

Compal Confidential

ZIVY2/ZIVY3 M/B Schematics Document

Intel Shark Bay + N15P-GX
(Crescent Bay + N15P-GX)

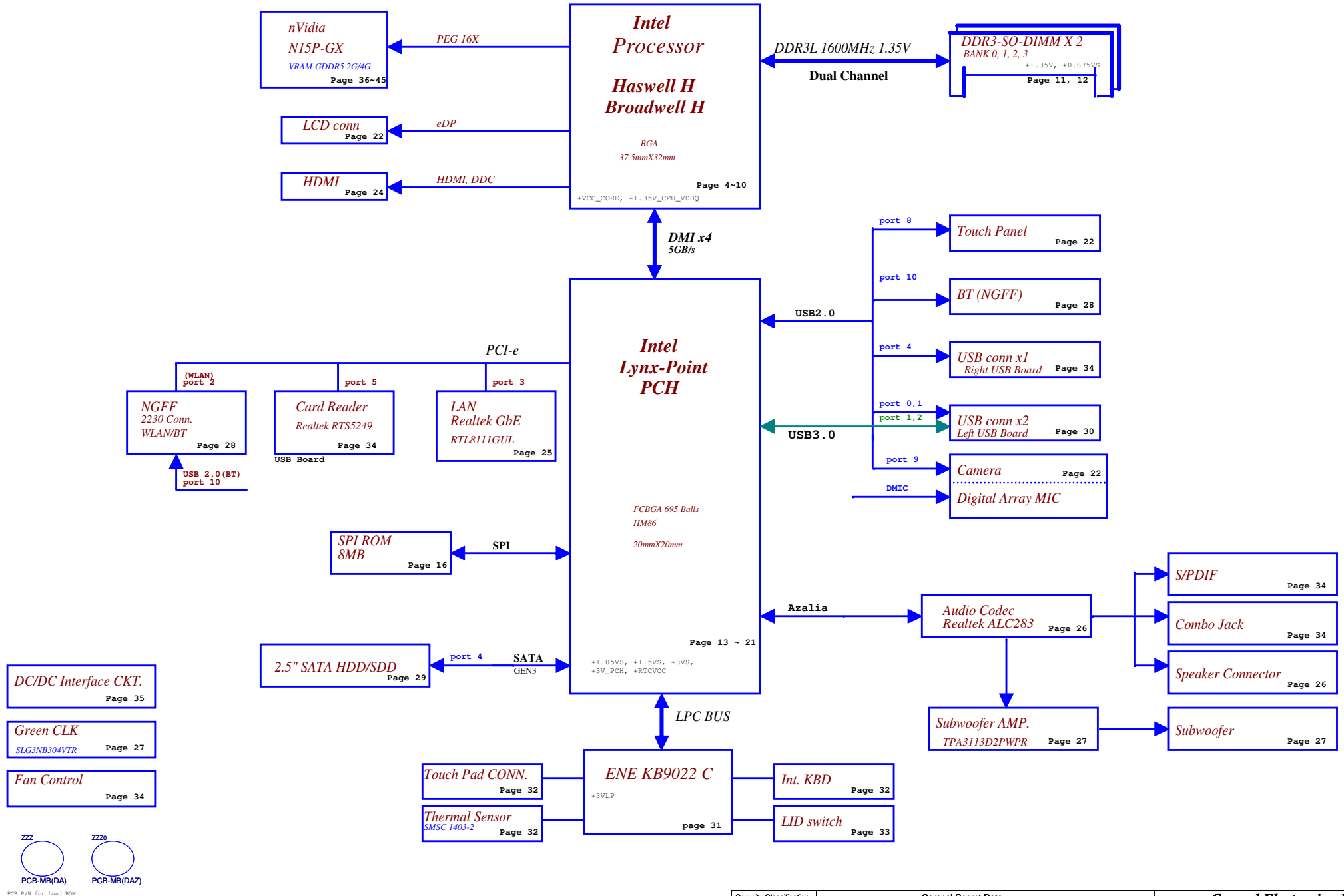
LA-B111P

2014-02-25

REV: 1.0

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Shark Bay/Crescent Bay



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(O MEANS ON X MEANS OFF)

USB Port Table

Board ID Table for AD channel

Symbol Note :



Install below 43 level BOM structure for ver. 0.1

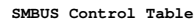
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EC SM Bus2 address

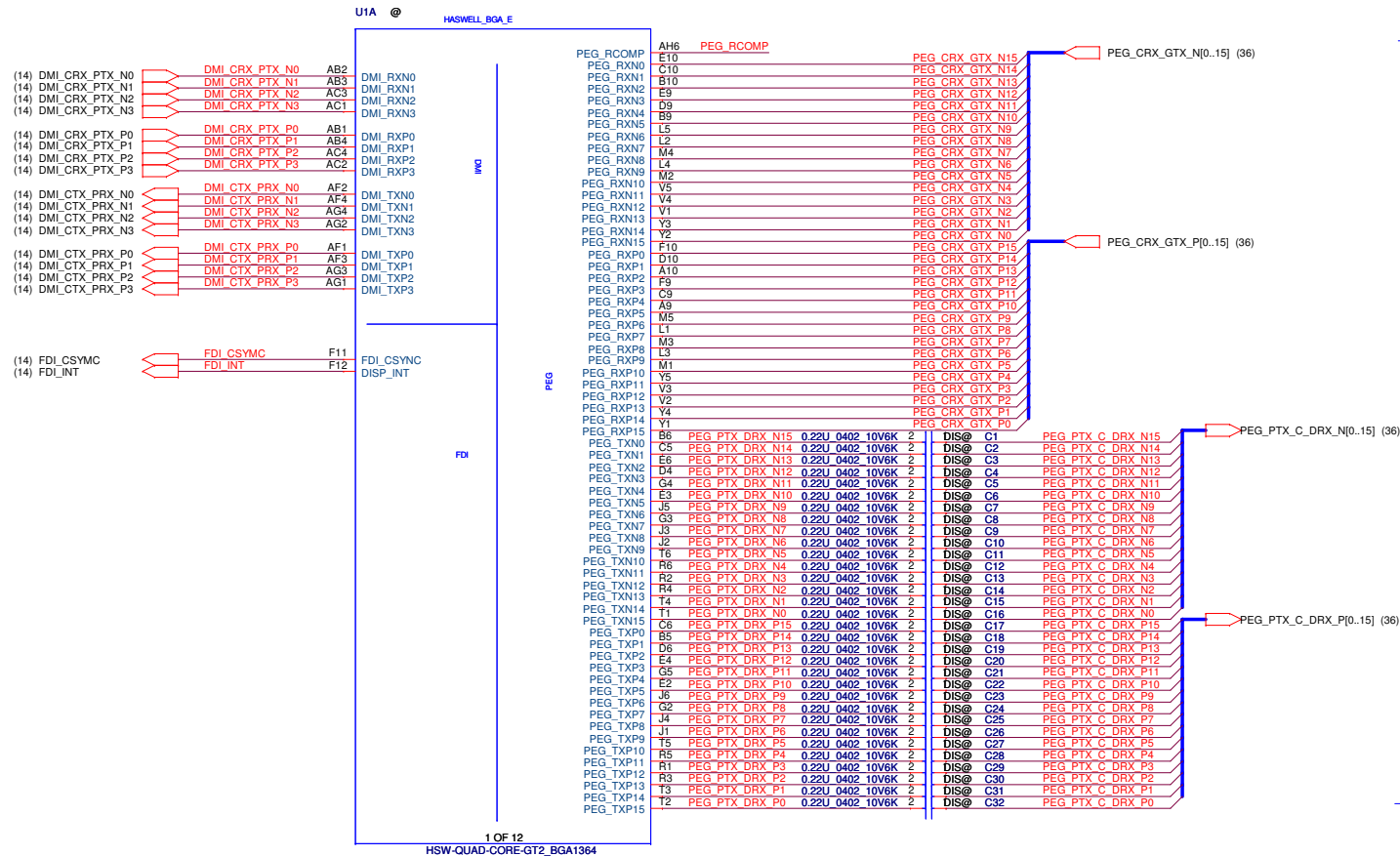
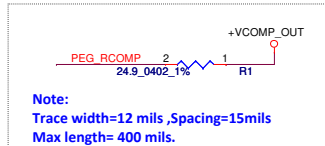
PCH SM Bus address

PCH SML0 Bus address

CPU part



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				Document Number	LA-B11IP	Rev
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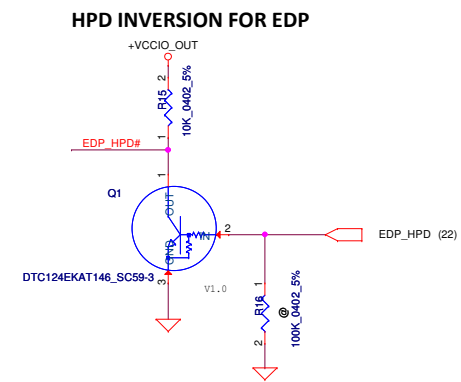
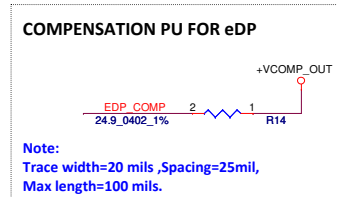
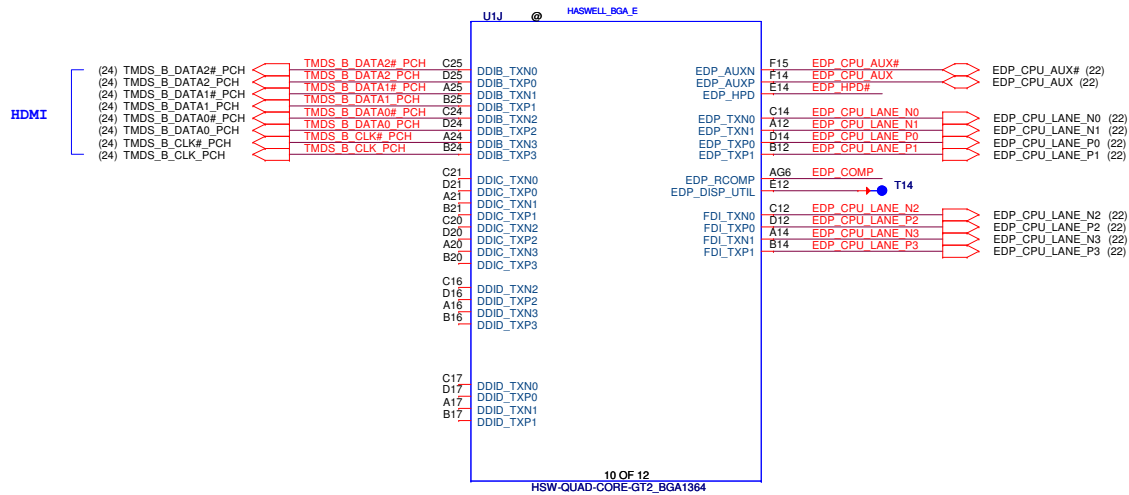


DGPU
PEG

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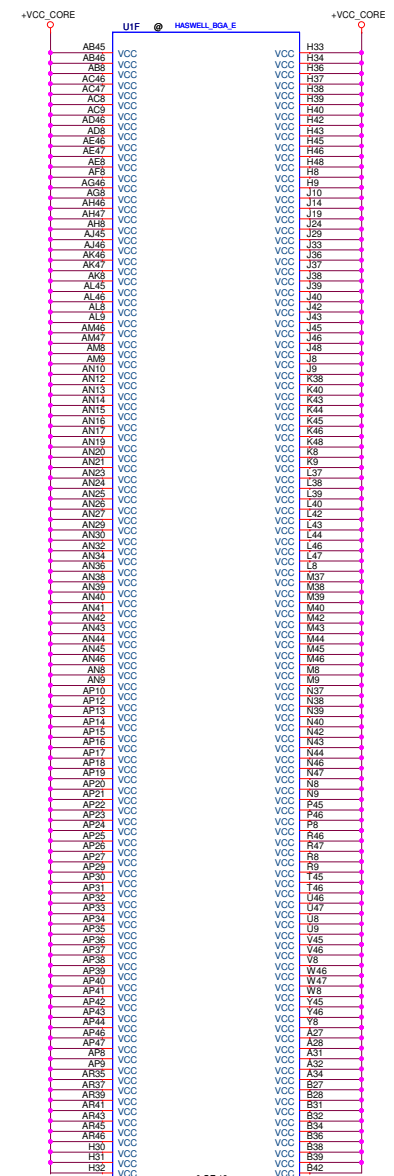
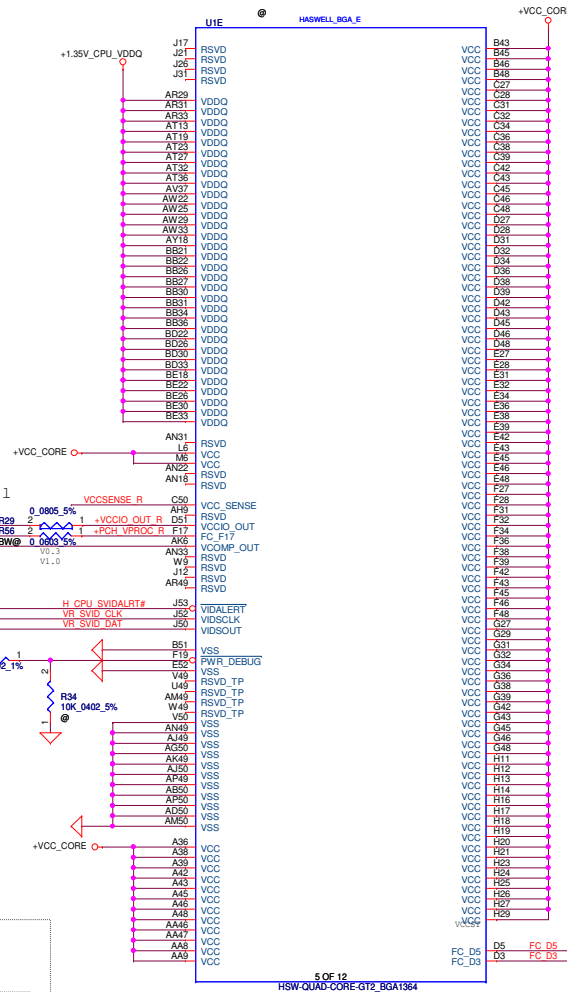
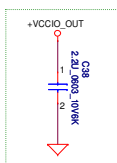
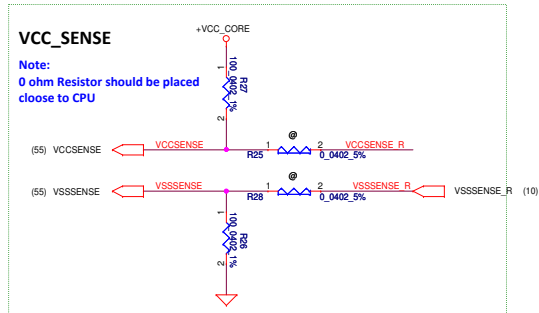


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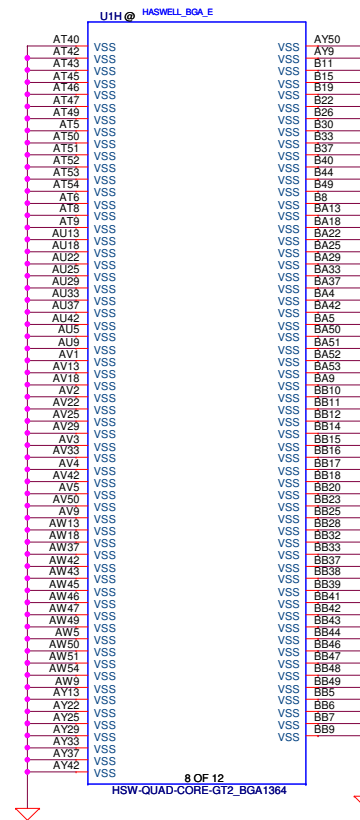
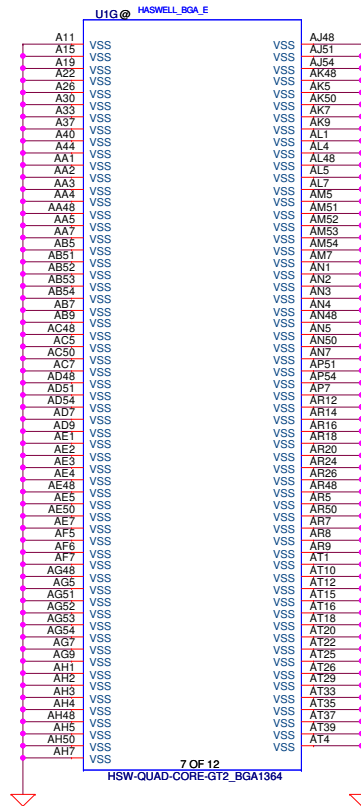
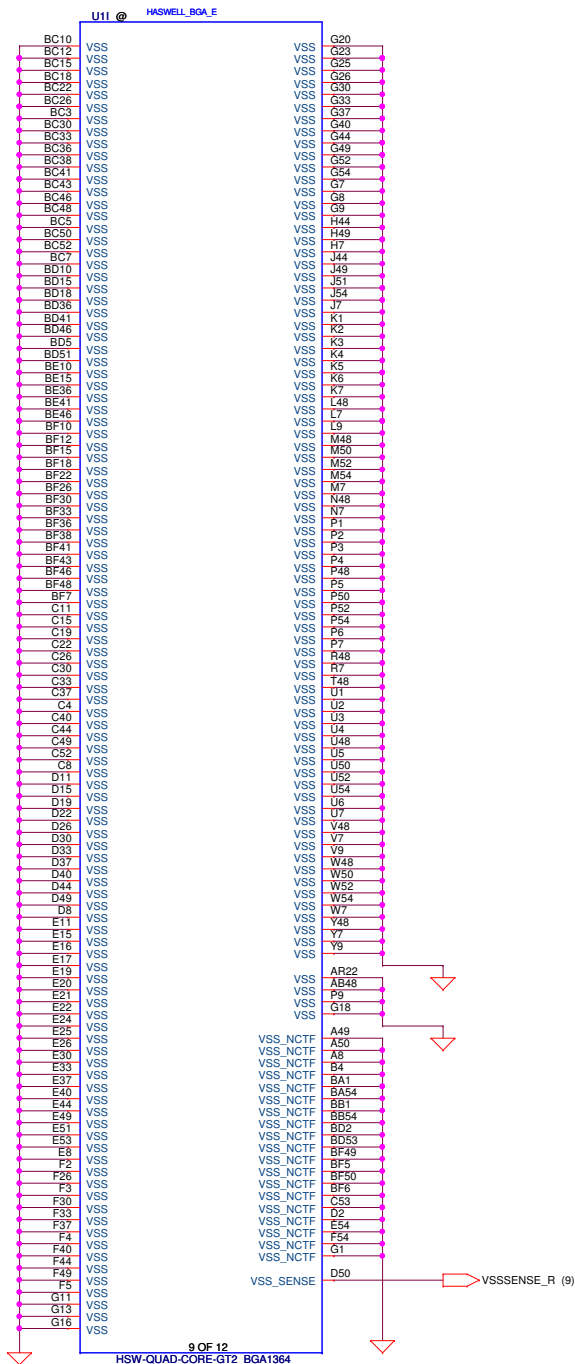


HPD is a active-high signal from device.
 The HPD processor input is active-low signal.

Note:
Intel Shark Bay
Removed the S3 power reduction circuit.



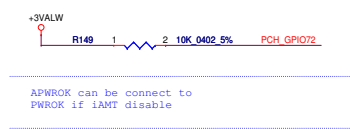
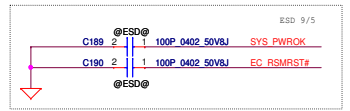
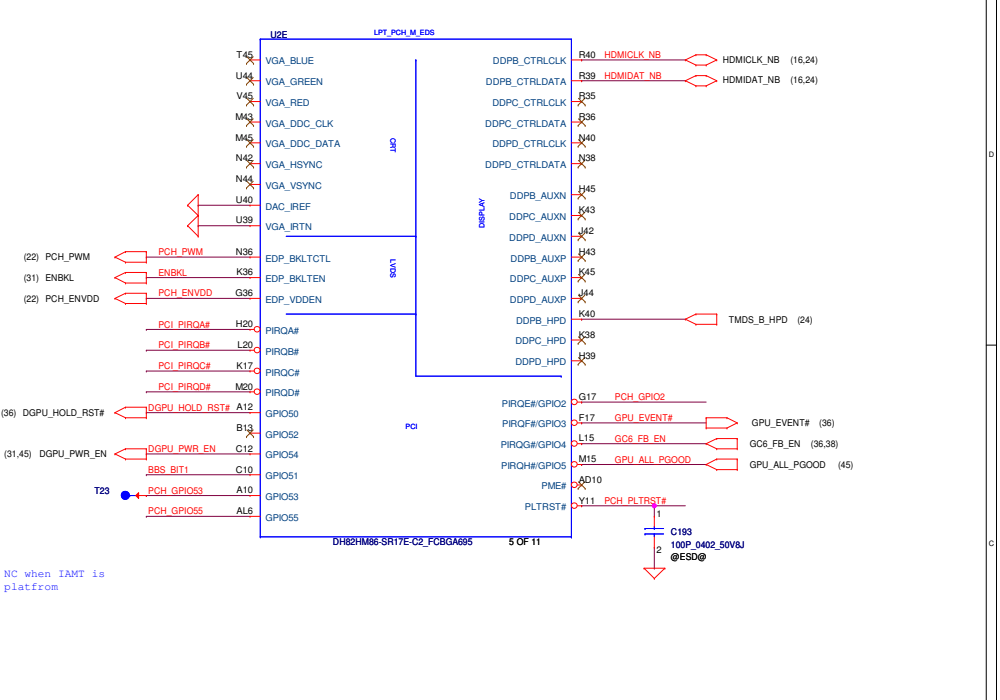
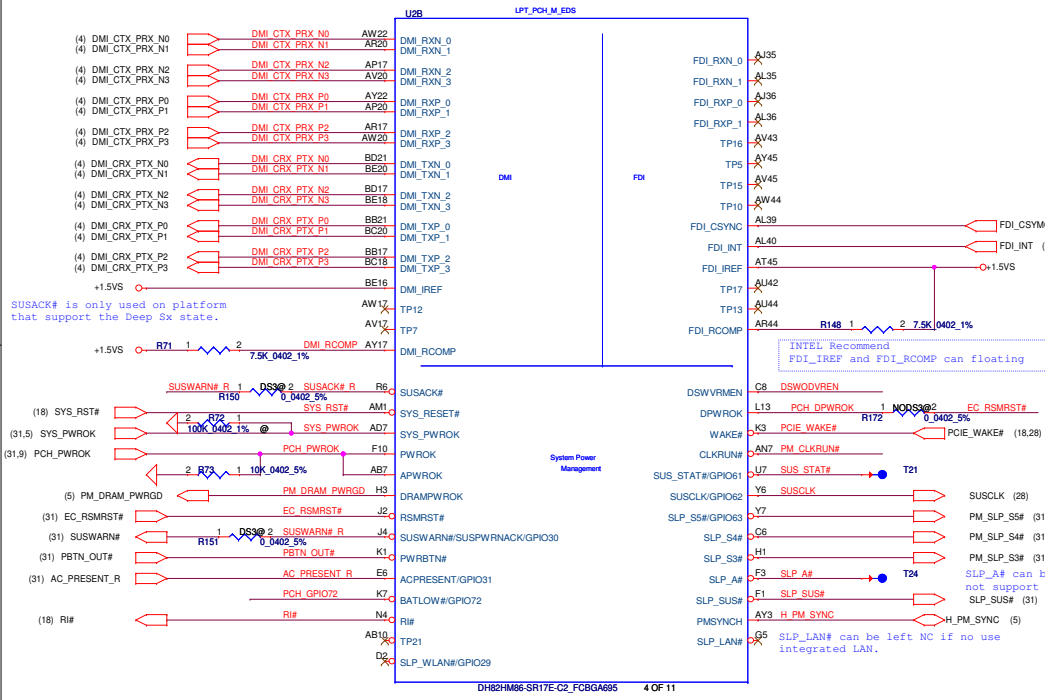
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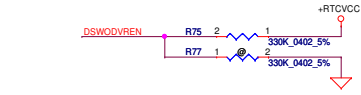
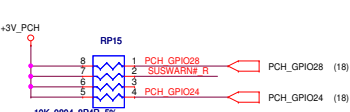
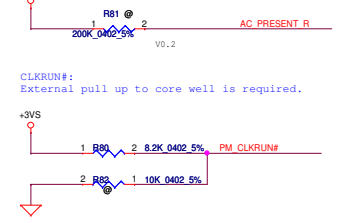


The schematic diagram shows a 10-bit DAC circuit. A 1.35V DC source is connected to a network of resistors and capacitors. The network consists of a series of resistors (C101 to C109) and capacitors (C100 to C108) connected to a common output node. The resistors are labeled with values: C101 (100.0603, 6.336M), C102 (100.0603, 6.336M), C103 (100.0603, 6.336M), C104 (100.0603, 6.336M), C105 (100.0603, 6.336M), C106 (100.0603, 6.336M), C107 (0.110, 0.002, 167K), C108 (0.110, 0.002, 167K), and C109 (0.110, 0.002, 167K). The capacitors are labeled with values: C100 (100.0603, 6.336M), C101 (100.0603, 6.336M), C102 (100.0603, 6.336M), C103 (100.0603, 6.336M), C104 (100.0603, 6.336M), C105 (100.0603, 6.336M), C106 (100.0603, 6.336M), C107 (0.110, 0.002, 167K), C108 (0.110, 0.002, 167K), and C109 (0.110, 0.002, 167K). The output node is connected to a common ground.

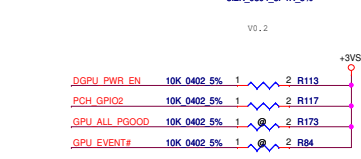
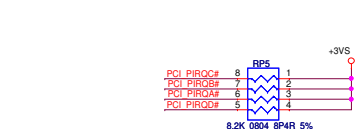
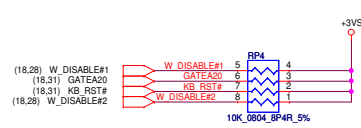


APWROK can be connect to PWROK if iAMT disable

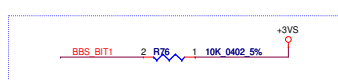
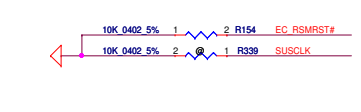
SUSACK# and SUSWARN# can be tied together if EC does not want to involve in the handshake mechanism for the Deep Sleep state entry and exit.



DSWODVREN - On Die DSW VR Enable
H : Enable (DEFAULT)
L : Disable



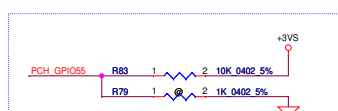
Follow Intel schematic review-0930



BBS_BIT1

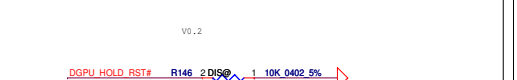
BBS_BIT1	SATA_SLDP (BBS_BIT0)	Boot BIOS Location
0	0	LPC
0	1	Reserved (NAND)
1	0	PCI
1	1	* SPI

GPIO51 needs pull up 10k to ensure proper behavior.

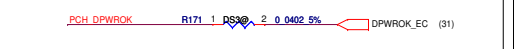


GPIO55

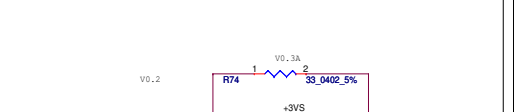
Low=A16 swap override/Top-Block Swap Override jumper
PCI_GNT3#
Low=A16 swap override/Top-Block Swap Override enabled
High=Default *



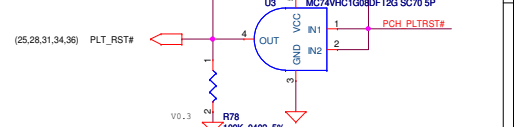
DGPU_HOLD_RST#



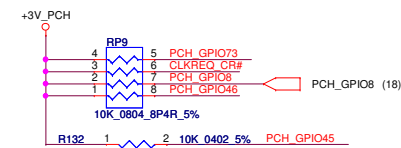
PCH_DPWROK



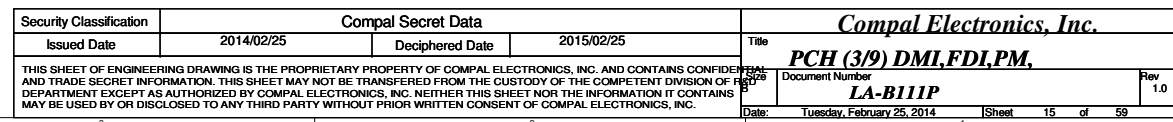
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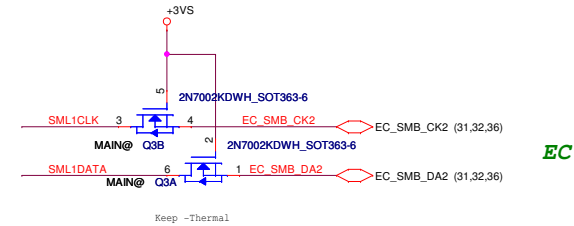
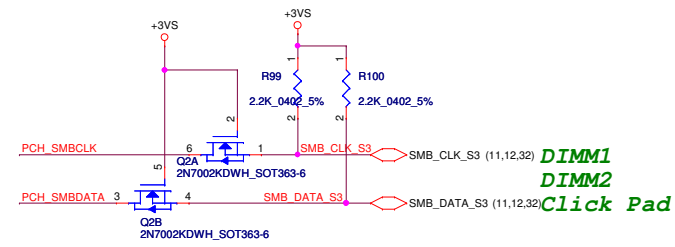
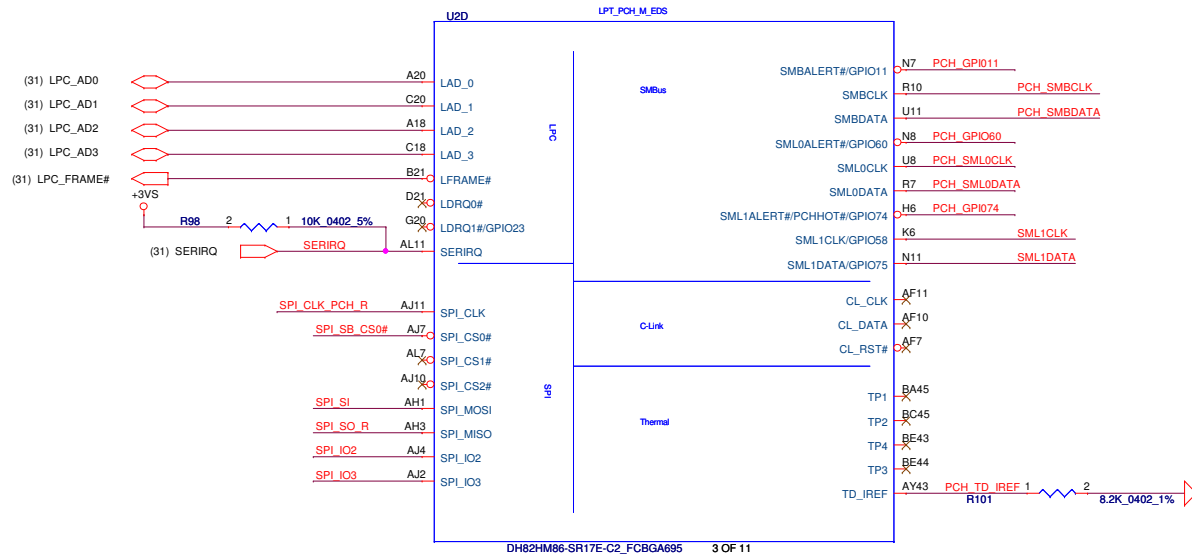


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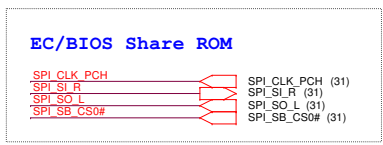
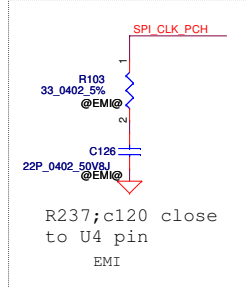
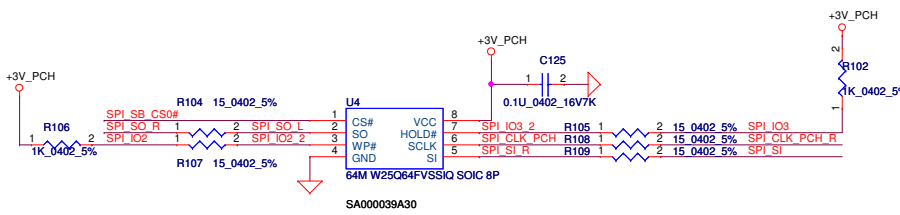


XTAL25_IN R156 1 GCLK@ 2 0.0402 5% CLK 25M PCH XIN (27)

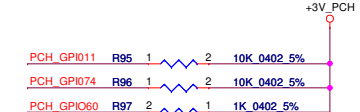
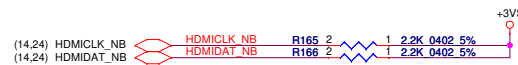
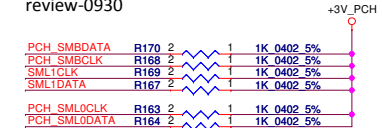




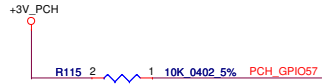
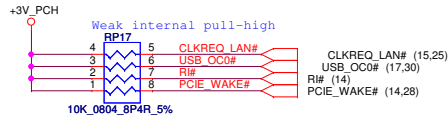
PCH SMBCLK	R162	1	@	2	0.0402 5%	SMB_CLK_S3
PCH SMBDATA	R160	1	@	2	0.0402 5%	SMB_DATA_S3
SML1CLK	R161	1	@	2	0.0402 5%	EC SMB CK2
SML1DATA	R159	1	@	2	0.0402 5%	EC SMB DA2



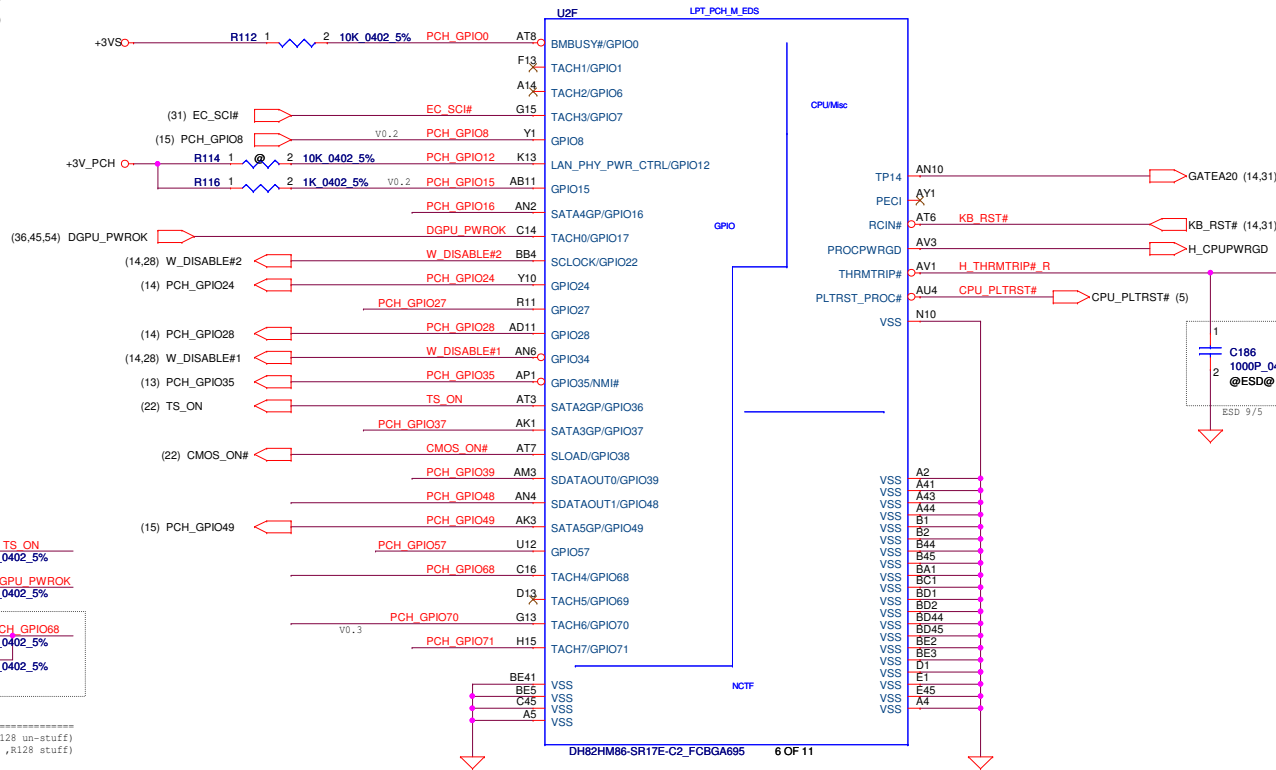
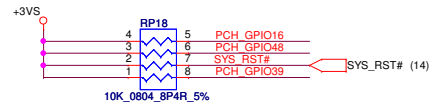
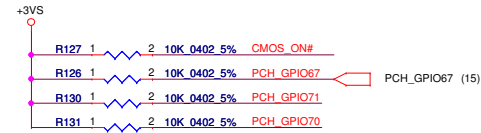
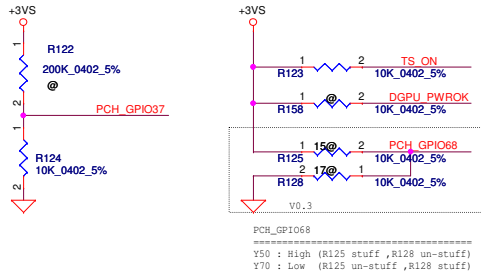
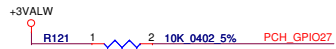
Follow Intel schematic review-0930



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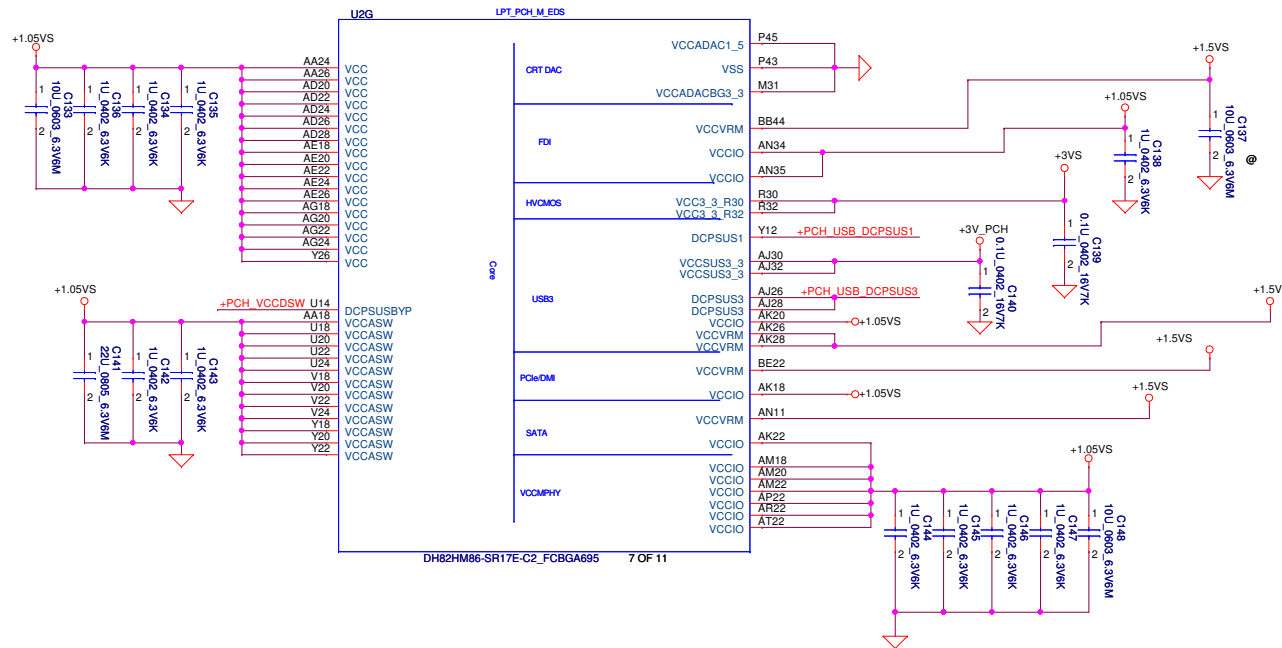


★ PCH_GPIO27 (Have internal Pull-High)
High: VCCVRM VR Enable
Low: VCCVRM VR Disable

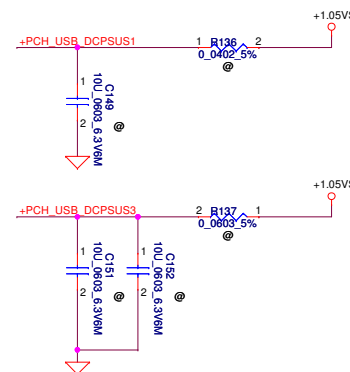
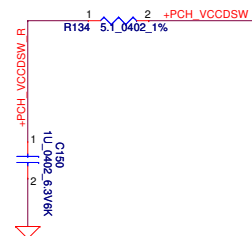


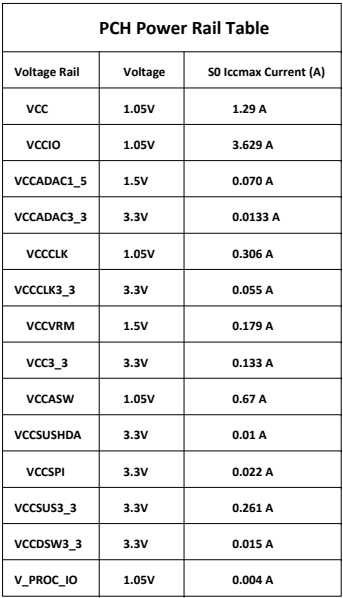
SKU	High Speed I/O Ports																	
	Port 1	Port 2	Port 3	Port 4	Port 5	Port 6	Port 7	Port 8	Port 9	Port 10	Port 11	Port 12	Port 13	Port 14	Port 15	Port 16	Port 17	Port 18
HM86	USB 3.0 Port 1	USB 3.0 Port 2	NA	NA	USB 3.0 Port 3	USB 3.0 Port 4	PCIe* Port 3	PCIe* Port 4	PCIe* Port 5	PCIe* Port 6	PCIe* Port 7	PCIe* Port 8	SATA 6Gb/s Port 4	SATA 6Gb/s Port 5	SATA 3Gb/s Port 0	NA	SATA 3Gb/s Port 2	NA

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PCH Power Rail Table		
Voltage Rail	Voltage	50 Iccmax Current (A)
VCC	1.05V	1.29 A
VCCIO	1.05V	3.629 A
VCCADAC1_5	1.5V	0.070 A
VCCADAC3_3	3.3V	0.0133 A
VCCCLK	1.05V	0.306 A
VCCCLK3_3	3.3V	0.055 A
VCCVRM	1.5V	0.179 A
VCC3_3	3.3V	0.133 A
VCCASW	1.05V	0.67 A
VCCSUSHDA	3.3V	0.01 A
VCCSPI	3.3V	0.022 A
VCCSUS3_3	3.3V	0.261 A
VCCDSW3_3	3.3V	0.015 A
V_PROC_IO	1.05V	0.004 A

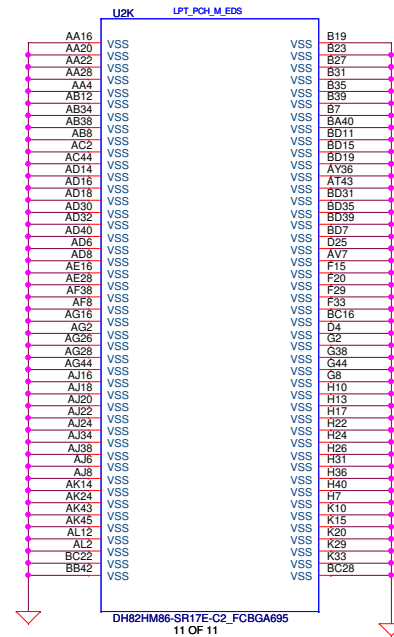
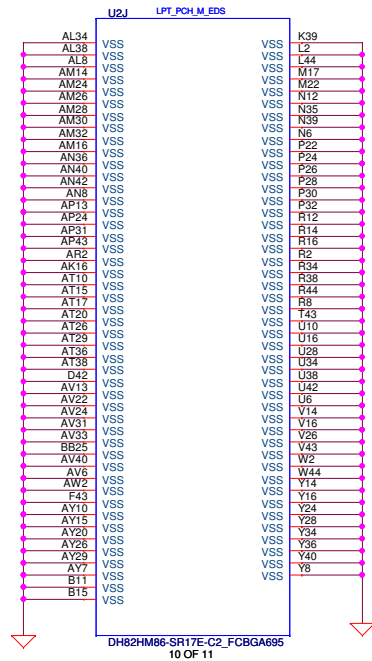




PCH Power Rail Table		
Voltage Rail	Voltage	S0 Iccmax Current (A)
VCC	1.05V	1.29 A
VCCIO	1.05V	3.629 A
VCCADAC1_5	1.5V	0.070 A
VCCADAC3_3	3.3V	0.0133 A
VCCCLK	1.05V	0.306 A
VCCCLK3_3	3.3V	0.055 A
VCCVRM	1.5V	0.179 A
VCC3_3	3.3V	0.133 A
VCCASW	1.05V	0.67 A
VCCSUSHDA	3.3V	0.01 A
VCCSPI	3.3V	0.022 A
VCCSUS3_3	3.3V	0.261 A
VCCDSW3_3	3.3V	0.015 A
V_PROC_IO	1.05V	0.004 A

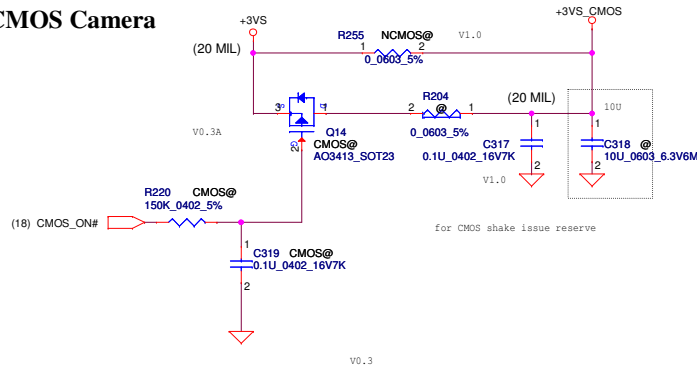
**INTEL Recommend follow 486714 DG
Different with COMPAL**

v0.2

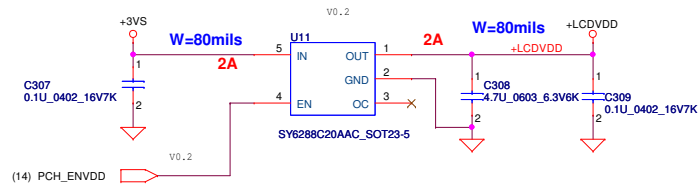


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						Document Number		LA-B111P		Rev 1.0	
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CMOS Camera



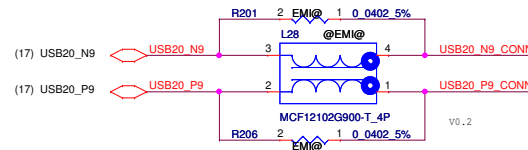
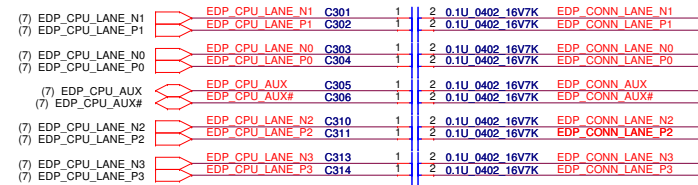
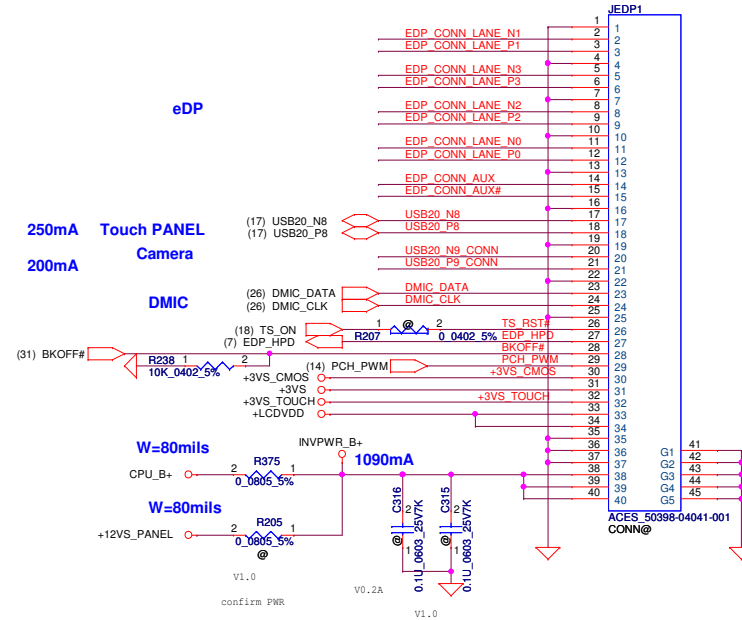
LCD POWER CIRCUIT



Touch Panel



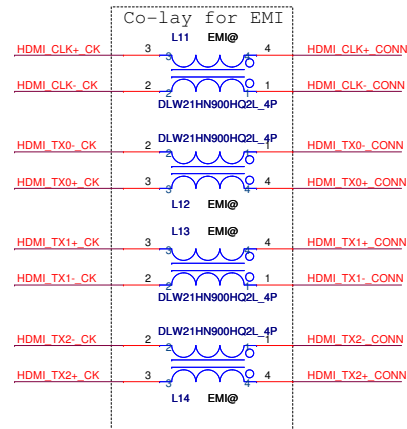
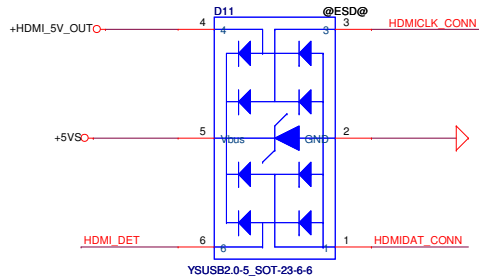
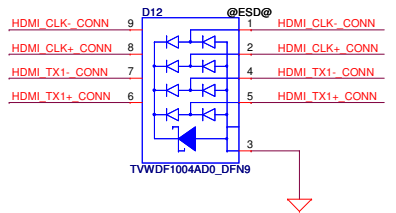
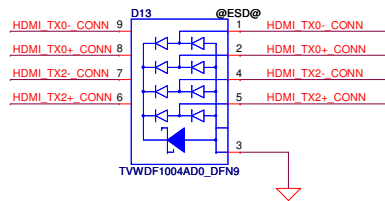
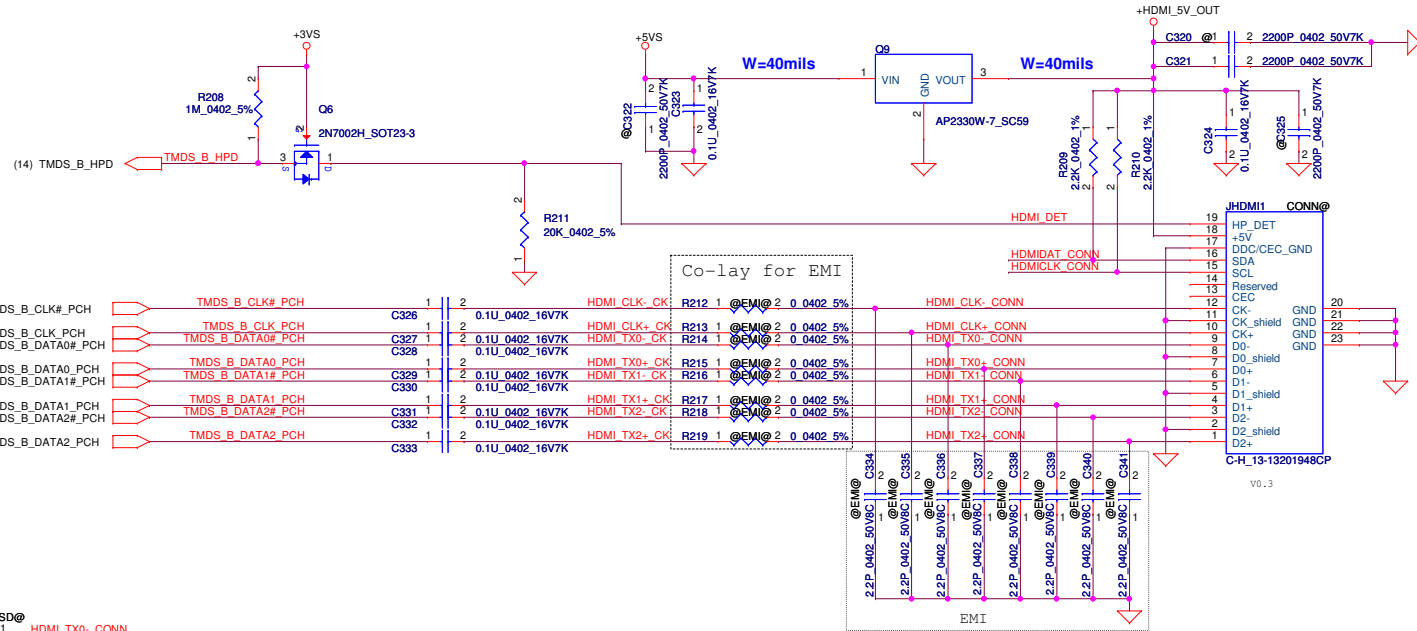
eDP
250mA Touch PANEL
200mA Camera
DMIC



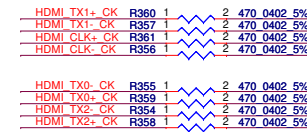
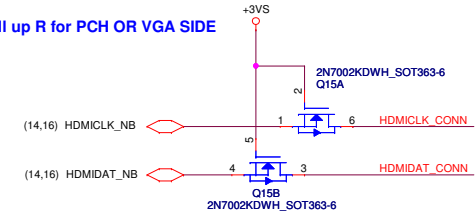
eDP Panel
CAMERA
DMIC
TOUCH SCREEN

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Issued Date	2014/02/25	Deciphered Date	2015/02/25	LCD Conn/Camera, Touch	
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HDMI Connector



Pull up R for PCH OR VGA SIDE



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				Date	Sheet
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W=60mils

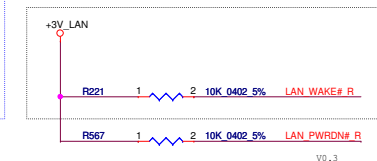
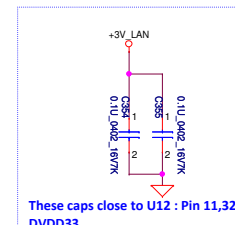
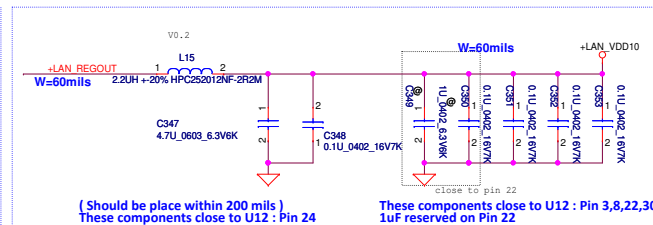
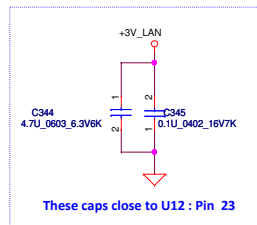
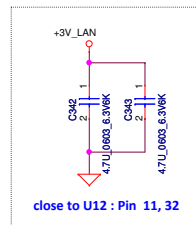
JP6 JP@

1 2

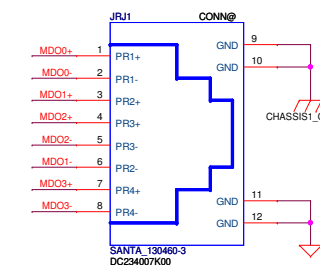
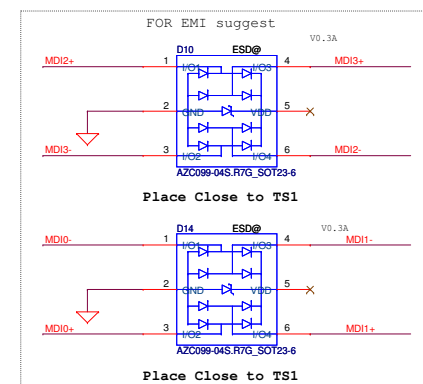
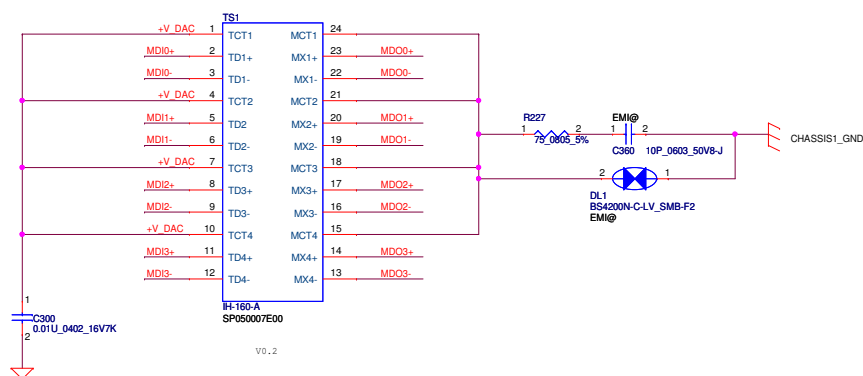
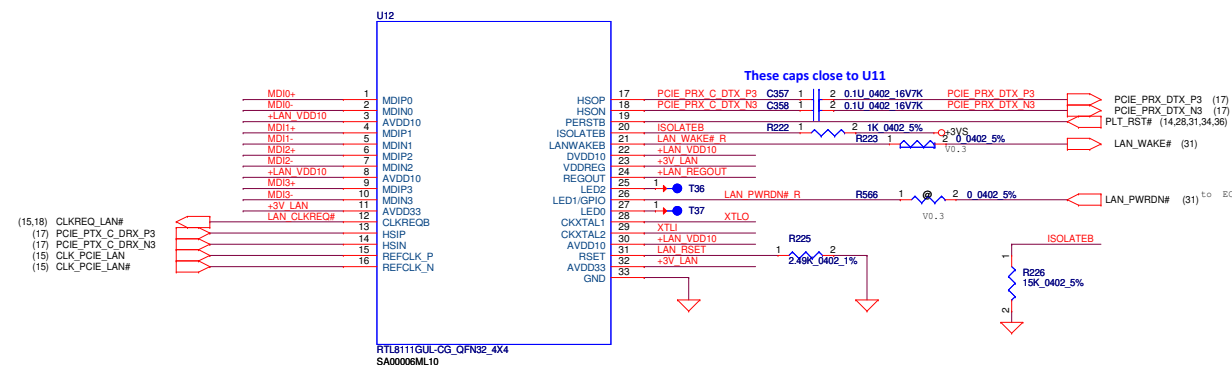
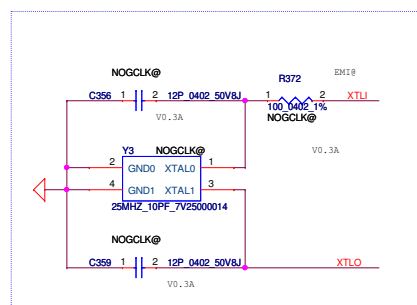
JUMP_43X39

370mA

+3V LAN

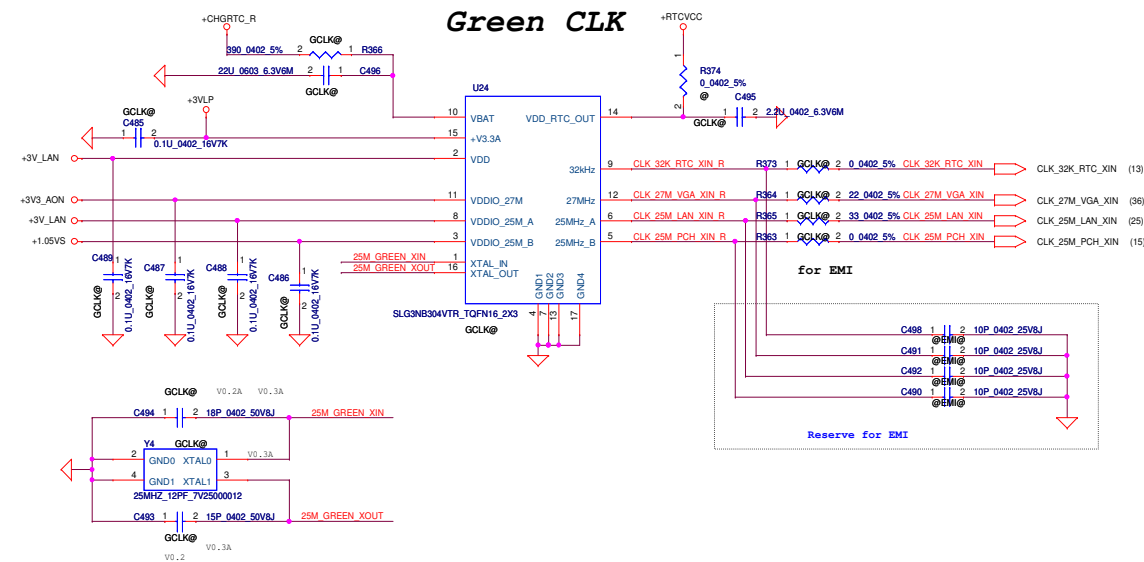
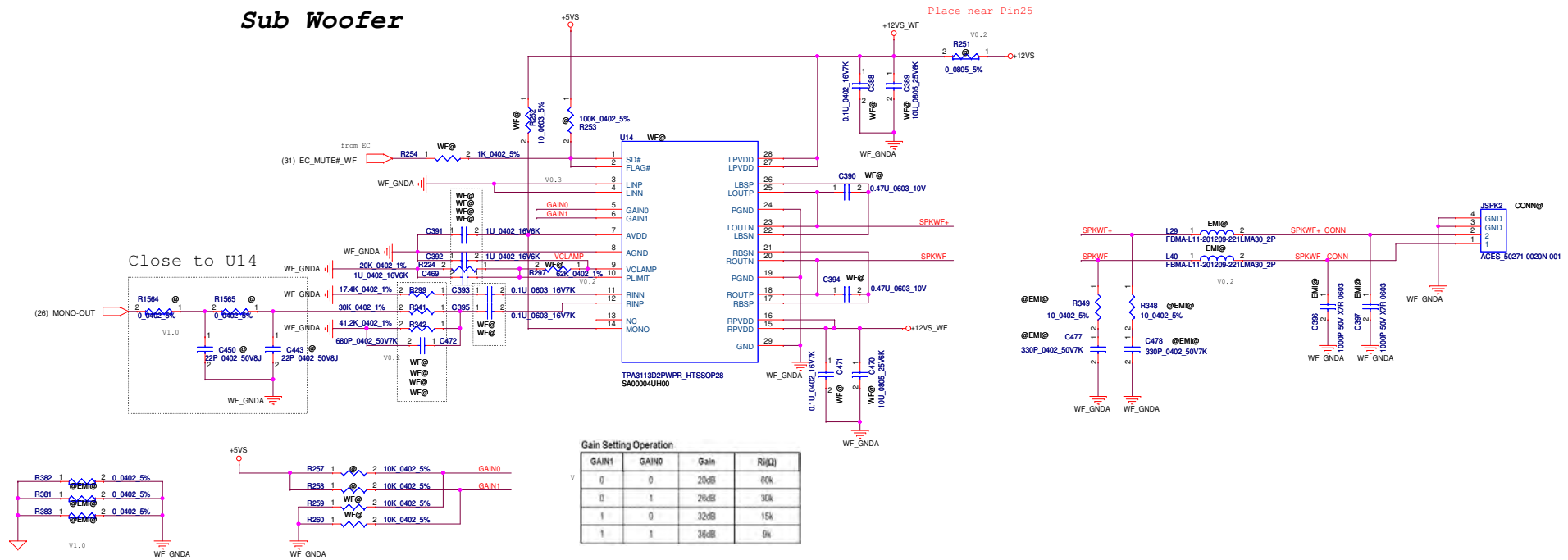


XTLI R362 1 GCLK@ 2 0 0402 5% CLK_25M_LAN_XIN (27)



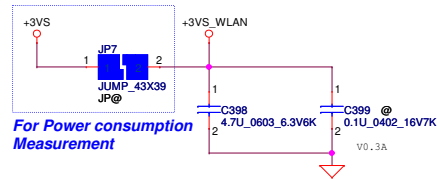
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				Custom	LA-B111P	1	
Date:	Year:	Month:	Day:	Year:	Month:	Day:	Page
	2014	02	25	2014	02	25	50

Sub Woofer

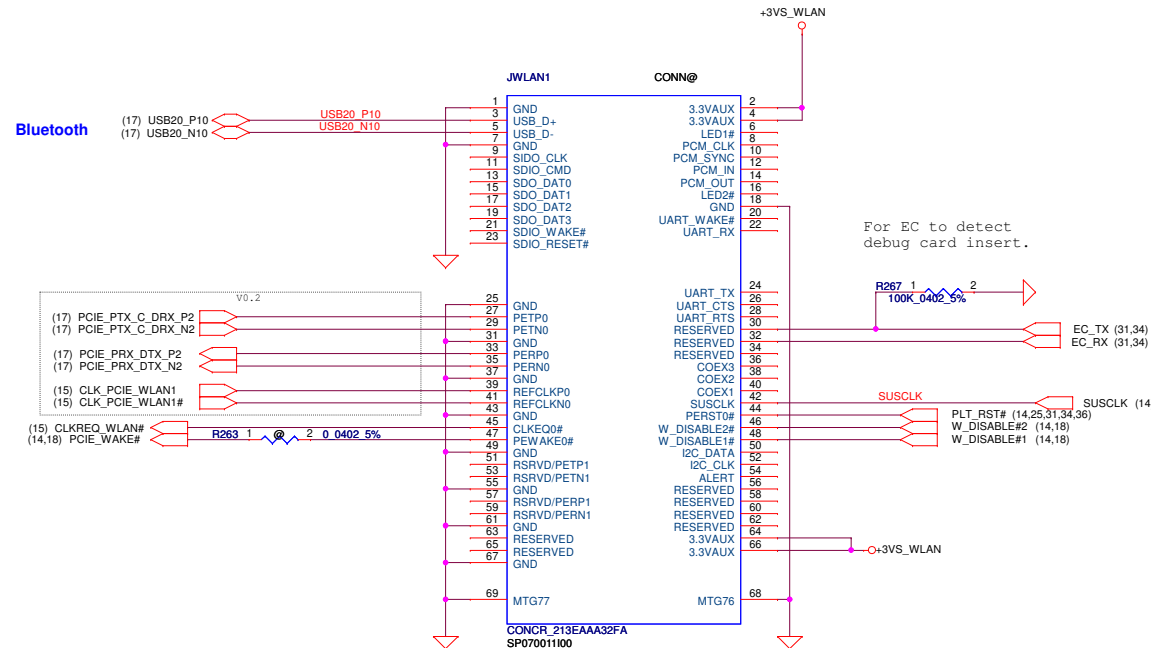


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				Size	Document Number	Rev
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WLAN



NGFF for WLAN (TYPE 2230)



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				Date: Tuesday, February 25, 2014	Sheet 28 of 59

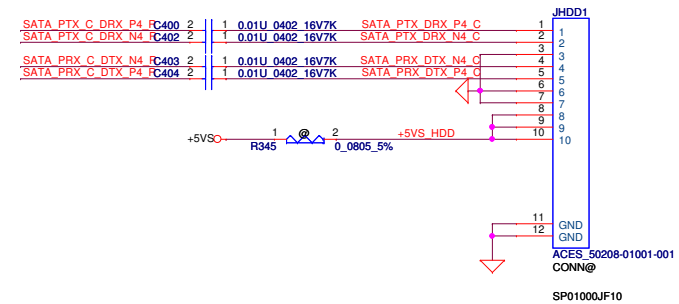
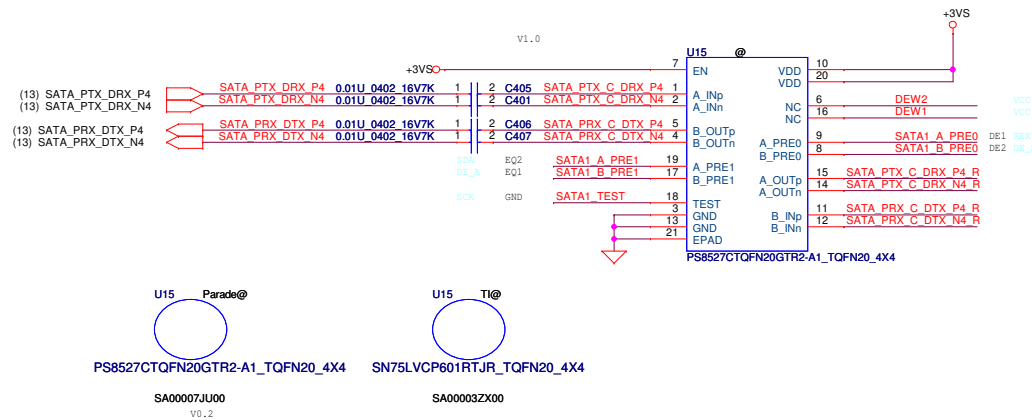
Compal Electronics, Inc.

NGFF (WLAN/BT)

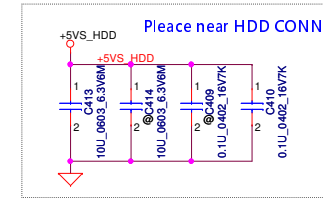
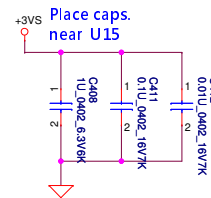
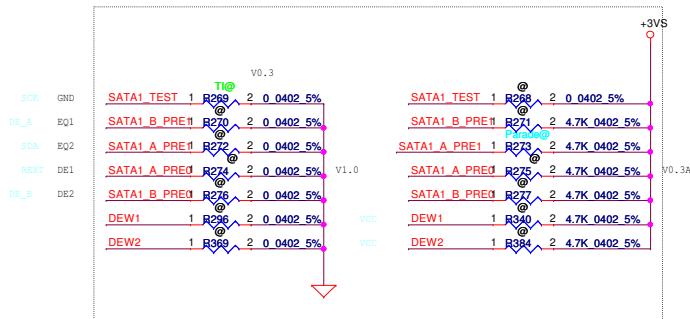
LA-B111P

Rev 1.0

SATA HDD CONN.



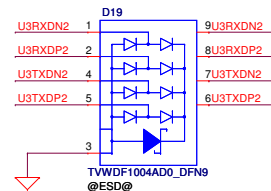
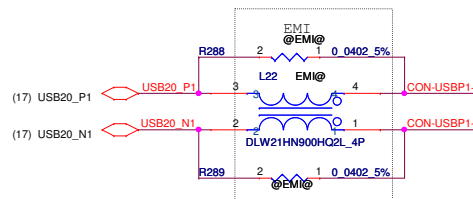
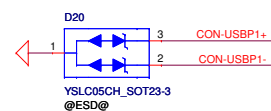
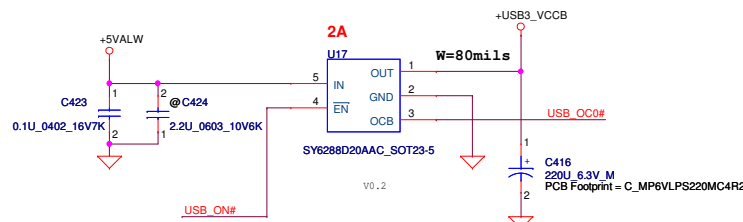
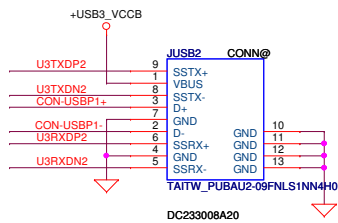
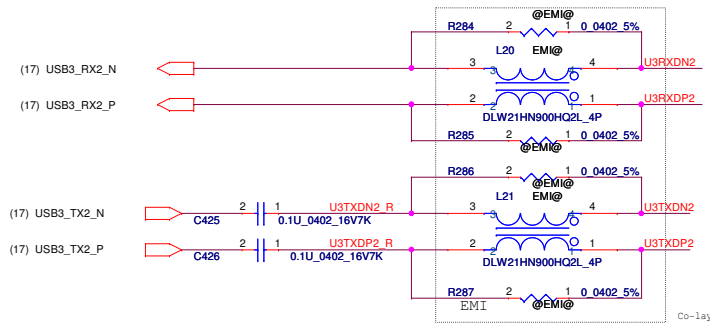
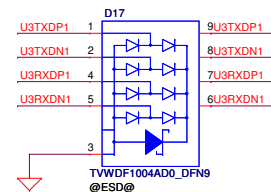
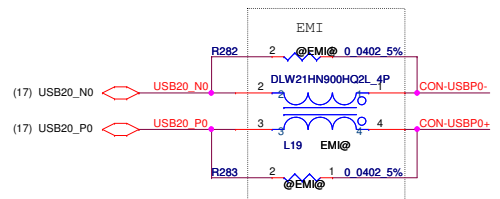
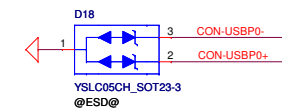
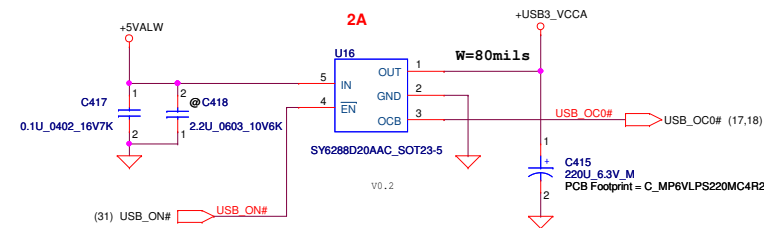
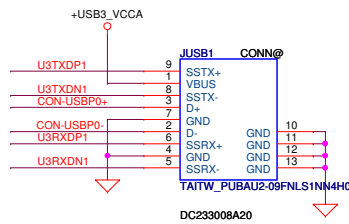
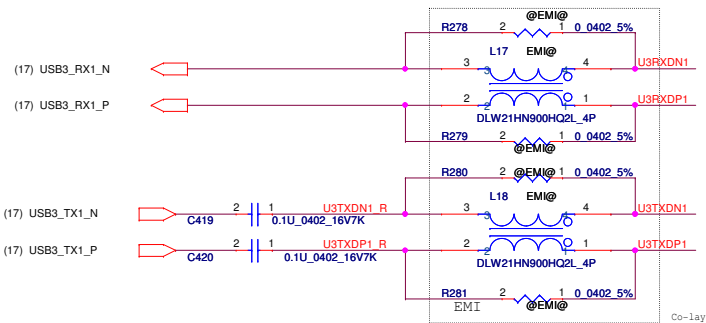
Add EQ pin for PI3EQX6741STZDEX



TI	DE1/DE2	dB	EQ1/EQ2	dB	V0.3
	NC	-6	NC	0	
	0	0	0	7	
	1	-3	1	14	

Asmidia	DE_X	dB
	0	+1.5
	1	+3.0

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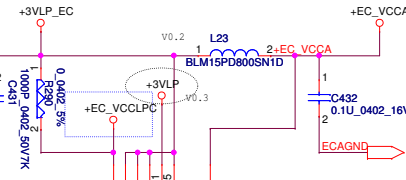
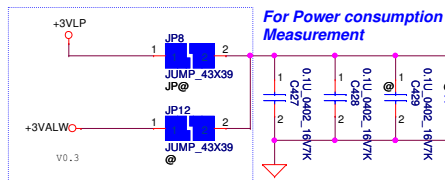
Security Classification		Compal Secret Data		Compal Electronics, Inc.	
Issued Date	2014/02/25	Deciphered Date	2015/02/25	USB3.0 port	
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				Document Number	
				LA-B11IP	
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Compal Electronics, Inc.

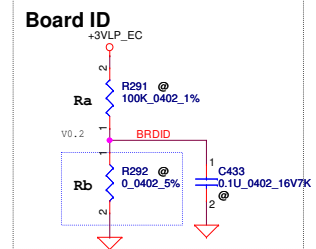
USB3.0 Port

LA-B11IP

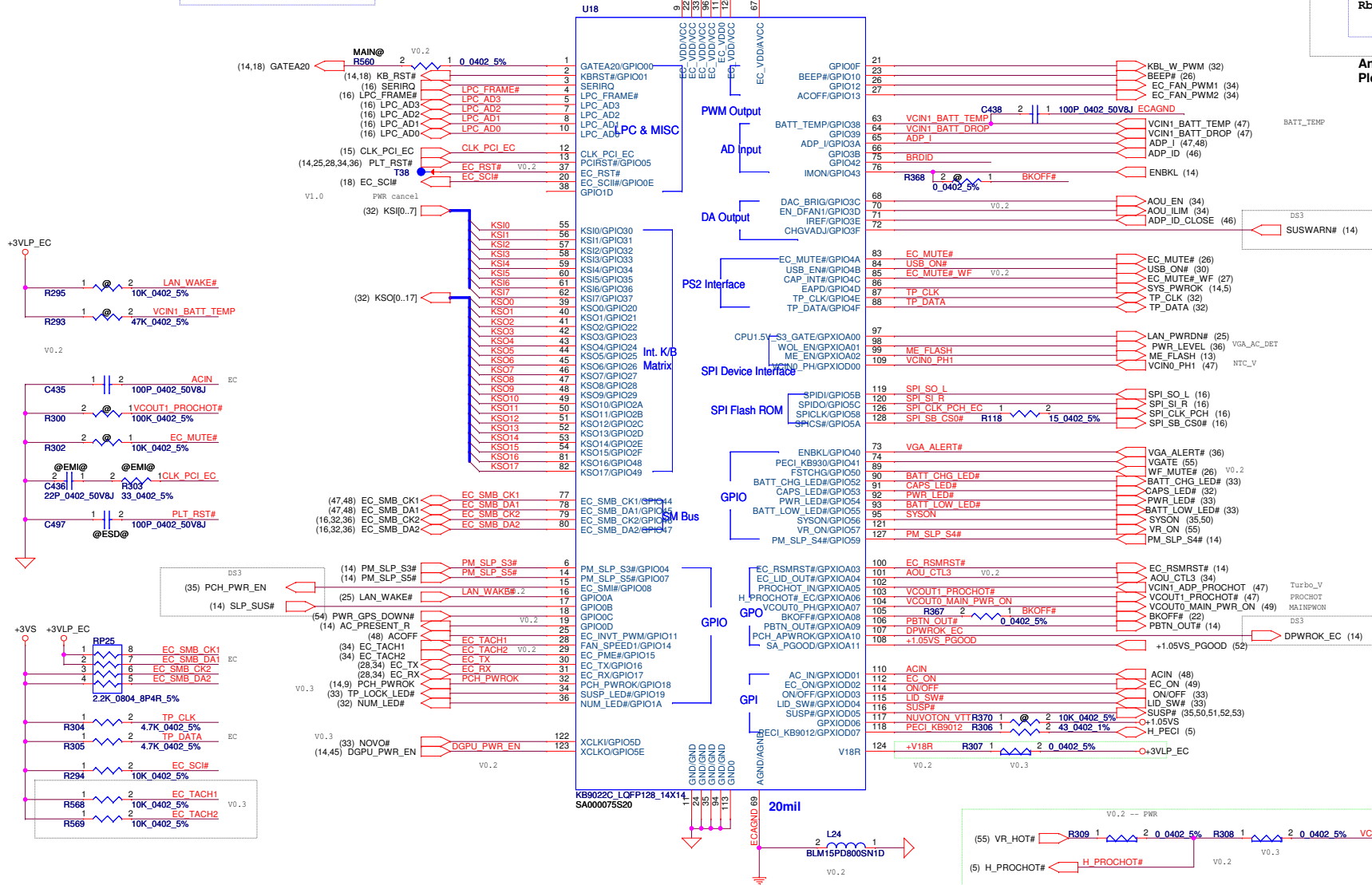
Rev 1.0



Vcc	3.3V			
Ra	100K +/- 1%			
Board ID	Rb	VAD_BID	typ	V
0	0	0 V		
1	12K +/- 1%	0.354 V		
2	15K +/- 1%	0.430 V		
3	20K +/- 1%	0.550 V		

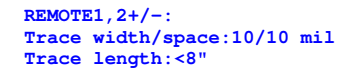
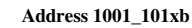


Analog Board ID definition, Please see page 3.

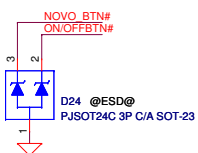
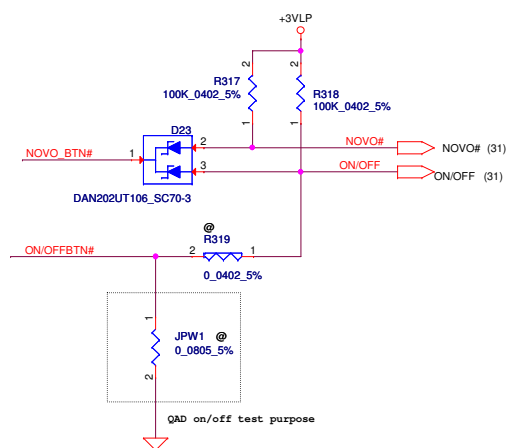




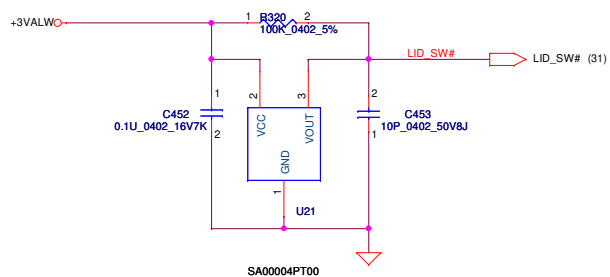
KB BackLight Control



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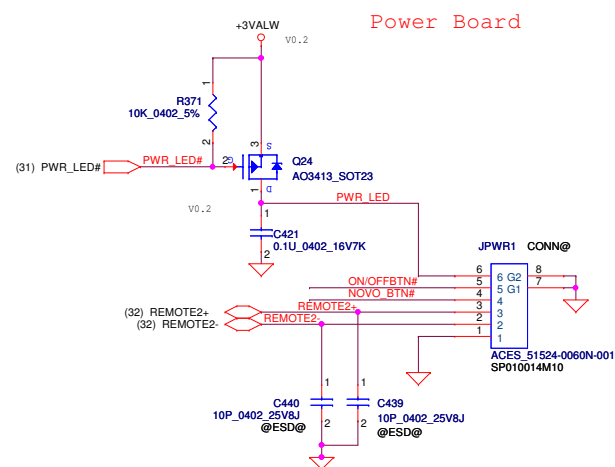


Lid switch

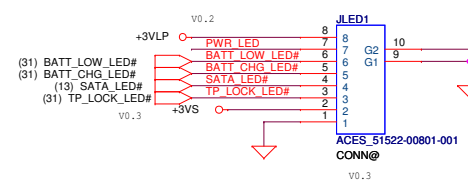


Connector: 0.3A / pin

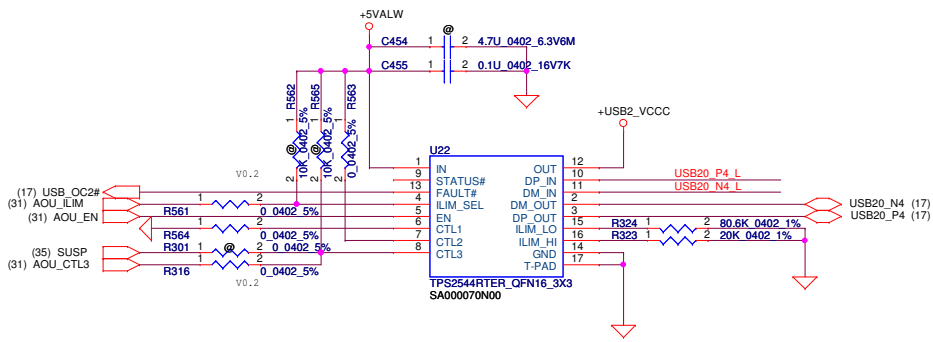
PWR Board CONN.



LED-B CONN

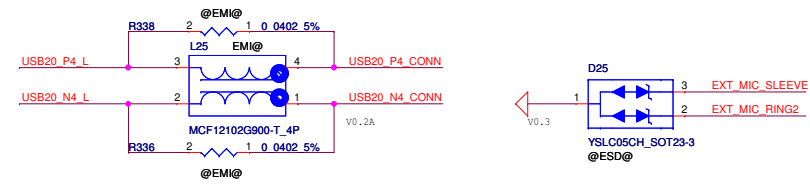
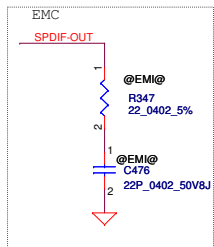


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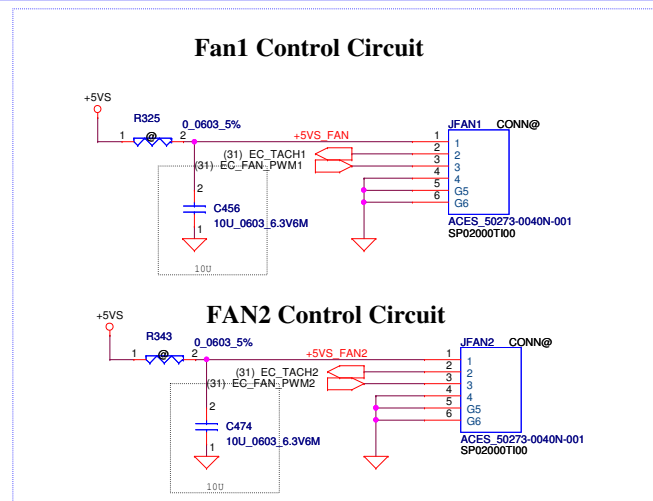
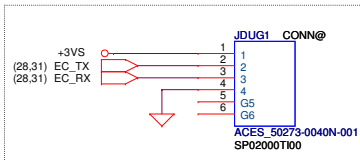
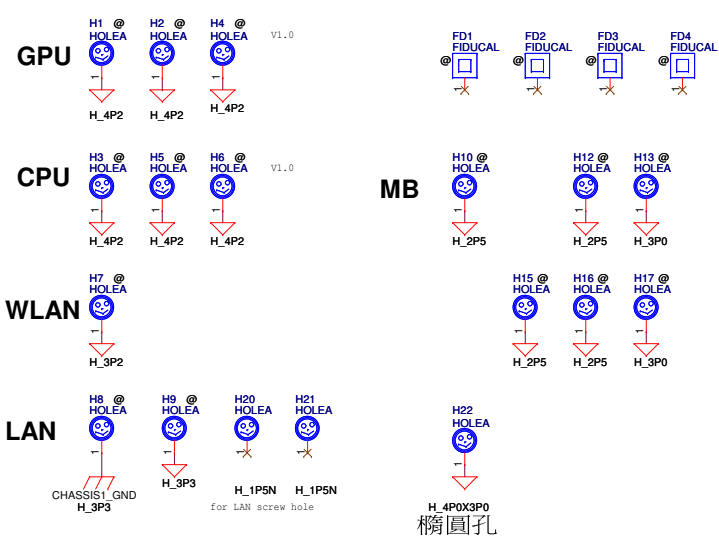
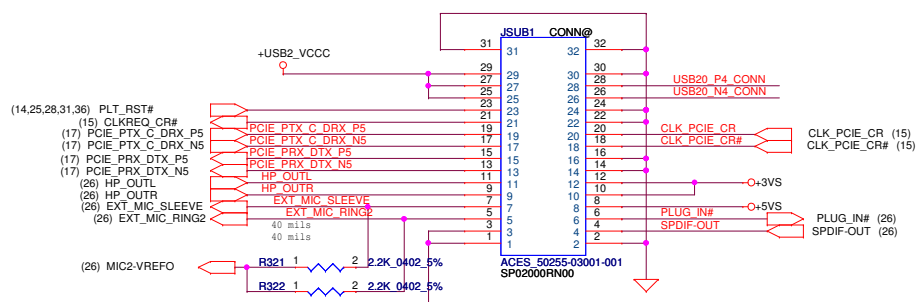


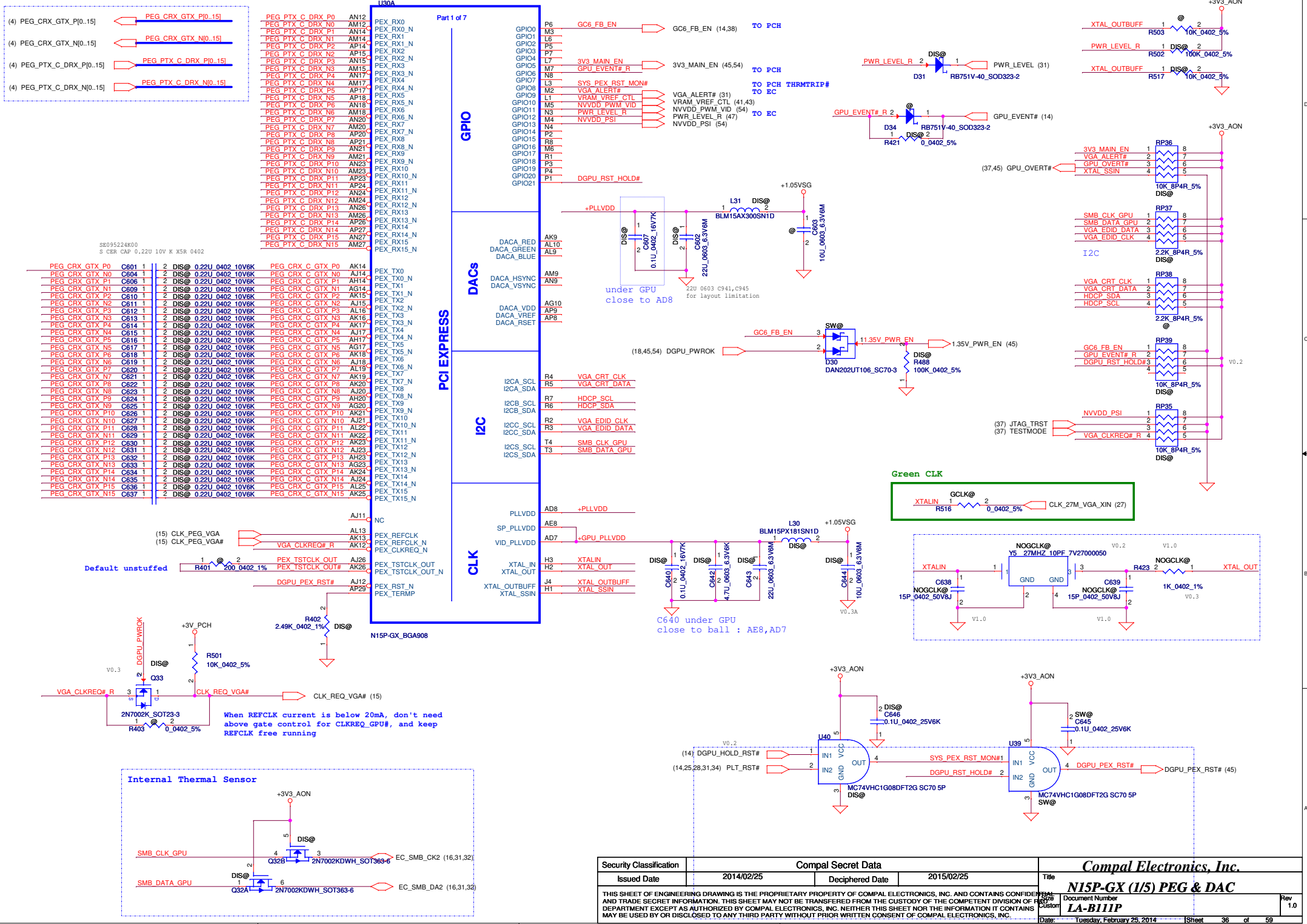
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Enable	S0	0 1 0 1
	S3/S4/S5	0 1 1 1
Disable	S0	0 1 0 1
	S3	0 1 0 0
	S4/S5	0 1 0 0

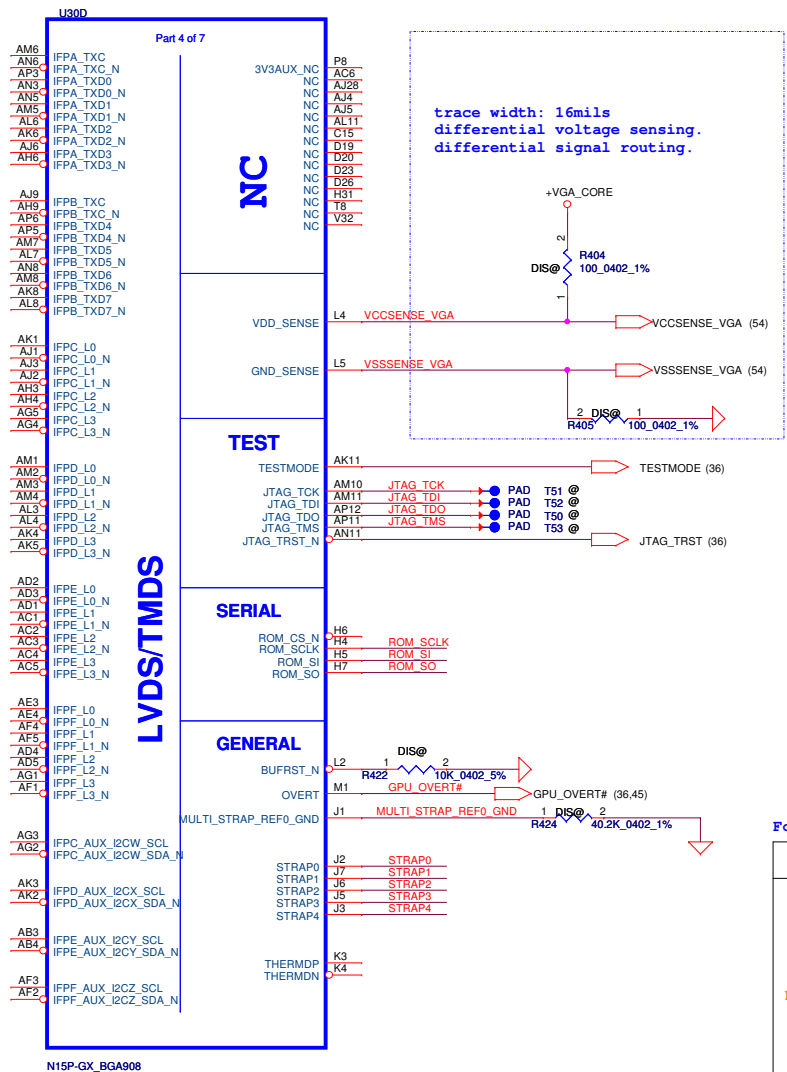
V0.2



USB Board CONN.



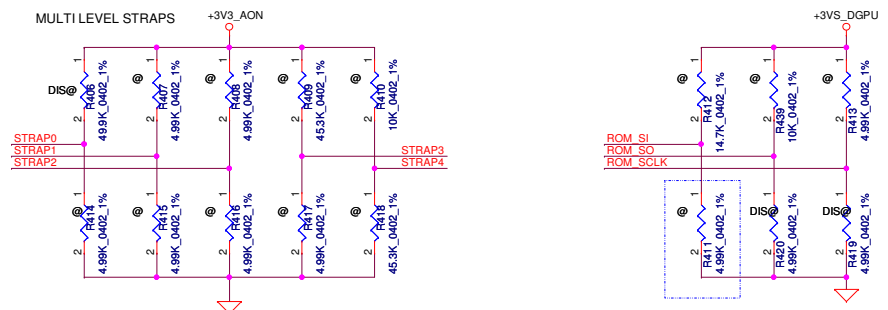




Physical Strapping pin	Power Rail	Logical Strapping Bit3	Logical Strapping Bit2	Logical Strapping Bit1	Logical Strapping Bit0
ROM_SCLK	+3VS_DGPU	SOR3_EXPOSED	SOR2_EXPOSED	SOR1_EXPOSED	SOR0_EXPOSED
ROM_SO	+3VS_DGPU	RAM_CFG[3]	RAM_CFG[2]	RAM_CFG[1]	RAM_CFG[0]
ROM_SI	+3VS_DGPU	DEVID_SEL	PCIE_CFG	SMB_ALT_ADDR	VGA_DEVICE
STRAP0	Keep pull-up to 3V3_AON and pull-down to GND foot print and stuff 50K ohm pull-up				
STRAP1	RESERVED				
STRAP2					
STRAP3					
STRAP4					

SKU	Device ID	bit5 to bit0
N15P-GX	0x1392	

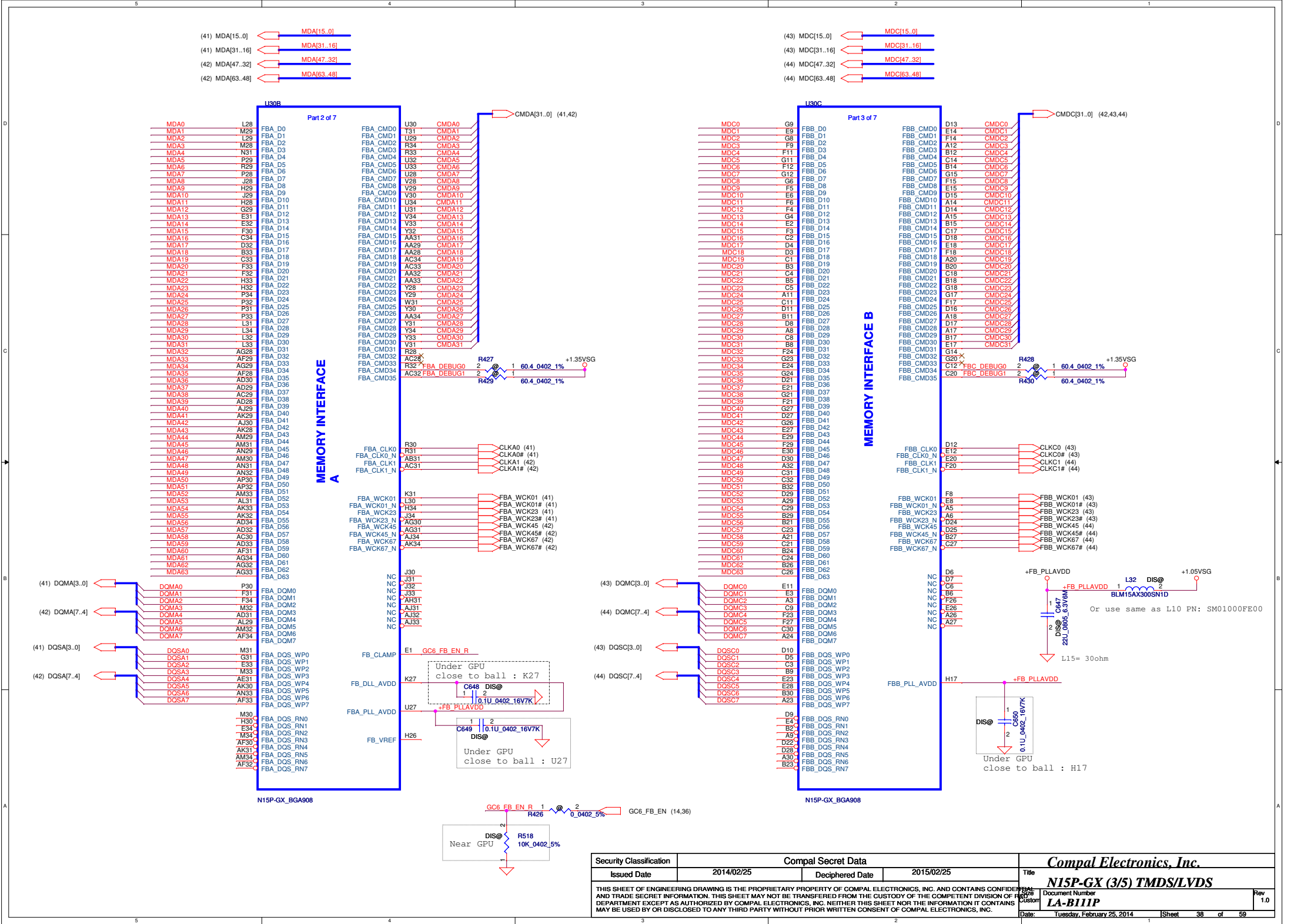
Resistor Values	Pull-up to +3VS_DGPU	Pull-down to Gnd
5K	1000	0000
10K	1001	0001
15K	1010	0010
20K	1011	0011
25K	1100	0100
30K	1101	0101
35K	1110	0110
45K	1111	0111



For X76 (N15P-GX)

GPU	FB Memory DDR5					ROM_SI
N15P-GX	128Mx16	X76L02@	Samsung	2G	K4G20325FD-FC03	PD 5K
		X76L01@	Hynix	2G	H5GC2H24BFR-T2C	PD 10K
	256Mx16	X76L03@	Hynix	4G	H5GC4H24MFR-T2C	PD 15K
		X76L04@	Samsung	4G	K4G41325FC-HC03	PD 20K





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				LA-B111P	
				Date	Tuesday, February 25, 2014
				Sheet	38 of 59

+VGA_CORE

U30G

Part 7 of 7

POWER

N15P-GX_BGA908

+VGA_CORE

U30F

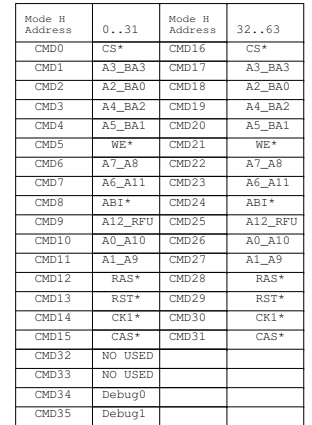
Part 6 of 7

GND

N15P-GX_BGA908

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VRAM DDR5 chips
128Mx16 GDDR5 *8==>2GB
256Mx16 GDDR5 *8==>4GB



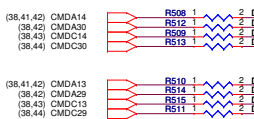
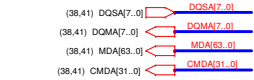
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Issued Date	2014/02/25	Deciphered Date	2015/02/25	Title	N15P-GX GDDRS 1/4		
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				Customer	1.0		
				14-B11P			
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Memory Partition A - Upper 16 bits

VRAM DDR5 chips

128Mx16 GDDR5 *8==>2GB

256Mx16 GDDR5 *8==>4GB



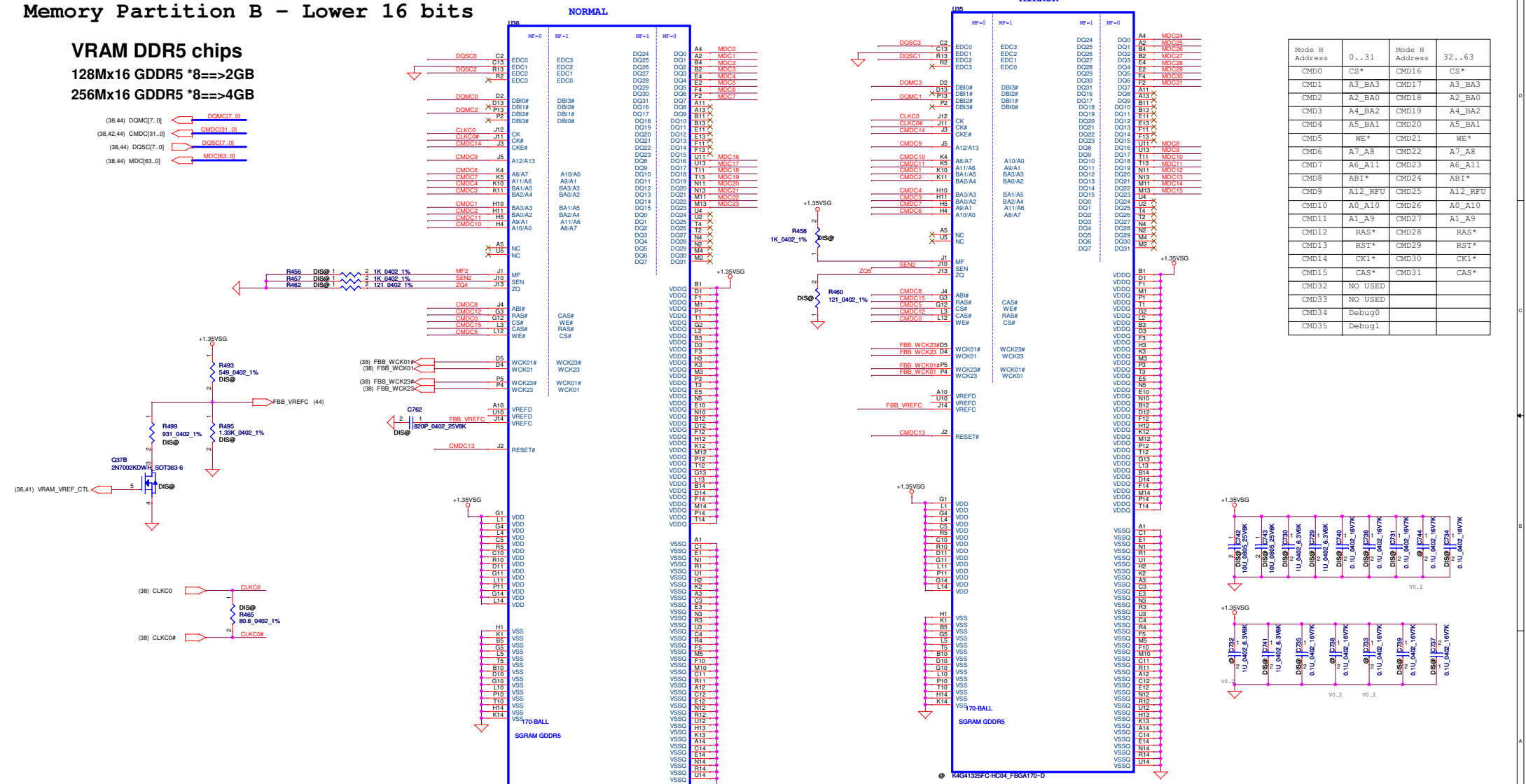
Memory Partition B - Lower 16 bits

VRAM DDR5 chips

128Mx16 GDDR5 *8==>2GB

256Mx16 GDDR5 *8==>4GB

(38.44) DOMC[7..0] → DOMC[7..0]
 (38.44.44) CMDC[31..0] → CMDC[31..0]
 (38.44) DQSC[7..0] → DQSC[7..0]
 (38.44) MDC[63..0] → MDC[63..0]



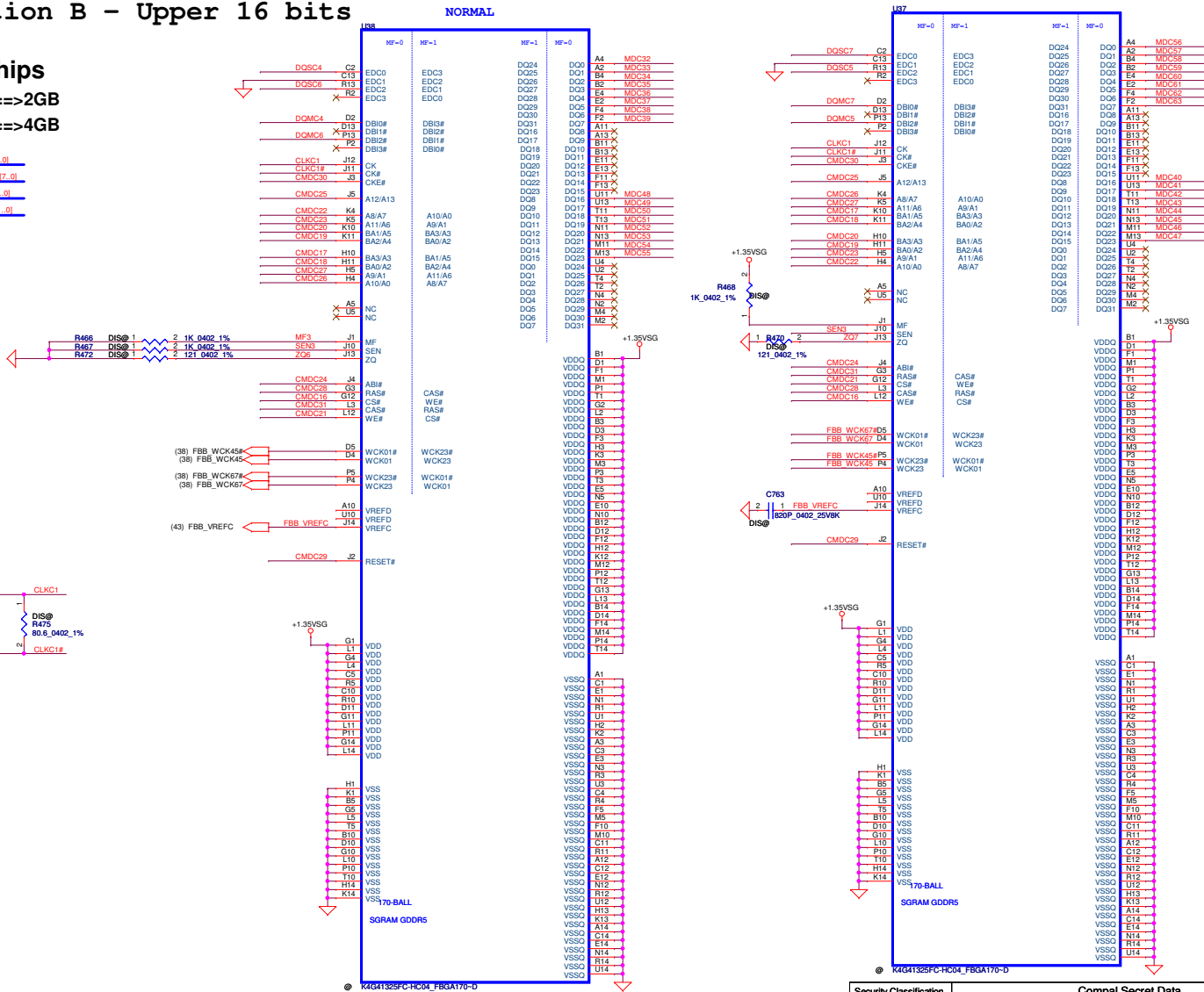
Mode H Address	0..31	Mode H Address	32..63
CMD0	CS*	CMD16	CS*
CMD1	A3_BA3	CMD17	A3_BA3
CMD2	A2_BA0	CMD18	A2_BA0
CMD3	A4_BA2	CMD19	A4_BA2
CMD4	A5_BA1	CMD20	A5_BA1
CMD5	WE*	CMD21	WE*
CMD6	A7_A8	CMD22	A7_A8
CMD7	A6_A11	CMD23	A6_A11
CMD8	AB1*	CMD24	AB1*
CMD9	A12_RFU	CMD25	A12_RFU
CMD10	A0_A10	CMD26	A0_A10
CMD11	A1_A9	CMD27	A1_A9
CMD12	RAS*	CMD28	RAS*
CMD13	RST*	CMD29	RST*
CMD14	CK1*	CMD30	CK1*
CMD15	CAS*	CMD31	CAS*
CMD32	NO USED		
CMD33	NO USED		
CMD34	Debug0		
CMD35	Debug1		

Security Classification		Compal Secret Data		Compal Electronics, Inc.	
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Date				Tuesday, February 25, 2014	Sheet 43 of 59

Memory Partition B - Upper 16 bits

VRAM DDR5 chips
128Mx16 GDDR5 *8==>2GB
256Mx16 GDDR5 *8==>4GB

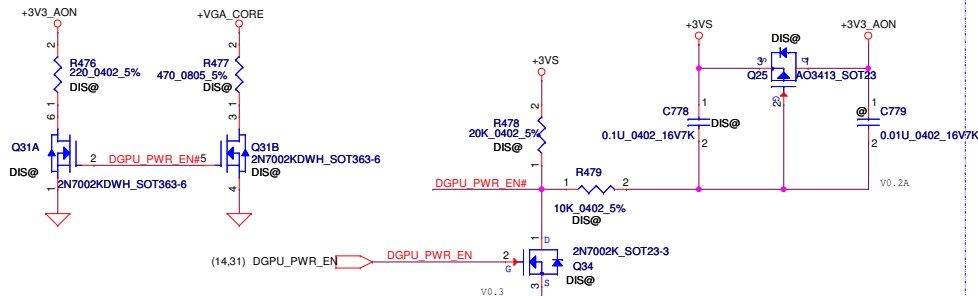
(38,43) DQSC[7..0] => DQSC07..0
(38,43) DQMC[7..0] => DQMC07..0
(38,43) MDC[63..0] => MDC063..0
(38,42,43) CMD[31..0] => CMD031..0



Mode H Address	0..31	Mode H Address	32..63
CMD0	CS*	CMD16	CS*
CMD1	A3_BA3	CMD17	A3_BA3
CMD2	A2_BA0	CMD18	A2_BA0
CMD3	A4_BA2	CMD19	A4_BA2
CMD4	A5_BA1	CMD20	A5_BA1
CMD5	WE*	CMD21	WE*
CMD6	A7_A8	CMD22	A7_A8
CMD7	A6_A11	CMD23	A6_A11
CMD8	AB1*	CMD24	AB1*
CMD9	A12_RFU	CMD25	A12_RFU
CMD10	A0_A10	CMD26	A0_A10
CMD11	A1_A9	CMD27	A1_A9
CMD12	RAS*	CMD28	RAS*
CMD13	RST*	CMD29	RST*
CMD14	CK1*	CMD30	CK1*
CMD15	CAS*	CMD31	CAS*
CMD32	NO USED		
CMD33	NO USED		
CMD34	Debug0		
CMD35	Debug1		

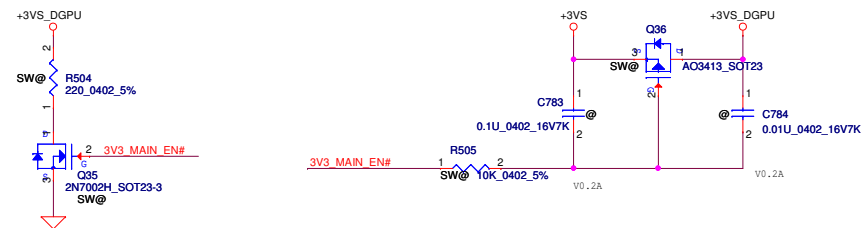
+3VS to +3V3_AON

Vgs=-4.5V, Id=3A, Rds<97mohm

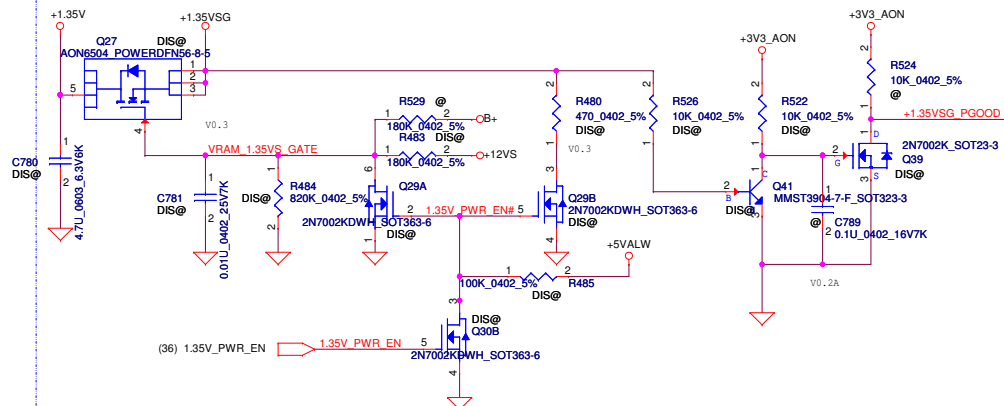


+3VS to +3VS_DGPU

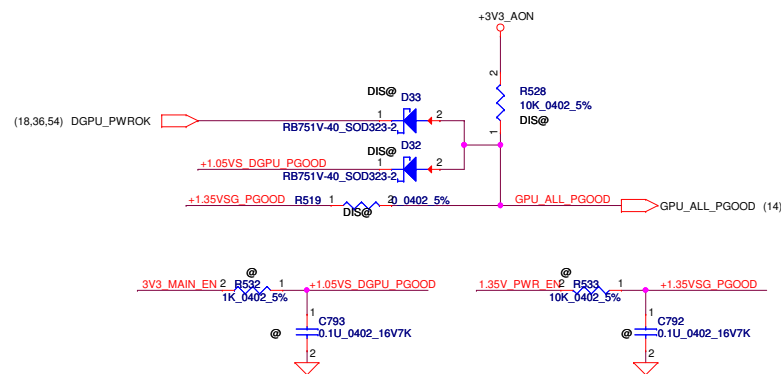
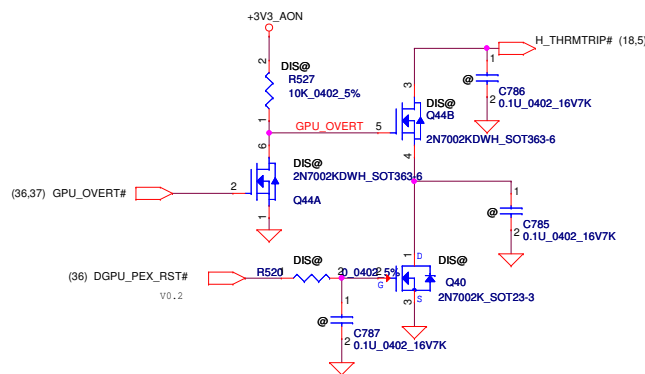
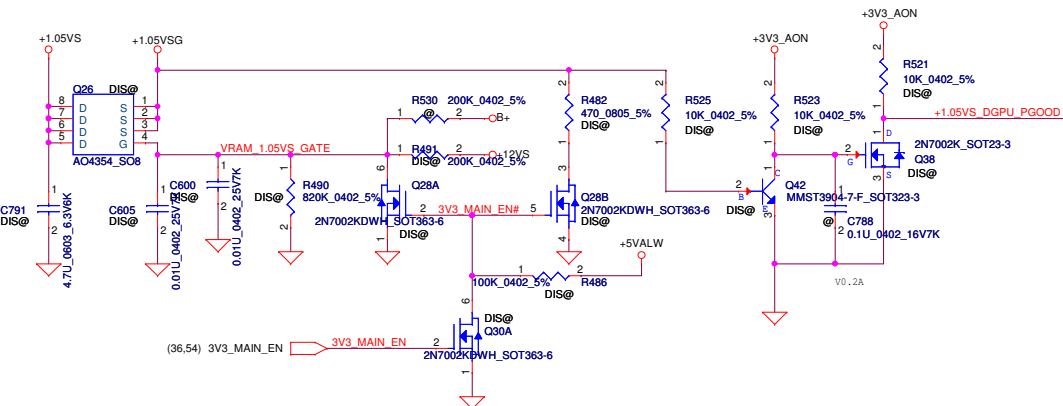
Vgs=-4.5V, Id=3A, Rds<97mohm



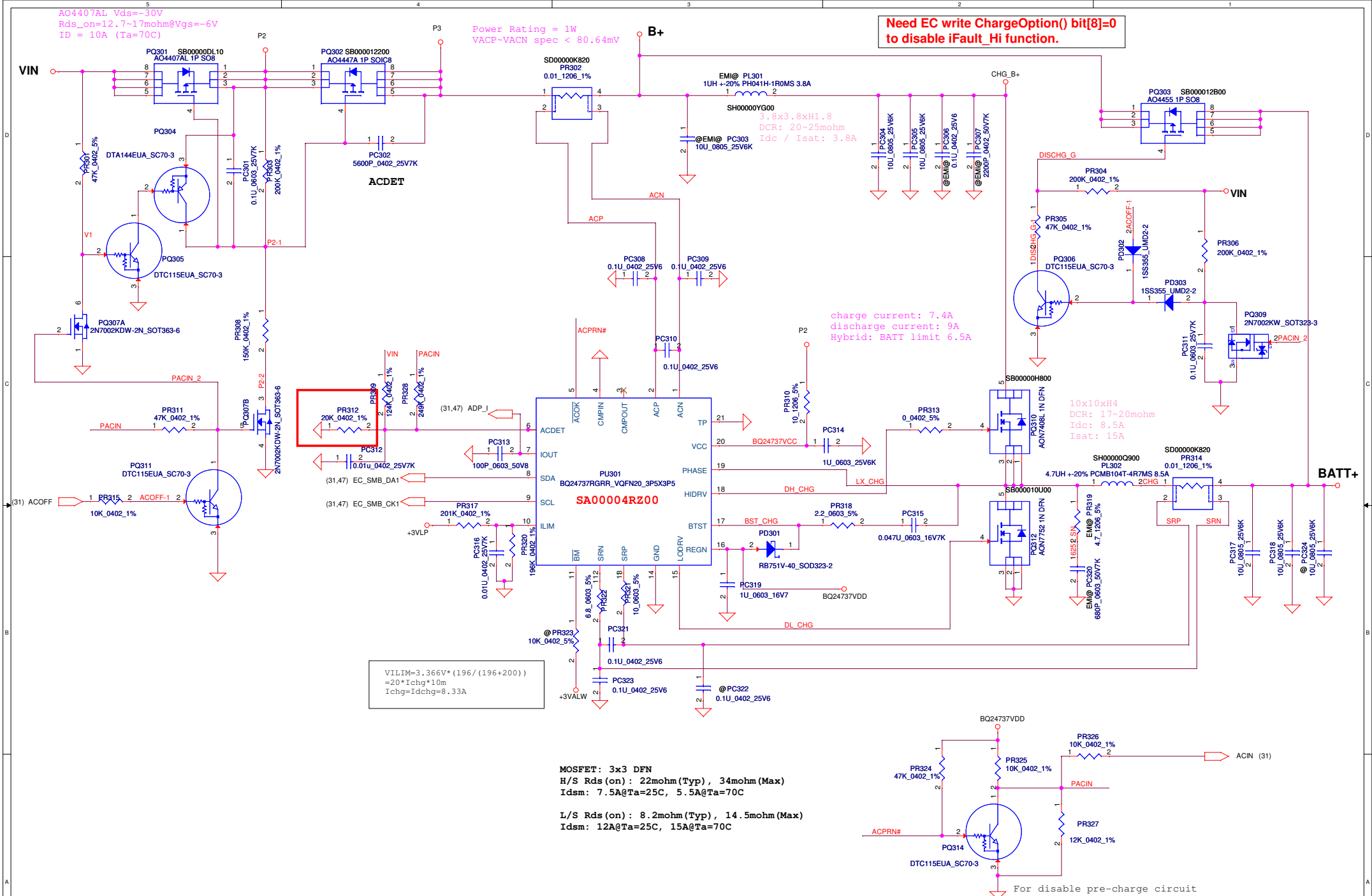
+1.35V to +1.35VSG



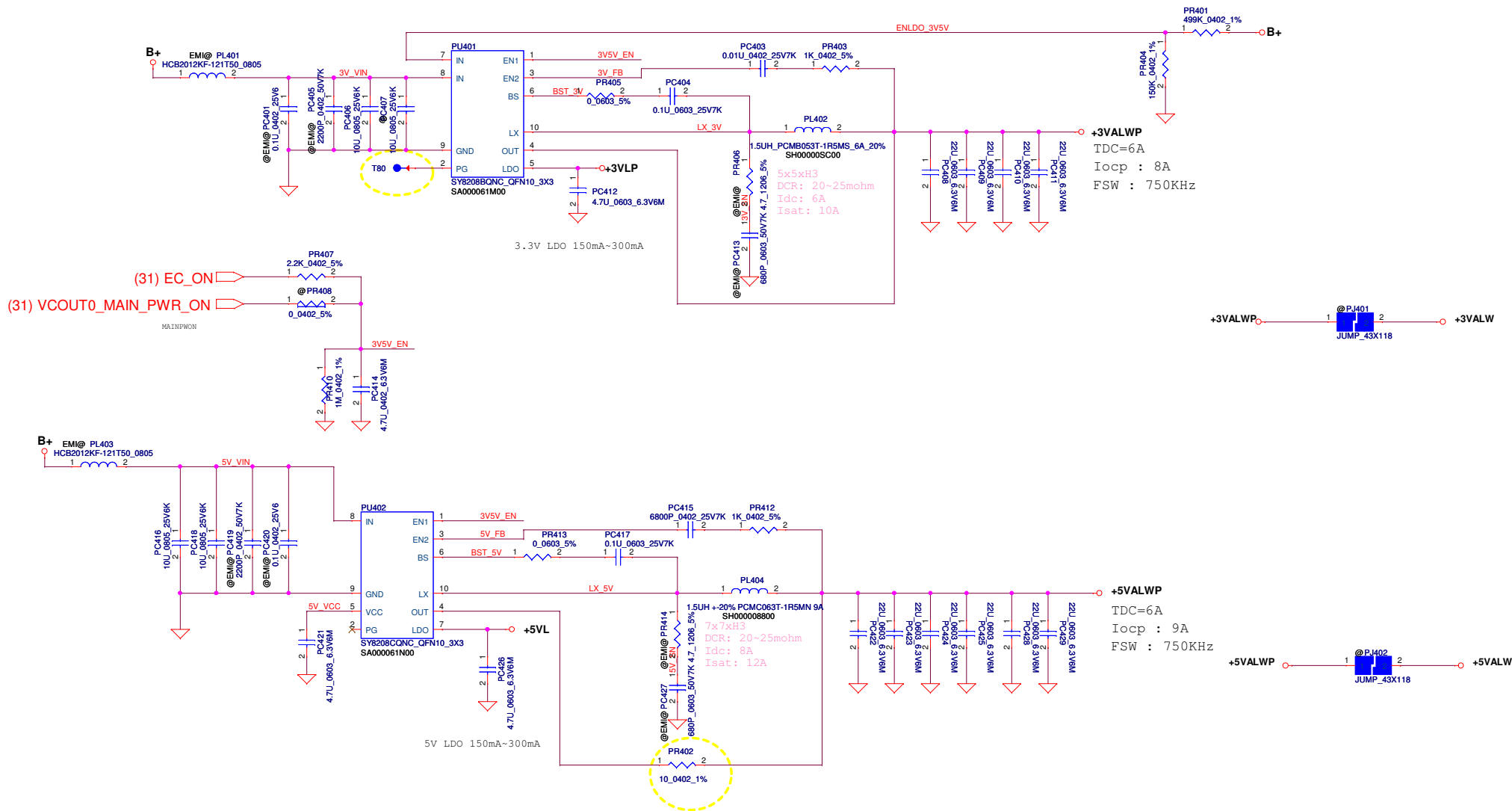
+1.05VS to +1.05VSG



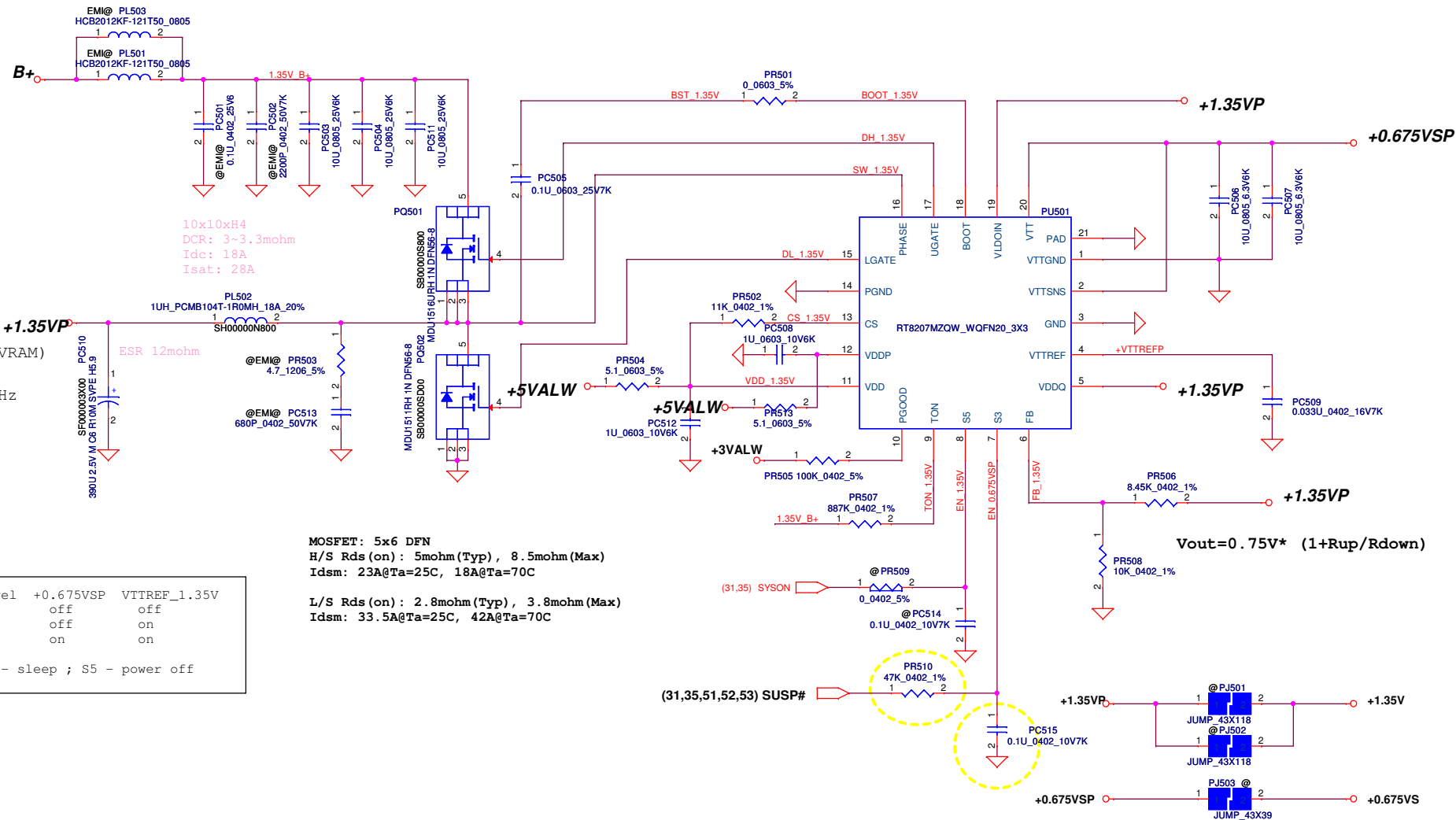
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						Document Number			
						Rev 1.0			
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Date: Tuesday, February 25, 2014		Sheet		48		of		59			



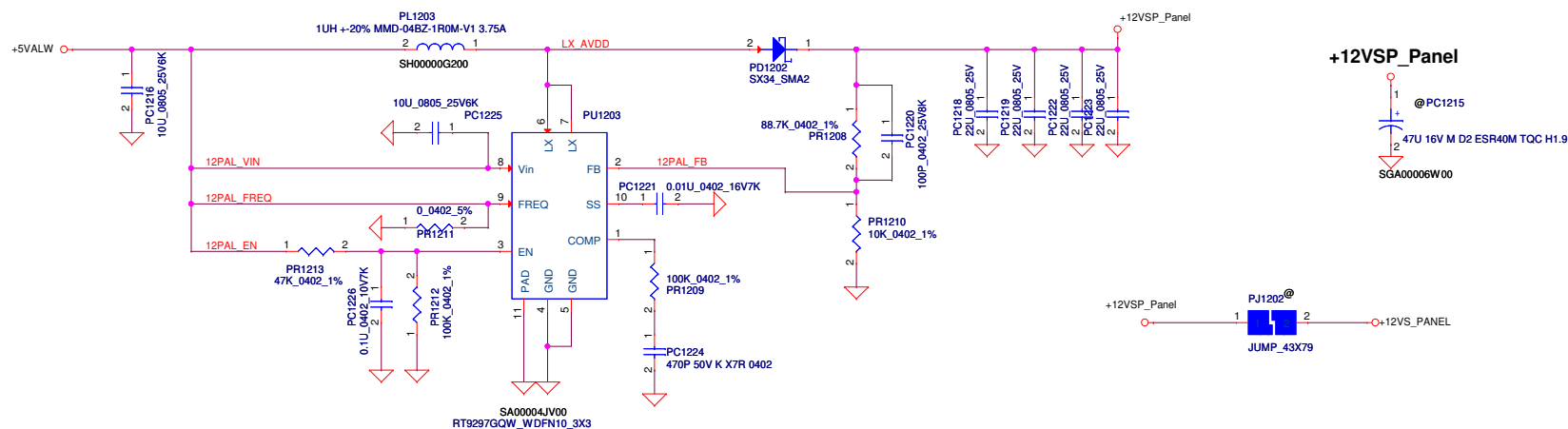
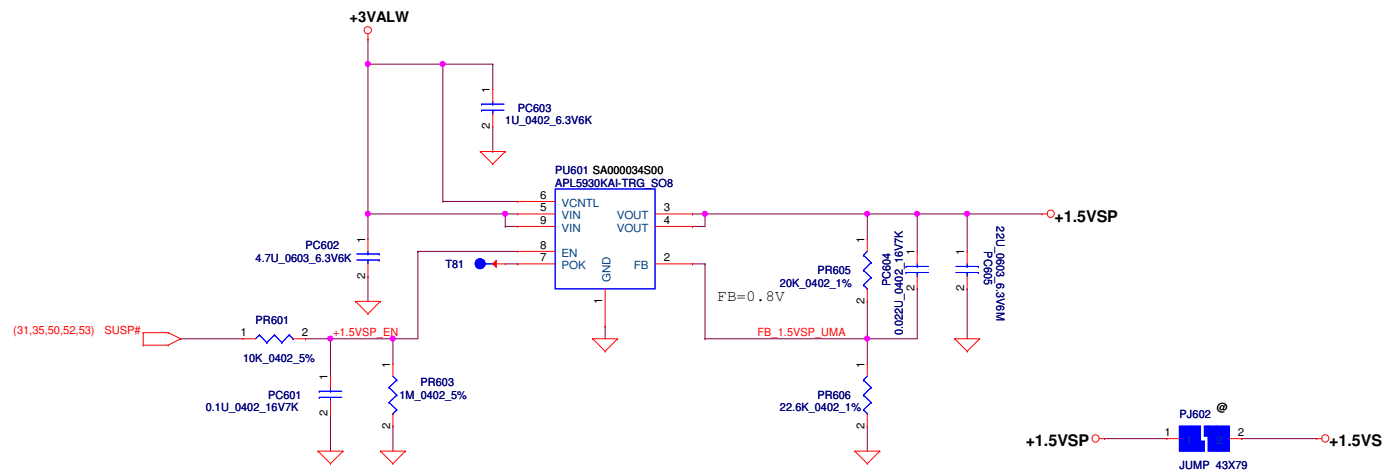
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Issued Date	2014/02/25	Deciphered Date	2015/02/25	Title	
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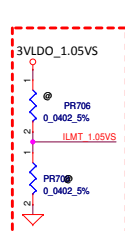
Mode	Level	+0.675VSP	VTTREF_1.35V
S5	L	off	off
S3	L	off	on
S0	H	on	on

Note: S3 - sleep ; S5 - power off

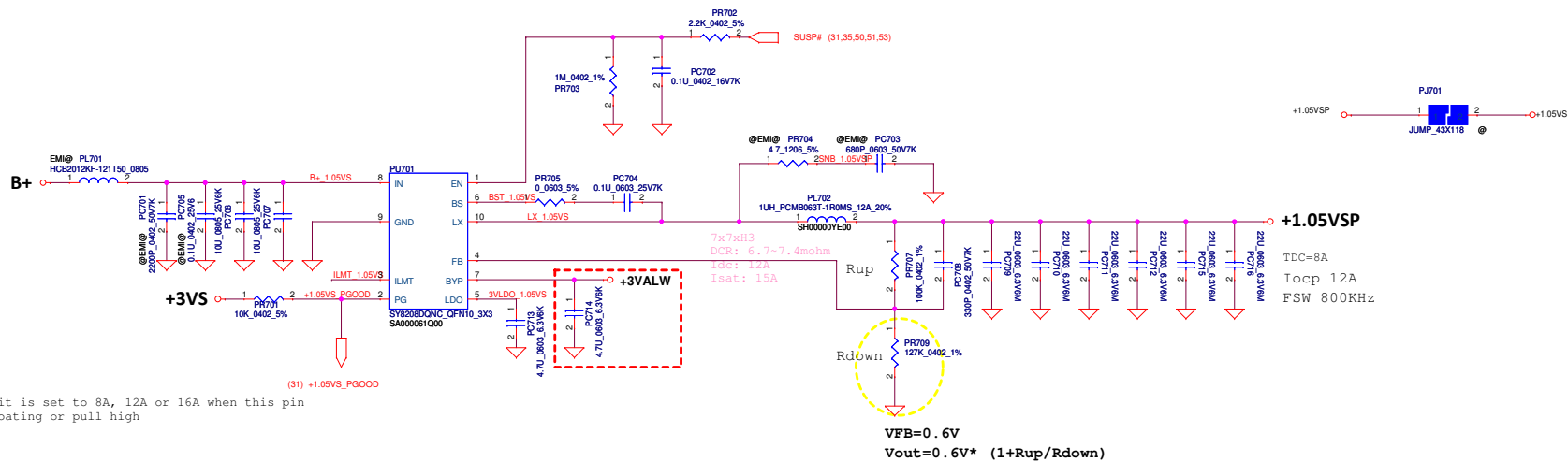
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										Size Document Number
										BE BDW
										Rev 1.0
										Date: Tuesday, February 25, 2014
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				Sheet	51 of 59

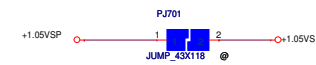


The current limit is set to 8A, 12A or 16A when this pin is pull low, floating or pull high



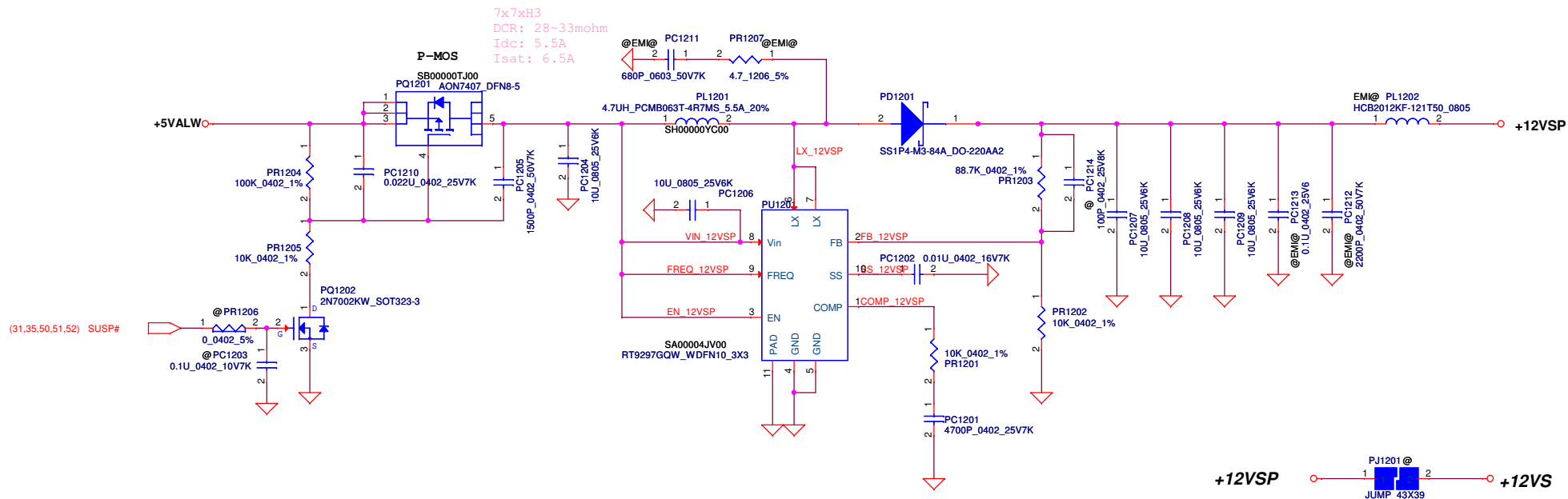
$$V_{FB} = 0.6V$$

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

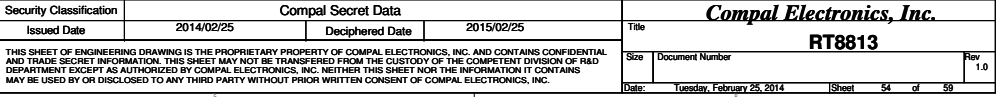


+1.05VSP
TDC=8A
Iocp 12A
FSW 800KHz

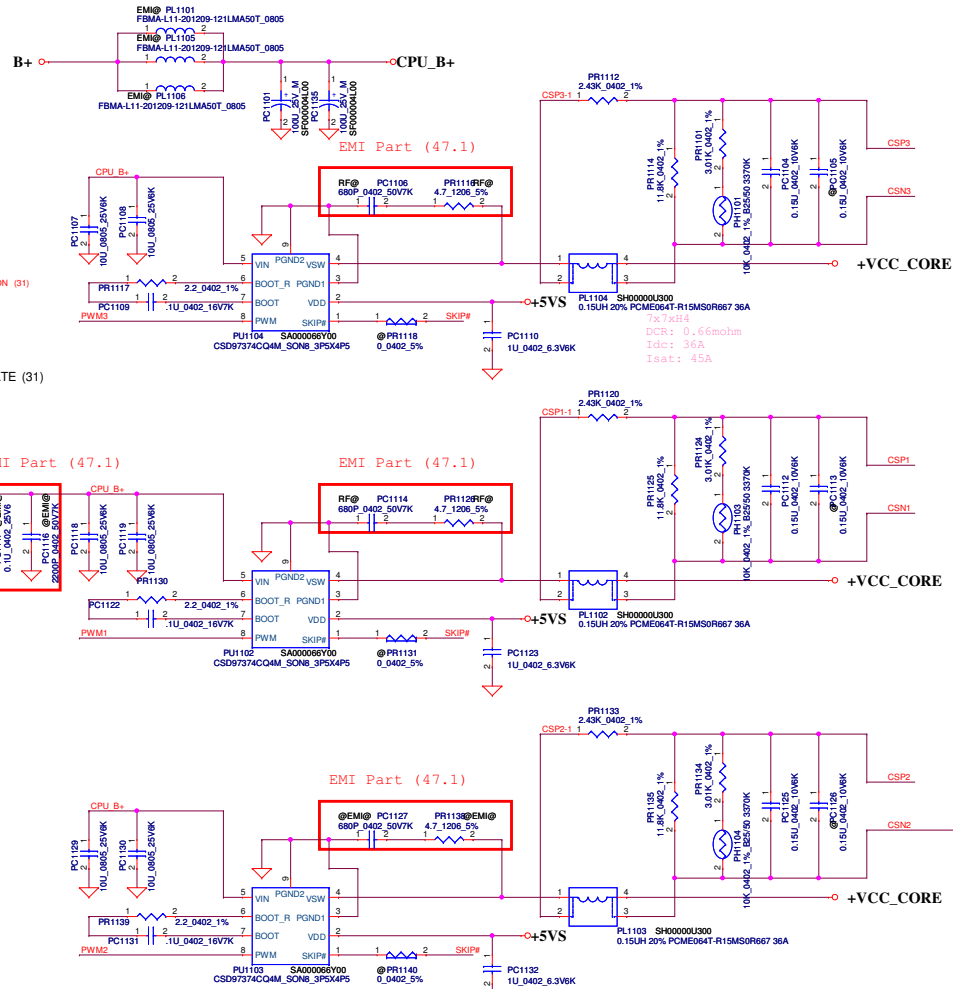
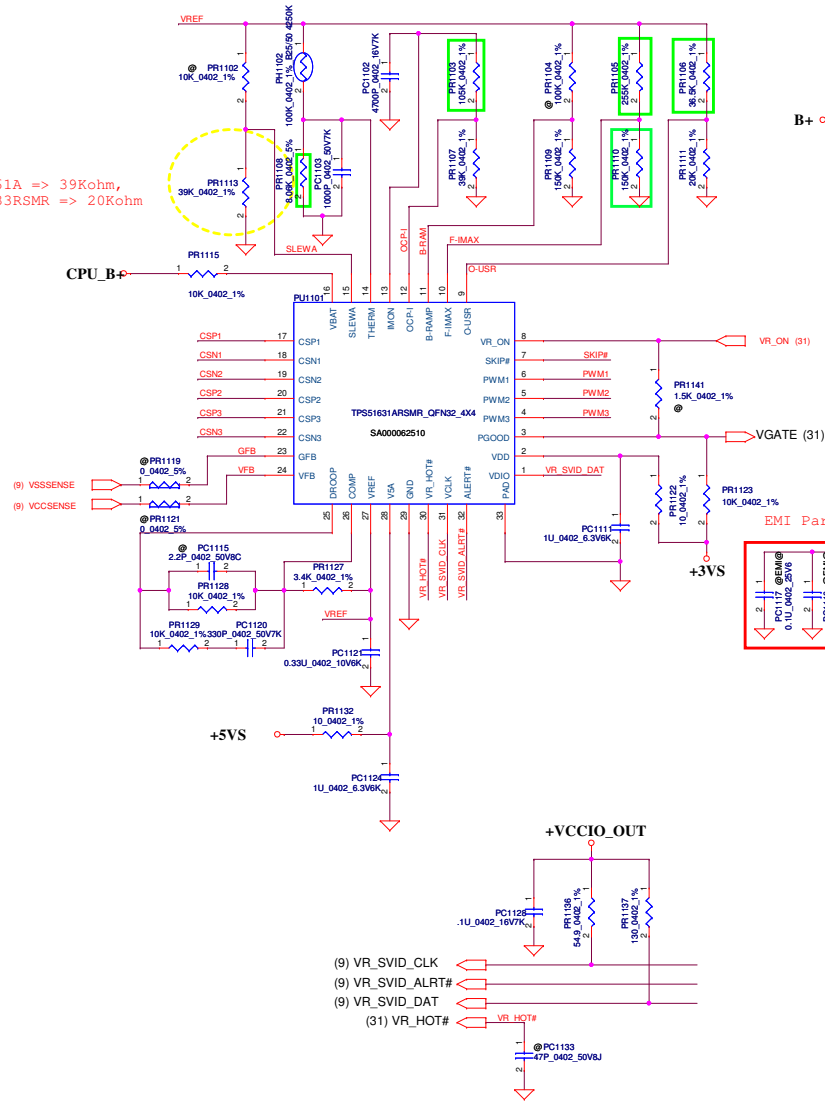
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Size A3	Document Number VPUAE	Rev 1.0		Date: Tuesday, February 25, 2014	
		Sheet 53	of 59		



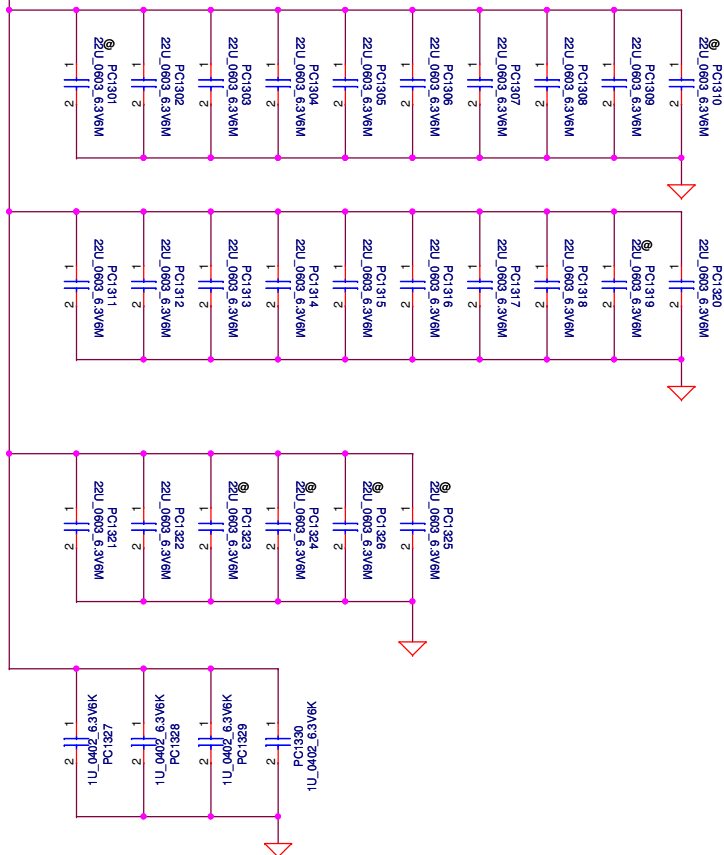
TPS51361A => 39Kohm,
TPS51633RSMR => 20Kohm



For intel SB 47W
TDC: 33A
Support Turbo: 95A
OCP setting: 114A
Frequency: 1MHz
DC_LL: -1.5mV/A

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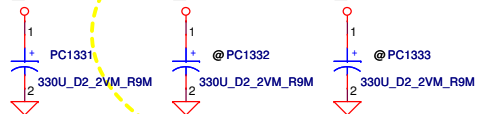
+VCC_CORE



+VCC_CORE

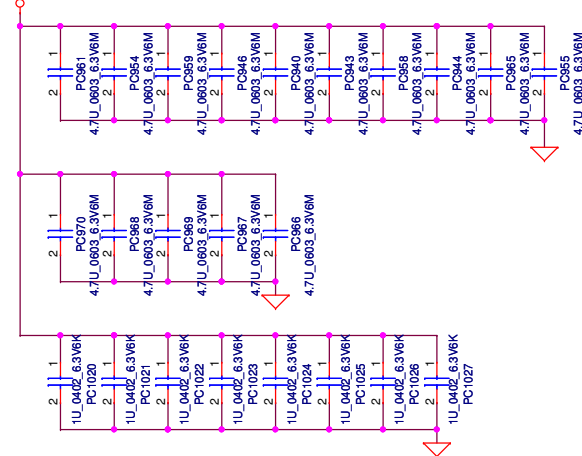
+VCC_CORE

+VCC_CORE

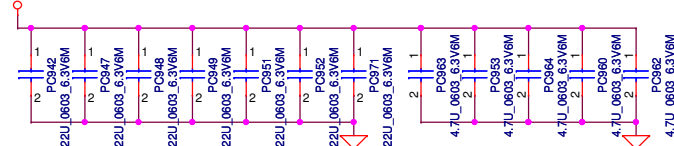


+VGA_CORE Under VGA Core

GB4B-128 package



+VGA_CORE Near VGA Core



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Size Custom		Document Number		BE_BDW	
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Version change list (P.I.R. List)

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for PWR

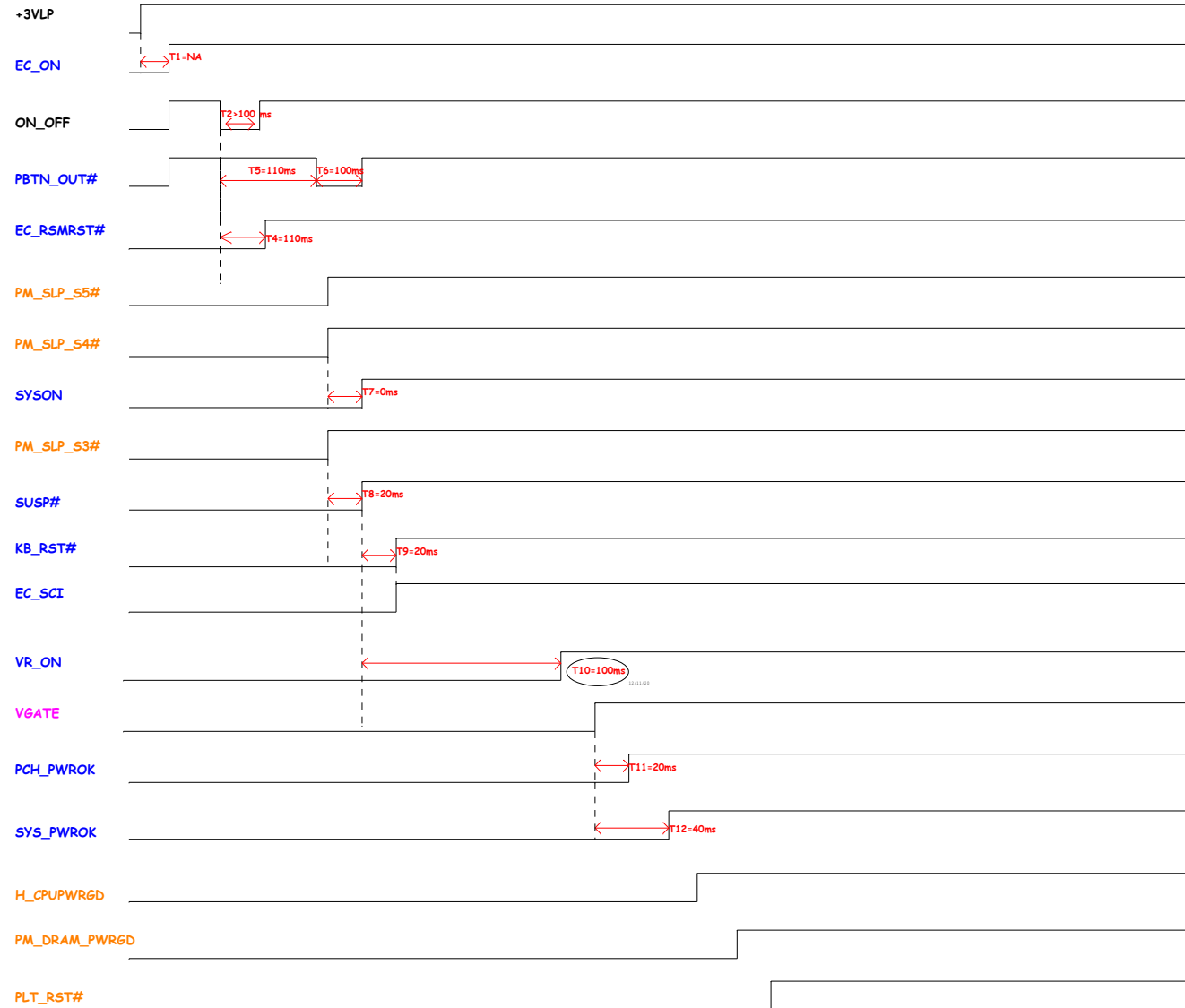
Item	Reason for change	PG#	Modify List	Date	Phase
1	for panel Vdrop	51	add boost solution	11/15	SIV
2	for EMI request	48	PR319, PC320 change to mount	11/15	SIV
3	for RF request	54	PR918, PC926, PR933, PC939 change to mount	11/18	SIV
4	for RF request	55	PC1114, PR1126, PC1106, PR1116 change to mount	11/18	SIV
6	battery can't be remove	47	del PR222, PR227, PC204, PR220, PU202, PC206, PR226, PD201, PC205, PR218, PR219, PQ201, PQ205, PR228	12/30	SIT
7	for acoustic noise	55, 56	add PC1135, 1332	12/30	SIT
8	SIV rework	48	PR309 is changed from 392K_0402_1% to 124K_0402_1% (SD034124380) PR312 is changed from 59K_0402_1% to 20K_0402_1% (SD034200280) Add a resistor 249K_0402_1% (SD034249380) between pin 6 of PU301 and PACIN. PC312 is changed from 2200pF_0402_25V_X7R to 0.01uF_0402_25V_X7R (SE075103K80) PQ302 change to AO4447A	12/30	SIT
9	SIV rework	47	PR217 change to 30K PR221 change to 110k	12/30	SIT
10	for HW request	50	PR506 change to SD000000680 8.45K 1%	12/30	SIT
11	accuracy modify	52	PR707 change to 100K +-1% PR709 change to 127K +-1%	1/20	SVT
15					
16					
17					

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Size		Document Number		Rev	
Custom		BE BDW		1.0	
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Item	Fixed Issue	Reason for change	Rev.	PG#	Modify List	Date	Phase	Verify
1		Add 3D Camera function	0.2	23	Add U25,C502~C511. Add R386~R400,R550~R559. Del Q14,R205,C319 Add U13	10/30	SIV	SIV Phase
2		Remove LPF for woofer amplifier	0.2	27	Change R224->20K,R297->62K Change R1564,R1565->0 ohm,R341->15K, Change R342->20.5K,R81->200K. un-stuff C450,C443	10/30	SIV	Verified by SDV rework.
3		AC/DC detect issue	0.2	14 31	Del D1 Add AC_PRESENT_R to U18 pin 19	11/03	SIV	Verified by SDV rework.
4		Change USB power switch (follow B/E series)	0.2	30	Change U16,U17->SY6288D20AAC	11/04	SIV	Verified by SDV rework.
5		Add resistor for 15"/17" K/B co-lay	0.2	31	Add R1001~R1012,R1021~R1032	11/04	SIV	SIV Phase
6		Cancel 3D Camera function	0.3	23	Del U25,C502~C508 Del R387~R400,R550~R557. Del R255,R256,R261,R262,L41,L42,D21. Del R204,R386,R558,R559	12/17	SIT	SIT Phase
7		TP lock LED function	0.3	31	TP_LOCK_LED# from U18_pin34 to LED	12/24	SIT	Verified by SIV rework.
8		KB Backlight behavior	0.3	32	Add R337,R335,C434,Q23	12/24	SIT	Verified by SIV rework.
9		Improve VRAM +1.35V	0.3	39	C790 stuff 330uf	12/25	SIT	Verified by SIV rework.
10		Hole size change for Thermal bracket.	1.0	34	H1,H2,H3,H4,H5,H6 : change to 4.2 mm.	2/5	SVT	Verified by SIT rework.
11		ESD reserve	1.0	32	Reserve C479,C480.	2/5	SVT	SVT Phase
12								
13								
14								
15								
16								
17								
18								
19								
20								

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Issued Date	2014/02/25	Deciphered Date	2015/02/25	Title	PIR-HW
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Timing Diagram for G3 or S4-5/M-off (Suspend Well Off) to S0/M0 [non Deep S4/S5 Platform]



Color	Command
Signal Names	Timing of these signals is set by PCH or processor
Signal Names	Timing of these signals should be met by the platform (EC)
Signal Names	Timing of these signals is set by IntelR MVP
Signal Names	Voltage rails or chip-to-chip buses