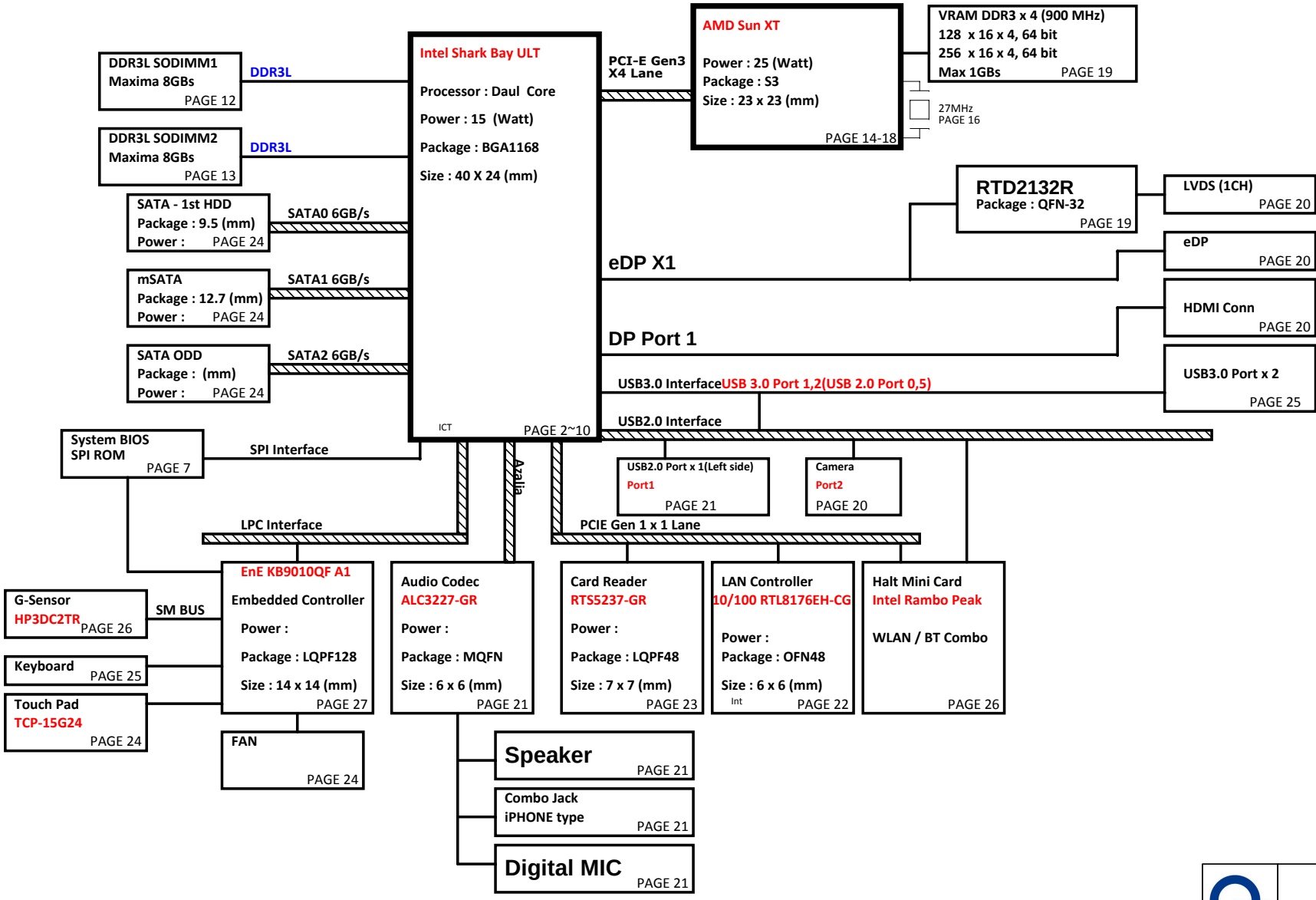
U83 DIS (14"/15.6") Ultra/Slim
Intel Shark Bay ULT Platform Block Diagram

PCB 6L STACK UP

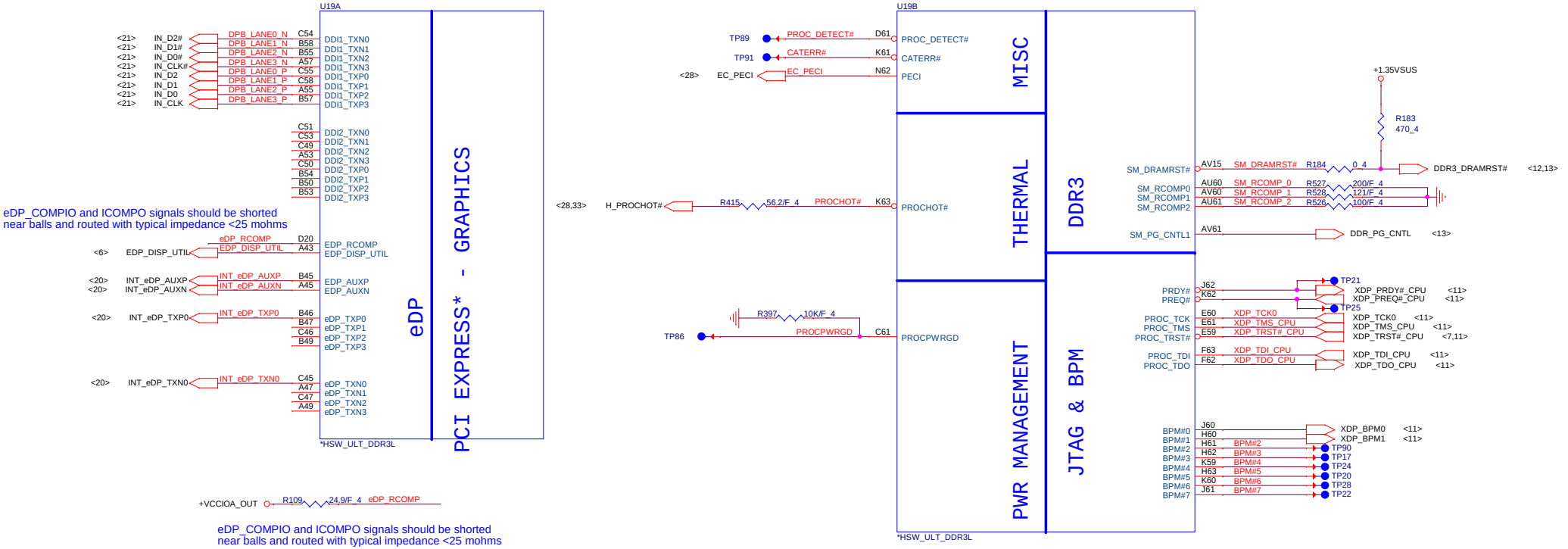
LAYER 1 : TOP
LAYER 2 : SGND
LAYER 3 : IN1(High)
LAYER 4 : IN2(Low)
LAYER 5 : SVCC
LAYER 6 : BOT



PROJECT :U83
Quanta Computer Inc.

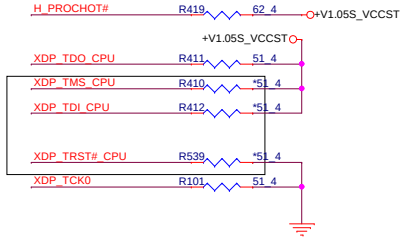
Size	Document Number	Rev
Custom	Block Diagram	1A

Date: Monday, March 18, 2013 | Sheet 1 of 41



Processor pull-up (CPU)

DEL or not?



PROJECT :U83
Quanta Computer Inc.

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

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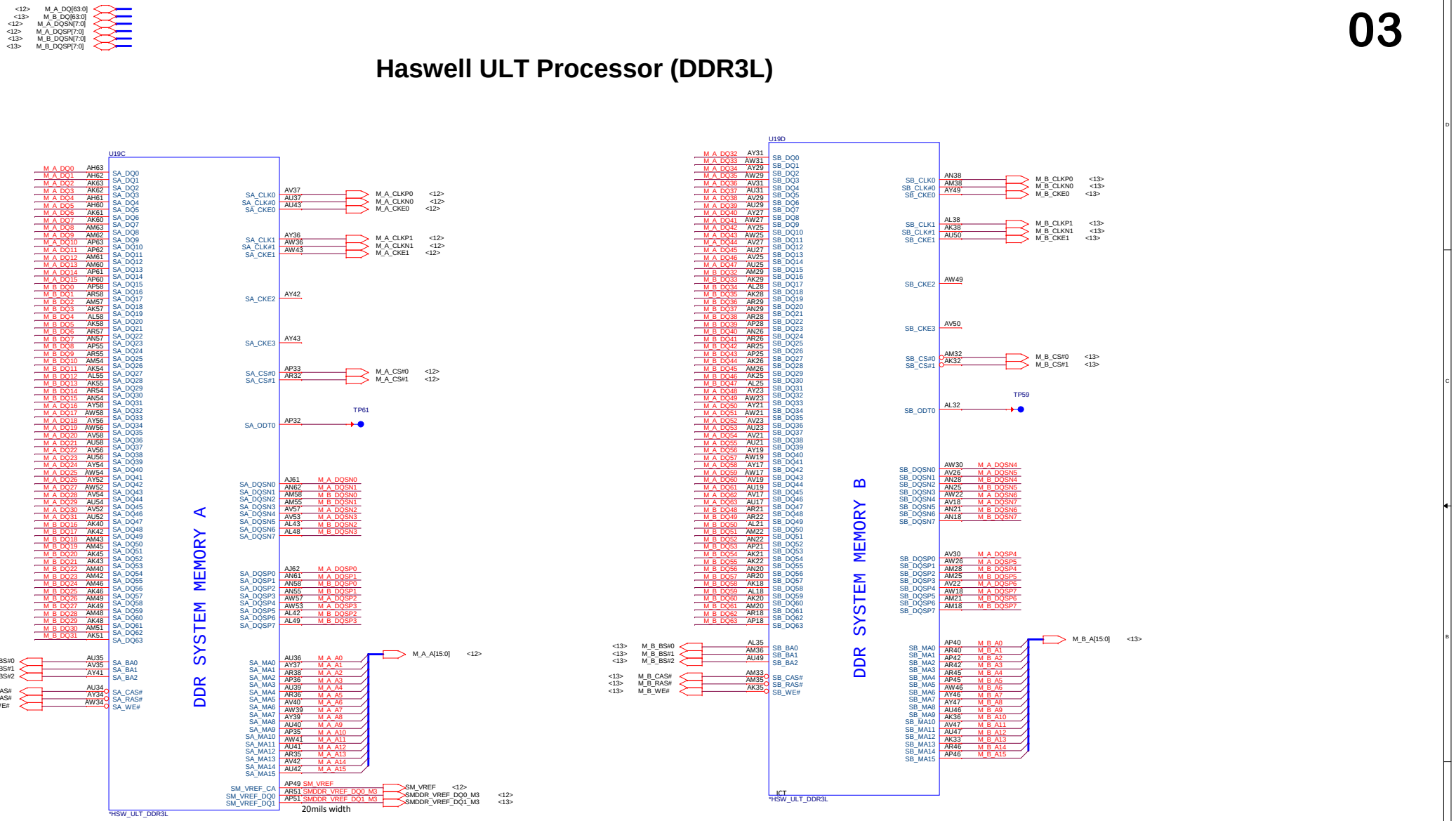
Haswell ULT Processor (DDR3L)



POWER

32A
+VCC_CORE

U19F

HSW ULT POWER

*HSW_ULT_DDR3L

1.4A
+1.35VSUS
Close to CPU

Direct tie to CPU VCC/VSS-Ball

CFG0-19 need Reserve TP

U19E

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 R452 *1K_4
CFG4 (DP Presence Strap)	Disable; No physical DP attached to eDP	Enable; An ext DP device is connected to eDP	CFG4 R143 1K_4

+VCCIOA_OUT <2>
+VCCIO_OUT <6>
+1.5V <10,22,25,27,31>
+1.35VSUS <2,12,13,25,32>
+1.05V <7,10,11,27,28,31,34>
+VCC_CORE <33>

PROJECT :U83
Quanta Computer Inc.

Size	Document Number	Rev
Custom	04 – ULT 3/9 (POWER-1)	1A

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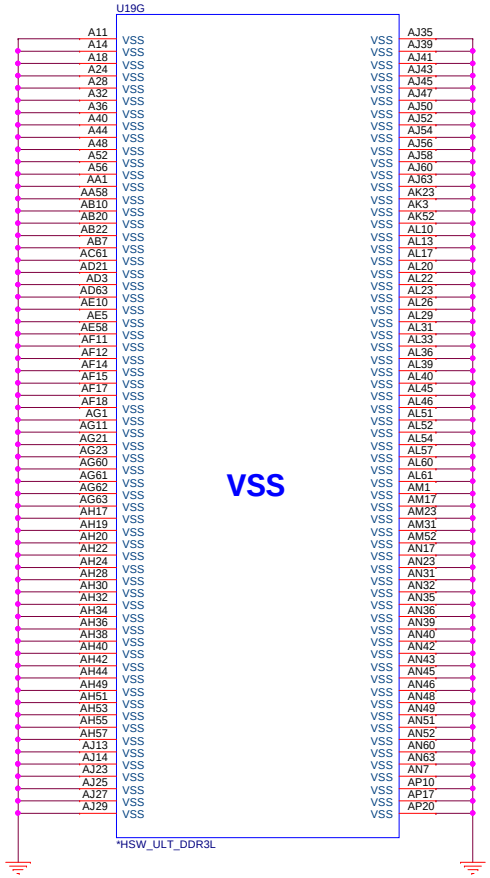

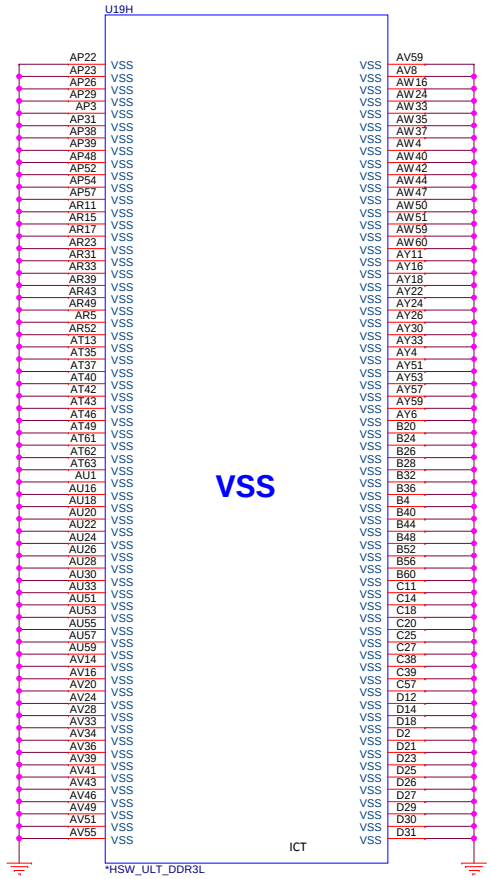

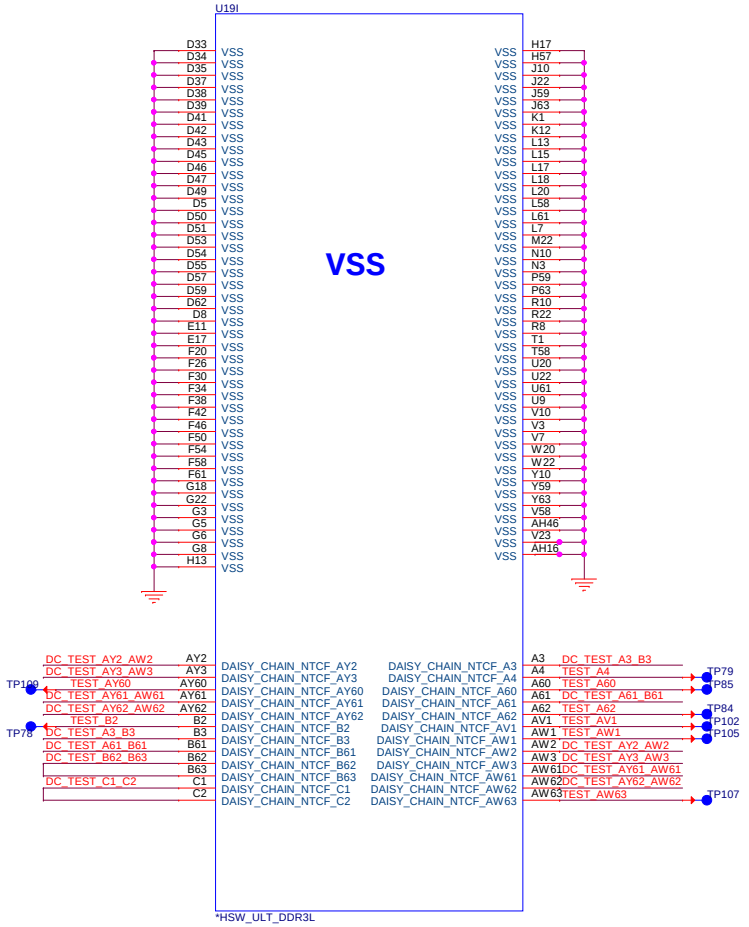

PROJECT :U83
Quanta Computer Inc.

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

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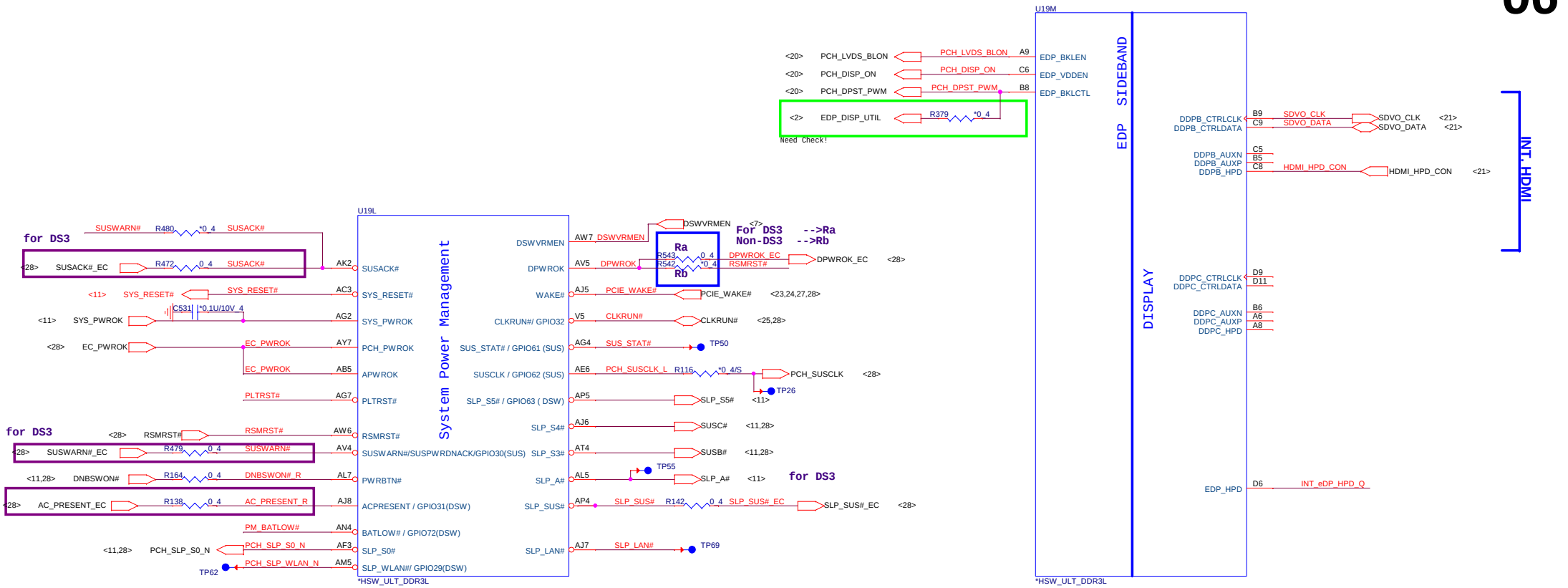
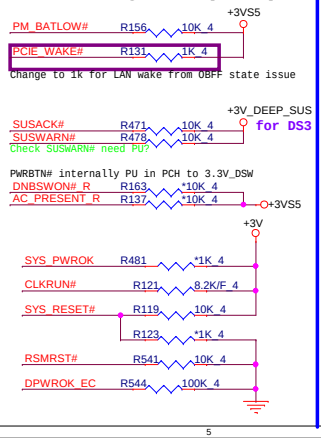
Lynx Point-LP Platform Controller Hub (LVDS,DDI)

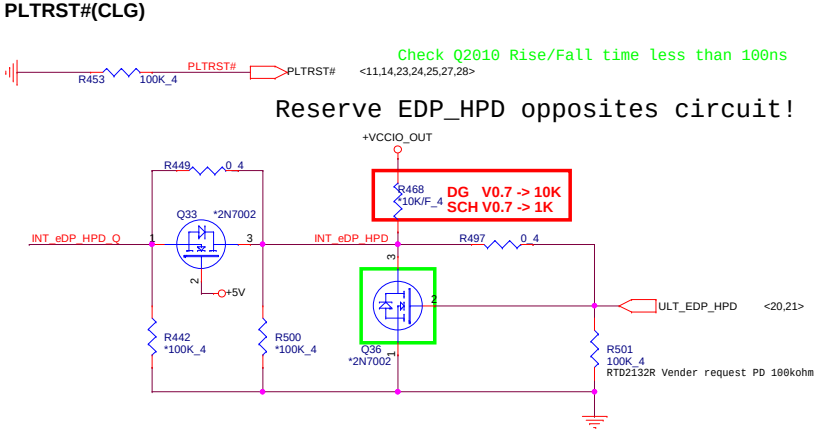
06



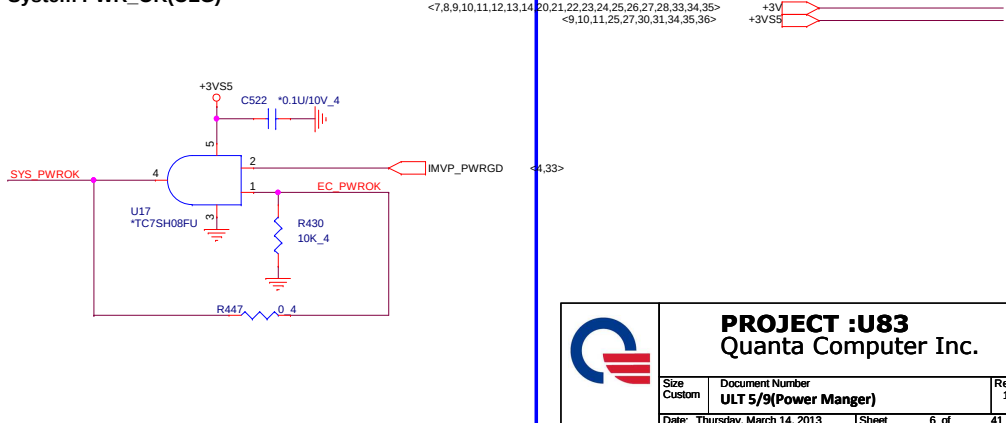
PCH Pull-high/low(CLG)



PLTRST#(CLG)



System PWR_OK(CLG)



PROJECT :U83
Quanta Computer Inc.

Size	Document Number	Rev
Custom	ULT 5/9(Power Manger)	1A
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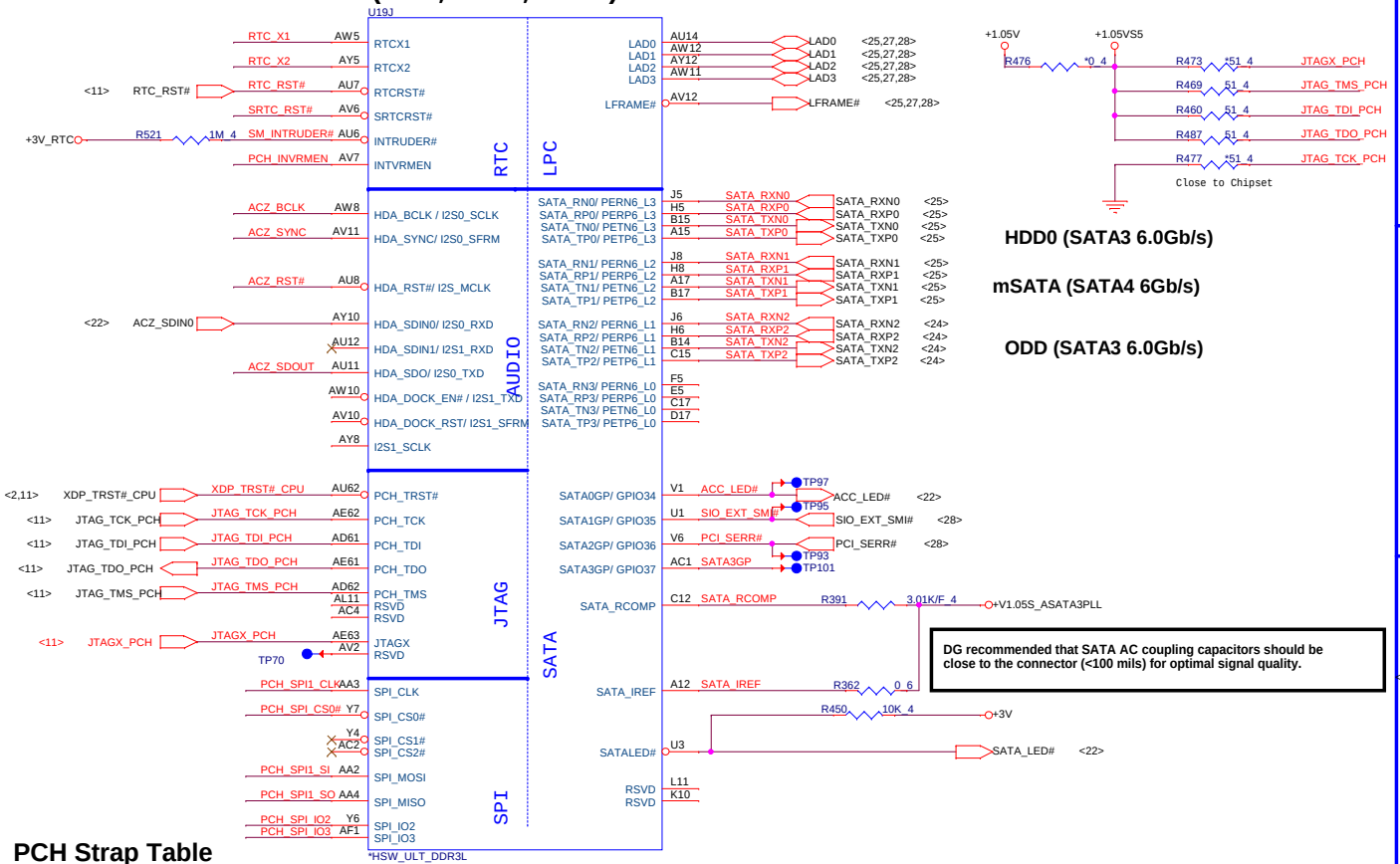
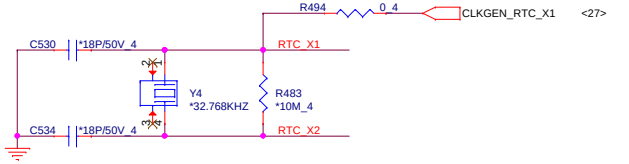
Lynx Point-LP Platform Controller Hub (HDA,JTAG,SATA)



PCH Strap Table

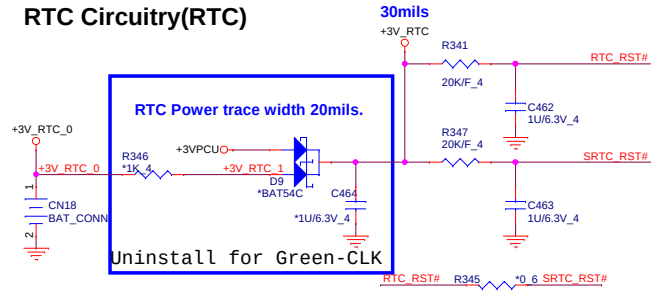
Pin Name	Strap description	Sampled	Configuration	Circuit
SPKR	No reboot mode setting	PWROK	0 = Default (weak pull-down 20K) 1 = Setting to No-Reboot mode	
SDIO_D0 /GPIO66	Top-Block Swap	PWROK	0 = "top-block swap" mode 1 = Default (weak pull-up 20K)	
INTVRMEN	Integrated 1.05V VRM enable	ALWAYS	Should be always pull-up	
HDA_SDO /I2S0_TXD	Flash Descriptor Security Only for Interposer	PWROK	0 = Default (weak pull-down 20K) 1 = Can be Overridden	
GSPI0_MOSI /GPIO86	Boot BIOS Selection	PWROK	GNT0# 1 = LPC; GNT0# 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	

RTC Clock 32.768KHz

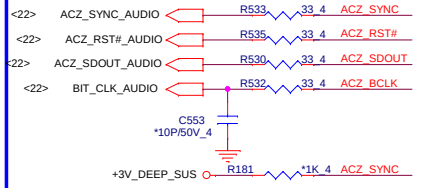


no stuff If use green Clock

RTC Circuitry(RTC)



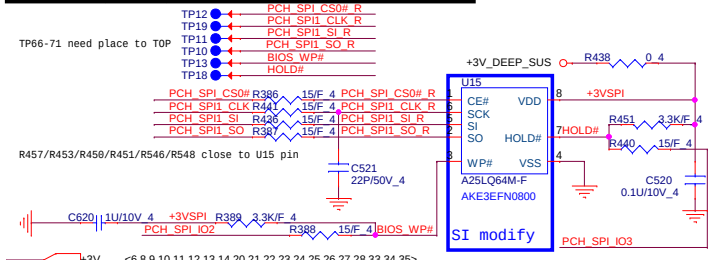
HDA Bus(CLG)



GPIO Pull UP

PCH SPI ROM(CLG)

Vender	Size	P/N
AMIC	8MB	AKE3EFN0800 (A25LQ64M-F)
Winbond	8MB	AKE3EFP0N07 (W25Q64FVSSIQ)
GigaDevice	8MB	AKE3EGN0Q01 (GD25B64BSIGR)
Socket		DFHS08FS023



PROJECT :U83
Quanta Computer Inc.

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

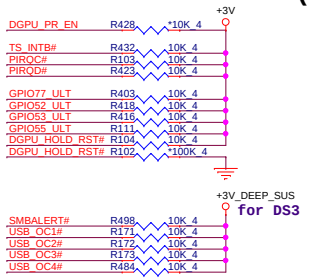
Date: Thursday, March 14, 2013 Sheet 7 of 41

07

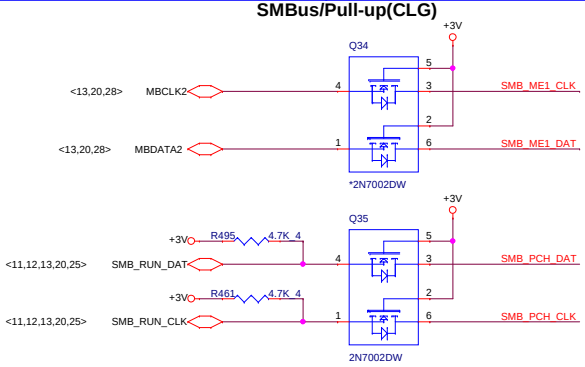
Lynx Point-LP Platform Controller Hub (HDA, JTAG, SATA)

08

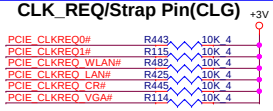
PCI/USBOC# Pull-up(CLG)



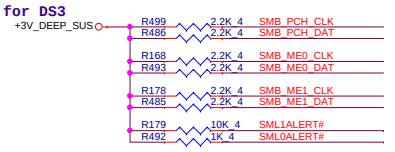
SMBus/Pull-up(CLG)



CLK_REQ/Strap Pin(CLG)



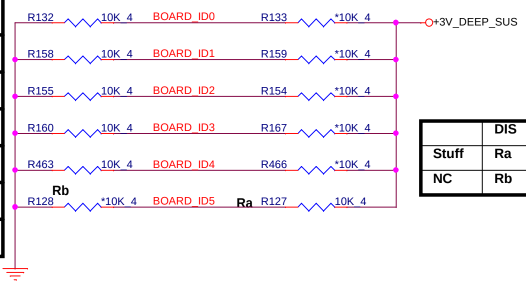
SMBus/Pull-up(CLG)



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

U19O
SIO_EXT_SCI# AU2 GPIO8(SUS)
BT_OFF AM3 GPIO9(SUS)
RF_OFF AM2 GPIO10(SUS)
LAN_DISABLE# AM7 LAN_PHY_PWR_CTRL / GPIO12(DSW)
GPIO13_ULT AT3 GPIO13(SUS)
GPIO14_ULT AH4 GPIO14(SUS)
GPIO15_ULT AD6 GPIO15(SUS)
ODD_PRSNT#_R Y1 GPIO16
DGPU_PWROK T3 GPIO17
GPIO24_ULT AD5 GPIO24 (SUS)
GPIO25_ULT AM4 GPIO25(DSW)
GPIO26_ULT AN3 GPIO26(SUS)
GPIO27_ULT AN5 GPIO27(DSW)
GPIO28_ULT AD7 GPIO28(SUS)
DEVSLP0 P2 DEVSLP0/ GPIO33
DEVSLP1 L2 DEVSLP1/ GPIO38
DEVSLP2 N5 DEVSLP2/ GPIO39
GPIO44_ULT AK4 GPIO44(SUS)
BOARD_ID4 AG5 GPIO45(SUS)
ACCEL_INTA# AG3 GPIO46(SUS)
BOARD_ID5 AB6 GPIO47(SUS)
BT_COMBO_EN# U4 GPIO48
GPIO49_ULT Y3 GPIO49
GPIO50_ULT P3 GPIO50
BOARD_ID0 AG6 GPIO56(SUS)
BOARD_ID1 AP1 GPIO57(SUS)
BOARD_ID2 AL4 GPIO58(SUS)
BOARD_ID3 AT5 GPIO59(SUS)
GPIO70_ULT C4 SDIO_POWER_EN/ GPIO70
MPHY_PWREN Y2 HSIOPC/ GPIO71
GPIO76_ULT P1 BMBUSY# / GPIO76
SPKR V2 SPKR/ GPIO81
GPIO
CPU/MISC
SERIAL IO
THRMTRIP# D60 PCH_THRMTRIP# R405 0_4 PM_THRMTRIP# <28>
RCIN#/ GPIO82 V4 EC_RCIN# <28>
SERIRQ T4 SERIRQ R113 10K_4 +3V SERIRQ <25,28>
PCH_OPI_RCOMP AW15 PCH_OPI_RCOMP R522 49.9/F_4
RSVD AF20
RSVD AB21
GSPI0_CS/ GPIO83 R6 GSPI0_CS
GSPI0_CLK/ GPIO84 L6 GSPI0_CLK
GSPI0_MISO/ GPIO85 N6 GSPI0_MISO
GSPI0_MOSI/ GPIO86 L8 GPIO86_ULT TP33
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 GPIO66_ULT <7>
SDIO_D1/ GPIO67 E4 SDIO_D1
SDIO_D2/ GPIO68 C3 SDIO_D2
SDIO_D3/ GPIO69 E2 SDIO_D3
*HSW_ULT_DDR3L
<28> SIO_EXT_SCI# TP67
<27> BT_OFF TP57
<27> RF_OFF TP52
for DS3
+3V_DEEP_SUS R175 10K_4
<7> GPIO15_ULT TP103
SI modify
Reserve ZERO_ODD_DP# R631 *0_4 TP92
<28,35,36,37> DGPU_PWROK
TP5038
<25> DEVSLP1
TP for DG
TP29 <27> ACCEL_INTA#
<27> BT_COMBO_EN#
TP99
TP106
<34> MPHY_PWREN
TP94
<22> ACZ_SPKR R456 0_4
<7> SPKR
RP7 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
SIO_EXT_SCI# R174 10K_4
BT_OFF R177 10K_4
RF_OFF R139 10K_4
GPIO13_ULT R176 10K_4
GPIO14_ULT R489 10K_4
GPIO24_ULT R488 10K_4
GPIO26_ULT R180 10K_4
GPIO28_ULT R126 10K_4
GPIO44_ULT R491 10K_4
ACCEL_INTA# R490 10K_4
+3V
GPIO49_ULT R475 10K_4
GPIO50_ULT R433 10K_4
SI modify
ODD_PRSNT#_R R470 10K_4
DGPU_PWROK R424 10K_4
DEVSLP0 R407 10K_4
DEVSLP1 R429 10K_4
DEVSLP2 R396 10K_4
BT_COMBO_EN# R112 10K_4
GPIO70_ULT R383 10K_4
EC_RCIN# R444 10K_4
GPIO12 LAN_DISABLE#
SUS -->Check list
+3V -->Datasheet
GPIO76_ULT R434 10K_4
MPHY_PWREN R465 100K_4
MPHY_PWREN R464 *10K_4
+3VS5
GPIO25_ULT R134 10K_4
GPIO27_ULT R161 10K_4
LAN_DISABLE# R136 10K_4
Close to EC
+V1.05S_VCCST
PM_THRMTRIP# R135 1K_4

Model	BOARD_ID5 UMA: 0 DIS: 1	BOARD_ID4 14": 0 15": 1	BOARD_ID3	BOARD_ID2	BOARD_ID1	BOARD_ID0
U83 DIS-14	1	0	0	0	0	0
U83 UMA-15	0	1	0	0	0	0
	0	0	0	0	0	0
	0	0	0	0	0	0
	0	0	0	0	0	0
	0	0	0	0	0	0



	DIS	UMA
Stuff	Ra	Rb
NC	Rb	Ra

<6,7,8,10,11,12,13,14,20,21,22,23,24,25,26,27,28,33,34,35> +3V
<6,10,11,25,27,30,31,34,35,36> +3VS5

PROJECT :U83
Quanta Computer Inc.

Size	Document Number	Rev
Custom	ULT 8/9 (GPIO/MISC)	1A

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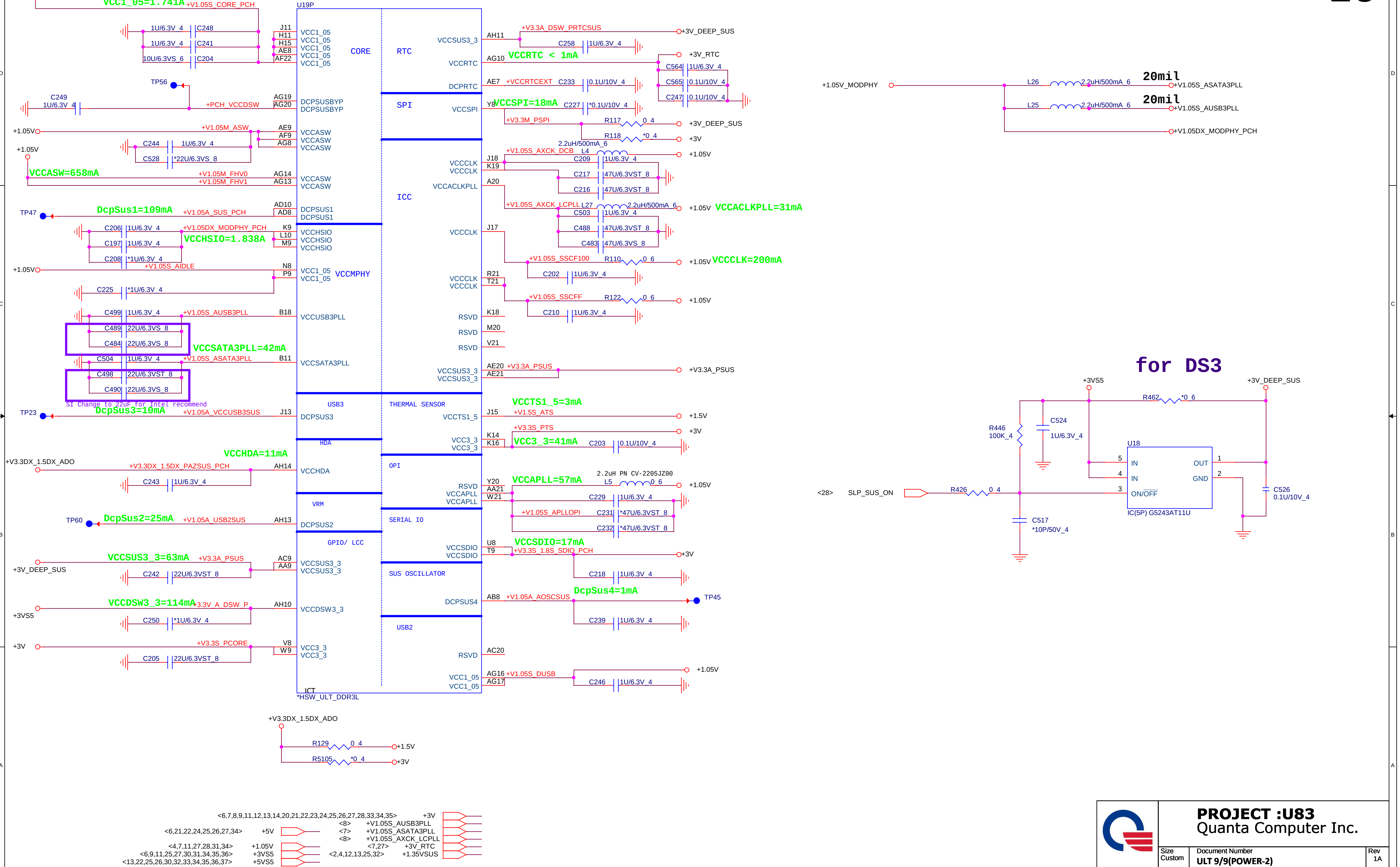
Lynx Point-LP Platform Controller Hub (HDA,JTAG,SATA)(POWER)


POWER
U19P
CORE
RTC
SPI
ICC
USB3
HDA
VRM
GPIO/ LCC
THERMAL SENSOR
OPI
SERIAL IO
SUS OSCILLATOR
USB2
VCCMPHY
*HSW_ULT_DDR3L
VCC1_05=1.741A
+V1.05S_CORE_PCH
+PCH_VCCDSW
VCCASW=658mA
DcpSus1=109mA
VCCHSIO=1.838A
VCCSATA3PLL=42mA
SI Change to 22uF for Intel recommend
DcpSus3=10mA
VCCHDA=11mA
DcpSus2=25mA
VCCSUS3_3=63mA
VCCDSW3_3=114mA
VCCRTC < 1mA
VCCSPI=18mA
VCCACLKPLL=31mA
VCCCLK=200mA
VCCTS1_5=3mA
VCC3_3=41mA
VCCAPLL=57mA
VCCSDIO=17mA
DcpSus4=1mA
+3V_DEEP_SUS
+3V_RTC
+3V
+1.05V
+1.5V
+V3.3A_PSUS
+1.05V_MODPHY
+V1.05S_ASATA3PLL
+V1.05S_AUSB3PLL
+V1.05DX_MODPHY_PCH
20mil
20mil
for DS3
+3VS5
U18
IN
OUT
GND
ON/OFF
IC(5P) G5243AT11U
SLP_SUS_ON
+V3.3DX_1.5DX_ADO
R129 0_4
R5105 *0_4
+5V
+3VS5
+5VS5
+1.35VSUS
+V1.05S_AXCK_LCPLL

PROJECT :U83
Quanta Computer Inc.

Size	Document Number	Rev
Custom	ULT 9/9(POWER-2)	1A

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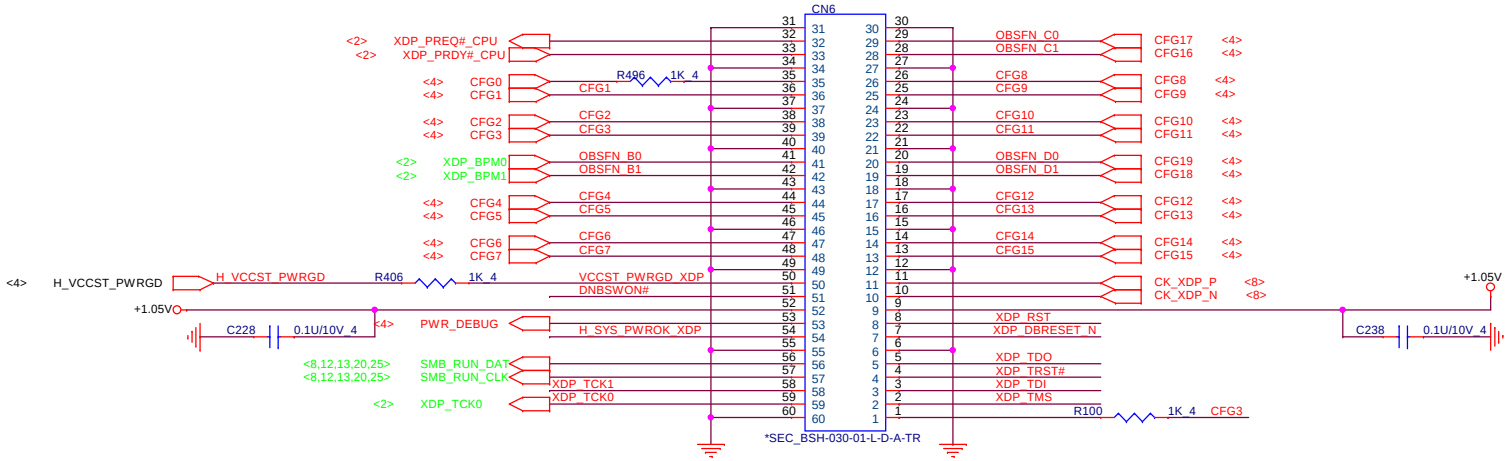

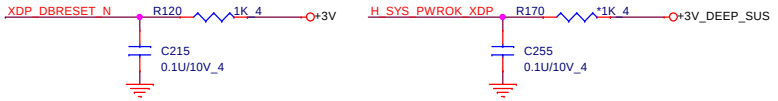

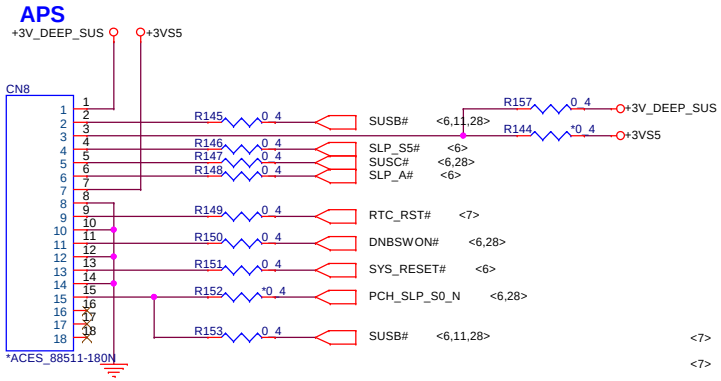

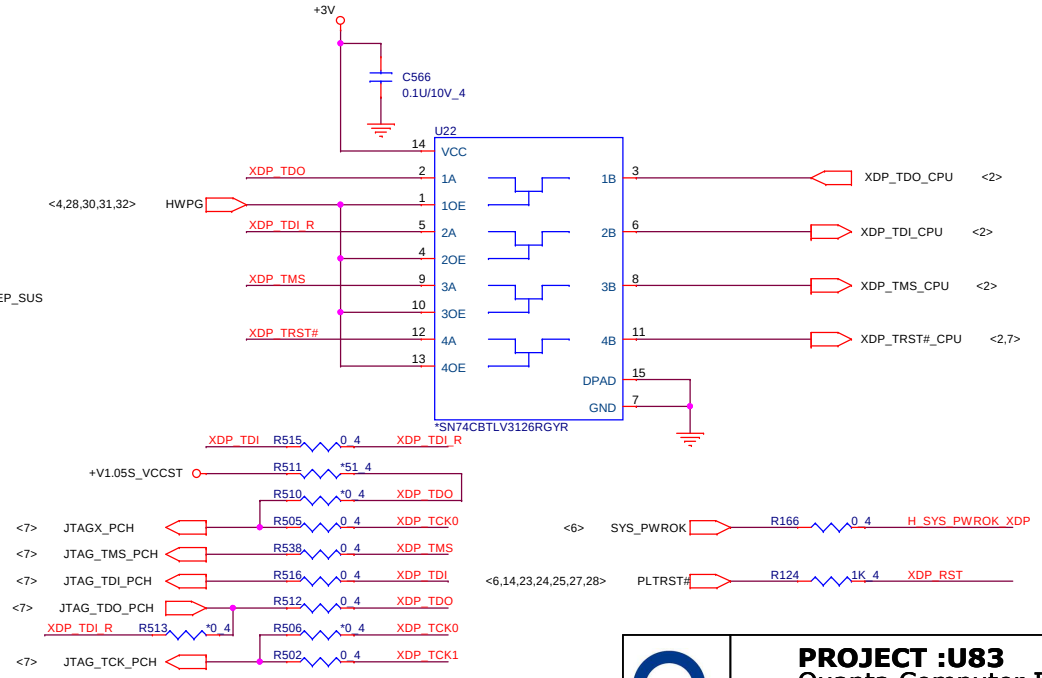

PROJECT :U83		
Quanta Computer Inc.		
ULT		
Size	Document Number: HSW XDP & APS	Rev: 1A
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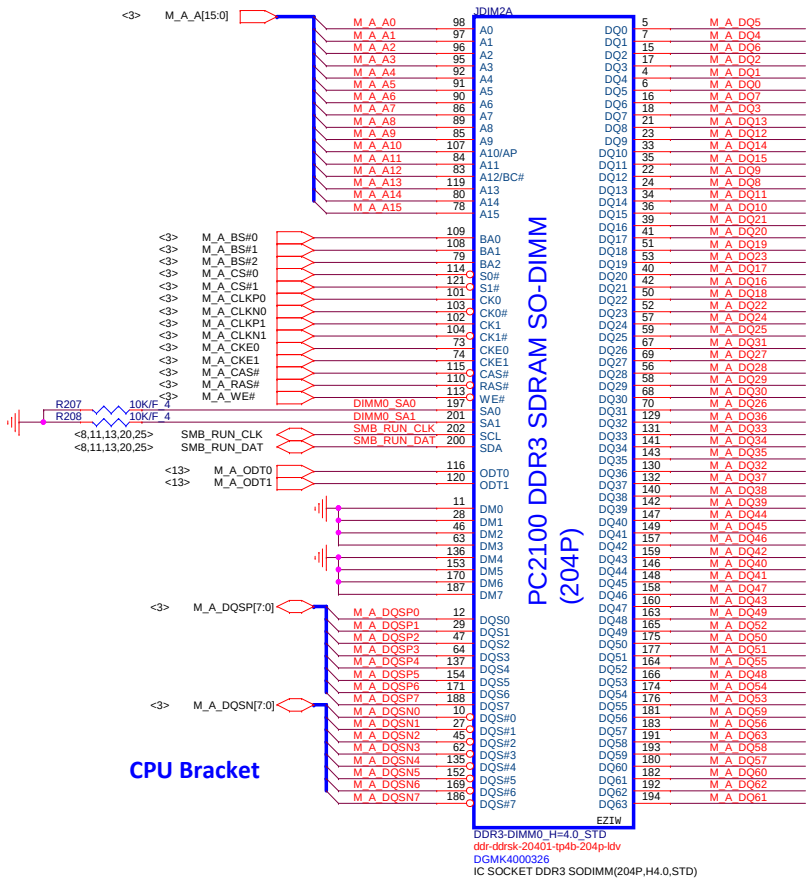
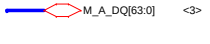
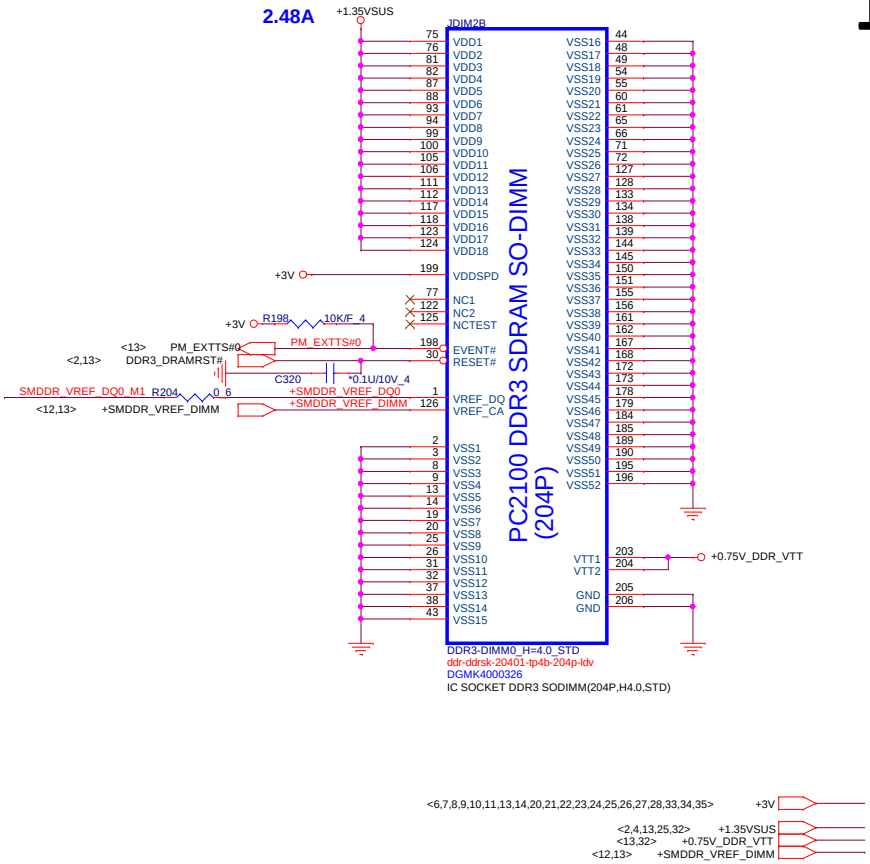
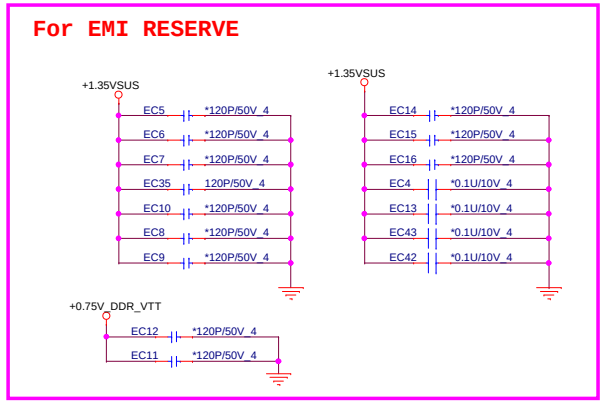
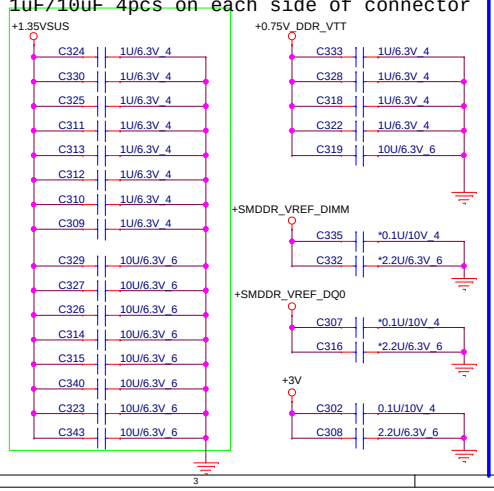
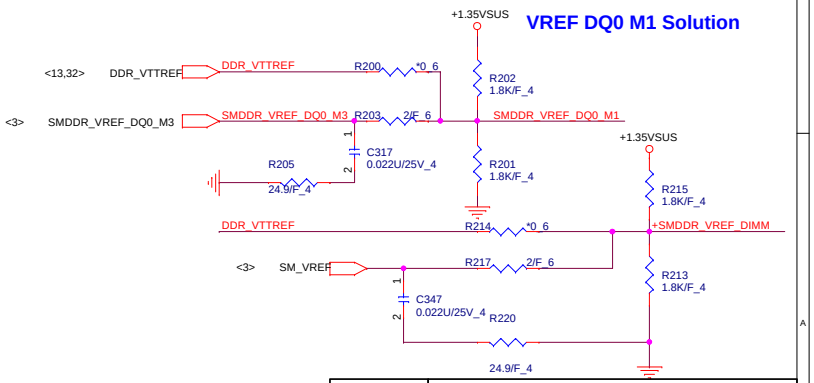






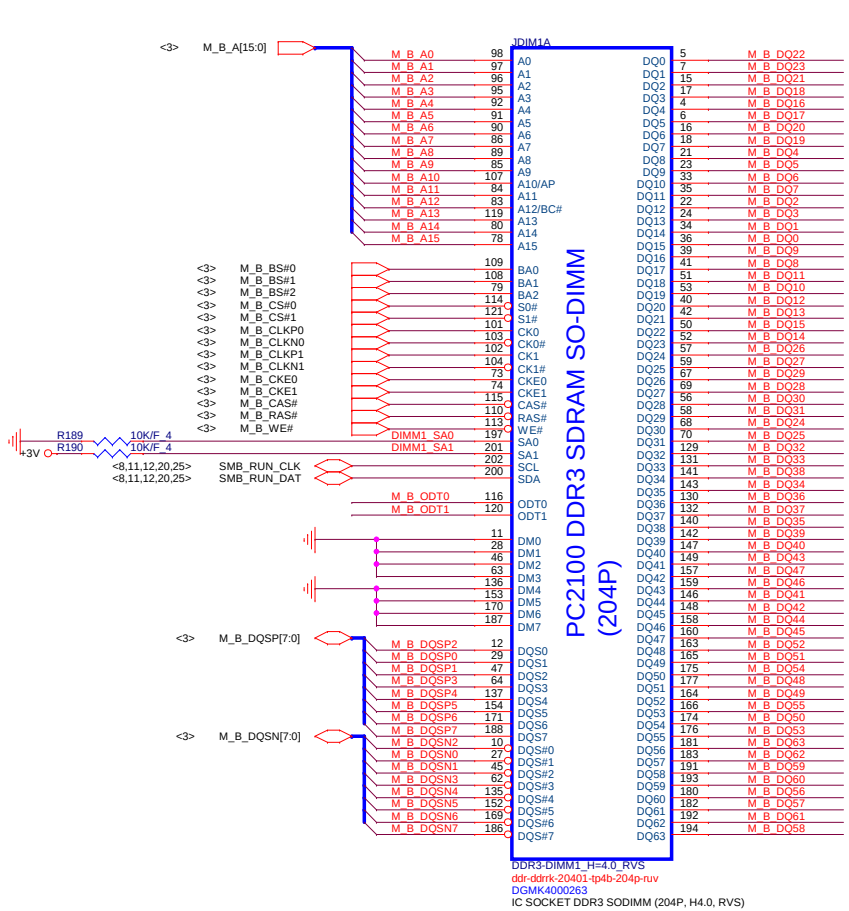


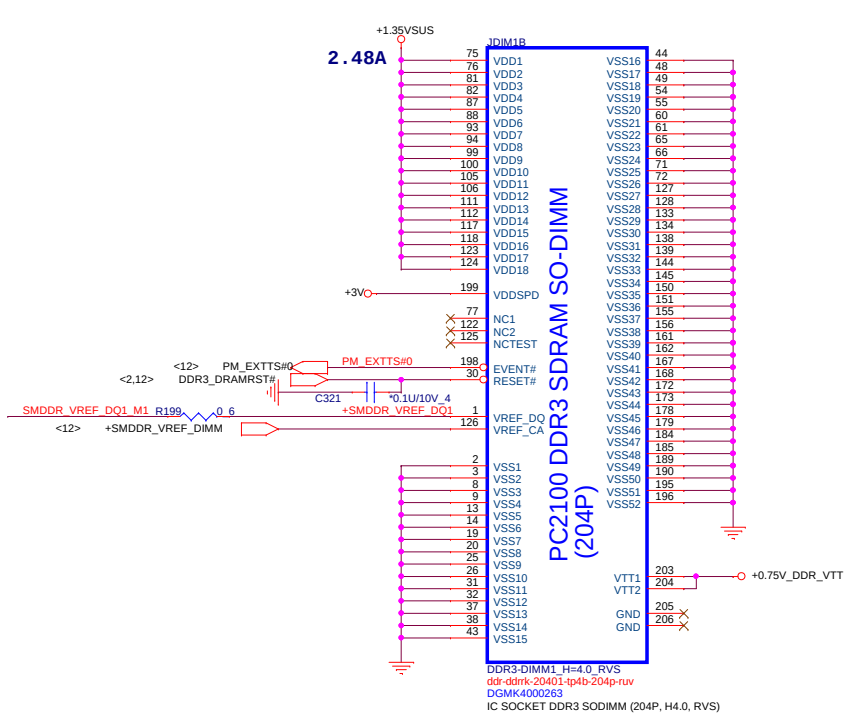




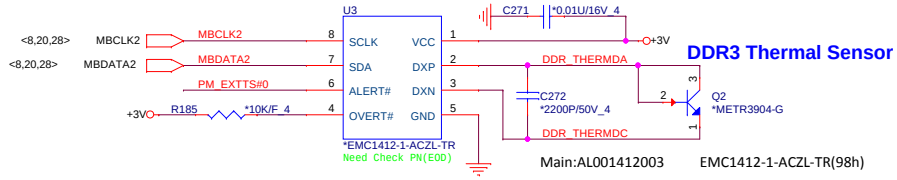
PROJECT :U83
Quanta Computer Inc.

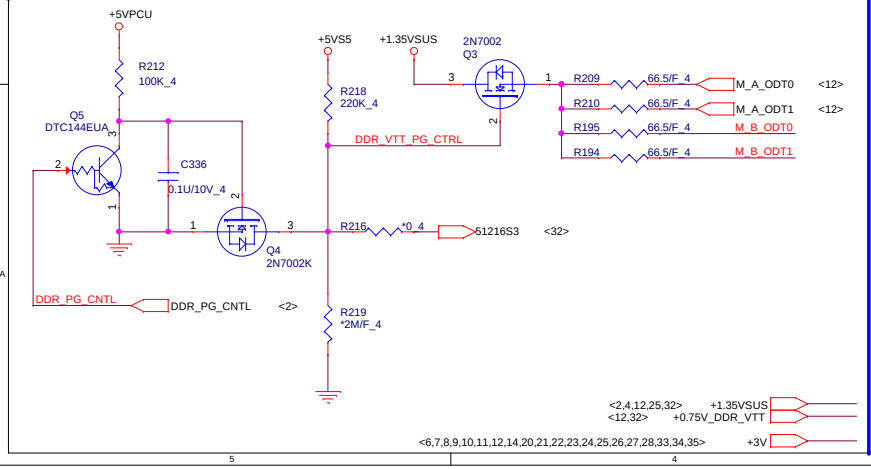
Size	Document Number	Rev
Custom	DDR3 DIMM0-STD(4.0H)	1A
Date: Thursday, March 14, 2013	Sheet 12of 41	



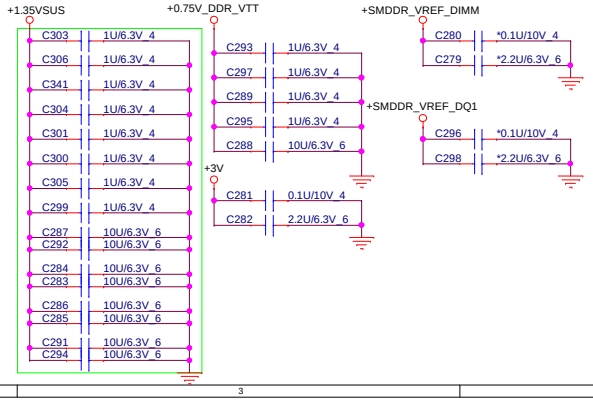


Local Thermal Sensor

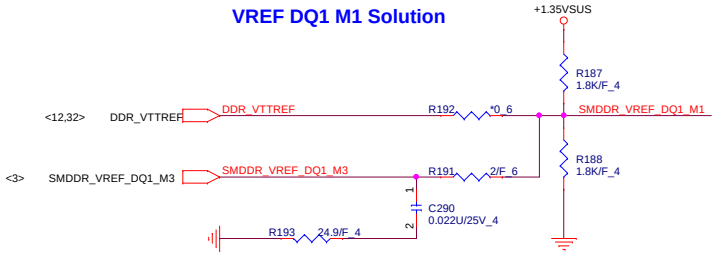




Place these Caps near So-Dimm1.
1uF/10uF 4pcs on each side of connector

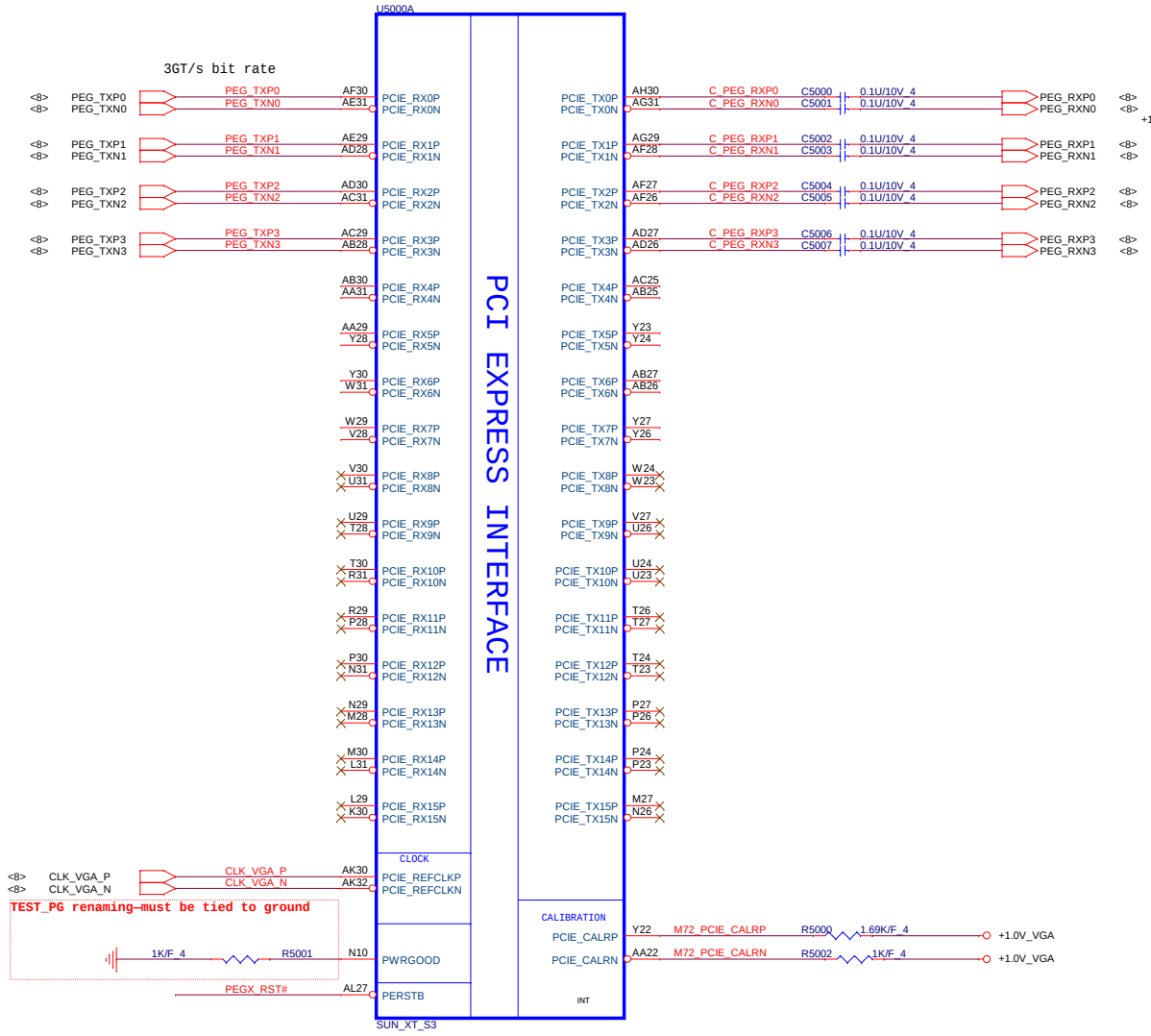


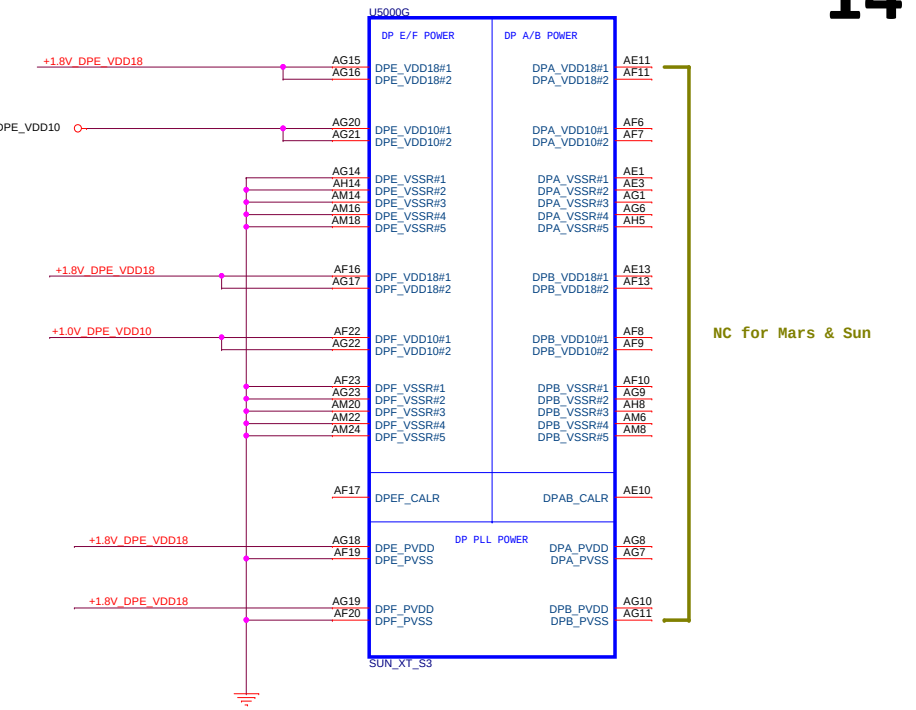
VREF DQ1 M1 Solution

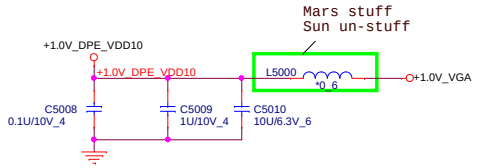


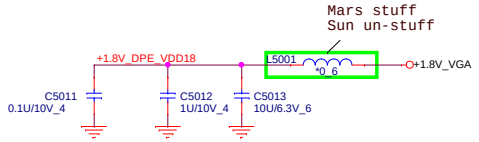
PROJECT :U83
Quanta Computer Inc.

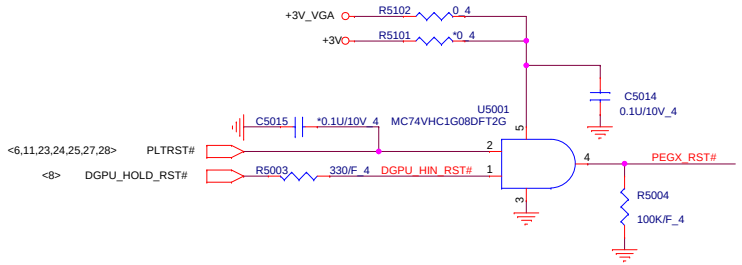
Size	Document Number	Rev
Custom	DDR3 DIMM1-RVS(4.0H)	1A
Date: Thursday, March 14, 2013	Sheet 13of 41	











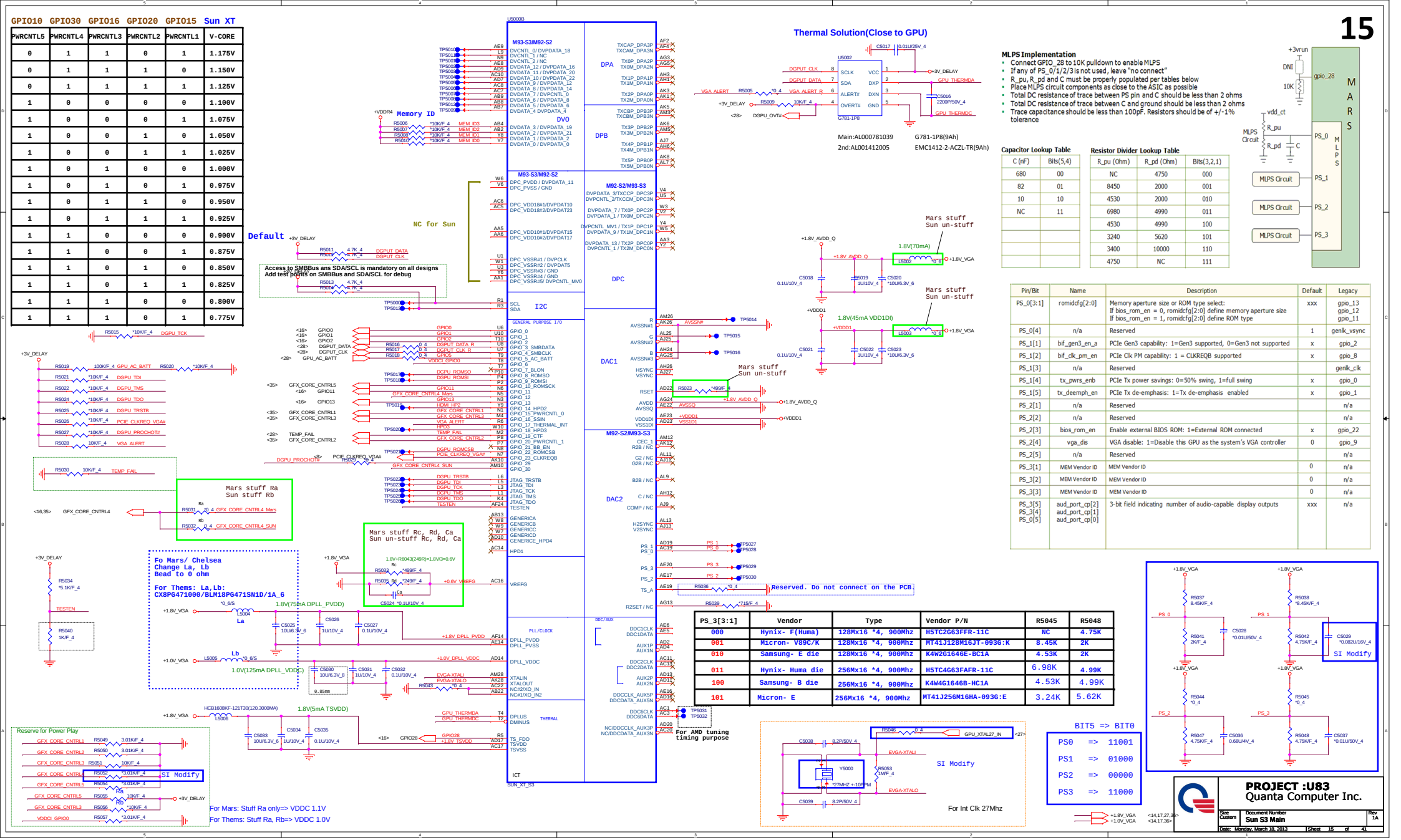
+1.0V_VGA <15,17,36>
+1.8V_VGA <15,17,27,36>

PROJECT :U83
Quanta Computer Inc.

Size	Document Number	Rev
Custom	Sun S3 PCIE_Interface	1A
Date: Thursday, March 14, 2013	Sheet 14 of 41	

GPIO10 GPIO30 GPIO16 GPIO20 GPIO15 Sun XT

PWRCNTL5	PWRCNTL4	PWRCNTL3	PWRCNTL2	PWRCNTL1	V-CORE
0	1	1	0	1	1.175V
0	1	1	1	0	1.150V
0	1	1	1	1	1.125V
1	0	0	0	0	1.100V
1	0	0	0	1	1.075V
1	0	0	1	0	1.050V
1	0	0	1	1	1.025V
1	0	1	0	0	1.000V
1	0	1	0	1	0.975V
1	0	1	1	0	0.950V
1	0	1	1	1	0.925V
1	1	0	0	0	0.900V
1	1	0	0	1	0.875V
1	1	0	1	0	0.850V
1	1	0	1	1	0.825V
1	1	1	0	0	0.800V
1	1	1	0	1	0.775V



PS_3[3:1]	Vendor	Type	Vendor P/N	R5045	R5048
000	Hynix- F(Huma)	128Mx16 *4, 900Mhz	H5TC2G63FFR-11C	NC	4.75K
001	Micron- V89C/K	128Mx16 *4, 900Mhz	MT41J128M16JT-093G:K	8.45K	2K
010	Samsung- E die	128Mx16 *4, 900Mhz	K4W2G1646E-BC1A	4.53K	2K
011	Hynix- Huma die	256Mx16 *4, 900Mhz	H5TC4G63FAFR-11C	6.98K	4.99K
100	Samsung- B die	256Mx16 *4, 900Mhz	K4W4G1646B-HC1A	4.53K	4.99K
101	Micron- E	256Mx16 *4, 900Mhz	MT41J256M16HA-093G:E	3.24K	5.62K

Pin/Bit	Name	Description	Default	Legacy
PS_0[3:1]	romidcfg[2:0]	Memory aperture size or ROM type select: If bios_rom_en = 0, romidcfg[2:0] define memory aperture size If bios_rom_en = 1, romidcfg[2:0] define ROM type	xxx	gpio_13 gpio_12 gpio_11
PS_0[4]	n/a	Reserved	1	genlk_vsync
PS_1[1]	bif_gen3_en_a	PCIe Gen3 capability: 1=Gen3 supported, 0=Gen3 not supported	x	gpio_2
PS_1[2]	bif_clk_pm_en	PCIe Clk PM capability: 1 = CLKREQB supported	x	gpio_8
PS_1[3]	n/a	Reserved		genlk_clk
PS_1[4]	tx_pwrs_enb	PCIe Tx power savings: 0=50% swing, 1=full swing	x	gpio_0
PS_1[5]	tx_deemph_en	PCIe Tx de-emphasis: 1=Tx de-emphasis enabled	x	gpio_1
PS_2[1]	n/a	Reserved		n/a
PS_2[2]	n/a	Reserved		n/a
PS_2[3]	bios_rom_en	Enable external BIOS ROM: 1=External ROM connected	x	gpio_22
PS_2[4]	vga_dis	VGA disable: 1=Disable this GPU as the system's VGA controller	0	gpio_9
PS_2[5]	n/a	Reserved		n/a
PS_3[1]	MEM Vendor ID	MEM Vendor ID	0	n/a
PS_3[2]	MEM Vendor ID	MEM Vendor ID	0	n/a
PS_3[3]	MEM Vendor ID	MEM Vendor ID	0	n/a
PS_3[5] PS_3[4] PS_0[5]	aud_port_cp[2] aud_port_cp[1] aud_port_cp[0]	3-bit field indicating number of audio-capable display outputs	xxx	n/a

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Quanta Computer Inc.
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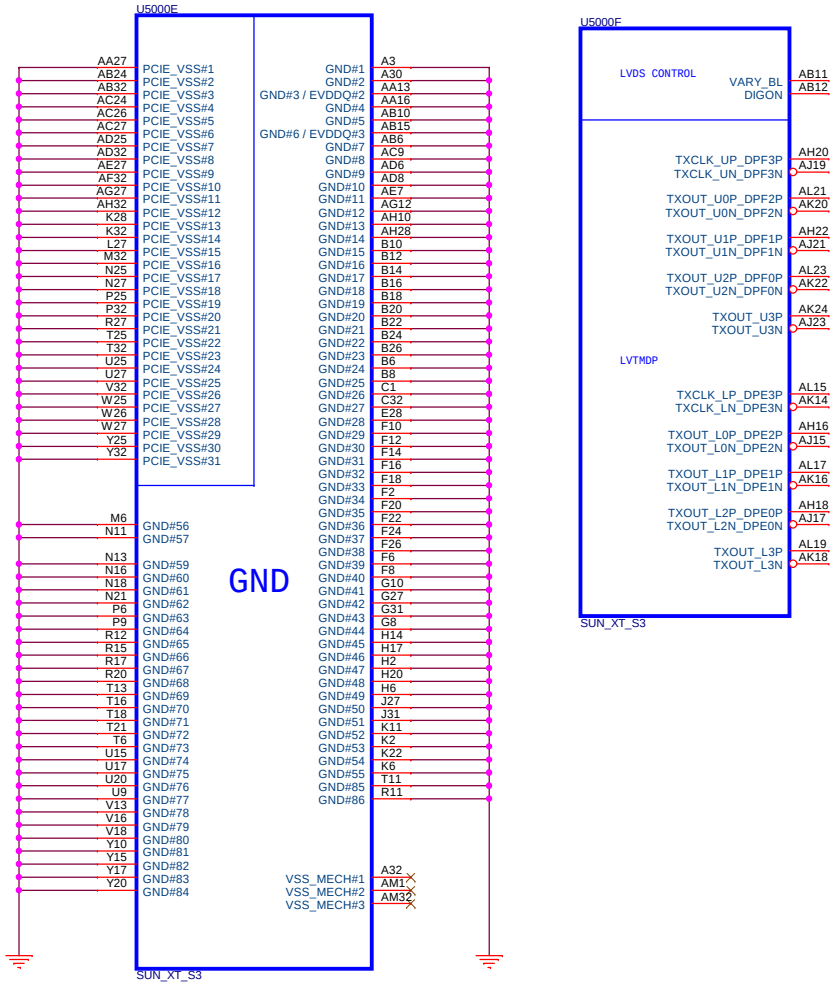
Date: Monday, March 18, 2013 | Sheet 15 of 41



CONFIGURATION STRAPS-- SEE EACH DATABOOK FOR STRAP DETAILS

ALLOW FOR PULLUP PADS FOR THESE STRAPS AND IF THESE GPIOS ARE USED, THEY MUST NOT CONFLICT DURING RESET

RECOMMENDED SETTINGS
0= DO NOT INSTALL RESISTOR
1 = INSTALL 3K RESISTOR
X = DESIGN DEPENDANT
NA = NOT APPLICABLE

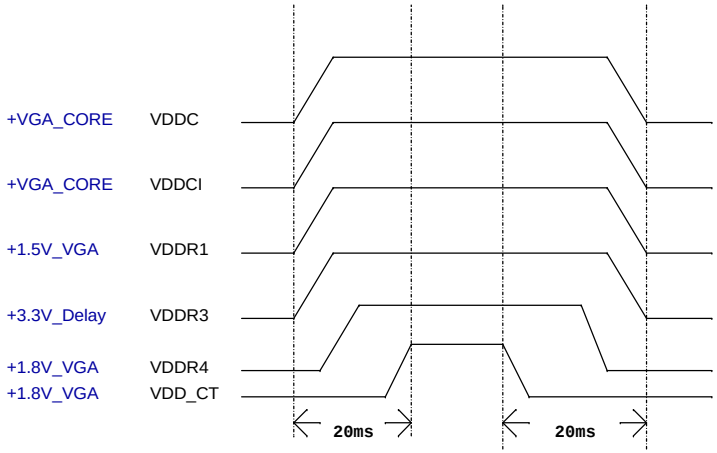
STRAPS	PIN	DESCRIPTION OF DEFAULT SETTINGS	
TX_PWRS_ENB	GPIO0	PCIE FULL TX OUTPUT SWING	0
TX_DEEMPH_EN	GPIO1	PCIE TRANSMITTER DE-EMPHASIS ENABLED	X
RSVD	GPIO2	RESERVED	0
RSVD	GPIO8	RESERVED	0
BIF_VGA DIS	GPIO9	VGA ENABLED	0
RSVD	GPIO21	RESERVED	0
BIOS_ROM_EN	GPIO_22_ROMCSB	ENABLE EXTERNAL BIOS ROM	0
ROMIDCFG(2:0)	GPIO[13:11]	SERIAL ROM TYPE OR MEMORY APERTURE SIZE SELECT	0 0 1
VIP_DEVICE_STRAP_ENA	V2SYNC	IGNORE VIP DEVICE STRAPS (Removed on Seymour/Whistler)	0
RSVD	H2SYNC	RESERVED	0
AUD[1]	HSYNC	SEE DATABOOK FOR DETAIL	0
AUD[0]	VSYNC	SEE DATABOOK FOR DETAIL	0
RSVD	GENERICC	RESERVED	0

NOTE1: AMD RESERVED CONFIGURATION STRAPS

ALLOW FOR PULLUP PADS FOR THESE STRAPS BUT DO NOT INSTALL RESISTOR. IF THESE GPIOS ARE USED, THEY MUST KEEP "LOW" AND NOT CONFLICT DURING RESET.

GPIO21 H2SYNC GENERICC GPIO8 GPIO2

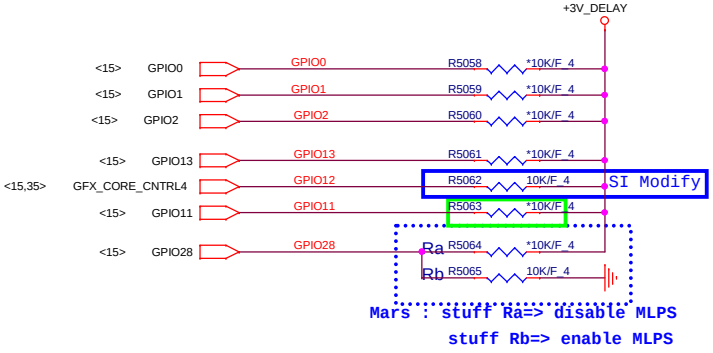
Power Up/Down Sequence



Memory Aperture size(Seymour)

GPIO9 BIOSROM		GPIO13 ROMIDCFG2	GPIO12 ROMIDCFG1	GPIO11 ROMIDCFG0
0	128M	0	0	0
0	256M	0	0	1
0	64M	0	1	0
0	32M	0	1	1
0	512M	1	0	0
0	1G	1	0	1
0	2G	1	1	0
0	4G	1	1	1

It is a shared pin strap with CONFIG[2:0] if BIOS_ROM_EN is set to 0.



+3V_DELAY <15,17>

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Quanta Computer Inc.

Size	Document Number	Rev
Custom	Sun S3 GND / LVDS/ Straps	1A
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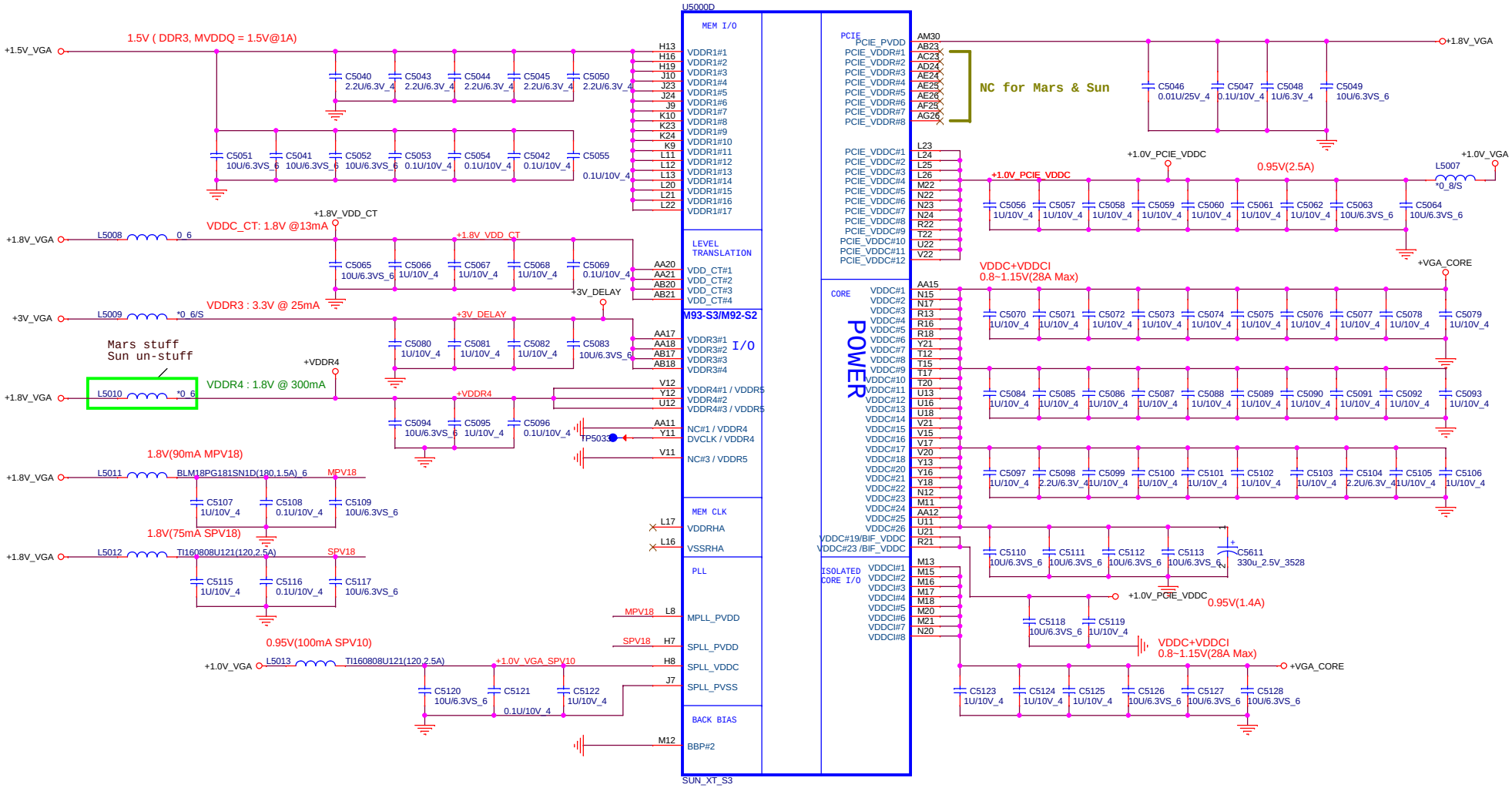

+1.5V_VGA <18,19,37>
+1.8V_VGA <14,15,27,36>
+1.0V_VGA <14,15,36>
+VGA_CORE <35,36>
+3V <6,7,8,9,10,11,12,13,14,20,21,22,23,24,25,26,27,28,33,34,35>
+5V <6,21,22,24,25,26,27,34>

PROJECT :U83
Quanta Computer Inc.

Size	Document Number	Rev
Custom	Sun S3 Power_and_NC	1A

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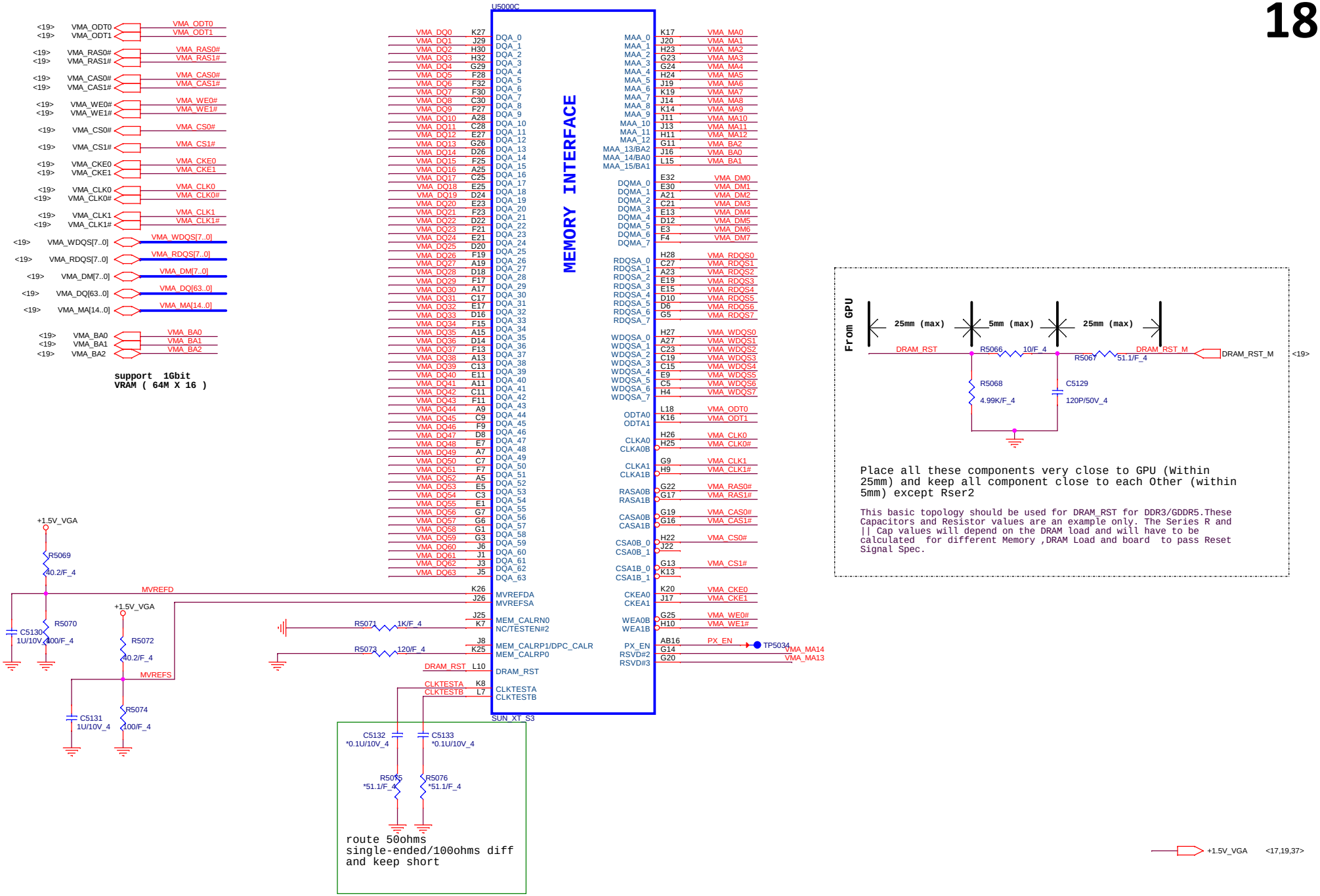

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Size: Custom	Document Number: Sun S3 MEM_Interface	Rev: 1A
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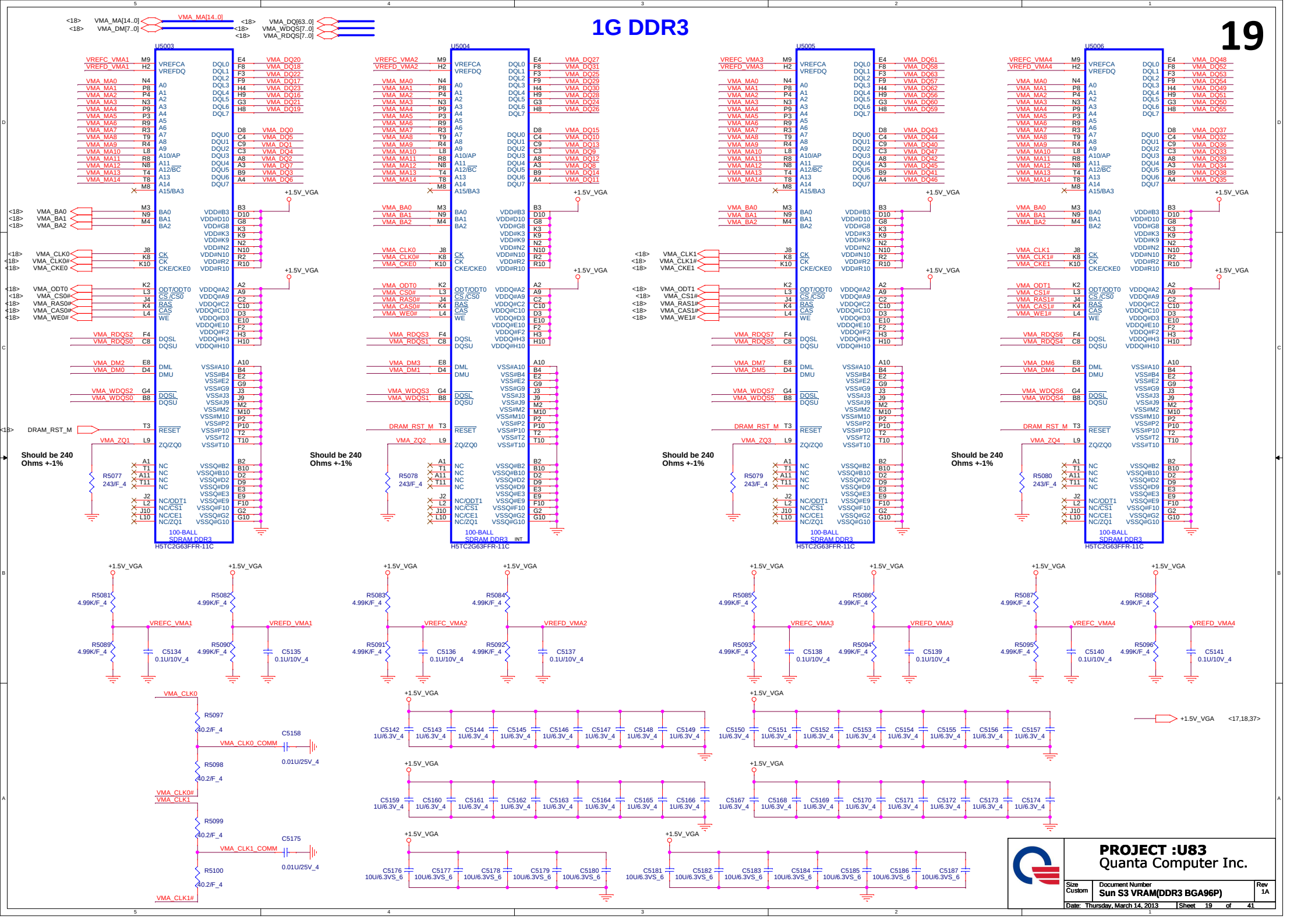
1G DDR3



PROJECT :U83
Quanta Computer Inc.

Size	Document Number	Rev
Custom	Sun S3 VRAM(DDR3 BGA96P)	1A

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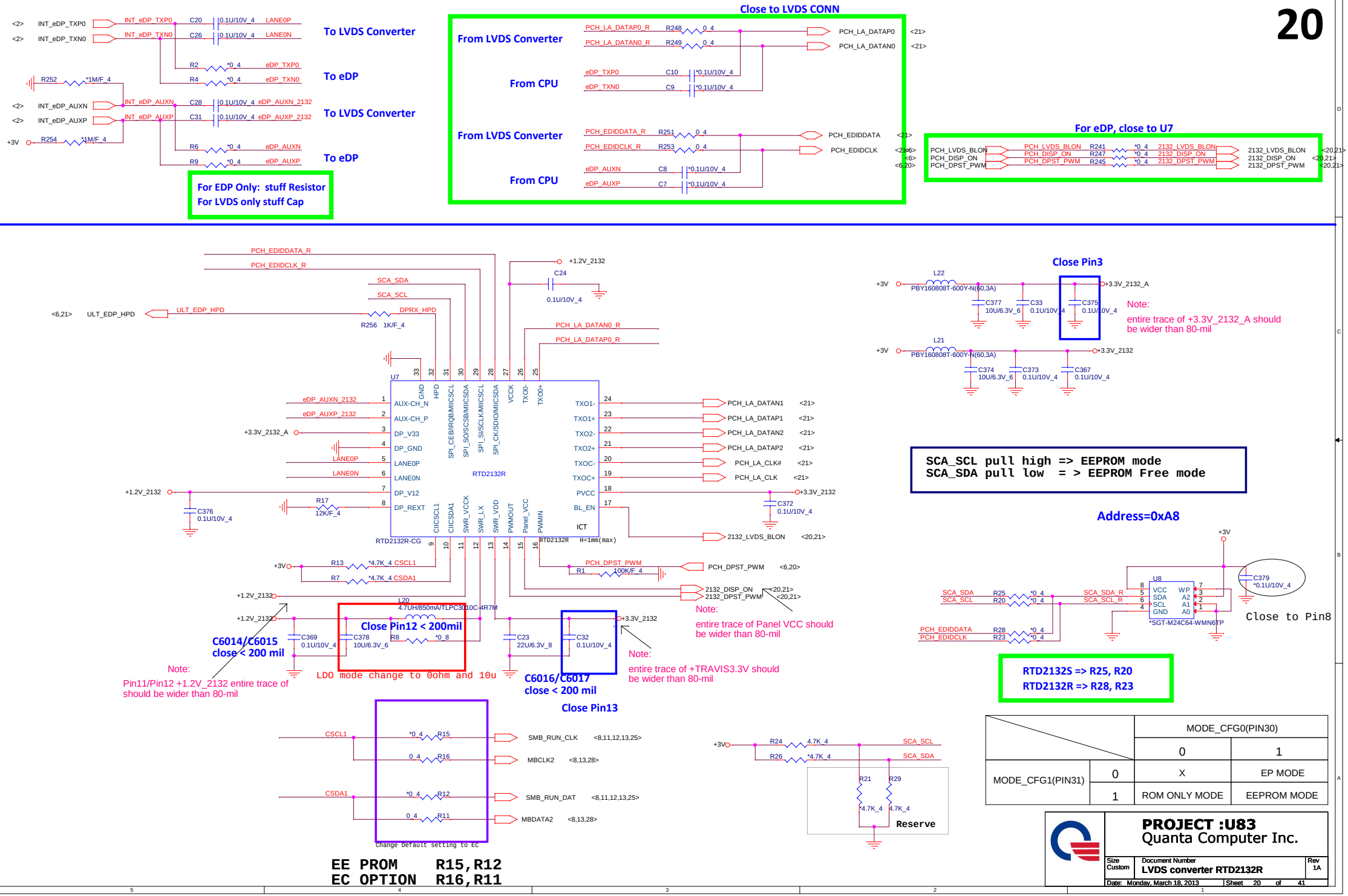

	MODE_CFG0(PIN30)	
	0	1
MODE_CFG1(PIN31) 0	X	EP MODE
MODE_CFG1(PIN31) 1	ROM ONLY MODE	EEPROM MODE

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Quanta Computer Inc.

Size	Document Number	Rev
Custom	LVDS converter RTD2132R	1A
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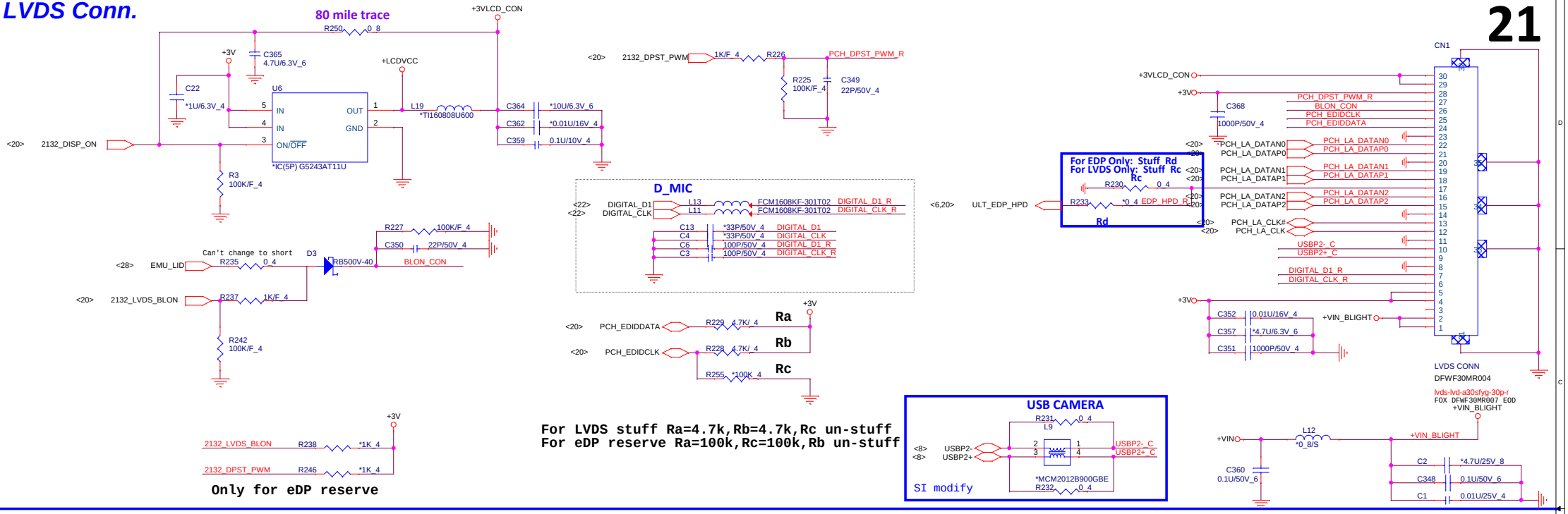
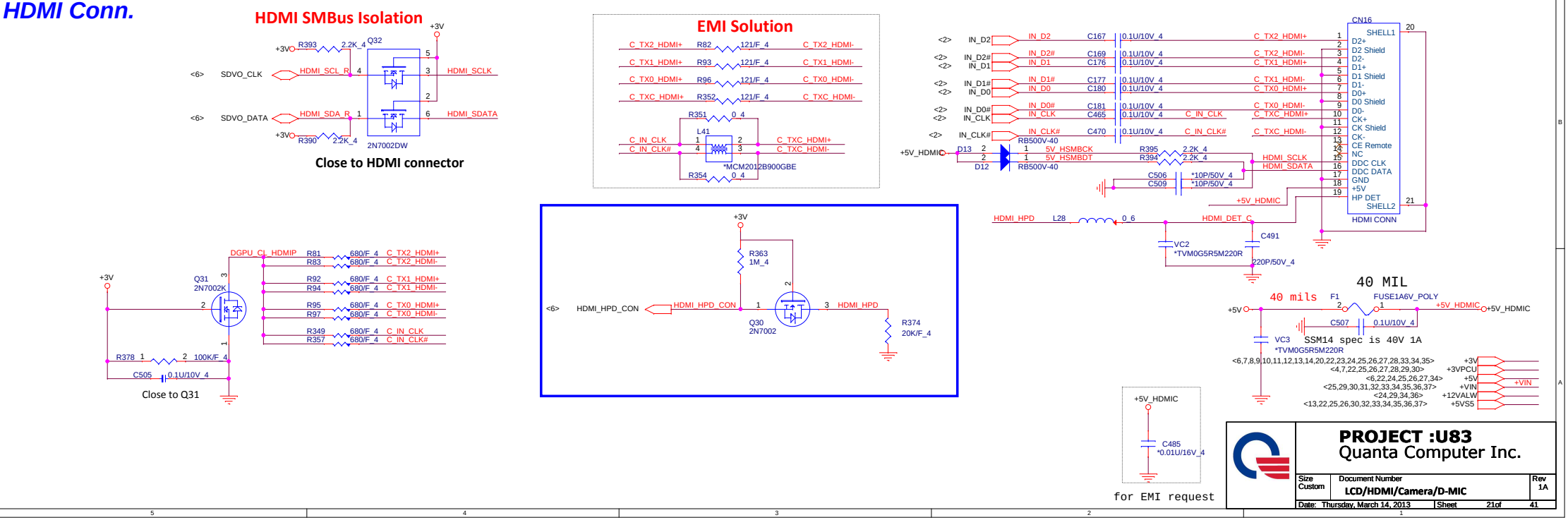
LVDS Conn.



HDMI Conn.



PROJECT :U83
Quanta Computer Inc.

Size	Document Number	Rev
Custom	LCD/HDMI/Camera/D-MIC	1A
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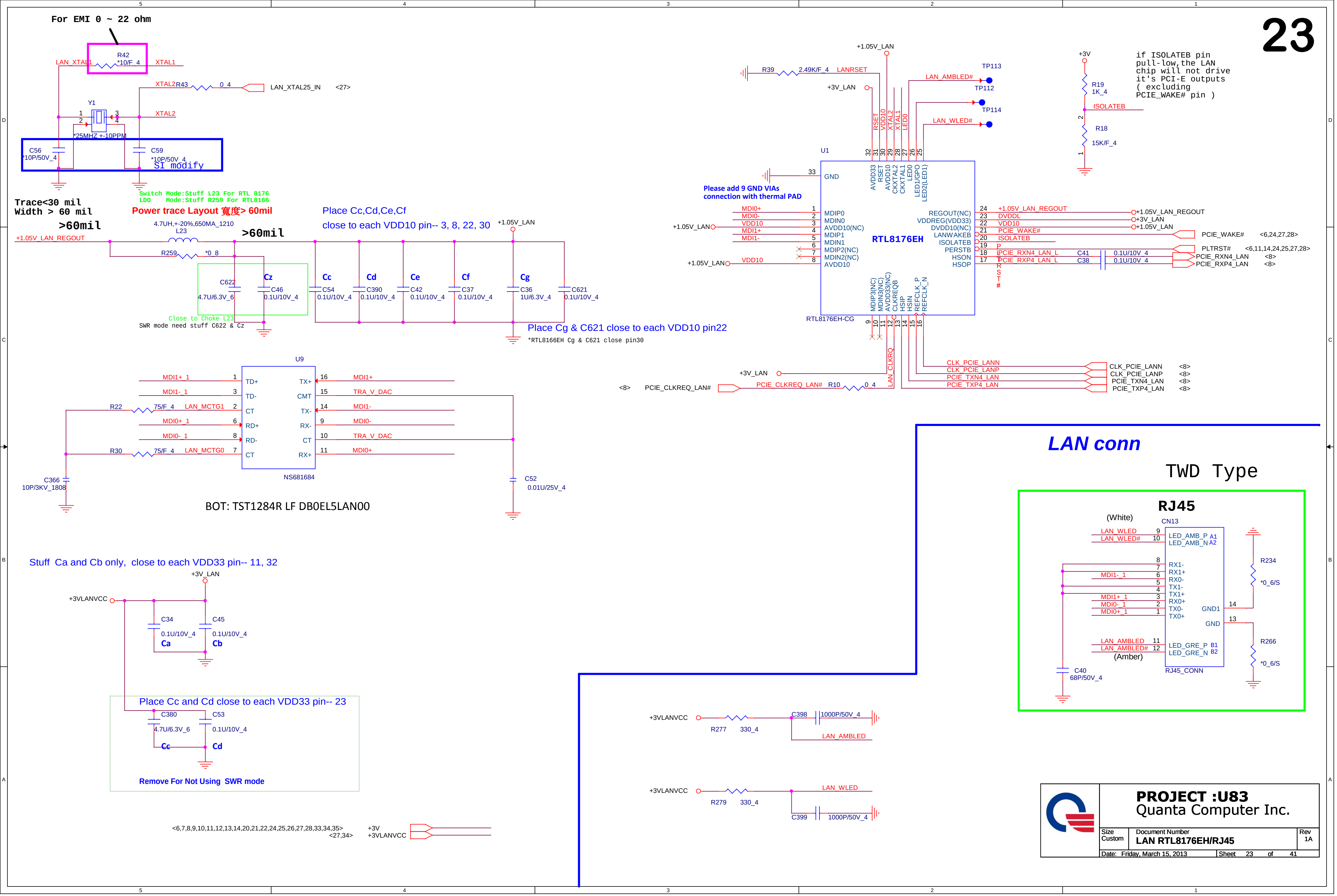
USB 2.0 AND AUDIO COMBO JACK

Close to PIN1
Close to PIN26
Close to PIN40
Close to PIN28
Close to PIN7
Close to Pin 34,35,36
Close to Pin 41
Close to Pin 46
Close to codec
Close to Speaker
Speaker 4 ohm: 40mils
Close to CODEC
place to near U24 or under U24
TO Digital MIC
TO Internal Speakers
>40mils trace
check value
Check layout mount location
for intel HSW ULT
FOR EMI
AGND SHIELD
Vset=1.242V
C581 need check!

U24 ALC3227 x QFN48
Analog
Digital



23
For EMI 0 ~ 22 ohm
R42 *10/F_4
LAN_XTAL1
XTAL1
XTAL2 R43 0_4
LAN_XTAL25_IN <27>
Y1
*25MHZ +-10PPM
C56 *10P/50V_4
C59 *10P/50V_4
SI modify
Trace<30 mil
Width > 60 mil
>60mil
Switch Mode:Stuff L23 For RTL 8176
LDO Mode:Stuff R259 For RTL8166
Power trace Layout 寬度> 60mil
4.7UH,+-20%,650MA_1210
L23
+1.05V_LAN_REGOUT
R259 *0_8
>60mil
Place Cc,Cd,Ce,Cf
close to each VDD10 pin-- 3, 8, 22, 30
+1.05V_LAN
C622 4.7U/6.3V_6
Cz C46 0.1U/10V_4
Cc C54 0.1U/10V_4
Cd C390 0.1U/10V_4
Ce C42 0.1U/10V_4
Cf C37 0.1U/10V_4
Cg C36 1U/6.3V_4
C621 0.1U/10V_4
Close to Choke L23
SWR mode need stuff C622 & Cz
Place Cg & C621 close to each VDD10 pin22
*RTL8166EH Cg & C621 close pin30
R39 2.49K/F_4 LANRSET
+1.05V_LAN
+3V_LAN
LAN_AMBLED#
TP113
TP112
TP114
LAN_WLED#
U1
GND
Please add 9 GND VIAs
connection with thermal PAD
RTL8176EH
RTL8176EH-CG
MDIP0 MDIN0 AVDD10(NC) MDIP1 MDIN1 MDIP2(NC) MDIN2(NC) AVDD10
REGOUT(NC) VDDREG(VDD33) DVDD10(NC) LANWAKEB ISOLATEB PERSTB HSON HSOP
AVDD33 RSET AVDD10 CKXTAL2 CKXTAL1 LED0 LED1/GPO LED2(LED1)
MDIP3(NC) MDIN3(NC) AVDD33(NC) CLKREQB HSIP HSIN REFCLK_P REFCLK_N
+1.05V_LAN_REGOUT
DVDDL
VDD10
PCIE_WAKE#
ISOLATEB
PLTRST#
PCIE_RXN4_LAN_L C41 0.1U/10V_4
PCIE_RXP4_LAN_L C38 0.1U/10V_4
PCIE_WAKE# <6,24,27,28>
PLTRST# <6,11,14,24,25,27,28>
PCIE_RXN4_LAN <8>
PCIE_RXP4_LAN <8>
+3V
R19 1K_4
ISOLATEB
R18 15K/F_4
if ISOLATEB pin pull-low,the LAN chip will not drive it's PCI-E outputs (excluding PCIE_WAKE# pin)
CLK_PCIE_LANN <8>
CLK_PCIE_LANP <8>
PCIE_TXN4_LAN <8>
PCIE_TXP4_LAN <8>
+3V_LAN
LAN_CLKRQ
<8> PCIE_CLKREQ_LAN# R10 0_4
U9
NS681684
TD+ TD- CT RD+ RD- CT
TX+ CMT TX- RX- CT RX+
MDI1+_1 MDI1-_1 LAN_MCTG1 MDI0+_1 MDI0-_1 LAN_MCTG0
MDI1+ TRA_V_DAC MDI1- MDI0- TRA_V_DAC MDI0+
R22 75/F_4
R30 75/F_4
C366 10P/3KV_1808
C52 0.01U/25V_4
BOT: TST1284R LF DB0EL5LAN00
Stuff Ca and Cb only, close to each VDD33 pin-- 11, 32
+3V_LAN
+3VLANVCC
C34 0.1U/10V_4 Ca
C45 0.1U/10V_4 Cb
Place Cc and Cd close to each VDD33 pin-- 23
C380 4.7U/6.3V_6 Cc
C53 0.1U/10V_4 Cd
Remove For Not Using SWR mode
<6,7,8,9,10,11,12,13,14,20,21,22,24,25,26,27,28,33,34,35> +3V
<27,34> +3VLANVCC
LAN conn
TWD Type
RJ45
(White)
CN13
LAN_WLED
LAN_WLED#
LED_AMB_P A1
LED_AMB_N A2
RX1- RX1+ RX0- TX1- TX1+ RX0+ TX0- TX0+
GND1
GND
LAN_AMBLED
LAN_AMBLED#
(Amber)
LED_GRE_P B1
LED_GRE_N B2
RJ45_CONN
R234 *0_6/S
R266 *0_6/S
C40 68P/50V_4
+3VLANVCC R277 330_4 C398 1000P/50V_4 LAN_AMBLED
+3VLANVCC R279 330_4 LAN_WLED C399 1000P/50V_4
PROJECT :U83
Quanta Computer Inc.
Size Custom
Document Number LAN RTL8176EH/RJ45
Rev 1A
Date: Friday, March 15, 2013
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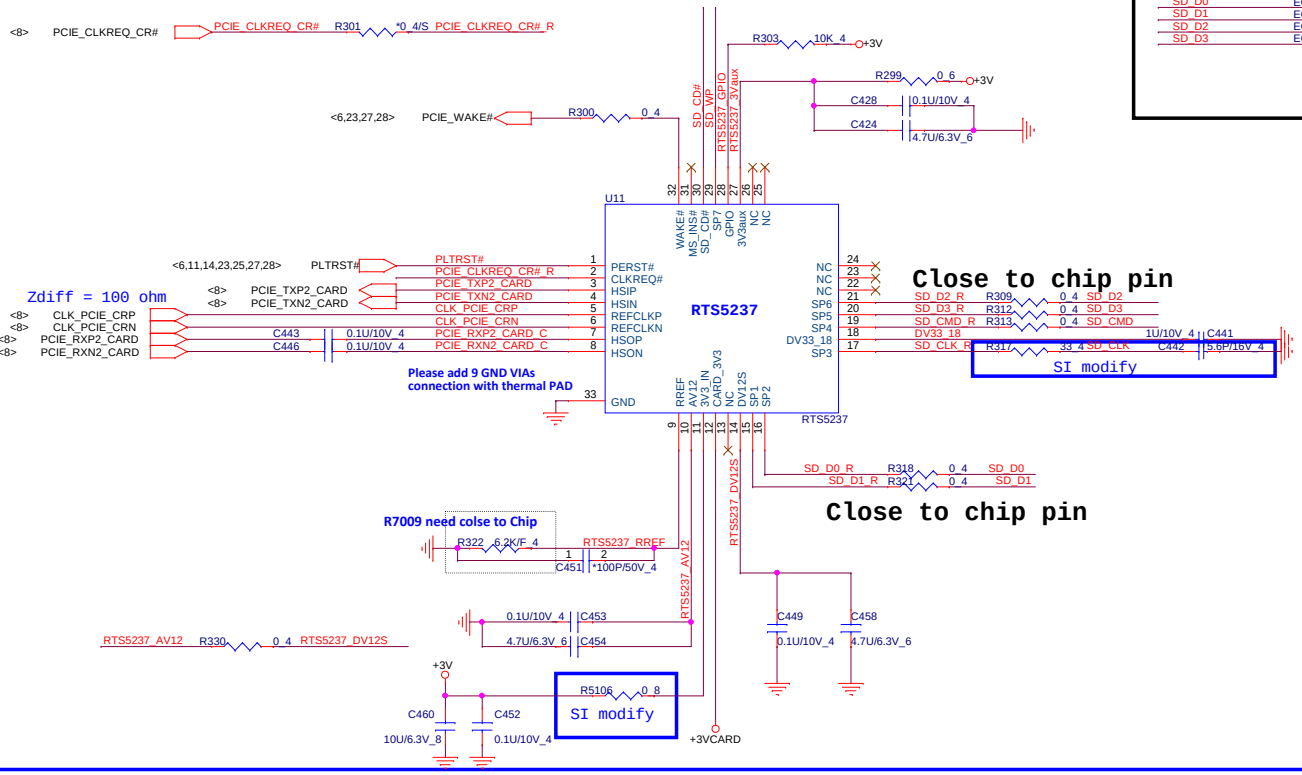
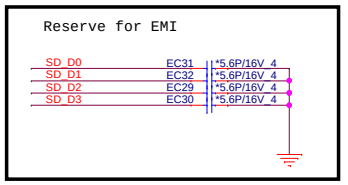
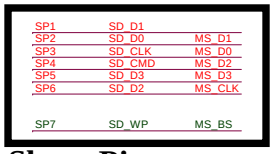
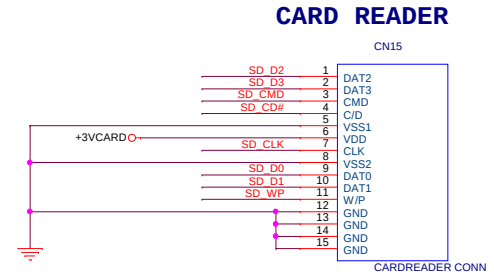
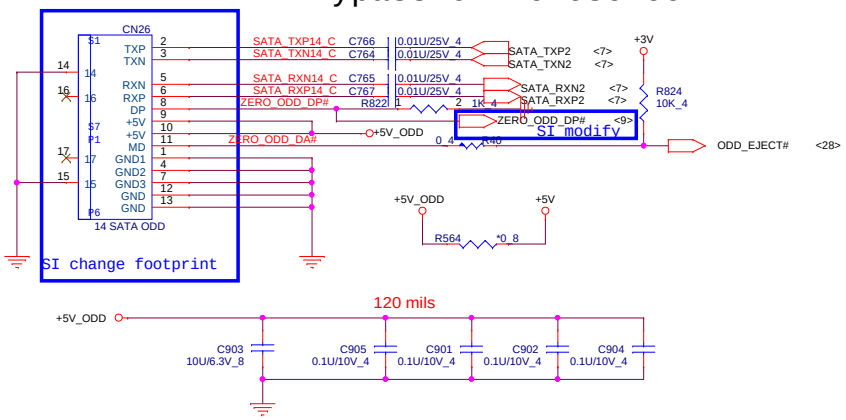


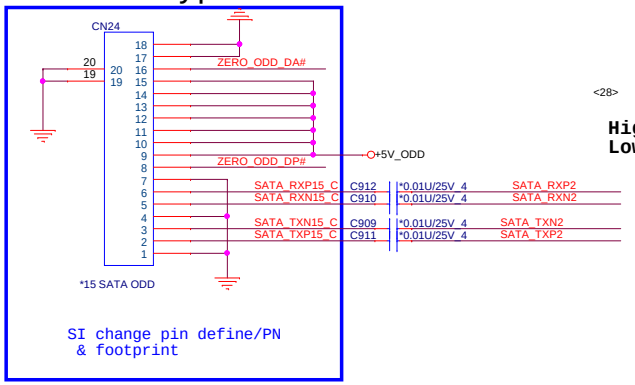


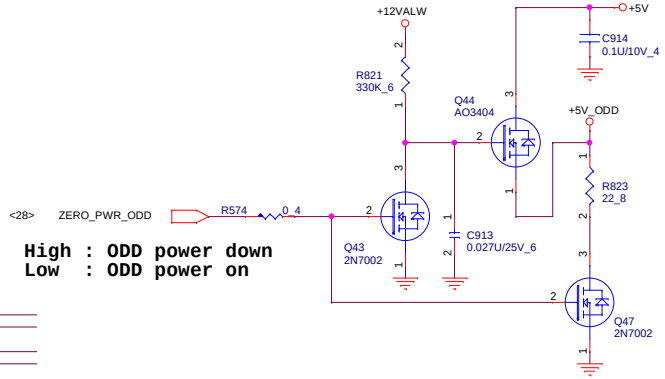




SATA ODD CONNECTOR







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Quanta Computer Inc.

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Custom	CR RTS5237 & CR SOCKET	1A
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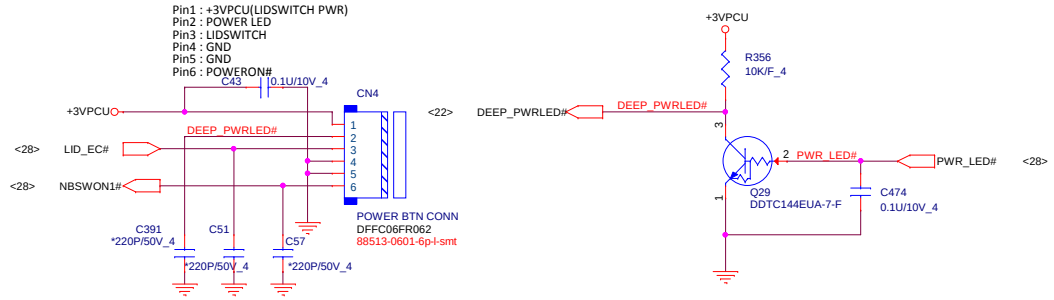
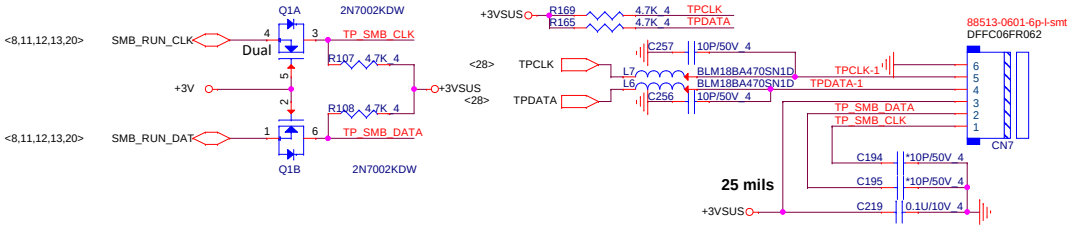
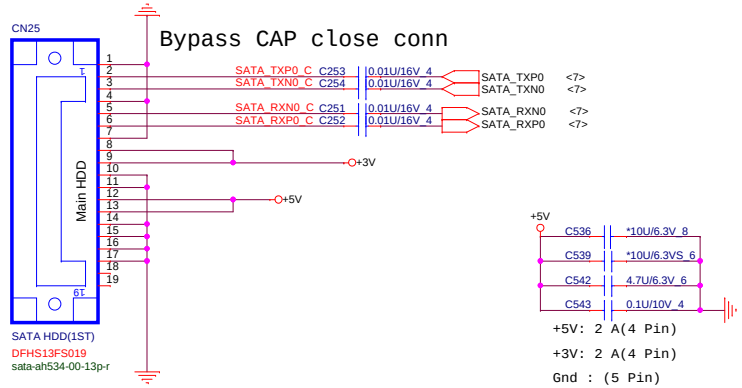
Power Botton Connector



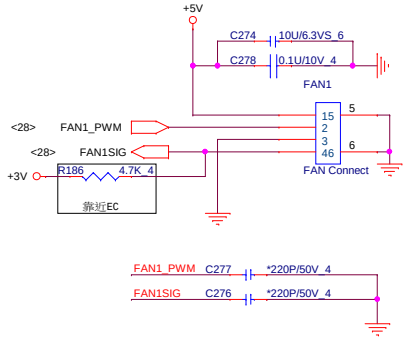
Touch Pad Connector



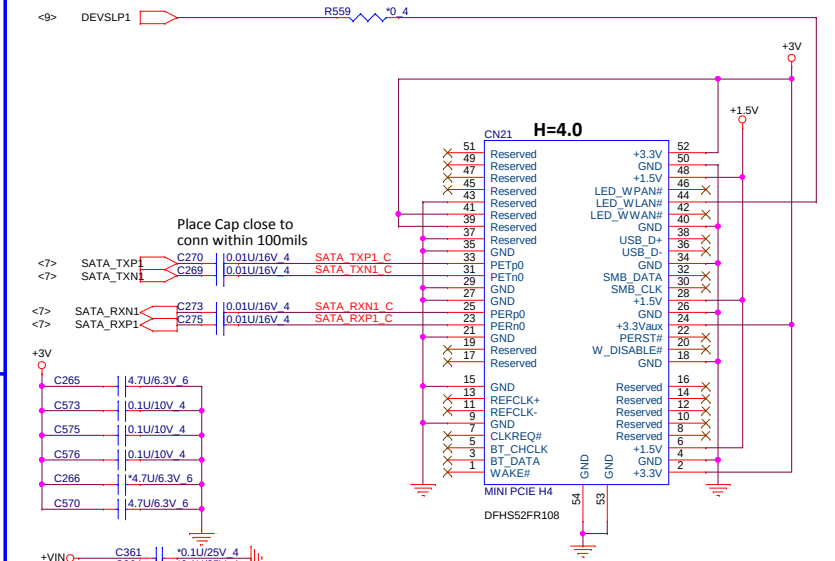
SATA HDD Connector(Cable type)



FAN



Mini PCI-E Card 2- Full size mSATA

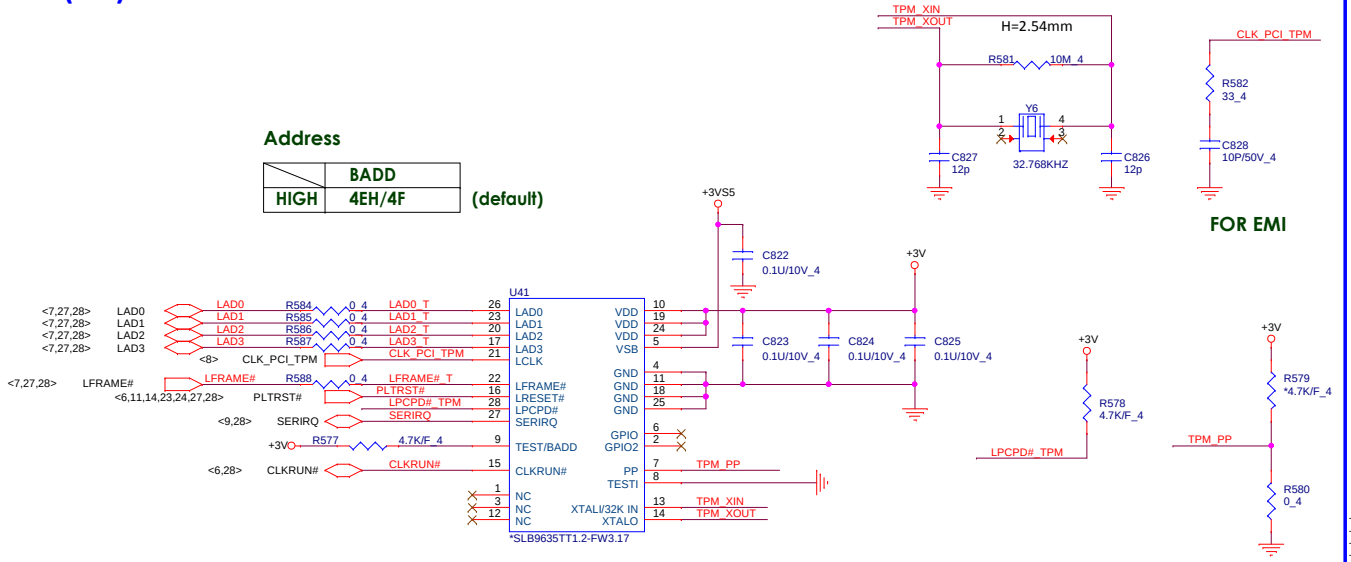


TPM (1.2)

Address

	BADD
HIGH	4EH/4F

(default)



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Quanta Computer Inc.	
Size: Custom	Document Number: HDD/mSATA/FAN/LED
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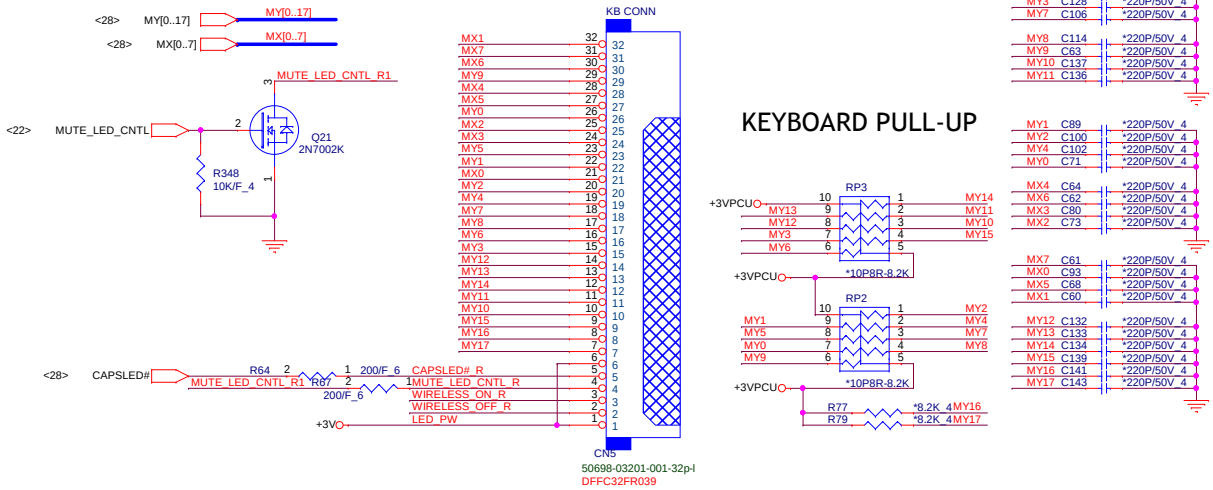
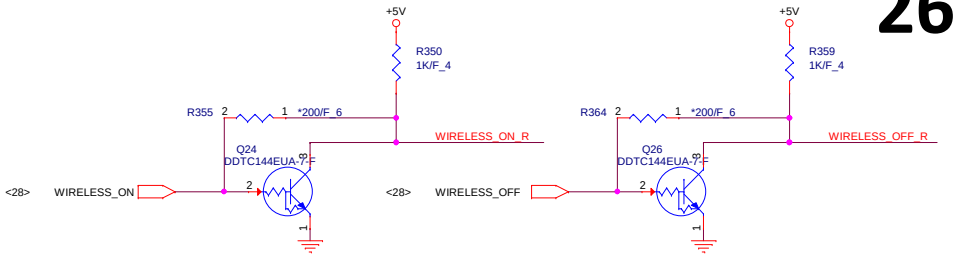
KEYBOARD Con.

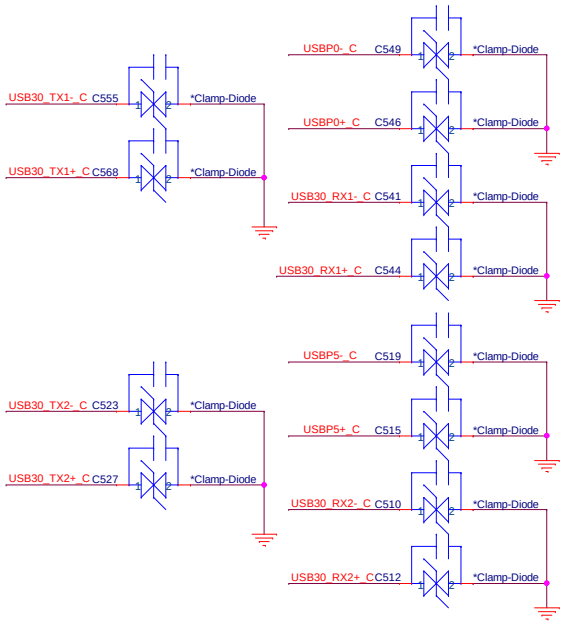


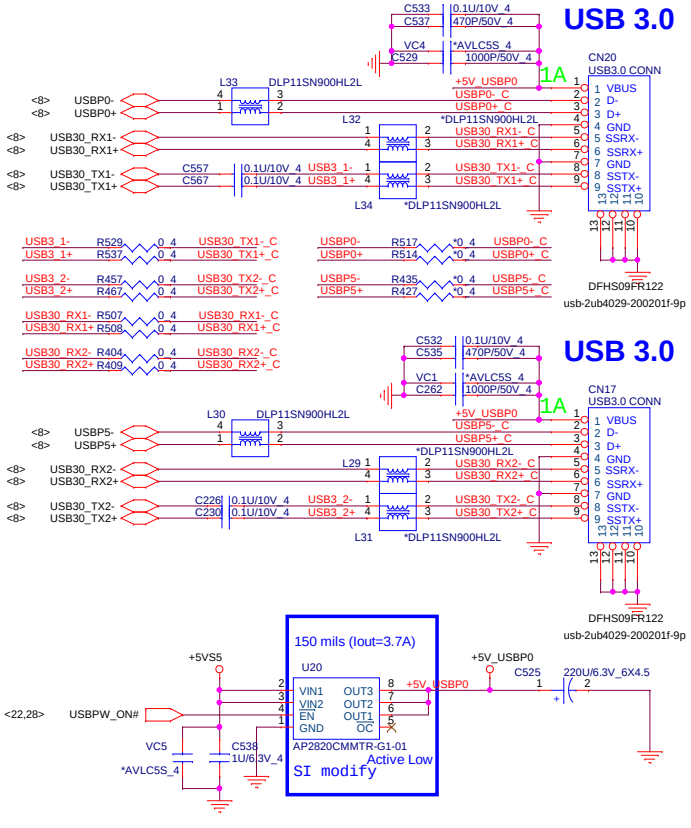
KEYBOARD PULL-UP



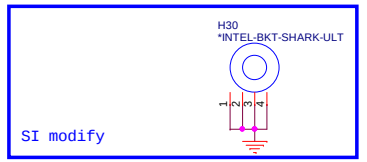
R6X Type

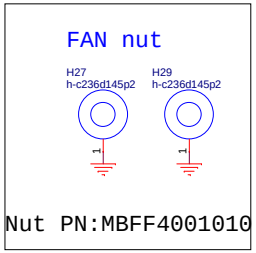
USB 2.0/3.0 Combo

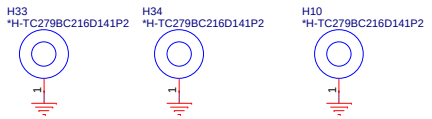


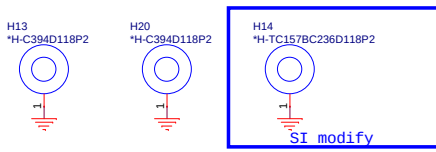


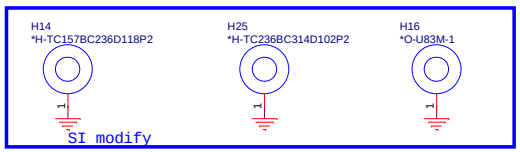
Hole

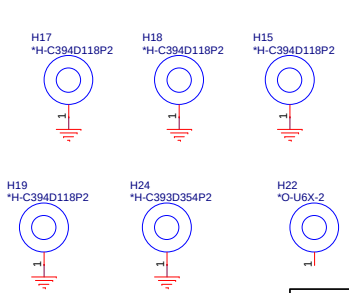


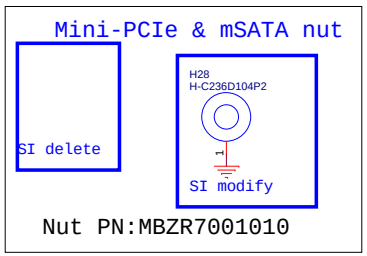












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Quanta Computer Inc.

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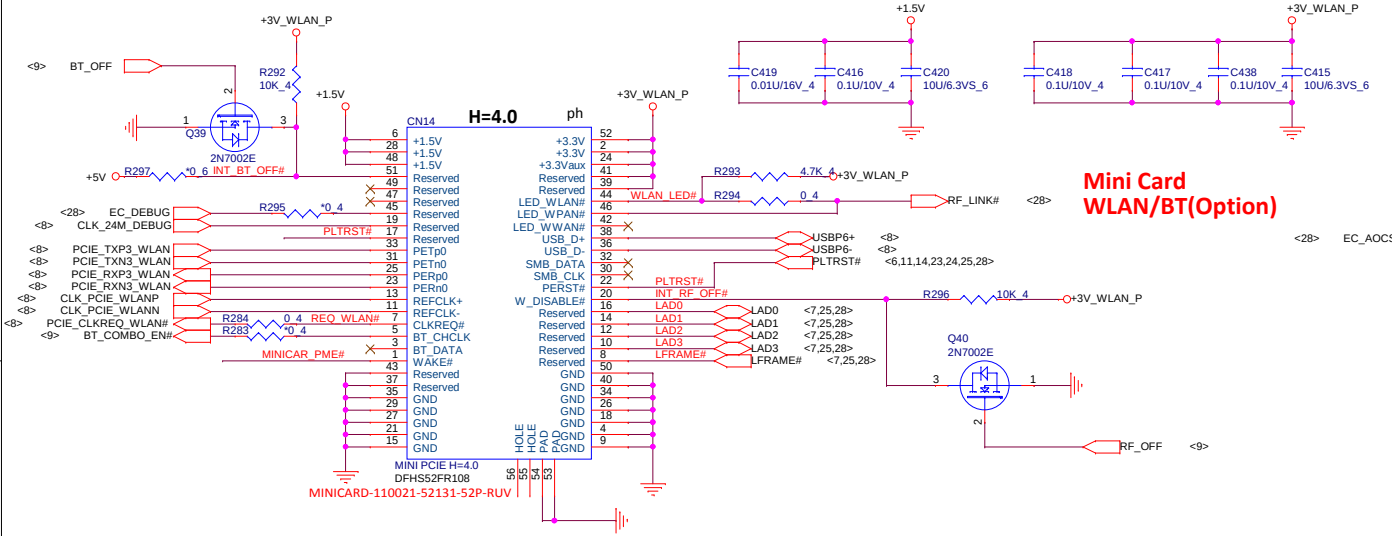
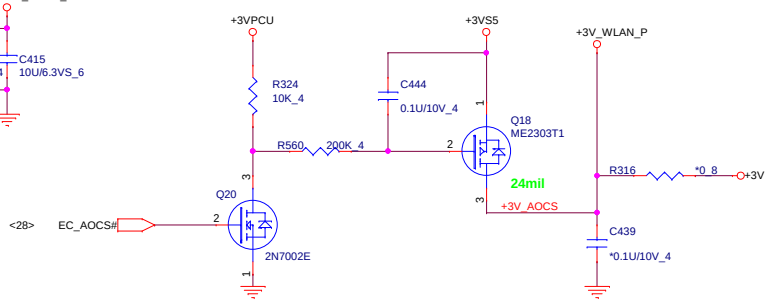
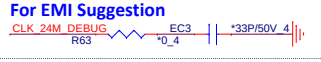
Mini Card WLAN/BT(Option)

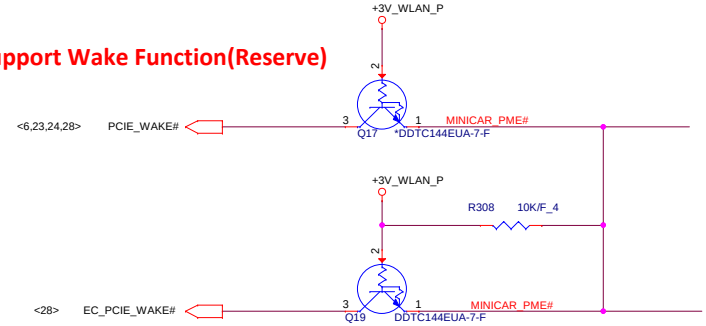




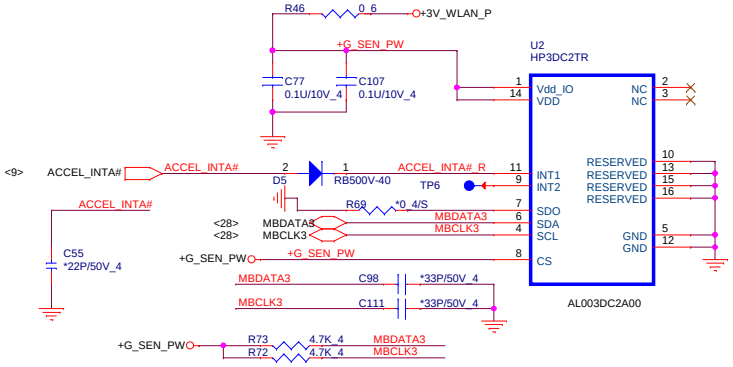
For EMI Suggestion



Support Wake Function(Reserve)

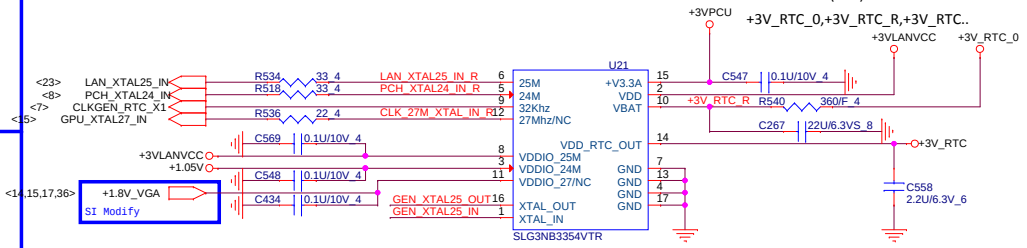


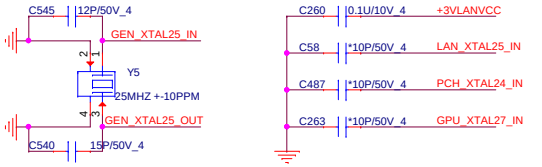
Accelerometer Sensor



Green CLK Circuitry

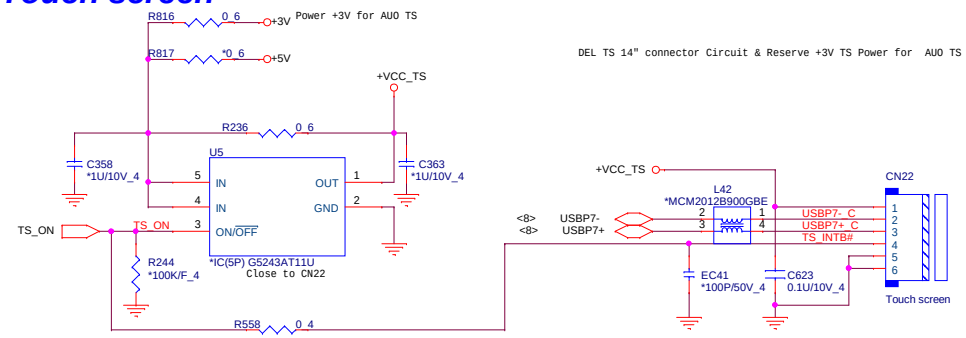
20mils width(min)
+3V_RTC_0,+3V_RTC_R,+3V_RTC..



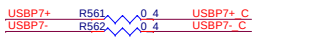


	P/N	R536	C434
UMA	AL003355000	N/A	N/A
DIS	AL003354001	Install	Install

Touch screen



DEL TS 14" connector Circuit & Reserve +3V TS Power for AUO TS



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Quanta Computer Inc.	
Size: Custom	Document Number: WLAN/G-Sensor/G-CLK/TS
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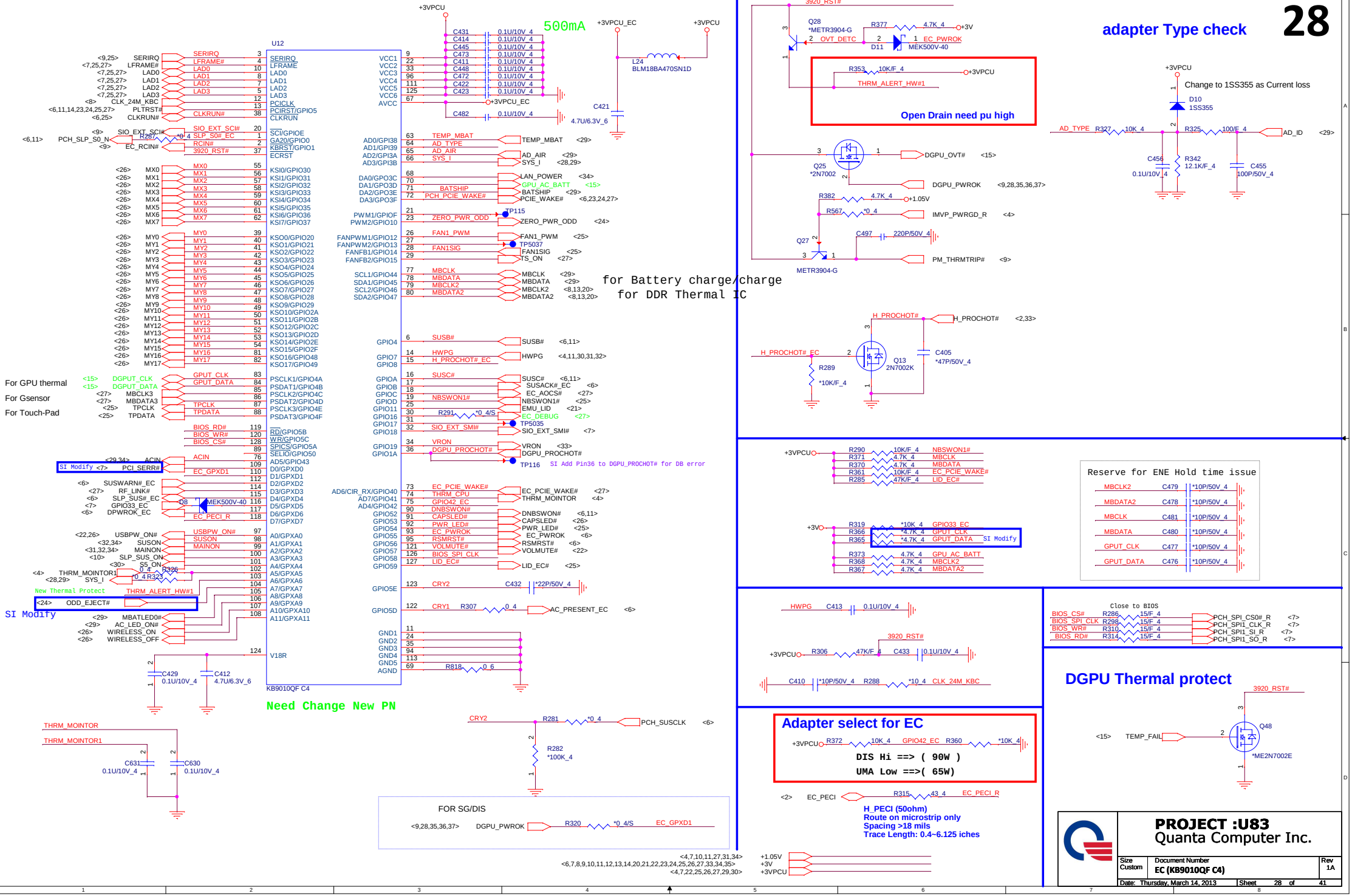
U12
KB9010QF C4
500mA
+3VPCU
+3VPCU_EC
L24
BLM18BA470SN1D
C421
4.7U/6.3V_6
C431 0.1U/10V_4
C414 0.1U/10V_4
C445 0.1U/10V_4
C473 0.1U/10V_4
C411 0.1U/10V_4
C448 0.1U/10V_4
C472 0.1U/10V_4
C422 0.1U/10V_4
C423 0.1U/10V_4
C482 0.1U/10V_4
SERIRQ
LFRAME#
LAD0
LAD1
LAD2
LAD3
CLK_24M_KBC
PLTRST#
CLKRUN#
SIO_EXT_SCI#
SLP_S0#_EC
RCIN#
3920_RST#
MX0
MX1
MX2
MX3
MX4
MX5
MX6
MX7
MY0
MY1
MY2
MY3
MY4
MY5
MY6
MY7
MY8
MY9
MY10
MY11
MY12
MY13
MY14
MY15
MY16
MY17
GPUT_CLK
GPUT_DATA
TPCLK
TPDATA
BIOS_RD#
BIOS_WR#
BIOS_CS#
ACIN
EC_GPXD1
SUSWARN#_EC
RF_LINK#
SLP_SUS#_EC
GPIO33_EC
DPWROK_EC
EC_PECI_R
USBPW_ON#
SUSON
MAINON
SLP_SUS_ON
S5_ON
THRM_MOINTOR1
SYS_I
THERM_ALERT_HW#1
ODD_EJECT#
MBATLED0#
AC_LED_ON#
WIRELESS_ON
WIRELESS_OFF
V18R
C429 0.1U/10V_4
C412 4.7U/6.3V_6
TEMP_MBAT
AD_TYPE
AD_AIR
SYS_I
BATSHIP
PCH_PCIE_WAKE#
ZERO_PWR_ODD
FAN1_PWM
FAN1SIG
MBCLK
MBDATA
MBCLK2
MBDATA2
SUSB#
HWPG
H_PROCHOT#_EC
SUSC#
NBSWON1#
VRON
DGPU_PROCHOT#
EC_PCIE_WAKE#
THRM_CPU
GPIO42_EC
DNBSWON#
CAPSLED#
PWR_LED#
EC_PWROK
RSMRST#
VOLMUTE#
BIOS_SPI_CLK
LID_EC#
CRY2
CRY1
R307 0_4
AC_PRESENT_EC
GND1
GND2
GND3
GND4
GND5
AGND
R818 0_6
THRM_MOINTOR
THRM_MOINTOR1
C631 0.1U/10V_4
C630 0.1U/10V_4
R281 *0_4
R282 *100K_4
PCH_SUSCLK
FOR SG/DIS
DGPU_PWROK
R320 *0_4/S
EC_GPXD1
for Battery charge/charge
for DDR Thermal IC
For GPU thermal
For Gsensor
For Touch-Pad
SI Modify
Need Change New PN
TP115
TP5037
TP5035
TP116
SI Add Pin36 to DGPU_PROCHOT# for DB error
D8 MEK500V-40
R291 *0_4/S
R326 0_4
R323 *0_4
New Thermal Protect
adapter Type check
Q28 *METR3904-G
R377 4.7K_4
OVT_DETC
D11 MEK500V-40
EC_PWROK
R353 10K/F_4
THRM_ALERT_HW#1
Open Drain need pu high
Change to 1SS355 as Current loss
D10 1SS355
AD_TYPE R327 10K_4
R325 100/F_4
AD_ID
C456 0.1U/10V_4
R342 12.1K/F_4
C455 100P/50V_4
Q25 *2N7002
DGPU_OVT#
DGPU_PWROK
R382 4.7K_4
+1.05V
R567 *0_4
IMVP_PWRGD_R
Q27
C497 220P/50V_4
PM_THRMTRIP#
METR3904-G
H_PROCHOT#
H_PROCHOT# EC
R289 *10K/F_4
Q13 2N7002K
C405 *47P/50V_4
R290 10K/F_4 NBSWON1#
R371 4.7K_4 MBCLK
R370 4.7K_4 MBDATA
R361 10K/F_4 EC_PCIE_WAKE#
R285 47K/F_4 LID_EC#
R319 *10K_4 GPIO33_EC
R366 *4.7K_4 GPUT_CLK
R365 *4.7K_4 GPUT_DATA
SI Modify
R373 4.7K_4 GPU_AC_BATT
R368 4.7K_4 MBCLK2
R367 4.7K_4 MBDATA2
Reserve for ENE Hold time issue
MBCLK2 C479 *10P/50V_4
MBDATA2 C478 *10P/50V_4
MBCLK C481 *10P/50V_4
MBDATA C480 *10P/50V_4
GPUT_CLK C477 *10P/50V_4
GPUT_DATA C476 *10P/50V_4
HWPG C413 0.1U/10V_4
C410 *10P/50V_4
R288 *10_4 CLK_24M_KBC
Close to BIOS
BIOS_CS# R286 15/F_4 PCH_SPI_CS0#_R
BIOS_SPI_CLK R298 15/F_4 PCH_SPI1_CLK_R
BIOS_WR# R310 15/F_4 PCH_SPI1_SI_R
BIOS_RD# R314 15/F_4 PCH_SPI1_SO_R
DGPU Thermal protect
Q48 *ME2N7002E
TEMP_FAIL
Adapter select for EC
R372 10K_4 GPIO42_EC R360 *10K_4
DIS Hi ==> (90W)
UMA Low ==>(65W)
EC_PECI
R315 43_4 EC_PECI_R
H_PECI (50ohm)
Route on microstrip only
Spacing >18 mils
Trace Length: 0.4~6.125 iches
+1.05V
+3V
+3VPCU
PROJECT :U83
Quanta Computer Inc.
Size Custom
Document Number EC (KB9010QF C4)
Rev 1A
Date: Thursday, March 14, 2013
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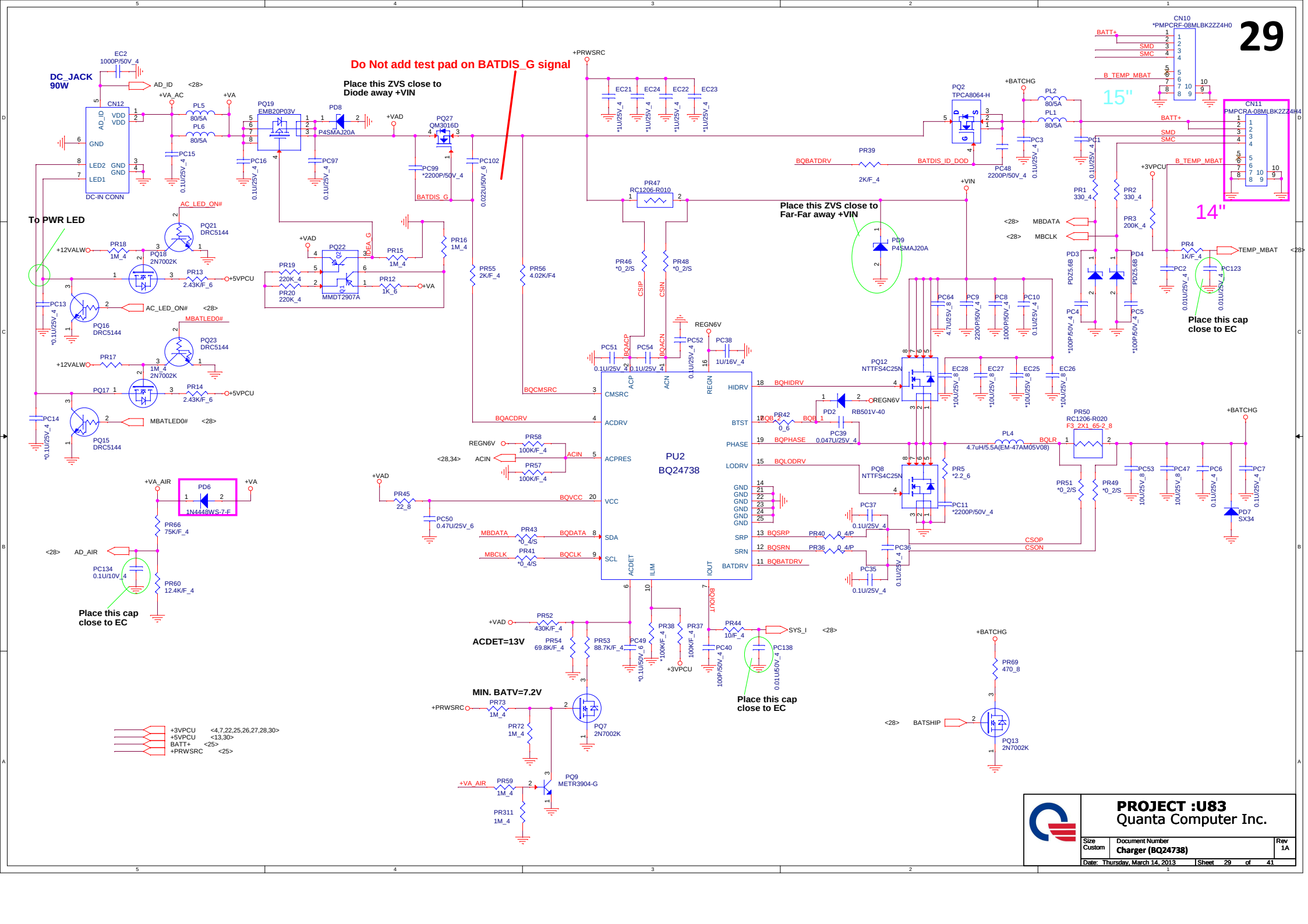
29
DC_JACK
90W
DC-IN CONN
CN12
Do Not add test pad on BATDIS_G signal
Place this ZVS close to
Diode away +VIN
To PWR LED
Place this ZVS close to
Far-Far away +VIN
Place this cap
close to EC
Place this cap
close to EC
Place this cap
close to EC
PU2
BQ24738
ACDET=13V
MIN. BATV=7.2V
CN10
*PMPCRF-08MLBK2ZZ4H0
15"
CN11
PMPCRA-08MLBK2ZZ4H4
14"
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Quanta Computer Inc.
Size
Custom
Document Number
Charger (BQ24738)
Rev
1A
Date: Thursday, March 14, 2013
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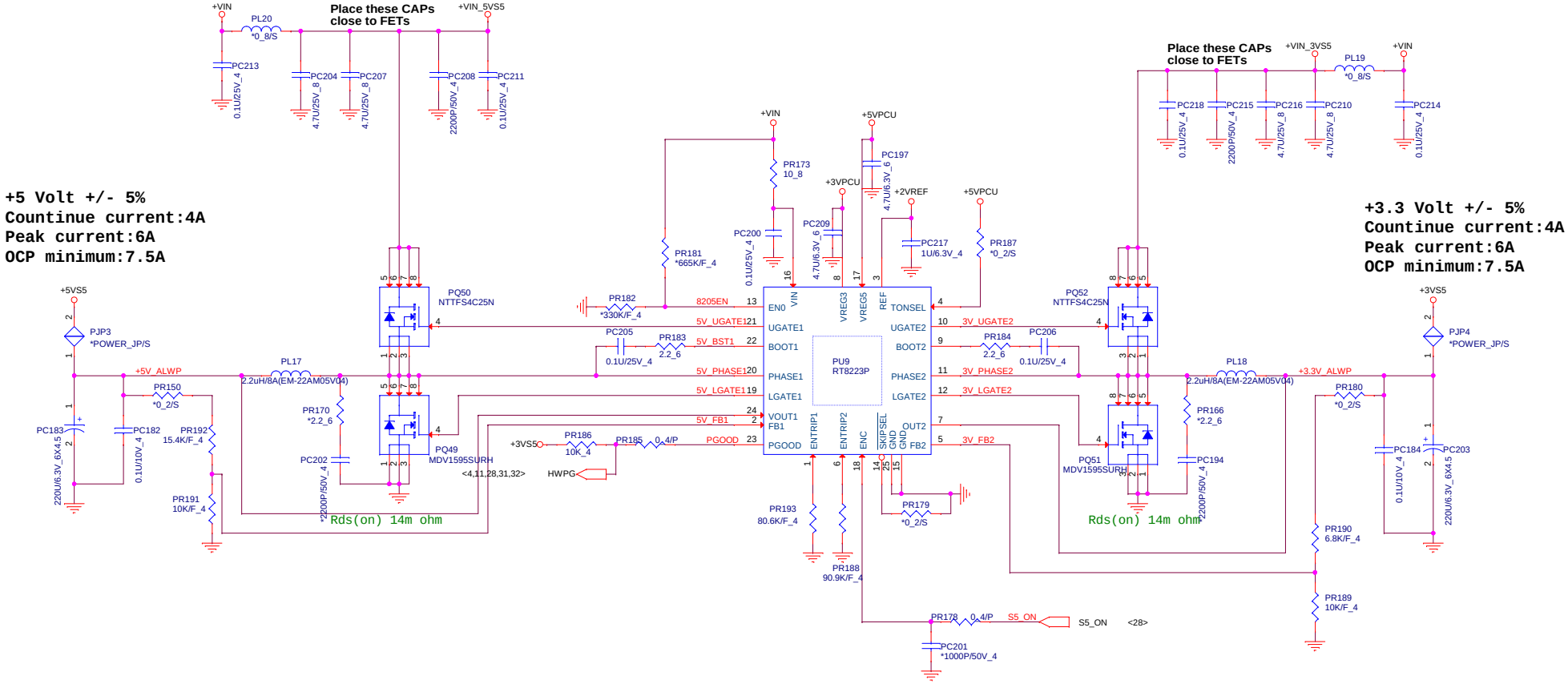
DC/DC +3VS5/+5VS5



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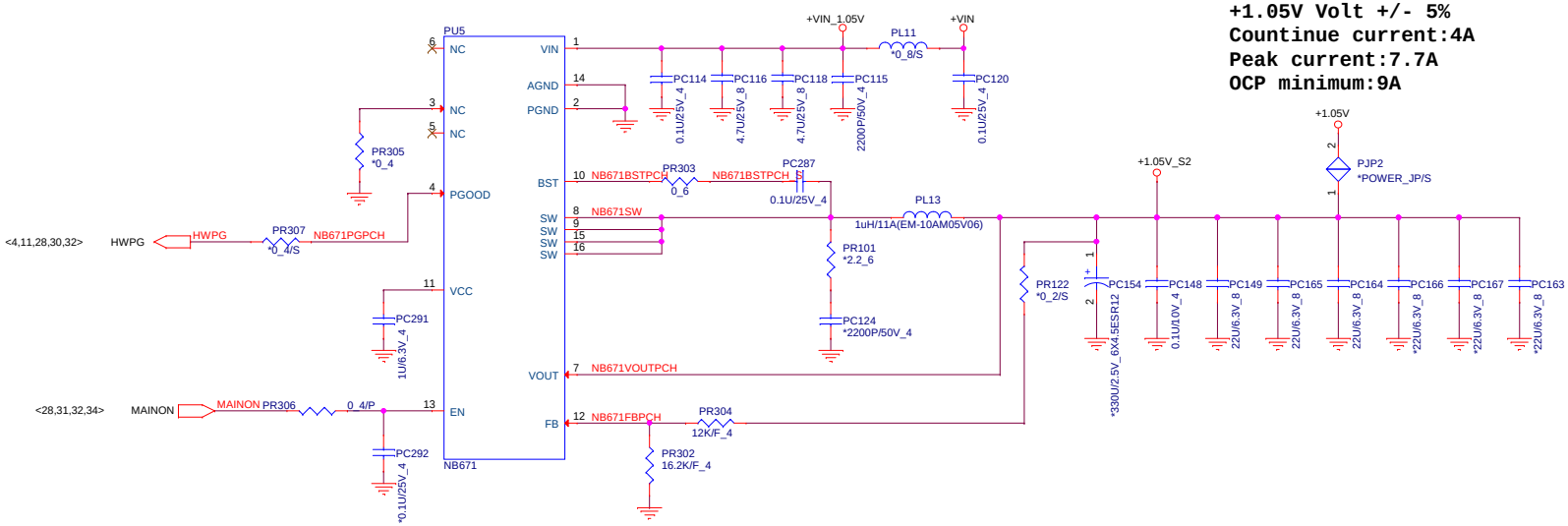
Quanta Computer Inc.

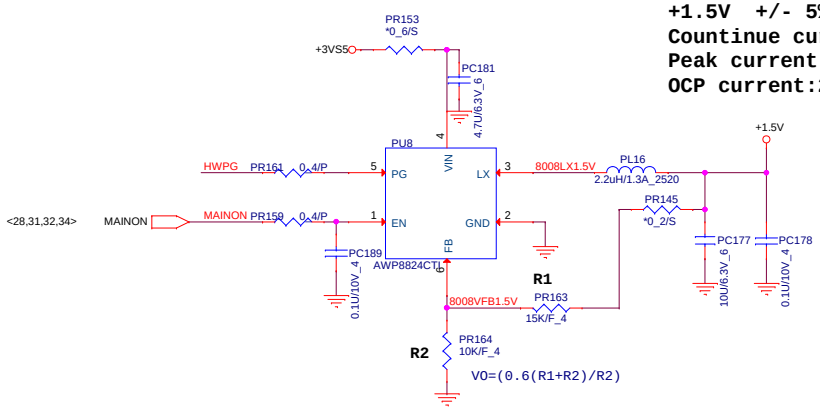
Size	Document Number	Rev
Custom	3/5VPCU(RT8223P)	1A

Date: Thursday, March 14, 2013 Sheet 30 of 41

+1.05V Volt +/- 5%
Countinue current:4A
Peak current:7.7A
OCP minimum:9A



+1.5V +/- 5%
Countinue current:1.3A
Peak current:1.5A
OCP current:2A



+VIN <21,25,29,30,32,33,34,35,36,37>
+3VS5 <6,9,10,11,25,27,30,34,35,36>
+5VS5 <13,22,25,26,30,32,33,34,35,36,37>
+5VPCU <13,29,30>

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Quanta Computer Inc.

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Custom	+1.05V (NB671)/1.5V	1A
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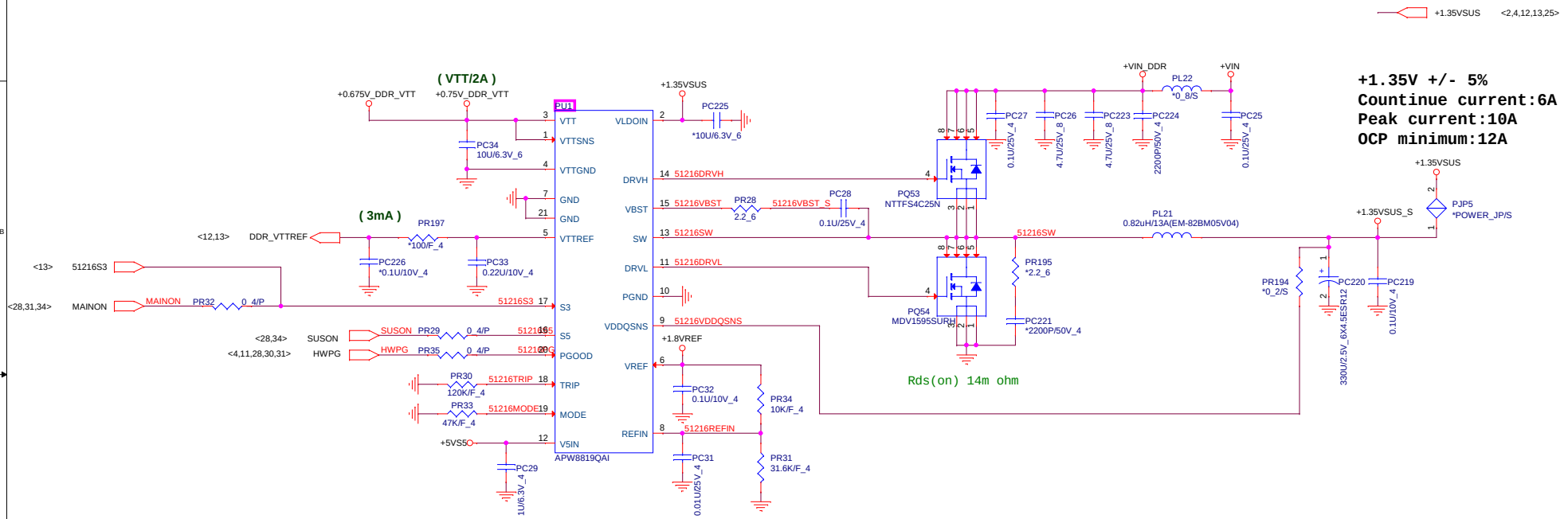

PROJECT :U83
Quanta Computer Inc.

Size	Document Number	Rev
Custom	DDR3 (APW8819)	1A

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Place close to inductor

POP Rb and no POP Ra for nex version.

Place close to MOSFET

POP for DIS

Boot Voltage Table	
R_boot	V_boot
30.1K	0V
49.9K	1.65V
69.8K	1.7V
90.9K	1.75V

PU7 NCP81101MNTXG

PQ37 RJK03S3DPA

PQ1 *RJK03S3DPA

Icc_Max=32A
I_TDC=14A
I_Dynamic=27A
V_Operate=1.6V~1.8V
DC_LL=2m
AC_LL=7m
AC_LL_VOS=9.4m
VBOOT=1.7V

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Size	Document Number	Rev
Custom	CPU Core (NCP81101)ULT	1A

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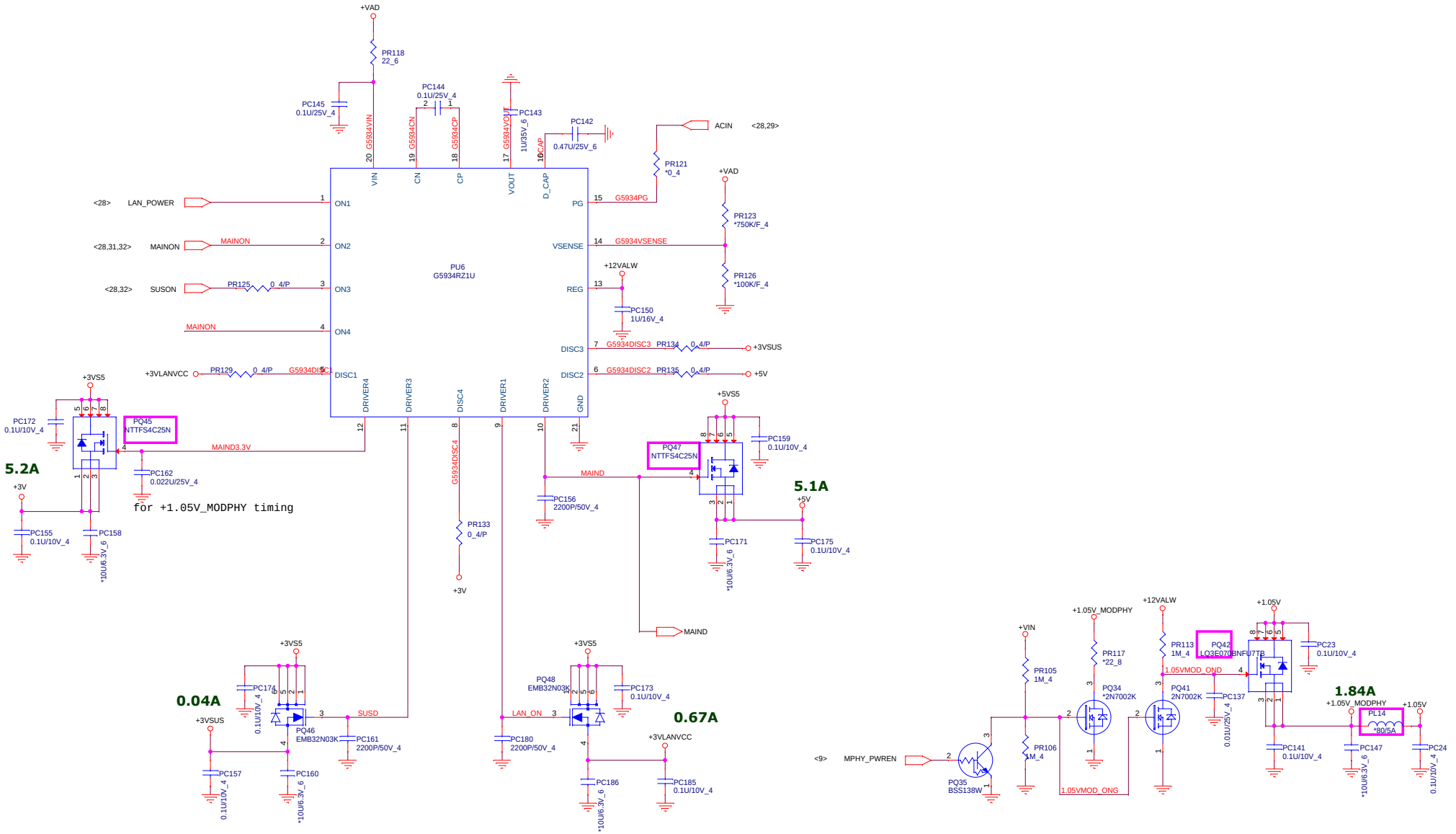

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Size	Document Number	Rev
Custom	Dis-charge IC (SLG55448)	1A

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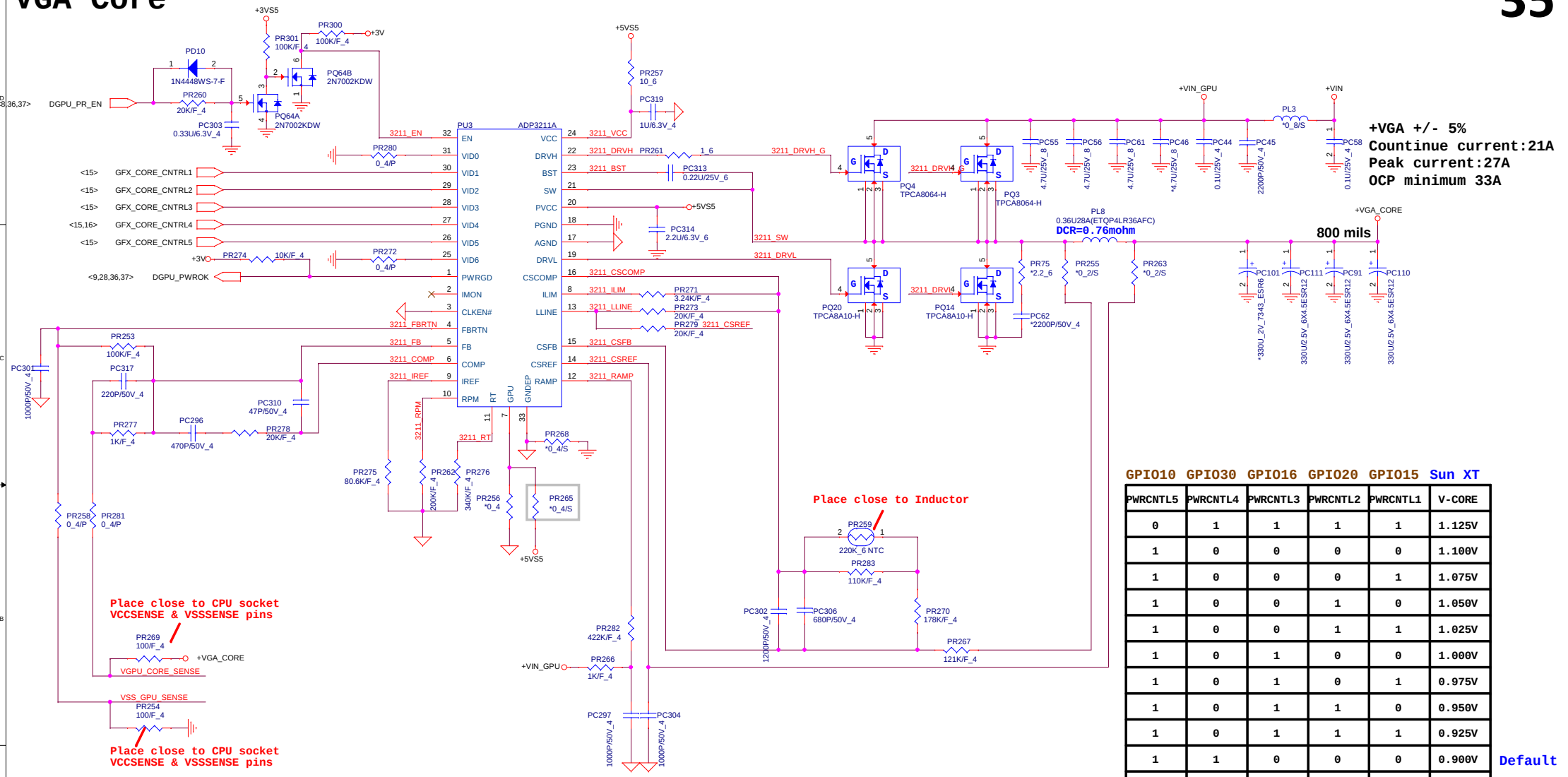
VGA Core



GPIO10 GPIO30 GPIO16 GPIO20 GPIO15 Sun XT

PWRCNTL5	PWRCNTL4	PWRCNTL3	PWRCNTL2	PWRCNTL1	V-CORE
0	1	1	1	1	1.125V
1	0	0	0	0	1.100V
1	0	0	0	1	1.075V
1	0	0	1	0	1.050V
1	0	0	1	1	1.025V
1	0	1	0	0	1.000V
1	0	1	0	1	0.975V
1	0	1	1	0	0.950V
1	0	1	1	1	0.925V
1	1	0	0	0	0.900V
1	1	0	0	1	0.875V
1	1	0	1	0	0.850V
1	1	0	1	1	0.825V
1	1	1	0	0	0.800V
1	1	1	0	1	0.775V

Default

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Size	Document Number	Rev
Custom	+VGACORE (ADP3211)	1A

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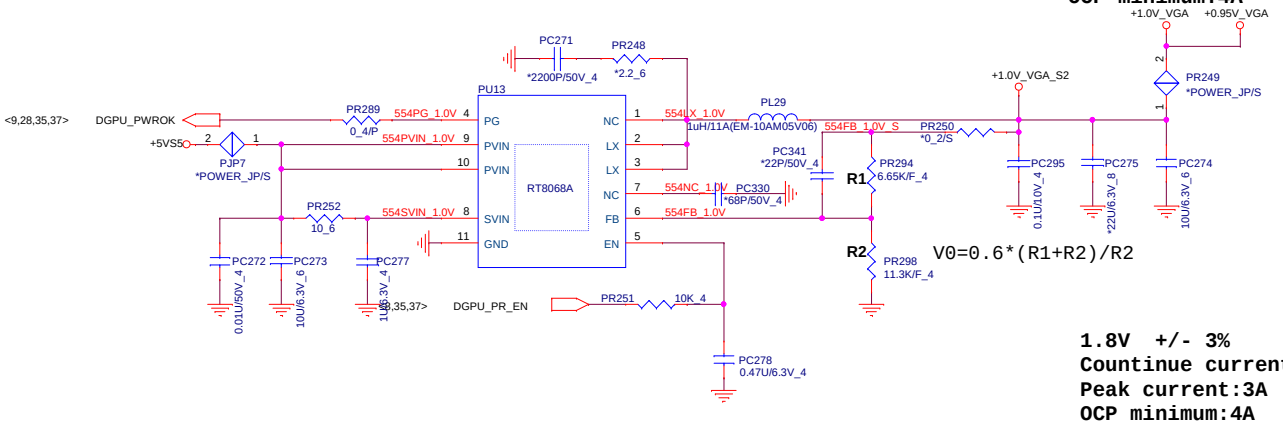
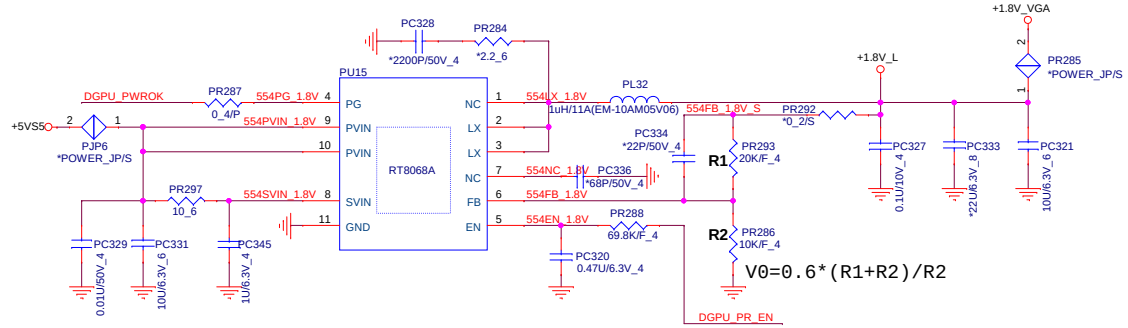
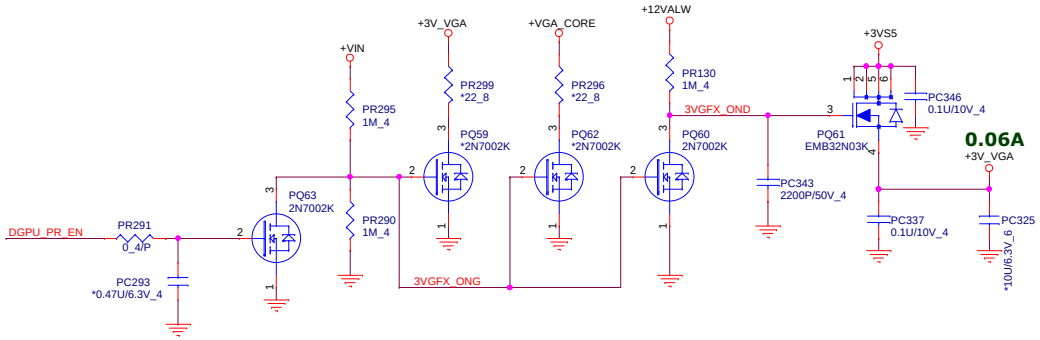
VGA TYPE	R2 Value	P/N	1.0V_VGA
Thems	10K	CS31002FB26	1.0V
MARS	11.3K	CS31132FB07	0.95V

+0.95V +/- 3%
Countinue current:2A
Peak current:3A
OCP minimum:4A



1.8V +/- 3%
Countinue current:2A
Peak current:3A
OCP minimum:4A





+1.8V_VGA <14,15,17,27>
+1.0V_VGA <14,15,17>
+3V_VGA <14,17>

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Size	Document Number	Rev
Custom	+1.0V_VGA/1.8V_VGA/3V_VGA	1A
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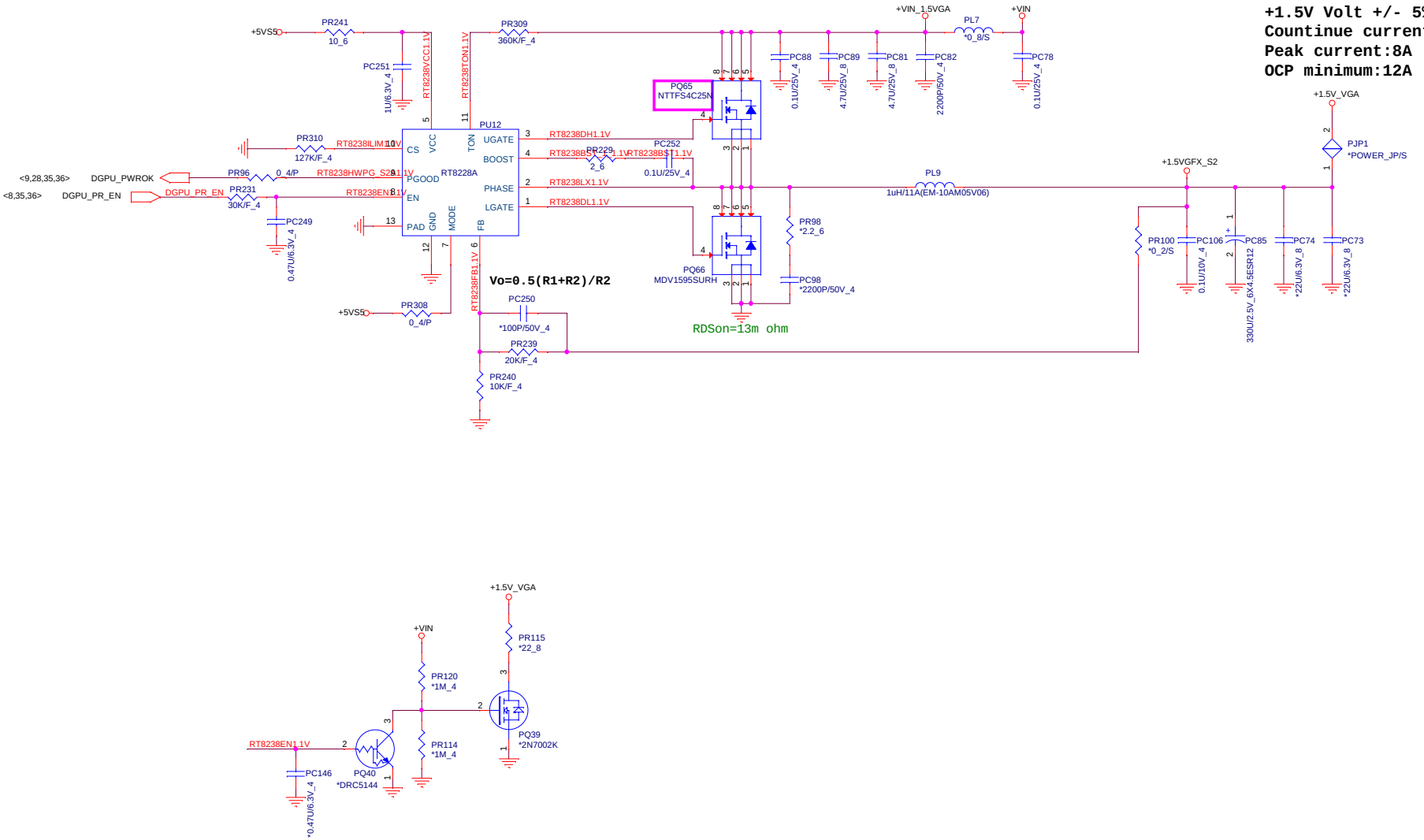
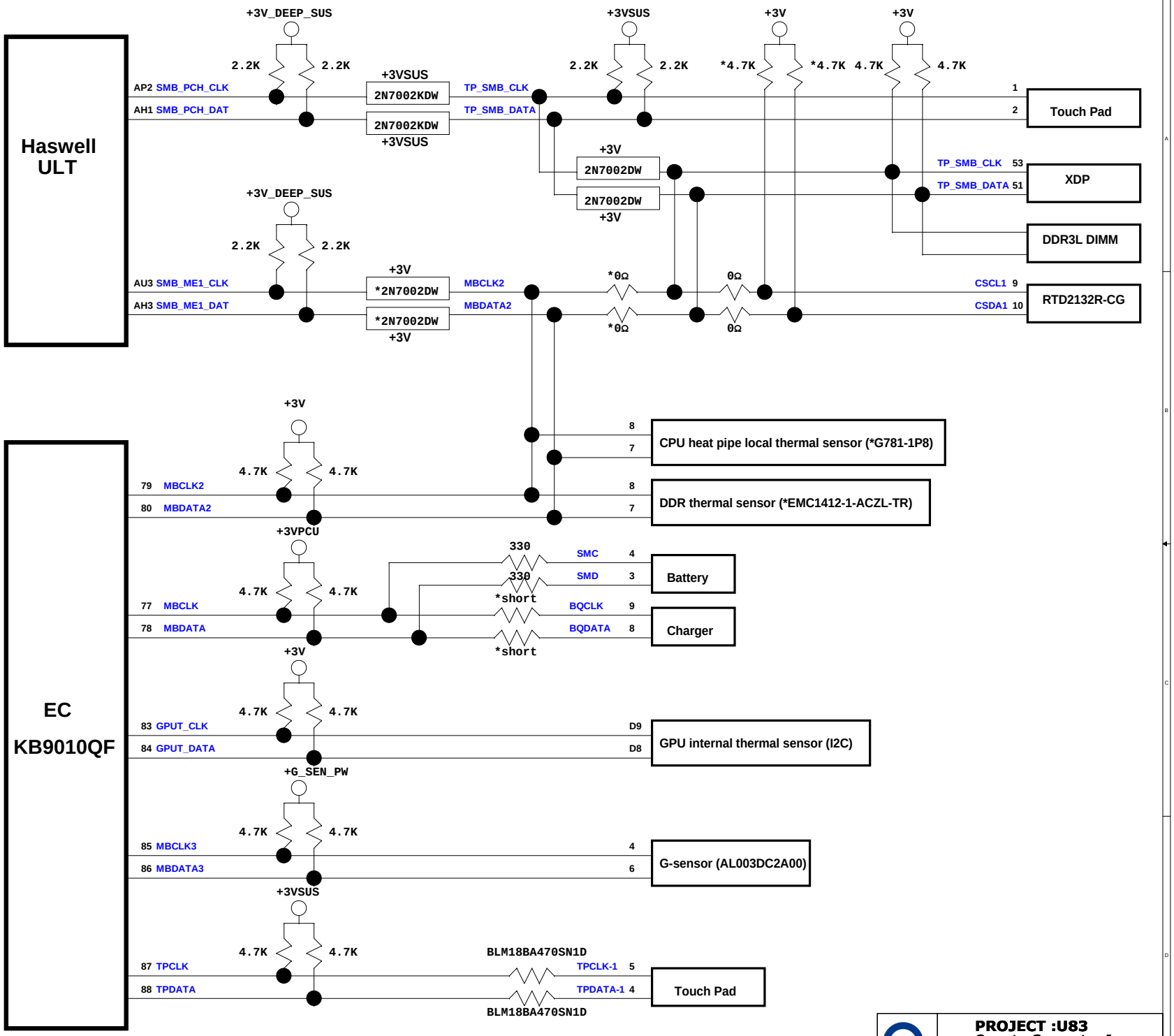

+1.5V Volt +/- 5%
Countinue current:6A
Peak current:8A
OCP minimum:12A
Vo=0.5(R1+R2)/R2
RDSon=13m ohm
PU12
RT8228A
PQ65 NTTFS4C25N
PQ66 MDV1595SURH
PL7 *0_8/S
PL9 1uH/11A(EM-10AM05V06)
PJP1 *POWER_JP/S
PQ39 *2N7002K
PQ40 *DRC5144
+1.5V_VGA
+1.5VGFX_S2
+VIN_1.5VGA
+VIN
+5VS5
DGPU_PWROK
DGPU_PR_EN

USB3.0	Port Assignment	Power control pin
PORT1	USB2.0/USB3.0 COMBO 1st	USBPW_ON#(from EC)
PORT2	USB2.0/USB3.0 COMBO 2nd	USBPW_ON#(from EC)
PORT3	NC	N/A
PORT4	NC	N/A

USB2.0	Port Assignment	Power control pin
PORT0	USB2.0/USB3.0 COMBO 1st	USBPW_ON#(from EC)
PORT1	USB2.0/USB3.0 COMBO 2nd	USBPW_ON#(from EC)
PORT2	Camera	N/A
PORT3	NC	N/A
PORT4	NC	N/A
PORT5	Left side USB daughter B	USBPW_ON#(from EC)
PORT6	WLAN	N/A
PORT7	Touch Screen 15" used	TS_ON(from EC)

SATA Master	Port Assignment	Power control pin
SATA0	HDD	N/A
SATA1	mSATA	N/A
SATA2	NC	N/A
SATA3/PCIE	Card reader	N/A

PCIE	Port Assignment	Control pin
PCIE 5_L0	PEG0	
PCIE 5_L1	PEG1	
PCIE 5_L2	PEG2	
PCIE 5_L3	PEG3	
PCIE 1	NC	
PCIE 2	NC	
PCIE 3	WLAN	
PCIE 4	LAN	


Haswell ULT
EC KB9010QF
+3V_DEEP_SUS
+3VSUS
+3V
2.2K
*4.7K
4.7K
AP2 SMB_PCH_CLK
AH1 SMB_PCH_DAT
2N7002KDW
TP_SMB_CLK
TP_SMB_DATA
Touch Pad
2N7002DW
XDP
DDR3L DIMM
AU3 SMB_ME1_CLK
AH3 SMB_ME1_DAT
*2N7002DW
MBCLK2
MBDATA2
*0Ω
0Ω
CSCL1
CSDA1
RTD2132R-CG
CPU heat pipe local thermal sensor (*G781-1P8)
79 MBCLK2
80 MBDATA2
DDR thermal sensor (*EMC1412-1-ACZL-TR)
+3VPCU
330
*short
77 MBCLK
78 MBDATA
SMC
SMD
BQCLK
BQDATA
Battery
Charger
83 GPUT_CLK
84 GPUT_DATA
GPU internal thermal sensor (I2C)
+G_SEN_PW
85 MBCLK3
86 MBDATA3
G-sensor (AL003DC2A00)
87 TPCLK
88 TPDATA
BLM18BA470SN1D
TPCLK-1
TPDATA-1
Touch Pad
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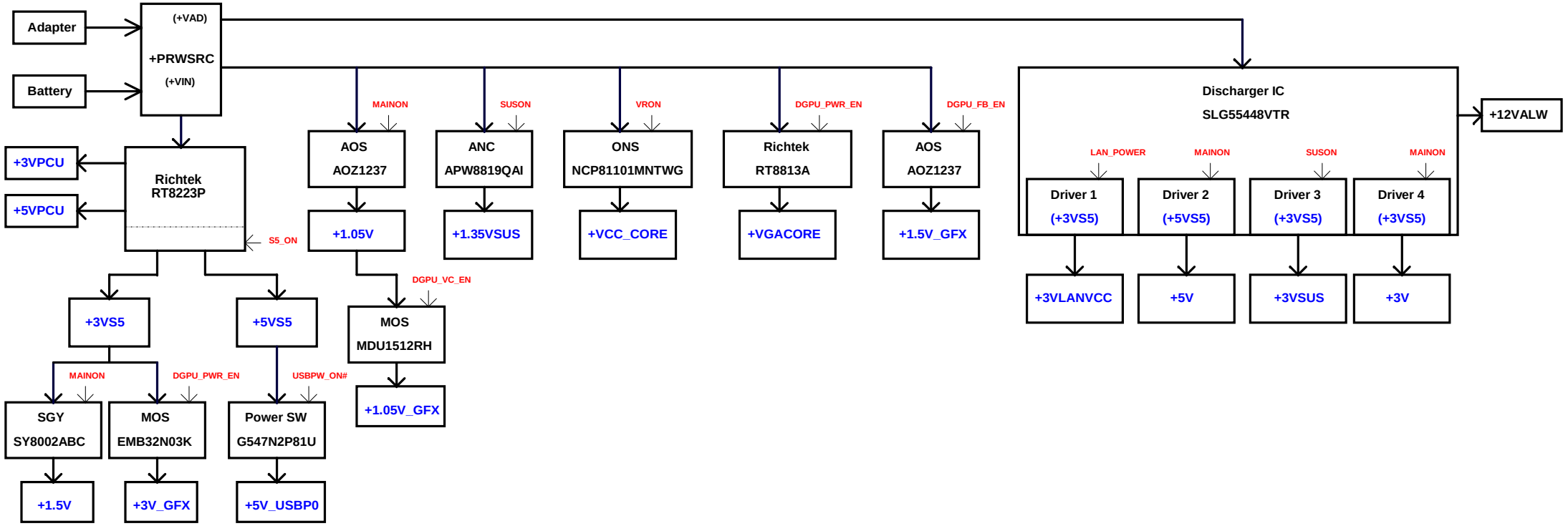

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	Power Block Diagram	1A

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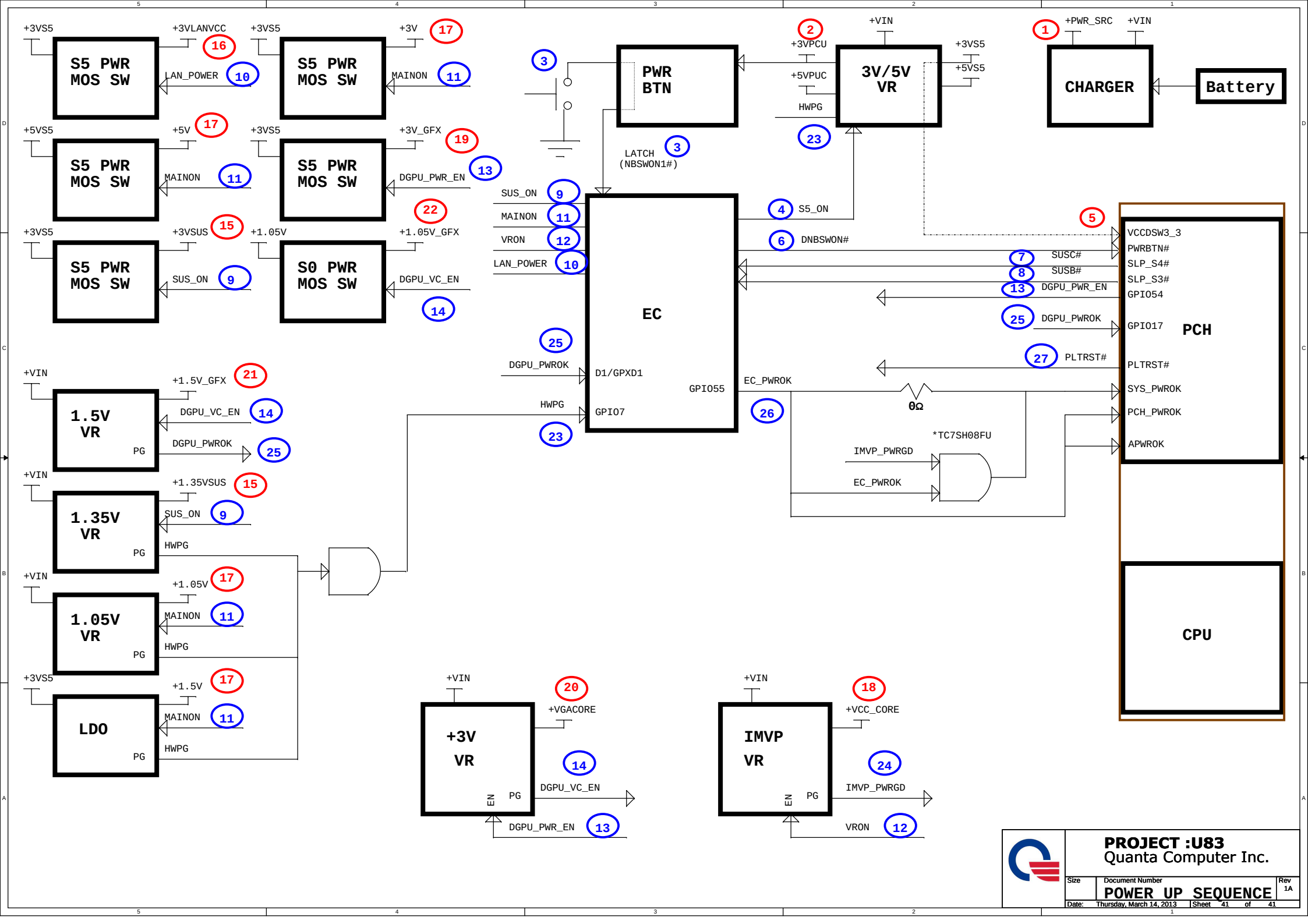
+3VS5
S5 PWR MOS SW
+3VLANVCC
16
LAN_POWER
10
+3VS5
S5 PWR MOS SW
+3V
17
MAINON
11
+5VS5
S5 PWR MOS SW
+5V
17
MAINON
11
+3VS5
S5 PWR MOS SW
+3V_GFX
19
DGPU_PWR_EN
13
22
+3VS5
S5 PWR MOS SW
+3VSUS
15
SUS_ON
9
+1.05V
S0 PWR MOS SW
+1.05V_GFX
DGPU_VC_EN
14
3
PWR BTN
LATCH (NBSWON1#)
3
+VIN
2
+3VPCU
+5VPUC
HWPG
3V/5V VR
+3VS5
+5VS5
23
1
+PWR_SRC
+VIN
CHARGER
Battery
SUS_ON
9
MAINON
11
VRON
12
LAN_POWER
10
EC
4
S5_ON
6
DNBSWON#
5
VCCDSW3_3
PWRBTN#
SLP_S4#
SLP_S3#
GPIO54
GPIO17
PCH
PLTRST#
SYS_PWROK
PCH_PWROK
APWROK
7
SUSC#
8
SUSB#
13
DGPU_PWR_EN
25
DGPU_PWROK
27
PLTRST#
25
DGPU_PWROK
D1/GPXD1
GPIO55
EC_PWROK
26
HWPG
GPIO7
23
0Ω
*TC7SH08FU
IMVP_PWRGD
EC_PWROK
+VIN
1.5V VR
PG
+1.5V_GFX
21
DGPU_VC_EN
14
DGPU_PWROK
25
+VIN
1.35V VR
PG
+1.35VSUS
15
SUS_ON
9
HWPG
+VIN
1.05V VR
PG
+1.05V
17
MAINON
11
HWPG
+3VS5
LDO
PG
+1.5V
17
MAINON
11
HWPG
CPU
+VIN
+3V VR
EN
PG
20
+VGACORE
14
DGPU_VC_EN
DGPU_PWR_EN
13
+VIN
IMVP VR
EN
PG
18
+VCC_CORE
24
IMVP_PWRGD
VRON
12
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