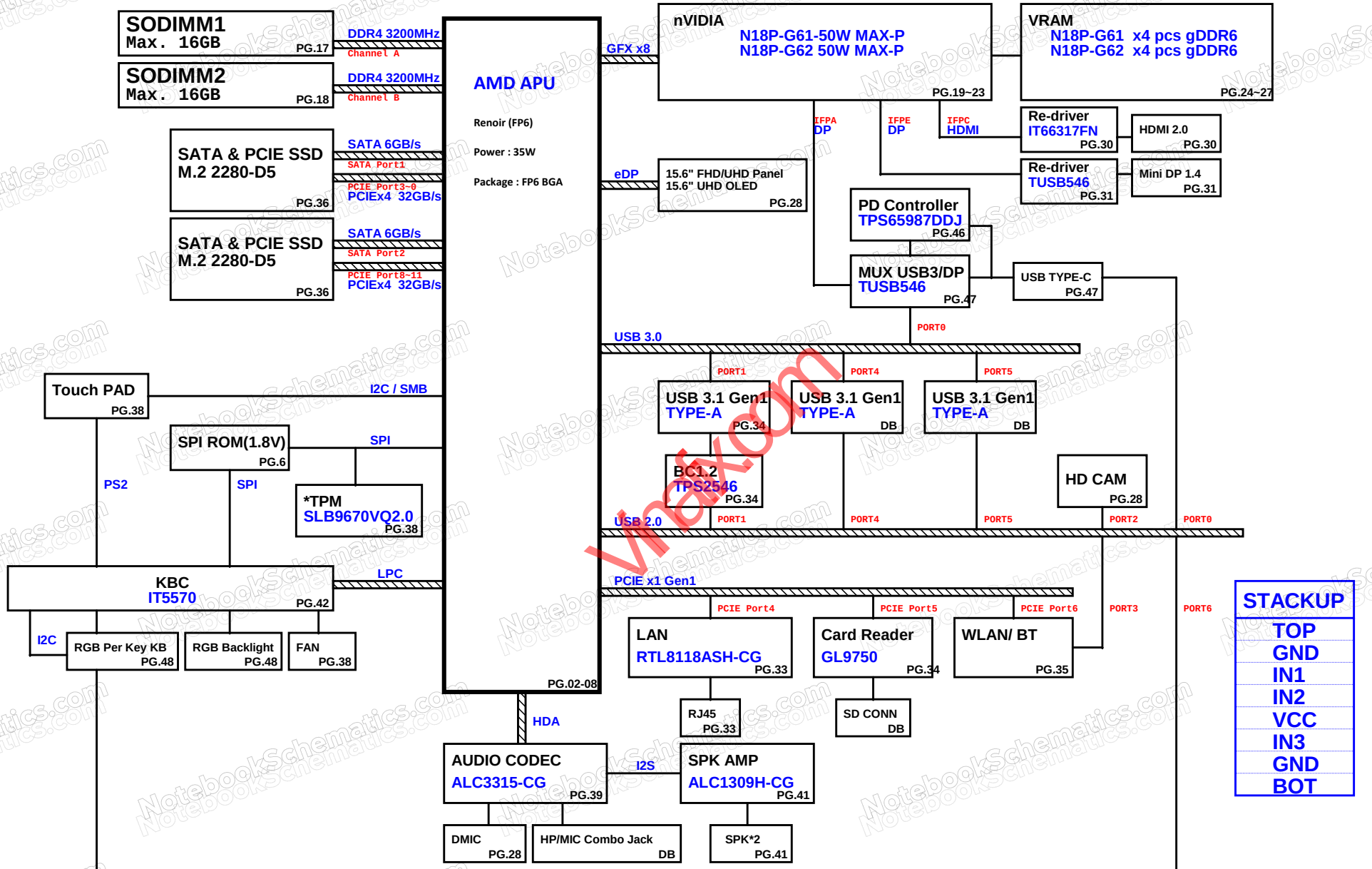
Valkyrie AMD Renoir & NV N18P G61/G62



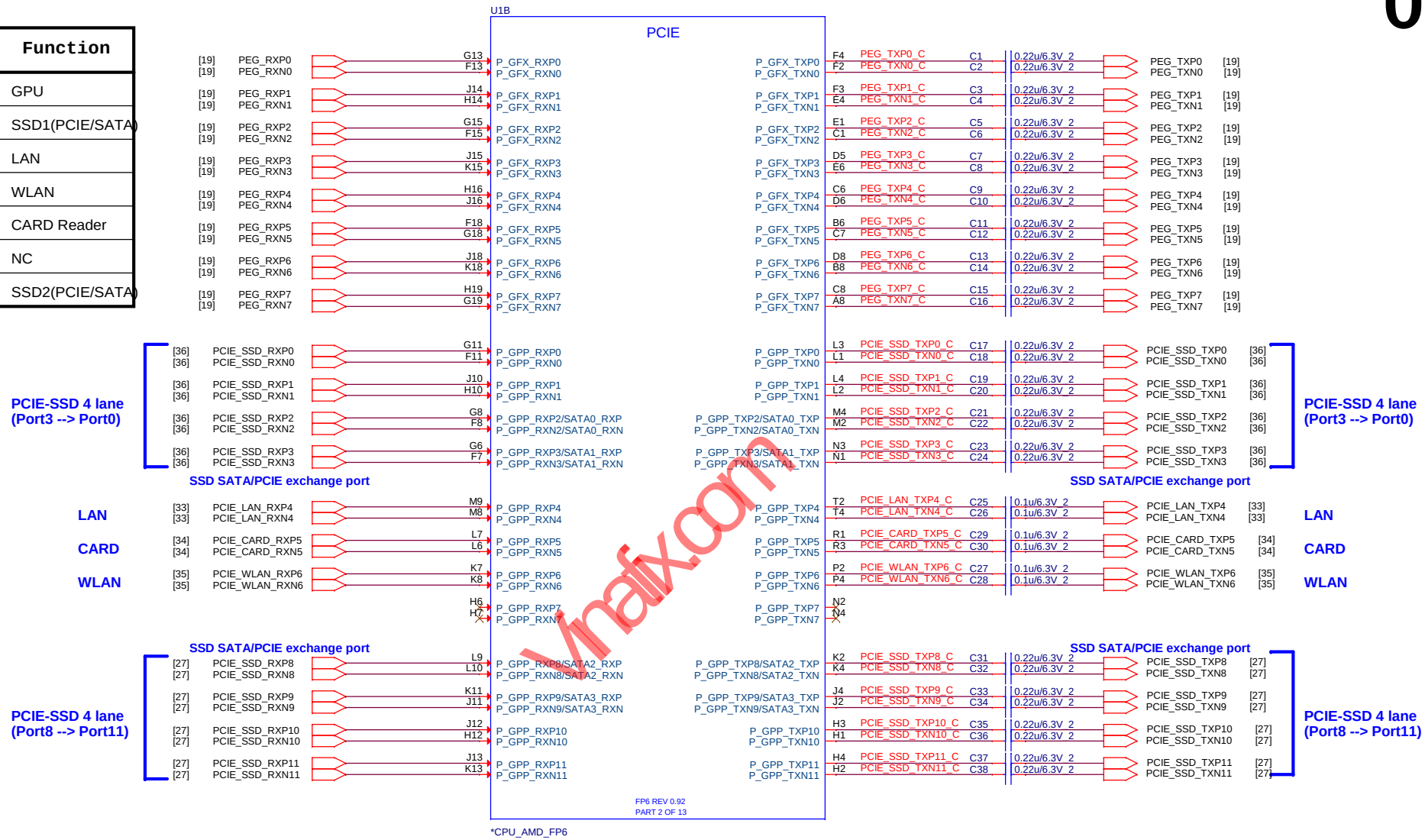
STACKUP
TOP
GND
IN1
IN2
VCC
IN3
GND
BOT

PROJECT : G3ED
Quanta Computer Inc.

Size	Document Number	Rev
Custom	Starmade Block Diagram	1A

Date: Tuesday, April 07, 2020 Sheet 1 of 106

PCIE Port	Function
GFX 0~8	GPU
PCIE 3~0	SSD1(PCIE/SATA)
PCIE 4	LAN
PCIE 5	WLAN
PCIE 6	CARD Reader
PCIE 7	NC
PCIE 8~11	SSD2(PCIE/SATA)

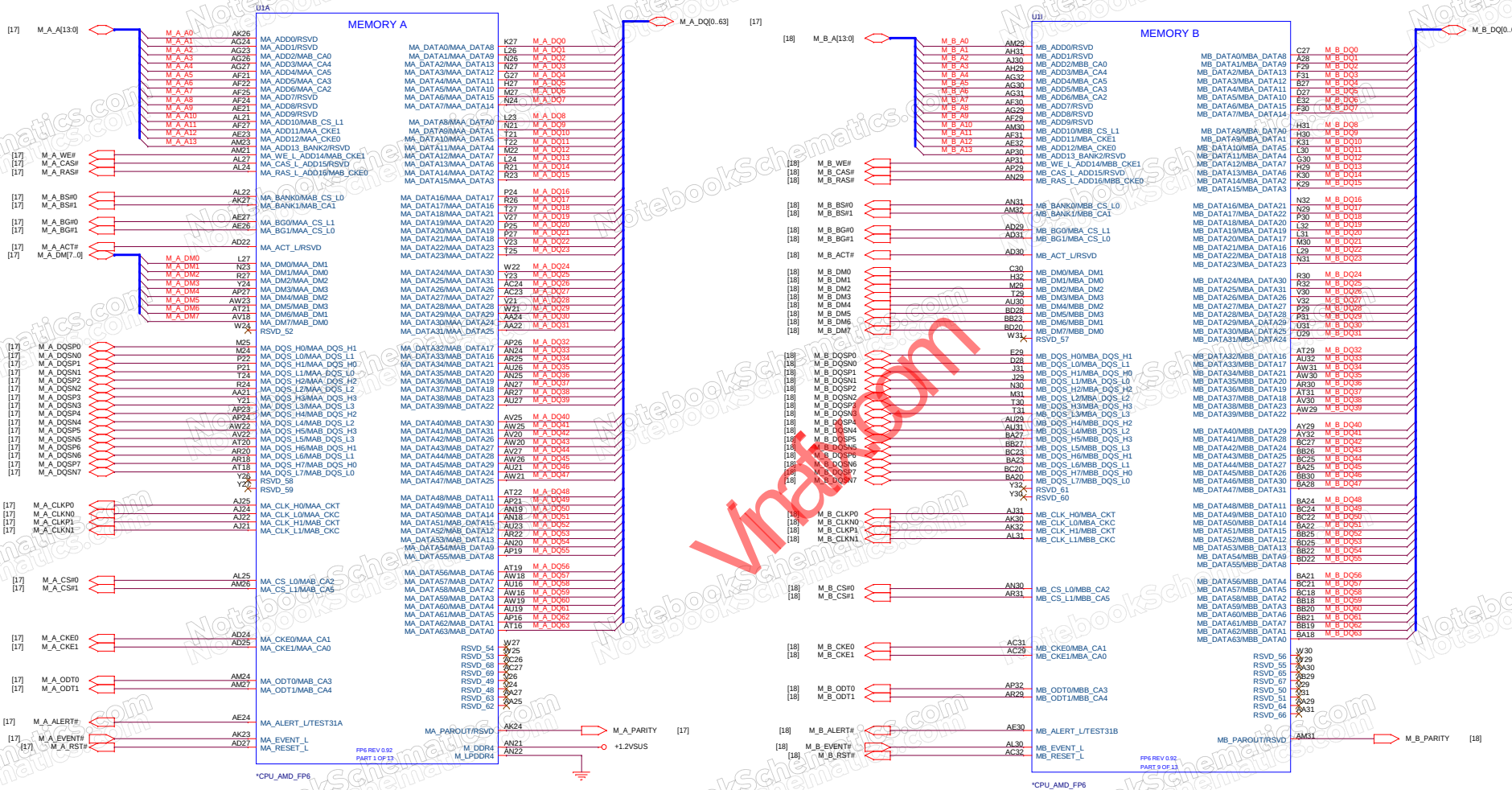


AMD APU	TOPBSQ PN	Quanta PN	Stage
R9-4900U 2.0G	NA	AJ00100UT00	DB

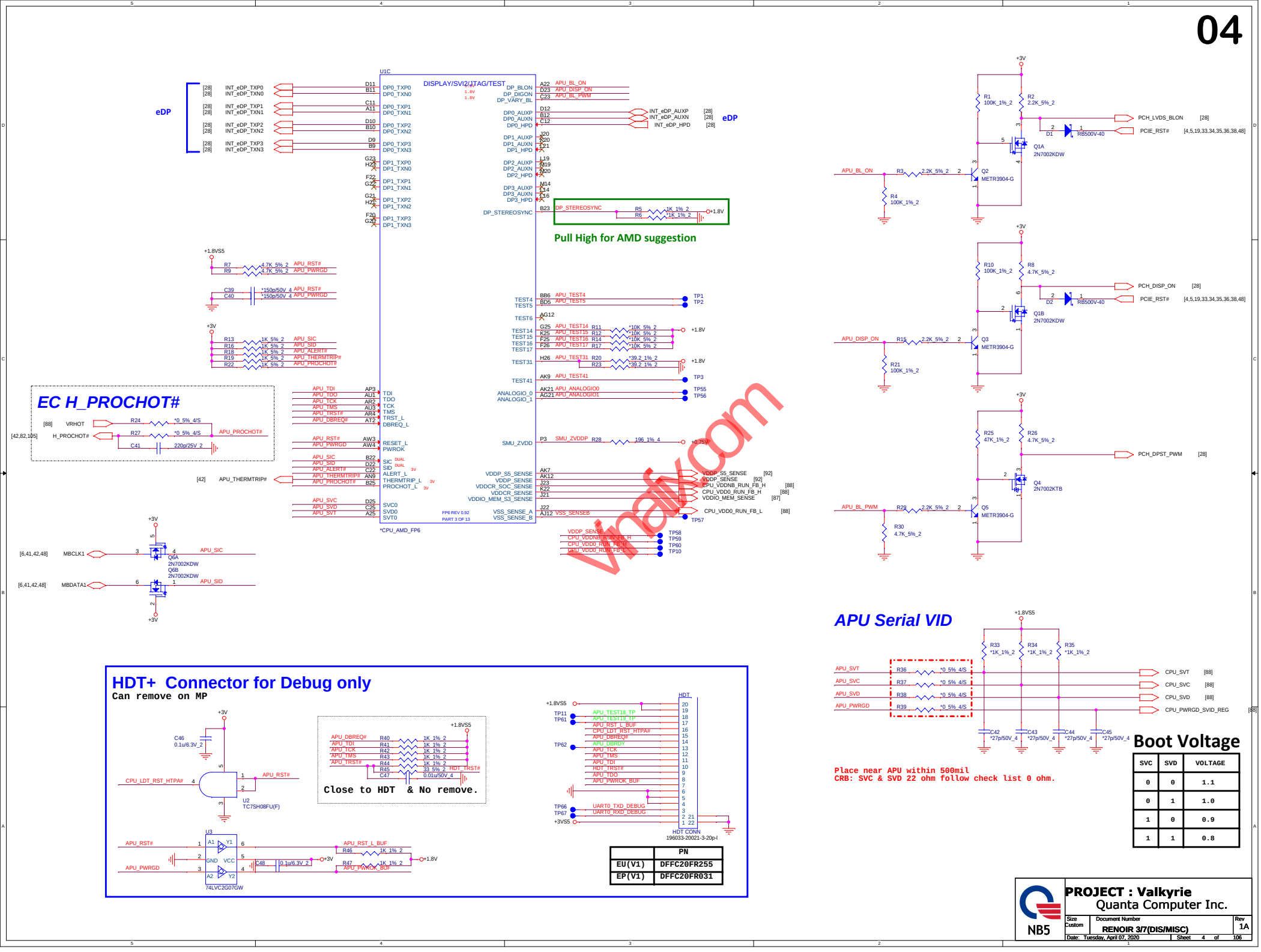
NB5

PROJECT : Valkyrie
Quanta Computer Inc.

Size	Document Number	Rev
Custom	RENOIR 1/7(PCIE)	1A
Date: Tuesday, April 07, 2020	Sheet 2 of 106	



NB5	PROJECT : Valkyrie Quanta Computer Inc.		
Size: Custom	Document Number: RENOIR 2/7(MEM)		Rev: 1A
Date: Tuesday, April 07, 2020	Sheet 3 of 106		



	PN
EU(V1)	DFFC20FR255
EP(V1)	DFFC20FR031

Boot Voltage

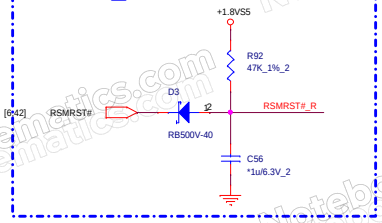
SVC	SVD	VOLTAGE
0	0	1.1
0	1	1.0
1	0	0.9
1	1	0.8

PROJECT : Valkyrie
Quanta Computer Inc.

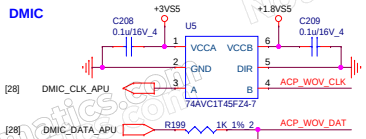
NB5

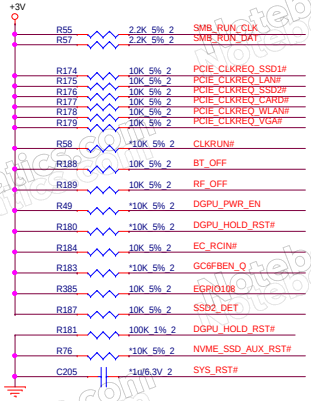
Size	Document Number	Rev
Custom	RENOIR 3/7(DIS/MISC)	1A
Date: Tuesday, April 07, 2020	Sheet 4 of 106	

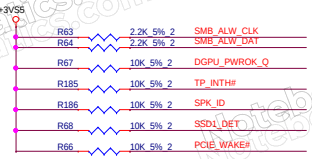
RSMRST_GATE# from EC



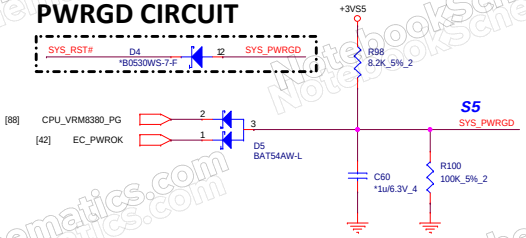
DMIC





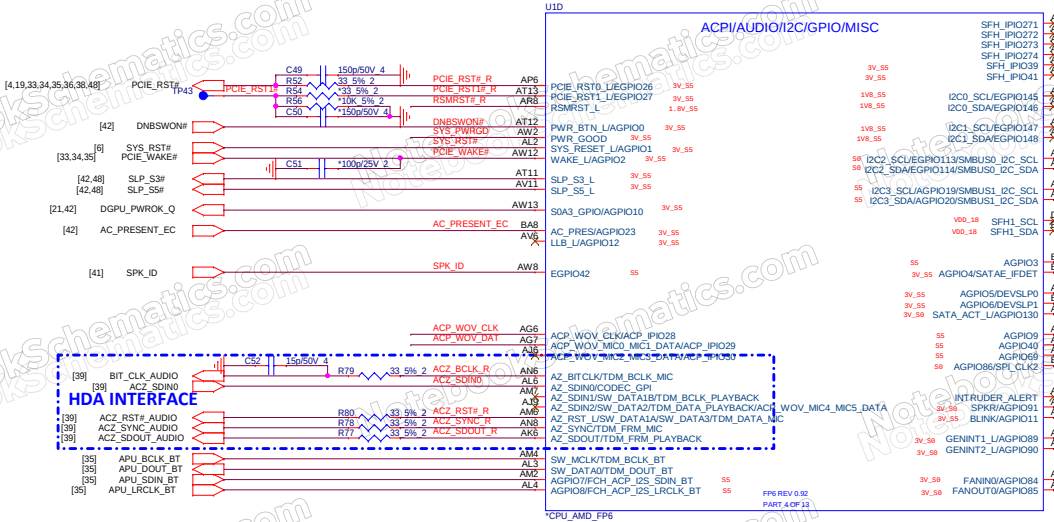


PWRGD CIRCUIT



ACPI/AUDIO/I2C/GPIO/MISC

U1D

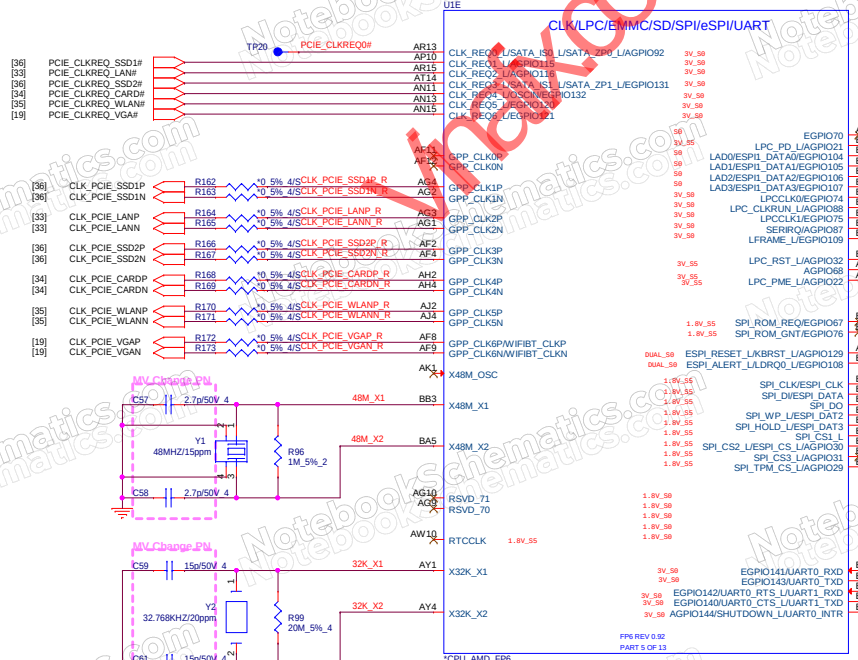


NVME_SSD_AUX_RST# & LPC_PD#

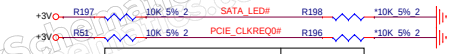
If unused, enable internal pull up or pull down by software.

CLK/LPC/EMMC/SD/SPI/eSPI/UART

U1E

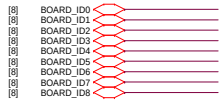


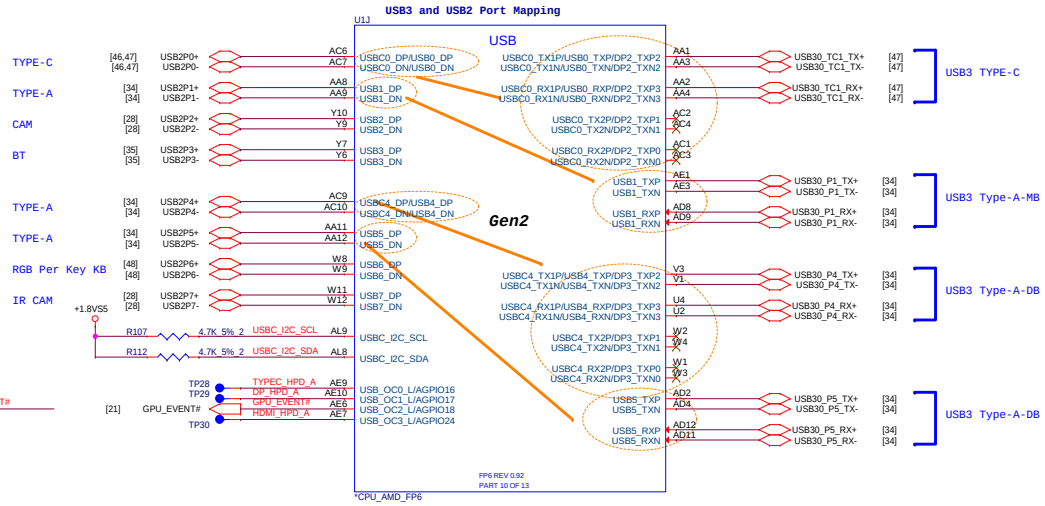
BOARD ID SETTING

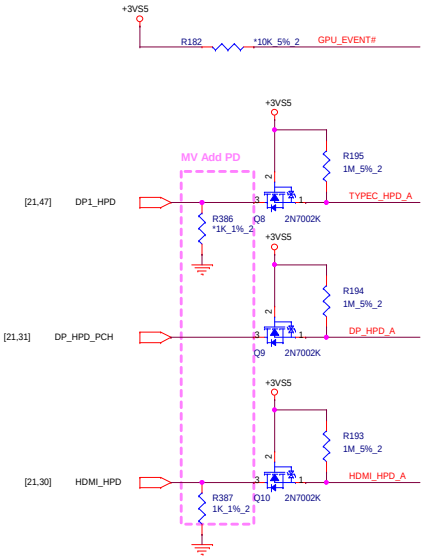


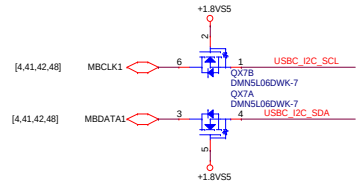
PCIE_CLKREQ0#	SATA_LED#	Definition
0	0	NEW GPU
0	1	N18E-G0
1	0	Reserved
1	1	N18P-G62

NB5	PROJECT : Valkyrie Quanta Computer Inc.	
Size: Custom	Document Number: RENOIR 4/7(GPIO/HDA/SPI)	Rev: 1A
Date: Tuesday, April 07, 2020	Sheet 5 of 106	





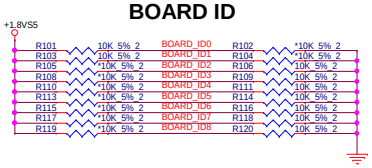




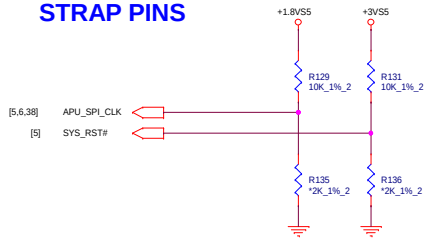
USB2 Port	Function
USB0	TYPE-C
USB1	TYPE-A
USB2	CAM
USB3	BT
USB4	TYPE-A
USB5	TYPE-A
USB6	RGB Per Key KB
USB7	IR CAM

USB3 Port	Function
USB0	TYPE-C
USB1	TYPE-A-MB
USB4	TYPE-A-DB
USB5	TYPE-A-DB

BOARD ID

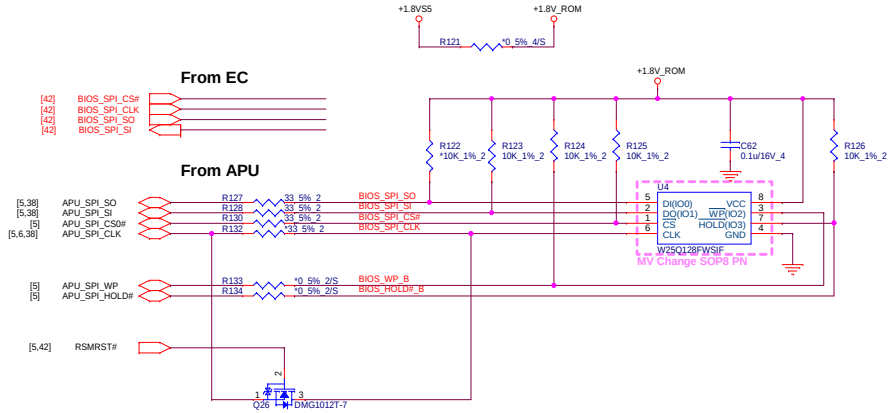


STRAP PINS

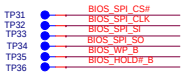


REQUIRED STRAPS

	APU_SPI_CLK	SYS_RST#
PULL HIGH	Use 48Mhz crystal clock and generate both internal and external clocks DEFAULT	Normal reset mode DEFAULT
PULL LOW	Use 100Mhz PCIE clock as reference clock and generate internal clocks only	Short reset mode



TP(TP2675) need place to the same layer



FLASH ROM

PV stuff SOP8 BIOS ROM only

Vender	Size	P/N (1.8V)
WND	16M	AKE5DZN0N01 W25Q128FWSIF
GGD	16M	AKE5DZN0Q02 GD25LQ128DSIGR
MAX	16M	AKE5DZN0Z00 MX25U12873FM2I-10G
Socket	DG008000011	

DB & SI stuff WSON8 SOCKETwith BIOS ROM

Vender	Size	P/N (1.8V)
WND	16M	AKE5DFNKN01 W25Q128FWPIF
GGD	16M	AKE5DZNKQ01 GD25LQ128DWIGR
MAX	16M	AKE5DFN0Z05 MX25U12835FZNI-10G
Socket	DG008000012	

NB5

PROJECT : Valkyrie
Quanta Computer Inc.

Size	Document Number	Rev
Custom	RENOIR 5/7(USB/STRAP)	1A

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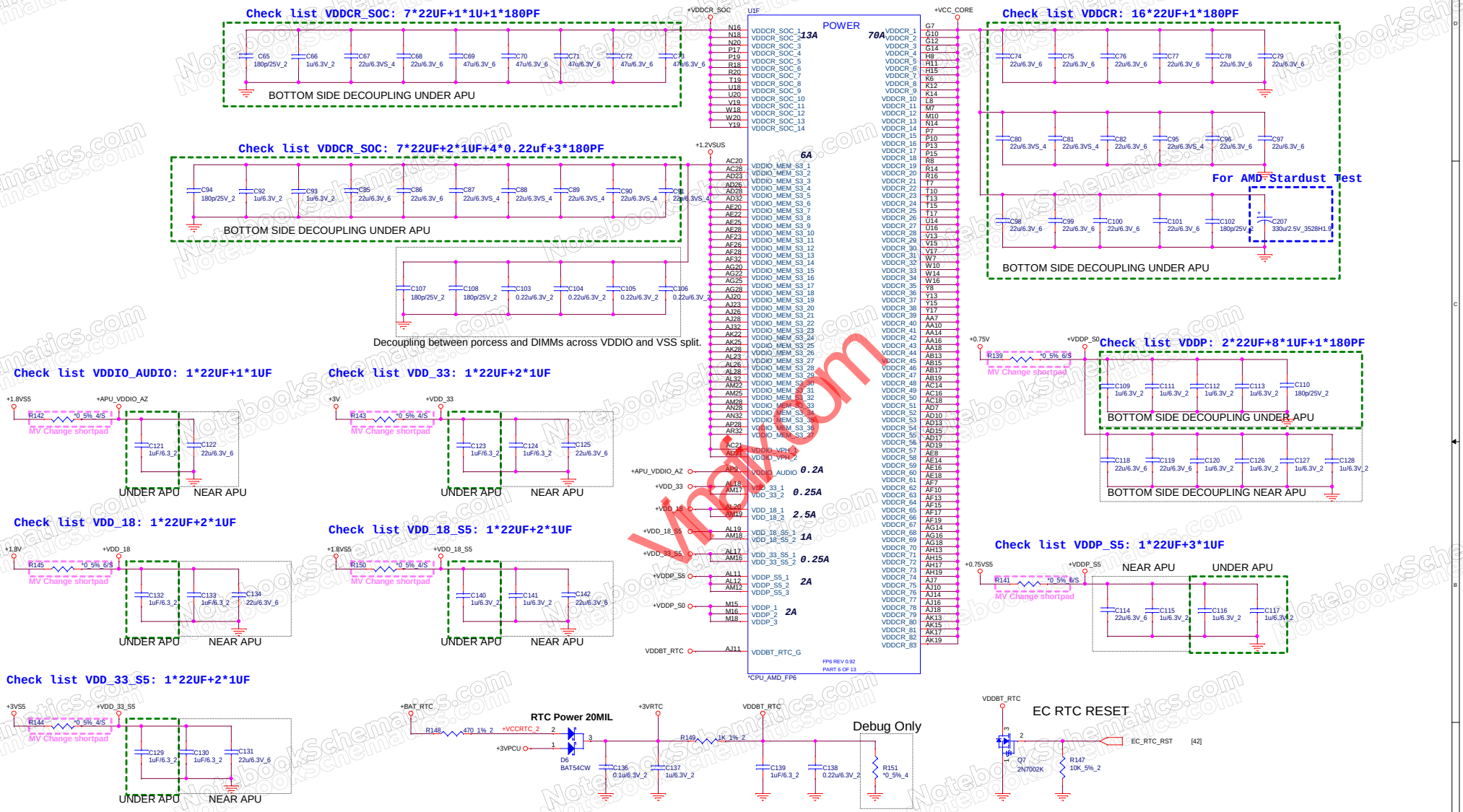
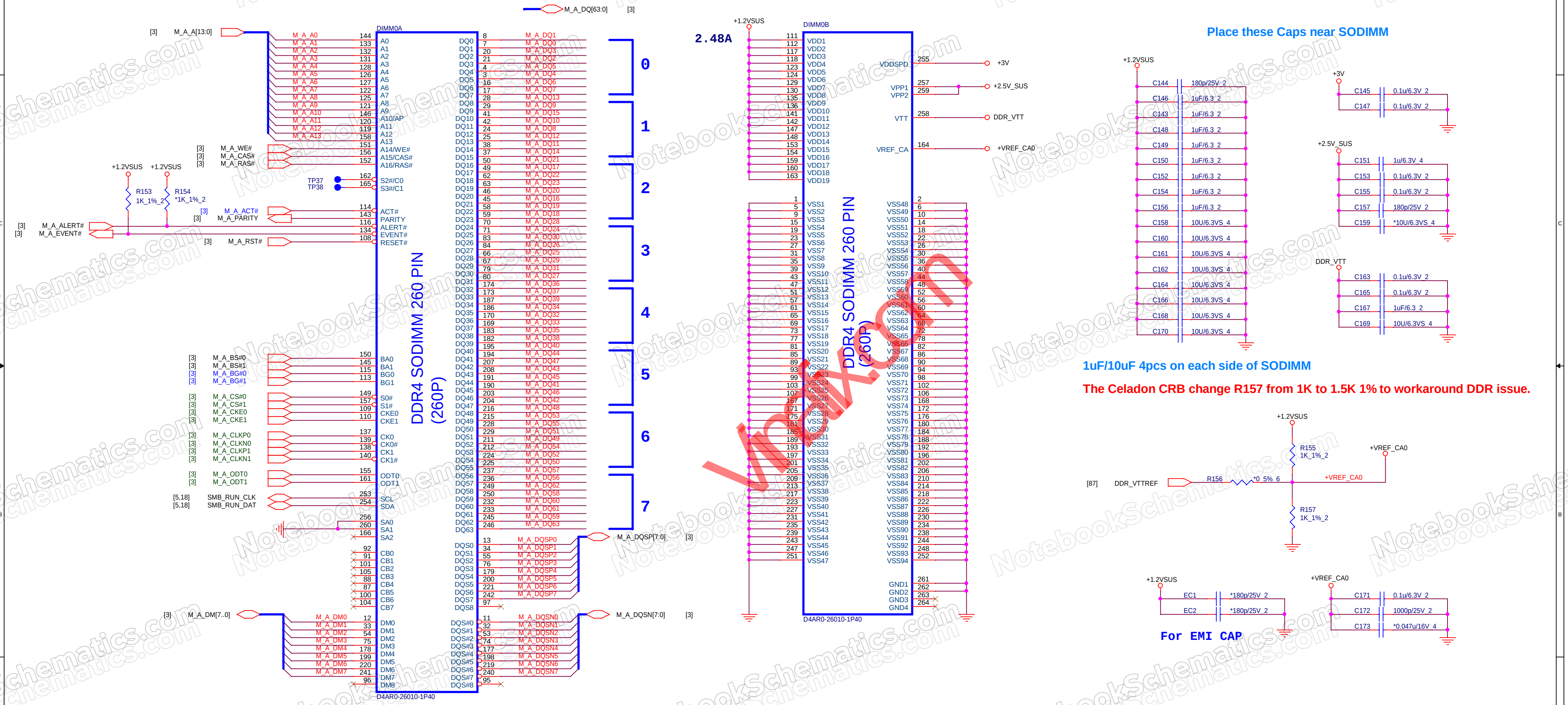


PROJECT : Valkyrie	
Quanta Computer Inc.	
NB5	Size: Custom
Document Number: RENOIR 6/7(POWER)	Rev: 1A
Date: Tuesday, April 07, 2020	Sheet 7 of 106

NB5	PROJECT : Valkyrie Quanta Computer Inc.	
	Size: Custom Document Number: RENOIR 7/7(GND/RSVD)	Rev: 1A
	Date: Tuesday, April 07, 2020	Sheet 8 of 106



PROJECT : Valkyrie

Quanta Computer Inc.

NB5

Size	Document Number	Rev
C	CHA0 DDR4 STD DIMM0	1A

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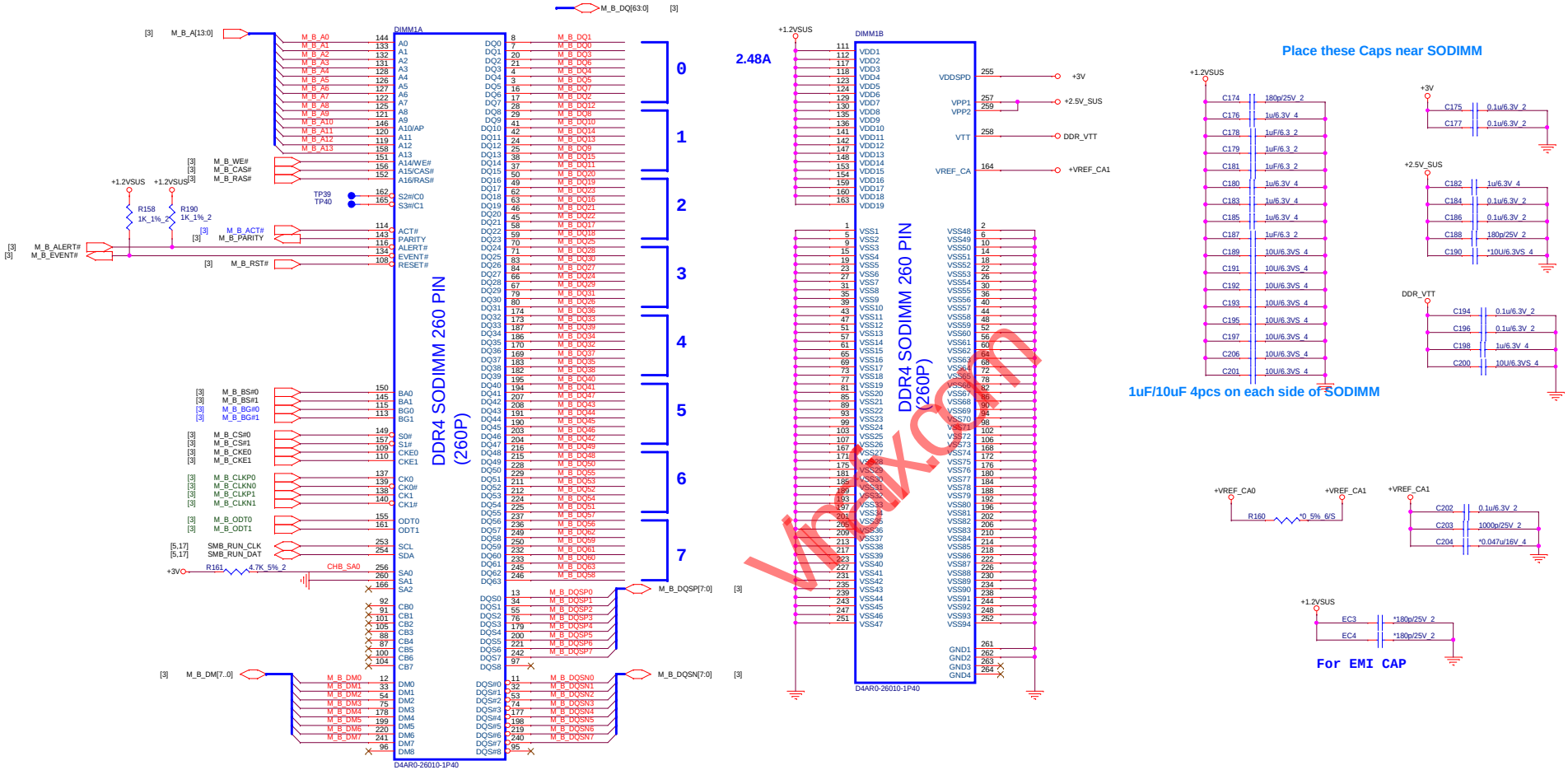
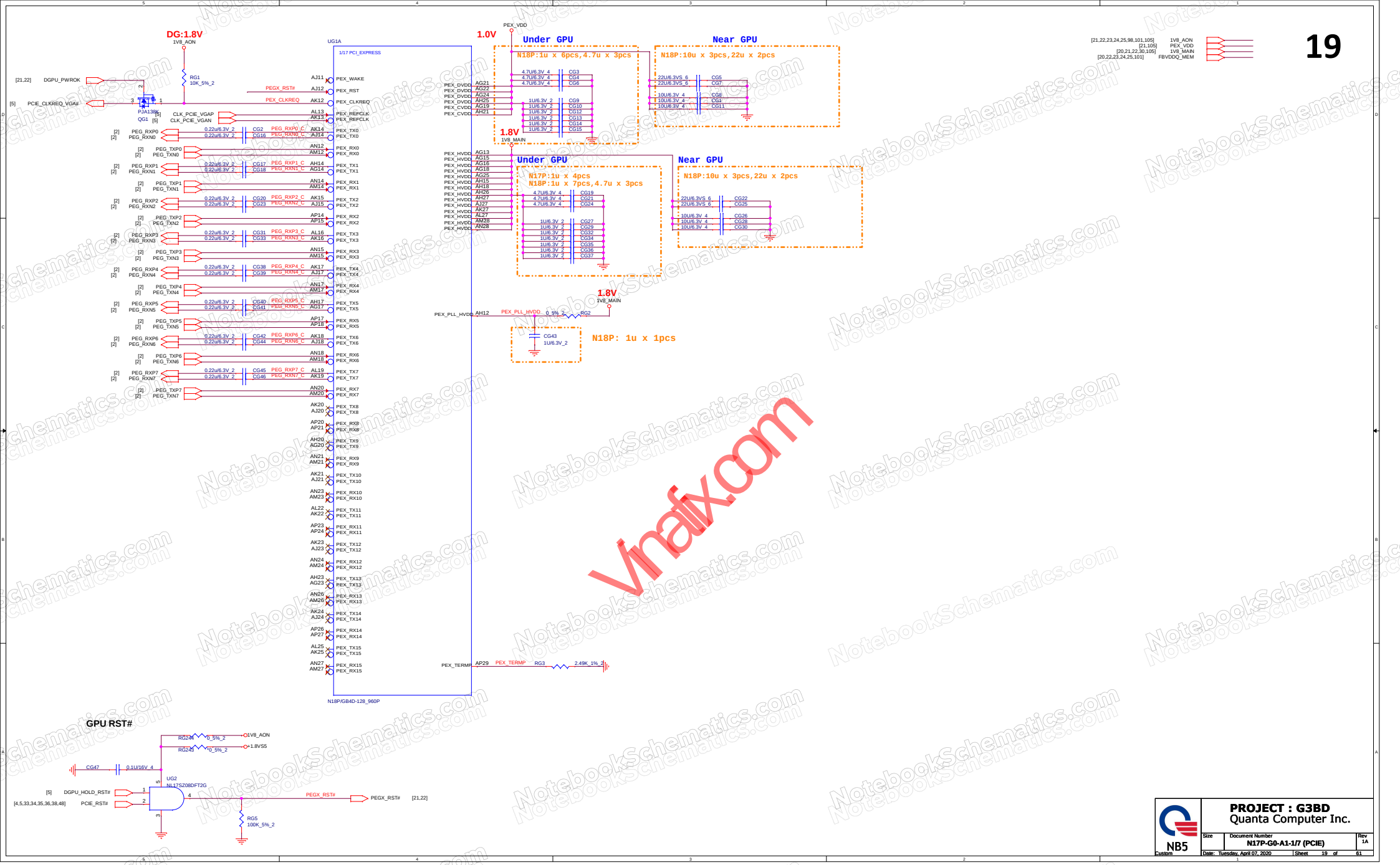


Place these Caps near SODIMM

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

For EMI CAP

NB5	PROJECT : Valkyrie Quanta Computer Inc.	
Size: C	Document Number: CHB DDR4 RVS DIMM1	Rev: 1A
Date: Tuesday, April 07, 2020	Sheet 18 of 106	


DG:1.8V
1V8_AON
UG1A
1/17 PCI_EXPRESS
1.0V
PEX_VDD
Under GPU
N18P:1u x 6pcs,4.7u x 3pcs
Near GPU
N18P:10u x 3pcs,22u x 2pcs
1.8V
1V8_MAIN
Under GPU
N17P:1u x 4pcs
N18P:1u x 7pcs,4.7u x 3pcs
Near GPU
N18P:10u x 3pcs,22u x 2pcs
1.8V
1V8_MAIN
N18P: 1u x 1pcs
GPU RST#
N18P/GB4D-128_960P
19
PROJECT : G3BD
Quanta Computer Inc.
NB5
Custom
Document Number
N17P-G0-A1-1/7 (PCIE)
Rev
1A
Date: Tuesday, April 07, 2020
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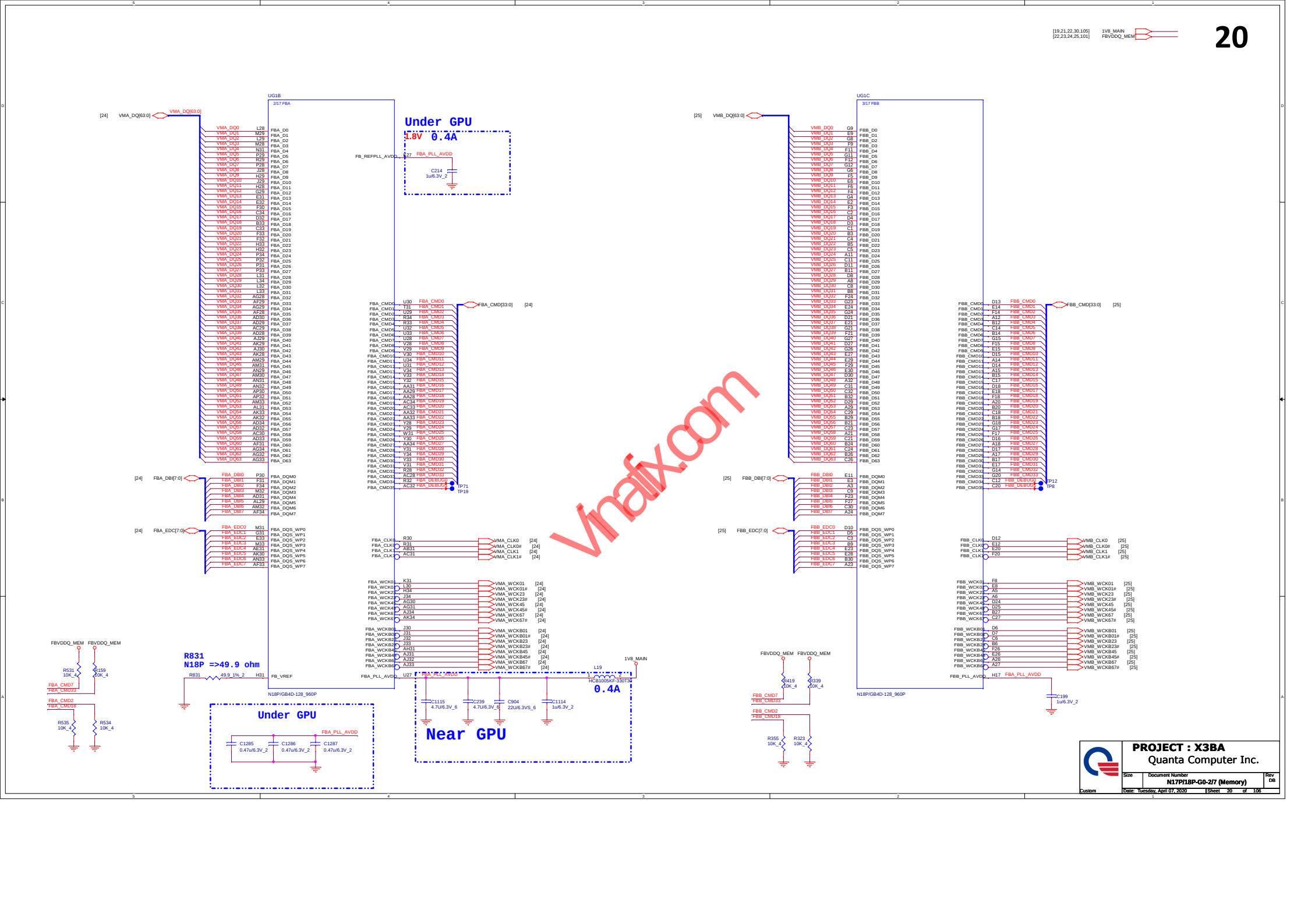
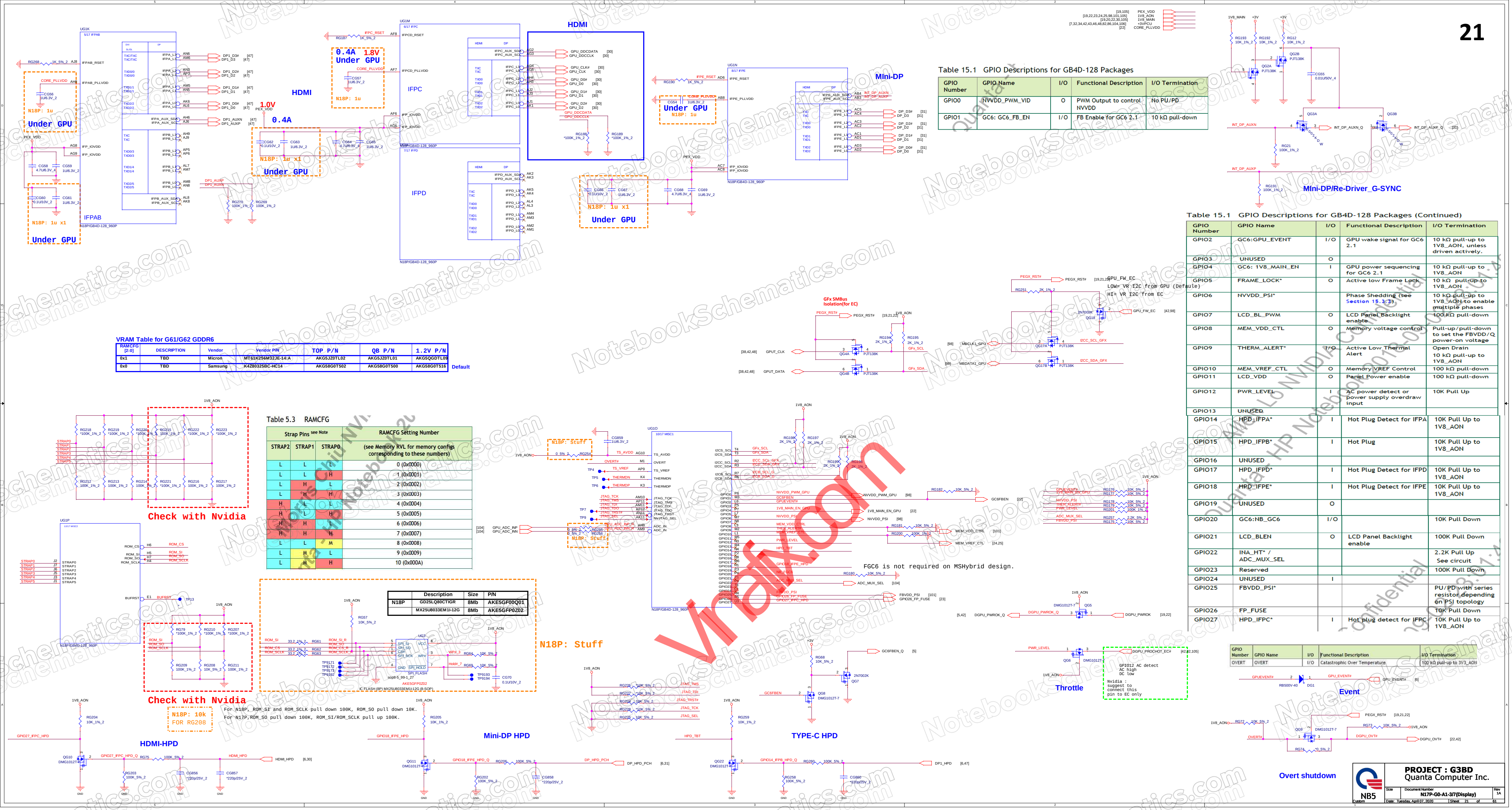

UG1B
2/17 FBA
UG1C
3/17 FBB
Under GPU
1.8V 0.4A
Near GPU
0.4A
R831
N18P =>49.9 ohm
Under GPU
N18P/GB4D-128_960P
PROJECT : X3BA
Quanta Computer Inc.
N17P/P18P-G0-2/7 (Memory)
Date: Tuesday, April 07, 2020
Sheet 20 of 106
Vnafix.com



VRAM Table for G61/G62 GDDR6

RAMCFG [2:0]	DESCRIPTION	Vendor	Vendor P/N	TOP P/N	QB P/N	1.2V P/N
0x1	TBD	Micron	MT61K256M32JE-14:A	AKG5JZ0TL02	AKG5JZ0TL01	AKG5QGDTL09
0x0	TBD	Samsung	K4Z80325BC-HC14	AKG58G0T502	AKG58G0T500	AKG58G0T516

Default

Table 5.3 RAMCFG

Strap Pins see Note			RAMCFG Setting Number
STRAP2	STRAP1	STRAP0	(see Memory RVL for memory configs corresponding to these numbers)
L	L	L	0 (0x0000)
L	L	H	1 (0x0001)
L	H	L	2 (0x0002)
L	H	H	3 (0x0003)
H	L	L	4 (0x0004)
H	L	H	5 (0x0005)
H	H	L	6 (0x0006)
H	H	H	7 (0x0007)
L	L	M	8 (0x0008)
L	M	L	9 (0x0009)
L	M	H	10 (0x000A)

	Description	Size	P/N
N18P	GD25LQ80CTIGR	8Mb	AKE5GF00Q01
	MX25U8033EM1I-12G	8Mb	AKE5GFP0Z02

Table 15.1 GPIO Descriptions for GB4D-128 Packages

GPIO Number	GPIO Name	I/O	Functional Description	I/O Termination
GPIO0	NVVDD_PWM_VID	O	PWM Output to control NVVDD	No PU/PD
GPIO1	GC6: GC6_FB_EN	I/O	FB Enable for GC6 2.1	10 kΩ pull-down

Table 15.1 GPIO Descriptions for GB4D-128 Packages (Continued)

GPIO Number	GPIO Name	I/O	Functional Description	I/O Termination
GPIO2	GC6:GPU_EVENT	I/O	GPU wake signal for GC6 2.1	10 kΩ pull-up to 1V8_AON, unless driven actively.
GPIO3	UNUSED	O		
GPIO4	GC6: 1V8_MAIN_EN	I	GPU power sequencing for GC6 2.1	10 kΩ pull-up to 1V8_AON
GPIO5	FRAME_LOCK*	O	Active low Frame Lock	10 kΩ pull-up to 1V8_AON
GPIO6	NVVDD_PSI*		Phase Shedding (see Section 15.3.3)	10 kΩ pull-up to 1V8_AON to enable multiple phases
GPIO7	LCD_BL_PWM	O	LCD Panel Backlight enable	100 kΩ pull-down
GPIO8	MEM_VDD_CTL	O	Memory voltage control	Pull-up/pull-down to set the FBVDD/Q power-on voltage
GPIO9	THERM_ALERT*	I/O	Active Low Thermal Alert	Open Drain 10 kΩ pull-up to 1V8_AON
GPIO10	MEM_VREF_CTL	O	Memory VREF Control	100 kΩ pull-down
GPIO11	LCD_VDD	O	Panel Power enable	100 kΩ pull-down
GPIO12	PWR_LEVEL	I	AC power detect or power supply overdraw input	10K Pull Up
GPIO13	UNUSED			
GPIO14	HPD_IFPA*	I	Hot Plug Detect for IFPA	10K Pull Up to 1V8_AON
GPIO15	HPD_IFPB*	I	Hot Plug	10K Pull Up to 1V8_AON
GPIO16	UNUSED			
GPIO17	HPD_IFPD*	I	Hot Plug Detect for IFPD	10K Pull Up to 1V8_AON
GPIO18	HPD_IFPE*	I	Hot Plug Detect for IFPE	10K Pull Up to 1V8_AON
GPIO19	UNUSED	O		
GPIO20	GC6:NB_GC6	I/O		10K Pull Down
GPIO21	LCD_BLEN	O	LCD Panel Backlight enable	100K Pull Down
GPIO22	INA_HT* / ADC_MUX_SEL			2.2K Pull Up See circuit
GPIO23	Reserved			100K Pull Down
GPIO24	UNUSED	I		
GPIO25	FBVDD_PSI*			PU/PD with series resistor depending on PSI topology
GPIO26	FP_FUSE			10K Pull Down
GPIO27	HPD_IFPC*	I	Hot plug detect for IFPC	10K Pull Up to 1V8_AON

GPIO Number	GPIO Name	I/O	Functional Description	I/O Termination
OVERT	OVERT	I/O	Catastrophic Over Temperature	100 kΩ pull-up to 3V3_AON

PROJECT : G3BD
Quanta Computer Inc.

NB5

Size	Document Number	Rev
Custom	N17P-G0-A1-3/7(Display)	1A

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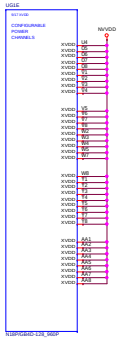
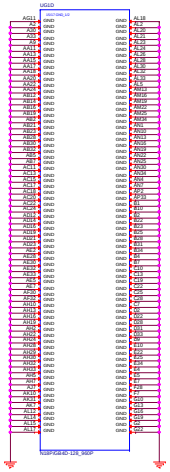
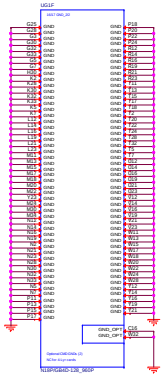
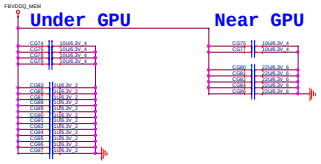




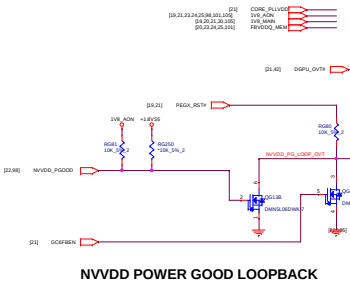


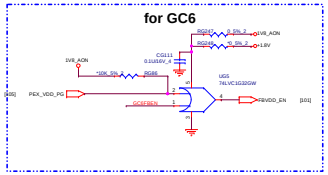


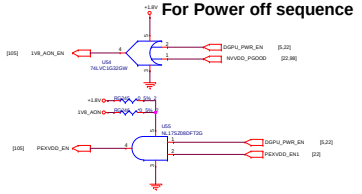
Note:

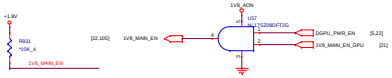
BOTH GP107 AND TU117-G5 NEED NC AF30,AF32,AK31,AM34,E34,H30,M30,M34, A30,A9,B2,B23,D22,D28,D9,E4

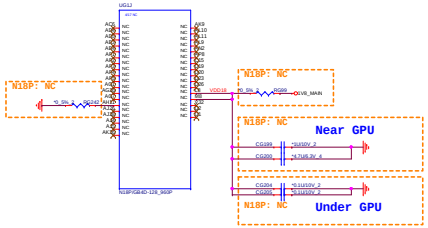
If N18P only, connect these pin to GND

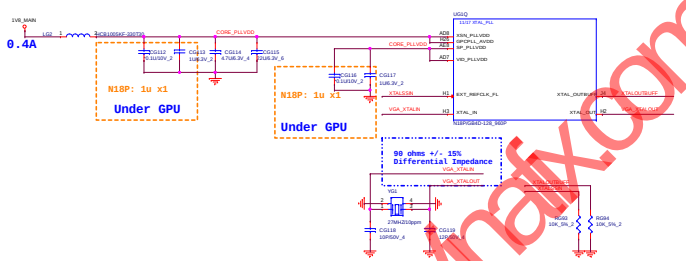






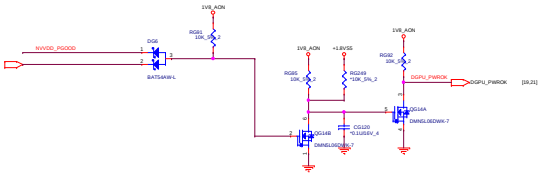




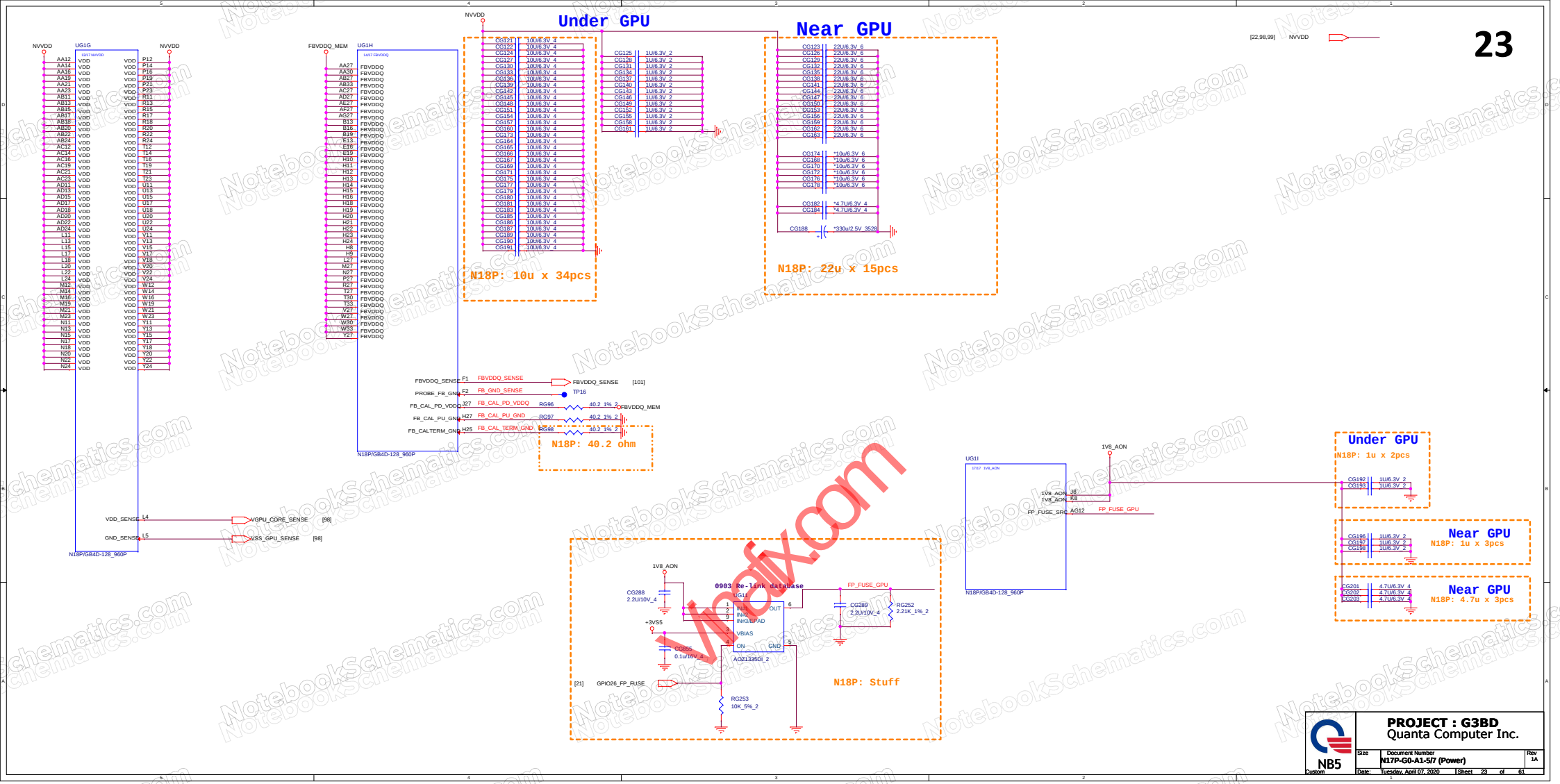


	GC6_1V8_MAIN_EN	GC6FBEN	NB_FGC6	1V8_AON	1V8_MAIN	NVVDD	PEX_VDD	FBVDDQ
POWER ON	1	0	0	ON	ON	ON	ON	ON
GC6	0	1	0	ON	OFF	OFF	OFF	ON
FGC6	0	1	1	ON	ON	OFF	ON	ON

GPU All power good



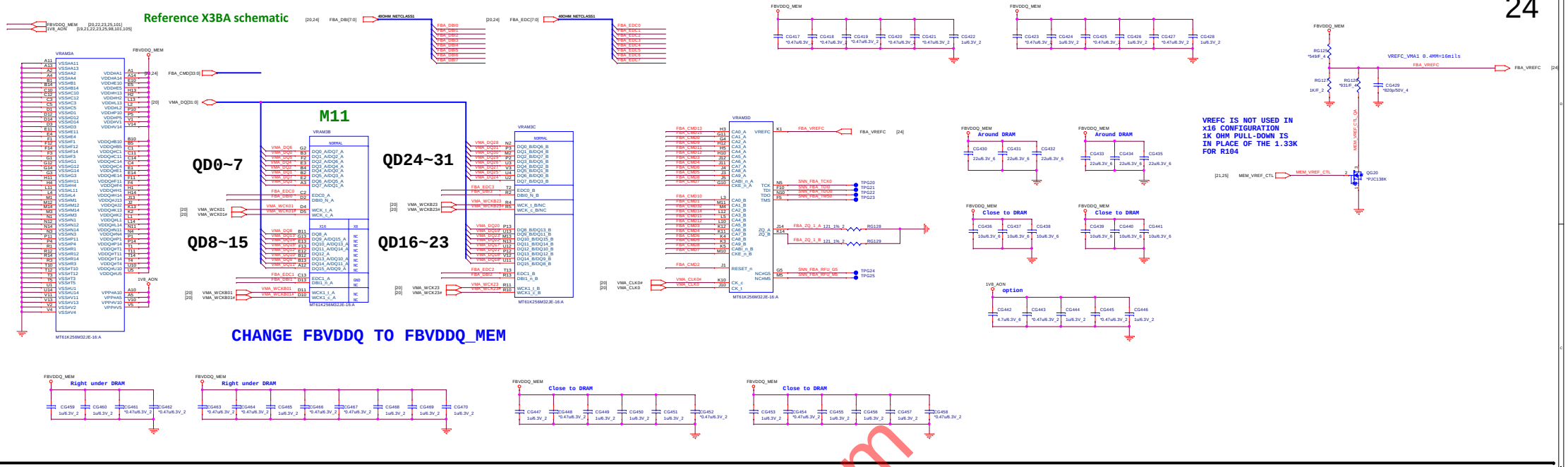
NB5	PROJECT : G3BD Quanta Computer Inc.
Size	Document Number: N17P-G0-A1-4/7 (MISC) Rev: 1A
Date: Tuesday, April 07, 2020	Sheet 26 of 81



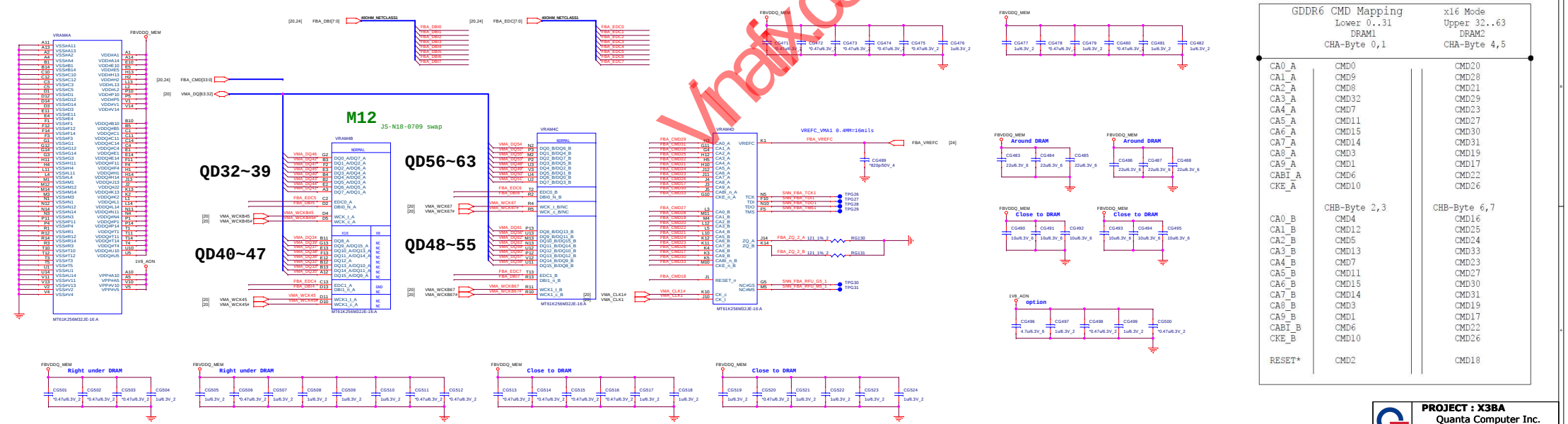
NB5 Custom	PROJECT : G3BD Quanta Computer Inc.	
Size	Document Number N17P-G0-A1-5/7 (Power)	Rev 1A
Date: Tuesday, April 07, 2020	Sheet 23 of 61	

MEMORY: FBA Partition 31..0

Reference X3BA schematic



MEMORY: FBA Partition 63..32

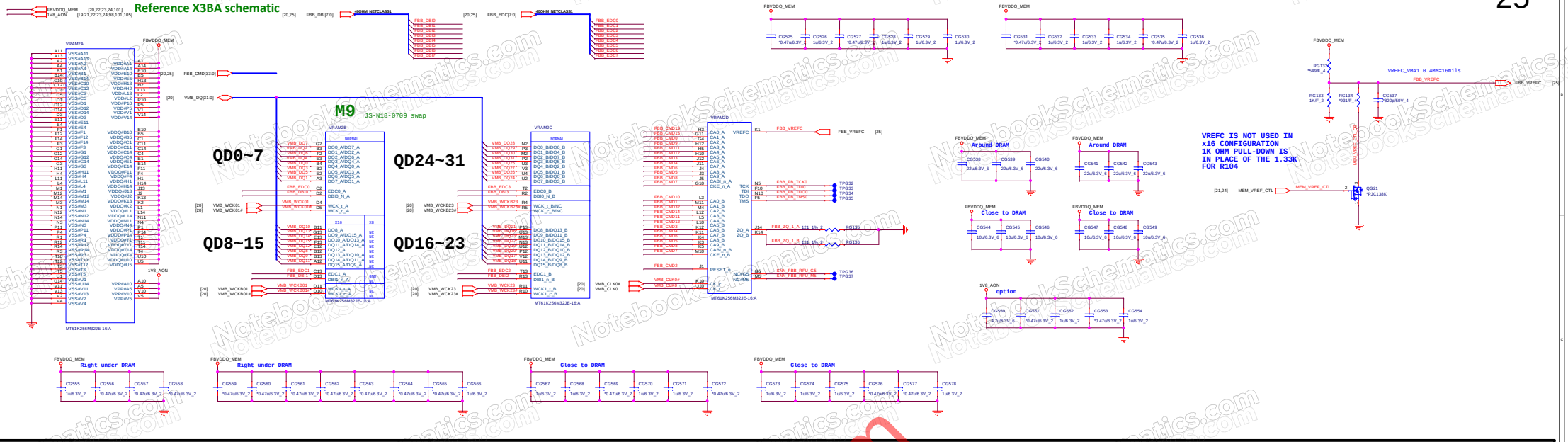


GDDR6 CMD Mapping	Lower 0..31 DRAM1 CHA-Byte 0,1	x16 Mode Upper 32..63 DRAM2 CHA-Byte 4,5
CA0_A	CMD0	CMD20
CA1_A	CMD9	CMD28
CA2_A	CMD8	CMD21
CA3_A	CMD32	CMD29
CA4_A	CMD7	CMD23
CA5_A	CMD11	CMD27
CA6_A	CMD15	CMD30
CA7_A	CMD14	CMD31
CA8_A	CMD3	CMD19
CA9_A	CMD1	CMD17
CABI_A	CMD6	CMD22
CKE_A	CMD10	CMD26
	CHB-Byte 2,3	CHB-Byte 6,7
CA0_B	CMD4	CMD16
CA1_B	CMD12	CMD25
CA2_B	CMD5	CMD24
CA3_B	CMD13	CMD33
CA4_B	CMD7	CMD23
CA5_B	CMD11	CMD27
CA6_B	CMD15	CMD30
CA7_B	CMD14	CMD31
CA8_B	CMD3	CMD19
CA9_B	CMD1	CMD17
CABI_B	CMD6	CMD22
CKE_B	CMD10	CMD26
RESET*	CMD2	CMD18

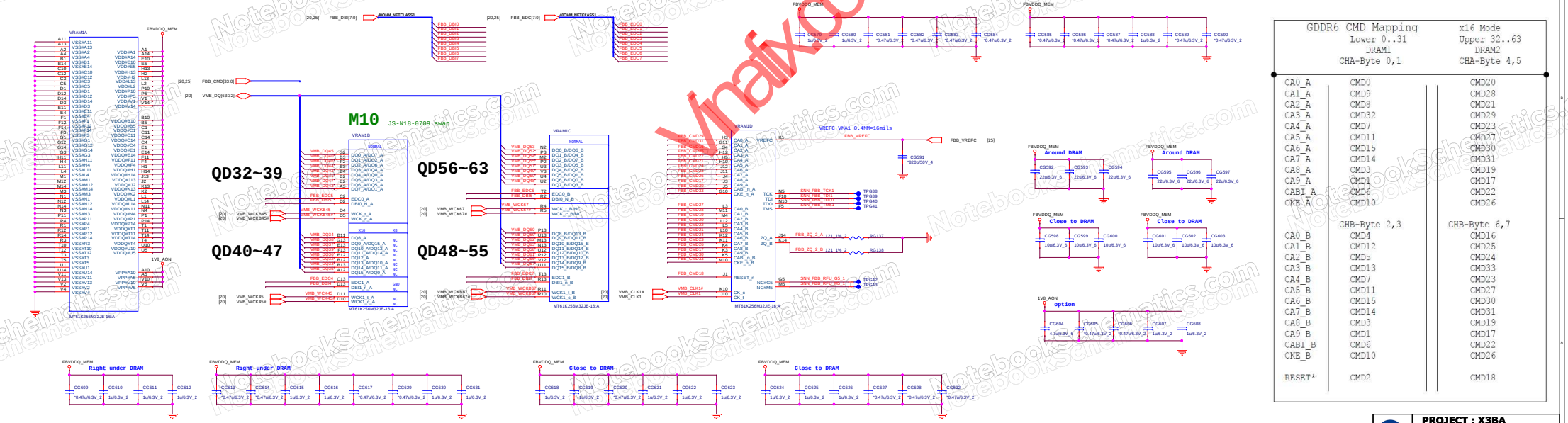
PROJECT : X3BA
Quanta Computer Inc.
Size: B | Document Number: N18E-GX-6(GDDR6) | Rev: 1A
Date: Tuesday, April 07, 2020 | Sheet 24 of 166

MEMORY: FBB Partition 31..0

Reference X3BA schematic

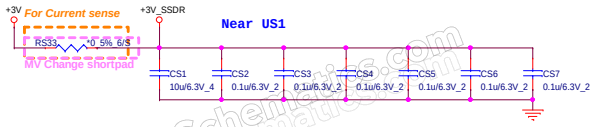


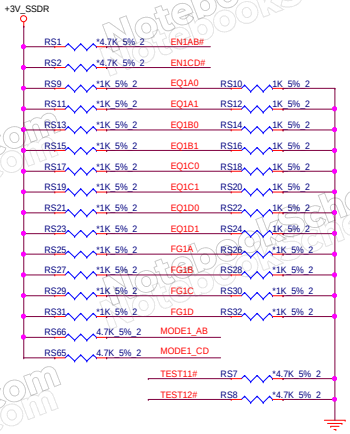
MEMORY: FBB Partition 63..32

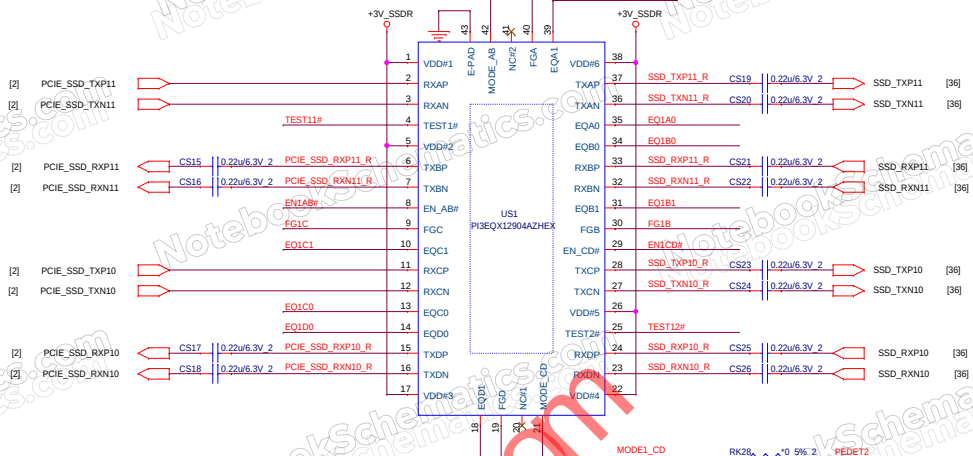


GDDR6 CMD Mapping	Lower 0..31	x16 Mode	Upper 32..63
	DRAM1		DRAM2
	CHA-Byte 0,1		CHA-Byte 4,5
CA0_A	CMD0		CMD20
CA1_A	CMD9		CMD28
CA2_A	CMD8		CMD21
CA3_A	CMD32		CMD29
CA4_A	CMD7		CMD23
CA5_A	CMD11		CMD27
CA6_A	CMD15		CMD30
CA7_A	CMD14		CMD31
CA8_A	CMD3		CMD19
CA9_A	CMD1		CMD17
CABI_A	CMD6		CMD22
CKE_A	CMD10		CMD26
	CHB-Byte 2,3		CHB-Byte 6,7
CA0_B	CMD4		CMD16
CA1_B	CMD12		CMD25
CA2_B	CMD5		CMD24
CA3_B	CMD13		CMD33
CA4_B	CMD7		CMD23
CA5_B	CMD11		CMD27
CA6_B	CMD15		CMD30
CA7_B	CMD14		CMD31
CA8_B	CMD3		CMD19
CA9_B	CMD1		CMD17
CABI_B	CMD6		CMD22
CKE_B	CMD10		CMD26
RESET*	CMD2		CMD18

PROJECT : X3BA	
Quanta Computer Inc.	
Size	Document Number: N18P-GX-6/8(GDDR6) Rev: 1A
Date: Tuesday, April 07, 2020	Sheet 25 of 166

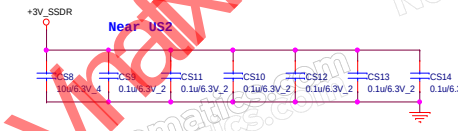


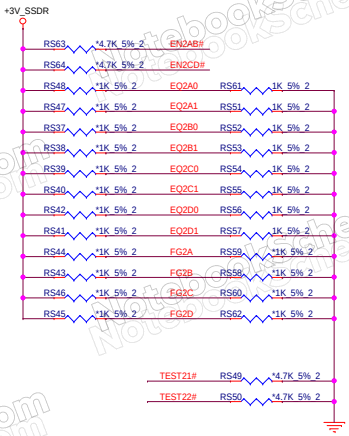


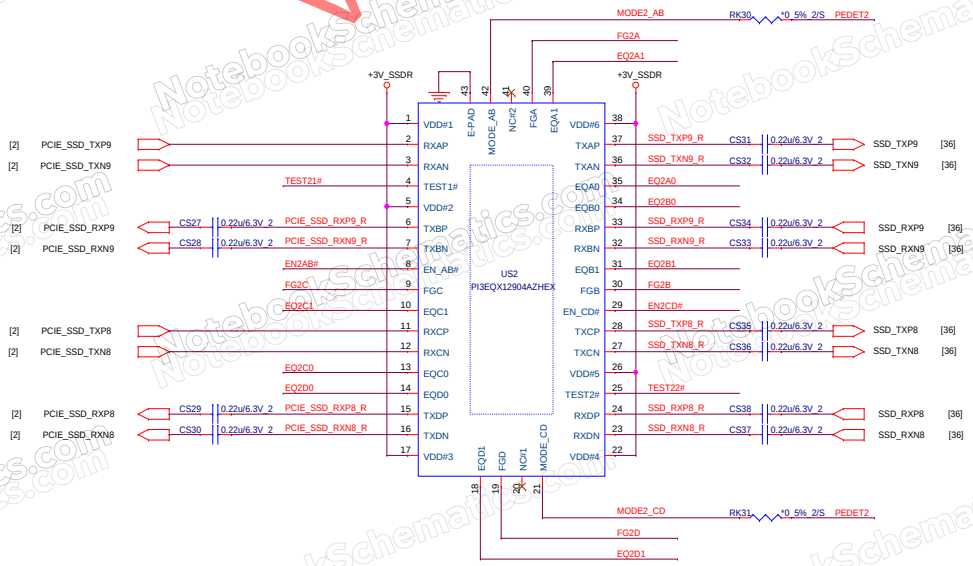


Flat Gain Settings
0 : -3.5 dB
R : -1.5 dB
F : 0 (Default)
1 : +1.5 dB

TEST#	MODE (PEDET2)	Supported Application
0	X	Active Mode only-for any application
1	0	SATA3
1	1	PCIe3

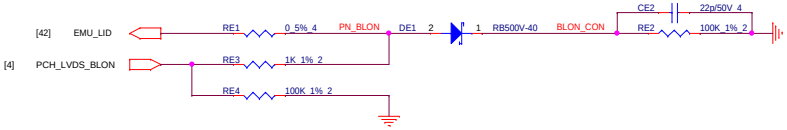




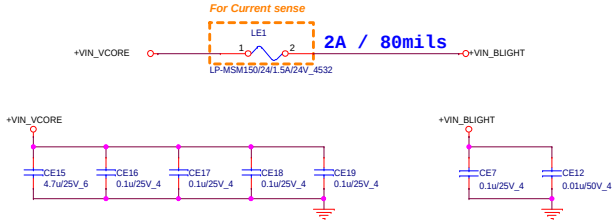


NB5	**PROJECT : Drax (N18E)** Quanta Computer Inc.
Size C	Document Number SSD2 Re-driver
Rev 1A	
Date: Tuesday, April 07, 2020	Sheet 27 of 106

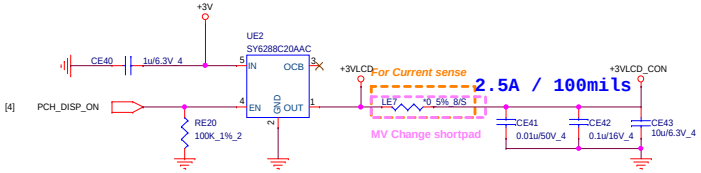
LID Switch



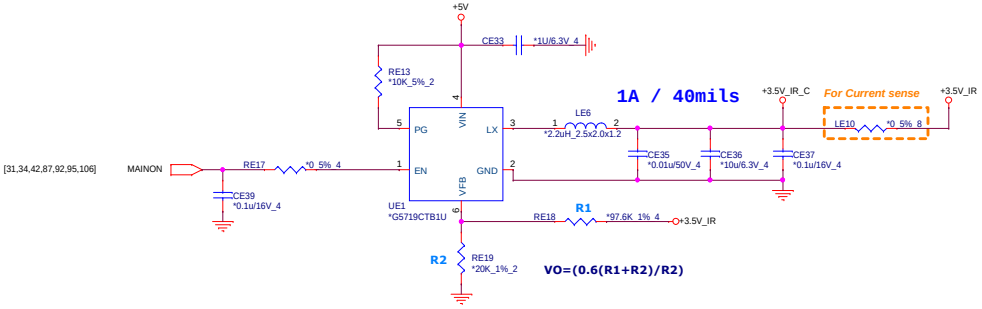
LCD Backlight



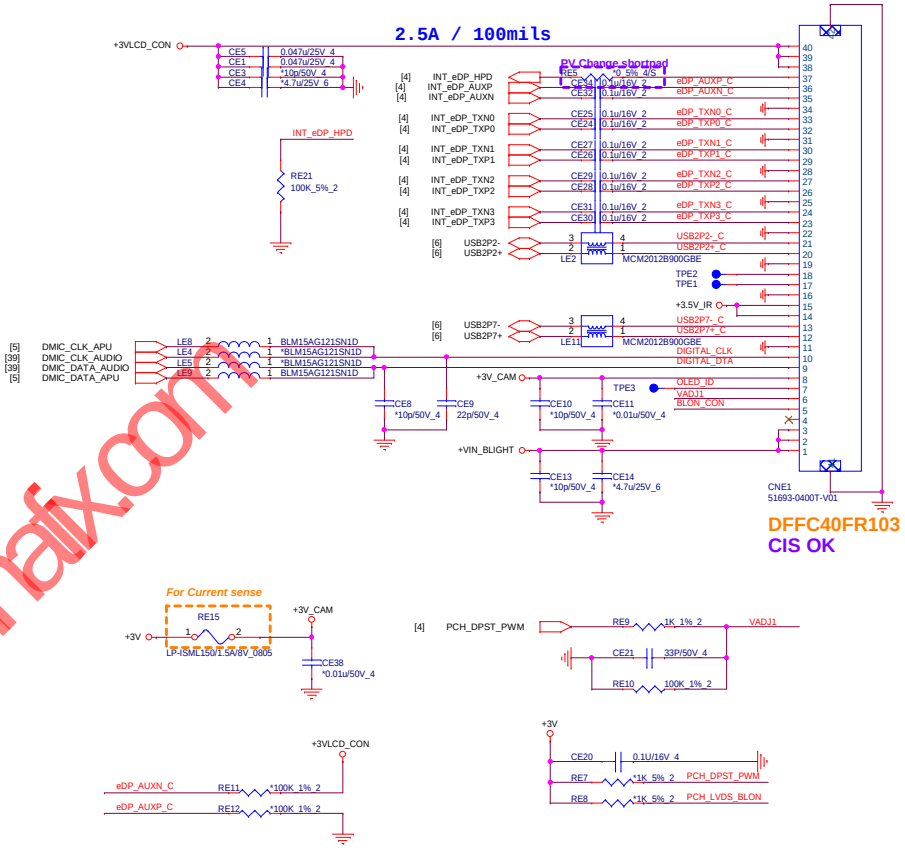
3V LCD Power SW



IR CAM Power SW



eDP CONN.



NB5	PROJECT : Valkyrie Quanta Computer Inc.	
Size C	Document Number eDP CONN/CAM/D-MIC	Rev 3A
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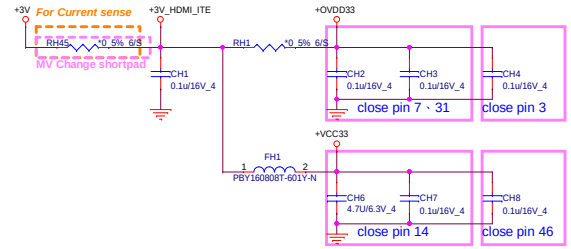
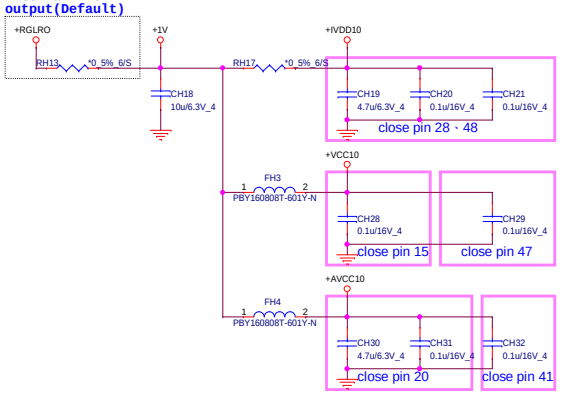
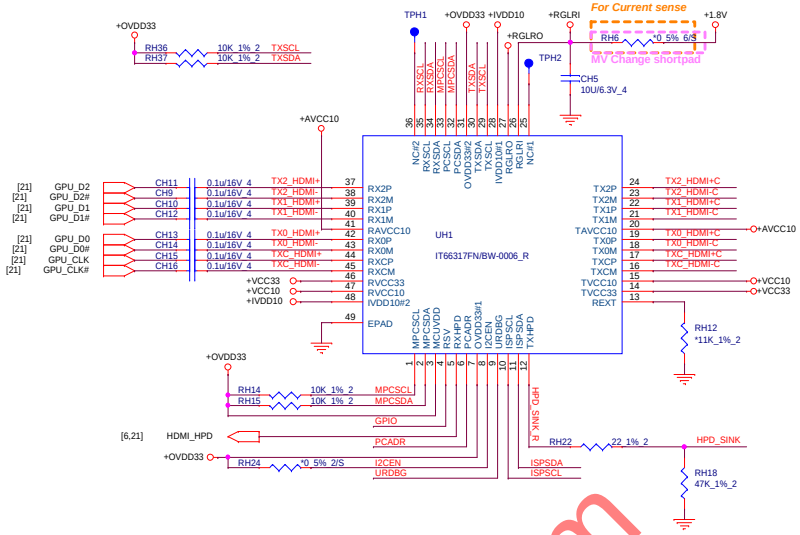
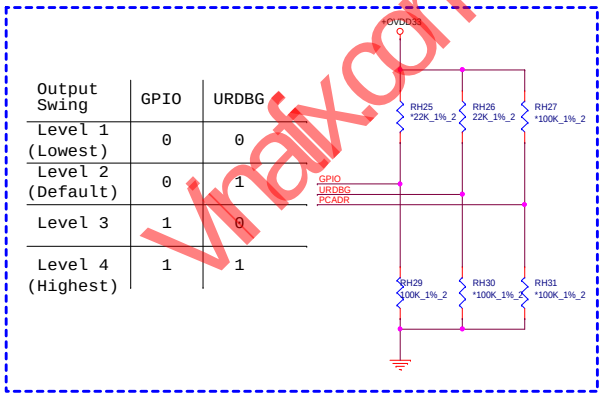




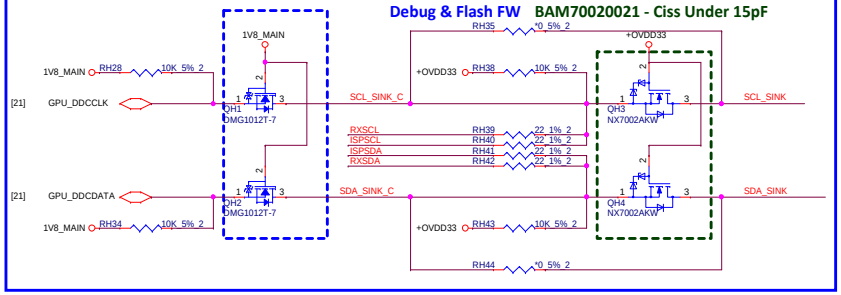


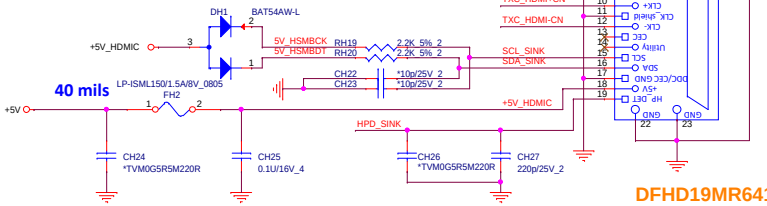
Output Swing	GPIO	URDBG
Level 1 (Lowest)	0	0
Level 2 (Default)	0	1
Level 3	1	0
Level 4 (Highest)	1	1



Close to HDMI connector

BAM10120003 - Ciss = 60pF, MAX Vgs = 1.0V
if DDC test fail, Change to BAM84060000 - Ciss = 35pF, MAX Vgs = 1.0V
Debug & Flash FW BAM70020021 - Ciss Under 15pF

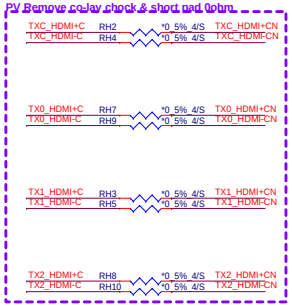




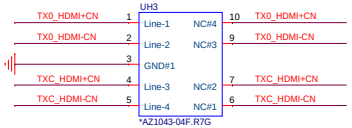
DFHD19MR641
CIS OK

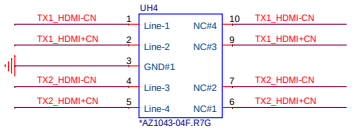
EMI

PV Remove co-lay check & short pad 0ohm



ESD





NB5	PROJECT : Valkyrie Quanta Computer Inc.		
	Size: C	Document Number: HDMI + Re-driver	Rev: 1A
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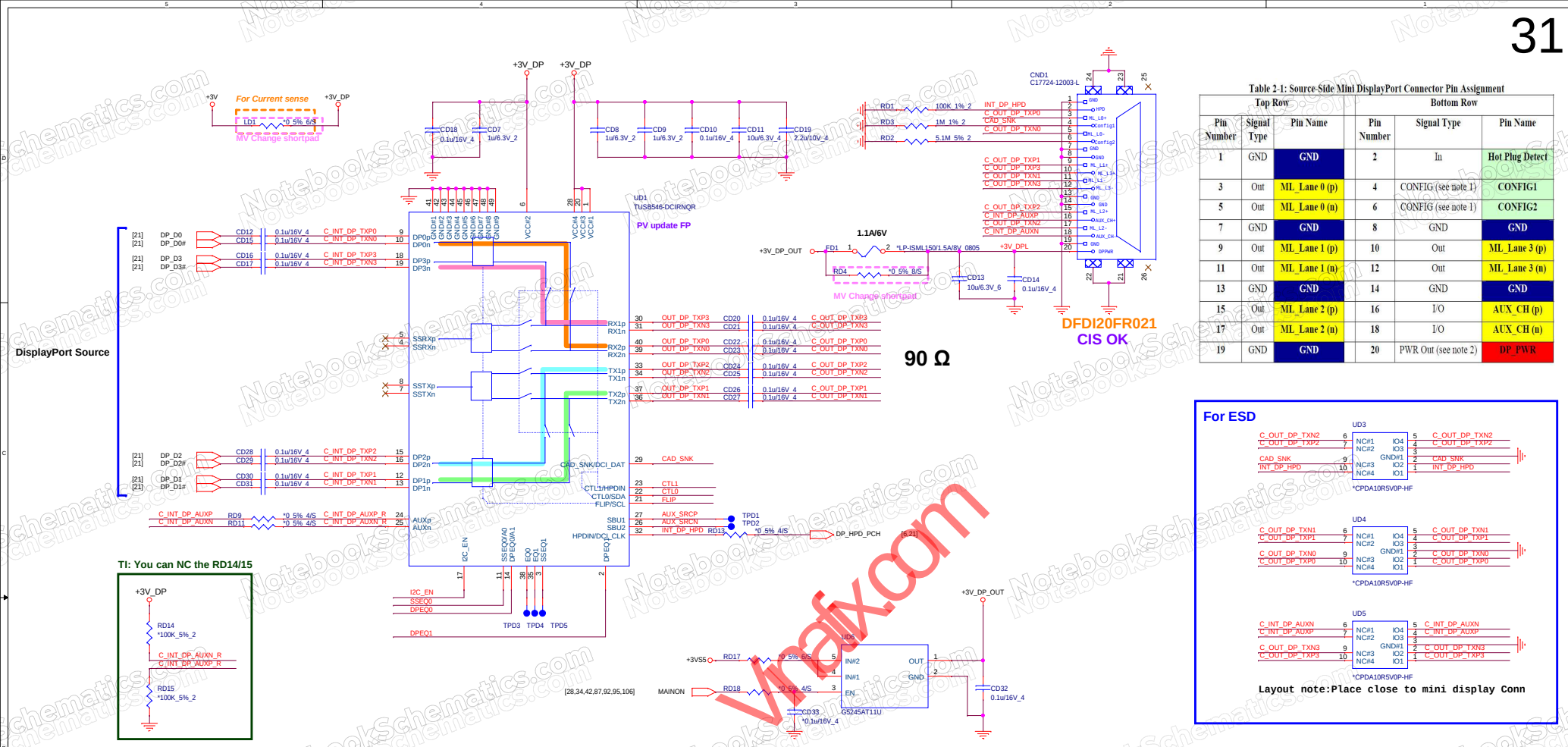
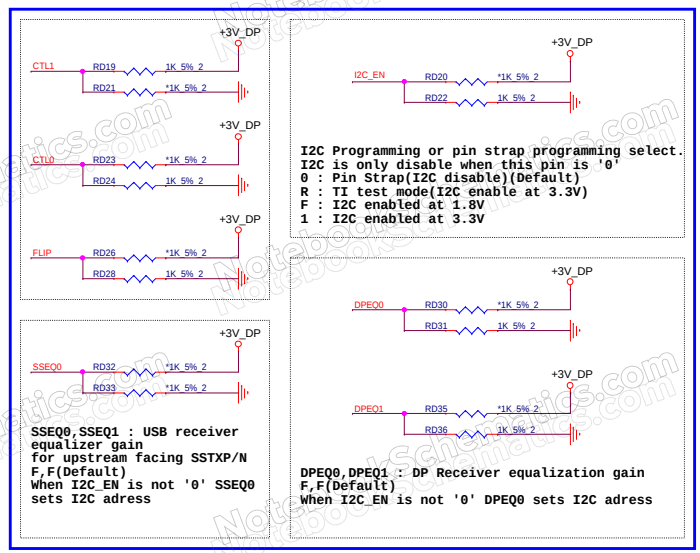
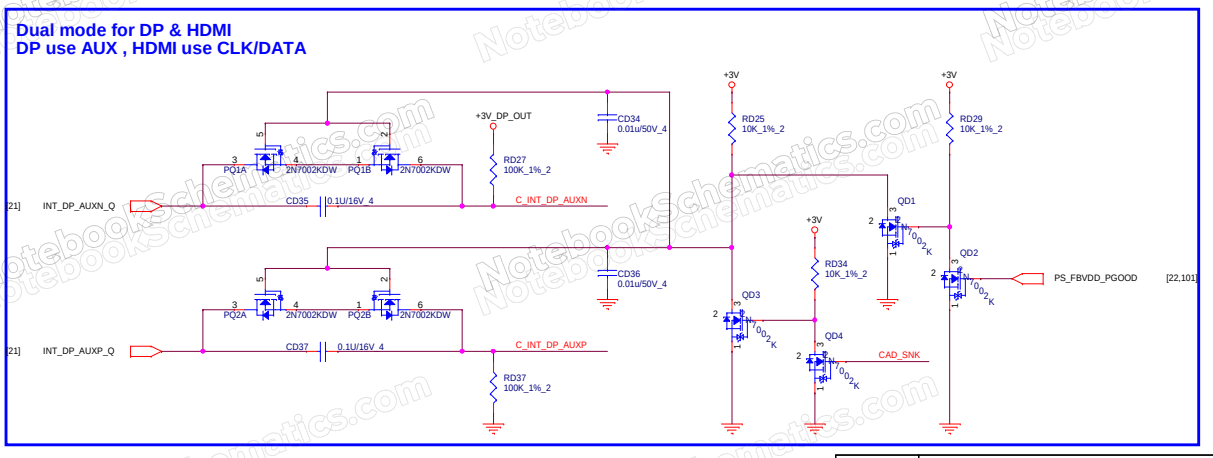


Table 2-1: Source-Side Mini DisplayPort Connector Pin Assignment

Top Row			Bottom Row		
Pin Number	Signal Type	Pin Name	Pin Number	Signal Type	Pin Name
1	GND	GND	2	In	Hot Plug Detect
3	Out	ML_Lane 0 (p)	4	CONFIG (see note 1)	CONFIG1
5	Out	ML_Lane 0 (n)	6	CONFIG (see note 1)	CONFIG2
7	GND	GND	8	GND	GND
9	Out	ML_Lane 1 (p)	10	Out	ML_Lane 3 (p)
11	Out	ML_Lane 1 (n)	12	Out	ML_Lane 3 (n)
13	GND	GND	14	GND	GND
15	Out	ML_Lane 2 (p)	16	I/O	AUX_CH (p)
17	Out	ML_Lane 2 (n)	18	I/O	AUX_CH (n)
19	GND	GND	20	PWR Out (see note 2)	DP_PWR





PROJECT : Valkyrie
Quanta Computer Inc.

Size	Document Number	Rev
C	mini DP/Re-driver	1A

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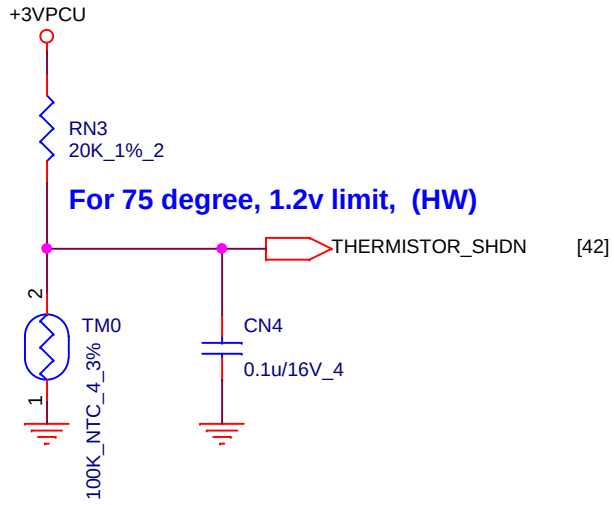
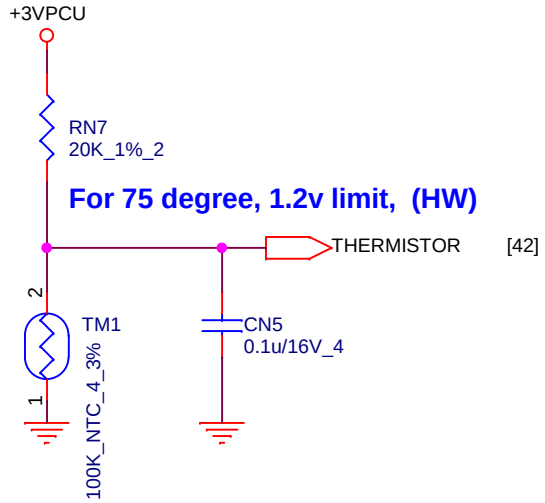
NB5

Thermal Protect

For HW shutdown (TOP nearby CPU)



For CPU (Bottom nearby CPU)



NB5

PROJECT : Valkyrie

Quanta Computer Inc.

Size	Document Number	Rev
A	**Thermal Sensor**	1A

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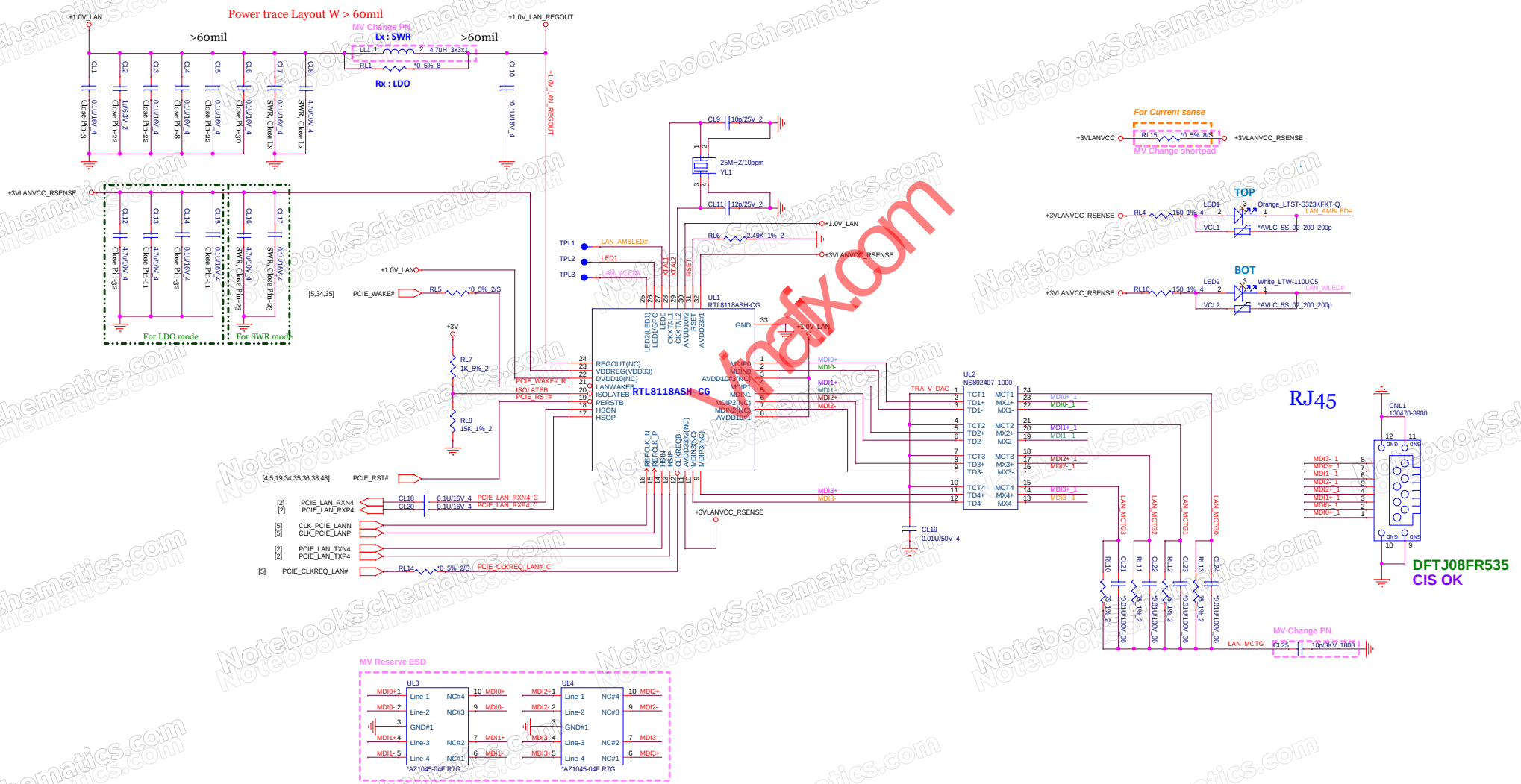
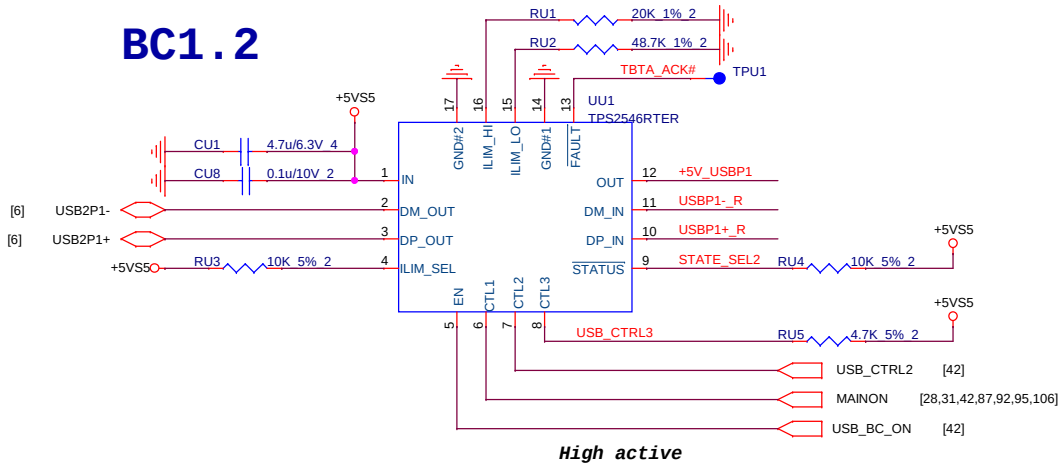
LAN & RJ45



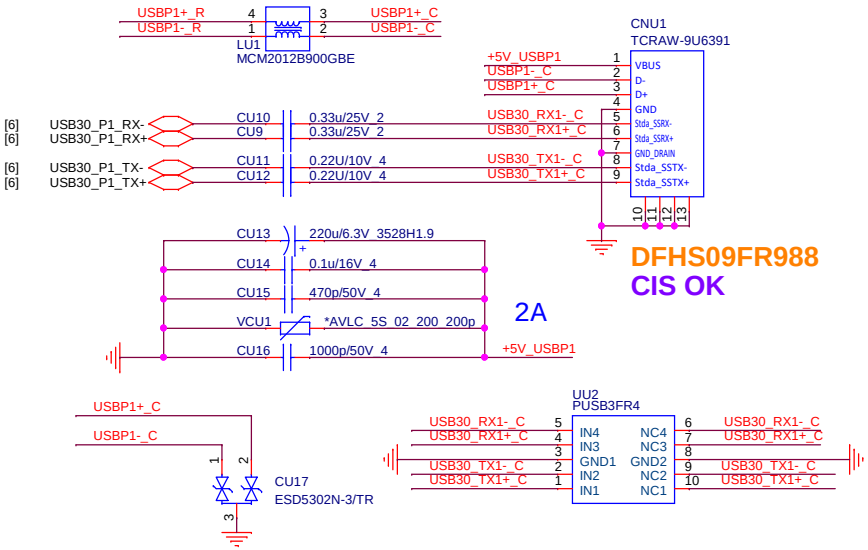
NB5	PROJECT : Valkyrie Quanta Computer Inc.		
	Size: C	Document Number: LAN RTL8118ASH-CG/RJ45	Rev: 1A
	Date: Tuesday, April 07, 2020	Sheet 33 of 106	

USB 2.0/3.0 Combo MB

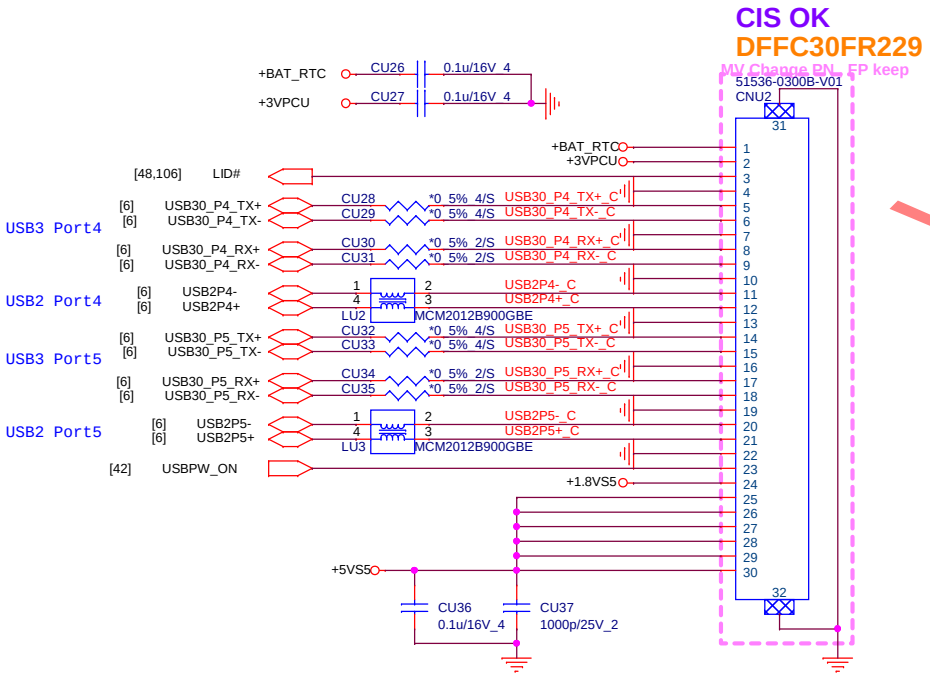
BC1.2



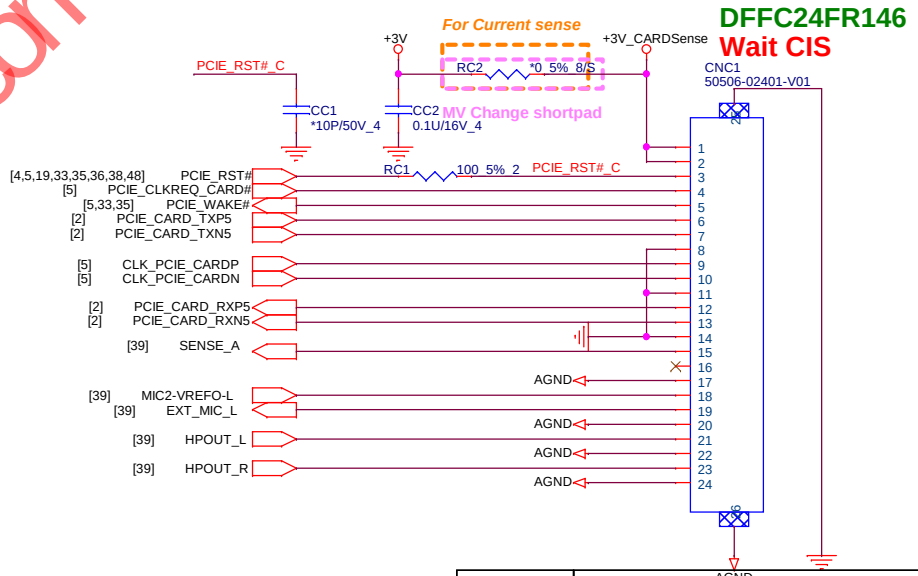
High active



USB small board



SD Card Audio Jack to Small Board



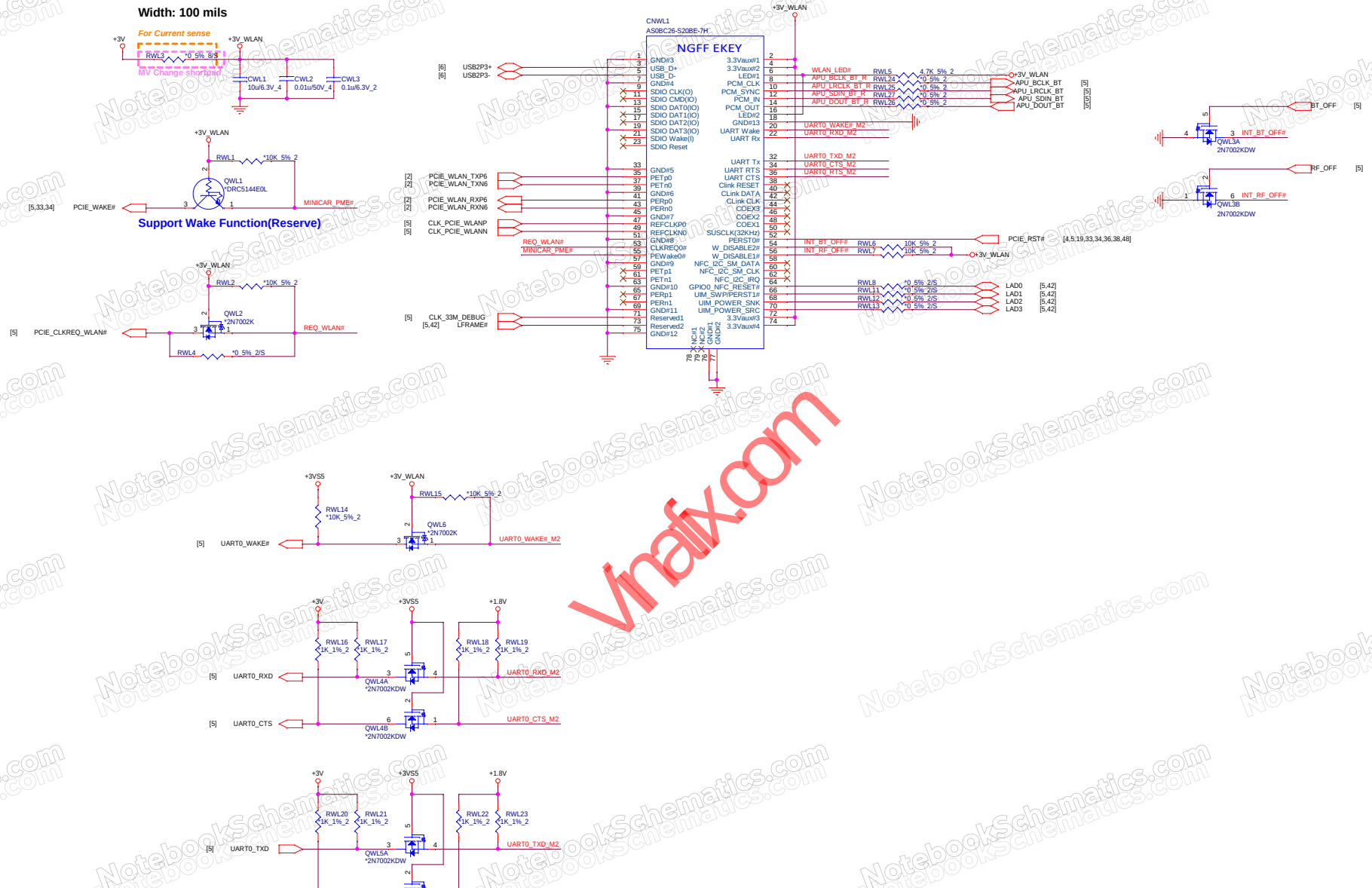
NB5

PROJECT : Valkyrie
Quanta Computer Inc.

Size	Document Number	Rev
B	USB3.0/SD/USB Small Board	3A

Date: Tuesday, April 07, 2020 Sheet 34 of 106

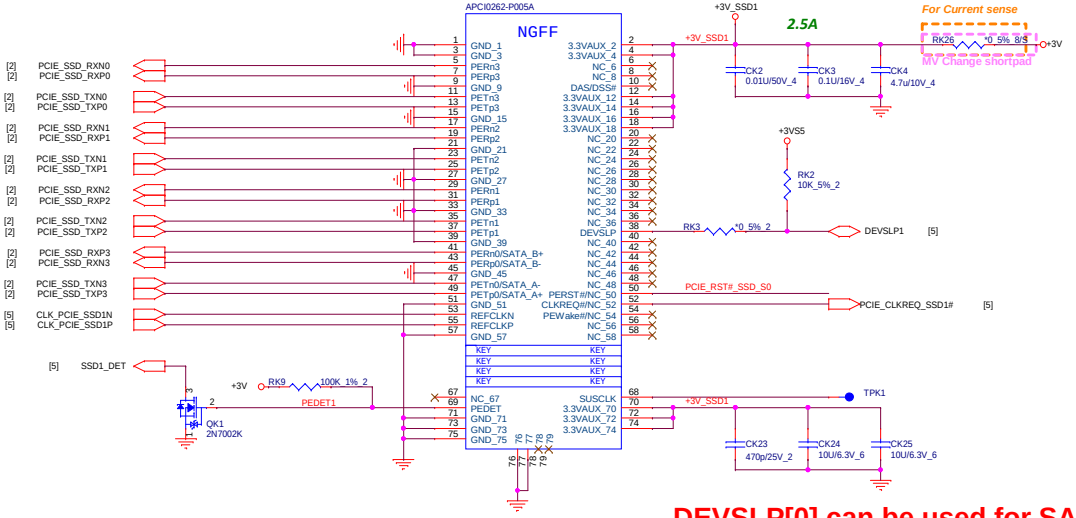
WLAN_NGFF CONN (E-Key)



PROJECT : Valkyrie			
Quanta Computer Inc.			
NB5	Size C	Document Number WLAN	Rev 1A
	Date: Tuesday, April 07, 2020	Sheet 35 of 106	

SSD1

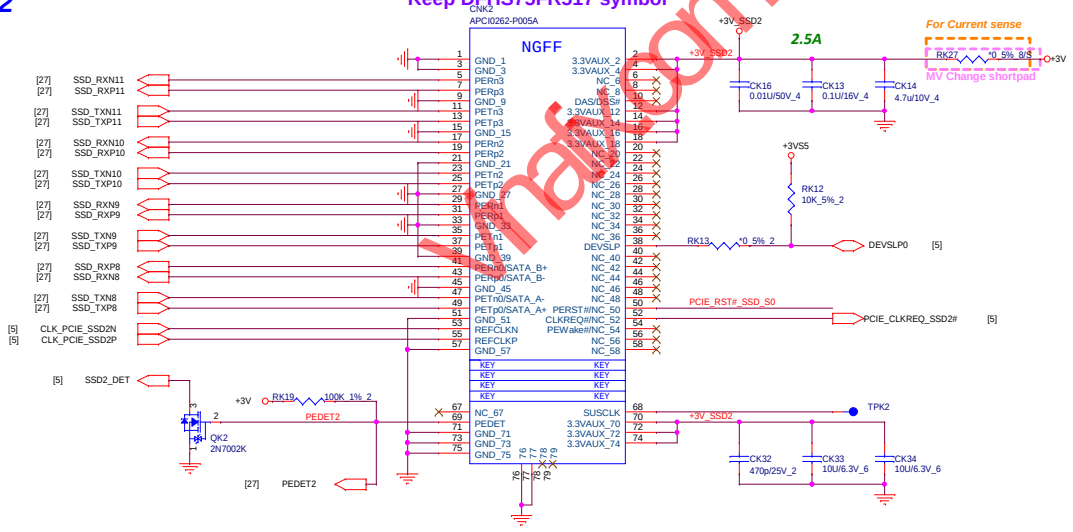
DFHS75FR595
Keep DFHS75FR517 symbol



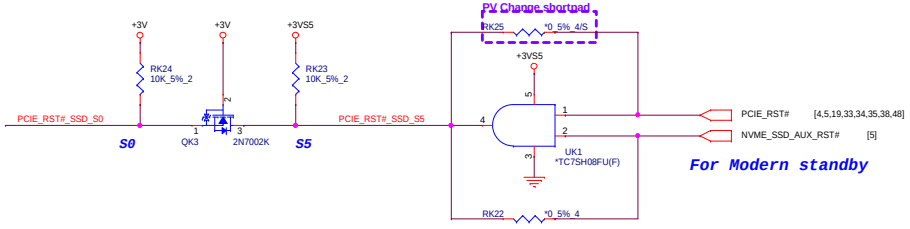
DEVSLP[0] can be used for SATA Port 0 or 2.
DEVSLP[1] can be used for SATA Port 1 or 3

SSD2

DFHS75FR595
Keep DFHS75FR517 symbol



For leakage



For Modern standby

NB5	**PROJECT : Valkyrie** Quanta Computer Inc.	
Size C	Document Number SSD X2	Rev 1A
Date: Tuesday, April 07, 2020	Sheet 36 of 106	

EMI PAD

3*2

H3 SPAD-RE3_0X2_0MM
H4 SPAD-RE3_0X2_0MM
H5 SPAD-RE3_0X2_0MM
H7 SPAD-RE3_0X2_0MM

4*3

H6 SPAD-RE4_0X3_0MM
H8 SPAD-RE4_0X3_0MM

Holes

H9 *H-TSBSD150P2-7
H10 *H-O118X79D118X79N
H11 *H-TBC236IC98D98P2
H12 *H-C236D98P2
H14 *H-TC217BSD99P2-9
H15 *H-C79D79N
H16 *H-STARMADE_AREG-8
H24 *H-STARMADE_AREG-5
H27 *H-STARMADE_AREG-7

APU Holes

H18 *H-TIC146BC256D146P2
H19 *H-TIC146BC256D146P2
H20 *H-TIC146BC256D146P2

GPU Holes

H17 *H-TIC146BC256D146P2
H21 *H-TIC146BC256D146P2
H22 *H-TIC146BC256D146P2
H23 *H-TIC146BC256D146P2

H28 *H-G3EB-EDADOC-6
H30 *H-TC217BSD99P2-10
H31 *H-STARMADE_AREG-2

WLAN NUT

H29 H-tc237ibc123d123pt

MB NUTs

H25 *SPAD-G3ED-MB-G3ED-1
H26 *H-TSBSD126P2-6

H32 *2D-BARCODE-8X8-S
H33 *2D-BARCODE-8X8-S
H34 *SPAD-G3ED-MB-G3ED-2

NB5

PROJECT : Valkyrie
Quanta Computer Inc.

Size	Document Number	Rev
B	EMI/RF Solution/HOLE	1A

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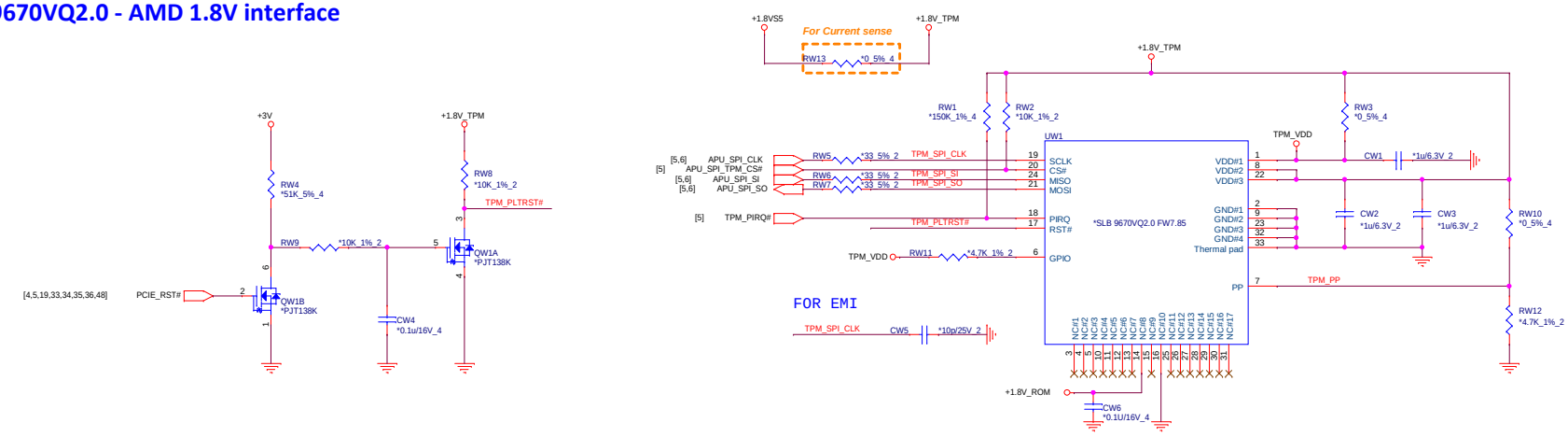
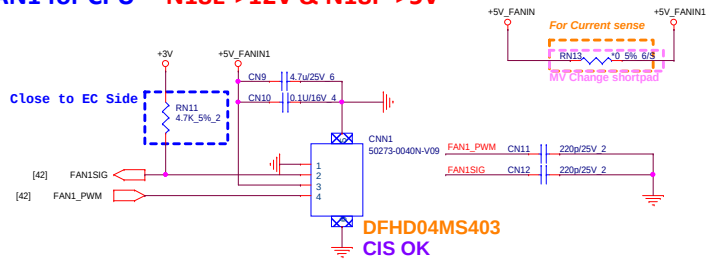
SLB9670VQ2.0 - AMD 1.8V interface

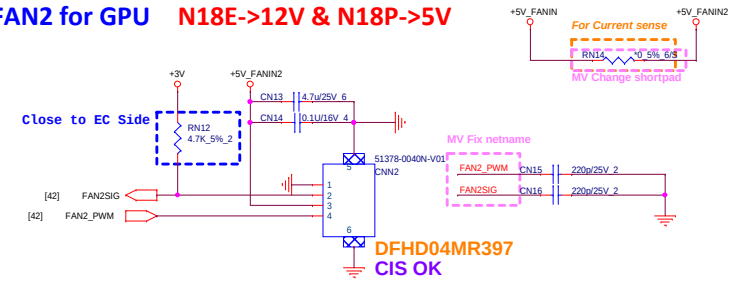


FAN1 for CPU N18E->12V & N18P->5V



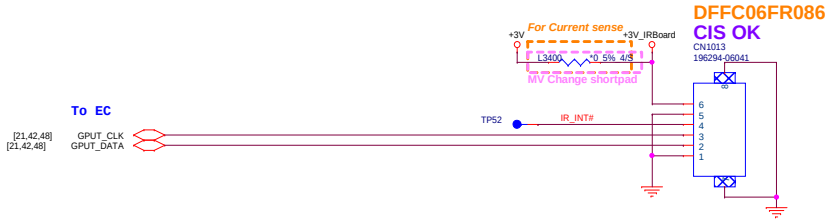
DFHD04MS403
CIS OK

FAN2 for GPU N18E->12V & N18P->5V



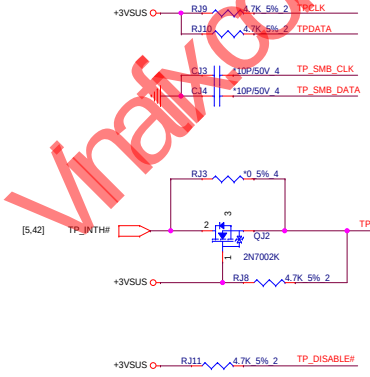
DFHD04MR397
CIS OK

IR connector

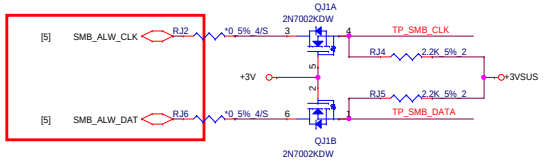


DFFC06FR086
CIS OK

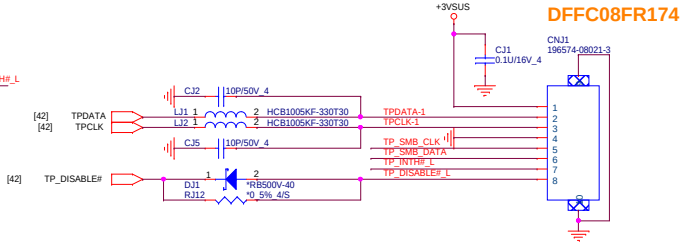
Touch Pad



BIOS change to I2C



DFFC08FR174



For Debug Card

PROJECT : Valkyrie	
Quanta Computer Inc.	
NB5	
Size C	Document Number TPM/FAN/TP/Debug/IRSensor
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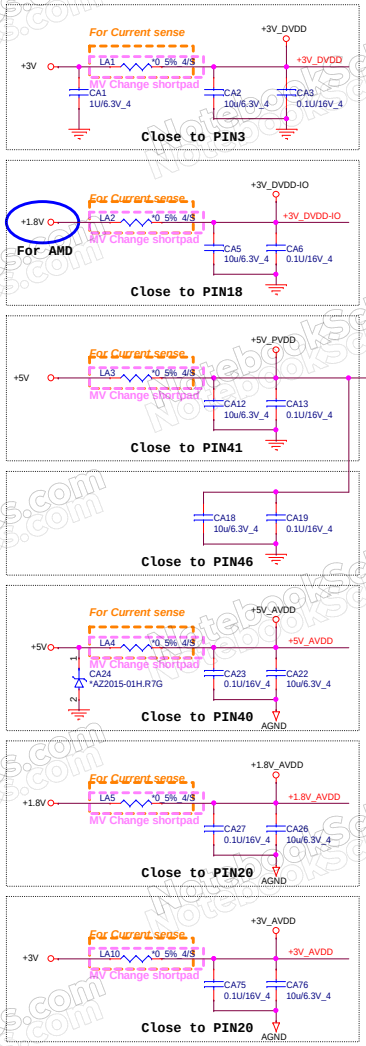
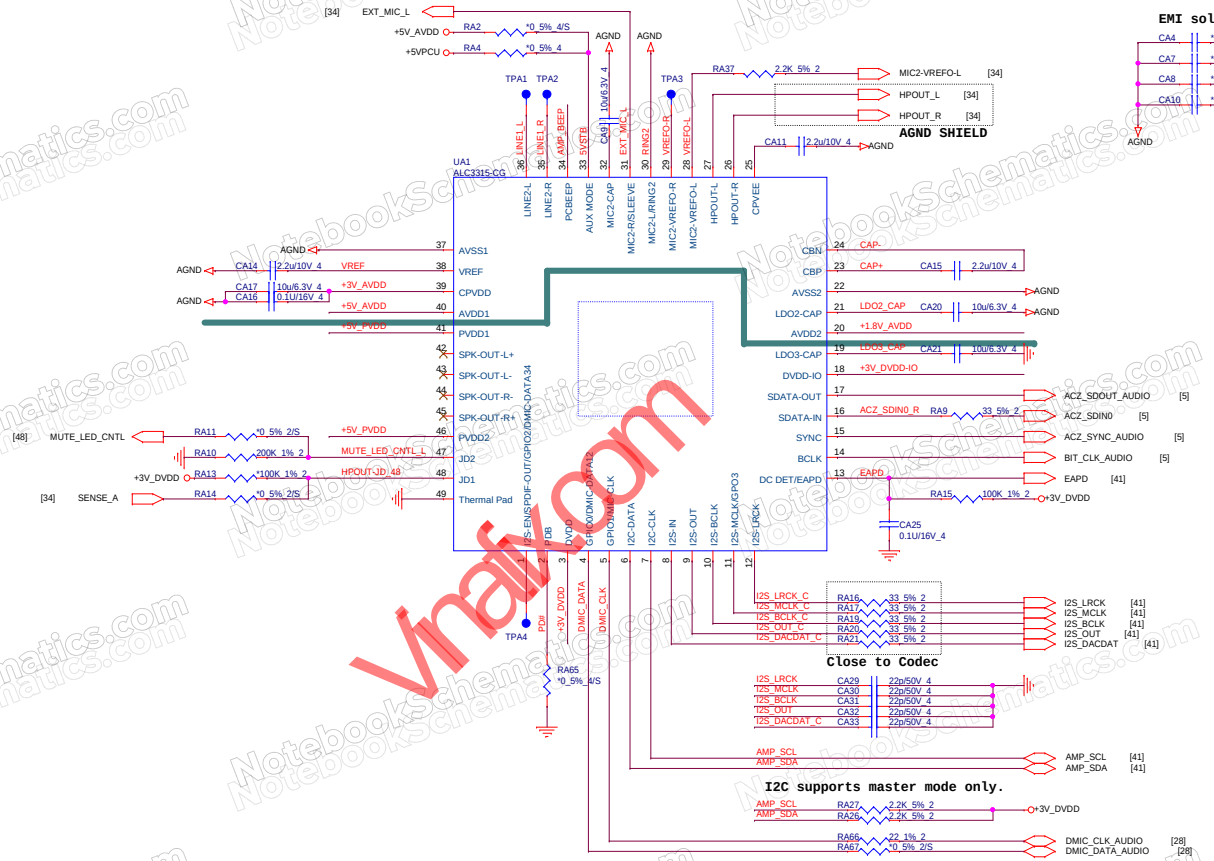
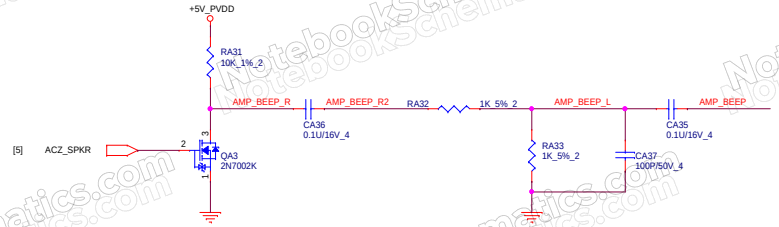
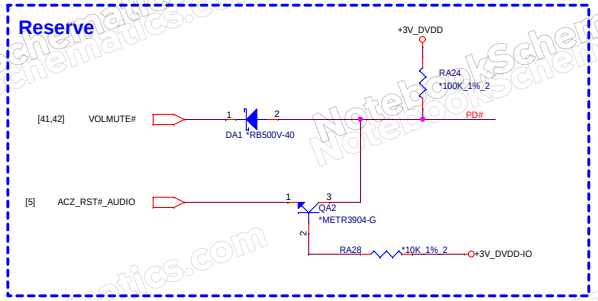
AUDIO CODEC ALC3315-CG









NB5	PROJECT : Valkyrie Quanta Computer Inc.	
Size C	Document Number ALC3315-CG	Rev 1A
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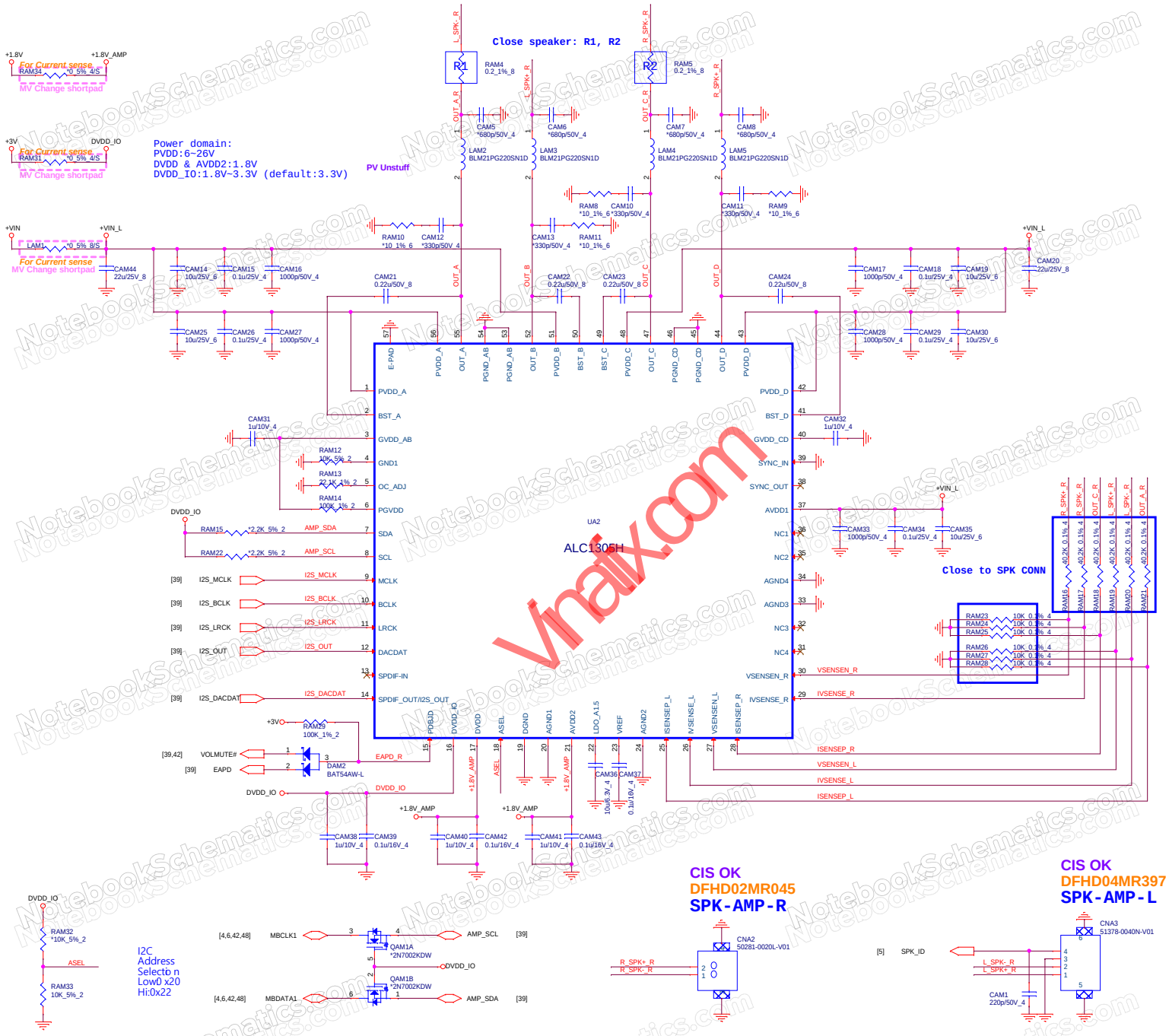
SPK AMP ALC1305H-CG



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NB5	Size C · Document Number: Speaker AMP ALC1305H-CG · Rev 1A
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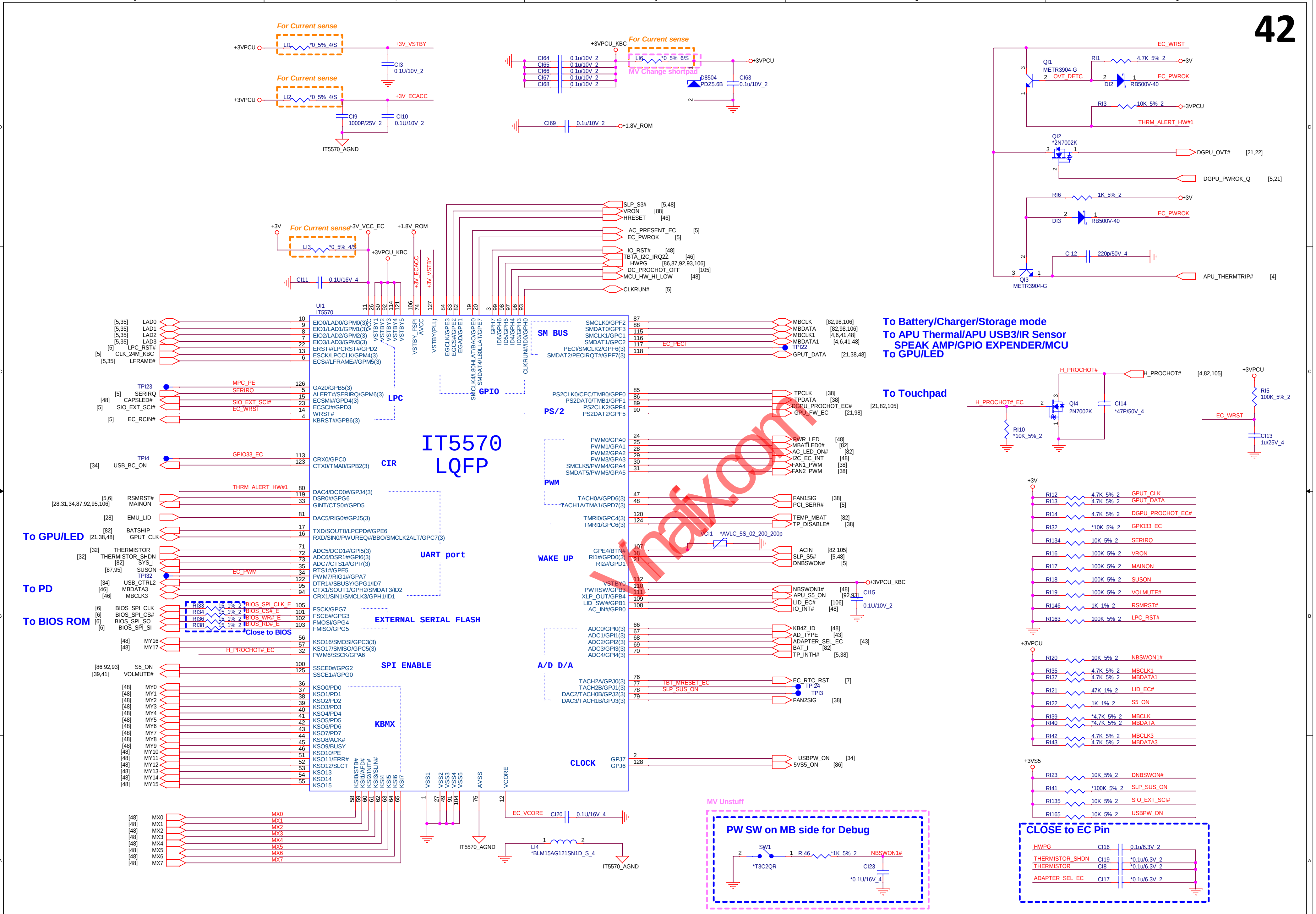

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Quanta Computer Inc.
NB5

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C	EC ITE IT5570/1	3A

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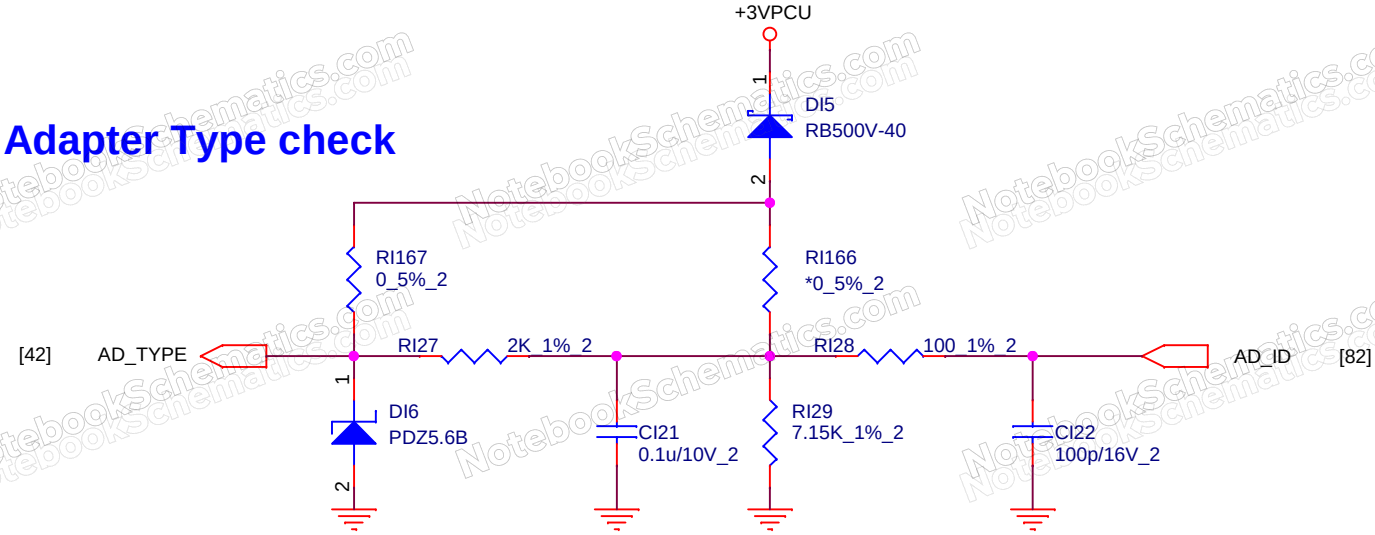
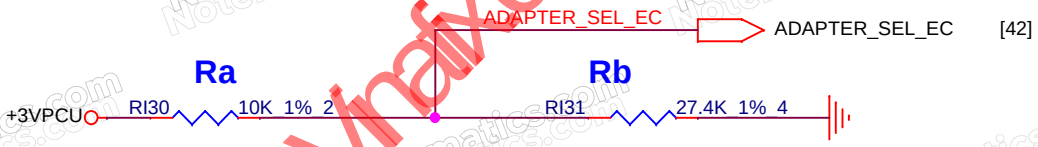
Adapter Type check



Adapter select for EC



	Ra	Rb	ADAPTER_SEL_EC	BOM
200W	10K(CS31002FB26)	100K (CS41002FB28)	3V	N18E
150W	10K(CS31002FB26)	27.4K(CS32742FB14)	2.42V	N18P

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Quanta Computer Inc.

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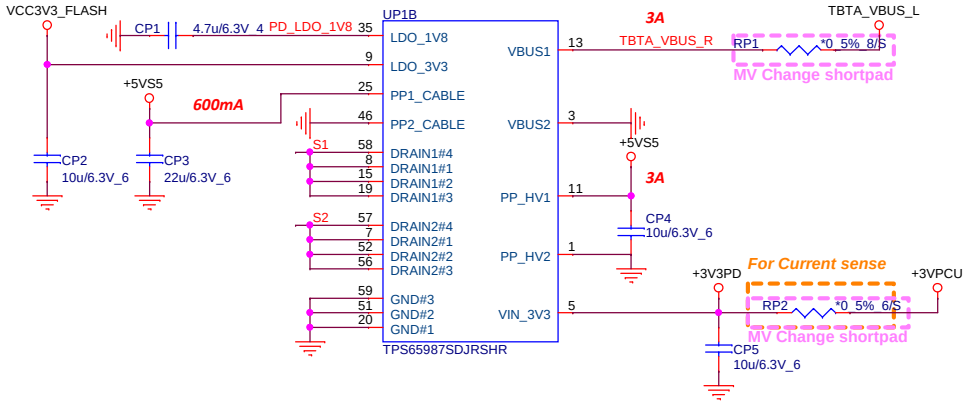
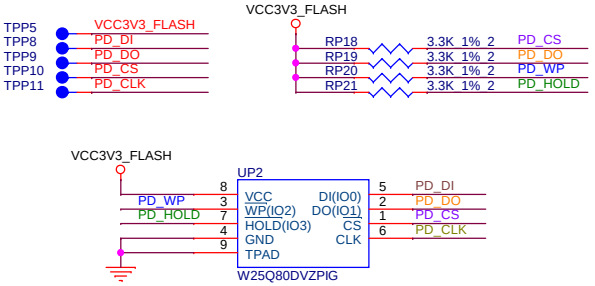
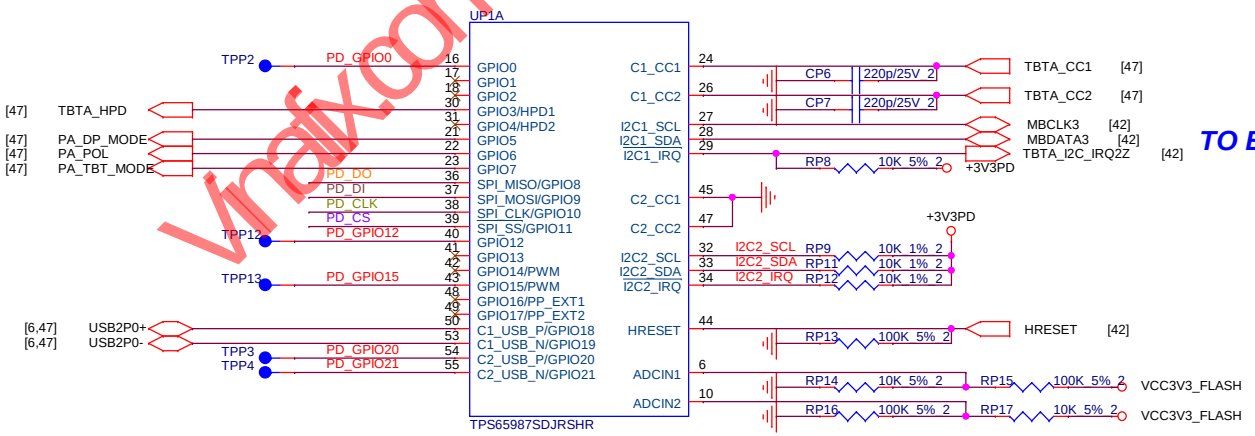
PD TPS65987DDJRSHR



PD SPI ROM





TO EC

Qunata PN	Part Description
AL180901000	IC OTHER(56P) SN1809018RSHR(VQFN)

NB5

PROJECT : Valkyrie
Quanta Computer Inc.

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B	PD TPS65987DDJRSHR	1A

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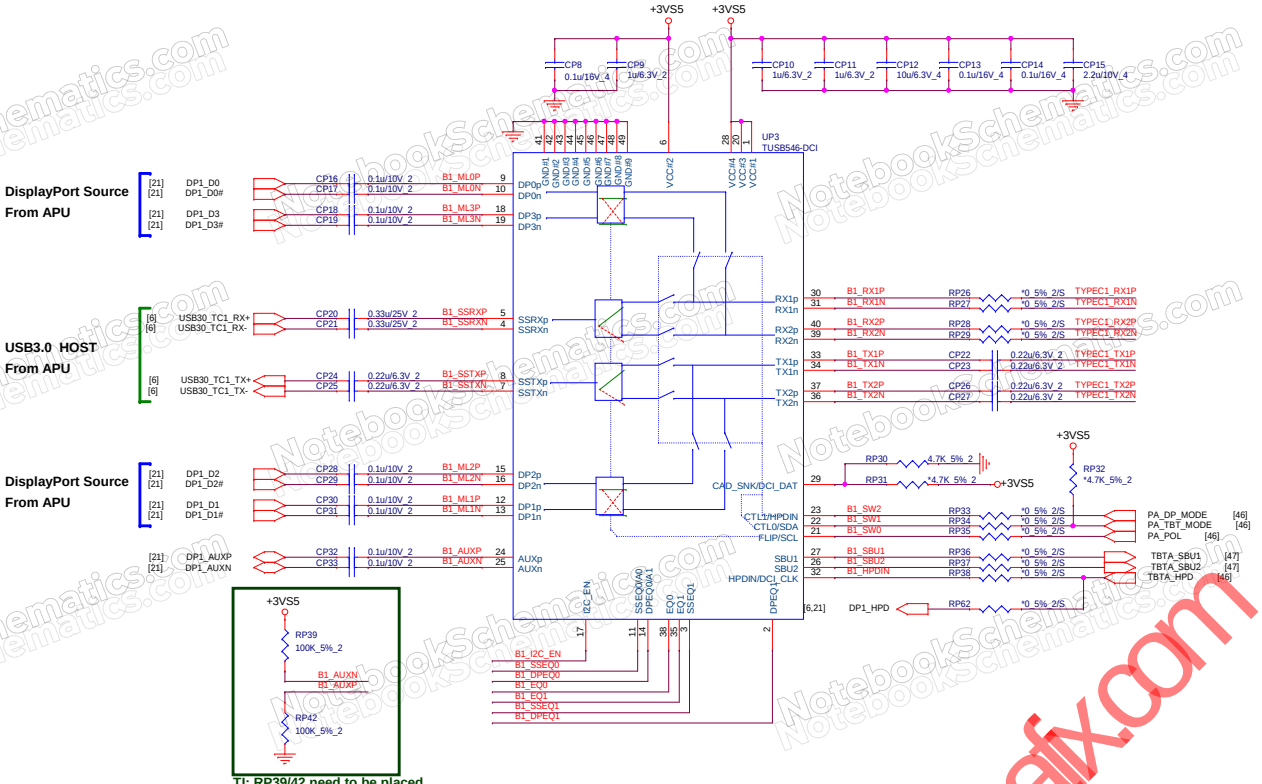


Table 7. TUSB546-DCI Receiver Equalization GPIO Control

Equalization Setting #	USB3.1 DOWNSTREAM FACING PORTS			USB 3.1 UPSTREAM FACING PORT			ALL DISPLAYPORT LANES		
	EQ1 PIN LEVEL	EQ0 PIN LEVEL	EQ GAIN at 2.5 GHz (dB)	SSEQ1 PIN LEVEL	SSEQ0 PIN LEVEL	EQ GAIN at 2.5 GHz (dB)	DPEQ1 PIN LEVEL	DPEQ0 PIN LEVEL	EQ GAIN at 4.05 GHz (dB)
0	0	0	0.2	0	0	-1.6	0	0	1.0
1	0	R	1.2	0	R	-0.5	0	R	3.3
2	0	F	2.2	0	F	0.5	0	F	4.9
3	0	1	3.3	0	1	1.6	0	1	6.5
4	R	0	4.2	R	0	2.4	R	0	7.5
5	R	R	5.1	R	R	3.4	R	R	8.6
6	R	F	5.9	R	F	4.1	R	F	9.5
7	R	1	6.7	R	1	4.9	R	1	10.4
8	F	0	7.4	F	0	5.7	F	0	11.1
9	F	R	8.1	F	R	6.4	F	R	11.7
10	F	F	8.7	F	F	6.9	F	F	12.3
11	F	1	9.3	F	1	7.5	F	1	12.8
12	1	0	9.7	1	0	8.0	1	0	13.2
13	1	R	10.2	1	R	8.5	1	R	13.6
14	1	F	10.6	1	F	8.9	1	F	14.0
15	1	1	11.1	1	1	9.4	1	1	14.4

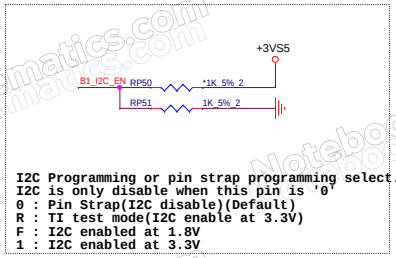
TUSB546 Pin Control Mode

CTL1	CTL0	FLIP	TUSB546 Mode Selection
L	L	L	Chip Power Down
L	L	H	Chip Power Down
L	H	L	One Port USB 3.1 - No Flip
L	H	H	One Port USB 3.1 - With Flip
H	L	L	4 Lane DP - No Flip
H	L	H	4 Lane DP - With Flip
H	H	L	One Port USB 3.1 + 2 Lane DP - No Flip
H	H	H	One Port USB 3.1 + 2 Lane DP - With Flip

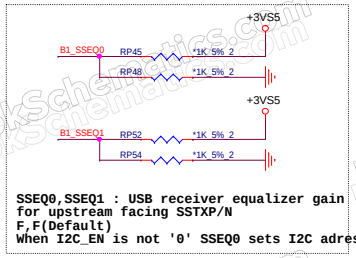
AUX Pin Control Mode

CTL1	FLIP	AUX Select
H	L	AUXP->SBU1,AUXN->SBU2
H	H	AUXP->SBU2,AUXN->SBU1
L>2ms	X	Open

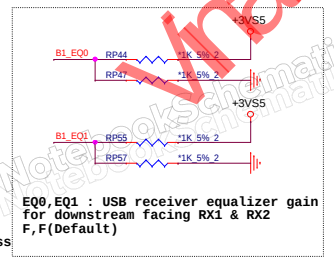
4 Level Input:
- L: Option1 Tie 1Kohm 5% to GND
  Option2 Directly tie to GND
- R: Tie 20kohm 5% to GND
- F: Float(leave pin open)
- 1: Option1 Tie 1Kohm 5% to Vcc
  Option2 Directly tie to Vcc



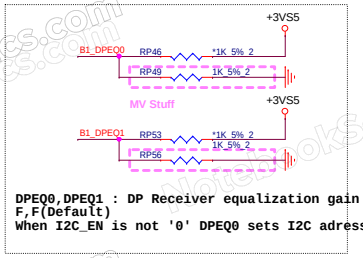
I2C Programming or pin strap programming select.
I2C is only disable when this pin is '0'
0 : Pin Strap(I2C disable)(Default)
R : TI test mode(I2C enable at 3.3V)
F : I2C enabled at 1.8V
1 : I2C enabled at 3.3V



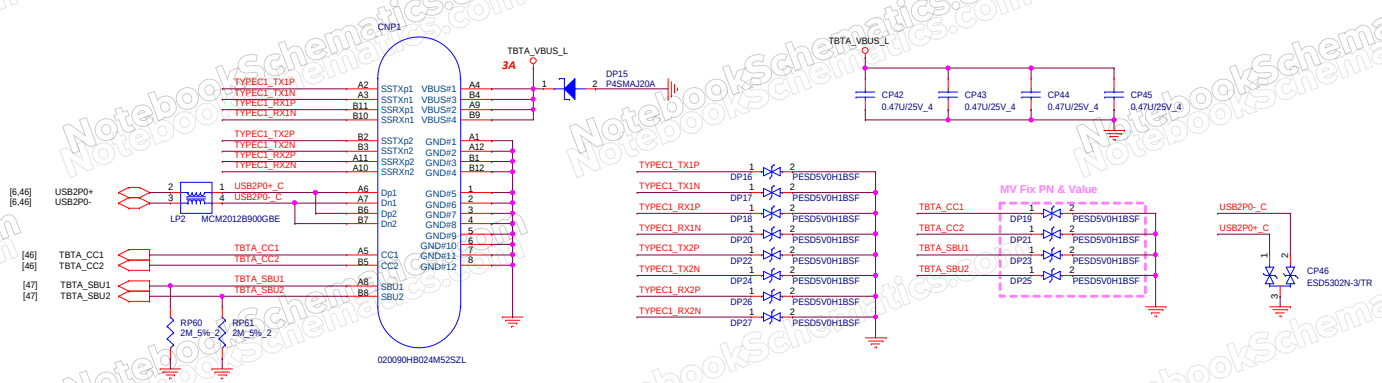
SSEQ0,SSEQ1 : USB receiver equalizer gain for upstream facing SSTXP/N
F,F(Default)
When I2C_EN is not '0' SSEQ0 sets I2C adress



EQ0,EQ1 : USB receiver equalizer gain for downstream facing RX1 & RX2
F,F(Default)



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



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Quanta Computer Inc.	
Size: C	Document Number: MUX TUSB546I/ TYPE-C
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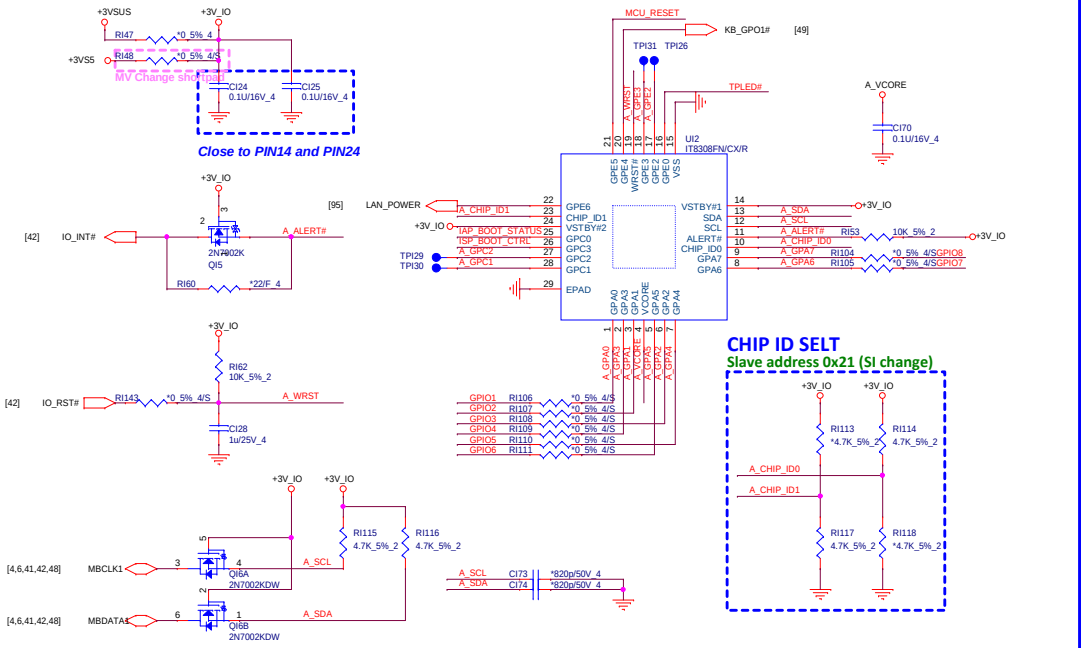
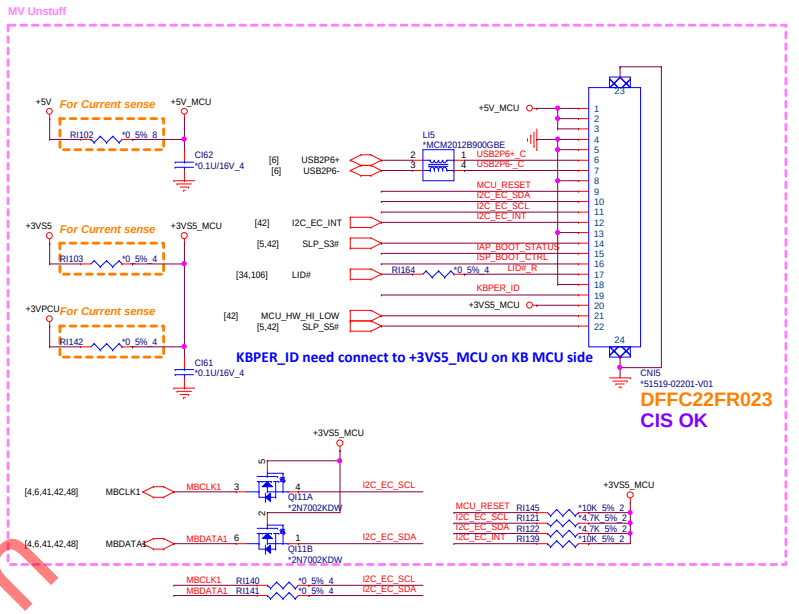
NB5

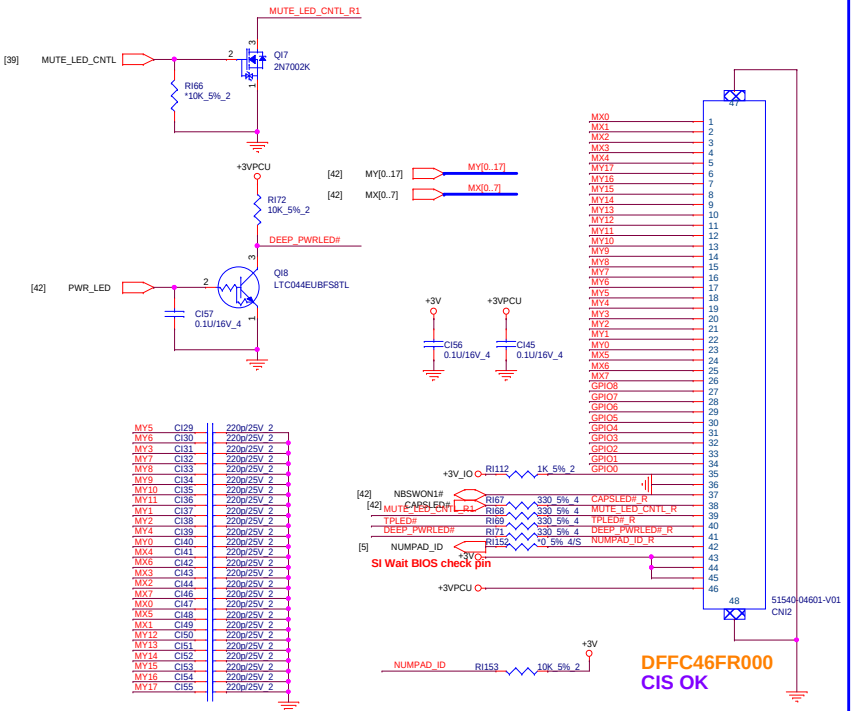
GPIO EXPENDER



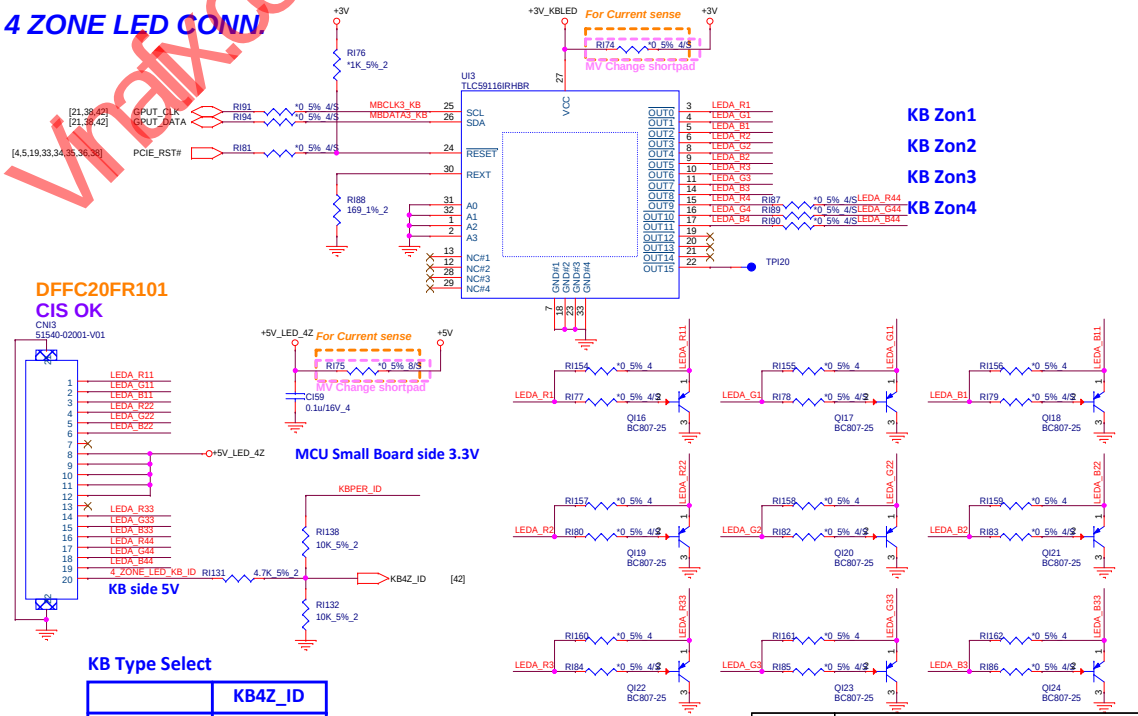
Per Key to MCU Board



KEYBOARD CONN.



4 ZONE LED CONN.



KB Type Select

	KB4Z_ID
1 Zone KB	0 V
4 Zone KB	3.3V
PerKey KB	1.5V

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NB5	Size C · Document Number GPIO EXPENDER/Keyboard · Rev 3A
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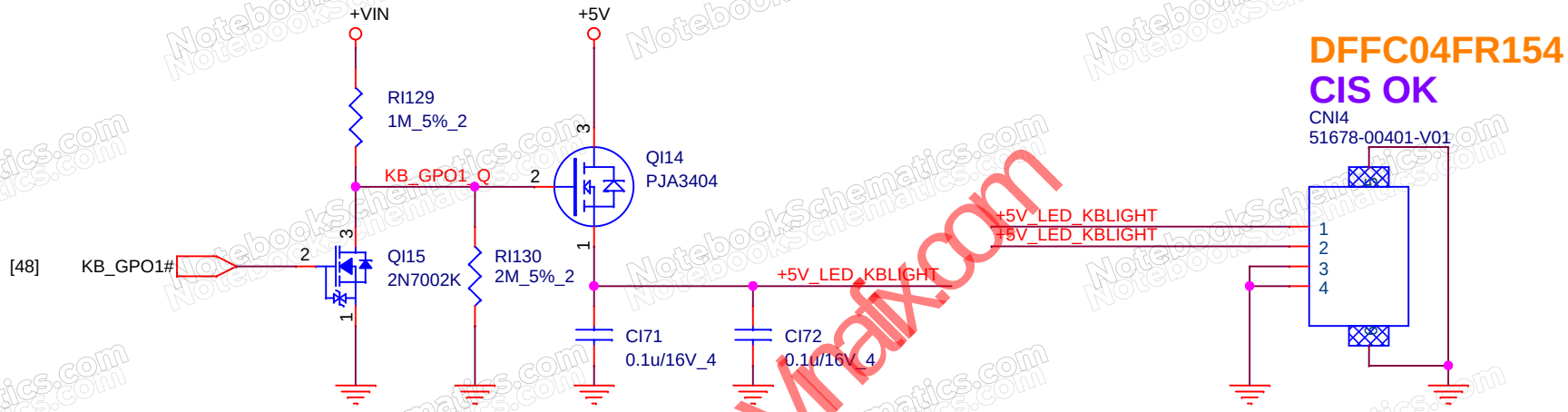
1 zone LED KEYBOARD BACKLIGHT CONN.



NB5

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Quanta Computer Inc.

Size	Document Number	Rev
A	1 Zone LED	1A
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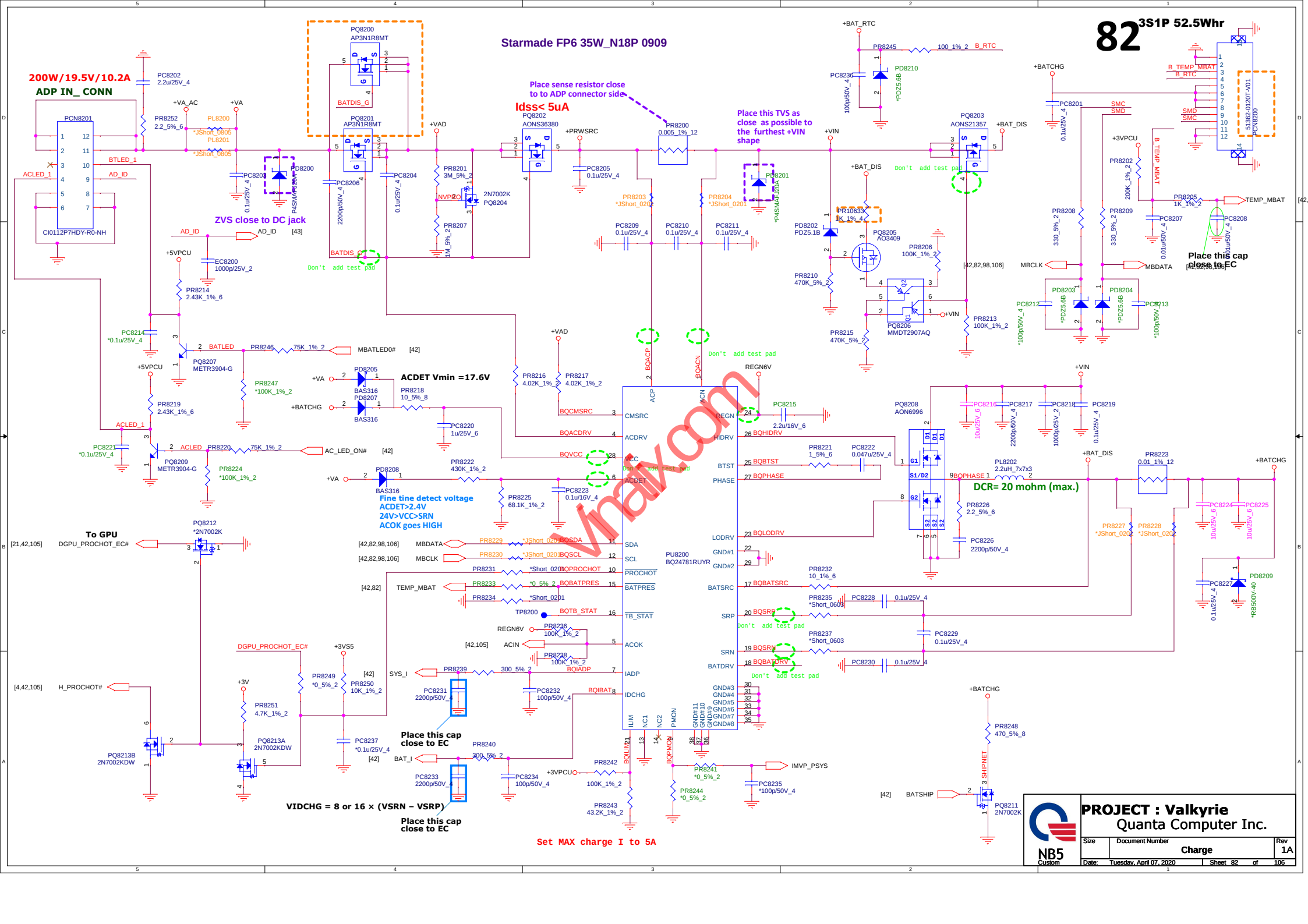
82
3S1P 52.5Whr
Starmade FP6 35W_N18P 0909
200W/19.5V/10.2A
ADP IN_ CONN
Idss< 5uA
Place sense resistor close to to ADP connector side
Place this TVS as close as possible to the furthest +VIN shape
ZVS close to DC jack
ACDET Vmin =17.6V
Fine tine detect voltage
ACDET>2.4V
24V>VCC>SRN
ACOK goes HIGH
DCR= 20 mohm (max.)
Place this cap close to EC
Place this cap close to EC
Place this cap close to EC
VIDCHG = 8 or 16 × (VSRN – VSRP)
Set MAX charge I to 5A
To GPU
PROJECT : Valkyrie
Quanta Computer Inc.
NB5
Charge
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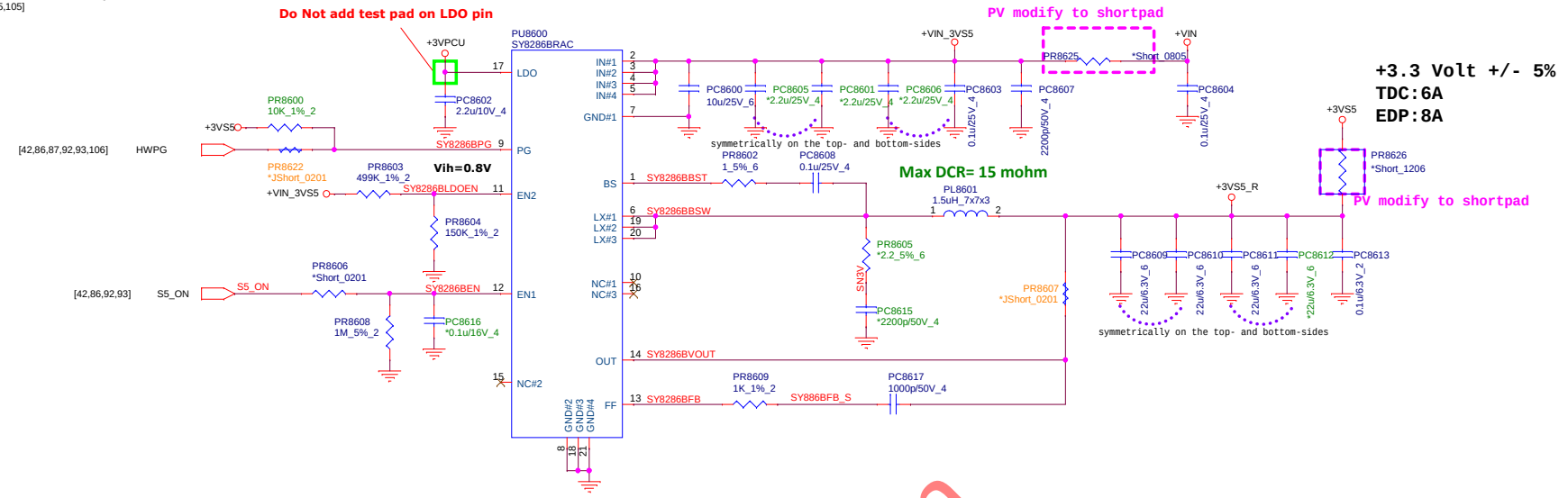
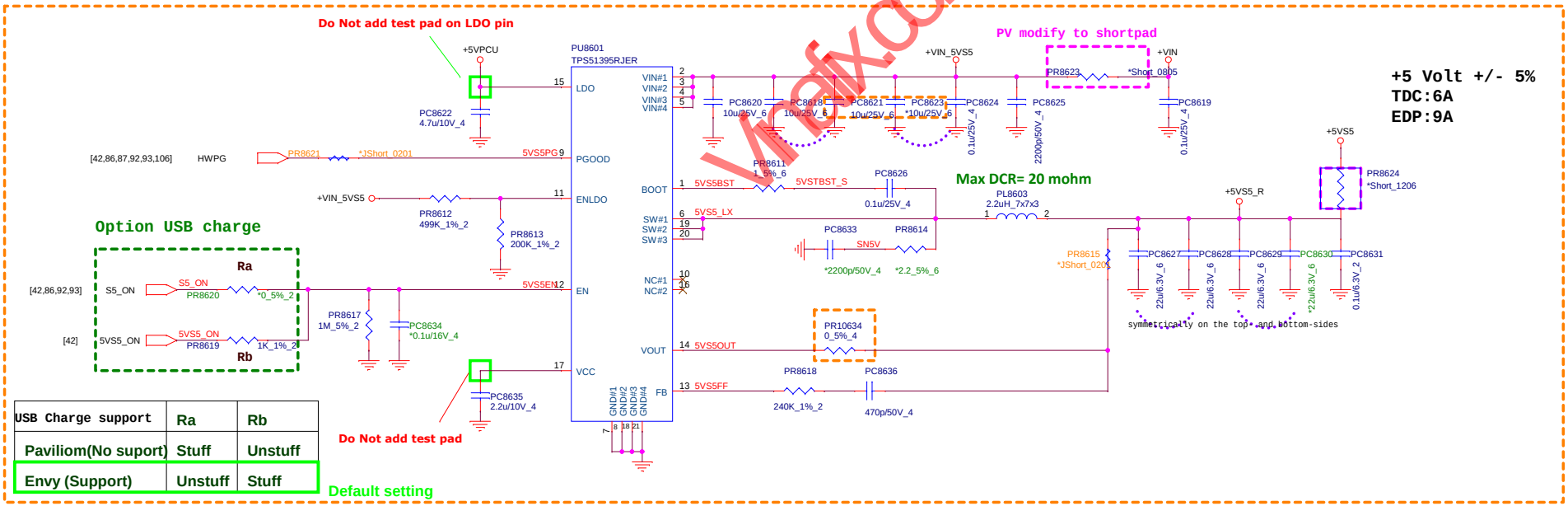
vhav.com

+VIN [41,49,82,87,88,89,95,97,101,106]
+3VS5 [4,5,6,7,23,31,35,36,42,47,48,82,92,93,95,104,105,106]
+5VS5 [34,46,87,88,89,95,98,101,105]
+3VPCU [7,32,34,42,43,46,48,82,104,106]
+5VPCU [39,82,95,105]



5V IC change from SYG to TIC on 20191203



USB Charge support	Ra	Rb
Paviliom(No suport)	Stuff	Unstuff
Envy (Support)	Unstuff	Stuff

Default setting

NB5

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Quanta Computer Inc.

Size	Document Number	Rev
Custom	+3/5VS5(SY8286B/SY8286C)	1A
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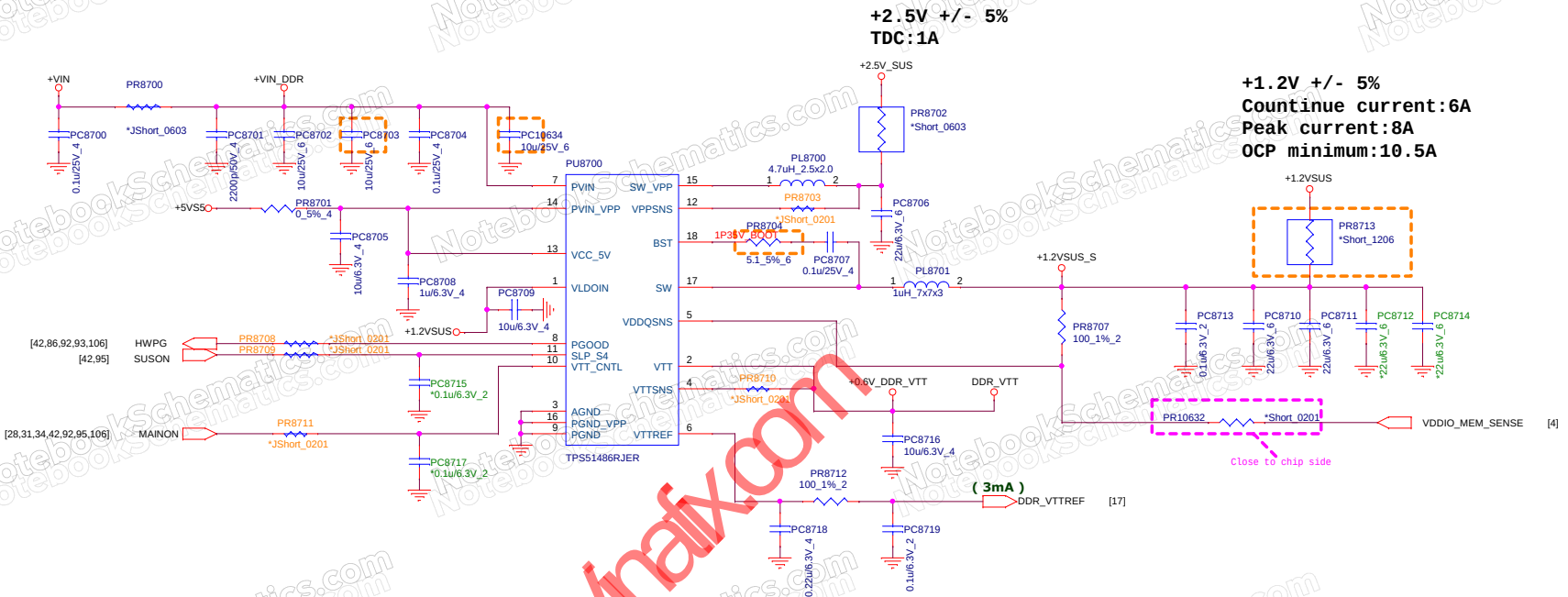

NB5	PROJECT : Valkyrie Quanta Computer Inc.	
Size: Custom	Document Number: +0.95VS5	Rev: 1A
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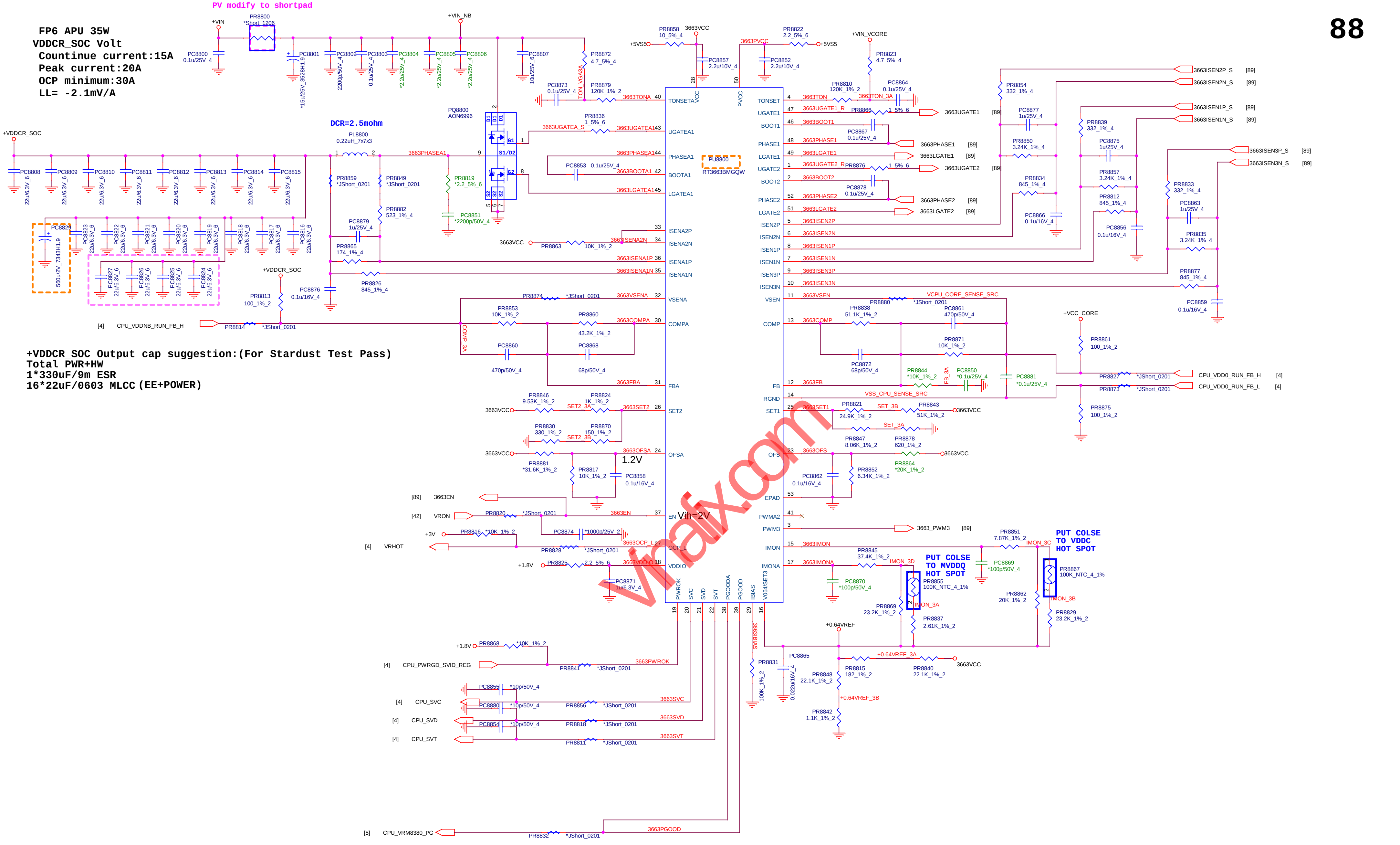
FP6 APU 35W
VDDCR_SOC Volt
Countinue current:15A
Peak current:20A
OCP minimum:30A
LL= -2.1mV/A



+VDDCR_SOC Output cap suggestion:(For Stardust Test Pass)
Total PWR+HW
1*330uF/9m ESR
16*22uF/0603 MLCC (EE+POWER)

NB5

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Custom	VGACORE1 (RT3663BC)	1A

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PV modify to shortpad

89

FP5 APU 35W
CPU CORE Volt
Countinue current:53A
Peak current:70A
OCP_TDC:90A
OCP_SPIKE:120A
LL= -0.7mV/A

Default setting

FP6 APU 35W
CPU CORE Volt
Countinue current:51A
Peak current:90A
OCP_TDC:110A
OCP_SPIKE:145A
LL= -0.7mV/A

FP6
Vcore Output cap suggestion:(For Stardust Test Pass)
Total PWR+HW
4*330uF/9m ESR
22*22uF/0603 MLCC

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NB5
Size Custom | Document Number CORE_NB2 | Rev 1A
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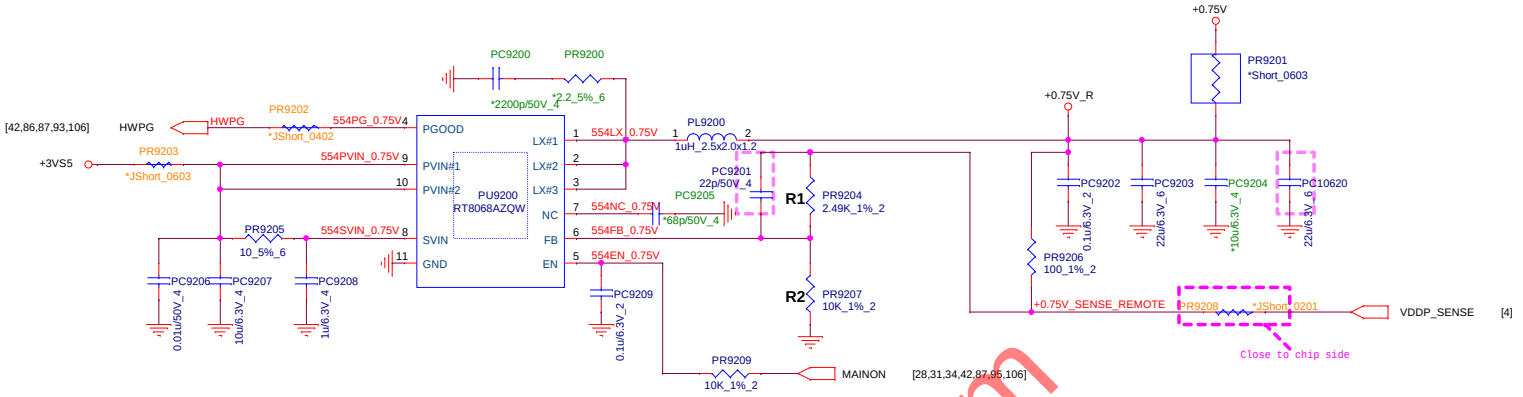
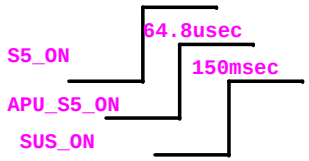
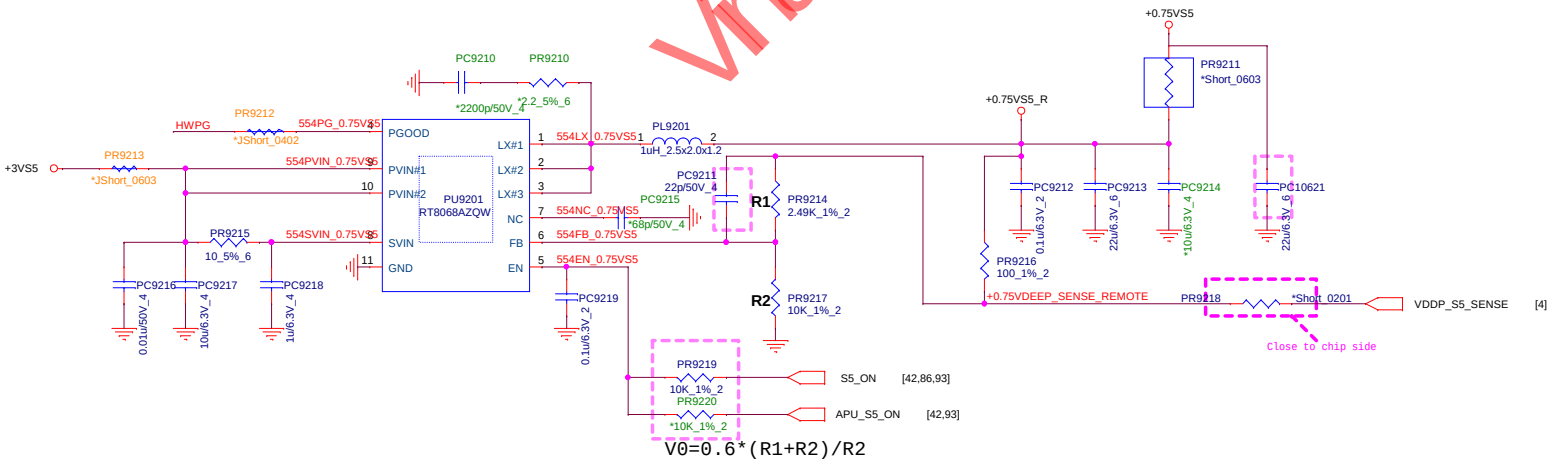
0.75V +/- 3%
TDC:2A
EDP:4A



V0=0.6*(R1+R2)/R2



0.75VS5 +/- 3%
TDC:2A
EDP:4A



V0=0.6*(R1+R2)/R2

NB5

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Quanta Computer Inc.

Size	Document Number	Rev
Custom	+0.95VS5	1A
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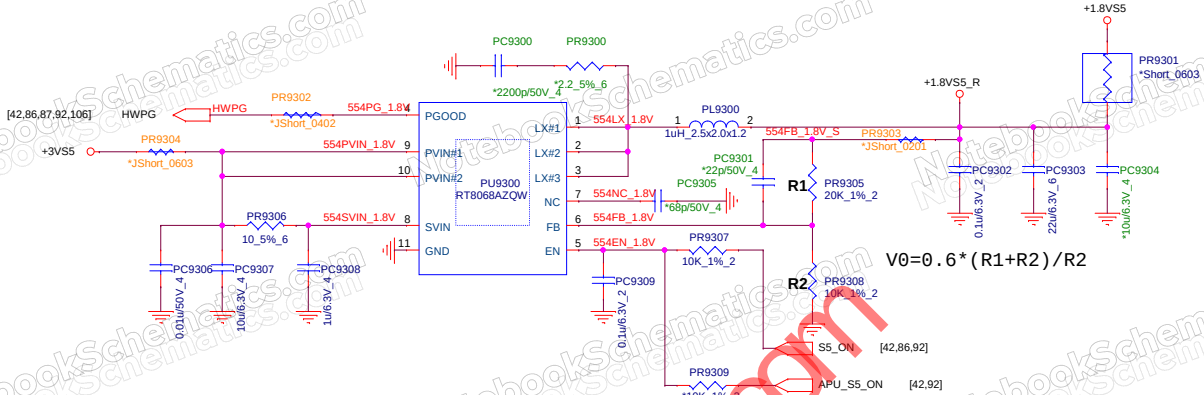
[41,49,82,86,87,88,89,95,97,101,106] +VIN

[4,5,6,7,19,22,34,38,95,105] +1.8VS5

1.8VS5 +/- 3%
TDC:3A
EDP:4A



V0=0.6*(R1+R2)/R2

NB5

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Quanta Computer Inc.

Size	Document Number	Rev
Custom	+0.95V(AOZ2260/+1.8VS5)	1A
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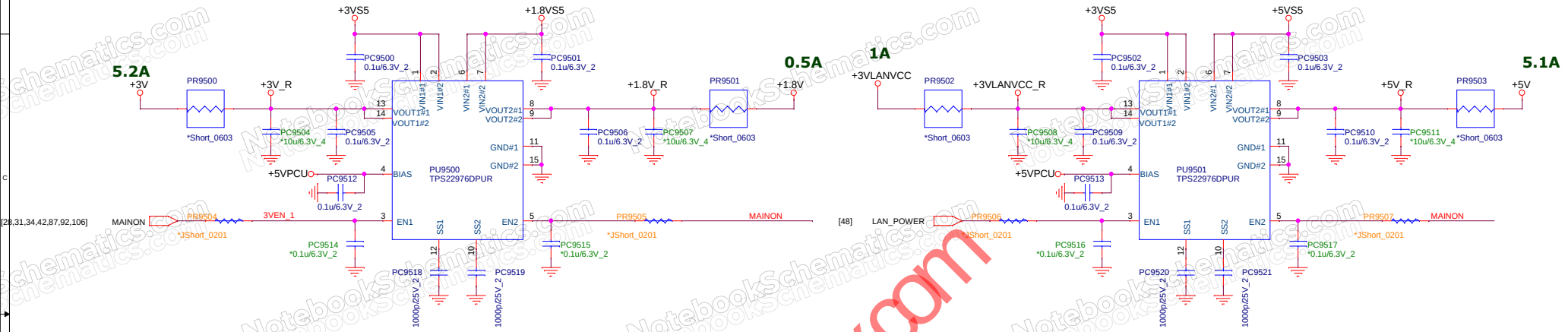
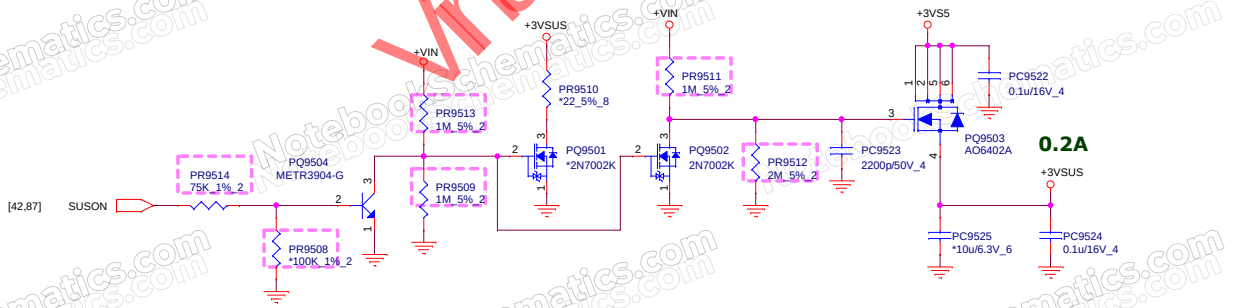
+3V [4,5,7,17,18,21,27,28,30,31,33,34,35,36,38,39,41,42,48,82,88,98,99,101,105]
+5VS5 [34,46,86,87,88,89,98,101,105]
+3VS5 [4,5,6,7,23,31,35,36,42,47,48,82,86,92,93,104,105,106]
+3VSUS [38,48]
+5V [28,30,39,48,49,104,106]
+3VLANVCC [33]
+5VPCU [39,82,86,105]





NB5

PROJECT : Valkyrie
Quanta Computer Inc.

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	Load switch IC(APL3523A)	1A
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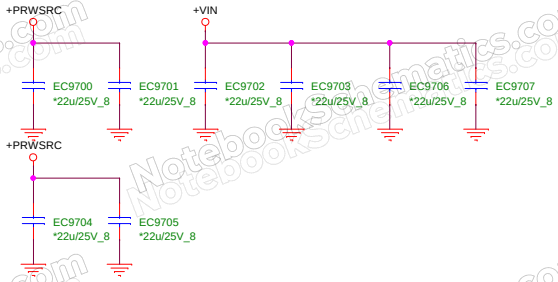
Reserve for ISEN



NB5	PROJECT : Valkyrie Quanta Computer Inc.	
Size: Custom	Document Number: 97 -- ISN and EMI	Rev: 1A
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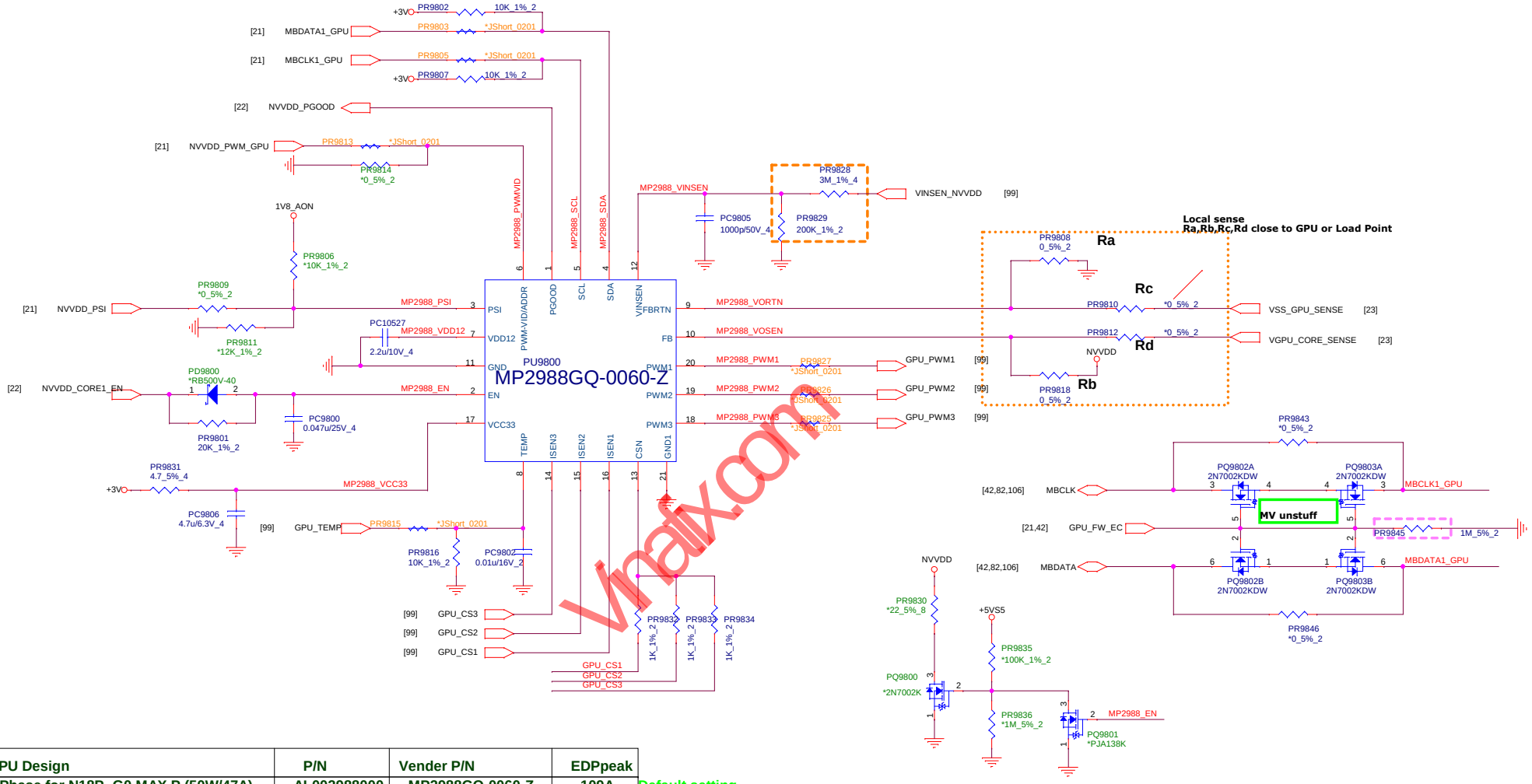

GPU Design	P/N	Vender P/N	EDPpeak
3 Phase for N18P -G0 MAX P (50W/47A)	AL002988000	MP2988GQ-0060-Z	109A
4 Phase for N17P-G1 (50W/59A)	AL002884003	MP2884AGU-0103-Z	106A
5 Phase for N18E -G0 MAXQ (60W/63A)	AL002886005	MP2886AGU-0125-Z	225A
6 Phase for N18E -G3 (80W/84A)	AL002886000	MP2886AGU-0112-Z	300A

Default setting

+5VS5 [34,46,86,87,88,89,95,101,105]
1V8_AON [19,21,22,23,24,25,101,105]
NVVDD [22,23,99]
+3V [4,5,7,17,18,21,27,28,30,31,33,34,35,36,38,39,41,42,48,82,88,

NB5

PROJECT : Valkyrie
Quanta Computer Inc.

Size	Document Number	Rev
Custom	+VGACORE (RT8813C)	1A
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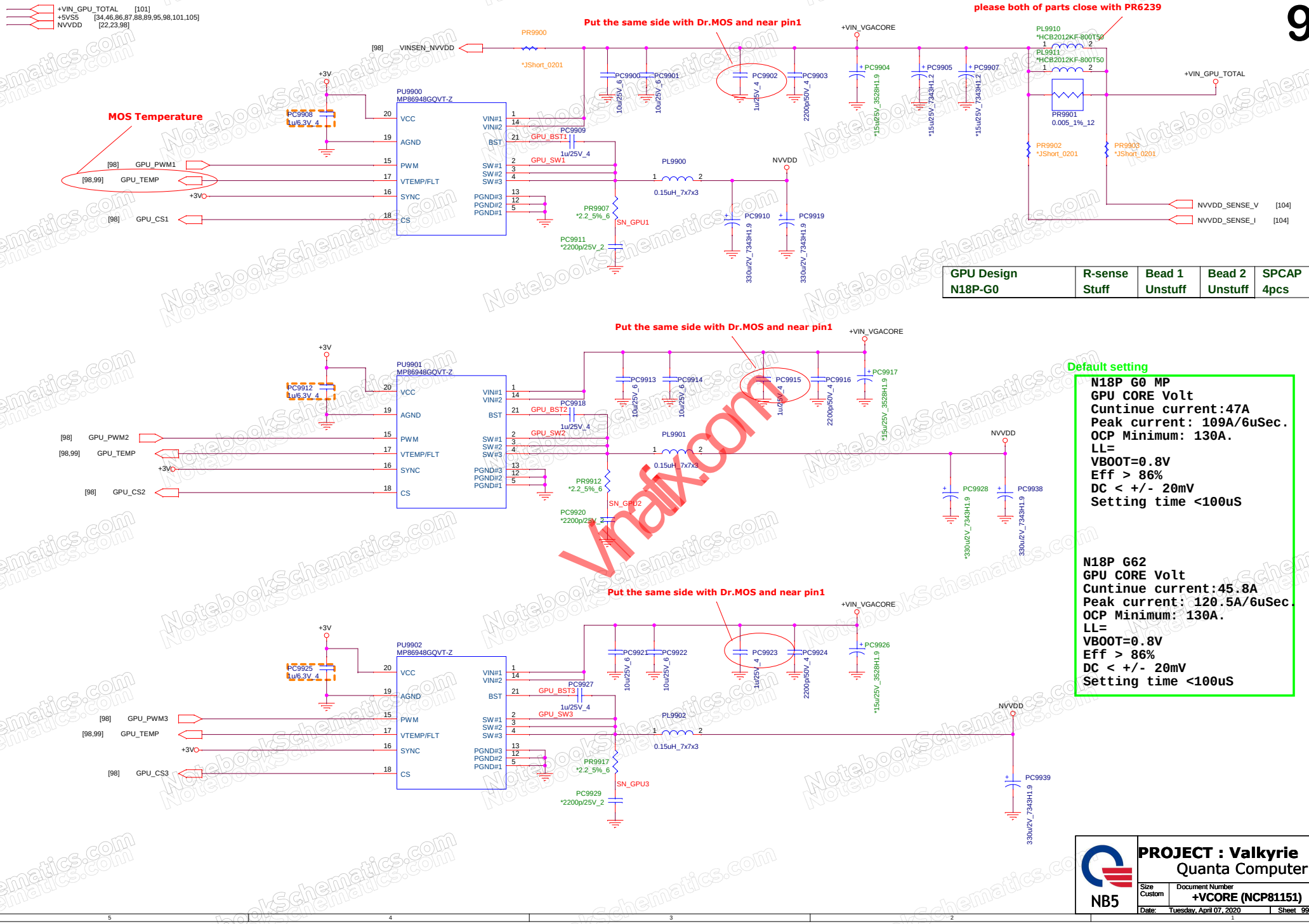

GPU Design	R-sense	Bead 1	Bead 2	SPCAP
N18P-G0	Stuff	Unstuff	Unstuff	4pcs

Default setting

```
N18P G0 MP
GPU CORE Volt
Cuntinue current:47A
Peak current: 109A/6uSec.
OCP Minimum: 130A.
LL=
VBOOT=0.8V
Eff > 86%
DC < +/- 20mV
Setting time <100uS


N18P G62
GPU CORE Volt
Cuntinue current:45.8A
Peak current: 120.5A/6uSec.
OCP Minimum: 130A.
LL=
VBOOT=0.8V
Eff > 86%
DC < +/- 20mV
Setting time <100uS
```


NB5	**PROJECT : Valkyrie** Quanta Computer Inc.
Size: Custom	Document Number: +VCORE (NCP81151) Rev: 1A
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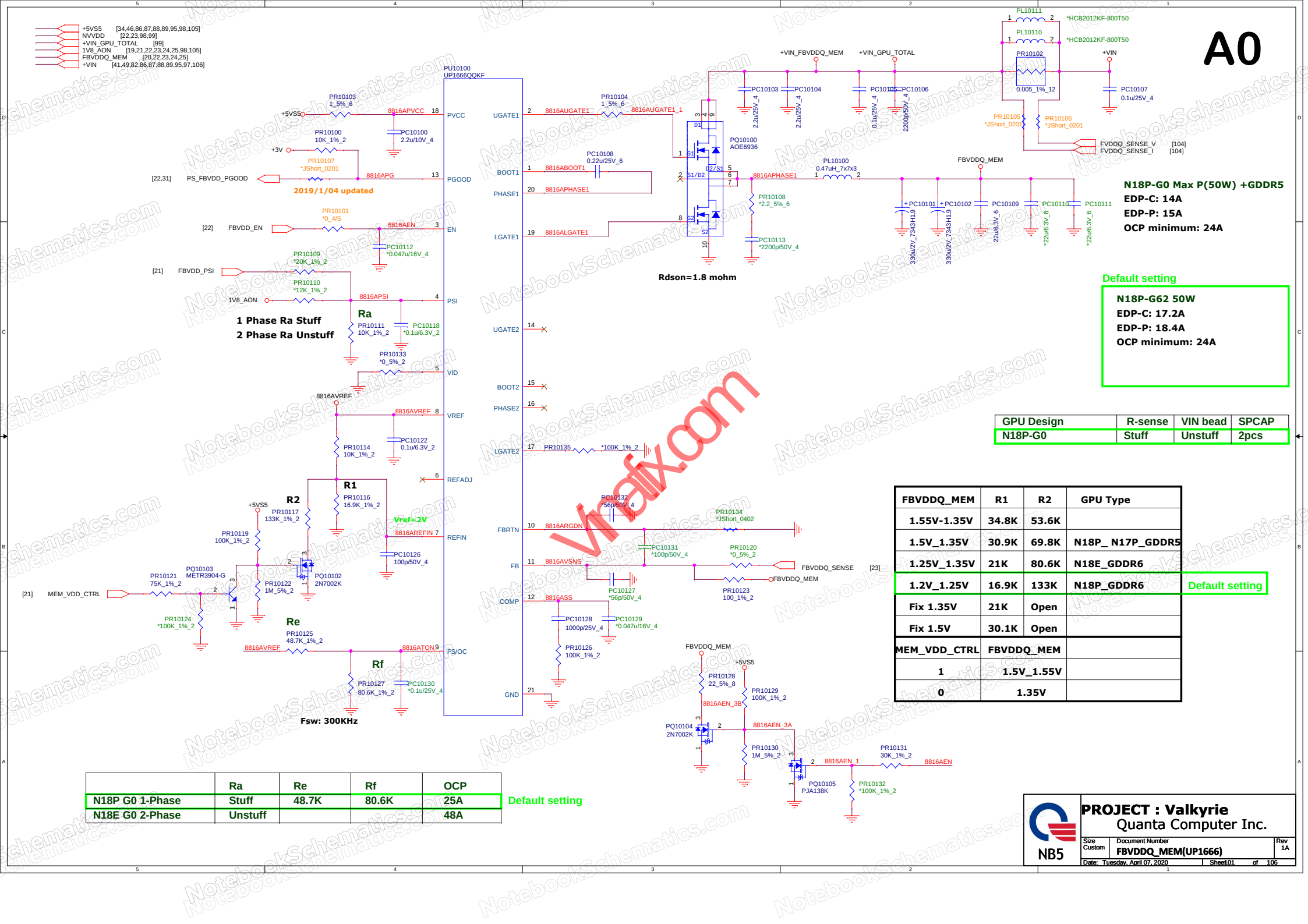


GPU Design	R-sense	VIN bead	SPCAP
N18P-G0	Stuff	Unstuff	2pcs

FBVDDQ_MEM	R1	R2	GPU Type
1.55V-1.35V	34.8K	53.6K	
1.5V_1.35V	30.9K	69.8K	N18P_ N17P_GDDR5
1.25V_1.35V	21K	80.6K	N18E_GDDR6
1.2V_1.25V	16.9K	133K	N18P_GDDR6
Fix 1.35V	21K	Open	
Fix 1.5V	30.1K	Open	

Default setting

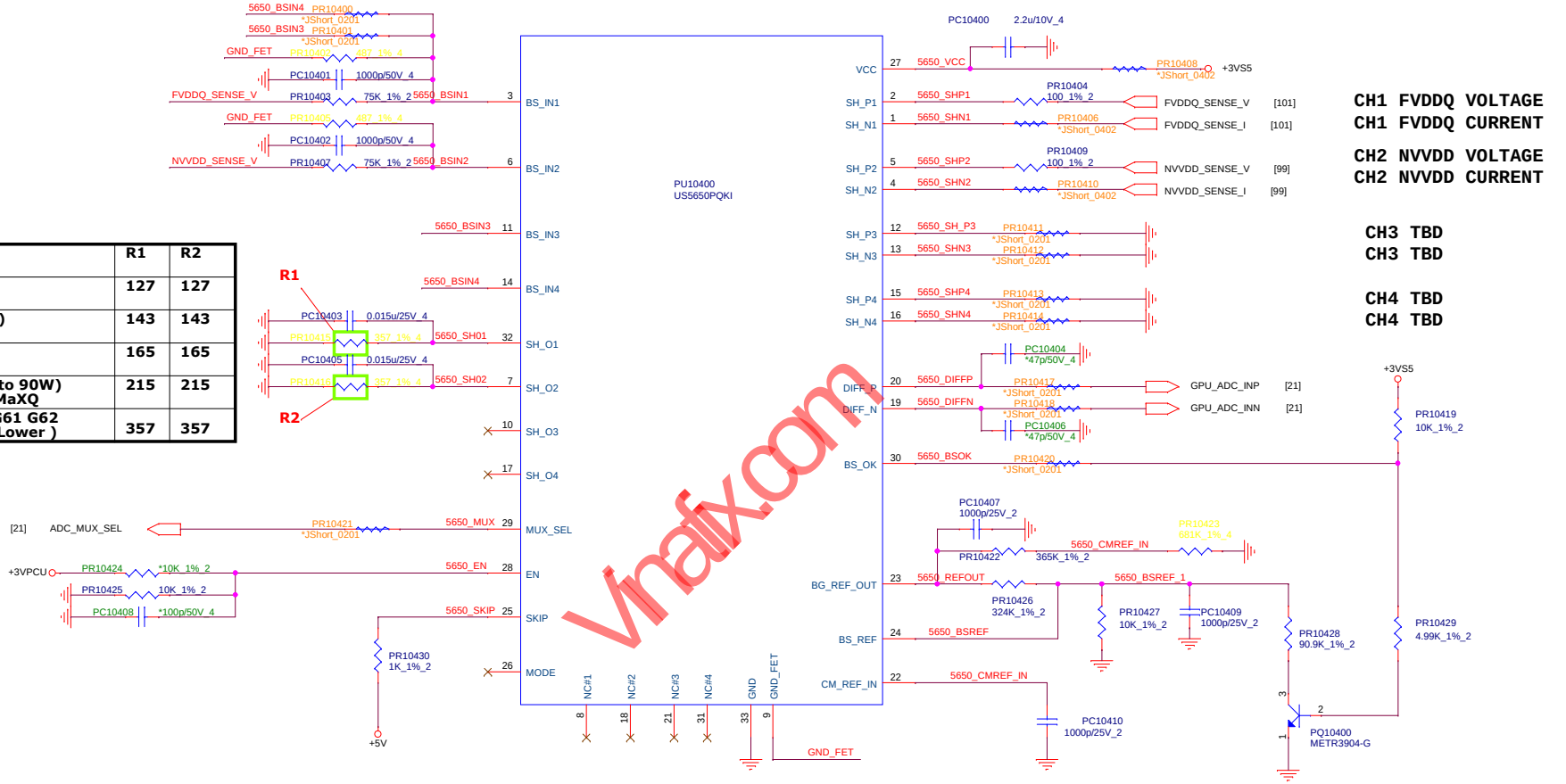
MEM_VDD_CTRL	FBVDDQ_MEM
1	1.5V_1.55V
0	1.35V

	Ra	Re	Rf	OCP
N18P G0 1-Phase	Stuff	48.7K	80.6K	25A
N18E G0 2-Phase	Unstuff			48A

Default setting

+3V [4,5,7,17,18,21,27,28,30,31,33,34,35,36,38,39,41,42,48,82,88,95,98,99,101,105]

UPI OVR Setting	R1	R2
N18E G3 (150W+)	127	127
N18E G2 (115W to 130W)	143	143
100W to 110W	165	165
N18E-G0,N18E-G1 (75W to 90W) N18E-G2 MaxQ,N18E-G3 MaXQ	215	215
N18P G0 N18P G0 MaxQ G61 G62 N18E G0 MaxQ (70W or Lower)	357	357



CH1 FVDDQ VOLTAGE
CH1 FVDDQ CURRENT
CH2 NVVDD VOLTAGE
CH2 NVVDD CURRENT
CH3 TBD
CH3 TBD
CH4 TBD
CH4 TBD

NB5

PROJECT : Valkyrie
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Custom	+3V/+1.05V_GFX(AOZ1331DI)	1A

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+3VS5 [4,5,6,7,23,31,35,36,42,47,48,82,86,92,93,95,104,106]
1V8_MAIN [19,20,21,22,30]
1V8_AON [19,21,22,23,24,25,98,101]
PEX_VDD [19,21]
+3V [4,5,7,17,18,21,27,28,30,31,33,34,35,36,38,39,41,42,48,82,88,95,98,99,101]

Reserved

1.8VS5 +/- 3%
TDC:3A
EDP:4A

1V8_AON
PR10504 *10K_1%_2
1V8_AON_PG
PR10507 *JShort_0201
68PG_1.8VGPU
PC10502 *2200p/25V_2
SN_P18GPU
PR10505 *2.2_5%_6
PL10500 *1uH_2.5x2.0x1.2
68LX_1.8V_GPU
68FB_1.8VGPU
PR10511 *JShort_0201
R1
PR10512 20K_1%_2
R2
PR10515 *10K_1%_2
PC10508 *0.1u/6.3V_2
PC10509 *22u/6.3V_6
PC10510 *10u/6.3V_4
1V8_AON_S2
PR10506 *JShort_0603
+3VS5
PR10510 *JShort_0603
68PVIN_1.8VGPU
PR10513 *10_5%_6
68SVIN_1.8VGPU
PC10513 *0.01u/50V_4
PC10514 *10u/6.3V_4
PC10515 *1u/6.3V_4
PU10501 *RT8068AZQW
PGOOD
PVIN#1
PVIN#2
SVIN
GND
LX#1
LX#2
LX#3
NC
FB
EN
PC10511 *68p/50V_4
PC10507 *22p/50V_4
68NC_1.8VGPU
68FB_1.8VGPU
68EN_1.8VGPU
PC10517 *0.1u/6.3V_2
PR10517 *JShort_0201
1V8_AON_EN [22,105]

V0=0.6*(R1+R2)/R2

1.2A

1V8_AON +1.8VS5
PR10500 *0_5%_6
PR10501 0_5%_6
PC10500 0.1u/6.3V_2
+1.8VS5 1V8_AON
PR10502 0_5%_6
PR10503 *0_5%_6
PC10501 0.1u/6.3V_2

1V8_MAIN
PR10508 JShort_0603
1V8_MAIN_S2
PC10503 *10u/6.3V_6
PC10504 0.1u/6.3V_2
+5VPCU
PC10512 0.1u/6.3V_2
PU10500 TPS22976DPUR
VIN1#1
VIN1#2
VIN2#1
VIN2#2
VOUT1#1
VOUT1#2
VBIAS
ON1
CT1
CT2
ON2
OUT2#1
OUT2#2
GND#1
GND#2
PC10518 220p/50V_4
PC10519 220p/50V_4
[22,105] 1V8_MAIN_EN
PR10516 10K_1%_2
PC10520 820p/50V_4
1V8_AON_S2
PR10509 *Short_0603
PC10505 0.1u/6.3V_2
PC10506 *10u/6.3V_6
PR10514 10K_1%_2
1V8_AON_EN [22,
PC10516 0.1u/16V_4

1.2A

For HW Throttling: Stuff condition: CPU45W & GPU>60W

[42] DC_PROCHOT_OFF
DC_PROCHOT_OFF
[42,82] ACIN
ACIN
+3VS5
PR10519 *10K_1%_2
+3V
PR10521 *10K_1%_2
DGPU_PROCHOT_EC# [21,42,82]
H_PROCHOT# [4,42,82]
PQ10502A *2N7002KDW
PQ10502B *2N7002KDW
PQ10503A *2N7002KDW
PQ10503B *2N7002KDW
HWPRHOT1

ACIN
DC_PROCHOT_OFF

1V8_MAIN
PR10518 22_5%_8
+5VS5
PR10520 100K_1%_2
PEX_VDD
PR10522 22_5%_8
PR10524 100K_1%_2
PQ10500 2N7002K
PR10523 1M_5%_2
1V8MAIN_EN
1V8_MAIN_EN [22,105]
PQ10501 PJA138K
PQ10504 2N7002K
PR10525 1M_5%_2
PEX_EN_1
PQ10505 PJA138K

+1.0V_GFX Volt +/- 5%
EDP=3.31A
EDP_peak = TBD

1V8_AON
PR10526 10K_1%_2
[22] PEX_VDD_PG
PR10528 *JShort_0201
PEX_PG_3
PR10529 *Short_0201
[22] PEXVDD_EN
PEXVDD_EN=1.8V
PEX_EN_1
PC10525 *2200p/50V_4
[22] PEX_EN_1
+3VS5
PC10521 10u/6.3V_4
PU10502 RT8097ALGE
PG
VIN
LX
EN
GND
FB
PEX_LX
PL10501 2.2uH_2.5x2.0x1.2
+1.0V_GFX_S2
PEX_VDD
PR10527 *JShort_0603
PR10530 *JShort_0201
PC10526 22u/6.3V_6
PC10522 *10u/6.3V_4
PC10523 *0.1u/6.3V_2
PC10524 *220u/2V_7343H1.9
PEX_FB_1
R1
PR10531 6.65K_1%_2
PEX_FB
R2
PR10532 10K_1%_2
VO=(0.6(R1+R2)/R2)

1V8_AON
1V8_MAIN
NVVDD
NVVDDS
PEX_VDD
FBVDDQ

NB5

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Custom	+3V/+1.05V_GFX(AOZ1331DI)	1A
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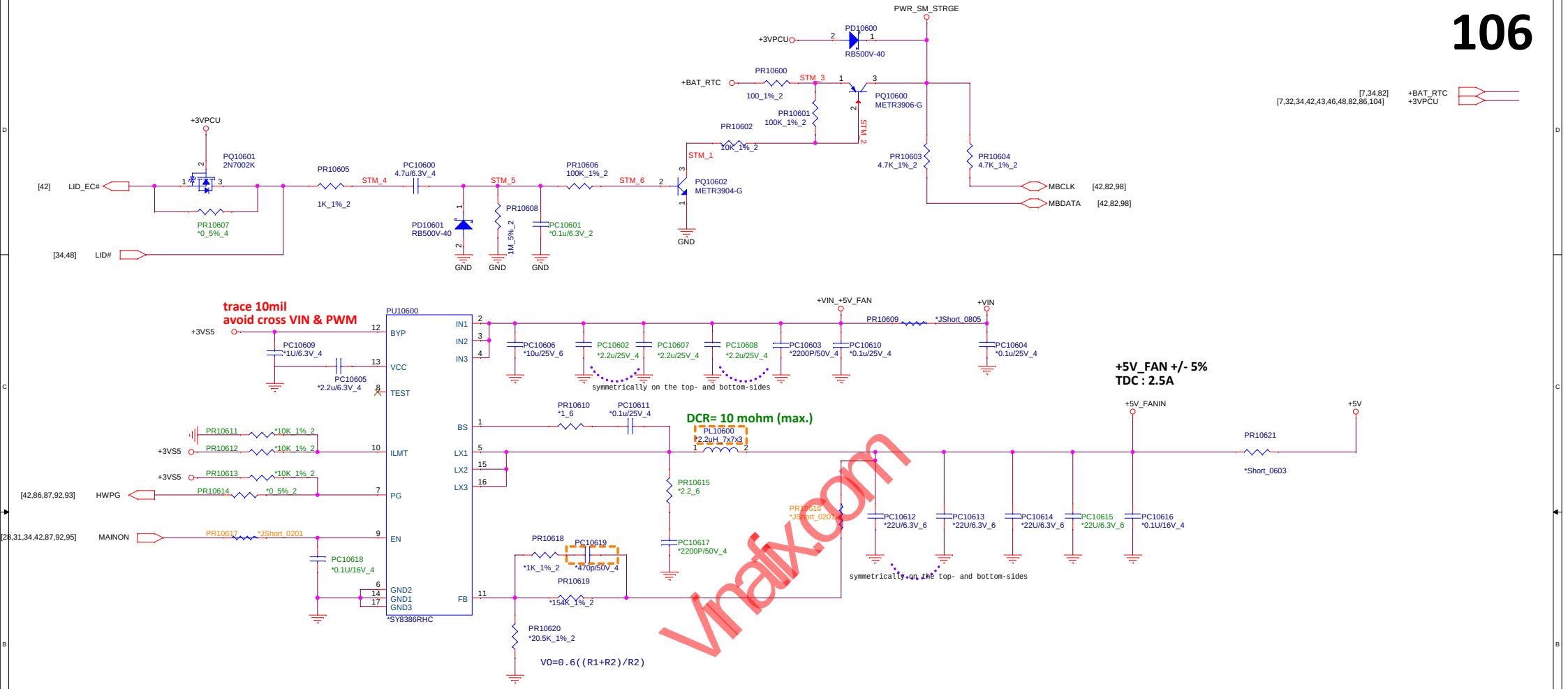

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Custom	STORAGE MODE	1A
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