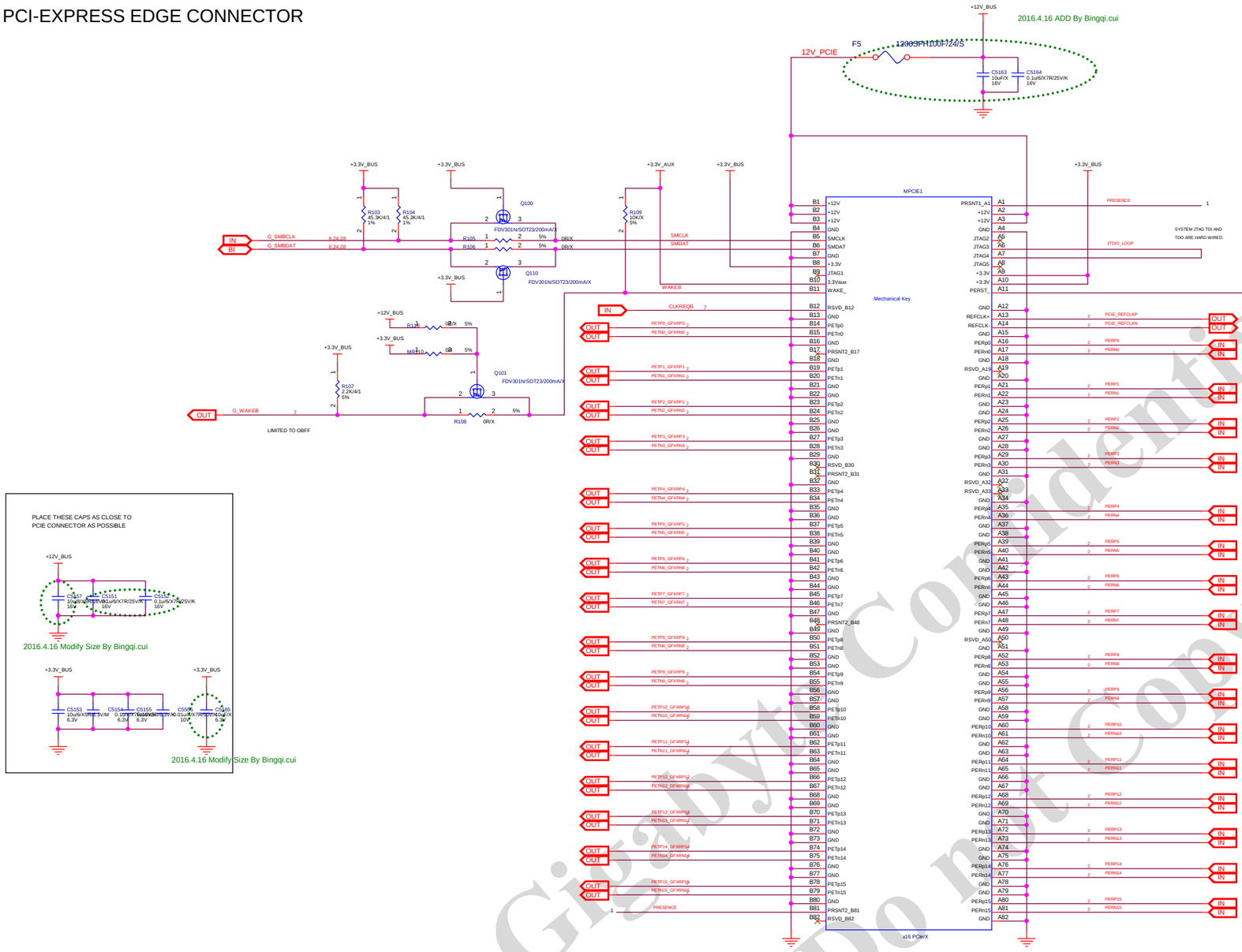
(1) PCI-EXPRESS EDGE CONNECTOR

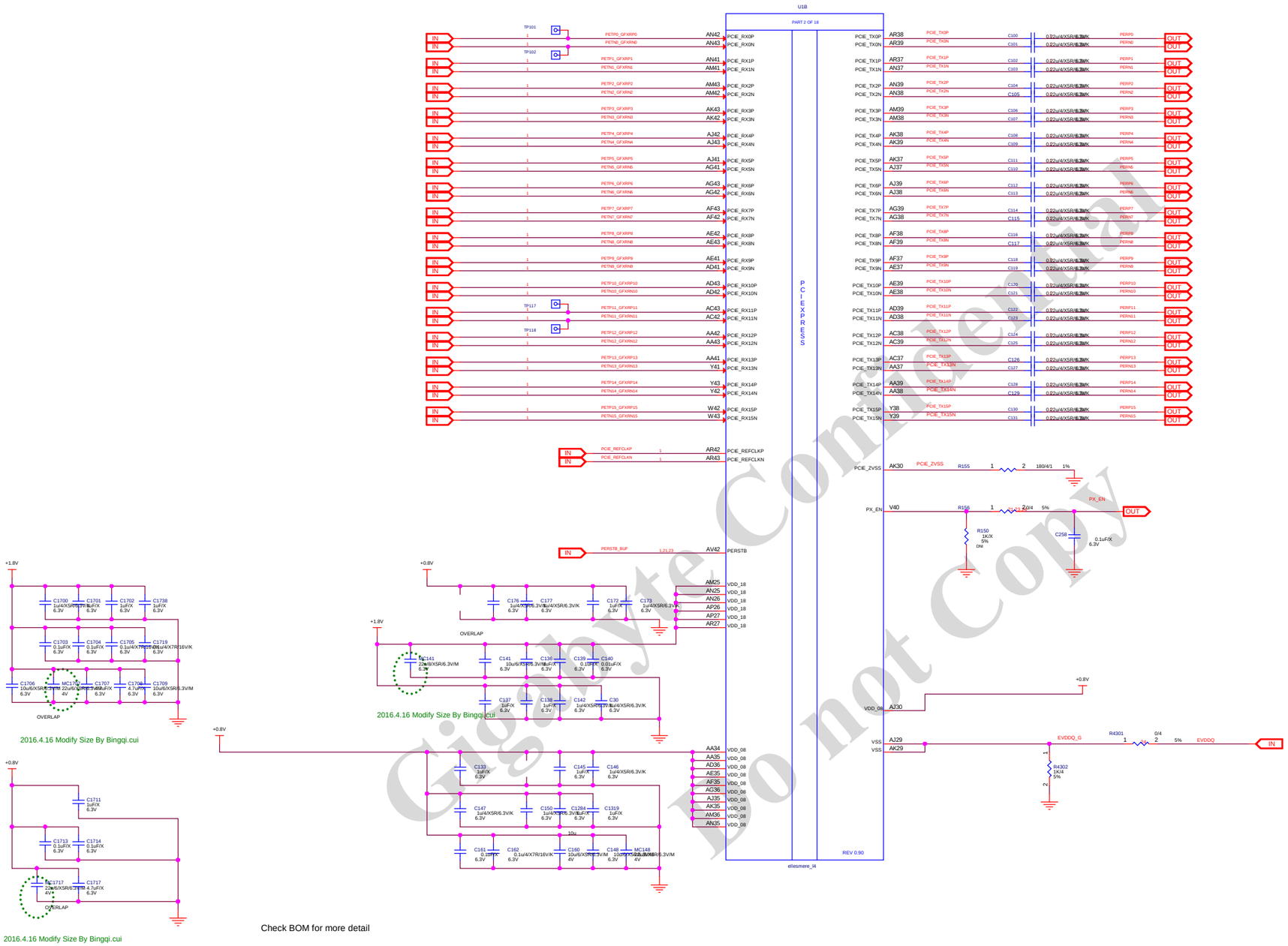


SYMBOL LEGEND

DNI	DO NOT INSTALL
b or #	ACTIVE LOW
BUO	BRING UP ONLY
	DIGITAL GROUND
	ANALOG GROUND

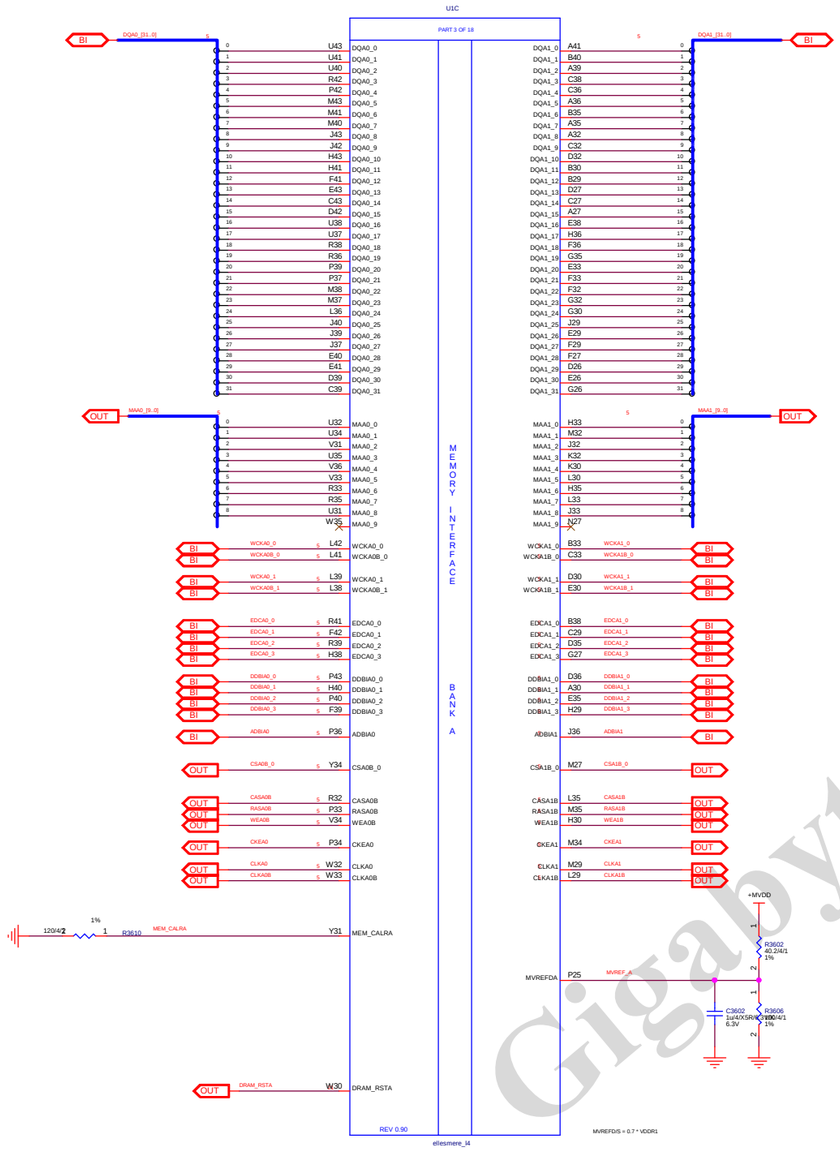
GIGABYTE			
Title	PCI Express		
Size: Custom	Document Number: GV-RX570GAMING-8GD-MI		Rev: 1.11
Date: Friday, June 01, 2018	Sheet 1 of 29		

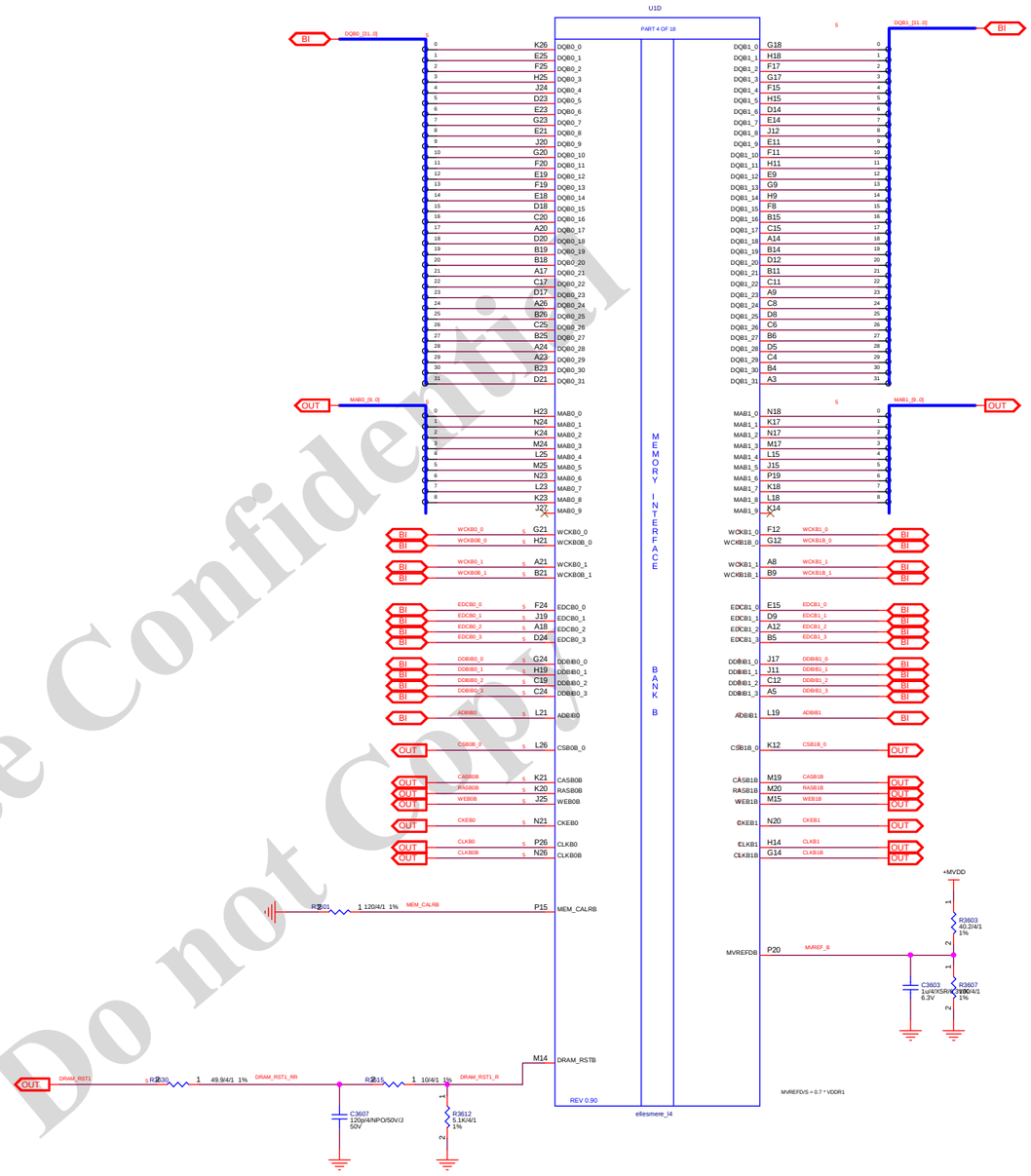
(2) ELLESMERE PCIE INTERFACE



GIGABYTE			
Title	ELLESMERE PCIE INTERFACE		
Size: Custom	Document Number: GV-RX570GAMING-8GD-MI		Rev: 1.11
Date: Friday, June 01, 2018	Sheet 2 of 29		

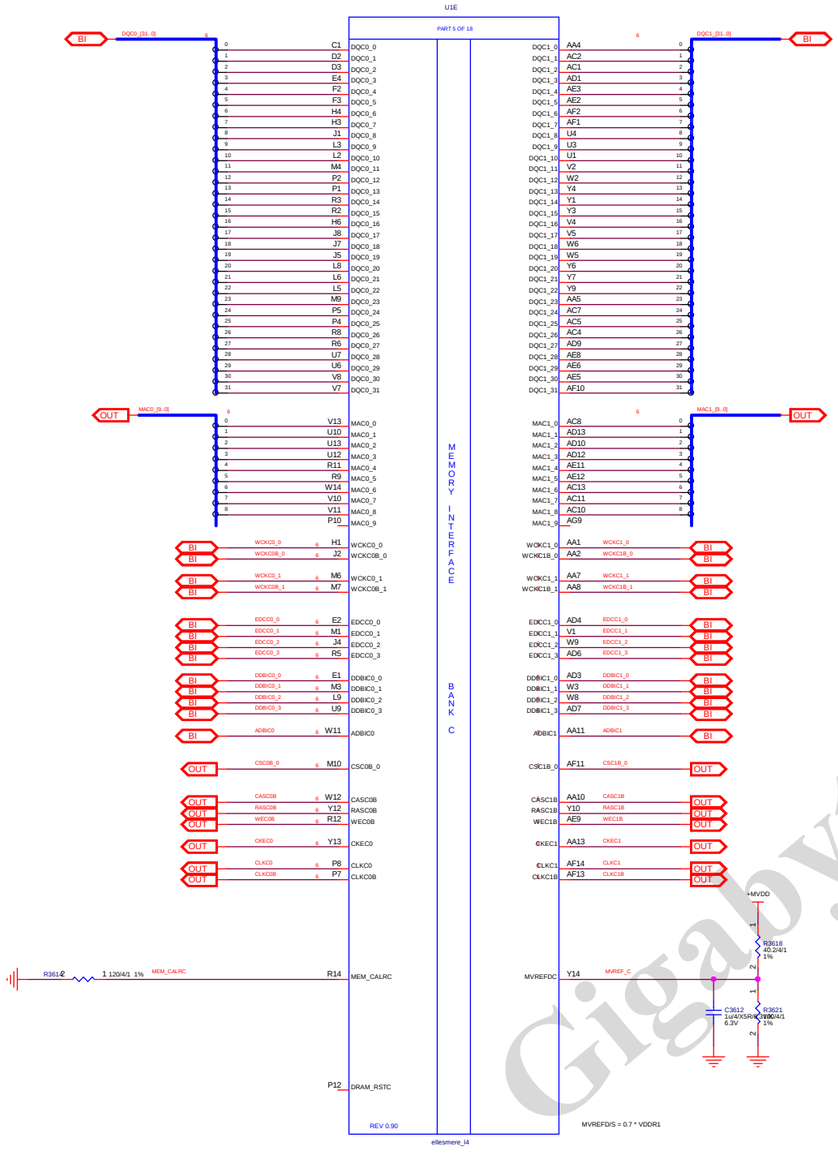
(3) ELLESMERE MEM INTERFACE CH A/B

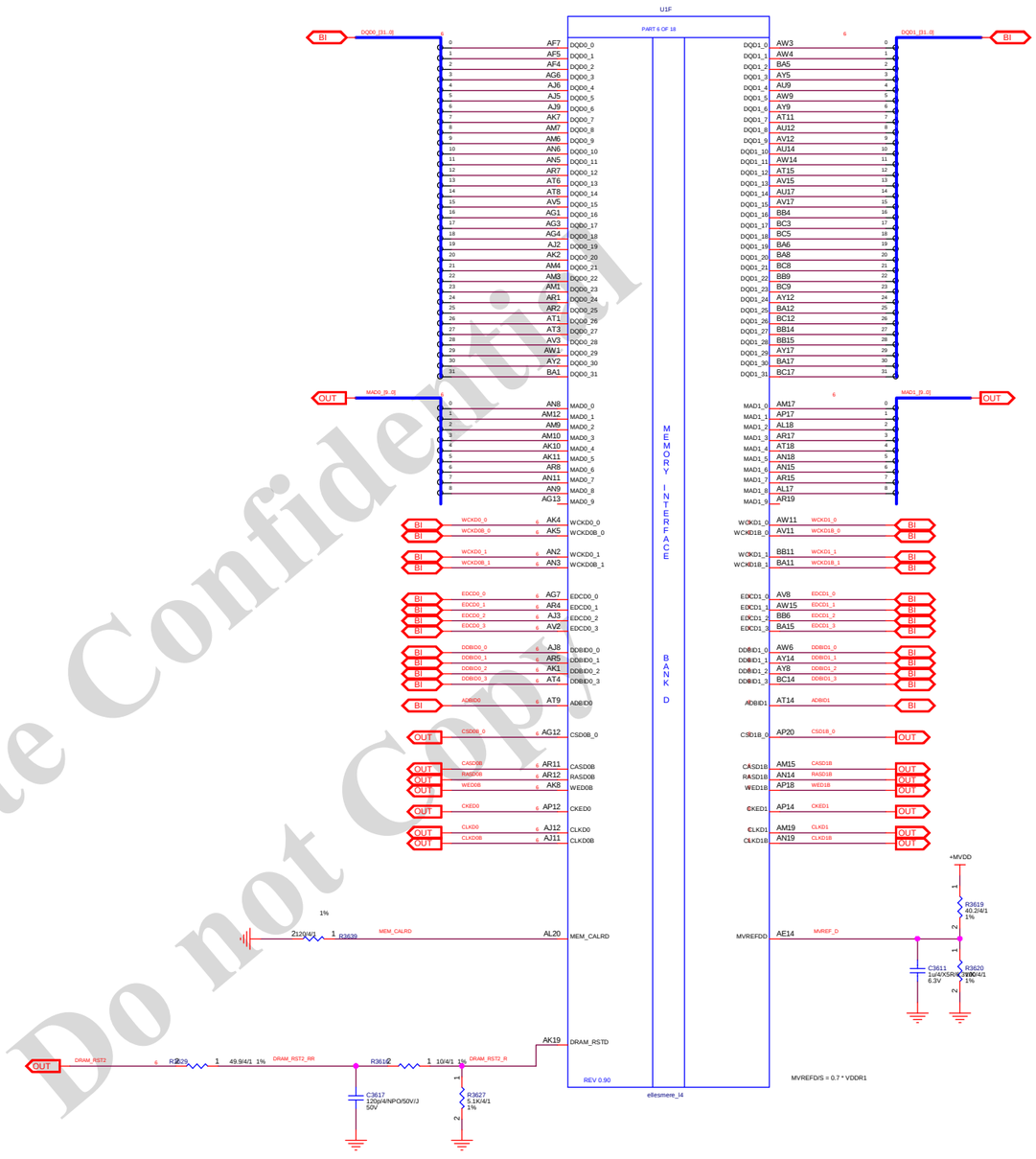




GIGABYTE		
Title: ELLESMERE MEM INTERFACE CH A/B		
Size: Custom	Document Number: GV-RX570GAMING-8GD-MI	Rev: 1.11
Date: Friday, June 01, 2018	Sheet 3 of 29	

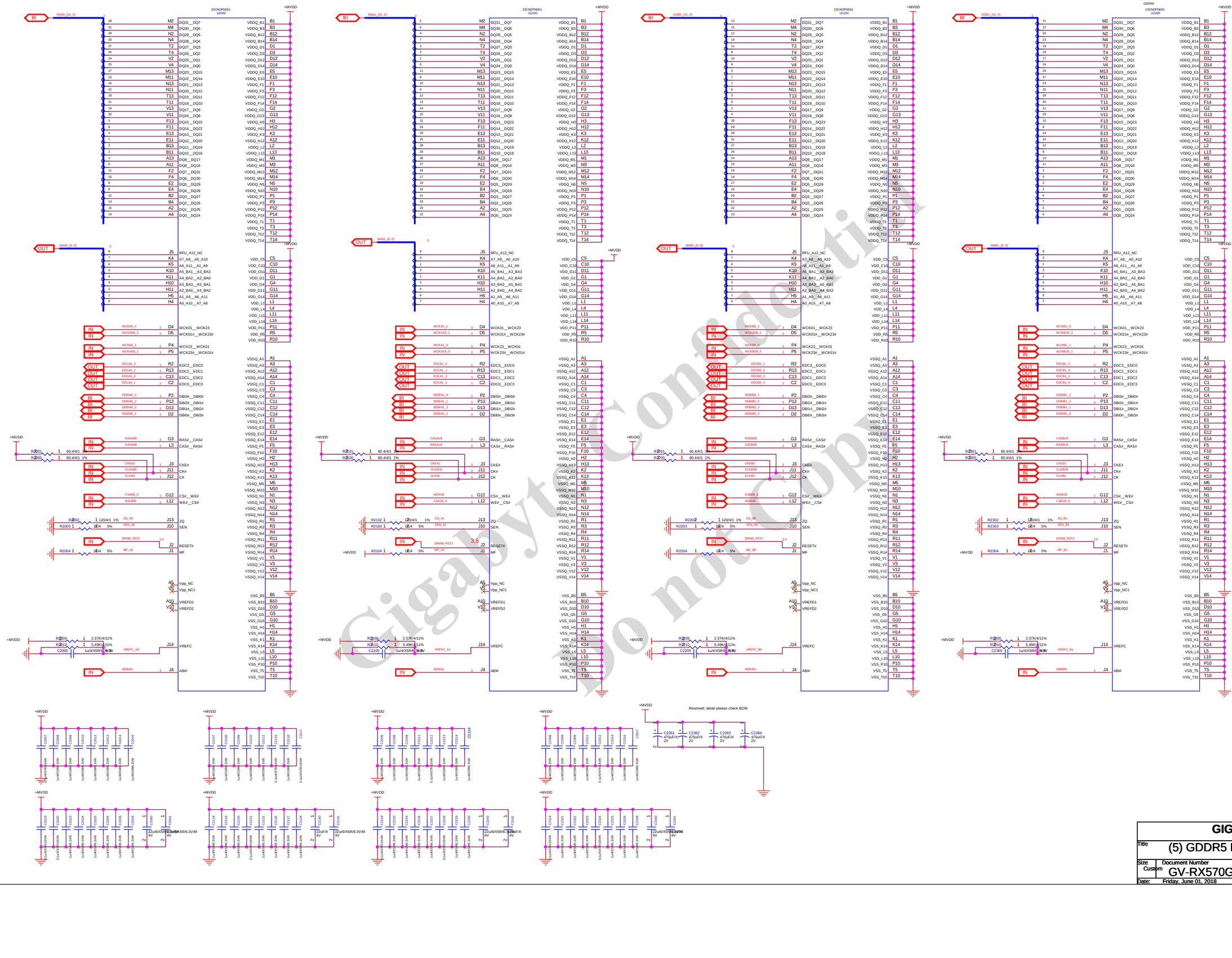
(4) ELLESMERE MEM INTERFACE CH C/D





GIGABYTE		
Title: ELLESMERE MEM INTERFACE CH C/D		
Size: Custom	Document Number: GV-RX570GAMING-8GD-MI	Rev: 1.11
Date: Friday, June 01, 2018	Sheet 4 of 29	

(5) GDDR5 MEMORY CH A/B



GIGABYTE			
Title: (5) GDDR5 MEMORY CH A/B			
Size: Custom	Document Number: GV-RX570GAMING-8GD-MI		Rev: 1.11
Date: Friday, June 01, 2018	Sheet 5 of 29		

(6) GDDR5 MEMORY CH C/D

GIGABYTE			
Title	(6) GDDR5 MEMORY CH C/D		
Size: Custom	Document Number: GV-RX570GAMING-8GD-MI		Rev: 1.11
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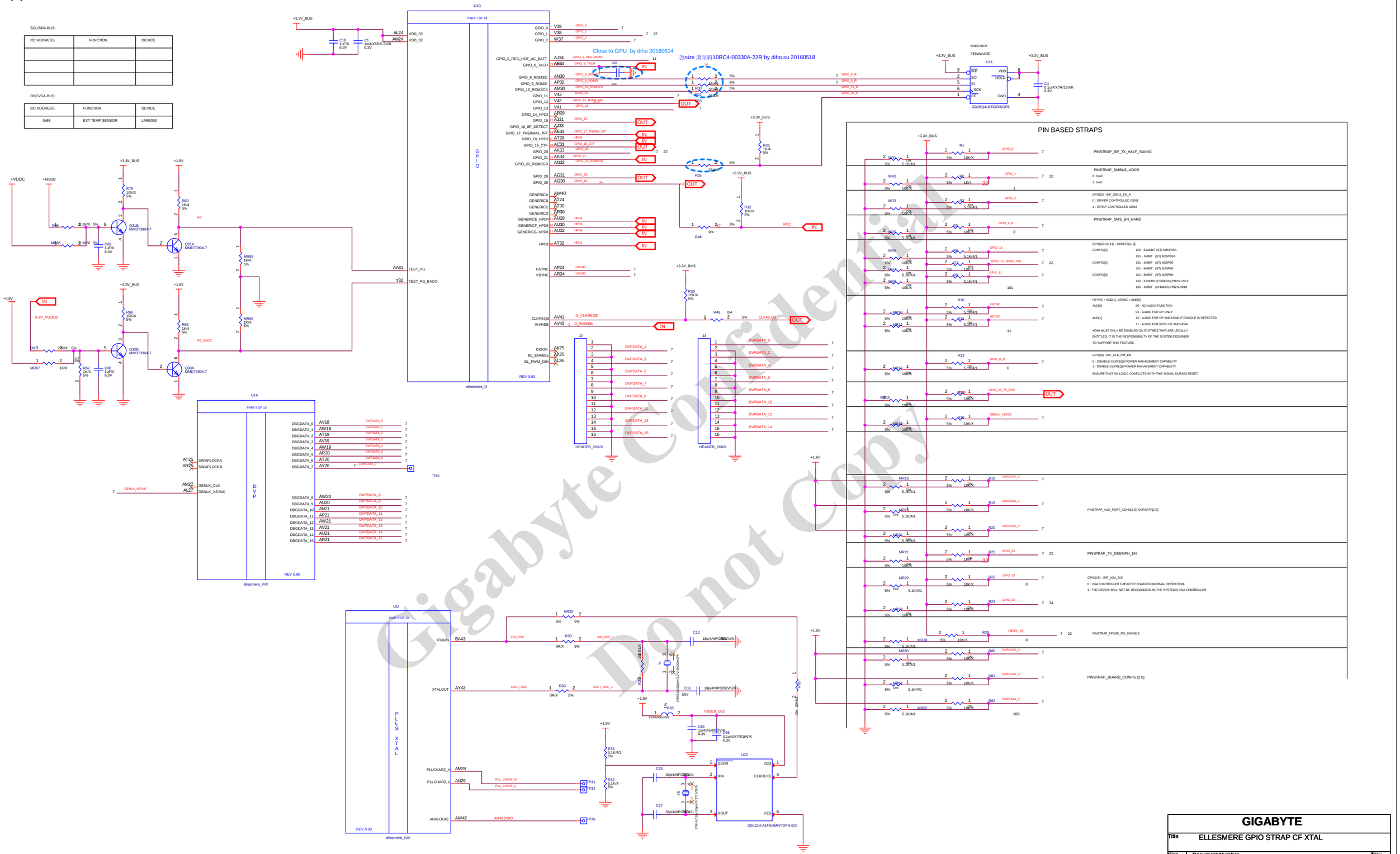
(7) ELLESMERE GPIO STRAP CF XTAL

SCL/SDA BUS:

I2C ADDRESS	FUNCTION	DEVICE

DDCVGA BUS:

I2C ADDRESS	FUNCTION	DEVICE
0x98	EXT TEMP SENSOR	LM96063



GIGABYTE			
Title: ELLESMERE GPIO STRAP CF XTAL			
Size: Custom	Document Number: GV-RX570GAMING-8GD-MI		Rev: 1.11
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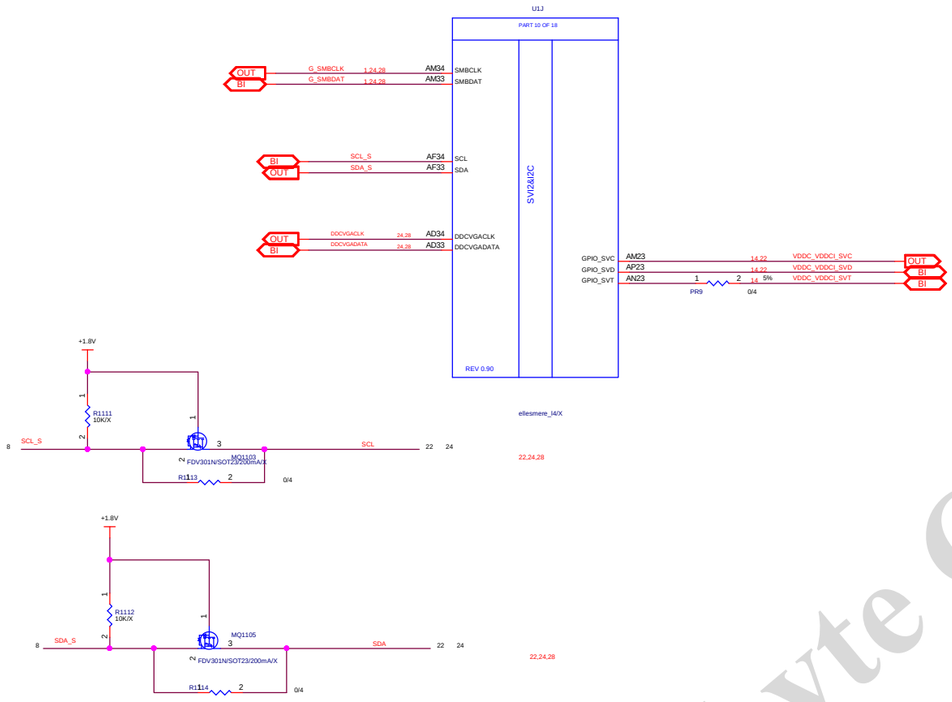
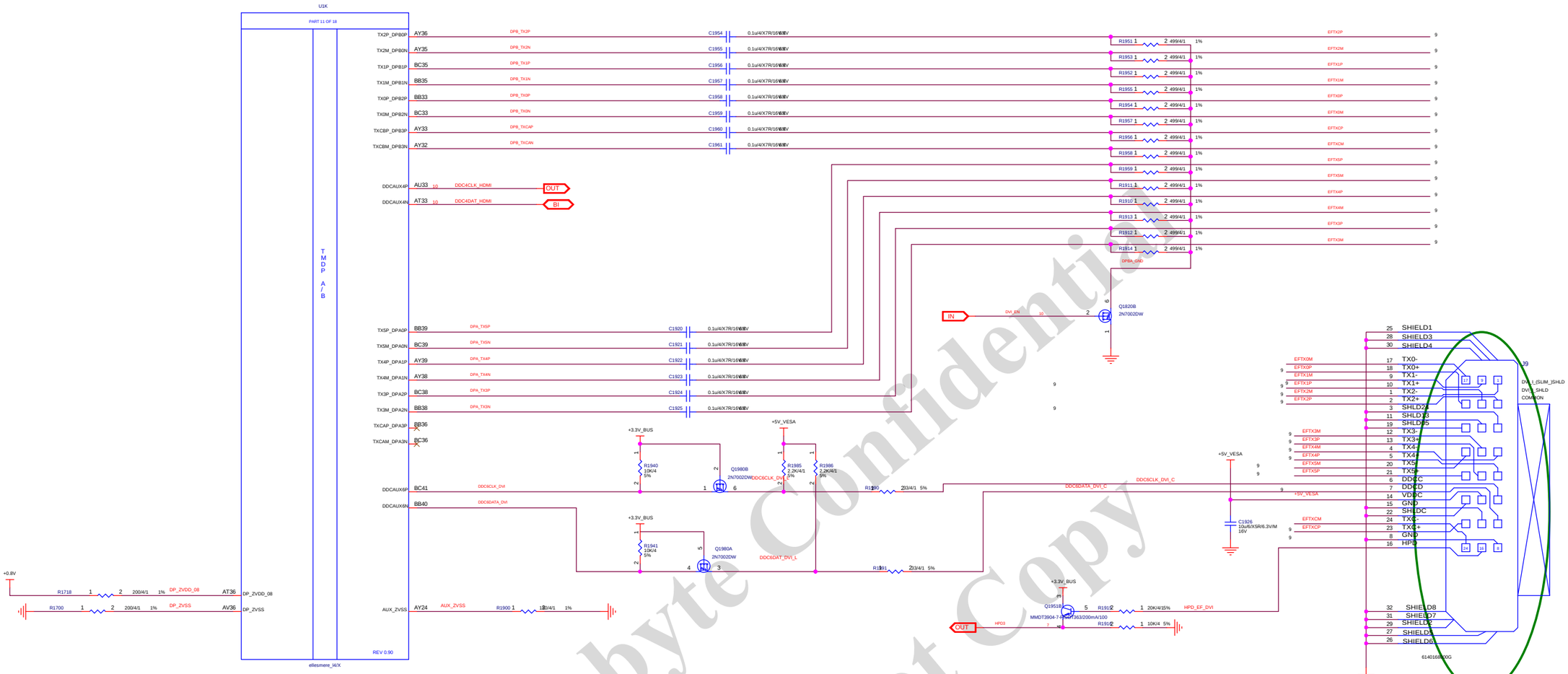
(8) ELLESMERE DAC1 LOCK



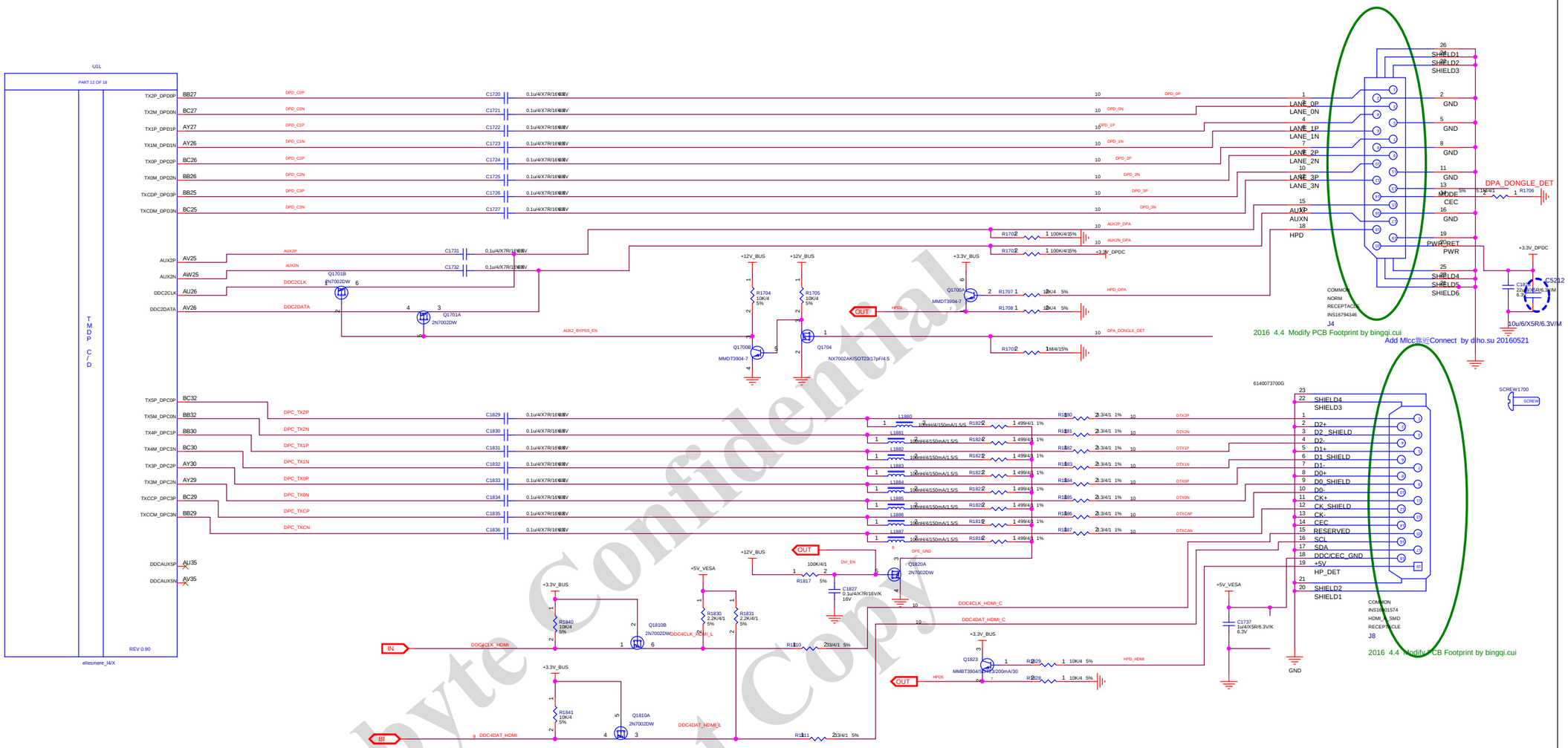
GIGABYTE		
Title: ELLESMERE DAC1 LOCK		
Size: Custom	Document Number: GV-RX570GAMING-8GD-MI	Rev: 1.11
Date: Friday, June 01, 2018	Sheet 8 of 29	

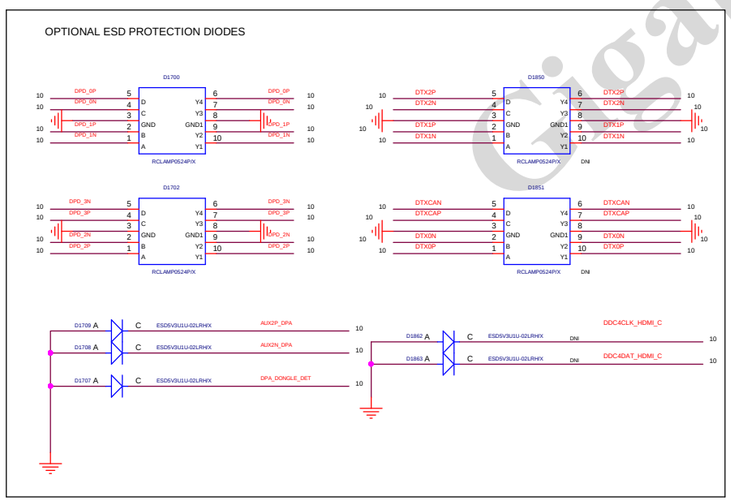
(9) ELLESMERE TMDP A/B



GIGABYTE			
Title	ELLESMERE TMDP A/B		
Size: Custom	Document Number: GV-RX570GAMING-8GD-MI		Rev: 1.11
Date: Friday, June 01, 2018	Sheet 9 of 29		

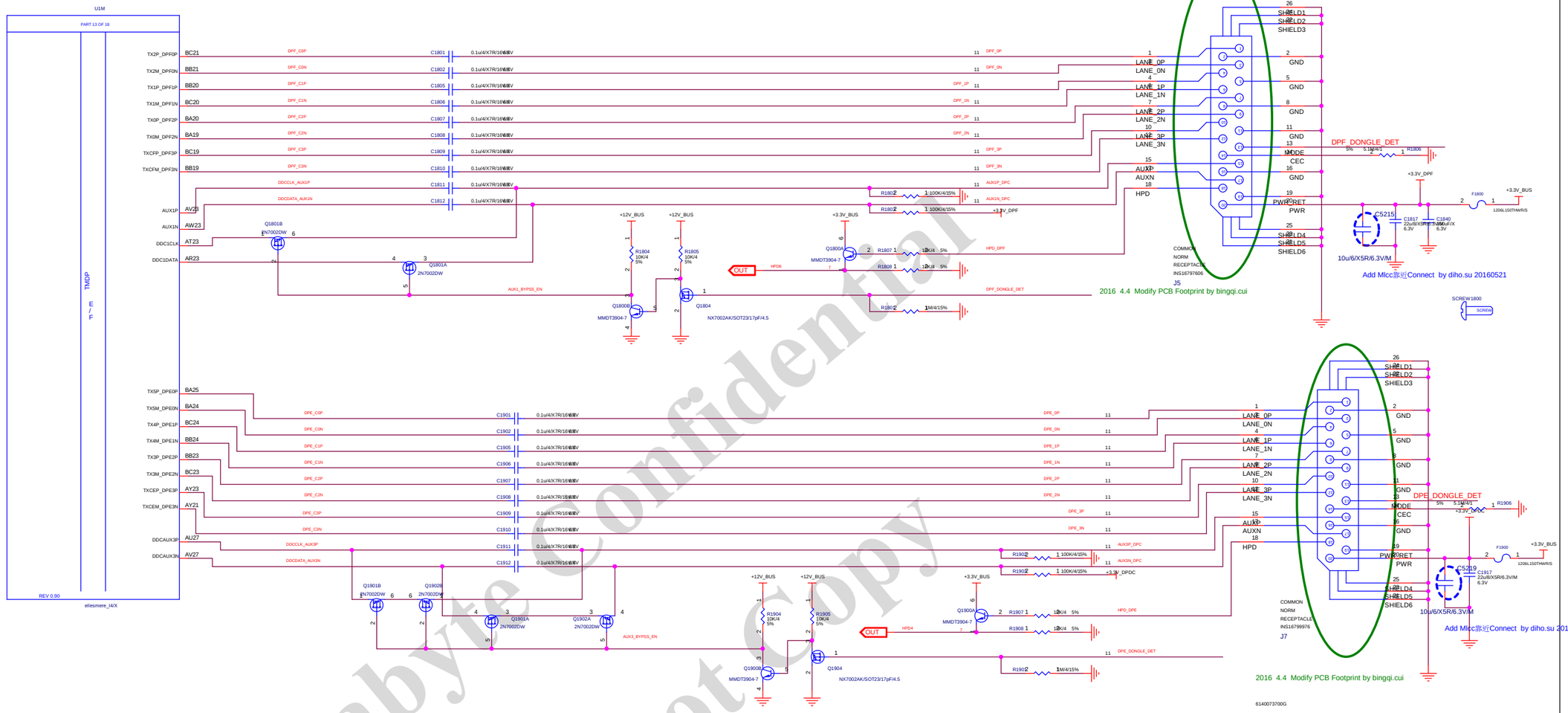
(10) ELLESMERE TMDP C/D



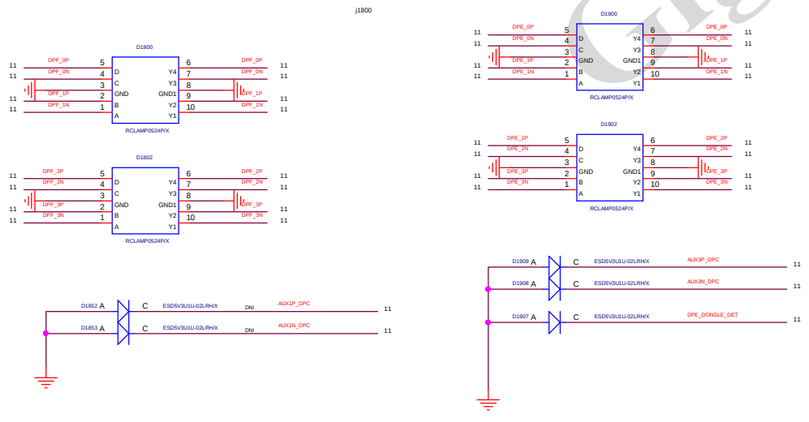


GIGABYTE			
Title: ELLESMERE TMDP C/D			
Size: Custom	Document Number: GV-RX570GAMING-8GD-MI		Rev: 1.11
Date: Friday, June 01, 2018	Sheet 10 of 29		

(11) ELLESMERE LVTMDP E/F

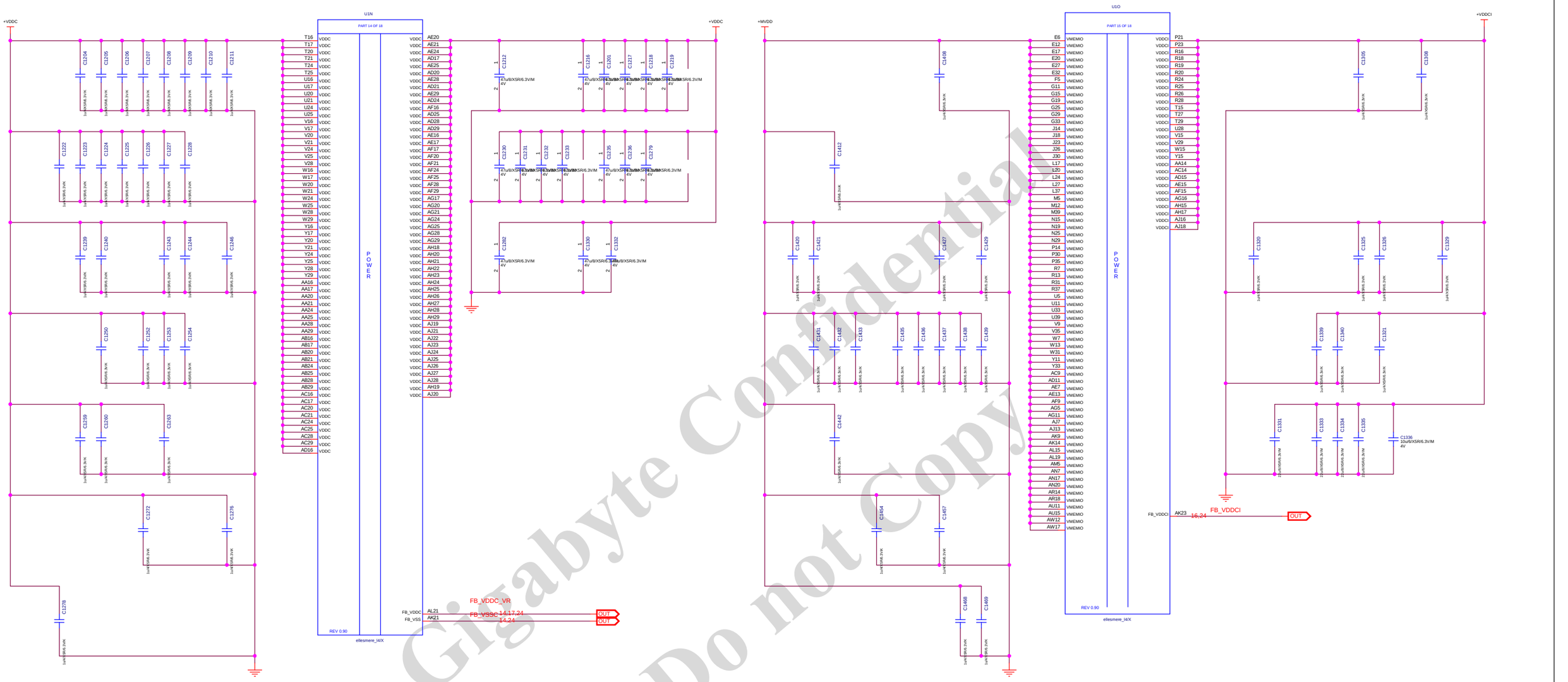


OPTIONAL ESD PROTECTION DIODES



GIGABYTE			
Title: ELLESMERE LVTMDP E/F			
Size: Custom	Document Number: GV-RX570GAMING-8GD-MI		Rev: 1.11
Date: Friday, June 01, 2018	Sheet 11 of 29		

(12) ELLESMERE POWER



GIGABYTE			
Title: PCI Express			
Size: Custom	Document Number: GV-RX570GAMING-8GD-MI		Rev: 1.11
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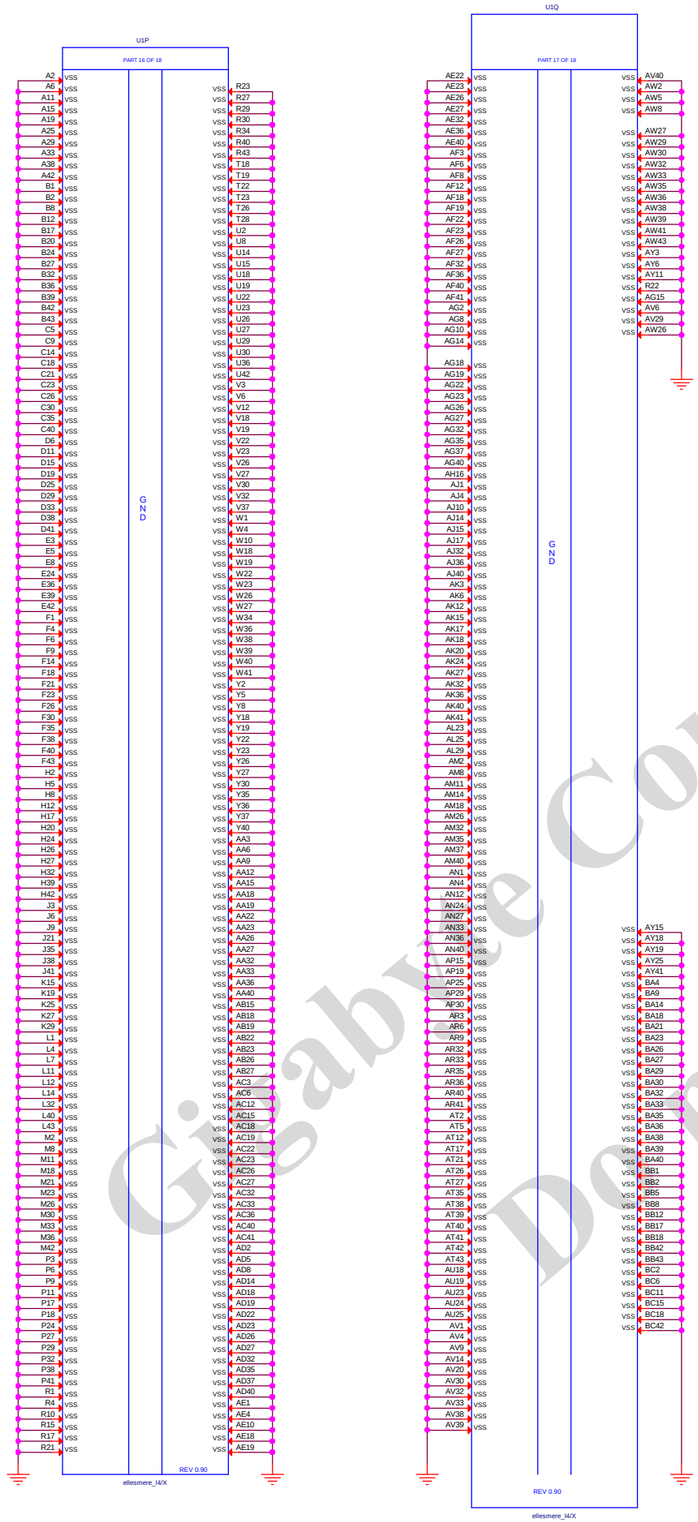
(13) ELLESMERE GROUND



GIGABYTE		
Title: ELLESMERE GND		
Size: Custom	Document Number: GV-RX570GAMING-8GD-MI	Rev: 1.11
Date: Friday, June 01, 2018	Sheet 13 of 29	

Change PWM to UPI by diho 20170807

+3.3V_BUS

U500
uP9505PQGW/VQFN6X6-52L

VCC5

VDDIO

POK

PWM1A

PWM2A

CSP1A

CSN1A

CSP2A

CSN2A

CSPA

CSNA

FBA

TPA

COMPA

EAPA

DACA

FBRTNA

IMONA

TONSET

VINSEN

PROG

TSENSE

TSENSEA

GND

PWM1

PWM2

PWM3

PWM4

CSP1

CSN1

CSP2

CSN2

CSP3

CSN3

CSP4

CSN4

CSP

CSN

FB

TP

COMP

EAP

DAC

FBRTN

IMON

SCL

SDA

VRHOT#

PWROK

SVD

SVT

SVC

EN

VDDC_PWM1 15 OUT

VDDC_PWM2 15 OUT

VDDC_PWM3 15 OUT

VDDC_PWM4 15 OUT

VDDC_PWM6 15 OUT

VDDC_PWM5 15 OUT

VDDC_PWR_GOOD OUT 21

VDDC_I1_P

IR3567B_IRTN1

VDDC_I2_P

IR3567B_IRTN2

VDDC_I3_P

IR3567B_IRTN3

VDDC_I4_P

IR3567B_IRTN4

IR3567B_VSEN

IR3567B_VRTN

IR3567B_VSINEN

IR3567B_PWROK

U500_SVD

U500_SVC

U500_VDDIO

SCL_U500

SDA_U500

VDDC_VDDCI_OE_VR

VDDC_VDDCI_SVT

2017.09.21 PWM Modify for Hardy

L=0.15uH, DCR=0.44m Ohm
Loadline=0.5m Ohm

VDDC_I1_CSP
VDDC_I2_CSP
VDDC_I3_CSP
VDDC_I4_CSP
VDDC_I5_CSP
VDDC_I6_CSP

VDDC_RCS_P 15
VDDC_RCS_N 15

VDDC_I6_P

IR3567B_IRTN6

VDDC_I5_P

IR3567B_IRTN5

VDDC_I6_N

IR3567B_IRTN6

VDDC_I5_N

VDDC_I4_N

VDDC_I3_N

VDDC_I2_N

VDDC_I1_N

VDDC_LOC_P

FB_VDDC_VR

FB_VSSC

VDDC_LOC_N

+12V_EXT_A_F

+1.8V

REGLTR_SDA

REGLTR_SCL

VDDC_VDDCI_SVC

VDDC_VDDCI_SVD

VDDC_VDDCI_OE_VR

VDDC_VDDCI_PWROK

SDA_U500

SCL_U500

Set Freq to 400KHZ by diho 20170807

Function pin Set follow SVI2 Connection add by diho 20170807

set limit temp=106 ℃ by diho

Set OCP=400A by diho 2017.8.10

Add by diho 20170807

VDDC_TSEN_P 15

VDDC_TSEN_N 15

SVC	SVD	BOOT VOLTAGE(V)
0	0	1.1
0	1	1.0
1	0	0.9
1	1	0.8

GIGABYTE

Title: VDDC

Size: Custom | Document Number: GV-RX570GAMING-8GD-MI | Rev: 1.11

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VDDC

2017.09.21 Driver form RX580aorus-4GD Modify for Hardy

PLACE NEXT TO PHASE 3 HALF BRIDGE

PLACE BETWEEN PHASE 1 AND 2 INDUCTORS

+12V_EXT_A_F

ADD diho 20160514

2016.4.16 Modify Size By Binggi.cui

2016.4.16 Modify 常用料 By Binggi.cui

VPVCC_EXT

VDDC_PWM1

VDDC_PHS1_BOOT

VDDC_PHS1_UG

VDDC_PHS1_SWNODE

VDDC_PHS1_LG

U502

uP1965PDD/SMD WDFN3x3 - 8L

modify 常用料 diho 20160514

VDDC_I1_CSP

VDDC_I1_P

VDDC_I1_N

VDDC_TSEN_P

VDDC_TSEN_N

VDDC_I2_CSP

VDDC_I2_P

VDDC_I2_N

VDDC_PWM2

VDDC_PHS2_BOOT

VDDC_PHS2_UG

VDDC_PHS2_SWNODE

VDDC_PHS2_LG

U506

VDDC_I3_CSP

VDDC_I3_P

VDDC_I3_N

VDDC_PWM3

VDDC_PHS3_BOOT

VDDC_PHS3_UG

VDDC_PHS3_SWNODE

VDDC_PHS3_LG

U503

2016.5.16 Modify Small size by diho

VDDC_RCS_P

VDDC_RCS_N

VDDC_I4_CSP

VDDC_I4_P

VDDC_I4_N

+12V_PH4_INPUT

VDDC_PWM4

VDDC_PHS4_BOOT

VDDC_PHS4_UG

VDDC_PHS4_SWNODE

VDDC_PHS4_LG

U509

VPVCC_BUS

Reserver input change diho 20160514

VDDC_I5_CSP

VDDC_I5_P

VDDC_I5_N

+VDDC

VDDC_PWM5

VDDC_PHS5_BOOT

VDDC_PHS5_UG

VDDC_PHS5_SWNODE

VDDC_PHS5_LG

U504

VDDC_LOC_P

VDDC_LOC_N

VDDC_I6_CSP

VDDC_I6_P

VDDC_I6_N

VDDC_PWM6

VDDC_PHS6_BOOT

VDDC_PHS6_UG

VDDC_PHS6_SWNODE

VDDC_PHS6_LG

U508

DEL 270U By Diho

DEL C534、C539、C551、C906、C3、C31 for more space enhance IRDROP by diho.su 20160520

2016.4.16 Modify Size By Binggi.cui

2016.4.16 Modify 820U From 560u By Binggi.cui

Phase 4 Modify input power by diho.su 20160703

Add by diho 20160514

GIGABYTE			
Title: VDDC Driver			
Size: Custom	Document Number: GV-RX570GAMING-8GD-MI		Rev: 1.11
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PLACE NEAR HALF BRIDGE

2016.4.16 Modify Size By Bingqi.cui

add by diho 20160514

ADD diho 20160514

2016.5.16 Modify Small size By Diho

改常用料 by diho 20160514

2016.4.16 Modify Size By Bingqi.cui

2016.4.16 Modify 820U From 560u By Bingqi.cui

PLACE NEXT TO VDDCI PHASE INDUCTOR

colay NCP1587 DIODE by diho 20160514

10uA*Rocp/Rdson=Iocp
10uA*15K/3.2mohm=46A

Place R1 and R4 close to PWM and routed with separate 20mil trace to the ASIC

COMPENSATION CIRCUIT

FILTERED SMPS VCC

BOOT CIRCUIT

share pad of R3002,R3004

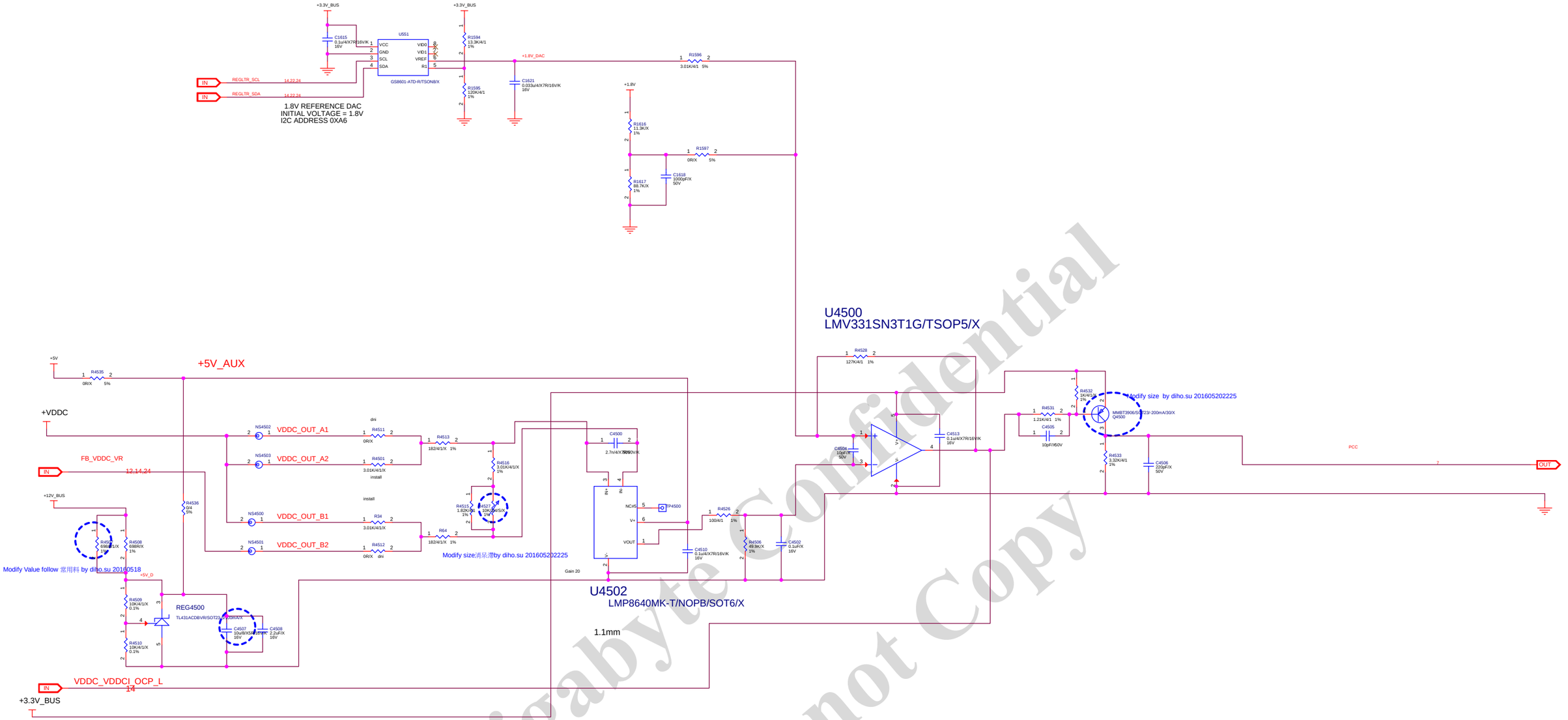
REGULATOR FOR VPVCC RAILS

IOUT MAX = 500mA

2016.4.16 Modify Size By Bingqi.cui

2016.4.16 Modify Size AND 47U Modify to 22u*2 By Bingqi.cui

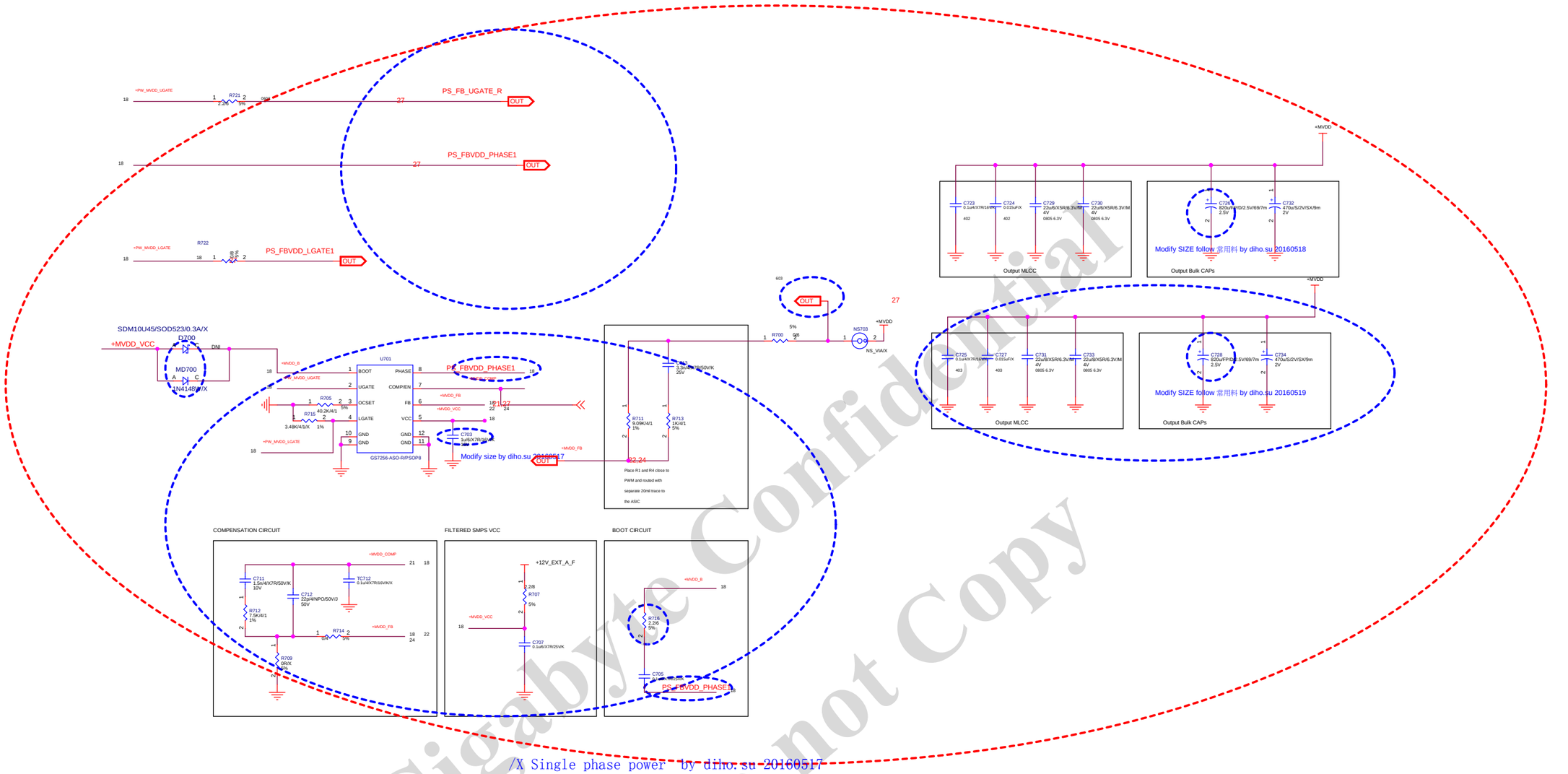
GIGABYTE		
Title: VDDCI		
Size: Custom	Document Number: GV-RX570GAMING-8GD-MI	Rev: 1.11
Date: Friday, June 01, 2018	Sheet 16 of 29	



GIGABYTE		
Title: PCC VDDC		
Size: Custom	Document Number: GV-RX570GAMING-8GD-MI	Rev: 1.11
Date: Friday, June 01, 2018	Sheet 17 of 29	

(16) MVDD

CHANGE POWER PHASE TO PAGE26 by diho 20160514

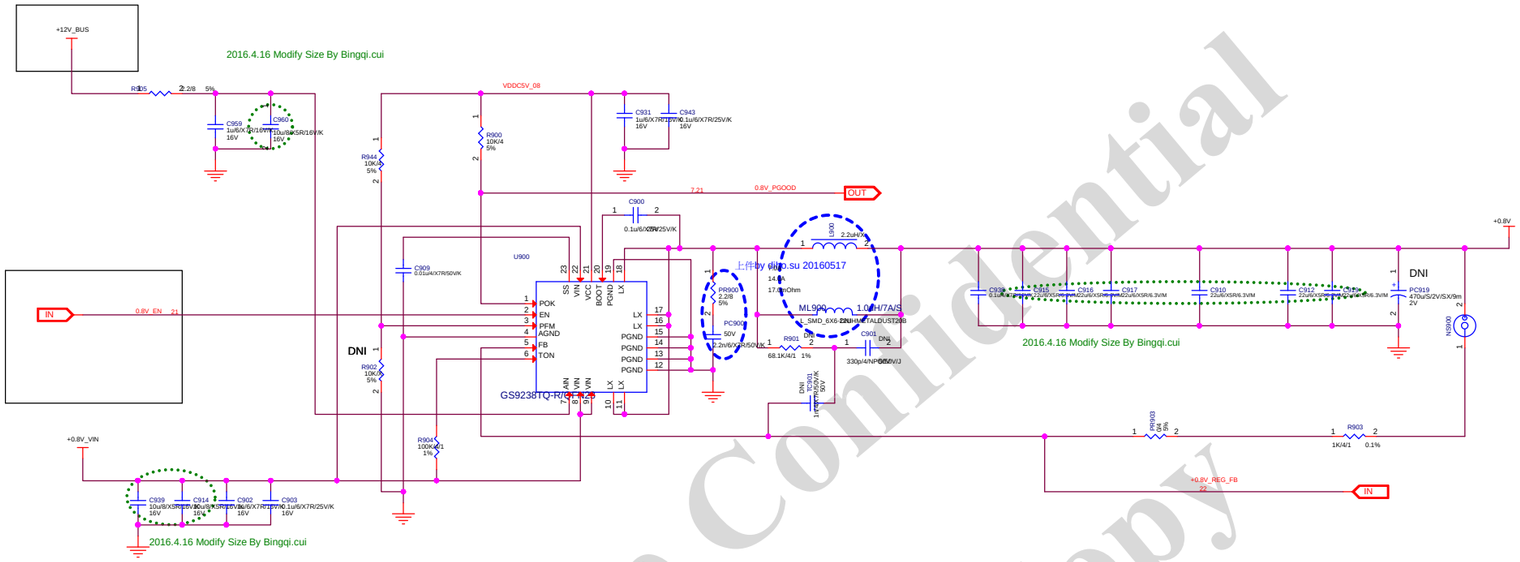


/X Single phase power by diho.su 20160517

上件 by xiang.l@20160526

GIGABYTE		
Title: MVDD		
Size: Custom	Document Number: GV-RX570GAMING-8GD-MI	Rev: 1.11
Date: Friday, June 01, 2018	Sheet 18 of 29	

(17) 0.95V



GIGABYTE		
Title: 0.95V		
Size: Custom	Document Number: GV-RX570GAMING-8GD-MI	Rev: 1.11
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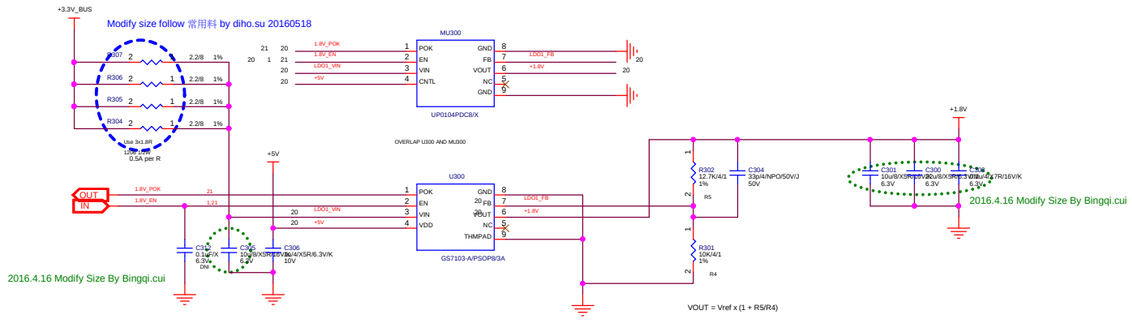
(18) SMALL RAIL REGULATORS

LDO #1: VIN = 3.0V TO 3.6V MAX VOUT = +1.8V +/- 2% IOUT = 1.3A RMS MAX

PCB: 50 TO 70mm SQ. COPPER AREA FOR COOLING

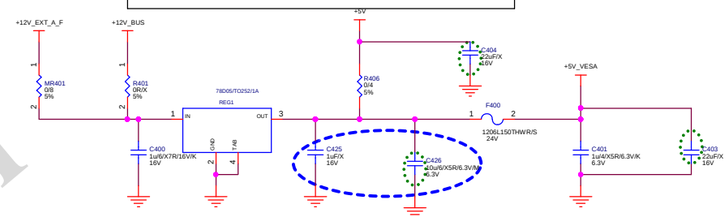


2016.4.16 Modify Size By Bingqi.cui

2016.4.16 Modify Size By Bingqi.cui

REGULATOR FOR +5V RAILS

IOUT MAX = 150mA



Modify value by diho.su 201605202225

2016.4.16 Modify Size By Bingqi.cui

GIGABYTE		
Title: SMALL RAIL REGULATORS		
Size: Custom	Document Number: GV-RX570GAMING-8GD-MI	Rev: 1.11
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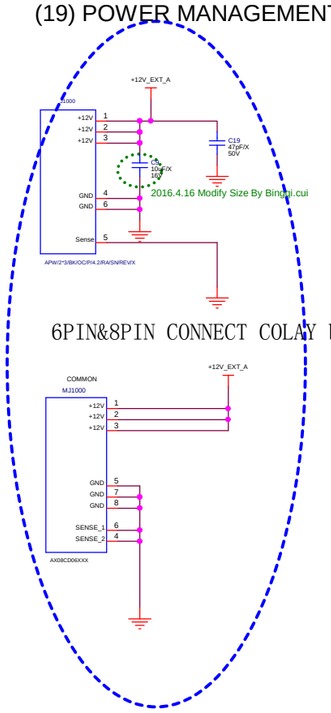
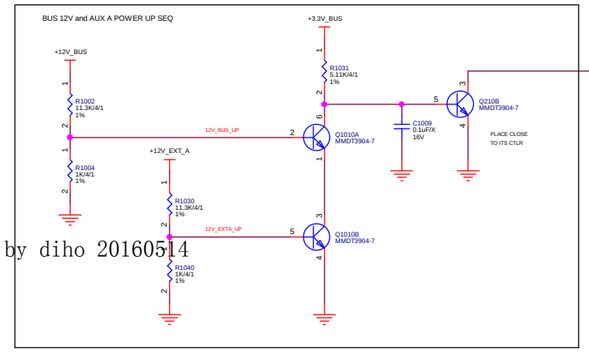
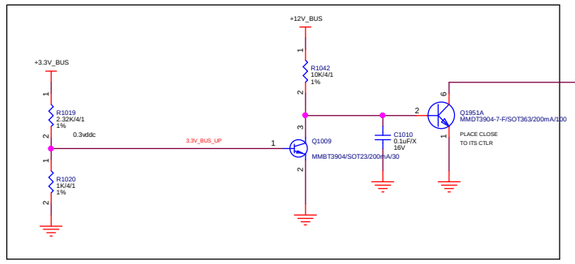
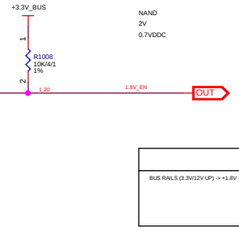
(19) POWER MANAGEMENT



6PIN&8PIN CONNECT COLAY by diho 20160514





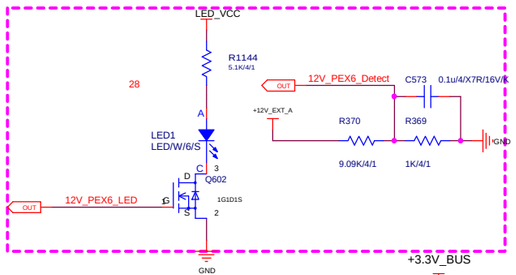


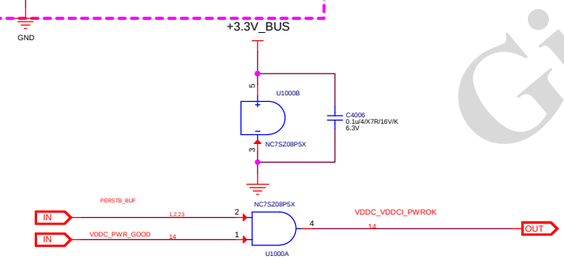
NAND
2V
0.7VDDC

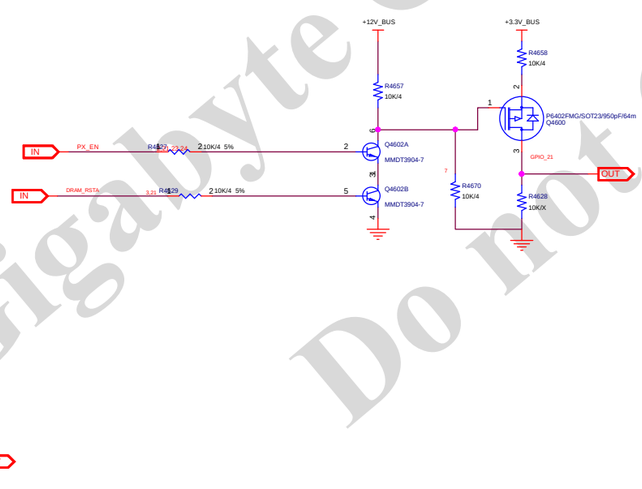
EN
Gate : 1.88V ~ 2.29V
+1.8V: >1.4V
+0.935V:>2.5V
+VDDC: 2.1Vh, 0.8VL
+VDDCI: FLOAT
+MVDD: 2.0V
Gate: 2V

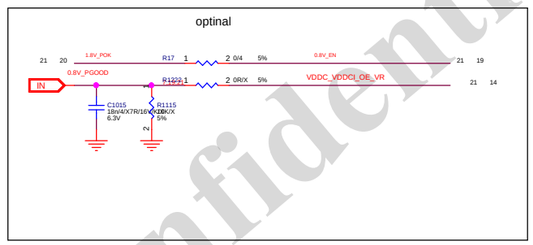
POK
OD
0.9v

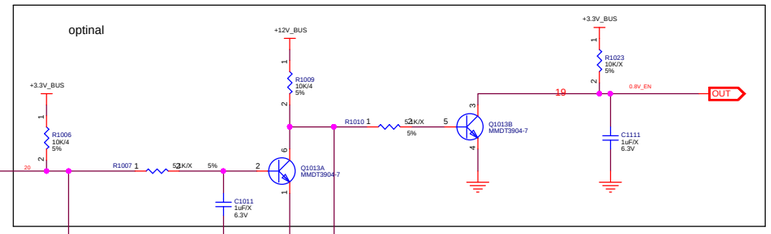
POWER UP SEQUENCE			
BUS RAILS (3.3V/12V UP) -> +1.8V -> 0.935V		BIF_VDDC VDDC ->VDDCI MVDD	

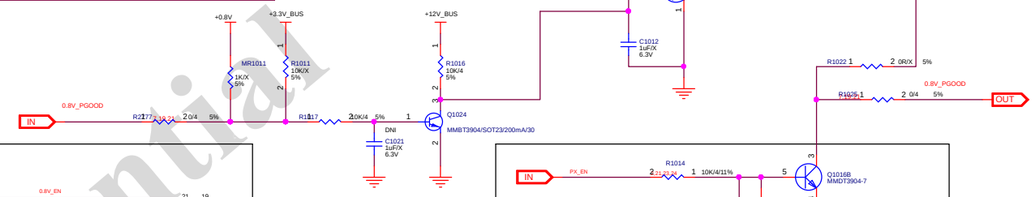


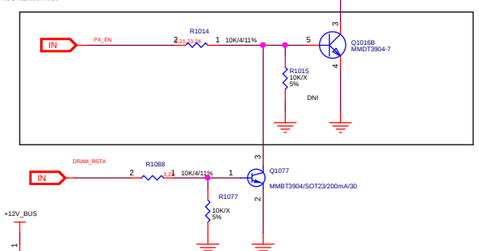


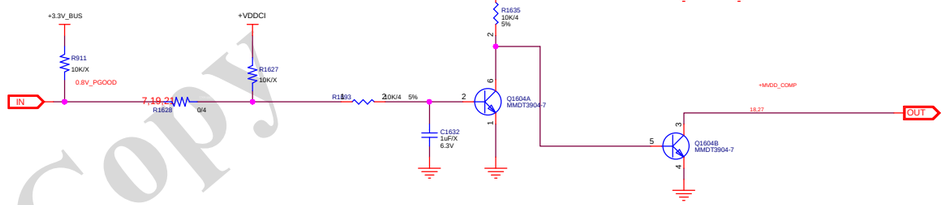


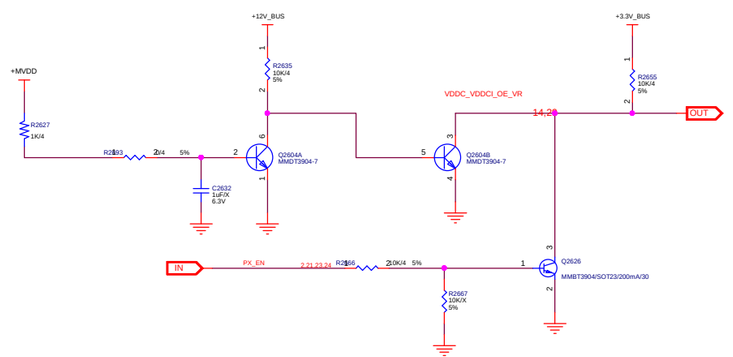












GIGABYTE		
Title: POWER MANAGEMENT1		
Size: Custom	Document Number: GV-RX570GAMING-8GD-MI	Rev: 1.11
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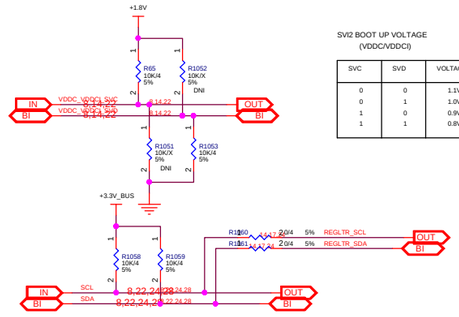
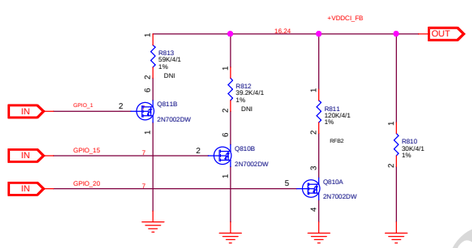
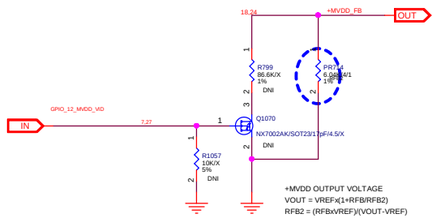
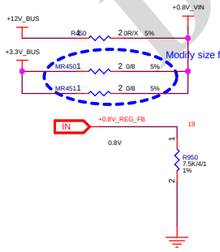


SVI2 BOOT UP VOLTAGE
(VDDC/VDDCI)

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

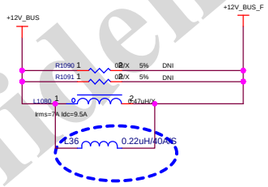




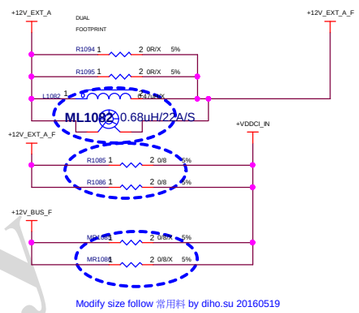


Modify size follow 常用料 by diho.su 20160520

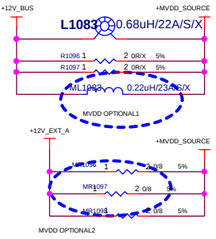
+12V_BUS INPUT



+12V_EXT_A INPUT



Modify size follow 常用料 by diho.su 20160519



Modify size follow 常用料 by diho.su 20160518

	GIGABYTE	
Title	POWER MANAGEMENT2	
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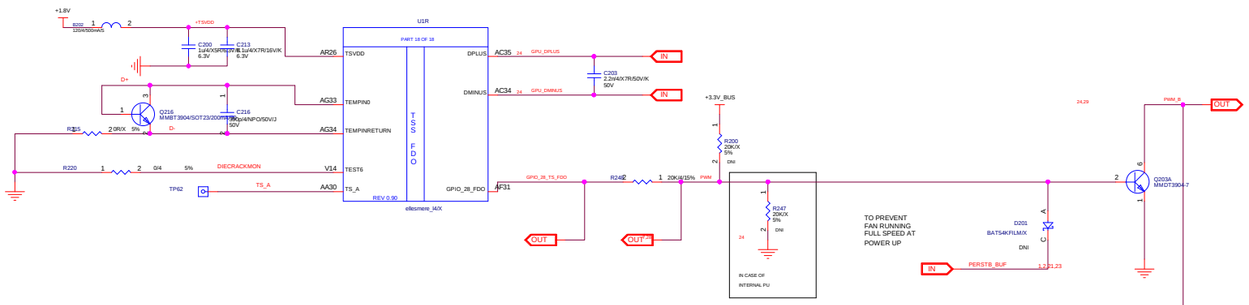
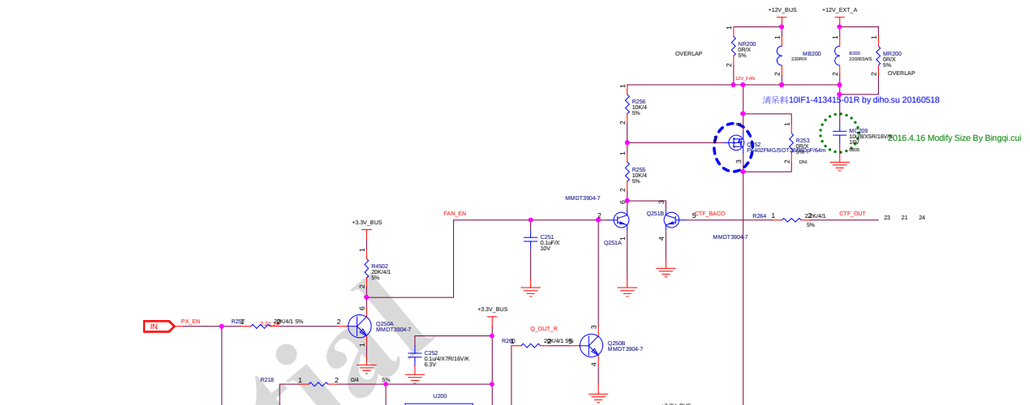
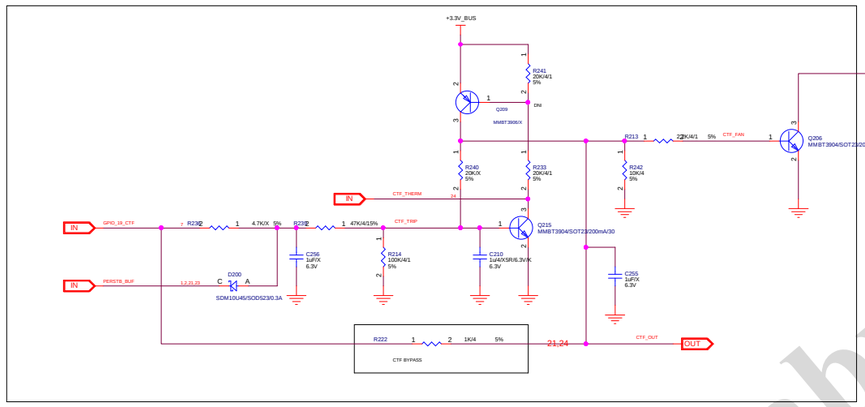
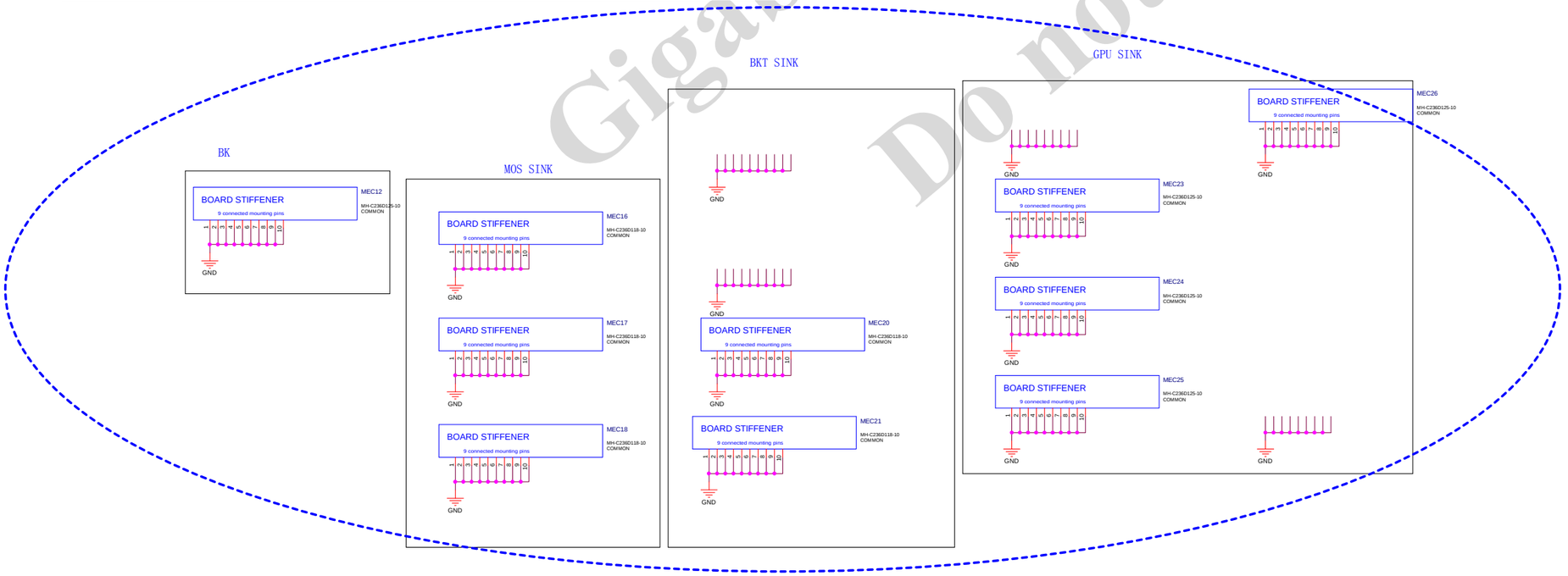
(20) MECHANICAL AND THERMAL MANAGEMENT







Modify 螺絲孔footprint by diho 20160514



GIGABYTE		
Title: MECHANICAL AND THERMAL MANAGEMENT		
Size: Custom	Document Number: GV-RX570GAMING-8GD-MI	Rev: 1.11
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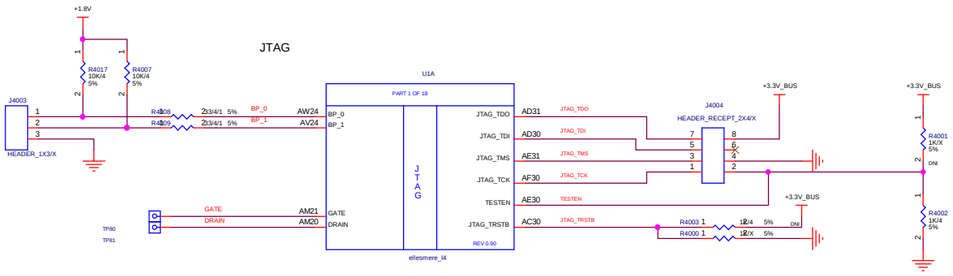
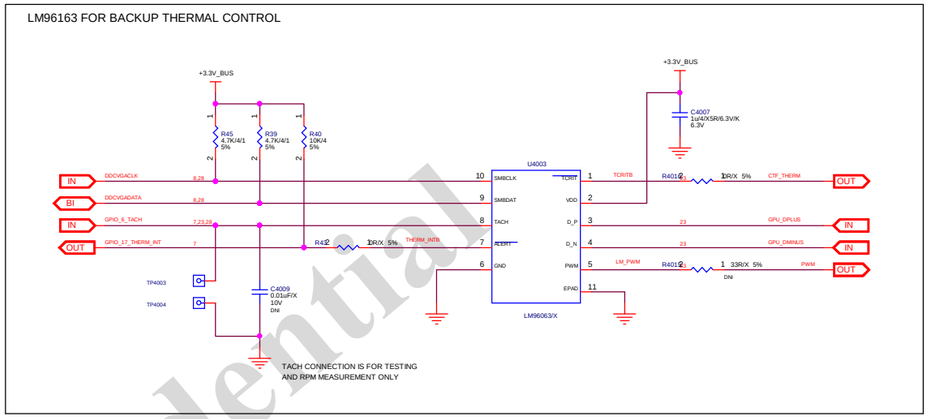
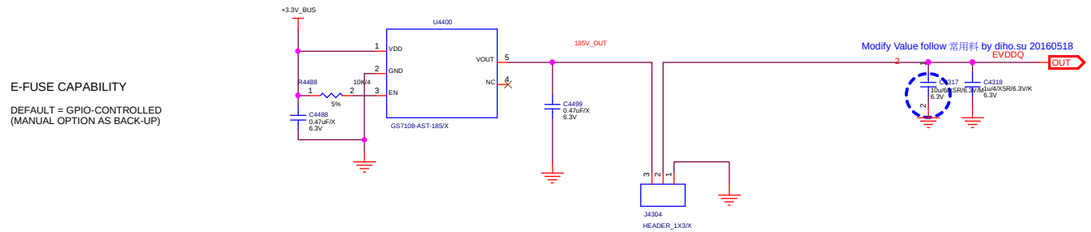
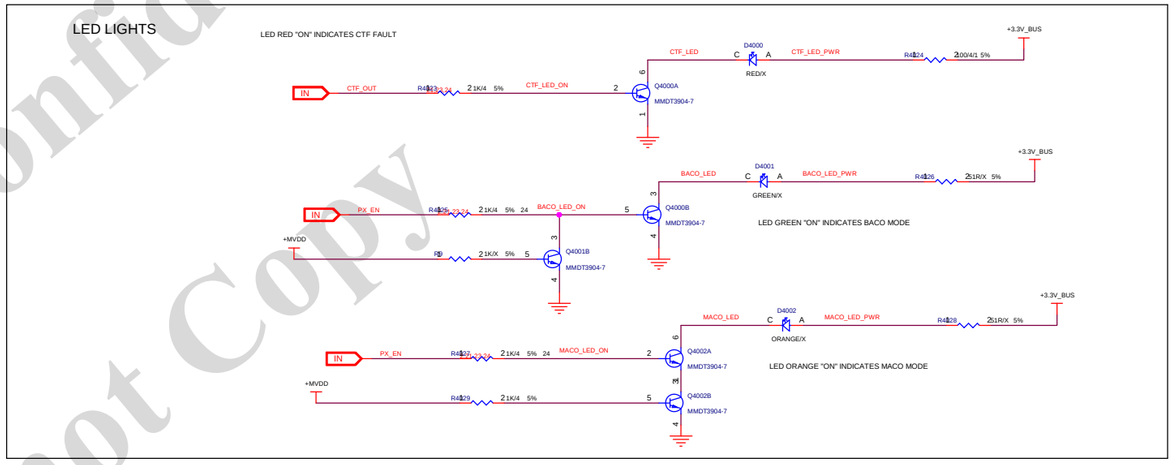
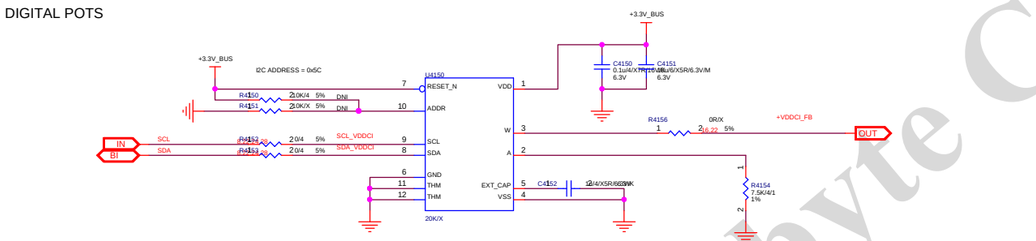
(21) DEBUG CIRCUITS

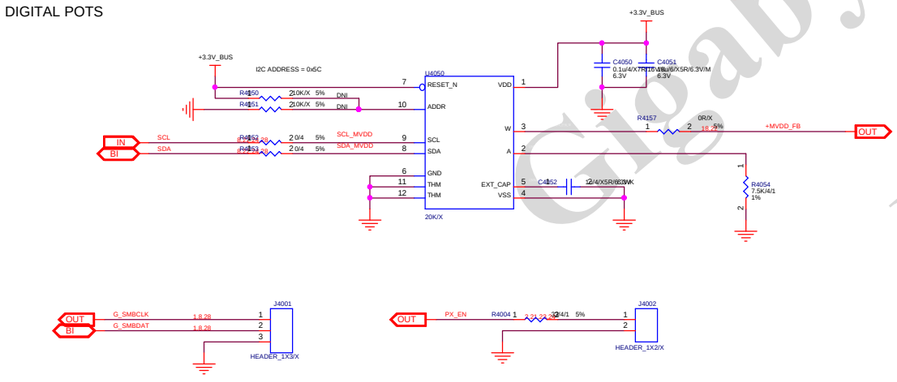


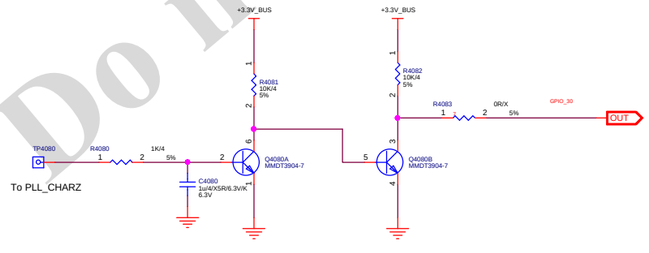


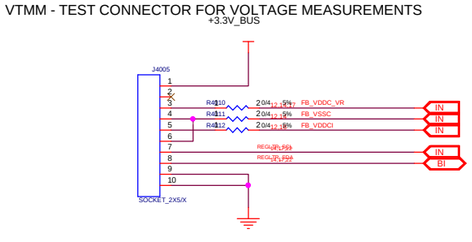


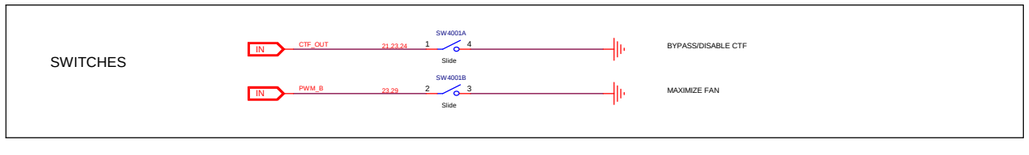












GIGABYTE		
Title: DEBUG CIRCUITS		
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MEMORY CHANNEL A&B

GDDR5 4pcs 64M/128M/256Mx32

MEMORY CHANNEL C&D

GDDR5 4pcs 64M/128M/256Mx32

EXTERNAL CONNECTOR

+12V_EXT_A

+12V_EXT_B

POWER REGULATORS

FROM +12V_BUS, +12V_EXT_A,

+12V_EXT_B,

+VDDC, +VDDCI, +MVDD, +5V, +0.8V, FAN

From +3.3V_BUS

+1.8V, +3.3V_DP, VDDR3

From +VDDC (SMPS)

VDDC

From +VDDCI (SMPS)

VDDCI

From +MVDD (SMPS)

VDDR1, MVDDQ/C

From +1.8V (LDO)

VDD_1.8, TSVDD,

From +0.8V (SMPS)

VDD_08, BIF_VDDC, EVDDC

POWER SEQUENCING

CIRCUIT

CH A/B/C/D

JTAG/I2C

DEBUG

JTAG

CROSSFIRE

DEBUG HEADER

DVO

DVPDATA_[15:0]

DVPCNTL_0

STRAPS

GPIO

DVPDATA_0,1,2

VBIOS

ROM

THERM

DDCVGA

SPEED CONTROL

TEMPERATURE

SENSE

INTERRUPT

TEMP SENSING

GPIO17

GPIO3_TACH

FAN

BUILT-IN PWM

GPU_DPLUS

GPU_DMINUS

TS_FDO

PCC

GPIO30

REGULATOR HOT

GPIO5

DYNAMIC POWER MANAGEMENT

(SVI2, GPIO, I2C)

SVC/DT

SCL/SDA

MVDD GPIO11

POWER DELIVERY

ELLESMERE

L4

BACO

PX_EN

CRITICAL TEMPERATURE

GPIO19_CTF

PCI-EXPRESS

TMDPF

DDC1 AUX1

HPD6

TMDPE

DDCAUX3

HPD4

TMDPD

DDC2 AUX2

HPD1

TMDPC

DDCAUX4

HPD5

TMDPAB

DDCAUX6

HPD3

XTALIN

XTALOUT

100MHz

27MHz

CLOCK

CHIP

CLOCK

CRYSTAL

AC COUPLING CAPS

AC COUPLING CAPS

TERMINATIONS

AC COUPLING CAPS

TERMINATIONS

AC COUPLING CAPS

TERMINATIONS

AC COUPLING CAPS

TERMINATIONS

DP

CONNECTOR

+3.3V_DP

DP

CONNECTOR

+3.3V_DP

DP

CONNECTOR

+3.3V_DP

HDMI

CONNECTOR

+5V_VESA

DVI-D BOTTOM

CONNECTOR

DL-DVI

+5V_VESA

PCI-E Ellesmere GDDR5 8pcs x32

DP HDMI DP DP DVI FH 6L

+12V_BUS

+3.3V_BUS

PCI-EXPRESS BUS

GIGABYTE		
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0	00A	08/28/2015	
1	00B	10/19/2015	1. Add GPIO1 for dynamic VDDCI 2. update VDDC driver sequence
2	00C	03/23/2016	HDMI: - add series resistor R1880 ~R1887 - add pull down inductor L1880 ~L1887 remove C405, C403, VR400,C410,C414,R405
3	00D	04/18/2016	Modify GBT Design

GIGABYTE		
Title: BLOCK DIAGRAM		
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Page26: PS: FBVDD

Add 2PHASE POWER by diho 20160514

UP1666&PH2 /X by xiang.l@20160526

ADD VID 反轉 match MD VID by diho.su 20160517

DEL PSI by diho 20160514

VOLTAGE OUTPUT LEVELS ARE SET BY

CONTROLLING THE LEVEL OF GPIO8

ACCORDING TO THE FOLLOWING TABLES:

SAMSUNG K4G1325FC-HC28

GPIO8 LEVEL	FBVDD OUTPUT VOLTAGE
0	1.35V
1	1.55V

GM Amp Compensation

OP Amp Compensation

A RESISTOR IS PLACED ON C206 FOOTPRINT

2016.4.4 Modify By Binggi.cui

2016.4.4 Modify Size By Binggi.cui

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	PS: FBVDD

GIGABYTE

Title	FBVDD		
Size: Custom	Document Number: GV-RX570GAMING-8GD-MI		Rev: 1.11
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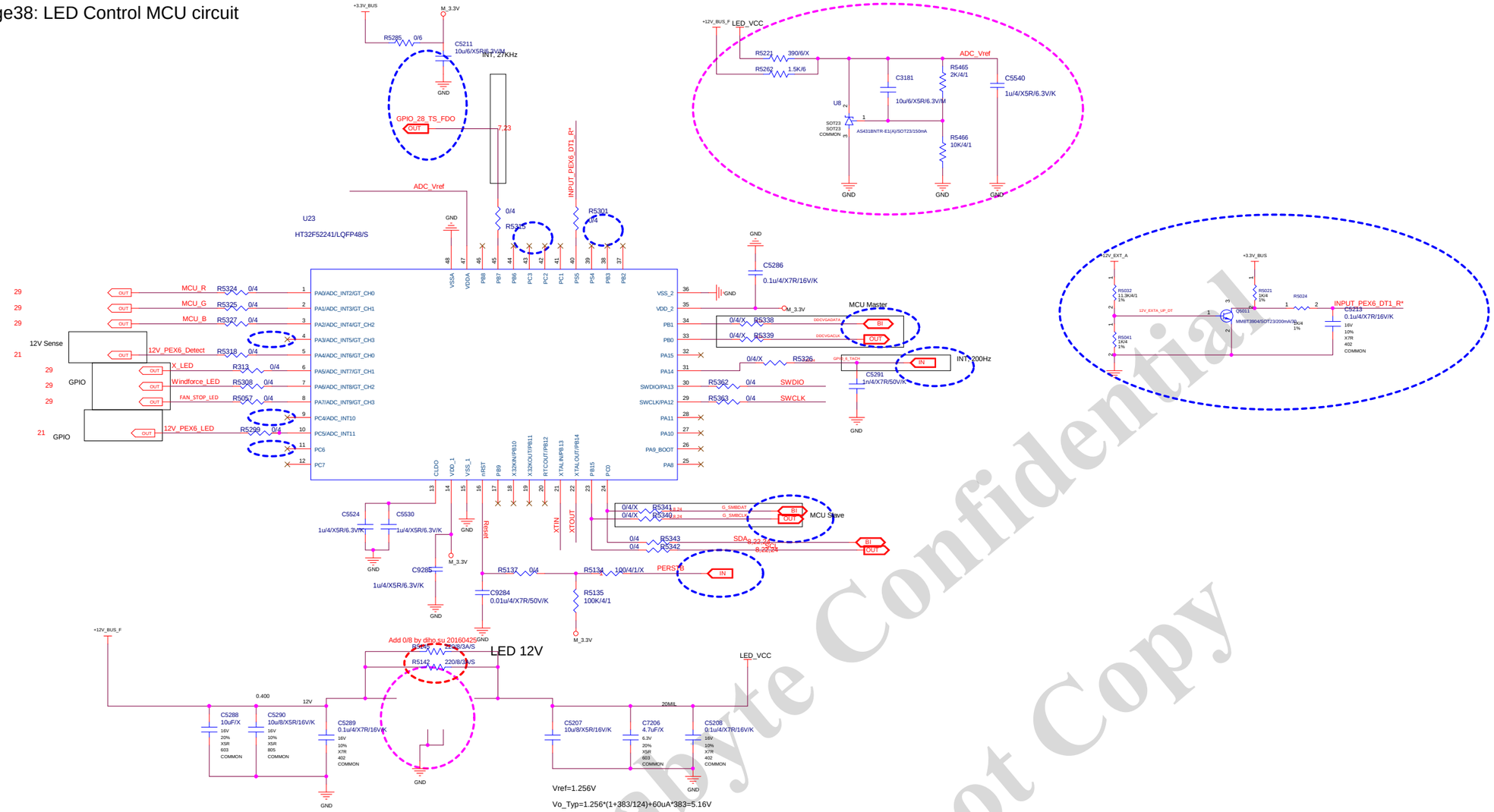
Page38: LED Control MCU circuit



ASSEMBLY <ASSEMBLY_DESCRIPTION>
PAGE DETAIL MECH: Bracket/Thermal

Title			
Size: CustomLED	Document Number: GV-RX570GAMING-8GD-MI		Rev: 1.11
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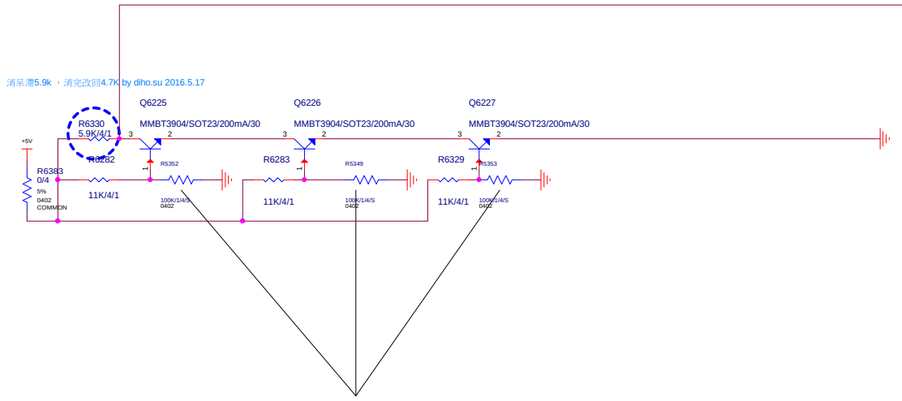
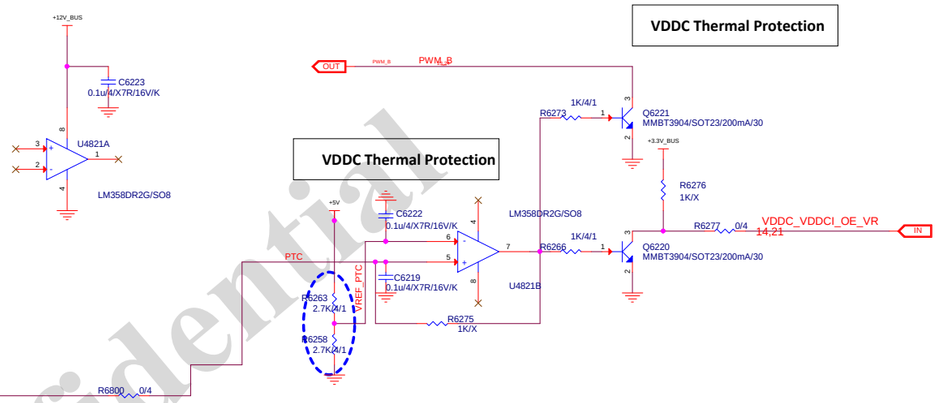
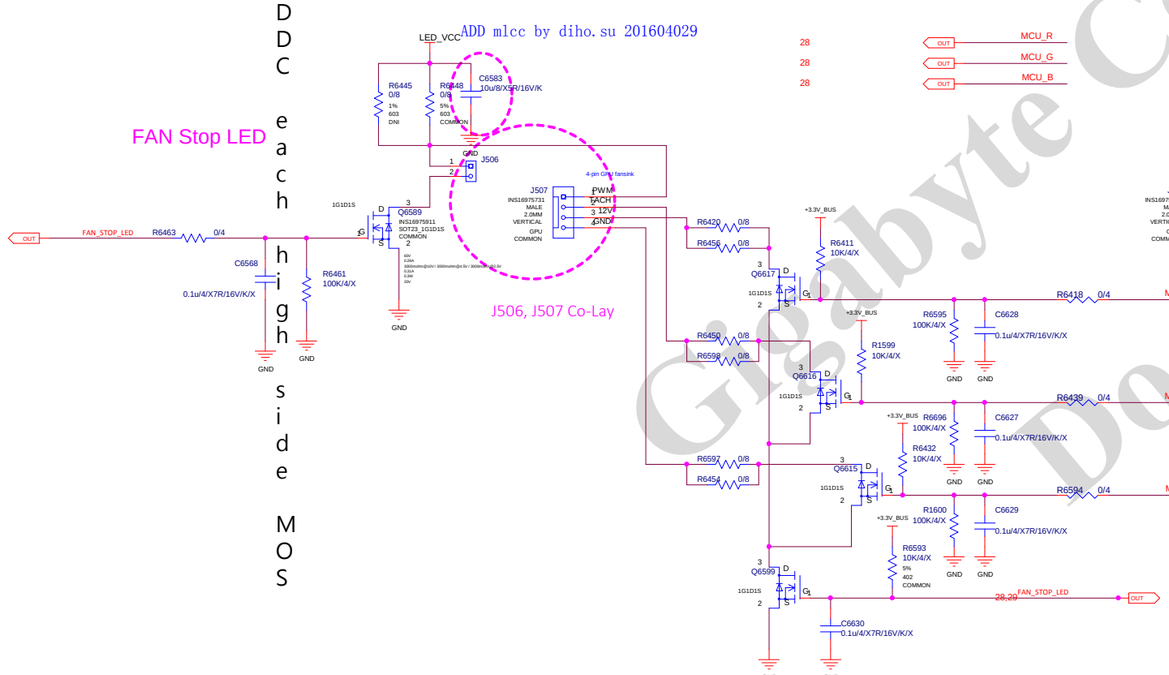
Page40: LED

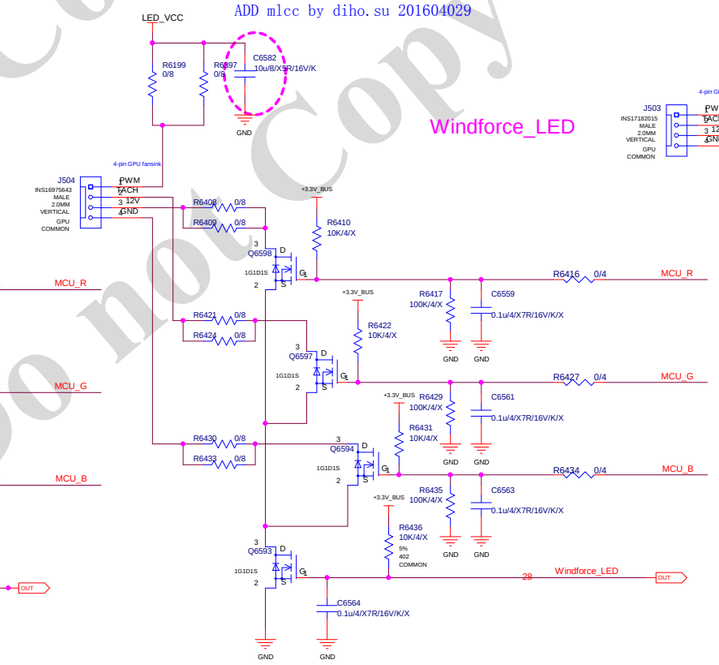
Add MOS VRHOT CIRCUIT

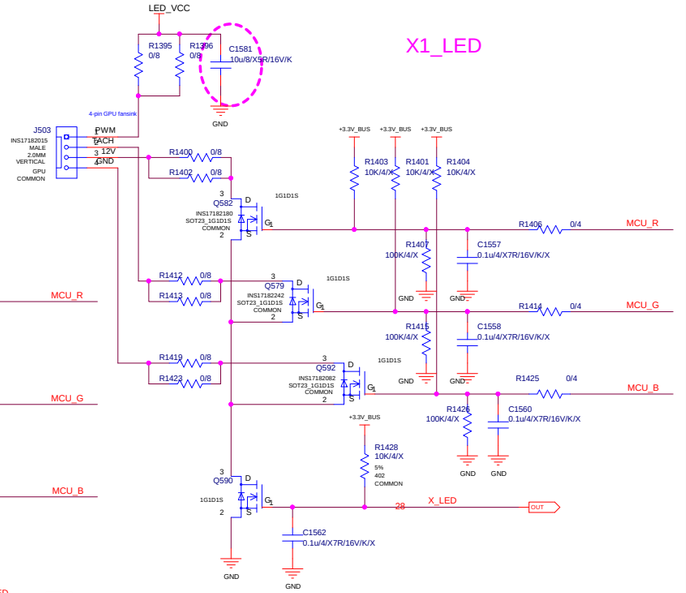




Near VDDC eachhigh side MOS







PAGE DETAIL MECH: Bracket/Thermal

Title			
Size: CustomFAN	Document Number: GV-RX570GAMING-8GD-MI		Rev: 1.11
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