PWWHA

Delhi 10RG

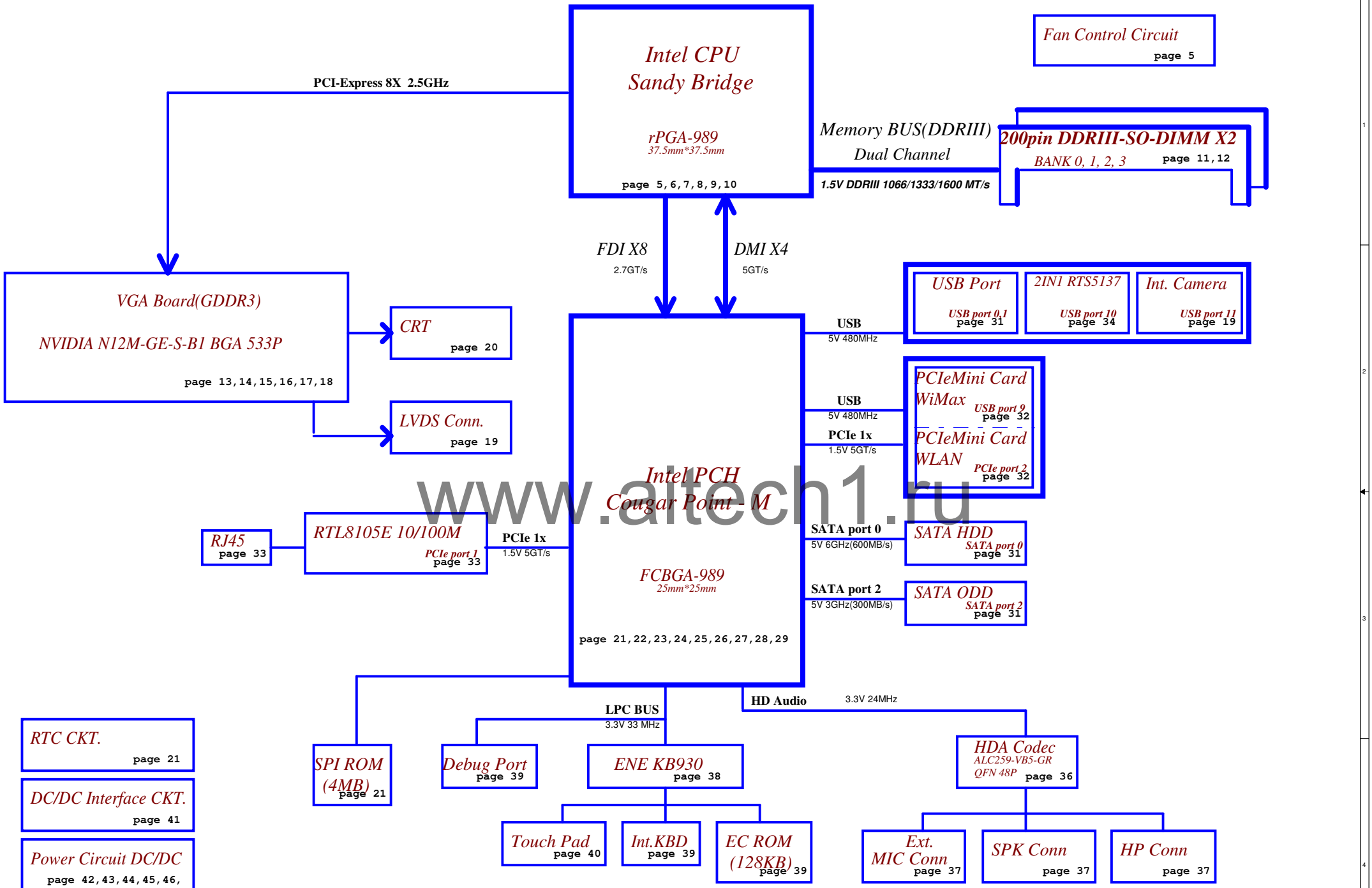
LA-7201P REV 1.0 Schematic

Intel Processor(Sandy Bridge) / PCH(Cougar Point)

2011-01-31 Rev 1.0

Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.		
Title: *Cover Page*		
Size: B	Document Number: PWWHA LA-7201P M/B	Rev: 1.0
Date: Friday, February 25, 2011	Sheet 1 of 53	



Security Classification	Compal Secret Data		
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Compal Electronics, Inc.

Title: **Block Diagram**

Size	Document Number	Rev
	PWWHA LA-7201P M/B	1.0

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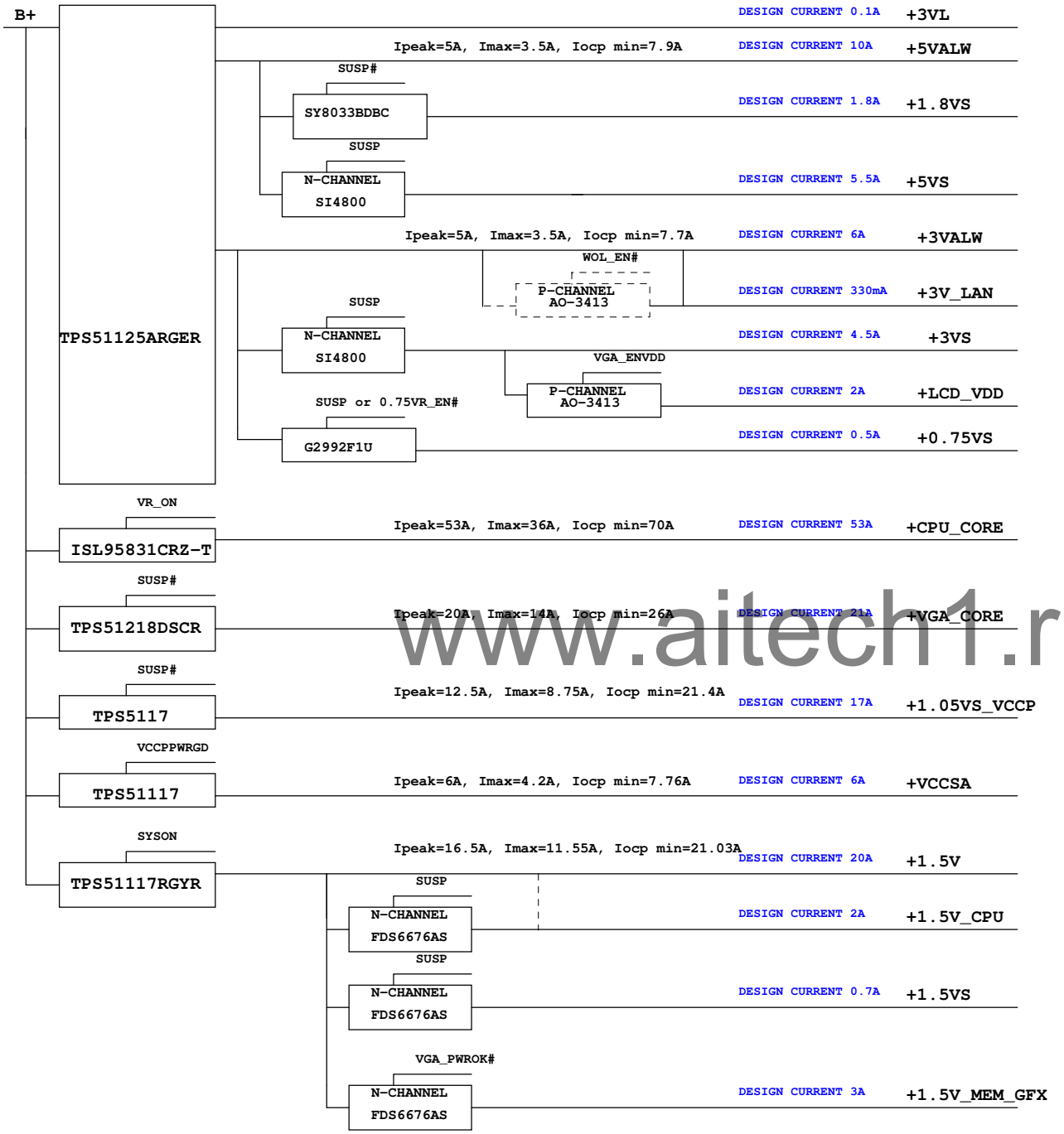

Security Classification	Compal Secret Data		
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Compal Electronics, Inc.

Title: **Power Tree**

Size	Document Number	Rev
	PWWHA LA-7201P M/B	1.0

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Voltage Rails

(O MEANS ON X MEANS OFF)

power plane / State	+RTCVCC	B+	+3VL	+5VALW +3VALW +VSB	+1.5V	+5VS +3VS +1.8VS +1.5VS +1.05VS +0.75VS +CPU_CORE +GFX_CORE
S0	O	O	O	O	O	O
S1	O	O	O	O	O	O
S3	O	O	O	O	O	X
S5 S4/AC	O	O	O	O	X	X
S5 S4/ Battery only	O	O	O	X	X	X
S5 S4/AC & Battery don't exist	O	X	X	X	X	X

BTO Option Table

Function	DIS only	MINI PCI-E SLOT	LAN			Camera & Mic
description		SLOT1	LAN			Camera & Mic
explain		WIMAX	10/100M		Giga	Camera & Mic
BTO	DIS@	WIMAX@	8105ELDO@	8105ESWR@	8111E@	CAM@

Function	PCH	HDMI/Non-HDMI	EC Chip			Zero ODD
description			930 or 9012			
explain			930	Complete	Simple	
BTO	Q65R3@	HDMI@/NHDMI@	930@	9012@	S9012@	ZODD@

PCH SM Bus Address

Power	Device	HEX	Address
+3VS	DDR SO-DIMM 0	A0 H	1010 0000 b
+3VS	DDR SO-DIMM 1	A4 H	1010 0100 b
+3VS	WLAN/WIMAX		

EC SM Bus1 Address

Power	Device	HEX	Address
+3VL	Smart Battery	16 H	0001 0110 b

EC SM Bus2 Address

Power	Device	HEX	Address
+3VS	PCH	96 H	1001 0110 b

STATE / SIGNAL	SLP_S3#	SLP_S4#	SLP_S5#
Full ON	HIGH	HIGH	HIGH
S1(Power On Suspend)	HIGH	HIGH	HIGH
S3 (Suspend to RAM)	LOW	HIGH	HIGH
S4 (Suspend to Disk)	LOW	LOW	HIGH
S5 (Soft OFF)	LOW	LOW	LOW
G3	LOW	LOW	LOW

Security Classification	Compal Secret Data		Compal Electronics, Inc.
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Title	Notes List		
Size: Custom	Document Number: PWWHA LA-7201P M/B		Rev: 1.0
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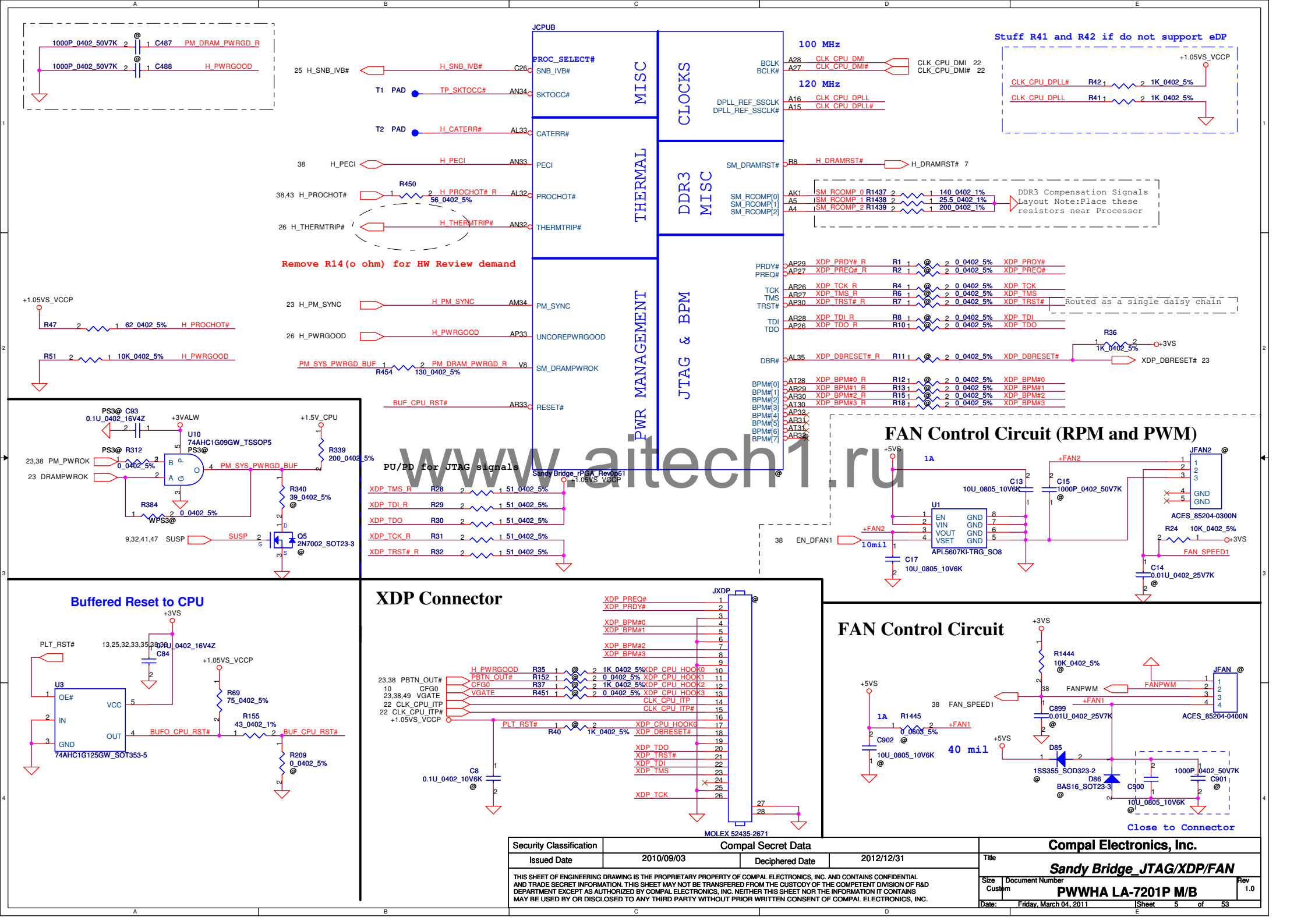

Security Classification	Compal Secret Data		
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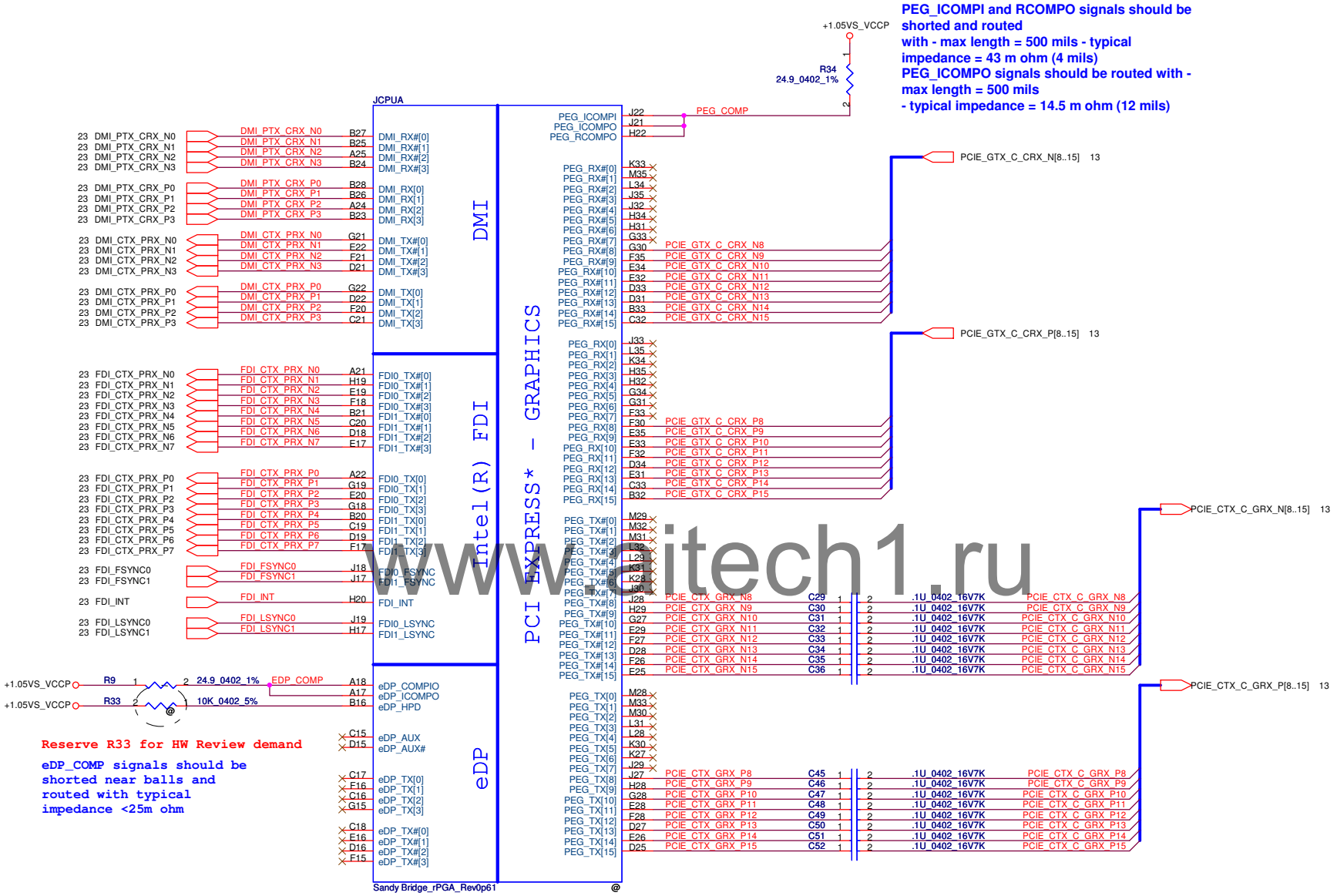
Compal Electronics, Inc.			
Title	Sandy Bridge_JTAG/XDP/FAN		
Size: Custom	Document Number: PWWHA LA-7201P M/B		Rev: 1.0
Date: Friday, March 04, 2011	Sheet 5 of 53		



Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.

Title: ***Sandy Bridge_DMI/PEG/FDI***

Size	Document Number	Rev
Custom	PWWHA LA-7201P M/B	1.0

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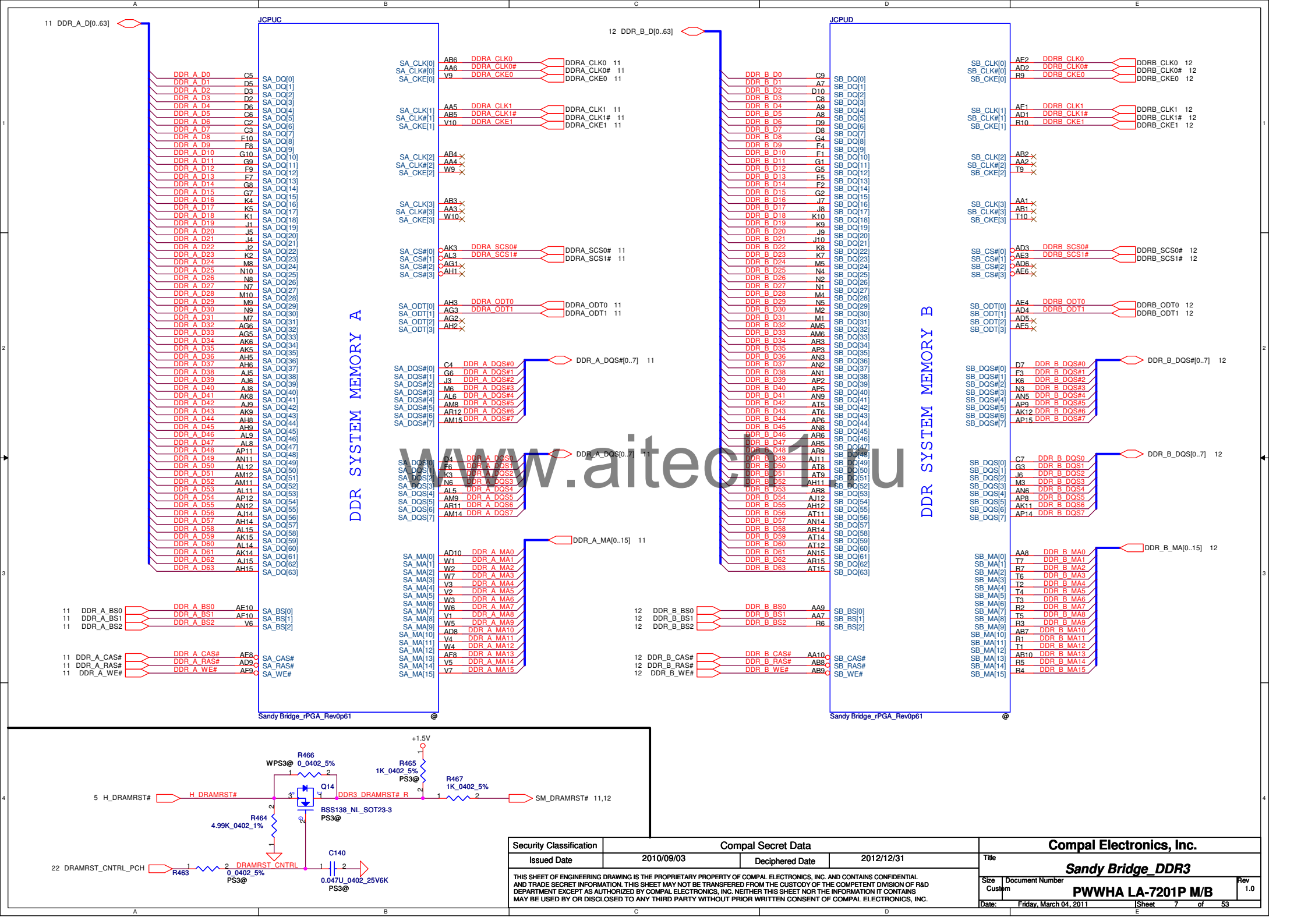

Security Classification	Compal Secret Data		
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Compal Electronics, Inc.

Title: *Sandy Bridge_DDR3*

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POWER

+CPU_CORE

JCPUF

53A (SV 35W)

8.5A

CORE SUPPLY

PEG AND DDR

SVID

SENSE LINES

AG35 VCC1
AG34 VCC2
AG33 VCC3
AG32 VCC4
AG31 VCC5
AG30 VCC6
AG29 VCC7
AG28 VCC8
AG27 VCC9
AG26 VCC10
AF35 VCC11
AF34 VCC12
AF33 VCC13
AF32 VCC14
AF31 VCC15
AF30 VCC16
AF29 VCC17
AF28 VCC18
AF27 VCC19
AF26 VCC20
AD35 VCC21
AD34 VCC22
AD33 VCC23
AD32 VCC24
AD31 VCC25
AD30 VCC26
AD29 VCC27
AD28 VCC28
AD27 VCC29
AD26 VCC30
AC35 VCC31
AC34 VCC32
AC33 VCC33
AC32 VCC34
AC31 VCC35
AC30 VCC36
AC29 VCC37
AC28 VCC38
AC27 VCC39
AC26 VCC40
AA35 VCC41
AA34 VCC42
AA33 VCC43
AA32 VCC44
AA31 VCC45
AA30 VCC46
AA29 VCC47
AA28 VCC48
AA27 VCC49
AA26 VCC50
Y35 VCC51
Y34 VCC52
Y33 VCC53
Y32 VCC54
Y31 VCC55
Y30 VCC56
Y29 VCC57
Y28 VCC58
Y27 VCC59
Y26 VCC60
V35 VCC61
V34 VCC62
V33 VCC63
V32 VCC64
V31 VCC65
V30 VCC66
V29 VCC67
V28 VCC68
V27 VCC69
V26 VCC70
U35 VCC71
U34 VCC72
U33 VCC73
U32 VCC74
U31 VCC75
U30 VCC76
U29 VCC77
U28 VCC78
U27 VCC79
U26 VCC80
R35 VCC81
R34 VCC82
R33 VCC83
R32 VCC84
R31 VCC85
R30 VCC86
R29 VCC87
R28 VCC88
R27 VCC89
R26 VCC90
P35 VCC91
P34 VCC92
P33 VCC93
P32 VCC94
P31 VCC95
P30 VCC96
P29 VCC97
P28 VCC98
P27 VCC99
P26 VCC100

VCCIO1 AH13
VCCIO2 AH10
VCCIO3 AG10
VCCIO4 AC10
VCCIO5 Y10
VCCIO6 U10
VCCIO7 P10
VCCIO8 L10
VCCIO9 J14
VCCIO10 J13
VCCIO11 J12
VCCIO12 J11
VCCIO13 H14
VCCIO14 H12
VCCIO15 H11
VCCIO16 G14
VCCIO17 G13
VCCIO18 G12
VCCIO19 F14
VCCIO20 F13
VCCIO21 F12
VCCIO22 F11
VCCIO23 E14
VCCIO24 E12
VCCIO25 E11
VCCIO26 D14
VCCIO27 D13
VCCIO28 D12
VCCIO29 D11
VCCIO30 C14
VCCIO31 C13
VCCIO32 C12
VCCIO33 C11
VCCIO34 B14
VCCIO35 B12
VCCIO36 A14
VCCIO37 A13
VCCIO38 A12
VCCIO39 A11
VCCIO40 J23

TOP Socket Cavity x 7

+1.05VS_VCCP

22U_0805_6.3V6M: C146 C144 C143 C141 C137 C136 C135 C134 C133 C142

22U_0805_6.3V6M: C147 C145 C163 @ C153 @ C160 @ C152 @ C139 @ C138 @ C132

Bottom Socket Cavity x 5

330U_D2_2V_Y: C10 C11 @C12

ESR 9mohm

330U_D2_2V_Y

+1.05VS_VCCP Decoupling:
2X 330U (6m ohm), 12X 22U

+CPU_CORE Decoupling:
4X 470U (4m ohm), 16X 22U, 10X 10U

Bottom Socket Cavity

+CPU_CORE

10U_0805_10V6K: C101 C102 C103 C104 C105 C106 C107 C108 C109 C110 C111 @

Top Socket Edge

+CPU_CORE

22U_0805_6.3V6M: C159 C151 C130 C129 C124 C123 C122 C121 C125 @

9/02 Remove C126, C131 by Power Demand

Top Socket Cavity

+CPU_CORE

22U_0805_6.3V6M: C158 C150 C128 C127 C120 C118 C119 C117

Bottom Socket Edge

+CPU_CORE

330U_D2_2V_Y: C2 C5 C7 C9 C3

SVID

+1.05VS_VCCP

R70 130_0402_5%

close to CPU

+1.05VS_VCCP

R68 75_0402_5%

VIDALERT# AJ29 H_CPU_SVIDALRT#
VIDSCLK AJ30 H_CPU_SVIDCLK
VIDSOUT AJ28 H_CPU_SVIDDAT

R67 43_0402_1%
R63 0_0402_5%
R66 0_0402_5%

VR_SVID_ALRT# 49
VR_SVID_CLK 49
VR_SVID_DAT 49

Pull high resistor on VR side

SENSE LINES

+CPU_CORE

R64 100_0402_1%

Close to CPU

VCC_SENSE AJ35 VCCSENSE_R
VSS_SENSE AJ34 VSSSENSE_R

R65 0_0402_5%
R52 0_0402_5%

VCCSENSE 49
VSSSENSE 49

R62 100_0402_1%

VCCIO_SENSE B10 VCCIO_SENSE
VSSIO_SENSE A10
vss_sense_vcc10

VCCIO_SENSE 47

R102 0_0402_5%
R105 100_0402_1% @

+1.05VS_VCCP

Close to CPU

9/02 Add C898 3Pin Bulk Cap by Power Demand

9/02 Change C890, C891, C894 from SGA00005R00 to SGA00004X80 for Power demand

Sandy Bridge_rPGA_Rev0p61

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Compal Electronics, Inc.

Title: Sandy Bridge_POWER-1

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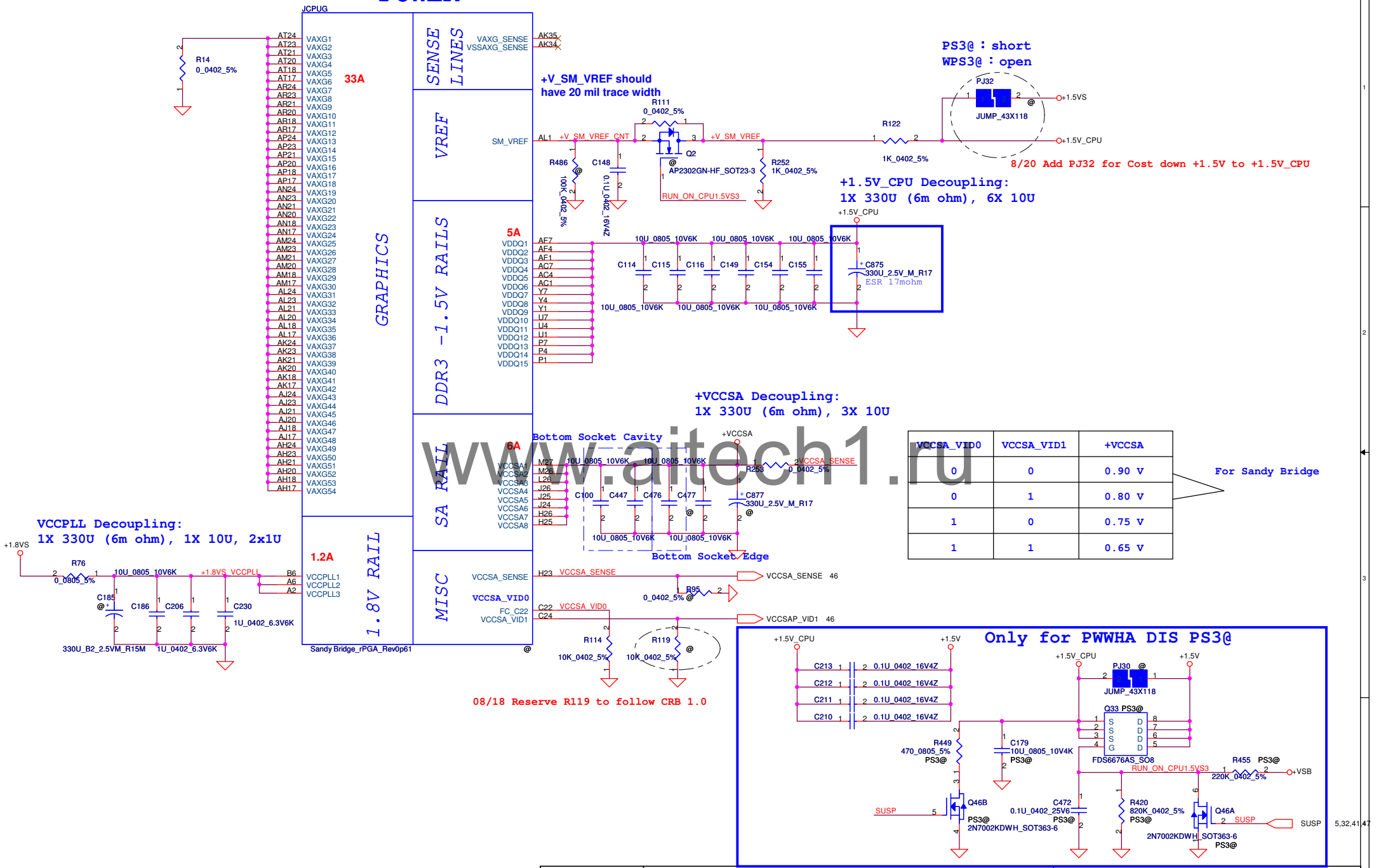
POWER



VCCSA_VID0	VCCSA_VID1	+VCCSA
0	0	0.90 V
0	1	0.80 V
1	0	0.75 V
1	1	0.65 V

For Sandy Bridge

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Compal Electronics, Inc.	
Title	Sandy Bridge_POWER-2
Size: Custom	Document Number: PWWHA LA-7201P M/B
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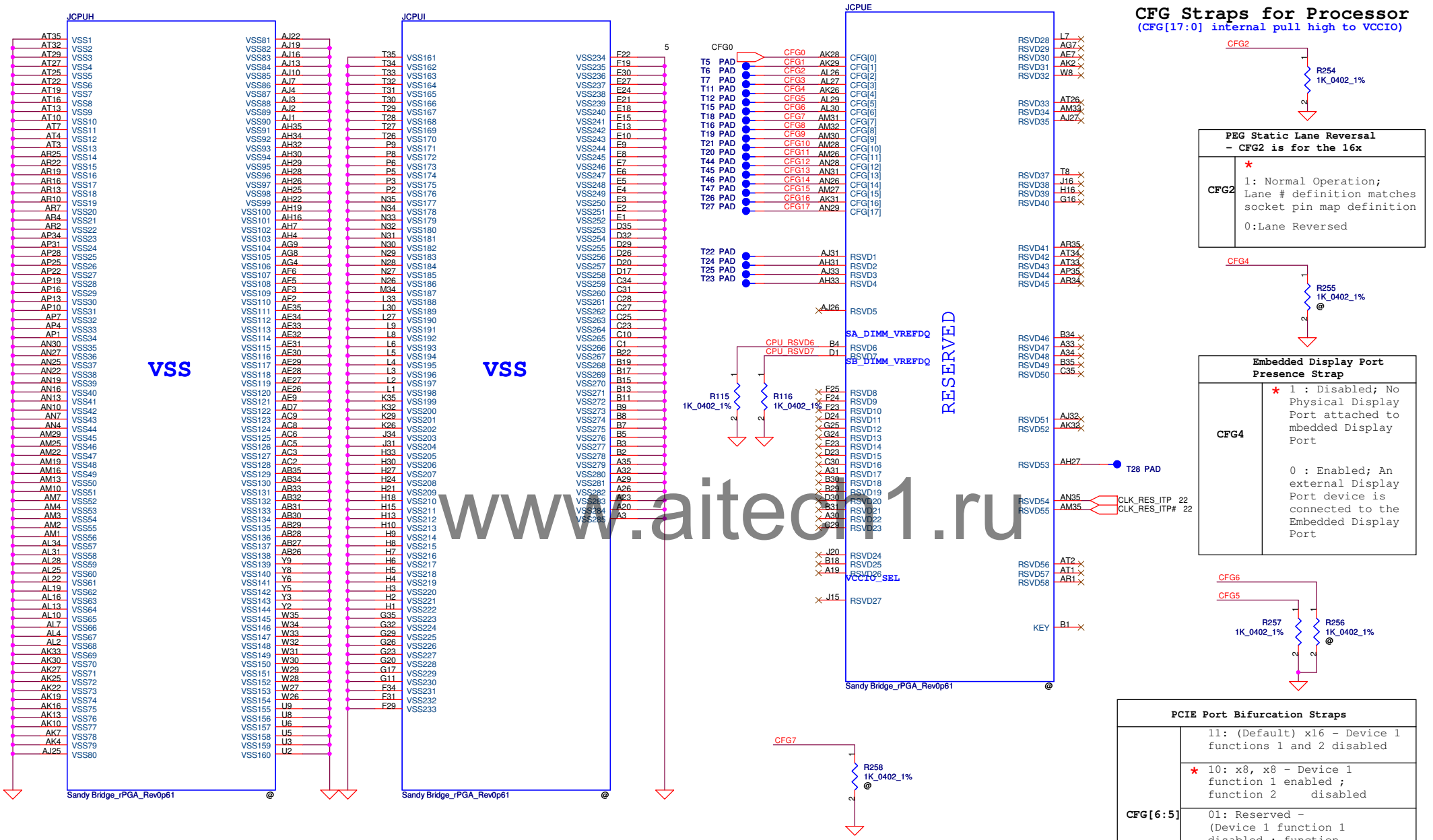
Date: Friday, March 04, 2011	Sheet 9 of 53



Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.

Title: *Sandy Bridge_GND/RSVD/CFG*

Size	Document Number	Rev
Custom	PWWHA LA-7201P M/B	1.0

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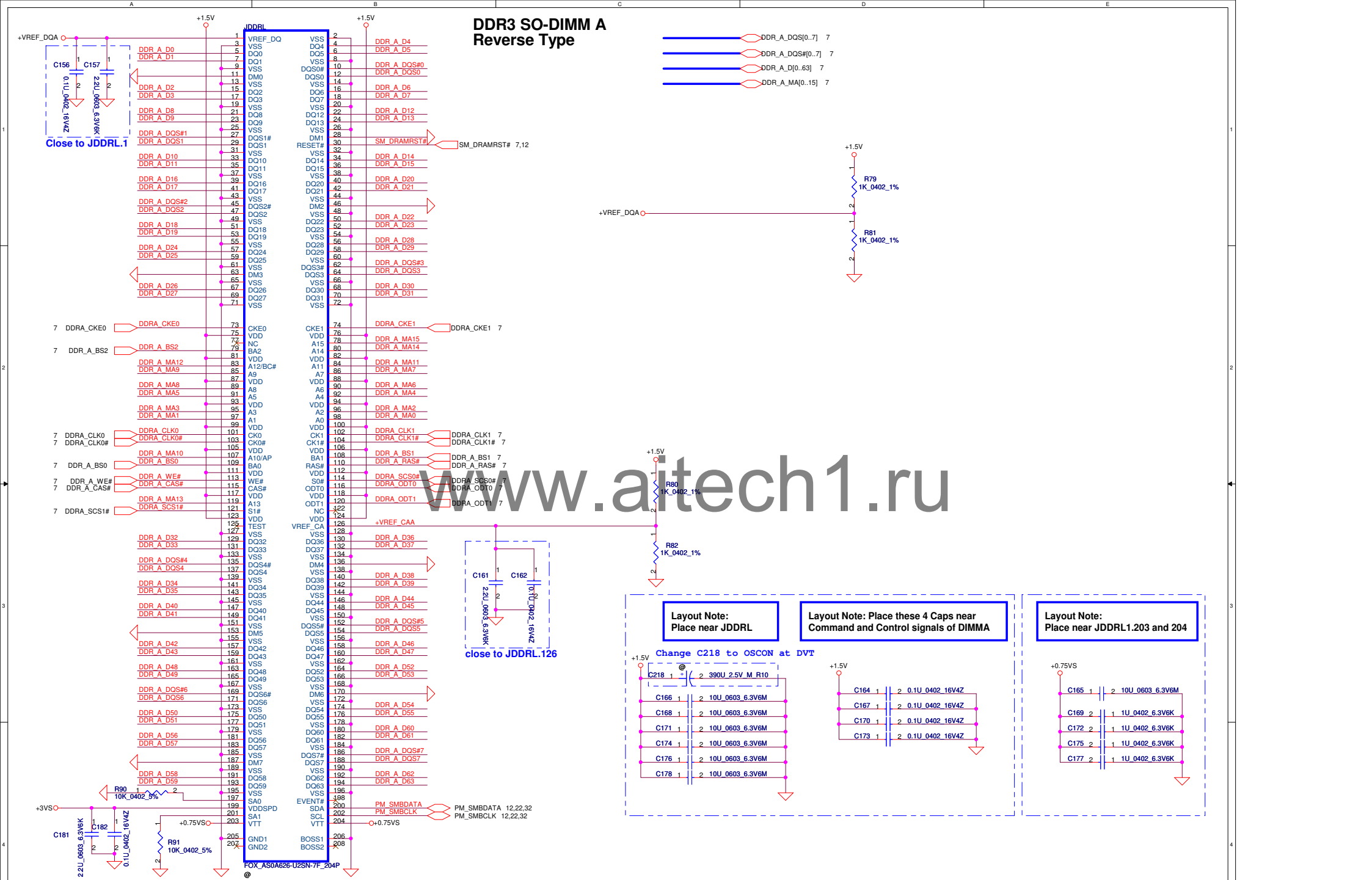
DDR3 SO-DIMM A
Reverse Type



Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.		
Title	*DDRIII-SODIMM0*	
Size: Custom	Document Number: PWWHA LA-7201P M/B	Rev: 1.0
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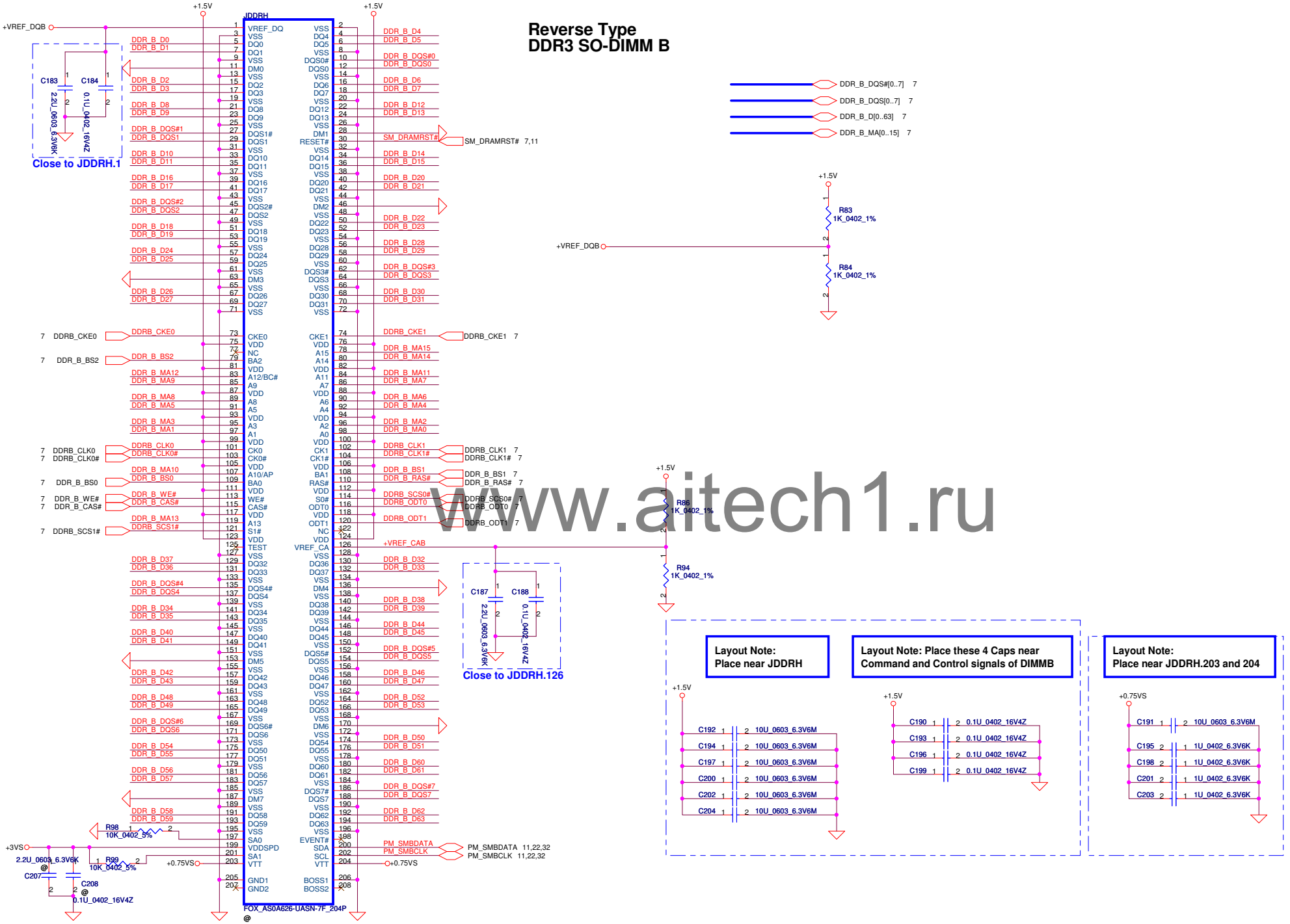
Reverse Type
DDR3 SO-DIMM B



Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.	
Title	DDRIII-SODIMM1
Size: Custom	Document Number: PWWHA LA-7201P M/B
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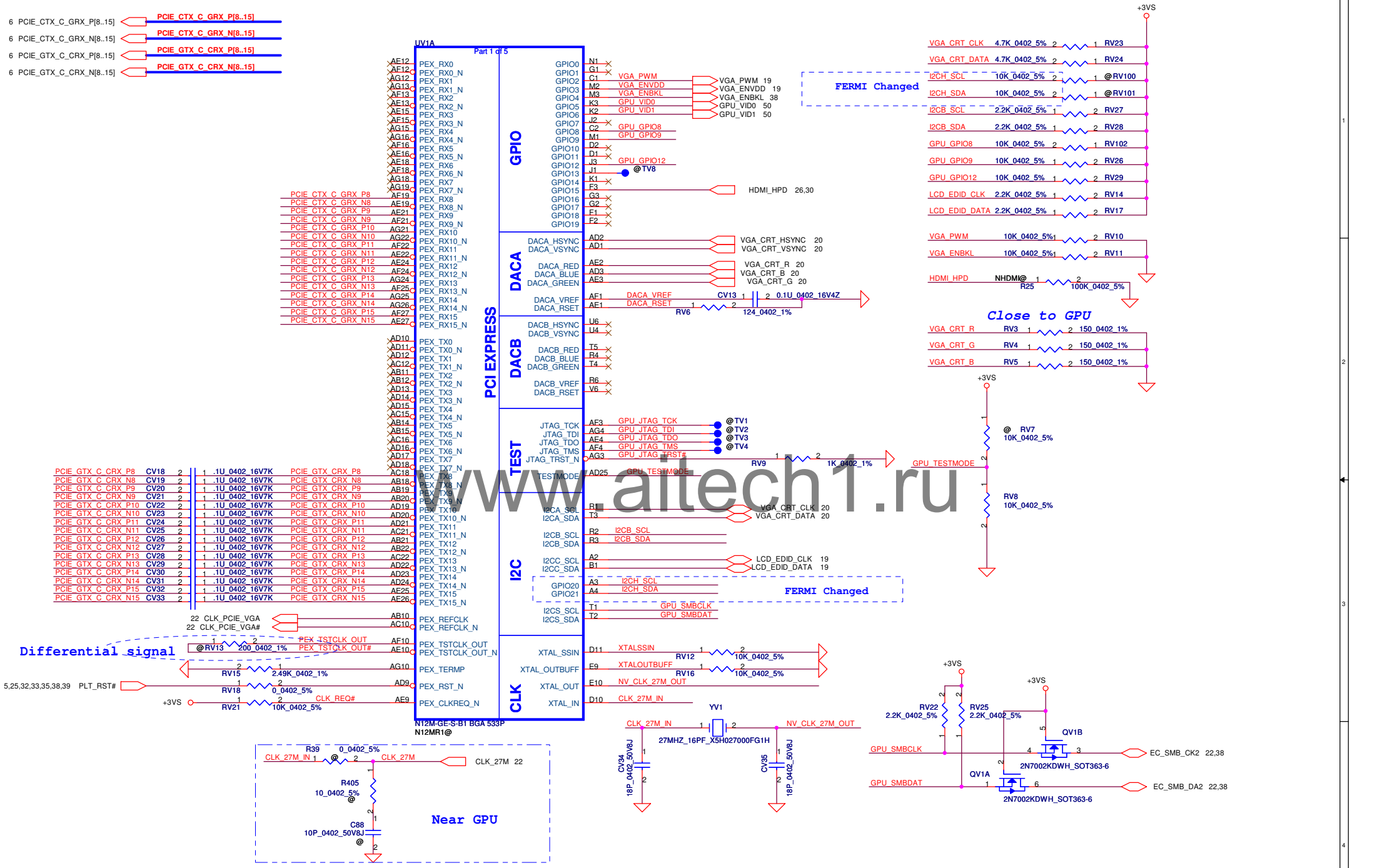
Date: Friday, March 04, 2011	Sheet 12 of 53



Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.	
Title	*N12M PCIe,DAC,GPIO*
Size: Custom	Document Number: PWWHA LA-7201P M/B
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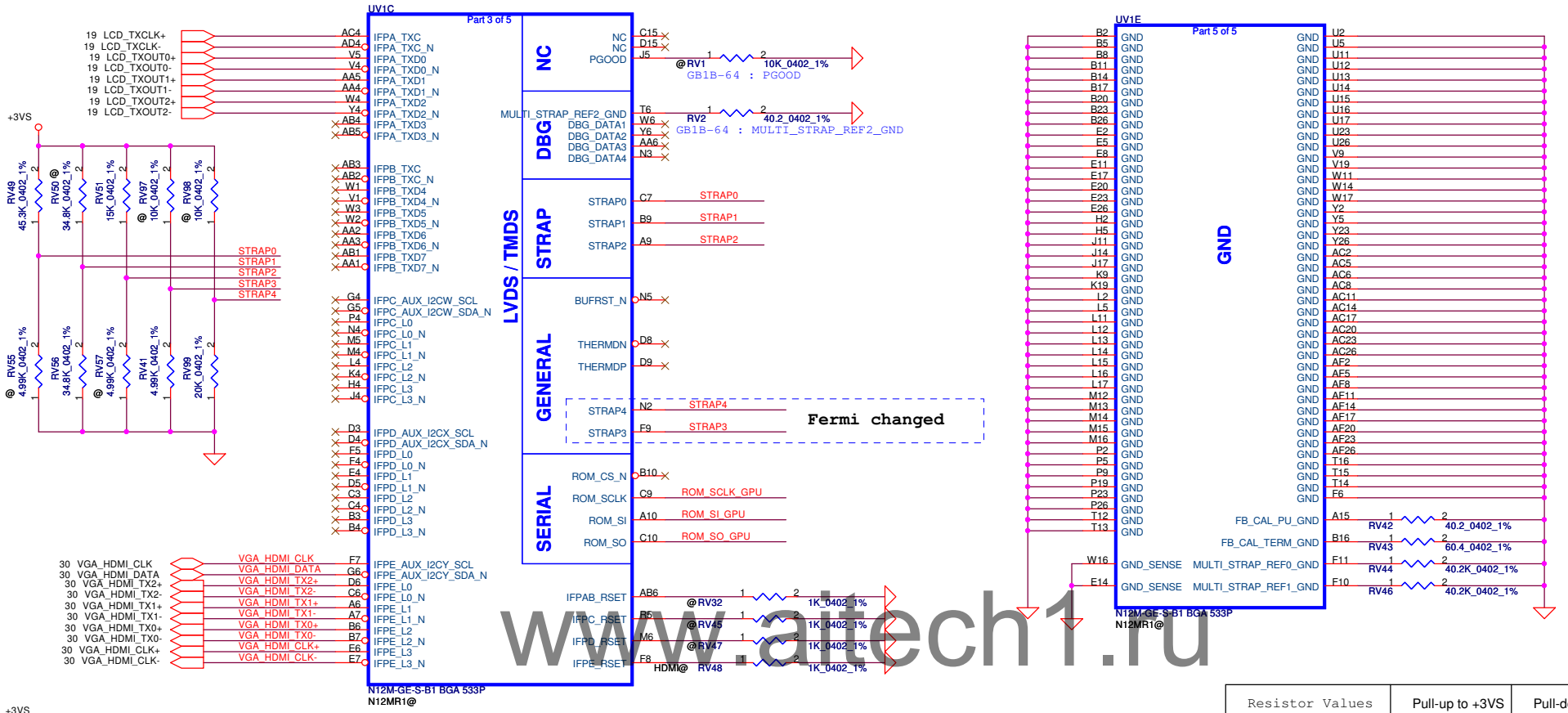
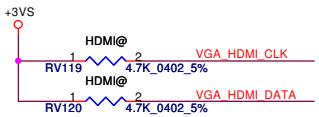
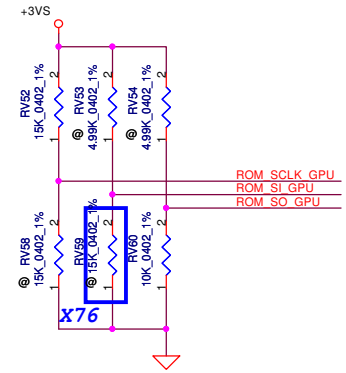
Date: Friday, March 04, 2011	Sheet 13 of 53







Physical Strapping pin	Power Rail	Logical Strapping Bit3	Logical Strapping Bit2	Logical Strapping Bit1	Logical Strapping Bit0
ROM_SO	+3VS	XCLK_417	FB_0_BAR_SIZE	SMB_ALT_ADDR	VGA_DEVICE
ROM_SCLK	+3VS	PCI_DEVID[4]	SUB_VENDOR	SLOT_CLK_CFG	PEX_PLLEN_TERM
ROM_SI	+3VS	RAMCFG[3]	RAMCFG[2]	RAMCFG[1]	RAMCFG[0]
STRAP2	+3VS	PCI_DEVID[3]	PCI_DEVID[2]	PCI_DEVID[1]	PCI_DEVID[0]
STRAP1	+3VS	3GIO_PADCFG[3]	3GIO_PADCFG[2]	3GIO_PADCFG[1]	3GIO_PADCFG[0]
STRAP0	+3VS	USER[3]	USER[2]	USER[1]	USER[0]

Resistor Values	Pull-up to +3VS	Pull-down to Gnd
5K	1000	0000
10K	1001	0001
15K	1010	0010
20K	1011	0011
25K	1100	0100
30K	1101	0101
35K	1110	0110
45K	1111	0111

Hynix (800MHZ) 64MX16 H5TQ1G63DFR-12C SA0000324C0	512MB	0010	RV59 PD 15K (SD034150280)
Hynix (900MHZ) 128MX16 H5TQ2G63BFR-11C SA00003YO00	1GB	0110	RV59 PD 34.8K (SD034348280)
Samsung (800MHZ) 64MX16 K4W1G1646G-BC12 SA00004HS00	512MB	0011	RV59 PD 20K (SD034200280)
Samsung (900MHZ) 128MX16 K4W2G1646C-HC11 SA000047Q00	1GB	0111	RV59 PD 45.3K (SD034453280)

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Compal Electronics, Inc.

Title: *N12M LVDS,HDMI,DP,GND*

Size: Custom | Document Number: PWWHA LA-7201P M/B | Rev: 1.0

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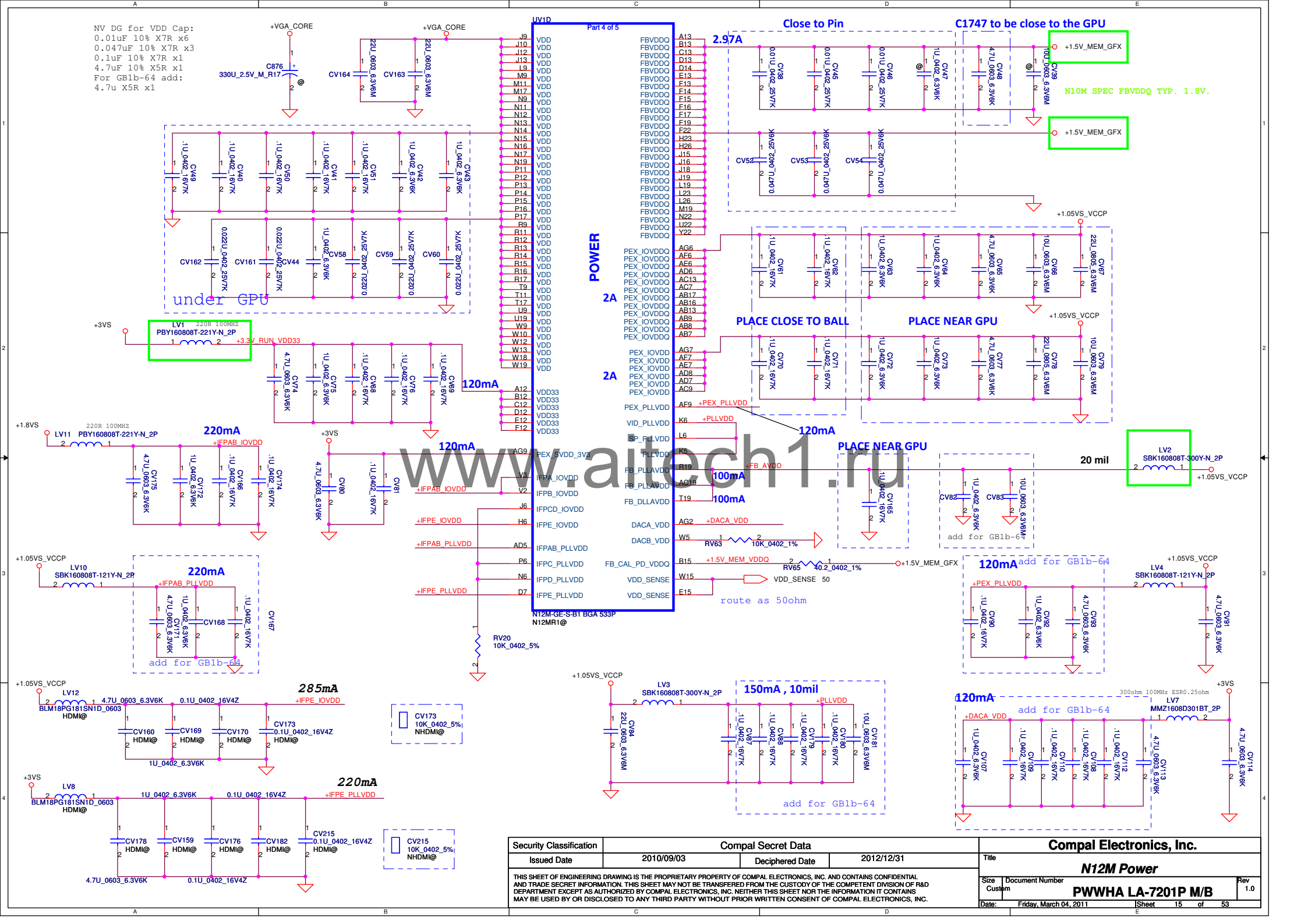

Security Classification	Compal Secret Data		
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Compal Electronics, Inc.

Title: ***N12M Power***

Size	Document Number	Rev
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FBAD[0..63] → FBAD[0..63] 17,18
FBA_CMD[0..30] → FBA_CMD[0..30] 17,18
DQMA#[0..7] → DQMA#[0..7] 17,18
DQSA_RN[0..7] → DQSA_RN[0..7] 17,18
DQSA_WP[0..7] → DQSA_WP[0..7] 17,18

FBA_CMD3 — RV66 10K_0402_5% — CKE_1
FBA_CMD19 — RV68 10K_0402_5% — ODT_2
FBA_CMD0 — RV71 10K_0402_5% — ODT_1
FBA_CMD16 — RV72 10K_0402_5% — CKE_2
FBA_CMD20 — RV75 10K_0402_5% — RST

+1.5V_MEM_GFX — RV77 1.1K_0402_1% — +FB_VREF — RV78 1.1K_0402_1% — CV128 0.01U_0402_25V7K — 16mil

UV1B
Part 2 of 5
MEMORY INTERFACE
N12M-GE-S-B1 BGA 533P
N12MR1@

FBAD0	D22	FBA_D0	FBA_CMD0	G24	FBA_CMD0
FBAD1	E24	FBA_D1	FBA_CMD1	F27	FBA_CMD1
FBAD2	E22	FBA_D2	FBA_CMD2	F25	FBA_CMD2
FBAD3	D24	FBA_D3	FBA_CMD3	F26	FBA_CMD3
FBAD4	D26	FBA_D4	FBA_CMD4	G26	FBA_CMD4
FBAD5	D27	FBA_D5	FBA_CMD5	G27	FBA_CMD5
FBAD6	C27	FBA_D6	FBA_CMD6	G25	FBA_CMD6
FBAD7	B27	FBA_D7	FBA_CMD7	J25	FBA_CMD7
FBAD8	A21	FBA_D8	FBA_CMD8	J24	FBA_CMD8
FBAD9	B21	FBA_D9	FBA_CMD9	H24	FBA_CMD9
FBAD10	C21	FBA_D10	FBA_CMD10	H22	FBA_CMD10
FBAD11	C19	FBA_D11	FBA_CMD11	J26	FBA_CMD11
FBAD12	C18	FBA_D12	FBA_CMD12	G22	FBA_CMD12
FBAD13	D18	FBA_D13	FBA_CMD13	G23	FBA_CMD13
FBAD14	B18	FBA_D14	FBA_CMD14	J22	FBA_CMD14
FBAD15	C16	FBA_D15	FBA_CMD15	J27	FBA_CMD15
FBAD16	F21	FBA_D16	FBA_CMD16	M24	FBA_CMD16
FBAD17	F21	FBA_D17	FBA_CMD17	L24	FBA_CMD17
FBAD18	D20	FBA_D18	FBA_CMD18	J23	FBA_CMD18
FBAD19	F20	FBA_D19	FBA_CMD19	K23	FBA_CMD19
FBAD20	D17	FBA_D20	FBA_CMD20	K22	FBA_CMD20
FBAD21	F18	FBA_D21	FBA_CMD21	M23	FBA_CMD21
FBAD22	D16	FBA_D22	FBA_CMD22	K24	FBA_CMD22
FBAD23	E16	FBA_D23	FBA_CMD23	M27	FBA_CMD23
FBAD24	A22	FBA_D24	FBA_CMD24	N27	FBA_CMD24
FBAD25	C24	FBA_D25	FBA_CMD25	M26	FBA_CMD25
FBAD26	D21	FBA_D26	FBA_CMD26	K26	FBA_CMD26
FBAD27	B22	FBA_D27	FBA_CMD27	K27	FBA_CMD27
FBAD28	C22	FBA_D28	FBA_CMD28	K25	FBA_CMD28
FBAD29	A25	FBA_D29	FBA_CMD29	M25	FBA_CMD29
FBAD30	B25	FBA_D30	FBA_CMD30	L22	FBA_CMD30
FBAD31	A26	FBA_D31			
FBAD32	U24	FBA_D32	FBA_DQM0	C26	DQMA#0
FBAD33	V24	FBA_D33	FBA_DQM1	B19	DQMA#1
FBAD34	V23	FBA_D34	FBA_DQM2	D19	DQMA#2
FBAD35	R24	FBA_D35	FBA_DQM3	D23	DQMA#3
FBAD36	T23	FBA_D36	FBA_DQM4	T24	DQMA#4
FBAD37	R23	FBA_D37	FBA_DQM5	AA23	DQMA#5
FBAD38	P24	FBA_D38	FBA_DQM6	AB27	DQMA#6
FBAD39	P22	FBA_D39	FBA_DQM7	T26	DQMA#7
FBAD40	AC24	FBA_D40			
FBAD41	AB23	FBA_D41	FBA_DQS_RN0	D25	DQSA_RN0
FBAD42	AB24	FBA_D42	FBA_DQS_RN1	A18	DQSA_RN1
FBAD43	W24	FBA_D43	FBA_DQS_RN2	E18	DQSA_RN2
FBAD44	AA22	FBA_D44	FBA_DQS_RN3	B24	DQSA_RN3
FBAD45	W23	FBA_D45	FBA_DQS_RN4	R22	DQSA_RN4
FBAD46	W22	FBA_D46	FBA_DQS_RN5	Y24	DQSA_RN5
FBAD47	V22	FBA_D47	FBA_DQS_RN6	AA27	DQSA_RN6
FBAD48	AA25	FBA_D48	FBA_DQS_RN7	R27	DQSA_RN7
FBAD49	W27	FBA_D49			
FBAD50	W26	FBA_D50	FBA_DQS_WP0	C25	DQSA_WP0
FBAD51	W25	FBA_D51	FBA_DQS_WP1	A19	DQSA_WP1
FBAD52	AB25	FBA_D52	FBA_DQS_WP2	E19	DQSA_WP2
FBAD53	AB26	FBA_D53	FBA_DQS_WP3	A24	DQSA_WP3
FBAD54	AD26	FBA_D54	FBA_DQS_WP4	T22	DQSA_WP4
FBAD55	AD27	FBA_D55	FBA_DQS_WP5	AA24	DQSA_WP5
FBAD56	V25	FBA_D56	FBA_DQS_WP6	AA26	DQSA_WP6
FBAD57	R25	FBA_D57	FBA_DQS_WP7	T27	DQSA_WP7
FBAD58	V26	FBA_D58			
FBAD59	V27	FBA_D59	FB_VREF	A16	+FB_VREF
FBAD60	R26	FBA_D60			
FBAD61	T25	FBA_D61	FBA_CLK0	F24	CLKA0 17
FBAD62	N25	FBA_D62	FBA_CLK0_N	F23	CLKA0# 17
FBAD63	N26	FBA_D63			
			FBA_CLK1	N24	CLKA1 18
			FBA_CLK1_N	N23	CLKA1# 18
			FBA_DEBUG	M22	RV76 1 2 10K_0402_5% +1.5V_MEM_GFX

PAD~D TV6@
PAD~D TV5@

Mode E – Mirror Mode Mapping

	DATA Bus	
Address	0..31	32..63
CMD0	ODT_L	
CMD1	CS1#_L	
CMD2	CS0#_L	
CMD3	CKE_L	
CMD4	A9	A11
CMD5	A6	A7
CMD6	A3	BA1
CMD7	A0	A12
CMD8	A8	A8
CMD9	A12	A0
CMD10	A1	A2
CMD11	RAS#	RAS#
CMD12	A13	A14
CMD13	BA1	A3
CMD14	A14	A13
CMD15	CAS#	CAS#
CMD16		CKE_H
CMD17		CS1#_H
CMD18		CS0#_H
CMD19		ODT_H
CMD20	RST	RST
CMD21	A7	A6
CMD22	A4	A5
CMD23	A11	A9
CMD24	A2	A1
CMD25	A10	WE#
CMD26	A5	A4
CMD27	BA2	A15
CMD28	WE#	A10
CMD29	BA0	BA0
CMD30	A15	BA2

Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

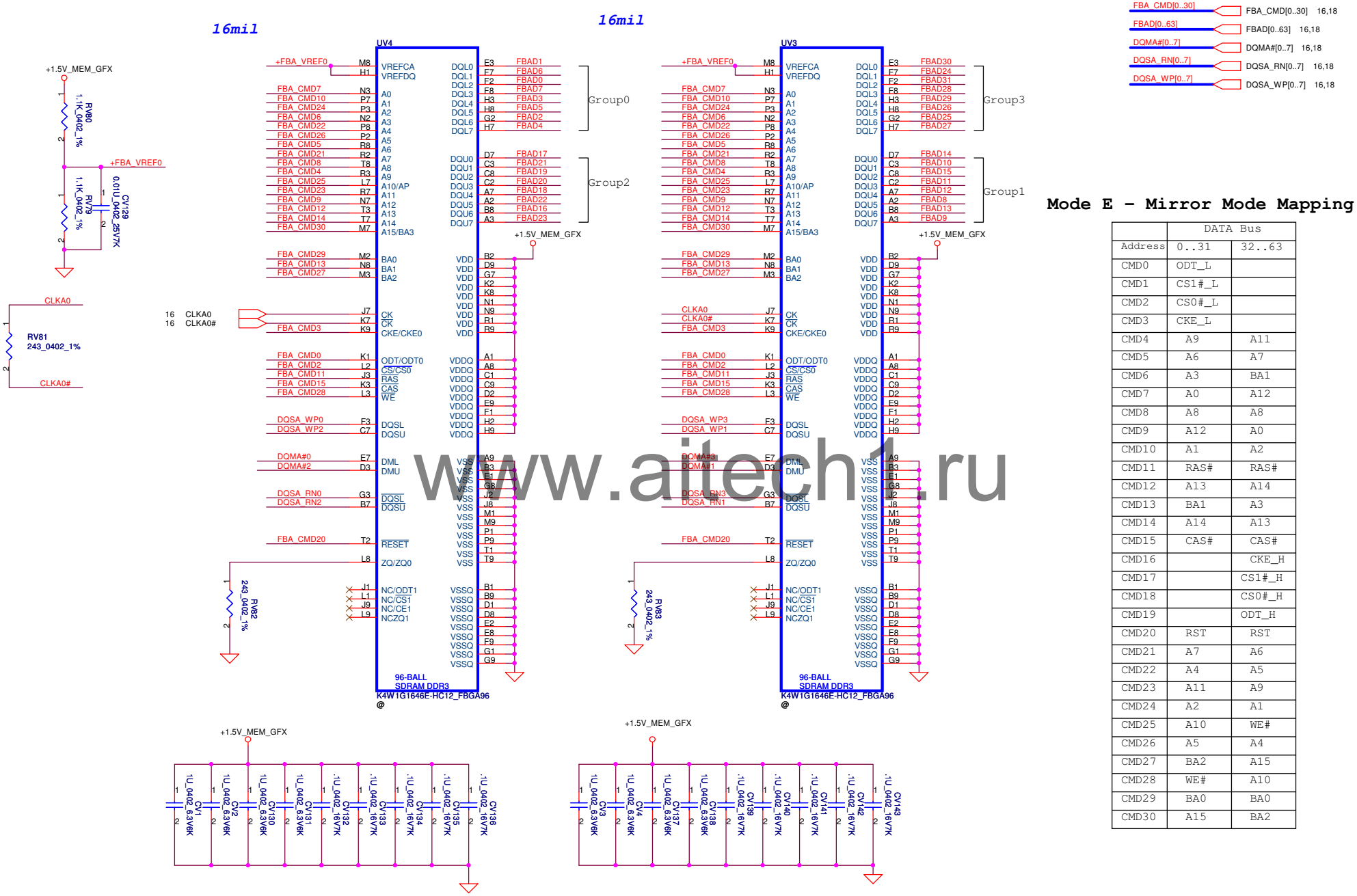
Compal Electronics, Inc.

Title: N12M MEM Interface

Size: Custom | Document Number: PWWHA LA-7201P M/B | Rev: 1.0

Date: Friday, March 04, 2011 | Sheet 16 of 53

Memory Partition A - Lower 32 bits



Mode E - Mirror Mode Mapping

	DATA Bus	
Address	0..31	32..63
CMD0	ODT_L	
CMD1	CS1#_L	
CMD2	CS0#_L	
CMD3	CKE_L	
CMD4	A9	A11
CMD5	A6	A7
CMD6	A3	BA1
CMD7	A0	A12
CMD8	A8	A8
CMD9	A12	A0
CMD10	A1	A2
CMD11	RAS#	RAS#
CMD12	A13	A14
CMD13	BA1	A3
CMD14	A14	A13
CMD15	CAS#	CAS#
CMD16		CKE_H
CMD17		CS1#_H
CMD18		CS0#_H
CMD19		ODT_H
CMD20	RST	RST
CMD21	A7	A6
CMD22	A4	A5
CMD23	A11	A9
CMD24	A2	A1
CMD25	A10	WE#
CMD26	A5	A4
CMD27	BA2	A15
CMD28	WE#	A10
CMD29	BA0	BA0
CMD30	A15	BA2

Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

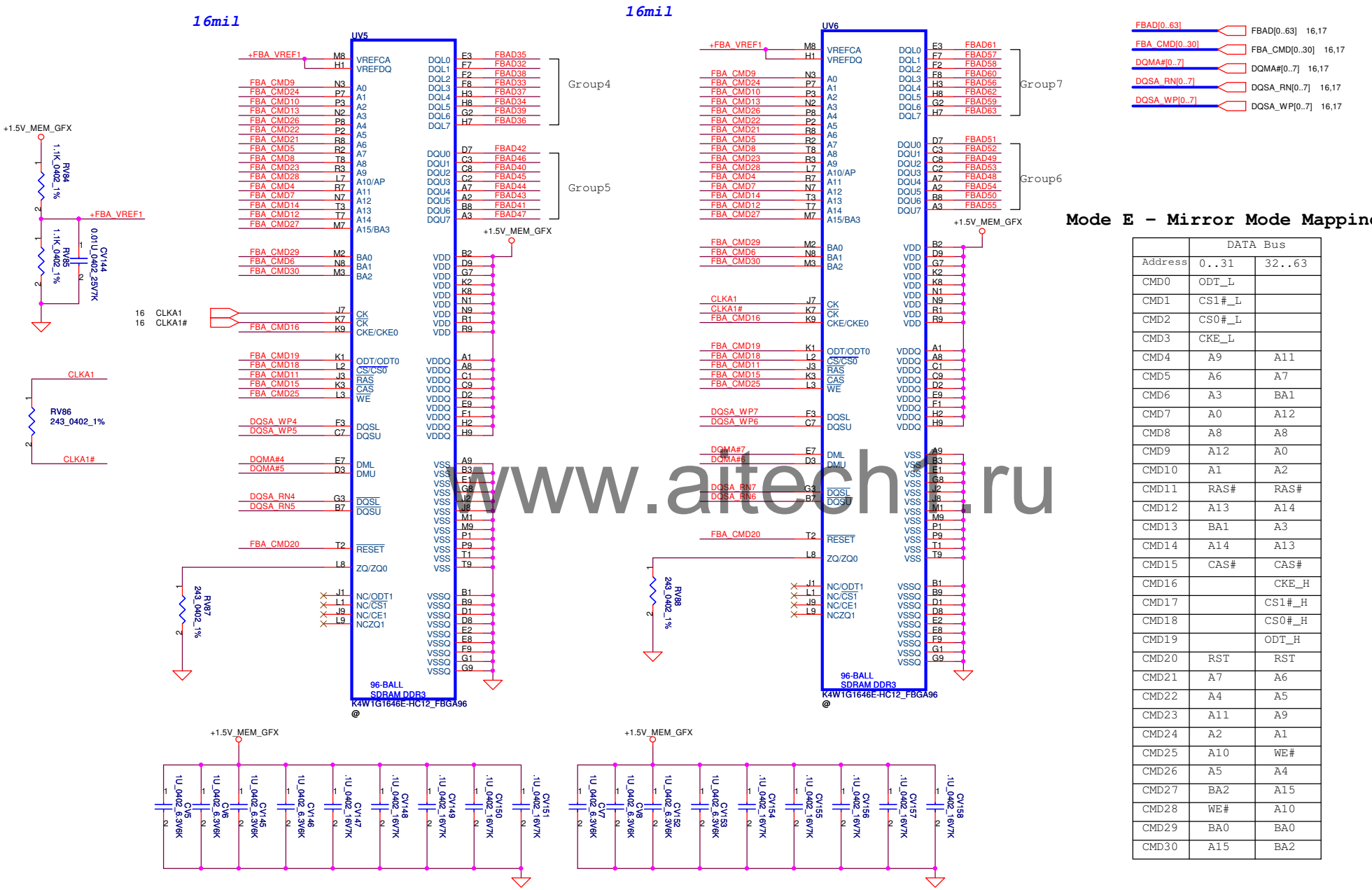
Compal Electronics, Inc.

Title: ***N12M VRAM***

Size: Custom | Document Number: **PWWHA LA-7201P M/B** | Rev: 1.0

Date: Friday, March 04, 2011 | Sheet 17 of 53

Memory Partition A - Upper 32 bits



Mode E - Mirror Mode Mapping

	DATA Bus	
Address	0..31	32..63
CMD0	ODT_L	
CMD1	CS1#_L	
CMD2	CS0#_L	
CMD3	CKE_L	
CMD4	A9	A11
CMD5	A6	A7
CMD6	A3	BA1
CMD7	A0	A12
CMD8	A8	A8
CMD9	A12	A0
CMD10	A1	A2
CMD11	RAS#	RAS#
CMD12	A13	A14
CMD13	BA1	A3
CMD14	A14	A13
CMD15	CAS#	CAS#
CMD16		CKE_H
CMD17		CS1#_H
CMD18		CS0#_H
CMD19		ODT_H
CMD20	RST	RST
CMD21	A7	A6
CMD22	A4	A5
CMD23	A11	A9
CMD24	A2	A1
CMD25	A10	WE#
CMD26	A5	A4
CMD27	BA2	A15
CMD28	WE#	A10
CMD29	BA0	BA0
CMD30	A15	BA2

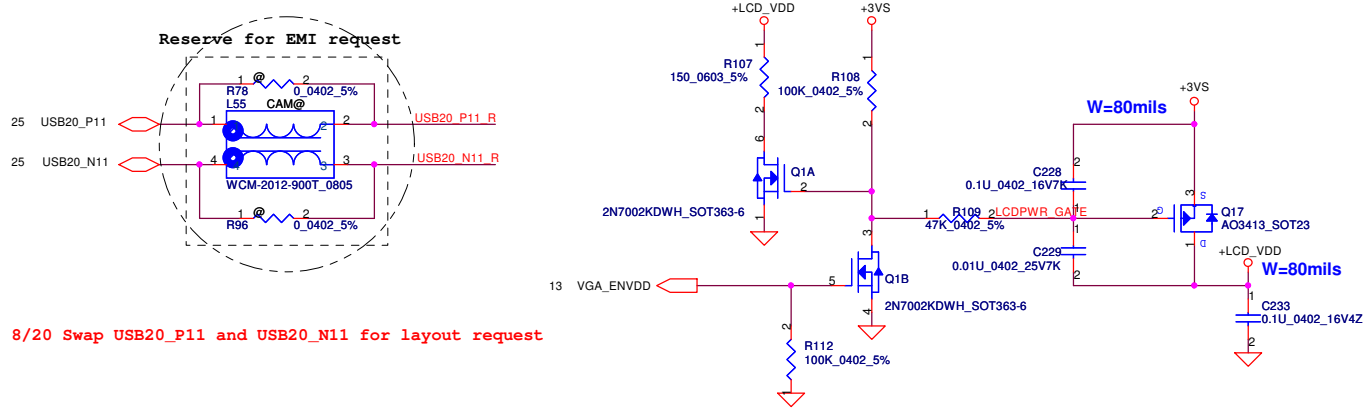
Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.

Title: *N12P VRAM*

Size: Custom | Document Number: PWWHA LA-7201P M/B | Rev: 1.0

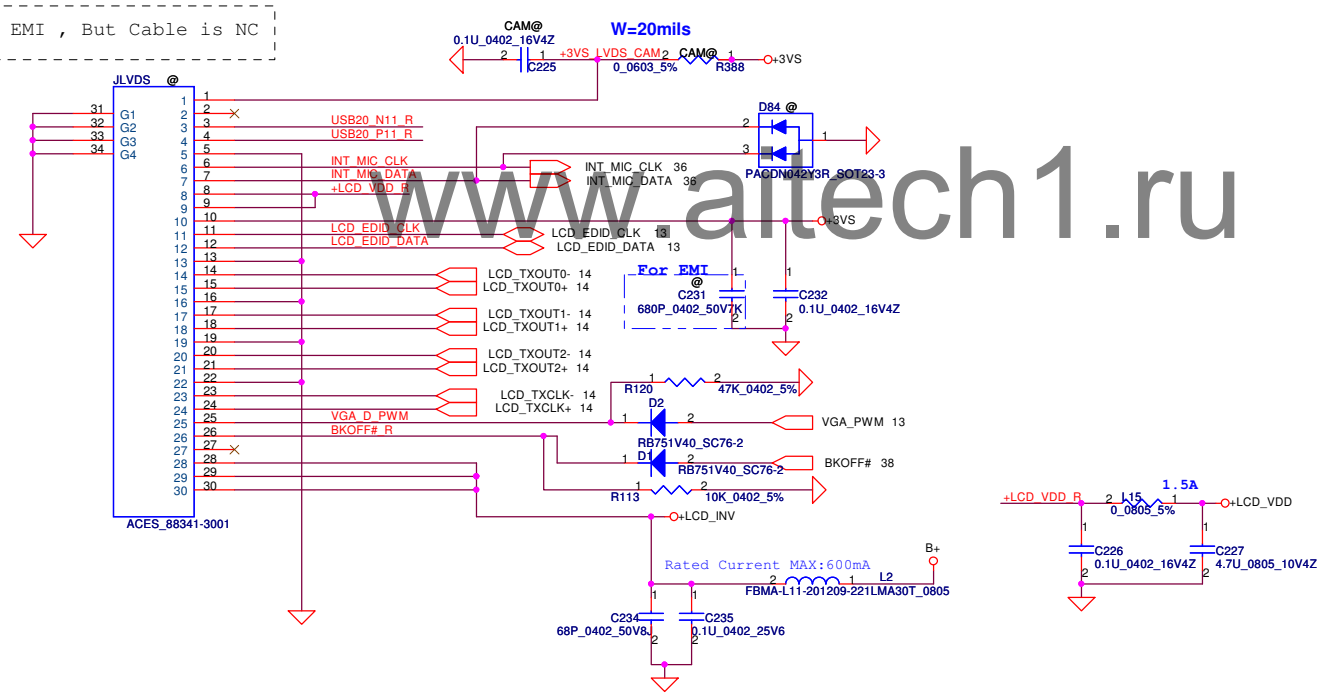
Date: Friday, March 04, 2011 | Sheet 18 of 53



8/20 Swap USB20_P11 and USB20_N11 for layout request

LCD/PANEL BD. Conn.

Pin13 GND for EMI , But Cable is NC



Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.

Title: *LVDS/eDP*

Size: Custom | Document Number: PWWHA LA-7201P M/B | Rev: 1.0

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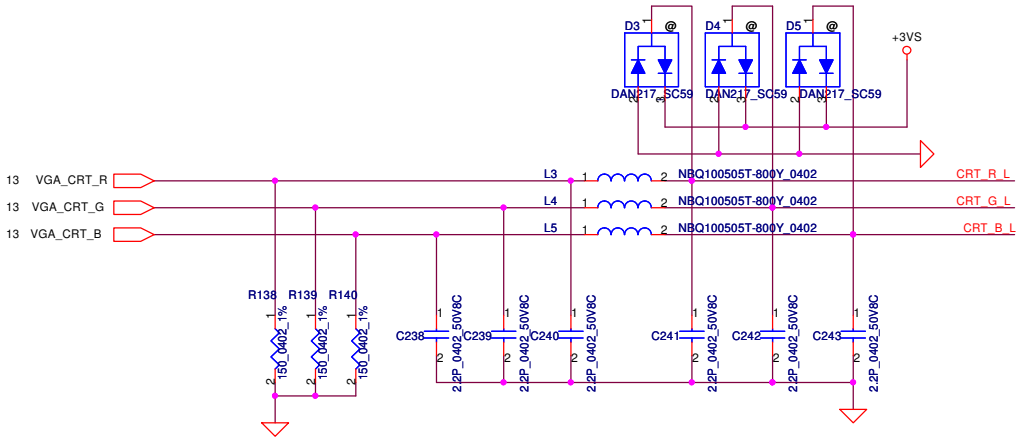
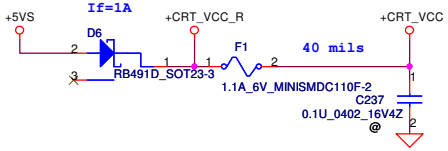
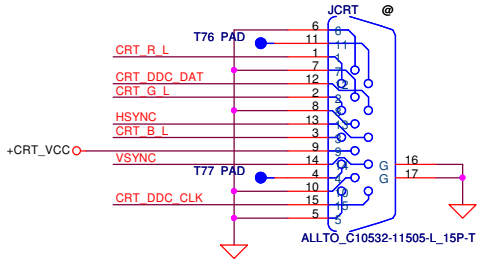
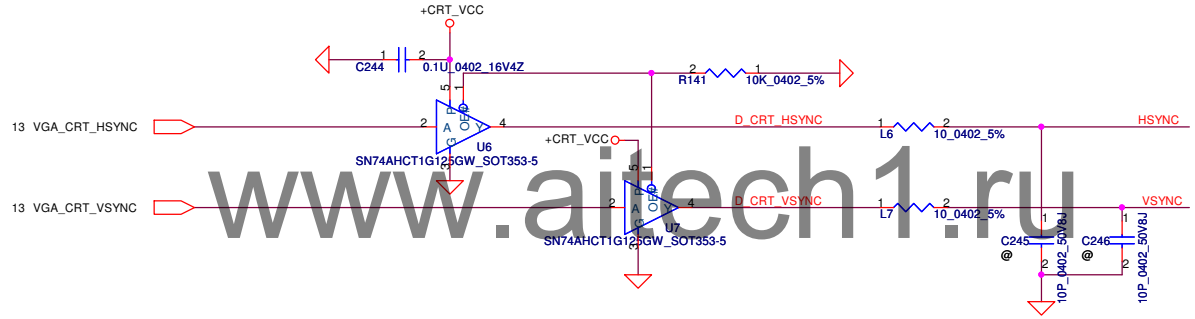
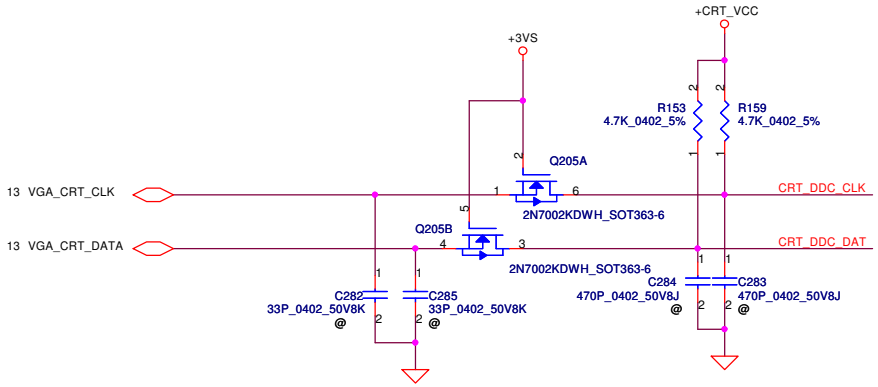
CRT CONNECTOR





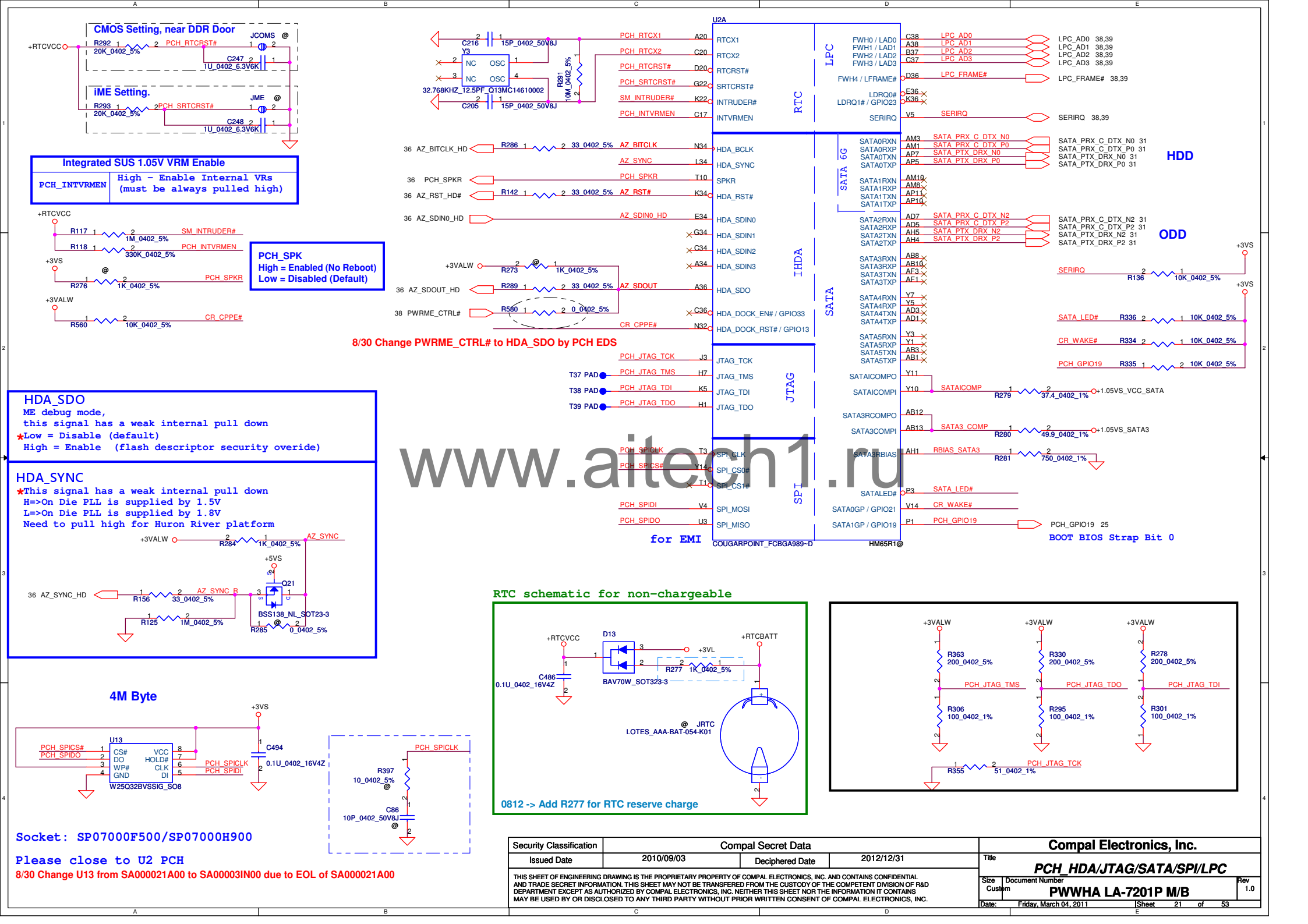






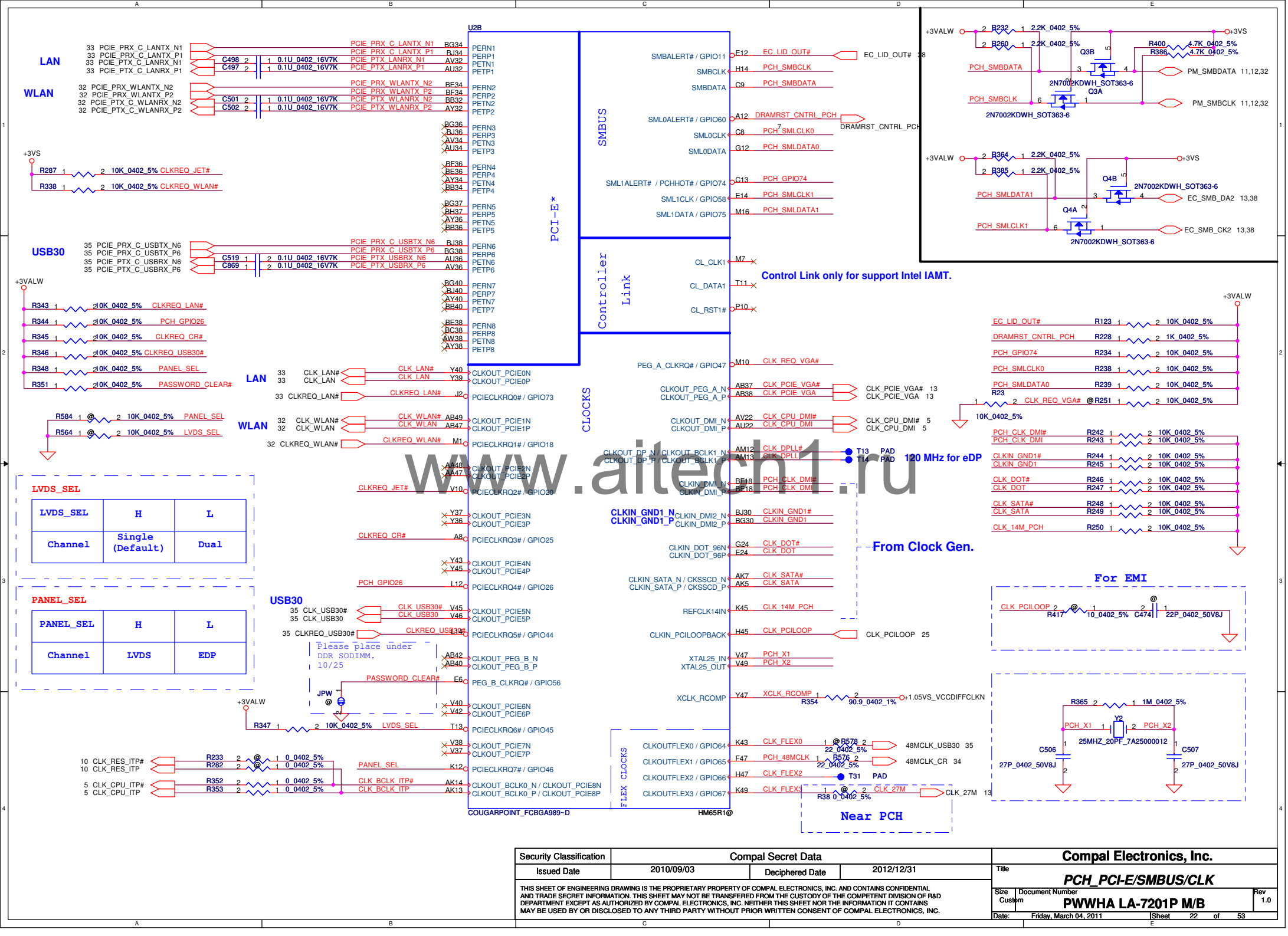
Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.			
Title: CRT			
Size	Document Number: PWWHA LA-7201P M/B		Rev: 1.0
Date: Friday, March 04, 2011	Sheet 20 of 53		



Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.			
Title	PCH_HDA/JTAG/SATA/SPI/LPC		
Size: Custom	Document Number: PWWHA LA-7201P M/B		Rev: 1.0
Date: Friday, March 04, 2011	Sheet 21 of 53		

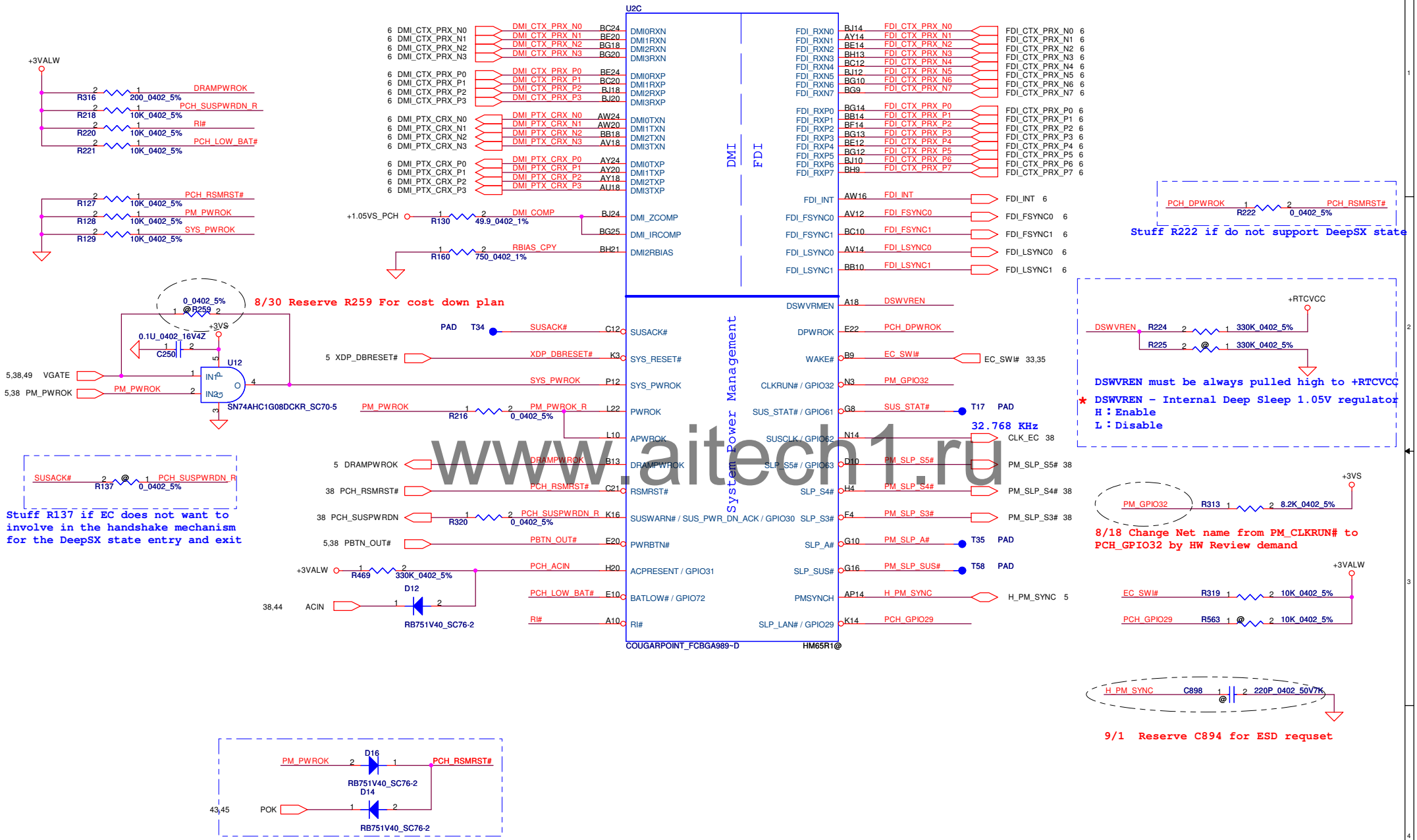


LVDS_SEL	H	L
Channel	Single (Default)	Dual

PANEL_SEL	H	L
Channel	LVDS	EDP

Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.			
Title	PCH_PCI-E/SMBUS/CLK		
Size: Custom	Document Number: PWWHA LA-7201P M/B		Rev: 1.0
Date: Friday, March 04, 2011	Sheet 22 of 53		



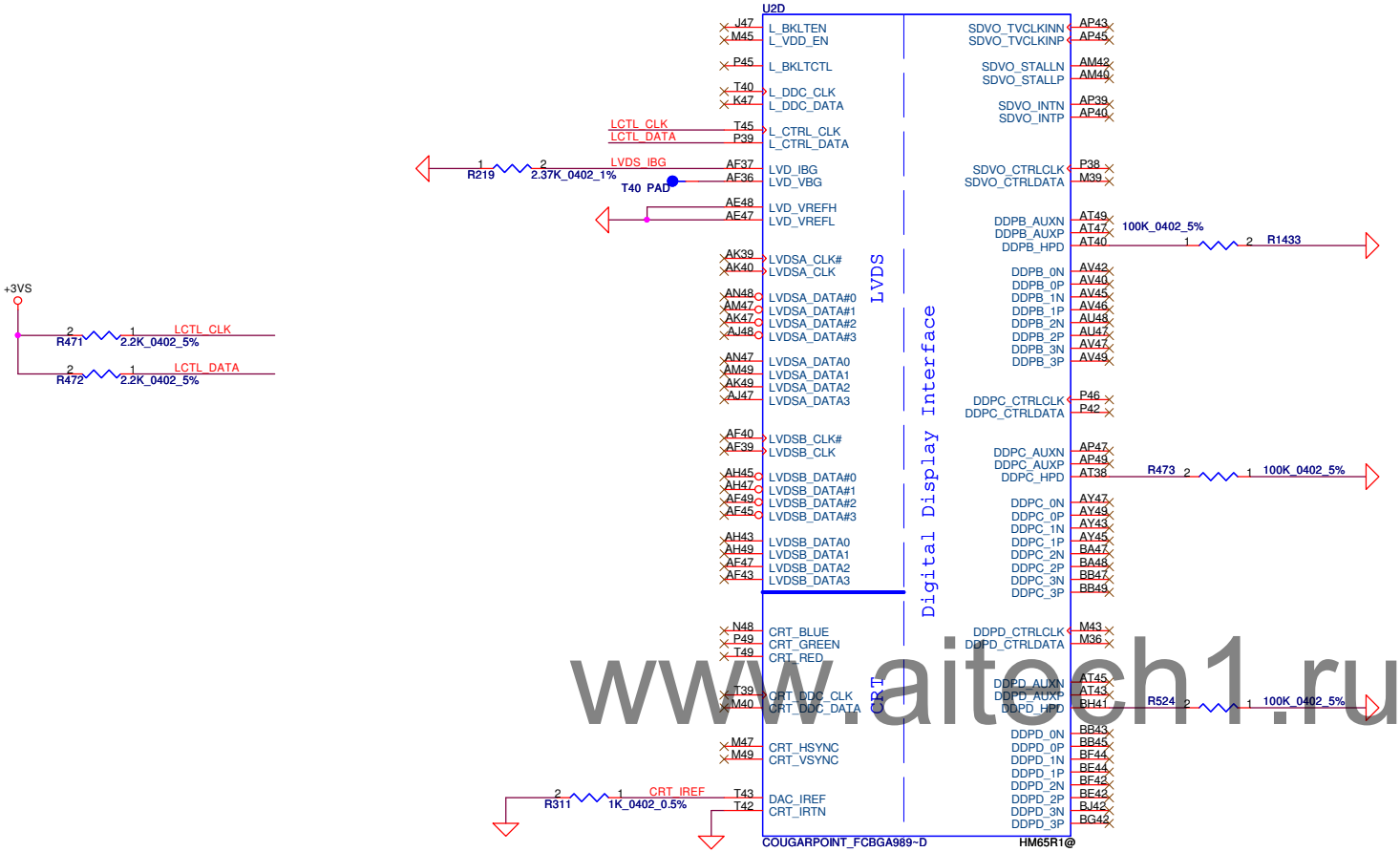
Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.

Title: *PCH_DMI/FDI/PM*

Size	Document Number	Rev
Custom	PWWHA LA-7201P M/B	1.0

Date: Friday, March 04, 2011 Sheet 23 of 53



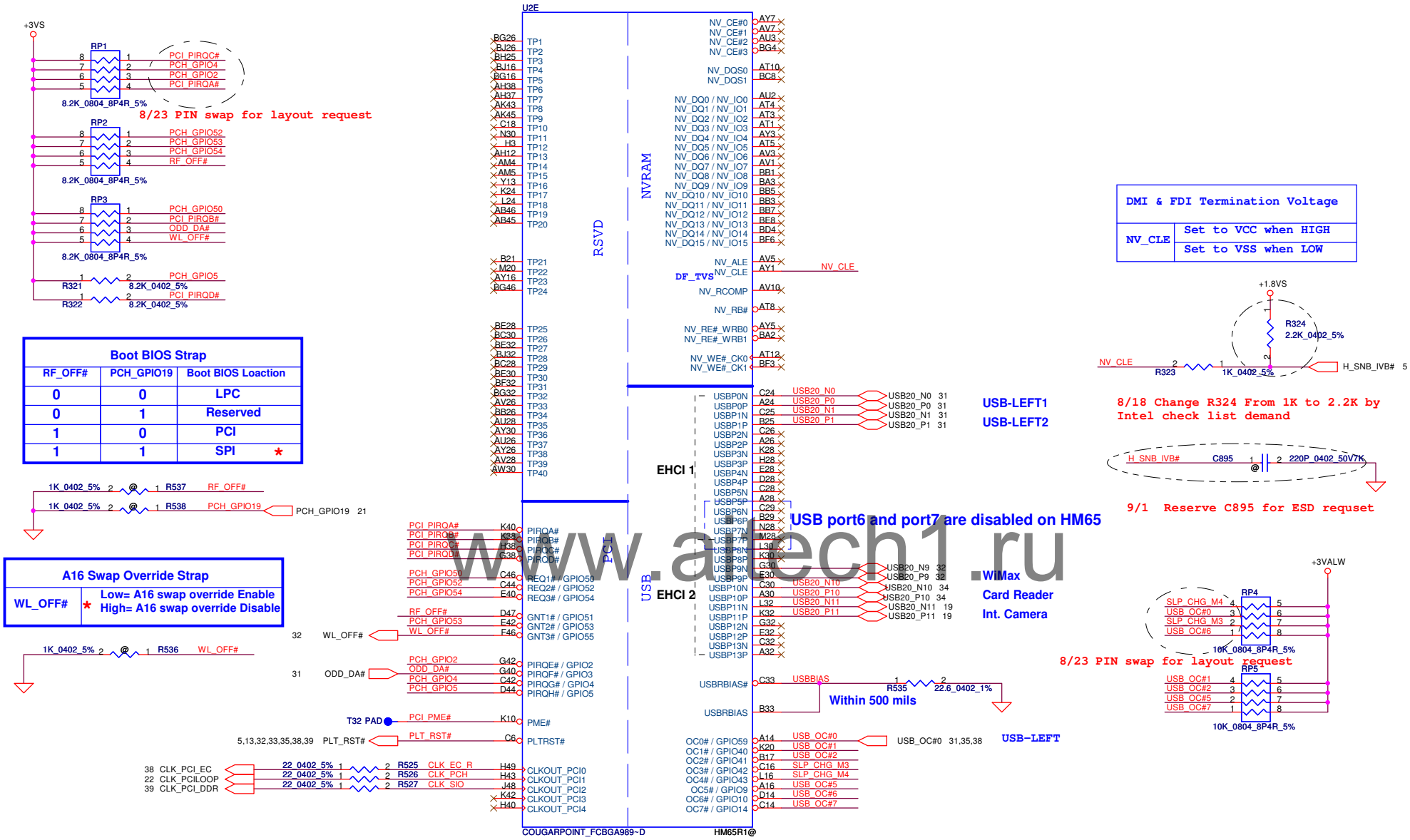
Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.

Title: ***PCH_CRT/LVDS***

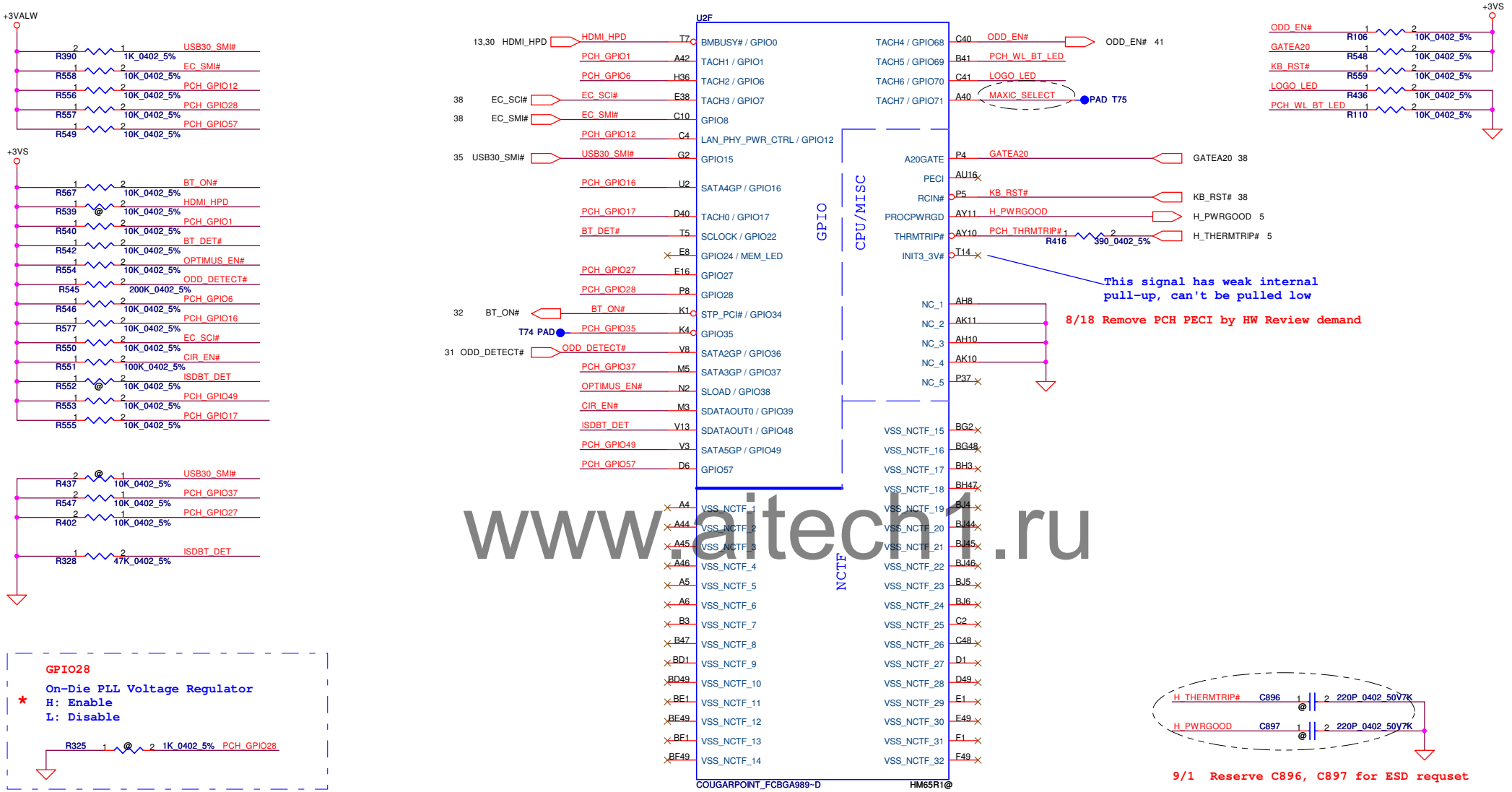
Size	Document Number	Rev
Custom	PWWHA LA-7201P M/B	1.0

Date: Friday, February 25, 2011 Sheet 24 of 53



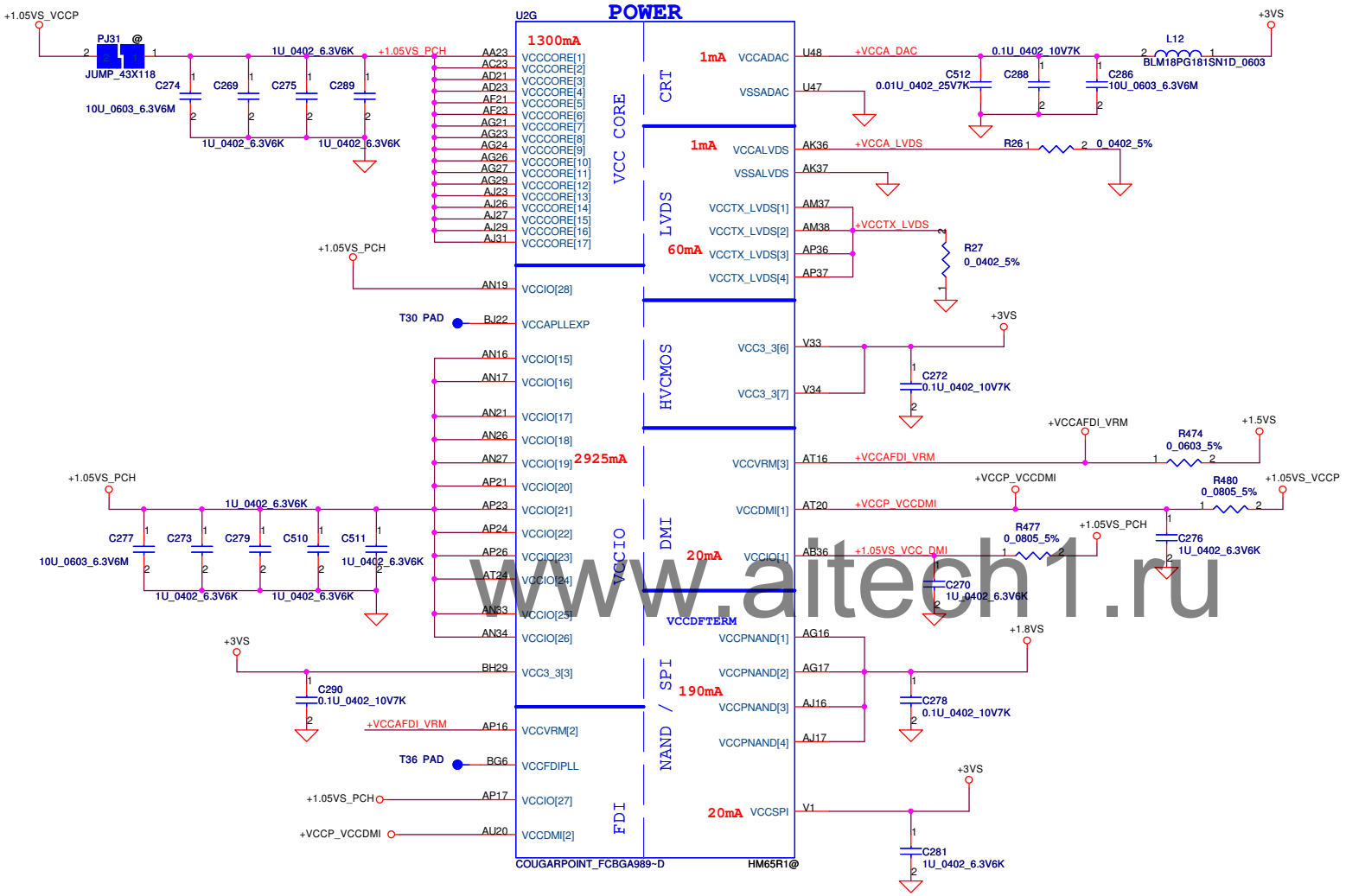
Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.	
Title	PCH_PCI/USB/NAND
Size: Custom	Document Number: PWWHA LA-7201P M/B
Rev	1.0
Date: Friday, March 04, 2011	Sheet 25 of 53



Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.			
Title	PCH_CPU/GPIO		
Size Custom	Document Number PWWHA LA-7201P M/B		Rev 1.0
Date: Friday, March 04, 2011	Sheet 26 of 53		



PCH Power Rail Table		
Voltage Rail	Voltage	S0 Iccmax Current (A)
V_PROC_IO	1.05	0.001
V5REF	5	0.001
V5REF_SUS	5	0.001
VCC3_3	3.3	0.266
VCCADAC	3.3	0.001
VCCADPLLA	1.05	0.08
VCCADPLLB	1.05	0.08
VCCCORE	1.05	1.3
VCCDMI	1.05	0.042
VCCIO	1.05	2.925
VCCASW	1.05	1.01
VCCSPI	3.3	0.02
VCCDSW	3.3	0.002
VCCDFTERM	1.8	0.19
VCCRTC	3.3	6 uA
VCCSUS3_3	3.3	0.97
VCCSusHDA	3.3 / 1.5	0.01
VCCVRM	1.5	0.16
VCCCLKDMI	1.05	0.02
VCCSSC	1.05	0.095
VCCDIFFCLKN	1.05	0.055
VCCALVDS	3.3	0.001
VCCTX_LVDS	1.8	0.06

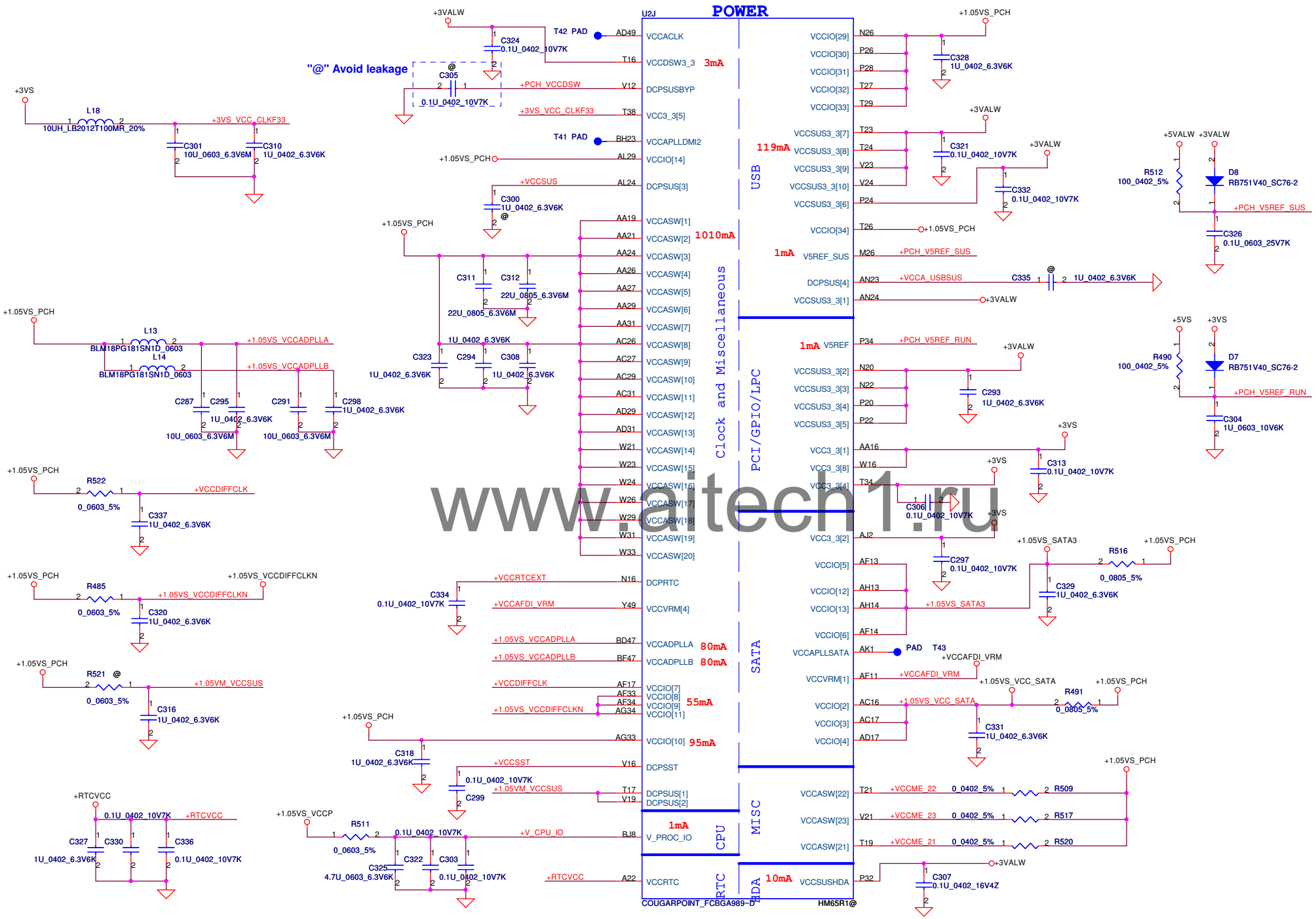
Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.

Title: ***PCH_POWER-1***

Size	Document Number	Rev
Custom	PWWHA LA-7201P M/B	1.0

Date: Friday, February 25, 2011 Sheet 27 of 53



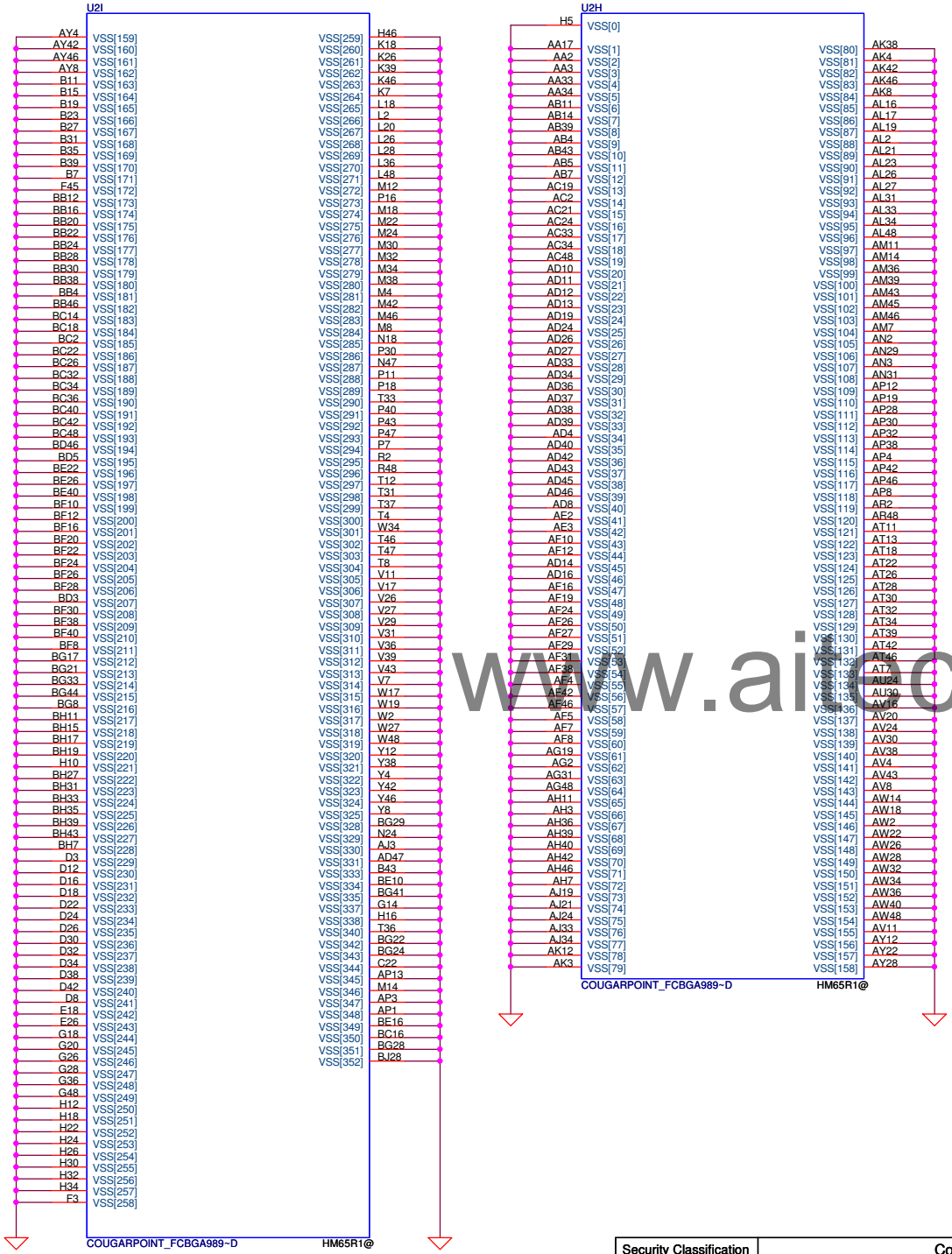
Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.

Title: ***PCH_POWER-2***

Size	Document Number	Rev
Custom	PWWHA LA-7201P M/B	1.0

Date: Friday, February 25, 2011 | Sheet 28 of 53



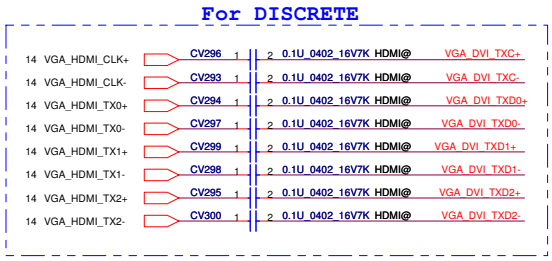
Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

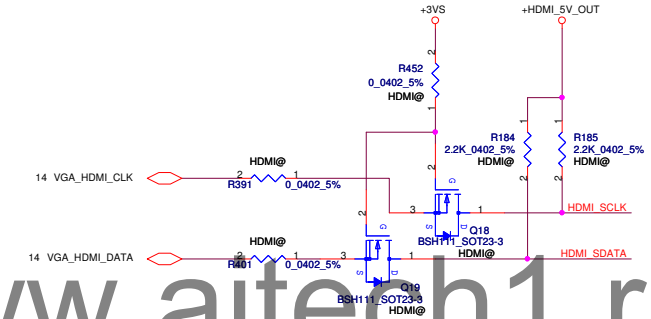
Compal Electronics, Inc.

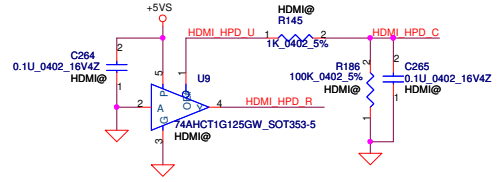
Title: ***PCH_GND***

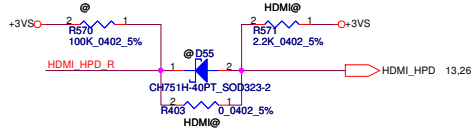
Size	Document Number	Rev
Custom	PWWHA LA-7201P M/B	1.0

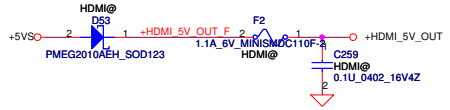
Date: Friday, February 25, 2011 Sheet 29 of 53

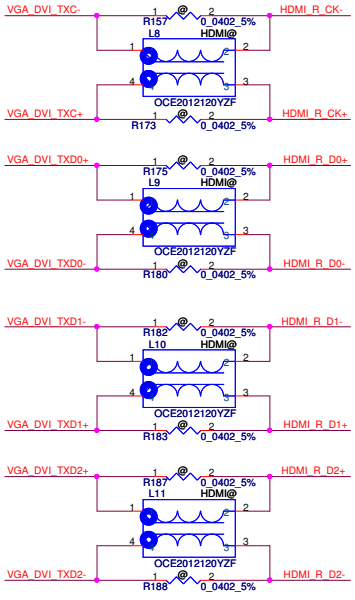


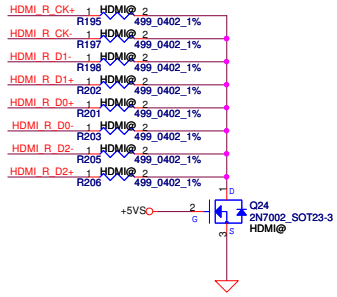


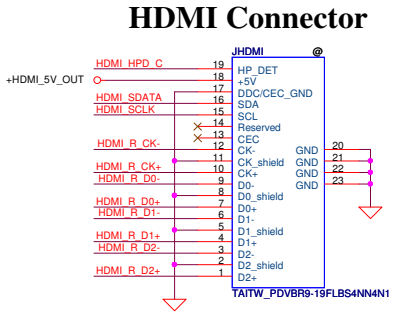








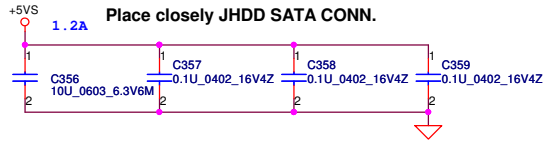


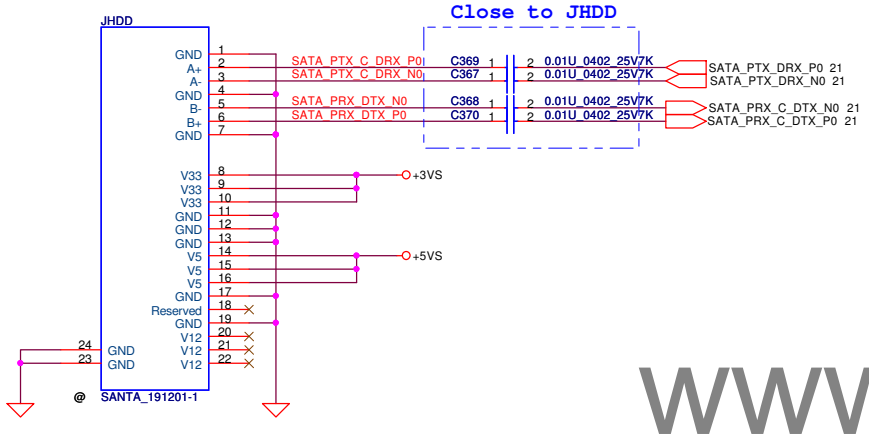


Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

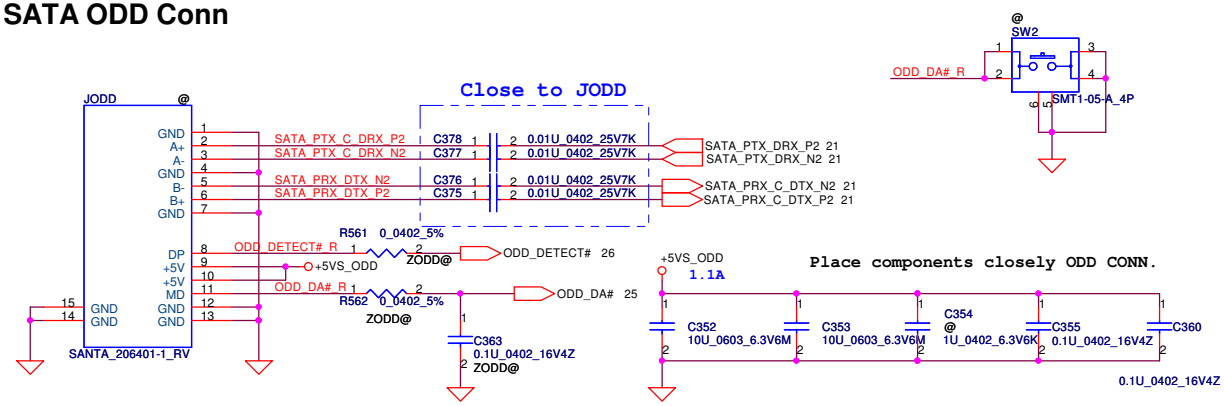
Compal Electronics, Inc.			
Title: HDMI Conn.			
Size	Document Number: PWWHA LA-7201P M/B		Rev: 1.0
Date: Friday, March 04, 2011		Sheet 30 of 53	

SATA HDD Conn

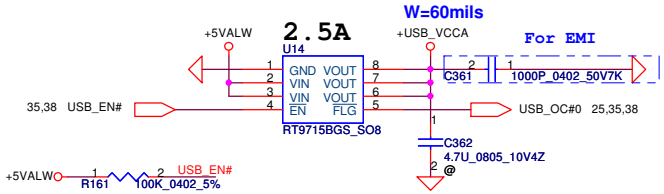


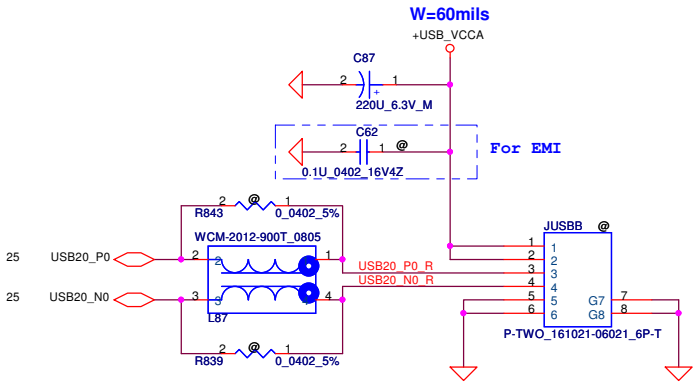


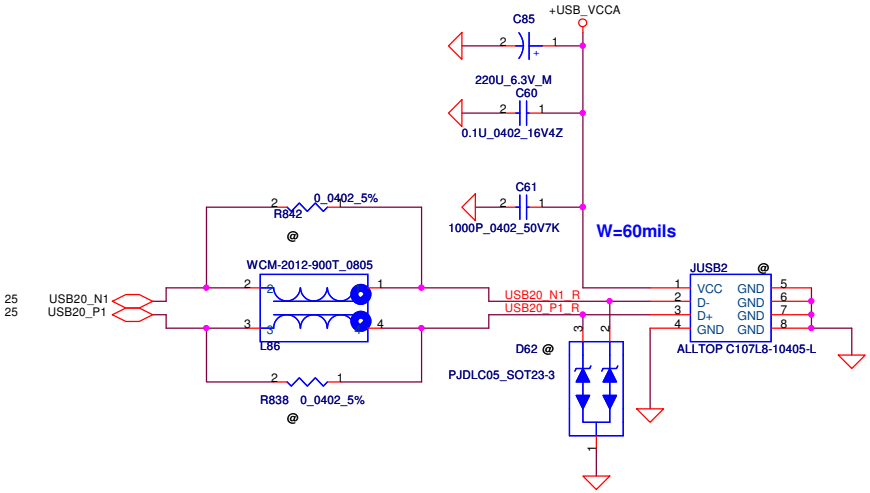
SATA ODD Conn



USB Conn







Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.			
Title: SATA-HDD/ODD/USB			
Size	Document Number: PWWHA LA-7201P M/B		Rev: 1.0
Date: Friday, March 04, 2011	Sheet 31 of 53		

Half PCIe Mini Card-WLAN/ WiMax

+3VALW — PJ27@JUMP_43X79 — +3V_WLAN
+3VS — PJ26@JUMP_43X79

Short PJ27 for Wimax
Short PJ26 for WLAN

40 mils

+3V_WLAN — 0.1U_0402_16V4Z — For SED
CM1 0.01U_0402_25V7K, CM2 4.7U_0805_10V4Z, CM3 0.1U_0402_16V4Z, C253 47P_0402_50V8J @

+1.5VS — 0.1U_0402_16V4Z — For SED
CM7 0.01U_0402_25V7K, CM8 4.7U_0805_10V4Z, CM9 0.1U_0402_16V4Z, C254 47P_0402_50V8J @

WLAN&BT Combo module circuits

	BT on module Enable	BT on module Disable
BT_CRTL	H	L
BT_ON#	L	H

**If +3V_WLAN is +3VS, please remove D24

26 BT_ON#
BT_CTRL
Q50B 2N7002KDWH_SOT363-6
Q50A 2N7002KDWH_SOT363-6
5,9,41,47 SUSP

JWLAN @ — FOX_AS0B226-S40N-7F

+1.5VS +3V_WLAN

R1443 0_0402_5%
BT_CTRL — BT_CTRL_R
22 CLKREQ_WLAN#
22 CLK_WLAN#
22 CLK_WLAN

22 PCIE_PRX_WLANTX_N2
22 PCIE_PRX_WLANTX_P2
22 PCIE_PTX_C_WLANRX_N2
22 PCIE_PTX_C_WLANRX_P2

WLAN/ WiFi

+3V_WLAN

R16 0_0402_5%
38 E51_TXD
38 E51_RXD
R17 0_0402_5%
E51_RXD_R
Debug card using

BT_CTRL — R327 1K_0402_5% — E51_RXD_R
For isolate Intel Rainbow Peak and Compal Debug Card.

WLAN_OFF#
PLT_RST# — PLT_RST# 5,13,25,33,35,38,39

PM_SMBCLK 11,12,22
PM_SMBDATA 11,12,22

USB20_N9 25
USB20_P9 25

WiMax

8/30 Add R1443 for WLAN Mini PCIE Card Pin5

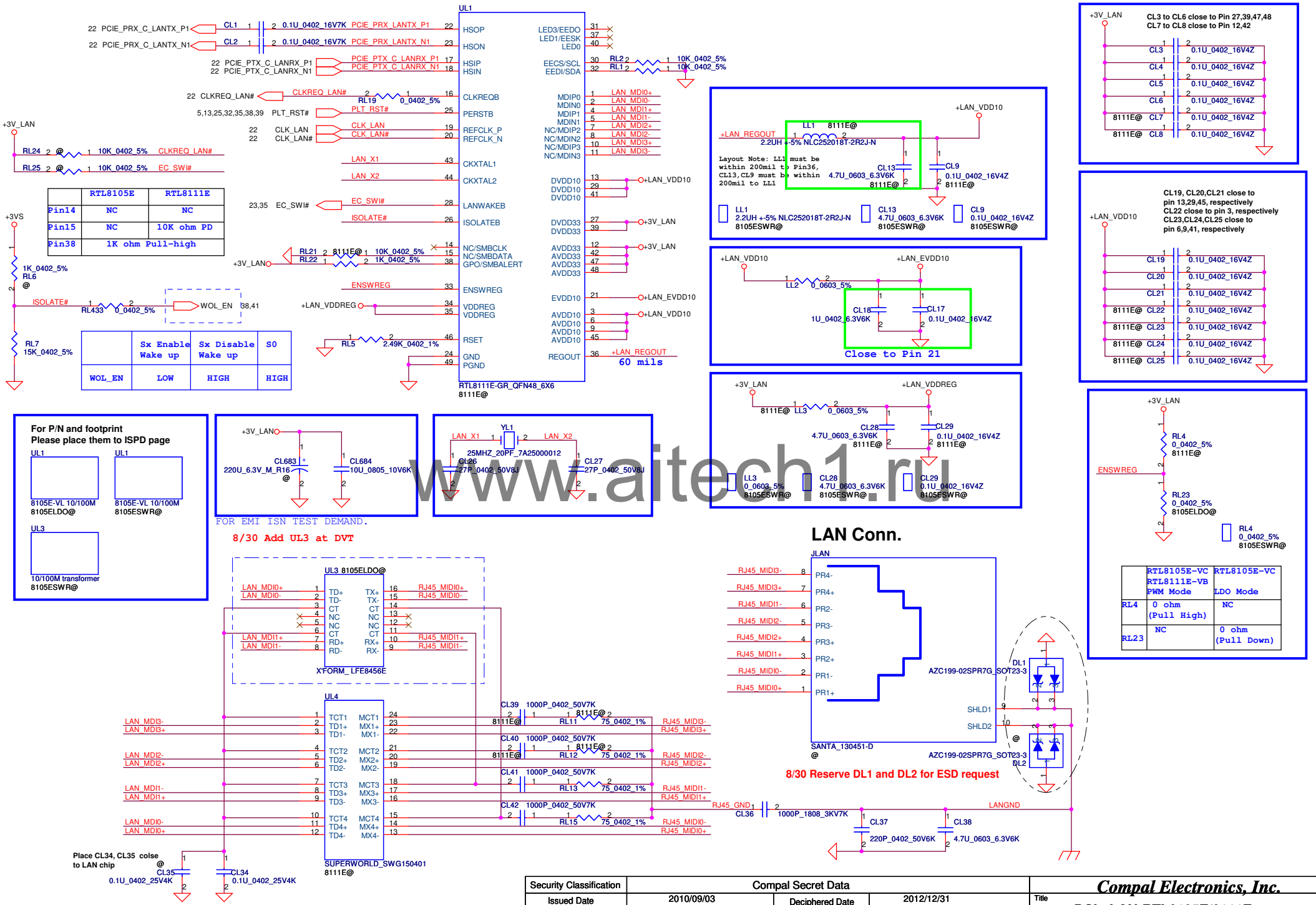
+3VS
WLAN_OFF# — Q36 2N7002_SOT23-3 — WL_OFF# 25
WLAN_OFF# — R565 10K_0402_5% — +3V_WLAN

Add level shift circuit for WL_OFF# to avoide leakage from WLAN to PCH

Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.

Title: PCIe-WLAN
Size: | Document Number: PWWHA LA-7201P M/B | Rev: 1.0
Date: Friday, March 04, 2011 | Sheet 32 of 53



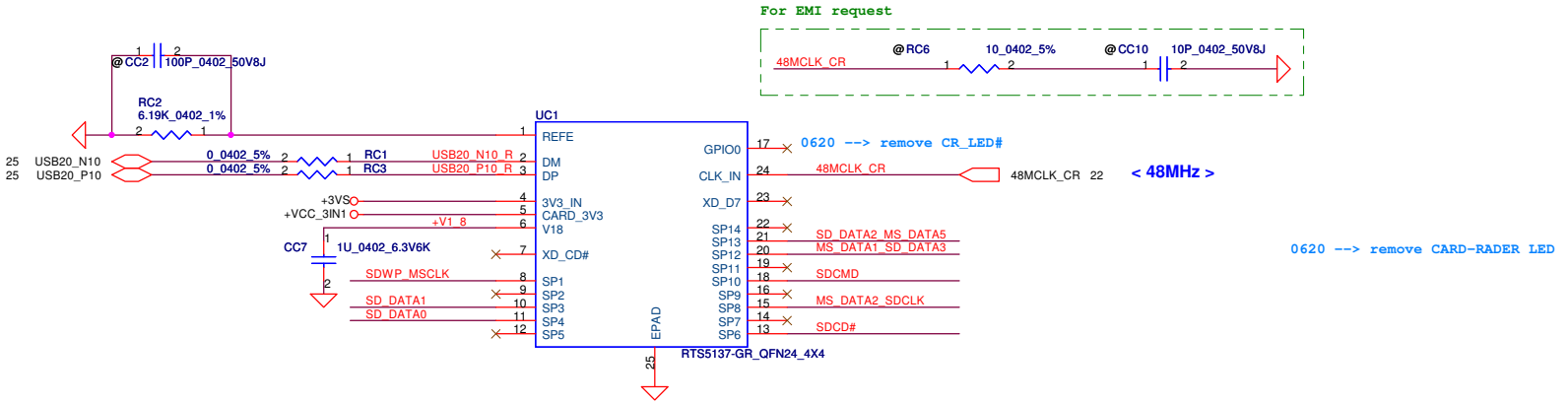
Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.

Title: PCIe-LAN-RTL8105E/8111E

Size	Document Number	Rev
Custom	PWWHA LA-7201P M/B	1.0

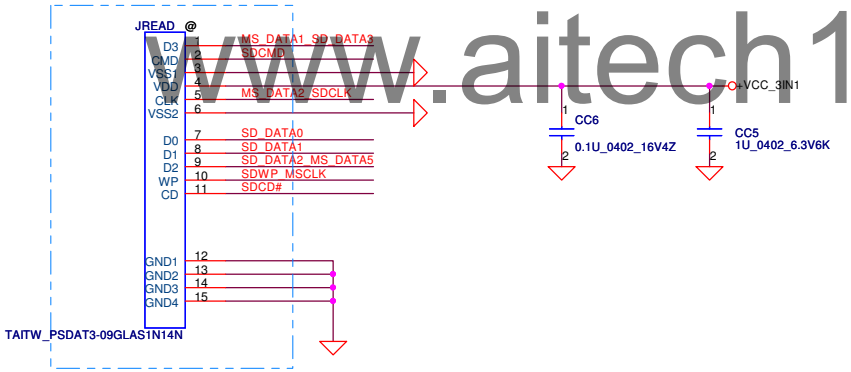
Date: Friday, March 04, 2011 Sheet 33 of 53



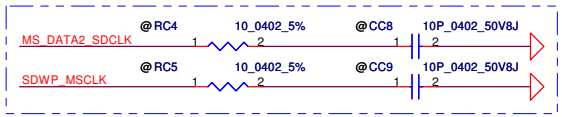
0715 --> change P/N to RTS5137 (SA000043500)

< 2 in 1 Card Reader >

0624 --> change CARDREADER conn.



For EMI request



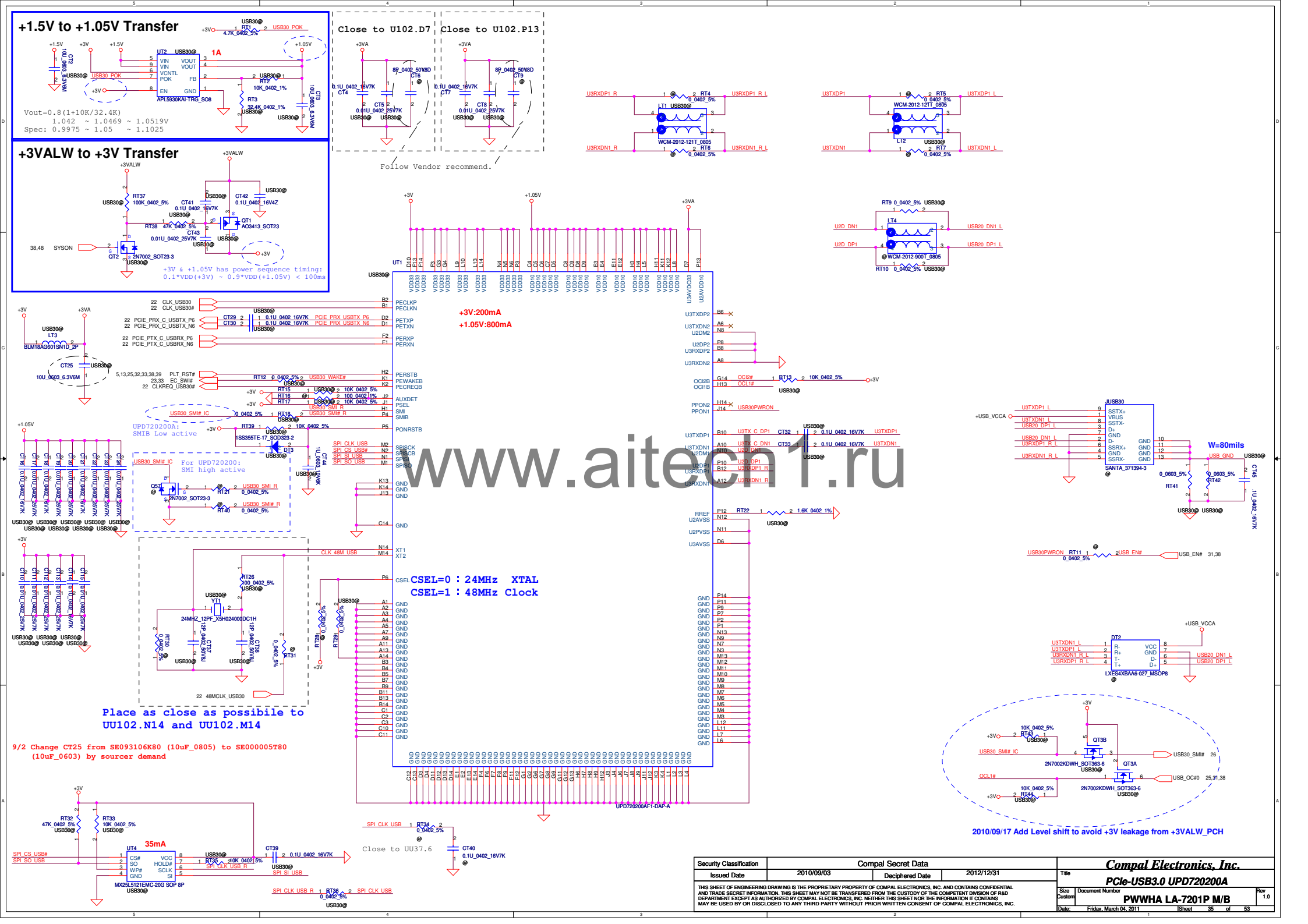
Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.

Title: PCIe-CardReader RTS5137

Size: Custom | Document Number: PWWHA LA-7201P M/B | Rev: 1.0

Date: Friday, March 04, 2011 | Sheet 34 of 53



Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

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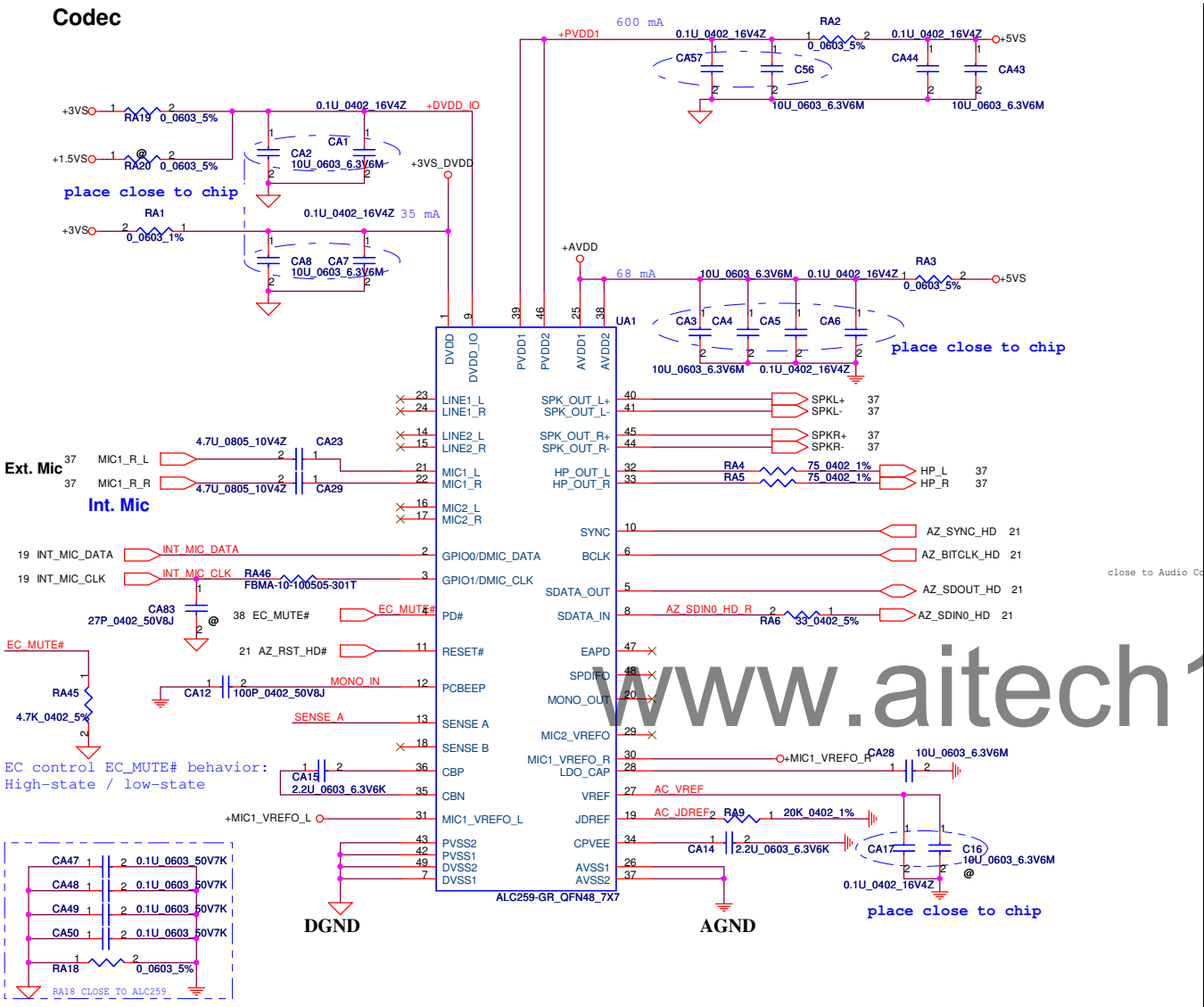
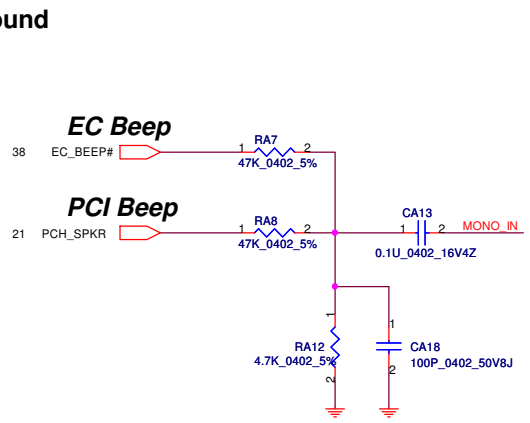
Compal Electronics, Inc.

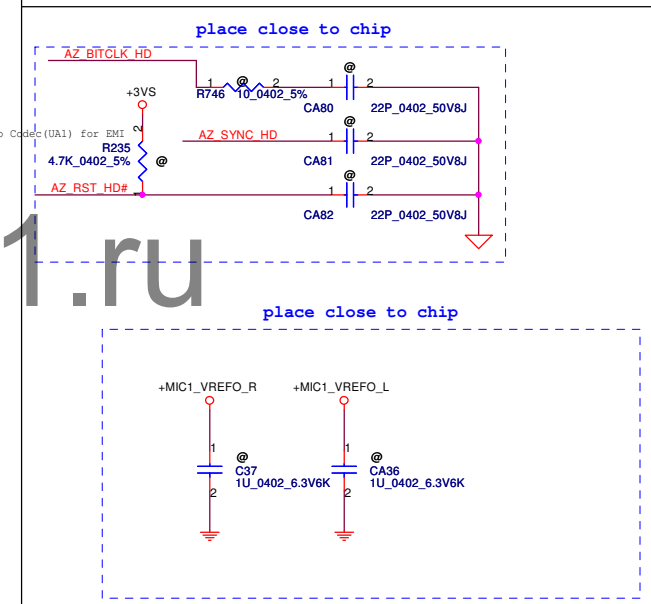
Title: PCIe-USB3.0 UPD720200A

Size	Document Number	Rev
Custom	PWWHA LA-7201P M/B	1.0

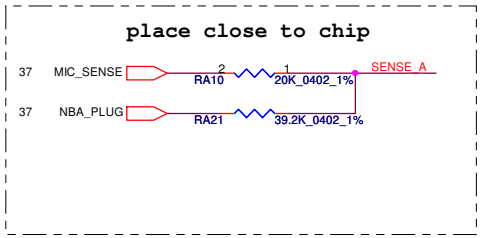
Date: Friday, March 04, 2011 Sheet 35 of 53







Sense Pin	Impedance	Codec Signals	Function
SENSE A	39.2K	PORT-I (PIN 32, 33)	Headphone out
	20K	PORT-B (PIN 21, 22)	Ext. MIC
	10K	PORT-C (PIN 23, 24)	
	5.1K	(PIN 48)	
SENSE B	39.2K	PORT-E (PIN 14, 15)	
	20K	PORT-F (PIN 16, 17)	Int. MIC
	10K	PORT-H (PIN 20)	



Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

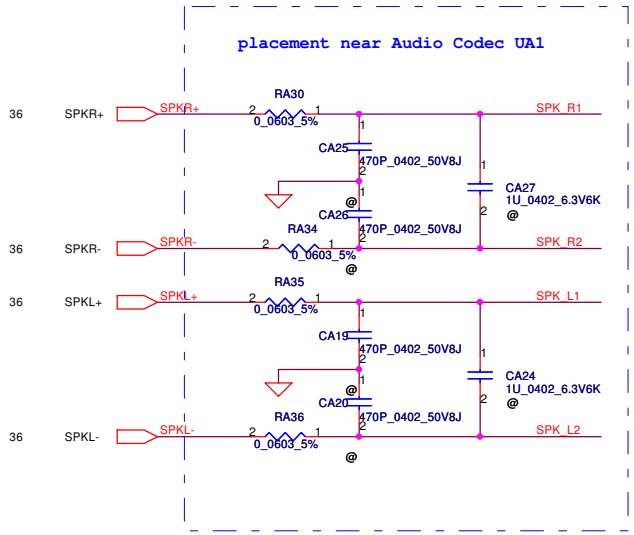
Compal Electronics, Inc.

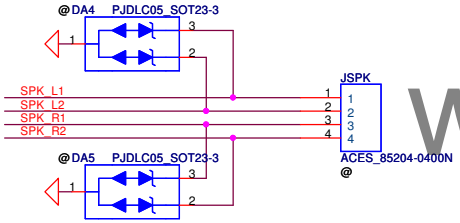
Title: HD CODEC ALC259

Size | Document Number: PWWHA LA-7201P M/B | Rev: 1.0

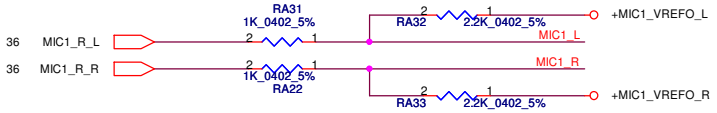
Date: Friday, March 04, 2011 | Sheet 36 of 53

Speaker Connector

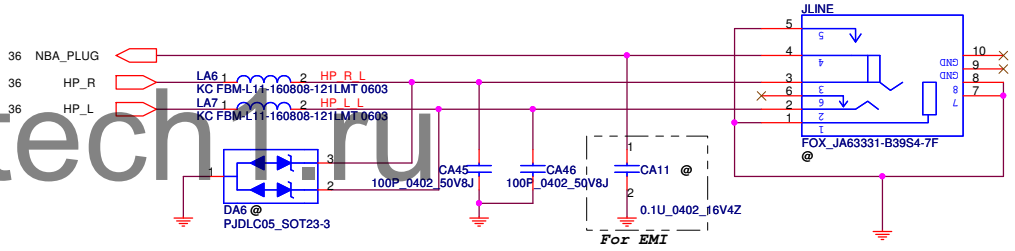




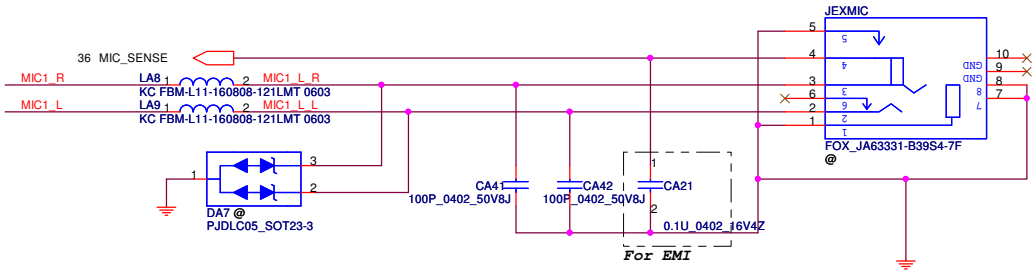
Ext. Mic



HeadPhone/LINE Out JACK



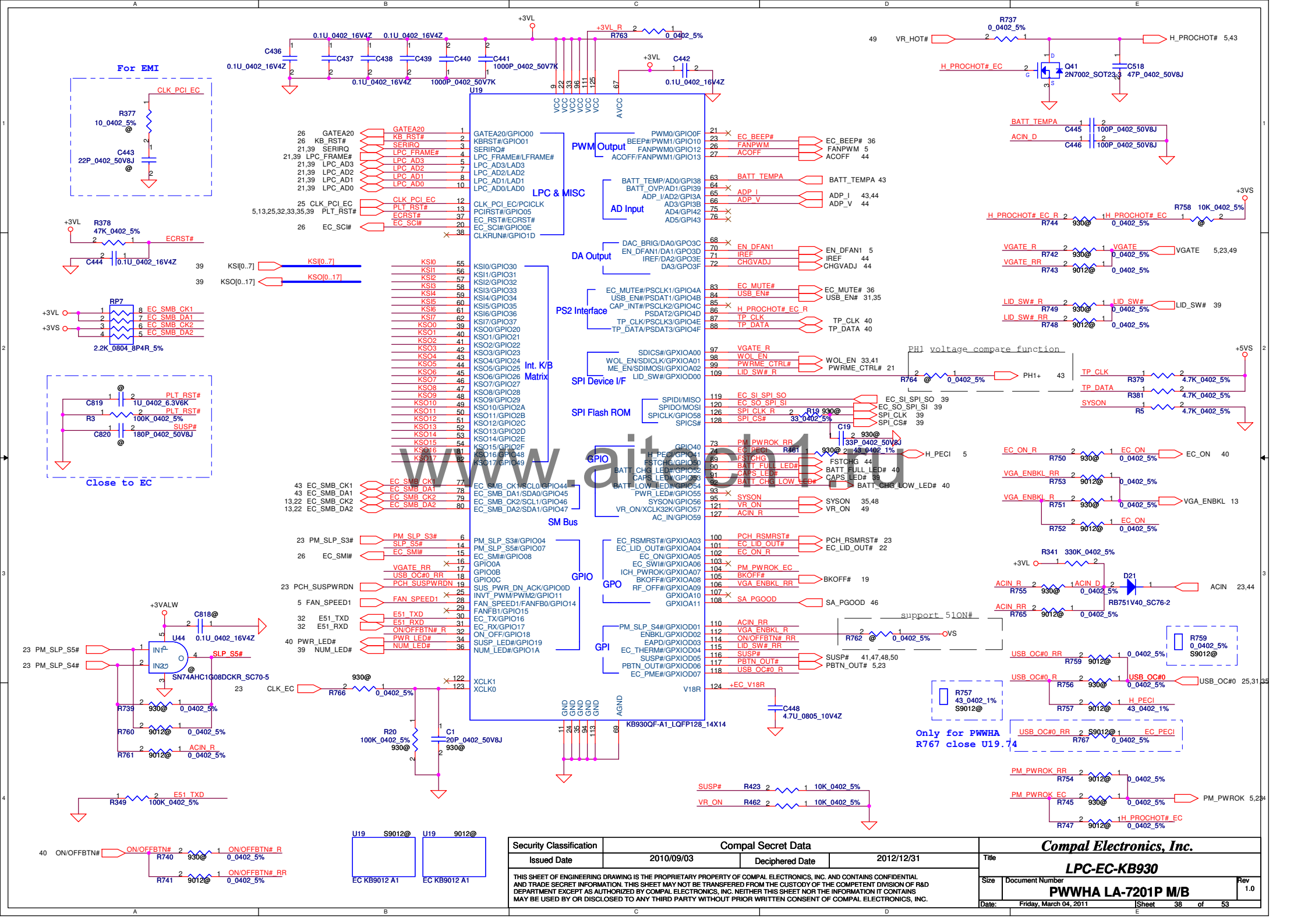
Ext.MIC/LINE IN JACK



Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.

Title	AUDIO AMP/MIC/SPK/VR	
Size	Document Number: PWWHA LA-7201P M/B	Rev: 1.0
Date: Friday, March 04, 2011	Sheet 37 of 53	

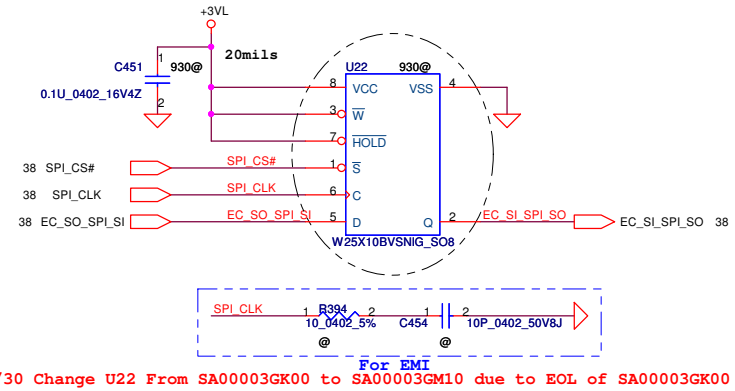


Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.

Title	LPC-EC-KB930	
Size	Document Number: PWWHA LA-7201P M/B	Rev: 1.0
Date: Friday, March 04, 2011	Sheet 38 of 53	

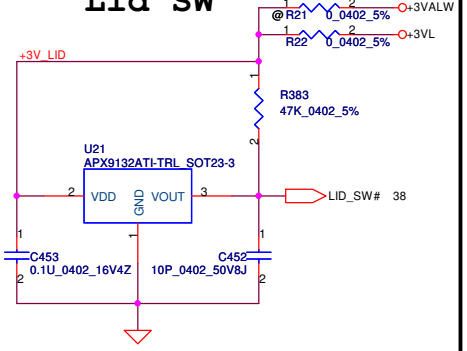
SPI Flash (256KB)



8/30 Change U22 From SA00003GK00 to SA00003GM10 due to EOL of SA00003GK00

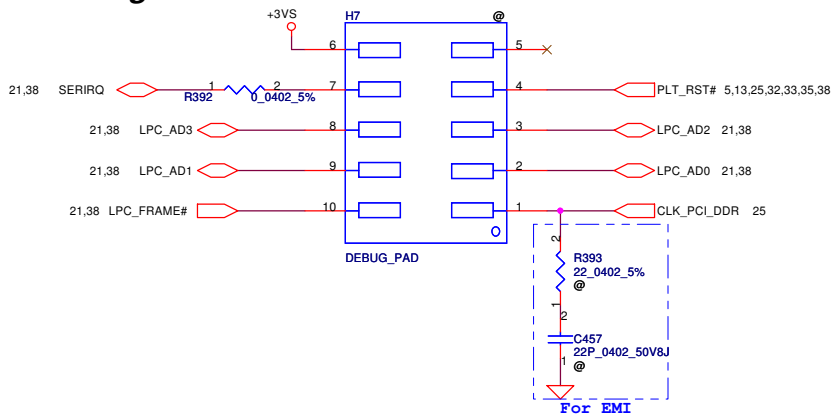
9/03 Change U22 change to SA00003FL10

Lid SW



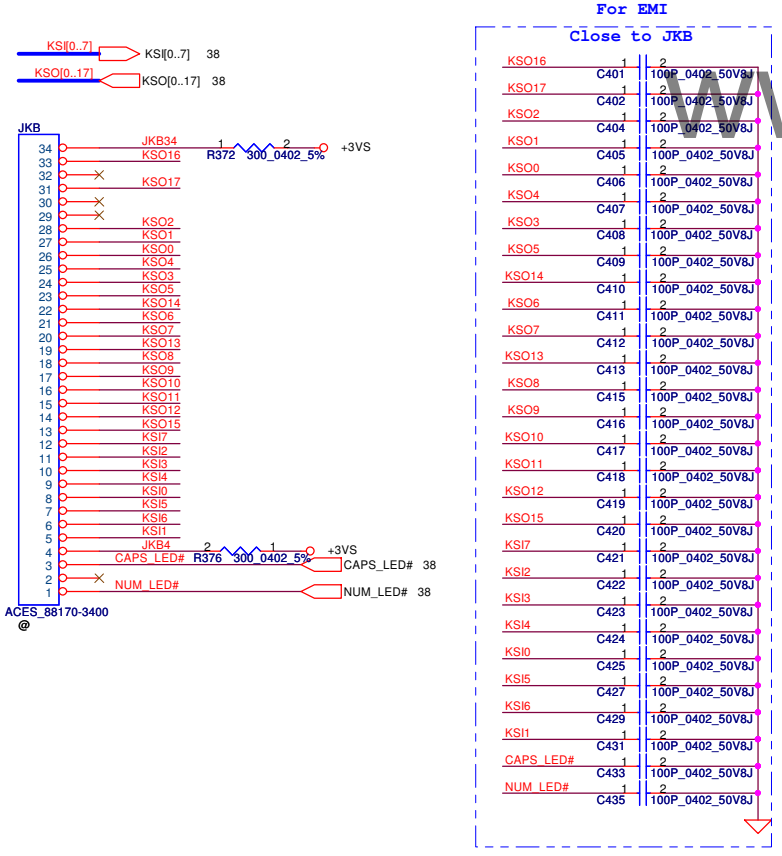
LPC Debug Port

Place the PAD under DDR DIMM.



KEYBOARD CONN.

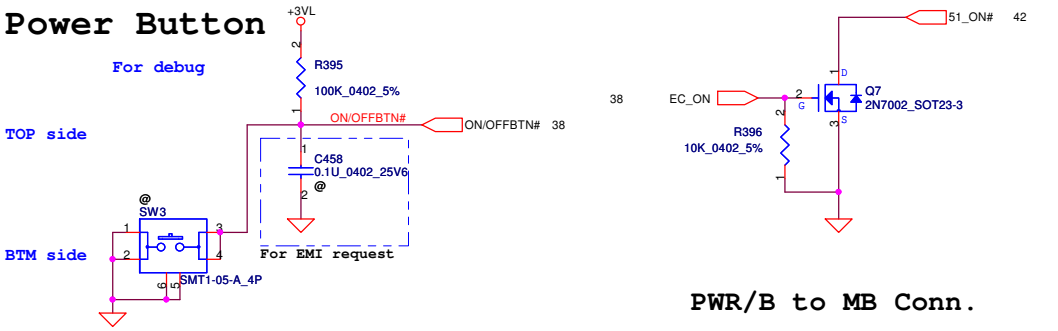
Noticed: KB Connector Pin Definition
Reversed with KB Membrane Pin Definition



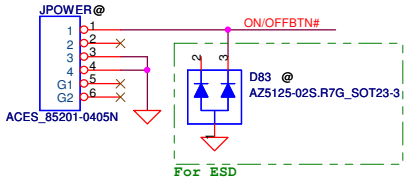
Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.			
Title	SPI ROM/LID/Debug/KB		
Size	Document Number	PWWHA LA-7201P M/B	Rev 1.0
Date: Friday, March 04, 2011	Sheet 39 of 53		

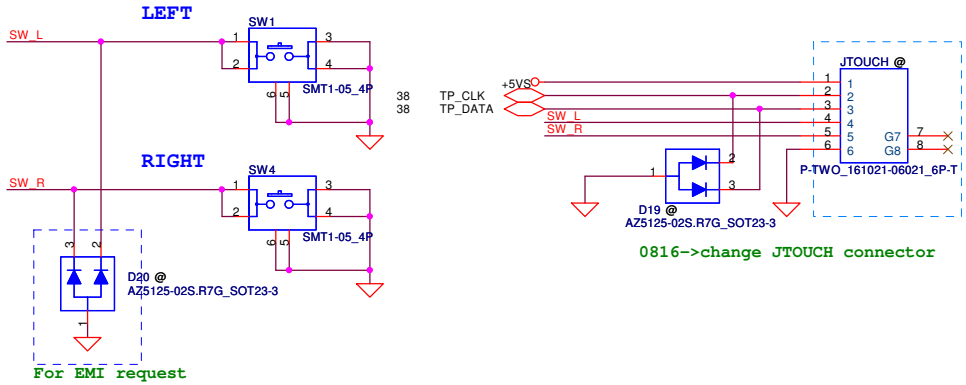
Power Button



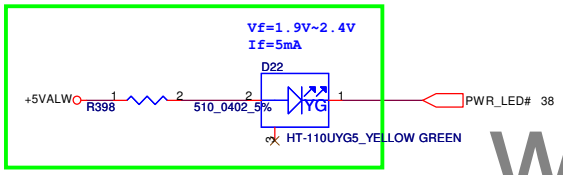
PWR/B to MB Conn.



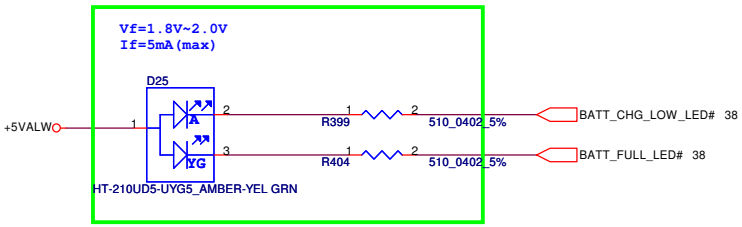
TP Button/Conn.



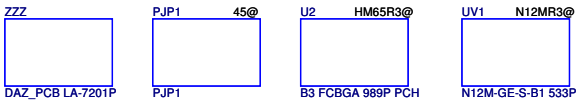
POWER/SUSPEND LED



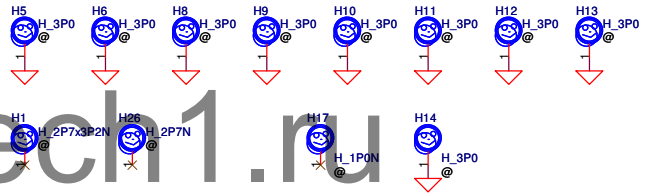
BATT CHARGE/FULL LED

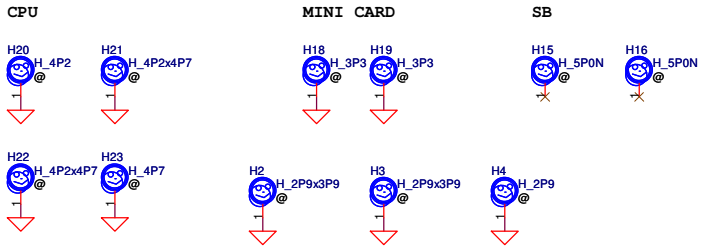


ISPD



Screw Hole





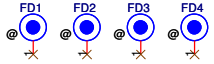
For Codec AGND

Dummy

3G

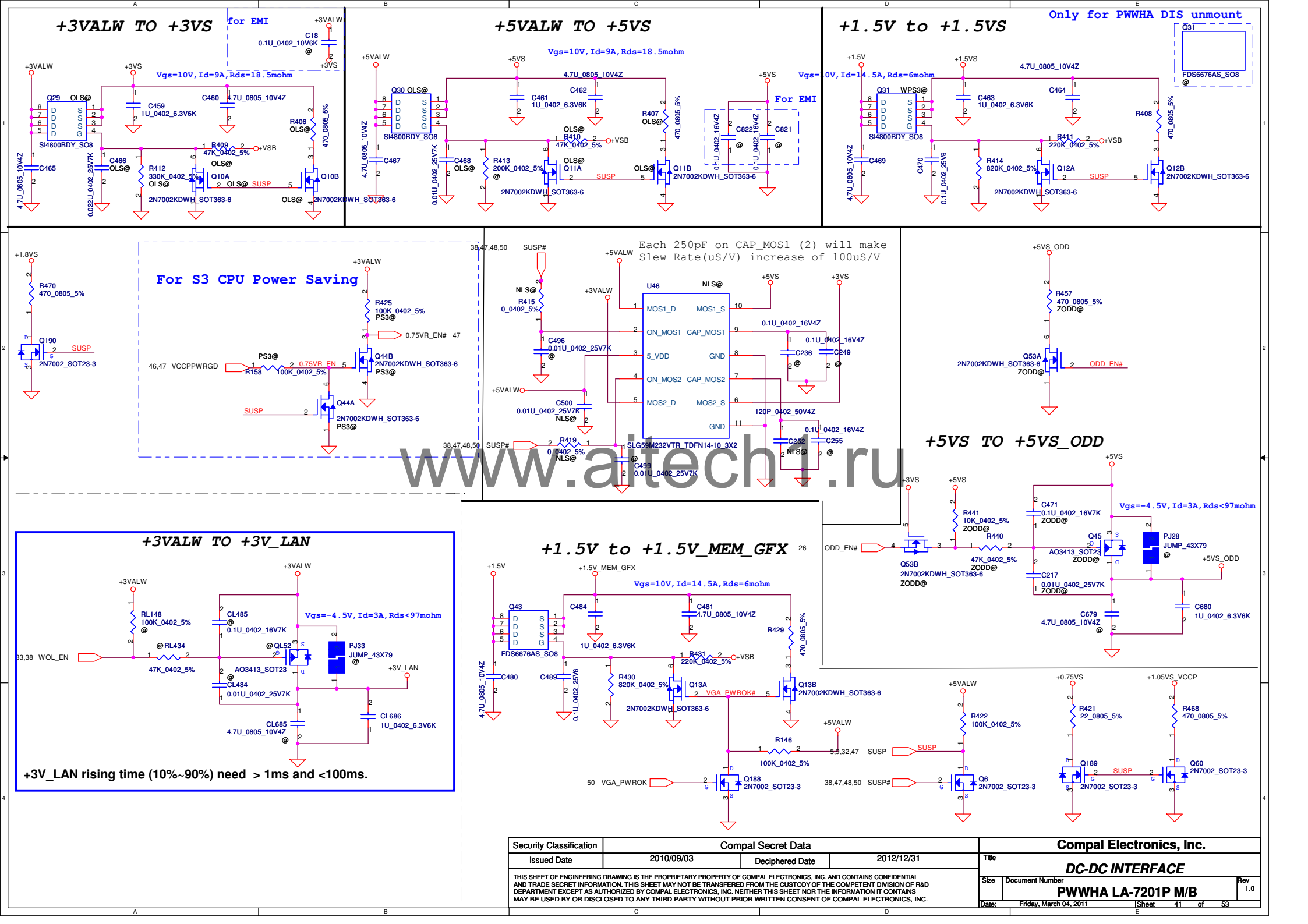
MDC

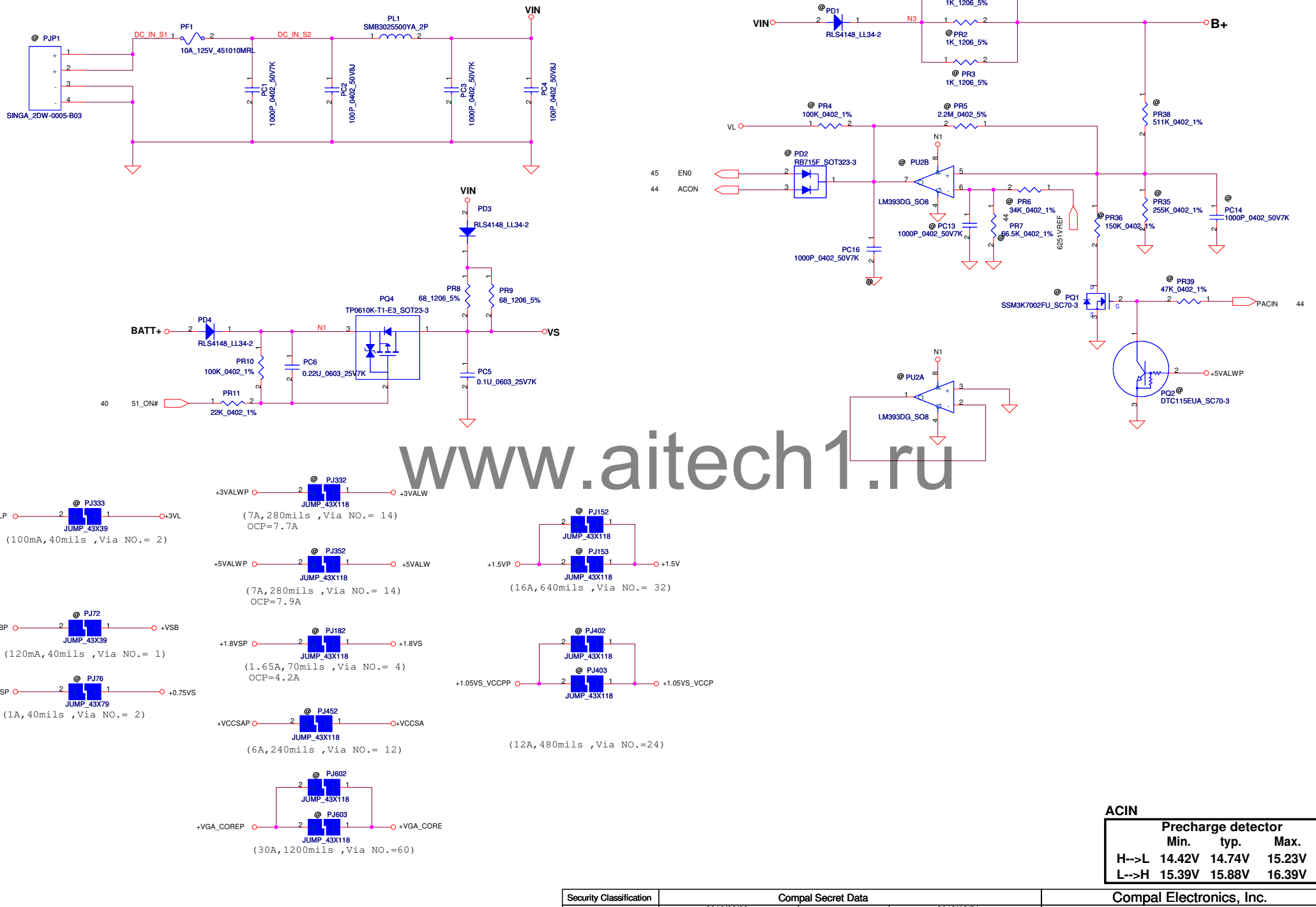
PCB Fedical Mark PAD



Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.			
Title	PWR&TP CON/LED/ISPD		
Size	Document Number	PWWHA LA-7201P M/B	Rev 1.0
Date: Friday, March 04, 2011	Sheet 40 of 53		





ACIN

Precharge detector

	Min.	typ.	Max.
H-->L	14.42V	14.74V	15.23V
L-->H	15.39V	15.88V	16.39V

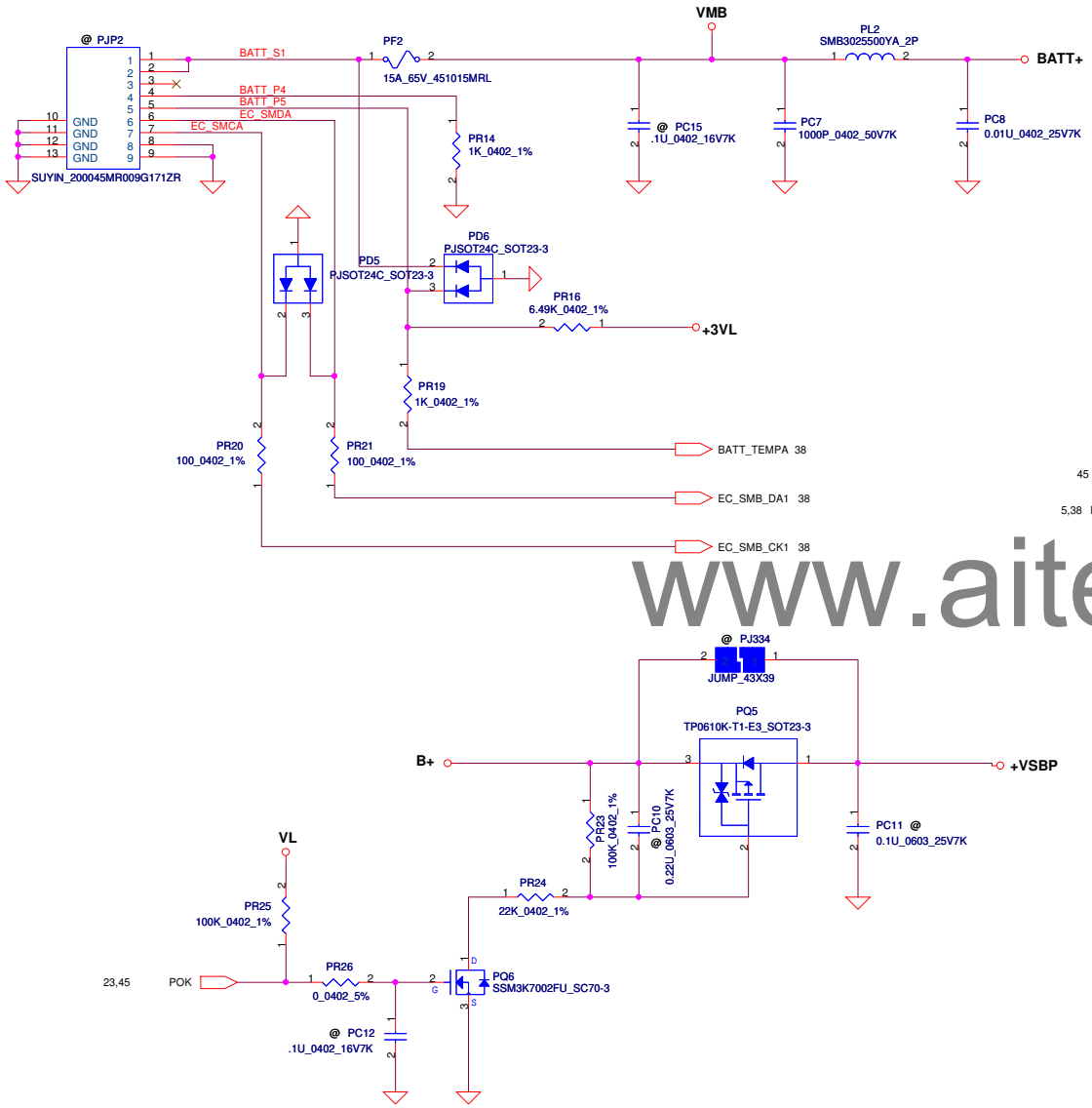
Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.

Title: ***DCIN/VIN DECTOR***

Size	Document Number	Rev
	PWWHA LA-7201P M/B	1.0

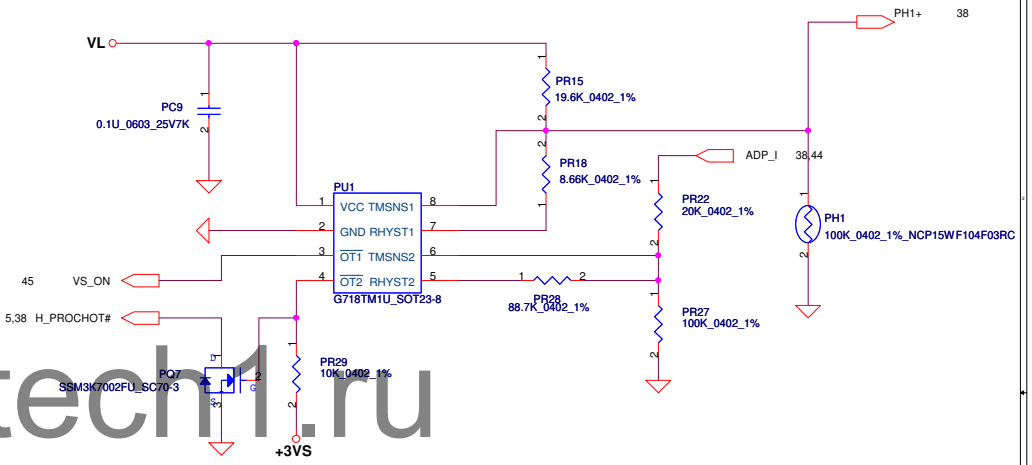
Date: Friday, March 04, 2011 | Sheet 42 of 53



PH1 under CPU botten side :

CPU thermal protection at 95 degree C

Recovery at 56 degree C



Adapter	Throttle Watt	Recovery Watt	Throttle Point	Recovery Point
65W_UMA	71.25W	62.4W	1.48V	1.308V
75W_DIS	85.5W	72W	1.78V	1.5V
75W_QCore	85.5W	72W	1.78V	1.5V

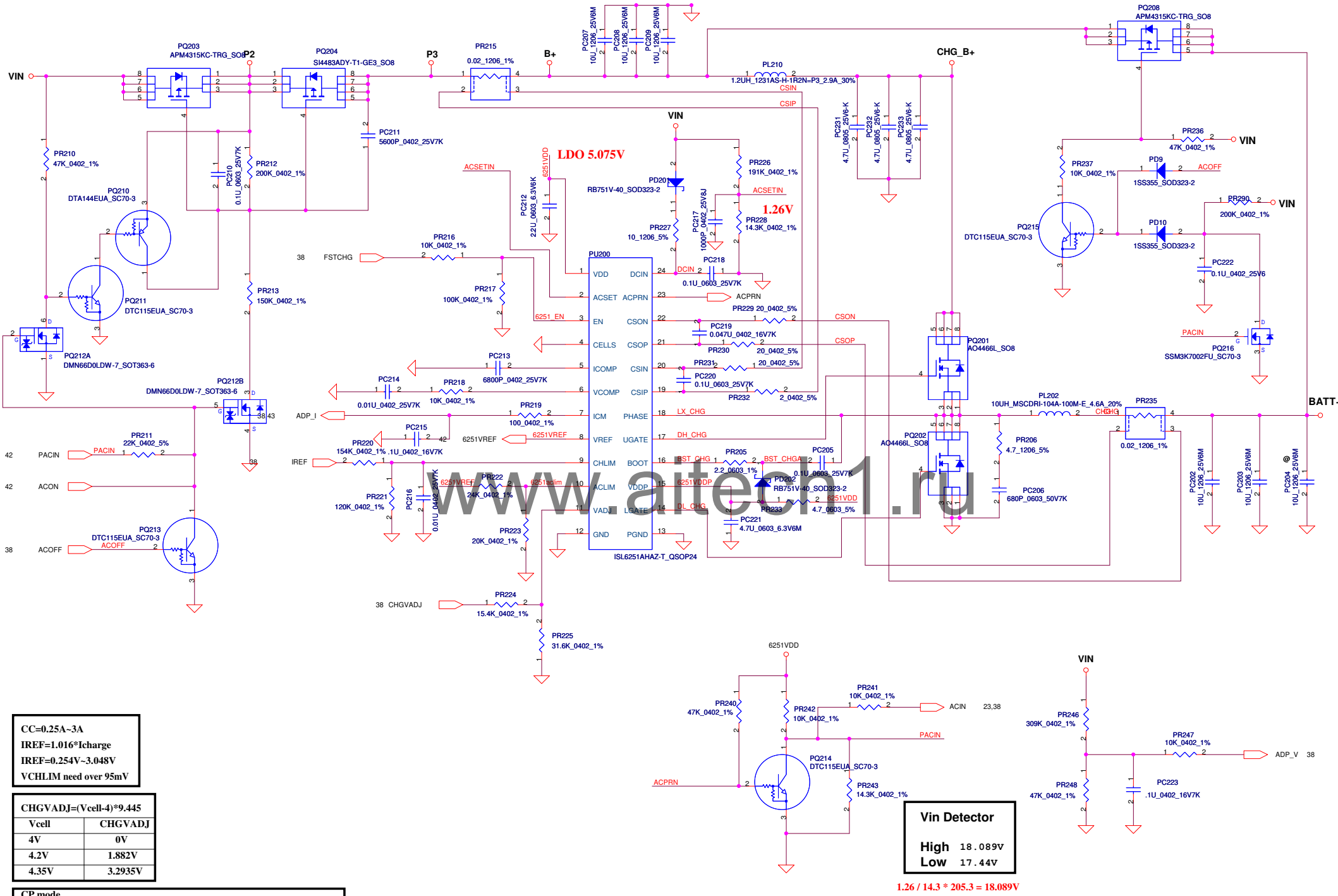
Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.

Title: ***BATTERY CONN / OTP***

Size | Document Number: **PWWHA LA-7201P M/B** | Rev: 1.0

Date: Friday, March 04, 2011 | Sheet 43 of 53



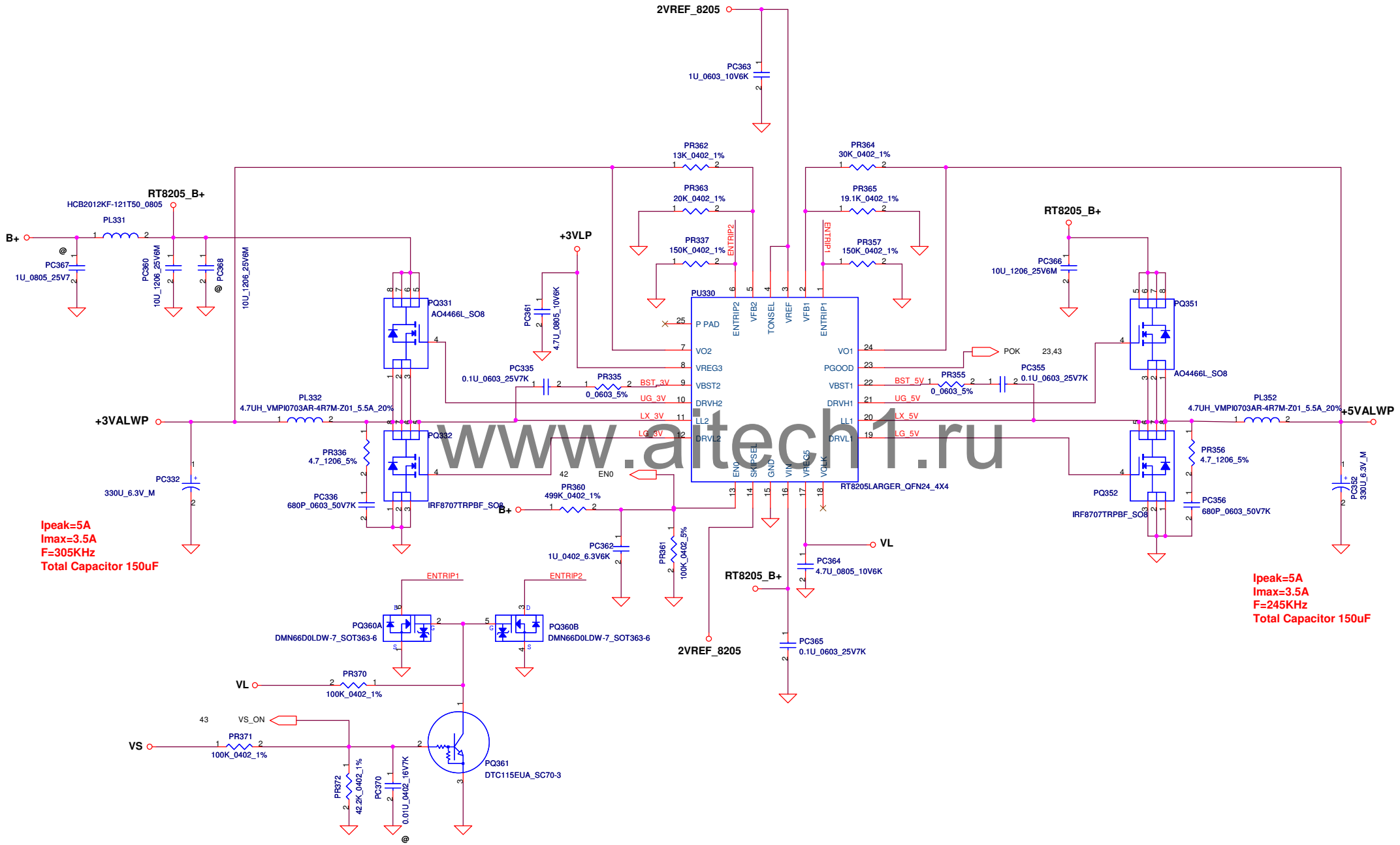
Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.

Title: **CHARGER**

Size	Document Number	Rev
Custom	PWWHA LA-7201P M/B	1.0

Date: Friday, March 04, 2011 Sheet 44 of 53



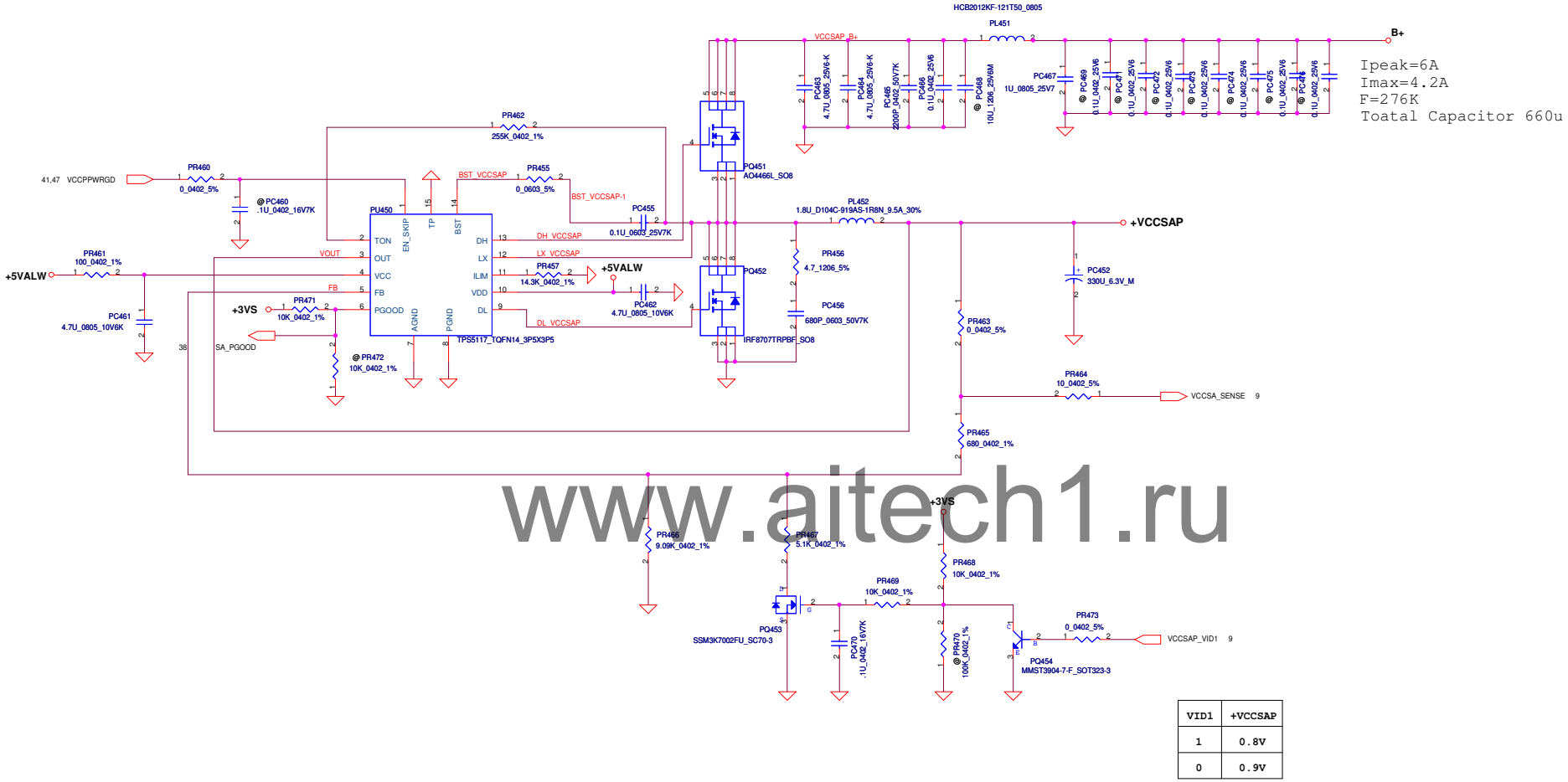
Security Classification	Compal Secret Data		
Issued Date	2009/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.

Title: *3VALWP/5VALWP*

Size	Document Number	Rev
	PWWHA LA-7201P M/B	1.0

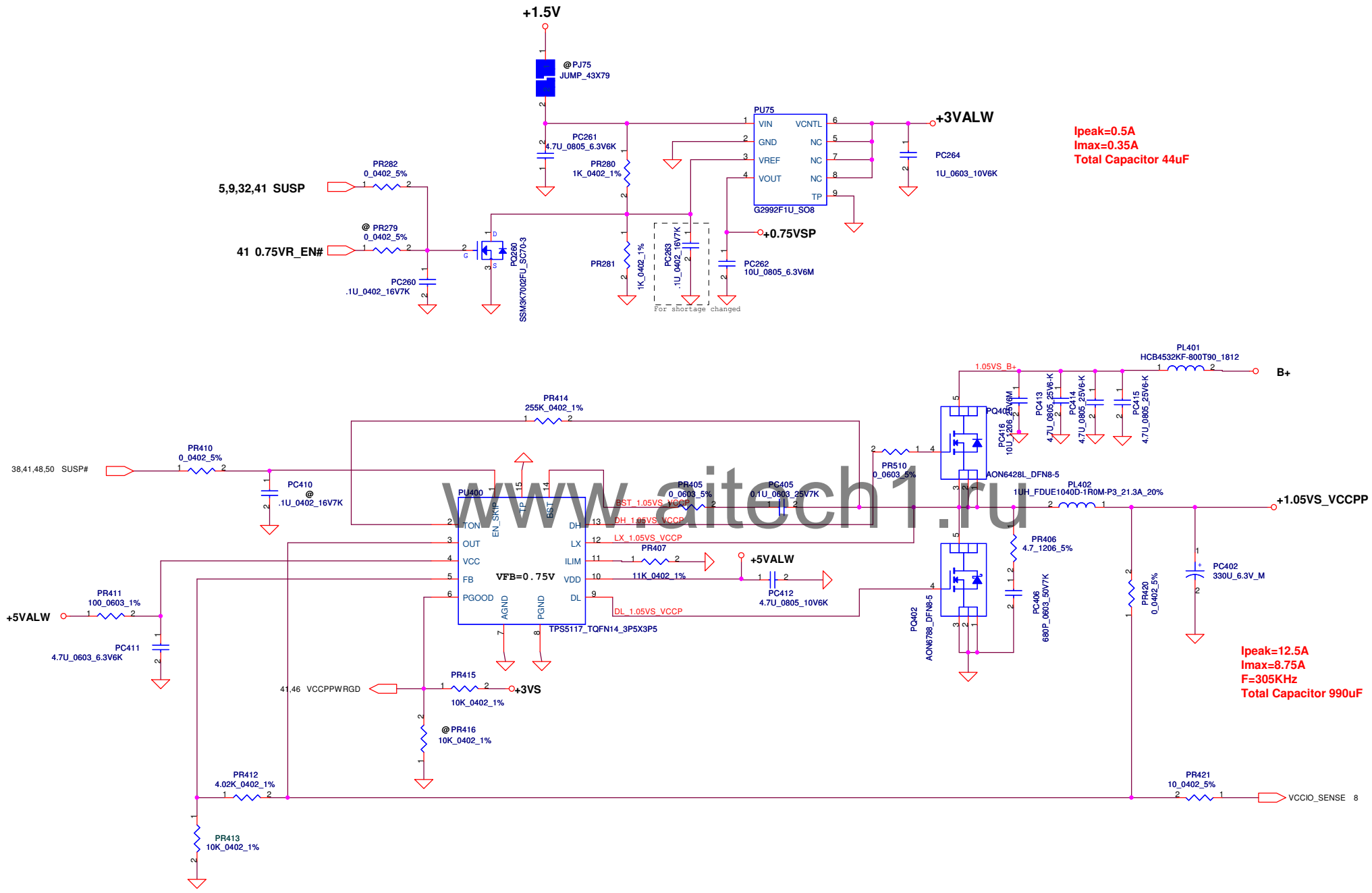
Date: Friday, March 04, 2011 Sheet 45 of 53



VID1	+VCCSAP
1	0.8V
0	0.9V

Security Classification	Compal Secret Data		Compal Electronics, Inc.
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Title	+VCCSAP		
Size C	Document Number PWWHA LA-7201P M/B		Rev 1.0
Date: Friday, March 04, 2011	Sheet 46 of 53		



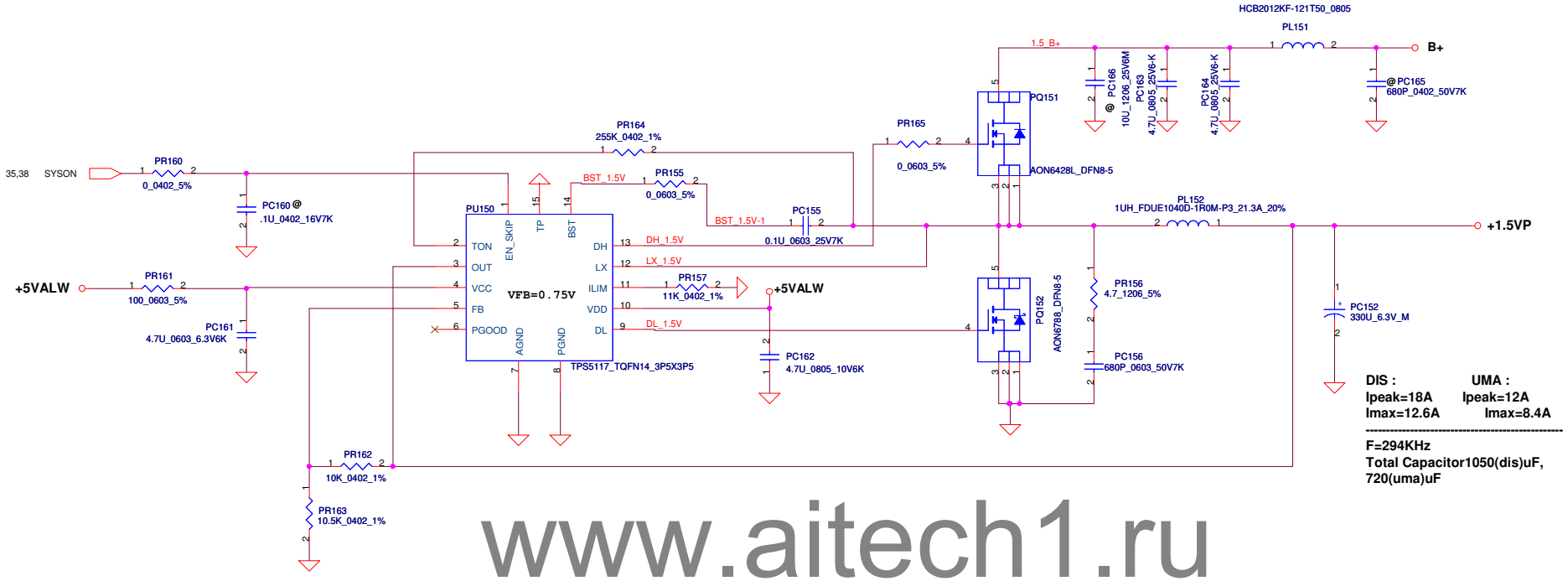
Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

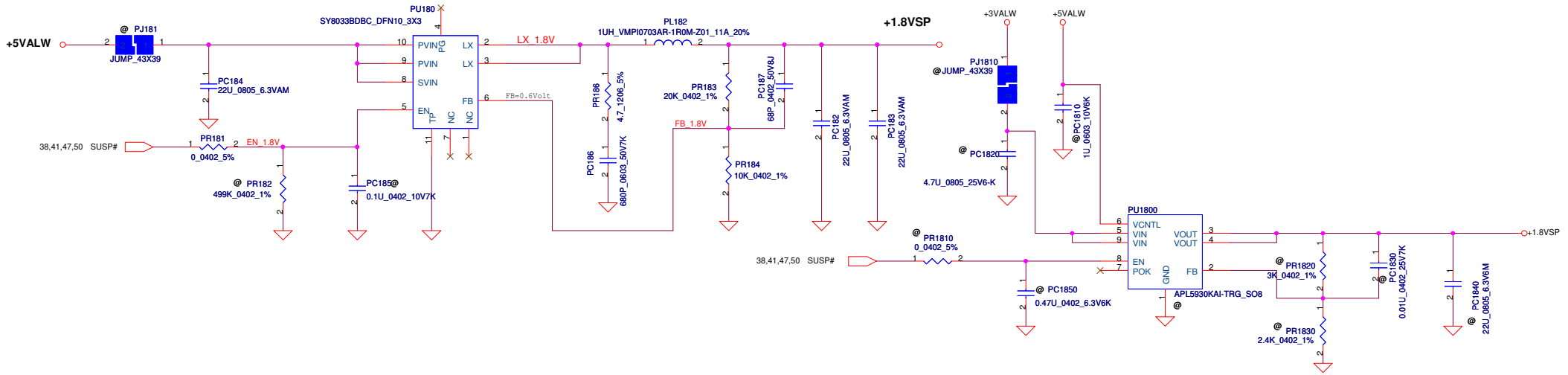
Compal Electronics, Inc.

Title: *+1.05VS_VCCP/+0.75VSP*

Size	Document Number	Rev
Custom	PWWHA LA-7201P M/B	1.0

Date: Friday, March 04, 2011 Sheet 47 of 53





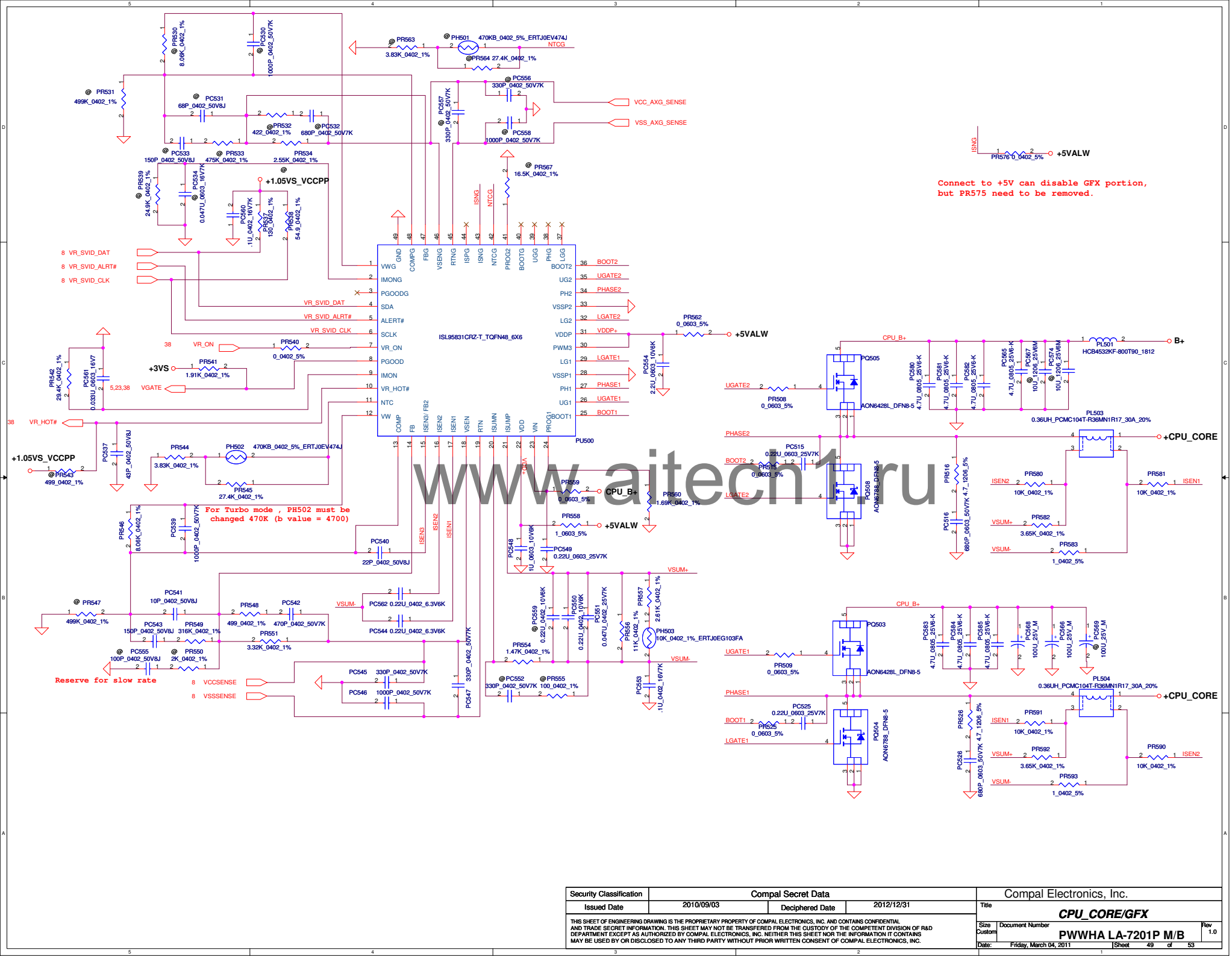
Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.

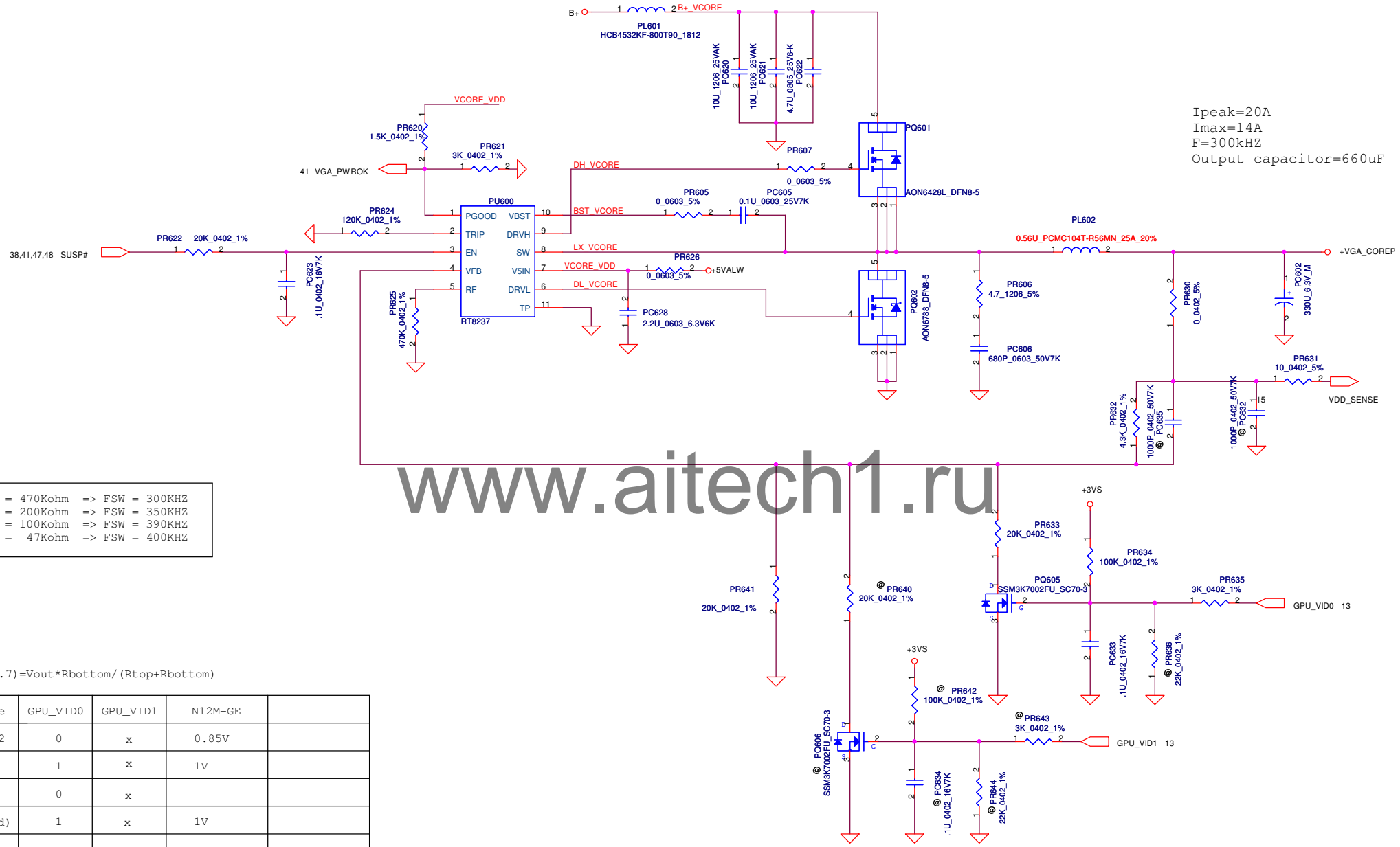
Title: *+1.5VP/+1.8VSP*

Size	Document Number	Rev
Custom	PWWHA LA-7201P M/B	1.0

Date: Friday, March 04, 2011 | Sheet 48 of 53



Security Classification	Compal Secret Data		Compal Electronics, Inc.
Issued Date	2010/09/03	Deciphered Date	2012/12/31
Title	CPU_CORE/GFX		
Size: Custom	Document Number: PWWHA LA-7201P M/B		Rev: 1.0
Date: Friday, March 04, 2011	Sheet 49 of 53		



VFB(0.7)=Vout*Rbottom/(Rtop+Rbottom)

Pstate	GPU_VID0	GPU_VID1	N12M-GE	
P8/P12	0	x	0.85V	
P0	1	x	1V	
	0	x		
P0(cold)	1	x	1V	
			PR632=4.3K PR633=20K PR641=20K	

Security Classification	Compal Secret Data		
Issued Date	2010/09/03	Deciphered Date	2012/12/31

Compal Electronics, Inc.

Title: ***VGA_CORE***

Size	Document Number	Rev
Custom	PWWHA LA-7201P M/B	1.0

Date: Friday, March 04, 2011 | Sheet 50 of 53

DATE	PAGE	MODIFICATION LIST	PURPOSE
2010/12/31(PVT)	P36 Charger	add snubber PR206,PC206	EMI command
2010/12/31(PVT)	P36 Charger	change boost to 2.2 ohm PR205	EMI command
2010/12/31(PVT)	P35 +3VALW/+5VALW	add snubber PR336,PC336,PR356,PC336	EMI command
2010/12/31(PVT)	P37 +1.5VP/+1.8VSP	Change PR155,PR165 to 0 ohm	EMI command
2010/12/31(PVT)	P37 +1.5VP/+1.8VSP	Change PQ151 to POK 5*6	EMI command
2010/12/31(PVT)	P37 +1.5VP/+1.8VSP	Reserve snubber PR156,PC156	EMI command
2010/12/31(PVT)	P37 +1.5VP/+1.8VSP	add PC165 for MEI	EMI command
2010/12/31(PVT)	P37 +VCCSA	add snubber PR456,PC456	EMI command
2010/12/31(PVT)	P38 +1.05VS/+0.75	change PRQ401 to POK 5x6	EMI command
2010/12/31(PVT)	P38 +1.05VS/+0.75	change PR405,PR510 to 0 ohm	EMI command
2010/12/31(PVT)	P38 +1.05VS/+0.75	change 0.75V enable PR279 tp PR282	HW command
2010/12/31(PVT)	P39 +CPU_CORE	change PC549,PC515,PC525 to correct rating	design change
2010/12/31(PVT)	P39 +CPU_CORE	change PL503,PL504 to DCR 5%	design change
2010/12/31(PVT)	P39 +CPU_CORE	change PC568 PC 566 to 5.8mmm capacitor	design change
2010/12/31(PVT)	P39 +CPU_CORE	change PC551 for load line adjust	design change
2010/12/31(PVT)	P39 +CPU_CORE	change PR560 for program temperture	design change
2010/12/31(PVT)	P39 +CPU_CORE	change PC505,PQ503 change to POK5X6	design change
2010/12/31(PVT)	P40+VGA_CORE	change PU600 to RT8237	design change
2010/12/31(PVT)	P40+VGA_CORE	change PR605,PR607 to 0ohm	design change
2010/12/31(PVT)	P40+VGA_CORE	change PR601 to POK 5X6	EMI command
2010/12/31(PVT)	P40+VGA_CORE	change VID0 and VID1 compont chage	design change

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Issued Date	2010/09/03	Deciphered Date	2012/12/31

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PWWHA LA-7201P SCHEMATIC CHANGE LIST
REVISION CHANGE: 0.1 TO 0.2
GERBER-OUT DATE: 2010/10/29

NO	DATE	PAGE	MODIFICATION LIST	PURPOSE
1	10/29	17	SWAP FBA_CMD2 and FBA_CMD11	Schematic error
2	10/29	18	SWAP FBA_CMD18 and FBA_CMD11	Schematic error
3	10/29	21	Chane +3V_SPI to +3VS	Schematic error
4	10/29	22	Add R23 for CLK_REQ_VGA#	Reserve pull down for clock request

REVISION CHANGE: 0.2 TO 0.3
GERBER-OUT DATE: 2010/11/11

NO	DATE	PAGE	MODIFICATION LIST	PURPOSE
1	11/03	25,31	Add USB20_N9 & USB20_P9	Support Wimax
2	11/03	32	Co-Lay Giga LAN	Giga LAN support
3	11/22	22	Add R584 & R564 for Panel select	For HW common design
4	11/22	5	change D86 (SC100001M00)	For HW common design
5	11/22	5	cancel D85 @	For HW common design
6	11/24	32	LAN 8105E-VC update to 8105E-VL	For HW common design

PWWHA LA-7201P SCHEMATIC CHANGE LIST
REVISION CHANGE: 0.4 TO 0.6
GERBER-OUT DATE: 2011/01/18

NO	DATE	PAGE	MODIFICATION LIST	PURPOSE
1	01/15	14	Change RV48 BOM structure from @ to HDMI@.	For HDMI function
2	01/15	15	Add net name +IFPE_IOVDD & +IFPE_PLLVDD	For HDMI function
3	01/15	15	Add LV12,CV160,CV169,CV170,CV173,LV8,CV178,CV159,CV176,CV182,CV215	For HDMI function
4	01/15	38	Add U19 BOM symbol for 9012	For EC 9012
5	01/15	19	Change R120 from 10Kohm to 47Kohm.	For backlight PWM issue
6	01/15	35	Change UT2.6 & RT1 connector from +5VALW to +3V and del CT1.	For LDO leakage issue
7	01/15	41	Add Q31 BOM symbol and add BOM structure PS3@.	For power saving function
8	01/16	13	Change R25 BOM structure from @ to NHDMI@.	For HDMI function
9	01/16	38	Delete U19.123 CLK_EC_R net name	Due to duplicate net name
10	01/16	38	Change U19.104 & R745.2 & R747.2 net name from PM_PWROK_R to PM_PWROK_EC.	Due to duplicate net name
11	01/18	38	Add R757 & R759 & U19 BOM symbol and add BOM structure S9012@	For EC9012 solution
12	01/18	38	Add R767 and BOM structure S9012@	For EC9012 solution
13	01/19	21~29	Change U2 P/N from SA00003P440 to SA00004EE80.	For PCH P/N update
14	01/19	21~29	Change U2 BOM structure from Q65R3@ to HM65R1@.	For BOM structure update
15	01/19	40	Add U2 BOM symbol and BOM structure HM65R3@.	For BOM structure update
16	01/19	33	Change UL3 to SP050006E00	For EMI
17	01/20	5,7,9	Change C93,R312,U10,Q14,R465,R463,C140 BOM structure to PS3@	For BOM structure update
18	01/20	41	Change Q31 BOM symbol structure from PS3@ to @	Only for PWWHA DIS unmount
19	01/20	9	Change Q46,R449,C179,C472,R420,R455,Q33 BOM structure from @ to PS3@	Only for PWWHA DIS PS3@

PWWHA LA-7201P SCHEMATIC CHANGE LIST
REVISION CHANGE: 0.6 TO 0.7
GERBER-OUT DATE: 2011/02/18

NO	DATE	PAGE	MODIFICATION LIST	PURPOSE
1	01/31	5	Change JFAN2.2 connect FAN_SPEED1, JFAN2.3 connect GND	For FAN pin define modification
2	02/09	5,38	Change Q5,Q41 from SB570020110 to SB570020020	For common material

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Issued Date	2010/09/03	Deciphered Date	2012/12/31

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PWWHA LA-7201P SCHEMATIC CHANGE LIST
REVISION CHANGE: 0.6 TO 1.0
GERBER-OUT DATE: 2011/02/18

NO	DATE	PAGE	MODIFICATION LIST	PURPOSE
1	01/31	5	Change JFAN2.2 connect FAN_SPEED1, JFAN2.3 connect GND	For FAN pin define modification
2	02/09	5,38	Change Q5,Q41 from SB570020110 to SB570020020	For common material
3	02/17	5	Change C902,R1445,D85,D86,C900,C901,R1444 from mount to @.	For unused PWM FAN
4	02/17	5	Change R24 from @ to mount.	For use RPM FAN
5	02/17	40	Change R396,Q7 from 930@ to mount.	For EC9012 function
6	02/17	31	Add C363	For solving ODD issue
7	02/17	31	Change SW3 from mount to @	For MP phase
8	02/17	41	Change C496,C499,C236,C249,C255 from NLS@ to @	For low cost power switch
9	02/17	41	Change R415,R419 from 47Kohm to 0ohm	For low cost power switch
10	02/17	40	Change ZZZ P/N from DA60000L700 to DAZ0II00101	For MP phase
11	02/17	41	Change C252 from SE070104Z80 to SE071121J80	For low cost power switch
12	02/17	31	Change R561,R562,R457,Q53,R441,R440,C471,C217,Q45 from mount to ZODD@	For zero ODD function
13	02/18	21~29	Change U2 P/N from SA00004EE80 to SA00004EES0	For PCH B3 version
14	02/18	40	Change U2 P/N from SA00004EEA0 to SA00004EET0	For PCH B3 version
15	02/22	40	ADD UV1 BOM symbol and BOM structure N12MR3@.	For N12M R3 P/N
16	02/22	13~16	ADD UV1 BOM structure N12MR1@.	For N12M R1 P/N
17	02/23	32,35,41	Change Q50,Q53,QT3 from SB00000EO00 to SB00000EO10	For common material
18	02/23	41	Change C465,C467 BOM structure from OLS@ to always mount	For low cost power switch

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