Model Name : Z5WAH
File Name : LA-B162P

Compal Confidential

EA50_HB M/B Schematics Document

Intel Broadwell ULT (Broadwell + Wildcat point)

Nvidia N15S-GT / N15V-GM / N15V-GL

2013-12-24

REV:0.2

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eDP

DDI

Intel Broadwell ULT

Broadwell ULT
Processor

OPI

Wildcat point
PCH

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PS2 / I2C

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Int.KBD

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BATT/B (UMA)

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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
BATT+	Battery power supply (12.6V)	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
+VGA_CORE	Core voltage for GPU	ON	OFF	OFF
+0.675VS	+0.675VS power rail for DDR3L terminator	ON	OFF	OFF
+1.05VS_VTT	+1.05V power rail for CPU	ON	OFF	OFF
+1.05VSDGPU	+1.05VSDGPU switched power rail for GPU	ON	OFF	OFF
+1.35V	+1.35V power rail for DDR3L	ON	ON	OFF
+1.5VSDGPU	+1.5VSDGPU power rail for GPU	ON	OFF	OFF
+1.5VS	+1.5V power rail for CPU	ON	OFF	OFF
+3VALW	+3VALW always on power rail	ON	ON	ON*
+3VLP	B+ to +3VLP power rail for suspend power	ON	ON	ON
+3VS	+3VALW to +3VS power rail	ON	OFF	OFF
+3VSDGPU	+3VS to +3VSDGPU power rail for GPU	ON	OFF	OFF
+5VALW	+5VALWP to +5VALW power rail	ON	ON	ON*
+5VS	+5VALW to +5VS power rail	ON	OFF	OFF
+RTCVCC	RTC power	ON	ON	ON

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

EC SM Bus1 address

Device	Address
Smart Battery	0001 011X

EC SM Bus2 address

Device	Address
On Board Thermal Senser	0100 110x
VGA Internal Thermal Senser	0100 000x
G Senser	0011 000x

PCH SM Bus address

Device		Address	
ChannelA	DIMM0	1010 0000	JDIMM1
ChannelB	DIMM1	1010 0010	JDIMM2

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

Board ID / SKU ID Table for AD channel

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

Board ID	Rb / Rd / Rf	V_{AD_BID} min	V_{AD_BID} typ	V_{AD_BID} max
0	0	0 V	0 V	0 V
1	12K +/- 5%	0.347 V	0.354 V	0.360 V
2	15K +/- 5%	0.423 V	0.430 V	0.438 V
3	20K +/- 5%	0.541 V	0.550 V	0.559 V
4	27K +/- 5%	0.691 V	0.702 V	0.713 V
5	33K +/- 5%	0.807 V	0.819 V	0.831 V
6	43K +/- 5%	0.978 V	0.992 V	1.006 V
7	56K +/- 5%	1.169 V	1.185 V	1.200 V
8	75K +/- 5%	1.398 V	1.414 V	1.430 V
9	100K +/- 5%	1.634 V	1.650 V	1.667 V
10	130K +/- 5%	1.849 V	1.865 V	1.881 V
11	160K +/- 5%	2.015 V	2.031 V	2.046 V
12	200K +/- 5%	2.185 V	2.200 V	2.215 V
13	240K +/- 5%	2.316 V	2.329 V	2.343 V

USB Port Table

USB 2.0	Port	3 External USB Port
EHCI1	0	USB Port(Left 3.0)
	1	USB Port(Right 2.0)
	2	USB Port(Right 2.0)
	3	
	4	Mini Card (WLAN+BT)
	5	Touch Screen
	6	Camera
	7	Finger Print
USB 3.0	Port	
XHCI	0	USB Port(Left 3.0)
	1	
	2	
	3	

BOARD ID Table

Board ID	PCB Revision
0	0.1
1	0.2
2	0.3
3	0.4
4	0.5
5	1.0
6	
7	

BTO Option Table

BTO Item	BOM Structure
Unpop	@
Connector	CONN@
EC 9022	9022@
EC 9012	9012@
UMA Component	UMA@
GPU	VGA@
VRAM x 8pcs	128@
EDP panel	EDP@
eDP to LVDS	LVDS@
EMC Component	EMC@
EMC Reserve	XEMC@
On Board HDD	HDD@
G-Sensor	BA@
TPM Module	BA@
Redriver HDD	BA@
Touch Screen	TS@
DGPU_IDEN	VGL@, VGM@, SGT@
CPU_IDEN	HW@, BW@
GC6 2.0	GC6@
non GC6	NGC6@
One DMIC	EA50@
Two DMIC	EA54@
VRAM Selection	X76@

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U1
CPU Haswell Intel I5-4200U 1.6G
4200@
SA00006SMB0

U1
CPU Haswell Intel I3-4010U 1.7G
4010@
SA00006SX70

AAA1
PCB 154 LA-B162P REV0 M/B
@
DA60014P000

U1
CPU Haswell Intel I7-4500U 1.8G
4500@
SA00006SLB0

U1
CPU_Haswell intel I3-4158U 2G
4158@
SA00006VW40

U1
CPU_Haswell intel I7-4550U 1.5G
4550@
SA00006SJ40

DP to CRT

<27> CPU_DP1_N0 — C54 DDI1_TXN0
<27> CPU_DP1_P0 — C55 DDI1_TXP0
<27> CPU_DP1_N1 — B58 DDI1_TXN1
<27> CPU_DP1_P1 — C59 DDI1_TXP1
B55 DDI1_TXN2
A56 DDI1_TXP2
A57 DDI1_TXN3
B57 DDI1_TXP3

HDMI

<26> CPU_DP2_N0 — C51 DDI2_TXN0
<26> CPU_DP2_P0 — C50 DDI2_TXP0
<26> CPU_DP2_N1 — C53 DDI2_TXN1
<26> CPU_DP2_P1 — B54 DDI2_TXP1
<26> CPU_DP2_N2 — C49 DDI2_TXN2
<26> CPU_DP2_P2 — B50 DDI2_TXP2
<26> CPU_DP2_N3 — A53 DDI2_TXN3
<26> CPU_DP2_P3 — B53 DDI2_TXP3

U1A — HASWELL_MCP_E — DDI — EDP — 1 OF 19 — Rev1p2
HASWELL-MCP-E-ULT_BGA1168
@

EDP_TXN0 C45 — EDP_TXN0 <25>
EDP_TXP0 B46 — EDP_TXP0 <25>
EDP_TXN1 A47 — EDP_TXN1 <25>
EDP_TXP1 B47 — EDP_TXP1 <25>
eDP Panel
EDP_TXN2 C47
EDP_TXP2 C46
EDP_TXN3 A49
EDP_TXP3 B49
EDP_AUXN A45 — EDP_AUXN <25>
EDP_AUXP B45 — EDP_AUXP <25>
EDP_RCOMP A43
EDP_DISP_UTIL
D20 EDP_COMP R1 1 — 2 24.9_0402_1% — +VCCIOA_OUT
Trace width=20 mils,Spacing=25mil,Max length=100mils
EDP_DISP_UTIL <25>

+1.35V
R184 470_0603_5%
DIMM_DRAMRST# <15,16>
C96 6.8P_0402_50V8C XEMC@
Close to AV15

DDR3 Compensation Signals
Trace width=12~15 mil, Spcing=20 mils
Max trace length= 500 mil

R11 200_0402_1% SM_RCOMP0 AU60
R13 120_0402_1% SM_RCOMP1 AV60
R41 100_0402_1% SM_RCOMP2 AU61
DIMM_DRAMRST# AV15
<15> DDR_PG_CTRL AV61

C94 6.8P_0402_50V8C XEMC@
T20 @ D61 PROC_DETECT
T2 @ K61 CATERR
<34> H_PECI N62 PECI
+1.05VS_VTT — R68 62_0402_5% — R8 56_0402_5%
<34,39> H_PROCHOT# — H_PROCHOT#_R K63 PROCHOT
C95 6.8P_0402_50V8C XEMC@
R6 10K_0402_5% H_CPUPWRGD C61 PROCPWRGD
C60 6.8P_0402_50V8C XEMC@

U1B — HASWELL_MCP_E — MISC — JTAG — THERMAL — PWR — DDR3 — 2 OF 19 — Rev1p2
HASWELL-MCP-E-ULT_BGA1168
@

PRDY J62 XDP_PRDY#_R @ T157
PREQ K62 XDP_PREQ#_R @ T158
PROC_TCK E60 XDP_TCK_R @ T159
PROC_TMS E61 XDP_TMS_R @ T160
PROC_TRST E59 XDP_TRST#_R @ T161
PROC_TDI F63 XDP_TDI_R @ T162
PROC_TDO F62 XDP_TDO_R @ T163

BPM#0 J60 XDP_BPM#0_R @ T164
BPM#1 H60 XDP_BPM#1_R @ T165
BPM#2 H61 @ T148
BPM#3 H62 @ T149
BPM#4 K59 @ T150
BPM#5 H63 @ T151
BPM#6 K60 @ T152
BPM#7 J61 @ T153

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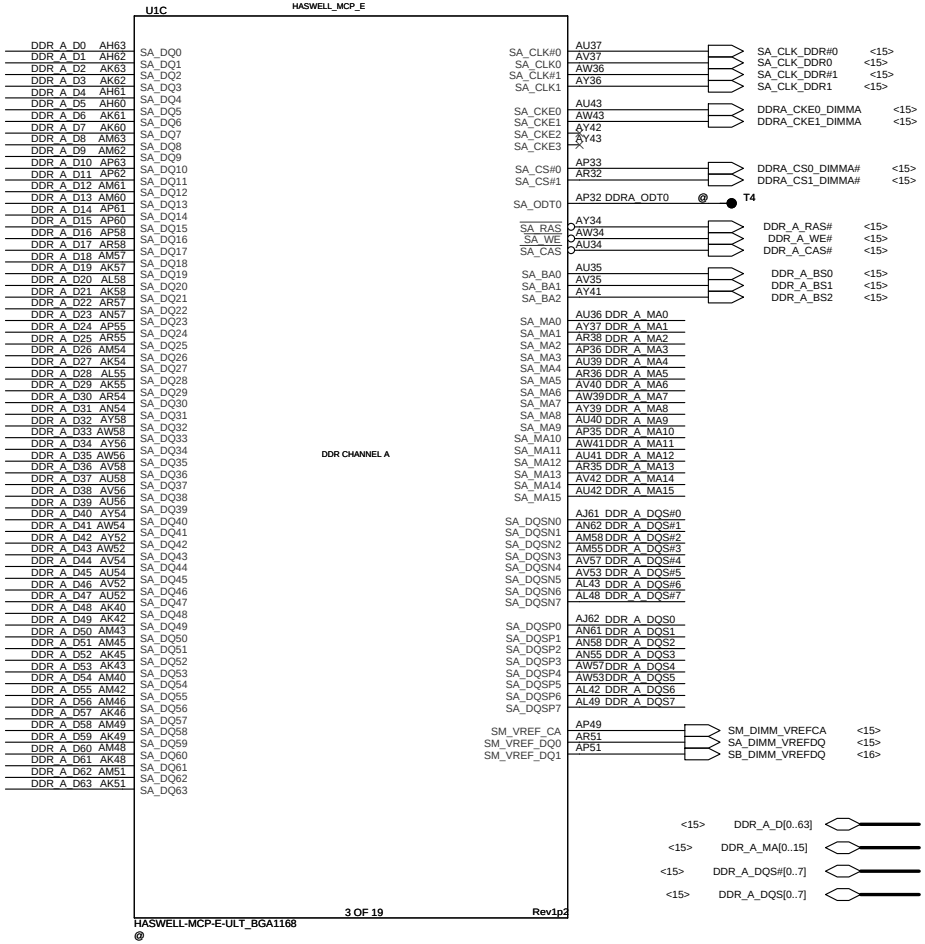
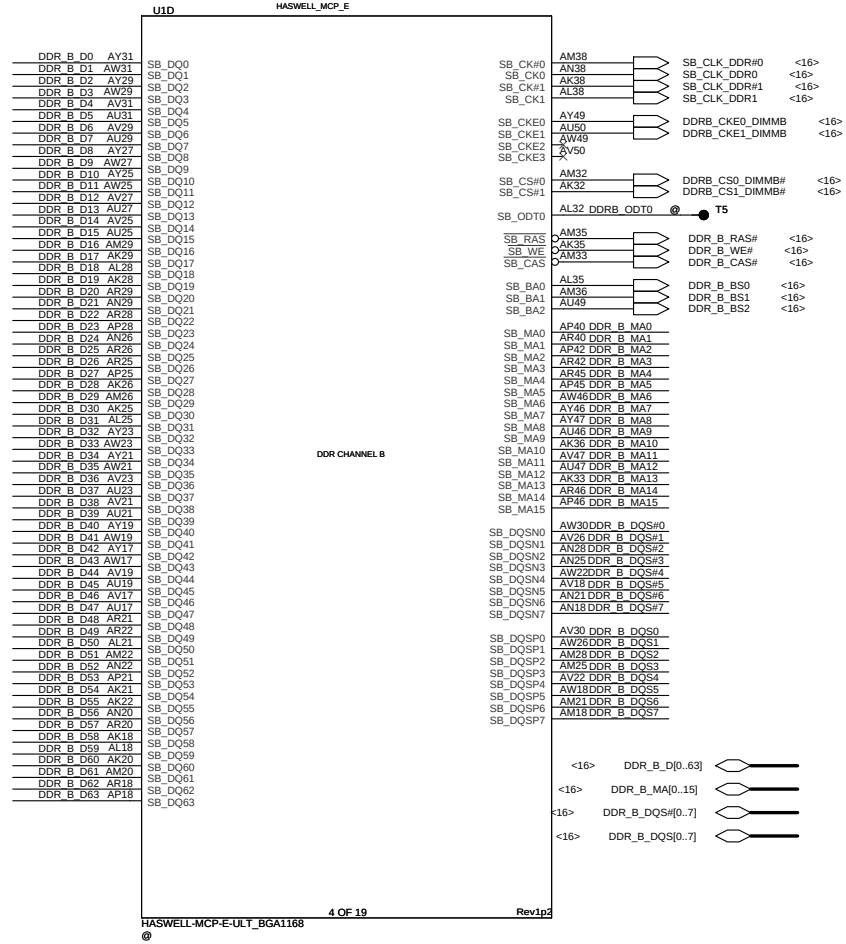
Title: BDW MCP(1/11) DDI,MSIC,XDP
Size: Custom
Document Number: Z5WAH M/B LA-B162P
Rev: 0.3
Date: Wednesday, January 08, 2014
Sheet 4 of 54





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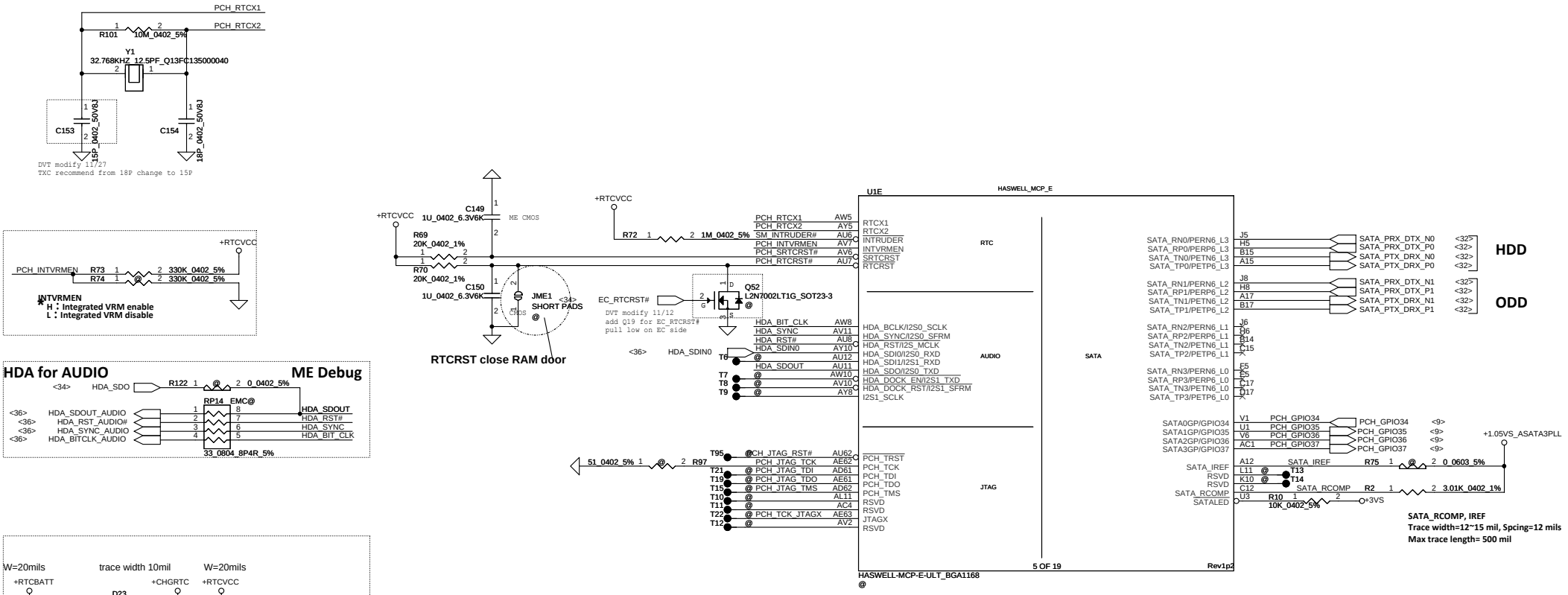
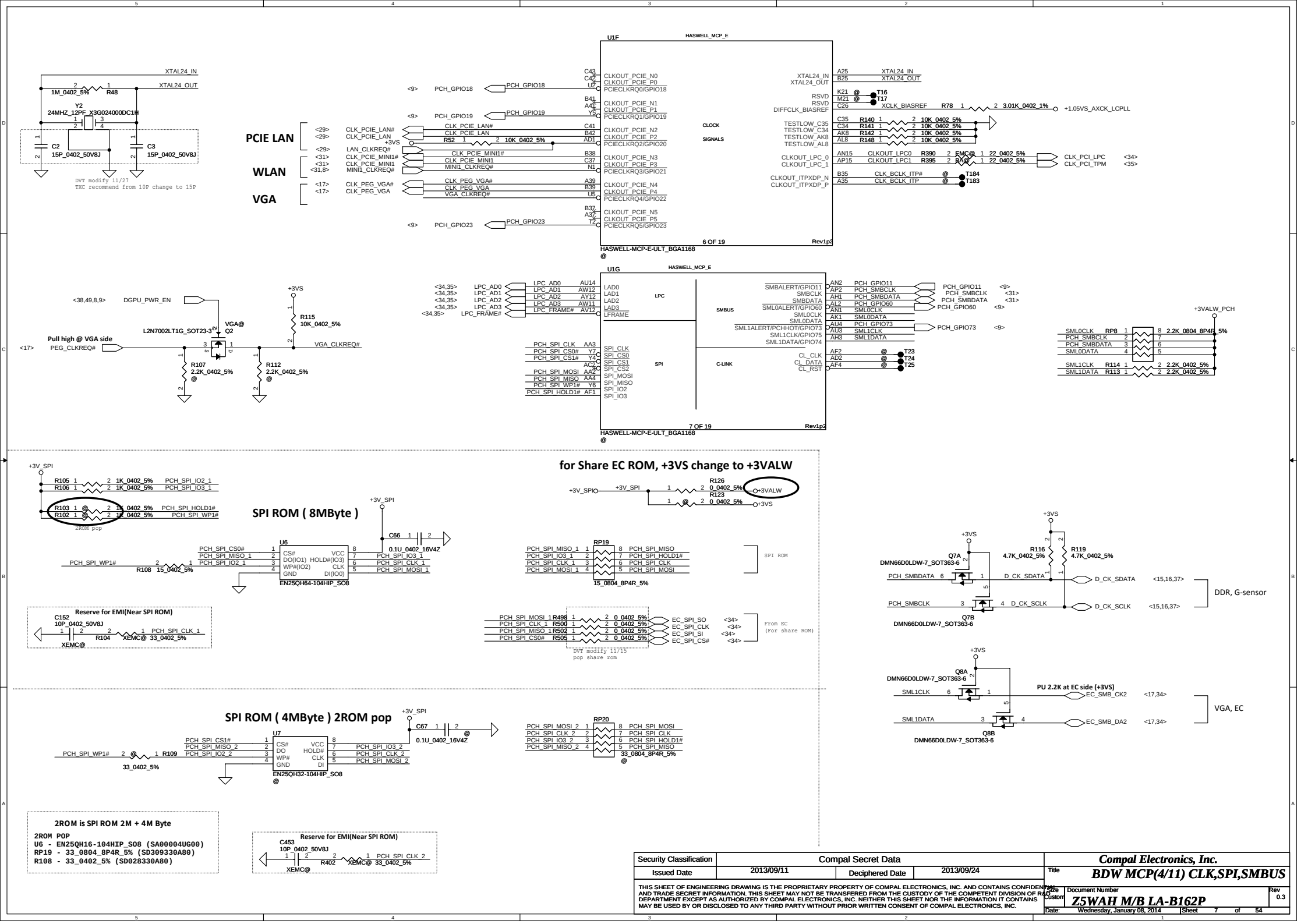
Issued Date	2013/09/11	Deciphered Date	2013/09/24

Compal Electronics, Inc.			
Title: BDW MCP(2/11) DDRIII			
Size: Custom	Document Number: Z5WAH M/B LA-B162P		Rev: 0.3
Date: Wednesday, January 08, 2014	Sheet 5 of 54		



Security Classification	Compal Secret Data		
Issued Date	2013/09/11	Deciphered Date	2013/09/24

Compal Electronics, Inc.			
Title: BDW MCP(3/11) RTC,SATA,XDP			
Size: Custom	Document Number: Z5WAH M/B LA-B162P		Rev: 0.3
Date: Wednesday, January 08, 2014	Sheet 6 of 54		



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Compal Electronics, Inc.

Title: **BDW MCP(4/11) CLK,SPI,SMBUS**

Size	Document Number	Rev
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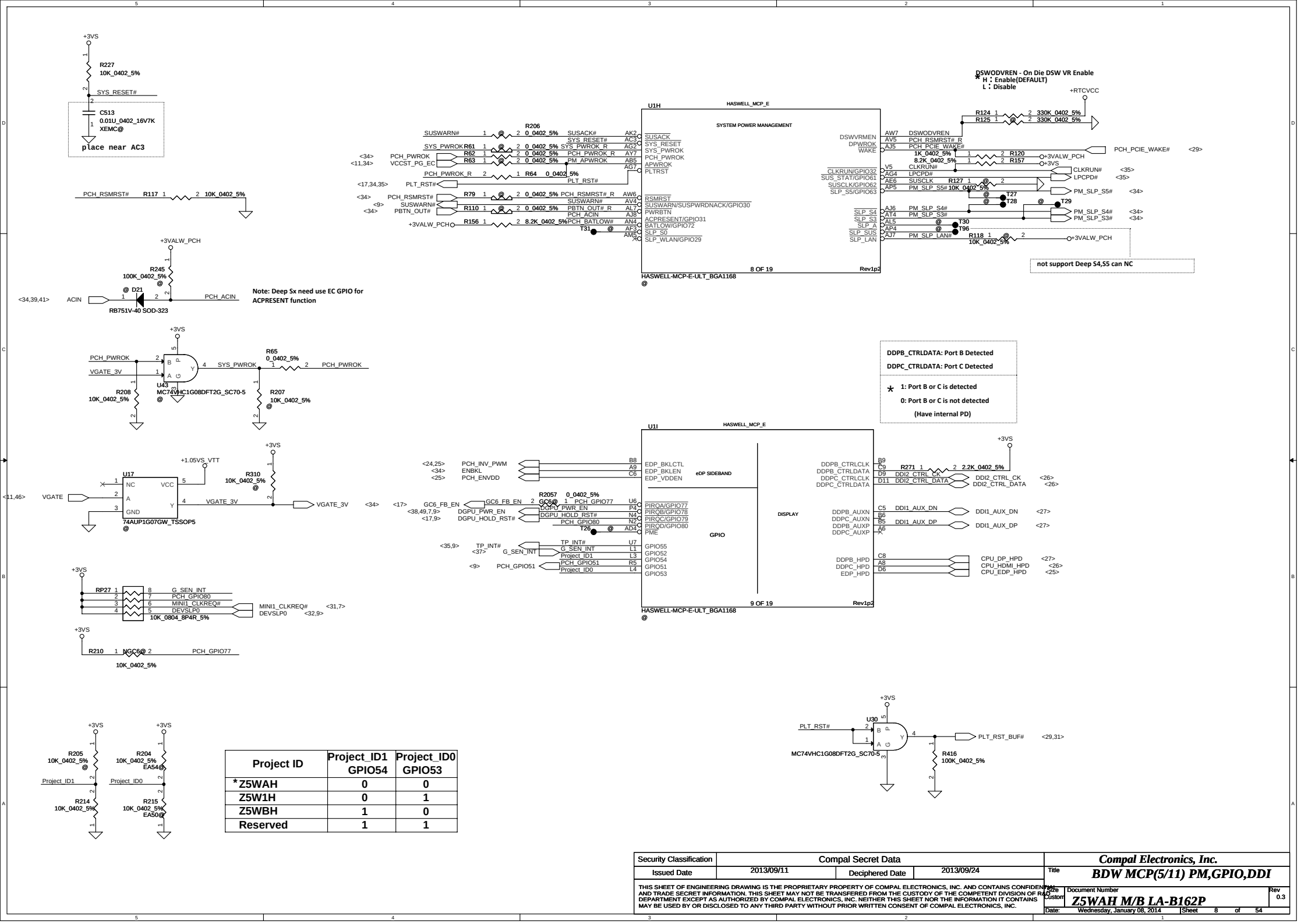
Date: Wednesday, January 08, 2014 | Sheet 7 of 54



Project ID	Project_ID1 GPIO54	Project_ID0 GPIO53
*Z5WAH	0	0
Z5W1H	0	1
Z5WBH	1	0
Reserved	1	1

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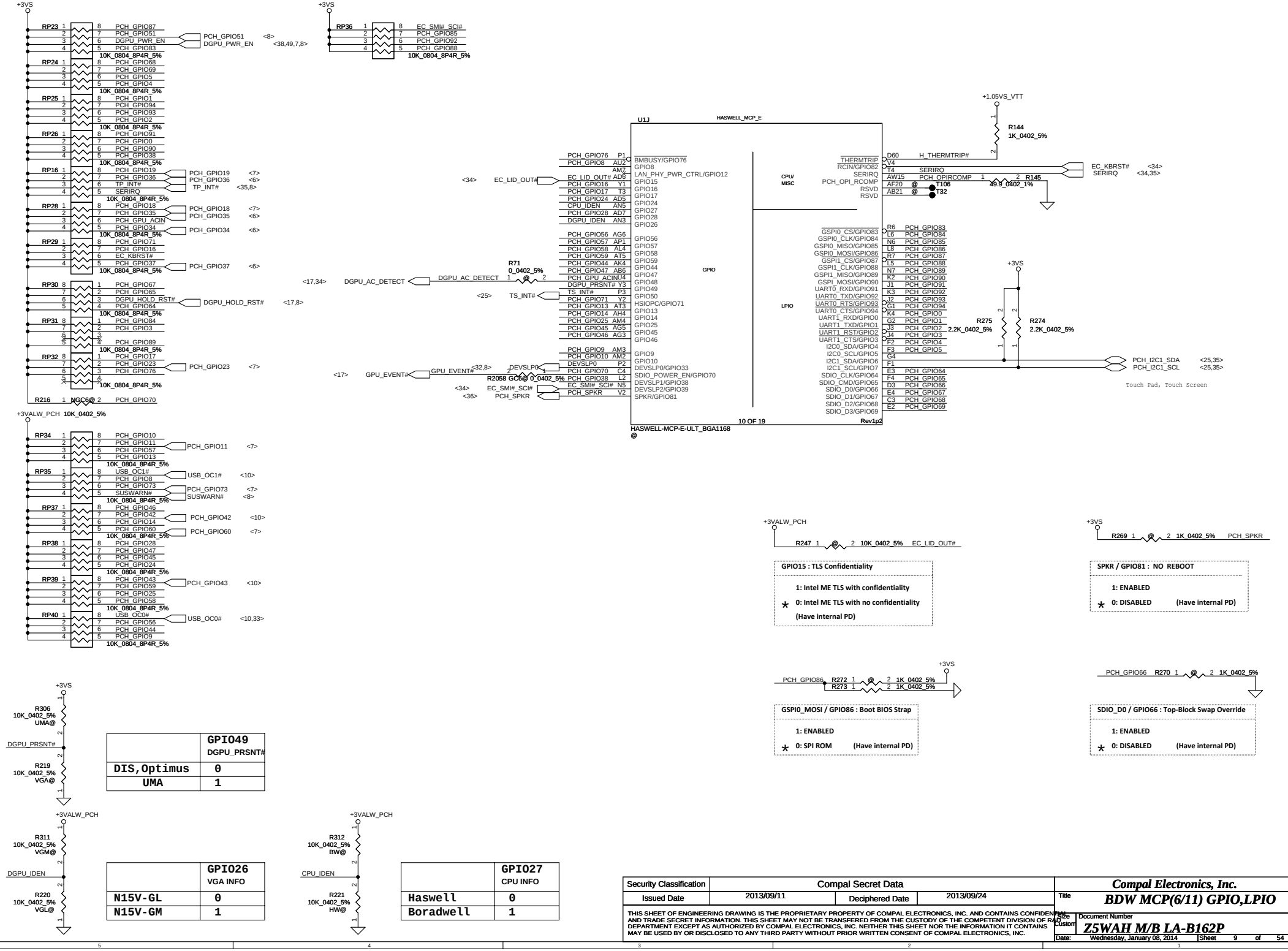
Compal Electronics, Inc.

Title: BDW MCP(5/11) PM,GPIO,DDI

Size: Custom | Document Number: Z5WAH M/B LA-B162P | Rev: 0.3

Date: Wednesday, January 08, 2014 | Sheet 8 of 54



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Title: **BDW MCP(6/11) GPIO,LPIO**

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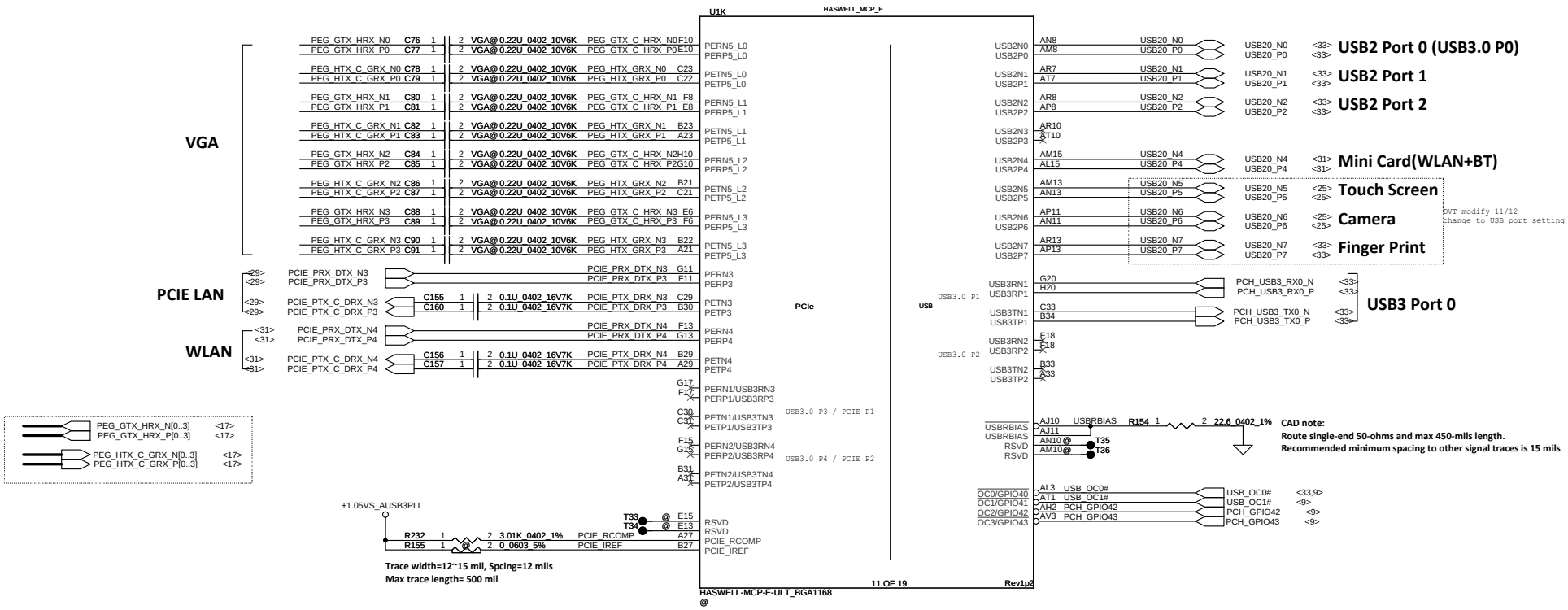

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Compal Electronics, Inc.

Title: BDW MCP(7/11) PCIE,USB

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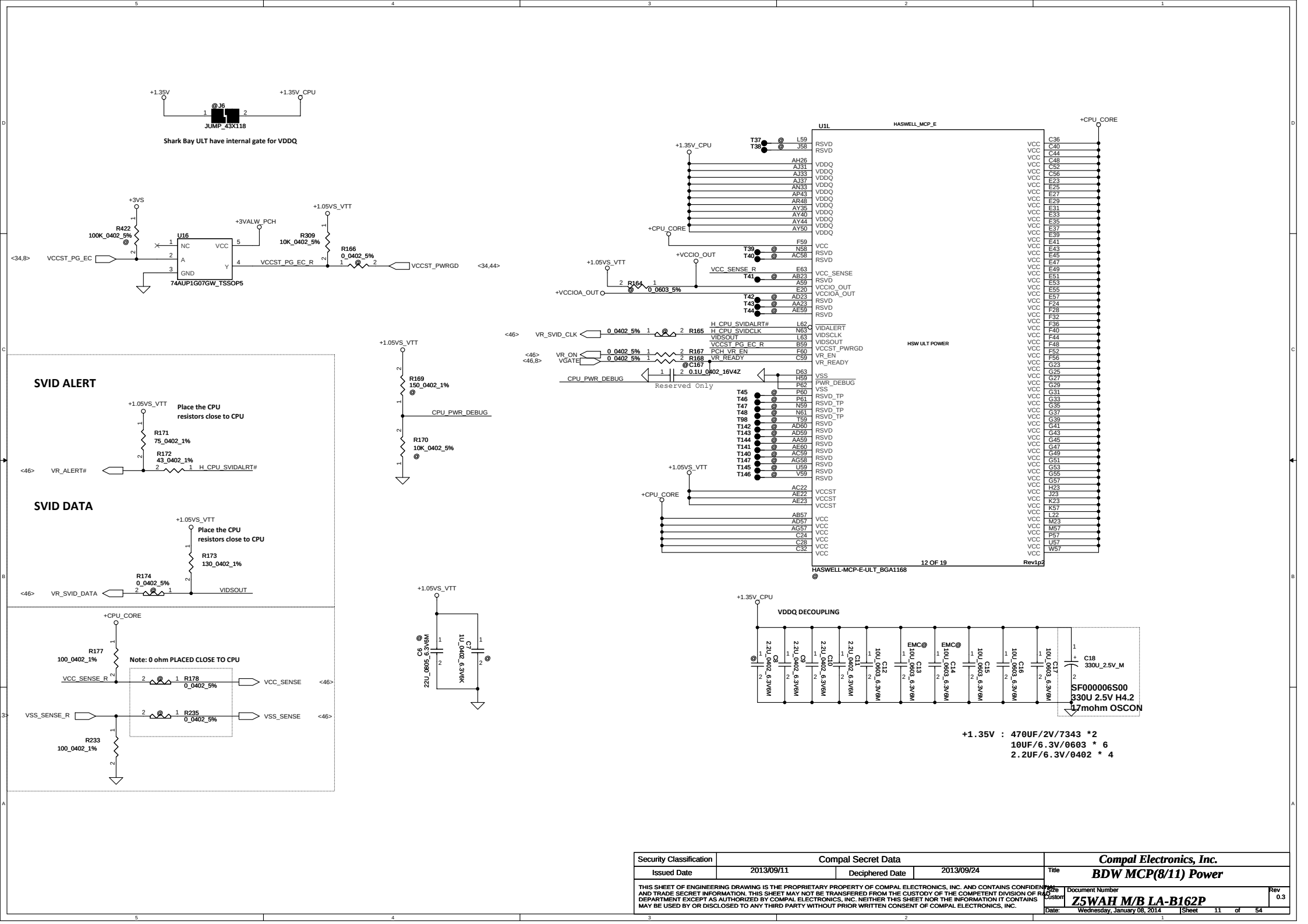

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Compal Electronics, Inc.			
Title: BDW MCP(8/11) Power			
Size: Custom	Document Number: Z5WAH M/B LA-B162P		Rev: 0.3
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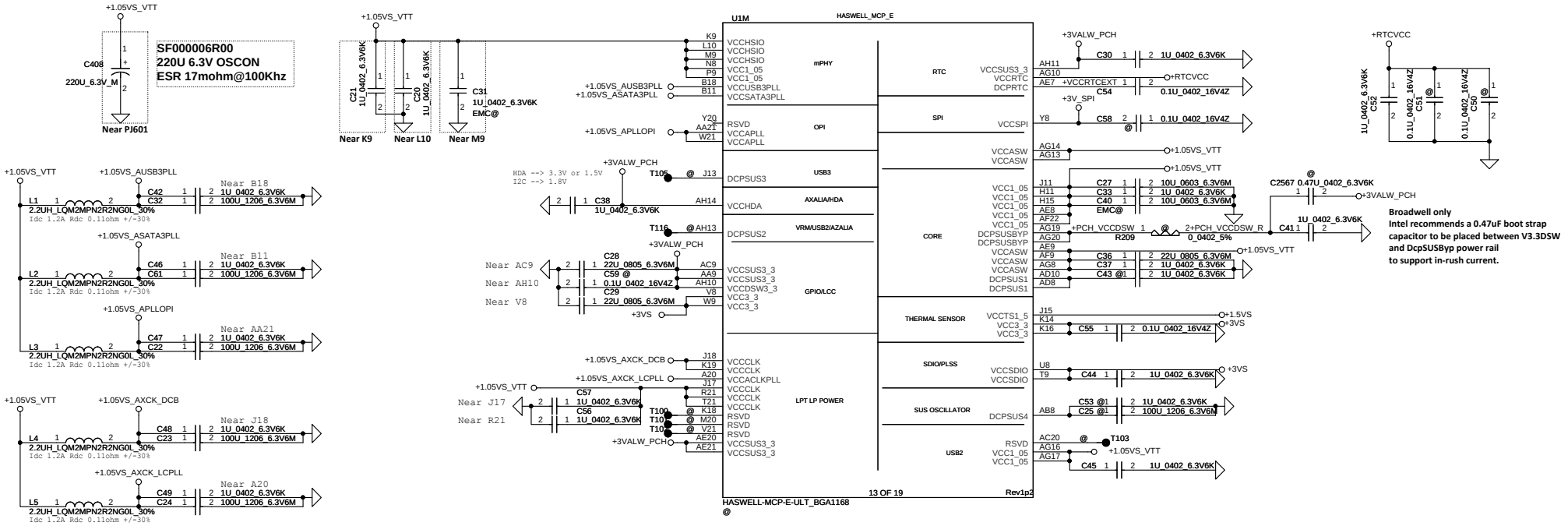
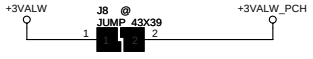


+3VALW TO +3VALW(PCH AUX Power)
Short J8 for PCH VCCSUS3.3



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Compal Electronics, Inc.			
Title: BDW MCP(9/11) Power			
Size: Custom	Document Number: Z5WAH M/B LA-B162P		Rev: 0.3
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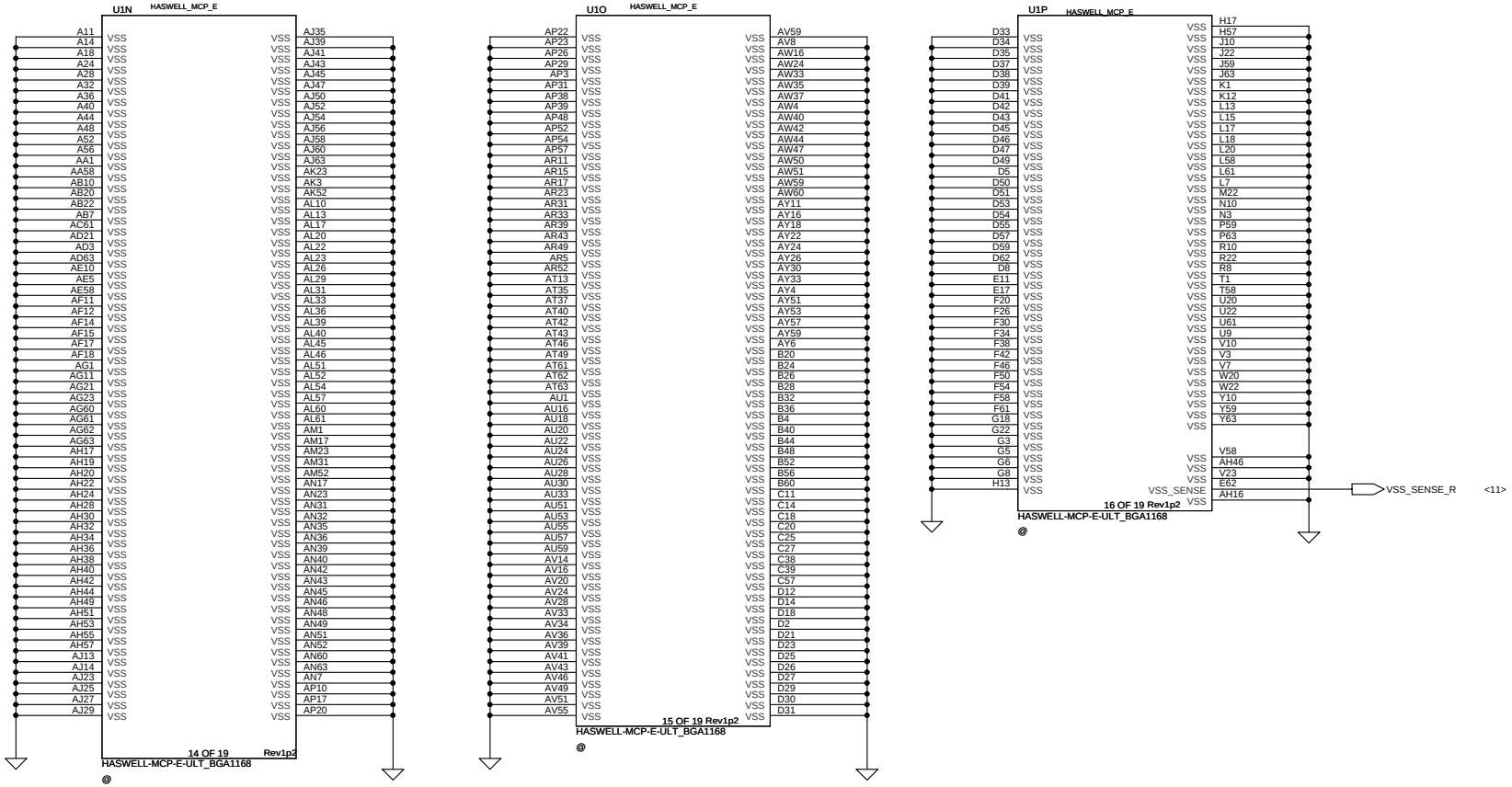

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Compal Electronics, Inc.			
Title: HSW MCP(10/11) GND			
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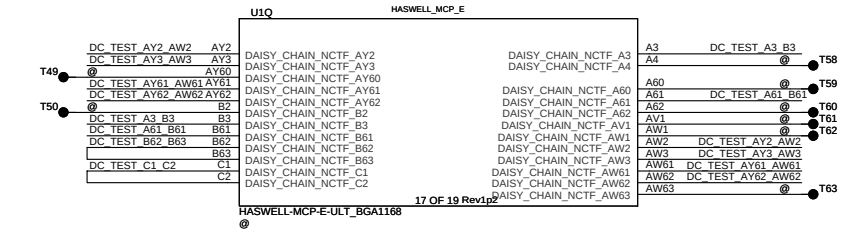
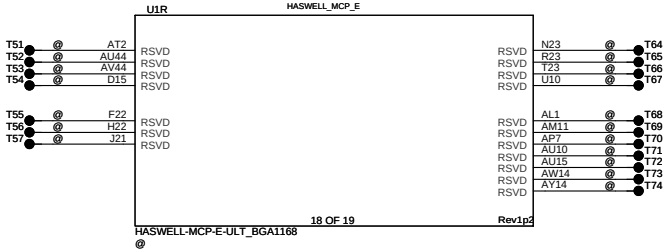
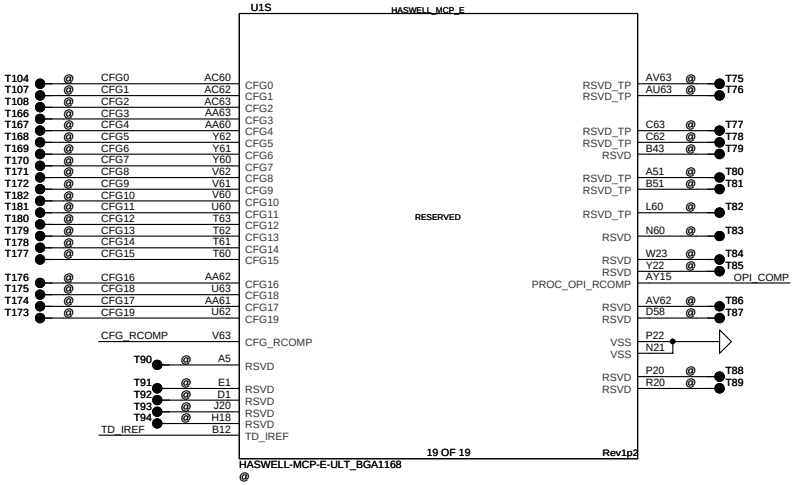
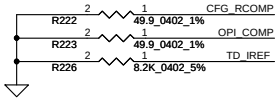
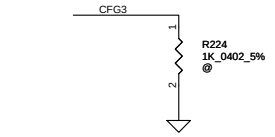




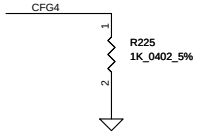




CFG Straps for Processor



Physical Debug Enable (DFX Privacy)	
CFG3	1: DISABLED 0: ENABLED; SET DFX ENABLED BIT IN DEBUG INTERFACE MSR



Display Port Presence Strap	
CFG4	1 : Disabled; No Physical Display Port attached to Embedded Display Port 0 : Enabled; An external Display Port device is connected to the Embedded Display Port

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Title: **BDW MCP(11/11) RSVD**

Size	Document Number	Rev
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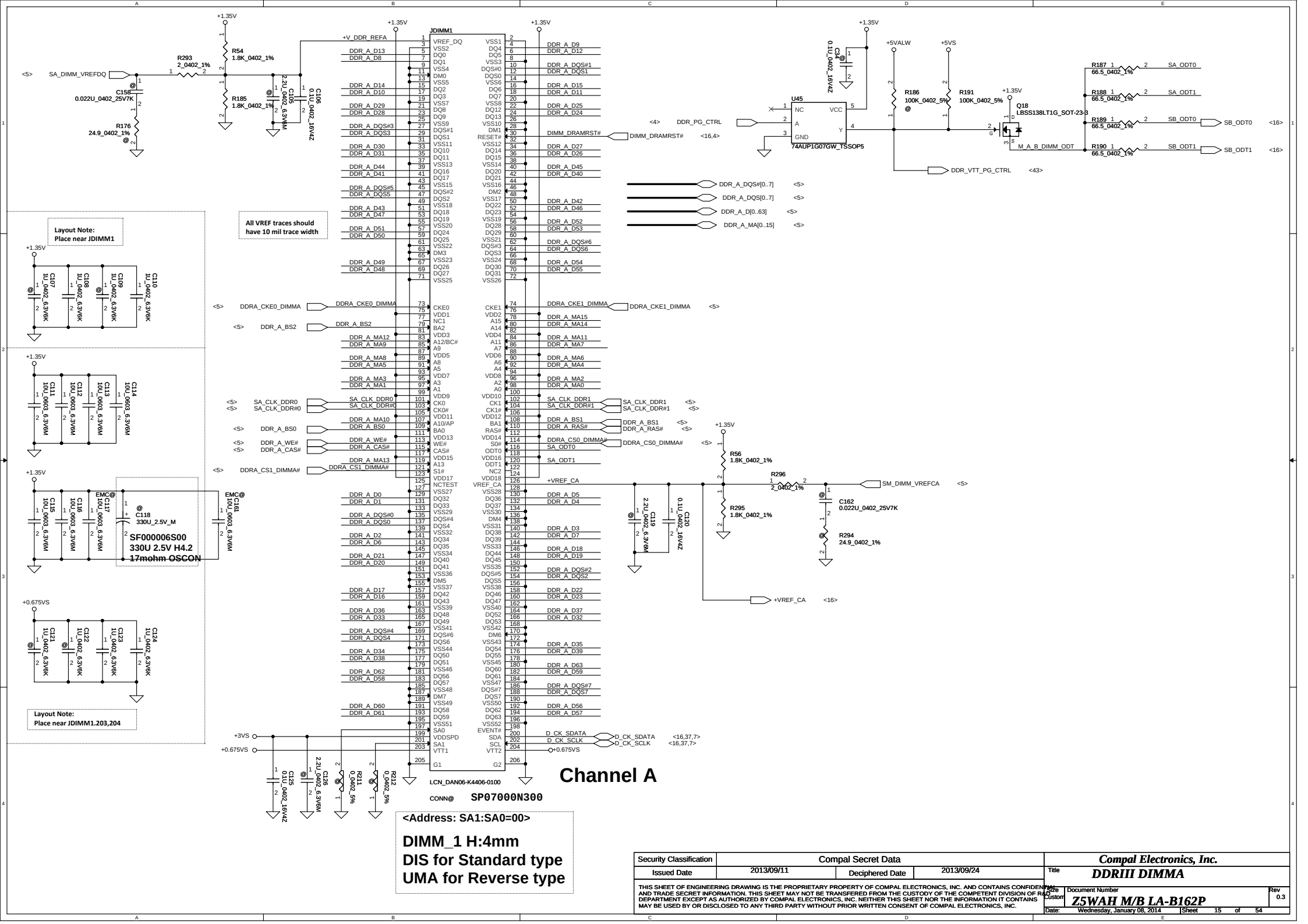

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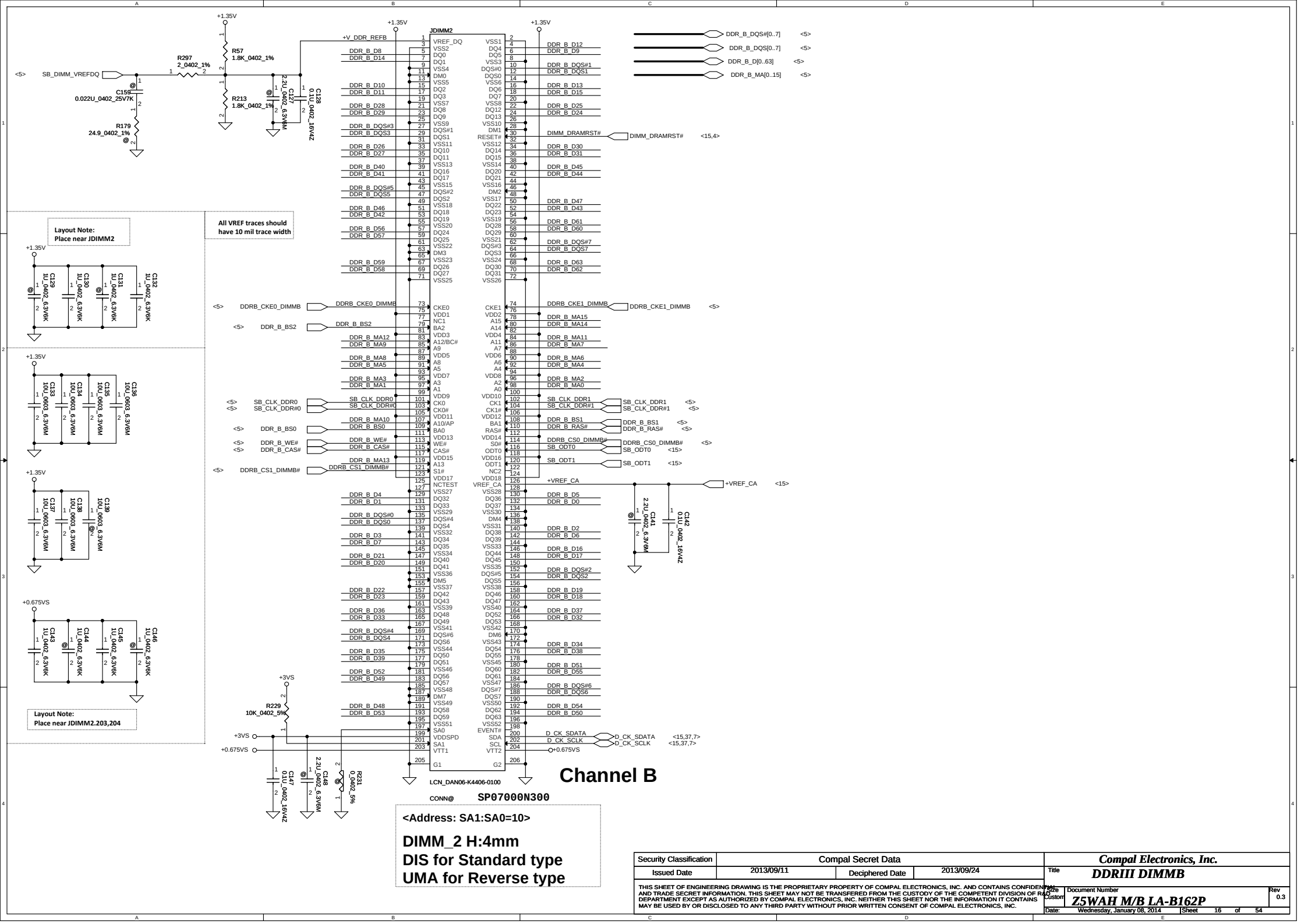
Compal Electronics, Inc.

Title: DDRIII DIMMA

Size: Custom | Document Number: Z5WAH M/B LA-B162P | Rev: 0.3

Date: Wednesday, January 08, 2014 | Sheet 15 of 54



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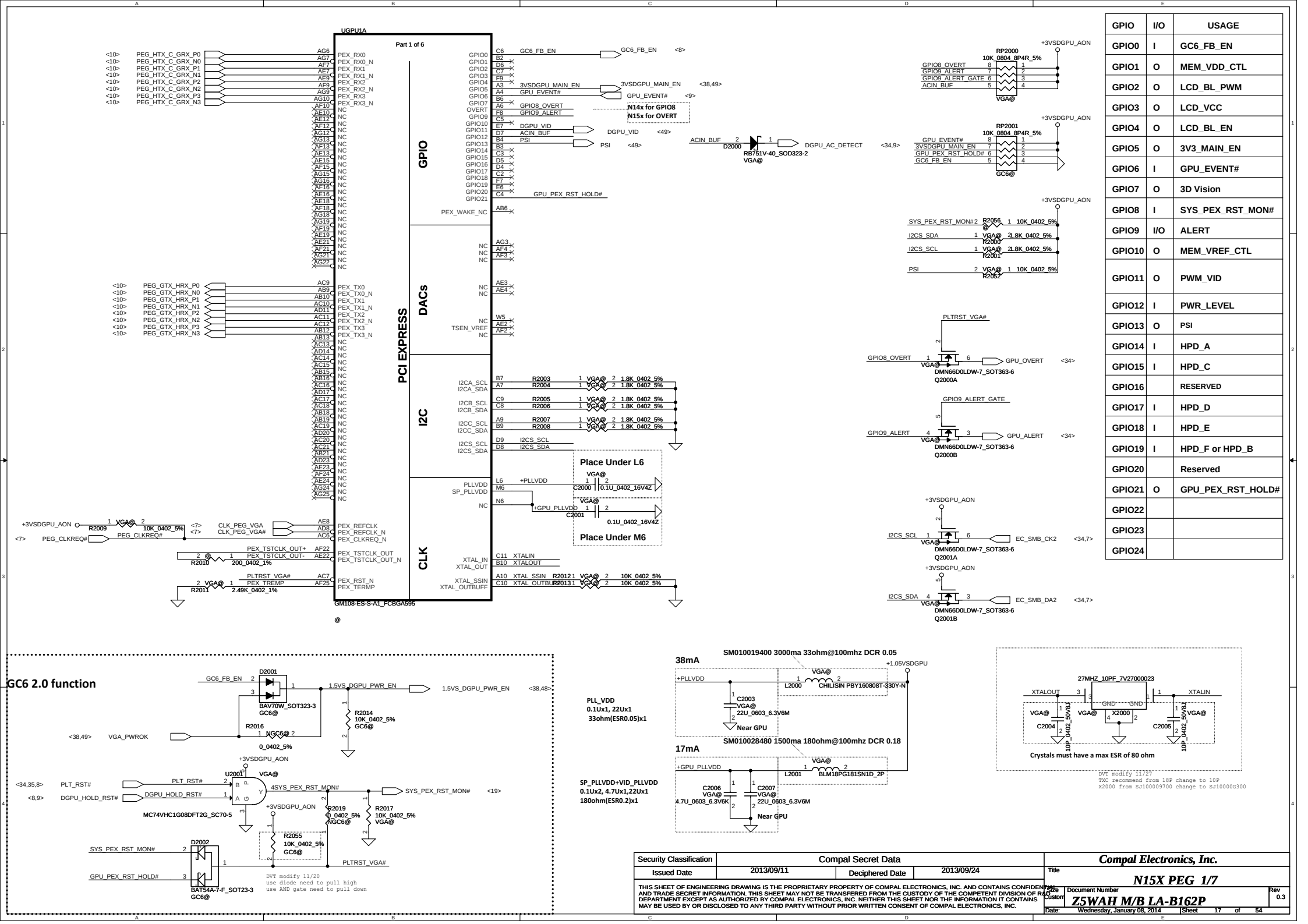
Compal Electronics, Inc.		
Title: DDRIII DIMMB		
Size: Custom	Document Number: Z5WAH M/B LA-B162P	Rev: 0.3
Date: Wednesday, January 08, 2014	Sheet 16 of 54	



GPIO	I/O	USAGE
GPIO0	I	GC6_FB_EN
GPIO1	O	MEM_VDD_CTL
GPIO2	O	LCD_BL_PWM
GPIO3	O	LCD_VCC
GPIO4	O	LCD_BL_EN
GPIO5	O	3V3_MAIN_EN
GPIO6	I	GPU_EVENT#
GPIO7	O	3D Vision
GPIO8	I	SYS_PEX_RST_MON#
GPIO9	I/O	ALERT
GPIO10	O	MEM_VREF_CTL
GPIO11	O	PWM_VID
GPIO12	I	PWR_LEVEL
GPIO13	O	PSI
GPIO14	I	HPD_A
GPIO15	I	HPD_C
GPIO16		RESERVED
GPIO17	I	HPD_D
GPIO18	I	HPD_E
GPIO19	I	HPD_F or HPD_B
GPIO20		Reserved
GPIO21	O	GPU_PEX_RST_HOLD#
GPIO22		
GPIO23		
GPIO24		

Security Classification	Compal Secret Data		
Issued Date	2013/09/11	Deciphered Date	2013/09/24

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Compal Electronics, Inc.

Title: **N15X PEG 1/7**

Size: Custom | Document Number: **Z5WAH M/B LA-B162P** | Rev: 0.3

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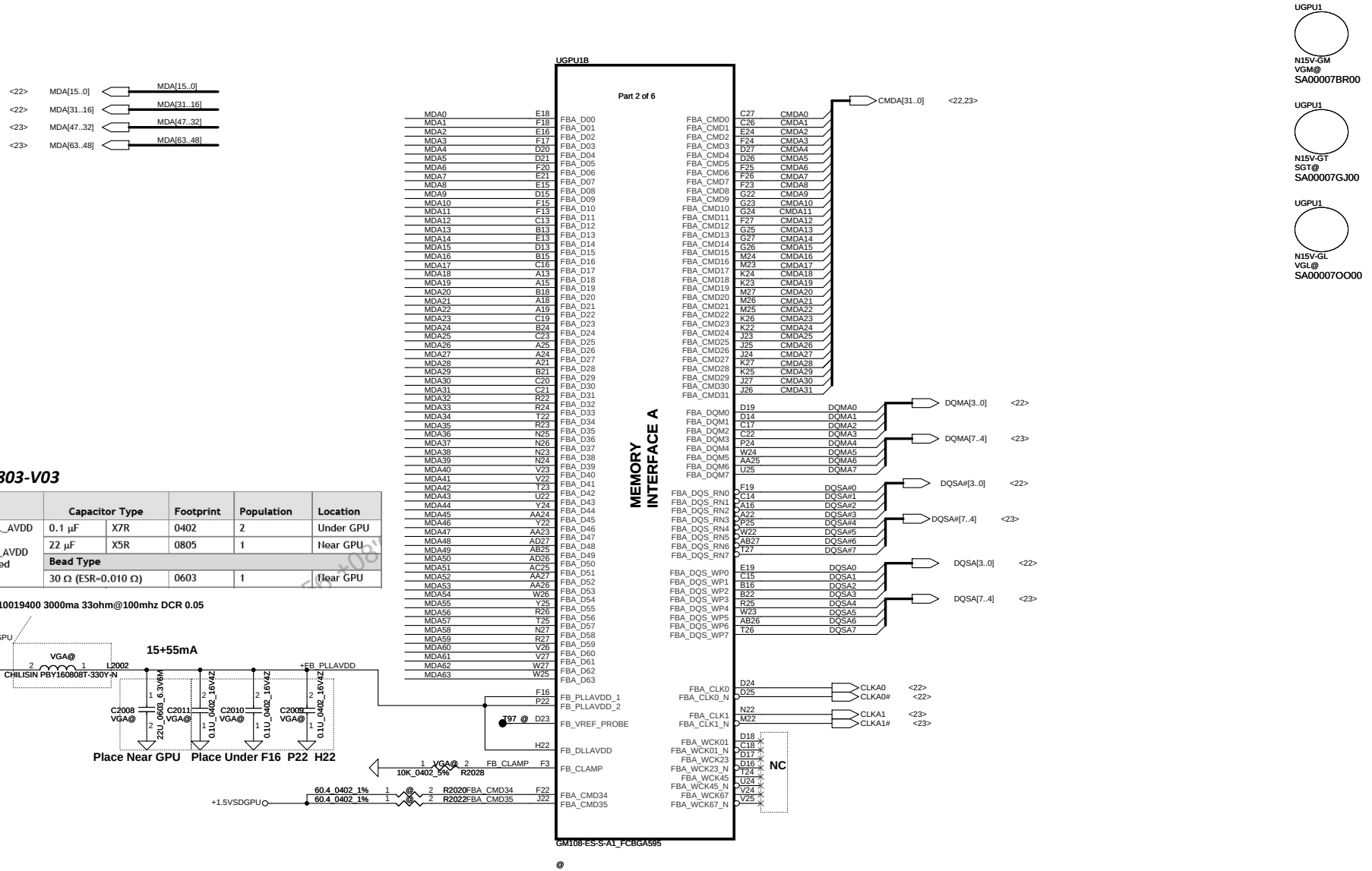
VRAM Interface



NV 15x DG-06803-V03

GPU Package	Rail	Capacitor Type		Footprint	Population	Location
GB2B-64	FBx_PLL_AVDD and FB_DLL_AVDD Combined	0.1 µF	X7R	0402	2	Under GPU
		22 µF	X5R	0805	1	Near GPU
		Bead Type				
		30 Ω (ESR=0.010 Ω)		0603	1	Near GPU

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Compal Electronics, Inc.			
Title: N15X VRAM 2/7			
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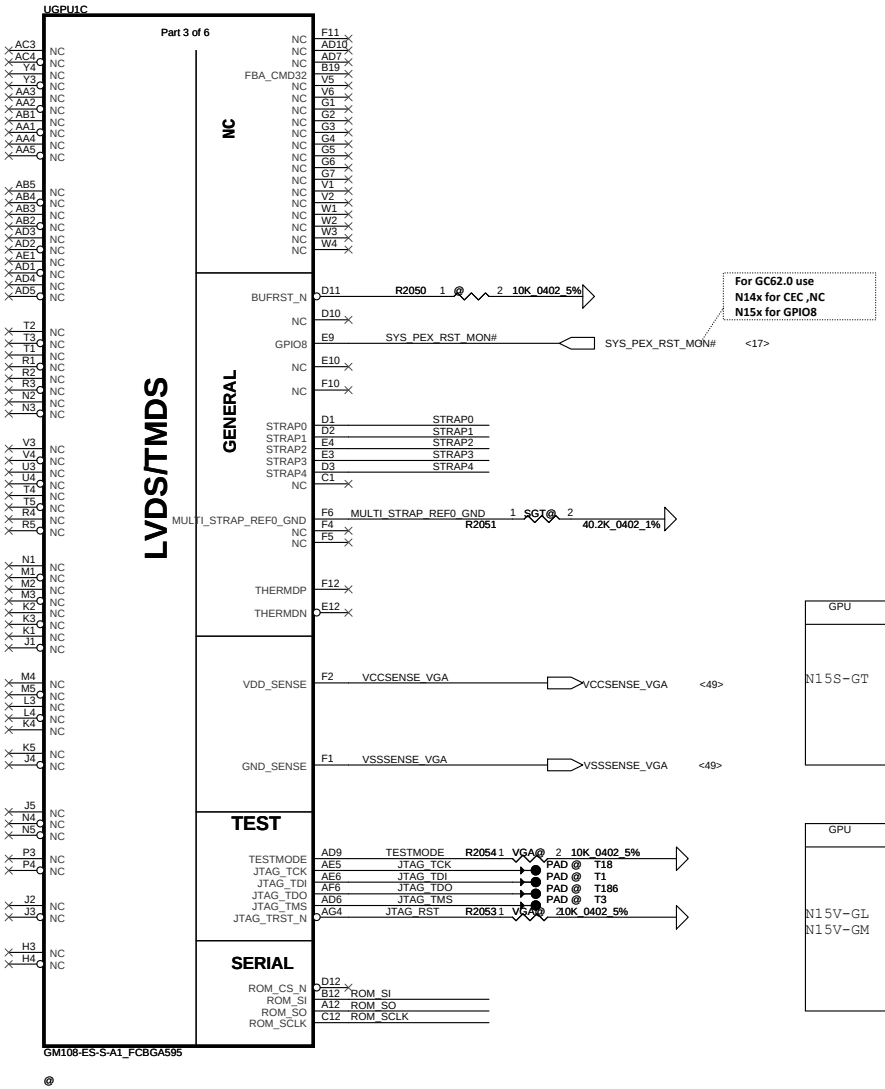
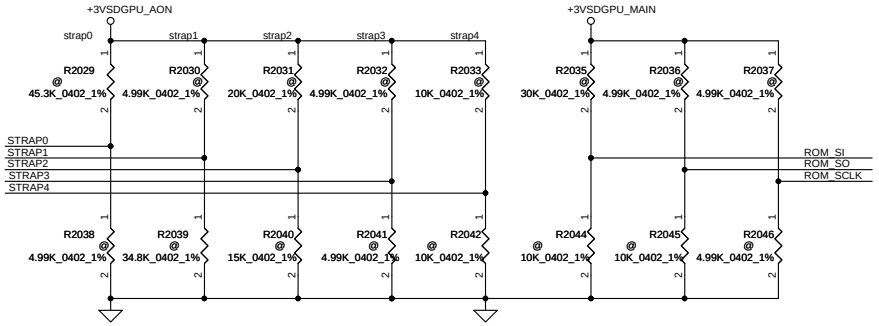


MULTI LEVEL STRAPS



For N15S-GT Binary strap table — Decive ID : 0x1341

GPU	X76	Freq	Memory Size	Memory Config	strap0	strap1	strap2	strap3	strap4	ROM_SI	ROM_SO	ROM_SCLK
N15S-GT	X76550BOL01	1GHz	128Mx16x4	0x7 (SA000067550) Micron MT41J128M16JT-093G:K	PU 50K	NC	NC	NC	NC	PD 45.3K	PD 4.99K	PD 4.99K
	X76550BOL02			0x8 (SA000068U90) Samsung K4W2G1646Q-BC1A						PU 4.99K		
	X76550BOL07			0x6 (SA00006H430) Hynix H5TC2G63FFR-11C						PD 34.8K		
	X76550BOL05	2GHz	256Mx16x4	0x1 (SA000077K20) Micron MT41J256M16HA-093G:E						PD 10K		
				0x2 (SA000076P20) Samsung K4W4G1646D-BC1A						PD 15K		
	X76550BOL06			0x0 (SA00006E840) Hynix H5TC4G63AFR-11C						PD 4.99K		

For N15V-GL/GM Binary strap table — Decive ID : 0x1140

GPU	X76	Freq	Memory Size	Memory Config	strap0	strap1	strap2	strap3	strap4	ROM_SI	ROM_SO	ROM_SCLK
N15V-GL N15V-GM	X76550BOL03	1GHz	128Mx16x4	0x1 (SA000067550) Micron MT41J128M16JT-093G:K	PU 10K	PD10K	PD 10K	PD 10K	PD 10K	PD 10K	PD 10K	PD 10K
	X76550BOL04			0x5 (SA000068U00) Samsung K4W2G1646E-BC1A	PU 10K	PD10K	PU 10K	PD 10K				
	X76550BOL08			0xC (SA00006H430) Hynix H5TC2G63FFR-11C	PD 10K	PD10K	PU 10K	PD 10K				
				0xE (SA000068U90) Samsung K4W2G1646Q-BC1A	PD 10K	PU 10K	PU 10K	PU 10K				
		2GHz	256Mx16x4	0x9 (SA000076P20) Samsung K4W4G1646D-BC1A	PU 10K	PD10K	PD 10K	PD 10K				
				0xD (SA000077K20) Micron MT41J256M16HA-093G:E	PU 10K	PD10K	PU 10K	PD 10K				
				0x4 (SA00006E840) Hynix H5TC4G63AFR-11C	PD 10K	PD10K	PU 10K	PD 10K				

Security Classification	Compal Secret Data		
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Compal Electronics, Inc.

Title: N15X LVDS 3/7

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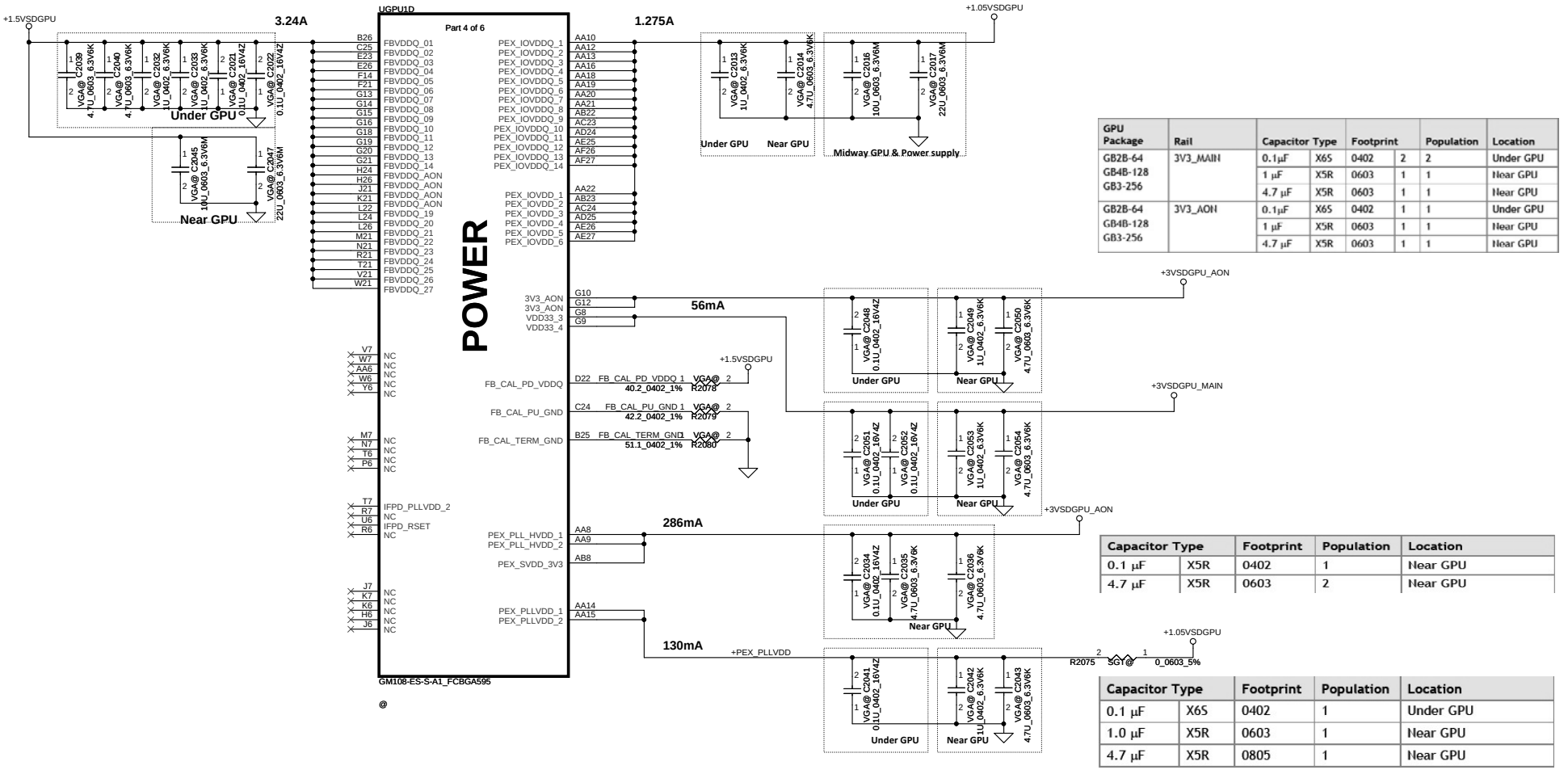
NV 15x DG-06803-V03

GPU Package Type	Capacitor Type		Footprint		Population	Location
GB2B-64 DDR3	0.1μF	X7R	0402	2	2	Under GPU
	1 μF	X7R	0603	2	2	Under GPU
	4.7 μF	X6S	0603	2	2	Under GPU
	10 μF	X5R	0805	1	1	Near GPU
	22 μF	X5R	0805	1	1	Near GPU

GPU Package Type	Capacitor Type		Footprint	Population	Location
GB2B-64	1.0 μF	X6S	0402	1	Under GPU
	4.7 μF	X6S	0603	1	Near GPU
	10 μF	X5R	0805	1	Midway between GPU and Power Supply
	22 μF	X5R	0805	1	Midway between GPU and Power Supply



GPU Package	Rail	Capacitor Type		Footprint		Population	Location
GB2B-64 GB4B-128 GB3-256	3V3_MAIN	0.1μF	X6S	0402	2	2	Under GPU
		1 μF	X5R	0603	1	1	Near GPU
		4.7 μF	X5R	0603	1	1	Near GPU
GB2B-64 GB4B-128 GB3-256	3V3_AON	0.1μF	X6S	0402	1	1	Under GPU
		1 μF	X5R	0603	1	1	Near GPU
		4.7 μF	X5R	0603	1	1	Near GPU

Capacitor Type		Footprint	Population	Location
0.1 μF	X5R	0402	1	Near GPU
4.7 μF	X5R	0603	2	Near GPU

Capacitor Type		Footprint	Population	Location
0.1 μF	X6S	0402	1	Under GPU
1.0 μF	X5R	0603	1	Near GPU
4.7 μF	X5R	0805	1	Near GPU

R2075 BLM18PG121SN1D_0603 VGL@ SM010028800

R2075 BLM18PG121SN1D_0603 VGM@ SM010028800

SM010028800 2000ma 120ohm@100mhz DCR 0.1

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Compal Electronics, Inc.

Title: N15X POWER & GND 4/9

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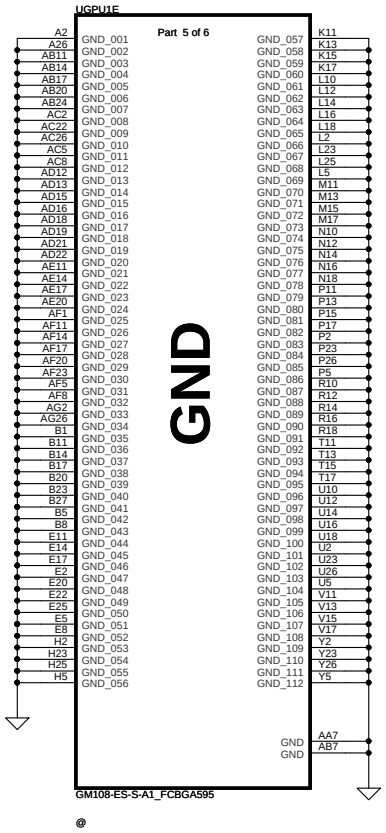

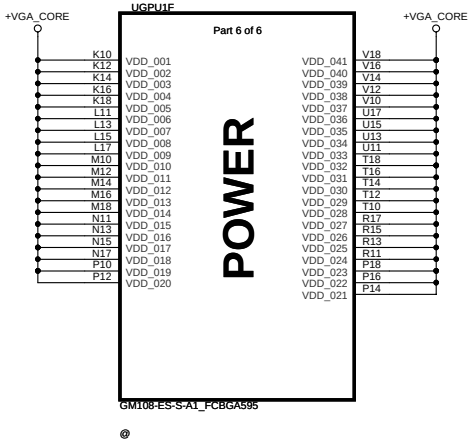

NV 15x DG-06803-V03

GPU Package Type	Capacitor Type		Footprint		Population	Location	Comments
GB2B-64	4.7 µF	X6S	0603	10	10	Under GPU	
	1 µF	X6S	0402	4	4	Under GPU	
	47 µF	X5R	0805	1	1	Near GPU	
	22 µF	X5R	0805	1	1	Near GPU	
	4.7 µF	X5R	0805	5	5	Near GPU	
	330 µF	POS	7343	1	1	Near GPU	ESR ≤ 6 mΩ

DA-06840-V03

Table 6. EDP-Peak

Products	VRM Type	GPU Core — (A)	FB Total 1.5/1.35V (A)	1.05V Total 1.05V (A)
~~N15S-GM~~	~~DDR3/L~~	~~48.11~~	~~4.23~~	~~0.91~~
N15S-GT	DDR3/L	60.07	4.26	0.91

DA-06925-V05

Table 6. EDP-Peak at T_J = 102°C

Power Supply Rail	N15V-GM-S DDR3/L
(V)	(A)
GPU Core Max	51.50
FB Total	4.25
PEXVDD	2.29

DA07075-V01

Table 7. EDP-Peak at T_J = 102°C

Power Supply Rail	N15V-GL DDR3
(V)	(A)
GPU Core Max	28.26
FB Total	4.07
PEXVDD	1.82

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Title: N15X POWER & GND 5/7

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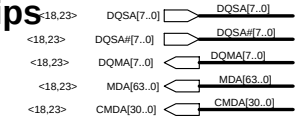
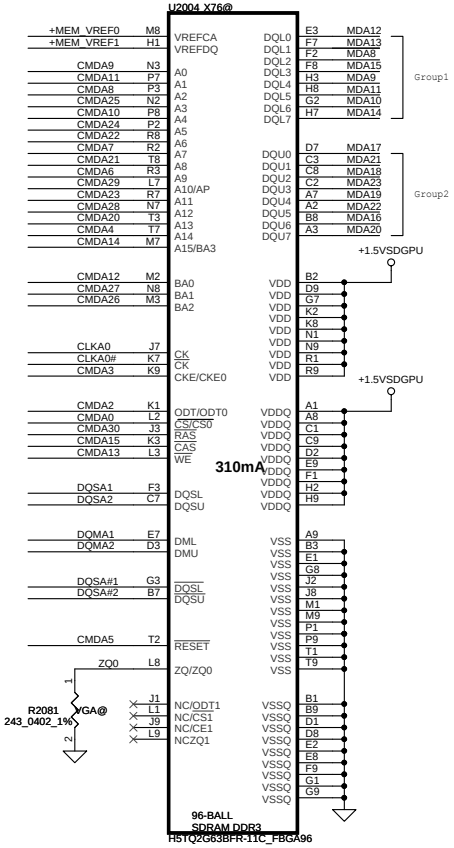
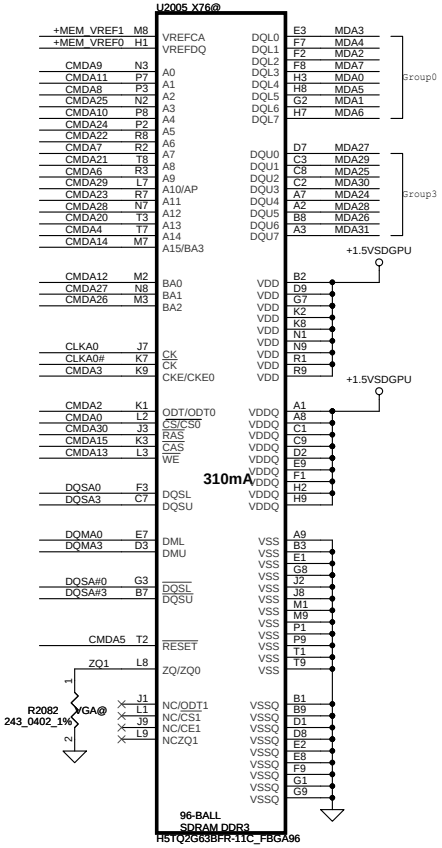
VRAM DDR3 chips

Low 32

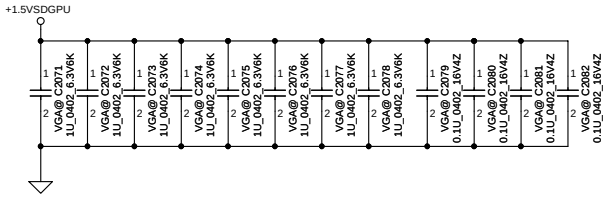


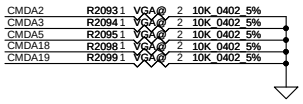


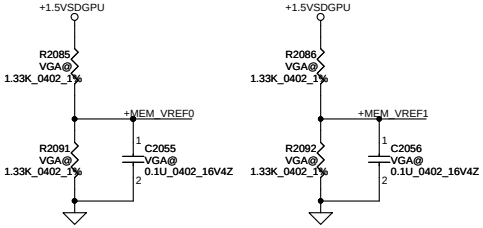


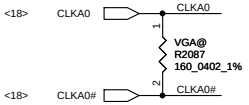
Mode D Address	0..31	32..63
CMD0	CS0_L#	
CMD1		
CMD2	ODT_L	
CMD3	CKE_L	
CMD4	A14	A14
CMD5	RST	RST
CMD6	A9	A9
CMD7	A7	A7
CMD8	A2	A2
CMD9	A0	A0
CMD10	A4	A4
CMD11	A1	A1
CMD12	BA0	BA0
CMD13	WE*	WE*
CMD14	A15	A15
CMD15	CAS*	CAS*
CMD16		CS0_H#
CMD17		
CMD18		ODT_H
CMD19		CKE_H
CMD20	A13	A13
CMD21	A8	A8
CMD22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

	Command Bit	Default Pull-down
DDR3	ODTx	10k
	CKEx	10k
	RST	10k
	CS*	No Termination









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VRAM DDR3 chips

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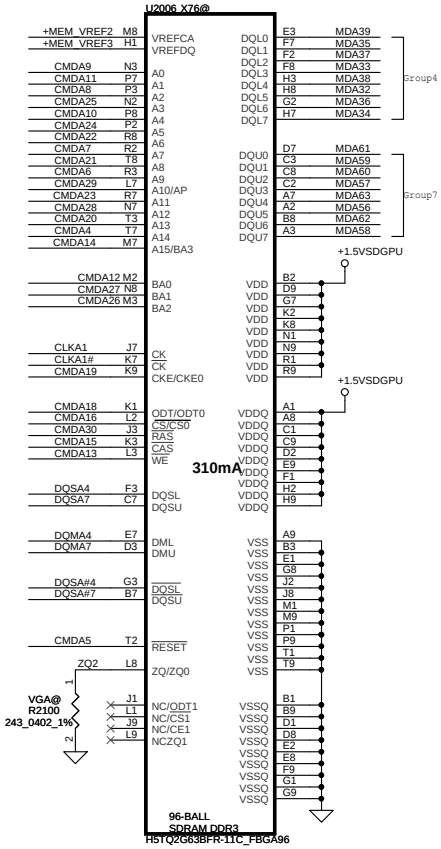
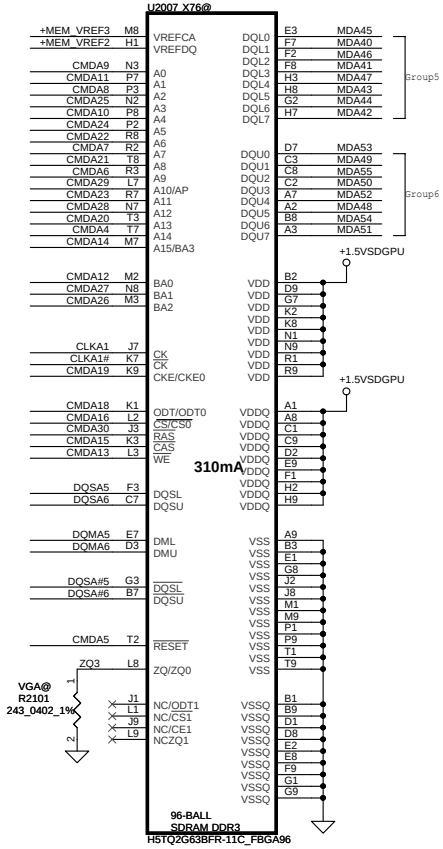
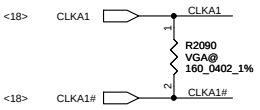
High 32

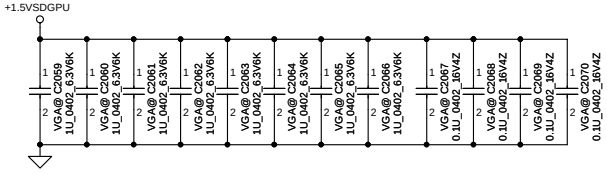


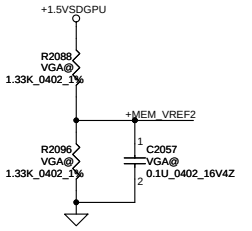


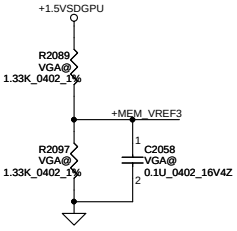
Mode D Address	0..31	32..63
CMD0	CS0_L#	
CMD1		
CMD2	ODT_L	
CMD3	CKE_L	
CMD4	A14	A14
CMD5	RST	RST
CMD6	A9	A9
CMD7	A7	A7
CMD8	A2	A2
CMD9	A0	A0
CMD10	A4	A4
CMD11	A1	A1
CMD12	BA0	BA0
CMD13	WE*	WE*
CMD14	A15	A15
CMD15	CAS*	CAS*
CMD16		CS0_H#
CMD17		
CMD18		ODT_H
CMD19		CKE_H
CMD20	A13	A13
CMD21	A8	A8
CMD22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

	Command Bit	Default Pull-down
DDR3	ODTx	10k
	CKEx	10k
	RST	10k
	CS*	No Termination









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Compal Electronics, Inc.

Title: N15X DDR3 7/7

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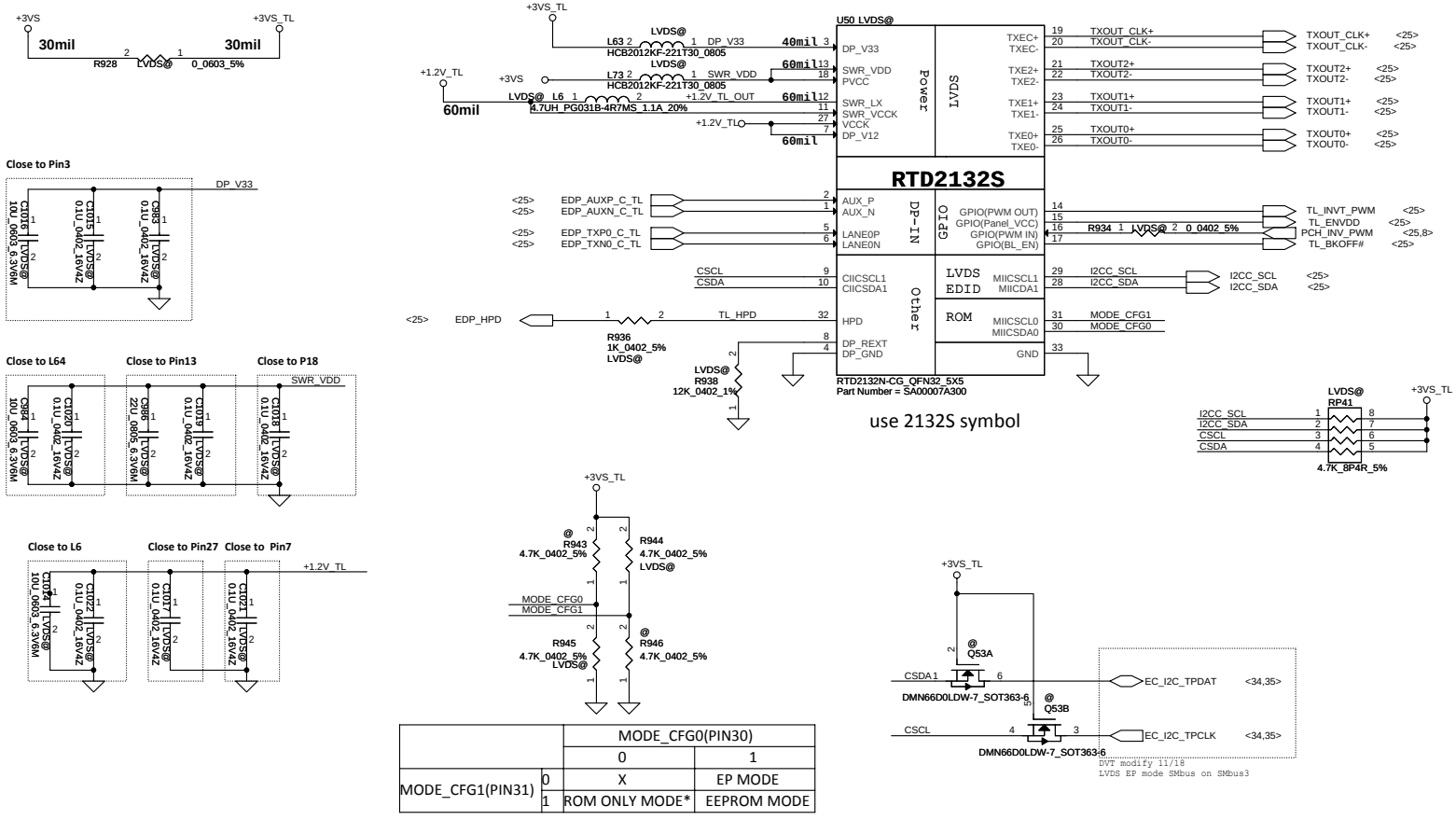
LVDS Translator - RTD2132R



		MODE_CFG0(PIN30)	
		0	1
MODE_CFG1(PIN31)	0	X	EP MODE
	1	ROM ONLY MODE*	EEPROM MODE

Title	LVDS Translator - RTD2132R		
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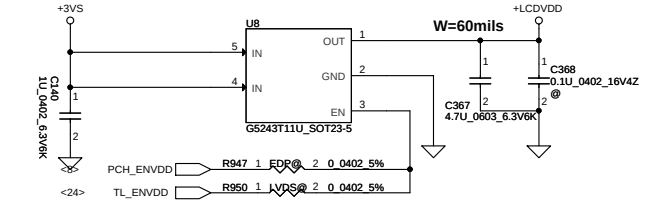
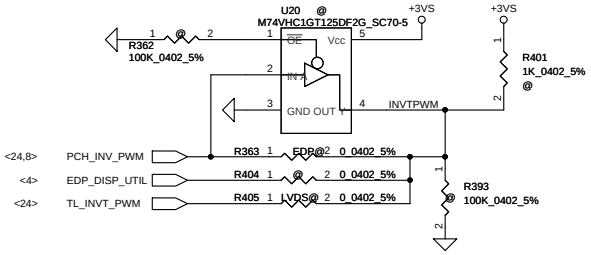
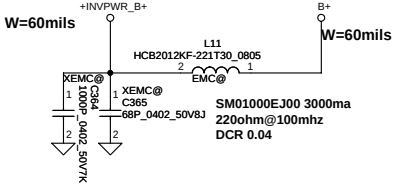
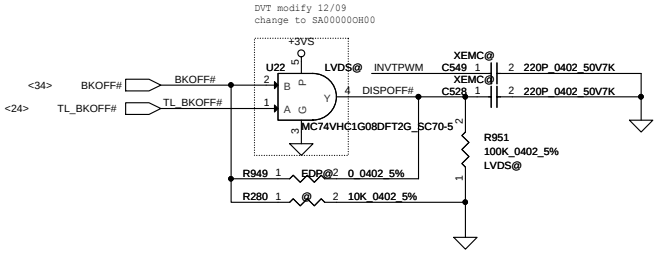
EDP / LVDS conn.

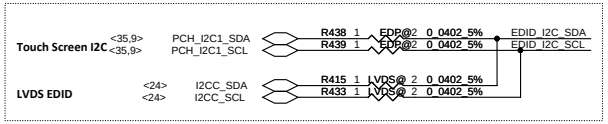
LCD POWER CIRCUIT











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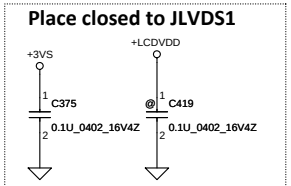
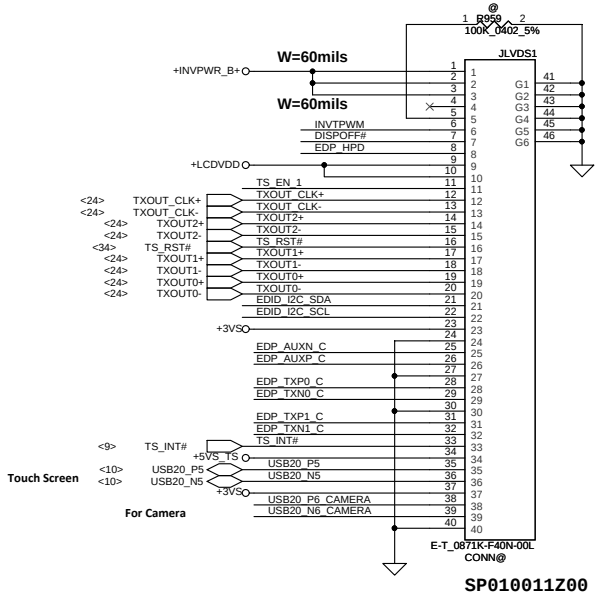
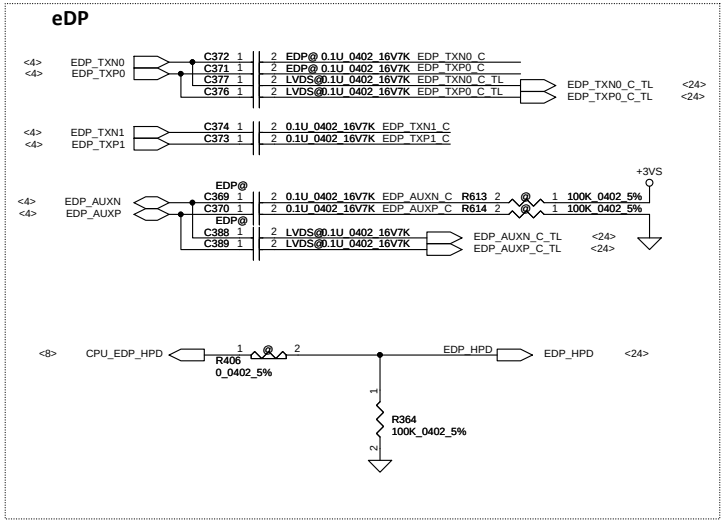


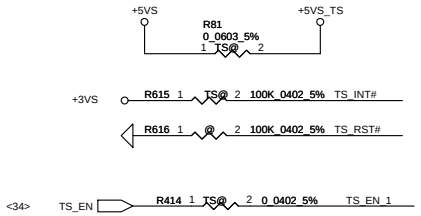
LCD/ LED PANEL Conn.



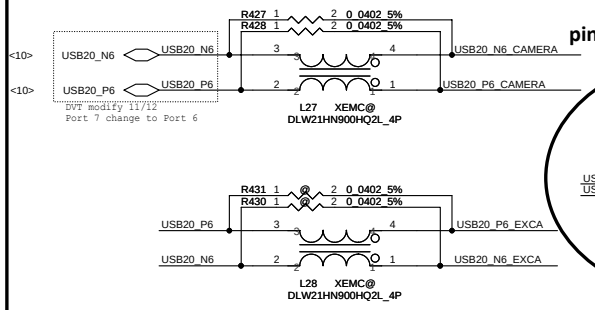
eDP



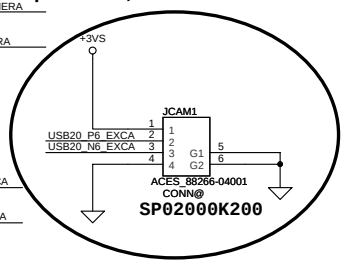
Touch Screen



Camera



pin define, conn need to confirm



Security Classification	Compal Secret Data		
Issued Date	2013/09/11	Deciphered Date	2013/09/24

Compal Electronics, Inc.

Title: eDP Connector

Size	Document Number	Rev
Custom	Z5WAH M/B LA-B162P	0.3
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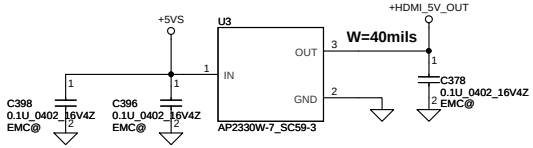
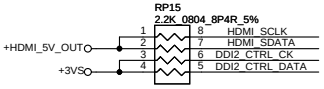
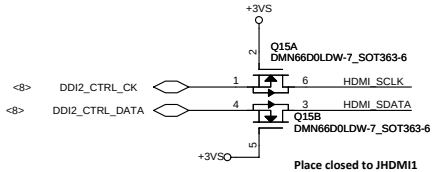
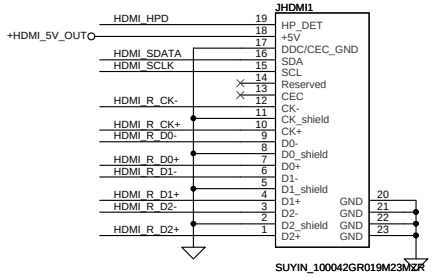
HDMI conn.

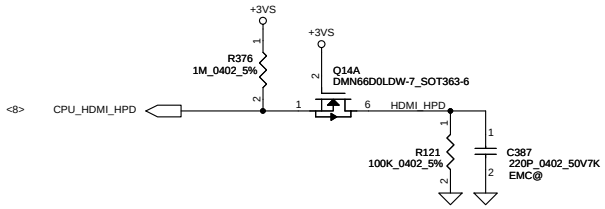






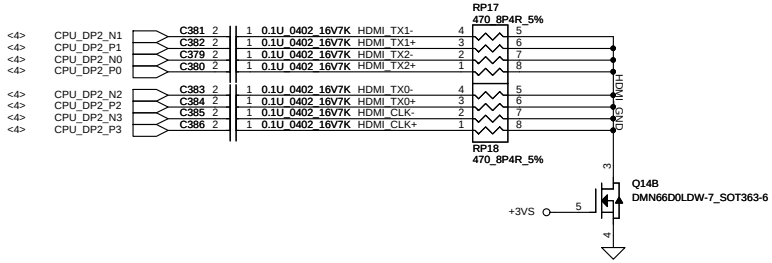
HDMI connector





SM070001310 400ma 90ohm@100mhz DCR 0.3

HDMI_CLK-	R368	XEMC@	0_0402_5%	HDMI_R_CK-
HDMI_CLK+	R369	XEMC@	0_0402_5%	HDMI_R_CK+
HDMI_TX0-	R370	XEMC@	0_0402_5%	HDMI_R_D0-
HDMI_TX0+	R371	XEMC@	0_0402_5%	HDMI_R_D0+
HDMI_TX1-	R372	XEMC@	0_0402_5%	HDMI_R_D1-
HDMI_TX1+	R373	XEMC@	0_0402_5%	HDMI_R_D1+
HDMI_TX2-	R374	XEMC@	0_0402_5%	HDMI_R_D2-
HDMI_TX2+	R375	XEMC@	0_0402_5%	HDMI_R_D2+



Security Classification	Compal Secret Data		
Issued Date	2013/09/11	Deciphered Date	2013/09/24

Compal Electronics, Inc.

Title: HDMI Conn

Size	Document Number	Rev
Custom	Z5WAH M/B LA-B162P	0.3

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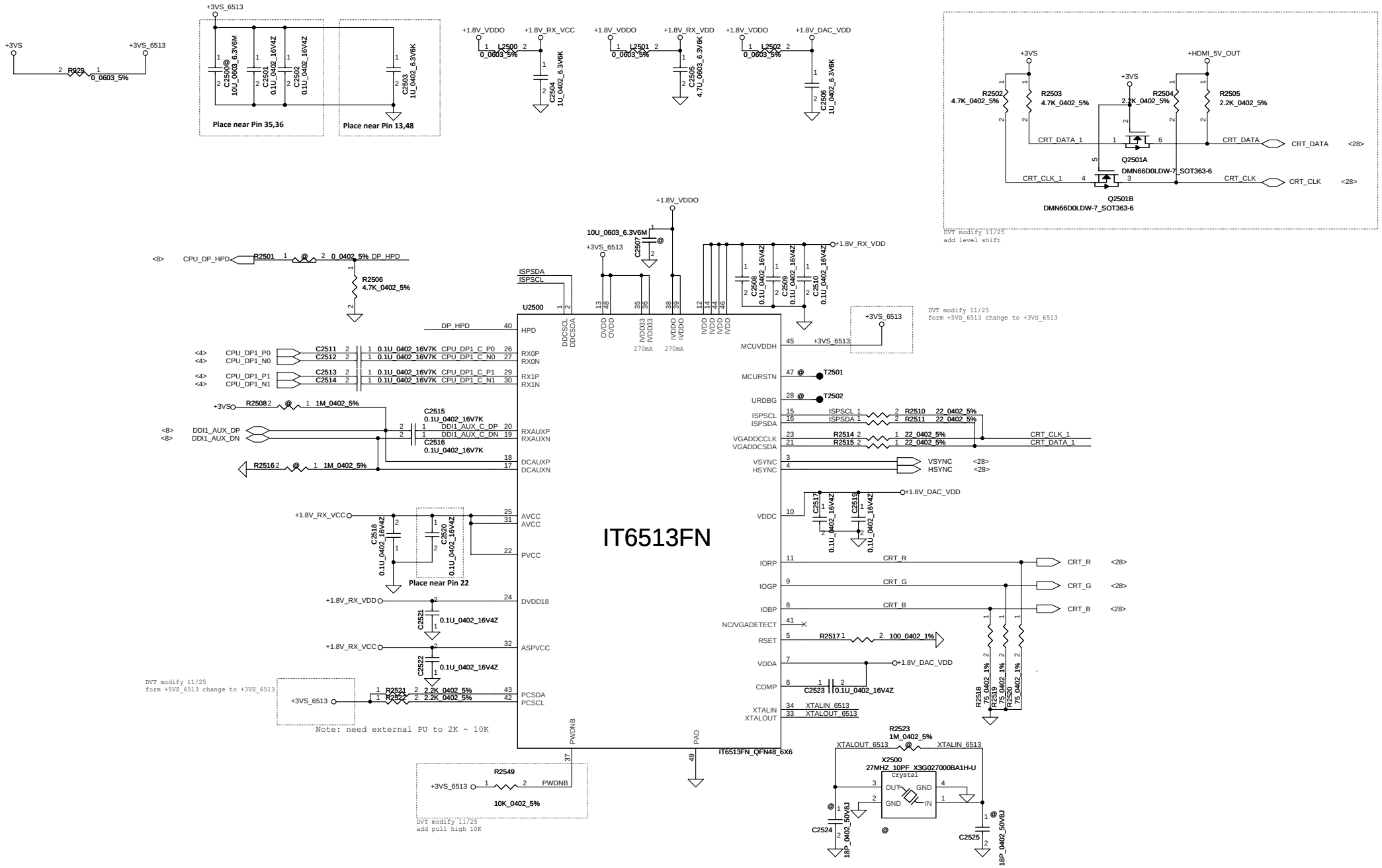
DP to VGA-IT6513



Security Classification	Compal Secret Data		
Issued Date	2013/09/11	Deciphered Date	2013/09/24

Compal Electronics, Inc.

Title: ITE IT6513FN

Size	Document Number	Rev
Custom	Z5WAH M/B LA-B162P	0.3

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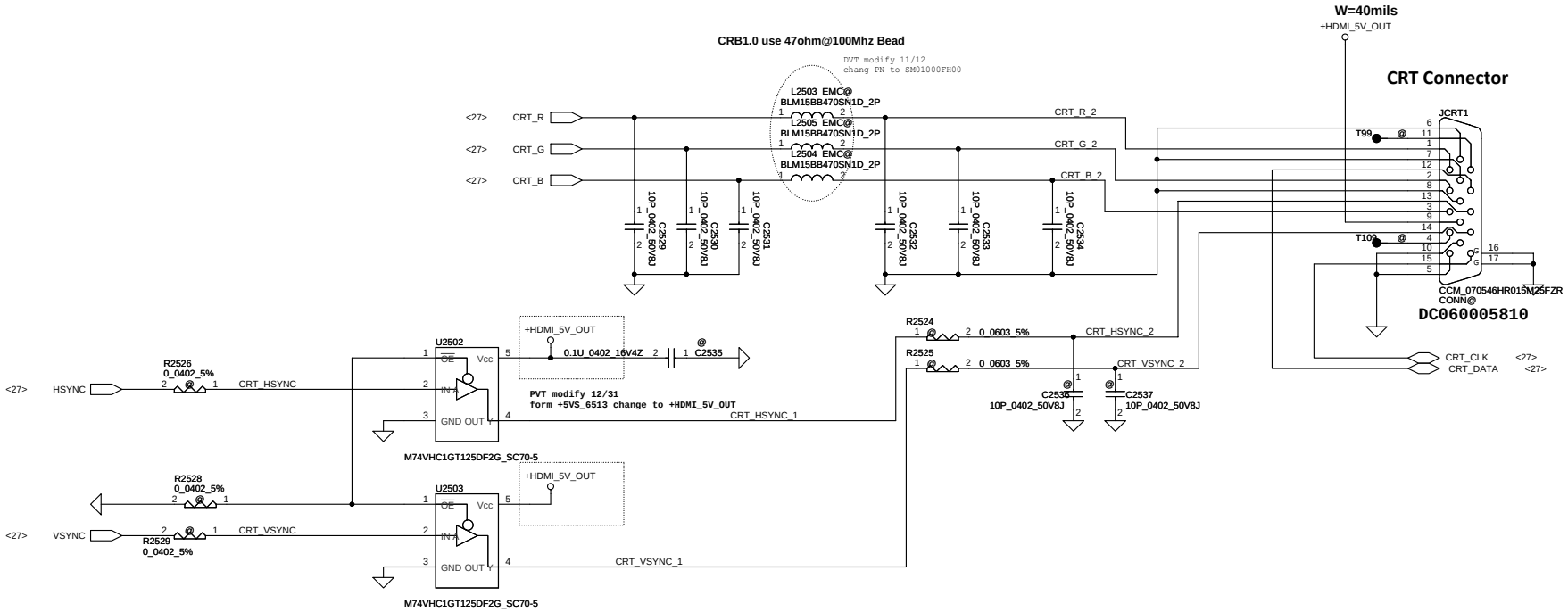
CRT conn.



Security Classification	Compal Secret Data		
Issued Date	2013/09/11	Deciphered Date	2013/09/11

Compal Electronics, Inc.

Title: CRT Connector

Size	Document Number	Rev
Custom	Z5WAH M/B LA-B162P	0.3

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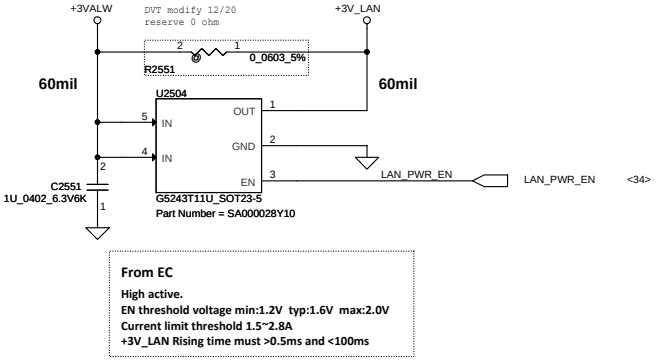
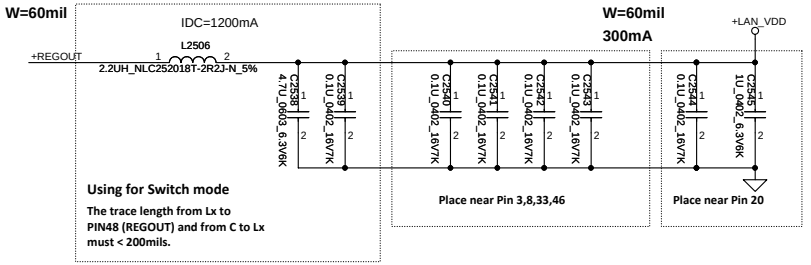
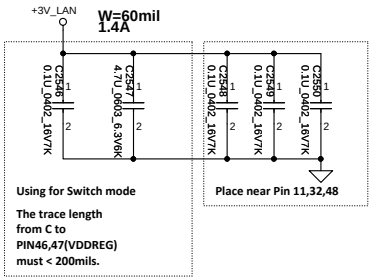
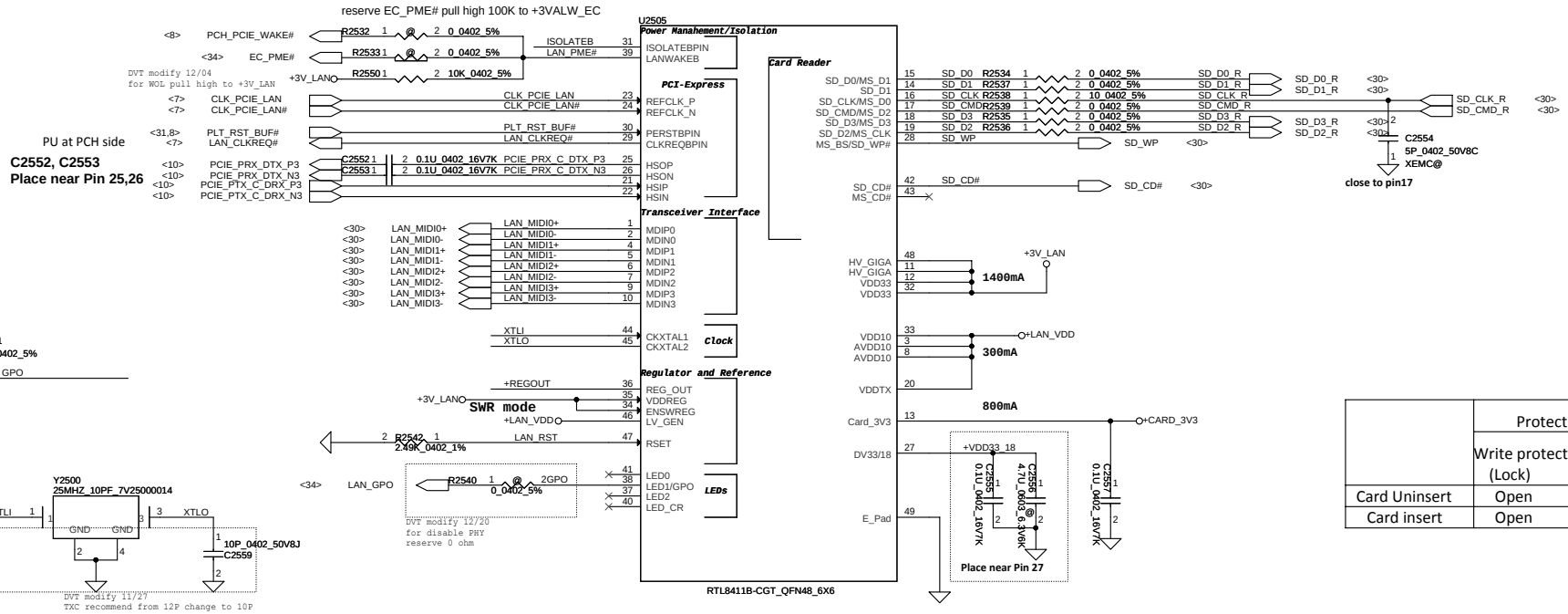
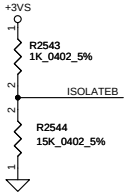
LAN-RTL8411B











	Protect cotact		Card contact
	Write protect (Lock)	Write Enable (Unlock)	
Card Uninsert	Open	Open	Open
Card insert	Open	Close	Close

Security Classification	Compal Secret Data		
Issued Date	2013/09/11	Deciphered Date	2013/09/24

Compal Electronics, Inc.

Title: LAN RTL8411-CG

Size	Document Number	Rev
Custom	Z5WAH M/B LA-B162P	0.3

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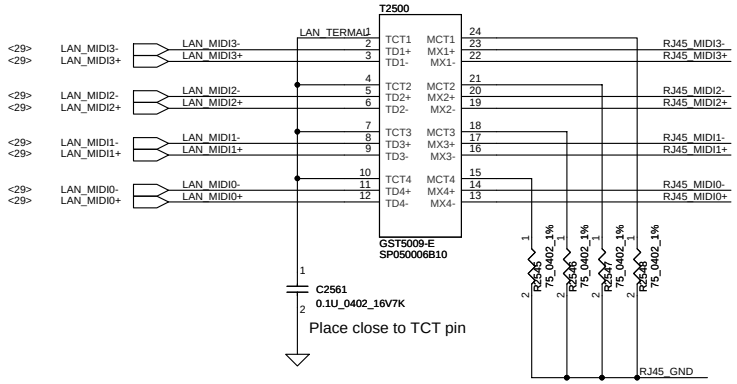
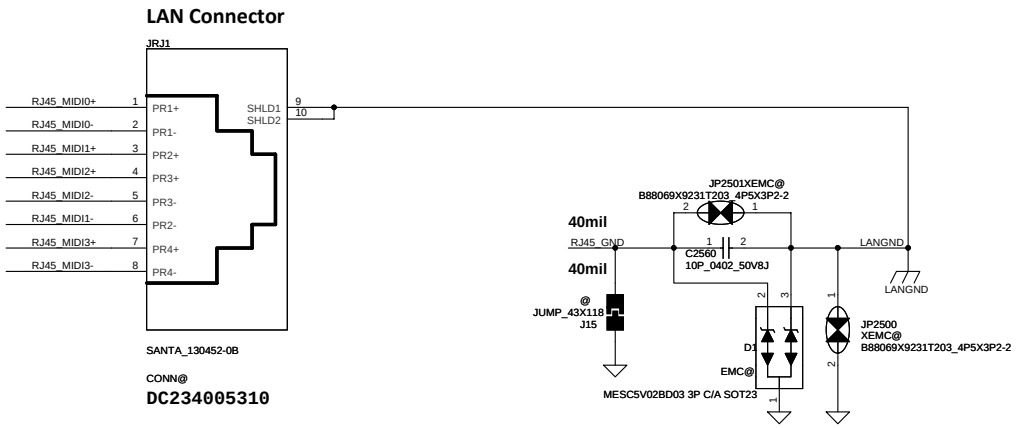
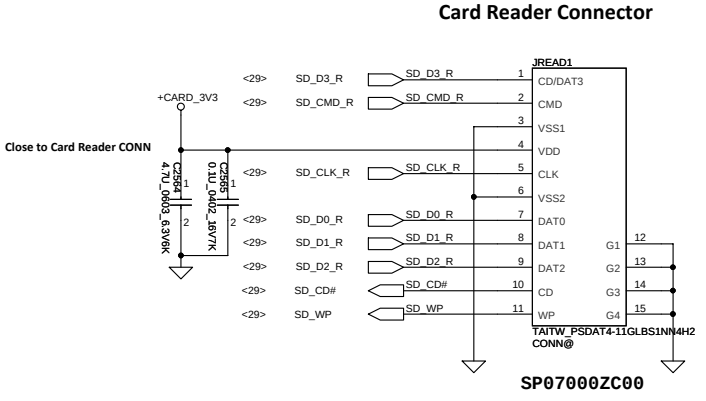
RJ45 / Card Reader conn.







Security Classification	Compal Secret Data		
Issued Date	2013/09/11	Deciphered Date	2013/09/24

Compal Electronics, Inc.

Title: LAN RJ45/CR SD Connector

Size	Document Number	Rev
Custom	Z5WAH M/B LA-B162P	0.3
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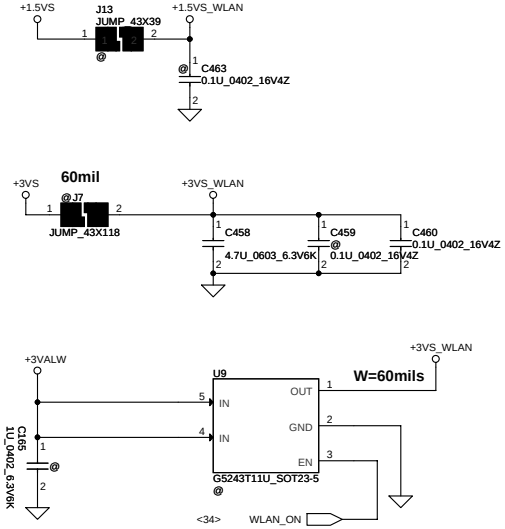
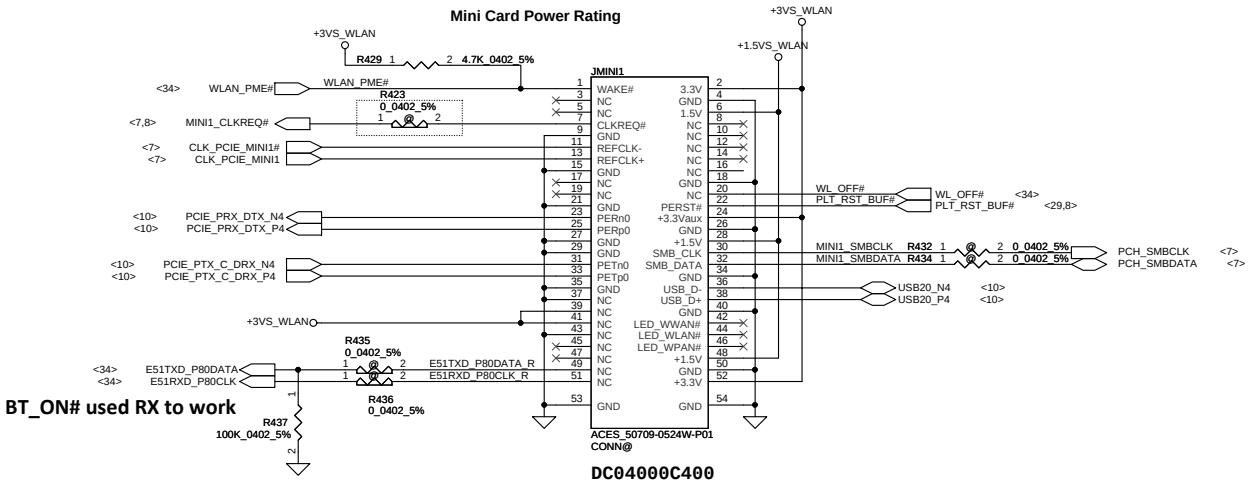
Wireless LAN





Security Classification	Compal Secret Data		
Issued Date	2013/09/11	Deciphered Date	2013/09/24

Compal Electronics, Inc.

Title: MINI CARD (WLAN)

Size: Custom | Document Number: Z5WAH M/B LA-B162P | Rev: 0.3

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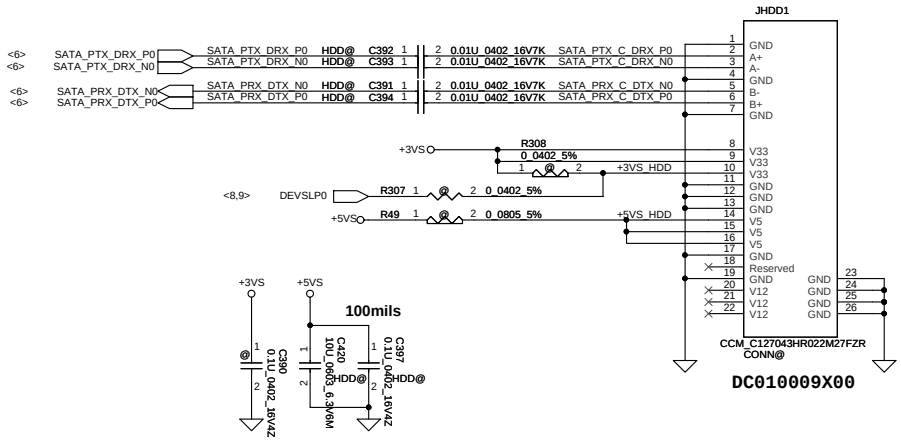
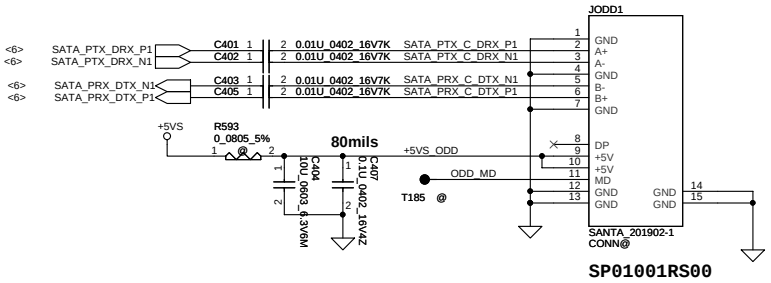
SATA HDD1 Conn.



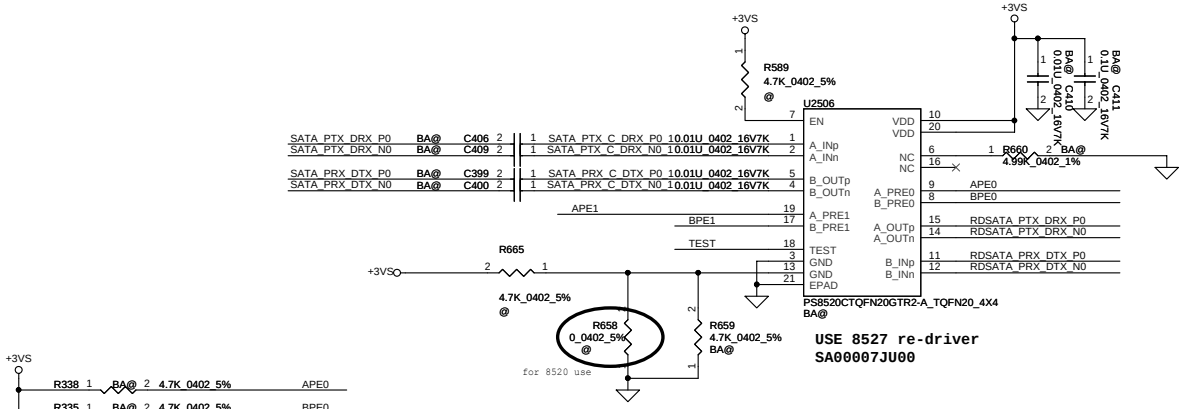
DC010009X00

SATA ODD Conn.

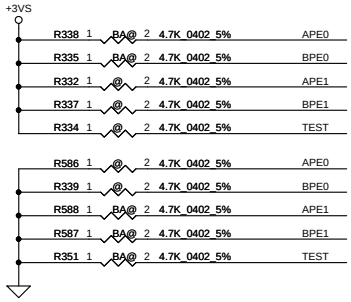


SP01001RS00

SATA Re-Driver HDD Conn. for BA50

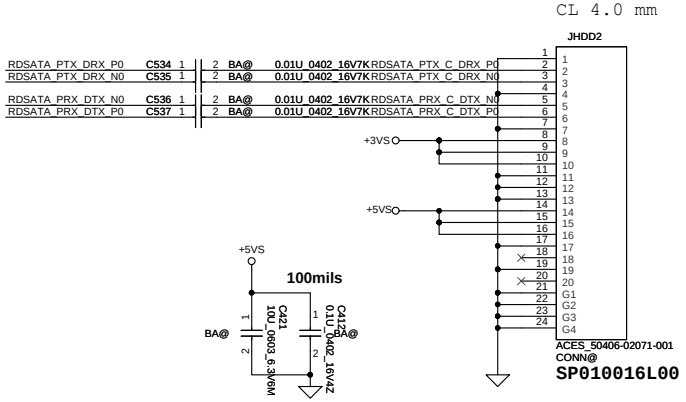


USE 8527 re-driver
SA00007JU00



SATA HDD1 Conn.

CL 4.0 mm



SP010016L00

Security Classification	Compal Secret Data		
Issued Date	2013/09/11	Deciphered Date	2013/09/24

Compal Electronics, Inc.

Title: HDD/ODD/ HDD Re-Driver

Size: Custom | Document Number: Z5WAH M/B LA-B162P | Rev: 0.3

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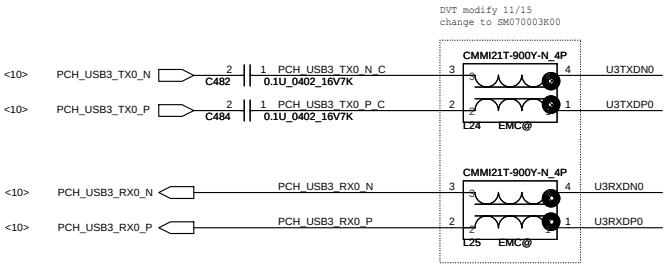
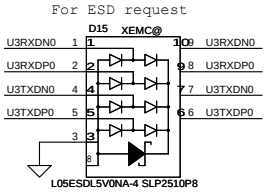
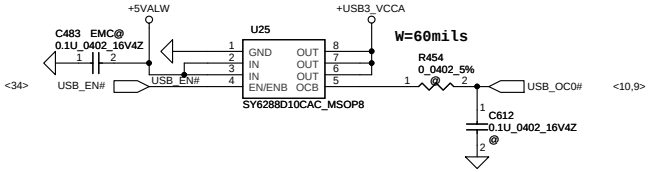
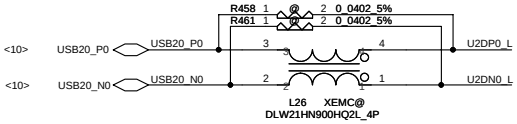
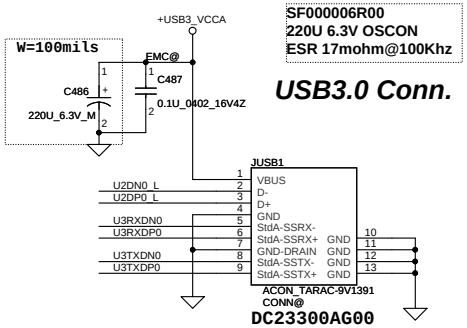
USB3.0 (Port 0)



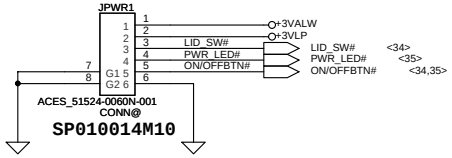




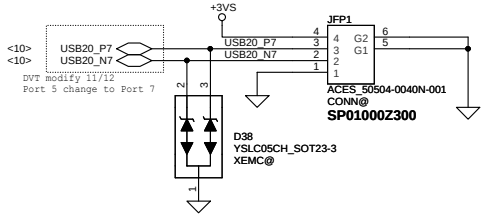




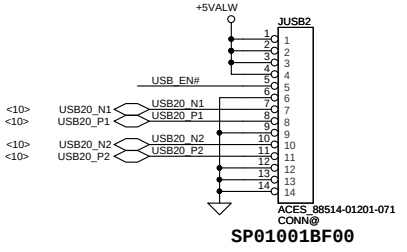
PWR/B



Finger Print /B for BA50



USB/B (USB Port 1, Port2)



Security Classification	Compal Secret Data		
Issued Date	2013/09/11	Deciphered Date	2013/09/24

Compal Electronics, Inc.

Title: USB3.0 Conn/USB_B/PWR_B

Size	Document Number	Rev
Custom	Z5WAH M/B LA-B162P	0.3

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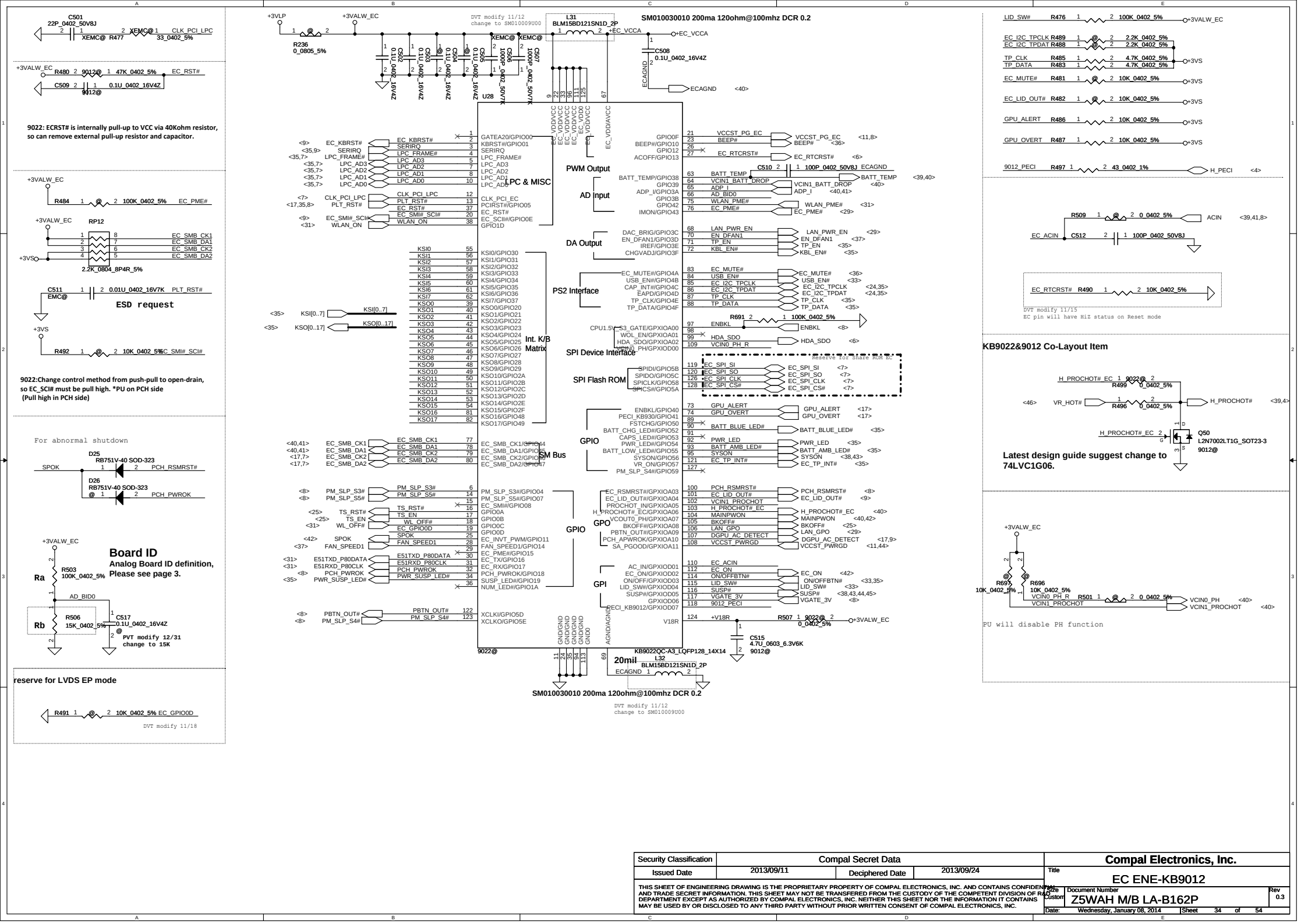

Security Classification	Compal Secret Data		
Issued Date	2013/09/11	Deciphered Date	2013/09/24

Compal Electronics, Inc.

Title: EC ENE-KB9012

Size	Document Number	Rev
Custom	Z5WAH M/B LA-B162P	0.3

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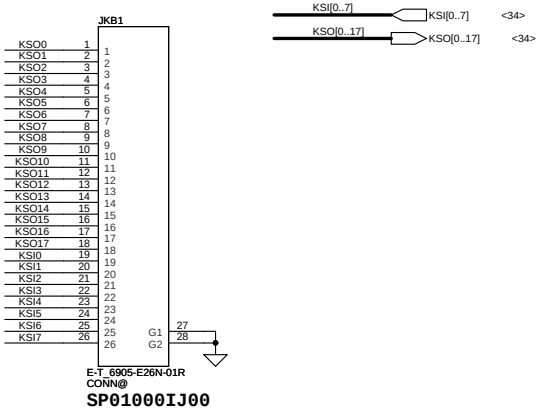
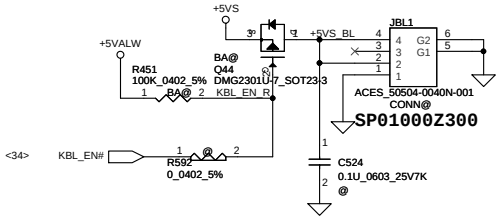
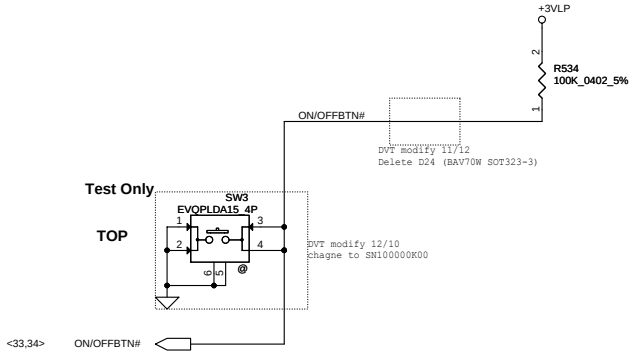
KB Conn.



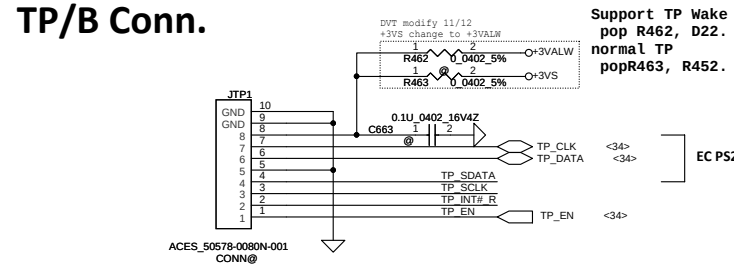
KB BackLight Conn. Reserve



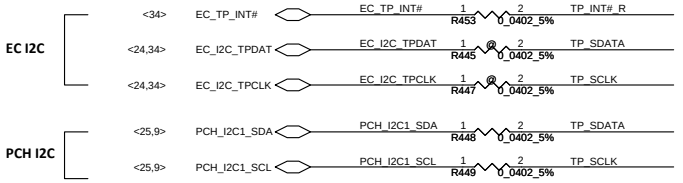
ON/OFF BTN

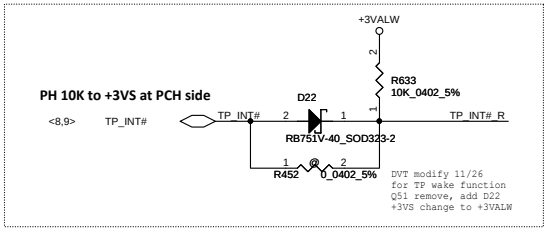


TP/B Conn.

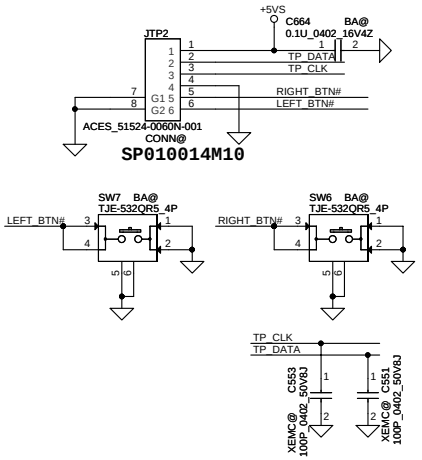


Support TP Wake
pop R462, D22. unpop R463, R452.
normal TP
popR463, R452. unpop R462, D22

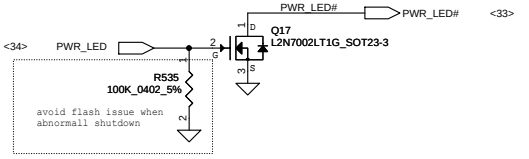


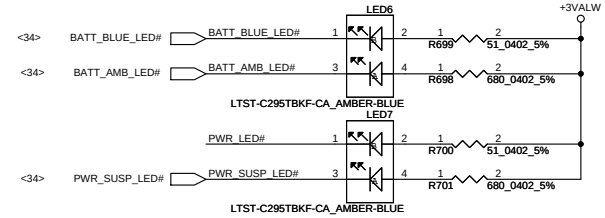


To BA50 TP/B Conn.

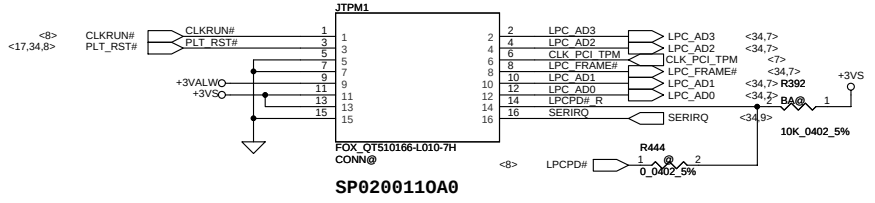


LED





TPM Board for BA50



Security Classification	Compal Secret Data		
Issued Date	2013/09/11	Deciphered Date	2013/09/24

Compal Electronics, Inc.

Title: KB & TP & TPM Connector & LED

Size	Document Number	Rev
Custom	Z5WAH M/B LA-B162P	0.3

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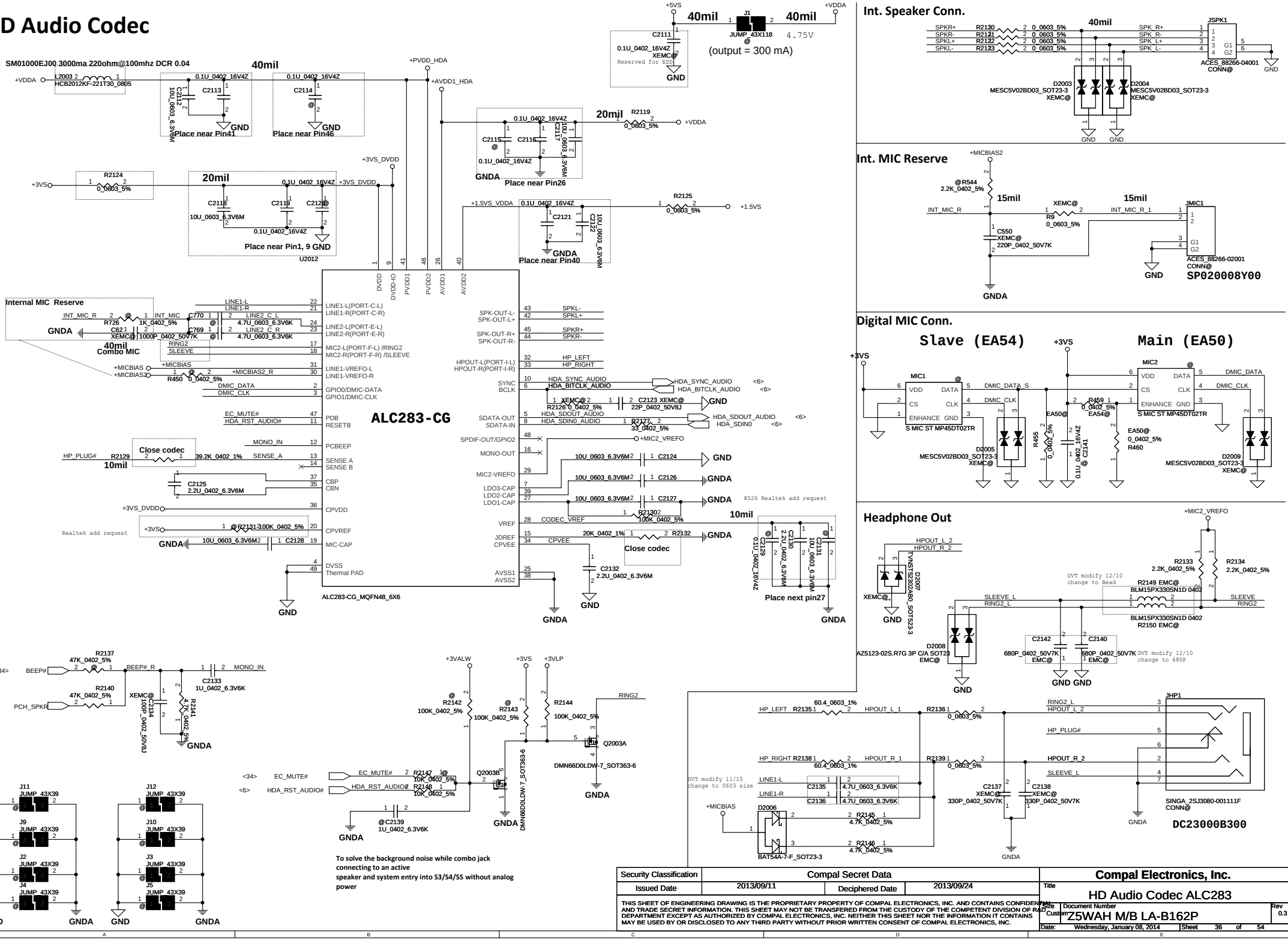
HD Audio Codec



Security Classification	Compal Secret Data		
Issued Date	2013/09/11	Deciphered Date	2013/09/24

Compal Electronics, Inc.

Title: HD Audio Codec ALC283

Size	Document Number	Rev
Custom	Z5WAH M/B LA-B162P	0.3
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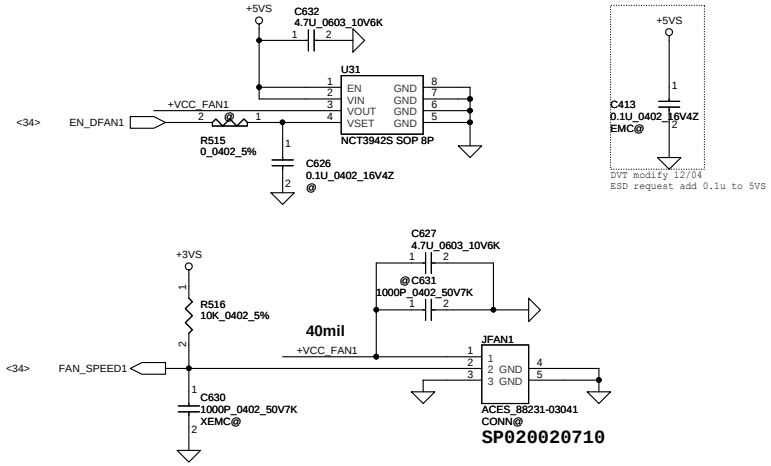
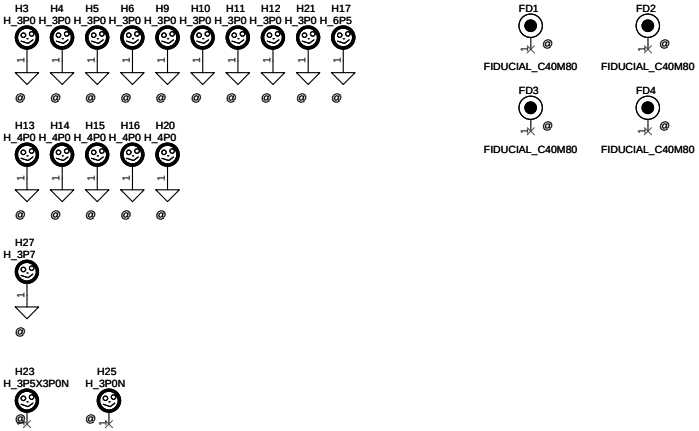
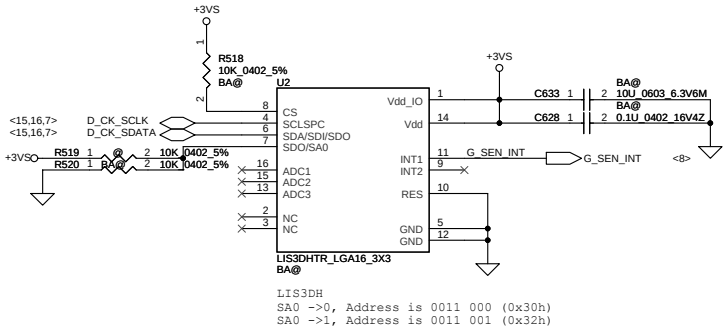
FAN1 Conn



Screw Hole



G-Sensor for BA50



Security Classification	Compal Secret Data		Compal Electronics, Inc.
Issued Date	2013/09/11	Deciphered Date 2013/09/24	Title: FAN & Screw Hole & G-Sensor

Size: Custom	Document Number: Z5WAH M/B LA-B162P		Rev: 0.3
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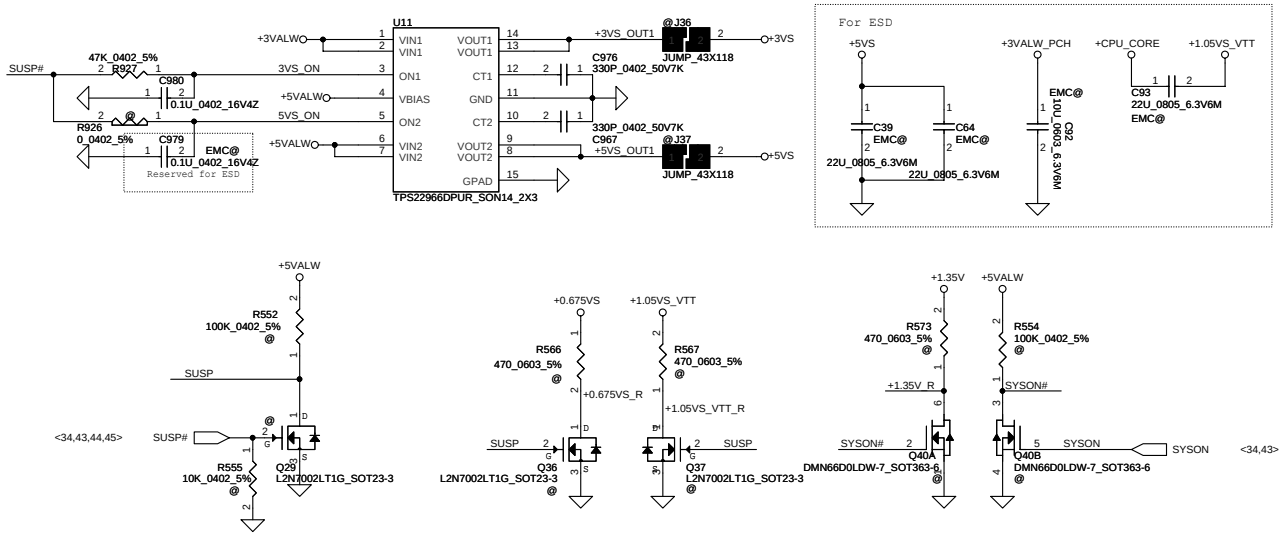
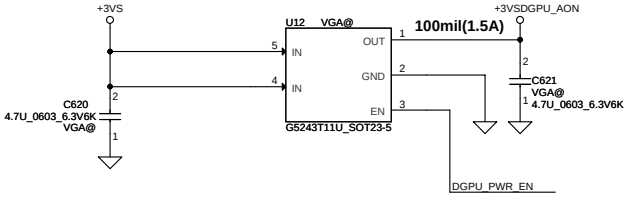
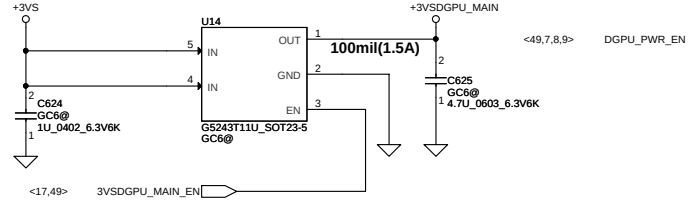
DC & VGA Interface



+3VS to +3VSDGPU_AON for GPU

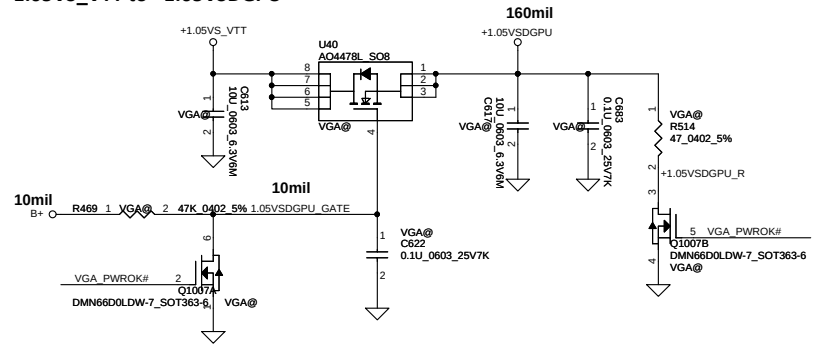


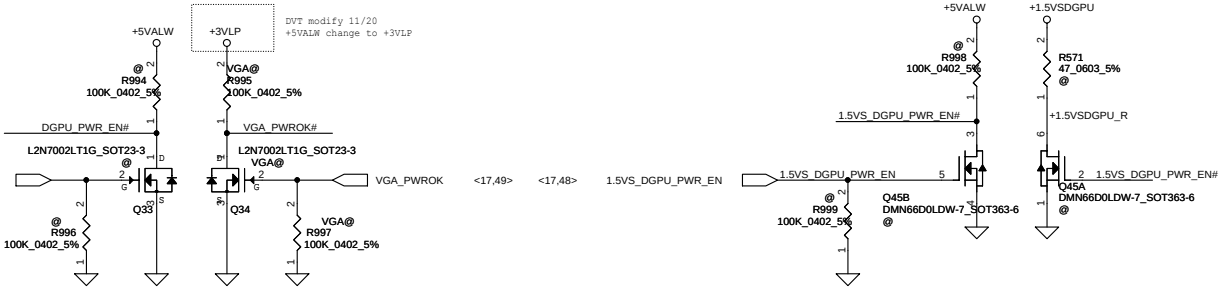
+3VS to +3VSDGPU_MAIN for GC6-2.0



3VSDGPU_MAIN_EN From GPU

+1.05VS_VTT to +1.05VSDGPU





Security Classification	Compal Secret Data		
Issued Date	2013/09/11	Deciphered Date	2013/09/24

Compal Electronics, Inc.

Title: DC Interface

Size	Document Number	Rev
Custom	Z5WAH M/B LA-B162P	0.3

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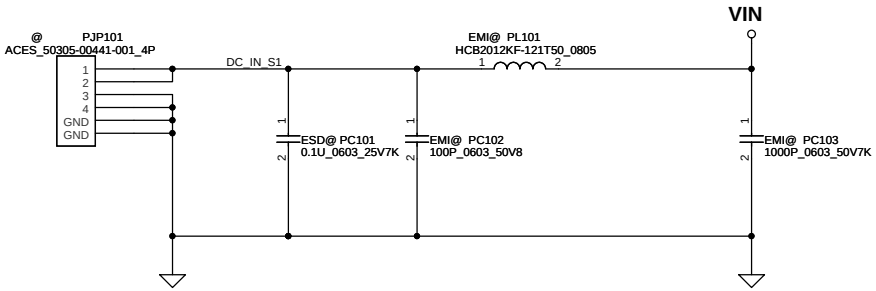

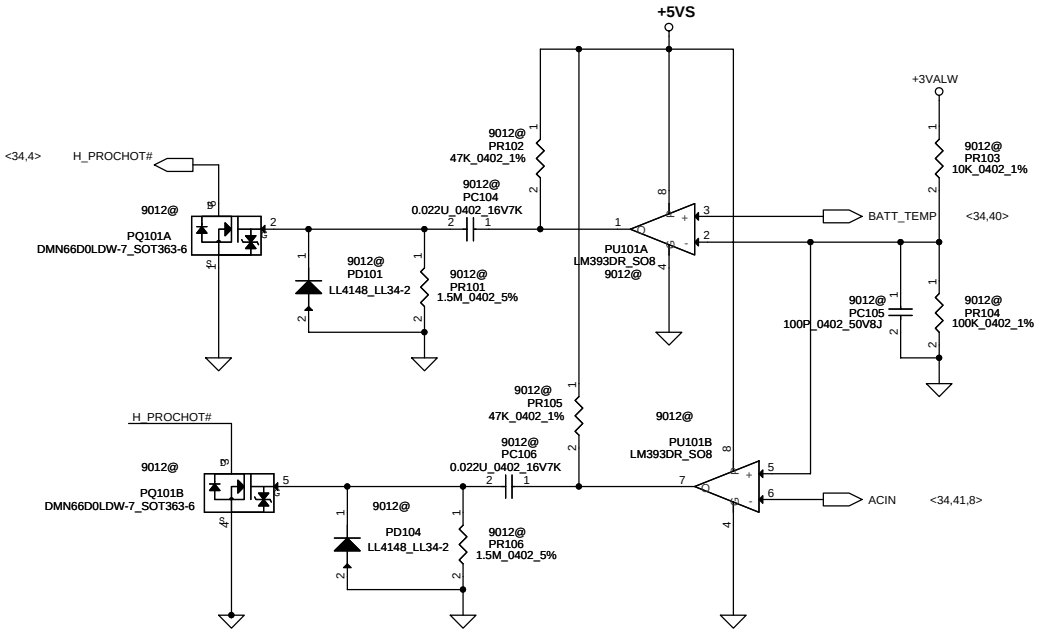

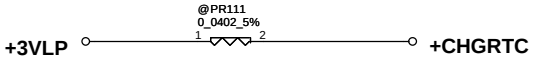

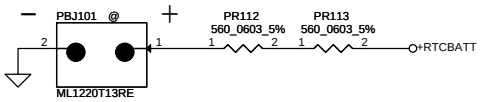

Security Classification	Compal Secret Data		
Issued Date	2012/07/10	Deciphered Date	2013/09/24

Compal Electronics, Inc.

Title: ***DCIN***

Size	Document Number	Rev
Custom		0.3

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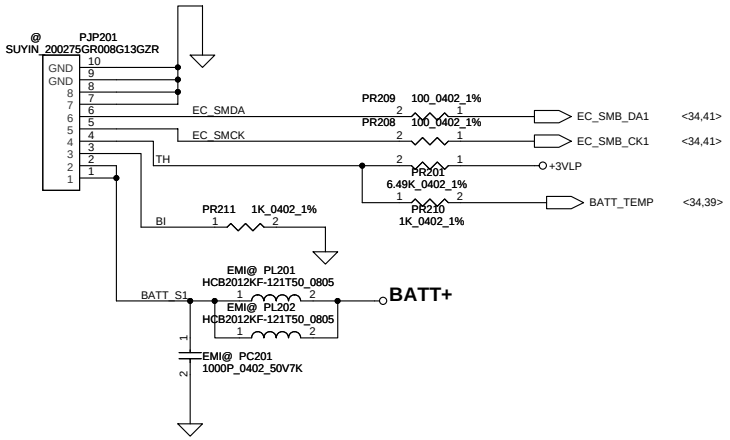
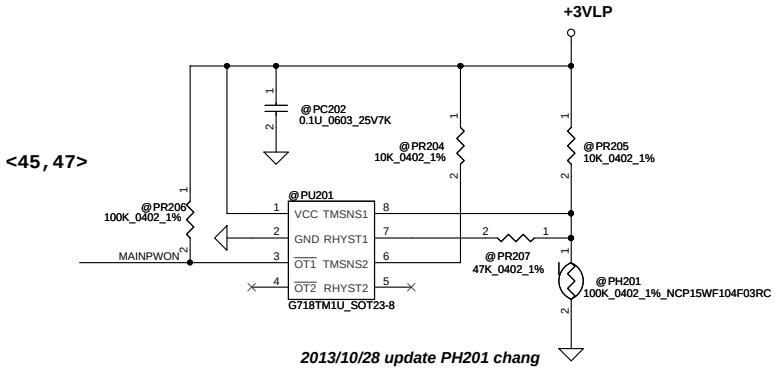




2013/10/28 update PH201 chang
Common part SL200002H00

```
---Battery_pin define---      ---Battery Con_pin define---
PIN1 GND                      PIN8 GND
PIN2 GND                      PIN7 GND
PIN3 SMD                      PIN6 SMD
PIN4 SMC                      PIN5 SMC
PIN5 TS                       PIN4 TS
PIN6 B/I                      PIN3 B/I
PIN7 Batt+                    PIN2 Batt+
PIN8 Batt+                    PIN1 Batt+
```

	For KB9012 OTP	For KB9022 OTP
92°C	1.2V	1.0V
56°C	1.2V	1.0V
PR216	22.6K ohm	32.4K ohm
PR227	26.1K ohm	30K ohm

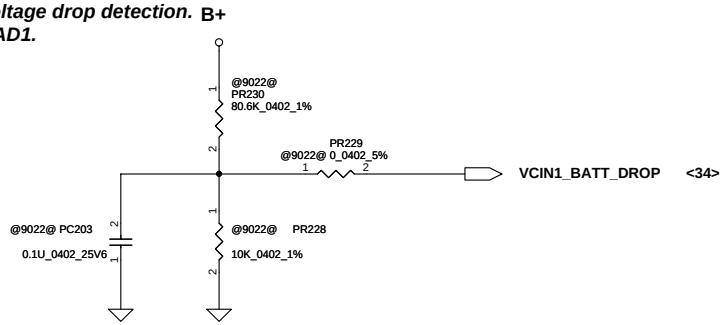
2013/10/14 update

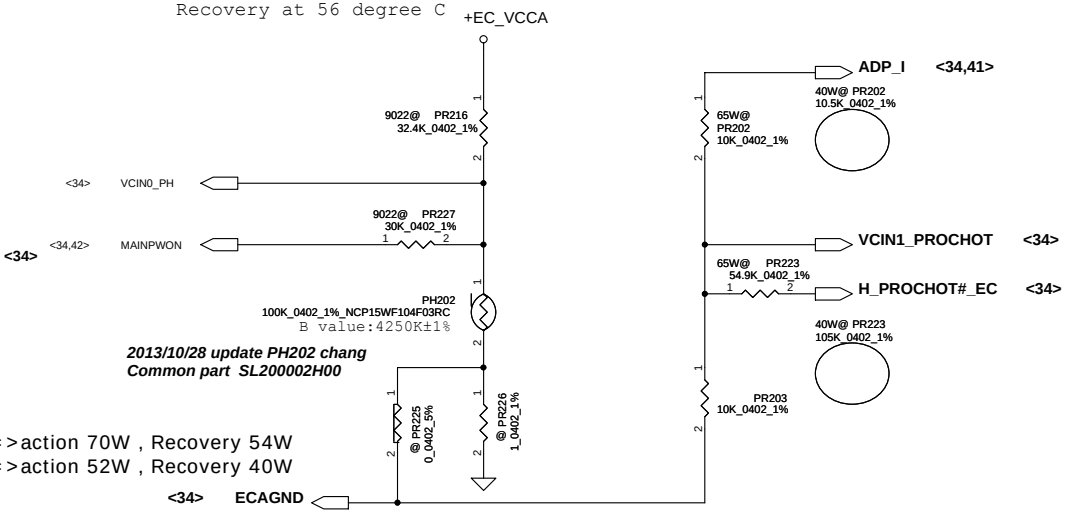
For KB9022 sense 20mΩ	Active	Recovery
40W	52W,0.51V	40W,0.51V
65W	84.5W,0.82V	65W,0.82V

PH201 under CPU botten side :
CPU thermal protection at 92 degree C (shutdown)
Recovery at 56 degree C

2013/10/02
Add for ENE9022 Battery Voltage drop detection. Connect to ENE9022 pin64 AD1.

Battery is 3-cell design.
B+=9V





2013/10/28 update PH202 chang
Common part SL200002H00

For 65W adapter==>action 70W , Recovery 54W
For 40W adapter==>action 52W , Recovery 40W

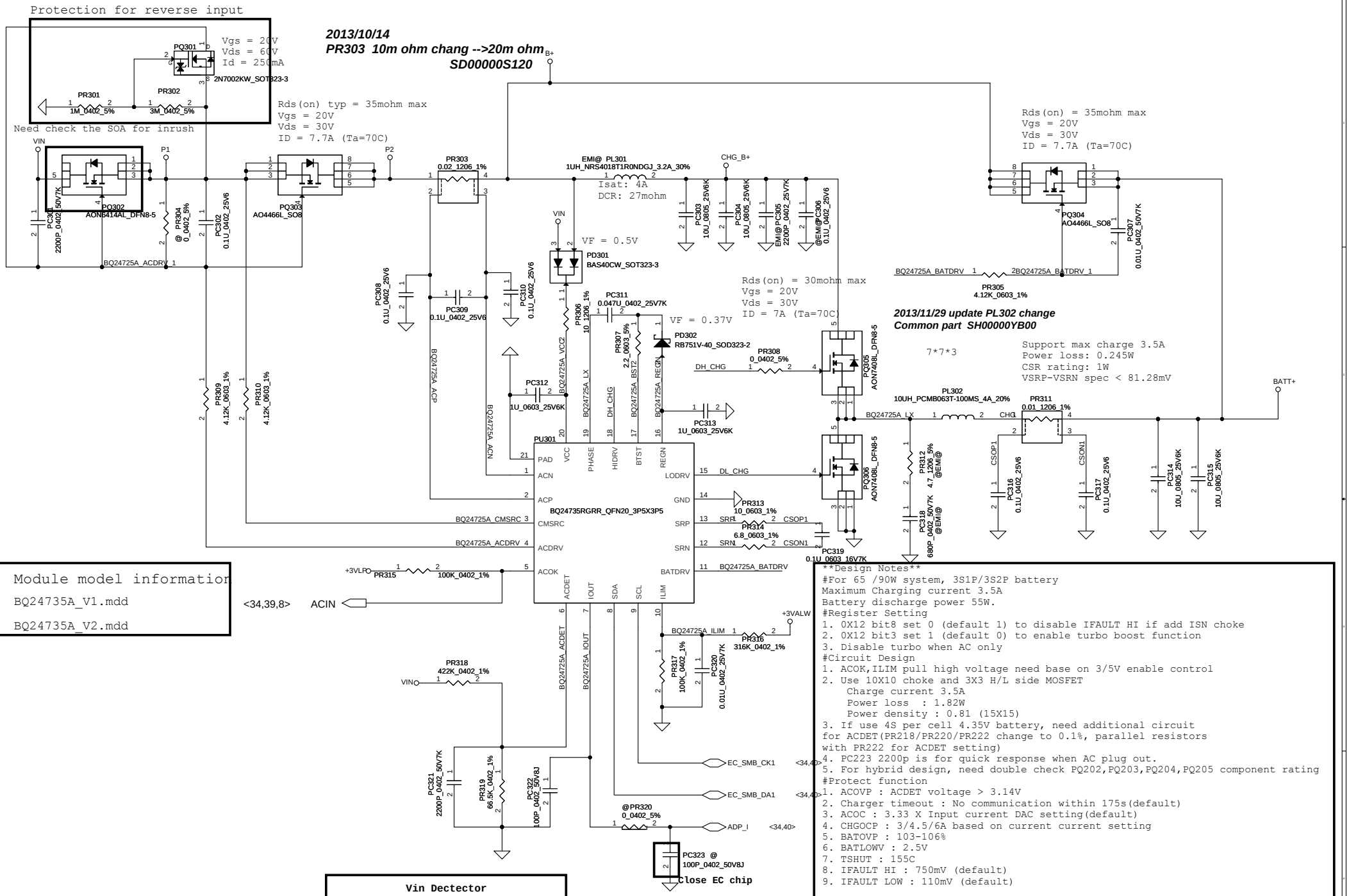
Security Classification	Compal Secret Data		
Issued Date	2012/07/10	Deciphered Date	2013/09/24

Compal Electronics, Inc.

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

Size: Custom | Document Number | Rev: 0.3

Date: Wednesday, January 08, 2014 | Sheet 40 of 54



Module model information

BQ24735A_V1.mdd

BQ24735A_V2.mdd

Vin Dectector

	Min.	Typ	Max.
L-->H	17.16V	17.63V	18.12V
H-->L	16.76V	17.22V	17.70V

VILIM = 20*ILIM*Rsr
ILIM = 3.3*100/(100+107)/20/0.02
= 3.986 A

Design Notes

#For 65 /90W system, 3S1P/3S2P battery
Maximum Charging current 3.5A
Battery discharge power 55W.
#Register Setting
1. 0X12 bit8 set 0 (default 1) to disable IFAULT HI if add ISN choke
2. 0X12 bit3 set 1 (default 0) to enable turbo boost function
3. Disable turbo when AC only
#Circuit Design
1. ACOK,ILIM pull high voltage need base on 3/5V enable control
2. Use 10X10 choke and 3X3 H/L side MOSFET
   Charge current 3.5A
   Power loss : 1.82W
   Power density : 0.81 (15X15)
3. If use 4S per cell 4.35V battery, need additional circuit for ACDET(PR218/PR220/PR222 change to 0.1%, parallel resistors with PR222 for ACDET setting)
4. PC223 2200p is for quick response when AC plug out.
5. For hybrid design, need double check PQ202,PQ203,PQ204,PQ205 component rating
#Protect function
1. ACOVP : ACDET voltage > 3.14V
2. Charger timeout : No communication within 175s(default)
3. ACOC : 3.33 X Input current DAC setting(default)
4. CHGOCP : 3/4.5/6A based on current current setting
5. BATOVP : 103-106%
6. BATLOWV : 2.5V
7. TSHUT : 155C
8. IFAULT HI : 750mV (default)
9. IFAULT LOW : 110mV (default)

Security Classification	Compal Secret Data		
Issued Date	2014/07/02	Deciphered Date	2013/09/24

Compal Electronics, Inc.

Title: CHARGER

Size | Document Number: Common Circuit | Rev: 0.3

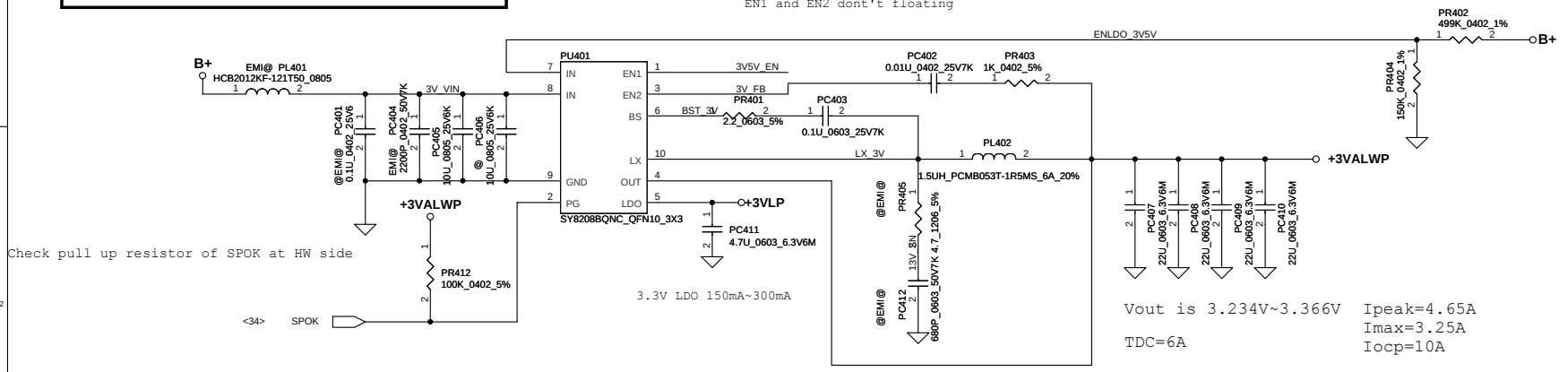
Date: Wednesday, January 08, 2014 | Sheet 41 of 54

Module model information

SY8208B_V2.mdd

SY8208C_V2.mdd

EN1 and EN2 dont't floating

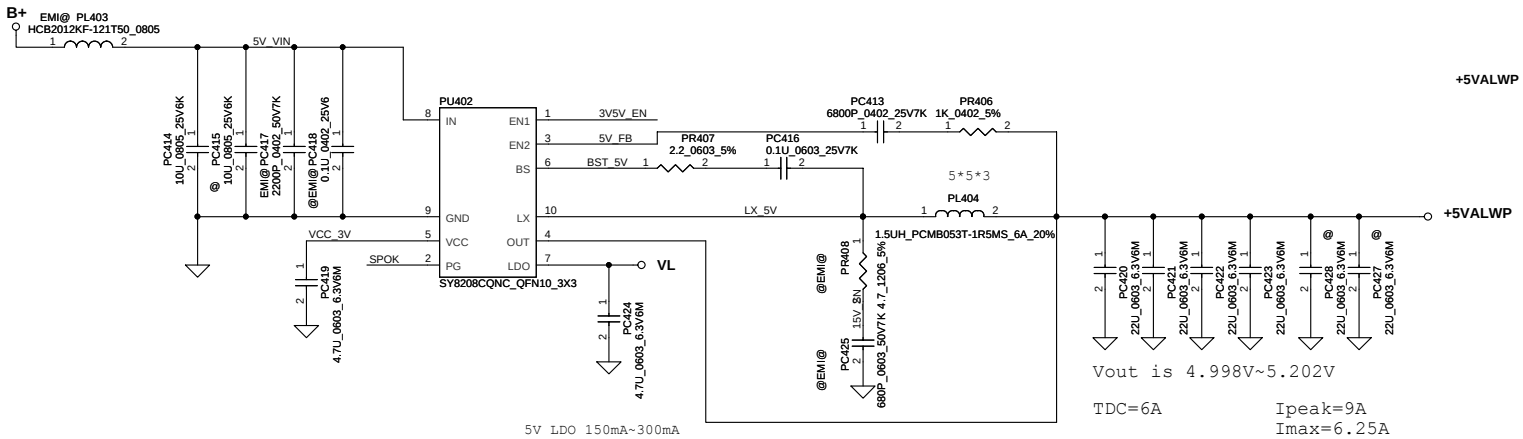


Check pull up resistor of SPOK at HW side

3.3V LDO 150mA~300mA

Vout is 3.234V~3.366V Ipeak=4.65A
Imax=3.25A
Iocp=10A

TDC=6A

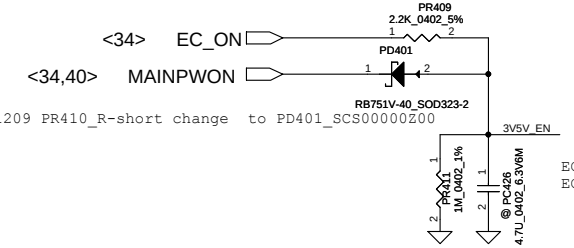


5V LDO 150mA~300mA

Vout is 4.998V~5.202V

TDC=6A

Ipeak=9A
Imax=6.25A
Iocp=10A



20131209 PR410_R-short change to PD401_SCS00000Z00

EC VDD0 is +3VL, PC426 UNPOP
EC VDD0 is +3VALW, PC426 POP

Security Classification	Compal Secret Data		
Issued Date	2011/06/15	Deciphered Date	2013/09/24

Compal Electronics, Inc.

Title: +3VALW/+5VALW

Size: Custom | Document Number | Rev: 0.3

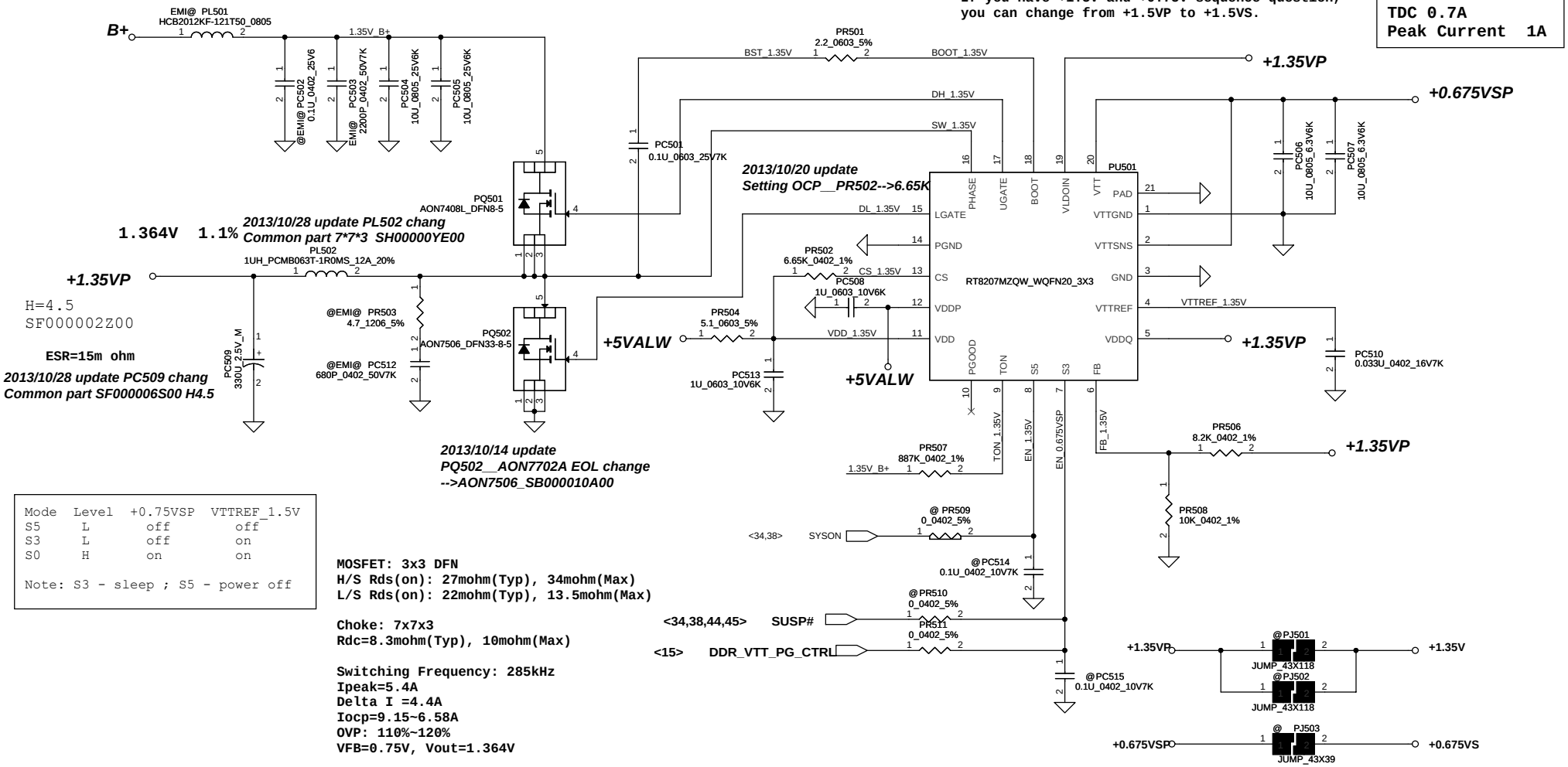
Date: Wednesday, January 08, 2014 | Sheet 42 of 54

Module model information

RT8207M_V1.mdd For Single layer
RT8207M_V2.mdd For Dual layer

Pin19 need pull separate from +1.5VP.
If you have +1.5V and +0.75V sequence question,
you can change from +1.5VP to +1.5VS.

0.75Volt +/- 5%
TDC 0.7A
Peak Current 1A



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

Note: S3 - sleep ; S5 - power off

MOSFET: 3x3 DFN
H/S Rds(on): 27mohm(Typ), 34mohm(Max)
L/S Rds(on): 22mohm(Typ), 13.5mohm(Max)

Choke: 7x7x3
Rdc=8.3mohm(Typ), 10mohm(Max)

Switching Frequency: 285kHz
Ipeak=5.4A
Delta I =4.4A
Iocp=9.15~6.58A
OVP: 110%~120%
VFB=0.75V, Vout=1.364V

Security Classification	Compal Secret Data		
Issued Date	2010/07/20	Deciphered Date	2013/09/24

Compal Electronics, Inc.

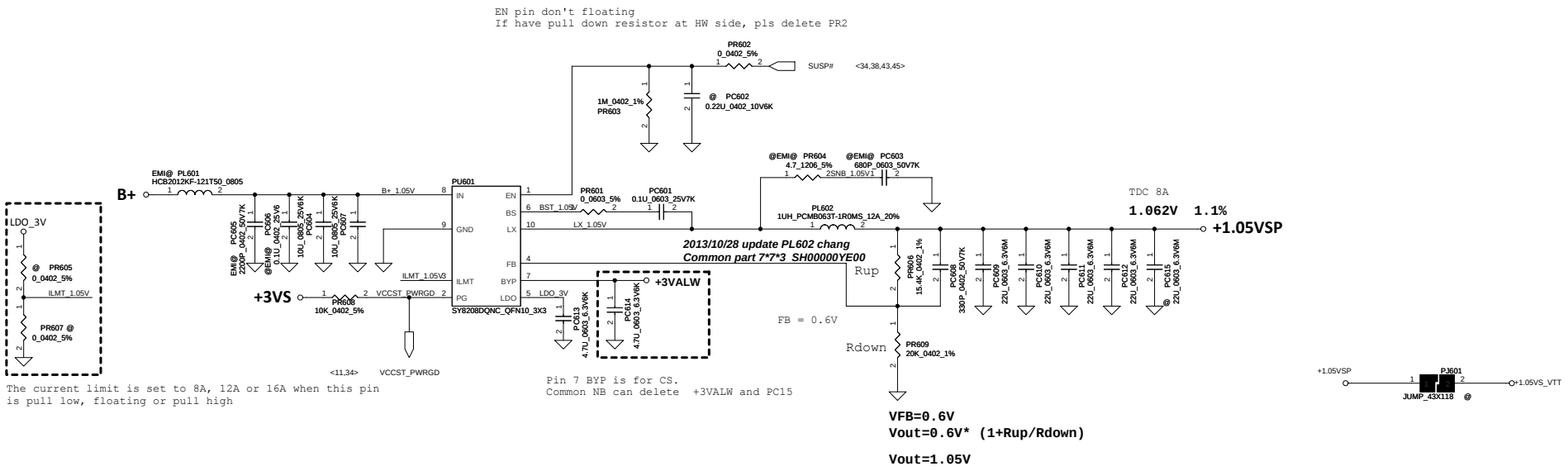
Title: +1.35VP/+0.675VSP

Size: Custom | Document Number | Rev: 0.3

Date: Wednesday, January 08, 2014 | Sheet 43 of 54

Module model information

SY8208D_V1.mdd



The current limit is set to 8A, 12A or 16A when this pin is pull low, floating or pull high

Pin 7 BYP is for CS.
Common NB can delete +3VALW and PC15

VFB=0.6V
Vout=0.6V* (1+Rup/Rdown)

Vout=1.05V

Security Classification	Compal Secret Data		
Issued Date	2011/06/15	Deciphered Date	2013/09/24

Compal Electronics, Inc.

Title: +1.05VSP

Size	Document Number	Rev
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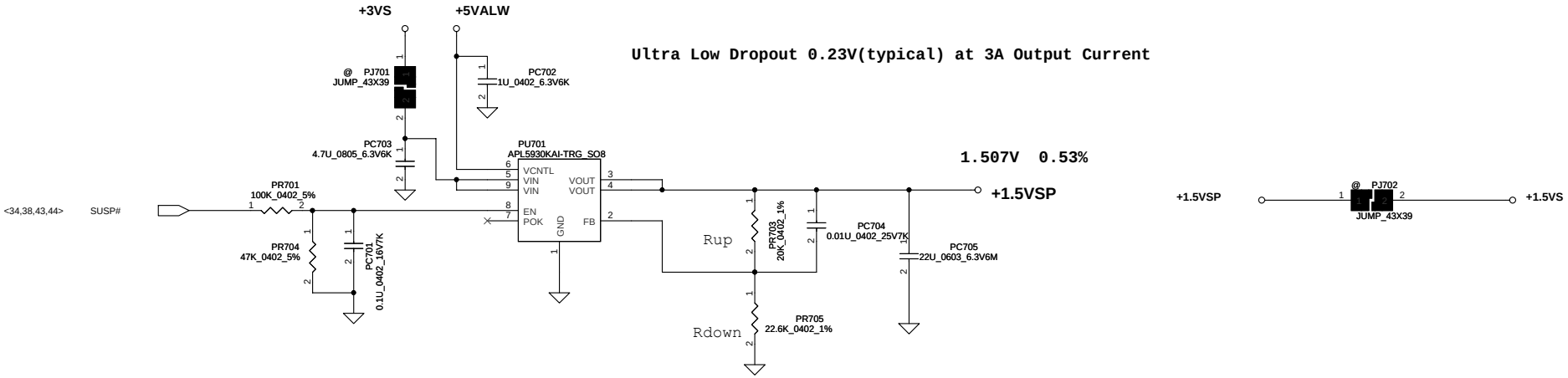
Date: Wednesday, January 08, 2014 Sheet 44 of 54



Security Classification	Compal Secret Data		
Issued Date	2011/06/13	Deciphered Date	2013/09/24

Compal Electronics, Inc.

Title: *+1.5VSP*

Size: Custom | Document Number | Rev: 0.3

Date: Wednesday, January 08, 2014 | Sheet 45 of 54

Module model information:
ISL95813 (for 15W & 28W CPU)

Base on BDW PDDG Rev_0_73			
Location	15W TDC 14A MAX 32A OCP 38.4A Loadline=-2.0mv/A	28W TDC 19A MAX 40A OCP 48A Loadline=-2.0mv/A	Note
PR820	499 Ohm	619 Ohm	OCP
PR816	1.27kOhm	1.58kOhm	Droop
PC816	0.033uF	0.022uF	RC Match
PR804	90.9kOhm	113kOhm	PROG1
PR807	93.1kOhm	95.3kOhm	IMON
PC811	0.1uF (0402)	0.1uF (0402)	RC Filter

H-side MOS: MDV1525URH
Rds(on):
<10.1mohm@Vgs=10V
<14.0mohm@Vgs=4.5V
Id :24A@Vgs=10V

L-side MOS: MDU1511RH
Rds(on):
<2.4mohm@Vgs=10V
<3.3mohm@Vgs=4.5V
Id :100A@Vgs=10V

-->20130828
Choke: 0.15UH (Size:7*7*4)
SH00000U300
Rdc=0.66mohm +-7%
Heat Rating Current=36A
Saturation Current=45A

+1.05VS_VTT Follow intel guideline

PR802 130_0402_1%
PR803 54.9_0402_1%
PC802 1U_0402_6.3V6K

<11> VR_SVID_DATA
<11> VR_ALERT#
<11> VR_SVID_CLK
<11> VR_ON
<11,8> VGATE
<34> VR_HOT#

Note:
VR_SVID_ALRT# Pull high on HW side

PR805 1.91K_0402_1%
PC808 1000P_0402_50V7K
PR807 121K_0402_1%
PH802 470K_0402_5%_TSM0B474J4702RE
PR810 3.83K_0402_1%
PR811 27.4K_0402_1%
PC809 47P_0402_50V8J

Over temperature protection:
OTP Setting: 100C active
Pin5 (NTC) voltage <0.88V, Protect
Pin5 (NTC) voltage >0.92v, recovery

2013/10/28 update PH802 chang
Common part SL200002E00

PU801
ISL95813HRZ-T_QFN20_3X4
PAD, SCLK, ALERT#, SDA, PRGM1
VR_ON, PGOOD, IMON, VR_HOT#, NTC, COMP, FB, RTN, ISUMN, ISUMP
LGATE, PHASE, UGATE, BOOT, VCC, PRGM2

PR813 1.91K_0402_1%
PC812 33P_0402_50V8J
PC813 6800P_0402_25V7K
PR814 2K_0402_1%
PR815 10_0402_1%
PC814 330P_0402_50V7K
PC815 390P_0402_50V7K
PR816 1.27K_0402_1%
Droop
28W@ PR816 1.58K_0402_1%

<11> VCC_SENSE
<11> VSS_SENSE

@PC818 330P_0402_50V7K
PC820 0.01U_0402_50V7K
@PC819 0.082U_0402_16V7K

Local sense put on HW site

15W@ PR804 169K_0402_1%
28W@ PR804 205K_0402_1%

Note:
PR804=113K
=>Icc(max)=40A
fsw=700KHz

PR806 0_0603_5%
PR801 2.2_0603_5%
PC801 0.22U_0603_16V7K
PR812 124K_0402_1%
PC811 0.1U_0402_25V6

Note:
PR812=124K
=>Slew rate=53mV/us
Vboot = 1.7V

+5VS

PR817 4.99M_0402_1%

RC Match
15W@ PC816 0.033U_0402_16V7K
28W@ PC816 0.022U_0402_16V7K
PC817 0.1U_0402_16V4Z
PR819 11K_0402_1%
PR818 2.61K_0402_1%
PH801 10KB_0402_5%_ERTJ0ER103J

2013/10/28 update PH801 chang
Common part SL200002G00

28W@ PR820 348_0402_1%
OCP Setting
15W: 38A
28W: 48A
PR820 15W@ 316_0402_1%

@PC821 4700P_0402_25V7K
@PR821 1.5K_0402_1%

PQ801 AON7518_DFN8-5
PQ803 AON6554_DFN5X6-8-5
28W@ PQ802 AON6554_DFN5X6-8-5

PC803 10U_0805_25V6K
PC804 10U_0805_25V6K
EMI@ PC805 0.01U_0402_50V7K
EMI@ PC806 220P_0402_50V7K
PC807 68U_25V_M_R0.36

CPU_B+
EMI@ PL801 HCB2012KF-121T50_0805
B+

Height 8 mm
100u_SF000000I80

Height 6 mm
68u_SF000000W00

2013/12/13 update PL802 change
Common part SH000011P00

PL802 0.15UH 20% PCME064T-R15MS0R667 36A
+CPU_CORE

EMI@ PR808 4.7_1206_5%
EMI@ PC810 680P_0603_50V7K
PR809 3.65K_0603_1%

TDC 19A
MAX 40A
OCP 48A
Loadline=-2.0mv/A

	123		
Title	***CPU_CORE/GFX_CORE***		
Size	Document Number		Rev 0.3
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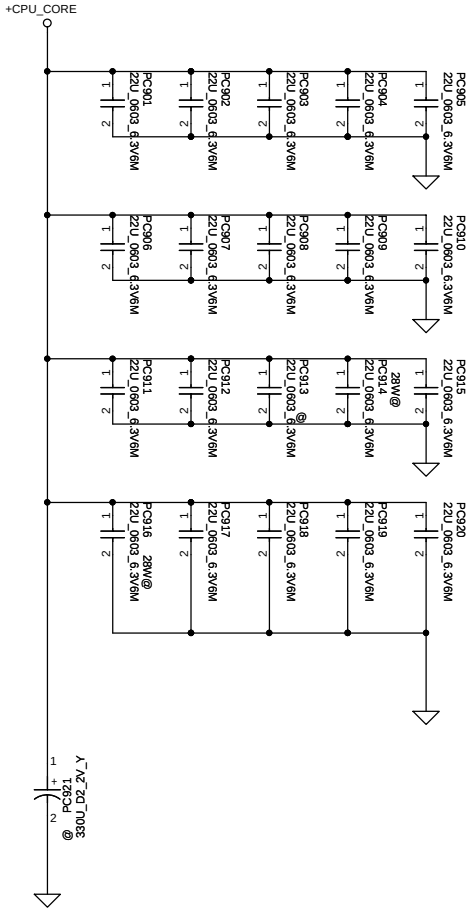
PWR Rule
需確認最新SPEC.
Modify 8/6.




```
30 X 22uF 0805
2012/10/23
check the output cap Qty!!!
2012/10/24
23 pcs 22uF and reserve 7 pcs
2013/01/14
22uF*17    unpop:22uF*3


20130828
15W:   22uF*14
28W:   22uF*16
```

Security Classification	Compal Secret Data			Compal Electronics, Inc.
Issued Date	2012/07/10	Deciphered Date	2013/09/24	Title: *CPU_CORE_CAP*
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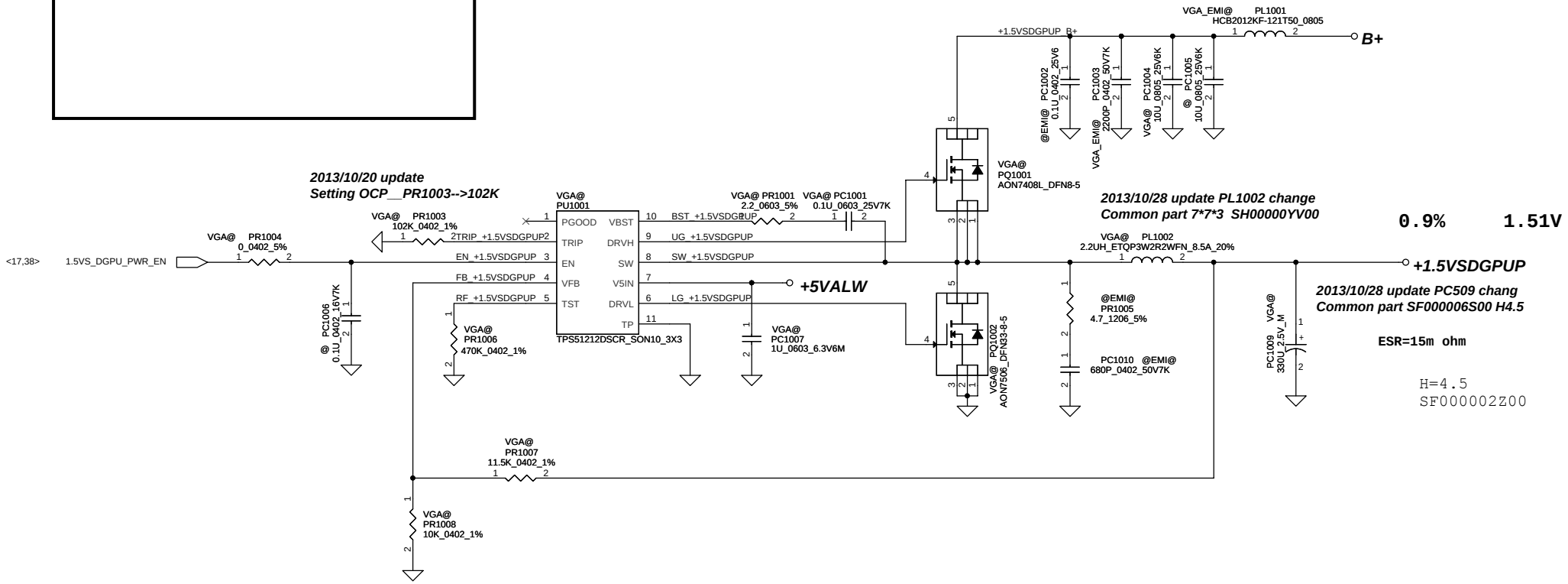
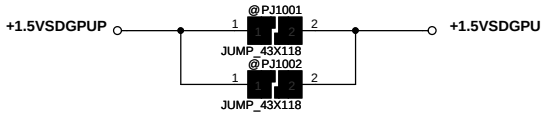
				Date: Wednesday, January 08, 2014; Sheet 47 of 54

Module model information

TPS51212_V1.mdd for Single layer
TPS51212_V2.mdd for Dual layer





+1.2V

Switching Frequency: 290kHz
Imax=8A
OCP~10.5A
OVP: 120%~130%
VFB=0.704V, Vout=1.207V

+1.05V

Switching Frequency: 290kHz
Imax=5.4A
Ipeak=6.5A
Iocp=7.8A
OVP: 120%-130%
VFB=0.704V, Vout=1.055V

Vout	PR1007	PR1008	PR1003
+1.5V	11.5k	10k	
+1.35V	9.31k	10k	
+1.2V	7.15K	10k	105K
+1.05V	4.99k	10k	93.1k

MOSFET: 3x3 DFN
H/S Rds(on): 27mohm(Typ), 34mohm(Max)
L/S Rds(on): 22mohm(Typ), 13.5mohm(Max)

Choke: 7x7x3
Rdc=15.5mohm +/-15%

Switching Frequency: 290kHz
Ipeak=10A
Delta I =2.16A
Iocp=12.14~16.67A
OVP: 120%~130%
VFB=0.704V, Vout=1.51V

Security Classification	Compal Secret Data		
Issued Date	2011/07/29	Deciphered Date	

Compal Electronics, Inc.

Title: 1.5VSDGPUP

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Module model information:
RT8813A_V1A for IC module
RT8813A_V1B for SW module

Vboot=Vvref*Rref2/(Rref1+Rref2+Rboot)
Rt=Rrefadj // (Rboot+Rref2)
Vmin= Vvref*[Rref2/(Rref2+Rboot)]*[Rt/(Rref1+Rt)]
Vmax=Vvref*Rref2/[(Rref1//Rrefadj)+Rboot+Rref2]
Vout=Vmin+N*Vstep
Vstep=(Vmax-Vmin)/Nmax

PWM-VID Spec and component Values

PWM-VID Spec		Config B	Config C	Config D
Vmin		0.6V	0.65V	0.9V
Vmax		1.2V	1.15V	1.15V
Vboot		0.9V	0.9V	1.028V
Voltage step		6.25mV	25mV	12.5mV
N of Voltage level		96	20	20
Rrefadj	PR1206	20K	39K	27K
Rref1	PR1204	20K	30K	7.5K
Rboot	PR1205	2K	3K	0
Rref2=PR1209 +PR1212	PR1209	18K	24K	6.2K
	PR1212	0	3K	1.74K
C	PC1209	2.7nf	1.8nf	5.6nf
		N15S-GT	N15V-GL	N15V-GM

Current Limit threshold setting
Rocset= (Ivalley * Rds(on) + 40 mV) / 10uA

I_ripple=(19-0.9)*0.9/
(304.89Khz*0.36u*19)=7.811A

OCP=54A/2=27A per phase
Ivalley=27A-7.811A/2=23.1A

H-side MOS:AON6552
Rds(on):
5.6mohm@Vgs=10V
6.7mohm@Vgs=4.5V
Id :20A@Ta=25 degC

L-side MOS:AON6554
Rds(on):
3.2mohm@Vgs=10V
3~3.8mohm@Vgs=4.5V
Id :85A@Ta=25 degC

Choke: 0.22uH (Size:7*7*4)
Rdc=0.97mohm +-5%
Heat Rating Current=34A
Saturation Current=25A

C=3*330uF (9mohm)=990uF
Vripple=Iripple*ESR(min)=7.811A*3mohm=23.4mV

Different VGA Chip (different EDP-Peak Current) need select different solution

VGA Chip	N14P-GV	N14P-GV2	N14M-GS	N14M-LP	N14P-LP	N14P-GE	N14P-GS	N14P-GT	N15S-GT	N15V-GM
OpenVReg Configurations	Config B	Config B	Config B	Config B	Config B	Config B	Config B	Config B	Config B	Config C
Rated TDP Power at Tj=102C	18W	25W	18W	13W	18.9W	25W	25.6W	35.5W	18W	18.16W
Boosted GPU Total at Tj=102C	25W	32W	25W	20W	23W	N/A	30W	40W	25W	24.72W
EDP-Continuous at Tj=102C	24A	32A	26A	22A	25A	27A	38A	45A	31A	29.2A
EDP-Peak at Tj=102C	35A	55A	45A	35A	35A	40A	60A	75A	60A	44.3A
Istep max (Evaluation)	15A	27A	25A	20A	14A	12A	31.5A	35A		
OCP Setting Current	42A	66A	54A	42A	42A	48A	72A	90A	72A	54A
Rocset	8.96K	12.45K	10.7K	8.96K	8.96K	9.83K	8.3K	9.39K	13K	10.2K
Recommendation	2phase 1H1L	2phase 1H1L	2phase 1H1L	2phase 1H1L	2phase 1H1L	2phase 1H1L	2phase 1H2L	2phase 1H2L	2phase 1H1L	2phase 1H1L
Polymer Cap (330uF)	6mohm * 2	9mohm * 3	9mohm * 3	6mohm * 2	6mohm * 2	6mohm * 2	6mohm * 3 (L=0.22uH)	4.5mohm * 3 (L=0.15uH)		
Or OSCON (390uF)	10mohm * 3	10mohm * 3	10mohm * 3	10mohm * 3	10mohm * 3	10mohm * 3	NULL	NULL	GT@	GM@

PWM VID and Output voltage control
1.Boot mode
2.Standby mode (don't support)
3.Normal mode

Operation phase Number	PSI Voltage setting
1 phase with DEM	0V to 0.8V
1 phase with CCM	1.2V to 1.8V
Active phase with CCM	2.4V to 5.5V

PSI Pull high on HW side

Pull high on HW side

Reserve Location

+VGA_CORE
EDP-Continuous 31A
EDP-Peak 60A
OCP min 72A

2013/12/13 update PL1202 PL1203 change to Common part SH000011H00

1. VSNS Soft-Start time (Internal) is 0.7ms (PC1213 un-pop)
   Tss=(Css*Vrefin)/Iss+2.3ms
   =0.01U*0.9V/5uA+2.3ms=4.1ms (PC1213 pop)

2. Switching frequency setting:
   Fsw=(Vin-0.5)/(2*Vin*Rton*3.2p)=304.89Khz

3. Thermal monitoring:
   (VGPU_VREF-VTSNS)/PR23=VTSNS/Rth

	T_min	T_typical	T_max
PR1221=18.7K	96.73C	100C	103.1C
PR1221=13K	106.38C	110C	113.4C

2013/10/28 update PH1201 chang Common part SL200002E00

Security Classification	Compal Secret Data		
Issued Date	2008/09/15	Deciphered Date	2013/09/24

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Title: **RT8813**

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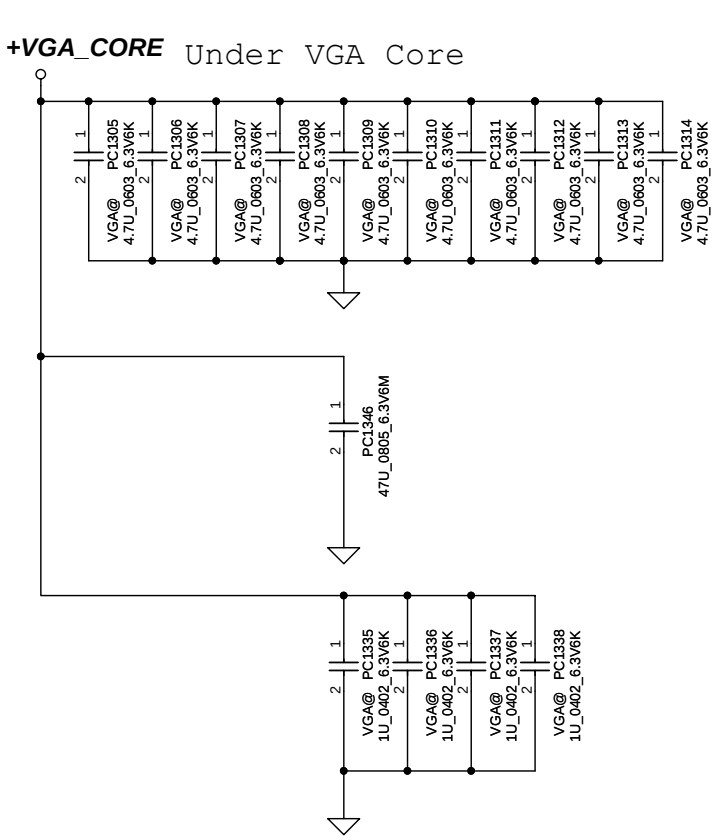

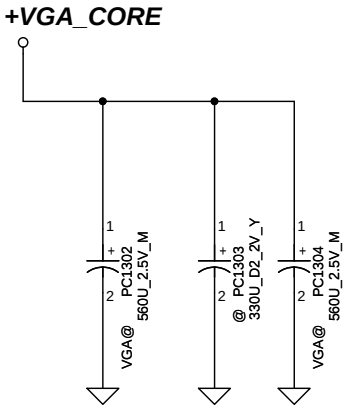

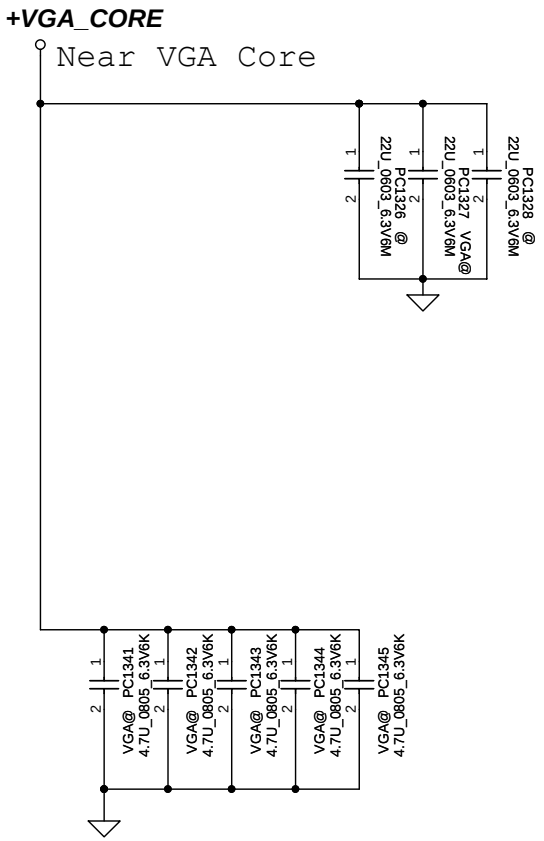

N15x 2013/12/10
Under
4.7uF_0603_10pcs
1uF_0402_4pcs
Near
47uF_0805_1pcs
22uF_0603_1pcs(2PCS unpop)
4.7uF_0805_5pcs

N15x2013/10/17
Under
4.7uF_0603_15pcs
1uF_0402_8pcs
Near
47uF_0805_0pcs
22uF_0603_9pcs(2PCS unpop)
4.7uF_0805_5pcs

N15x2013/10/07
Under
4.7uF_0603_15pcs
1uF_0402_8pcs
Near
47uF_0805_0pcs
22uF_0805_9pcs(2PCS unpop)
4.7uF_0805_5pcs

N15x2013/10/02
Under
4.7uF_0603_15pcs
1uF_0402_8pcs
Near
47uF_0805_0pcs
22uF_0805_14pcs
4.7uF_0805_5pcs

N14x
Under
4.7uF_0603_10pcs
0.1uF_0402_4pcs
Near
47uF_0805_1pcs
22uF_0805_1pcs
4.7uF_0805_5pcs

Security Classification	Compal Secret Data		
Issued Date	2011/06/24	Deciphered Date	2013/09/24

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Title: ***VGA_CORE CAP***

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

for PWR

Item	Fixed Issue	Reason for change	PG#	Modify List	Date	Phase
1	design update		P42 P44 P44 P46 P41	Add unpop PC428 PC427,22U_0603_6.3V6M_SE00000M000 Add unpop PC615,22U_0603_6.3V6M_SE00000M000 PC609 PC610,SE00000PL00 change to 0603_6.3V6M_SE00000M000 PL801 PC807,Swap positions. PL302,10uH_10104_SH000005Z80 change to 10uH_773_SH00000YB00	11/29	EVT
2	design update	Update Common part	P42	PR410_R-short change to PD401_SCS00000Z00	12/09	EVT
3	design update	VGA 29*29 change to 23*23	P50	ADD 1pcs PC1346_47U_0805_6.3V6M_SE00000PL00 Del 5pcs PC1315~PC1319 4.7U_0603_6.3V6K_SE107475K80 Del 4pcs PC1331~PC1334 1U_0402_6.3V6K_SE000000K80 Del 6pcs PC1322~1325&PC1329~1330_22U_0603_6.3V6M_SE00000M000	12/10	EVT
4	design update	VGA 29*29 change to 23*23 (GM config SPEC change)		PR1206_39K_0402_1% change to 27K_0402_1%(GL->GM) PR1204_30K_0402_1% change to 7.5K_0402_1%(GL->GM) PR1205_3K_0402_1% change to 0_0402_5%(GL->GM) PR1209_24K_0402_1% change to 6.2K_0402_1%(GL->GM) PR1212_3K_0402_1% change to 1.74K_0402_1%(GL->GM) PC1209_1800P_0402_50V7K change to 5600P_0402_50V7K(GL->GM)	12/12	EVT
5	design update	CPU Transient Test & Update Common part		PR820_274_0402_SD00000EI80 change to 316_0402_SD000003480 PR814_2K_0402_1%_SD034200180 change to unpop PC814_330P_0402_50V7K_SE074331K80 change to unpop PR813_5.9K_0402_SD034590180 change to 1.91K_0402_SD000009O80 PR807_95.3K_0402_SD034953280 change to 121K_0402_SD034121380 PR817_Unpop change to 4.99M_0402_SD00000VO00 PL1202 PL1203_SH00000O200_7*7*4 change to Common part SH000011H00 PL802_SH00000U300_change to Common part SH000011P00 PC909 PC918 PC919 22U_0603_SE00000M000 SMT PC914 22U_0603_SE00000M000,SMT change to 28W@ PC913 22U_0603_SE00000M000 ,SMT change to @ PR227_30.9K_0402_1%_SD034309280 change to_30K_0402_1%_SD034300280 PR1210 1K_0402_5%_SD028100180change to unpop PR1226 0_0402_5%_SD028000080change to SMT	12/12	EVT

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Title: PIR (PWR)

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Item	Fixed Issue	Reason for change	PG#	Modify List	Date	Phase
1	Module Design	Module Design change 3/5V solution	3/5V	Un-pop PR1	11/13	DVT
2						
12						
13						
14						
15						
16						
17						

Item	Fixed Issue	Reason for change	PG#	Modify List	Date	Phase
1	material update		P28	L2503/2504/2505 Change P/N from SM01000GA00 to SM01000FH00	11/12	DVT
2	material update		P34	L31/L32 Change P/N from SM010030010 to SM010009U00	11/12	DVT
3	design update		P35	Delete D24, ON/OFF change to ON/OFFBTN#	11/12	DVT
4	schematics update	for TP_INT# wake function	P35	TP PIN1 VCC Connect to +3VALW, add R462, R463@, pop D22, R633, R453	11/12	DVT
5	design change		P10	Change USB port 5 for TS/port 6 for CCD / port 7 for CR(USB)_FP	11/12	DVT
6	design update		P6	reserve RTCRST# to EC pin 27 for clear CMOS add R490, and Q52 reserve to EC_RTCRST#	11/12	DVT
7	design update	EC board ID	P34	Pop R503(100K), R506(12K)	11/15	DVT
8	material update		P36	change C2135, C2136 to 0603 size	11/15	DVT
9	material update		P33	L24, L25 form SM070003Y00 to SM070003K00	11/15	DVT
10	material update		P7	pop share rom	11/15	DVT
11	design update	Co-lay TS_I2C and LVDS EDID	P25	R415, R433 for LVDS EDID R438, R439 for TS I2C	11/15	DVT
12	design update	for LVDS EP mode SMbus2 change to SMbus3	P24	Add R491 reserve for RTD2132 EP_MODE	11/18	DVT
13	design update	~~for TP_INT# wake function~~	P34	~~GPI055 change to GPI013~~	11/18	DVT
14	design update	for GC62.0 function	P17	R2055 change to Pull high +3VSDGPU_AON	11/20	DVT
15	design update	for +1.05VS_VTT leakage issue	P38	+5VALW change to +3VLP	11/20	DVT
16	design update	for IT 6513 leakage issue	P27	add level shift(Q2501)、R2503, R2502、R2549 Del R930 IT6513 change to use 3VS	11/26	DVT
17	material update	for TXC recommend	P6	C153, C2, C3 to 15PF, C2004, C2005, C2558, C2559 to 10PF	11/27	DVT
18	design update	for wake on LAN function	P29	add R2550 10K pull high to +3V_LAN , PCH side pull high reserve	12/04	DVT
19	design update	for ESD request	P37	add C413 0.1u to +5VS	12/04	DVT
20	design update	~~for EMI request~~	P33	~~add choke(L29,L30) and R(R456, R457,R462,R463)~~ ~~co-lay for USB/B conn~~	12/04	DVT
21	design update	for ESD request	P36	add R2149, R2150(SM01000NH00), C2140, C2142(680PF) D2008(SCA00001B00) change to SOT23 R2135,R2138 chagne to 60 ohm	12/10	DVT DVT
22	material update			SW3 SN100007700 chagne to SN100000K00 C408, C486 SF000002Y00 change to SF000006R00 C18, C118 SF000002Z00 change to SF000006S00	12/13	DVT
23	design update		P37	reserve R2551 0 ohm +3VALW to +3VLAN reserve R2540 for disable PHY	12/20	DVT

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Item	Fixed Issue	Reason for change	PG#	Modify List	Date	Phase
1	design issue		P28	U2052, U2503 change power rail to +HDMI_5V_OUT	12/31	PVT
2	material update	PVT board ID	P34	R506 change to 15K	12/31	PVT
3	design update	modify DQS P/N pin	P18		01/08	PVT
4	schematics update					
5	design change					
6	design update					
7	design update					
8	material update					
9	material update					
10	material update					
11	design update					
12	design update					
13	design update					
14	design update					
15	design update					
16	design update					
17	material update					
18	design update					
19	design update					
20	design update					
21	design update					
22	material update					
23	design update					

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