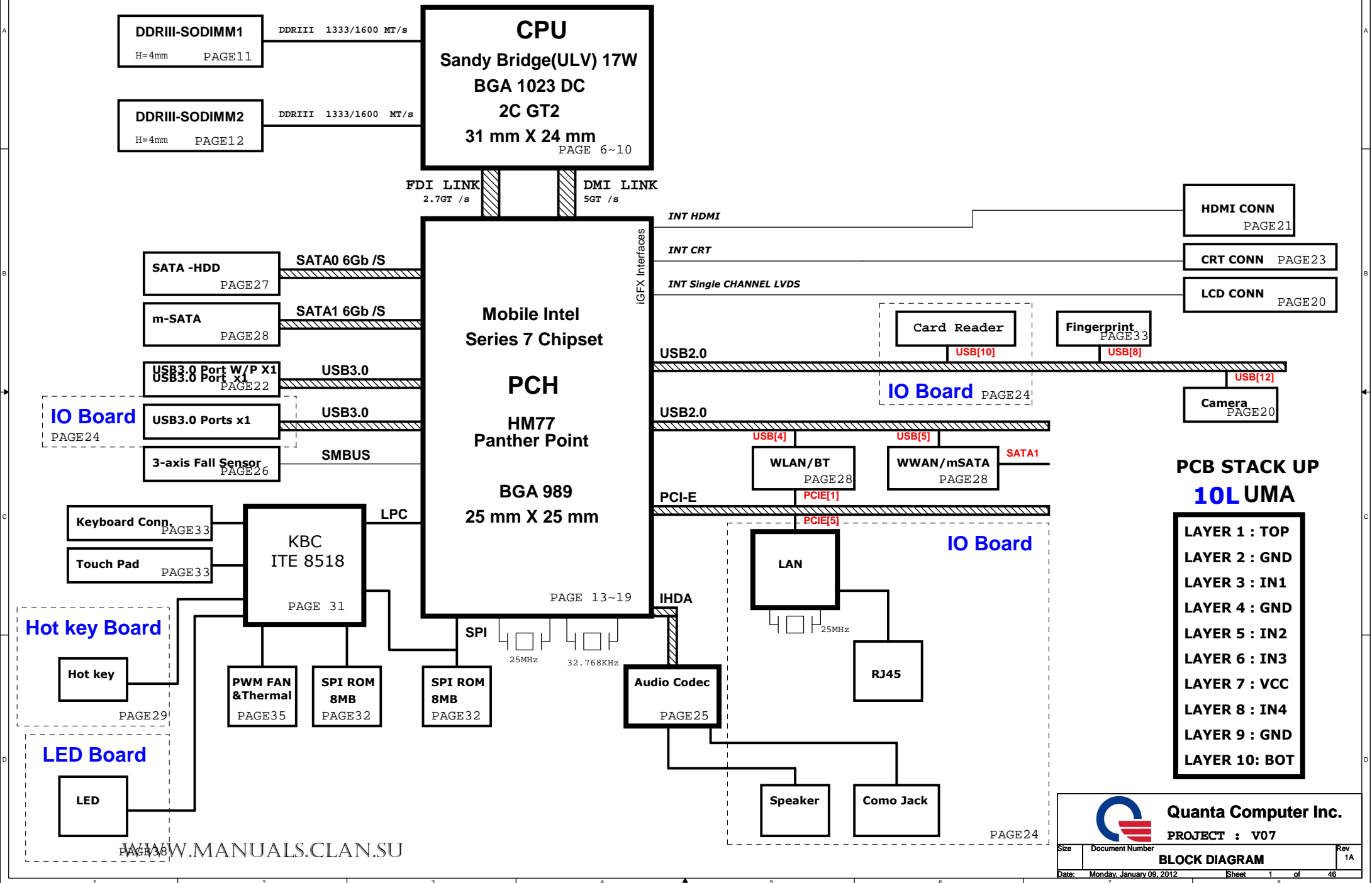
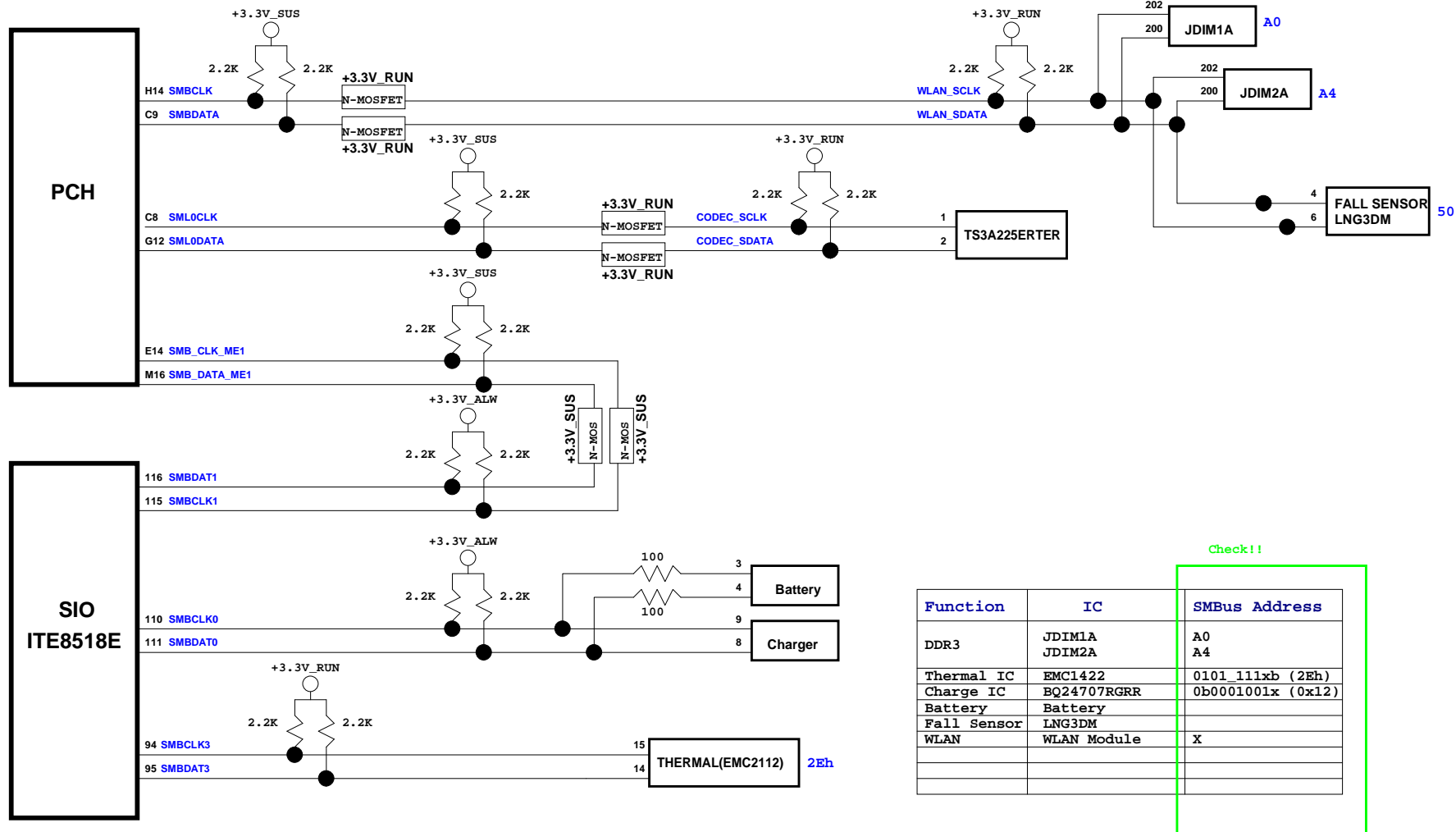


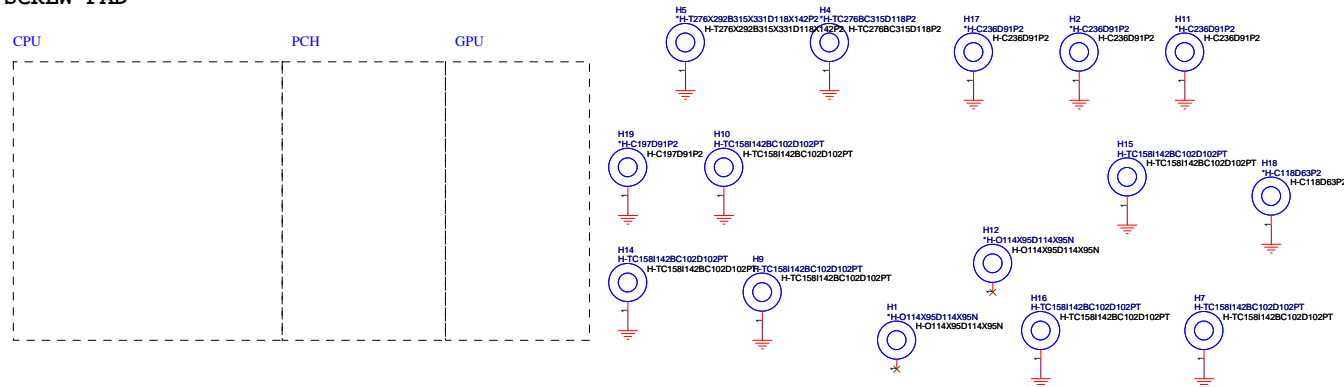
V07 BLOCK DIAGRAM





SCREW PAD

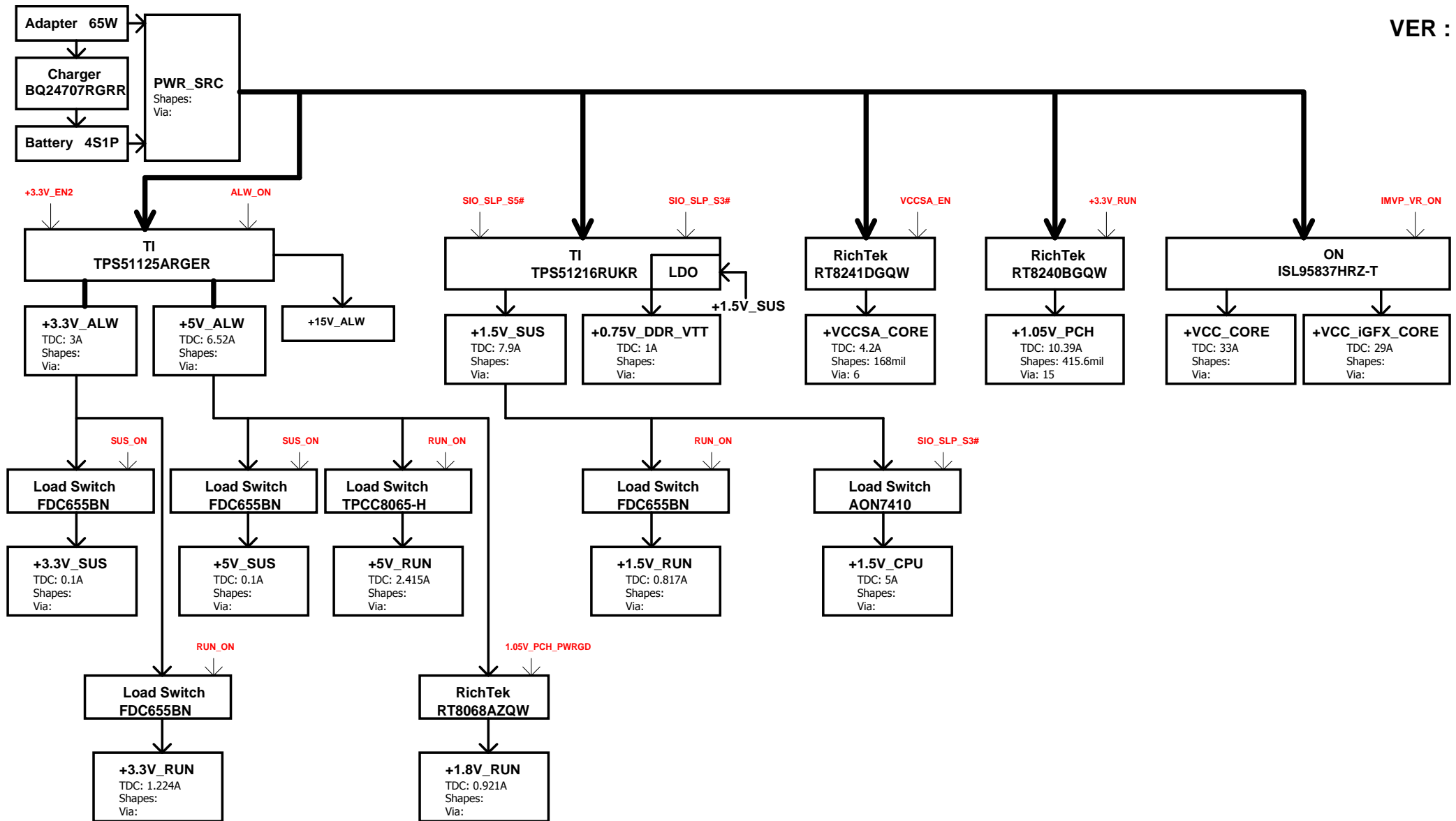
0704 Delet H1-H10, H12-H25



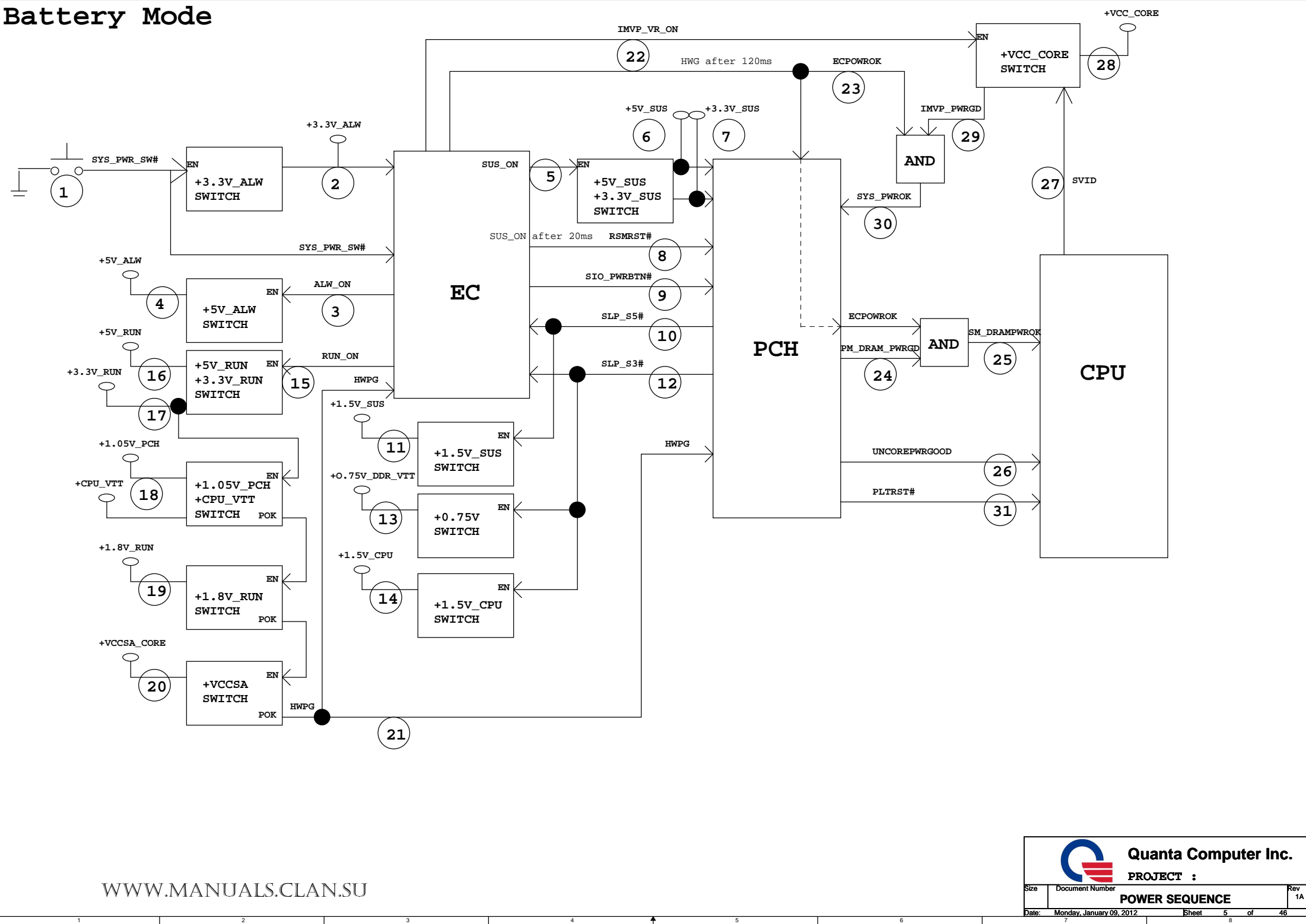
USB Master	Port Assignment
USB0	External port#1 (USB3.0)
USB1	External port#2 (USB3.0/eSATA/ Power share/ debug port)
USB2	External port#3 (USB3.0)
USB3	External port#4 (USB3.0) (NC)
USB4	MiniCard 1 (WLAN/BT/WiMAX)
USB5	MiniCard 2 (WWAN)
USB6	X(FOR HM77)
USB7	X(FOR HM77)
USB8	Fingerprint
USB9	Touch panel (NC, for debug)
USB10	Card Reader
USB11	Express Card (NC)
USB12	Camera
USB13	NC

SATA Master	Port Assignment
SATA0	HDD
SATA1	mSATA
SATA2	NC
SATA3	ODD (NC)
SATA4	eSATA (NC)
SATA5	NC

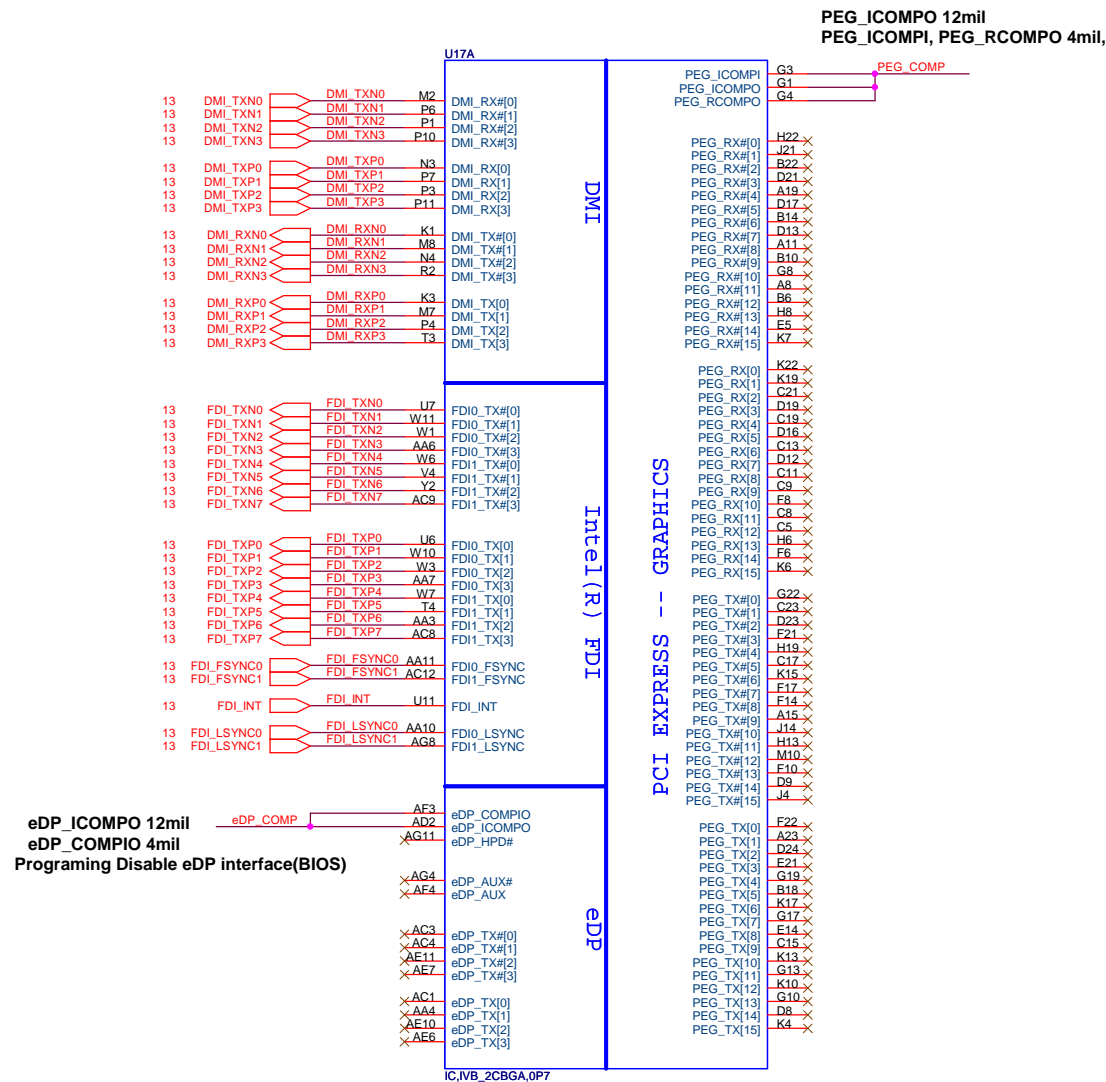
PCIE Master	Port Assignment
PCIE 1	WLAN
PCIE 2	WWAN (NC)
PCIE 3	Card reader (NC)
PCIE 4	NC
PCIE 5	LAN
PCIE 6	Express card (NC)
PCIE 7	NC
PCIE 8	NC



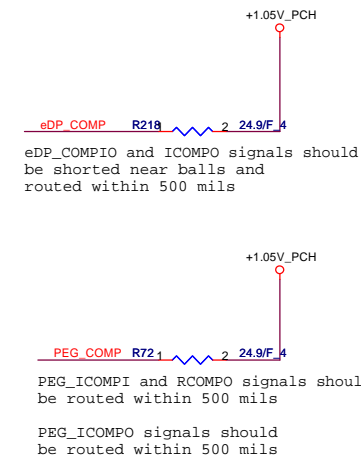
Battery Mode



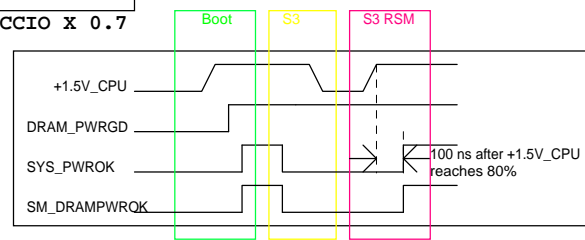
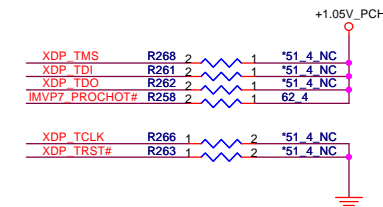
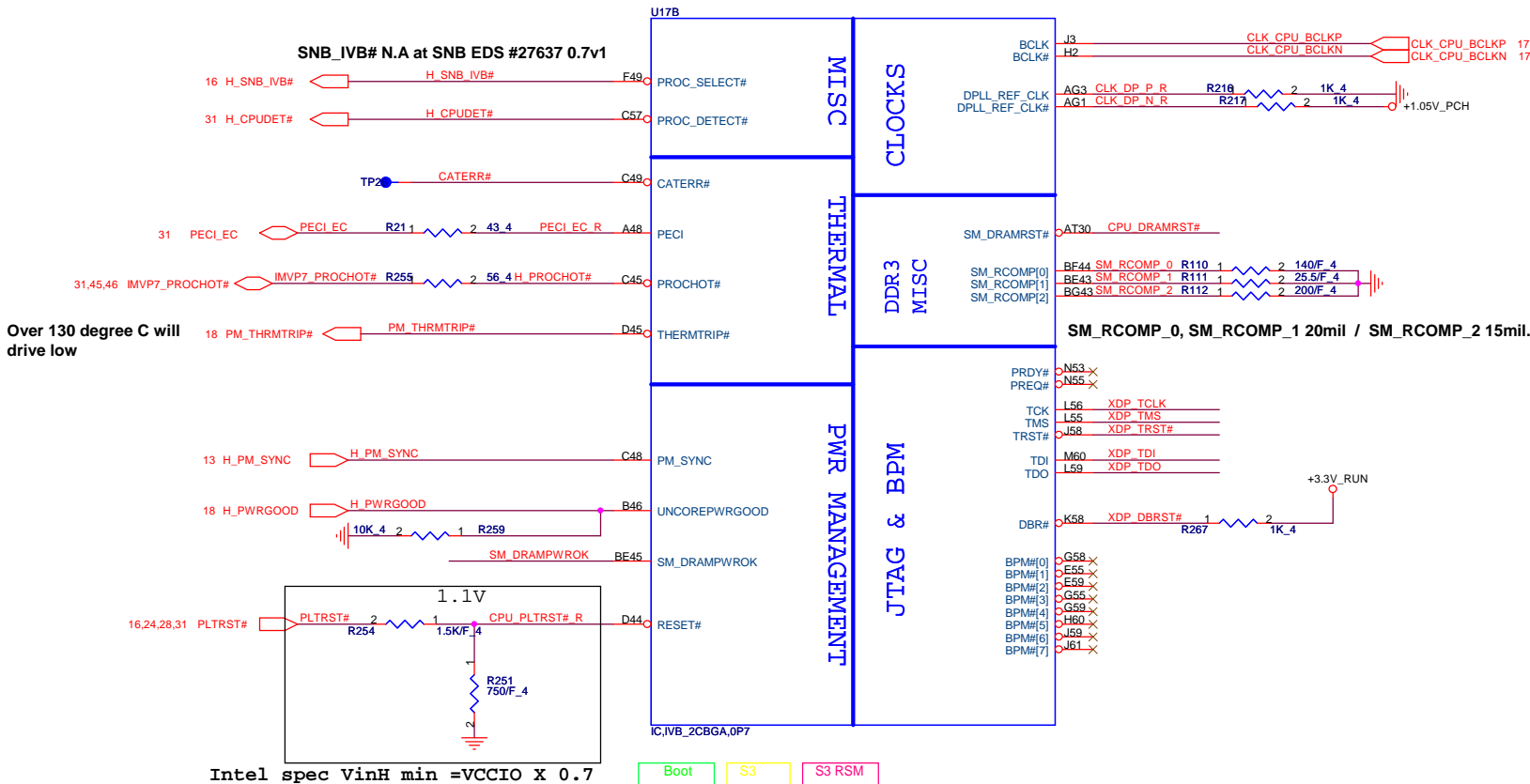
Ivy Bridge Processor (RESERVED, CFG)



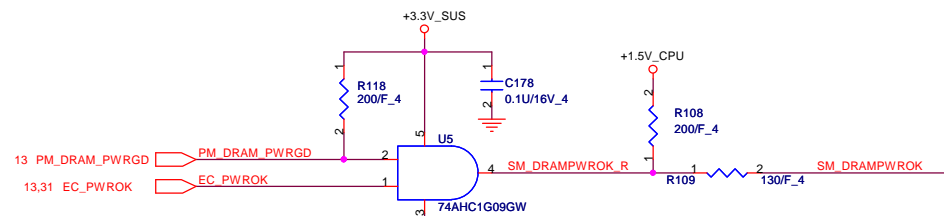
DP & PEG Compensation



Ivy Bridge Processor (CLK,MISC,JTAG)

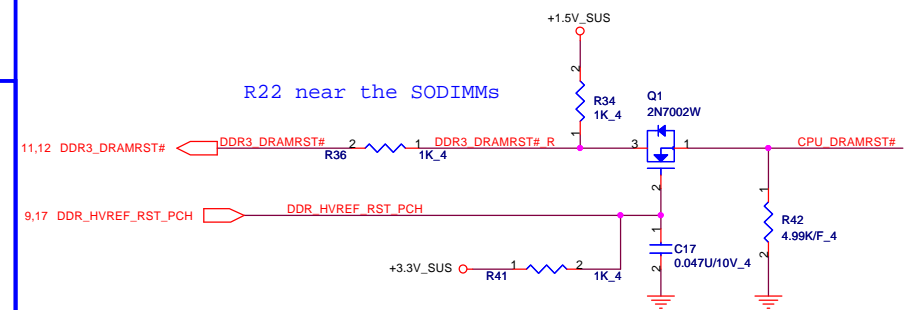


Follow #DG1.0 436735 P105
DDR Power Gating Topology



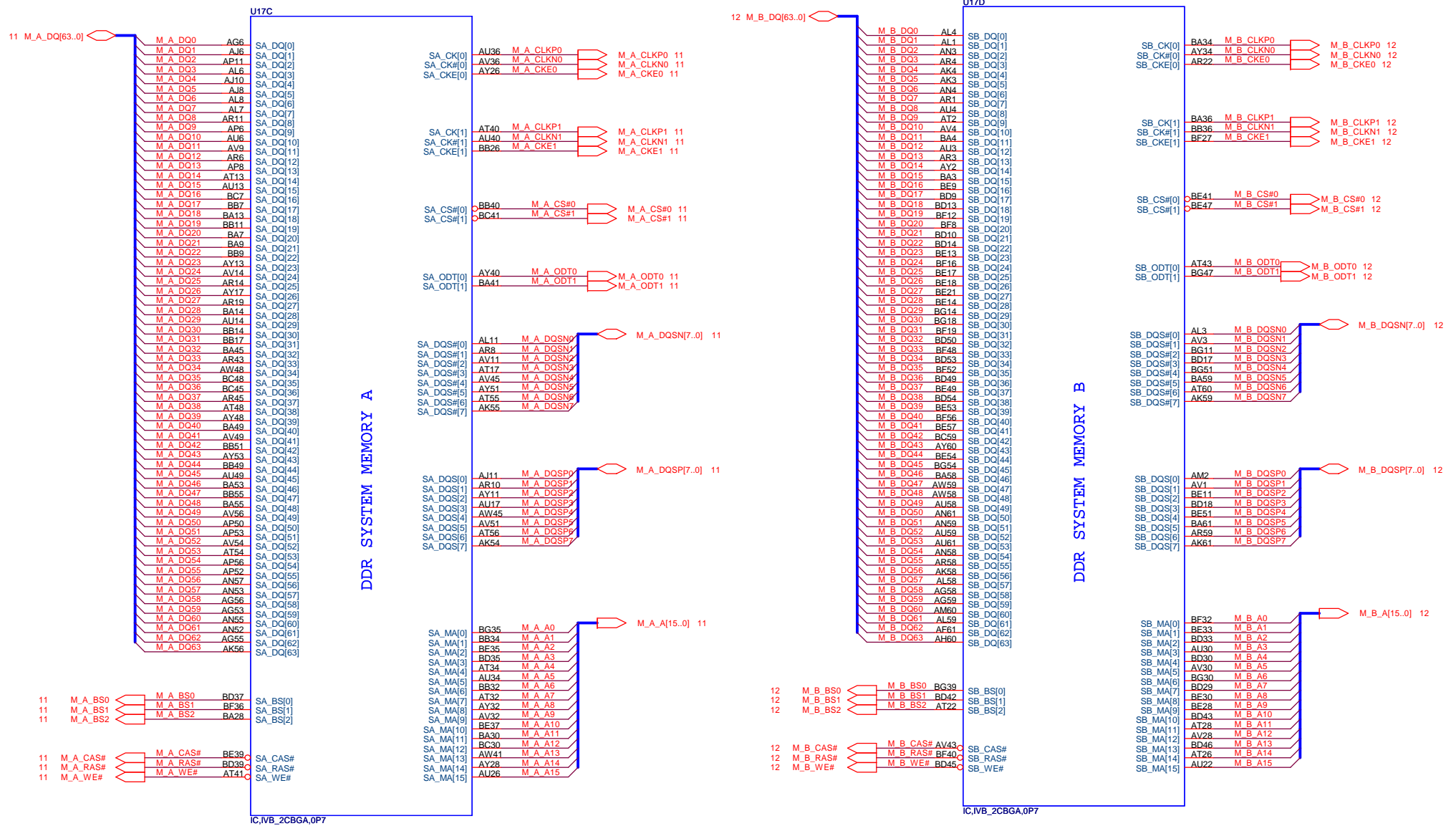
WWW.MANUALS.CLEAN.SU

Follow #DG1.0 436735 P107
DRAMRST# Routing Illustration



Quanta Computer Inc.
PROJECT : V07

Ivy Bridge Processor (DDR3)



CPU Core Power
 SNB: 33A
 IVY: 33A
 10uF x 11
 1uF x15

CORE SUPPLY

SNB: 8.5A
IVY: 8.5A
10uF x12

SNB: 29A
IVY: 29A
10uF x 12

POWER

CAD Note: +VDDR_REF_CPU should have 10 mil trace width

5

GRAPHICS

1.8V RAIL

SA RAIL

Power Rail Sense Line	R1, R2	Trace Impedance	Trace Length Match
VCC_SENSE / VSS_SENSE	100Ω	27-33Ω	<25 mils
VCCAXG_SENSE / VSSAXG_SENSE	100Ω		
VCCIO_SENSE / VSS_SENSE_VCCIO	10Ω	55Ω	
VCCSA	100Ω		

M3 VREF


S3 Power reduce

Take care Q3 $V_{gs}(\text{MAX})=2.5$

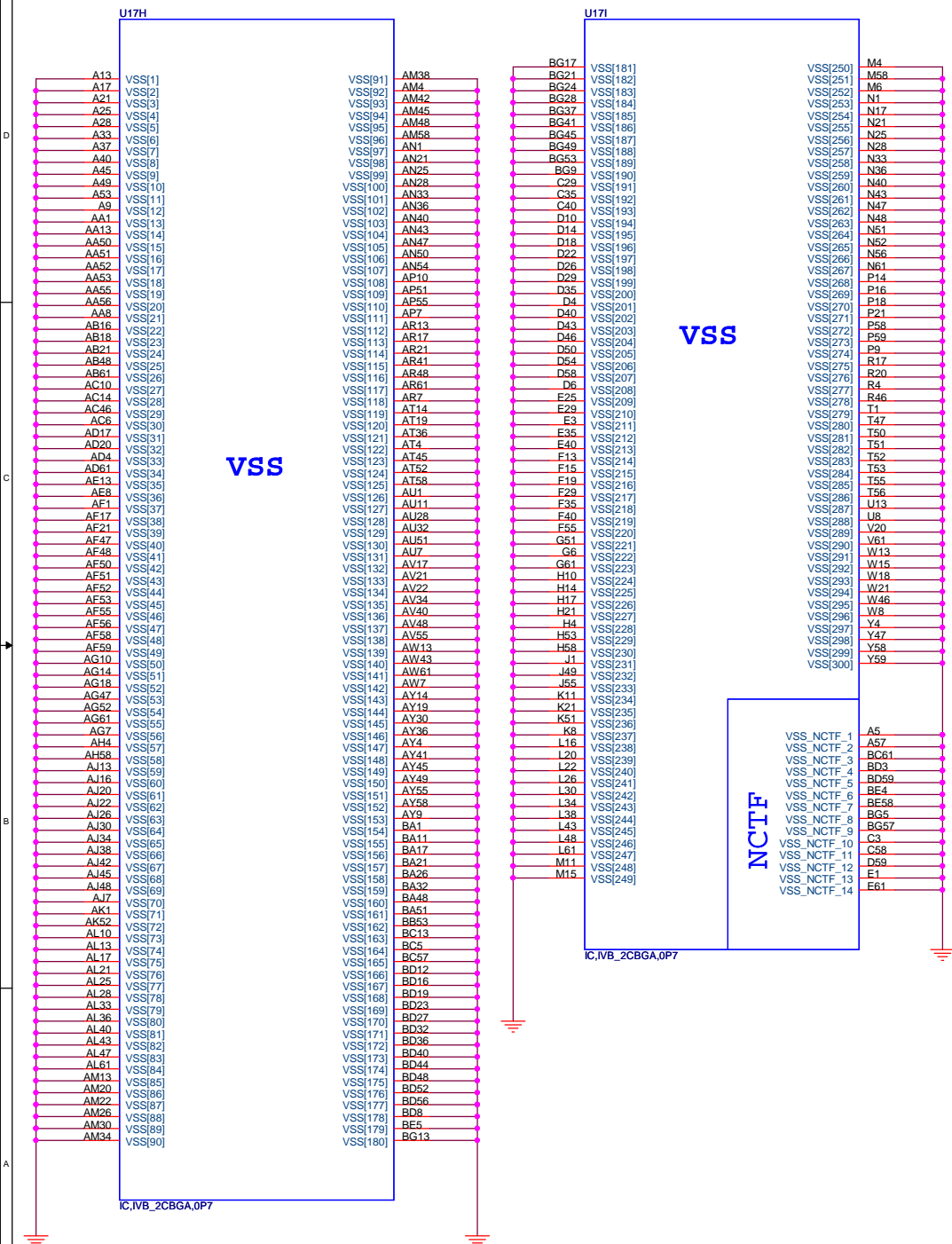
Layout note: need routing together and ALERT need between CLK and DATA

Place PU resistor close to CPU
+1.05V_PCH
SVID DATA

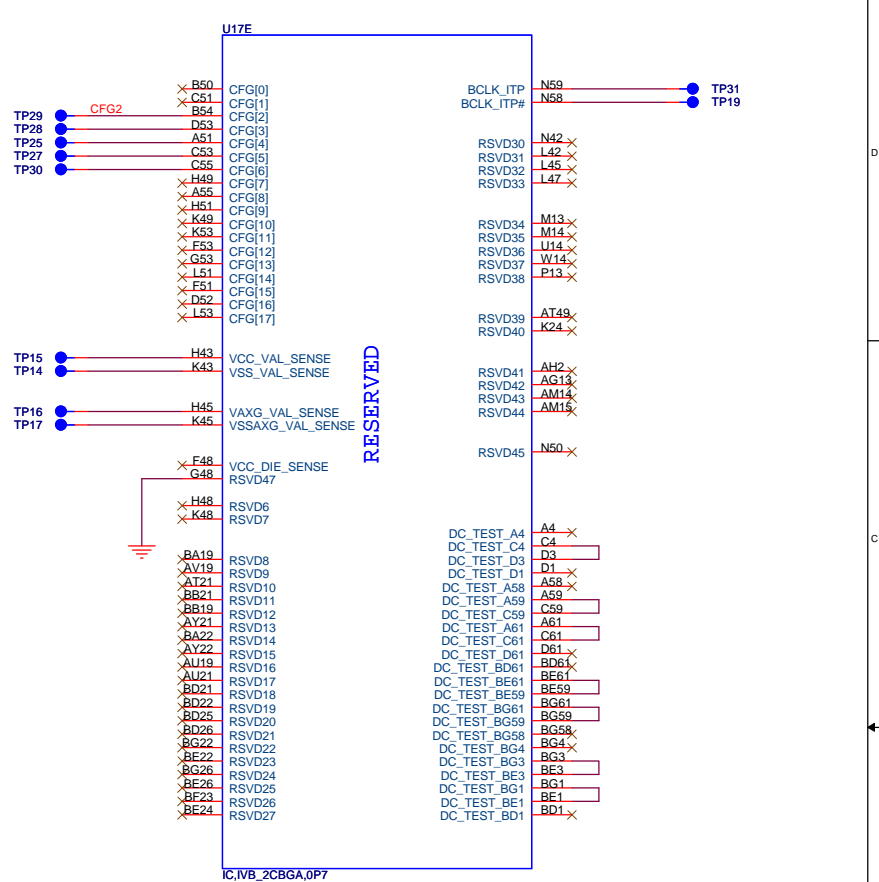
SVID ALERT +1.05V_PCH


Quanta Computer Inc.
PROJECT : V07
 Size Document Number
Ivy Bridge 4/5
 Date: Monday, January 09, 2012 Sheet 9 of 46 Rev 1A

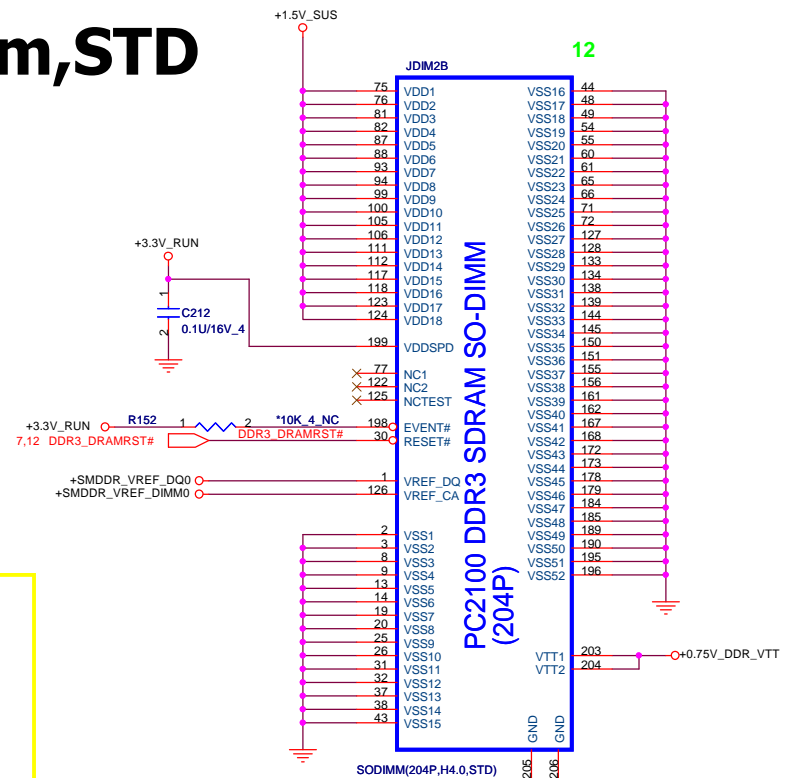
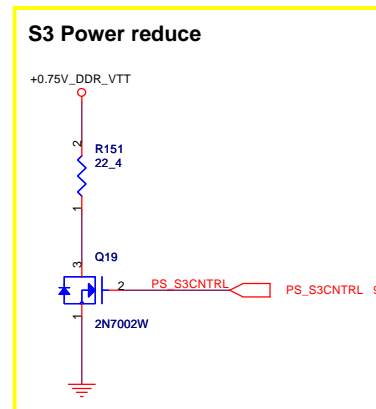
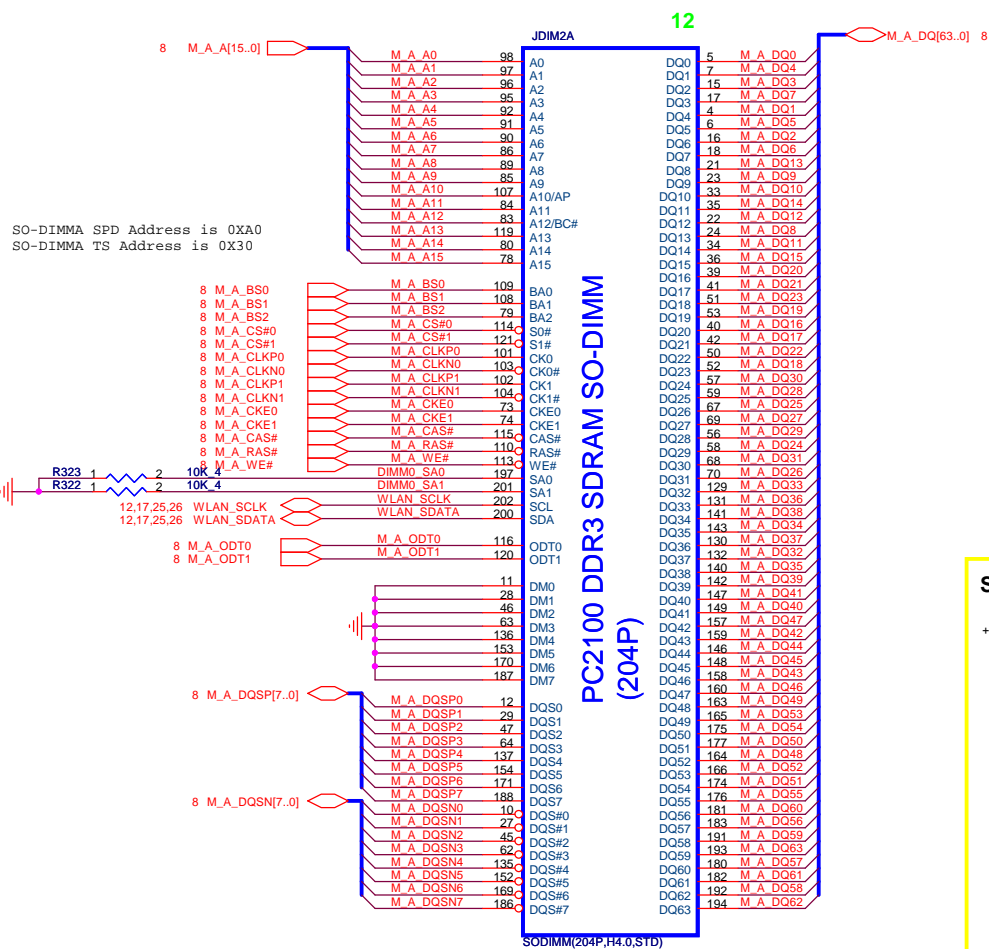
Ivy Bridge Processor (GND)



Ivy Bridge Processor (RESERVED, CFG)



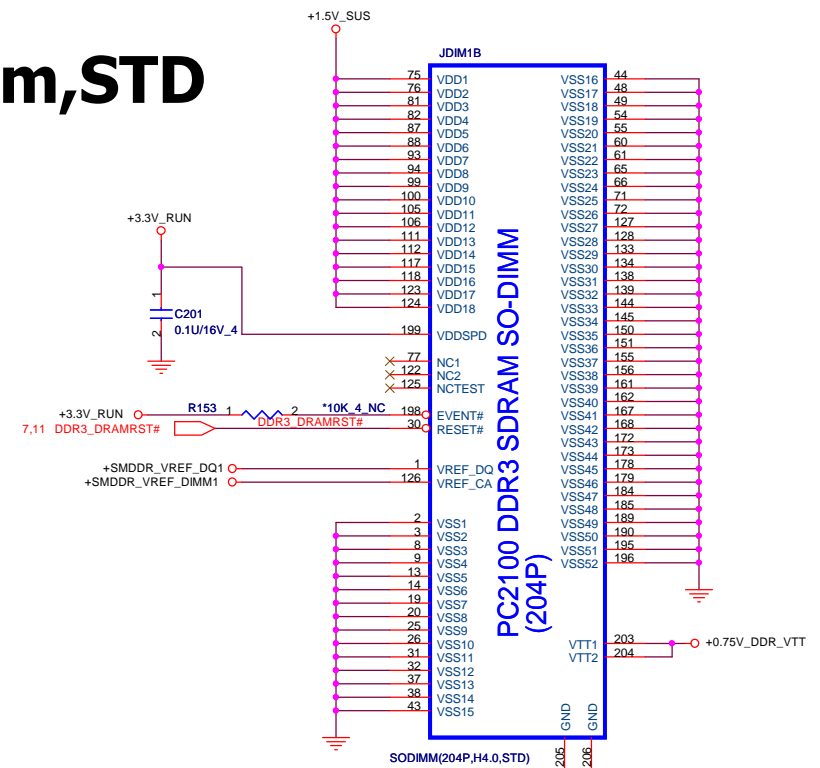
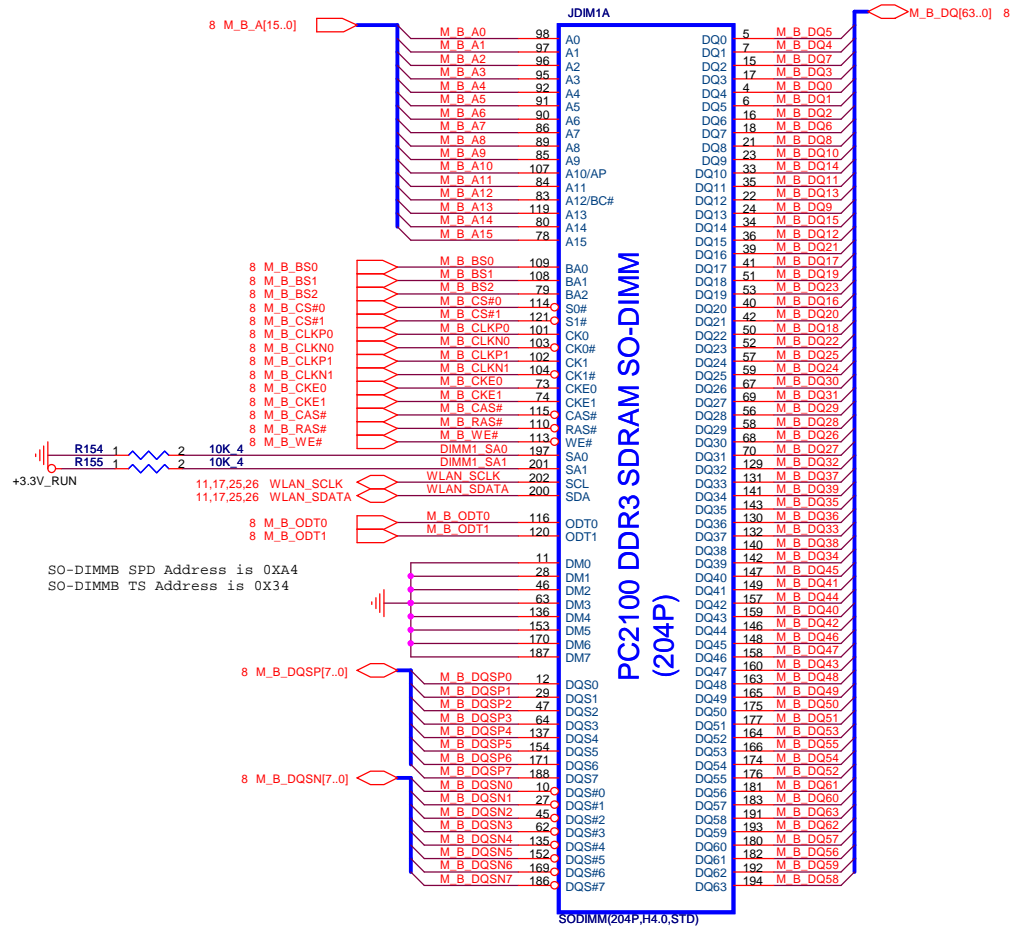
H=4mm,STD



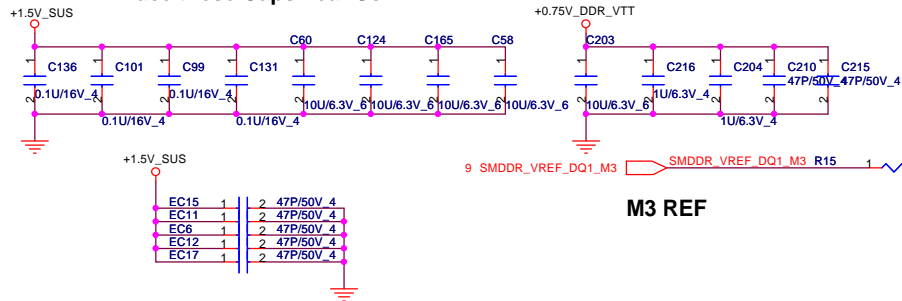
Quanta Computer Inc.
PROJECT : V07

WWW.MANUALS.CLAN.SU

H=4mm,STD

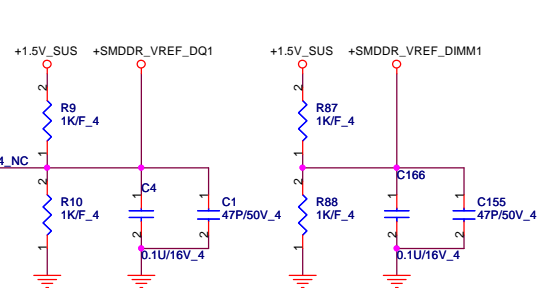


Place these Caps near So-Dimm1.

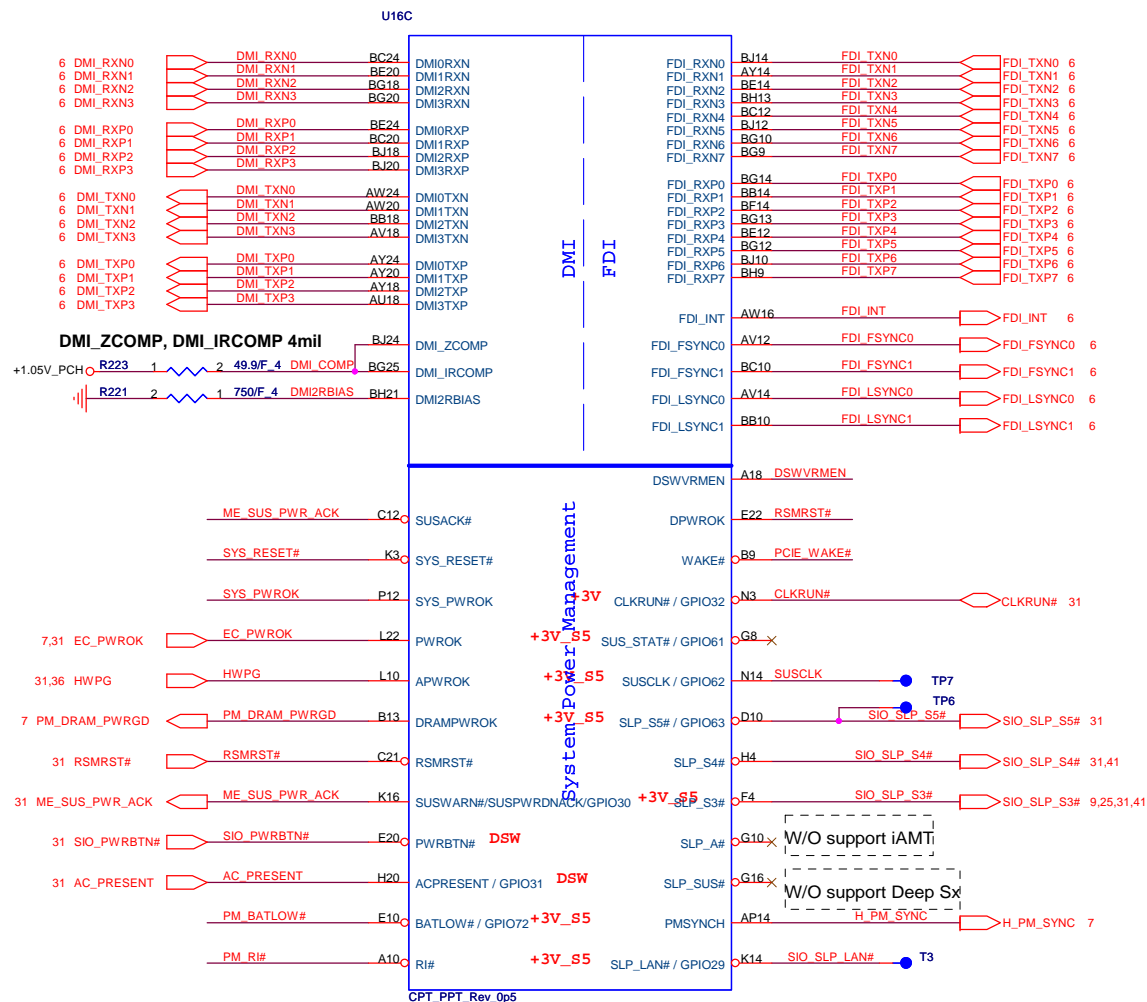


Place these Caps near So-Dimm0.

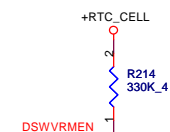
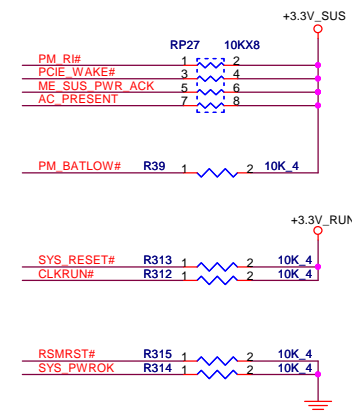
M1 VREF



Cougar Point/Panther Point (DMI,FDI,PM)



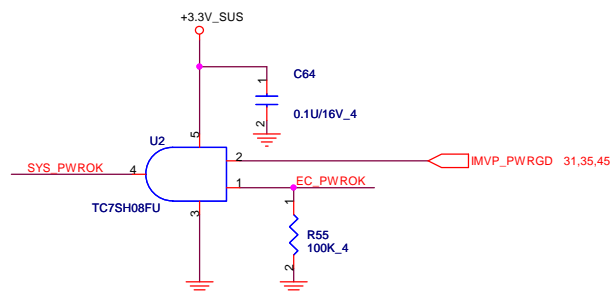
PCH Pull-high/low(CLG)



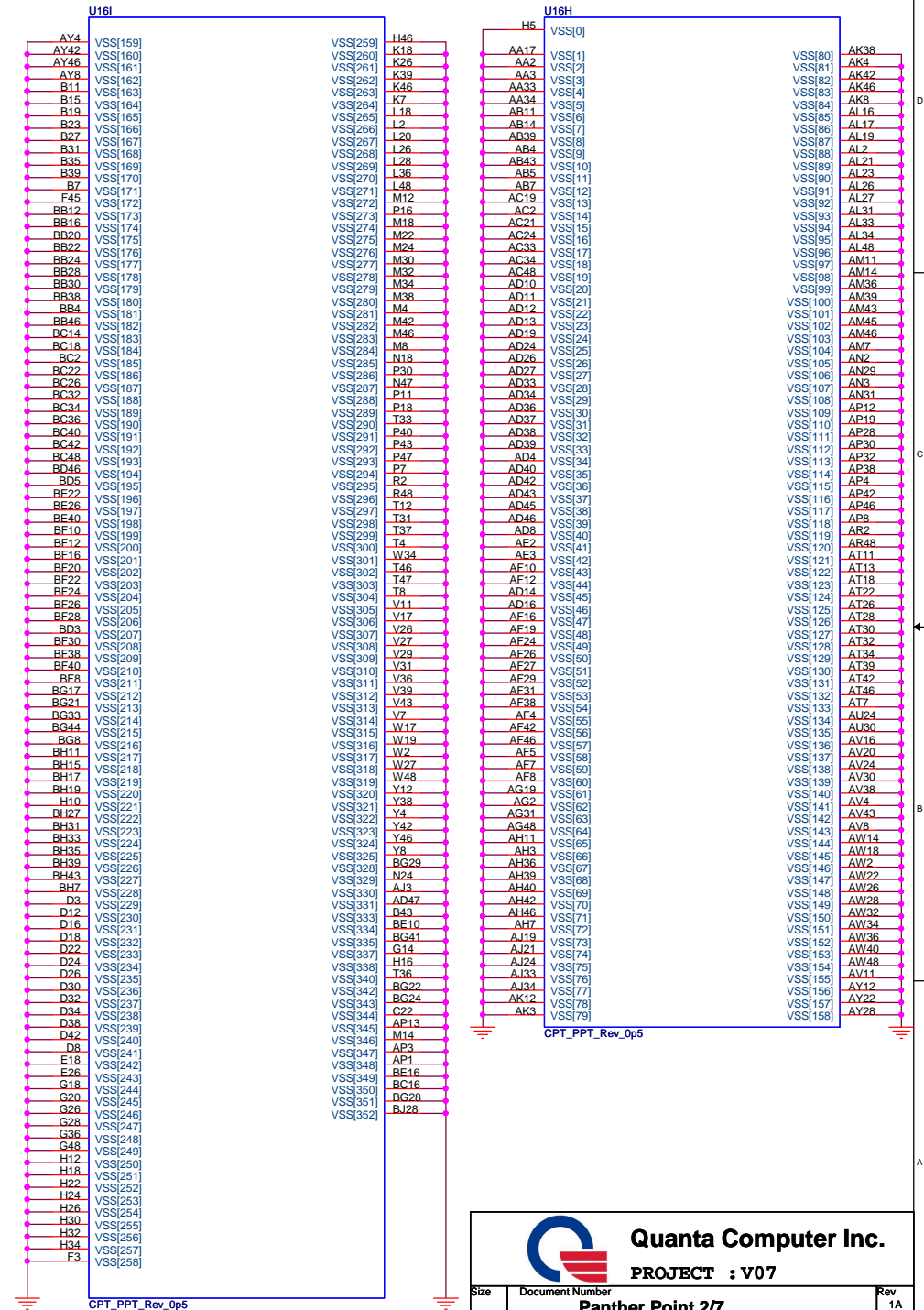
On Die DSW VR Enable

High = Enable (Default)

Low = Disable

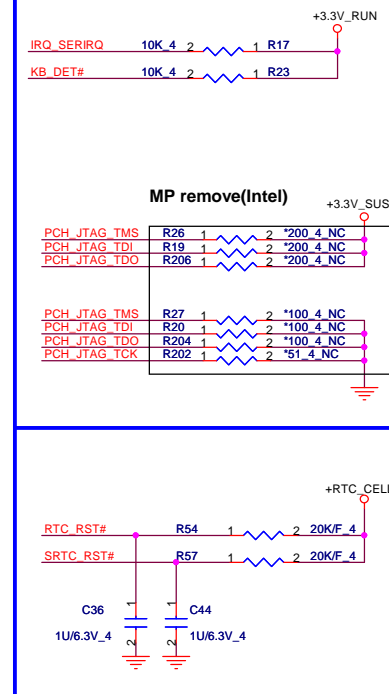
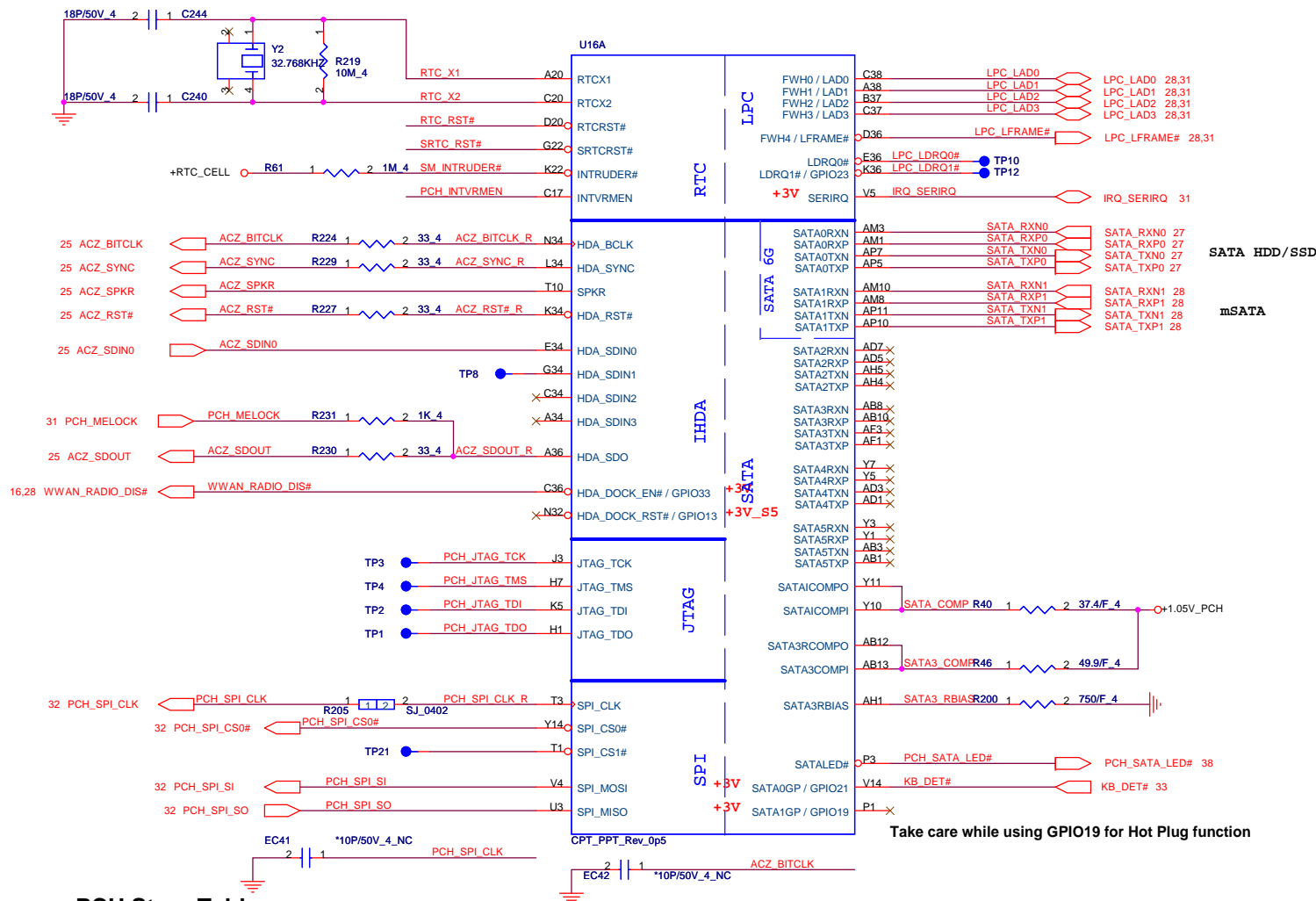


Cougar Point/Panther Point (GND)



BOM setup	Vostro	Inspiron
R241,R242,R243	POP	NC

Cougar Point/Panther Point (HDA,JTAG,SATA)

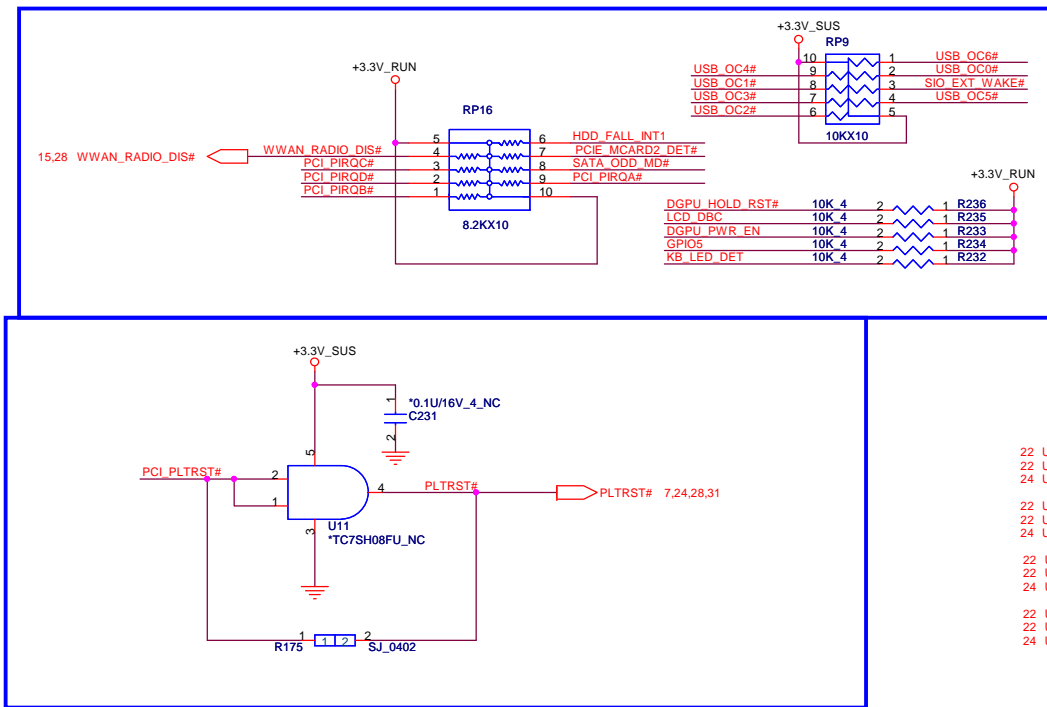


Take care while using GPIO19 for Hot Plug function

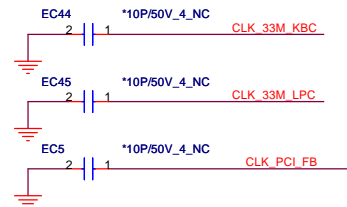
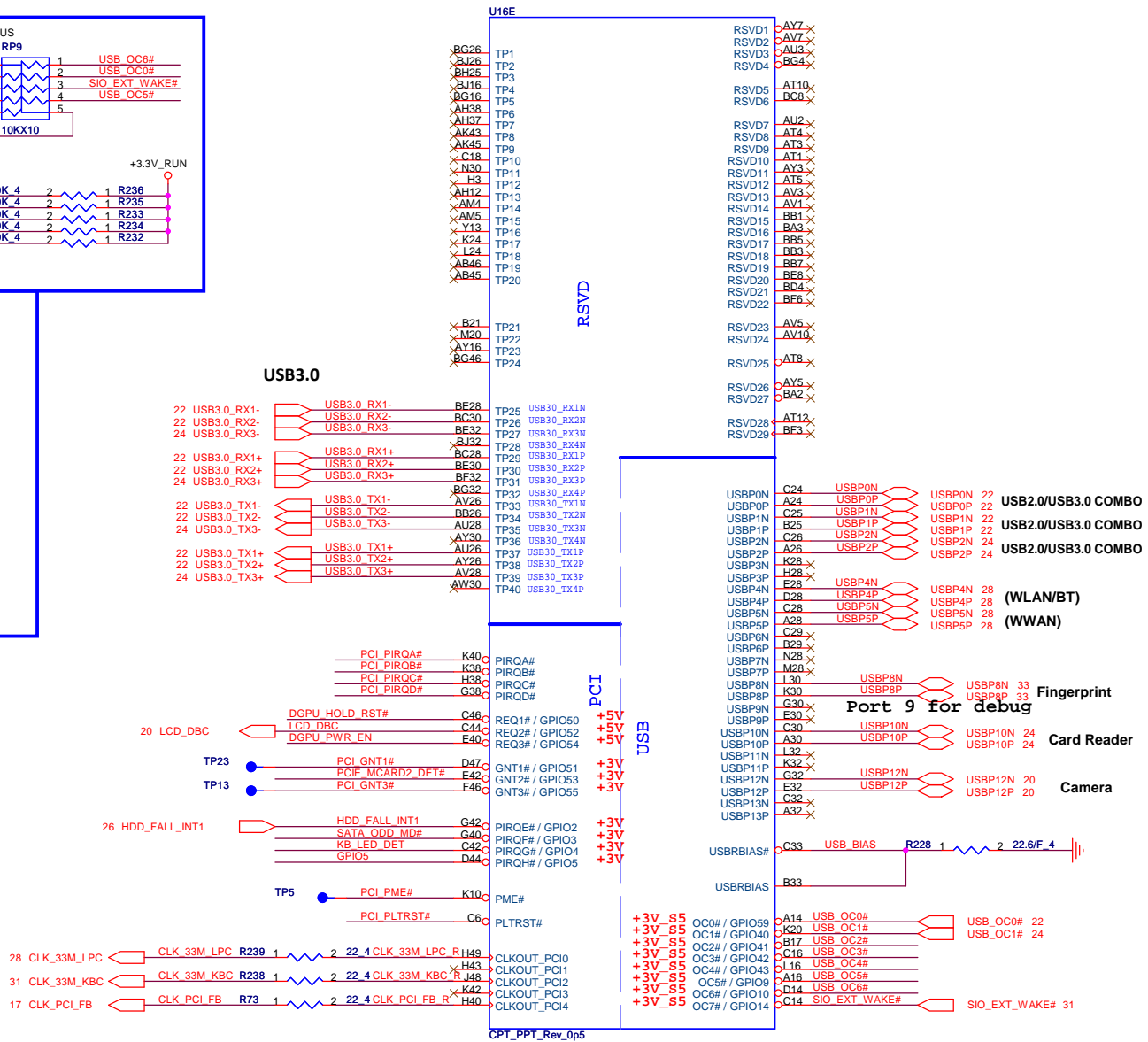
PCH Strap Table

Pin Name	Strap description	Sampled	Configuration	note
SPKR	No reboot mode setting	PWROK	0 = Default (weak pull-down 20K) 1 = Setting to No-Reboot mode	
HDA_SDO	Flash Descriptor Security	PWROK	0 = Default (weak pull-down 20K) 1 = Override	
INTVRMEN	Integrated 1.05V VRM enable	ALWAYS	Should be always pull-up	+RTC_CELL R215 1 2 330K 4 PCH_INTVRMEN
HDA_SYNC	On-Die PLL VR Volatge Select	RSMRST	0 = Support by 1.8V (weak PD) 1 = Support by 1.5V	+3.3V_SUS R67 1 2 1K 4 ACZ_SYNC_R

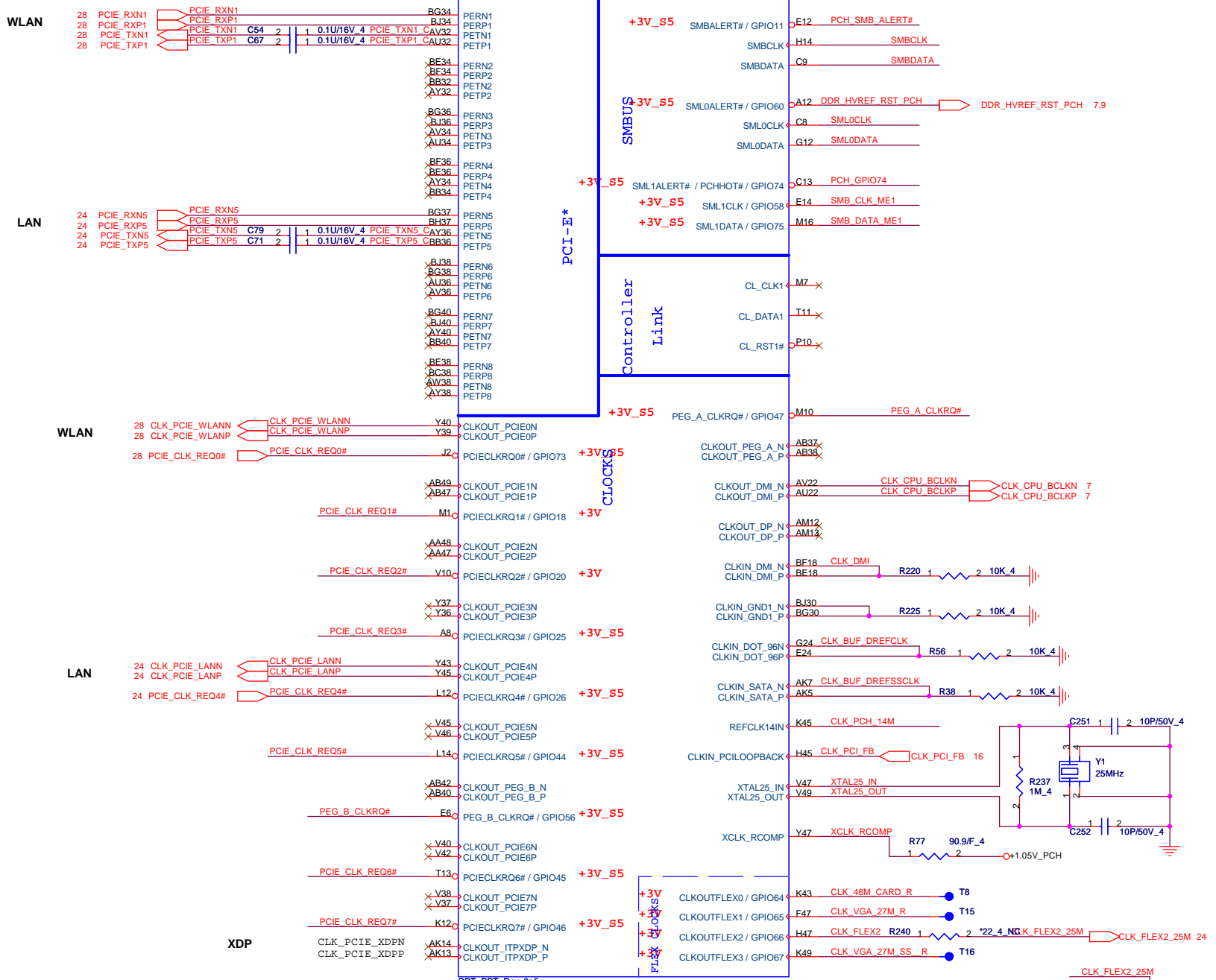
Cougar Point-M/Panther Point (PCI,USB,NVRAM)



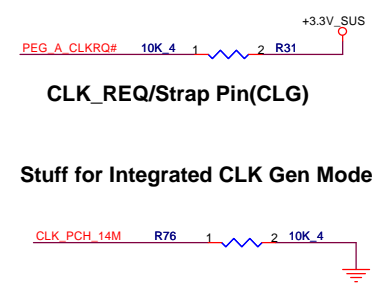
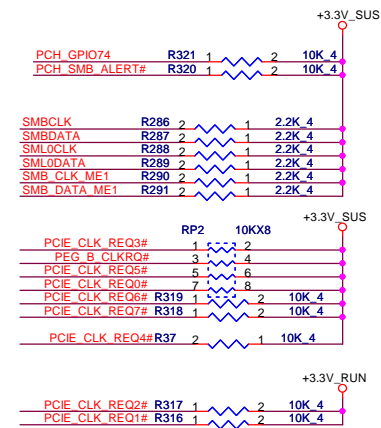
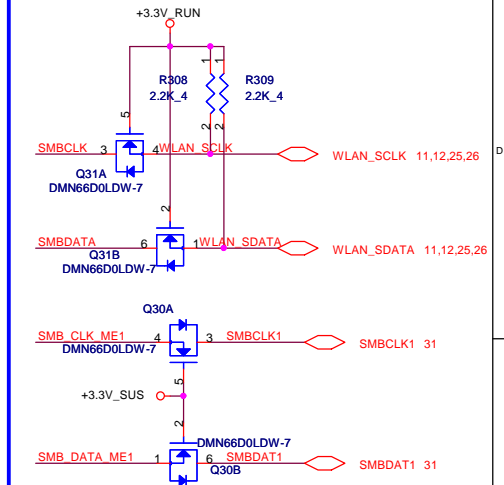
Pin Name	Strap description	Sampled	Configuration									
GNT2# / GPIO53	ESl strap (Server only)	PWROK	Should not be pull-down (weak pull-up 20K)									
GNT3# / GPIO55	Top-Block Swap Override	PWROK	0 = "top-block swap" mode 1 = Default (weak pull-up 20K)									
GNT1# / GPIO51	Boot BIOS Selection 1 [bit-1]	PWROK	<table><tr><td>Bit 0</td><td>Bit 1</td><td>Boot Location</td></tr><tr><td>1</td><td>1</td><td>SPI *</td></tr><tr><td>0</td><td>0</td><td>LPC</td></tr></table>	Bit 0	Bit 1	Boot Location	1	1	SPI *	0	0	LPC
Bit 0	Bit 1	Boot Location										
1	1	SPI *										
0	0	LPC										
GPIO19	Boot BIOS Selection 0 [bit-0]	PWROK										
<div>Default weak pull-up on GNT0/1# [Need external pull-down for LPC BIOS]</div>												
DF_TV5	DMI and FDI Tx/Rx Termination Voltage	PWROK	weak pull-down 20kohm									
<div><p>R25 2.2K 1 +1.8V_RUN</p><p>DF_TV5 2.2K 1 H_SNB_IVB#</p><p>DF_TV6 2.2K 1 H_SNB_IVB#</p></div>												



Cougar Point-M/Panther Point (PCI-E,SMBUS,CLK)

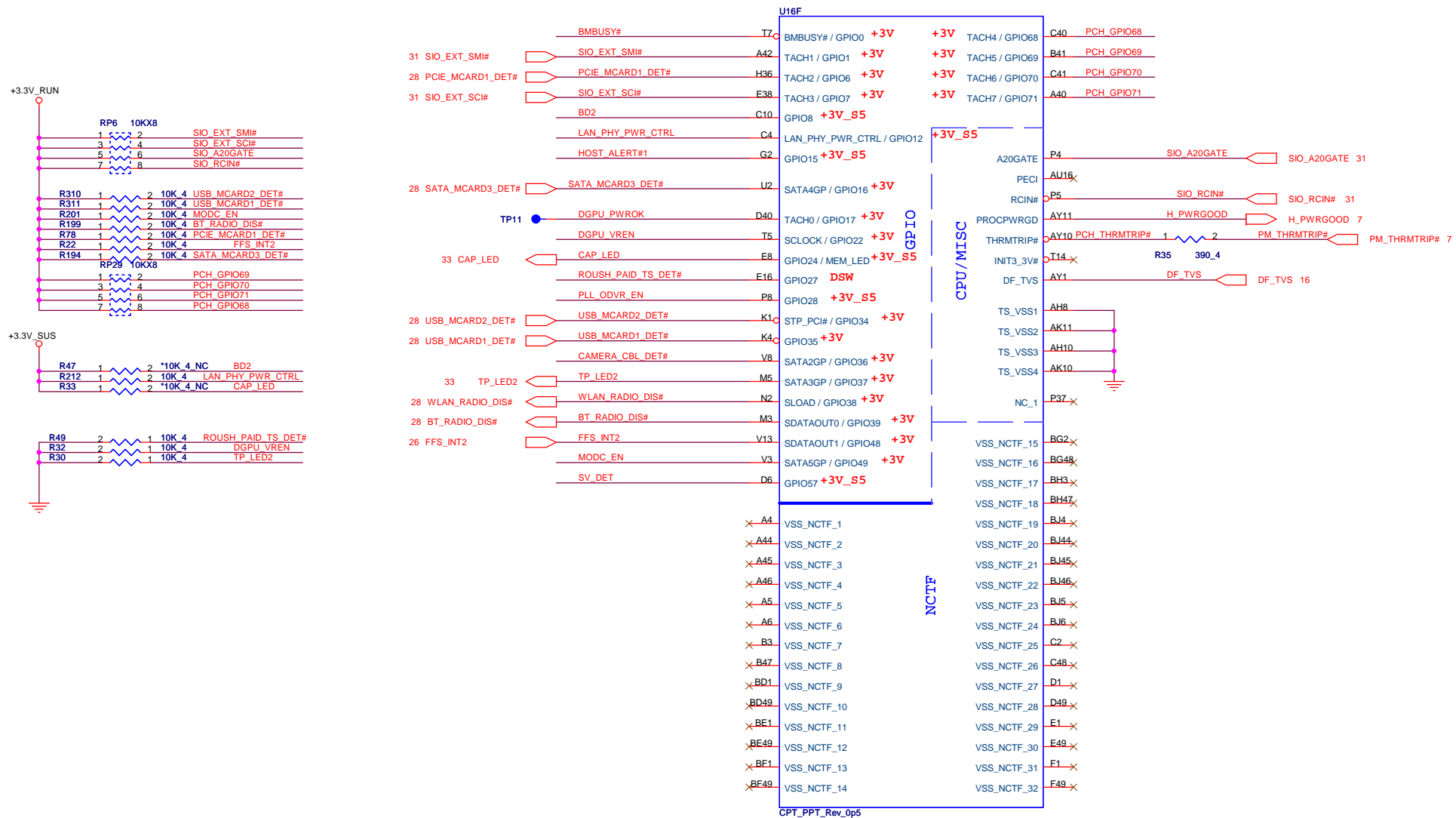


SMBus/Pull-up(CLG)



Signal	Configurable as a GPIO or as a programmable output clock which can be configured as one of the following:
CLKOUTFLEX0 / GPIO64	• 33 / 27 / 48 / 14.318 MHz / DC Output logic '0'
CLKOUTFLEX1 / GPIO65	unsupported clock output value (Default) / 27 / 14.318 MHz output to SIO/EC / 48/24 MHz
CLKOUTFLEX2 / GPIO66	• 33/25/27/48/24/14.318 MHz / DC Output logic '0'
CLKOUTFLEX3 / GPIO67	• 27/14.318 output to SIO/48/24 MHz (Default)

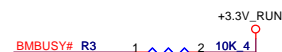
Cougar Point/Panther Point (GPIO,VSS_NCTF,RSVD)



Pin Name	Strap description	Sampled	Configuration
GPIO28	On-die PLL Voltage Regulator	RSMRST#	0 = Disable 1 = Enable (Default)

	DMT TERMINATION VOLTAGE OVERRIDE	Low = Tx, Rx terminated to same voltage (DC Coupling Mode) (Default) High = Enable (Default)
--	--	---

SGPIO



BMBUSY#:(Intel feedback)
Follow CRB checklist, 1K is for intel BIOS validation purpose.

BMBUSY#:
If not used, require a weak pull-up (8.2- KΩ to 10 KΩ) to Vcc3_3.
CRB(V1.0)P28: it has 1K PU and 100 ohm on this net for validation purpose.

Intel ME Crypto Transport Layer Security (TLS) cipher suite Low = Disable (Default) High = Enable	

MFG-TEST

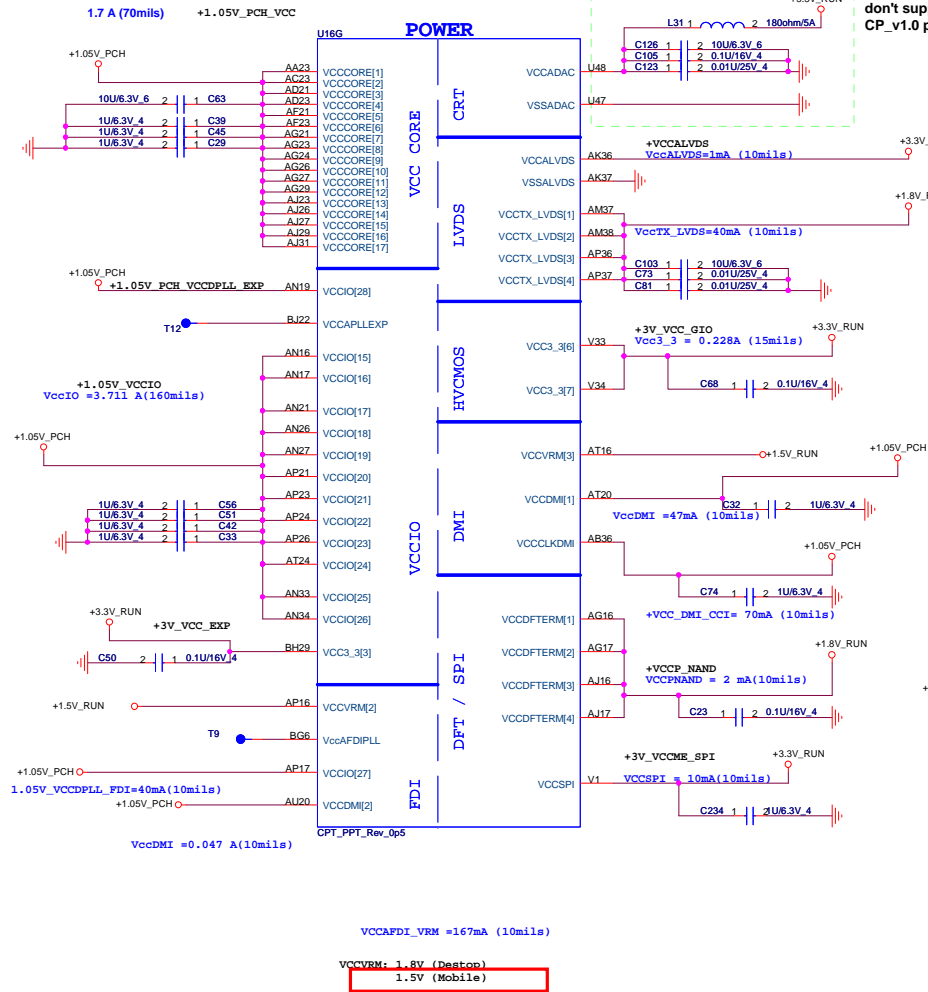
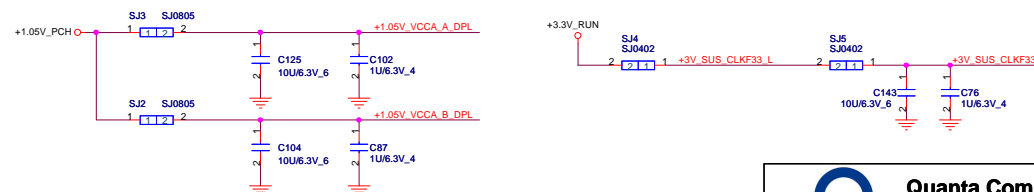


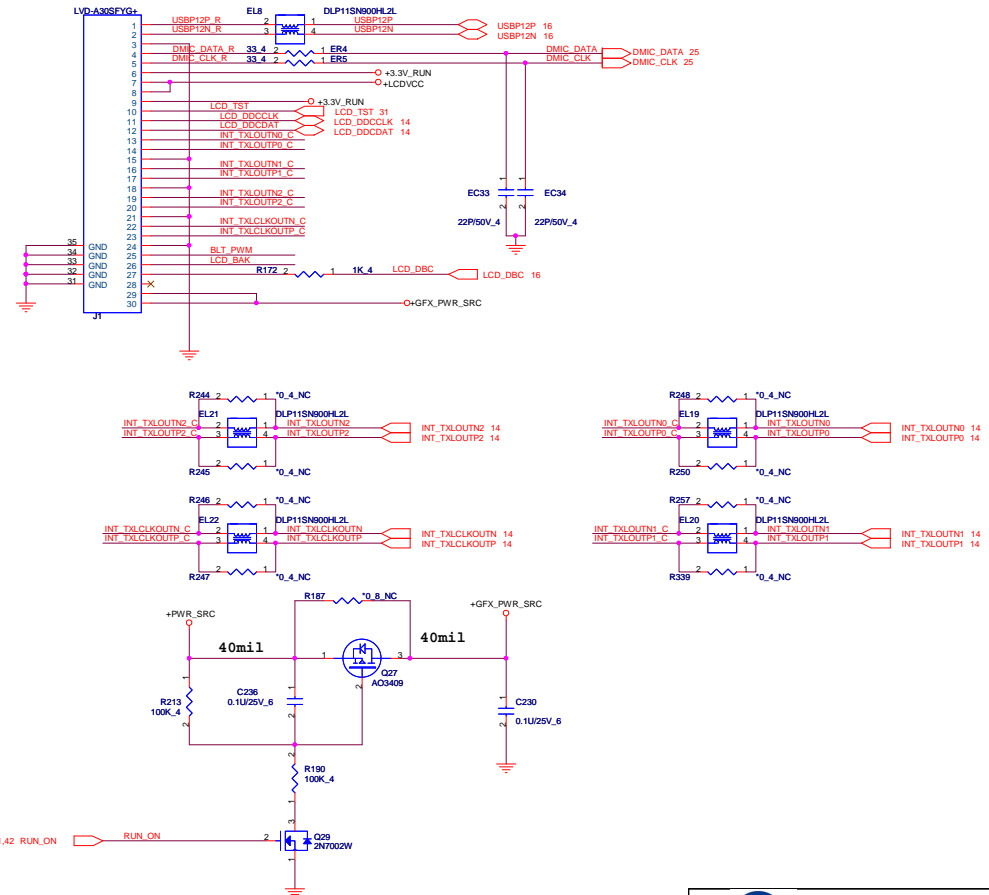
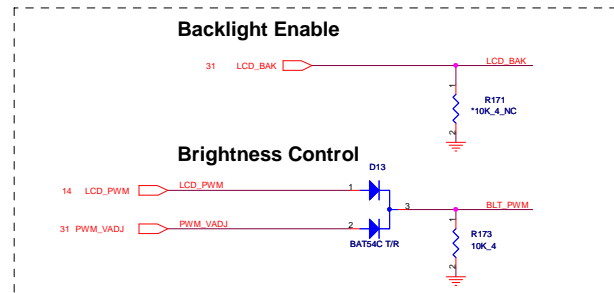
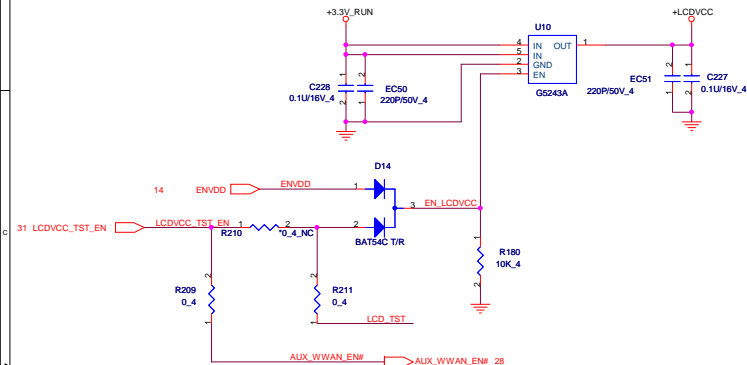
Quanta Computer Inc.
PROJECT : V07

Size	Document Number	Rev
	Panther Point 6/7	1A
Date:	Monday, January 09, 2012	Sheet 18 of 46

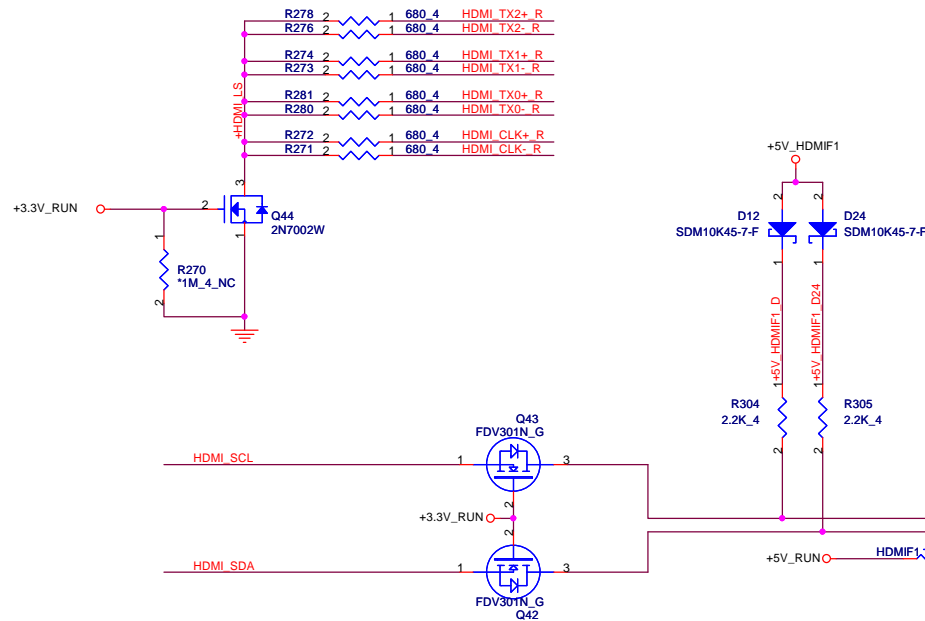
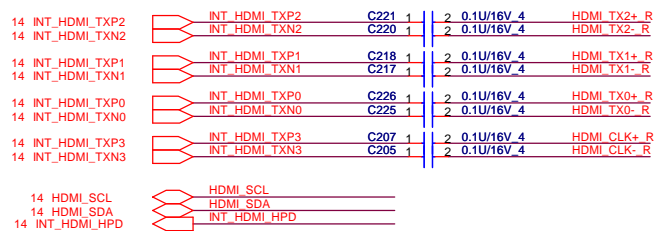
BOM setup	VOSTOR(V07)	Inspiron(R07)
L31 QPN	CX000181024	CS00003J951

BOM setup	VOSTOR(V07)	Inspiron(R07)
C126,C105 C123	POP	NC

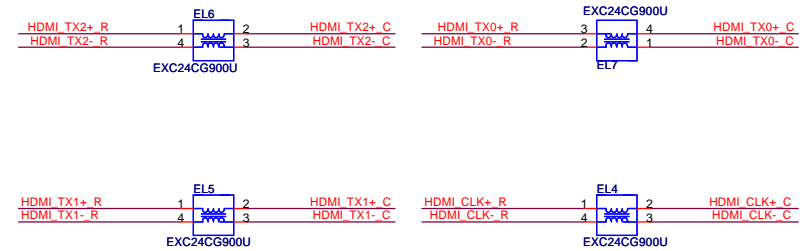
[illegible]



INT HDMI

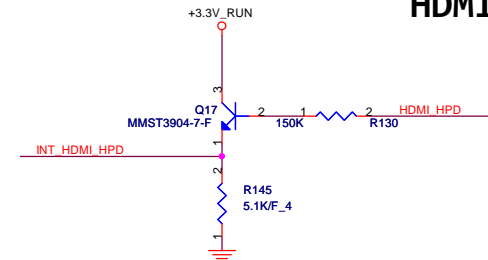


Reserve for EMI and close to HDMI CONN



HDMI_HPDP spec VinH_min=2.0V

HDMI HPD



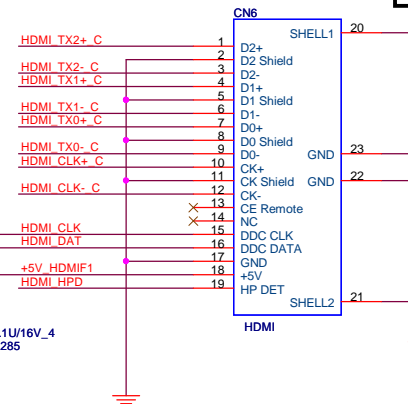
$$IB = (5V - 0.7V) / (150K + (70 + 1) 5.1K) = 8.4\mu A$$

$$IE = (1 + 70) \times 8.4\mu A = 596.4\mu A$$

$$VE = 596.4\mu A \times 5.1K = 3.04V$$

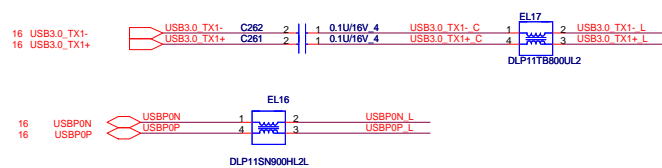
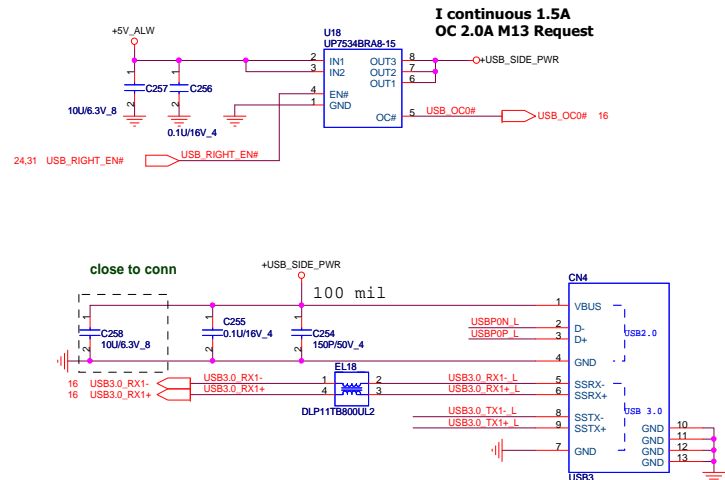
$$B = 70$$

HDMI Conn.

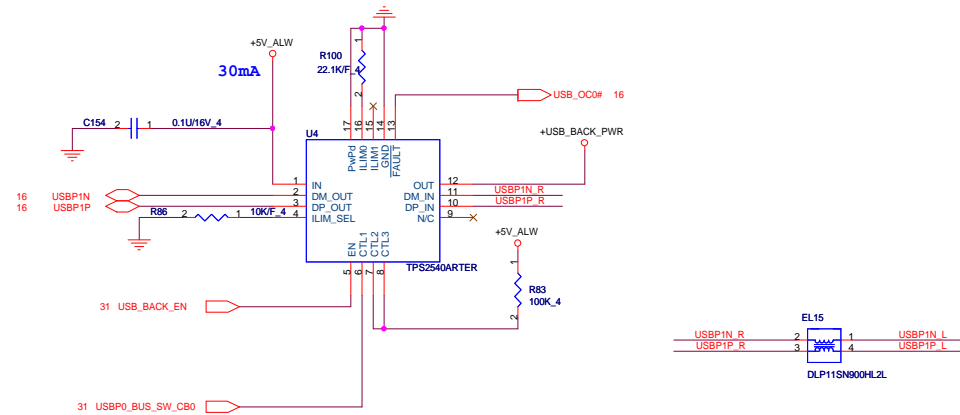


BOM setup	VOSTOR(V07)	Inspiron(R07)
CN6 QPN	DFHS19FR067	DFHS19FR066

USB3.0 x2 (x1 with powershare)



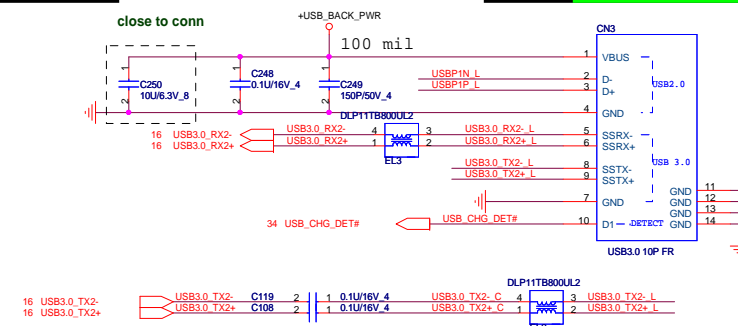
S3/S5 USB charging circuit



USBP0_BUS_SW_CB0	Mode
Low	DCP, Auto-detect
High	CDP, BC Spec 1.1

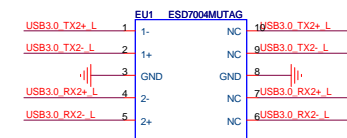
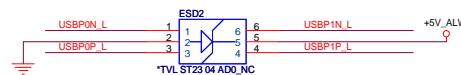
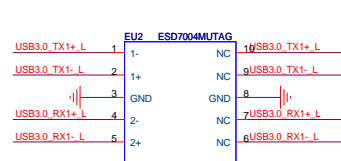
	R8224	mA
OC limitation	100k ohm	480
	22.1k ohm	2171

Applied Now

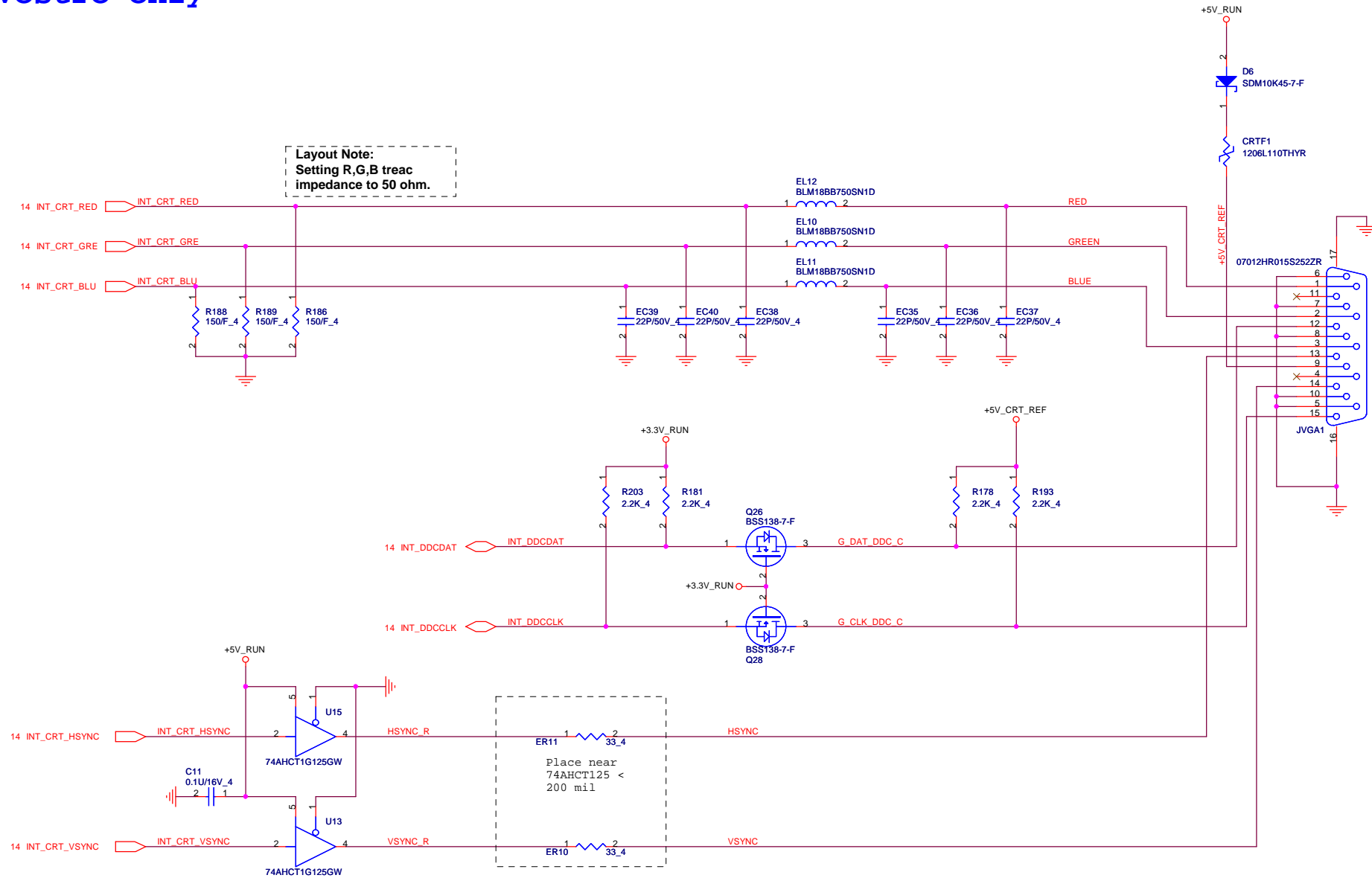


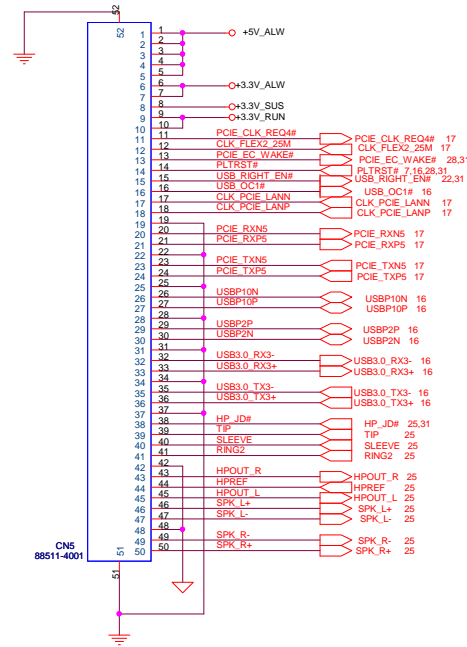
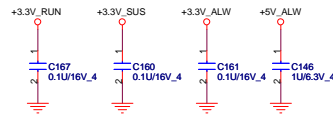
ESD Function

Place ESD diodes as close as USB connector.



Vostro only

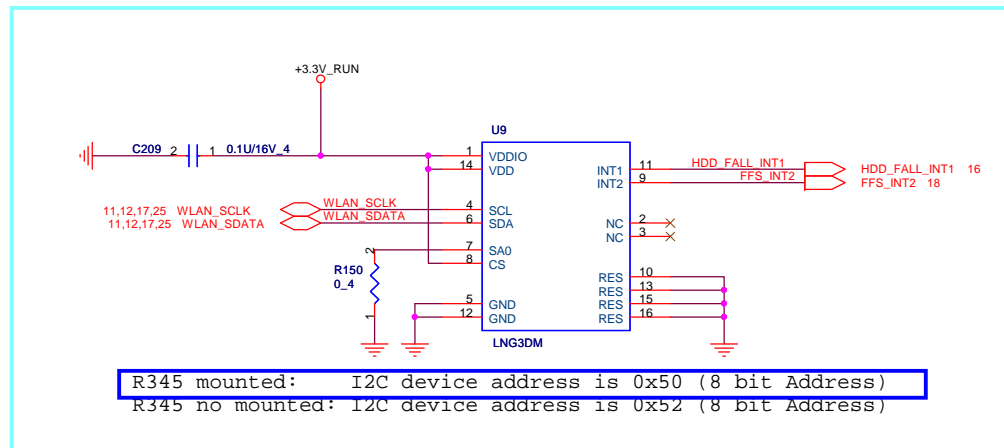
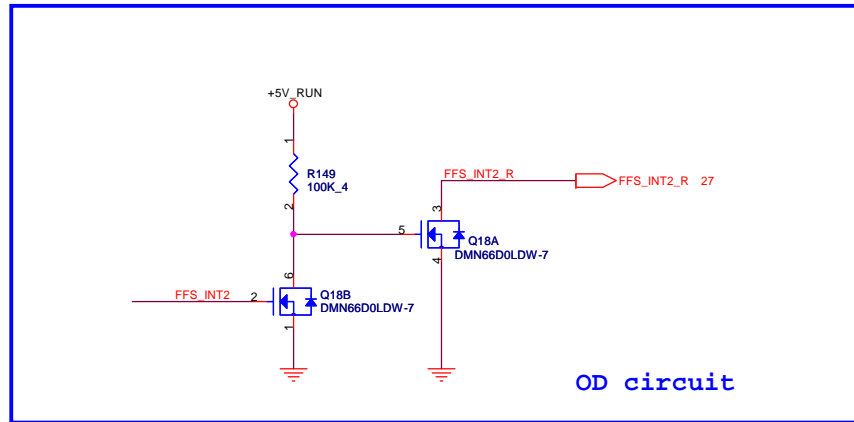




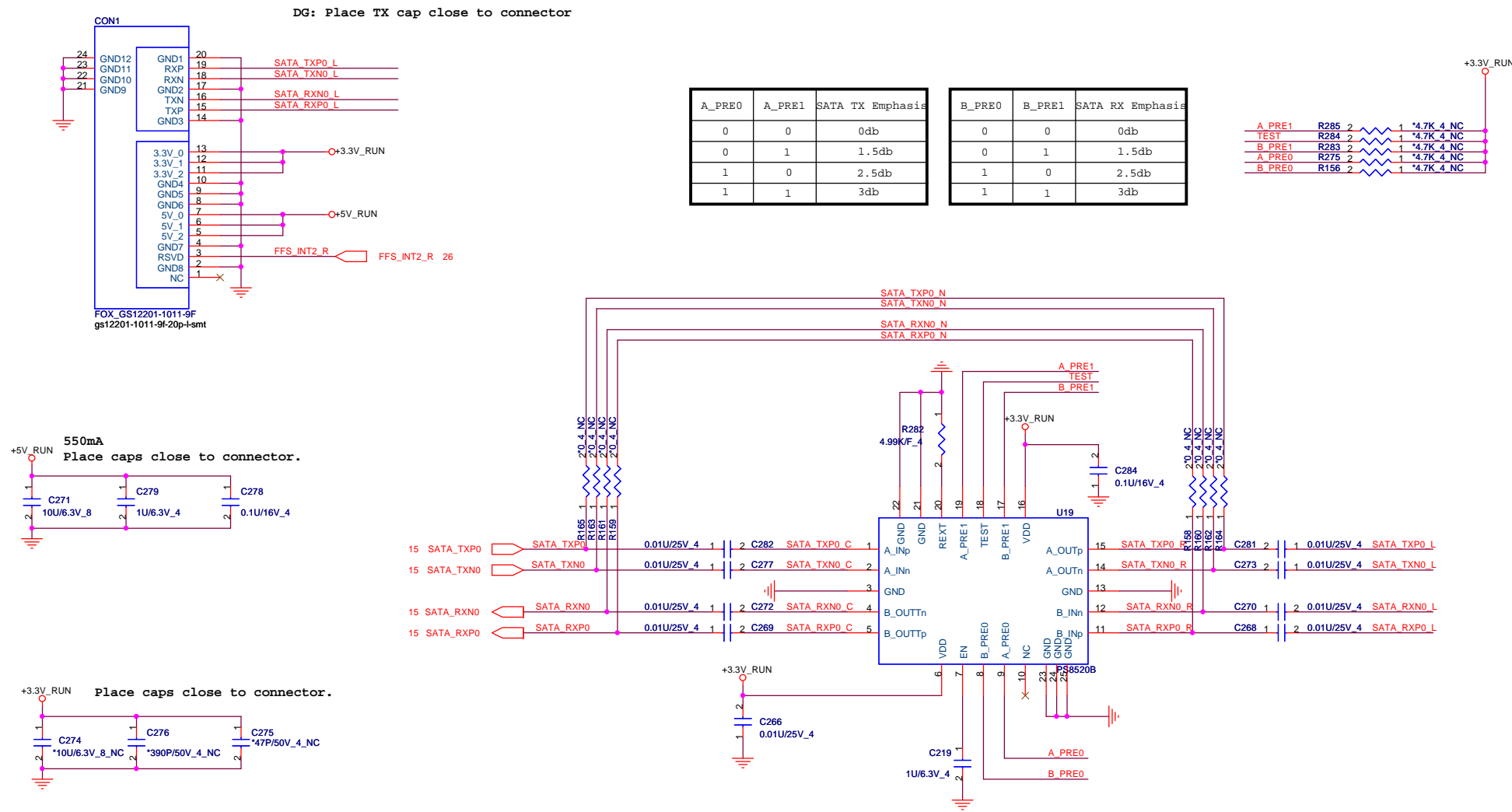
3-axis Fall Sensor

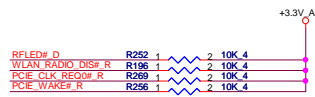
Vostro only

If you have two HDD, need add two OD circuit for Fall sensor interrupt circuit

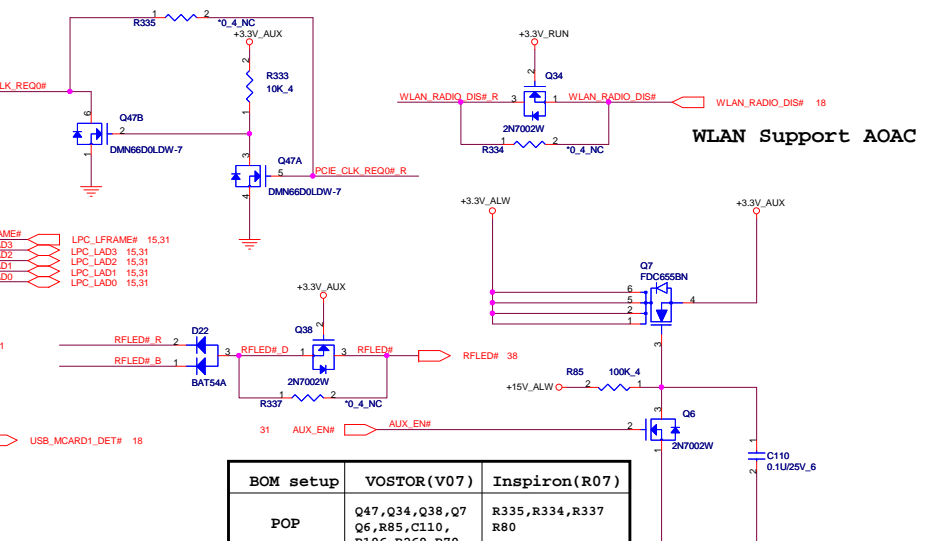
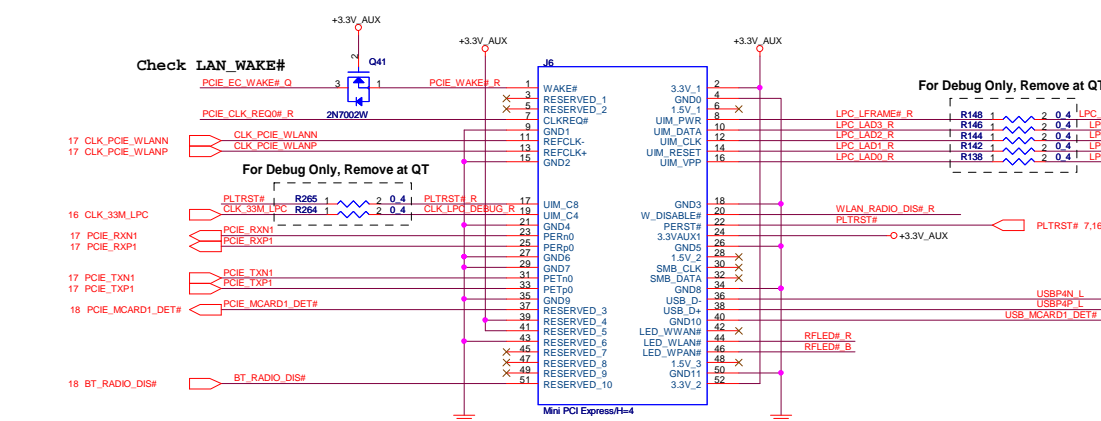


HDD

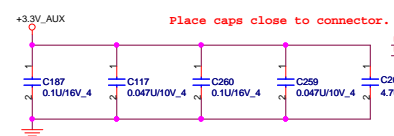
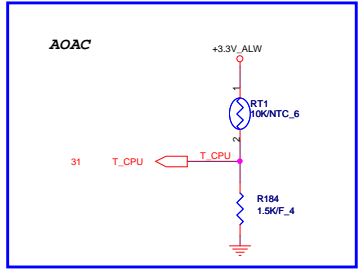




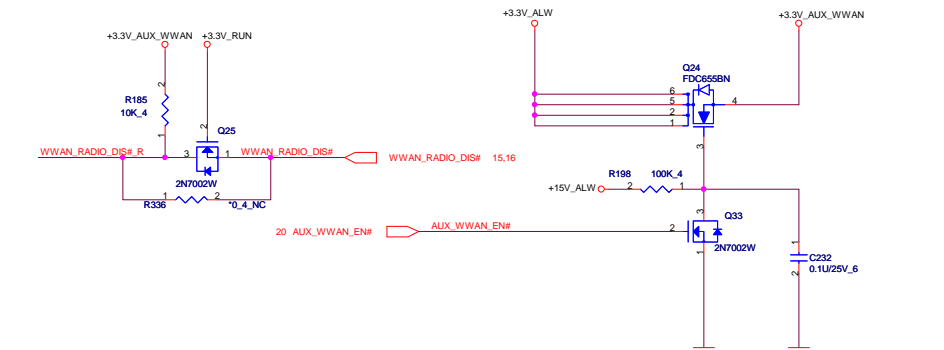
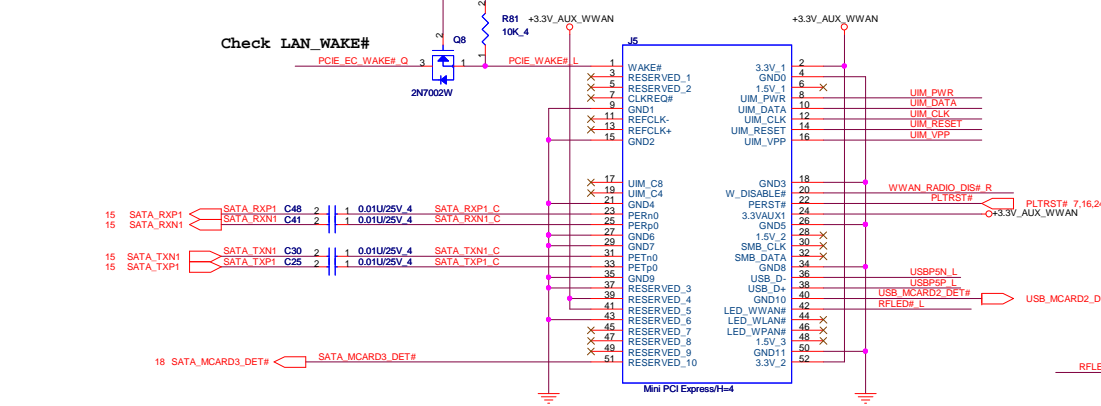
MiniCard WLAN connector



BOM setup	VOSTOR(V07)	Inspiron(R07)
POP	Q47,Q34,Q38,Q7 Q6,R85,C110, R196,R269,R79	R335,R334,R337 R80
NC	R335,R334,R337 R80	Q47,Q34,Q38,Q7 Q6,R85,C110,R196 R269,R79

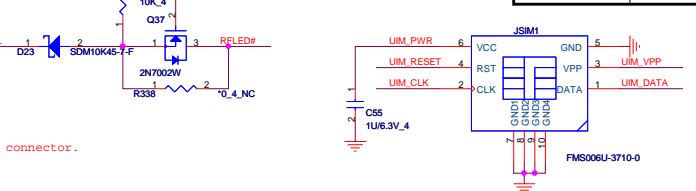


MiniCard WWAN\ mSATA connector



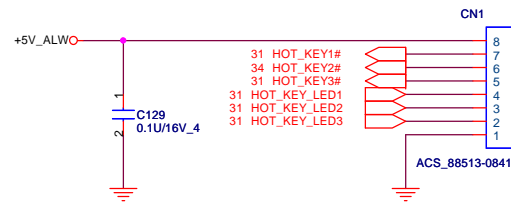
BOM setup	VOSTOR(V07)	Inspiron(R07)
POP	Q37,Q25,Q24,Q33 ,R198,C232,R185	R338,R336
NC	R338,R336	Q37,Q25,Q24,Q33 ,R198,C232,R185

SIM SOCKET




Place as close as possible to JSIM1 connector

Spacing 2:1



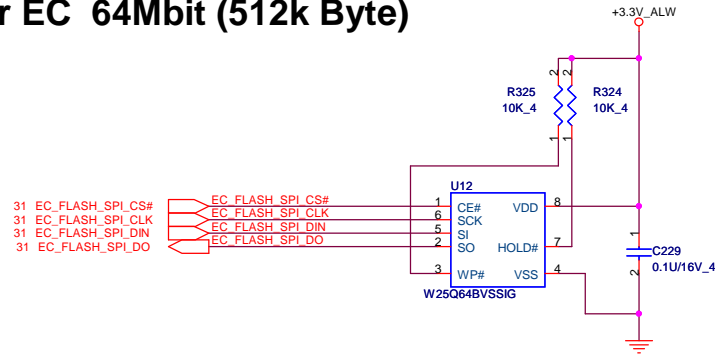
HOTKEY CON

1	2	3	4	5	6	7	8
A							A
B							B
C							C
D							D
1	2	3	4	5	6	7	8

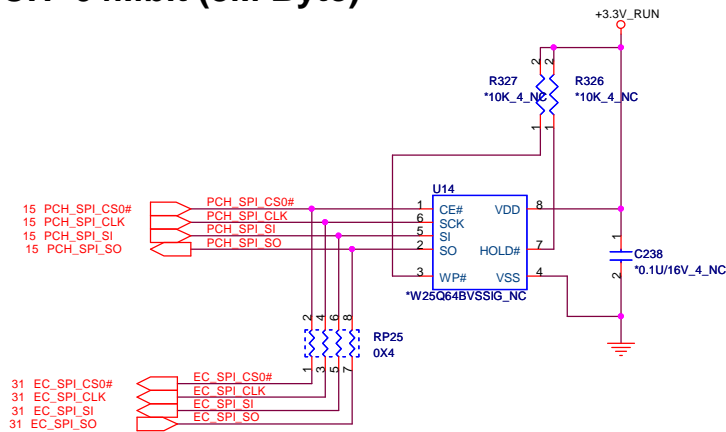
		 Quanta Computer Inc.	
		PROJECT : V07	
Size	Document Number	Rev YA	
		CODEC	
Date:	Monday, January 09, 2012	Sheet	30 of 46

FLASH / RTC

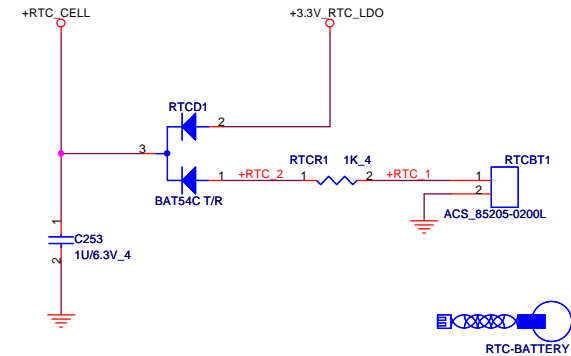
For EC 64Mbit (512k Byte)



For PCH 64Mbit (8M Byte)



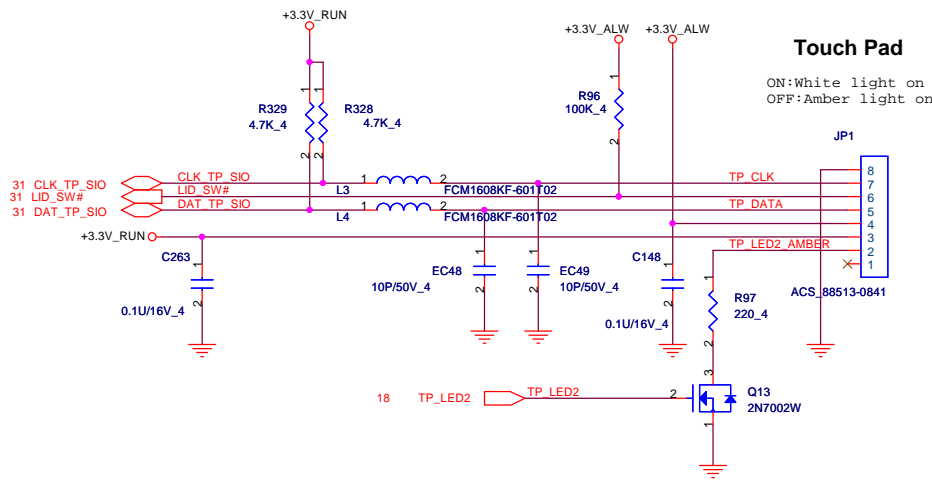
RTC



Double, 25'C, Vf=0.4V, If=25mA
one, 25'C, Vf=0.35V, If=15.8mA

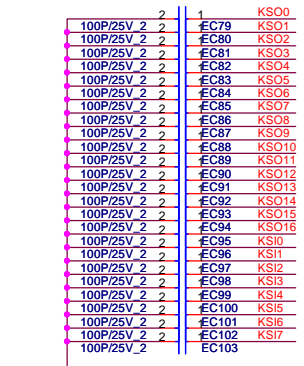
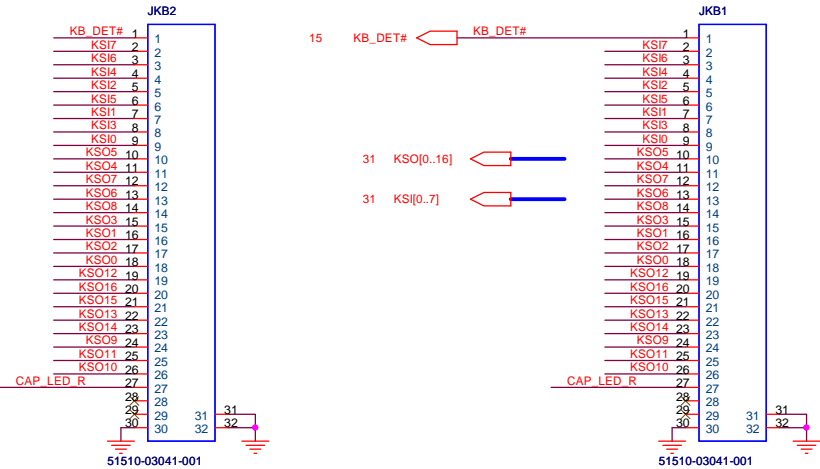


KEYBOARD CONNECTOR

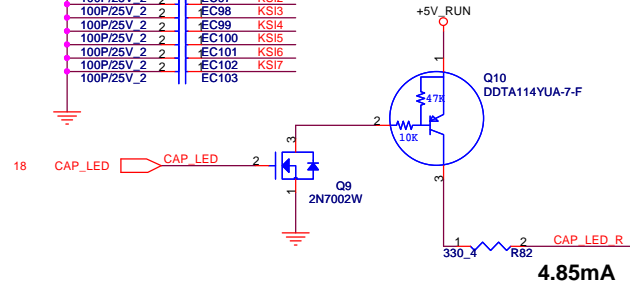


Vostro

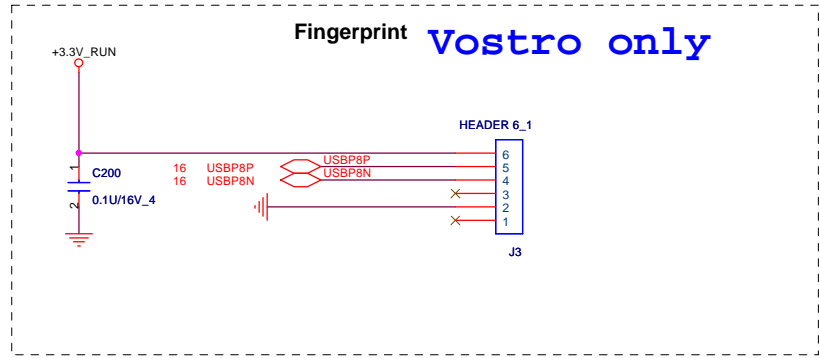
Inspiron



Vi(on_max)=-1.4V
Vi(off_min)=-0.3



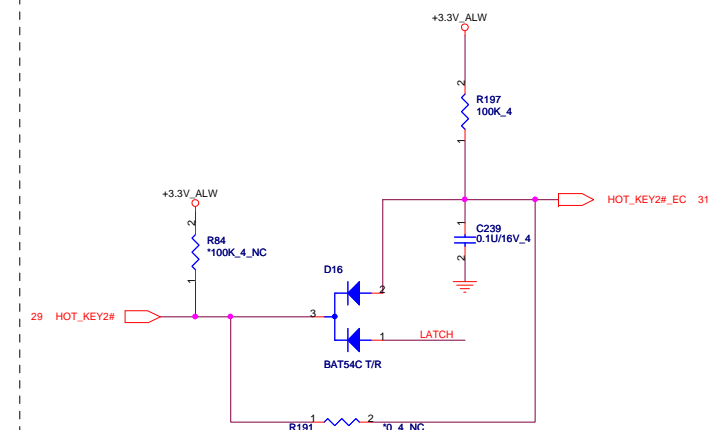
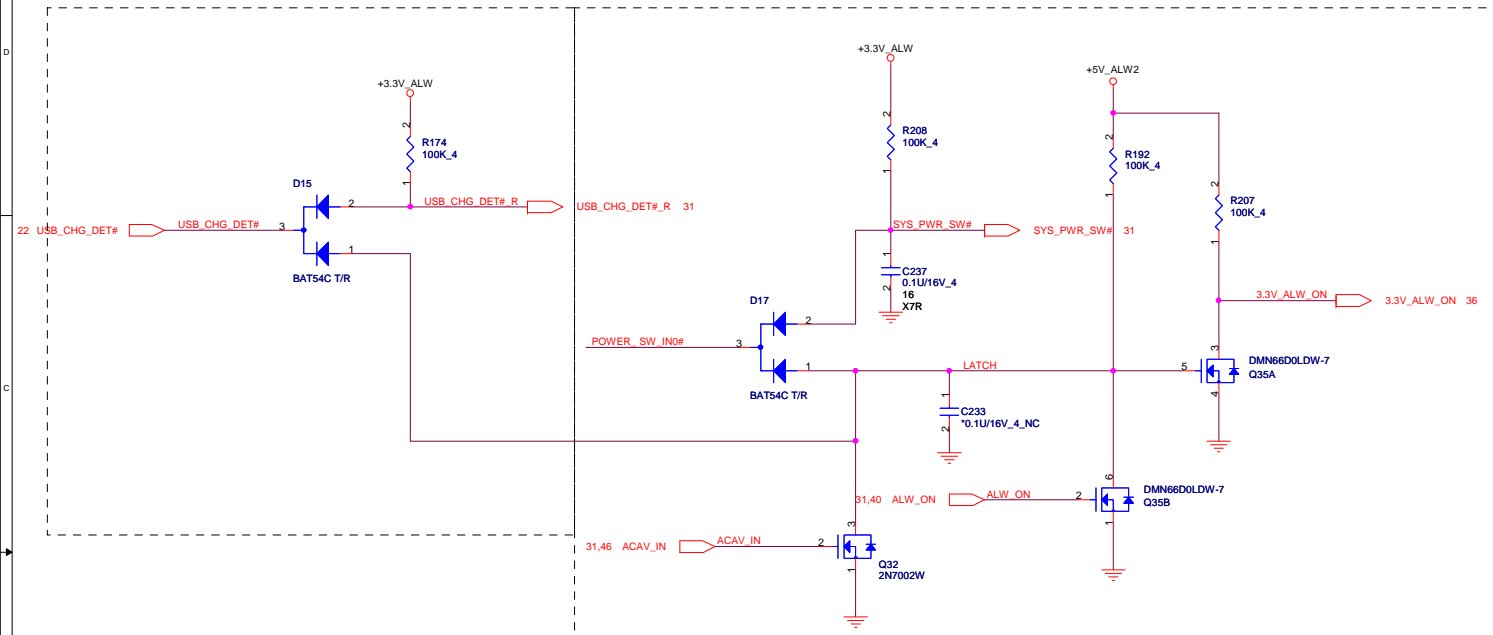
Fingerprint Vostro only



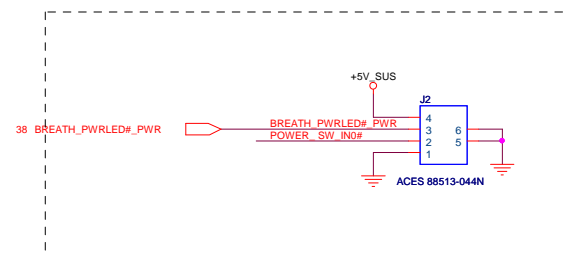
For USB charger usage

3V ALW ON POWER LOGIC


Instant ON function Vostor only



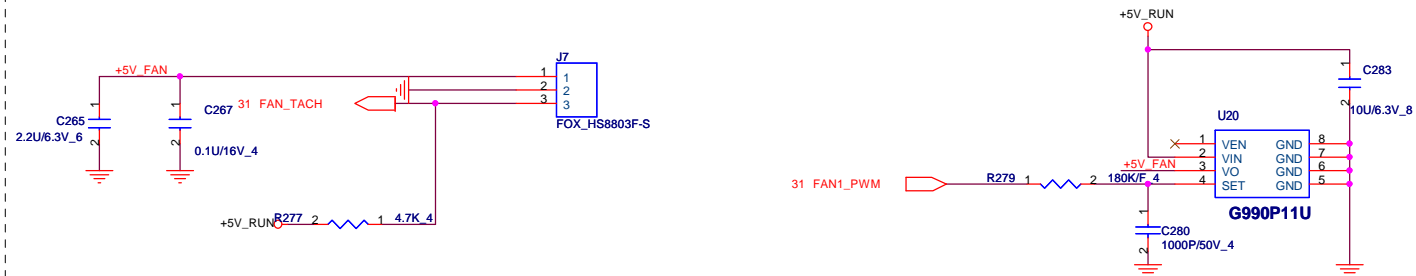
TO PWR button board



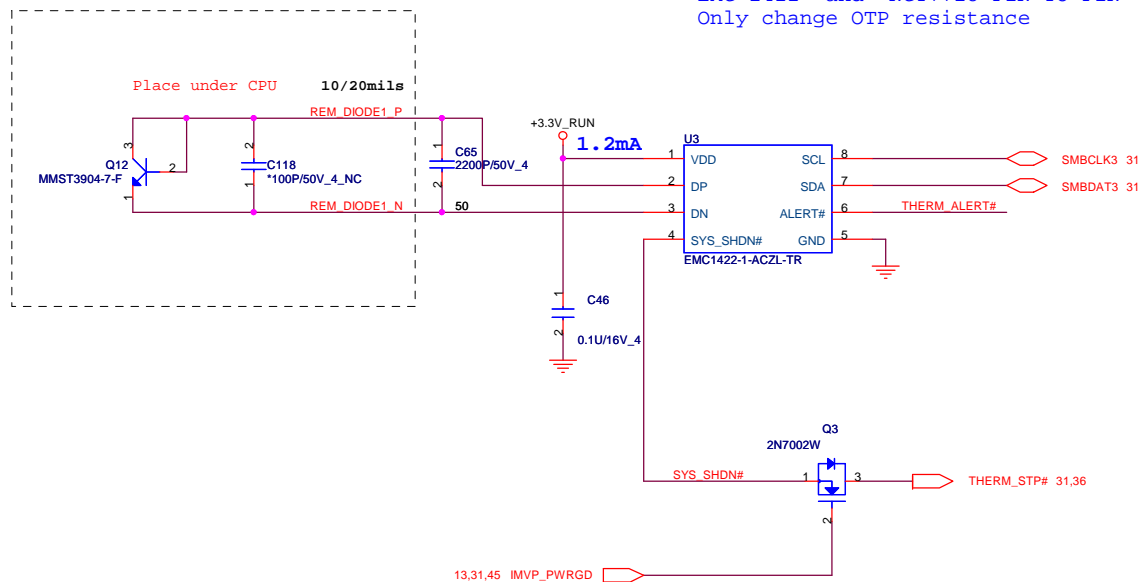
BOM setup	NC	POP
Vostro	R84,R191	D16,C239,R197
Inspiron	D16,C239,R197	R84,R191

 Quanta Computer Inc. PROJECT : V07		
Size	Document Number	Rev 1A
PWR SW/LED		
Date:	Monday, January 09, 2012	Sheet 34 of 46

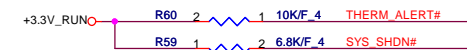
FAN CONTROL



EMC 1422 and NCT7718 PIN TO PIN
Only change OTP resistance

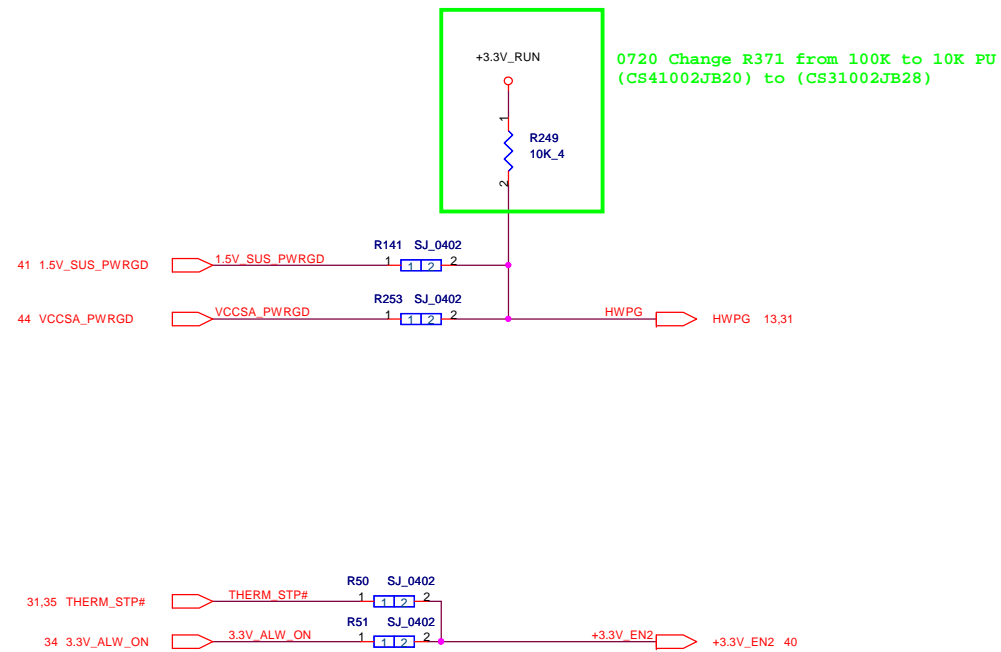


OTP 85 degree C



SYSD_SHD#	4.7K	6.8K	10K	15K	22K	33K
ALERT#						
4.7K	77'C	83'C	89'C	95'C	101'C	107'C
6.8K	78'C	84'C	90'C	96'C	102'C	108'C
10K	79'C	85'C	91'C	97'C	103'C	109'C
15K	80'C	86'C	92'C	98'C	104'C	110'C
22K	81'C	87'C	93'C	99'C	105'C	111'C
33K	82'C	88'C	94'C	100'C	106'C	112'C





5

4

3

2

1

D

D

C

C

B

B

A

A



5

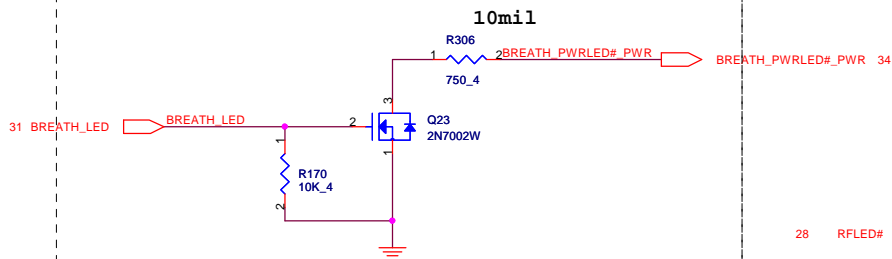
4

3

2

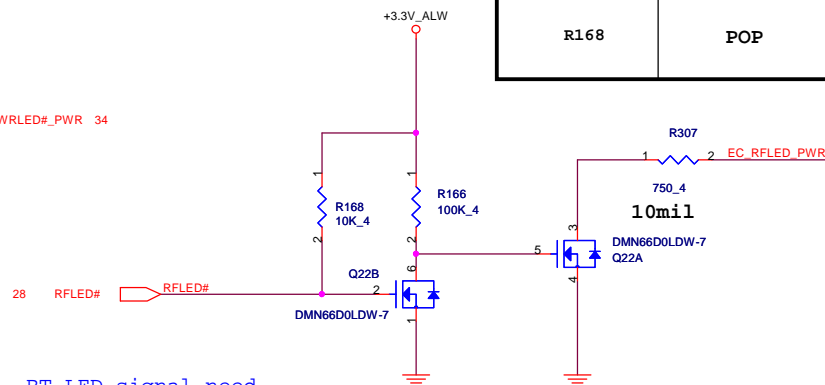
1

Power



Bluetooth / WLAN on/off LED

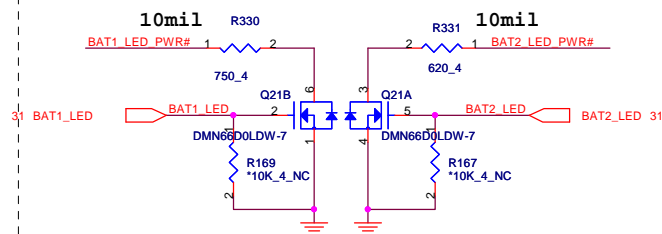
BOM setup	VOSTOR(V07)	Inspiron(R07)
R168	POP	NC



BT LED signal need

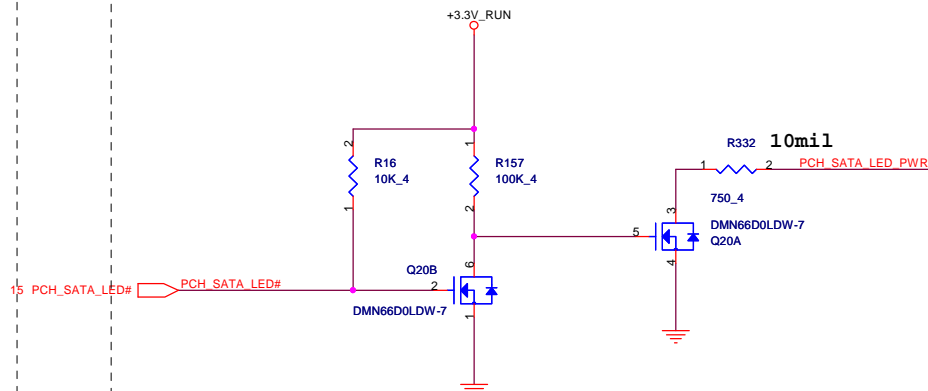
Change from 2N7002W-7-F to DMN66D0LDW-7

Battery

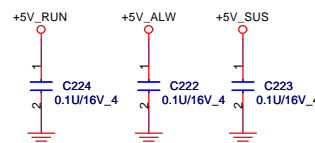
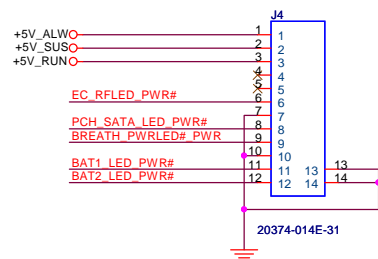


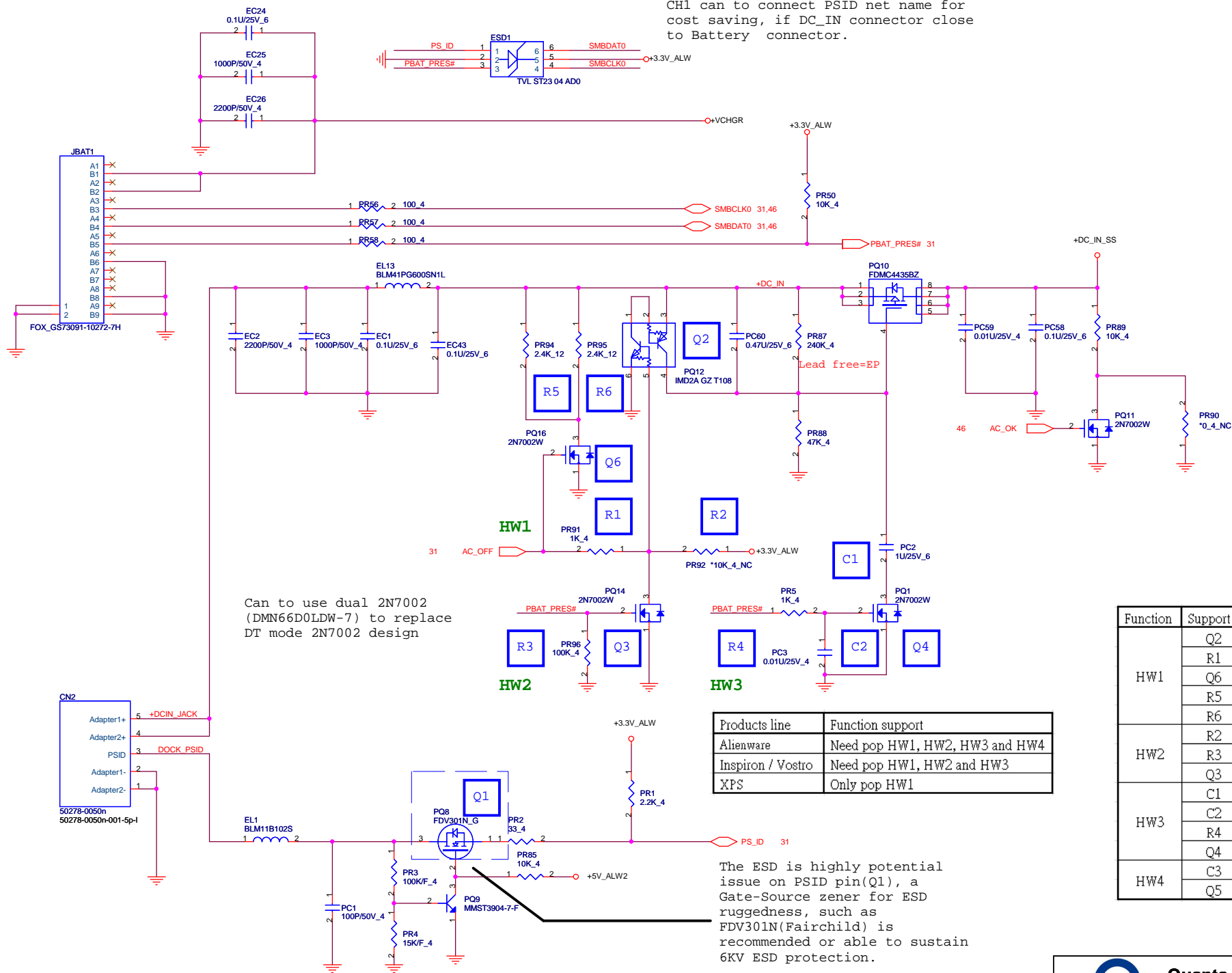
Change from 2N7002W-7-F to DMN66D0LDW-7(9/2)

HDD activity LED.



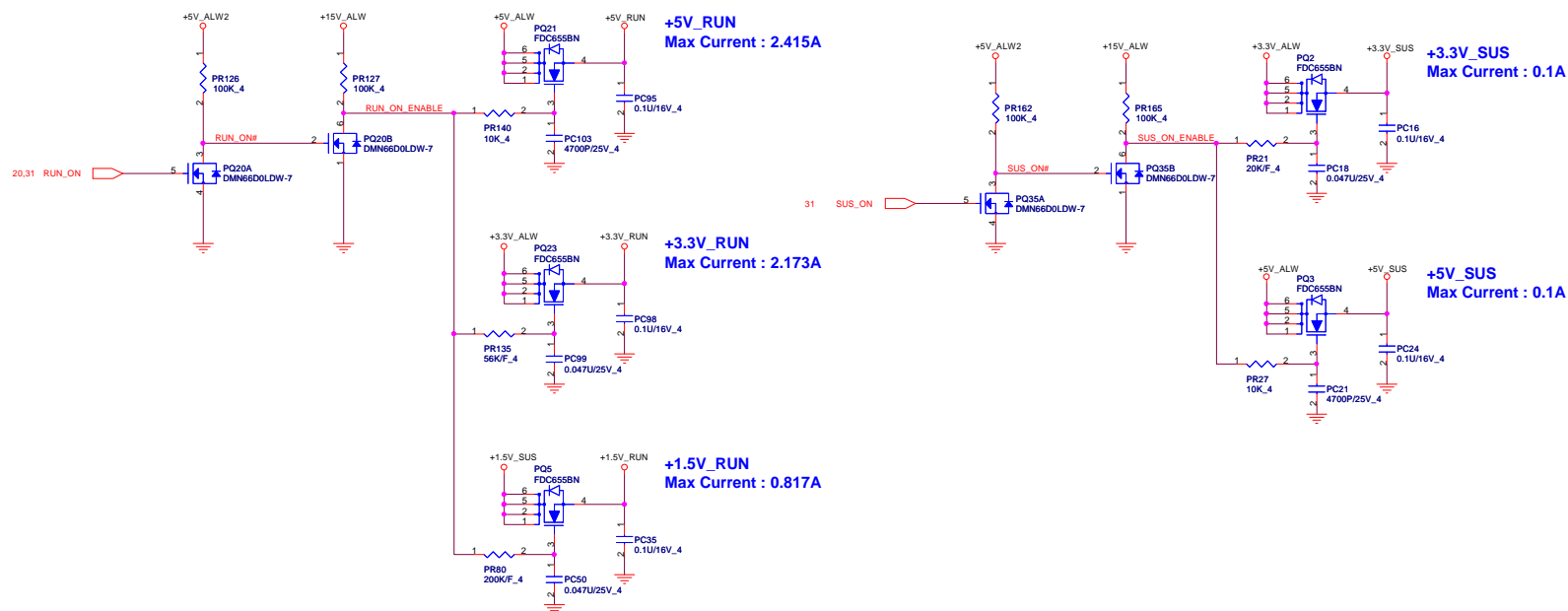
Change from 2N7002W-7-F to DMN66D0LDW-7(9/2)



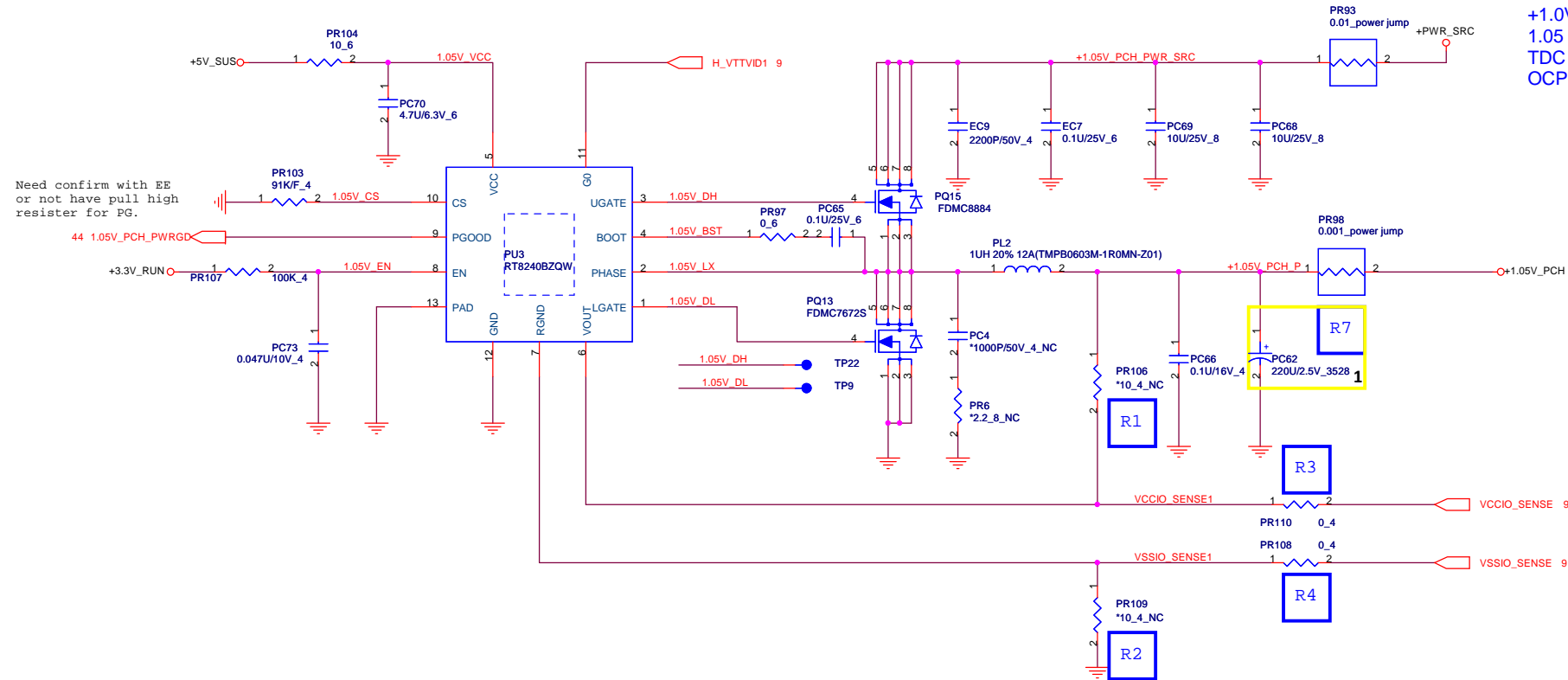


Products line	Function support
Alienware	Need pop HW1, HW2, HW3 and HW4
Inspiron / Vostro	Need pop HW1, HW2 and HW3
XPS	Only pop HW1

Function	Support DT Mode Components	
HW1	Q2	IMD2AT108
	R1	1K_4
	Q6	2N7002W-7-F
	R5	2.2K_12
	R6	2.2K_12
HW2	R2	10K_4
	R3	100K_4
	Q3	2N7002W-7-F
HW3	C1	1U/6.3V_4
	C2	0.01U/25V_4
	R4	1K_4
	Q4	2N7002W-7-F
HW4	C3	1U/6.3V_4
	Q5	2N7002W-7-F



Need confirm with EE
or not have pull high
resistor for PG.



+1.0V_VCCIO
1.05 Volt DC +/- 2%
TDC : 10.669A
OCP : 16A

For EA test	
R1	10_4
R2	10_4
R3	NC
R4	NC
R5	NC
R6	NC
R7	NC



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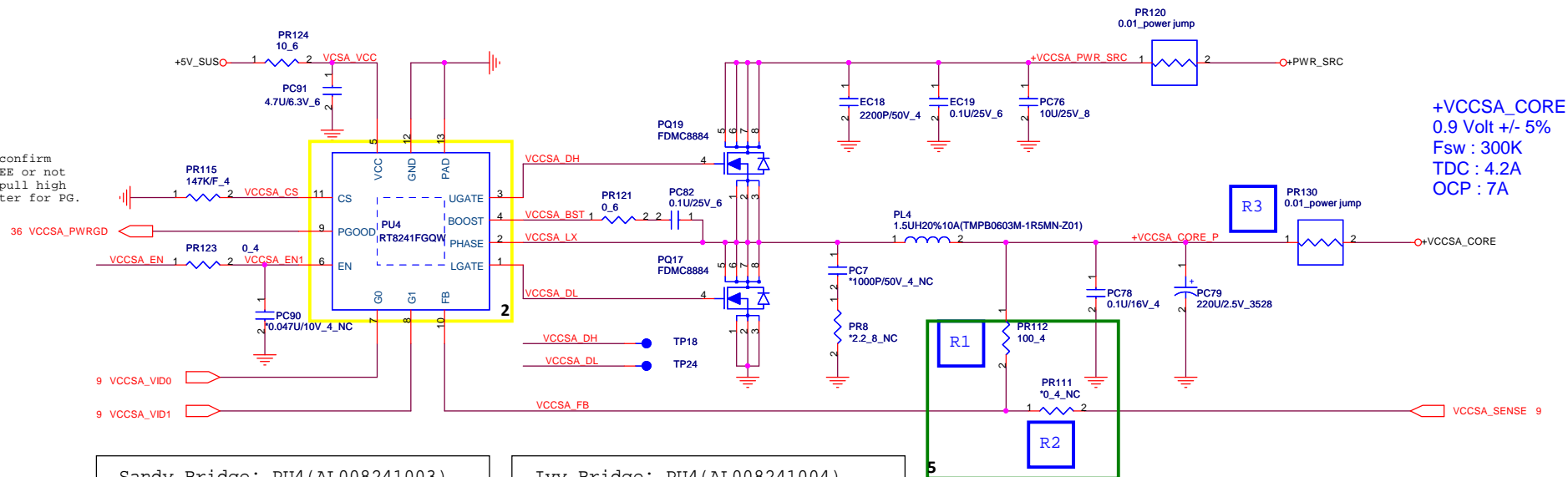
PROJECT : R07/V07

Size	Document Number	Rev
	+1.05V_PCH / VTT (RT8240BGQW)	1A
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S_1. Change PC62 to 220uF/ESR15 for shortage issue

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Need confirm
with EE or not
have pull high
resistor for PG.

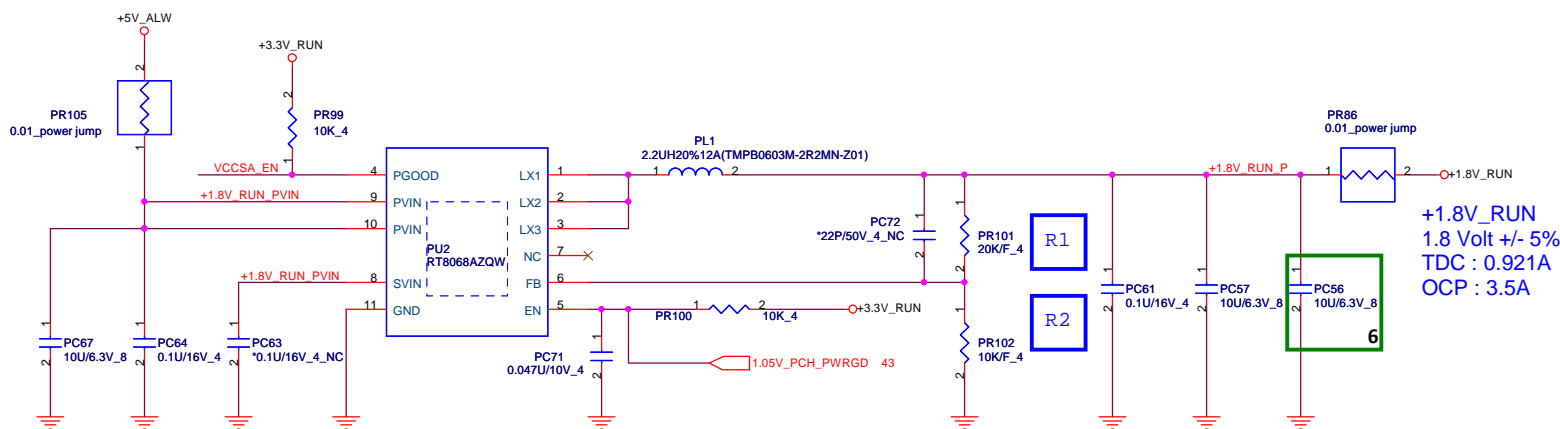


+VCCSA_CORE
0.9 Volt +/- 5%
Fsw : 300K
TDC : 4.2A
OCP : 7A

Sandy Bridge: PU4(AL008241003)		
VCCSA_VID1	VCCSA_VID0	VCCSA_CORE
Low	Low	0.9V
High	Low	0.85V
Low	High	0.725V
High	High	0.675V

Ivy Bridge: PU4(AL008241004)		
VCCSA_VID1	VCCSA_VID0	VCCSA_CORE
Low	Low	0.9V
High	Low	0.85V
Low	High	0.775V
High	High	0.75V

For EA test	
R1	100_4
R2	NC
R3	NC
R4	NC



+1.8V_RUN
1.8 Volt +/- 5%
TDC : 0.921A
OCP : 3.5A

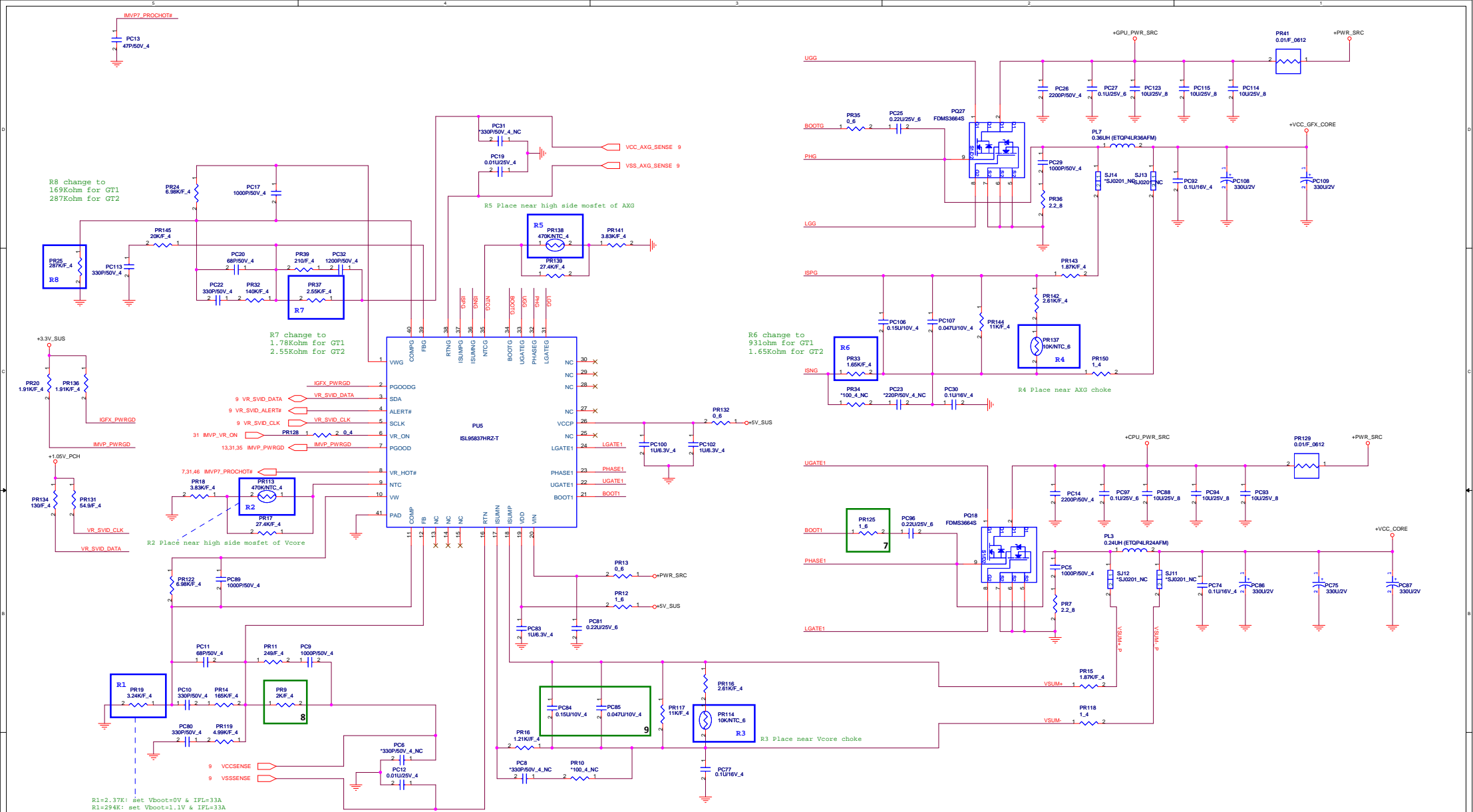
$$VOUT = 0.6(1+R1/R2)$$

P_5. Change to local sense

P_6. Pop PC56

S_2. Change PU4 P/N for IVB GPU change

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NOTE 1:
AXG Core power: Loadline ~-4.6mOhm
OCP~22A

CPU Core power: Loadline ~-2.9mOhm
OCP~40A

	GT1	GT2
R6	931 / CS19312FB11	1.65K / CS21652FB29
R7	1.78K / CS21782FB00	2.55K / CS22552FB01
R8	169K / CS41692FB12	287K / CS42872FB13

P_7. Change PR125 from 0ohm to 1ohm
P_8. Change PR9 from 2.15Kohm to 2Kohm
P_9. Change PC84 to 0.15uF and change PC85 to 0.047uF

Adapter type	65W	90W
ADAPT_TRIP_SET	0	1
SETTING CURRENT	3.7A	5.6A

P_10. Change PC120 to 10uF.

S_1. Add PC137 for input voltage stability.