

Compal Confidential

Diner Braswell M/B LA-D702P Schematics Document

Intel Braswell + ATI R16M-M1-30/70

2015/12/12

Project Code : BDL50

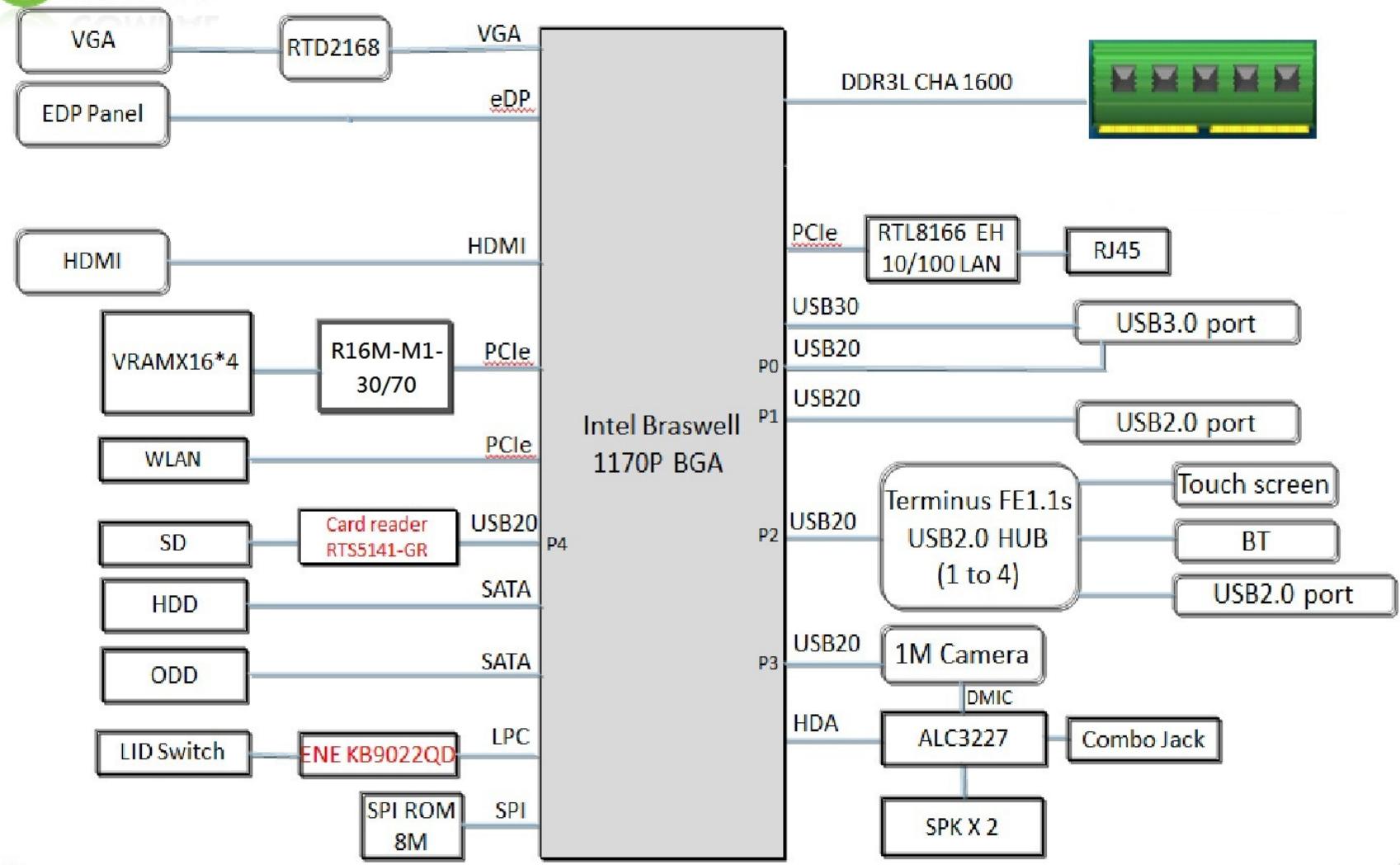
Rev. 0.3 PV

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Intel Braswell 15"

Hardware Block Diagram



Sub-board

- page34
CR+USB/B
- page34
PWR BTN/B
- page36
TP BTN/B
- page24
HDD or SSD/B
- page24
ODD/B

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Voltage Rails

Power Plane	Description	S0	S3	S4/S5
VIN	19V Adapter power supply	ON	ON	ON
BATT+	12V Battery power supply	ON	ON	ON
B+	AC or battery power rail for power circuit. (19V/12V)	ON	ON	ON
+VSB	+VSBP to +VSB always on power rail for sequence control	ON	ON	ON
+RTCVCC	RTC Battery Power	ON	ON	ON
+1.0VALW	+1.0v Always power rail	ON	ON	ON
+1.2VALW	+1.2v Always power rail	ON	ON	ON
+1.8VALW	+1.8v Always power rail	ON	ON	ON
+3VALW	+3.3v Always power rail	ON	ON	ON
+5VALW	+5.0v Always power rail	ON	ON	ON
+1.35V	+1.35V power rail for DDR3L	ON	ON	OFF
+SOC_VCC	Core voltage for SOC	ON	OFF	OFF
+SOC_VNN	GFX voltage for SOC	ON	OFF	OFF
+0.675VS	+0.675V power rail for DDR3L Terminator	ON	OFF	OFF
+1.0VS	+1.0v system power rail	ON	OFF	OFF
+1.05VS	+1.05v system power rail	ON	OFF	OFF
+1.35VS	+1.35v system power rail	ON	OFF	OFF
+1.5VS	+1.5v system power rail	ON	OFF	OFF
+1.8VS	+1.8v system power rail	ON	OFF	OFF
+3VS	+3.3v system power rail	ON	OFF	OFF
+5VS	+5.0v system power rail	ON	OFF	OFF
Note : ON* means that this power plane is ON only with AC power available, otherwise it is OFF.				

<PCI-E,SATA,USB3.0>

Lane#	USB3.0	DESTINATION	
		UMA	DIS
0		USB3.0	USB3.0
1			

Lane#	SATA	DESTINATION	
		UMA	DIS
0		HDD	HDD
1		ODD	ODD

Lane#	PCIE	DESTINATION	
		UMA	DIS
0			GPU
1			GPU
2		WLAN	WLAN
3		LAN	LAN

<USB2.0 port>

USB2.0 port	UMA	Dis
0	USB 3.0 (MB)	USB 3.0 (MB)
1	USB 2.0 (MB)	USB 2.0 (MB)
2	Camera	Camera
3	Card Reader	Card Reader
4	USB 2.0 Hub	USB 2.0 Hub

<USB2.0 Hub>

USB2.0 port	UMA	Dis
0	Touch Screen	Touch Screen
1	USB 2.0 (SB)	USB 2.0 (SB)
2	BT	BT
3		
4		

BOM Structure Table

BOM Config	Description
@	Unpop
CONN@	Connector Part Control by ME
EMI@	EMI pop component
@EMI@	EMI unpop component
ESD@	ESD pop component
@ESD@	ESD unpop component
PX@	For Discrete Sku
8166@	10/100 LAN
8151@	Giga LAN
UMA@	For UMA Sku
NAT@	EC Non Auto Load Code
AUTO@	EC Auto Load Code
TPM@	CPU to EC LPC use 3.3V level
NTPM@	CPU to EC LPC use 1.8V level
GCLK@	Pop Green Clock
GCUMA@	Pop Green Clock UMA
GCDIS@	Pop Green Clock DIS
XTAL@	For XTAL
TS@	Pop Touch Screen component
R30@	For R16M-M1-30 GPU
R70@	For R16M-M1-70 GPU
6U@	For 6U@ (Add CRT Component)
IND@	Pop for India Sku

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EC SM Bus1 address

Device	Address	
Charger		
Battery		

EC SM Bus2 address

CPU Thermal Sensor	4C	UC3
ATI GPU EXO Pro		U666


EC SM Bus3 address

GPU Thermal Sensor	4C	UV1
--------------------	----	-----

SOC SM Bus address


Device	Address	
ChannelA	A0	DDR DIMM1
ChannelB	A2	DDR DIMM2
Touch Pad		

DAX



PCB
Part Number = DA6001JC000
PCB LA-C811P REV0 M/B 4

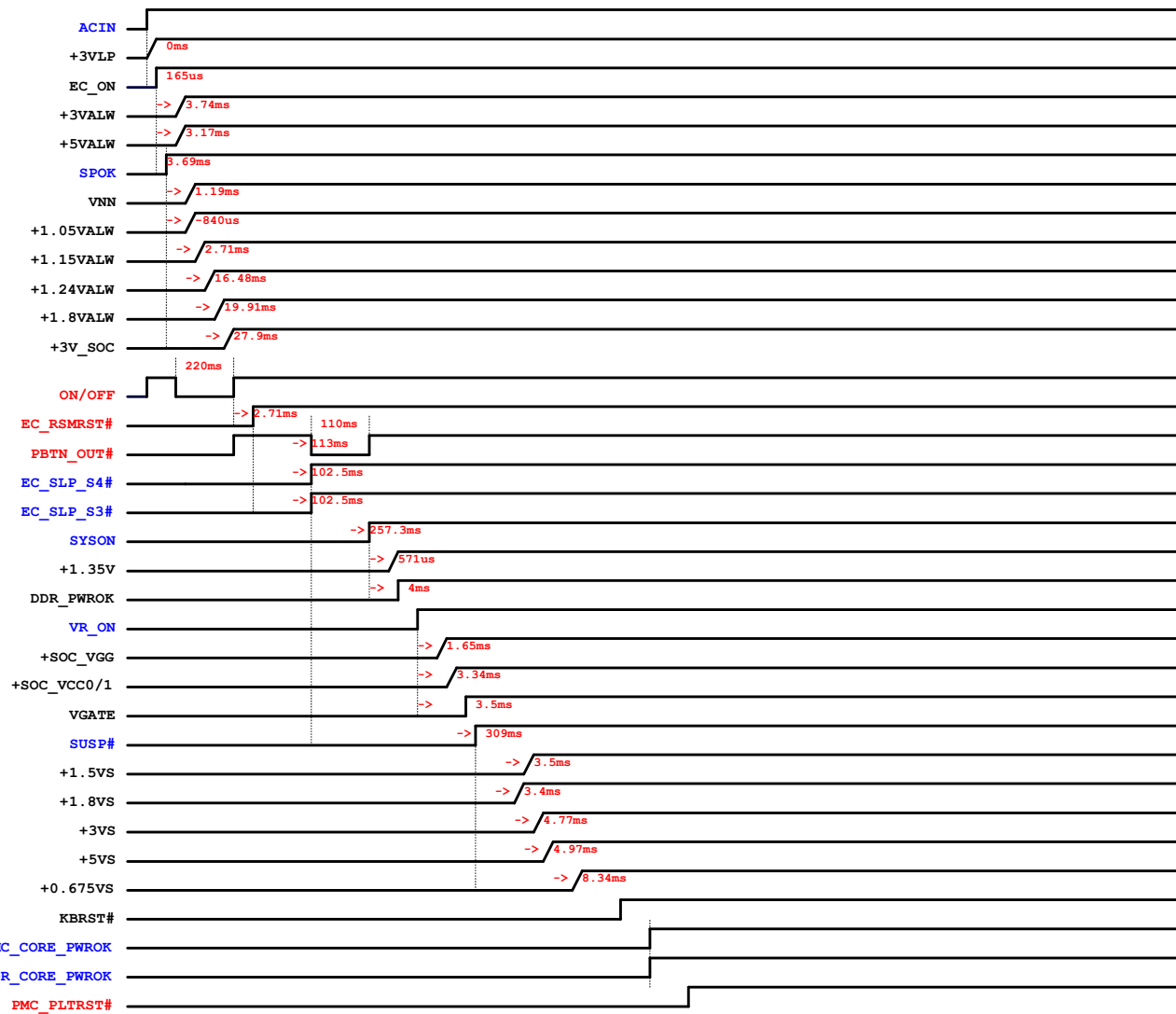
ZZZ1

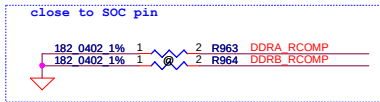
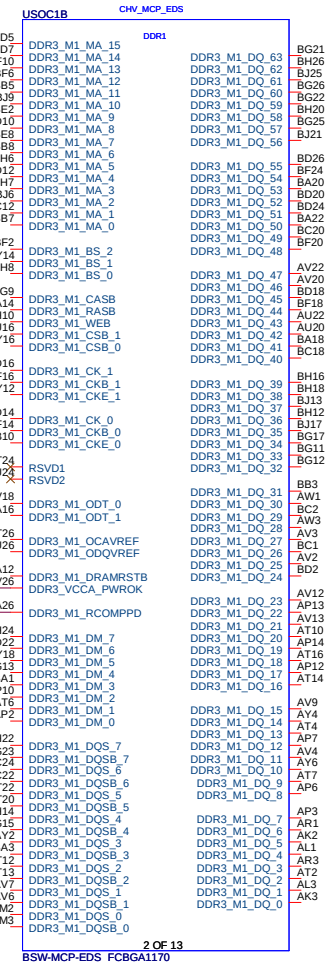
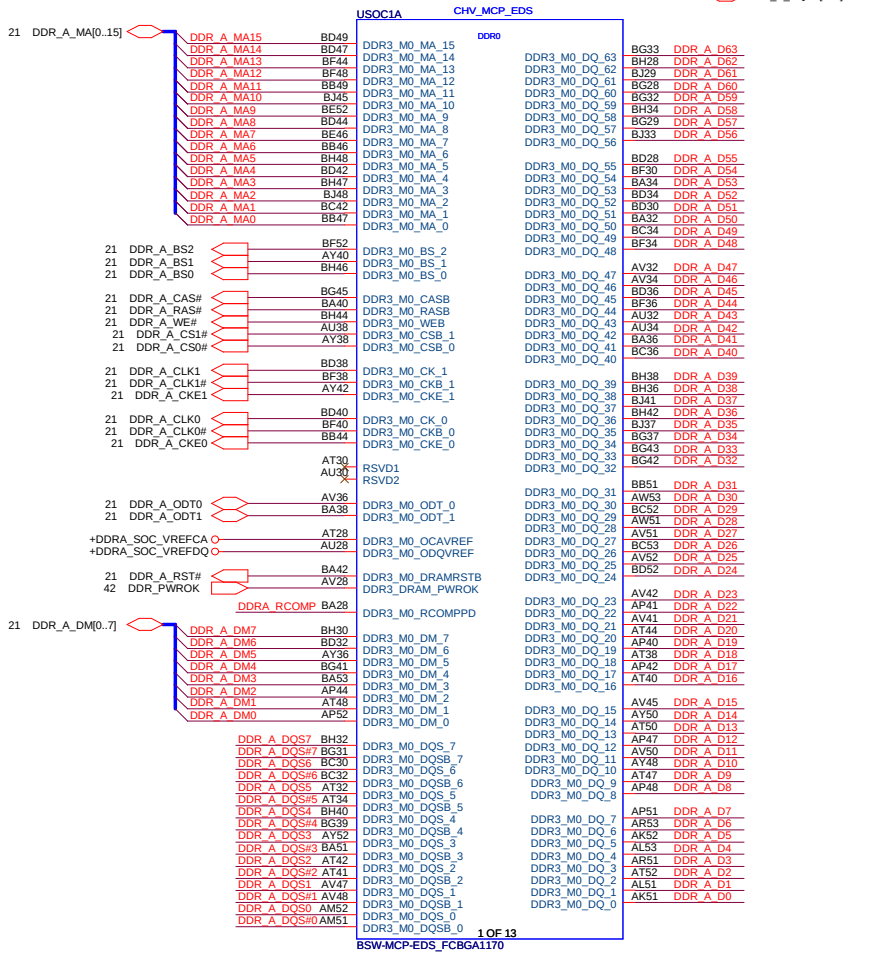


HDMI
Part Number = R00000003HM
PCB 102 LA-B151P REV0 M/B 3
45@

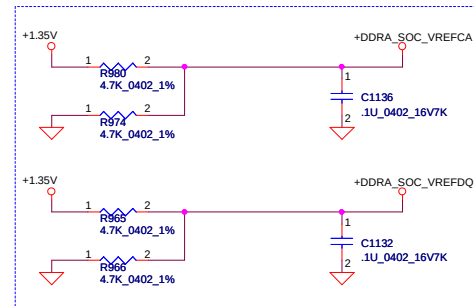
SOC

G3->S0

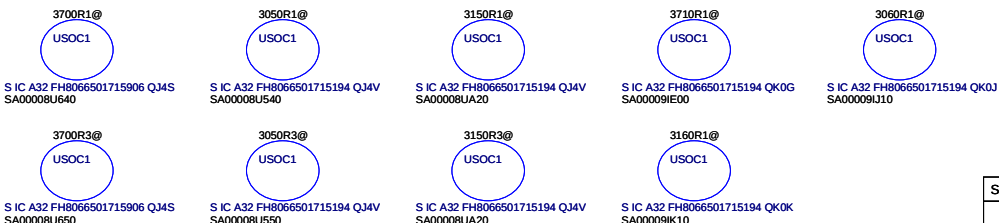




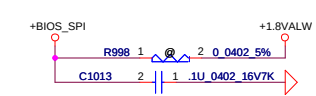
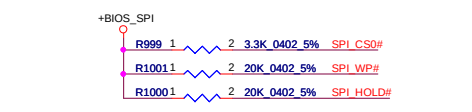
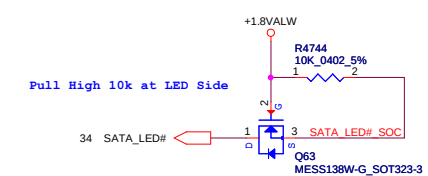
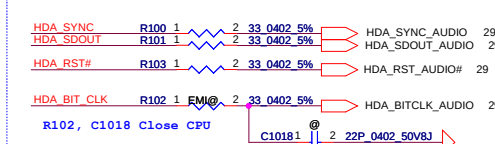
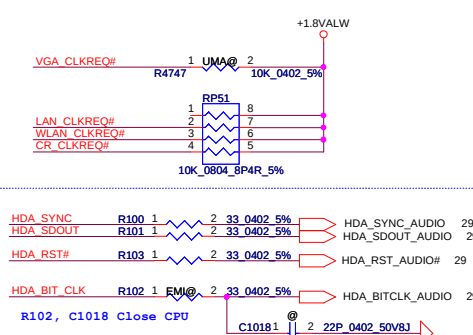
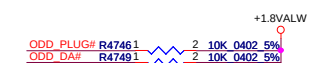
Close To SOC Pin



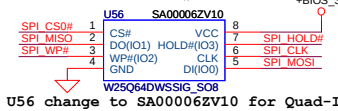
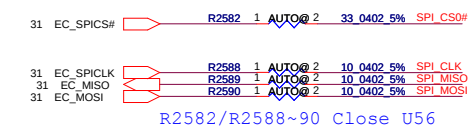
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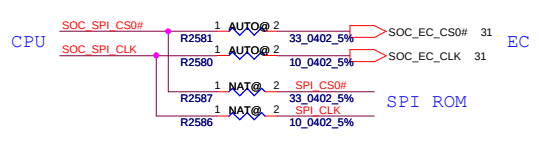
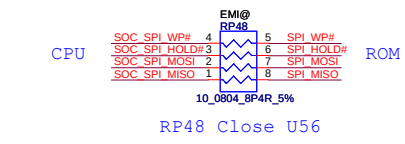
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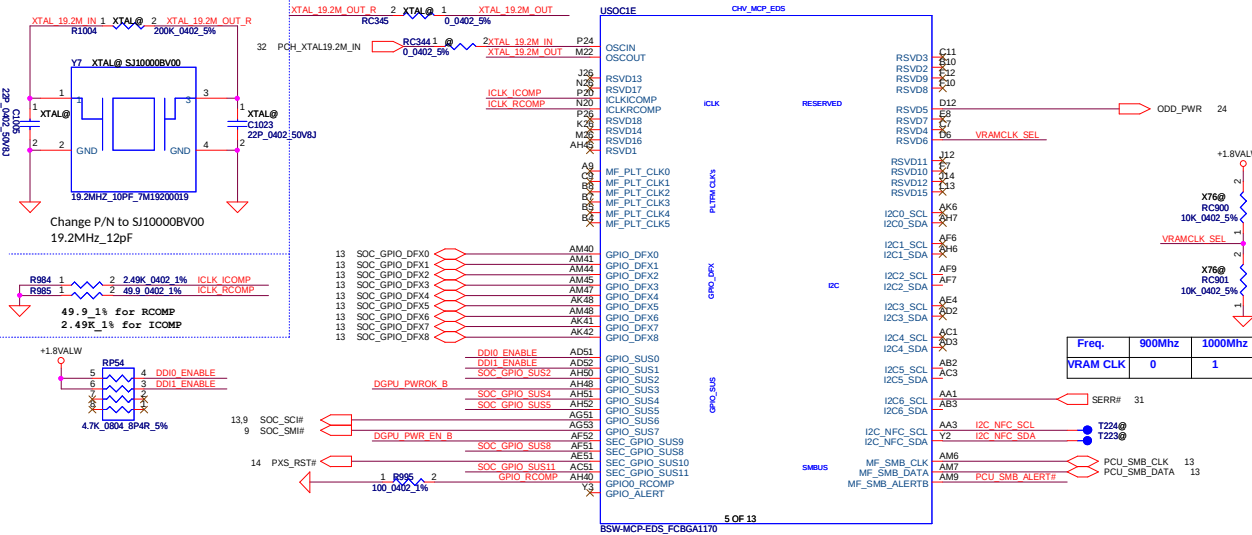
EC (For Auto Load)



Reserve for EMI(Near SPI ROM)

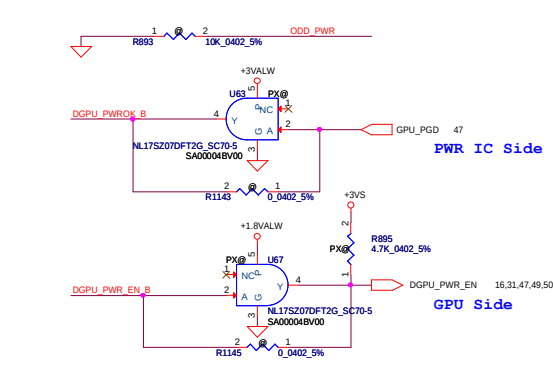
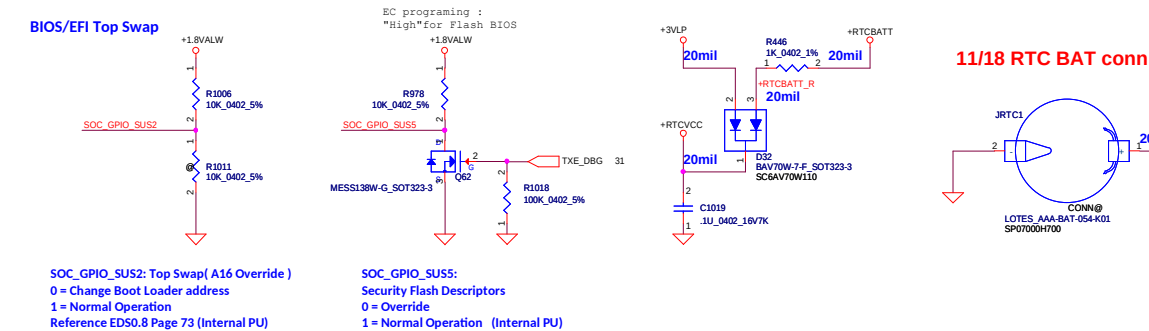


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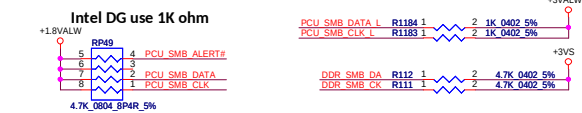
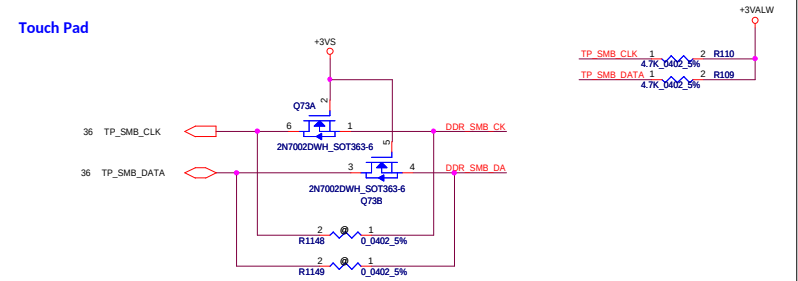


Pin Name	Purpose	PU/PD	Description	Default State
GPIO_SUS0	DDI0 Detect	PU	1: DDI0 detected 0: DDI0 not detected	High
GPIO_SUS1	DDI1 Detect	PU	1: DDI1 detected 0: DDI1 not detected	High
GPIO_SUS2	A16 swap overdrive	PU	1: Normal operation 0: Change Boot Loader address	High
GPIO_SUS3	DSI Display Detect	NC	1: DSI detected 0: DSI not detected	Low
GPIO_SUS4	Boot BIOS Strap BBS	PU	1: Boot from SPI 0: Boot from LPC	High
GPIO_SUS5	Flash Descriptor Security Override	PU	1: Security enabled 0: Security disabled	High
GPIO_SUS6	DFX Boot Halt Strap, VISA Early POSM Debug Enable	PU	1: Normal operation 0: Halt boot enable	High
GPIO_SUS7	DFX Sus Debug Strap	PU	1: Normal operation 0: Sus Debug enabled	High
SEC_GPIO_SUS8	ICLK, USB2, DDI SFR Supply Select	PD	1: 1.35V supply 0: 1.25V supply	Low
SEC_GPIO_SUS9	ICLK, USB2, DDI SFR Bypass	NC	1: Bypass with 1.05V 0: No bypass	Low
SEC_GPIO_SUS10	POSM Select	NC	1: PMC 0: Fuse controller	Don't care, if GPIO_SUS6 is pulled high
GP_CAMERASB08	ICLK Xtal OSC Bypass	PD	1: Bypass 0: No bypass	Low
GP_CAMERASB09	CCU SUS RO Bypass	PD	1: Bypass 0: No bypass	Low
GP_CAMERASB11	RTC OSC Bypass	PD	1: Bypass 0: No bypass	Low

BIOS/EFI Top Swap

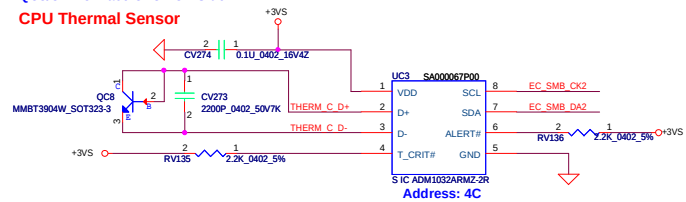


Touch Pad

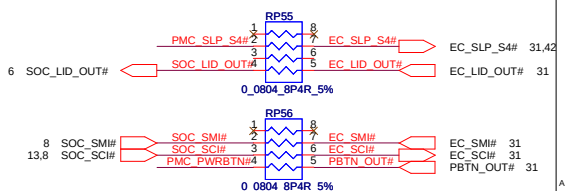
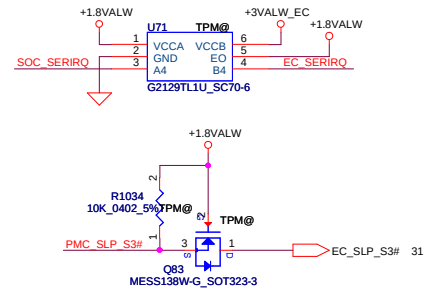
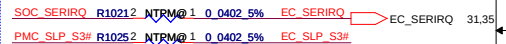
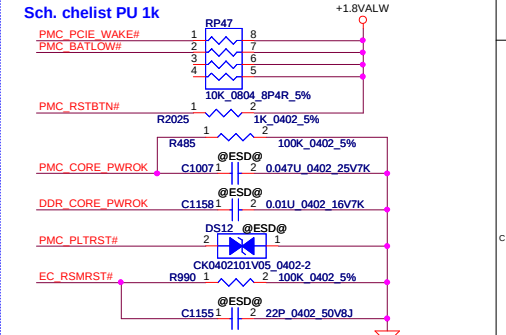
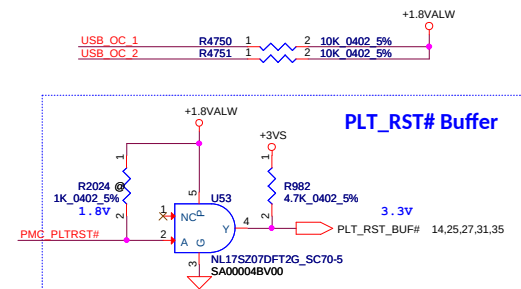
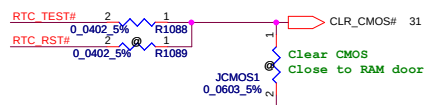
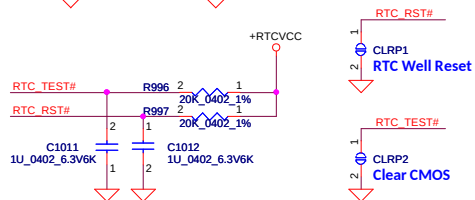
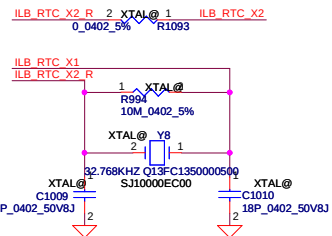
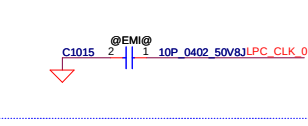
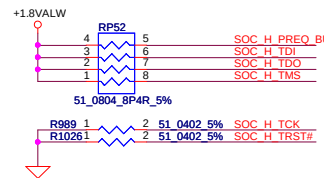
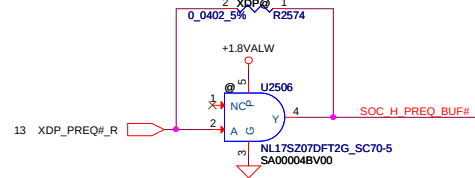
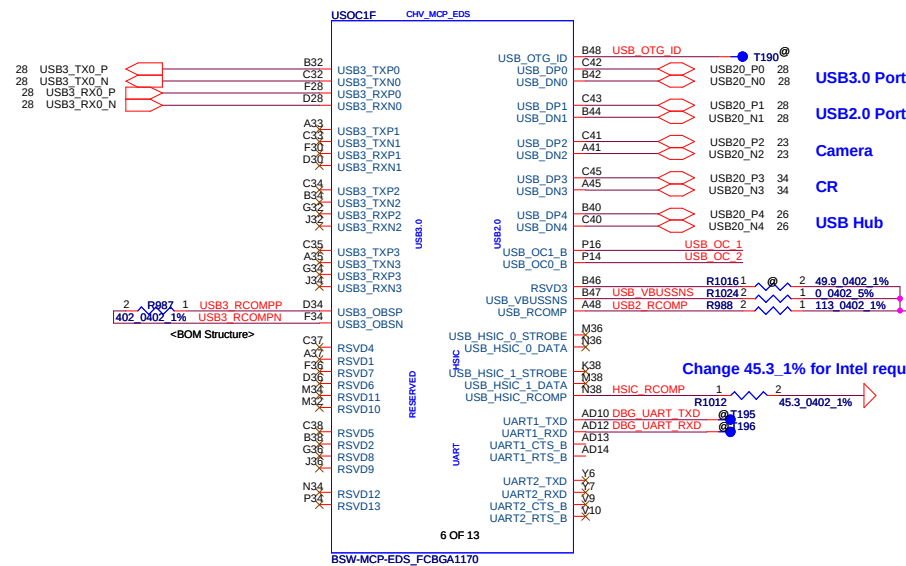


Q2516 change to SB000016K00
Vgs = 0.8V~1.1V

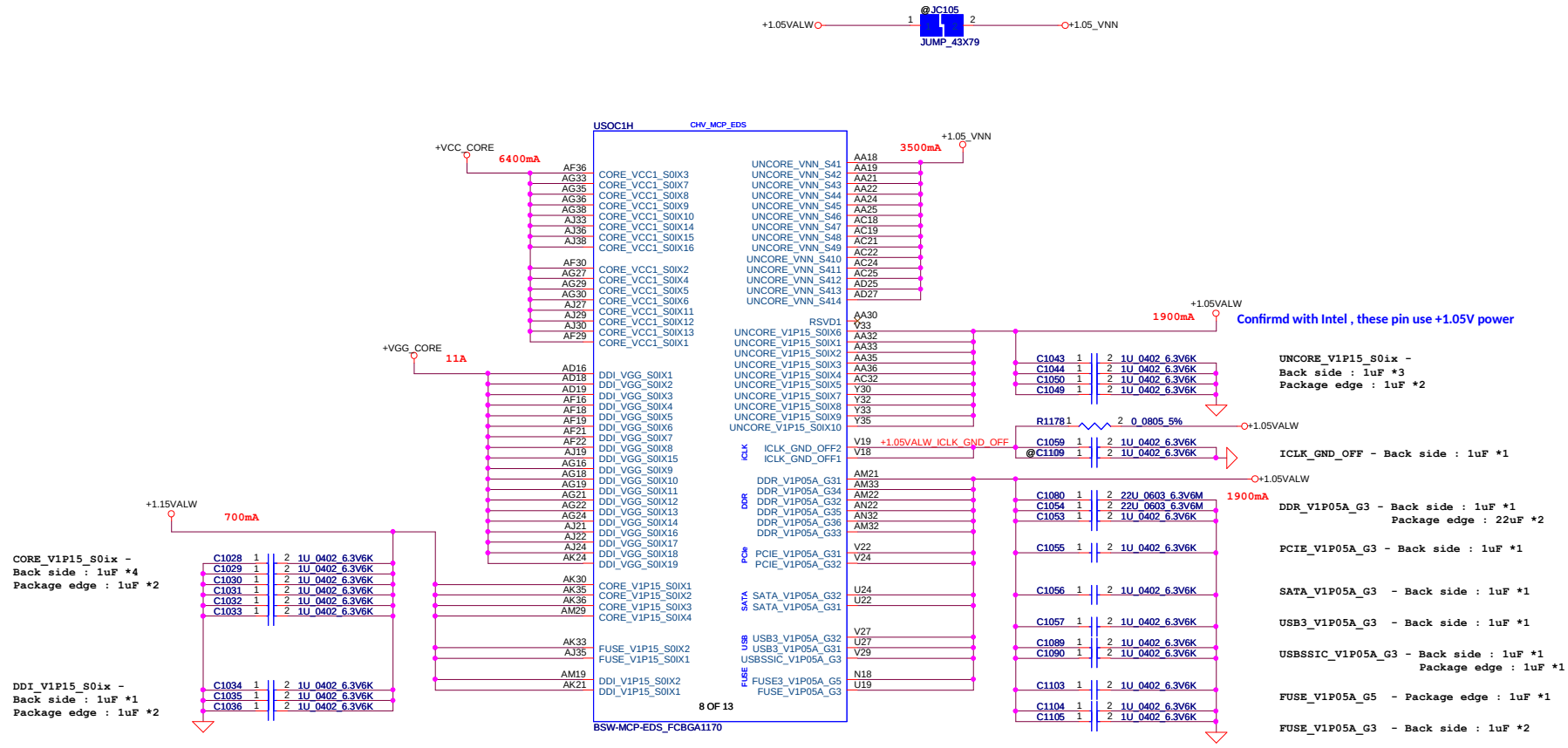
QC8/CV273 Place CPU TOP Side CPU Thermal Sensor

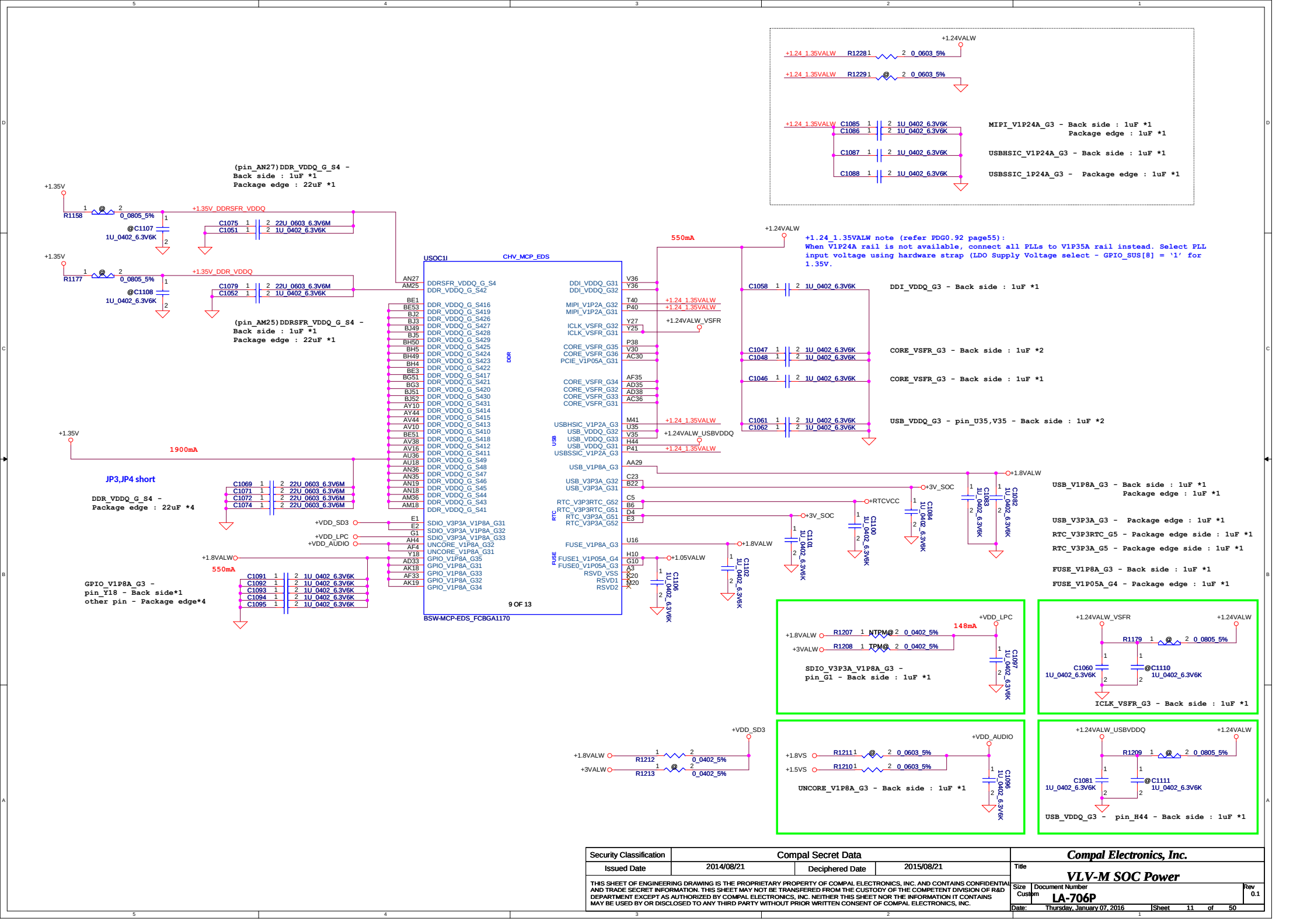


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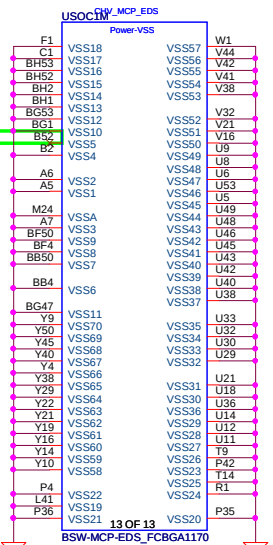
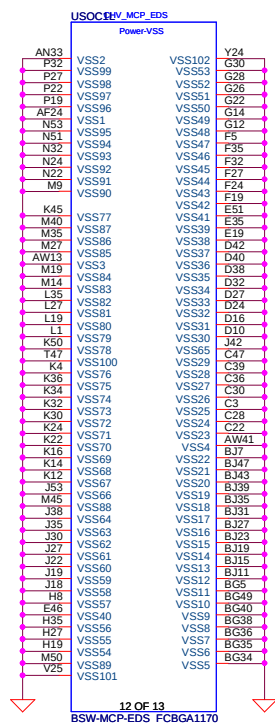
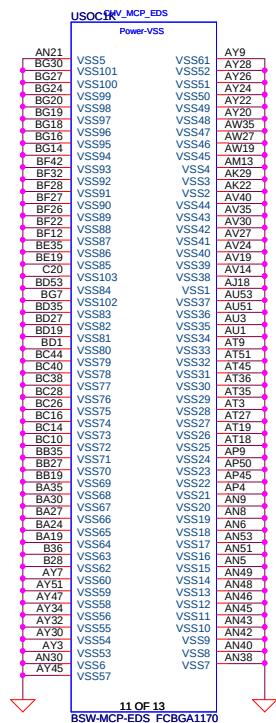
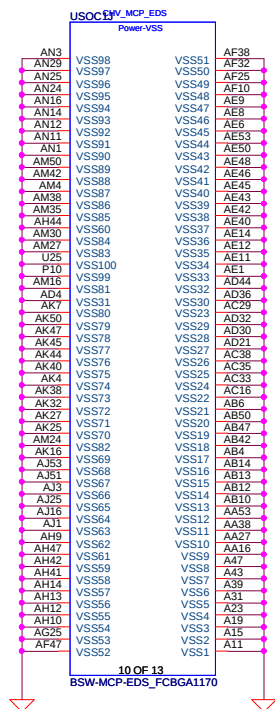


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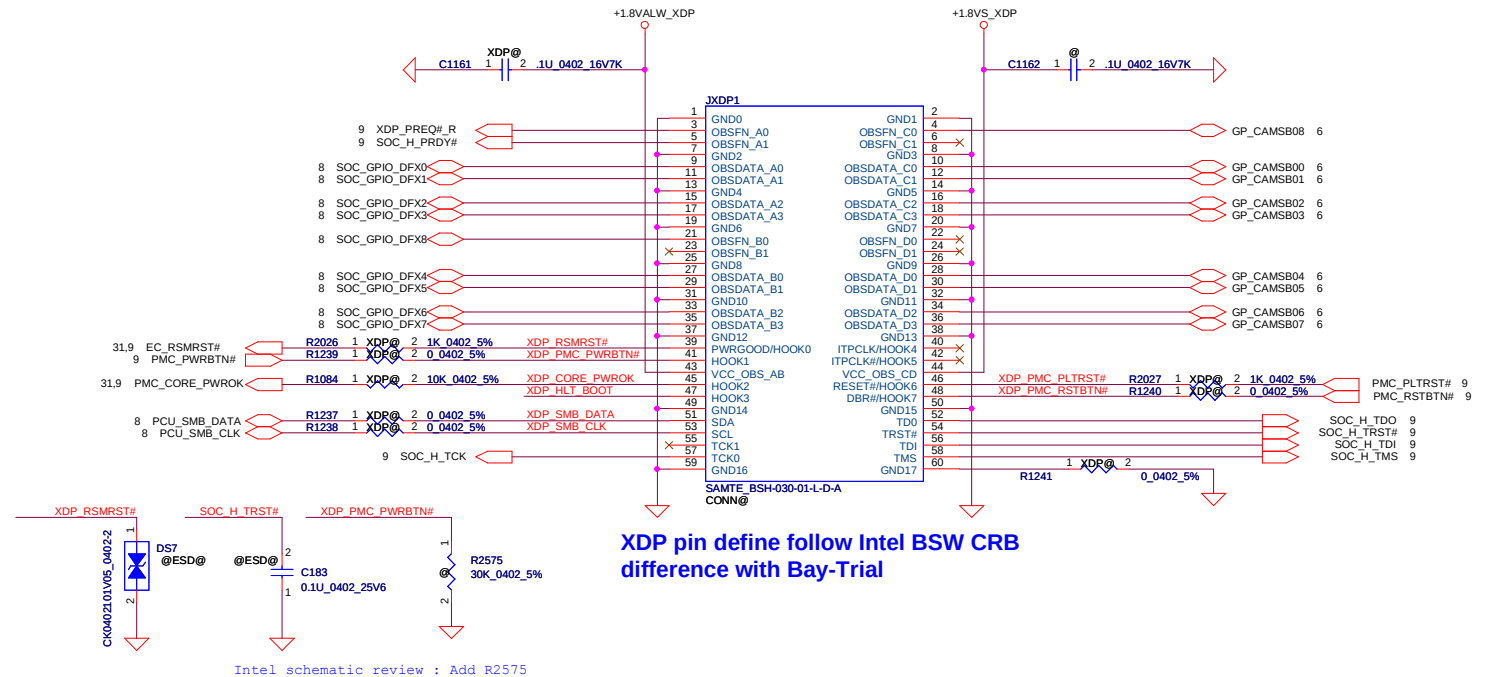


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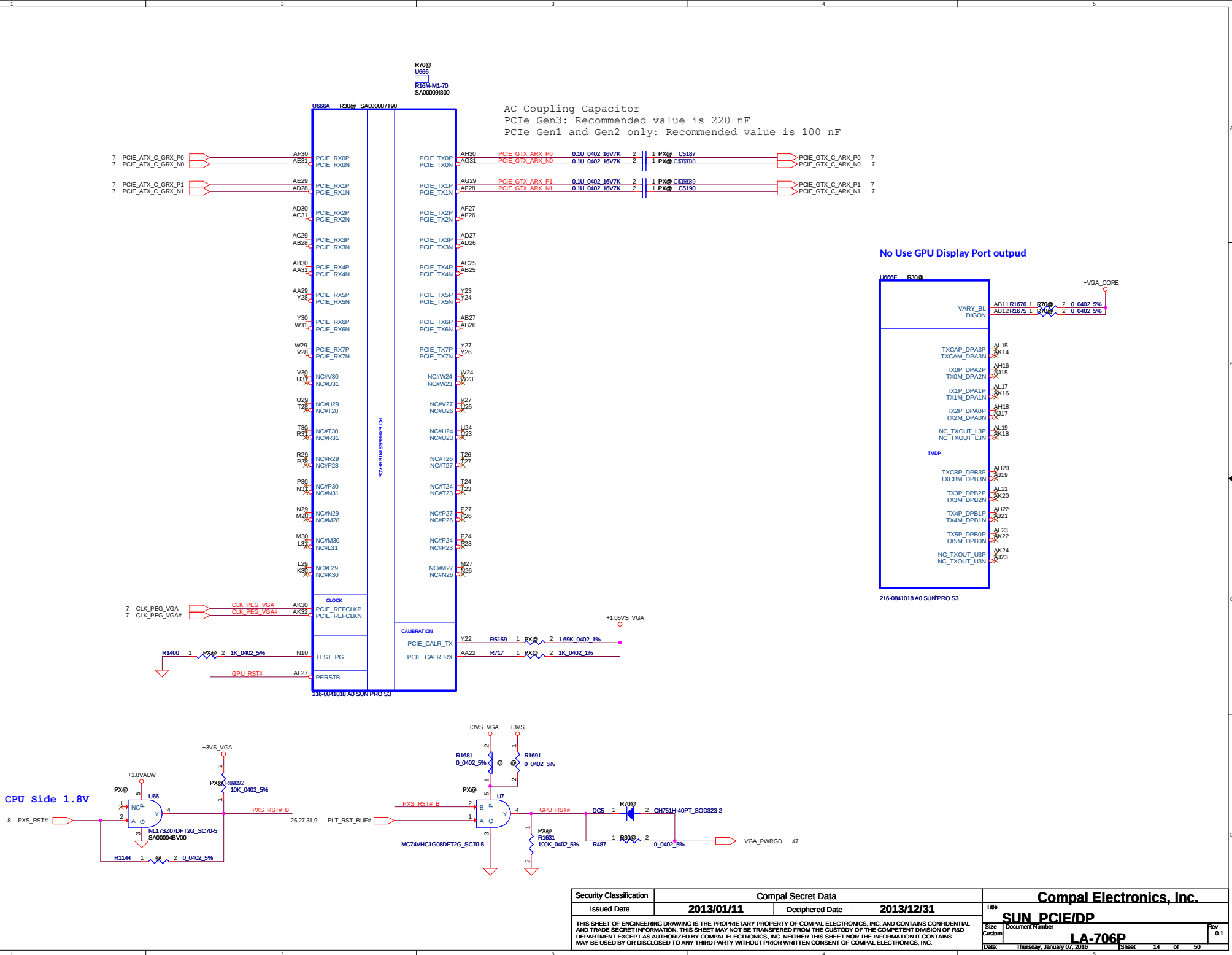


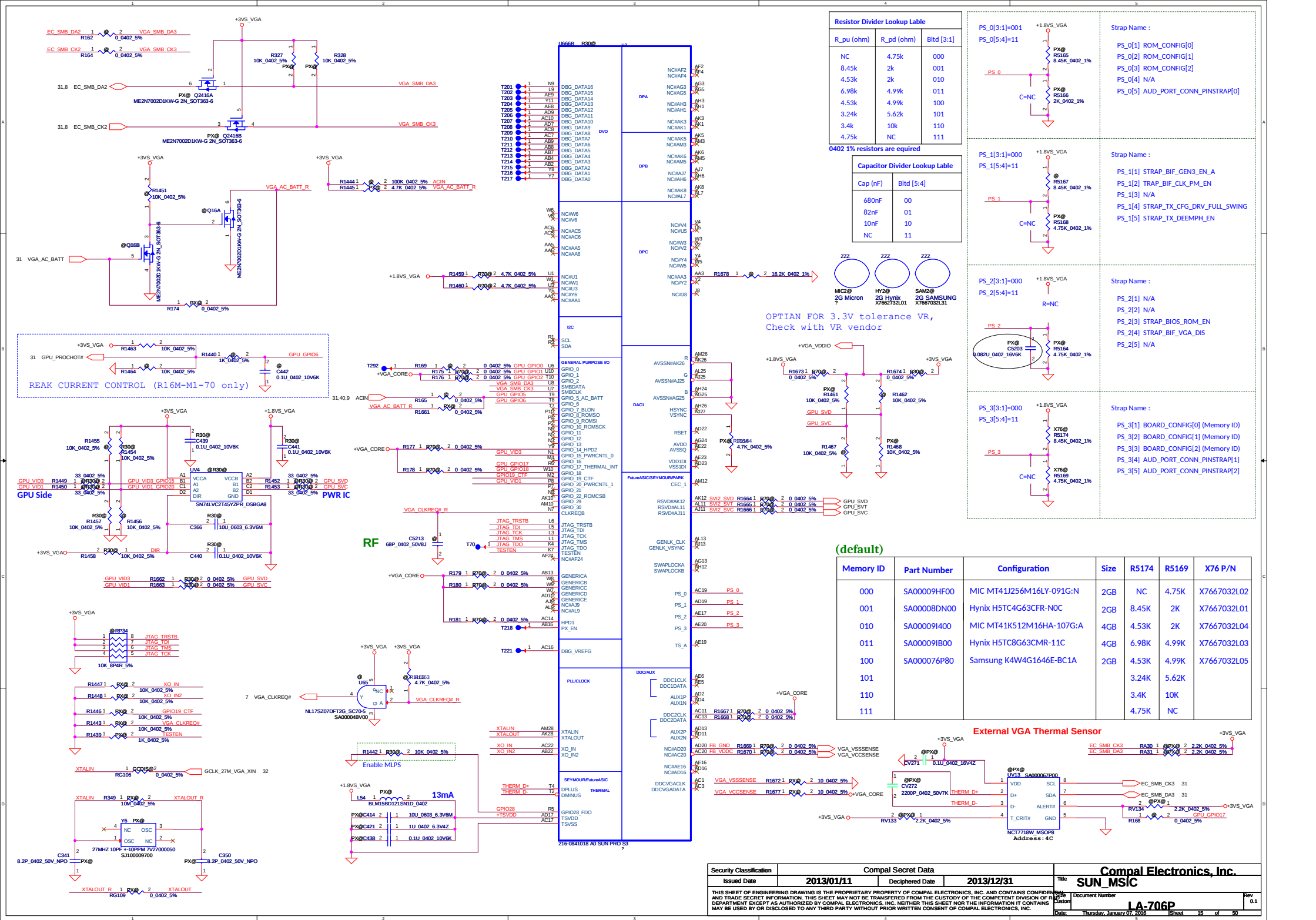
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XDP CONN

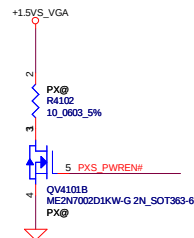


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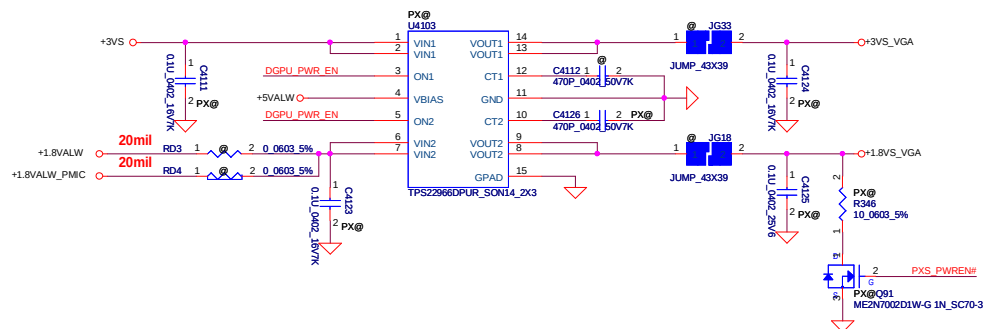




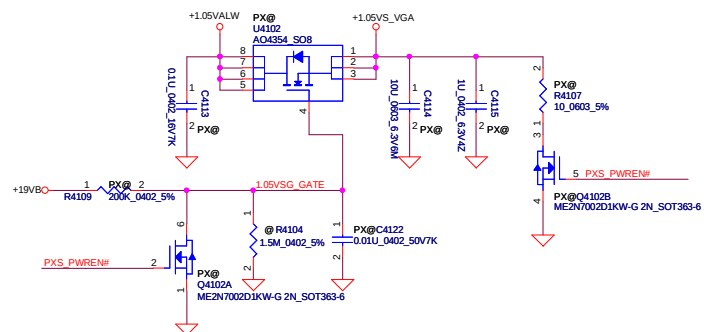
+1.5VS to +1.5VS_VGA (4A)



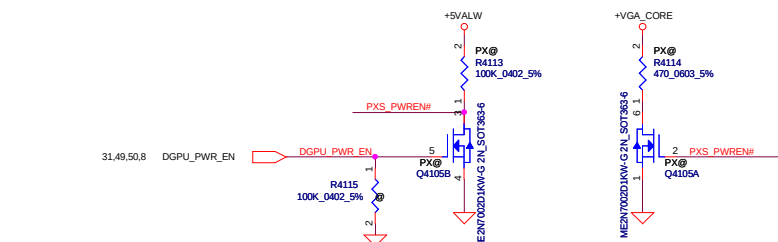
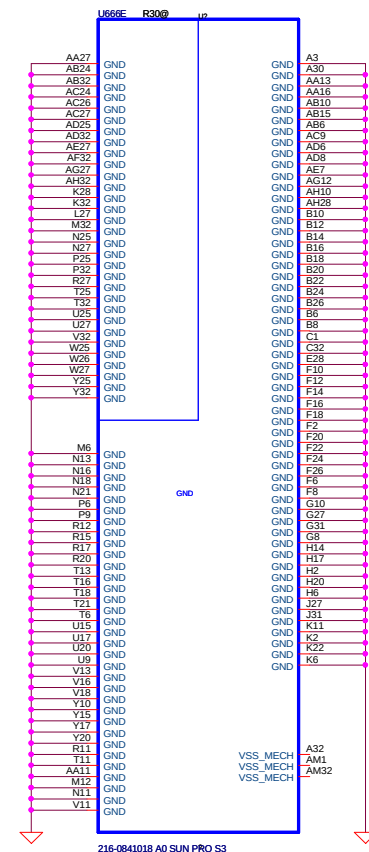
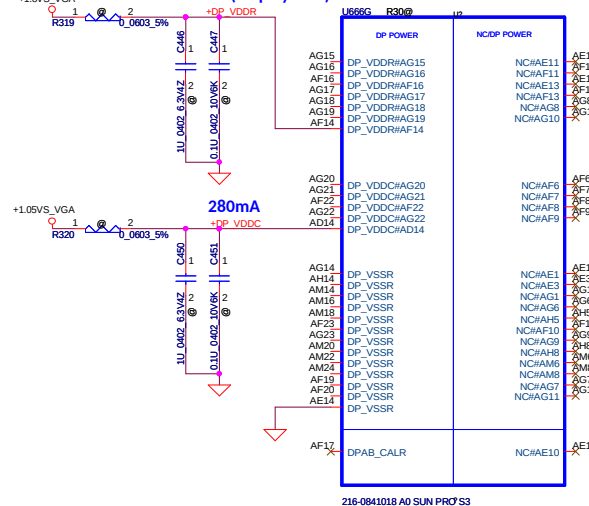
+3VS to +3VS_VGA (25mA) +1.8VALW to +1.8VS_VGA (331mA)



+1.05VALW to +1.05VGA (2A)

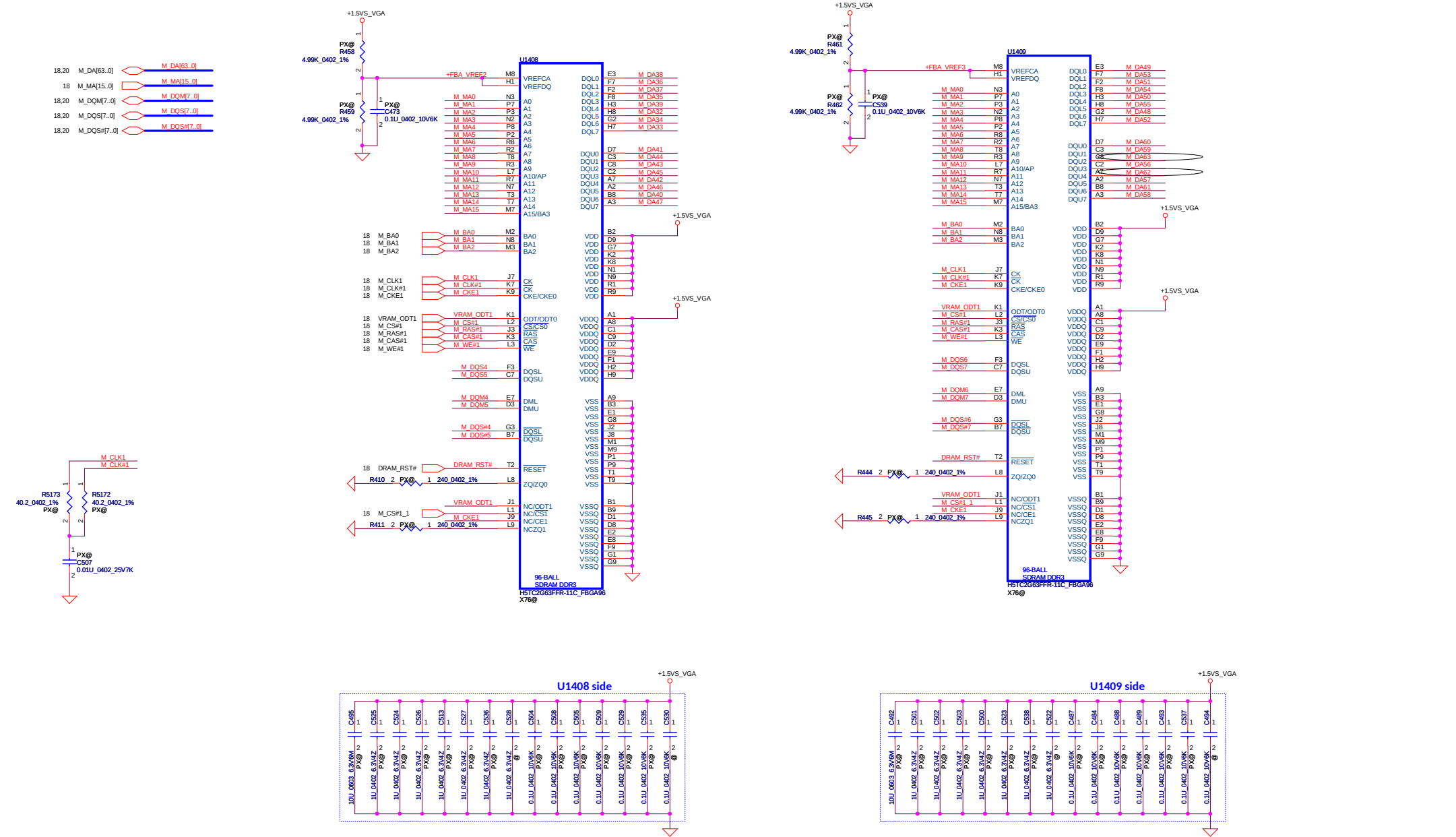


370mA (HDMI) 188mA (Display Port)



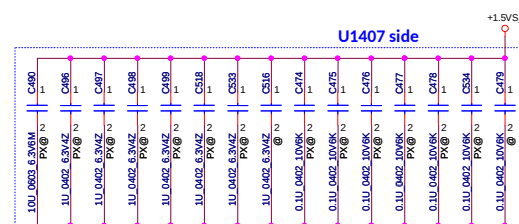
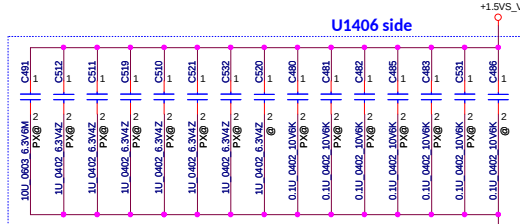
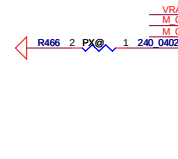
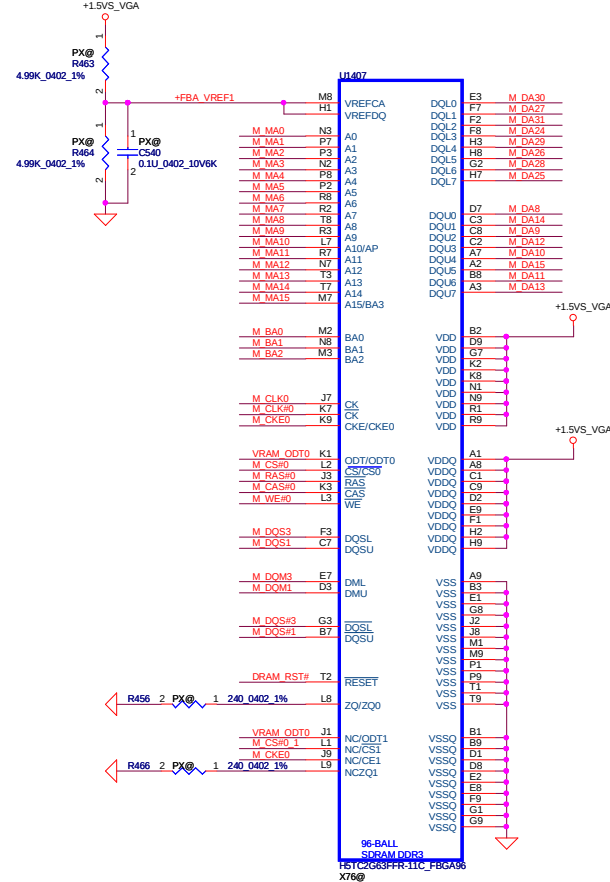
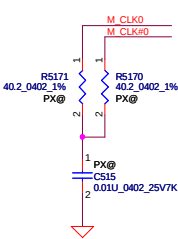
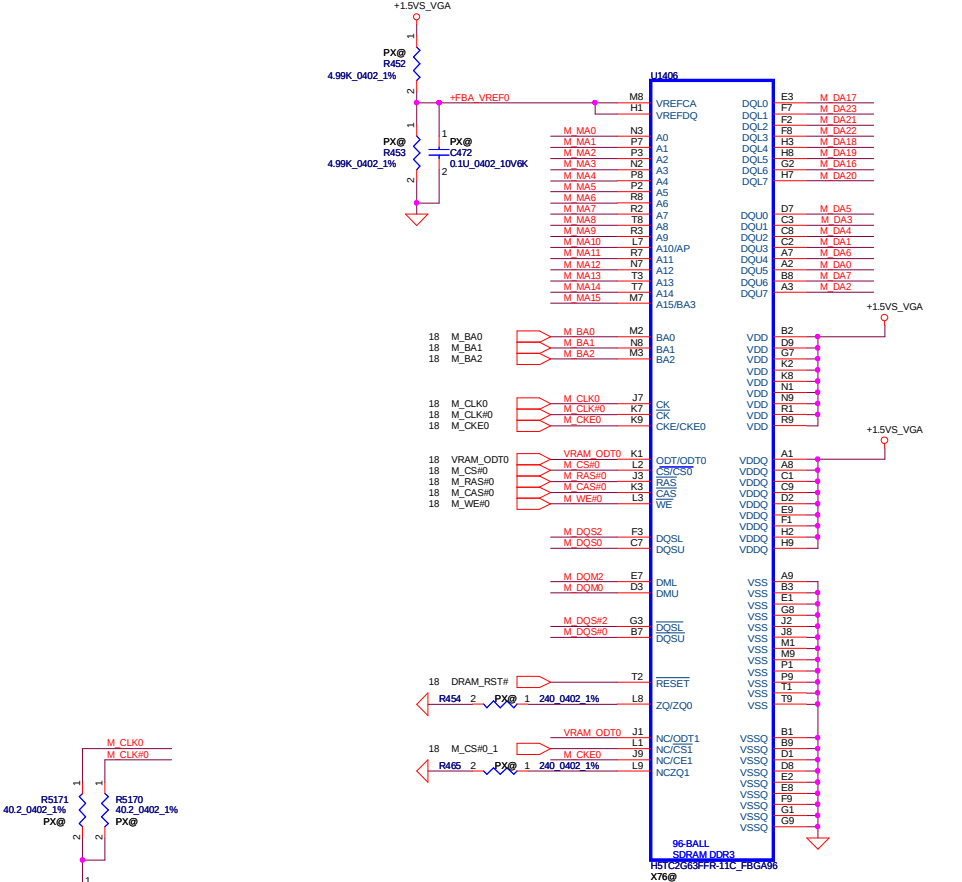
Security Classification		Compal Secret Data		Title	
Issued Date	2013/01/11	Deciphered Date	2013/12/31	Size	Custom
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				LA-706P	
				Date	Thursday, January 07, 2016
				Sheet	16 of 50

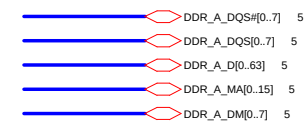
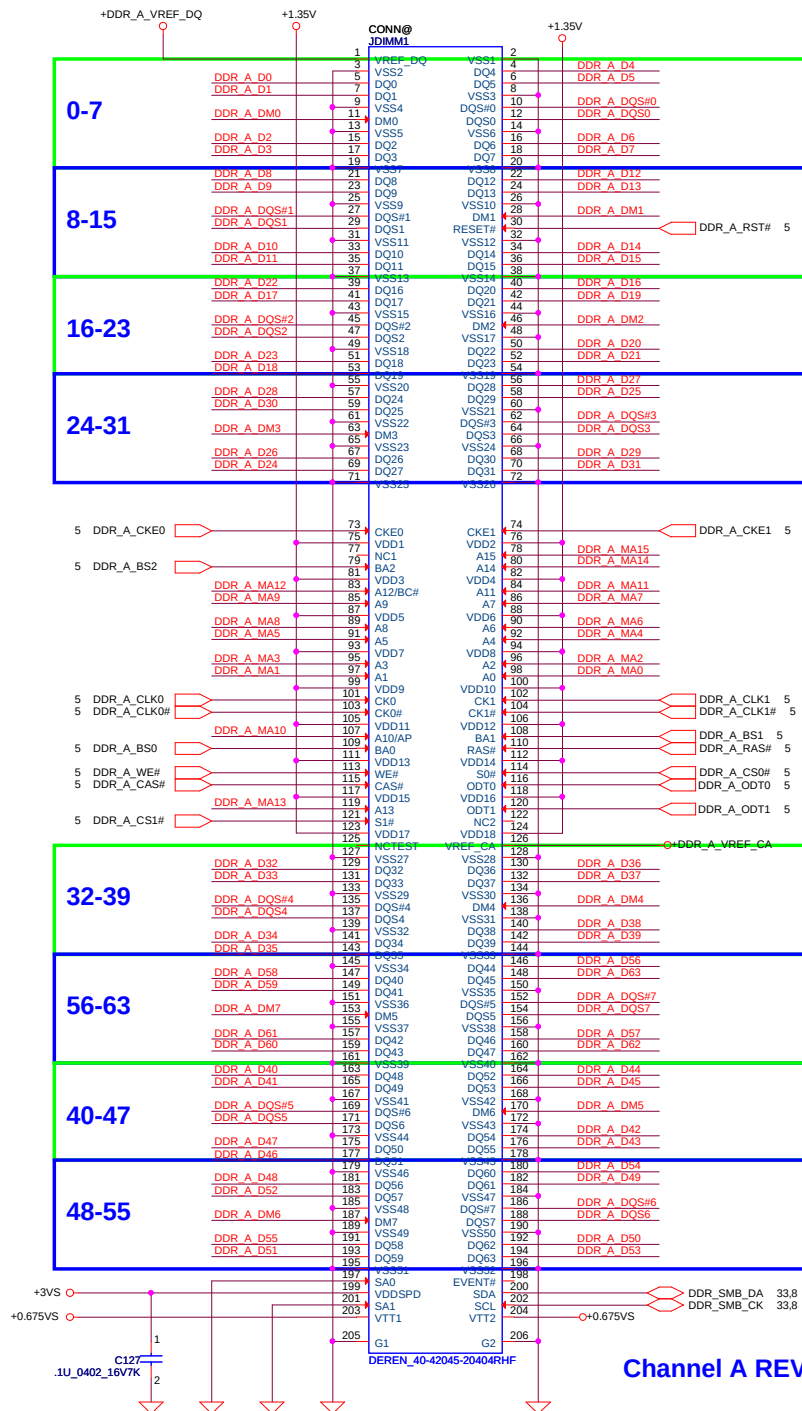
Memory Partition A - Upper 32 bits



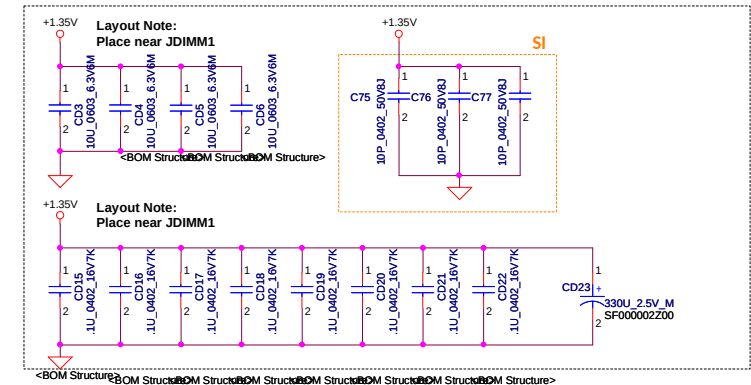
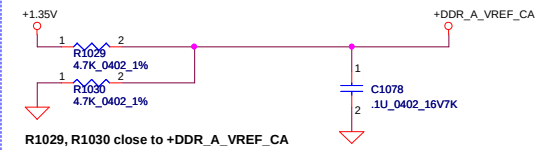
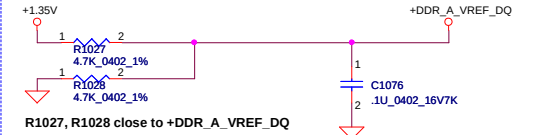
Memory Partition A - Lower 32 bits

- 18.19 M_DA[63:0] M_DA[63:0]
- 18 M_MA[15:0] M_MA[15:0]
- 18.19 M_DQM[7:0] M_DQM[7:0]
- 18.19 M_DQS[7:0] M_DQS[7:0]
- 18.19 M_DQS#[7:0] M_DQS#[7:0]





```
.....
Signal voltage level = 0.675 V
PLACE TWO 4.7K RESISTORS CLOSE TO
DIMMS ON DIMM_VREF_CA / DIMM_VREF_DQ
Decoupling caps are needed; one 0.1 uF placed close to VREF pins of each DDR3 SODIMM.
.....
```



SA1: SA0 = 00
Address: A0h/10100000b

Channel A REV

Security Classification		Compal Secret Data		Compal Electronics, Inc. DDR3L DIMMA		
Issued Date	2014/07/07	Deciphered Date	2015/07/07	Title DDR3L DIMMA		
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				Date: Thursday, January 07, 2016	Sheet 21 of 50	

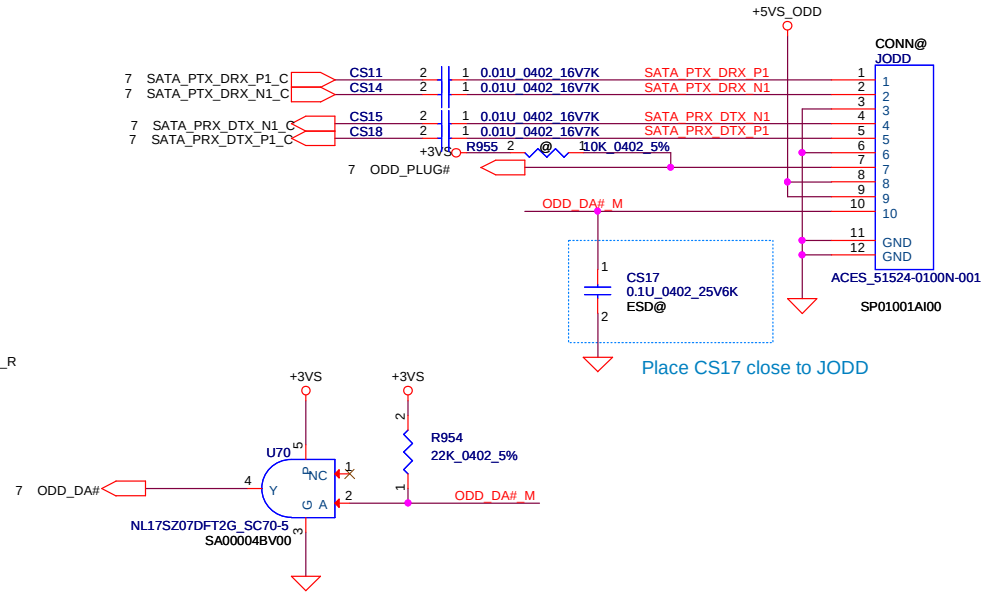
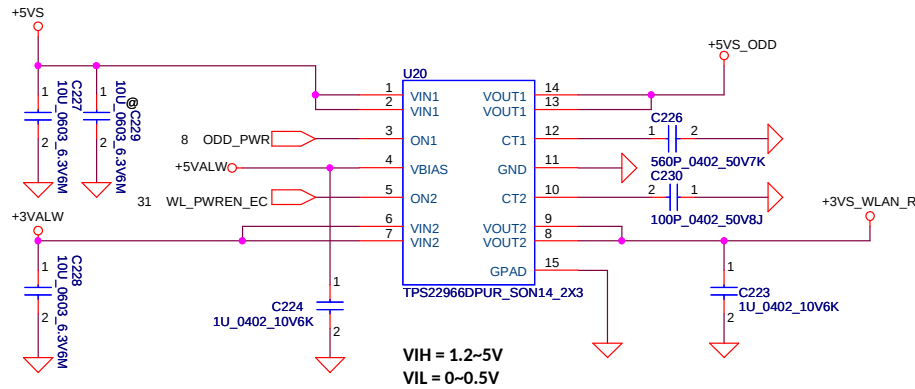
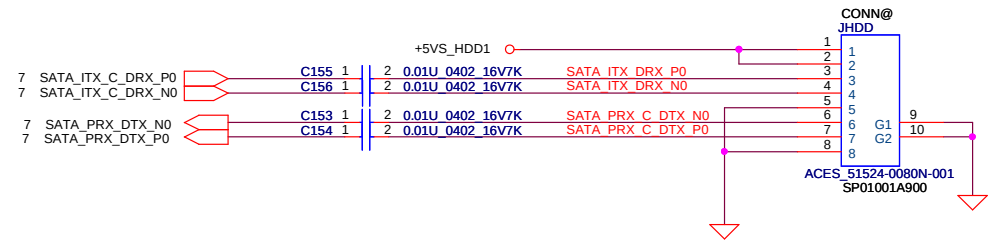
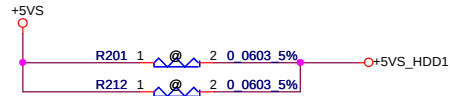


<Address: SA0:SA1=10 (A2H)>
DIMM_2 REV H:4mm

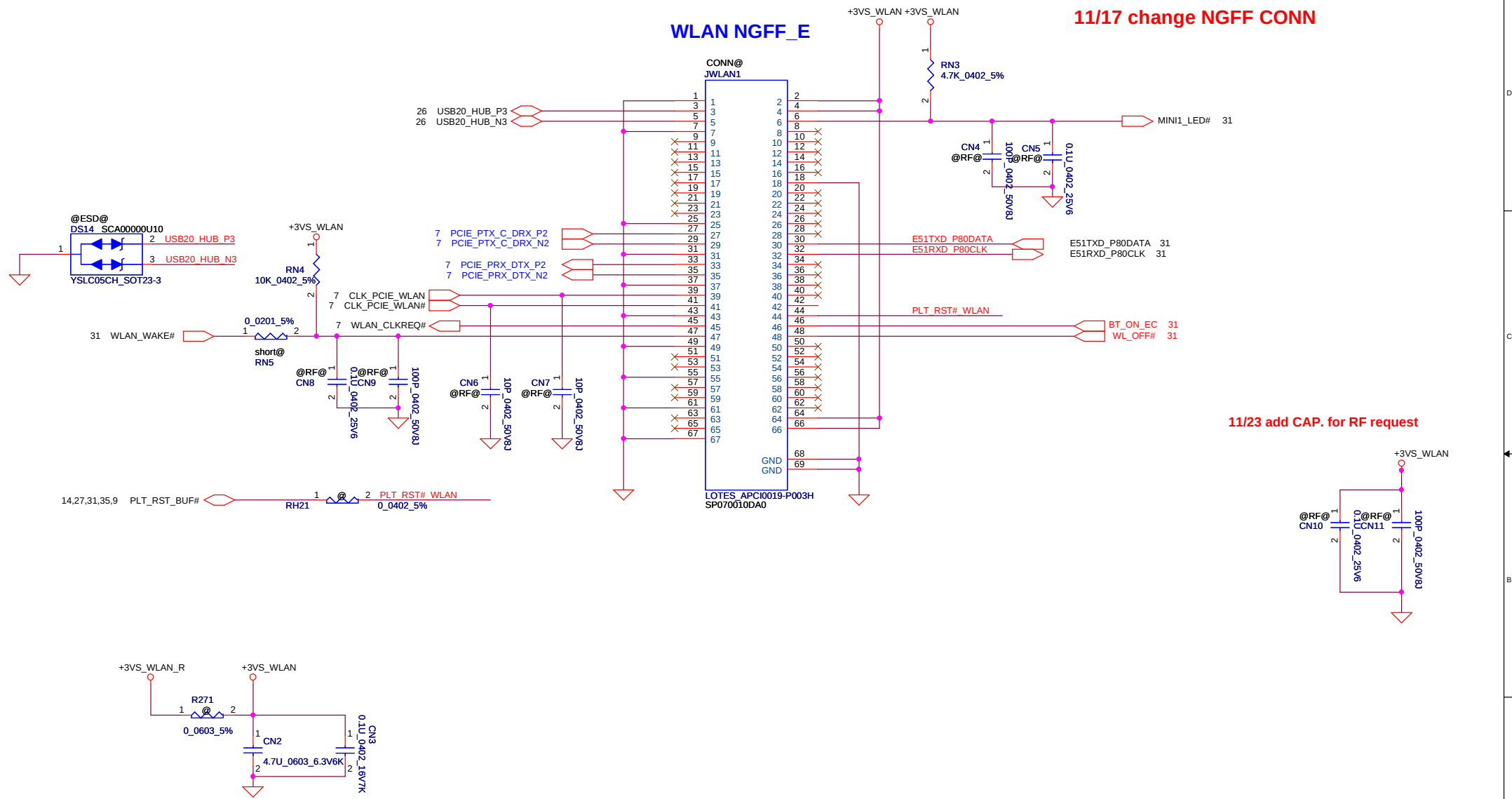
Channel B Rev

Security Classification	Compal Secret Data			Compal Electronics, Inc.		
Issued Date	2014/08/21	Deciphered Date	2015/08/21	Title	DDR3L DIMMB	
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				Custom	LA-706P	0.1
				Date:	Thursday, January 07, 2016	Sheet 22 of 50

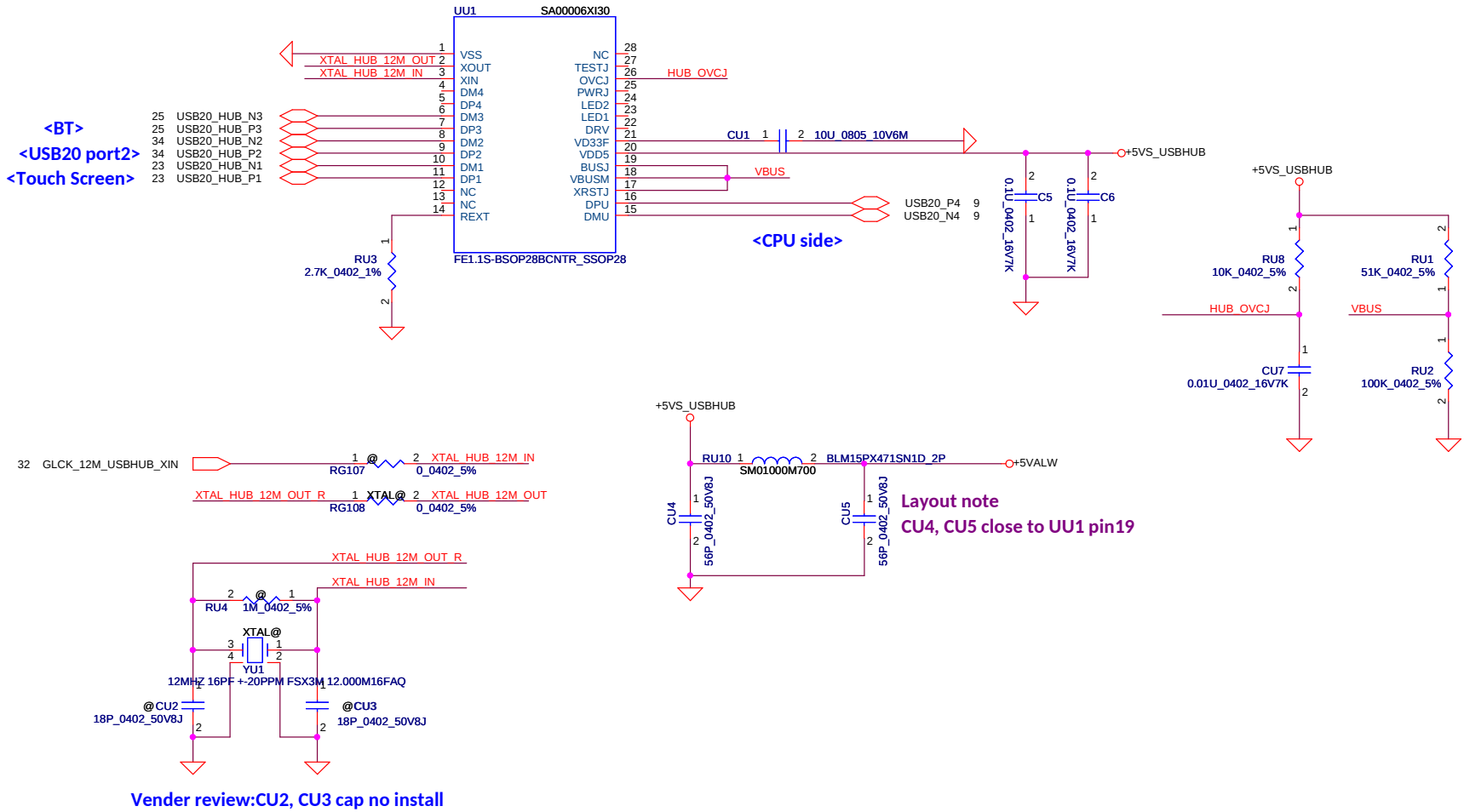
2.5" SATA HDD connector



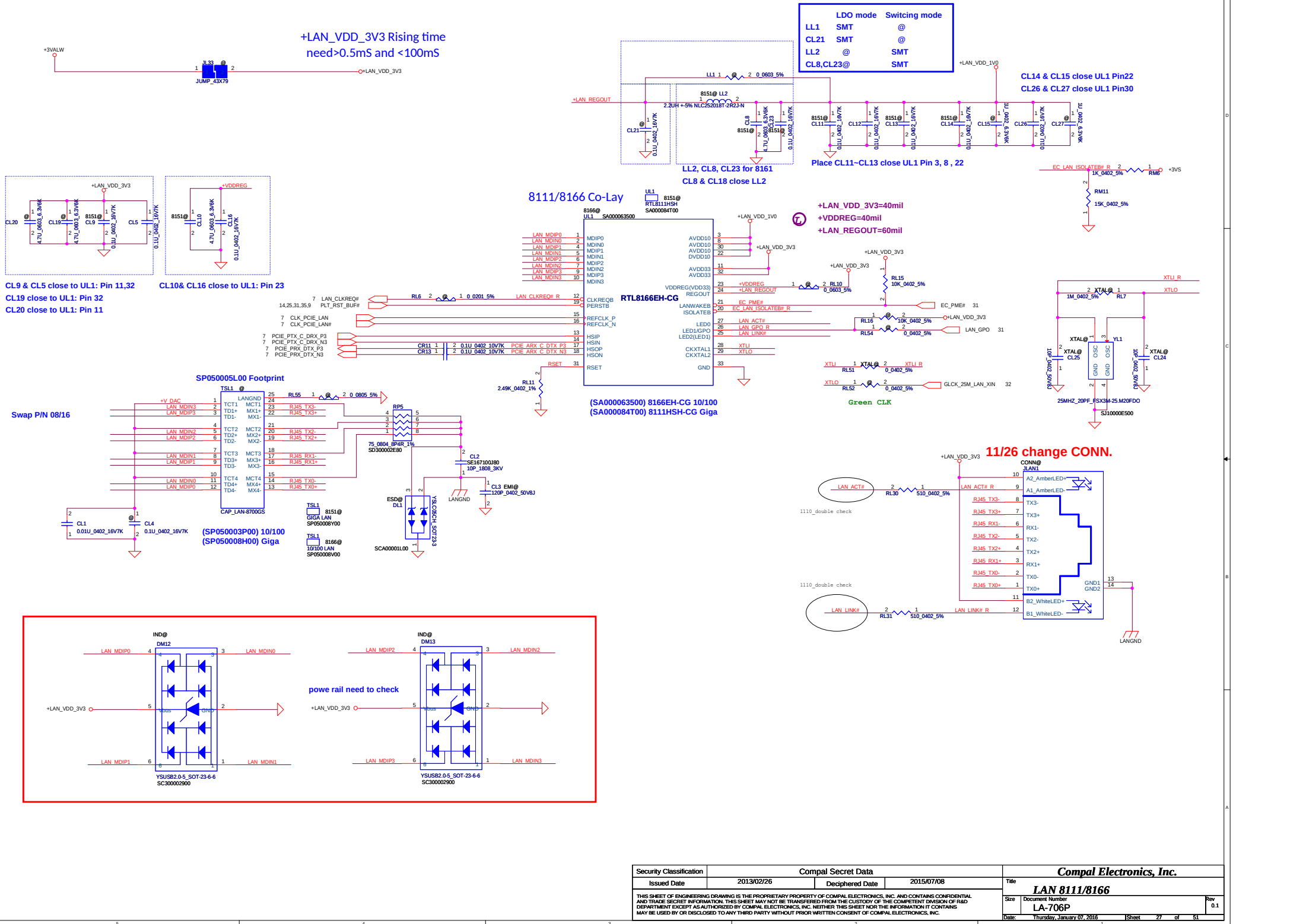
Security Classification		Compal Secret Data		Compal Electronics, Inc.					
Issued Date	2013/02/26	Deciphered Date	2015/07/08	Title	ODD/SATA Conn				
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				LA-706P	0.1				
				Date: Thursday, January 07, 2016		Sheet	24	of	51

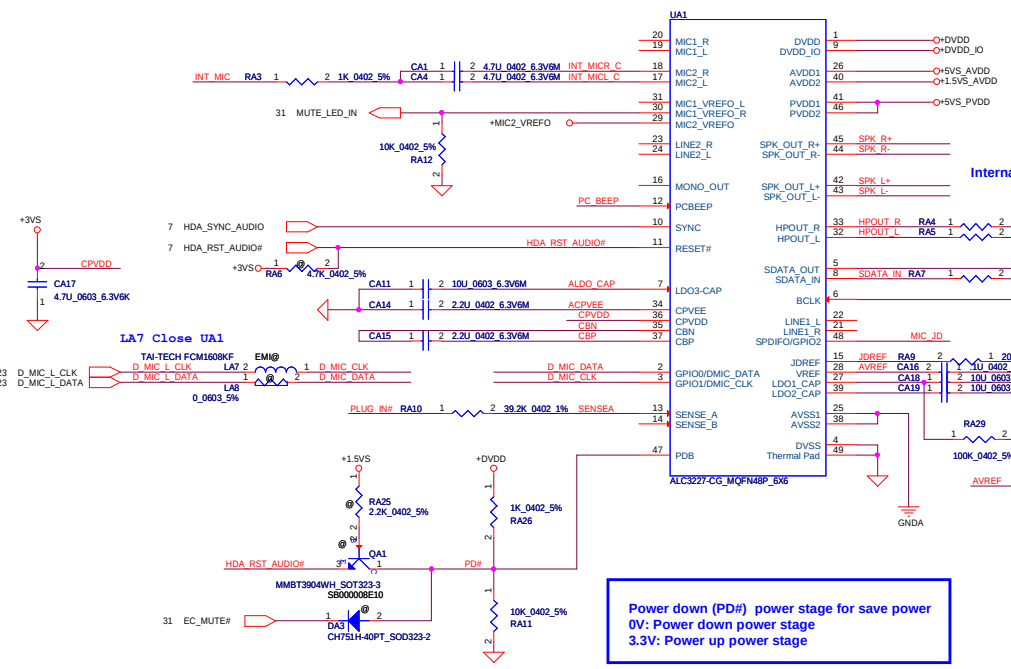


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Issued Date	2013/02/26	Deciphered Date	2015/07/08	Title	WLAN
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				Rev	0.1



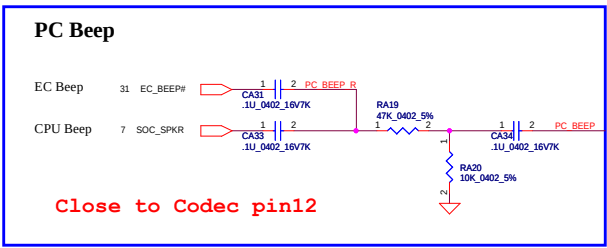
Security Classification	Compal Secret Data			Compal Electronics, Inc.	
Issued Date	2013/02/26	Deciphered Date	2015/07/08	Title	USB2.0 Hub
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				Date:	Thursday, January 07, 2016
				Sheet	26 of 51



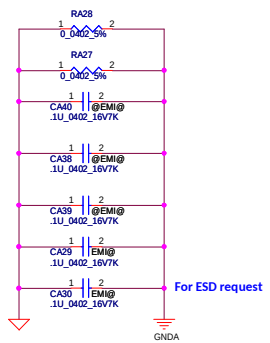


Power down (PD#) power stage for save power
0V: Power down power stage
3.3V: Power up power stage

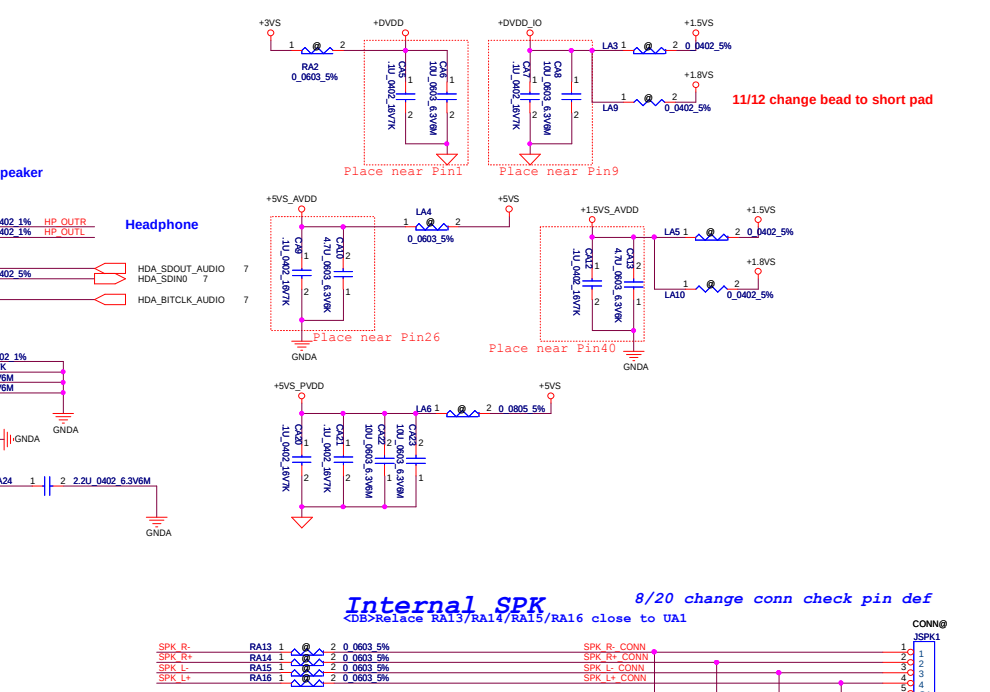
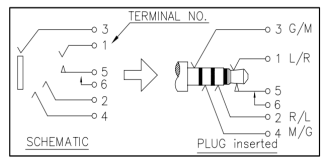
Reserve for ESD request.



Close to Codec pin12



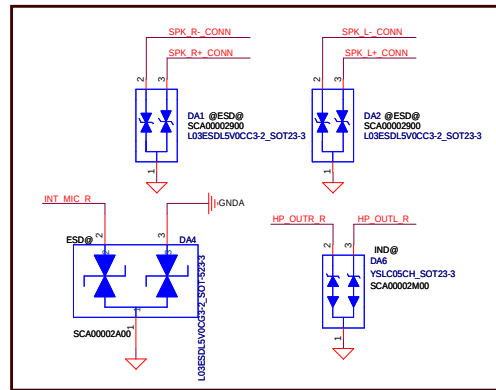
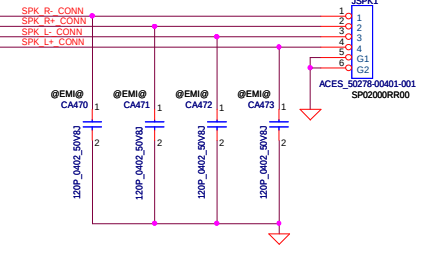
For ESD request



Internal SPK

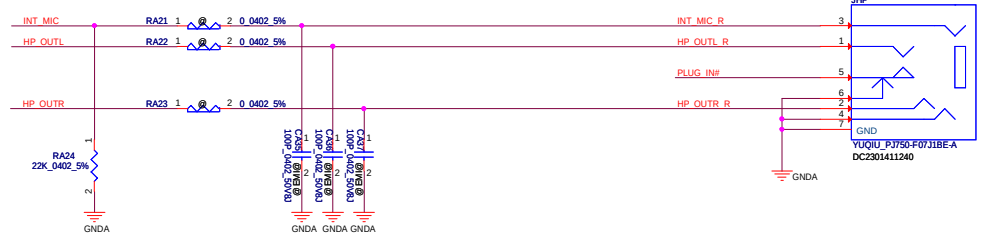
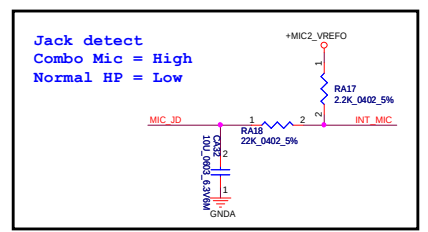
8/20 change conn check pin def

SPK R- RA13 1 2 0.0603 5%
SPK R+ RA14 1 2 0.0603 5%
SPK L- RA15 1 2 0.0603 5%
SPK L+ RA16 1 2 0.0603 5%

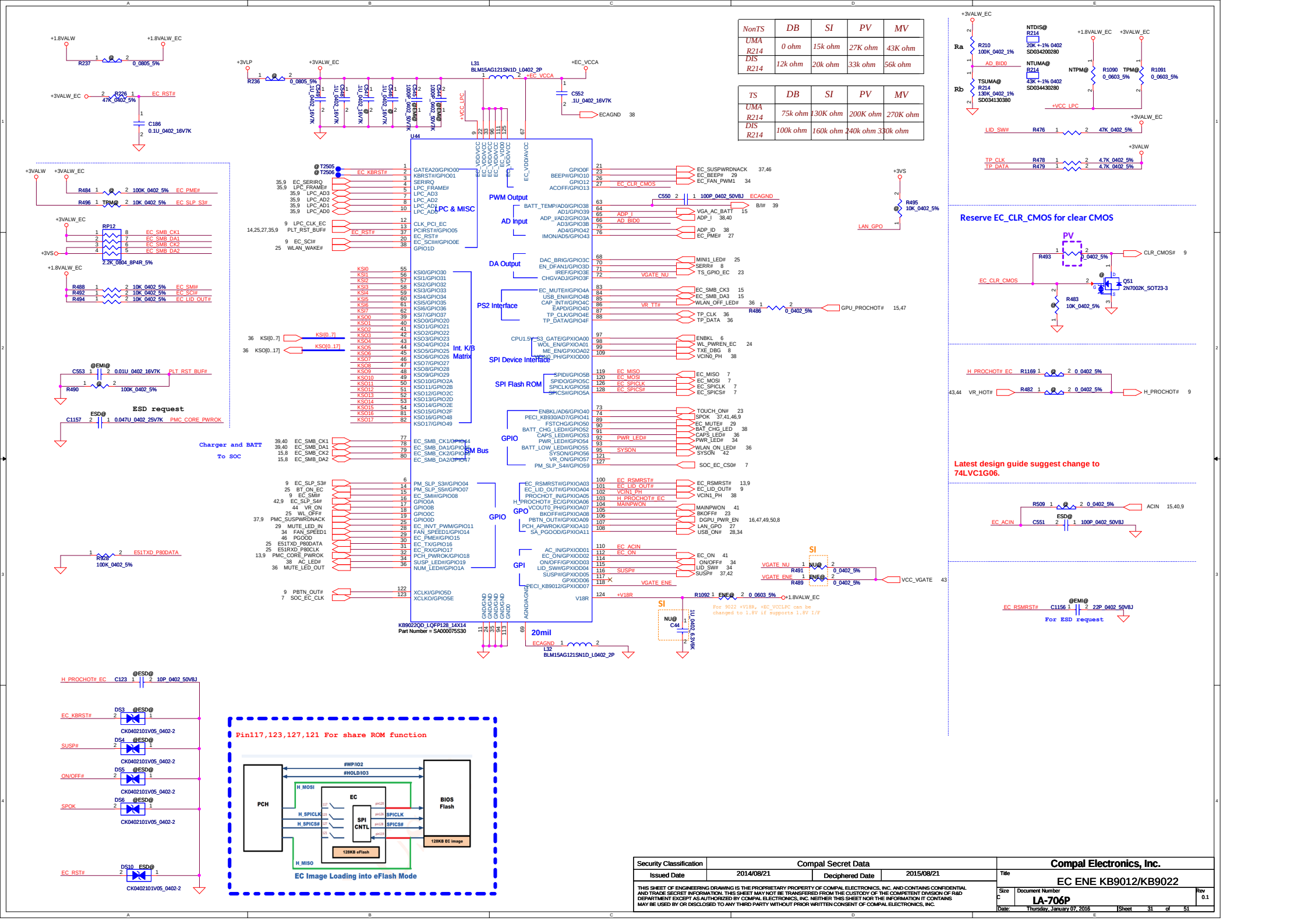


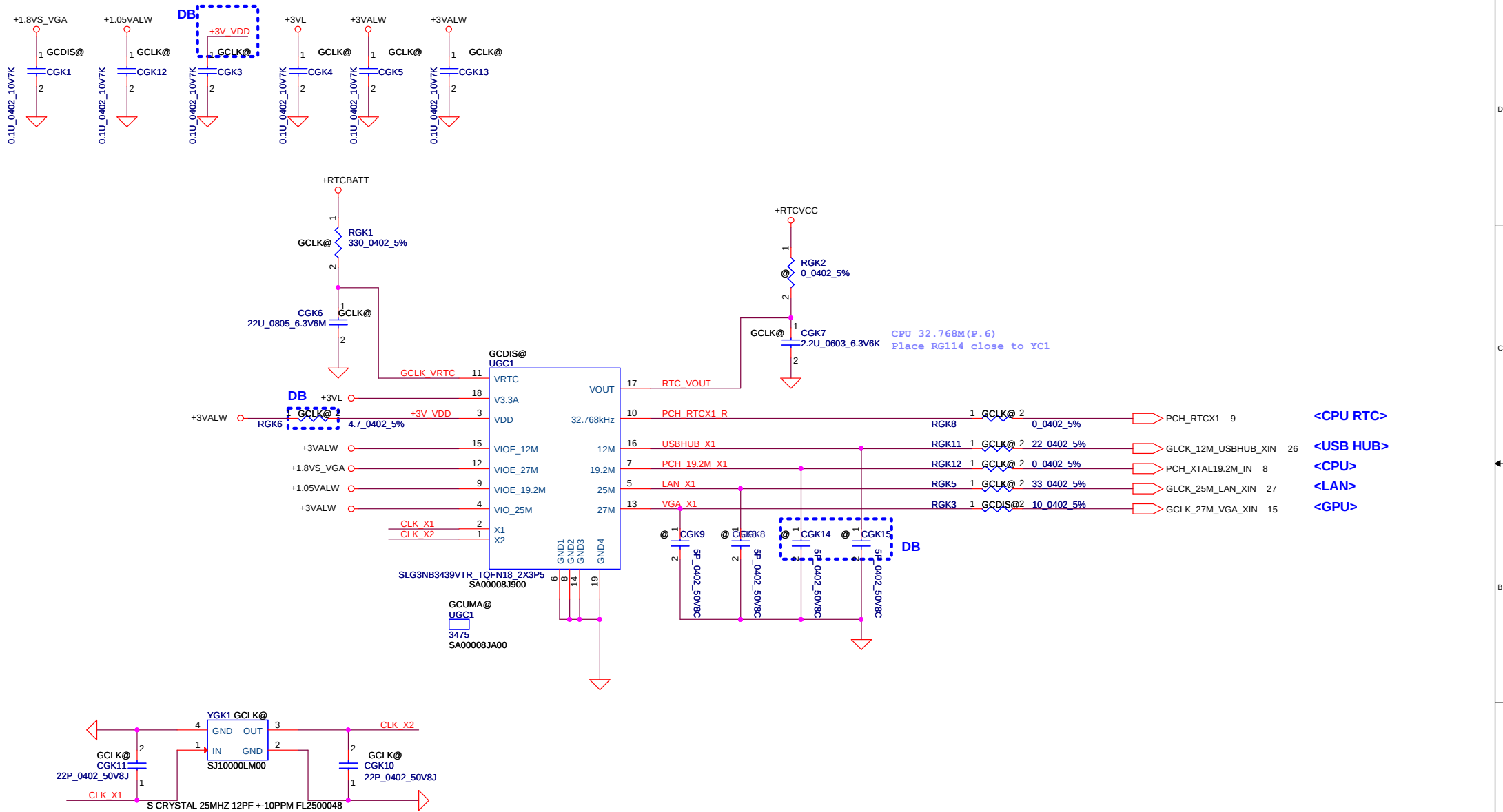
COMBO AUDIO JACK

HPR, HPL, 15mil Keep 30mil



Security Classification		Compal Secret Data		Compal Electronics, Inc.	
Issued Date		2013/01/04		Title	
Deciphered Date		2015/01/04		AUDIO ALC259-VC2-CG	
Size		Document Number		LA-706P	
Date		Thursday, January 07, 2016		Sheet 29 of 51	

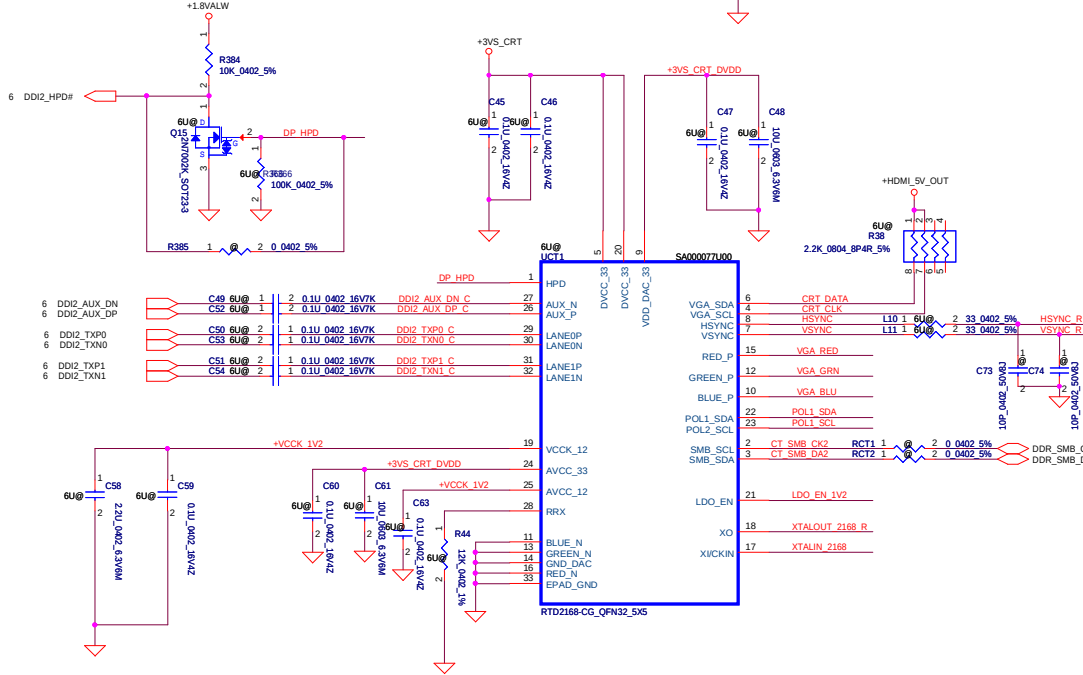
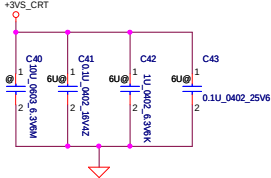
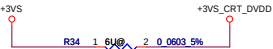
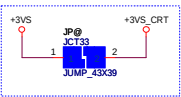




Security Classification		Compal Secret Data		Title	
Issued Date	2013/06/10	Deciphered Date	2014/07/01	GCLK	
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DP to CRT converter

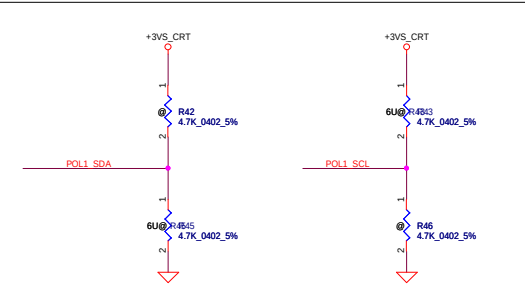
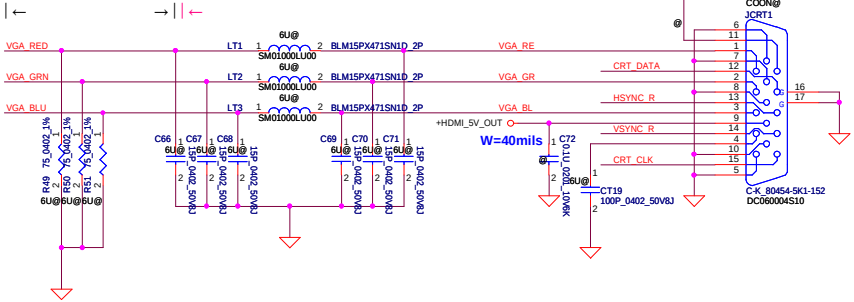
For Power consumption Measurement



37.5 impedance

50 impedance

CRT Connector



Mode Configure Table(Power On Latch)

	POL1_SDA(PIN22)	
	0	1
POL2_SCL(PIN23)	0	X
	1	ROM ONLY MODE
		EEPROM MODE

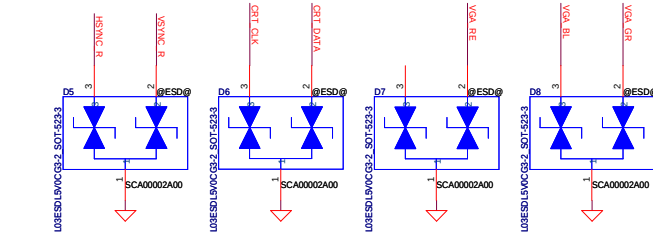
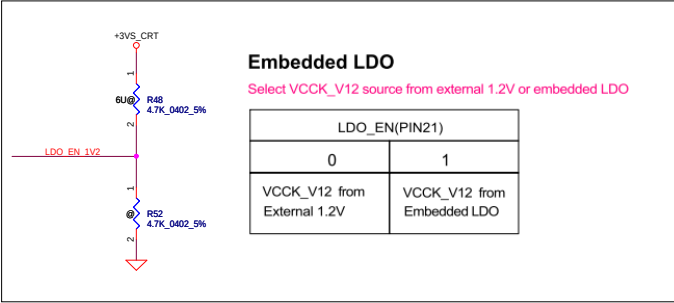
RTD2168 Supports three operation mode for system design.
Reserve 4.7K resistor pull high/low for mode selection

ROM ONLY Mode : PIN22 pull low, PIN23 pull high
EP Mode : PIN22 pull high, PIN23 pull low
EEPROM Mode : PIN22 pull high, PIN23 pull high

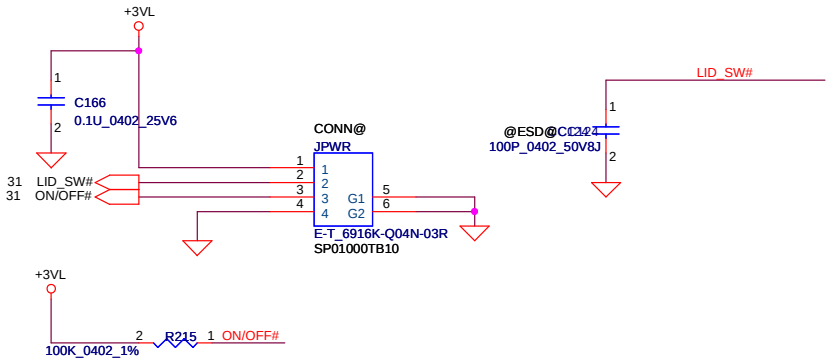
Embedded LDO

Select VCCCK_V12 source from external 1.2V or embedded LDO

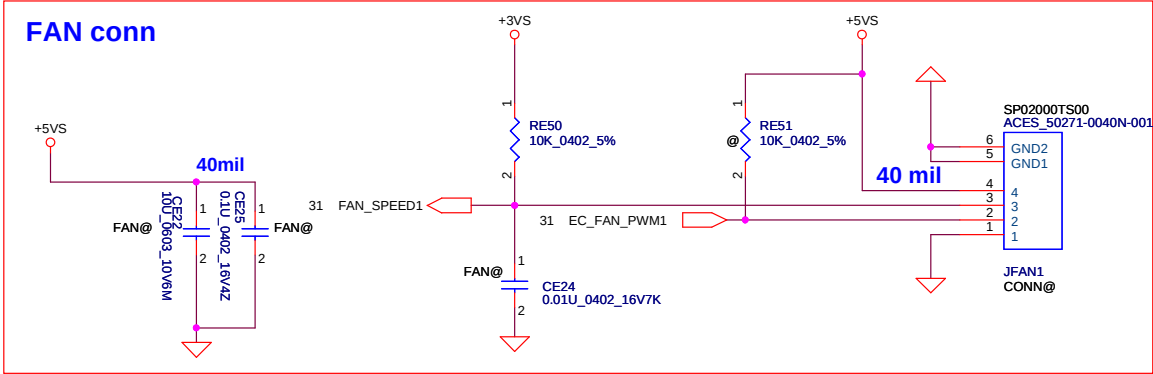
LDO_EN(PIN21)	
0	1
VCCCK_V12 from External 1.2V	VCCCK_V12 from Embedded LDO



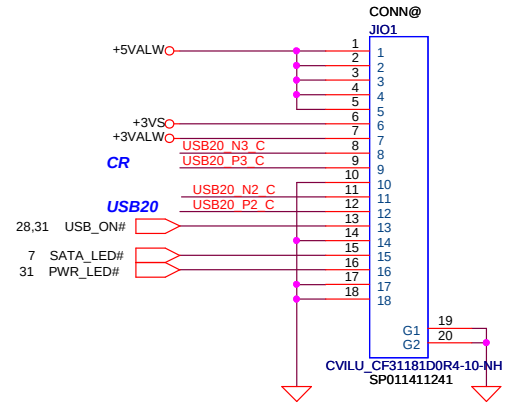
Power Button Connector



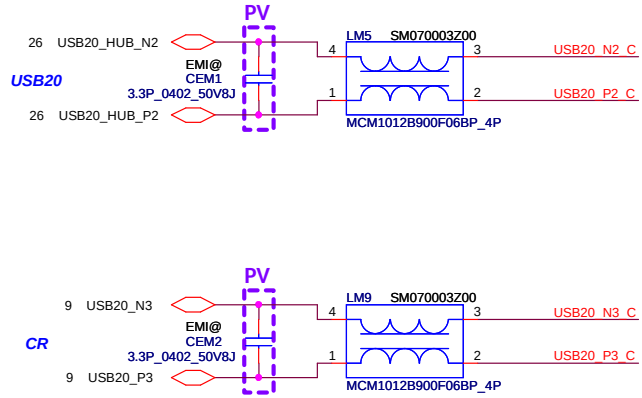
FAN conn



JIO S/B



CEM1,2 Close LM5/LM9



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Issued Date	2013/02/26	Deciphered Date	2015/07/08	Title	PWRBTN/FAN	
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				Date:	Thursday, January 07, 2016	Sheet 34 of 51

TPM2.0

The schematic diagram illustrates the TPM2.0 module (U5) and its connections. The module is an SA00007XU00 (SLB9665TT2.0-FW-5.00_TSSOP28). It is powered by +3VS and +3VS_TPM. Signal lines include LPC_AD0-AD3, LPC_FRAME#, PLT_RST_BUF#, EC_SERIRQ, and LPC_CLK_TPM. The module's pins are connected to the microcontroller's pins and various passive components like resistors (R26, R27, R28, R29, R31) and capacitors (C34, C35, C36, C37).

Power Connections:

- +3VS:** Connected to pin 1 of R26, which is connected to pin 1 of U5.
- +3VS_TPM:** Connected to pin 2 of R26, which is connected to pin 2 of U5.

Signal Connections:

- LPC_AD0-AD3:** Connected to pins 26, 23, 20, and 17 of U5.
- LPC_FRAME#:** Connected to pin 22 of U5.
- PLT_RST_BUF#:** Connected to pin 16 of U5.
- EC_SERIRQ:** Connected to pin 27 of U5.
- LPC_CLK_TPM:** Connected to pin 21 of U5.

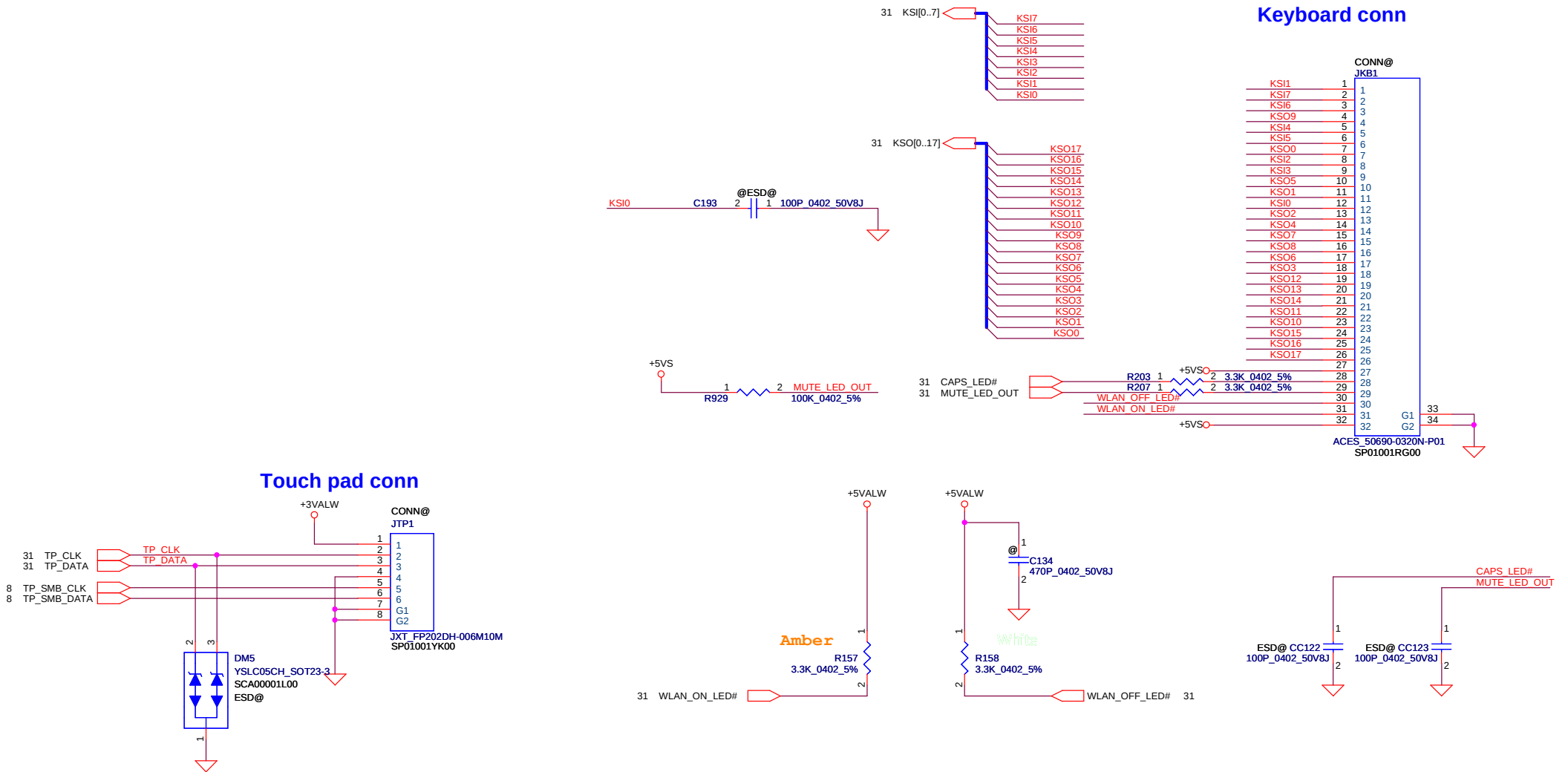
Passive Components:

- R26:** 0.0402 5% resistor, connected between +3VS and +3VS_TPM.
- R27:** 4.7K 0.402 5% resistor, connected between +3VS_TPM and pin 1 of U5.
- R28:** 0.0402 5% resistor, connected between pin 2 of U5 and PLT_RST_BUF#.
- R29:** 4.7K 0.402 5% resistor, connected between pin 1 of U5 and pin 2 of R27.
- R31:** 4.7K 0.402 5% resistor, connected between pin 1 of U5 and ground.
- C34, C35, C36, C37:** 0.1U 0.402 16V4Z capacitors, connected between pins 1, 2, 1, and 2 of U5 and ground.

Module Pinout:

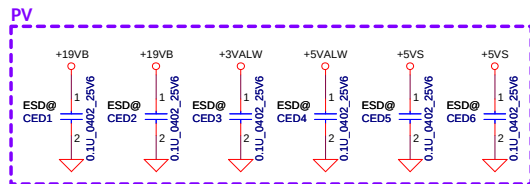
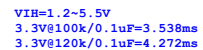
Pin	Signal	Connection
1	VDD	+3VS
2	VDD	+3VS_TPM
3	VDD	NC
4	VDD	NC
5	VDD	NC
6	VDD	NC
7	VDD	NC
8	VDD	NC
9	VDD	NC
10	VDD	NC
11	VDD	NC
12	VDD	NC
13	VDD	NC
14	VDD	NC
15	VDD	NC
16	VDD	NC
17	VDD	NC
18	VDD	NC
19	VDD	NC
20	VDD	NC
21	VDD	NC
22	VDD	NC
23	VDD	NC
24	VDD	NC
25	VDD	NC
26	VDD	NC
27	VDD	NC
28	VDD	NC

Security Classification	Compal Secret Data			Compal Electronics, Inc. LED/Screw hole		
Issued Date	2013/02/26	Deciphered Date	2015/07/08	Title		
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				NO	LA-706P	0.1
				Date:	Thursday, January 07, 2016	Sheet 35 of 51

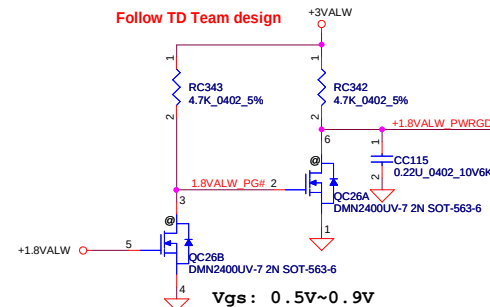


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Issued Date	2013/02/26	Deciphered Date	2015/07/08	Title	KB/TP
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				Date:	Thursday, January 07, 2016
				Sheet	36 of 51
				Rev	0.1

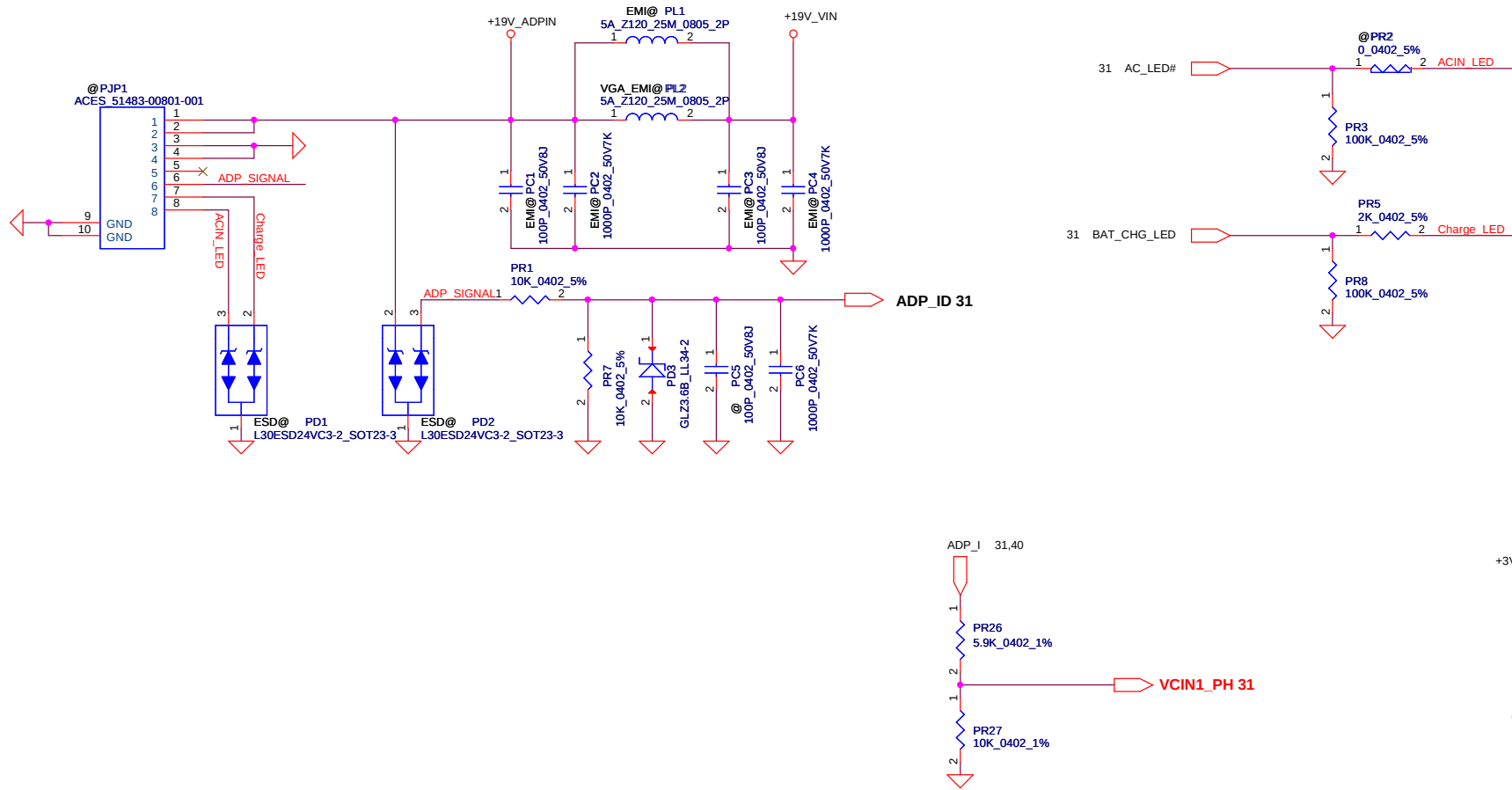
SPOK 2 1 **+3V_SOC_ON**
R1061 47K_0402_5%



Q2509,Q2510,Q2511
Change to SB00000I200
Vgs = 0.49V~1V



Security Classification		Compal Secret Data		Compal Electronics, Inc.		
Issued Date	2014/07/07	Deciphered Date	2015/07/07	Title	DC Interface	
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				Date:	Thursday, January 07, 2016	Sheet 37 of 51



Security Classification	Compal Secret Data			Compal Electronics, Inc.	
Issued Date	2015/10/08	Deciphered Date	2014/10/28	Title	DC Conn
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				LA-C706P	0.1
				Date:	Thursday, January 07, 2016
				Sheet	38 of 52

Vin Dectector

Min.	Typ	Max.
1.1V	1.2V	1.3V

Vgs = 20V
 Vds = 60V
 Id = 250mA

max Power loss 0.22W for 90W; 0.12W for 65W system
 CSR rating: 1W
 VACP-VACN spec < 80.6mV

$R_{ds(on)} = 30\text{mohm}$ max
 $V_{gs} = 20\text{V}$
 $V_{ds} = 30\text{V}$
 $I_D = 7\text{A}$ ($T_a=70^\circ\text{C}$)

H-Mos
 30V/16A, Rds=10.2mΩ,
L-Mos
 30V/18A, Rds=11.6mΩ,
 H=3, DCR=29-33mΩ

7x7X3
 Isat: 6.5A
 DCR: 30mohm

Power loss: 0.32W for 3.5A
 CSR rating: 1W
 VSRR-VSRN spec < 81.28mV

6.76A

Design Notes

- #For 65 /90W system, 3S1P/3S2P battery Maximum Charging current 3.5A Maximum Battery discharge power 55W.
- #Register Setting
- 1. 0x12 bit8 set 0 (default 1) to disable IFAULT HI if add ISN choke
- #Circuit Design
- 1. ACOK, ILIM pull high voltage need base on 3/5v enable control
- 2. Use 10K10 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 0.22U can't be changed. (Wrong adapter concern)
- 5. For the design, need double confirm PQ202,PQ203,PQ204 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. BATOVLP : 103~106%
- 6. BATLOWV : 2.5V

Module model information

 BQ24725A_V1.mdd

 BQ24725A_V2.mdd

BQ24725A_V1.mdd
BQ24725A_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

- ```

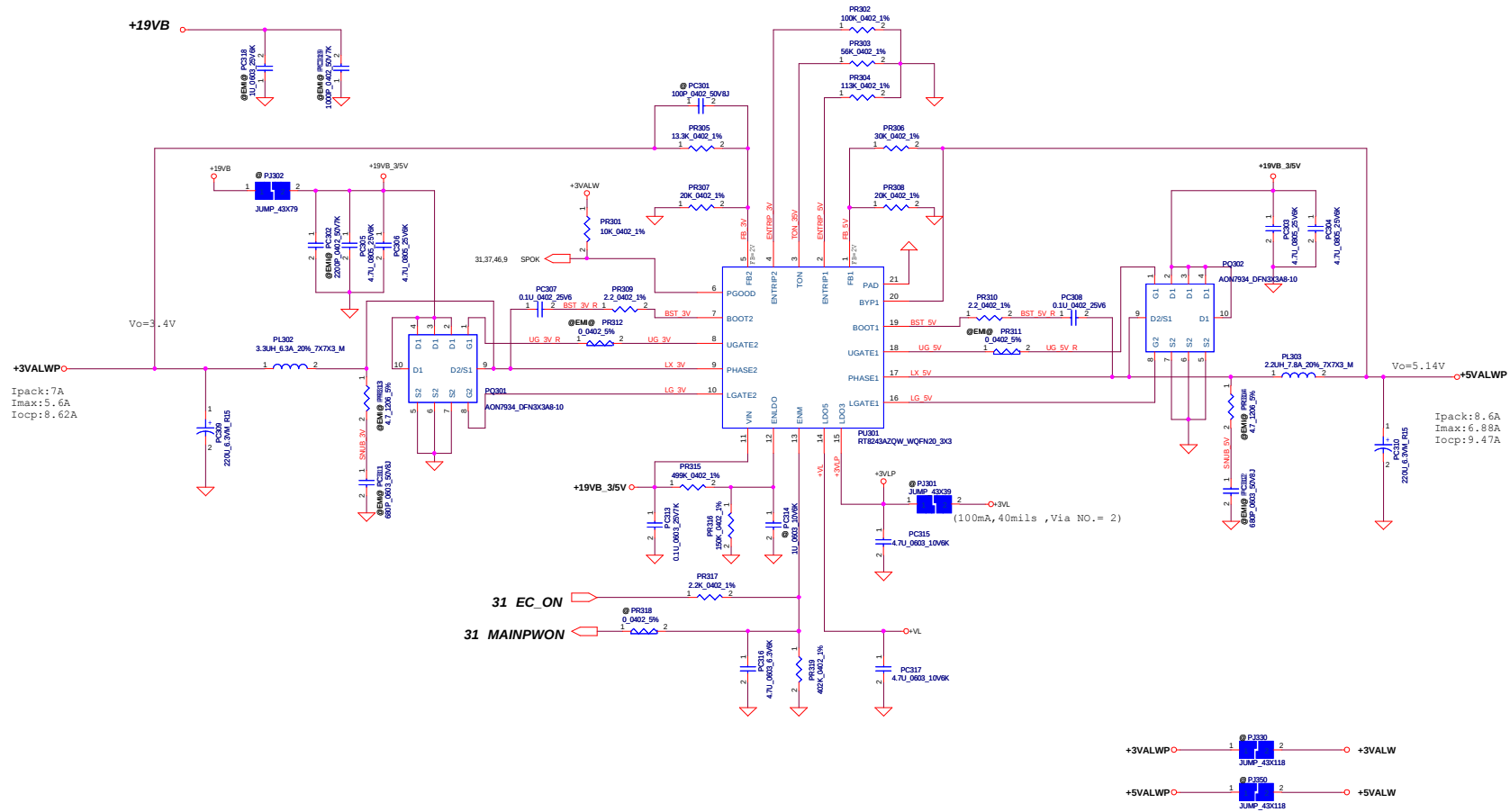
Design Notes
#For 65 /90W system, 3S1P/3S2P battery
Maximum Charging current 3.5A
Maximum Battery discharge power 55W.

#Register Setting
1. 0X12 bit8 set 0 (default 1) to disable IFAULT HI if add ISN choke
#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 0.22uF can't be changed. (Wrong adapter concern)
5. For the design, need double confirm PQ202,PQ203,PQ204 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 : 150mV (default)

```

|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            |                                                   |                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------|------------|---------------------------------------------------|----------------------------|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | Compal Secret Data |            | <b>Compal Electronics, Inc.</b><br><b>CHARGER</b> |                            |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2015/10/08 | Deciphered Date    | 2012/07/02 | Title                                             |                            |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Rev                                               | 01                         |

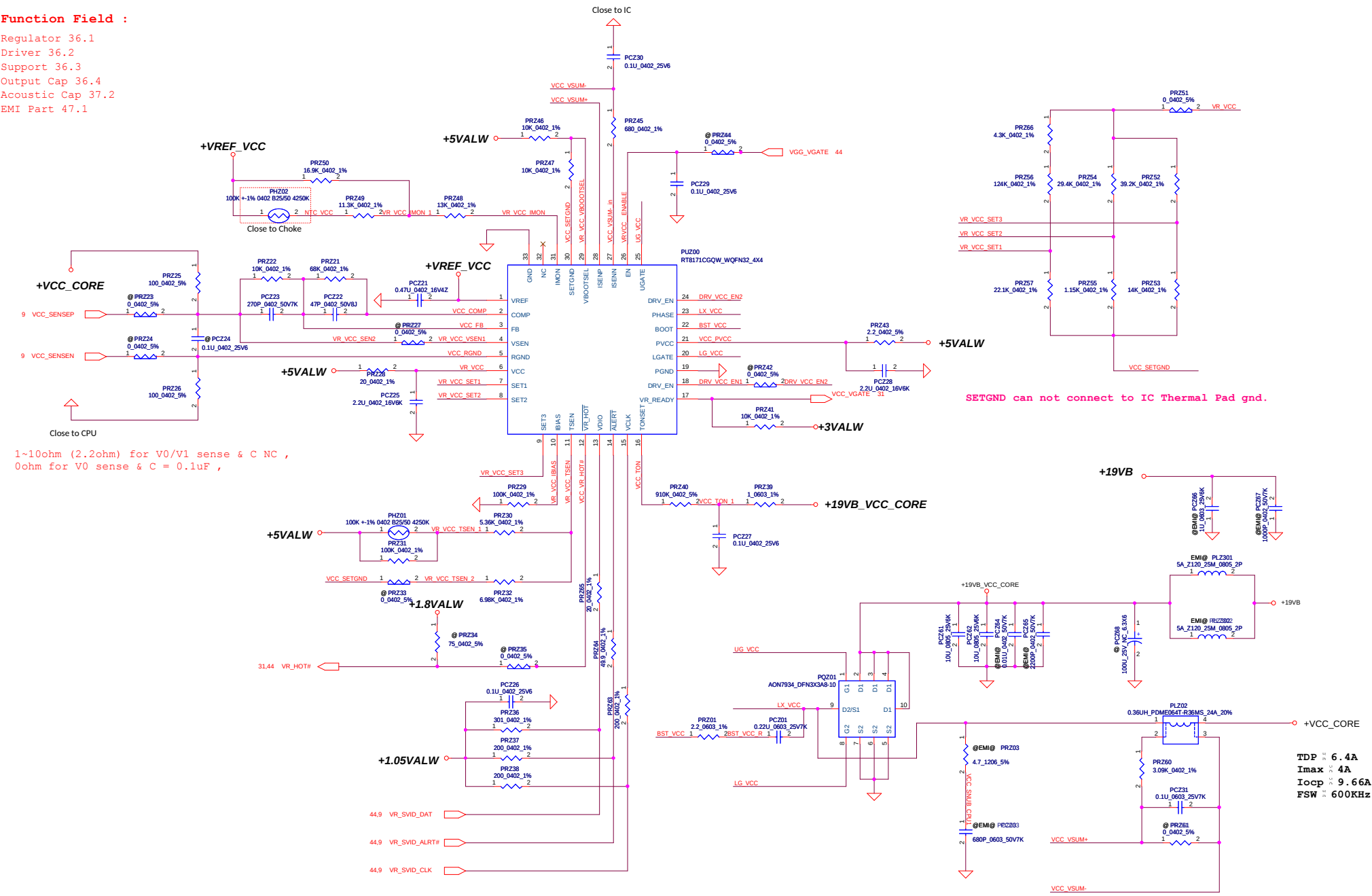




| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | Compal Secret Data |            | Compal Electronics, Inc. |                 |
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| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2015/10/08 | Deciphered Date    | 2016/08/06 | Title                    | 3VALW/5VALW     |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Date                     | Sheet 41 of 52  |

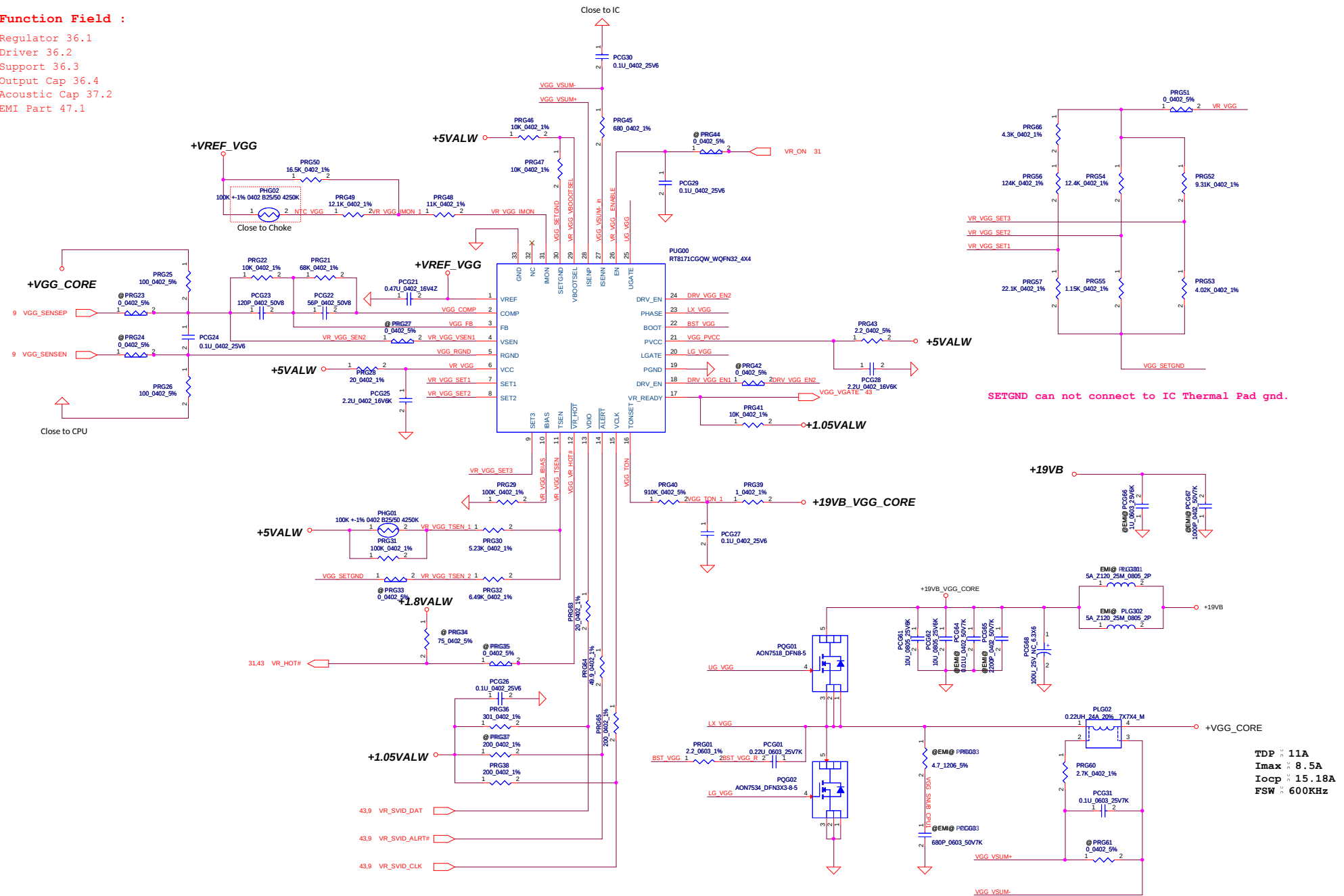


Function Field :  
Regulator 36.1  
Driver 36.2  
Support 36.3  
Output Cap 36.4  
Acoustic Cap 37.2  
EMI Part 47.1

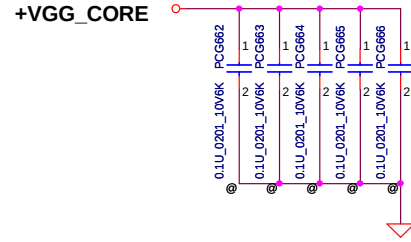
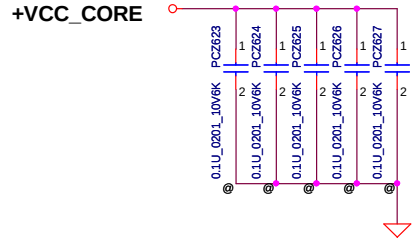
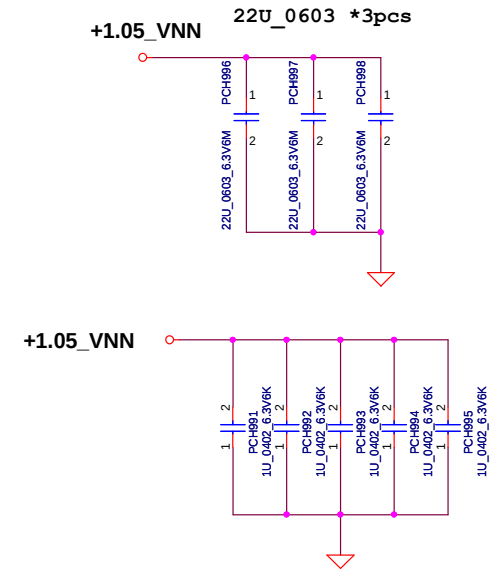
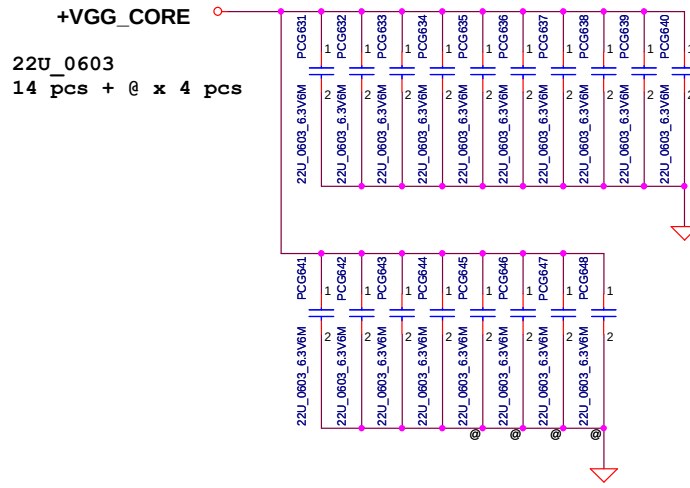
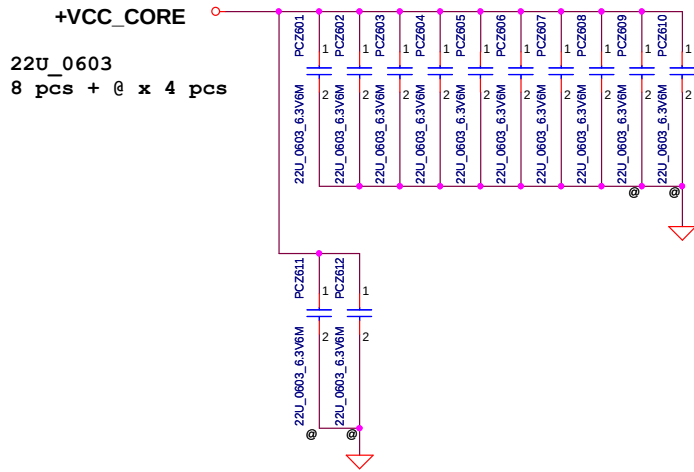


| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | Compal Secret Data |            | Title            |                 |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Date:            | Sheet 43 of 52  |

Regulator 36.1  
Driver 36.2  
Support 36.3  
Output Cap 36.4  
Acoustic Cap 37.2  
EMI Part 47.1

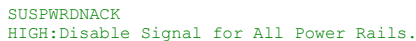


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| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       | Compal Secret Data |                 |            | Compal Electronics, Inc. |                  |     |  |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2015/10/08         | Deciphered Date | 2013/07/10 | Title                    | VGG_Core         |     |  |
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| Index                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |                 |            | Sheet 44 of 67           |                  |     |  |

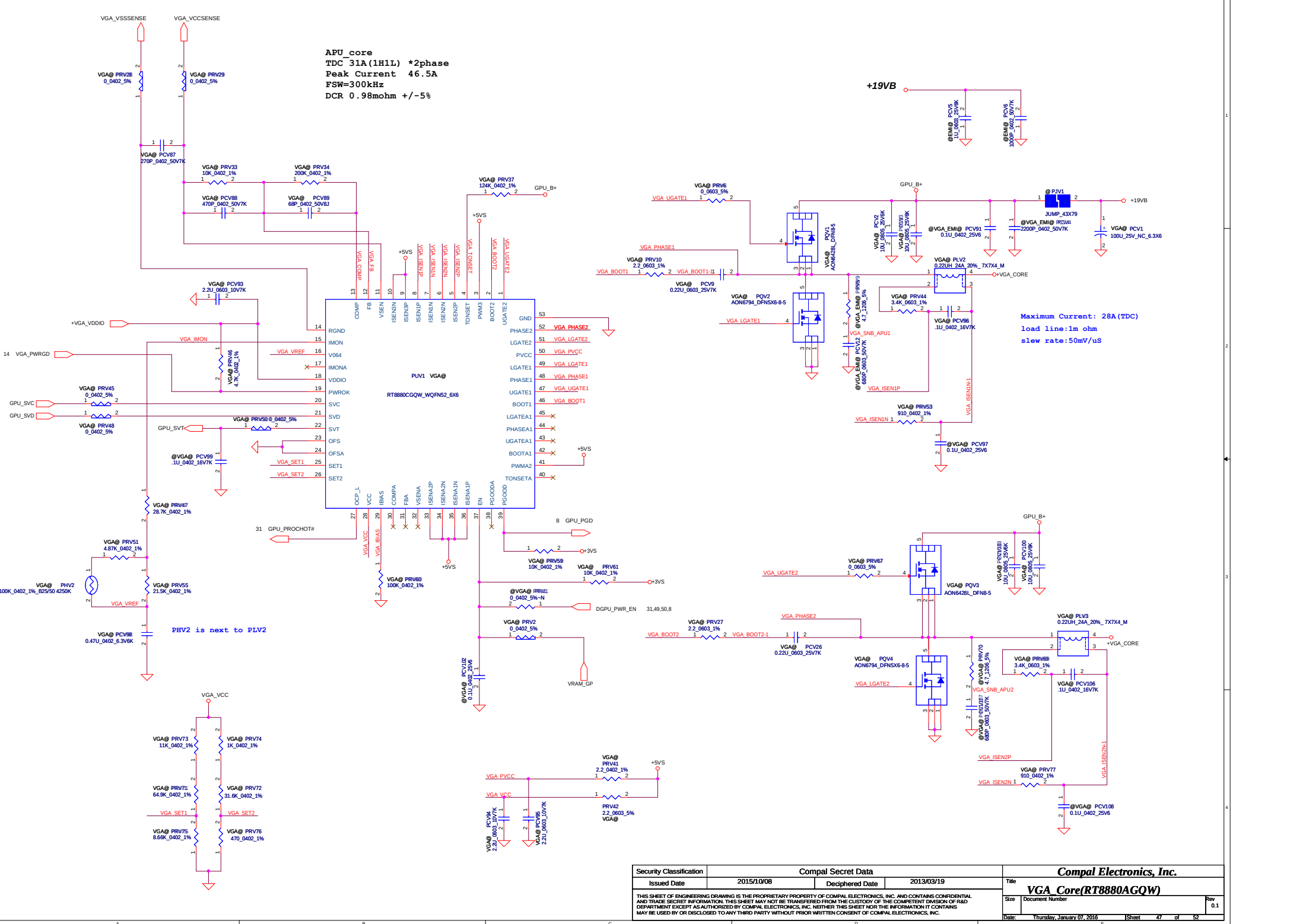


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| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | Compal Secret Data |            | Compal Electronics, Inc. |                            |       |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Date:                    | Thursday, January 07, 2016 | Sheet |

Regulator 35.51  
Support 35.52  
EMI Part 47.1

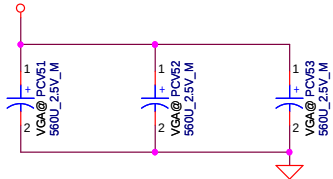


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| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       | Compal Secret Data         |                 |            | Compal Electronics, Inc. |                 |     |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2015/10/08                 | Deciphered Date | 2013/09/17 | Title                    | PWR-MOIC SYSTEM |     |
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| Date:                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Thursday, January 07, 2016 |                 | Sheet      | 46                       | of              | 52  |

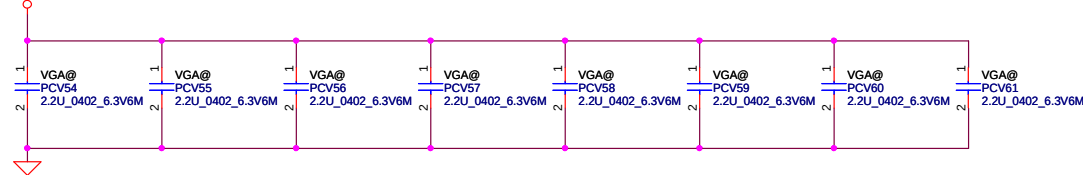


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| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       | Compal Secret Data |                 |            | Compal Electronics, Inc. |                            |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |                 |            | Size                     | Document Number            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |                 |            | Rev                      | 0.1                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |                 |            | Date                     | Thursday, January 07, 2016 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |                 |            | Sheet                    | 47 of 52                   |

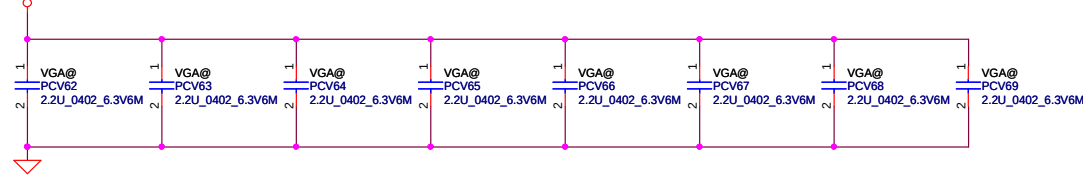
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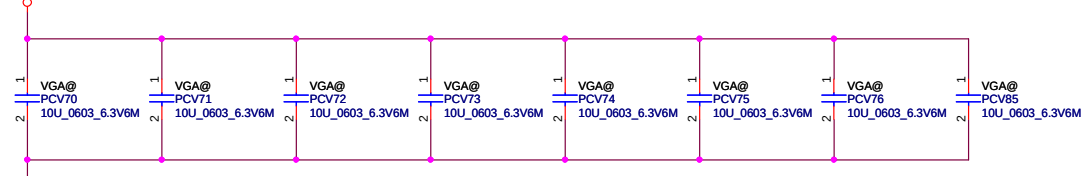
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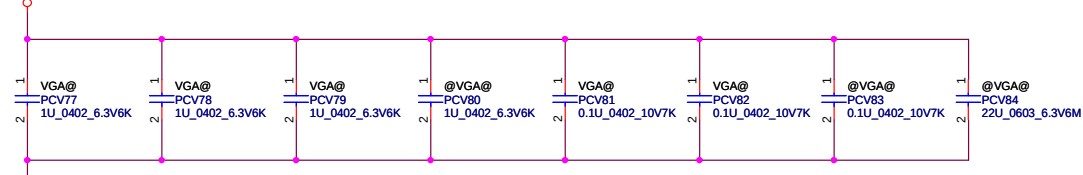
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+VGA\_CORE



+VGA\_CORE

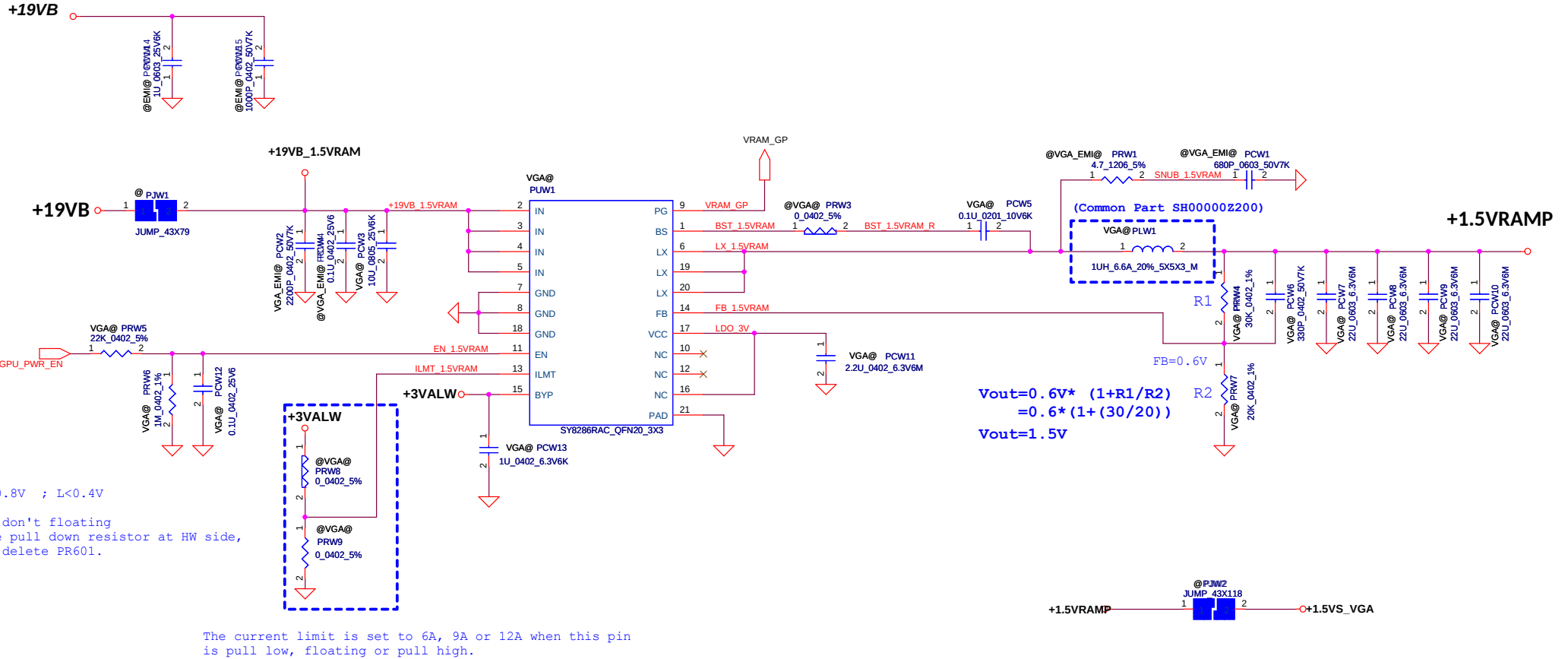


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| Security Classification |  | Compal Secret Data                                                                                                                                                                                                                                                                                                                                                                                                                                            |                 | Compal Electronics, Inc. |                            |
| Issued Date             |  | 2015/10/08                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Deciphered Date | 2016/09/30               | Title                      |
|                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                 |                          | VGA CHIP DECOUPLING        |
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|                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                 |                          | Rev                        |
|                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                 |                          | 0.1                        |
|                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                 |                          | Date:                      |
|                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                 |                          | Thursday, January 07, 2016 |
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## Module model information

SY8286\_V1\_single.mdd  
SY8286\_V1\_dual.mdd



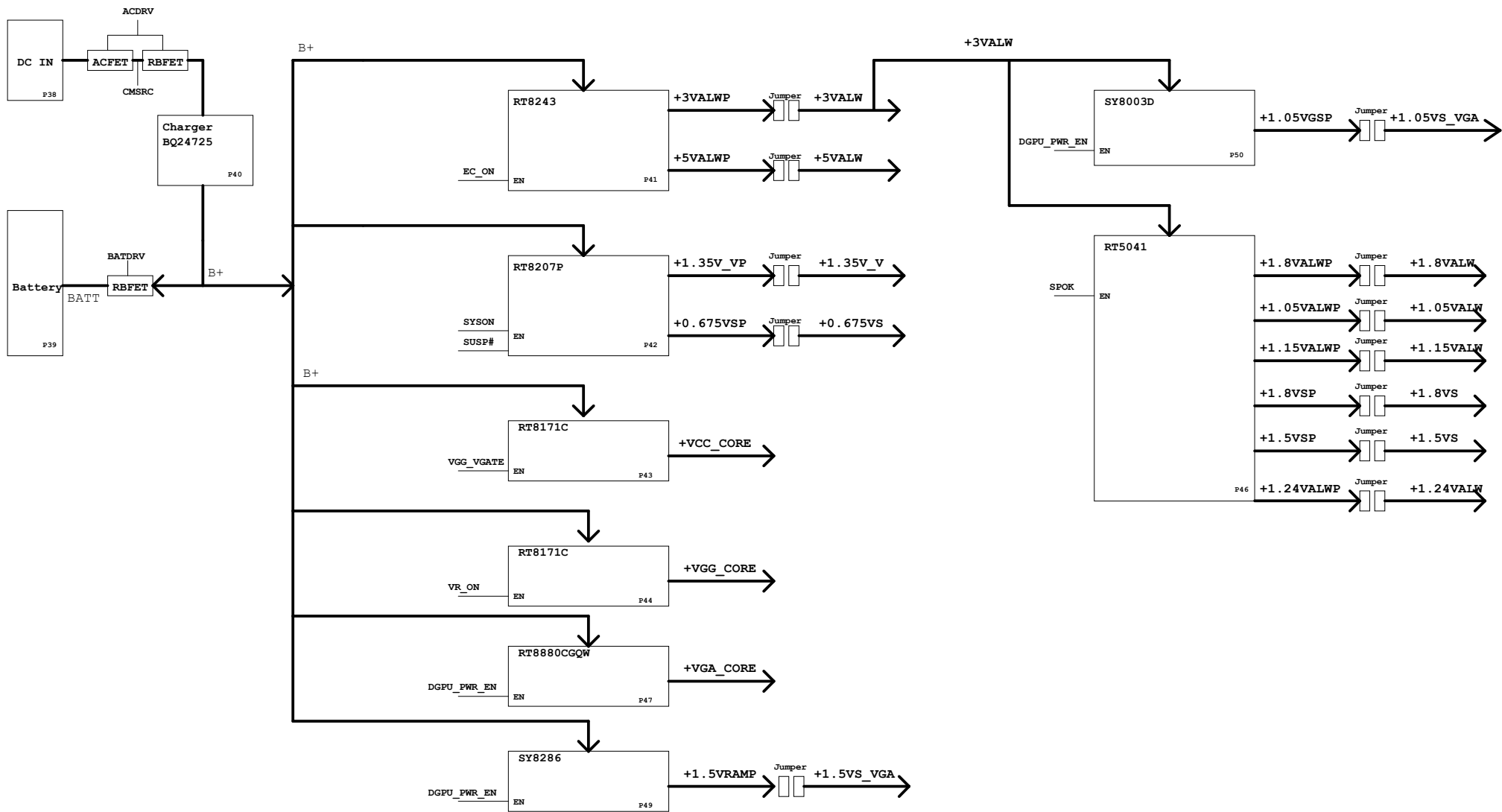
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| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | Compal Secret Data |            | APS55    Compal Electronics, Inc. |                             |         |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2015/10/08 | Deciphered Date    | 2014/05/26 | Title<br>VRAM 1V5 GPU             |                             |         |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Date: Thursday, January 07, 2016  |                             |         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Sheet 49 of 52                    |                             |         |

## SY8003 V2.mdd


$$V_{out} = 0.6V * (1 + R_{up}/R_{down})$$

Note: Use VCCSA\_SEL to switch High & Low Level for VID[1] (ie. VCCSA SEL) due to the VID[0] is don't care for this setting.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |                 |            |                  |                 |        |
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| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       | Compal Secret Data |                 |            |                  |                 |        |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |                 |            | Size A3          | Document Number | Rev 0. |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |                 |            | Intel / Braswell |                 |        |
| Date: Thursday, January 07, 2016                                                                                                                                                                                                                                                                                                                                                                                                                              |                    |                 |            | Sheet            | 50              | of 52  |



|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            |                          |                             |
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| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | Compal Secret Data |            | Compal Electronics, Inc. |                             |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2015/10/08 | Deciphered Date    | 2014/10/28 | Title                    | Power Block Diagram         |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Rev                      | 0.1                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Date:                    | Thursday, January 07, 2016  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Sheet                    | 51 of 52                    |

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

| Item | Date  | Page          | Reason for change              | Modify List                                                     | Phase |
|------|-------|---------------|--------------------------------|-----------------------------------------------------------------|-------|
| 1    | 11/16 | P47           | EE request for VGA power debug | Change PRV61 to stuff & PRV1/PCV102 to Unpop                    | SI    |
| 2    | 11/16 | P47           | EE request for VGA power debug | Add PRV2 for EE debug sequence issue                            | SI    |
| 3    | 11/24 | P44           | EMI request for debug          | remove PJG1 & add PLG301/PLG302                                 | SI    |
| 4    | 11/24 | P52           | EE request for VGA power debug | Change PRW5 0 ohm --> 22K & PCW12 0.1U to stuff                 | SI    |
| 5    | 11/24 | P43           | EMI request for debug          | remove PJZ1 & add PLZ301/PLZ302                                 | SI    |
| 6    | 12/29 | P47           | Modify OCP value               | Change PRV73 1K-->11K, PRV71 124K-->64.9K<br>PRV75 2.8K-->8.66K | PV    |
| 7    | 12/29 | P40,P42       | Diner cost down item           | Change PCB17, PCM4 0603 to 0402, PCM5 0805 to 0603              | PV    |
| 8    | 12/30 | P43, P44, P47 | Change 0 ohm to short pad      | PRZ51, PRG51, PRV28, PRV29, PRV45, PRV48, PRV50, PRV2           | PV    |
| 9    | 1/7   | P49           | Change 0 ohm to short pad      | PRW8                                                            | PV    |
| 10   |       |               |                                |                                                                 |       |
| 11   |       |               |                                |                                                                 |       |
| 12   |       |               |                                |                                                                 |       |
| 13   |       |               |                                |                                                                 |       |
| 14   |       |               |                                |                                                                 |       |
| 15   |       |               |                                |                                                                 |       |
| 16   |       |               |                                |                                                                 |       |
| 17   |       |               |                                |                                                                 |       |
| 18   |       |               |                                |                                                                 |       |
| 19   |       |               |                                |                                                                 |       |
| 20   |       |               |                                |                                                                 |       |
| 21   |       |               |                                |                                                                 |       |