PCB STACK UP

8L DIS

V03A DIS/UMA BLOCK DIAGRAM

LAYER 1 : TOP
LAYER 2 : GND
LAYER 3 : IN1
LAYER 4 : IN2
LAYER 5 : VCC
LAYER 6 : IN3
LAYER 7 : GND
LAYER 8 : BOT

DDRIII-SODIMM1 A 00 PAGE 16 — DDRIII 1333 MT/s
DDRIII-SODIMM2 A 01 PAGE 17 — DDRIII 1333 MT/s

CPU
Sandy Bridge 45W
PGA 989
PAGE 4~8

PCIEx16

Nvidia
N12P-GE (128bit)
29mm X 29mm
BGA 969
PAGE 18~22

DDR3 1GB/2GB
128Mx16bitx8
PG 23,24

HDMI Switch PAGE 26
HDMI CONN PAGE 26

FDI LINK 2.5GT /s
DMI LINK 2.5GT /s

INT HDMI

Re-Driver SN75LVCP412RTJR PAGE 27
E-SATA PAGE 27 — SATA4 300MB /S

SATA -HDD PAGE 28 — SATA0 300MB /S

ODD PAGE 28 — SATA1 300MB /S

3-axis Fall Sensor PAGE 28 — SMBUS

Mobile Intel
Series 6 Chipset
PCH
HM67
Couger Point
BGA 989
25 mm X 25 mm
PAGE 9~15

iGFX Interfaces

INT Dual CHANNEL LVDS

LCD CONN
1600 x 900 (HD) PAGE 25

USB2.0

ESATA+USB2.0 PAGE 27 — USB[0]
Camera PAGE 25 — USB[11]
Card Reader RTS5128-GR PAGE 29 — USB[8]
FP PAGE 35 — USB[10]
Touch Screen PAGE 34 — USB[12]

USB[8]
Express Card
R5538D001 PAGE 02

CRT Board PAGE 03 — IO Board

USB[4] WLAN PAGE 05
USB[5] WiMAX PAGE 04
PCIE[3] USB3.0 Controller PAGE 06

PCIE[1]
PCIE[2] BlueTooth PAGE 05 — USB[6]
USB3.0 Ports x2 PAGE 07
USB Port x1 PAGE 08 — USB[2]

PCIE[5]
LAN
Realtek
RTL8111E-VB-GR
PAGE 09
25MHz
RJ45 PAGE 10

EXP Board
LED Board
PB Board
TP Board
HotKey Board

Charger PAGE 42
3/5V PAGE 43
1.5V_SUS/0.75V_DDR PAGE 44
Batt/DC-IN PAGE 41
1.05V_PCH PAGE 45
VCCSA PAGE 46
DGFX_CORE PAGE 48
CPU_CORE PAGE 47
1.8V_RUN PAGE 45

32.768KHz
Keyboard Conn. PAGE 35
Touch Pad PAGE 35
LED PAGE 36
KBC
ITE 8518
PAGE 30
LPC
PWM FAN &Thermal PAGE 38
SPI ROM 512kB PAGE 34

SPI
SPI ROM 4MB PAGE 34
25MHz
32.768KHz

IHDA

Audio Codec
ALC 269Q-VB6-GR
PAGE 32

Subwoofer MAX9759ETE PAGE 33
Speaker PAGE 32
Jack X2 PAGE 32
Digital-MIC PAGE 32

Quanta Computer Inc.
PROJECT : R03A/V03A
Size | Document Number: BLOCK DIAGRAM | Rev 2A
Date: Friday, December 31, 2010 | Sheet 1 of 50

power / State	+RTC_CELL	+DC_IN +DC_IN_SS +PWR_SRC +5V_ALW_2 +3.3V_ALW +5V_ALW +15V_ALW +3.3V_LAN (for V03)	+VCHGR +PWR_SRC +5V_ALW_2 +3.3V_ALW +5V_ALW +15V_ALW +3.3V_LAN (for V03)	+5V_SUS +3.3V_SUS +1.5V_SUS +1.5V_CPU +DDR_VTTREF +3.3V_LAN (for R03)	+VCC_CORE +VCC_GFX_CORE +1.05V_PCH +5V_RUN +3.3V_RUN +1.8V_RUN +1.5V_RUN +VCCSA +0.75V_DDR_VTT +LCDVCC +VCC_DGFX_CORE	
S0	ON	ON	ON	ON	ON	
S1						
S3	ON	ON	ON	ON	OFF	
S4/S5 AC	ON	ON				
S4/S5 DC Only	ON		ON	OFF	OFF	
AC/DC No Exist	ON	OFF	OFF	OFF	OFF	

SMBCLK SMBDATA								
SMB_CLK_ME1 SMB_DAT_ME1								
AB1A_CLK AB1A_DATA								

Quanta Computer Inc.

PROJECT : R03A/V03A

Size | Document Number: Power Rails | Rev 2A

Date: Wednesday, October 27, 2010 | Sheet 2 of 50

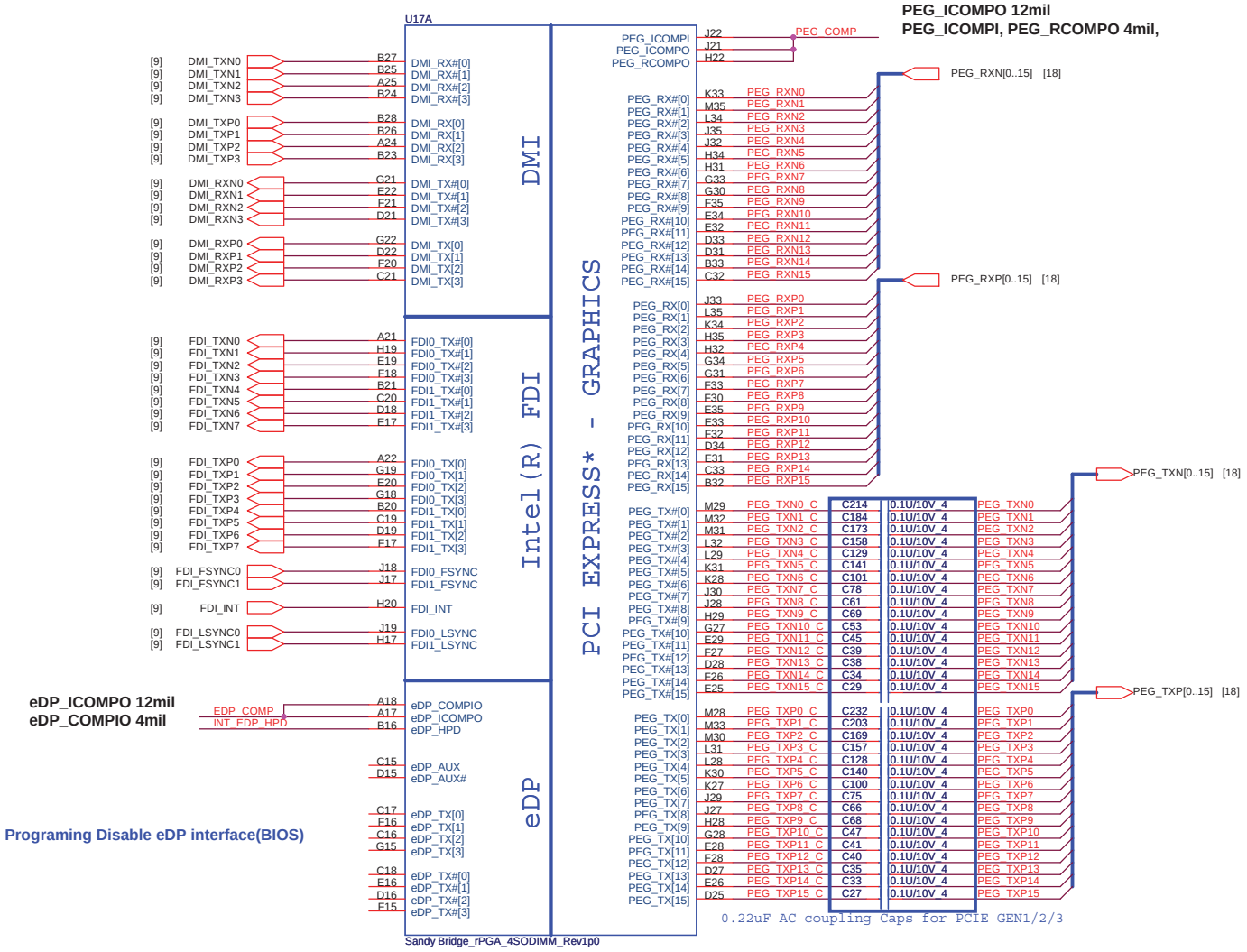
Quanta Computer Inc.

PROJECT : R03A/V03A

Size	Document Number	Rev
	BLANK	2A

Date: Wednesday, October 06, 2010 Sheet 3 of 50

Sandy Bridge Processor (DMI,PEG,FDI)

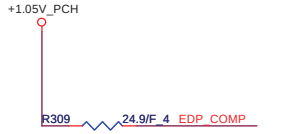


PEG_ICOMPO 12mil
PEG_ICOMPI, PEG_RCOMPO 4mil,

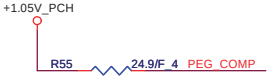
eDP_ICOMPO 12mil
eDP_COMPIO 4mil

Programing Disable eDP interface(BIOS)

DP & PEG Compensation



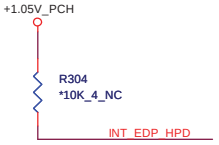
eDP_COMPIO and ICOMPO signals should be shorted near balls and routed within 500 mils



PEG_ICOMPI and RCOMPO signals should be routed within 500 mils

PEG_ICOMPO signals should be routed within 500 mils

eDP Hot-plug (Disable)



CAD Note: Place PU resistor within 2 inches of CPU

This signal can be left as no connect if entire eDP interface is disabled.

Quanta Computer Inc.
PROJECT : R03A/V03A

Size	Document Number	Rev
	Sandy Bridge 1/5	2A
Date: Friday, January 07, 2011	Sheet 4 of 50	

Sandy Bridge Processor (CLK,MISC,JTAG)

U17B

MISC
TP43 C26 PROC_SELECT#
+1.05V_PCH R186 62/F_4 H_PROCHOT#
[30] H_CPUDET# AN34 SKTOCC#

THERMAL
TP34 TP_CATERR# AL33 CATERR#
[30] PECI_EC R445 43/J_4 H_PECI_R AN33 PECI
[30,42,47] H_PROCHOT# R181 56/J_4 H_PROCHOT#_R AL32 PROCHOT#
Over 130 degree C will drive low
[14] PM_THRMTRIP# AN32 THERMTRIP#

PWR MANAGEMENT
[9] H_PM_SYNC AM34 PM_SYNC
[14] H_PWRGOOD AP33 UNCOREPWRGOOD
R189 10K/J_4
SM_DRAMPWROK V8 SM_DRAMPWROK
+1.05V_PCH R192 *75/J_4_NC CPU_PLTRST#
R193 *43/J_4_NC CPU_PLTRST#_R AR33 RESET#

CLOCKS
BCLK A28 CLK_CPU_BCLKP [13]
BCLK# A27 CLK_CPU_BCLKN [13]
DPLL_REF_CLK A16 CLK_DP_P_R R310 1K_4 R305 *0_4_NC CLK_DP_P [13]
DPLL_REF_CLK# A15 CLK_DP_N_R R306 *0_4_NC R311 1K_4 CLK_DP_N [13]
+1.05V_PCH

DDR3 MISC
SM_DRAMRST# R8 CPU_DRAMRST#
SM_RCOMP[0] AK1 SM_RCOMP_0 R153 140/F_4
SM_RCOMP[1] A5 SM_RCOMP_1 R312 25.5/F_4
SM_RCOMP[2] A4 SM_RCOMP_2 R313 200/F_4
SM_RCOMP_0, SM_RCOMP_1 20mil
SM_RCOMP_2 15mil,

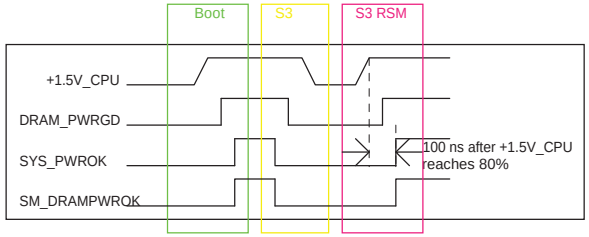
JTAG & BPM
PRDY# AP29
PREQ# AP27
TCK AR26 XDP_TCLK
TMS AR27 XDP_TMS
TRST# AP30 XDP_TRST# R447 51/J_4
TDI AR28 XDP_TDI
TDO AP26 XDP_TDO
DBR# AL35 XDP_DBRST# R443 1K_4
BPM#[0] AT28
BPM#[1] AR29
BPM#[2] AR30
BPM#[3] AT30
BPM#[4] AP32
BPM#[5] AR31
BPM#[6] AT31
BPM#[7] AR32

+1.05V_PCH
XDP_TMS R452 51/J_4
XDP_TDI R450 51/J_4
XDP_TDO R201 51/J_4
XDP_TCLK R202 51/J_4
+3.3V_RUN
XDP_DBRST# use a 1k pull-up to 3.3V_S
TRST# use a 51ohm pull down.

Sandy Bridge_rPGA_4SODIMM_Rev1p0

IN	OUT
L	L
H	High-Z

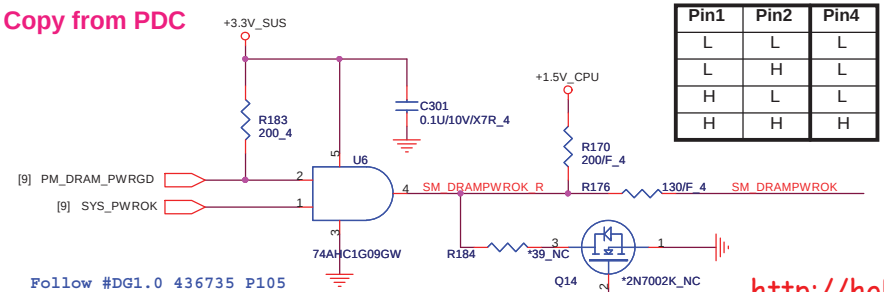
+3.3V_SUS
C333 *0.1U/10V/X7R_4_NC
U8 NC VCC IN GND OUT *74LVC1G07GW_NC
[12,18,30,31] PLTRST#
CPU_PLTRST#
R556 1.5K 1%
CPU_PLTRST#_R voltage level Ckt.
CPU_PLTRST# R
R557 750 1%



Change OD part same with PDC
Copy from PDC

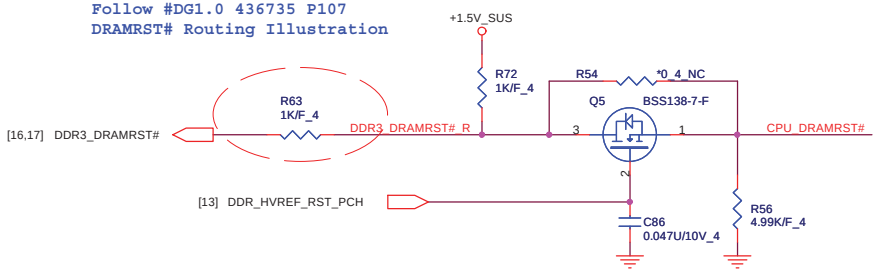
R8239, R8241 change to 5%

Pin1	Pin2	Pin4
L	L	L
L	H	L
H	L	L
H	H	H



Follow #DG1.0 436735 P105
DDR Power Gating Topology

Follow #DG1.0 436735 P107
DRAMRST# Routing Illustration

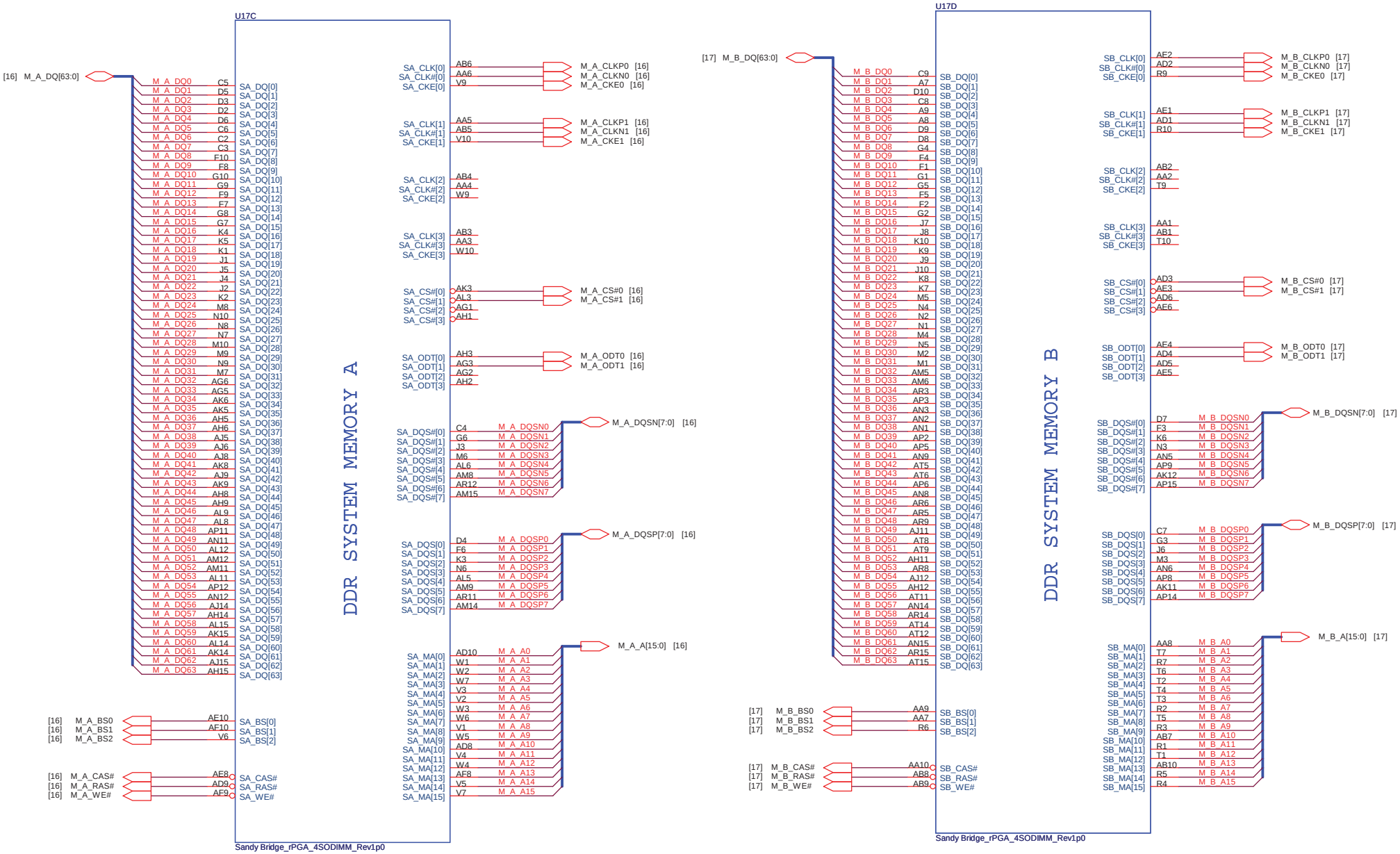


http://hobi-elektronika.net

Quanta Computer Inc.
PROJECT : R03A/V03A

Size	Document Number	Rev
	Sandy Bridge 2/5	2A
Date: Monday, January 24, 2011	Sheet 5 of 50	

Sandy Bridge Processor (DDR3)



Quanta Computer Inc.

PROJECT : R03A/V03A

Size	Document Number	Rev
	Sandy Bridge 3/5	2A

Date: Friday, January 07, 2011 Sheet 6 of 50

Sandy Bridge Processor (POWER)

Sandy Bridge Processor (GRAPHIC POWER)

CPU Core Power
SNB 45W:95A
470uF/4mohm x 4
22uF x 16
10uF x 10

CPU VTT
SNB 45W:8.5A
330uF/6mohm x 2
22uF x 12
22uF x 7 (Non-stuff)

CPU VGT
SNB 45W:22A
22uF x 12

CPU MCH
SNB 45W: 5A
330uF/6mohm x 1
10uF x 6

CPU SA
SNB 45W: 6A
330uF/7mohm x 1
10uF x 3

CPU VCCPL
SNB 45W:3A
330uF/7mohm x 1
10uF x 1
1uF x 2

ripple question, check with power, 47uF?

power side low itself

S3 Power reduce

Take care Q3509 Vgs(MAX)=2.5

Change R8281,R8285, R8704,R8329 to +/-5%
54.9 ohm has no 5%

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

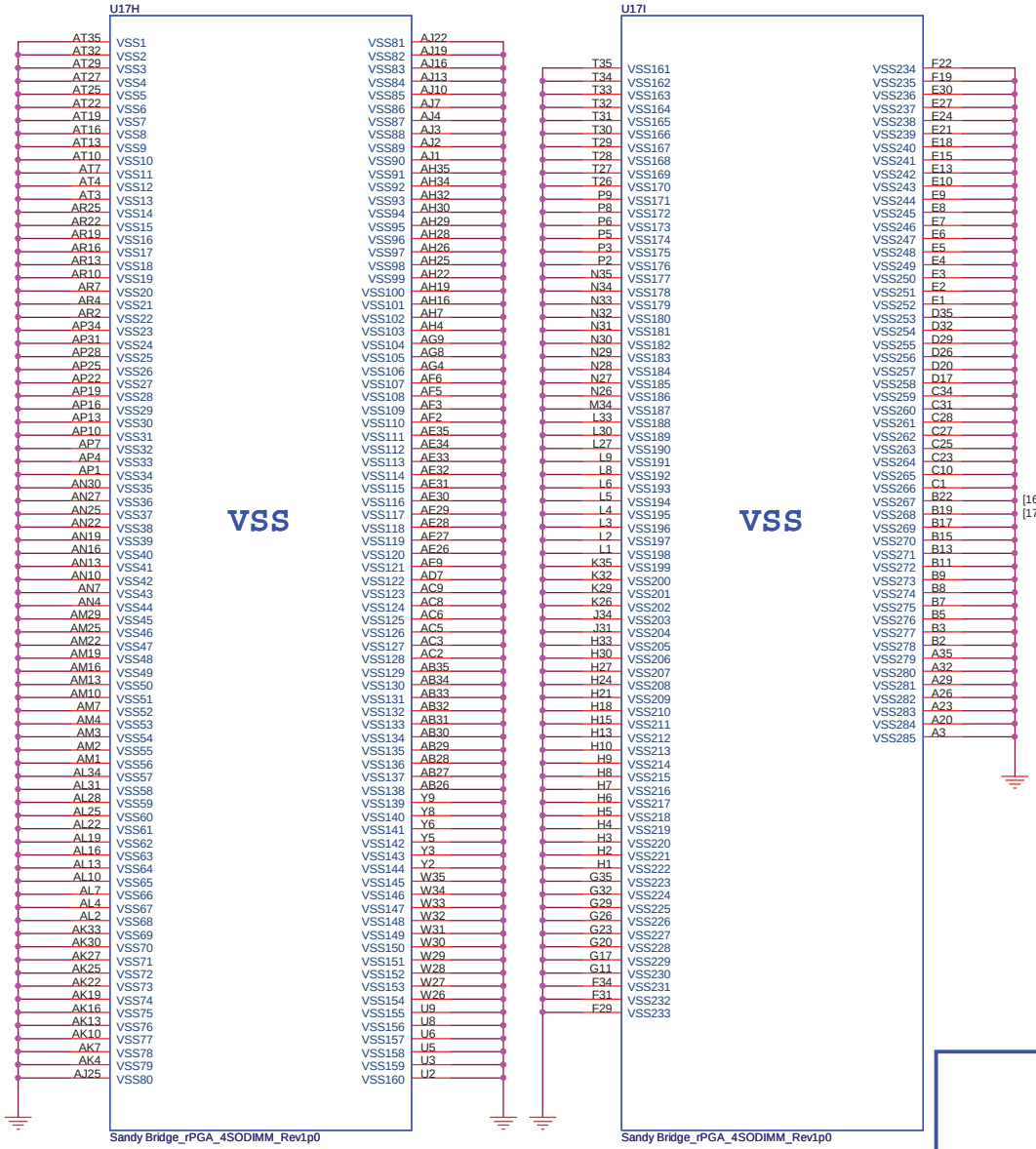
Place PU resistor close to CPU

Place PU resistor close to CPU

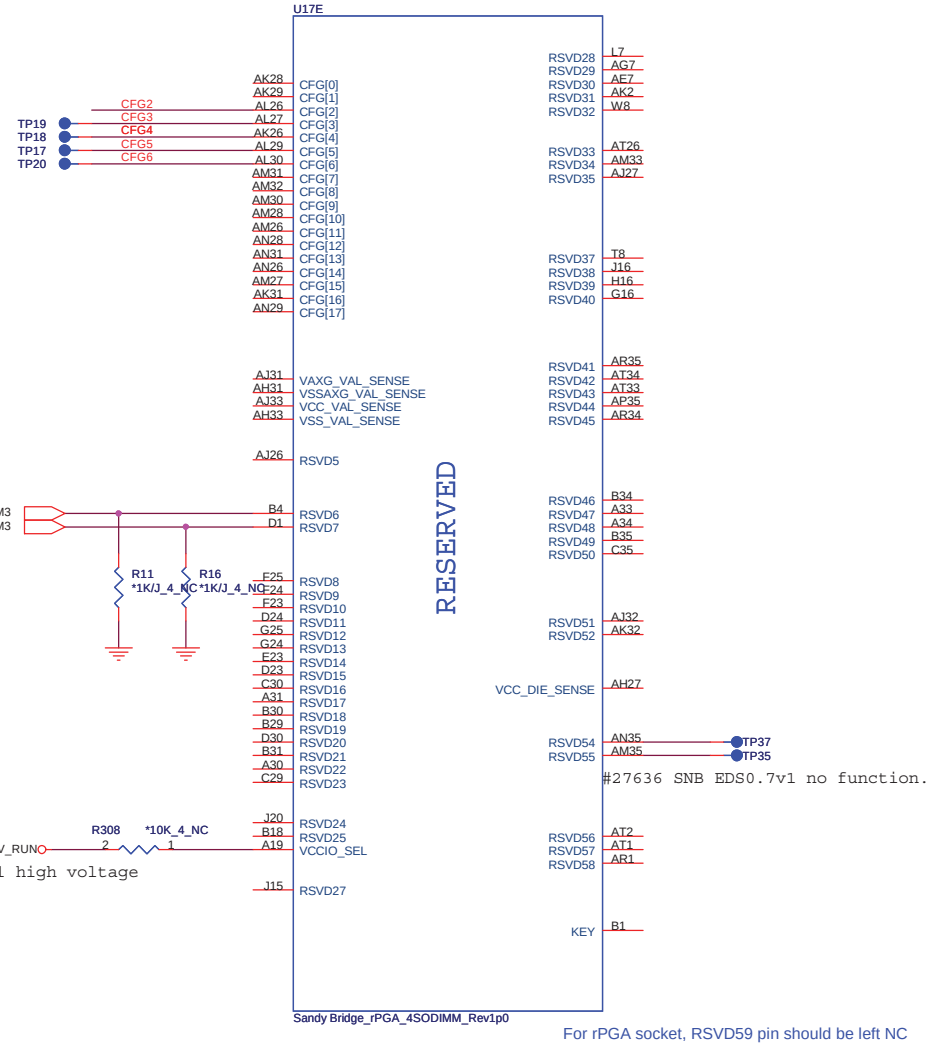
SVID ALERT

Quanta Computer Inc.
PROJECT : R03A/V03A
Sandy Bridge 4/5
Date: Monday, January 24, 2011 Sheet 7 of 50

Sandy Bridge Processor (GND)



Sandy Bridge Processor (RESERVED, CFG)



For rPGA socket, RSVD59 pin should be left NC

CFG[6:5] (PCIE Port Bifurcation Straps)

11: (Default) x16 - Device 1 functions 1 and 2 disabled
10: x8, x8 - Device 1 function 1 enabled ; function 2 disabled
01: Reserved - (Device 1 function 1 disabled ; function 2 enabled)
00: x8,x4,x4 - Device 1 functions 1 and 2 enabled

Processor Strapping

The CFG signals have a default value of '1' if not terminated on the board.

	1	0
CFG2 (PCI-E Static x16 Lane Reversal)	Normal Operation	Lane Reversed
CFG3 (PCI-E Static x4 Lane Reversal)	Normal Operation	Lane Reversed
CFG4 (DP Presence Strap)	Disable; No physical DP attached to eDP	Enable; An ext DP device is connected to eDP

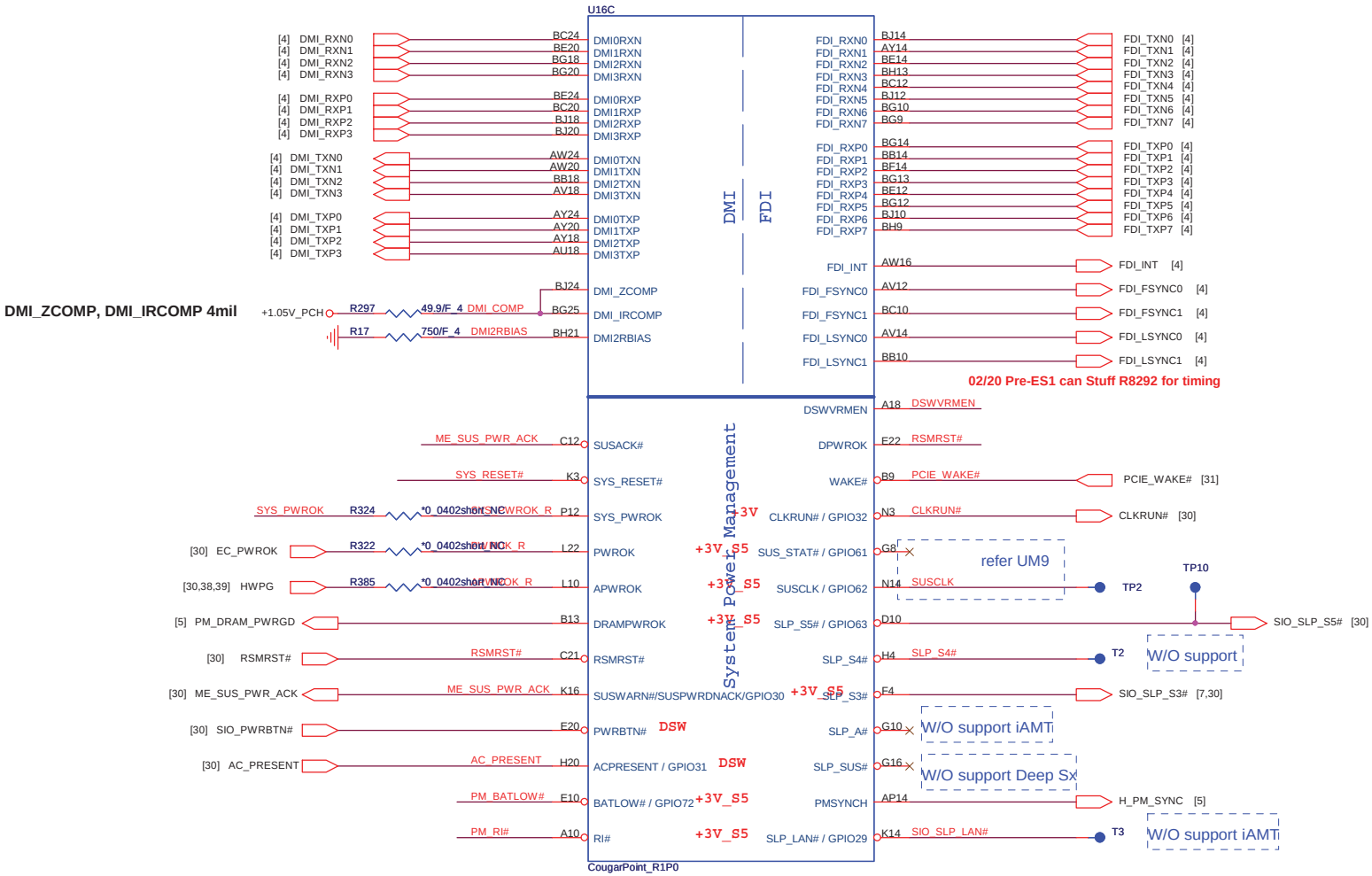
CFG2 R199 1K/F_4

Quanta Computer Inc.
PROJECT : R03A/V03A

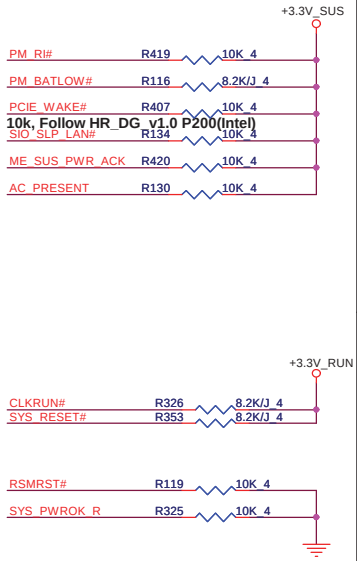
Size	Document Number	Rev
	Sandy Bridge 5/5	2A

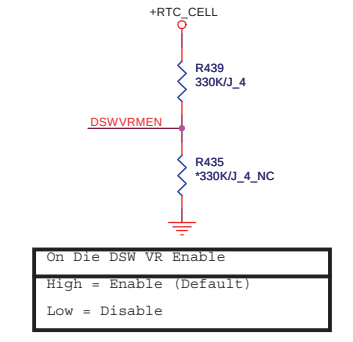
Date: Friday, January 07, 2011 Sheet 8 of 50

Cougar Point (DMI,FDI,PM)

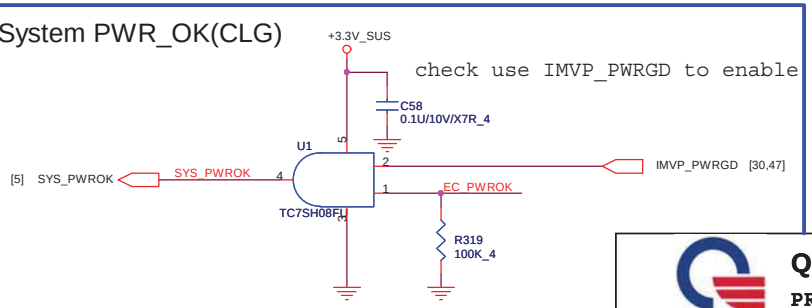


PCH Pull-high/low(CLG)





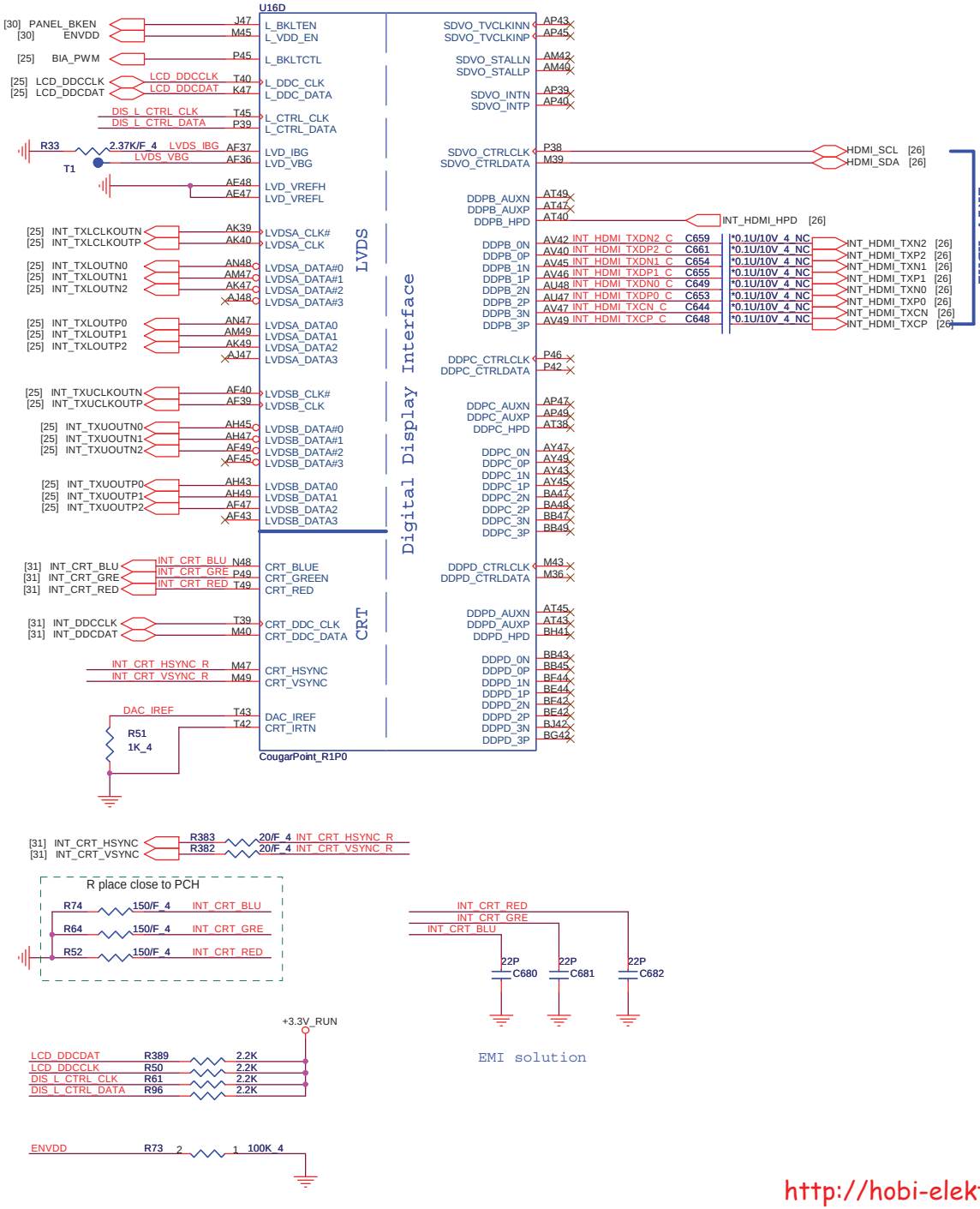
System PWR_OK(CLG)



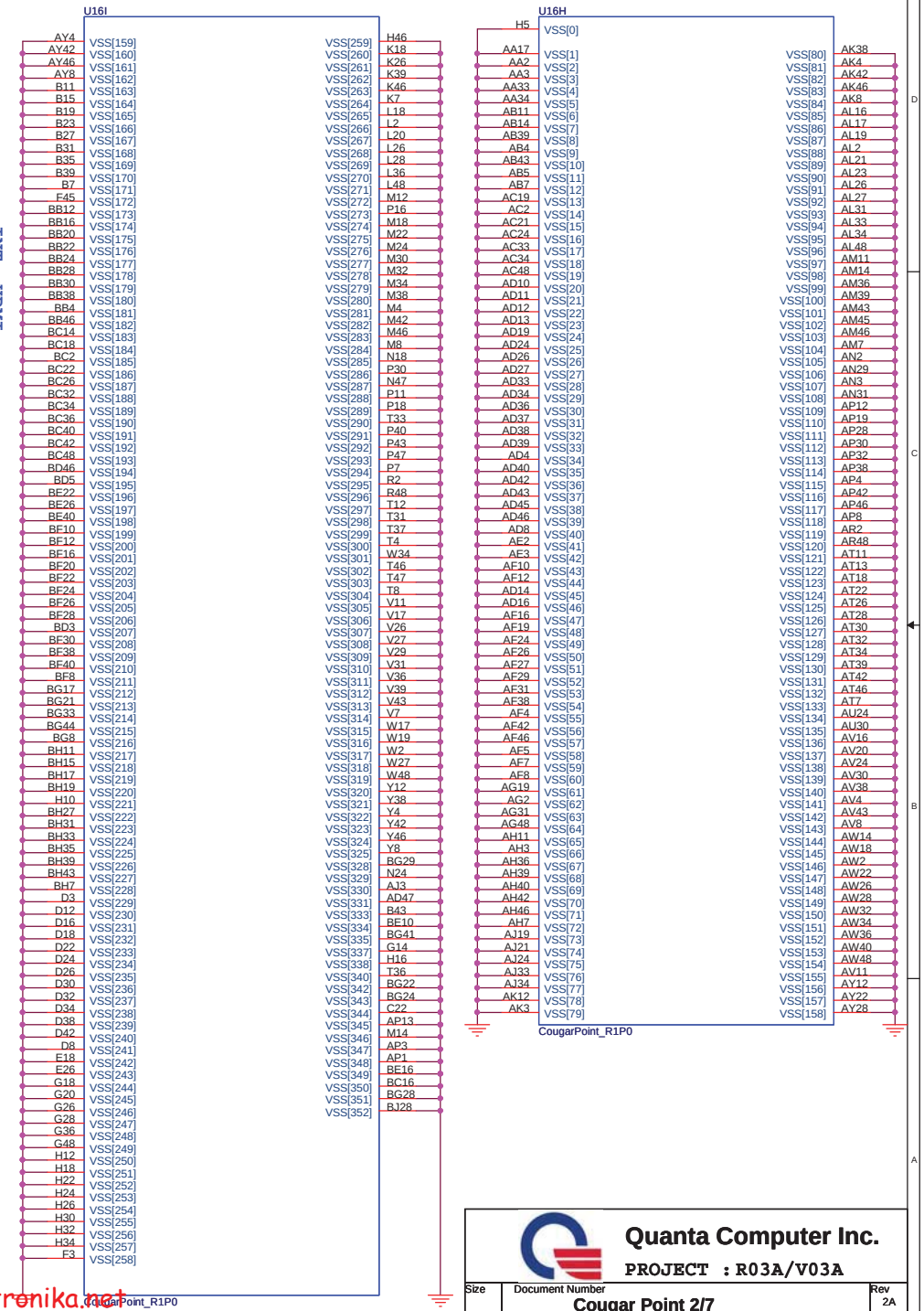
Quanta Computer Inc.
PROJECT : R03A/V03A

Size	Document Number	Rev
	Cougar Point 1/7	2A
Date: Monday, January 24, 2011	Sheet 9 of 50	

Cougar Point (LVDS,DDI)



Cougar Point (GND)

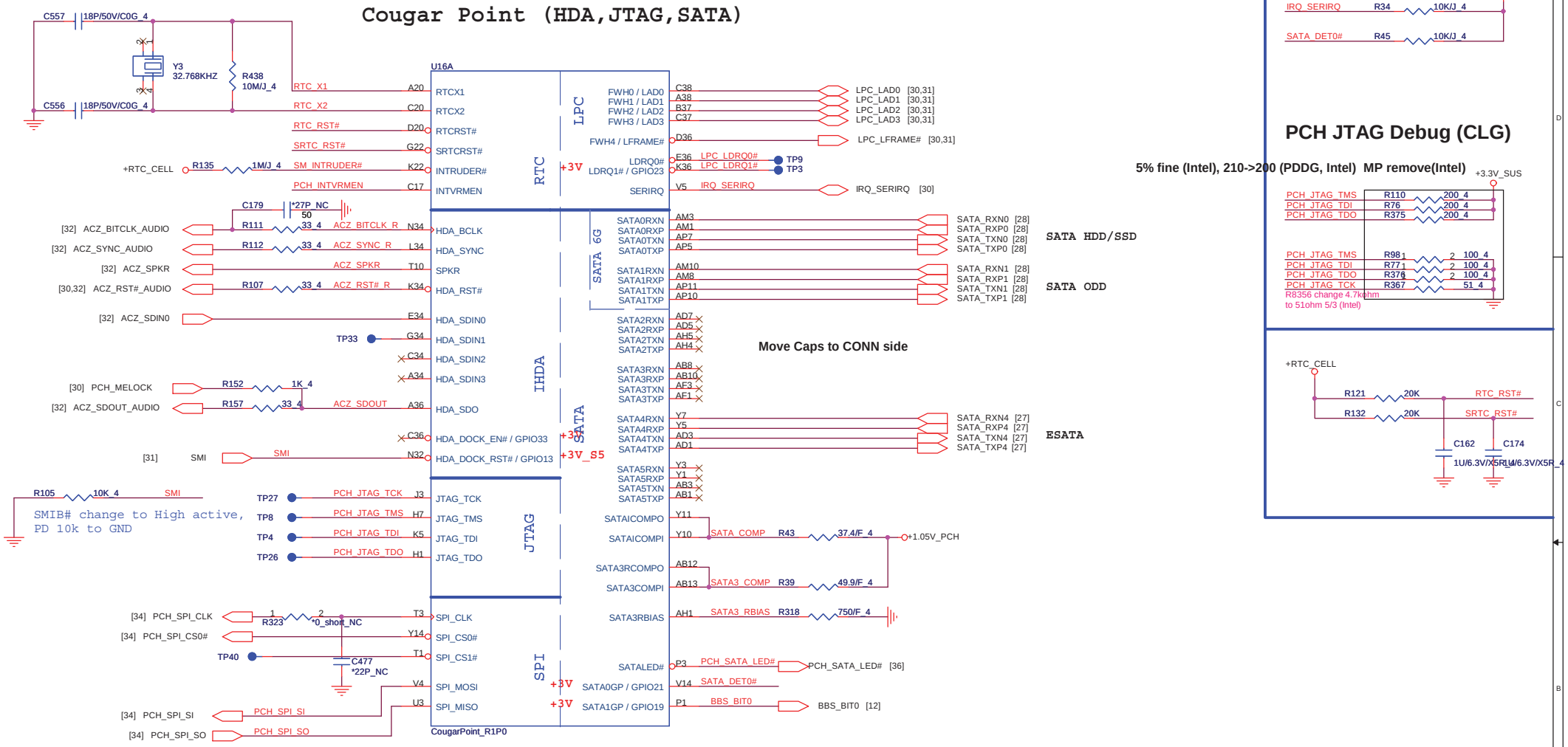


Quanta Computer Inc.

PROJECT : R03A/V03A

Size	Document Number	Rev
	Cougar Point 2/7	2A

Date: Friday, January 07, 2011 Sheet 10 of 50



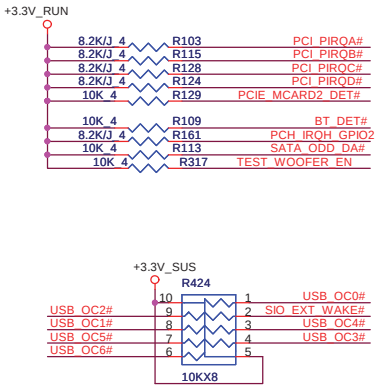
PCH Strap Table

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	+3.3V_SUS R41 *1K_4_NC ACZ_SPKR
HDA_SDO	Flash Descriptor Security	PWROK	0 = Default (weak pull-down 20K) 1 = Override	+3.3V_SUS R146 *1K_4_NC ACZ_SDOUT
Del 0510			Remove SPI_MOSI from PCH strapping, HR_C/L_v0.91	
INTVRMEN	Integrated 1.05V VRM enable	ALWAYS	Should be always pull-up	+RTC_CELL R434 330K/J_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 R118 1K_4 ACZ_SYNC_R

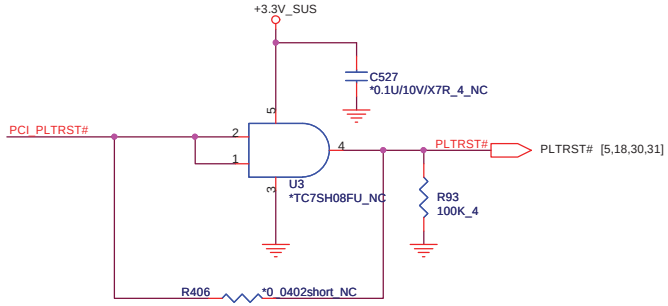
Quanta Computer Inc.
PROJECT : R03A/V03A
Size | Document Number: Cougar Point 3/7 | Rev 2A
Date: Monday, January 24, 2011 | Sheet 11 of 50

Cougar Point-M (PCI,USB,NVRAM)

PCI/USBOC# Pull-up(CLG)



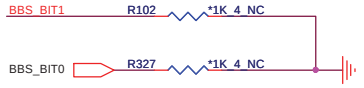
PLTRST#(CLG)



change SMIB# to SMI

Pin Name	Strap description	Sampled	Configuration
GNT2# / GPIO53	ESI 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)
			Defined in EDS (Intel)
GNT1# / GPIO51	Boot BIOS Selection 1 [bit-1]	PWROK	
GPIO19	Boot BIOS Selection 0 [bit-0]	PWROK	

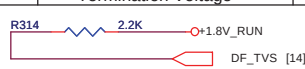
Bit 0	Bit 1	Boot Location
1	1	SPI *
0	0	LPC



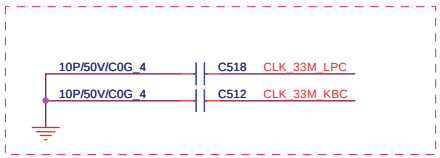
Default weak pull-up on GNT0/1# [Need external pull-down for LPC BIOS]

DF_TVS	DMI and FDI Tx/Rx Termination Voltage	PWROK	weak pull-down 20kohm

CheckList_1.0 p58; HR_v1.0 p450



follow CheckList_1.5, DF_TVS pu-high 2,2k only, Remove R315

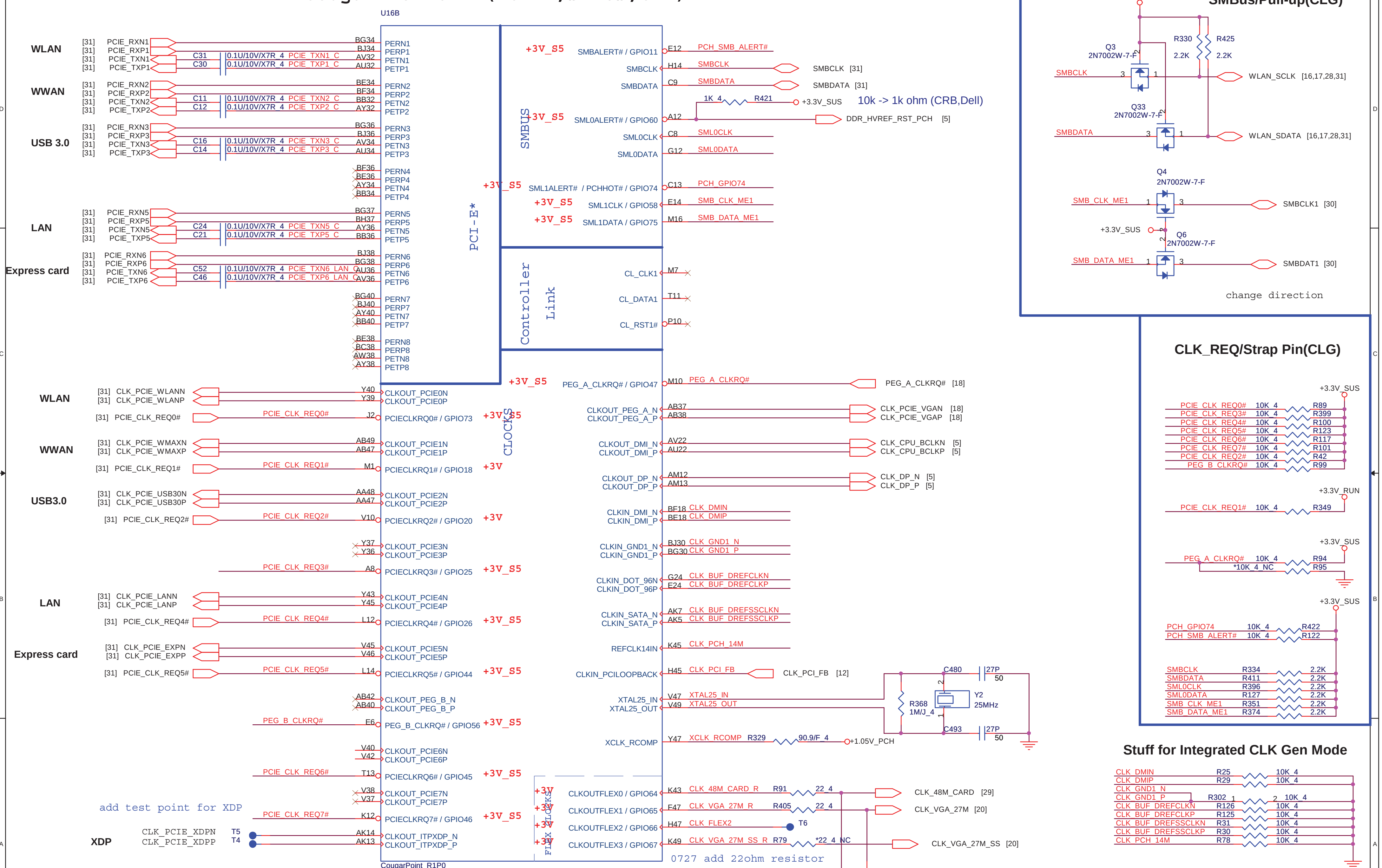


SV_SET_UP
High = Strong (Default)

Quanta Computer Inc.
PROJECT : R03A/V03A

Size	Document Number	Rev
	Cougar Point 4/7	2A
Date: Monday, January 24, 2011	Sheet 12 of 50	

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



U16B
WLAN
WWAN
USB 3.0
LAN
Express card
PCI-E*
SMBUS
Controller Link
CLOCKS
FLEX CLOCKS
+3V_S5
+3V
PCIE_RXN1
PCIE_RXP1
PCIE_TXN1
PCIE_TXP1
0.1U/10V/X7R_4
PERN1
PERP1
PETN1
PETP1
SMBALERT# / GPIO11
SMBCLK
SMBDATA
SML0ALERT# / GPIO60
SML0CLK
SML0DATA
SML1ALERT# / PCHHOT# / GPIO74
SML1CLK / GPIO58
SML1DATA / GPIO75
PCH_SMB_ALERT#
SMBCLK [31]
SMBDATA [31]
10k -> 1k ohm (CRB,Dell)
DDR_HVREF_RST_PCH [5]
PCH_GPIO74
SMB_CLK_ME1
SMB_DATA_ME1
CL_CLK1
CL_DATA1
CL_RST1#
WLAN
CLK_PCIE_WLANN
CLK_PCIE_WLANP
PCIE_CLK_REQ0#
CLKOUT_PCIE0N
CLKOUT_PCIE0P
PCIECLKRQ0# / GPIO73
PEG_A_CLKRQ# / GPIO47
PEG_A_CLKRQ# [18]
CLK_PCIE_VGAN [18]
CLK_PCIE_VGAP [18]
CLK_CPU_BCLKN [5]
CLK_CPU_BCLKP [5]
CLK_DP_N [5]
CLK_DP_P [5]
CLK_DMIN
CLK_DMIP
CLK_GND1_N
CLK_GND1_P
CLK_BUF_DREFCLKN
CLK_BUF_DREFCLKP
CLK_BUF_DREFSSCLKN
CLK_BUF_DREFSSCLKP
CLK_PCH_14M
CLK_PCI_FB [12]
XTAL25_IN
XTAL25_OUT
Y2 25MHz
R368 1M/J_4
XCLK_RCOMP
R329 90.9/F_4
+1.05V_PCH
CLKOUTFLEX0 / GPIO64
CLKOUTFLEX1 / GPIO65
CLKOUTFLEX2 / GPIO66
CLKOUTFLEX3 / GPIO67
CLK_48M_CARD [29]
CLK_VGA_27M [20]
CLK_VGA_27M_SS [20]
0727 add 22ohm resistor
EMI soultion reserve, please place near PCH
add test point for XDP
XDP
CLK_PCIE_XDPN
CLK_PCIE_XDPP
CougarPoint_R1P0
SMBus/Pull-up(CLG)
+3.3V_RUN
Q3 2N7002W-7-F
Q33 2N7002W-7-F
Q4 2N7002W-7-F
Q6 2N7002W-7-F
WLAN_SCLK [16,17,28,31]
WLAN_SDATA [16,17,28,31]
SMBCLK1 [30]
SMBDAT1 [30]
change direction
CLK_REQ/Strap Pin(CLG)
+3.3V_SUS
Stuff for Integrated CLK Gen Mode
http://hobi-elektronika.net

	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)

Quanta Computer Inc.

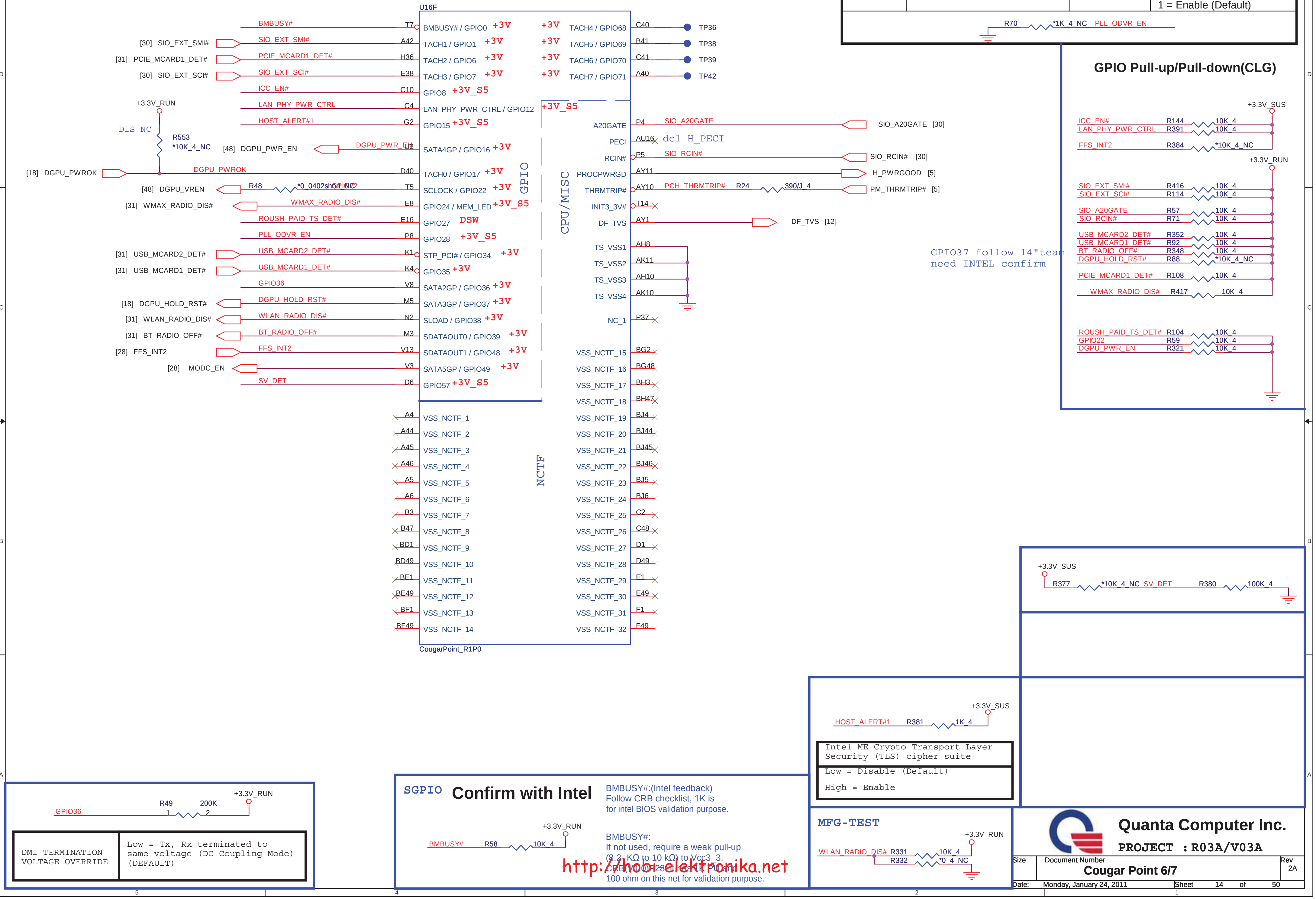
PROJECT : R03A/V03A

Size	Document Number	Rev
	Cougar Point 5/7	2A

Date: Monday, January 24, 2011 Sheet 13 of 50

Cougar Point (GPIO,VSS_NCTF,RSVD)

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



Quanta Computer Inc.	PROJECT : R03A/V03A	
Size	Document Number: Cougar Point 6/7	Rev 2A
Date: Monday, January 24, 2011	Sheet 14 of 50	

COUGAR POINT (POWER)

Cougar Point (POWER)

Tie to 3.3V_SUS, when don't support Deep SX CP_v1.0 p88

need 1206?

Intel

the trace needs to be at least 20 mils width with full VSS/VCC reference plane.

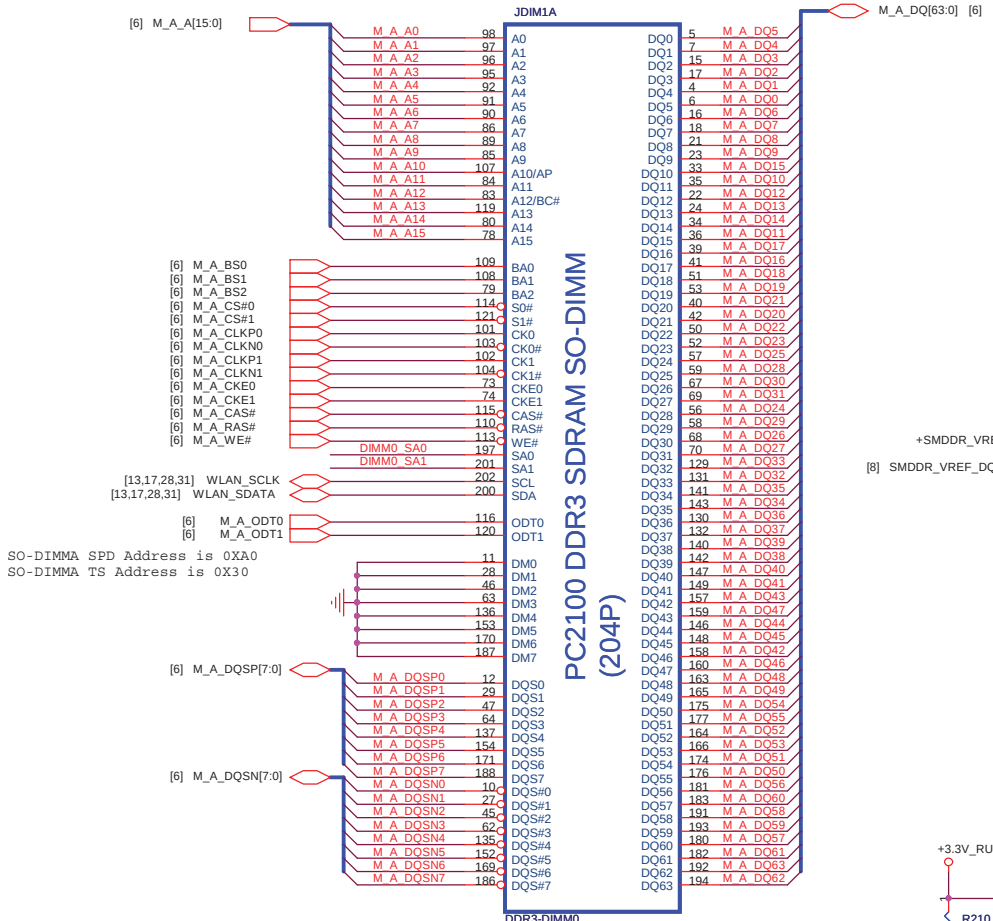
Ask PD3 or Intel, why need 1ohm change to +/-5%

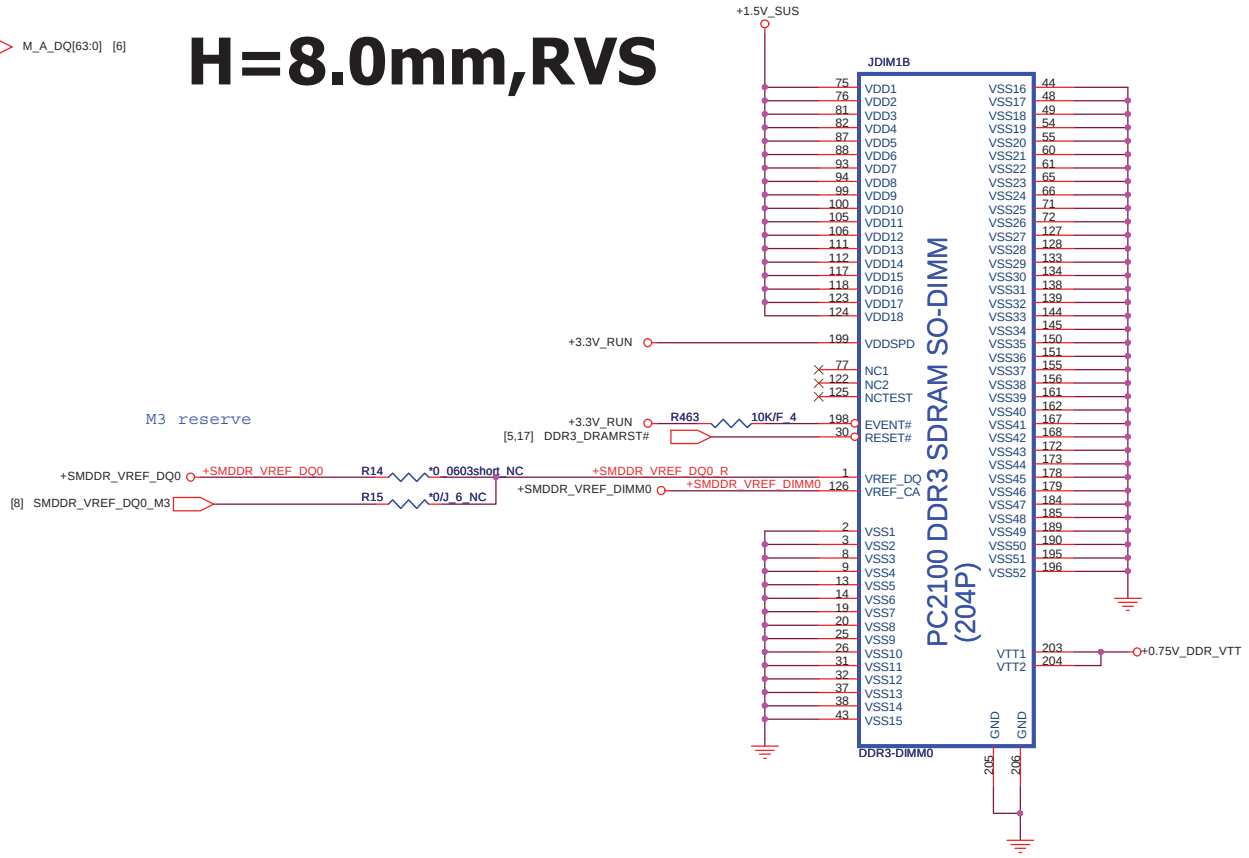
Quanta Computer Inc.

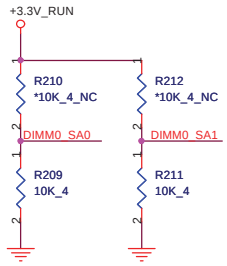
PROJECT :R03A/V03A

Size	Document Number	Rev
	Cougar Point 7/7	2A
Date: Monday, January 24, 2011	Sheet 15 of 50	

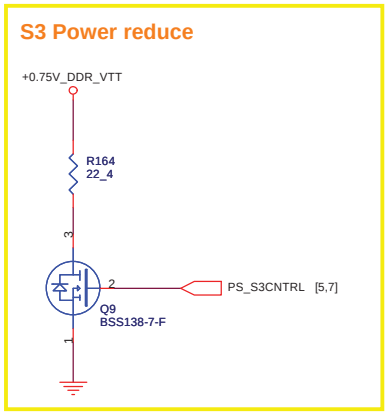
H=8.0mm,RVS

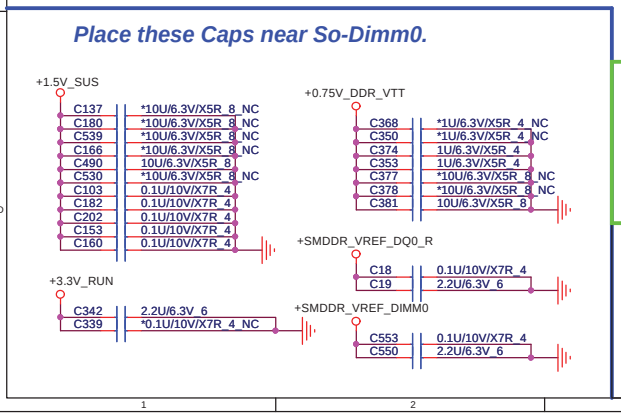


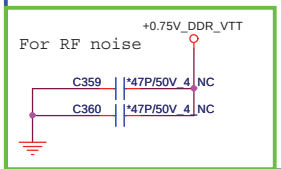


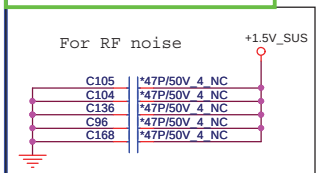


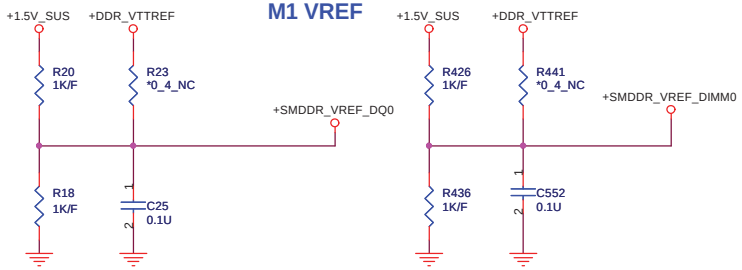
	DIMM0_SA0	DIMM0_SA1
DOMM0	0	0
DOMM1	0	1











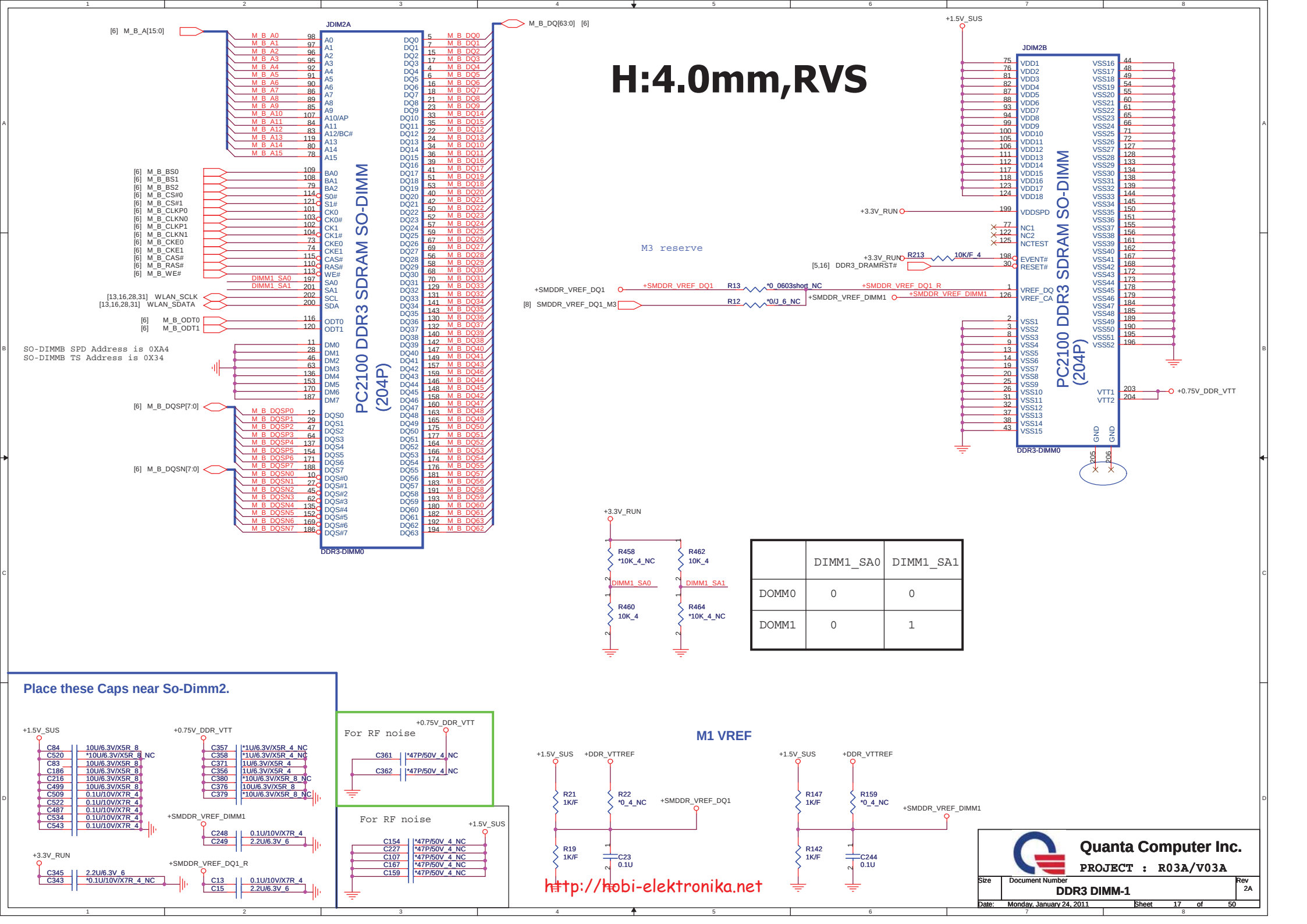
http://hobi-elektronika.net

Quanta Computer Inc.

PROJECT : R03A/V03A

Size	Document Number	Rev
	DDR3 DIMM-0	2A

Date: Monday, January 24, 2011 Sheet 16 of 50


H:4.0mm,RVS
JDIM2A
PC2100 DDR3 SDRAM SO-DIMM (204P)
DDR3-DIMM0
JDIM2B
PC2100 DDR3 SDRAM SO-DIMM (204P)
DDR3-DIMM0
M3 reserve
SO-DIMMB SPD Address is 0XA4
SO-DIMMB TS Address is 0X34
DIMM1_SA0
DIMM1_SA1
DOMM0 0 0
DOMM1 0 1
Place these Caps near So-Dimm2.
For RF noise
For RF noise
M1 VREF
Quanta Computer Inc.
PROJECT : R03A/V03A
DDR3 DIMM-1
Rev 2A
Monday, January 24, 2011
Sheet 17 of 50
http://hobi-elektronika.net

PEX_IOVDD+PEX_IOVDDQ >2.2A

~ 500mA

1600mA

0.1u *4 under GPU
Others Near GPU

0.1u under GPU
Others Near GPU

confirm with FAE
should change power rail

12~16 mils width
120mA
0.1u under GPU
Others Near GPU

120mA 12~16 mils width

0.1u under GPU
Others Near GPU
add 1u near GPU as FAE confirm

1211 for Nvidia request
add transition cap

U20A
N12P-GE-A1

PCI EXPRESS

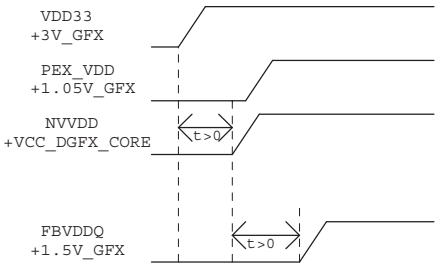
10k PU 3V_GFX as FAE's feedback

Add MOS for preventing leakage.

GPU all PWROK

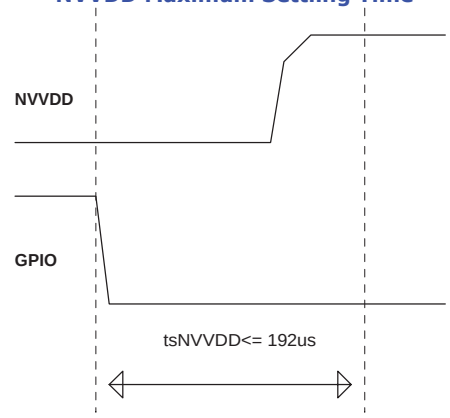
Q84: H(sat), L(cut-off)

Power up sequence

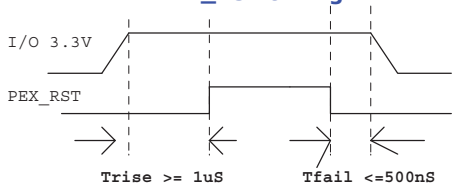


NB9M: VGACORE +0.90V (Normal) , +1.09V

NVVDD Maximum Settling Time



PEX_RST timing



http://hobi-elektronika.net

Quanta Computer Inc.
PROJECT : R03A/V03A

Size	Document Number	Rev
	N12P-GE (PCIE I/F) 1/5	2A

Date: Friday, January 07, 2011 Sheet 18 of 50

U20B
N12P-GE-A1

U20C
N12P-GE-A1

mode E change to mode D design

Follow Mode D Command Mapping
(ODTX, CKE*, RST)

All need stuff for N11P-GS
N11M-GE2 no VMC_CMD* (64 bits)

MEMORY I/F A

MEMORY I/F C

15mils width

For Debug only

100mA

3050mA

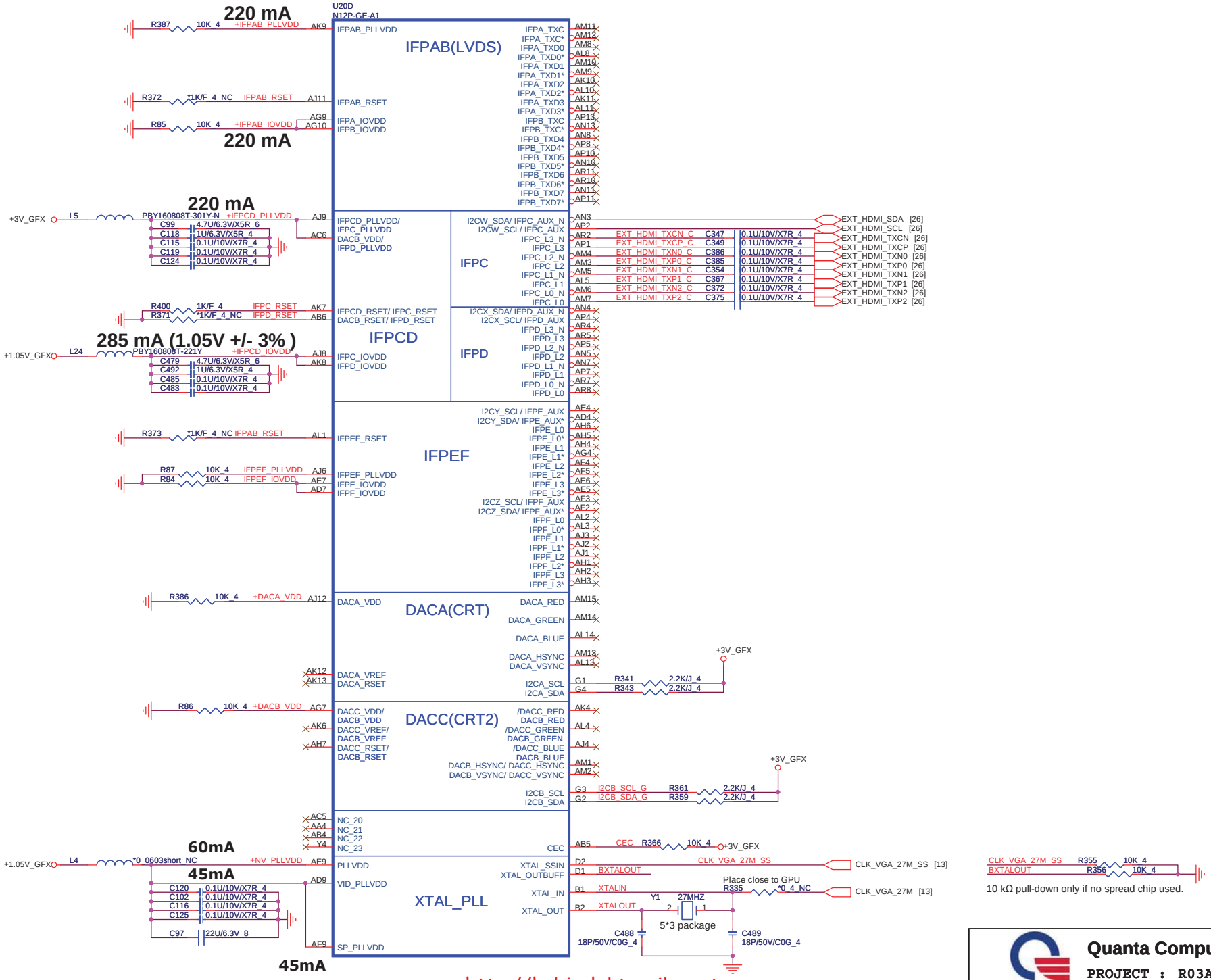
0.1u *8 under GPU
Others Near GPU

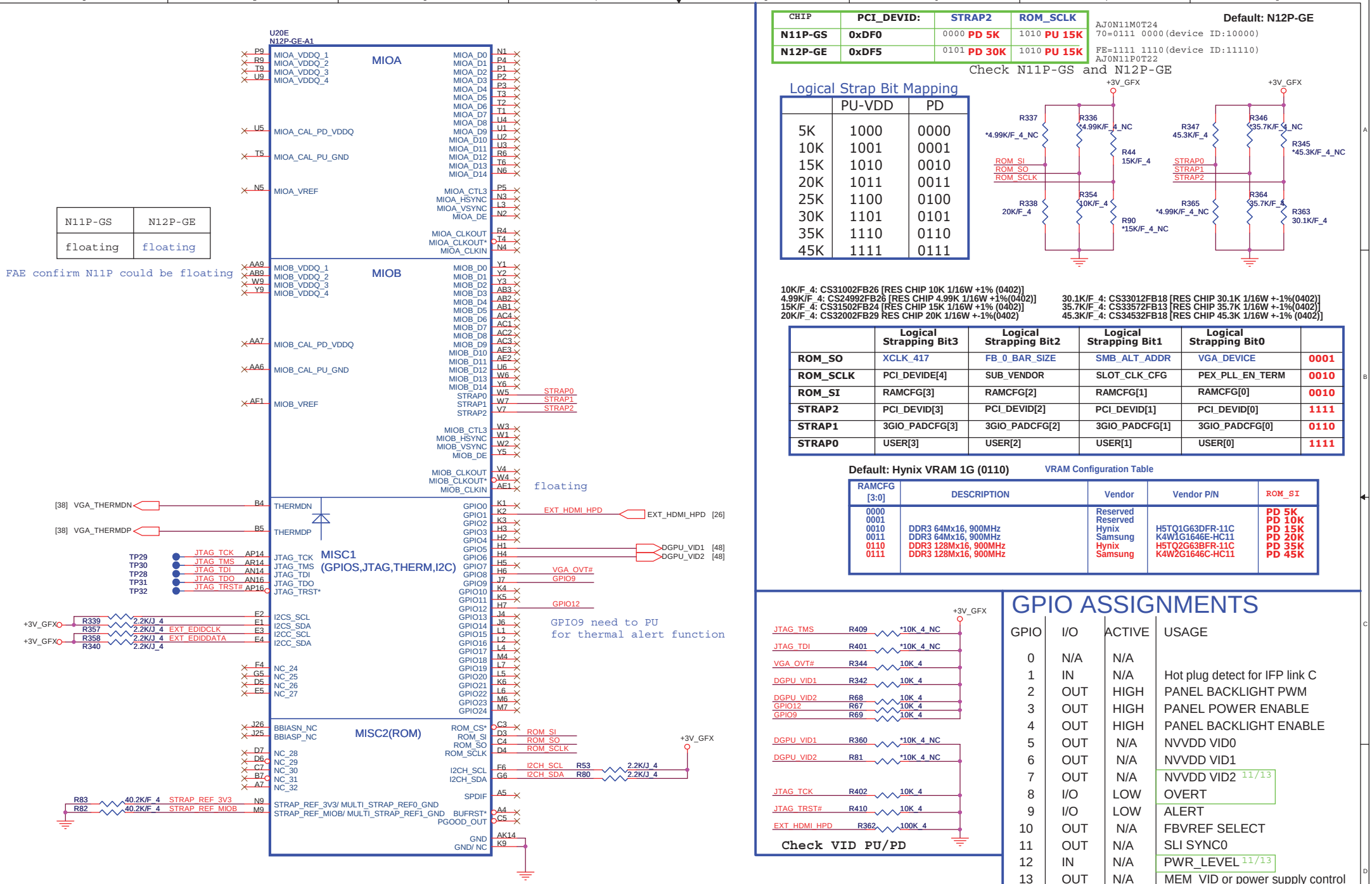
15mils width

100mA

http://hobi-elektronika.net

Quanta Computer Inc.		
PROJECT : R03A/V03A		
Size	Document Number	Rev
	N12P-GE (MEMORY I/F) 2/5	2A
Date: Monday, January 24, 2011	Sheet 19 of 50	


220 mA
U20D
N12P-GE-A1
R387 10K_4 +IFPAB_PLLVDD AK9
IFPAB_PLLVDD
IFPAB(LVDS)
IFPA_TXC AM11
IFPA_TXC* AM12
IFPA_TXD0 AM8
IFPA_TXD0* AL8
IFPA_TXD1 AM10
IFPA_TXD1* AM9
IFPA_TXD2 AK10
IFPA_TXD2* AL10
IFPA_TXD3 AK11
IFPA_TXD3* AL11
IFPB_TXC AP13
IFPB_TXC* AN13
IFPB_TXD4 AN8
IFPB_TXD4* AP8
IFPB_TXD5 AP10
IFPB_TXD5* AN10
IFPB_TXD6 AR11
IFPB_TXD6* AR10
IFPB_TXD7 AN11
IFPB_TXD7* AP11
R372 *1K/F_4_NC IFPAB_RSET AJ11
IFPAB_RSET
R85 10K_4 +IFPAB_IOVDD AG10
AG9
IFPA_IOVDD
IFPB_IOVDD
220 mA
220 mA
+3V_GFX L5 PBY160808T-301Y-N +IFPCD_PLLVDD AJ9
C99 4.7U/6.3V/X5R_6
C118 1U/6.3V/X5R_4
C115 0.1U/10V/X7R_4
C119 0.1U/10V/X7R_4
C124 0.1U/10V/X7R_4
AC6
IFPCD_PLLVDD/
IFPC_PLLVDD
DACB_VDD/
IFPD_PLLVDD
I2CW_SDA/ IFPC_AUX_N AN3
I2CW_SCL/ IFPC_AUX AP2
IFPC_L3_N AR2
IFPC_L3 AP1
IFPC_L2_N AM4
IFPC_L2 AM3
IFPC_L1_N AM5
IFPC_L1 AL5
IFPC_L0_N AM6
IFPC_L0 AM7
IFPC
EXT_HDMI_TXCN_C C347 0.1U/10V/X7R_4 EXT_HDMI_SDA [26]
EXT_HDMI_TXCP_C C349 0.1U/10V/X7R_4 EXT_HDMI_SCL [26]
EXT_HDMI_TXN0_C C386 0.1U/10V/X7R_4 EXT_HDMI_TXCN [26]
EXT_HDMI_TXP0_C C385 0.1U/10V/X7R_4 EXT_HDMI_TXCP [26]
EXT_HDMI_TXN1_C C354 0.1U/10V/X7R_4 EXT_HDMI_TXN0 [26]
EXT_HDMI_TXP1_C C367 0.1U/10V/X7R_4 EXT_HDMI_TXP0 [26]
EXT_HDMI_TXN2_C C372 0.1U/10V/X7R_4 EXT_HDMI_TXN1 [26]
EXT_HDMI_TXP2_C C375 0.1U/10V/X7R_4 EXT_HDMI_TXN2 [26]
EXT_HDMI_TXP2 [26]
R400 1K/F_4 IFPC_RSET AK7
R371 *1K/F_4_NC IFPD_RSET AB6
IFPCD_RSET/ IFPC_RSET
DACB_RSET/ IFPD_RSET
IFPCD
285 mA (1.05V +/- 3%)
+1.05V_GFX L24 PBY160808T-221Y +IFPCD_IOVDD AJ8
C479 4.7U/6.3V/X5R_6
C492 1U/6.3V/X5R_4
C485 0.1U/10V/X7R_4
C483 0.1U/10V/X7R_4
AK8
IFPC_IOVDD
IFPD_IOVDD
I2CX_SDA/ IFPD_AUX_N AN4
I2CX_SCL/ IFPD_AUX AP4
IFPD_L3_N AR4
IFPD_L3 AR5
IFPD_L2_N AP5
IFPD_L2 AN5
IFPD_L1_N AN7
IFPD_L1 AP7
IFPD_L0_N AR7
IFPD_L0 AR8
IFPD
R373 *1K/F_4_NC IFPAB_RSET AL1
IFPEF_RSET
IFPEF
R87 10K_4 IFPEF_PLLVDD AJ6
R84 10K_4 IFPEF_IOVDD AE7
AD7
IFPEF_PLLVDD
IFPE_IOVDD
IFPF_IOVDD
I2CY_SCL/ IFPE_AUX AE4
I2CY_SDA/ IFPE_AUX* AD4
IFPE_L0 AH6
IFPE_L0* AH5
IFPE_L1 AH4
IFPE_L1* AG4
IFPE_L2 AF4
IFPE_L2* AE5
IFPE_L3 AE6
IFPE_L3* AE5
I2CZ_SCL/ IFPF_AUX AE3
I2CZ_SDA/ IFPF_AUX* AF2
IFPF_L0 AL2
IFPF_L0* AL3
IFPF_L1 AJ3
IFPF_L1* AJ2
IFPF_L2 AJ1
IFPF_L2* AH1
IFPF_L3 AH2
IFPF_L3* AH3
R386 10K_4 +DACA_VDD AJ12
DACA_VDD
DACA(CRT)
DACA_RED AM15
DACA_GREEN AM14
DACA_BLUE AL14
DACA_HSYNC AM13
DACA_VSYNC AL13
+3V_GFX
AK12
AK13
DACA_VREF
DACA_RSET
I2CA_SCL G1 R341 2.2K/J_4
I2CA_SDA G4 R343 2.2K/J_4
R86 10K_4 +DACB_VDD AG7
DACC_VDD/
DACB_VDD
DACC_VREF/
DACB_VREF
DACC_RSET/
DACB_RSET
DACC(CRT2)
/DACC_RED AK4
DACB_RED
/DACC_GREEN AL4
DACB_GREEN
/DACC_BLUE AJ4
DACB_BLUE
DACB_HSYNC/ DACC_HSYNC AM1
DACB_VSYNC/ DACC_VSYNC AM2
+3V_GFX
I2CB_SCL G3 I2CB_SCL_G R361 2.2K/J_4
I2CB_SDA G2 I2CB_SDA_G R359 2.2K/J_4
AK6
AH7
I2CB_SCL
I2CB_SDA
AC5
AA4
AB4
Y4
NC_20
NC_21
NC_22
NC_23
CEC
AB5 CEC R366 10K_4 +3V_GFX
60mA
+1.05V_GFX L4 *0_0603short_NC +NV_PLLVDD AE9
45mA
C120 0.1U/10V/X7R_4
C102 0.1U/10V/X7R_4
C116 0.1U/10V/X7R_4
C125 0.1U/10V/X7R_4
C97 22U/6.3V_8
AD9
AF9
PLLVDD
VID_PLLVDD
SP_PLLVDD
XTAL_PLL
XTAL_SSIN
XTAL_OUTBUFF
XTAL_IN
XTAL_OUT
D2 CLK_VGA_27M_SS CLK_VGA_27M_SS [13]
D1 BXTALOUT
B1 XTALIN
B2 XTALOUT
Place close to GPU
R335 *0_4_NC CLK_VGA_27M [13]
Y1 27MHZ
2 1
5*3 package
C488 18P/50V/C0G_4
C489 18P/50V/C0G_4
45mA
CLK_VGA_27M_SS R355 10K_4
BXTALOUT R356 10K_4
10 kΩ pull-down only if no spread chip used.
http://hobi-elektronika.net
Quanta Computer Inc.
PROJECT : R03A/V03A
Size
Document Number
N12P-GE (DISPLAY) 3/5
Rev 2A
Date: Monday, January 24, 2011
Sheet 20 of 50



CHIP	PCI_DEVID:	STRAP2	ROM_SCLK
N11P-GS	0xDF0	0000 PD 5K	1010 PU 15K
N12P-GE	0xDF5	0101 PD 30K	1010 PU 15K

Default: N12P-GE

AJ0N11M0T24
70=0111 0000(device ID:10000)

FE=1111 1110(device ID:11110)
AJ0N11P0T22

Check N11P-GS and N12P-GE

Logical Strap Bit Mapping

	PU-VDD	PD
5K	1000	0000
10K	1001	0001
15K	1010	0010
20K	1011	0011
25K	1100	0100
30K	1101	0101
35K	1110	0110
45K	1111	0111

10K/F_4: CS31002FB26 [RES CHIP 10K 1/16W +1% (0402)]
4.99K/F_4: CS24992FB26 [RES CHIP 4.99K 1/16W +1%(0402)]
15K/F_4: CS31502FB24 [RES CHIP 15K 1/16W +1% (0402)]
20K/F_4: CS32002FB29 RES CHIP 20K 1/16W +-1%(0402)
30.1K/F_4: CS33012FB18 [RES CHIP 30.1K 1/16W +-1%(0402)]
35.7K/F_4: CS33572FB13 [RES CHIP 35.7K 1/16W +-1%(0402)]
45.3K/F_4: CS34532FB18 [RES CHIP 45.3K 1/16W +-1% (0402)]

	Logical Strapping Bit3	Logical Strapping Bit2	Logical Strapping Bit1	Logical Strapping Bit0	
ROM_SO	XCLK_417	FB_0_BAR_SIZE	SMB_ALT_ADDR	VGA_DEVICE	0001
ROM_SCLK	PCI_DEVIDE[4]	SUB_VENDOR	SLOT_CLK_CFG	PEX_PLL_EN_TERM	0010
ROM_SI	RAMCFG[3]	RAMCFG[2]	RAMCFG[1]	RAMCFG[0]	0010
STRAP2	PCI_DEVID[3]	PCI_DEVID[2]	PCI_DEVID[1]	PCI_DEVID[0]	1111
STRAP1	3GIO_PADCFG[3]	3GIO_PADCFG[2]	3GIO_PADCFG[1]	3GIO_PADCFG[0]	0110
STRAP0	USER[3]	USER[2]	USER[1]	USER[0]	1111

Default: Hynix VRAM 1G (0110)

VRAM Configuration Table

RAMCFG [3:0]	DESCRIPTION	Vendor	Vendor P/N	ROM_SI
0000		Reserved		PD 5K
0001		Reserved		PD 10K
0010	DDR3 64Mx16, 900MHz	Hynix	H5TQ1G63DFR-11C	PD 15K
0011	DDR3 64Mx16, 900MHz	Samsung	K4W1G1646E-HC11	PD 20K
0110	DDR3 128Mx16, 900MHz	Hynix	H5TQ2G63BFR-11C	PD 35K
0111	DDR3 128Mx16, 900MHz	Samsung	K4W2G1646C-HC11	PD 45K

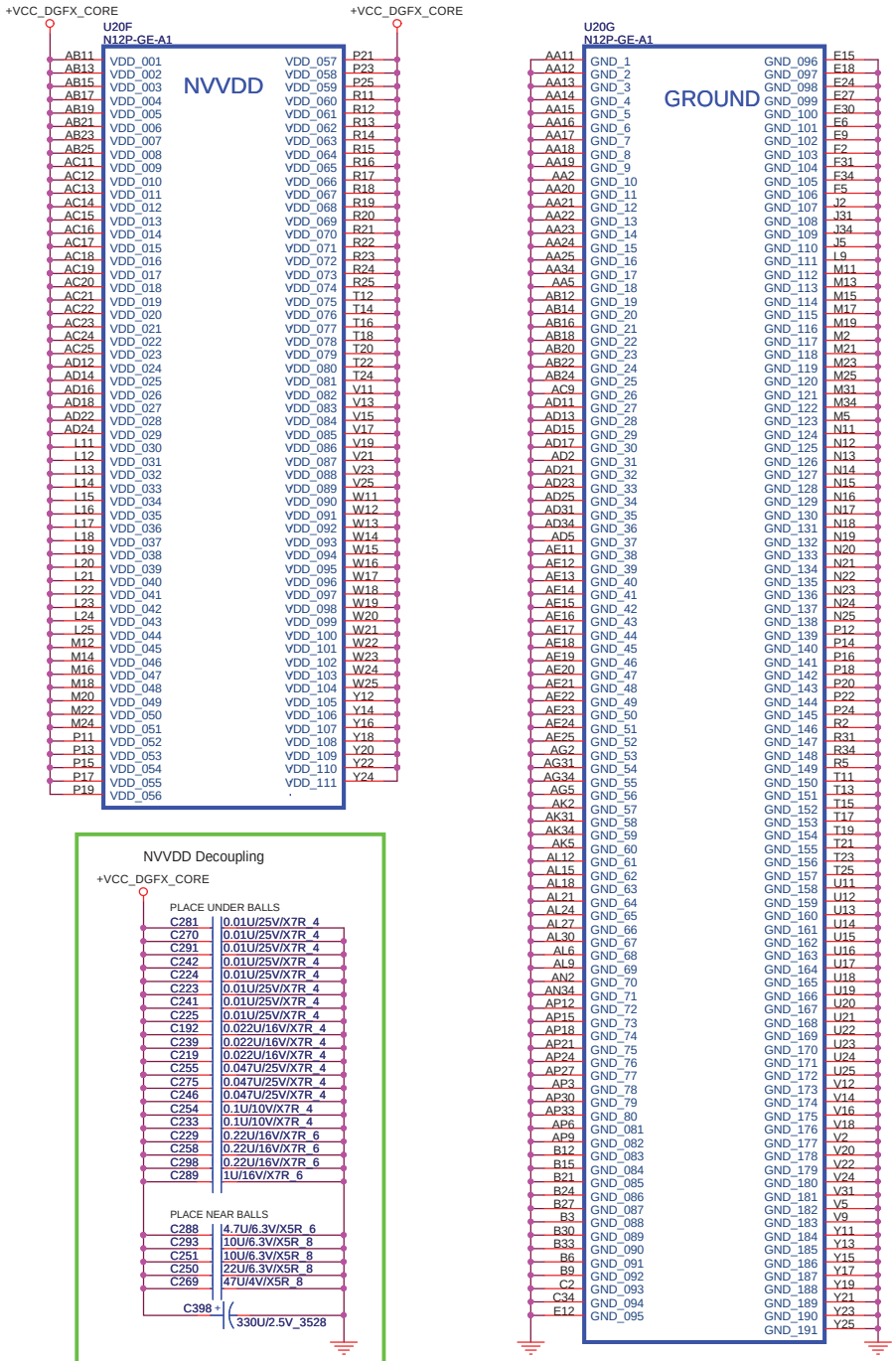
GPIO ASSIGNMENTS

GPIO	I/O	ACTIVE	USAGE
0	N/A	N/A	
1	IN	N/A	Hot plug detect for IFP link C
2	OUT	HIGH	PANEL BACKLIGHT PWM
3	OUT	HIGH	PANEL POWER ENABLE
4	OUT	HIGH	PANEL BACKLIGHT ENABLE
5	OUT	N/A	NVVDD VID0
6	OUT	N/A	NVVDD VID1
7	OUT	N/A	NVVDD VID2 11/13
8	I/O	LOW	OVERT
9	I/O	LOW	ALERT
10	OUT	N/A	FBVREF SELECT
11	OUT	N/A	SLI SYNC0
12	IN	N/A	PWR_LEVEL 11/13
13	OUT	N/A	MEM_VID or power supply control
14	OUT	N/A	PS CONTROL

Quanta Computer Inc.
PROJECT : R03A/V03A

Size	Document Number	Rev
	N12P-GE (GPIO&STRAPS) 4/5	2A

Date: Friday, January 07, 2011 Sheet 21 of 50



Quanta Computer Inc.

PROJECT : R03A/V03A

Size	Document Number	Rev
	N12P-GE (POWER & GND) 5/5	2A

Date: Monday, January 24, 2011 Sheet 22 of 50

SWAP CMD NET
modify Mode E to Mode D

[19] VMA_DQ[63..0]
[19] VMA_DM[7..0]
[19] VMA_WDQS[7..0]
[19] VMA_RDQS[7..0]

CHANNEL A: 512MB/1024MB DDR3

change VRAM footprint to hynix 2G(the package is bigger)

U11 / U22 / U12 / U23 — 96-BALL SDRAM DDR3 — K4W1G1646E-HC12

+1.5V_GFX

Placement has to be close to VRAM

R257 243/F
R473 243/F
R252 243/F
R490 243/F
R249 162/F
R248 162/F

R477 1.33K/F_4
R487 1.33K/F_4
R484 1.33K/F_4
R476 1.33K/F_4
R480 1.33K/F_4
R486 1.33K/F_4
R479 1.33K/F_4
R474 1.33K/F_4

C584 0.1U/10V/X7R_4
C586 0.1U/10V/X7R_4
C585 0.1U/10V/X7R_4
C579 0.1U/10V/X7R_4

C397 *330U/2.5V_3528_NC

C403 1U/6.3V/X5R_4
C405 1U/6.3V/X5R_4
C407 0.1U/10V/X5R_4
C404 0.1U/10V/X5R_4
C406 0.1U/10V/X5R_4

C599 1U/6.3V/X5R_4
C598 1U/6.3V/X5R_4
C590 0.1U/10V/X5R_4
C582 0.1U/10V/X5R_4
C595 0.1U/10V/X5R_4

C393 1U/6.3V/X5R_4
C413 1U/6.3V/X5R_4
C409 0.1U/10V/X5R_4
C415 0.1U/10V/X5R_4
C389 0.1U/10V/X5R_4

C604 1U/6.3V/X5R_4
C576 1U/6.3V/X5R_4
C575 0.1U/10V/X5R_4
C603 0.1U/10V/X5R_4
C601 0.1U/10V/X5R_4

Quanta Computer Inc.
PROJECT : R03A/V03A

Size	Document Number	Rev
	N12P-GE VRAM-1(DDR3 BGA96)	2A
Date: Friday, January 07, 2011	Sheet 23 of 50	

SWAP CMD NET
modify Mode E to Mode D

[19] VMC_DQ[63..0]
[19] VMC_DM[7..0]
[19] VMC_WDQS[7..0]
[19] VMC_RDQS[7..0]

CHANNEL B: 512MB/1024MB DDR3

change VRAM footprint to hynix 2G(the package is bigger)

U19 / U5 / U7 / U21 — 96-BALL SDRAM DDR3 — K4W1G1646E-HC12

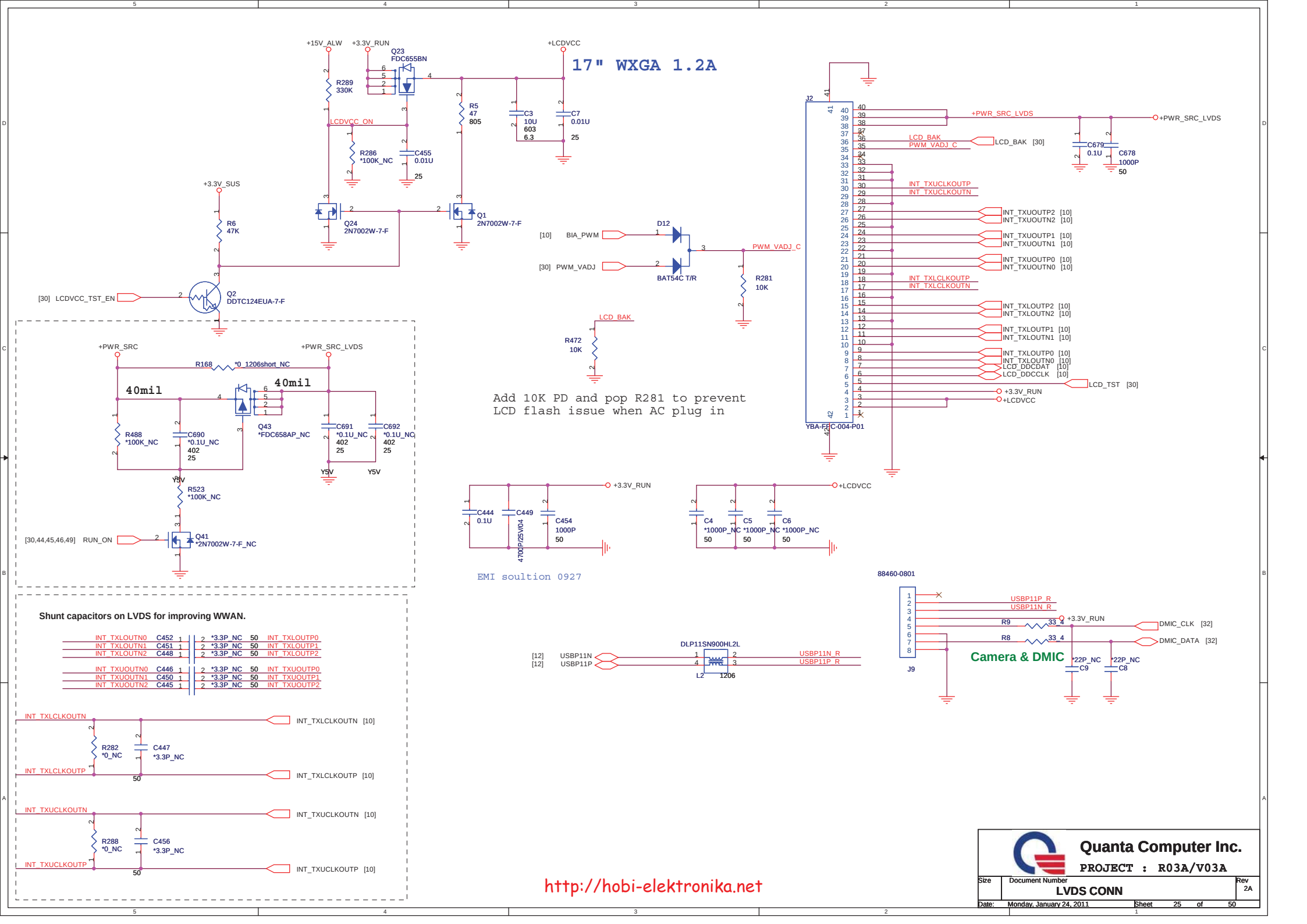
Placement has to be close to VRAM

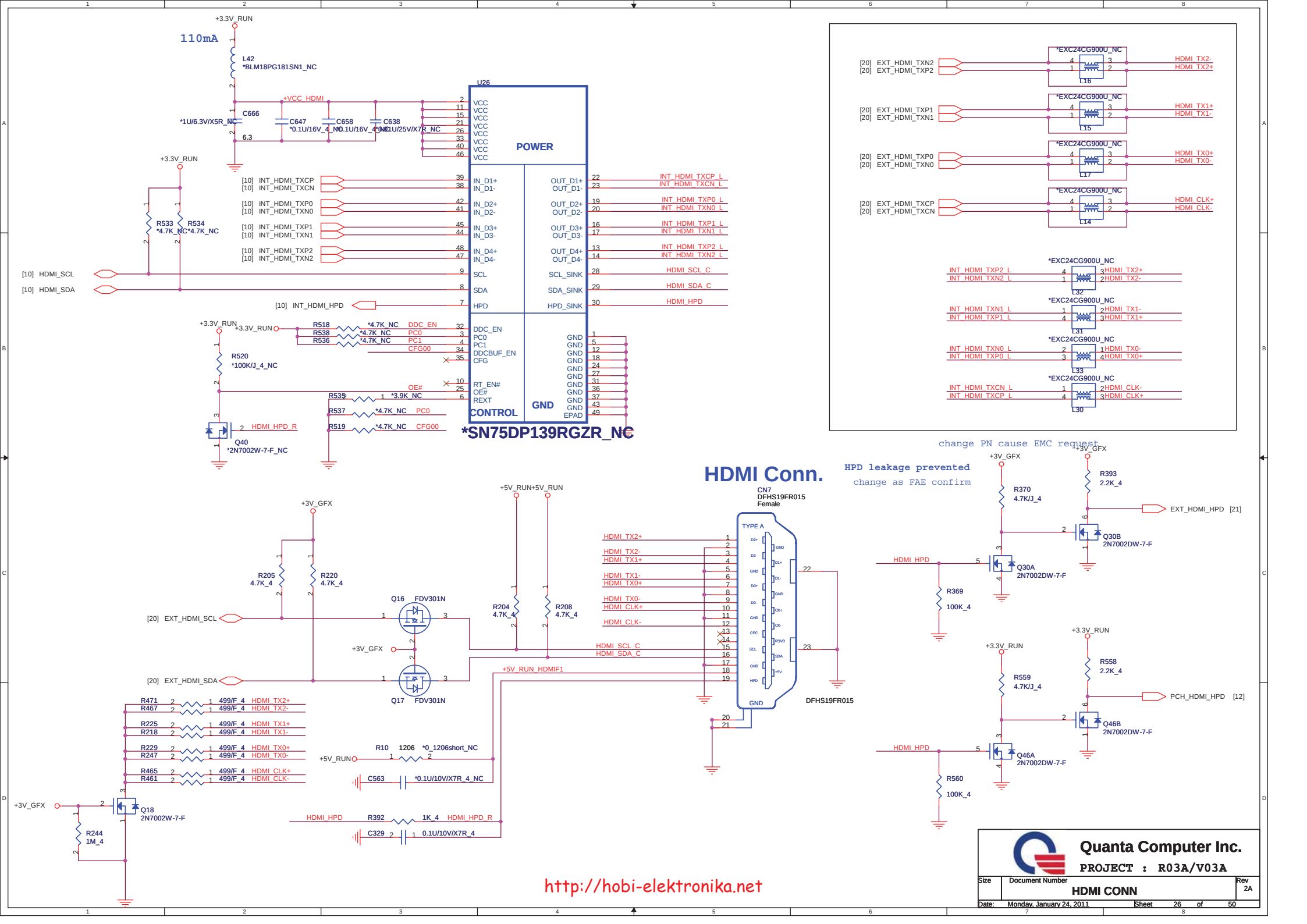
Placement has to be close to VRAM

Quanta Computer Inc.
PROJECT : R03A/V03A

Size	Document Number	Rev
	N12P-GE VRAM-2(DDR3 BGA96)	2A

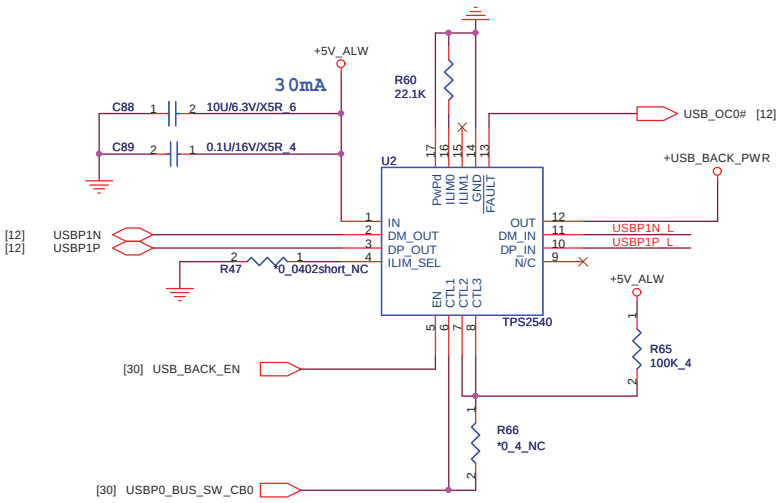
Date: Friday, January 07, 2011 Sheet 24 of 50


17" WXGA 1.2A
+15V_ALW
+3.3V_RUN
+LCDVCC
Q23
FDC655BN
R289
330K
LCDVCC_ON
R286
*100K_NC
C455
0.01U
25
R5
47
805
C3
10U
603
6.3
C7
0.01U
25
+3.3V_SUS
R6
47K
Q24
2N7002W-7-F
Q1
2N7002W-7-F
[30] LCDVCC_TST_EN
Q2
DDTC124EUA-7-F
[10] BIA_PWM
[30] PWM_VADJ
D12
BAT54C T/R
PWM_VADJ_C
R281
10K
LCD_BAK
R472
10K
Add 10K PD and pop R281 to prevent
LCD flash issue when AC plug in
J2
YBA-FFC-004-P01
+PWR_SRC_LVDS
LCD_BAK
PWM_VADJ_C
LCD_BAK [30]
C679
0.1U
C678
1000P
50
INT_TXUCLKOUTP
INT_TXUCLKOUTN
INT_TXUOUTP2 [10]
INT_TXUOUTN2 [10]
INT_TXUOUTP1 [10]
INT_TXUOUTN1 [10]
INT_TXUOUTP0 [10]
INT_TXUOUTN0 [10]
INT_TXLCLKOUTP
INT_TXLCLKOUTN
INT_TXLOUTP2 [10]
INT_TXLOUTN2 [10]
INT_TXLOUTP1 [10]
INT_TXLOUTN1 [10]
INT_TXLOUTP0 [10]
INT_TXLOUTN0 [10]
LCD_DDCDAT [10]
LCD_DDCCLK [10]
LCD_TST [30]
+3.3V_RUN
+LCDVCC
+PWR_SRC
+PWR_SRC_LVDS
R168
*0_1206short_NC
40mil
40mil
Q43
*FDC658AP_NC
R488
*100K_NC
C690
*0.1U_NC
402
25
C691
*0.1U_NC
402
25
C692
*0.1U_NC
402
25
Y5V
R523
*100K_NC
[30,44,45,46,49] RUN_ON
Q41
*2N7002W-7-F_NC
C444
0.1U
C449
4700P/25V/04
C454
1000P
50
C4
*1000P_NC
50
C5
*1000P_NC
50
C6
*1000P_NC
50
EMI soultion 0927
88460-0801
J9
USBP11P_R
USBP11N_R
R9
33_4
R8
33_4
+3.3V_RUN
DMIC_CLK [32]
DMIC_DATA [32]
Camera & DMIC
*22P_NC
C9
*22P_NC
C8
DLP11SN900HL2L
L2
1206
[12] USBP11N
[12] USBP11P
USBP11N_R
USBP11P_R
Shunt capacitors on LVDS for improving WWAN.
INT_TXLOUTN0 C452 *3.3P_NC 50 INT_TXLOUTP0
INT_TXLOUTN1 C451 *3.3P_NC 50 INT_TXLOUTP1
INT_TXLOUTN2 C448 *3.3P_NC 50 INT_TXLOUTP2
INT_TXUOUTN0 C446 *3.3P_NC 50 INT_TXUOUTP0
INT_TXUOUTN1 C450 *3.3P_NC 50 INT_TXUOUTP1
INT_TXUOUTN2 C445 *3.3P_NC 50 INT_TXUOUTP2
INT_TXLCLKOUTN
INT_TXLCLKOUTP
R282
*0_NC
C447
*3.3P_NC
50
INT_TXLCLKOUTN [10]
INT_TXLCLKOUTP [10]
INT_TXUCLKOUTN
INT_TXUCLKOUTP
R288
*0_NC
C456
*3.3P_NC
50
INT_TXUCLKOUTN [10]
INT_TXUCLKOUTP [10]
http://hobi-elektronika.net
Quanta Computer Inc.
PROJECT : R03A/V03A
Size
Document Number
LVDS CONN
Rev
2A
Date: Monday, January 24, 2011
Sheet 25 of 50


110mA
+3.3V_RUN
L42
*BLM18PG181SN1_NC
U26
POWER
CONTROL
GND
*SN75DP139RGZR_NC
change PN cause EMC request
HDMI Conn.
HPD leakage prevented
change as FAE confirm
CN7
DFHS19FR015
Female
TYPE A
Q16 FDV301N
Q17 FDV301N
Q18
2N7002W-7-F
Q40
*2N7002W-7-F_NC
Q30A
2N7002DW-7-F
Q30B
2N7002DW-7-F
Q46A
2N7002DW-7-F
Q46B
2N7002DW-7-F
*EXC24CG900U_NC
http://hobi-elektronika.net
Quanta Computer Inc.
PROJECT : R03A/V03A
HDMI CONN
Monday, January 24, 2011

ESATA + USB Conn + Power share

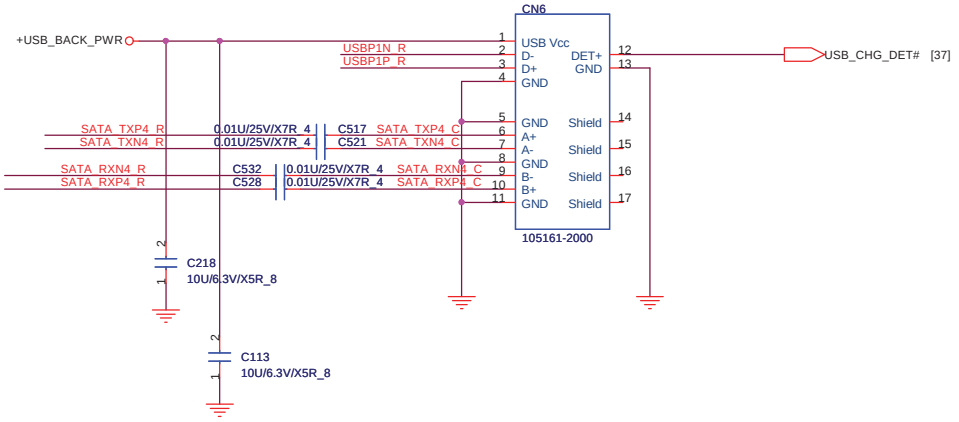
S3/S5 USB charging circuit

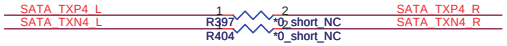


USBP0_BUS_SW_CB0	Mode
Low	DCP, Auto-detect
High	CDP, BC Spec 1.1

ES(PG1.0): Stuff R66, Remove R65
MP(PG1.1): Remove R66 Stuff R65

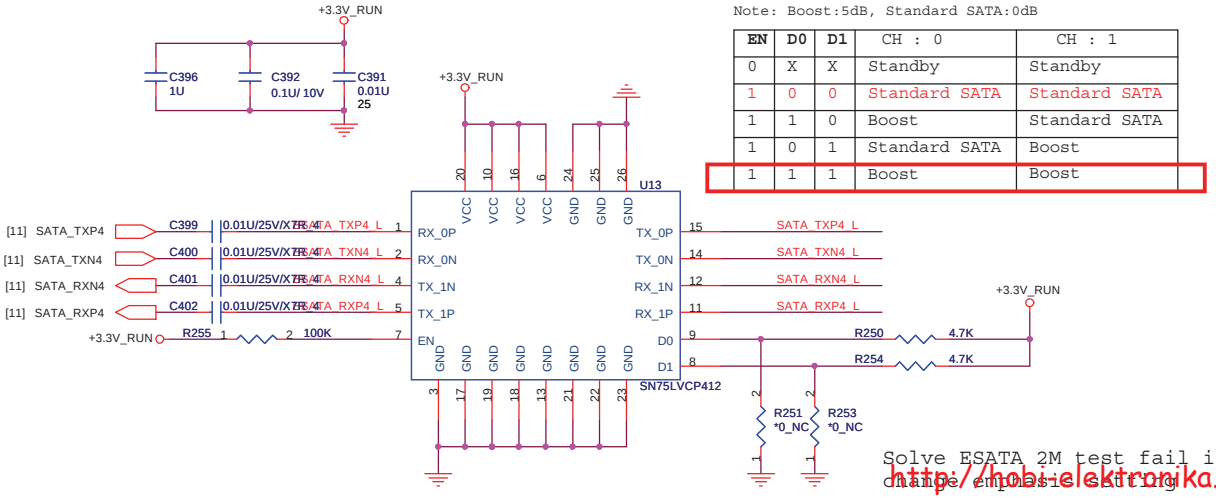
	R8224	mA	
OC limitation	100k ohm	480	
	22.1k ohm	2171	Applied Now





E-SATA Re-driver

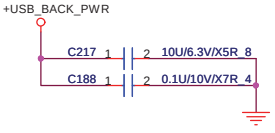
Layout Note: Please put those on the same side of MB PCB

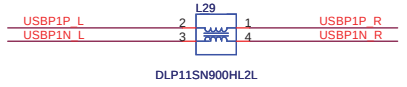


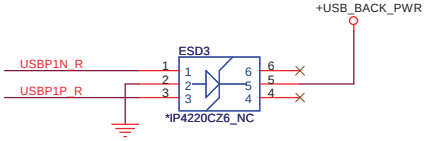
Note: Boost:5dB, Standard SATA:0dB

EN	D0	D1	CH : 0	CH : 1
0	X	X	Standby	Standby
1	0	0	Standard SATA	Standard SATA
1	1	0	Boost	Standard SATA
1	0	1	Standard SATA	Boost
1	1	1	Boost	Boost

Solve ESATA 2M test fail issue, change emphasis SATA trig



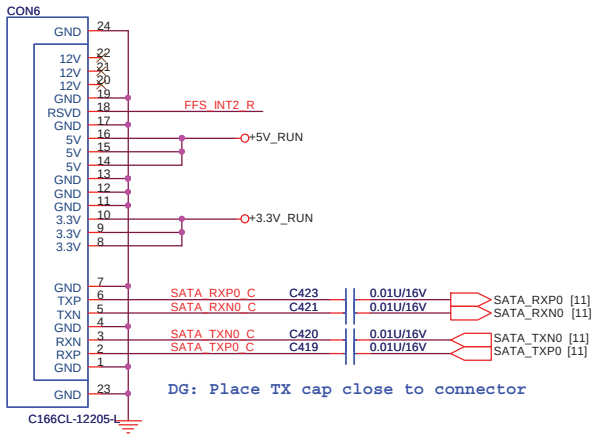




Quanta Computer Inc.
PROJECT : R03A/V03A

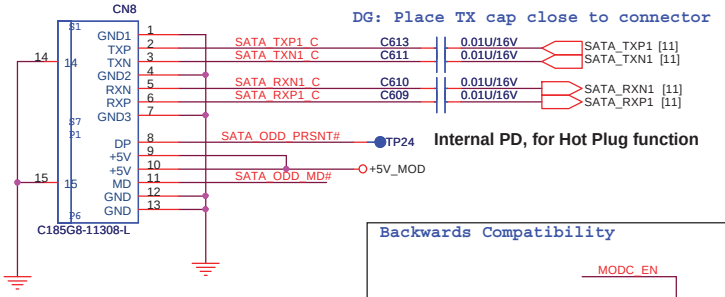
Size	Document Number	Rev
	PUSB / ESATA	2A
Date: Monday, January 24, 2011	Sheet 27 of 50	

SATA Connector



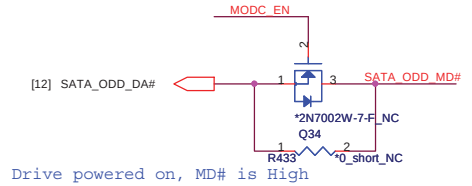
ODD Connector

Change connector as ME request



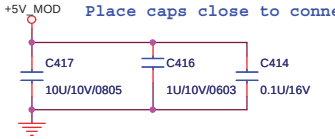
Internal PD, for Hot Plug function

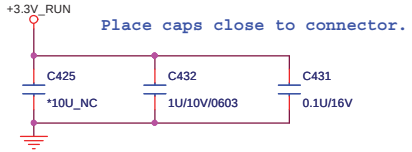
Backwards Compatibility

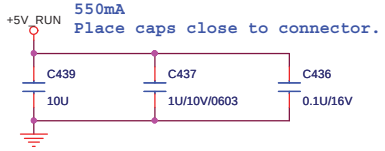


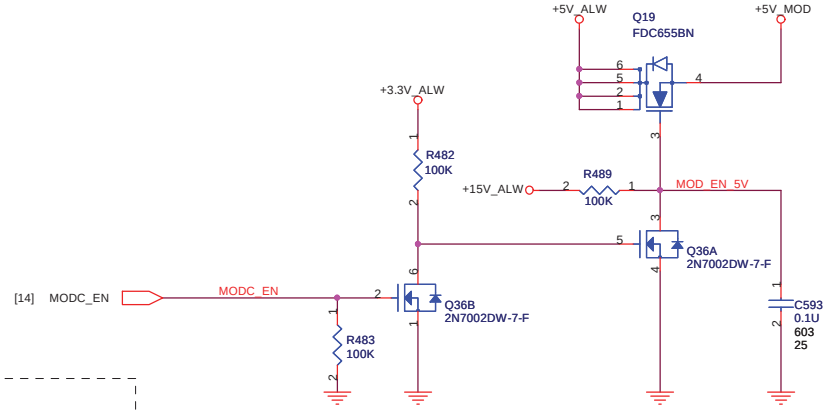
Drive powered on, MD# is High
Drive powered off, MD# is Low

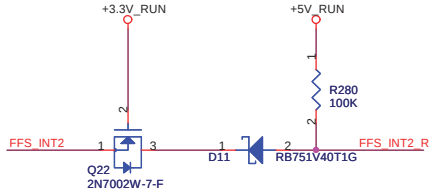
Because the drive does not support ZPODD, the driver never powers off the power FET and never connects the MD/DA pin to the drive



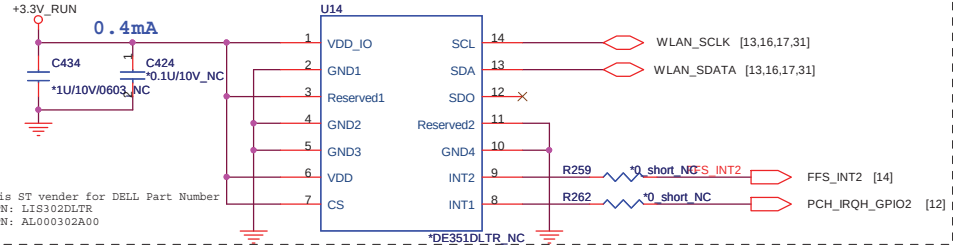








3-axis Fall Sensor (HDD data protector)

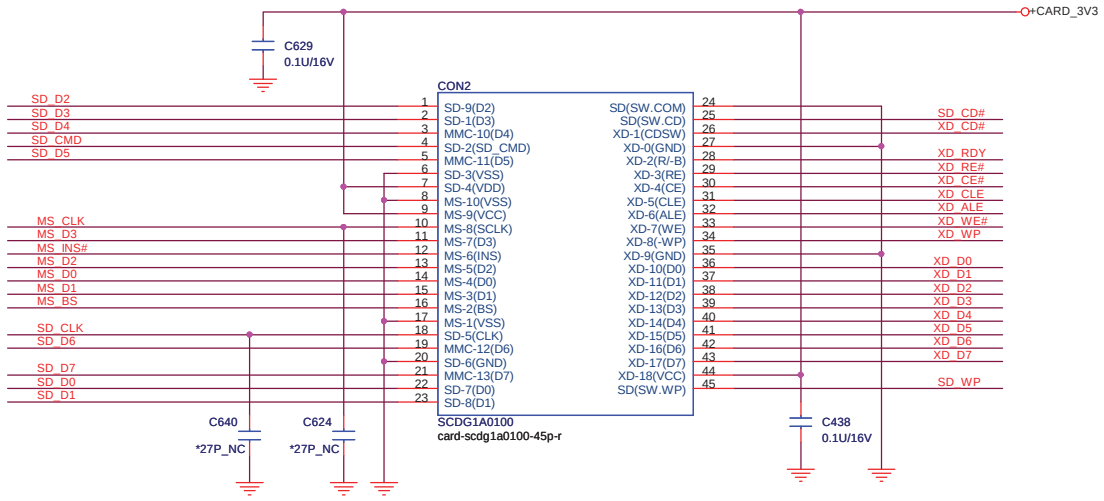


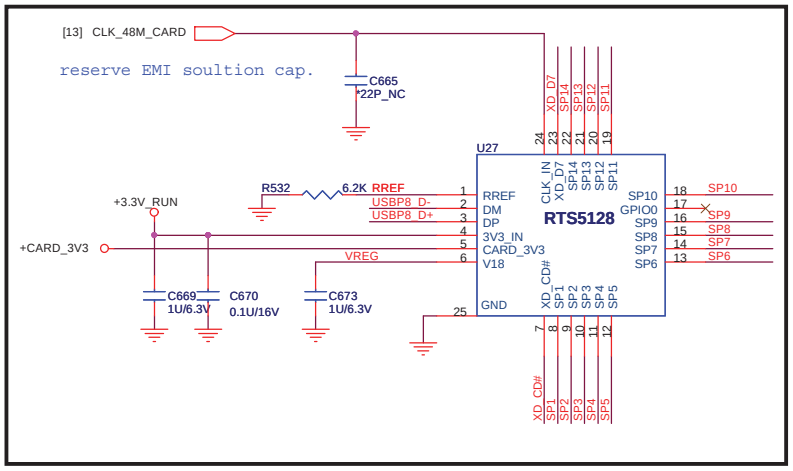
DE351DL is ST vender for DELL Part Number
Vender PN: LIS302DLTR
Quanta PN: AL000302A00

Quanta Computer Inc.
PROJECT : R03A/V03A

Size	Document Number	Rev
	SATA HDD/ODD	2A
Date: Monday, January 24, 2011	Sheet 28 of 50	

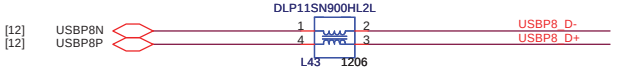
RTS5128-QFN24





SP1	XD_RDY	SD_WP	MS_CLK
SP2	XD_RE#		MS_INS#
SP3	XD_CE#	SD_D1	
SP4	XD_CLE	SD_D0	MS_D7
SP5	XD_ALE	SD_D7	MS_D3
SP6	XD_WE#	SD_CD#	
SP7	XD_WP	SD_D6	MS_D6
SP8	XD_D0	SD_CLK	MS_D2
SP9	XD_D1	SD_D5	MS_D0
SP10	XD_D2	SD_CMD	
SP11	XD_D3	SD_D4	MS_D4
SP12	XD_D4	SD_D3	MS_D1
SP13	XD_D5	SD_D2	MS_D5
SP14	XD_D6		MS_BS

Share Pin

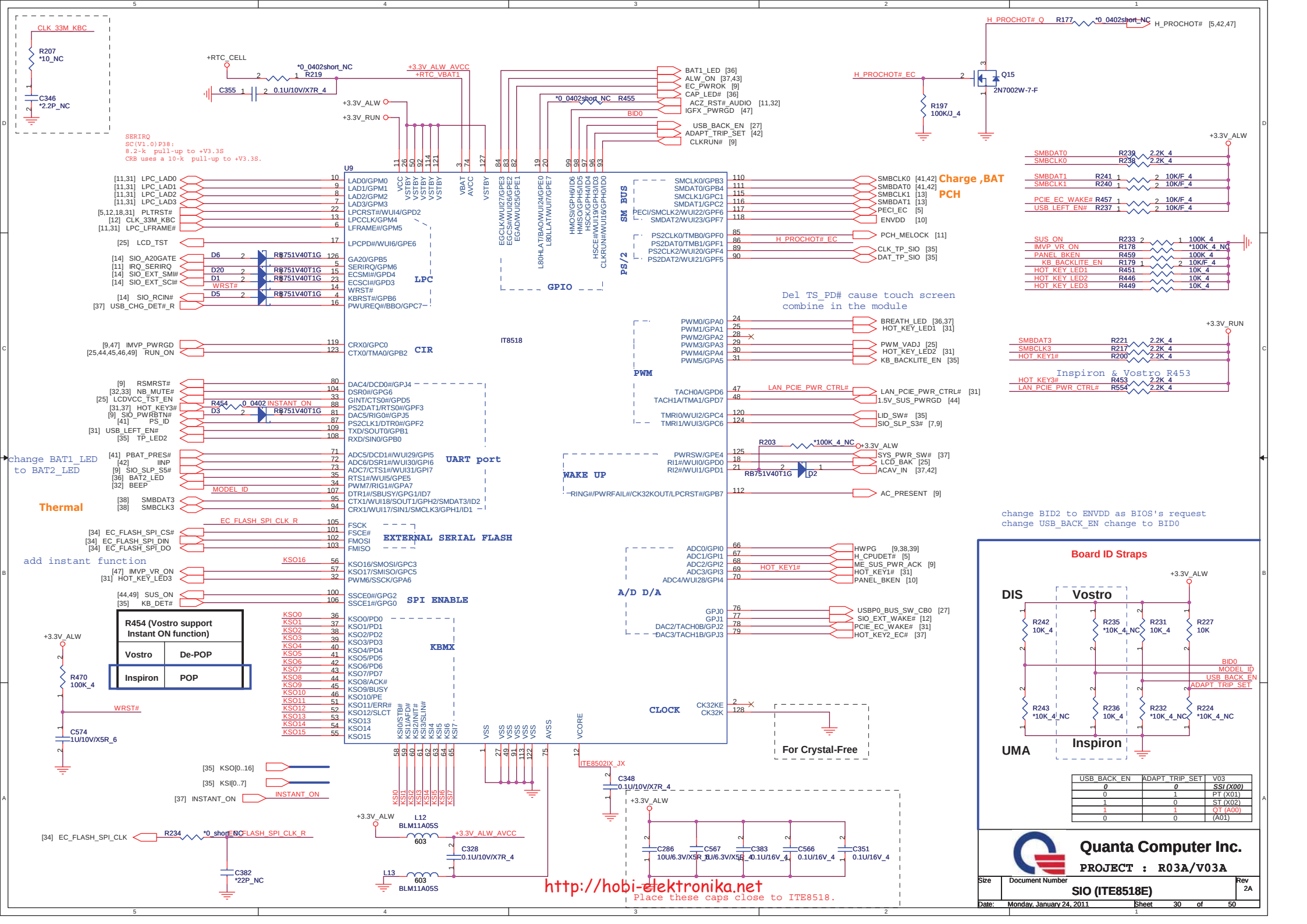


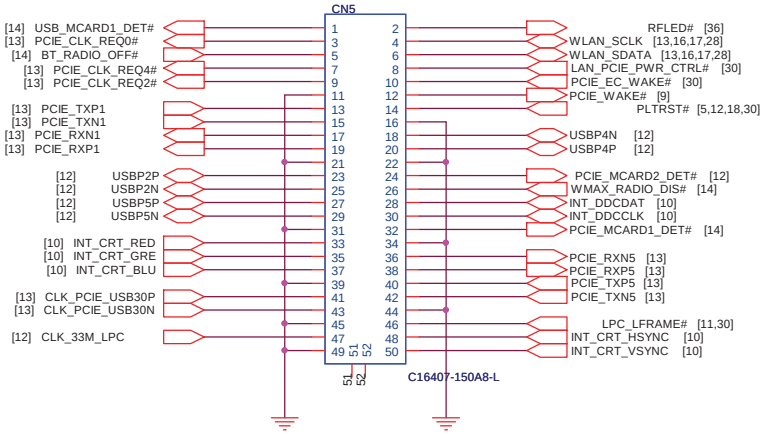
Quanta Computer Inc.

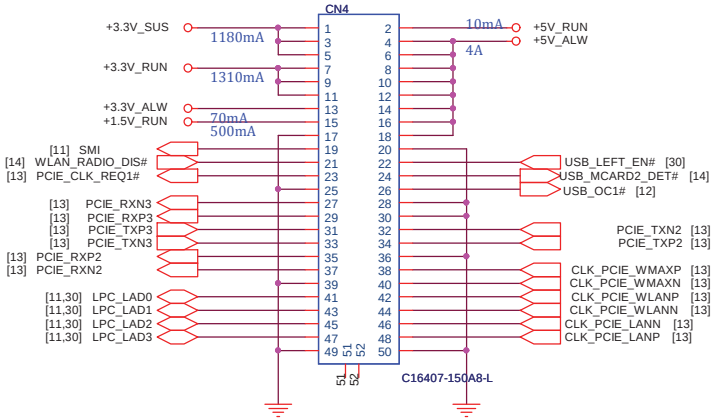
PROJECT : R03A/V03A

Size	Document Number	Rev
	Cardreader (RTS5128)	2A

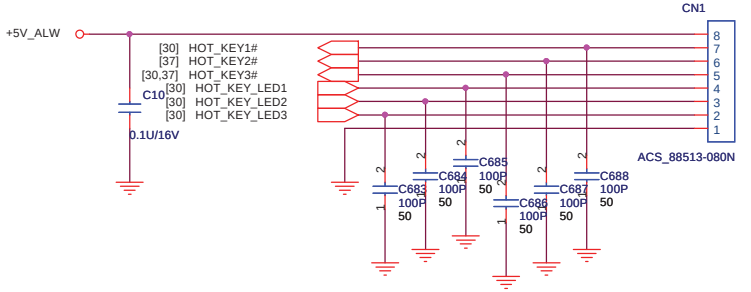
Date: Monday, January 24, 2011 Sheet 29 of 50


U9
IT8518
LPC
CIR
GPIO
SM BUS
PS/2
PWM
UART port
WAKE UP
EXTERNAL SERIAL FLASH
SPI ENABLE
KBMX
A/D D/A
CLOCK
Charge ,BAT
PCH
Del TS_PD# cause touch screen
combine in the module
change BAT1_LED
to BAT2_LED
Thermal
add instant function
change BID2 to ENVDD as BIOS's request
change USB_BACK_EN change to BID0
R454 (Vostro support
Instant ON function)
Vostro
De-POP
Inspiron
POP
Board ID Straps
DIS
Vostro
UMA
Inspiron
For Crystal-Free
Inspiron & Vostro R453
Quanta Computer Inc.
PROJECT : R03A/V03A
SIO (ITE8518E)
Monday, January 24, 2011
http://hobi-elektronika.net
Place these caps close to ITE8518.

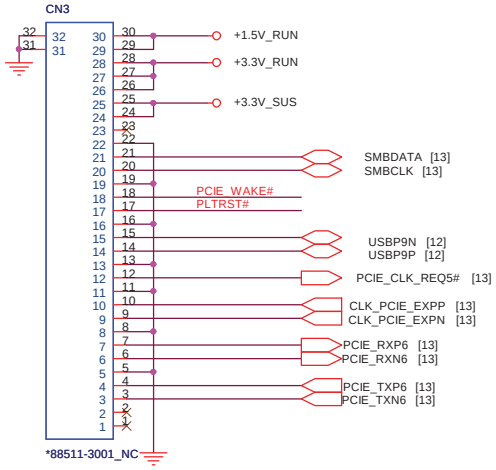




HOTKEY CON



MB to Express Card Board



Quanta Computer Inc.

PROJECT : R03A/V03A

Size	Document Number	Rev
	SIO (ITE8518E)	2A
Date: Monday, January 24, 2011	Sheet 31 of 50	

*NOTE: ALC269_VB type add the LDO circuit in IC
VA type: PIN28 作爲MIC之偏壓
PIN31接A-GND

VB type: PIN31 作爲MIC之偏壓
PIN28接CAP作爲內部LDO
output 輸出濾波用

AVDD1, AVDD2 TYP=48mA

AVDD1, AVDD2 TYP=48mA

ALC269Q VB6

Analog Plane

Digital Plane

DVDD & DVDD-IO TYP=50mA

del 0ohm NC 0928

reserve EMI solution

reverse Diode, and remove PD ckt

PD#=0V : Power down Class D SPK amplifer
PD#=3.3V : Power up Class D SPK amplifer
Internal pulled high.

please close to ALC269 Pin 28

must close to ALC269 Pin12

modify single net GND SIGNAL

Trace width >= 40mil, Trace length < 20cm

Int. Stereo Speakers
5V / 4 Ohm / 2W

L34.L35,L36,L37,
FB_600ohm+-25%_100MHz
_200mA_0.6ohm DC

HP JACKN
Pin5 & pin6 short when HP insert

MIC JACK
Pin5 & pin6 short when MIC insert

Reserve RC for EMI

Digital GND Analog GND
Tied at one point only under the
ALC269 or near the ALC269

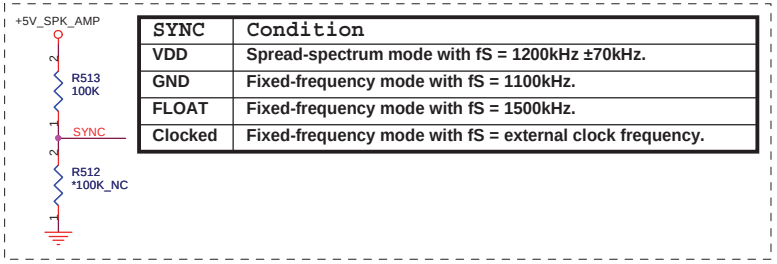
Quanta Computer Inc.
PROJECT : R03A/V03A
Size | Document Number: Azelia CODEC | Rev 2A
Date: Monday, January 24, 2011 | Sheet 32 of 50

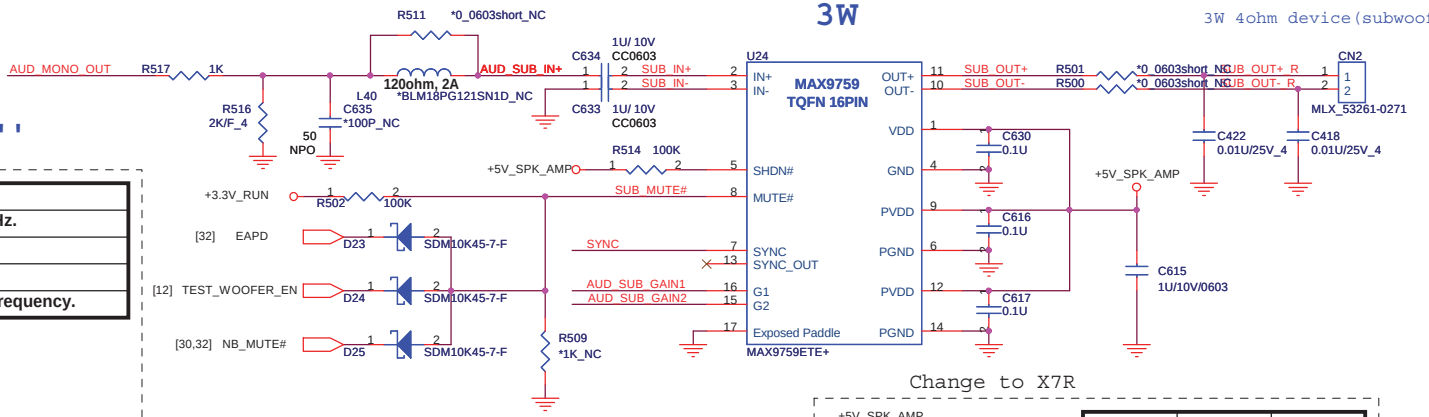
INTERNAL SUBWOOFER AMP Only for 17''

3W

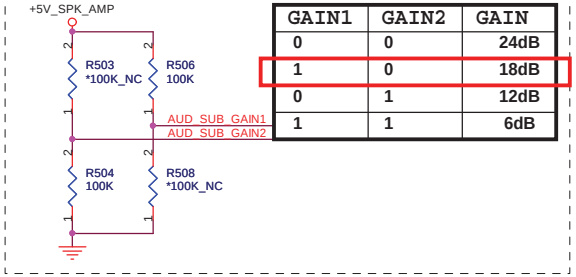
3W 4ohm device(subwoofer)

SYNC	Condition
VDD	Spread-spectrum mode with fS = 1200kHz ±70kHz.
GND	Fixed-frequency mode with fS = 1100kHz.
FLOAT	Fixed-frequency mode with fS = 1500kHz.
Clocked	Fixed-frequency mode with fS = external clock frequency.

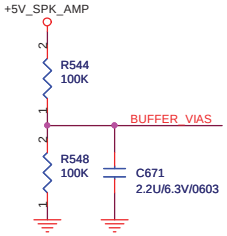


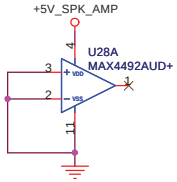


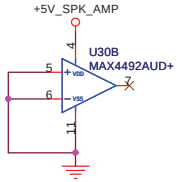
Change to X7R

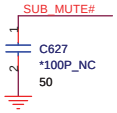


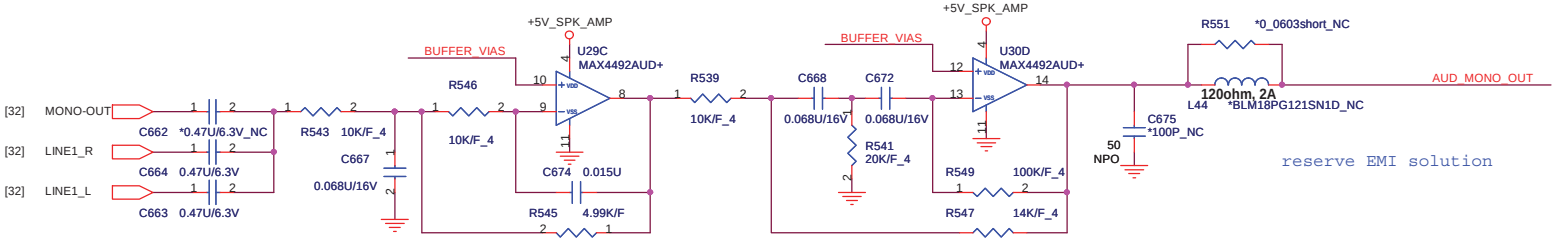
GAIN1	GAIN2	GAIN
0	0	24dB
1	0	18dB
0	1	12dB
1	1	6dB





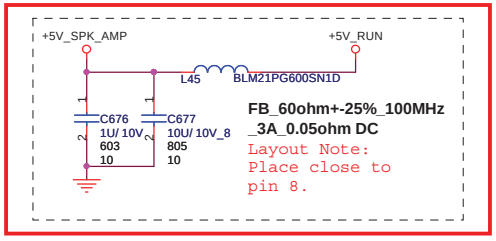






check modify to MONO-OUT PIN

reserve EMI solution



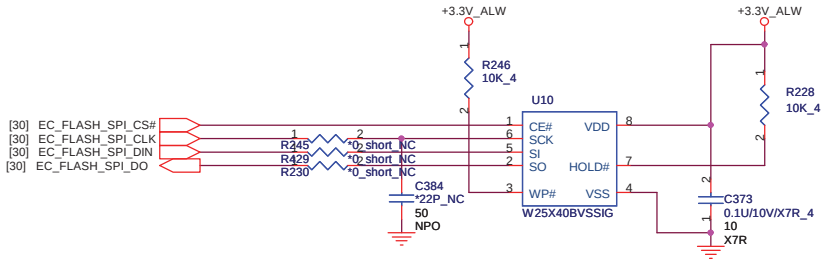
place close to connector side

Quanta Computer Inc.

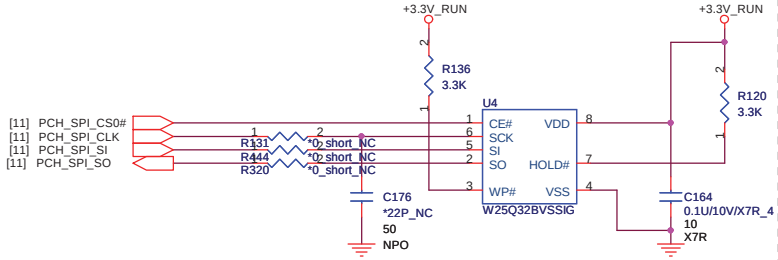
PROJECT : R03A/V03A

Size	Document Number	Rev
	AUDIO CONN	2A
Date: Monday, January 24, 2011	Sheet 33 of 50	

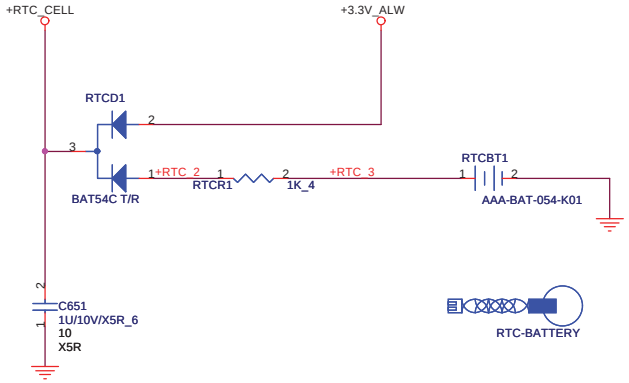
For EC 4Mbit (512K Byte)



For PCH 32Mbit (4M Byte)

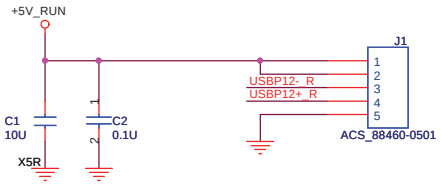


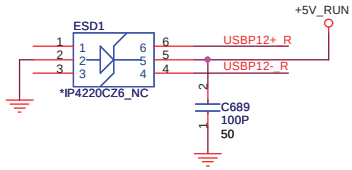
RTC



Touch Screen Module

Note:
1. VBUS IND:VBUS indication should be supplied to single the DuoSense to connect According to the USB 2.0 specification. A GND voltage from the host should indicate a connection.
2. Maximum cable resistance on VCC, GND should be 150m ohm.
3. FPC cable should support 12MHz USB singles. A tri-state should indicate no connection.



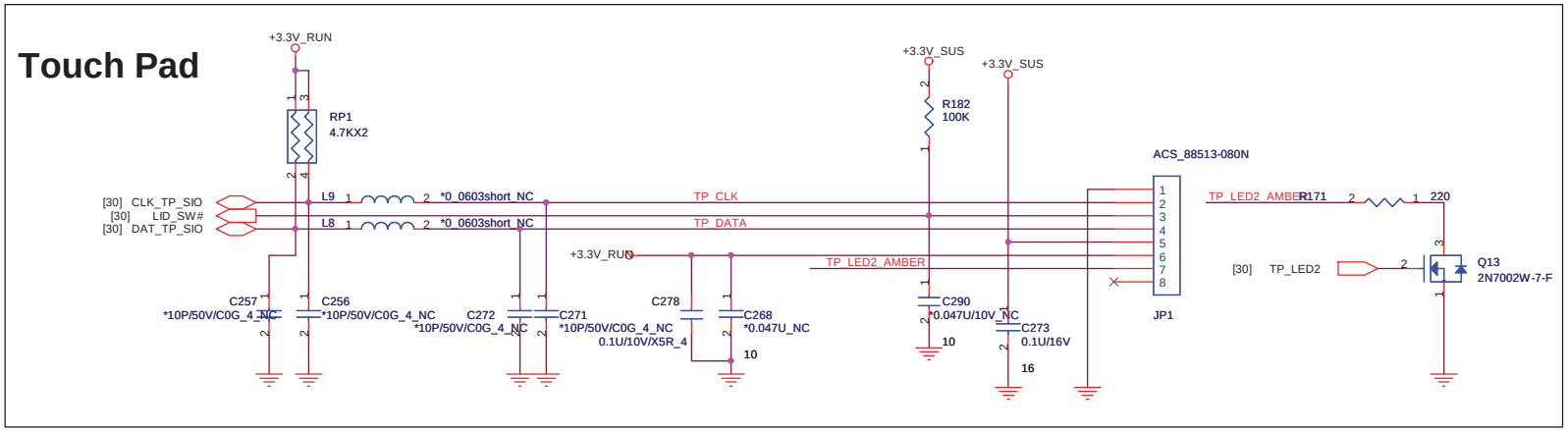


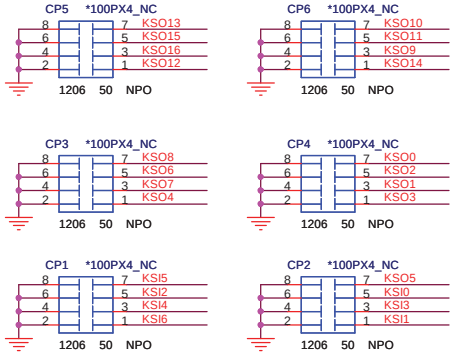
Quanta Computer Inc.
PROJECT : R03A/V03A

Size	Document Number	Rev
	FLASH / RTC	2A

Date: Monday, January 24, 2011 Sheet 34 of 50

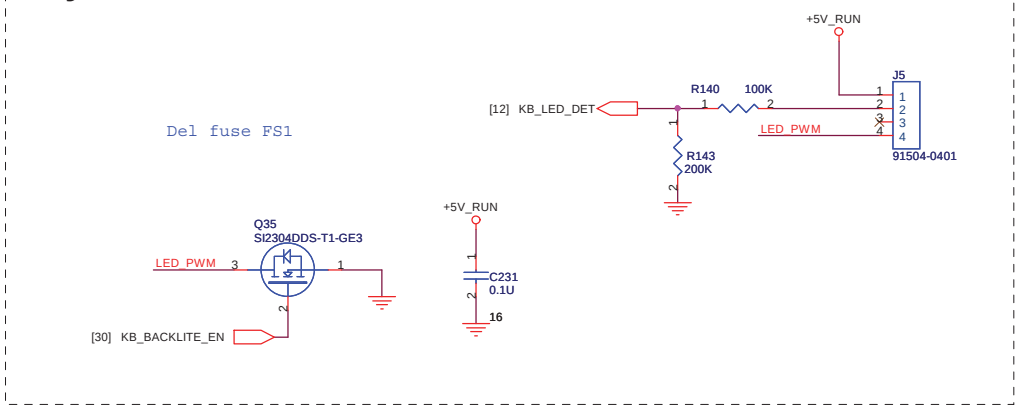
Touch Pad

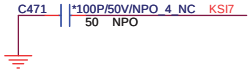




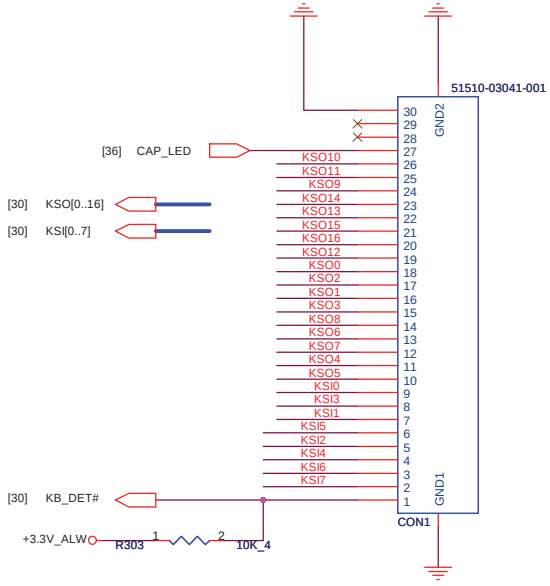
Key board illumination

+KB_LED power trace width >10 mil

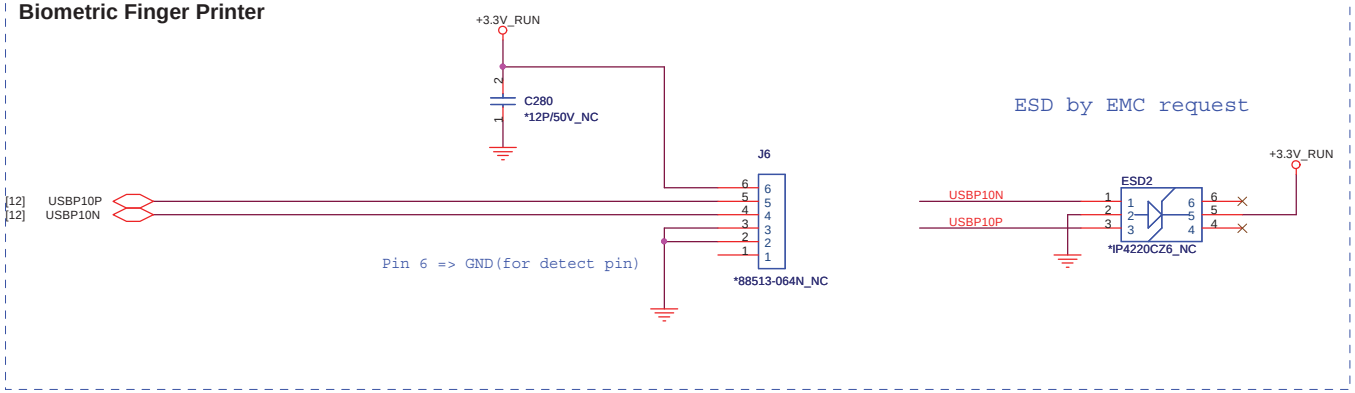




KEYBOARD CONNECTOR



Biometric Finger Printer



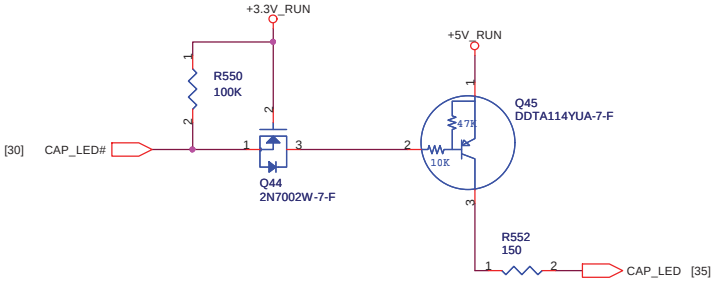
Quanta Computer Inc.

PROJECT : R03A/V03A

Size	Document Number	Rev
	TP / KB	2A

Date: Monday, January 24, 2011 Sheet 35 of 50

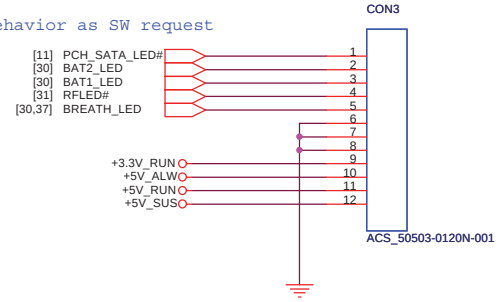
CAP lock LED



Check LED location and type

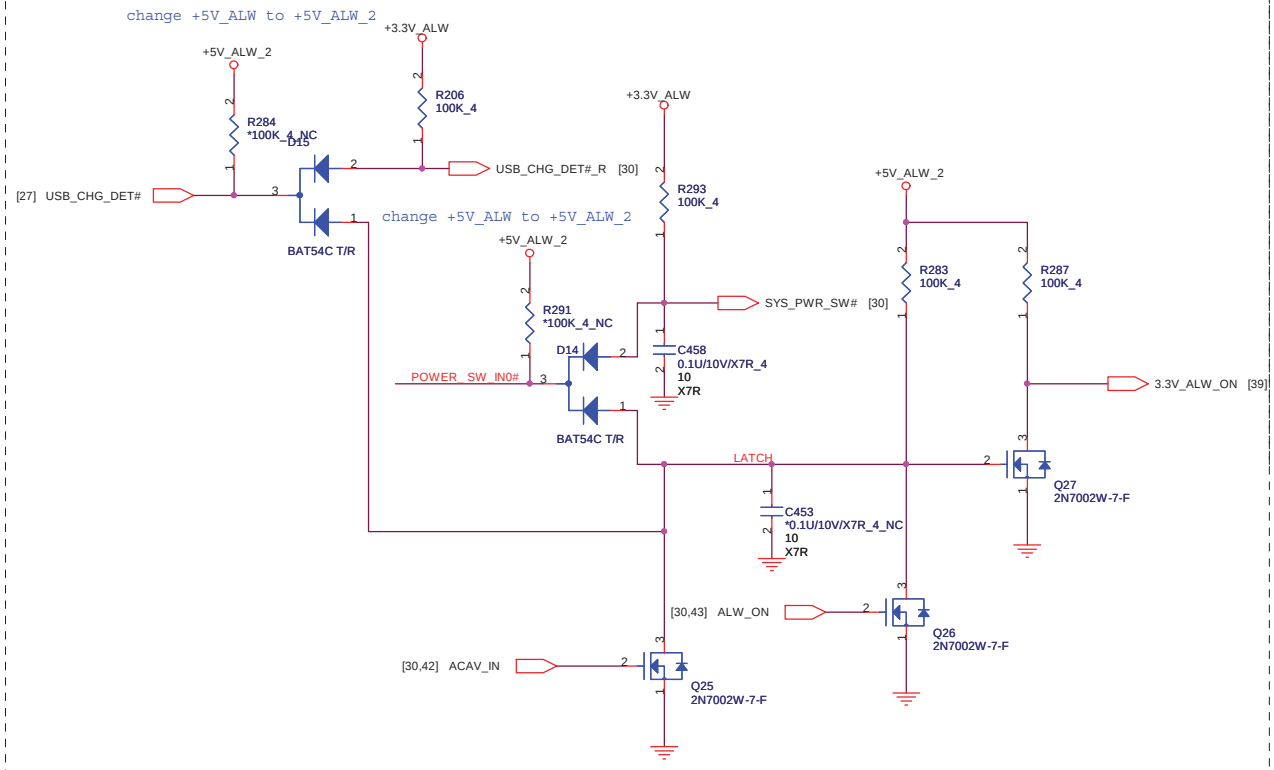
MB to LED Board conn

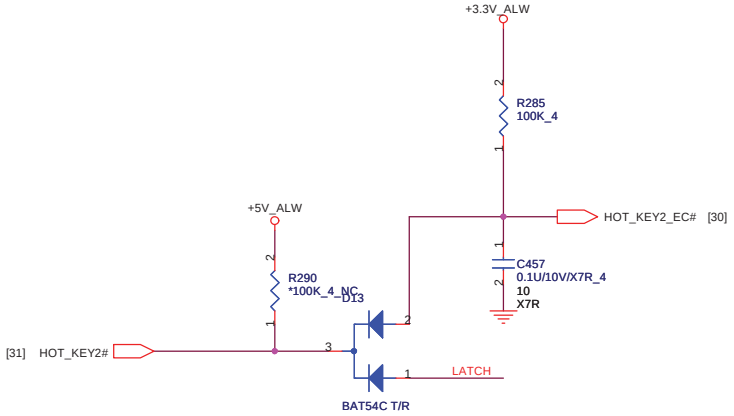
correct LED behavior as SW request



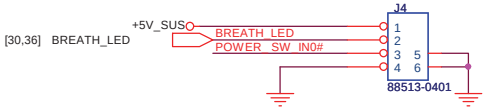
Quanta Computer Inc.		
PROJECT : R03A/V03A		
Size	Document Number: LED	Rev 2A
Date: Friday, January 07, 2011	Sheet 36 of 50	

3VALW ON POWER LOGIC

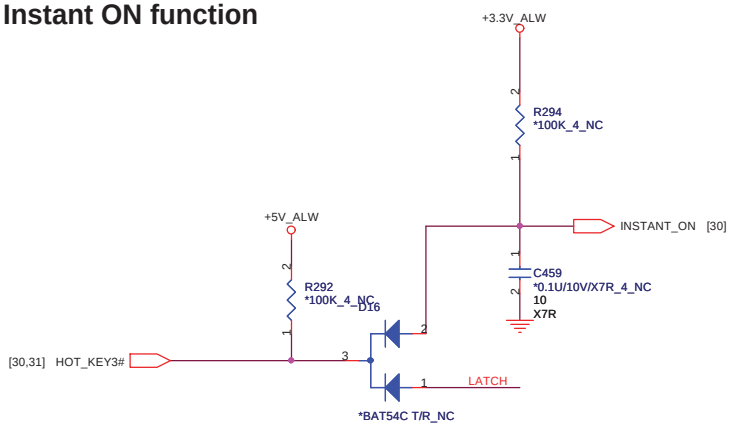




PWR button board form UM7



Instant ON function



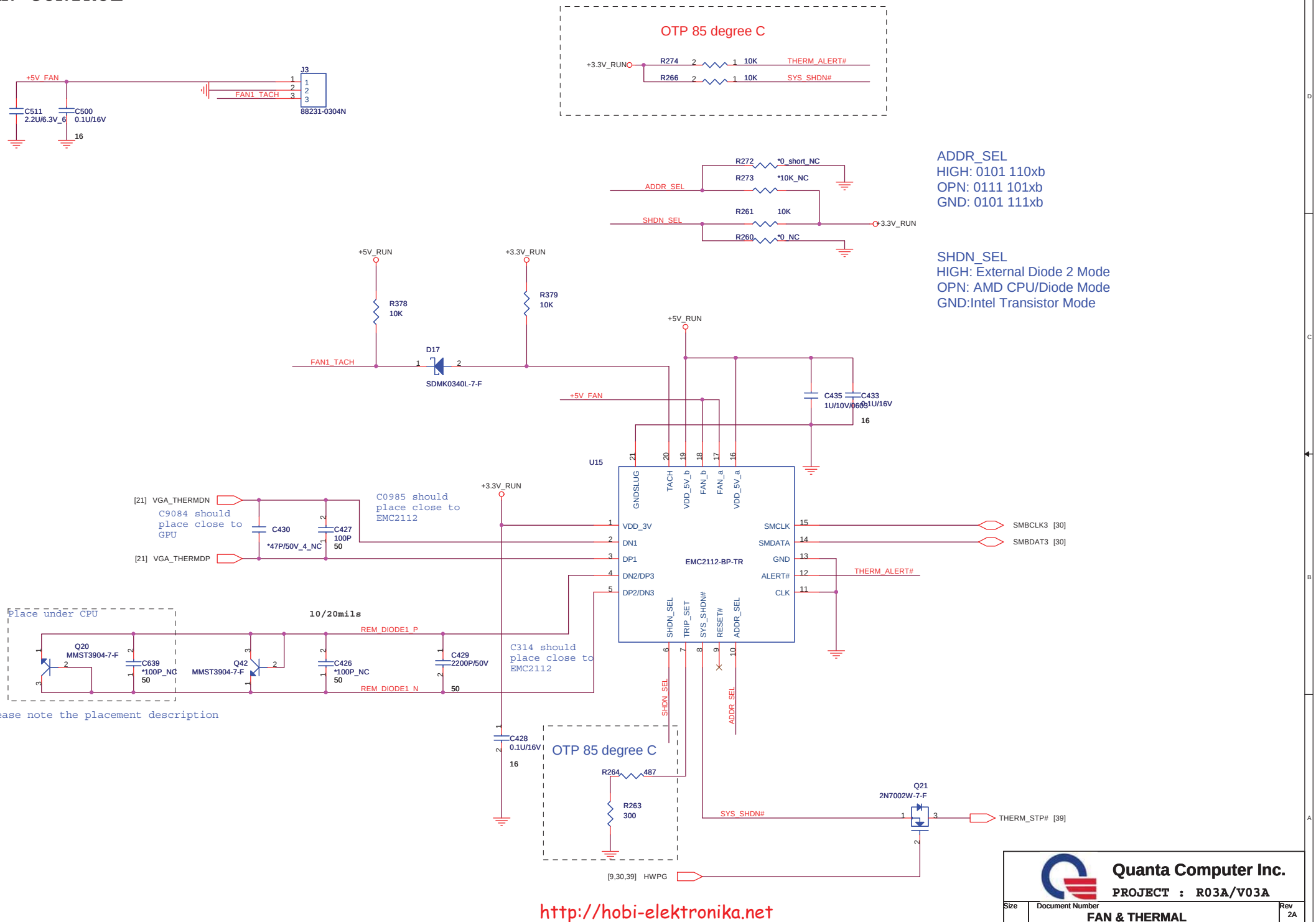
Quanta Computer Inc.

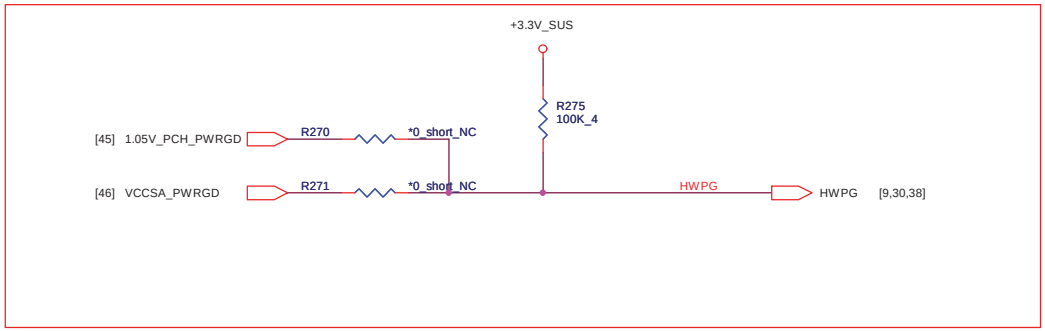
PROJECT : R03A/V03A

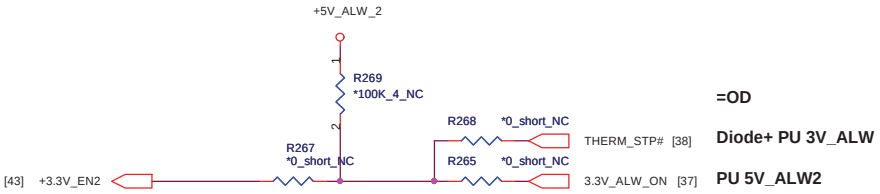
Size	Document Number	Rev
	PWR SW/LED	2A

Date: Monday, January 24, 2011 Sheet 37 of 50

FAN CONTROL


OTP 85 degree C
+3.3V_RUN
R274 10K THERM_ALERT#
R266 10K SYS_SHDN#
+5V_FAN
J3
FAN1_TACH
88231-0304N
C511 2.2U/6.3V_6
C500 0.1U/16V
16
ADDR_SEL
R272 *0_short_NC
R273 *10K_NC
SHDN_SEL
R261 10K
R260 *0_NC
+3.3V_RUN
ADDR_SEL
HIGH: 0101 110xb
OPN: 0111 101xb
GND: 0101 111xb
SHDN_SEL
HIGH: External Diode 2 Mode
OPN: AMD CPU/Diode Mode
GND:Intel Transistor Mode
+5V_RUN
+3.3V_RUN
R378 10K
R379 10K
D17
SDMK0340L-7-F
FAN1_TACH
+5V_RUN
+5V_FAN
C435 1U/10V/0603
C433 0.1U/16V
16
U15
GNDSLUG
TACH
VDD_5V_b
FAN_b
FAN_a
VDD_5V_a
VDD_3V
DN1
DP1
DN2/DP3
DP2/DN3
SMCLK
SMDATA
GND
ALERT#
CLK
EMC2112-BP-TR
SHDN_SEL
TRIP_SET
SYS_SHDN#
RESET#
ADDR_SEL
SMBCLK3 [30]
SMBDAT3 [30]
THERM_ALERT#
[21] VGA_THERMDN
[21] VGA_THERMDP
C9084 should place close to GPU
C430 *47P/50V_4_NC
C427 100P 50
C0985 should place close to EMC2112
+3.3V_RUN
Place under CPU
10/20mils
Q20 MMST3904-7-F
C639 *100P_NC 50
Q42 MMST3904-7-F
C426 *100P_NC 50
C429 2200P/50V
REM_DIODE1_P
REM_DIODE1_N
C314 should place close to EMC2112
please note the placement description
C428 0.1U/16V
16
OTP 85 degree C
R264 487
R263 300
SHDN_SEL
ADDR_SEL
SYS_SHDN#
Q21 2N7002W-7-F
THERM_STP# [39]
[9,30,39] HWPG
http://hobi-elektronika.net
Quanta Computer Inc.
PROJECT : R03A/V03A
Size
Document Number
FAN & THERMAL
Rev 2A
Date: Monday, January 24, 2011
Sheet 38 of 50





=OD

Diode+ PU 3V_ALW

PU 5V_ALW2

Quanta Computer Inc.

PROJECT : R03A/V03A

Size	Document Number	Rev
	System Reset Circuit	2A
Date: Monday, January 24, 2011	Sheet 39 of 50	

H2
H-TC236BC197D110P2
H-TC236BC197D110P2

H7
H-TC236BC197D110P2
H-TC236BC197D110P2

H14
h-tc335bc276d126p2
h-tc335bc276d126p2

H5
h-tc335bc276d126p2
h-tc335bc276d126p2

H8
h-c276d177p2
h-c276d177p2

H12
h-c276d126p2
h-c276d126p2

H19
H-C276IN130D110P2
H-C276IN130D110P2

H17
H-C276IN130D110P2
H-C276IN130D110P2

H16
h-c354d126p2
h-c354d126p2

H15
h-tsbc295d126p2
h-tsbc295d126p2

H13
H-C158D158N
H-C158D158N

H9
H-C158D158N
H-C158D158N

H23
h-c276d110pt
h-c276d110pt

add a new hole for layout request

CPU bracket

H10 Intel-cpu-bkt2
Intel-cpu-bkt2

H18
H-C142D142N
H-C142D142N

H20
h-c295d126p2
h-c295d126p2

H6
h-tc236bc197d102p2
h-tc236bc197d102p2

H11
h-tc236bc197d102p2
h-tc236bc197d102p2

H4
H-T236I130B276D110P2
H-T236I130B276D110P2

H24
H-TC276BC236D110P2
H-TC276BC236D110P2

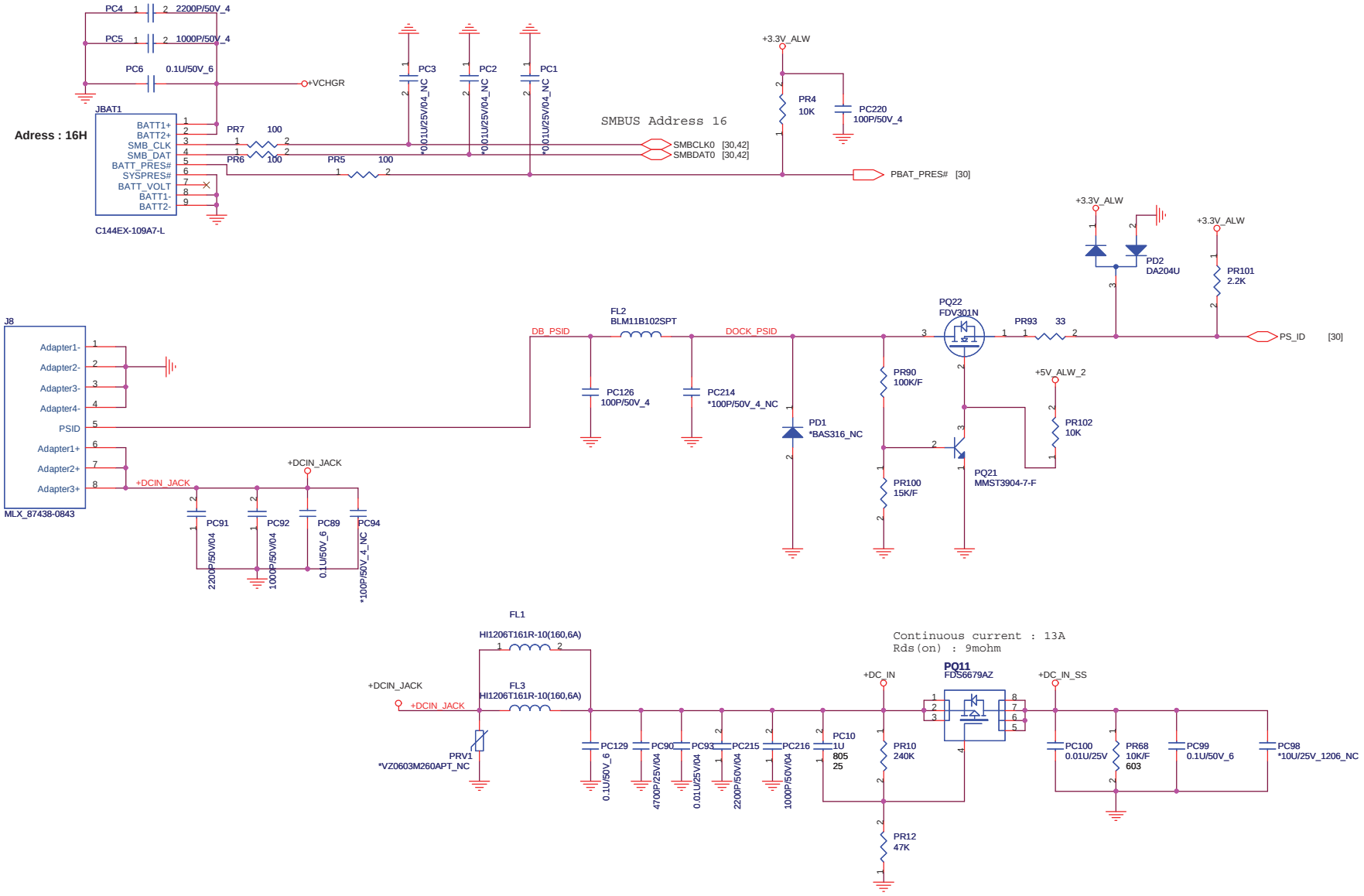
H1
h-c142d142n
h-c142d142n

H3
h-tc335bc276d126p2
h-tc335bc276d126p2

Quanta Computer Inc.
PROJECT : R03A/V03A

Size	Document Number	Rev
	SCREW PAD	2A

Date: Monday, January 24, 2011 Sheet 40 of 50

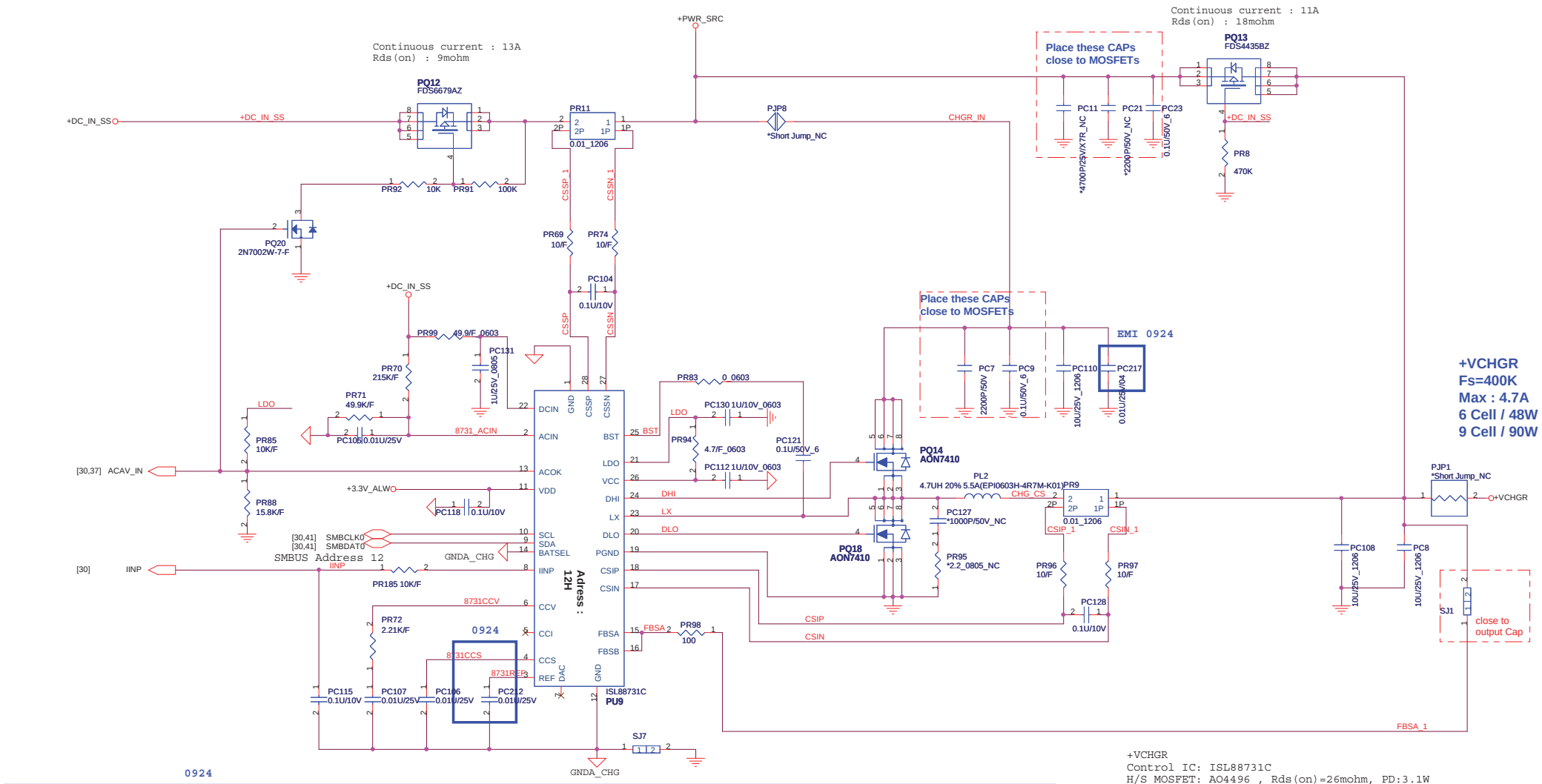


Quanta Computer Inc.

PROJECT : R03A/V03A

Size	Document Number	Rev
	DCIN,BATT CONNECTOR	2A

Date: Monday, January 24, 2011 Sheet 41 of 50



Adapter type	90W	130W
ADAPT_TRIP_SET	0	1
SETTING CURRENT	5.6A	7.6A

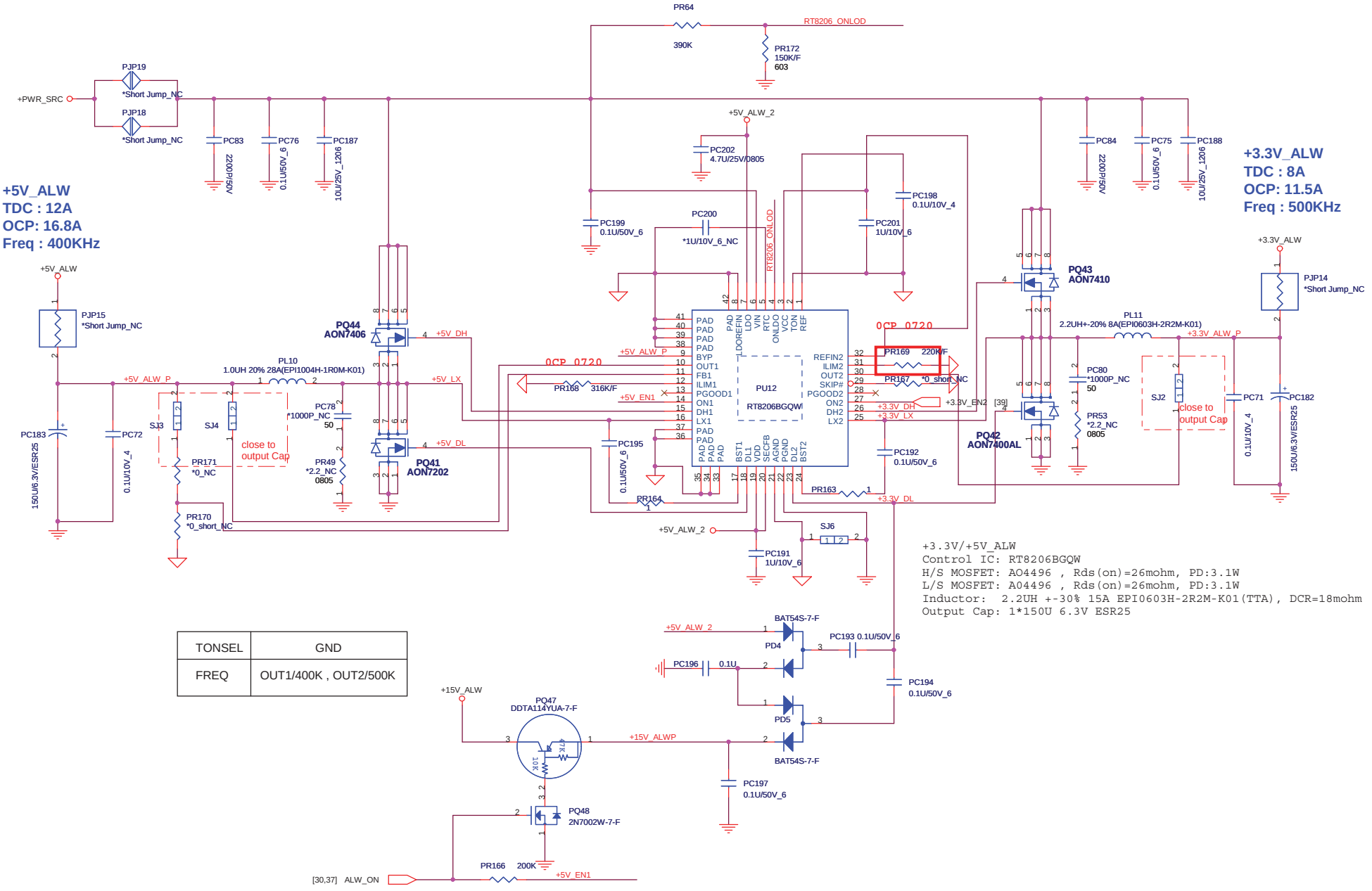
Quanta Computer Inc.

PROJECT : R03A/V03A

Size	Document Number	Rev
	Charger (ISL88731C)	2A

Date: Friday, January 07, 2011 Sheet 42 of 50

DC/DC +3V_ALW/+5V_ALW /+15V_ALW

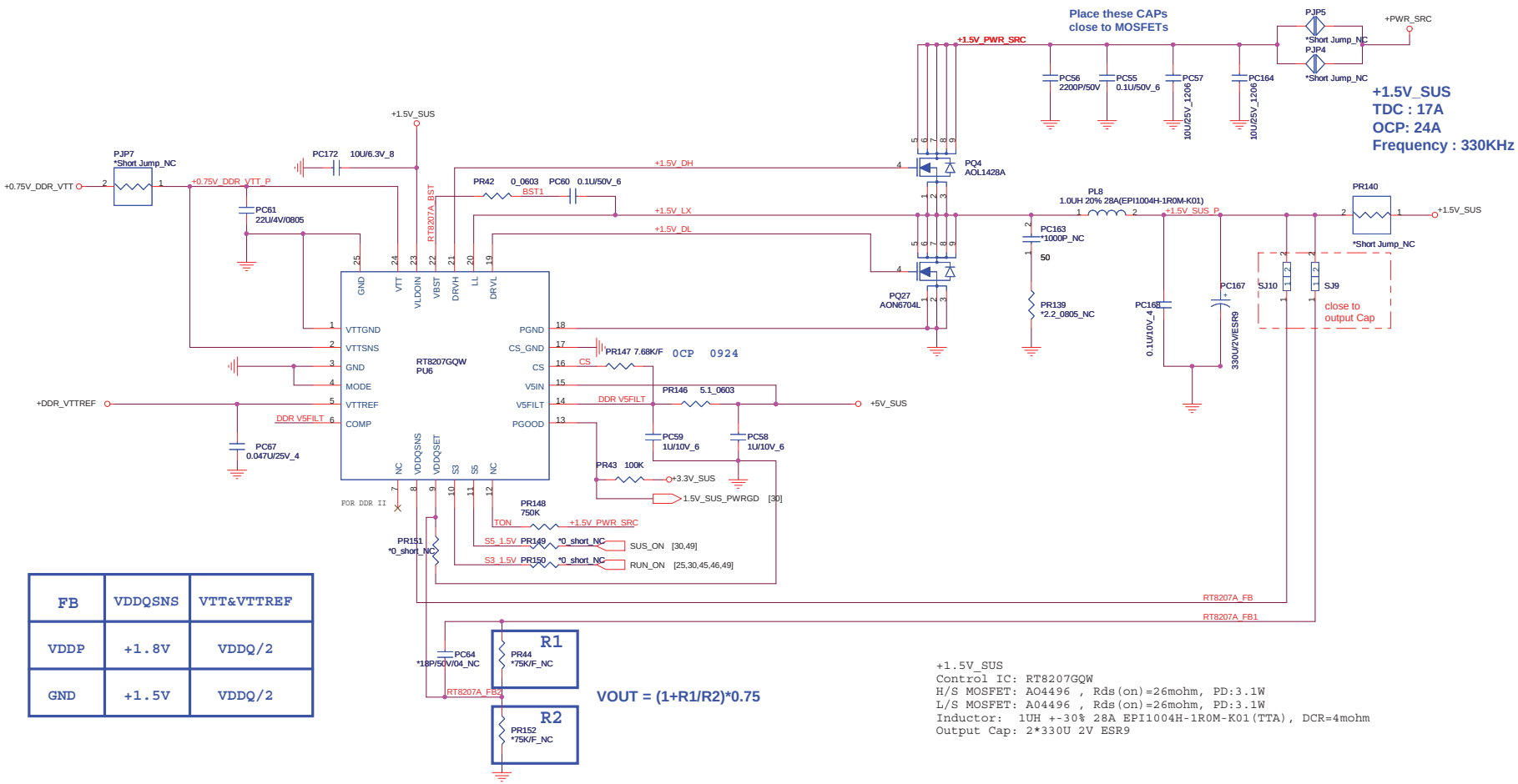


TONSEL	GND
FREQ	OUT1/400K , OUT2/500K

+3.3V/+5V_ALW
Control IC: RT8206BGQW
H/S MOSFET: AO4496 , Rds(on)=26mohm, PD:3.1W
L/S MOSFET: AO4496 , Rds(on)=26mohm, PD:3.1W
Inductor: 2.2UH +-30% 15A EPI0603H-2R2M-K01(TTA), DCR=18mohm
Output Cap: 1*150U 6.3V ESR25

Quanta Computer Inc.
PROJECT : R03A/V03A

Size	Document Number	Rev
	SYSTEM 5V/3V (RT8206BGQW)	2A
Date: Monday, January 24, 2011	Sheet 43 of 50	



FB	VDDQSNS	VTT&VTTREF
VDDP	+1.8V	VDDQ/2
GND	+1.5V	VDDQ/2

+1.5V_SUS
Control IC: RT8207GQW
H/S MOSFET: AO4496 , Rds(on)=26mohm, PD:3.1W
L/S MOSFET: AO4496 , Rds(on)=26mohm, PD:3.1W
Inductor: 1UH +-30% 28A EPI1004H-1R0M-K01(TTA), DCR=4mohm
Output Cap: 2*330U 2V ESR9

VDDQ and VTT discharge control

MODE pin	Discharge mode
V5IN	No discharge
VDDQ	Tracking discharge
S4/GND	Non-tracking discharge

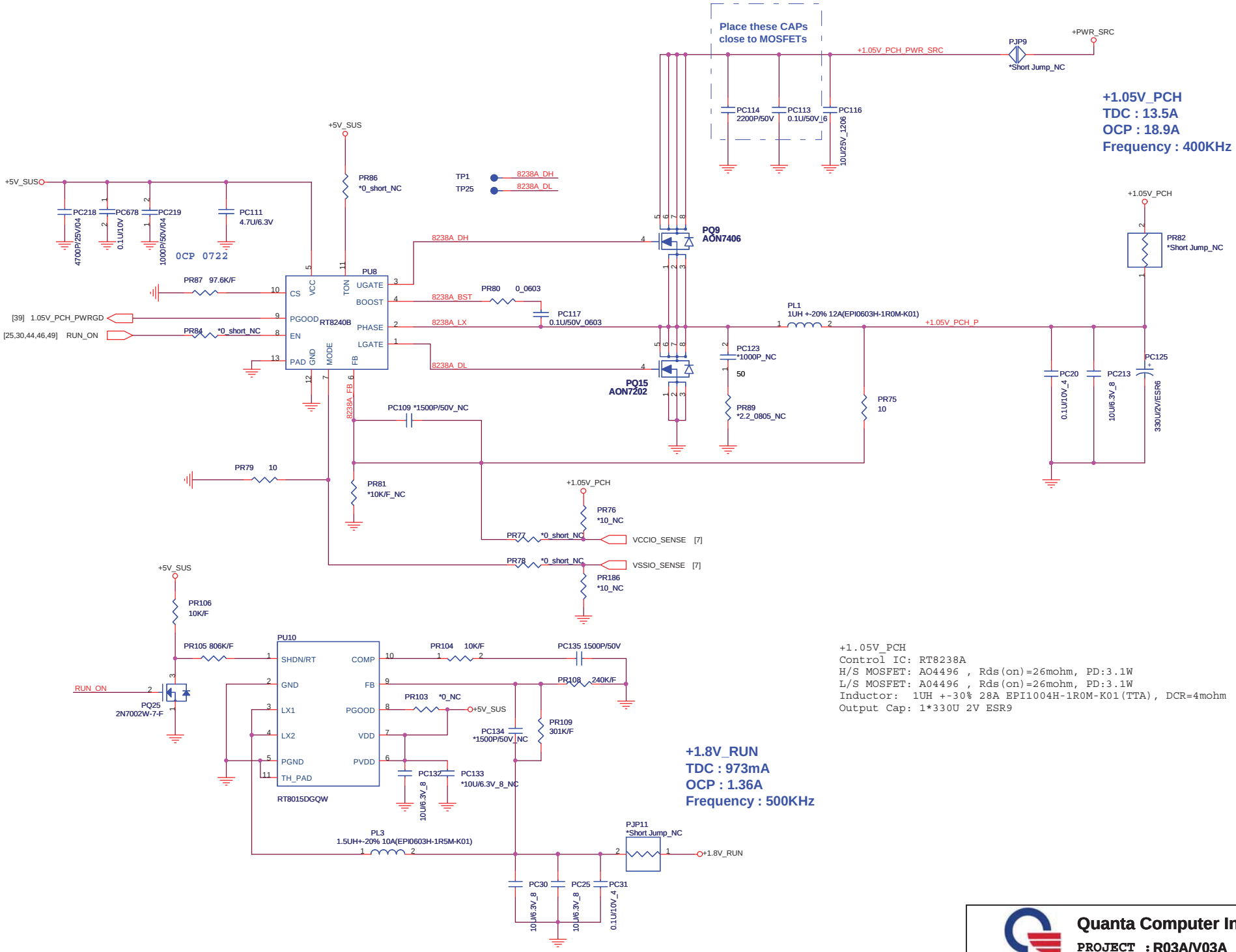
VDDQ output voltage selection

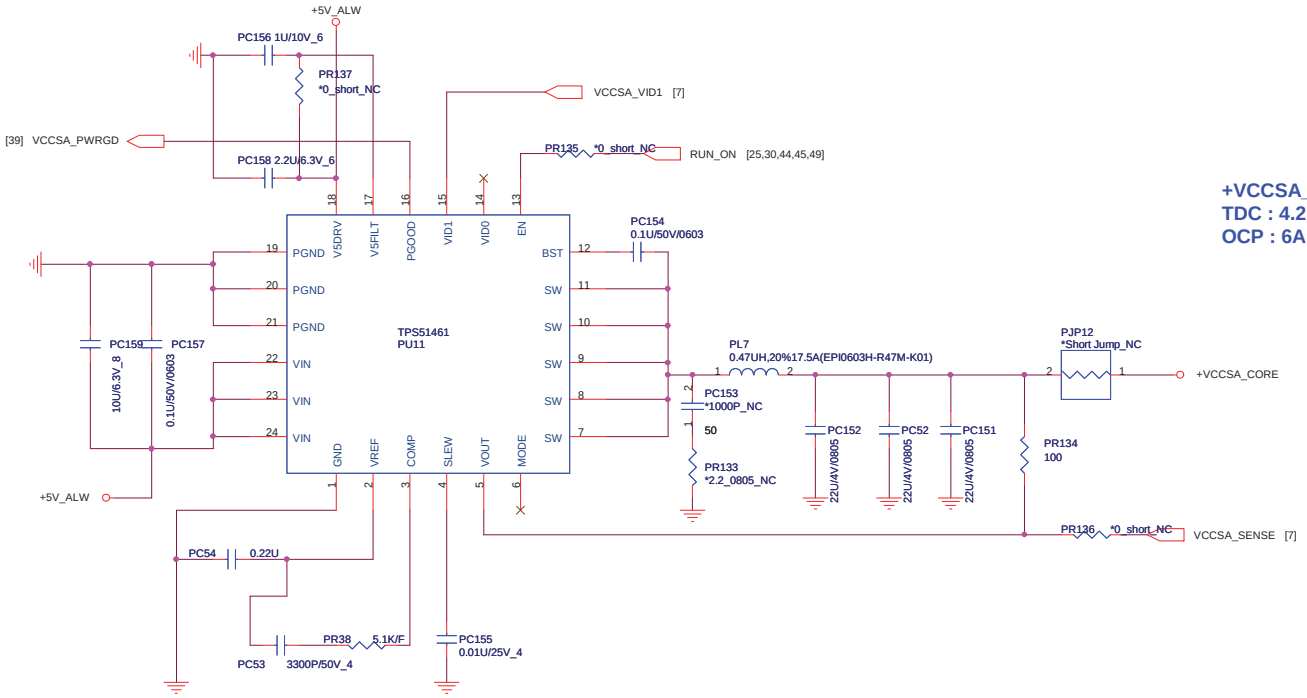
VDDQSET	VDDQ(V)	VTTREF and VTT	NOTE
GND	1.5V	VDDQSNS/2	DDR3
V5IN	1.8V	VDDQSNS/2	DDR2
FB Resistors	Adjusting	VDDQSNS/2	1.5V < VVDDQ < 3V

Outputs Management by S3, S5 control

State	S3	S5	VDDQ	VTTREF	VTT
S0	HI	HI	On	On	On
S3	LO	HI	On	On	Off (Hi-Z)
S4/S5	LO	LO	On (discharge)	Off (discharge)	Off (discharge)

Quanta Computer Inc.
PROJECT : R03A/V03A
Size | Document Number: DDR3 +1.5V_SUS(RT8207AGQW) | Rev: 2A
Date: Monday, January 24, 2011 | Sheet 44 of 50


Place these CAPs close to MOSFETs
+1.05V_PCH_PWR_SRC
PJP9
*Short Jump_NC
+PWR_SRC
PC114 2200P/50V
PC113 0.1U/50V_6
PC116 10U/25V_1206
+1.05V_PCH
TDC : 13.5A
OCP : 18.9A
Frequency : 400KHz
+5V_SUS
PR86 *0_short_NC
TP1 8238A_DH
TP25 8238A_DL
PC218 4700P/25V/04
PC678 0.1U/10V
PC219 1000P/50V/04
PC111 4.7U/6.3V
OCP 0722
PU8
RT8240B
PR87 97.6K/F
PR80 0_0603
PC117 0.1U/50V_0603
8238A_DH
8238A_BST
8238A_LX
8238A_DL
[39] 1.05V_PCH_PWRGD
[25,30,44,46,49] RUN_ON
PR84 *0_short_NC
PQ9 AON7406
PQ15 AON7202
PL1 1UH +-20% 12A(EPI0603H-1R0M-K01)
+1.05V_PCH_P
PR82 *Short Jump_NC
PC123 *1000P_NC
50
PR89 *2.2_0805_NC
PR75 10
PC20 0.1U/10V_4
PC213 10U/6.3V_8
PC125 330U/2V/ESR6
PC109 *1500P/50V_NC
PR79 10
PR81 *10K/F_NC
PR76 *10_NC
PR77 *0_short_NC
VCCIO_SENSE [7]
PR78 *0_short_NC
VSSIO_SENSE [7]
PR186 *10_NC
PR106 10K/F
PR105 806K/F
PU10
RT8015DGQW
RUN_ON
PQ25 2N7002W-7-F
PR104 10K/F
PC135 1500P/50V
PR108 240K/F
PR103 *0_NC
PC134 *1500P/50V_NC
PR109 301K/F
PC132 10U/6.3V_8
PC133 *10U/6.3V_8_NC
PL3 1.5UH+-20% 10A(EPI0603H-1R5M-K01)
PJP11 *Short Jump_NC
+1.8V_RUN
PC30 10U/6.3V_8
PC25 10U/6.3V_8
PC31 0.1U/10V_4
+1.8V_RUN
TDC : 973mA
OCP : 1.36A
Frequency : 500KHz
+1.05V_PCH
Control IC: RT8238A
H/S MOSFET: AO4496 , Rds(on)=26mohm, PD:3.1W
L/S MOSFET: AO4496 , Rds(on)=26mohm, PD:3.1W
Inductor: 1UH +-30% 28A EPI1004H-1R0M-K01(TTA), DCR=4mohm
Output Cap: 1*330U 2V ESR9
http://hobi-elektronika.net
Quanta Computer Inc.
PROJECT : R03A/V03A
Size
Document Number
+1.05V_PCH(RT8209A)
Rev 2A
Date: Monday, January 24, 2011
Sheet 45 of 50

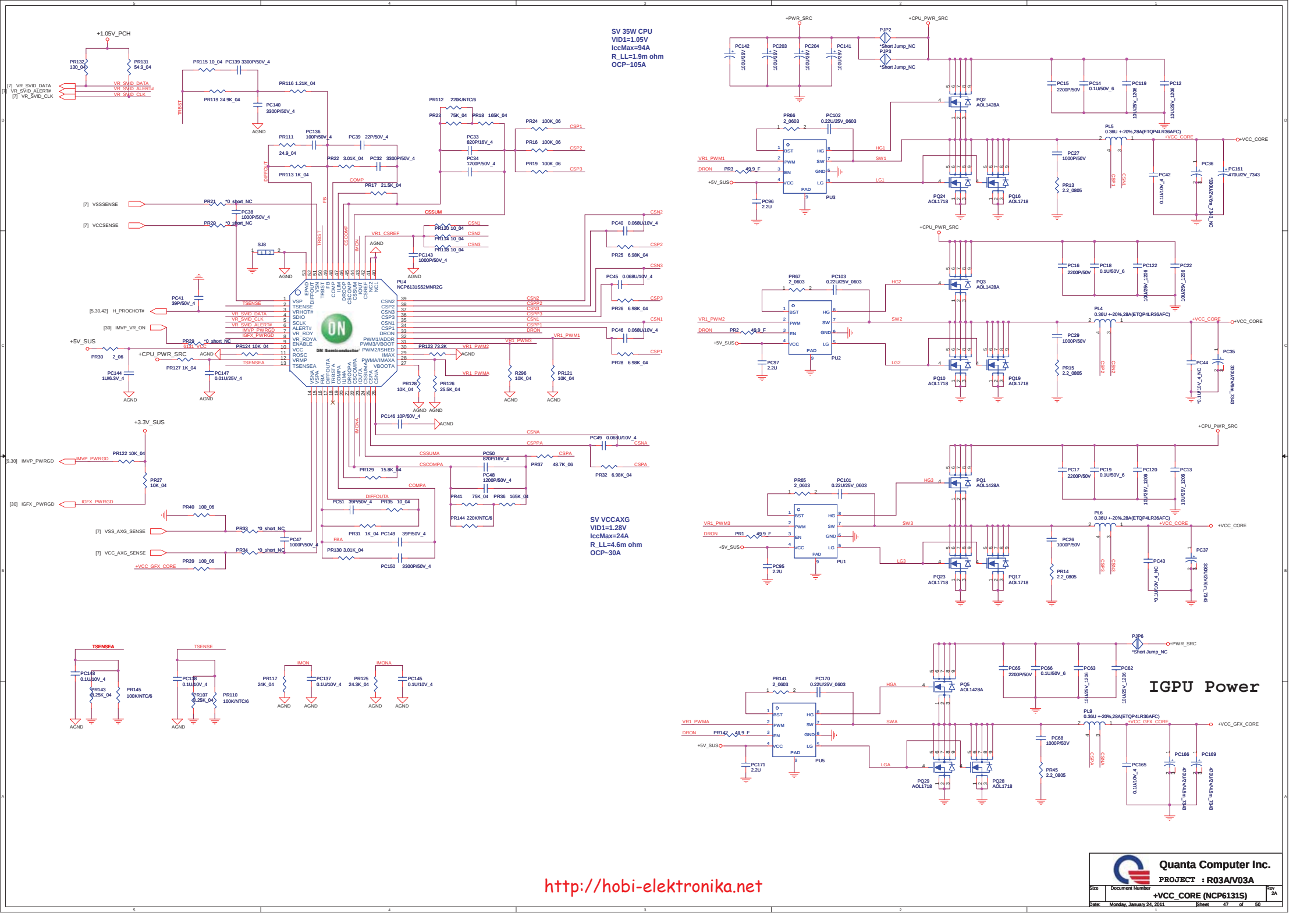


+VCCSA_CORE
TDC : 4.2A
OCP : 6A

+VCCSA	VCCSA_VID1
0.8V	High
0.9V	Low

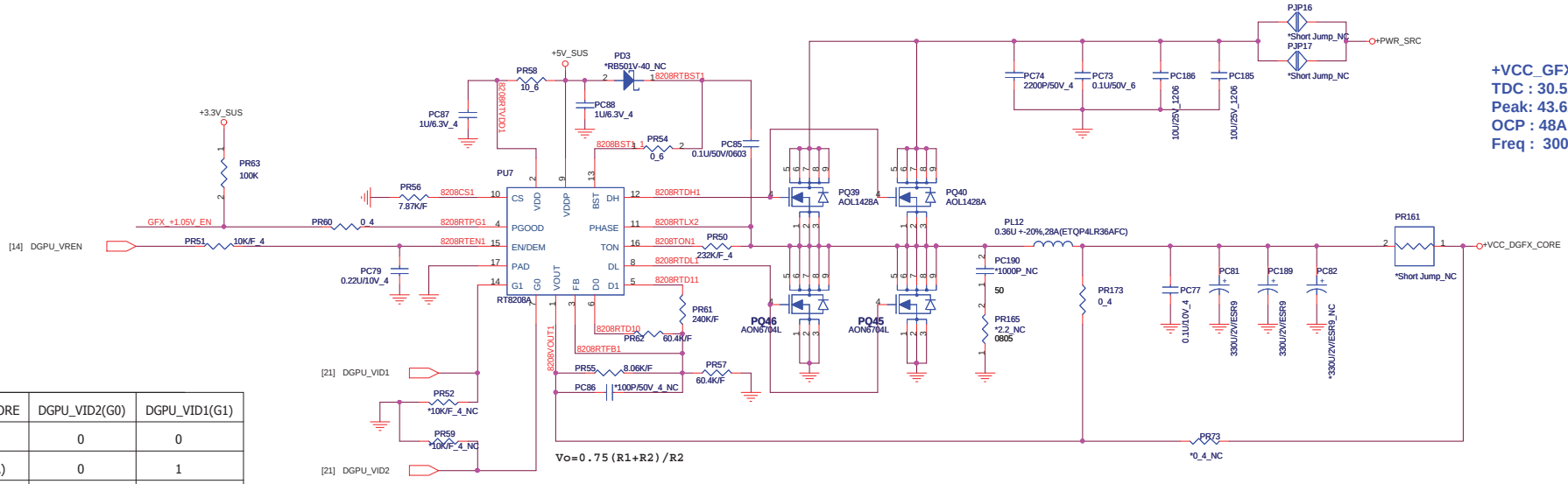
Quanta Computer Inc.
PROJECT : R03A/V03A

Size	Document Number	Rev
	VCCSA (TPS51461)	2A
Date: Monday, January 24, 2011	Sheet 46 of 50	



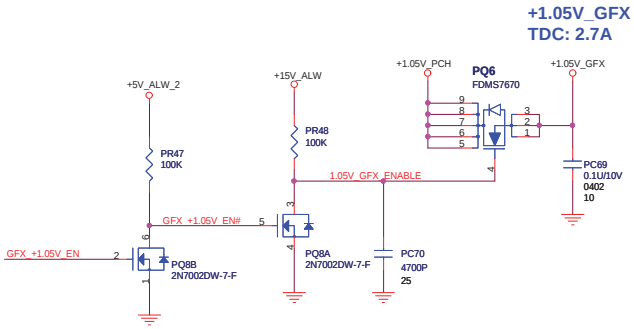
http://hobi-elektronika.net

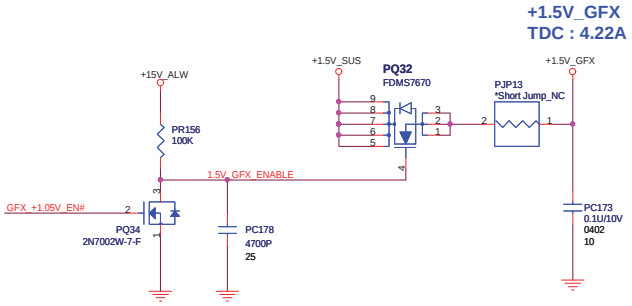
Quanta Computer Inc.			
PROJECT : R03A/V03A			
Size	Document Number	+VCC_CORE (NCP6131S)	Rev 2A
Date: Monday, January 24, 2011	Sheet 47 of 50		

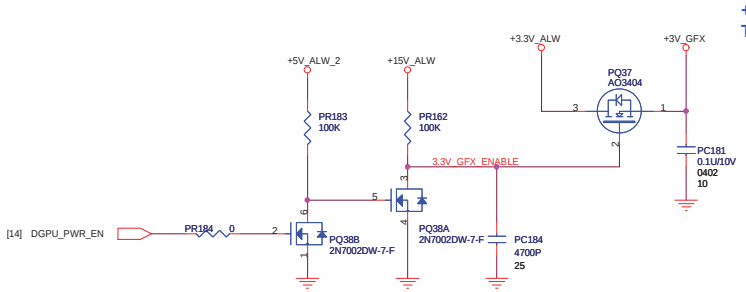


+VCC_DGFX_CORE	DGPU_VID2(G0)	DGPU_VID1(G1)
0.85V	0	0
0.875V(NA)	0	1
0.95 V	1	0
0.975V	1	1

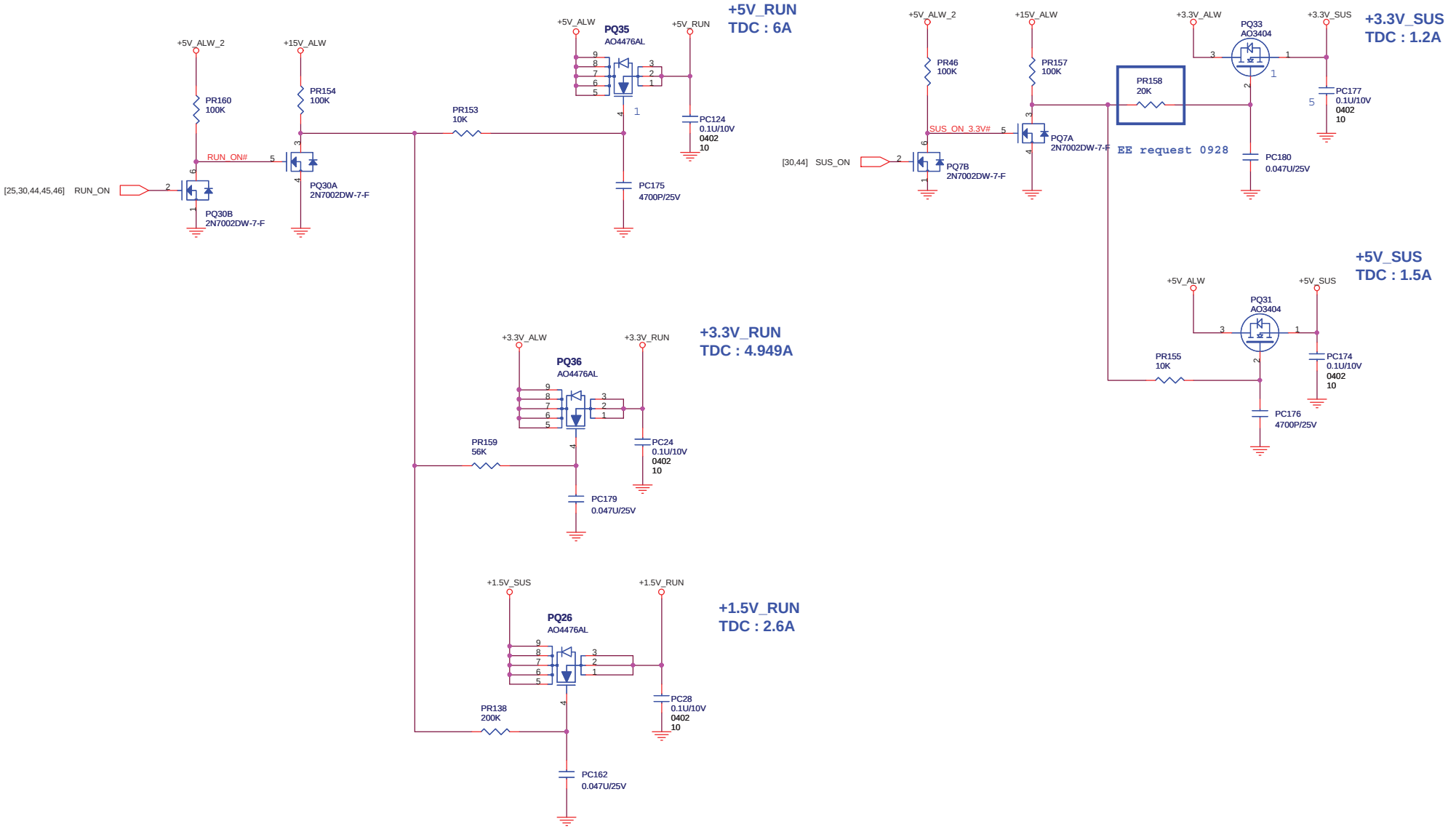
+VCC_GFX_CORE
Control IC: RT8208A
H/S MOSFET: FDMS7692(Fairchild), Qg=11nC, Rds(on)=14mohm, PD:2.5W
L/S MOSFET: FDMS0308S(Fairchild), Qg=24nC, Rds(on)=5mohm, PD:2.5W
Inductor: 0.36UH 20% 28A(EPI1004H-1R0M-K01)(TTA), DCR=2.8mohm
Output Cap: 2*330U,2.5V(20%,105C,3528),ESR=9mohm







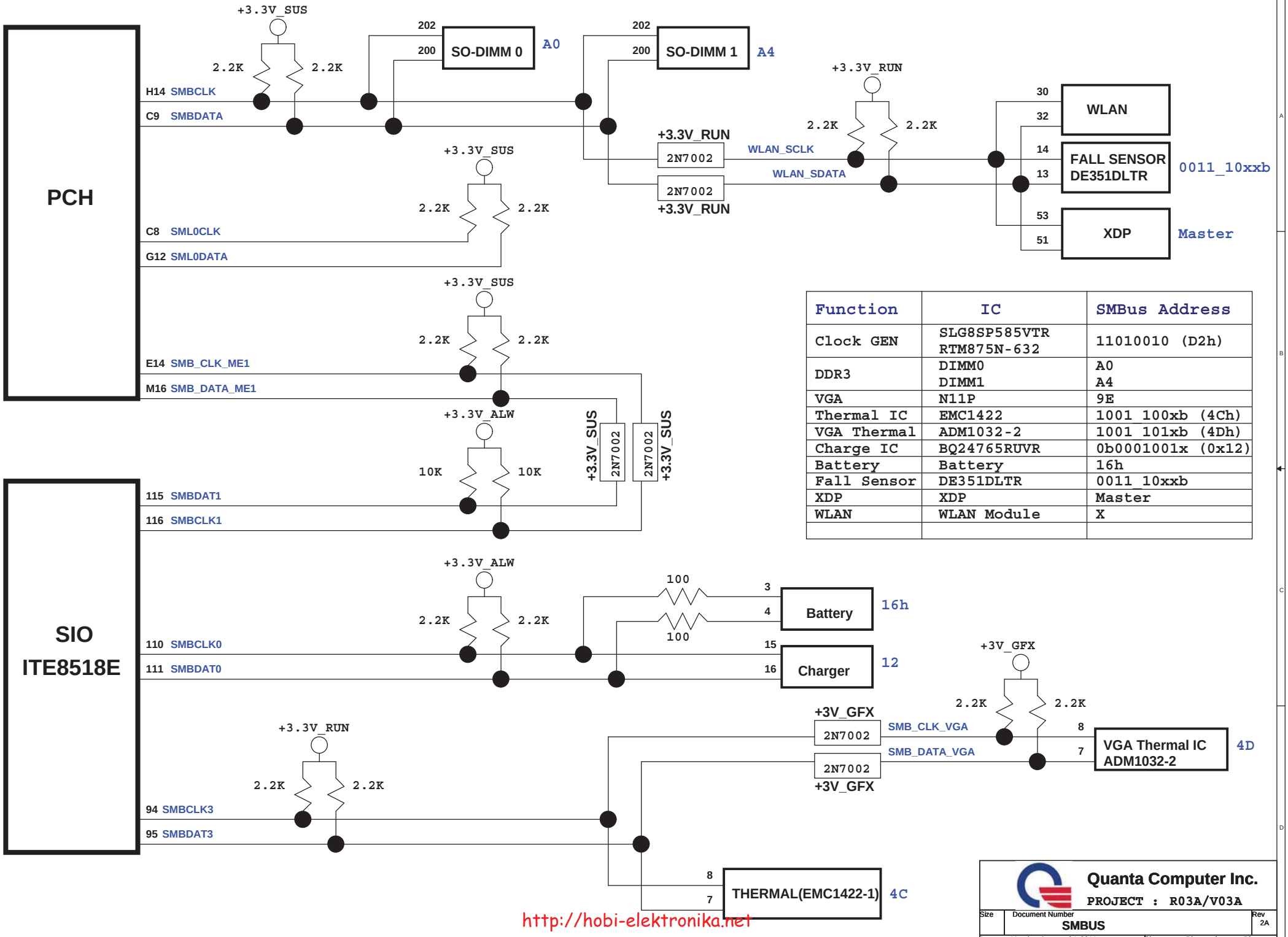
Quanta Computer Inc.
PROJECT : R03A/V03A
Size | Document Number: VGA power (RT8208A) | Rev 2A
Date: Monday, January 24, 2011 | Sheet 48 of 50



Quanta Computer Inc.

PROJECT : R03A/V03A

Size	Document Number	Rev
	RUN / SUS POWER SW	2A
Date: Monday, January 24, 2011	Sheet 49 of 50	



Function	IC	SMBus Address
Clock GEN	SLG8SP585VTR RTM875N-632	11010010 (D2h)
DDR3	DIMM0 DIMM1	A0 A4
VGA	N11P	9E
Thermal IC	EMC1422	1001 100xb (4Ch)
VGA Thermal	ADM1032-2	1001 101xb (4Dh)
Charge IC	BQ24765RUVR	0b0001001x (0x12)
Battery	Battery	16h
Fall Sensor	DE351DLTR	0011_10xxb
XDP	XDP	Master
WLAN	WLAN Module	X

Quanta Computer Inc.
PROJECT : R03A/V03A

Size	Document Number	Rev
	SMBUS	2A

Date: Monday, January 24, 2011 Sheet 50 of 50