

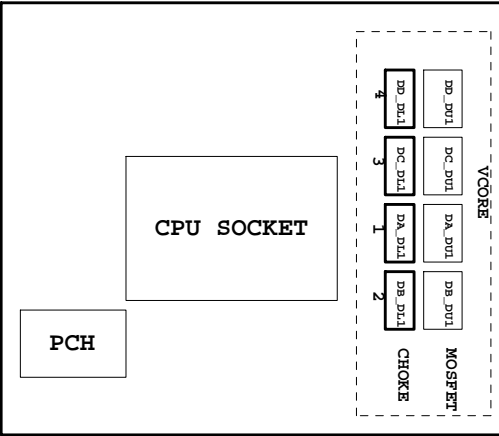
Model Name: GA-B150M-HD3 DDR3-WP

SHEET TITLE rev 1.0

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1151-A
05	CPU_LGA1151-B-DDR3
06	CPU_LGA1151-C
07	CPU_LGA1151-D
08	DDR 3 CHANNEL A
09	DDR 3 CHANNEL B
10	PCH CLOCK BUFFER
11	PCH DMI,USB,PCIE
12	PCH MISC
13	PCH SATA,PCIE,SATA_EXPRESS
14	PCH_PWR,GND
15	Dual BIOS
16	I/O ITE8628
17	HWM
18	FAN CTRL-SIO
19	PCIEX16 SLOT
20	PCIEX1*2 SLOT
21	M.2 x4
22	SATA EXPRESS
23	ASM1083
24	ASM1083 POWER
25	PCI SLOT
26	ISL95858_856 PWM
27	ISL95858_856 MOS_VCORE
28	ISL95858_856 MOS_VCCGT
29	VCCSA_VCCIO_VCCPLL
30	RT8120_DDR_BEAD
31	RT8068A_VPP
32	RT8120_PCH-BEAD
33	DISCRETE POWER
34	NCP3933 OVER VOLTAGE

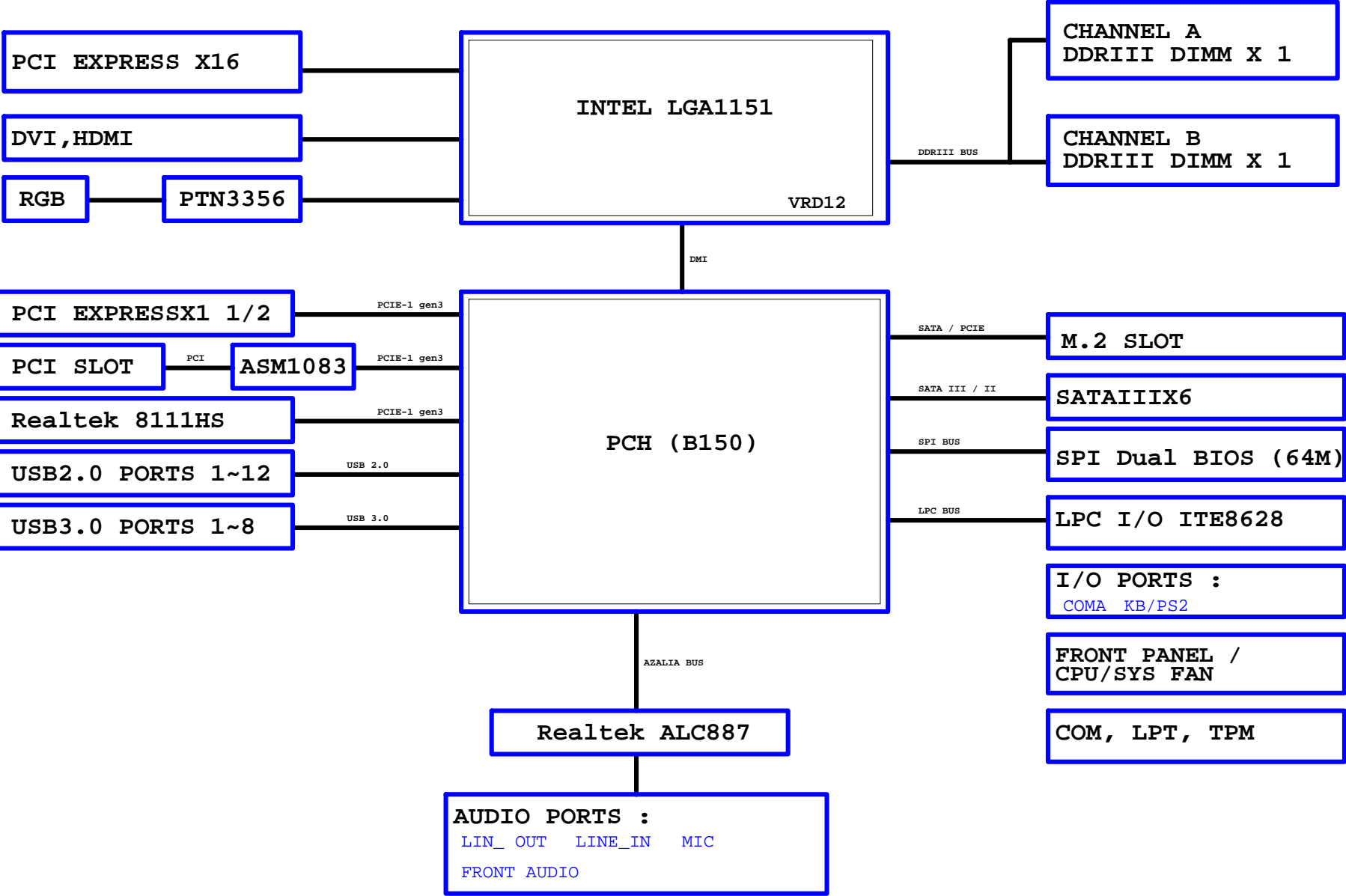
SHEET TITLE

35	ATX POWER , -PROCHOT
36	KB_MS_USB
37	DVI
38	PTN3356 - DP to VGA - IC
39	PTN3356 - DP to VGA - Conn
40	HDMI
41	R_USB30
42	Realtek 8111G
43	USB30_LAN CONNECTOR-8111G
44	ALC887-VD2 CODEC
45	REAR AUDIO JACK
46	F_USB30
47	F_USB20
48	COM , LPT , TPM
49	F_PANEL
50	TABLE LIST

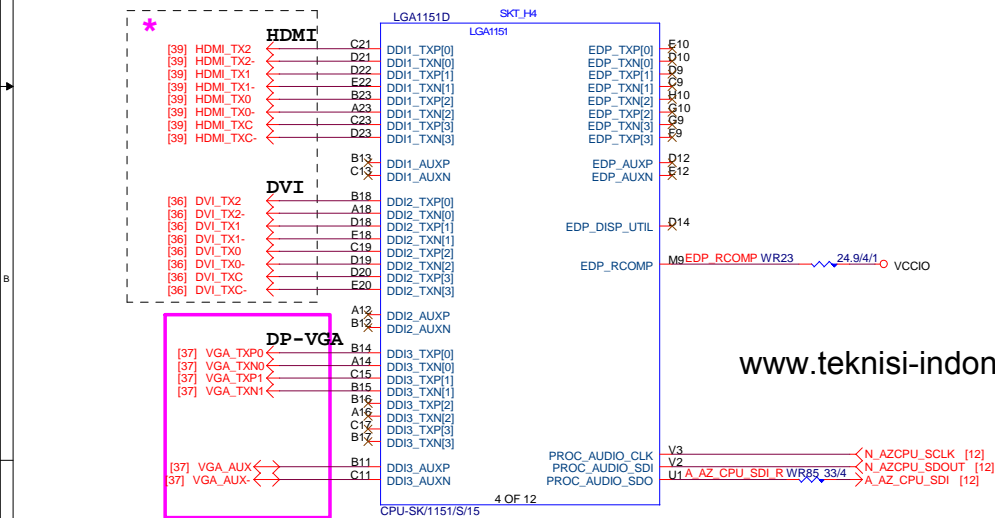
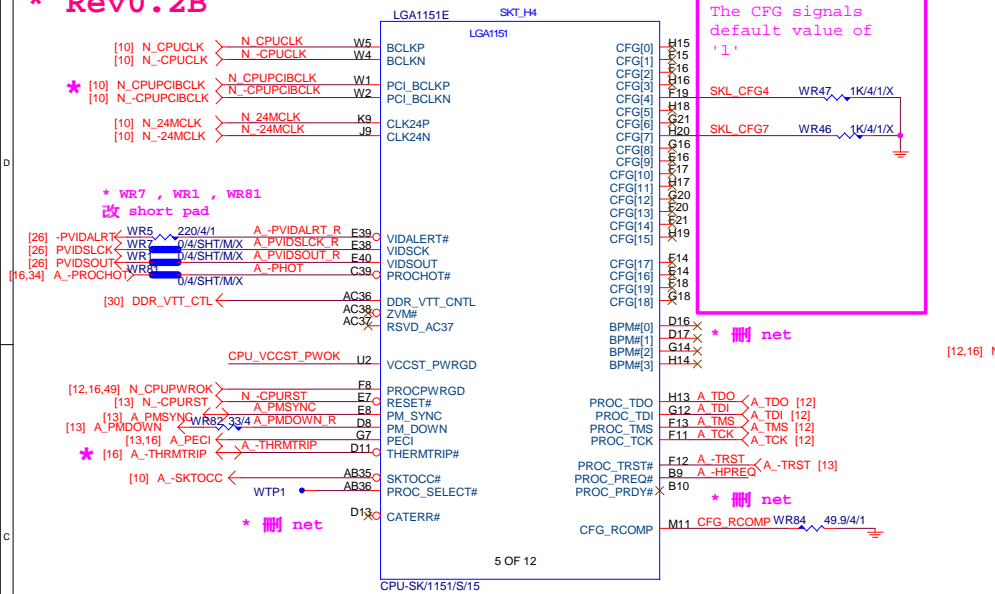




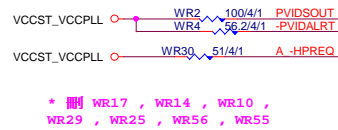
BLOCK DIAGRAM



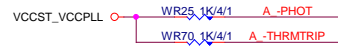
**\* Rev0.2B**



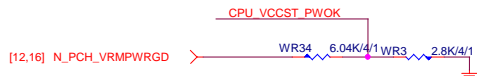
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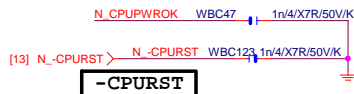
\* 刪 WR17 , WR14 , WR10 ,  
WR29 , WR25 , WR56 , WR55



\* 删除 WR91



```
*  net N_CPU_VCCST_PWOK
```



VCCIO  WR80 24.9/4/1 PEG\_RCOMP L7 PEG\_RCOMP



```

PA_EXP_TXP[0..15]  >> PA_EXP_TXP[0..15] [19]
PA_EXP_TXN[0..15]  >> PA_EXP_TXN[0..15] [19]
PA_EXP_RXP[0..15]  >> PA_EXP_RXP[0..15] [19]
PA_EXP_RXN[0..15]  >> PA_EXP_RXN[0..15] [19]

```

```
4 layer PEG/DMI=====4/4/4//15
6 layer PEG/DMI=====4/5.5/4//15
```

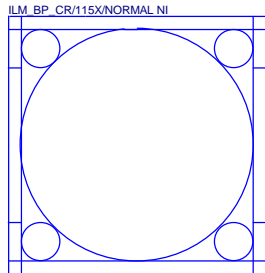
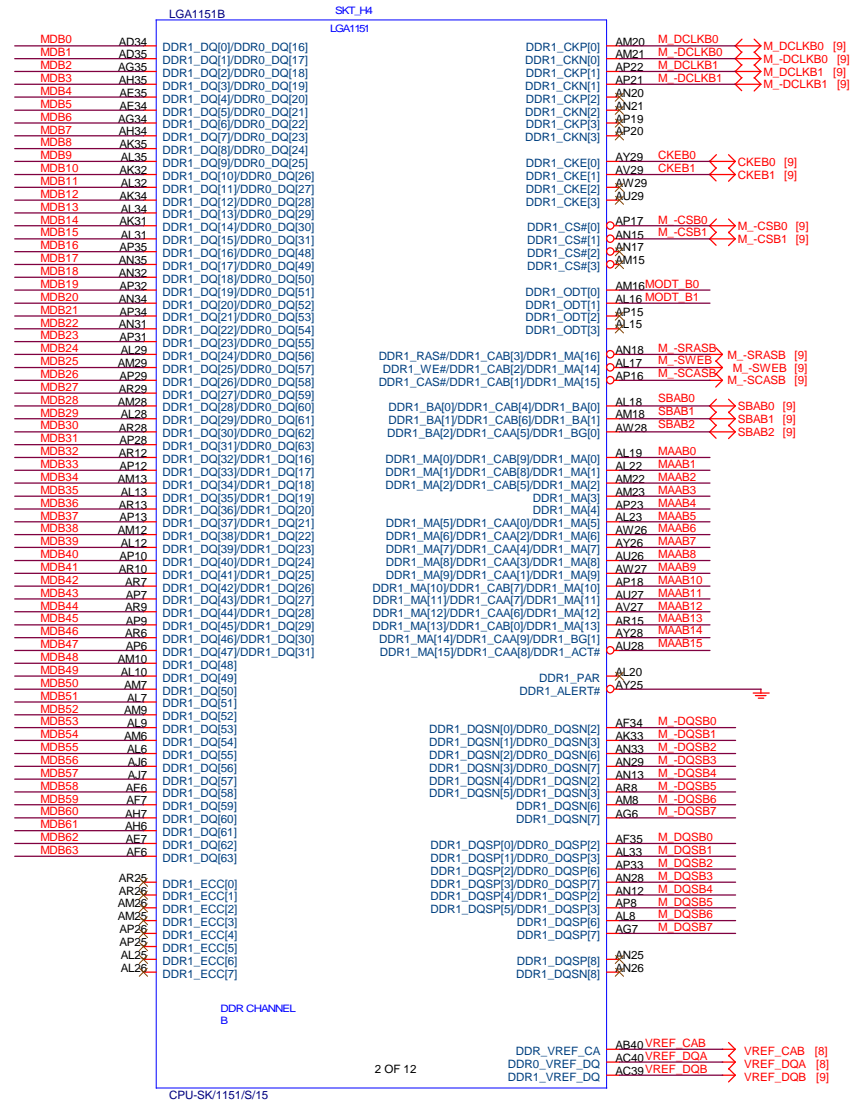
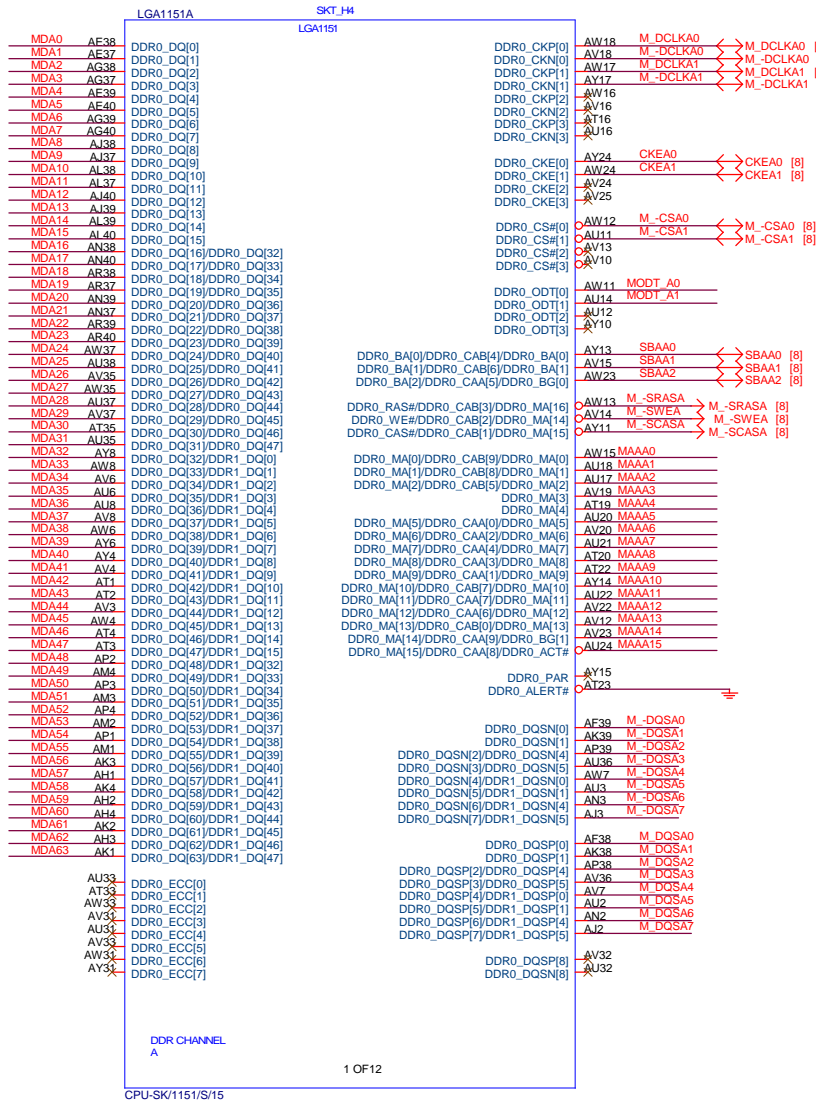
Impedance=85 +- 15%

```
W=12 mil out of CPU
S=15 mil out of CPU
```

Bifurcation Config.	Signals Lanes		
	CFG[6]	CFG[5]	CFG[2]
1x16	1	1	1
1x16 Reversed	1	1	0
2x8	1	0	1
2x8 Reversed	1	0	0
1x8+2x4	0	0	1
1x8+2x4 Reversed	0	0	0

<b><i>Gigabyte Technology</i></b>			
Title			
<b>CPU LGA1151-A</b>			
Size Custom	Document Number		Rev
	<b>GA-B150M-HD3 DDR3-WP</b>		<b>1.0</b>
Date:	Tuesday, October 13, 2015	Sheet	4 of 52

- \* DDR3 net

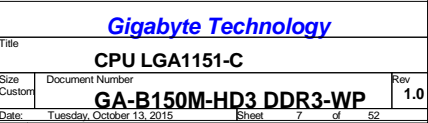


Need check the new CPU ME

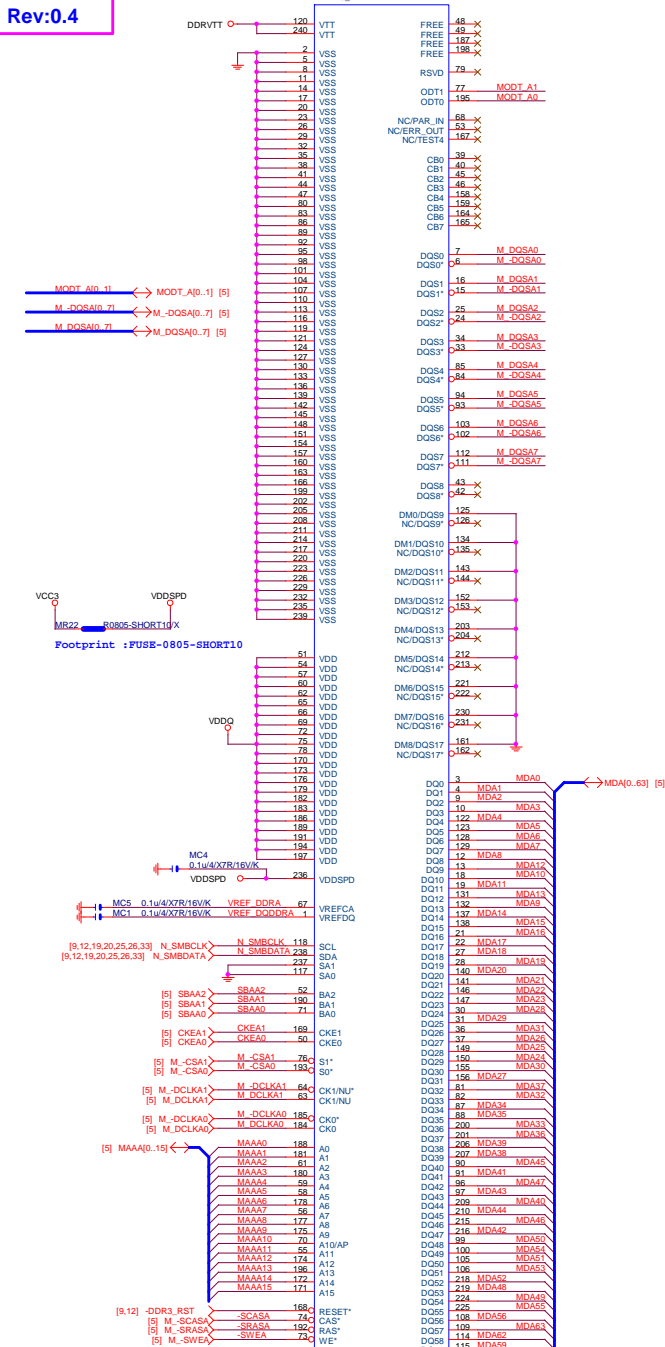
Figure 1 illustrates the mapping of 16-bit bus signals to 32-bit bus signals. The diagram shows two columns of signals. The left column contains 16-bit signals, and the right column contains 32-bit signals. Red arrows indicate the mapping from the 16-bit signals to the 32-bit signals.

16-bit Signal	32-bit Signal
[8] MODT_A[0..1]	MODT_R[0..1]
[9] MODT_B[0..1]	MODT_R[0..1]
[8] MDA[0..63]	MDAT[0..63]
[9] MDB[0..63]	MDBI[0..63]
[8] M_DQSA[0..7]	M_DQSA[0..7]
[8] M_-DQSA[0..7]	-M_DQSA[0..7]
[8] MAA[A[0..15]	MAA[A[0..15]
[9] MAA[B[0..15]	MAA[B[0..15]
[9] M_DQSB[0..7]	M_DQSB[0..7]
[9] M_-DQSB[0..7]	M_-DQSB[0..7]



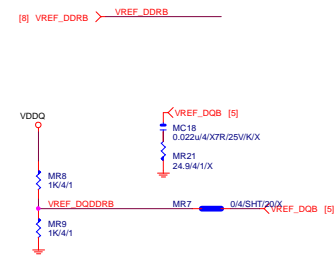
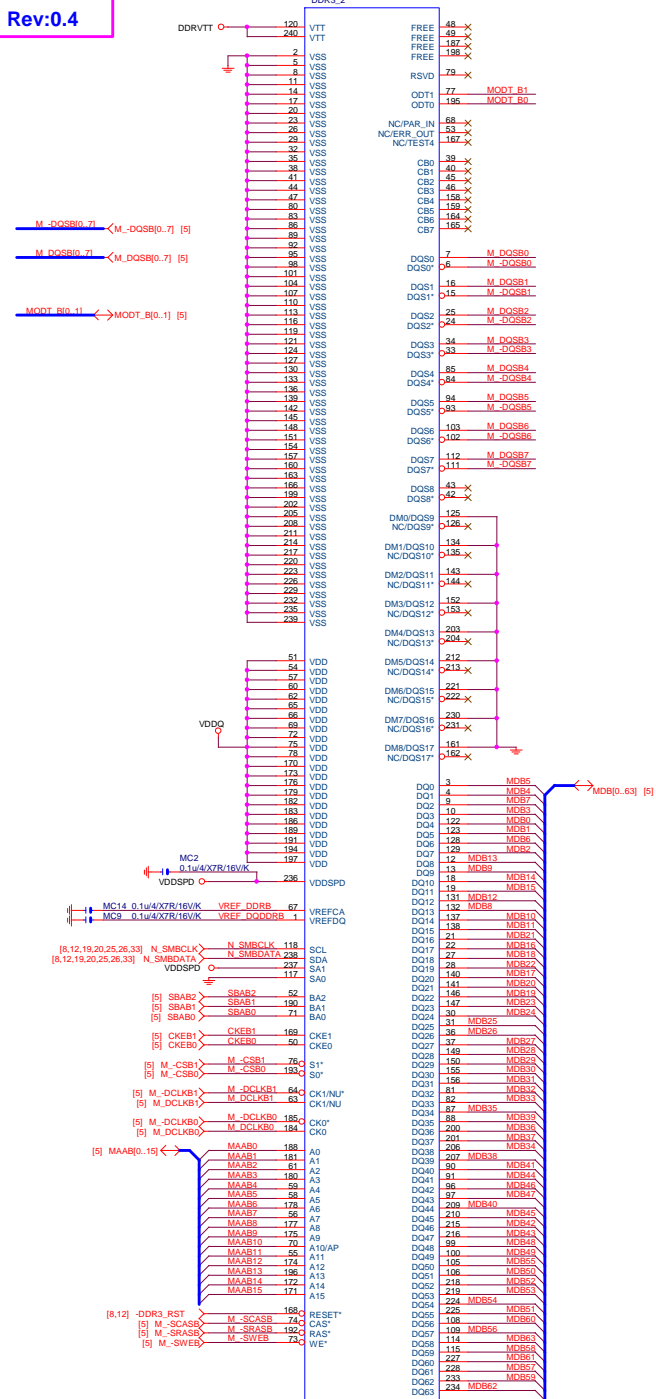


Rev:0.4

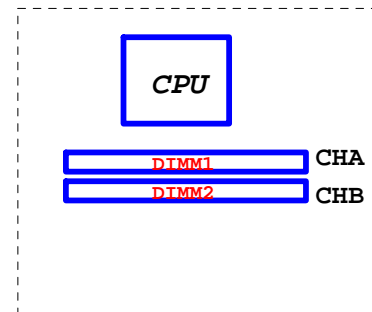




Rev:0.4



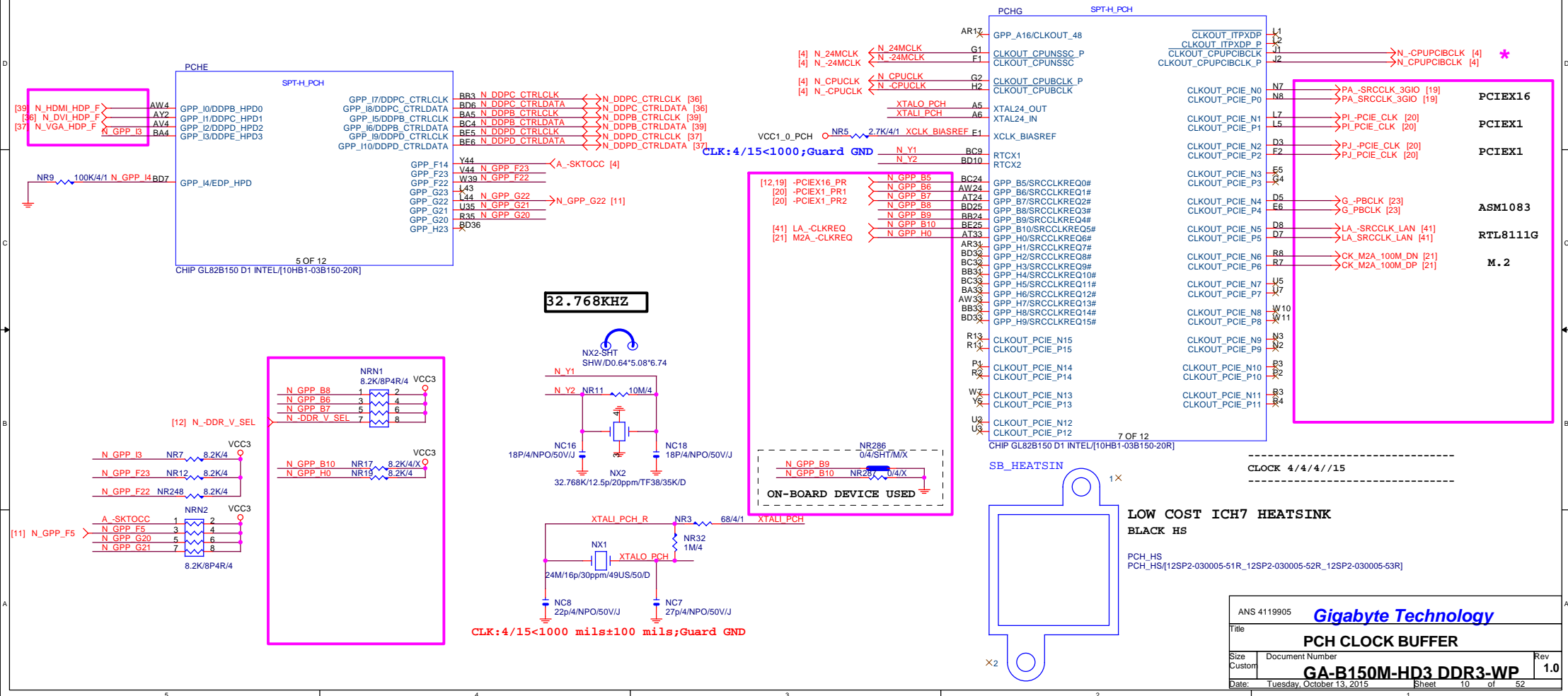
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*Gigabyte Technology*

Title				DDR4 CHANNEL B				Rev	
Size		Document Number		GA-B150M-HD3 DDR3-WP1				Rev	
Custom									
Date		Sheet		9 of 52					

\* Rev0.6

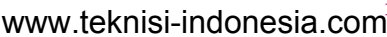


LOW COST ICH7 HEATSINK  
BLACK HS

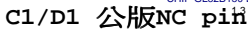
PCH\_HS  
PCH\_HS[12SP2-030005-51R\_12SP2-030005-52R\_12SP2-030005-53R]

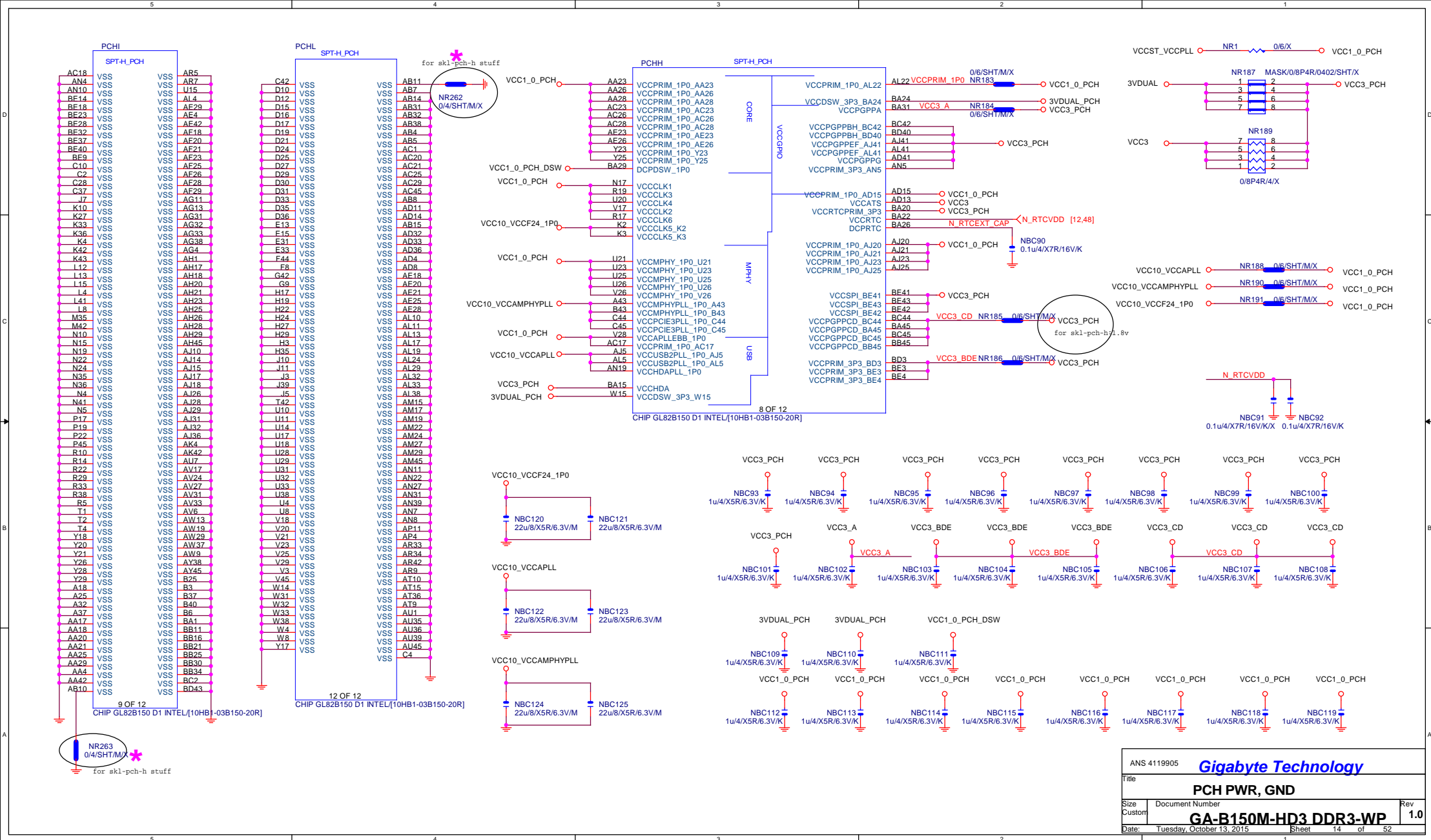
ANS 4119905			<b>Gigabyte Technology</b>		
<b>PCH CLOCK BUFFER</b>					
Size	Document Number				Rev
Custom	<b>GA-B150M-HD3 DDR3-WP</b>				<b>1.0</b>
Date:	Tuesday, October 13, 2015	Sheet	10	of	52

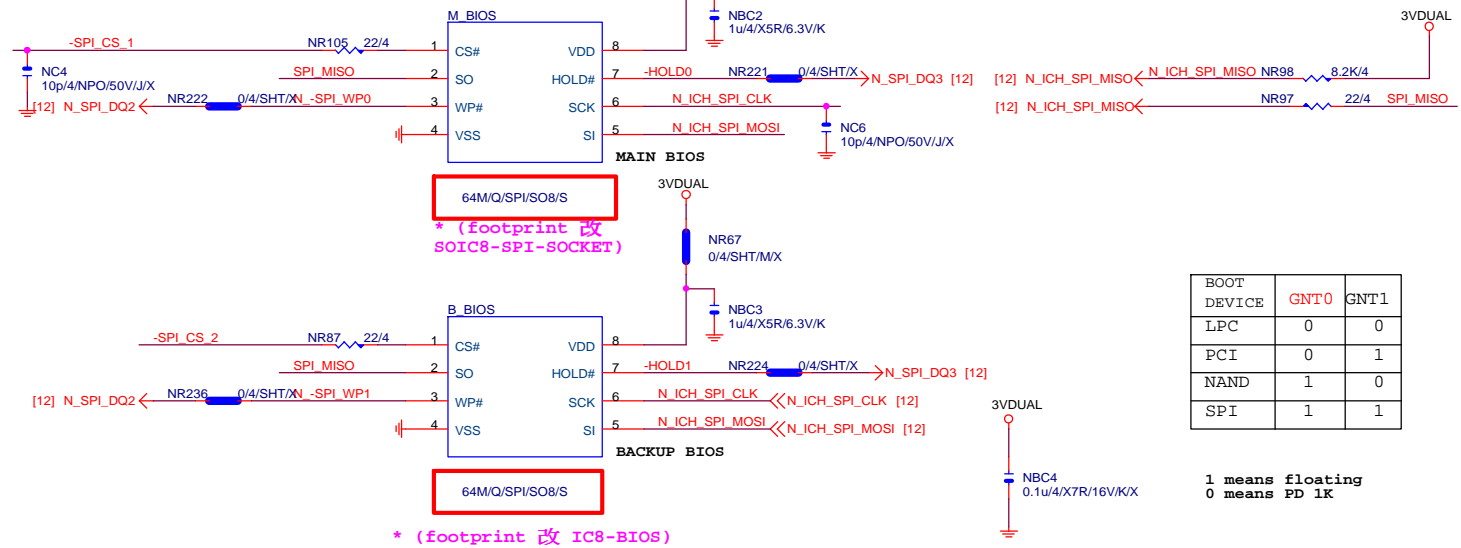
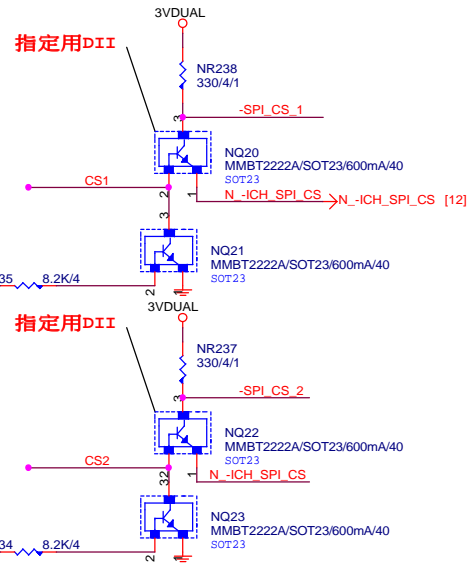




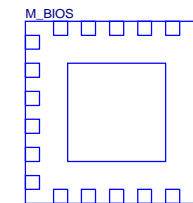
Rev 0.6







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LCP/G-FL/1.27mm/200MIL/WHITE[10SL2-000008-31R]X

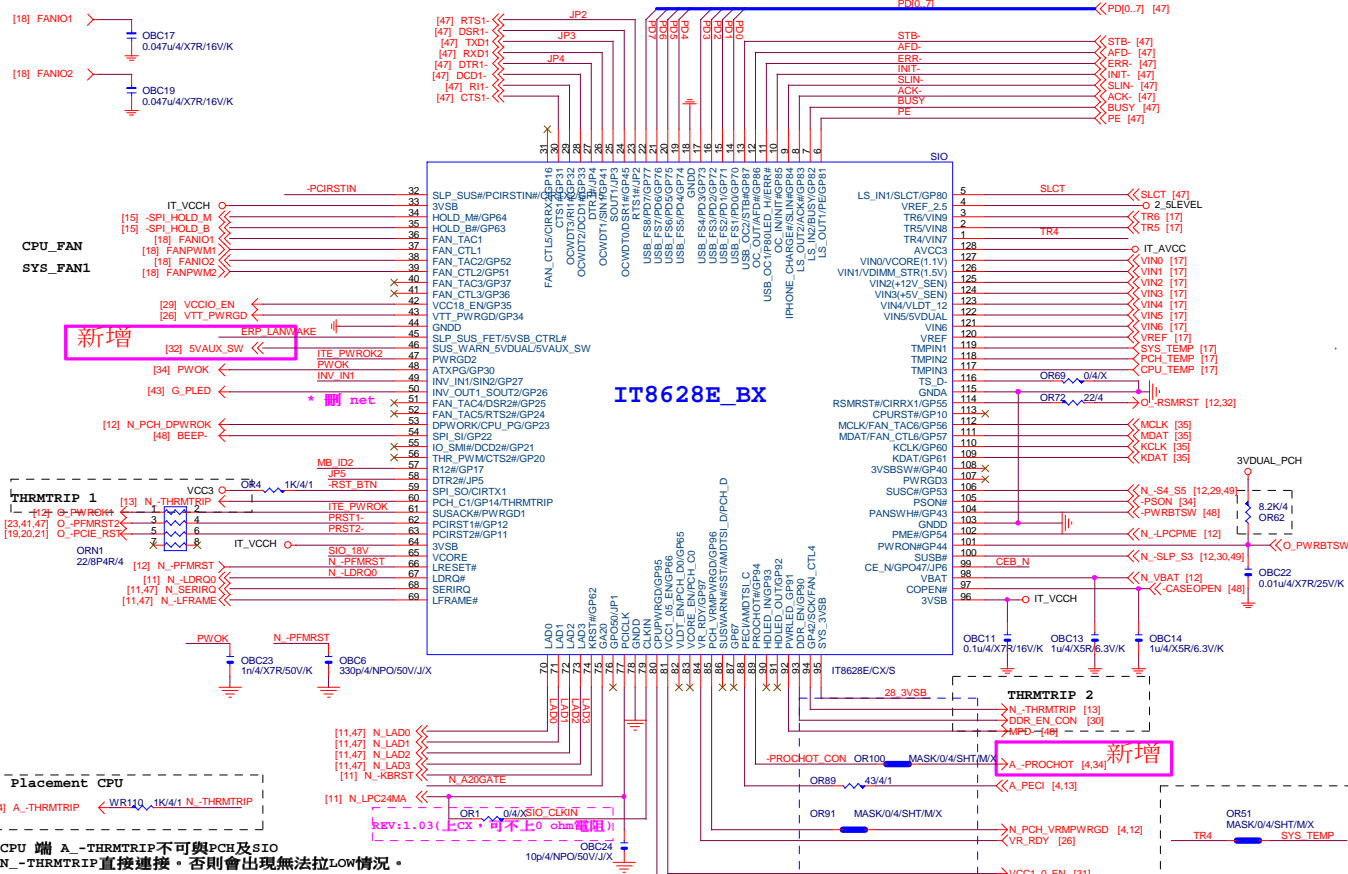
\* 試産先上 , PVT 移除

**Gigabyte Technology**

Title		BIOS	
Size	Document Number	GA-B150M-HD3 DDR3-WP	
Custom		Rev: 1.0	
Date:	Tuesday, October 13, 2015	Sheet	15 of 52



SIO IT8628BX REV:1.05



Placement CPU

[4] A\_THRMTRIP <WR10 1K/4/1 N\_THRMTRIP

CPU 端 A -THRMTRIP 不可與PCH及SIO N\_THRMTRIP直接連接。否則會出現無法拉LOW情況。

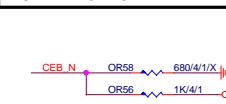
FAN TABLE

CPU_FAN	FAN_CTL1 FAN_TAC1
SYS_FAN1	FAN_CTL2 FAN_TAC2
SYS_FAN2	FAN_CTL3 FAN_TAC3
SYS_FAN3	FAN_CTL5 FAN_TAC5
OPT_FAN or SYS_FAN4	N/A
THRMTRIP1	YES PIN60
THRMTRIP2	YES PIN94

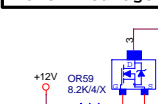
IT8620E GPIO問題匯整

PIN 50	GP26-第一次接上POWER時 會拉 Lo
PIN 90/91	DEFAULT為HDLLED FUNCTION, GP93 BYPASS TO GP92 高阻時 GP92 會被拉Lo(ITE BUG)
PIN 108	GP40--- POWER ON 時會拉 Lo
PIN 111/112	MOUSE 跟FAN6 FUNCTION 擇一使用,不然會互相干擾
PIN 22	PIN23,需高於3V,若低於 該部分COM PORT及LPT裝置 蜂鳴器會異常動作。

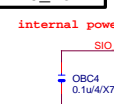
DUAL BIOS OPT STRAP



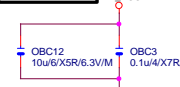
Power leakage



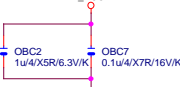
SIO\_18V



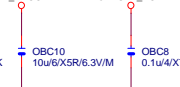
SIO CAP



IT\_VCCH



IT\_AVCC



3VDUAL\_PCH

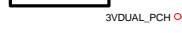


2\_5LEVEL

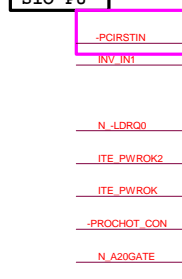


CLOSE SIO PIN4 2\_5LEVEL

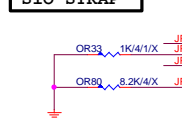
PWR SHT



SIO PU



SIO STRAP



EUP control detect

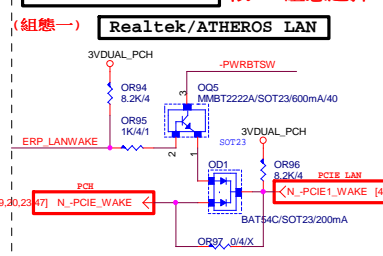


JP2	1	Disable WDT
	0	Enable WDT to rest PWR0K
JP3	1	SPI-Flash Disable
	0	SPI-Flash Enable
JP4	1	k8 power function is Disable
	0	k8 power sequency function is Enable
JP5	1	anti-surge Disable
	0	anti-surge Enable
JP3	1 1	The default value of EC Index 63h/6Bh/73h is 80h.
	1 0	The default value of EC Index 63h/6Bh/73h is FFh
JP5	0 1	The default value of EC Index 63h/6Bh/73h is 00h.
	0 0	The default value of EC Index 63h/6Bh/73h is 40h.

MB ID



ERP WAKE on LAN (依LAN組態選擇)



Realtek/ATHEROS LAN



[12,19,30,32,37] N\_PCIE\_WAKE <N\_PCIE1\_WAKE [41]

Gigabyte Technology

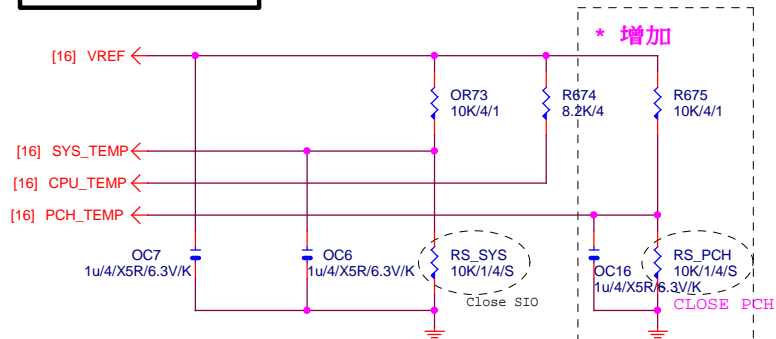
Title			ITE 8628 LPC IO		
Size	Document Number	Rev			
Custom					
Date:	Tuesday, October 13, 2015	Sheet	16	of	52

GA-B150M-HD3 DDR3-WP

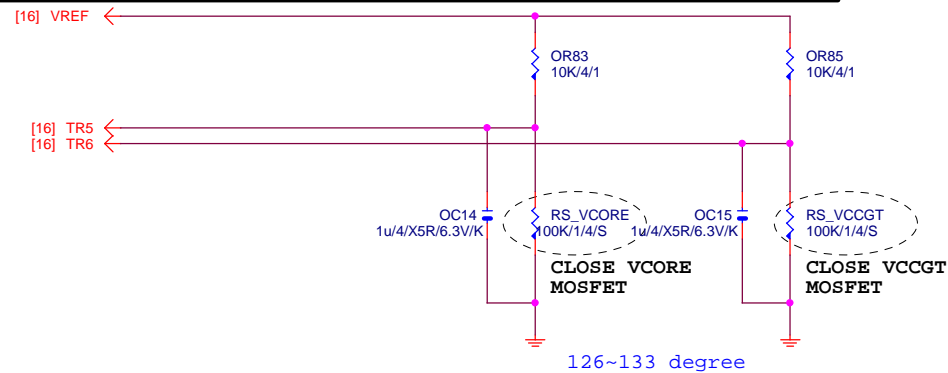


## TEMP H/W MONITOR

REV 1.04



## RS\_VCORE, RS\_VCCGT, CLOSE CPU\_VCORE &amp; VCCGT MOSFET

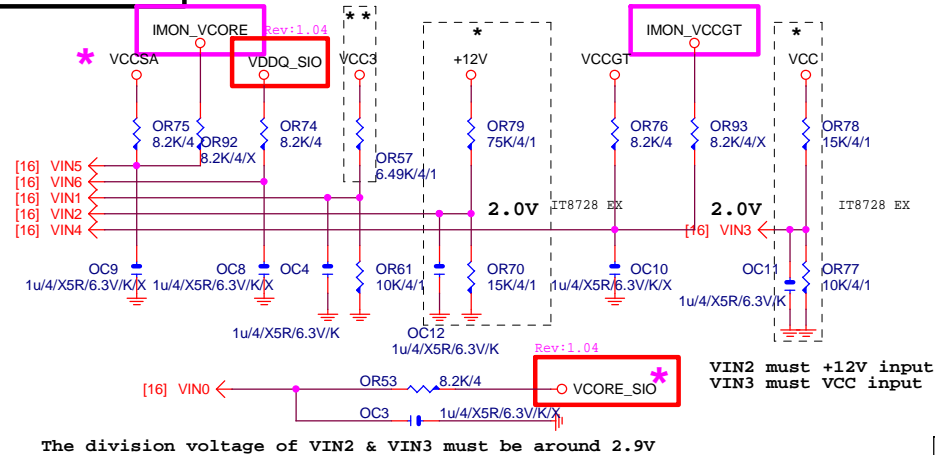
~~PROCHOT: 有mos heartsink不用prochot function~~

## VOLTAGE-- H/W MONITOR

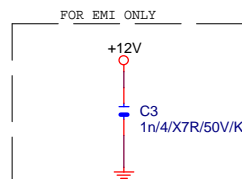
Connect to PWM

\* IT8728 BX  
\*\* IT8728 CX

Connect to PWM



The division voltage of VIN2 &amp; VIN3 must be around 2.9V

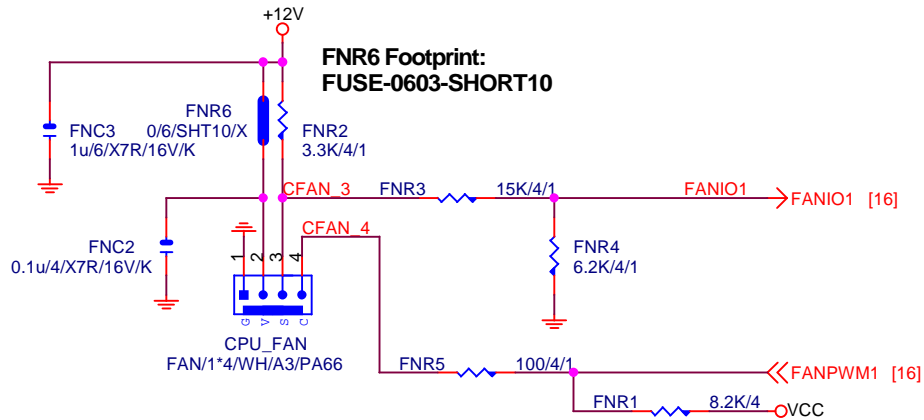
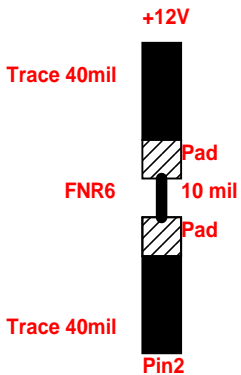


Gigabyte Technology

Title		
HWM,KB/MS, FAN CTRL		
Size	Document Number	Rev
Custom	GA-B150M-HD3 DDR3-WP	1.0
Date:	Tuesday, October 13, 2015	Sheet 17 of 52

CPU SMART FAN

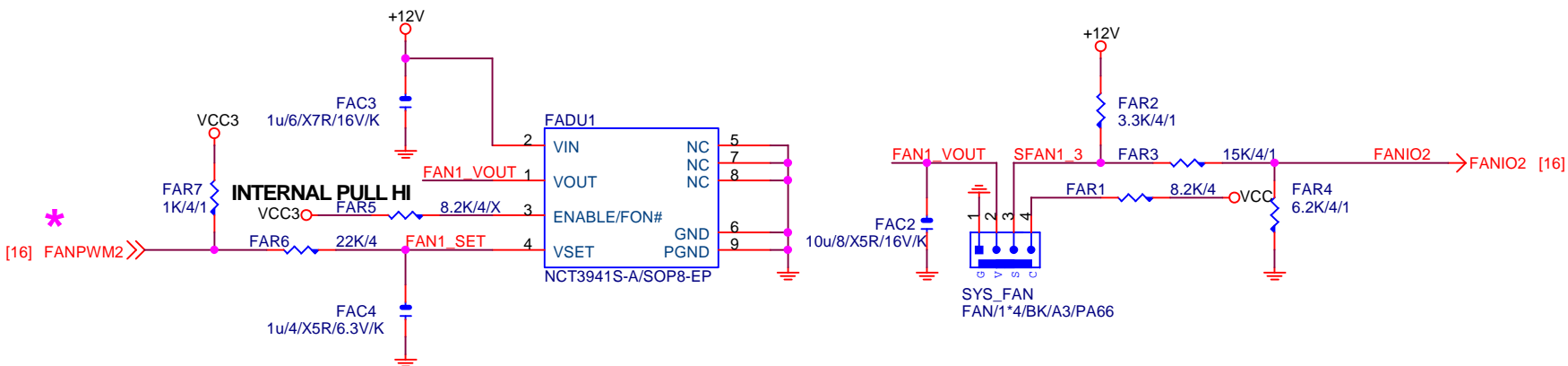
Rev: 0.53



SYSTEM FAN1

Linear SYS\_FAN

Enable Function (NCT3941S)  
Full Turn On Function  
(NCT3941S-A)



Gigabyte Technology

Title

HWM,KB/MS, FAN CTRL

Size

Document Number

GA-B150M-HD3 DDR3-WP

Rev

1.0

Date:

Tuesday, October 13, 2015

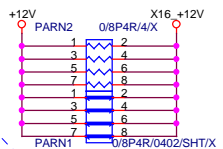
Sheet

18

of

52

Rev 0.2

\* +12 protect  
short-wire test

PA\_EXP\_RXP0..15] >> PA\_EXP\_RXP[0..15] [4]  
 PA\_EXP\_RXN0..15] >> PA\_EXP\_RXN[0..15] [4]  
 PA\_EXP\_TXP0..15] >> PA\_EXP\_TXP[0..15] [4]  
 PA\_EXP\_TXN0..15] >> PA\_EXP\_TXN[0..15] [4]

PA_EXP_TXP0	PAC5	0.22u4/X5R/6.3V/K	PA_EXP_TXP0 C
PA_EXP_TXN0	PAC4	0.22u4/X5R/6.3V/K	PA_EXP_TXN0 C
PA_EXP_TXP1	PAC6	0.22u4/X5R/6.3V/K	PA_EXP_TXP1 C
PA_EXP_TXN1	PAC7	0.22u4/X5R/6.3V/K	PA_EXP_TXN1 C
PA_EXP_TXP2	PAC8	0.22u4/X5R/6.3V/K	PA_EXP_TXP2 C
PA_EXP_TXN2	PAC9	0.22u4/X5R/6.3V/K	PA_EXP_TXN2 C
PA_EXP_TXP3	PAC10	0.22u4/X5R/6.3V/K	PA_EXP_TXP3 C
PA_EXP_TXN3	PAC11	0.22u4/X5R/6.3V/K	PA_EXP_TXN3 C
PA_EXP_TXP4	PAC12	0.22u4/X5R/6.3V/K	PA_EXP_TXP4 C
PA_EXP_TXN4	PAC13	0.22u4/X5R/6.3V/K	PA_EXP_TXN4 C
PA_EXP_TXP5	PAC14	0.22u4/X5R/6.3V/K	PA_EXP_TXP5 C
PA_EXP_TXN5	PAC15	0.22u4/X5R/6.3V/K	PA_EXP_TXN5 C
PA_EXP_TXP6	PAC16	0.22u4/X5R/6.3V/K	PA_EXP_TXP6 C
PA_EXP_TXN6	PAC17	0.22u4/X5R/6.3V/K	PA_EXP_TXN6 C
PA_EXP_TXP7	PAC18	0.22u4/X5R/6.3V/K	PA_EXP_TXP7 C
PA_EXP_TXN7	PAC19	0.22u4/X5R/6.3V/K	PA_EXP_TXN7 C
PA_EXP_TXP8	PAC21	0.22u4/X5R/6.3V/K	PA_EXP_TXP8 C
PA_EXP_TXN8	PAC20	0.22u4/X5R/6.3V/K	PA_EXP_TXN8 C
PA_EXP_TXP9	PAC22	0.22u4/X5R/6.3V/K	PA_EXP_TXP9 C
PA_EXP_TXN9	PAC23	0.22u4/X5R/6.3V/K	PA_EXP_TXN9 C
PA_EXP_TXP10	PAC24	0.22u4/X5R/6.3V/K	PA_EXP_TXP10 C
PA_EXP_TXN10	PAC25	0.22u4/X5R/6.3V/K	PA_EXP_TXN10 C
PA_EXP_TXP11	PAC26	0.22u4/X5R/6.3V/K	PA_EXP_TXP11 C
PA_EXP_TXN11	PAC27	0.22u4/X5R/6.3V/K	PA_EXP_TXN11 C
PA_EXP_TXP12	PAC28	0.22u4/X5R/6.3V/K	PA_EXP_TXP12 C
PA_EXP_TXN12	PAC29	0.22u4/X5R/6.3V/K	PA_EXP_TXN12 C
PA_EXP_TXP13	PAC30	0.22u4/X5R/6.3V/K	PA_EXP_TXP13 C
PA_EXP_TXN13	PAC31	0.22u4/X5R/6.3V/K	PA_EXP_TXN13 C
PA_EXP_TXP14	PAC32	0.22u4/X5R/6.3V/K	PA_EXP_TXP14 C
PA_EXP_TXN14	PAC33	0.22u4/X5R/6.3V/K	PA_EXP_TXN14 C
PA_EXP_TXP15	PAC34	0.22u4/X5R/6.3V/K	PA_EXP_TXP15 C
PA_EXP_TXN15	PAC35	0.22u4/X5R/6.3V/K	PA_EXP_TXN15 C

PCIE16:16/5/5/5/16

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

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

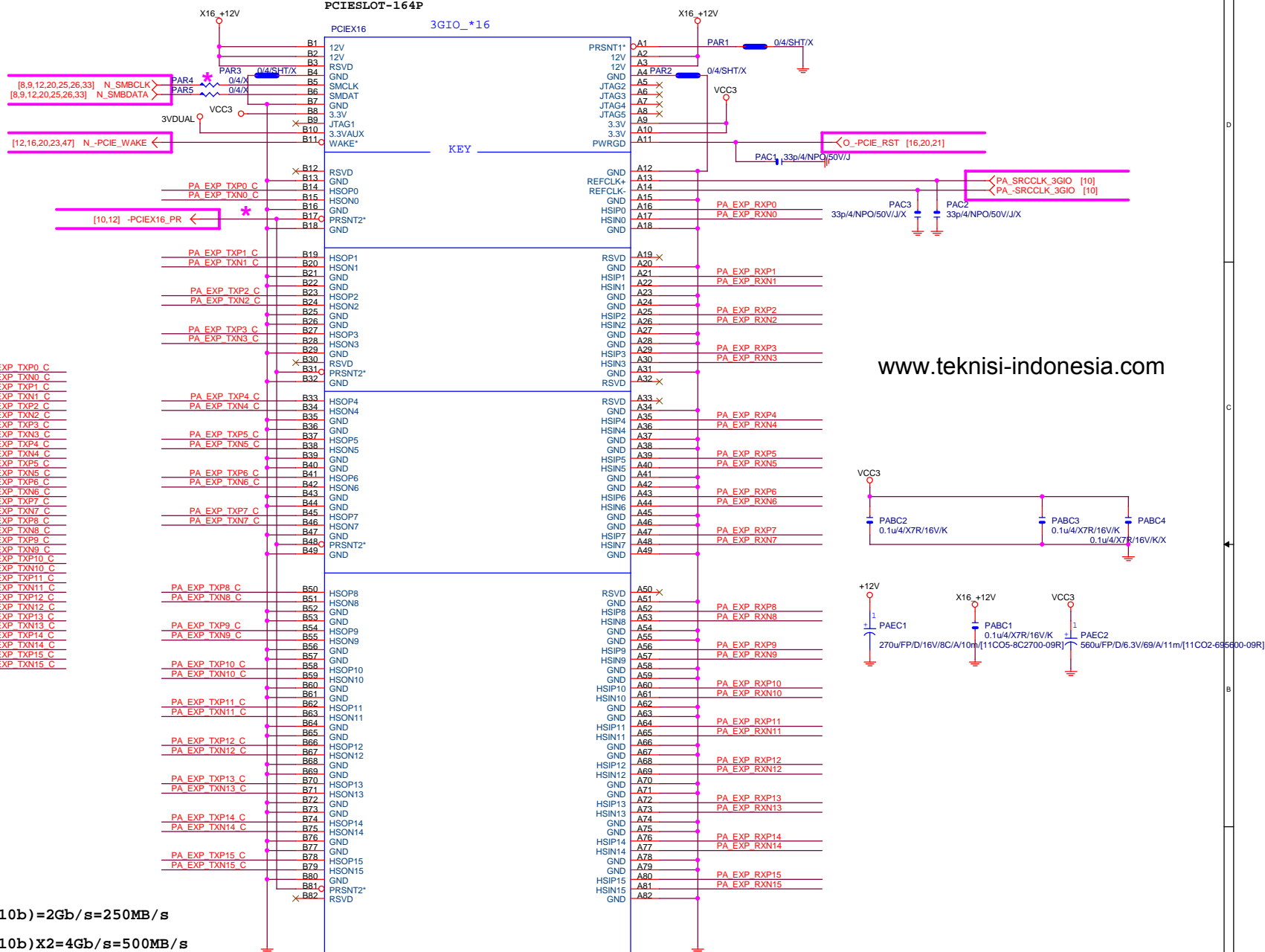
PCE-E X1(雙向) BANDWITH=2.5GHz\*(8b/10b)X2=4Gb/s=500MB/s

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

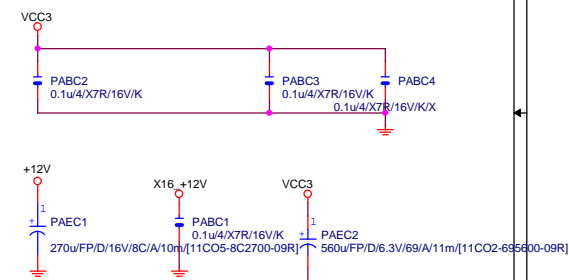
PCIESLOT-164P



PCI-E/16X-164P/BK/LONG DOUBLE[11AC1-023164-D1R]

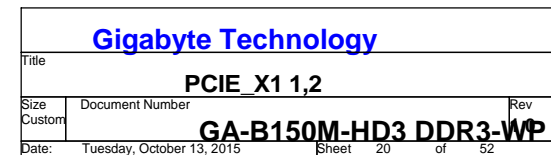
R01A

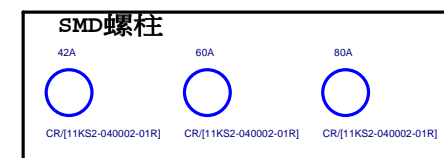
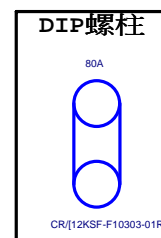
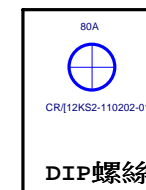
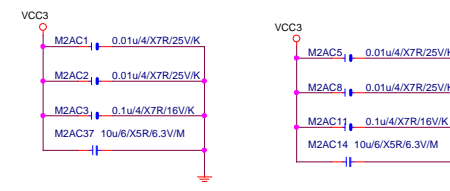
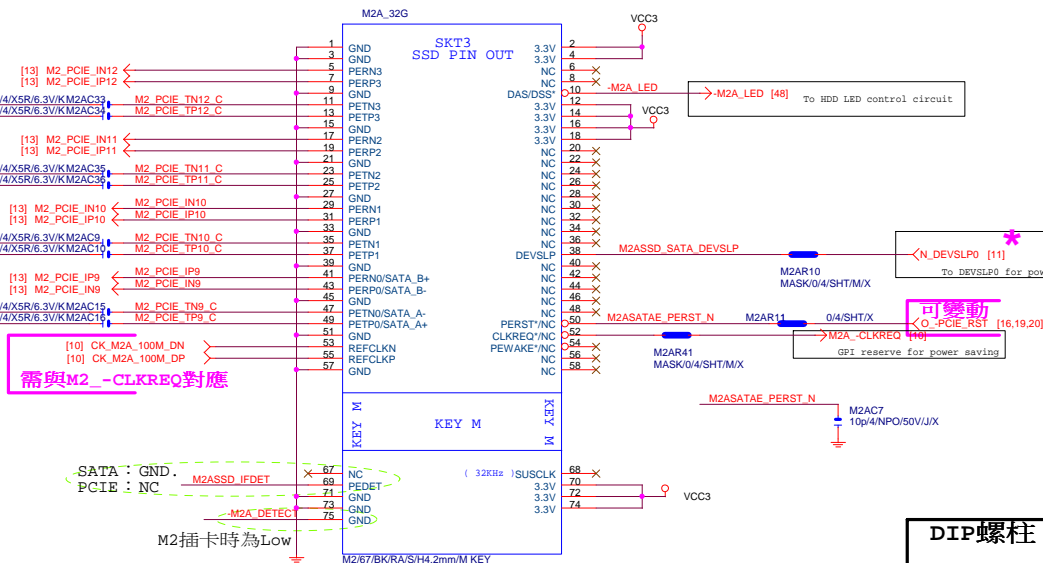
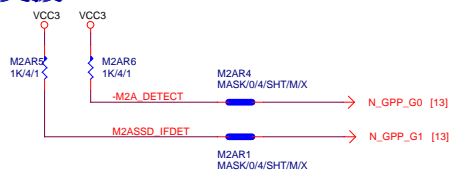
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Gigabyte Technology

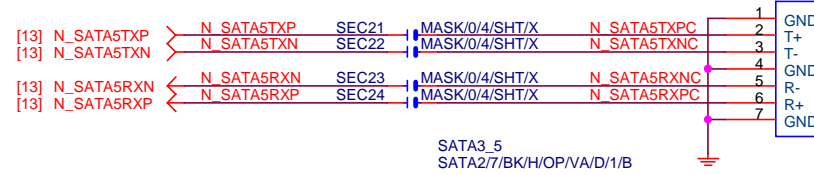
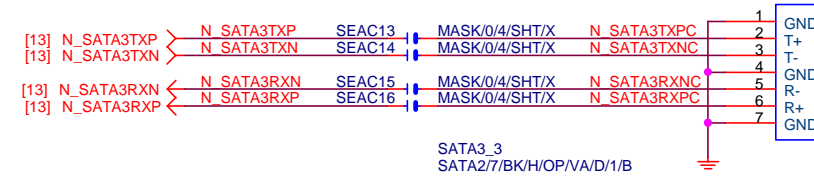
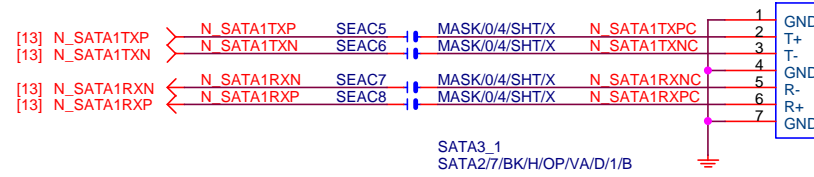
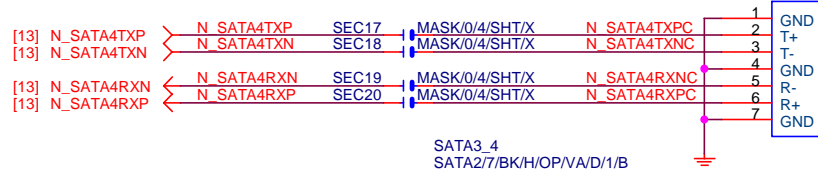
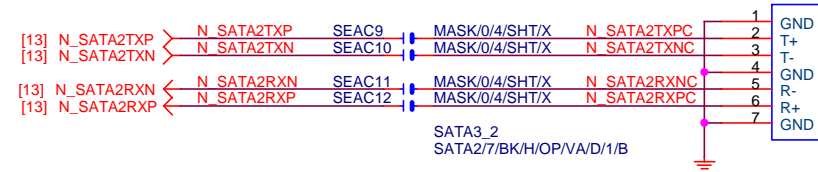
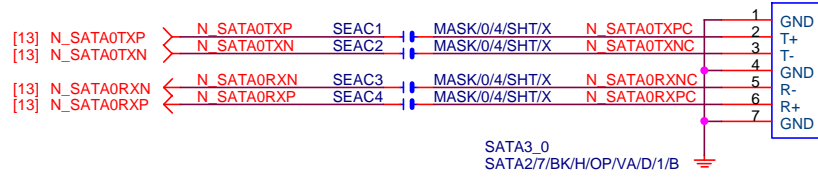
Title			PCI EXPRESS * 16	
Size			Document Number	Rev
Custom			GA-B150M-HD3 DDR3-WP	1.0
Date:			Tuesday, October 13, 2015	Sheet 19 of 52





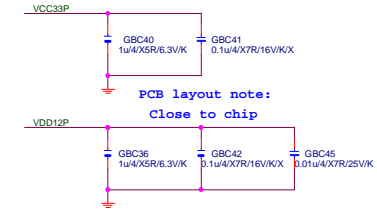
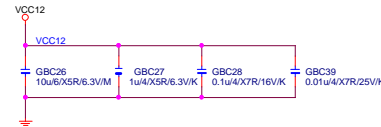
M.2 有插卡 /沒插卡 GPP_G0	M.2插何種卡？ GPP_G1	SATA Express 插何種硬碟？ GPP_E0/E2/F1	I015 (S0)	I016 (S1)	I017	I018	I019 (S0)	IP20 (S1)
有插卡 (Low)	SATA Mode (Low)	SATA (Hi)	SATA (M.2)	PCIE x1	PCIE x1	PCIE X1	PCIE x1	SATA
		SATA Express (Low)	SATA (M.2)	PCIE x1	PCIE x1	PCIE x1	SATA Express	
	PCIE Mode (Hi)	SATA (Hi)	PCIE x4 (For M.2)				SATA	SATA
		SATA Express (Low)	PCIE x4 (For M.2)				SATA Express	
沒插卡 (Hi)	Don' t Care (Hi)	SATA (Hi)	PCIE x4				SATA	SATA
		SATA Express (Low)	PCIE x4				SATA Express	

Rev 0.5a

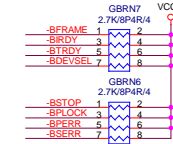
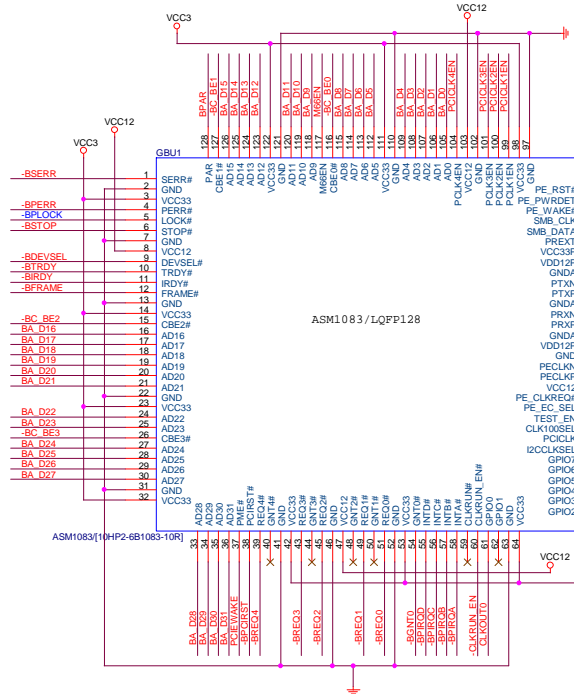


Gigabyte Technology

Title		
SATA EXPRESS		
Size	Document Number	Rev
Custom	GA-B150M-HD3 DDR3-WP	1.0
Date:	Tuesday, October 13, 2015	Sheet 1 of 22



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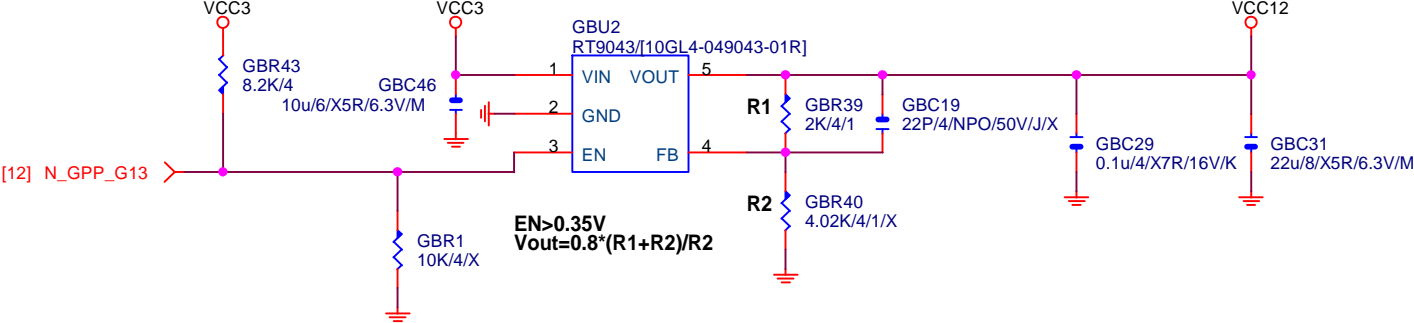


CLK100SEL	H	L
PCIE CLK	100M +/-N%	100M +/-N%
PCICLK_IN	X	33M
PCICLK_O	33M +/-N%	33M

---



Rev 0.9



Gigabyte Technology

Title

ASM1085 POWER

Size  
Custom

Document Number

GA-B150M-HD3 DDR3-WP

Rev  
1.6

Date:

Tuesday, October 13, 2015

Sheet

24

of

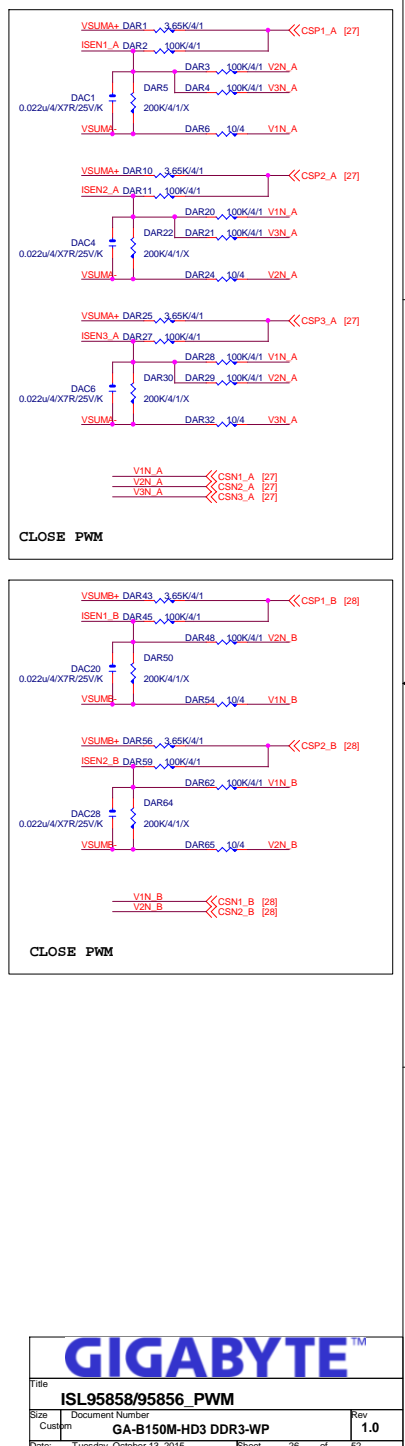
52



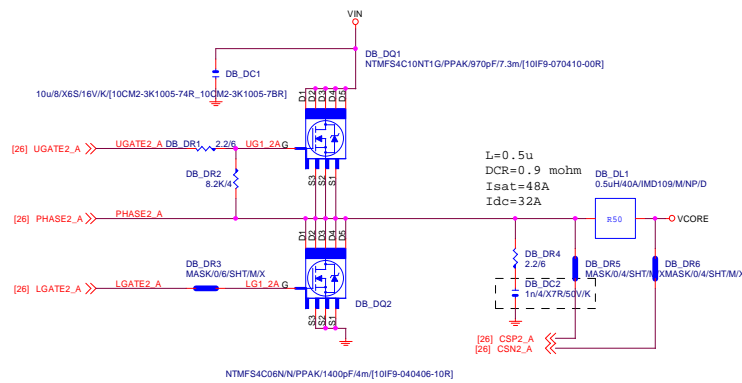
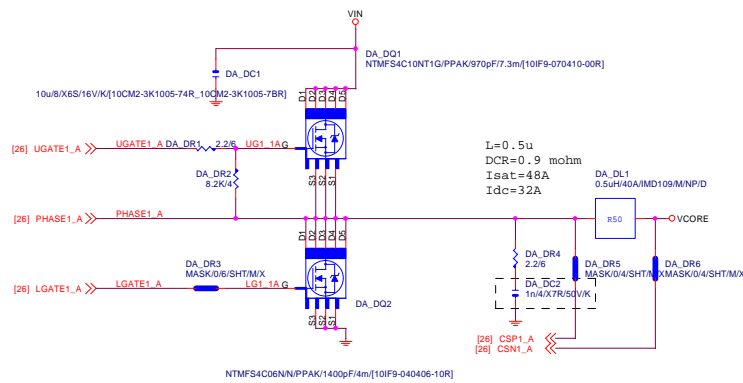
PCI SLOT 1



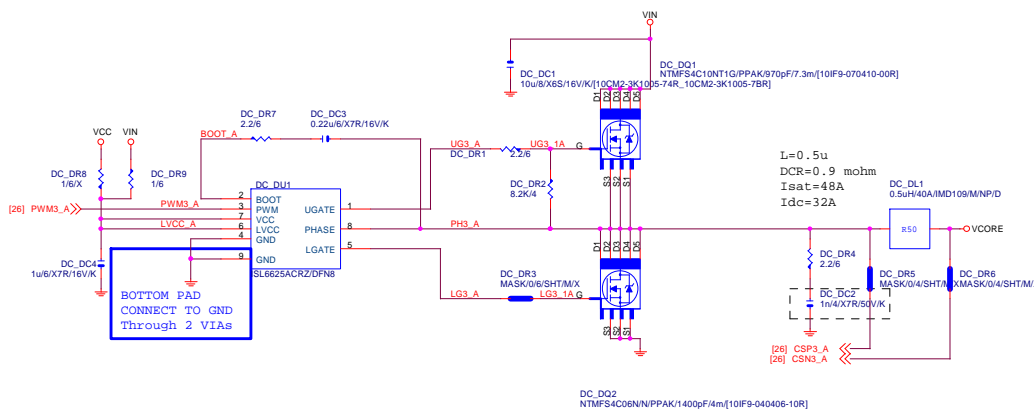
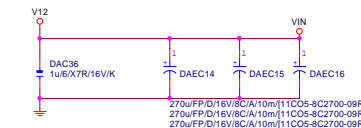
Title			
PCI SLOT 1			
Size	Document Number	Rev	
Custom	GA-B150M-HD3	DDR3-WP	
Date:	Tuesday, October 13, 2015	Sheet	25 of 52



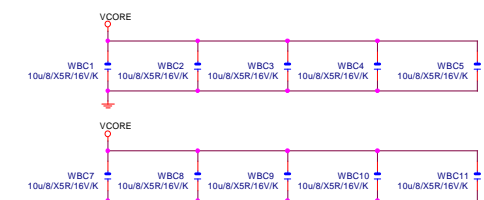
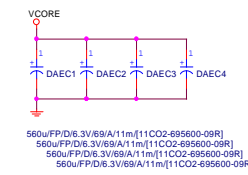
# VCORE



VIN CAP 270u\*3PCS



VCORE CAP 560u\*8PCS 22u\*29PCS



## D

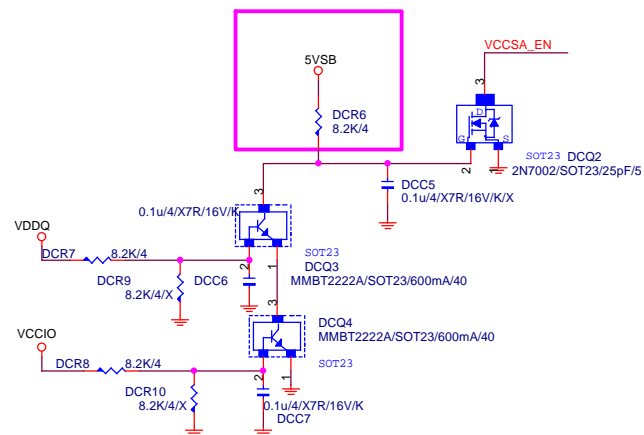
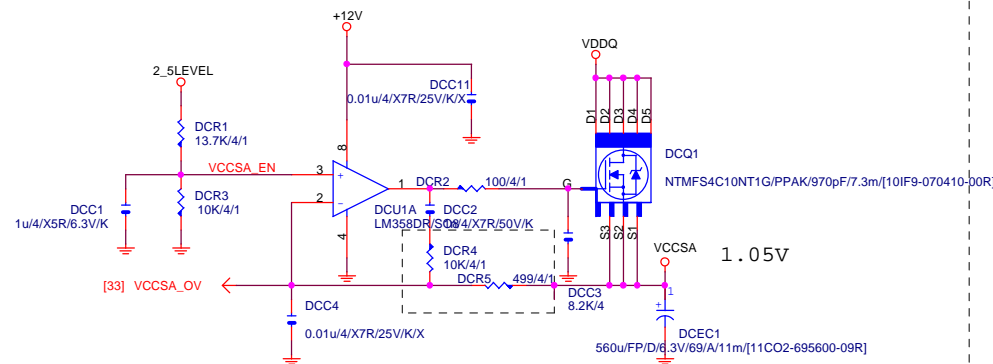


## 1

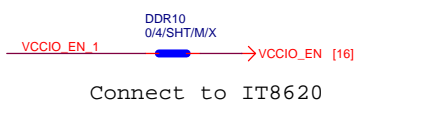
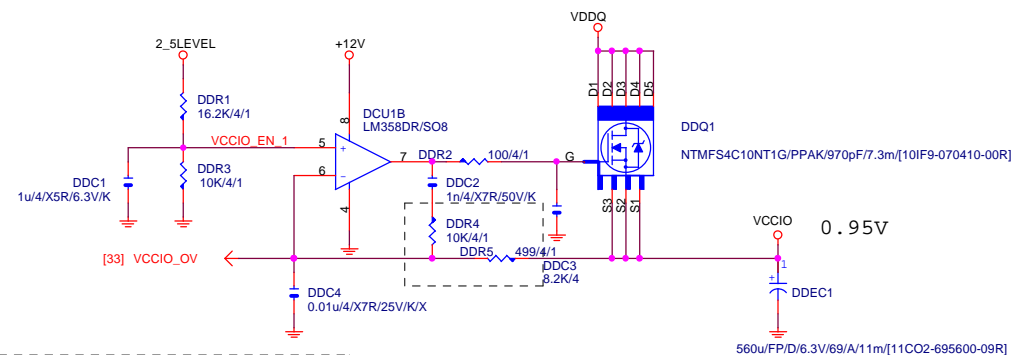
1

VCCSA

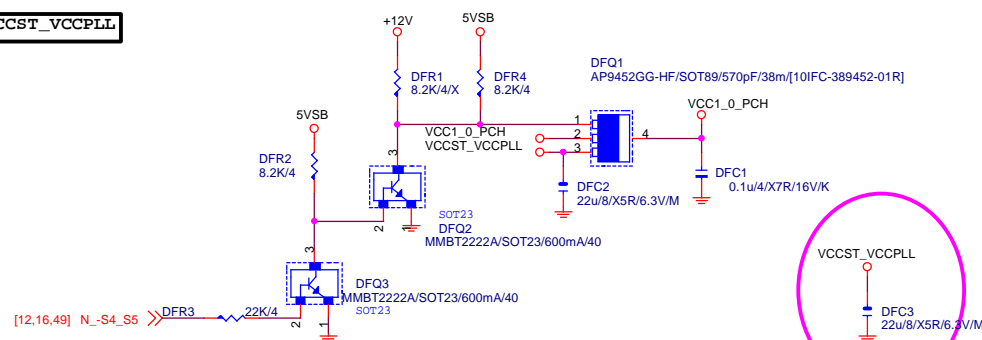
REV:0.4



VCCIO



VCCST\_VCCPLL



GIGABYTE™			
Title			
VCCSA_VCCIO			
Size	Document Number		Rev
Custom	GA-B150M-HD3 DDR3-WP		1.0
Date:	Tuesday, October 13, 2015	Sheet	29 of 52

## DDR3



SUPPORT DDR3 1.35V

L=0.5u  
DCR=1.05 mohm  
Isat=40A - - -  
Idc=30A

Remote sense請從最重的負載端點拉回

PWR SEQ



Close to RT8237

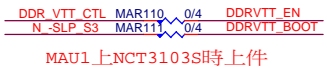


[12,16,49] N-SLP\_S3 >>

[4]

**DDRVTT**

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DDR CAP 560u\*2PCS

22u\*1PCS



DDRVTT CAP

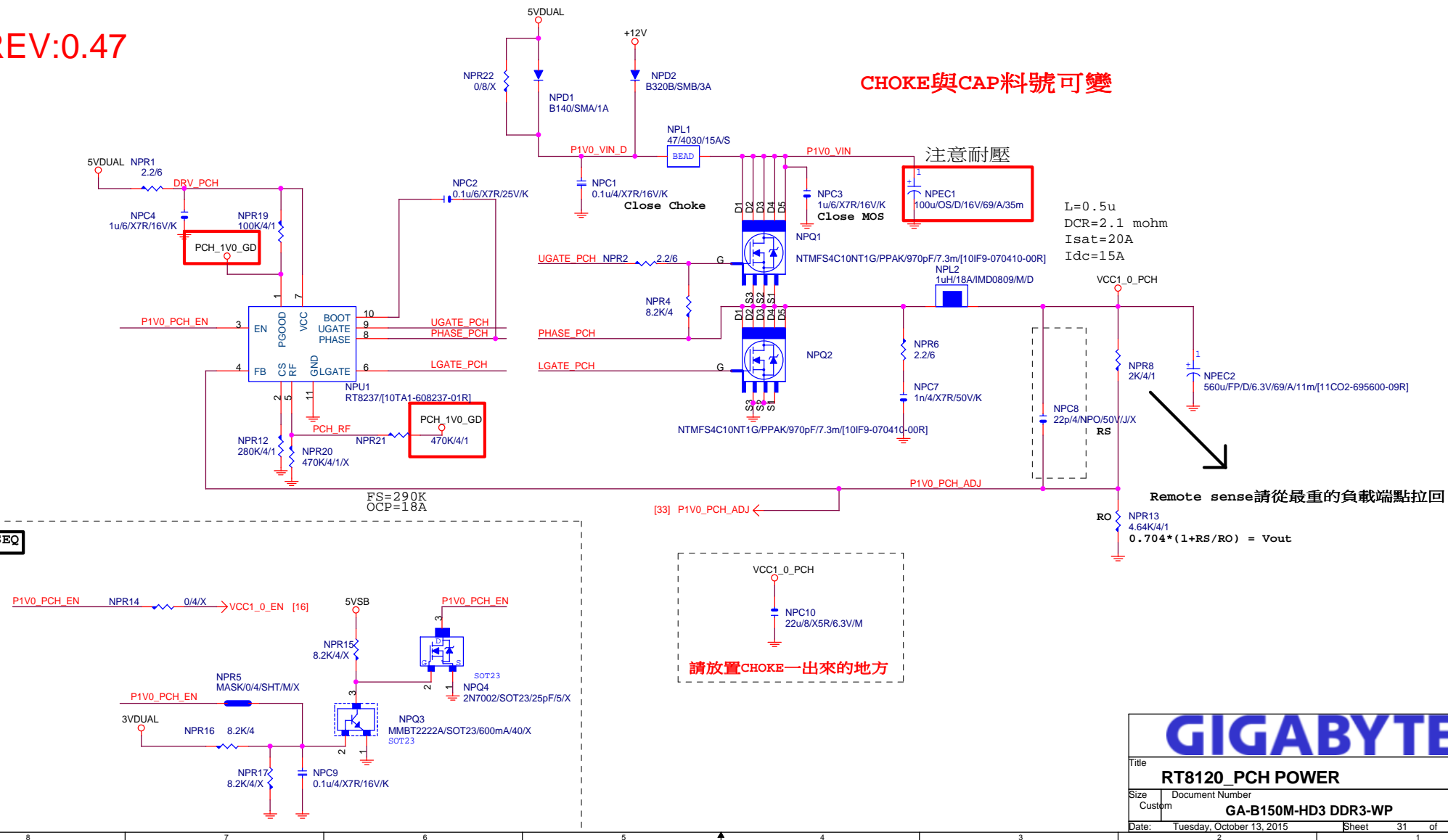
**GIGABYTE™**

RT8237\_DDR POWER

Size Custom	Document Number <b>GA-B150M-HD3 DDR3-WP</b>	Rev <b>1.0</b>
Date: Tuesday, October 13, 2015	Sheet 30 of 52	

REV:0.47

CHOKE與CAP料號可變



**GIGABYTE™**

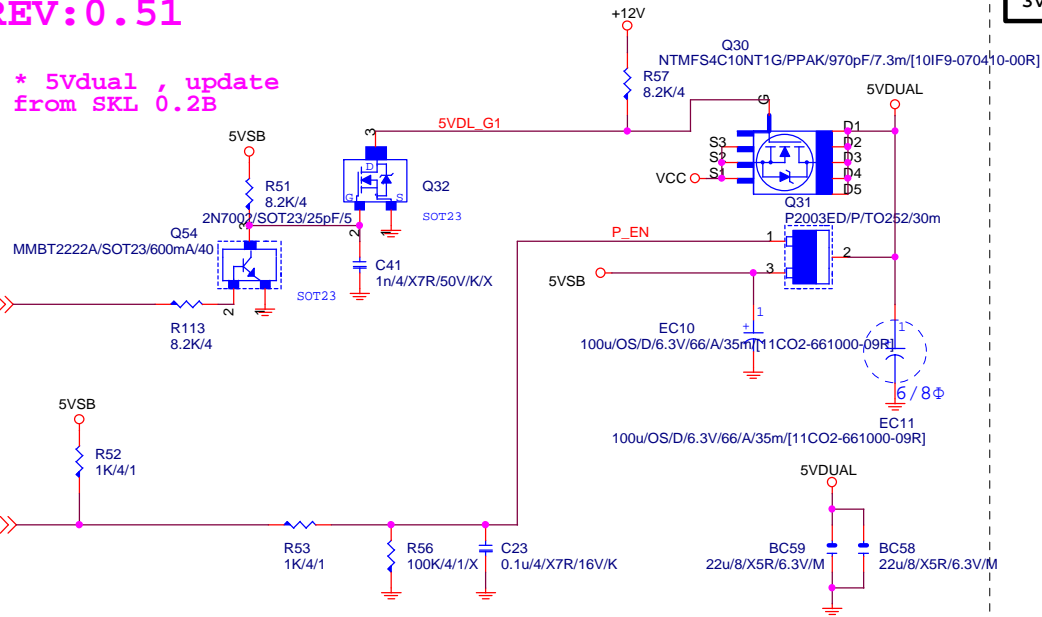
Title  
**RT8120\_PCH POWER**

Size	Document Number	Rev
Custom	<b>GA-B150M-HD3 DDR3-WP</b>	<b>1.0</b>

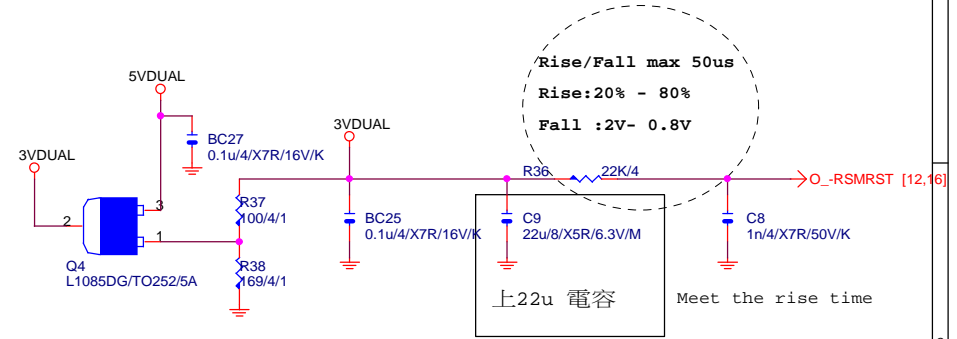
Date: Tuesday, October 13, 2015 Sheet 31 of 52

## REV:0.51

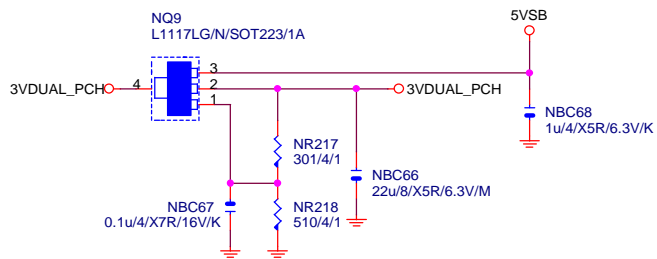
[16] 5VAUX\_SW >>



## 3VDUAL

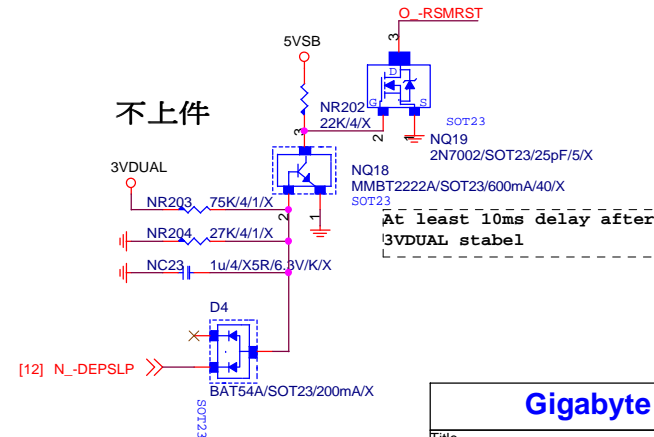


## 3VDUAL\_PCH



## O\_-RSMRST

不上件

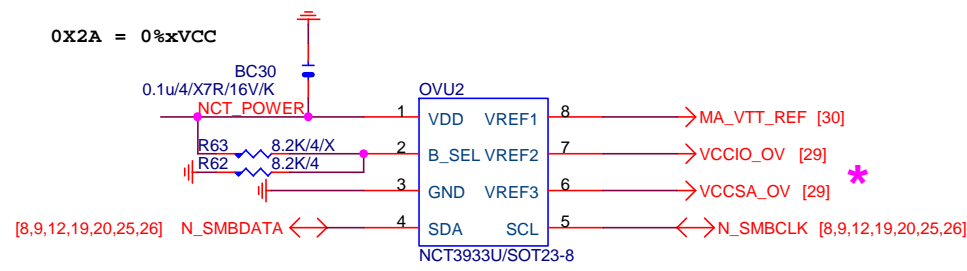
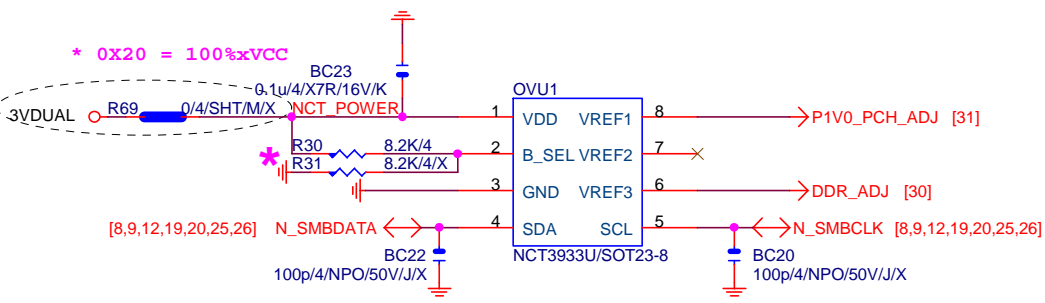


## Gigabyte Technology

Title			
<b>DISCRETE POWER</b>			
Size	Document Number	Rev	
Custom	<b>GA-B150M-HD3 DDR3</b>	<b>WP 1.0</b>	
Date:	Tuesday, October 13, 2015	Sheet	32 of 52



OVER VOLTAGE



0X22 = 75%xVCC

\* 删除 OVU3

NCT3933	0X20	0X2A	
VREF1	PCH Core	DDRVTT	
VREF2	N/A	VCCIO	
VREF3	DDR	VCCSA	

**Gigabyte Technology**

TitleCPU CORE VR-2

SizeCustom

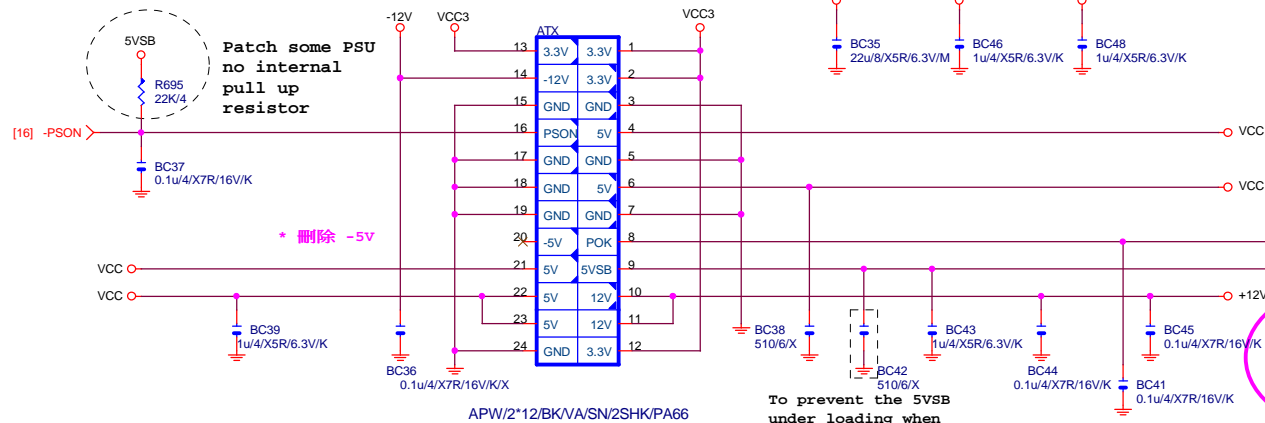
Document Number

Rev1.0

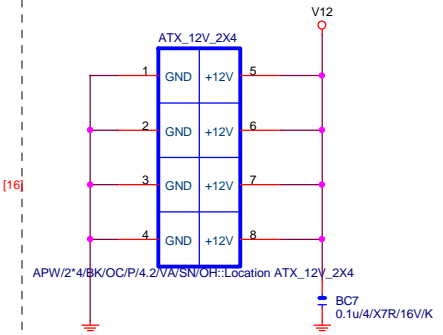
Date:Tuesday, October 13, 2015

Sheet33 of 52

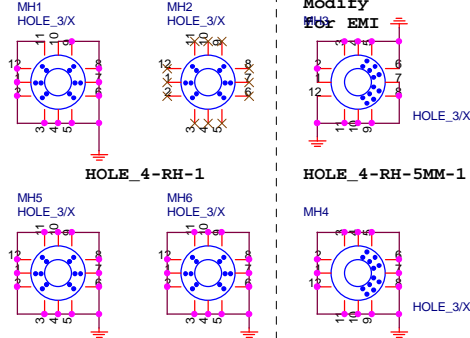
## ATXX24 POWER CONNECTOR



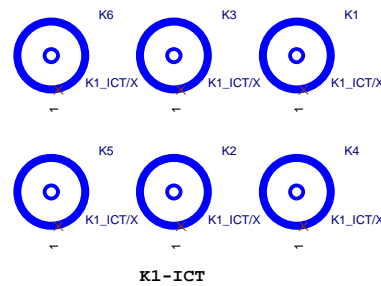
## ATXX4 POWER CONNECTOR



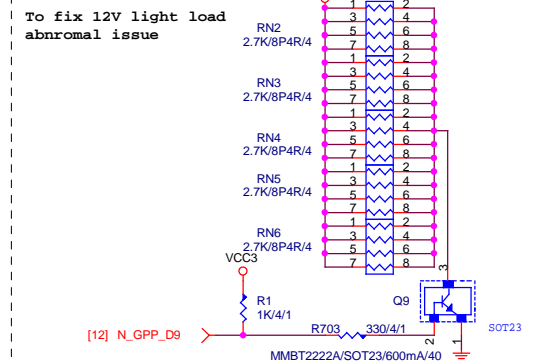
## 螺絲孔



## 固定孔/光學點

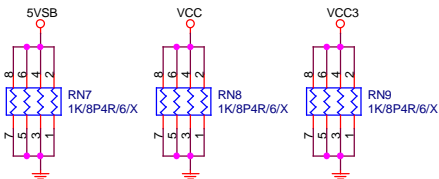


## +12V DUMMY LOAD

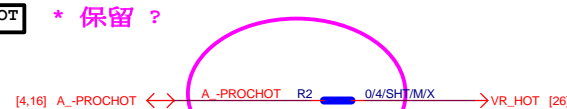


【技術通報R&D技術通報153】

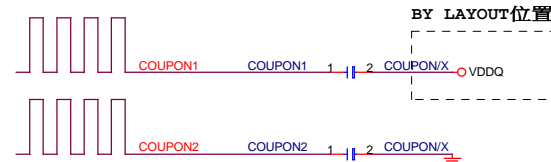
## DUMMY LOAD



## -PROHOT



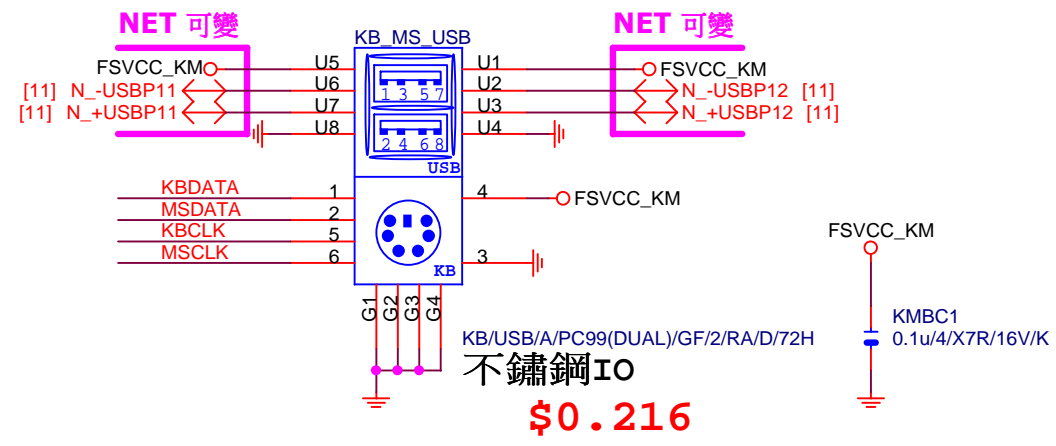
## COUPON



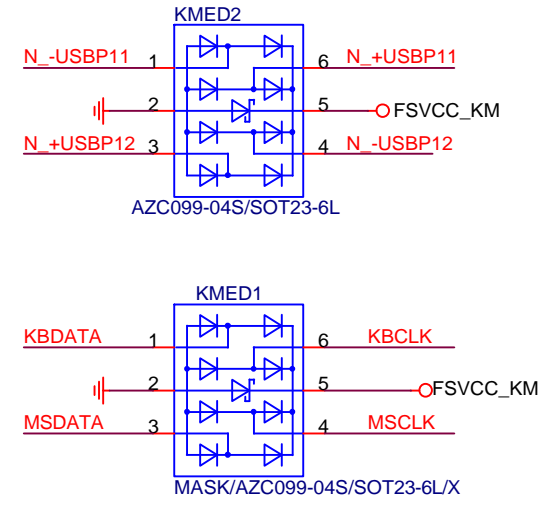
## Gigabyte Technology

ATX POWER CONNECTOR		
Title	Document Number	Rev
Size	GA-B150M-HD3 DDR3-WP	1.0
Date:	Tuesday, October 13, 2015	Sheet 34 of 52

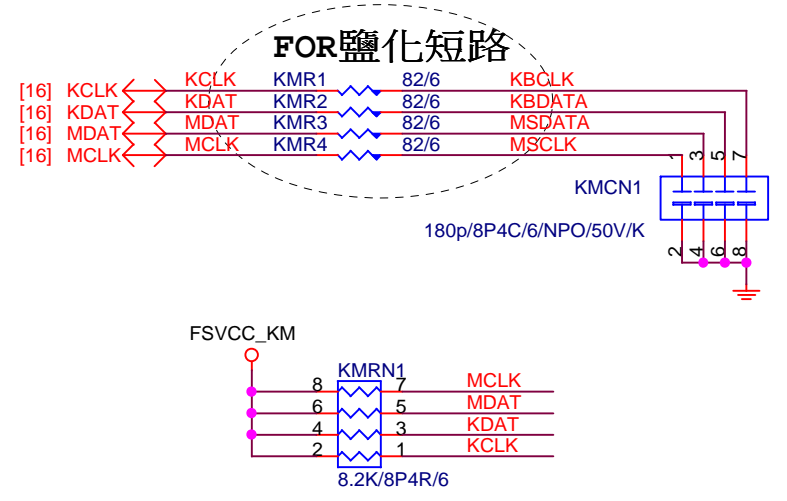
KB\_MS\_USB



ESD

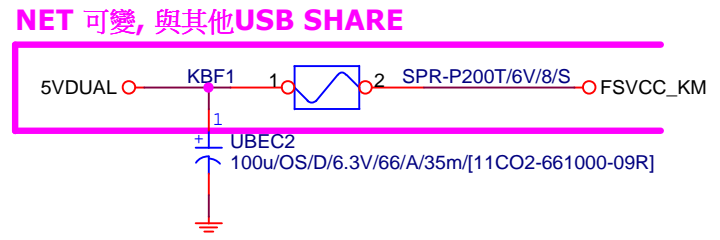


KB\_MS\_USB DAMPING/PU

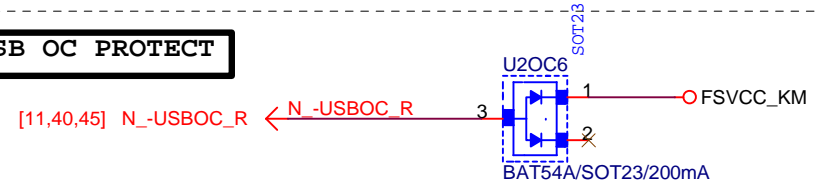


KB\_MS\_USB PWR

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USB OC PROTECT



**Gigabyte Technology**

**AUDIO JACK**

**GA-B150M-HD3 DDR3-WP**

Title

Size A

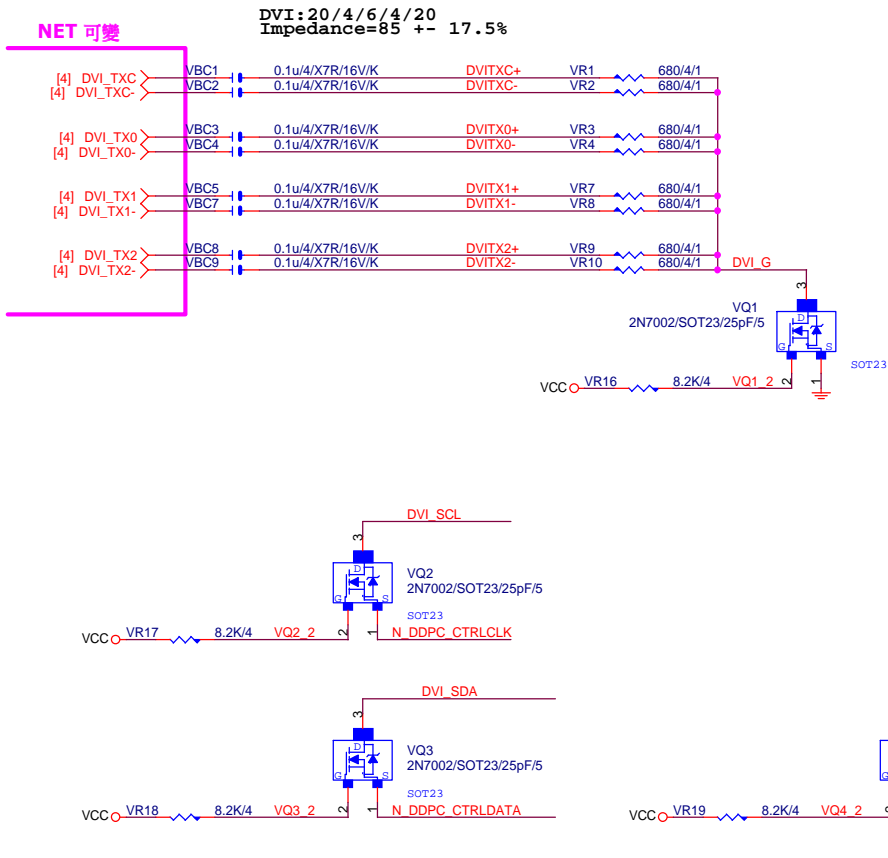
Document Number

Date: Tuesday, October 13, 2015

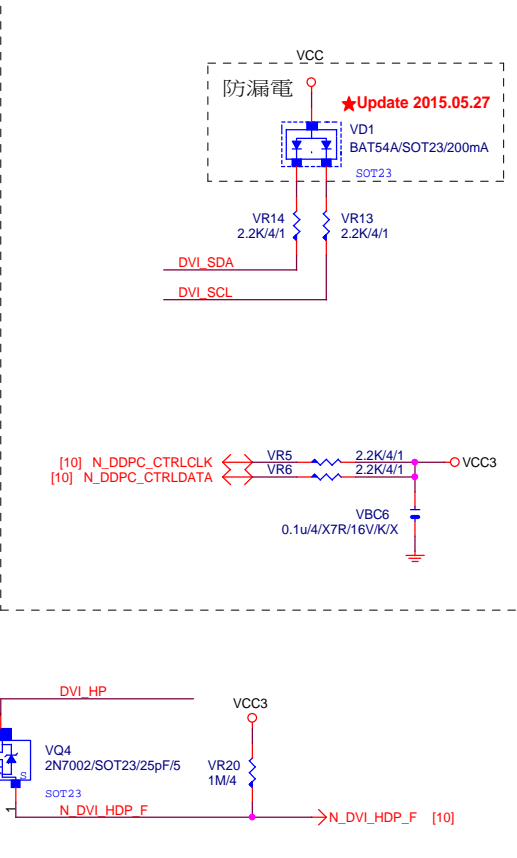
Sheet 35 of 52

Rev 1.0

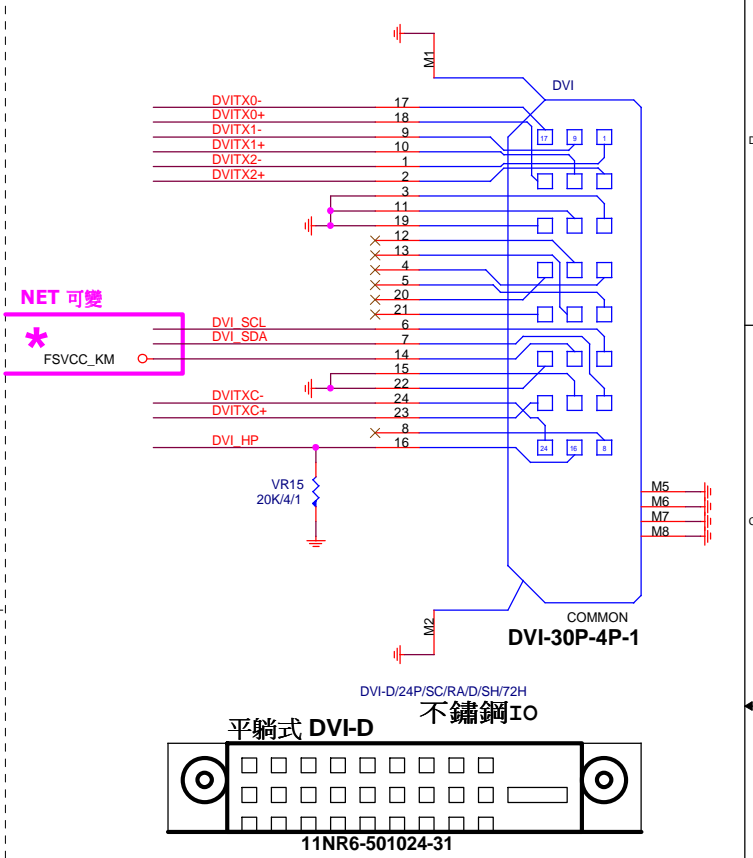
DVI



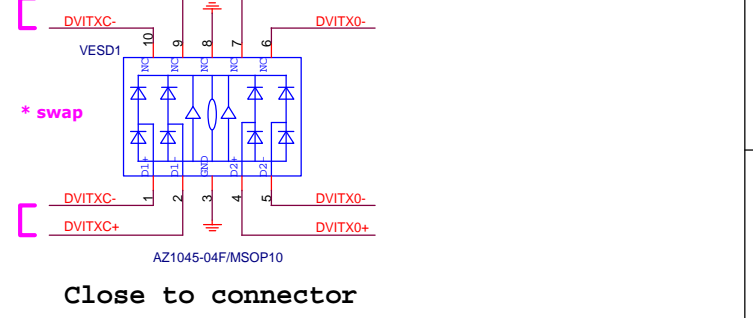
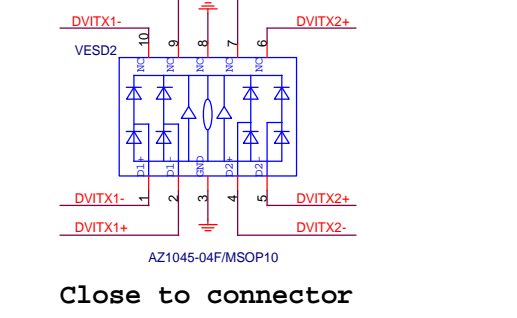
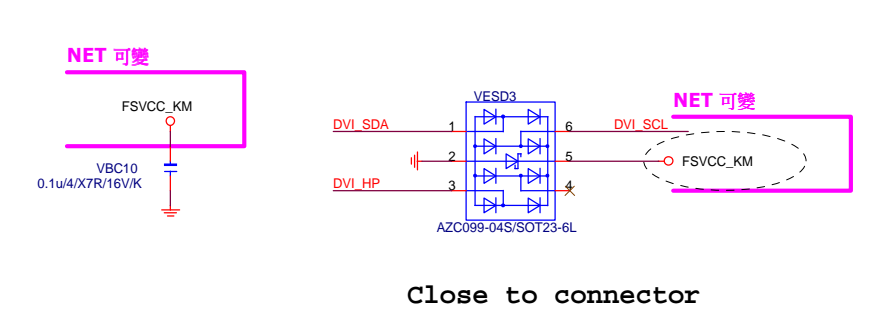
DVI PU



DVI CONN



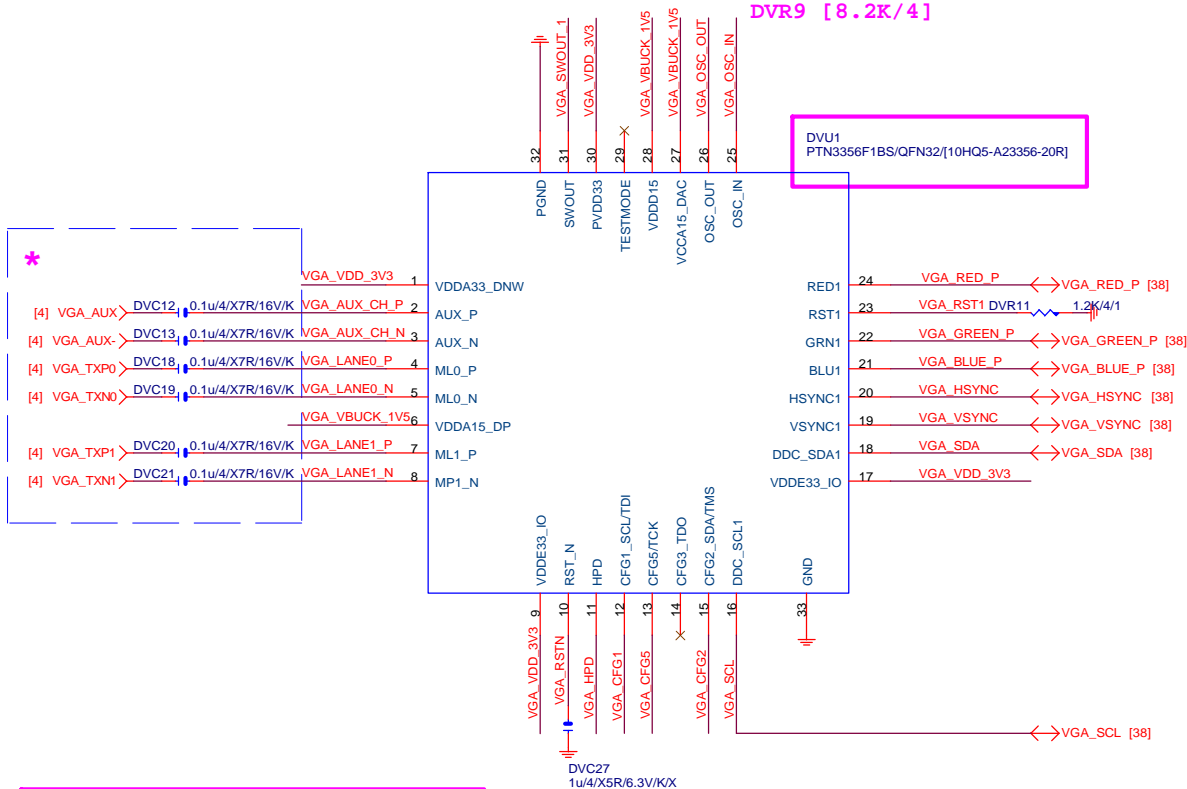
ESD



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

省X'TAL COST DOWN:

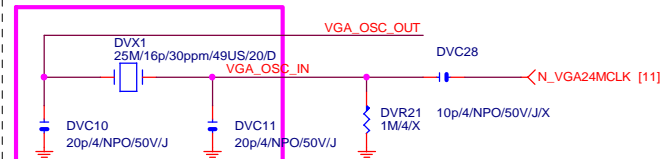
1. 上件:  
DVC28 [10p/4/NPO/50V/J]  
DVC11 [10p/4/NPO/50V/J]~修改值  
DVR10 [8.2K/4]
2. 删除:  
DVX1 [25M/16p/30ppm/49US/20/D]  
DVC10 [20p/4/NPO/50V/J]  
DVR9 [8.2K/4]



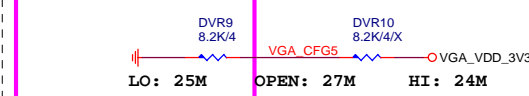
## 放置PCH端



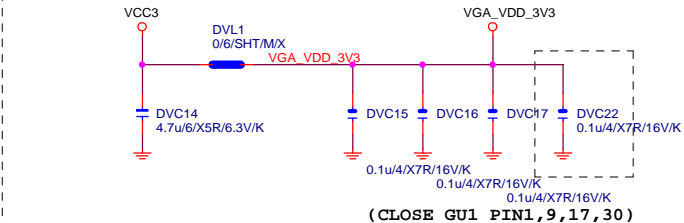
**25M Crystal** FROM PCH 24MHZ ISSUE



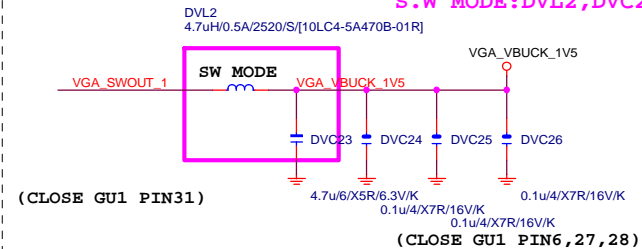
**CFG5** For Crystal Less



## ADAPTER POWER

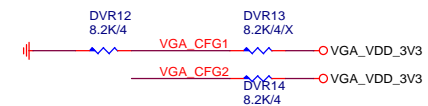


```
LDO  MODE:DVL2,DVC23-->X
S.W  MODE:DVL2,DVC23-->O
```

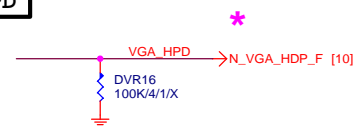


## CFG1&amp;2

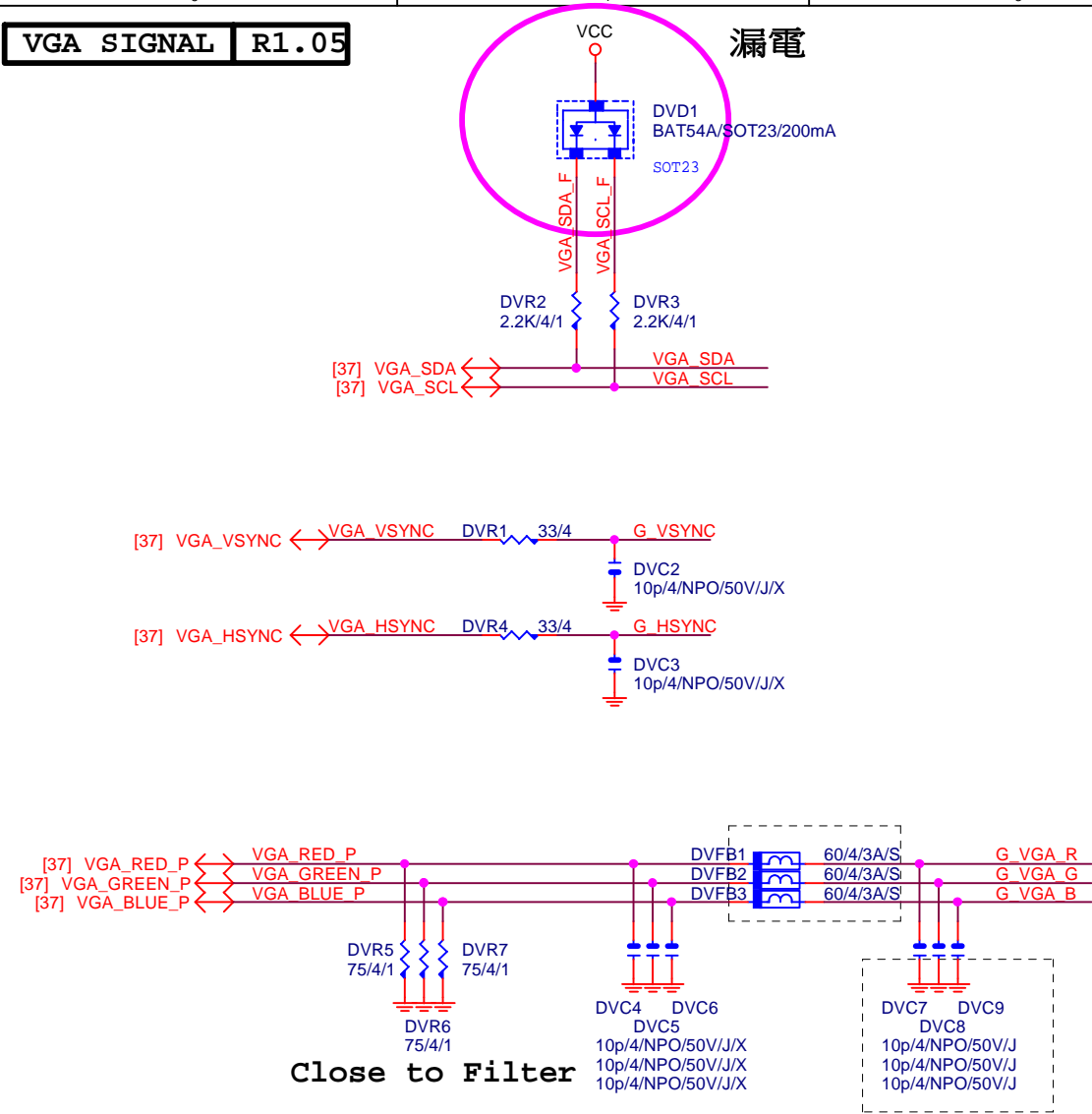
Non-Compliant



HPD

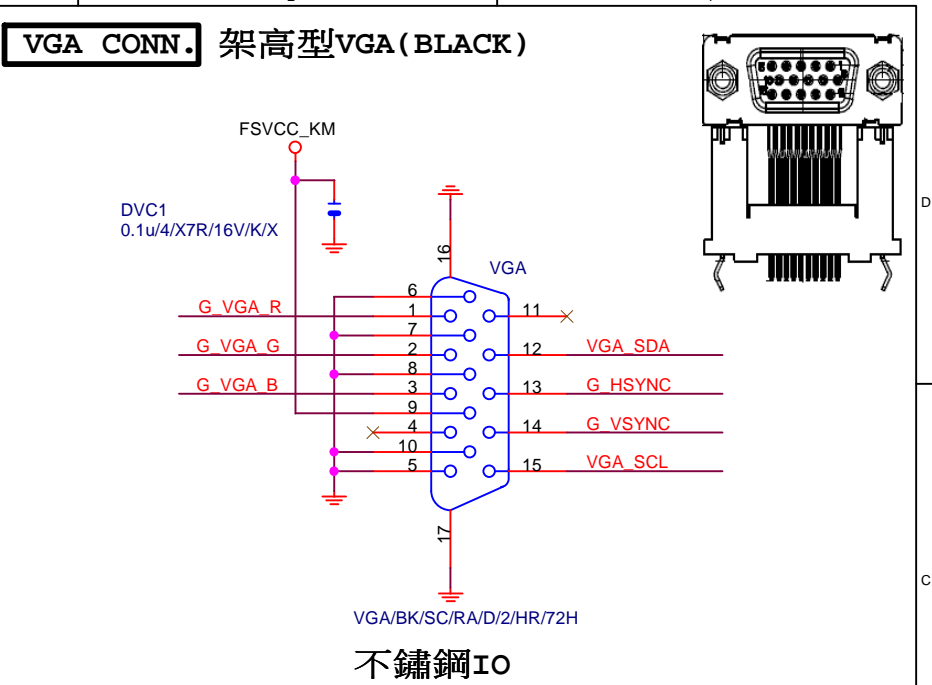


VGA SIGNAL R1.05

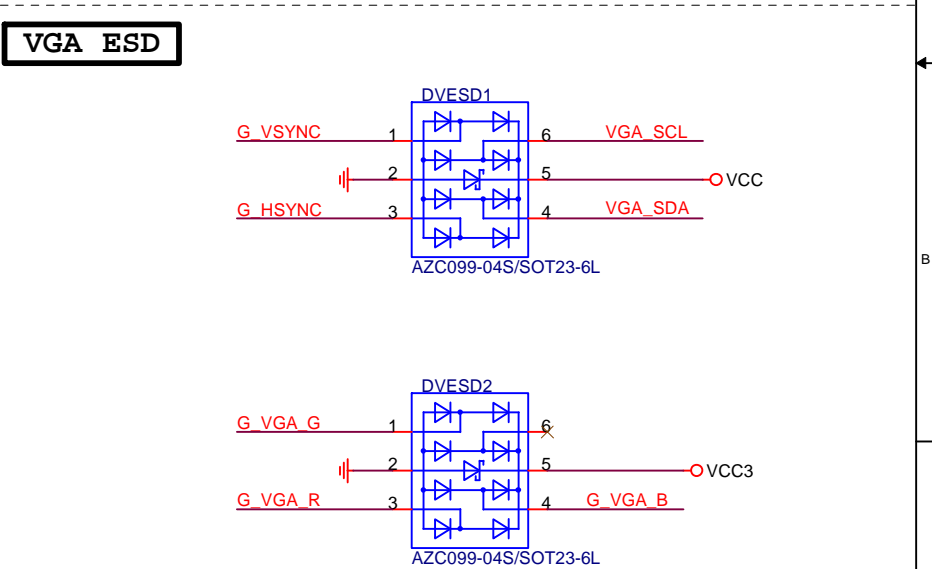


FOR EMI

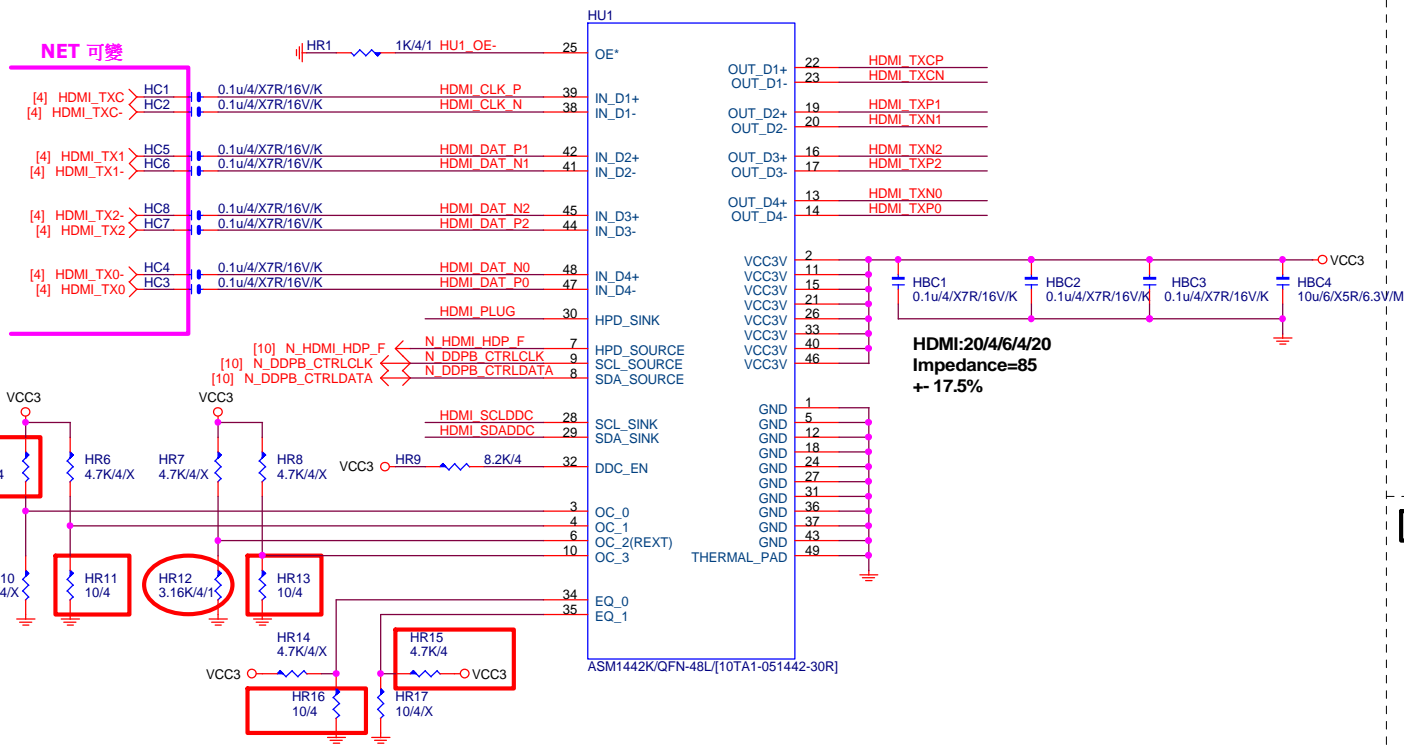
VGA CONN. 架高型VGA (BLACK)



VGA ESD



Title			NXP-PTN3356		
Size	Custom	Document Number	GA-B150M-HD3 DDR3-WP		
Date:	Tuesday, October 13, 2015		Sheet	38	of 52



PTN3360:PIN 4/10/34/35 NC PIN,都不上值;只上HR12:10K

ASM1442:紅色框要上,HR12:3.16K

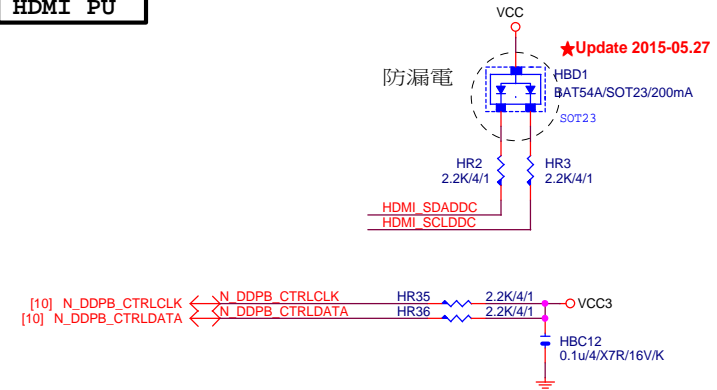
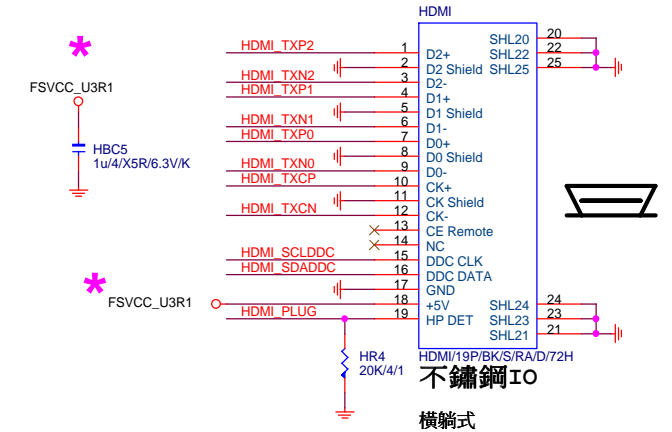
【技術通報R&D技術通報150】

HDMI eye diagram1.4版(deep color)會fail

原因: 因目前的HDMI訊號過長,造成RISING TIME過慢,而會壓到eye diagram

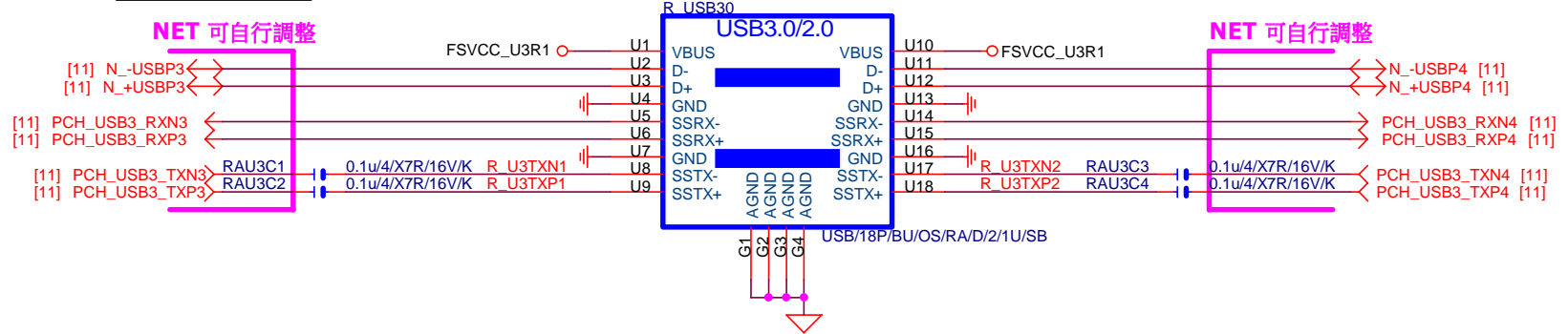
改善: ASMEDIA ASM1442 : 3.16K(PIN6 PULL DOWN電阻) 10ohm(PIN4 PULL

DOWN電阻)

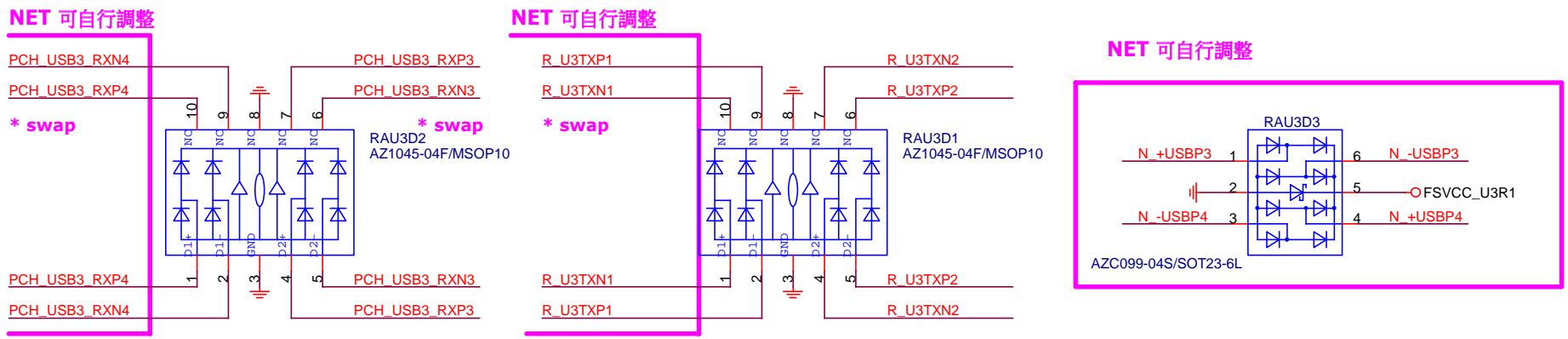


R\_USB30\_1

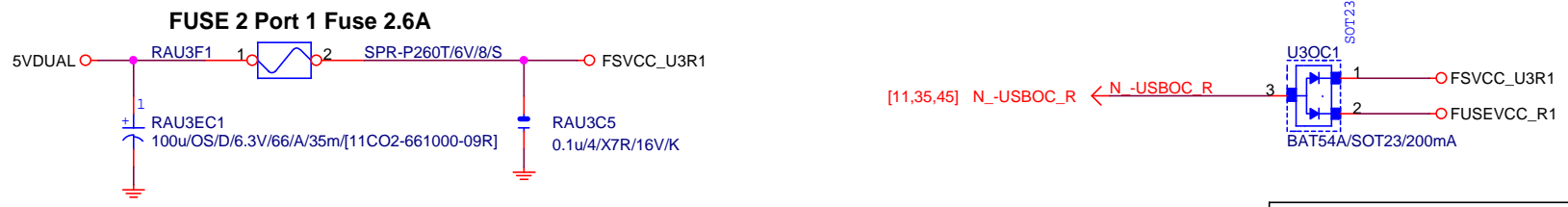
ESD 可自行SWAP PIN ,CONN端 NET 名稱 不可



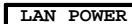
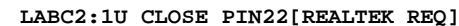
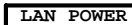
ESD



FUSE





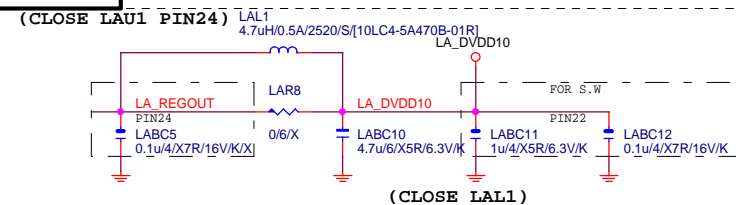
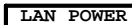
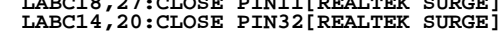
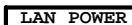


3VDUAL\_LAN1

3VDUAL\_LAN1

PIN23  
LABC6  
0.1uF/4X7R/16V/K

(CLOSE LAN1 PIN23)



NOTE:  
RT8106E:PIN3,11,22,24-->NC  
LABC2LABC3,LABC5,LABC18,LABC27-->N/A

**Gigabyte Technology**

Title	<b>Realtek RTL8111GUS</b>
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**GA-B150M-HD3 DDR3-WP**

Size Custom	Document Number	<b>GA-B150M-HD3 DDR</b>		
Date:	Tuesday, October 13, 2015	Sheet	41	of 52

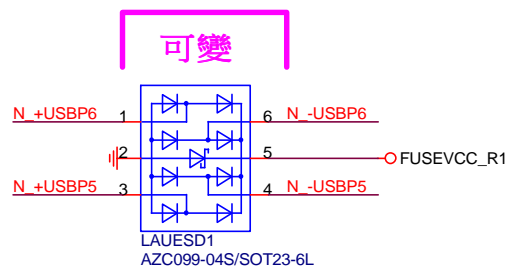
	F
--	---

2

## R1.06

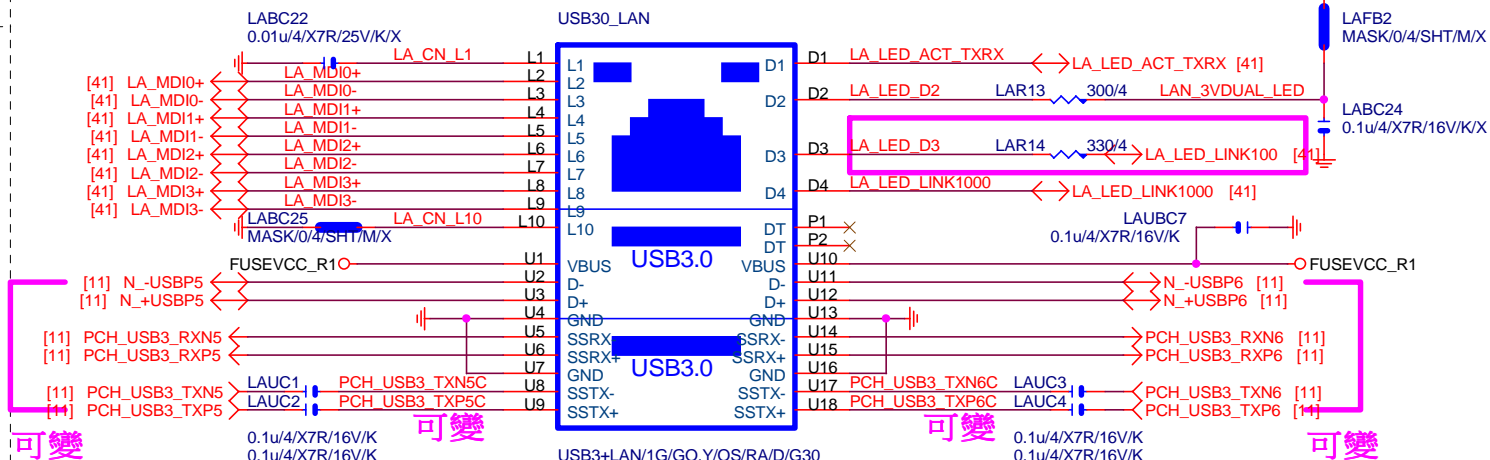
note:可變更USB NAME

RMA ESD PROTECT



note:可變更USB NAME

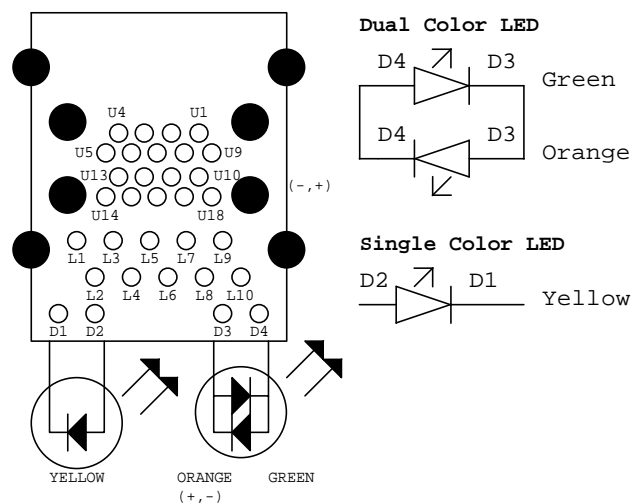
[RTL8111G]



LA MDI-->100歐姆:[20/4/8/4/20]

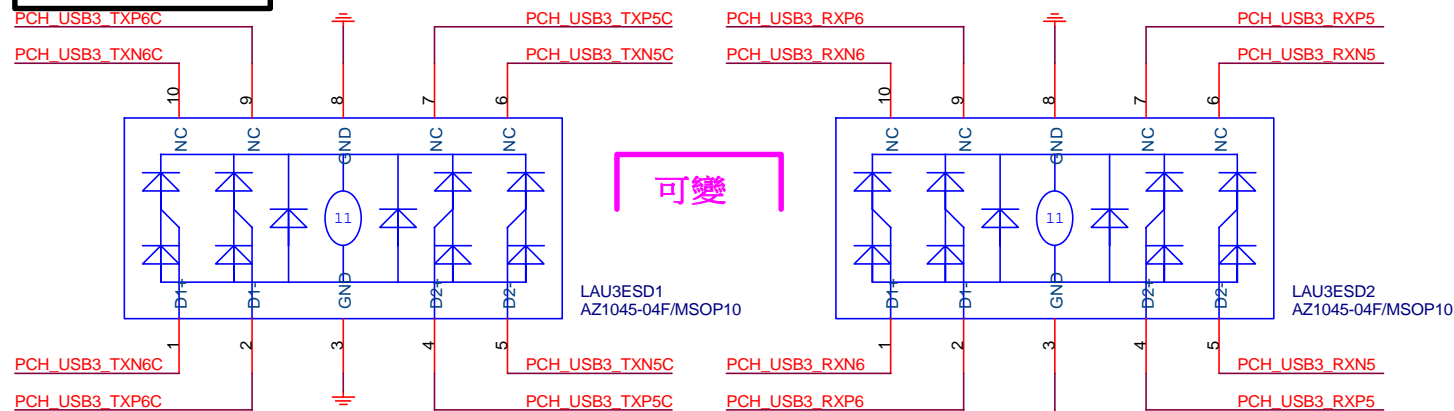
[www.teknisi-indonesia.com](http://www.teknisi-indonesia.com)

### USB30\_LAN LAYOUT示意圖



## RMA ESD PROTECT

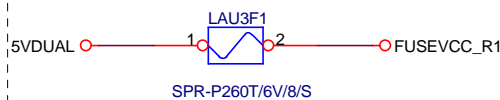
note:可變更USB NAME



## USB POWER

note:可變更FUSE

可變



Close to connector  
FUSE-0805

## EMI SHORT PAD

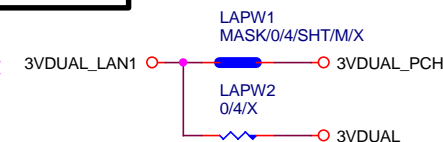
PS:視EMI需求



## LAN POWER

note: lan power連接及電流

可變



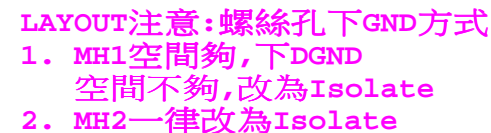
## Gigabyte Technology

## LAN CONNECTOR-RTL8111G

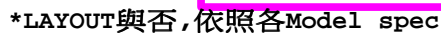
Size	Document Number
Custom	

GA-B150M-HD3 DDR3-WP

Date: Tuesday, October 13, 2015 Sheet 42 of 52



<input type="radio"/> MH1	<input type="radio"/> MH2	
DGND	Isolate	



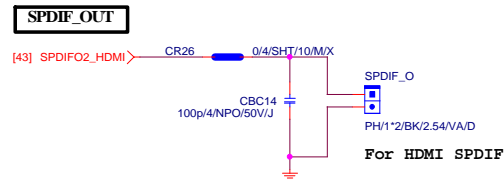
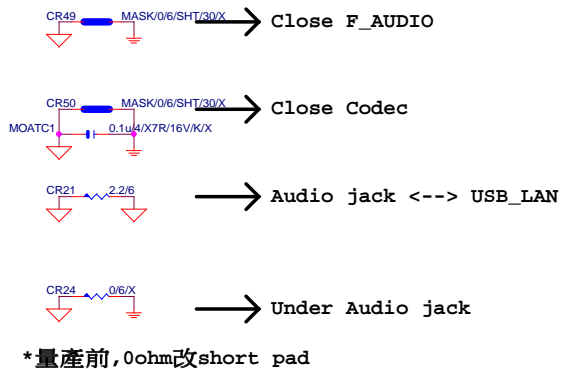
VALUE可變,LED顏色請自行修改  
(預設:低亮度黃色LED:LED/Y/6/S)

LAYOUT注意:要加  
GND切割線

## 音效區域印刷

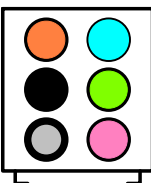
BOM OPTION : 1. Chemicon音效電容  
2. 金屬外罩 Reserve (上件與否,依照各Model spec)  
3. LED Reserve (上件與否和LED顏色,依照各Model spec)

Rev 0.5



SPDIF\_IN

AZALIA JACK

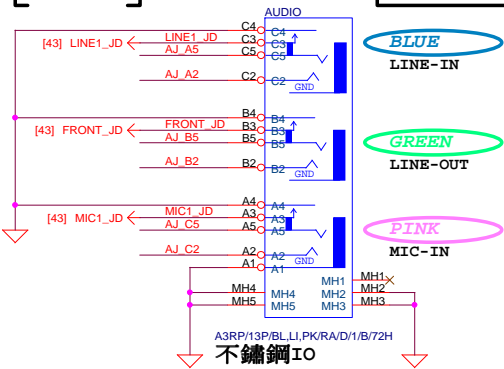


AZALIA JACK

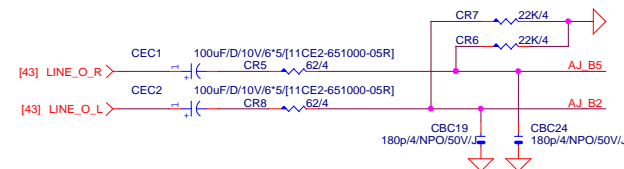
BLUE  
LINE-IN

GREEN  
LINE-OUT

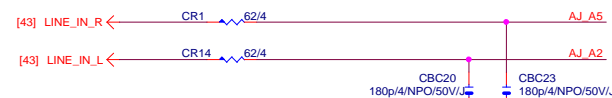
PINK  
MIC-IN



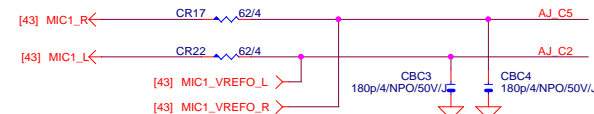
LINE-OUT



LINE-IN



MIC-IN

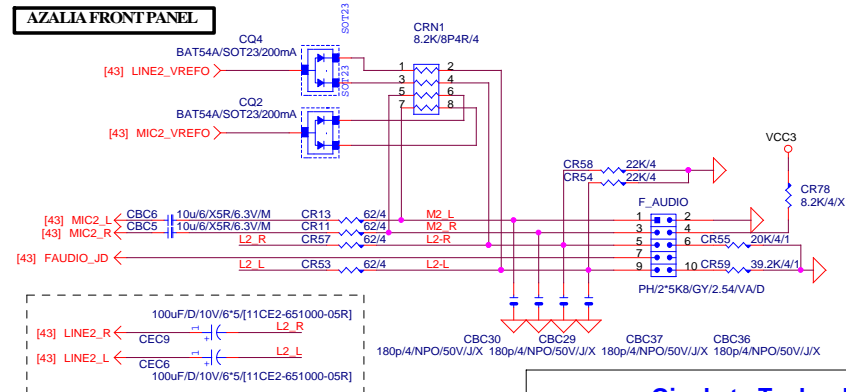


SURROUND

CEN/LFE

SURRBACK

AZALIA FRONT PANEL



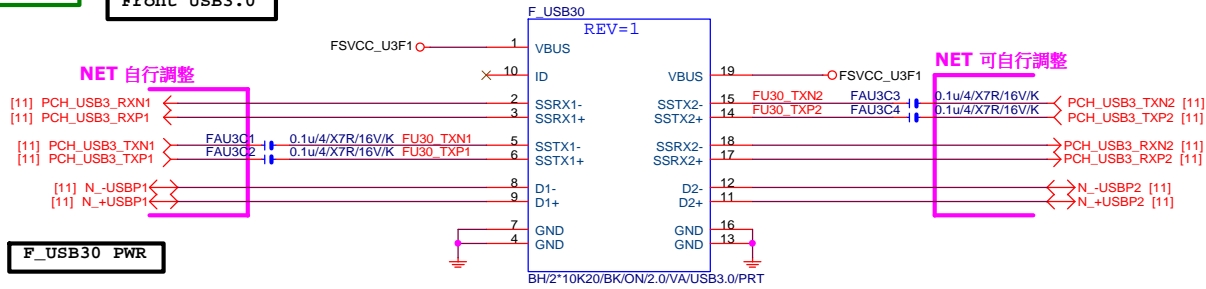
Gigabyte Technology

AUDIO JACK

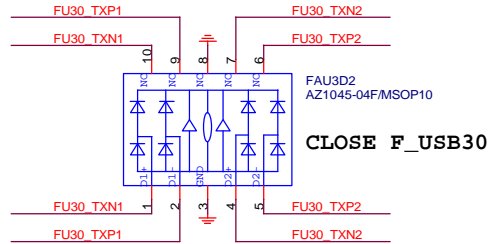
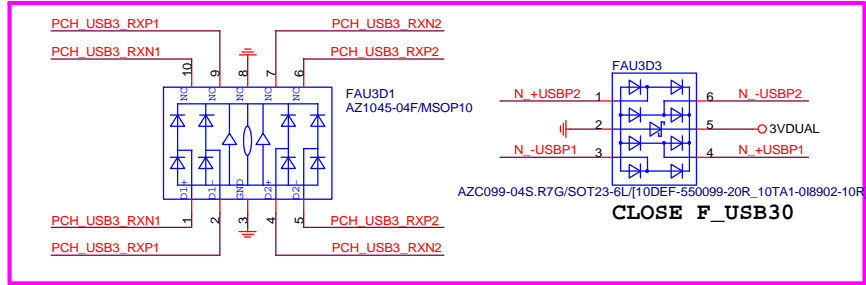
Title	Document Number
Size	GA-B150M-HD3 DDR3 W/P
Custom	1.0
Date:	Tuesday, October 13, 2015
Sheet	44 of 52

Rev: 0.53

Front USB3.0

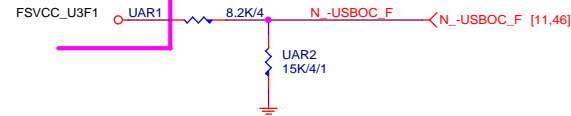


NET 可自行調整



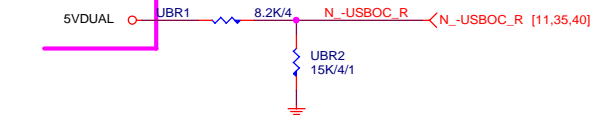
-USBOC\_F

POWER 可自行調整

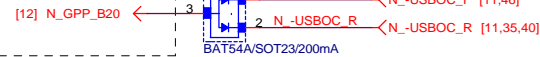


-USBOC\_R

POWER 可自行調整



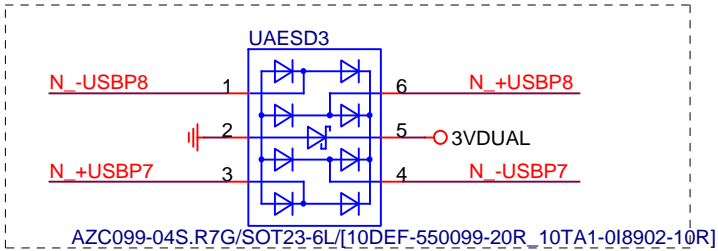
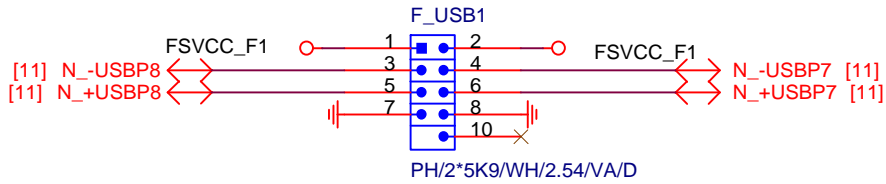
\* 接 PCH  
N\_GPP\_B20(SMI) &  
PCH PU 3Vdual



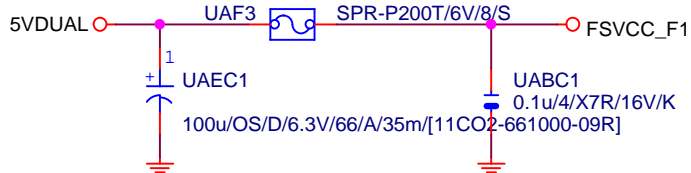
Gigabyte Technology

Title		R_USB30,F_USB30,USB_OC	
Size	Document Number	GA-B150M-HD3 DDR3-WP	
Custom		Rev: 1.0	
Date:	Tuesday, October 13, 2015	Sheet	45 of 52

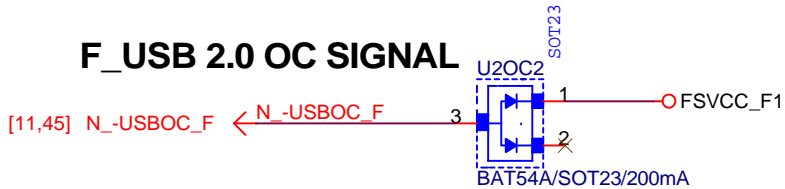
NET 可變



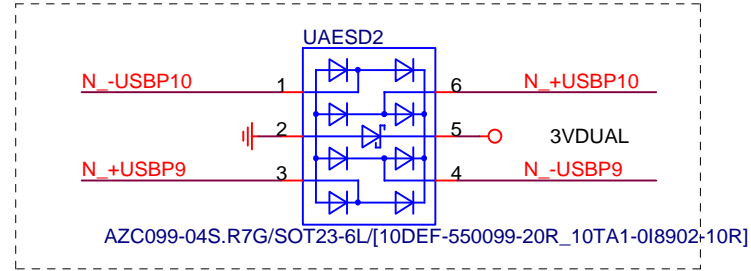
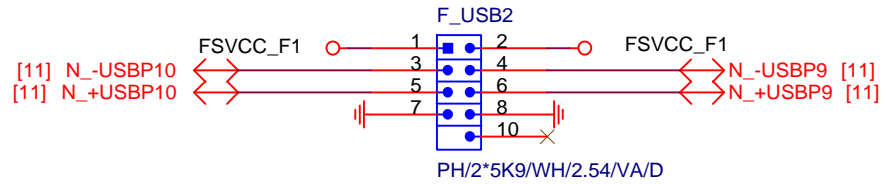
Close to connector  
FUSE 2 Port 1 Fuse 2A



F\_USB 2.0 OC SIGNAL



NET 可變



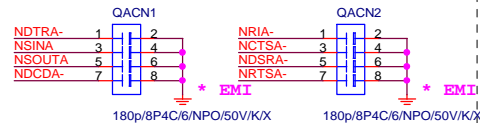
Close to connector  
FUSE 2 Port 1 Fuse 2A



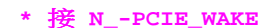
Gigabyte Technology

USB2.0

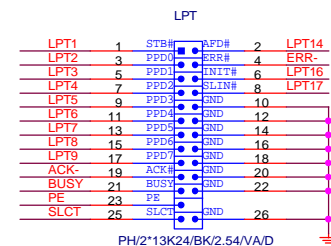
Size Custom	Document Number	Rev
	GA-B150M-HD3 DDR3-WP	1.0
Date:	Tuesday, October 13, 2015	Sheet 46 of 52



COM RI



## LPT PORT



\* footprint :  
PIN2X13 LPT-CUT24

## TPM CONNECTOR

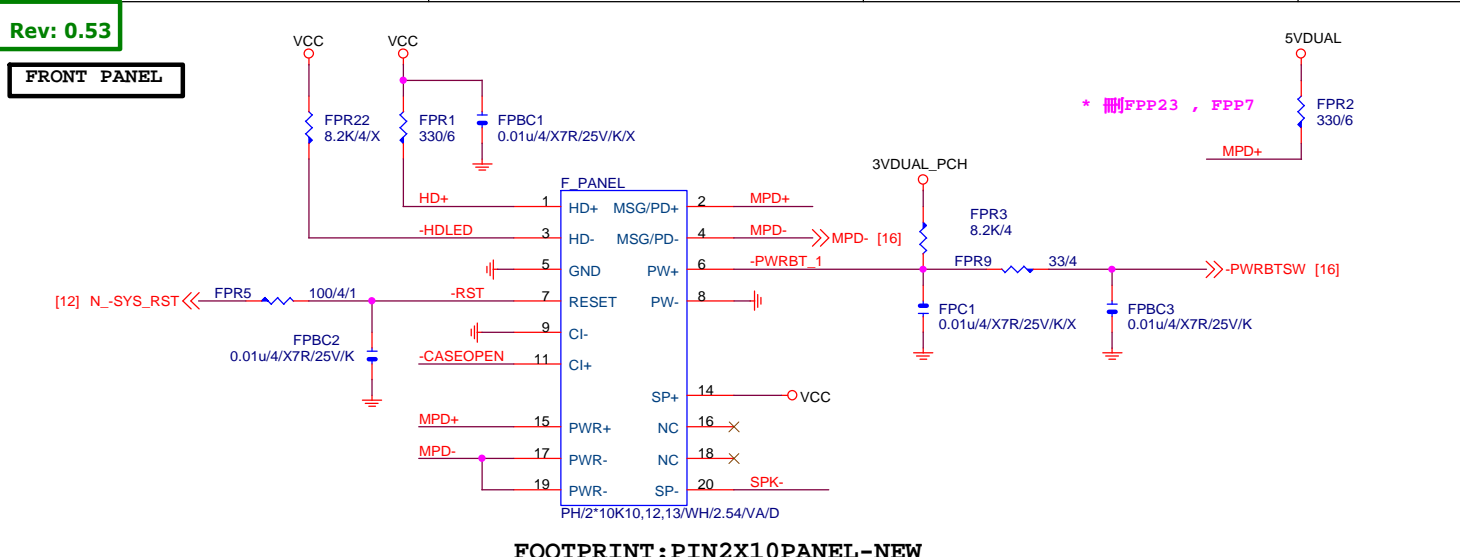
## PH2X10-CUT4 TPM



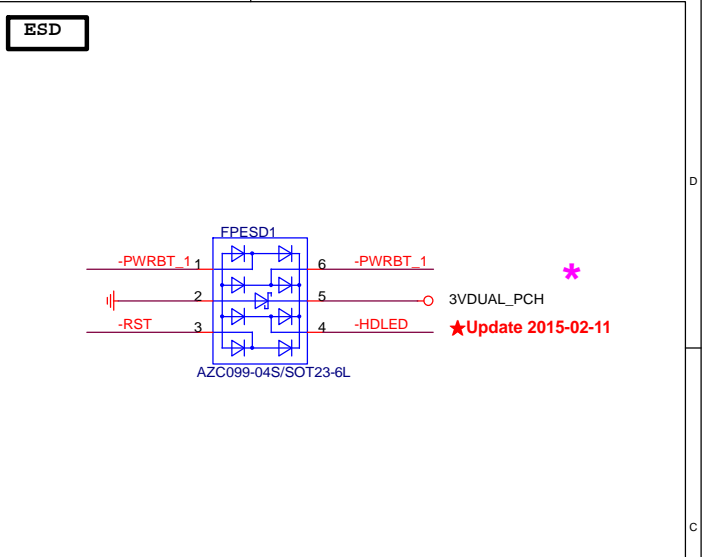
Title			
FP,F_USB,USB PWR,BZ			
Size	Document Number	Rev	
Custom	GA-B150M-HD3	1.0	
Date: Tuesday, October 13, 2015		Sheet	47 of 52

Rev: 0.53

FRONT PANEL

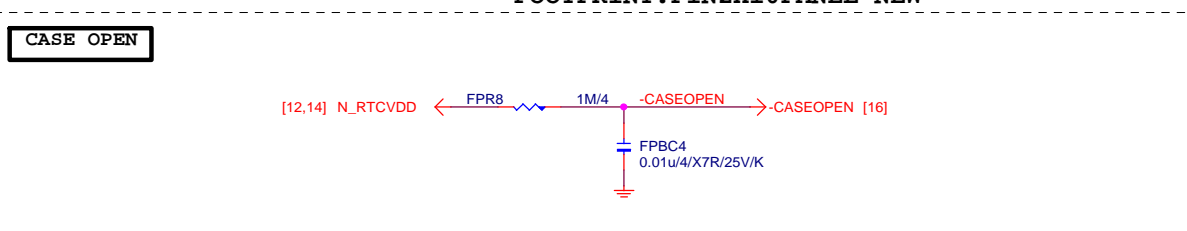


ESD

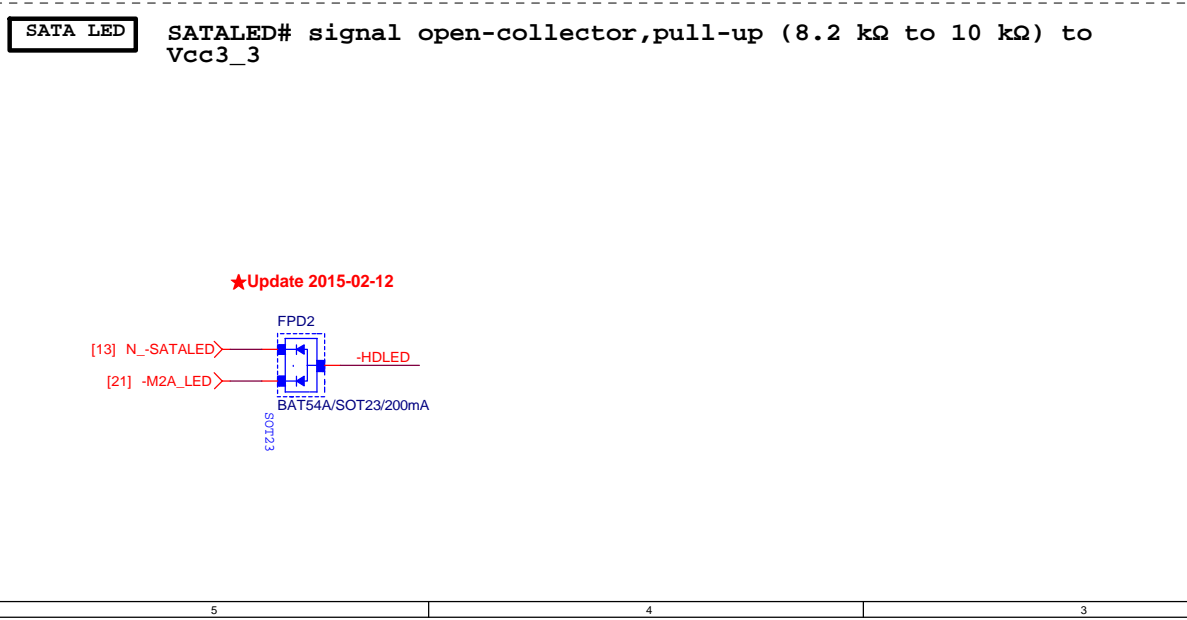


FOOTPRINT: PIN2X10PANEL-NEW

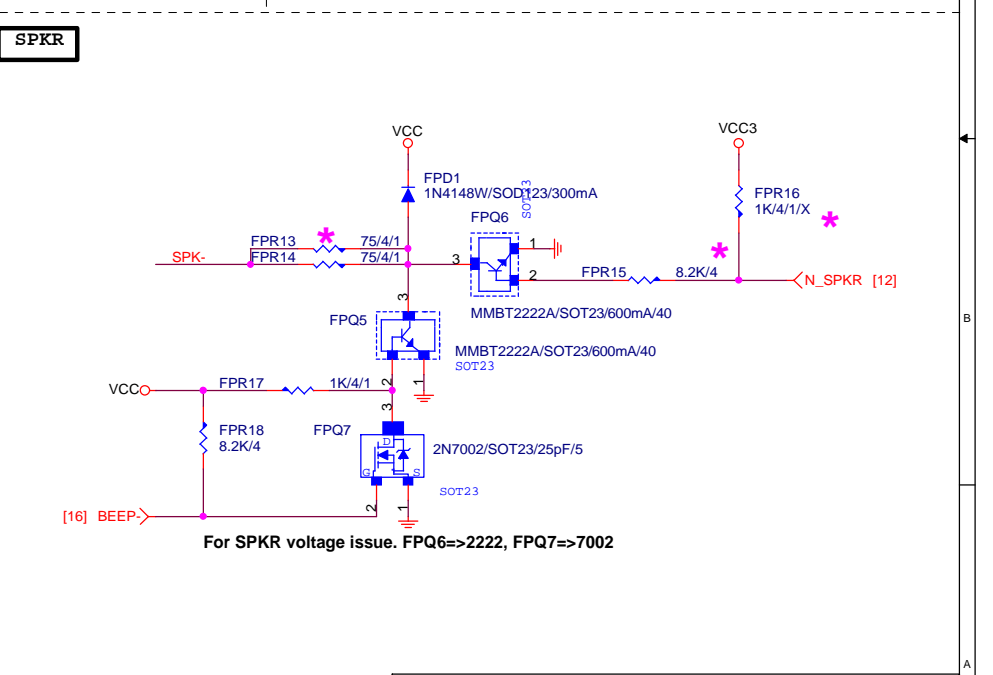
CASE OPEN



SATA LED

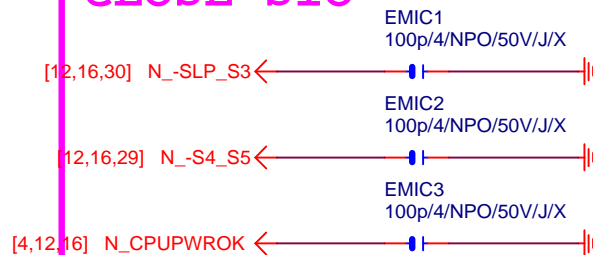


SPKR





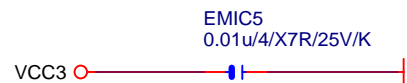
## CLOSE SIO



## CLOSE PCH



## For H1703M-HD3 USB



# GIGABYTE™

Title

EM/ESD

Size  
A

Document Number

GA-B150M-HD3 DDR3-WP

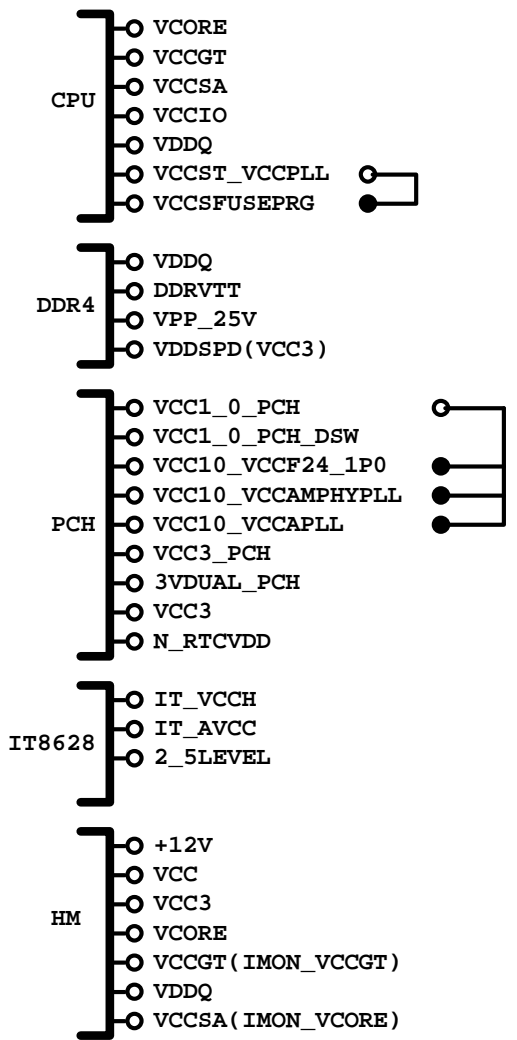
Rev

1.0

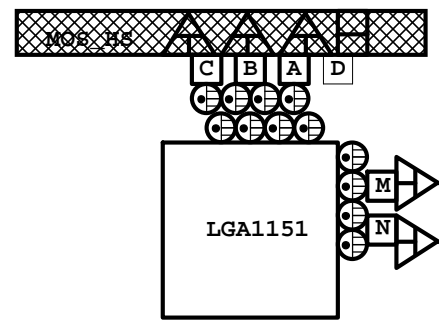
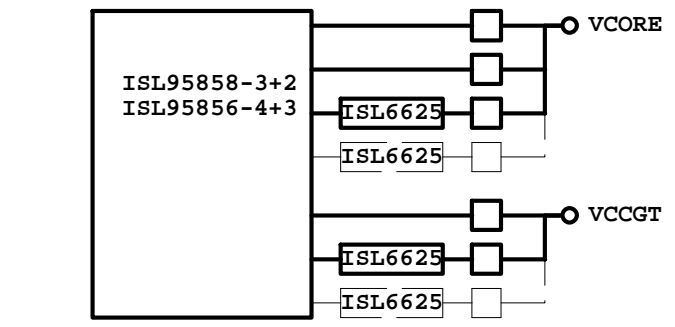
Date: Tuesday, October 13, 2015

Sheet 49 of 52

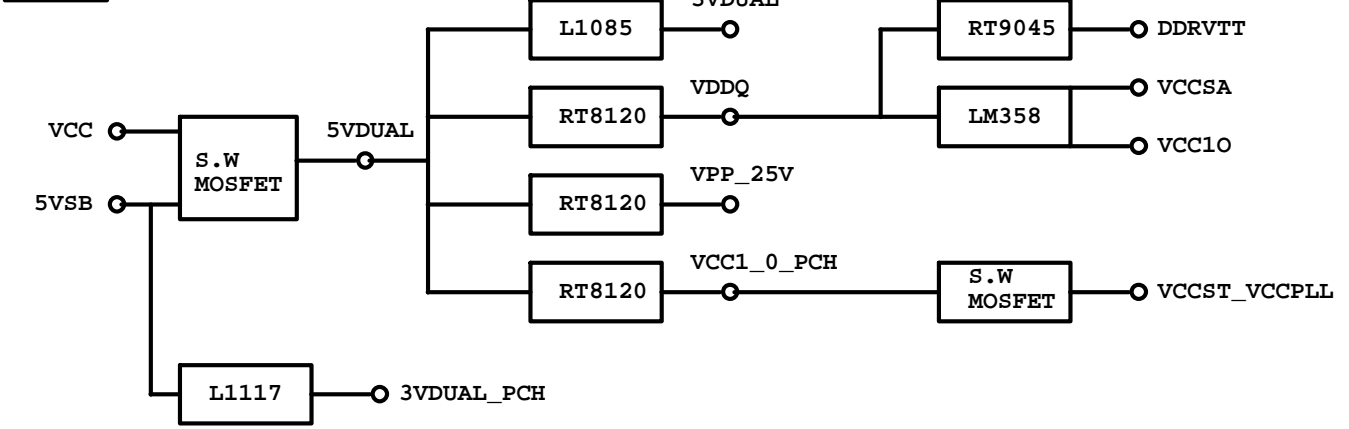
POWER BLOCK MAP



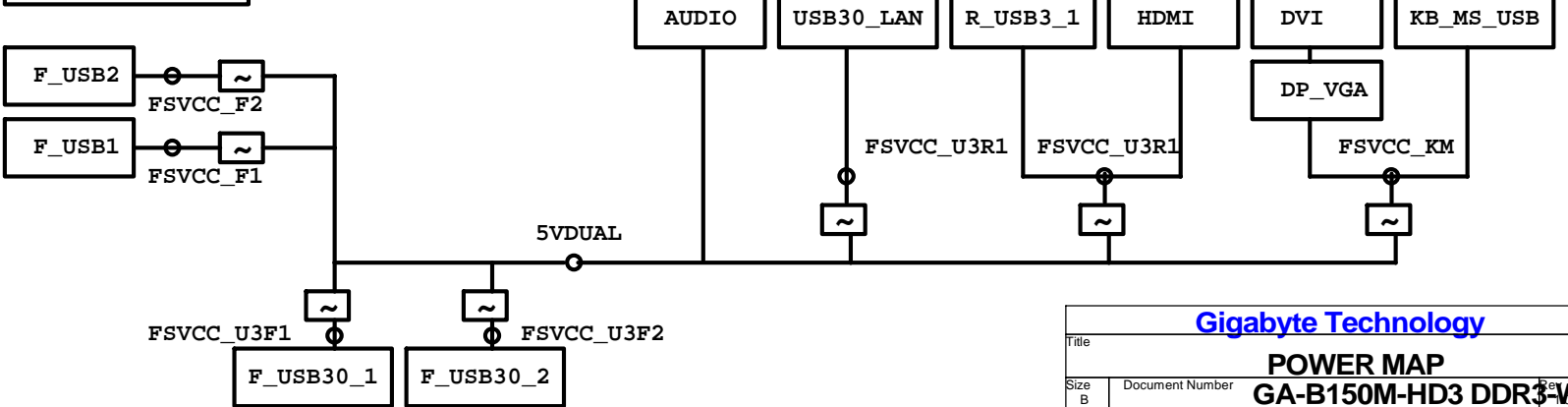
VCORE/VCCGT



POWER



FUSE POWER F/R



固態電容料號.請自行修改

日系黑色固態	Capture Value
11C02-C85600-01R	560u/FP/D/6.3V/68/C/8m
11C05-C82700-01R	270u/FP/D/16V/88/C/12m
11C05-C61000-01R	100u/OS/D/16V/66/C/30m
11C02-C51000-01R	100u/FP/D/6.3V/65/C/13m

日系一般固態	Capture Value
11CO2-685600-01R	560u/FP/D/6.3V/68/8m
11CO5-882700-01R	270u/FP/D/16V/88/12m
11CO5-661000-03R	100u/OS/D/16V/66/30m
11CO2-651000-02R	100u/OS/D/6.3V/66/30m

台系固態	Capture Value
11CO2-661000-09R	100u/OS/D/6.3V/66/A/35m
11CO5-691000-09R	100u/OS/D/16V/69/A/35m
11CO5-8C2700-09R	270u/FP/D/16V/8C/A/10m
11CO2-695600-09R	560u/FP/D/6.3V/69/A/11m

## IRON CHOKE

	料號	Capture Value	SIZE	Footprint
DIP	11LC5-M4500C-01R	0.5uH/40A/IMD109/M/D	10*10	CHOKE05U-40A-1PQ-3
DIP	11LC5-M2500C-01R	0.5uH/20A/IMD0809/M/D	8*8	CHOKE1U-R50M-IF

## Ferrite

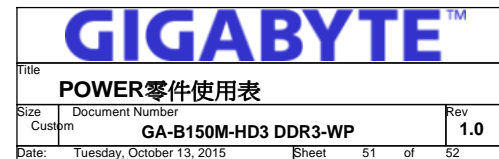
	料號	Capture Value	SIZE	Footprint
DIP	11LC5-F3500C-11R	0.5uH/32A/INCG109/FSI/D	10*10	CHOKE05U-40A-1PQ-3
DIP	11LC5-F2500C-11R	0.5uH/25A/INC0809/F/D	8*8	CHOKE1U-R50M-IF
SMD	未建(SIUC1007-R30M-JJ1W)		10*7	CHOKE11X8MM-SMD

## BEAD

	料號	Capture Value	SIZE	Footprint
DIP	10LFB-15470A-01R	47/4030/15A/S	4*3	BEADC8B-BPH_SMD

PWM料號

		料號	Capture Value	Footprint
PWM	ISL95856	10TA1-695856-01R		IC52QFN-6x6-G
PWM	ISL95858	10TA1-695858-01R		IC52QFN-6x6-G
PWM	IR35201	10TA1-635201-00R		IC56QFN-9VRS4339
PWM	IR3570	10TA1-603570-00R		IC40MLFP-ISL95835

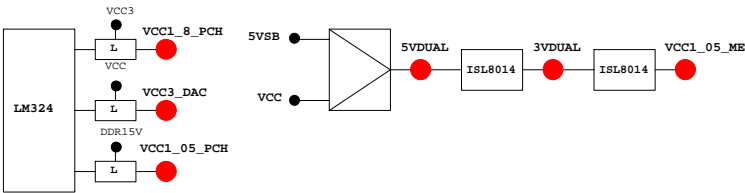


PCH GPIO LIST TABLE					
PIN NAME	PWR	Default	USAGE	NOTE	
GP0	MAIN	H-Z	GPI	GPIO0	N/A
GP1/TACH1	MAIN		GPI	GPIO1	N/A
GP2/PIRQE#	MAIN		GPI	-PIRQE	P/U 8.2K VCC3
GP3/PIRQF#	MAIN		GPI	-PIRQF	P/U 8.2K VCC3
GP4/PIRQG#	MAIN		GPI	-PIRQG	P/U 8.2K VCC3
GP5/PIRQH#	MAIN		GPI	-PIRQH	P/U 8.2K VCC3
GP6/TACH2	MAIN		GPI	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

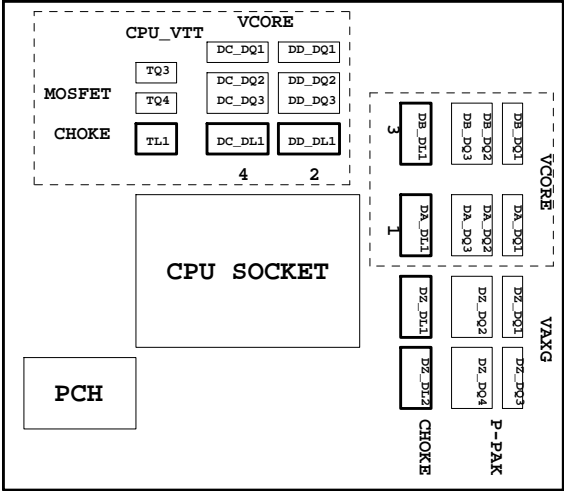
Super I/O ITE8720 GPIO Table

PIN NAME	USAGE	NOTE
SVC/PECI_RQT/GP14	-PECI_REQ	
PWROK1/GP13	PWROK1/ITE_PWROK	
KRST#/GP62	-KBRST	
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	-PCI_E_RST	
RSMRST#CIRRXL/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/BUSSIO	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	
VIDO0/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/SMBD_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/SMBD_R	-EN_PWM2	
PSI_L/FAN_CLT5/CIRRXL2/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：

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 Terminatio
VREF_CA_A/VREF_CA_B	DRAM Address Ref
VREF_DQ_A/VREF_DQ_B	DRAM Data Ref

散熱模組料號：

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
	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