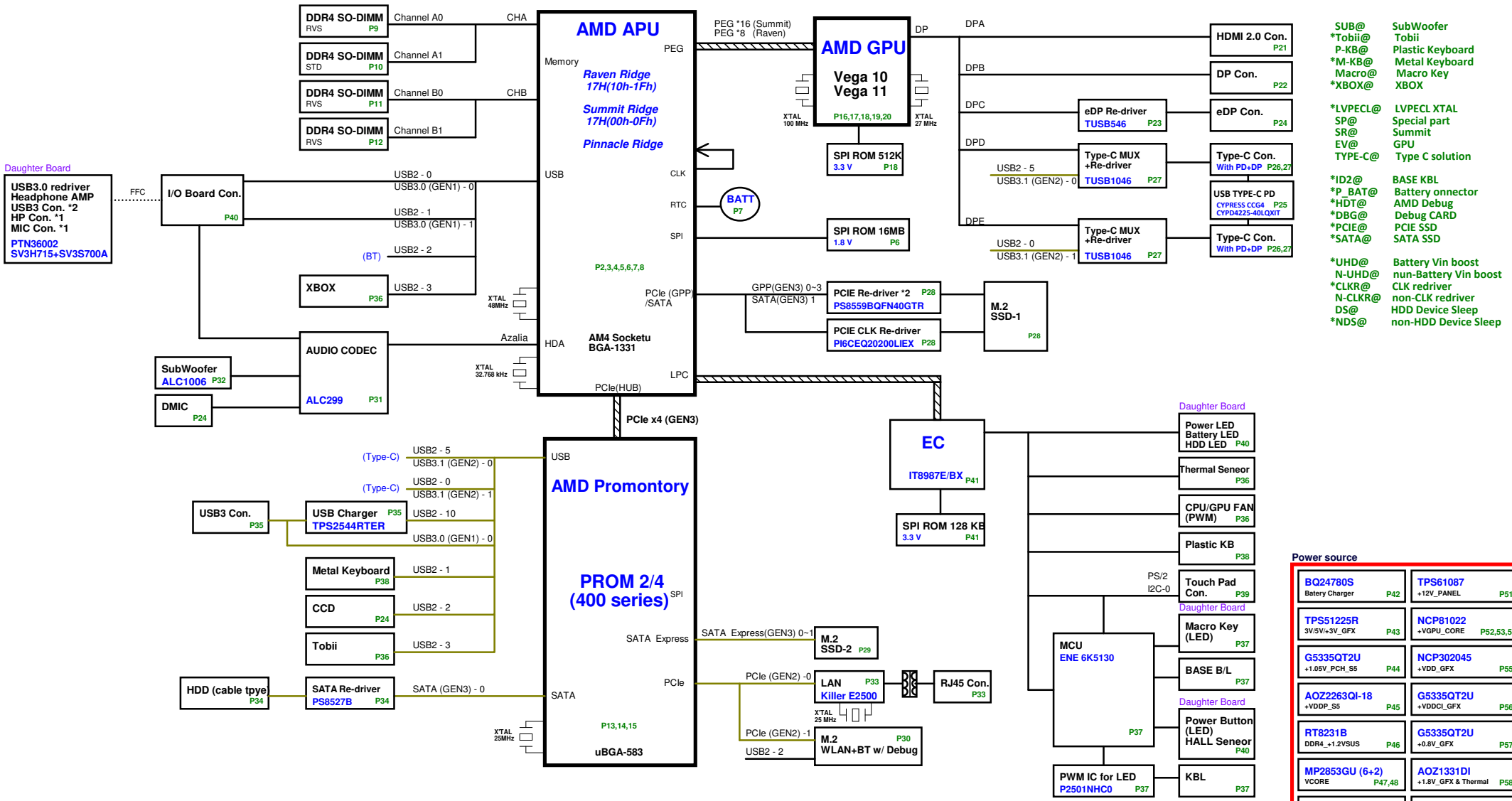
ZGX System Block Diagram

01

1 of 2/CH (xR-0) : SR(2667), DR(2400-2667) MT/s
2 of 2/CH (1R-1R) : 2133-2400 MT/s
2 of 2/CH (2R-xR) : 1866-2133 MT/s



SUB@	SubWoofer
*Tobii@	Tobii
P-KB@	Plastic Keyboard
*M-KB@	Metal Keyboard
Macro@	Macro Key
*XBOX@	XBOX
*LVPECL@	LVPECL XTAL
SP@	Special part
SR@	Summit
EV@	GPU
TYPE-C@	Type C solution
*ID2@	BASE KBL
*P_BAT@	Battery onnector
*HDT@	AMD Debug
*DBG@	Debug CARD
*PCIE@	PCIE SSD
*SATA@	SATA SSD
*UHD@	Battery Vin boost
N-UHD@	nun-Battery Vin boost
*CLKR@	CLK redriver
N-CLKR@	non-CLK redriver
DS@	HDD Device Sleep
*NDS@	non-HDD Device Sleep

Power source

BQ24780S Batery Charger P42	TPS61087 +12V_PANEL P51
TPS51225R 3V/5V/+3V_GFX P43	NCP81022 +VGPU_CORE P52,53,54
G5335QT2U +1.05V_PCH_S5 P44	NCP302045 +VDD_GFX P55
AOZ2263QI-18 +VDDP_S5 P45	G5335QT2U +VDDCI_GFX P56
RT8231B DDR4_+1.2VSUS P46	G5335QT2U +0.8V_GFX P57
MP2853GU (6+2) VCORE P47,48	AOZ1331DI +1.8V_GFX & Thermal P58
G5335QT2U +1.8V_S5 P49	M5671RE1U +VPP_GFX & PCC P59
TPS61087 +12V_FAN P50	

Quanta Computer Inc.
PROJECT : ZGX
Size | Document Number: Block Diagram | Rev 1A
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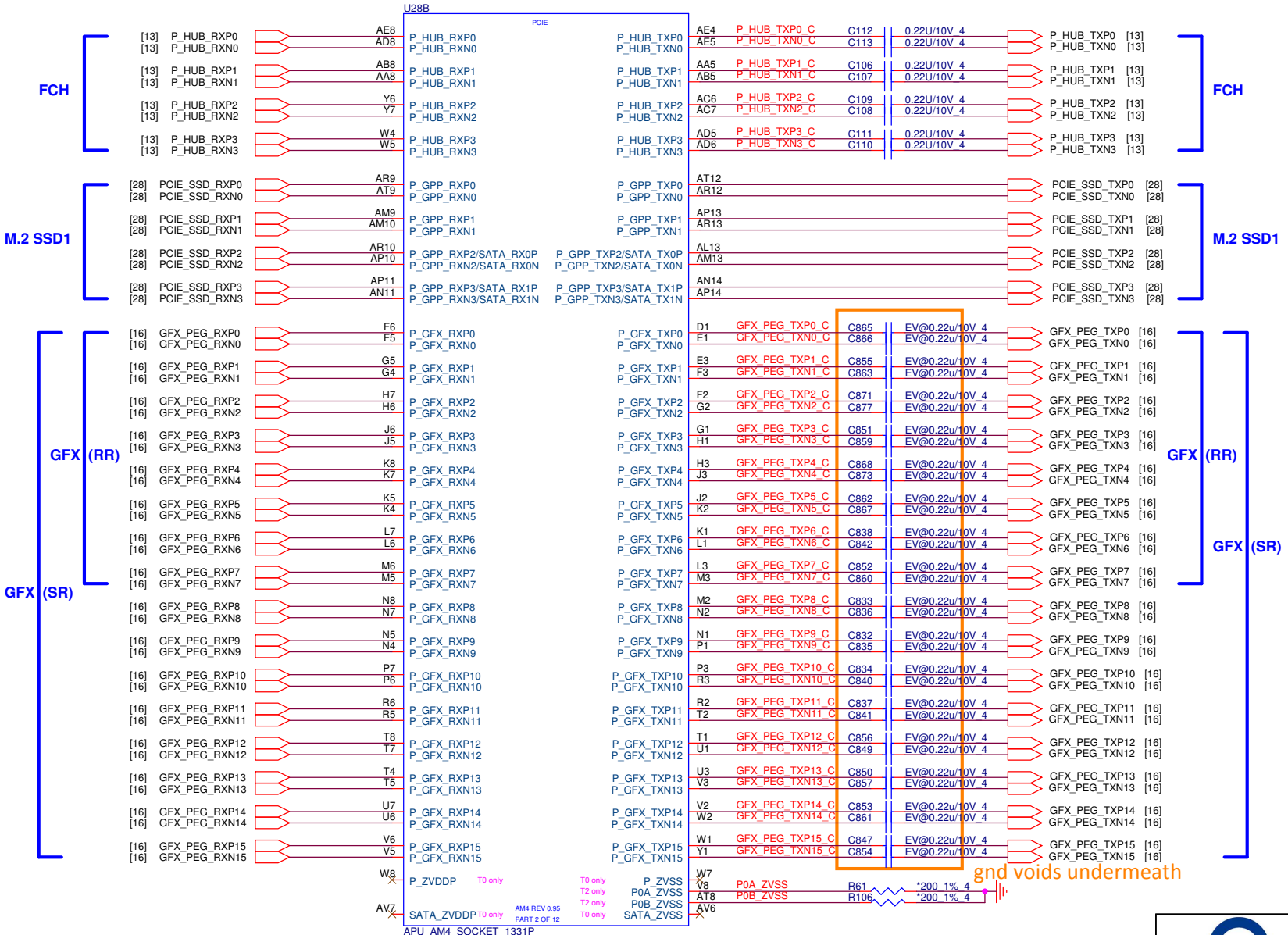
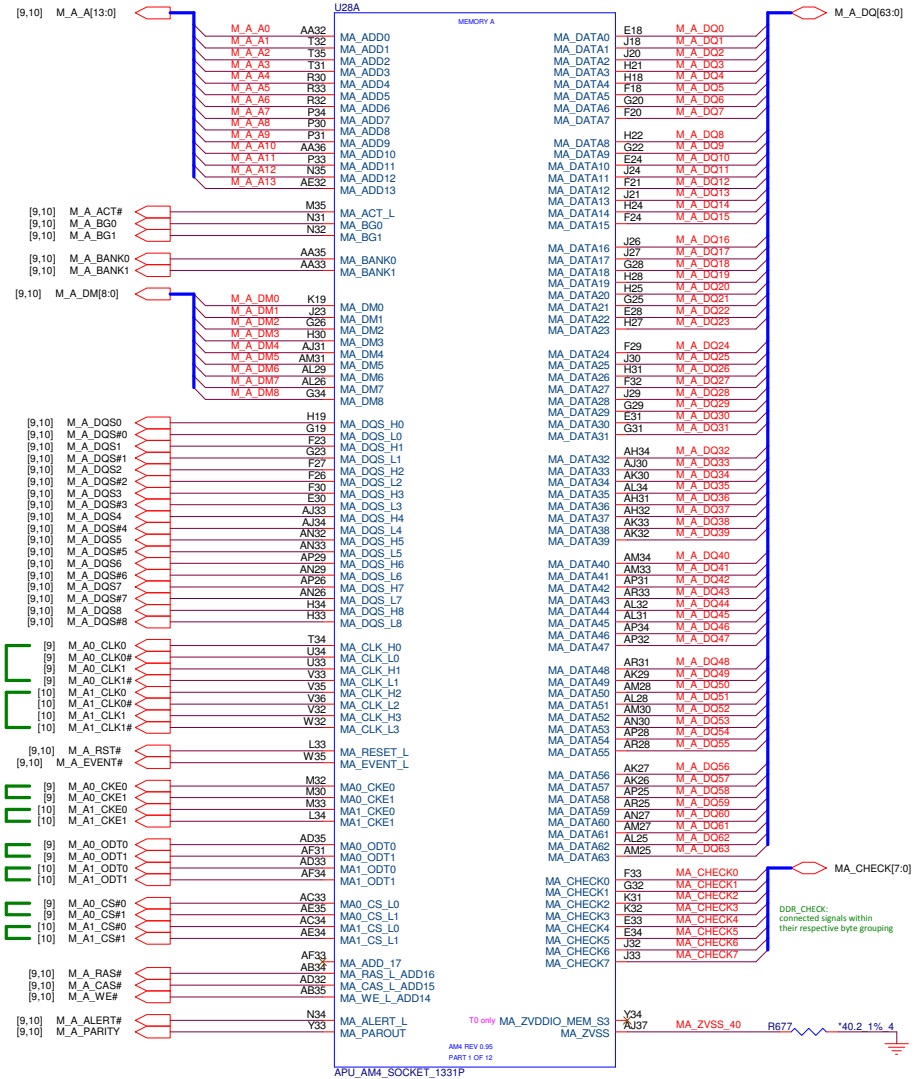
(CPU)

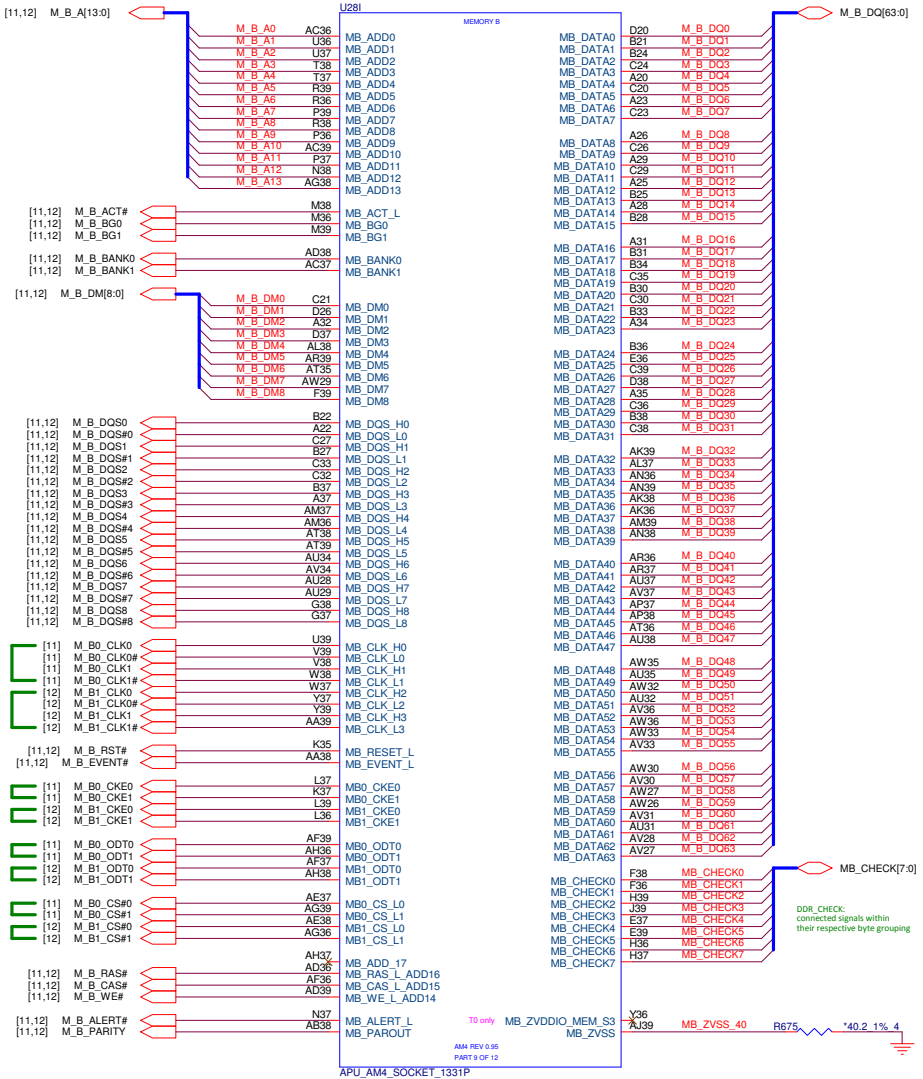
02



Quanta Computer Inc.		
PROJECT : ZGX		
Size	Document Number: AM4 PCIE	Rev: 1A
Date: Tuesday, June 26, 2018	Sheet 2 of 59	

(CPU)





Quanta Computer Inc.

PROJECT : ZGX

Size	Document Number	Rev
	AM4 MEMORY	1A

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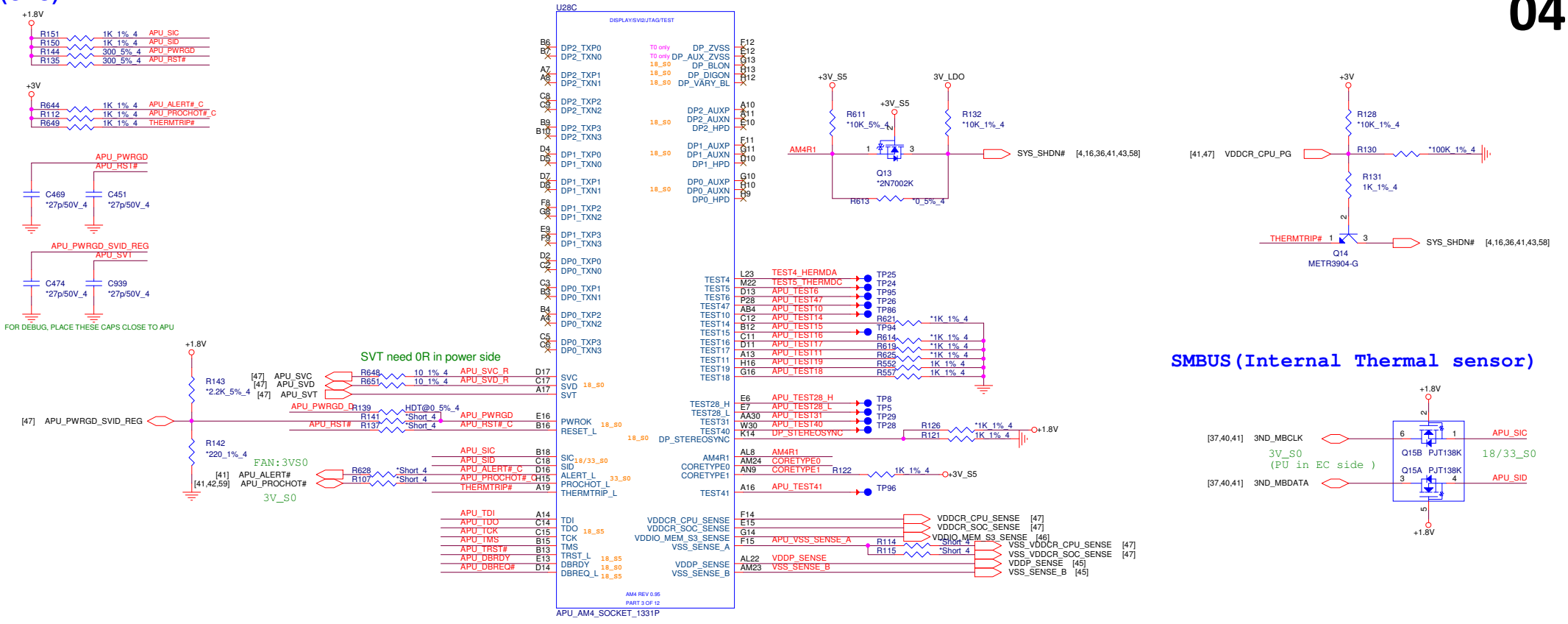
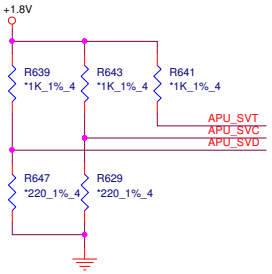
(CPU)

04



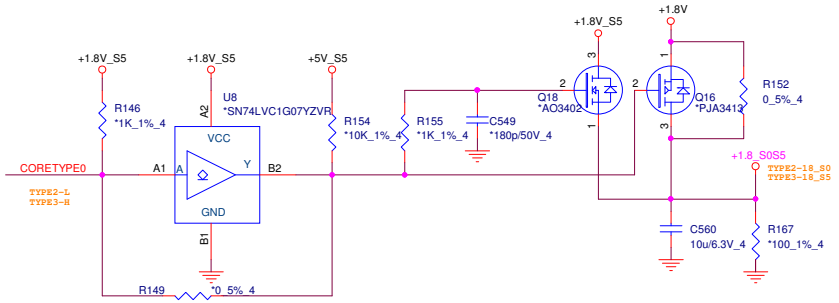
SMBUS(Internal Thermal sensor)

Serial VID



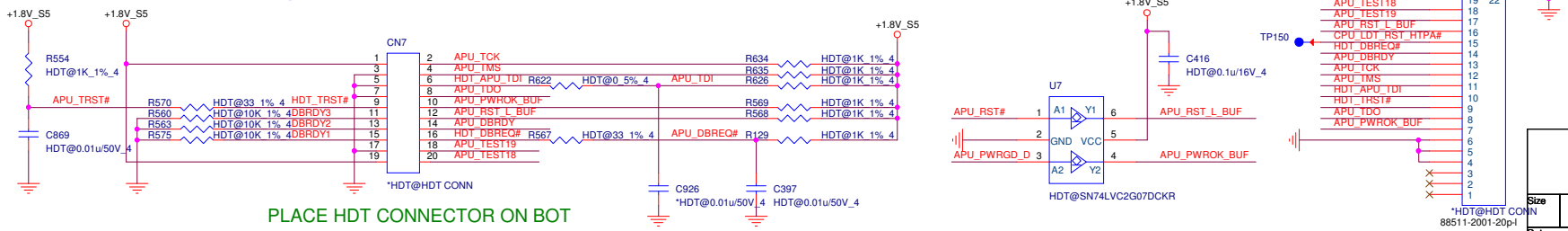
VFIX MODE		VID Override table (VDD)
SVC	SVD	Boot Voltage
0	0	1.1V
0	1	1.0V
1	0	0.9V
1	1	0.8V

for normal operation open all switches



CORETYPE1	CORETYPE0	Family/Model Numbers	AM4 Processor Type
0	0	Family 15h/Models 60h-6Fh	Type 0
0	1	Reserved	Reserved
1	1	Family 17h/Models 20h-2Fh	Type 1
1	0	Family 17h/Models 00h-0Fh	Type 2
1	1	Family 17h/Models 10h-1Fh	Type 3

HDT(Hardware Debug Tool) Connector



Quanta Computer Inc.			
PROJECT : ZGX			
Size	Document Number		Rev
	AM4 DISPLAY/MISC		1A
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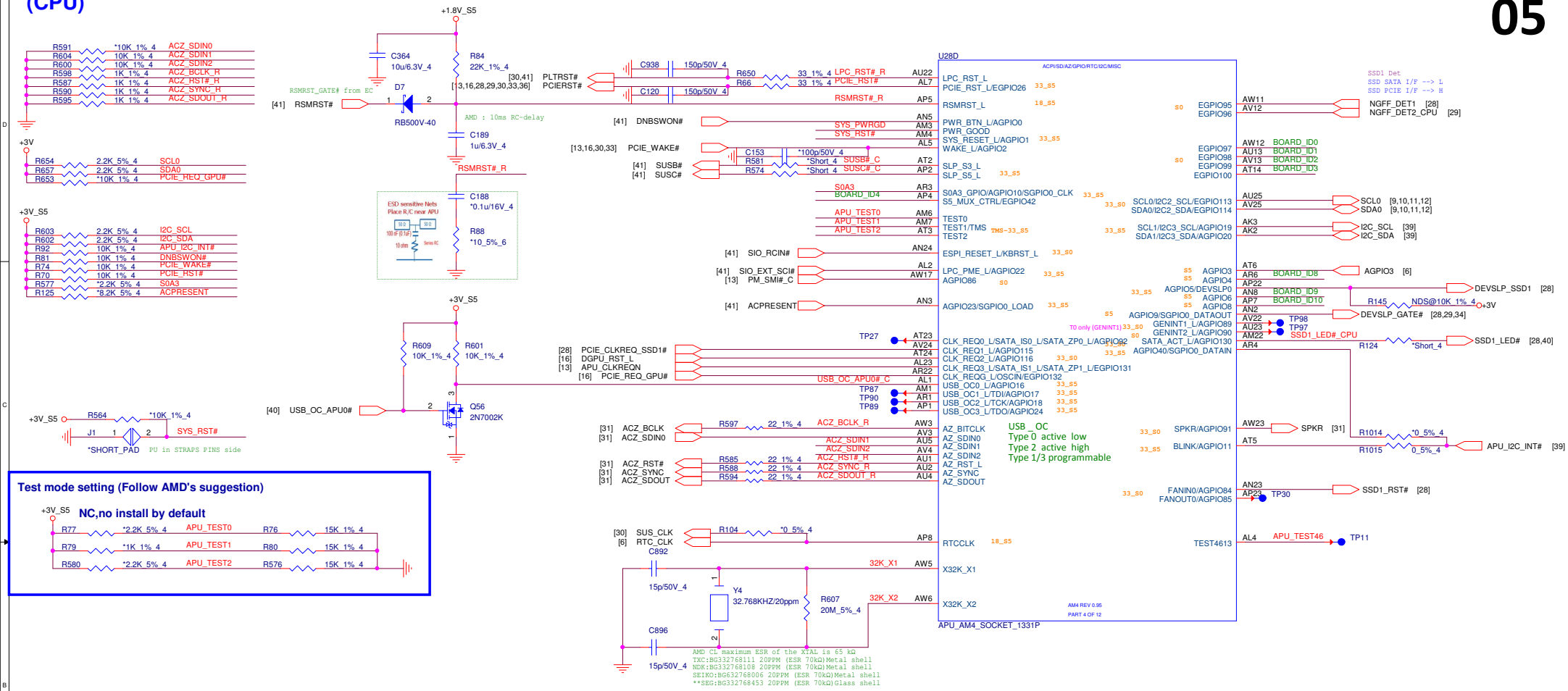
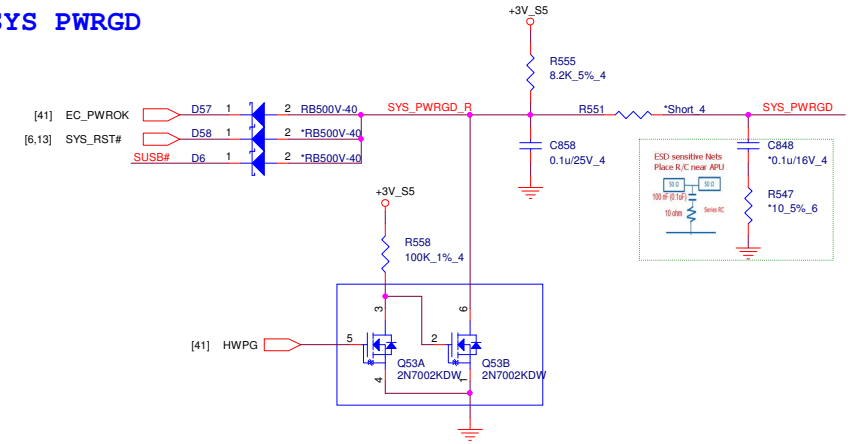
(CPU)

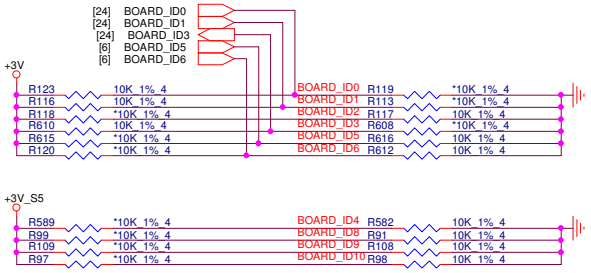
05



SYS PWRGD



BOARD ID



AMD read EDID data to get its device ID and manufacture code via AUX channel.(NO NVSR)

GPIO	High	Low
BOARD_ID0	NVSR,Normal,Freesync	Reserve,DD
BOARD_ID1	Normal,DD,Freesync	Reserve,NVSR
BOARD_ID2	Reserve	Reserve (Default)
BOARD_ID3	nun-OD Panel	OD Panel
BOARD_ID4	Reserve	Reserve (Default)
BOARD_ID5	Reserve	Reserve (Default)
BOARD_ID6	Reserve	Reserve (Default)
NA	NA	NA
BOARD_ID8	Reserve	Reserve (Default)
BOARD_ID9	Reserve	Reserve (Default)
BOARD_ID10	Reserve	Reserve (Default)

Quanta Computer Inc.

PROJECT : ZGX

Size	Document Number	Rev
	AM4 ACPI/AZ/SD/I2C/GPIO/FC	1A

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(CPU)

06

U28E

CLK/USB/SPI/LPC

48M_OSC — R103 *22_1%_4 — TP16

USB_ZVSS

AM4 USB"3.1" RX need through an 0.33uF AC-coupling capacitor.

USB_HSD0P / USB_HSD0N — USB2_APU_0P [40] / USB2_APU_0N [40] — **USB3.0 Port 1 (DB)**

USB_HSD1P / USB_HSD1N — USB2_APU_1P [40] / USB2_APU_1N [40] — **USB3.0 Port 2 (DB)**

USB_HSD2P / USB_HSD2N — USB2_APU_2P [30] / USB2_APU_2N [30] — **Blue tooth**

USB_HSD3P / USB_HSD3N — USB2_APU_3P [36] / USB2_APU_3N [36] — **XBOX**

USB0_ZVSS R48 *200_1%_4
USB1_ZVSS R87 *200_1%_4
USB2_ZVSS R55 *200_1%_4
USB3_ZVSS R65 *200_1%_4

[16] GFX_PEG_CLKP / [16] GFX_PEG_CLKN — R58/R57 *Short_4 — GFX_PEG_CLKP_C / GFX_PEG_CLKN_C — AF6/AF7 — GFX_CLKP / GFX_CLKN

R49/R54 *CLKR@49.9_1%_4 — AG5/AG6 — GPP_CLK0P / GPP_CLK0N

[28] CLK_PCIE_SSDP / [28] CLK_PCIE_SSDN — R62/R53 *Short_4 — CLK_PCIE_SSDP_C / CLK_PCIE_SSDN_C — AH4/AH5 — GPP_CLK1P / GPP_CLK1N

AH7/AH8 — GPP_CLK2P / GPP_CLK2N

[14] CLK_PCIE_HUBP / [14] CLK_PCIE_HUBN — R60/R59 *Short_4 — CLK_PCIE_HUBP_C / CLK_PCIE_HUBN_C — AJ6/AJ7 — GPP_CLK3P / GPP_CLK3N

C872 2.2p/50V_4 — TP85

Y2 48MHZ/15ppm — TXC:BG648000021 15PPM — HHE:BG648000026 15PPM

R559 1M_1%_4 — 48M_X1 — AJ1 — X48M_X1

C864 2.2p/50V_4 — TP84 — 48M_X2 — AH1 — X48M_X2

all XTAL need add TP2650 for ICT test
test pad must place in Bottom side

[41] CLK_PCI_EC / [30] CLK_LPC_DEBUG — R638/R627 22_1%_4 — LPCCLK0 / LPCCLK1 — AU20/AU19 — LPCCLK0/EGPIO74 / LPCCLK1/EGPIO75 (33_S0)

[30,41] LPC_LAD0 — AW20 — LAD0/EGPIO104
[30,41] LPC_LAD1 — AV21 — LAD1/EGPIO105 (33_S0)
[30,41] LPC_LAD2 — AT21 — LAD2/EGPIO106
[30,41] LPC_LAD3 — AT20 — LAD3/EGPIO107
[30,41] LPC_LFRAME# — AW18 — LFRAME_L/EGPIO109
[5] BOARD_ID6 — AT15 — ESPI_ALERT_L/LDRQ0_L/EGPIO108 (EGPIO108-18/33_S0)
[41] SERIRQ — AW21 — SERIRQ/AGPIO87 (33_S0)
[41] CLKRUN# — AV19 — LPC_CLKRUN_L/AGPIO88 (33_S0)
TP93 — AV18 — LPC_PD_L/AGPIO21 (33_S0)
[5] BOARD_ID5 — AT18 — EGPIO70 (S0)

SPI_CLK — AW14 — SPI_CLK/ESPI_CLK
SPI_CS# — AT17 — SPI_CS1_L/EGPIO118
TP91 — AW15 — SPI_CS2_L/ESPI_CS_L/EGPIO119
SPI_SO — AU14 — SPI_DI/ESPI_DAT1 (TYPE2-18_S0 / TYPE3-18_S5)
SPI_SI — AU16 — SPI_DO/ESPI_DAT0
SPI_WP — AV16 — SPI_WP_L/ESPI_DAT2/EGPIO122
SPI_HOLD# — AV15 — SPI_HOLD_L/ESPI_DAT3/EGPIO133
TP92 — AU17 — SPI_TPM_CS_L/AGPIO76

AM4 REV 0.95
PART 5 OF 12

APU_AM4_SOCKET_1331P

T0 only USB_SS_ZVSS — AJ4
T0 only USB_SS_ZVDDP — AK8

USB_SS_0TXP / USB_SS_0TXN — AF3/AF4 — USB3_APU_TXP0 [40] / USB3_APU_TXN0 [40]
USB_SS_0RXP / USB_SS_0RXN — Y3/Y4 — USB3_APU_RXP0 [40] / USB3_APU_RXN0 [40] — **USB3.0 Port 1 (DB)**

USB_SS_1TXP / USB_SS_1TXN — AB1/AC1 — USB3_APU_TXP1 [40] / USB3_APU_TXN1 [40]
USB_SS_1RXP / USB_SS_1RXN — AA2/AA3 — USB3_APU_RXP1 [40] / USB3_APU_RXN1 [40] — **USB3.0 Port 2 (DB)**

USB_SS_2TXP / USB_SS_2TXN — AC3/AC4
USB_SS_2RXP / USB_SS_2RXN — AD2/AE2
USB_SS_3TXP / USB_SS_3TXN — AG2/AG3
USB_SS_3RXP / USB_SS_3RXN — AE1/AF1

BIOS ROM(16MB)

+1.8_S0S5 — R694 10K_1%_4

U29

SPI_CS# R695 *Short_4 SPI_CS_A — TP106 — 1 CS
SPI_CLK R670 10_5%_4 SPI_SCK_A — TP99 — 6 CLK
TP102 — 5 DI
TP101 — 2 DO
C953 *22p/50V_4 (SPI EMI)
SPI_SI R673 *Short_4 SPI_SDI_A — TP105 — 3 WP
SPI_SO R671 *Short_4 SPI_SDO_A
+1.8_S0S5 — R692 *10K_1%_4
SPI_WP R688 *Short_4 SPI_WP_R

VCC 8 — +1.8_S0S5 — R674 *10K_1%_4 — C954 0.1u/16V_4 — TP31
HOLD 7 — TP100 — SPI_HOLD#
GND 4

SP@MX25U12835FM2I-10G

BIOS every pin need add TP2675(First)/TP2650 for ICT test
test pad must place in TOP side

SP@ socket P/N: DG008000011 only for A-TEST
(FP:50960-0084n-001-8p-socket)

B-STAGE need change FP to soic8-7_9-1_27-2_16h

STRAPS PINS

Type0 only — Type0 only

+3V — R637 *10K_1%_4 — LPCCLK0
+3V — R623 *10K_1%_4 — LPCCLK1
+3V — R618 SR@10K_1%_4 — LPC_LFRAME#
+3V_S5 — R105 *10K_1%_4 — [5] RTC_CLK
+3V_S5 — R95 *10K_1%_4 — [5] AGPIO3
+3V_S5 — R566 10K_1%_4 — [5,13] SYS_RST#
+1.8_S0S5 — R669 10K_1%_4 — SPI_SCK_A

R631 *2K_1%_4
R624 *2K_1%_4
R620 *SR@2K_1%_4
R102 *2K_1%_4
R100 *2K_1%_4
R565 *2K_1%_4
R672 *2K_1%_4

	CZ/ST ONLY						ZP ONLY
	LPC_CLK0	LPC_CLK1	RTC_CLK	AGPIO3	LFRAME#	SYS_RST#	SPI CLK(ZP)
PU	BOOT Fail Timer ENABLE	Use 48Mhz crystal clock and generate both internal and external clocks DEFAULT	Coin battery is on board. DEFAULT	Enhanced Reset logic (for quicker S5 resume) DEFAULT	SPI ROM DEFAULT	normal reset mode DEFAULT	Use 48Mhz crystal clock and generate both internal and external clocks DEFAULT
PD	BOOT Fail Timer DISABLE DEFAULT	Use 100Mhz PCIE clock as reference clock and generate internal clocks only	Coin battery isn't on board.	Default to traditional reset logic	LPC ROM	short reset mode	Use 100Mhz PCIE clock as reference clock and generate internal clocks only

Quanta Computer Inc.
PROJECT : ZGX

Size	Document Number	Rev
	AM4 CLK/LPC/SPI/USB	1A
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(CPU)

TOP : Under the CPU

BOT : BOT CAVITY

122A

VDDCR_CPU

48A

VDDCR_NB

21A

+1.2VSUS

11.5A

VDDP

U28L

APU_AM4_SOCKET_1331P

U28F

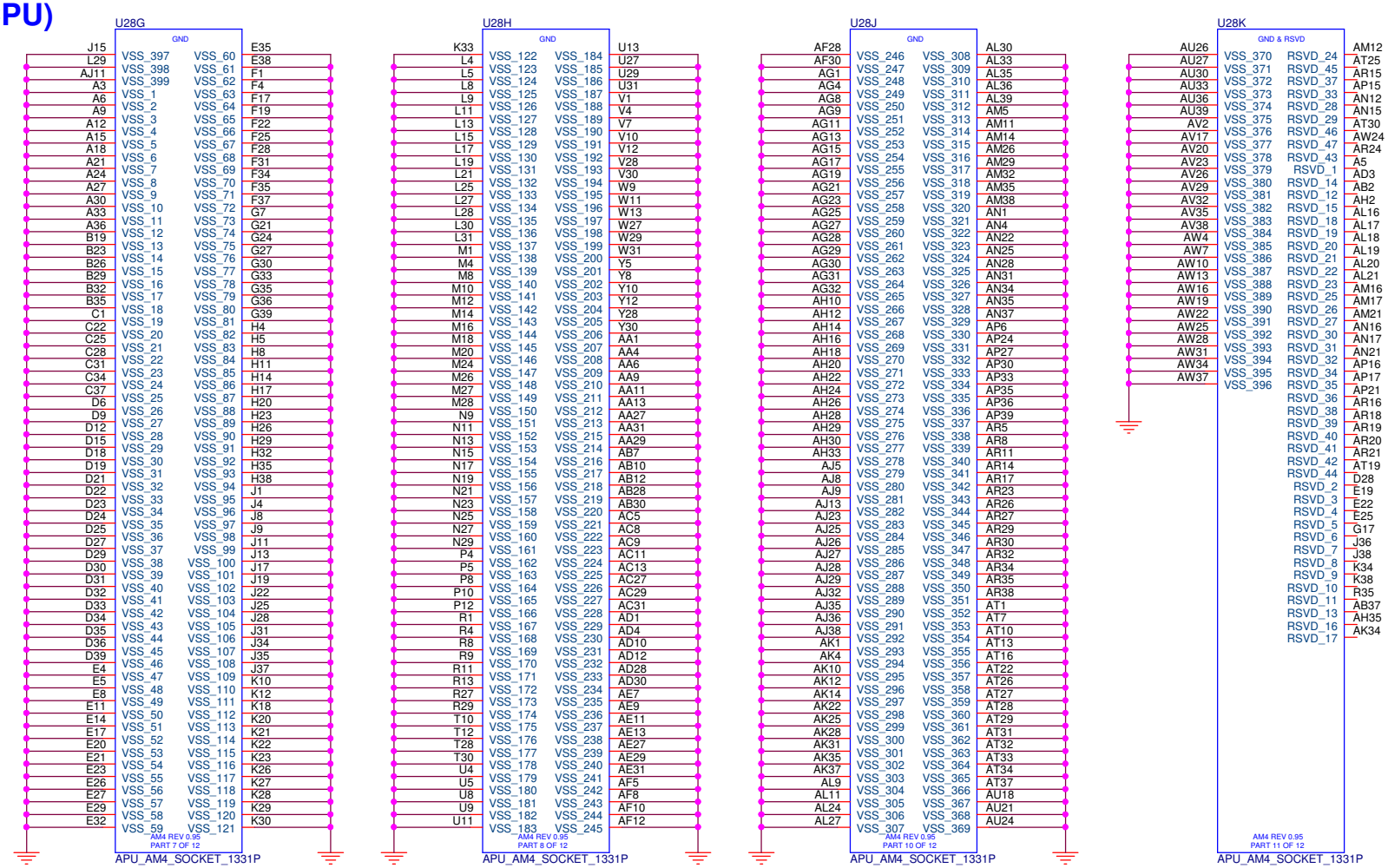
APU_AM4_SOCKET_1331P

RTC(RTC)

Charge function

For EC reset RTC

(CPU)



08

Quanta Computer Inc.		
PROJECT : ZGX		
Size	Document Number: AM4 GND	Rev: 1A
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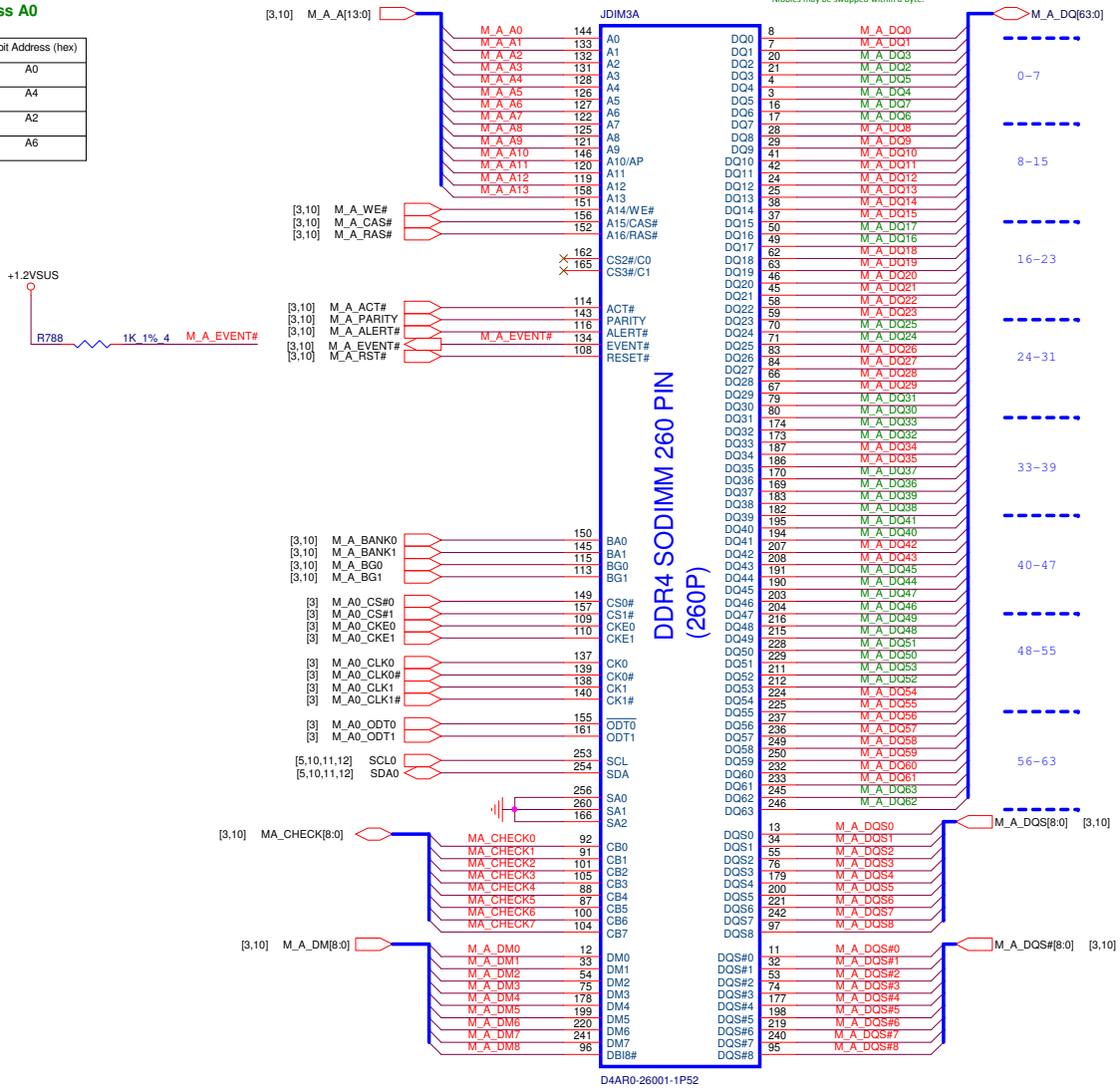
SODIMM (SDM)

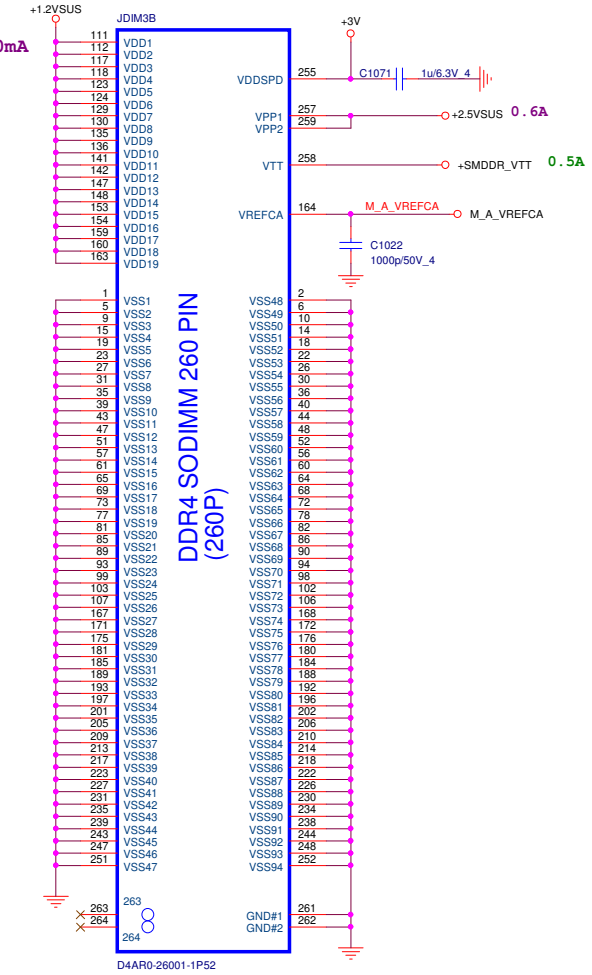
09

DDR industry-standard specification
All bits within a byte must be wired to the same DRAM.
Bits within a nibble may be swapped in any order.
Nibbles may be swapped within a byte.

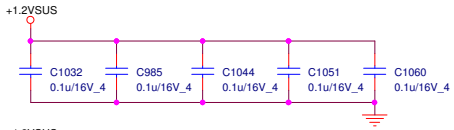
Address A0

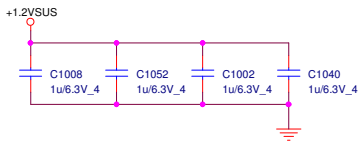
Device	8-bit Address (hex)
DIMMA0	A0
DIMMA1	A4
DIMMB0	A2
DIMMB1	A6

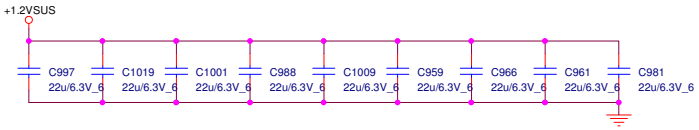


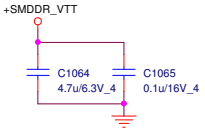


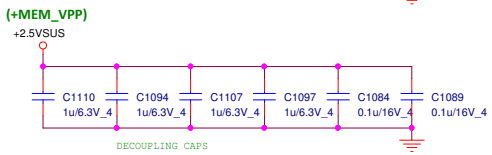
Place these Caps near So-Dimm A0

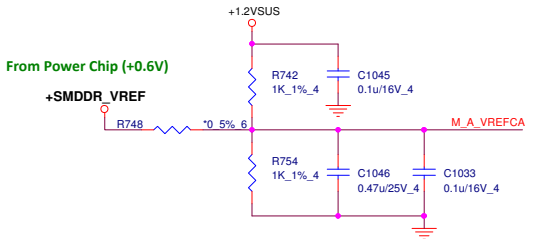












Quanta Computer Inc.

PROJECT : ZGX

Size	Document Number	Rev
	DDR4 DIMM CHA0 (RVS-H5-B)	1A

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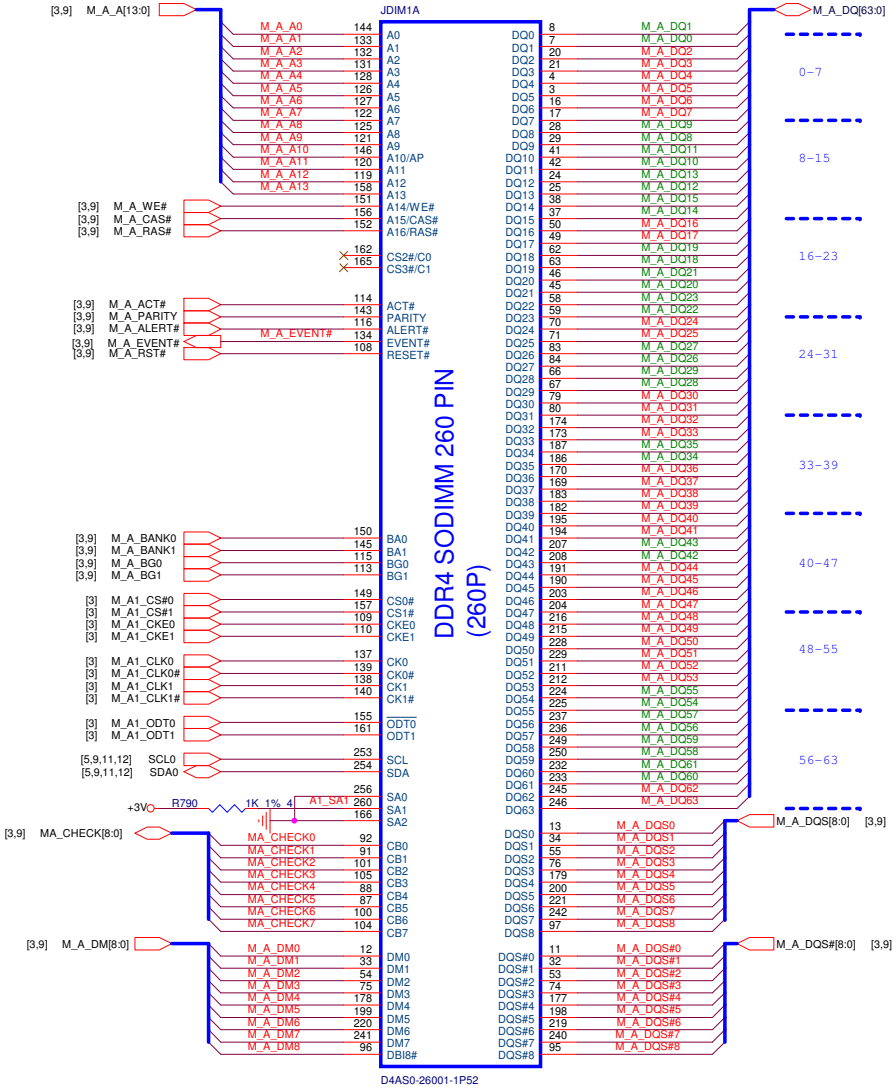
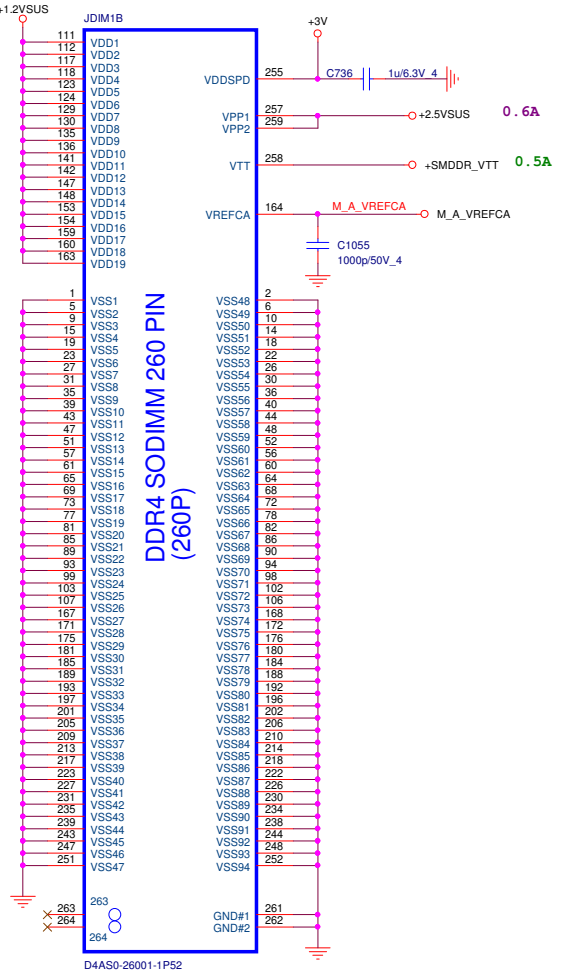
SODIMM (SDM)

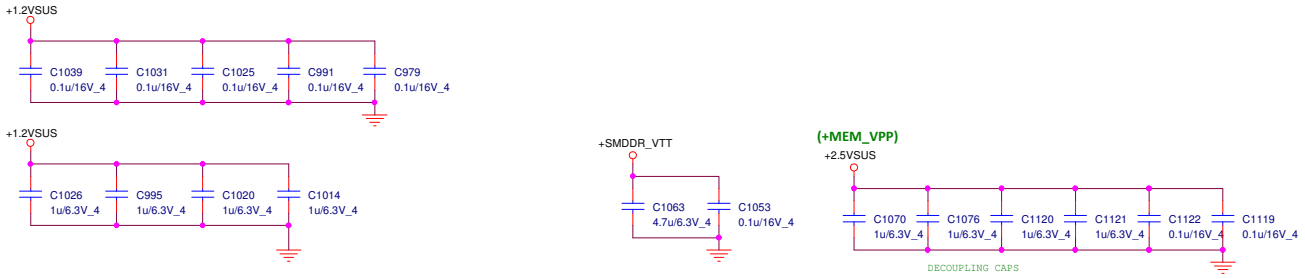
Address A4

DDR industry-standard specification
All bits within a byte must be wired to the same DRAM.
Bits within a nibble may be swapped in any order.
Nibbles may be swapped within a byte.





Place these Caps near So-Dimm A1



Quanta Computer Inc.

PROJECT : ZGX

Size	Document Number	Rev
	DDR4 DIMM CHA1 (STD-H4-T)	1A

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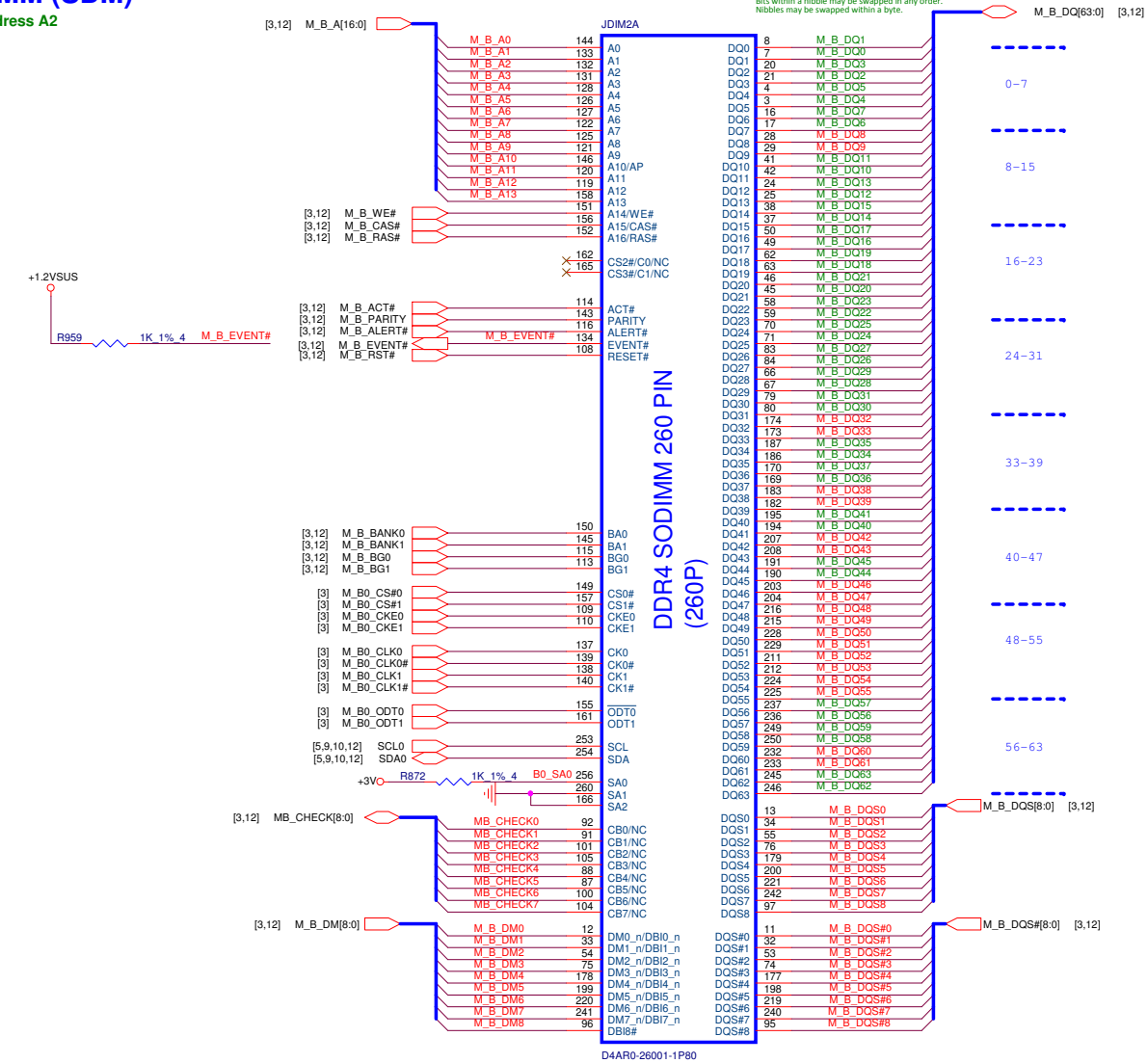
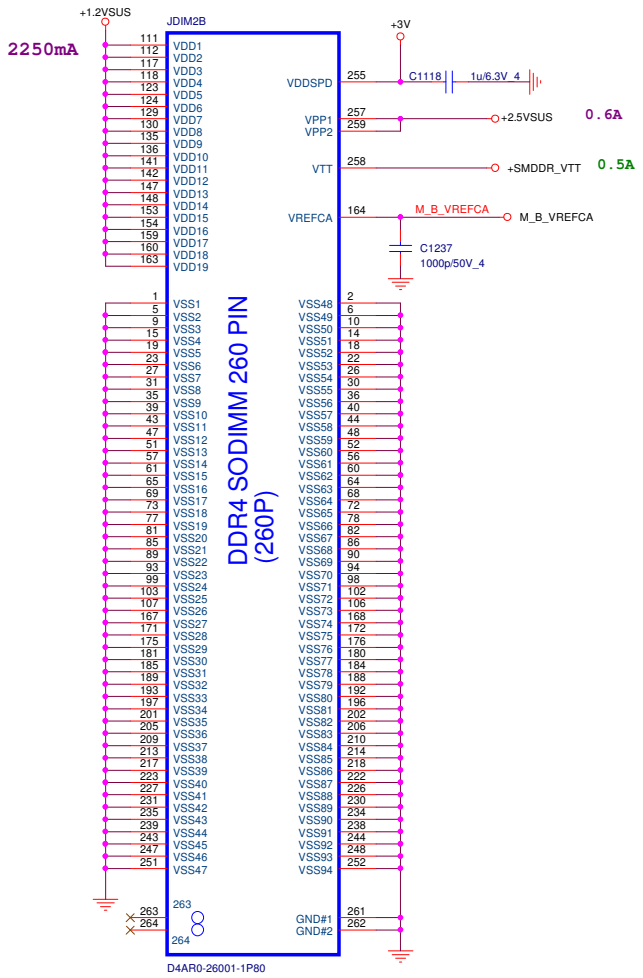
SODIMM (SDM)

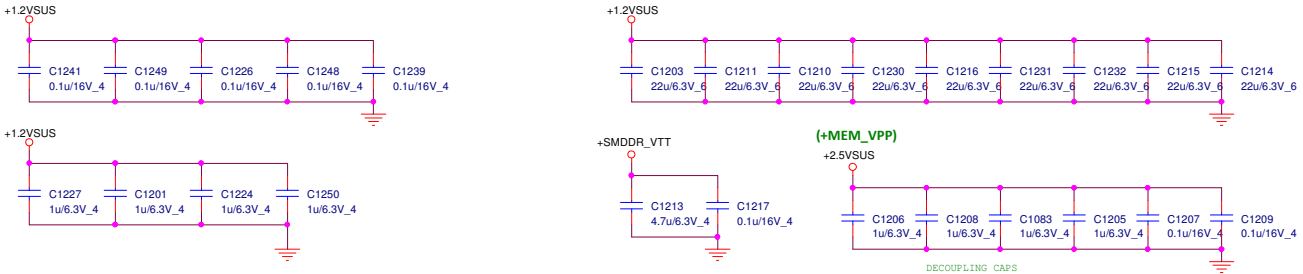
Address A2

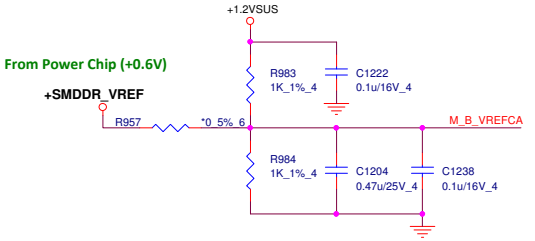
DDR industry-standard specification
All bits within a byte must be wired to the same DRAM.
Bits within a nibble may be swapped in any order.
Nibbles may be swapped within a byte.





Place these Caps near So-Dimm B0





Quanta Computer Inc.		
PROJECT : ZGX		
Size	Document Number: DDR4 DIMM CHB0 (RVS-H4-T)	Rev: 1A
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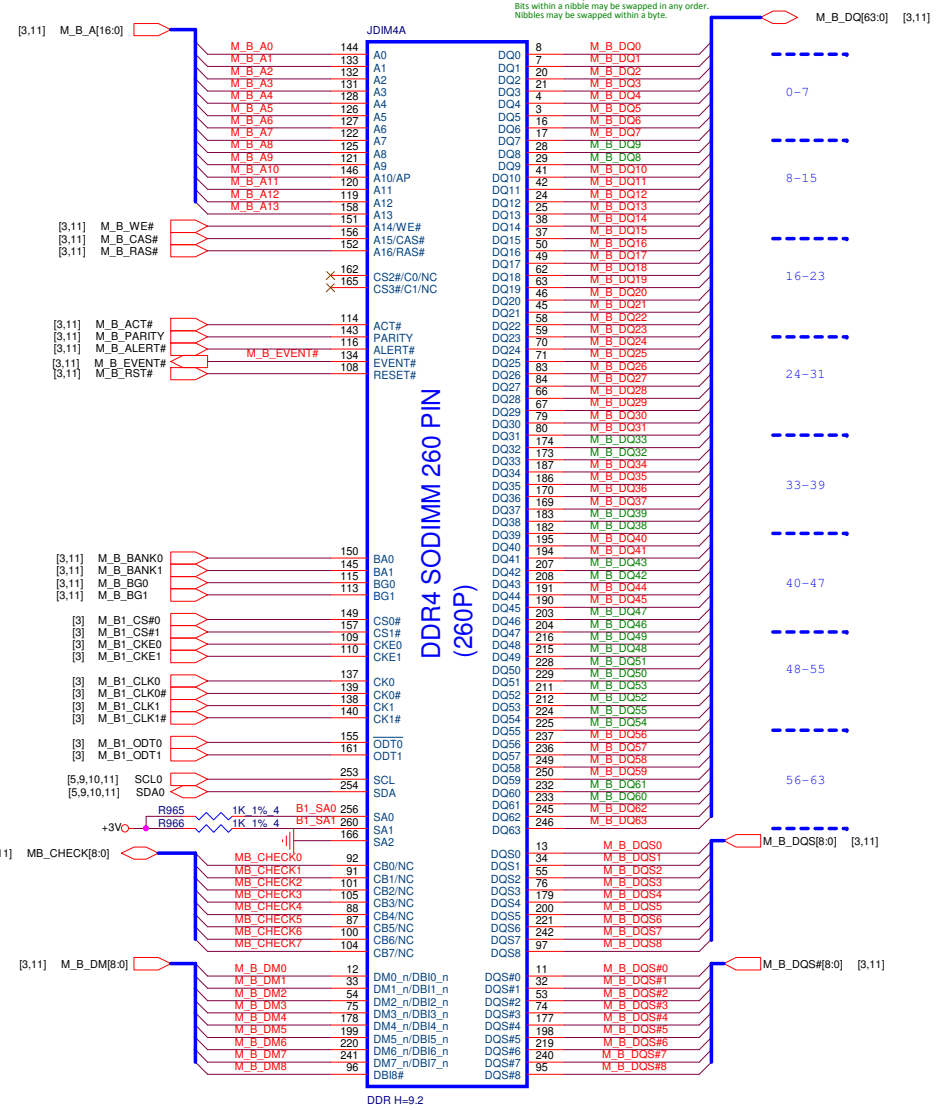
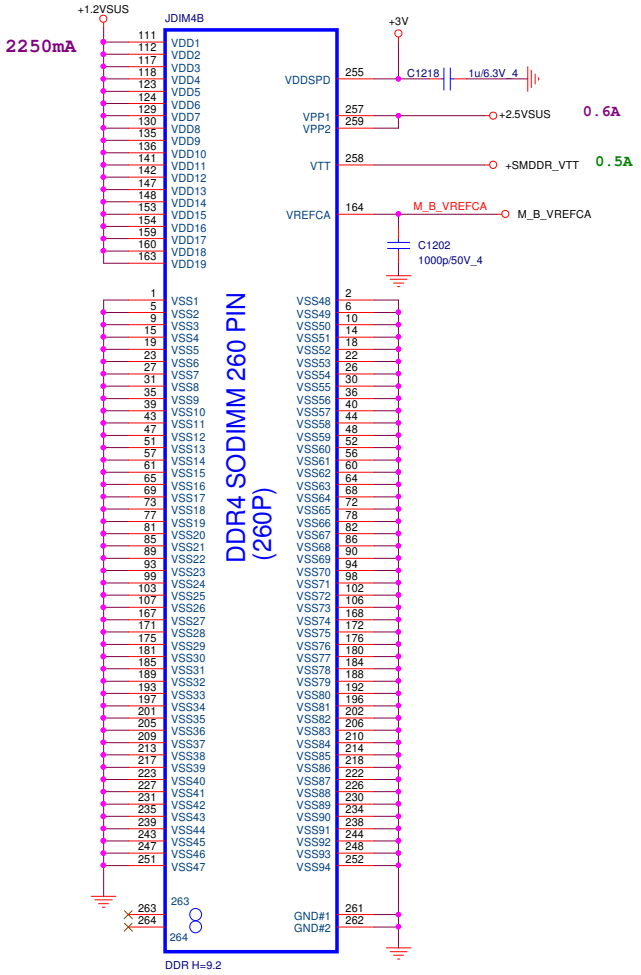
SODIMM (SDM)

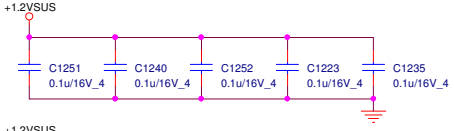
Address A6

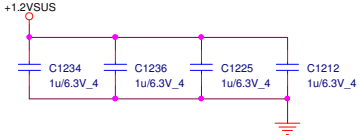
DDR industry-standard specification
All bits within a byte must be wired to the same DRAM.
Bits within a nibble may be swapped in any order.
Nibbles may be swapped within a byte.

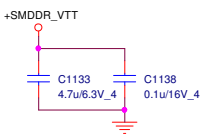


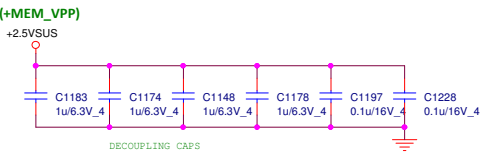


Place these Caps near So-Dimm B1







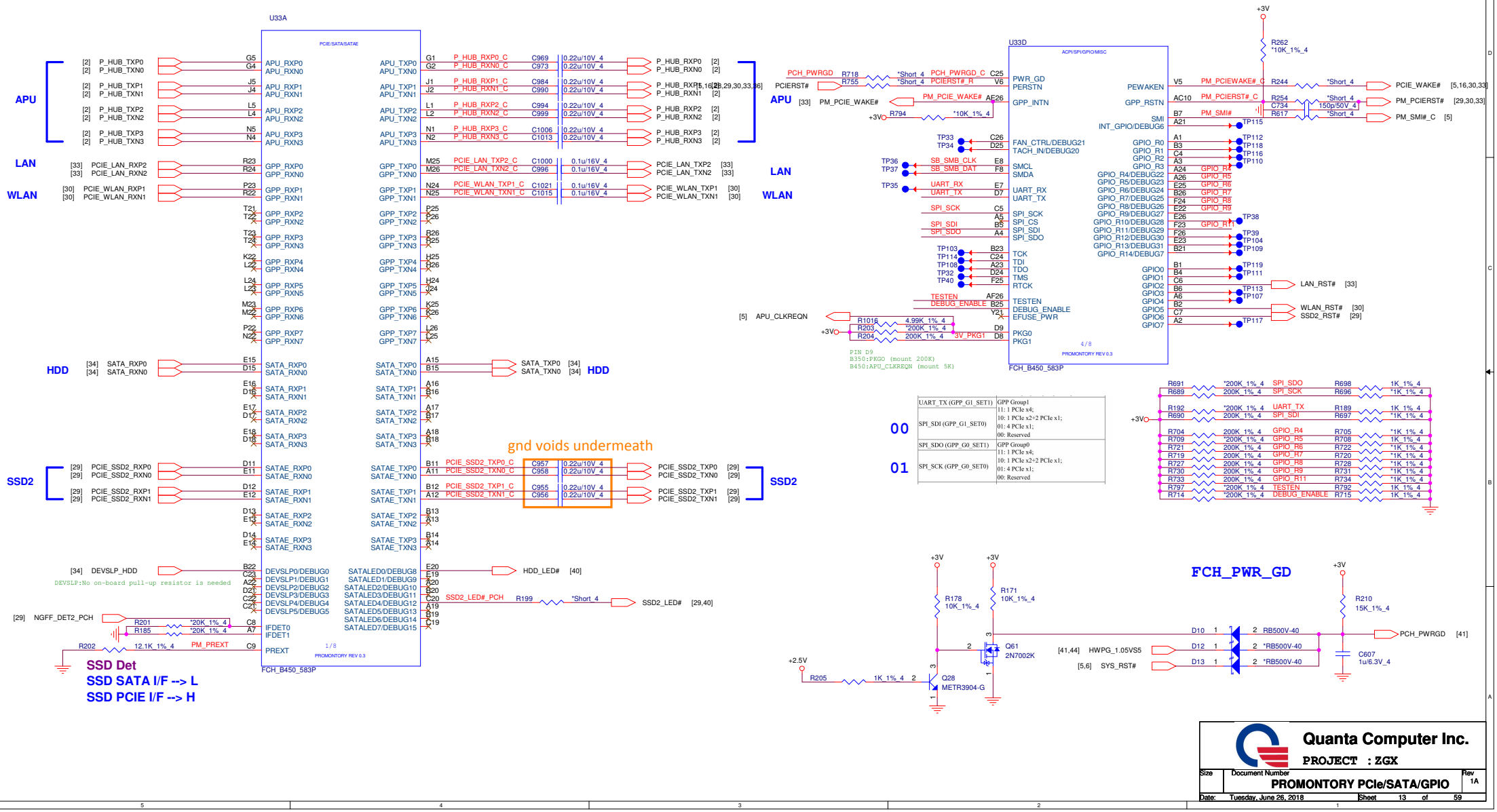


Quanta Computer Inc.

PROJECT : ZGX

Size	Document Number	Rev
	DDR4 DIMM CHB1 (RVS-H9-B)	1A
Date: Tuesday, June 26, 2018	Sheet 12 of 59	

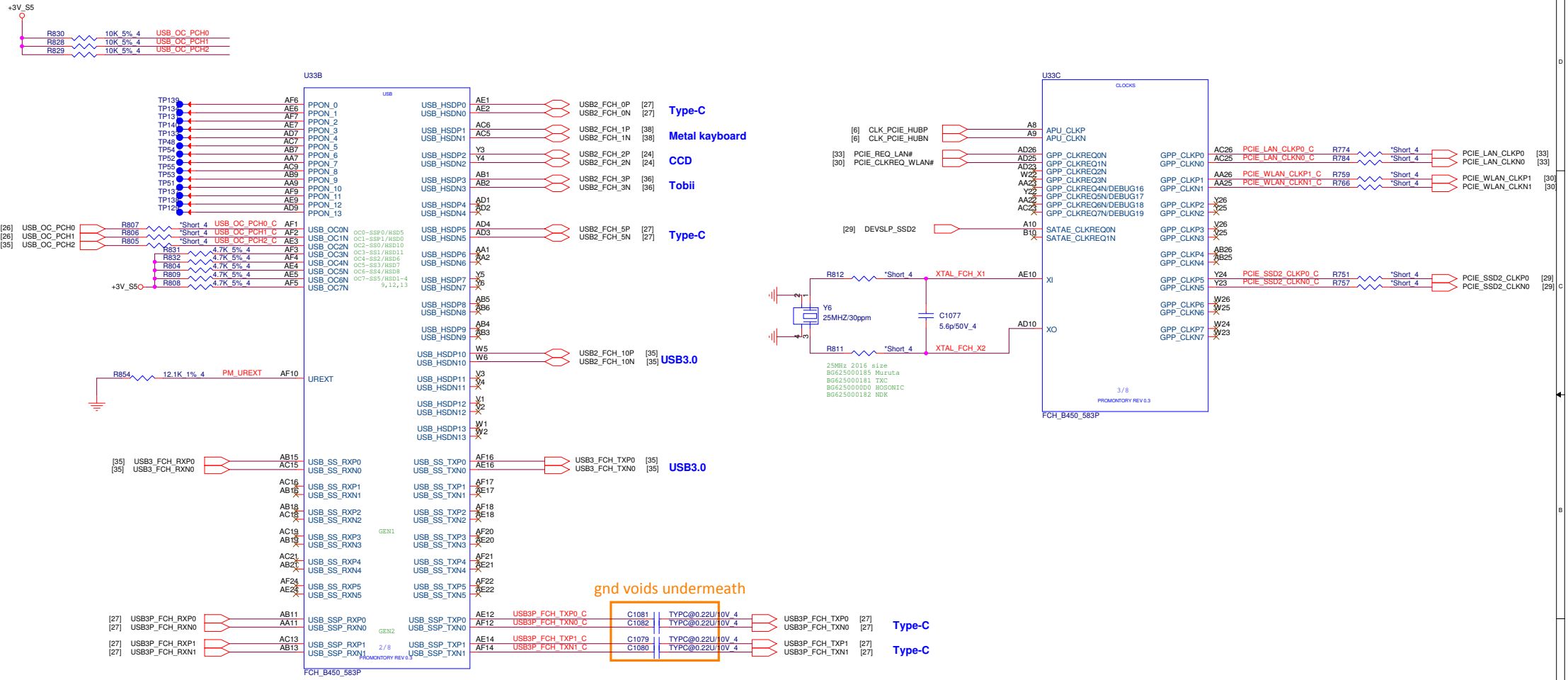
PCH (CLG)

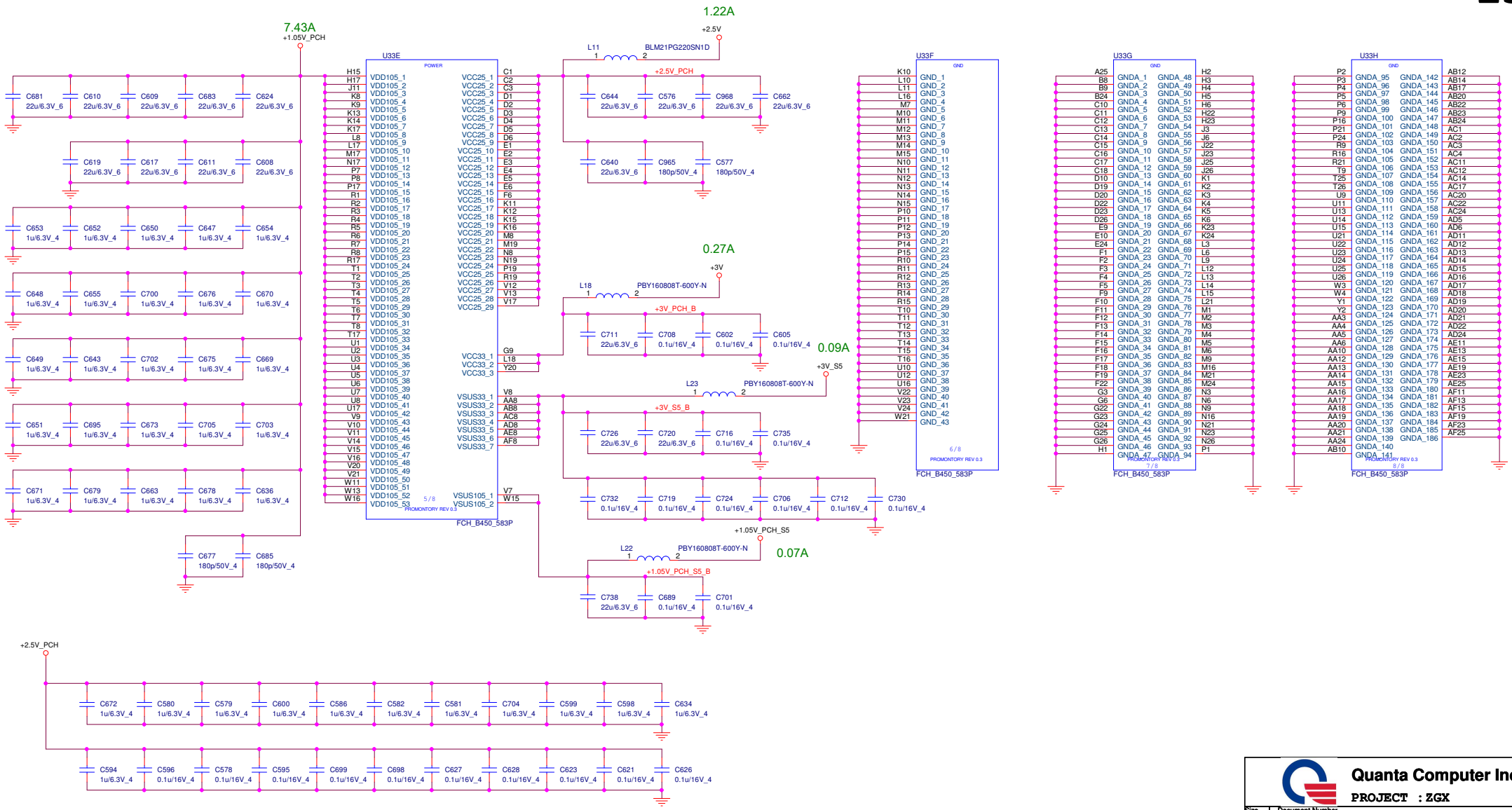


UART_TX (GPP_G1_SET1)	GPP Group1 11: 1 PCIe x4; 10: 1 PCIe x2+2 PCIe x1; 01: 4 PCIe x1; 00: Reserved
SPI_SDI (GPP_G1_SET0)	
SPI_SDO (GPP_G0_SET1)	GPP Group0 11: 1 PCIe x4; 10: 1 PCIe x2+2 PCIe x1; 01: 4 PCIe x1; 00: Reserved
SPI_SCK (GPP_G0_SET0)	

Quanta Computer Inc.		
PROJECT : ZGX		
Size	Document Number	Rev
	PROMONTORY PCIe/SATA/GPIO	1A
Date: Tuesday, June 26, 2018	Sheet 13 of 59	

PCH (CLG)


+3V_S5
R830 10K_5%_4 USB_OC_PCH0
R828 10K_5%_4 USB_OC_PCH1
R829 10K_5%_4 USB_OC_PCH2
U33B
USB
FCH_B450_583P
Type-C
Metal kayboard
CCD
Tobii
Type-C
USB3.0
USB3.0
Type-C
Type-C
gnd voids undermeath
U33C
CLOCKS
FCH_B450_583P
Y6
25MHZ/30ppm
C1077
5.6p/50V_4
25MHz 2016 size
BG625000185 Muruta
BG625000181 TXC
BG6250000D0 HOSONIC
BG625000182 NDK
Quanta Computer Inc.
PROJECT : ZGX
PROMONTORY USB/CLOCK
Rev 1A
Date: Tuesday, June 26, 2018
Sheet 14 of 59

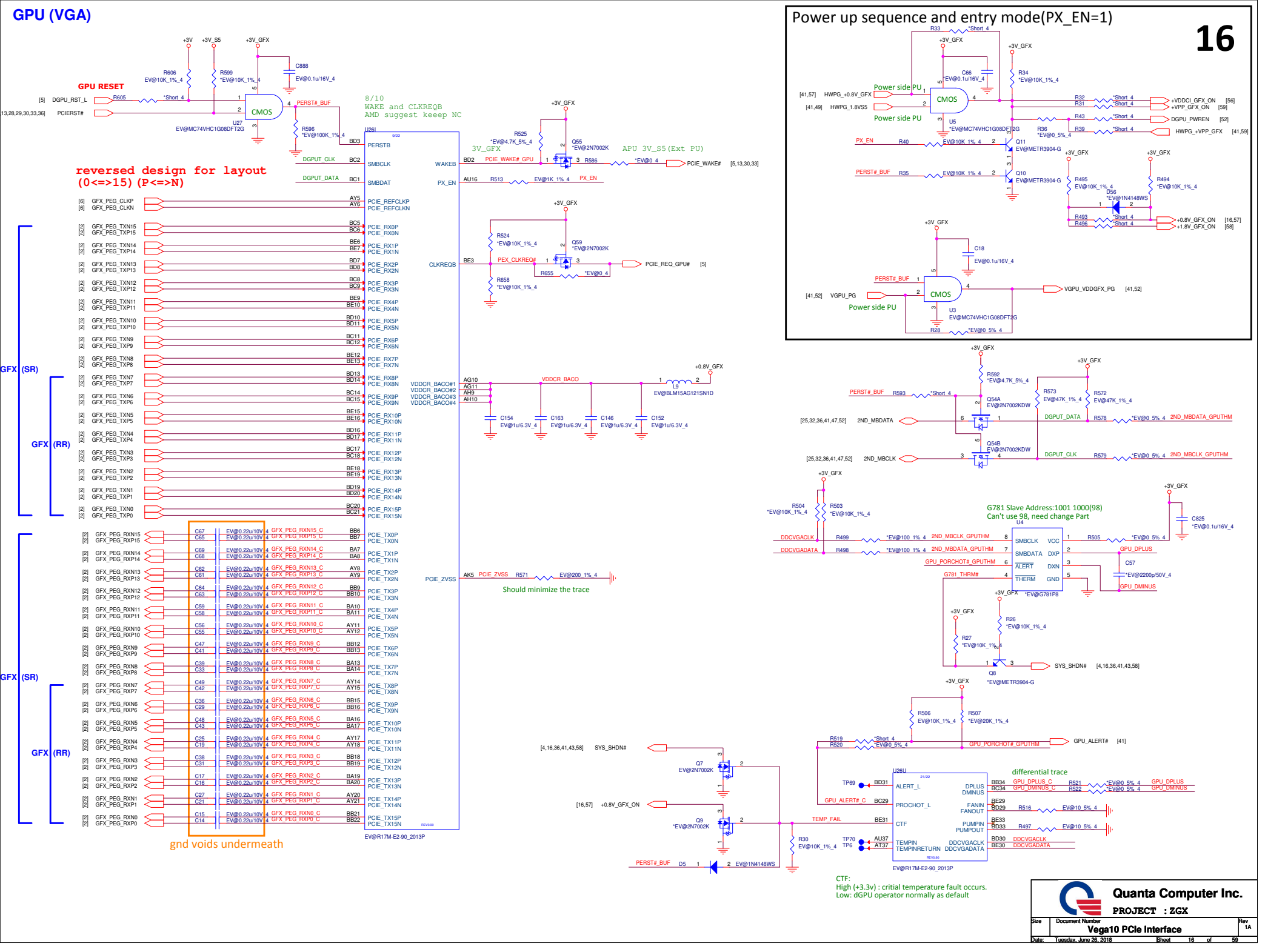


Quanta Computer Inc.
PROJECT : ZGX

Size	Document Number	Rev
	PROMONTORY POWER	1A

Date: Tuesday, June 26, 2018 Sheet 15 of 59

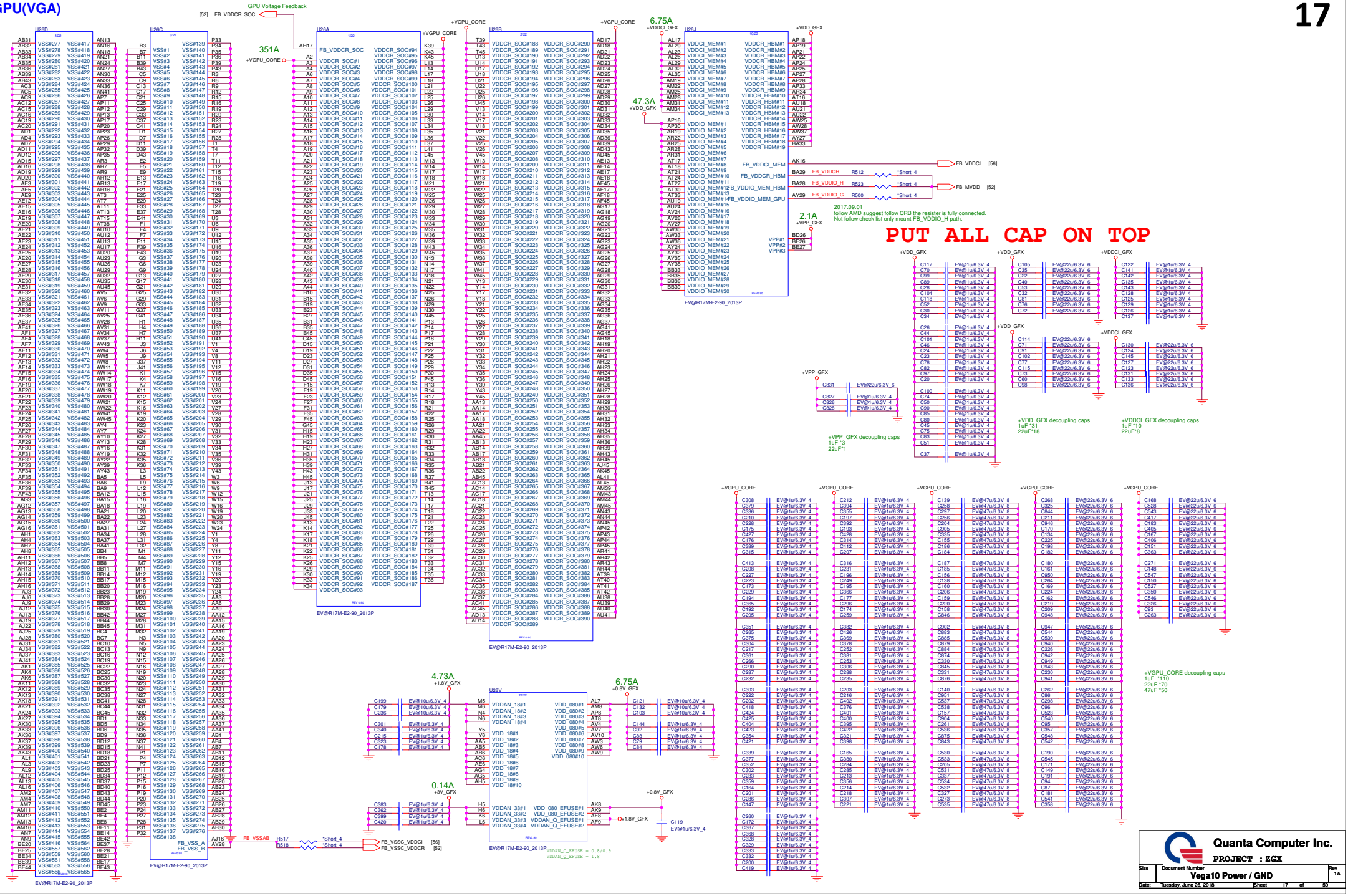
GPU (VGA)



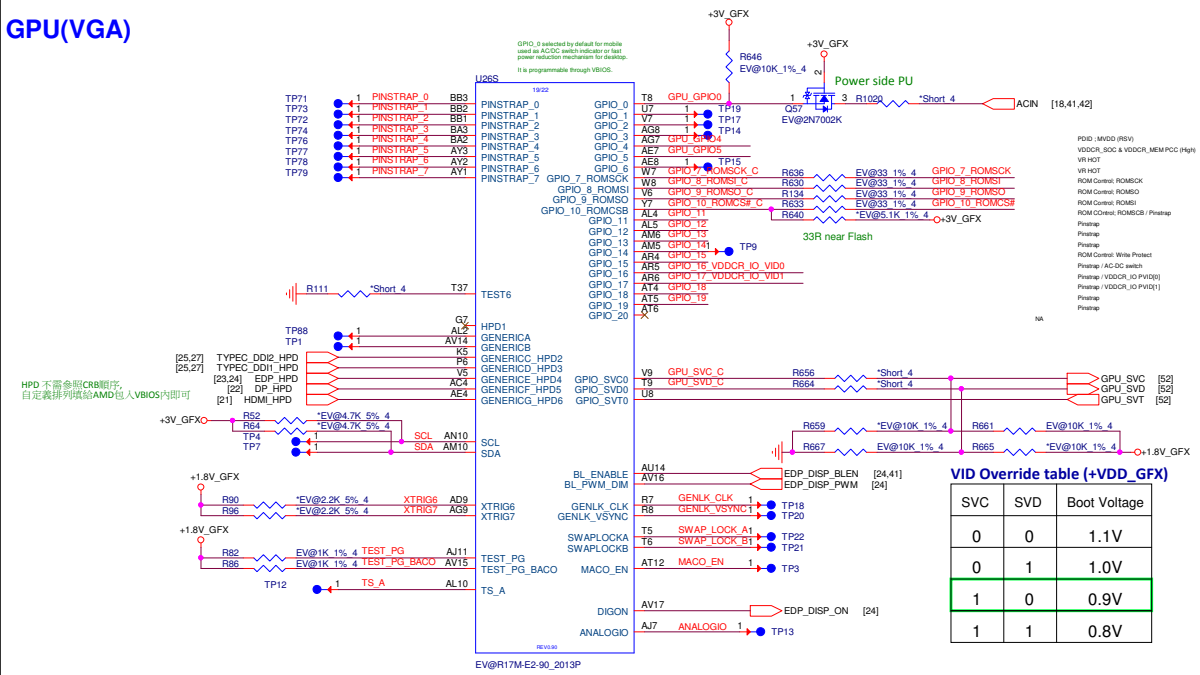
Power up sequence and entry mode(PX_EN=1)

16

Quanta Computer Inc.	
PROJECT : ZGX	
Size	Document Number: Vega10 PCIe Interface — Rev 1A
Date: Tuesday, June 26, 2018	Sheet 16 of 59

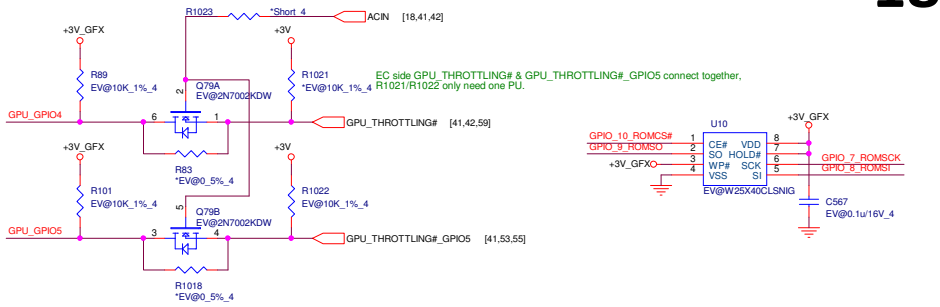


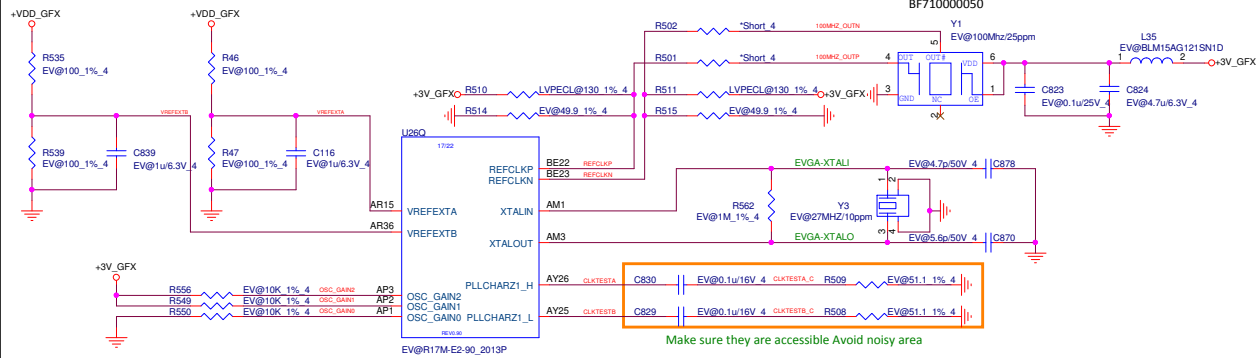
Quanta Computer Inc.
PROJECT : ZGX
Size | Document Number: Vega10 Power / GND | Rev 1A
Date: Tuesday, June 26, 2018 | Sheet 17 of 59

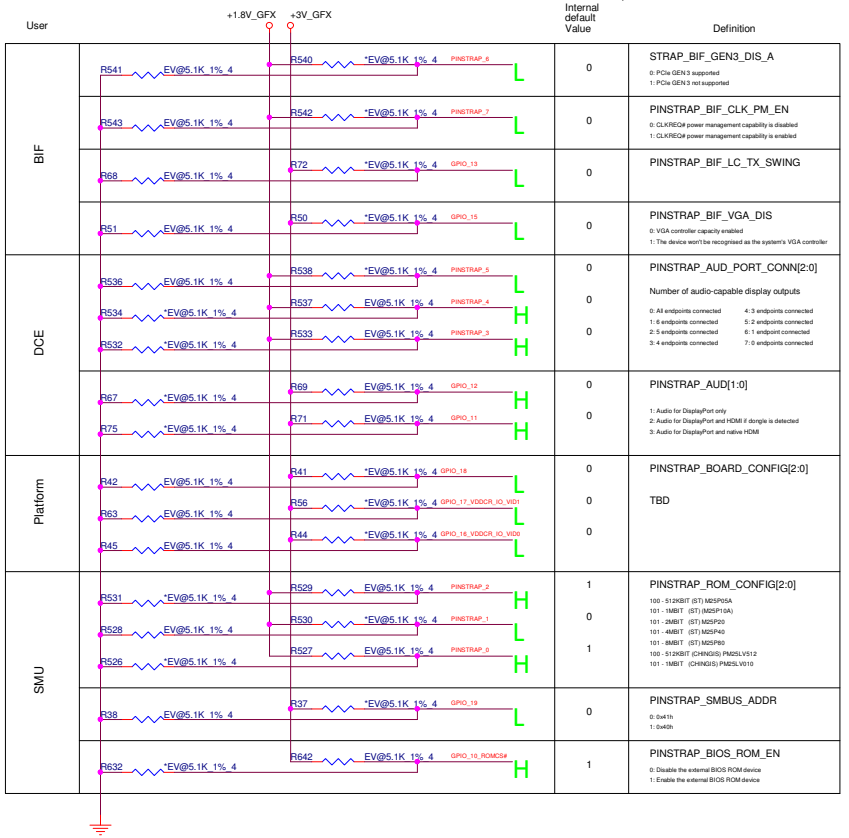


VID Override table (+VDD_GFX)

SVC	SVD	Boot Voltage
0	0	1.1V
0	1	1.0V
1	0	0.9V
1	1	0.8V





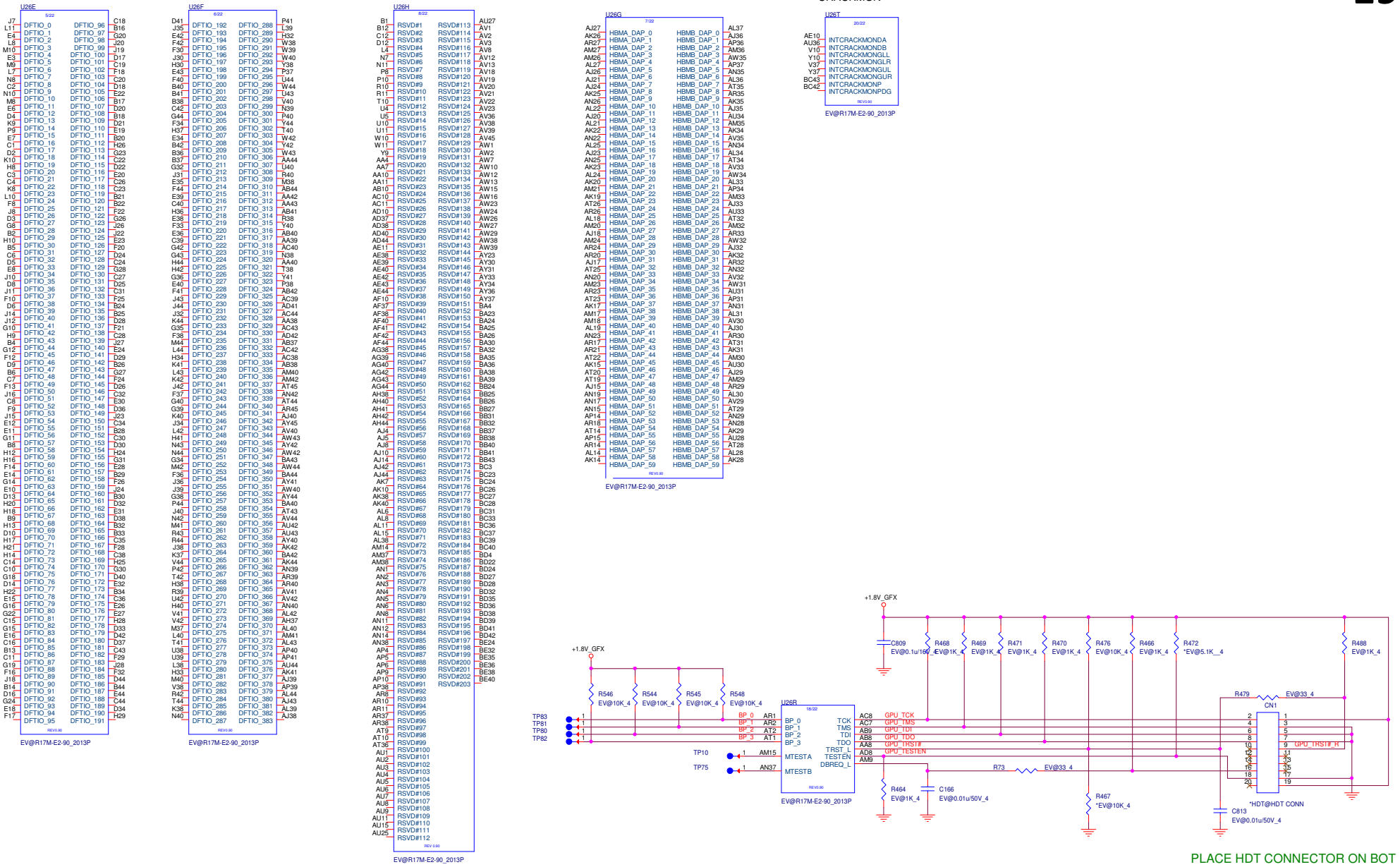


DFTIO

FREE

HBM_DAP

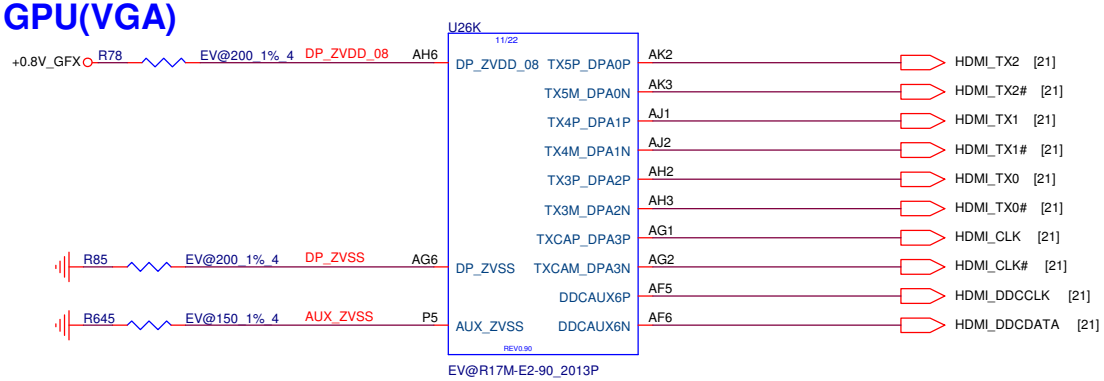
CRACKMON

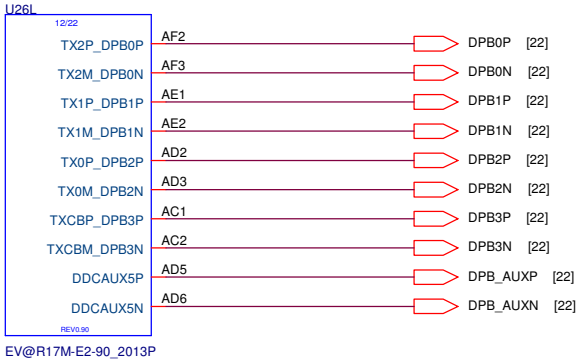


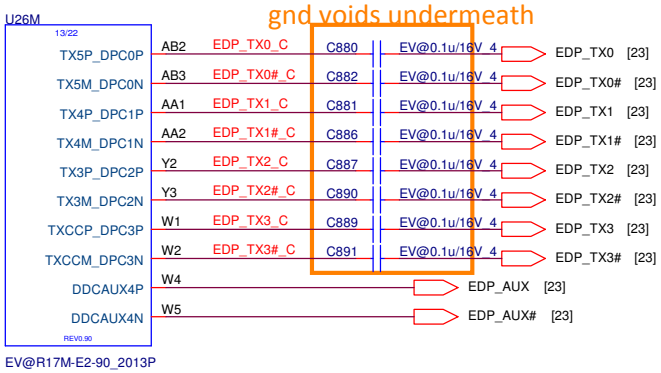
PLACE HDT CONNECTOR ON BOT

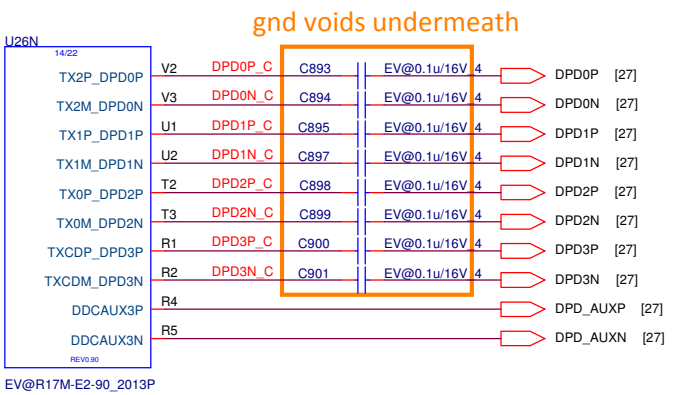
Quanta Computer Inc.		
PROJECT : ZGX		
Size	Document Number: Vega10 DFTIO, FREE, HPM	Rev: 1A
Date: Tuesday, June 26, 2018	Sheet 19 of 59	

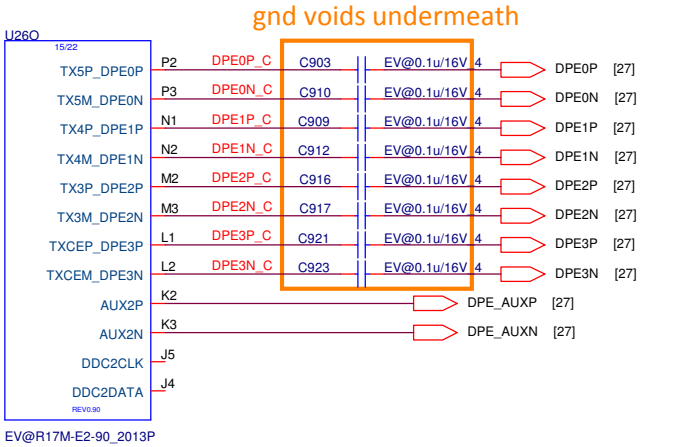
GPU(VGA)

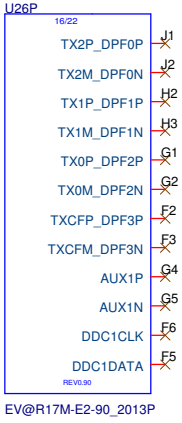












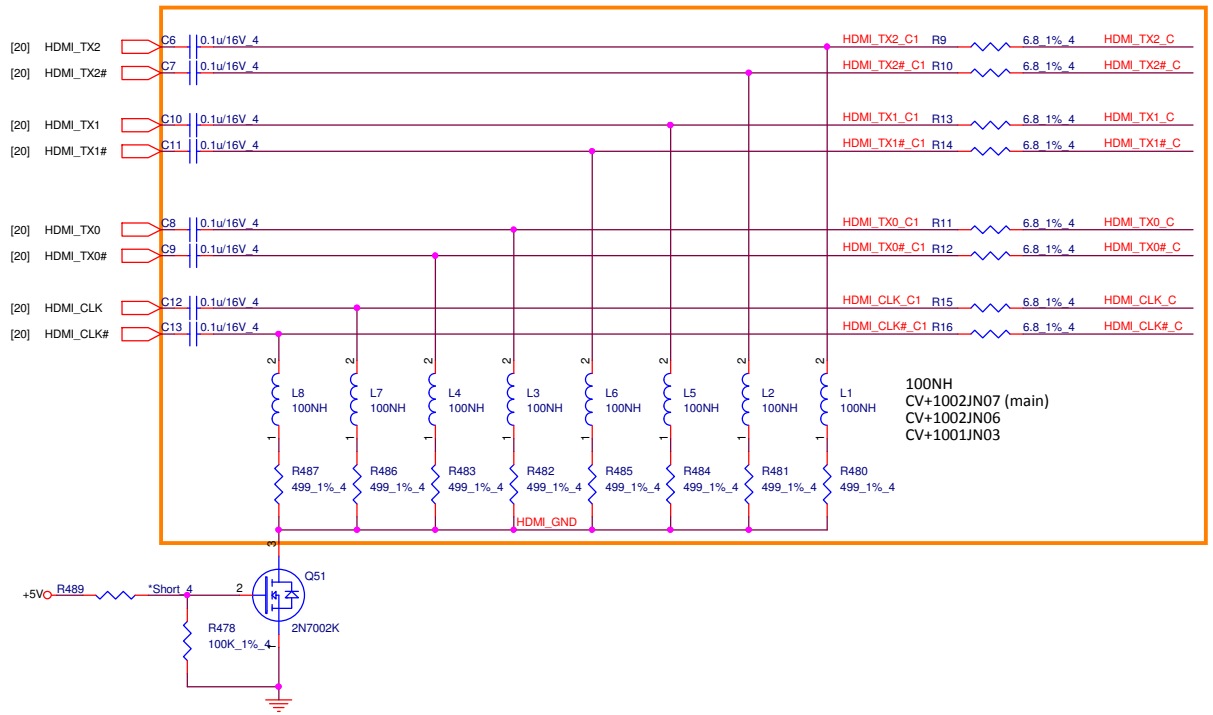
Quanta Computer Inc.

PROJECT : ZGX

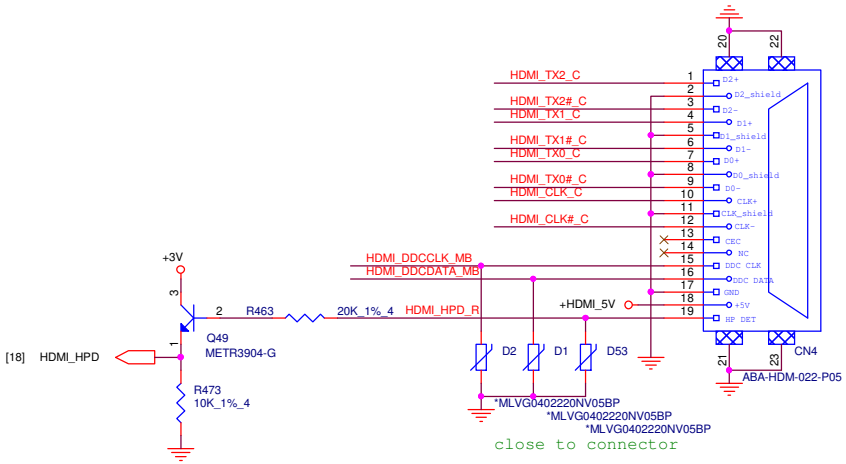
Size	Document Number	Rev
	Vega10 TMDP	1A
Date: Tuesday, June 26, 2018	Sheet 20 of 59	

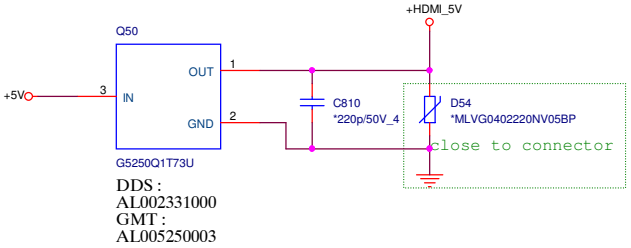
HDMI(HDM)

gnd voids undermeath



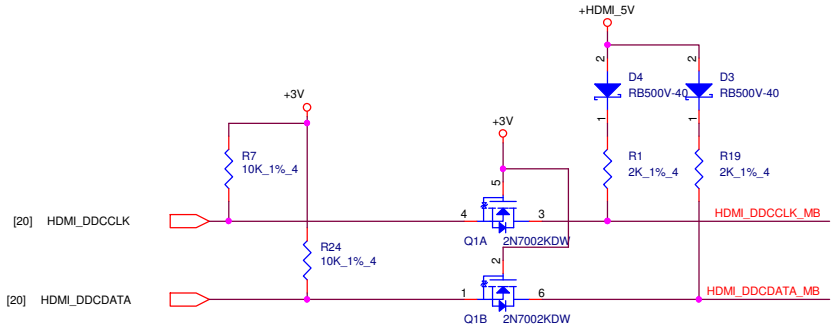
The MOSFET should be off when GPU is shut down to cut off the leakage path.
+5V or higher from system side should be used as the on/off control signal.



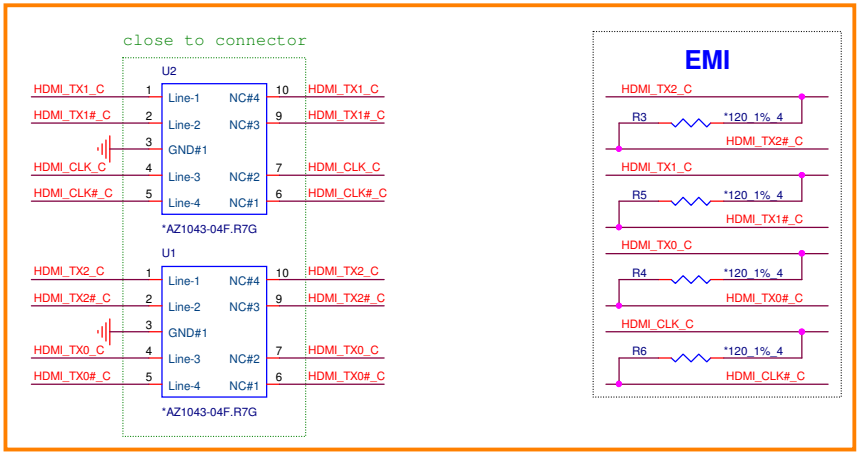


DDS :
AL002331000
GMT :
AL005250003

HDMI DDC (HDM)



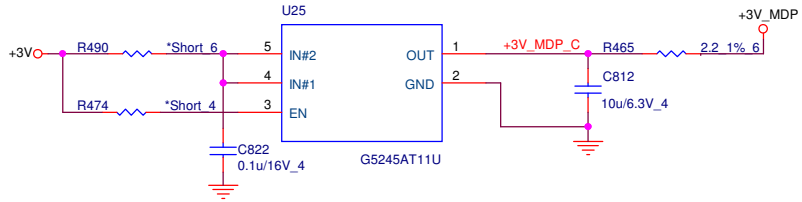
gnd voids undermeath

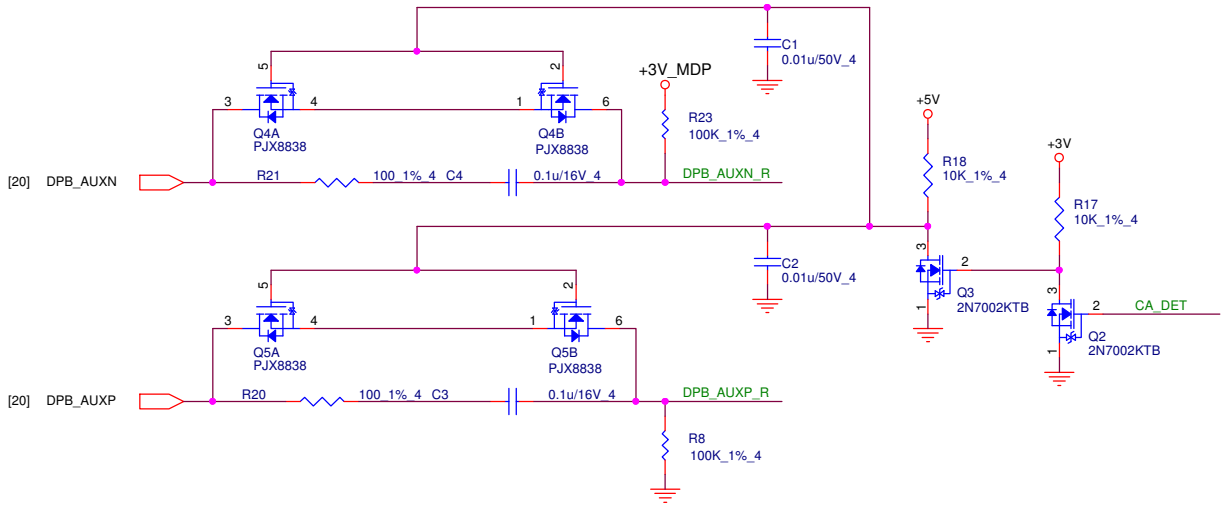


Quanta Computer Inc.
PROJECT : ZGX

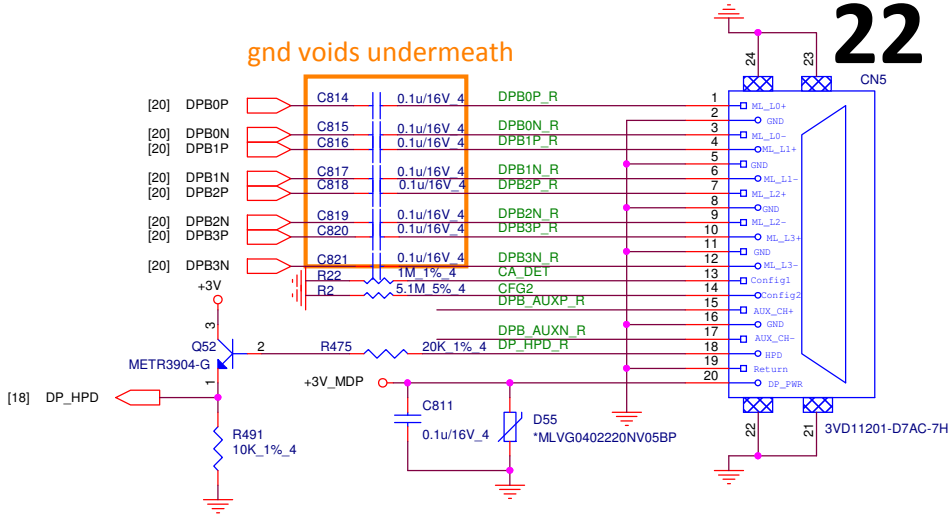
Size	Document Number	Rev
	HDMI	1A
Date: Tuesday, June 26, 2018	Sheet 21 of 59	

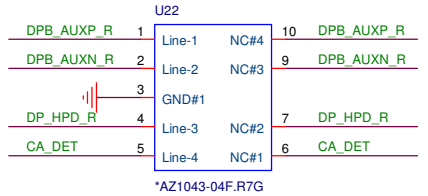
Display Port (DPP)



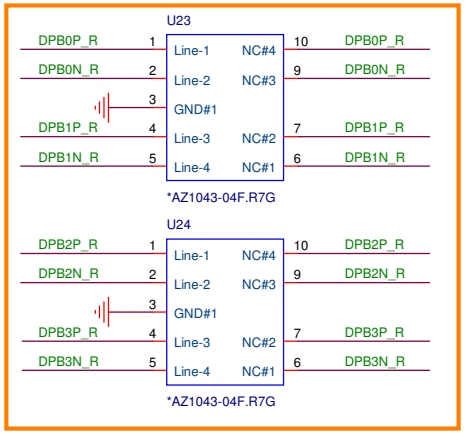


gnd voids undermeath





gnd voids undermeath



Quanta Computer Inc.

PROJECT : ZGX

Size	Document Number	Rev
	Display Port	1A

Date: Tuesday, June 26, 2018 Sheet 22 of 59

eDP Redriver (LDS)

Four Lane DP-No Filp
CTL1=H, CTL0=L, FILP=L

Typ 0.2A

Min of 15 Vias for GND Pad

Impedance S-50ohm/D-90ohm,
Intra-Pair within 2mils

Impedance S-50ohm/D-90ohm,
Intra-Pair within 2mils

gnd voids undermeath

For eDP CAD_SNK need PD

U11
TUSB546-DCIRNQR

PN OK

SSEQ0,SSEQ1 : USB receiver equalizer gain
for upstream facing SSTXP/N
F,F(Default)
When I2C_EN is not '0' SSEQ0 sets I2C adress

DPEQ0,DPEQ1 : DP Receiver equalization gain
F,F(Default)
When I2C_EN is not '0' DPEQ0 sets I2C adress

I2C Programming or pin strap programming select.
I2C is only disable when this pin is '0'
0 : Pin Strap(I2C disable)(Default)
R : TI test mode(I2C enable at 3.3V)
F : I2C enabled at 1.8V
1 : I2C enabled at 3.3V

Quanta Computer Inc.		
PROJECT : ZGX		
Size	Document Number: eDP re-Driver	Rev: 1A
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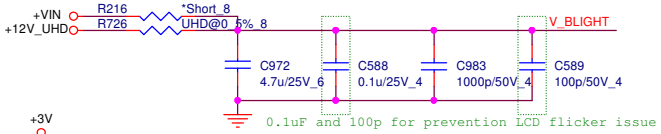
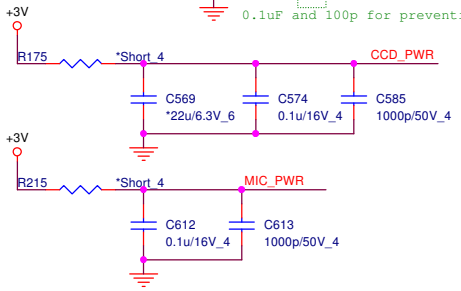
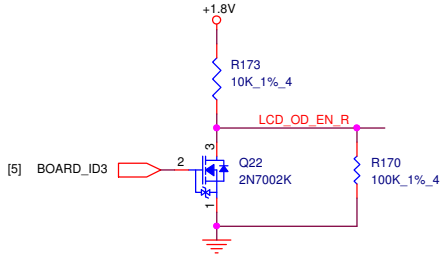
LCD (LDS)

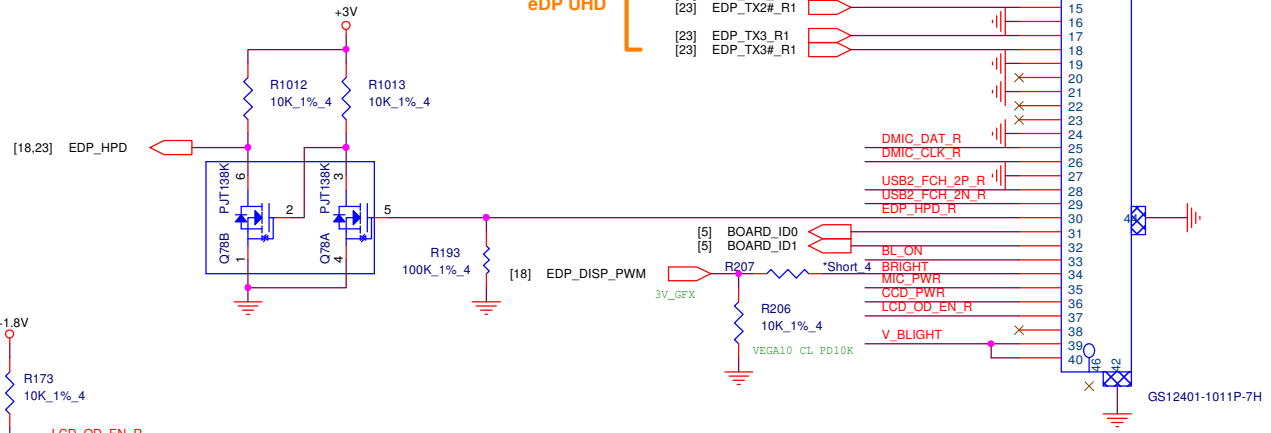




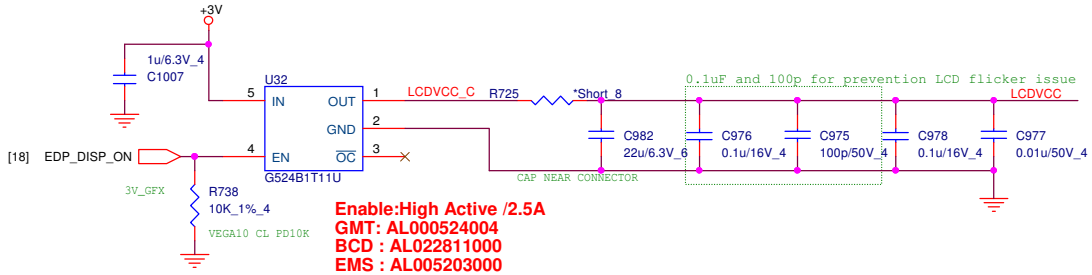
Panel ID 1	Panel ID 0	OD_EN	PWM pin	NVSR pin (FRAME_LOCK#)	Support panel	Remark
0	0	NC			Reserve	Panel ID 0,1 connect to GND in cable
0	1	NC	NC	Y	NVSR	Panel ID 1 connect to GND in cable
1	0	Y	Y	NC	DD	Panel ID 0 connect to GND in cable
1	1	NC	Y	NC	Normal, Freesync	Panel ID 0,1 NC in cable



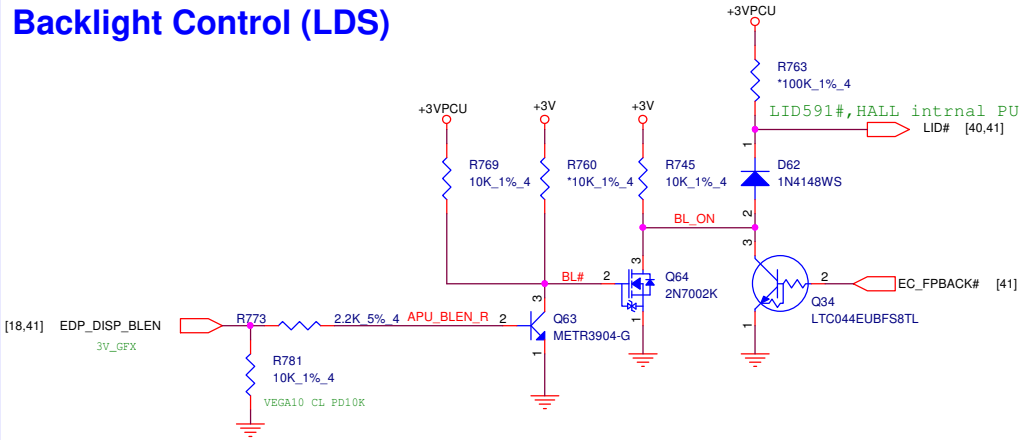
Function	Enable	Disable
LCD OD_EN_R	Hi or Open	Default



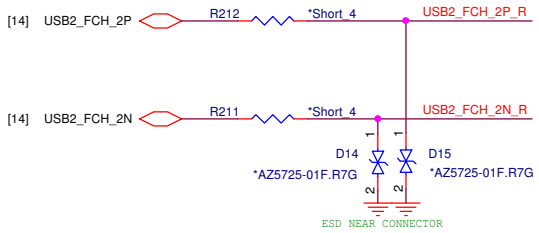
LCD Power (LDS)



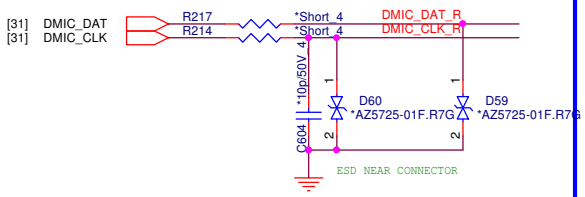
Backlight Control (LDS)



Front Camera (FCM)



Microphone (MIC)



Quanta Computer Inc.

PROJECT : ZGX

Size	Document Number	Rev
	eDP Panel/CCD/Hall Sensor	1A
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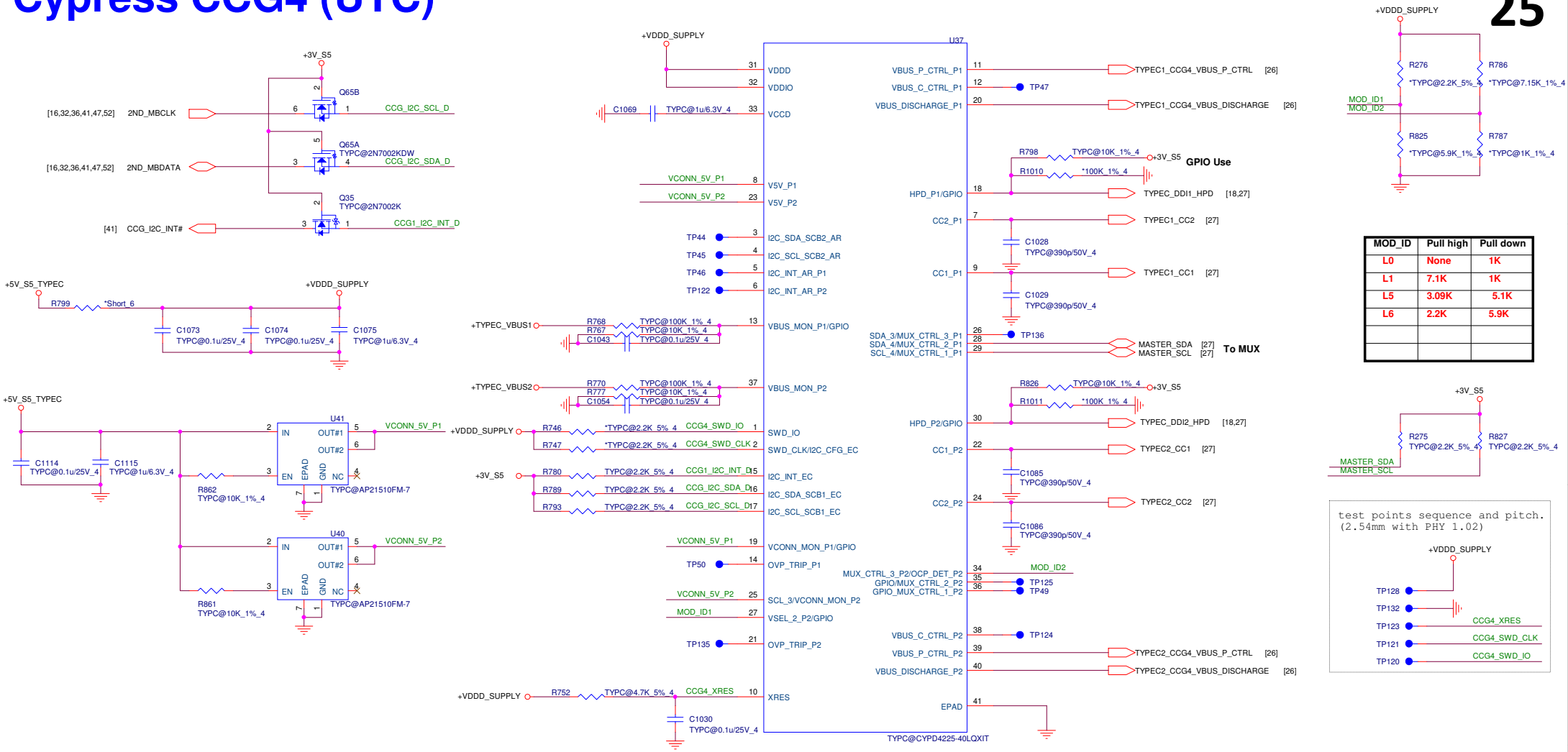
Cypress CCG4 (UTC)



MOD_ID	Pull high	Pull down
L0	None	1K
L1	7.1K	1K
L5	3.09K	5.1K
L6	2.2K	5.9K

apply ZGX P/N

Quanta Computer Inc.

PROJECT : ZGX

Size	Document Number	Rev
	ype-C PD(Cypress CCG4)	1A

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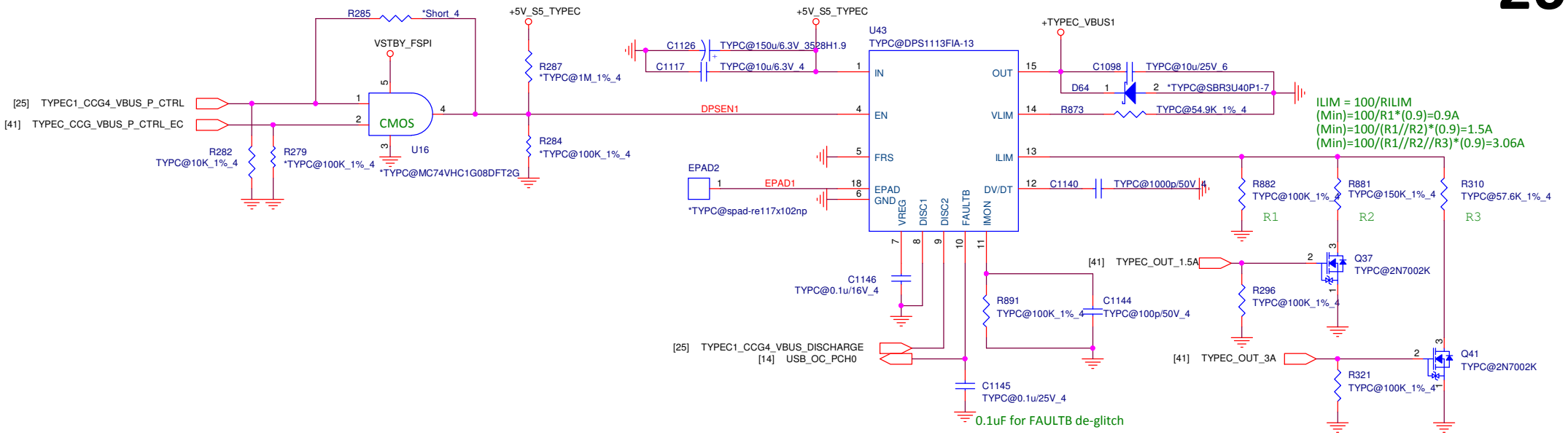
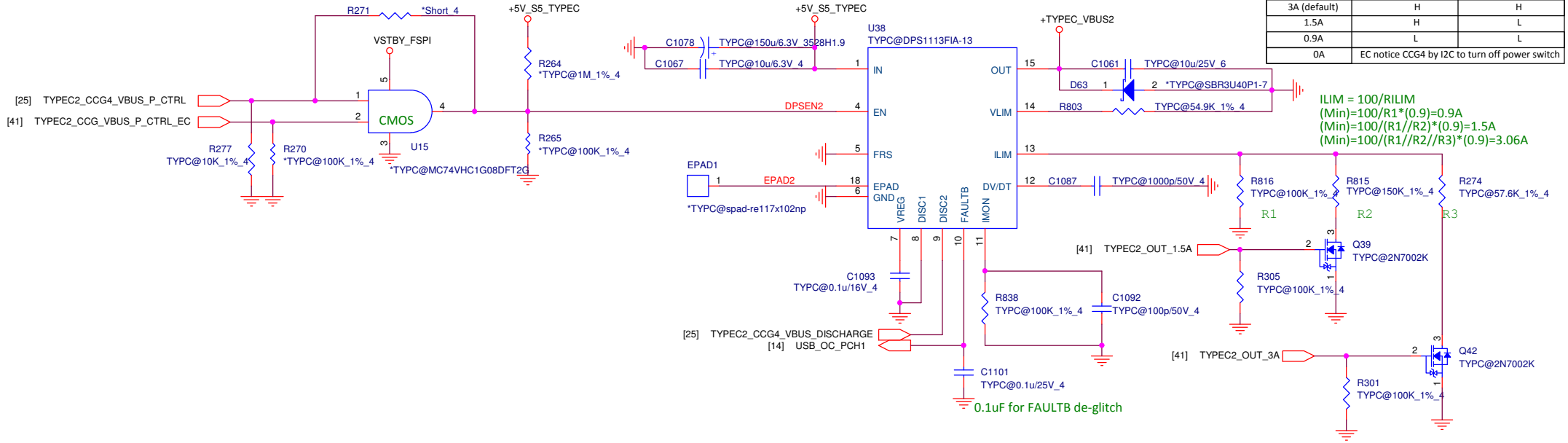
Type C Powwr switch (UTC)





USB Type-C Port	TYPEC_OUT_1.5A	TYPEC_OUT_3A
3A (default)	H	H
1.5A	H	L
0.9A	L	L
0A	EC notice CCG4 by I2C to turn off power switch	

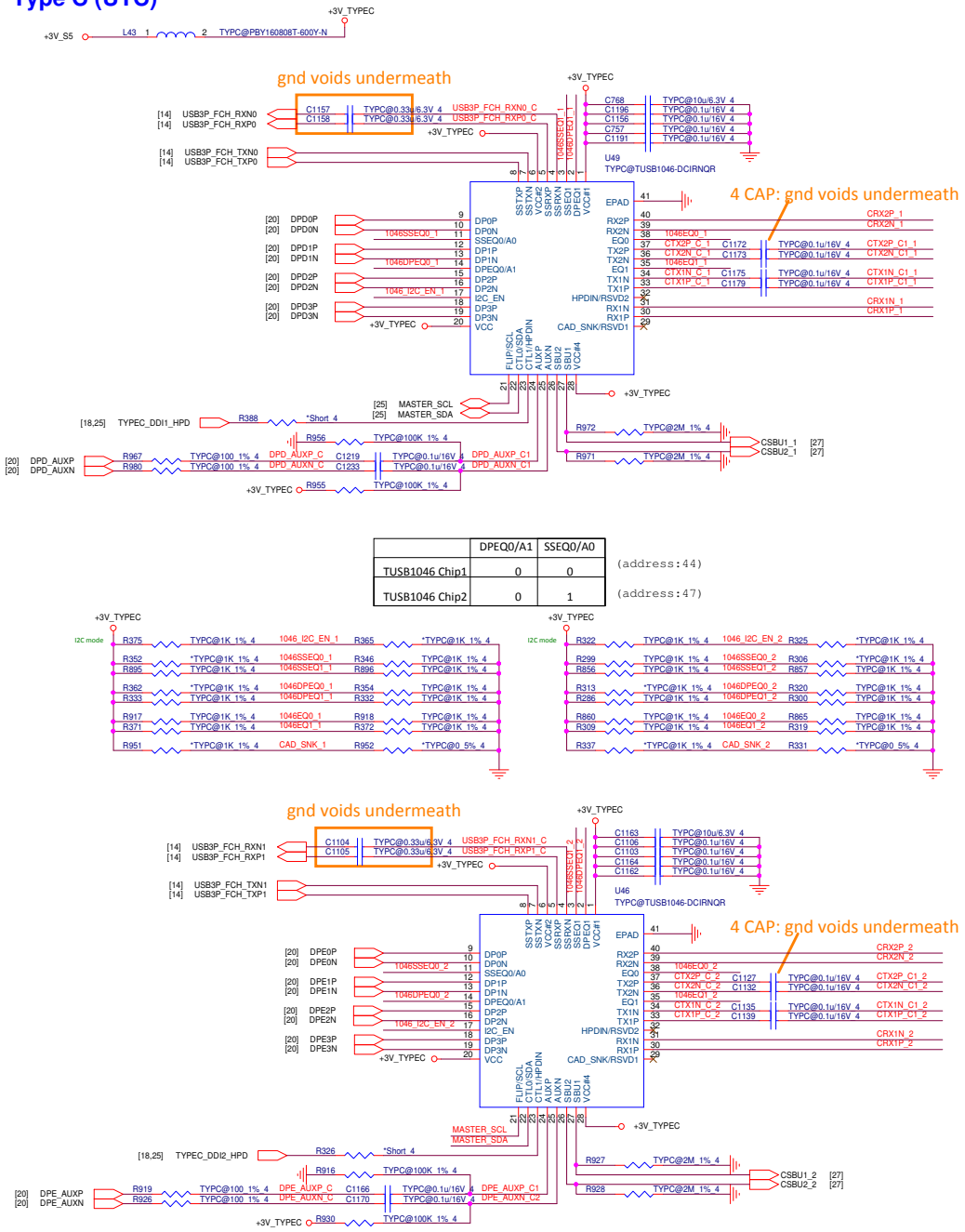
Quanta Computer Inc.

PROJECT : ZGX

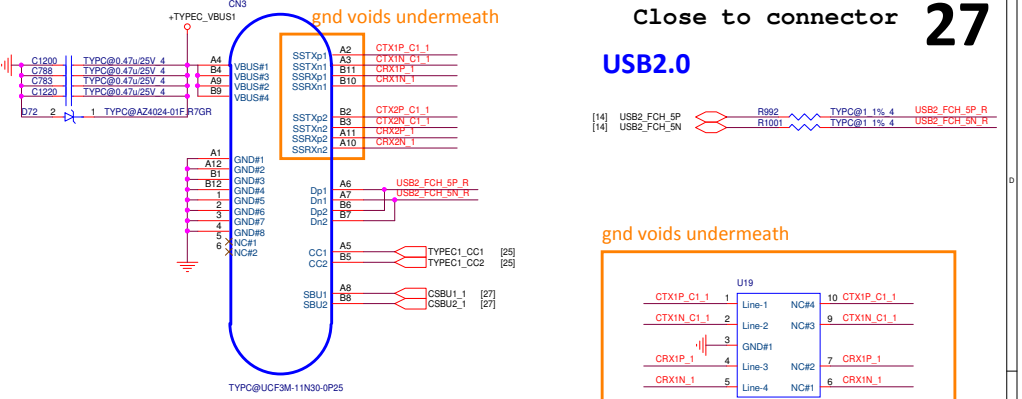
Size	Document Number	Rev
	Type-C Power switch	1A

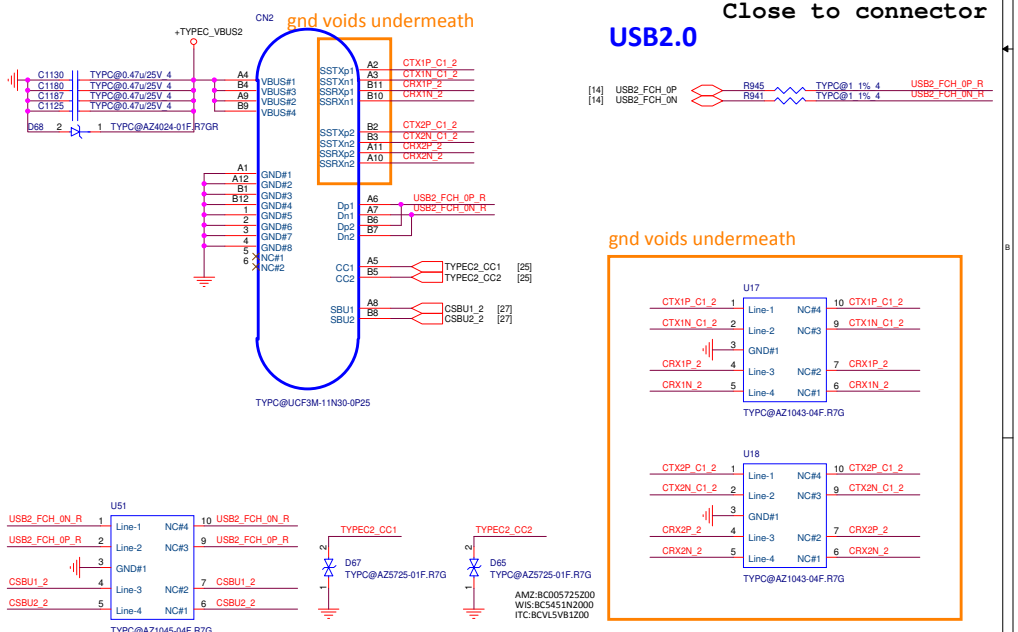
Date: Tuesday, June 26, 2018 Sheet 26 of 59

Type C (UTC)



	DPEQ0/A1	SSEQ0/A0	
TUSB1046 Chip1	0	0	(address:44)
TUSB1046 Chip2	0	1	(address:47)





Quanta Computer Inc.		
PROJECT : ZGX		
Size	Document Number: Type-C MUX/Re-Driver/CONN	Rev: 1A
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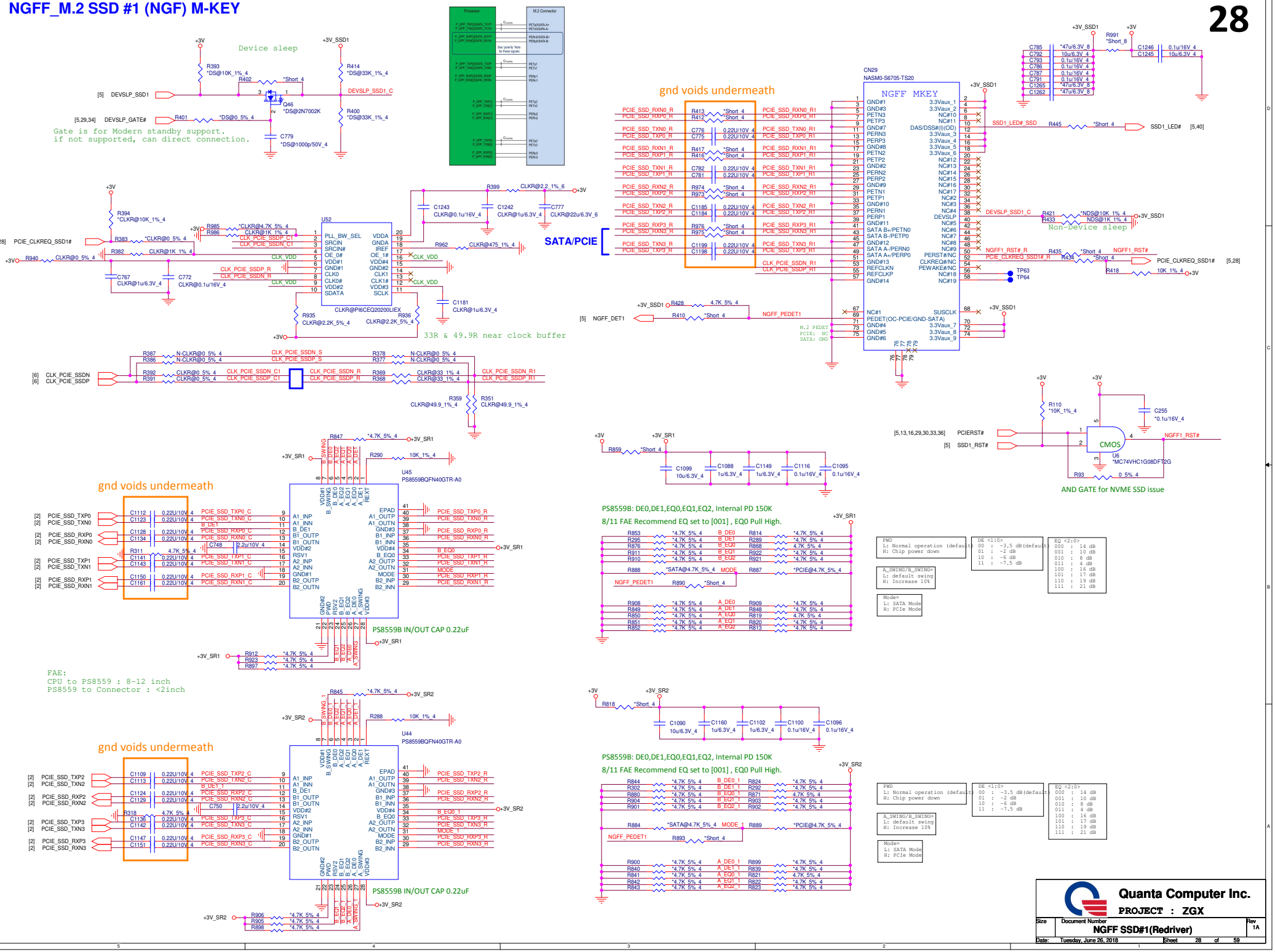
NGFF_M.2 SSD #1 (NGF) M-KEY



Quanta Computer Inc.			
PROJECT : ZGX			
Size	Document Number		Rev
	NGFF SSD#1(Redriver)		1A
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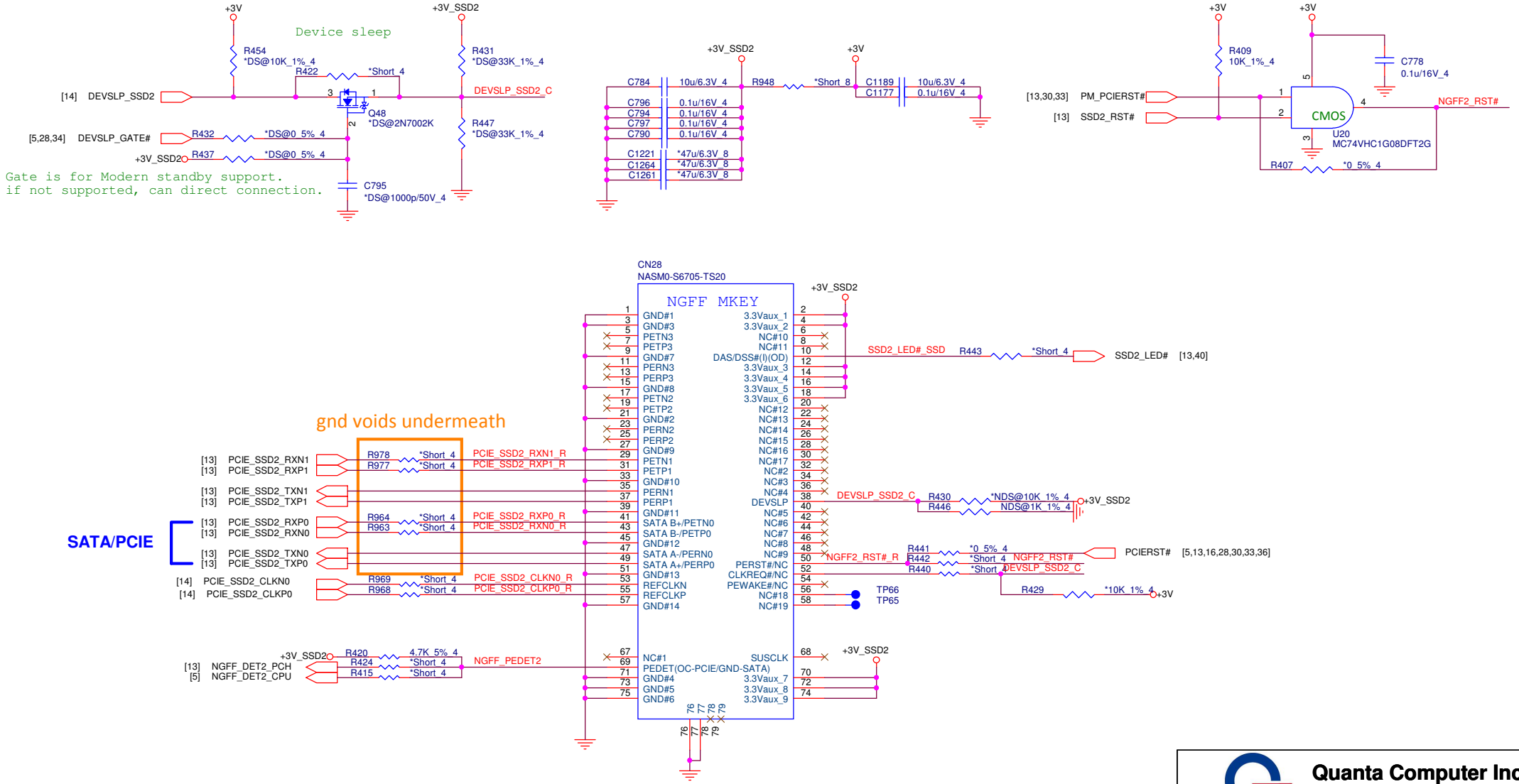
NGFF_M.2 SSD #2 (NGF)



Quanta Computer Inc.

PROJECT : ZGX

Size	Document Number	Rev
	NGFF SSD #2	1A

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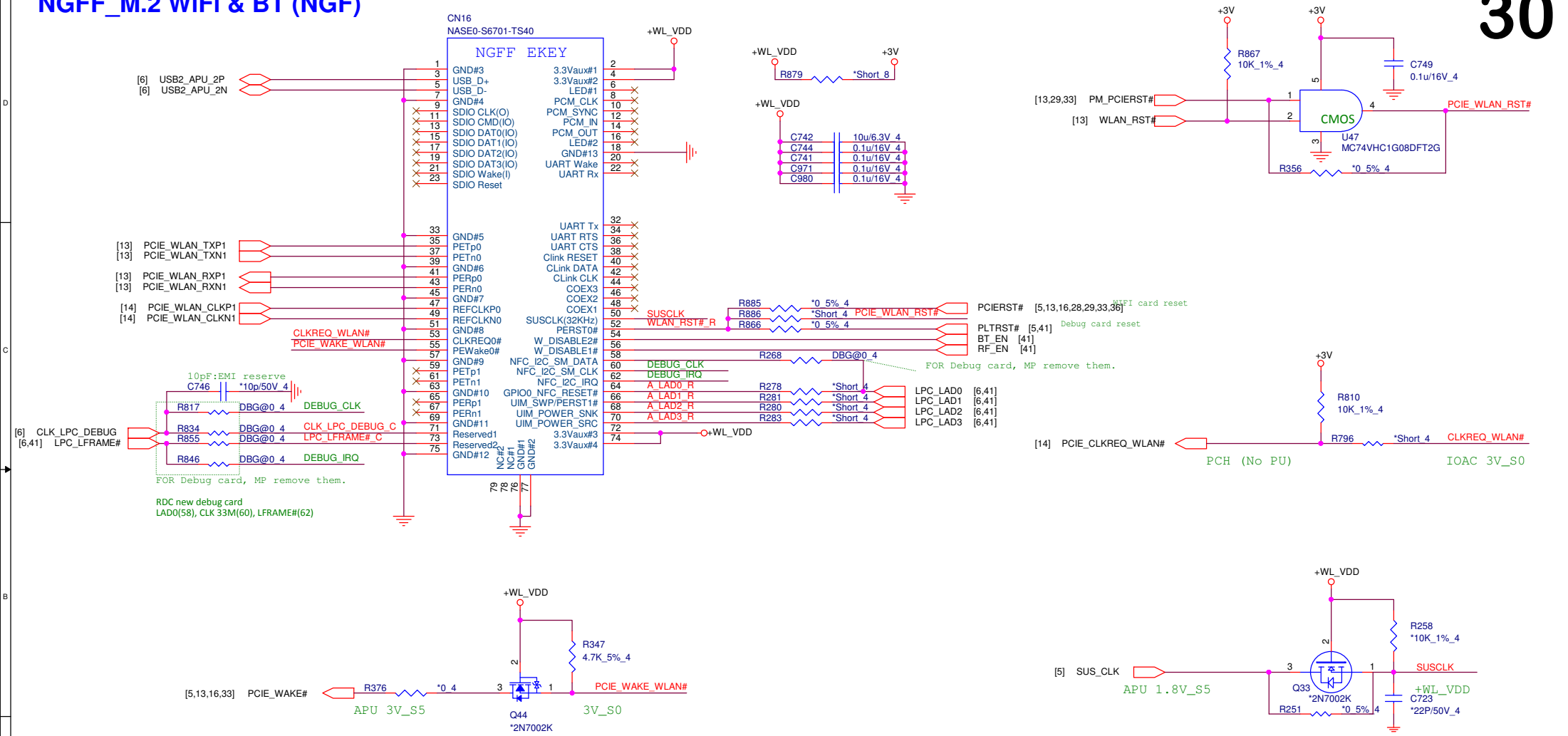
NGFF_M.2 WiFi & BT (NGF)



Quanta Computer Inc.

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Size	Document Number	Rev
	NGFF WiFi & BT	1A
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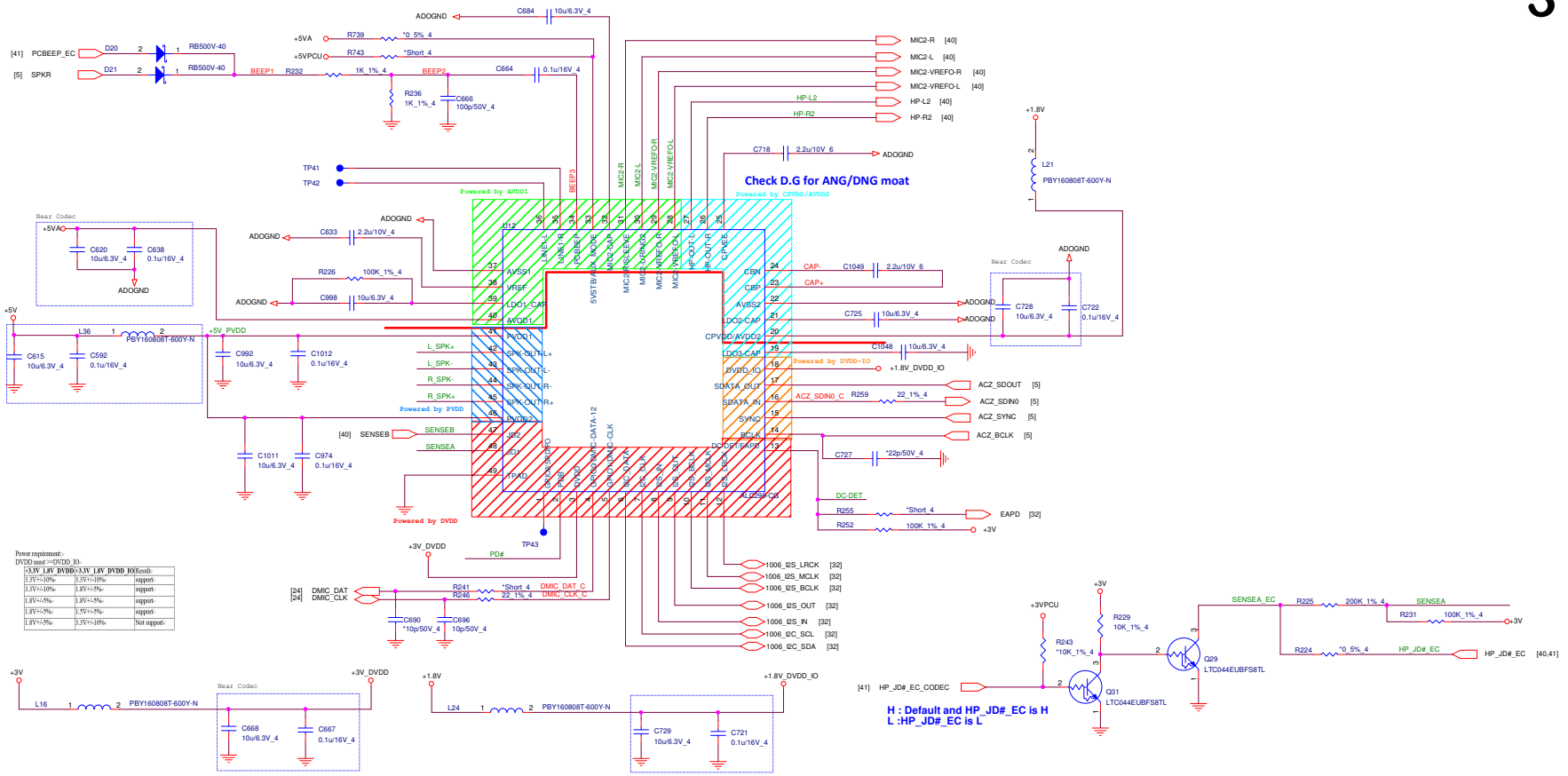
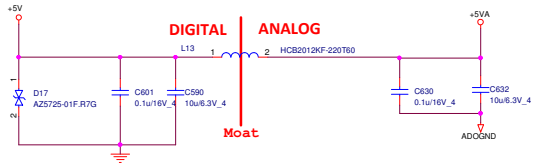
Codec(ADO)



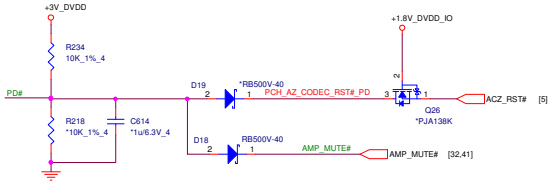
Power requirement:
DVDD must >=DVDD_IO.

+3.3V_LDV_DVDD	+3.3V_LDV_DVDD_IO	Result:
3.3V+/-10%	3.3V+/-10%	support
3.3V+/-10%	1.8V+/-5%	support
1.8V+/-5%	1.8V+/-5%	support
1.8V+/-5%	1.5V+/-5%	support
1.8V+/-5%	3.3V+/-10%	Not support

Codec PWR 5V(ADO)

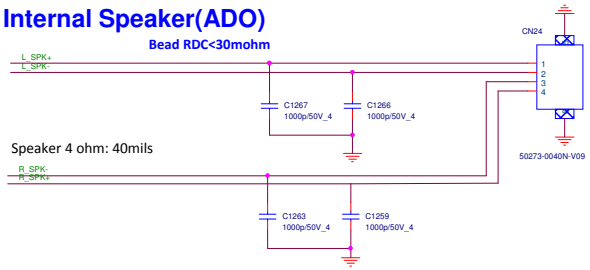


Mute(ADO)



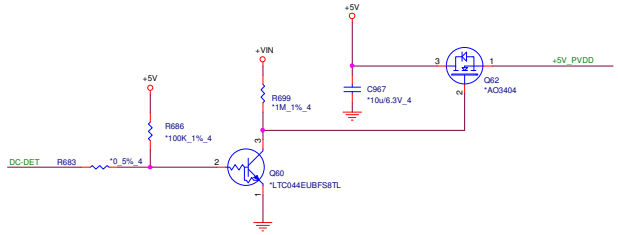
Internal Speaker(ADO)

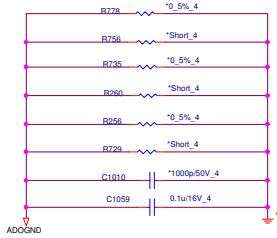
Bead RDC<30mohm



Speaker 4 ohm: 40mils

DC-DET circuit(ADO)





Quanta Computer Inc.	
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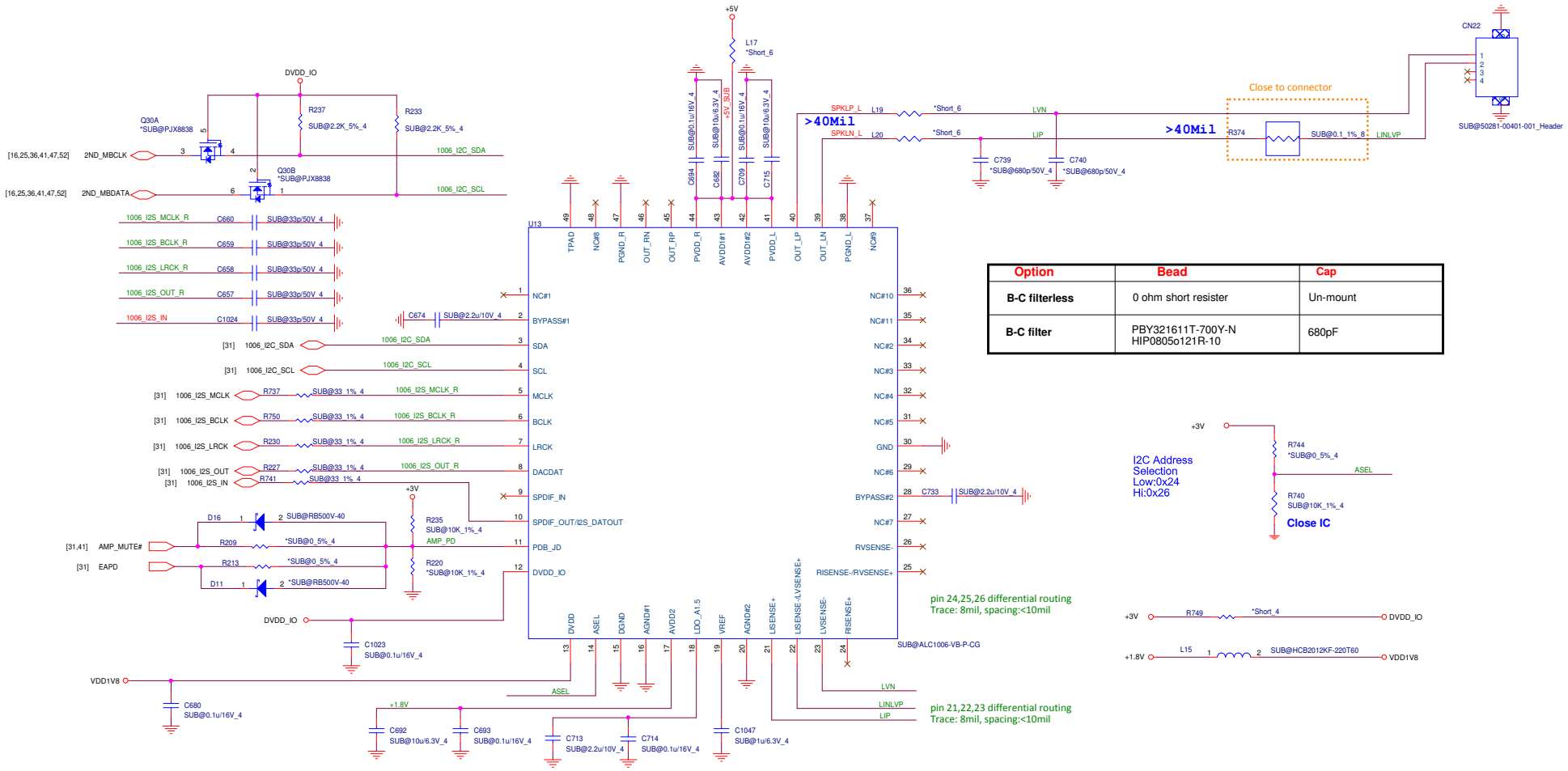
SubWoofer (AMP)



Option	Bead	Cap
B-C filterless	0 ohm short resister	Un-mount
B-C filter	PBY321611T-700Y-N HIP0805o121R-10	680pF

2017.8.31 FAE suggest change all AGND to DGND.

FP/PN OK

Quanta Computer Inc.
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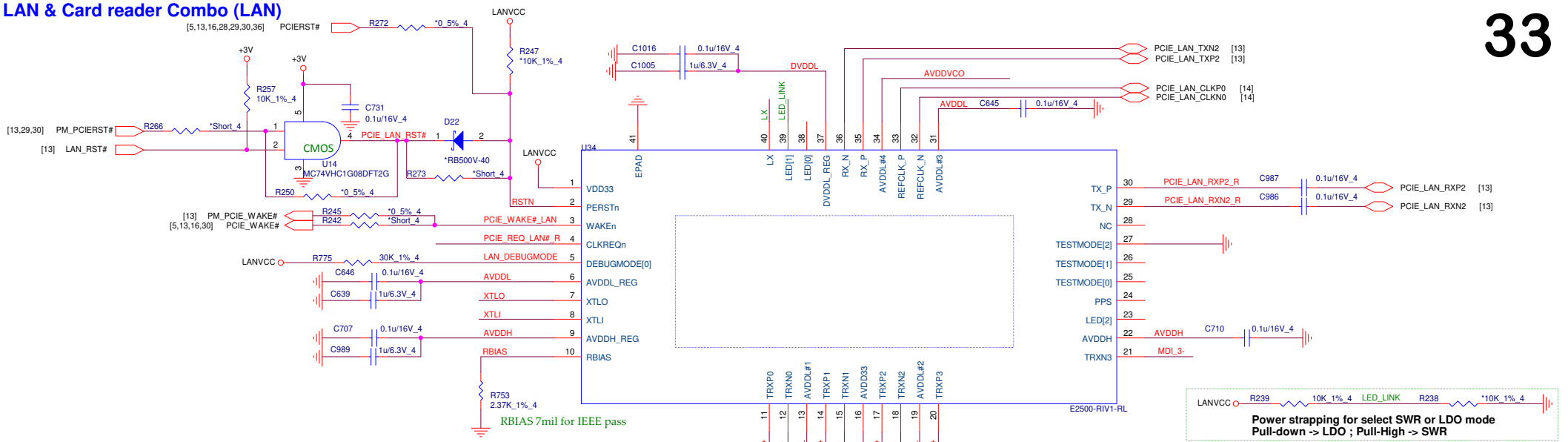
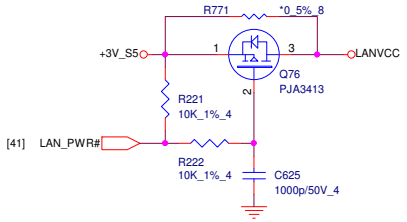
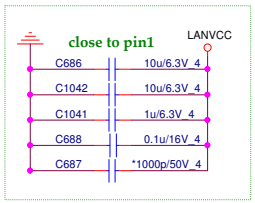
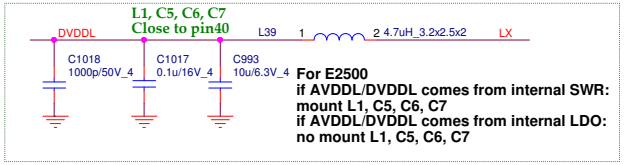
LAN & Card reader Combo (LAN)

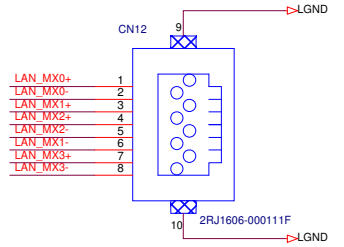


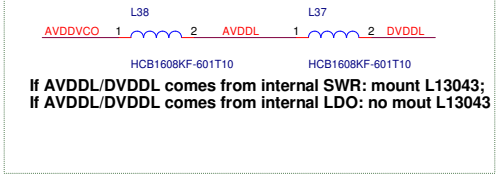


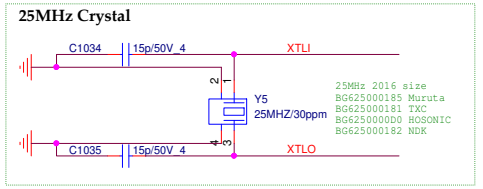




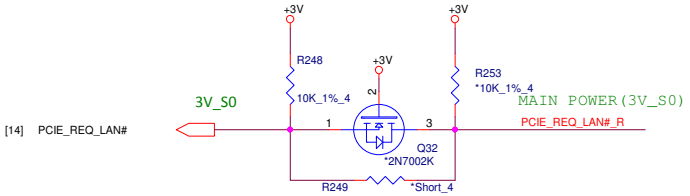
RJ45 Connector



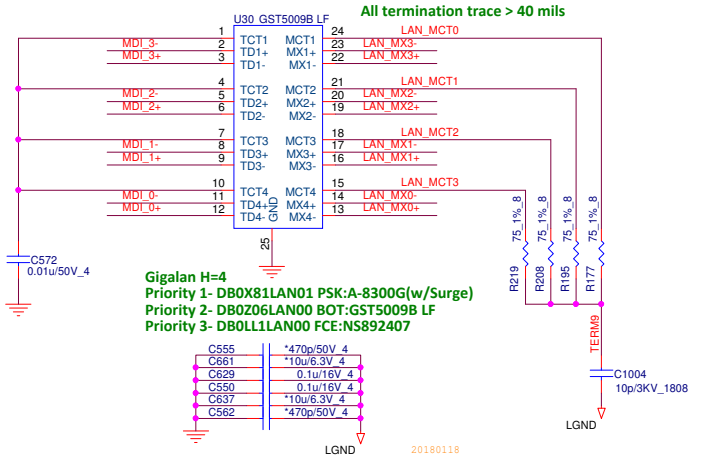




Leakage circuit



Tramsformer



Quanta Computer Inc.

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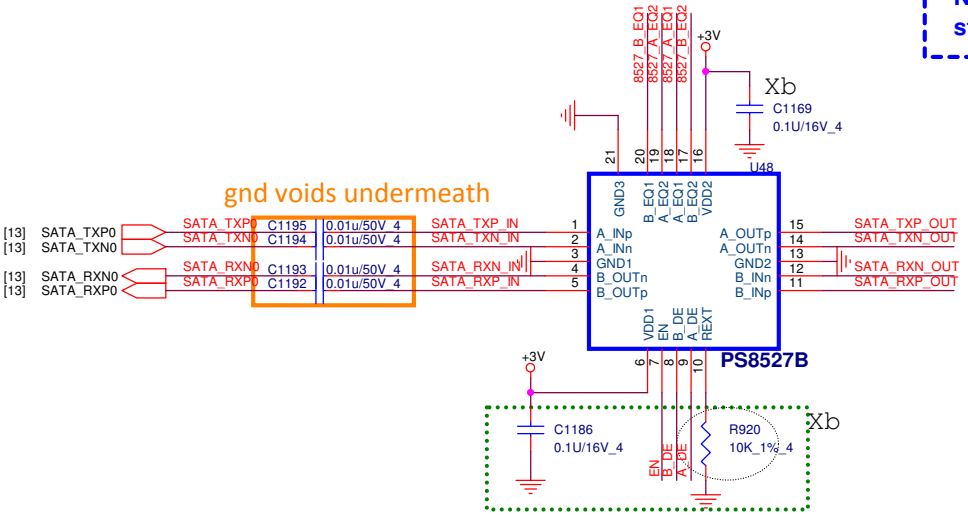
HDD Re-driever(HDD)

SATA re-driver IC
stuff Rb,Cb,Xb , unstuff Ra,Ca

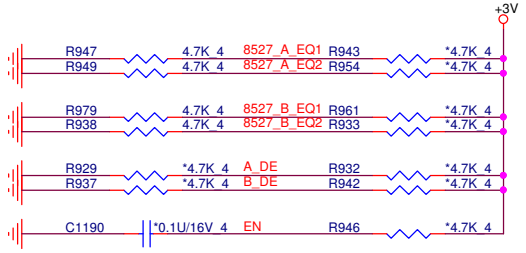
Normal
stuff Ra,Ca , unstuff Rb,Cb

Equalization level setting for Channel x(x=A/B),internally tied to VDD/2 (default:12.2dB)
[x_EQ2, x_EQ1] ==
L/L: for channel loss up to 7.4dB
L/H: for channel loss up to 14.4dB
H/L: for channel loss up to 11.2dB
H/H: for channel loss up to 5dB

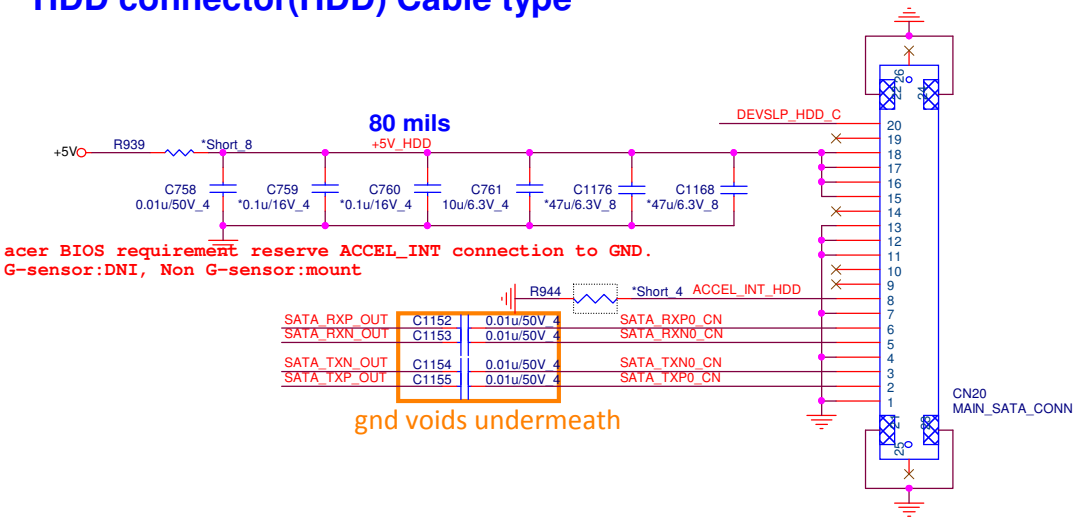
De-emphasis level setting for Channel x(x=A/B), internally tied to VDD/2(Default=-3.5dB)
[x_DE] ==
L: 0 dB
H: -6dB

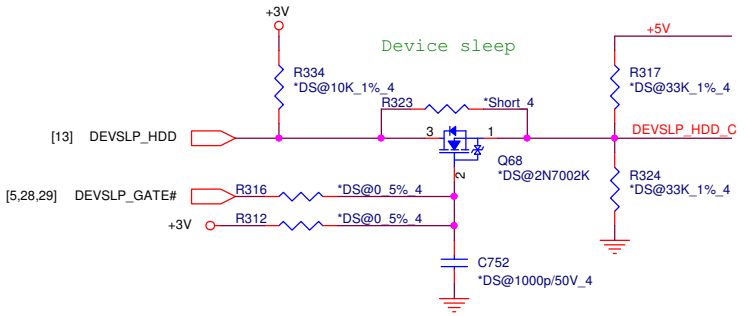


8/11 FAE suggest A_EQ1,A_EQ2,B_EQ1,B_EQ2 mount for LL EQ 7.4dB



HDD connector(HDD) Cable type





Quanta Computer Inc.
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	HDD/Re-Driver	1A
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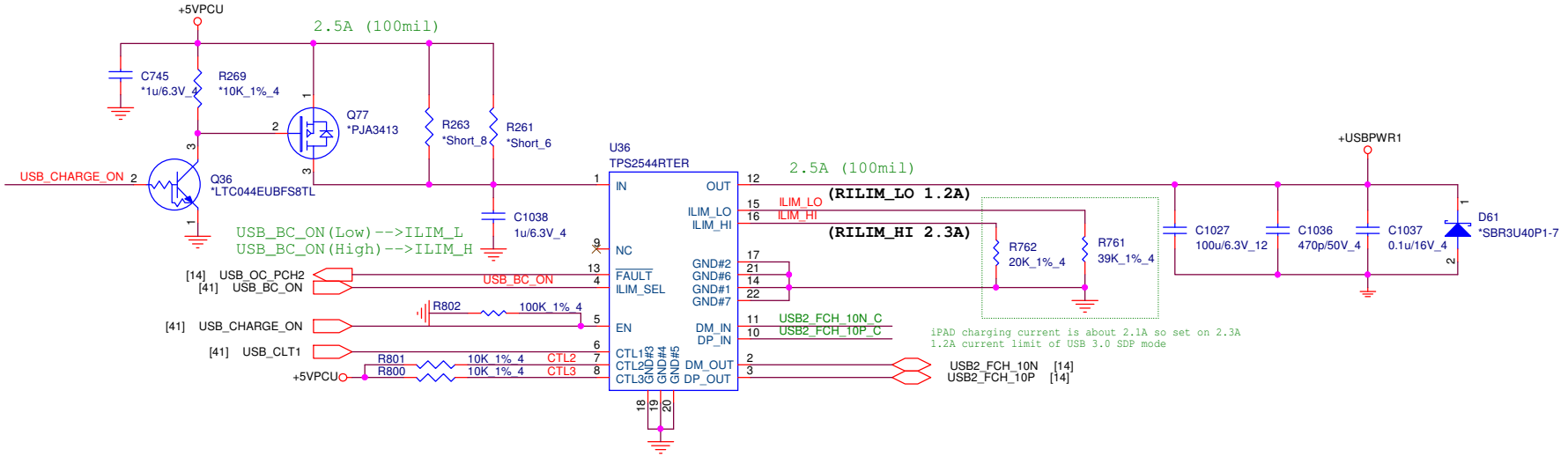
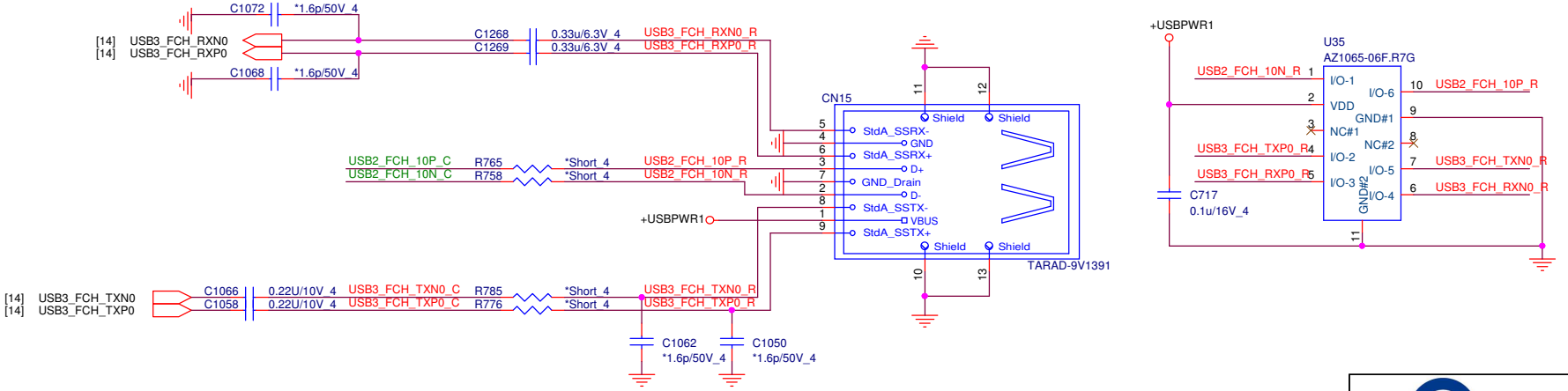
USB Charger (UBC)_BC 1.2



USB 3.0 (UB3) FROM PCH



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Size	Document Number: USB3.0*1 (BC1.2)	Rev: 1A
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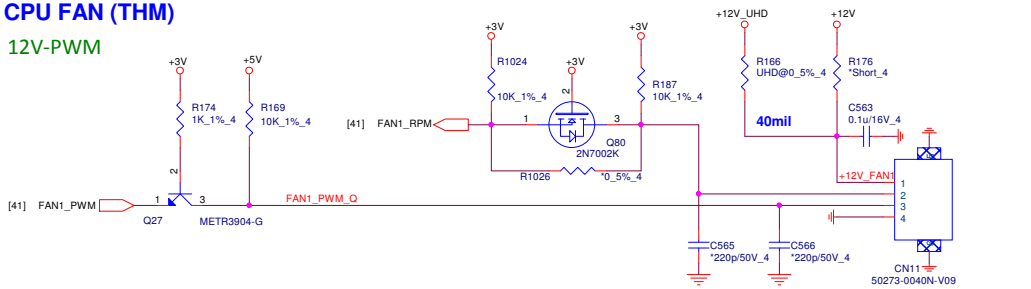
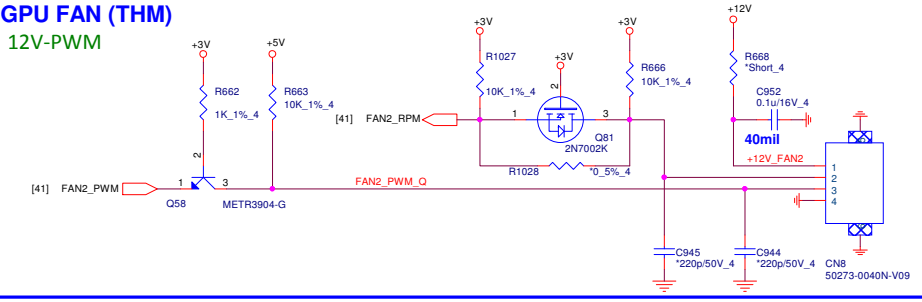
CPU FAN (THM)

12V-PWM

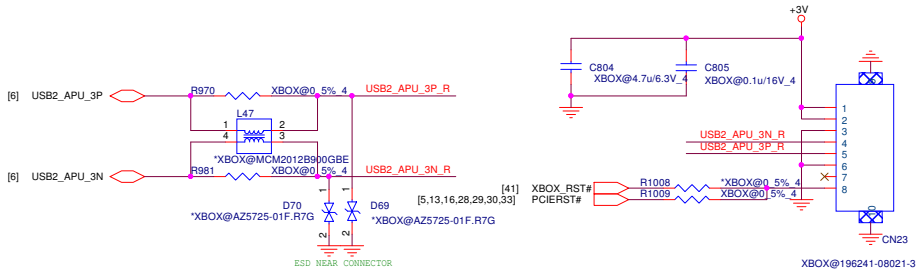


GPU FAN (THM)

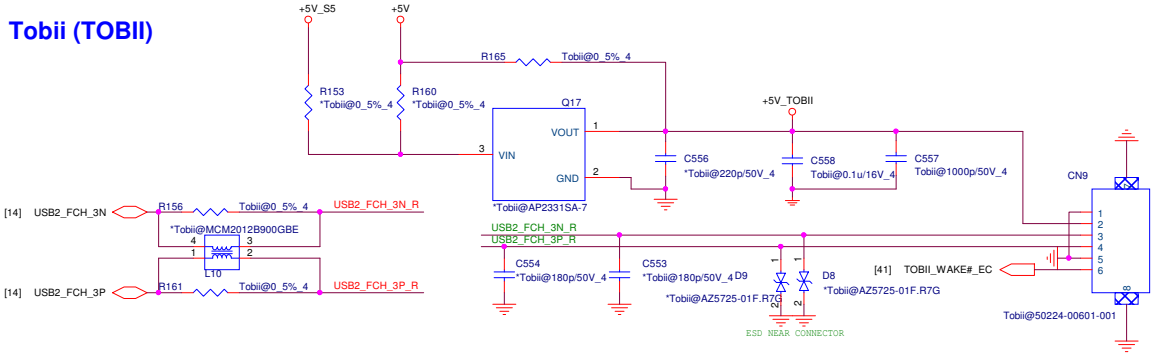
12V-PWM



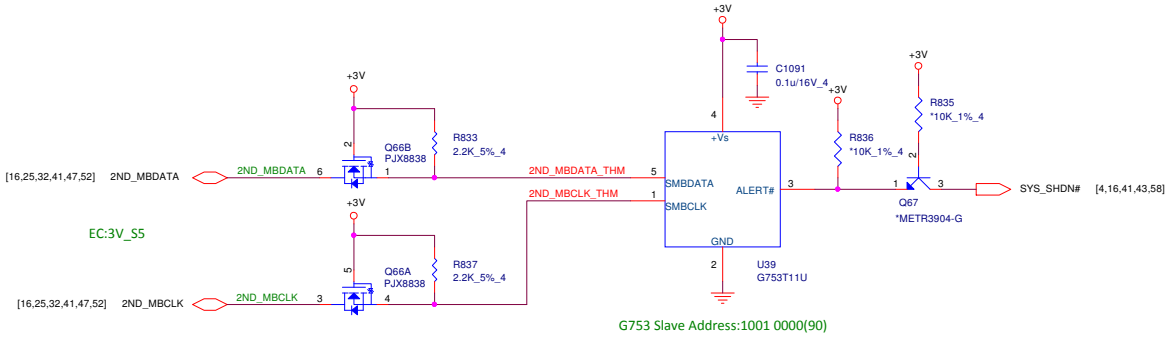
Xbox (XBOX)



Tobii (TOBII)



System Thermal Sensor(THM)



Quanta Computer Inc.		
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Size	Document Number: FAN/Thermal/Xbox/Tobii	Rev 1A
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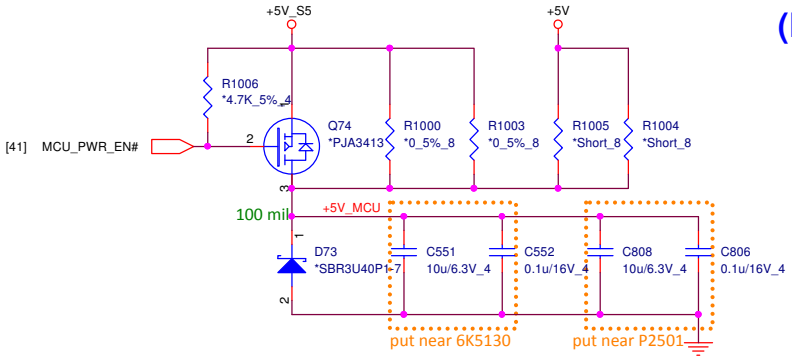
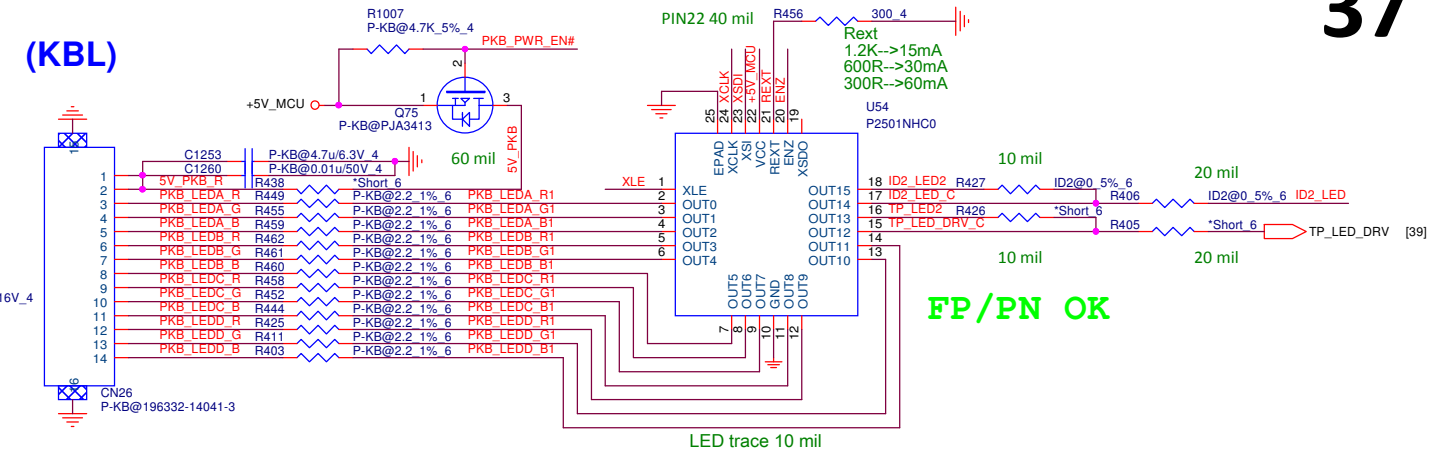
UIF Controller (UIF)

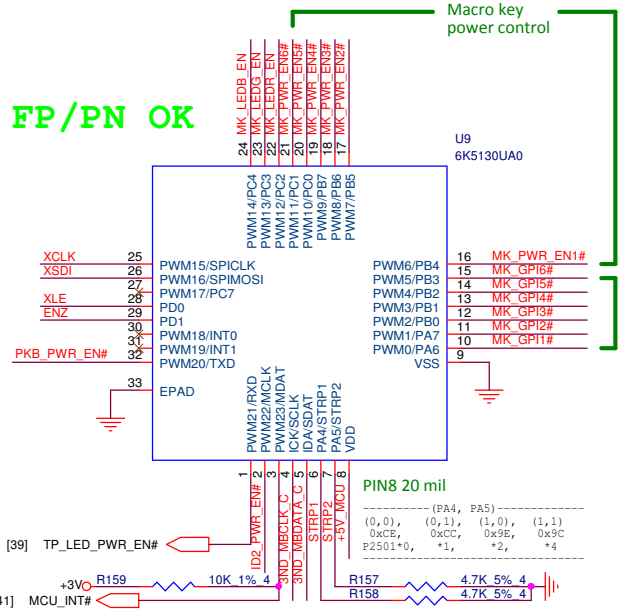


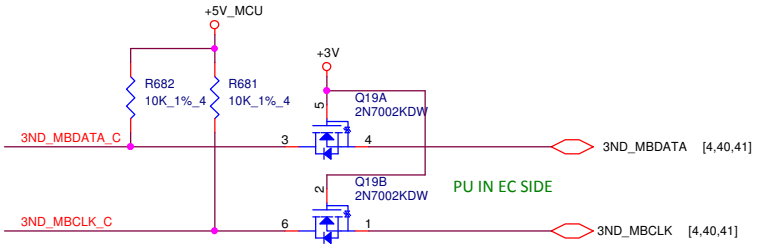
(KBL)

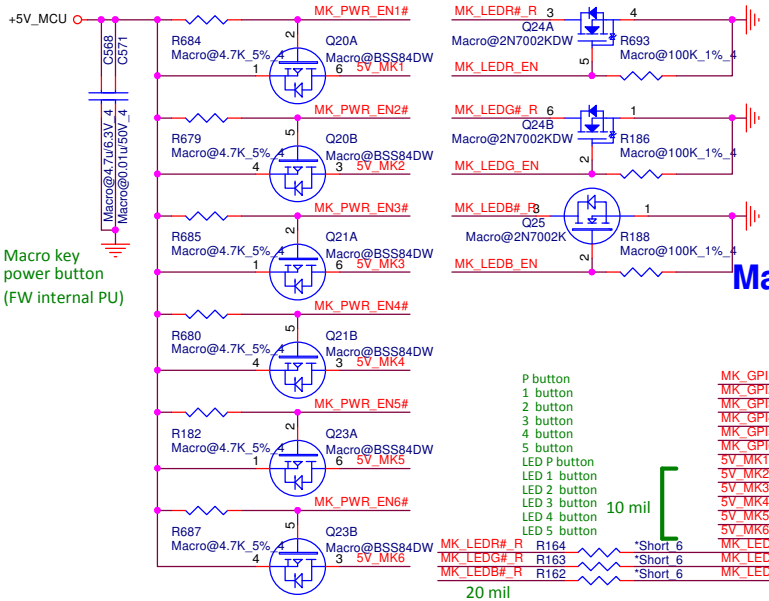


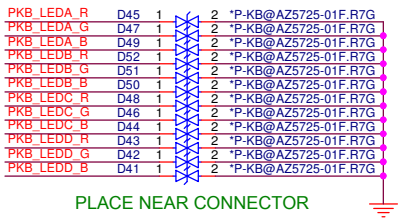
FP/PN OK

FP/PN OK

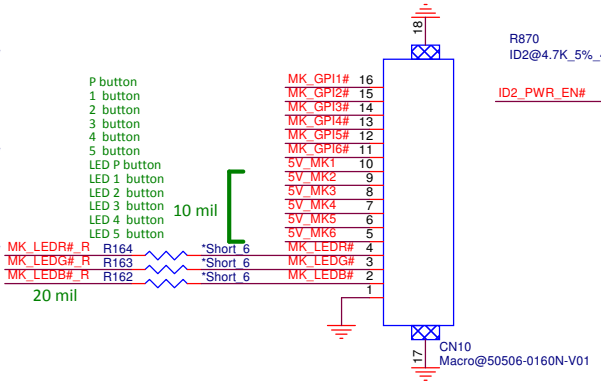




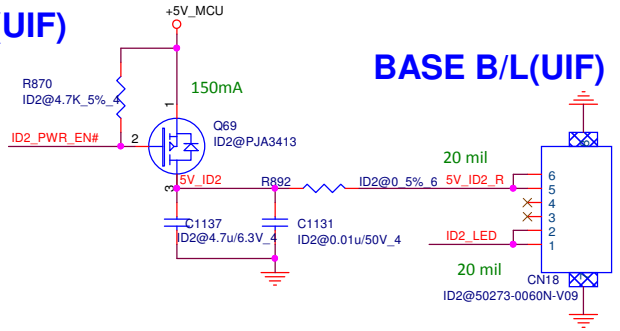




Macro Key (UIF)



BASE B/L(UIF)



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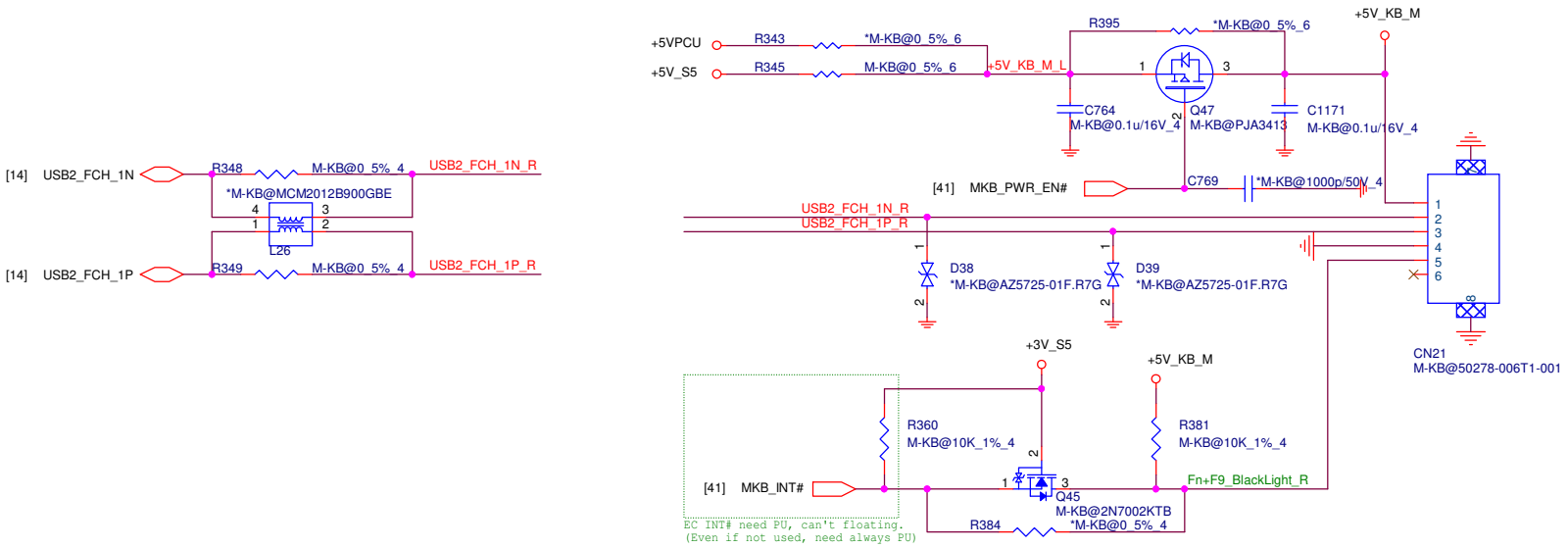
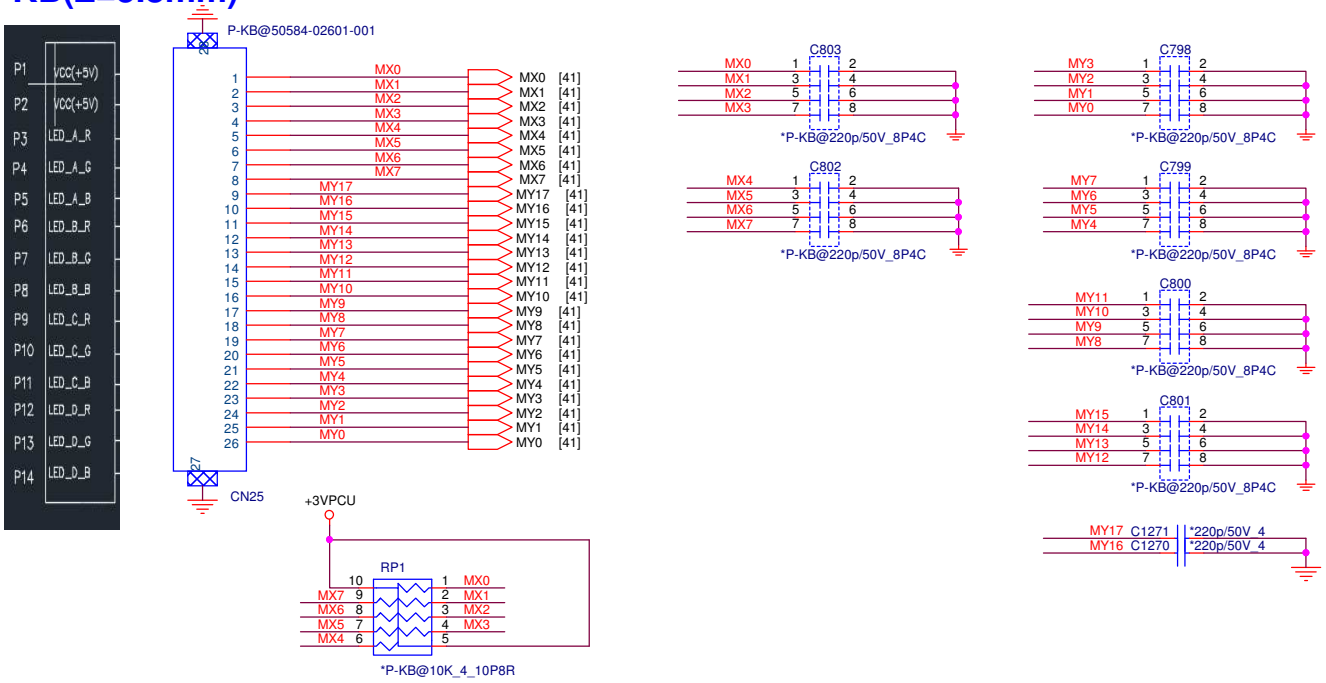
Metal KB(KBL)



Plastic KB(Z=5.8mm)



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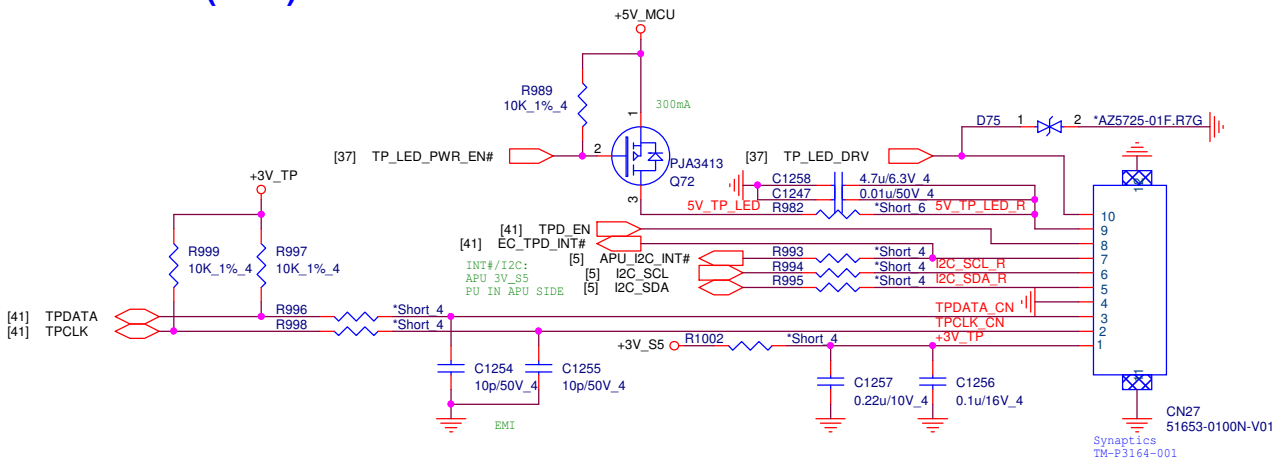
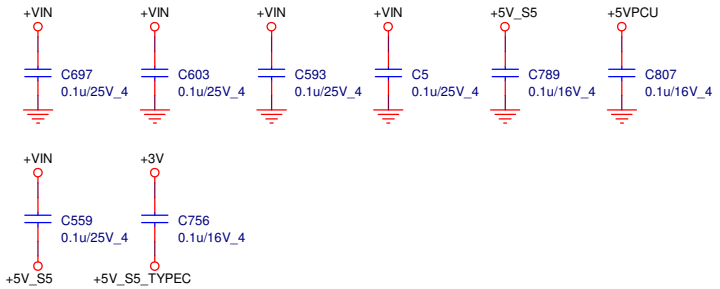
TOUCH PAD(TPD)



Stitching caps



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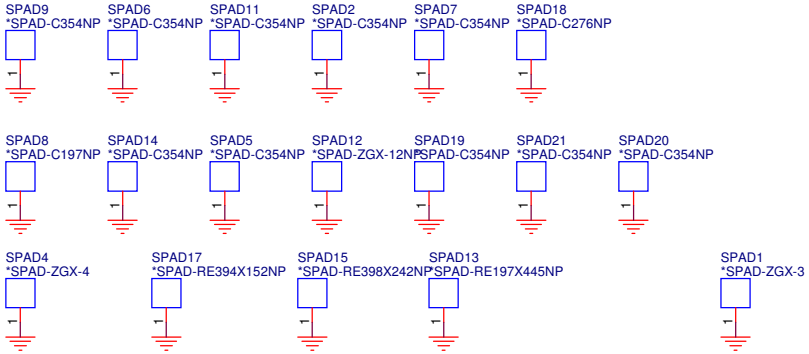
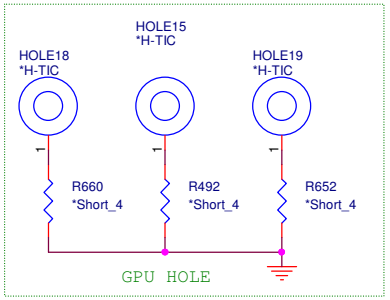
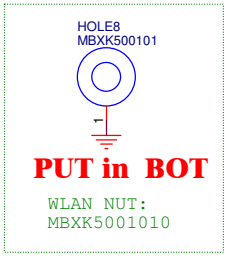
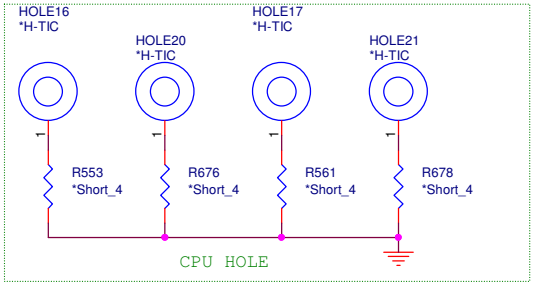
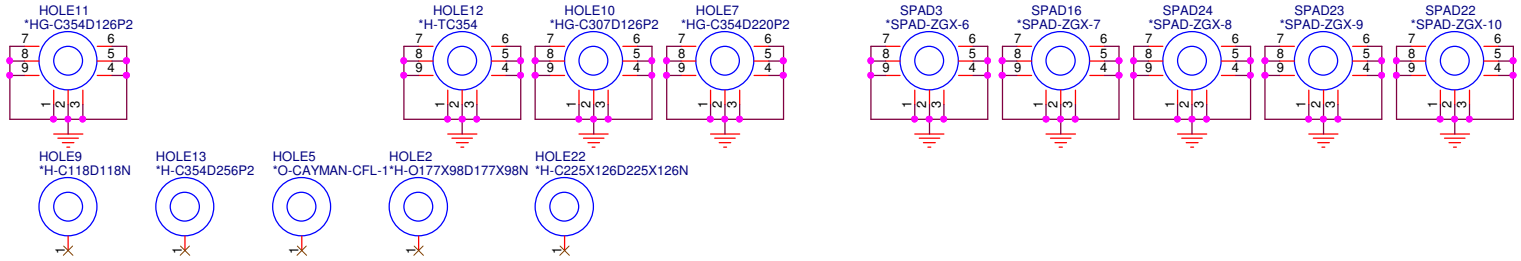
HOLE(OTH)











Quanta Computer Inc.

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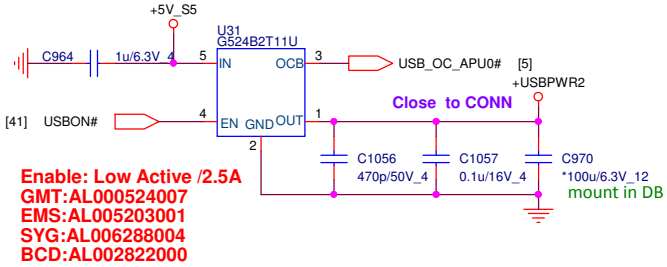
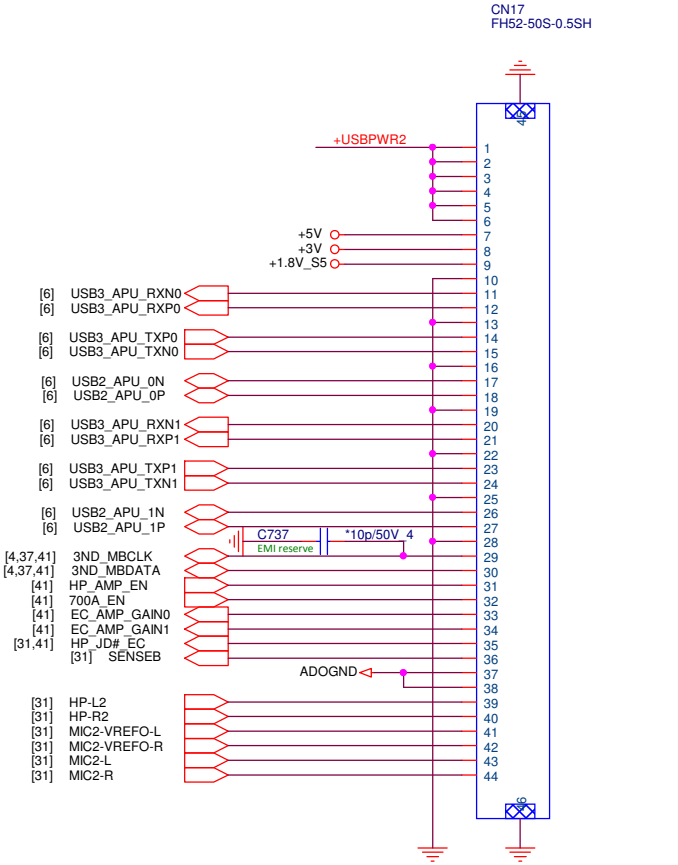
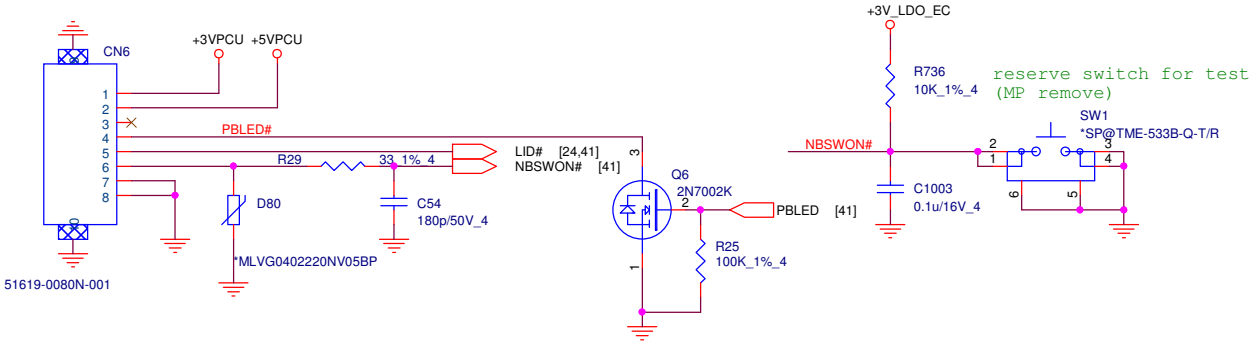
USB BOARD (UB3)

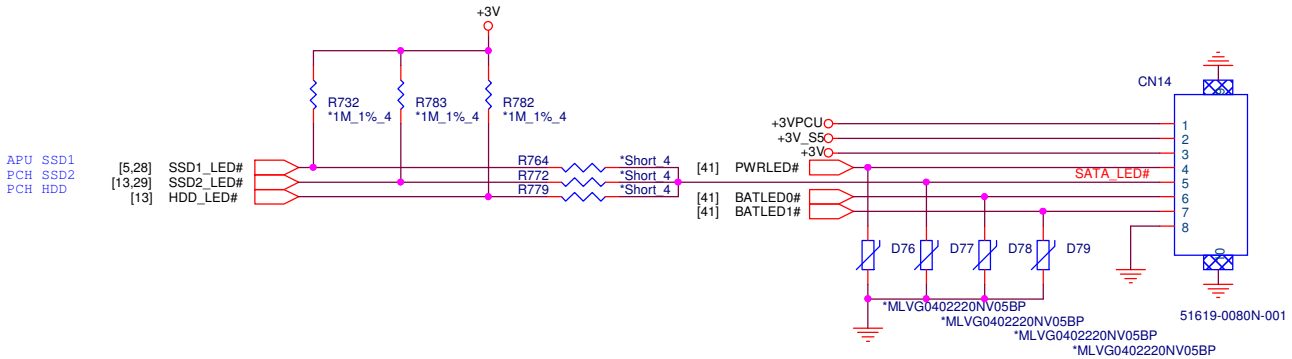




POWER BOARD (KBC)



LED BOARD(UIF)



Quanta Computer Inc.

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	DB(Power/IO/LED)	1A
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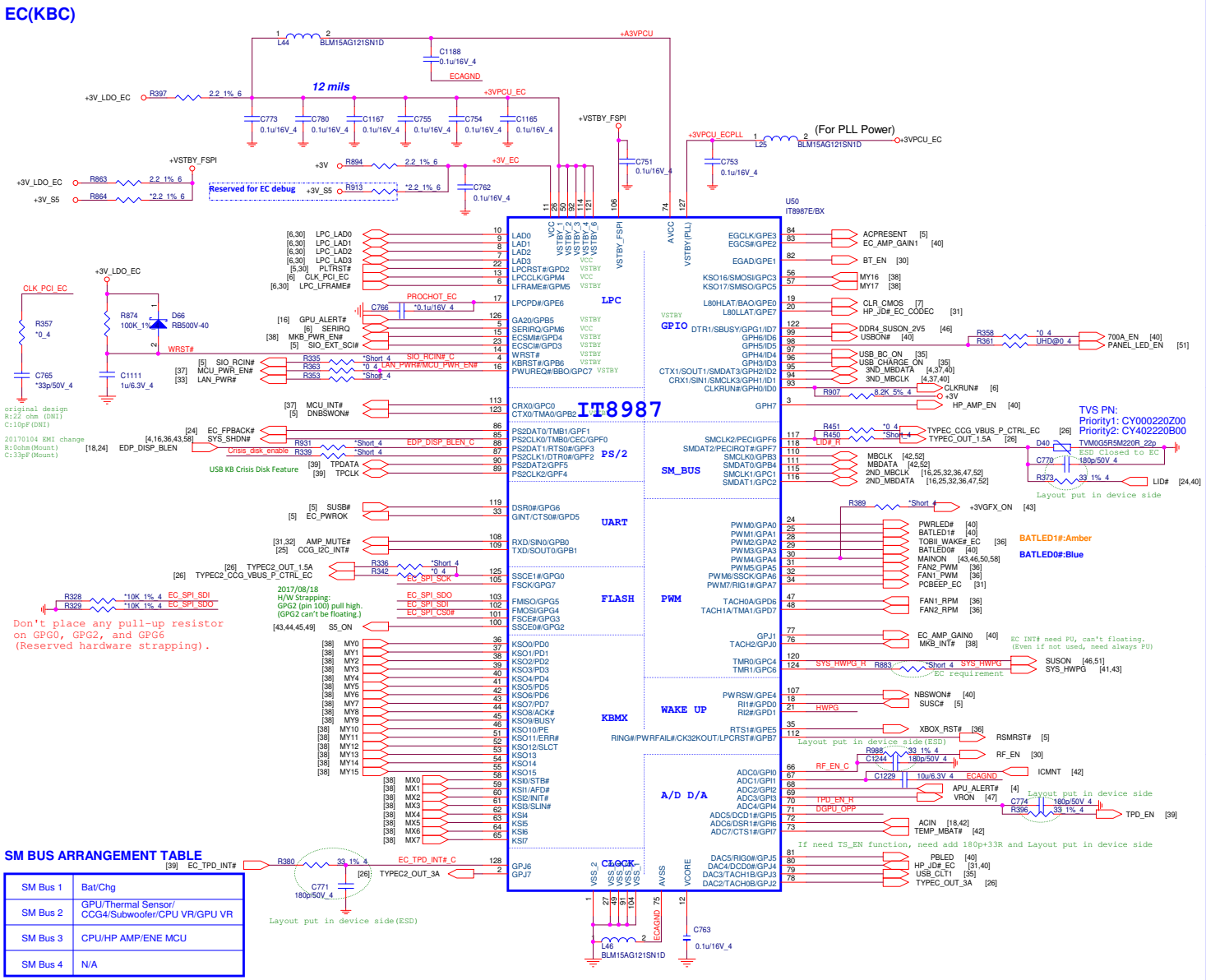
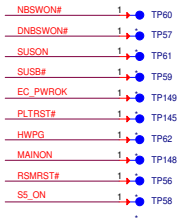
EC(KBC)



SM BUS ARRANGEMENT TABLE

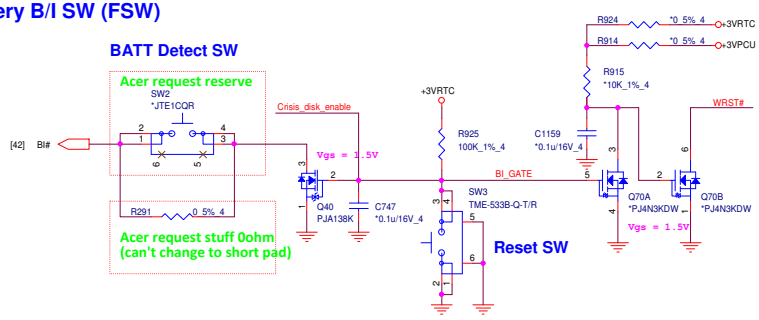
SM Bus 1	Bat/Chg
SM Bus 2	GPU/Thermal Sensor/ CCG4/Subwoofer/CPU VR/GPU VR
SM Bus 3	CPU/HP AMP/ENE MCU
SM Bus 4	N/A

Power sequence

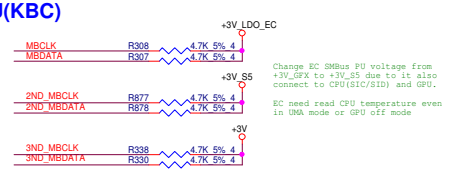


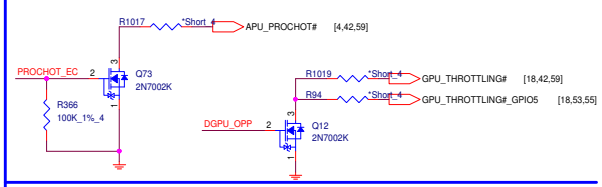
Battery B/I SW (FSW)

BATT Detect SW

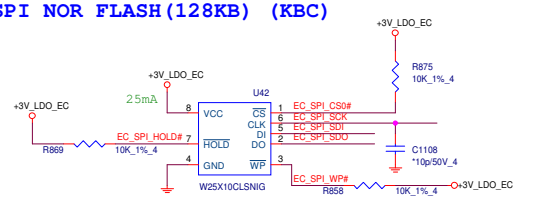


SM BUS PU(KBC)

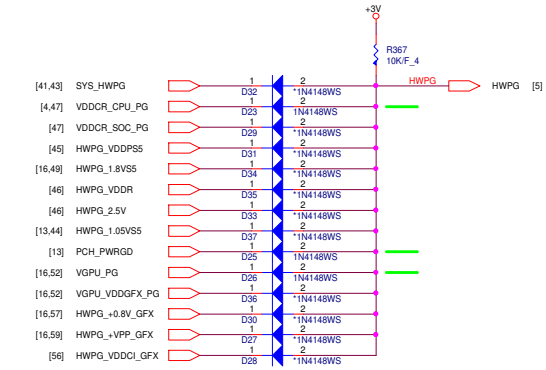




SPI NOR FLASH(128KB) (KBC)



HWPG(KBC)



Quanta Computer Inc.	PROJECT : ZGX
Size	Document Number: EC (ITE8987E/BX) — Rev 1A
Date: Tuesday, June 26, 2018	Sheet 41 of 59

(1) Double Check ADP-IN Connector with ME
(2) Same as ZGL

PD=3W

ADP (MAX) =330W

V_ PMON=K*Total*R
1.2V=1uA*Total*R

CS32262FB15RES CHIP 22.6K 1/16W +-1%(0402)
for 180W/230W

REGN MAX voltage 6.5V
V_ILIM=20*(VSRP-VSRN)=20*Ichg*Rsr
=0.793V for 7.93A current limit

ILIM=0.793V
Rsr = 0.01ohm

Double Check Charge Current

(1) Double Check BATT-IN Conn. with ME
(2) Same as ZGL

Double Check if BI pin PU Low

2017/3/6 Adds Co-lay BATT Connector

Quanta Computer Inc.
PROJECT : ZGX
Size | Document Number: Charger (BQ24780S) | Rev 1A
Date: Tuesday, June 26, 2018 | Sheet 42 of 59

[41] SYS_HWPG
[4,16,36,41,58] SYS_SHDN#

+5VPCU
5 Volt +/- 5%
TDC : 17.73A
PEAK : 23.6A
OCP : 23.7A
Width : 520mil

Isat=27A

PU8 TPS51225RUKR

Rds(on)=2.99m ohm

OCP:23.7A
L(ripple current)
=(12-5)*5/(2.2u*0.3M*12)
=4.41A

Iocp=24-(4.41A/2)=21.79A
Vth=(21.79A*2.99mOhm)+1mV=66.15mV
R(Ilim)=(66.15mV*8)/10uA
~52.9K

+3VPCU
3.3 Volt +/- 5%
TDC : 11A
PEAK : 14.7A
OCP : 20A
Width : 440mil

Isat=22A

Rds(on)=4.9m ohm

OCP:20A
L(ripple current)
=(9-3.3)*3.3/(1u*0.355M*9)
~5.887A
Iocp=20-(5.887/2)=17.056A
Vth=(17.056A*4.9mOhm)+1mV=84.576mV
R(Ilim)=(84.576mV*8)/10uA
=67.66K

+5V_S5
TDC : 2.46A
PEAK : 3.28A
Width : 100mi

+3V_GFX
TDC : 0.13A
PEAK : 0.18A
Width : 20mil

Power auto recovery

TDC : 4A
PEAK : 5.33A
Width : 160mil

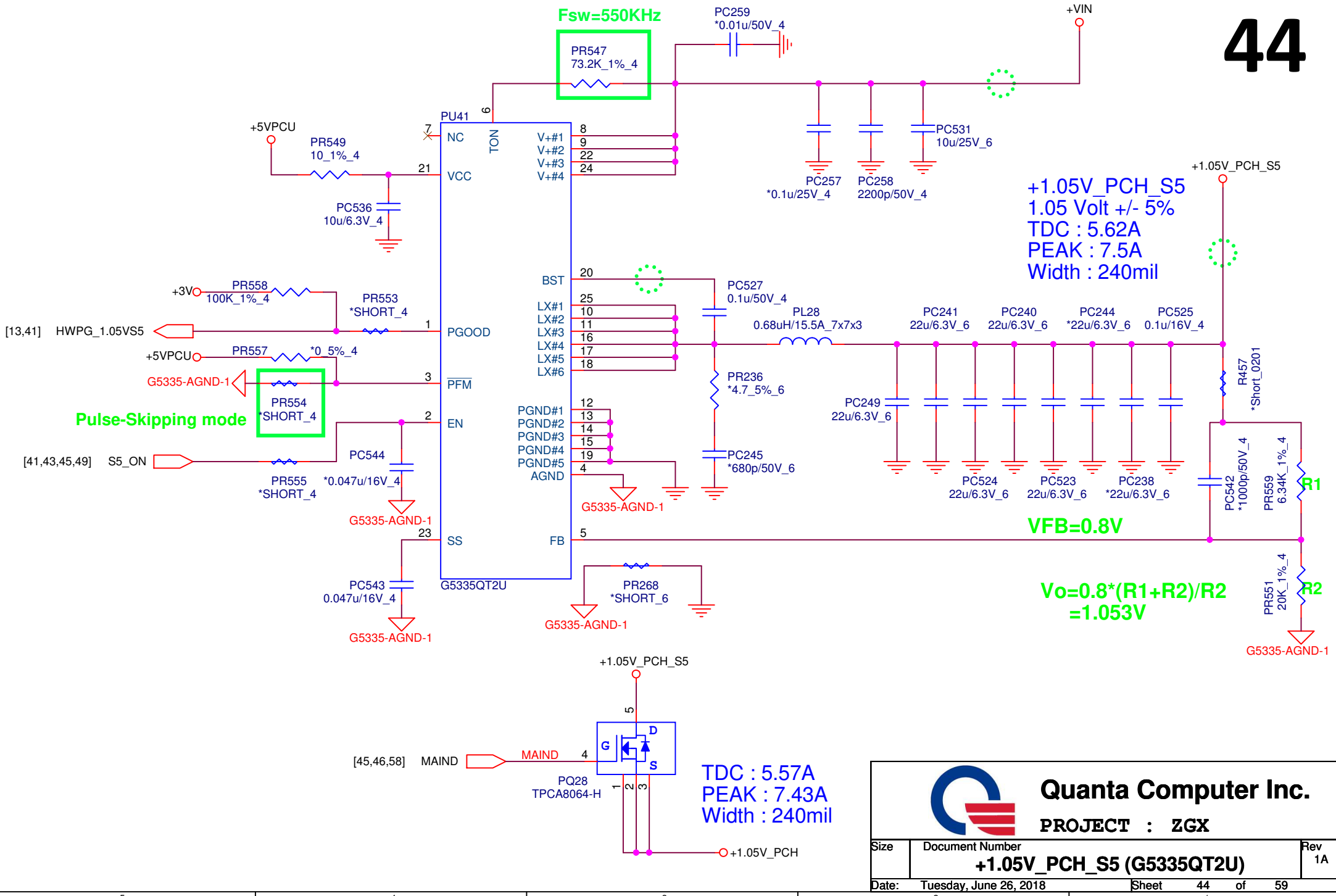
TDC : 4.6A
PEAK : 6.1A
Width : 200mil

For TYPE C*2

+5V_S5_TYPEC
TDC : 4.5A
PEAK : 6A
Width : 180mil

+3V
TDC : 6A
PEAK : 8A
Width : 240mil

Quanta Computer Inc.			
PROJECT : ZGX			
Size	Document Number		Rev
	SYSTEM 5V/3V (TPS51225R)		1A
Date: Tuesday, June 26, 2018		Sheet 43 of 59	


44
Fsw=550KHz
PR547
73.2K_1%_4
PC259
*0.01u/50V_4
+VIN
PU41
+5VPCU
PR549
10_1%_4
PC536
10u/6.3V_4
NC
TON
VCC
V+#1
V+#2
V+#3
V+#4
PC257
*0.1u/25V_4
PC258
2200p/50V_4
PC531
10u/25V_6
+1.05V_PCH_S5
1.05 Volt +/- 5%
TDC : 5.62A
PEAK : 7.5A
Width : 240mil
+3V
PR558
100K_1%_4
PR553
*SHORT_4
[13,41] HWPG_1.05VS5
PGOOD
+5VPCU
PR557
*0_5%_4
G5335-AGND-1
PFM
PR554
*SHORT_4
Pulse-Skipping mode
[41,43,45,49] S5_ON
PR555
*SHORT_4
PC544
*0.047u/16V_4
EN
BST
LX#1
LX#2
LX#3
LX#4
LX#5
LX#6
PC527
0.1u/50V_4
PL28
0.68uH/15.5A_7x7x3
PC241
22u/6.3V_6
PC240
22u/6.3V_6
PC244
*22u/6.3V_6
PC525
0.1u/16V_4
PR236
*4.7_5%_6
PC249
22u/6.3V_6
PC245
*680p/50V_6
PC524
22u/6.3V_6
PC523
22u/6.3V_6
PC238
*22u/6.3V_6
R457
*Short_0201
PGND#1
PGND#2
PGND#3
PGND#4
PGND#5
AGND
G5335-AGND-1
PC542
*1000p/50V_4
PR559
6.34K_1%_4
R1
VFB=0.8V
SS
FB
G5335QT2U
PC543
0.047u/16V_4
PR268
*SHORT_6
Vo=0.8*(R1+R2)/R2
=1.053V
PR551
20K_1%_4
R2
+1.05V_PCH_S5
[45,46,58] MAIND
MAIND
PQ28
TPCA8064-H
TDC : 5.57A
PEAK : 7.43A
Width : 240mil
+1.05V_PCH
Quanta Computer Inc.
PROJECT : ZGX
Size
Document Number
+1.05V_PCH_S5 (G5335QT2U)
Rev
1A
Date: Tuesday, June 26, 2018
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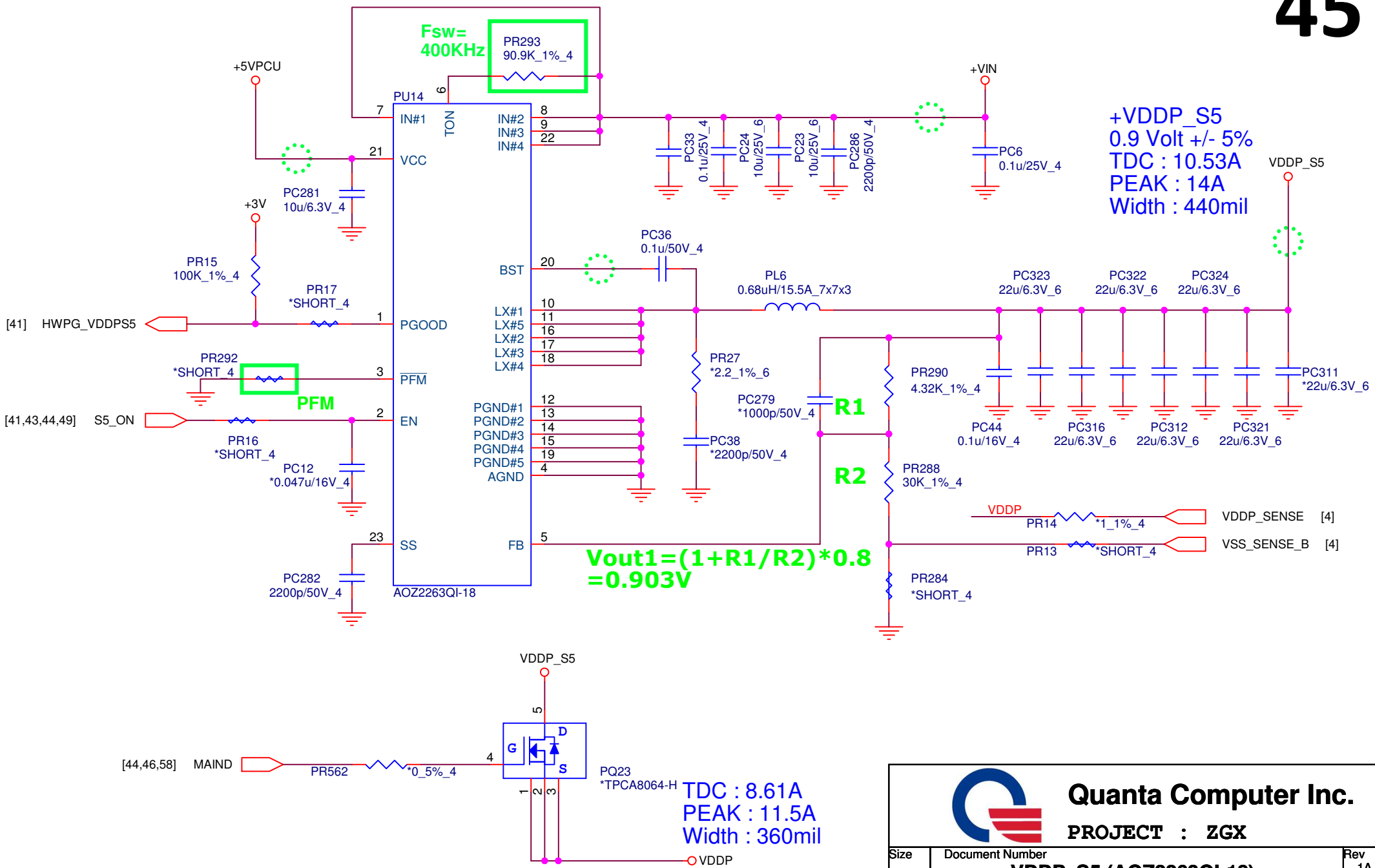
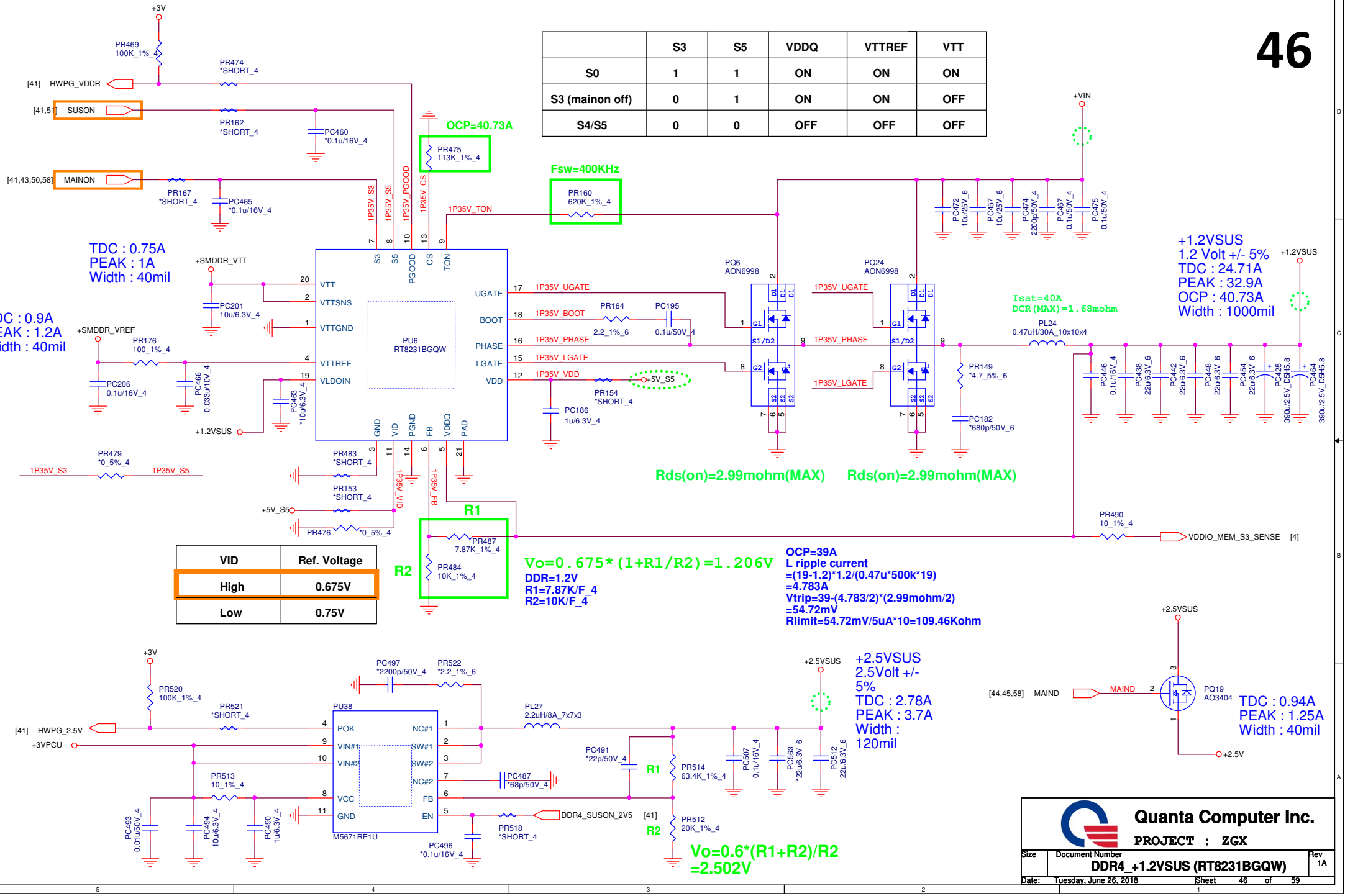


Quanta Computer Inc.		
PROJECT : ZGX		
Size	Document Number: +VDDP_S5 (AOZ2263QI-18)	Rev: 1A
Date: Tuesday, June 26, 2018	Sheet 45 of 59	

	S3	S5	VDDQ	VTTREF	VTT
S0	1	1	ON	ON	ON
S3 (mainon off)	0	1	ON	ON	OFF
S4/S5	0	0	OFF	OFF	OFF



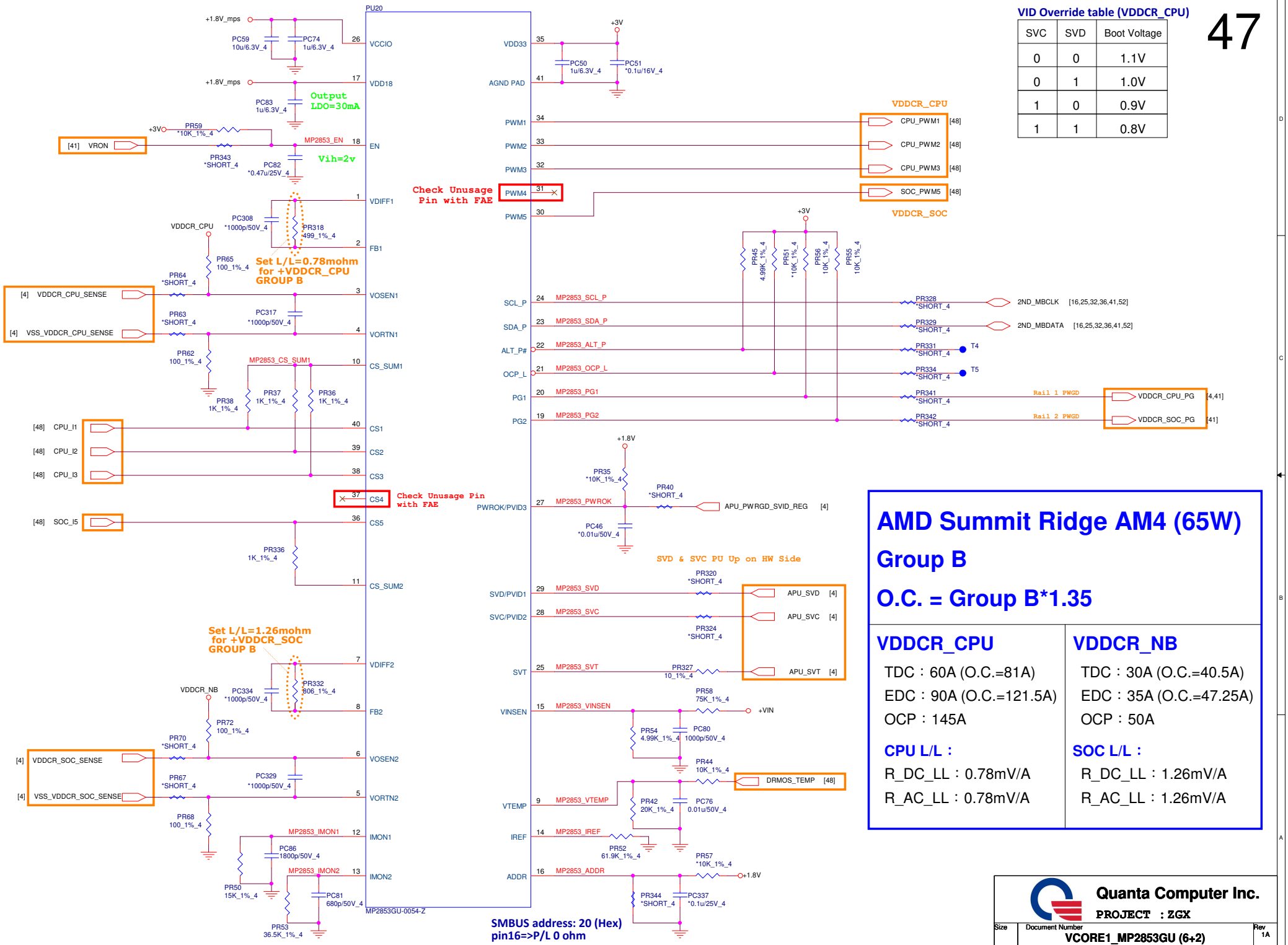
Quanta Computer Inc.

PROJECT : ZGX

Size	Document Number	Rev
	DDR4_+1.2VSUS (RT8231BGQW)	1A
Date: Tuesday, June 26, 2018	Sheet 46 of 59	

VID Override table (VDDCR_CPU)

SVC	SVD	Boot Voltage
0	0	1.1V
0	1	1.0V
1	0	0.9V
1	1	0.8V



AMD Summit Ridge AM4 (65W)

Group B

O.C. = Group B*1.35

VDDCR_CPU

TDC：60A (O.C.=81A)

EDC：90A (O.C.=121.5A)

OCP：145A

CPU L/L：

R_DC_LL：0.78mV/A

R_AC_LL：0.78mV/A

VDDCR_NB

TDC：30A (O.C.=40.5A)

EDC：35A (O.C.=47.25A)

OCP：50A

SOC L/L：

R_DC_LL：1.26mV/A

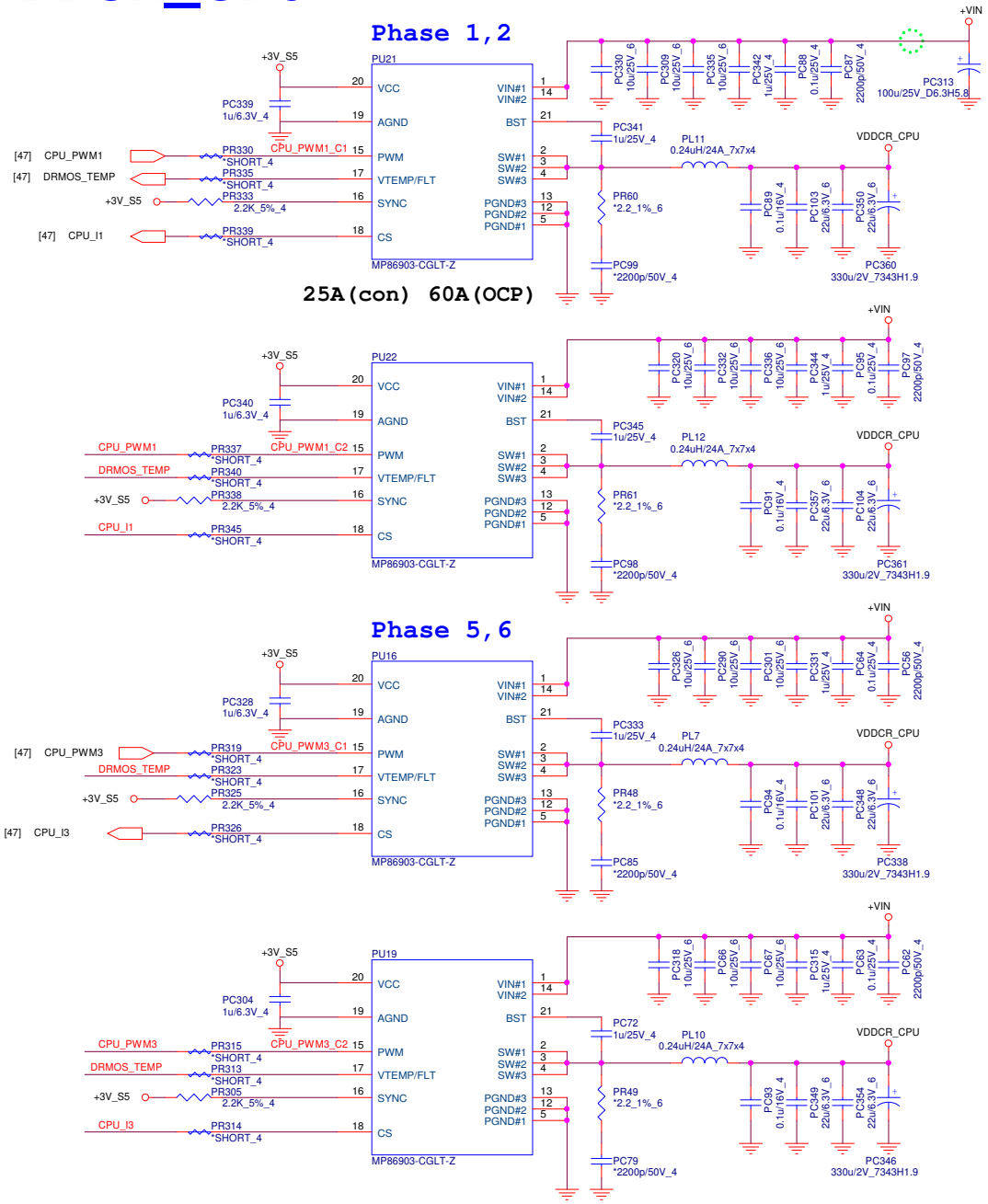
R_AC_LL：1.26mV/A

Quanta Computer Inc.

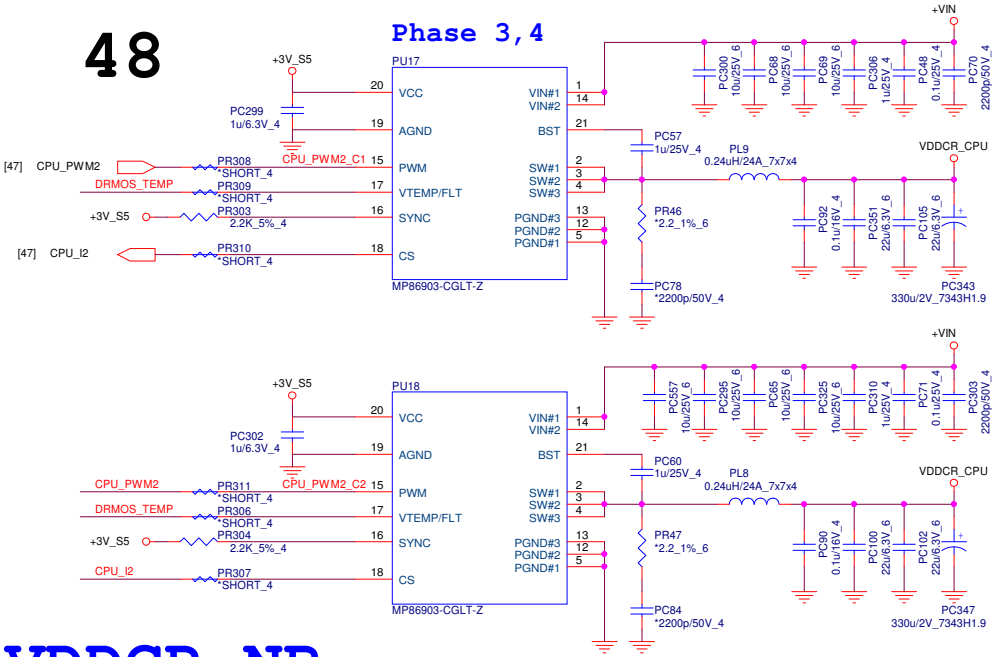
PROJECT : ZGX

Size	Document Number	Rev
	VCORE1_MP2853GU (6+2)	1A
Date: Tuesday, June 26, 2018	Sheet 47 of 59	

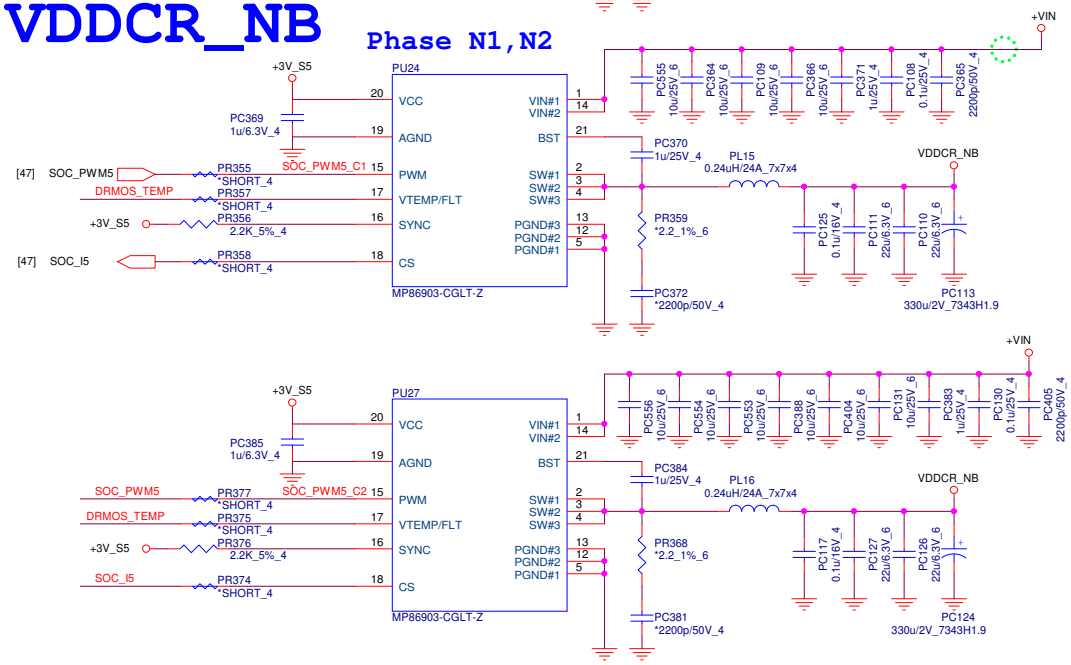
VDDCR_CPU



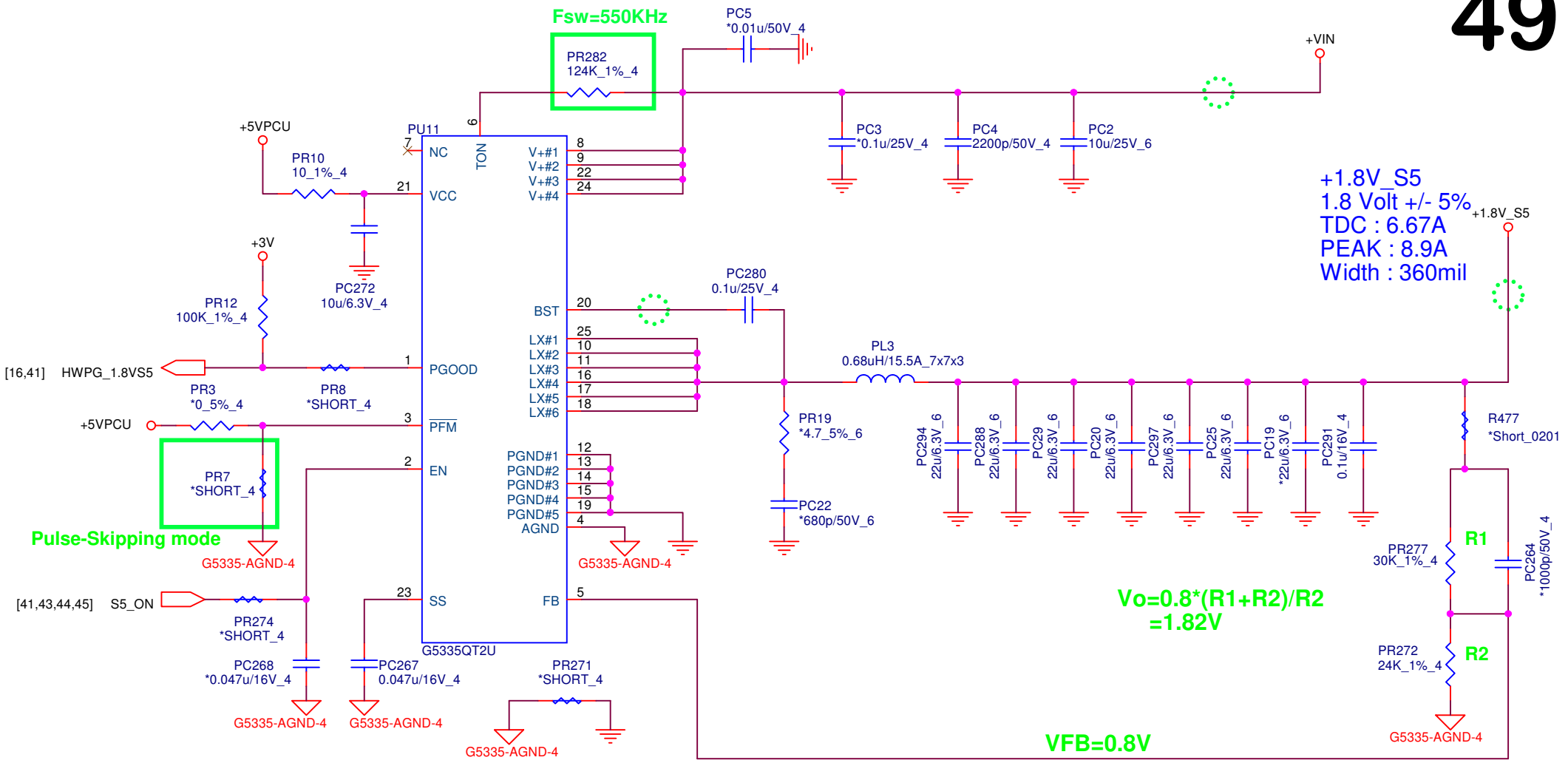
48



VDDCR_NB

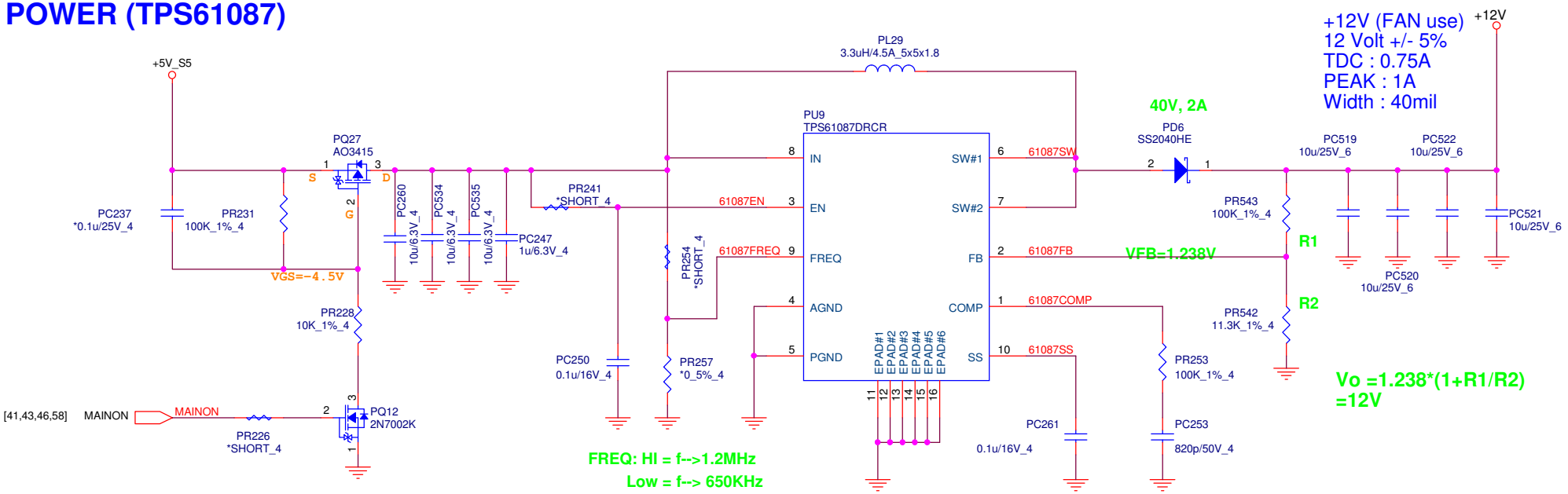


Quanta Computer Inc.			
PROJECT : ZGX			
Size	Document Number		Rev
	VDDCR_CPU / VDDCR_NB		1A
Date: Tuesday, June 26, 2018	Sheet 48	of 59	

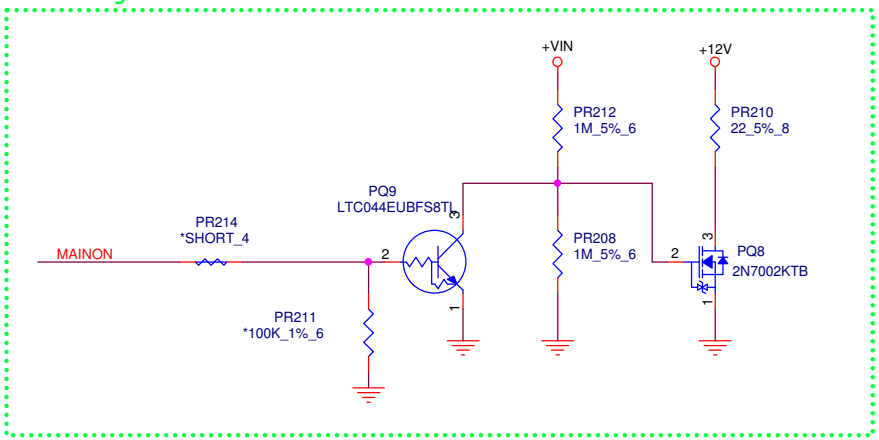


Quanta Computer Inc.		
PROJECT : ZGX		
Size	Document Number: +1.8V_S5 (G5335QT2U)	Rev: 1A
Date: Tuesday, June 26, 2018	Sheet 49 of 59	

FAN POWER (TPS61087)

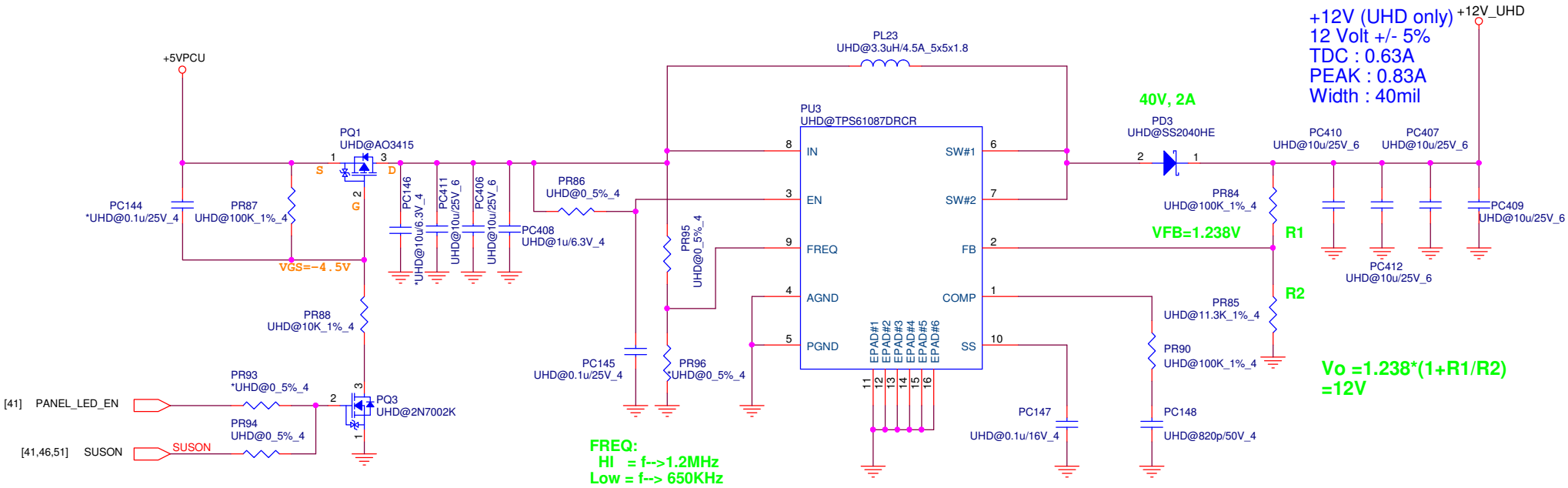


Discharge Circuit

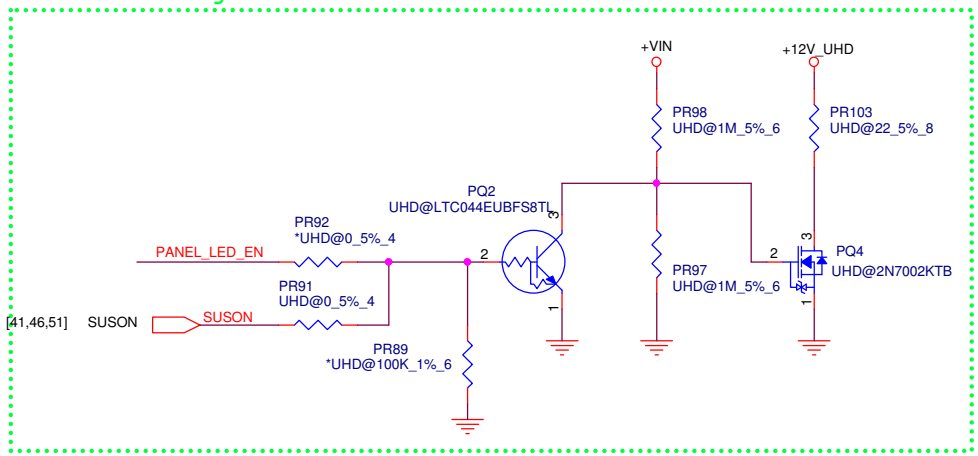


Quanta Computer Inc.		
PROJECT : ZGX		
Size	Document Number: +12V_FAN (TPS61087)	Rev: 1A
Date: Tuesday, June 26, 2018	Sheet 50 of 59	

UHD PANEL POWER (TPS61087)



Discharge Circuit



Quanta Computer Inc.

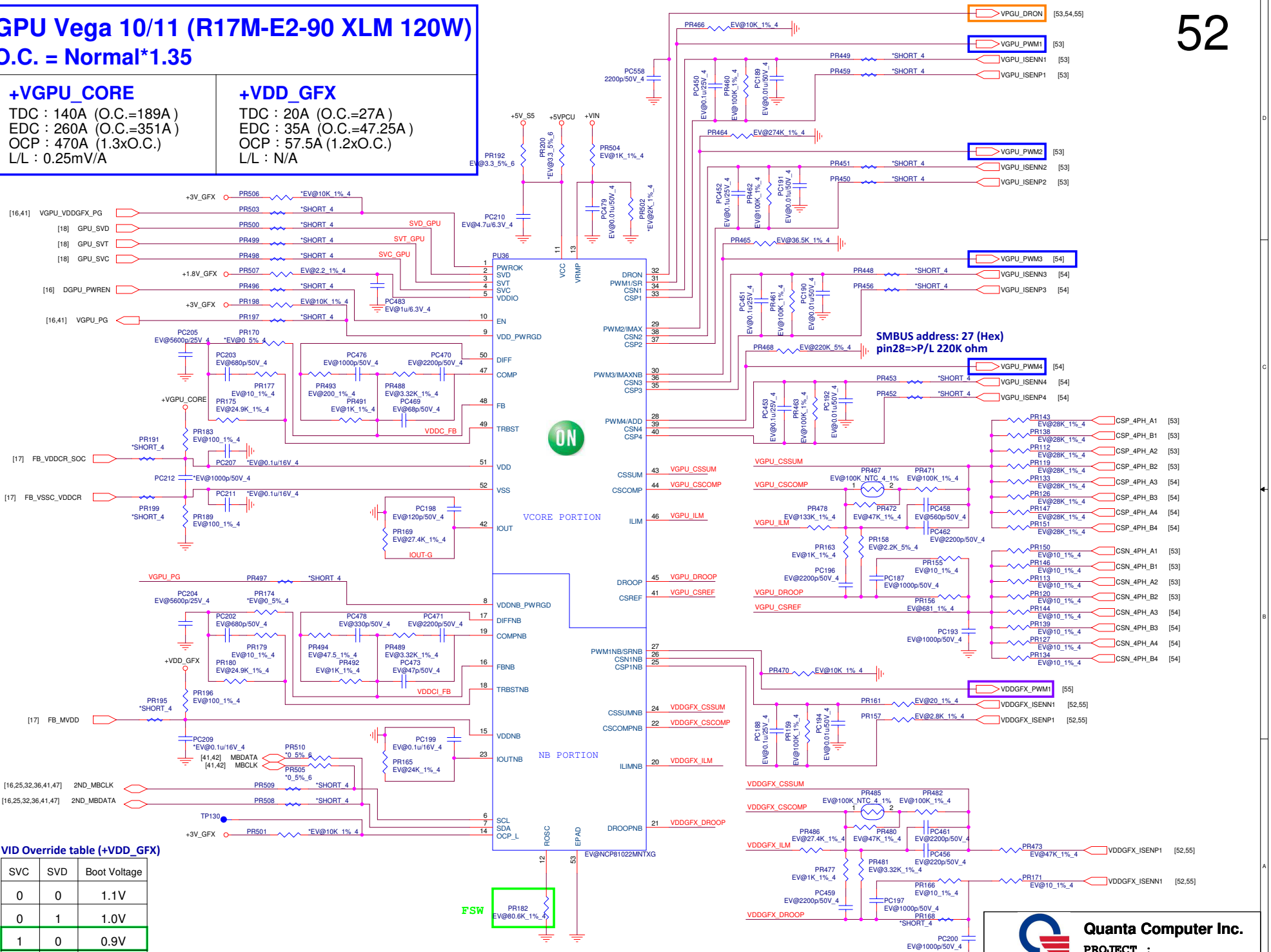
PROJECT : ZGX

Size	Document Number	Rev
	+12V_PANEL (TPS61087)	1A
Date: Tuesday, June 26, 2018	Sheet 51 of 59	

GPU Vega 10/11 (R17M-E2-90 XLM 120W)
O.C. = Normal*1.35

+VGPU_CORE
TDC : 140A (O.C.=189A)
EDC : 260A (O.C.=351A)
OCP : 470A (1.3xO.C.)
L/L : 0.25mV/A

+VDD_GFX
TDC : 20A (O.C.=27A)
EDC : 35A (O.C.=47.25A)
OCP : 57.5A (1.2xO.C.)
L/L : N/A



VID Override table (+VDD_GFX)

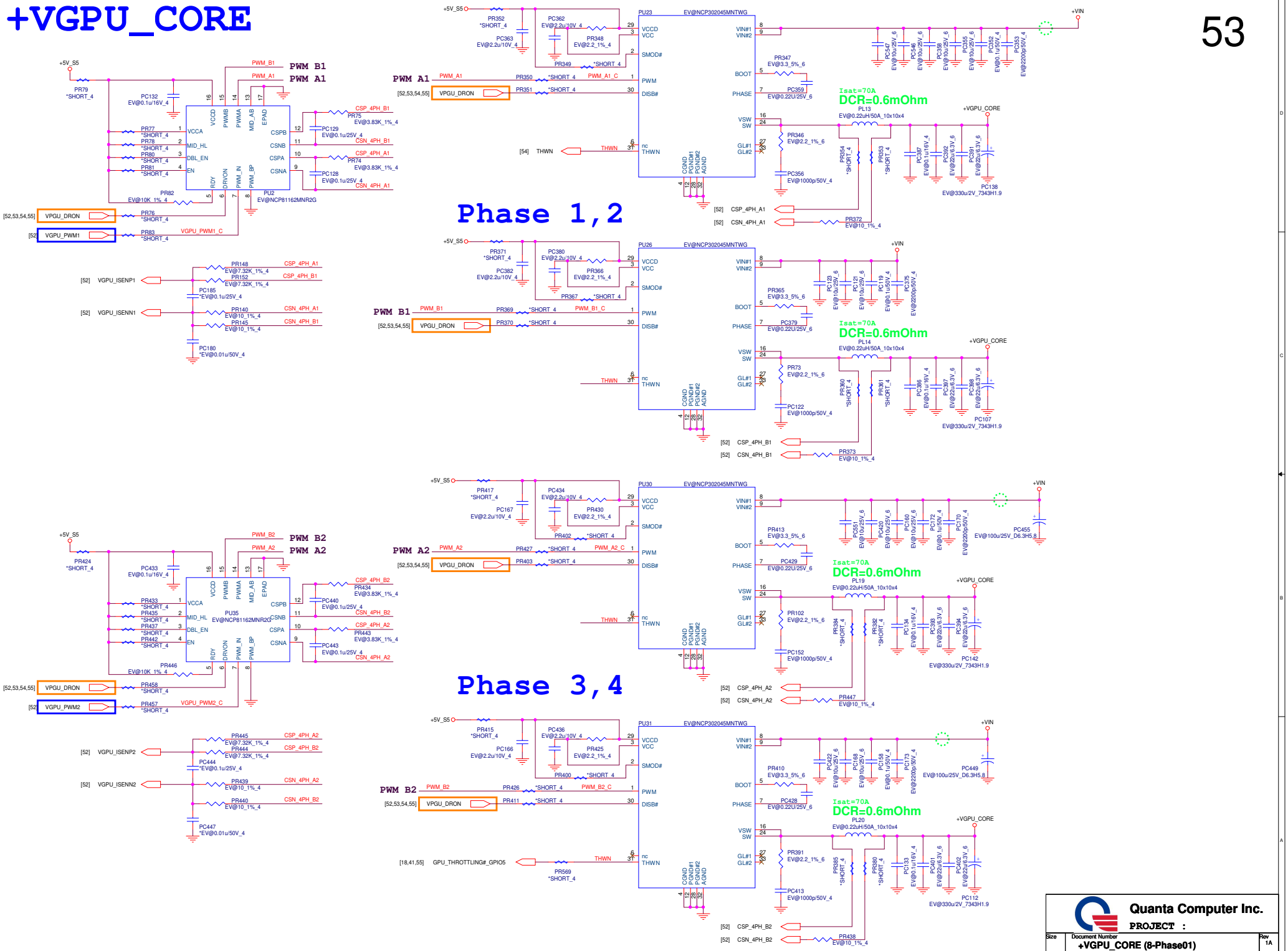
SVC	SVD	Boot Voltage
0	0	1.1V
0	1	1.0V
1	0	0.9V
1	1	0.8V

Quanta Computer Inc.
PROJECT :

Size	Document Number	Rev
	+VGPU VR IC (NCP81022MNTXG)	1A

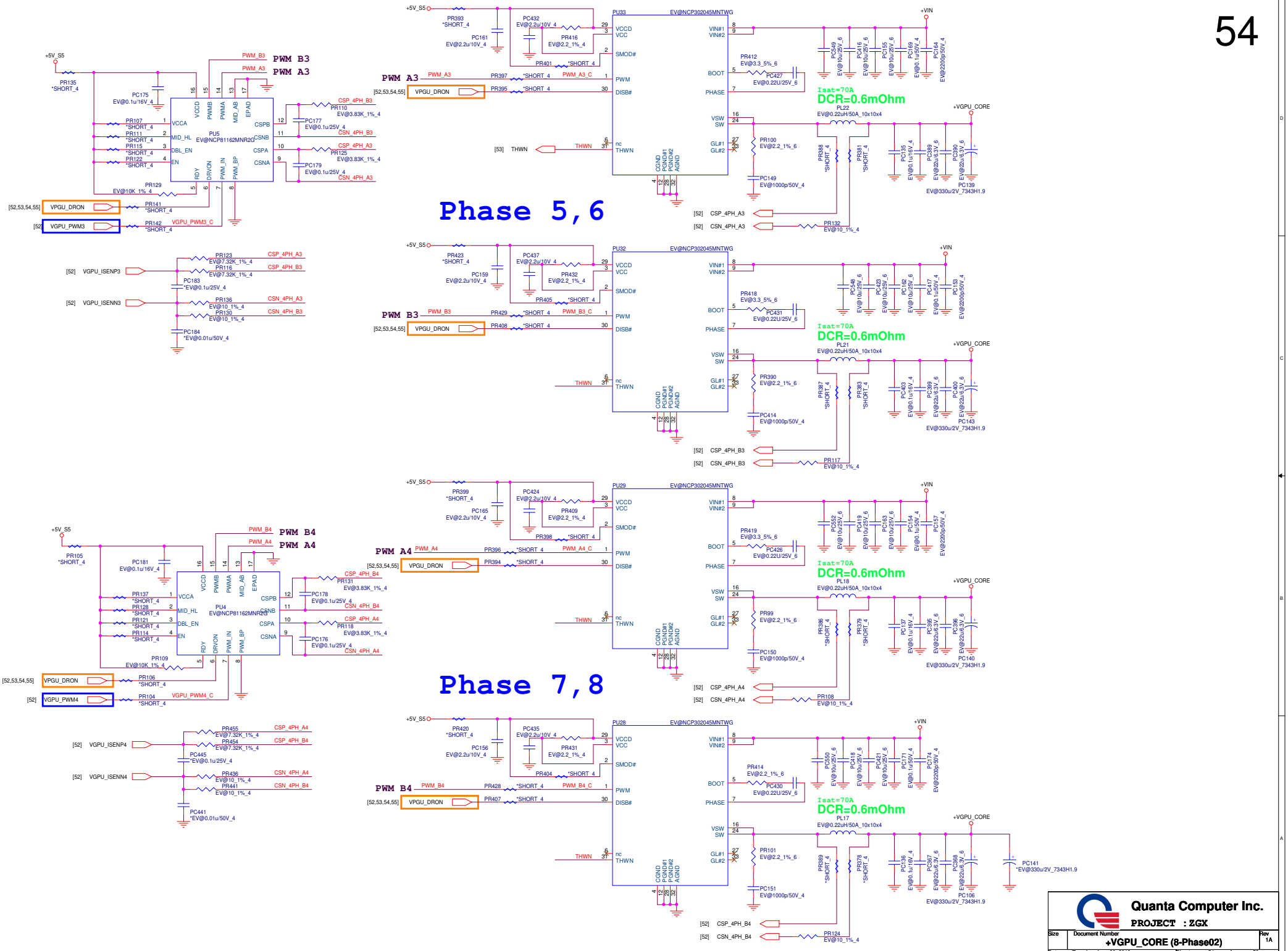
Date: Tuesday, June 26, 2018 Sheet 52 of 59

+VGPU_CORE



Quanta Computer Inc.
PROJECT :

Size	Document Number	Rev
	+VGPU_CORE (8-Phase01)	1A
Date: Tuesday, June 26, 2018	Sheet 53 of 59	



Quanta Computer Inc.			
PROJECT : ZGX			
Size	Document Number		Rev
	+VGPU_CORE (8-Phase02)		1A
Date: Tuesday, June 26, 2018		Sheet 54 of 59	

+VDD_GFX

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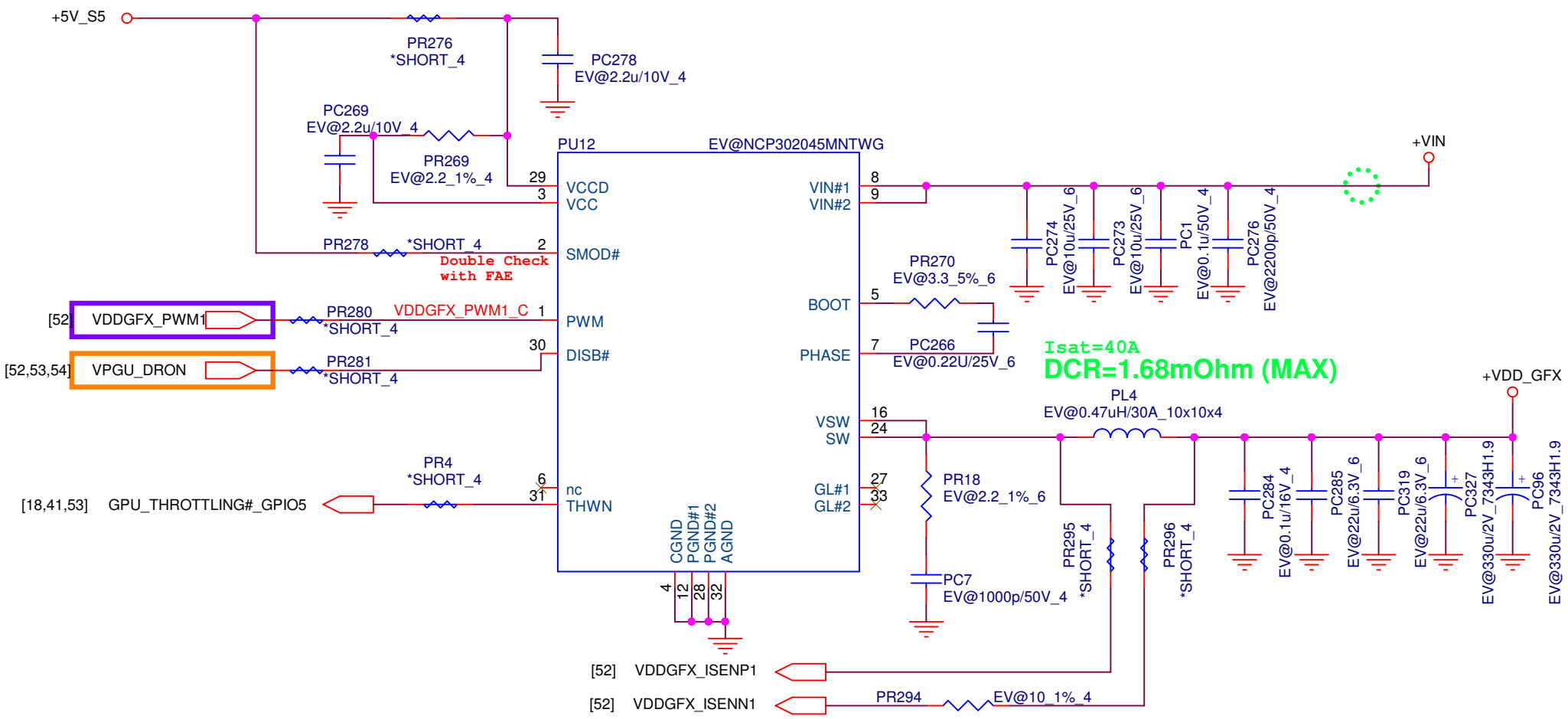
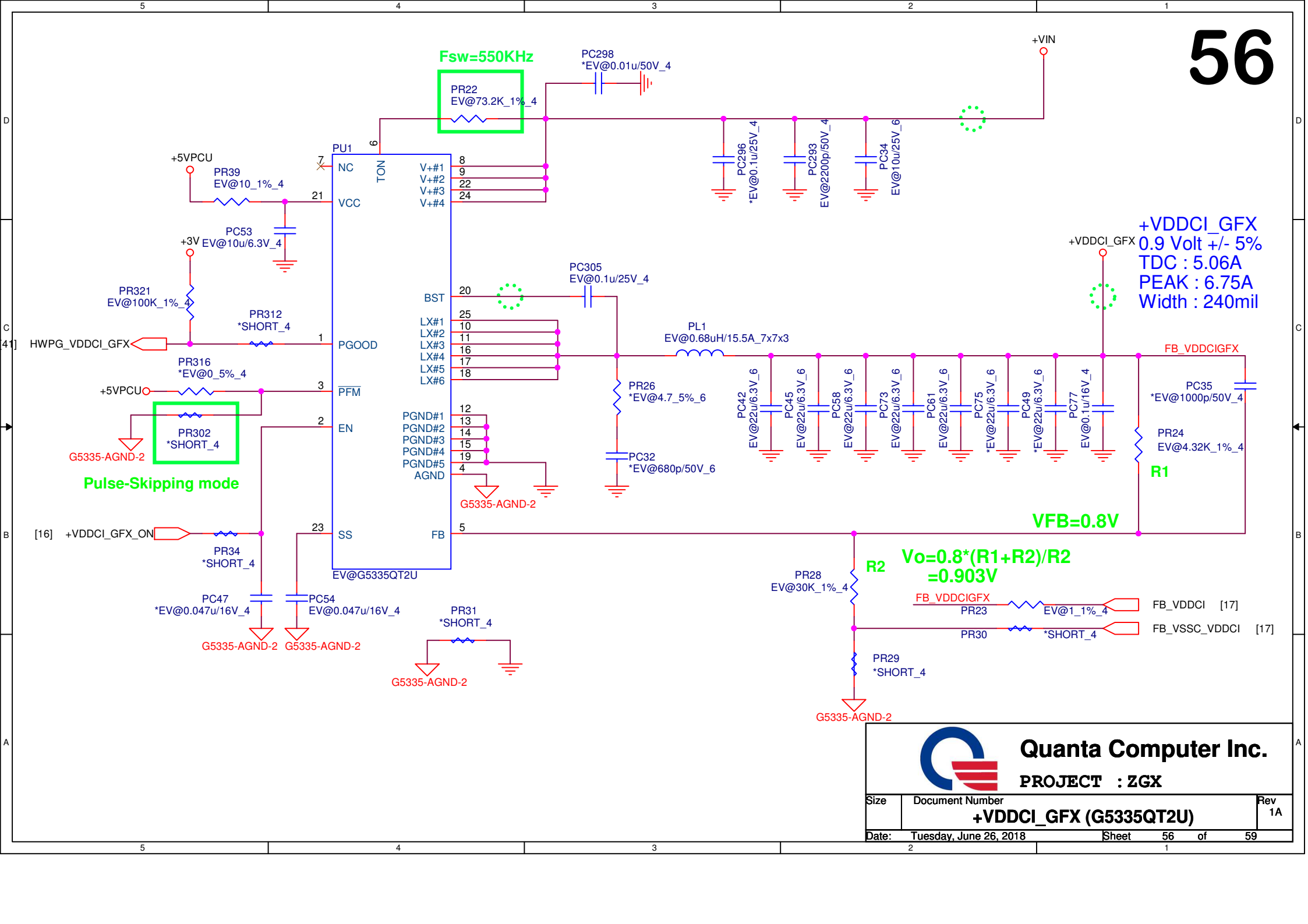


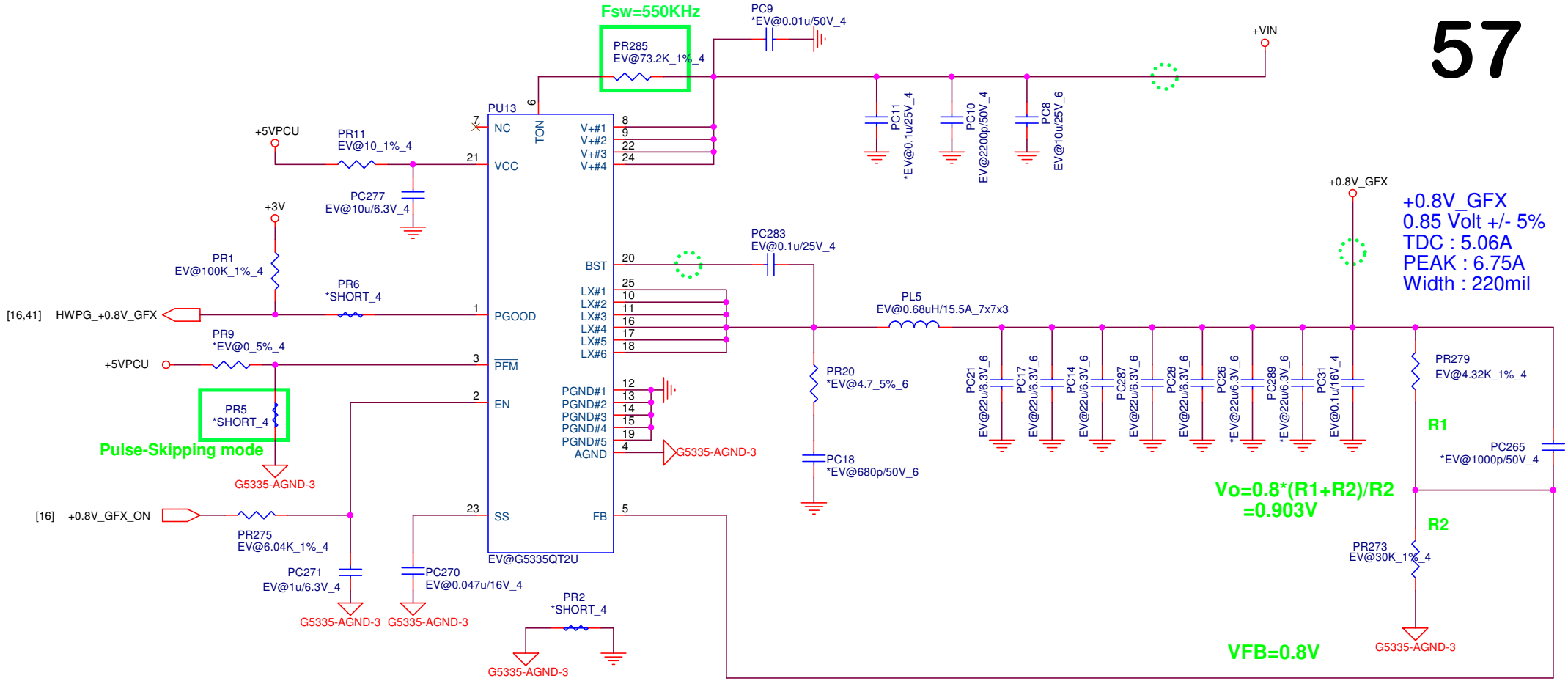
Quanta Computer Inc.

PROJECT :

Size	Document Number	Rev
	+VDD_GFX (1-Phase) NCP302045	1A
Date: Tuesday, June 26, 2018	Sheet 55 of 59	



Quanta Computer Inc.		
PROJECT : ZGX		
Size	Document Number: +VDDCI_GFX (G5335QT2U)	Rev: 1A
Date: Tuesday, June 26, 2018	Sheet 56 of 59	



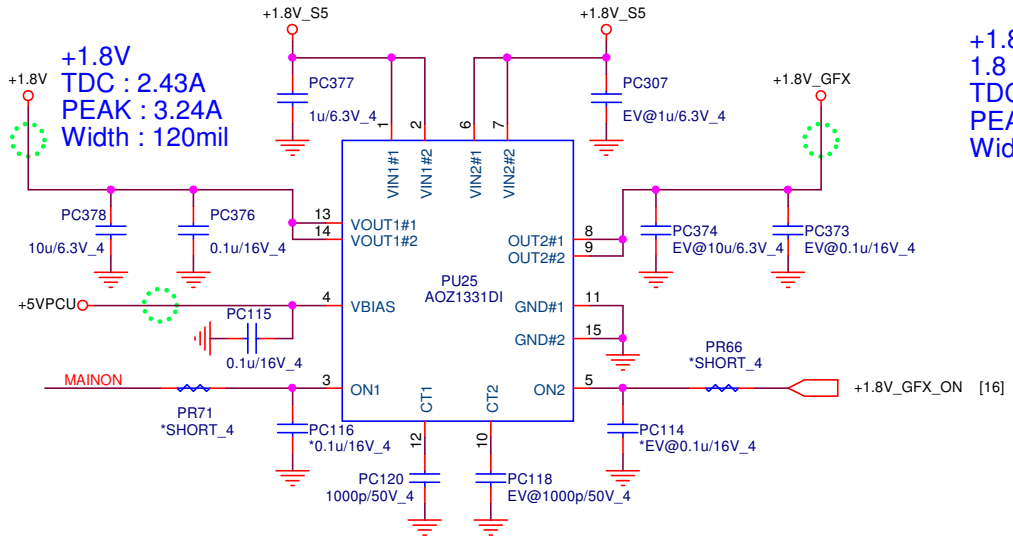
Quanta Computer Inc.

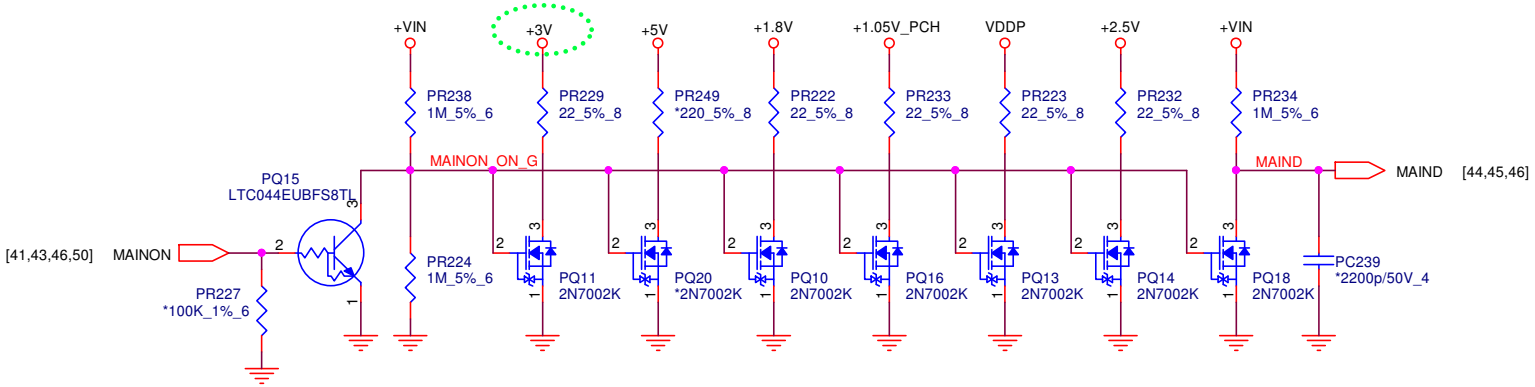
PROJECT : ZGX

Size	Document Number	Rev
	+0.8V_GFX (G5335QT2U)	1A
Date: Tuesday, June 26, 2018	Sheet 57 of 59	

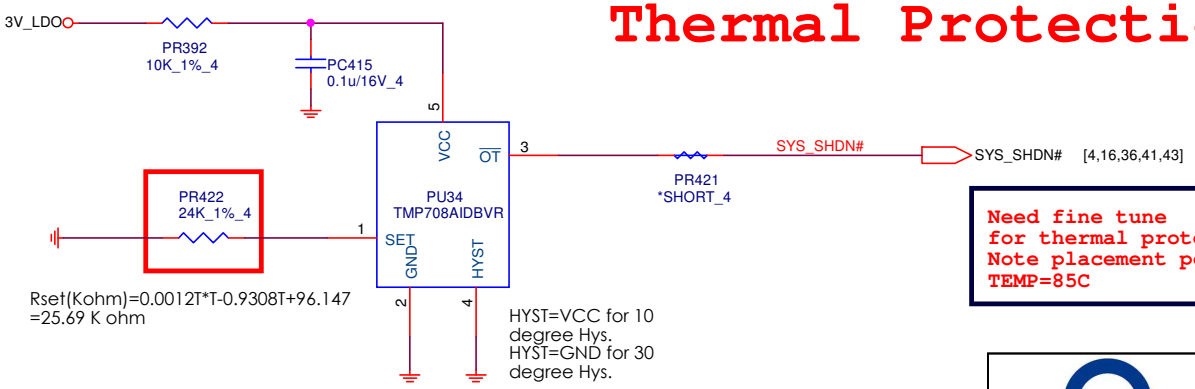
+1.8V
TDC : 2.43A
PEAK : 3.24A
Width : 120mil

+1.8V_GFX
1.8 Volt +/- 5%
TDC : 3.54A
PEAK : 4.73A
Width : 160mil





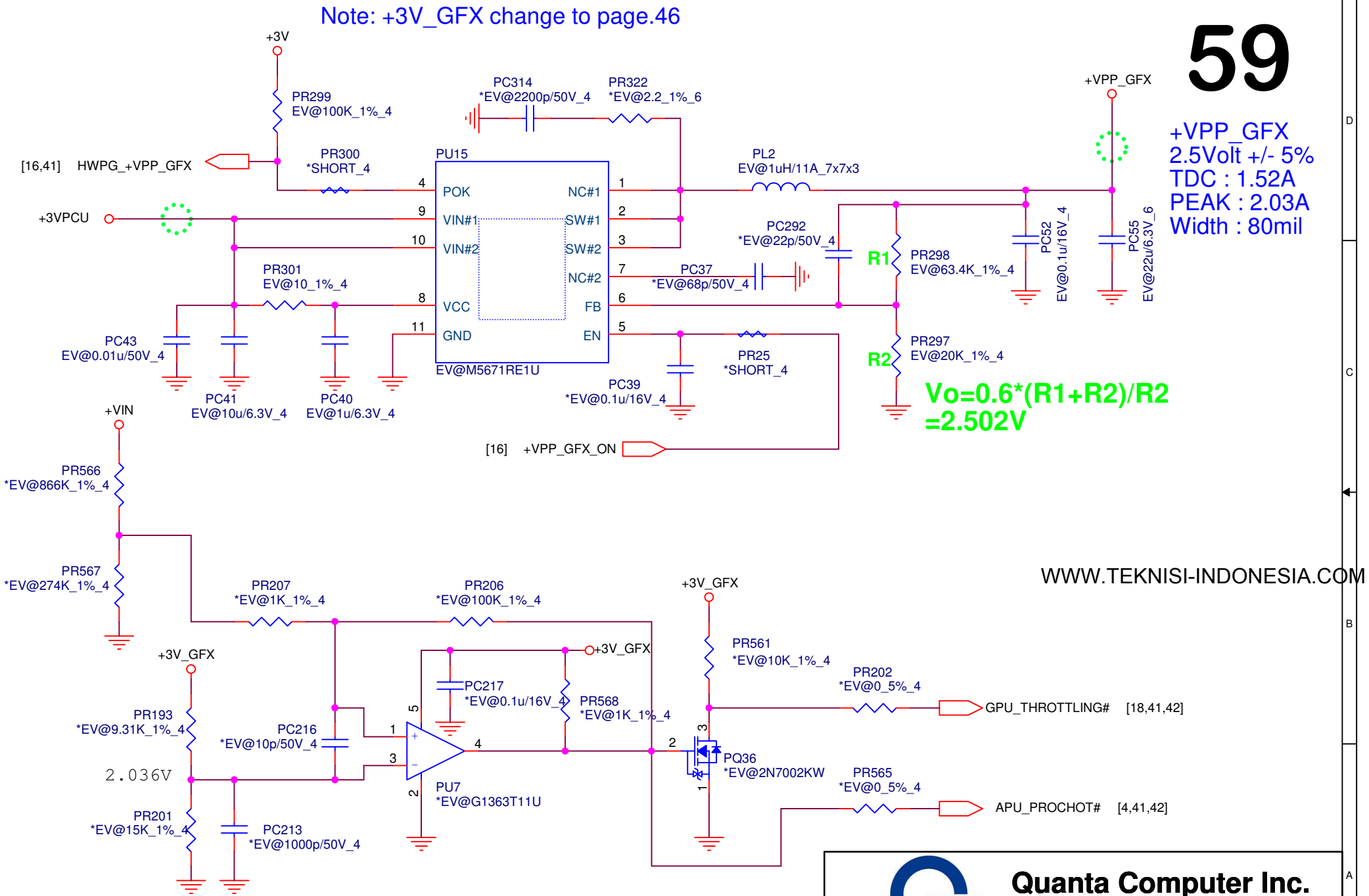
Thermal Protection



Need fine tune
for thermal protect point
Note placement position
TEMP=85C

Quanta Computer Inc.
PROJECT : ZGX

Size	Document Number	Rev
	+1.8V_GFX/Thermal	1A
Date: Tuesday, June 26, 2018	Sheet 58 of 59	


Note: +3V_GFX change to page.46
59
+VPP_GFX
2.5Volt +/- 5%
TDC : 1.52A
PEAK : 2.03A
Width : 80mil
+3V
PR299
EV@100K_1%_4
PC314
*EV@2200p/50V_4
PR322
*EV@2.2_1%_6
+VPP_GFX
[16,41] HWPG_+VPP_GFX
PR300
*SHORT_4
PU15
PL2
EV@1uH/11A_7x7x3
+3VPCU
POK
NC#1
VIN#1
SW#1
VIN#2
SW#2
NC#2
VCC
FB
GND
EN
EV@M5671RE1U
PC292
*EV@22p/50V_4
R1
PR298
EV@63.4K_1%_4
PC52
EV@0.1u/16V_4
PC55
EV@22u/6.3V_6
PR301
EV@10_1%_4
PC37
*EV@68p/50V_4
PC43
EV@0.01u/50V_4
PC41
EV@10u/6.3V_4
PC40
EV@1u/6.3V_4
PC39
*EV@0.1u/16V_4
PR25
*SHORT_4
R2
PR297
EV@20K_1%_4
Vo=0.6*(R1+R2)/R2
=2.502V
[16] +VPP_GFX_ON
+VIN
PR566
*EV@866K_1%_4
PR567
*EV@274K_1%_4
PR207
*EV@1K_1%_4
PR206
*EV@100K_1%_4
+3V_GFX
PR561
*EV@10K_1%_4
PR202
*EV@0_5%_4
GPU_THROTTLING# [18,41,42]
PC217
*EV@0.1u/16V_4
PR568
*EV@1K_1%_4
PR193
*EV@9.31K_1%_4
PC216
*EV@10p/50V_4
2.036V
PU7
*EV@G1363T11U
PQ36
*EV@2N7002KW
PR565
*EV@0_5%_4
APU_PROCHOT# [4,41,42]
PR201
*EV@15K_1%_4
PC213
*EV@1000p/50V_4
WWW.TEKNISI-INDONESIA.COM
Quanta Computer Inc.
PROJECT : ZGX
Size
Document Number
+VPP_GFX & PCC
Rev
1A
Date: Tuesday, June 26, 2018
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