

## Model Name: GA-Z170X-Gaming 3

SHEET

TITLE

Rev 1.01

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1150-A
05	CPU_LGA1150-B_DDR4
06	CPU_LGA1150-C
07	CPU_LGA1150-D
08	DDR4 CHANNEL A 1,2
09	DDR4 CHANNEL B 1,2
10	PCH_RGB,CLK_BUFFER
11	PCH_DMI,USB,PCIE
12	PCH_MISC
13	PCH_SATA,PCIE,SATA_EXPRESS
14	PCH_PWR,GND
15	DUAL BIOS
16	ITE 8628 LPC IO
17	HMW
18	FAN_CTRL--SIO
19	PCI_EXPRESS X16 SLOT
20	PCI_EXPRESS X4 SLOT(PCH)
21	PCI_EXPRESS X1 SLOTS
22	M.2 X4
23	SATA EXPRESS
24	ISL95856 PWM
25	ISL95856 MOS_VCORE
26	ISL95856 MOS_VCCGT
27	VCCSA_VCCIO_VCCPLL
28	RT8120_DDR

www.xinxunwei.com 400-800-9990

29	RT8120_VPP
30	RT8120_PCH
31	DISCRETE POWER1
32	NCT3933
33	ATX POWER , A_-PROCHOT
34	KB_MS_USB
35	DVI_CONN
36	PTN3356 - DP to VGA - IC
37	PTN3356 - DP to VGA - Conn
38	HDMI_CONN_170
39	R_USB30
40	KILLER E2201
41	USB30 LAN CONNECTOR-E2201
42	Realtek ALC1150
43	REAR AUDIO JACK
44	Audio Power
45	F_USB30
46	F_USB_BOX Header
47	COM,TPM,THB
48	F_PANEL
49	PCI_EXPRESS X8 SLOT
50	PCI_EXPRESS X16 SWITCH
51	IDT6V41530_CLK_BUFFER
52	ALPINE RIDGE CIO & DP
53	ALPINE RIDGE POWER
54	HD3SS3212&TUSB321_A
55	EMI ESD
56	2nd M.2 X4
57	M.2 SWITCH
58	TABLE LIST



Gigabyte Technology

File		
Cover Sheet		
Size	Document Number	Rev
Custom	GA-Z170X-Gaming 3	1.01
Date:	Tuesday, July 07, 2015	Sheet 1 of 58

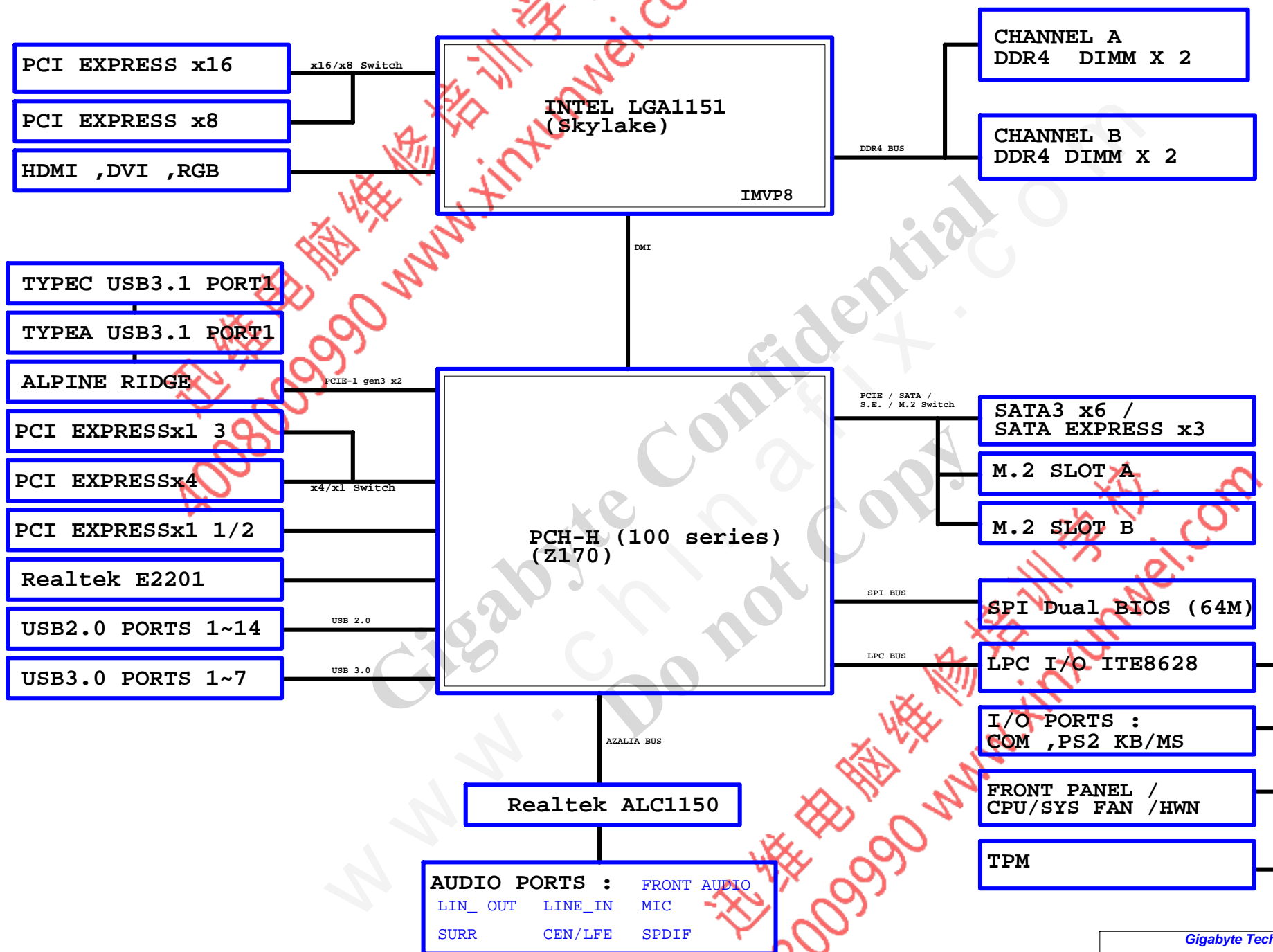
## Circuit or PCB layout change

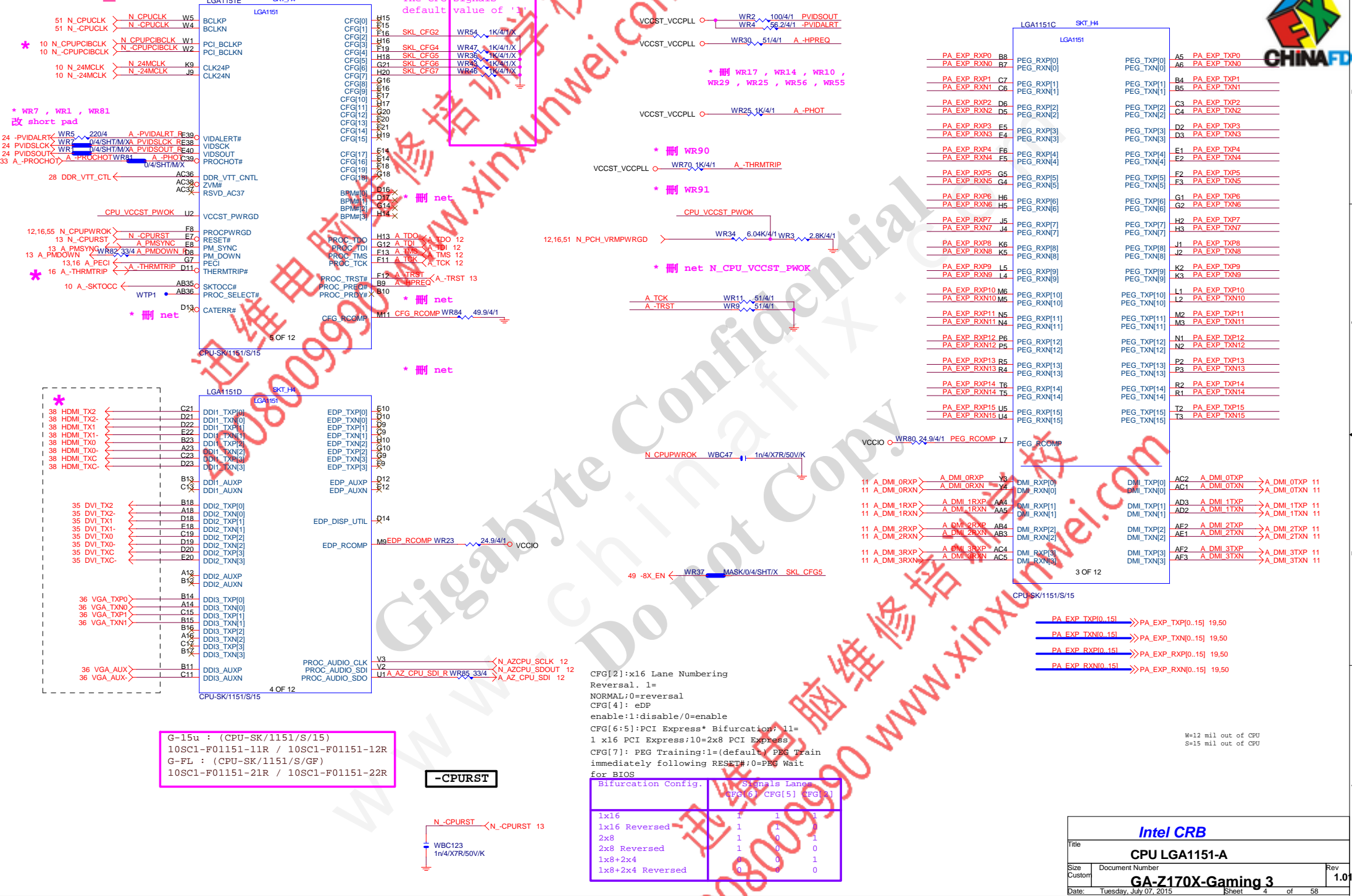
P-Code: U15003-0

[illegible]

# BLOCK DIAGRAM

www.xinxunwei.com 400-800-9990

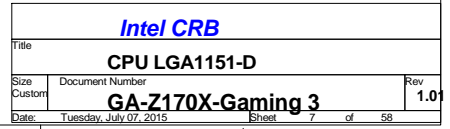




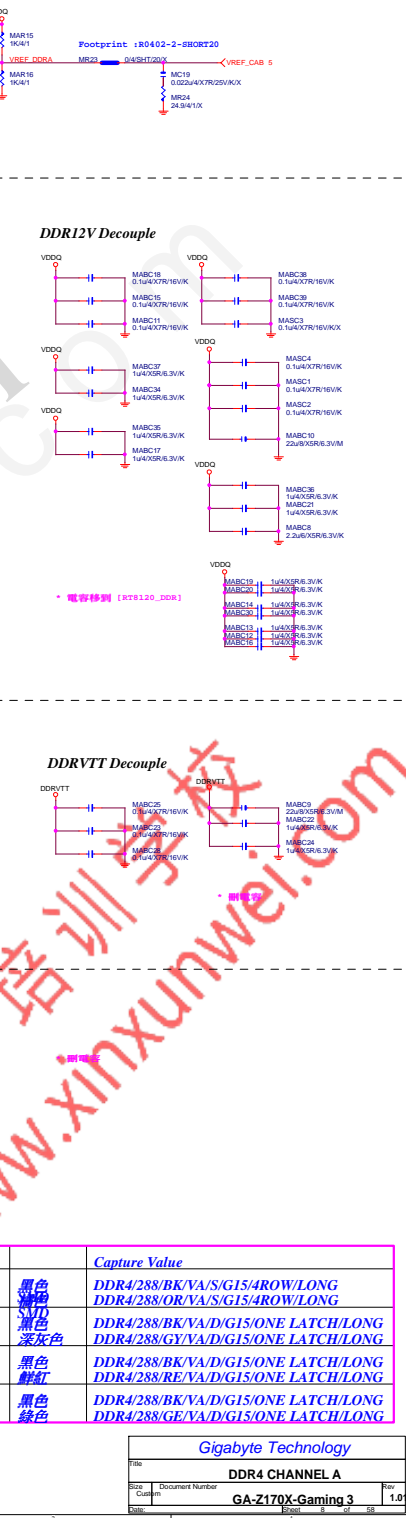
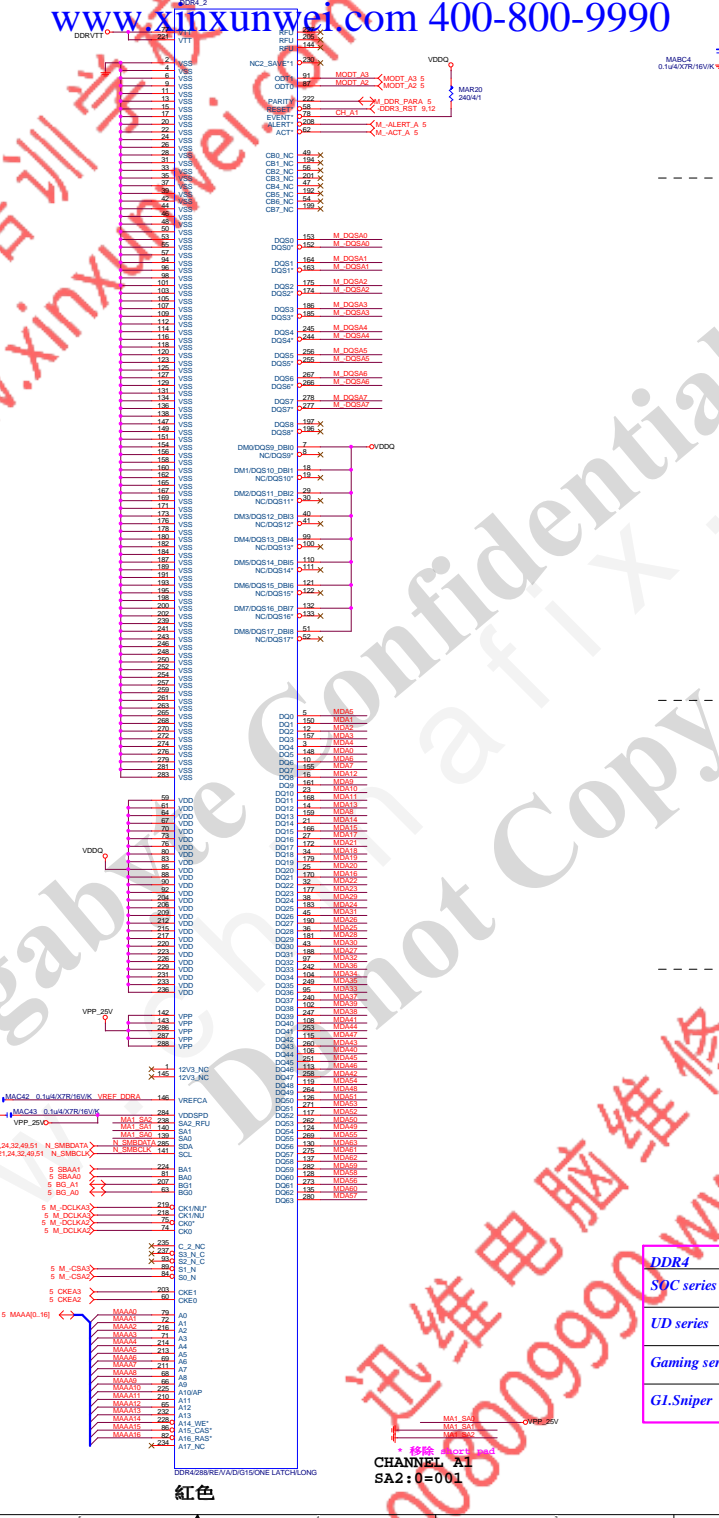
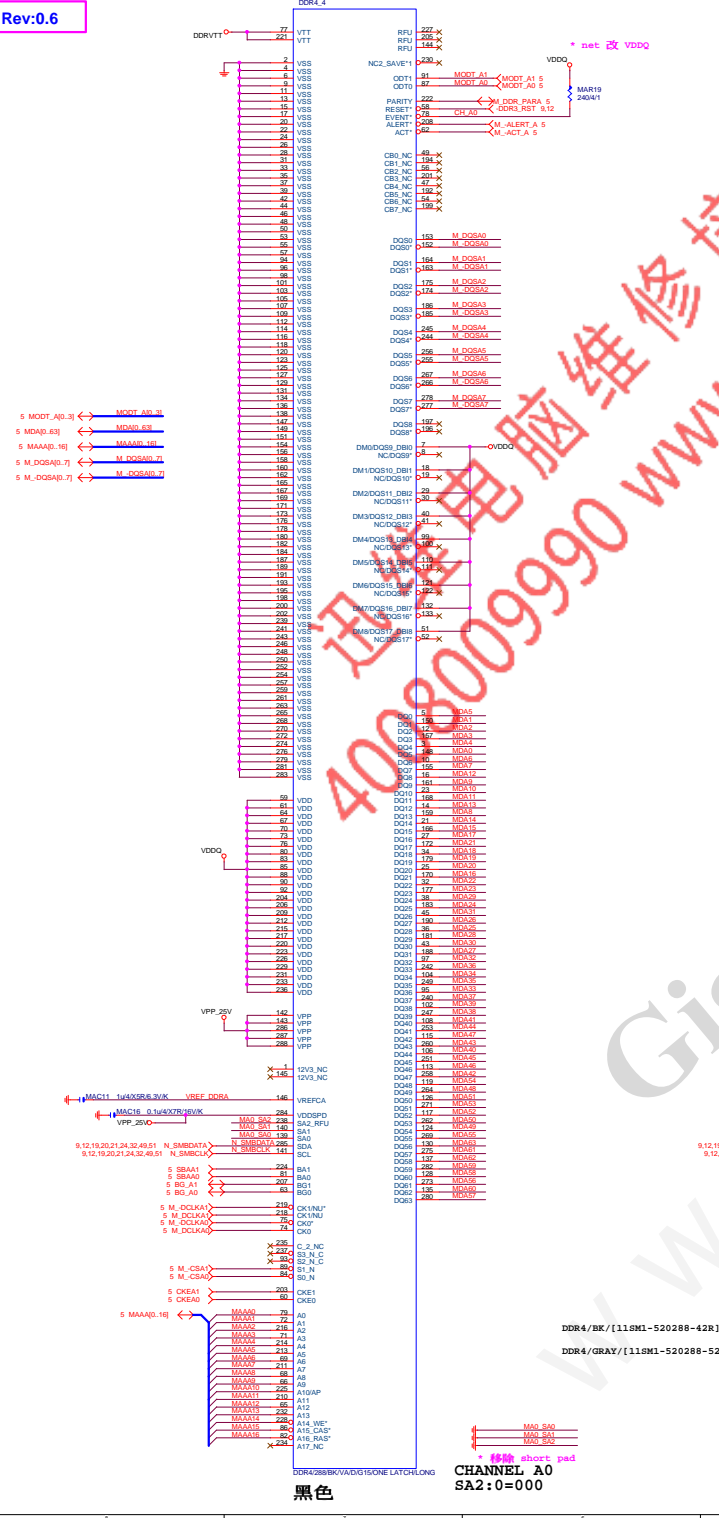












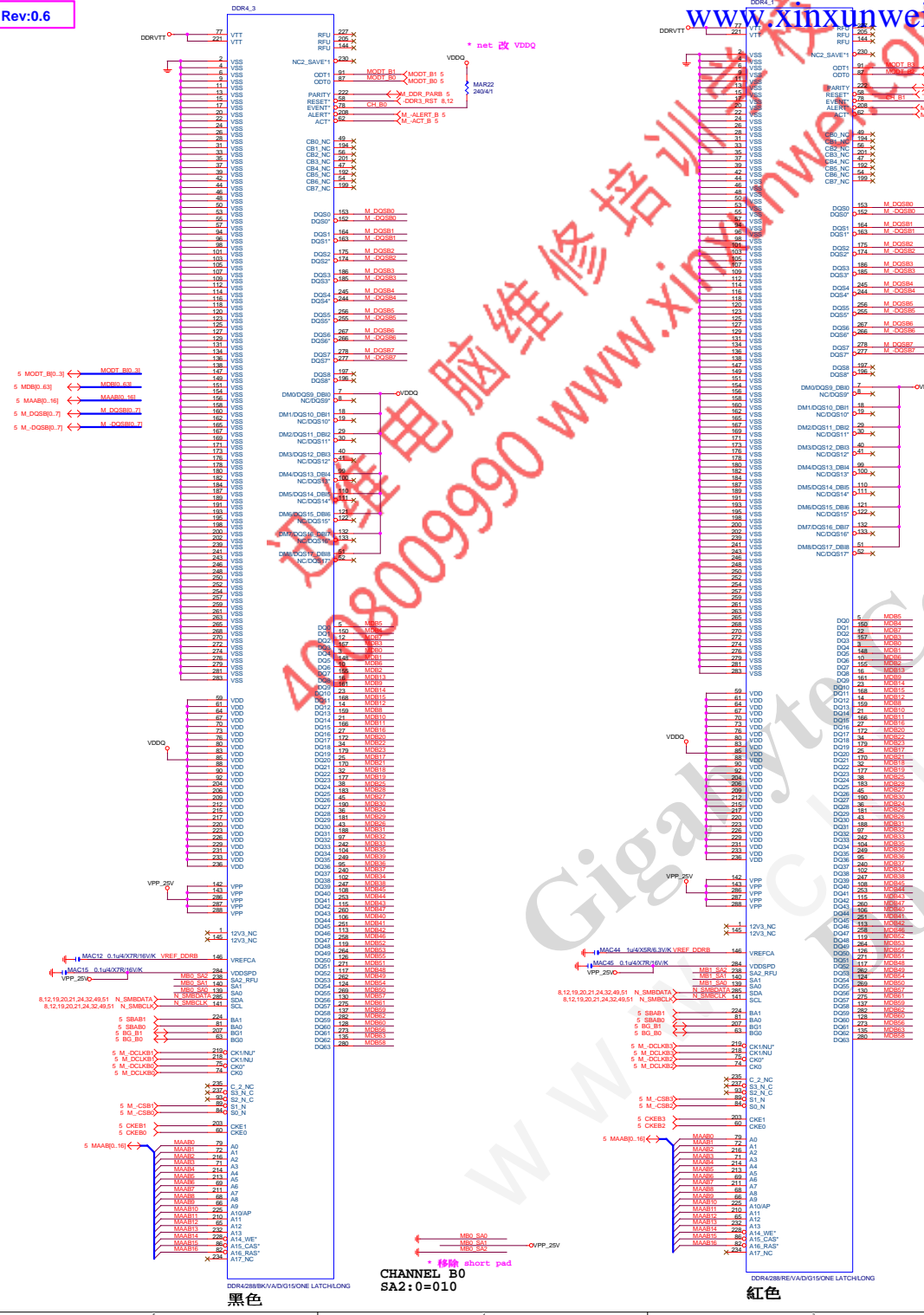
Gigabyte Technology

DDR4 CHANNEL A

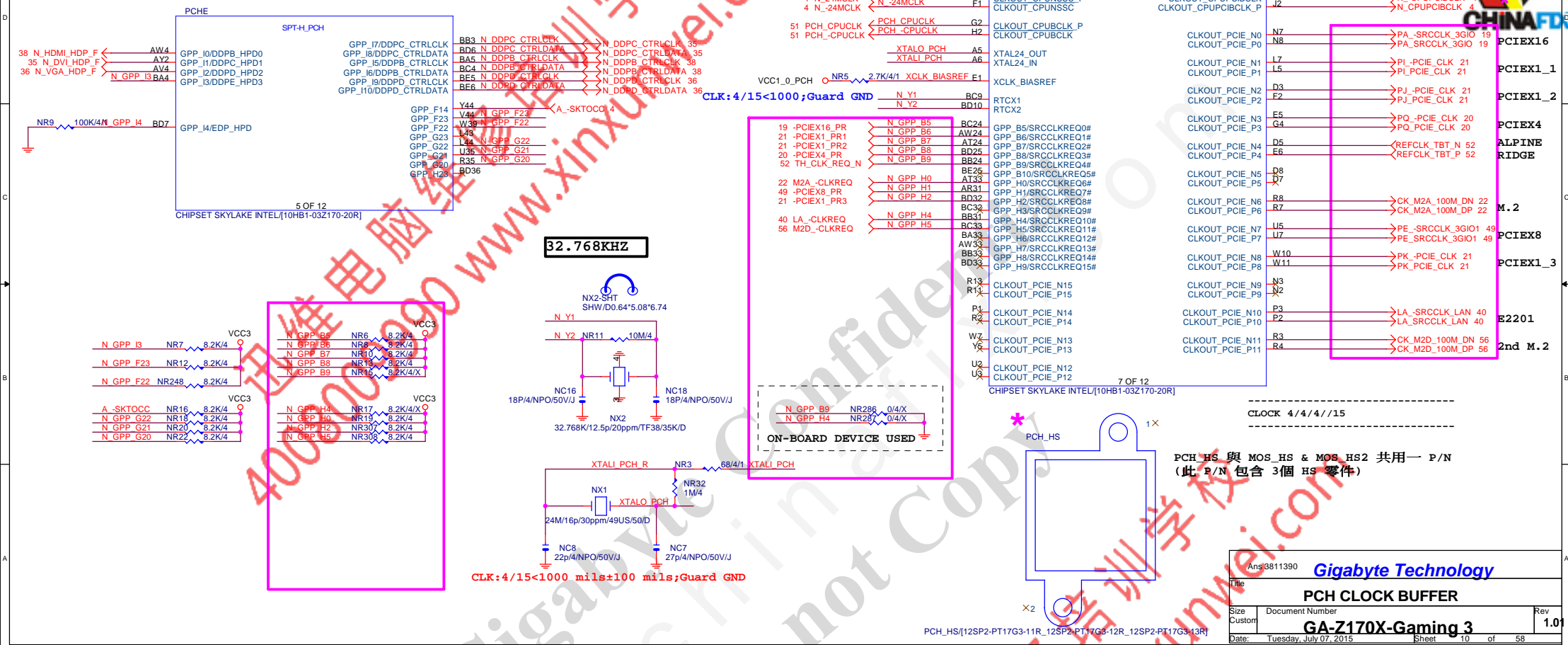
GA-Z170X-Gaming 3

Rev: 1.01



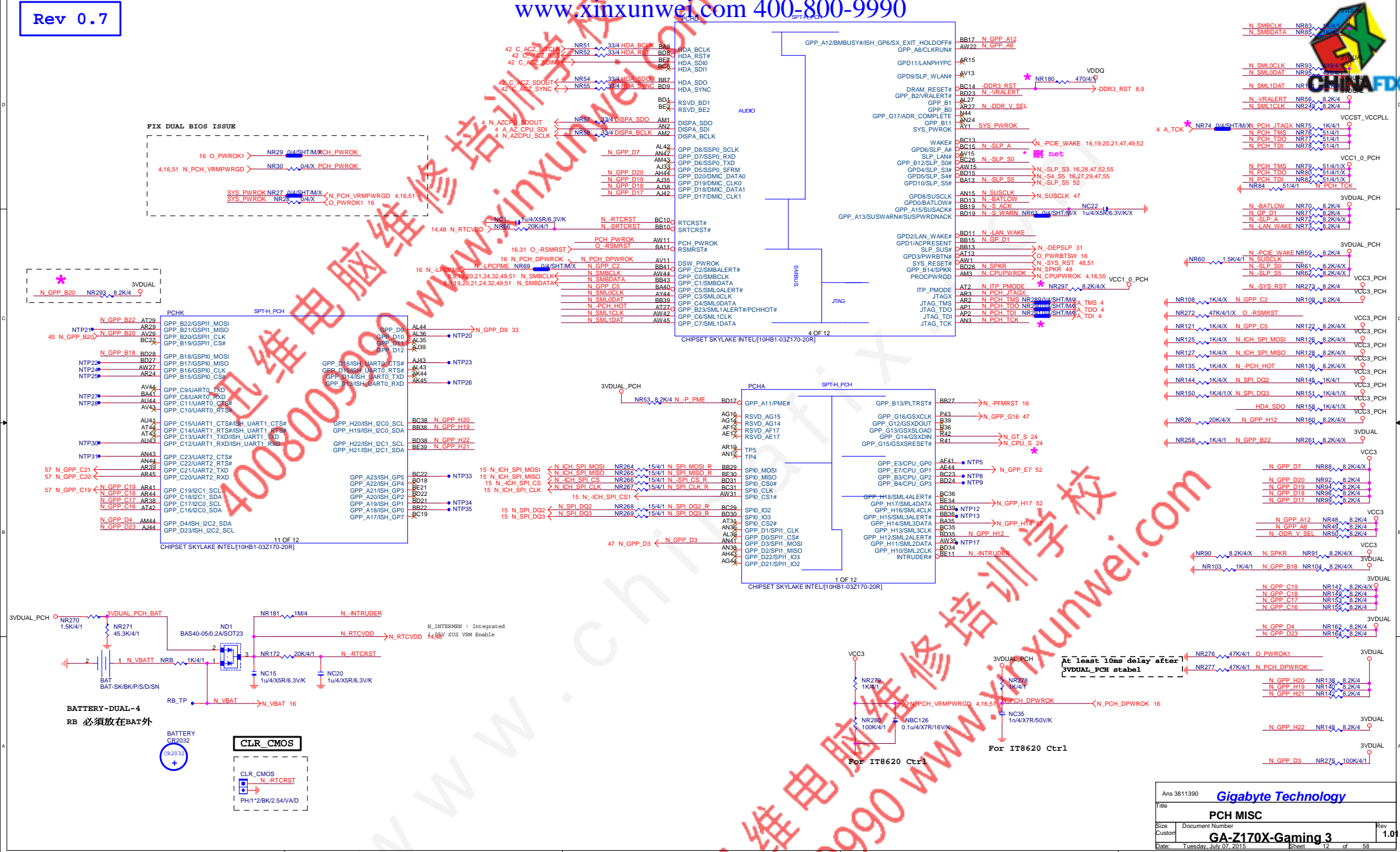


Gigabyte Technology		
File	DDR4 CHANNEL B	
Size	Document Number	Rev
100K	GA-Z170X-Gaming 3	1.01



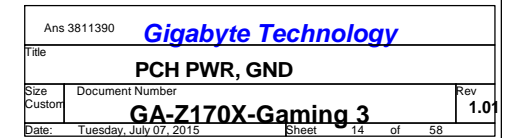


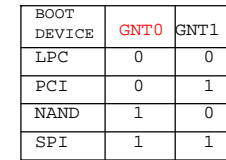








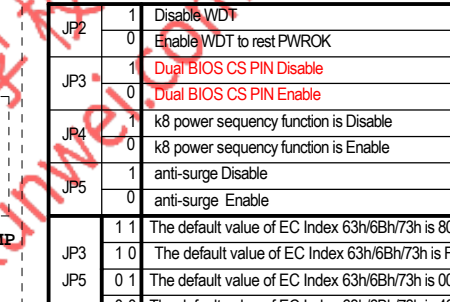
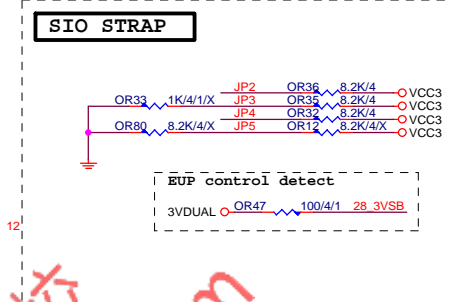
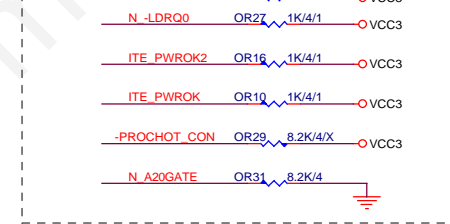
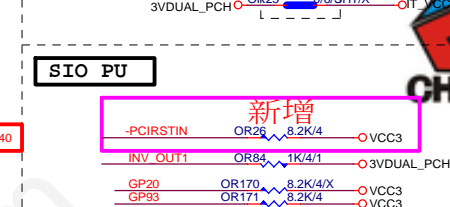




A diagram of a square chip. In the center is a smaller square. Surrounding this central square is a ring of 24 small squares, representing pins. The top-left pin is labeled "M BIOS".

<b><i>Gigabyte Technology</i></b>			
<b>BIOS</b>			
Size Custom	Document Number	<b>GA-Z170X-Gaming 3</b>	Rev <b>1.01</b>
Date:	<b>Tuesday, July 07, 2015</b>	Sheet	<b>15 of 58</b>





VCC3

OR7

8.2K/4%

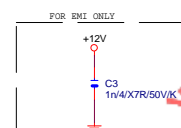
OR15

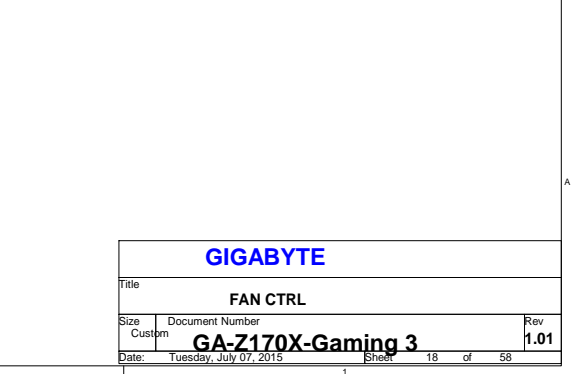
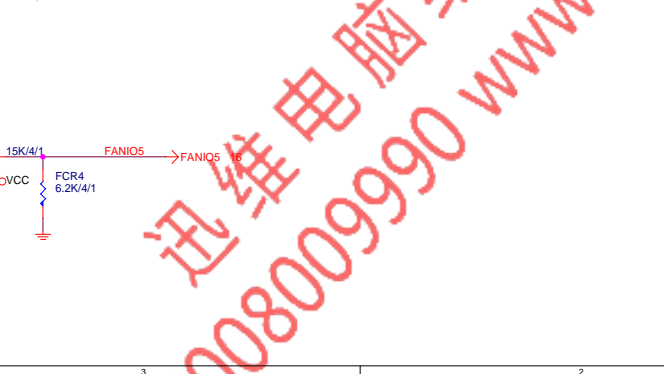
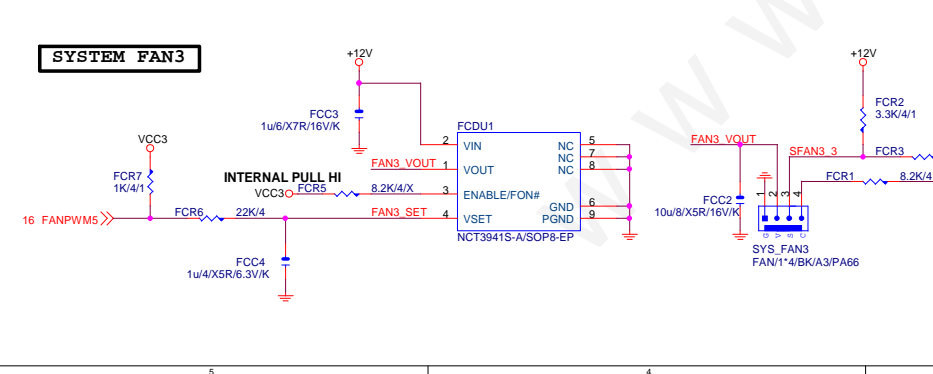
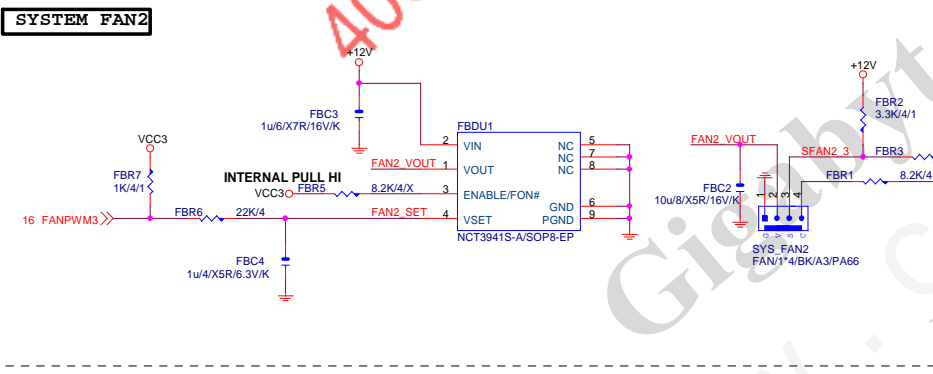
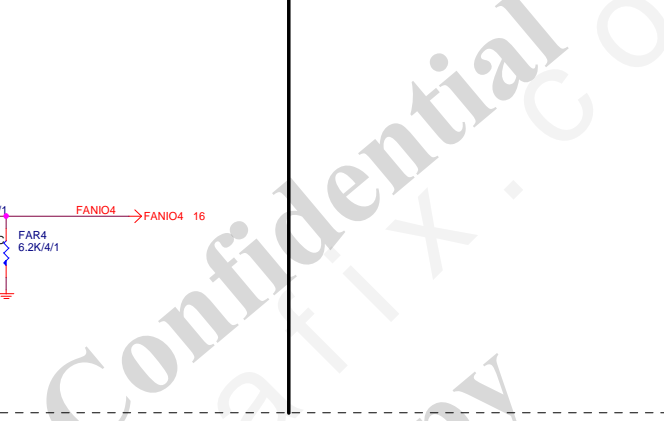
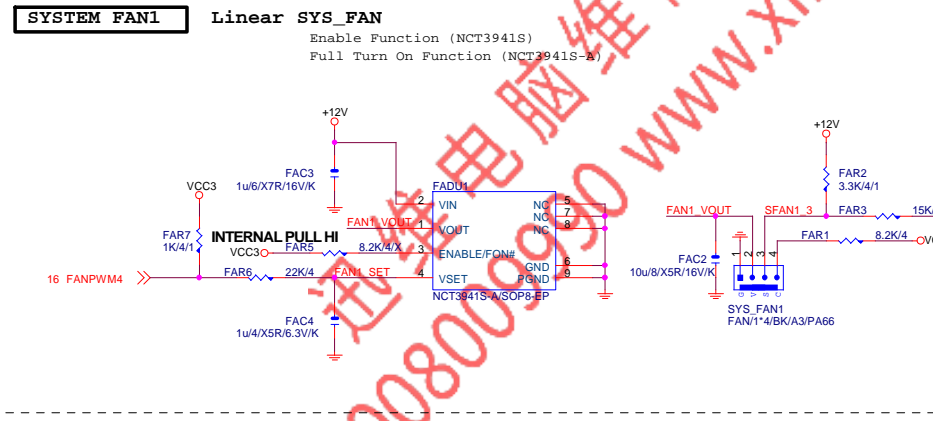
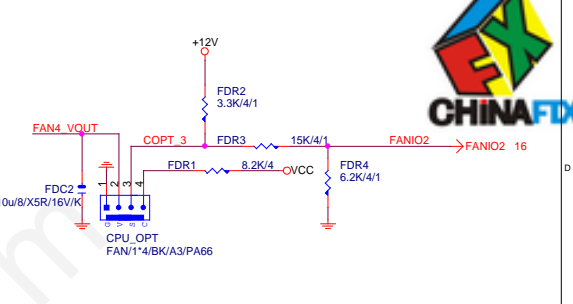
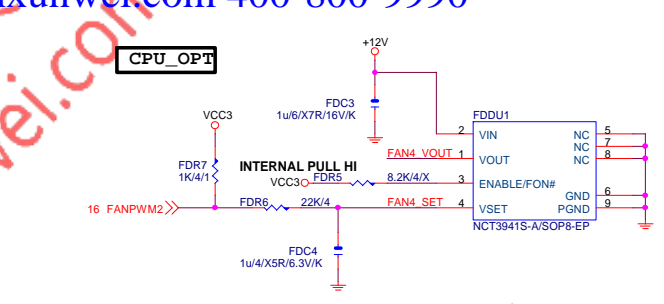
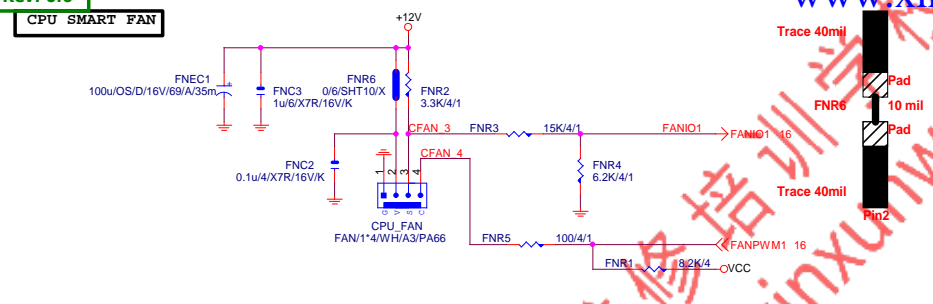
8.2K/4%

MB\_ID2

Ground







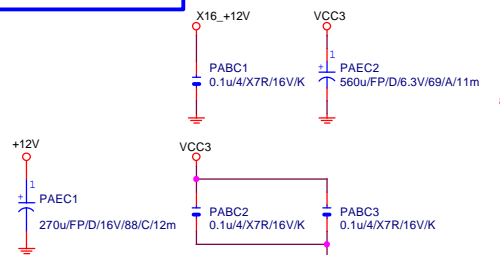
GIGABYTE			
Title			
FAN CTRL			
Size	Document Number	Rev	
Custom	GA-Z170X-Gaming 3	1.01	
Date:	Tuesday, July 07, 2015	Sheet	18 of 58

Rev 0.3

PCIEX16 CAP

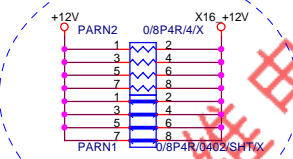
PCIEX16 SLOT

www.xinxiunwei.com 400-800-9990



PCIEX16 PROTECT SHT

+12 protect short-wire test



PCIEX16 AC CAP

PA EXP TXP0	PAC5	0.22u/4/X5R/6.3V/K	PA EXP TXP0 C
PA EXP TXN0	PAC4	0.22u/4/X5R/6.3V/K	PA EXP TXN0 C
PA EXP TXP1	PAC6	0.22u/4/X5R/6.3V/K	PA EXP TXP1 C
PA EXP TXN1	PAC7	0.22u/4/X5R/6.3V/K	PA EXP TXN1 C
PA EXP TXP2	PAC8	0.22u/4/X5R/6.3V/K	PA EXP TXP2 C
PA EXP TXN2	PAC9	0.22u/4/X5R/6.3V/K	PA EXP TXN2 C
PA EXP TXP3	PAC10	0.22u/4/X5R/6.3V/K	PA EXP TXP3 C
PA EXP TXN3	PAC11	0.22u/4/X5R/6.3V/K	PA EXP TXN3 C
PA EXP TXP4	PAC12	0.22u/4/X5R/6.3V/K	PA EXP TXP4 C
PA EXP TXN4	PAC13	0.22u/4/X5R/6.3V/K	PA EXP TXN4 C
PA EXP TXP5	PAC14	0.22u/4/X5R/6.3V/K	PA EXP TXP5 C
PA EXP TXN5	PAC15	0.22u/4/X5R/6.3V/K	PA EXP TXN5 C
PA EXP TXP6	PAC16	0.22u/4/X5R/6.3V/K	PA EXP TXP6 C
PA EXP TXN6	PAC17	0.22u/4/X5R/6.3V/K	PA EXP TXN6 C
PA EXP TXP7	PAC18	0.22u/4/X5R/6.3V/K	PA EXP TXP7 C
PA EXP TXN7	PAC19	0.22u/4/X5R/6.3V/K	PA EXP TXN7 C
PA EXP SW TXP8	PAC20	0.22u/4/X5R/6.3V/K	PA EXP SW TXP8 C
PA EXP SW TXN8	PAC21	0.22u/4/X5R/6.3V/K	PA EXP SW TXN8 C
PA EXP SW TXP9	PAC22	0.22u/4/X5R/6.3V/K	PA EXP SW TXP9 C
PA EXP SW TXN9	PAC23	0.22u/4/X5R/6.3V/K	PA EXP SW TXN9 C
PA EXP SW TXP10	PAC24	0.22u/4/X5R/6.3V/K	PA EXP SW TXP10 C
PA EXP SW TXN10	PAC25	0.22u/4/X5R/6.3V/K	PA EXP SW TXN10 C
PA EXP SW TXP11	PAC26	0.22u/4/X5R/6.3V/K	PA EXP SW TXP11 C
PA EXP SW TXN11	PAC27	0.22u/4/X5R/6.3V/K	PA EXP SW TXN11 C
PA EXP SW TXP12	PAC28	0.22u/4/X5R/6.3V/K	PA EXP SW TXP12 C
PA EXP SW TXN12	PAC29	0.22u/4/X5R/6.3V/K	PA EXP SW TXN12 C
PA EXP SW TXP13	PAC30	0.22u/4/X5R/6.3V/K	PA EXP SW TXP13 C
PA EXP SW TXN13	PAC31	0.22u/4/X5R/6.3V/K	PA EXP SW TXN13 C
PA EXP SW TXP14	PAC32	0.22u/4/X5R/6.3V/K	PA EXP SW TXP14 C
PA EXP SW TXN14	PAC33	0.22u/4/X5R/6.3V/K	PA EXP SW TXN14 C
PA EXP SW TXP15	PAC34	0.22u/4/X5R/6.3V/K	PA EXP SW TXP15 C
PA EXP SW TXN15	PAC35	0.22u/4/X5R/6.3V/K	PA EXP SW TXN15 C

PCI-E REV:1.1--&gt; 2.5GHZ

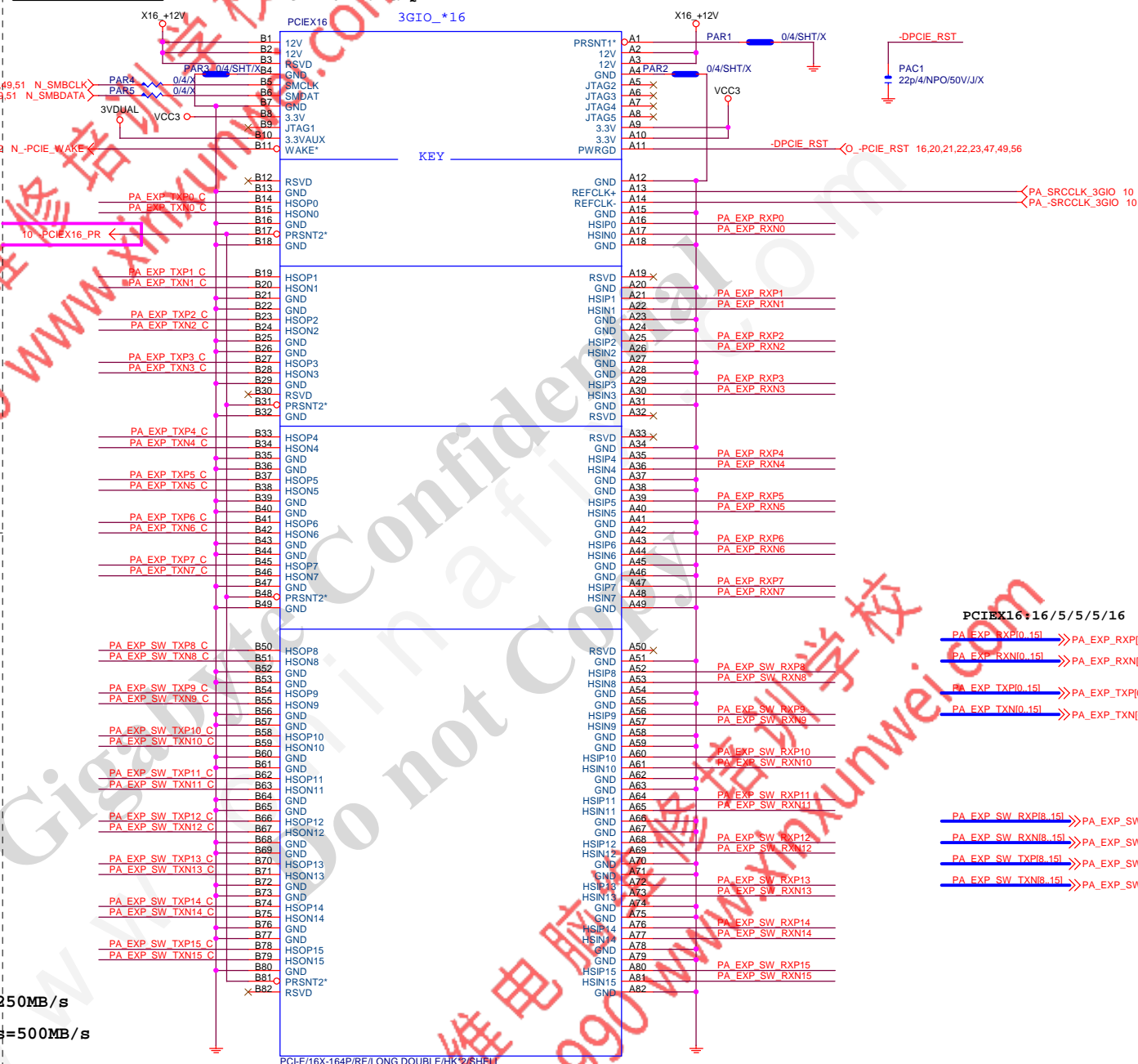
PCE-E X1(單向) BANDWITH=2.5GHz\*(8b/10b)=2Gb/s=250MB/s

PCE-E X1(雙向) BANDWITH=2.5GHz\*(8b/10b)X2=4Gb/s=500MB/s

PCE-E X16(單向) BANDWITH=2.5GHz\*(8b/10b)X16=32Gb/s=4GB/s

PCE-E X16(雙向) BANDWITH=2.5GHz\*(8b/10b)X16X2=64Gb/s=8GB/s

PCI-E REV:2.0--&gt; 5GHZ



PCIEX16\*16/5/5/16

PA EXP TXP0.15]	>>PA_EXP_RXP[0..15]	4,50
PA EXP TXN0.15]	>>PA_EXP_RXN[0..15]	4,50
PA EXP TXP1.15]	>>PA_EXP_TXP[0..15]	4,50
PA EXP TXN1.15]	>>PA_EXP_TXN[0..15]	4,50
PA EXP SW_RXP[8..15]	>>PA_EXP_SW_RXP[8..15]	50
PA EXP SW_RXN[8..15]	>>PA_EXP_SW_RXN[8..15]	50
PA EXP SW_TXP[8..15]	>>PA_EXP_SW_TXP[8..15]	50
PA EXP SW_TXN[8..15]	>>PA_EXP_SW_TXN[8..15]	50

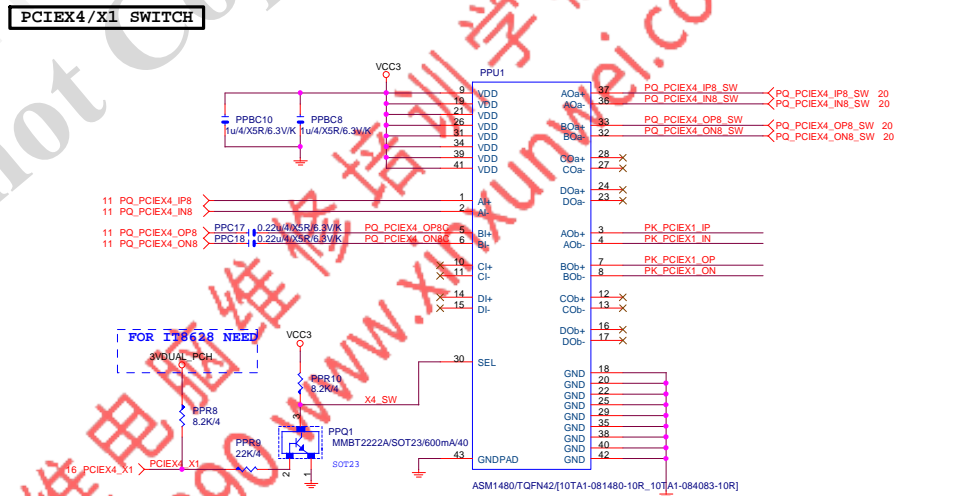
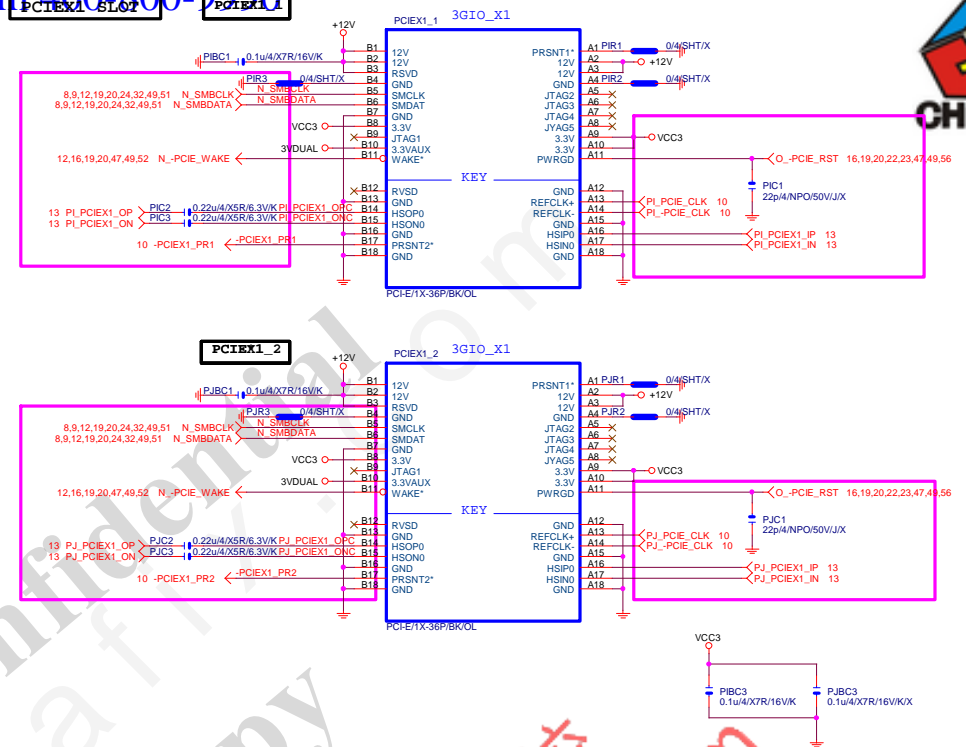
紅色

Gigabyte Technology

Title			PCI EXPRESS * 16
Size	Document Number	GA-Z170X-Gaming 3	
Custom		Rev	1.01
Date:	Tuesday, July 07, 2015	Sheet	19 of 58







	N_GPP_G3 (PCH_GPP_G3)	PCIEX4_X1 (SIO_GPIO27)
PCIEX4 -> X4 M2_WIFI -> N/A PCIEX1 --> N/A (Default)	H	H
PCIEX4 -> X1 M2_WIFI -> X1 PCIEX1 --> X1	L	L

Function	SEL
xI--> x0a	L;PCIEX4 SLOT-->X
xI--> x0b	H;PCIEX4 SLOT-->X

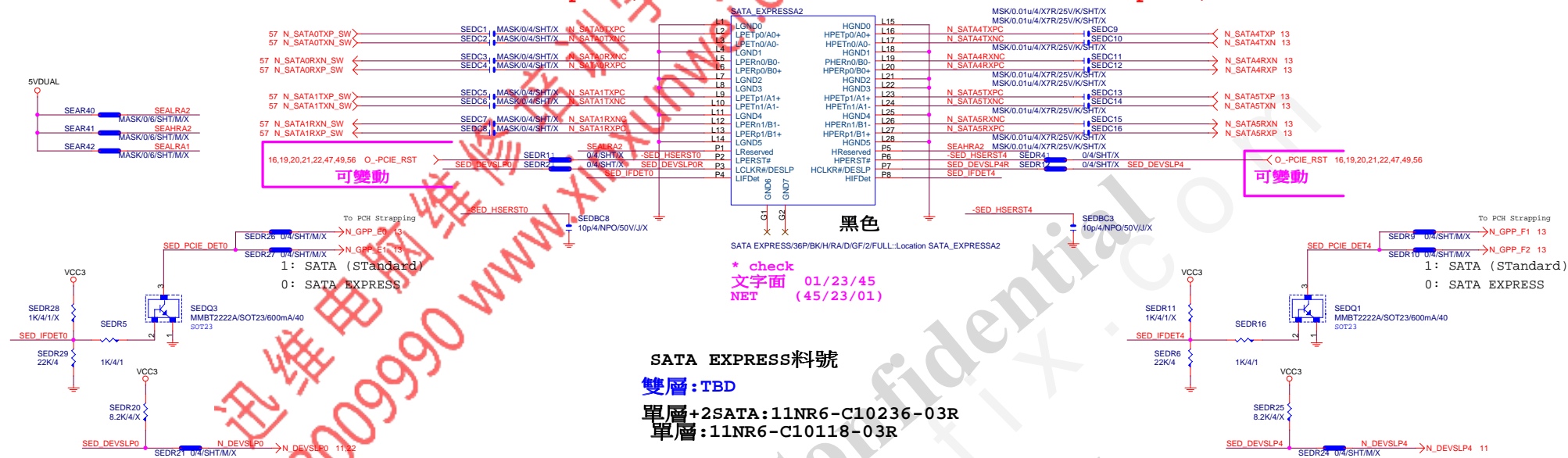
M.2 Lane2 from PCH port15



<b>GIGABYTE Technology</b>			
Title			
<b>M.2 X4</b>			
Size Custom	Document Number		Rev
	<b>GA-Z170X-Gaming 3</b>		<b>1.0</b>
Date:	Tuesday, July 07, 2015	Sheet	22 of 58

SATA EXPRESS 下層 To SATA3 port0/1

SATA EXPRESS 上層 To SATA3 port4/5



\* check  
文字面 01/23/45  
NET (45/23/01)

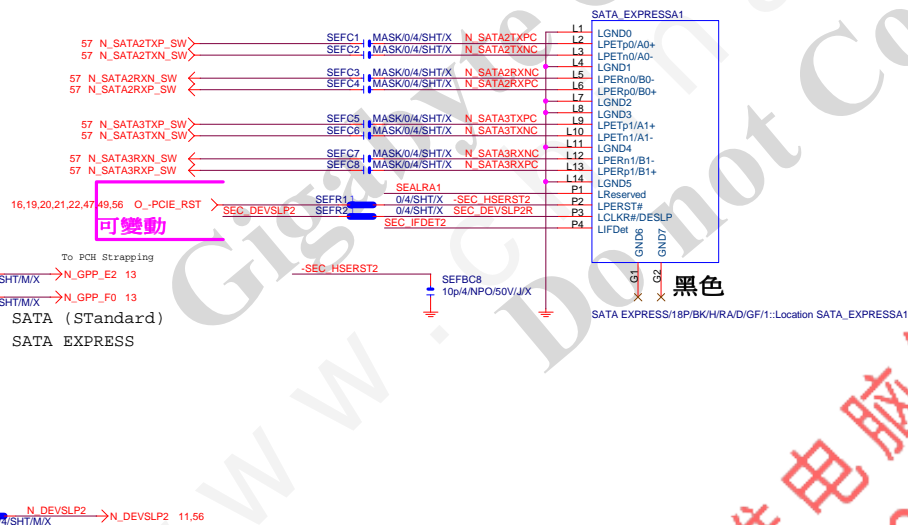
SATA EXPRESS料號

雙層:TBD

單層+2SATA:11NR6-C10236-03R

單層:11NR6-C10118-03R

To SATA3 port2/3



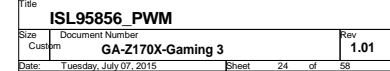
SATA 5 (文字面寫SATA 1)  
SATA 4 (文字面寫SATA 0)  
SATA 3  
SATA 2  
SATA 1 (文字面寫SATA 5)  
SATA 0 (文字面寫SATA 4)

GIGABYTE Technology

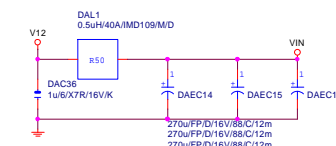
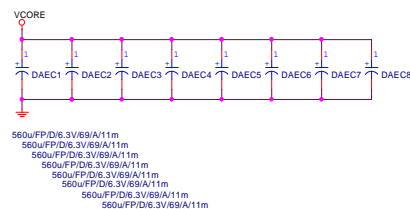
SATA EXPRESS

Size Document Number  
Custom GA-Z170X-Gaming 3  
Date: Tuesday, July 07, 2015 Sheet 23 of 58

Rev 1.01



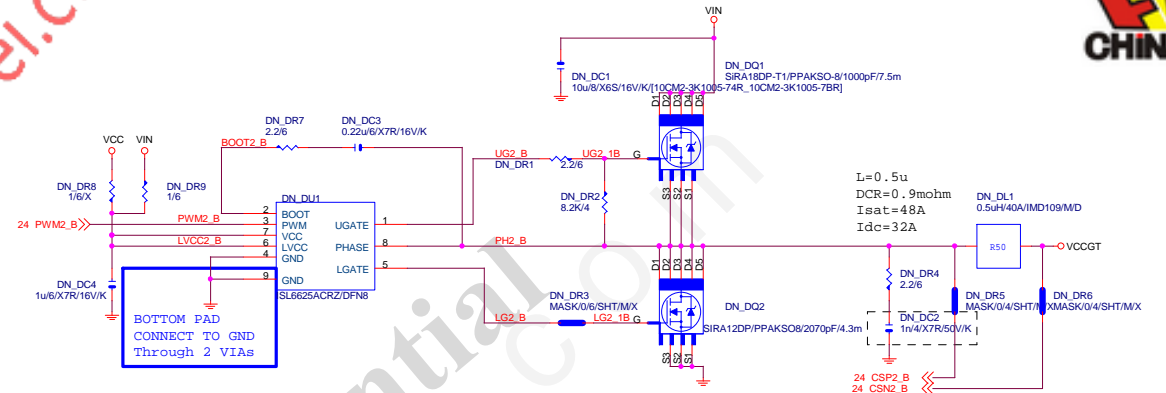
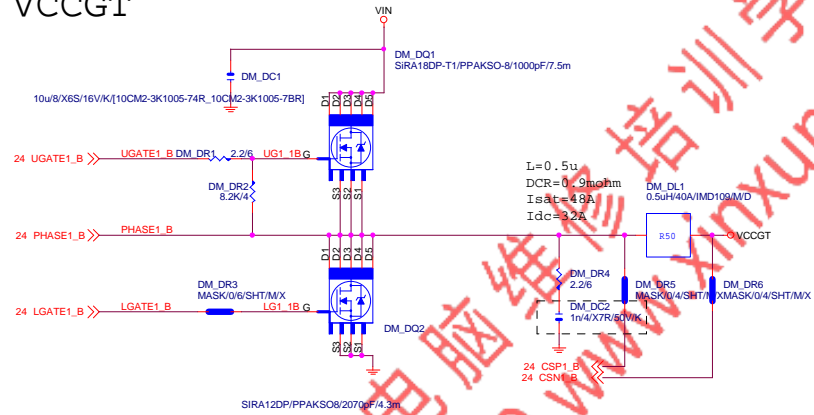




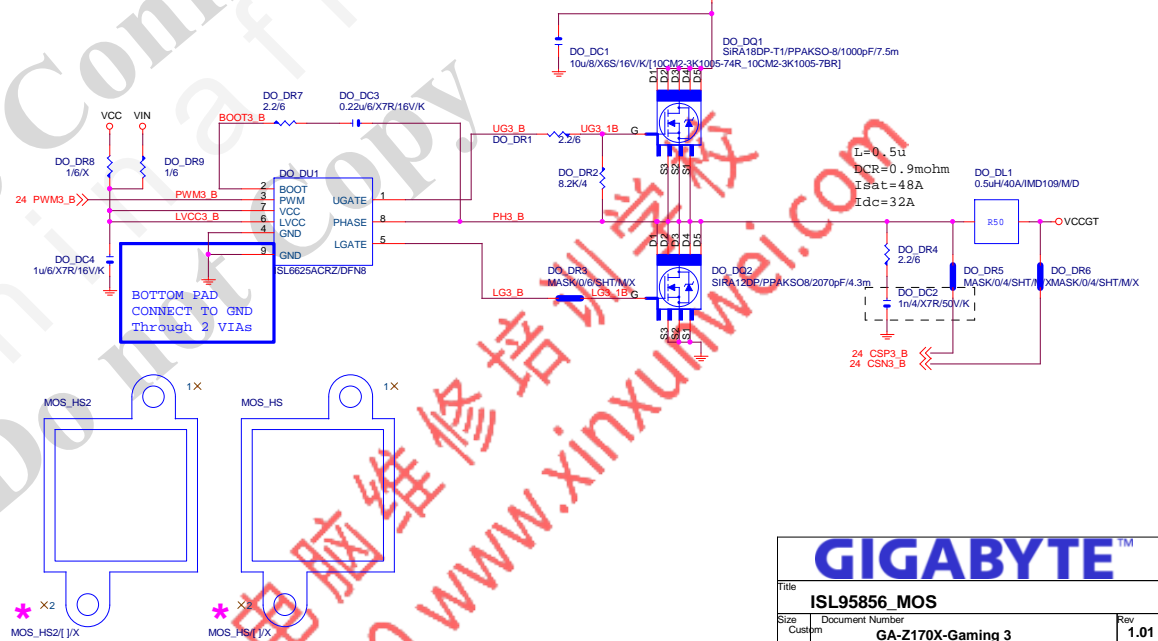
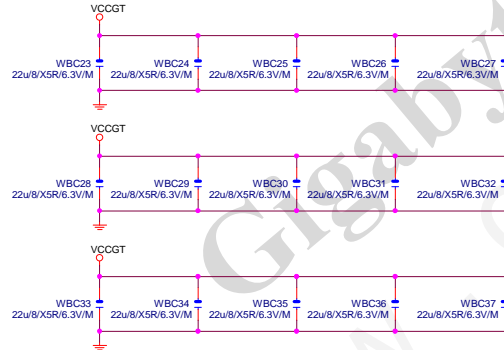
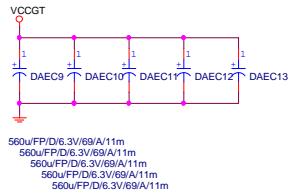
Title <b>ISL95856_MOS</b>			
Size Custom	Document Number <b>GA-Z170X-Gaming 3</b>		Rev <b>1.01</b>
Date: Tuesday, July 07, 2015	Sheet 25 of 58		



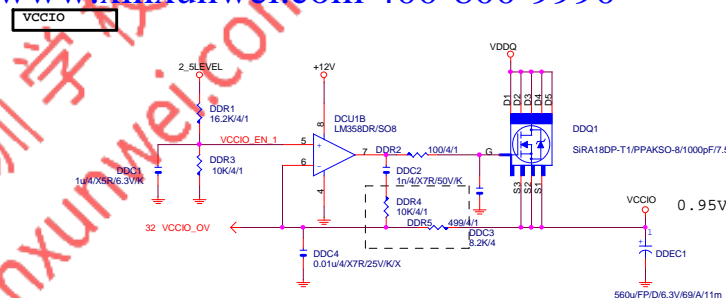
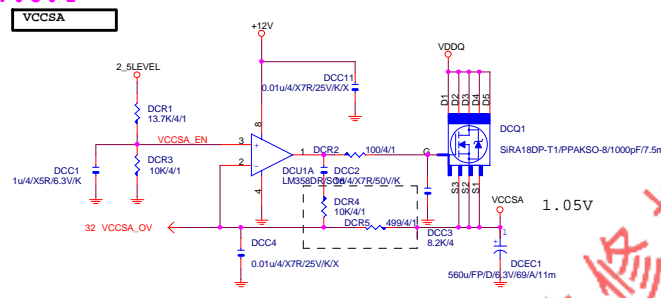
## VCCGT



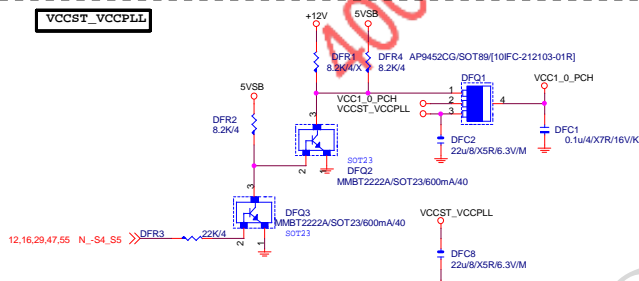
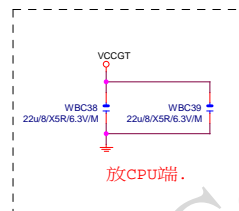
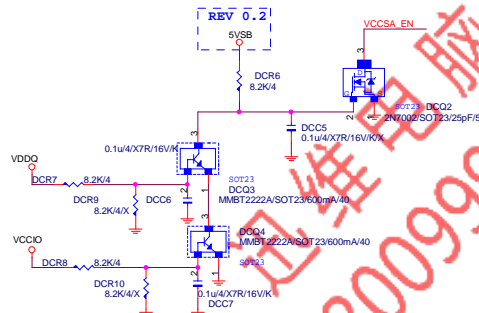
## VCCGT CAP

560u\*5PCS  
22u\*15PCS

GIGABYTE™			
Title			
ISL95856 MOS			
Size	Document Number	Rev	
Custom	GA-Z170X-Gaming 3	1.01	
Date:	Tuesday, July 07, 2015	Sheet	26 of 58



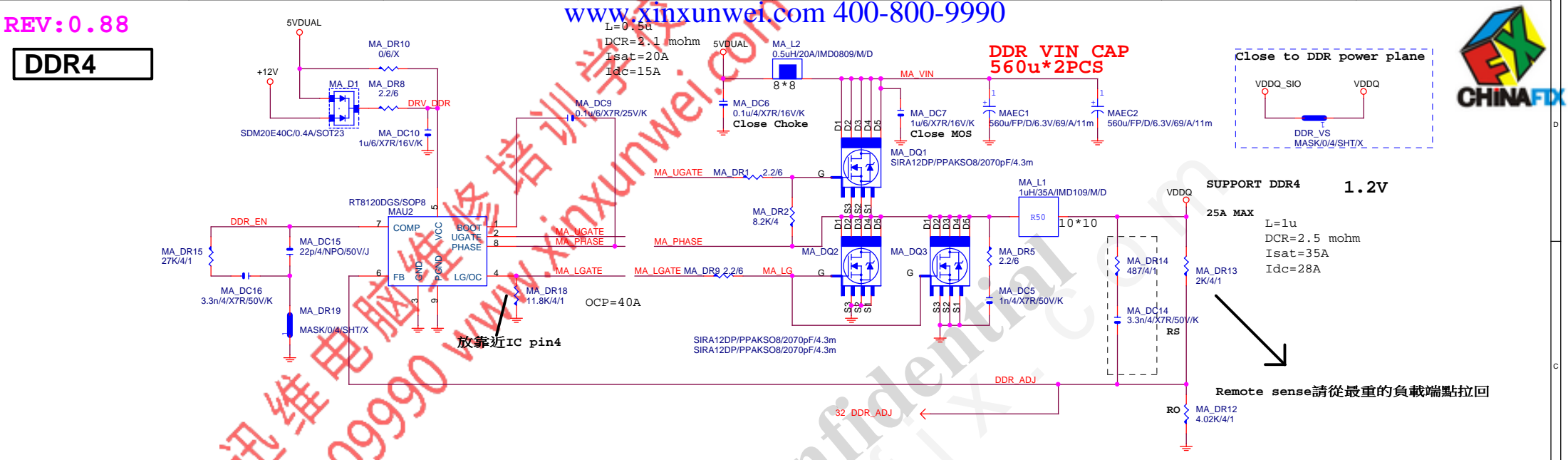
Connect to IT8620



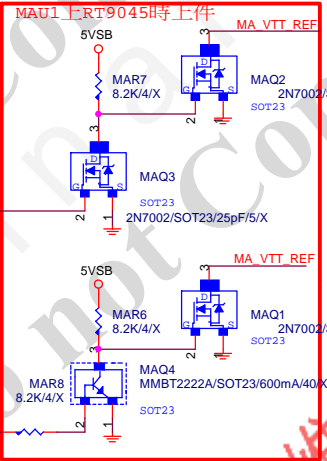
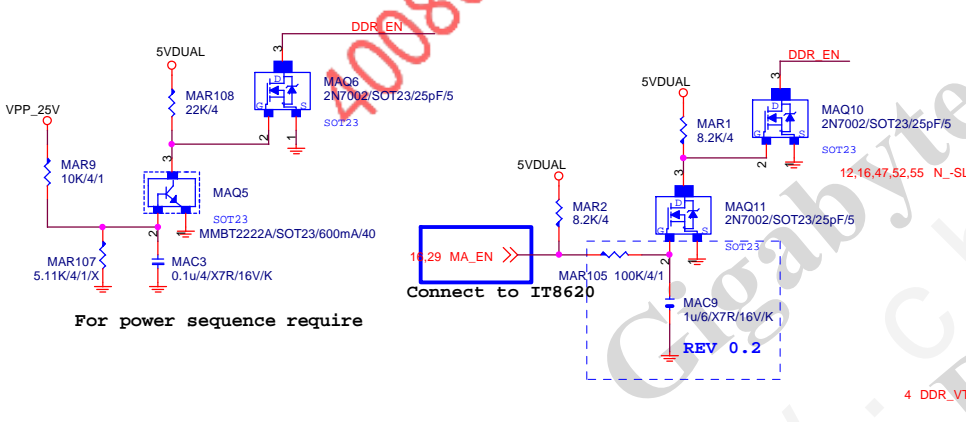
# GIGABYTE

Title			
VCCSA_VCCIO_no 44E			
Size	Document Number	Rev	
Custom	GA-Z170X-Gaming 3	1.01	
Date:	Tuesday, July 07, 2015	Sheet	27 of 58

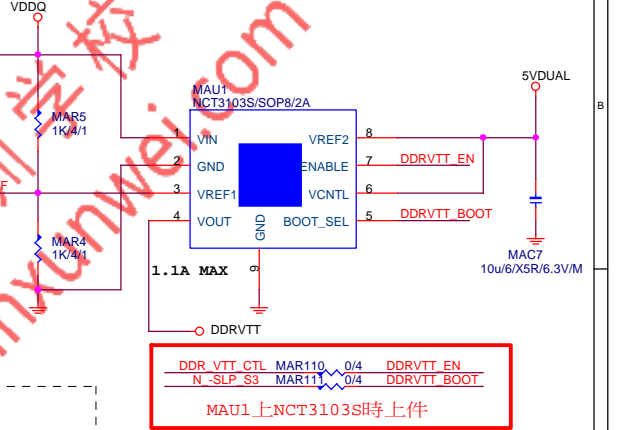
DDR4



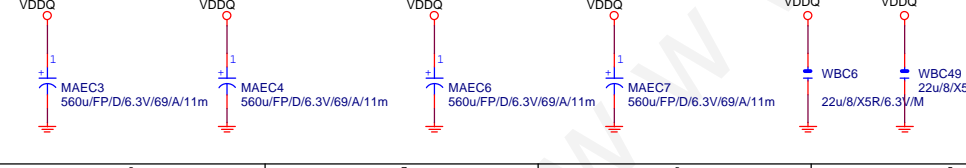
PWR SEQ



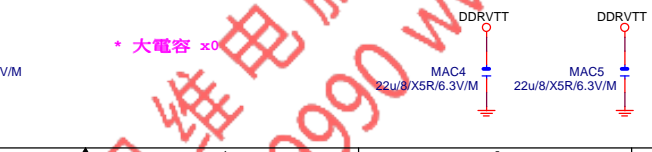
DDRVTT



DDR CAP 560u\*4PCS \*大電容 x4



DDRVTT CAP \*大電容 x0



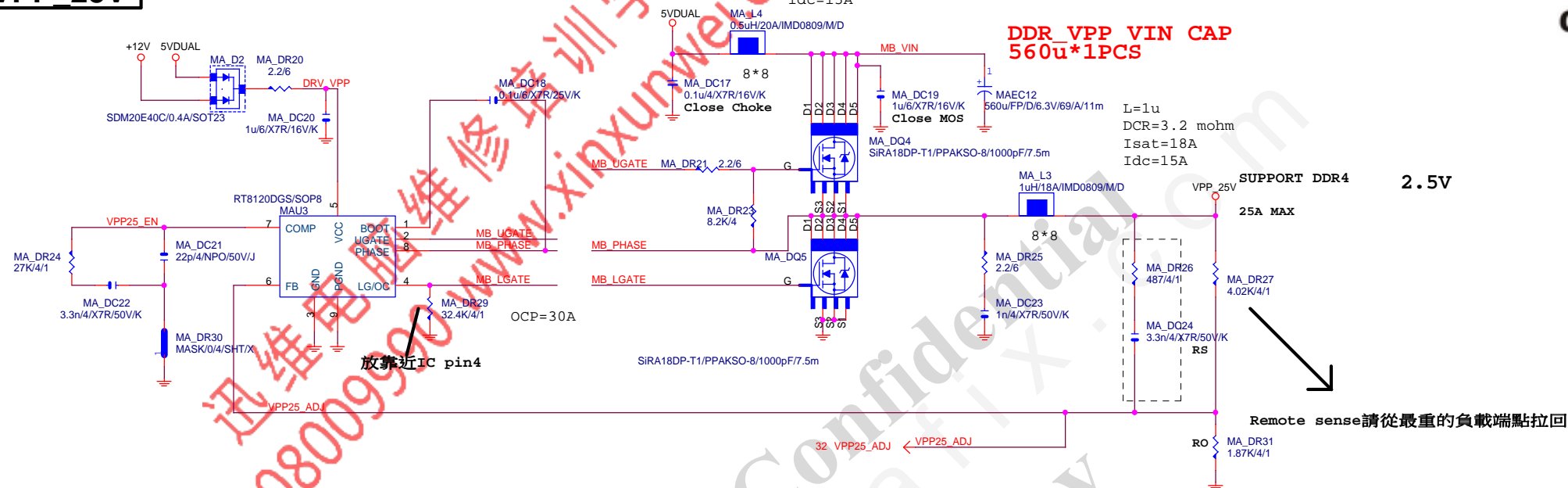
GIGABYTE™		
RT8120_DDR4 POWER		
Title	Document Number	Rev
Size	GA-Z170X-Gaming 3	1.01
Custom		
Date:	Tuesday, July 07, 2015	Sheet 28 of 58



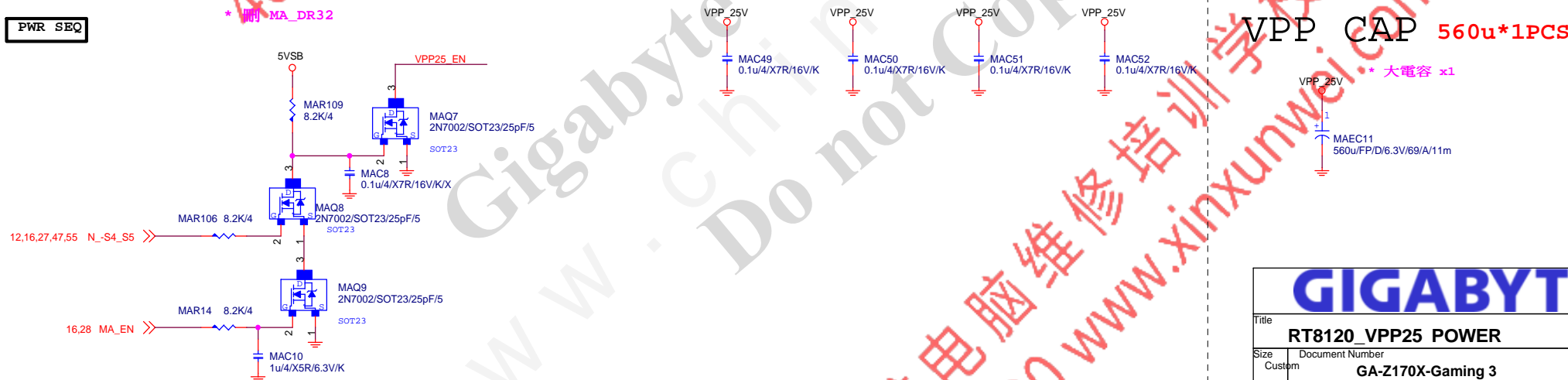
REV:0.88

VPP\_25V

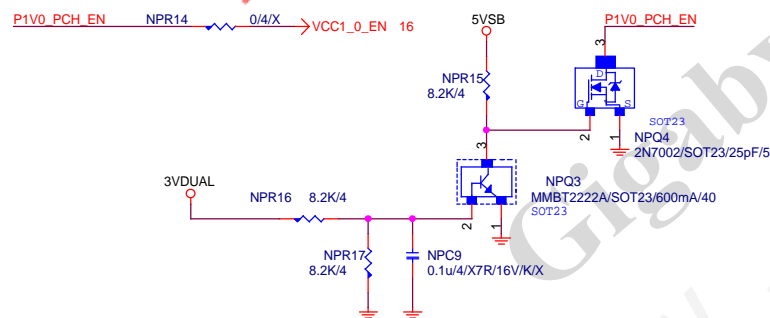
www.xinxunwei.com 400-800-9990



PWR\_SEQ



GIGABYTE™			
Title			
RT8120_VPP25 POWER			
Size		Document Number	
Custom		GA-Z170X-Gaming 3	
Date:		Rev	
Tuesday, July 07, 2015		1.01	
Sheet		of	
29		58	


$$0.8 \cdot (1 + R_S/R_O) = V_{out}$$
$$0.8 \cdot [1 + 2K/8K] =$$
$$1.0V$$


VCC1\_0\_PCH

NPC10  
22u/8/X5R/6.3V/M

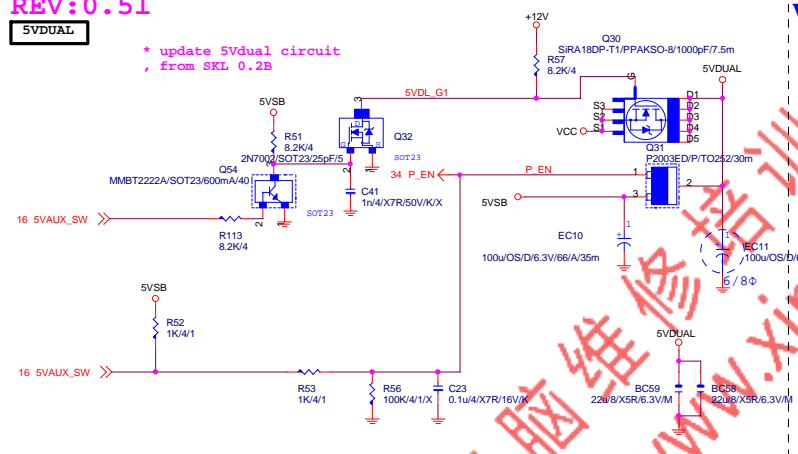
請放置CHOKE一出來的地方

**GIGABYTE™**

Title			
RT8120_PCH POWER			
Size	Document Number	Rev	
Custom	GA-Z170X-Gaming 3	1.01	
Date:	Tuesday, July 07, 2015	Sheet	30 of 58

REV:0.51

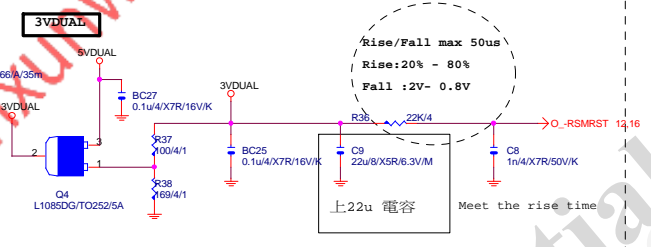
5VDUAL



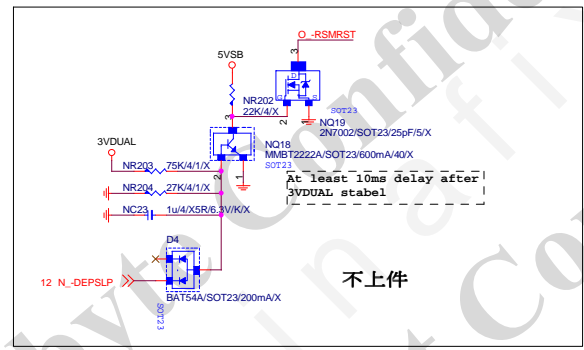
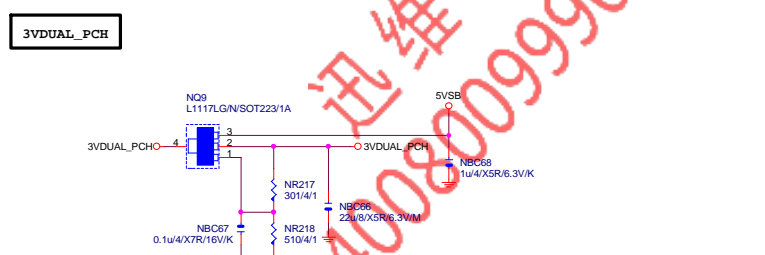
www.xinxunwei.com 400-800-9990



3VDUAL



3VDUAL\_PCH

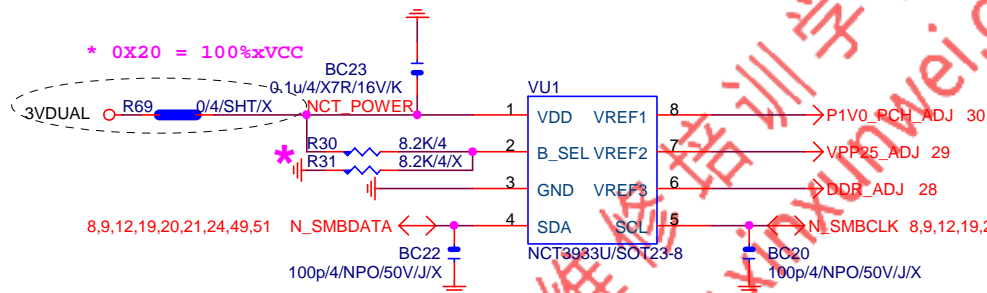


Gigabyte Technology

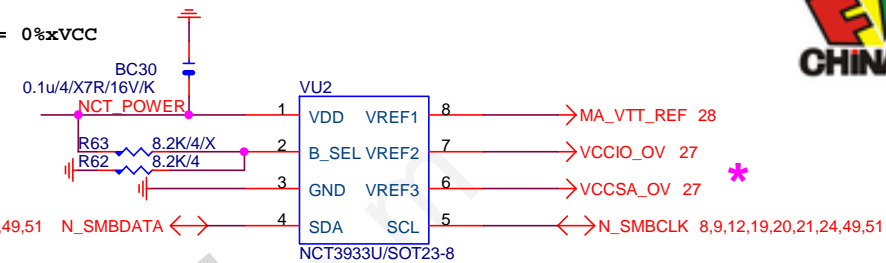
Title			DISCRETE POWER
Size	Document Number	GA-Z170X-Gaming 3	Rev
Custom			1.01
Date:	Tuesday, July 07, 2015	Sheet	31 of 58



## OVER VOLTAGE



0X2A = 0%xVCC



0X22 = 75%xVCC

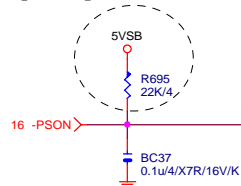
\* 删除 OVU3

NCT3933	0X2A	0X20	0X22
VREF1	DDRVTT	VREF_DDRA_DQ	PCH Core
VREF2	VREF_DDRA_CA	N/A	VCC1_5_PCH
VREF3	VREF_DDRA_CA	VREF_DDRB_DQ	SMREF

Gigabyte Technology		
Title		
NCT3933		
Size	Document Number	Rev
Custom	GA-Z170X-Gaming 3	1.01
Date:	Tuesday, July 07, 2015	Sheet 32 of 58



Patch some PSU no internal pull up resistor



\* 删除 -5V

VCC

VCC

BC39

1u/4/X5R/6.3V/K

-12V

VCC3

VCC3

ATX

3.3V

3.3V

13

14

15

16

17

18

19

20

21

22

23

24

GND

3.3V

12

11

10

9

8

7

6

5

4

3

2

1

13

14

15

16

17

18

19

20

21

22

23

24

GND

3.3V

12

11

10

9

8

7

6

5

4

3

2

1

13

14

15

16

17

18

19

20

21

22

23

24

GND

3.3V

12

11

10

9

8

7

6

5

4

3

2

1

13

14

15

16

17

18

19

20

21

22

23

24

GND

3.3V

12

11

10

9

8

7

6

5

4

3

2

1

13

14

15

16

17

18

19

20

21

22

23

24

GND

3.3V

12

11

10

9

8

7

6

5

4

3

2

1

13

14

15

16

17

18

19

20

21

22

23

24

GND

3.3V

12

11

10

9

8

7

6

5

4

3

2

1

13

14

15

16

17

18

19

20

21

22

23

24

GND

3.3V

12

11

10

9

8

7

6

5

4

3

2

1

13

14

15

16

17

18

19

20

21

22

23

24

GND

3.3V

12

11

10

9

8

7

6

5

4

3

2

1

13

14

15

16

17

18

19

20

21

22

23

24

GND

3.3V

12

11

10

9

8

7

6

5

4

3

2

1

13

14

15

16

17

18

19

20

21

22

23

24

GND

3.3V

12

11

10

9

8

7

6

5

4

3

2

1

13

14

15

16

17

18

19

20

21

22

23

24

GND

3.3V

12

11

10

9

8

7

6

5

4

3

2

1

13

14

15

16

17

18

19

20

21

22

23

24

GND

3.3V

12

11

10

9

8

7

6

5

4

3

2

1

13

14

15

16

17

18

19

20

21

22

23

24

GND

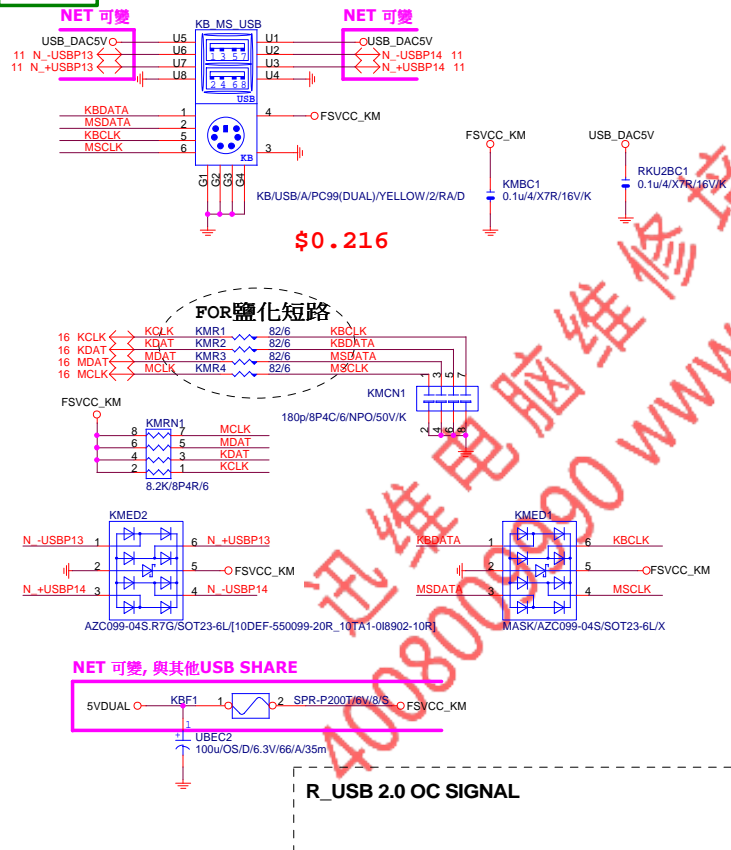
3.3V

12

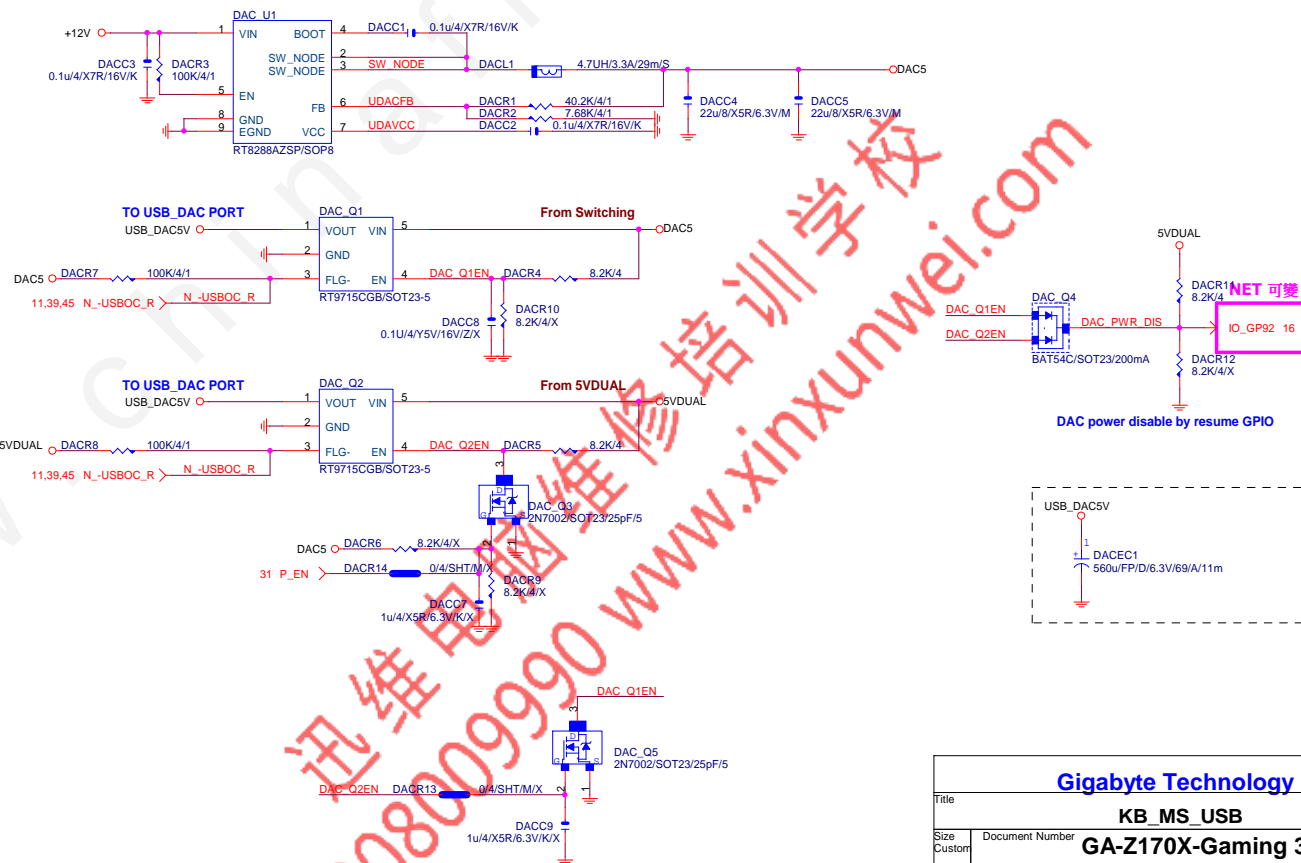
Rev: 0.6

KB/MS

www.xinxunwei.com 400-800-9990



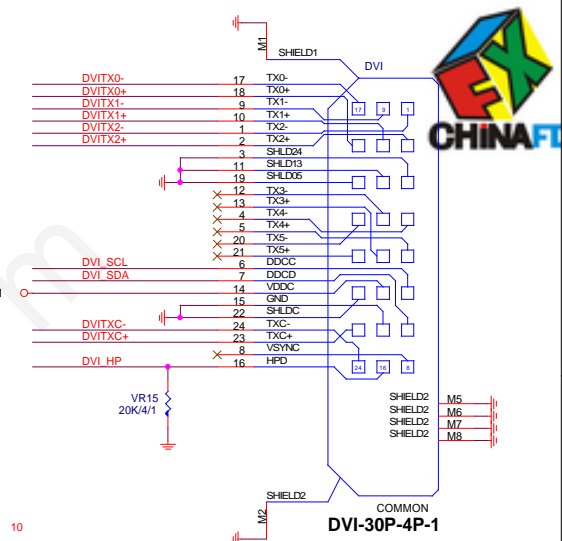
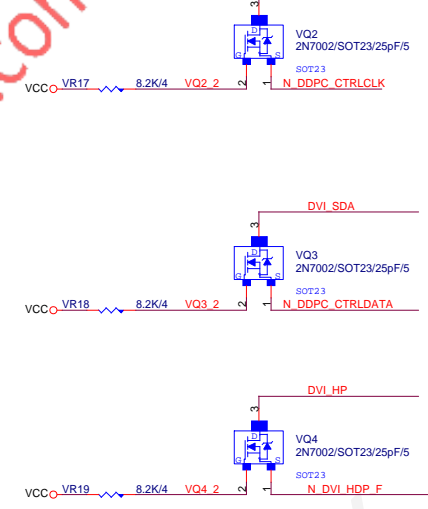
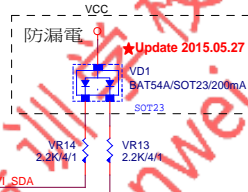
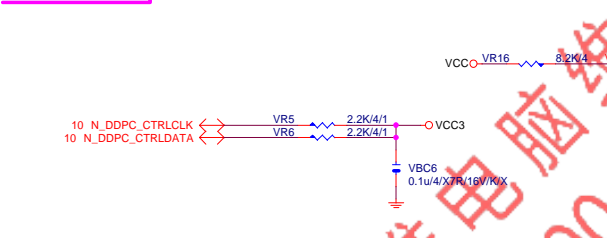
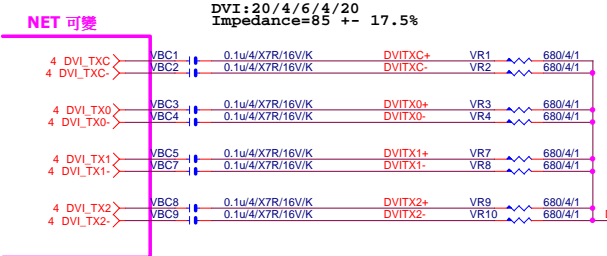
USB\_DAC



Gigabyte Technology

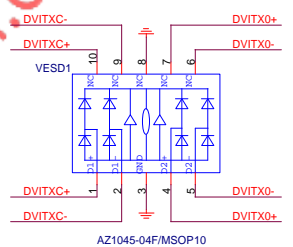
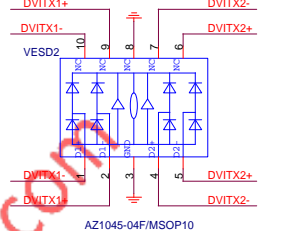
KB\_MS\_USB

Title	Document Number	Rev
Size	Custom	1.01
Date	Tuesday, July 07, 2015	Sheet 34 of 58

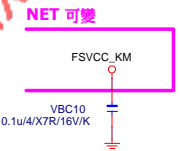
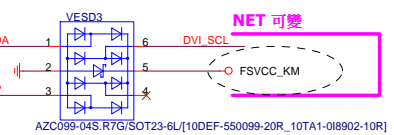


DVI-D(24P)/SC/RA/D/SH[11NR6-501024-31R]

Close to connector



Close to connector



Gigabyte Technology

Title		
DVI CONN		
Size	Document Number	Rev
Custom	GA-Z170X-Gaming 3	1.01
Date:	Tuesday, July 07, 2015	Sheet 35 of 58

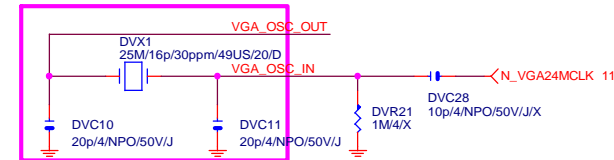
PTN3356 R1.08

ROM PART: PTN3356R1BS/[10HQ5-A23356-10R]  
FLASH PART: PTN3356F1BS/[10HQ5-A23356-20R]

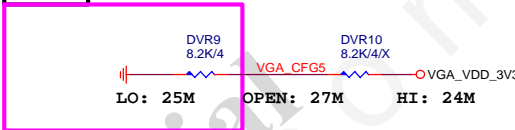
www.xinxiunwei.com 400-800-9990

1. 上件:  
DVC28 [10p/4/NPO/50V/J]  
DVC11 [10p/4/NPO/50V/J]~修改值  
DVR10 [8.2K/4]  
2. 删除:  
DVR1 [25M/16p/30ppm/49US/20/D]  
DVC10 [20p/4/NPO/50V/J]  
DVR9 [8.2K/4]

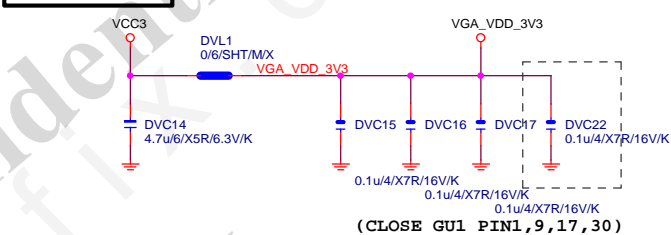
25M Crystal FROM PCH 24MHZ ISSUE



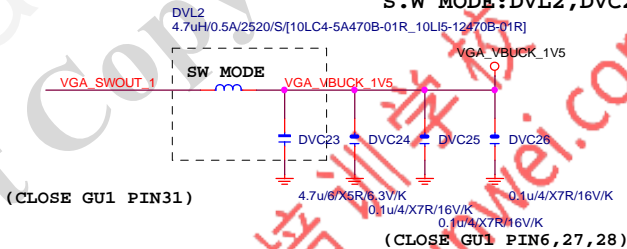
CFG5 For Crystal Less



ADAPTER POWER

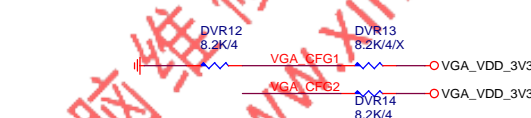


LDO MODE: DVL2, DVC23-->X  
S.W MODE: DVL2, DVC23-->O

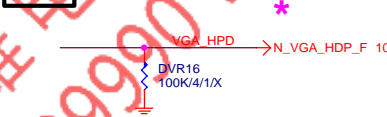


CFG1&2

Non-Compliant



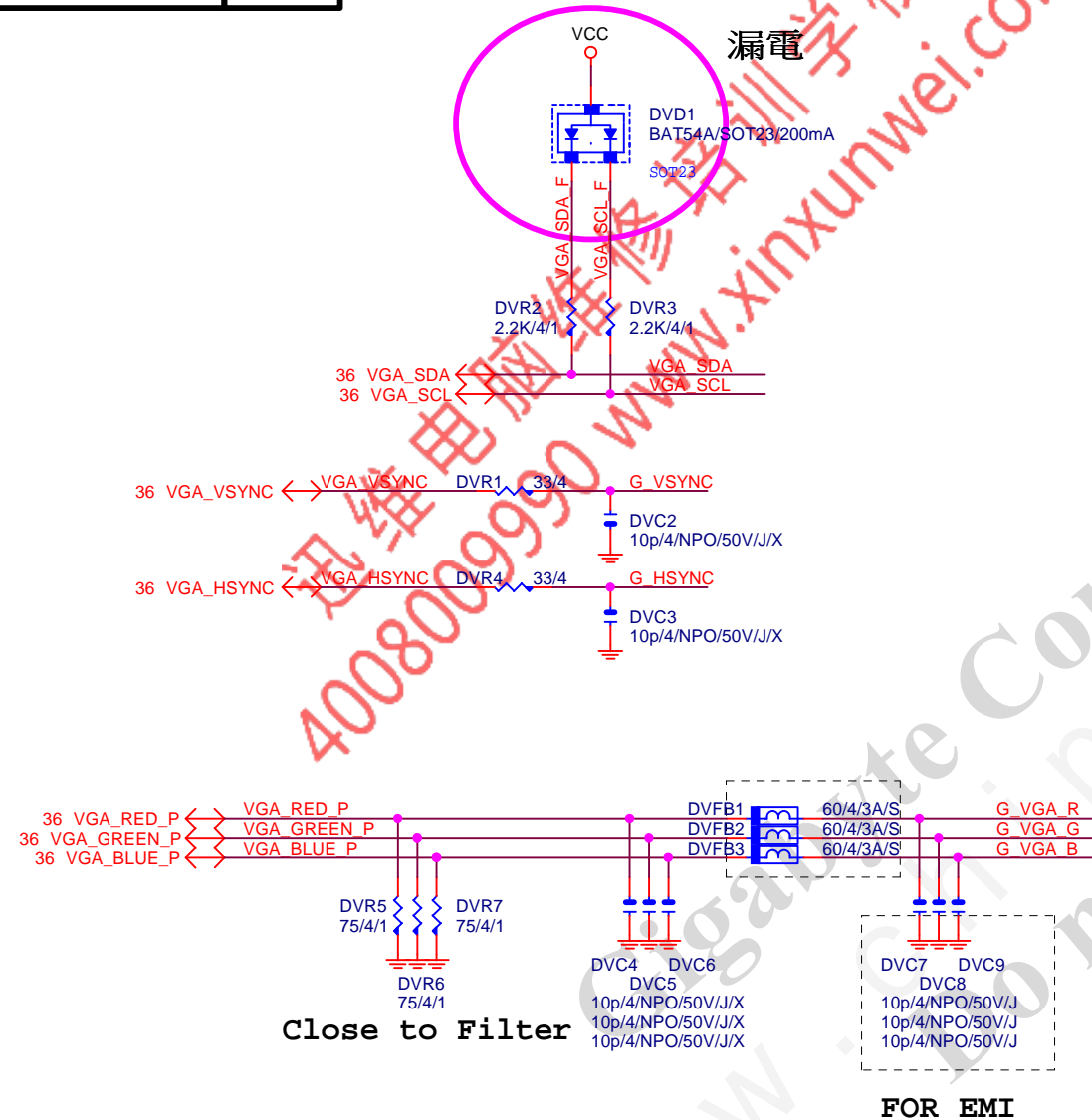
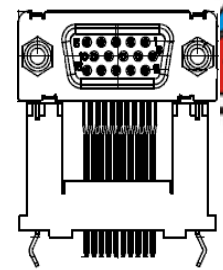
HPD



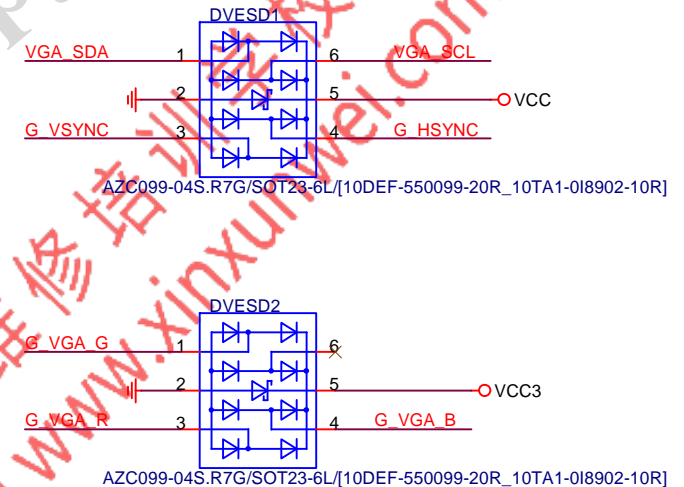
Gigabyte Technology NXP-PTN3356			
Title	Document Number	GA-Z170X-Gaming 3	Rev 1.01
Size	Custom		
Date:	Tuesday, July 07, 2015	Sheet 36 of 58	







## VGA ESD



Gigabyte Technology  
NXP-PTN3356

Title				Rev 1.01
NXP-PTN3356				
Size Custom	Document Number			GA-Z170X-Gaming 3
Date:	Tuesday, July 07, 2015		Sheet 37 of 58	

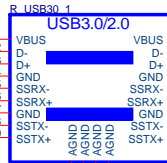
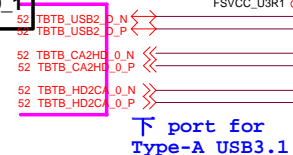


Rev: 0.31

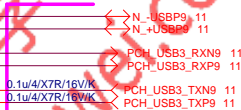
www.xinxunwei.com 400-800-9990

R\_USB30\_1

NET 可自行調整



NET 可自行調整

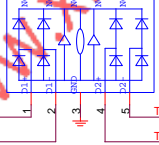


NET 可自行調整

TBTTB\_CA2HD\_0\_P

TBTTB\_CA2HD\_0\_N

\* swap

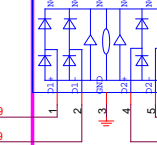


NET 可自行調整

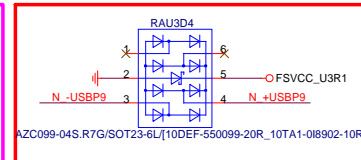
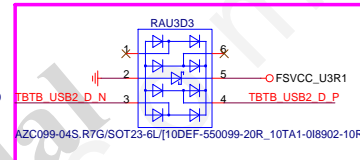
PCH\_USB3\_RXP9

PCH\_USB3\_RXN9

\* swap

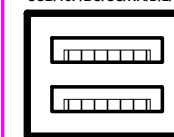


NET 可自行調整



CONNECTOR 自行調整

2 port USB 3.0 Capture:  
USB/18P/BU/OS/RA/D/2/1U/SB



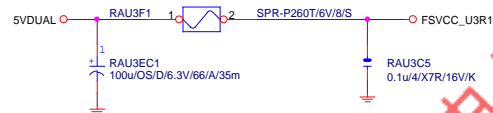
Footprint:USB30\_20

2 port USB 3.0 with TYPE C Capture:  
USB/18P/BU/OS/RA/D/2/1U/SB



Footprint:USB30\_H

FUSE 2 Port 1 Fuse 2.6A



Gigabyte Technology

Title		R_USB30,F_USB30, USB OC	
Size	Document Number	GA-Z170X-Gaming 3	Rev 1.01
Date:	Tuesday, July 07, 2015	Sheet 39	of 58

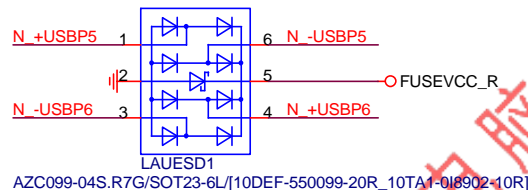


E2400料號:E2400-RIV1-RL/QFN40/[10HP2-402400-10R

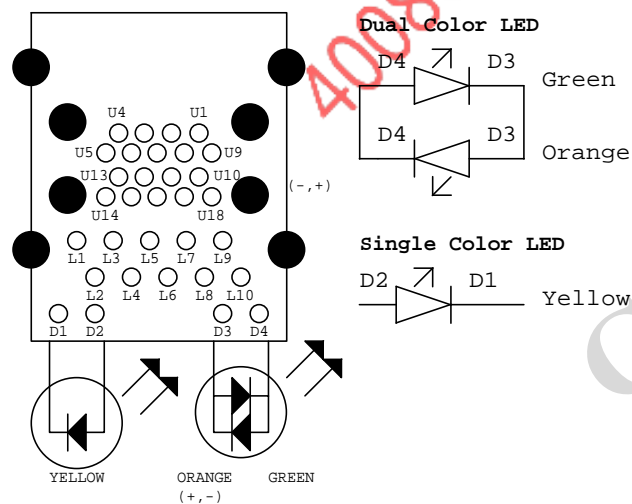
<p align="center"><b>Gigabyte Technology</b> <b>KILLER E2201</b></p>			
Title			
Size	Document Number		Rev
Custom	<p align="center"><b>GA-Z170X-Gaming 3</b></p>		<b>1.01</b>
Date:	Tuesday, July 07, 2015	Sheet 40 of 58	



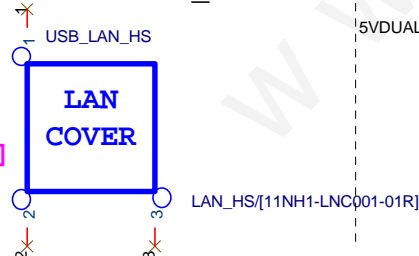
## 可變



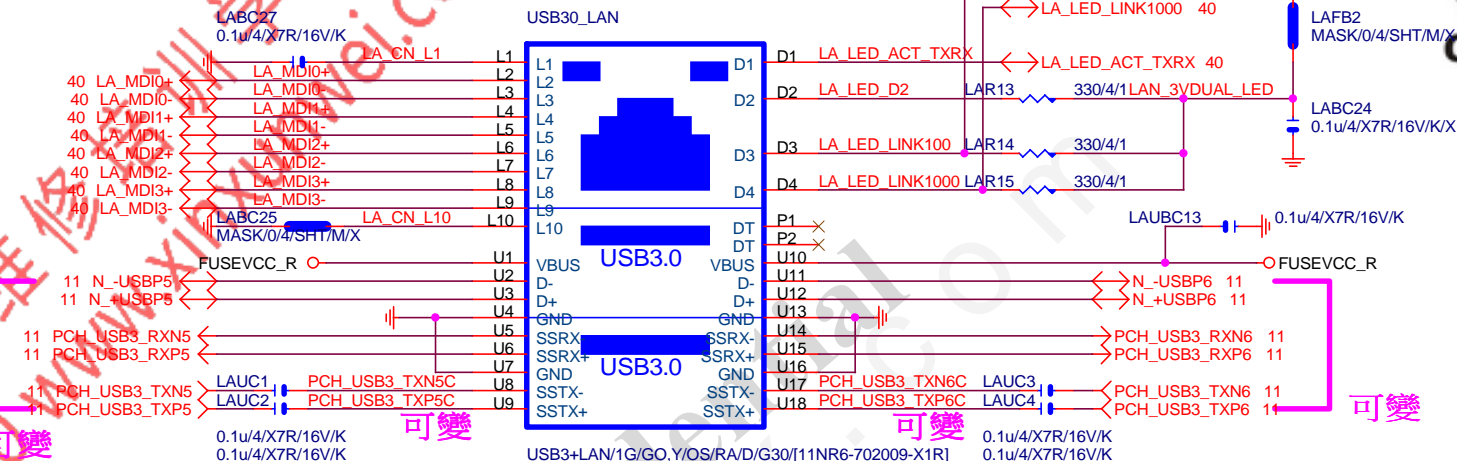
### USB30\_LAN LAYOUT示意圖



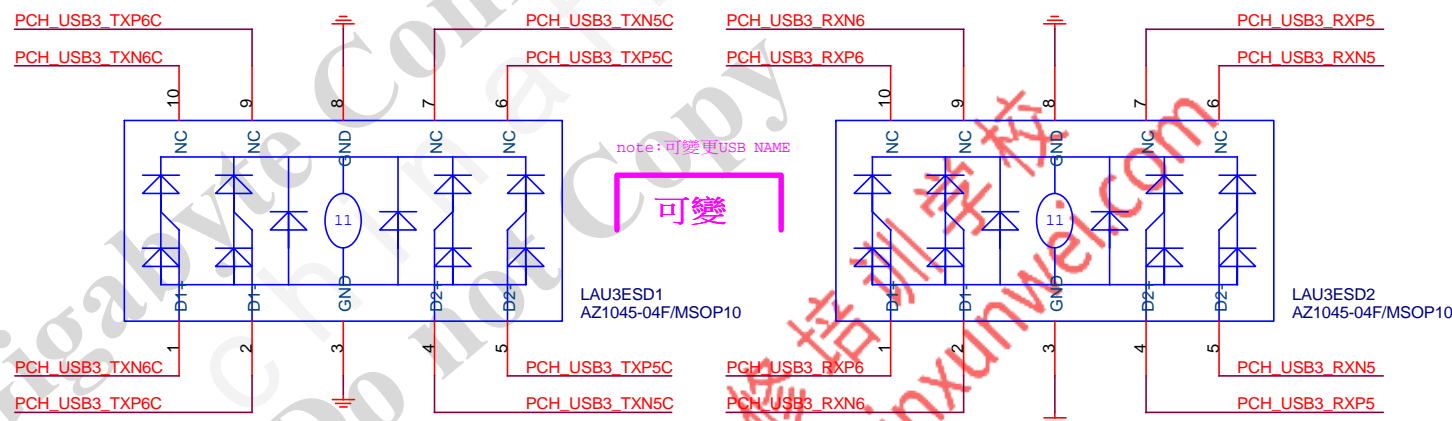
FOOT PRINT:LAN COVER



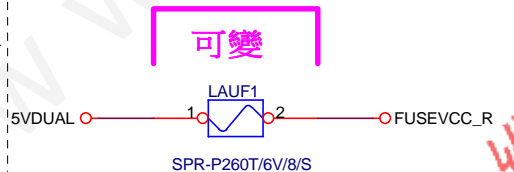
USB30\_LAN



LA MDI-->100歐姆:[20/4/8/4/20]



note:可變電FUSE



Close to connector  
FUSE-0805

PS:視EMI需求



可變

3VDDUAL\_LAN1

LAPW2  
0/4/X

3VDDUAL\_PCH

3VDDUAL

## Gigabyte Technology

## LAN CONNECTOR-E2201

## GA-Z170X-Gaming 3

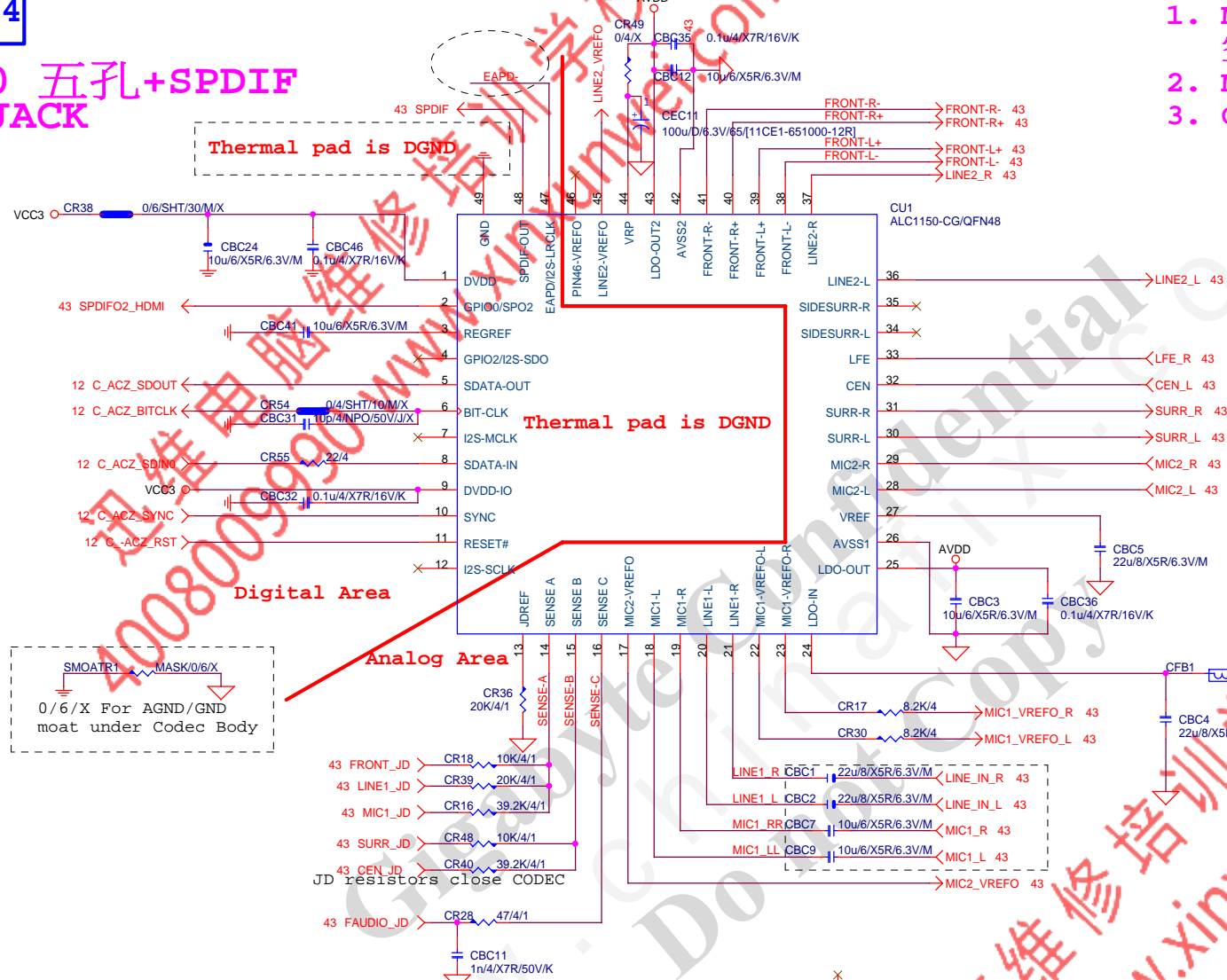
Rev
-----

ALC1150 五孔+SPDIF  
AUDIO JACK

LAYOUT注意:螺絲孔下GND方式



1. MH1空間夠,下DGND  
空間不夠,改為Isolate
2. MH2一律改為Isolate
3. Codec下方,第二層必須參考GND



☐ MH1      MH2 ☐   
 DGND      Isolate

LAYOUT注意:要加  
GND切割線

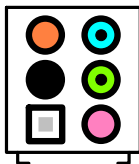
## 音效區域印刷



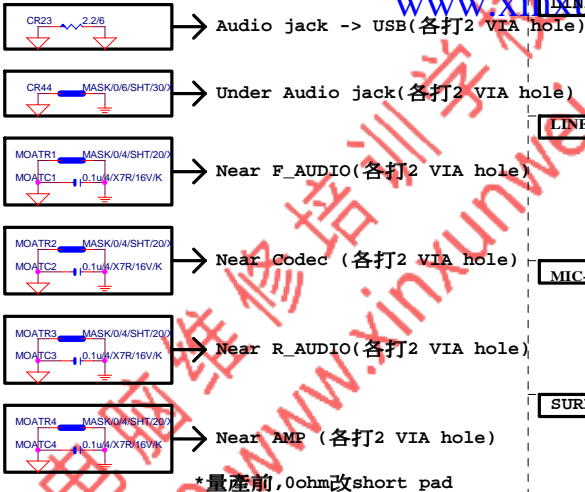
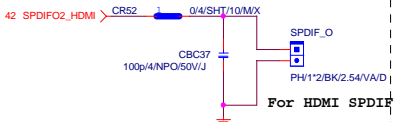
## Gigabyte Technology

Title			
ALC1150			
Size Custom	Document Number	GA-Z170X-Gaming 3	Rev 1.01
Date: Tuesday, July 07, 2015	Sheet 42	of 58	

## AZALIA JACK



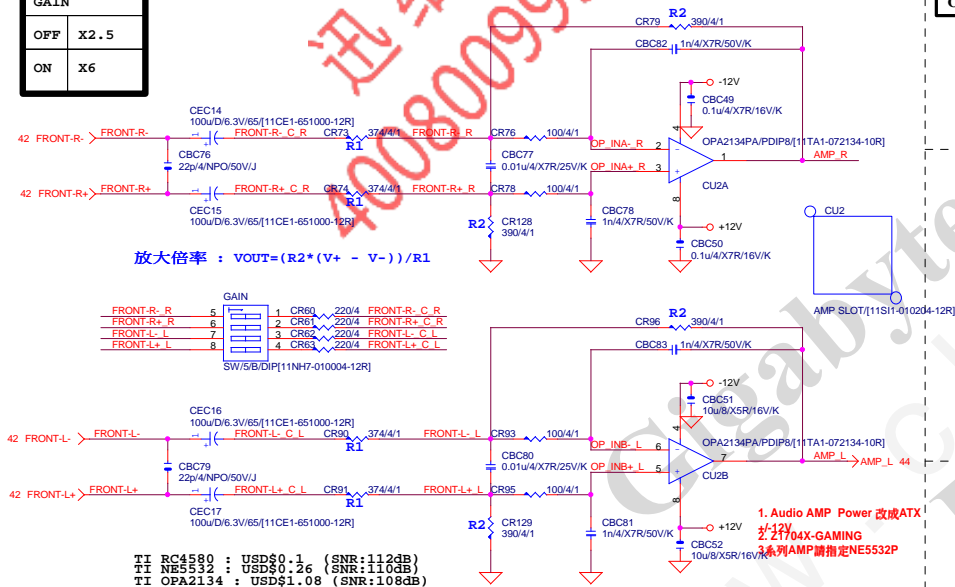
## SPDIF OUT



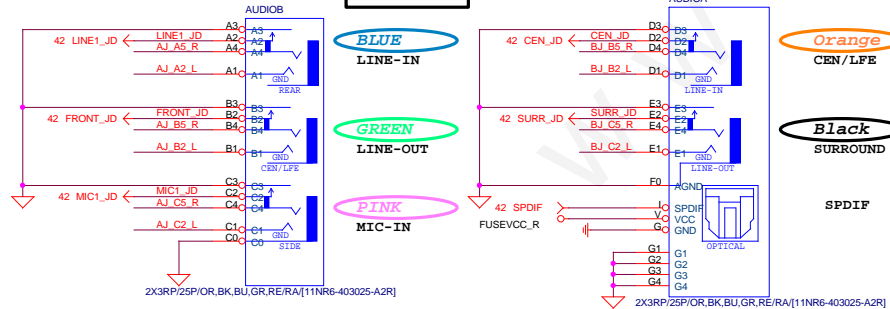
\*量產前,0ohm改short pad

GAIN	
OFF	X2.5
ON	X6

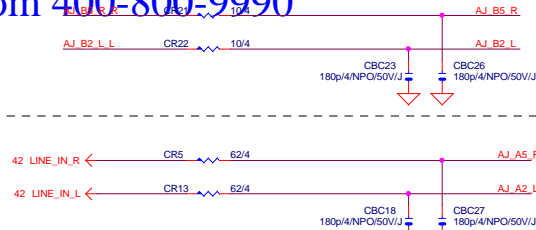
## Differential to Single-End AMPLIFIED



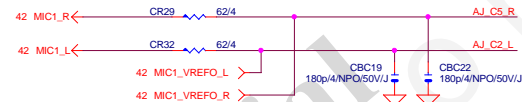
## AZALIA JACK



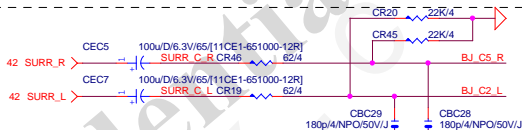
## LINE-IN



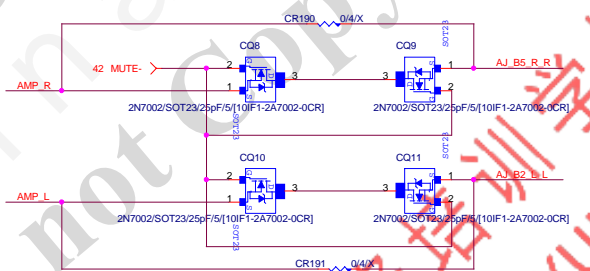
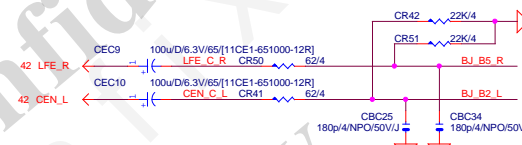
## MIC-IN



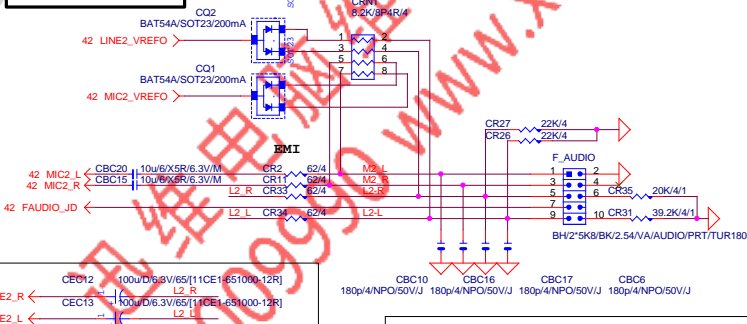
## SURROUND



## CEN/LFE



## AZALIA FRONT PANEL



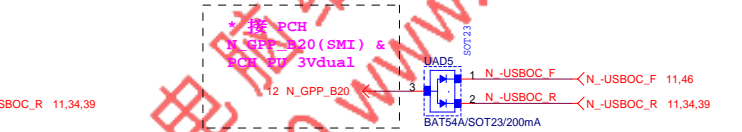
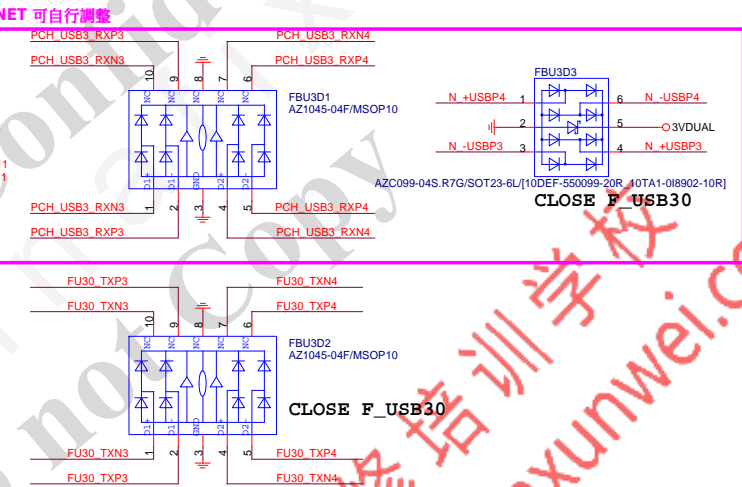
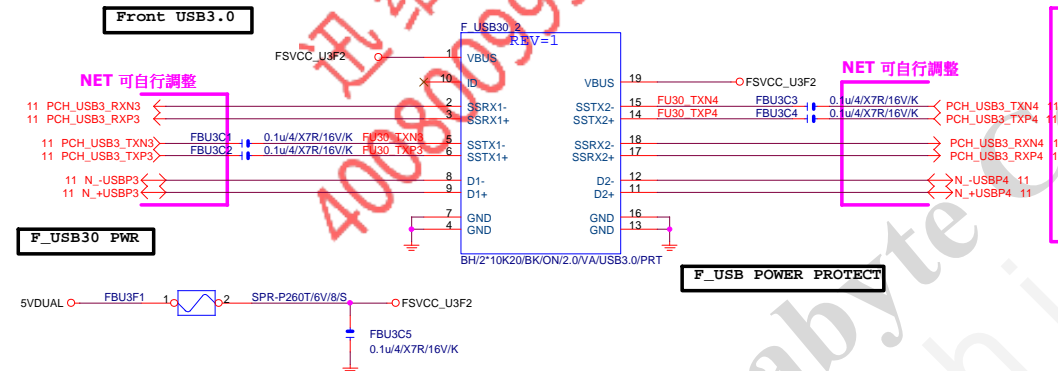
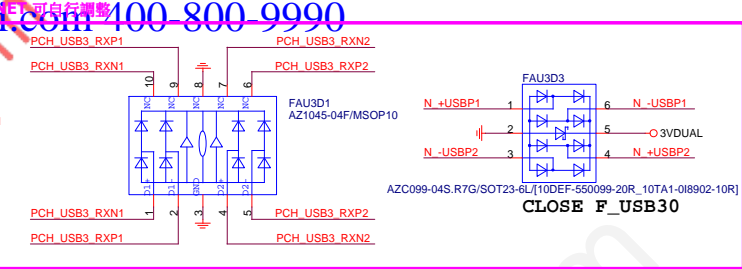
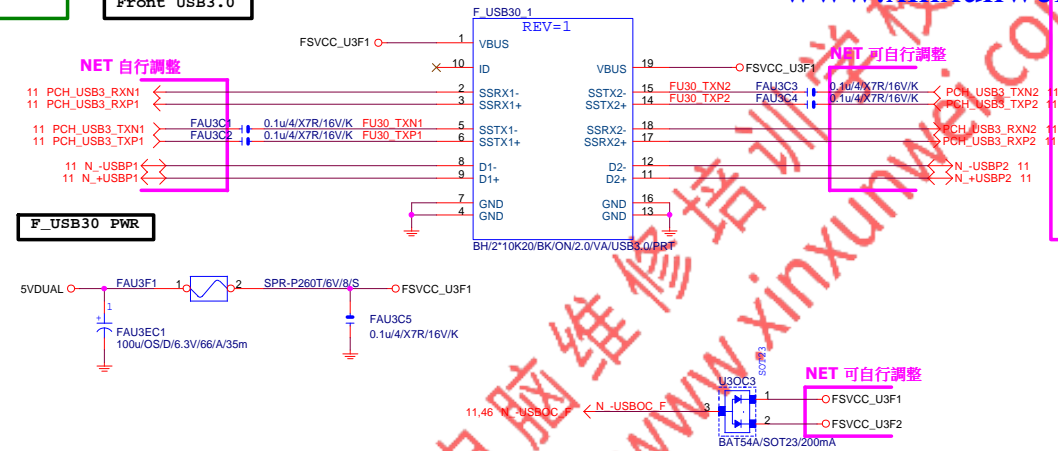
## Gigabyte Technology

Title		AUDIO JACK		Rev 1.01
Size Custom	Document Number	GA-Z170X-Gaming 3		
Date:	Tuesday, July 07, 2015	Sheet	43 of 58	





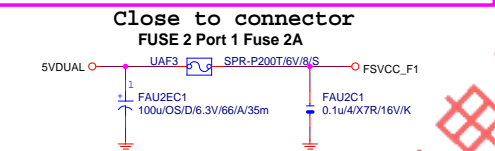
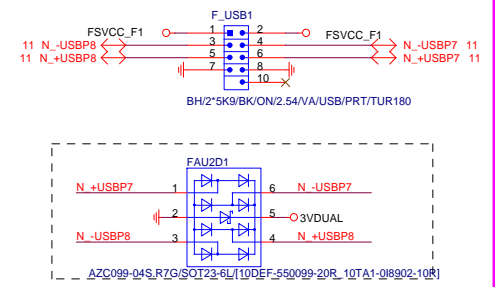
Front USB3.0



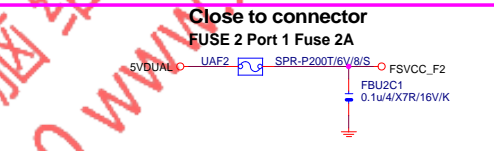
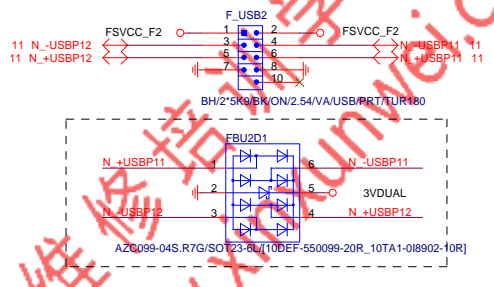
Gigabyte Technology			
Title R_USB30,F_USB30, USB OC			
Size	Document Number	GA-Z170X-Gaming 3	
Custom		Rev	1.01
Date:	Tuesday, July 07, 2015	Sheet	45 of 58



NET 可變



NET 可變



F\_USB 2.0 OC SIGNAL



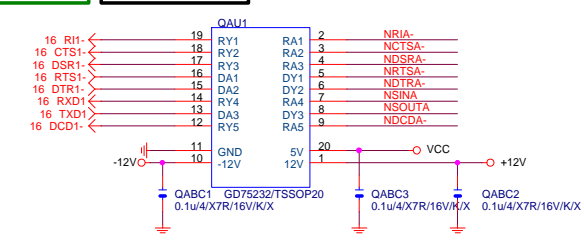
Gigabyte Technology

USB2.0

Size	Document Number	Rev
Custom	GA-Z170X-Gaming 3	1.01
Date:	Tuesday, July 07, 2015	Sheet 46 of 58

Rev: 0.7

COM PORT

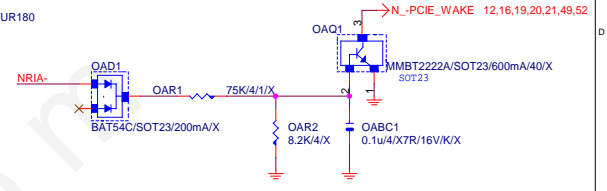


www.xinxunwei.com 400-800-9990

COMA



\* 接 N\_-PCIE\_WAKE 12,16,19,20,21,49,52

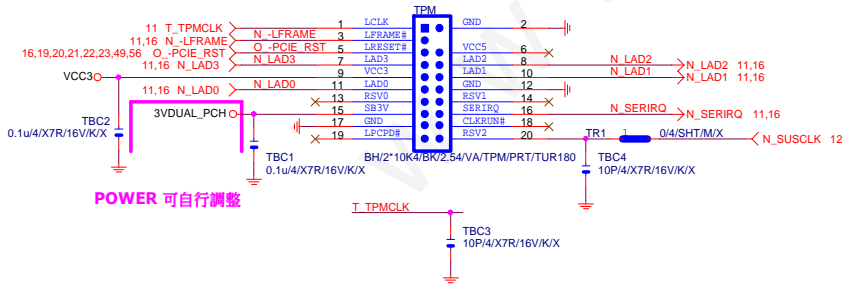


Rev: 0.3

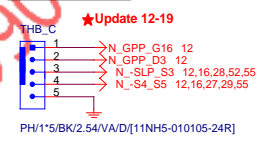
TURBO KEY

LPT PORT

TPM CONNECT



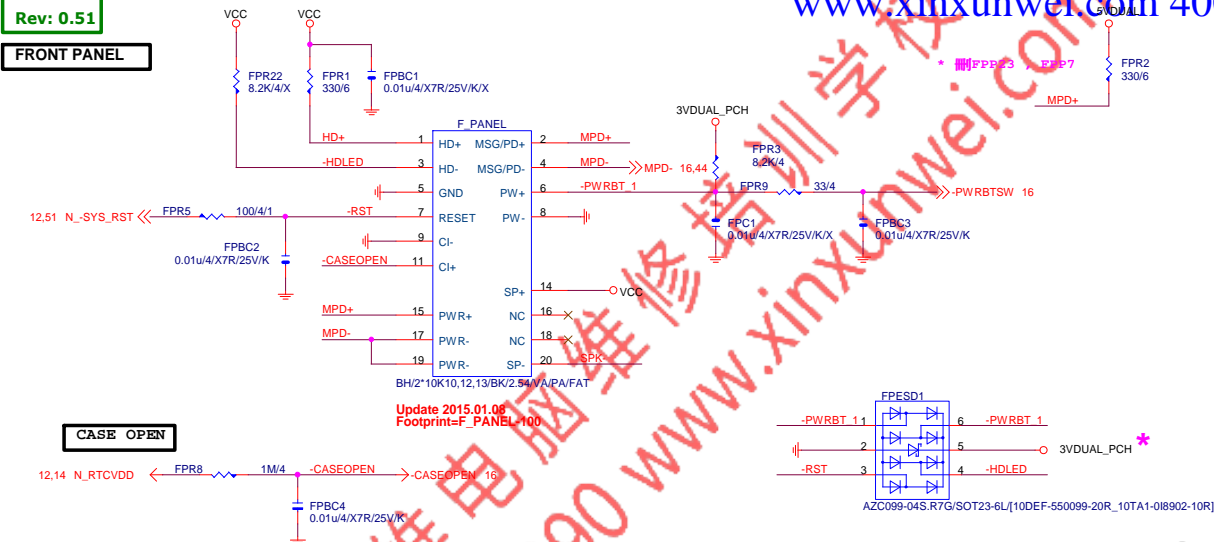
Thunderbolt



Gigabyte Technology			
Title			
COM,TPM,THB			
Size	Document Number	Rev	
Custom	GA-Z170X-Gaming 3	1.01	
Date:	Tuesday, July 07, 2015	Sheet	47 of 58

Rev: 0.51

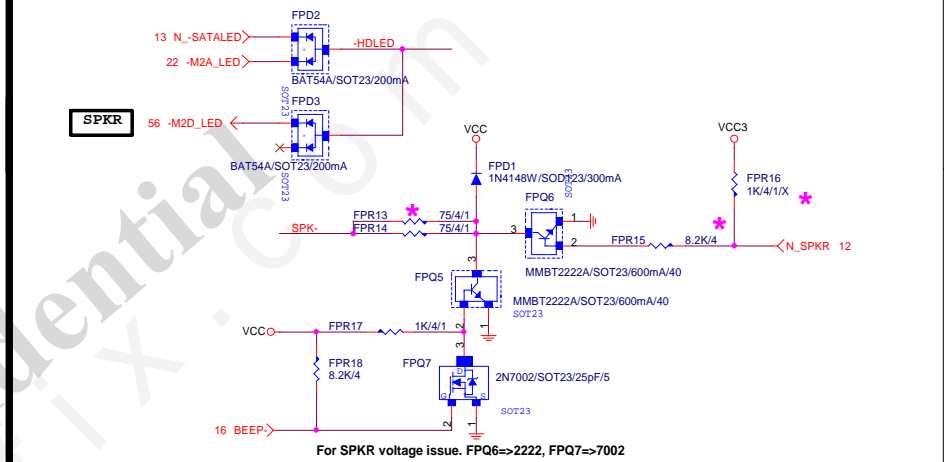
FRONT PANEL



CASE OPEN

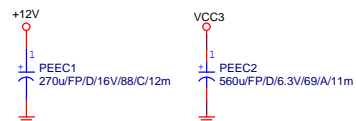


SPKR



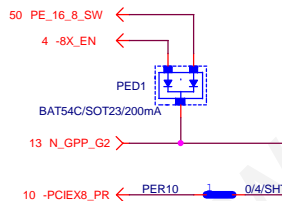
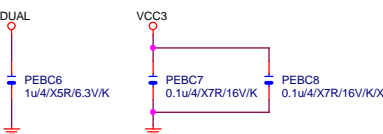
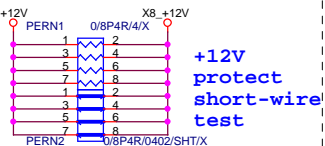
Gigabyte Technology			
Title			
FRONT PANEL			
Size	Document Number	GA-Z170X-Gaming 3	Rev
Custom			1.01
Date:	Tuesday, July 07, 2015	Sheet	48 of 58





8,9,12,19,20,21,24,32,51 N\_SMBCLK N\_SMBCLK PER8 PER9  
8,9,12,19,20,21,24,32,51 N\_SMBDATA N\_SMBDATA PER8 PER9

12,16,19,20,21,47,52 N\_-PCIE\_WAKE

**PCIEX8 PROTECT SHT**

PCI-E/8X-99P/RE/LONG DOUBLE/HK2/SHELL

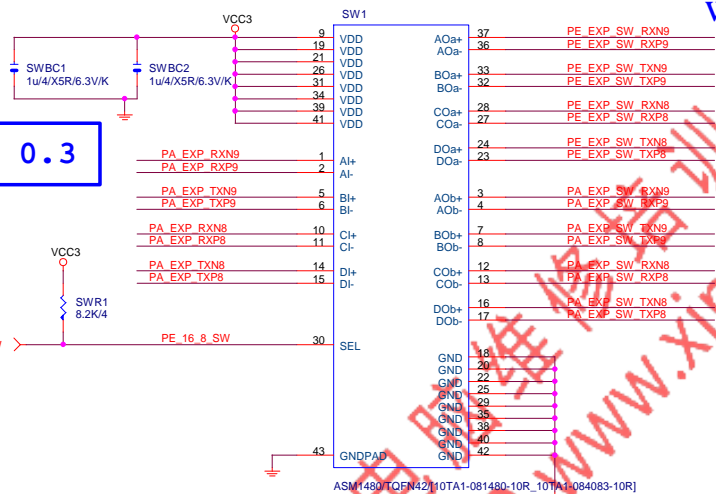
紅色

PE EXP SW TXP8 C	PEC7	0.22u4/X5R/6.3V/K	PE EXP SW TXP8 C
PE EXP SW TXN8 C	PEC8	0.22u4/X5R/6.3V/K	PE EXP SW TXN8 C
PE EXP SW TXP9 C	PEC9	0.22u4/X5R/6.3V/K	PE EXP SW TXP9 C
PE EXP SW TXN9 C	PEC10	0.22u4/X5R/6.3V/K	PE EXP SW TXN9 C
PE EXP SW TXP10 C	PEC11	0.22u4/X5R/6.3V/K	PE EXP SW TXP10 C
PE EXP SW TXN10 C	PEC12	0.22u4/X5R/6.3V/K	PE EXP SW TXN10 C
PE EXP SW TXP11 C	PEC13	0.22u4/X5R/6.3V/K	PE EXP SW TXP11 C
PE EXP SW TXN11 C	PEC14	0.22u4/X5R/6.3V/K	PE EXP SW TXN11 C
PE EXP SW TXP12 C	PEC15	0.22u4/X5R/6.3V/K	PE EXP SW TXP12 C
PE EXP SW TXN12 C	PEC16	0.22u4/X5R/6.3V/K	PE EXP SW TXN12 C
PE EXP SW TXP13 C	PEC17	0.22u4/X5R/6.3V/K	PE EXP SW TXP13 C
PE EXP SW TXN13 C	PEC18	0.22u4/X5R/6.3V/K	PE EXP SW TXN13 C
PE EXP SW TXP14 C	PEC19	0.22u4/X5R/6.3V/K	PE EXP SW TXP14 C
PE EXP SW TXN14 C	PEC20	0.22u4/X5R/6.3V/K	PE EXP SW TXN14 C
PE EXP SW TXP15 C	PEC21	0.22u4/X5R/6.3V/K	PE EXP SW TXP15 C
PE EXP SW TXN15 C	PEC22	0.22u4/X5R/6.3V/K	PE EXP SW TXN15 C

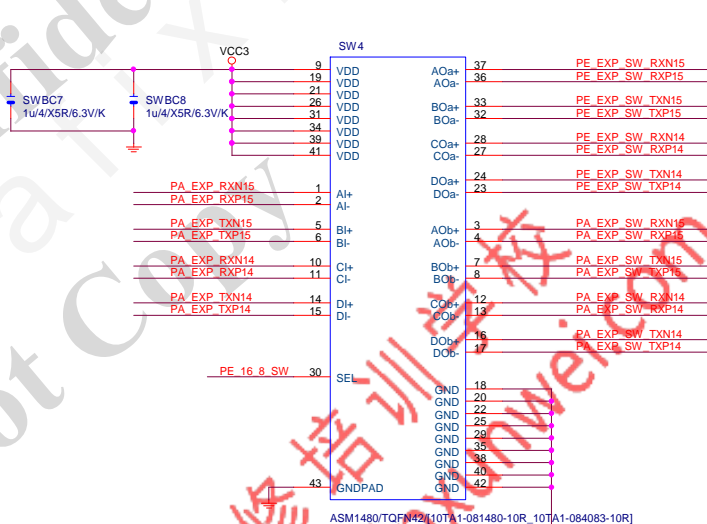
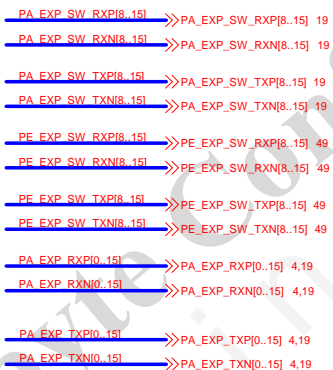
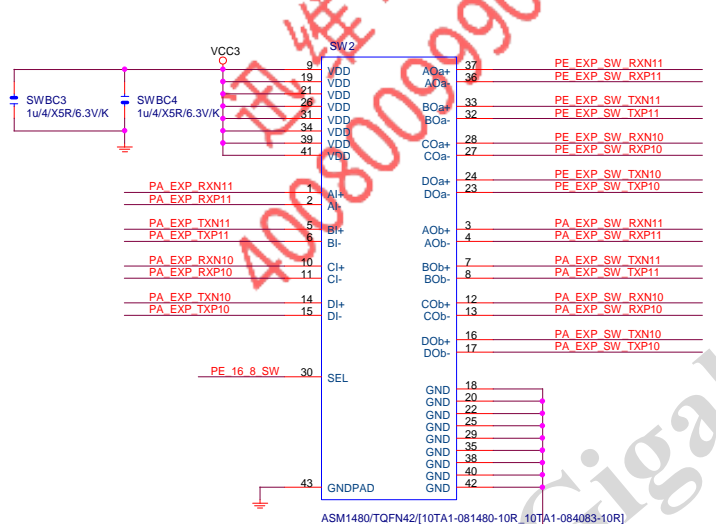
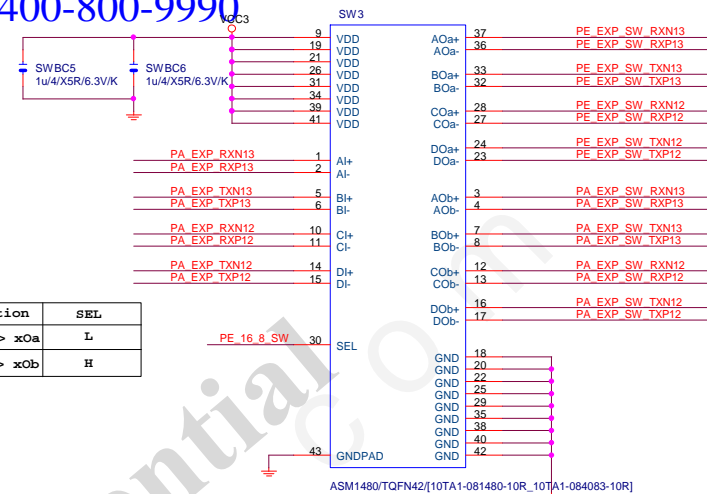
Gigabyte Technology

Title				PCI EXPRESS X8	
Size				Custom	
Date				Tuesday, July 07, 2015	
Sheet				49 of 58	
Rev				1.01	

Rev 0.3



Function	SEL
xI--> xOa	L
xI--> xOb	H

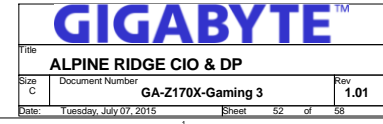


Gigabyte Technology

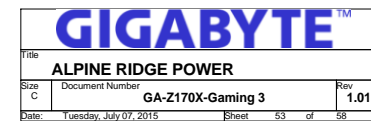
PCI EXPRESS X16 SWITCH

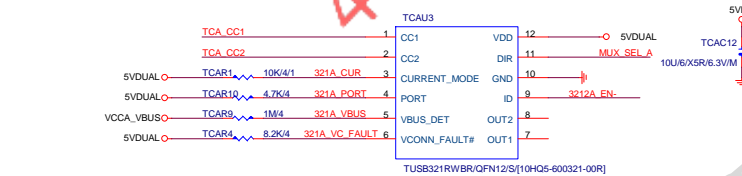
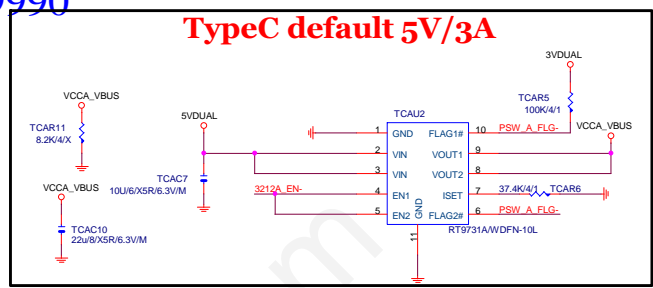
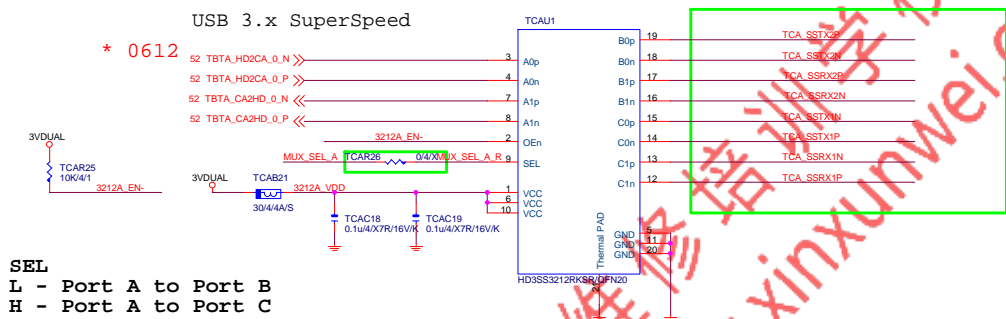
Title	Document Number	Rev
Size	Custom	GA-Z170X-Gaming 3
Date:	Tuesday, July 07, 2015	Sheet 50 of 58

<b>GIGABYTE™</b>			
Title		<b>IDT6V41530_CLK BUFFER</b>	
Size	Document Number	Rev	
Custom	<b>GA-Z170X-Gaming 3</b>	<b>1.01</b>	
Date:	Tuesday, July 07, 2015	Sheet	51 of 58





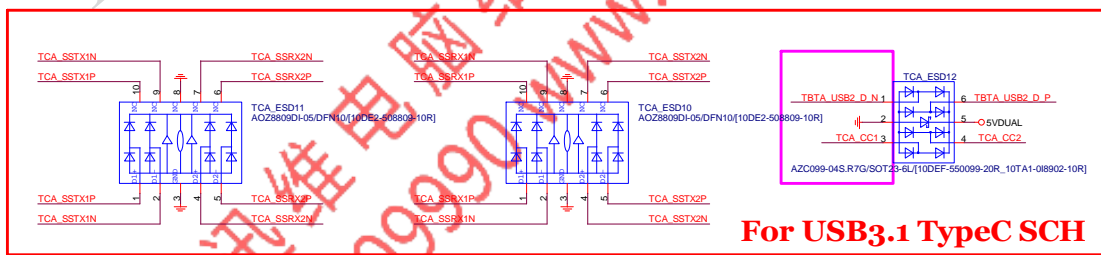
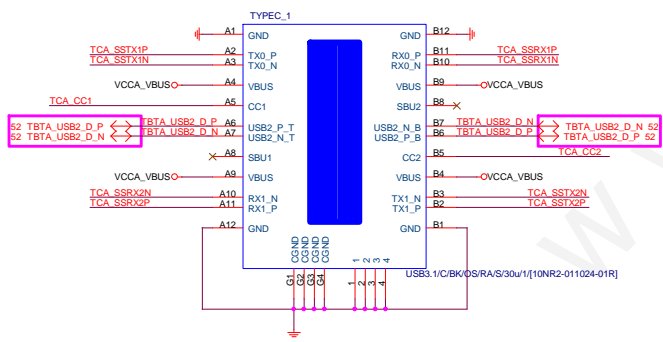




MUX\_SEL  
H - TypeC plug position 2  
L - TypeC plug position 1

CURRENT MODE  
L - Default current / Pull down to GND or NC  
M - Medium (1.5A) current / Pull up to VDD 500K  
H - High (3.0A) current / Pull up to VDD 10K

PORT  
H - HOST  
L - Device  
NC - Dual Role

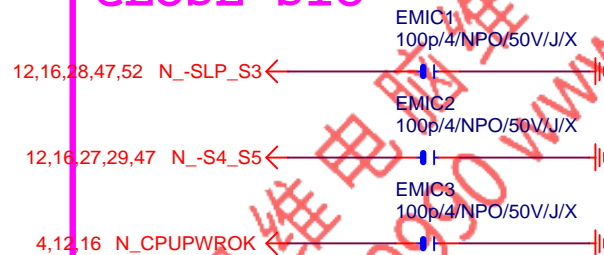


For USB3.1 TypeC SCH

Color markers can be changed by model

GIGABYTE™		
TI TUSB321		
Size C	Document Number	Rev
	GA-Z170X-Gaming 3	1.01
Date:	Tuesday, July 07, 2015	Sheet 54 of 58

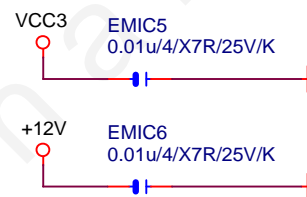
## CLOSE SIO



## CLOSE PCH



EMI Alain 2015/03/04 modify

**GIGABYTE™**

Title

EMI/ESD

Size

A

Document Number

GA-Z170X-Gaming 3

Rev

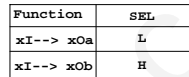
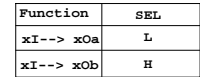
1.01


Date: Tuesday, July 07, 2015

Sheet 55 of 58







<div style="text-align: center;">  </div>			
<div style="text-align: center;"> <b>M.2 SWITCH</b> </div>			
Title			
Size	Document Number	GA-Z170X-Gaming 3	Rev 1.01
Custom			
Date:	Tuesday, July 07, 2015	Sheet 57 of 58	

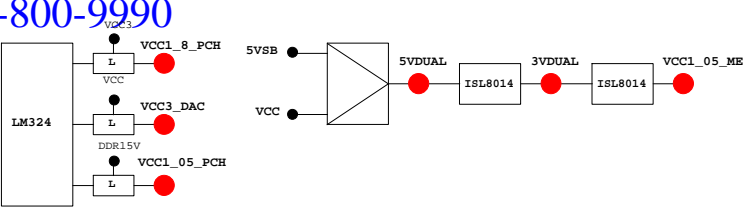


PCH GPIO LIST TABLE					
PIN NAME	PWR	Default	USAGE	NOTE	
GP0	MAIN	H-Z	GPI	GPIO0	N/A
GP1/TACH1	MAIN		GPI	GPIO1	N/A
GP2/PIRQE#	MAIN		GPI	-PIRQE	P/U 8.2K VCC3
GP3/PIRQF#	MAIN		GPI	-PIRQF	P/U 8.2K VCC3
GP4/PIRQG#	MAIN		GPI	-PIRQG	P/U 8.2K VCC3
GP5/PIRQH#	MAIN		GPI	-PIRQH	P/U 8.2K VCC3
GP6/TACH2	MAIN		GPI	PCIEX1 Detect	P/U 8.2K VCC3
GP7/TACH3	MAIN		GPI	GPIO7	P/U 8.2K VCC3
GP8	STBY	H	GPI	GPIO8	N/A
GP9/OC5#	STBY		NATIVE	USB OC5#	N/A
GP10/OC6#	STBY		NATIVE	USB OC6#	N/A
GP11/SMBALERT#	STBY		NATIVE	USB PWR protect	P/U 8.2K 3VDUAL
GP12	STBY	L	GPI	GPIO12	N/A
GP13	STBY	L	GPI	LPCPME#	P/U 8.2K 3VDUAL
GP14/OC7#	STBY		NATIVE	USB OC7#	N/A
GP15	STBY	L	GPI	GPIO15(TLS Enable)	P/U 8.2K 3VDUAL
GP16	MAIN		GPI	GPIO16	P/U 8.2K VCC3
GP17/TACH0	MAIN		GPI	GPIO17	P/U 8.2K VCC3
GP18	MAIN		GPI	Mobile Only	N/A
GP19	MAIN		GPI	GPIO19	P/U 8.2K VCC3
GP20	MAIN		GPI	GPIO20	P/U 8.2K VCC3
GP21	MAIN		GPI	GPIO21	P/U 8.2K VCC3
GP22	MAIN	H-Z	GPI	GPIO22	P/U 8.2K VCC3
GP23	MAIN		GPI	GPIO23	N/A
GP24	STBY	L	GPI	SKTOCC#	N/A
GP25	STBY			Mobile Only	N/A
GP26	STBY			Mobile Only	N/A
GP27	STBY	H	GPO	GPIO27	P/U 8.2K 3VDUAL
GP28	STBY	H	GPO	PWR_LED	P/U 8.2K 3VDUAL
GP29	STBY	L	GPI	GPIO29	N/A
GP30	STBY	H-Z	GPI	Mobile Only	N/A
GP31	STBY	H-Z	GPI	Mobile Only	N/A
GP32	MAIN	H	GPO	N/A	N/A
GP33	MAIN	H	GPO	N/A	N/A
GP34	MAIN	H-Z	GPI	-PCI_STOP	P/U 8.2K VCC3
GP35	MAIN	L	GPO	-ACZ_DET	P/U 8.2K VCC3
GP36	MAIN		GPI	N/A	N/A
GP37	MAIN		GPI	N/A	N/A
GP38	MAIN	H-Z	GPI	PCIEX4 Detect	P/U 8.2K VCC3
GP39	MAIN	H-Z	GPI	GPIO39	P/U 8.2K VCC3
GP40	STBY		NATIVE	USB OC1#	N/A
GP41	STBY		NATIVE	USB OC2#	N/A
GP42	STBY		NATIVE	USB OC3#	N/A
GP43	STBY		NATIVE	USB OC4#	N/A
GP44	STBY	L	NATIVE	GPIO44	P/U 8.2K 3VDUAL
GP45	STBY		NATIVE	GPIO45	P/U 8.2K 3VDUAL
GP46	STBY	L	NATIVE	GPIO46	P/U 8.2K 3VDUAL
GP47	STBY			Mobile Only	N/A
GP48	MAIN	H-Z	IN	GPIO48	P/U 8.2K 3VDUAL
GP49	MAIN	H-Z	IN	GPIO49	P/U 8.2K 3VDUAL
GP50	MAIN		NATIVE	-REQ1	P/U 2.2K VCC
GP51	MAIN	H	NATIVE	-GNT1	N/A
GP52	MAIN		NATIVE	-REQ2	P/U 2.2K VCC
GP53	MAIN	H	NATIVE	-GNT2	N/A
GP54	MAIN		NATIVE	-REQ3	P/U 2.2K VCC
GP55	MAIN	H	NATIVE	-GNT3	N/A
GP56	STBY		NATIVE	Mobile Only	N/A
GP57	STBY	H-Z	IN	VCORE_OV1	P/U 8.2K 3VDUAL
GP58	STBY	H-Z	NATIVE	F_USB_OC	P/U 8.2K 3VDUAL
GP59	STBY		NATIVE	USB_OC0#	N/A
GP60	STBY	H-Z	NATIVE	N/A(Reverse)	P/U 8.2K 3VDUAL
GP61	STBY	L	NATIVE	-SUSTAT	N/A
GP62	STBY	L	NATIVE	SUSCLK	N/A
GP63	STBY	L	NATIVE	GPIO63	N/A
GP64	MAIN	L	NATIVE	CLKOUTFLEX0	N/A
GP65	MAIN	L	NATIVE	CLKOUTFLEX1	N/A
GP66	MAIN	L	NATIVE	CLKOUTFLEX2	N/A
GP67	MAIN	L	NATIVE	CLKOUTFLEX3	N/A
GP72	STBY	H-Z	NATIVE	VCORE_OV4	P/U 8.2K 3VDUAL
GP73	STBY			Mobile Only	N/A
GP74	STBY	H-Z	NATIVE	1_05V_OV2	P/U 8.2K 3VDUAL
GP75	STBY	H-Z	NATIVE	N/A(Reverse)	P/U 8.2K 3VDUAL

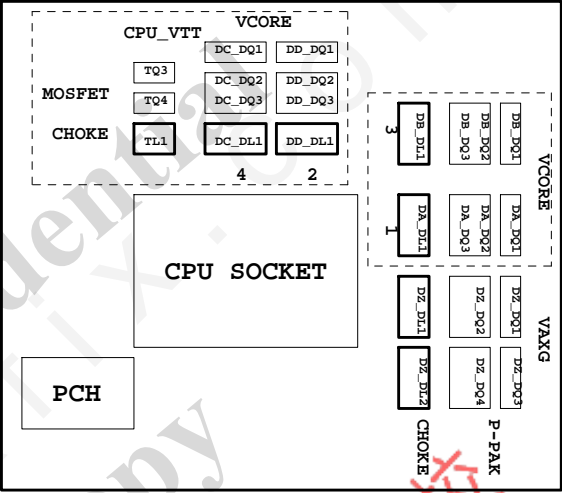
Super I/O ITE8720 GPIO Table

PIN NAME	USAGE	NOTE
SVC/PECI_RQT/GP14	-PECI_REQ	
PWROK1/GP13	PWROK1/ITE_PWROK	
KRST#/GP62	-KRST	
SO/GP50	-ICH_SPI_CS	
IRTX/GP47/CE2_N/JP7	CEB_N	
GP46/IRRX	-LAN2_DSM	
PSION#/GP42	-PSON	
PWROK2#/GP41	PECI_CTL	
PCIRST3#/GP10/VDIMM_STR_EN	-PCIE_RST	
RSMRST#/CIRR1X/GP55	-RSMRST	
PME#/GP54	-LPCPME	
PD5/GP75/BUSS00	N/A	

PIN NAME	USAGE	NOTE
FAN_TAC2/GP52	FANIO2	
FAN_TAC3/GP37	FANIO3	
VIDO3/FAN_TAC4/GP25/DSR2#	FANIO4	
FAN_CTL2/GP51	FANPWM2	
FAN_CTL3/GP36	FANPWM3	
VID4/GP34	BEEP-	
VID3/GP33	TURBO1	
VID2/GP32	TURBO0	
VCORE_GOOD/VID6/GP63	CPUT_LED1_C	
VID5/GP35	CPUT_LED2_C	
VID1/GP31	CPUT_LED3_C	
VID0/GP30	-LAN1_DSM	NBT_LED1_C
SLCT/GP80	CPU_LED1_C	
PE/GP81	CPU_LED2_C	
BUSY/GP82	CPU_LED3_C	
PD3/GP73/BUSSI1	SB_LED1_C	
PD4/GP74/BUSSI2	SB_LED2_C	
VCORE_EN/VID7/GP64	IT_GP64	SB_LED3_C
PD0/GP70	NB_LED1_C	
PD1/GP71	NB_LED2_C	
PD2/GP72/BUSSI0	NB_LED3_C	
GP22/SCK	LOW_PWR_1	
VID05/GP27/SIN2	LOW_PWR_2	
PCIRST2#/GP11	-PFMRST1	
PCIRST1#/GP12	-PFMRST2	
3VBSBW#/GP40	CSI_F0	BSEL166_1
SUSC#/GP53	CSI_F1	BSEL166_2
GP23/SI	BSEL166_3/CSISBSL	
VID00/GP20/CTS2#	CPUT_LED1_C	BSEL166_4
GP65/VDDA_EN/GB_01	MB_ID2	
PD6/GP76/BUSS01	MB_ID3	
PD7/GP77/BUSS02	MB_ID4	
AFD#/GP86/SMBC_R	SEC_PIN	FST_2X8
INIT#/GP85/SMBC_M	SEC_2x8	GTLREF_AD2
ACK#/GP83	DDR_LED1_C	
VID01/GP21/DCD2#	DDR_LED2_C	
STB#/GP87/SMBC_M	DDR_LED3_C	
PWRON#/GP44	VCORE_OV1	
PANSWH#/GP43	PWRBTSW	
KDAT/GP61	-PWRBTSW	
KCLK/GP60	KDAT	
MDAT/GP57	KCLK	
MACL/GP56	MDAT	
GP66/VLDT_EN/GB_02	NBT_LED1_C	MCLK
SVD/PCIRSTIN#/CIRTX/GP15	PWM2_CR	
KDAT/GP61	PWM2_CR	
GP67/CPU_PG/GB_03	EN_LOADLINE	IT_GP67/-EN_PWM2
SLIN#/GP84/SMBC_R	-EN_PWM2	
PSI_L/FAN_CLT5/CIRR2X/GP16	-THERM	
VID04/GP26/SOUT2	DDR18V_PH2_EN	
VID02/FAN_TAC5/GP24/DSR2#	DDR18V_LED	
VID06/GP17/RI2#	1_1V_PH_EN	
VID07/JP6/DTR2#	JP6	
PD5/GP75/BUSS00	SB_LED3_C	



PWM各相位的擺法如下:



BIOS超電壓對應表:

散熱模組料號:

線路圖名稱	BIOS選項
Vcore	CPU Vcore
CPU_VTT	CPU Termination
CPU_VAXG	CPU Graphic Core
VCC1_8_PCH	CPU PLL
VCC1_05_PCH	PCH core
3VDUAL	3VDUAL
DDR15V	DRAM voltage
DDRVTT	DRAM Termination
VREF_CA_A/VREF_CA_B	DRAM Address Ref
VREF_DQ_A/VREF_DQ_B	DRAM Data Ref

Z77-D3H :  
PCH :  
12SP2-S05511-01R/02R/03R  
MOSFET :  
12SP2-S08924-01R/02R/03R

	3 pin FAN control	4 pin FAN control	FAN speed	Controller
CPU FAN	FANPWM1	FANPWM3	FANIO1	IT8720
	PWM2_CR			
	ICH_FAN_PWM2	ICH_FAN_PWM0	ICH_FAN_TACH0	PCH
SYS FAN	FANPWM2	N/A	FANIO2	IT8720
	ICH_FAN_PWM1	N/A	ICH_FAN_TACH1	PCH
PWR FAN	N/A	N/A	FANIO3	IT8720
			ICH_FAN_TACH2	PCH