Compal Confidential

Model Name : Z5WAH

File Name : LA-B161P

Compal Confidential

EA50_HB M/B Schematics Document

Intel Broadwell ULT (Broadwell + Wildcat point)

2014-03-04

REV:1.0

For 20140225 pre-MP gerber

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Intel Broadwell ULT

Broadwell ULT
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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
+0.675VS	+0.675VS power rail for DDR3L terminator	ON	OFF	OFF
+1.05VS_VTT	+1.05V power rail for CPU	ON	OFF	OFF
+1.35V	+1.35V power rail for DDR3L	ON	ON	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
+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	1001 000x	JDIMM1
ChannelB	DIMM1	1001 010x	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

BOARD ID Table

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

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	Finger Print
	6	Touch Screen
	7	Camera

USB 3.0	Port	
XHCI	0	USB Port(Left 3.0)
	1	
	2	
	3	

BTO Option Table

BTO Item	BOM Structure
Unpop	@
Connector	CONN@
EC 9022	9022@
EC 9012	9012@
UMA Component	UMA@
2 SPI ROM	2ROM@
1 SPI ROM	1ROM@
For EDP panel	EDP@
eDP to LVDS	LVDS@
Touch Screen	TS@
1 DMIC	EA50@
2 DMIC	EA54@
EMC Component	EMC@
Reservec for EMC	XEMC@
G-Sensor	BA@
TPM Module	BA@
HDD redriver	BA@

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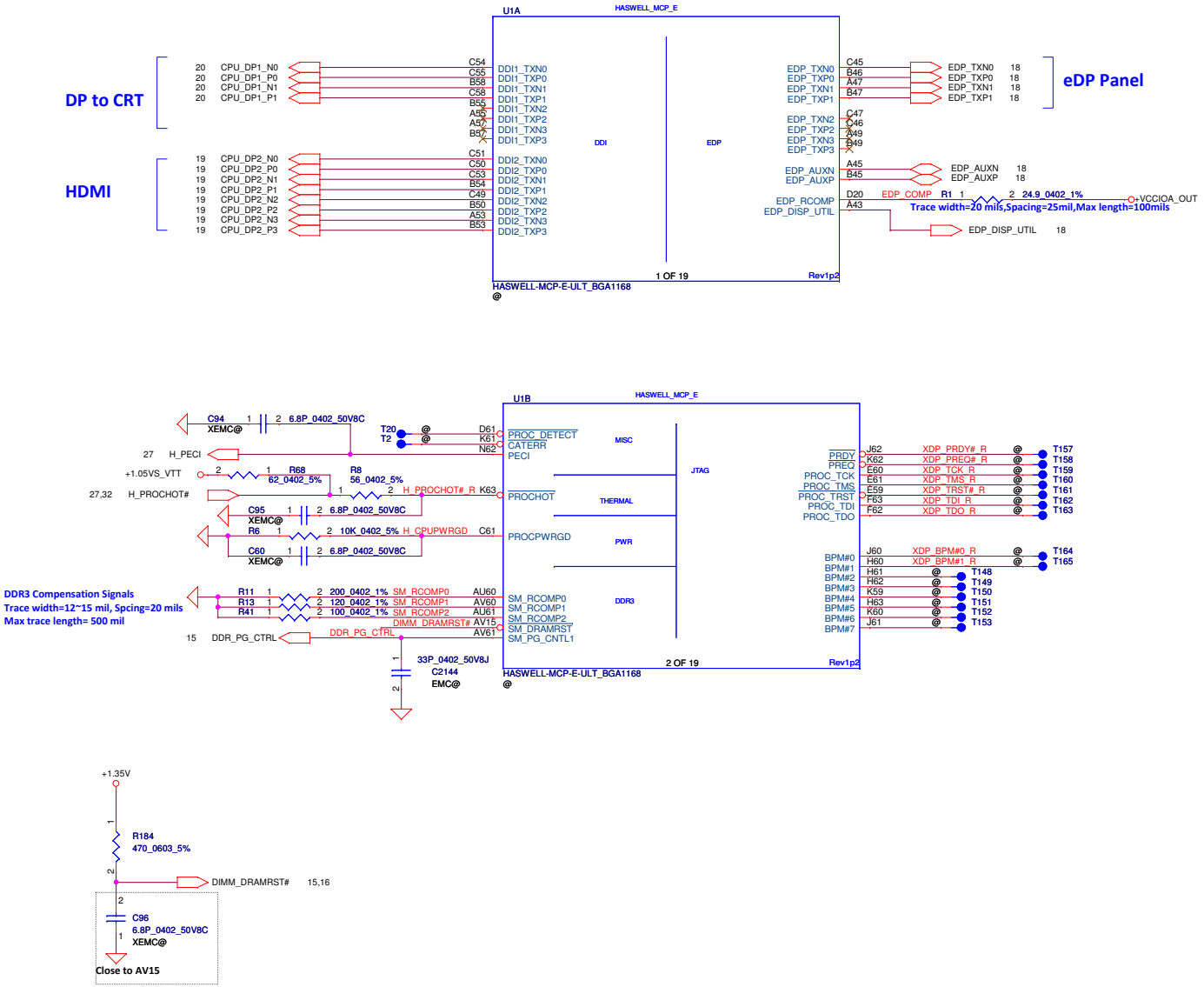
PCB	ZZZ DAZ15400100 DAZ15400100	DAZ15400100
CPU *PDC2957*	U1 PDC2957@ S IC CL8064701570000 SR1DV D0 1.4G ABO! SA00007G060	4319SOBOL01
CPU *I3-4158*	U1 I34158@ S IC CL8064701526902 SR18B C0 2G ABO! SA00006VW40	4319SOBOL02
CPU *PMD3558U*	U1 PMD3558U@ S IC CL8064701569500 SR1E8 D0 1.7G ABO! SA00007G260	4319SOBOL03
CPU *I5-4258*	U1 I54258@ S IC CL8064701481503 SR18A C0 2.4G ABO! SA00006VZ60	4319SOBOL04
CPU *I3-4010*	U1 I34010@ S IC CL8064701478202 SR16Q C0 1.7G ABO! SA00006SX70	4319SOBOL05
CPU *I3-4030*	U1 I34030@ S IC CL8064701552900 SR1EN D0 1.9G BGA 1168 SA00007TA60	4319SOBOL08
CPU *I5-4200*	U1 I54200@ S IC CL8064701477702 SR170 C0 1.6G ABO! SA00006SMB0	4319SOBOL09
CPU *I5-4210*	U1 I54210@ S IC CL8064701477802 SR1EF D0 1.7G BGA 1168 ABO ! SA00007LQ70	4319SOBOL10
CPU *BDW-ES1*	U1 QG21@ S IC CL8065801674128 QG21 C0 1.2G BGA 1168 SA00007OS10	4319SOBOL06
CPU *BDW-ES1*	U1 QG22@ S IC CL8065801675027 QG22 C0 1.2G BGA 1168 SA00007OT10	4319SOBOL06



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Title	BDW MCP(1/11) DDI,MSIC,XDP		
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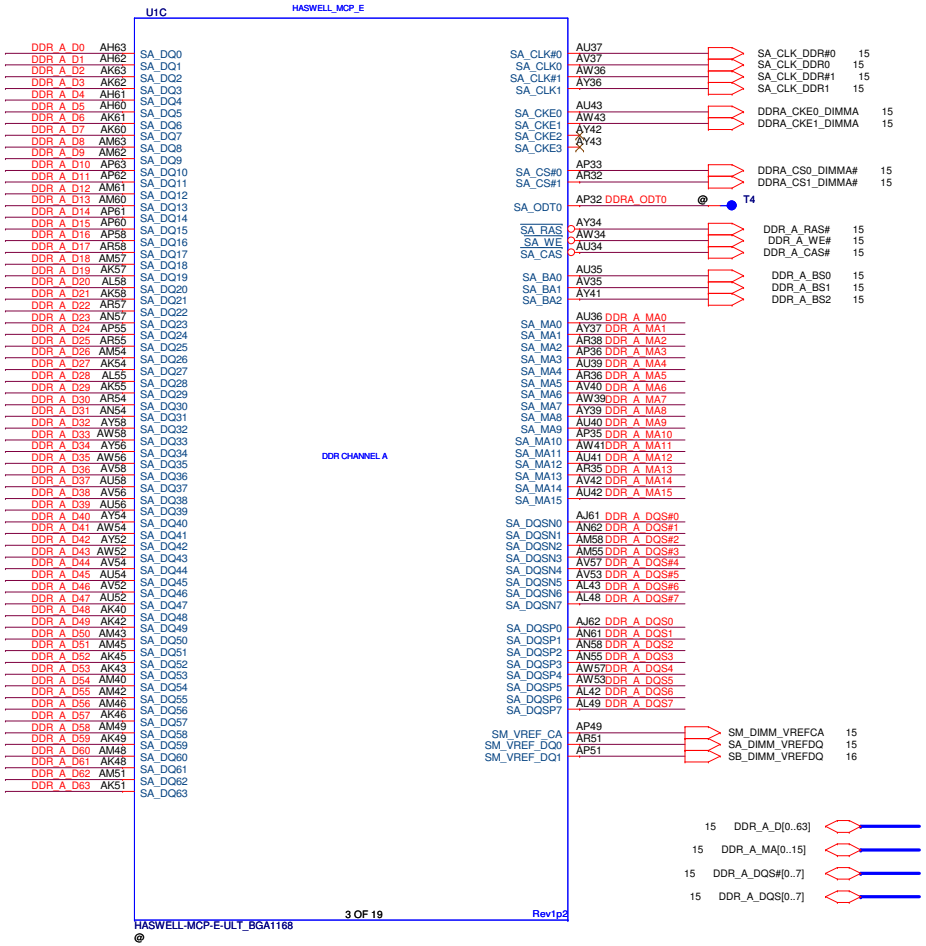

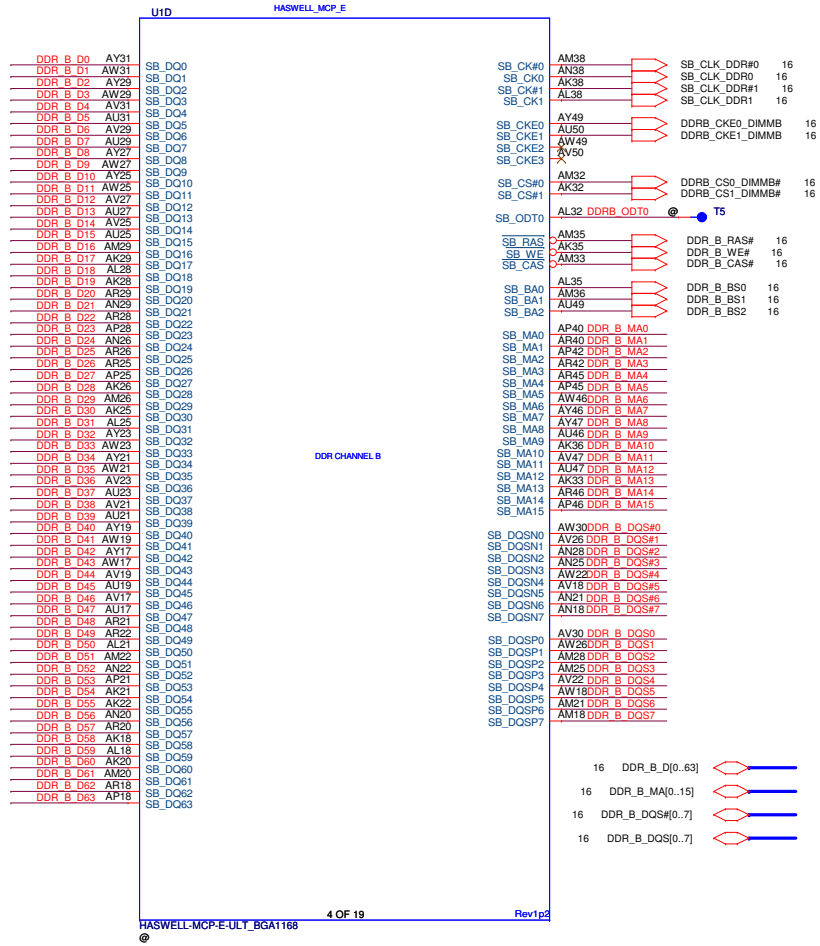

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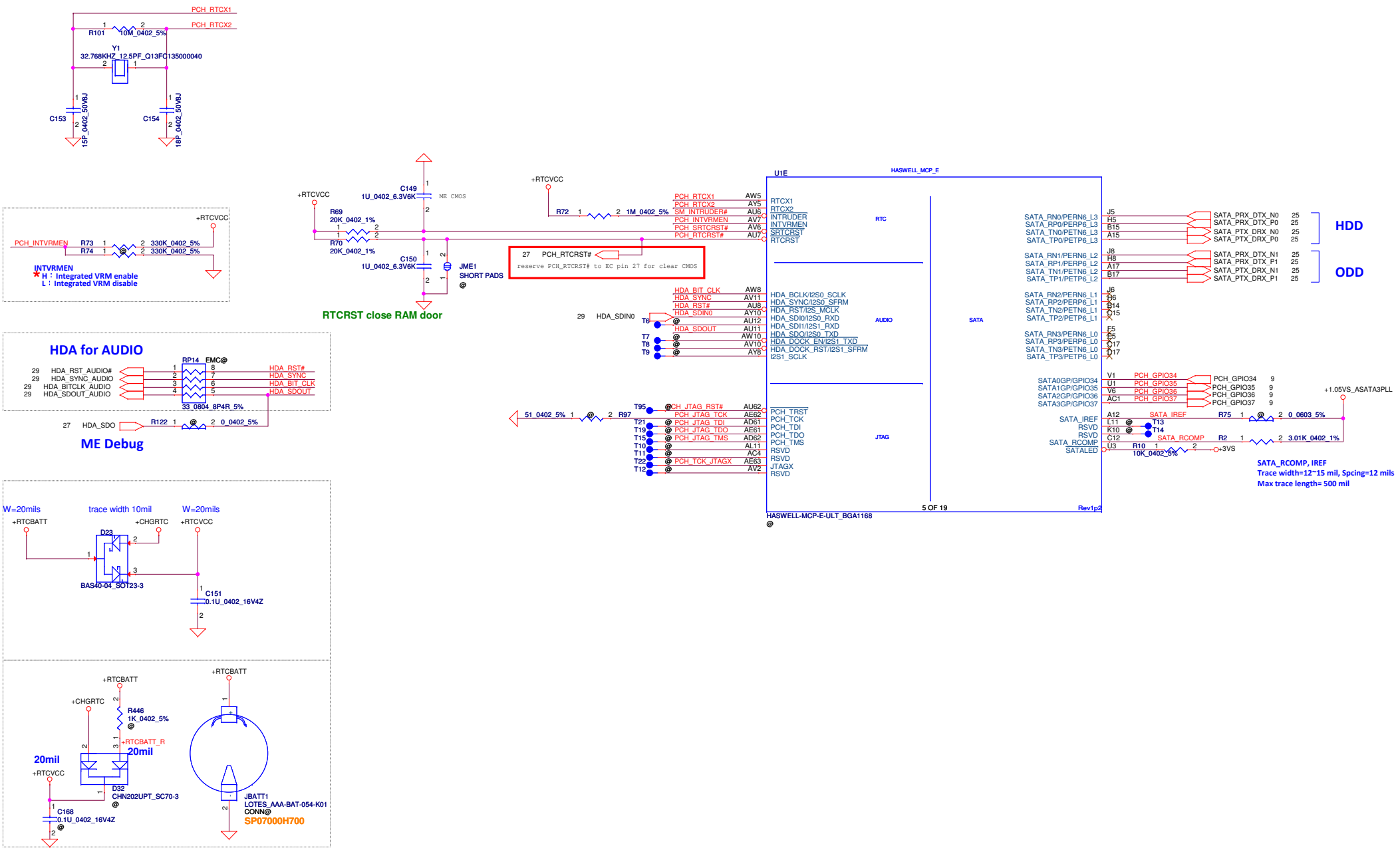

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Title	BDW MCP(3/11) RTC,SATA,XDP		
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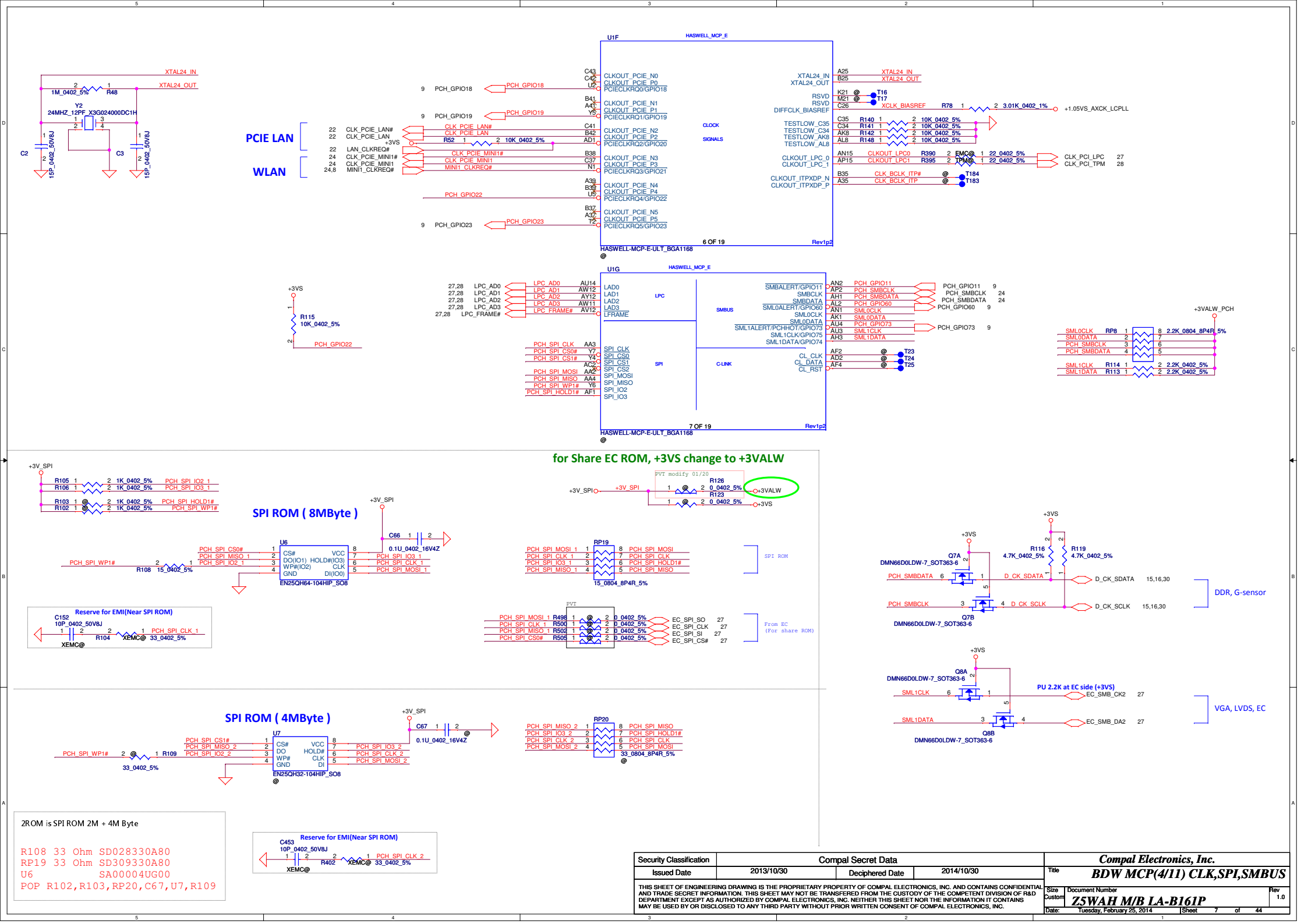

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Title	BDW MCP(4/11) CLK,SPI,SMBUS		
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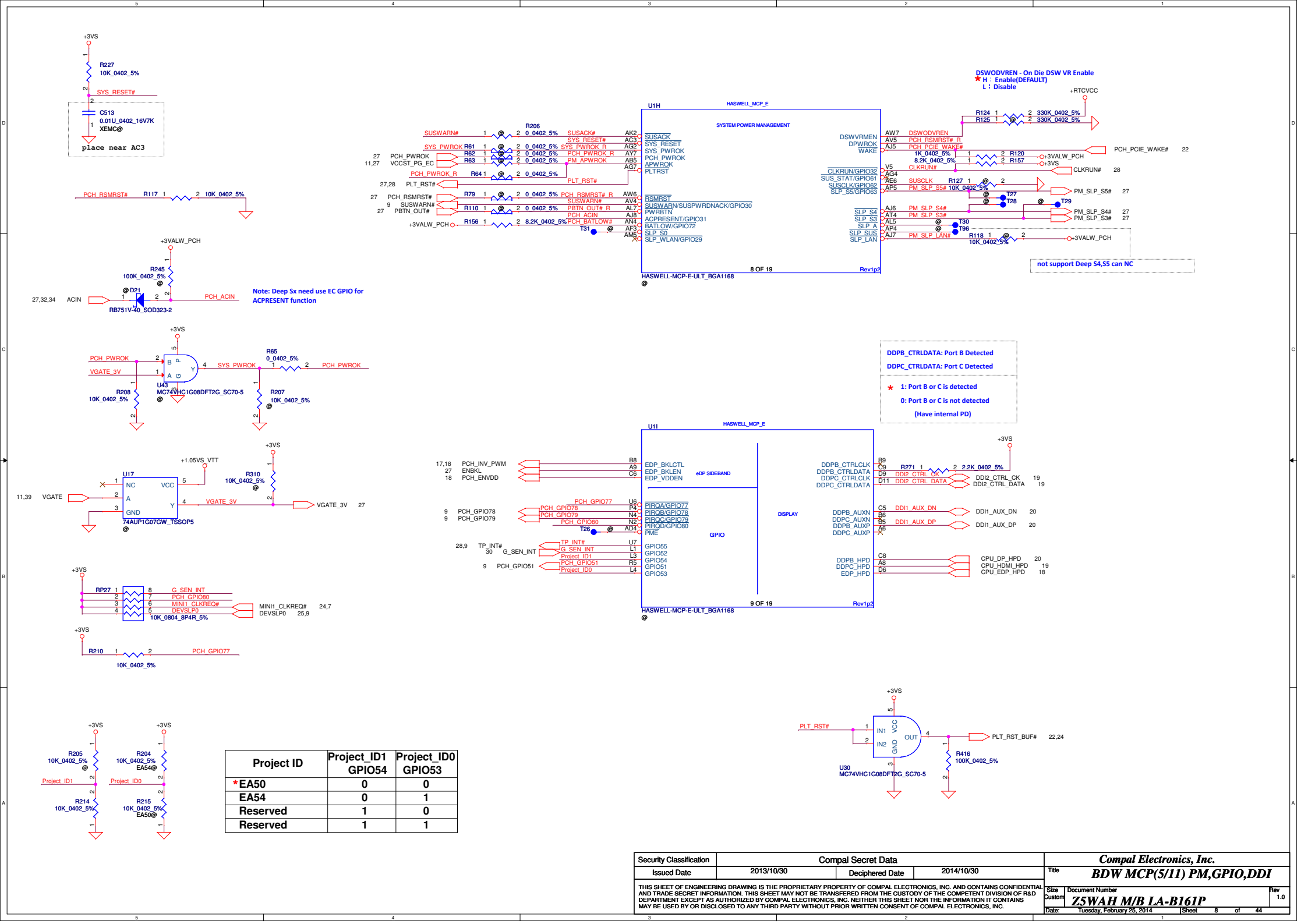

Project ID	Project_ID1 GPIO54	Project_ID0 GPIO53
*EA50	0	0
EA54	0	1
Reserved	1	0
Reserved	1	1

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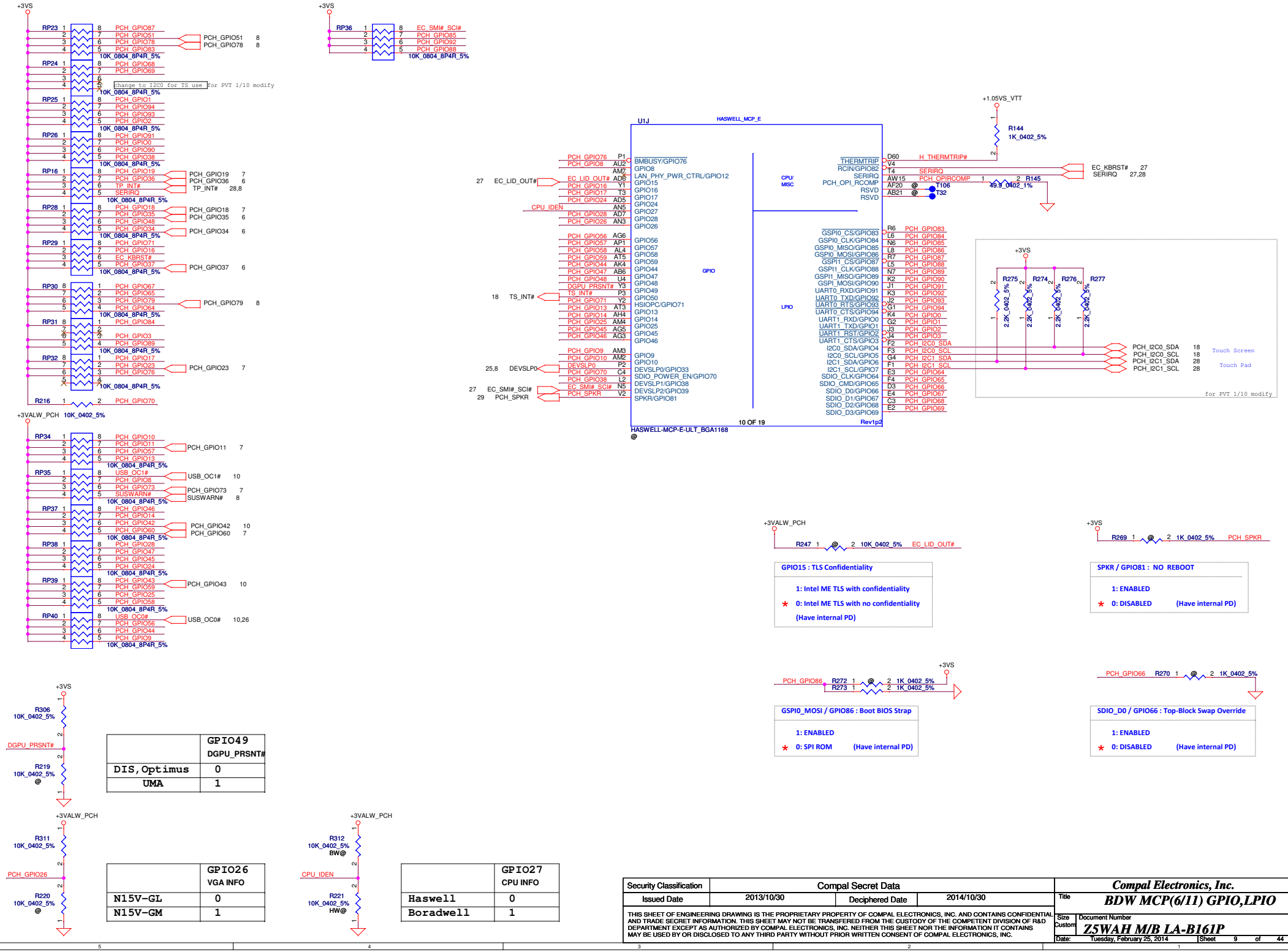

	GPIO49 DGPU_PRSNT#
DIS,Optimus	0
UMA	1

	GPIO26 VGA INFO
N15V-GL	0
N15V-GM	1

	GPIO27 CPU INFO
Haswell	0
Boradwell	1

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Title	BDW MCP(6/11) GPIO,LPIO		
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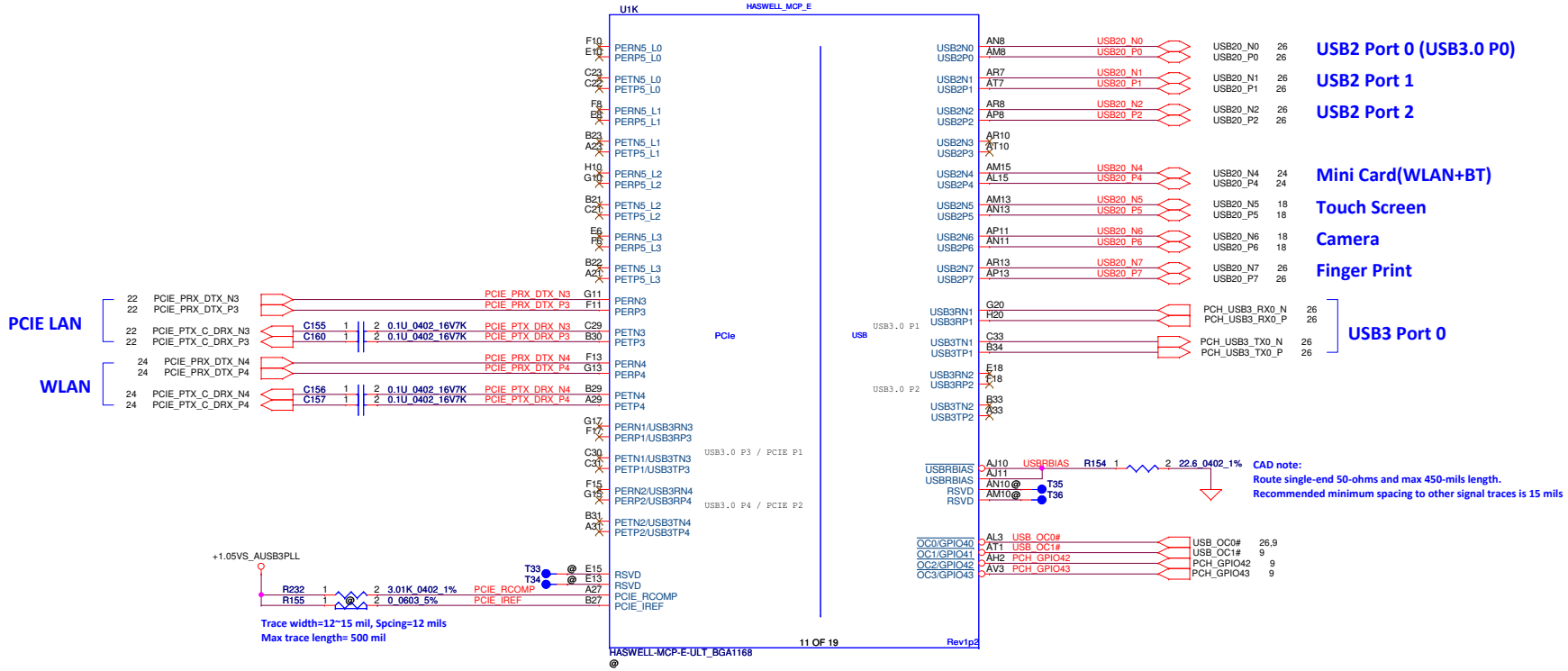

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+1.35V
+1.35V_CPU
@J6
JUMP_43X118

Shark Bay ULT have internal gate for VDDQ

+3VS
R422
100K_0402_5%
@
U16
NC
A
GND
VCC
Y
74AUP1G07GW_TSSOP5
+3VALW_PCH
+1.05VS_VTT
R309
10K_0402_5%
R166
0_0402_5%
27,8 VCCST_PG_EC
VCCST_PG_EC_R
VCCST_PWRGD 27,37

SVID ALERT

+1.05VS_VTT
Place the CPU
resistors close to CPU
R171
75_0402_1%
R172
43_0402_1%
39 VR_ALERT#
H_CPU_SVIDALRT#

SVID DATA

+1.05VS_VTT
Place the CPU
resistors close to CPU
R173
130_0402_1%
R174
0_0402_5%
39 VR_SVID_DATA
VIDSOUT

+CPU_CORE
R177
100_0402_1%
Note: 0 ohm PLACED CLOSE TO CPU
VCC_SENSE_R
R178
0_0402_5%
VCC_SENSE 39
13 VSS_SENSE_R
R235
0_0402_5%
VSS_SENSE 39
R233
100_0402_1%

+1.05VS_VTT
R169
150_0402_1%
CPU_PWR_DEBUG
R170
10K_0402_5%

+1.05VS_VTT
C6
22U_0805_6.3V6M
C7
1U_0402_6.3V6K

U1L
HASWELL_MCP_E
HSW ULT POWER
HASWELL-MCP-E-ULT_BGA1168
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Rev1p2

+1.35V_CPU
+CPU_CORE
+VCCIO_OUT
+VCCIOA_OUT
+1.05VS_VTT
R164
0_0603_5%
VCC_SENSE_R
H_CPU_SVIDALRT#
H_CPU_SVIDCLK
VIDSOUT
VCCST_PG_EC_R
PCH_VR_EN
VR_READY
39 VR_SVID_CLK
R165
39 VR_ON
39,8 VGATE
R167
R168
C167
0.1U_0402_16V4Z
CPU_PWR_DEBUG
Reserved Only

VIDALERT
VIDSCLK
VIDSOUT
VCCST_PWRGD
VR_EN
VR_READY
VSS
PWR_DEBUG
VSS
RSVD_TP
RSVD
VCCST
VCC
VCC_SENSE
VCCIO_OUT
VCCIOA_OUT

+1.05VS_VTT
+CPU_CORE

VDDQ DECOUPLING

+1.35V_CPU
C3 2.2U_0402_6.3V6M
C9 2.2U_0402_6.3V6M
C10 2.2U_0402_6.3V6M
C11 2.2U_0402_6.3V6M
C12 10U_0603_6.3V6M
C13 EMC@ 10U_0603_6.3V6M
C14 EMC@ 10U_0603_6.3V6M
C15 10U_0603_6.3V6M
C16 10U_0603_6.3V6M
C17 10U_0603_6.3V6M
C18 330U_2.5V_M

+1.35V : 470UF/2V/7343 *2
10UF/6.3V/0603 * 6
2.2UF/6.3V/0402 * 4

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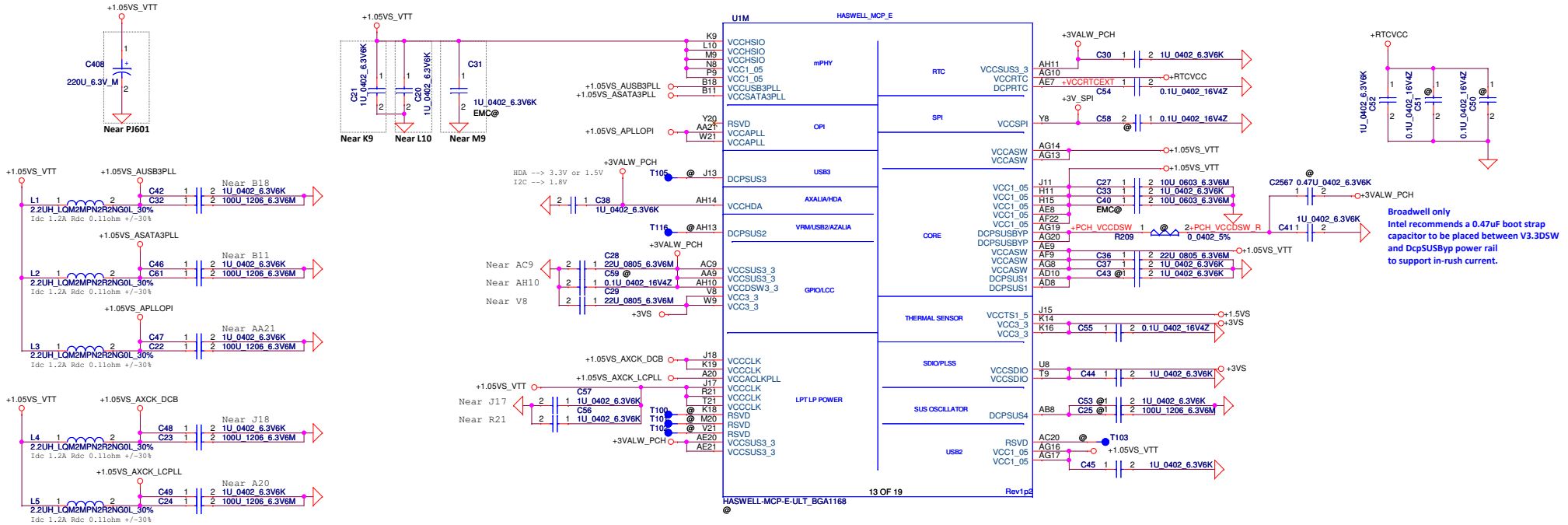
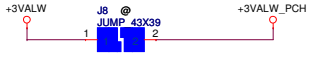


+3VALW TO +3VALW(PCH AUX Power)
Short J8 for PCH VCCSUS3.3



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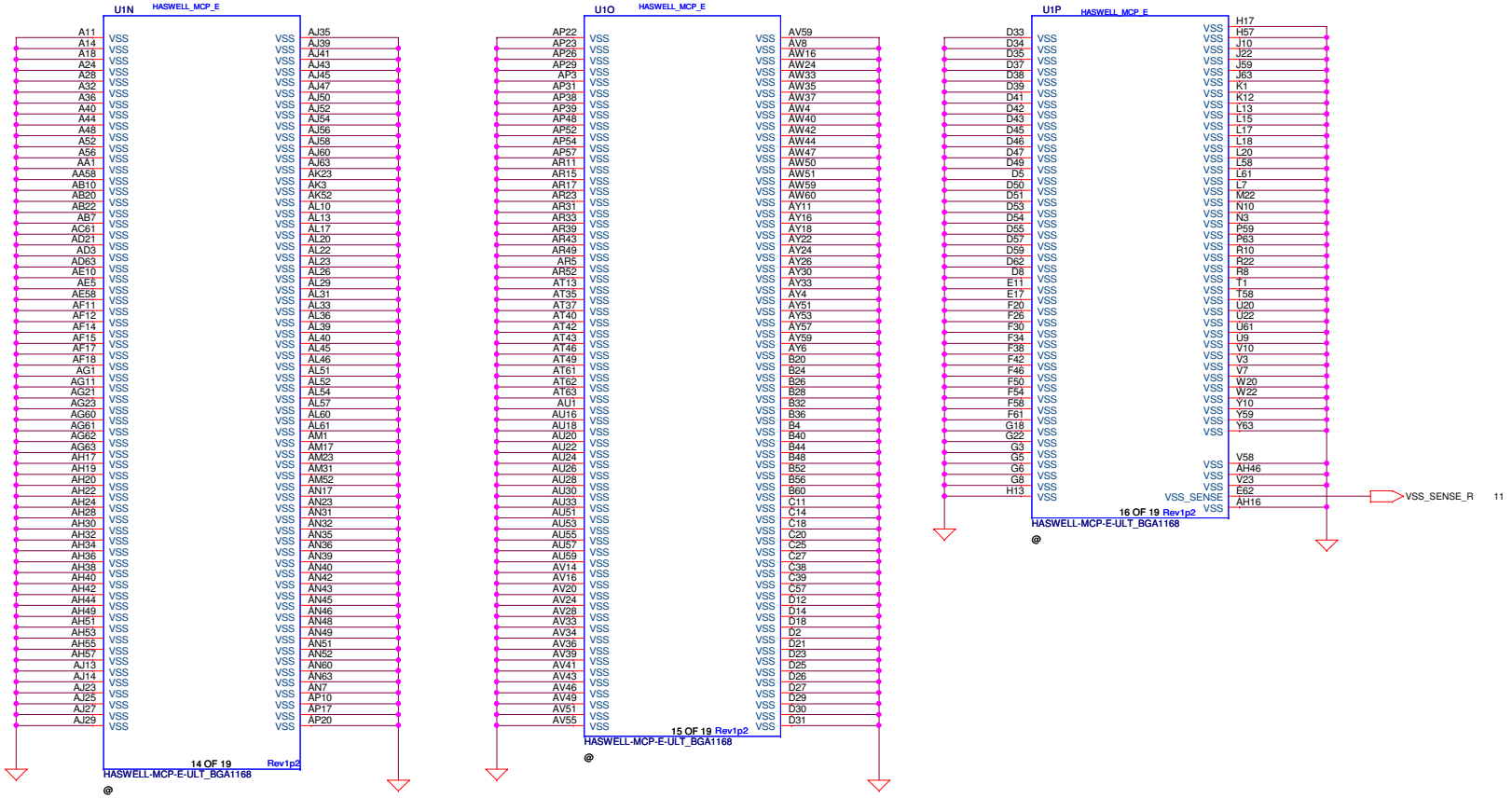

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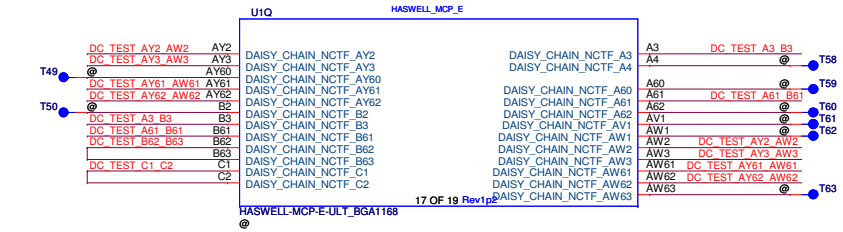
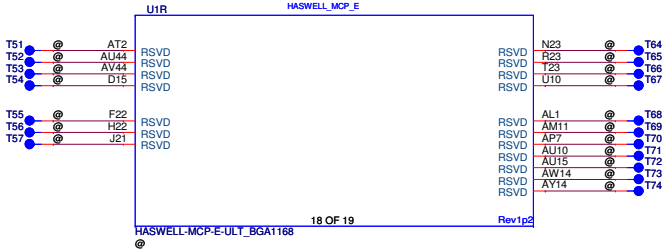
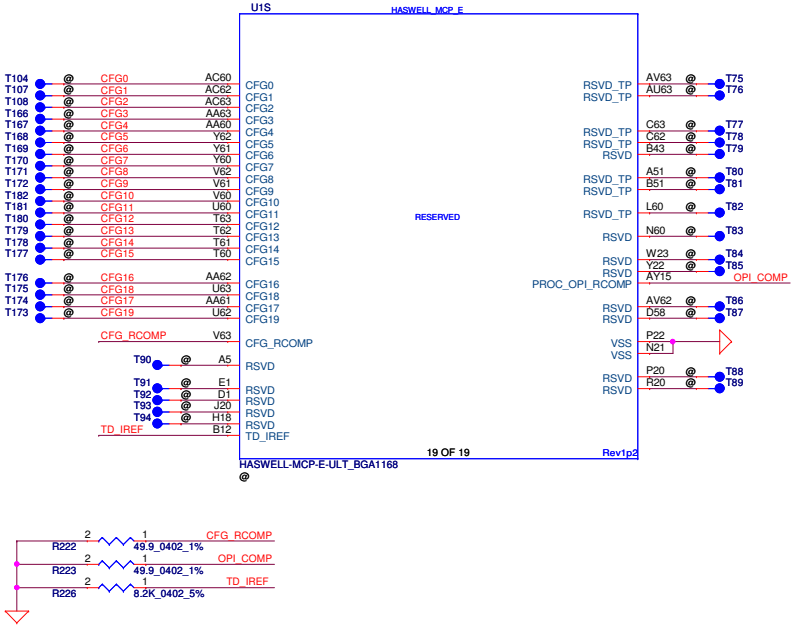
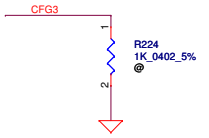


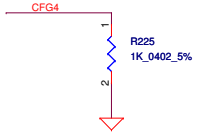




CFG Straps for Processor



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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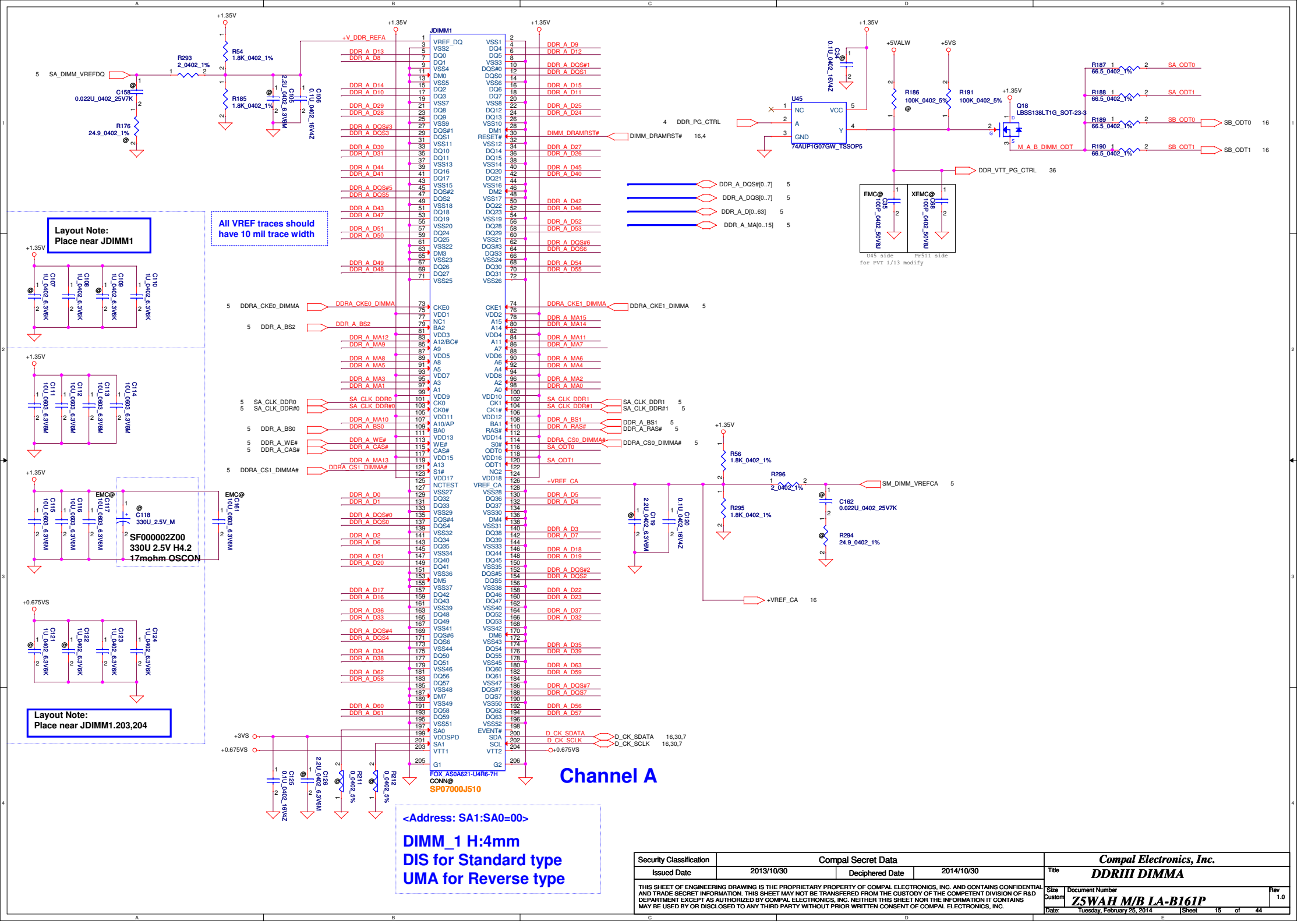

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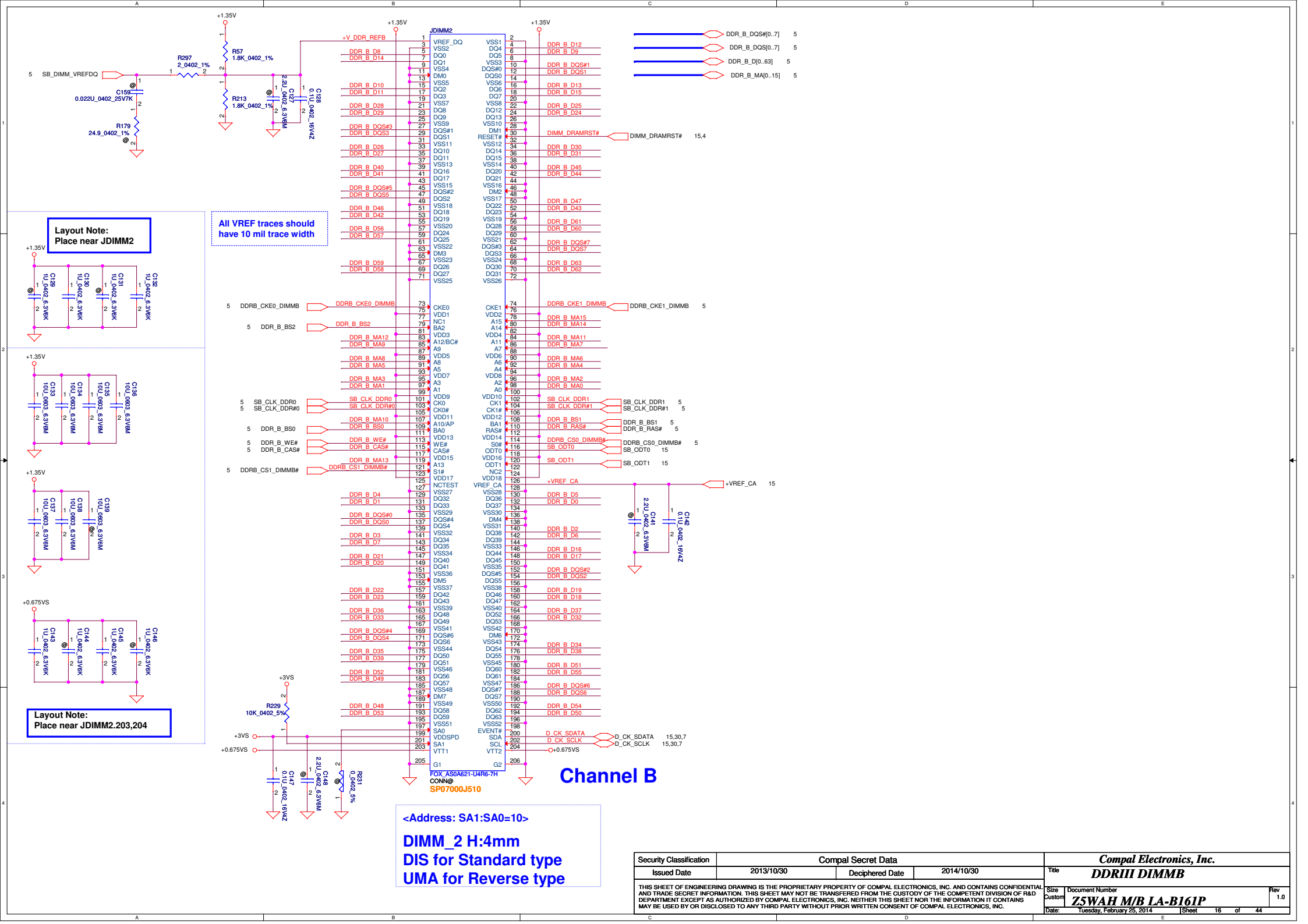

Security Classification	Compal Secret Data		
Issued Date	2013/10/30	Deciphered Date	2014/10/30

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Title	DDRIII DIMMB
Size: Custom	Document Number: Z5WAH M/B LA-B161P
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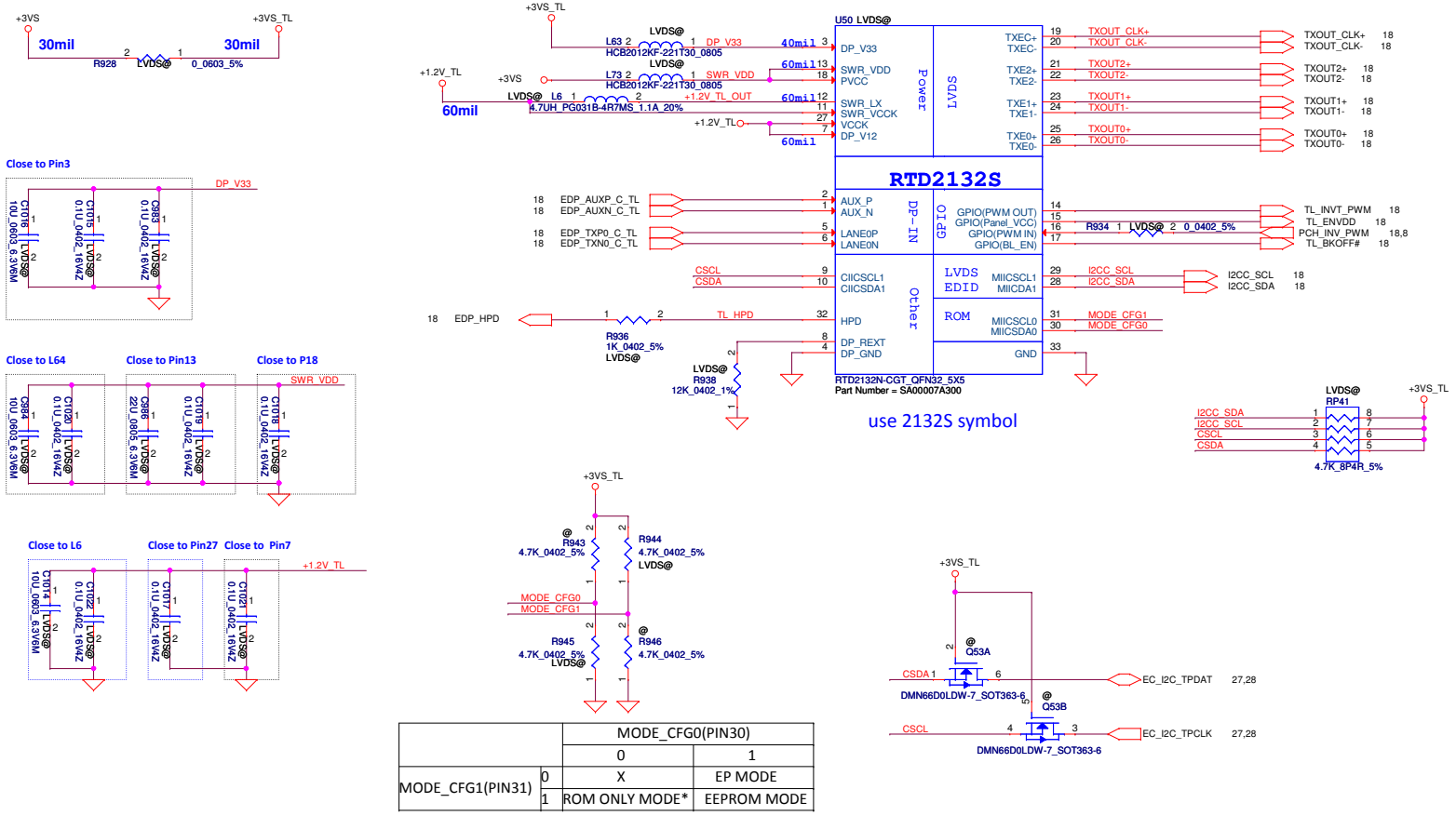
LVDS Translator - RTD2132R



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

Security Classification	Compal Secret Data		
Issued Date	2013/10/30	Deciphered Date	2014/10/30

Title	LVDS Translator - RTD2132R		
Size	Document Number		Rev
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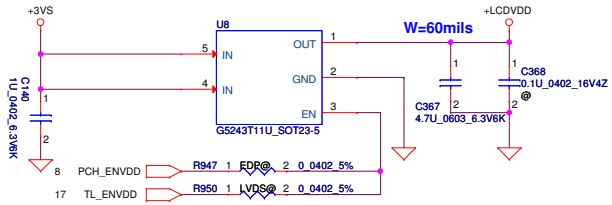
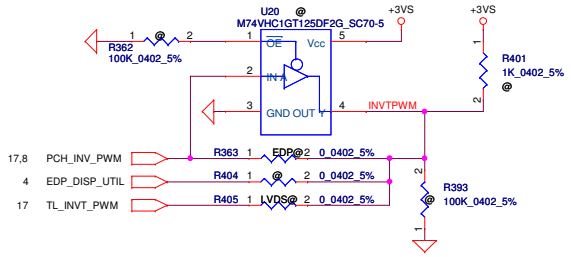
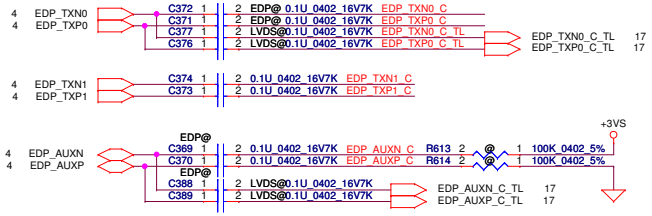
EDP / LVDS conn.

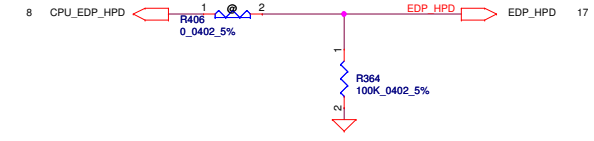
LCD POWER CIRCUIT

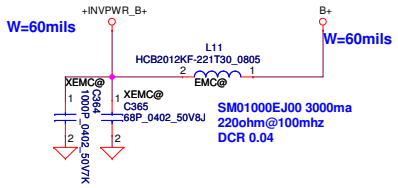


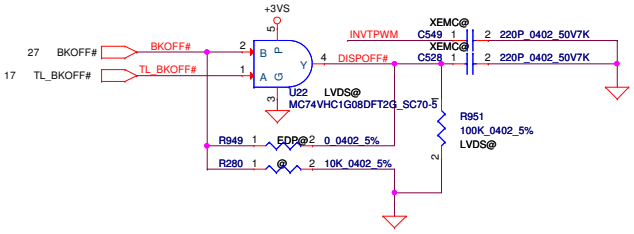


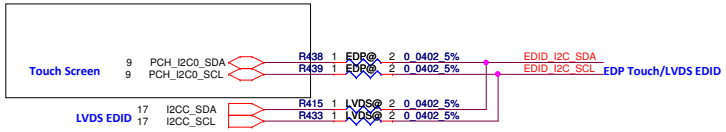
eDP



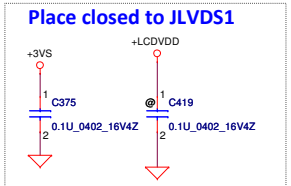




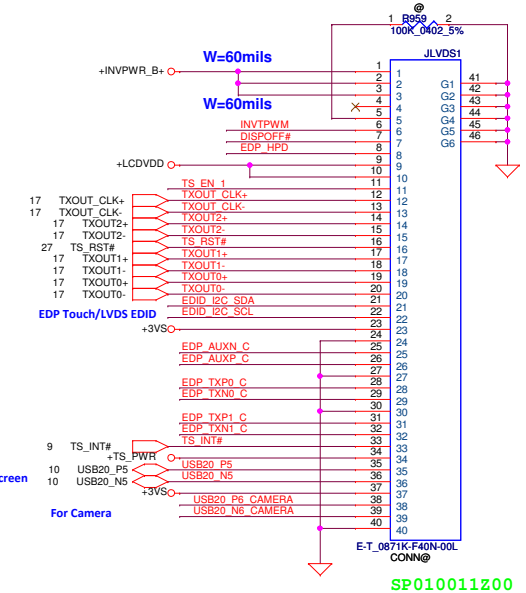




Place closed to JLVDS1

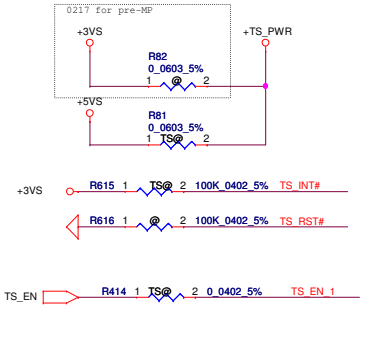


LCD/ LED PANEL Conn.

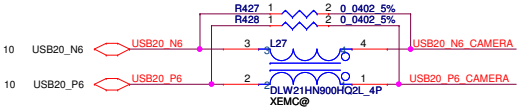


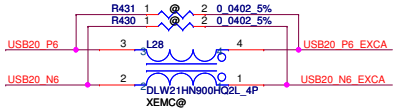
SP010011Z00

Touch Screen

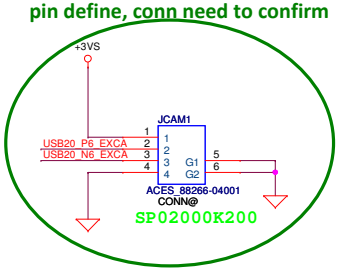


Camera





pin define, conn need to confirm



SP02000K200

Security Classification	Compal Secret Data		
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Compal Electronics, Inc.

Title: eDP Connector

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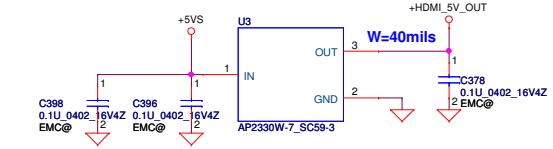
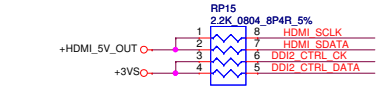
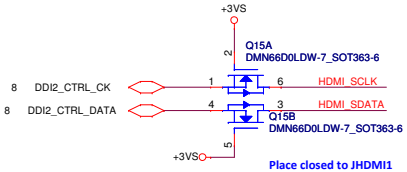
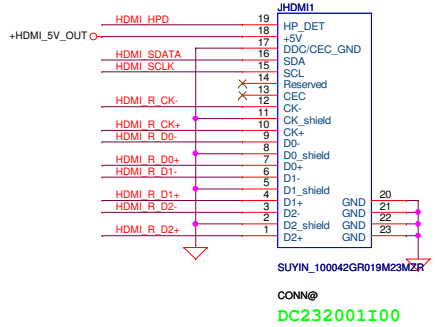
HDMI conn.

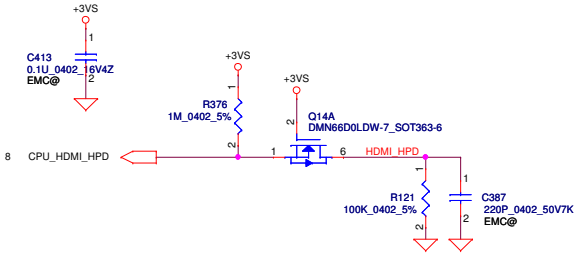




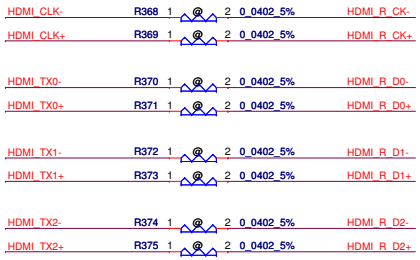


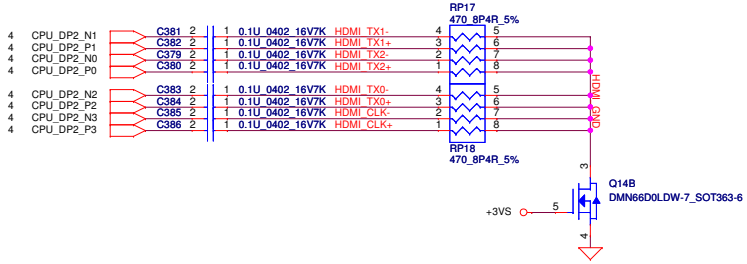
HDMI connector





SM070001310 400ma 90ohm@100mhz DCR 0.3





Security Classification	Compal Secret Data		
Issued Date	2013/10/30	Deciphered Date	2014/10/30

Compal Electronics, Inc.

Title: HDMI Conn

Size	Document Number	Rev
Custom	Z5WAH M/B LA-B161P	1.0

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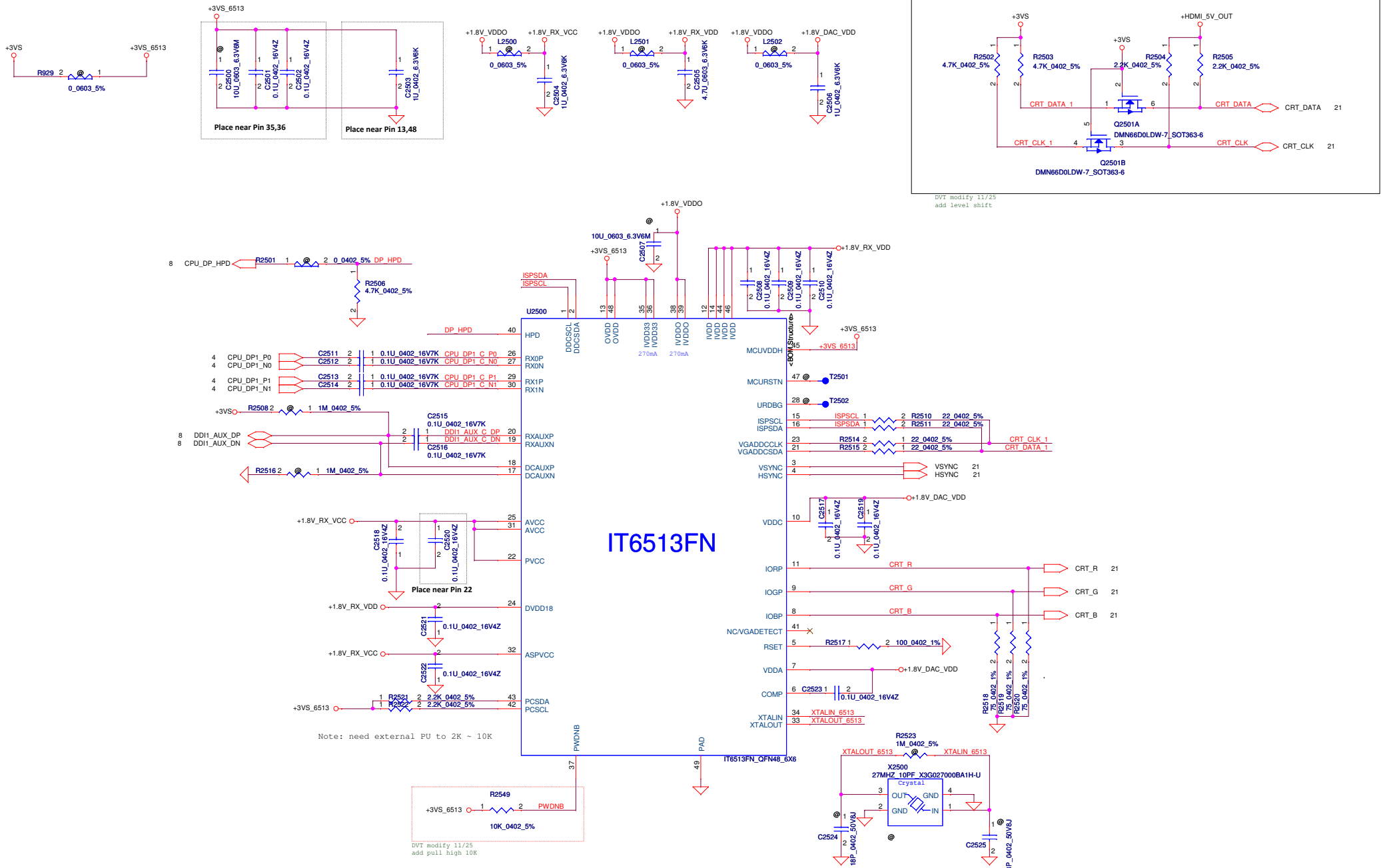
DP to VGA-IT6513



Security Classification	Compal Secret Data		
Issued Date	2013/10/30	Deciphered Date	2014/10/30

Compal Electronics, Inc.

Title: ITE IT6513FN

Size	Document Number	Rev
Custom	Z5WAH M/B LA-B161P	1.0
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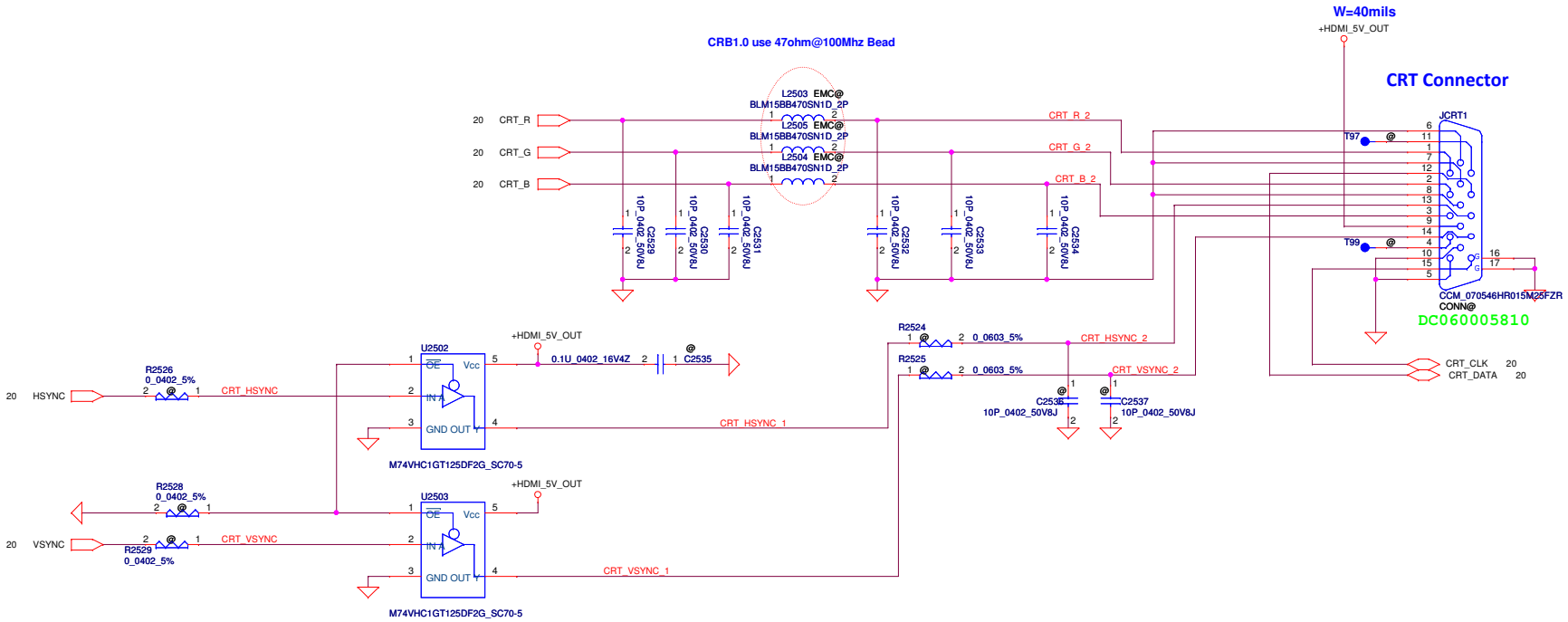
CRT conn.



Security Classification	Compal Secret Data		
Issued Date	2013/10/30	Deciphered Date	2014/10/30

Compal Electronics, Inc.

Title: CRT Connector

Size	Document Number	Rev
Custom	Z5WAH M/B LA-B161P	1.0

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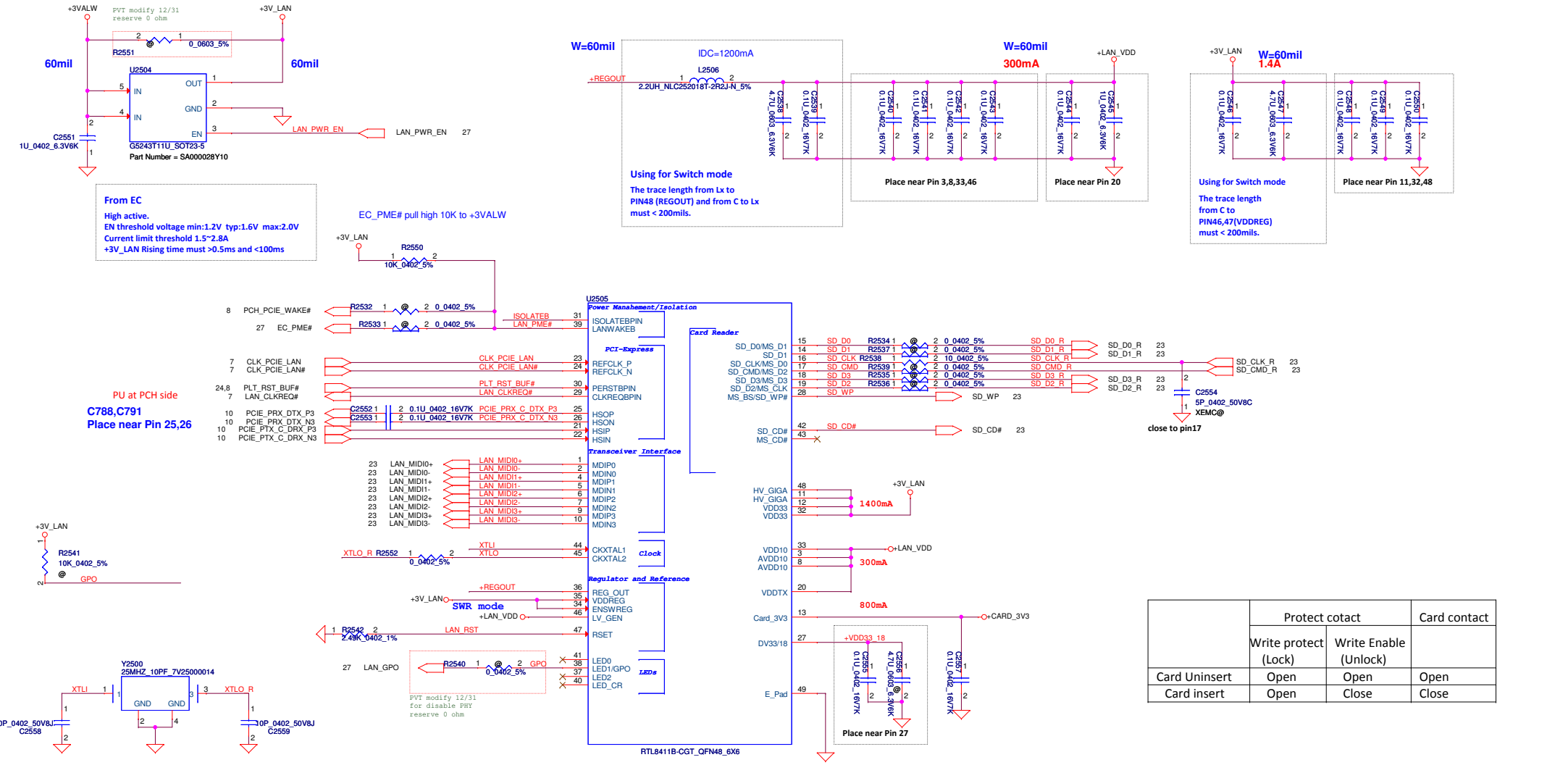
LAN-RTL8411B



	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	2013/10/30	Deciphered Date	2014/10/30

Compal Electronics, Inc.

Title: LAN RTL8411-CG

Size: Custom | Document Number: Z5WAH M/B LA-B161P | Rev: 1.0

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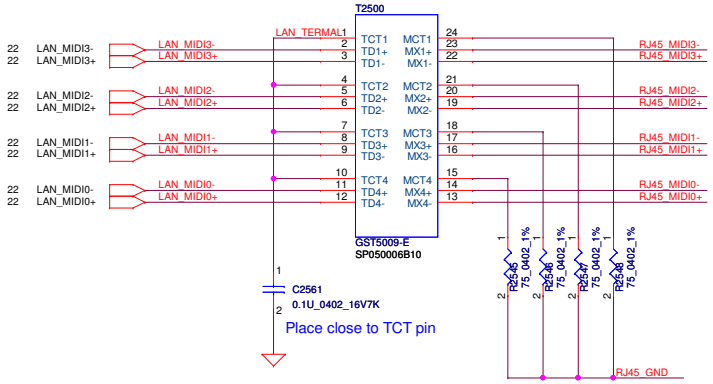
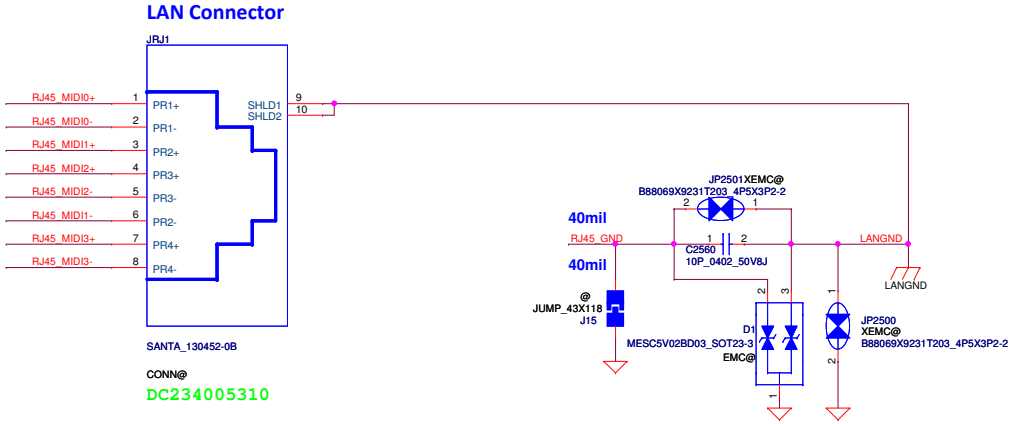
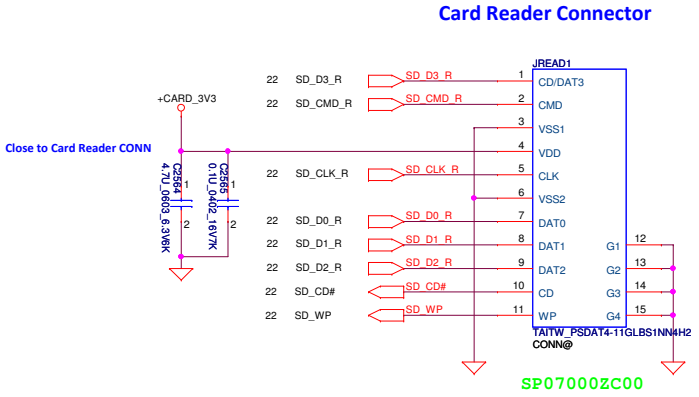
RJ45 / Card Reader conn.







Compal Electronics, Inc.

Title: LAN RJ45/CR SD Connector

Size: Custom | Document Number: Z5WAH M/B LA-B161P | Rev: 1.0

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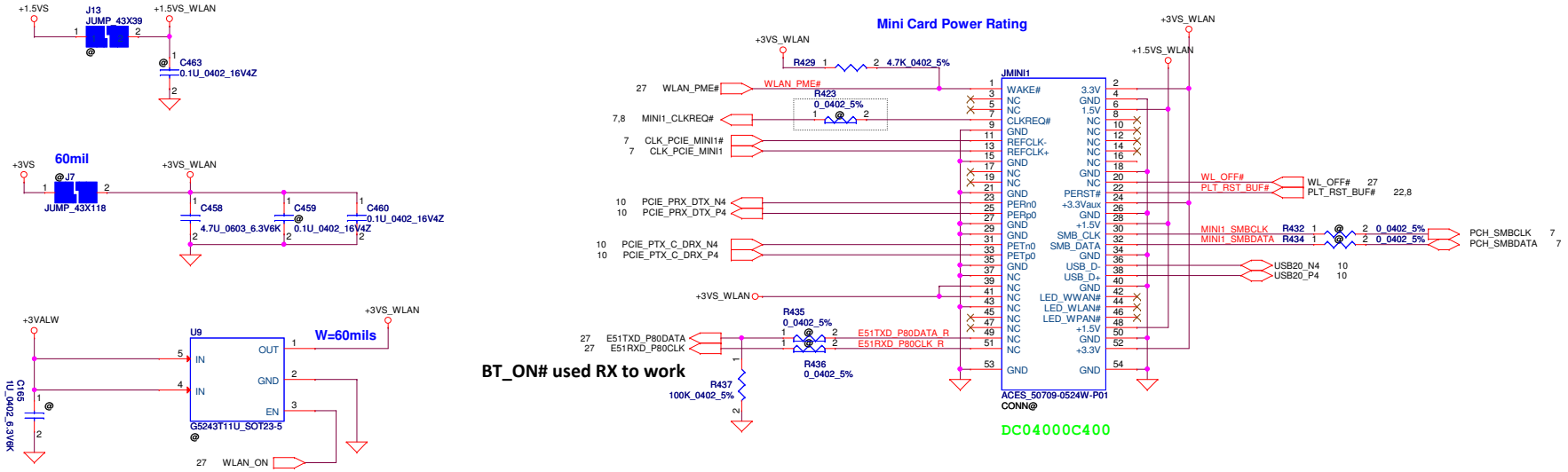
Wireless LAN



Security Classification	Compal Secret Data		
Issued Date	2013/10/30	Deciphered Date	2014/10/30

Compal Electronics, Inc.

Title: MINI CARD (WLAN)

Size	Document Number	Rev
Custom	Z5WAH M/B LA-B161P	1.0

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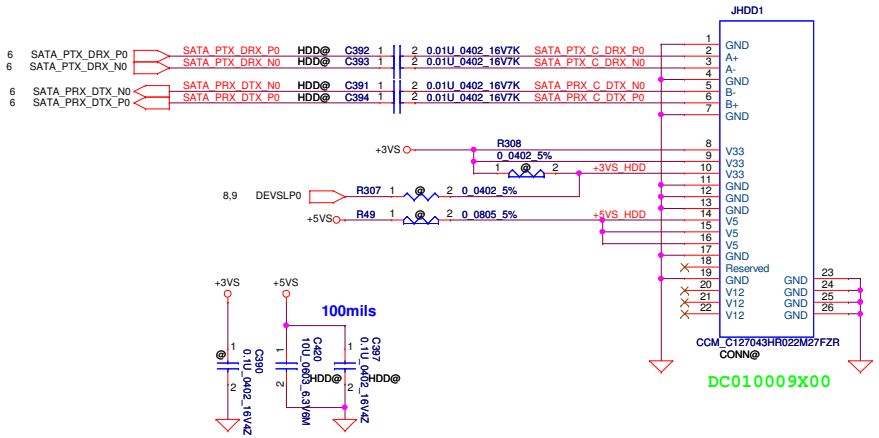
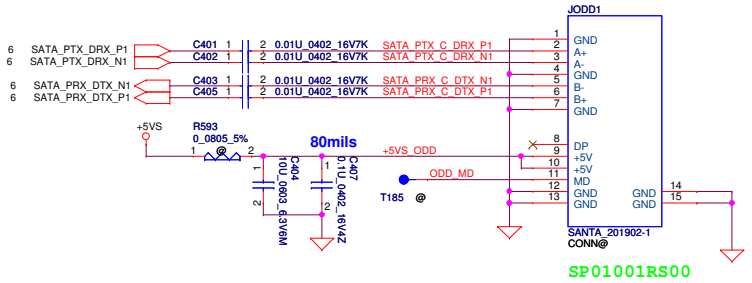
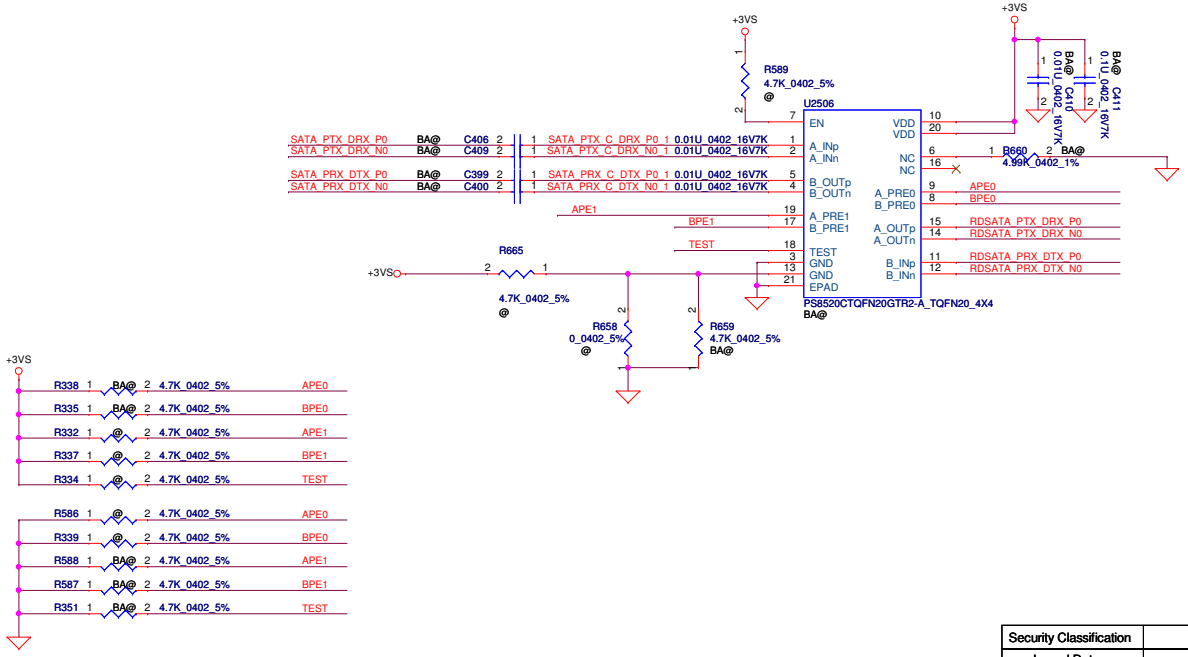
SATA HDD1 Conn.

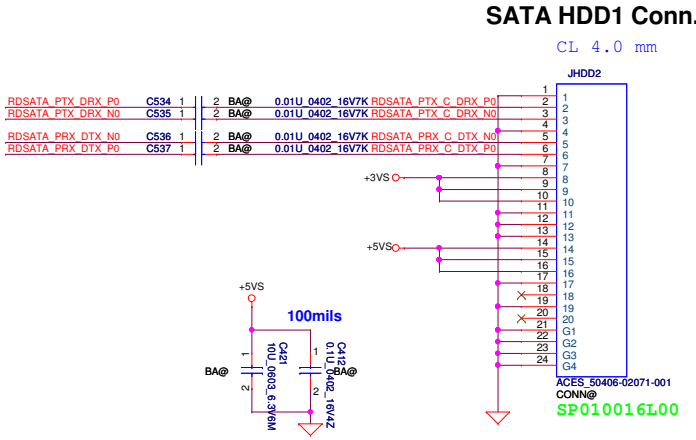


SATA ODD Conn.



SATA Re-Driver HDD Conn. Reserve





Security Classification	Compal Secret Data		
Issued Date	2013/10/30	Deciphered Date	2014/10/30

Compal Electronics, Inc.

Title: HDD/ODD/ HDD Re-Driver

Size	Document Number	Rev
Custom	Z5WAH M/B LA-B161P	1.0

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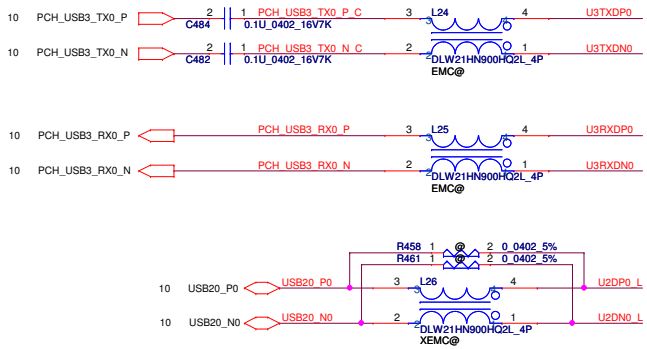
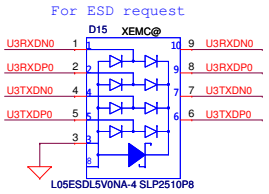
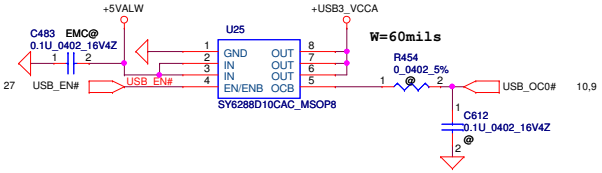
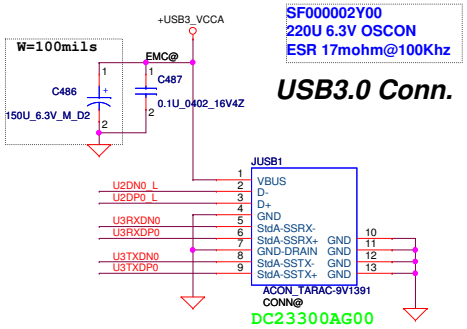
USB3.0 (Port 0)

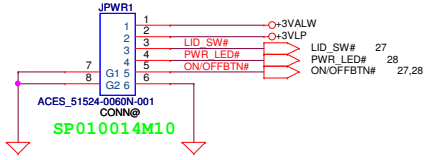




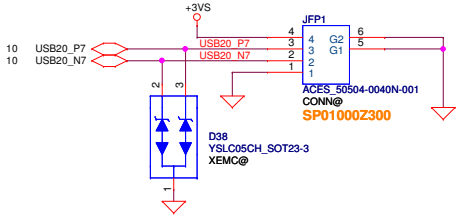




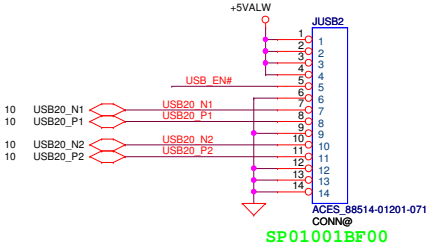
PWR/B



Finger Print /B Reserve



USB/B (USB Port 1, Port2)



Security Classification	Compal Secret Data		
Issued Date	2013/10/30	Deciphered Date	2014/10/30

Compal Electronics, Inc.

Title: USB3.0 Conn/USB_B/PWR_B

Size	Document Number	Rev
Custom	Z5WAH M/B LA-B161P	1.0

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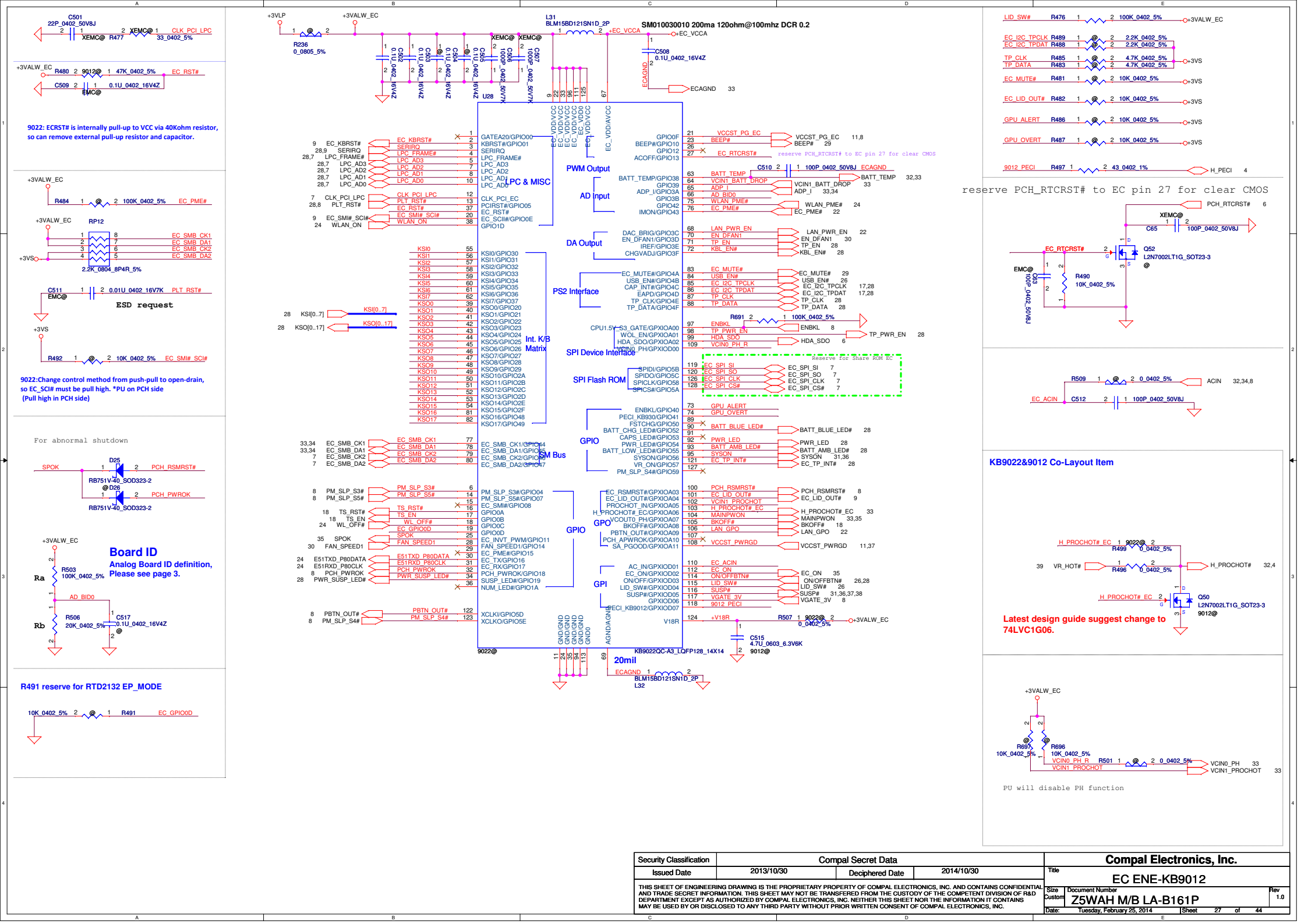
9022: ECRST# is internally pull-up to VCC via 40Kohm resistor, so can remove external pull-up resistor and capacitor.
9022:Change control method from push-pull to open-drain, so EC_SCI# must be pull high. *PU on PCH side (Pull high in PCH side)
For abnormal shutdown
Board ID
Analog Board ID definition, Please see page 3.
R491 reserve for RTD2132 EP_MODE
SM010030010 200ma 120ohm@100mhz DCR 0.2
LPC & MISC
PWM Output
AD Input
DA Output
PS2 Interface
Int. K/B Matrix
SPI Device Interface
SPI Flash ROM
GPIO
SMB Bus
GPO
GPI
20mil
reserve PCH_RTCRST# to EC pin 27 for clear CMOS
ESD request
KB9022&9012 Co-Layout Item
Latest design guide suggest change to 74LVC1G06.
PU will disable PH function
Compal Secret Data
Issued Date 2013/10/30
Deciphered Date 2014/10/30
Compal Electronics, Inc.
EC ENE-KB9012
Z5WAH M/B LA-B161P
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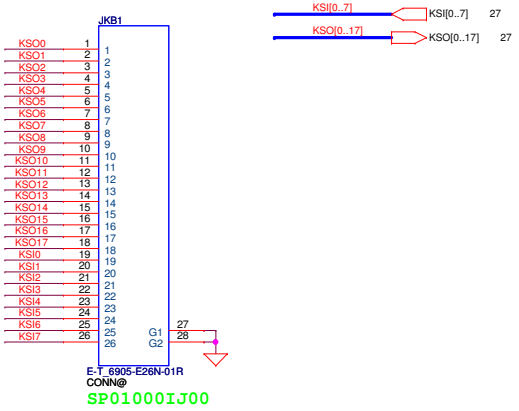
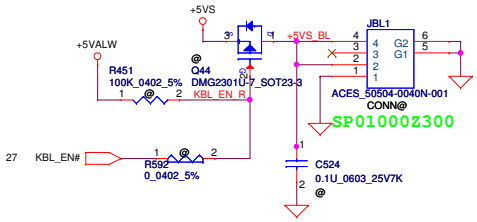
KB Conn.

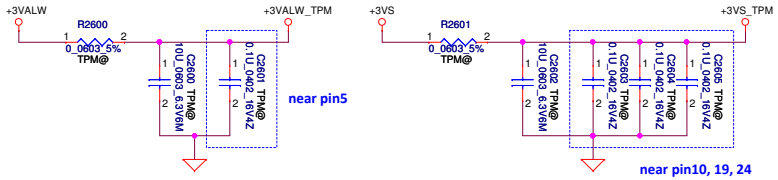


KB BackLight Conn. Reserve

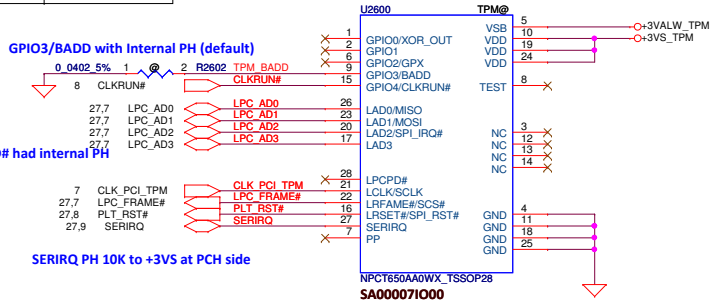


TPM Board for 2015

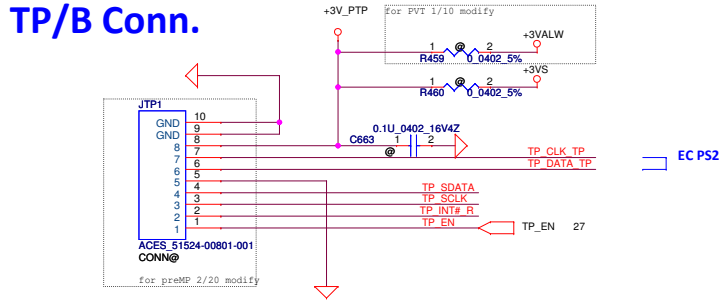
for PVT 1/14 modify

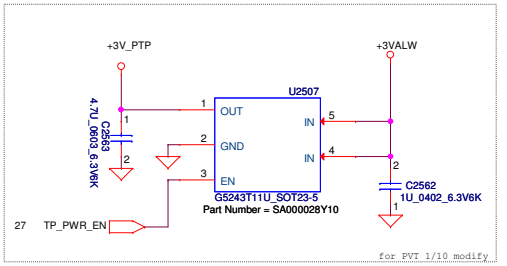


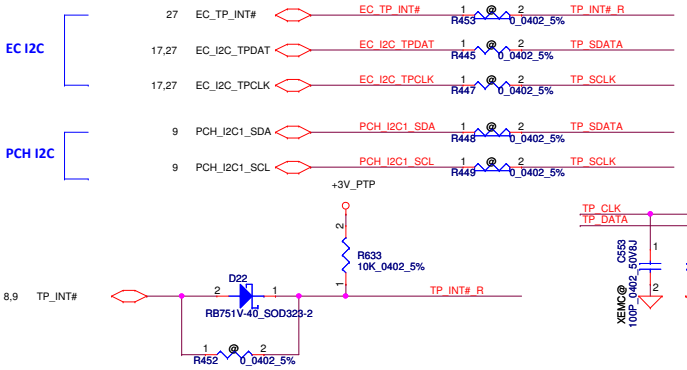
BADD	SELECTION
0	EEh - EFh
* 1	7Eh - 7Fh

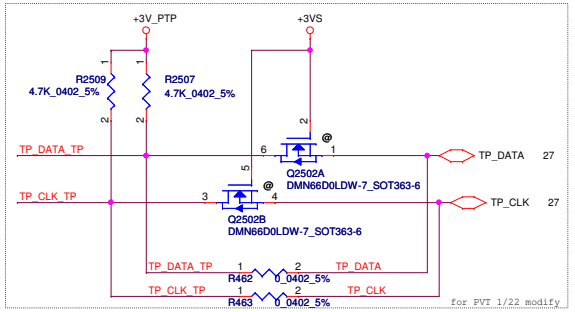


TP/B Conn.

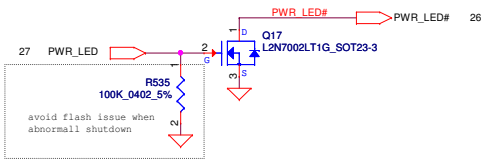


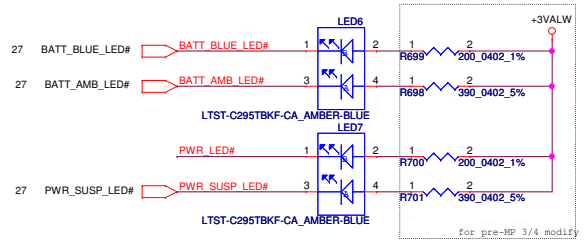




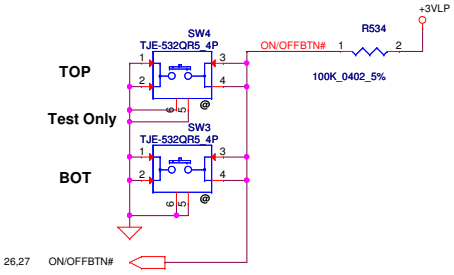


LED





ON/OFF BTN



Security Classification	Compal Secret Data		
Issued Date	2013/10/30	Deciphered Date	2014/10/30

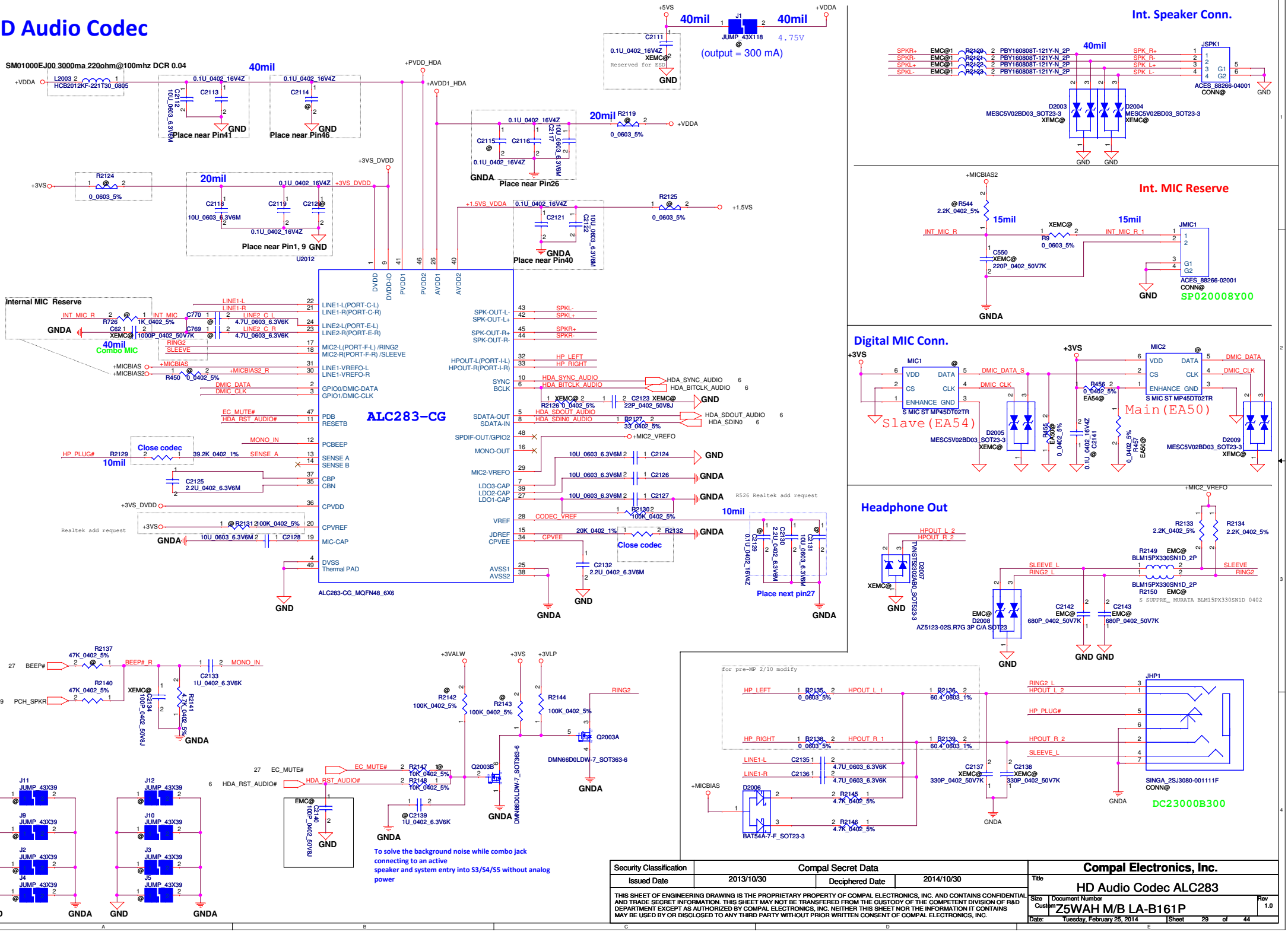
Compal Electronics, Inc.

Title: KB & TP & TPM Connector & LED

Size	Document Number	Rev
Custom	Z5WAH M/B LA-B161P	1.0

Date: Tuesday, March 04, 2014 | Sheet 28 of 44

HD Audio Codec



Security Classification	Compal Secret Data		
Issued Date	2013/10/30	Deciphered Date	2014/10/30

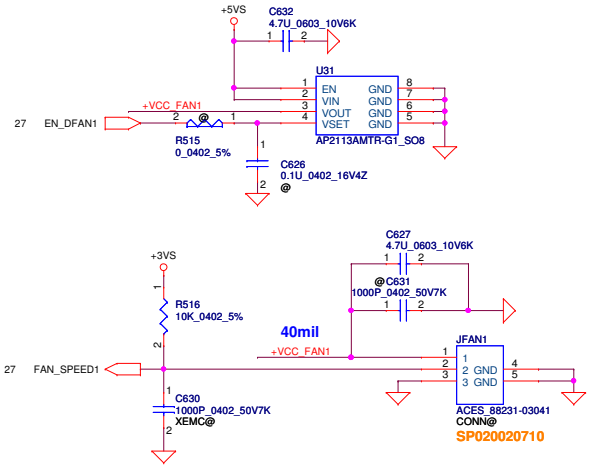
Compal Electronics, Inc.

Title: HD Audio Codec ALC283

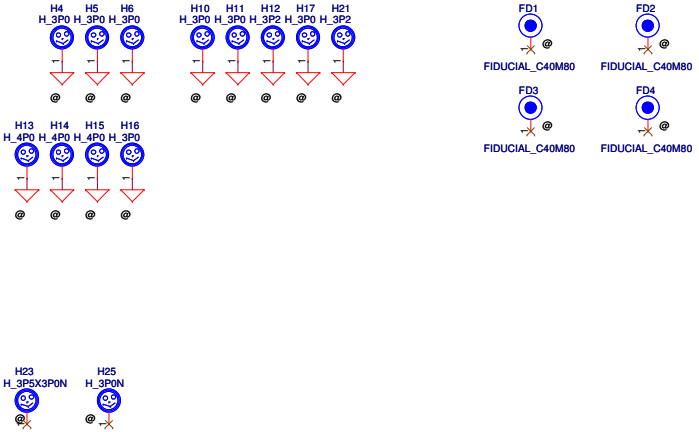
Size	Document Number	Rev
Custom	Z5WAH M/B LA-B161P	1.0

Date: Tuesday, February 25, 2014 | Sheet 29 of 44

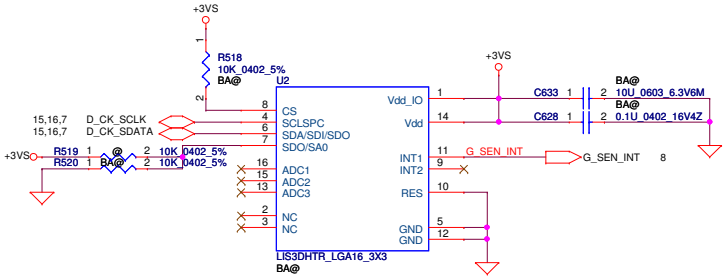
FAN1 Conn



Screw Hole



G-Sensor Reserve



LIS3DH
SA0 ->0, Address is 0011 000 (0x30h)
SA0 ->1, Address is 0011 001 (0x32h)

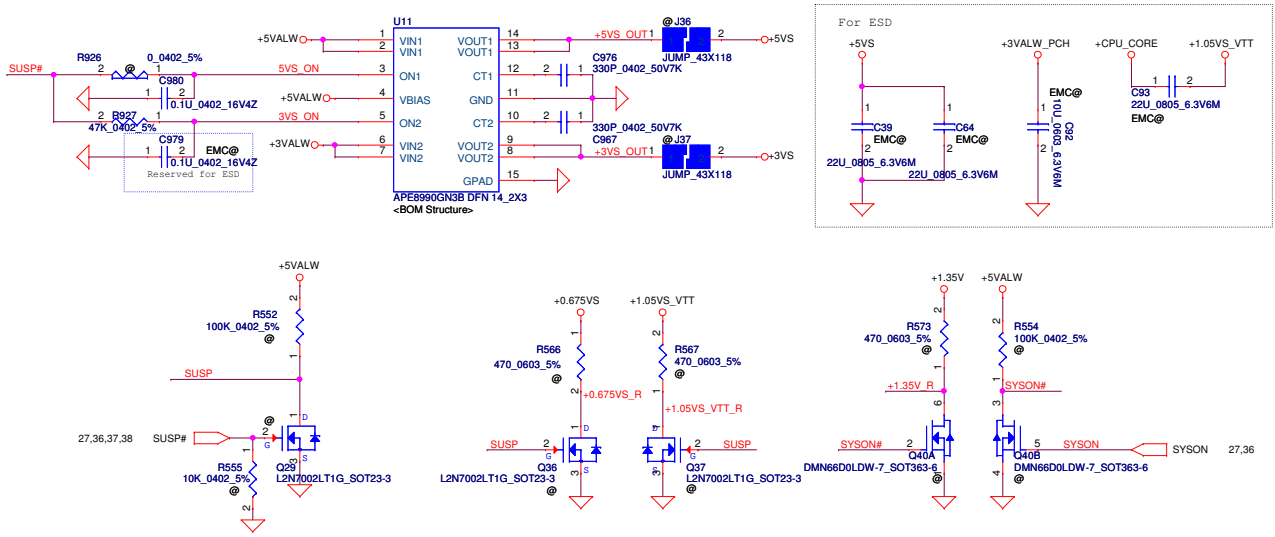
Security Classification	Compal Secret Data		
Issued Date	2013/10/30	Deciphered Date	2014/10/30

Compal Electronics, Inc.

Title: FAN & Screw Hole & G-Sensor

Size: Custom | Document Number: Z5WAH M/B LA-B161P | Rev: 1.0

Date: Tuesday, February 25, 2014 | Sheet 30 of 44



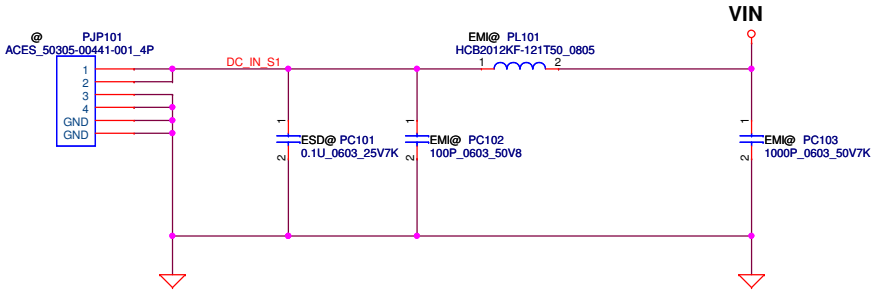
Security Classification	Compal Secret Data		
Issued Date	2013/10/30	Deciphered Date	2014/10/30

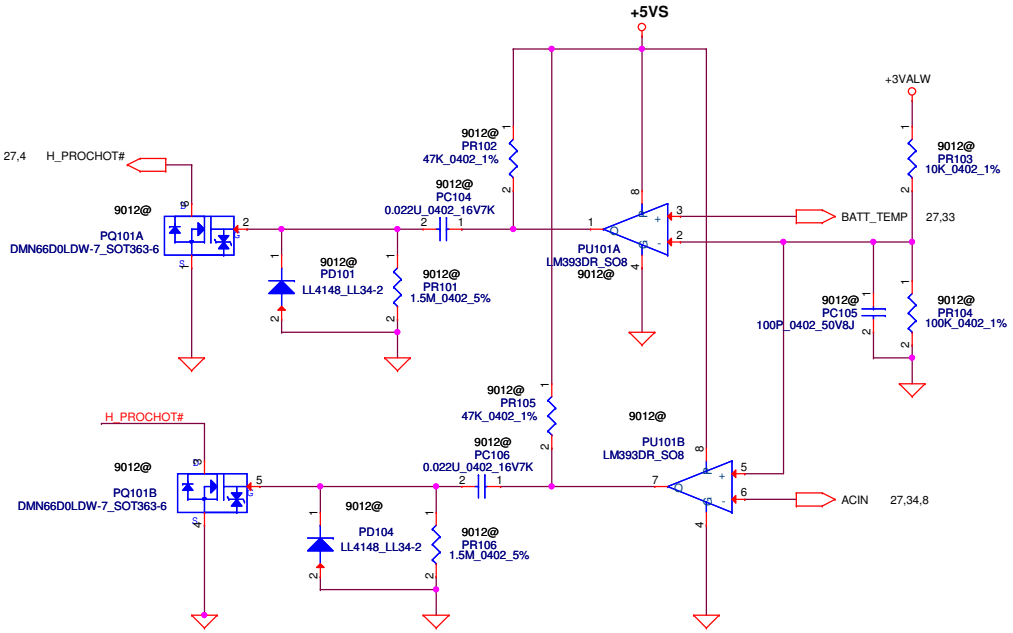
Compal Electronics, Inc.

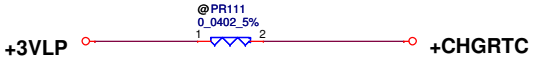
Title: DC Interface

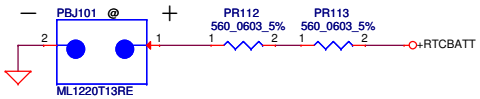
Size	Document Number	Rev
Custom	Z5WAH M/B LA-B161P	1.0

Date: Tuesday, February 25, 2014 | Sheet 31 of 44









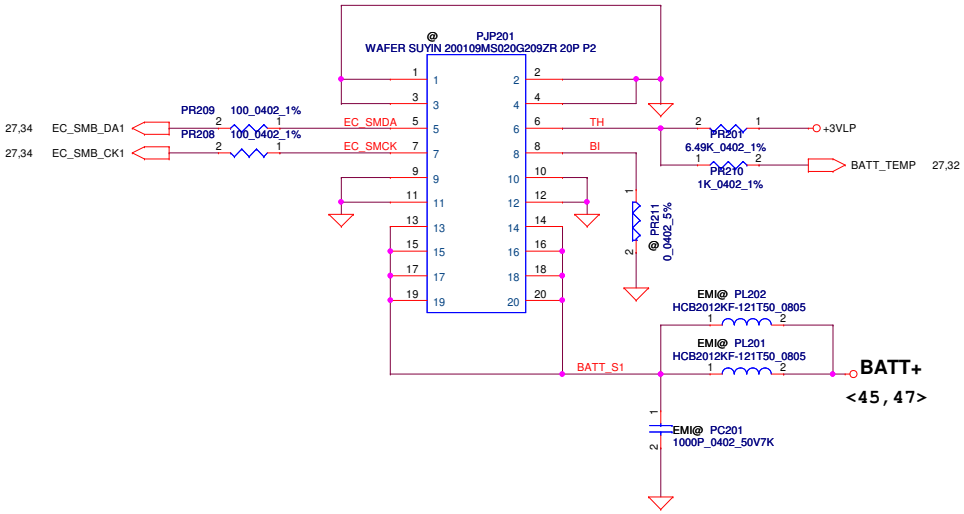
Security Classification	Compal Secret Data		
Issued Date	2013/10/30	Deciphered Date	2014/10/30

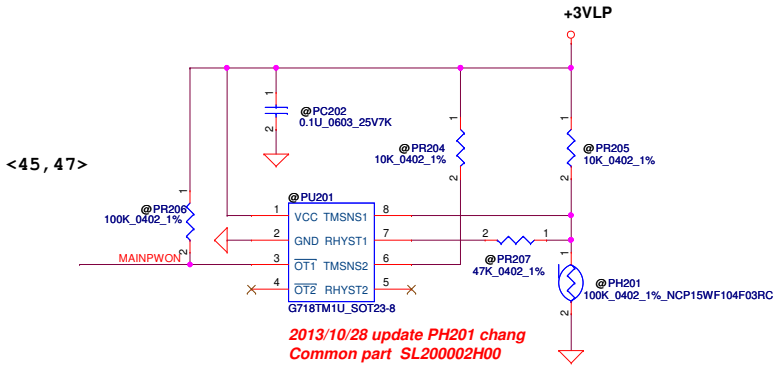
Compal Electronics, Inc.

Title: *DCIN*

Size	Document Number	Rev
Custom		1.0

Date: Tuesday, February 25, 2014 Sheet 32 of 44






```
---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+
```

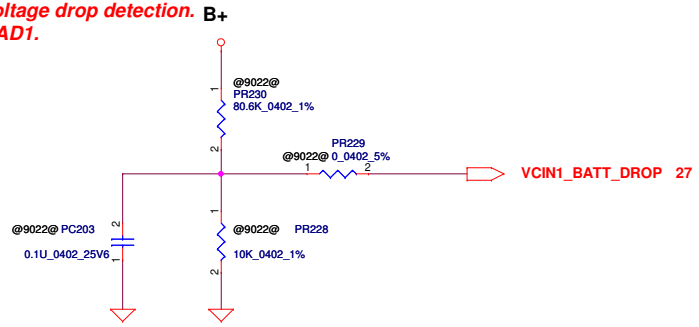
2013/10/14 update

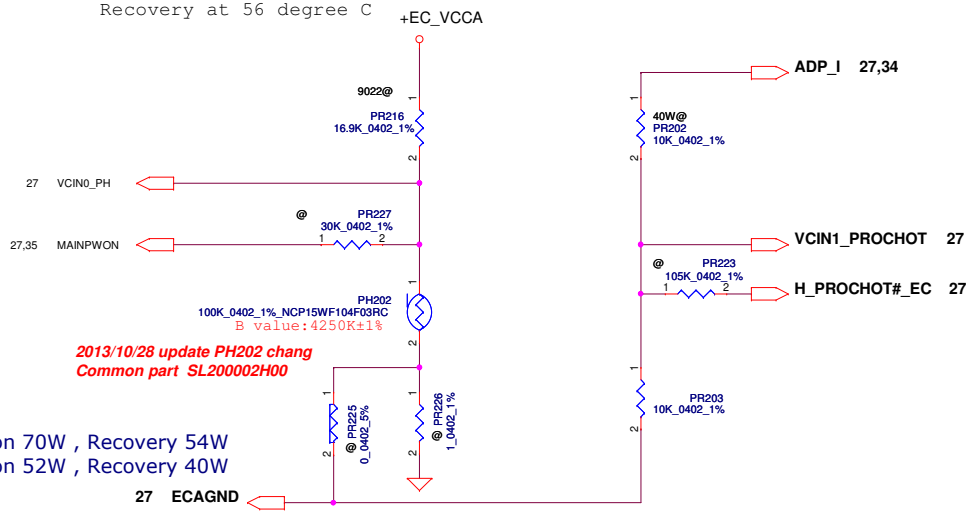
For KB9022 sense 20mΩ	Active	Recovery
40W PR202 10K ohm	52W,0.54V	40W,0.42V
65W PR202 22.6K ohm	84.5W,0.54V	65W,0.42V

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





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

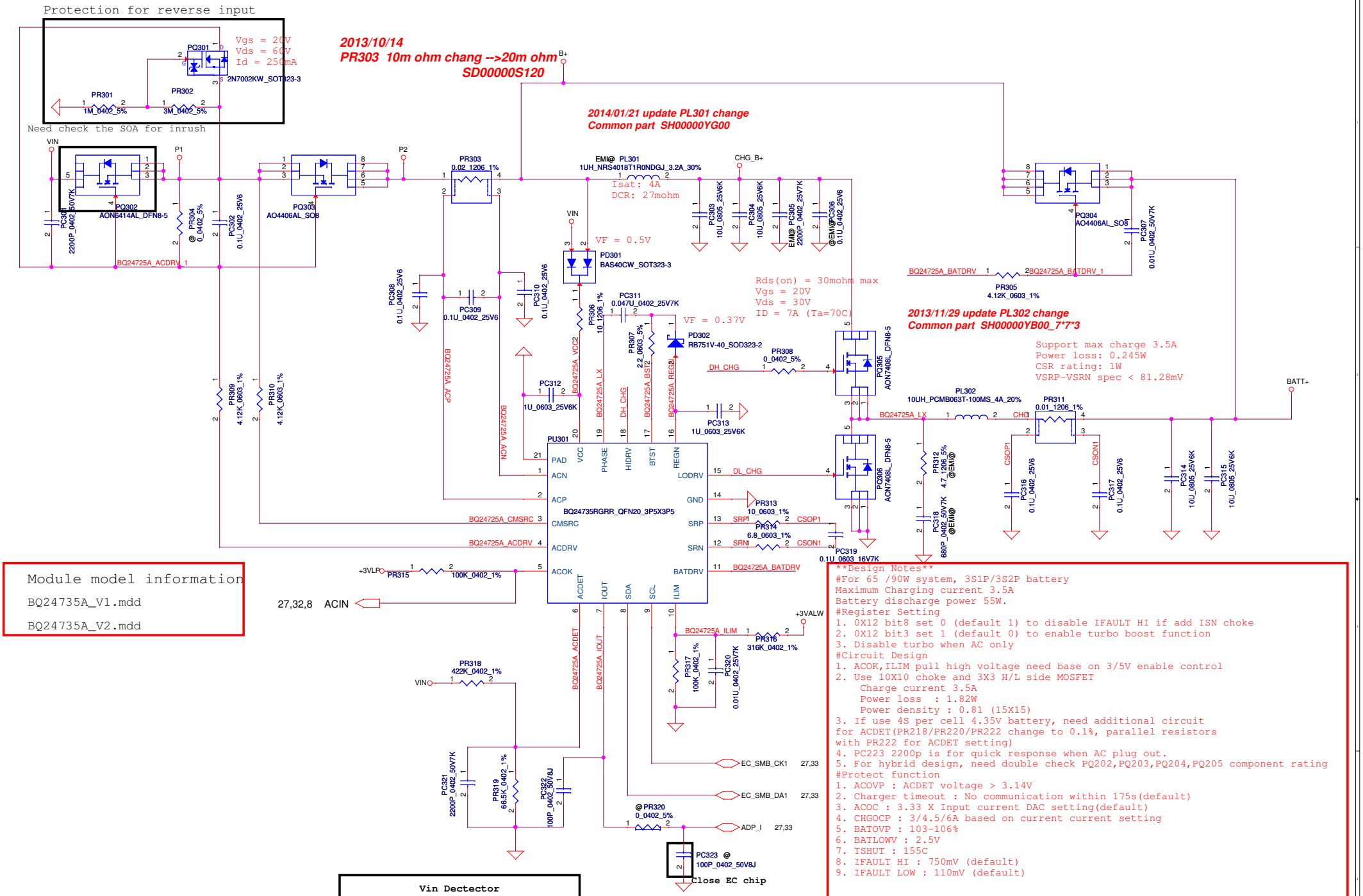
Security Classification	Compal Secret Data		
Issued Date	2013/10/30	Deciphered Date	2014/10/30

Compal Electronics, Inc.

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

Size: Custom | Document Number | Rev: 1.0

Date: Tuesday, February 25, 2014 | Sheet 33 of 44



Security Classification	Compal Secret Data		
Issued Date	2013/10/30	Deciphered Date	2014/10/30

Compal Electronics, Inc.

Title: **CHARGER**

Size: | Document Number: *Common Circuit* | Rev: 1.0

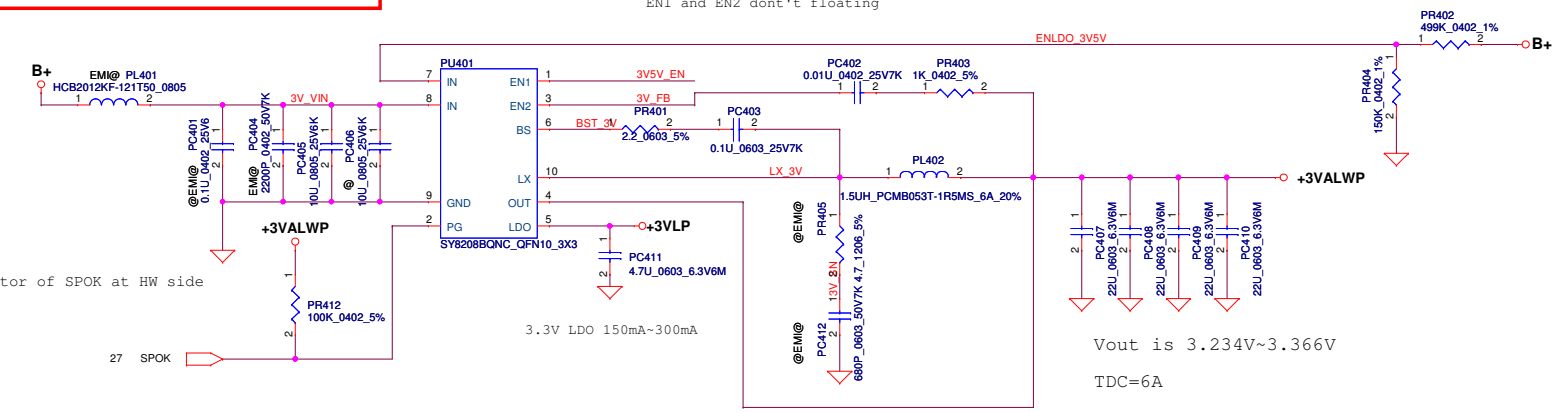
Date: Tuesday, February 25, 2014 | Sheet 34 of 44

Module model information

SY8208B_V2.mdd

SY8208C_V2.mdd

EN1 and EN2 dont't floating

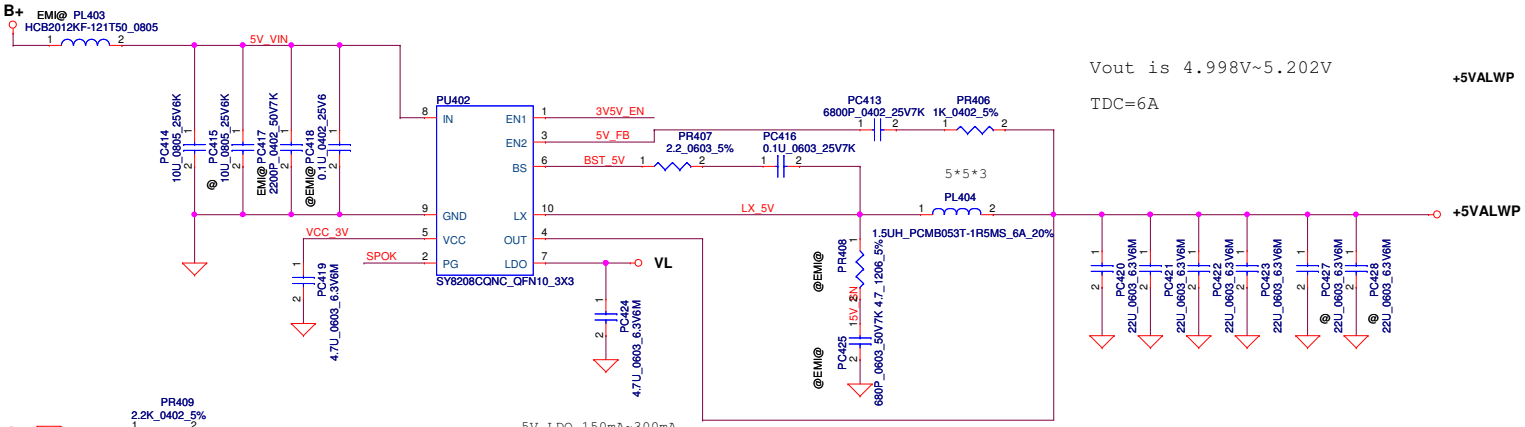


Check pull up resistor of SPOK at HW side

3.3V LDO 150mA~300mA

Vout is 3.234V~3.366V

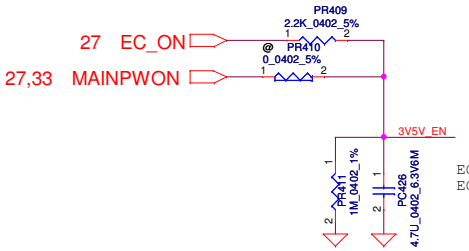
TDC=6A



Vout is 4.998V~5.202V

TDC=6A

5V LDO 150mA~300mA



EC VDD0 is +3VL, PC426 UNPOP

EC VDD0 is +3VALW, PC426 POP

Security Classification	Compal Secret Data		
Issued Date	2013/10/30	Deciphered Date	2014/10/30

Compal Electronics, Inc.

Title: +3VALW/+5VALW

Size: Custom | Document Number | Rev: 1.0

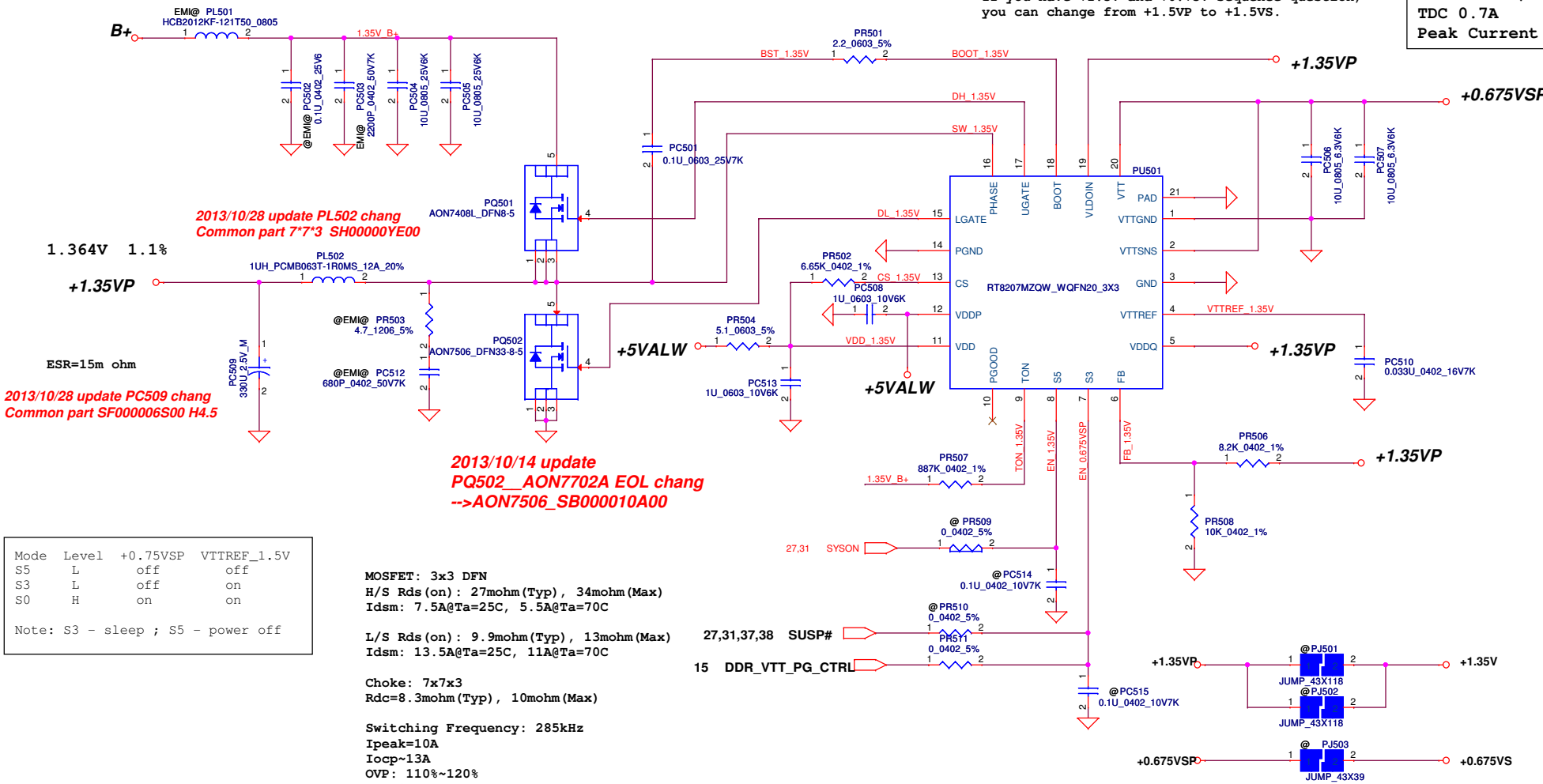
Date: Tuesday, February 25, 2014 | Sheet 35 of 44

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)
Idsm: 7.5A@Ta=25C, 5.5A@Ta=70C

L/S Rds(on): 9.9mohm(Typ), 13mohm(Max)
Idsm: 13.5A@Ta=25C, 11A@Ta=70C

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

Switching Frequency: 285kHz
Ipeak=10A
Iocp~13A
OVP: 110%~120%
VFB=0.75V, Vout=1.515V
MOSFET footprint: SIS412DN

Security Classification	Compal Secret Data		
Issued Date	2013/10/30	Deciphered Date	2014/10/30

Compal Electronics, Inc.

Title: +1.35VP/+0.675VSP

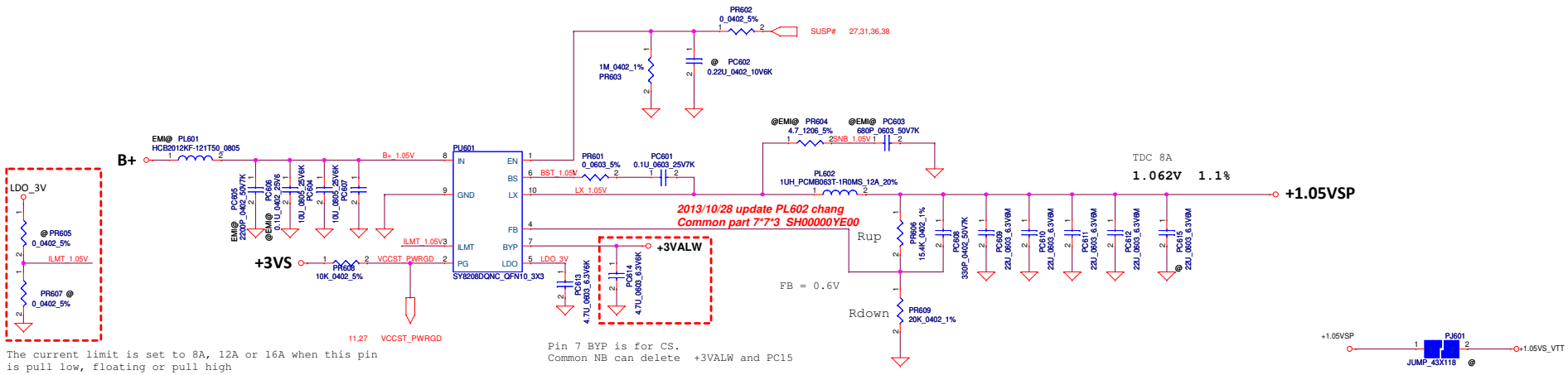
Size: Custom | Document Number | Rev: 1.0

Date: Tuesday, February 25, 2014 | Sheet 36 of 44

Module model information

SY8208D_V1.mdd

EN pin don't floating
If have pull down resistor at HW side, pls delete PR2



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

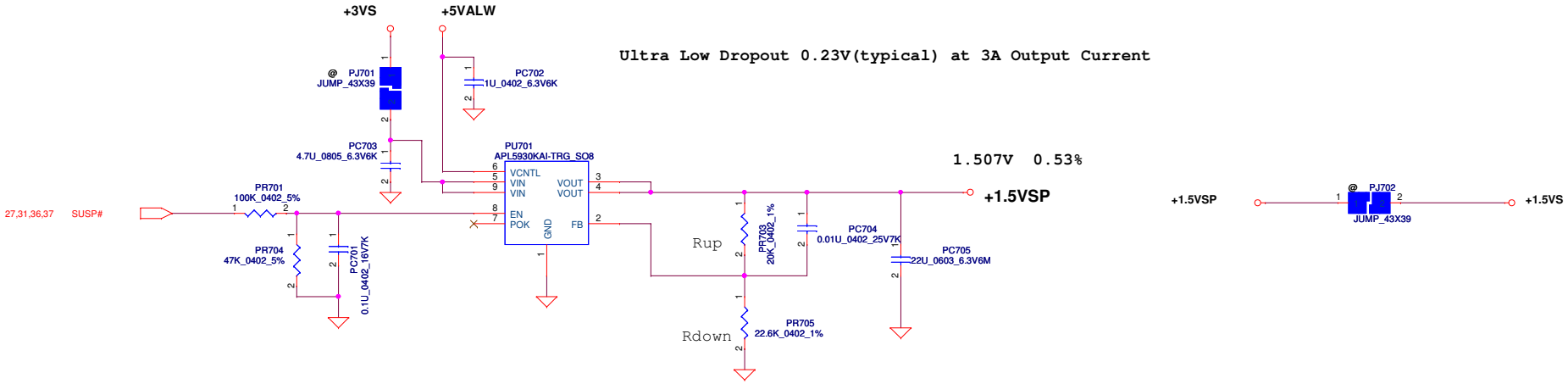
Security Classification	Compal Secret Data		
Issued Date	2013/10/30	Deciphered Date	2014/10/30

Compal Electronics, Inc.

Title: +1.05VSP

Size	Document Number	Rev
C		1.0

Date: Tuesday, February 25, 2014 Sheet 37 of 44



Security Classification	Compal Secret Data		
Issued Date	2013/10/30	Deciphered Date	2014/10/30

Compal Electronics, Inc.

Title: *+1.5VSP*

Size	Document Number	Rev
Custom		1.0

Date: Tuesday, February 25, 2014 Sheet 38 of 44

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	392 Ohm	449 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

Note:
VR_SVID_ALRT# Pull high on HW side

11 VR_SVID_DATA
11 VR_ALERT#
11 VR_SVID_CLK
11 VR_ON
11,8 VGATE
27 VR_HOT#

PR805 1.91K_0402_1%
PC808 1000P_0402_50V7K
15W@ PR807 121K_0402_1%
28W@ PR807 113K_0402_1%

Note:
VR_HOT# Pull high on HW side

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

PH802 470K_0402_5%_TSM0B474J4702RE
PR810 3.83K_0402_1%
PR811 27.4K_0402_1%
PC809 47P_0402_50V8J

PU801 ISL95813HRZ-T_QFN20_3X4
PAD 21, SCLK 20, ALERT# 19, SDA 18, PRGM1 17
VR_ON 1, PGOOD 2, IMON 3, VR_HOT# 4, NTC 5, COMP 6, FB 7, RTN 8, ISUMN 9, ISUMP 10
LGATE 16, PHASE 15, UGATE 14, BOOT 13, VCC 12, PRGM2 11

15W@ PR804 90.9K_0402_1%
28W@ PR804 113K_0402_1%

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

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

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

+5VS

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

CPU_B+
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
EMI@ PL801 HCB2012KF-121T50_0805
B+

Height 8 mm
100u_SF000000I80

Height 6 mm
68u_SF000000W00

2013/12/12 update PL802 change
Common part SH000011H00

PL802 0.22UH 20% PCME064T
+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

2013/10/28 update PH802 chang
Common part SL200002E00

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

15W@ PR816 1.27K_0402_1%
Droop
28W@ PR816 1.58K_0402_1%

PR817 4.99M_0402_1%

RC Match
15W@ PC816 0.033U_0402_16V7K
28W@ PC816 0.022U_0402_16V7K

PC817 0.1U_0402_16V4Z
PR818 2.61K_0402_1%
PR819 11K_0402_1%
PH801 10KB_0402_5%_ERTJ0ER103J

15W@ PR820 392_0402_1%
OCP Setting
15W: 38A
28W: 48A
PR820 28W@ 499_0402_1%

2013/10/28 update PH801 chang
Common part SL200002G00

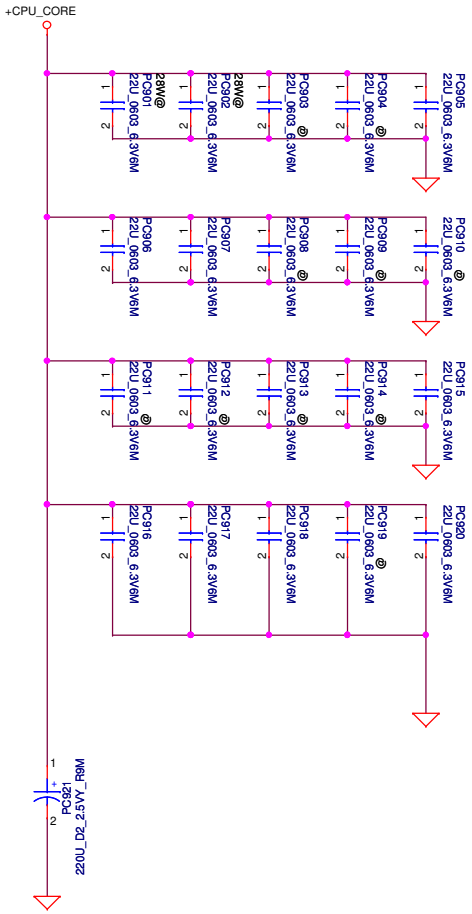
11 VCC_SENSE
@PC818 330P_0402_50V7K
@PC819 0.082U_0402_16V7K
PC820 0.01U_0402_50V7K
11 VSS_SENSE

@PC821 4700P_0402_25V7K
@PR821 1.5K_0402_1%

Local sense put on HW site

	123	
Title	CPU_CORE/GFX_CORE	
Size	Document Number: Z5WAH M/B LA-B161P	Rev 1.0
Date: Tuesday, February 25, 2014	Sheet 39 of 44	

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		
Issued Date	2013/10/30	Deciphered Date	2014/10/30

Compal Electronics, Inc.

Title: ***CPU_CORE_CAP***

Size	Document Number	Rev
Custom		1.0

Date: Tuesday, February 25, 2014 | Sheet 40 of 44

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

for PWR

Item	Fixed Issue	Reason for change	PG#	Modify List	Date	Phase
1	Design Update		P.35 P.37 P.37 P.39 P.34 P.33	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 Add PL202_SM01000C000	11/29	EVT
2	Design Update		P.35	PR410_R-short change to PD401_SCS00000Z00	12/09	EVT
3	Design Update	CPU Transient Test	P.39 P.40 P.40 P.40 P.33	PL802_SH00000U300_change to Common part SH000011P00 PC906 PC910 PC915 22U_0603_SE00000M000 SMT PC901 PC902 22U_0603_SE00000M000,SMT change to 28W@ PC916 PC915 22U_0603_SE00000M000 ,28W@ change to SMT PR227_30.9K_0402_1%_SD034309280 change to_30K_0402_1%_SD034300280	12/12	EVT
4	Design Update	CPU Transient Test		PR820_348_0402_SD00000EI80 change to 357_0402_SD034357080(28W) PR820_348_0402_SD00000EI80 change to 316_0402_SD000003480(15W) 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_SD000009080 PR807_95.3K_0402_1%_SD034953280 change to 113K_0402_SD034113380(28W) PR807_95.3K_0402_1%_SD034953280 change to 121K_0402_1%_SD034121380(15W) PR817_Unpop change to 4.99M_0402_SD00000VO00	12/13	EVT
5	Design Update	VCIN0 VCIN1 B/I PIN Pull down Update Common part CPU Transient Test		PR211_1K_0402_SD034100180 Change to 0_0402_SD028000080 PR227_30K_0402_1%_SD034300280 change to unpop. PR216_32.4K_0402_1%_SD034324280 change to 16.9K_0402_1%_SD034169280 PR223_105K_0402_1%_SD034105380 change to unpop. PR202_10.5K_0402_1%_SD034105280 change to 10K_0402_1%_SD034100280 PQ303 PQ304 AON4466_SB00000CG80 --> AON4406_SB00000I800 PL301_1UH_SH00000MW00 --> 1UH +-30% 2.8A_SH00000YG00 Add PC426_4.7u_0402_SE00000SO00 15W:PR804_169K_0402_1%_SD034169380 --> 90.9K_0402_1%_SD034909280 28W:PR804_205K_0402_1%_SD034205380 --> 113K_0402_1%_SD034113380 PL802 0.15UH 20%_SH000011P00 -->0.22UH_20%_SH000011H00 15W:PR820_316_0402_1%_SD000003480 --> 392_0402_1%_SD00000F080 28W:PR820_357_0402_1%_SD034357080 --> 499_0402_1%_SD034499080 Add PC921_220U_D2_2.5VY_R9M_SGA00009800 Un pop PC903 PC904 PC908 PC909 PC9010 PC912 PC913 PC914 PC919	2014/01/21	DVT
15	Design Update	Update Common part		PR211 SD028000080 change to R-short PD401 SCS00000Z00 change to PR410 R-short	2014/02/17	PVT
16						
17						

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

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						

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

Item	Fixed Issue	Reason for change	PG#	Modify List	Date	Phase
1		extra cap	24	unpop C165	1107	DVT
2	Desidn change	change EC board ID	27	AD_BID0 > change R506 to 12K POP R503	1107	DVT
3	Desidn change	change net "LINE1-L/LINE1-R" cap material	29	change C2135,C2136 to 4.7u 0402 to 0603	1107	DVT
4	Desidn change	modify ON/OFFBYN# circuit	27,28	DEL D24 , ON/OFF change to ON/OFFBTN#	1112	DVT
5	Desidn change	change CRT RGB bead material	21	change L2503,L2504,L2505 to 0402 bead(SM01000FH00)	1112	DVT
6	Desidn change	change +EC_VCCA ,EC_GND bead material	27	change L31 L32 to SM010009U00	1112	DVT
7	Desidn change	change USB port assign	18	Change USB port6 for CCD Change USB port5 for TS	1112	DVT
8	Desidn change	change USB port assign	26	Change USB port7 for CR(USB)_FP	1112	DVT
9	Desidn change	reserve RTCRST# to EC	27	reserve RTCRST# to EC pin 27 for clear CMOS	1115	DVT
10	Desidn change	reserve RTCRST# to EC	28	add Q52 R490 reserve to EC RTCRST#	1115	DVT
11	Desidn change	share ROM function	7	POP R498,R500,R502,R505 for share ROM	1115	DVT
12	Desidn change	option LVDS EDID/EDP touch	18	change R438,R439,R415,R433 for option LVDS EDID/EDP touch	1115	DVT
13	Desidn change	EC_SMB_DA2	17	change to EC_I2C_TPDAT	1118	DVT
15	Desidn change	EC_SMB_CK2	17	change to EC_I2C_TPCLK	1118	DVT
16	Desidn change	RTD2132 EP_MODE	27	Add R491 reserve for RTD2132 EP_MODE	1118	DVT
17	Desidn change	change TP POWER	28	Change TP power to +3VALW	1118	DVT
18	CRT leakage	CRT_DATA/CRT_CLK add level shift	20	add R2502,R2503,Q2501 for level shift	1126	DVT
19	CRT leakage	change CRT POWER from 5VS to 3VS	20	add R2549	1126	DVT
20	CRT leakage	change CRT POWER from 5VS to 3VS	20	change pin PCSDA,PCSCL to +3VS_6513	1126	DVT
21	CRT leakage	change CRT POWER from 5VS to 3VS	20	change pin MCUVDDH to +3VS_6513	1126	DVT
22	Desidn change	change T/P int net connection support S3 wake	28	Change Q51 to D22 ,TP_INT# ,POP R633,del R452	1126	DVT
23	Desidn change	change EC_PME# pull up	22	add R2550 pull up to +3VLAN	1128	DVT
24	Desidn change	change EC_PME# pull up	27	unpop R484	1128	DVT
25	Desidn change	solve ESD	19	add C413 to +3VS	1204	DVT
26	Desidn change	solve ESD	29	add C2140,C2142,R2149,R2150	1205	DVT
27	Desidn change	solve ESD	29	change D2008 pakage	1205	DVT
28	Desidn change	ME drawing change	30	Del H9	1205	DVT
29	Desidn change	solve EMI	26	add R459,R460,R462,R463,L7,L8 for EMI request	1206	DVT
30	Desidn change	Change part number	18	change U22 PN	1209	DVT
31	Desidn change	Change part number	11	change C18 to SF000006S00	1209	DVT
32	Desidn change	Change part number	12	change C408 to SF000006R00	1209	DVT
33	Desidn change	Change part number	15	change C118 to SF000006S00	1209	DVT
34	Desidn change	Change part number	26	change C486 to SF000006R00	1209	DVT
35	Desidn change	Change part number	6	change C153 to 15pF to SE071150J80	1210	DVT
36	Desidn change	Change part number	7	change C2,C3 to 15pF to SE071150J80	1210	DVT
37	Desidn change	Change part number	22	change C2558,C2559 to 10pF to SE071100J80	1210	DVT
38	Desidn change	Change part number	29	change R2135,R2138 to 59 Ohm 0603	1210	DVT
39	Desidn change	solve EMI	29	change R2149,R2150 to SM01000NA00	1210	DVT
40	Desidn change	solve ESD	29	change C2142 , C2143 to 680pF	1210	DVT
41	Desidn change	Change part number	28	change SW to SN100000K00	1210	DVT
42	Desidn change	TP leakage from change TP VCC	28	add R452,R459,R460	1211	DVT
43	Desidn change	Change part number	23	change D1 to SCA00002M00	1216	DVT

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Item	Fixed Issue	Reason for change	PG#	Modify List	Date	Phase
44	Desidn change	LAN Chip GPO	22	reserve R2551 0 ohm +3VALW to +3VLAN	1231	PVT
45	Desidn change	LAN Chip GPO	22	add R2540 (0 - Ohm) for disable PHY	1231	PVT
46	Desidn change	change CRT POWER from +5VS_6513 to +HDMI_5V_OUT	21	change CRT POWER from +5VS_6513 to +HDMI_5V_OUT	1231	PVT
47	Desidn change	TP PWR	27/28	unpop R459,add C2563,C2562,U2507 , add net "TP_PWR_EN" to EC pin 98	0110	PVT
48	Desidn change	TP connector	28	change connector type	0110	PVT
49	Desidn change	TS change to I2C0	09	change PCH GPIO4/GPIO5 to PCH_I2C0_SDA/PCH_I2C0_SCL	0110	PVT
50	Desidn change	TS change to I2C0	09	Del RP24 pin5 pin6 ,Add R276,R277 for TS I2C	0110	PVT
51	Desidn change	TS change to I2C0	18	change PCH_I2C1_SDA/PCH_I2C1_SCL to PCH_I2C0_SDA/PCH_I2C0_SCL	0110	PVT
52	Desidn change	R-Short		follow ZACH list	0110	PVT
53	Desidn change	solve ESD	15/29/27	add C35/C2140/C63 ,reserve C65/C68	0113	PVT
54	Desidn change	change USB CAP to 150U D2 size	26	change C486 to D2 150uF	0113	PVT
55	Desidn change	change LED brightness	28	change R699/R700 to 330 Ohm ,R698/R701 to 560 Ohm	0114	PVT
56	Desidn change	change Board ID to 0.3	27	change R506 to 15K (board ID)	0114	PVT
57	Desidn change	Change part number	29	change R2135,R2138 to 60.4 Ohm 0603	0114	PVT
58	Desidn change	Change TPM from module to on board	7	change R395 to TPM@	0115	PVT
59	Desidn change	Change TPM from module to on board	8	del net "LPCPD#"	0115	PVT
60	Desidn change	Change TPM from module to on board	28	reserve U2600,R2600,R2601,C2600,C2601,C2602,C2603,C2604,C2605 for TPM , R2603,C2606 for EMI , R2602 > @	0115	PVT
61	Desidn change	solve ESD	27	POP C509 EMC@	0116	PVT
62	Desidn change	solve epson crystal issue	22	add R2552	0116	PVT
63	Desidn change	solve EMI	29	change R2120,R2121,R2122,R2123 to bead SM01000CC00	0116	PVT
64	Desidn change	solve EMI	4	add C2144	0117	PVT
65	Desidn change	R-Short	11	change R126 to 0 - short	0120	PVT
66	Desidn change	Add Toch pad PS2 BUS level shift(solve PS2 leakage)	28	add R2509,R2507,R462,R463 reserve Q2502	0122	PVT
67	solve jack BO noise	solve audio BO noise sync with other project	29	change R2136/R2139 to 60.4 Ohm , R2135,R2138 to 0 Ohm	0210	pre-MP
68	Desidn change	modify DMIC net	29	delete R457	0213	pre-MP
69	Desidn change	reserve +3.3V for touch screen	18	add R82	0217	pre-MP
70	Desidn change	change +3.3V for touch screen	18	pop R82 , unpop R81	0218	pre-MP
71			28	unpop SW4	0218	pre-MP
72	Desidn change	change EC board ID to 1.0	27	change R506 to 20K Ohm	0224	pre-MP
73	Desidn change	change LED brightness	28	change R699/R700 to 200 Ohm ,R698/R701 to 390 Ohm	0304	pre-MP

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