

Model Name: GA-B150M-SE-SI

rev 1.0



SHEET

TITLE

SHEET

TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1151-A
05	CPU_LGA1151-B-DDR4
06	CPU_LGA1151-C
07	CPU_LGA1150-D
08	DDR3 CHANNEL A
09	DDR3 CHANNEL B
10	PCH_CLK BUFFER
11	PCH_DMI,USB,PCIE
12	PCH_MISC
13	PCH SATA,PCIE,SATA_EXPRESS
14	PCH_PWR,GND
15	Dual BIOS
16	ITE 8628 LPC IO
17	HWM
18	FAN CTRL--SIO
19	PCI EXPRESS*16 SLOT
20	PCI EXPRESS*1 SLOT
21	M.2X4
22	SATA EXPRESS
23	IT8892 PCI BRIDGE
24	PCI SLOT
25	ISL95858_856 PWM
26	ISL95858_856 MOS_VCORE
27	ISL95858_856 MOS_VCCGT

28	
29	VCCSA_VCCIO_VCCPLL
30	RT8120_DDR_VDDQ
31	
32	RT8120_PCH_VCC1_0_PCH
33	DISCRETE POWER
34	NCT3933
35	ATX POWER , A_-PROCHOT
36	KB_MS_USB
37	DVI CONN
38	RTD2168 - DP to VGA - IC
39	RTD2168 - DP to VGA - Conn
40	
41	R_USB30
42	REALTEK - RTL8111G
43	USB30_LAN CONNECTOR-RTL8111G
44	Realtek ALC887
45	REAR AUDIO JACK
46	F_USB30
47	F_USB
48	COM , LPT , TPM
49	F_PANEL
50	TABLE LIST
51	POWER MAP

Gigabyte Technology

Title		
Cover Sheet		
Size	Document Number	Rev
Custom	GA-B150M-SE-SI	1.0
Date:	Wednesday, May 25, 2016	Sheet 1 of 50

rev1.0

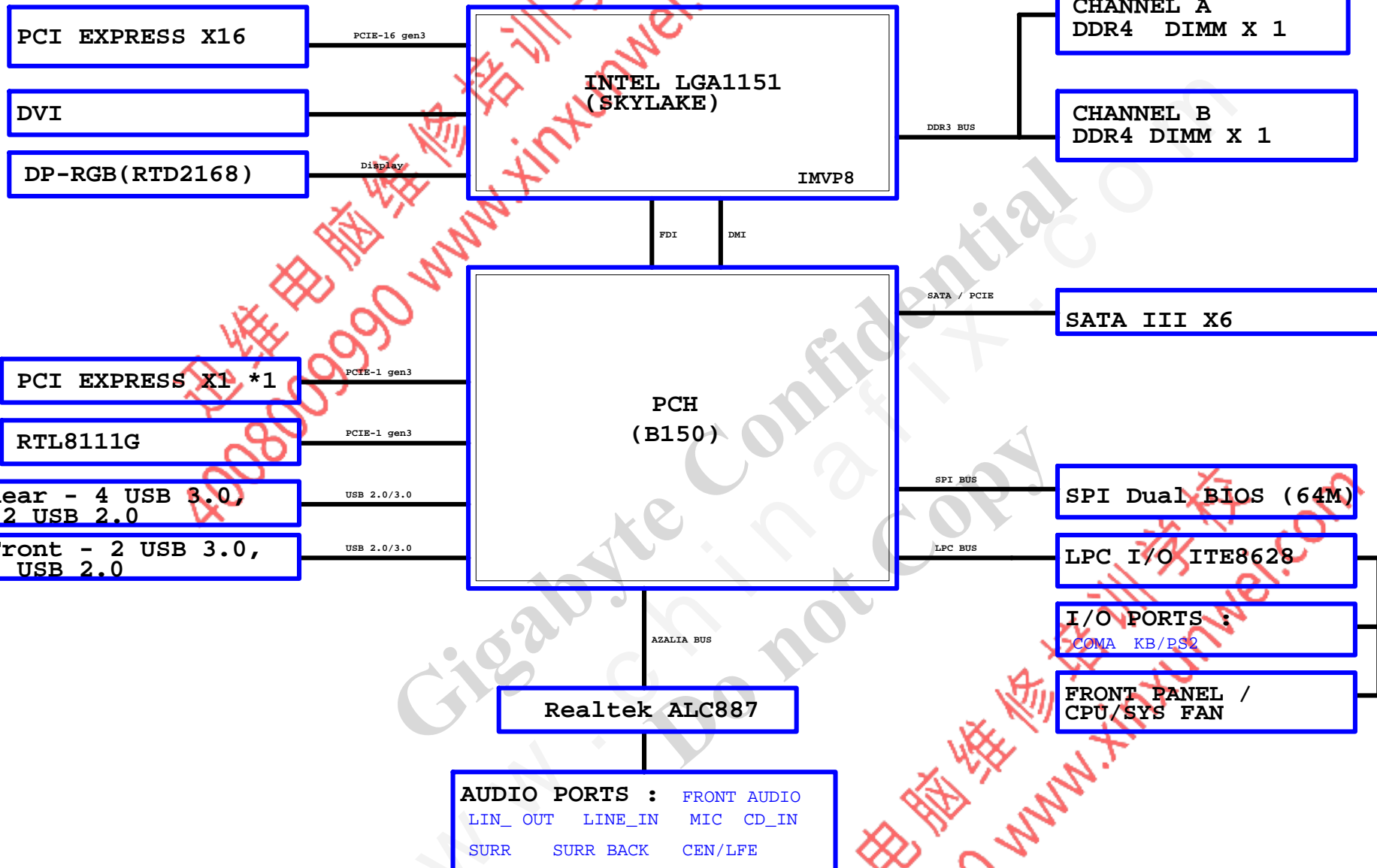
CHINA FDX

[illegible][illegible][illegible]

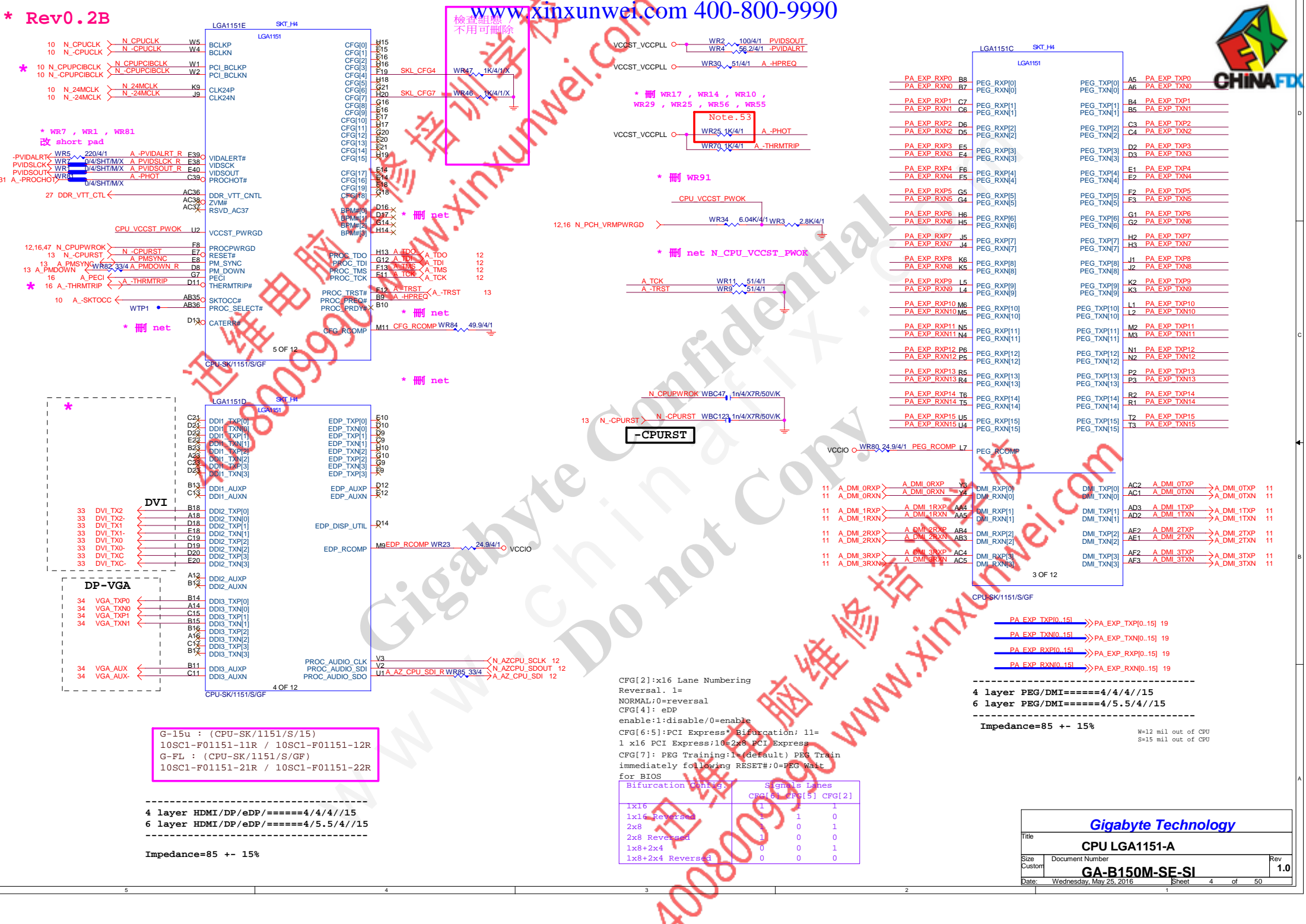
# GIGABYTE™

# BLOCK DIAGRAM

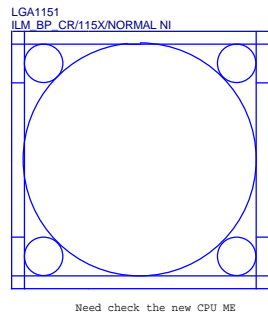
www.xinxunwei.com 400-800-9990

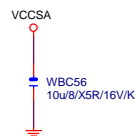


Rev0.2B

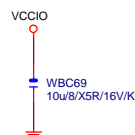




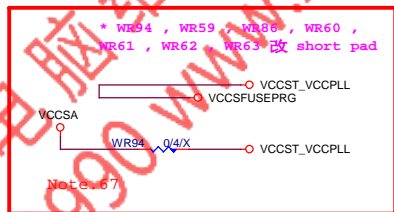




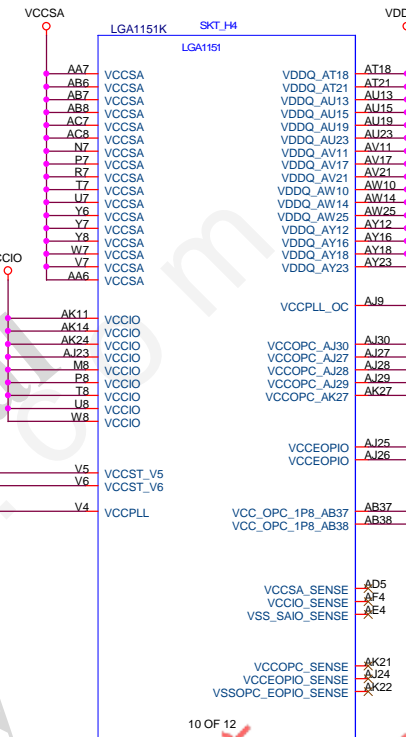
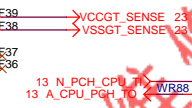
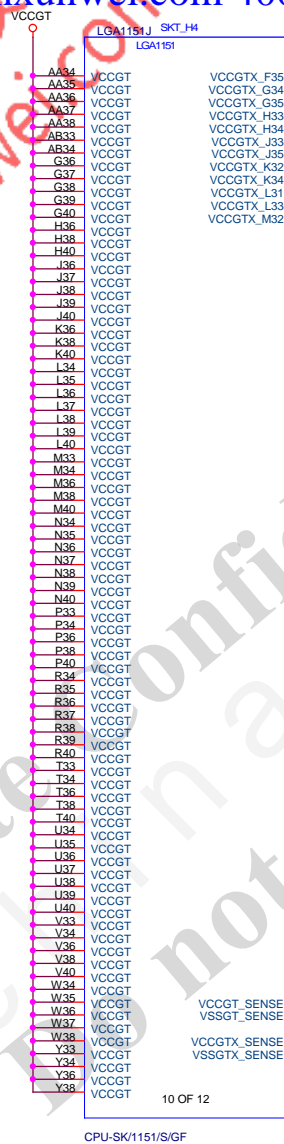
\* 删 WBC124 , WBC125 , WBC126 , WBC127 电容



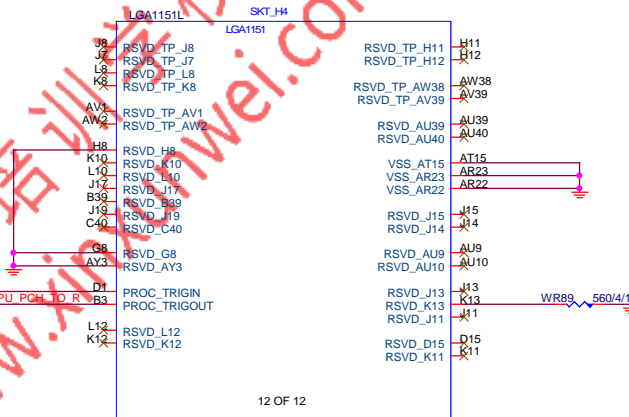
\* 删 VCCGT 电容



\* WR94 , WR59 , WR86 , WR60 ,  
WR61 , WR62 , WR63 改 short pad



CPU-SK/1151/S/GF



CPU-SK/1151/S/GF

Gigabyte Technology			
Title			
CPU LGA1151-C			
Size	Document Number	Rev	
Custom	GA-B150M-SF-SI	1.0	
Date:	Wednesday, May 25, 2016	Sheet	6 of 50

VCORE	LGA1151I SKT_H4	VCORE
LGA1151		
A25	VCC_A25	VCC_H32
A26	VCC_A26	VCC_J21
A27	VCC_A27	VCC_F32
A28	VCC_A28	VCC_F33
A29	VCC_A29	VCC_F34
A30	VCC_A30	VCC_G24
B25	VCC_B25	VCC_G25
B27	VCC_B27	VCC_G26
B29	VCC_B29	VCC_G27
B31	VCC_B31	VCC_G28
B32	VCC_B32	VCC_G29
B33	VCC_B33	VCC_J22
B34	VCC_B34	VCC_J23
B35	VCC_B35	VCC_J24
B36	VCC_B36	VCC_J25
C25	VCC_C25	VCC_J26
C26	VCC_C26	VCC_J27
C27	VCC_C27	VCC_J28
C28	VCC_C28	VCC_J29
C29	VCC_C29	VCC_J30
C30	VCC_C30	VCC_J31
C32	VCC_C32	VCC_K18
C34	VCC_C34	VCC_K20
C36	VCC_C36	VCC_K21
D25	VCC_D25	VCC_K23
D27	VCC_D27	VCC_K25
D29	VCC_D29	VCC_K27
D31	VCC_D31	VCC_K29
D32	VCC_D32	VCC_K31
D33	VCC_D33	VCC_K14
D34	VCC_D34	VCC_L16
D35	VCC_D35	VCC_L16
D36	VCC_D36	VCC_L17
E24	VCC_E24	VCC_L18
E25	VCC_E25	VCC_L19
E26	VCC_E26	VCC_L20
E27	VCC_E27	VCC_L21
E28	VCC_E28	VCC_L22
E29	VCC_E29	VCC_L23
E30	VCC_E30	VCC_L24
E32	VCC_E32	VCC_L25
E34	VCC_E34	VCC_L26
F36	VCC_F36	VCC_L27
F23	VCC_F23	VCC_L28
F24	VCC_F24	VCC_L29
F25	VCC_F25	VCC_L30
F27	VCC_F27	VCC_M13
F29	VCC_F29	VCC_M14
F31	VCC_F31	VCC_M16
G30	VCC_G30	VCC_M18
G32	VCC_G32	VCC_M20
H22	VCC_H22	VCC_M22
H23	VCC_H23	VCC_M24
H25	VCC_H25	VCC_M26
H27	VCC_H27	VCC_M28
H29	VCC_H29	VCC_M30
H31	VCC_H31	VCC_AJ12
AJ11	VCC_AJ11	VCC_AJ14
AJ13	VCC_AJ13	VCC_AJ16
AJ15	VCC_AJ15	VCC_AJ18
AJ17	VCC_AJ17	VCC_AJ20
AJ19	VCC_AJ19	VCC_AJ22
AJ21	VCC_AJ21	VCC_SENSE
		VCC_SENSE

9 OF 12

CPU-SK/1151/S/GF

\* 刪 Vcore 電容

LGA1151F SKT_H4	LGA1151
A11	VSS
A13	VSS
A15	VSS
A17	VSS
A24	VSS
A27	VSS
A33	VSS
AA33	VSS
AA8	VSS
AB39	VSS
AB5	VSS
AC3	VSS
AC33	VSS
AC34	VSS
AC65	VSS
AD1	VSS
AD33	VSS
AD36	VSS
AD37	VSS
AD38	VSS
AD39	VSS
AD4	VSS
AD40	VSS
AD6	VSS
AD7	VSS
AD8	VSS
AE3	VSS
AE33	VSS
AE36	VSS
AE5	VSS
AF3	VSS
AF33	VSS
AF36	VSS
AF37	VSS
AF40	VSS
AF5	VSS
AF8	VSS
AG1	VSS
AG2	VSS
AG3	VSS
AG33	VSS
AG36	VSS
AG4	VSS
AG5	VSS
AG8	VSS
AH33	VSS
AH36	VSS
AH37	VSS
AH38	VSS
AH39	VSS
AH40	VSS
AH5	VSS
AH8	VSS
AJ1	VSS
AJ31	VSS
AJ32	VSS
AJ33	VSS
AJ12	VSS
AJ35	VSS
AJ36	VSS
AJ4	VSS
AJ5	VSS
AJ8	VSS
AK10	VSS
AK12	VSS
AK13	VSS
AK15	VSS
AK16	VSS
AK17	VSS
AK18	VSS
AK19	VSS
AK20	VSS
AK23	VSS
AK25	VSS
AK26	VSS
AK28	VSS

6 OF 12

CPU-SK/1151/S/GF

LGA1151G SKT_H4	LGA1151
AR24	VSS
AR3	VSS
AR30	VSS
AR31	VSS
AR32	VSS
AR33	VSS
AR34	VSS
AR35	VSS
AR36	VSS
AR4	VSS
AR5	VSS
AT10	VSS
AT11	VSS
AT12	VSS
AT13	VSS
AT14	VSS
AT17	VSS
AT24	VSS
AT25	VSS
AT26	VSS
AT27	VSS
AT28	VSS
AT29	VSS
AT30	VSS
AT31	VSS
AT32	VSS
AT34	VSS
AT36	VSS
AT37	VSS
AT38	VSS
AT39	VSS
AT40	VSS
AT5	VSS
AT6	VSS
AT7	VSS
AT8	VSS
AT9	VSS
AT17	VSS
AU25	VSS
AU30	VSS
AU34	VSS
AU4	VSS
AU5	VSS
AU7	VSS
AV2	VSS
AV26	VSS
AV28	VSS
AV30	VSS
AV34	VSS
AV38	VSS
AV5	VSS
AV9	VSS
AW3	VSS
AW30	VSS
AW32	VSS
AW34	VSS
AW36	VSS
AW5	VSS
AW9	VSS
AY27	VSS
AY30	VSS
AY5	VSS
AY7	VSS
AY9	VSS
B24	VSS
B26	VSS
B28	VSS
B30	VSS
B6	VSS
C12	VSS
C14	VSS
C16	VSS
C18	VSS
C20	VSS
C22	VSS
C24	VSS
C31	VSS
C33	VSS
C35	VSS

7 OF 12

CPU-SK/1151/S/GF

LGA1151H SKT_H4	LGA1151
C37	VSS
C5	VSS
C8	VSS
C10	VSS
D24	VSS
D26	VSS
D28	VSS
D30	VSS
D37	VSS
D39	VSS
D4	VSS
D7	VSS
E110	VSS
E13	VSS
E15	VSS
E17	VSS
E19	VSS
E21	VSS
E23	VSS
E3	VSS
E31	VSS
E33	VSS
E35	VSS
E37	VSS
E6	VSS
E9	VSS
F1	VSS
F10	VSS
F22	VSS
F26	VSS
F28	VSS
F30	VSS
F4	VSS
F40	VSS
F7	VSS
G11	VSS
G13	VSS
G15	VSS
G17	VSS
G19	VSS
G22	VSS
G3	VSS
G31	VSS
G33	VSS
G6	VSS
H1	VSS
H21	VSS
H24	VSS
H26	VSS
H28	VSS
H30	VSS
H35	VSS
H37	VSS
H39	VSS
H4	VSS
H7	VSS
H9	VSS
J10	VSS
J12	VSS
L11	VSS
J16	VSS
J18	VSS
J20	VSS
J3	VSS
J62	VSS
J84	VSS
J6	VSS
K1	VSS
K14	VSS
K15	VSS
K17	VSS
K19	VSS
K22	VSS
K24	VSS
K26	VSS
K28	VSS
K30	VSS
K33	VSS
K35	VSS
K37	VSS

8 OF 12

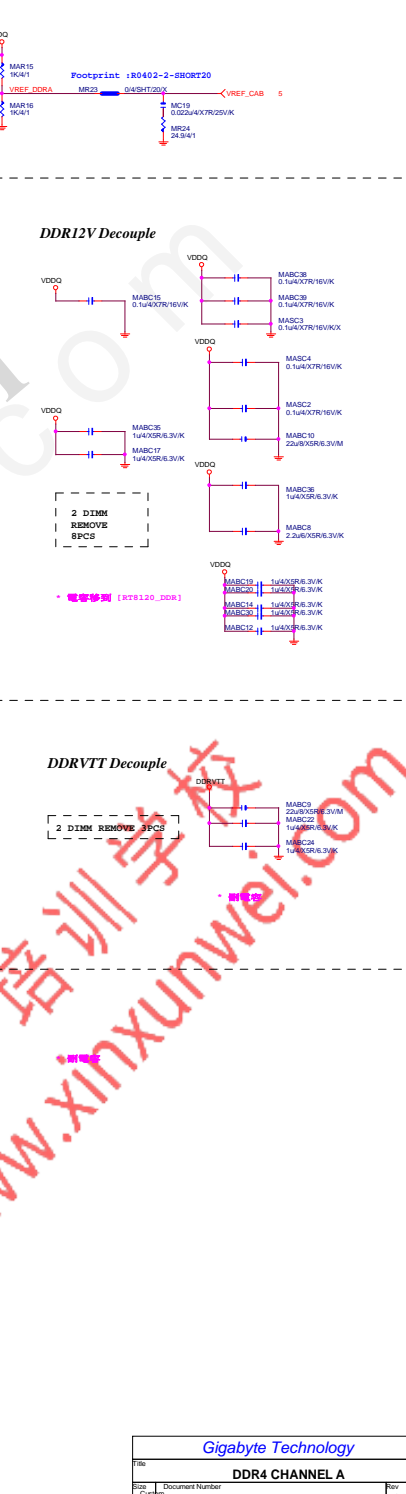
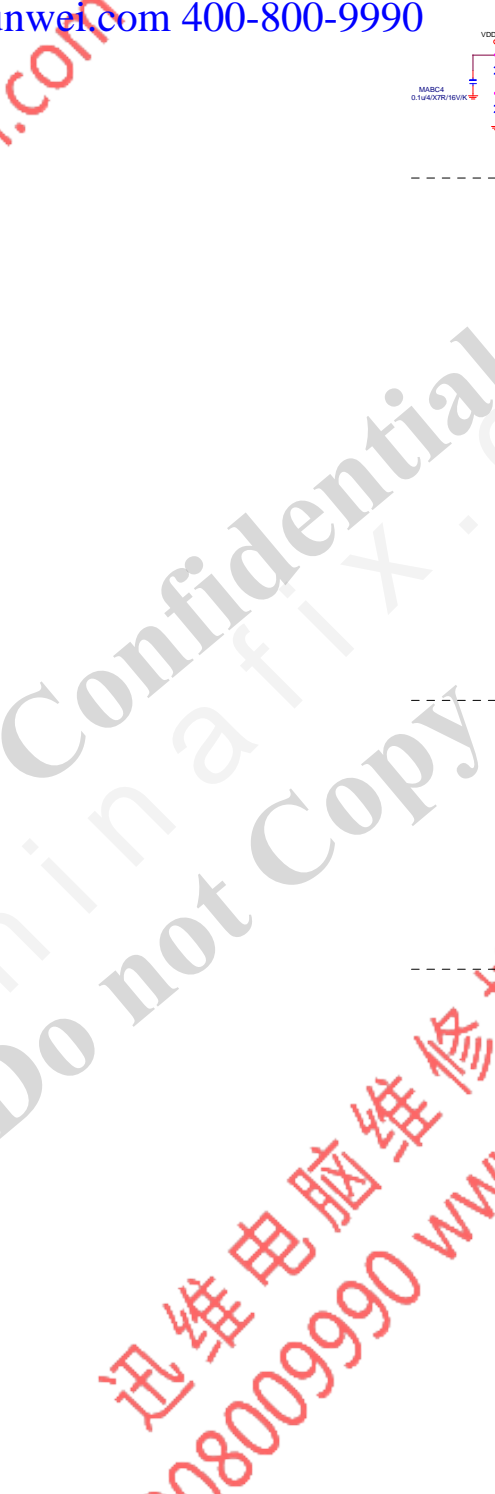
CPU-SK/1151/S/GF

A4 VSS\_NCTF  
B38 VSS\_NCTF  
C2 VSS\_NCTF  
D40 VSS\_NCTF

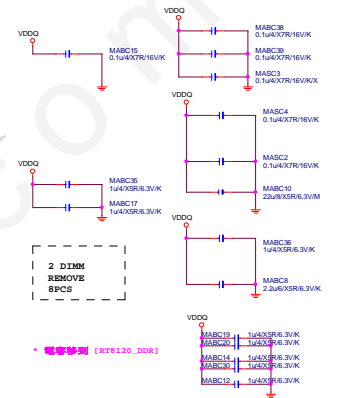
Gigabyte Technology

Title	CPU LGA1151-C	
Size Custom	Document Number	Rev 1.0
Date:	Wednesday, May 25, 2016	Sheet 7 of 50





DDR12V Decouple

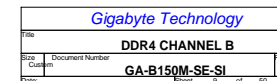


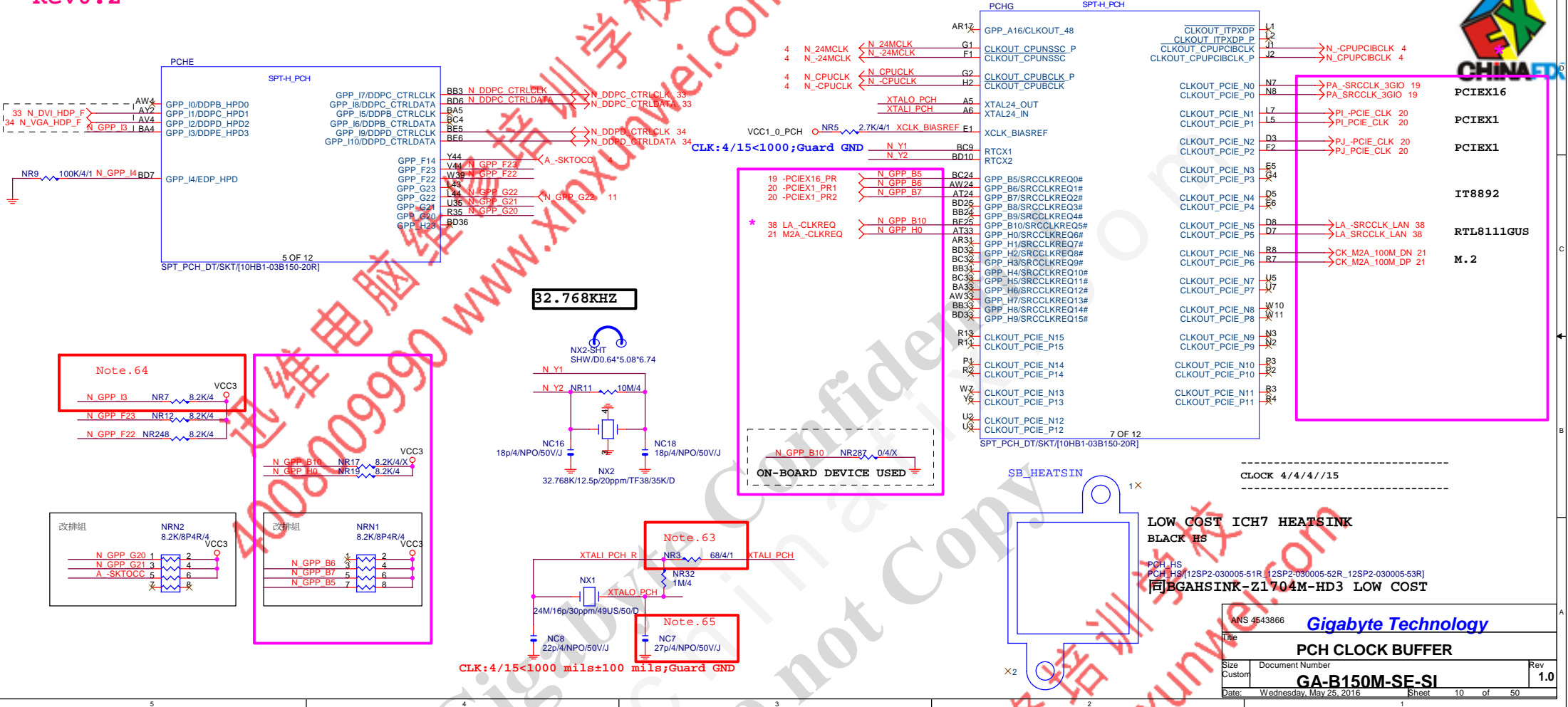
DDRVTT Decouple

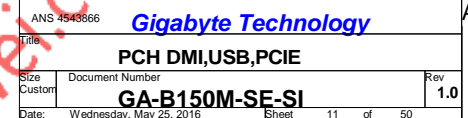


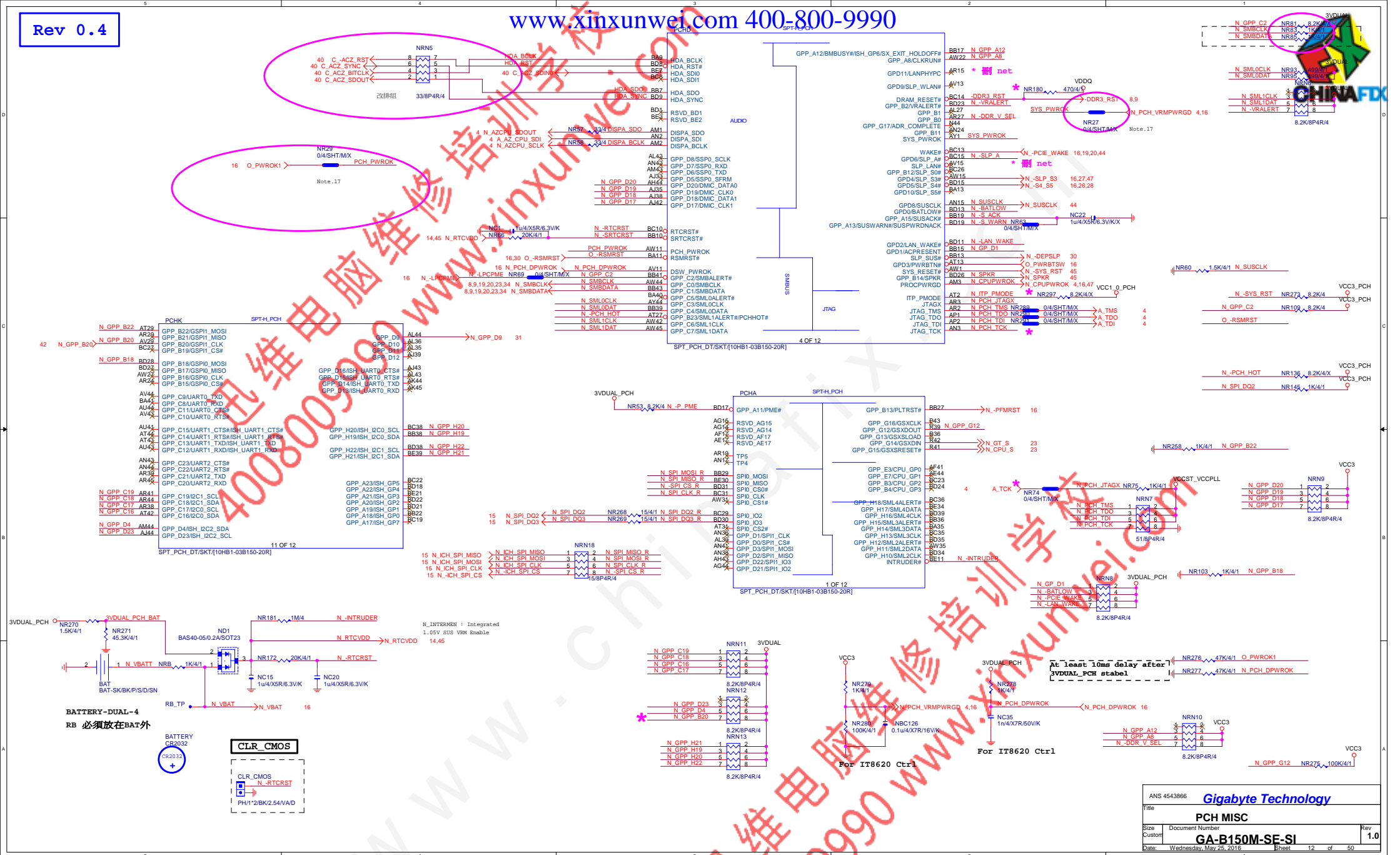
Gigabyte Technology		
File	DDR4 CHANNEL A	
Size	Document Number	Rev
Comp	GA-B150M-SE-SI	1.0
Doc	Page 6 of 80	



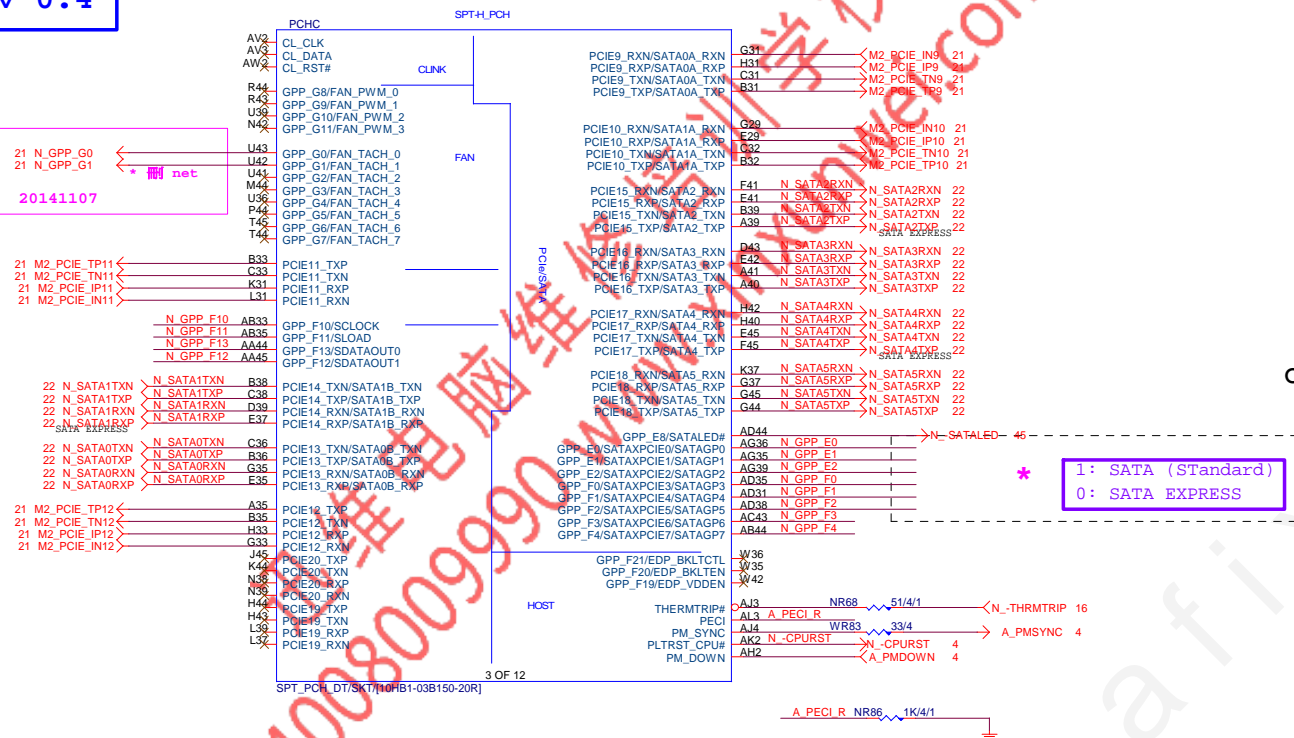




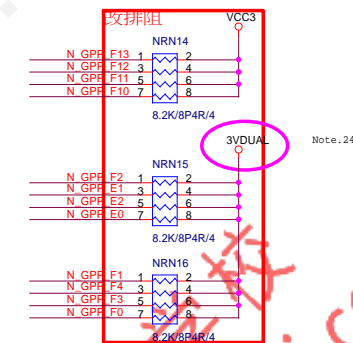
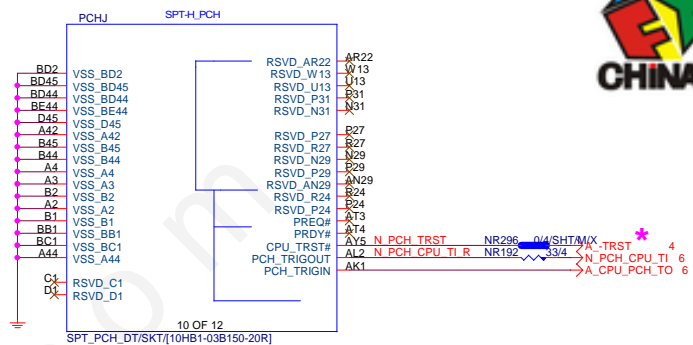


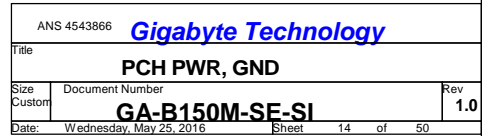


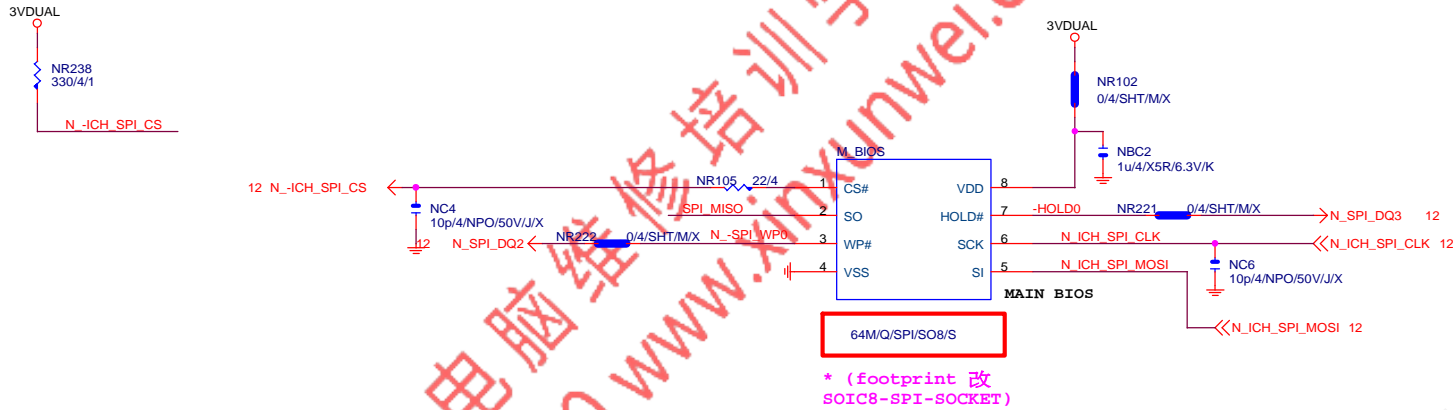




C1/D1 公版NC pin

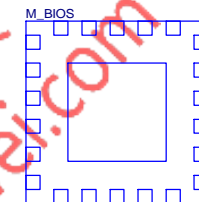
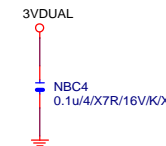






BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

1 means floating  
0 means PD 1K



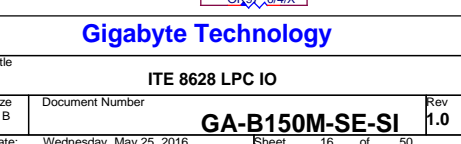
LCP/G-FL/1.27mm/200MIL/WHITE[10SL2-000008-31R]X

\* 試產先上，PVT 移除

BIOS PH

Gigabyte Technology

Title		BIOS	
Size	Document Number	GA-B150M-SE-SI	Rev
Custom			1.0
Date:	Wednesday, May 25, 2016	Sheet	15 of 50



OBC12  
10u6/X5R/6.3V/M

OBC3  
0.1u4/X7R/16V/K

OBC2  
1u4/X5R/6.3V/K

OBC7  
0.1u4/X7R/16V/K

OBC10  
10u6/X5R/6.3V/M

OBC8  
0.1u4/X7R/16V/K

OBC16  
22u8/X5R/6.3V/M

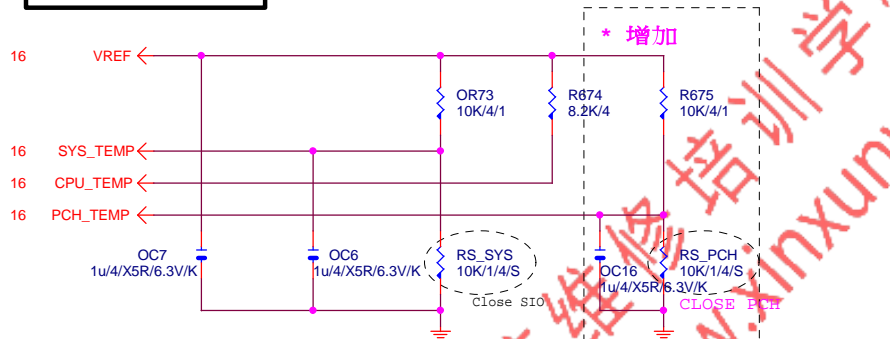
OBC15  
1u4/X5R/6.3V/K

CLOSE SIO PIN4 2.5LEVEL



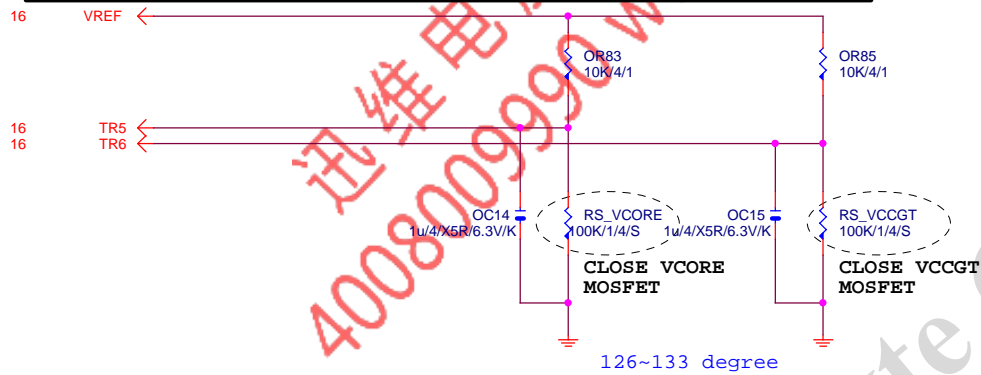
## TEMP H/W MONITOR

REV 1.04



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

-PROCHOT:有mos heartsink不用prochot function

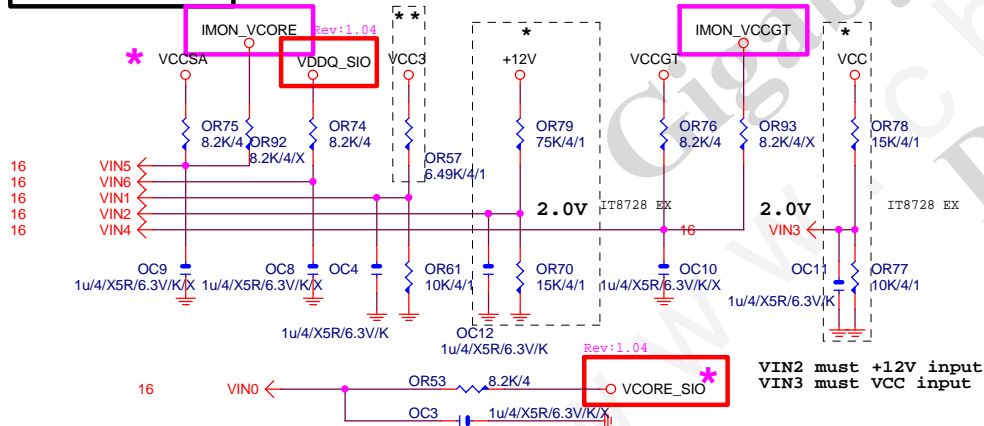


## VOLTAGE-- H/W MONITOR

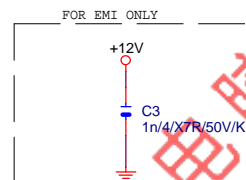
Connect to PWM

\* IT8728 BX  
\*\* IT8728 CX

Connect to PWM



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

VIN2 must +12V input  
VIN3 must VCC input

Gigabyte Technology

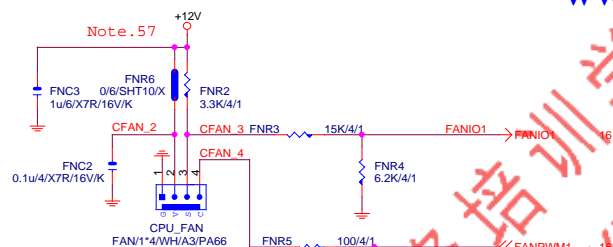
Title			HWM,KB/MS, FAN CTRL	
Size	Document Number	Rev		
Custom	GA-B150M-SE-SI	1.0		
Date:	Wednesday, May 25, 2016	Sheet	17	of 50



# CPU SMART FAN

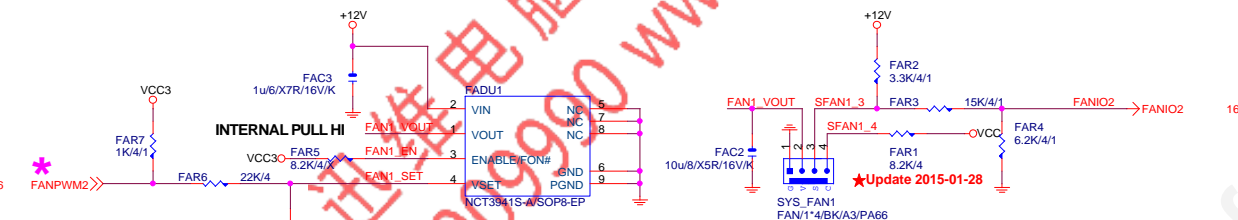
Rev: 0.53

Trace 40mil  
Pad 10 mil  
Trace 40mil  
Pin2



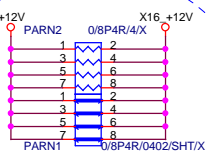
# SYSTEM FAN1

A. Linear SYS\_FAN  
Enable Function (NCT3941S)  
Full Turn On Function (NCT3941S-A)





+12V\_protect  
short-wire test



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

PCIE16:16/5/5/5/16

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

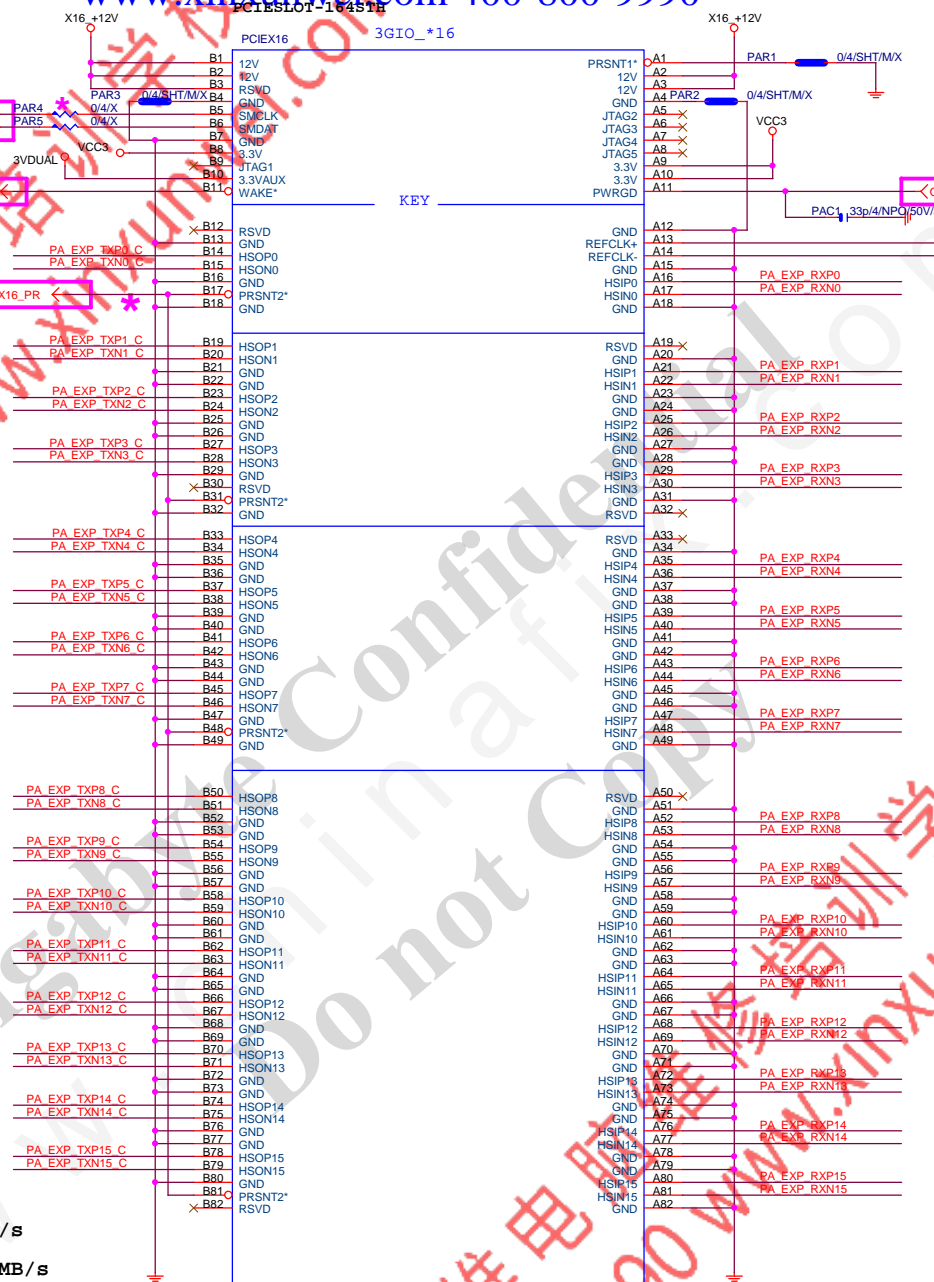
PCE-E X1(單向) BANDWIDTH=2.5GHz\*(8b/10b)=2Gb/s=250MB/s

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

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

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

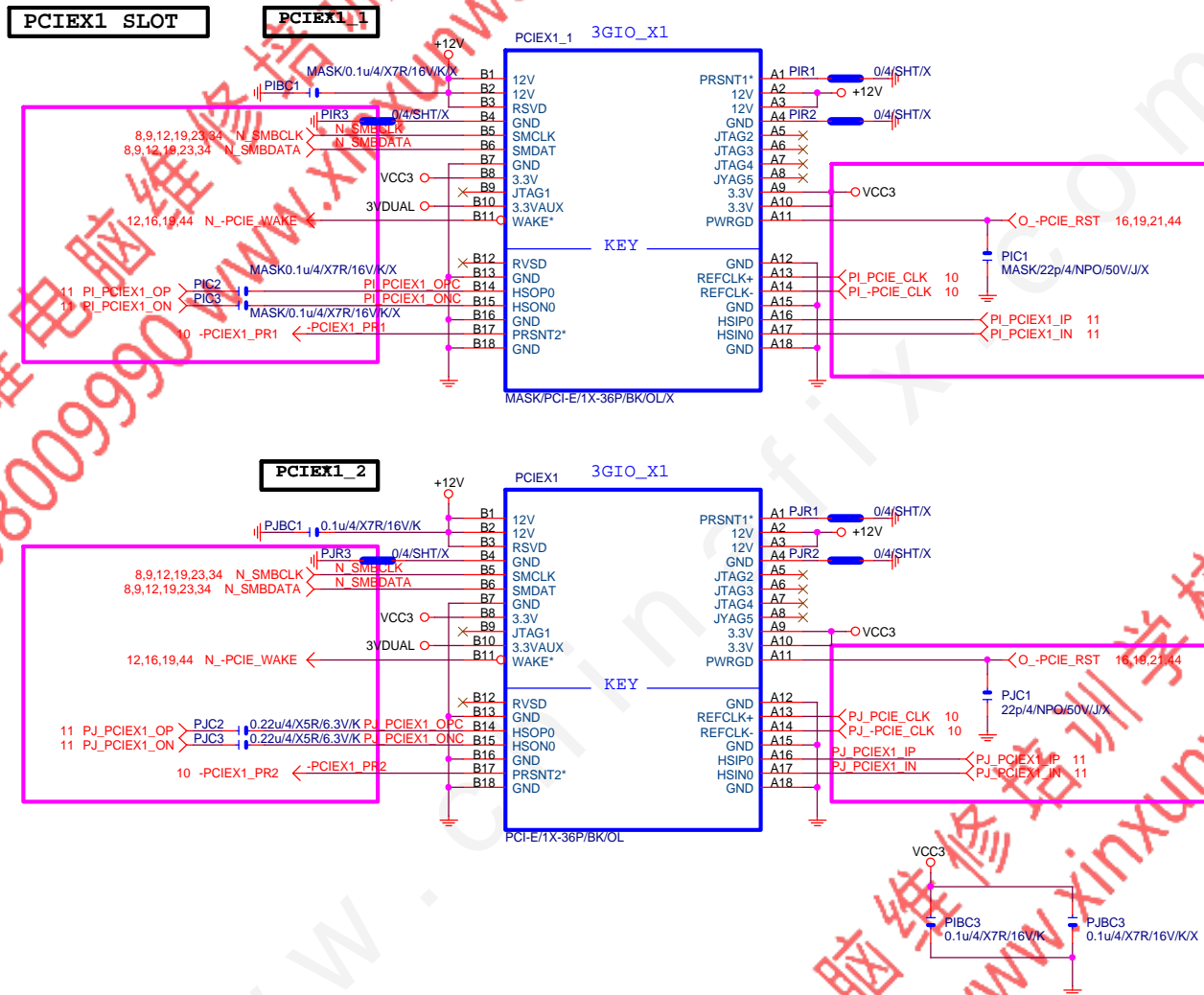
PCI-E REV:2.0--&gt; 5GHZ



PCI-E/16x164P/GY/LONG DOUBLE/HK'2

Gigabyte Technology

Title				
PCI EXPRESS * 16				
Size	Document Number			Rev
Custom	GA-B150M-SE-SI			1.0
Date:	Wednesday, May 25, 2016	Sheet	19 of 50	

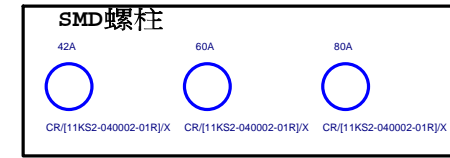


Gigabyte Technology

Title			
PCIE_X1 1,2			
Size	Document Number		Rev
Custom	GA-B150M-SE-SI		1.0
Date:	Wednesday, May 25, 2016	Sheet 20	of 50

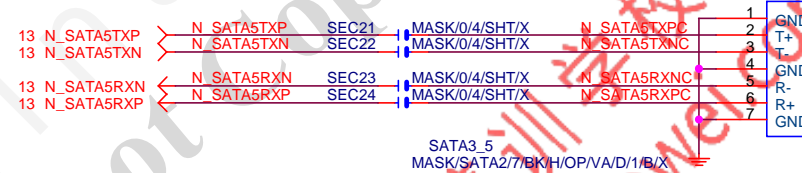
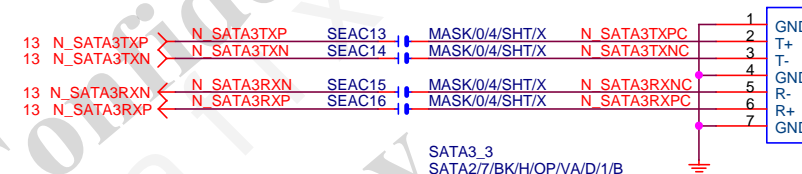
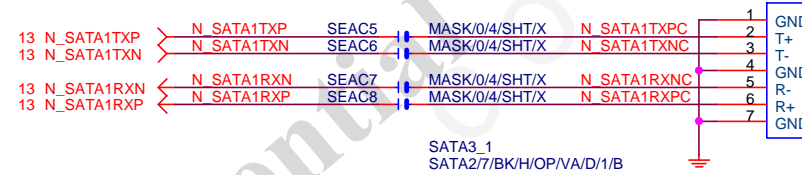
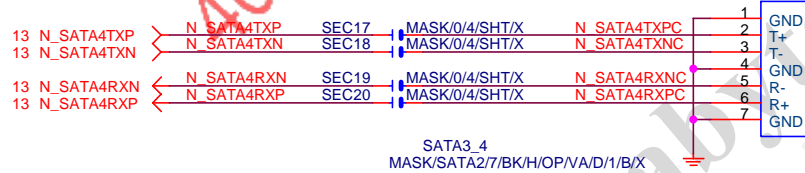
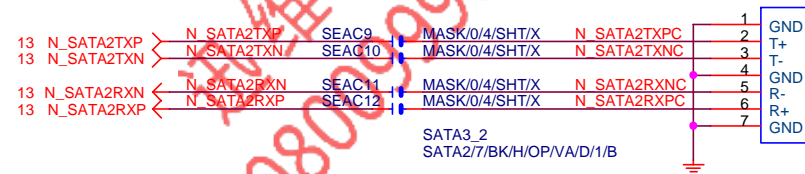
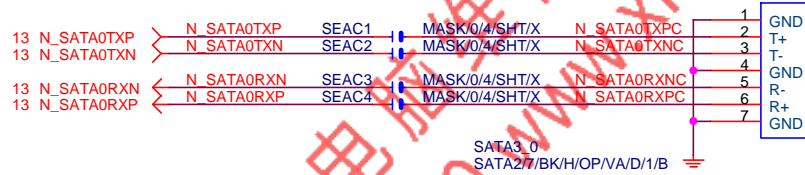


M.2 Lane2 from PCH port15



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	

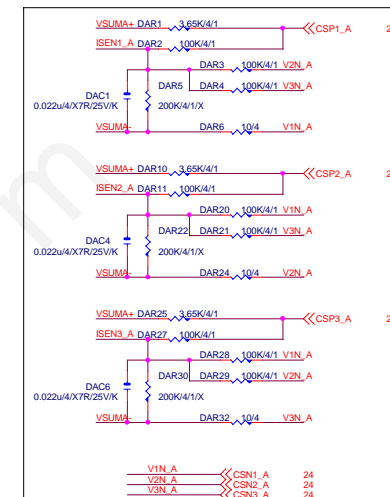
Note.40



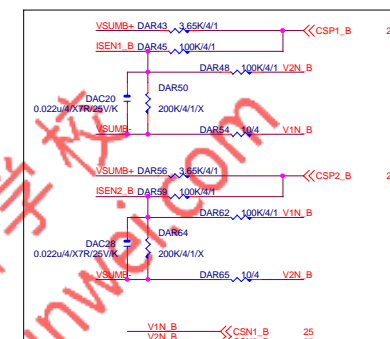
Gigabyte Technology

Title  
SATA EXPRESSSize Custom Document Number  
GA-B150M-SE-SIRev  
1.0

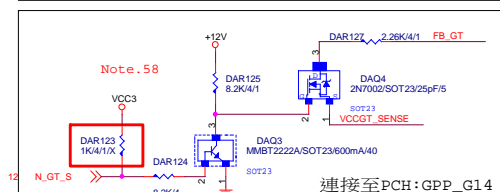
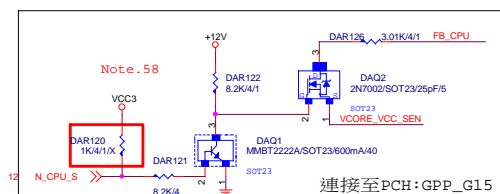
Date: Wednesday, May 25, 2016 Sheet 22 of 50



CLOSE PWM



CLOSE PWM

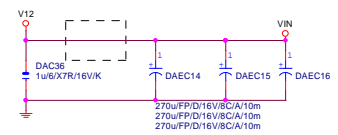




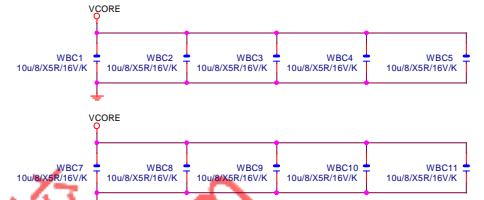
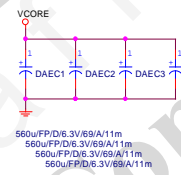
VCORE



VIN CAP 270u\*3PCS



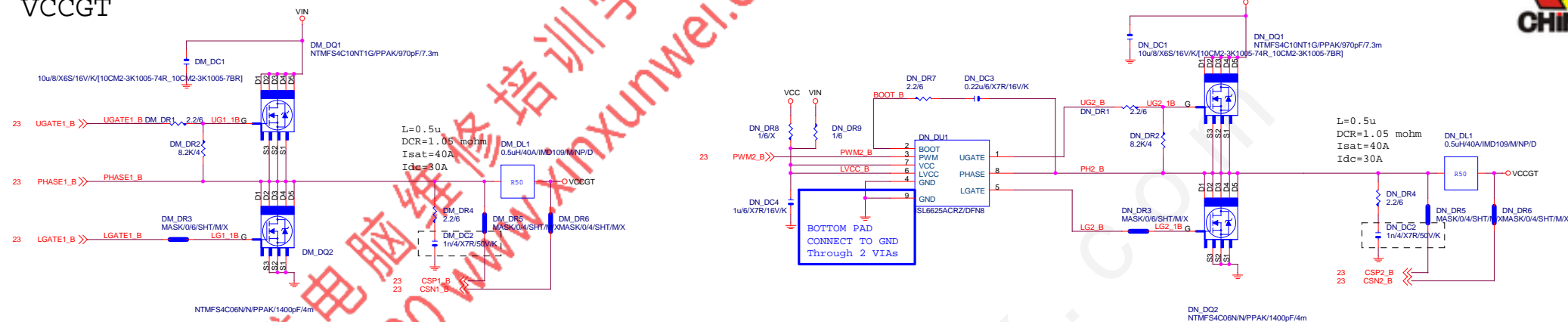
VCORE CAP 560u\*4PCS 10u\*10PCS



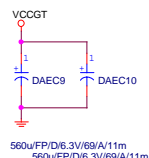
GIGABYTE™			
Title			
ISL95858_MOS			
Size	Document Number	Rev	
Custm	GA-B150M-SE-SI	1.0	
Date:	Wednesday, May 25, 2016	Sheet	24 of 50

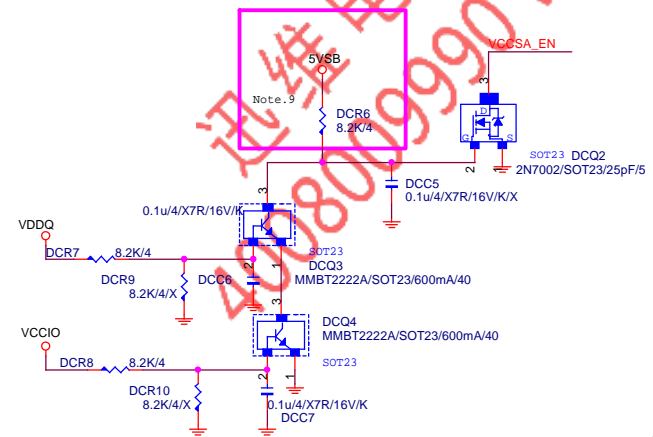
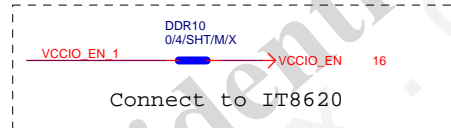
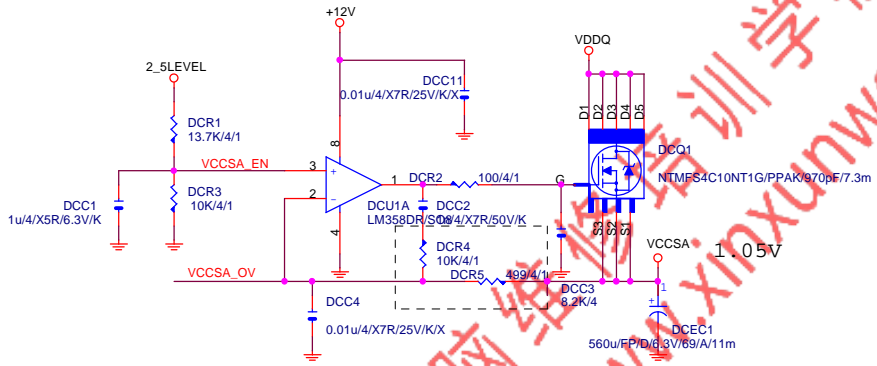


## VCCGT

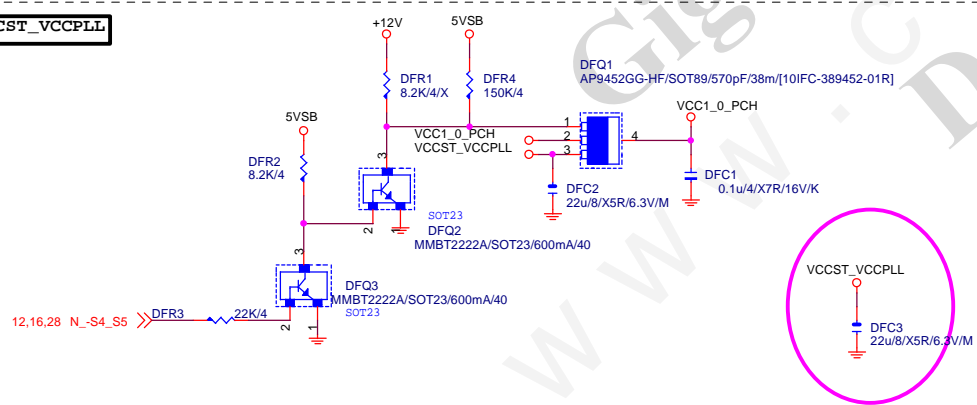


## VCCGT CAP

560u\*2PCS  
10u\*2PCS



VCCST\_VCCPLL



GIGABYTE™			
Title VCCSA_VCCIO			
Size	Document Number	Rev	
Custom	GA-B150M-SE-SI	1.0	
Date:	Wednesday, May 25, 2016	Sheet	26 of 50



## CHOKE與CAP料號可變

<b>GIGABYTE™</b>			
Title <b>RT8068A_VPP25_POWER</b>			
Size	Document Number	Rev	
Custom	<b>GA-B150M-SE-SI</b>	<b>1.0</b>	
Date:	Wednesday, May 25, 2016	Sheet	28 of 50

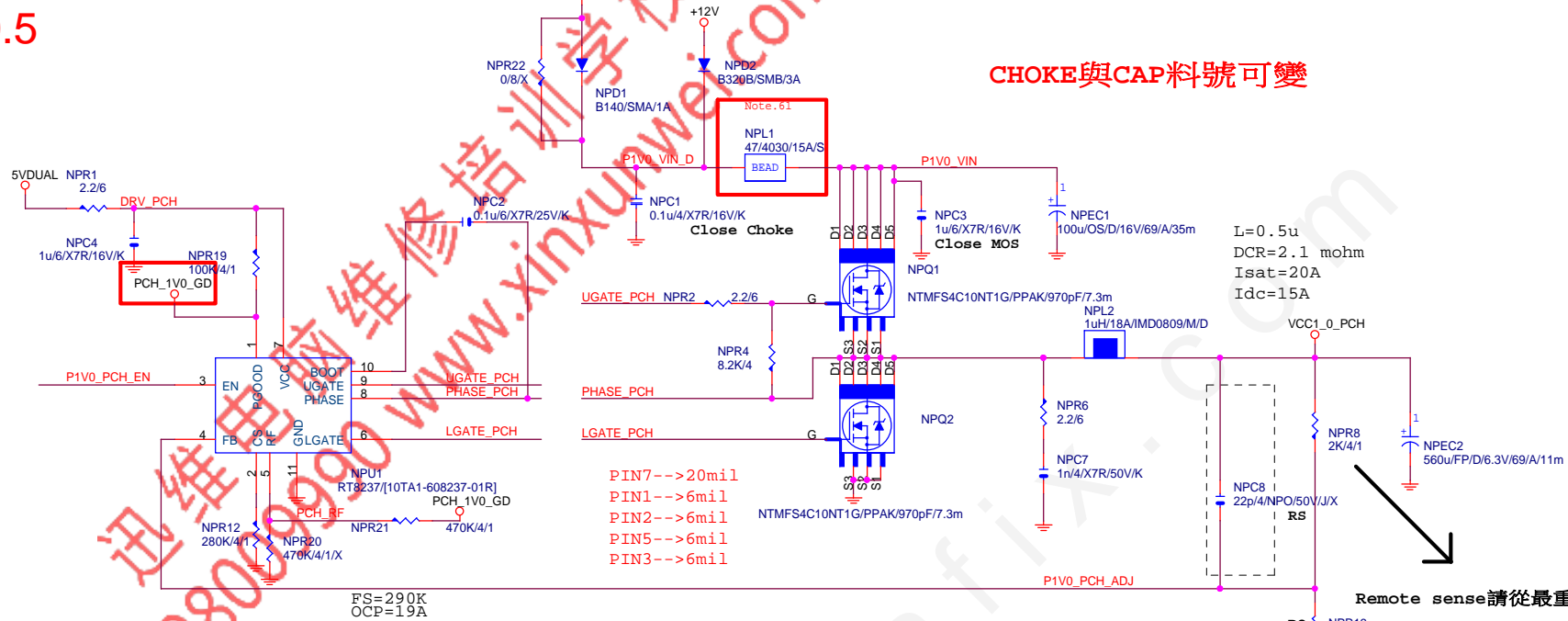


REV:0.5

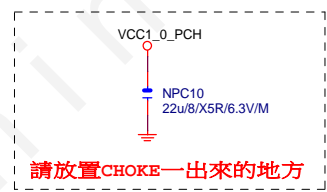
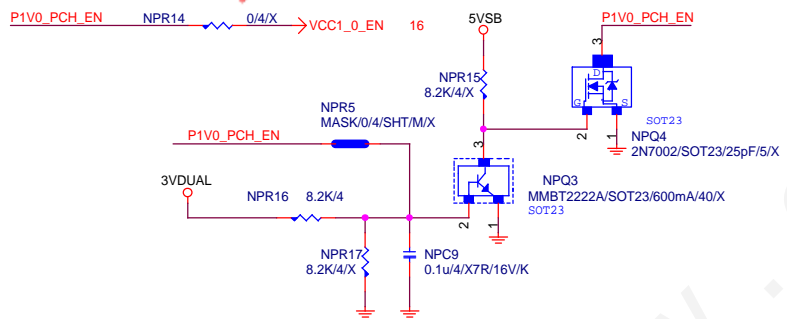
www.xinxunwei.com 400-800-9990



CHOKE與CAP料號可變



PWR\_SEQ

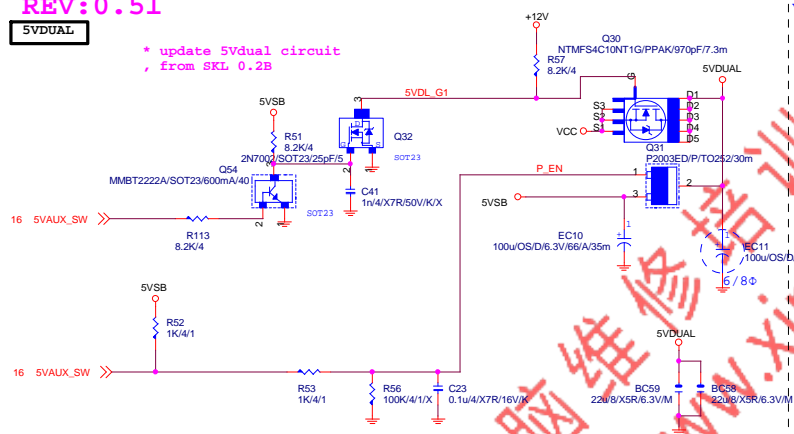


GIGABYTE™			
Title			
RT8237_PCH POWER			
Size	Document Number	Rev	
Custom	GA-B150M-SE-SI	1.0	
Date:	Wednesday, May 25, 2016	Sheet	29 of 50

REV: 0.51

5VDUAL

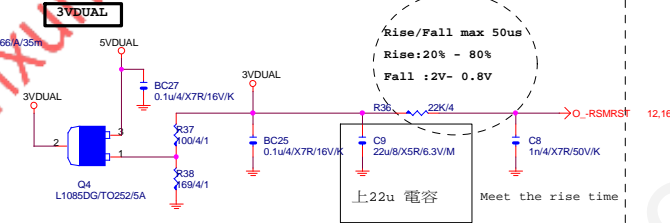
\* update 5Vdual circuit  
from SKL 0.2B



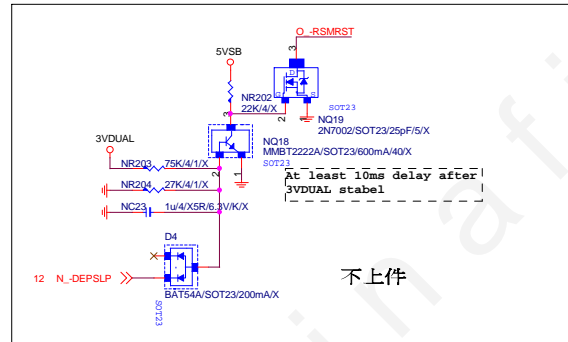
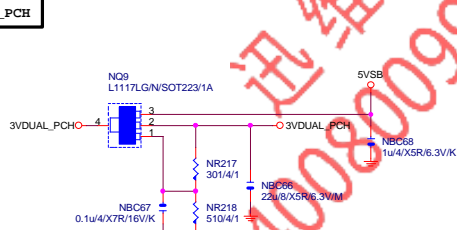
www.xinxunwei.com 400-800-9990



3VDUAL



3VDUAL\_PCH



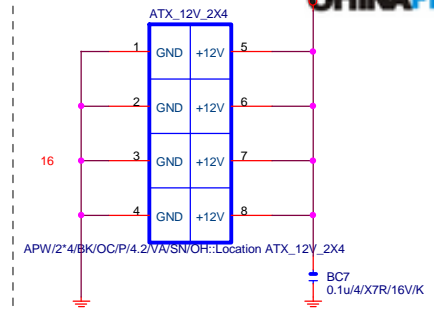
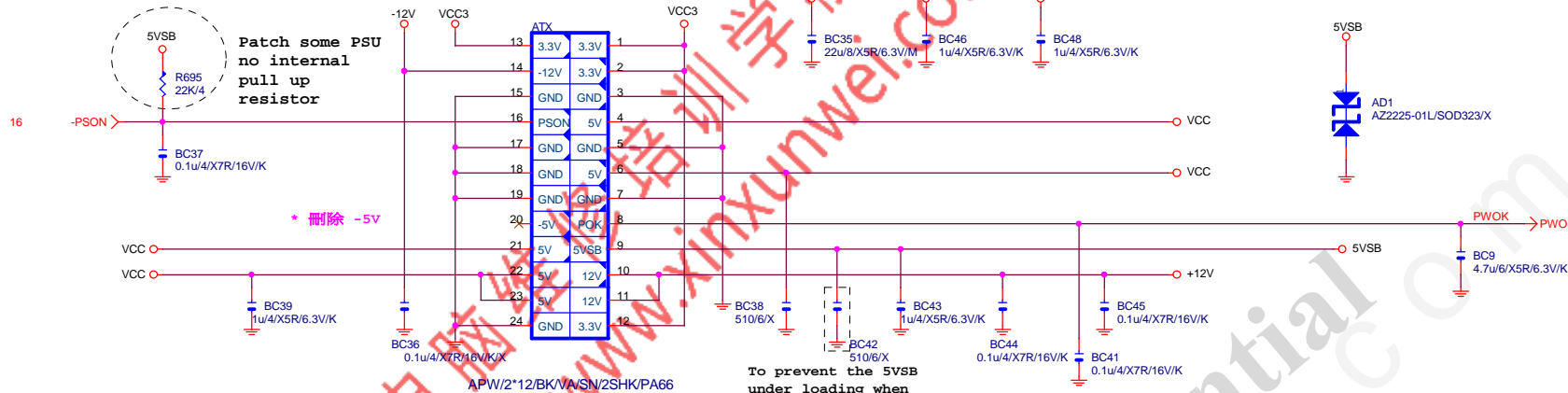
Gigabyte Technology

Title			DISCRETE POWER
Size	Document Number	GA-B150M-SE-SI	
Custom		Rev	1.0
Date:	Wednesday, May 25, 2016	Sheet	30 of 50

# ATXX24 POWER CONNECTOR

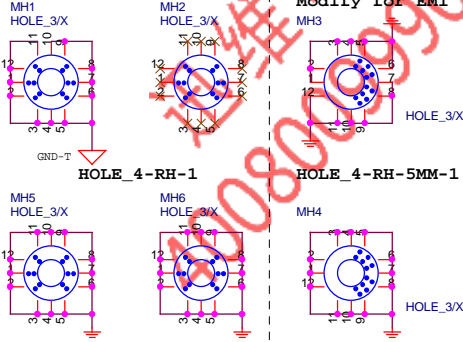
www.xinxunwei.com 400-800-9990

# ATXX4 POWER CONNECTOR

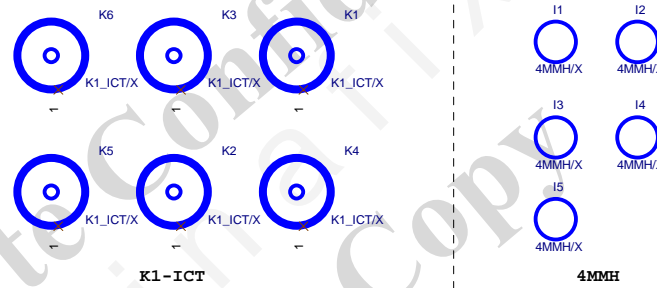


## 螺絲孔

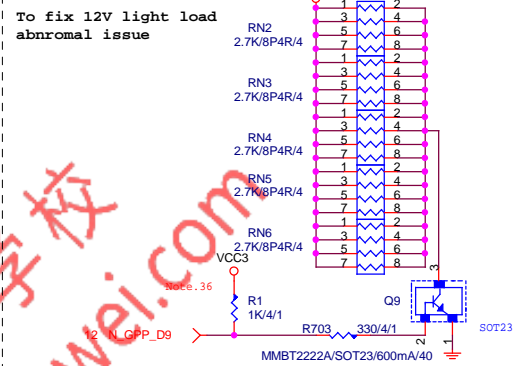
MH1:GND-T  
FOR EMI  
TEST驗證



## 固定孔/光學點

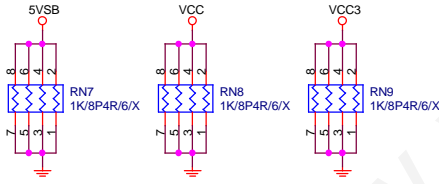


## +12V DUMMY LOAD

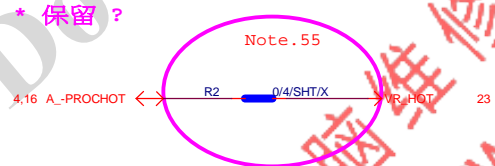


【技術通報R&D技術通報153】

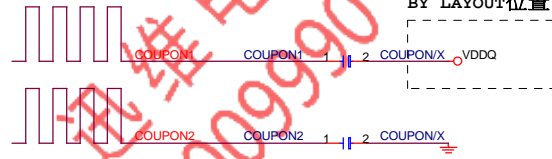
## DUMMY LOAD



## -PROHOT



## COUPON



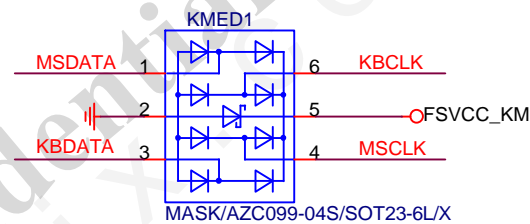
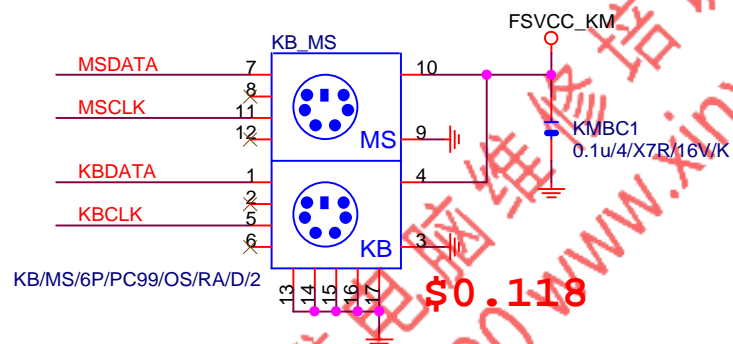
Gigabyte Technology

ATX POWER CONNECTOR			Rev
Title	Document Number	GA-B150M-SE-SI	1.0
Size	Custom		
Date:	Wednesday, May 25, 2016	Sheet	31 of 50

KB\_MS\_USB

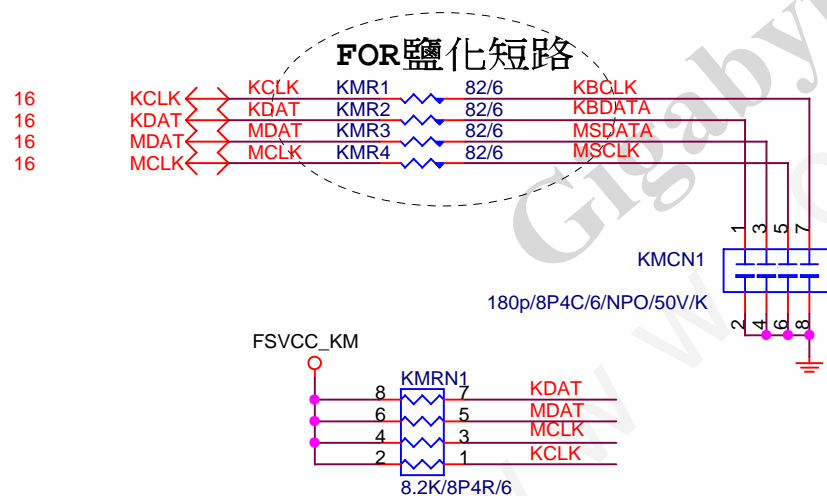
Rev: 0.51

ESD



KB\_MS\_USB DAMPING/PU

KB\_MS\_USB PWR



Gigabyte Technology

Title

KB\_MS\_USB

Size

Document Number

GA-B150M-SE-SI

Rev

1.0

Date:

Wednesday, May 25, 2016

Sheet

32

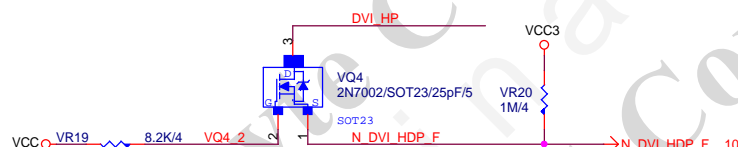
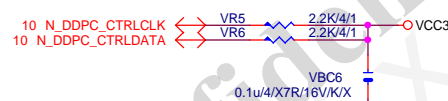
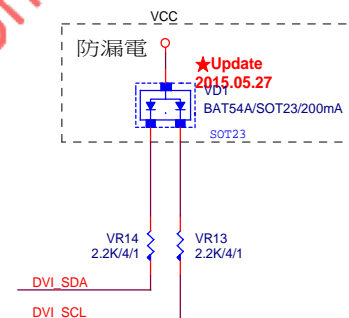
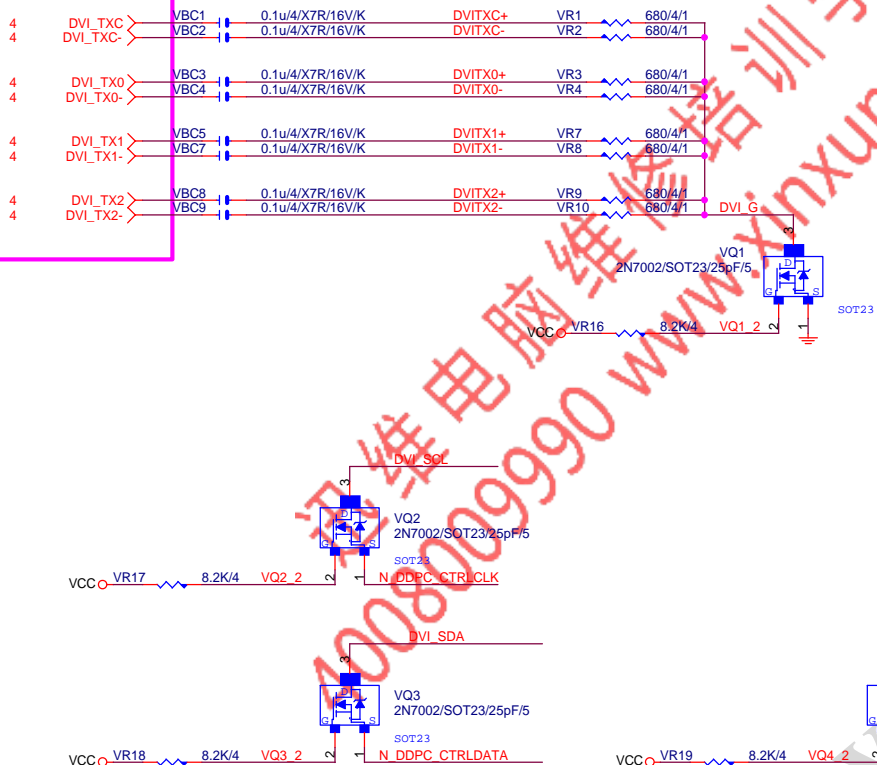
of 50





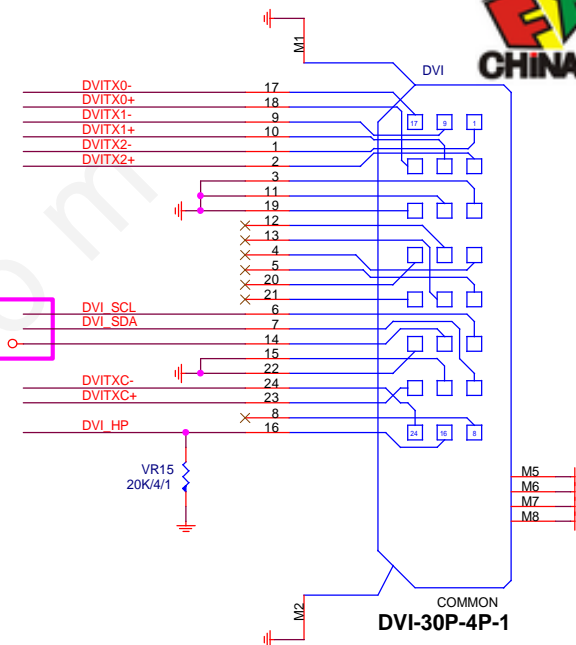
NET 可變

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



## NET 可變

**\***

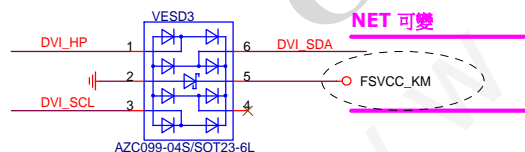
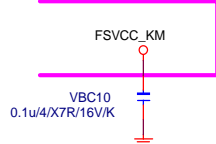


## ~~平躺式~~ DVI-D

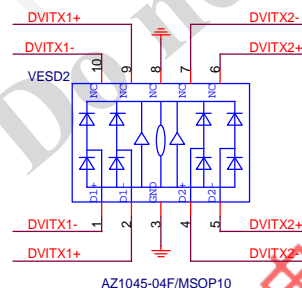


ESD

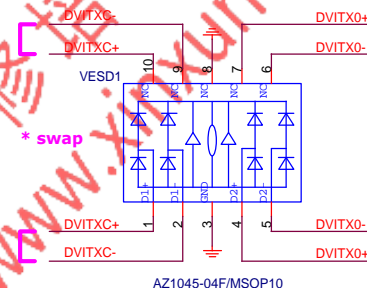
NET 可變



Close to connector



Close to connector



Close to connector

## Gigabyte Technology

Title
-------

## DVI

Size	Custom
------	--------

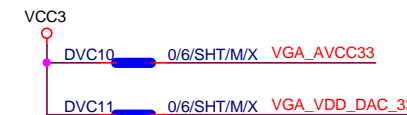
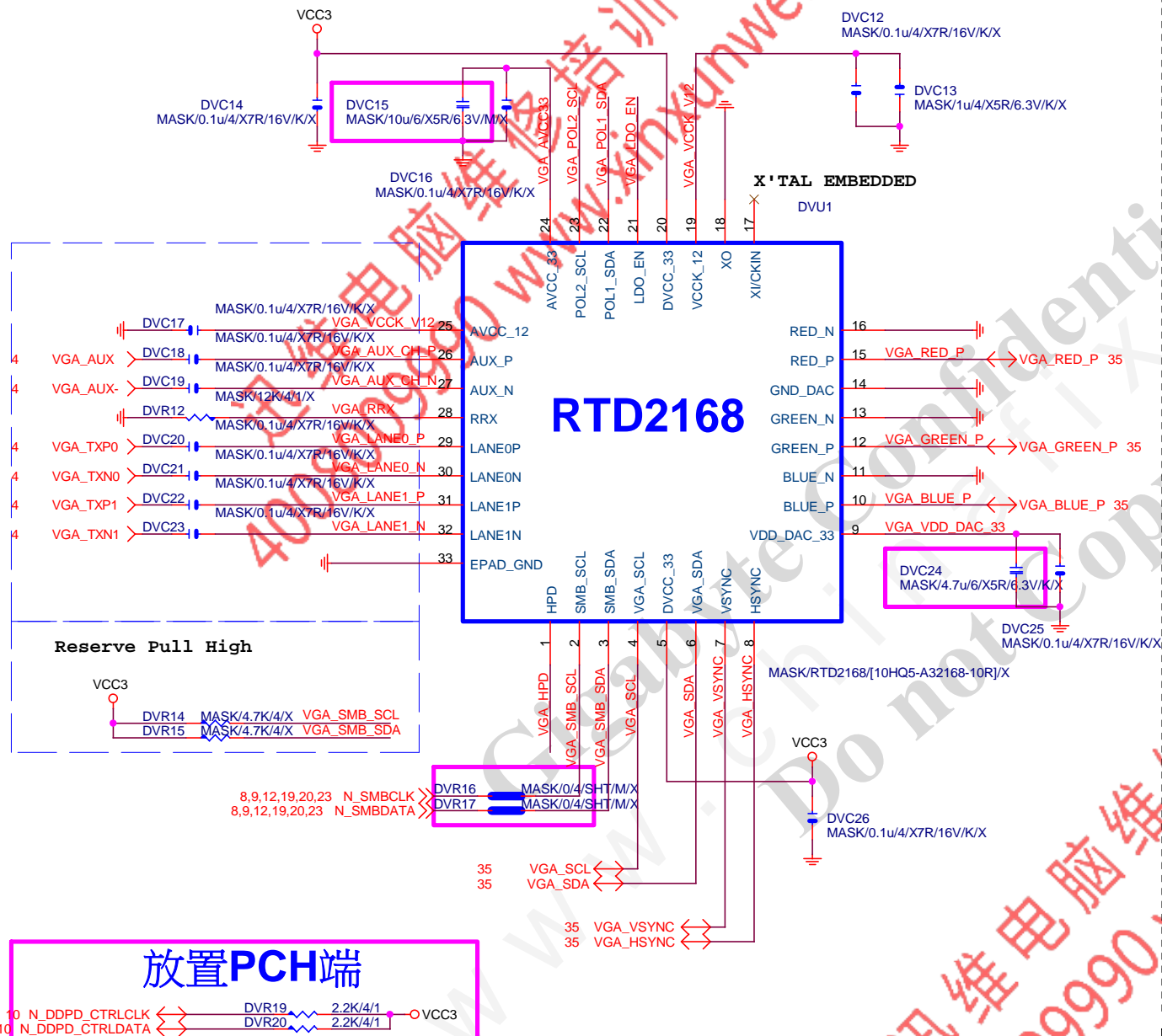
Document Number

GA-B150M-SE-SI

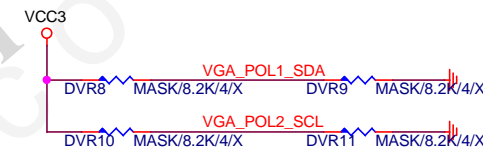
Rev
<b>1.0</b>

Date: Wednesday, May 25, 2016

Sheet 33 of 50

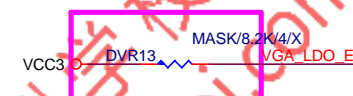


## Power on latch



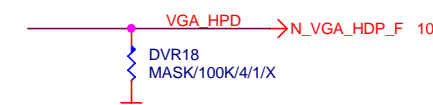
		POL1_SDA(PIN22)	
		0	1
POL2_SCL (PIN23)	0	X	EP MODE
	1	ROM ONLY MODE	EPPROM MODE

## Embedded LDO



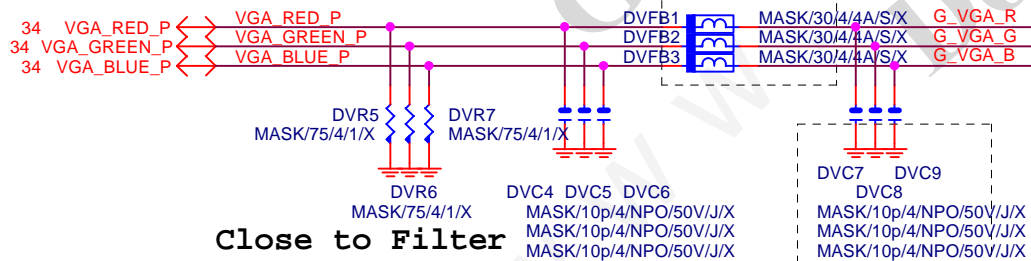
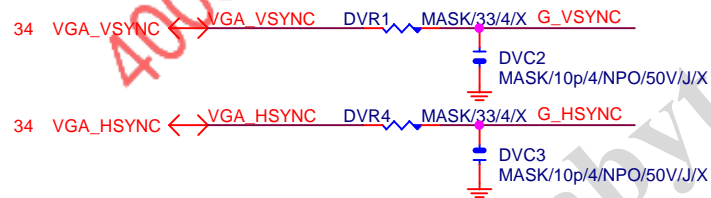
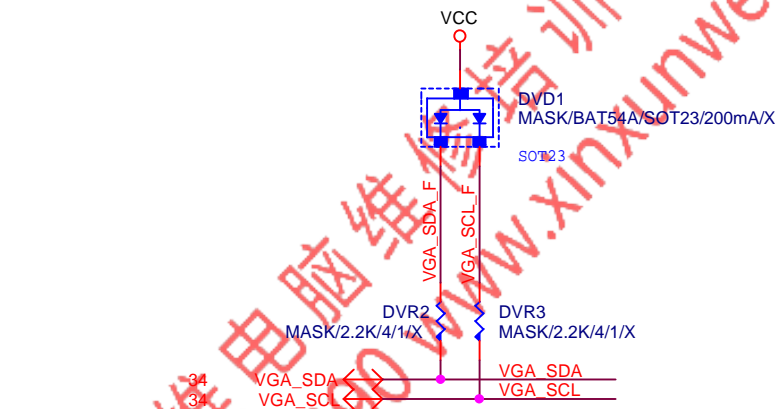
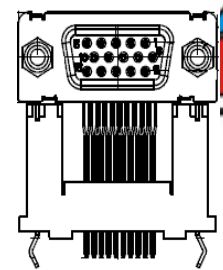
LDO_EN(PIN21)	
0	1
VCCCK_V12 from External 1.2V	VCCCK_V12 from Embedded LDO

## DP HPD



Gigabyte Technology  
DP-VGA RTD2168

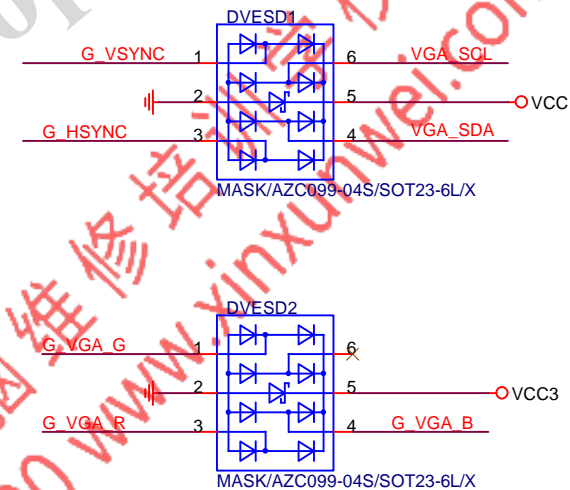
Size	Document Number	Rev
Custom	GA-B150M-SE-SI	1.0
Date:	Wednesday, May 25, 2016	Sheet 34 of 50



Close to Filter

FOR EMI

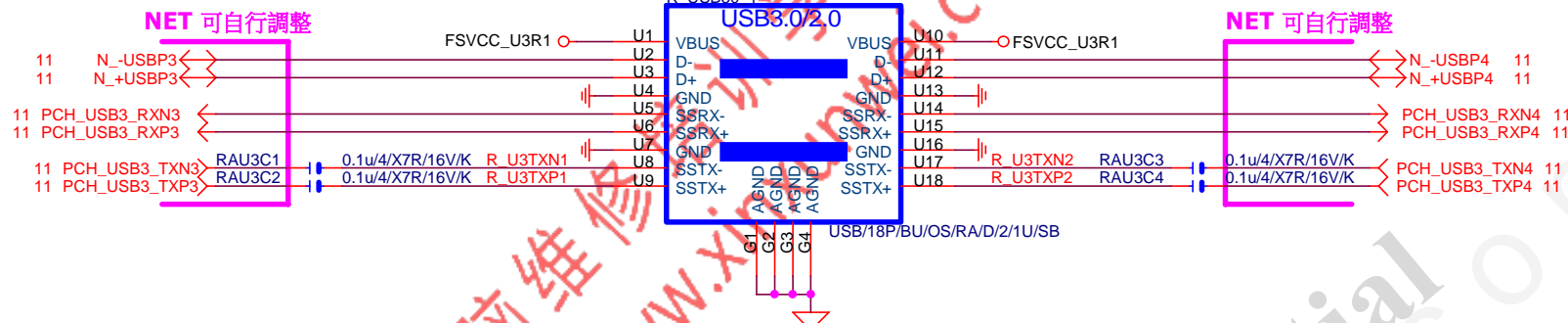
## VGA ESD



Gigabyte Technology

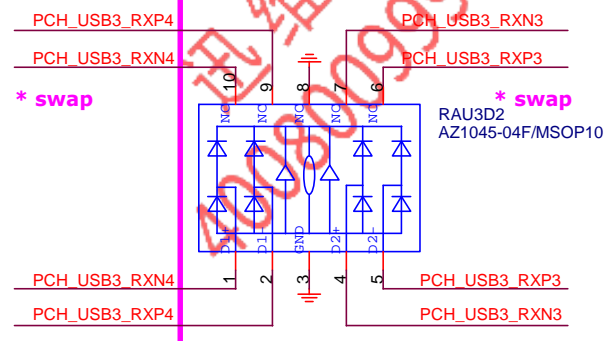
NXP-PTN3356

Title		
Size	Document Number	Rev
Custom	GA-B150M-SE-SI	1.0
Date:	Wednesday, May 25, 2016	Sheet 35 of 50

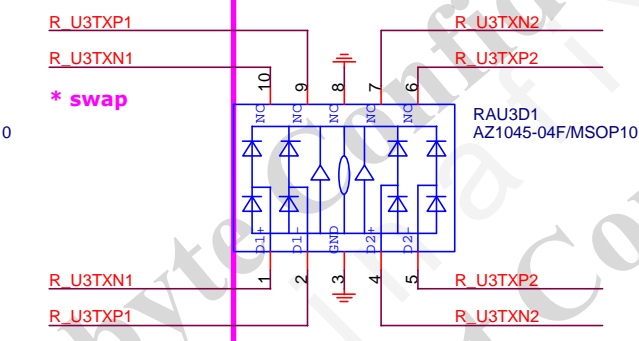


## ESD

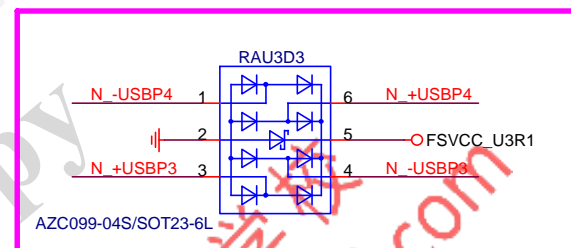
NET 可自行調整



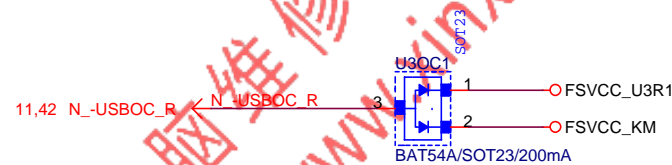
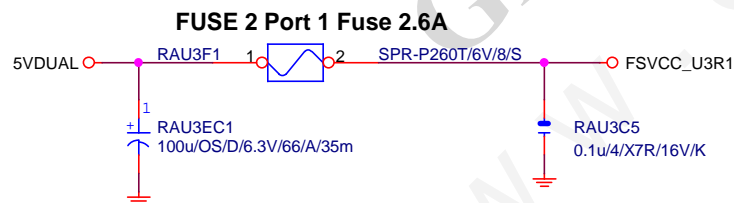
NET 可自行調整



NET 可自行調整



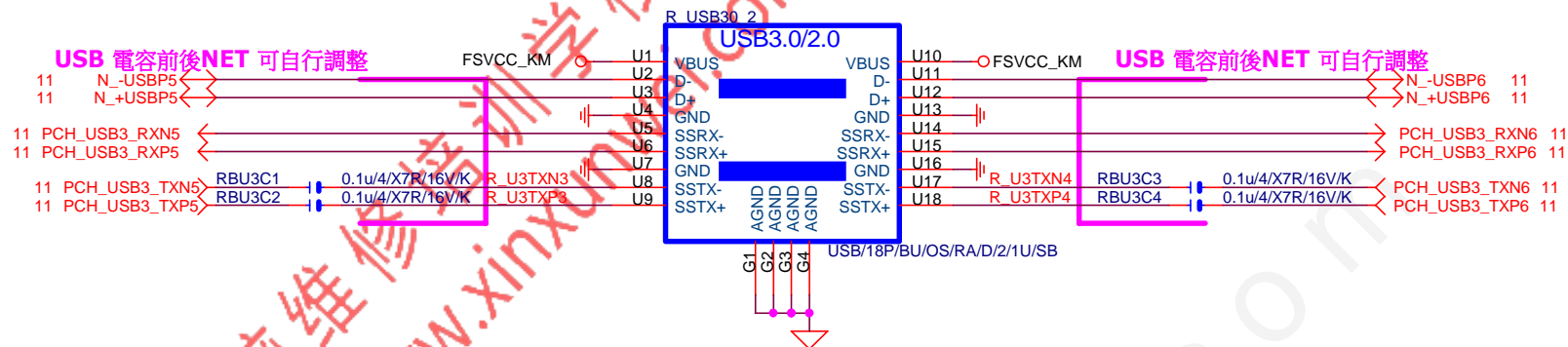
## FUSE



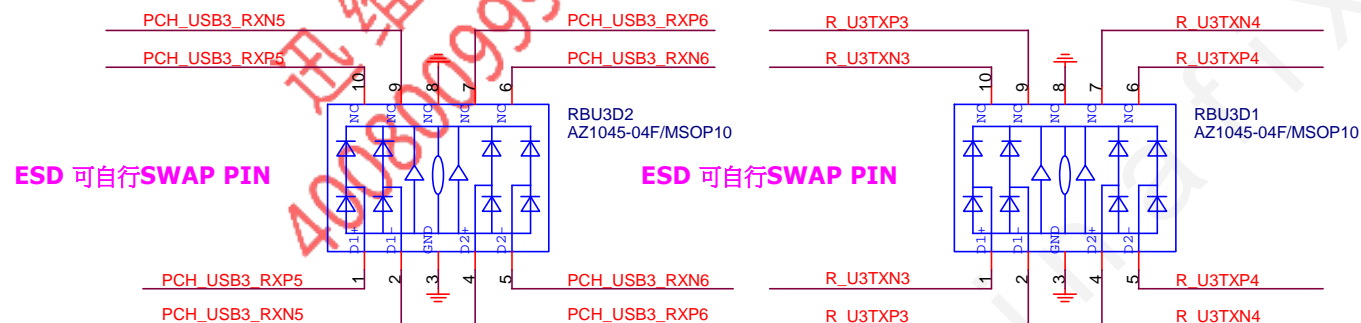
Gigabyte Technology

Title			
R_USB30,USB_OC			
Size	Document Number	GA-B150M-SE-SI	
Custom			Rev 1.0
Date:	Wednesday, May 25, 2016	Sheet	36 of 50

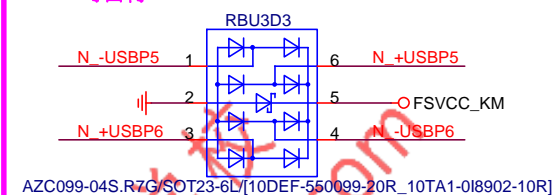




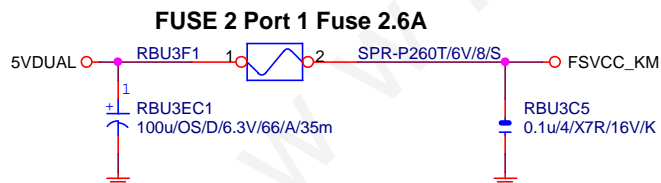
## ESD



## ESD 可自行SWAP PIN



## FUSE

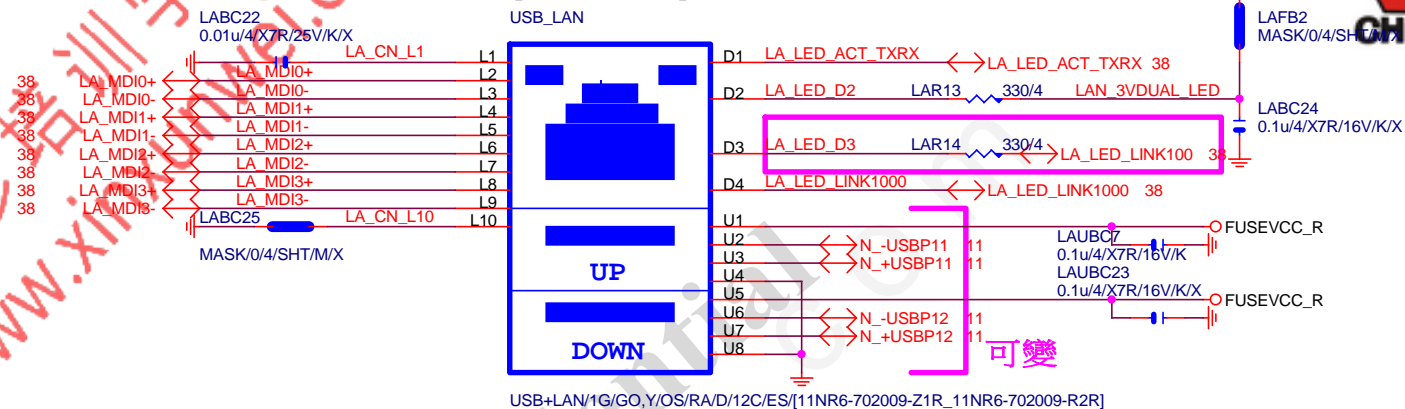
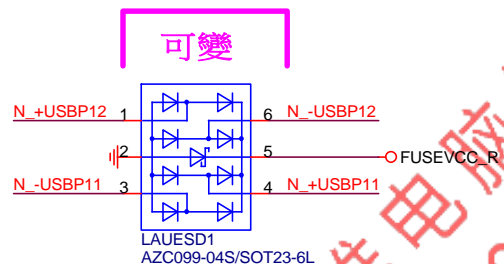


Gigabyte Technology

Title			
R_USB30,USB_OC			
Size	Document Number	GA-B150M-SE-SI	
Custom			Rev 1.0
Date:	Wednesday, May 25, 2016	Sheet	37 of 50

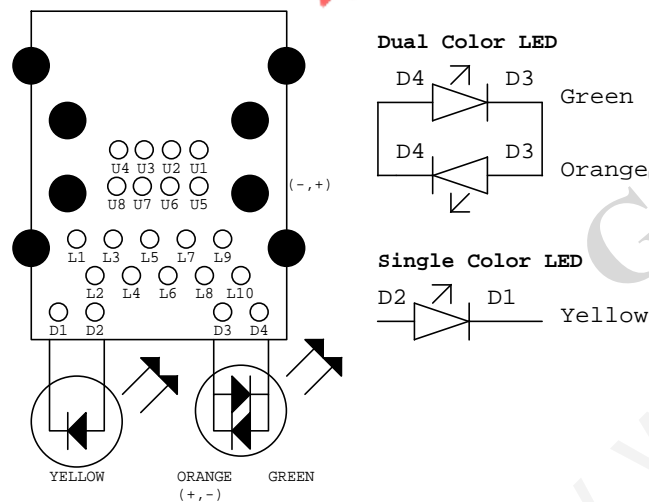


note:可變更USB NAME



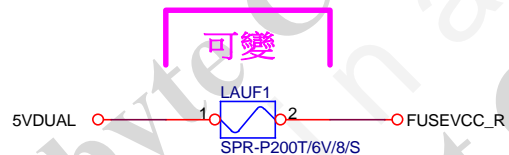
LA MDI-->100歐姆:[20/4/8/4/20]

### USB\_LAN LAYOUT示意圖



## USB POWER

note:可變更FUSE



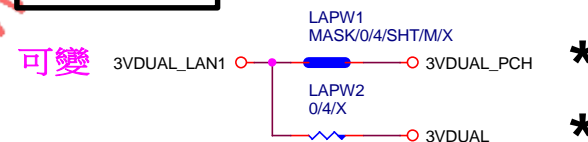
Close to connector  
USB\_LAN 2-Port 2.0A  
FUSE-0805

## 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
Custom	

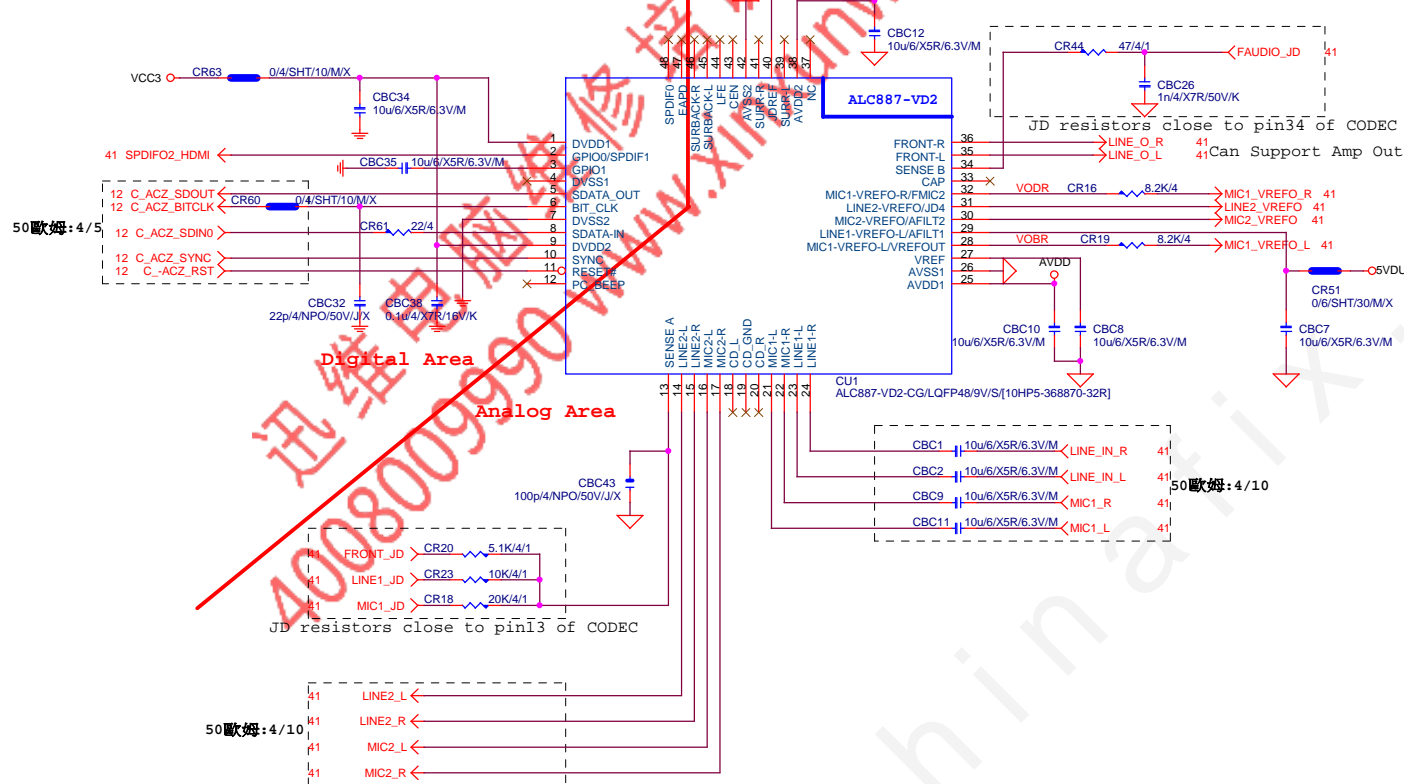
GA-B150M-SE-SI

Rev  
1.0

Date: Wednesday, May 25, 2016

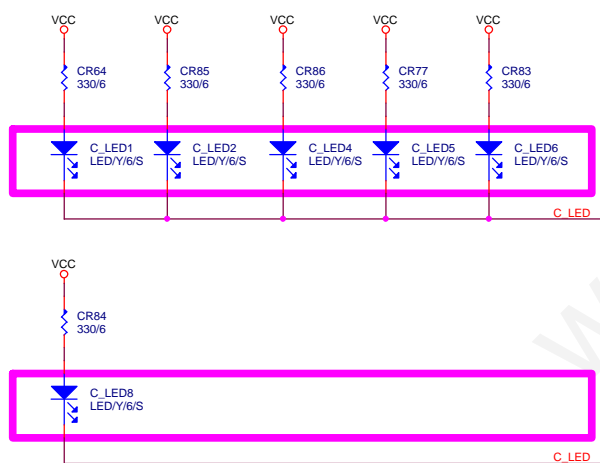
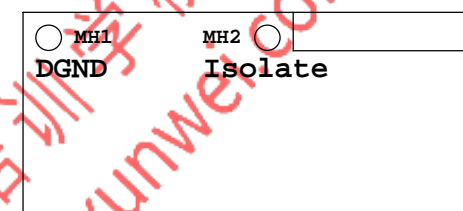
Sheet 39 of 50

## ALC887 三孔 AUDIO JACK

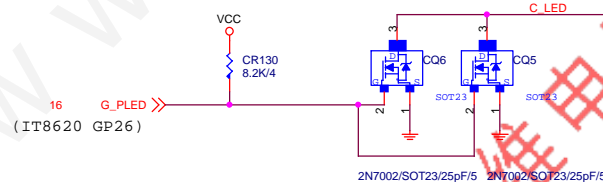


### LAYOUT注意:螺絲孔下GND方式

1. MH1空間夠, 下DGND  
空間不夠, 改為Isolate
2. MH2一律改為Isolate



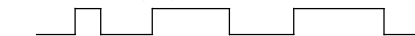
VALUE可變,LED顏色請自行修改  
(預設:低亮度黃色LED:LED/Y/6/S)



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

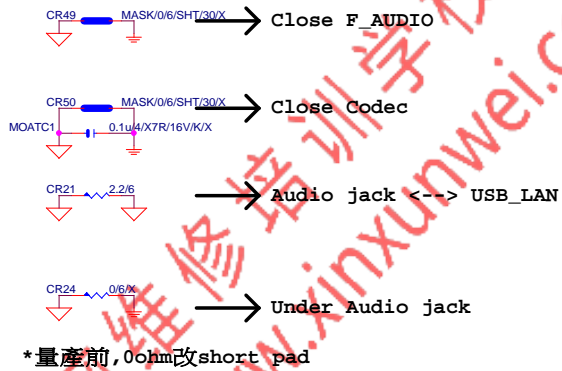


<div style="text-align: center;">  </div>			
<div style="text-align: center;"> <b>HD AUDIO ALC887</b> </div>			
Size Custom	Document Number	<b>GA-B150M-SE-SI</b>	Rev 1.0
Date:	Wednesday, May 25, 2016	Sheet 40 of 50	

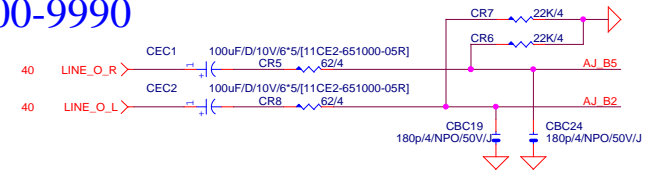


Rev 0.5

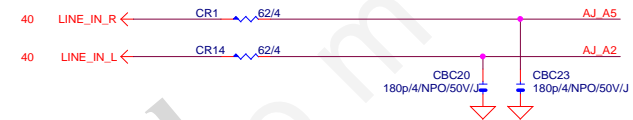
www.xinxunwei.com 400-800-9990



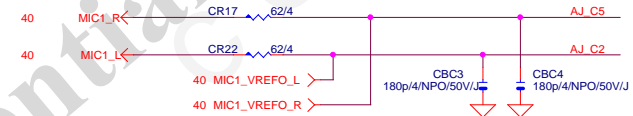
LINE-OUT



LINE-IN



MIC-IN

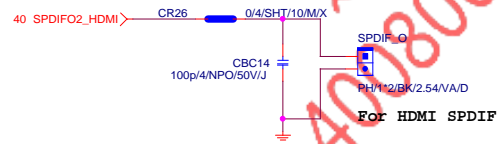


SURROUND

CEN/LFE

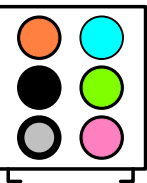
SURRBACK

SPDIF\_OUT



SPDIF\_IN

AZALIA JACK

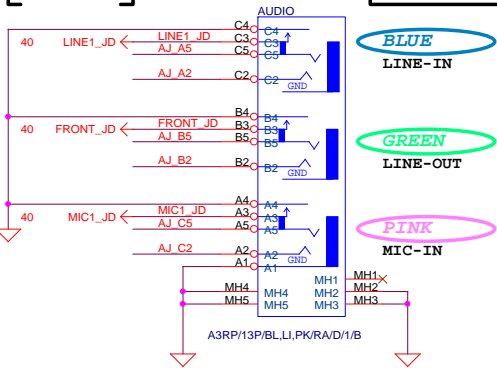


AZALIA JACK

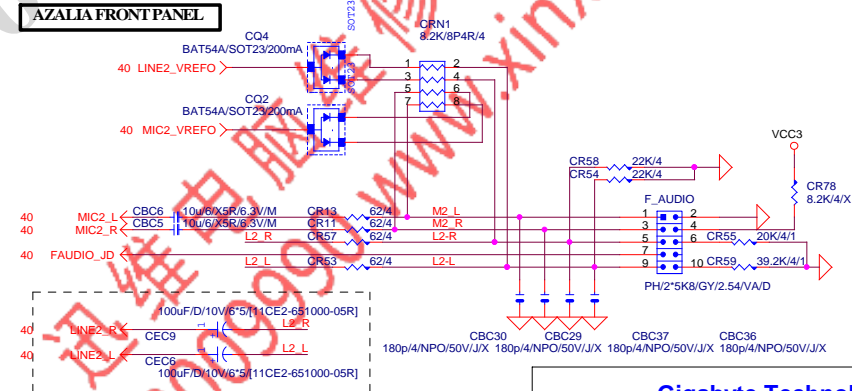
BLUE  
LINE-IN

GREEN  
LINE-OUT

PINK  
MIC-IN



AZALIA FRONT PANEL

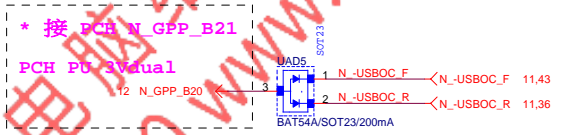
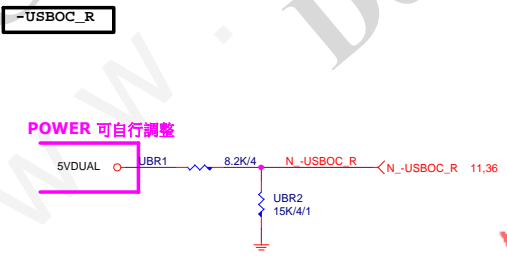
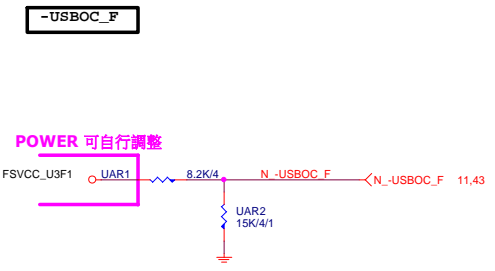
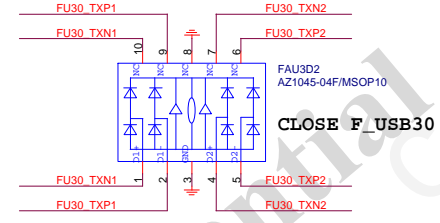
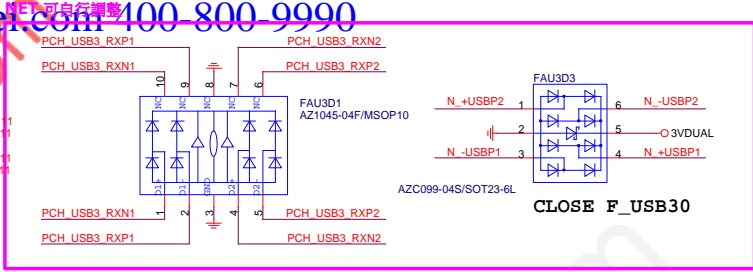
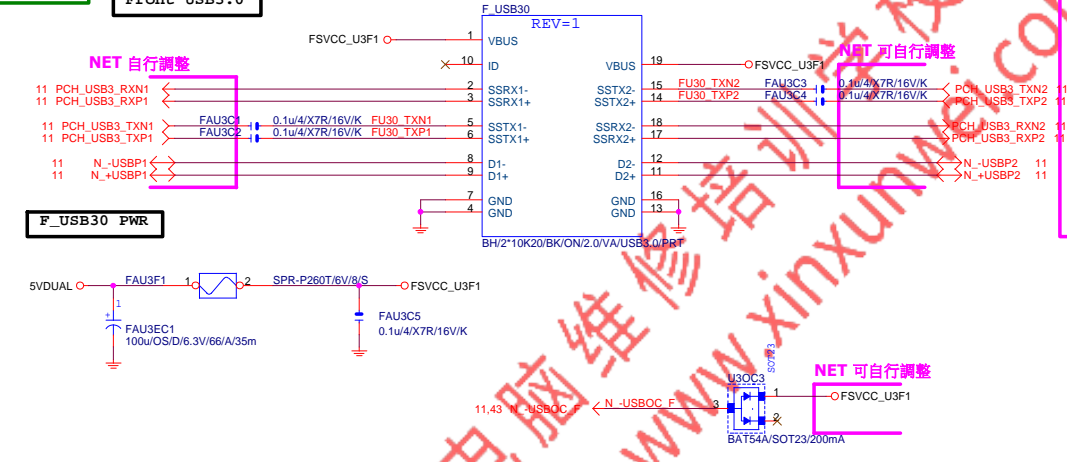


Gigabyte Technology

AUDIO JACK

Title	GA-B150M-SE-SI	Rev	1.0
Size	Document Number		
Custom			
Date:	Wednesday, May 25, 2016	Sheet	41 of 50

Front USB3.0



FUSE 4081

Fuse 2A

FRONT USB1

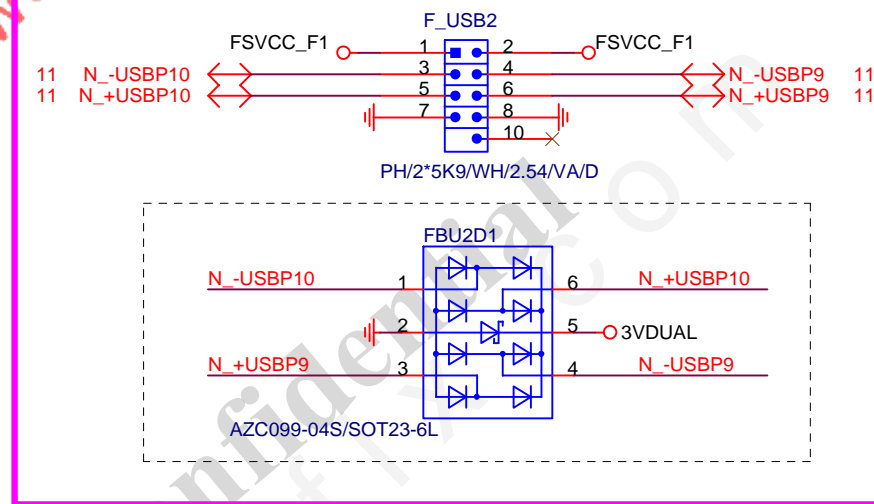
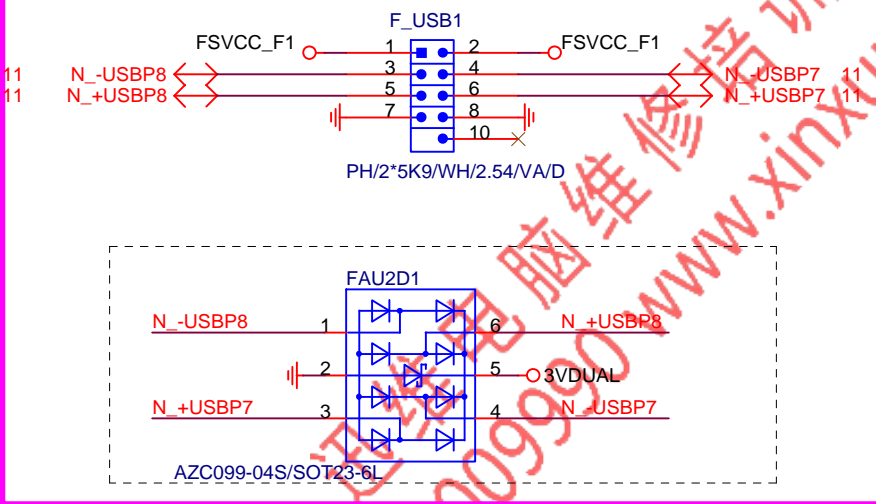
FRONT USB2

NET 可變

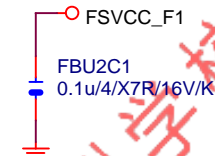
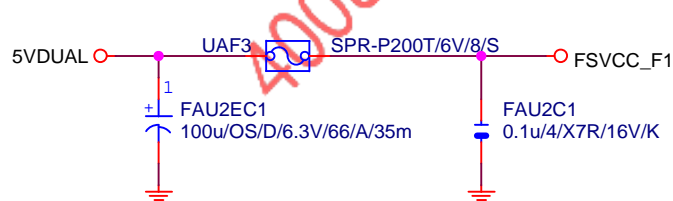
FUSB2X5-HS

NET 可變

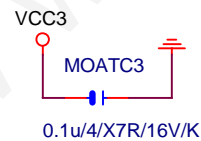
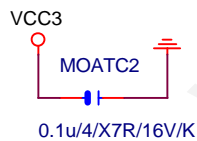
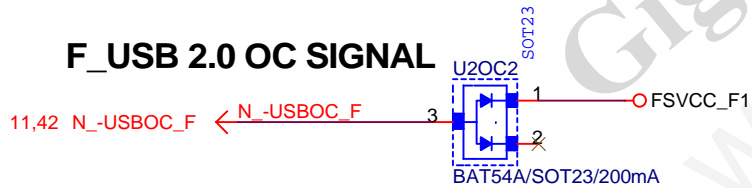
FUSB2X5-HS



Close to connector



F\_USB 2.0 OC SIGNAL



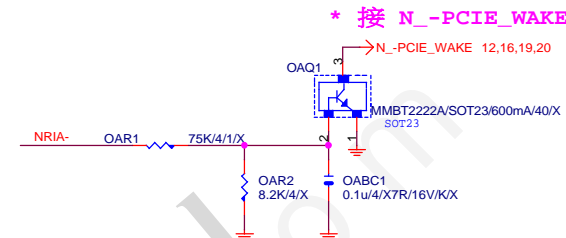
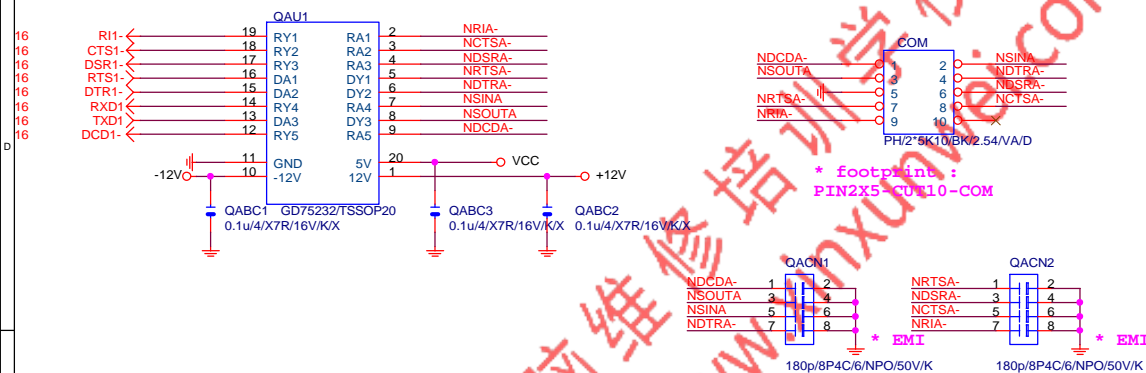
Gigabyte Technology

Title			USB2.0	
Size	Document Number	GA-B150M-SE-SI		Rev
A				1.0
Date:	Wednesday, May 25, 2016	Sheet	43	of 50



COM PORT Rev: 0.51

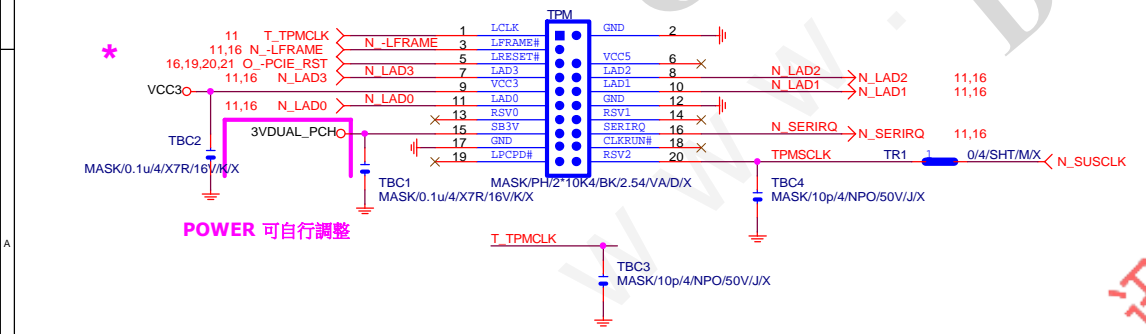
COM PORT



LPT PORT

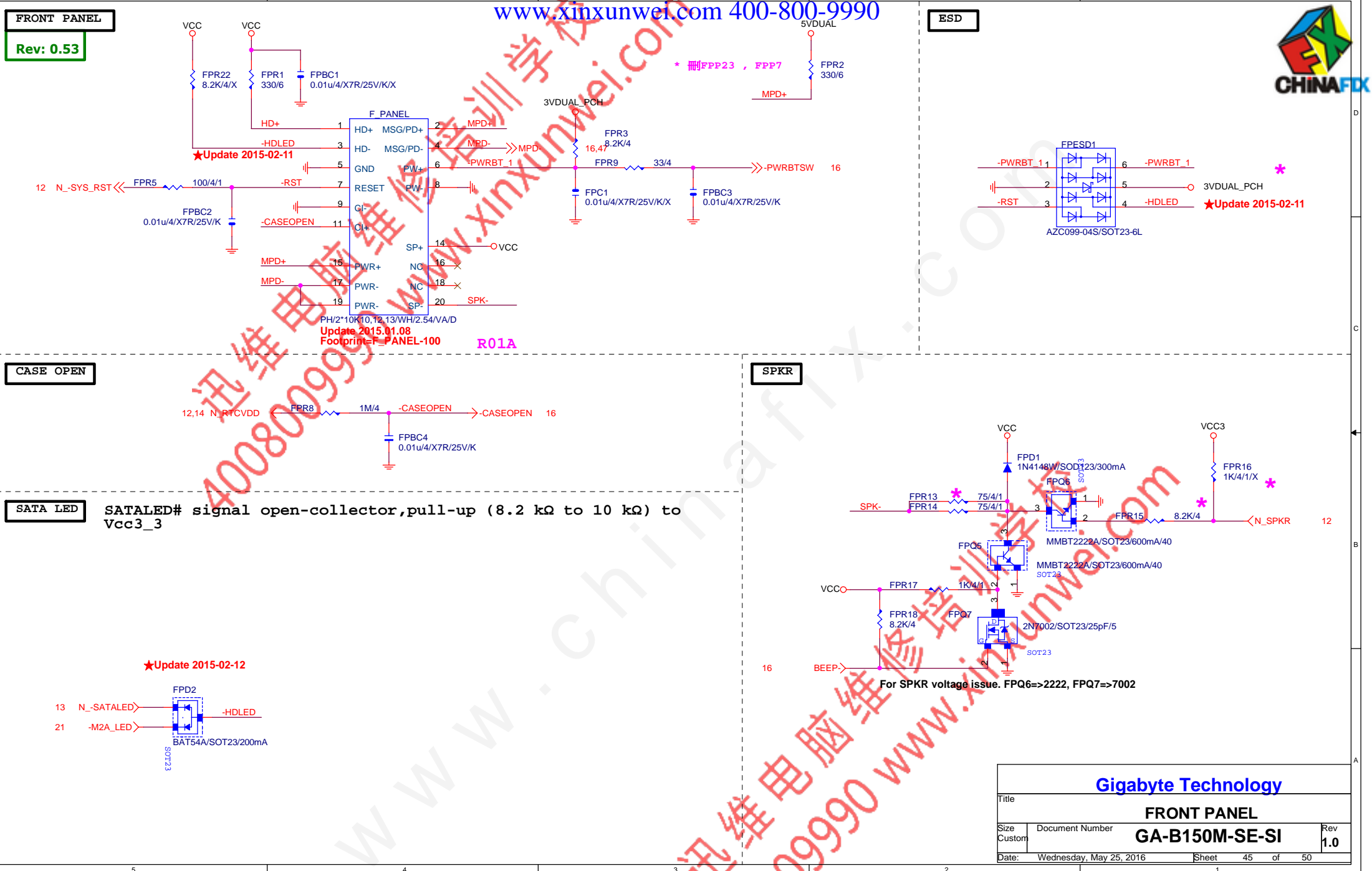
TPM CONNECT

Thunderbolt (N/A)



Gigabyte Technology			
Title			
FP,F_USB,USB PWR,BZ			
Size	Document Number	GA-B150M-SE-SI	
Custom		Rev 1.0	
Date:	Wednesday, May 25, 2016	Sheet	44 of 50





Gigabyte Technology			
Title			
FRONT PANEL			
Size	Document Number	GA-B150M-SE-SI	
Custom		Rev 1.0	
Date:	Wednesday, May 25, 2016	Sheet	45 of 50

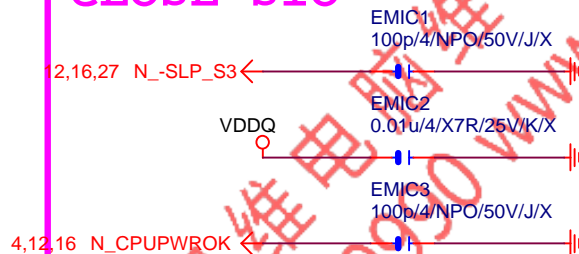
OVER VOLTAGE



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

Gigabyte Technology		
Title		
CPU CORE VR-2		
Size	Document Number	Rev
Custom	GA-B150M-SE-SI	1.0
Date:	Wednesday, May 25, 2016	Sheet 46 of 50

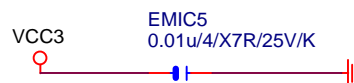
## CLOSE SIO



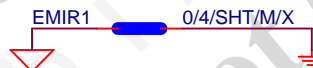
## CLOSE PCH



## close to PCH (NR17)



## R\_USB30\_2 &amp; DVI 之間



## close to FRONT PANEL

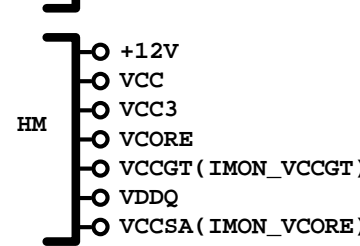
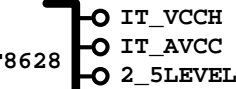
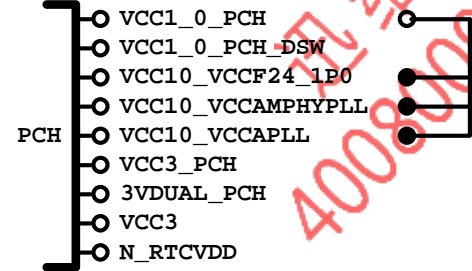
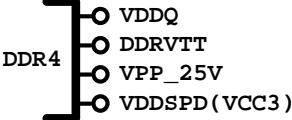
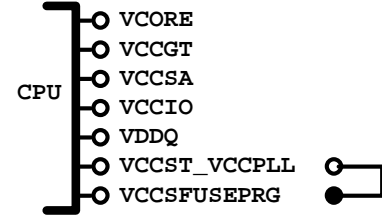
**GIGABYTE™**

Title <b>EMI/ESD</b>		
Size A	Document Number <b>GA-B150M-SE-SI</b>	Rev <b>1.0</b>
Date:	Wednesday, May 25, 2016	Sheet 47 of 50

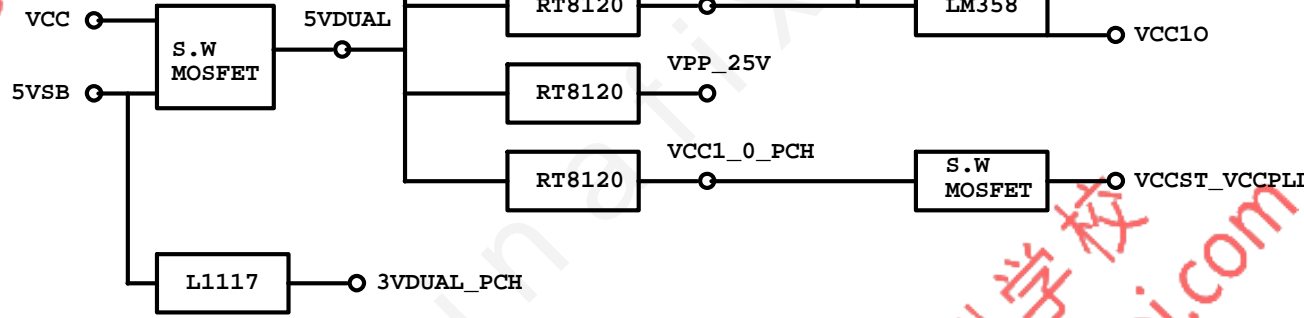
# POWER BLOCK MAP

## VCORE/VCCGT

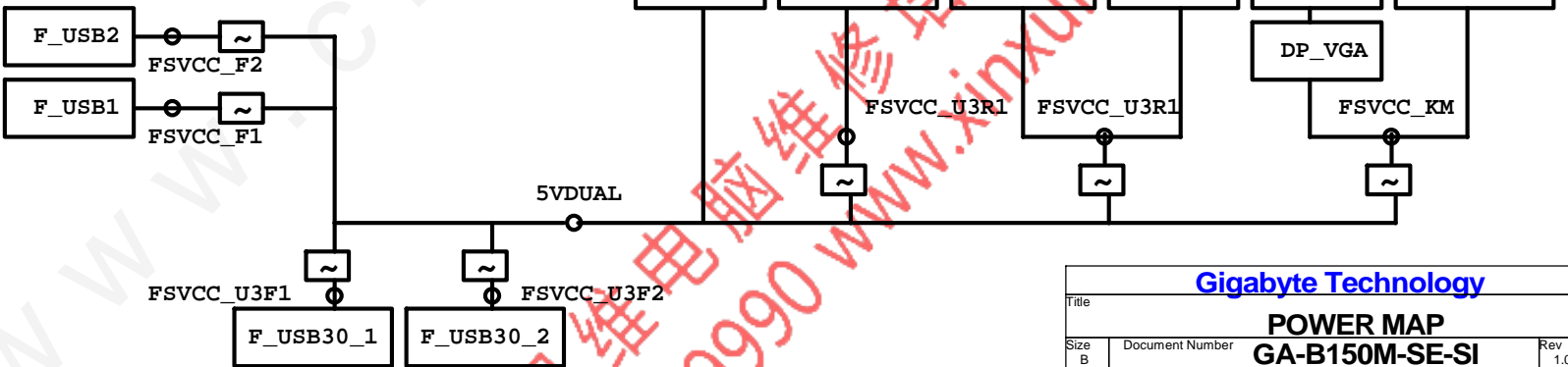
www.xinxunwei.com 400-800-9990



## POWER



## FUSE POWER F/R



Gigabyte Technology

Title		
POWER MAP		
Size	Document Number	Rev
B	GA-B150M-SE-SI	1.0
Date:	Wednesday, May 25, 2016	Sheet 48 of 50



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

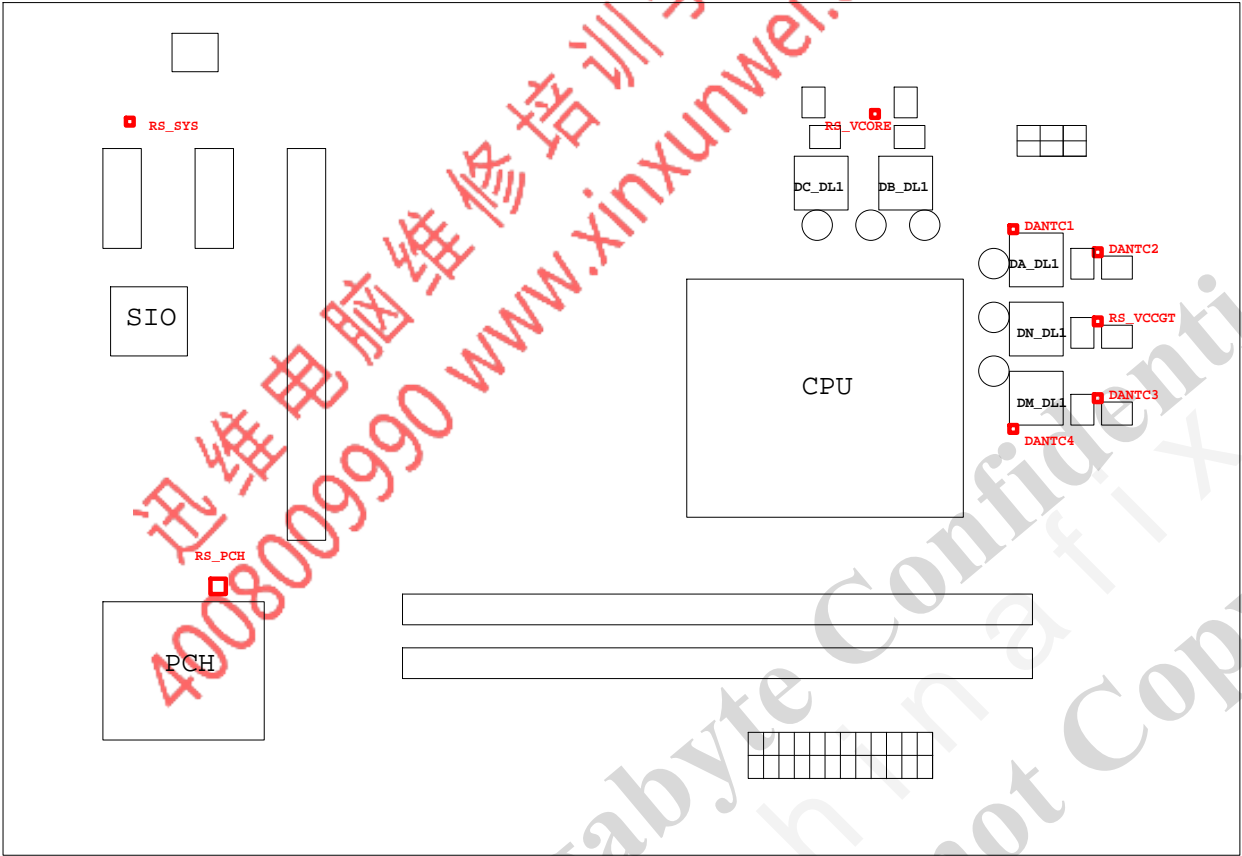
	料號	Capture Value	SIZE	Footprint
DIP	10LFB-15470A-01R	47/4030/15A/S	4*3	BEADC8B-BPH_SMD

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 RT8120_DDR4 POWER			
Size Custom	Document Number GA-B150M-SE-SI		Rev 1.0
Date:	Wednesday, May 25, 2016	Sheet	49 of 50



熱敏電阻	擺放靠近位置	走線方式
DANTC4	DM_DL1	Differential
DANTC1	DA_DL1	Differential
DANTC3	DM_DQ1	Differential
DANTC2	DA_DQ1	Differential
RS_VCORE	DC_DQ1	N/A
RS_VCCGT	DM_DQ1	N/A
RS_PCH	PCH	N/A
RS_SYS	CUI	N/A