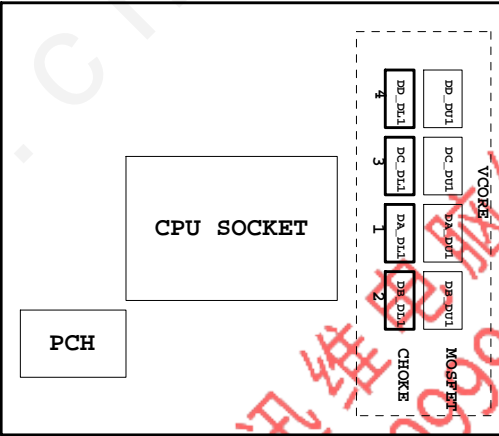


01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1151-A
05	CPU_LGA1151-B-DDR3
06	CPU_LGA1151-C
07	CPU_LGA1151-D
08	DDR 3 CHANNEL A
09	DDR 3 CHANNEL B
10	PCH CLOCK BUFFER
11	PCH DMI,USB,PCIE
12	PCH MISC
13	PCH SATA,PCIE,SATA EXPRESS
14	PCH_PWR,GND
15	Dual BIOS
16	I/O ITE8628
17	HWM
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

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



Gigabyte Technology

Cover Sheet

GA-B150M-HD3 DDR3-WP

Document Number

Date: Tuesday, October 13, 2015 Sheet 1 of 52

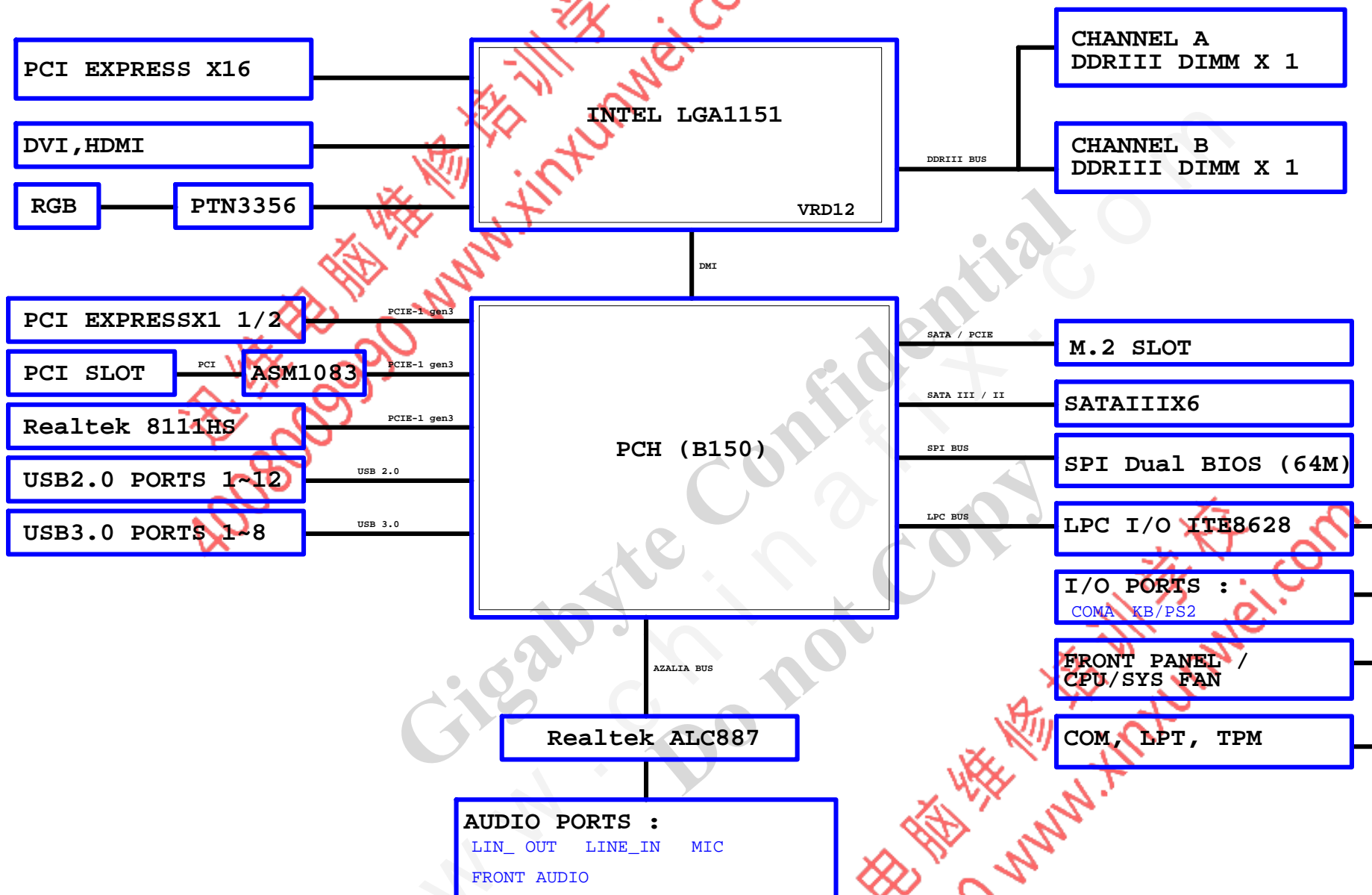
Circuit or PCB layout change

2015/10/08

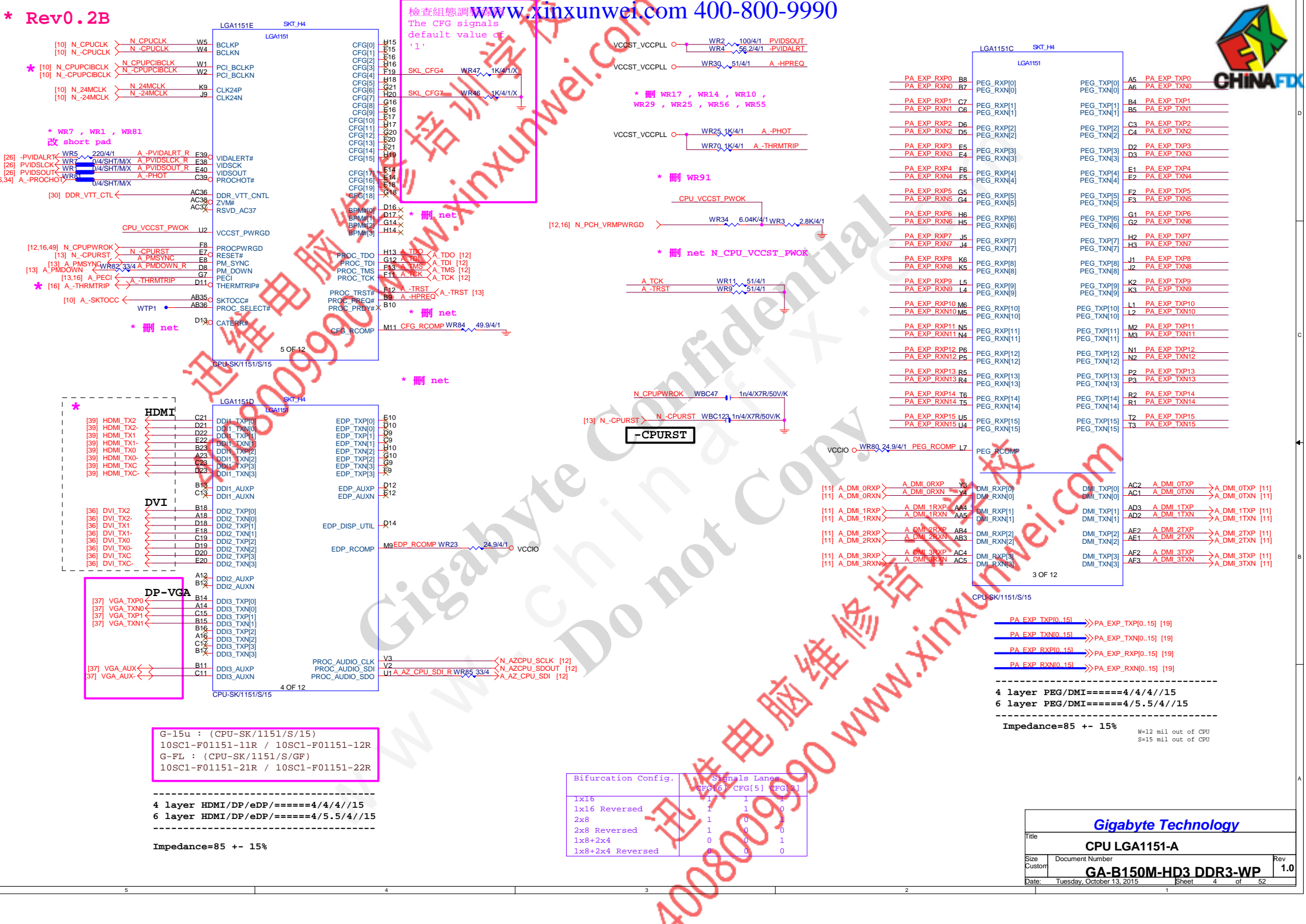
[illegible][illegible]

BLOCK DIAGRAM

www.xinxunwei.com 400-800-9990



Rev0.2B



G-15u : (CPU-SK/1151/S/15)
10SC1-F01151-11R / 10SC1-F01151-12R
G-FL : (CPU-SK/1151/S/GF)
10SC1-F01151-21R / 10SC1-F01151-22R

4 layer HDMI/DP/eDP=====4/4/4//15
6 layer HDMI/DP/eDP=====4/5.5/4//15

Impedance=85 +- 15%

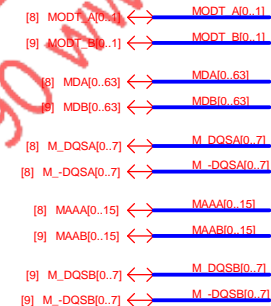
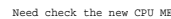
Bifurcation Config.	Signals Lanes		
	CFG[6]	CFG[5]	CFG[2]
1x16	1	1	1
1x16 Reversed	1	1	0
2x8	1	0	0
2x8 Reversed	1	0	0
1x8+2x4	0	0	1
1x8+2x4 Reversed	0	0	0

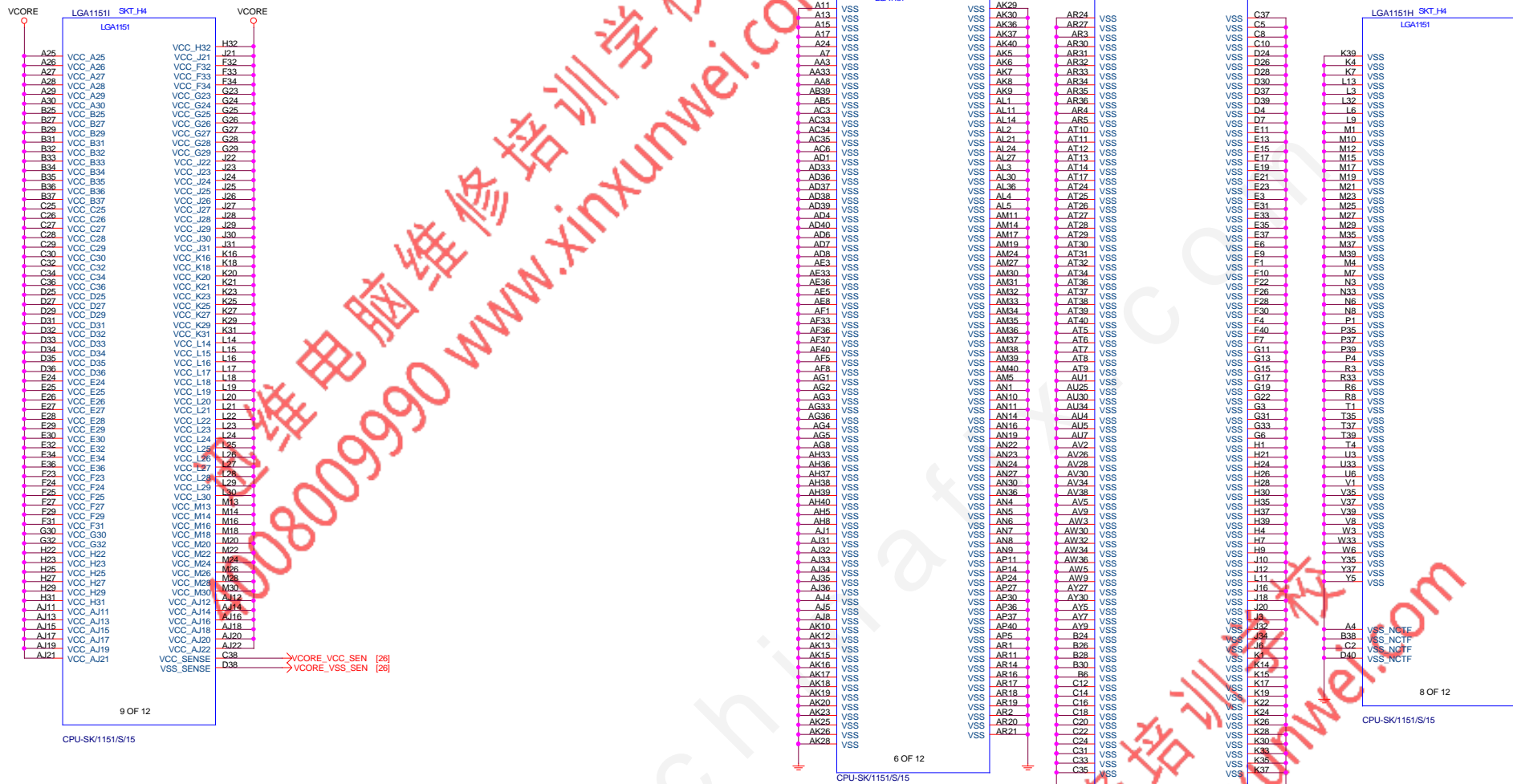
PA_EXP_TXP[0..15] >>> PA_EXP_TXP[0..15] [19]
PA_EXP_TXN[0..15] >>> PA_EXP_TXN[0..15] [19]
PA_EXP_RXP[0..15] >>> PA_EXP_RXP[0..15] [19]
PA_EXP_RXN[0..15] >>> PA_EXP_RXN[0..15] [19]

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

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





* 刪 Vcore 電容

Rev:0.4

www.xinxunwei.com 400-800-9990

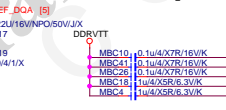


MODT_A0[1] ↔ MODT_A0[1] [5]
M_DQSA0_7I ↔ M_DQSA0[0..7] [5]
M_DQSA0_7I ↔ M_DQSA0[0..7] [5]

VCC3
VDDSPD
MB22 R0805-SHORT10X
Footprint : FUSE-0805-SHORT10

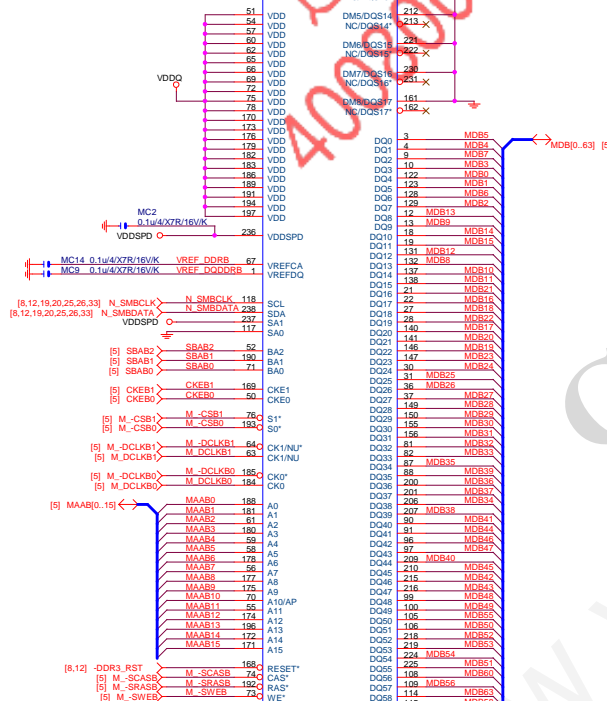
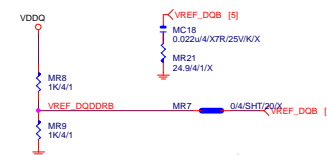
DDR3_1
DDR3_240/BK/VA/D
黑色DDR TERMINATION
CHANNEL A/B

DDRVT Decouple

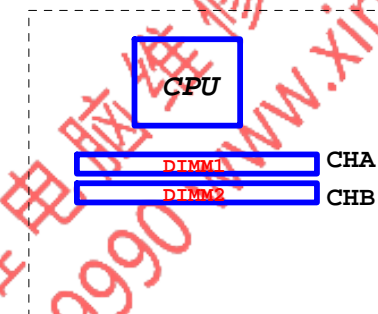


Gigabyte Technology		
Title	DDR4 CHANNEL A	
Size	Document Number	Rev
Custom	GA-B150M-HD3 DDR3-WP1.0	1.0
Date	Sheet 1 of 22	

DDR3



黑色



CPU

DTMM1

CHA

DIMM2

CHR

Gigabyte Technology

DDR4 CHANNEL E

Size Custom	Document Number GA-B150M-HD3 DDR3-WP1	Rev
----------------	---	-----

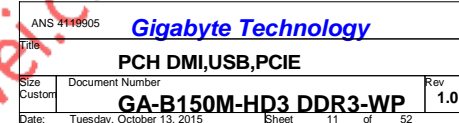
Date: _____ Sheet 9 of 52

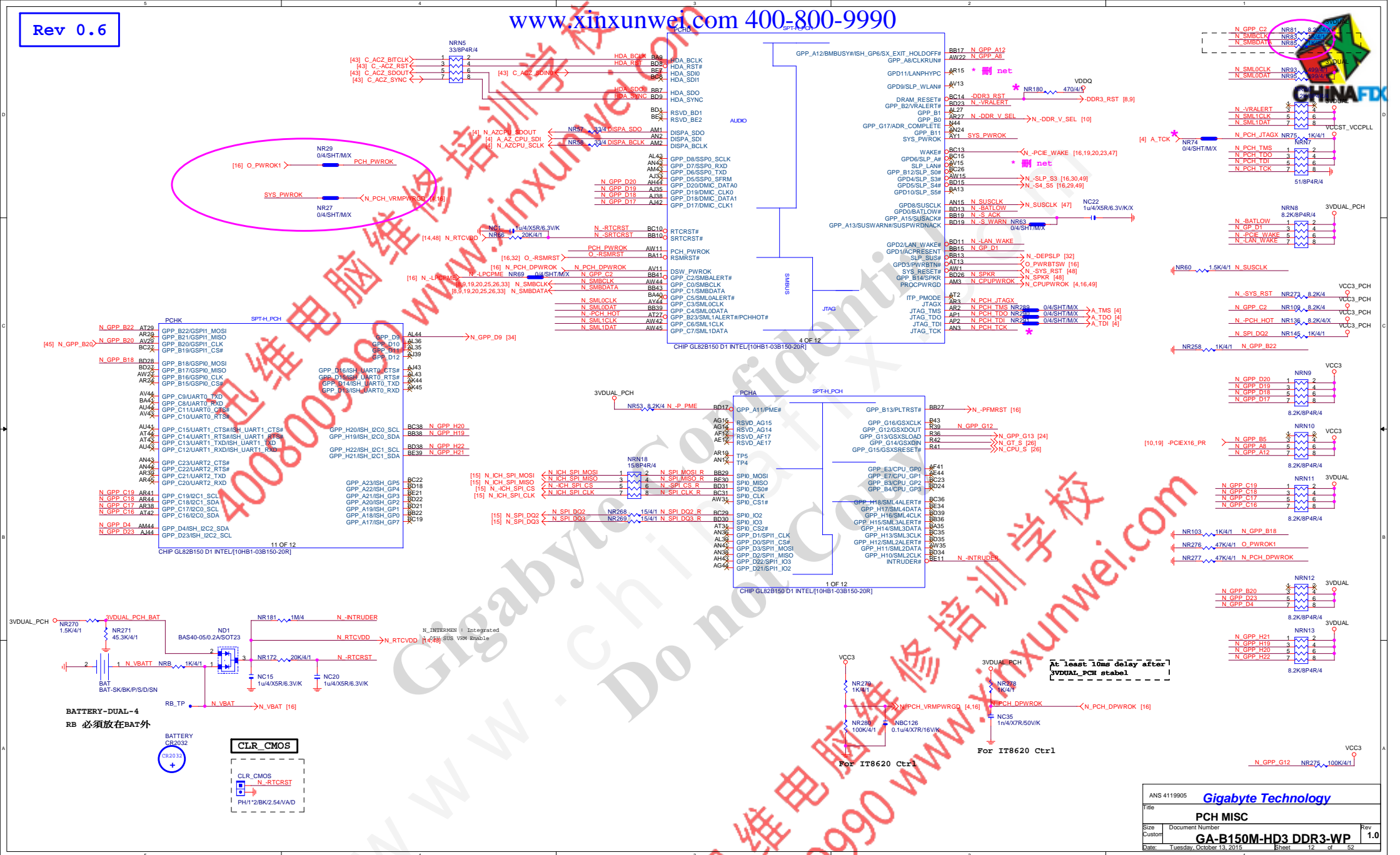
```

[39] N_HDMI_HDP_F  }
[36] N_DVI_HDP_F   }
[37] N_VGA_HDP_F    } N_GPP_I3

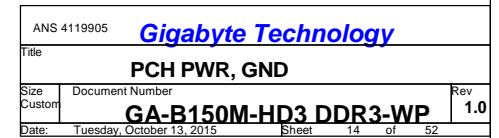
```

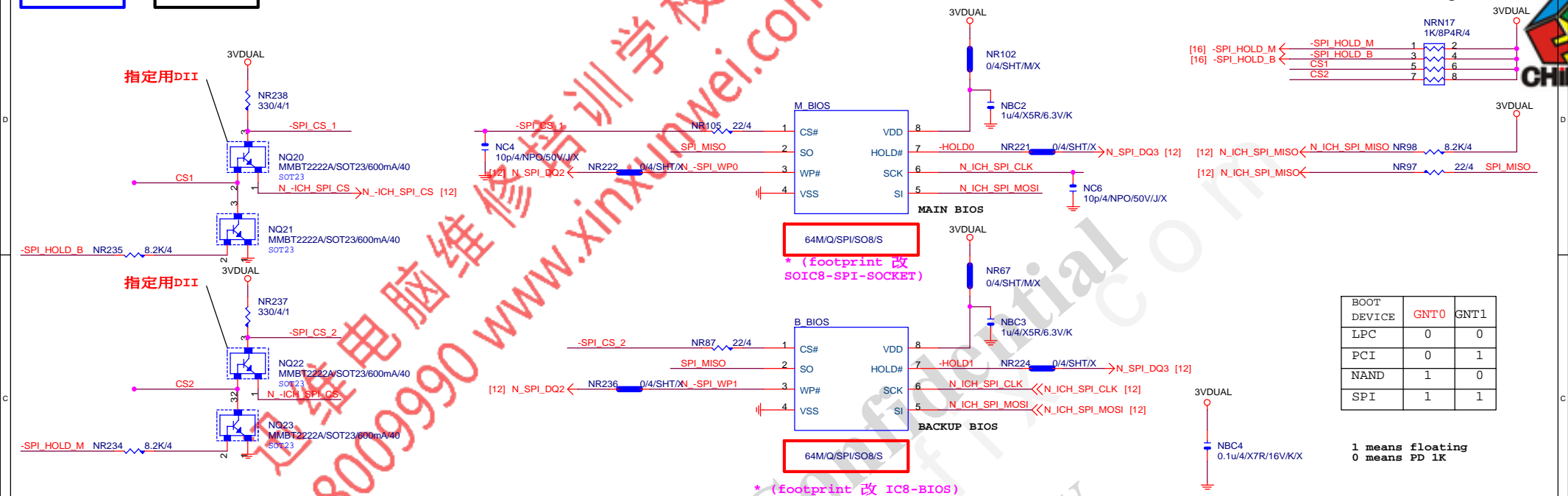










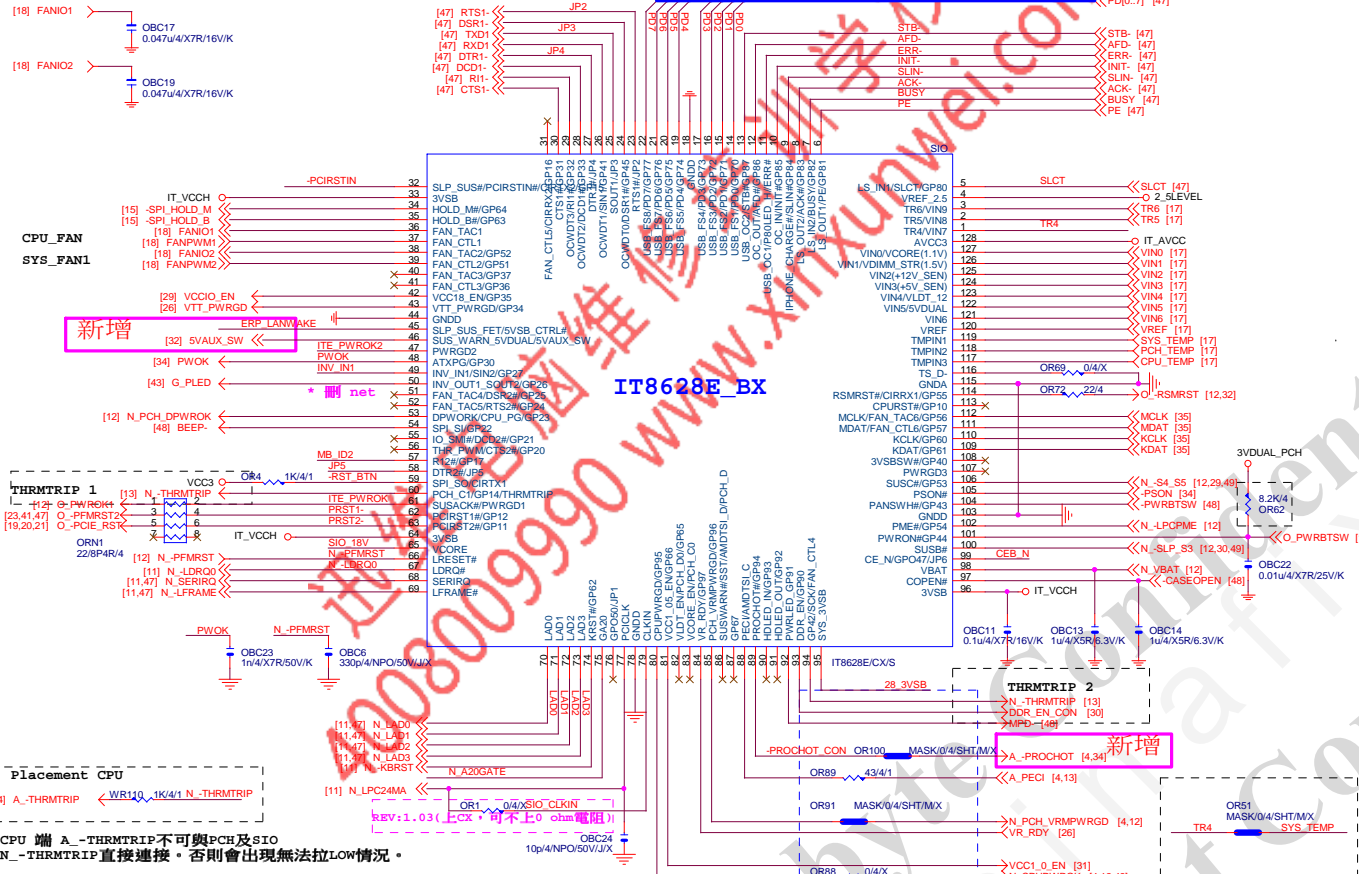


BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

1 means floating
0 means PD 1K

M BIOS
PL1: 27nm/200MIL/WHITE/10SL2-000008-31R)X

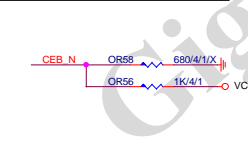
* 試産先上，PVT 移除



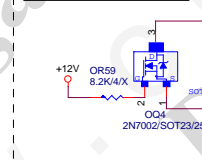
FAN TABLE	
CPU_FAN	FAN_CTL1 FAN_TAC1
SYS_FAN1	FAN_CTL2 FAN_TAC2
SYS_FAN2	FAN_CTL3 FAN_TAC3
SYS_FAN3	FAN_CTL5 FAN_TAC5
OPT_FAN or SYS_FAN4	N/A
THRMTrip1	YES PIN60
THRMTrip2	YES PIN94

IT8628E GPIO問題匯整	
PIN 50	GP26-第一次接上POWER時 會拉 Lo
PIN 90/91	DEFAULT為HDLed 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PAN6 FUNCTION 擇一使用, 不會互相干擾
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。

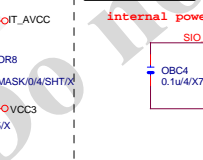
DUAL BIOS OPT STRAP



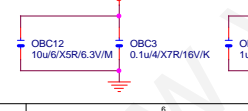
Power leakage



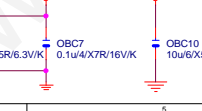
SIO 18V



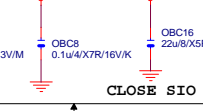
SIO CAP



IT_VCCH



IT_AVCC



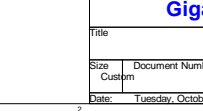
3VDUAL_PCH



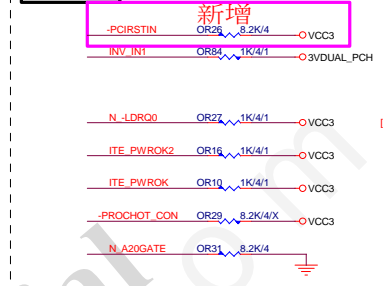
2.5LEVEL



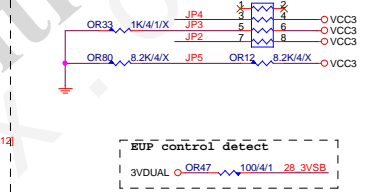
2.5LEVEL



SIO PU

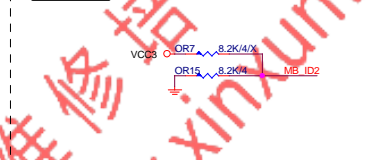


SIO STRAP



JP2	1	Disable WDT
JP2	0	Enable WDT to rest PWROK
JP3	1	SPI-Flash Disable
JP3	0	SPI-Flash Enable
JP4	1	k8 power function is Disable
JP4	0	k8 power sequency function is Enable
JP5	1	anti-surge Disable
JP5	0	anti-surge Enable
JP3	1 1	The default value of EC Index 63h/68h/73h is 80h.
JP3	1 0	The default value of EC Index 63h/68h/73h is FFh.
JP5	0 1	The default value of EC Index 63h/68h/73h is 00h.
JP5	0 0	The default value of EC Index 63h/68h/73h is 40h.

MB ID



ERP WAKE on LAN (組態一)

Realtek/ATHEROS LAN

Gigabyte Technology

ITE 8628 LPC IO

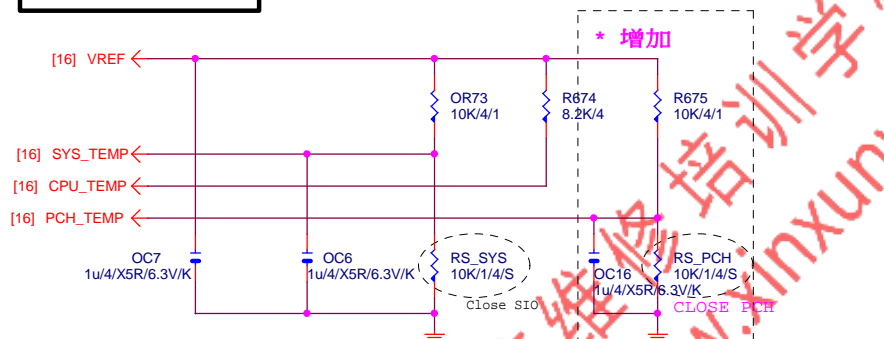
GA-B150M-HD3 DDR3-WP

Date: Tuesday, October 13, 2015

Sheet 16 of 52

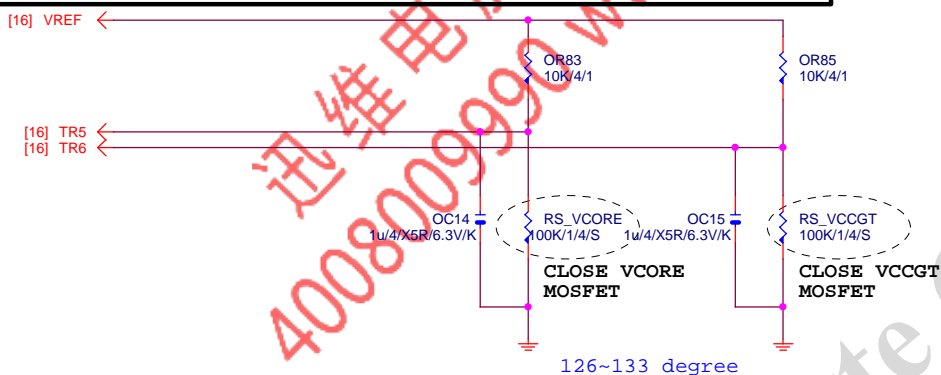
TEMP H/W MONITOR

REV 1.04



RS_VCORE ~ RS_VCCGT CLOSE CPU_VCORE & VCCGT MOSFET

-PROCHOT:有mos heartsink不用prochot function

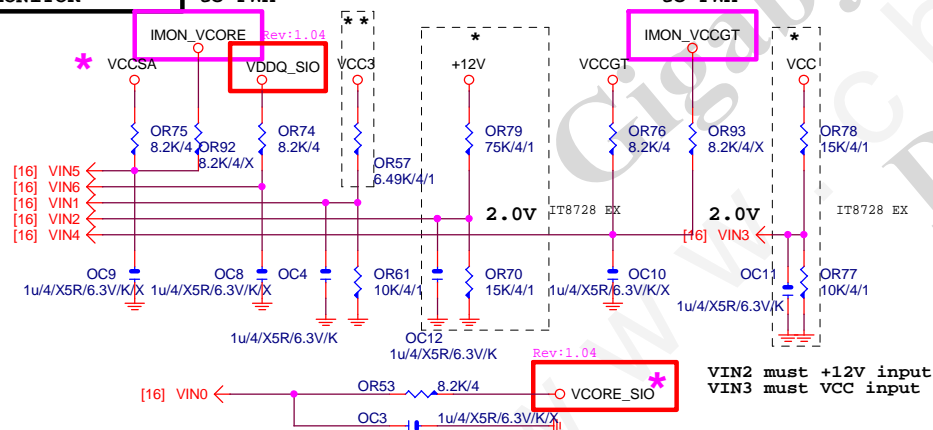


VOLTAGE-- H/W MONITOR

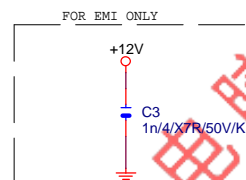
Connect to PWM

★ IT8728 BX
★★ IT8728 CX

Connect to PWM



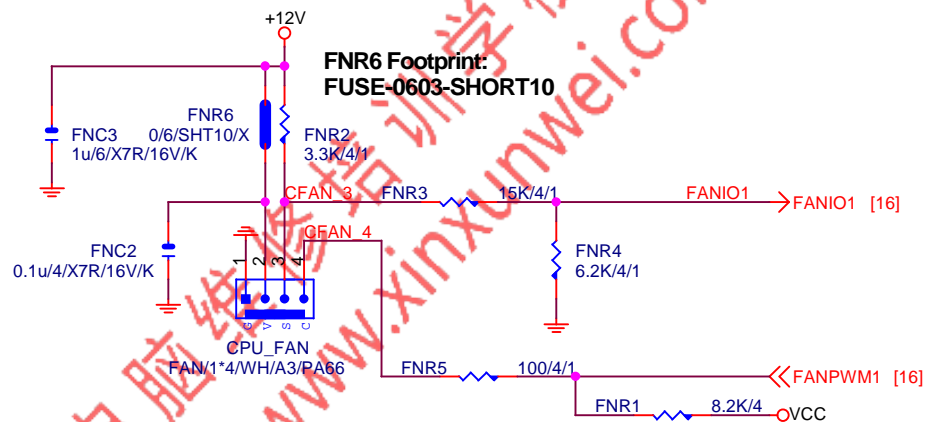
The division voltage of VIN2 & VIN3 must be around 2.9V



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

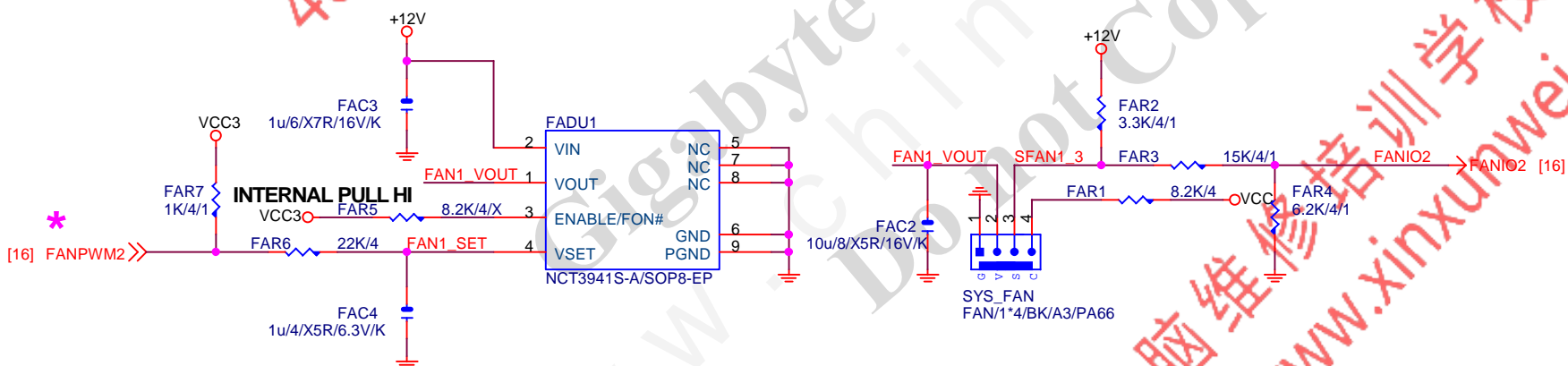
The diagram illustrates the vertical structure of the FNR6 device. From top to bottom, the layers are: a black layer connected to +12V, a hatched layer representing a 40mil trace and pad, a thin black layer representing the 10mil FNR6 channel, another hatched layer representing a 40mil trace and pad, and a bottom black layer connected to Pin2.



SYSTEM FAN1

Linear SYS FAN

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



Gigabyte Technology

Title	HWM,KB/MS, FAN CTRL
-------	---------------------

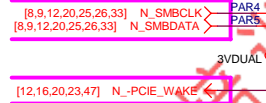
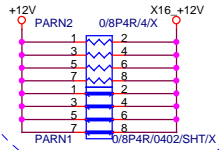
Size	Document Number
Custom	CA-B1

GA-B150M-HD3 DDR3-WP

Rev	
1.0	

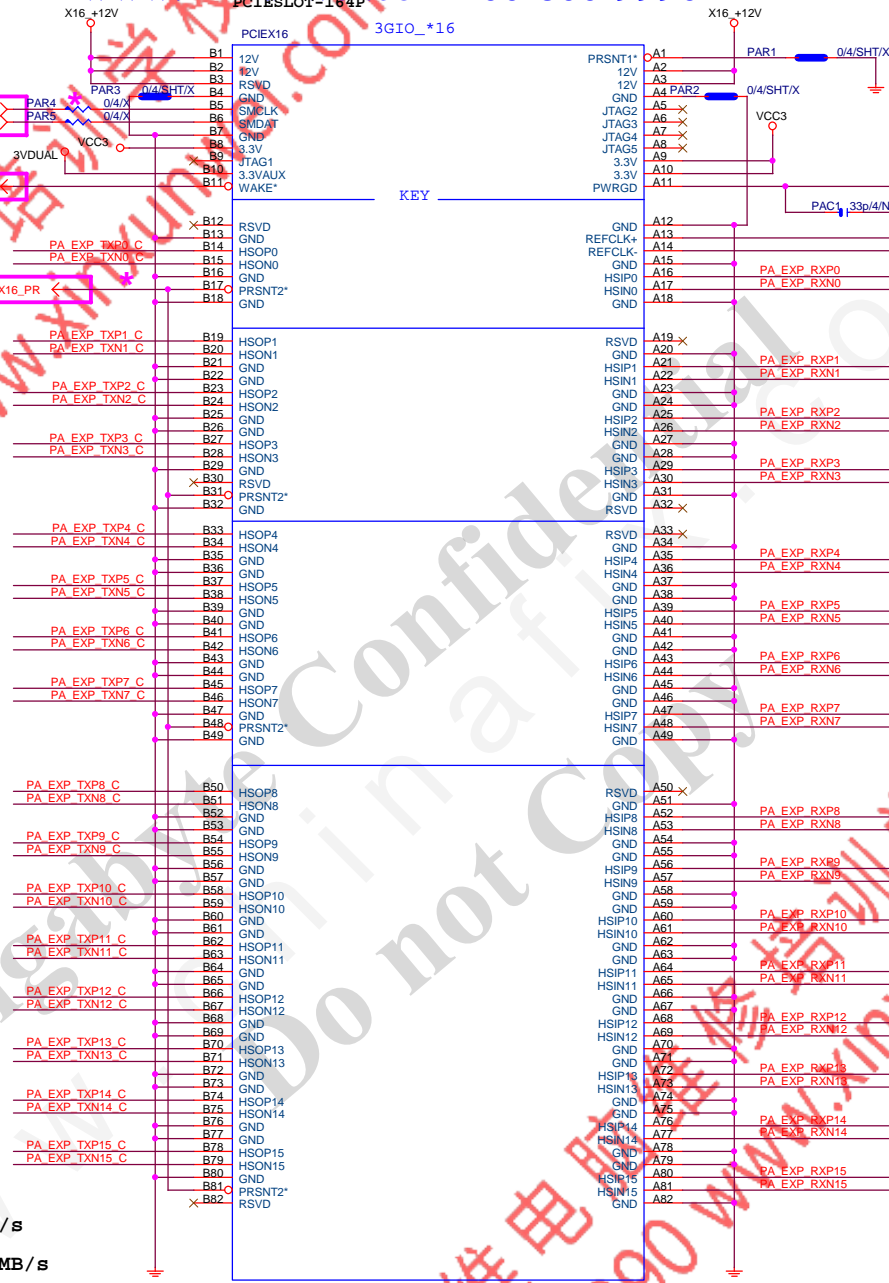
Date: Tuesday, October 13, 2015

Sheet 18 of 52

* +12 protect
short-wire test

PA_EXP_RXP0_15I >>> PA_EXP_RXP[0..15] [4]
PA_EXP_RXN0_15I >>> PA_EXP_RXN[0..15] [4]
PA_EXP_TXP0_15I >>> PA_EXP_TXP[0..15] [4]
PA_EXP_TXN0_15I >>> PA_EXP_TXN[0..15] [4]

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_TXP8	PAC20	0.22u/4/X5R/6.3V/K	PA_EXP_TXP8_C
PA_EXP_TXN8	PAC21	0.22u/4/X5R/6.3V/K	PA_EXP_TXN8_C
PA_EXP_TXP9	PAC22	0.22u/4/X5R/6.3V/K	PA_EXP_TXP9_C
PA_EXP_TXN9	PAC23	0.22u/4/X5R/6.3V/K	PA_EXP_TXN9_C
PA_EXP_TXP10	PAC24	0.22u/4/X5R/6.3V/K	PA_EXP_TXP10_C
PA_EXP_TXN10	PAC25	0.22u/4/X5R/6.3V/K	PA_EXP_TXN10_C
PA_EXP_TXP11	PAC26	0.22u/4/X5R/6.3V/K	PA_EXP_TXP11_C
PA_EXP_TXN11	PAC27	0.22u/4/X5R/6.3V/K	PA_EXP_TXN11_C
PA_EXP_TXP12	PAC28	0.22u/4/X5R/6.3V/K	PA_EXP_TXP12_C
PA_EXP_TXN12	PAC29	0.22u/4/X5R/6.3V/K	PA_EXP_TXN12_C
PA_EXP_TXP13	PAC30	0.22u/4/X5R/6.3V/K	PA_EXP_TXP13_C
PA_EXP_TXN13	PAC31	0.22u/4/X5R/6.3V/K	PA_EXP_TXN13_C
PA_EXP_TXP14	PAC32	0.22u/4/X5R/6.3V/K	PA_EXP_TXP14_C
PA_EXP_TXN14	PAC33	0.22u/4/X5R/6.3V/K	PA_EXP_TXN14_C
PA_EXP_TXP15	PAC34	0.22u/4/X5R/6.3V/K	PA_EXP_TXP15_C
PA_EXP_TXN15	PAC35	0.22u/4/X5R/6.3V/K	PA_EXP_TXN15_C



PCI-E/16x-164P/BK/LONG DOUBLE(11AC1-923164-D1R)

R01A

PCIEX16:16/5/5/5/16

PCI-E REV:1.1--> 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

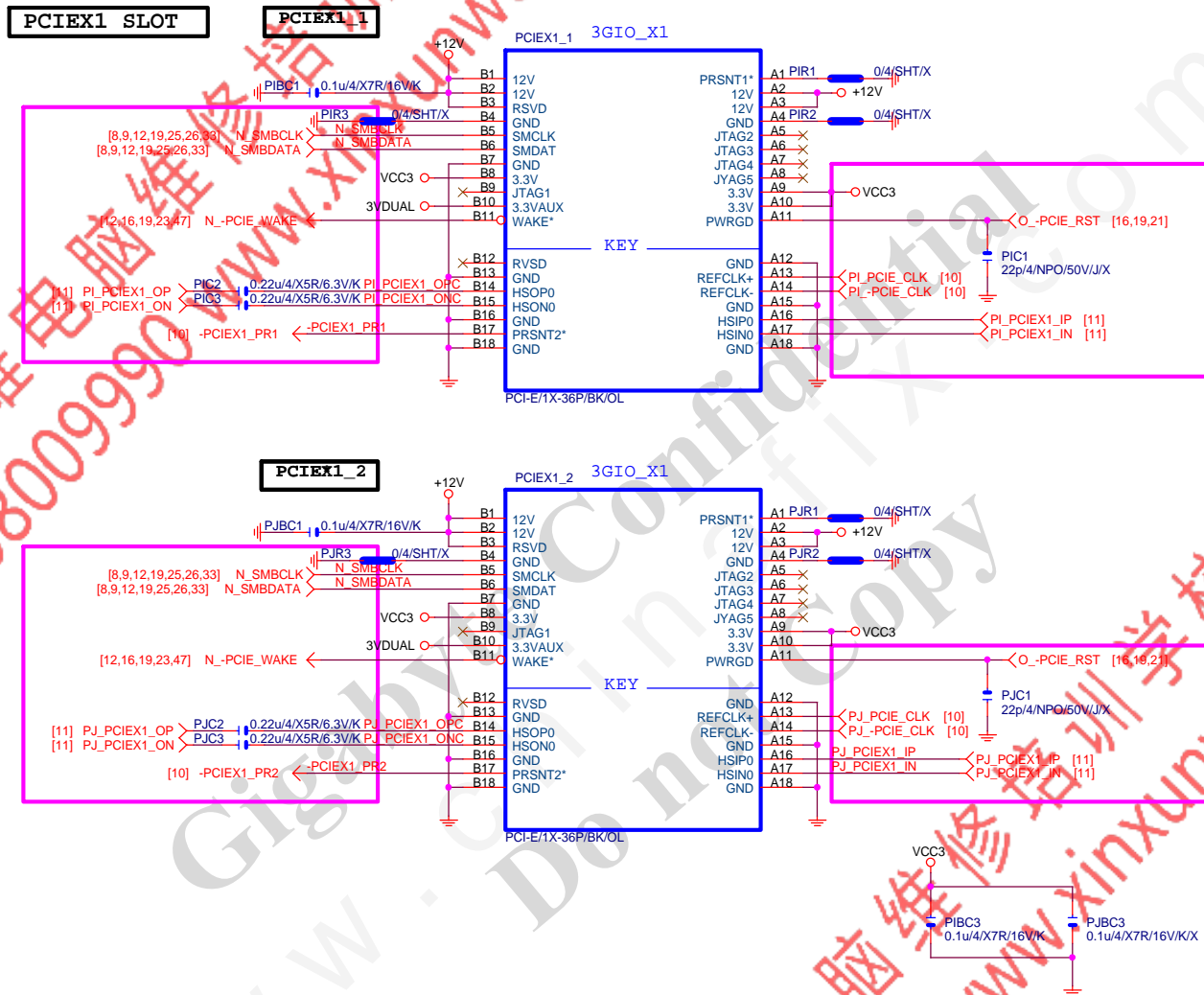
PCE-E X16(單向) BANDWITH=2.5GHz*(8b/10b)X16=32Gb/s=4GB/s

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

PCI-E REV:2.0--> 5GHZ

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



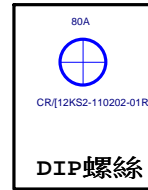
Gigabyte Technology

Title			
PCIE_X1 1,2			
Size	Document Number		Rev
Custom	GA-B150M-HD3 DDR3-WP		0
Date:	Tuesday, October 13, 2015	Sheet	20 of 52


M.2 Lane2 from PCH port15



KEY M



80A

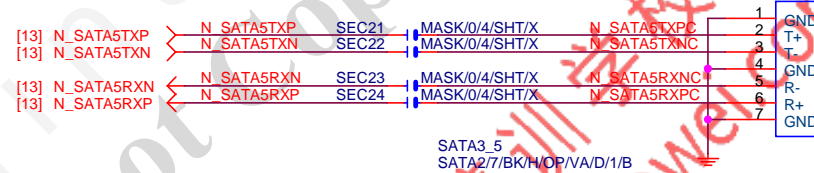
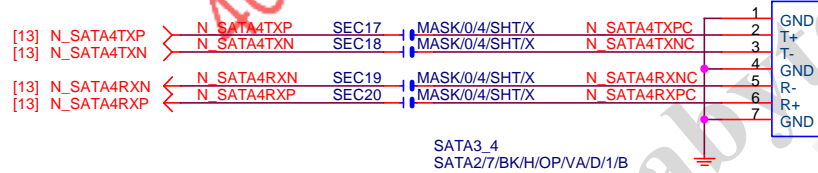
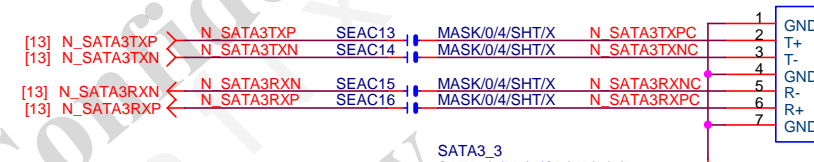
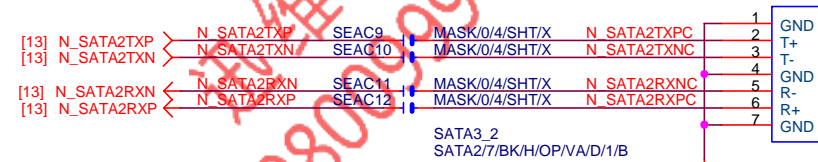
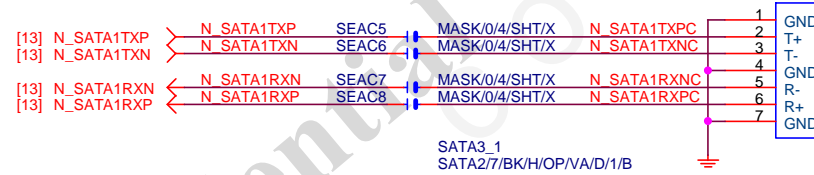
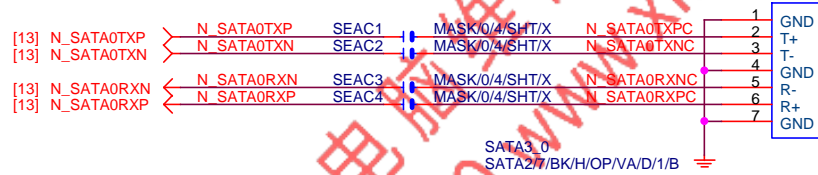


42A
CR/[11KS2-040002-01R]

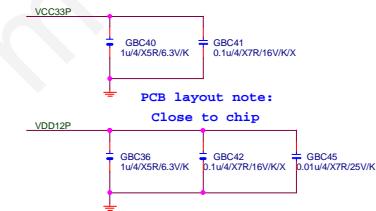
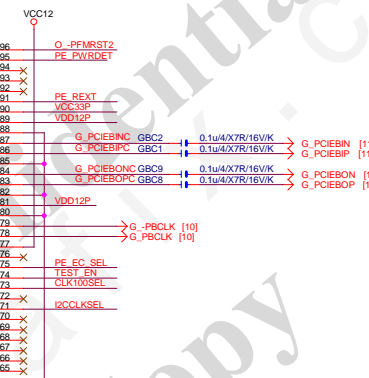
60A
CR/[11KS2-040002-01R]

80A
CR/[11KS2-040002-01R]

Gigabyte Technology			
M.2 X4			
Size	Document Number	Rev	
Custom	GA-B150M-HD3 DDR3-WP	1.0	
Date:	Tuesday, October 13, 2015	Sheet	21 of 62

**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



CLKOUT0 GBR11 22/4 → BPCLK0 [25]

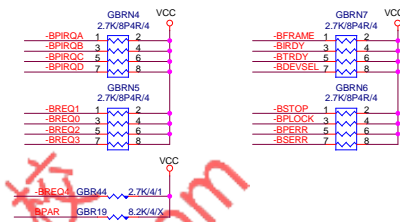
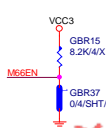
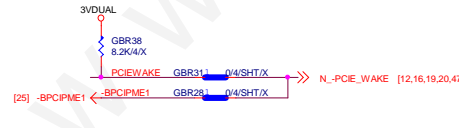
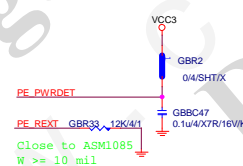
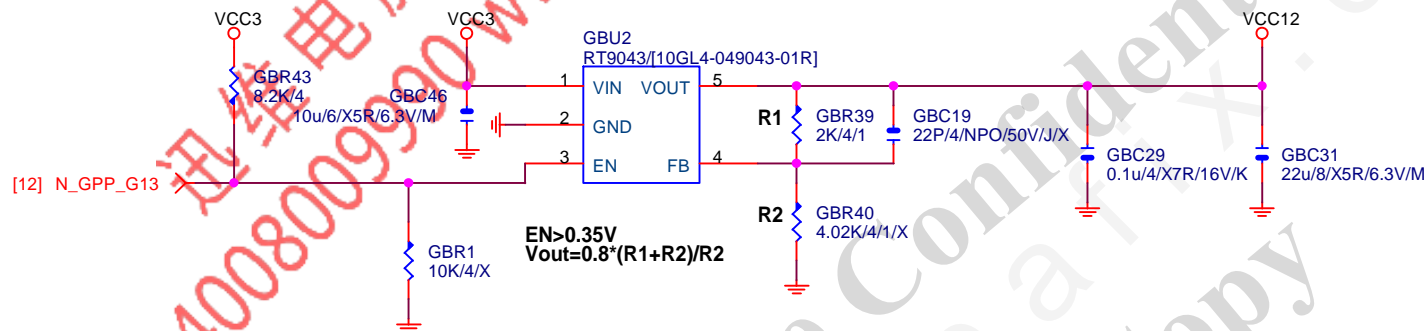


Figure 10 shows a PLL configuration for 100MHz operation. The circuit includes several input pins: PE, EC, SEL, CLK100SEL, TEST, EN, CLKRUN_EN, and DCCLKSEL. The output pins are GBR14, GBR20, GBR30, GBR32, GBR13, GBR21, GBR22, GBR7, and GBR29. The power supply is connected to VCC3 and GND. The PLL is configured for 100MHz operation, as indicated by the note.



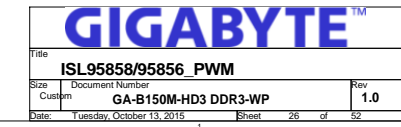


Rev 0.9



Gigabyte Technology

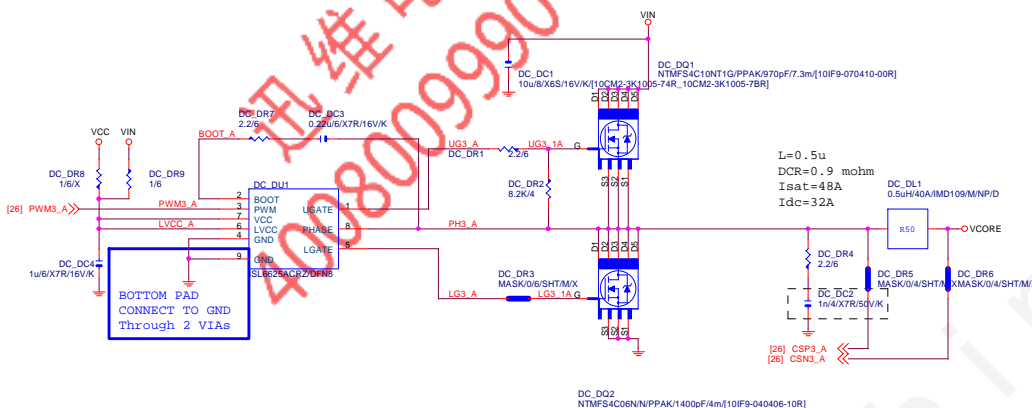
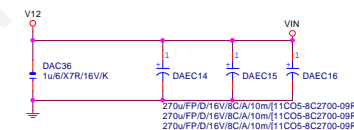
Title		ASM1085 POWER	
Size	Document Number	GA-B150M-HD3 DDR3-WP	
Custom		Rev 1.6	
Date:	Tuesday, October 13, 2015	Sheet	24 of 52



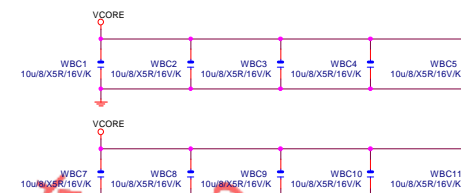
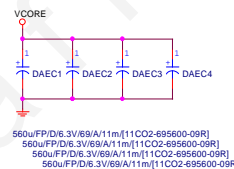
VCORE



VIN CAP 270u*3PCS

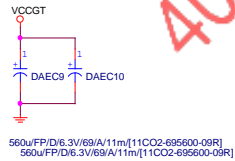
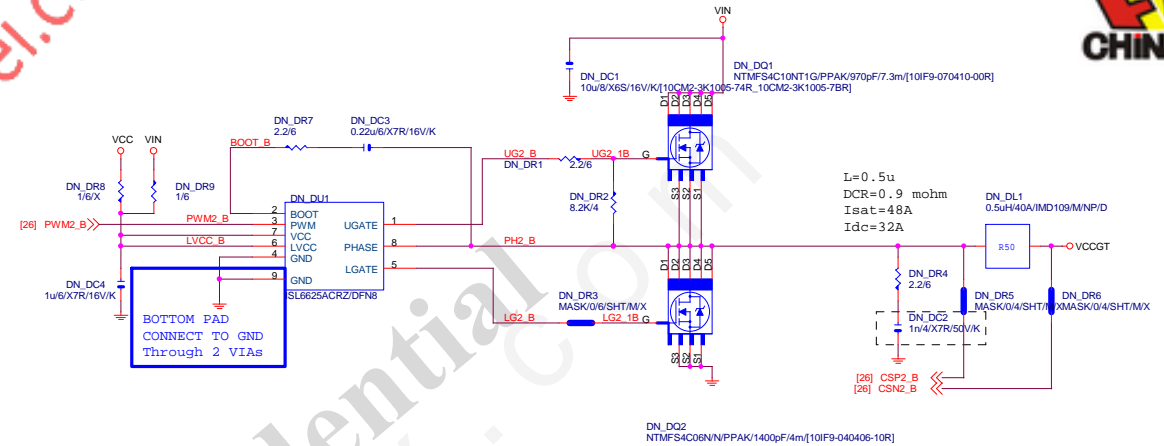



VCORE CAP 560u*8PCS
22u*29PCS

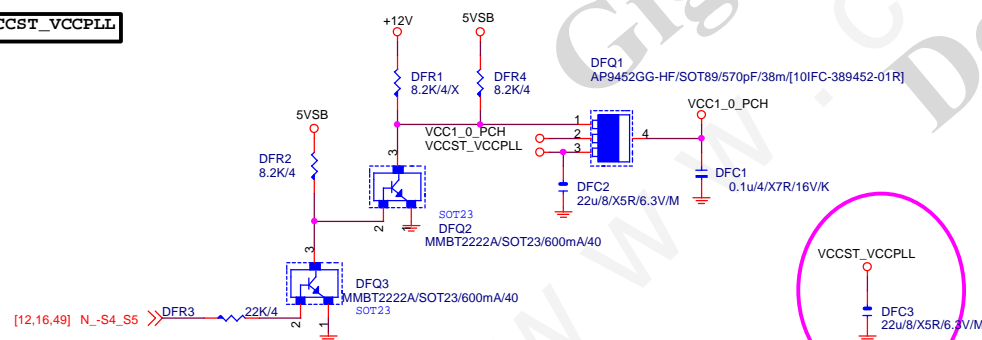
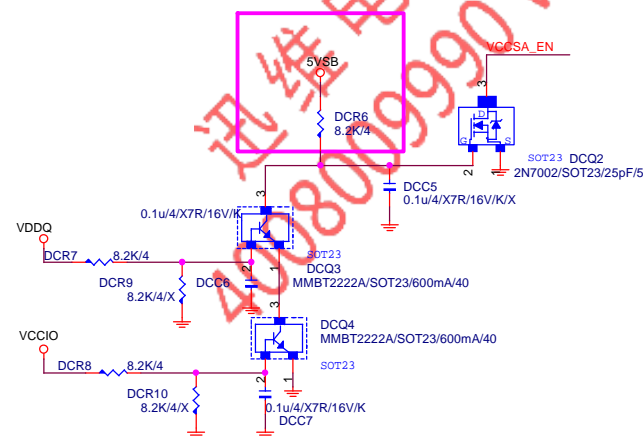
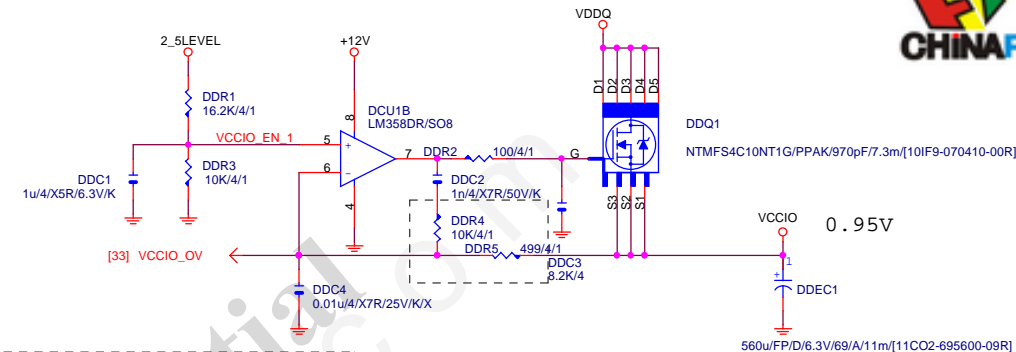



GIGABYTE™

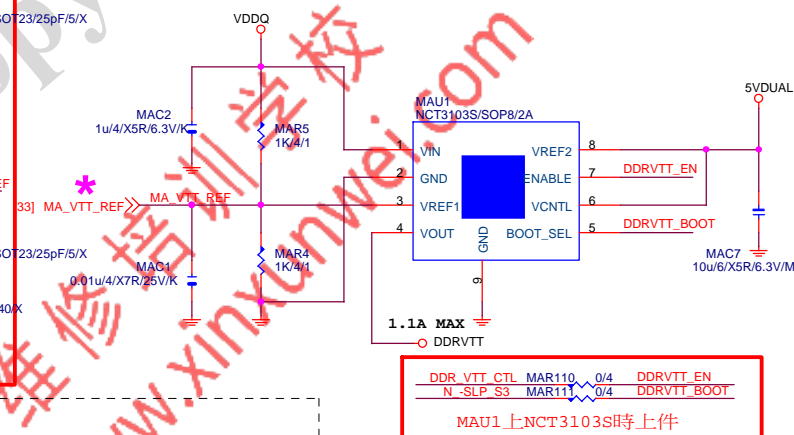
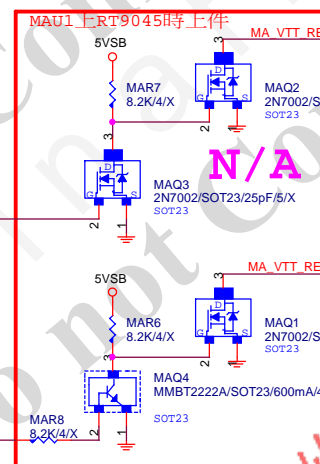
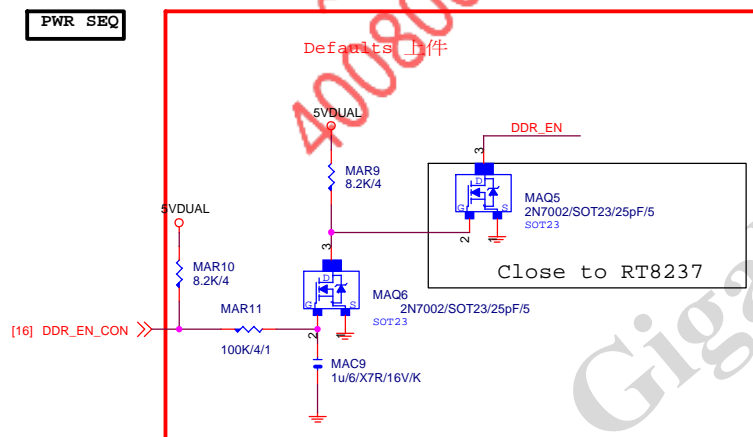
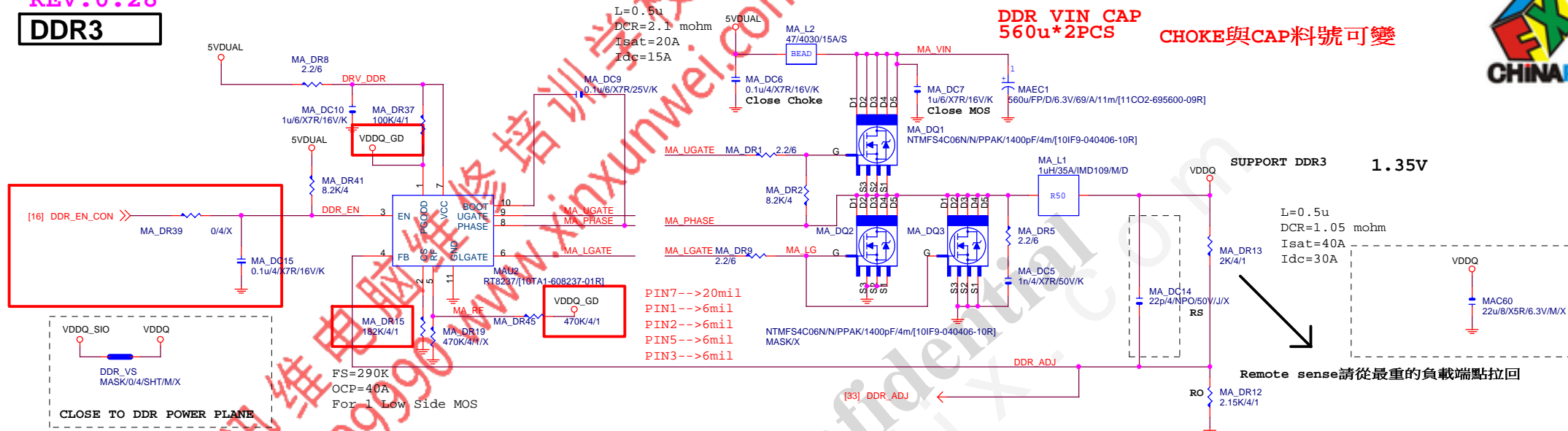
Title			ISL95858_MOS
Size	Document Number	GA-B150M-HD3 DDR3-WP	
	Custm		
Date	Tuesday, October 13, 2015	Sheet	27 of 52



			
Title			
ISL95858_MOS			
Size	Document Number		Rev
Custom	GA-B150M-HD3 DDR3-WP		1.0
Date:	Tuesday, October 13, 2015	Sheet 28 of	52

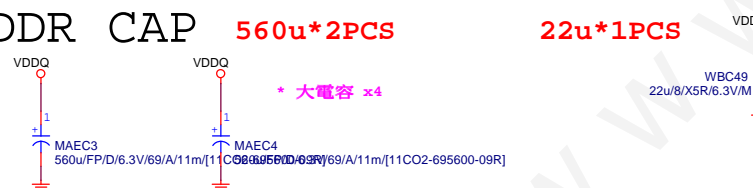


			
Title			
VCCSA_VCCIO			
Size	Document Number		Rev
Custom	GA-B150M-HD3 DDR3-WP		1.0
Date:	Tuesday, October 13, 2015	Sheet 29 of 52	

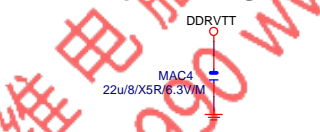


DDR CAP 560u*2PCS

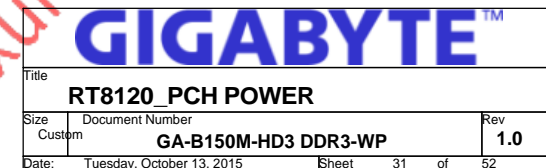
22u*1PCS



DDRVTT CAP

**GIGABYTE™**

Title			
RT8237_DDR POWER			
Size	Document Number	Rev	
Custom	GA-B150M-HD3 DDR3-WP	1.0	
Date:	Tuesday, October 13, 2015	Sheet	30 of 52



* 5Vdual , update
from SKL 0.2B

[16] 5VAUX_SW >>

[16] 5VAUX_SW >>

3VDUAL_PCH

O_-RSMRST

不上件

[12] N_DEPSLP >>

Rise/Fall max 50us

Rise:20% - 80%

Fall :2V- 0.8V

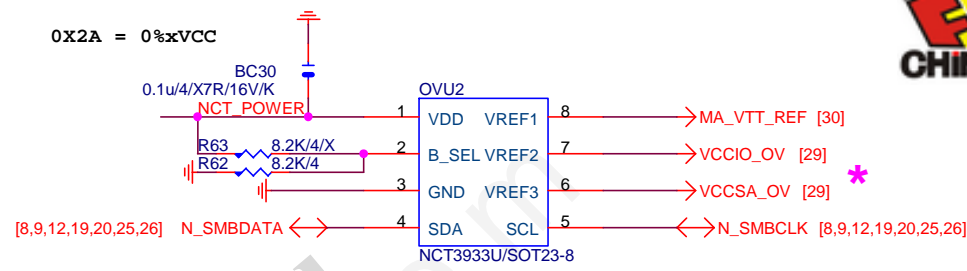
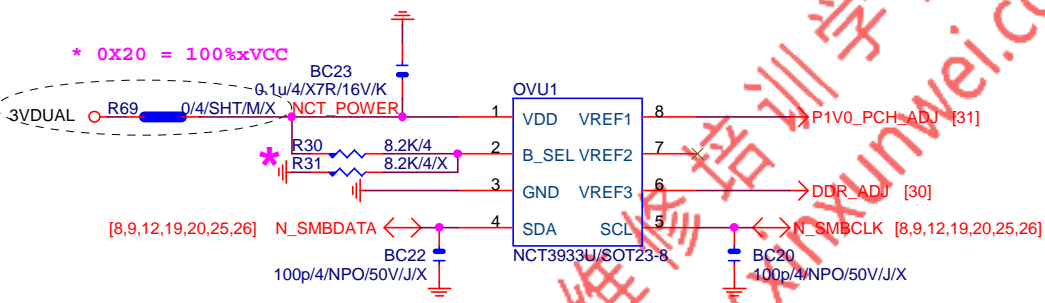
上22u 电容

Meet the rise time

Gigabyte Technology

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

OVER VOLTAGE



* 删除 OVU3

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

Gigabyte Technology

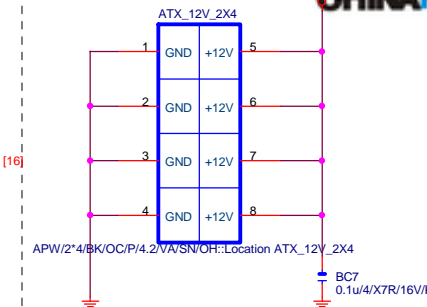
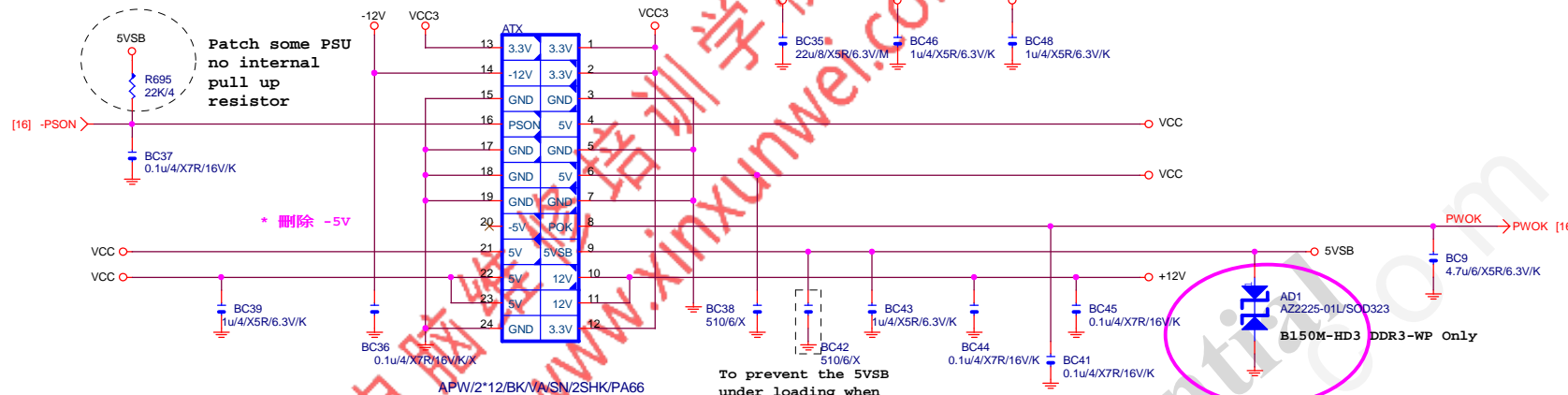
Title: CPU CORE VR-2

Size Custom	Document Number	Rev
	GA-B150M-HD3 DDR3-WP	1.0
Date:	Tuesday, October 13, 2015	Sheet 33 of 52

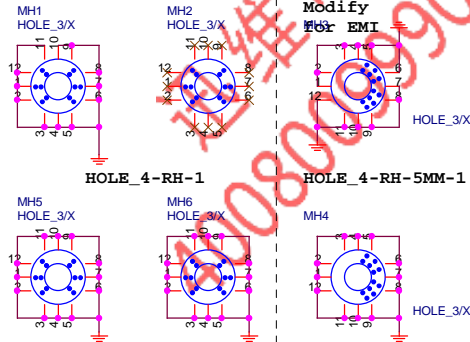
ATXX24 POWER CONNECTOR

www.xinxunwei.com 400-800-9990

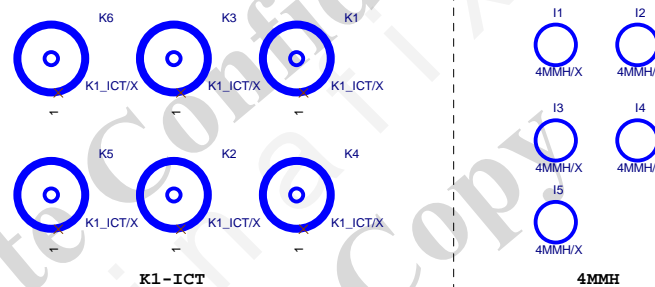
ATXX4 POWER CONNECTOR



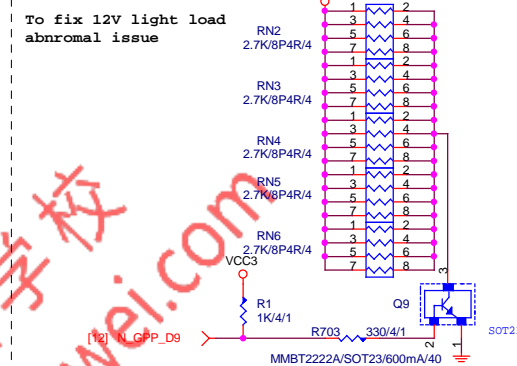
螺絲孔



固定孔/光學點

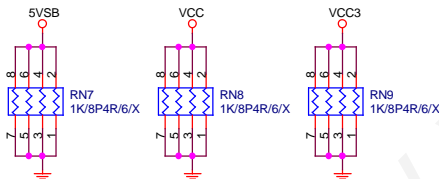


+12V DUMMY LOAD

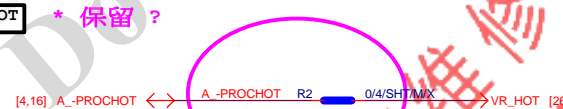


【技術通報R&D技術通報153】

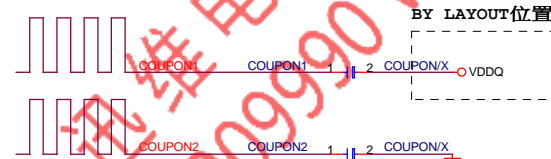
DUMMY LOAD



-PROHOT

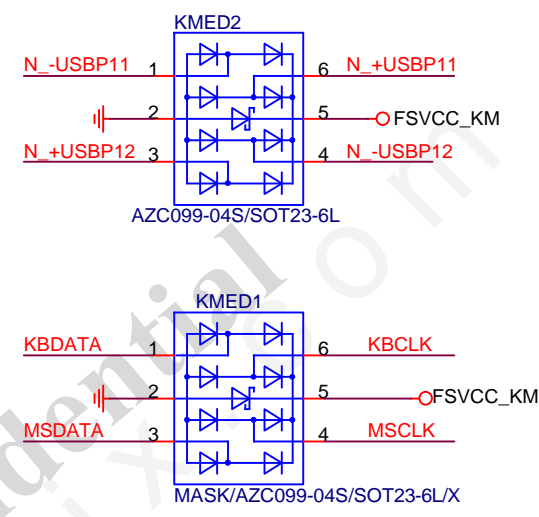
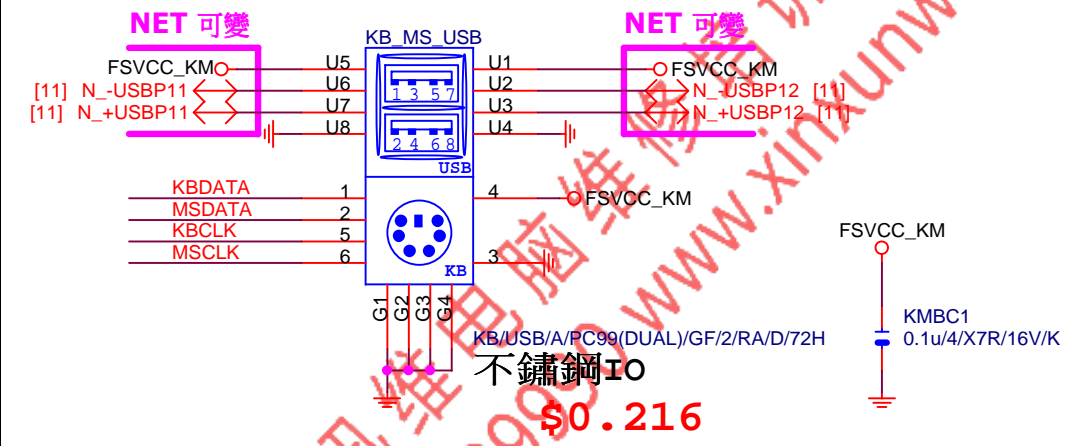


COUPON



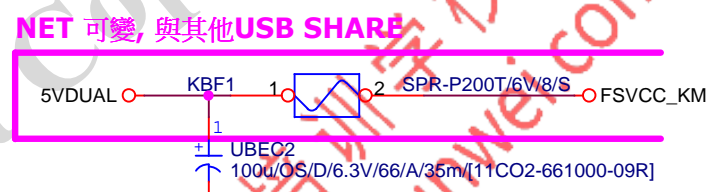
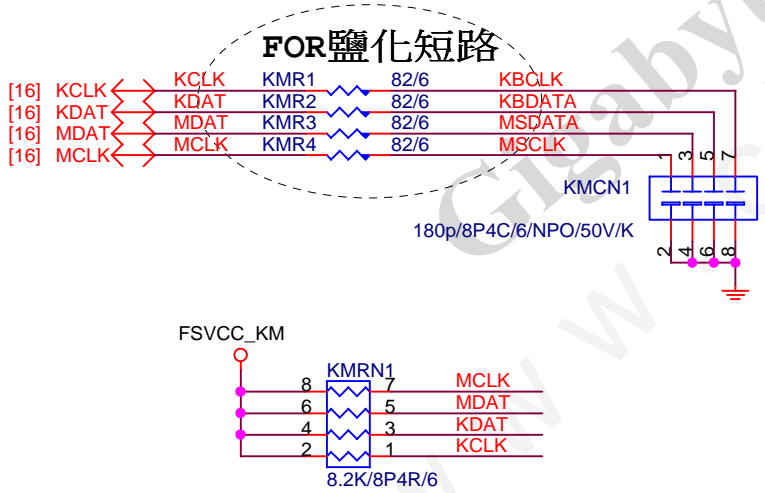
Gigabyte Technology

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

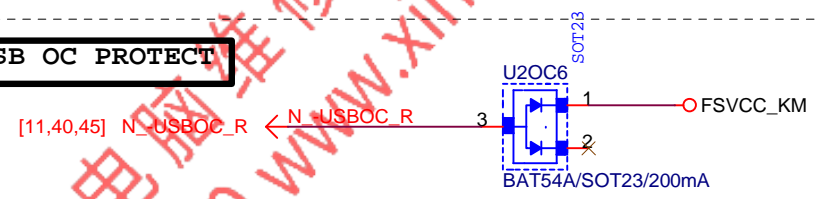


KB_MS_USB DAMPING/PU

KB_MS_USB PWR



USB OC PROTECT



Gigabyte Technology

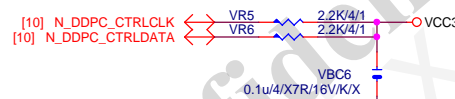
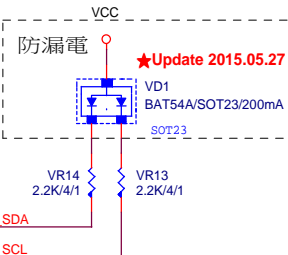
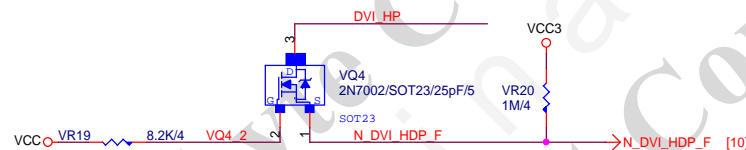
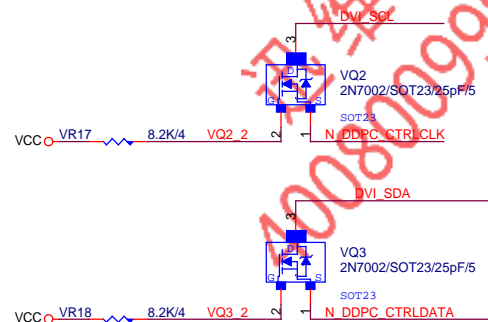
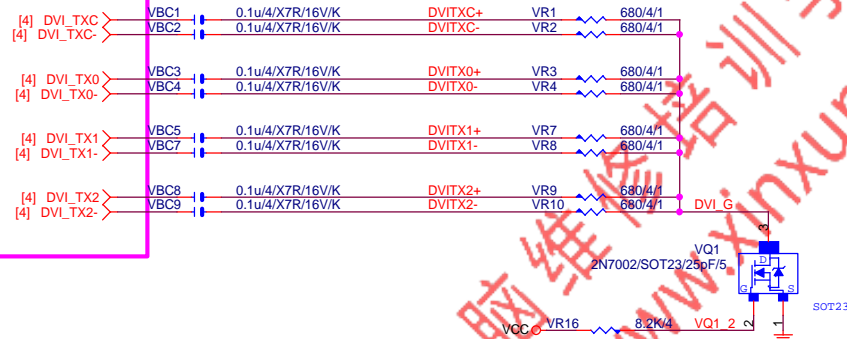
AUDIO JACK

GA-B150M-HD3 DDR3-WP

Title		Rev	
Size A		Document Number	
Date:	Tuesday, October 13, 2015	Sheet	35 of 52

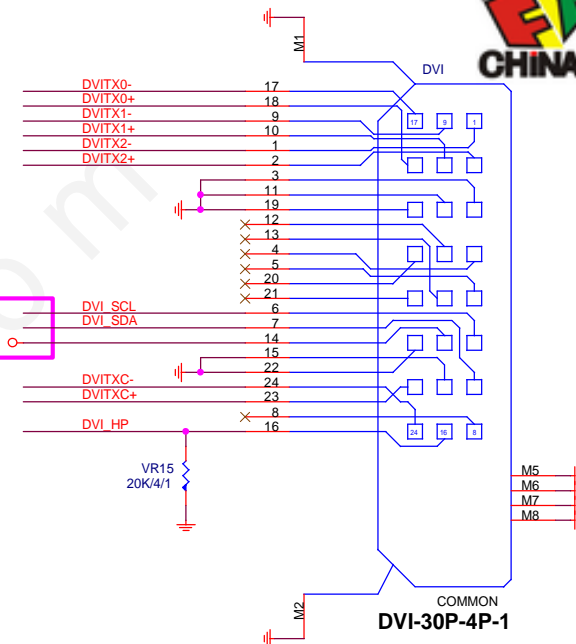


NET 可變

DVI: 20/4/6/4/20
Impedance=85 +- 17.5%

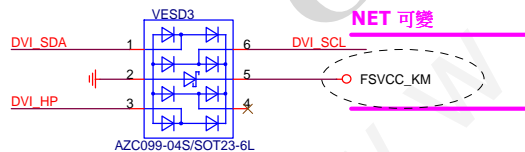
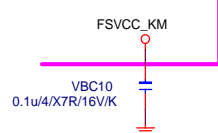
NET 可變

* FSVCC_KM



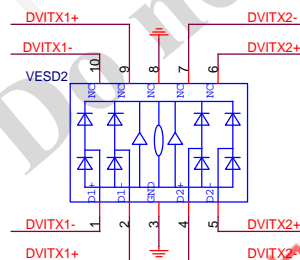
ESD

NET 可變



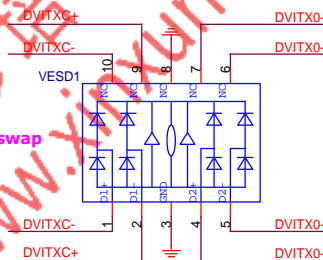
Close to connector

NET 可變



Close to connector

* swap



Close to connector

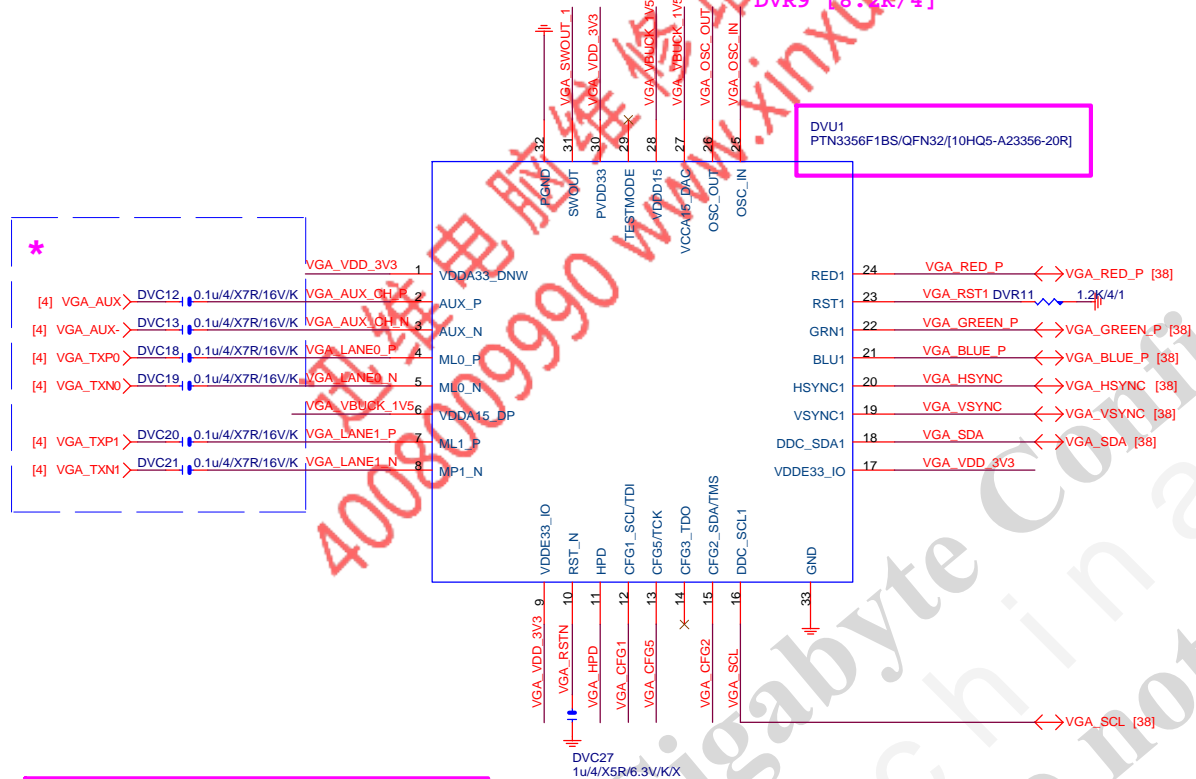
Gigabyte Technology

Title		FP,F_USB,USB PWR,BZ	
Size		Document Number	
Custom		GA-B150M-HD3 DDR3-WF	
Date:		Tuesday, October 13, 2015	
Sheet		36 of 52	

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

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]

DVU1
PTN3356F1BS/QFN32/[10HQ5-A23356-20R]

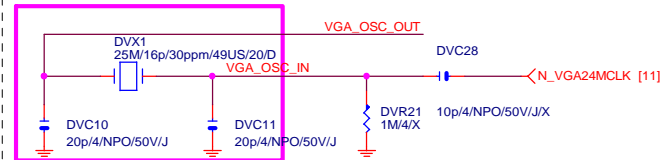


放置PCH端

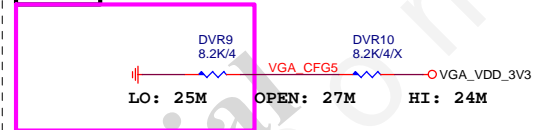
[10] N_DDPD_CTRLCLK <-> DVR19 2.2K/4/1 <-> VCC3
[10] N_DDPD_CTRLDATA <-> DVR20 2.2K/4/1 <-> VCC3

25M Crystal

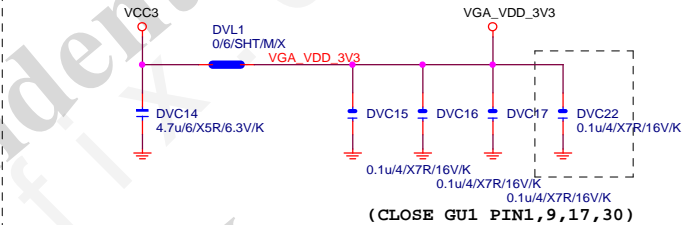
FROM PCH 24MHZ ISSUE



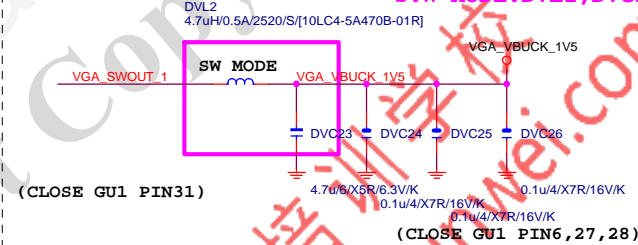
CFG5 For Crystal Less



ADAPTER POWER

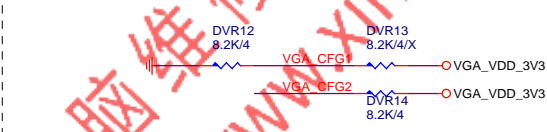


LDO MODE: DVL2, DVC23--->X
S.W MODE: DVL2, DVC23--->O



CFG1&2

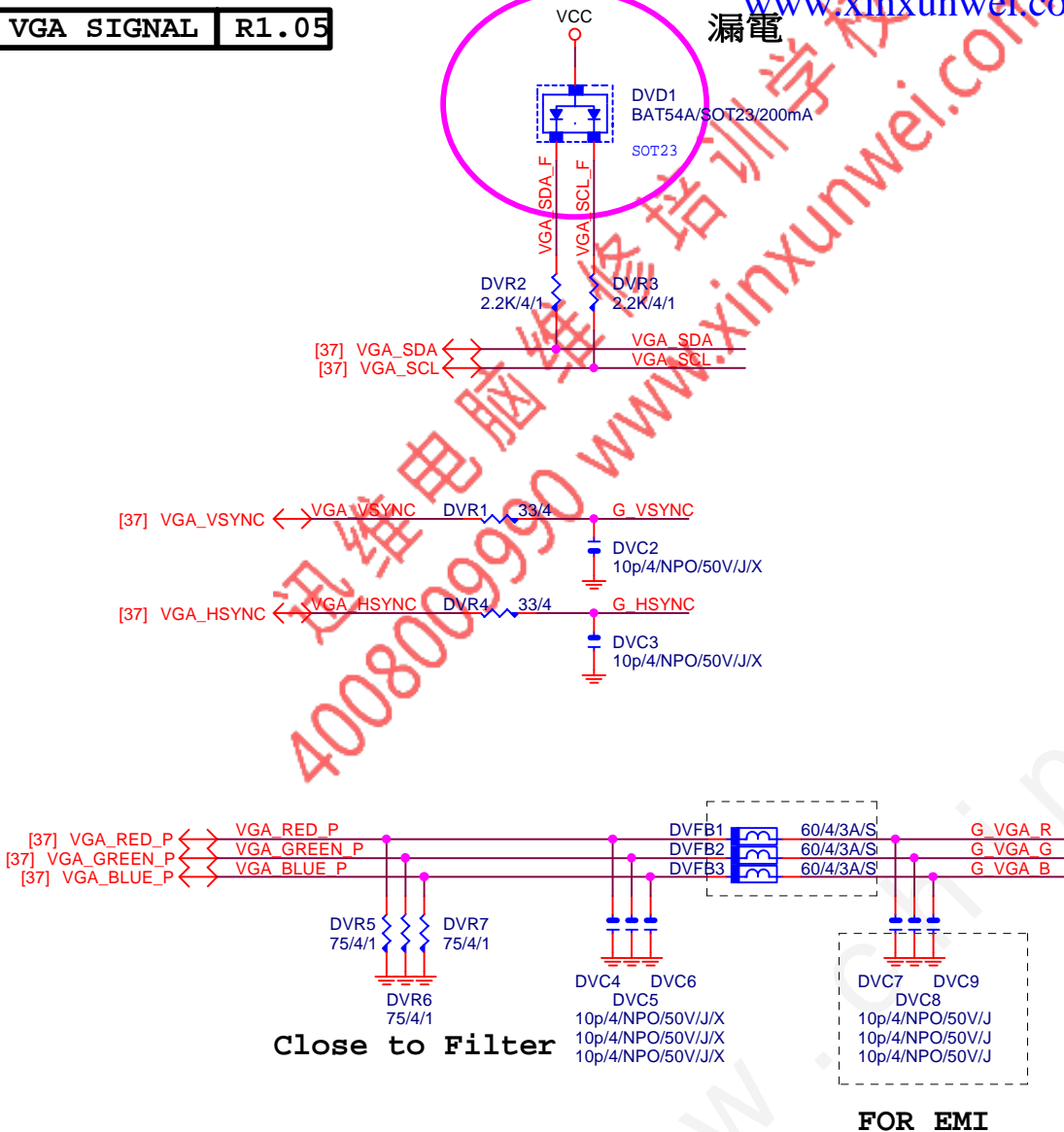
Non-Compliant



HPD



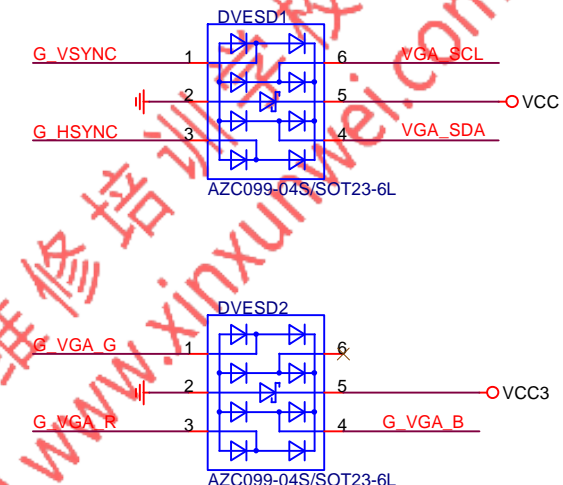
Gigabyte Technology
NXP-PTN3356



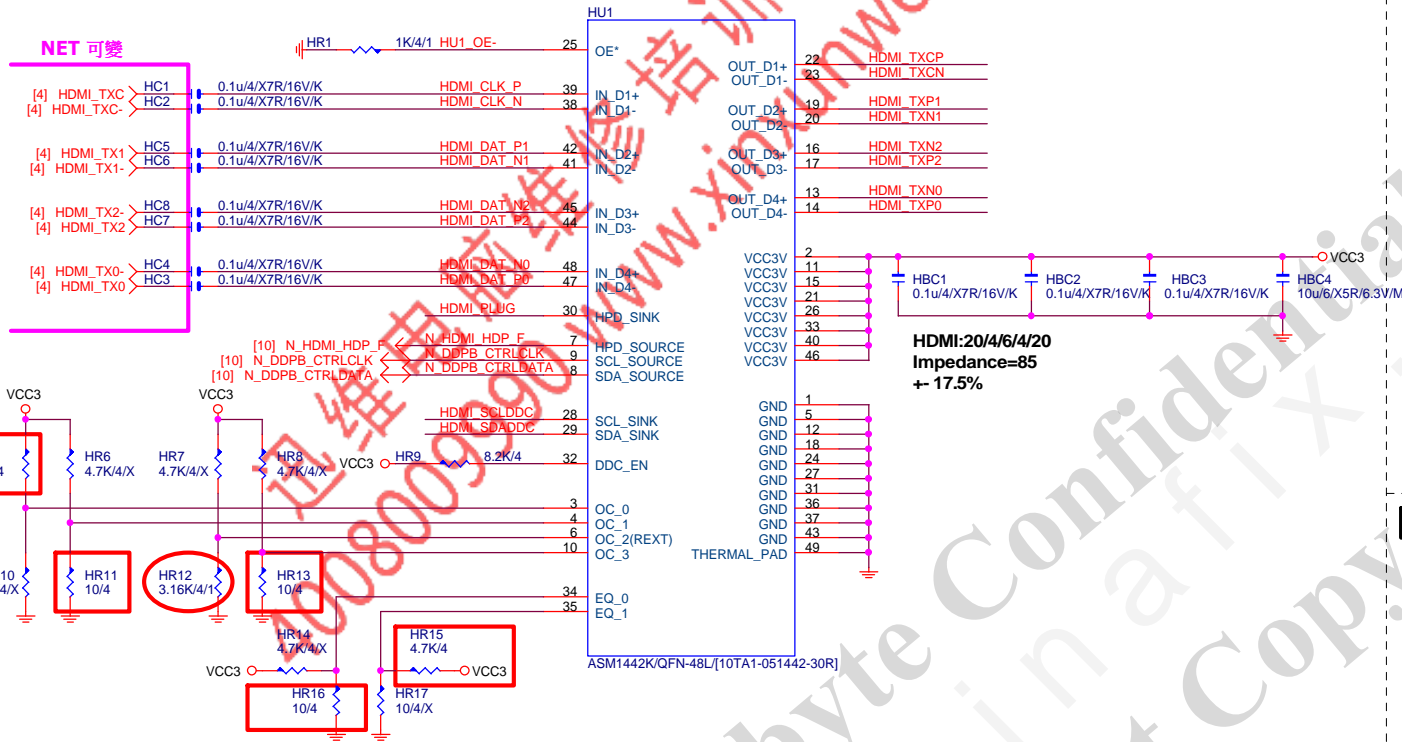
Close to Filter

FOR EMI

VGA ESD



Title			NXP-PTN3356		
Size			Document Number		
Custom			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】

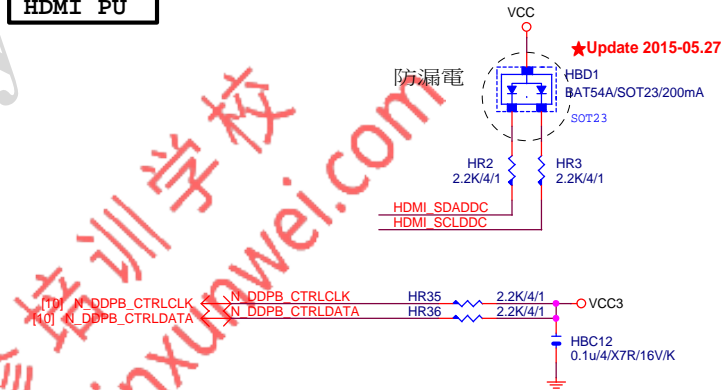
HDMI eye diagram 1.4版(deep color)會fail

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)

HDMI PU

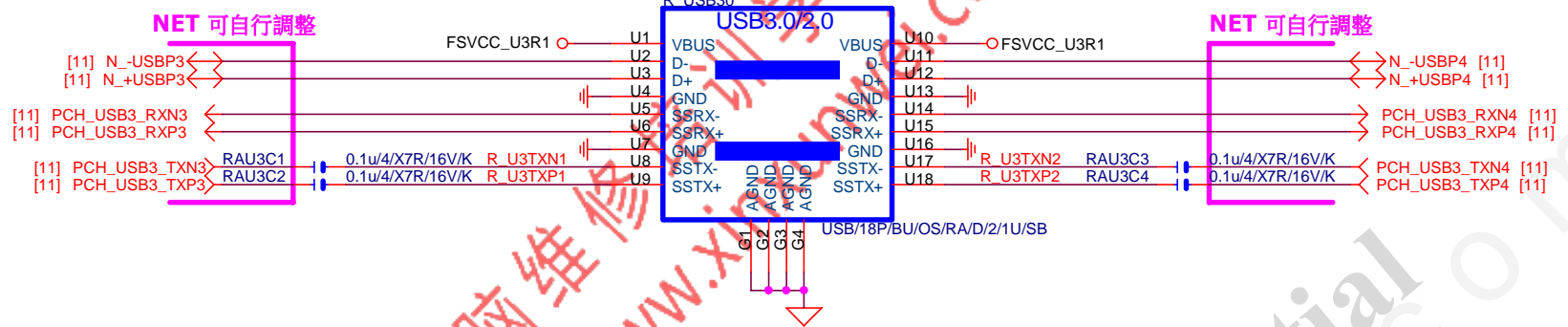


Gigabyte Technology

Title		FP,F_USB,USB PWR,BZ	
Size		Document Number	
Custom		GA-B150M-HD3 DDR3-WF	
Date:		Tuesday, October 13, 2015	Sheet 39 of 52

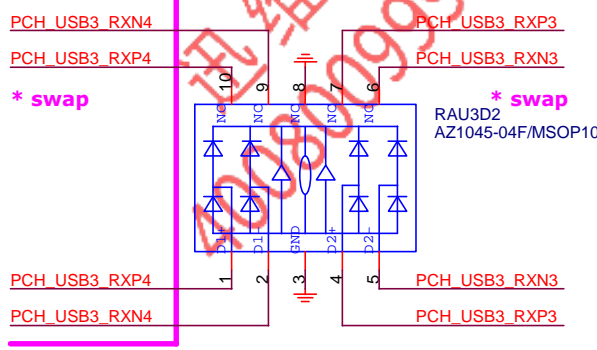


ESD 可自行SWAP PIN, 端 NET 名稱 不可

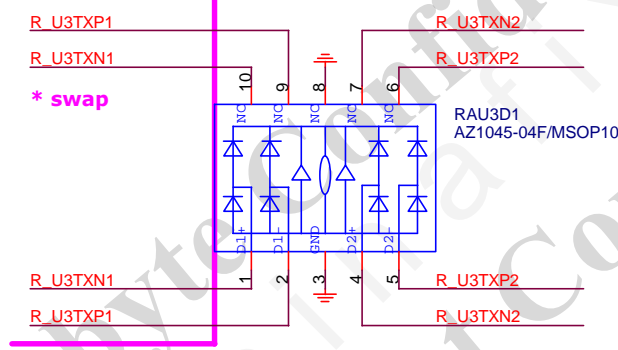


ESD

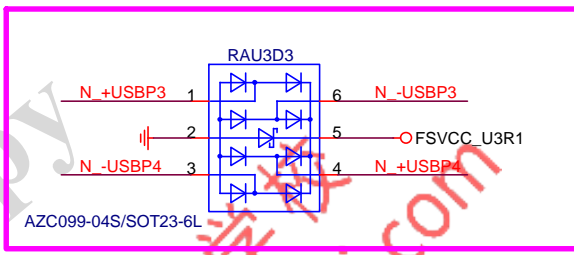
NET 可自行調整



NET 可自行調整

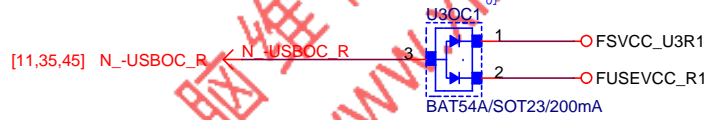
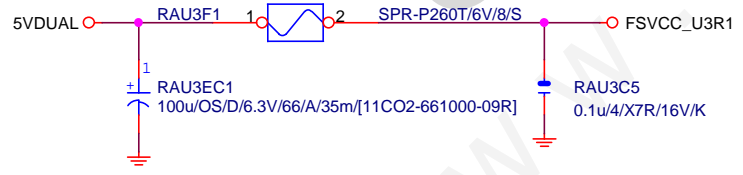


NET 可自行調整

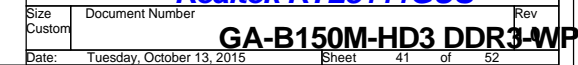


FUSE

FUSE 2 Port 1 Fuse 2.6A



Gigabyte Technology			
Title			
R_USB30,F_USB30, USB_OC			
Size	Document Number		
Custom	GA-B150M-HD3 DDR3-WF		
Date:	Tuesday, October 13, 2015	Sheet	40 of 52



LAESD2
AZC099-04S/SOT23-6L/X

LA MDI1- 1 6 LA MDI1+

2 5

LA MDI0+ 3 4 LA MDI0-

5VDC

LAESD3
AZC099-04S/SOT23-6L/X

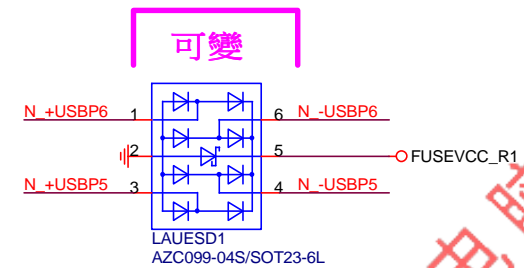
LA MDI3- 1 6 LA MDI3+

2 5

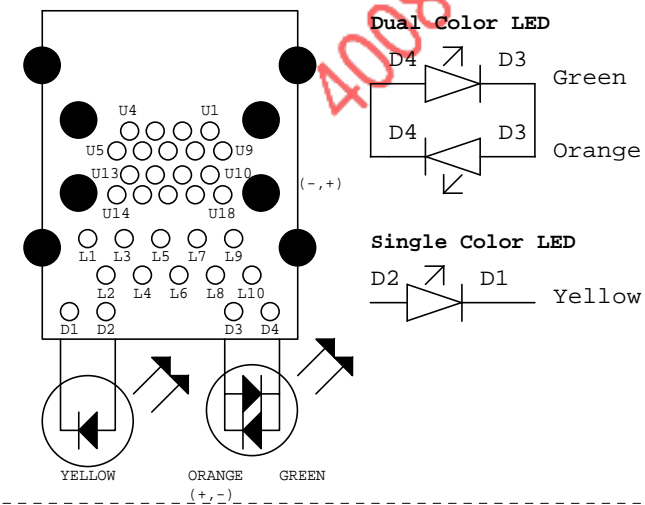
LA MDI2+ 3 4 LA MDI2-

USB_LAN CONNECTOR R1.06

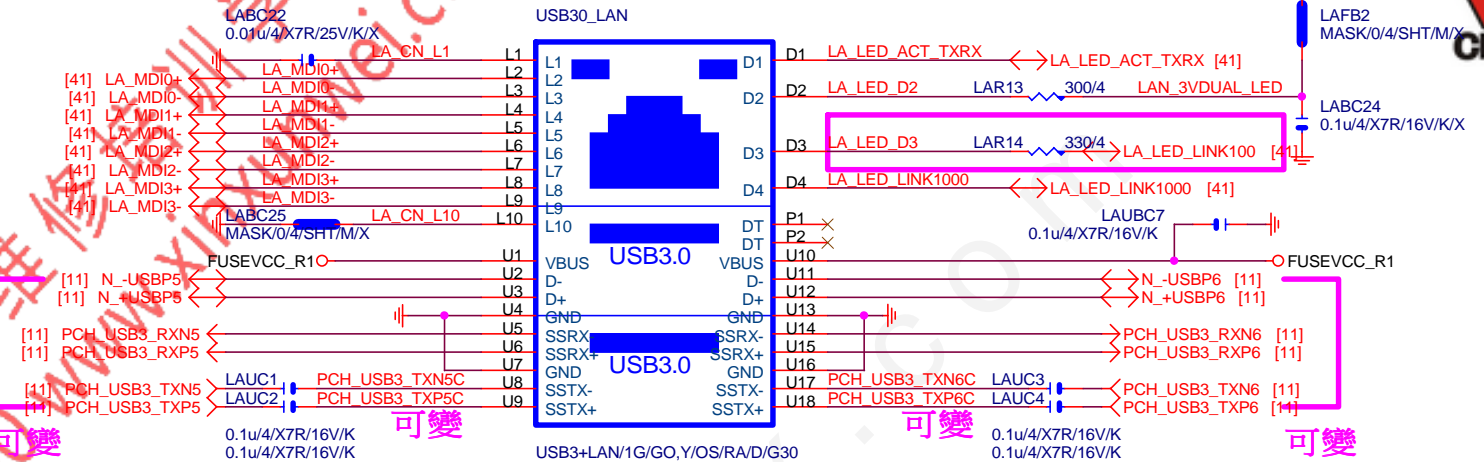
RMA ESD PROTECT note:可變更USB NAME



USB30 LAN LAYOUT示意圖

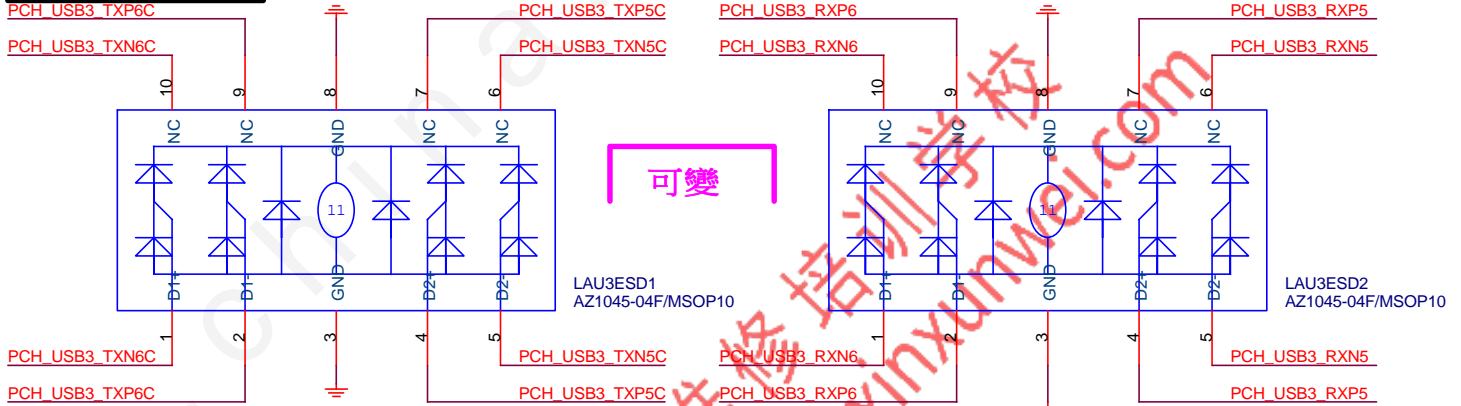


USB_LAN CONNECTOR [RTL8111G]

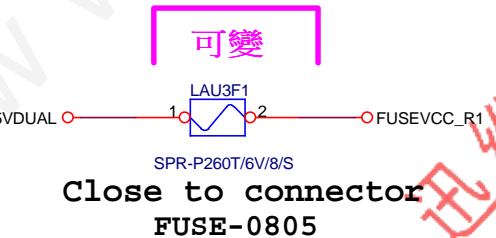


LA MDI-->100歐姆:[20/4/8/4/20]

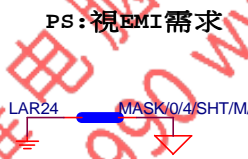
RMA ESD PROTECT note:可變更USB NAME



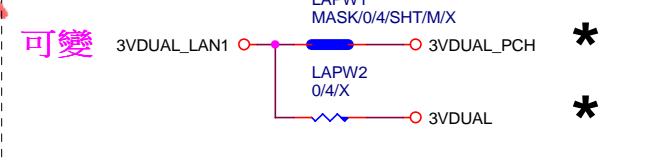
USB POWER note:可變更FUSE



EMI SHORT PAD PS:視EMI需求

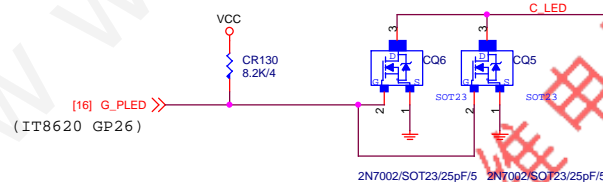
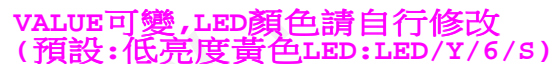
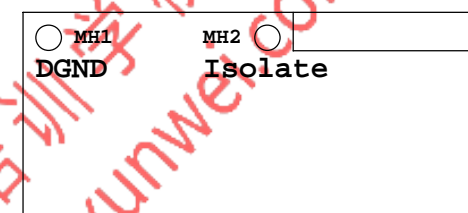
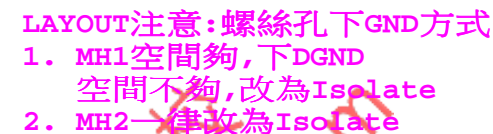


LAN POWER note:lan power連接及電流



Gigabyte Technology			
LAN CONNECTOR-RTL8111G			
Size	Document Number	Rev	
Custom		GA-B150M-HD3 DDR3-WP	
Date:	Tuesday, October 13, 2015	Sheet	42 of 52

Rev 0.5



*LAYOUT與否,依照各Model spec

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)

LAYOUT注意:要加

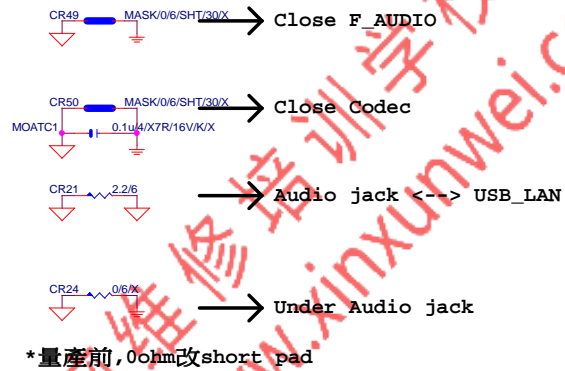
GND切割線

音效區域印刷

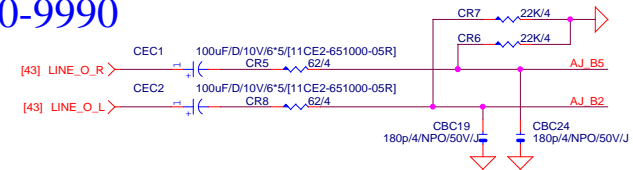
Gigabyte Technology			
Title			
HD AUDIO ALC887			
Size Custom	Document Number	GA-B150M-HD3 DDR3-M	
Date:	Tuesday, October 13, 2015	Sheet	43 of 52

Rev 0.5

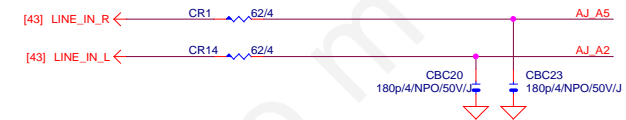
www.xinxunwei.com 400-800-9990



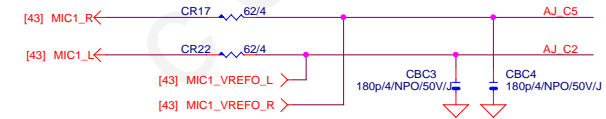
LINE-OUT



LINE-IN



MIC-IN

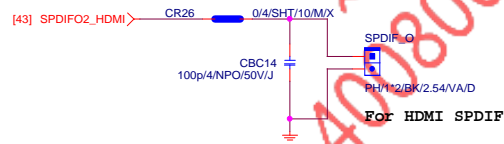


SURROUND

CEN/LFE

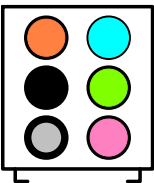
SURRBACK

SPDIF_OUT

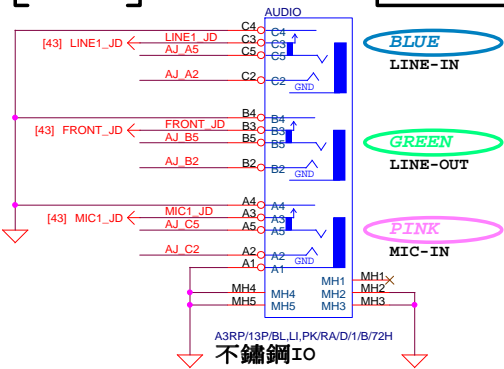


SPDIF_IN

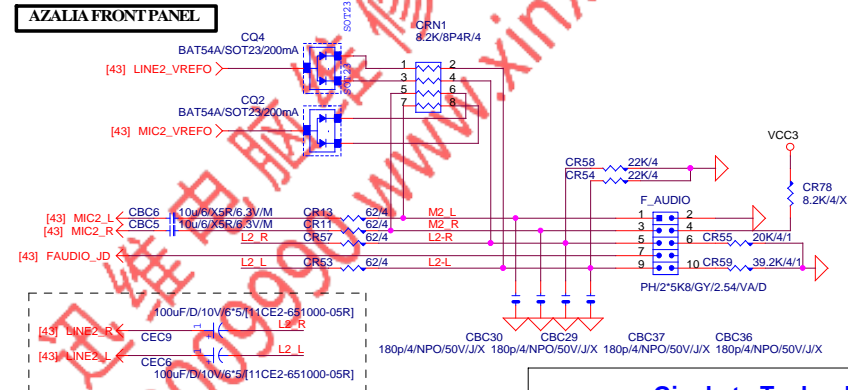
AZALIA JACK



AZALIA JACK



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

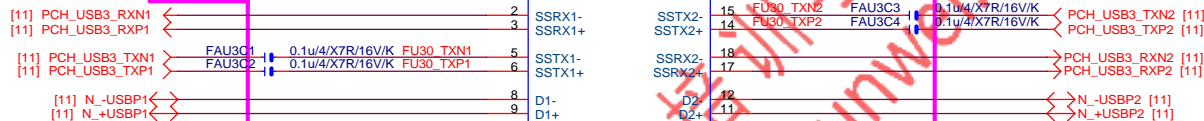
Rev: 0.53

Front USB3.0

F_USB30

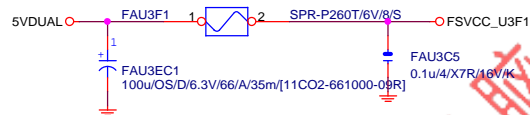
REV=1

NET 自行調整

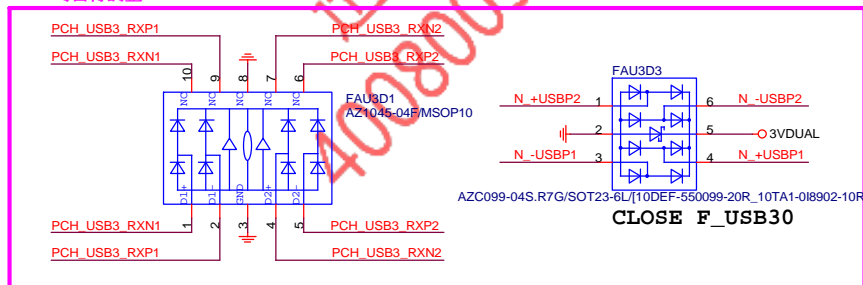


NET 可自行調整

F_USB30 PWR



NET 可自行調整

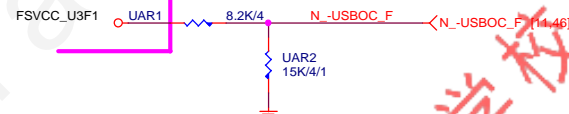


CLOSE F_USB30

CLOSE F_USB30

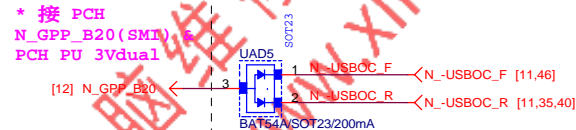
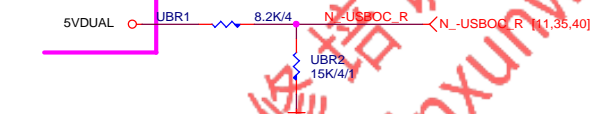
-USBOC_F

POWER 可自行調整



-USBOC_R

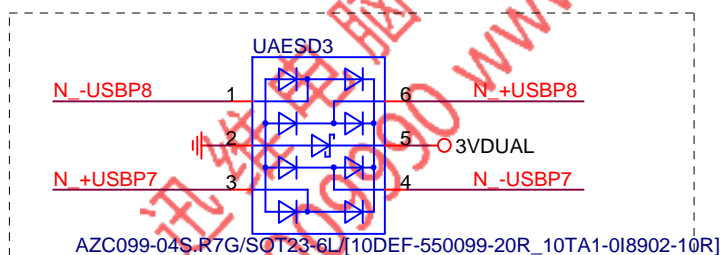
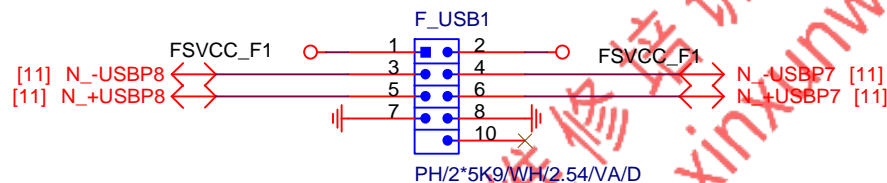
POWER 可自行調整



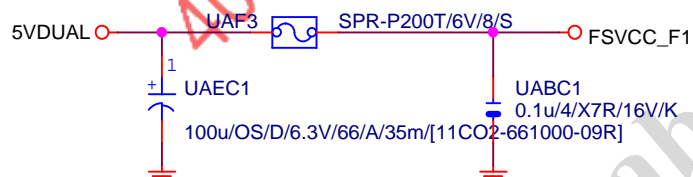
Gigabyte Technology

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

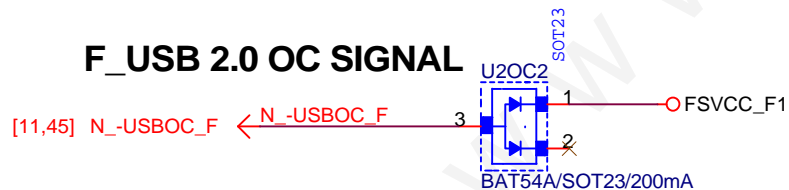
NET 可變



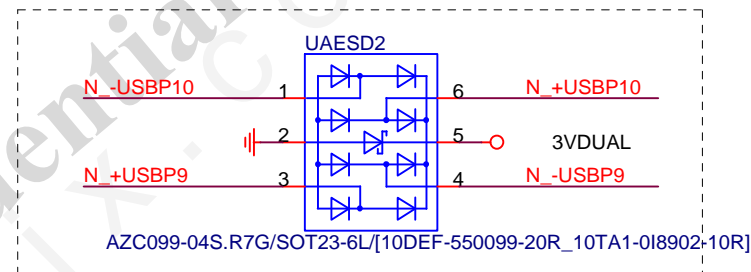
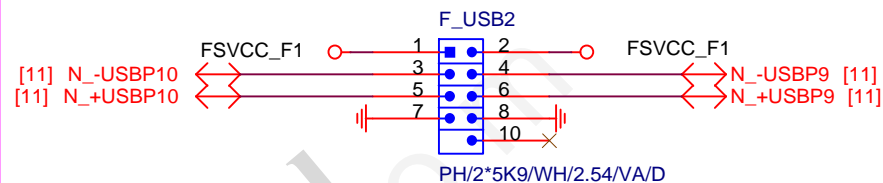
Close to connector
FUSE 2 Port 1 Fuse 2A



F_USB 2.0 OC SIGNAL



NET 可變



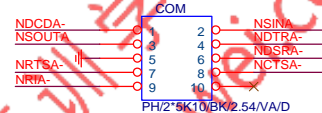
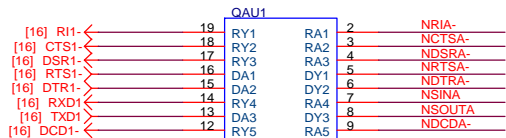
Close to connector
FUSE 2 Port 1 Fuse 2A



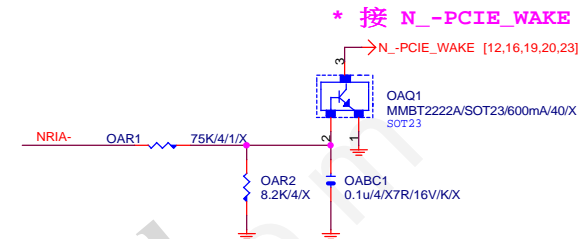
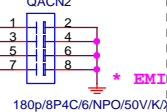
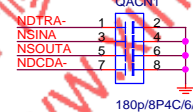
Gigabyte Technology

USB2.0

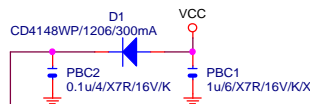
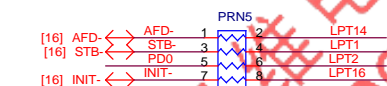
Size Custom	Document Number	Rev
	GA-B150M-HD3 DDR3-WP	1.0
Date:	Tuesday, October 13, 2015	Sheet 46 of 52



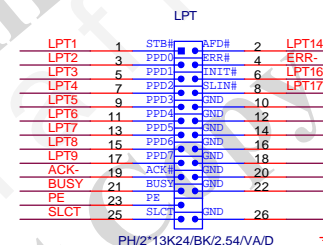
* footprint :
PIN2X5-CU10-COM



LPT PORT



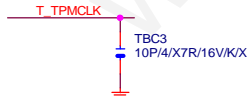
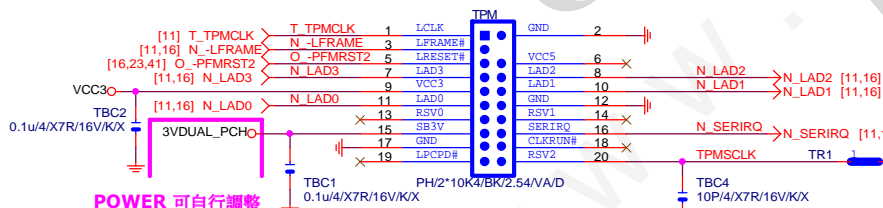
R&D技術通報151 有使用PRINT PORT的
MODEL，需使用新料號:10HP2-118728-72R。(CHIP IT8728F/EX (GB) ITE/SMD
QFP128 PRINTPORT SORTING)料件。串電阻33 ohm改為68 ohm。



* footprint :
PIN2X13_LPT-CUT24

TPM CONNECTOR

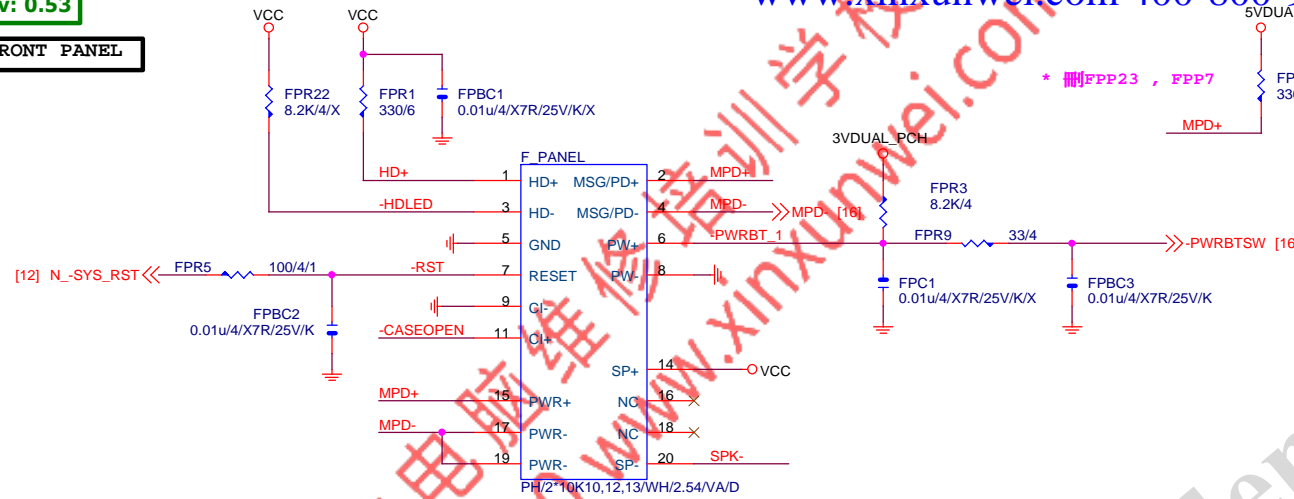
PH2X10-CUT4_TPM



Gigabyte Technology	
Title	FP,F_USB,USB PWR,BZ
Size	Document Number
Custom	GA-B150M-HD3 DDR3-WP
Date:	Tuesday, October 13, 2015
Sheet	47 of 52

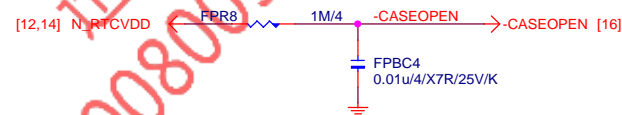


FRONT PANEL



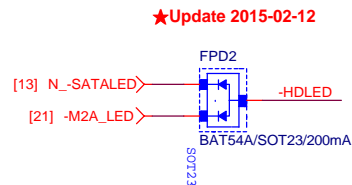
FOOTPRINT: PIN2X10PANEL-NEW

CASE OPEN

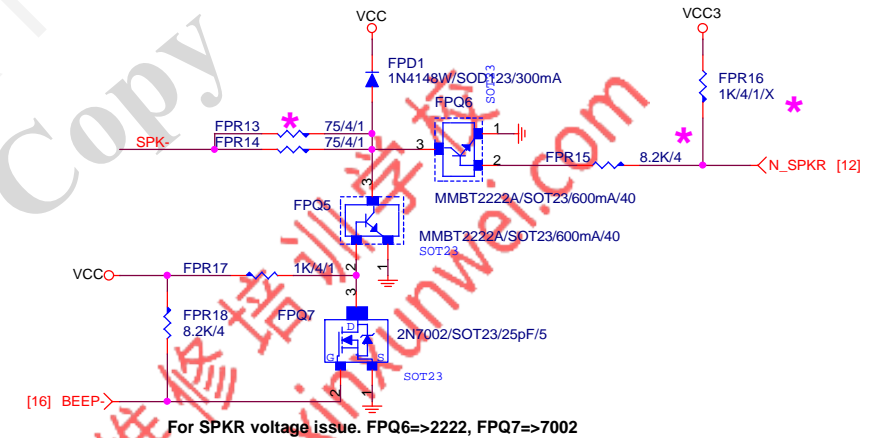


SATA LED

```
SATALED# signal open-collector,pull-up (8.2 kΩ to 10 kΩ) to
Vcc3_3
```



SPKR



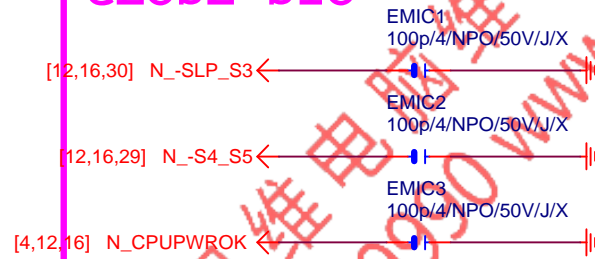
Gigabyte Technology

FRONT PANEL

GA-B150M-HD3 DDR3-WP	Rev
----------------------	-----

Title			
FRONT PANEL			
Size Custom	Document Number	Rev 1.0	
GA-B150M-HD3 DDR3		WP	
Date:	Tuesday, October 13, 2015	Sheet 48 of 52	

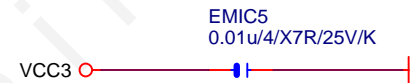
CLOSE SIO



CLOSE PCH



For H1703M-HD3 USB



GIGABYTE™

Title

EMI/ESD

Size
A

Document Number

GA-B150M-HD3 DDR3-WP

Rev
1.0

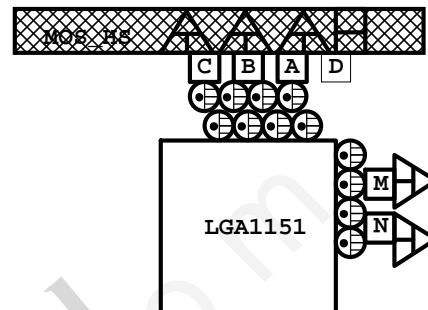
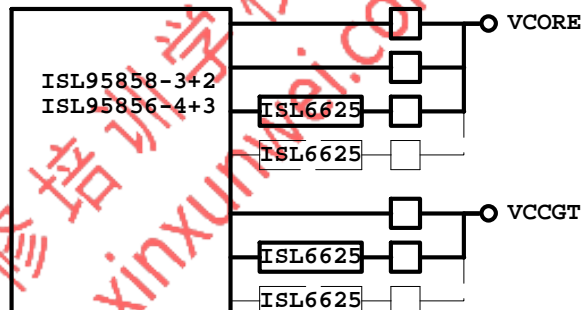
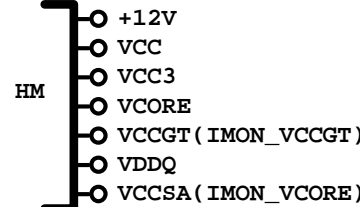
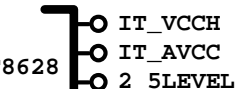
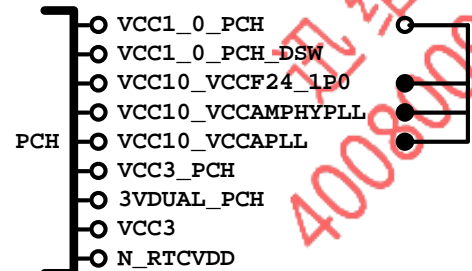
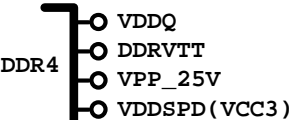
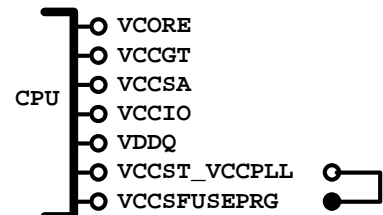
Date: Tuesday, October 13, 2015

Sheet 49 of 52

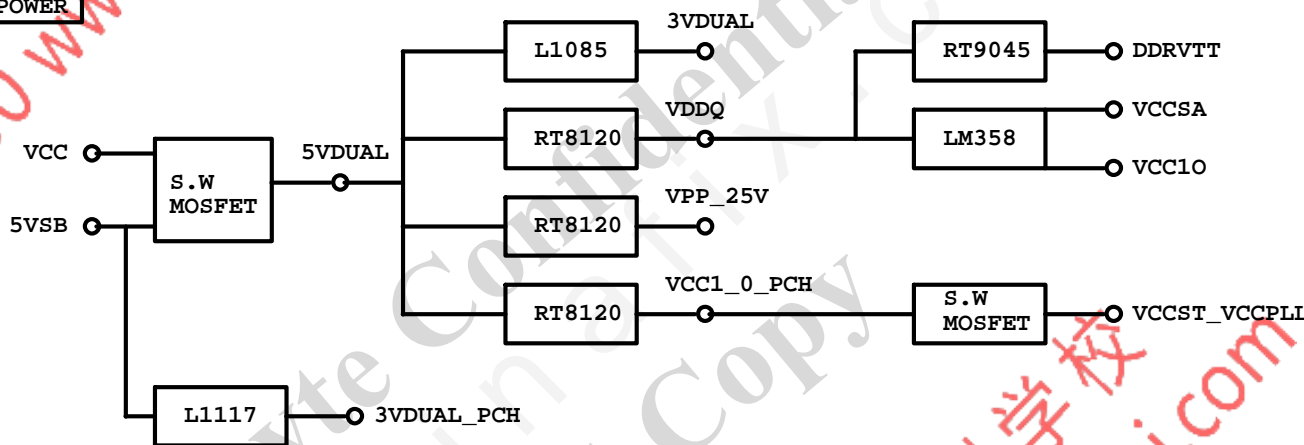
POWER BLOCK MAP

VCORE/VCCGT

www.xinxunwei.com 400-800-9990



POWER



FUSE POWER F/R



Gigabyte Technology

Title		POWER MAP	
Size	Document Number	GA-B150M-HD3 DDR3-WP	
B			
Date:	Tuesday, October 13, 2015	Sheet	50 of 52

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
11C02-685600-01R	560u/FP/D/6.3V/68/8m
11C05-882700-01R	270u/FP/D/16V/88/12m
11C05-661000-03R	100u/OS/D/16V/66/30m
11C02-651000-02R	100u/OS/D/6.3V/66/30m

台系固態	Capture Value
11C02-661000-09R	100u/OS/D/6.3V/66/A/35m
11C05-691000-09R	100u/OS/D/16V/69/A/35m
11C05-8C2700-09R	270u/FP/D/16V/8C/A/10m
11C02-695600-09R	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

GIGABYTE™			
Title POWER零件使用表			
Size Custom	Document Number GA-B150M-HD3 DDR3-WP		Rev 1.0
Date:	Tuesday, October 13, 2015	Sheet 51 of 52	

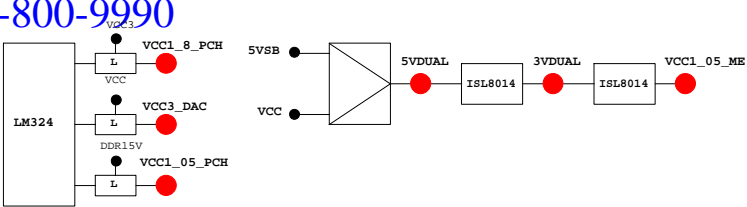


PCH GPIO LIST TABLE					
PIN NAME	PWR	Default	USAGE	NOTE	
GP0	MAIN	H-Z	GPI	GPI0	N/A
GP1/TACH1	MAIN		GPI	GPI01	N/A
GP2/PIRQE#	MAIN		GPI	-PIRQE	P/U 8.2K VCC3
GP3/PIRQF#	MAIN		GPI	-PIRQF	P/U 8.2K VCC3
GP4/PIRQG#	MAIN		GPI	-PIRQG	P/U 8.2K VCC3
GP5/PIRQH#	MAIN		GPI	-PIRQH	P/U 8.2K VCC3
GP6/TACH2	MAIN		GPI	PCIEX1 Detect	P/U 8.2K VCC3
GP7/TACH3	MAIN		GPI	GPI07	P/U 8.2K VCC3
GP8	STBY	H	GPI	GPI08	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	GPI012	N/A
GP13	STBY	L	GPI	LPCPME#	P/U 8.2K 3VDUAL
GP14/OC7#	STBY		NATIVE	USB OC7#	N/A
GP15	STBY	L	GPI	GPI015(TLS Enable)	P/U 8.2K 3VDUAL
GP16	MAIN		GPI	GPI016	P/U 8.2K VCC3
GP17/TACH0	MAIN		GPI	GPI017	P/U 8.2K VCC3
GP18	MAIN		GPI	Mobile Only	N/A
GP19	MAIN		GPI	GPI019	P/U 8.2K VCC3
GP20	MAIN		GPI	GPI020	P/U 8.2K VCC3
GP21	MAIN		GPI	GPI021	P/U 8.2K VCC3
GP22	MAIN	H-Z	GPI	GPI022	P/U 8.2K VCC3
GP23	MAIN		GPI	GPI023	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	GPI027	P/U 8.2K 3VDUAL
GP28	STBY	H	GPO	PWR_LED	P/U 8.2K 3VDUAL
GP29	STBY	L	GPI	GPI029	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	GPI039	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	GPI044	P/U 8.2K 3VDUAL
GP45	STBY		NATIVE	GPI045	P/U 8.2K 3VDUAL
GP46	STBY	L	NATIVE	GPI046	P/U 8.2K 3VDUAL
GP47	STBY			Mobile Only	N/A
GP48	MAIN	H-Z	IN	GPI048	P/U 8.2K 3VDUAL
GP49	MAIN	H-Z	IN	GPI049	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	GPI063	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	3V 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/SMBD_R	-EN_PWM2	
PSI_L/FAN_CLT5/CIRR1X2/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：

