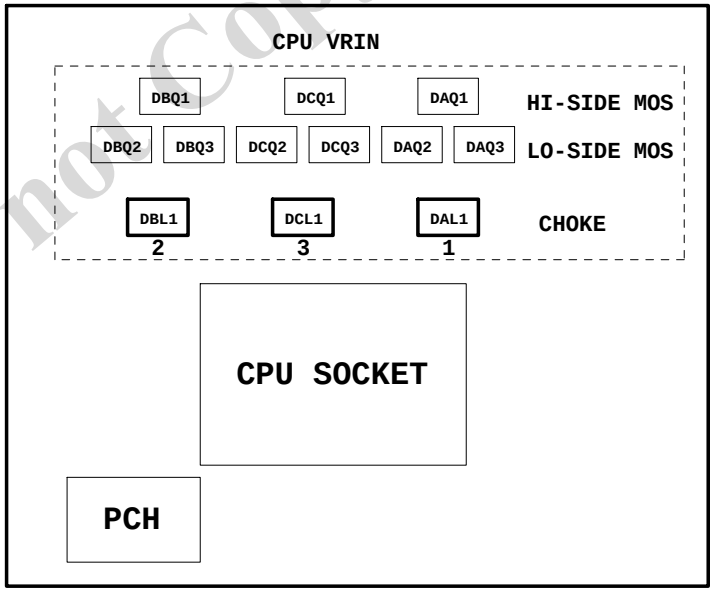
Model Name: GA-P81-D3

1.1

SHEET	TITLE
01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1150-A
05	CPU_LGA1150-B
06	CPU_LGA1150-C
07	DDR III CHANNEL A
08	DDR III CHANNEL B
09	PCH_FDI,DMI,USB,PCIE
10	PCH_RGB,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCI EXPRESS*16 SLOT
15	PCIEX1*2 , PCIEX4 SLOT
16	ITE8892 PCI BRIDGE
17	PCI SLOT 1&2
18	I/O ITE8728
19	COM, -PROHOT, R_USB
20	Dual BIOS / LPT
21	ALC892 CODEC
22	REAR AUDIO JACK
23	VCORE_ ISL95820_1
24	VCORE_ ISL95820_2
25	DDR15V / M3 POWER
26	NCP3933 OVER VOLTAGE
27	DISCRETE POWER

SHEET	TITLE
28	F_PANEL , F_USB2.0/3.0
29	ATX POWER, CLOCK GEN
30	HWM , KB/MS , FAN CTRL
31	Realtek 8111F-VL
32	DVI
33	HDMI
34	TABLE LIST
35	
36	
37	
38	
39	
40	



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Title: Cover Sheet

Size: Custom | Document Number: GA-P81-D3 | Rev: 1.1

Date: Thursday, September 04, 2014 | Sheet 1 of 34

GA-P81-D3

Component value change history

Data	Change Item	Reason
0.1	E-BOM	
	1. CPU內圈電容移除	
0.2	1. C30要上?	
1.0A	1. 確認上RS1 or RS2?	
	2. PCB 1.0	
1.0B	1. 5VSB OVP --> 5VDUAL OVP	
	2. PCB 1.0 --> 1.01	
1.0C	1. R705 887/4/1 --> 825/4/1	
	2. Add MOSFET : Infineon	
1.0D	1. CPU_FAN change to "FAN/1*4/WH/A3/PA66"	
	1. CPU_FAN change to "FAN/1*4/WH/A3/PA66"	
1.0E	1. Remove WR57	
1.0F	1.Crystal (25MHZ / 32.768KHz) ref GND /width/space 2.CPU fan 0402-----'0603 3.DDR VDDSPD 0402-----'0603/POLU FUSE 4.POWER PAK / 1206 POLY FUSE UPDATE FOOTPRINT 5.UPDTAE Footprint "PCIESLOT-164DN-Q-1"	
1.0G	1. Add F_USB20 power short protection	
1.0H	1. NX1 : 25MHz/12P , NC7,NC8 : 12P	
1.0I	1. ALC887-VD2改加強版	
1.0J	1. NX1 : 25MHz/12P , NC7,NC8 : 15P	
	2. ALC887-VD2改加強版	
P81-D3-10A	1. 確認H81的P-PAK用法 (只保留VISHAY , 將NXP移除)	
	2. DR51=40.2K/4/1 , DBC14=470P/4 , DBC27=0.47u/4	
P81-D3-11A	1. LAN RTL8111F --> RTL8111G	
1106-11A	1. 轉P-BOM	

Circuit or PCB layout change

DATE	Change Item	Reason
0.1	1. B85-HD3 Rev1.0 --> H81-HD3 Rev0.1	
0.2	1. 0ohm change to SHORT PAD 2. WBC15~WBC21 Change to "C0805-MASK" 3. Update GBR3/GBR4 footprint 4. U6的NET改走20mil 5. VCC3_DAC gate加粗8mil 6. NCT_POWER加粗至12mil 7. PCH 25MHz周圍走線遠離 8. ESD3 SWAP pin 9. LM324 pin5/7對調	
1.0	1. NX1,NC7,NC8,NR15 第二層切割改至GND層 2. Add NC9~NC12 放在NX1周圍	
1.02	1. Add O_-RSMRST control circuit	
1.03	1.Crystal (25MHZ / 32.768KHz) ref GND /width/space 2.CPU fan 0402-----'0603 3.DDR VDDSPD 0402-----'0603/POLU FUSE 4.POWER PAK / 1206 POLY FUSE UPDATE FOOTPRINT 5.UPDTAE Footprint "PCIESLOT-164DN-Q-1"	
1.04 P81-D3	1. Add F_USB20 power short protection	
1.0	1. H81-D3 REV1.04 --> P81-D3 REV1.0 2. MOS_HS外框移除 , VGA外框移除	
1.1	1. LAN RTL8111F --> RTL8111G	

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Title: BOM & PCB MODIFY HISTORY

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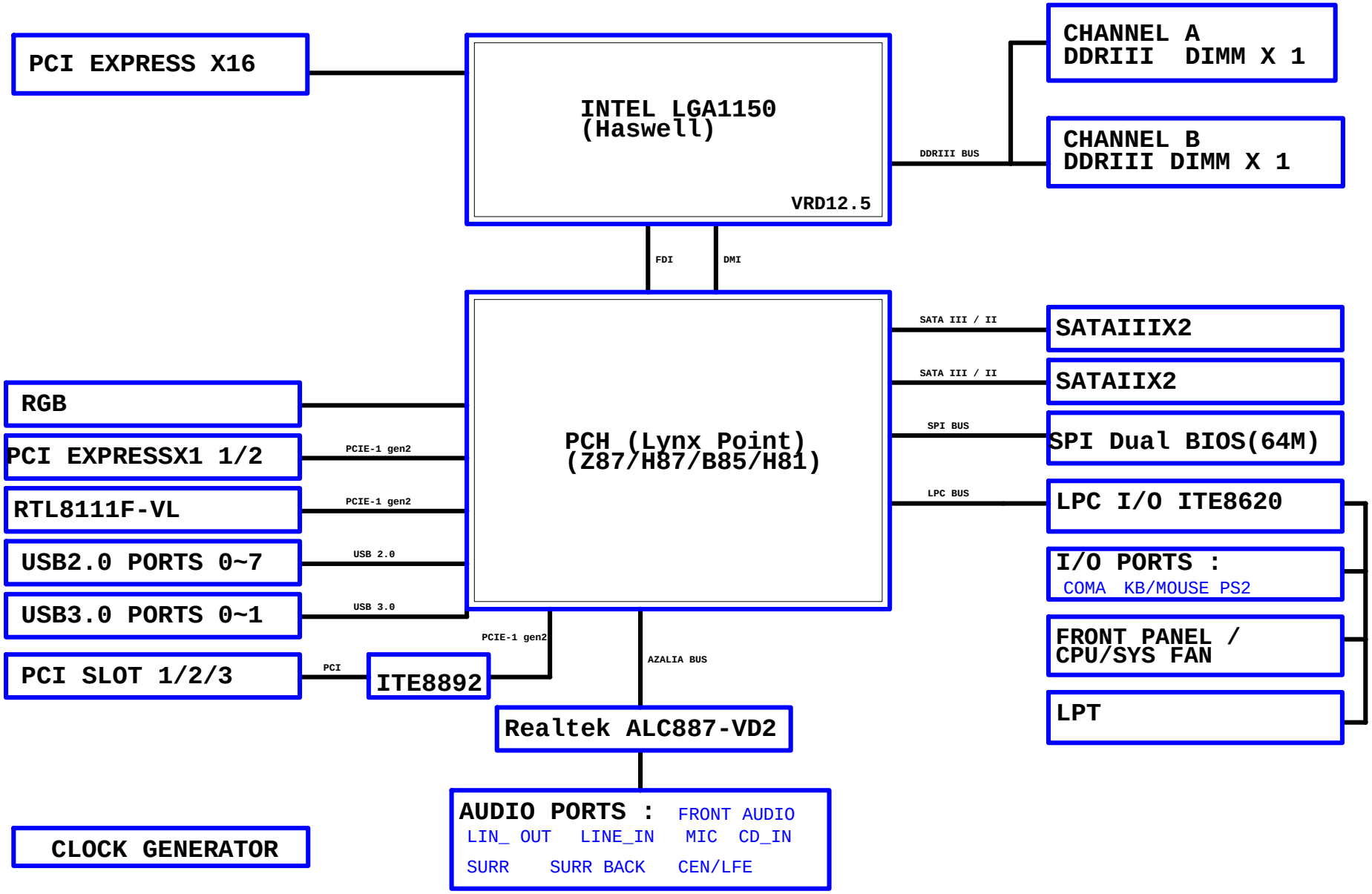
Date: Thursday, November 06, 2014 | Sheet 2 of 34

BLOCK DIAGRAM



Gigabyte Technology			
Title: BLOCK DIAGRAM			
Size: C	Document Number: GA-P81-D3		Rev: 1.1
Date: Thursday, September 04, 2014	Sheet 3 of 34		

LGA1150 (E)

W/S=4/12

LGA1150E

HSW_CFG9 : Disable CPU SVID

HSW_CFG13 : Improve CPU 125MHz over-clocking

CFG	H	L	NOTE
0	RSVD	RSVD	RSVD
1	RSVD	RSVD	RSVD
2	**NORM**	**Reverse**	LANE REVERSAL[0],x16
3	RSVD	RSVD	RSVD
4	**Disable**	**Enable**	eDP Enable
7	RSVD	RSVD	RSVD
8	RSVD	RSVD	RSVD
9	RSVD	RSVD	RSVD
10	RSVD	RSVD	RSVD
11	RSVD	RSVD	RSVD
12	RSVD	RSVD	RSVD
13	RSVD	RSVD	RSVD
14	RSVD	RSVD	RSVD
15	RSVD	RSVD	RSVD
16	RSVD	RSVD	RSVD
17	RSVD	RSVD	RSVD

CFG6	CFG5	PCIE CONFIG
1	1	1X16 , Default
1	0	2X8
0	1	RSVD
0	0	X8,X4,X4

CFG 0-17 all internal PULL-UP

LGA1150 (D)

LGA1150D

FDI:15/4/4/4/15(breakout min 4/4/4//8)
Impedance=85 +- 15%

DP/HDMI 15/4/4/4//15 FDI 12/4/4/4/12

Impedance=85 +- 15%

LGA1155 (C)

LGA1150C

(1.011V) I/O Digatal Voltage
I/O Analog Voltage (1.05V)
RING/PLL Voltage
System Angen(0.815V)
VCCPLL (1.35V)
VCORE1
VCORE2
VCORE3

CPU PEG 20/5/4/5/20 Impedance=80 +- 15%

DMI 12/4/4/4//12 Impedance=85 +- 15%

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

CPU SVID

REMOVE

CPU PU/PD

SM REF

-CPURST

1.1V分壓

For IT8620 Ctrl

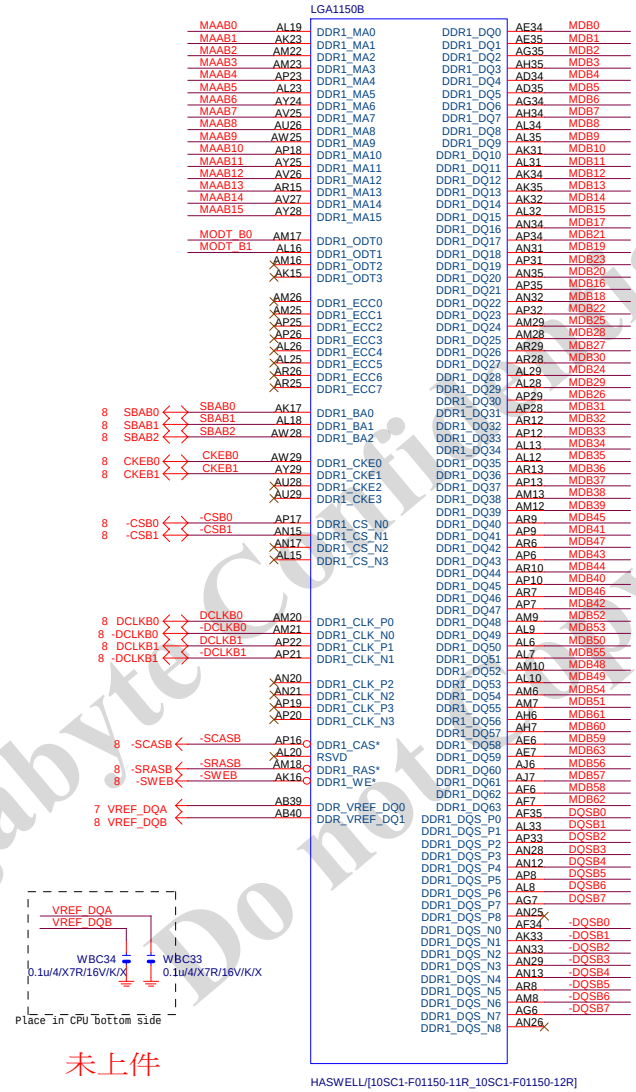
新增

Title	CPU LGA1150-A	
Size: Custom	Document Number: GA-P81-D3	Rev: 1.1
Date: Wednesday, September 10, 2014	Sheet 4 of 34	

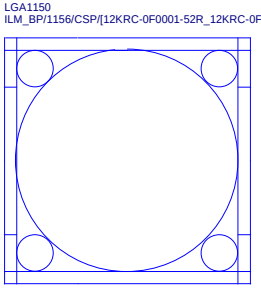
Gigabyte Technology

LGA1150 (A)

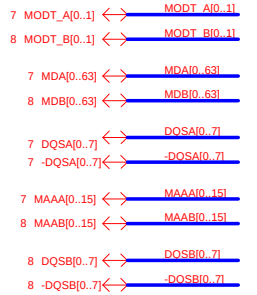
LGA1150 (B)



LGA1150 (CR)

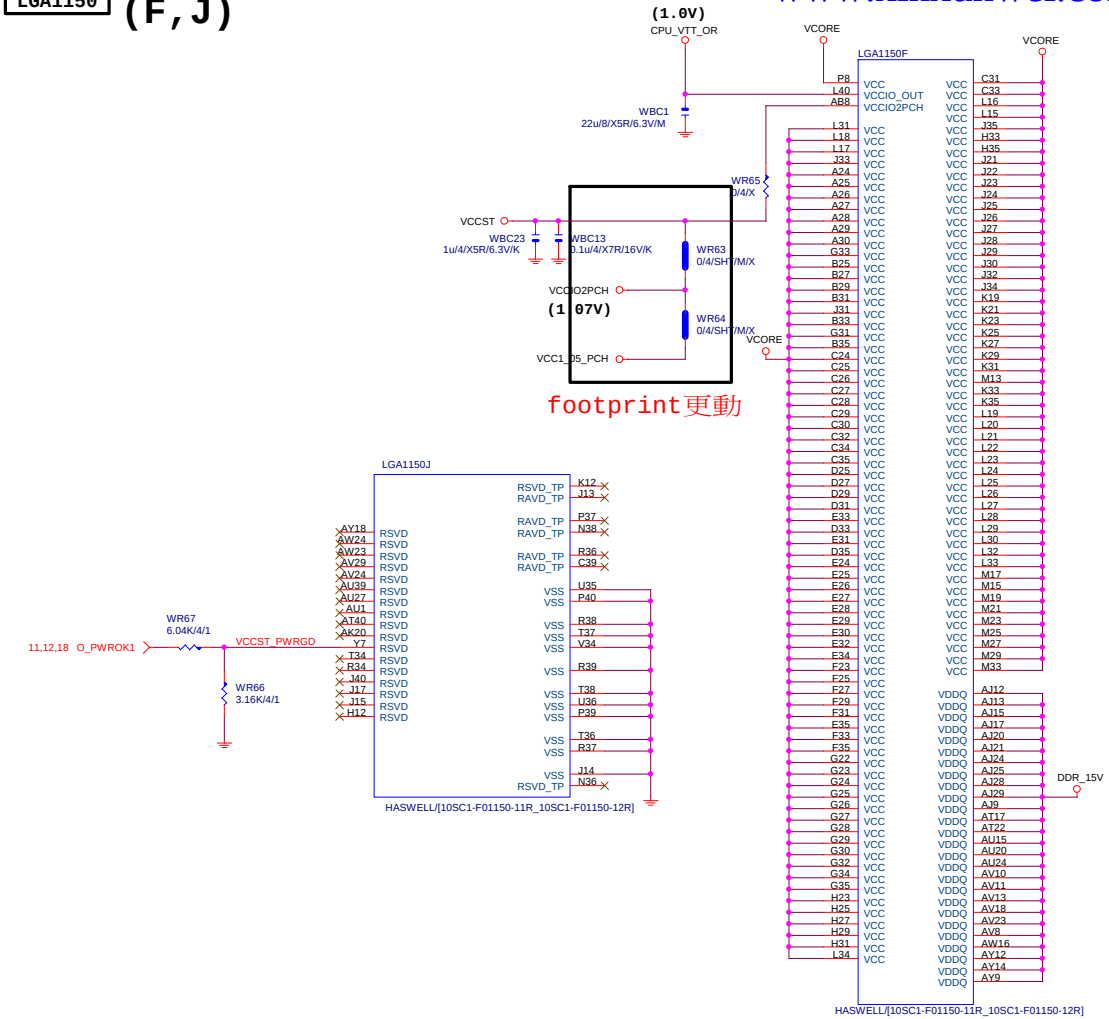


DDR BUS

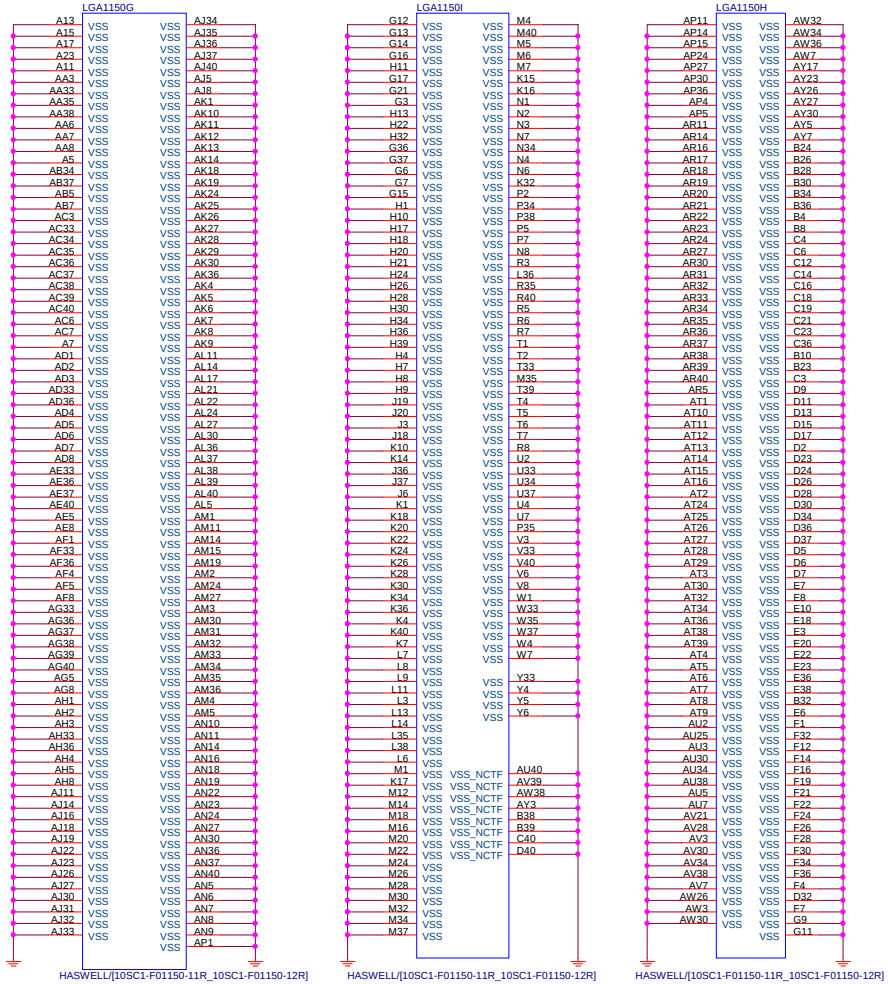


Gigabyte Technology			
Title: CPU LGA1150-B			
Size: Custom	Document Number: GA-P81-D3		Rev: 1.1
Date: Wednesday, September 10, 2014	Sheet 5 of 34		

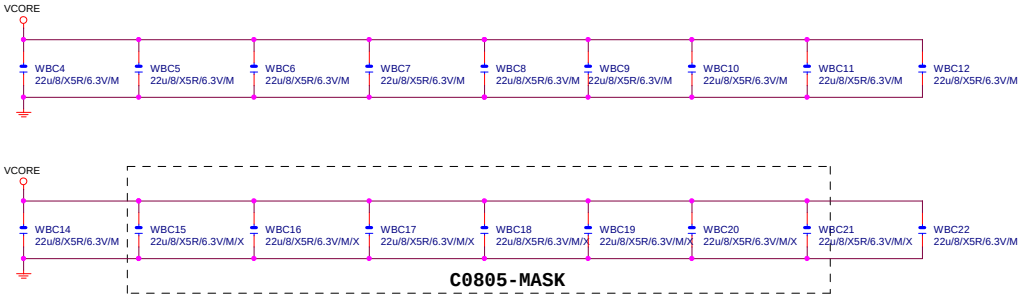
LGA1150 (F,J)



LGA1150 (G,H,I)

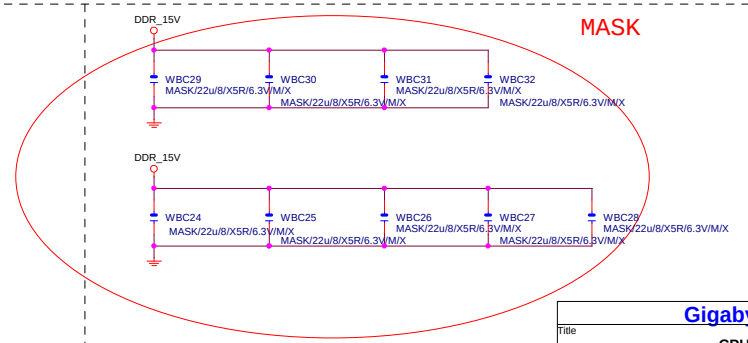


VCore CAP (X18)

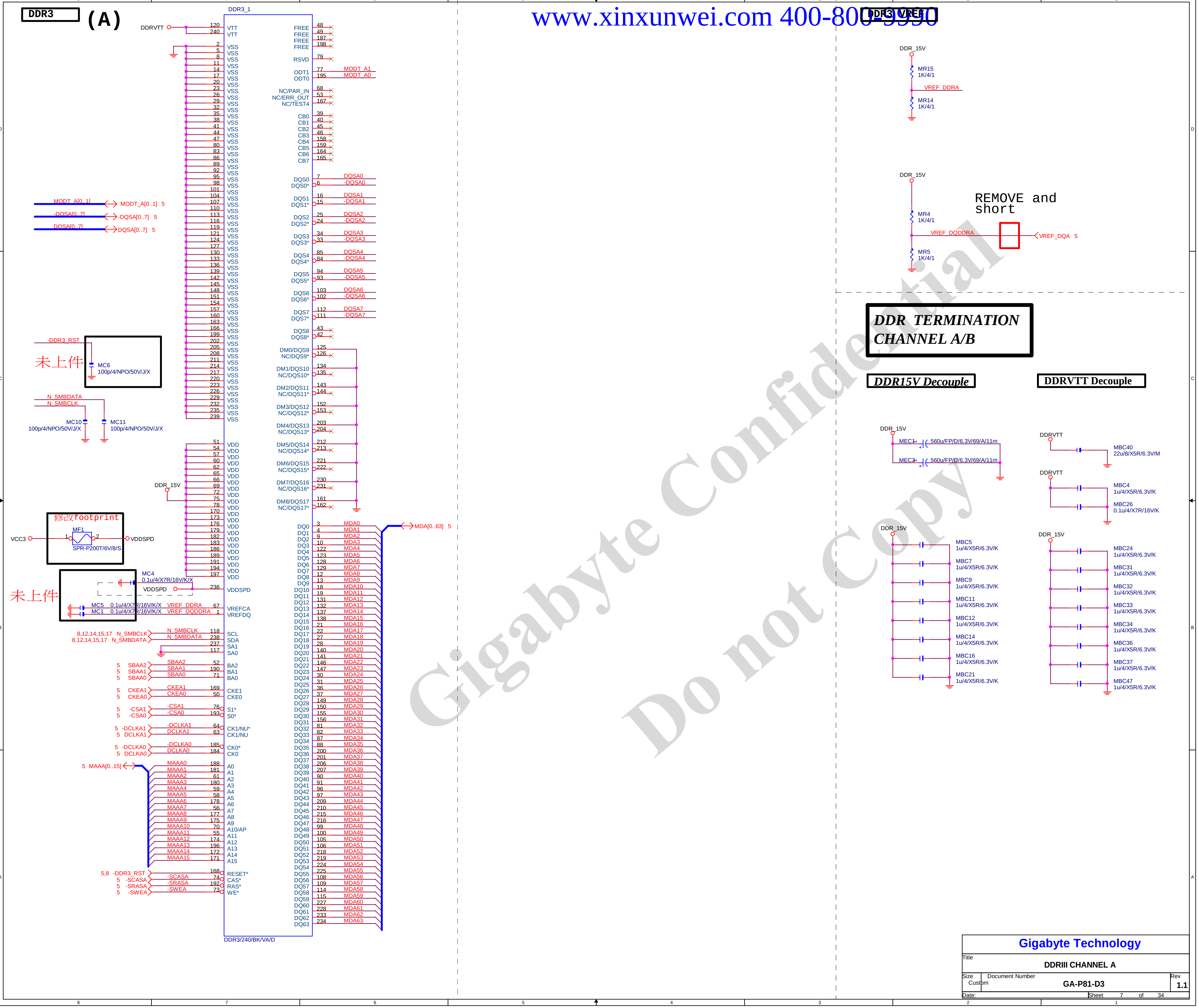


DDR CAP (X9)

MASK



Gigabyte Technology		
Title: CPU LGA1150-C		
Size: Custom	Document Number: GA-P81-D3	Rev: 1.1
Date: Wednesday, September 10, 2014	Sheet 6 of 34	



www.xinxunwei.com 400-800-5990
DDR3
(A)
DDR3 VREF
DDR3_1
DDRVTT
DDR_15V
VREF_DDRA
REMOVE and short
VREF_DQDDRA
VREF_DQA 5
DDR TERMINATION CHANNEL A/B
DDR15V Decouple
DDRVTT Decouple
MODT_A[0..1]
-DQSA[0..7]
DQSA[0..7]
MDA[0..63]
MAAA[0..15]
-DDR3_RST
未上件
修改footprint
VCC3
VDDSPD
SPR-P200T/6V/8/S
N_SMBDATA
N_SMBCLK
MC6 100p/4/NPO/50V/J/X
MC10 100p/4/NPO/50V/J/X
MC11 100p/4/NPO/50V/J/X
MC4 0.1u/4/X7R/16V/K/X
MC5 0.1u/4/X7R/16V/K/X
MC1 0.1u/4/X7R/16V/K/X
MEC1 560u/FP/D/6.3V/69/A/11m
MEC2 560u/FP/D/6.3V/69/A/11m
MBC40 22u/8/X5R/6.3V/M
MBC26 0.1u/4/X7R/16V/K
DDR3/240/BK/VA/D
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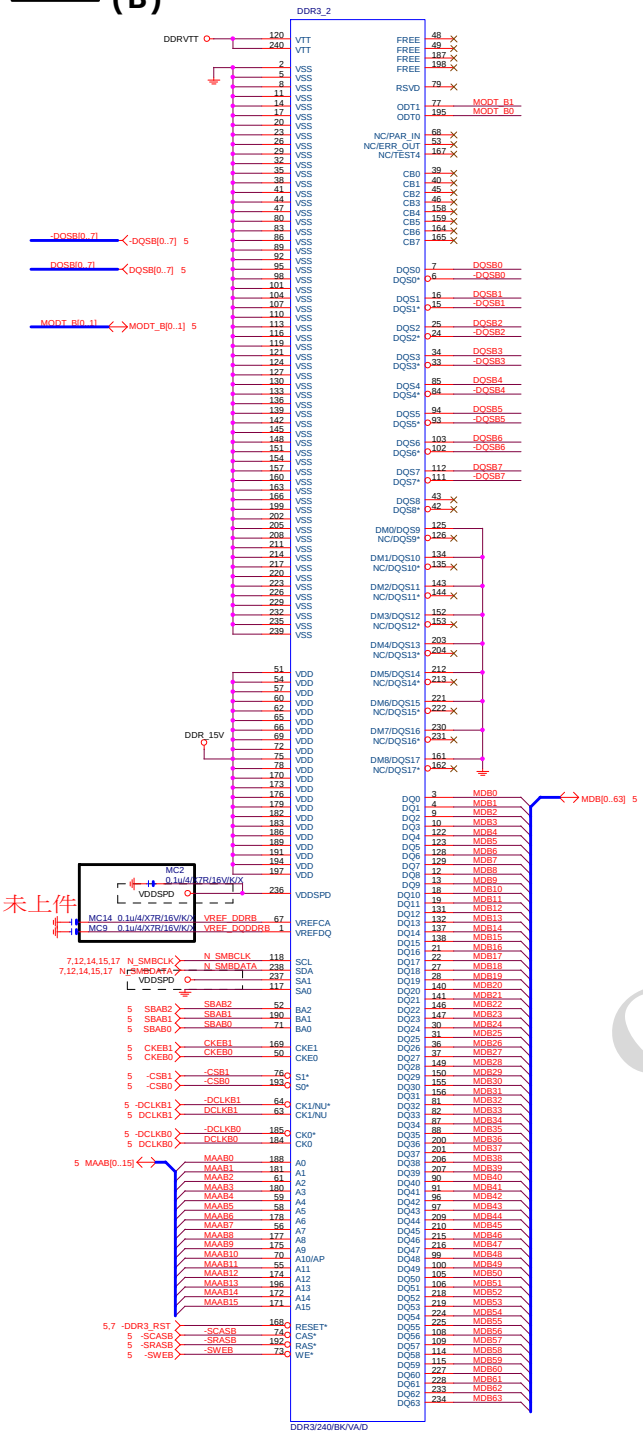
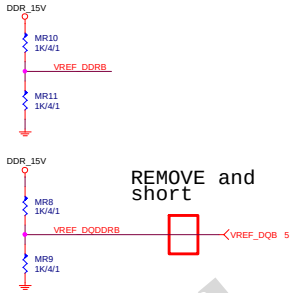
Do not Copy
Gigabyte Technology
Title
DDRIII CHANNEL A
Size Custom
Document Number GA-P81-D3
Rev 1.1
Date:
Sheet 7 of 34

DDR3 (B)



DDR3_VREF



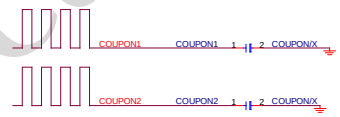
DDR3 1066,1333,1600MHZ BANDWIDTH

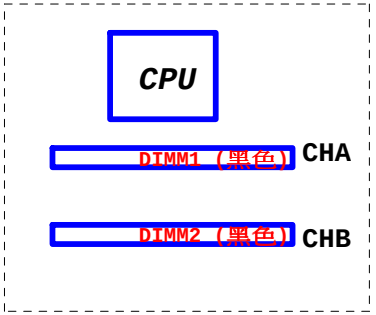
DDR3 1066MHZ
DDR3 clock=533MHZ
DDR3 single channel bandwidth=533x2x8Byte=8.5GB/s
DDR3 dual channel bandwidth=533x2x2x8Byte=17GB/s

DDR3 1333MHZ
DDR3 clock=667MHZ
DDR3 single channel bandwidth=10.6GB/s
DDR3 dual channel bandwidth=21GB/s

DDR3 1600MHZ
DDR3 clock=800MHZ
DDR3 single channel bandwidth=12.8GB/s
DDR3 dual channel bandwidth=25.6GB/s

COUPON





Gigabyte Technology			
Title: DDRIII CHANNEL B			
Size: Custom	Document Number: GA-P81-D3		Rev: 1.1
Date:	Sheet 8 of 34		

PCH (B)

DMI:12/4/4/4/12(breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%

USB2.0 : 12/5/7/5/12 (breakout min 8/4/4/4/8)
Impedance=85 +- 15%

B85: Port 6/7 N/A
H81: Port 6/7/12/13 N/A

PCHB

DMI_RXN_0 DMI_RXP_0 DMI_TXN_0 DMI_TXP_0 DMI_RXN_1 DMI_RXP_1 DMI_TXN_1 DMI_TXP_1 DMI_RXN_2 DMI_RXP_2 DMI_TXN_2 DMI_TXP_2 DMI_RXN_3 DMI_RXP_3 DMI_TXN_3 DMI_TXP_3 DMI

A_DMI_0TXN L24, A_DMI_0TXP K24, A_DMI_0RXN C20, A_DMI_0RXP B20, A_DMI_1TXN G24, A_DMI_1TXP H24, A_DMI_1RXN D21, A_DMI_1RXP B21, A_DMI_2TXN F26, A_DMI_2TXP G26, A_DMI_2RXN B22, A_DMI_2RXP C22, A_DMI_3TXN K26, A_DMI_3TXP L26, A_DMI_3RXN A24, A_DMI_3RXP B24

DMI_RCOMP PCIE_RCOMP

VCC1_5_PCH — NR50 7.5K/4/1 DMI_COMP B19; NR40 7.5K/4/1 PCIE_COMP C13
W=8 mil out of PCH
S=15 mil to other signals

CLKIN_DMI_N CLKIN_DMI_P

10 CK_-SRCCLK_PCH → CK_-SRCCLK_PCH G22
10 CK_SRCCLK_PCH → CK_SRCCLK_PCH F22

USB

USBN_0 AV10 N_-USBP0 → N_-USBP0 19
USBP_0 AU10 N_+USBP0 → N_+USBP0 19
USBN_1 AV11 N_-USBP1 → N_-USBP1 19
USBP_1 AW11 N_+USBP1 → N_+USBP1 19
USBN_2 AN14 N_-USBP2 → N_-USBP2 28
USBP_2 AP14 N_+USBP2 → N_+USBP2 28
USBN_3 A16 N_-USBP3 → N_-USBP3 28
USBP_3 AK16 N_+USBP3 → N_+USBP3 28
USBN_4 AV15
USBP_4 AV14
USBN_5 AU12
USBP_5 AT12
USBN_6 AW14
USBP_6 AU17
USBN_7 AT17
USBP_7 AW16 N_-USBP8 → N_-USBP8 31
USBN_8 AV16 N_+USBP8 → N_+USBP8 31
USBP_8 AN16 N_-USBP9 → N_-USBP9 31
USBN_9 AP16 N_+USBP9 → N_+USBP9 31
USBP_9 AJ18 N_-USBP10 → N_-USBP10 28
USBN_10 AK18 N_+USBP10 → N_+USBP10 28
USBP_10 AP18 N_-USBP11 → N_-USBP11 28
USBN_11 AN18 N_+USBP11 → N_+USBP11 28
USBP_11 AW18
USBN_12 AV18
USBP_12 AP20
USBN_13 AN20
USBP_13

B85/H81: 6/7 N\A
H81:12/13 N\A

PCIE

PCIEX1 port1
15 PI_PCIE_IN1 L14, 15 PI_PCIE_IP1 K14, 15 PI_PCIE_TN1 B12, 15 PI_PCIE_TP1 B11

PCIEX1 port2
15 PJ_PCIE_IN2 F14, 15 PJ_PCIE_IP2 G14, 15 PJ_PCIE_TN2 D11, 15 PJ_PCIE_TP2 C11

LAN RTL8111F-VL
31 LA_ML_IN F11, 31 LA_ML_IP H11, 31 LA_ML_ON B9, 31 LA_ML_OP A9

ITE8892 PCI Bridge
16 G_PCIEBIN J11, 16 G_PCIEBIP L11, 16 G_PCIEBON B8, 16 G_PCIEBOP C8

PCIE_PERN_1_USB3_RXN_2 PCIE_PERP_1_USB3_RXP_2 PCIE_PETN_1_USB3_TXN_2 PCIE_PETP_1_USB3_TXP_2 PCIE_PERN_2_USB3_RXN_3 PCIE_PERP_2_USB3_RXP_3 PCIE_PETN_2_USB3_TXN_3 PCIE_PETP_2_USB3_TXP_3 PCIE_PERN_3 PCIE_PERP_3 PCIE_PETN_3 PCIE_PETP_3 PCIE_PERN_4 PCIE_PERP_4 PCIE_PETN_4 PCIE_PETP_4 PCIE_PERN_5 PCIE_PERP_5 PCIE_PETN_5 PCIE_PETP_5 PCIE_PERN_6 PCIE_PERP_6 PCIE_PETN_6 PCIE_PETP_6 PCIE_PERN_7 PCIE_PERP_7 PCIE_PETN_7 PCIE_PETP_7 PCIE_PERN_8 PCIE_PERP_8 PCIE_PETN_8 PCIE_PETP_8

H81:PCIE 7/8 N/A

OC0B_GP59 AE40
OC1B_GP40 AF37 → N_-USBOC_F 28
OC2B_GP41 AD39
OC3B_GP42 AD40
OC4B_GP43 AF39 → N_-USBOC_R 28,31
OC5B_GP9 AC41
OC6B_GP10 AE40
OC7B_GP14 AG40 → N_GPIO14

USBRBIASB AV20
USBRBIAS AU20 → N_USBRBIAS — NR47 22.6/4/1
W=8 mil out of PCH
S=15 mil to other signals

CLKIN_DOT96N AP11 CK_-DOTCLK
CLKIN_DOT96P AM11 CK_DOTCLK

N_GPIO14 — NR130 8.2K/4 — 3VDUAL

N_-USBOC_F — NBC82 0.1u/4/X7R/16V/K
N_-USBOC_R — NBC83 0.1u/4/X7R/16V/K

放靠近 Device & PCI-E Slot

H81/S/[10HB1-030H81-10R]

PCH PCIE ,DMI 15/4/4/4//15 Impedance=85 +- 15%

usb2.0 12/5/7/5/12
usb3.0 20/5/7/5/20 Impedance=85 +- 15%

PCH (F)

Port要對應

PCHF

USB3 / FDILINK

19 PCH_USB3_RXN0 → F20 USB3_RXN_0 → FDI_RXN_0 → N1 FDI_TXN0
19 PCH_USB3_RXP0 → G20 USB3_RXP_0 → FDI_RXP_0 → N2 FDI_TXP0
19 PCH_USB3_TXN0 → B18 USB3_TXN_0 → FDI_RXN_1 → P2 FDI_TXN1
19 PCH_USB3_TXP0 → C18 USB3_TXP_0 → FDI_RXP_1 → P3 FDI_TXP1

19 PCH_USB3_RXN1 → G18 USB3_RXN_1
19 PCH_USB3_RXP1 → H18 USB3_RXP_1
19 PCH_USB3_TXN1 → B15 USB3_TXN_1
19 PCH_USB3_TXP1 → B16 USB3_TXP_1

FDI_CSYNC L2 → FDI_CSYNC 4
FDI_INT L3 → FDI_INT 4
FDI_RCOMP K2 — NR29 7.5K/4/1 → VCC1_5_PCH

K20 USB3_RXN_4
L20 USB3_RXP_4
D15 USB3_TXN_4
C15 USB3_TXP_4

L18 USB3_RXN_5
K18 USB3_RXP_5
B14 USB3_TXN_5
A14 USB3_TXP_5

TACH6_GP70 AK28
TACH7_GP71 AT34

VCC3 — NR62 8.2K/4/X — NR63 8.2K/4/X

H81/S/[10HB1-030H81-10R]

FDI_TXP[0..1] → FDI_TXP[0..1] 4
FDI_TXN[0..1] → FDI_TXN[0..1] 4

FDI:12/4/4/4/12
Impedance=85 +- 17.5%

H81:USB3.0 N\A

未上件

USB3.0:20/5/7/5/20 (breakout min 8/4/4/4/8) ; ONLY 3 VIAS
Impedance=85 +- 17.5%
Back Panel < 10000 MILS
Front Panel < 6000 MILS

NRN14 8.2K/8P4R/4
10 N_PCHCLK14
CK_-DOTCLK
CK_DOTCLK

NR92 short to GND in non graphic SKU

PCH (J)

PCHJ

AT1 AT41 AU1 AV1 AV2 AV40 AV41 AW2 AW40 B40 B41 C41 D1 D41 — VSS_NCTF

TP22 U11, TP23 U10, TP21 AJ14, TP20 AK14, TP14 K34, TP15 K33, TP12 AH24
TP10 L16, TP11 K16, TP9 AM34
TP3 R12, TP4 N12, TP1 L22, TP2 K22
TP5 R4, TP6 K5, TP7 P5, TP8 L5
VSS AC31, VSS AF3, VSS AV21

H81/S/[10HB1-030H81-10R]

PCH H/S

LOW COST PCH HEATSINK

PCH_HS

NEW H81 MODEL
Footprint: BGAHSINK-75;
3mm孔徑

HEAT SINK/N-BG/GBT MK/Z87/KWOG/[12SP2-S04208-61R_12SP2-S04208-62R_12SP2-S04208-63R]

USB TABLE

OC[3:0]# for Device 29 (ports 0-7)
OC[7:4]# for Device 26 (ports 8-13)

USB OC#	Configure
OC0#	USB0,1
OC1#	USB2,3
OC2#	USB4,5
OC3#	USB6,7
OC4#	USB8,9
OC5#	USB10,11
OC6#	USB12,13
OC7#	Not Use

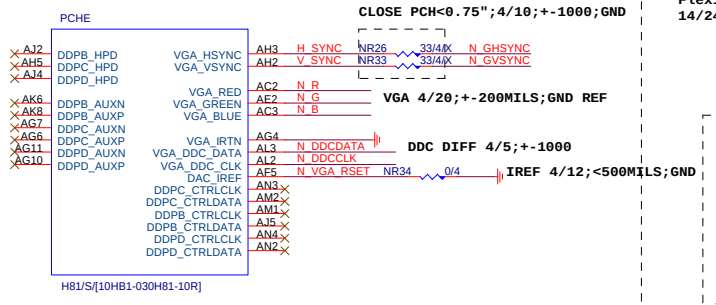
Gigabyte Technology

Title: PCH FDI,DMI,USB ,PCIE

Size: Custom | Document Number: GA-P81-D3 | Rev: 1.1

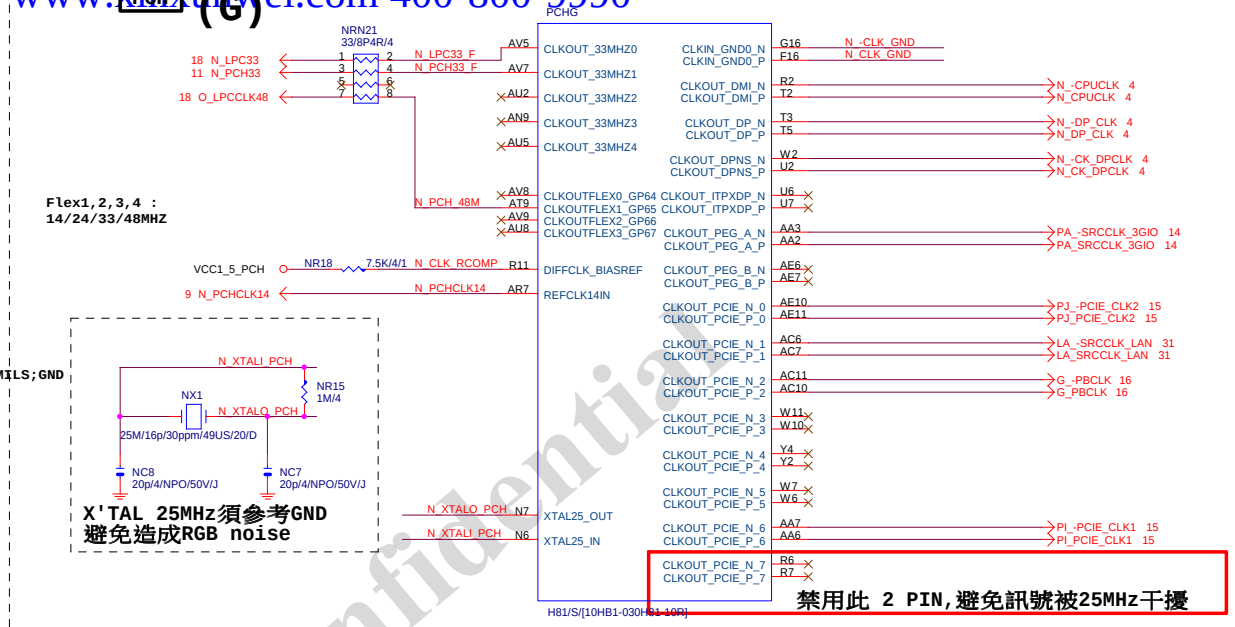
Date: Friday, September 05, 2014 | Sheet 9 of 34

PCH (E)

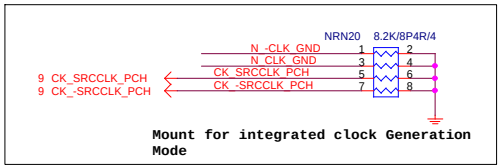


VGA DISABLE
R,G,B NC OR GND
IRTN / IREF GND
VGA_HSYNC, VGA_VSYNC,DDC_CLK, DDC_DATA NC
POWER VCCADAC(AF2), VCCADACBG(AE1) GND

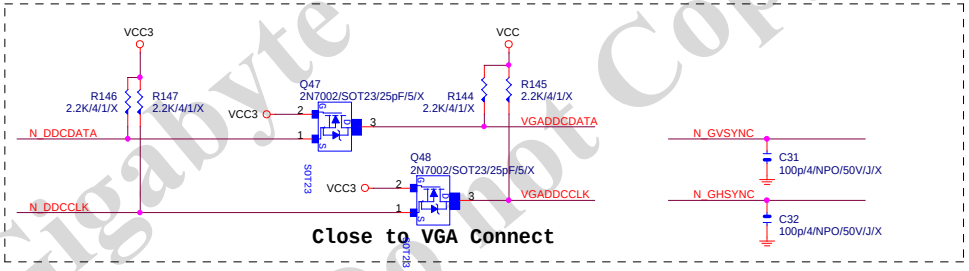
PCH (G)



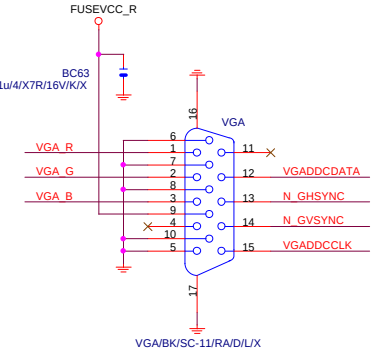
PCH CLK PD



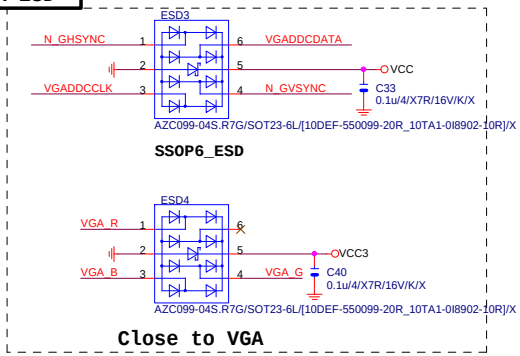
VGA DDC



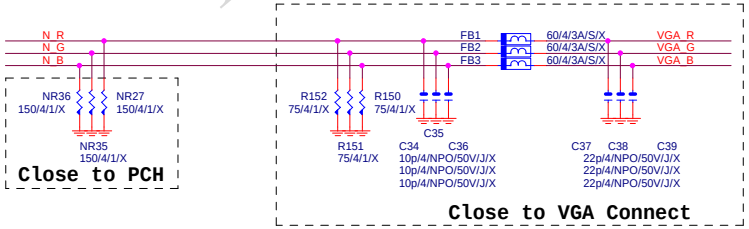
VGA CONNECTOR



VGA ESD



VGA DDC



Gigabyte Technology		
Title: PCH DISPLAY ,CLK BUFFER		
Size: Custom	Document Number: GA-P81-D3	Rev: 1.1
Date: Friday, September 05, 2014	Sheet 10 of 34	

PCH (C)

SATA3 : 20/4/4/4/20 (breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%

SATA2 15/4/4/4/15
SATA3 20/4/4/4/20

PCHC

H81/S/[10HB1-030H81-10R]

PCH (A)

Del

PCHA

H81/S/[10HB1-030H81-10R]

BOOT DEVICE	GP51	GP19
LPC	0	0
SPI	float	float

Default int pull up on GP51,
Default SPI boot devices

GPIO37 PU ENABLE SBA
For H87 & B85

PCH CLK PD

Mount for integrated clock Generation Mode

PCH PU/PD

soft strap	GP16	GP49
0	pcie1	pcie2
1	sata4	sata5

SATA CONNECTOR

SATA3_0

WHITE CONNECTOR

SATA3_1

WHITE CONNECTOR

SATA2/7/WH/H/OP/VA/D/1/B/PA66

[Z87/H87] all SATA3
SATA3(From Z87) - 黑色
SATA3(From Marvell) - 灰色
[B85] SATA2+SATA3
SATA2(From B85) - 黑色
SATA3(From B85) - 白色

** Z87/H87 Port 4&5 SATA3.0
** B85 Port 4&5 SATA2.0

SATA2_2

BLACK CONNECTOR

SATA2_3

BLACK CONNECTOR

SATA2/7/BK/H/OP/VA/D/1/B

GPIO38 Ctrl

MFG Mode

N_GPIO38 : Lo --> Enable
Hi --> Disable

MASK

NQ13
MASK/MMBT2222A/SOT23/600mA/40/X
S0T23

Title	PCH HOST , SATA, PCI
Size	Custom
Document Number	GA-P81-D3
Rev	1.1
Date:	Wednesday, September 10, 2014
Sheet	11 of 34

Gigabyte Technology

PCH (D)

PCHD

H81/S/[10HB1-030H81-10R]

ACZ_SDOUT

C_ACZ_SDOUT : HI --> ME Enable
Lo --> ME Disable
HI:disable ME and override SPI Flash Access Permissions

PCH_DPWROK

For IT8620 Ctrl

PCH PU/PD

HSW_STRAP13

REMOVE

32.768KHZ

CLR_CMOS

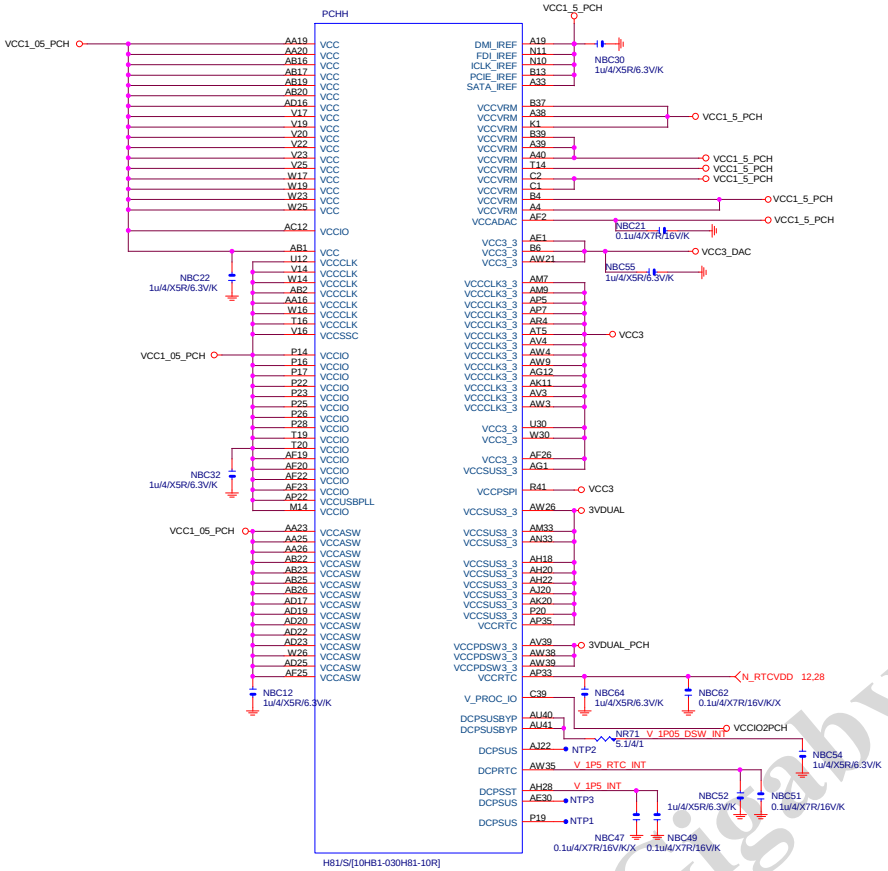
BATTERY-DUAL-4
RB 必須放在BAT外

N_INTERMEN : Integrated 1.05V SUS VRM Enable

Reserve for EMI test

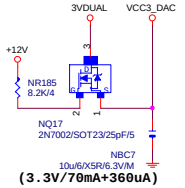
Gigabyte Technology	
Title	PCH GPIO , CTRL , AUDIO
Size: Custom	Document Number: GA-P81-D3
Rev	1.1
Date: Wednesday, September 10, 2014	Sheet 12 of 34

PCH (H)



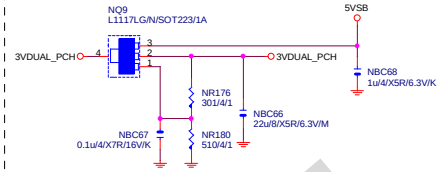
VCC3_DAC

CLOSE北橋(注意震盪水波紋)



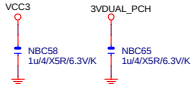
(3.3V/70mA+360uA)

3VDUAL_PCH

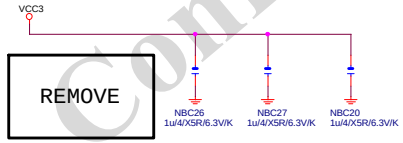


SHT PWR

CAP



(3.3V)(X6)



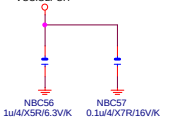
(1.05V)(X5)

REMOVE

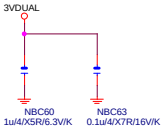
(1.05V)(X6)

REMOVE

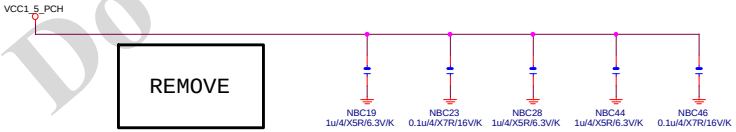
(1.05V)(X2)



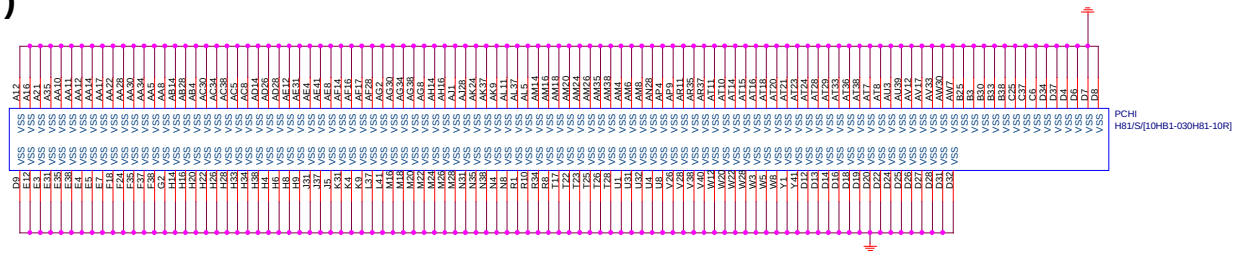
(3.3V)(X2)



(1.05V)(X10)

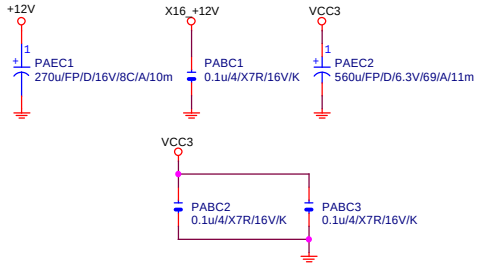


PCH (I)



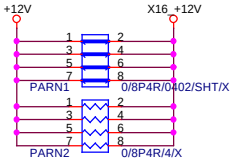
Gigabyte Technology			
Title	PCH PWR ,GND		
Size: Custom	Document Number: GA-P81-D3		Rev: 1.1
Date: Friday, September 05, 2014	Sheet 13 of 34		

PCIEX16 CAP



PCIEX16 PROTECT SHT

+12 protect short-wire test



PCIEX16 AC CAP

PA_EXP_TXP0	PAC5	0.22u/4/X5R/6.3V/K	PA_EXP_TXP0_C
PA_EXP_TXN0	PAC4	0.22u/4/X5R/6.3V/K	PA_EXP_TXN0_C
PA_EXP_TXP1	PAC6	0.22u/4/X5R/6.3V/K	PA_EXP_TXP1_C
PA_EXP_TXN1	PAC7	0.22u/4/X5R/6.3V/K	PA_EXP_TXN1_C
PA_EXP_TXP2	PAC8	0.22u/4/X5R/6.3V/K	PA_EXP_TXP2_C
PA_EXP_TXN2	PAC9	0.22u/4/X5R/6.3V/K	PA_EXP_TXN2_C
PA_EXP_TXP3	PAC10	0.22u/4/X5R/6.3V/K	PA_EXP_TXP3_C
PA_EXP_TXN3	PAC11	0.22u/4/X5R/6.3V/K	PA_EXP_TXN3_C
PA_EXP_TXP4	PAC12	0.22u/4/X5R/6.3V/K	PA_EXP_TXP4_C
PA_EXP_TXN4	PAC13	0.22u/4/X5R/6.3V/K	PA_EXP_TXN4_C
PA_EXP_TXP5	PAC14	0.22u/4/X5R/6.3V/K	PA_EXP_TXP5_C
PA_EXP_TXN5	PAC15	0.22u/4/X5R/6.3V/K	PA_EXP_TXN5_C
PA_EXP_TXP6	PAC16	0.22u/4/X5R/6.3V/K	PA_EXP_TXP6_C
PA_EXP_TXN6	PAC17	0.22u/4/X5R/6.3V/K	PA_EXP_TXN6_C
PA_EXP_TXP7	PAC19	0.22u/4/X5R/6.3V/K	PA_EXP_TXP7_C
PA_EXP_TXN7	PAC18	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 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

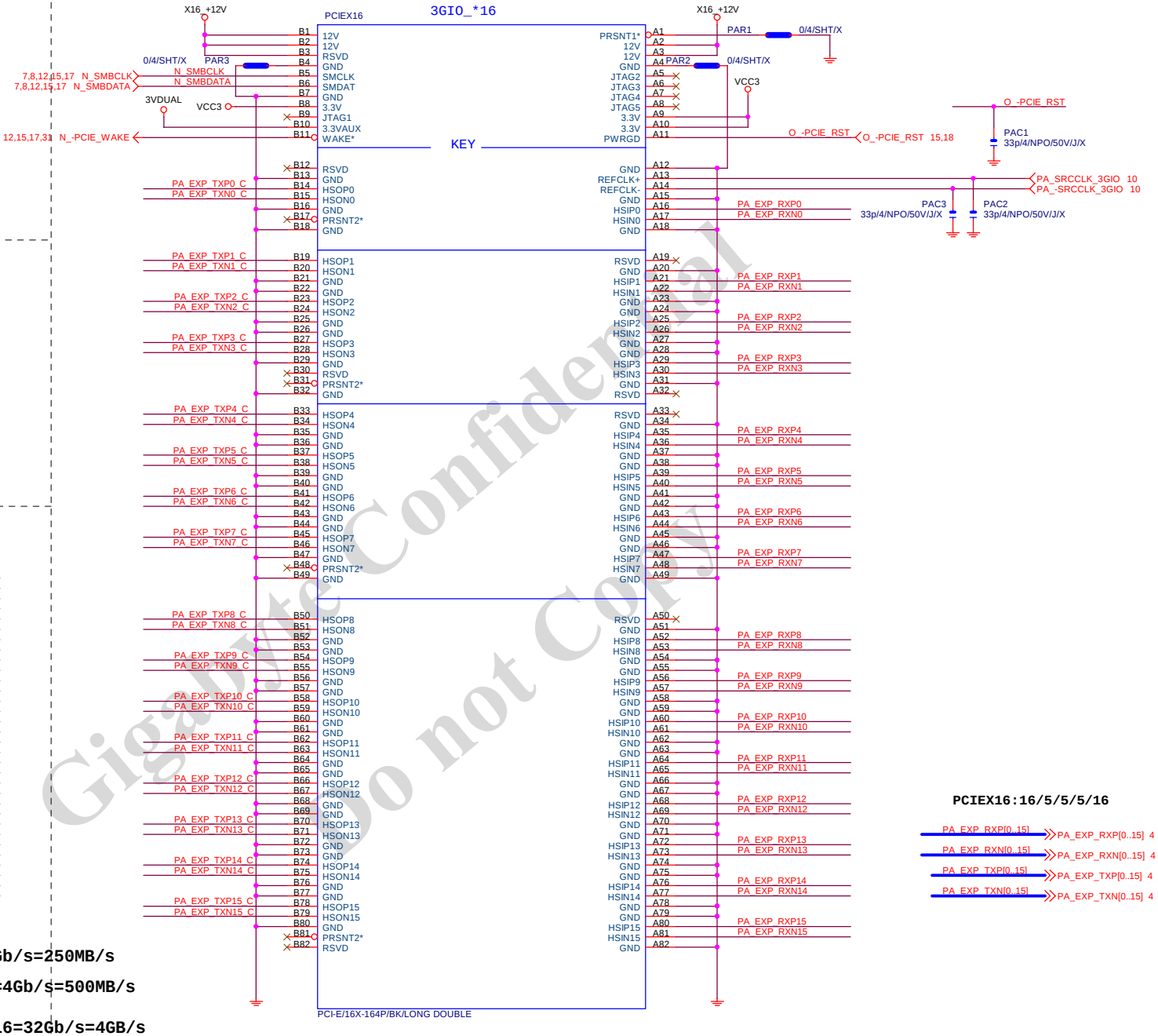
PCE-E X16(單向) BANDWITH=2.5GHz*(8b/10b)X16=32Gb/s=4GB/s

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

PCI-E REV:2.0--> 5GHZ

PCIEX16 SLOT

PCIESLOT-164DM-Q



PCIEX16:16/5/5/5/16

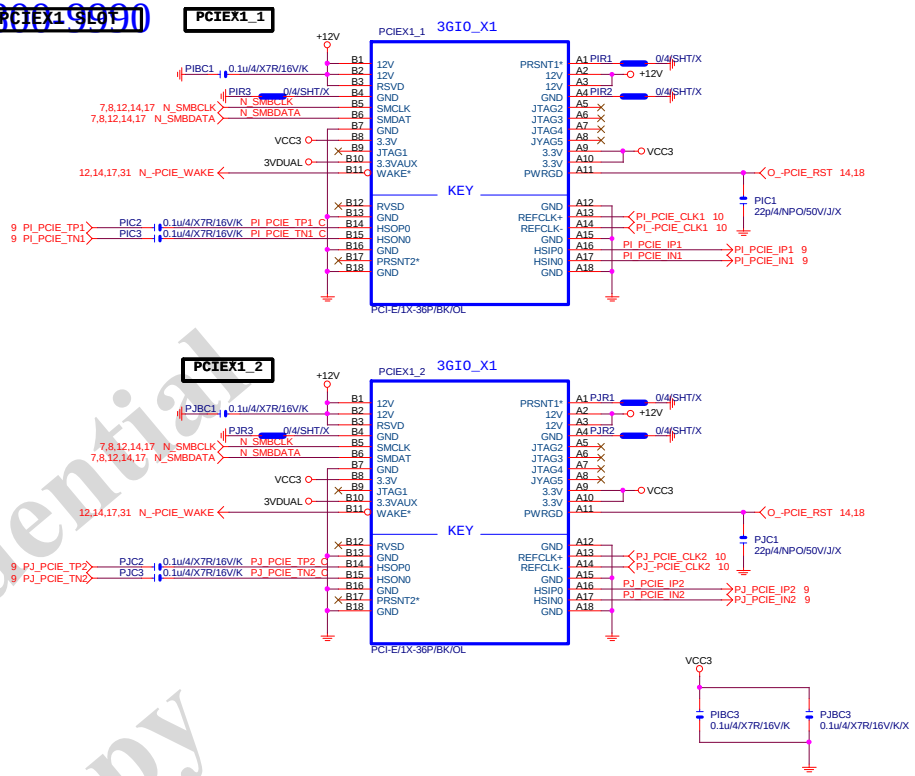
PA_EXP_RXP[0..15] → PA_EXP_RXP[0..15] 4

PA_EXP_RXN[0..15] → PA_EXP_RXN[0..15] 4

PA_EXP_TXP[0..15] → PA_EXP_TXP[0..15] 4

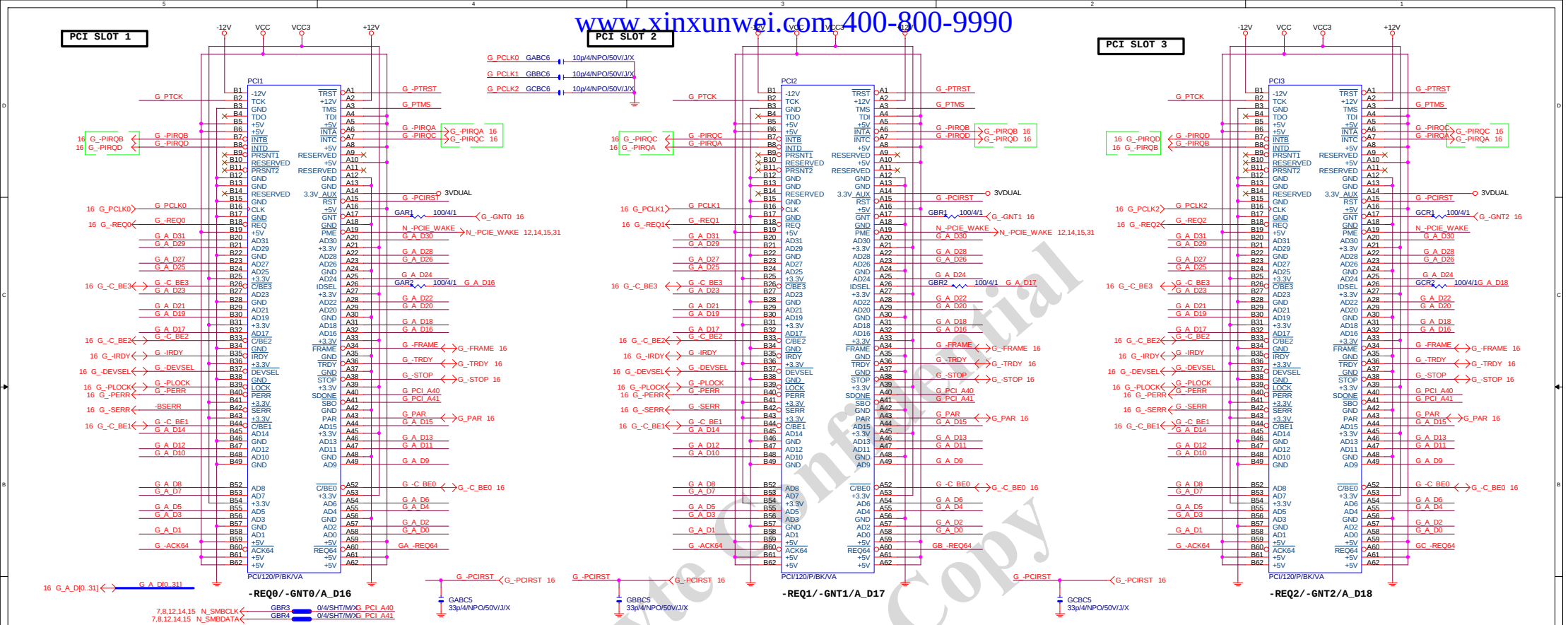
PA_EXP_TXN[0..15] → PA_EXP_TXN[0..15] 4

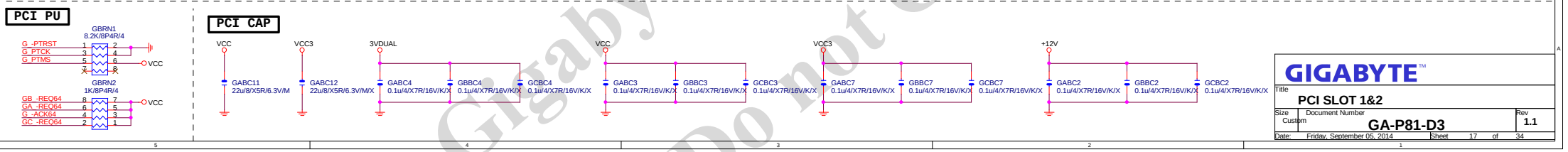
Gigabyte Technology			
Title: PCI EXPRESS * 16			
Size: Custom	Document Number: GA-P81-D3		Rev: 1.1
Date: Thursday, September 11, 2014	Sheet 14 of 34		



Gigabyte Technology		
Title: PCIE_X1 1,2		
Size: Custom	Document Number: GA-P81-D3	Rev: 1.1
Date: Friday, September 05, 2014	Sheet 15 of 34	

Gigabyte Technology	
Title	IT8892E
Size: Custom	Document Number: GA-P81-D3
Rev	1.1
Date: Friday, September 05, 2014	Sheet 16 of 34





GIGABYTE™

Title: PCI SLOT 1&2

Size: Custom | Document Number: GA-P81-D3 | Rev: 1.1

Date: Friday, September 05, 2014 | Sheet 17 of 34

SIO IT8620E_BX

IT8620E_BX

SYS_FAN3

CPU_FAN

SYS_FAN1

SYS_FAN2

【技術通報R&D技術通報151】
有使用PRINT PORT的 MODEL
需使用新料號:10HP2-118728-72R

新增

SIO

IT8620E/CX/S

PWR SHT

For 8728 EUP function

3VDUAL_PCH OR25 0/6/SHT/X IT_VCCH

VCC3 OR49 0/6/X IT_AVCC

不上件

SIO PU

-PCIRSTIN OR86 8.2K/4 VCC3

新增

N_-LDRQ0 OR27 1K/4/1 VCC3

ITE_PWROK2 OR16 1K/4/1/X VCC3

ITE_PWROK1 OR10 1K/4/1 VCC3

O_-PCIE_RST OR19 1K/4/1/X VCC3

O_-PFMRST2 OR2 1K/4/1/X VCC3

N_A20GATE OR31 680/4/1/X

Hi :Disable WDT
Lo :Enable WDT to rest PWROK

EUP_from PCH

3VDUAL_PCH

OR62 8.2K/4

O_PWRBTSW 12

OC5 0.01u/4/X7R/25V/K

SIO STRAP

JP3--- High SPI-Flash Disable
Low SPI-Flash Enable

-PROCHOT_CON JP4 JP3 JP2 ORN1 8.2K/8P4R/4 VCC3

8.2K/4/X OR12 JP5 OR80 8.2K/4/X VCC3

ITE recommand

JP5:N\A FOR 8728 DX
JP5:PULL DOWN FOR 8728 EX
anti-surge enable

EUP control detect

3VDUAL OR47 100/4/1 28_3VSB

JP4	1	k8 power sequency function is Disable
	0	k8 power sequency function is Enable
JP3 JP5	1 1	The default value of EC Index 63h/6Bh/73h is 80h.
	1 0	The default value of EC Index 63h/6Bh/73h is FFh.
	0 1	The default value of EC Index 63h/6Bh/73h is 00h.
	0 0	The default value of EC Index 63h/6Bh/73h is 40h.

IT8620E 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
PIN 108	GP40--- POWER ON 時會拉 LO
PIN 111/112	MOUSE 跟FAN6 FUNCTION 擇一使用,不然會互相干擾

DUAL BIOS OPT STRAP

CEB_N OR58 680/4/1/X

OR56 1K/4/1 VCC3

Power leakage

IT_AVCC

新增

+12V OR59 8.2K/4

OQ3 2N7002/SOT23/25pF/5

SOT23

VCC3

SIO_18V

internal power pin, max 22nF cap

SIO_18V

OBC4 0.1u/4/X7R/16V/K/X

OBC5 0.1u/4/X7R/16V/K

MB ID

VCC3 OR7 8.2K/4

OR15 8.2K/4/X MB_ID2

SIO CAP

IT_VCCH OBC12 10u/6/X5R/6.3V/M OBC3 0.1u/4/X7R/16V/K/X

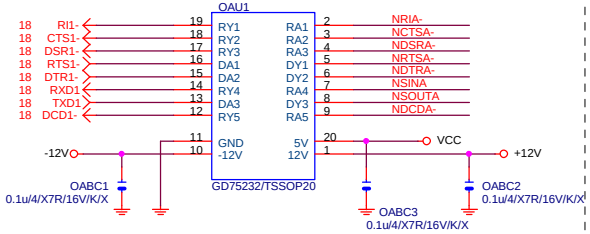
IT_VCCH OBC2 1u/4/X5R/6.3V/K/X OBC7 0.1u/4/X7R/16V/K/X

IT_AVCC OBC10 10u/6/X5R/6.3V/M

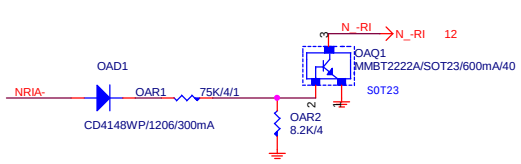
3VDUAL_PCH OBC8 0.1u/4/X7R/16V/K/X

Gigabyte Technology	
Title	ITE 8728 LPC IO
Size: Custom	Document Number: GA-P81-D3 Rev: 1.1
Date: Friday, September 05, 2014	Sheet 18 of 34

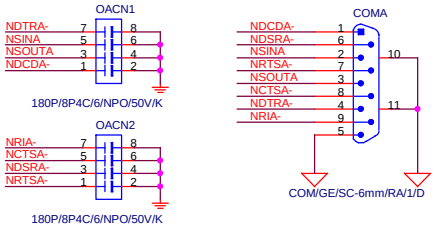
COMA



COM RI

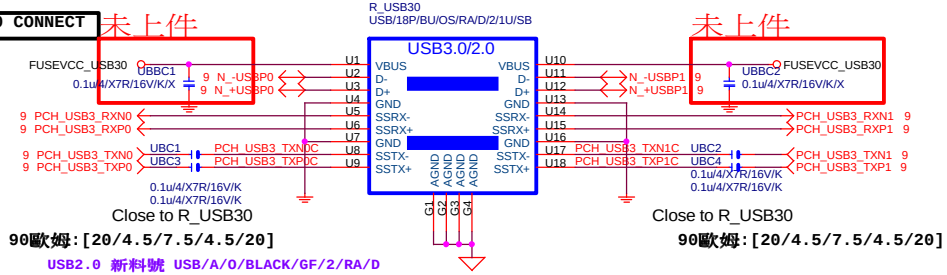


COM BUFFER



R_USB30 CONNECT

未上件



90歐姆:[20/4.5/7.5/4.5/20]

90歐姆:[20/4.5/7.5/4.5/20]

USB2.0 新料號 USB/A/O/BLACK/GF/2/RA/D

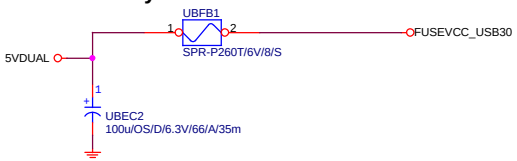
USB3.0 : USB/18P/BU/OS/RA/D/2/1U/SB

-PROHOT

DELETE

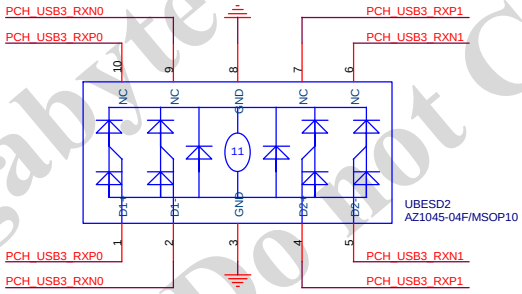
USB30 PWR

Polyswitch-1206

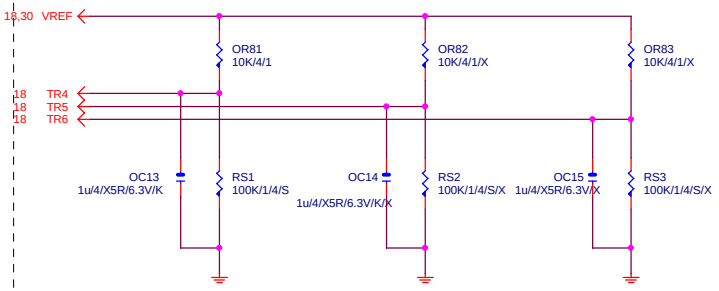


USB3.0 1Port - 1Fuse (3.5A)

USB30 ESD PROCTECT

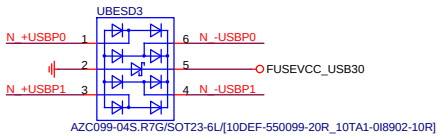


-PROHOT



RS1 close DBQ1、
RS2 close DDQ1、
RS3 close DAQ1、
Others close SIO

USB20 ESD PROCTECT



CLOSE R_USB30

Gigabyte Technology			
Title: COM & PROHOT/Dynamic O.C.			
Size: Custom	Document Number: GA-P81-D3		Rev: 1.1
Date: Friday, September 05, 2014	Sheet 19 of 34		

DUAL BIOS

指定用DII

VCC3 NR226 330/4/1 -SPI_CS_1
NR227 1K/4/1
NQ20 S0T23 N_-ICH_SPI_CS MMBT2222A/SOT23/600mA/40
NQ21 MMBT2222A/SOT23/600mA/40 S0T23
-SPI_HOLD_B NR229 8.2K/4

指定用DII

VCC3 NR230 330/4/1 -SPI_CS_2
NR231 1K/4/1
NQ22 MMBT2222A/SOT23/600mA/40 S0T23 N_-ICH_SPI_CS → N_-ICH_SPI_CS 12
NQ23 MMBT2222A/SOT23/600mA/40 S0T23
-SPI_HOLD_M NR232 8.2K/4

M_BIOS
-SPI_CS_1 NR7 0/4/SHT/MX
NC1 10p/4/NPO/50V/J/X
SPI_MISO
12 SPI_DQ2 NR220 0/4/SHT/MX
N_-SPI_WP0
CS# SO WP# VSS VDD HOLD# SCK SI
NR4 0/4/SHT/MX
NBC2 1u/4/X5R/6.3V/K
-HOLD0 NR221 0/4/SHT/X → SPI_DQ3 12
N_ICH_SPI_CLK
N_ICH_SPI_MOSI
NC2 10p/4/NPO/50V/J/X
MAIN BIOS
32M/SPI/SO8/200mil/S/[10HP4-112532-20R_10HP4-152532-20R]

B_BIOS
-SPI_CS_2 NR8 0/4/SHT/MX
SPI_MISO
12 SPI_DQ2 NR223 0/4/SHT/MX
N_-SPI_WP1
CS# SO WP# VSS VDD HOLD# SCK SI
NR12 0/4/SHT/MX
NBC3 1u/4/X5R/6.3V/K
-HOLD1 NR224 0/4/SHT/X → SPI_DQ3 12
N_ICH_SPI_CLK → N_ICH_SPI_CLK 12
N_ICH_SPI_MOSI → N_ICH_SPI_MOSI 12
BACKUP BIOS
32M/SPI/SO8/200mil/S/[10HP4-112532-20R_10HP4-152532-20R]

MOSI For DMI RX Termination Voltage

18 -SPI_HOLD_M NR3 1K/4/1
18 -SPI_HOLD_B NR11 1K/4/1
12 N_ICH_SPI_MISO N_ICH_SPI_MISO NR5 8.2K/4
12 N_ICH_SPI_MISO NR6 22/4 SPI_MISO

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

1 means floating
0 means PD 1K

VCC3 NBC4 0.1u/4/X7R/16V/K

LPT PORT

PRN5 68/8P4R/4
18 AFD- AFD- PD0 STB- INIT- LPT14 LPT2 LPT1 LPT16
18 STB-
18 INIT-
18 ERR- ERR-
18 ACK- ACK-
18 BUSY BUSY
18 PE PE
18 SLCT SLCT
18 PD[0..7] PD[0..7]

PRN3 68/8P4R/4
18 SLIN- PD1 PD2 PD3 SLIN- LPT3 LPT4 LPT5 LPT17

PRN1 68/8P4R/4
PD4 PD6 PD7 PD5 LPT6 LPT8 LPT9 LPT7

D1 CD4148WP/1206/300mA VCC
PBC2 0.1u/4/X7R/16V/K
PBC1 1u/6/X7R/16V/K/X

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。

PRN2 2.2K/8P4R/4 LPT3 LPT4 LPT5 LPT17
PRN6 2.2K/8P4R/4 LPT6 LPT8 LPT9 ACK-
PRN4 2.2K/8P4R/4 LPT2 LPT1 LPT16 ERR-
PRN7 2.2K/8P4R/4 LPT7 BUSY PE SLCT
PR1 2.2K/4/1 LPT14

PCN2 180p/8P4C/6/NPO/50V/K LPT17 LPT5 LPT4 LPT3
PCN3 180p/8P4C/6/NPO/50V/K LPT6 LPT8 LPT9 ACK-
PCN1 180p/8P4C/6/NPO/50V/K LPT2 LPT1 LPT16 ERR-
PCN4 180p/8P4C/6/NPO/50V/K LPT7 BUSY PE SLCT
PC1 180p/4/NPO/50V/J LPT14

LPT
LPT1 LPT14 LPT2 ERR- LPT3 LPT16 LPT4 LPT17 LPT5 LPT6 LPT7 LPT8 LPT9 ACK- BUSY PE SLCT
27
26
LPT/PK/SC-6mm/RA/D

Gigabyte Technology		
Title: BIOS		
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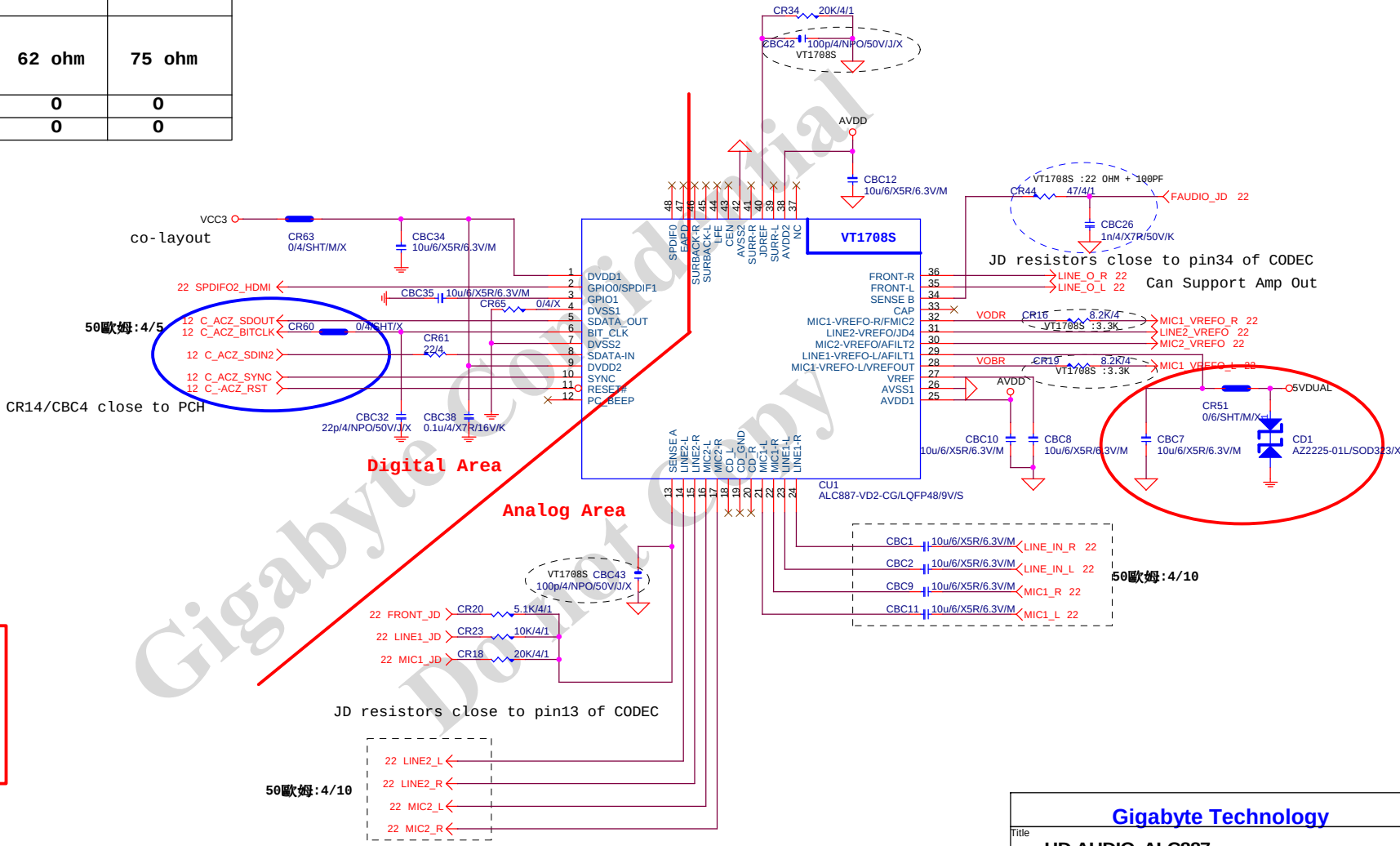
AZALIA CODEC **ALC892/ALC887-VD2/VT1708-CE Colay**

	ALC892	ALC887-VD2	VT1708S-CE
CR44/CBC26	47ohm+1nF	47ohm+1nF	22ohm+100P
CBC42/CBC43	X	X	100P/4
CR16/CR19 CR52/CR56/CR10/CR9	8.2K/4	8.2K/4	3.3K/4/1
CR6/CR7/CR58/CR54/ CR67/CR68/CR69/CR70	22K/4	22K/4	10K/4/1
CR5/CR8/CR1/CR14/ CR17/CR22/CR73/CR74/ CR13/CR11/CR57/CR53/ CR75/CR76	62 ohm	62 ohm	75 ohm
CR51/CD1/CBC7	0	0	0
CESD1	X	0	0



Gigabyte Technology

Title: HD AUDIO ALC887

Size: Custom | Document Number: GA-P81-D3 | Rev: 1.1

Date: Friday, September 05, 2014 | Sheet 21 of 34

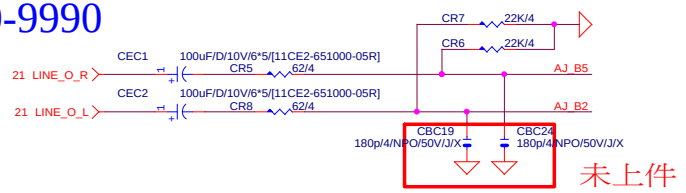
CR49 0/6/SHT/M/X → Close F_AUDIO

CR50 0/6/SHT/M/X → Close Codec

CR21 2.2/6 → Audio jack <--> USB_LAN

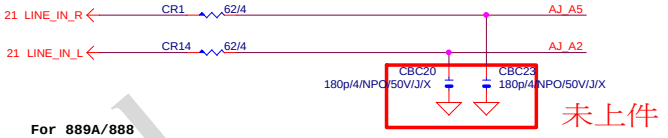
CR24 0/6/X → Under Audio jack

LINE-OUT



Only reserved for ALC888

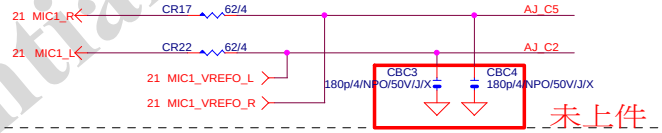
LINE-IN



Verify MIC function in LINE-in

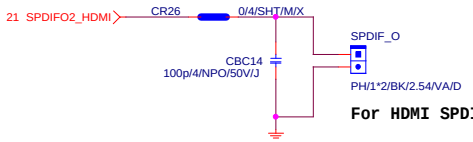
For 889A/888

MIC-IN



SURROUND

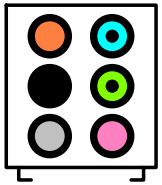
SPDIF_OUT



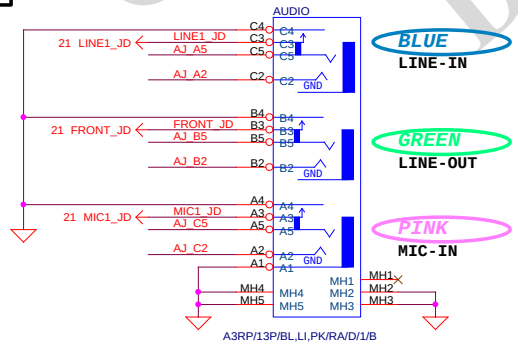
For HDMI SPDIF

CEN/LFE

AZALIA JACK



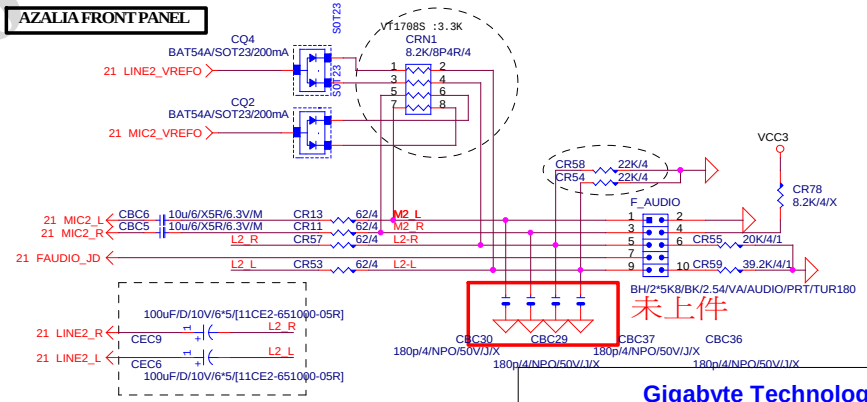
AZALIA JACK



A3RP/13P/BL,LI,PK/RA/D/1/B

SURR BACK

AZALIA FRONT PANEL



Gigabyte Technology

Title: AUDIO JACK

Size: Custom | Document Number: GA-P81-D3 | Rev: 1.1

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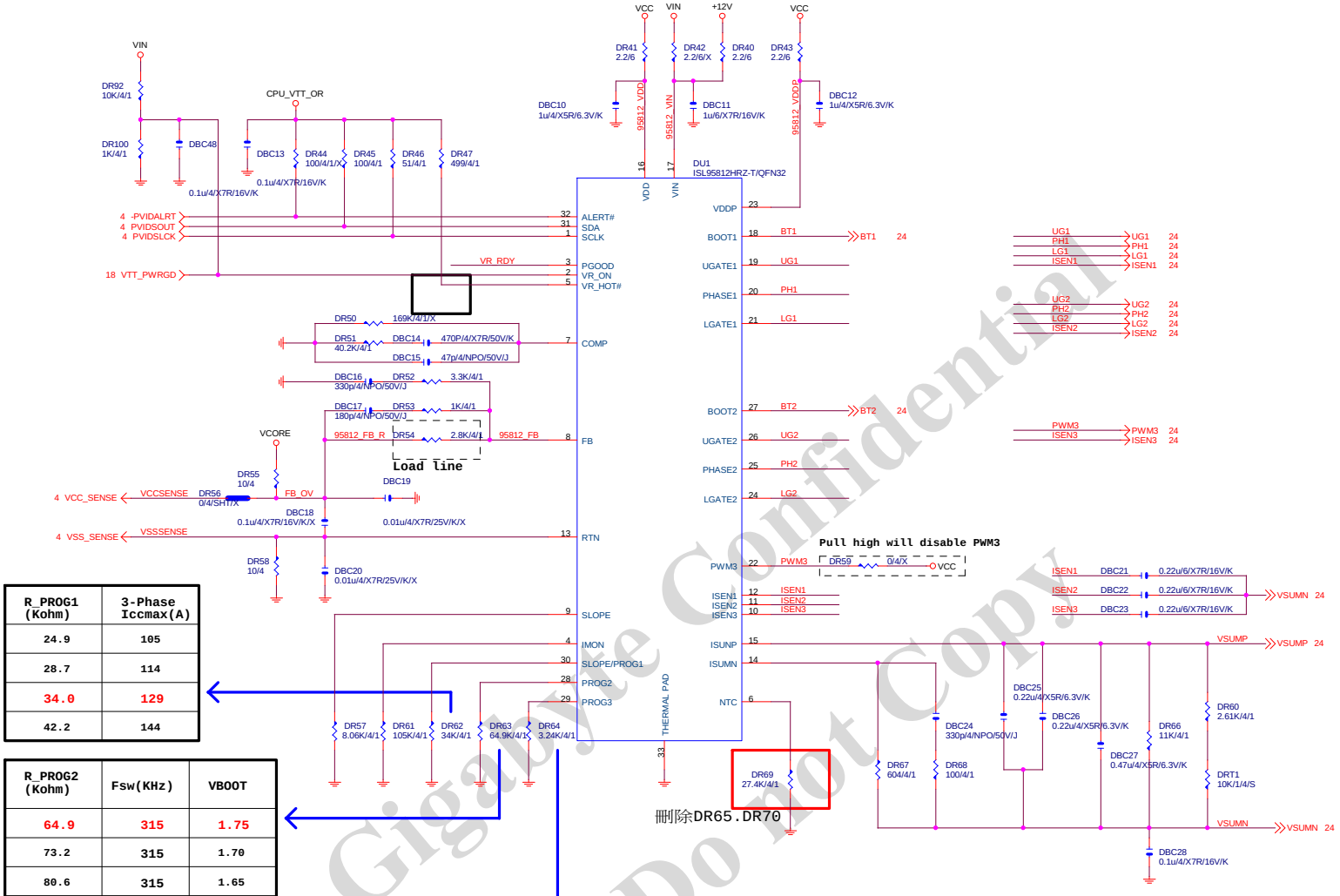
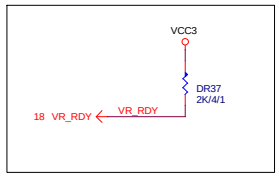


R_PROG1 (Kohm)	3-Phase Iccmax(A)
24.9	105
28.7	114
34.0	129
42.2	144

R_PROG2 (Kohm)	Fsw(KHz)	VBOOT
64.9	315	1.75
73.2	315	1.70
80.6	315	1.65
90.9	315	0

R_PROG3 (Kohm)	Fast Slew Rate (mV/us)
3.24	12
5.76	24
9.31	40
13.3	45



Gigabyte Technology		
Title: CPU CORE VR-1		
Size: Custom	Document Number: GA-P81-D3	Rev: 1.1
Date: Friday, September 05, 2014	Sheet 23 of 34	

PHASE 1

UG1 PH1 LG1 → UG1 23, PH1 23, LG1 23

VIN
DAC1 1u/6/X7R/16V/K
UG1 DAR1 2.2/6 UG1_1
DAR2 8.2K/4
PH1
LG1 DAR3 0/6/SHT/M/X LG1_1
DAC2 0.22u/6/X7R/16V/K
DAR6 2.2/6
DAC3 1n/4/X7R/50V/K
DAR8 0/6/SHT/M/X
BT1 23

[1]

DAQ1 SiRA14DP-T1/PPAKSO-8/1450pF/5.1m/[10IF9-050014-01R]
DAQ2 SiRA14DP-T1/PPAKSO-8/1450pF/5.1m/[10IF9-050014-01R_10IF7-065830-01R]
DAQ3 SiRA14DP-T1/PPAKSO-8/1450pF/5.1m/[10IF9-050014-01R_10IF7-065830-01R]

DAL1 0.68uH/40A/IMD119/M/D
VCORE
DAR4 0/4/SHT/M/X
DAR5 0/4/SHT/M/X

23 VSUMP VSUMP DAR7 3.6K/4/1
23 ISEN1 ISEN1 DAR9 10K/4/1
23 VSUMN VSUMN DAR10 10/4 V1N
ISEN2 DAR11 10K/4/1
ISEN3 DAR12 10K/4/1

Close to PWM

PHASE 3

VCC
DCR13 1/6
DCR14 1/6
DCC4 1u/6/X7R/16V/K
DCC5 0.1u/4/X7R/16V/M/X
DCU1 ISL6208BCRZ/DFN8/[10TA1-606208-21R]
BOOT PVCC 6609_VCC PWM3
UGATE PHASE LGATE
UG3 PH3 LG3

PWM3 → PWM3 23

VIN
DCC1 1u/6/X7R/16V/K
UG3 DCR1 2.2/6 UG3_1
DCR2 8.2K/4
PH3
LG3 DCR3 0/6/SHT/M/X LG3_1
DCC2 0.22u/6/X7R/16V/K
DCR6 2.2/6
DCC3 1n/4/X7R/50V/K
DCR8 0/6/SHT/M/X
BOOT

[3]

DCQ1 SiRA14DP-T1/PPAKSO-8/1450pF/5.1m/[10IF9-050014-01R_10IF7-065830-01R]
DCQ2 SiRA14DP-T1/PPAKSO-8/1450pF/5.1m/[10IF9-050014-01R_10IF7-065830-01R]
DCQ3 SiRA14DP-T1/PPAKSO-8/1450pF/5.1m/[10IF9-050014-01R_10IF7-065830-01R]

DCL1 0.68uH/40A/IMD119/M/D
VCORE
DCR4 0/4/SHT/M/X
DCR5 0/4/SHT/M/X

23 VSUMP VSUMP DCR7 3.6K/4/1
23 ISEN3 ISEN3 DCR9 10K/4/1
23 VSUMN VSUMN DCR10 10/4 V3N
ISEN1 DCR11 10K/4/1
ISEN2 DCR12 10K/4/1

Close to PWM

PHASE 2

UG2 → UG2 23
PH2 → PH2 23
LG2 → LG2 23

VIN
DBC1 1u/6/X7R/16V/K
UG2 DBR1 2.2/6 UG2_1
DBR2 8.2K/4
PH2
LG2 DBR3 0/6/SHT/M/X LG2_1
DBC2 0.22u/6/X7R/16V/K
DBR6 2.2/6
DBC3 1n/4/X7R/50V/K
DBR8 0/6/SHT/M/X
BT2 23

[2]

DBQ1 SiRA14DP-T1/PPAKSO-8/1450pF/5.1m/[10IF9-050014-01R_10IF7-065830-01R]
DBQ2 SiRA14DP-T1/PPAKSO-8/1450pF/5.1m/[10IF9-050014-01R_10IF7-065830-01R]
DBQ3 SiRA14DP-T1/PPAKSO-8/1450pF/5.1m/[10IF9-050014-01R_10IF7-065830-01R]

DBL1 0.68uH/40A/IMD119/M/D
VCORE
DBR4 0/4/SHT/M/X
DBR5 0/4/SHT/M/X

23 VSUMP VSUMP DBR7 3.6K/4/1
23 ISEN2 ISEN2 DBR9 10K/4/1
23 VSUMN VSUMN DBR10 10/4 V2N
ISEN1 DBR11 10K/4/1
ISEN3 DBR12 10K/4/1

Close to PWM

MOSFET HEATSINK

MOS_HS
MOS HS/[12SP2-S08924-11R_12SP2-S08924-12R_12SP2-S08924-13R]/X

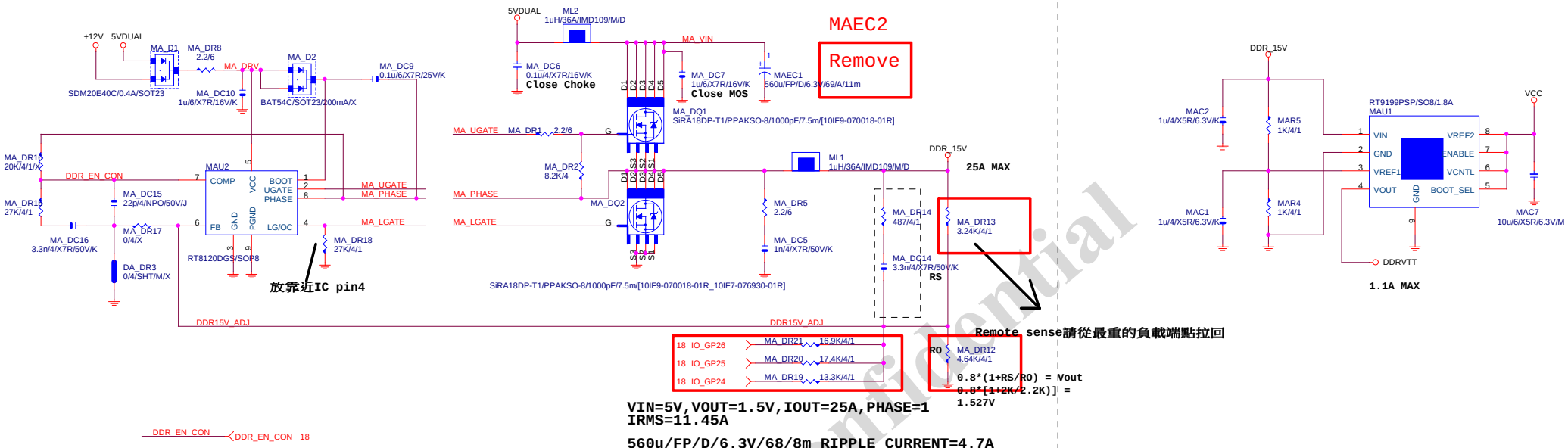
VCORE
DEC3 DEC4 DEC5 DEC6
560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]
560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]
560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]
560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]

V12
DBC46 1u/6/X7R/16V/K
DEC10
270u/FP/D/16V/8C/A/10m

VIN
DEC12
270u/FP/D/16V/8C/A/10m

Gigabyte Technology		
Title	CPU CORE VR-2	
Size: Custom	Document Number: GA-P81-D3	Rev: 1.1
Date: Thursday, September 11, 2014	Sheet 24 of 34	

DDR_15V



VIN=5V,VOUT=1.5V,IOUT=25A,PHASE=1
IRMS=11.45A

560u/FP/D/6.3V/68/8m RIPPLE CURRENT=4.7A
Coefficient=1.7(85℃),1(105℃)

VIN Ripple current=4.7X1.7=7.99A(85℃)
-->故固態電容須2X7.99=15.98>11.45A

OCP:35.82A for Rds=6.7m for vishay@4.5V
OCP:72.727A for Rds=3.3m for renesas@10V
OCP:48A=Roset*Iocset / Rds(on)
=12K*10uA / [5//5]

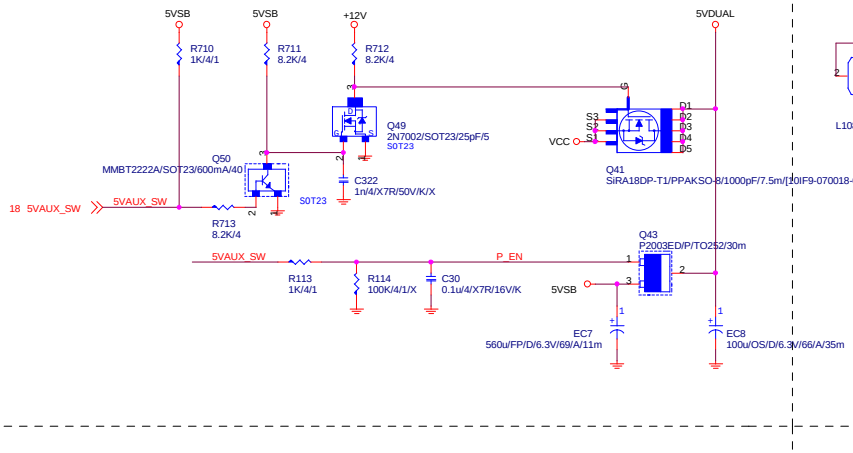
DDRVTT

GIGABYTE™

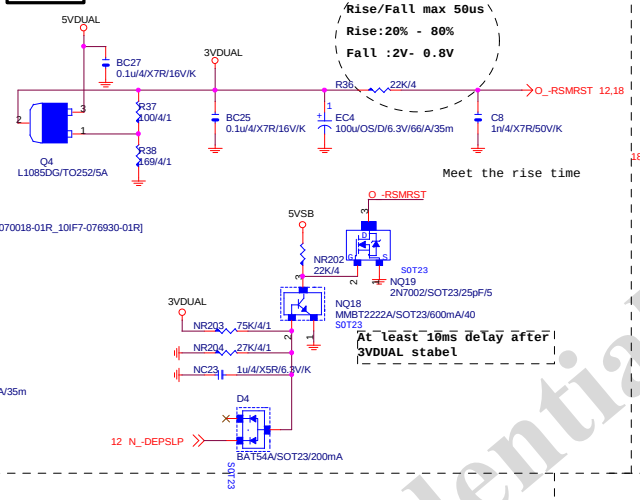
Title	DDR15V / M3 POWER	
Size: Custom	Document Number: GA-P81-D3	Rev: 1.1
Date: Wednesday, September 10, 2014	Sheet 25 of 34	

Gigabyte Technology	
Title	CPU CORE VR-2
Size: Custom	Document Number: GA-P81-D3
Rev: 1.1	
Date: Friday, September 05, 2014	Sheet 26 of 34

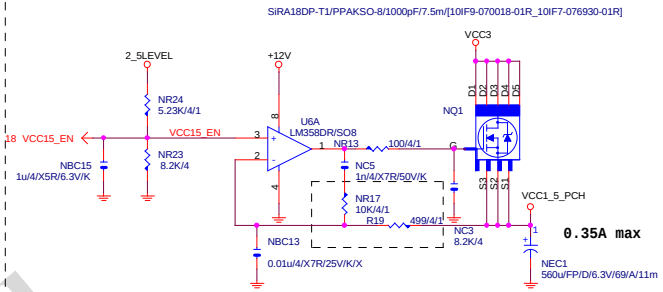
5VDUAL



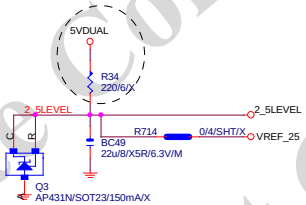
3VDUAL



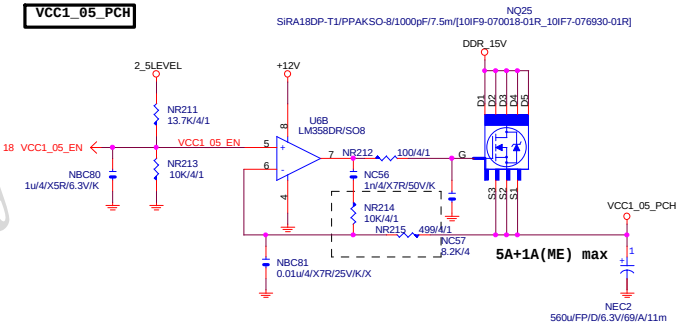
VCC1_5_PCH



ERP

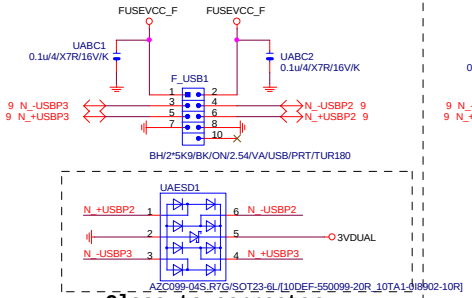


VCC1_05_PCH

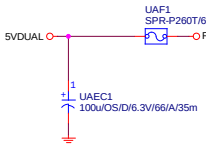


Gigabyte Technology		
Title: DISCRETE POWER		
Size: Custom	Document Number: GA-P81-D3	Rev: 1.1
Date: Friday, September 05, 2014	Sheet 27 of 34	

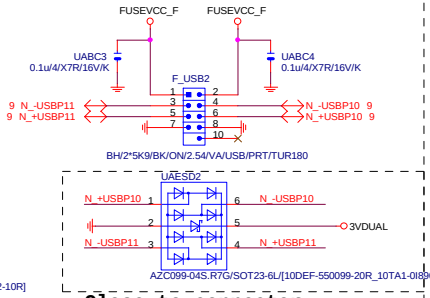
FRONT USB1



Close to connector



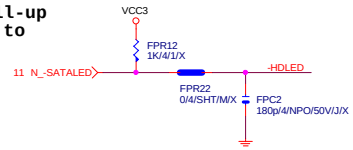
FRONT USB2



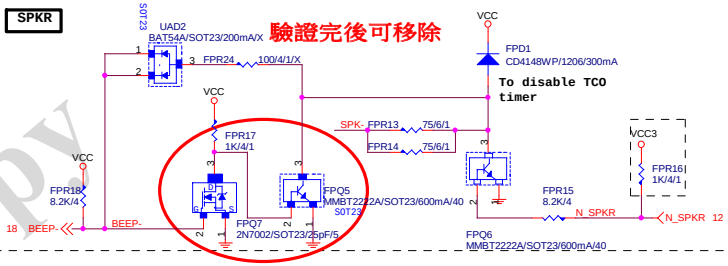
Close to connector

SATA LED

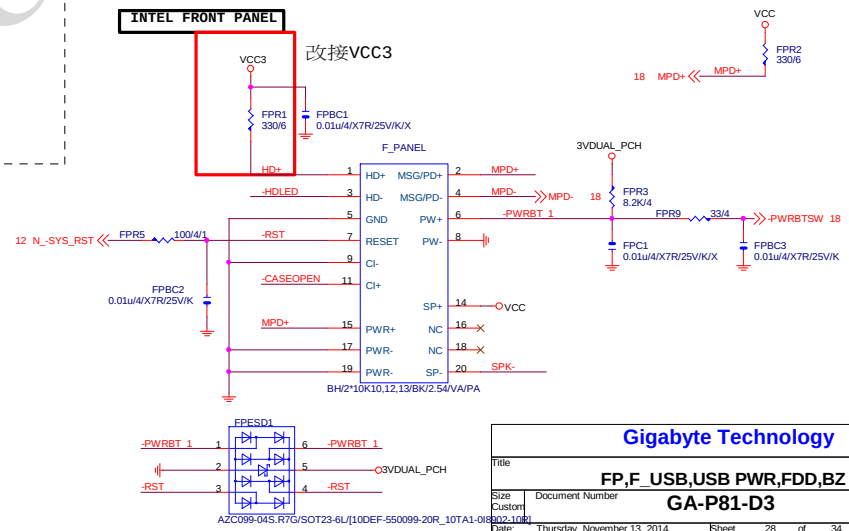
SATALED# signal open-collector,pull-up (8.2 kΩ to 10 kΩ) to Vcc3_3



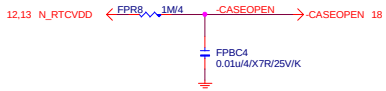
SPKR



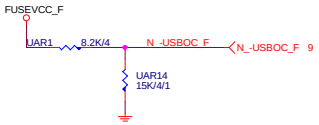
INTEL FRONT PANEL



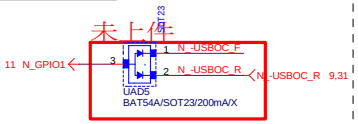
CASE OPEN



-USBOC_F



F_USB POWER PROTECT

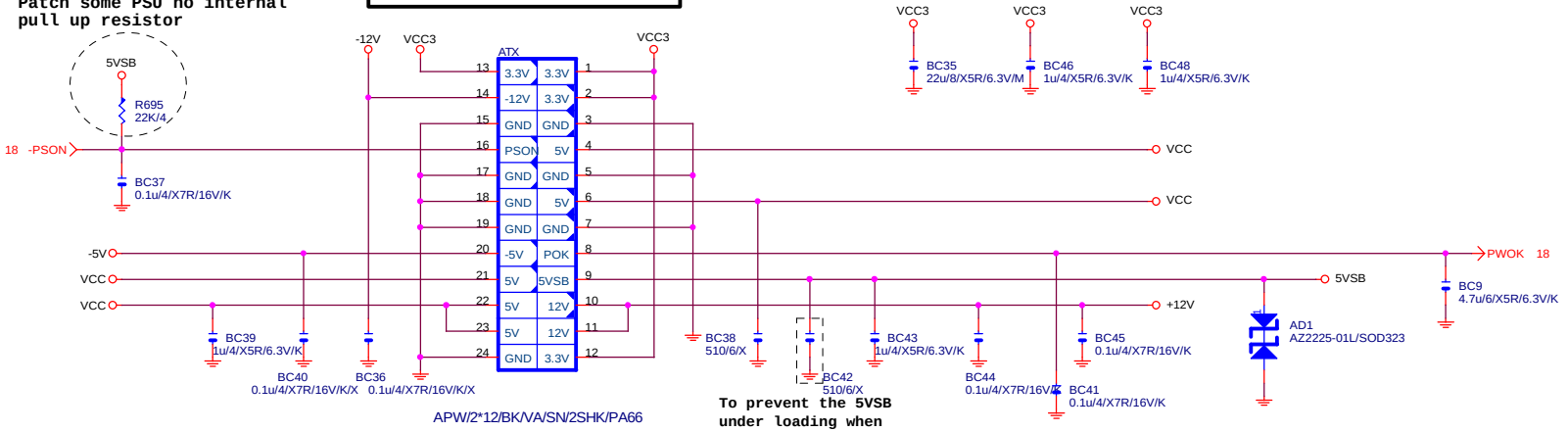


Gigabyte Technology		
Title: FP,F_USB,USB PWR,FDD,BZ		
Size: Custom	Document Number: GA-P81-D3	Rev: 1.1
Date: Thursday, November 13, 2014	Sheet 28 of 34	

Patch some PSU no internal pull up resistor

ATXX24 POWER CONNECTOR

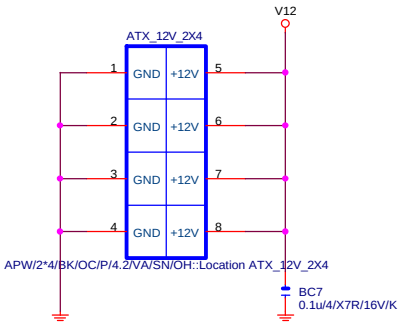
www.xinxunwei.com 400-800-9990



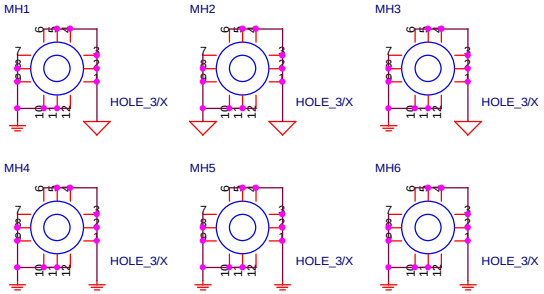
APW/2*12/BK/VA/SN/2SHK/PA66

To prevent the 5VSB under loading when boot

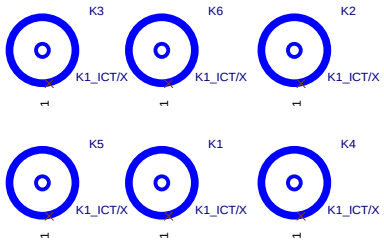
ATXX4 POWER CONNECTOR



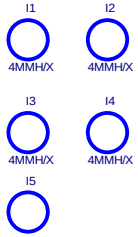
APW/2*4/BK/OC/P/4.2/VA/SN/OH::Location ATX_12V_2X4



HOLE_4-RH-1



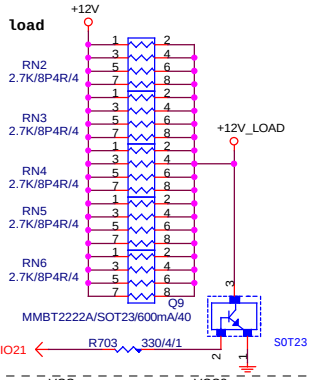
K1-ICT

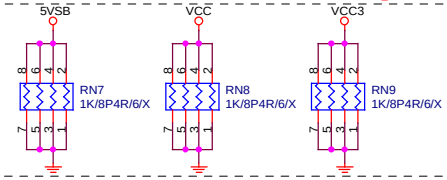


4MMH

【技術通報R&D技術通報153】

To fix 12V light load abnromal issue





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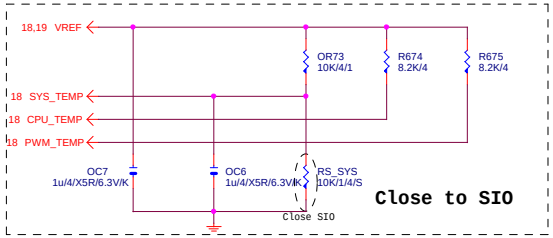
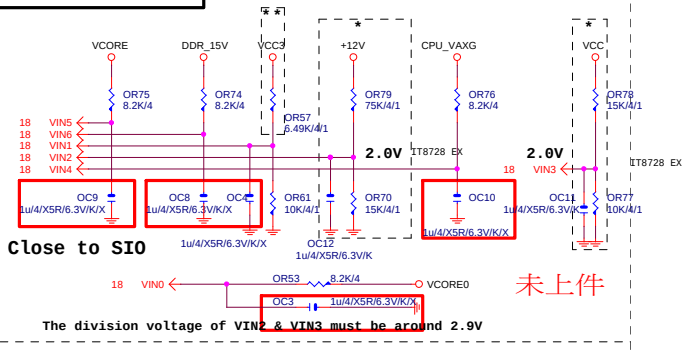
TEMP H/W MONITOR



VOLTAGE-- H/W MONITOR

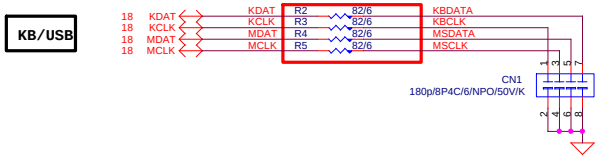
* IT8728 BX
** IT8728 CX

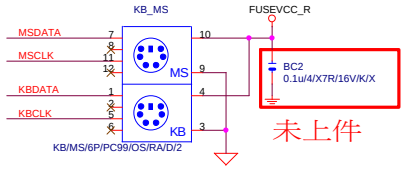
VIN2 must +12V input
VIN3 must VCC input



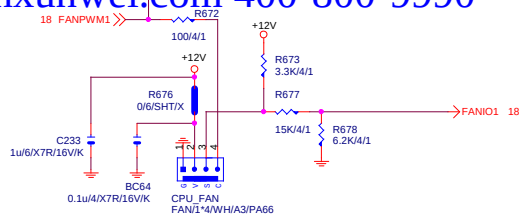
The division voltage of VIN2 & VIN3 must be around 2.9V

KB/USB





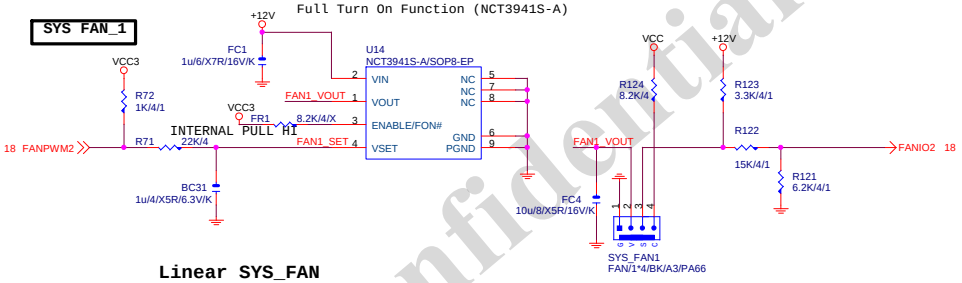
CPU SMART FAN



SYS FAN_1

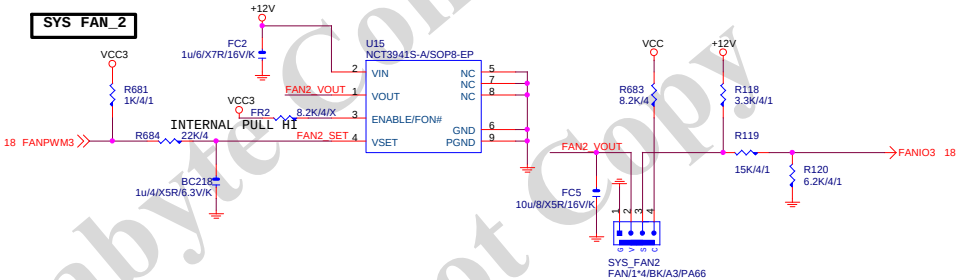
Linear SYS_FAN

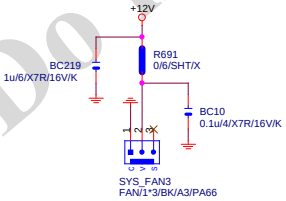
Enable Function (NCT3941S)
Full Turn On Function (NCT3941S-A)

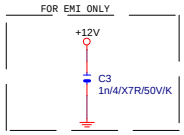


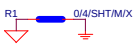
SYS FAN_2

Linear SYS_FAN









Gigabyte Technology		
Title: HWM,KB/MS, FAN CTRL		
Size: Custom	Document Number: GA-P81-D3	Rev: 1.1
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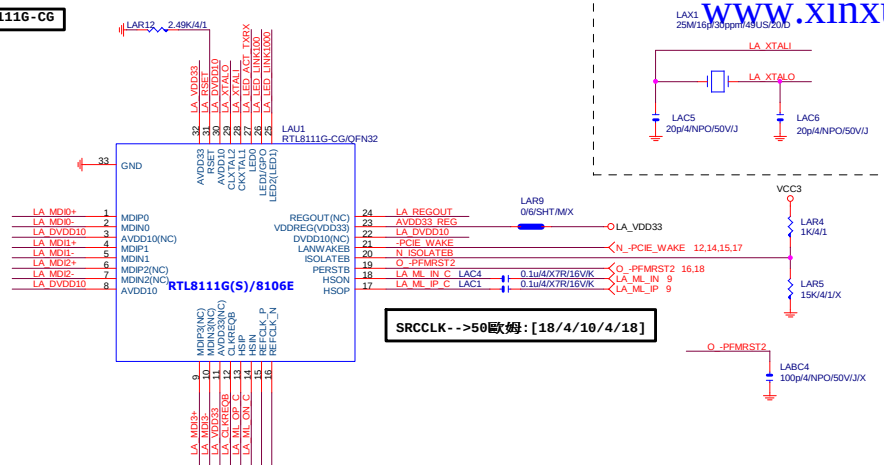
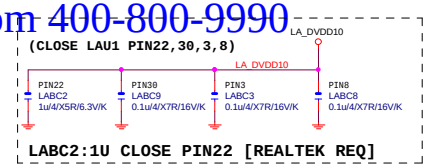
LAN RTL8111G-CG

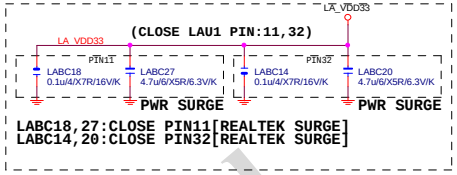


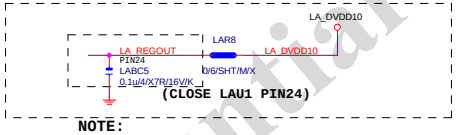
LA_ ML-->80歐姆:[15/5/5/5/15]

SRCCLK-->50歐姆:[18/4/10/4/18]

LAN POWER

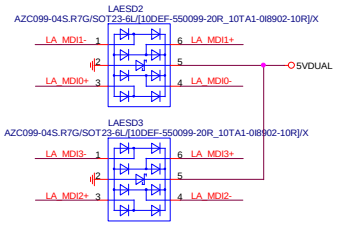






NOTE:
RT8106E:PIN3,11,22,24-->NC
LABC2LABC3,LABC5,LABC18,LABC27-->N/A

MDI ESD預留28KV *



BOM NOTICE *

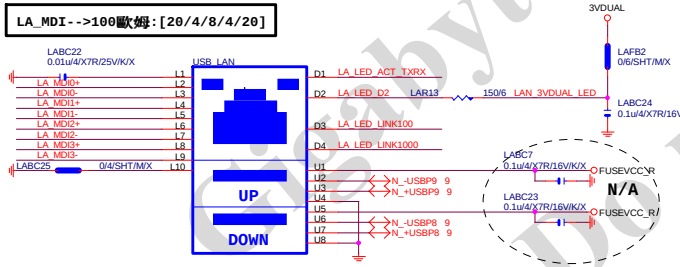
料號	規格	廠商
11NR6-702009-96R 1G LAN (12core)		UDE(RU9 ESD+)

[LED獨立走線,可省略外加AZC099料件LAESD1]

1. 9KV ESD BOM:
USB_LAN (RU9):11NR6-702009-96R
2. 28KV ESD BOM:
USB_LAN (RU9):11NR6-702009-96R
LAESD2,LAESD3:上件AZC398-04S

USB30_LAN CONNECTOR

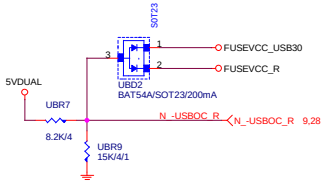
LA_MDI-->100歐姆:[20/4/8/4/20]

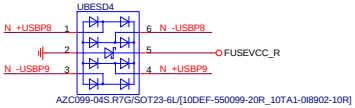


USB+LAN/1G/GO,Y/OS/RA/D/1/1SUR/[11NR6-702009-Z1R_11NR6-702009-R2R]

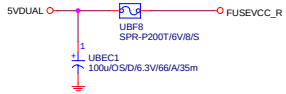
Surge加強RJ45 connector

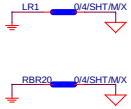
-USBOC_R





CLOSE USB_LAN





Title	RTL8111G-CG	
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	Gigabyte Technology		
Title	N/A		
Size: Custom	Document Number: GA-P81-D3		Rev: 1.1
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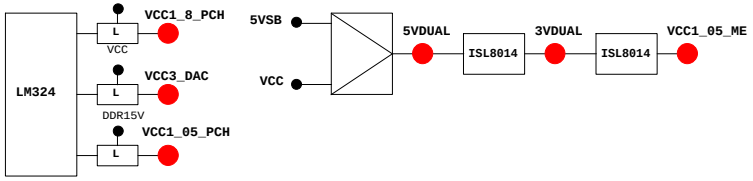
PCH GPIO LIST TABLE

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

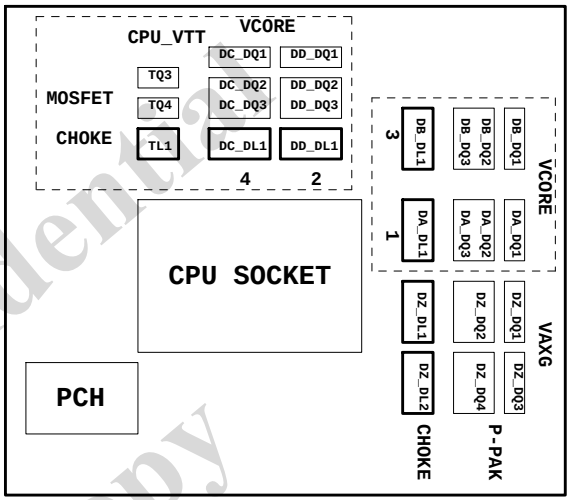
Super I/O ITE8720 GPIO Table

PIN NAME	USAGE	NOTE
SVC/PECI_RQT/GP14	-PECI_REQ	
PWROK1/GP13	PWROK1/ITE_PWROK	
KRST#/GP62	-KBRST	
SO/GP50	-ICH_SPI_CS	
IRTX/GP47/CE2_N/JP7	CEB_N	
GP46/IRRX	-LAN2_DSM	
PSION#/GP42	-PSON	
PWROK2#/GP41	PECI_CTL	
PCIRST3#/GP10/VDIMM_STR_EN	-PCIE_RST	
RSMRST#CIRRX1/GP55	-RSMRST	
PME#/GP54	-LPCPME	
PD5/GP75/BUSSO0	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	
VIDO5/GP27/SIN2	LOW_PWR_2	
PCIRST2#/GP11	-PFMRST1	
PCIRST1#/GP12	-PFMRST2	
3VSBSW#/GP40	CSI_F0	BSEL166_1
SUSC#/GP53	CSI_F1	BSEL166_2
GP23/SI	BSEL166_3/CSISBSL	
VIDO0/GP20/CTS2#	CPUT_LED1_C	BSEL166_4
GP65/VDDA_EN/GB_01	MB_ID2	
PD6/GP76/BUSSO1	MB_ID3	
PD7/GP77/BUSSO2	MB_ID4	
AFD#/GP86/SMBC_R	空 PIN	FST_2X8
INIT#/GP85/SMBD_M	SEC_2x8	GTLREF_AD2
ACK#/GP83	DDR_LED1_C	
VIDO1/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/CIRRX2/GP16	-THERM	
VIDO4/GP26/SOUT2	DDR18V_PH2_EN	
VIDO2/FAN_TAC5/GP24/DSR2#	DDR18V_LED	
VIDO6/GP17/RI2#	1_1V_PH_EN	
VIDO7/JP6/DTR2#	JP6	
PD5/GP75/BUSSO0	SB_LED3_C	



PWM各相位的擺法如下：



BIOS超電壓對應表：

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

散熱模組料號：

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

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

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Title: TABLE LIST
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