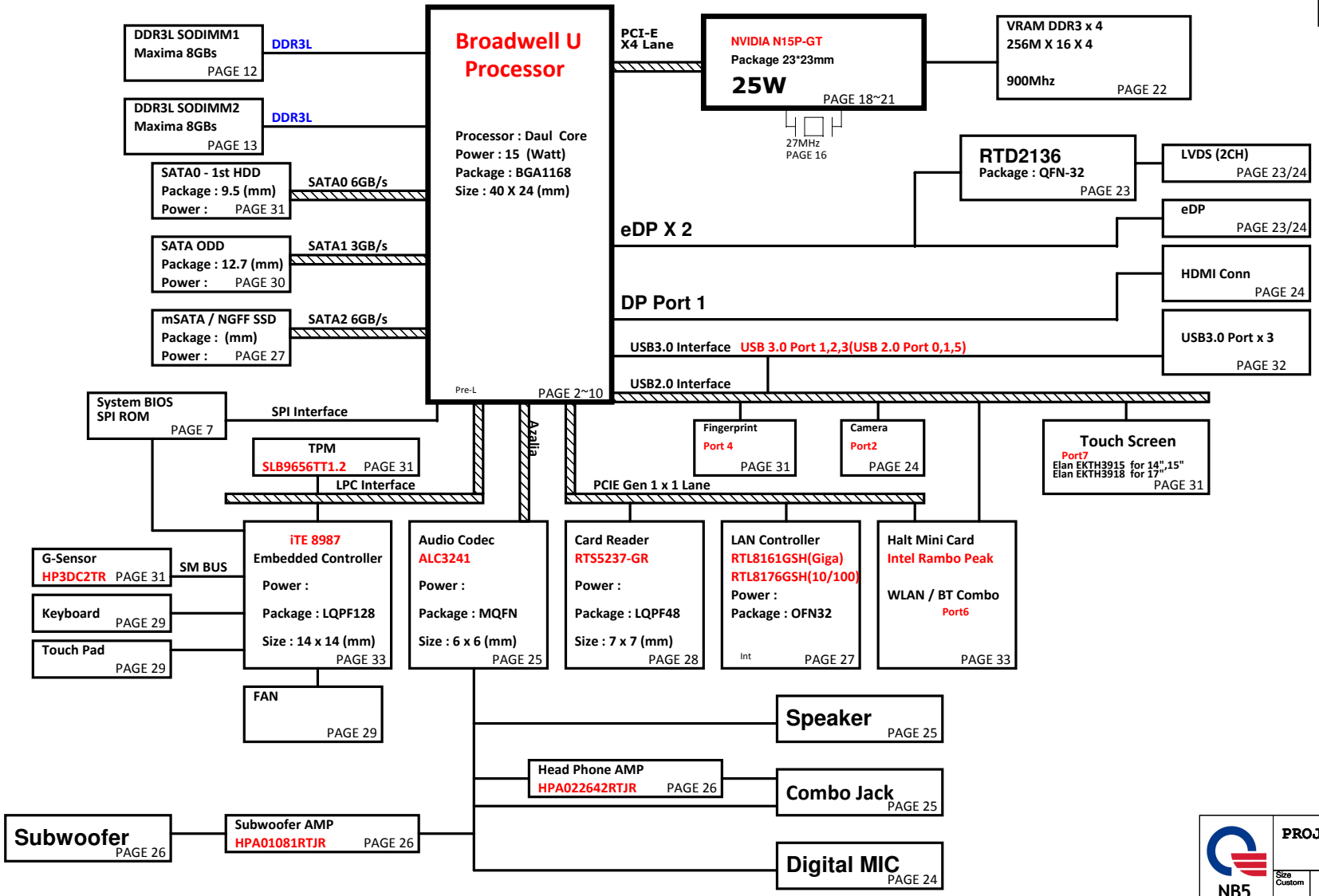
DIS (14" / 15" / 17") Lay-Vine
Intel Cresent Bay ULT Platform Block Diagram

01

PCB 6L STACK UP

LAYER 1 : TOP
LAYER 2 : SGND
LAYER 3 : IN1(High)
LAYER 4 : IN2(Low)
LAYER 5 : SVCC
LAYER 6 : BOT

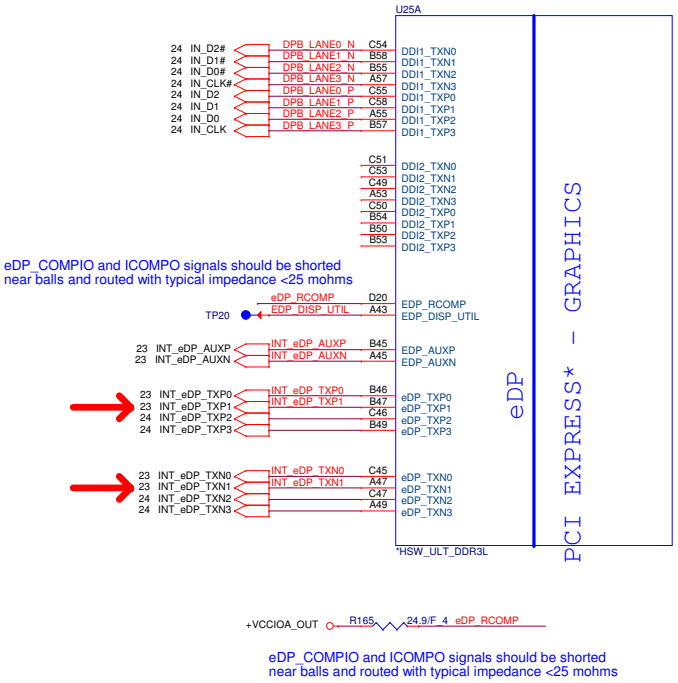


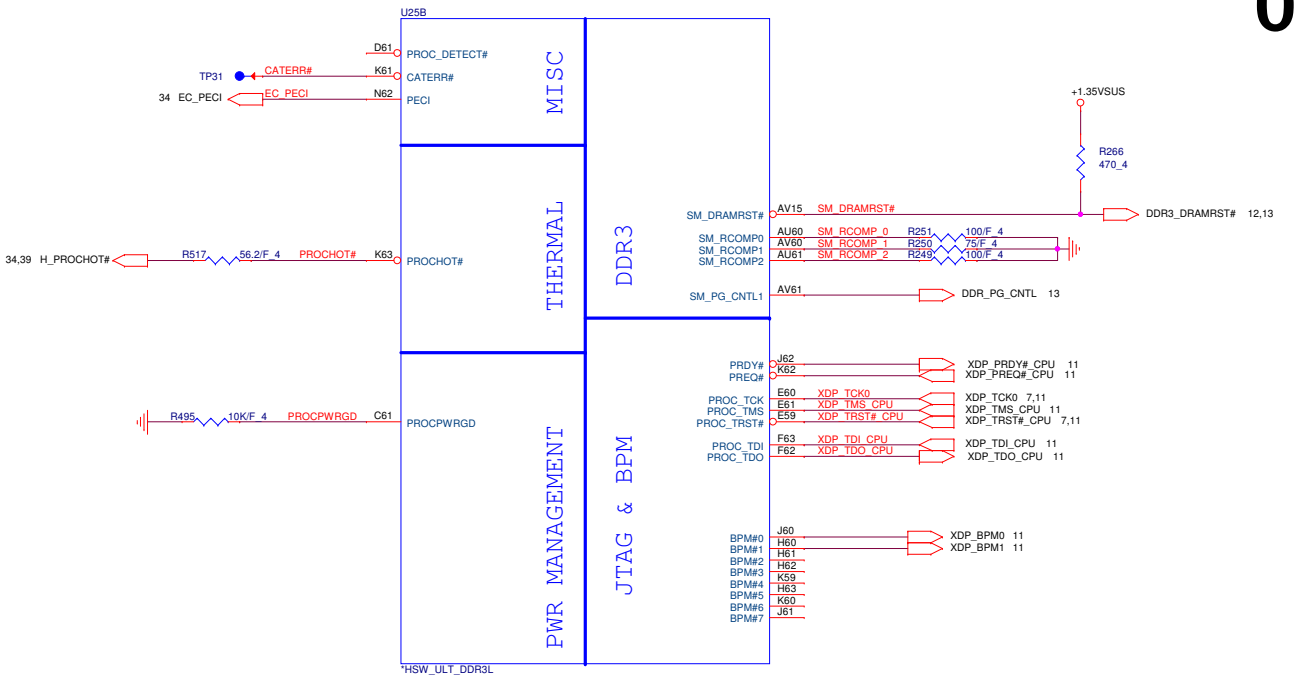
NB5

PROJECT : Y11C
Quanta Computer Inc.

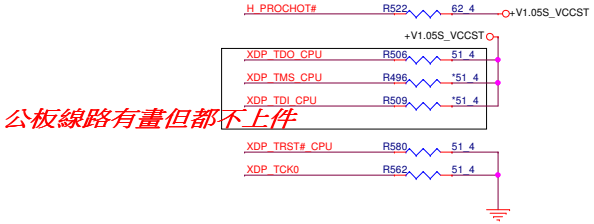
Size	Document Number	Rev
Custom	Block Diagram	1A

Date: Friday, February 14, 2014 Sheet 1 of 44





Processor pull-up (CPU)



公板線路有畫但都不上件

NB5

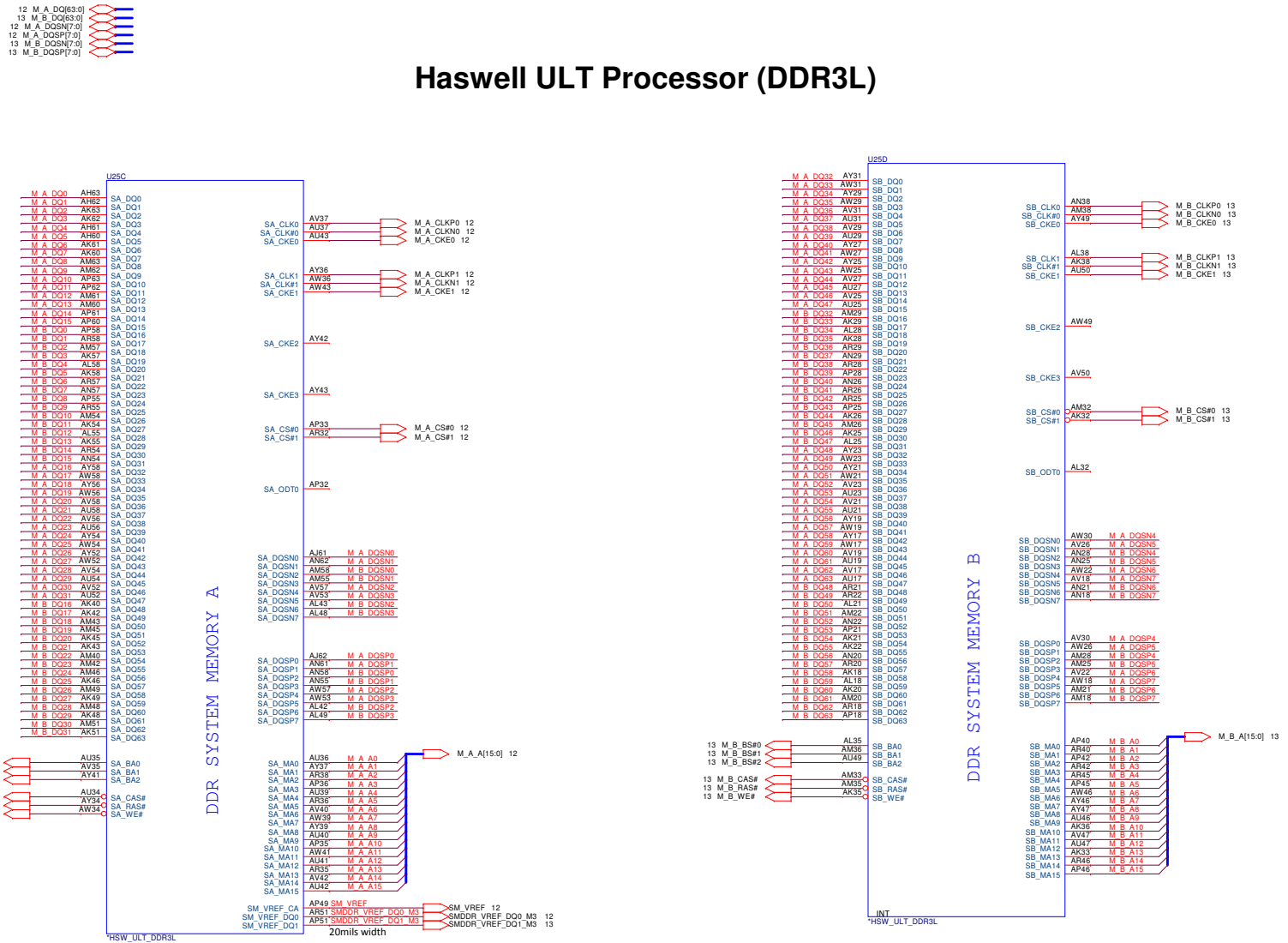
PROJECT : Y11C

Quanta Computer Inc.

Size	Document Number	Rev
Custom	ULT 1/9(eDP/DDI)	1A

Date: Friday, February 14, 2014 Sheet 2 of 44

Haswell ULT Processor (DDR3L)



POWER

32A
+VCC_CORE

U25F

HSW ULT POWER

*HSW_ULT_DDR3L

1.4A
+1.35VSUS

Close to CPU

Direct tie to CPU VCC/VSS-Ball

PV install for RF

CFG0-19 need Reserve TP

U25E

RESERVED

*HSW_ULT_DDR3L

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

SVID ALERT

SVID CLK

SVID DATA

Place PU resistor close to VR

IO Thrm Protect

For 65 degree, 1.8v limit, (SW)

For 75 degree, 1.2v limit, (HW)

100- ±1% pull-up to VCC near processor.

Processor Strapping

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

	1	0	Circuit
CFG3 (Physcial Debug Enable) DFX_Privacy	Disable:	Enable: Set DFX Enable in DFX interface MSR	CFG3 R543 *1K_4
CFG4 (DP Presence Strap)	Disable; No physical DP attached to eDP	Enable; An ext DP device is connected to eDP	CFG4 R542 1K_4

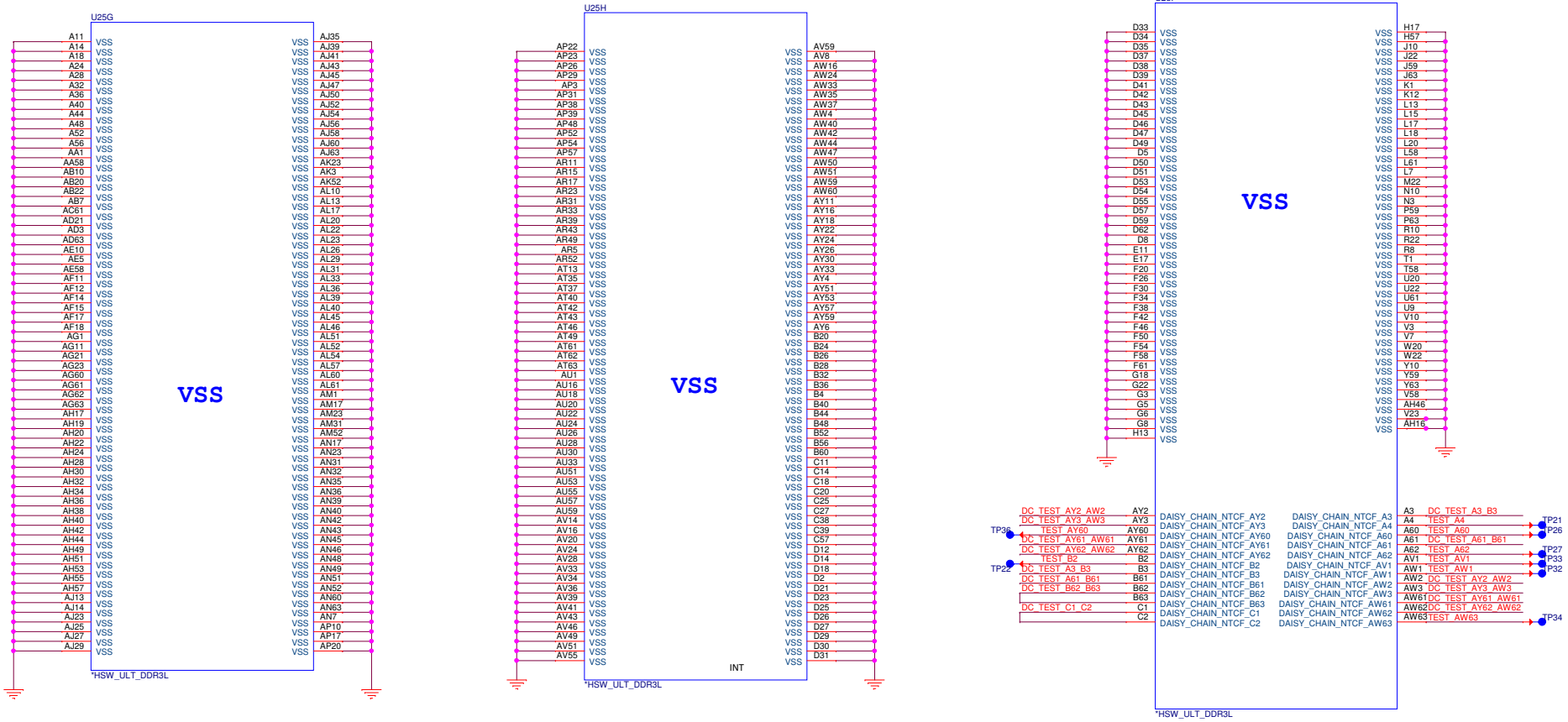
+VCCIOA_OUT 2
+VCCIO_OUT 6

+1.35VSUS 2,12,13,29,37
+1.05V 2,7,9,10,11,31,34,38,39,40,43
+VCC_CORE 39

NB5

PROJECT : Y11C
Quanta Computer Inc.

Size: Custom | Document Number: 04 -- ULT 3/9 (POWER-1) | Rev: 1A
Date: Friday, February 14, 2014 | Sheet 4 of 44



05

PROJECT : Y11C

Quanta Computer Inc.

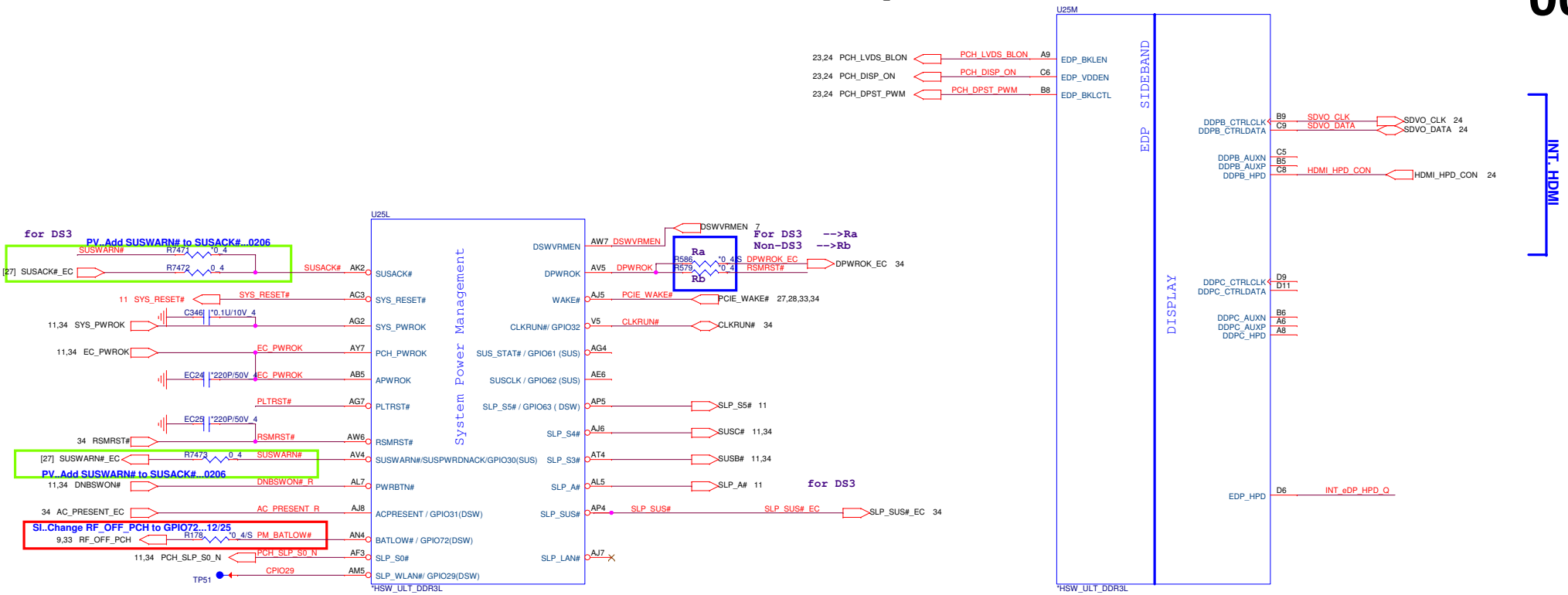
NB5

Size	Document Number	Rev
Custom	ULT 4/9 (RSV,GND)	1A

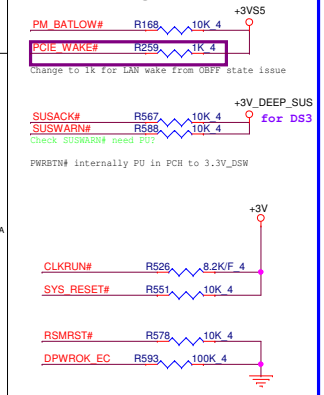
Date: Friday, February 14, 2014 Sheet 5 of 44

Lynx Point-LP Platform Controller Hub (LVDS,DDI)

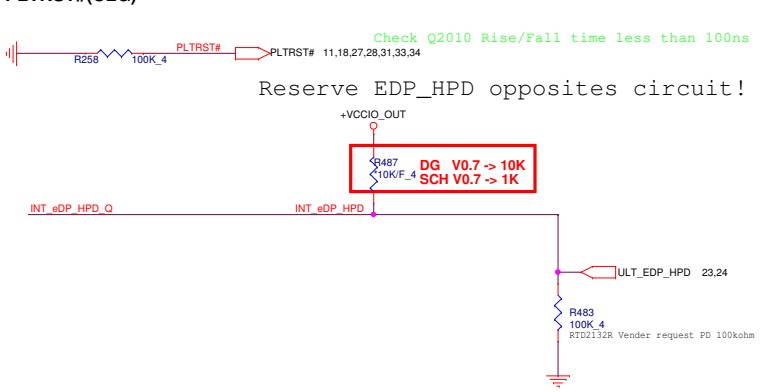
06



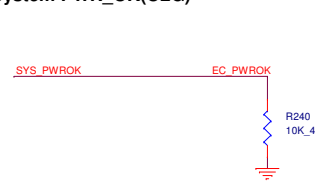
PCH Pull-high/low(CLG)

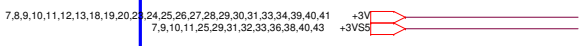


PLTRST#(CLG)



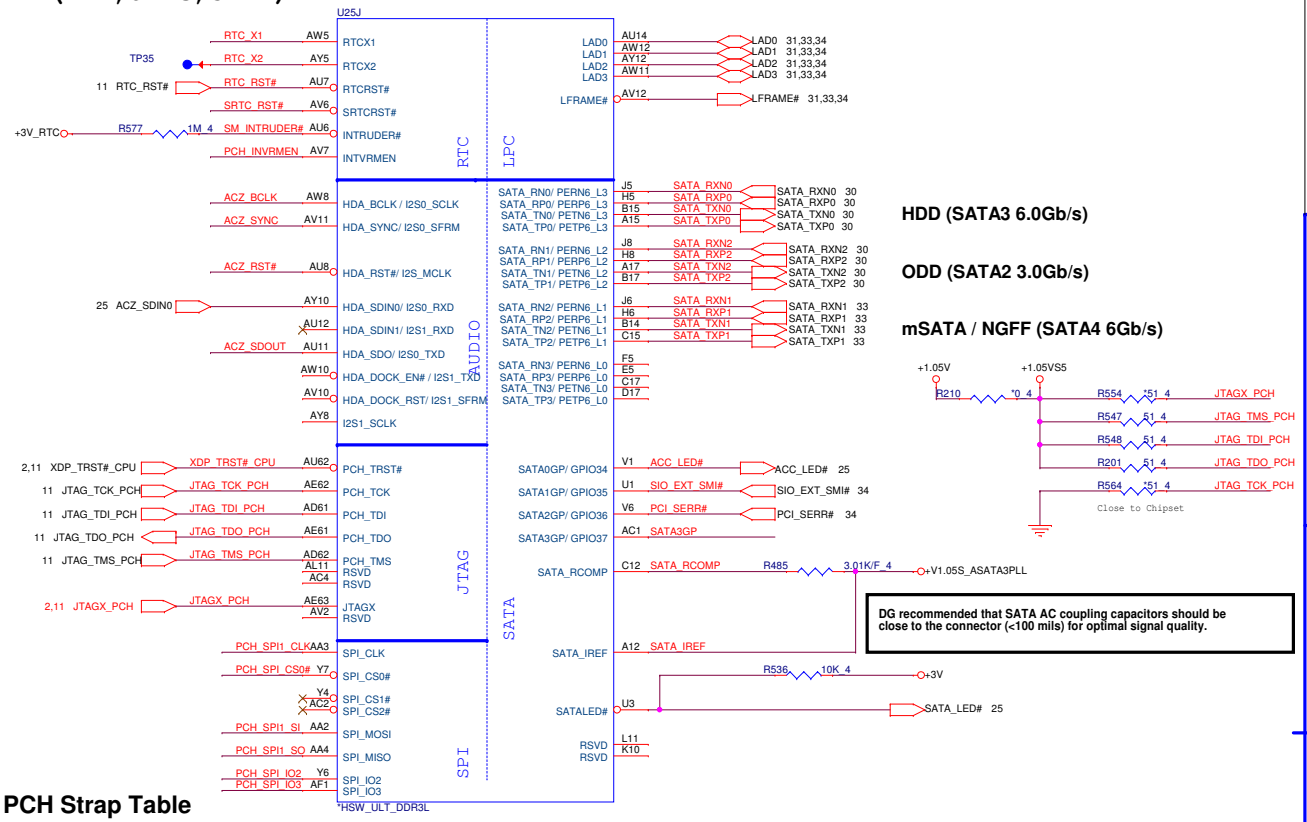
System PWR_OK(CLG)





NB5	PROJECT : Y11C Quanta Computer Inc.	
Size: Custom	Document Number: ULT 5/9(Power Manger)	Rev: 1A
Date: Friday, February 14, 2014	Sheet: 6 of 44	

Lynx Point-LP Platform Controller Hub (HDA, JTAG, SATA)



HDD (SATA3 6.0Gb/s)

ODD (SATA2 3.0Gb/s)

mSATA / NGFF (SATA4 6Gb/s)

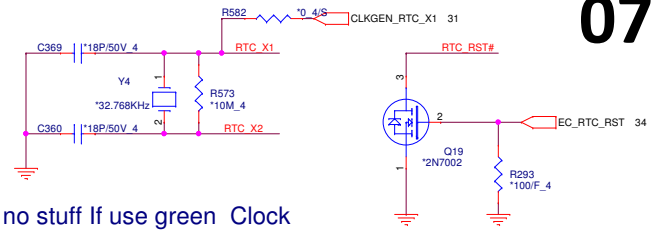
DG recommended that SATA AC coupling capacitors should be close to the connector (<100 mils) for optimal signal quality.

PCH Strap Table

Pin Name	Strap description	Sampled	Configuration	Circuit
SPKR	No reboot mode setting	PWROK	0 = Default (weak pull-down 20K) 1 = Setting to No-Reboot mode	
SDIO_D0 /GPIO66	Top-Block Swap	PWROK	0 = "top-block swap" mode 1 = Default (weak pull-up 20K)	
INTVRMEN	Integrated 1.05V VRM enable	ALWAYS	Should be always pull-up	+3V_RTC R575 330K_4 PCH_INVRMEN
HDA_SDO /I2S0_TXD	Flash Descriptor Security Only for Interposer	PWROK	0 = Default (weak pull-down 20K) 1 = Can be Overridden	34 GPIO33_EC R581 1K_4 ACZ_SDOUT
GSPI0_MOSI /GPIO86	Boot BIOS Selection	PWROK	GNT0# 1 = LPC; 0 = SPI(Default)	
GPIO15	TLS Confidentiality	PWROK	0 = ME Crypto Transport Layer Security cipher suite with no confidentiality(Default) 1 = Intel ME Crypto TLS cipher suite with confidentiality	
DSWVRMEN	Deep Sx Well On-Die Voltage Regulator Enable	ALWAYS	Should be always pull-up	+3V_RTC R576 330K_4 DSWVRMEN 6
				34 PCH_SPI_CS0#_R → PCH_SPI_CS0#_R 34 PCH_SPI1_CLK_R → PCH_SPI1_CLK_R 34 PCH_SPI1_SI_R → PCH_SPI1_SI_R 34 PCH_SPI1_SO_R → PCH_SPI1_SO_R

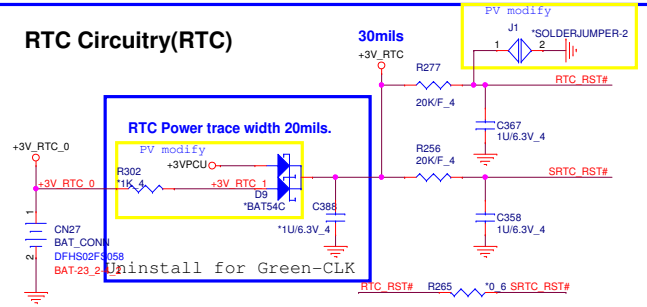
RTC Clock 32.768KHz

07

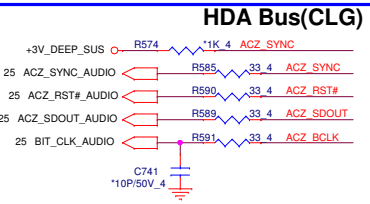


no stuff If use green Clock

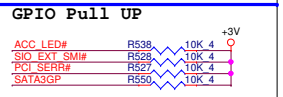
RTC Circuitry(RTC)



HDA Bus(CLG)



GPIO Pull UP

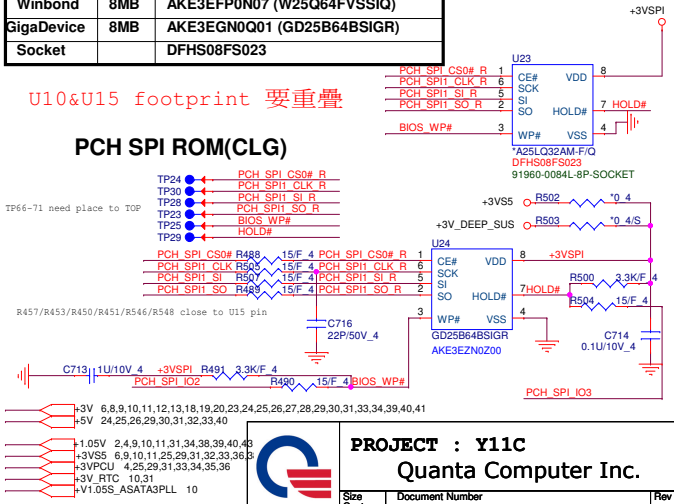


Vender	Size	P/N
MXIC	8MB	AKE3EZN0Z00 (MX25L6473EM2I-10G)
Winbond	8MB	AKE3EFP0N07 (W25Q64FVSSIQ)
GigaDevice	8MB	AKE3EGN0Q01 (GD25B64BSIGR)
Socket		DFHS08FS023

4M SPI ROM Socket

U10&U15 footprint 要重疊

PCH SPI ROM(CLG)



+3V 6,8,9,10,11,12,13,18,19,20,23,24,25,26,27,28,29,30,31,33,34,39,40,41
+5V 24,25,26,29,30,31,32,33,40
+1.05V 2,4,9,10,11,31,34,38,39,40,43
+3VS5 6,9,10,11,25,29,31,32,33,36,3
+3VPCU 4,25,29,31,33,34,35,36
+3V_RTC 10,31
+V1.05S_ASATA3PLL 10

NB5

PROJECT : Y11C

Quanta Computer Inc.

Size	Document Number	Rev
Custom	ULT 6/9(SATA/HDA)	1A

Date: Friday, February 14, 2014 | Sheet 7 of 44

Lynx Point-LP Platform Controller Hub (HDA, JTAG, SATA)

08

PCI/USBOC# Pull-up(CLG)

SI modify

DGPU_PWR_EN R520 10K_4 +3V

TS_INTB# R523 10K_4
PIRQC# R516 10K_4
PIRQD# R518 10K_4

GPIO77_ULT R514 10K_4
GPIO52_ULT R511 10K_4
GPU_EVENT# R510 10K_4
GC6_FB_EN R139 10K_4
DGPU_HOLD_RST# R493 10K_4
DGPU_HOLD_RST# R492 100K_4

SI modify

+3V_DEEP_SUS for DS3

SMBALERT# R186 10K_4
USB_OC1# R195 10K_4
USB_OC2# R211 10K_4
USB_OC3# R561 10K_4
USB_OC4# R571 10K_4

U25N

C- Link

CL_CLK AF2
CL_DATA AD2
CL_RST# AF4

Cardreader
WLAN
LAN

USB2.0(M/B-1) (USBP0)
USB2.0(M/B-2) (USBP5)
USB2.0 Small board (USBP1)
FP Small board (USBP4)
Camera (USBP2)
WLAN (USBP6)
TS (USBP7)

USB3.0

32 USB30_RX1- G20 USB3RN1
32 USB30_RX1+ H20 USB3RP1
32 USB30_TX1- C33 USB3TN1
32 USB30_TX1+ B34 USB3TP1

32 USB30_RX2- E18 USB3RN2
32 USB30_RX2+ F18 USB3RP2
32 USB30_TX2- B33 USB3TN2
32 USB30_TX2+ A33 USB3TP2

20111130 Modify USB3.0 for HM70

USB2N0 AM8 USBP0- 32
USB2P0 AR7 USBP0+ 32
USB2N1 AT7 USBP1- 25
USB2P1 AR8 USBP1+ 25
USB2N2 AP8 USBP2- 24
USB2P2 AR10 USBP2+ 24
USB2N3 AT10 USBP3- 32
USB2P3 AM15 USBP3+ 32
USB2N4 AL15 USBP4- 31
USB2P4 AM13 USBP4+ 31
USB2N5 AN13 USBP5- 32
USB2P5 AP11 USBP5+ 32
USB2N6 AN11 USBP6- 33
USB2P6 AR13 USBP6+ 33
USB2N7 AP13 USBP7- 31
USB2P7 USBP7+ 31

GPIO77_ULT U6 PIRQA# / GPIO77
TS_INTB# P4 PIRQB# / GPIO78
PIRQC# N4 PIRQC# / GPIO79
PIRQD# N2 PIRQD# / GPIO80

GPIO52_ULT L1 GPIO52
DGPU_PWR_EN_R L3 GPIO54
DGPU_HOLD_RST# R5 GPIO51
GPU_EVENT# L4 GPIO53
GC6_FB_EN U7 GPIO55

19,43 DGPU_PWR_EN
18 DGPU_HOLD_RST#
21 GPU_EVENT#
19,21 GC6_FB_EN

PCI

USB

AD4 PME#

TIE TRACES TOGETHER CLOSE TO PINS WITH LENGTH TO RESISTOR

USBRBIAS# AJ10 USB_BIAS R193 22.6/F_4
USBRBIAS AJ11

RSVD AN10
RSVD AM10

OC0# / GPIO40(SUS) AL3 USB_OC1#
OC1# / GPIO41(SUS) AT1 USB_OC2#
OC2# / GPIO42(SUS) AH2 USB_OC3#
OC3# / GPIO43(SUS) AV3 USB_OC4#

*HSW_ULT_DDR3L

U25K

32 USB30_RX3- G17 PERN1 / USB3RN3
32 USB30_RX3+ F17 PERP1 / USB3RP3
32 USB30_TX3- C30 PETN1 / USB3TN3
32 USB30_TX3+ C31 PETP1 / USB3TP3

28 PCIE_RXN2_CARD F15 PERN2/ USB3RN4
28 PCIE_RXP2_CARD G15 PERP2/ USB3RP4
28 PCIE_TXN2_CARD C705 0.1U/10V_4 PCIE_TXN2_CARD_C B31 PETN2/ USB3TN4
28 PCIE_TXP2_CARD C711 0.1U/10V_4 PCIE_TXP2_CARD_C A31 PETP2/ USB3TP4

33 PCIE_RXN3_WLAN G11 PERN3
33 PCIE_RXP3_WLAN F11 PERP3
33 PCIE_TXN3_WLAN C256 0.1U/10V_4 PCIE_TXN3_WLAN_C C29 PETN3
33 PCIE_TXP3_WLAN C244 0.1U/10V_4 PCIE_TXP3_WLAN_C B30 PETP3

27 PCIE_RXN4_LAN PCIE_RXN4_LAN F13 PERN4
27 PCIE_RXP4_LAN PCIE_RXP4_LAN G13 PERP4
27 PCIE_TXN4_LAN C698 0.1U/10V_4 PCIE_TXN4_LAN_C B29 PETN4
27 PCIE_TXP4_LAN C701 0.1U/10V_4 PCIE_TXP4_LAN_C A29 PETP4

18 PEG_RXN0 F10 PERN5_L0
18 PEG_RXP0 E10 PERP5_L0
18 PEG_TXN0 C691 0.22U/10V_4 PEG_TXN0_C C23 PETN5_L0
18 PEG_TXP0 C692 0.22U/10V_4 PEG_TXP0_C C22 PETP5_L0

18 PEG_RXN1 F8 PERN5_L1
18 PEG_RXP1 E8 PERP5_L1
18 PEG_TXN1 C686 0.22U/10V_4 PEG_TXN1_C B23 PETN5_L1
18 PEG_TXP1 C687 0.22U/10V_4 PEG_TXP1_C A23 PETP5_L1

18 PEG_RXN2 H10 PERN5_L2
18 PEG_RXP2 G10 PERP5_L2
18 PEG_TXN2 C690 0.22U/10V_4 PEG_TXN2_C B21 PETN5_L2
18 PEG_TXP2 C688 0.22U/10V_4 PEG_TXP2_C C21 PETP5_L2

18 PEG_RXN3 E6 PERN5_L3
18 PEG_RXP3 F6 PERP5_L3
18 PEG_TXN3 C693 0.22U/10V_4 PEG_TXN3_C B22 PETN5_L3
18 PEG_TXP3 C689 0.22U/10V_4 PEG_TXP3_C A21 PETP5_L3

PCIE_IREF B27
10 +V1.05S_AUSB3PLL R150 3.01K/F_4 PCIE_RCOMP A27 PCIE_RCOMP
E15 RSVD
E13 RSVD

PCI-*

SMBUS

SMBALERT# / GPIO11(SUS) AN2 SMBALERT#
SMBCLK AP2 SMB_PCH_CLK
SMBDATA AH1 SMB_PCH_DAT
SML0ALERT# / GPIO60(SUS) AL2 SML0ALERT#
SML0CLK AN1 SMB_ME0_CLK
SML0DATA AK1 SMB_ME0_DAT
SML1ALERT# / PCHHOT# / GPIO73(SUS) AU4 SML1ALERT# TP10
SML1CLK / GPIO75(SUS) AU3 SMB_ME1_CLK
SML1DATA / GPIO74(SUS) AH3 SMB_ME1_DAT

XTAL24_IN A25 XTAL24_IN
XTAL24_OUT B25 XTAL24_OUT

CLKOUT_ITPXDP# B35 CK_XDP_N_R
CLKOUT_ITPXDP_P A35 CK_XDP_P_R
*0_4P2R_4 RP1
CK_XDP_N 11
CK_XDP_P 11
RP1 install for XDP
EC26 18P/50V_4

CLKOUT_LPC_0 AN15 CLK_PCI_EC_R R242 22_4 CLK_24M_KBC 34
CLKOUT_LPC_1 AP15 CLK_PCI_LPC_R R234 22_4 CLK_24M_DEBUG 33
EMI(near PCH)
EC29 18P/50V_4
R243 22_4 CLK_PCI_TPM 31
EMI(near PCH)
EC27 18P/50V_4

R149
DIFFCLK_BIASREF C26 XCLK_BIASREF +V1.05S_AXCK_LCPLL 10
3.01K/F_4

RSVD K21
RSVD M21
TESTLOW_C35 C35 R148 10K/F_4
TESTLOW_C34 C34 R152 10K/F_4
TESTLOW_AK8 AK8 R239 10K/F_4
TESTLOW_AL8 AL8 R245 10K/F_4

CLOCK SIGNALS

C43 CLKOUT_PCIE0N
C42 CLKOUT_PCIE0P

PCIE_CLKREQ0# U2 PCIECLKRQ0# / GPIO18

Cardreader
28 CLK_PCIE_CRN CLK_PCIE_CRN B41 CLKOUT_PCIE_N1
28 CLK_PCIE_CRP CLK_PCIE_CRP A41 CLKOUT_PCIE_P1
28 PCIE_CLKREQ_CR# PCIE_CLKREQ_CR# Y5 PCIECLKRQ1# / GPIO19

WLAN
33 CLK_PCIE_WLANN CLK_PCIE_WLANN C41 CLKOUT_PCIE_N2
33 CLK_PCIE_WLANP CLK_PCIE_WLANP B42 CLKOUT_PCIE_P2
33 PCIE_CLKREQ_WLAN# PCIE_CLKREQ_WLAN# AD1 PCIECLKRQ2# / GPIO20

LAN
27 CLK_PCIE_LANN CLK_PCIE_LANN B38 CLKOUT_PCIE_N3
27 CLK_PCIE_LANP CLK_PCIE_LANP C37 CLKOUT_PCI_P3
27 PCIE_CLKREQ_LAN# PCIE_CLKREQ_LAN# N1 PCIECLKRQ3# / GPIO21

VGA
18 CLK_VGA_N CLK_VGA_N A39 CLKOUT_PCIE_N4
18 CLK_VGA_P CLK_VGA_P B39 CLKOUT_PCIE_P4
18 PCIE_CLKREQ_VGA# PCIE_CLKREQ_VGA# U5 PCIECLKRQ4# / GPIO22

B37 CLKOUT_PCIE_N5
A37 CLKOUT_PCIE_P5
PCIE_CLKREQ5# T2 PCIECLKRQ5# / GPIO23

*HSW_ULT_DDR3L

SMBus/Pull-up(CLG)

Q38 2N7002DW
13,23,34 MBCLK2 SMB_ME1_CLK
13,23,34 MBDATA2 SMB_ME1_DAT

Q12 2N7002DW
+3V R185 4.7K_4 SMB_PCH_DAT
11,12,13,23,29 SMB_RUN_DAT
+3V R194 4.7K_4 SMB_PCH_CLK
11,12,13,23,29 SMB_RUN_CLK

CLK_REQ/Strap Pin(CLG)

+3V
PCIE_CLKREQ0# R534 10K_4
PCIE_CLKREQ5# R535 10K_4
PCIE_CLKREQ_WLAN# R530 10K_4
PCIE_CLKREQ_LAN# R519 10K_4
PCIE_CLKREQ_CR# R268 10K_4
PCIE_CLKREQ_VGA# R158 10K_4

R147 0_4/S TP4 PCH_XTAL24_IN 31
C246 *12P/50V_4
XTAL24_IN
XTAL24_OUT
R153 *1M_4
*24MHZ +-30PPM
Y1
C245 *12P/50V_4
TP5

6,7,9,10,11,12,13,18,19,20,23,24,25,26,27,28,29,30,31,33,34,39,40,41 +3V
6,7,9,10,11 +3V_DEEP_SUS

SMBus/Pull-up(CLG)

for DS3
+3V_DEEP_SUS
R570 2.2K_4 SMB_PCH_CLK
R566 2.2K_4 SMB_PCH_DAT
R569 2.2K_4 SMB_ME0_CLK
R568 2.2K_4 SMB_ME0_DAT
R572 2.2K_4 SMB_ME1_CLK
R560 2.2K_4 SMB_ME1_DAT
R238 10K_4 SML1ALERT#
R192 1K_4 SML0ALERT#

NB5

PROJECT : Y11C
Quanta Computer Inc.

Size	Document Number	Rev
Custom	ULT 7/9 (PCIE/USB/CLK)	1A

Date: Friday, February 14, 2014 Sheet 8 of 44

Lynx Point-LP Platform Controller Hub (HDA,JTAG,SATA) Haswell (GPIO)

09

U25O

GPIO8(SUS) SIO_EXT_SCI# AU2 ← 34 SIO_EXT_SCI#
GPIO9(SUS) BT_OFF AM3 ← 33 BT_OFF
GPIO10(SUS) RF_OFF_PCH_R AM2 ← R177 *0_4 ← 6,33 RF_OFF_PCH
LAN_PHY_PWR_CTRL / GPIO12(DSW) LAN_DISABLE# AM7
GPIO13(SUS) GPIO13_ULT AT3
GPIO14(SUS) GPIO14_ULT AH4
GPIO15(SUS) AD6
GPIO16 ODD_PRSNT#_R Y1 ← R553 *0_4 ← 30 ZERO_ODD_DP#
GPIO17 T3 ← 20,34,42 DGPU_PWROK
GPIO24 (SUS) BOARD_ID6 AD5
GPIO25(DSW) GPIO25_ULT AM4
GPIO26(SUS) BOARD_ID7 AN3
GPIO27(DSW) GPIO27 AN5
GPIO28(SUS) BOARD_ID8 AD7
DEVSLP0/ GPIO33 DEVSLP0 P2
DEVSLP1/ GPIO38 DEVSLP1 L2 ← 33 DEVSLP1
DEVSLP2/ GPIO39 DEVSLP2 N5
GPIO44(SUS) GPIO44_ULT AK4
GPIO45(SUS) BOARD_ID4 AG5
GPIO46(SUS) GPIO46_ULT AG3
GPIO47(SUS) BOARD_ID5 AB6
GPIO48 BT_COMBO_EN# U4 ← 38 BT_COMBO_EN#
GPIO49 GPIO49_ULT Y3 ← 31 ACCEL_INTA#
GPIO50 GPIO50_ULT P3
GPIO56(SUS) BOARD_ID0 AG6
GPIO57(SUS) BOARD_ID1 AP1
GPIO58(SUS) BOARD_ID2 AL4
GPIO59(SUS) BOARD_ID3 AT5
SDIO_POWER_EN/ GPIO70 GPIO70_ULT C4
HSIOPC/ GPIO71 MPHY_PWREN Y2 ← 40 MPHY_PWREN
BMBUSY# / GPIO76 GPIO76_ULT P1
SPKR/ GPIO81 SPKR V2 ← 25 ACZ_SPKR; 25 SPKR

TP for DG

SI..Change ACCEL_INTA# to GPIO49...12/25

CPU/MISC
THRMTRIP# D60 PCH_THRMTRIP# → PM_THRMTRIP# 34
RCIN#/ GPIO82 V4 EC_RCIN# → EC_RCIN# 34
SERIRQ T4 SERIRQ → R529 10K_4 → +3V; SERIRQ 31,34
PCH_OPI_RCOMP AW15 PCH_OPI_RCOMP → R583 49.9/F_4
RSVD AF20
RSVD AB21

GPIO
SERIAL IO
GSPI0_CS/ GPIO83 R6 GSPI0_CS
GSPI0_CLK/ GPIO84 L6 GSPI0_CLK
GSPI0_MISO/ GPIO85 N6 GSPI0_MISO
GSPI0_MOSI/ GPIO86 L8
GSPI1_CS/ GPIO87 R7 GSPI1_CS
GSPI1_CLK/ GPIO88 L5 GSPI1_CLK
GSPI1_MISO/ GPIO89 N7 GSPI1_MISO
GSPI1_MOSI/ GPIO90 K2 GSPI1_MOSI
UART0_RXD/ GPIO91 J1 UART0_RXD
UART0_TXD/ GPIO92 K3 UART0_TXD
UART0_RTS/ GPIO93 J2 UART0_RTS
UART0_CTS/ GPIO94 G1 UART0_CTS
UART1_RXD/ GPIO0 K4 UART1_RXD
UART1_TXD/ GPIO1 G2 UART1_TXD
UART1_RST/ GPIO2 J3 UART1_RST
UART1_CTS/ GPIO3 J4 UART1_CTS
I2C0_SDA/ GPIO4 F2 I2C0_SDA
I2C0_SCL/ GPIO5 F3 I2C0_SCL
I2C1_SDA/ GPIO6 G4 I2C1_SDA
I2C1_SCL/ GPIO7 F1 I2C1_SCL
SDIO_CLK/ GPIO64 E3 SDIO_CLK
SDIO_CMD/ GPIO65 F4 SDIO_CMD
SDIO_D0/ GPIO66 D3
SDIO_D1/ GPIO67 E4 SDIO_D1
SDIO_D2/ GPIO68 C3 SDIO_D2
SDIO_D3/ GPIO69 E2 SDIO_D3

*HSW_ULT_DDR3L

RP2: 10K_10P8R_6 — UART1_RXD, I2C1_SDA, GSPI0_CLK, GSPI1_CLK ↔ SDIO_D2, SDIO_D1, SDIO_CMD, SDIO_CLK → +3V
RP6: 10K_10P8R_6 — GSPI1_MOSI, GSPI0_MISO, GSPI1_MISO, UART0_TXD ↔ I2C0_SCL, I2C1_SCL, I2C0_SDA, SDIO_D3 → +3V
RP5: 10K_10P8R_6 — UART0_RXD, UART1_CTS, GSPI0_CS, GSPI1_CS ↔ UART1_RST, UART0_RTS, UART0_CTS, UART1_TXD → +3V

GPIO Pull-up/Pull-down(CLG)

+3V_DEEP_SUS
Change R172 Netname
SIO_EXT_SCI# R282 10K_4
BT_OFF R180 10K_4
RF_OFF_PCH_R R172 10K_4
GPIO13_ULT R218 10K_4
GPIO14_ULT R183 10K_4
GPIO44_ULT R565 10K_4
GPIO46_ULT R541 10K_4
+3V
GPIO49_ULT R552 10K_4
GPIO50_ULT R524 10K_4
ODD_PRSNT#_R R546 10K_4
DGPU_PWROK R513 10K_4
DEVSLP0 R515 10K_4
DEVSLP2 R499 10K_4
BT_COMBO_EN# R512 10K_4
GPIO70_ULT R486 10K_4
EC_RCIN# R269 10K_4
GPIO12 LAN_DISABLE# PDS -->Check list +3V -->Datasheet
GPIO76_ULT R525 10K_4
MPHY_PWREN R544 100K_4
MPHY_PWREN R545 *10K_4
+3VS5
GPIO25_ULT R173 10K_4
LAN_DISABLE# R169 10K_4
GPIO27 R626 10K_4

Close to EC
+V1.05S_VCCST
PM_THRMTRIP# R184 1K_4

Model	BOARD_ID[6:5]	BOARD_ID4	BOARD_ID3	BOARD_ID[2:1]	BOARD_ID0
	Reserve	0 LVDS 1 EDP	0 Pavillian 1 Envy	00 14" 01 15" 10 17"	0 : UMA 1 : DIS

R174 *10K_4 BOARD_ID0 R539 10K_4 → +3V_DEEP_SUS
R205 *10K_4 BOARD_ID1 R199 10K_4
R558 10K_4 BOARD_ID2 R559 *10K_4
R248 *10K_4 BOARD_ID3 R255 10K_4
R175 10K_4 BOARD_ID4 R540 *10K_4
R167 10K_4 BOARD_ID5 R549 *10K_4
R161 10K_4 BOARD_ID6 R164 *10K_4
R204 10K_4 BOARD_ID7 R198 *10K_4
R160 10K_4 BOARD_ID8 R163 *10K_4

	DIS	UMA
Stuff	Ra	Rb
NC	Rb	Ra

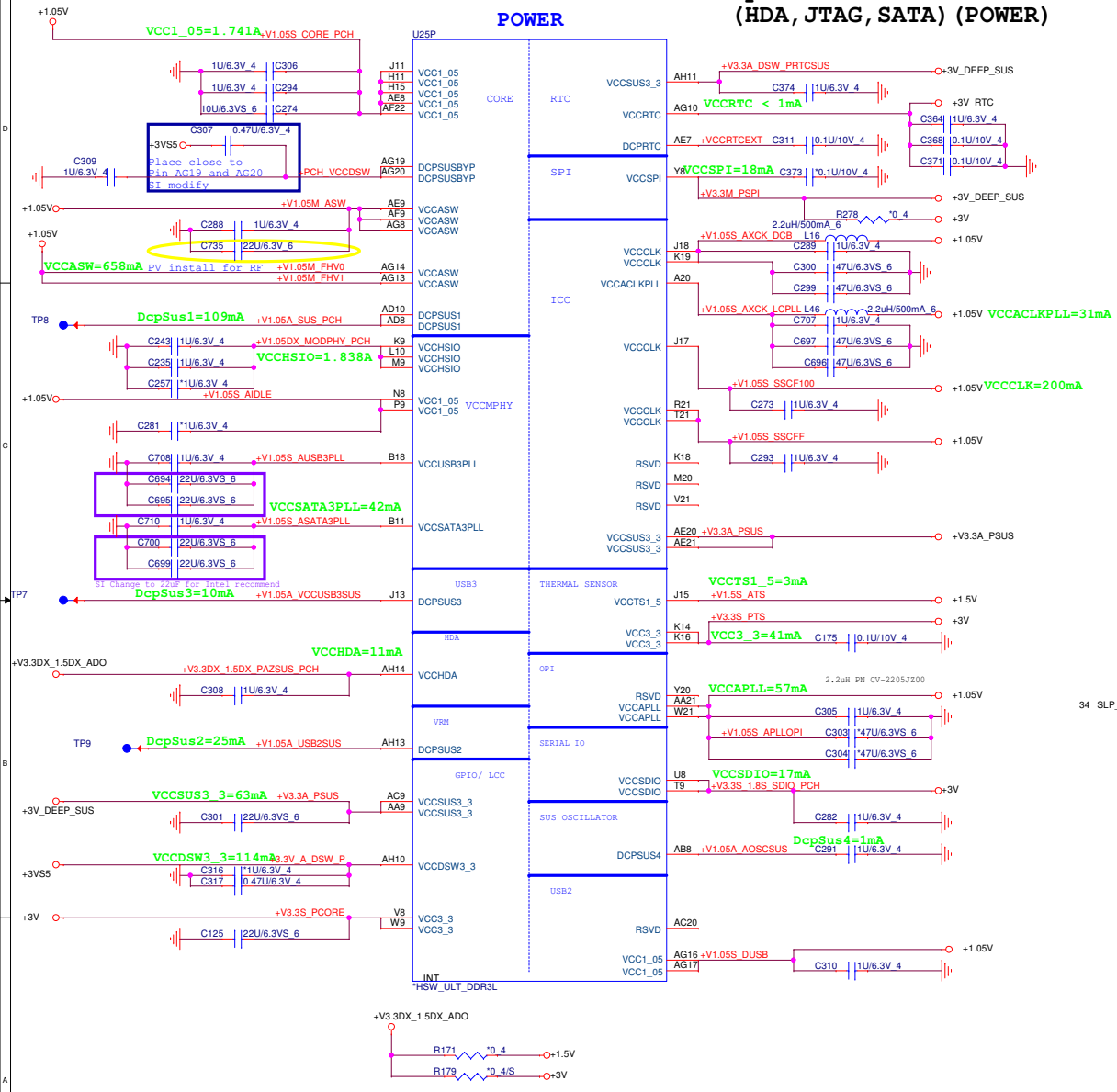
6,7,8,10,11,12,13,18,19,20,23,24,25,26,27,28,29,30,31,33,34,39,40,41 +3V
6,7,10,11,25,29,31,32,33,36,38,40,43 +3VS5

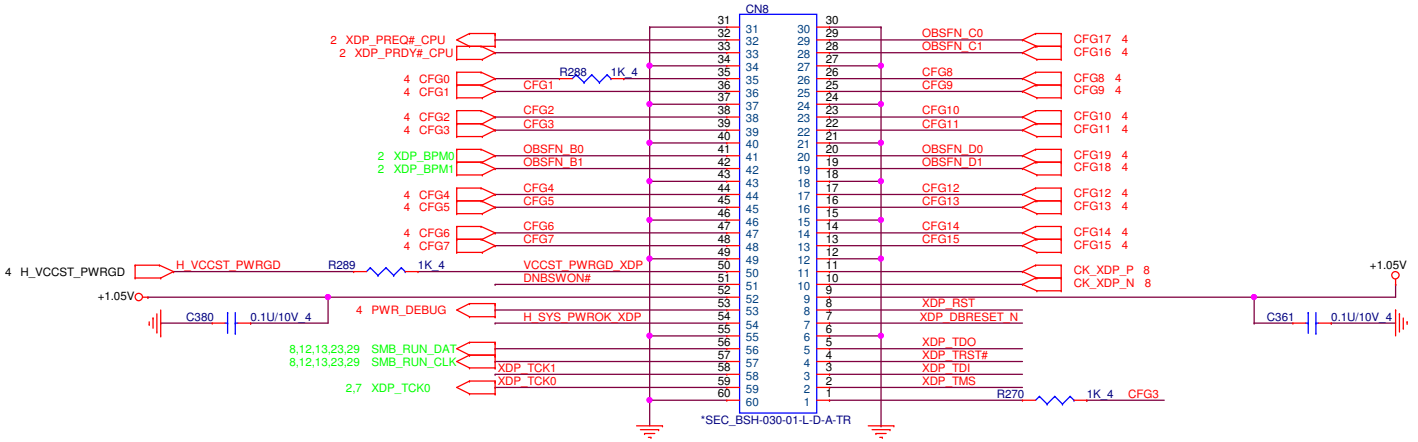
NB5

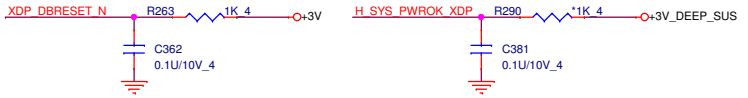
PROJECT : Y11C
Quanta Computer Inc.
Size: Custom | Document Number: ULT 8/9 (GPIO/MISC) | Rev: 1A
Date: Friday, February 14, 2014 | Sheet 9 of 44

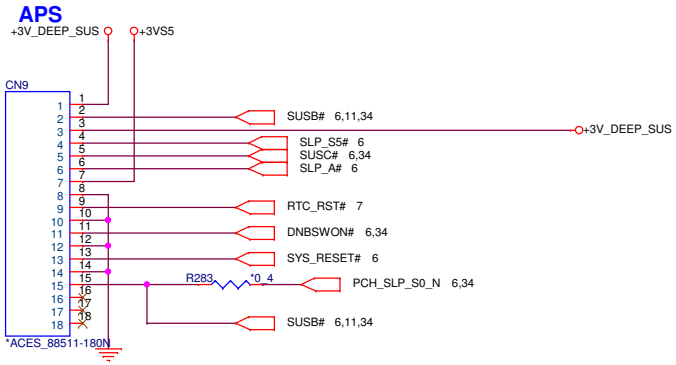
Lynx Point-LP Platform Controller Hub (HDA, JTAG, SATA) (POWER)

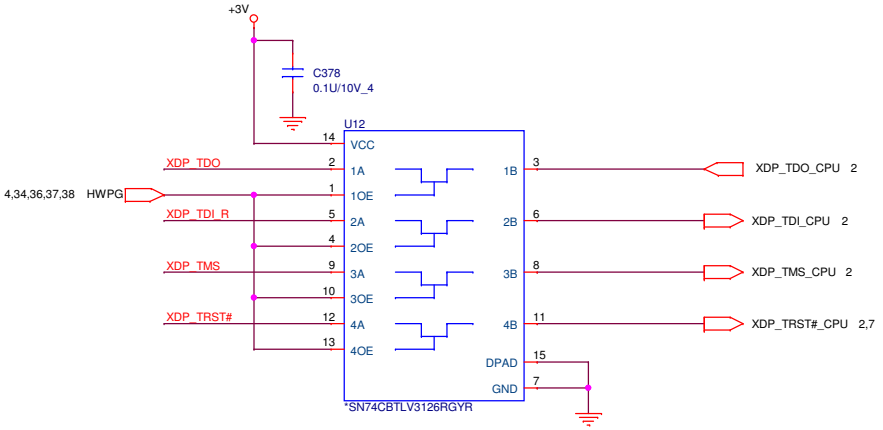
POWER

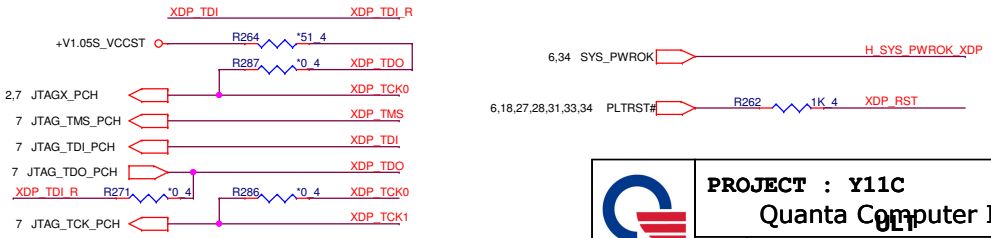






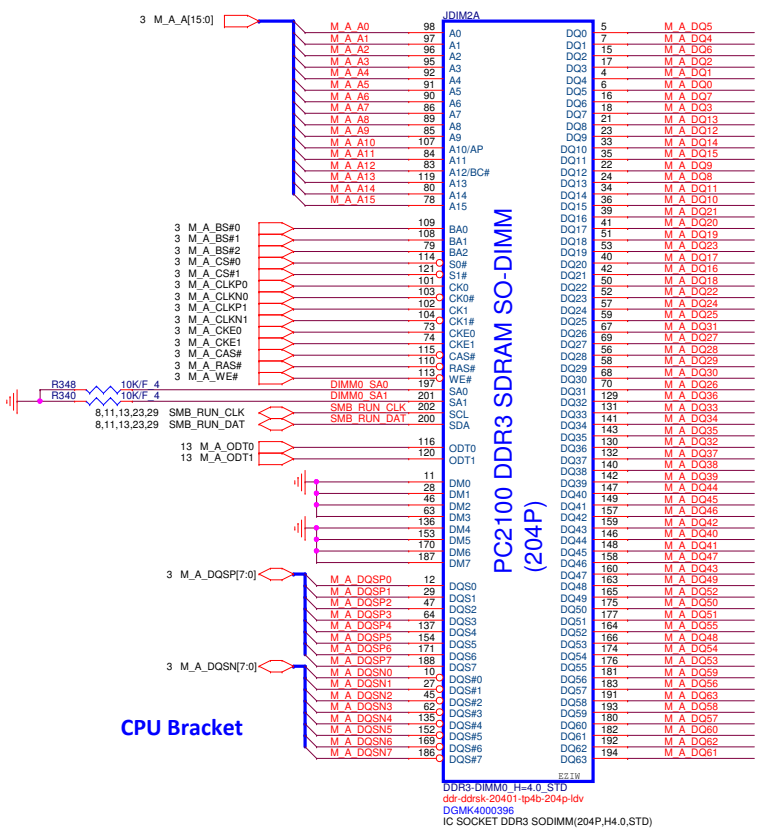


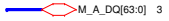


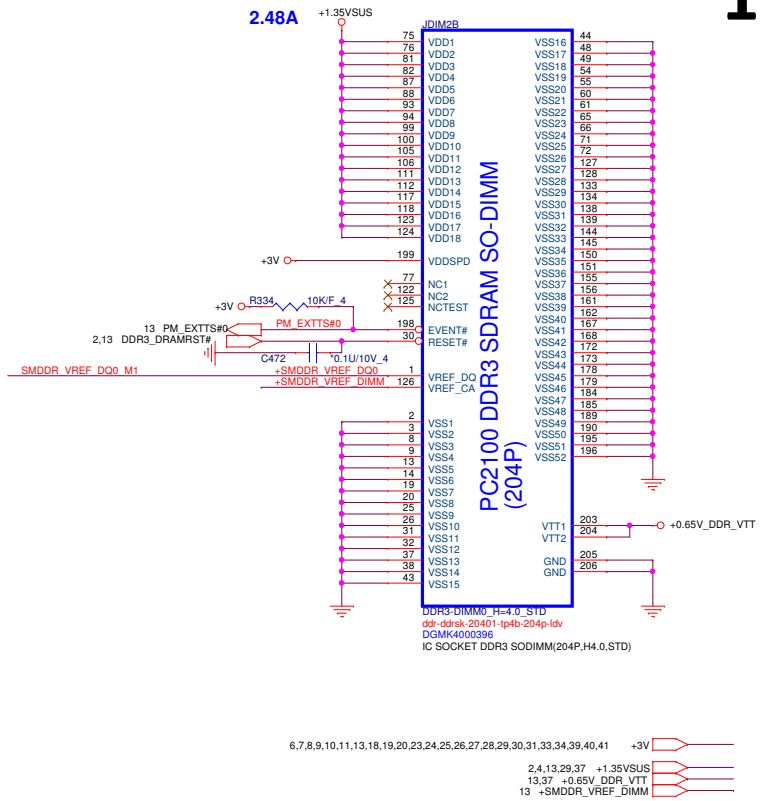


NB5	PROJECT : Y11C Quanta Computer Inc. 0L1	
Size	Document Number HSW XDP & APS	Rev 1A
Date: Friday, February 14, 2014	Sheet 11 of 44	

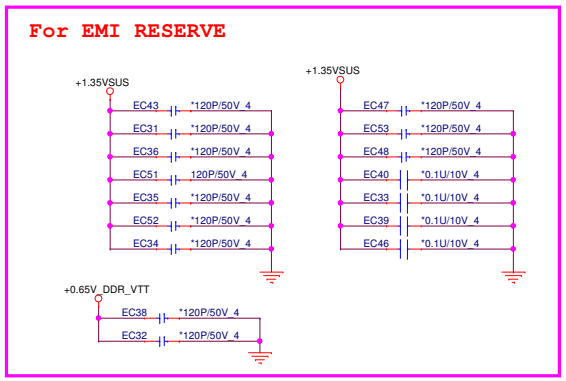
DIMM & Footprint 同Joshua提供





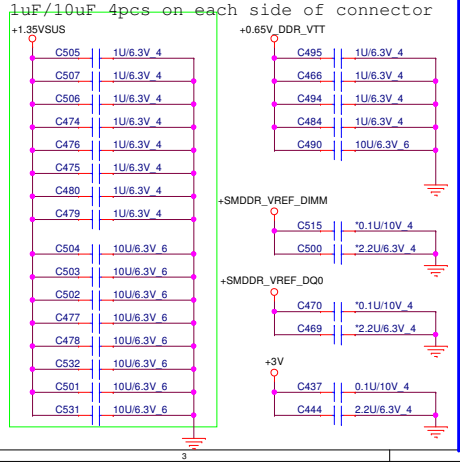


For EMI RESERVE

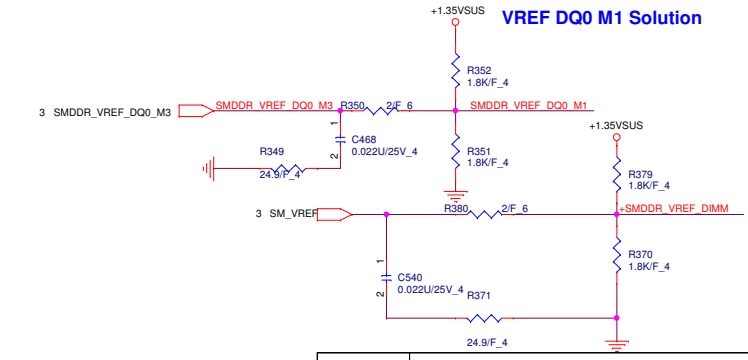


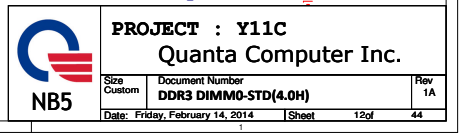
Place these Caps near So-Dimm0.

1uF/10uF 4pcs on each side of connector

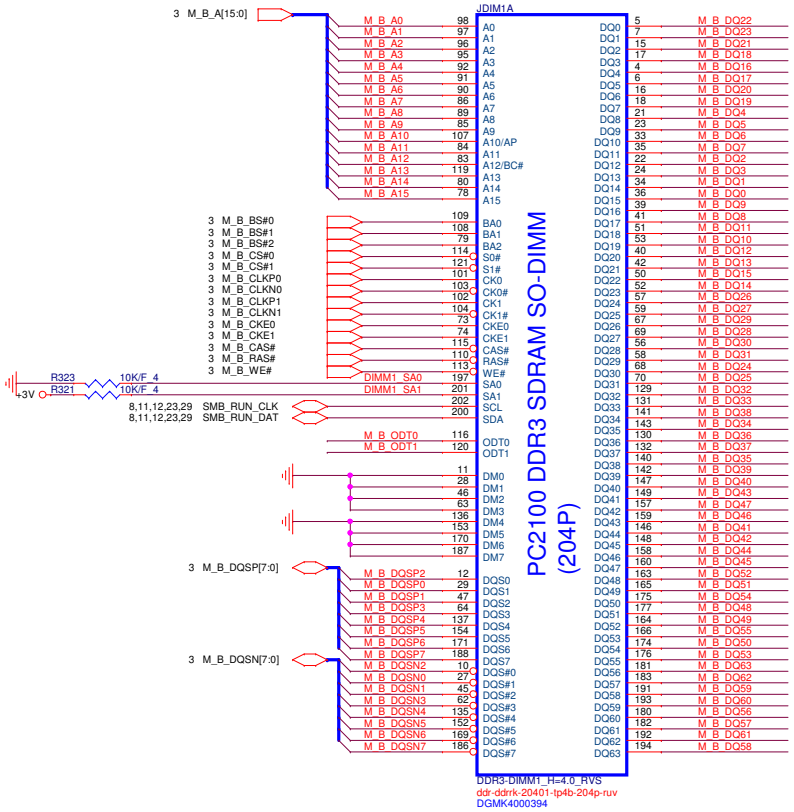


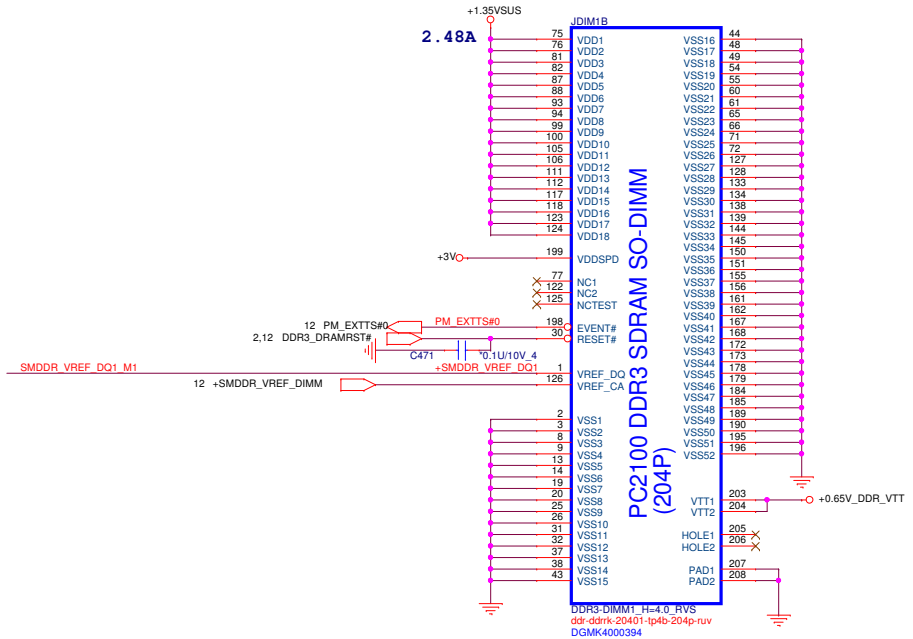
VREF DQ0 M1 Solution





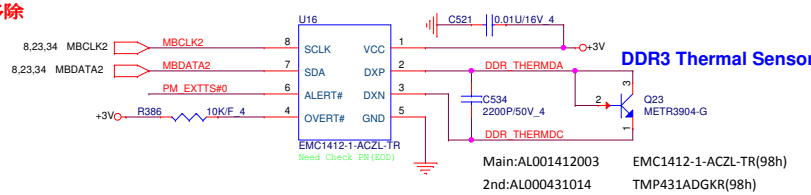
DIMM & Footprint 同Joshua提供



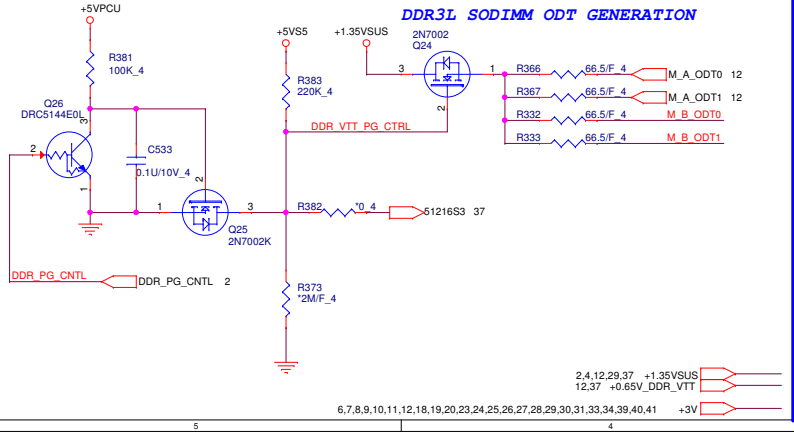


Local Thermal Sensor

MV可移除

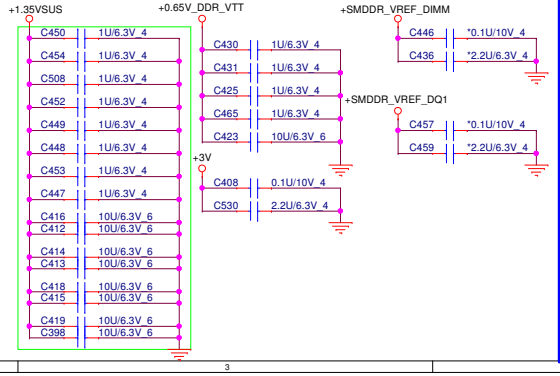


DDR3L SODIMM ODT GENERATION

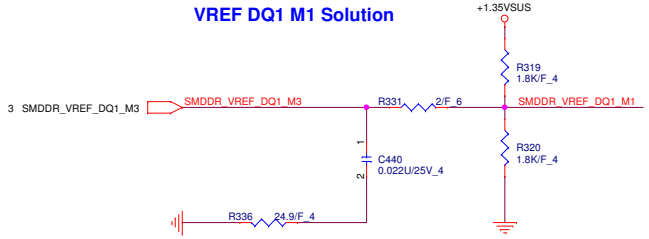


Place these Caps near So-Dimm1.

1uF/10uF 4pcs on each side of connector



VREF DQ1 M1 Solution



NB5

PROJECT : Y11C

Quanta Computer Inc.

Size	Document Number	Rev
Custom	DDR3 DIMM1-RVS(4.0H)	1A

Date: Friday, February 14, 2014 Sheet 13of 44

U22A
N15P-GT-A2

[PEG Interface]

PEX_IOVDD/Q : 3300mA

+1.05V_GFX

To be placed no further from the GPU than bewteen the PS and GPU

PLACE NEAR BALLS

PLACE UNDER BGA

PLACE CLOSE TO BGA

PLACE CLOSE TO GPU BALLS

VDD33 : 85mA

+3V_AON
+3V_GFX

PEX_SVDD_3V3 : 210mA

PEX_PLLVDD : 150mA

PLACE NEAR BGA

10/02 modify : follow design guide

10/02 : Power rail change to +3V_AON

Notes: - All 3.3V includes all rails powered at 3.3V
- PEX_VDD 1.05V includes all rails that are shared

All 3.3V
NVVDD
PEX_VDD 1.05V
FBVDD/Q
90%

PROJECT : Y11C
Quanta Computer Inc.
NB5
Size A3 | Document Number N14P-GT - 1/5 (PCIE) | Rev 1A
Date: Friday, February 14, 2014 | Sheet 14 of 44

FBA_CMD2 R450 10K_4
FBA_CMD3 R63 10K_4
FBA_CMD5 R123 10K_4
FBA_CMD18 R627 10K_4
FBA_CMD19 R473 10K_4

FBB_CMD2 R440 10K_4
FBB_CMD3 R25 10K_4
FBB_CMD5 R10 10K_4
FBB_CMD18 R26 10K_4
FBB_CMD19 R442 10K_4

U22B
N15P-GT-A2

[MEMORY I/F A]

[19,20] FBA_CMD[30:0]
FBA_CMD0 U30
FBA_CMD1 T31
FBA_CMD2 U29
FBA_CMD3 R34
FBA_CMD4 R33
FBA_CMD5 U32
FBA_CMD6 U33
FBA_CMD7 U28
FBA_CMD8 V28
FBA_CMD9 V29
FBA_CMD10 V30
FBA_CMD11 U34
FBA_CMD12 U31
FBA_CMD13 V34
FBA_CMD14 V33
FBA_CMD15 Y32
FBA_CMD16 AA31
FBA_CMD17 AA29
FBA_CMD18 AA28
FBA_CMD19 AC34
FBA_CMD20 AC33
FBA_CMD21 AA32
FBA_CMD22 AA33
FBA_CMD23 Y28
FBA_CMD24 Y29
FBA_CMD25 W31
FBA_CMD26 Y30
FBA_CMD27 AA34
FBA_CMD28 Y31
FBA_CMD29 Y34
FBA_CMD30 Y33
FBA_CMD31 V31
TP2

FBA_CMD0 (FBA_CMD25)
FBA_CMD1 (FBA_CMD23)
FBA_CMD2
FBA_CMD3 (FBA_CMD0)
FBA_CMD4 (FBA_CMD10)
FBA_CMD5 (FBA_CMD26)
FBA_CMD6 (FBA_CMD14)
FBA_CMD7
FBA_CMD8 (FBA_CMD1)
FBA_CMD9 (FBA_CMD22)
FBA_CMD10 (FBA_CMD20)
FBA_CMD11 (FBA_CMD24)
FBA_CMD12 (FBA_CMD18)
FBA_CMD13 (FBA_CMD9)
FBA_CMD14 (FBA_CMD29)
FBA_CMD15 (FBA_CMD8)
FBA_CMD16 (FBA_CMD27)
FBA_CMD17 (FBA_CMD15)
FBA_CMD18 (FBA_CMD11)
FBA_CMD19 (FBA_CMD16)
FBA_CMD20 (FBA_CMD28)
FBA_CMD21 (FBA_CMD3)
FBA_CMD22 (FBA_CMD17)
FBA_CMD23 (FBA_CMD5)
FBA_CMD24 (FBA_CMD4)
FBA_CMD25 (FBA_CMD21)
FBA_CMD26 (FBA_CMD6)
FBA_CMD27 (FBA_CMD13)
FBA_CMD28 (FBA_CMD19)
FBA_CMD29 (FBA_CMD12)
FBA_CMD30
FBA_CMD31 (NC)

[19,20] VMA_DM[7:0]
VMA_DM0 P30
VMA_DM1 F31
VMA_DM2 F34
VMA_DM3 M32
VMA_DM4 AD31
VMA_DM5 AL29
VMA_DM6 AM32
VMA_DM7 AF34

FBA_DQM0
FBA_DQM1
FBA_DQM2
FBA_DQM3
FBA_DQM4
FBA_DQM5
FBA_DQM6
FBA_DQM7

[19,20] VMA_WDQS[7:0]
VMA_WDQS0 M31
VMA_WDQS1 G31
VMA_WDQS2 E33
VMA_WDQS3 M33
VMA_WDQS4 AE31
VMA_WDQS5 AK30
VMA_WDQS6 AN33
VMA_WDQS7 AF33

FBA_DQS_WP0
FBA_DQS_WP1
FBA_DQS_WP2
FBA_DQS_WP3
FBA_DQS_WP4
FBA_DQS_WP5
FBA_DQS_WP6
FBA_DQS_WP7

[19,20] VMA_RDQS[7:0]
VMA_RDQS0 M30
VMA_RDQS1 H30
VMA_RDQS2 E34
VMA_RDQS3 M34
VMA_RDQS4 AF30
VMA_RDQS5 AK31
VMA_RDQS6 AM34
VMA_RDQS7 AF32

FBA_DQS_RN0
FBA_DQS_RN1
FBA_DQS_RN2
FBA_DQS_RN3
FBA_DQS_RN4
FBA_DQS_RN5
FBA_DQS_RN6
FBA_DQS_RN7

+1.35V_GFX

PLACE CLOSE TO GPU BALLS
C668 4.7U/6.3V_4
C132 4.7U/6.3V_4
C677 4.7U/6.3V_4
C670 4.7U/6.3V_4
C117 1U/10V_4
C118 1U/10V_4
C123 1U/10V_4
C146 1U/10V_4
C119 0.1U/10V_4
C121 0.1U/10V_4
C609 0.1U/10V_4
C126 0.1U/10V_4

PLACE CLOSE TO BGA
C108 10U/6.3V_6
C99 10U/6.3V_6
C640 22U/6.3VS_6
C639 22U/6.3VS_6

AA27 AA30 AB27 AB33 AC27 AD27 AE27 AF27 AG27 B13 B16 B19 E13 E16 E19 H10 H11 H12 H13 H14 H15 H16 H18 H19 H20 H21 H22 H23 H24 H8 H9 L27 M27 N27 P27 R27 T27 T30 T33 V27 W27 W30 W33 Y27
FBVDDQ_1 FBVDDQ_2 FBVDDQ_3 FBVDDQ_4 FBVDDQ_5 FBVDDQ_6 FBVDDQ_7 FBVDDQ_8 FBVDDQ_9 FBVDDQ_10 FBVDDQ_11 FBVDDQ_12 FBVDDQ_13 FBVDDQ_14 FBVDDQ_15 FBVDDQ_16 FBVDDQ_17 FBVDDQ_18 FBVDDQ_19 FBVDDQ_20 FBVDDQ_21 FBVDDQ_22 FBVDDQ_23 FBVDDQ_24 FBVDDQ_25 FBVDDQ_26 FBVDDQ_27 FBVDDQ_28 FBVDDQ_29 FBVDDQ_30 FBVDDQ_31 FBVDDQ_32 FBVDDQ_33 FBVDDQ_34 FBVDDQ_35 FBVDDQ_36 FBVDDQ_37 FBVDDQ_38 FBVDDQ_39 FBVDDQ_40 FBVDDQ_41 FBVDDQ_42 FBVDDQ_43 FBVDDQ_44

L28 M29 L29 M28 N31 P29 P29 P28 J28 H29 J29 H28 G29 E31 E32 F30 C34 D32 B33 C33 F33 F32 H33 H32 P34 P32 P31 P33 L31 L34 L32 L33 AG28 AF29 AG29 AF28 AD30 AD29 AC29 AD28 AJ29 AK29 AJ30 AK28 AM29 AM31 AN29 AM30 AN31 AN32 AP30 AP32 AM33 AL31 AK33 AK32 AD34 AD32 AC30 AD33 AF31 AG34 AG32 AG33
VMA_DQ0 VMA_DQ1 VMA_DQ2 VMA_DQ3 VMA_DQ4 VMA_DQ5 VMA_DQ6 VMA_DQ7 VMA_DQ8 VMA_DQ9 VMA_DQ10 VMA_DQ11 VMA_DQ12 VMA_DQ13 VMA_DQ14 VMA_DQ15 VMA_DQ16 VMA_DQ17 VMA_DQ18 VMA_DQ19 VMA_DQ20 VMA_DQ21 VMA_DQ22 VMA_DQ23 VMA_DQ24 VMA_DQ25 VMA_DQ26 VMA_DQ27 VMA_DQ28 VMA_DQ29 VMA_DQ30 VMA_DQ31 VMA_DQ32 VMA_DQ33 VMA_DQ34 VMA_DQ35 VMA_DQ36 VMA_DQ37 VMA_DQ38 VMA_DQ39 VMA_DQ40 VMA_DQ41 VMA_DQ42 VMA_DQ43 VMA_DQ44 VMA_DQ45 VMA_DQ46 VMA_DQ47 VMA_DQ48 VMA_DQ49 VMA_DQ50 VMA_DQ51 VMA_DQ52 VMA_DQ53 VMA_DQ54 VMA_DQ55 VMA_DQ56 VMA_DQ57 VMA_DQ58 VMA_DQ59 VMA_DQ60 VMA_DQ61 VMA_DQ62 VMA_DQ63

FBA_CLK0 R30
FBA_CLK0_N R31
FBA_CLK1 AB31
FBA_CLK1_N AC31
VMA_CLK0 [19]
VMA_CLK0# [19]
VMA_CLK1 [20]
VMA_CLK1# [20]

(FBA_DEBUG) FBA_DEBUG0 R28
(NC) FBA_DEBUG1 AC28
FB_VREF_NC H28
R28/AC28 chenge to NC

FBA_CMD_RFU0 R32
FBA_CMD_RFU1 AC32
*60.4/F_4 R122
*60.4/F_4 R126
+1.35V_GFX
+1.35V_GFX
10/02 : R32/AC32 Pull-up to FBVDDQ

FBA_WCK01 K31
FBA_WCK01_N L30
FBA_WCK23 H34
FBA_WCK23_N J34
FBA_WCK45 AG30
FBA_WCK45_N AG31
FBA_WCK67 AJ34
FBA_WCK67_N AK34

FBA_WCKB01 J30
FBA_WCKB01_N J31
FBA_WCKB23 J32
FBA_WCKB23_N J33
FBA_WCKB45 AH31
FBA_WCKB45_N AJ31
FBA_WCKB67 AJ32
FBA_WCKB67_N AJ33

RSVD E1 PS_FB_CLAMP
R453 10K_4
C124 0.1U/10V_4
C683 22U/6.3VS_6
HCB1608KF-300T30 L13 +1.05V_GFX

FB_DLL_AVDD K27 +FB_PLLAVDD
FBA_PLL_AVDD U27 +FB_PLLAVDD
+FB_PLLAVDD : 62mA C137 0.1U/10V_4
FBVDDQ_PROBE F1 FBVDDQ_SENSE TP14
GND_PROBE F2 FB_GND_SENSE TP15

FB_CAL_PD_VDDQ J27 FB_CAL_PD_VDDQ R112 40.2/F_4 +1.35V_GFX
FB_CAL_PU_GND H27 FB_CAL_PU_GND R108 42.2/F_4
FB_CALTERM_GND H25 FB_CAL_TERM_GND R106 51.1/F_4
PLACE CLOSE TO GPU BALLS

PLACE NEAR BGA CLOSE TO CAPS
PLACE CLOSE TO BGA
PLACE CLOSE TO BALL

U22C
N15P-GT-A2

MEMORY I/F C

[21,22] FBB_CMD[30:0]
FBB_CMD0 D13
FBB_CMD1 E14
FBB_CMD2 F14
FBB_CMD3 A12
FBB_CMD4 B12
FBB_CMD5 C14
FBB_CMD6 B14
FBB_CMD7 G15
FBB_CMD8 F15
FBB_CMD9 E15
FBB_CMD10 D15
FBB_CMD11 A14
FBB_CMD12 D14
FBB_CMD13 A15
FBB_CMD14 B15
FBB_CMD15 C17
FBB_CMD16 D18
FBB_CMD17 E18
FBB_CMD18 F18
FBB_CMD19 A20
FBB_CMD20 B20
FBB_CMD21 C18
FBB_CMD22 B18
FBB_CMD23 G18
FBB_CMD24 G17
FBB_CMD25 F17
FBB_CMD26 D16
FBB_CMD27 A18
FBB_CMD28 D17
FBB_CMD29 A17
FBB_CMD30 B17
FBB_CMD31 E17
TP1

FBB_CMD0 (FBC_CMD25)
FBB_CMD1 (FBC_CMD23)
FBC_CMD2
FBB_CMD3 (FBC_CMD0)
FBB_CMD4 (FBC_CMD10)
FBB_CMD5 (FBC_CMD26)
FBB_CMD6 (FBC_CMD14)
FBC_CMD7
FBB_CMD8 (FBC_CMD1)
FBB_CMD9 (FBC_CMD22)
FBB_CMD10 (FBC_CMD20)
FBB_CMD11 (FBC_CMD24)
FBB_CMD12 (FBC_CMD18)
FBB_CMD13 (FBC_CMD9)
FBB_CMD14 (FBC_CMD29)
FBB_CMD15 (FBC_CMD8)
FBB_CMD16 (FBC_CMD27)
FBB_CMD17 (FBC_CMD15)
FBB_CMD18 (FBC_CMD11)
FBB_CMD19 (FBC_CMD16)
FBB_CMD20 (FBC_CMD28)
FBB_CMD21 (FBC_CMD3)
FBB_CMD22 (FBC_CMD17)
FBB_CMD23 (FBC_CMD5)
FBB_CMD24(FBC_CMD4)
FBB_CMD25 (FBC_CMD21)
FBB_CMD26 (FBC_CMD6)
FBB_CMD27 (FBC_CMD13)
FBB_CMD28 (FBC_CMD19)
FBB_CMD29 (FBC_CMD12)
FBC_CMD30
FBC_CMD31 (NC)

[21,22] VMB_DM[7:0]
VMB_DM0 E11
VMB_DM1 E3
VMB_DM2 A3
VMB_DM3 C9
VMB_DM4 F23
VMB_DM5 F27
VMB_DM6 C30
VMB_DM7 A24

FBC_DQM0
FBC_DQM1
FBC_DQM2
FBC_DQM3
FBC_DQM4
FBC_DQM5
FBC_DQM6
FBC_DQM7

[21,22] VMB_WDQS[7:0]
VMB_WDQS0 D10
VMB_WDQS1 D5
VMB_WDQS2 C3
VMB_WDQS3 B9
VMB_WDQS4 E23
VMB_WDQS5 E28
VMB_WDQS6 B30
VMB_WDQS7 A23

FBC_DQS_WP0
FBC_DQS_WP1
FBC_DQS_WP2
FBC_DQS_WP3
FBC_DQS_WP4
FBC_DQS_WP5
FBC_DQS_WP6
FBC_DQS_WP7

[21,22] VMB_RDQS[7:0]
VMB_RDQS0 D9
VMB_RDQS1 E4
VMB_RDQS2 B2
VMB_RDQS3 A9
VMB_RDQS4 D22
VMB_RDQS5 D28
VMB_RDQS6 A30
VMB_RDQS7 B23

FBC_DQS_RN0
FBC_DQS_RN1
FBC_DQS_RN2
FBC_DQS_RN3
FBC_DQS_RN4
FBC_DQS_RN5
FBC_DQS_RN6
FBC_DQS_RN7

G9 E9 G8 F9 F11 F12 G12 G6 F5 E6 F6 F4 G4 E2 F3 C2 D4 D3 C1 B3 C4 B5 C5 A11 C11 D11 B11 D8 B8 F24 G23 E24 G24 D21 E21 G21 F21 G27 D27 G26 E27 E29 F29 E30 D30 A32 C31 C32 B32 D29 A29 C29 B29 B21 C23 A21 C21 B24 C24 B26 C26
FBC_D00 FBC_D01 FBC_D02 FBC_D03 FBC_D04 FBC_D05 FBC_D06 FBC_D07 FBC_D08 FBC_D09 FBC_D10 FBC_D11 FBC_D12 FBC_D13 FBC_D14 FBC_D15 FBC_D16 FBC_D17 FBC_D18 FBC_D19 FBC_D20 FBC_D21 FBC_D22 FBC_D23 FBC_D24 FBC_D25 FBC_D26 FBC_D27 FBC_D28 FBC_D29 FBC_D30 FBC_D31 FBC_D32 FBC_D33 FBC_D34 FBC_D35 FBC_D36 FBC_D37 FBC_D38 FBC_D39 FBC_D40 FBC_D41 FBC_D42 FBC_D43 FBC_D44 FBC_D45 FBC_D46 FBC_D47 FBC_D48 FBC_D49 FBC_D50 FBC_D51 FBC_D52 FBC_D53 FBC_D54 FBC_D55 FBC_D56 FBC_D57 FBC_D58 FBC_D59 FBC_D60 FBC_D61 FBC_D62 FBC_D63
VMB_DQ0 VMB_DQ1 VMB_DQ2 VMB_DQ3 VMB_DQ4 VMB_DQ5 VMB_DQ6 VMB_DQ7 VMB_DQ8 VMB_DQ9 VMB_DQ10 VMB_DQ11 VMB_DQ12 VMB_DQ13 VMB_DQ14 VMB_DQ15 VMB_DQ16 VMB_DQ17 VMB_DQ18 VMB_DQ19 VMB_DQ20 VMB_DQ21 VMB_DQ22 VMB_DQ23 VMB_DQ24 VMB_DQ25 VMB_DQ26 VMB_DQ27 VMB_DQ28 VMB_DQ29 VMB_DQ30 VMB_DQ31 VMB_DQ32 VMB_DQ33 VMB_DQ34 VMB_DQ35 VMB_DQ36 VMB_DQ37 VMB_DQ38 VMB_DQ39 VMB_DQ40 VMB_DQ41 VMB_DQ42 VMB_DQ43 VMB_DQ44 VMB_DQ45 VMB_DQ46 VMB_DQ47 VMB_DQ48 VMB_DQ49 VMB_DQ50 VMB_DQ51 VMB_DQ52 VMB_DQ53 VMB_DQ54 VMB_DQ55 VMB_DQ56 VMB_DQ57 VMB_DQ58 VMB_DQ59 VMB_DQ60 VMB_DQ61 VMB_DQ62 VMB_DQ63

VMA_DQ[63:0] VMA_DQ[63:0] [19,20]
VMB_DQ[63:0] VMB_DQ[63:0] [21,22]

FBC_CLK0 D12
FBC_CLK0_N E12
FBC_CLK1 E20
FBC_CLK1_N F20
VMB_CLK0 [21]
VMB_CLK0# [21]
VMB_CLK1 [22]
VMB_CLK1# [22]

(FBC_DEBUG) FBB_DEBUG0 G14
(NC) FBB_DEBUG1 G20
10/02 : G14/G20 Change to NC

FBB_CMD_RFU0 C12
FBB_CMD_RFU1 C20
*60.4/F_4 R451
*60.4/F_4 R102
+1.35V_GFX
10/02 : C12/C20 Pull-up to FBVDDQ

FBB_WCK01 F8
FBB_WCK01_N E8
FBB_WCK23 A5
FBB_WCK23_N A6
FBB_WCK45 D24
FBB_WCK45_N D25
FBB_WCK67 B27
FBB_WCK67_N C27

FBB_WCKB01 D6
FBB_WCKB01_N D7
FBB_WCKB23 C6
FBB_WCKB23_N B6
FBB_WCKB45 F26
FBB_WCKB45_N E26
FBB_WCKB67 A26
FBB_WCKB67_N A27

FBB_PLL_AVDD H17 +FB_PLLAVDD
C809 0.1U/10V_4
PLACE CLOSE TO BALL

[18,19,20,21,22,42] +1.35V_GFX
[14,16,18,43] +1.05V_GFX

NB5

PROJECT : Y11C
Quanta Computer Inc.

Size	Document Number	Rev
Custom	N14P-GT - 2/5 (Memory)	1A
Date: Friday, February 14, 2014	Sheet 15 of 44	

U22D
N15P-GT-A2

[IFPA/B_LVDS]

AH8 IFPAB_PLLVDD
AG8 IFPA_IOVDD
AG9 IFPB_IOVDD
AJ8 IFPAB_RSET

IFPA_TXC AM6
IFPA_TXC_N AN6
IFPA_TXD0 AP3
IFPA_TXD0_N AN3
IFPA_TXD1 AN5
IFPA_TXD1_N AM5
IFPA_TXD2 AL6
IFPA_TXD2_N AK6
IFPA_TXD3 AJ6
IFPA_TXD3_N AH6

IFPB_TXC AJ9
IFPB_TXC_N AH9
IFPB_TXD4 AP6
IFPB_TXD4_N AP5
IFPB_TXD5 AM7
IFPB_TXD5_N AL7
IFPB_TXD6 AN8
IFPB_TXD6_N AM8
IFPB_TXD7 AK8
IFPB_TXD7_N AL8

[IFPC/D_TMDS]

AF7 IFPC_PLLVDD
AG7 IFPD_PLLVDD
AF6 IFPC_IOVDD
AG6 IFPD_IOVDD
AF8 IFPC_RSET
AN2 IFPD_RSET

IFPC_AUX_I2CW_SCL AG3
IFPC_AUX_I2CW_SDA_N AG2
IFPC_L0 AK1
IFPC_L0_N AJ1
IFPC_L1 AJ3
IFPC_L1_N AJ2
IFPC_L2 AH3
IFPC_L2_N AH4
IFPC_L3 AG5
IFPC_L3_N AG4

IFPD_AUX_I2CX_SCL AK3
IFPD_AUX_I2CX_SDA_N AK2
IFPD_L0 AM1
IFPD_L0_N AM2
IFPD_L1 AM3
IFPD_L1_N AM4
IFPD_L2 AL3
IFPD_L2_N AL4
IFPD_L3 AK4
IFPD_L3_N AK5

[IFPE/F_DP]

AB8 IFPEF_PLLVDD
AC7 IFPE_IOVDD
AC8 IFPF_IOVDD
AD6 IFPEF_RSET

IFPE_AUX_I2CY_SCL AB3
IFPE_AUX_I2CY_SDA_N AB4
IFPE_L0 AD2
IFPE_L0_N AD3
IFPE_L1 AD1
IFPE_L1_N AC1
IFPE_L2 AC2
IFPE_L2_N AC3
IFPE_L3 AC4
IFPE_L3_N AC5

IFPF_AUX_I2CZ_SCL AF3
IFPF_AUX_I2CZ_SDA_N AF2
IFPF_L0 AE3
IFPF_L0_N AE4
IFPF_L1 AF4
IFPF_L1_N AF5
IFPF_L2 AD4
IFPF_L2_N AD5
IFPF_L3 AG1
IFPF_L3_N AF1

[DACA/B_CRT]

AG10 DACA_VDD
AP9 DACA_VREF
AP8 DACA_RSET

DACA_RED AK9
DACA_GREEN AL10
DACA_BLUE AL9
DACA_HSYNC AM9
DACA_VSYNC AN9

I2CA_SCL R4 2CA_SCL 1.8K_4 R120
I2CA_SDA R5 2CA_SDA 1.8K_4 R121

[XTAL IN]

XTAL_IN H3 CLK_27M_VGA_2
XTAL_OUT H2 XTALOUT
XTAL_OUTBUFF J4 R463 10K_4
XTAL_SSIN H1 R459 10K_4

R456 *0_4/S CLK_27M_XTAL_IN [31]

Y5
*27MHZ +-10PPM
C646 *10P/50V_4
C642 *10P/50V_4

[14,17,18,41,43] +3V_GFX
[14,15,18,43] +1.05V_GFX

PLLVDD : 200mA

+1.05V_GFX L42 HCB1608KF-300T30 NV_PLLVDD AD8 PLLVDD
C684 22U/6.3VS_6
C194 0.1U/10V_4

SP_PLLVDD AE8 SP_PLLVDD

+1.05V_GFX L43 HCB1005KF-181T15(180,1.5A)_6 VID_PLLVDD AD7 VID_PLLVDD
C685 22U/6.3VS_6
C680 4.7U/6.3V_4
C198 0.1U/10V_4
C205 0.1U/10V_4

PLACE CLOSE TO GPU
PLACE CLOSE TO BALLS

DV2...Change Y1 P/N and footprint
vendor suggest change C117,C84 to 10pf 1/11

NB5

PROJECT : Y11C
Quanta Computer Inc.
Size A3
Document Number N14P-GT - 3/5 (Display)
Rev 1A
Date: Friday, February 14, 2014
Sheet 16 of 44

U22E
N15P-GT-A2

[MIOA]

[MIOB]

[MISC_GPIO/I2C/JTAG/THER]

[MISC2_ROM]

+3V_GFX

R93 *4.99K/F_4 — R72 *4.99K/F_4 — R81 *10K/F_4
ROM_SI
ROM_SO
ROM_SCLK
R92 20K/F_4 — R71 4.99K/F_4 — R80 4.99K/F_4

+3V_AON

STRAP0 — R98 49.9K/F_4 — R107 *45.3K/F_4 — R103 *15K/F_4 — R99 *34.8K/F_4 — R97 *20K/F_4
STRAP1
STRAP2
STRAP3
STRAP4
R89 *4.99K/F_4 — R110 *4.99K/F_4 — R104 *24.9K/F_4 — R100 *4.99K/F_4 — R88 *45.3K/F_4

4.99K/F_4: CS24992FB26 RES CHIP 4.99K 1/16W +1%(0402)
10K/F_4: CS31002FB26 RES CHIP 10K 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)
24.9K/F_4: CS32492FB16 RES CHIP 24.9K 1/16W +-1%(0402)
30.1K/F_4: CS33012FB18 RES CHIP 30.1K 1/16W +-1%(0402)
34.8K/F_4: CS33482FB22 RES CHIP 34.8K 1/16W +-1% (0402)
45.3K/F_4: CS34532FB18 RES CHIP 45.3K 1/16W +-1% (0402)

Logical Strap Bit Mapping

Table 15-2. Resistance Mapping to Hex Values

Resistor Values	Pull-Up to 3V3_MAIN	Pull-Down to GND
4.99 kΩ	1000	0000
10.0 kΩ	1001	0001
15.0 kΩ	1010	0010
20.0 kΩ	1011	0011
24.9 kΩ	1100	0100
30.1 kΩ	1101	0101
34.8 kΩ	1110	0110
45.3 kΩ	1111	0111

Default: Hynix 2G VRAM

Vendor	Q : P/N	Mfr. P/N	ROM_SI	H.P
Hynix (1.35V)		H5TC4G63AFR-11C	0011	20K PD
Micron (1.35V)		MT41J256M16HA-093G:E	0100	24.9K PD
Samsung (1.35V)		K4W4G1646D-BC1A	0101	30.1K PD

N15P-GT device ID=0x1391

Netname	N15P-GT
ROM_SO	4.99K PD
ROM_SCLK	4.99K PD
STRAP0	49.9K PU
STRAP1	NC
STRAP2	NC
STRAP3	NC
STRAP4	NC

Table 15-4 GB3-256 Multi-Level Mode Strapping

Strap Pin Name	Logical Strapping Bit 3	Logical Strapping Bit 2	Logical Strapping Bit 1	Logical Strapping Bit 0
ROM_SCLK	PCI_DEVID[4]	SUB_VENDOR	PCI_DEVID[5]	PEX_PLL_EN_TERM
ROM_SI	RAM_CFG[3]	RAM_CFG[2]	RAM_CFG[1]	RAM_CFG[0]
ROM_SO	FB[1]	FB[0]	SMB_ALT_ADDR	VGA_DEVICE
STRAP0	USER[3]	USER[2]	USER[1]	USER[0]
STRAP1	3GIO_PADCFG[3]	3GIO_PADCFG[2]	3GIO_PADCFG[1]	3GIO_PADCFG[0]
STRAP2	PCI_DEVID[3]	PCI_DEVID[2]	PCI_DEVID[1]	PCI_DEVID[0]
STRAP3	SOR3_EXPOSED	SOR2_EXPOSED	SOR1_EXPOSED	SOR0_EXPOSED
STRAP4	RESERVED	PCIE_SPEED_CHANGE_GEN3	PCIE_MAX_SPEED	DP_PLL_VDD33V

Table 28. N15S-GX and N15P-GT DDR3L Recommended Memories 256Mx16 Configuration

Configuration	Vendor	Strap	FBVDD/ FBVDDQ	Manufacturer Part Number	Max Speed CLK (MHz)	Memory Date Code Minimum	Status
256Mx16 DDR3L	Hynix	0x3	1.35 V/ 1.35 V	H5TC4G63AFR-11C	900	N/A	Production candidate
	Micron	0x4	1.35 V/ 1.35 V	MT41J256M16HA-093G:E	900	1322	Production candidate
	Samsung	0x5	1.35V/ 1.35V	K4W4G1646D-BC1A	900	N/A	Post-production candidate

GPIO ASSIGNMENTS

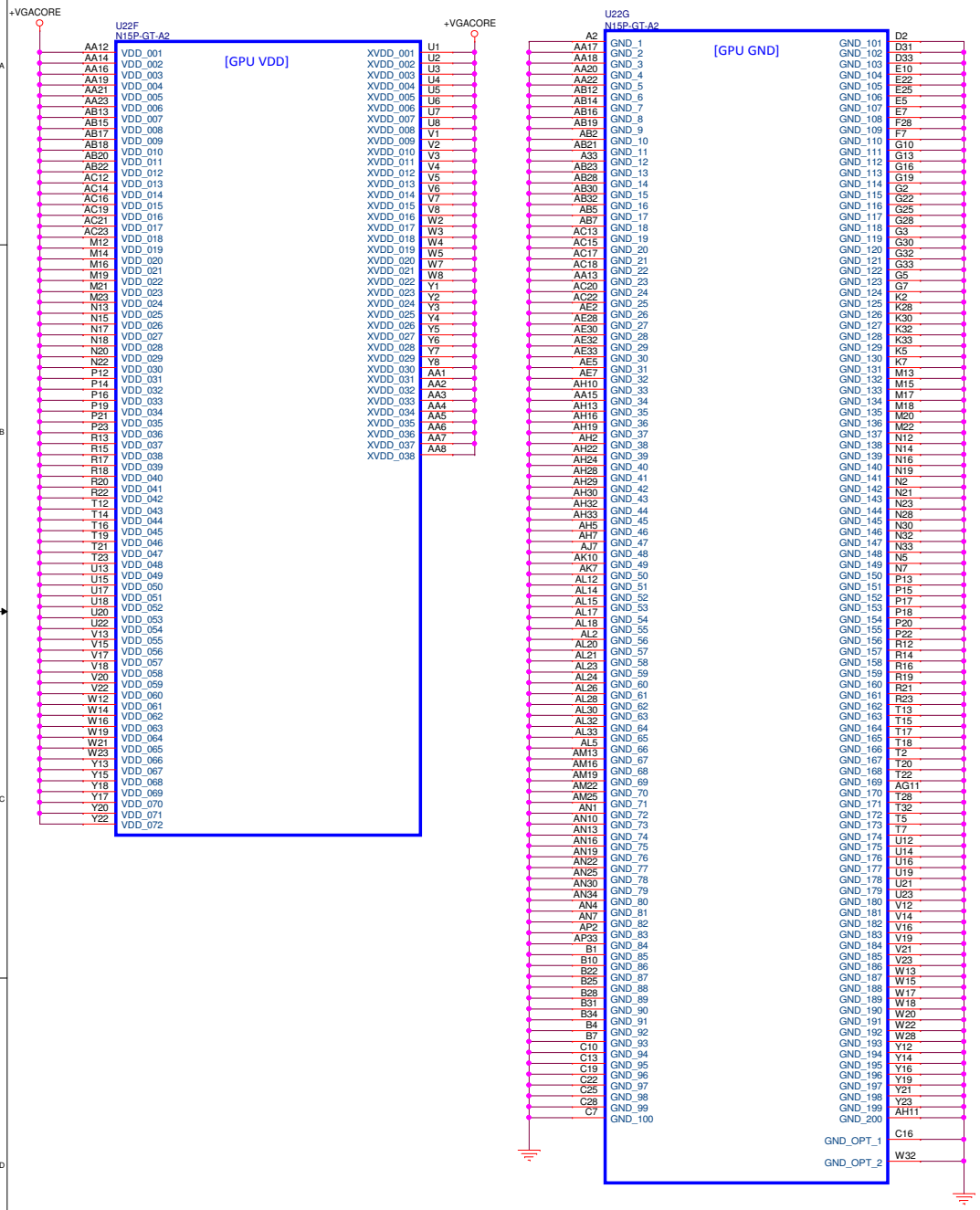
GPIO	GM107/GM108	GK208/GK107
GPIO 0	GC6_FB_EN	GPIO_FB_CLAMP
GPIO 1	MEM_VDD_CTL	MEM_VDD_CTL
GPIO 2	LCD_BL_PWM	LCD_BL_PWM
GPIO 3	LCD_PWR_EN	LCD_PWR_EN
GPIO 4	LCD_BL_EN	LCD_BL_EN
GPIO 5	GC6_PWR_EN	DEBUG SERVICE HEADER
GPIO 6	GPU_EVENT*	Remote Sensor Error Correction
GPIO 7	DEBUG SERVICE HEADER	3D STEREO
GPIO 8	SYS_PEX_RST_MON*	GPU OVERTEMP
GPIO 9	Remote Sensor Error Correction	GPU THERMAL ALERT/FAN_PWM
GPIO 10	MEM_VREF_CTL(N/A)	MEM_VREF_CTL
GPIO 11	NVVDD PWM_VID	NVVDD PWM_VID
GPIO 12	AC DETECT	AC DETECT
GPIO 13	NVVDD PSI	NVVDD PSI
GPIO 14	IFPG HDP	N/C
GPIO 15	N/C	N/C
GPIO 16	FRAME LOCK	FRAME LOCK
GPIO 17	IFPD HDP(DP)	IFPD HDP(DPIIM)
GPIO 18	IFPE HDP(DPIIM)	IFPE HDP(DPIIM)
GPIO 19	IFPF HDP(DPIIM)	IFPF HDP(DPIIM)
GPIO 20	GC5_MODE	N/A
GPIO 21	GPU_PEX_RST_HOLD*	N/A

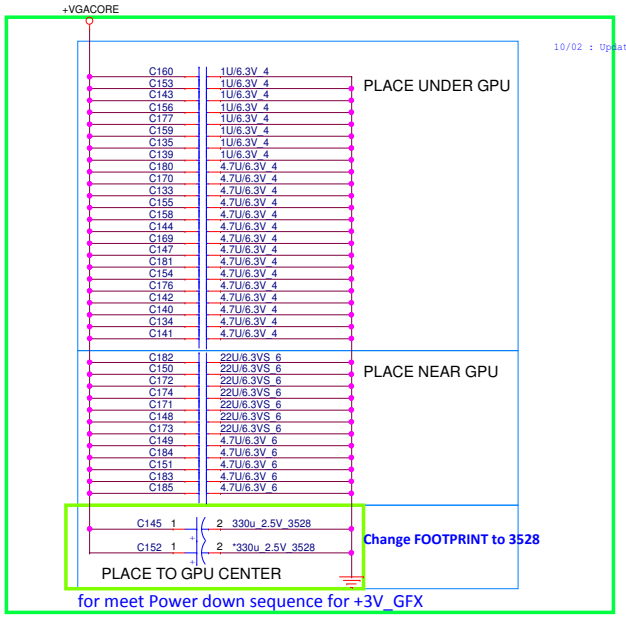
PV...Add R7475/R7474 for SMBS enable
GFx SMBus Isolation

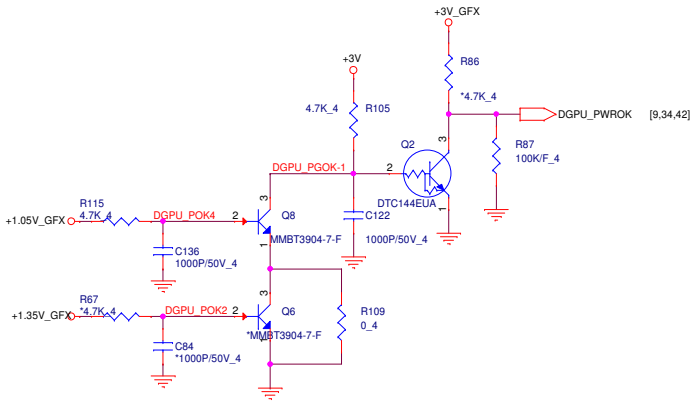
Project	Y11C
Quanta Computer Inc.	
Size	Custom
Document Number	N14P-GT - 4/5 (MISC)
Rev	1A
Date	Friday, February 14, 2014
Sheet	17 of 44

NB5

VDD/XVDD : 25.72A







[41] +VGACORE
[14,15,16,43] +1.05V_GFX
[15,19,20,21,22,42] +1.35V_GFX
[14,17,41,43] +3V_GFX
[6,7,8,9,10,11,12,13,14,17,23,24,25,26,27,28,29,30,31,33,34,39,40,41] +3V

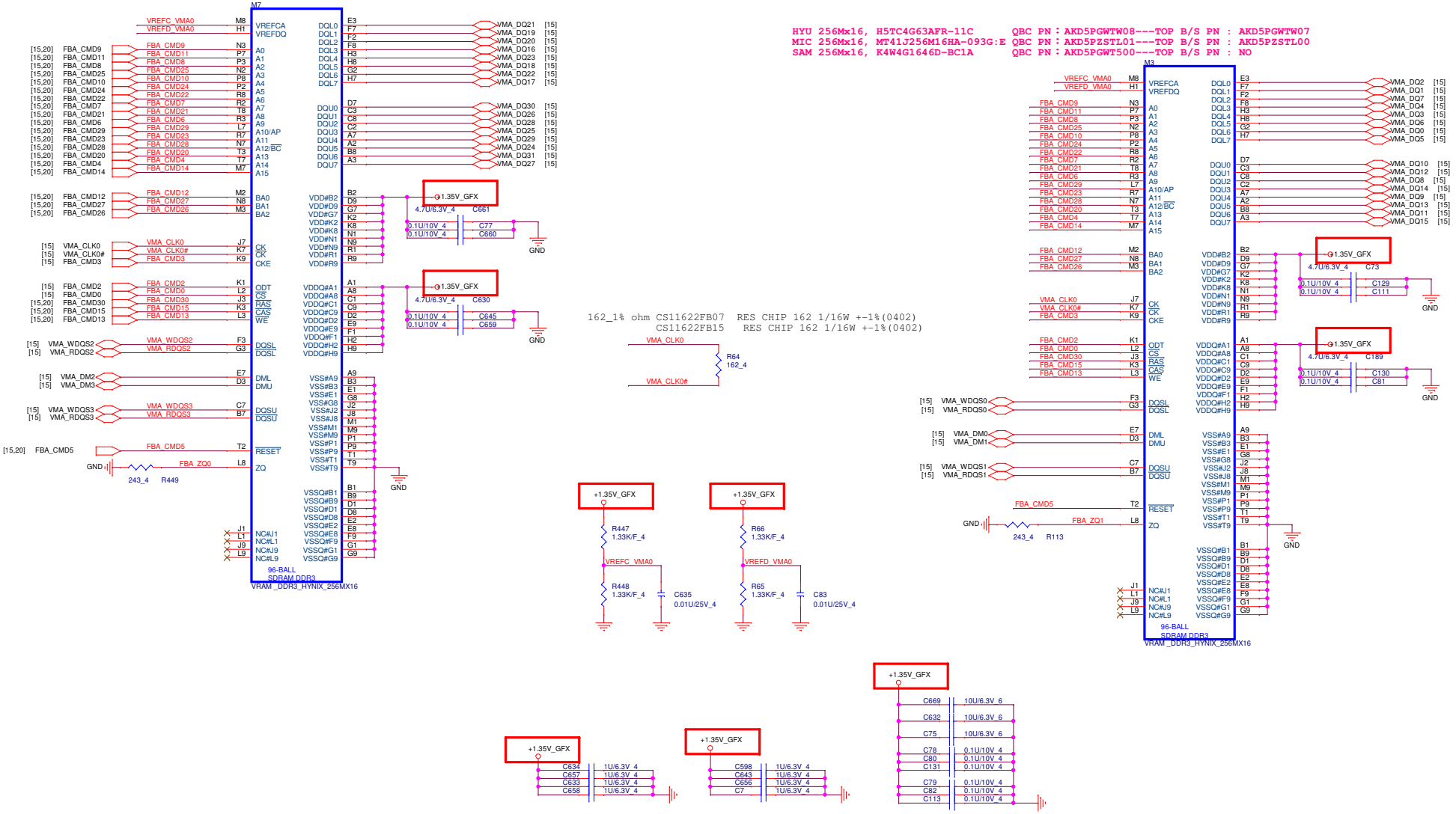
NB5

PROJECT : Y11C
Quanta Computer Inc.

Size	Document Number	Rev
Custom	N14P-GT - 5/5 (Power)	1A

Date: Friday, February 14, 2014 Sheet 18 of 44

HYU 256Mx16, H5TC4G63AFR-11C QBC PN : AKD5PGWTW08---TOP B/S PN : AKD5PGWTW07
MIC 256Mx16, MT41J256M16HA-093G:E QBC PN : AKD5PZSTL01---TOP B/S PN : AKD5PZSTL00
SAM 256Mx16, K4W4G1646D-BC1A QBC PN : AKD5PGWT500---TOP B/S PN : NO



HYU 256Mx16, H5TC4G63AFR-11C QBC PN : AKD5PGWTW08---TOP B/S PN : AKD5PGWTW07
MIC 256Mx16, MT41J256M16HA-093G:E QBC PN : AKD5PZSTL01---TOP B/S PN : AKD5PZSTL00
SAM 256Mx16, K4W4G1646D-BC1A QBC PN : AKD5PGWT500---TOP B/S PN : NO

M8

VREFC_VMA1 M8 VREFCA
VREFD_VMA1 H1 VREFDQ

[15,19] FBA_CMD9 N3 A0
[15,19] FBA_CMD11 P7 A1
[15,19] FBA_CMD8 P3 A2
[15,19] FBA_CMD25 N2 A3
[15,19] FBA_CMD10 P8 A4
[15,19] FBA_CMD24 P2 A5
[15,19] FBA_CMD22 R8 A6
[15,19] FBA_CMD7 R2 A7
[15,19] FBA_CMD21 T8 A8
[15,19] FBA_CMD6 R3 A9
[15,19] FBA_CMD29 L7 A10/AP
[15,19] FBA_CMD23 R7 A11
[15,19] FBA_CMD28 N7 A12/BC
[15,19] FBA_CMD20 T3 A13
[15,19] FBA_CMD4 T7 A14
[15,19] FBA_CMD14 M7 A15

[15,19] FBA_CMD12 M2 BA0
[15,19] FBA_CMD27 N8 BA1
[15,19] FBA_CMD26 M3 BA2

[15] VMA_CLK1 J7 CK
[15] VMA_CLK1# K7 CK
[15] FBA_CMD19 K9 CKE

[15] FBA_CMD18 K1 ODT
[15] FBA_CMD16 L2 CS
[15,19] FBA_CMD30 J3 RAS
[15,19] FBA_CMD15 K3 CAS
[15,19] FBA_CMD13 L3 WE

[15] VMA_WDQS4 F3 DQSL
[15] VMA_RDQS4 G3 DQSL

[15] VMA_DM4 E7 DML
[15] VMA_DM6 D3 DMU

[15] VMA_WDQS6 C7 DQSU
[15] VMA_RDQS6 B7 DQSU

[15,19] FBA_CMD5 T2 RESET
GND FBA_ZQ2 L8 ZQ
243_4 R472

DQL0 E3 VMA_DQ33 [15]
DQL1 F7 VMA_DQ38 [15]
DQL2 F2 VMA_DQ35 [15]
DQL3 F8 VMA_DQ37 [15]
DQL4 H3 VMA_DQ32 [15]
DQL5 H8 VMA_DQ39 [15]
DQL6 G2 VMA_DQ34 [15]
DQL7 H7 VMA_DQ36 [15]

DQU0 D7 VMA_DQ52 [15]
DQU1 C3 VMA_DQ49 [15]
DQU2 C8 VMA_DQ55 [15]
DQU3 C2 VMA_DQ48 [15]
DQU4 A7 VMA_DQ53 [15]
DQU5 A2 VMA_DQ50 [15]
DQU6 B8 VMA_DQ54 [15]
DQU7 A3 VMA_DQ51 [15]

VDD#B2 B2 1.35V_GFX
VDD#D9 D9
VDD#G7 G7
VDD#K2 K2
VDD#K8 K8
VDD#N1 N1
VDD#N9 N9
VDD#R1 R1
VDD#R9 R9
4.7U/6.3V_4 C678
0.1U/10V_4 C666
0.1U/10V_4 C662
GND

VDDQ#A1 A1 1.35V_GFX
VDDQ#A8 A8
VDDQ#C1 C1
VDDQ#C9 C9
VDDQ#D2 D2
VDDQ#E9 E9
VDDQ#F1 F1
VDDQ#H2 H2
VDDQ#H9 H9
4.7U/6.3V_4 C855
0.1U/10V_4 C202
0.1U/10V_4 C200
GND

VSS#A9 A9
VSS#B3 B3
VSS#E1 E1
VSS#G8 G8
VSS#J2 J2
VSS#J8 J8
VSS#M1 M1
VSS#M9 M9
VSS#P1 P1
VSS#P9 P9
VSS#T1 T1
VSS#T9 T9
GND

VSSQ#B1 B1
VSSQ#B9 B9
VSSQ#D1 D1
VSSQ#D8 D8
VSSQ#E2 E2
VSSQ#E8 E8
VSSQ#F9 F9
VSSQ#G1 G1
VSSQ#G9 G9

J1 NC#J1 L1
NC#L1 L1
J9 NC#J9 L9
NC#L9 L9

96-BALL
SDRAM DDR3
VRAM _DDR3_HYNIX_256MX16

162_1% ohm CS11622FB07 RES CHIP 162 1/16W +-1%(0402)
CS11622FB15 RES CHIP 162 1/16W +-1%(0402)

VMA_CLK1
R135 162_4
VMA_CLK1#

+1.35V_GFX
R136 1.33K/F_4
VREFC_VMA1
R137 1.33K/F_4
C199 0.01U/25V_4

+1.35V_GFX
R475 1.33K/F_4
VREFD_VMA1
R474 1.33K/F_4
C679 0.01U/25V_4

M4

VREFC_VMA1 M8 VREFCA
VREFD_VMA1 H1 VREFDQ

FBA_CMD9 N3 A0
FBA_CMD11 P7 A1
FBA_CMD8 P3 A2
FBA_CMD25 N2 A3
FBA_CMD10 P8 A4
FBA_CMD24 P2 A5
FBA_CMD22 R8 A6
FBA_CMD7 R2 A7
FBA_CMD21 T8 A8
FBA_CMD6 R3 A9
FBA_CMD29 L7 A10/AP
FBA_CMD23 R7 A11
FBA_CMD28 N7 A12/BC
FBA_CMD20 T3 A13
FBA_CMD4 T7 A14
FBA_CMD14 M7 A15

FBA_CMD12 M2 BA0
FBA_CMD27 N8 BA1
FBA_CMD26 M3 BA2

VMA_CLK1 J7 CK
VMA_CLK1# K7 CK
FBA_CMD19 K9 CKE

FBA_CMD18 K1 ODT
FBA_CMD16 L2 CS
FBA_CMD30 J3 RAS
FBA_CMD15 K3 CAS
FBA_CMD13 L3 WE

[15] VMA_WDQS5 F3 DQSL
[15] VMA_RDQS5 G3 DQSL

[15] VMA_DM5 E7 DML
[15] VMA_DM7 D3 DMU

[15] VMA_WDQS7 C7 DQSU
[15] VMA_RDQS7 B7 DQSU

FBA_CMD5 T2 RESET
GND FBA_ZQ3 L8 ZQ
243_4 R138

DQL0 E3 VMA_DQ41 [15]
DQL1 F7 VMA_DQ44 [15]
DQL2 F2 VMA_DQ40 [15]
DQL3 F8 VMA_DQ45 [15]
DQL4 H3 VMA_DQ42 [15]
DQL5 G2 VMA_DQ46 [15]
DQL6 H7 VMA_DQ43 [15]
DQL7 VMA_DQ47 [15]

DQU0 D7 VMA_DQ63 [15]
DQU1 C3 VMA_DQ57 [15]
DQU2 C8 VMA_DQ60 [15]
DQU3 C2 VMA_DQ56 [15]
DQU4 A7 VMA_DQ62 [15]
DQU5 A2 VMA_DQ58 [15]
DQU6 B8 VMA_DQ61 [15]
DQU7 A3 VMA_DQ59 [15]

VDD#B2 B2 1.35V_GFX
VDD#D9 D9
VDD#G7 G7
VDD#K2 K2
VDD#K8 K8
VDD#N1 N1
VDD#N9 N9
VDD#R1 R1
VDD#R9 R9
4.7U/6.3V_4 C203
0.1U/10V_4 C166
0.1U/10V_4 C161
GND

VDDQ#A1 A1 1.35V_GFX
VDDQ#A8 A8
VDDQ#C1 C1
VDDQ#C9 C9
VDDQ#D2 D2
VDDQ#E9 E9
VDDQ#F1 F1
VDDQ#H2 H2
VDDQ#H9 H9
4.7U/6.3V_4 C127
0.1U/10V_4 C162
0.1U/10V_4 C165
GND

VSS#A9 A9
VSS#B3 B3
VSS#E1 E1
VSS#G8 G8
VSS#J2 J2
VSS#J8 J8
VSS#M1 M1
VSS#M9 M9
VSS#P1 P1
VSS#P9 P9
VSS#T1 T1
VSS#T9 T9
GND

VSSQ#B1 B1
VSSQ#B9 B9
VSSQ#D1 D1
VSSQ#D8 D8
VSSQ#E2 E2
VSSQ#E8 E8
VSSQ#F9 F9
VSSQ#G1 G1
VSSQ#G9 G9

J1 NC#J1 L1
NC#L1 L1
J6 NC#J9 L9
NC#L9 L9

96-BALL
SDRAM DDR3
VRAM _DDR3_HYNIX_256MX16

+1.35V_GFX
C664 1U/6.3V_4
C673 1U/6.3V_4
C674 1U/6.3V_4
C663 1U/6.3V_4

+1.35V_GFX
C665 1U/6.3V_4
C675 1U/6.3V_4
C676 1U/6.3V_4
C667 1U/6.3V_4

+1.35V_GFX
C167 10U/6.3V_6
C178 10U/6.3V_6
C204 10U/6.3V_6
C168 0.1U/10V_4
C201 0.1U/10V_4
C163 0.1U/10V_4
C157 0.1U/10V_4
C164 0.1U/10V_4
C128 0.1U/10V_4

NB5

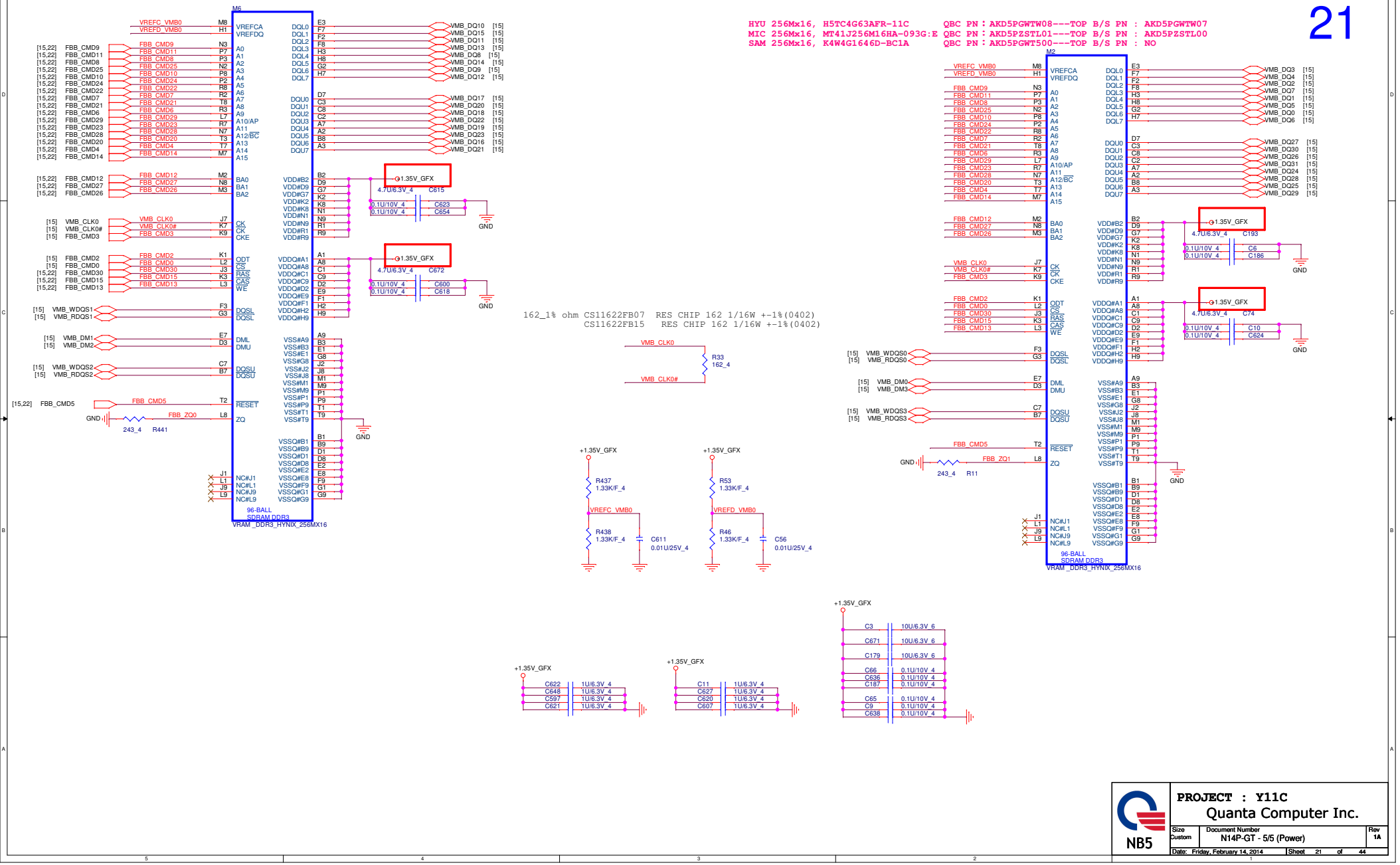
PROJECT : Y11C
Quanta Computer Inc.

Size	Document Number	Rev
Custom	N14P-GT - 5/5 (Power)	1A

Date: Friday, February 14, 2014 Sheet 20 of 44

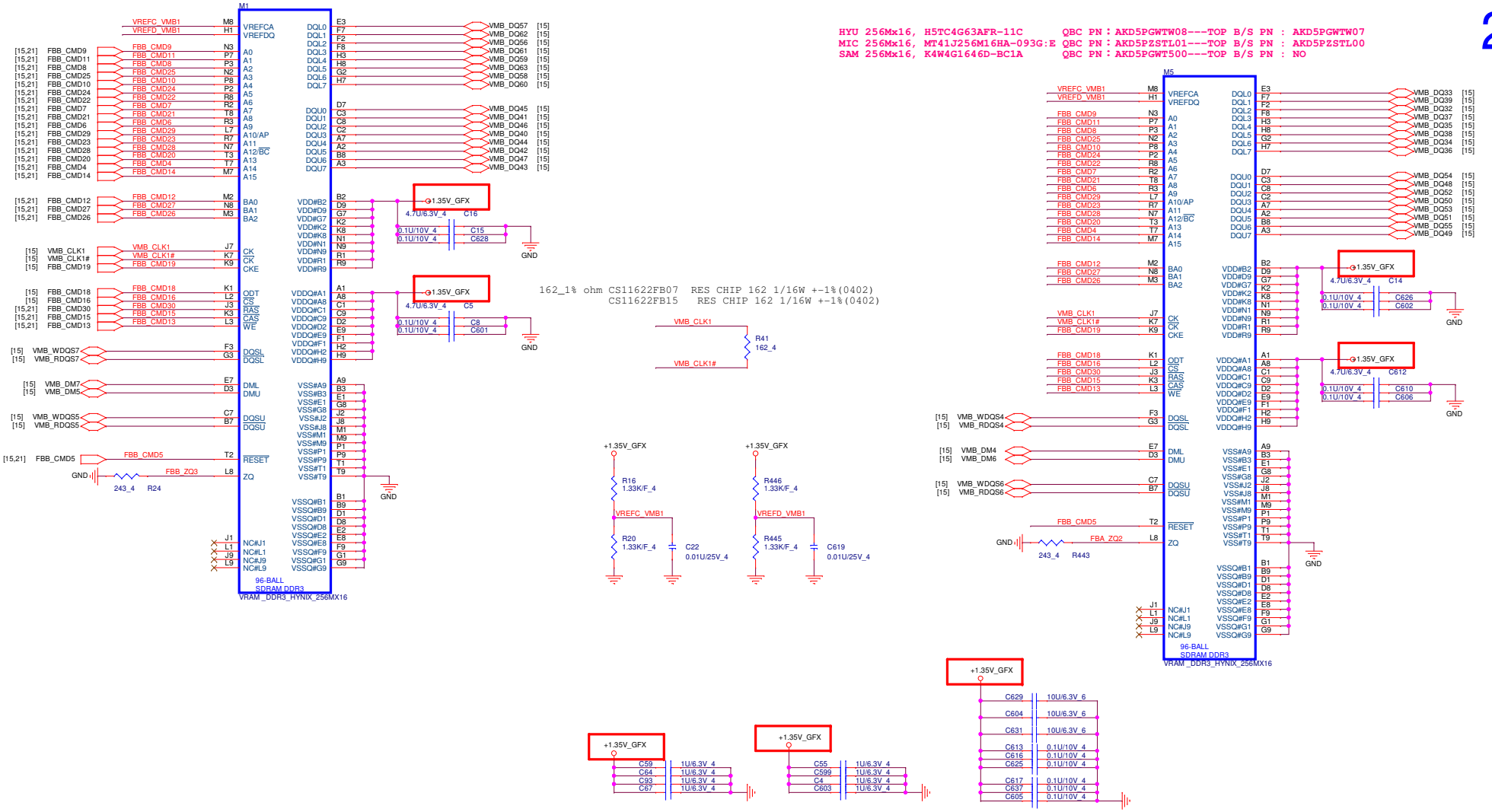
HYU 256Mx16, H5TC4G63AFR-11C
MIC 256Mx16, MT41J256M16HA-093G:E
SAM 256Mx16, K4W4G1646D-BC1A

QBC PN : AKD5PGWTW08---TOP B/S PN : AKD5PGWTW07
QBC PN : AKD5PZSTL01---TOP B/S PN : AKD5PZSTL00
QBC PN : AKD5PGWT500---TOP B/S PN : NO



PROJECT : Y11C	
Quanta Computer Inc.	
NB5	
Size: Custom	Document Number: N14P-GT - 5/5 (Power)
Rev: 1A	
Date: Friday, February 14, 2014	Sheet 21 of 44

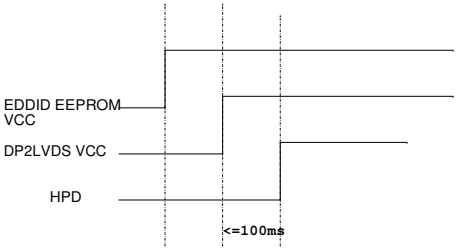
HYU 256Mx16, H5TC4G63AFR-11C QBC PN : AKD5PGWTW08---TOP B/S PN : AKD5PGWTW07
MIC 256Mx16, MT41J256M16HA-093G:E QBC PN : AKD5PZSTL01---TOP B/S PN : AKD5PZSTL00
SAM 256Mx16, K4W4G1646D-BC1A QBC PN : AKD5PGWT500---TOP B/S PN : NO



PROJECT : Y11C			
Quanta Computer Inc.			
NB5	Size: Custom	Document Number: N14P-GT - 5/5 (Power)	Rev: 1A
	Date: Friday, February 14, 2014	Sheet 22 of 44	

RTD2136 Dual Channel only

RTD2136S Power Up Sequence 23



Reserve for co layout EDP CON, EDP only please stuff

R76 *0_4 INT_eDP_AUXN_R
R77 *0_4 INT_eDP_AUXP_R
R78 *0_4 INT_eDP_TXP0_R
R79 *0_4 INT_eDP_TXN0_R
R83 *0_4 INT_eDP_TXP1_R
R73 *0_4 INT_eDP_TXN1_R

INT_eDP_AUXN_R 24
INT_eDP_AUXP_R 24
INT_eDP_TXP0_R 24
INT_eDP_TXN0_R 24
INT_eDP_TXP1_R 24
INT_eDP_TXN1_R 24

+3.3V_2136_A
+1.2V_2136
+3.3V_2136_D
Pine 18: keep 80 Mile Trace
+SWR_LX

R75 100k/F_4
EDP_HPD_2136

U3
RTD2136R

DP_HPD
TESTMODE
AUX-CH_N
AUX-CH_P
LANE0P
LANE0N
LANE1P
LANE1N
CIICSCL1
CIICSDA1
MIICSDA1
MIICSCL1
MIICSDA0
MIICSCL0
NC
SWR_LX
DP_V12
SWR_VCCK
VCCK
DP_V33
SWR_VDD
PVCC
DP_GND
GND
DP_REXT
PWMOUT
PANEL_VCC
PWMIN
BL_EN

TXO0- 42
TXO0+ 41
TXO1- 40
TXO1+ 39
TXO2- 38
TXO2+ 37
TXOC- 36
TXOC+ 35
TXO3- 34
TXO3+ 33
TXE0- 32
TXE0+ 31
TXE1- 30
TXE1+ 29
TXE2- 28
TXE2+ 27
TXEC- 26
TXEC+ 25
TXE3- 24
TXE3+ 23
BL_EN 44

TXLOUT0-_2136 24
TXLOUT0+_2136 24
TXLOUT1-_2136 24
TXLOUT1+_2136 24
TXLOUT2- 24
TXLOUT2+ 24
TXLCLKOUT- 24
TXLCLKOUT+ 24
TXUOUT0- 24
TXUOUT0+ 24
TXUOUT1- 24
TXUOUT1+ 24
TXUOUT2- 24
TXUOUT2+ 24
TXUCLKOUT- 24
TXUCLKOUT+ 24
LVDS_BLON_2136
LVDS_BLON_2136 24

2 INT_eDP_AUXN
2 INT_eDP_AUXP
INT_eDP_AUXN
INT_eDP_AUXP
C89 0.1U/10V_4 INT_eDP_AUXN_2136
C90 0.1U/10V_4 INT_eDP_AUXP_2136

2 INT_eDP_TXP0
2 INT_eDP_TXN0
2 INT_eDP_TXP1
2 INT_eDP_TXN1
INT_eDP_TXP0
INT_eDP_TXN0
INT_eDP_TXP1
INT_eDP_TXN1
C87 0.1U/10V_4 INT_eDP_TXP0_2136
C88 0.1U/10V_4 INT_eDP_TXN0_2136
C100 0.1U/10V_4 INT_eDP_TXP1_2136
C96 0.1U/10V_4 INT_eDP_TXN1_2136

SCL1_2136
SDA1_2136

8,11,12,13,29 SMB_RUN_CLK
8,11,12,13,29 SMB_RUN_DAT
R84 *0_4
R85 *0_4
Reserve

24 EDIDDATA_2136
24 EDIDCLK_2136
SDAT_2136
SCLK_2136

IC底部需接GND

R68 12K_4
Use 1% Res on R2178

2136_DISP_ON
2136_DPST_PWM
2136_DISP_ON 24
2136_DPST_PWM 24
PCH_DPST_PWM
R32 100K/F_4

C1 0.1U/10V_4

8,13,34 MBCLK2
8,13,34 MBDATA2
R69 *0_4/S SCL1_2136
R70 *0_4/S SDA1_2136
Default

For eDP, close to U8016

6,24 PCH_LVDS_BLON
6,24 PCH_DISP_ON
6,24 PCH_DPST_PWM
PCH_LVDS_BLON R50 *0_4 LVDS_BLON_2136
PCH_DISP_ON R51 *0_4 2136_DISP_ON
PCH_DPST_PWM R36 *0_4 2136_DPST_PWM

+3V
R55 4.7K_4 SCLK_2136
SDAT_2136
R56 4.7K_4

6,24 ULT_EDP_HPD
ULT_EDP_HPD R82 1K/F_4 EDP_HPD_2136

6,7,8,9,10,11,12,13,18,19,20,24,25,26,27,28,29,30,31,33,34,39,40,41 +3V

L8: need use CV-4709MN00 for Vendor suggestion

+SWR_LX
L10 *4.7UH_1A
R58 *0_8/S
+1.2V_2136
C76 22U/6.3VS_6
C68 0.1U/10V/X7R_4
C61 0.1U/10V/X7R_4
C86 0.1U/10V/X7R_4
Close to Pin11
Close to Pin43
Close to Pin17

keep 80 Mile Trace
+3V
+3.3V_2136_D
L11 PBY160808T-600Y-N(60,3A)
USING 60R 2A
C94 10U/6.3VS_6
C95 0.1U/10V/X7R_4
C46 0.1U/10V/X7R_4
CLOSE TO Pin22

+3.3V_2136_D
C53 0.1U/10V/X7R_4
C54 22U/6.3VS_6
Close to Pin18

+3V
+3.3V_2136_A
L9 PBY160808T-600Y-N(60,3A)
USING 60R 1A
C51 10U/6.3V_6
C47 0.1U/10V/X7R_4
C45 0.1U/10V/X7R_4
Close to Pin5

SWR MODE	LDO MODE
Stuff L8	Stuff R86

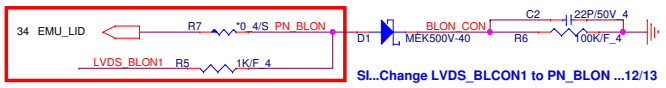
NB5

PROJECT : Y11C
Quanta Computer Inc.

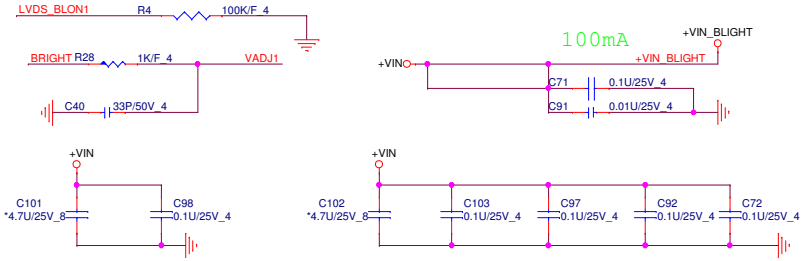
Size	Document Number	Rev
Custom	RTD2136	1A

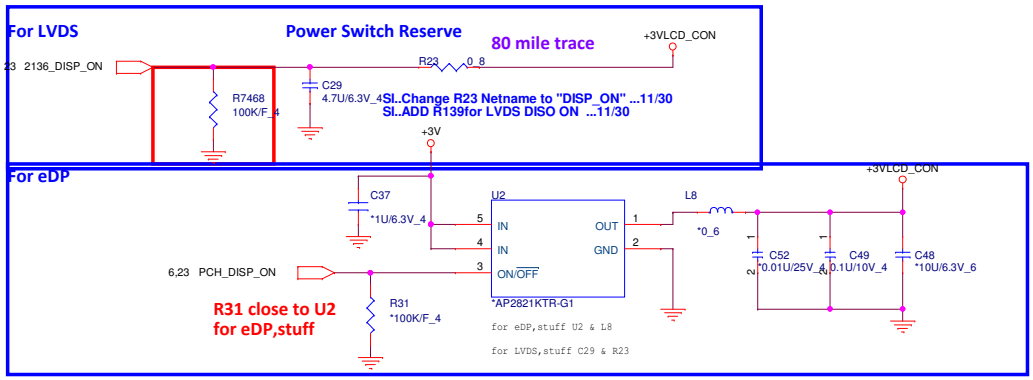
Date: Friday, February 14, 2014 Sheet 23 of 44

LID Switch

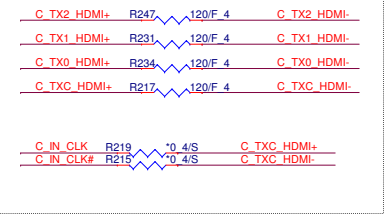


SI...Change LVDS_BLCON1 to PN_BLON ...12/13

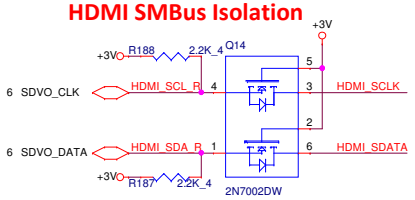




EMI Solution

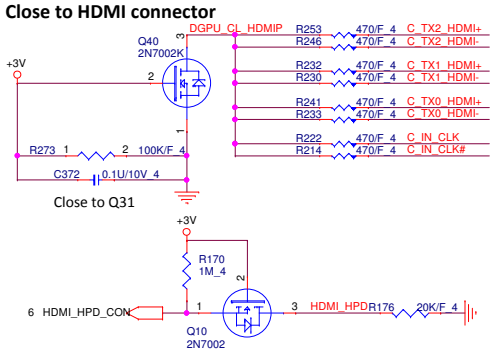


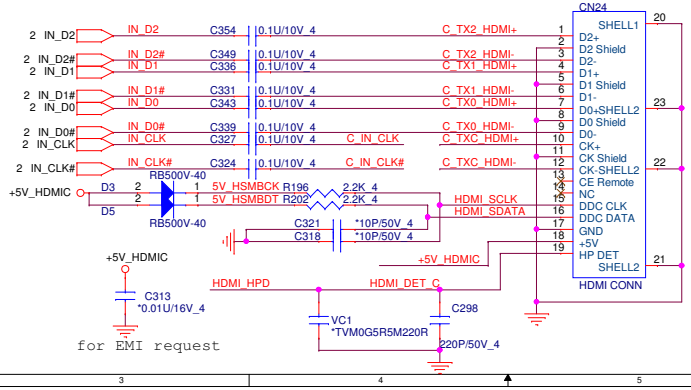
HDMI SMBus Isolation

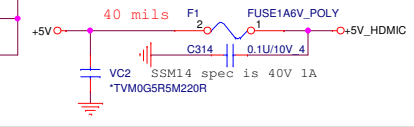


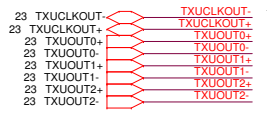
For EDP Only: stuff Cap
For LVDS only stuff Resistor

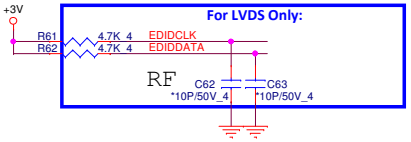
Close to HDMI connector

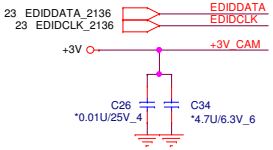


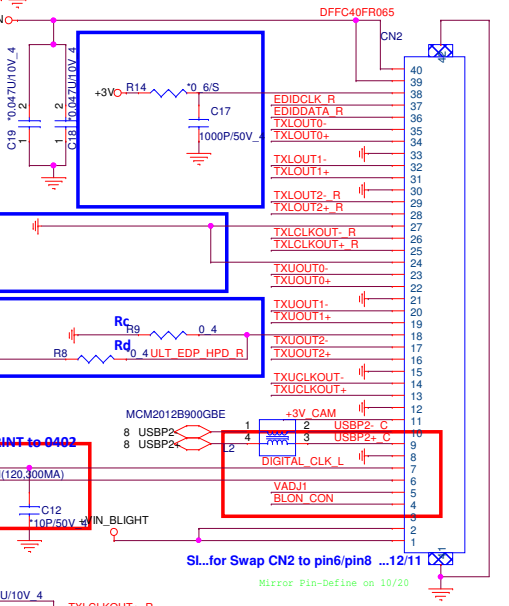


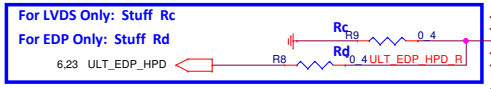


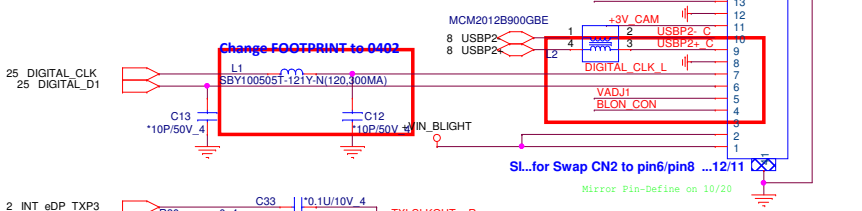


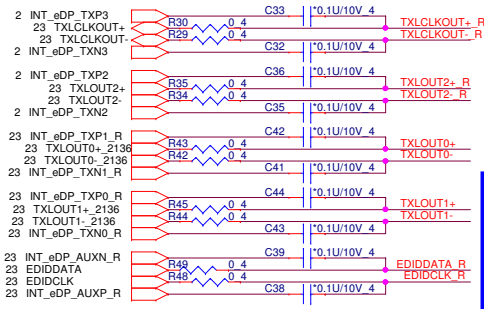






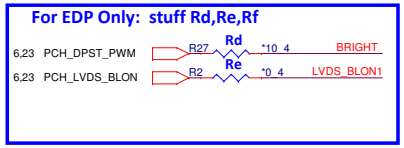




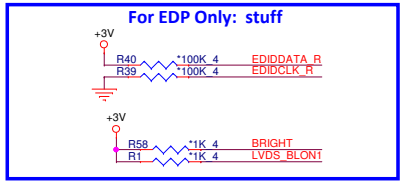


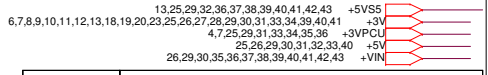
For LVDS Only: stuff Ra,Rb,Rc

For EDP Only: stuff Rd,Re,Rf



For EDP Only: stuff





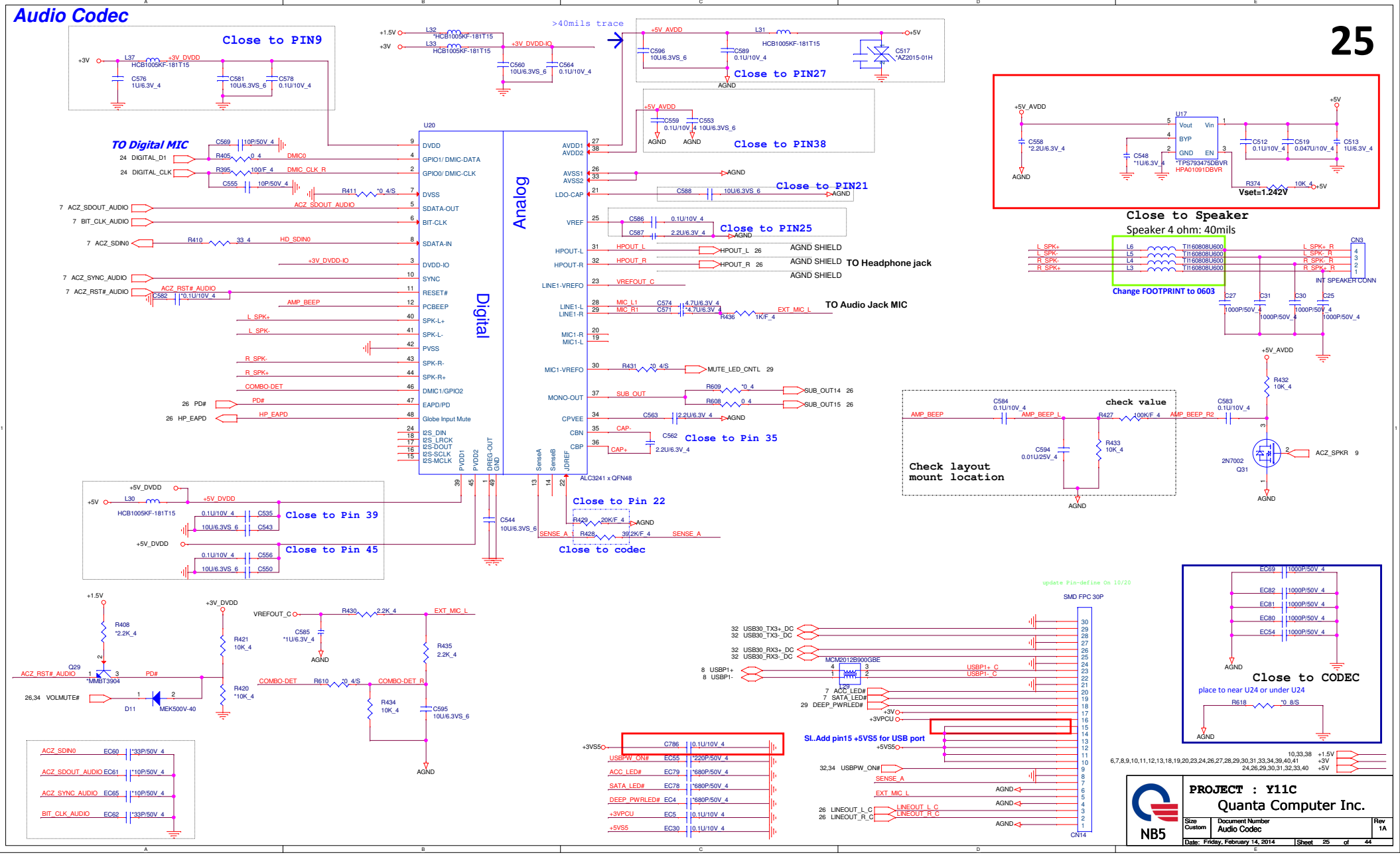
GS12401-1011-9H
lvds-50671-04041-001-40p-l

NB5

PROJECT : Y11C
Quanta Computer Inc.

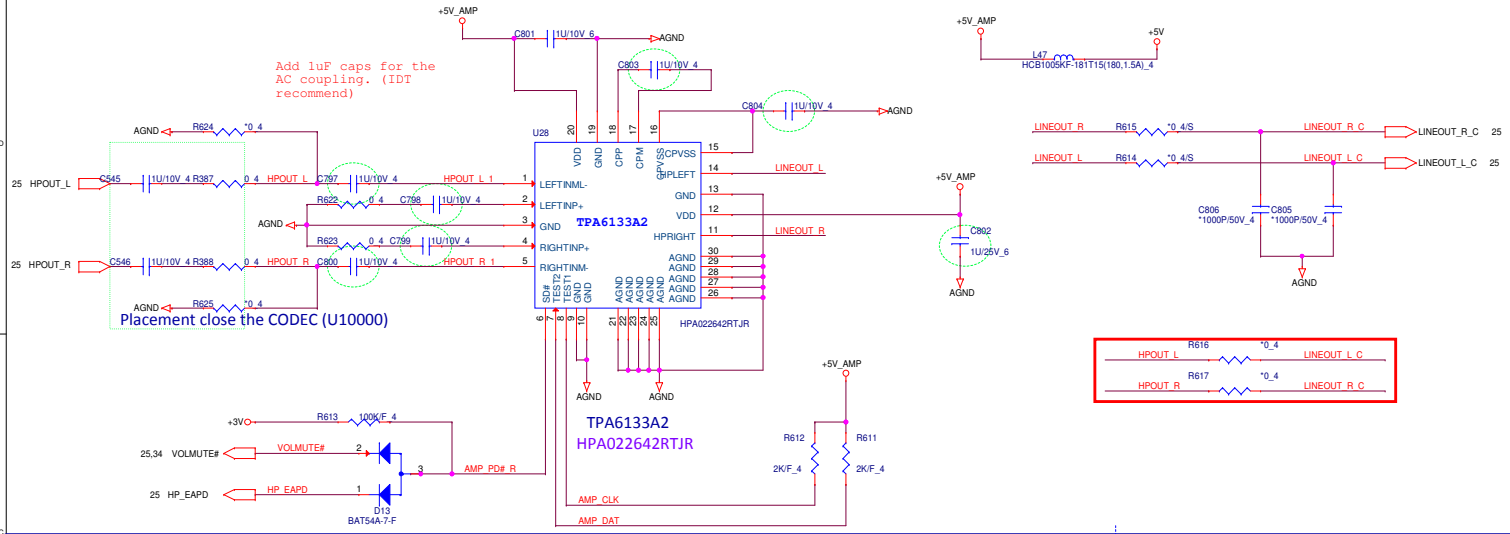
Size	Document Number	Rev
Custom	LCD CONN/LID/CAM/D-MIC	1A
Date: Friday, February 14, 2014	Sheet 24 of 44	

Audio Codec

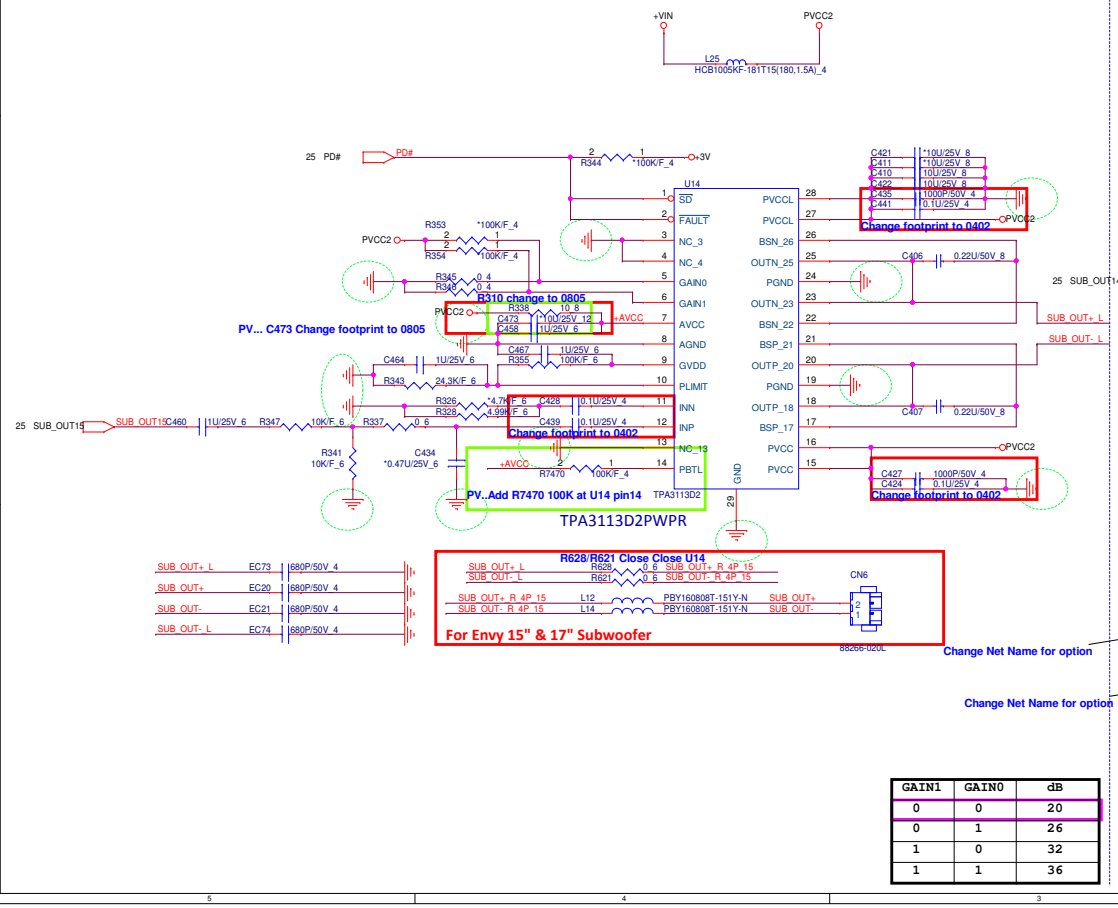


PROJECT :	Y11C
Quanta Computer Inc.	
NB5	
Size: Custom	Document Number: Audio Codec
Rev: 1A	
Date: Friday, February 14, 2014	Sheet 25 of 44

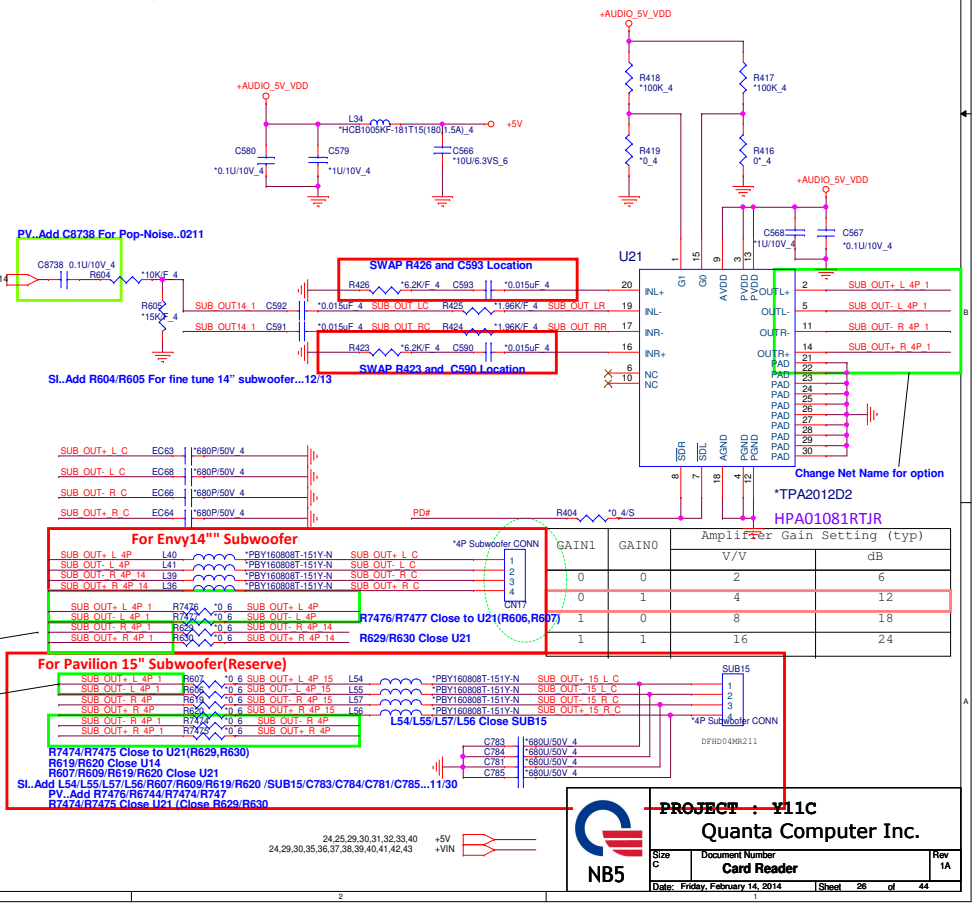
Head Phone out



For Envy 15" & 17" Subwoofer



For Pavilion 15" Subwoofer(Reserve)
For Envy14"" Subwoofer



GAIN1	GAIN0	Amplifier Gain Setting (typ)	
		V/V	dB
0	0	2	6
0	1	4	12
1	0	8	18
1	1	16	24

GAIN1	GAIN0	dB
0	0	20
0	1	26
1	0	32
1	1	36

PROJECT : Y11C

Quanta Computer Inc.

NB5

Size	Document Number	Rev
C	Card Reader	1A

Date: Friday, February 14, 2014 Sheet 26 of 44

Green Clk

For EMI 0 ~ 22 ohm

R155 *10/F_4
LAN_XTAL1 — XTAL1
R159 *0_4/S LAN_XTAL25_IN — LAN_XTAL25_IN 31
Y2 *25MHZ +-10PPM
C262 *10P/50V_4
C261 *10P/50V_4
XTAL2

Power trace Layout 寬度> 60mil

>60mil — R151 Ra *0_8 — >60mil
+1.05V_LAN_REGOUT — L15 4.7UH,+-20%,650MA_1210
La
Ce C266 *0.1U/10V_4
Ca C264 0.1U/10V_4
Cb C265 4.7U/6.3VS_4

Trace<30 mil
Width > 60 mil

For GbE
Stuff La, Ca ,Cb

For 10/100
NA: La, Ca ,Cb
STUFF : Ra, Ce

For GbE
* Place Cc,Cd,Ce,Cf,C232
close to each VDD10 pin-- 3, 22, 8 , 30

For 10/100 NA Ce,Cf
* Place Ce , Cf ,C250
close to each VDD10 pin-- 8, 30 only,

+1.05V_LAN
Cc C263 0.1U/10V_4
Cd C233 0.1U/10V_4
Ce C228 0.1U/10V_4
Cf C231 0.1U/10V_4
Cg C259 *1U/6.3V_4
Cf C234 1U/6.3V_4
C232 0.1U/10V_4
C250 *0.1U/10V_4

For GbE
* Place Cf close to each VDD10 pin-- 22 (reserve)

For 10/100
* Place Cg close to each VDD10 pin-- 30 (reserve)

For 10/100
* Stuff Cb and Ce only, close to each VDD33 pin-- 23, 32

For GIGA
* Stuff Ca and Cb only, close to each VDD33 pin-- 11, 32

+3V_LAN
+3VLANVCC
C227 0.1U/10V_4 Ca
C247 0.1U/10V_4 Cb
C248 *0.1U/10V_4 Ce
C258 *4.7U/6.3V_6
C260 *4.7U/6.3V_6

* Place Cc and Cd close to each VDD33 pin-- 23
C236 4.7U/6.3VS_4 Cc
C237 0.1U/10V_4 Cd
Remove For Not Using SWR mode

For GIGA
Stuff Cc ,Cd

For 10/100
NA: Cc, Cd

+1.05V_LAN — TP6
R154 2.49K/F_4 LANRSET
+3V_LAN
LAN_AMBLED#
R157 0_4 LAN_WLED#
R156 *0_4 LAN_WLED#
FOR 8176: Stuff R156,DEL R157
FOR 8161: Stuff R157, DEL R156

+3V
R144 1K_4
ISOLATEB
R145 15K/F_4

if ISOLATEB pin pull-low,the LAN chip will not drive it's PCI-E outputs (excluding PCIE_WAKE# pin)

U8
33 GND
Please add 9 GND VIAs connection with thermal PAD

RTL 8161GSH

MDI0+ 1
MDI0- 2
VDD10 3
MDI1+ 4
MDI1- 5
MDI2+ 6
MDI2- 7
VDD10 8
MDIP0
MDIN0
AVDD10(NC)
MDIP1
MDIN1
MDIP2(NC)
MDIN2(NC)
AVDD10

REGOUT(NC) 24 +1.05V_LAN_REGOUT
VDDREG(VDD33) 23 DVDDL
DVDD10(NC) 22 VDD10
PCIE_WAKE# R 21 R146 *0_4/S
LANWAKEB 20 ISOLATEB R143 *0_4 DSW_WAKE#
ISOLATEB 19 PLTRST#
PERSTB 18 PCIE_RXN4_LAN_L C225 0.1U/10V_4
HSON 17 PCIE_RXP4_LAN_L C226 0.1U/10V_4
HSOP

RTL8161GSH

+1.05V_LAN_REGOUT
+3V_LAN
+1.05V_LAN
PCIE_WAKE# 6,28,33,34
TP3
PLTRST# 6,11,18,28,31,33,34
PCIE_RXN4_LAN 8
PCIE_RXP4_LAN 8

FOR GIGA: 8161GSH: AL008161004
FOR 10/100 : 8176EH:
AL008161004IC CTRL(32P) RTL8161GSH-CG(QFN)
AL008176000IC CTRL(32P) RTL8176EH-CG(QFN)

MDIP3(NC)
MDIN3(NC)
AVDD33(NC)
CLKREQB
HSIP
HSIN
REFCLK_P
REFCLK_N
LAN_CLKREQ
MDI3+
MDI3-
+3V_LAN
8 PCIE_CLKREQ_LAN#
PCIE_CLKREQ_LAN# R142 *0_4/S
CLK_PCIE_LANN
CLK_PCIE_LANP
PCIE_TXN4_LAN
PCIE_TXP4_LAN
CLK_PCIE_LANN 8
CLK_PCIE_LANP 8
PCIE_TXN4_LAN 8
PCIE_TXP4_LAN 8

+3VLANVCC
R444 330_4
LAN_WLED
C614 1000P/50V_4
C28 1000P/50V_4
R21 330_4
LAN_AMBLED

RJ45
(White)
CN21
LAN_WLED 9
LAN_WLED# 10
LED_White_P A1
LED_White_N A2
MDI3- 8
MDI3+ 7
MDI1- 6
MDI2- 5
MDI2+ 4
MDI1+ 3
MDI0- 2
MDI0+ 1
RX1-
RX1+
RX0-
TX1-
TX1+
RX0+
TX0-
TX0+
GND1 14
GND 13
LAN_AMBLED 11
LAN_AMBLED# 12
LED_AMB_P B1
LED_AMB_N B2
(Amber)
RJ45_CONN
R454 *0_6/S
R439 *0_6/S
R126 R124 R126 R124 0_4
EC19 *68P/50V_4

U6
MDI1+_1 1 TD+ TX+ 16 MDI1+
MDI1-_1 3 TD- CMT 15 TRA_V_DAC
R101 75/F_4 LAN_MCTG1 2 CT TX- 14 MDI1-
MDI0+_1 6 RD+ RX- 9 MDI0-
MDI0-_1 8 RD- CT 10 TRA_V_DAC
R119 75/F_4 LAN_MCTG0 7 CT RX+ 11 MDI0+
NS681684

U7
MDI3+_1 1 TD+ TX+ 16 MDI3+
MDI3-_1 3 TD- CMT 15 TRA_V_DAC
R131 75/F_4 LAN_MCTG3 2 CT TX- 14 MDI3-
MDI2+_1 6 RD+ RX- 9 MDI2-
MDI2-_1 8 RD- CT 10 TRA_V_DAC
R140 75/F_4 LAN_MCTG2 7 CT RX+ 11 MDI2+
NS681684

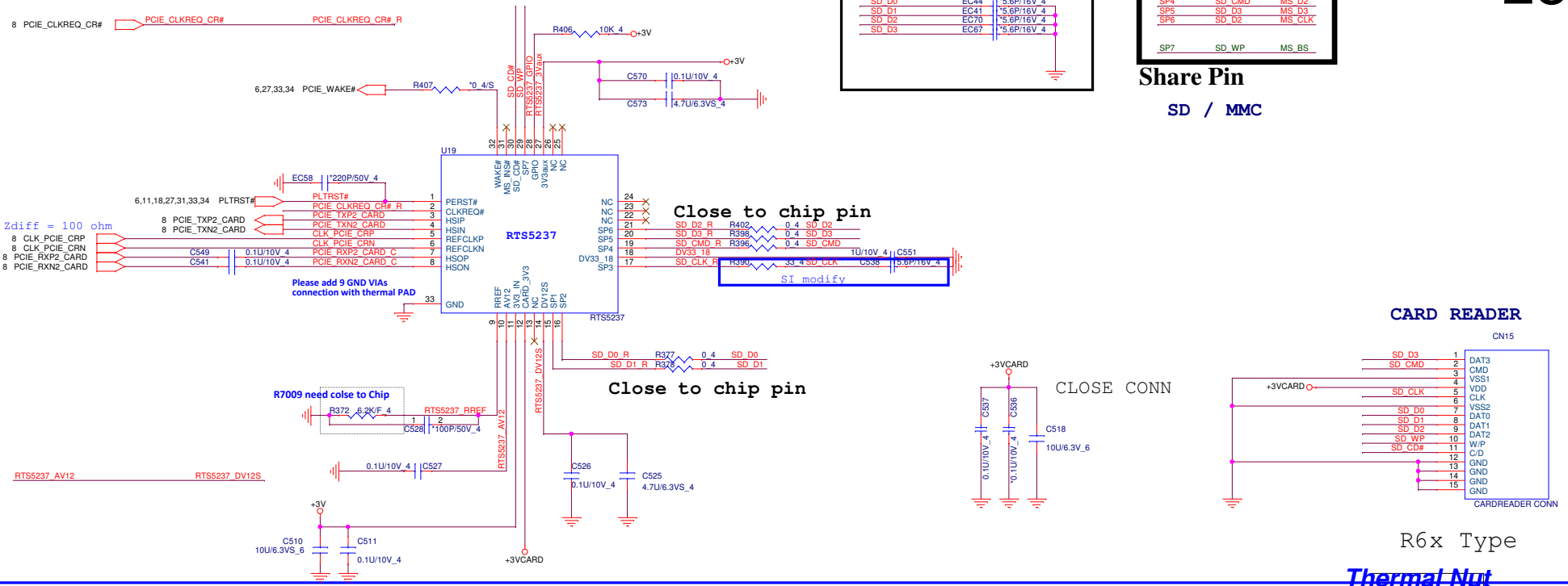
C608 10P/3KV_1808
C115 0.01U/25V_4

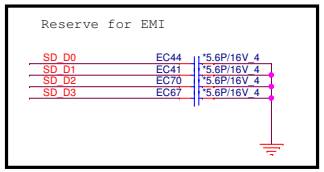
For Giga : U6 + U7
For 10/100 : U6

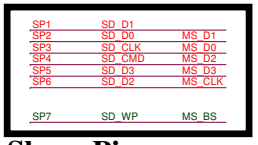
6,7,8,9,10,11,12,13,18,19,20,23,24,25,26,28,29,30,31,33,34,39,40,41 +3V
31,40 +3VLANVCC

FCE :NS892408 ,DB0EF7LAN01

PROJECT : Y11C
Quanta Computer Inc.
NB5
Size Custom | Document Number LAN RTL8161GSH /RJ45 conn | Rev 1A
Date: Friday, February 14, 2014 | Sheet 27 of 44







Share Pin

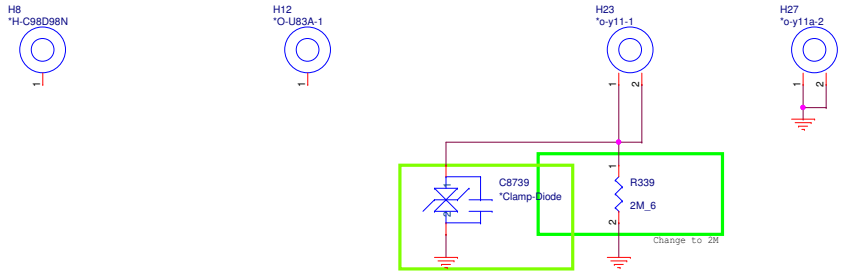
SD / MMC

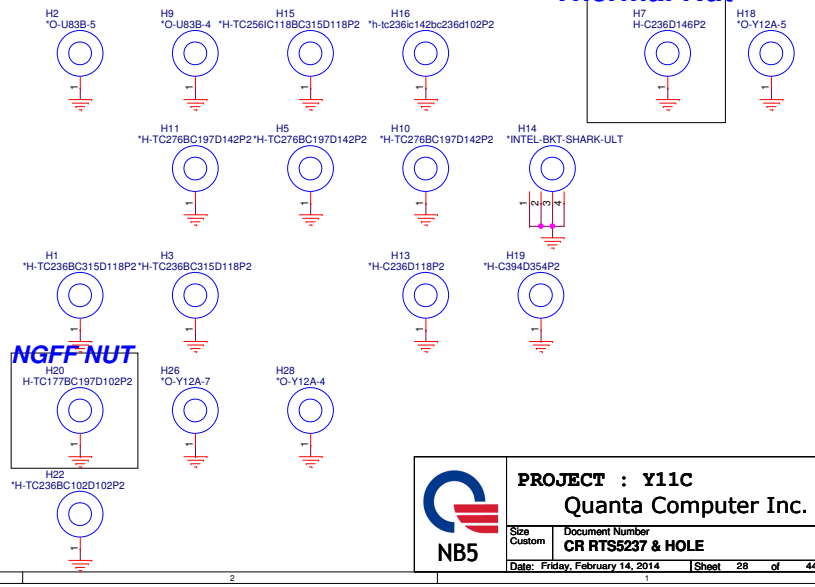
CLOSE CONN

CARD READER

R6x Type

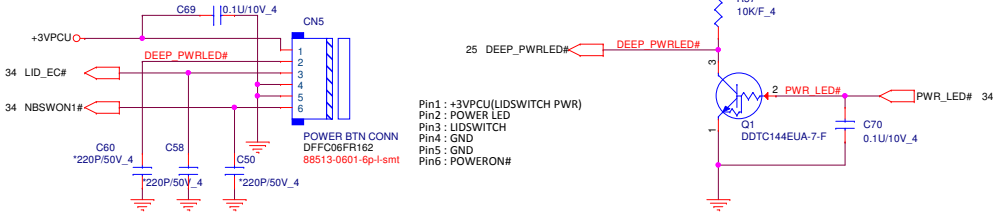
Thermal Nut



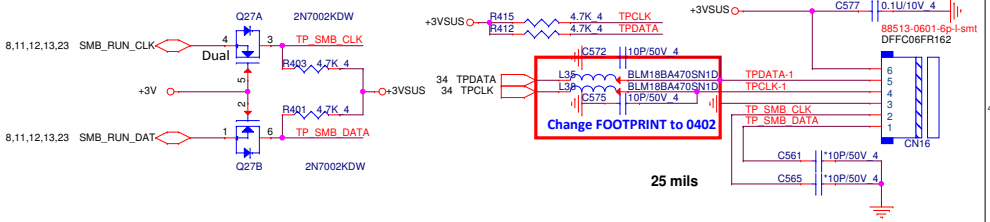


NB5	PROJECT : Y11C Quanta Computer Inc.	
Size: Custom	Document Number: CR RTS5237 & HOLE	Rev: 1A
Date: Friday, February 14, 2014	Sheet 28 of 44	

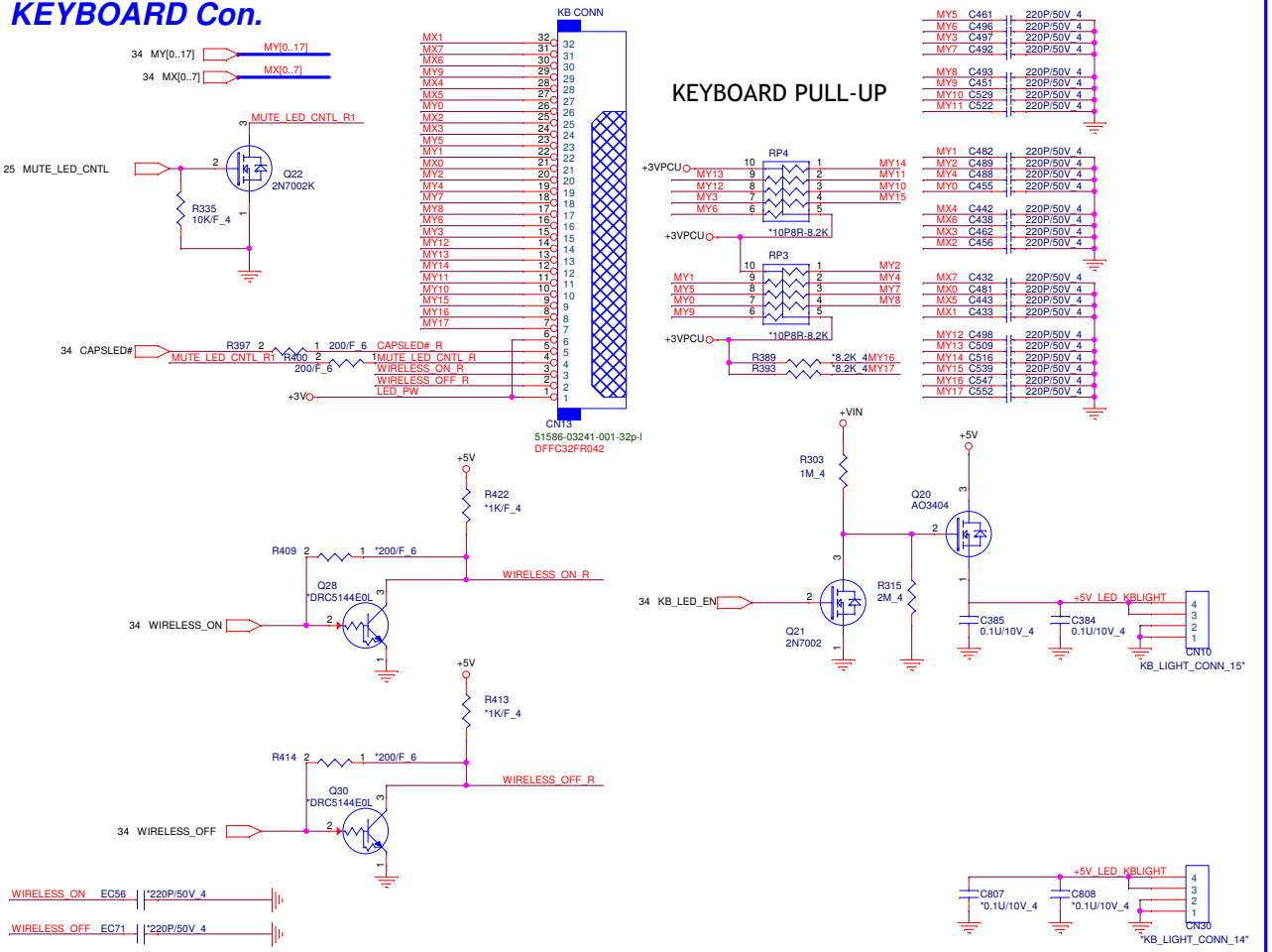
Power Botton Connector



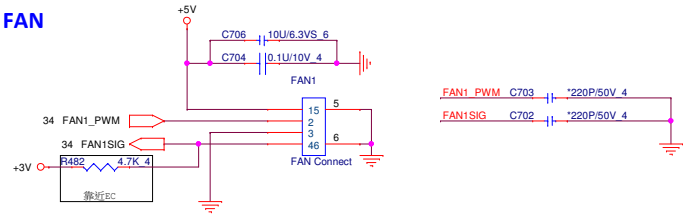
Touch Pad Connector

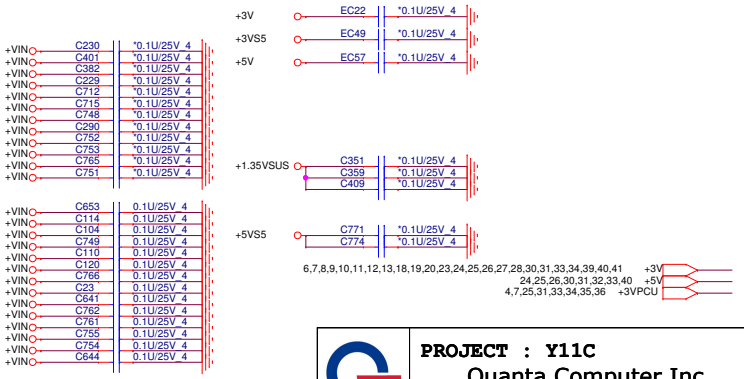


KEYBOARD Con.



FAN

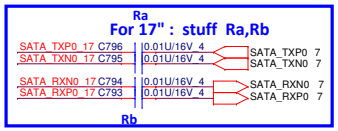


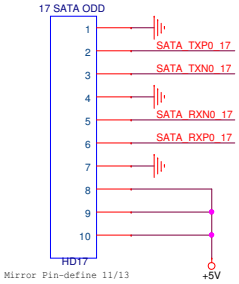


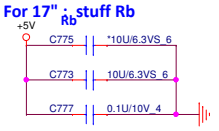
NB5	PROJECT : Y11C Quanta Computer Inc.	
Size: Custom	Document Number: PB/TP/KB/FAN/EMI Cap	Rev: 1A
Date: Friday, February 14, 2014	Sheet 29 of 44	

HDD

SATA HDD Connector(Cable type) 15.6"

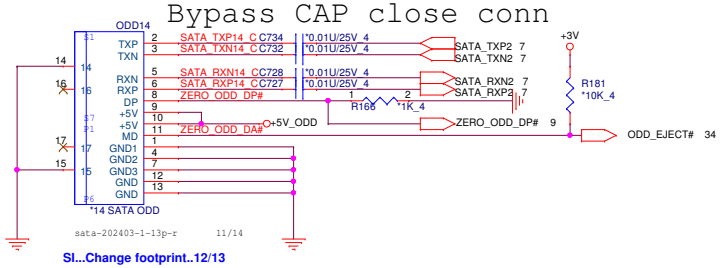




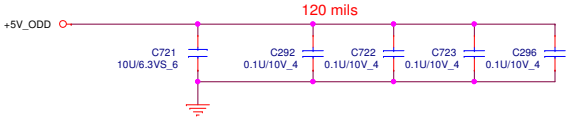


SATA ODD CONNECTOR

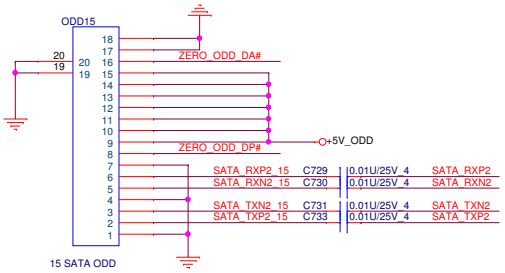
14" SATA ODD

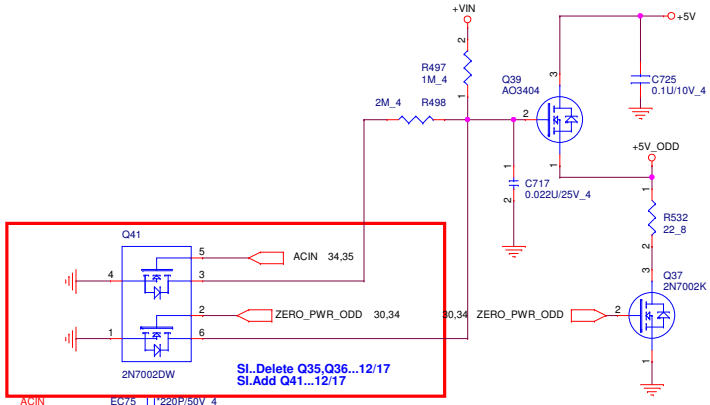


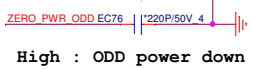
SI...Change footprint..12/13



15" SATA ODD







High : ODD power down
Low : ODD power on

NB5

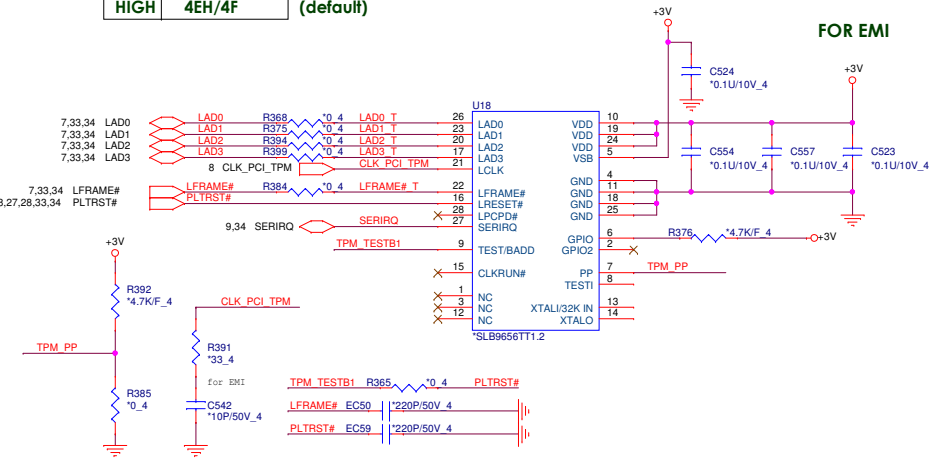
PROJECT : Y11C
Quanta Computer Inc.

Size	Document Number	Rev
Custom	HDMI	1A
Date: Friday, February 14, 2014	Sheet 30 of 44	

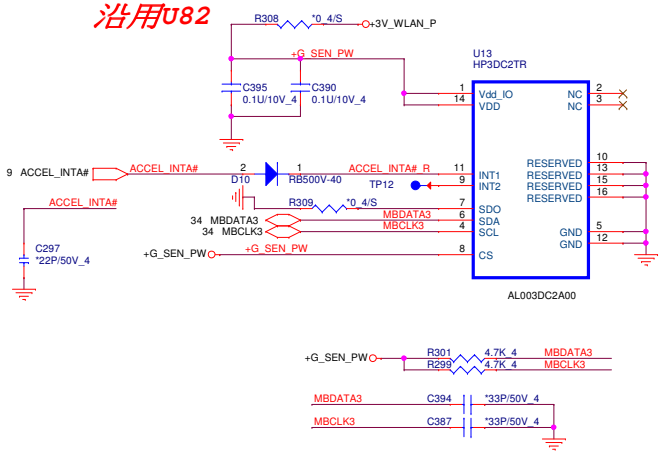
TPM (1.2)

Address

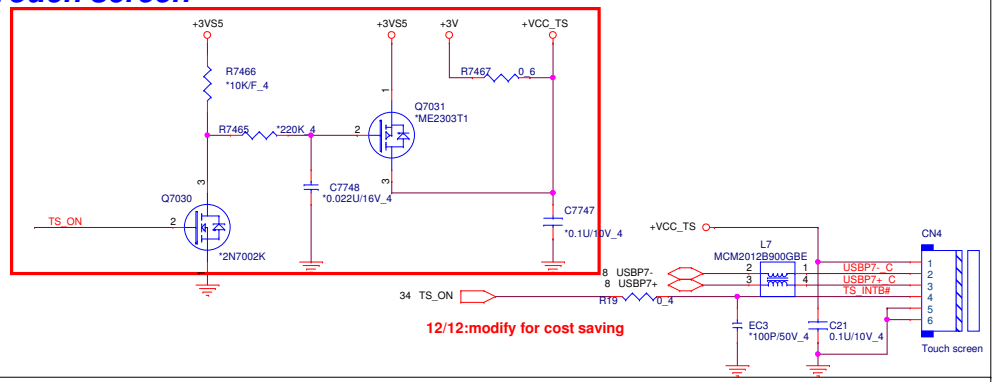
	BADD
HIGH	4EH/4F (default)



Accelerometer Sensor

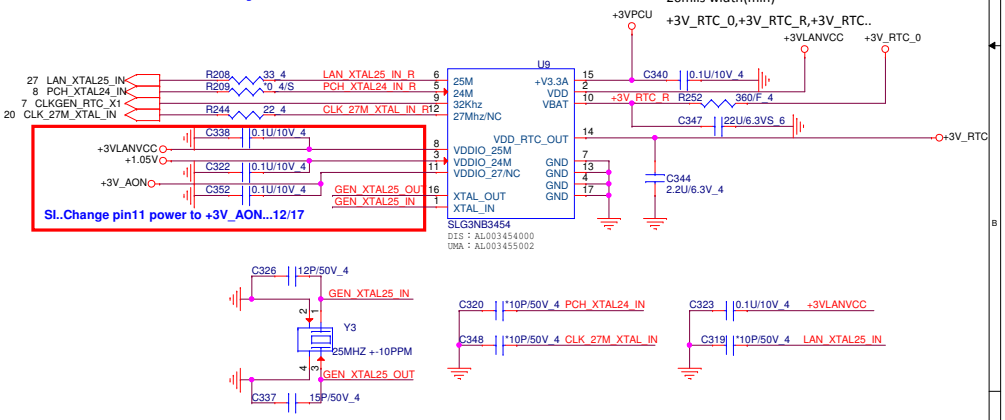


Touch screen

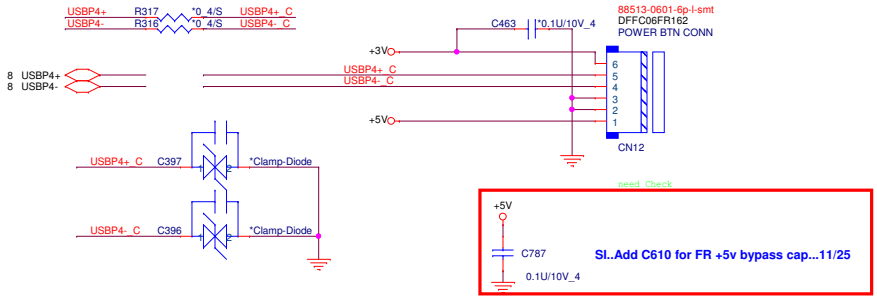


Green CLK Circuitry

20mils width(min)
+3V_RTC_0,+3V_RTC_R,+3V_RTC..

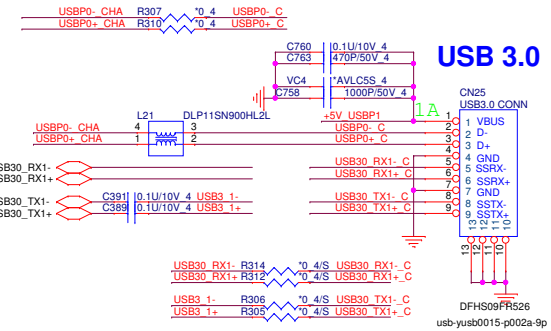


Fingerprint Conn

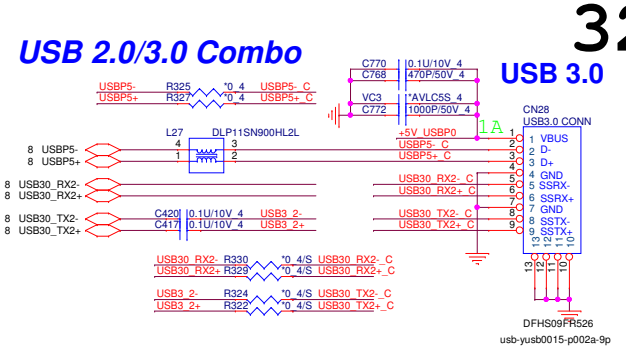


NB5	PROJECT : Y11C Quanta Computer Inc.	
Size: Custom	Document Number: TPM/G-Sensor/G-CLK/TS/FP	Rev: 1A
Date: Friday, February 14, 2014	Sheet: 31of 44	

USB 3.0



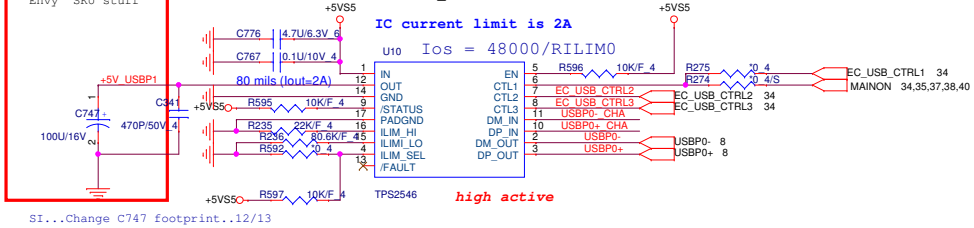
USB 2.0/3.0 Combo



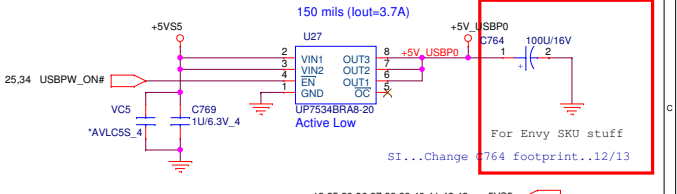
if Envy SKU,non-staff

for Envy SKU stuff

For Pavilion / Envy SKU stuff



SI...Change C747 footprint..12/13



13,25,29,36,37,38,39,40,41,42,43 +5VS5
4,7,25,29,31,33,34,35,36 +3VPCU

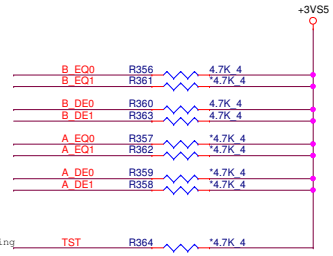
Right-Side USB3.0 Re-Driver

AEQ 9.5db / ADE 3.5db

BEQ 13db / BDE 5db / REXT 5.36K

A_EQ1 B_EQ1	A_EQ0 B_EQ0		A_DE1 B_DE1	A_DE0 B_DE0	
0	0	9.5dB	0	0	3.5dB
0	1	13dB	0	1	no de-emphasis
1	0	4.5dB	1	0	2.7dB
1	1	7.5dB	1	1	5dB

TST : Low = Normal LFPS swing / Hight =Turn down LFPS swing

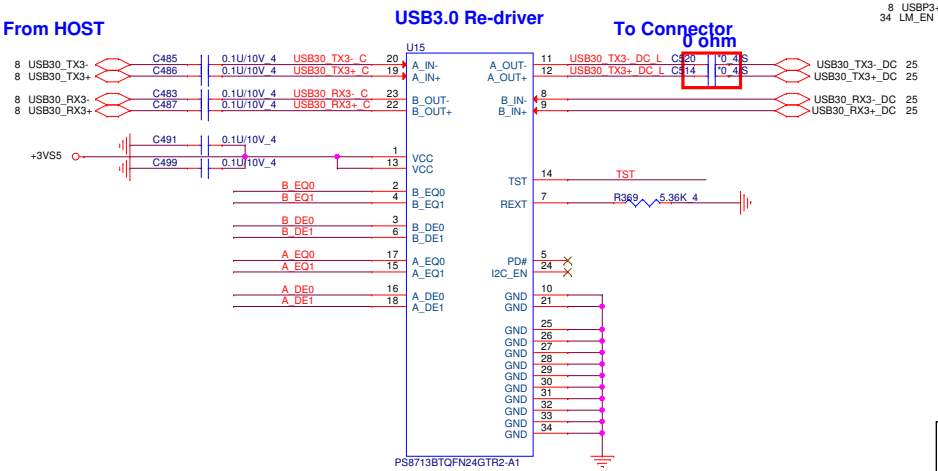


From HOST

USB3.0 Re-driver

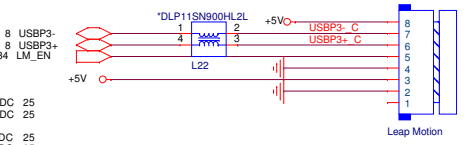
To Connector

0 ohm



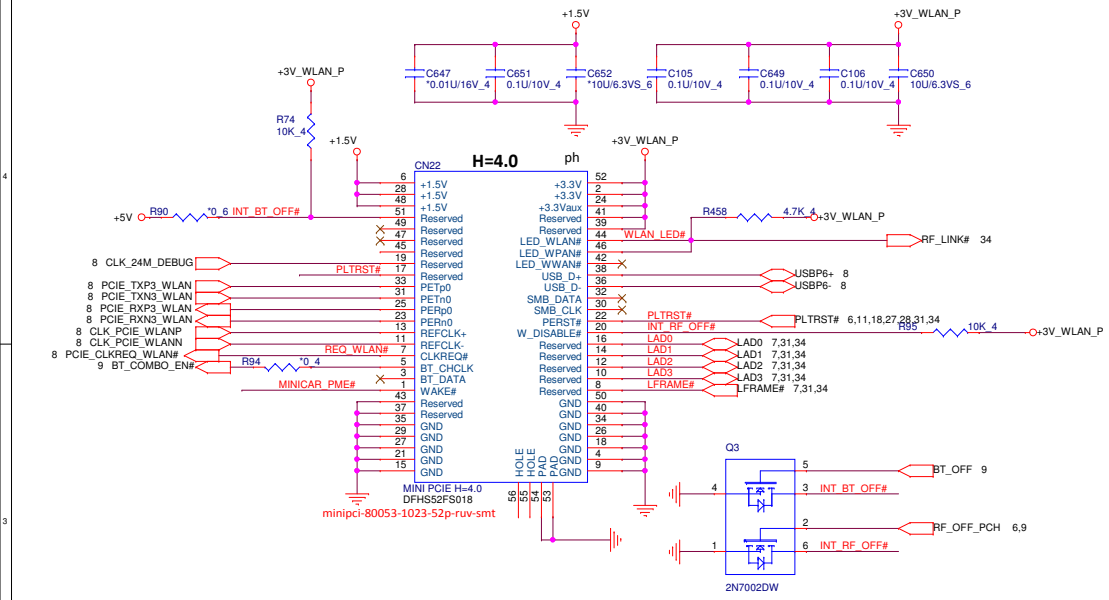
PS8713BTQFN24GTR2-A1

DFFC08FR016

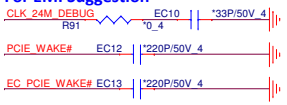


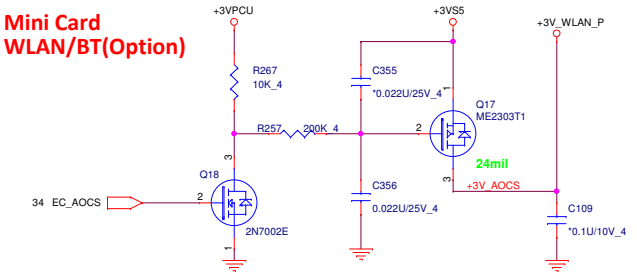
NB5	PROJECT : Y11C Quanta Computer Inc.	
Size: Custom	Document Number: USB 3.0	Rev: 1A
Date: Friday, February 14, 2014	Sheet 32 of 44	

Mini Card WLAN/BT(Option)

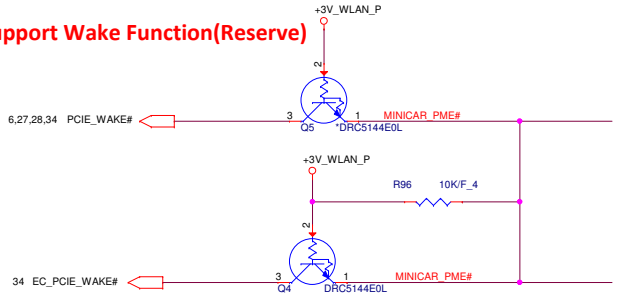


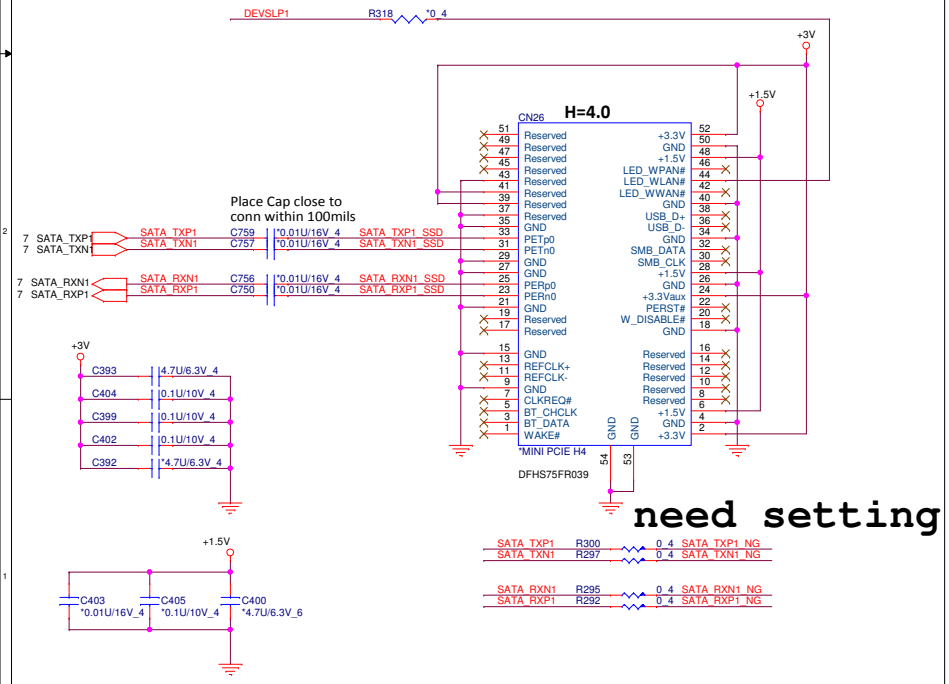
For EMI Suggestion





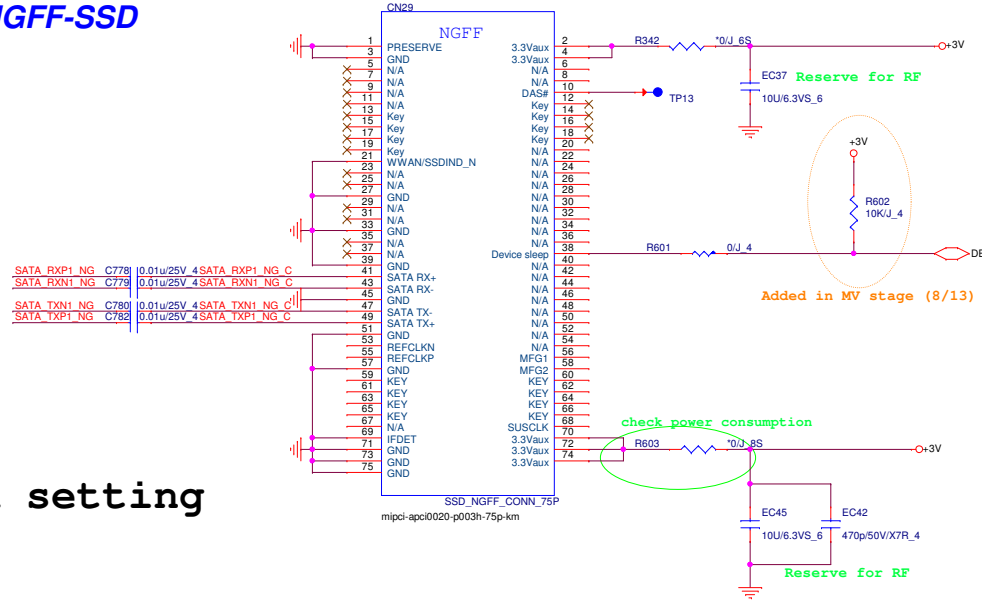
Support Wake Function(Reserve)





need setting

NGFF-SSD



need setting

6,7,8,9,10,11,12,13,18,19,20,23,24,25,26,27,28,29,30,31,34,39,40,41 +3V
24,25,26,29,30,31,32,40 +5V
4,7,25,29,31,34,35,36 +3VPCU

NB5

PROJECT : Y11C

Quanta Computer Inc.

Size	Document Number	Rev
Custom	WLAN/NGFF/MSATA	1A

Date: Friday, February 14, 2014 | Sheet 33of 44

申請料號中

IT8987

AJ089870F01

IT8987E/AX

Open Drain need pu high

adapter Type check

Adapter select for EC

DIS Hi ==> (90W)

UMA Low ==> (65W)

Change to 1SS355 as Current loss

H_PECI (50ohm)
Route on microstrip only
Spacing >18 mils
Trace Length: 0.4~6.125 iches

for Gsensor

for GPU thermal

for Battery charge/charge

for DDR Thermal IC

Add R459 for reserve

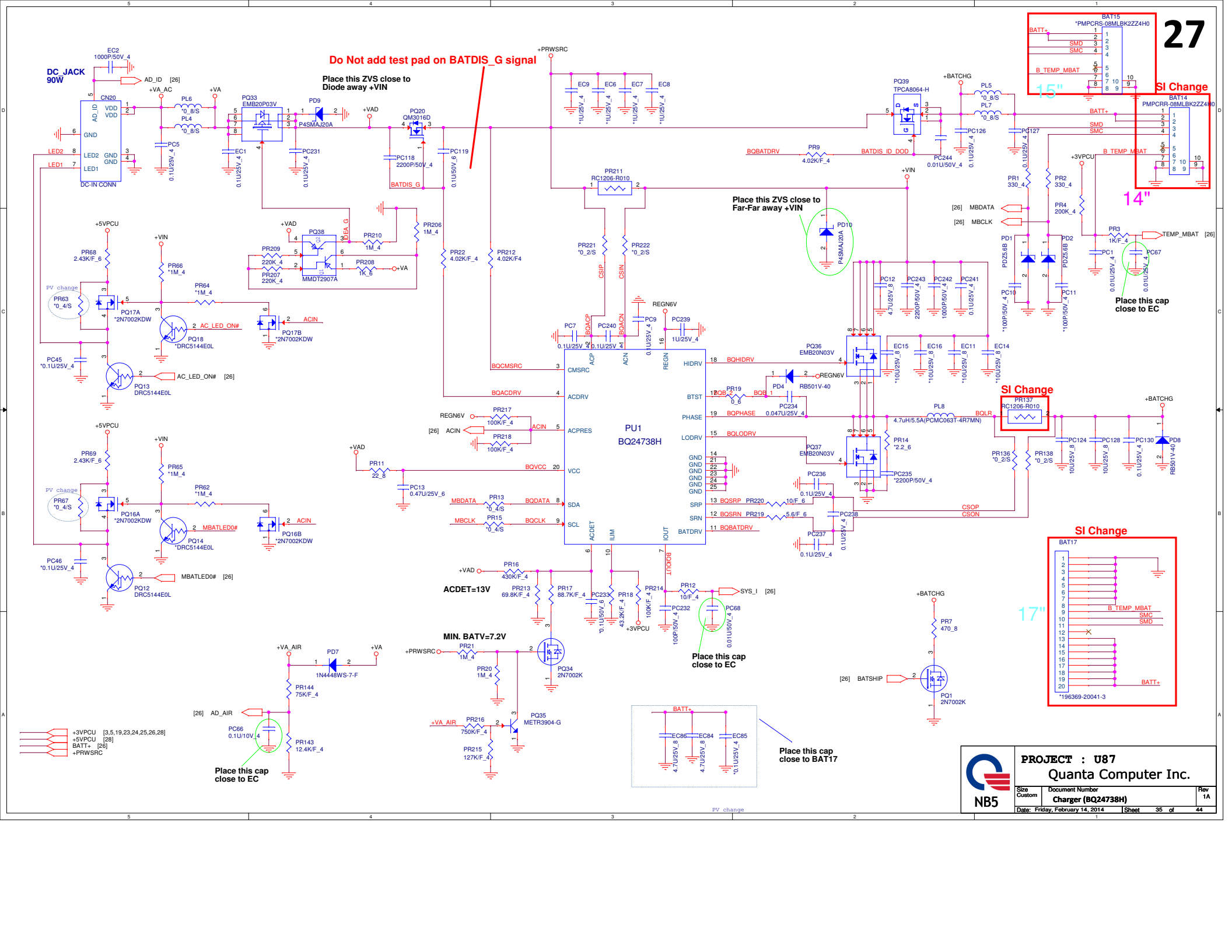
PROJECT : Y11C

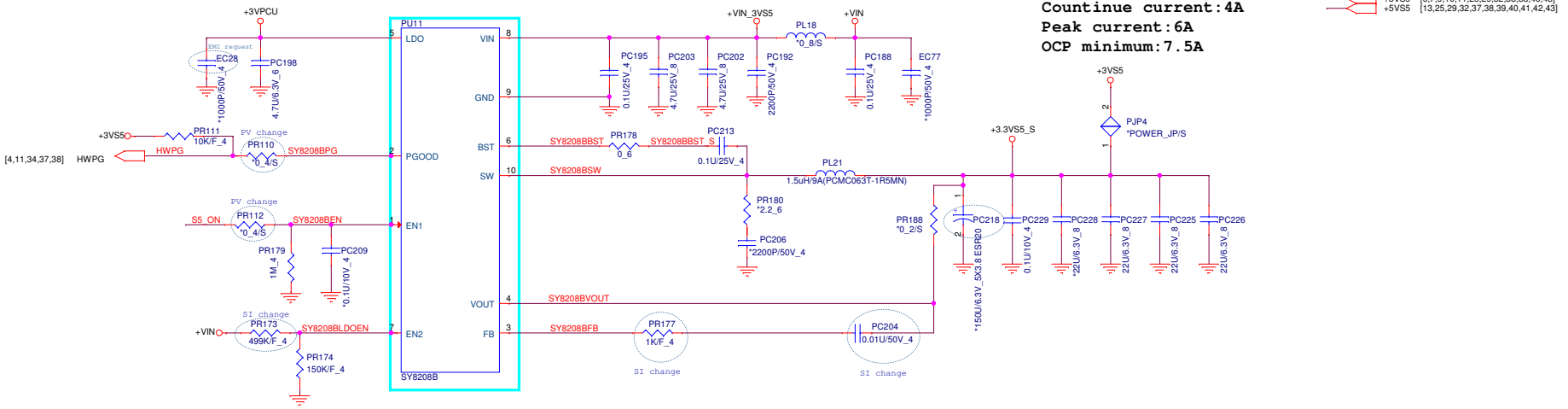
Quanta Computer Inc.

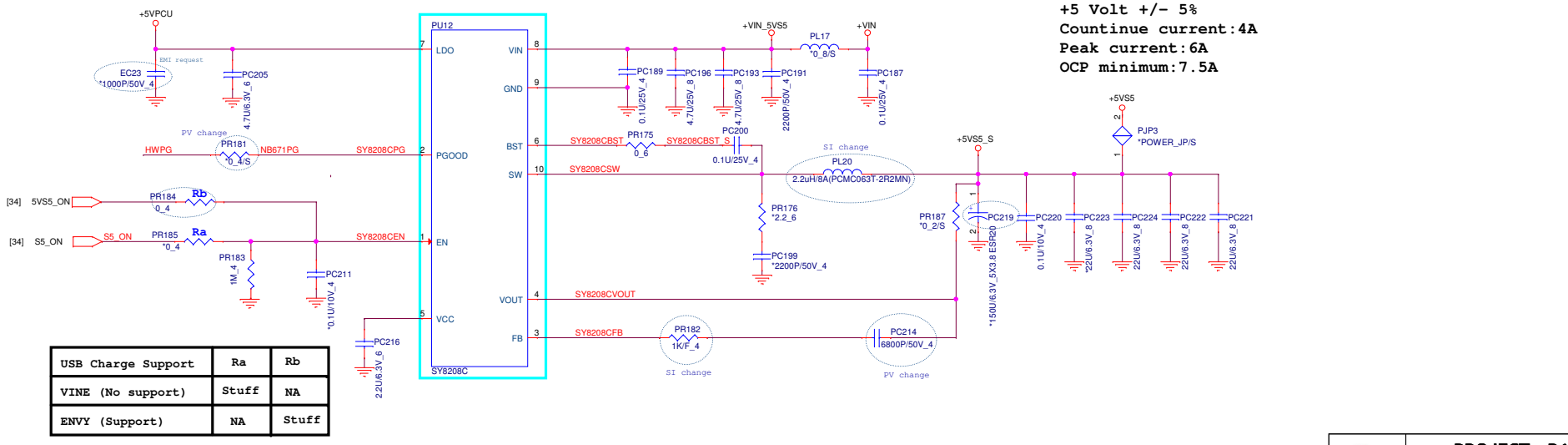
NB5

Size: Custom | Document Number: WLAN/G-Sensor/G-CLK/TS | Rev: 1A

Date: Friday, February 14, 2014 | Sheet 34of 44


27
DC JACK 90W
DC-IN CONN
CN20
Do Not add test pad on BATDIS_G signal
Place this ZVS close to Diode away +VIN
Place this ZVS close to Far-Far away +VIN
PU1
BQ24738H
ACDET=13V
MIN. BATV=7.2V
Place this cap close to EC
Place this cap close to BAT17
SI Change
15"
14"
17"
PROJECT : U87
Quanta Computer Inc.
NB5
Charger (BQ24738H)
Friday, February 14, 2014
Sheet 35 of 44





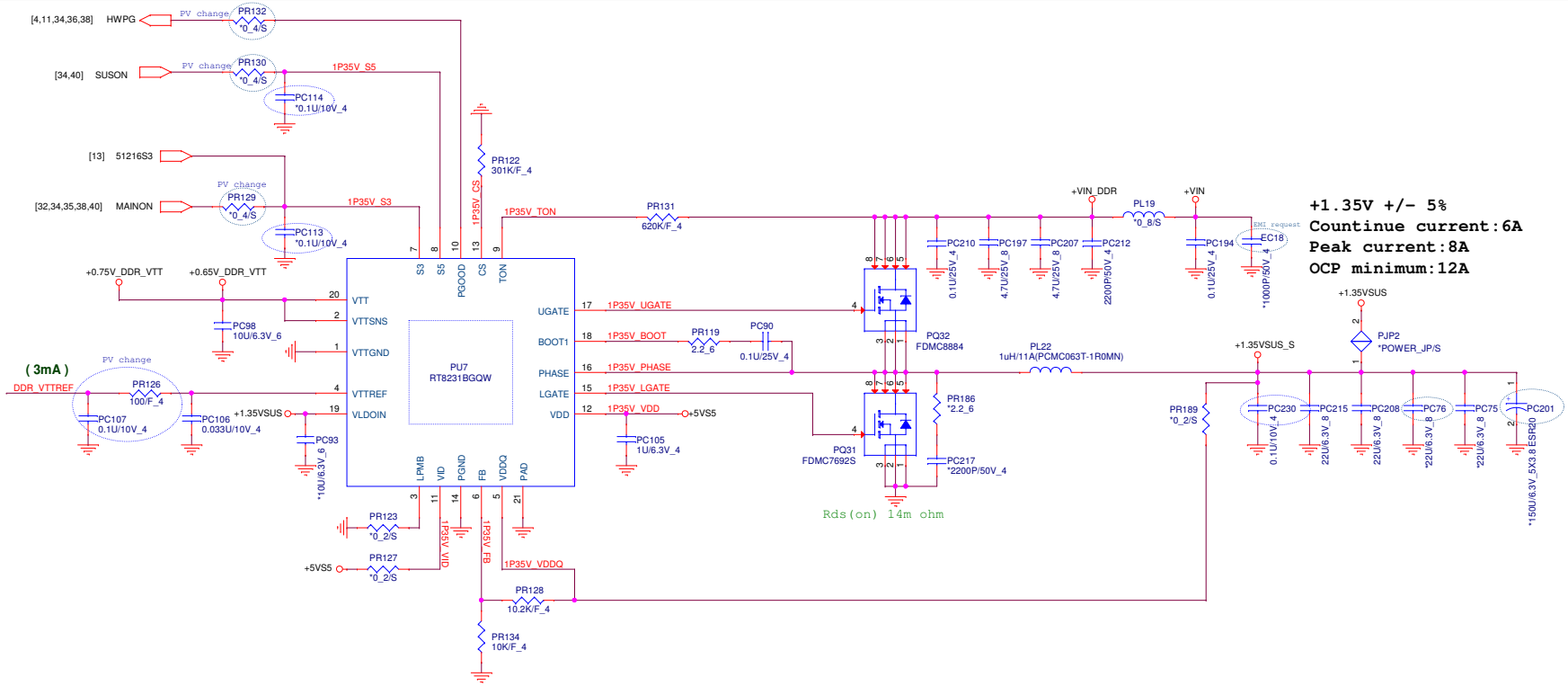
USB Charge Support	Ra	Rb
VINE (No support)	Stuff	NA
ENVY (Support)	NA	Stuff

NB5

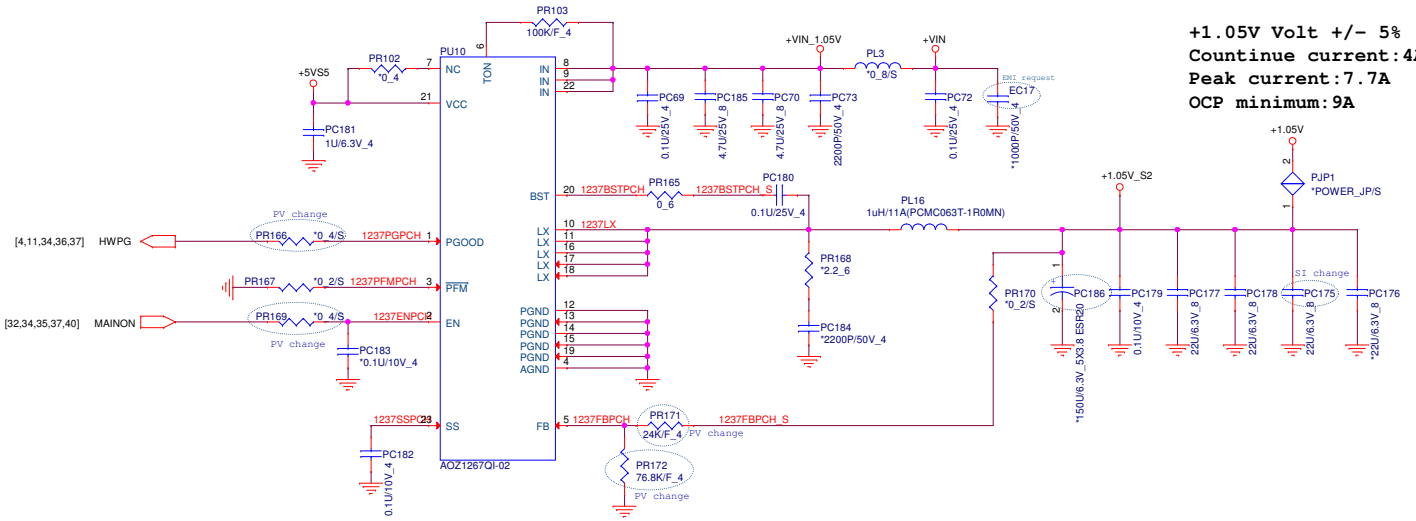
PROJECT : R63
Quanta Computer Inc.

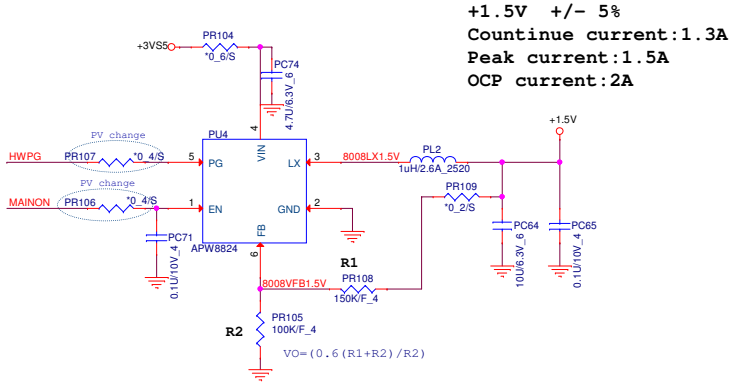
Size	Document Number	Rev
Custom	3/5VPCU(RT8243A)	1A

Date: Friday, February 14, 2014 Sheet 36 of 44



NB5	PROJECT : Y02 Quanta Computer Inc.	
Size: Custom	Document Number: DDR3 (RT8231A)/1.8VS5	Rev: 1A
Date: Friday, February 14, 2014	Sheet 37 of 44	





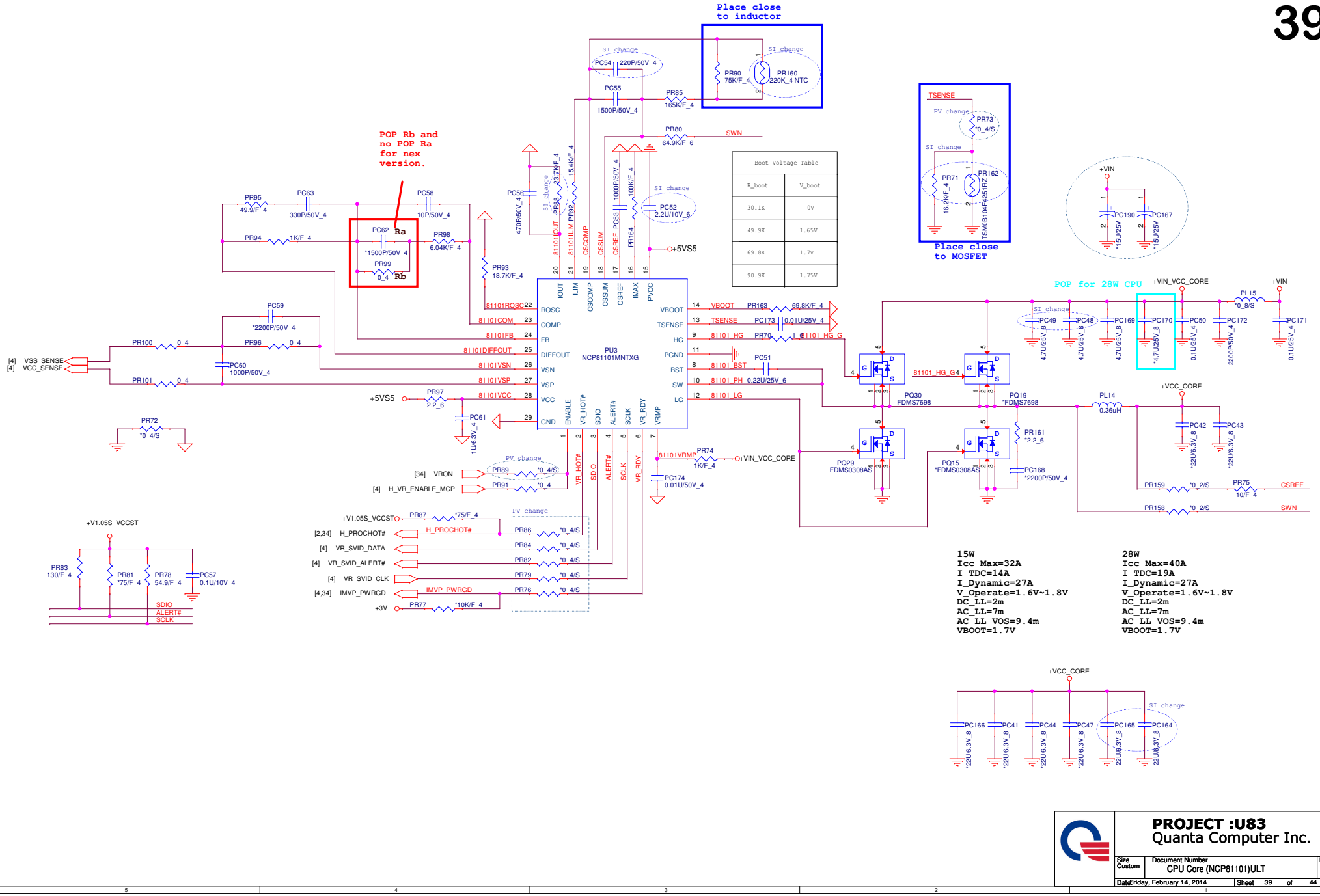
+VIN [24,26,29,30,35,36,37,39,40,41,42,43]
+3VS5 [6,7,9,10,11,25,29,32,33,36,40,43]
+5VS5 [13,25,29,32,36,37,39,40,41,42,43]

NB5/RD3

PROJECT : U63
Quanta Computer Inc.

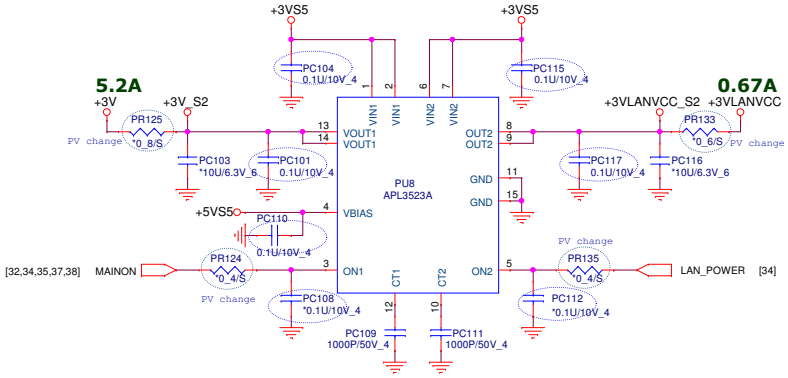
Size	Document Number	Rev
Custom	+1.1VS5 (RT8228)/2.5V	1A

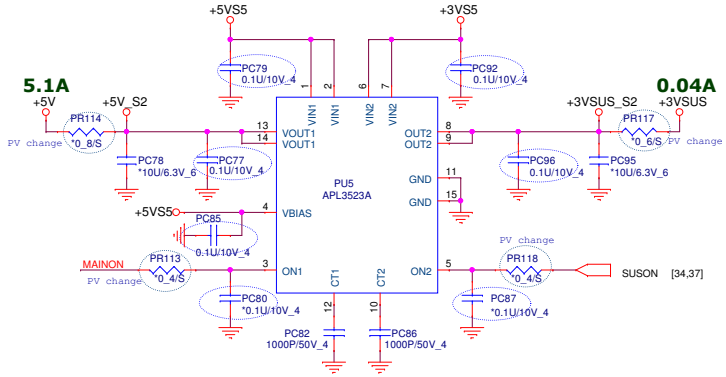
Date: Friday, February 14, 2014 | Sheet 38 of 44

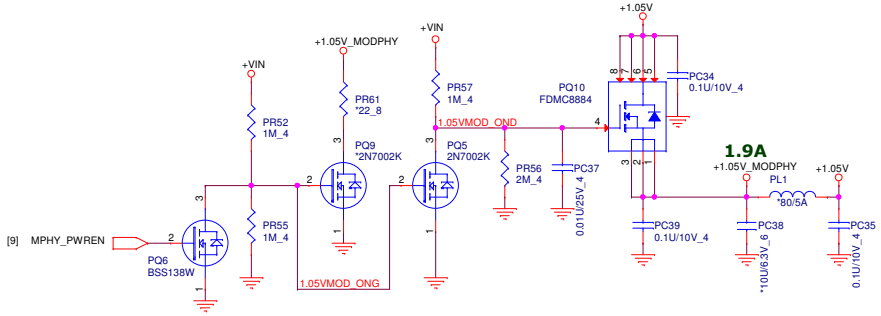


PROJECT :U83
Quanta Computer Inc.

Size	Document Number	Rev
Custom	CPU Core (NCP81101)ULT	1A
Date: Friday, February 14, 2014	Sheet 39 of 44	







[6,7,8,9,10,11,12,13,14,17,18,23,24,25,26,27,28,29,30,31,33,34,39,41] +3V
[24,25,26,29,30,31,32,33] +5V
[24,26,29,30,35,36,37,38,39,41,42,43] +VIN
[6,7,9,10,11,25,29,32,33,36,38,43] +3VS5
[13,25,29,32,36,37,38,39,41,42,43] +5VS5
[27,31] +3VLANVCC

PROJECT :U83
Quanta Computer Inc.

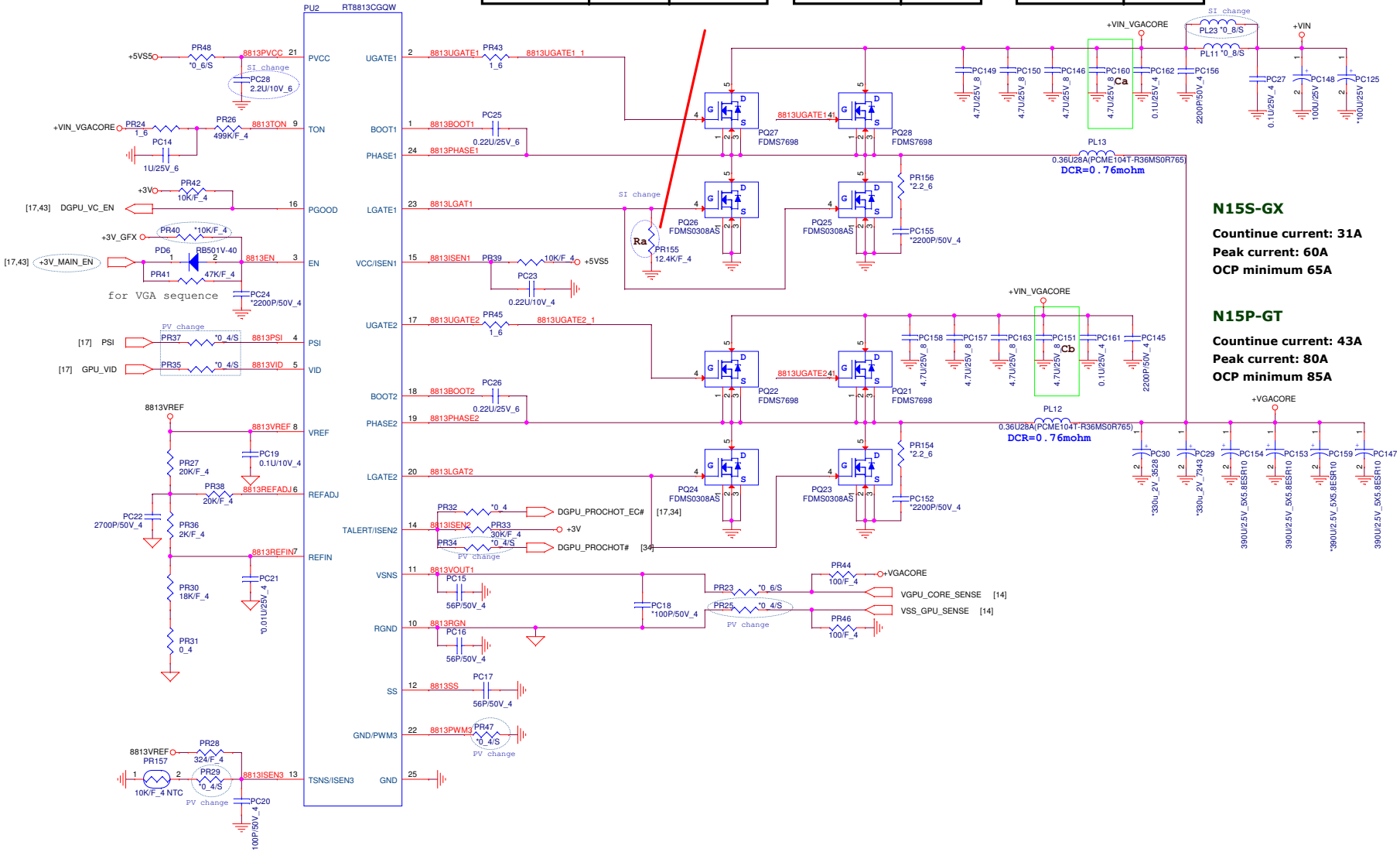
Size	Document Number	Rev
Custom	Dis-charge IC (SLG55448)	1A
Date: Friday, February 14, 2014	Sheet 40 of 44	

VGA Core

VGA TYPE	Ra Value	P/N
N15S-GX (25W)	9.53K	CS29532FB10
N15P-GT (35W)	12.4K	CS31242FB13

VGA TYPE	MOSFET
N15S-GX (25W)	1H1L
N15P-GT (35W)	2H2L

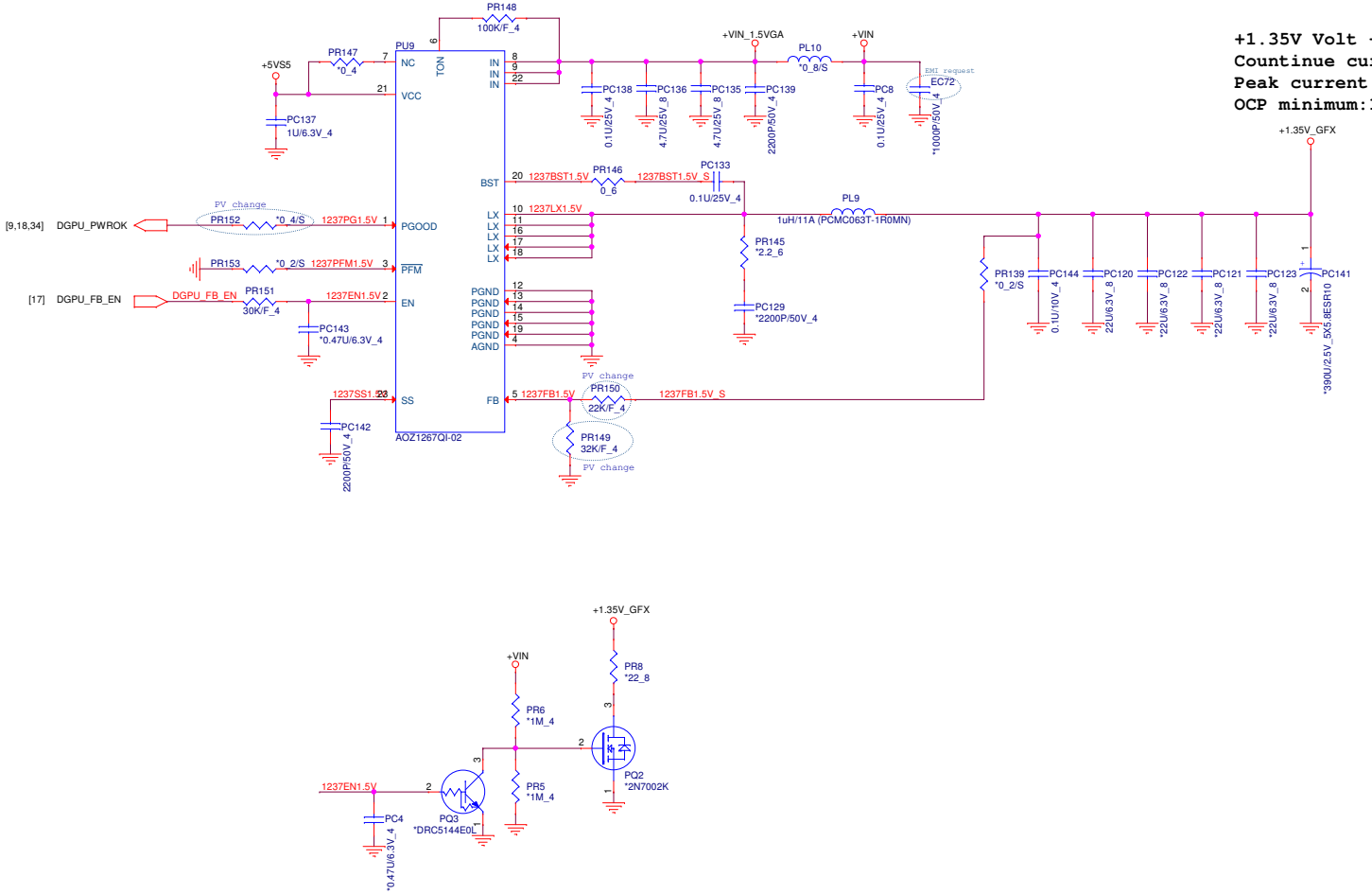
VGA TYPE	Ca, Cb
N15S-GX (25W)	No stuff
N15P-GT (35W)	Stuff



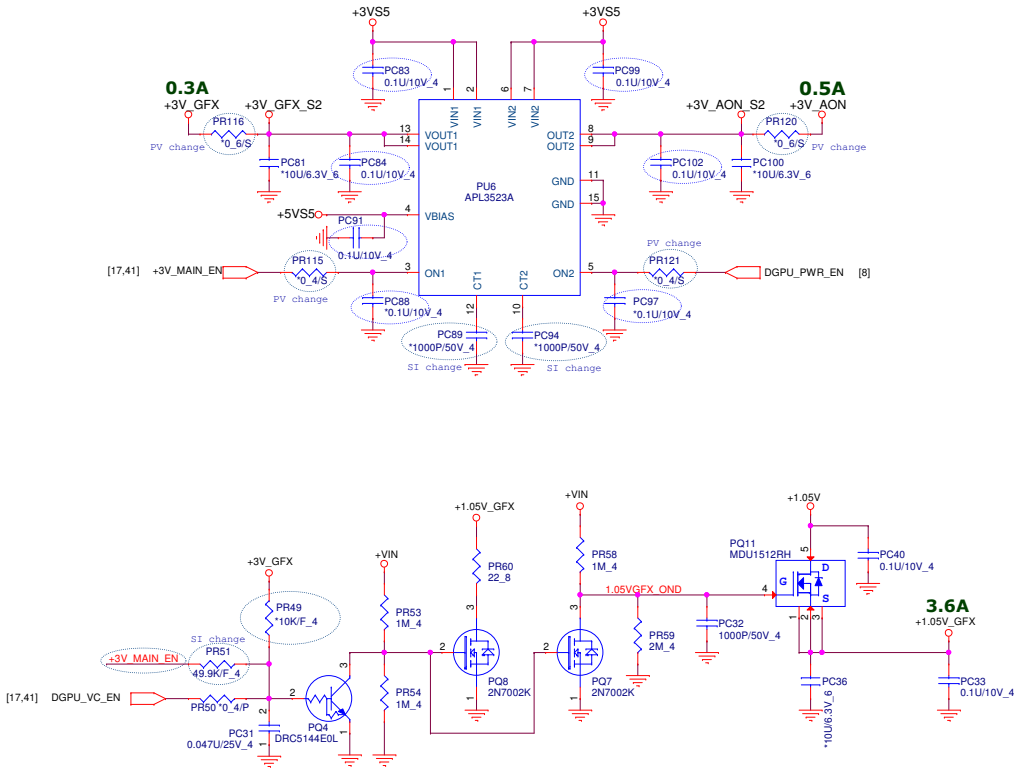
PROJECT :U83
Quanta Computer Inc.

Size	Document Number	Rev
Custom	+VGACORE (RT8813A)	1A
Date: Friday, February 14, 2014	Sheet 41 of 44	

+1.35V Volt +/- 5%
Countinue current:6A
Peak current:8A
OCP minimum:12A



PROJECT :U83 Quanta Computer Inc.			
Size: Custom	Document Number: +1.35V_VGA(AOZ1237)		Rev: 1A
Date: Friday, February 14, 2014	Sheet 42 of 44		



PROJECT :U83
Quanta Computer Inc.

Size	Document Number	Rev
Custom	1.05V_VGA/3V_VGA	1A
Date: Friday, February 14, 2014	Sheet 43 of 44	

Battery Connector	Pavillion	ENVY
14"	DFAD08MR063	DFAD08MR064
15"	DFAD08MR065	DFAD08MR066
17"	DFAD08MR063	DFAD08MR063

USB Charge Support	PR185	PR184
Pavillion	Stuff	NA
ENVY (USB charge)	NA	Stuff

UMA	Disable Page 41、42、43 ,but keep below location
Page 41	PC161、PC162
Page 42	PC138、PC144、PC4
Page 43	PC84、PC102、PC88、PC97、PC40、PC33

Discrete	Location	Part Number
N15S (25W)	PR155	CS29532FB10
	PC151、PC160	NA
	PQ21、PQ23、PQ25、PQ28	NA
N15P (35W)	PR155	CS31242FB13
	PC151、PC160	Stuff
	PQ21、PQ23、PQ25、PQ28	Stuff

Title <Title>		
Size A	Document Number <Doc>	Rev <RevCo
Date: Friday, February 14, 2014	Sheet 44 of 44	