ZZZ1

PCB

SE000008600

Compal Confidential

Everest Schematics Document

Intel Merom Processor with Crestline + DDRII + ICH8M

2007-03-05

REV: 0.2

Security Classification	Compal Secret Data		
Issued Date	2006/08/18	Deciphered Date	2007/8/18

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Title: Cover Page

Size	Document Number	Rev
B	LA-3691P	0.2

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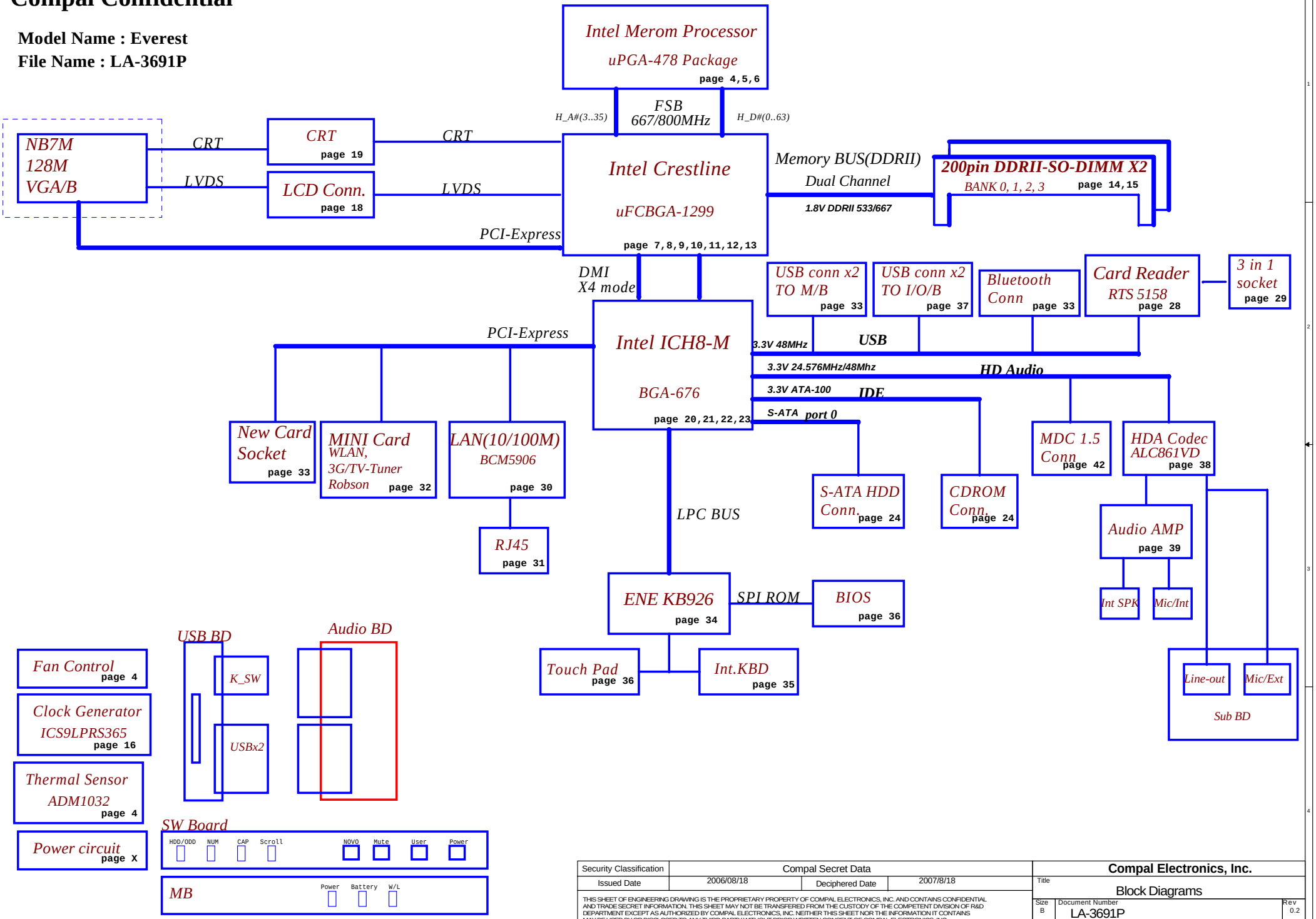
Model Name : Everest
File Name : LA-3691P



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Title: Block Diagrams

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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	Core voltage for CPU	ON	OFF	OFF
+0.9VS	0.9V switched power rail for DDR terminator	ON	OFF	OFF
+1.05VS	1.05V switched power rail	ON	OFF	OFF
+1.25VS	1.25V switched power rail	ON	OFF	OFF
+1.5VS	1.5V switched power rail	ON	OFF	OFF
+1.8V	1.8V power rail for DDR	ON	ON	OFF
+1.8VS	1.8V switched power rail	ON	OFF	OFF
+2.5VS	2.5V switched power rail	ON	OFF	OFF
+3VALW	3.3V always on power rail	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

SIGNAL / STATE	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 Table

ID1	ID0	TEST
0(R744)	0(R745)	A-TEST
0(R744)	1(R742)	B-TEST
1(R741)	0(R745)	C-TEST

PANEL ID Table

R	Size
Ra (R743)	15W
Rb (R740)	14W

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 #	PIRQ

No PCI Device

EC SM Bus1 address

Device	Address
Smart Battery	0001 011X b
EEPROM(24C16/02)	1010 000X b

EC SM Bus2 address

Device	Address
GMT-781	1001 100X b
NVIDIA NB8X	

ICH8M SM Bus address

Device	Address
Clock Generator (ICS9LPRS325AKLFT_MLF72)	1101 001Xb
DDR DIMM0	1010 000Xb
DDR DIMM1	1010 010Xb

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Title: Notes List

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Place close to CPU within 500mil

XDP Reserve

+VCCP

XDP_TDI R33 150_0402_1%
XDP_TMS R32 39_0402_1%
XDP_TDO R31 @54.9_0402_1%
XDP_BPM#5 R28 54.9_0402_1%
XDP_HOOK1 R27 @54.9_0402_1%
XDP_TRST# R24 560_0402_5%
XDP_TCK R17 27_0402_5%

<7> H_A#[3..35] H_A#[3..35]
<7> H_REQ#[0..4] H_REQ#[0..4]
<7> H_RS#[0..2] H_RS#[0..2]

JP15A

ADDR GROUP 0
H_A#3 J4 A[3]#
H_A#4 L5 A[4]#
H_A#5 L4 A[5]#
H_A#6 K5 A[6]#
H_A#7 M3 A[7]#
H_A#8 N2 A[8]#
H_A#9 J1 A[9]#
H_A#10 N3 A[10]#
H_A#11 P5 A[11]#
H_A#12 P2 A[12]#
H_A#13 L2 A[13]#
H_A#14 P4 A[14]#
H_A#15 P1 A[15]#
H_A#16 R1 A[16]#
<7> H_ADSTB#0 M1 ADSTB[0]#

H_REQ#0 K3 REQ[0]#
H_REQ#1 H2 REQ[1]#
H_REQ#2 K2 REQ[2]#
H_REQ#3 J3 REQ[3]#
H_REQ#4 L1 REQ[4]#

ADDR GROUP 1
H_A#17 Y2 A[17]#
H_A#18 U5 A[18]#
H_A#19 R3 A[19]#
H_A#20 W6 A[20]#
H_A#21 U4 A[21]#
H_A#22 Y5 A[22]#
H_A#23 U1 A[23]#
H_A#24 R4 A[24]#
H_A#25 T5 A[25]#
H_A#26 T3 A[26]#
H_A#27 W2 A[27]#
H_A#28 W5 A[28]#
H_A#29 Y4 A[29]#
H_A#30 U2 A[30]#
H_A#31 V4 A[31]#
H_A#32 W3 A[32]#
H_A#33 AA4 A[33]#
H_A#34 AB2 A[34]#
H_A#35 AA3 A[35]#
<7> H_ADSTB#1 V1 ADSTB[1]#

<21> H_A20M# A6 A20M#
<21> H_FERR# A5 FERR#
<21> H_IGNNE# C4 IGNNE#

<21> H_STPCLK# D5 STPCLK#
<21> H_INTR C6 LINT0
<21> H_NMI B4 LINT1
<21> H_SMI# A3 SMI#

RESERVED
M4 RSVD[01]
N5 RSVD[02]
T2 RSVD[03]
V3 RSVD[04]
B2 RSVD[05]
C3 RSVD[06]
D2 RSVD[07]
D22 RSVD[08]
D3 RSVD[09]
F6 RSVD[10]

CONTROL
ADS# H1 H_ADS# <7>
BNR# E2 H_BNR# <7>
BPRI# G5 H_BPRI# <7>
DEFER# H5 H_DEFER# <7>
DRDY# E21 H_DRDY# <7>
DBSY# E1 H_DBSY# <7>
BR0# F1 H_BR0# <7>
IERR# D20 H_IERR# R73 2 1 56_0402_5% +VCCP
INIT# B3 H_INIT# <21>
LOCK# H4 H_LOCK# <7>
RESET# C1 H_RESET# H_RESET# <7>
RS[0]# F3 H_RS#0
RS[1]# F4 H_RS#1
RS[2]# G3 H_RS#2
TRDY# G2 H_TRDY# <7>
HIT# G6 H_HIT# <7>
HITM# E4 H_HITM# <7>

XDP/ITP SIGNALS
BPM[0]# AD4 XDP_BPM#0 T1
BPM[1]# AD3 XDP_BPM#1 T4
BPM[2]# AD1 XDP_BPM#2 T3
BPM[3]# AC4 XDP_BPM#3 T7
PRDY# AC2 XDP_BPM#4 T6
PREQ# AC1 XDP_BPM#5 T9
TCK AC5 XDP_TCK T5
TDI AA6 XDP_TDI T12
TDO AB3 XDP_TDO T10
TMS AB5 XDP_TMS T11
TRST# AB6 XDP_TRST# T8
DBR# C20 XDP_DBRESET# XDP_DBRESET# <22>

Connect SB SYS_RESET# or just left NC

THERMAL
PROCHOT# D21 H_PROCHOT# H_PROCHOT# <45>
THERMDA A24 H_THERMDA
THERMDC B25 H_THERMDC
R70 2 1 56_0402_5% +VCCP

HOT
THERMTRIP# C7 H_THERMTRIP# <8,21>

H CLK
BCLK[0] A22 CLK_CPU_BCLK <16>
BCLK[1] A21 CLK_CPU_BCLK# <16>

FOX_PZ4782A-274M-41_Merom
ME@

H_THERMDA, H_THERMDC routing together,
Trace width / Spacing = 10 / 10 mil

+3VS
C327 0.1U_0402_16V4Z
R268 10K_0402_5%
U19
H_THERMDA 2 D+ VDD1 1
C328 2200P_0402_50V7K
H_THERMDC 3 D- ALERT# 6 THERM_SCI#
<32> EC_SMB_CK2 EC_SMB_CK2 8 SCLK THERM# 4 THERM#
<32> EC_SMB_DA2 EC_SMB_DA2 7 SDATA GND 5
R267 @0_0402_5% EC_THERM# <22,32>
R269 10K_0402_5% +3VS
G781F_SOP8
Address:100_1100
Check : to sb

FAN1 Conn

+5VS
C100 2.2U_0603_16V6K
U6
VEN GND
VIN GND
VO GND
VSET GND
+VCC_FAN1
EN_FAN1 <32> EN_FAN1
G993P1UF_SOP8

DIODE
Closed to
Connector
+5VS
D8 1SS355_SOD323
@ D7 @1N4148_SOT23
C94 2.2U_0603_16V6K
C358 1000P_0402_50V7K

+3VS
R276 10K_0402_5%
40mil
+VCC_FAN1
<32> FAN_SPEED1
C341 1000P_0402_50V7K
JP17
GND GND
ACES_85205-03001
ME@

+VCCP
R68 @56_0402_5%
H_PROCHOT# Q4 @MMBT3904_SOT23 OCP# OCP# <22>

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Title: Merom (1/3)

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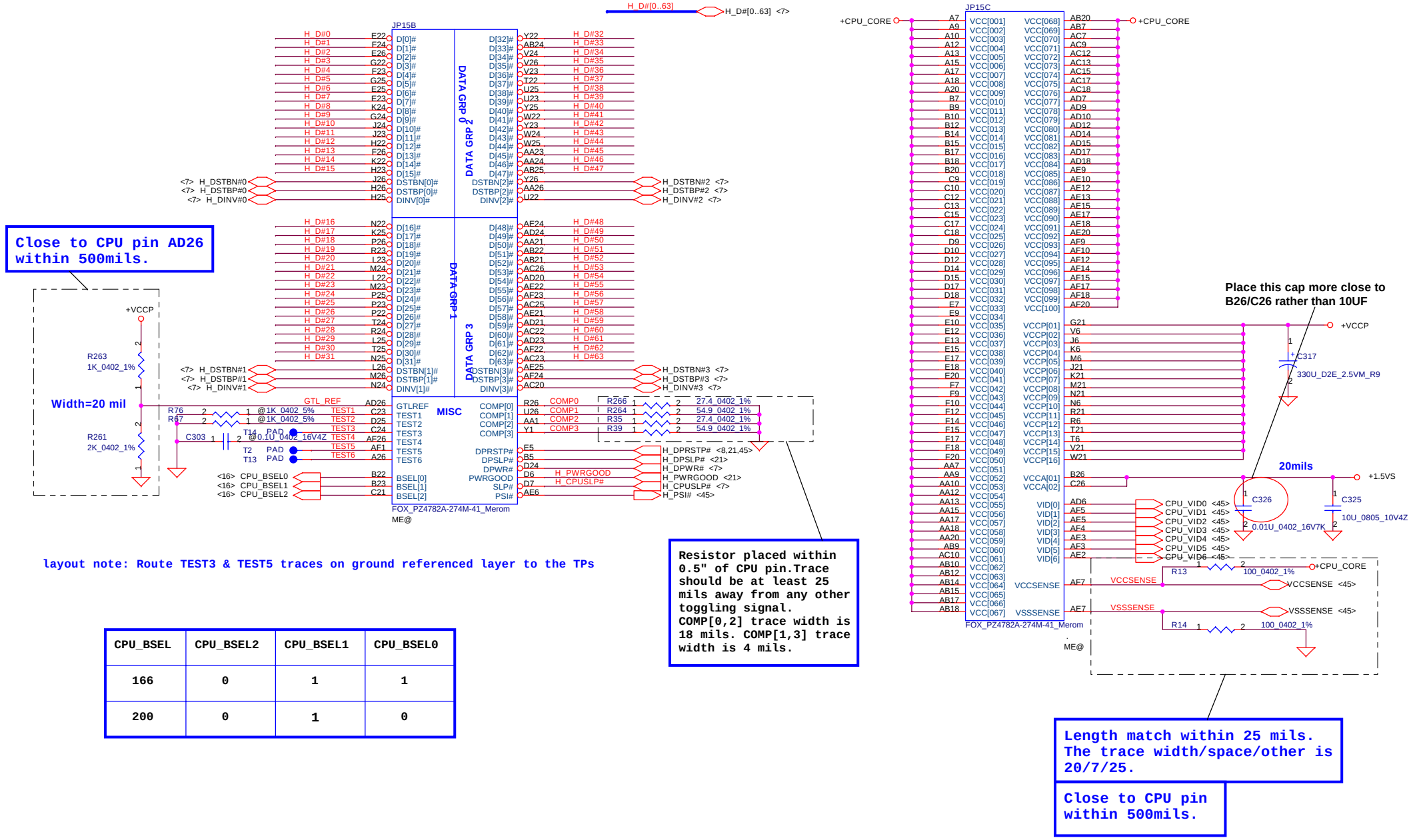

CPU_BSEL	CPU_BSEL2	CPU_BSEL1	CPU_BSEL0
166	0	1	1
200	0	1	0

Security Classification	Compal Secret Data		
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Compal Electronics, Inc.

Title: Merom (2/3)

Size	Document Number	Rev
B	LA-3691P	0.2

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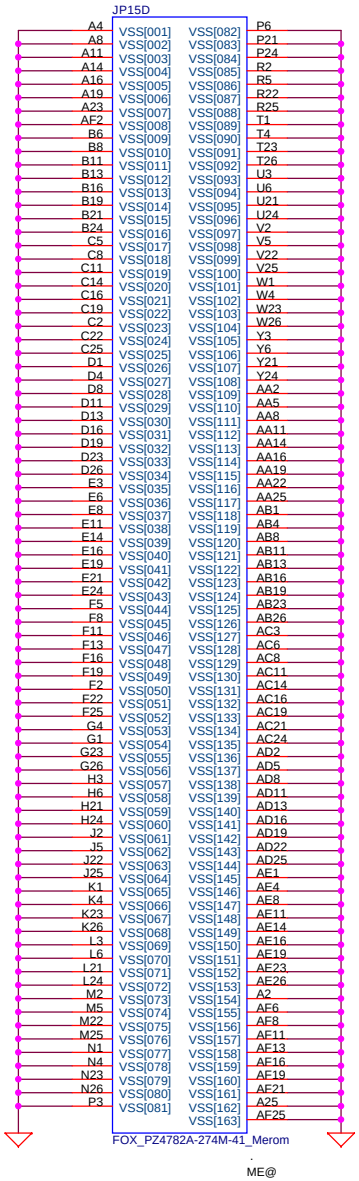
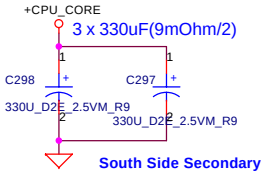
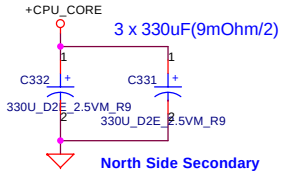
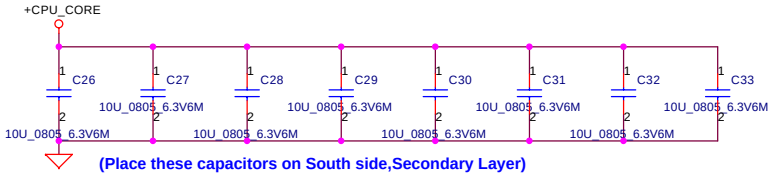
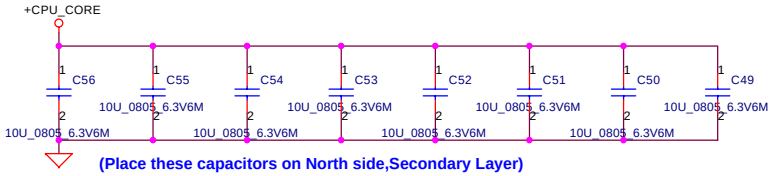
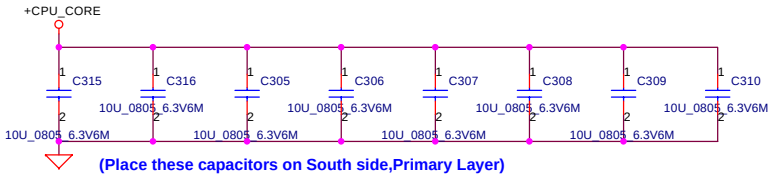


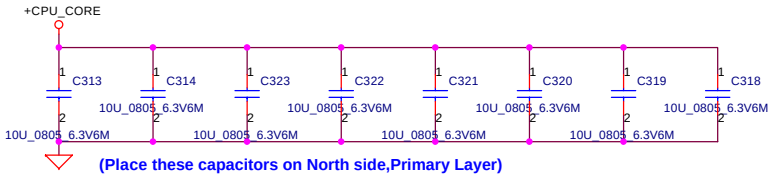






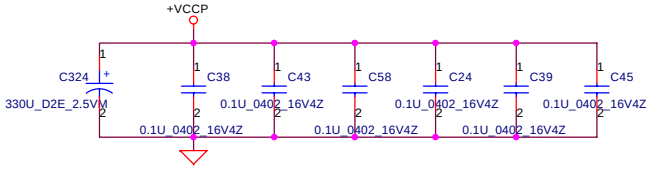






9/25 10U checked. OK for use!

+CPU-CORE Decoupling	C,uF	ESR, mohm	ESL,nH
SPCAP,Polymer	6X330uF	9m ohm/6	1.8nH/6
MLCC 0805 X5R	32X22uF	3m ohm/32	0.6nH/32
	32X10uF	3m ohm/32	0.6nH/32



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Title: Merom (3/3)

Size: B | Document Number: LA-3691P | Rev: 0.2

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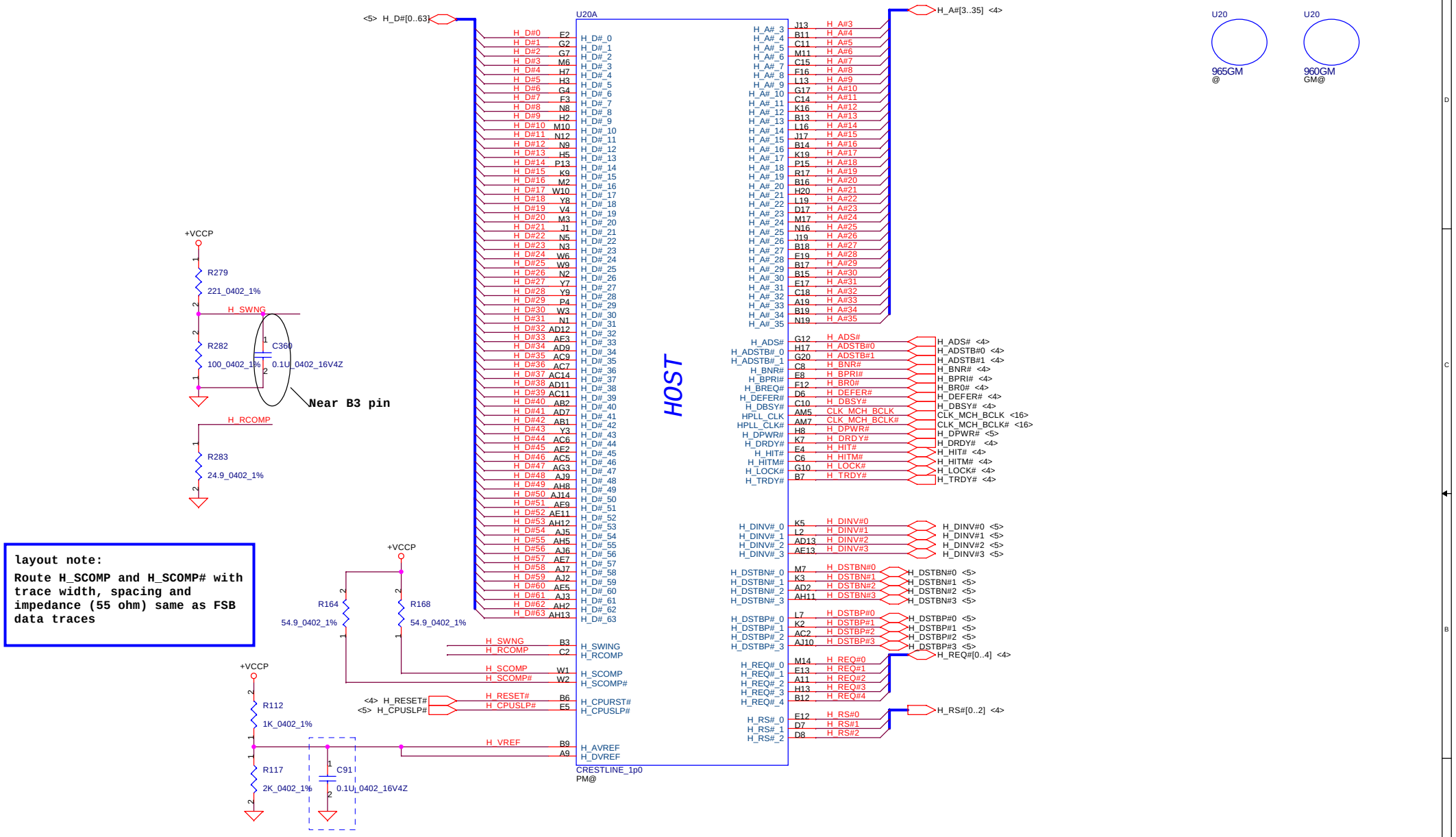

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Title: Crestline (1/7)-GTL

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U20B

RSVD1 RSVD2 RSVD3 RSVD4 RSVD5 RSVD6 RSVD7 RSVD8 RSVD9 RSVD10 RSVD11 RSVD12 RSVD13 RSVD14

RSVD20 RSVD21 RSVD22 RSVD23 RSVD24 RSVD25 RSVD26 RSVD27 RSVD28 RSVD29 RSVD30 RSVD31 SA_MA_14 SB_MA_14 RSVD34 RSVD35 RSVD36 LVDSA_DATA#_3 LVDSA_DATA_3 RSVD39 RSVD40 RSVD41 RSVD42 RSVD43 RSVD44 RSVD45

DDR MUXING

SM_CK_0 SM_CK_1 SM_CK_3 SM_CK_4 — AV29 BB23 BA25 AV23 — DDRA_CLK0 <14> DDRA_CLK1 <14> DDRB_CLK0 <15> DDRB_CLK1 <15>

SM_CK#_0 SM_CK#_1 SM_CK#_3 SM_CK#_4 — AW30 BA23 AW25 AW23 — DDRA_CLK0# <14> DDRA_CLK1# <14> DDRB_CLK0# <15> DDRB_CLK1# <15>

SM_CKE_0 SM_CKE_1 SM_CKE_3 SM_CKE_4 — BE29 AY32 BD39 BG37 — DDRA_CKE0 <14> DDRA_CKE1 <14> DDRB_CKE0 <15> DDRB_CKE1 <15>

SM_CS#_0 SM_CS#_1 SM_CS#_2 SM_CS#_3 — BG20 BK16 BG16 BE13 — DDRA_SCS0# <14> DDRA_SCS1# <14> DDRB_SCS0# <15> DDRB_SCS1# <15>

SM_ODT_0 SM_ODT_1 SM_ODT_2 SM_ODT_3 — BH18 BJ15 BJ14 BE16 — DDRA_ODT0 <14> DDRA_ODT1 <14> DDRB_ODT0 <15> DDRB_ODT1 <15>

SM_RCOMP — BL15 SMRCOMP — R382 1 2 20_0402_1%
SM_RCOMP# — BK14 SMRCOMP# — R381 1 2 20_0402_1%

SM_RCOMP_VOH — BK31 SM_RCOMP_VOH
SM_RCOMP_VOL — BL31 SM_RCOMP_VOL

SM_VREF_0 SM_VREF_1 — AR49 AW4 — SM_VREF — 20mil

+1.8V — R182 1K_0402_1% — R180 1K_0402_1% — C161 0.1U_0402_16V4Z

CLK

DPLL_REF_CLK — B42 CLK_DREF_96M — CLK_DREF_96M <16>
DPLL_REF_CLK# — C42 CLK_DREF_96M# — CLK_DREF_96M# <16>
DPLL_REF_SSCLK — H48 CLK_DREF_SSC — CLK_DREF_SSC <16>
DPLL_REF_SSCLK# — H47 CLK_DREF_SSC# — CLK_DREF_SSC# <16>

PEG_CLK — K44 CLK_MCH_3GPLL — CLK_MCH_3GPLL <16>
PEG_CLK# — K45 CLK_MCH_3GPLL# — CLK_MCH_3GPLL# <16>

DMI

DMI_RXN_0 DMI_RXN_1 DMI_RXN_2 DMI_RXN_3 — AN47 AJ38 AN42 AN46 — DMI_ITX_MRX_N0 DMI_ITX_MRX_N1 DMI_ITX_MRX_N2 DMI_ITX_MRX_N3 — DMI_ITX_MRX_N0 <22> DMI_ITX_MRX_N1 <22> DMI_ITX_MRX_N2 <22> DMI_ITX_MRX_N3 <22>

DMI_RXP_0 DMI_RXP_1 DMI_RXP_2 DMI_RXP_3 — AM47 AJ39 AN41 AN45 — DMI_ITX_MRX_P0 DMI_ITX_MRX_P1 DMI_ITX_MRX_P2 DMI_ITX_MRX_P3 — DMI_ITX_MRX_P0 <22> DMI_ITX_MRX_P1 <22> DMI_ITX_MRX_P2 <22> DMI_ITX_MRX_P3 <22>

DMI_TXN_0 DMI_TXN_1 DMI_TXN_2 DMI_TXN_3 — AJ46 AJ41 AM40 AM44 — DMI_MTX_IRX_N0 DMI_MTX_IRX_N1 DMI_MTX_IRX_N2 DMI_MTX_IRX_N3 — DMI_MTX_IRX_N0 <22> DMI_MTX_IRX_N1 <22> DMI_MTX_IRX_N2 <22> DMI_MTX_IRX_N3 <22>

DMI_TXP_0 DMI_TXP_1 DMI_TXP_2 DMI_TXP_3 — AJ47 AJ42 AM39 AM43 — DMI_MTX_IRX_P0 DMI_MTX_IRX_P1 DMI_MTX_IRX_P2 DMI_MTX_IRX_P3 — DMI_MTX_IRX_P0 <22> DMI_MTX_IRX_P1 <22> DMI_MTX_IRX_P2 <22> DMI_MTX_IRX_P3 <22>

GRAPHICS VID

GFX_VID_0 GFX_VID_1 GFX_VID_2 GFX_VID_3 GFX_VR_EN — E35 A39 C38 B39 E36

MISC

CL_CLK — AM49 — CL_CLK0 <22>
CL_DATA — AK50 — CL_DATA0 <22>
CL_PWROK — AT43 — CL_PWROK <22>
CL_RST# — AN49 — CL_RST# <22>
CL_VREF — AM50 CL_VREF — C142 1 2 0.1U_0402_16V4Z — R173 1K_0402_1% — R172 392_0402_1% — +1.25VS

SDVO_CTRL_CLK — H35 SDVO_CTRL_CLK
SDVO_CTRL_DATA — K36 SDVO_CTRL_DATA
CLK_REQ# — G39 MCH_CLKREQ# — MCH_CLKREQ# <16>
ICH_SYNC# — G40 — MCH_ICH_SYNC# <22>

TEST_1 — A37 MCH_TEST_1 — R124 0_0402_5%
TEST_2 — R32 MCH_TEST_2 — R158 20K_0402_5%

NC_1 NC_2 NC_3 NC_4 NC_5 NC_6 NC_7 NC_8 NC_9 NC_10 NC_11 NC_12 NC_13 NC_14 NC_15 NC_16

CRESTLINE_1p0
PM@

<14> DDRA_SMA14
<15> DDRB_SMA14
DDRA_SMA14 DDRB_SMA14 — BE24 BH39 AW20 BK20 C48 D47 B44 C44 A35 B37 B36 B34 C34

9/20 Modify NB symbol for Pin BJ29/BE24/C48/D47

<16> MCH_CLKSEL0
<16> MCH_CLKSEL1
<16> MCH_CLKSEL2
MCH_CLKSEL0 MCH_CLKSEL1 MCH_CLKSEL2 — P27 N27 N24 — CFG_0 CFG_1 CFG_2

C21 C23 F23 N23 G23 J20 C20 R24 L23 J23 E23 E20 K23 M20 M24 L32 N33 L35 — CFG_3 CFG_4 CFG_5 CFG_6 CFG_7 CFG_8 CFG_9 CFG_10 CFG_11 CFG_12 CFG_13 CFG_14 CFG_15 CFG_16 CFG_17 CFG_18 CFG_19 CFG_20

MCH_CFG_5
MCH_CFG_7
MCH_CFG_8
MCH_CFG_9
MCH_CFG_12
MCH_CFG_13
MCH_CFG_16
MCH_CFG_19
MCH_CFG_20

<22> PM_BMBUSY#
<5,21,45> H_DPRSTP#
<14> PM_EXTTS#0
<15> PM_EXTTS#1
PM_EXTTS#0
PM_EXTTS#1
GMCH_PWROK
MCH_RSTIN#
<17,20,22,24,25,30> PLT_RST_BUF#
<4,21> H_THERMTRIP#
<22,45> PM_DPRSLPVR
R176 100_0402_5%
R104 0_0402_5%
G41 L39 L36 J36 AW49 AV20 N20 G36
PM_BM_BUSY#
PM_DPRSTP#
PM_EXT_TS#_0
PM_EXT_TS#_1
PWROK
RSTIN#
THERMTRIP#
DPRSLPVR

If THERMTRIP no used, left NC

Use VGATE for GMCH_PWROK

<22,45> VGATE
<22,32> ICH_POK
VGATE ICH_POK — R184 @0_0402_5% — R186 0_0402_5% — GMCH_PWROK

BJ51 BK51 BK50 BL50 BL49 BL3 BL2 BK1 BJ1 E1 A5 C51 B50 A50 A49 BK2

+1.8V — R410 1K_0402_1%
SM_RCOMP_VOH — R397 3.01K_0402_1% — C469 2.2U_0805_10V6K — C465 0.01U_0402_16V7K
SM_RCOMP_VOL — R384 1K_0402_1% — C467 2.2U_0805_10V6K — C464 0.01U_0402_16V7K

Layout Note:
SM_VREF trace width and spacing is 20/20.

Maybe not used
+VCCP
CLK_DREF_96M# R122 PM@ 0_0402_5%
CLK_DREF_SSC# R146 PM@ 0_0402_5%
CLK_DREF_96M R123 PM@ 0_0402_5%
CLK_DREF_SSC R142 PM@ 0_0402_5%

CFG[17:3] have internal pull up
CFG[19:18] have internal pull down

Strap Pin Table

CFG[2:0]	011 = 667MT/s FSB 010 = 800MT/s FSB
CFG5	0 = DMI x 2 1 = DMI x 4 * (Default)
CFG9	0 = Lane Reversal Enable 1 = Normal Operation * (Default)
CFG[13:12]	00 = Reserved 01 = XOR Mode Enabled 10 = All Z Mode Enabled 11 = Normal Operation * (Default)
CFG16	0 = Dynamic ODT Disabled 1 = Dynamic ODT Enabled * (Default)
CFG19	0 = Normal Operation *(Default) 1 = DMI Lane Reversal Enable
CFG20 (PCIE/SDVO select)	0 = Only PCIE or SDVO is operational. * (Default) 1 = PCIE/SDVO are operating simu.
SDVO_CTRLDATA	0 = No SDVO Device Present * (Default) 1 = SDVO Device Present

MCH_CFG_5 R132 @4.02K_0402_1%
MCH_CFG_9 R141 @4.02K_0402_1%
MCH_CFG_12 R145 @4.02K_0402_1%
MCH_CFG_13 R133 @4.02K_0402_1%
MCH_CFG_16 R155 @4.02K_0402_1%
MCH_CFG_7 R135 @4.02K_0402_1%
MCH_CFG_8 R151 @4.02K_0402_1%

MCH_CFG_19 R113 @4.02K_0402_1% — +3VS
MCH_CFG_20 R126 @4.02K_0402_1%

PM_EXTTS#0 R114 10K_0402_5% — +3VS
PM_EXTTS#1 R138 10K_0402_5%
MCH_CLKREQ# R125 10K_0402_5%

SDVO_CTRL_CLK R149 @ 0_0402_5%
SDVO_CTRL_DATA R160 @ 0_0402_5%

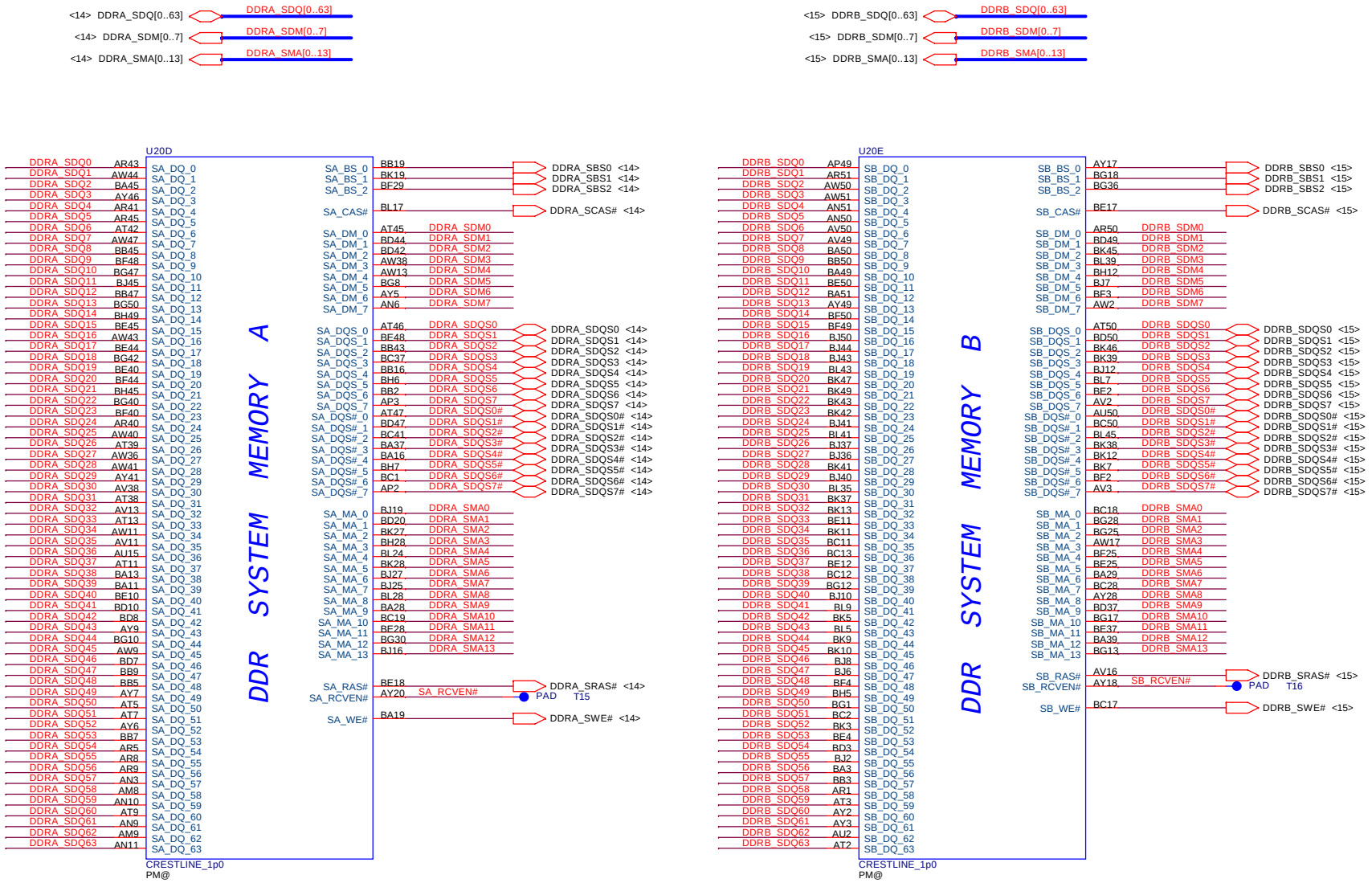
Security Classification	Compal Secret Data		
Issued Date	2006/08/18	Deciphered Date	2007/8/18

Compal Electronics, Inc.

Title: Crestline (2/7)-DMI/DDR

Size	Document Number	Rev
Custom	LA-3691P	0.2

Date: Thursday, March 08, 2007 Sheet 8 of 45



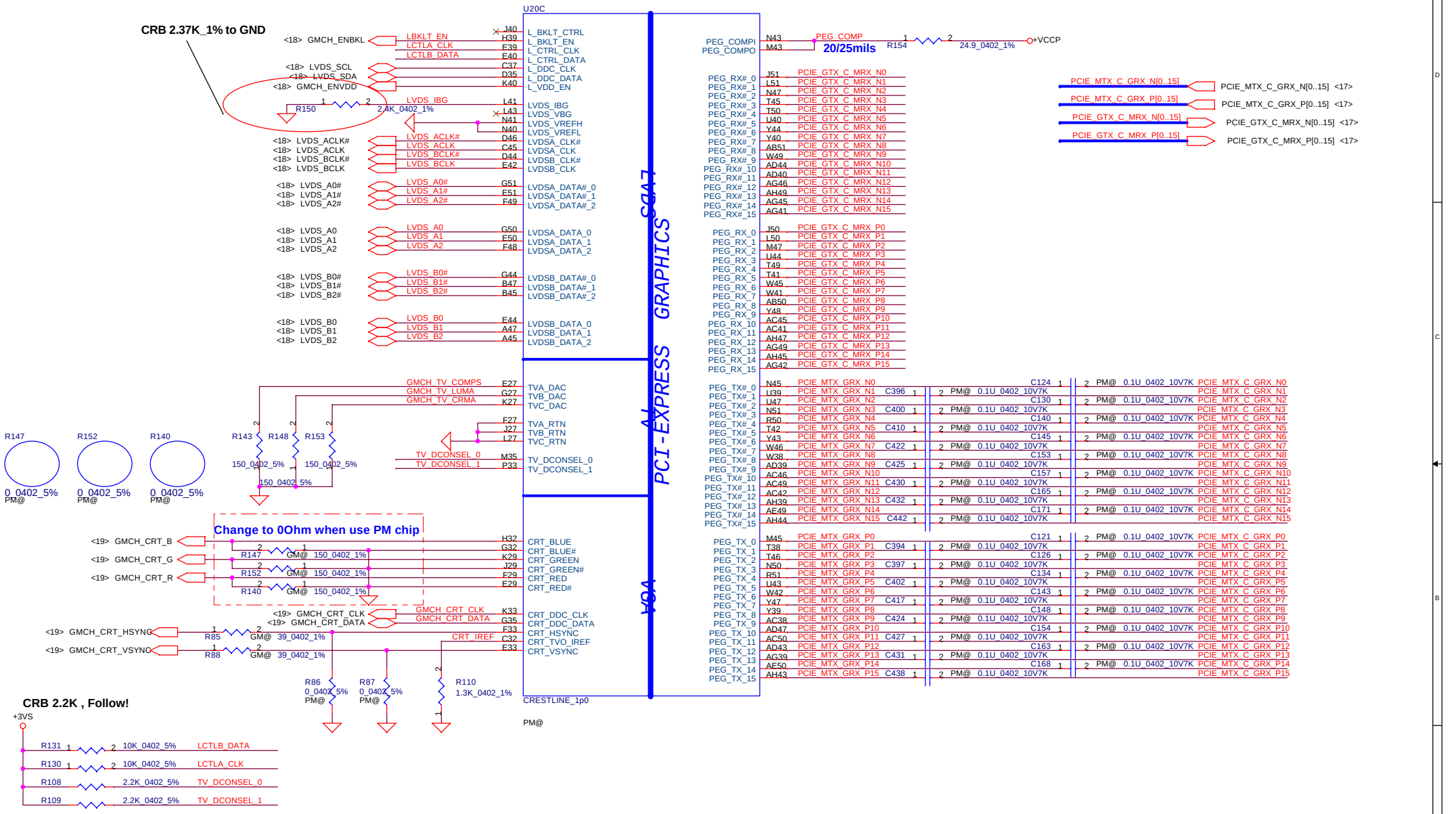
Security Classification	Compal Secret Data		
Issued Date	2006/08/18	Deciphered Date	2007/8/18

Compal Electronics, Inc.

Title: Crestline (3/7)-DDRII

Size	Document Number	Rev
B	LA-3691P	0.2

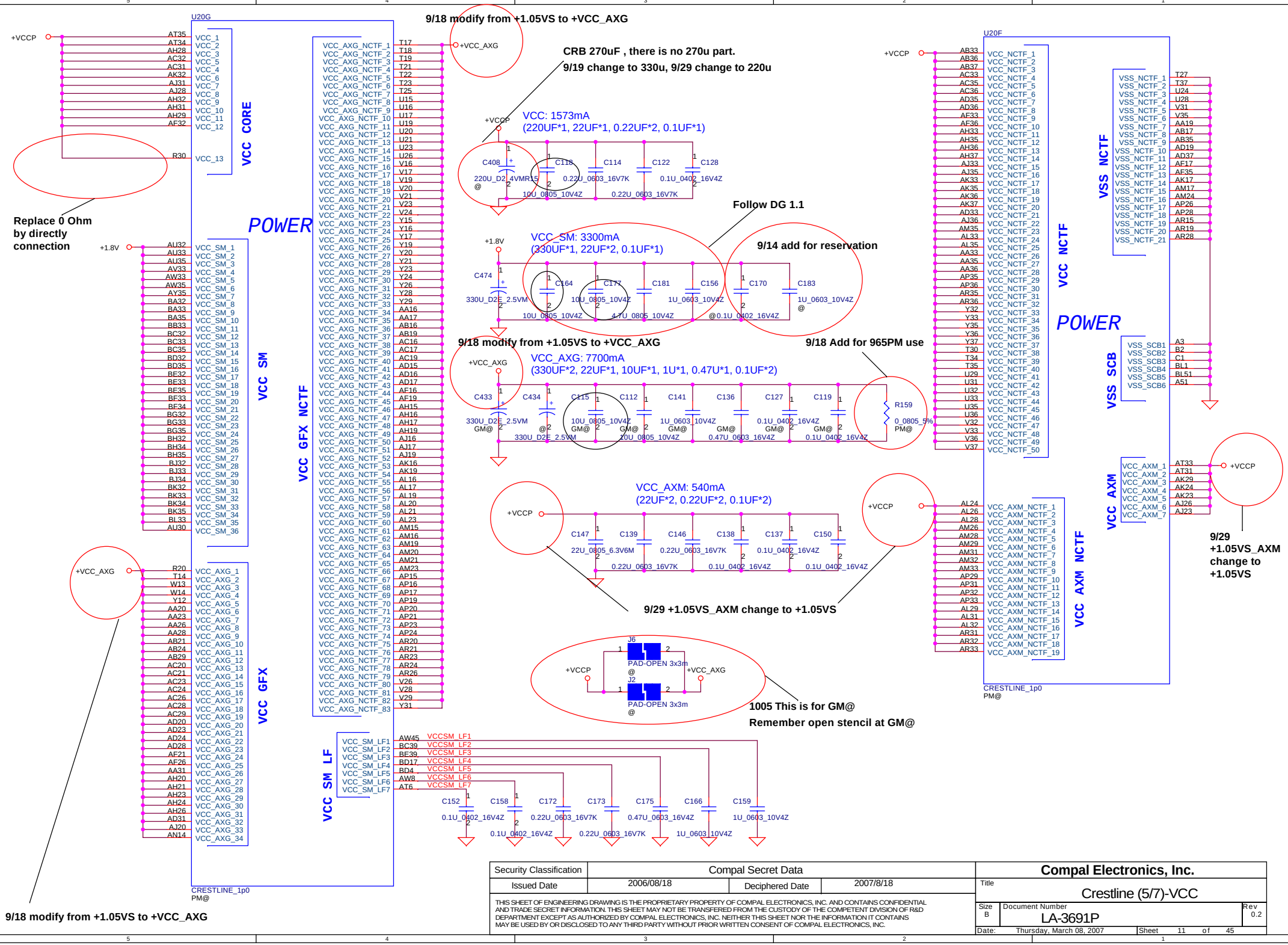
Date: Thursday, March 08, 2007 Sheet 9 of 45



Security Classification	Compal Secret Data		
Issued Date	2006/08/18	Deciphered Date	2007/8/18

Compal Electronics, Inc.

Title	Crestline (4/7)-VGA/LVDS/TV	
Size B	Document Number LA-3691P	Rev 0.2
Date: Thursday, March 08, 2007	Sheet 10 of 45	



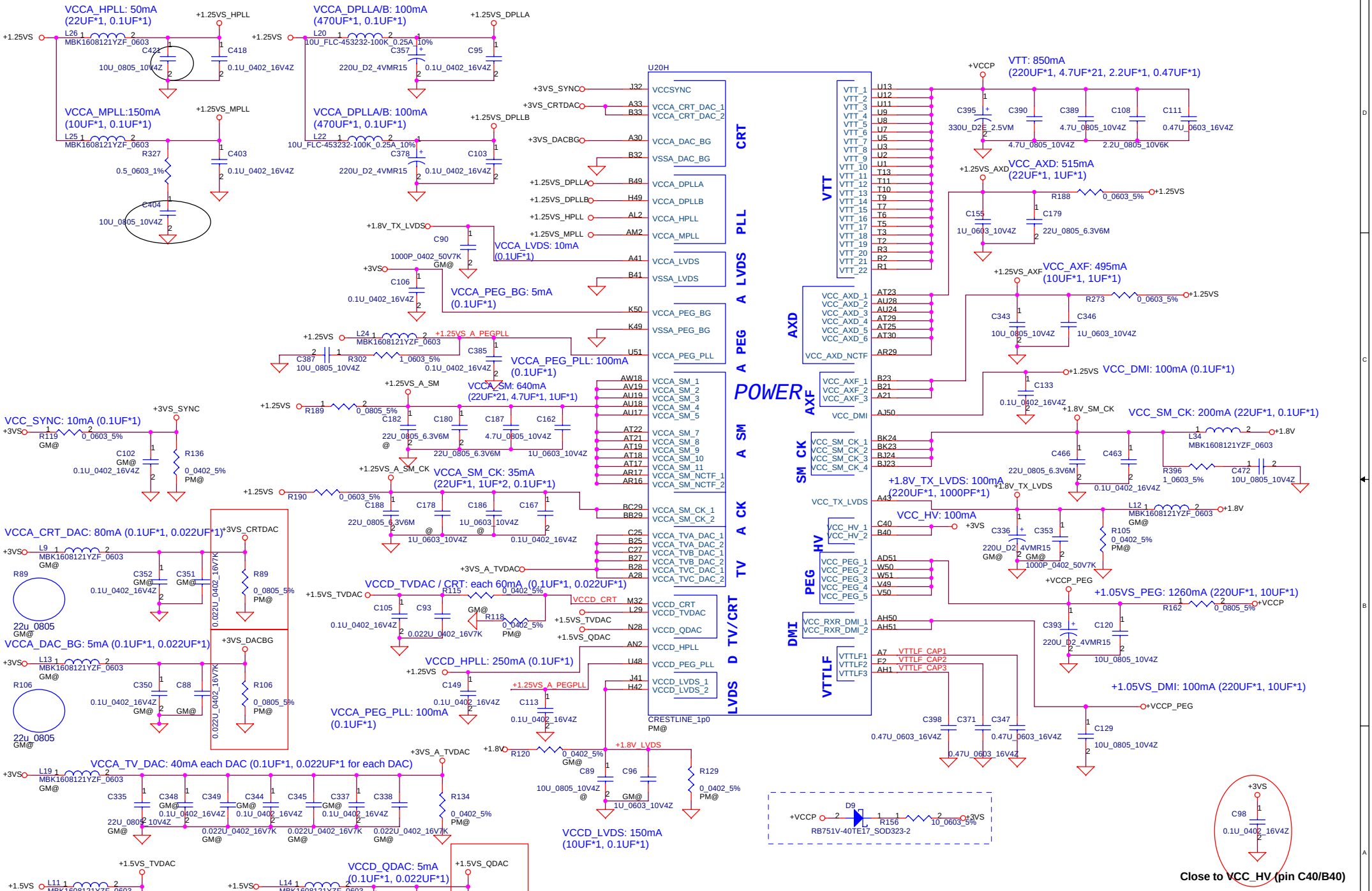
Security Classification	Compal Secret Data		
Issued Date	2006/08/18	Deciphered Date	2007/8/18

Compal Electronics, Inc.

Title: Crestline (5/7)-VCC

Size	Document Number	Rev
B	LA-3691P	0.2

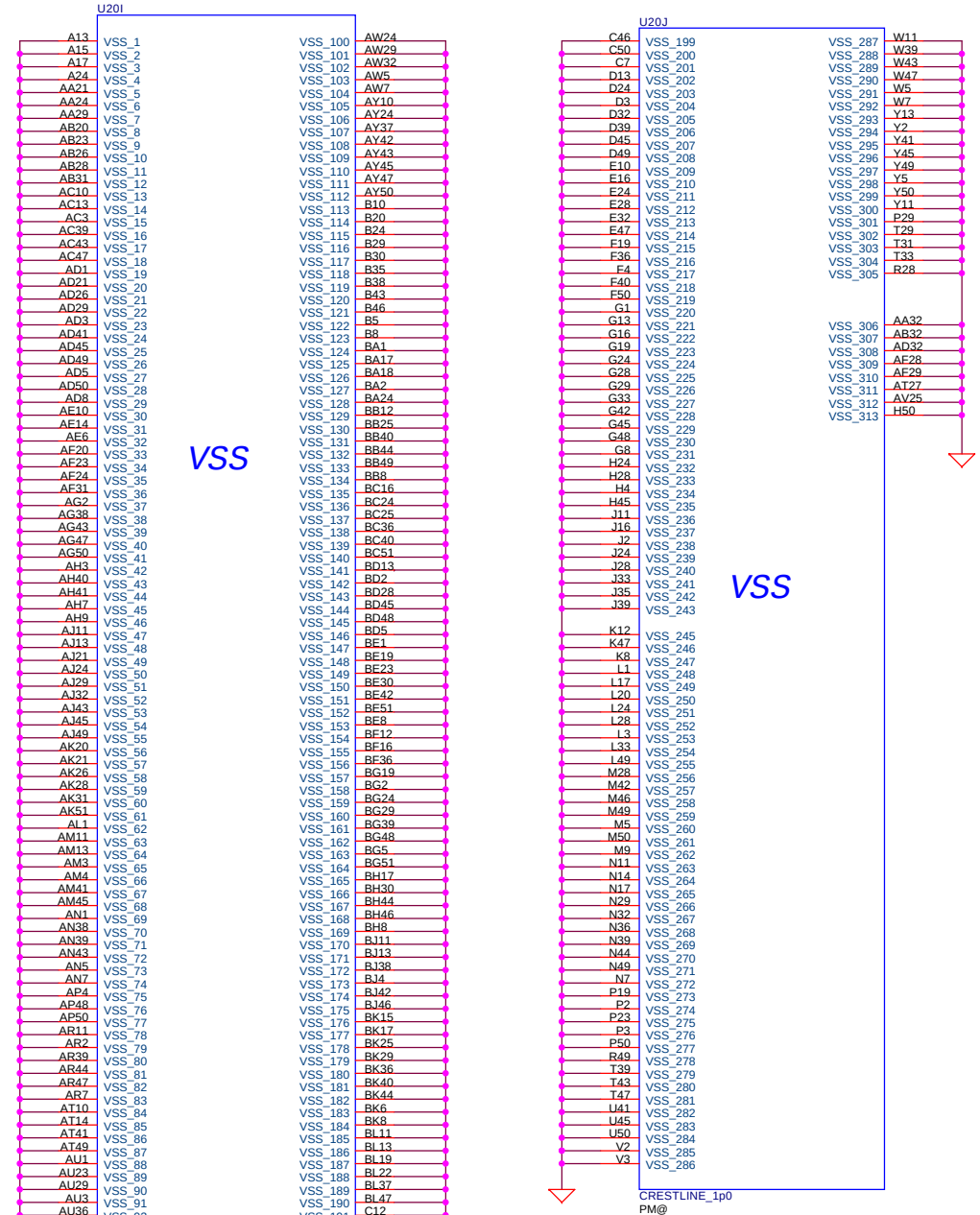
Date: Thursday, March 08, 2007 Sheet 11 of 45



Security Classification	Compal Secret Data		
Issued Date	2006/08/18	Deciphered Date	2007/8/18

Compal Electronics, Inc.

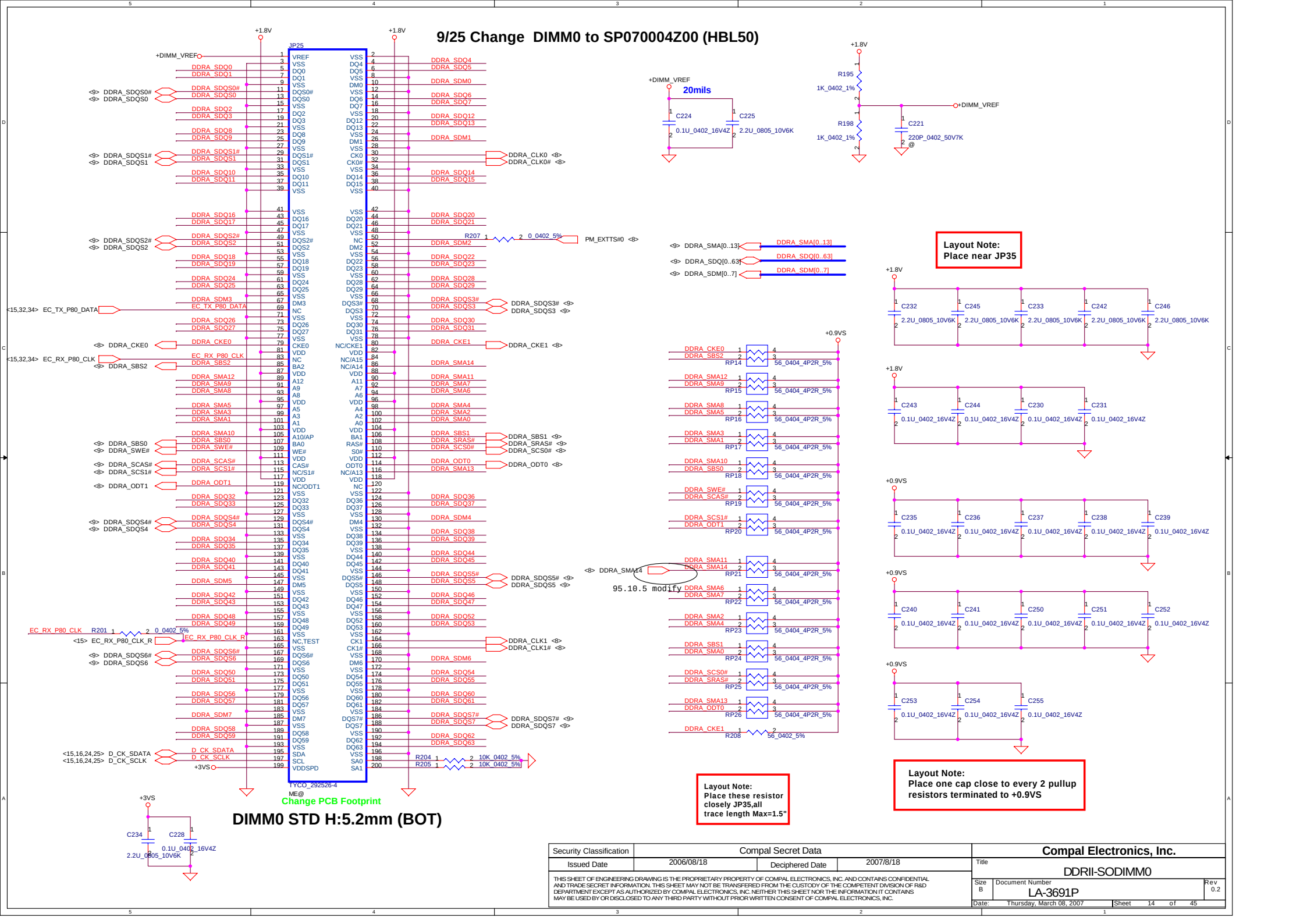
Title	Crestline (6/7)-VCC	
Size B	Document Number LA-3691P	Rev 0.2
Date: Thursday, March 08, 2007	Sheet 12 of 45	



Security Classification	Compal Secret Data		
Issued Date	2006/08/18	Deciphered Date	2007/8/18

Compal Electronics, Inc.

Title	Crestline (7/7)-GND
Size B	Document Number LA-3691P
Rev	0.2
Date:	Thursday, March 08, 2007
Sheet	13 of 45



Security Classification	Compal Secret Data		
Issued Date	2006/08/18	Deciphered Date	2007/8/18

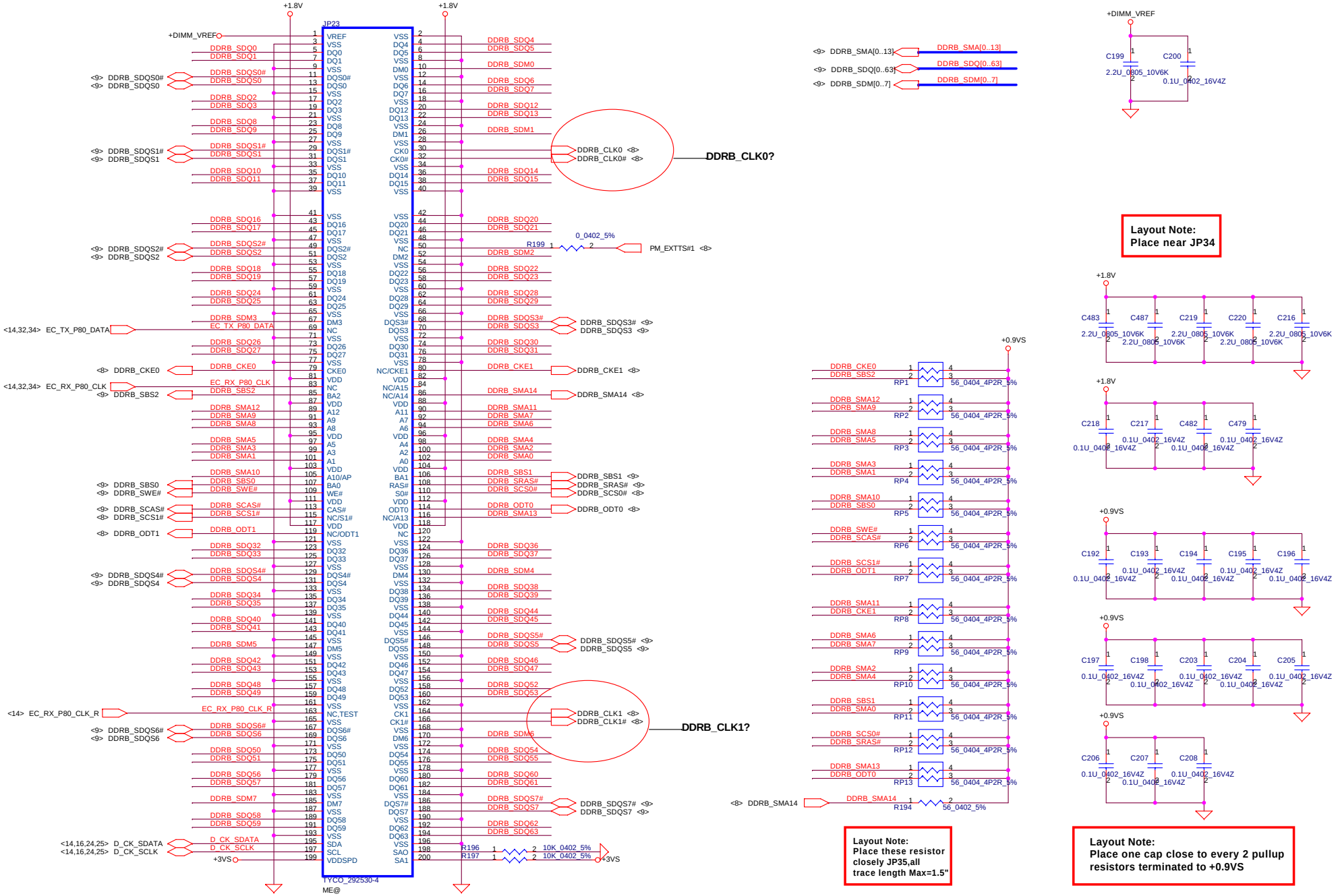
Compal Electronics, Inc.

Title: DDRII-SODIMM0

Size	Document Number	Rev
B	LA-3691P	0.2

Date: Thursday, March 08, 2007 | Sheet 14 of 45

9/25 Change DIMM1 to SP070006F00



DIMM1 STD H:9.2mm (BOT)

Layout Note:
Place these resistor closely JP35,all trace length Max=1.5"

Layout Note:
Place near JP34

Layout Note:
Place one cap close to every 2 pullup resistors terminated to +0.9VS

Security Classification	Compal Secret Data		
Issued Date	2006/08/18	Deciphered Date	2007/8/18

Compal Electronics, Inc.

Title: DDRII-SODIMM1

Size	Document Number	Rev
B	LA-3691P	0.2

Date: Thursday, March 08, 2007 Sheet 15 of 45

FSLC CLKSEL2	FSLB CLKSEL1	FSLA CLKSEL0	CPU MHz	SRC MHz	PCI MHz
0	1	0	200	100	33.3
0	1	1	166	100	33.3

FSB Frequency Selet:

CPU Driven	Stuff						
*(Default)	No Stuff	R401	R408	R417	R430	R438	R447
667MHz	Stuff	R401	R417	R447			
	No Stuff	R408	R430	R438			
800MHz	Stuff	R408	R417	R447			
	No Stuff	R401	R430	R438			

10/17 : Change P/N from SA0001GT00 to SA00001GT10

Need to update Symbol

For ITP_EN, 0 =SRC8/SRC8#; 1 = ITP/ITP#
For 27_SEL, 0 = Enable DOT96 & SRC1,
1= Enable SRC0 & 27MHz
For PCI2_EN, 0 = Overclocking of CPU and SRC Allowed
1 = Overclocking of CPU and SRC NOT allowed

Routing the trace at least 10mil

Place close to U35

ICS9LPRS365/SA00001GT00

<BOM Structure>

* Internal Pull-Up Resistor
* Internal Pull-Down Resistor

Security Classification	Compal Secret Data		
Issued Date	2006/08/04	Deciphered Date	2006/10/06

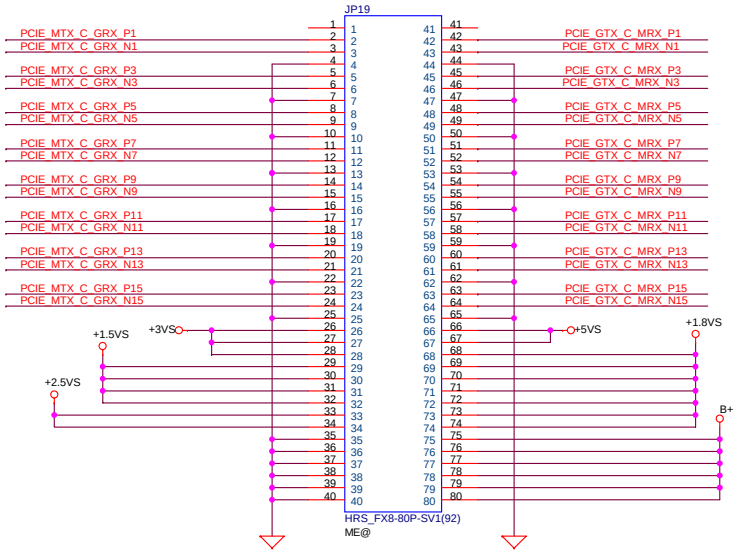
Compal Electronics, Inc.

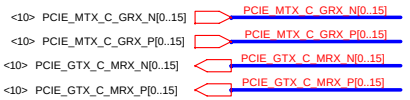
Title: **Clock generator**

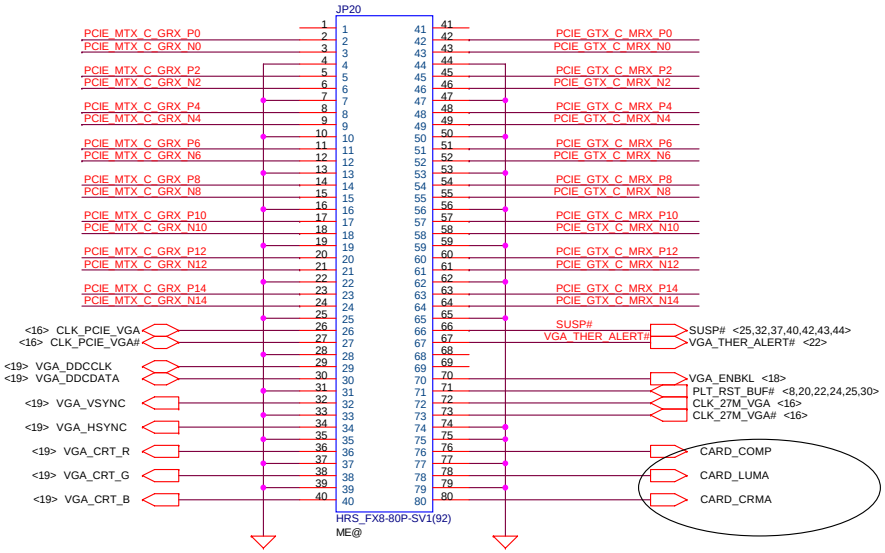
Size	Document Number	Rev
	LA-3691P	0.2

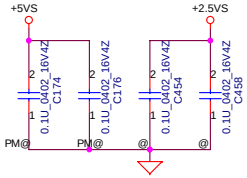
Date: Thursday, March 08, 2007 Sheet 16 of 45

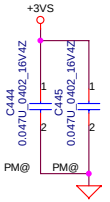
MAX. 4.06A @ 1.8V
MAX. 130mA @ 2.5V
MAX. 655mA @ 3.3V











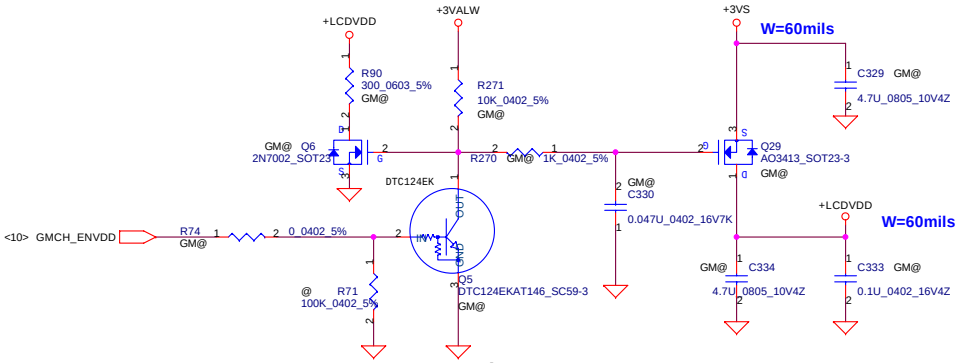
Compal Electronics, Inc.

Title: **VGA/B connector**

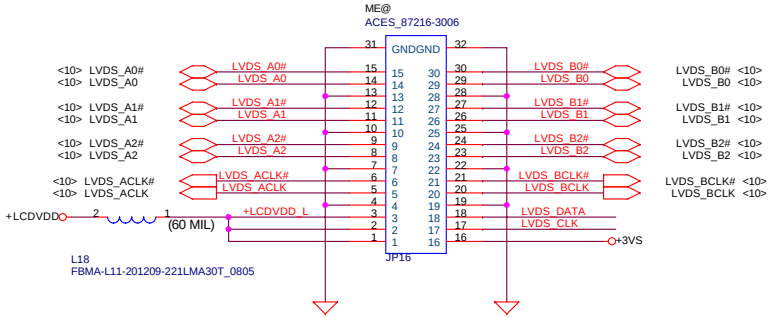
Size	Document Number	Rev
Custom	*IEL10 LA-3451P*	0.2

Date: Thursday, March 08, 2007 Sheet 17 of 45

LCD POWER CIRCUIT

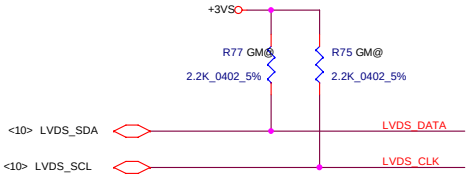


LCD/PANEL BD. Conn.

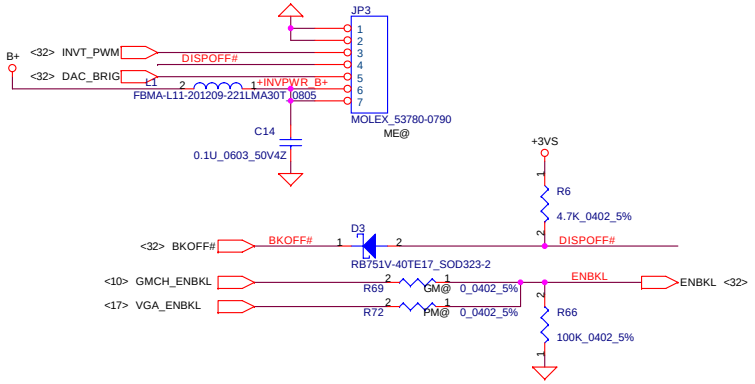


Follow HEL80's pin definition

Except pin 29



INVERTER Conn.



Security Classification	Compal Secret Data		
Issued Date	2006/08/18	Deciphered Date	2007/8/18

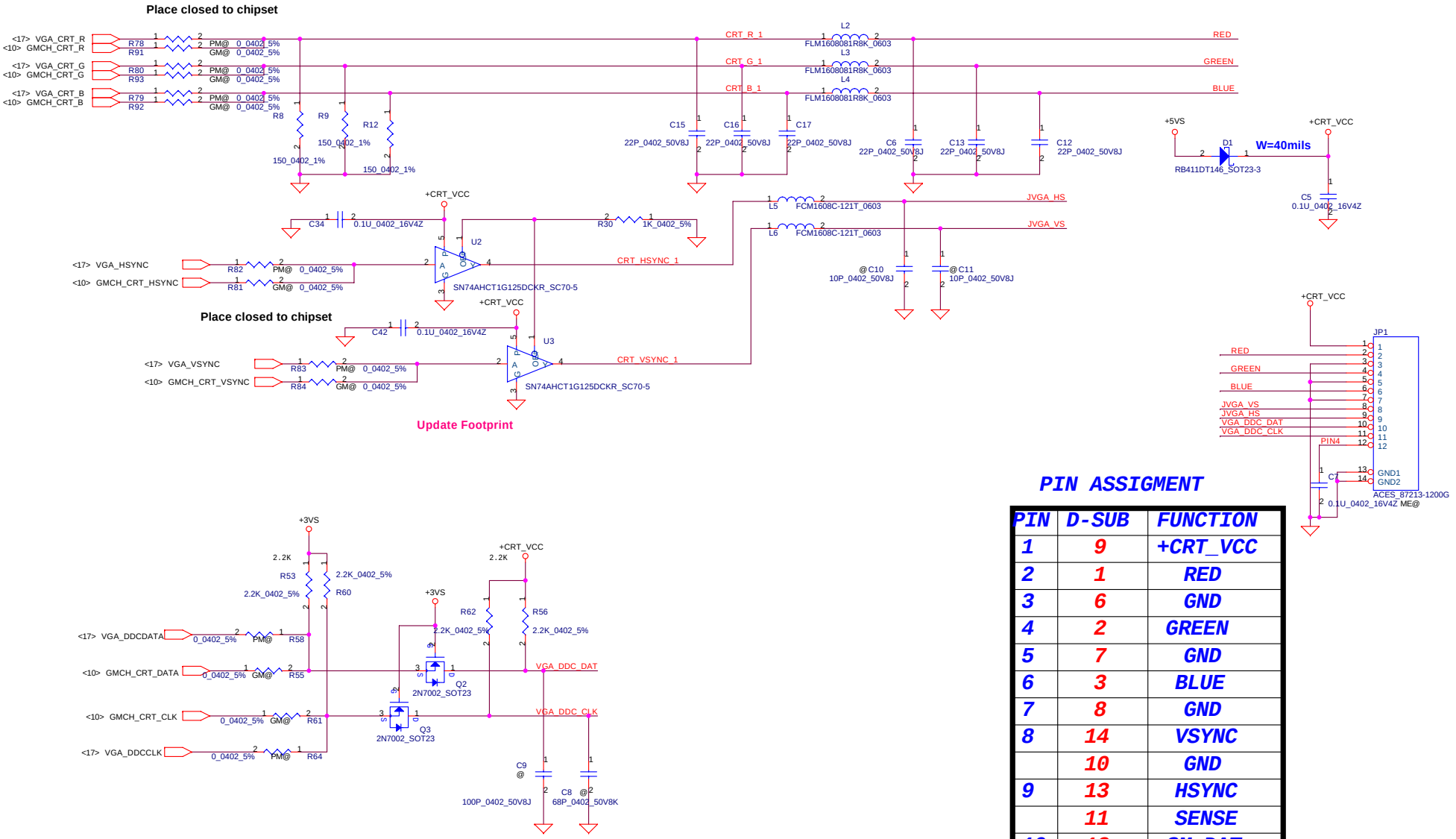
Compal Electronics, Inc.

Title: LVDS & DVI Connector

Size	Document Number	Rev
B	LA-3691P	0.2

Date: Thursday, March 08, 2007 Sheet 18 of 45

CRT Connector



PIN ASSIGMENT

PIN	D-SUB	FUNCTION
1	9	+CRT_VCC
2	1	RED
3	6	GND
4	2	GREEN
5	7	GND
6	3	BLUE
7	8	GND
8	14	VSYNC
	10	GND
9	13	HSYNC
	11	SENSE
10	12	SM_DAT
11	15	SM_CLK
12	4	PIN4

Security Classification	Compal Secret Data		
Issued Date	2006/08/18	Deciphered Date	2007/8/18

Compal Electronics, Inc.

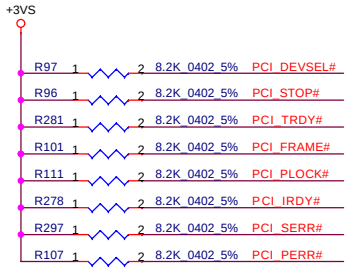
Title: CRT & TV-OUT Connector

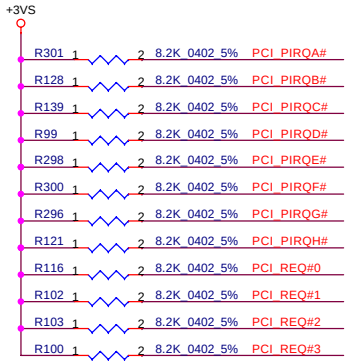
Size	Document Number	Rev
B	LA-3691P	0.2

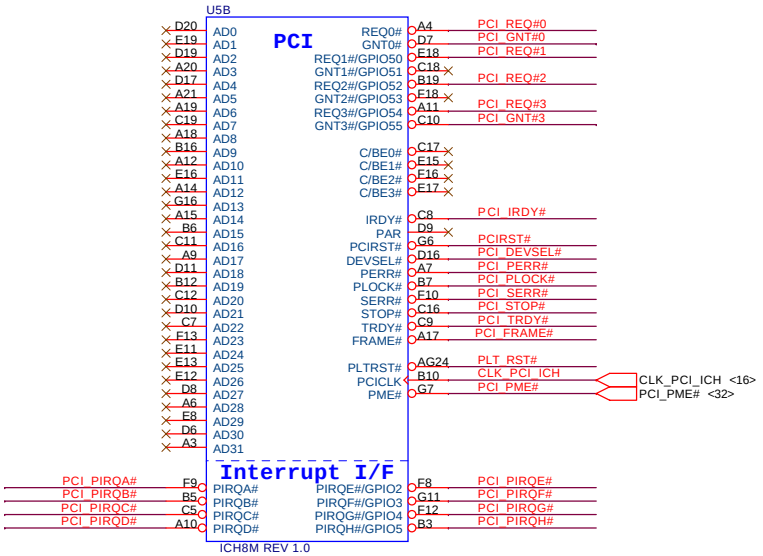
Date: Thursday, March 08, 2007 Sheet 19 of 45

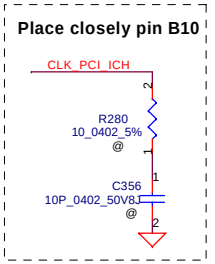
10/17 : Change P/N from SA000010G00 to SA00001JU10

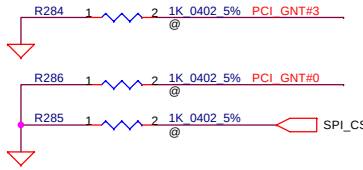
10/17 : FootPrint : SA000010G00
BOM : SA00001JU10





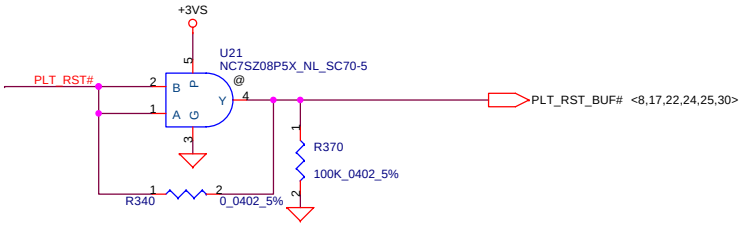


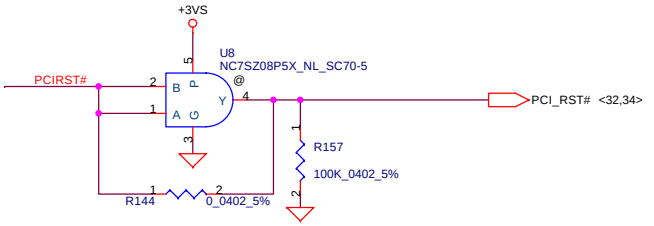




A16 Swap Override Strap	
PCI_GNT#3	Low= A16 swap override Enable High= Default*

Boot BIOS Strap		
PCI_GNT#0	SPI_CS#1	Boot BIOS Loaction
0	1	SPI
1	0	PCI
1	1	LPC*

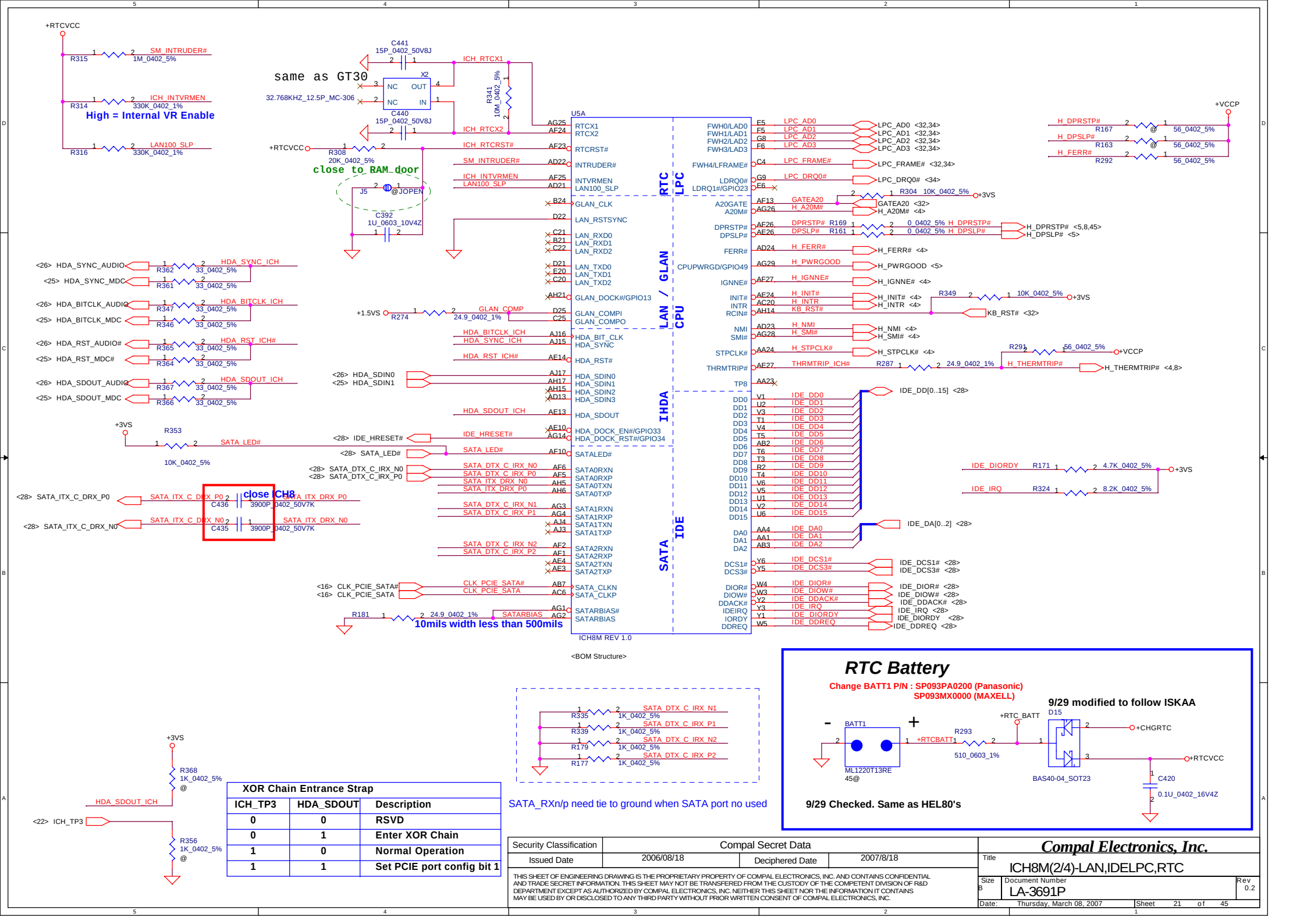




Security Classification	Compal Secret Data		
Issued Date	2006/08/18	Deciphered Date	2007/8/18

Compal Electronics, Inc.

Title	ICH8M(1/4)-PCI		
Size	Document Number: LA-3691P		Rev: 0.2
Date: Thursday, March 08, 2007	Sheet 20 of 45		



XOR Chain Entrance Strap		
ICH_TP3	HDA_SDOUT	Description
0	0	RSVD
0	1	Enter XOR Chain
1	0	Normal Operation
1	1	Set PCIE port config bit 1

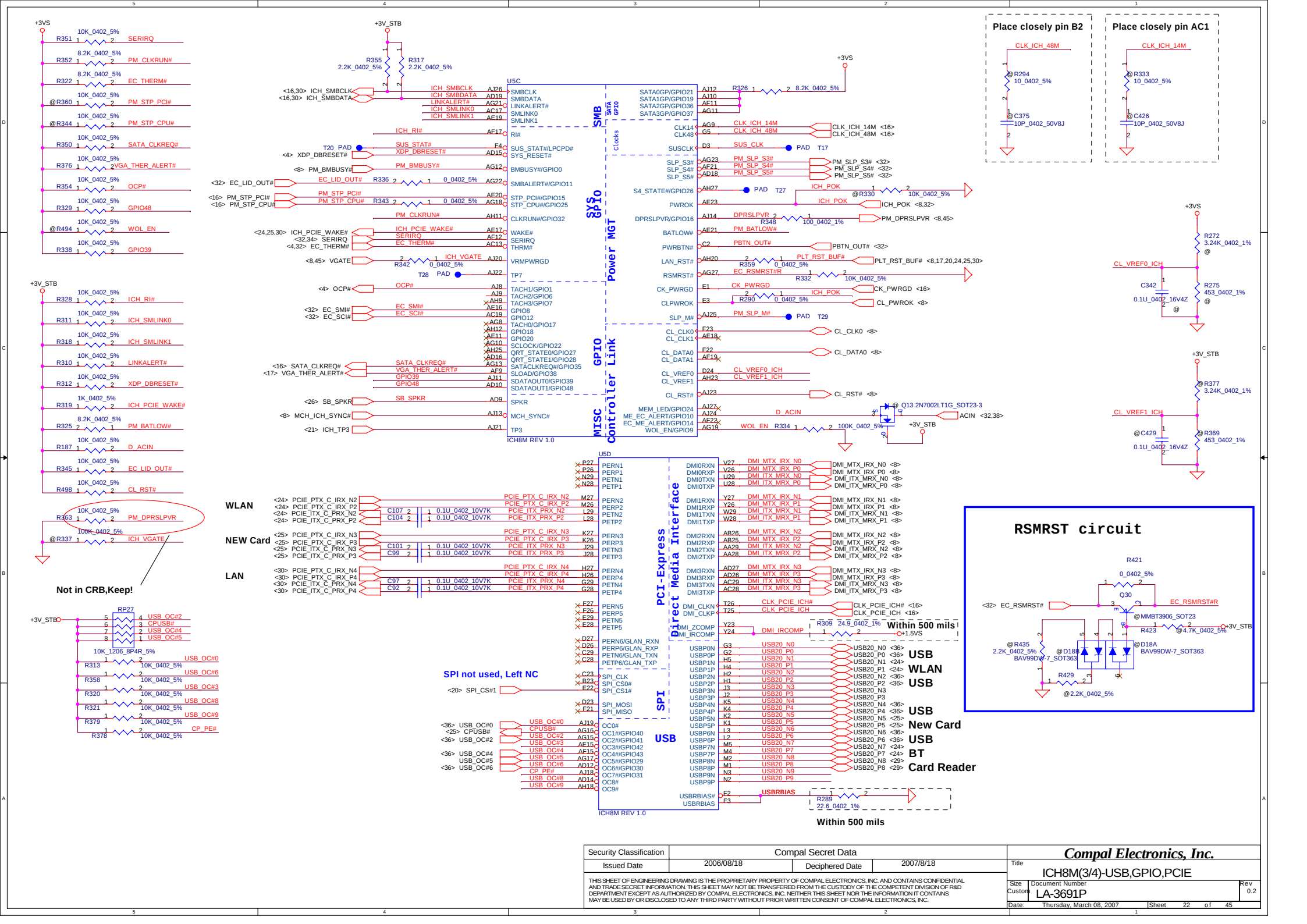
Security Classification	Compal Secret Data		
Issued Date	2006/08/18	Deciphered Date	2007/8/18

Compal Electronics, Inc.

Title: ICH8M(2/4)-LAN,IDELPC,RTC

Size	Document Number	Rev
B	LA-3691P	0.2

Date: Thursday, March 08, 2007 Sheet 21 of 45



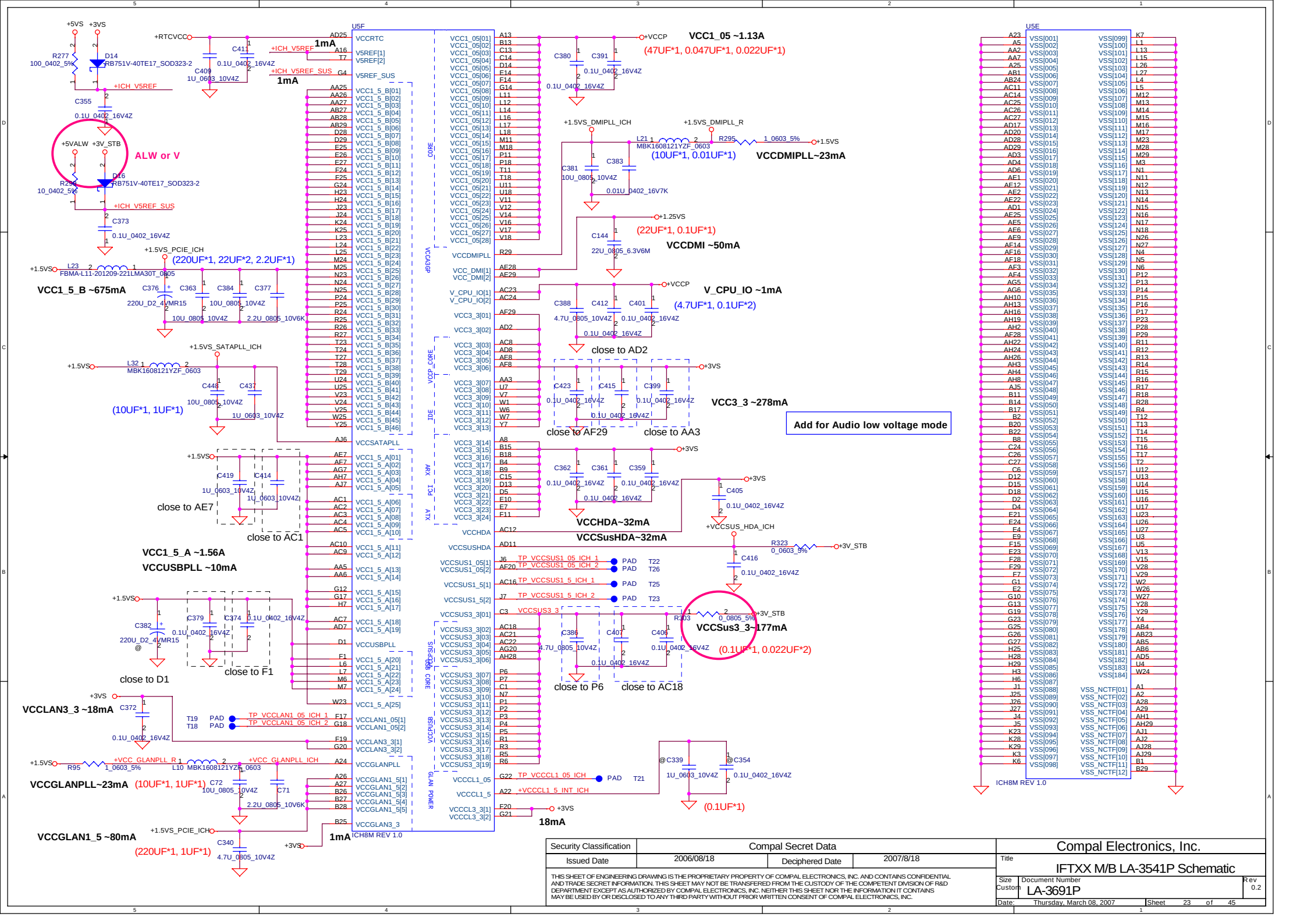
Security Classification	Compal Secret Data		
Issued Date	2006/08/18	Deciphered Date	2007/8/18

Compal Electronics, Inc.

Title: ICH8M(3/4)-USB,GPIO,PCIE

Size	Document Number	Rev
Custom	LA-3691P	0.2

Date: Thursday, March 08, 2007 Sheet 22 of 45



Security Classification	Compal Secret Data		
Issued Date	2006/08/18	Deciphered Date	2007/8/18

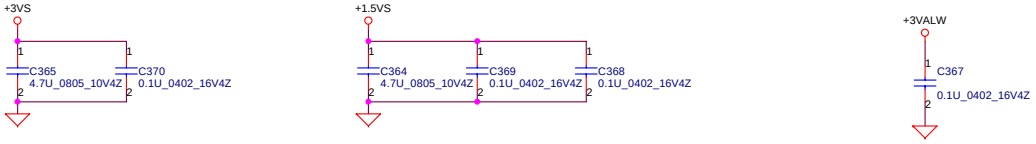
Compal Electronics, Inc.

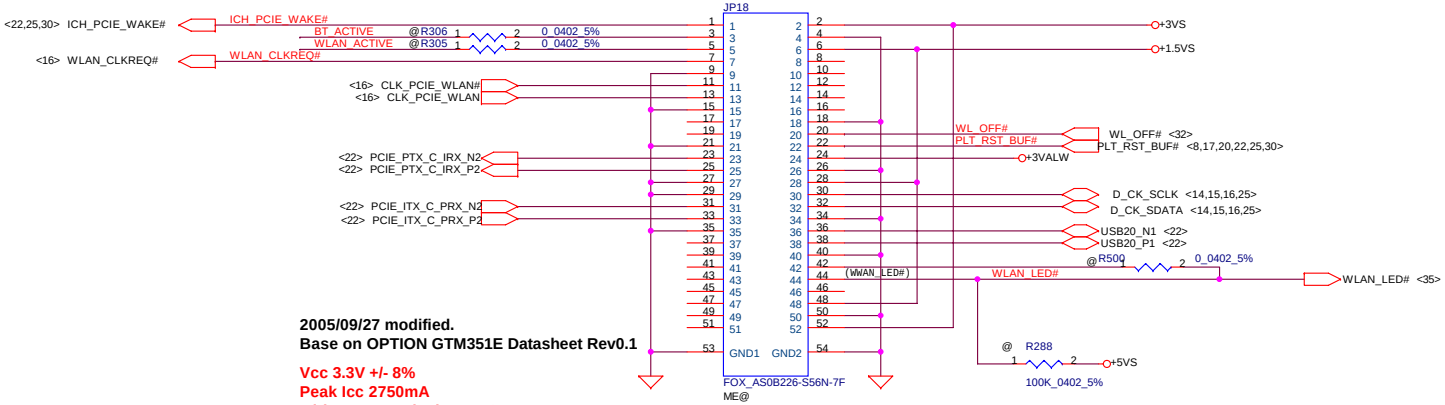
Title: IFTXX M/B LA-3541P Schematic

Size	Document Number	Rev
Custom	LA-3691P	0.2

Date: Thursday, March 08, 2007 Sheet 23 of 45

Mini-Express Card for 3G Or TV Tuner
Mini-Express Card for WLAN

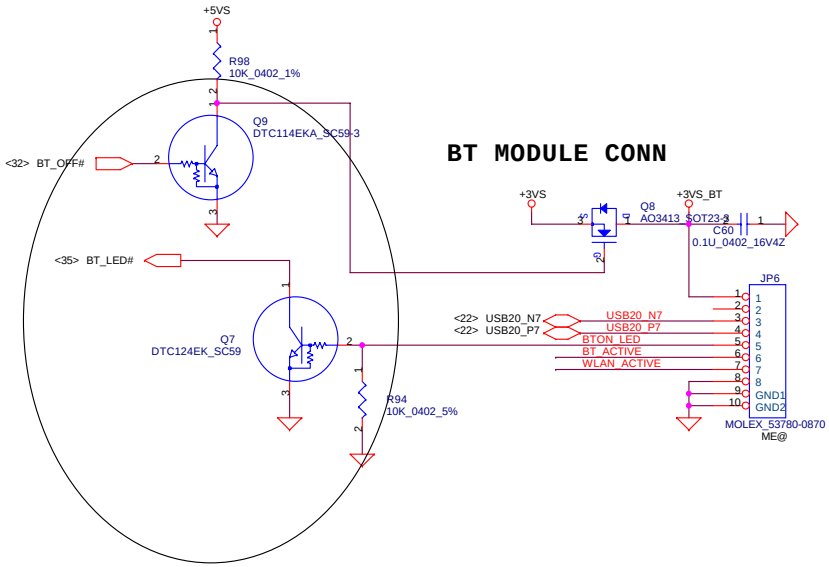




2005/09/27 modified.
Base on OPTION GTM351E Datasheet Rev0.1

Vcc 3.3V +/- 8%
Peak Icc 2750mA
with max supply droop 50mA
Average Icc 1000mA

BT MODULE CONN



Security Classification	Compal Secret Data		
Issued Date	2006/08/05	Deciphered Date	2007/08/05

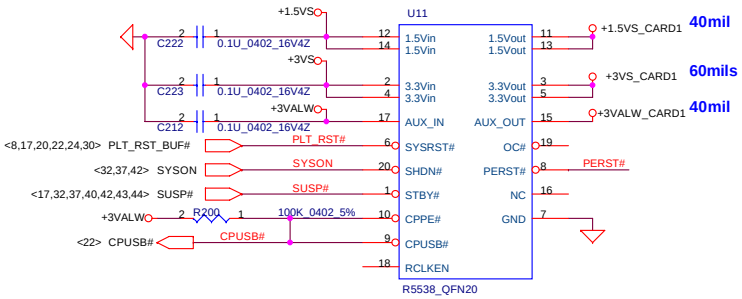
Compal Electronics, Inc.

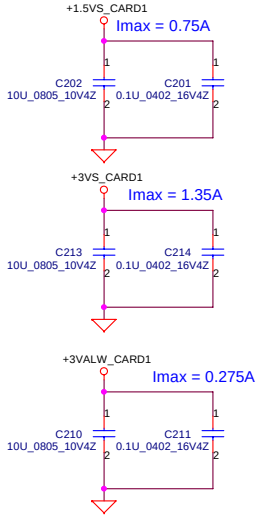
Title: **Mini-Card/3G/FeliCa/FP**

Size | Document Number: **LA-3691P** | Rev: 0.2

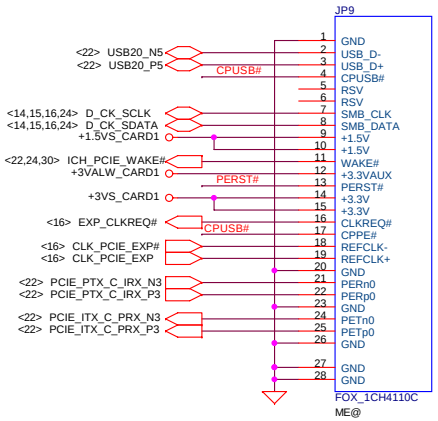
Date: Thursday, March 08, 2007 | Sheet 24 of 45

Express Card Power Switch



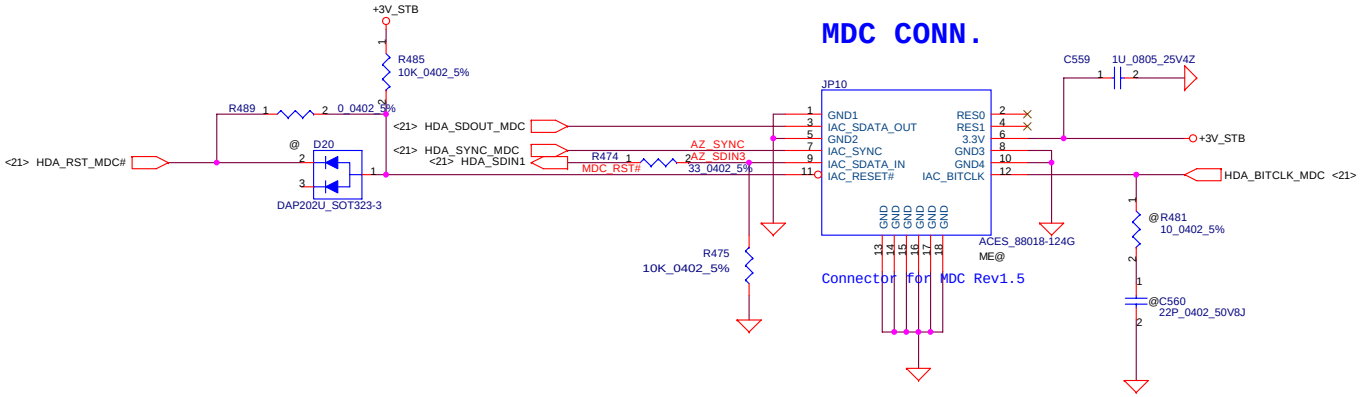


New Card Socket (Left/TOP)



(NEW)

MDC CONN.



Security Classification	Compal Secret Data		
Issued Date	2006/08/18	Deciphered Date	2007/8/18

Compal Electronics, Inc.

Title: NEW CARD & USB Connector

Size	Document Number	Rev
B	LA-3691P	0.2

Date: Thursday, March 08, 2007 Sheet 25 of 45

AC97 Codec

28.7K for Module Design (VDDA = 4.702)

(output = 250 mA)

	SUB WOOFER SUPPORT
ALC262	
ALC861D	

Window mode

DOS mode Driver initial

ACPI

RST

EC_MUTE

12sec

DOS mode

DOS mode

RST

EC_MUTE

12sec

GND GNDA

Security Classification	Compal Secret Data		
Issued Date	2006/08/04	Deciphered Date	2006/10/06

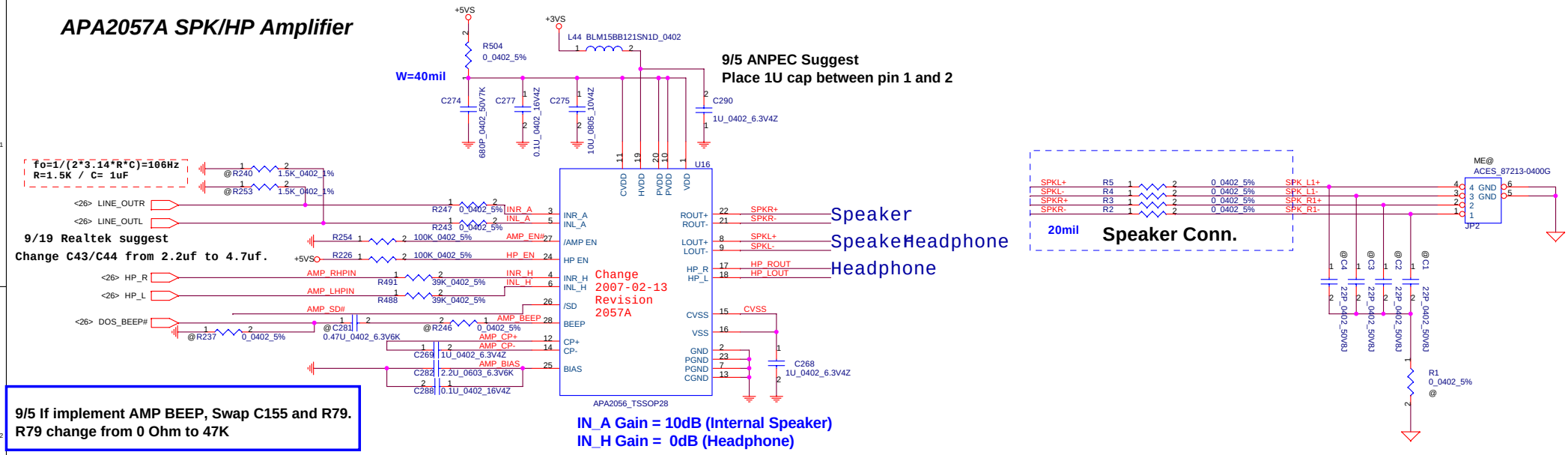
Compal Electronics, Inc.

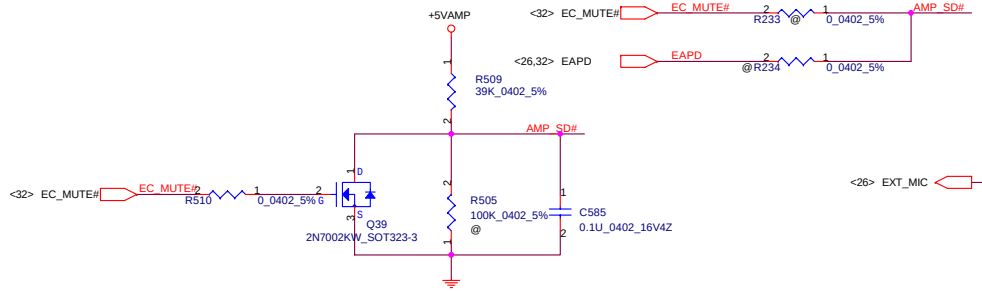
Title: ALC861 VD Codec

Size: Custom | Document Number: IEL10 LA-3451P | Rev: 0.2

Date: Thursday, March 08, 2007 | Sheet 26 of 45

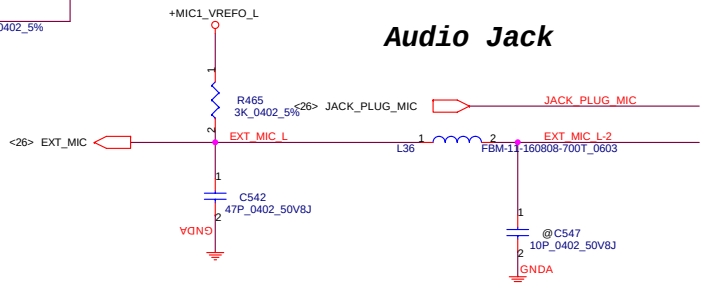
APA2057A SPK/HP Amplifier

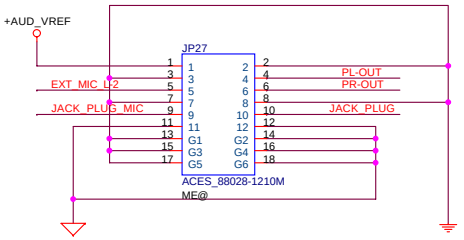


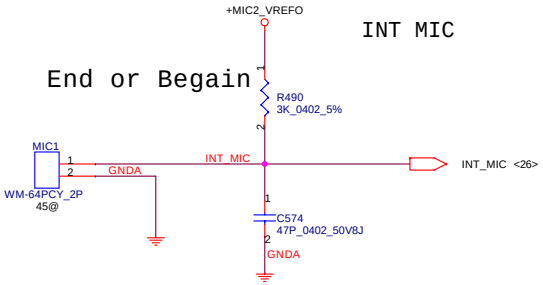


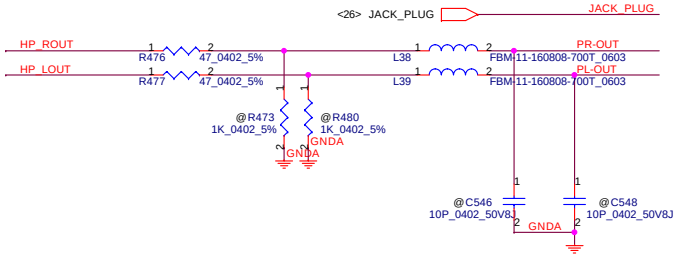
EXT MIC

Audio Jack









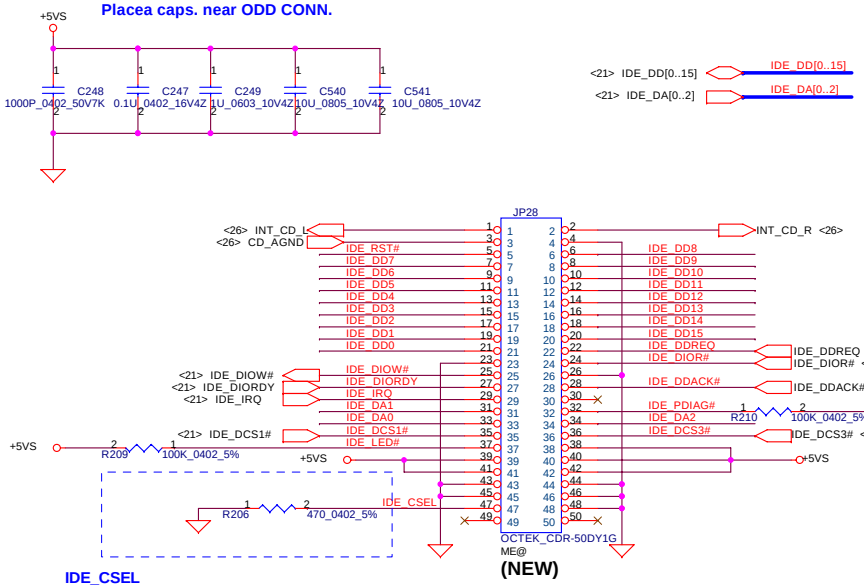
Security Classification	Compal Secret Data		
Issued Date	2006/08/05	Deciphered Date	2007/08/05

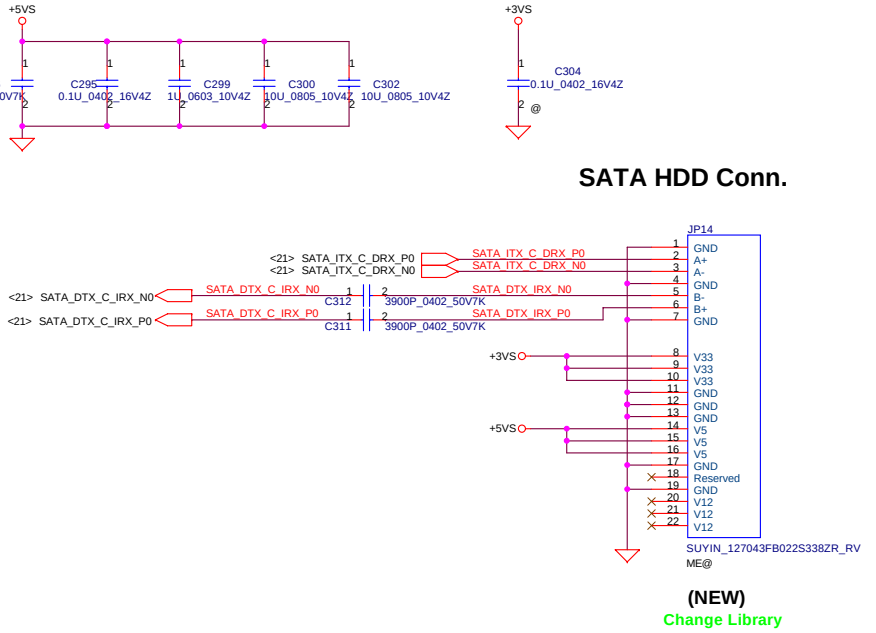
Compal Electronics, Inc.

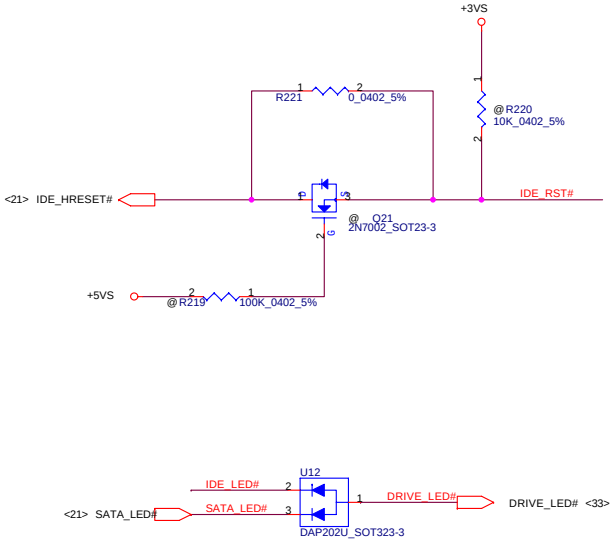
Title: AMP/VR/Audio Jack/MIC

Size: Custom | Document Number: LA-3691P | Rev: 0.2

Date: Thursday, March 08, 2007 | Sheet 27 of 45







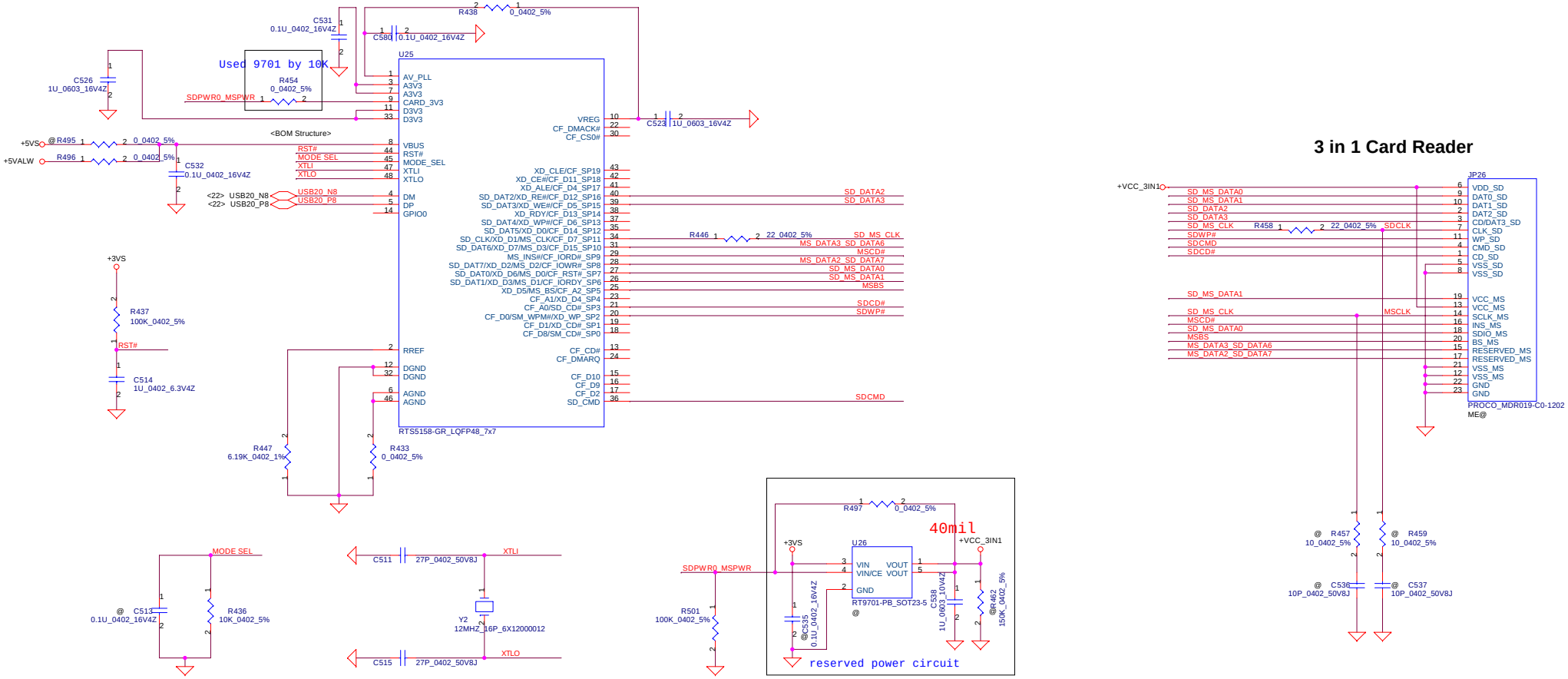
Security Classification	Compal Secret Data		
Issued Date	2006/08/18	Deciphered Date	2007/8/18

Compal Electronics, Inc.

Title: HDD & ODD Connector

Size	Document Number	Rev
B	LA-3691P	0.2

Date: Thursday, March 08, 2007 | Sheet 28 of 45



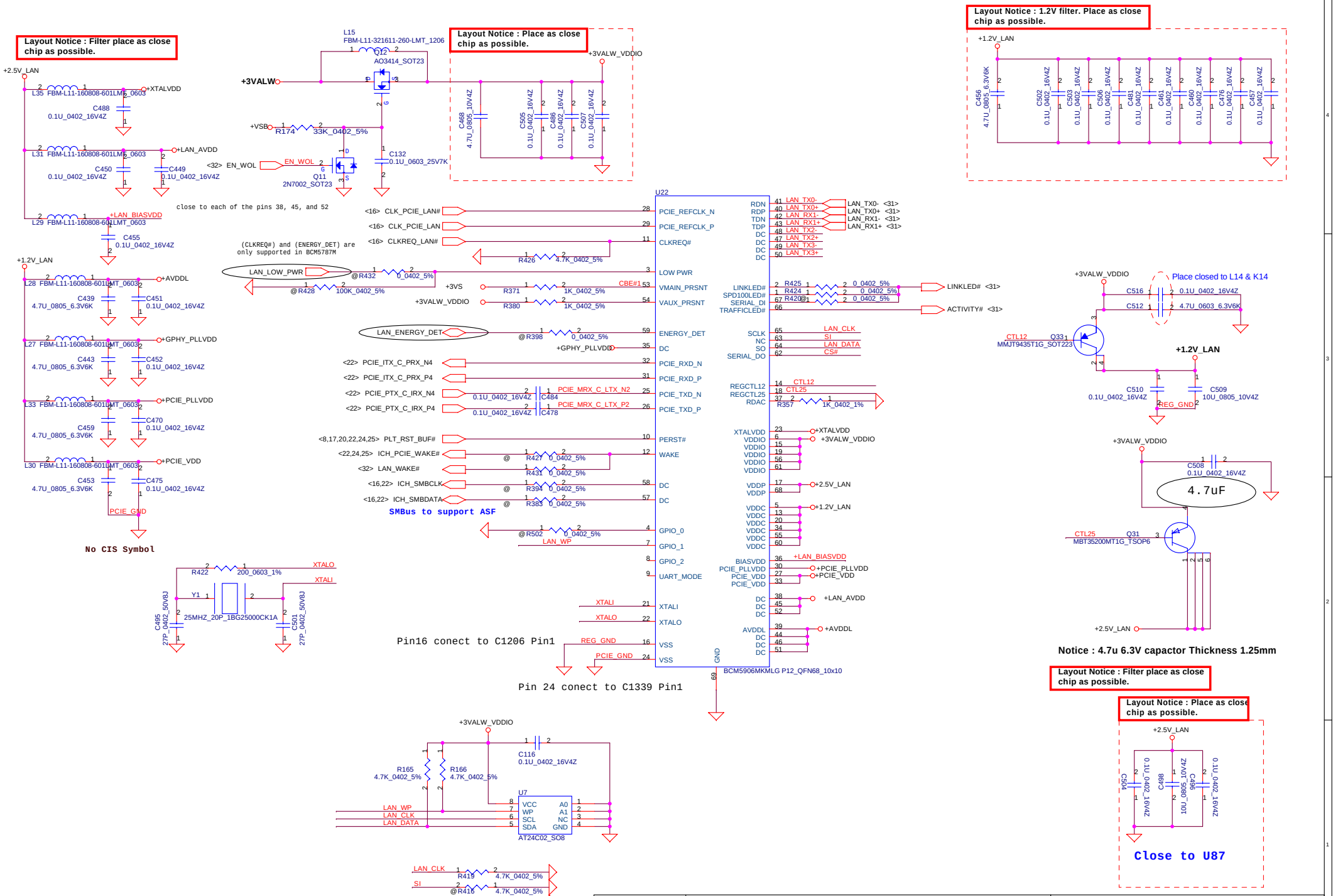
Security Classification	Compal Secret Data		
Issued Date	2006/08/04	Deciphered Date	2006/10/06

Compal Electronics, Inc.

Title: **1394+3 in 1 Card**

Size	Document Number	Rev
Custom	LA-3691P	0.2

Date: Thursday, March 08, 2007 | Sheet 29 of 45



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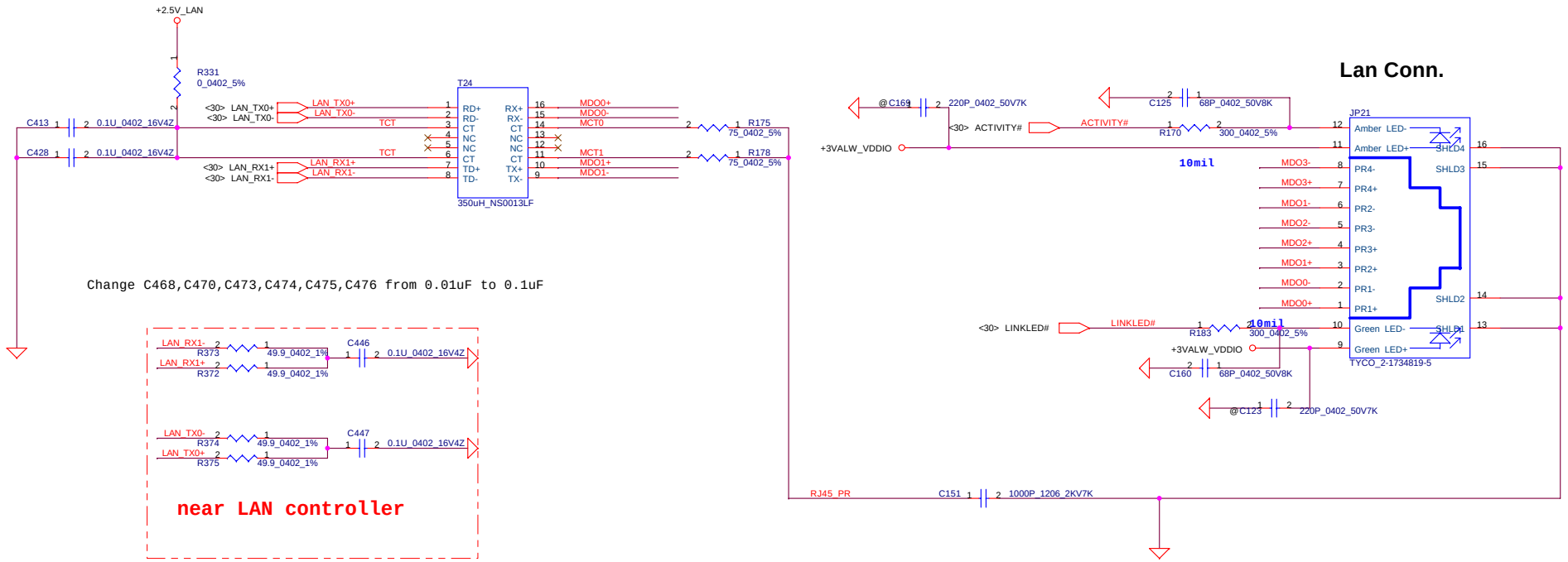


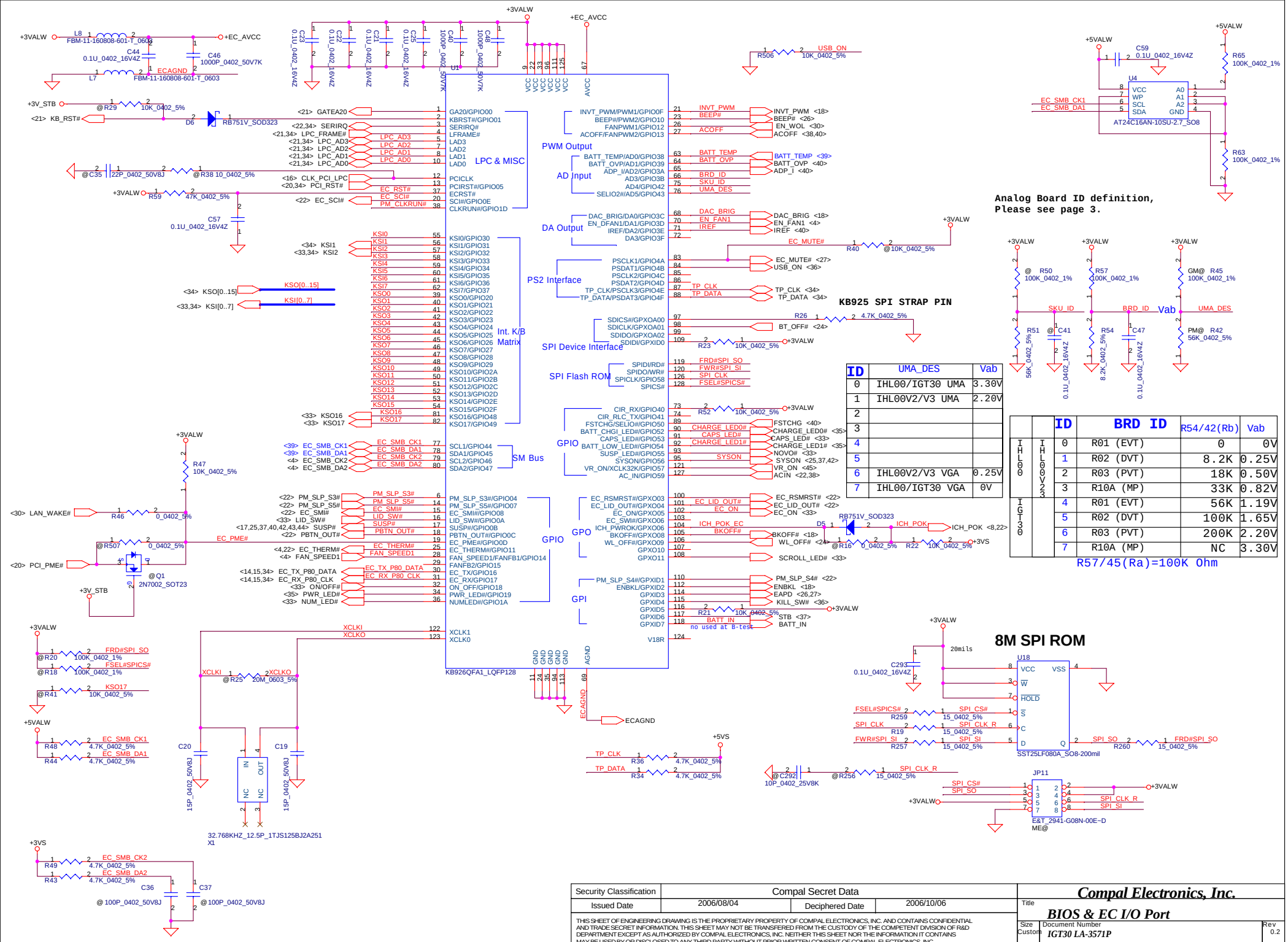
Security Classification	Compal Secret Data		
Issued Date	2006/08/04	Deciphered Date	2006/10/06

Compal Electronics, Inc.

Title: **LAN CONTROLLER**

Size	Document Number	Rev
Custom	LA-3691P	0.2

Date: Thursday, March 08, 2007 Sheet 31 of 45



ID	UMA_DES	Vab
0	IHL00/IGT30 UMA	3.30V
1	IHL00V2/V3 UMA	2.20V
2		
3		
4		
5		
6	IHL00V2/V3 VGA	0.25V
7	IHL00/IGT30 VGA	0V

		ID	BRD ID	R54/42(Rb)	Vab
IHL00	IHL00V23	0	R01 (EVT)	0	0V
		1	R02 (DVT)	8.2K	0.25V
		2	R03 (PVT)	18K	0.50V
		3	R10A (MP)	33K	0.82V
IGT30		4	R01 (EVT)	56K	1.19V
		5	R02 (DVT)	100K	1.65V
		6	R03 (PVT)	200K	2.20V
		7	R10A (MP)	NC	3.30V

R57/45(Ra)=100K Ohm

Security Classification	Compal Secret Data		
Issued Date	2006/08/04	Deciphered Date	2006/10/06

Compal Electronics, Inc.

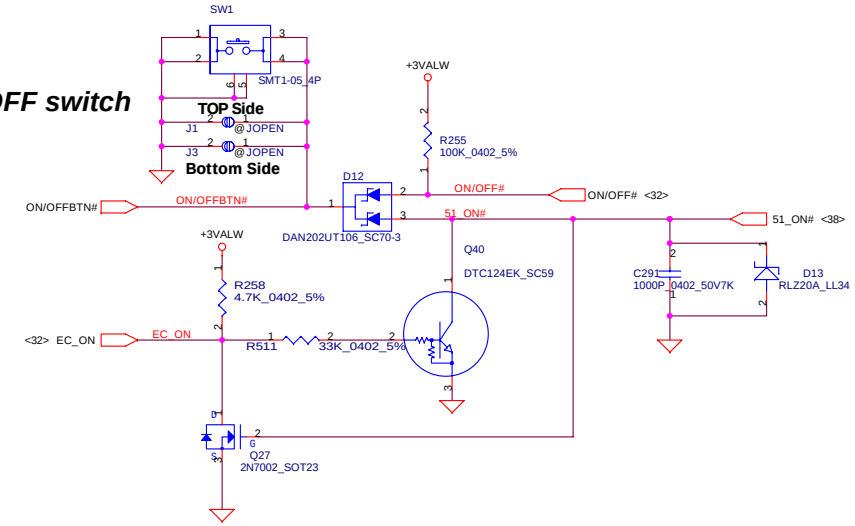
Title: BIOS & EC I/O Port

Size	Document Number	Rev
Custom	IGT30 LA-3571P	0.2

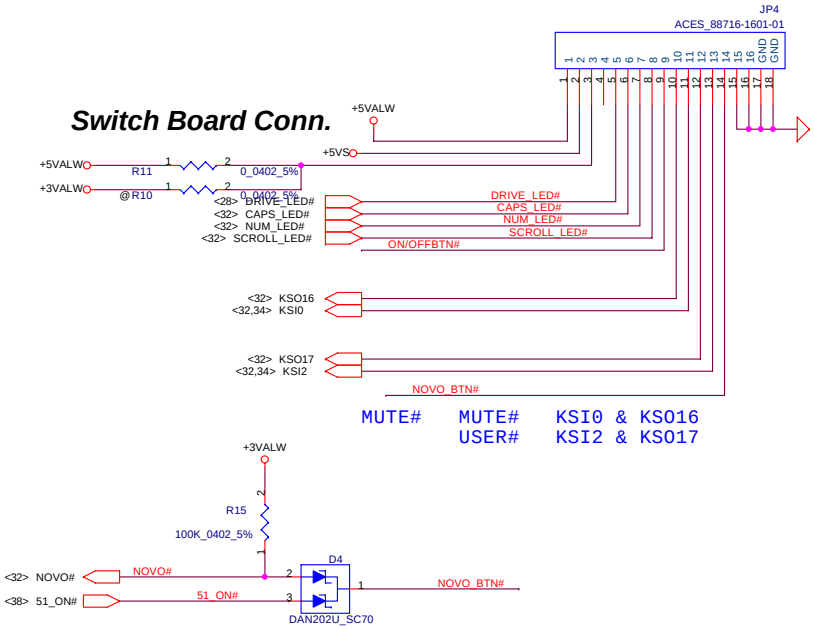
Date: Thursday, March 08, 2007 | Sheet 32 of 45

Power Button

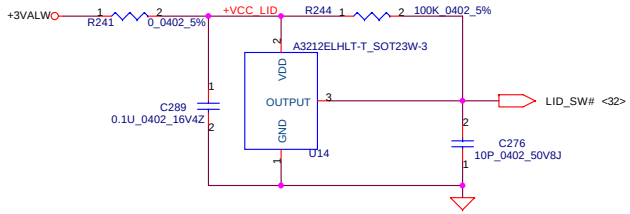
ON/OFF switch



Switch Board Conn.



Lid Switch



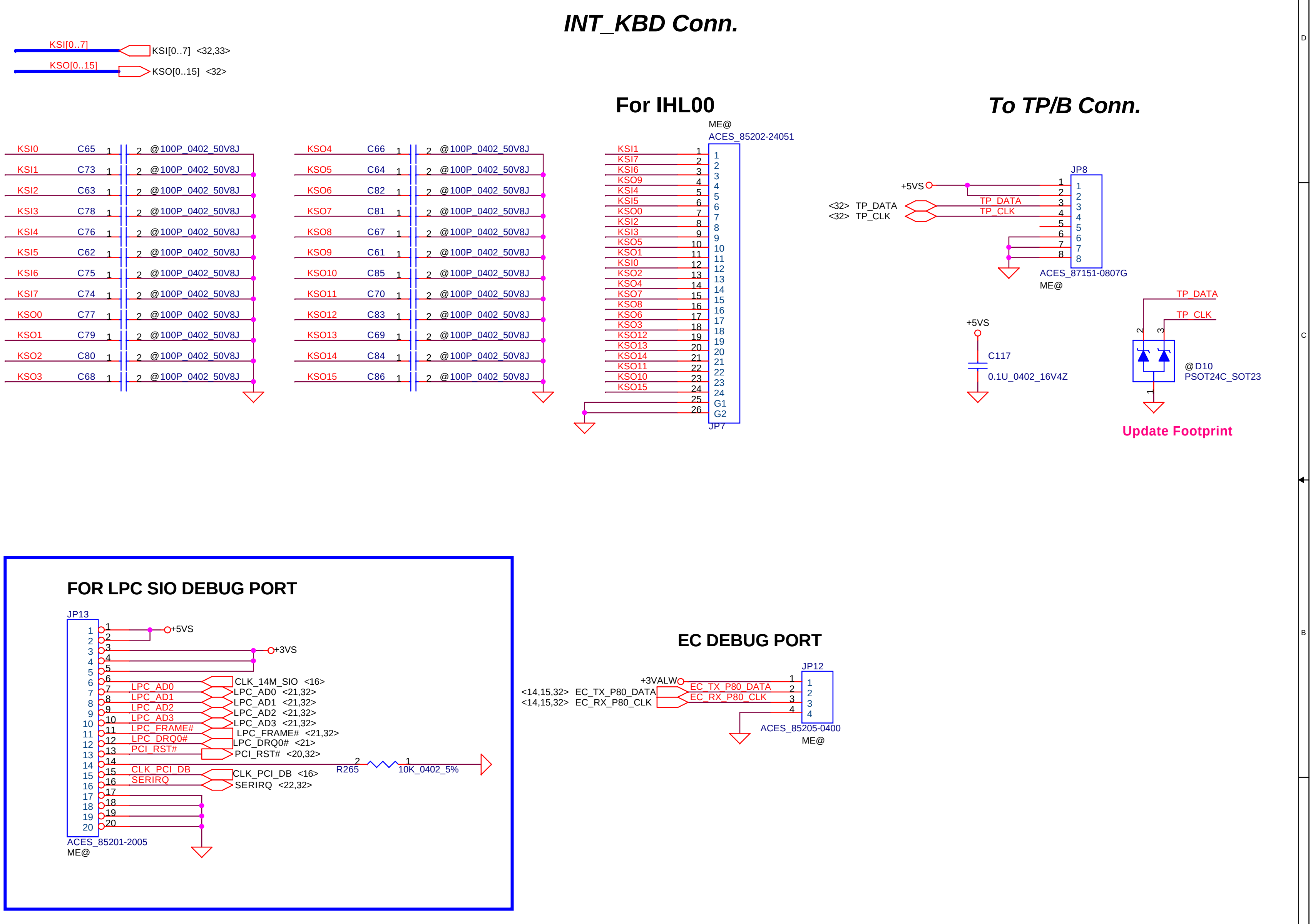
Security Classification	Compal Secret Data		
Issued Date	2006/08/18	Deciphered Date	2007/8/18

Compal Electronics, Inc.

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

Size	Document Number	Rev
B	LA-3691P	0.2

Date: Thursday, March 08, 2007 Sheet 33 of 45



INT_KBD Conn.
KSI[0..7]
KSI[0..7] <32,33>
KSO[0..15]
KSO[0..15] <32>
For IHL00
ME@
ACES_85202-24051
JP7
To TP/B Conn.
JP8
+5VS
<32> TP_DATA
<32> TP_CLK
TP_DATA
TP_CLK
ACES_87151-0807G
ME@
C117
0.1U_0402_16V4Z
@D10
PSOT24C_SOT23
Update Footprint
KSI0 C65 @100P_0402_50V8J
KSI1 C73 @100P_0402_50V8J
KSI2 C63 @100P_0402_50V8J
KSI3 C78 @100P_0402_50V8J
KSI4 C76 @100P_0402_50V8J
KSI5 C62 @100P_0402_50V8J
KSI6 C75 @100P_0402_50V8J
KSI7 C74 @100P_0402_50V8J
KSO0 C77 @100P_0402_50V8J
KSO1 C79 @100P_0402_50V8J
KSO2 C80 @100P_0402_50V8J
KSO3 C68 @100P_0402_50V8J
KSO4 C66 @100P_0402_50V8J
KSO5 C64 @100P_0402_50V8J
KSO6 C82 @100P_0402_50V8J
KSO7 C81 @100P_0402_50V8J
KSO8 C67 @100P_0402_50V8J
KSO9 C61 @100P_0402_50V8J
KSO10 C85 @100P_0402_50V8J
KSO11 C70 @100P_0402_50V8J
KSO12 C83 @100P_0402_50V8J
KSO13 C69 @100P_0402_50V8J
KSO14 C84 @100P_0402_50V8J
KSO15 C86 @100P_0402_50V8J
FOR LPC SIO DEBUG PORT
JP13
+5VS
+3VS
CLK_14M_SIO <16>
LPC_AD0 <21,32>
LPC_AD1 <21,32>
LPC_AD2 <21,32>
LPC_AD3 <21,32>
LPC_FRAME# <21,32>
LPC_DRQ0# <21>
PCI_RST# <20,32>
R265
10K_0402_5%
CLK_PCI_DB <16>
SERIRQ <22,32>
ACES_85201-2005
ME@
EC DEBUG PORT
JP12
+3VALW
<14,15,32> EC_TX_P80_DATA
<14,15,32> EC_RX_P80_CLK
EC_TX_P80_DATA
EC_RX_P80_CLK
ACES_85205-0400
ME@

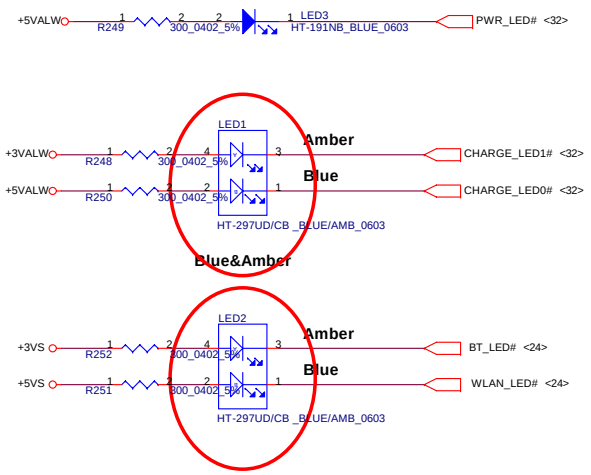
Security Classification	Compal Secret Data		
Issued Date	2006/08/18	Deciphered Date	2007/8/18

Compal Electronics, Inc.

Title: EC ENE KB910L(Reserved)

Size	Document Number	Rev
B	LA-3691P	0.2

LED



Security Classification	Compal Secret Data		
Issued Date	2006/08/18	Deciphered Date	2007/8/18

Compal Electronics, Inc.

Title: MDC/CIR & LED

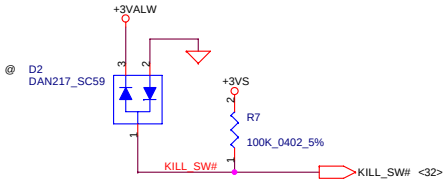
Size	Document Number	Rev
B	LA-3691P	0.2

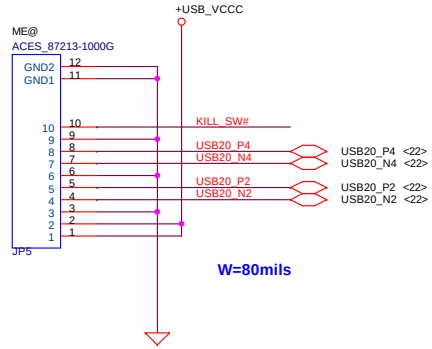
Date: Thursday, March 08, 2007 Sheet 35 of 45

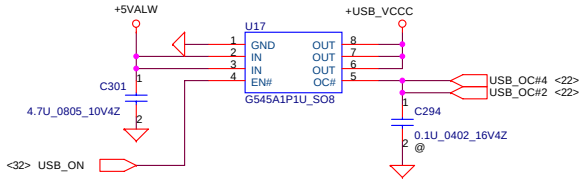
USB Conn.

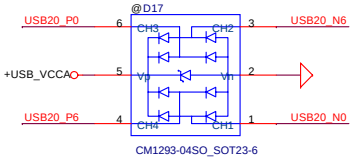
W=80mils

Kill SWITCH

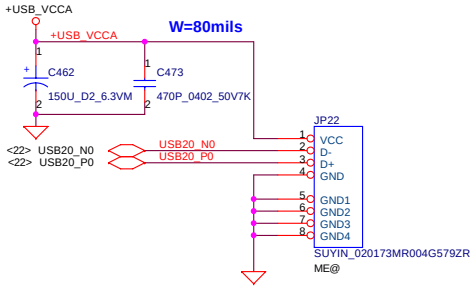


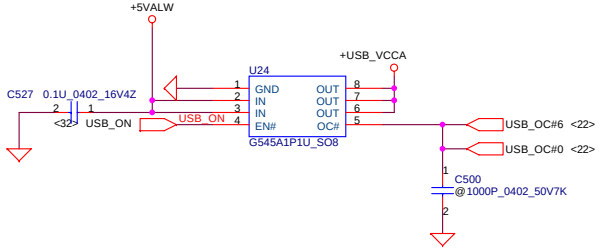




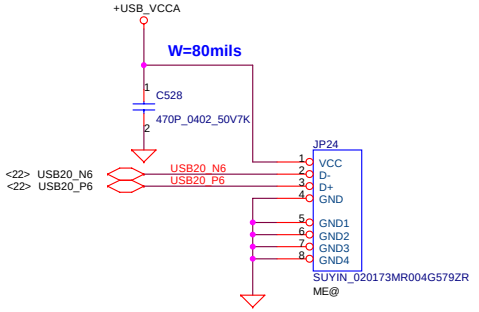


USB CONN. 1





USB CONN. 2



Security Classification	Compal Secret Data		
Issued Date	2006/08/18	Deciphered Date	2007/8/18

Compal Electronics, Inc.

Title: Power OK, Reset and RTC Circuit, TP

Size	Document Number	Rev
B	LA-3691P	0.2

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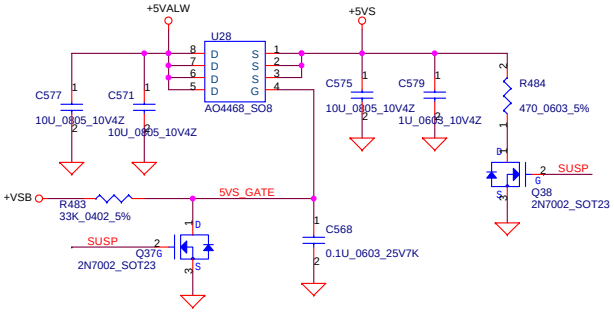
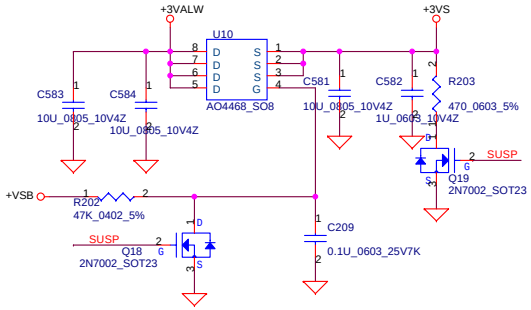
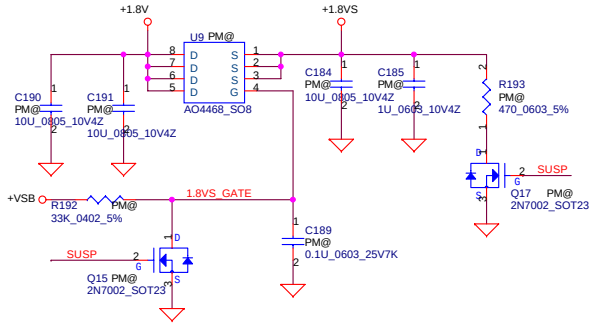
+5VALW TO +5VS



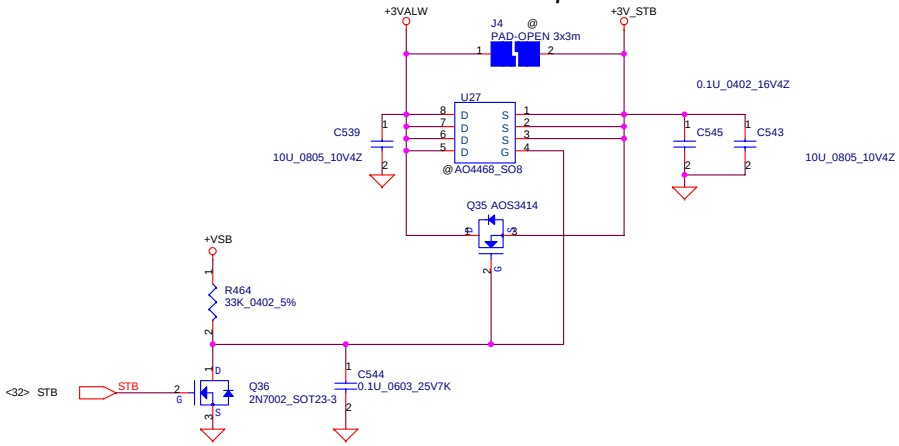
+3VALW TO +3VS

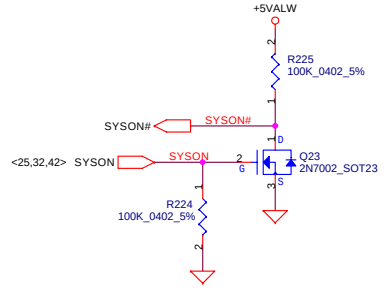


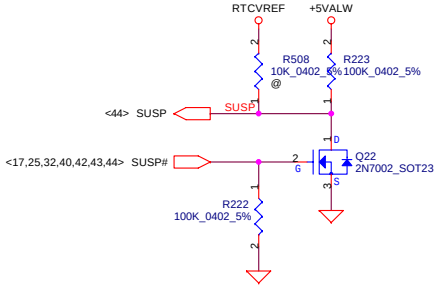
+1.8V to +1.8VS

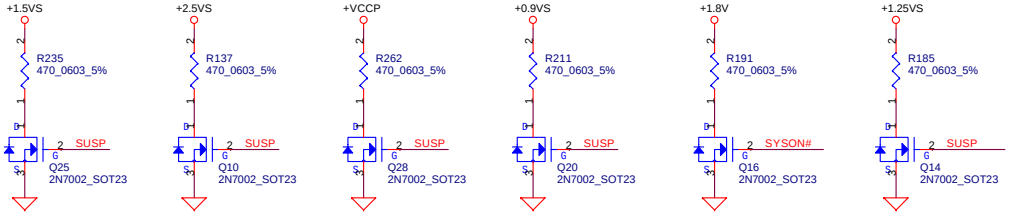


+3VALW to +3V Transfer









Security Classification	Compal Secret Data		
Issued Date	2006/08/18	Deciphered Date	2007/8/18

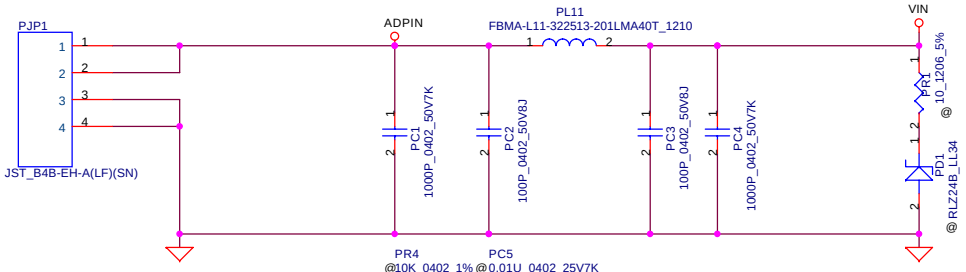
Compal Electronics, Inc.

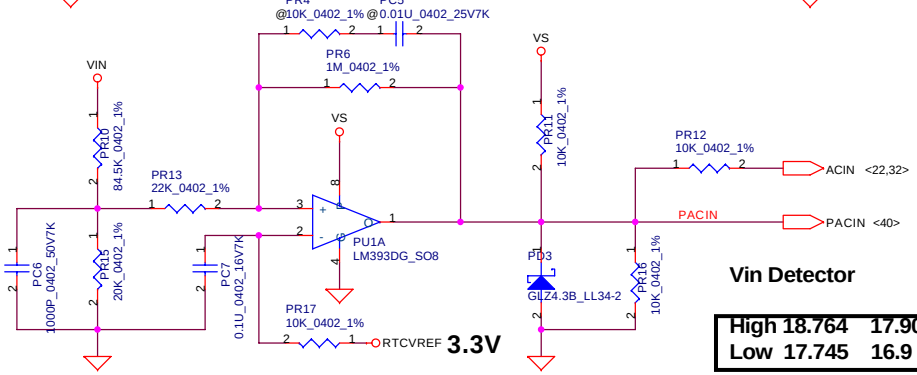
Title: DC Interface

Size	Document Number	Rev
B	LA-3691P	0.2

Date: Thursday, March 08, 2007 | Sheet 37 of 45

DC030005Q00





Vin Detector

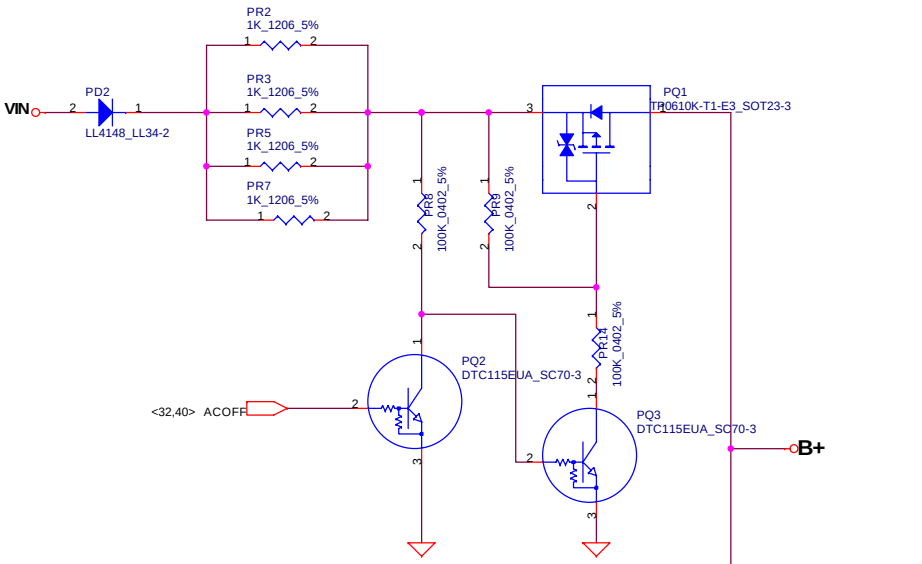
High	18.764	17.901	17.063
Low	17.745	16.9	16.03

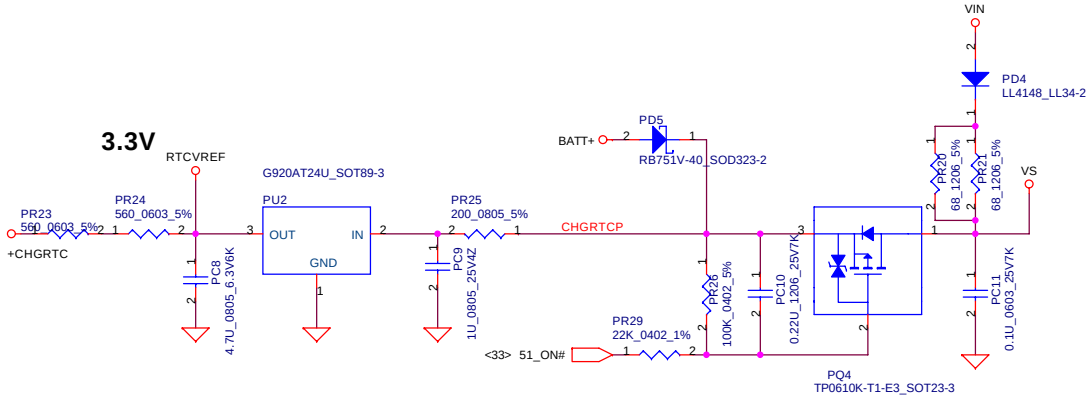
ACIN

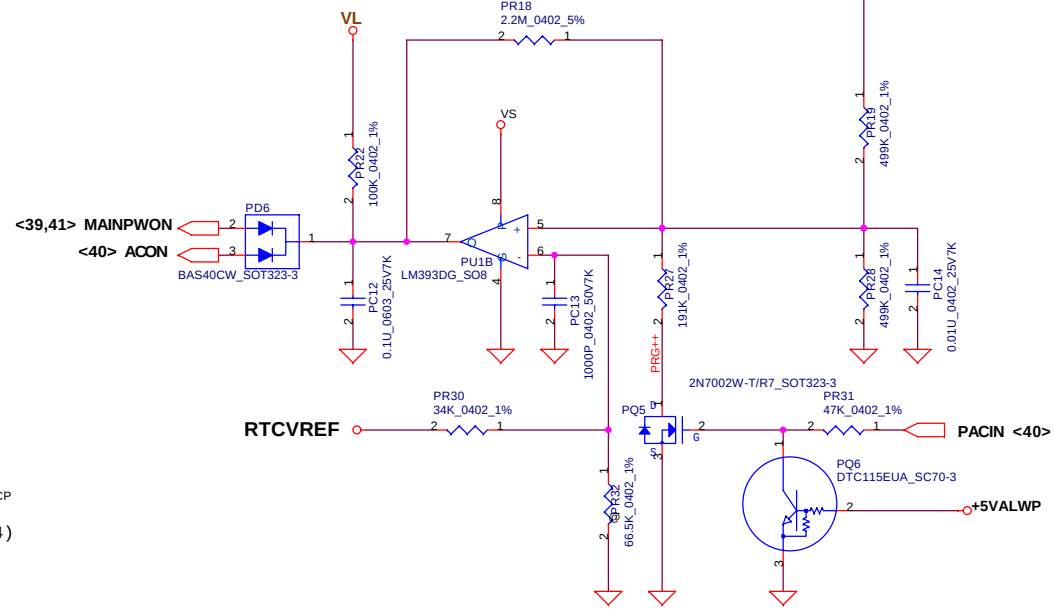
Precharge detector	Min.	typ.	Max.
H-->L	14.589V	14.84V	15.243V
L-->H	15.562V	15.97V	16.388V

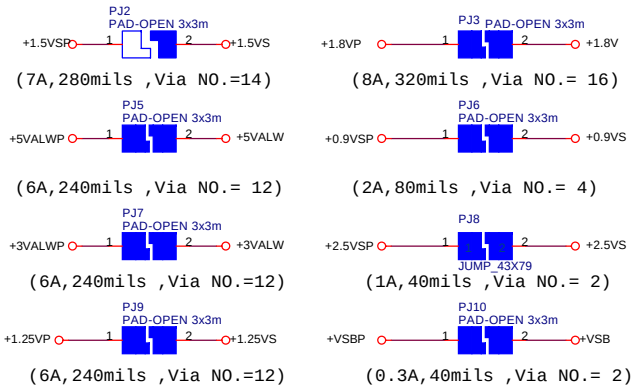
BATT ONLY

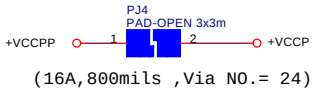
Precharge detector	Min.	typ.	Max.
H-->L	6.138V	6.214V	6.359V
L-->H	7.196V	7.349V	7.505V











Security Classification	Compal Secret Data		
Issued Date	2005/10/17	Deciphered Date	2006/10/17

Compal Electronics, Inc.

Title: **DCIN/DECTOR**

Size	Document Number	Rev
B	IHL00 LA-3691P	0.2

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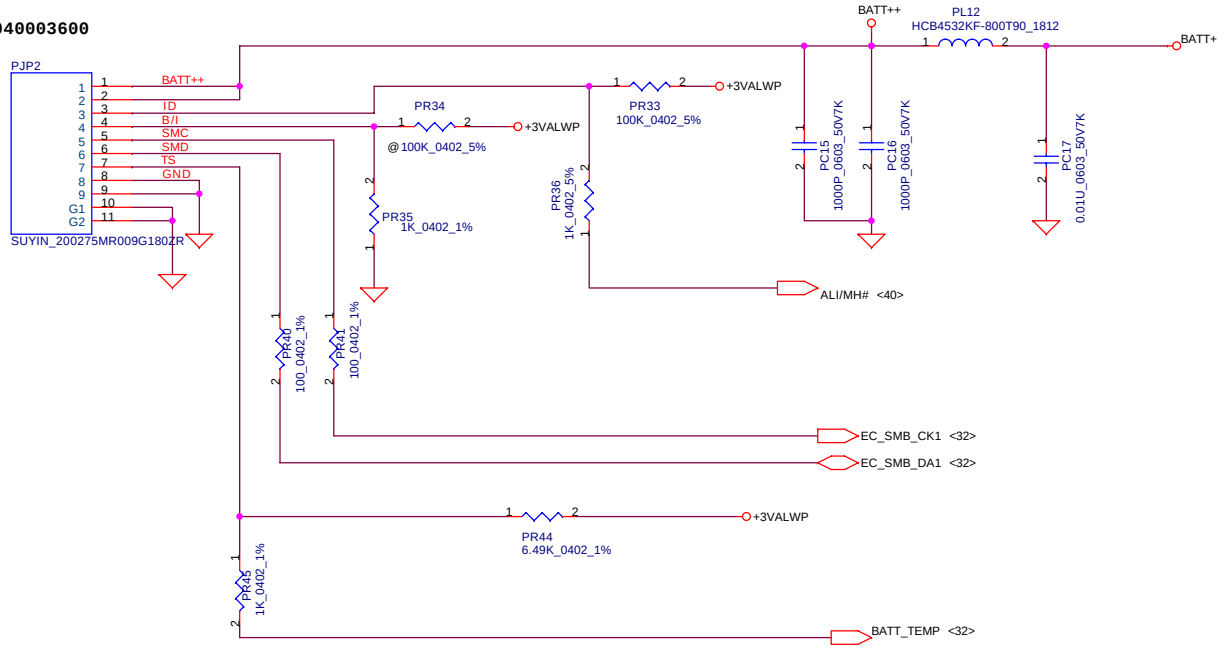
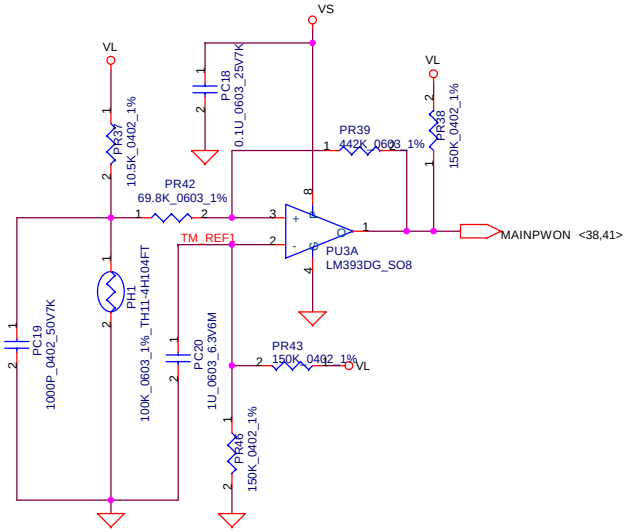
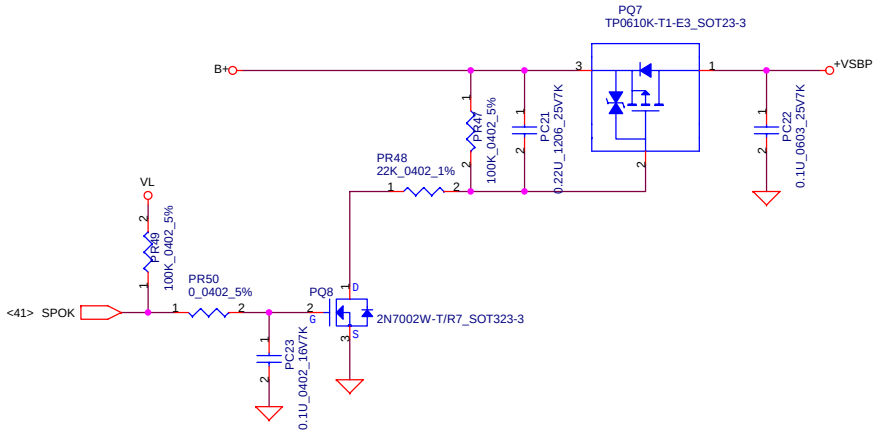
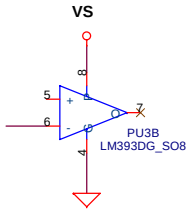
DC040003600



PH1 under CPU botten side :
CPU thermal protection at 87 degree C
Recovery at 70 degree C







Security Classification	Compal Secret Data		
Issued Date	2005/10/17	Deciphered Date	2006/10/17

Compal Electronics, Inc.

Title: **BATTERY CONN. / OTP**

Size	Document Number	Rev
B	IHL00 LA-3691P	0.2

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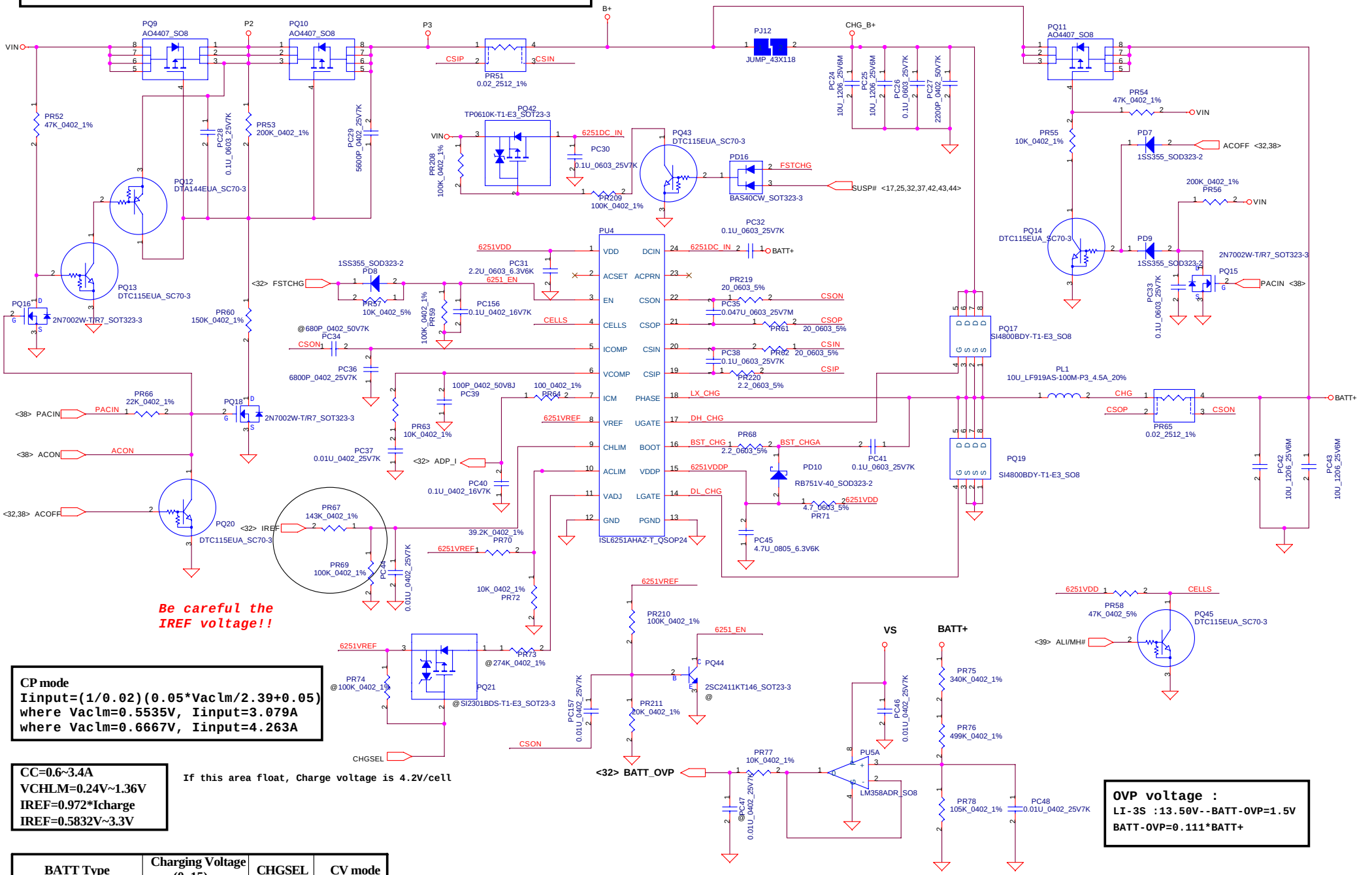
65W, Iadapter=0~3.42A, Current sense=0.02ohm, PR70=39.2K, CP=3.079A
90W, Iadapter=0~4.74A, Current Sense=0.015ohm, PR70=28.7K, CP=4.263A

ADP_I = 19.9*Iadapter*Rsense



Be careful the IREF voltage!!

CP mode
Iinput=(1/0.02)(0.05*Vaclm/2.39+0.05)
where Vaclm=0.5535V, Iinput=3.079A
where Vaclm=0.6667V, Iinput=4.263A

CC=0.6~3.4A
VCHLM=0.24V~1.36V
IREF=0.972*Icharge
IREF=0.5832V~3.3V

If this area float, Charge voltage is 4.2V/cell

OVP voltage :
LI-3S :13.50V--BATT-OVP=1.5V
BATT-OVP=0.111*BATT+

BATT Type	Charging Voltage (0x15)	CHGSEL	CV mode
2800mAH 3S pack	13050mV	LOW	12.90V
Normal 3S LI-ON Cells	12600mV	HIGH	12.60V

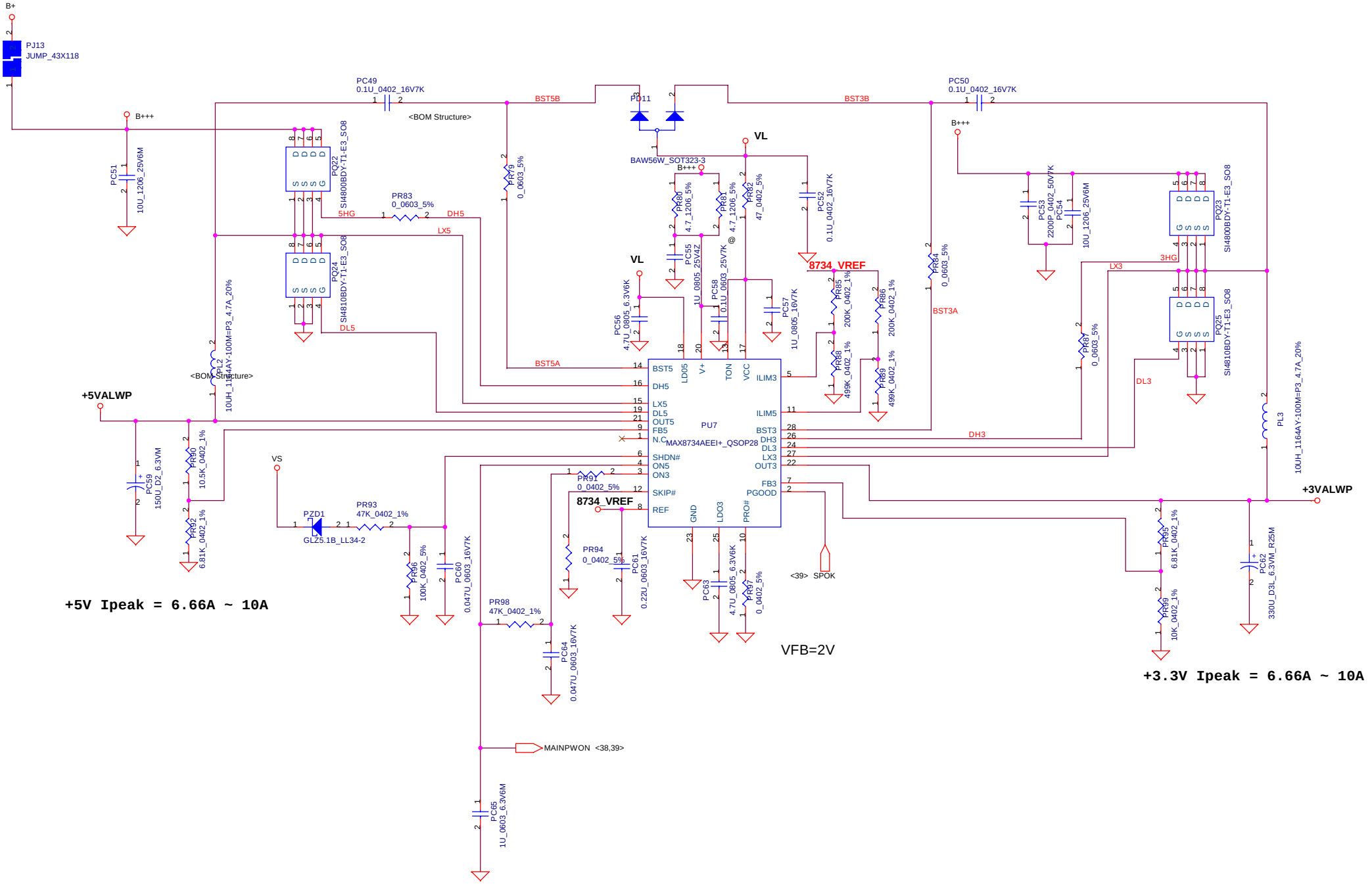
Security Classification	Compal Secret Data		
Issued Date	2006/05/18	Deciphered Date	2007/05/18

Compal Electronics, Inc.

Title: CHARGER

Size | Document Number: IHL00 LA-3691P | Rev: 0.2

Date: Thursday, March 08, 2007 | Sheet 40 of 45



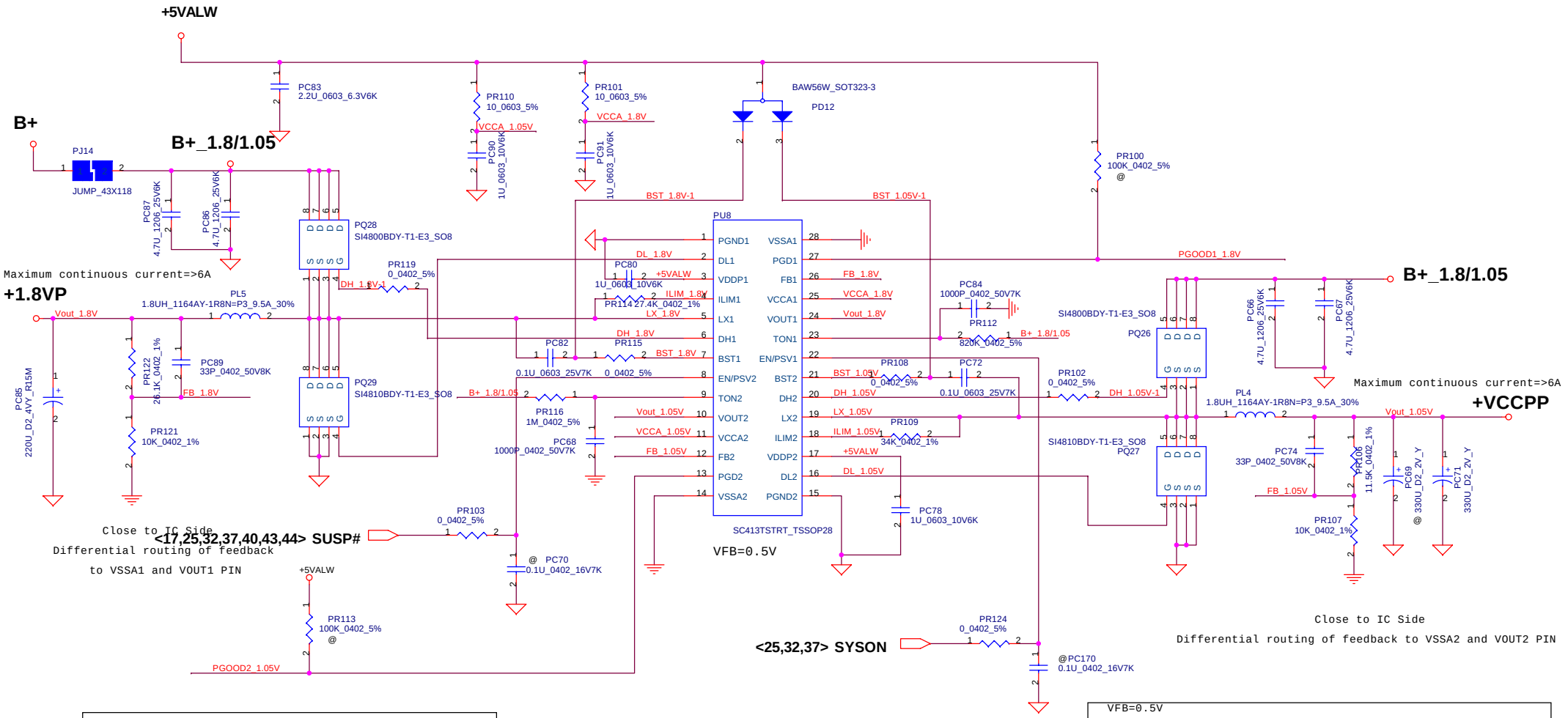
Security Classification	Compal Secret Data		
Issued Date	2005/10/17	Deciphered Date	2006/10/17

Compal Electronics, Inc.

Title: **+5VALWP/+3VALWP**

Size	Document Number	Rev
Custom	IHL00 LA-3691P	0.2

Date: Thursday, March 08, 2007 | Sheet 41 of 45



VFB=0.5V
Vo=VFB*(1+PR122/PR127)=1.805V
Ipeak=12.17A, Imax=8.519A
Ton=(3.3E-12*(PR121+37K)*(Vout/VBat))+50ns
=3.3*10e-12*(820K+37K)*(1.8/19)+50ns=0.3179us
FDS6670AS:Rds(on)=>Typ:9 mOhm
Max:11.5 mOhm
Iocp=Ivalley+ Iripple /2
Iripple=(vin-vout)*(Ton/L)=5.467A, 1/2 Iripple=2.734A.
Ivalleymin=10E-6*(PR120/Rds(ON)max*1.5)
=9*10e-6*(27.4K/0.0115*1.5)=14.295A>11.73*1.2=14.076A
Ivalleymax=10E-6*(PR120/Rds(ON)typ*1.2)
=11*10e-6*(27.4K/0.009*1.2)=27.907A.
OCP==>17.029A~30.641A

VFB=0.5V
Vo=VFB*(1+PR129/PR130)=1.5V
Ipeak=5.16A, Imax=3.612A
Ton=(3.3E-12*(PR125+37K)*(Vout/VBat))+50ns
=0.3201us
AO4916 Rds(on)=>Typ:21 mOhm
Max:27 mOhm
Ivalleymin=9*10u*(29.4K/0.027*1.4)=7A
Ivalleymax=11*E-6*(29.4K/0.021*1.1)=12.833A
Iripple=(vin-vout)*(Ton/L)=2.546A, 1/2Iriiple=1.273A
Iocp=Ivalley+ Iripple /2
OCP==>8.273A~14.106A

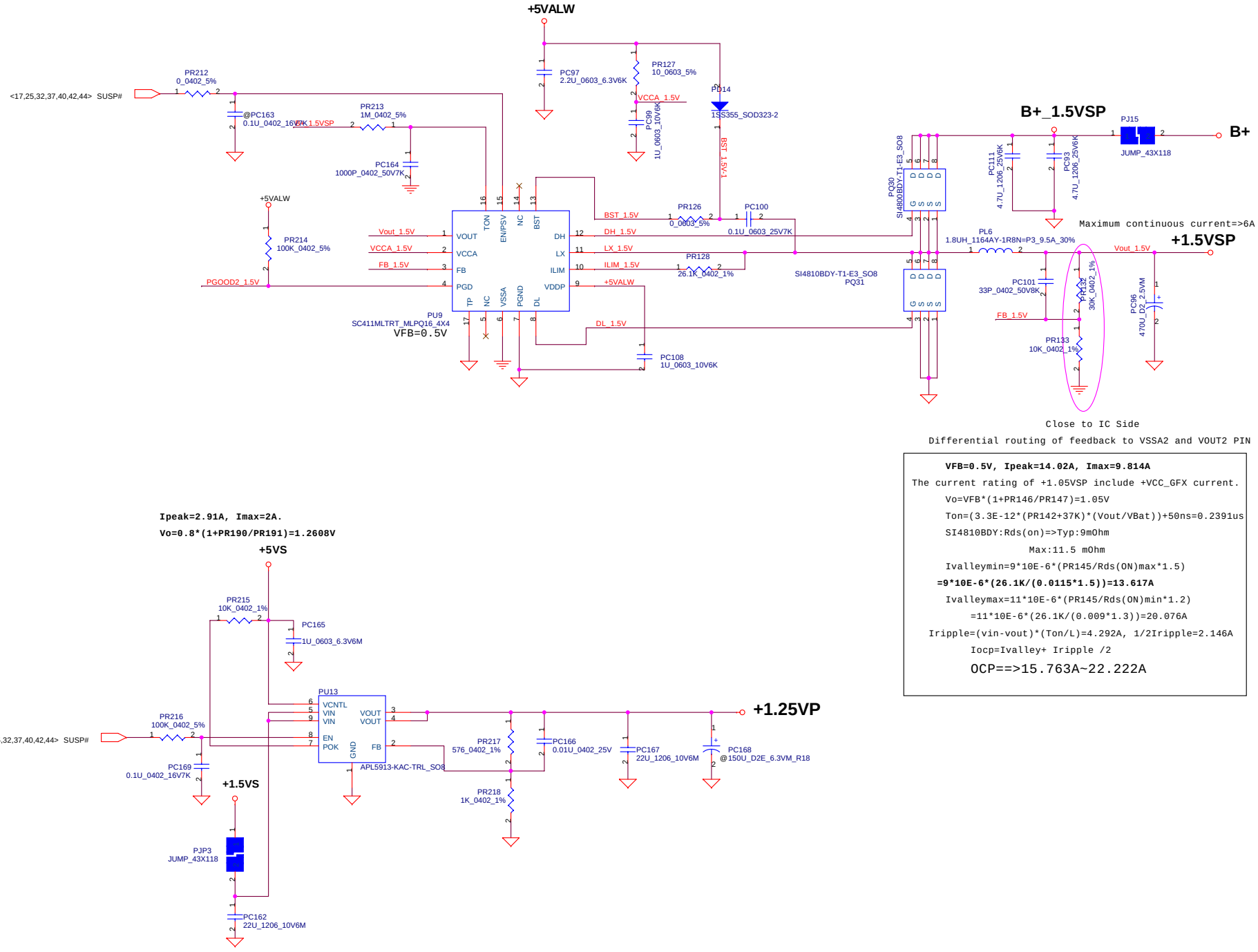
Security Classification	Compal Secret Data		
Issued Date	2005/10/17	Deciphered Date	2006/10/17

Compal Electronics, Inc.

Title: VCCPP/1.8VP

Size: Custom | Document Number: IHL00 LA-3691P | Rev: 0.2

Date: Thursday, March 08, 2007 | Sheet 42 of 45



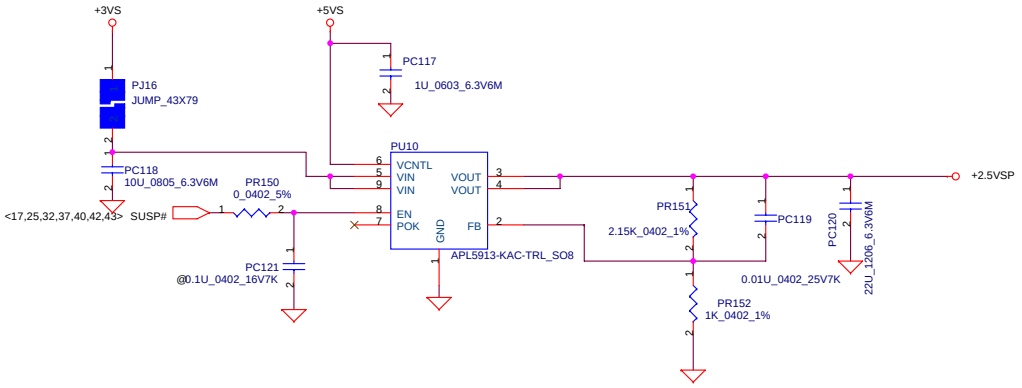
Security Classification	Compal Secret Data		
Issued Date	2005/10/17	Deciphered Date	2006/10/17

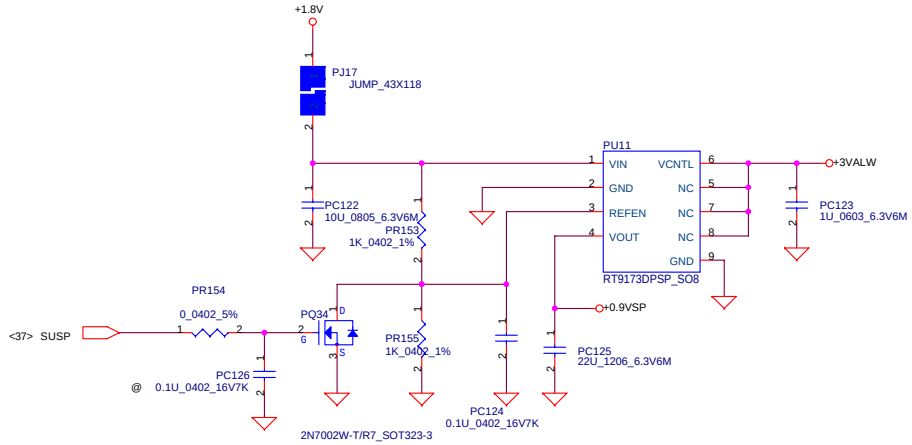
Compal Electronics, Inc.

Title: **1.5VSP/1.25VP**

Size	Document Number	Rev
Custom	**IHL00 LA-3691P**	0.2

Date: Thursday, March 08, 2007 Sheet 43 of 45





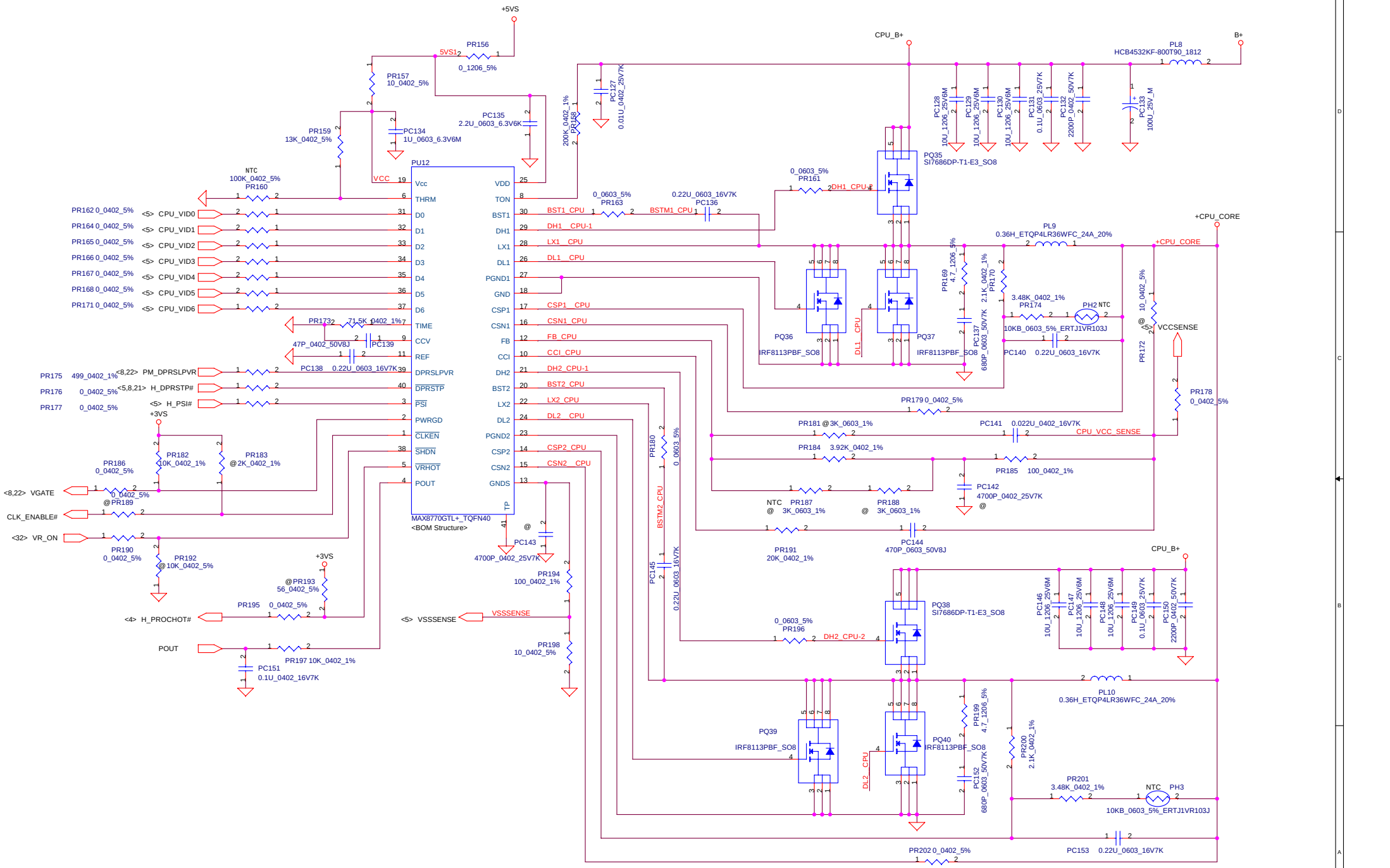
Security Classification	Compal Secret Data		
Issued Date	2005/10/17	Deciphered Date	2006/10/17

Compal Electronics, Inc.

Title: **+2.5VSP/0.9VSP**

Size: Custom | Document Number: **IHL00 LA-3691P** | Rev: 0.2

Date: Thursday, March 08, 2007 | Sheet 44 of 45



Security Classification	Compal Secret Data		
Issued Date	2005/10/17	Deciphered Date	2006/10/17

Compal Electronics, Inc.

Title: **+CPU_CORE**

Size	Document Number	Rev
Custom	IHL00 LA-3691P	0.2

Date: Thursday, March 08, 2007 | Sheet 45 of 45

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

Item	Fixed Issue	Rev.	PG#	Modify List	B.Ver#	Phase
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						

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

Item	Fixed Issue	Rev.	PG#	Modify List	B.Ver#	Phase
1	XDP_BPM#0~4 test point short as EMI request	B	4	Modify Layout		
2	ADD J6 for +VCC_AXG UMA VGA power shape	B	11	Modify Layout		
3	Fixed Speaker no function	A2	37	Change Q91 form SI2301BDS to MMBT3906, Del R895		
4	Fixed SWDJ function can't work	A2	36	Add R904		
5	Fixed Audio Codec can't work	A2	29	Add R905,Q96		
6	Fixed USB Port4 can't work	A2	27	Swap USB_N4 & USB_P4		
7	Fixed EMI issue	A2	32 37	Add R908,C878,C879		
8	Fixed SWDJ mode EC_MUTE# ISSUE	B	30	Add D39,Q99,R914		
9	Fixed CMOS noise	B	36	Add R912,C880		
10	Fixed EMI	B	25	Add C881,C882		
11	Add chipset id	B	33	Add R915,R916		
12	Fix SWDJ Subwoofer issue	B	31	Add R917		
13	Fix DFX issue	C	22,33	Change Y3,X1,Y2 footprint		
14	FOR E-STAR V4 wake on lan	C	22,33	Add R918,R919		
15	For ESD issue	C	36	Add C883~C887 D40,D41		
16	For AUDIO team design	C	30	Add R920 R921		
17	Change LAN led function	C	25	Swap JP73 PIN12 & PIN14		