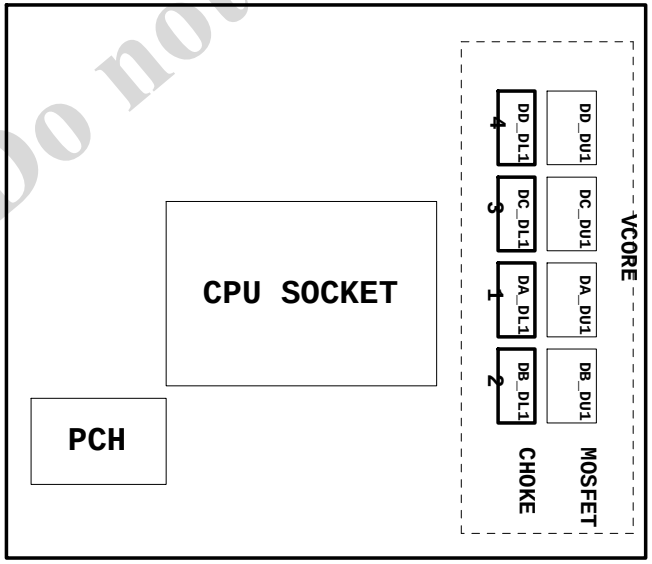
Model Name: GA-H110M-S2PH DDR3

SHEET	TITLE	Rev 1.0
01	COVER SHEET	
02	BOM & PCB MODIFY HISTORY	
03	BLOCK DIAGRAM	
04	CPU_LGA1151-A	
05	CPU_LGA1151-B-DDR3	
06	CPU_LGA1151-C	
07	CPU_LGA1151-D	
08	DDR 3 CHANNEL A	
09	DDR 3 CHANNEL B	
10	PCH CLOCK BUFFER	
11	PCH DMI,USB,PCIE	
12	PCH MISC	
13	PCH SATA,PCIE,SATA SATA CONN	
14	PCH_PWR,GND	
15	Dual BIOS	
16	I/O ITE8628	
17	HWM	
18	FAN CTRL-SIO	
19	PCIEX16 SLOT	
20	PCIEX1 SLOT	
21	IT8892E/FX	
22	PCI SLOT 1, 2	
23	ISL95858_856 PWM	
24	ISL95858_856 MOS_VCORE	
25	ISL95858_856 MOS_VCCGT	
26	VCCSA_VCCIO_VCCPLL	
27	RT8237_DDR_BEAD	
28	RT8237_PCH-BEAD	

SHEET	TITLE
29	DISCRETE POWER
30	ATX POWER , -PROCHOT
31	KB_MS_USB
32	HDMI CONN
33	RTD2168 - DP to VGA
34	R_USB30
35	Realtek 8111G USB 2.0
36	ALC887-VD2 CODEC
37	REAR AUDIO JACK
38	F_USB30
39	F_USB20
40	COM , LPT
41	F_PANEL, EMI
42	POWER MAP
43	POWER 零件使用表
44	TABLE LIST



Gigabyte Technology

Title: Cover Sheet

Size: Custom | Document Number: GA-H110M-S2PH DDR3 | Rev: 1.0

Date: Thursday, October 15, 2015 | Sheet 1 of 44

H110M-S2PH DDR3

Component value change history

Data	Change Item			Reason
2015/07/23	Modify from H110M-S2PV DDR3 02	E-BOM release.	PCB:0.1	
2015/08/19	Modify from H110M-S2PH DDR3 01 1.GR73,GR75 不上件 2.GR74,GR76 shortpad 3.OR84不上件 4.HDMI change 11NR6-H03037-01R 5.HR5,HR11,HR13,HR16,HR15 上件 6.HR12 change 3.16K	E-BOM release.	PCB:1.0	

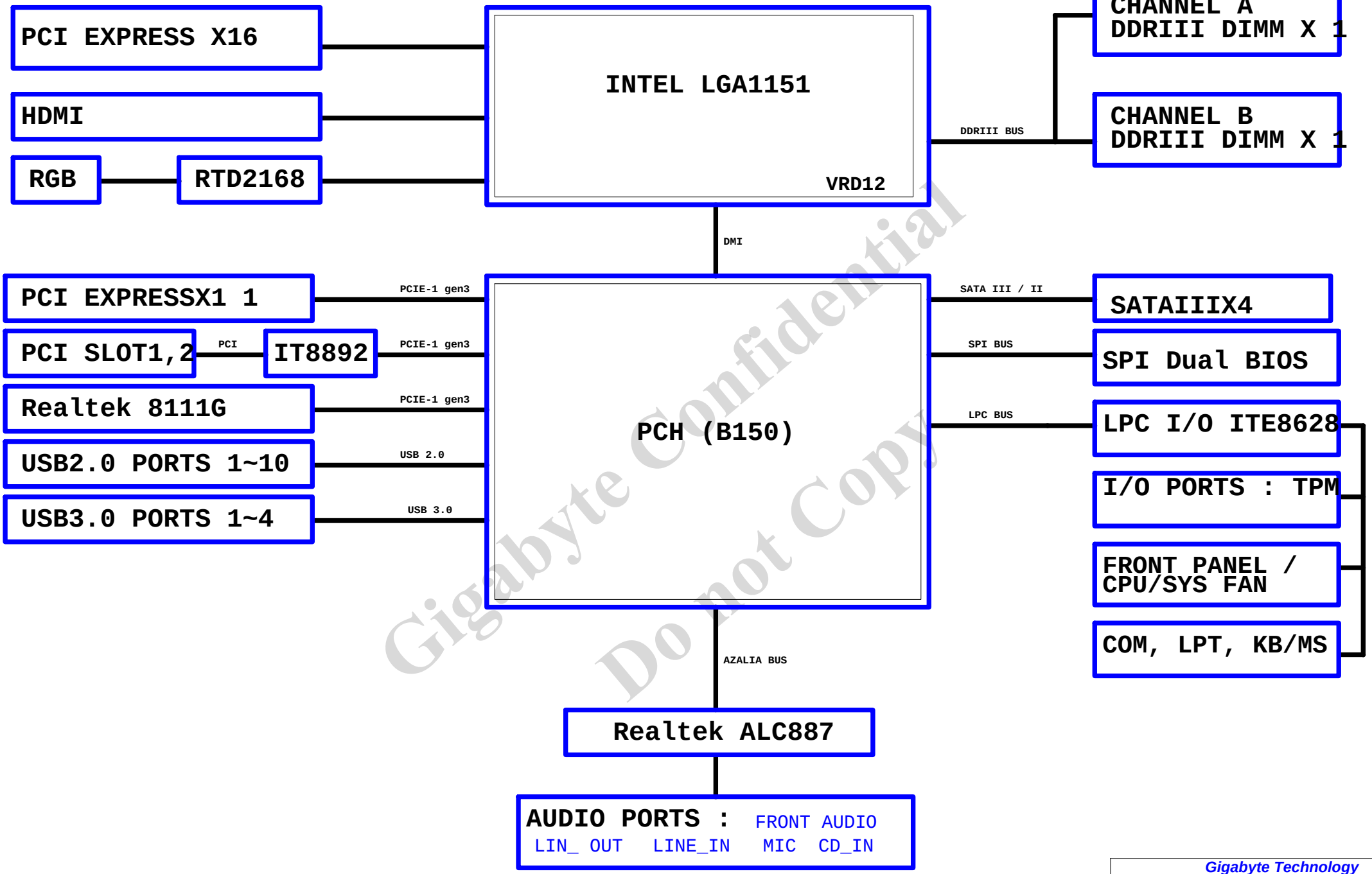
Circuit or PCB layout change

DATE	Change Item	Reason
2015/07/22 PCB:0.1	PCB first release	
2015/08/18 PCB:1.0	1.GR74,GR76 shor tpad 2.MA_DQ3 mask 3.GP92 change GP95 4.0 ohm change short pad (NPR5,DDR10,GR66, GR70,GR78,LPW1,LAREQ1)	

GIGABYTE™

Title: BOM & PCB MODIFY HISTORY		
Size: Custom	Document Number: GA-H110M-S2PH DDR3	Rev: 1.0
Date: Thursday, October 15, 2015	Sheet 2 of 44	

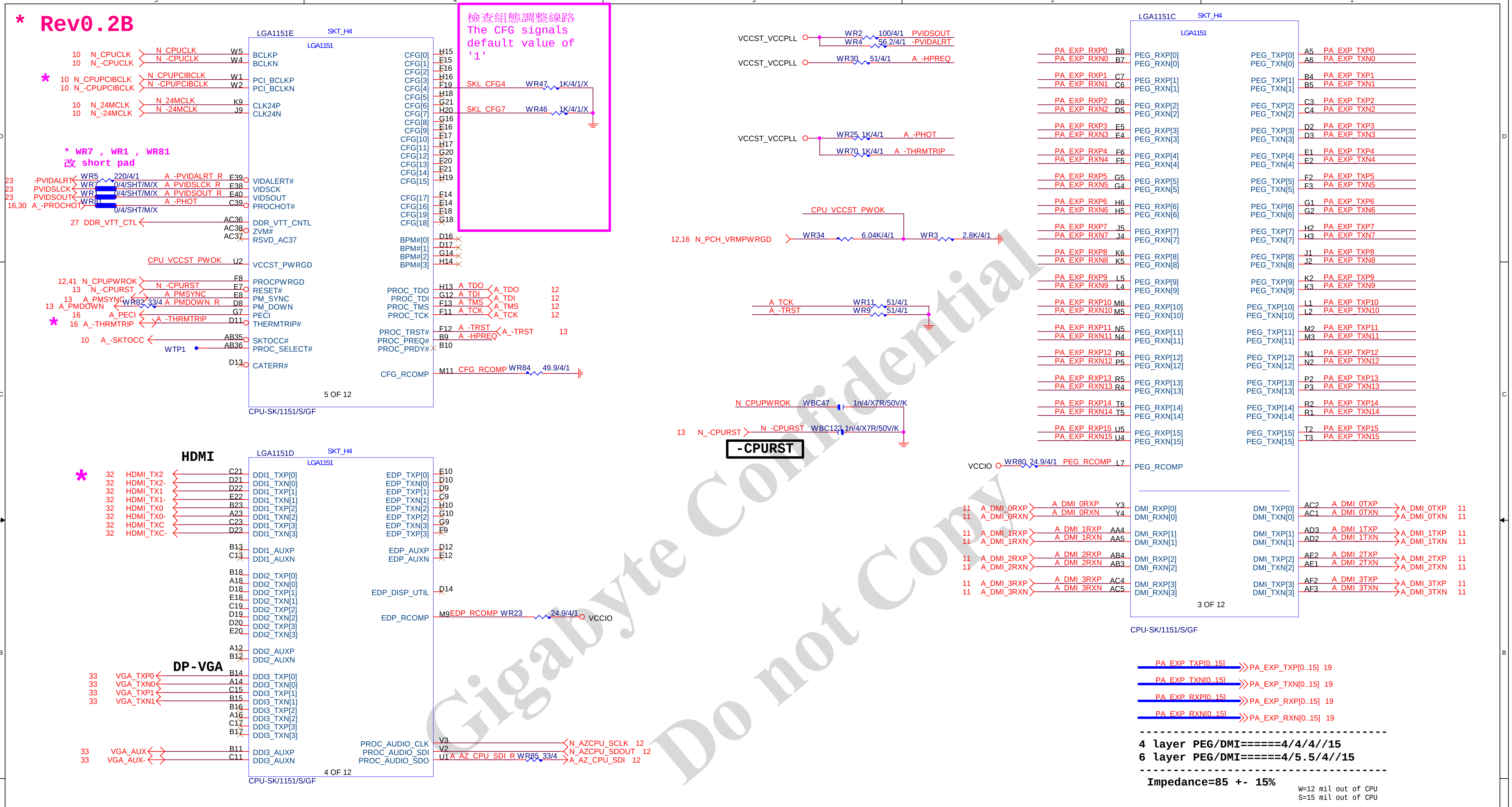
BLOCK DIAGRAM



Gigabyte Technology

Title	BLOCK DIAGRAM		
Size: Custom	Document Number: GA-H110M-S2PH DDR3		Rev: 1.0
Date: Thursday, October 15, 2015	Sheet 3 of 44		

* Rev0.2B



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

Impedance=85 +- 15%

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

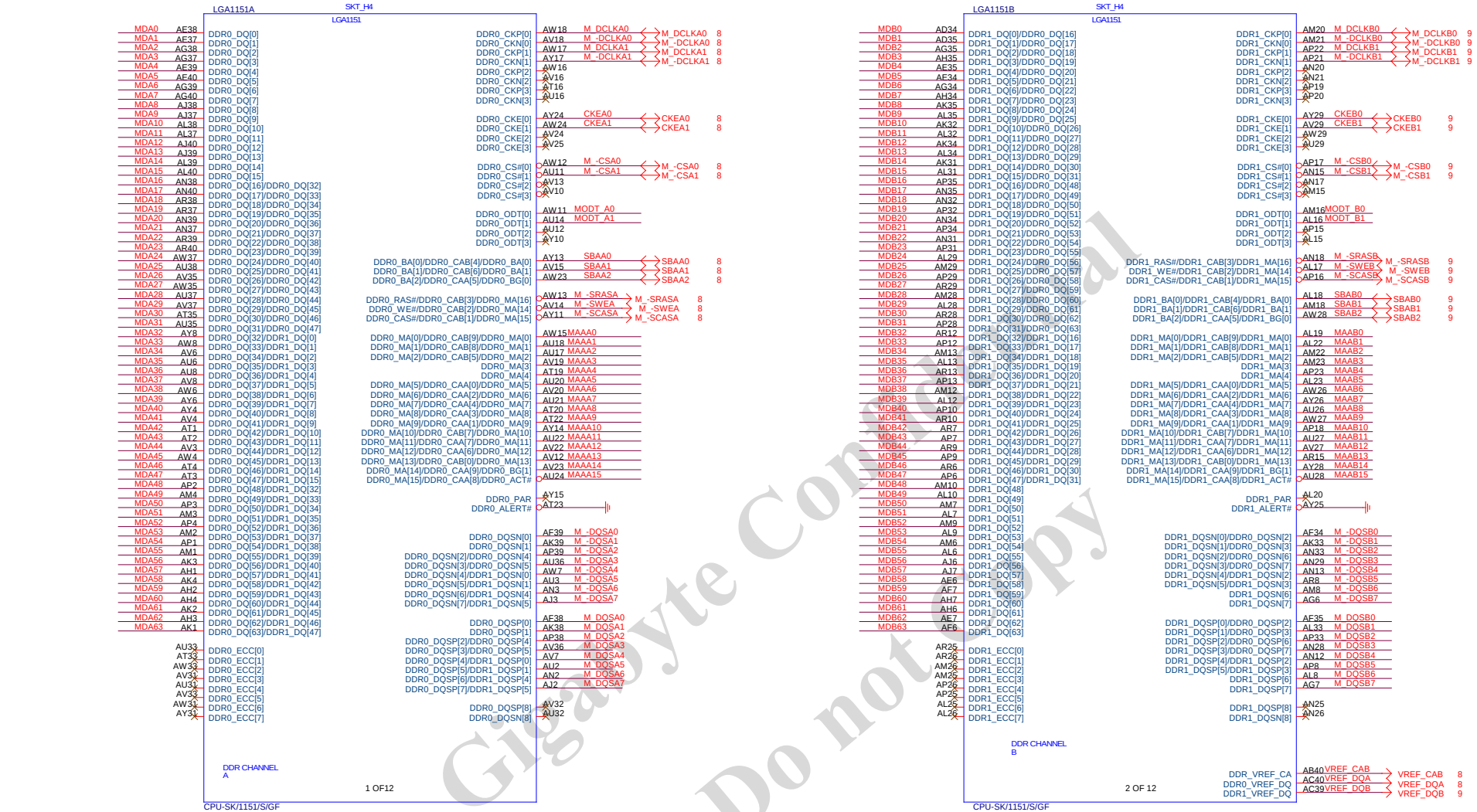
G-15u : (CPU-SK/1151/S/15)
10SC1-F01151-11R / 10SC1-F01151-12R
G-FL : (CPU-SK/1151/S/GF)
10SC1-F01151-21R / 10SC1-F01151-22R

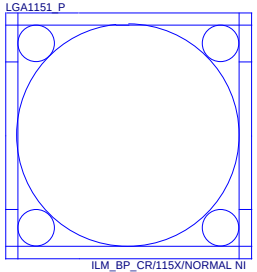
4 layer HDMI/DP/eDP/======4/4/4//15
6 layer HDMI/DP/eDP/======4/5.5/4//15

Impedance=85 +- 15%

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

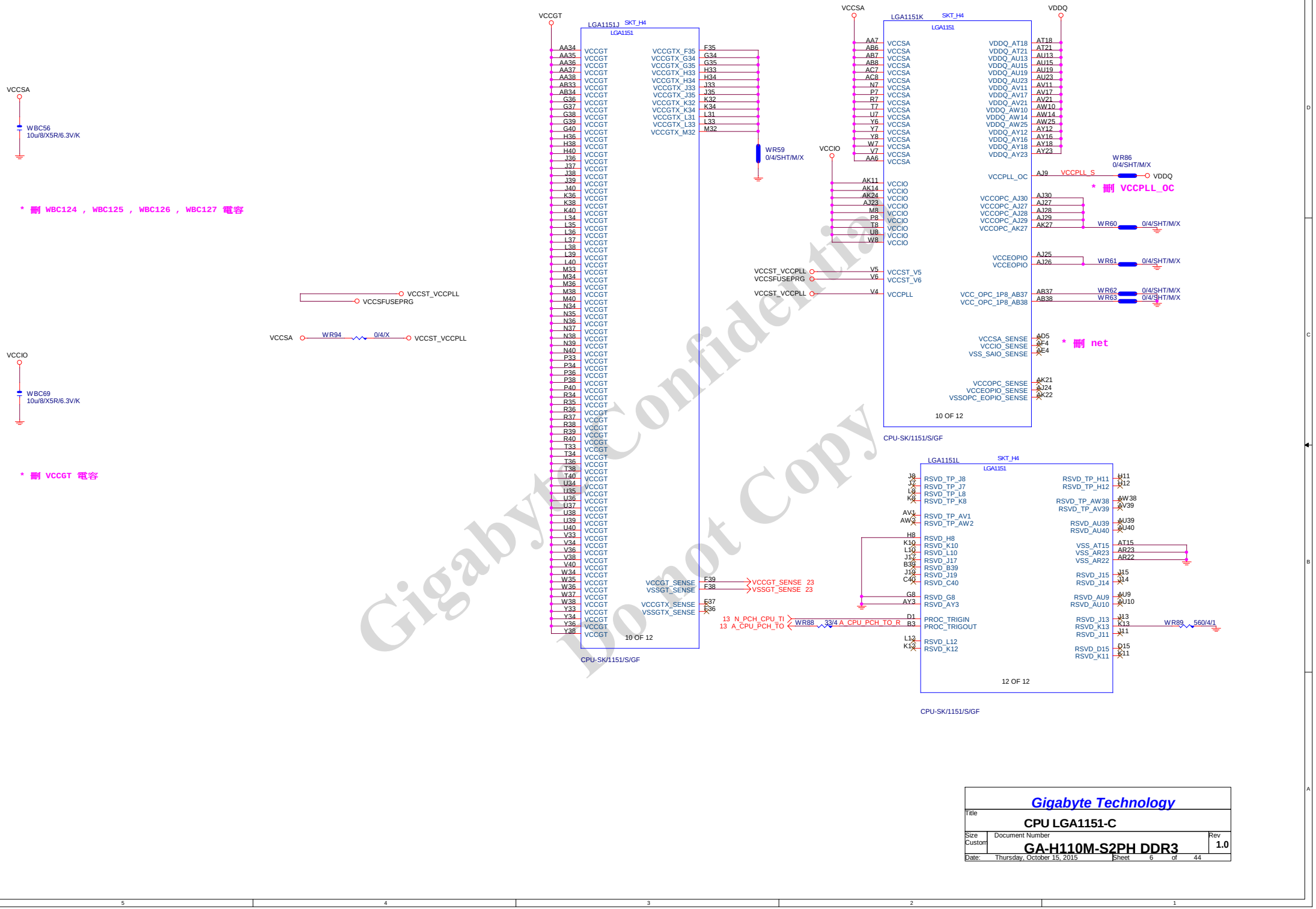
* DDR3 net





Title	CPU LGA1151-B
Size / Document Number	Custom / GA-H110M-S2PH DDR3
Rev	1.0
Date:	Thursday, October 15, 2015
Sheet	5 of 44

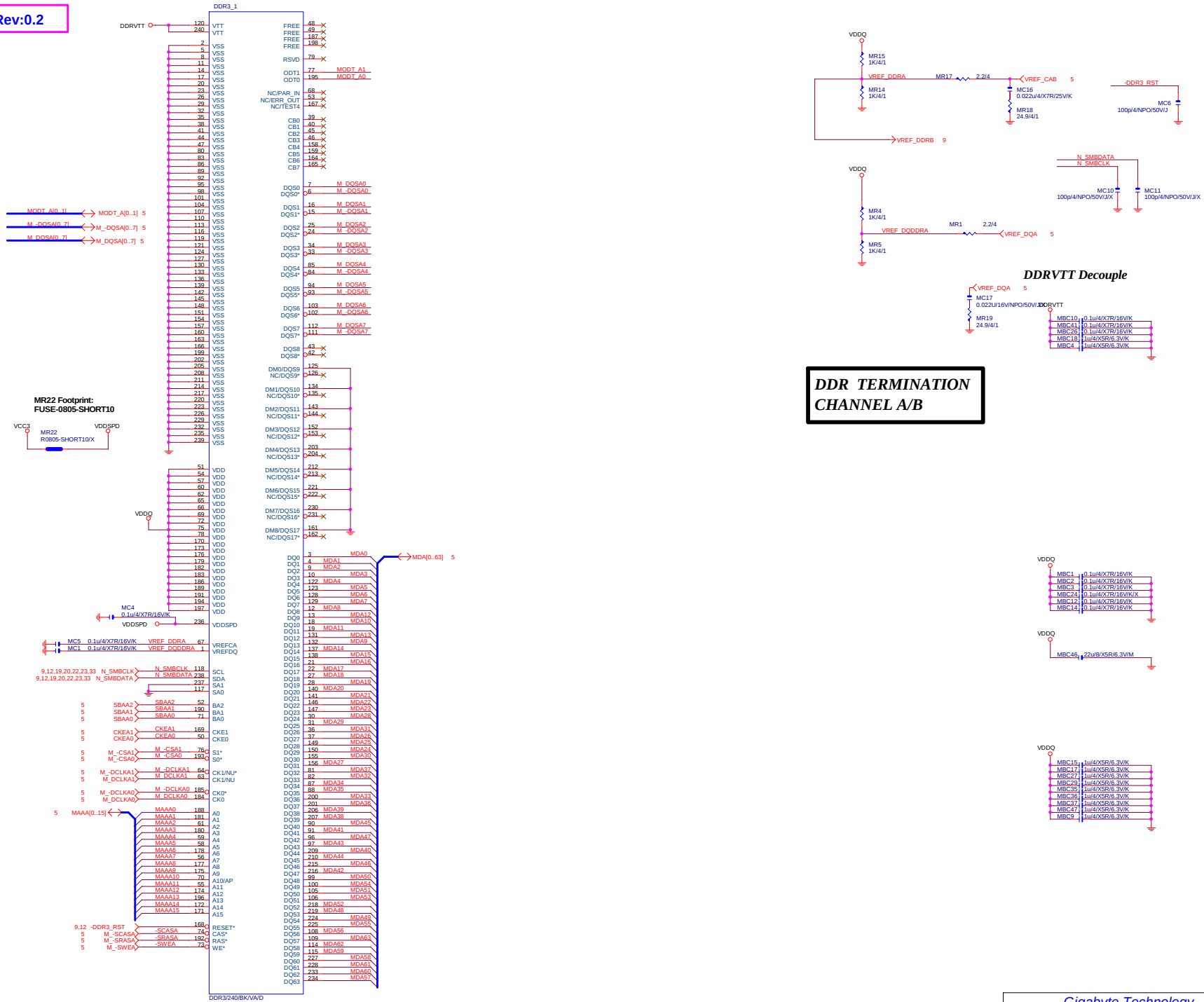
Gigabyte Technology



* 刪 Vcore 電容

Gigabyte Technology			
Title: CPU LGA1151-C			
Size: Custom	Document Number: GA-H110M-S2PH DDR3		Rev: 1.0
Date: Thursday, October 15, 2015	Sheet 7 of 44		

Rev:0.2



MR22 Footprint:
FUSE-0805-SHORT10

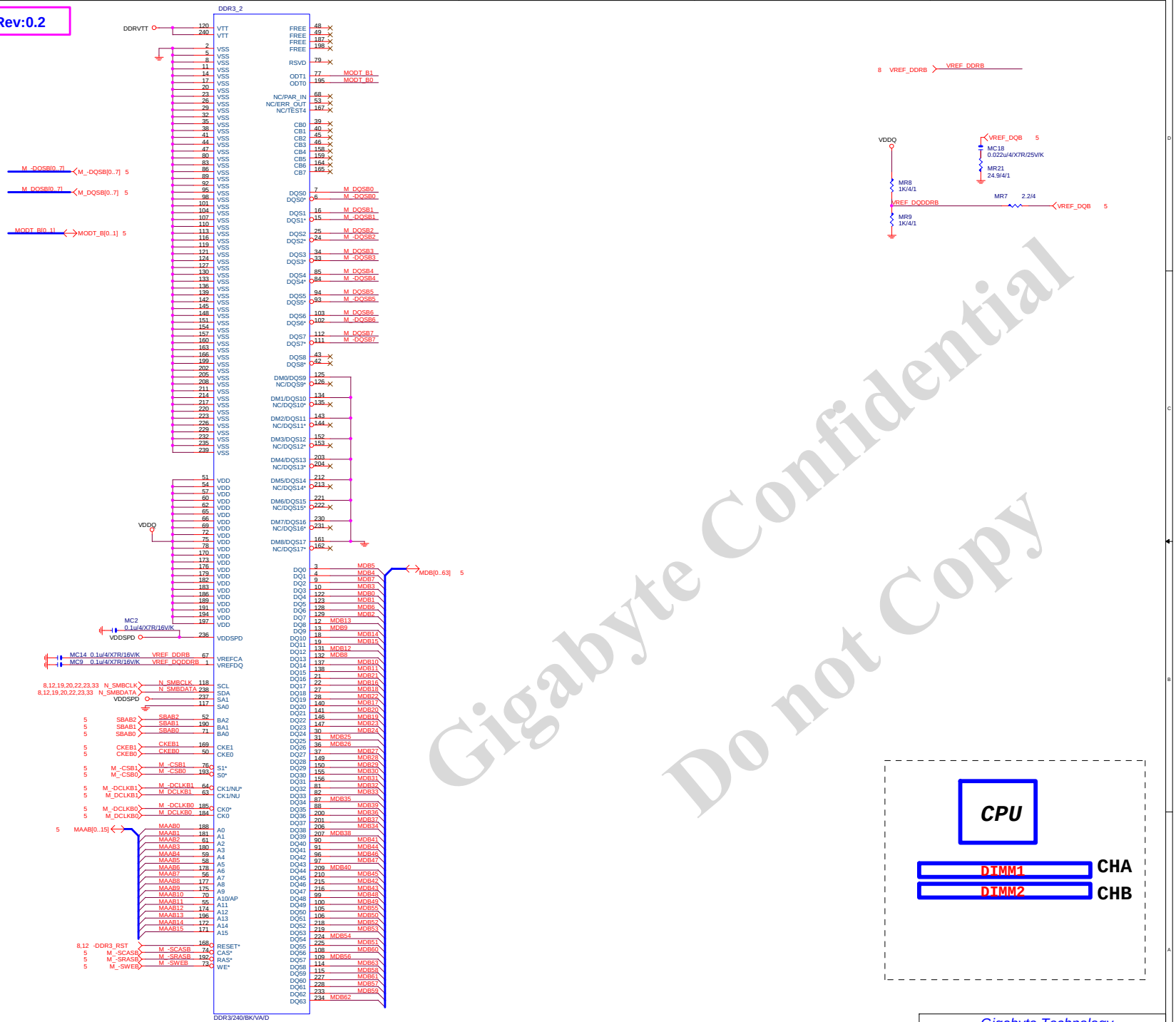
黑色

DDRVTT Decouple

DDR TERMINATION CHANNEL A/B

Gigabyte Technology			
Title: DDR4 CHANNEL A			
Size: Custom	Document Number: GA-H110M-S2PH DDR3		Rev: 1.0
Date:	Sheet 8 of 44		

Rev:0.2



黑色

CPU

DIMM1 CHA

DIMM2 CHB

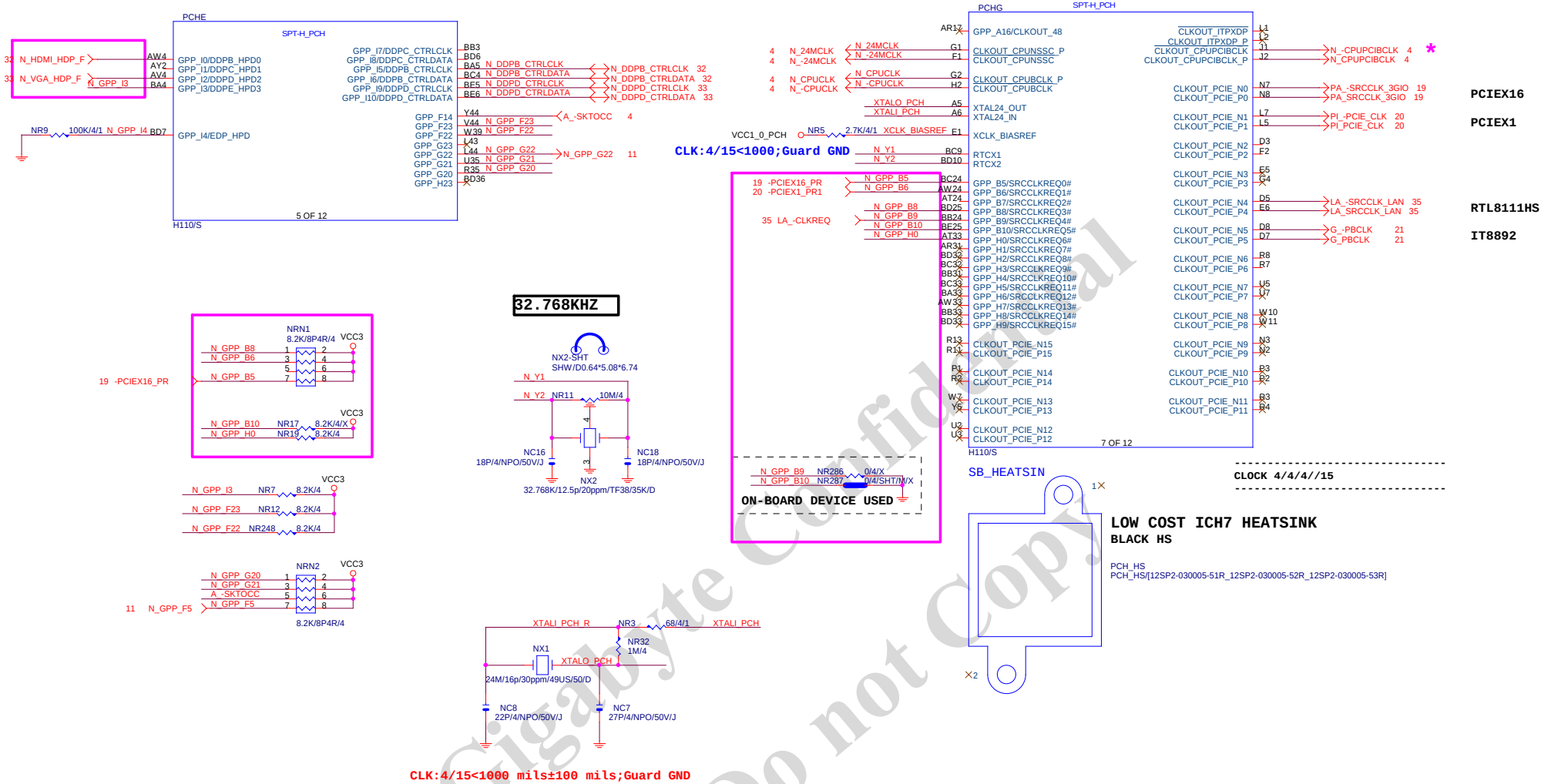
Gigabyte Technology

Title: DDR4 CHANNEL B

Size: Custom | Document Number: GA-H110M-S2PH DDR3 | Rev: 1.0

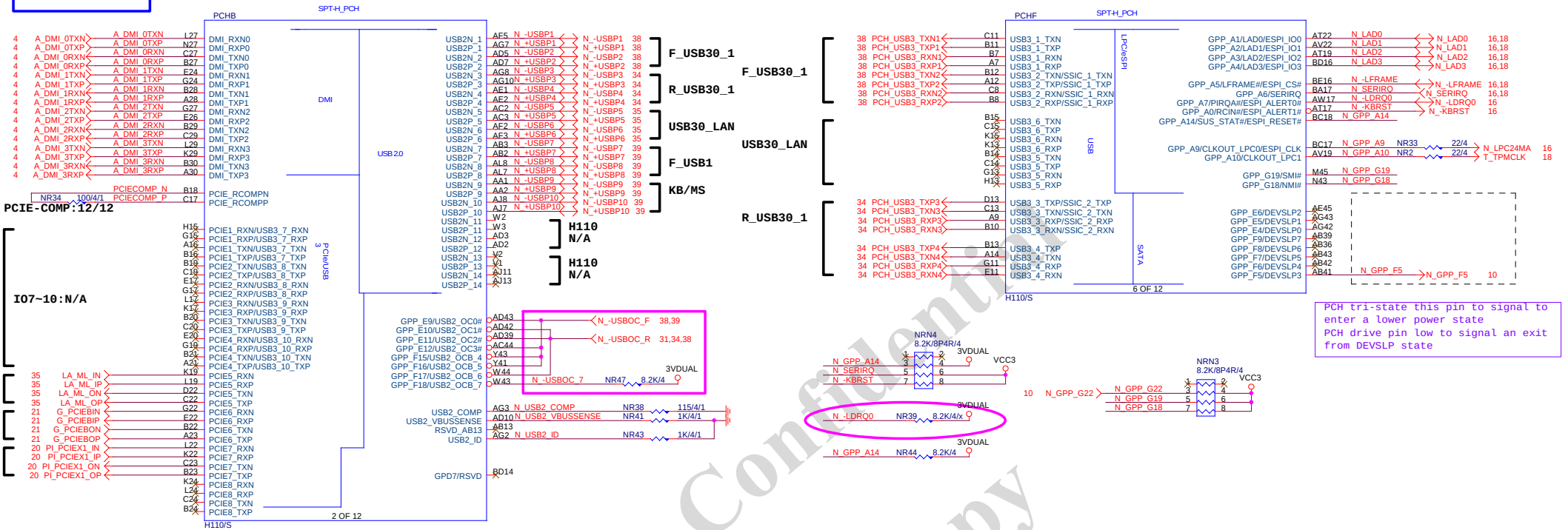
Date: | Sheet 9 of 44

* Rev0.2



ANS 4019041	Gigabyte Technology		
Title	PCH CLOCK BUFFER		
Size Custom	Document Number GA-H110M-S2PH DDR3		Rev 1.0
Date: Thursday, October 15, 2015		Sheet 10 of 44	

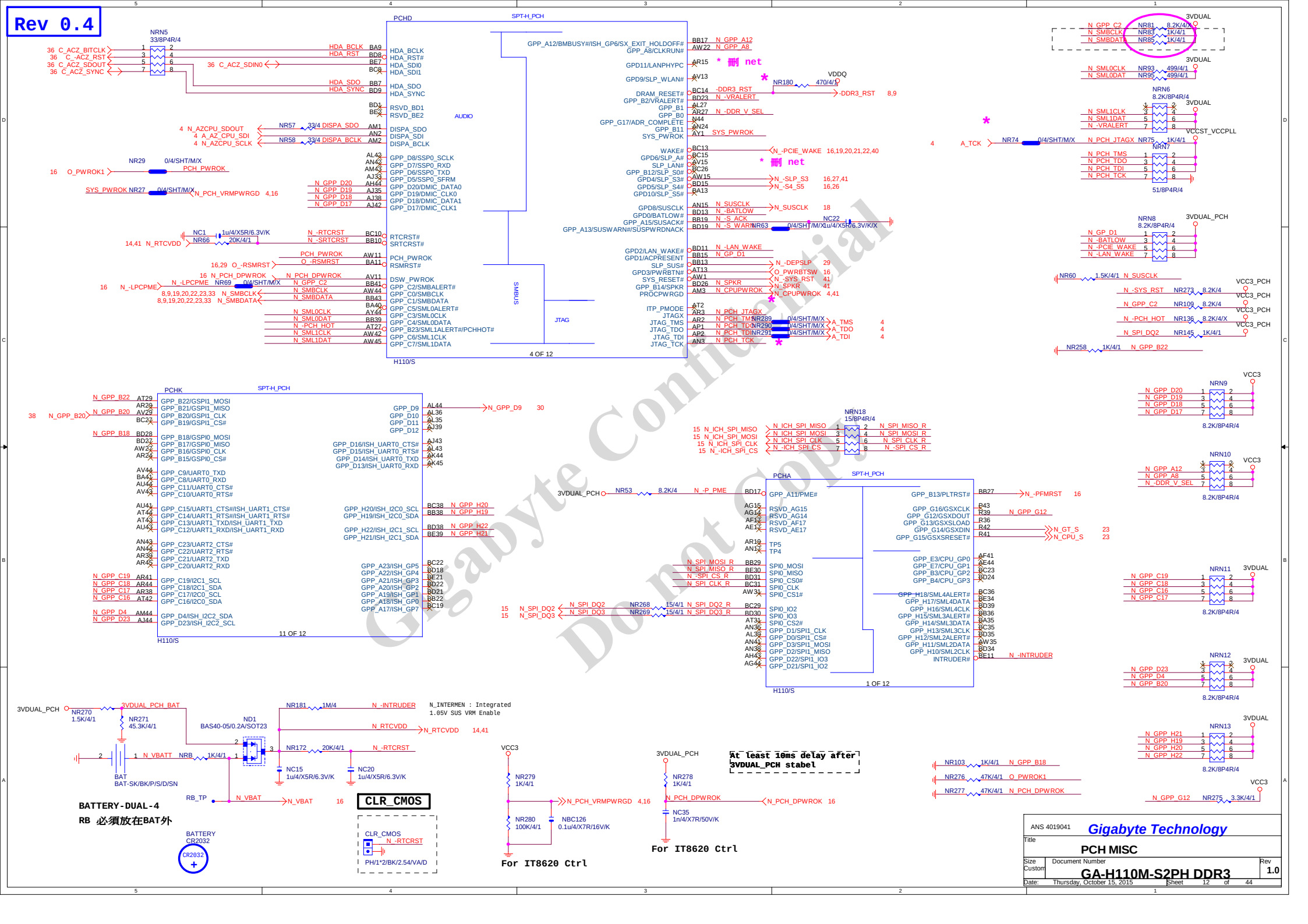
Rev 0.4



---
4 layer USB3/USB2/SATA/PCH PCIe======4/4/4//15
6 layer USB3/USB2/SATA/PCH PCIe======4/5.5/4//15

ANS 4019041	Gigabyte Technology	
Title	PCH DMI,USB,PCIE	
Size: Custom	Document Number: GA-H110M-S2PH DDR3	Rev: 1.0
Date: Thursday, October 15, 2015	Sheet 11 of 44	

Rev 0.4



ANS 4019041

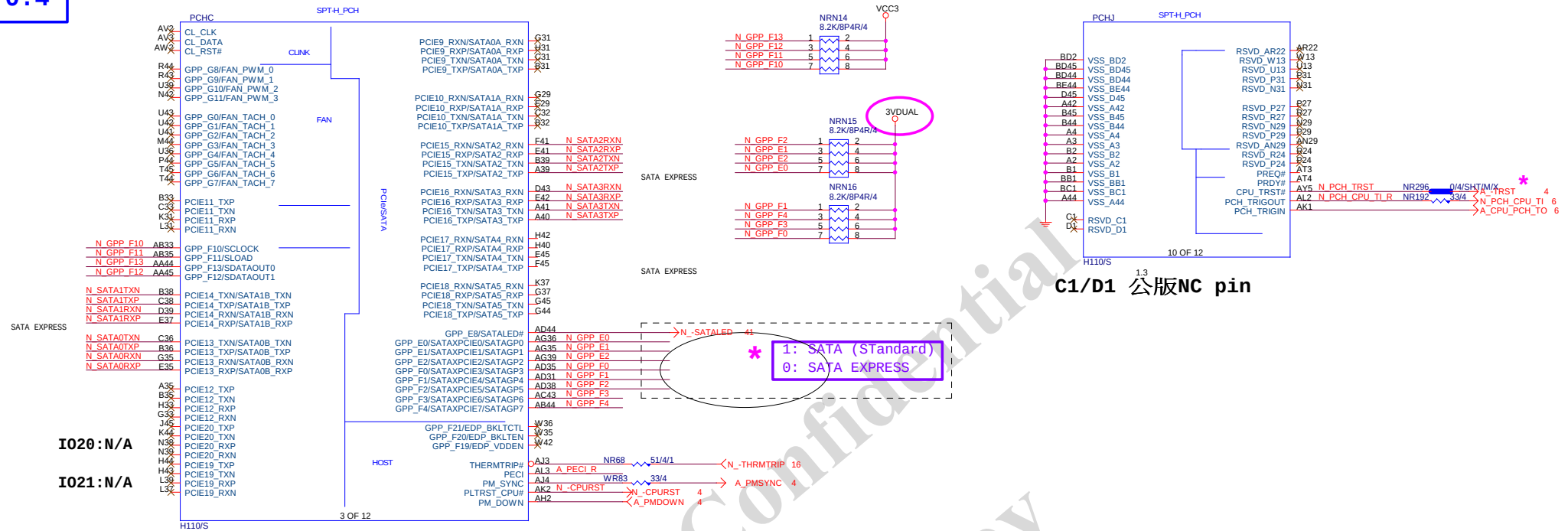
Gigabyte Technology

Title: PCH MISC

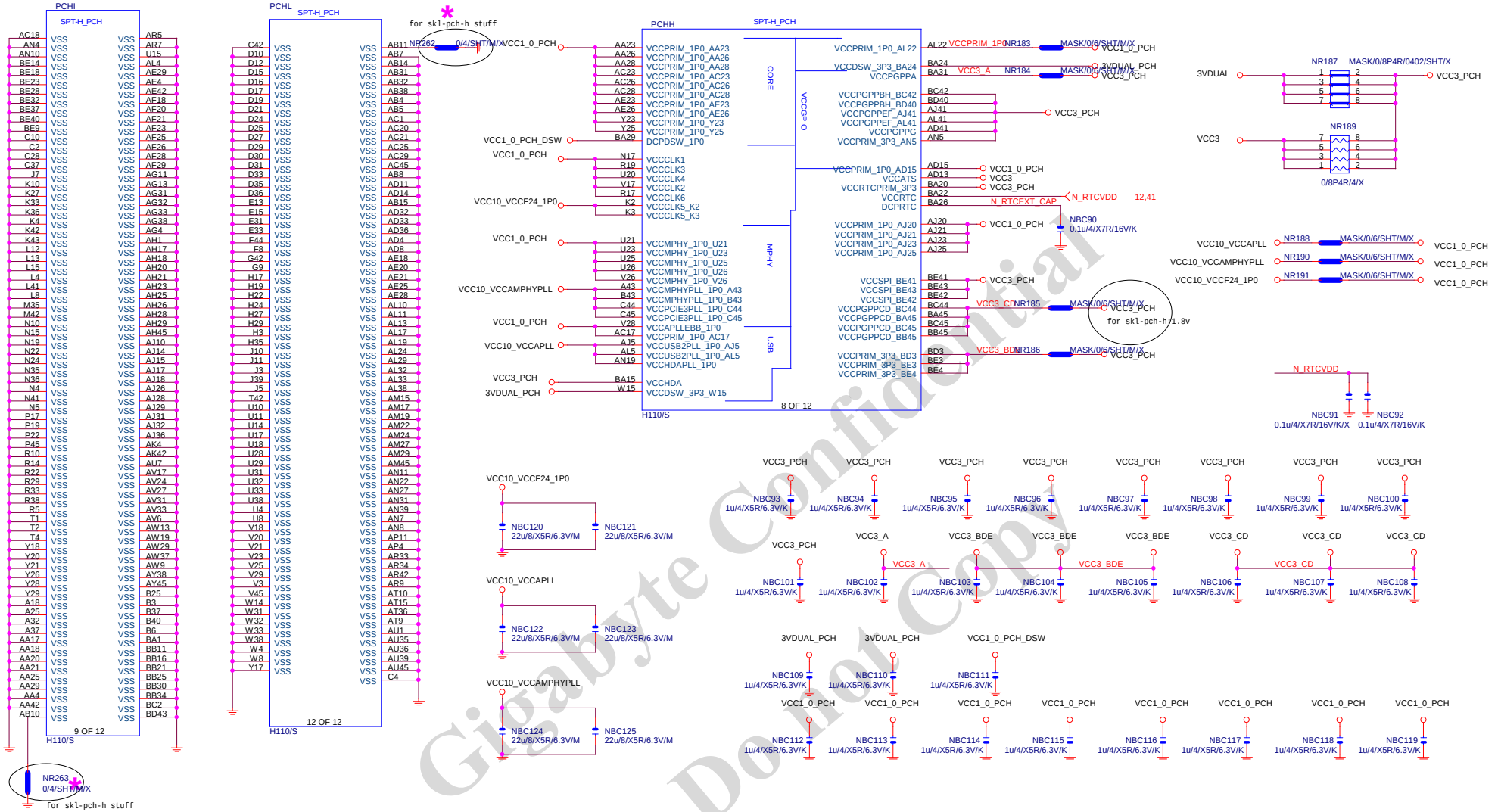
Size: Custom | Document Number: GA-H110M-S2PH DDR3 | Rev: 1.0

Date: Thursday, October 15, 2015 | Sheet 12 of 44

Rev 0.4



ANS 4019041	Gigabyte Technology		
Title	PCH SATA,PCIE,SATA_EXPRESS		
Size Custom	Document Number GA-H110M-S2PH DDR3		Rev 1.0
Date: Thursday, October 15, 2015	Sheet 13 of 44		



ANS 4019041	Gigabyte Technology		
Title	PCH PWR, GND		
Size: Custom	Document Number: GA-H110M-S2PH DDR3		Rev: 1.0
Date: Thursday, October 15, 2015	Sheet 14 of 44		

Rev 0.1

DUAL BIOS

指定用DII

3VDUAL

NR238 330/4/1

-SPI_CS_1

NQ20 MMBT2222A/SOT23/600mA/40 S0T23

CS1

N_-ICH_SPI_CS → N_-ICH_SPI_CS 12

NQ21 MMBT2222A/SOT23/600mA/40 S0T23

-SPI_HOLD_B NR235 8.2K/4

指定用DII

3VDUAL

NR237 330/4/1

-SPI_CS_2

NQ22 MMBT2222A/SOT23/600mA/40 S0T23

CS2

N_-ICH_SPI_CS

NQ23 MMBT2222A/SOT23/600mA/40 S0T23

-SPI_HOLD_M NR234 8.2K/4

3VDUAL

NR102 0/4/SHT/M/X

NBC2 1u/4/X5R/6.3V/K

M_BIOS

-SPI_CS_1 NR105 22/4

NC4 10p/4/NPO/50V/J/X

SPI_MISO

12 N_SPI_DQ2 NR222 0/4/SHT/X N_-SPI_WP0

CS# VDD HOLD# SO SCK WP# SI VSS

-HOLD0 NR221 0/4/SHT/X → N_SPI_DQ3 12

N_ICH_SPI_CLK

N_ICH_SPI_MOSI

NC6 10p/4/NPO/50V/J/X

MAIN BIOS

64M/Q/SPI/SO8/S

* (footprint 改 SOIC8-SPI-SOCKET)

3VDUAL

NR67 0/4/SHT/M/X

NBC3 1u/4/X5R/6.3V/K

B_BIOS

-SPI_CS_2 NR87 22/4

SPI_MISO

12 N_SPI_DQ2 NR236 0/4/SHT/X N_-SPI_WP1

CS# VDD HOLD# SO SCK WP# SI VSS

-HOLD1 NR224 0/4/SHT/X → N_SPI_DQ3 12

N_ICH_SPI_CLK → N_ICH_SPI_CLK 12

N_ICH_SPI_MOSI → N_ICH_SPI_MOSI 12

BACKUP BIOS

64M/Q/SPI/SO8/S

* (footprint 改 IC8-BIOS)

MOSI For DMI RX Termination Voltage

3VDUAL

NRN17 1K/8P4R/4

16 -SPI_HOLD_M

16 -SPI_HOLD_B

CS1

CS2

3VDUAL

12 N_ICH_SPI_MISO N_ICH_SPI_MISO NR98 8.2K/4

12 N_ICH_SPI_MISO NR97 22/4 SPI_MISO

3VDUAL

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

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

1 means floating
0 means PD 1K

M_BIOS

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

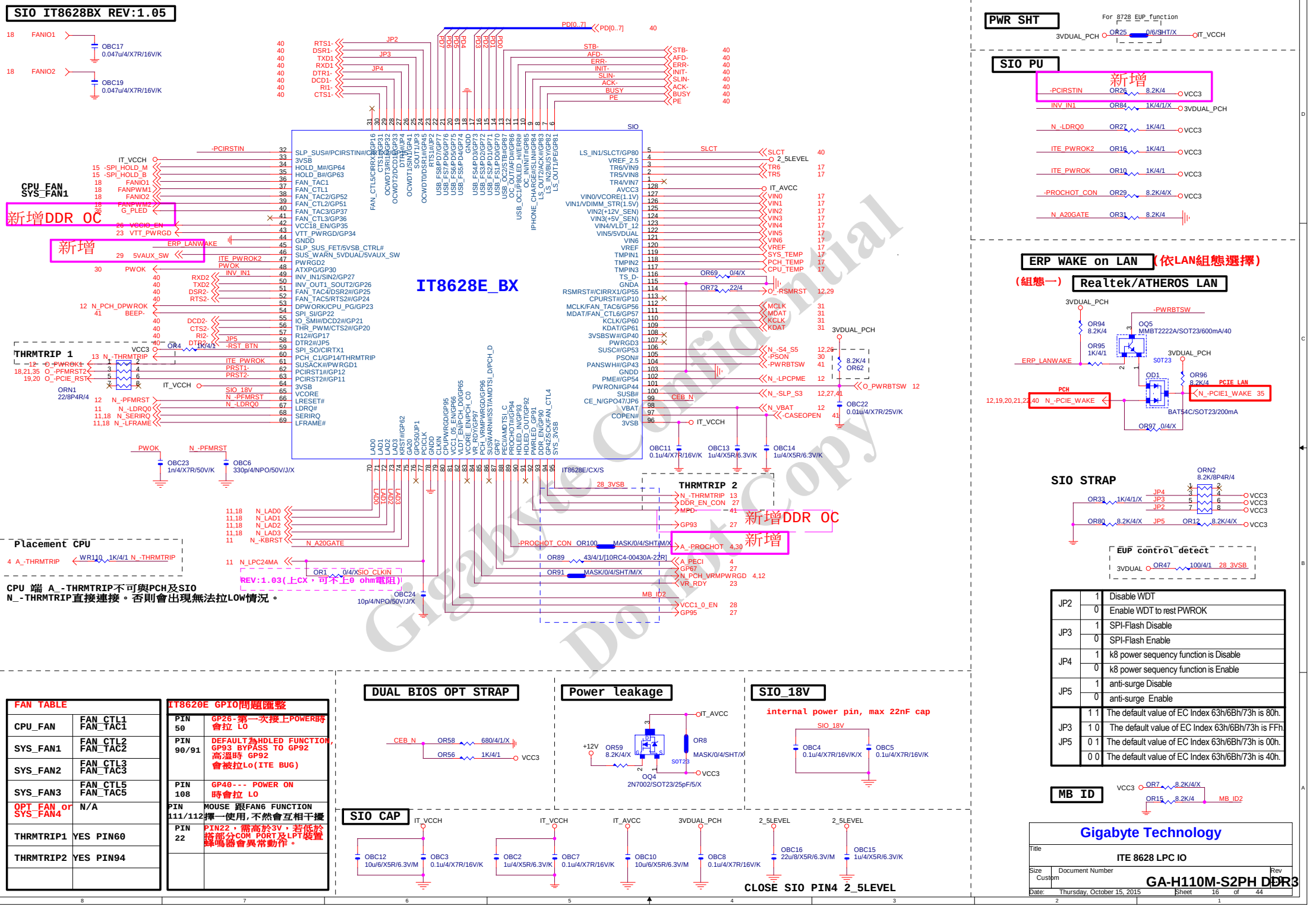
* 試產先上 , PVT 移除

Gigabyte Technology

Title: BIOS

Size: Custom | Document Number: GA-H110M-S2PH DDR3 | Rev: 1.0

Date: Thursday, October 15, 2015 | Sheet 15 of 44



PWR SHT

For 8728 EUP function

3VDUAL_PCH — OR25 0/6/SHT/X — IT_VCCH

SIO PU

新增

-PCIRSTIN — OR26 8.2K/4 — VCC3

INV_IN1 — OR84 1K/4/1/X — 3VDUAL_PCH

N_-LDRQ0 — OR27 1K/4/1 — VCC3

ITE_PWROK2 — OR16 1K/4/1 — VCC3

ITE_PWROK — OR10 1K/4/1 — VCC3

-PROCHOT_CON — OR29 8.2K/4/X — VCC3

N_A20GATE — OR31 8.2K/4

ERP WAKE on LAN （依LAN組態選擇）

（組態一） **Realtek/ATHEROS LAN**

SIO STRAP

EUP control detect

3VDUAL — OR47 100/4/1 — 28_3VSB

JP2	1	Disable WDT
	0	Enable WDT to rest PWROK
JP3	1	SPI-Flash Disable
	0	SPI-Flash Enable
JP4	1	k8 power sequency function is Disable
	0	k8 power sequency function is Enable
JP5	1	anti-surge Disable
	0	anti-surge 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.

MB ID

VCC3 — OR7 8.2K/4/X — MB_ID2

OR15 8.2K/4

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

IT8620E GPIO問題確整	
PIN 50	GP26-第一次接上POWER時會拉 LO
PIN 90/91	DEFAULT為HDLED FUNCTION, GP93 BYPASS TO GP92 高溫時 GP92 會被拉Lo(ITE BUG)
PIN 108	GP40--- POWER ON 時會拉 LO
PIN 111/112	MOUSE 跟FANG FUNCTION 擇一使用,不然會互相干擾
PIN 22	PIN22，需高於3V，若低於搭部分COM PORT及LPT裝置蜂鳴器會異常動作。

DUAL BIOS OPT STRAP

Power leakage

SIO_18V

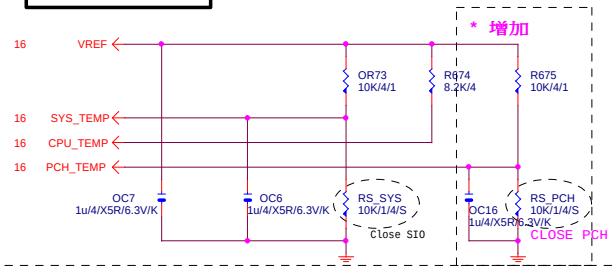
internal power pin, max 22nF cap

SIO CAP

CLOSE SIO PIN4 2_5LEVEL

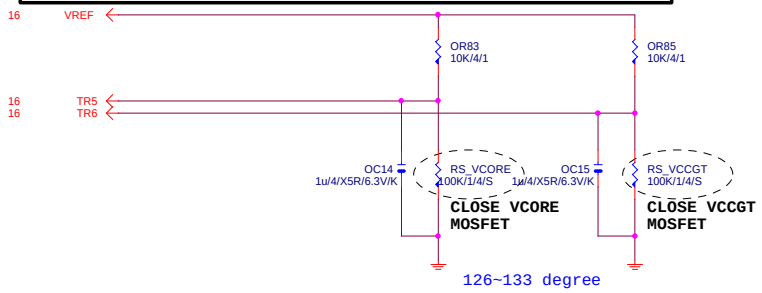
Gigabyte Technology	
Title	ITE 8628 LPC IO
Size: Custom	Document Number: GA-H110M-S2PH DDR3
Rev: 1.0	
Date: Thursday, October 15, 2015	Sheet 16 of 44

TEMP H/W MONITOR REV 1.04

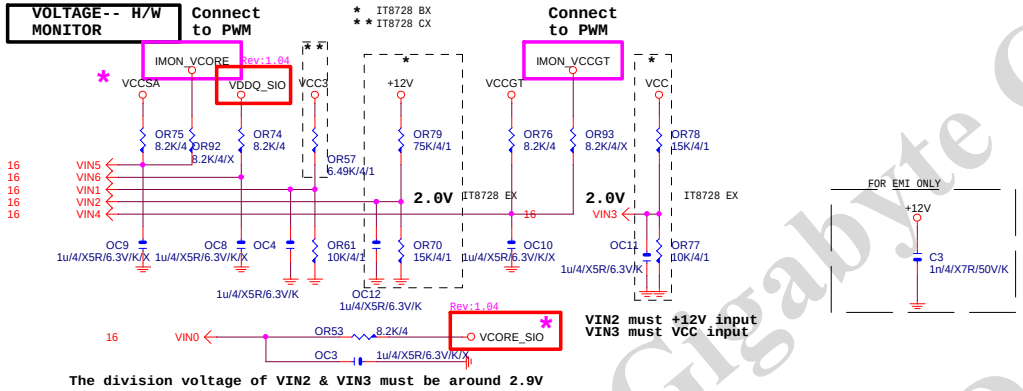


RS_VCORE、RS_VCCGT CLOSE CPU VCORE & VCCGT MOSFET

-ProCHOT:有mos heartsink不用prochot function



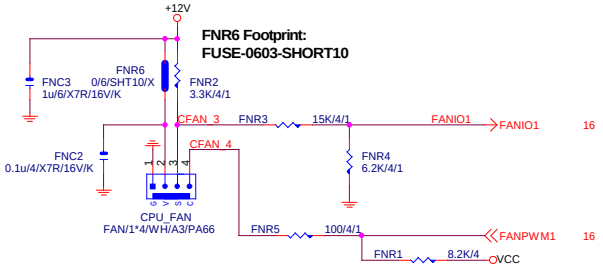
VOLTAGE-- H/W MONITOR



Gigabyte Technology		
Title: HWM,KB/MS, FAN CTRL		
Size: Custom	Document Number: GA-H110M-S2PH DDR3	Rev: 1.0
Date: Thursday, October 15, 2015	Sheet 17 of 44	

CPU SMART FAN

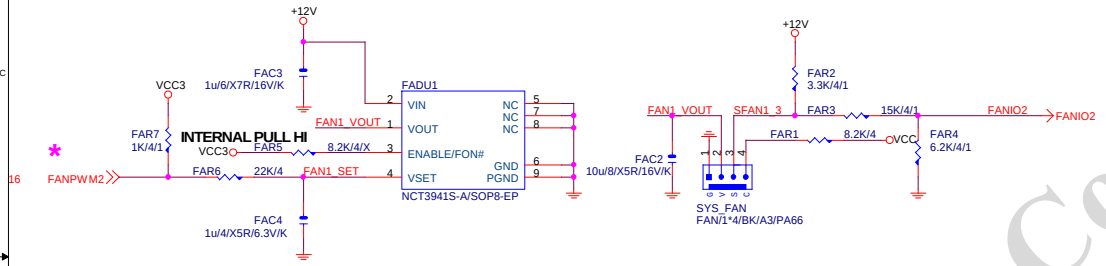
Rev: 0.53



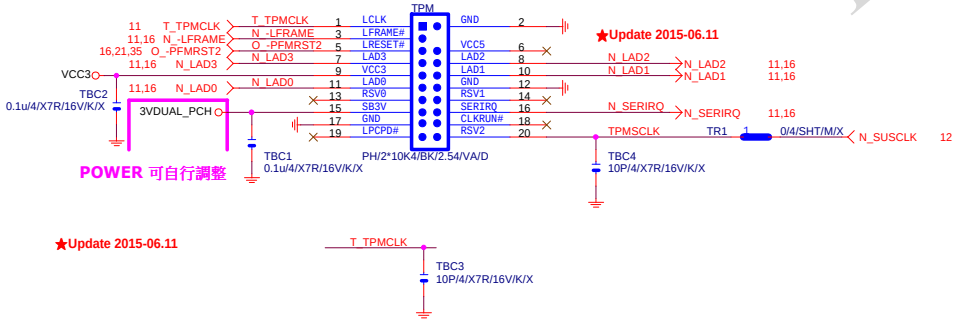
SYSTEM FAN1

Linear SYS_FAN

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



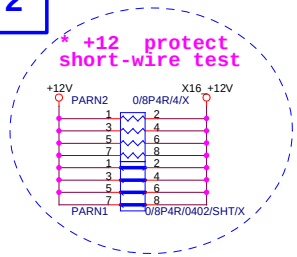
TPM CONNECTOR



Gigabyte Technology		
Title: HWM,KB/MS, FAN CTRL		
Size: Custom	Document Number: GA-H110M-S2PH DDR3	Rev: 1.0
Date: Thursday, October 15, 2015	Sheet 18 of 44	

Rev 0.2

* +12 protect short-wire test



PCIESLOT-164P

PCIEX16 — 3GIO_*16

X16 +12V

8,9,12,20,22,23,33 N_SMBCLK
8,9,12,20,22,23,33 N_SMBDATA
PAR4 0/4/X
PAR5 0/4/X
PAR3 0/4/SHT/X
3VDUAL
VCC3
12,16,20,21,22,40 N_-PCIE_WAKE
10 -PCIEX16_PR

B1 12V
B2 12V
B3 RSVD
B4 GND
B5 SMCLK
B6 SMDAT
B7 GND
B8 3.3V
B9 JTAG1
B10 3.3VAUX
B11 WAKE*

KEY

B12 RSVD
B13 GND
B14 HSOP0
B15 HSON0
B16 GND
B17 PRSNT2*
B18 GND

B19 HSOP1
B20 HSON1
B21 GND
B22 GND
B23 HSOP2
B24 HSON2
B25 GND
B26 GND
B27 HSOP3
B28 HSON3
B29 GND
B30 RSVD
B31 PRSNT2*
B32 GND

B33 HSOP4
B34 HSON4
B35 GND
B36 GND
B37 HSOP5
B38 HSON5
B39 GND
B40 GND
B41 HSOP6
B42 HSON6
B43 GND
B44 GND
B45 HSOP7
B46 HSON7
B47 GND
B48 PRSNT2*
B49 GND

B50 HSOP8
B51 HSON8
B52 GND
B53 GND
B54 HSOP9
B55 HSON9
B56 GND
B57 GND
B58 HSOP10
B59 HSON10
B60 GND
B61 GND
B62 HSOP11
B63 HSON11
B64 GND
B65 GND
B66 HSOP12
B67 HSON12
B68 GND
B69 GND
B70 HSOP13
B71 HSON13
B72 GND
B73 GND
B74 HSOP14
B75 HSON14
B76 GND
B77 GND
B78 HSOP15
B79 HSON15
B80 GND
B81 PRSNT2*
B82 RSVD

PA_EXP_TXP0_C / PA_EXP_TXN0_C
PA_EXP_TXP1_C / PA_EXP_TXN1_C
PA_EXP_TXP2_C / PA_EXP_TXN2_C
PA_EXP_TXP3_C / PA_EXP_TXN3_C
PA_EXP_TXP4_C / PA_EXP_TXN4_C
PA_EXP_TXP5_C / PA_EXP_TXN5_C
PA_EXP_TXP6_C / PA_EXP_TXN6_C
PA_EXP_TXP7_C / PA_EXP_TXN7_C
PA_EXP_TXP8_C / PA_EXP_TXN8_C
PA_EXP_TXP9_C / PA_EXP_TXN9_C
PA_EXP_TXP10_C / PA_EXP_TXN10_C
PA_EXP_TXP11_C / PA_EXP_TXN11_C
PA_EXP_TXP12_C / PA_EXP_TXN12_C
PA_EXP_TXP13_C / PA_EXP_TXN13_C
PA_EXP_TXP14_C / PA_EXP_TXN14_C
PA_EXP_TXP15_C / PA_EXP_TXN15_C

X16 +12V

PAR1 0/4/SHT/X
PAR2 0/4/SHT/X
VCC3

A1 PRSNT1*
A2 12V
A3 12V
A4 GND
A5 JTAG2
A6 JTAG3
A7 JTAG4
A8 JTAG5
A9 3.3V
A10 3.3V
A11 PWRGD

O_-PCIE_RST 16,20
PAC1 33p/4/NPO/50V/J

A12 GND
A13 REFCLK+
A14 REFCLK-
A15 GND
A16 HSIP0
A17 HSIN0
A18 GND

PA_SRCCLK_3GIO 10
PA_-SRCCLK_3GIO 10
PAC3 33p/4/NPO/50V/J/X
PAC2 33p/4/NPO/50V/J/X

A19 RSVD
A20 GND
A21 HSIP1
A22 HSIN1
A23 GND
A24 GND
A25 HSIP2
A26 HSIN2
A27 GND
A28 GND
A29 HSIP3
A30 HSIN3
A31 GND
A32 RSVD

A33 RSVD
A34 GND
A35 HSIP4
A36 HSIN4
A37 GND
A38 GND
A39 HSIP5
A40 HSIN5
A41 GND
A42 GND
A43 HSIP6
A44 HSIN6
A45 GND
A46 GND
A47 HSIP7
A48 HSIN7
A49 GND

A50 RSVD
A51 GND
A52 HSIP8
A53 HSIN8
A54 GND
A55 GND
A56 HSIP9
A57 HSIN9
A58 GND
A59 GND
A60 HSIP10
A61 HSIN10
A62 GND
A63 GND
A64 HSIP11
A65 HSIN11
A66 GND
A67 GND
A68 HSIP12
A69 HSIN12
A70 GND
A71 GND
A72 HSIP13
A73 HSIN13
A74 GND
A75 GND
A76 HSIP14
A77 HSIN14
A78 GND
A79 GND
A80 HSIP15
A81 HSIN15
A82 GND

PA_EXP_RXP0 / PA_EXP_RXN0
PA_EXP_RXP1 / PA_EXP_RXN1
PA_EXP_RXP2 / PA_EXP_RXN2
PA_EXP_RXP3 / PA_EXP_RXN3
PA_EXP_RXP4 / PA_EXP_RXN4
PA_EXP_RXP5 / PA_EXP_RXN5
PA_EXP_RXP6 / PA_EXP_RXN6
PA_EXP_RXP7 / PA_EXP_RXN7
PA_EXP_RXP8 / PA_EXP_RXN8
PA_EXP_RXP9 / PA_EXP_RXN9
PA_EXP_RXP10 / PA_EXP_RXN10
PA_EXP_RXP11 / PA_EXP_RXN11
PA_EXP_RXP12 / PA_EXP_RXN12
PA_EXP_RXP13 / PA_EXP_RXN13
PA_EXP_RXP14 / PA_EXP_RXN14
PA_EXP_RXP15 / PA_EXP_RXN15

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

R01A

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

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	PAC21	0.22u/4/X5R/6.3V/K	PA_EXP_TXP8_C
PA_EXP_TXN8	PAC20	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

VCC3

PABC2 0.1u/4/X7R/16V/K
PABC3 0.1u/4/X7R/16V/K
PABC4 0.1u/4/X7R/16V/K/X

+12V

PAEC1 270u/FP/D/16V/8C/A/10m/[11CO5-8C2700-09R]
X16 +12V
PABC1 0.1u/4/X7R/16V/K
VCC3
PAEC2 560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]

PCIEX16:16/5/5/5/16

PCI-E REV:1.1--> 2.5GHZ

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

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

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

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

PCI-E REV:2.0--> 5GHZ

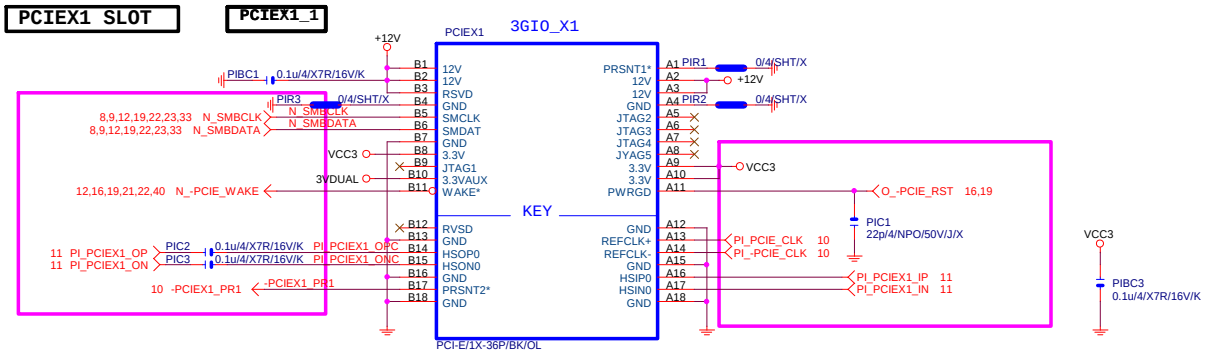
Gigabyte Technology

Title: **PCI EXPRESS * 16**

Size: Custom | Document Number: **GA-H110M-S2PH DDR3** | Rev: **1.0**

Date: Thursday, October 15, 2015 | Sheet 19 of 44

Rev 0.2



Gigabyte Technology		
Title: PCIE_X1 1,2		
Size: Custom	Document Number: GA-H110M-S2PH DDR3	Rev: 1.0
Date: Thursday, October 15, 2015	Sheet 20 of 44	

Rev 0.1

IT8892E/JX LQFP128

IT8892E/FX/S

CLOCK SHARE

* 刪 G_PCLK2

* 刪 G_-GNT2

可變

PCB layout note:
Close to chip

High: Enable PCI CLK 66MHz
Low: Disable PCI CLK 66MHz

High: PCICLK INTPUT form CLK Gen
Low: PCICLK OUTPUT form IT8893 chip

External regulator only :
GR77: 0 ohm ; GR78 :NC

Chip Internal LDO power only :

GR78: 0 ohm ; GR77: NC

GL14&GL10&GL16&GL17 : ON use chip LDO fuction

Chip internal LDO Mode only :
IT8892 PME# pin connect to PCI slot
IT8892_ WAKE# pin Connect to chipset

External regulator only :
From PCI slot signals PPME#
Connect to chipset PCIe_Wake# pin

IT8892FX setting
GR74&GR76:0 ohm ; GR73&GR75:NC
IT8892JX setting
GR74&GR76:NC ; GR73&GR75: 0 ohm

	Component change note
IT8892FX	GR70,GR74,GR76,GR78,GR66 : ON GR69,GR73,GR75,GR77,GR67 : NC GR44 resistor is 12k ohm GL14,GL10,GL16,GL17 : ON GL19,GL21,GL23,GL25: NC
IT8892JX	GR70,GR73,GR75,GR78,GR66 : ON GR69,GR74,GR76,GR77,GR67 : NC GR44 resistor is 18k ohm GL14,GL10,GL16,GL17 : ON GL19,GL21,GL23,GL25: NC
External LDO Power (IT8892JX)	GR69,GR73,GR75,GR77,GR67 : ON GR70,GR78,GR66 : NC GR44 resistor is 18k ohm GL19,GL21,GL23,GL25 : ON GL14,GL10,GL16,GL17 : ON

Gigabyte Technology

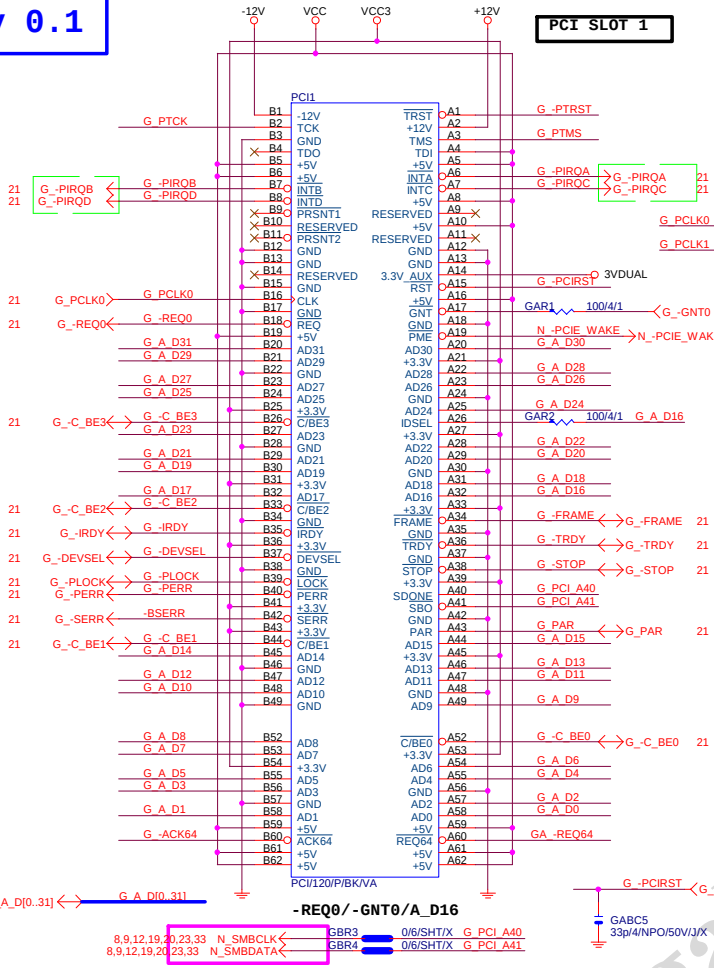
Title: IT8892

Size: Custom | Document Number: GA-H110M-S2PH DDR3 | Rev: 1.0

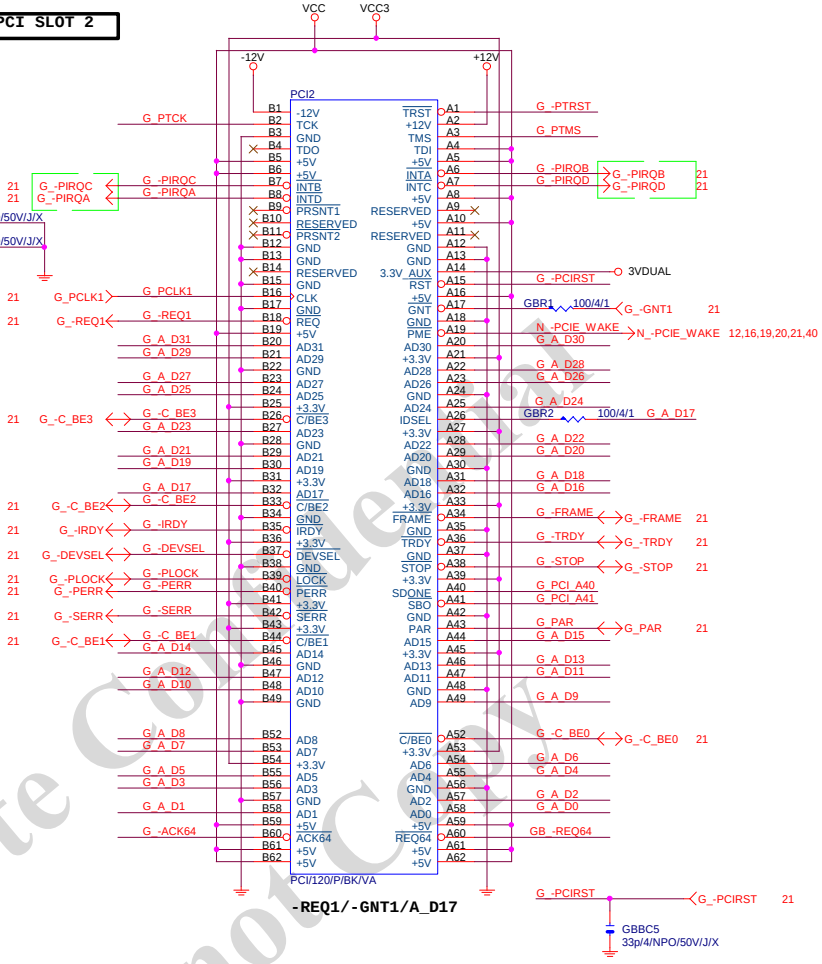
Date: Thursday, October 15, 2015 | Sheet 21 of 44

Rev 0.1

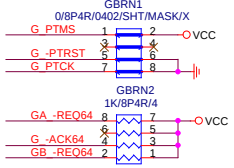
PCI SLOT 1



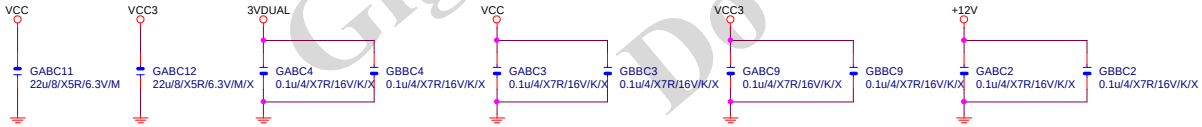
PCI SLOT 2



PCI PU



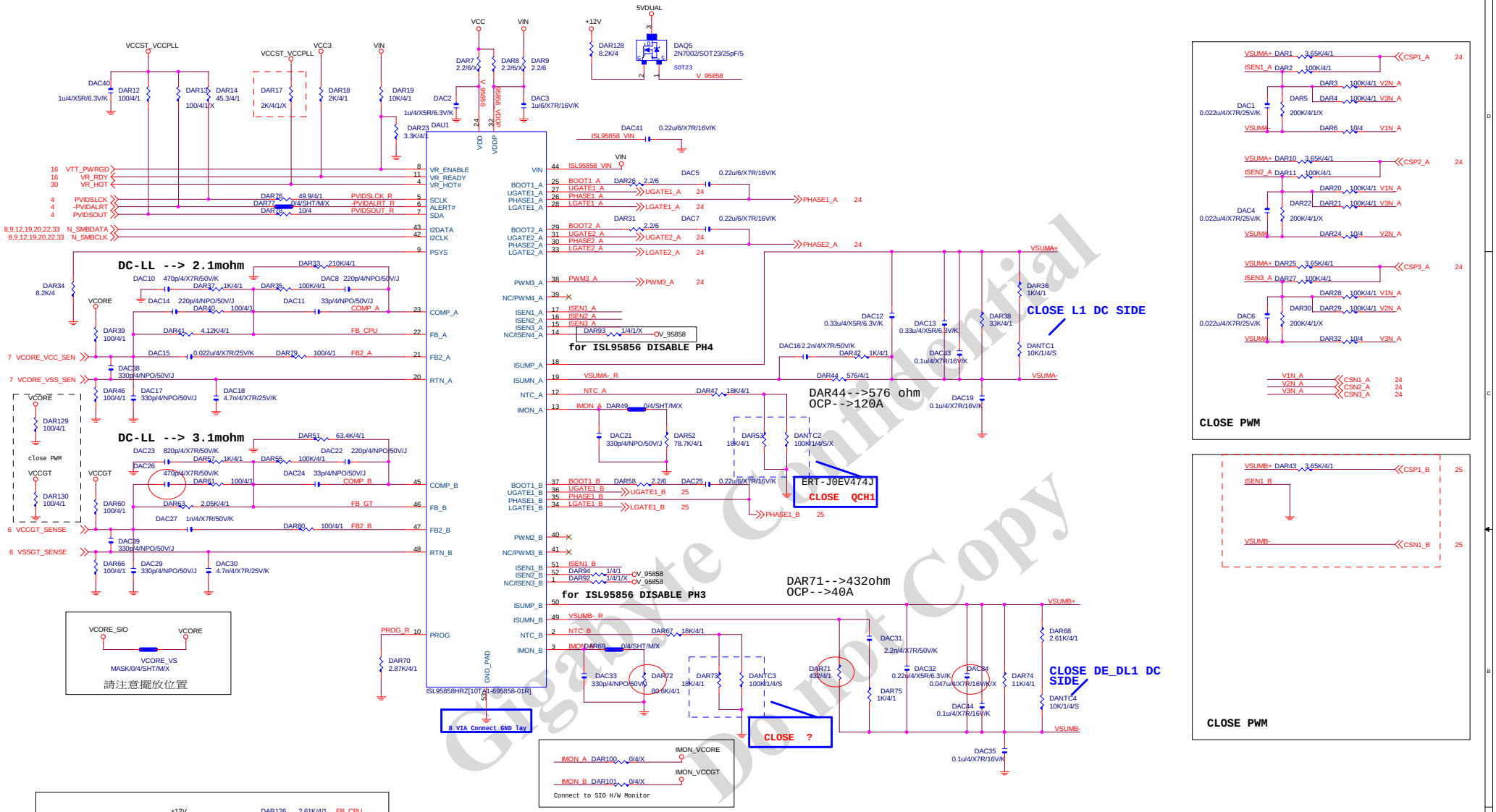
PCI CAP



GIGABYTE™

Title	PCI SLOT 1	
Size: Custom	Document Number: GA-H110M-S2PH DDR3	Rev: 1.0
Date: Thursday, October 15, 2015	Sheet 22 of 44	

REV:0.1

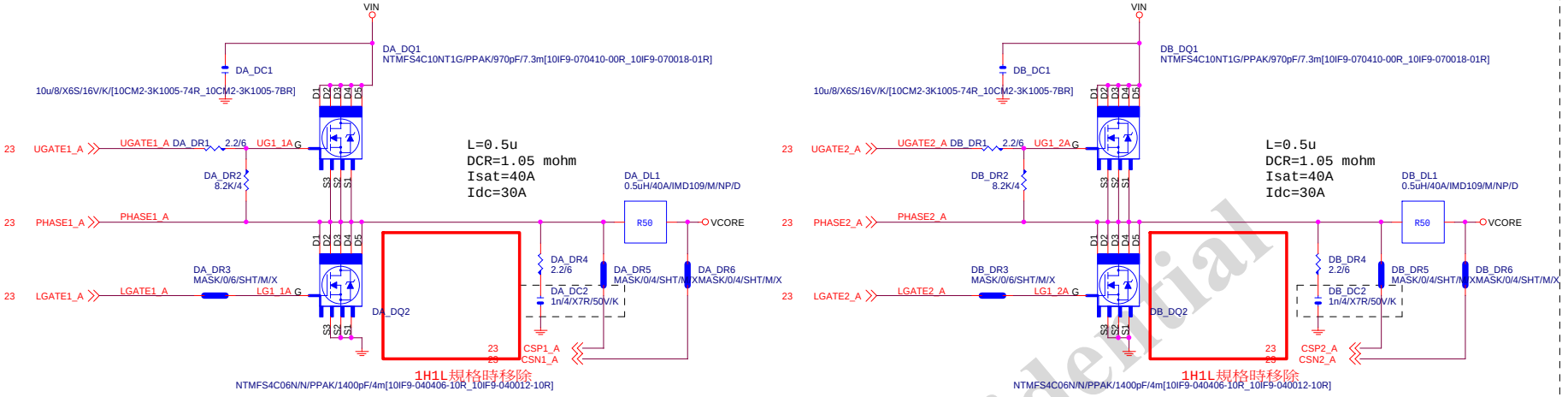


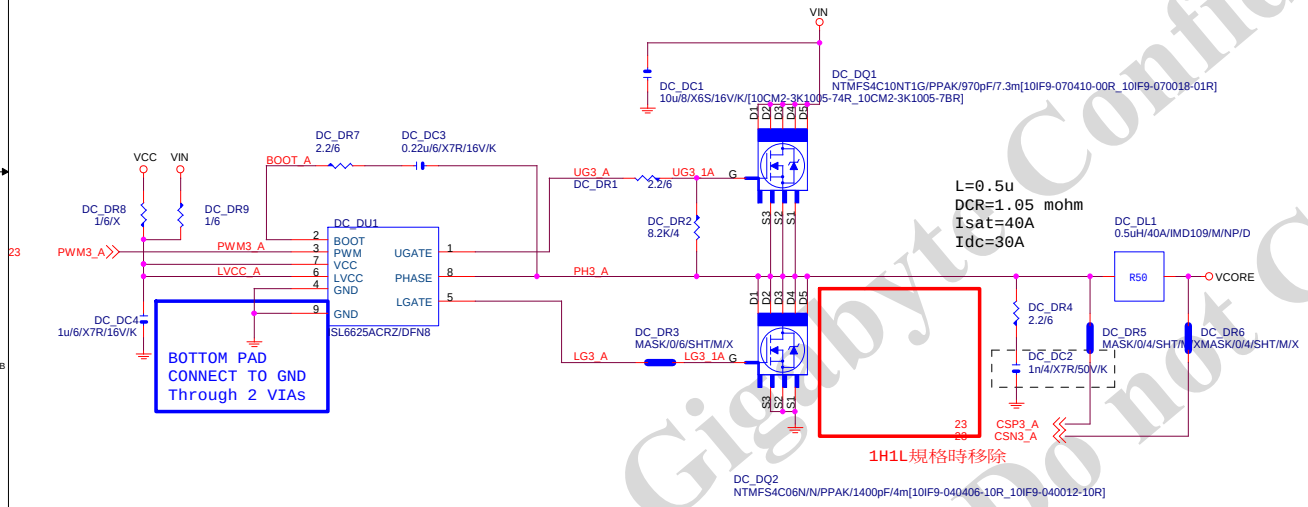
GIGABYTE™

Title	ISL95858/95856_PWM
Size: Custom	Document Number: GA-H110M-S2PH DDR3
Rev	1.0
Date: Thursday, October 15, 2015	Sheet 23 of 44

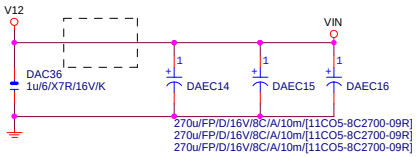
REV:0.91

VCORE

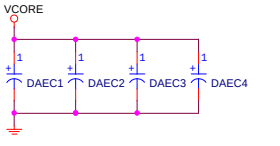


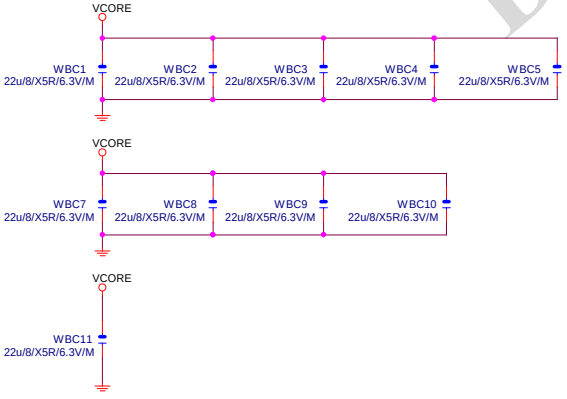


VIN CAP 270u*3PCS



VCORE CAP 560u*4PCS 22u*10PCS



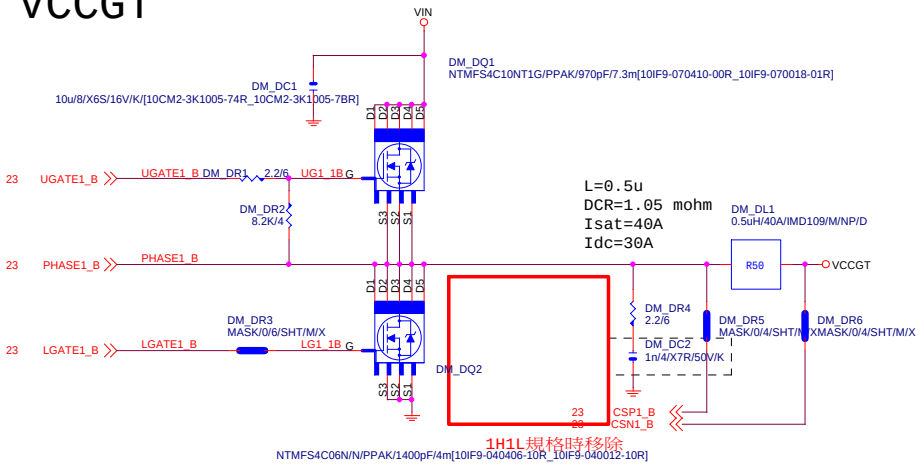


GIGABYTE™

Title: ISL95858_MOS		
Size: Custom	Document Number: GA-H110M-S2PH DDR3	Rev: 1.0
Date: Thursday, October 15, 2015	Sheet 24 of 44	

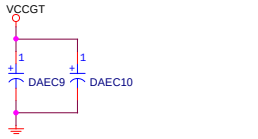
REV:0.91

VCCGT

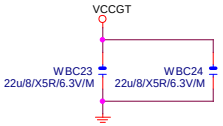


VCCGT CAP

560u*2PCS
22u*2PCS



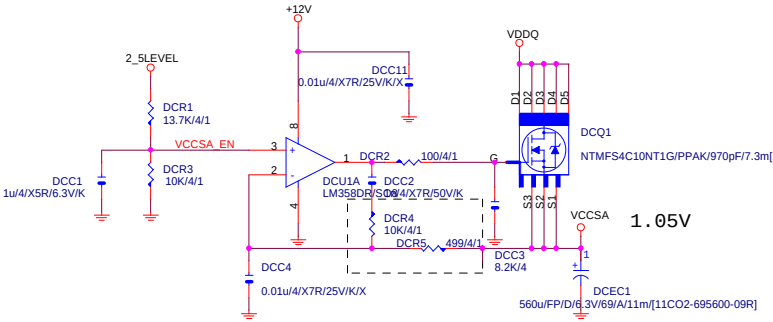
560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]
560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]



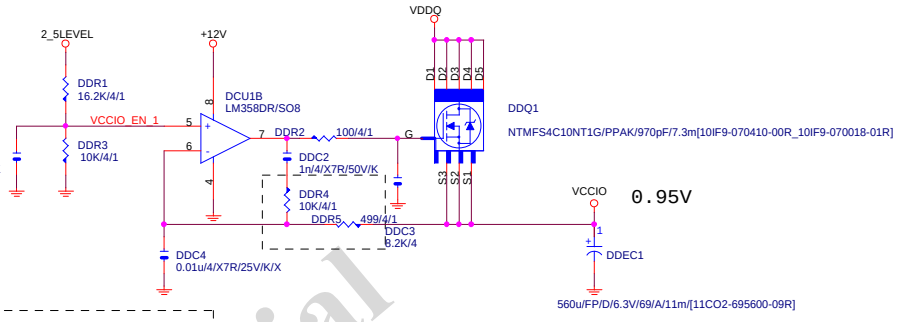
GIGABYTE™

Title: ISL95858_MOS		
Size: Custom	Document Number: GA-H110M-S2PH DDR3	Rev: 1.0
Date: Thursday, October 15, 2015	Sheet 25 of 44	

VCCSA REV:0.4

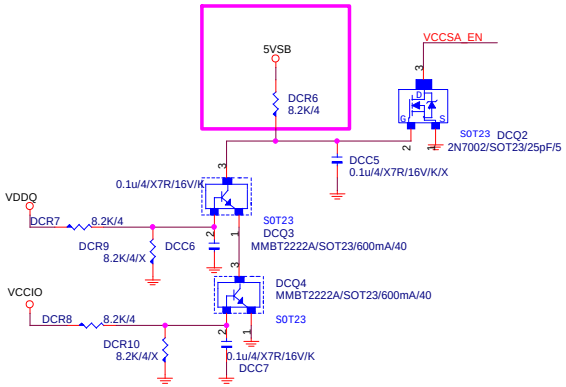


VCCIO

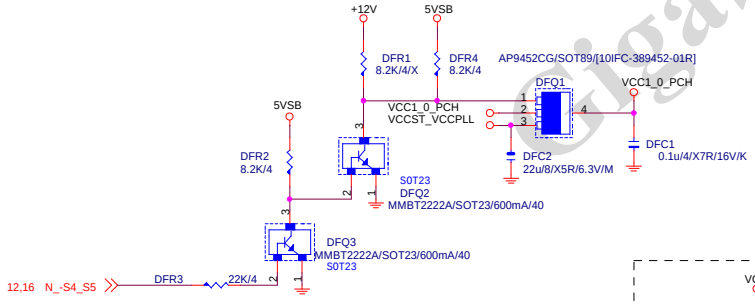


VCCIO_EN_1 DDR10 0/4/SHT/MAX VCCIO_EN 16

Connect to IT8620



VCCST_VCCPLL



VCCST_VCCPLL

DFC3
22u/8/X5R/6.3V/M

close to CPU

GIGABYTE™

Title: VCCSA_VCCIO		
Size: Custom	Document Number: GA-H110M-S2PH DDR3	Rev: 1.0
Date: Thursday, October 15, 2015	Sheet 26 of 44	

REV:0.2

DDR3

L=0.5u
DCR=2.1 mohm
Isat=20A
Idc=15A

DDR VIN CAP
560u*2PCS

CHOKE與CAP料號可變

5VDUAL
MA_L2
47/4030/15A/S
BEAD
MA_VIN
MA_DC6
0.1u/4/X7R/16V/K
Close Choke
MA_DC7
1u/6/X7R/16V/K
Close MOS
MAEC1
560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]
MA_DQ1
NTMFS4C10NT1G/PPAK/970pF/7.3m[10IF9-070410-00R_10IF9-070018-01R]

MA_DR8 2.2/6
DRV_DDR
MA_DC9
0.1u/6/X7R/25V/K
MA_DC10
1u/6/X7R/16V/K
MA_DR37
100K/4/1
VDDQ_GD
MA_DR41
8.2K/4
DDR_EN
16 DDR_EN_CON
MA_DR39 0/4/X
MA_DC15
0.1u/4/X7R/16V/K/X

EN PGOOD VCC BOOT UGATE PHASE FB CS RF GND LGATE
MAU2
RT8237C/D/DFN-10L

MA_UGATE
MA_PHASE
MA_LGATE
MA_RF
MA_DR45
470K/4/1
MA_DR15
95.3K/4/1
MA_DR19
470K/4/1/X
VDDQ_GD

MA_UGATE MA_DR1 2.2/6
MA_PHASE
MA_LGATE MA_DR9 2.2/6 MA_LG
MA_DR2
8.2K/4
MA_DQ2
MA_DQ3
NTMFS4C10NT1G/PPAK/970pF/7.3m[10IF9-070410-00R_10IF9-070018-01R]
NTMFS4C10NT1G/PPAK/970pF/7.3m[10IF9-070410-00R_10IF9-070018-01R]/X

MA_L1
1uH/35A/IMD109/M/D
R50
VDDQ
MA_DR5
2.2/6
MA_DC5
1n/4/X7R/50V/K
MA_DC14
22p/4/NPO/50V/J/X
RS
MA_DR13
3K/4/1
DDR_ADJ
RO
MA_DR12
3.24K/4/1

SUPPORT DDR3 **1.35V**

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

Remote sense請從最重的負載端點拉回

VDDQ
MAC60
22u/8/X5R/6.3V/M/X

PIN7-->20mil
PIN1-->6mil
PIN2-->6mil
PIN5-->6mil
PIN3-->6mil

FS=290K
OCP=30A

VDDQ_SIO VDDQ
DDR_VS MASK/0/4/SHT/M/X
CLOSE TO DDR POWER PLANE

16 GP93 MA_DR20 7.15K/4/1 1.65V
16 GP95 MA_DR21 14K/4/1 1.5V
16 GP67 MA_DR22 6.19K/4/1 1.7V

PWR SEQ

Defaults 不上件

5VDUAL
DDR_EN
MAR9
8.2K/4
MAQ5
2N7002/SOT23/25pF/5
SOT23
Close to RT8120
MAR10
8.2K/4
MAR11
100K/4/1
MAQ6
2N7002/SOT23/25pF/5
SOT23
16 DDR_EN_CON
MAC9
1u/6/X7R/16V/K

MAU1上RT9045時上件

5VSB
MA_VTT_REF
MAR7
8.2K/4/X
MAQ2
2N7002/SOT23/25pF/5/X
SOT23
N/A
MAQ3
2N7002/SOT23/25pF/5/X
SOT23
12,16,41 N_SLP_S3
MAR6
8.2K/4/X
MAQ1
2N7002/SOT23/25pF/5/X
SOT23
MAQ4
MMBT2222A/SOT23/600mA/40/X
SOT23
MAR8
8.2K/4/X
4 DDR_VTT_CTL

DDRVTT

VDDQ
MAC2
1u/4/X5R/6.3V/K
MAR5
1K/4/1
MA_VTT_REF
MAR4
1K/4/1
MAC1
0.01u/4/X7R/25V/K
*
MAU1
NCT3103S/SOP8/2A
VIN GND VREF1 VOUT VREF2 ENABLE VCNTL BOOT_SEL
DDRVTT_EN
DDRVTT_BOOT
5VDUAL
MAC7
10u/6/X5R/6.3V/M
1.1A MAX
DDRVTT

DDR_VTT_CTL MAR10 0/4 DDRVTT_EN
N_SLP_S3 MAR11 0/4 DDRVTT_BOOT
MAU1上NCT3103S時上件

DDR CAP

560u*2PCS **22u*1PCS**

VDDQ
VDDQ
* 大電容 x4
MAEC3
560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]
MAEC4
560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]
VDDQ
WBC49
22u/8/X5R/6.3V/M

DDRVTT CAP

DDRVTT
MAC4
22u/8/X5R/6.3V/M

GIGABYTE™

Title	RT8120_DDR POWER
Size	Custom
Document Number	GA-H110M-S2PH DDR3
Rev	1.0
Date:	Thursday, October 15, 2015
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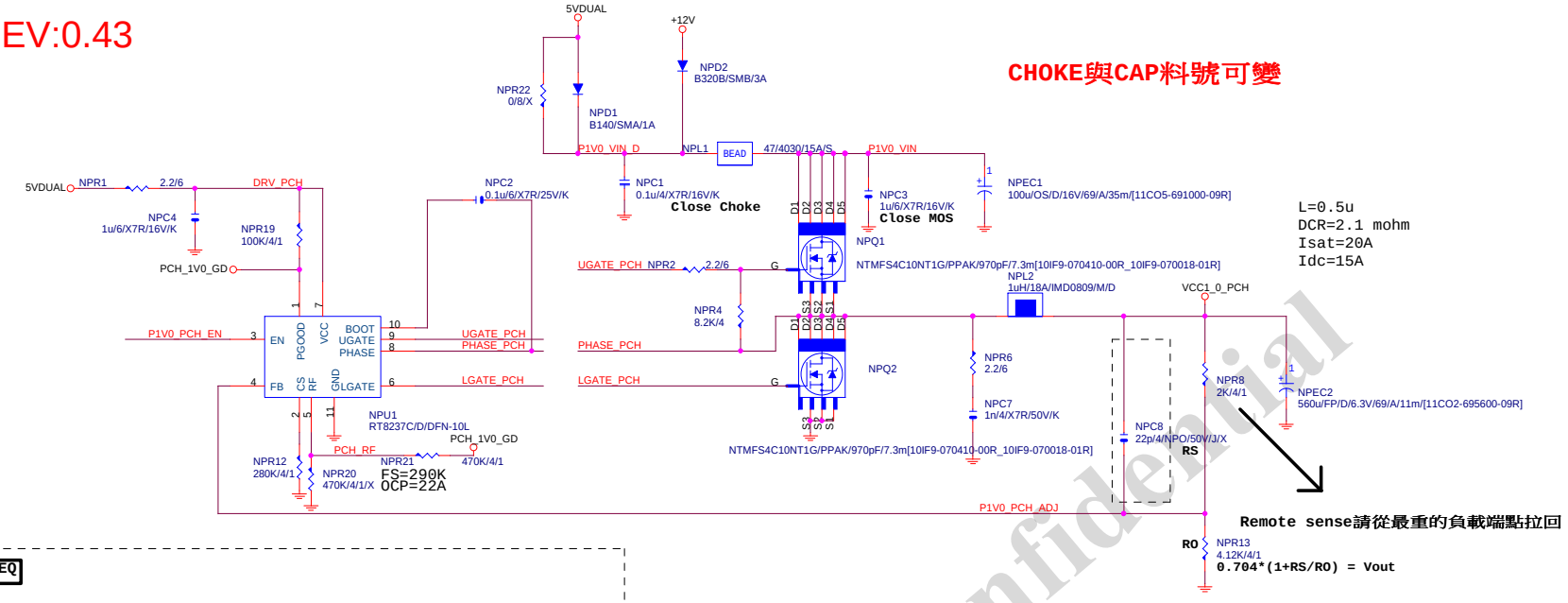
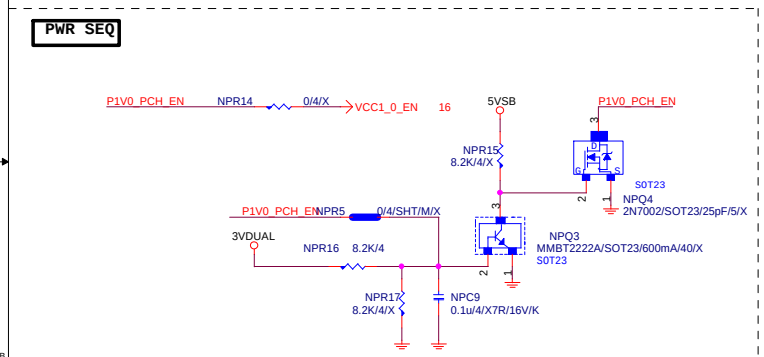
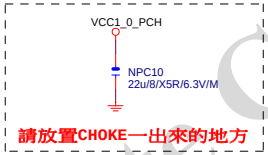
REV:0.43







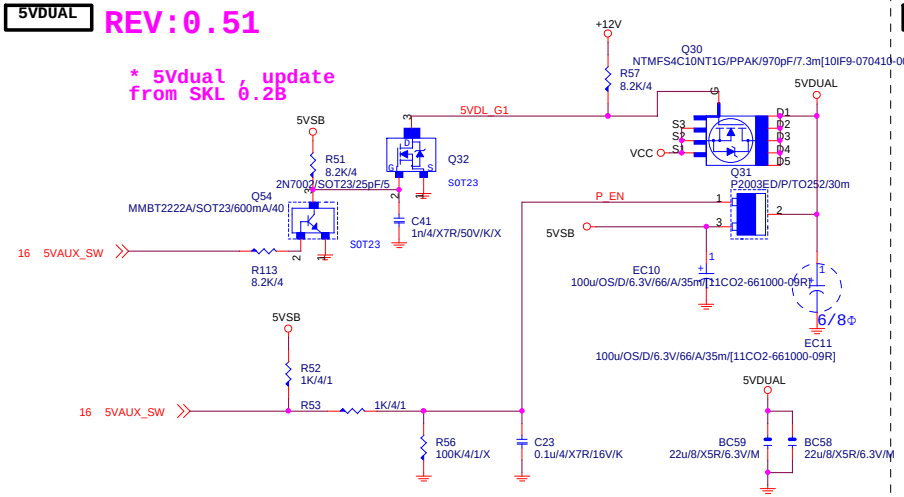
GIGABYTE™

Title: RT8237_PCH POWER		
Size: Custom	Document Number: GA-H110M-S2PH DDR3	Rev: 1.0
Date: Thursday, October 15, 2015	Sheet 28 of 44	

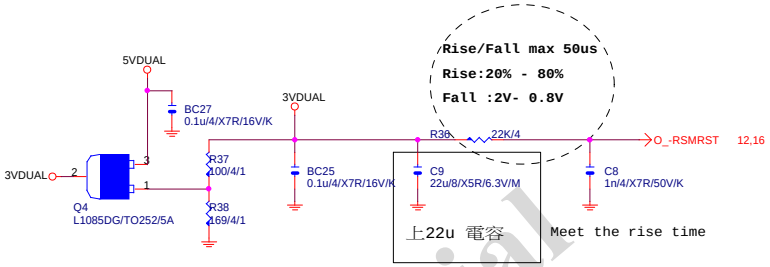
5VDUAL

REV:0.51

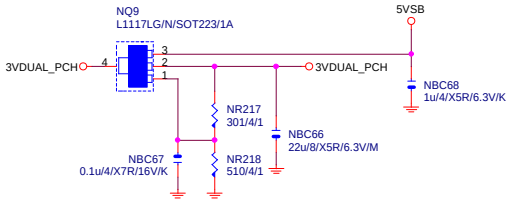
* 5Vdual , update from SKL 0.2B



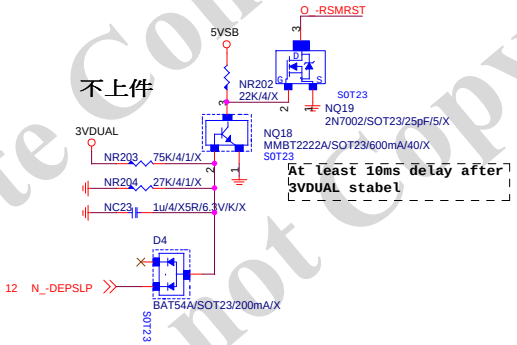
3VDUAL



3VDUAL_PCH

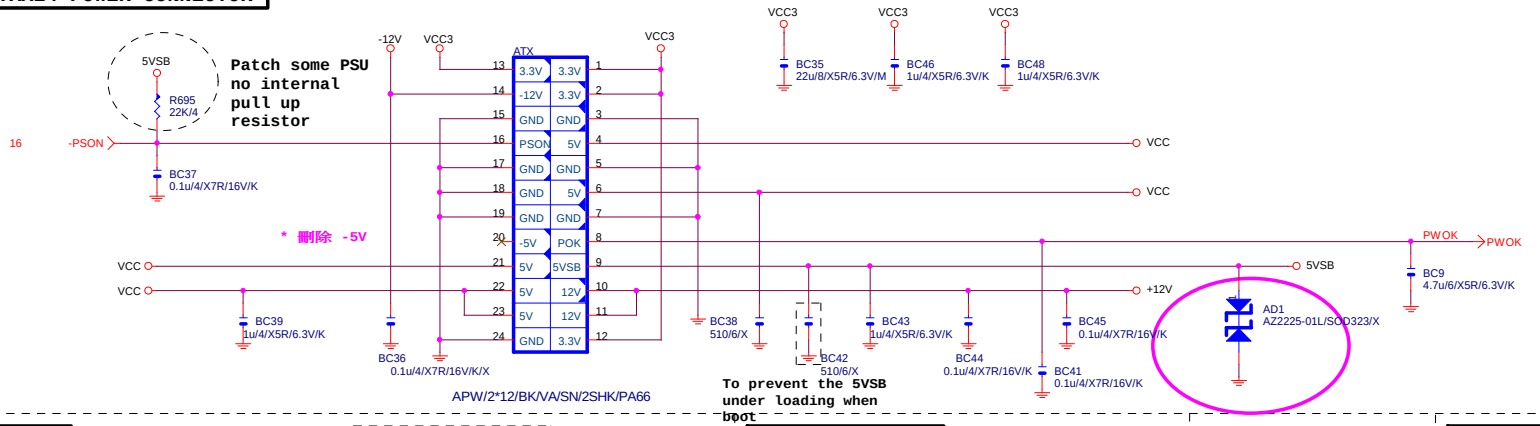


O_-RSMRST

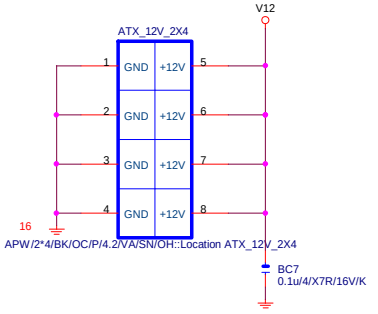


Gigabyte Technology			
Title: DISCRETE POWER			
Size: Custom	Document Number: GA-H110M-S2PH DDR3		Rev: 1.0
Date: Thursday, October 15, 2015	Sheet 29 of 44		

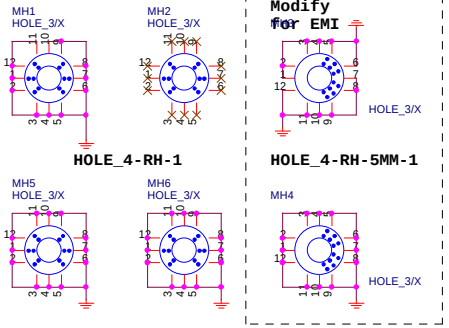
ATXX24 POWER CONNECTOR



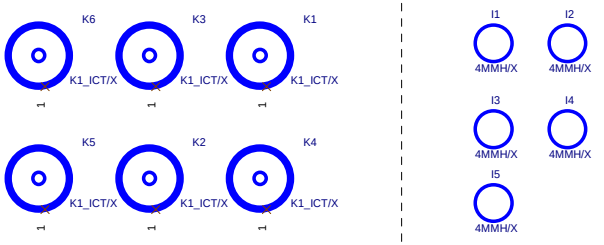
ATXX4 POWER CONNECTOR



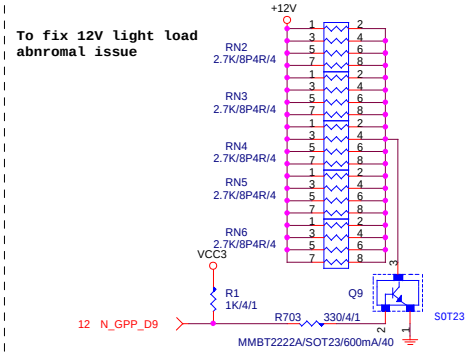
螺絲孔



固定孔/光學點

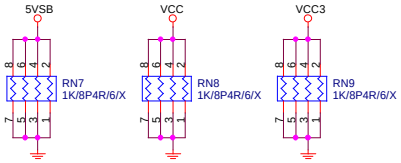


+12V DUMMY LOAD



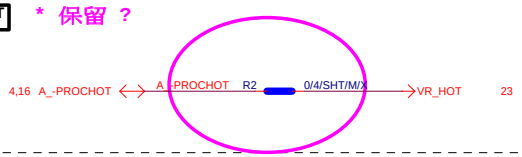
【技術通報R&D技術通報153】

DUMMY LOAD

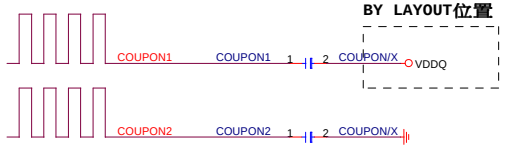


-PROHOT

* 保留 ?



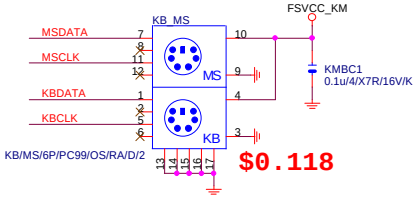
COUPON



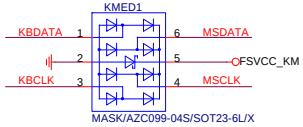
Gigabyte Technology		
Title: ATX POWER CONNECTOR		
Size: Custom	Document Number: GA-H110M-S2PH DDR3	Rev: 1.0
Date: Thursday, October 15, 2015	Sheet 30 of 44	

Rev: 0.53

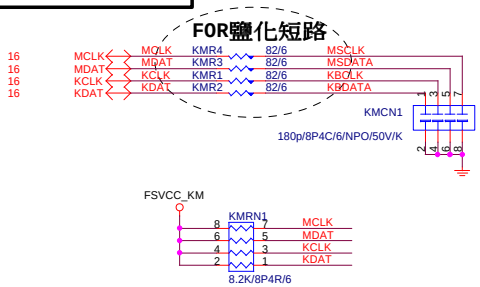
KB_MS_USB



ESD

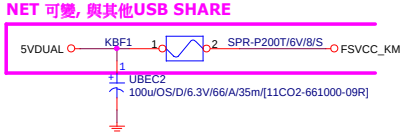


KB_MS_USB DAMPING/PU

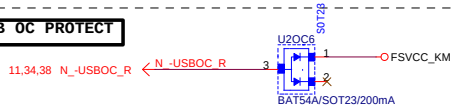


KB_MS_USB PWR

NET 可變, 與其他USB SHARE



USB OC PROTECT



Gigabyte Technology

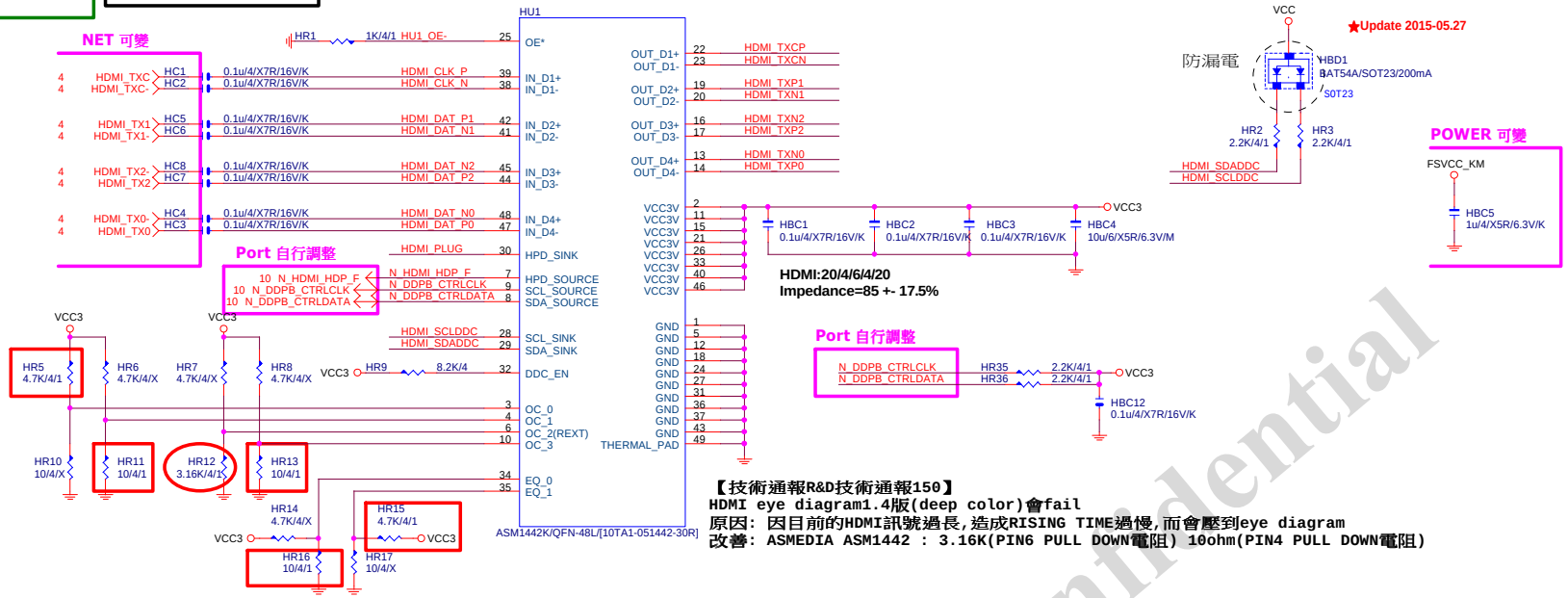
Title: AUDIO JACK

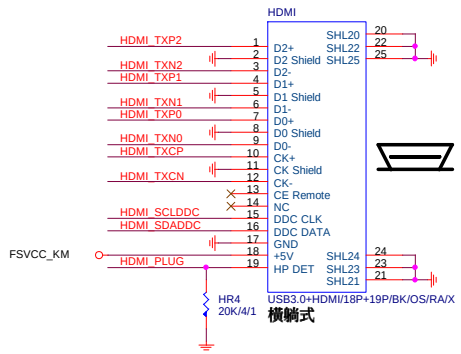
Size: Custom | Document Number: GA-H110M-S2PH DDR3 | Rev: 1.0

Date: Thursday, October 15, 2015 | Sheet 31 of 44

Rev: 0.41

HDMI LEVEL SHIFT





【技術通報R&D技術通報150】
HDMI eye diagram1.4版(deep color)會fail
原因: 因目前的HDMI訊號過長,造成RISING TIME過慢,而會壓到eye diagram
改善: ASMEDIA ASM1442 : 3.16K(PIN6 PULL DOWN電阻) 10ohm(PIN4 PULL DOWN電阻)

PTN3360:PIN 4/10/34/35 NC PIN,都不上值;只上HR12:10K
ASM1442:紅色框要上,HR12:3.16K

Gigabyte Technology

Title: HDMI CONN

Size: Custom | Document Number: GA-H110M-S2PH DDR3 | Rev: 1.0

Date: Thursday, October 15, 2015 | Sheet 32 of 44

RTD2168 | R1.02

POWER

VCC3

DVC10 0/6/SHT/M/X VGA_AVCC33

DVC11 0/6/SHT/M/X VGA_VDD_DAC_33

Power on latch

VCC3

DVR8 8.2K/4/X VGA_POL1_SDA DVR9 8.2K/4

DVR10 8.2K/4 VGA_POL2_SCL DVR11 8.2K/4/X

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

Embedded LDO

VCC3 DVR13 8.2K/4/X VGA_LDO_EN

LDO_EN(PIN21)	
0	1
VCCK_V12 from External 1.2V	VCCK_V12 from Embedded LDO

DP HPD

N_VGA_HDP_F → N_VGA_HDP_F 10

DVR18 100K/4/1

VCC3

DVC14 0.1u/4/X7R/16V/K

DVC15 10u/6/X5R/6.3V/M/X

DVC16 0.1u/4/X7R/16V/K

DVC12 0.1u/4/X7R/16V/K

DVC13 1u/4/X5R/6.3V/K

VGA_AVCC33 VGA_POL2_SCL VGA_POL1_SDA VGA_LDO_EN VGA_VCCK_V12

X'TAL EMBEDDED

DVU1

RTD2168

AVCC_33 POL2_SCL POL1_SDA LDO_EN DVCC_33 VCCK_12 XO XI/CKIN

DVC17 0.1u/4/X7R/16V/K VGA_VCCK_V12	25	AVCC_12	RED_N	16	
4 VGA_AUX DVC18 0.1u/4/X7R/16V/K VGA_AUX_CH_P	26	AUX_P	RED_P	15	VGA_RED_P
4 VGA_AUX- DVC19 0.1u/4/X7R/16V/K VGA_AUX_CH_N	27	AUX_N	GND_DAC	14	
DVR12 12K/4/1 VGA_RRX	28	RRX	GREEN_N	13	
4 VGA_TXP0 DVC20 0.1u/4/X7R/16V/K VGA_LANE0_P	29	LANE0P	GREEN_P	12	VGA_GREEN_P
4 VGA_TXN0 DVC21 0.1u/4/X7R/16V/K VGA_LANE0_N	30	LANE0N	BLUE_N	11	
4 VGA_TXP1 DVC22 0.1u/4/X7R/16V/K VGA_LANE1_P	31	LANE1P	BLUE_P	10	VGA_BLUE_P
4 VGA_TXN1 DVC23 0.1u/4/X7R/16V/K VGA_LANE1_N	32	LANE1N	VDD_DAC_33	9	VGA_VDD_DAC_33
	33	EPAD_GND			

HPD SMB_SCL SMB_SDA VGA_SCL DVCC_33 VGA_SDA VSYNC HSYNC

DVC24 4.7u/6/X5R/6.3V/K

DVC25 0.1u/4/X7R/16V/K

RTD2168/[10HQ5-A32168-10R]

Reserve Pull High

VCC3

DVR14 4.7K/4/X VGA_SMB_SCL

DVR15 4.7K/4/X VGA_SMB_SDA

N_VGA_HDP_F VGA_SMB_SCL VGA_SMB_SDA VGA_SCL VGA_SDA VGA_VSYNC VGA_HSYNC

8,9,12,19,20,22,23 N_SMBCLK DVR16 MASK/0/4/SHT/M/X

8,9,12,19,20,22,23 N_SMBDATA DVR17 MASK/0/4/SHT/M/X

VGA_SCL

VGA_SDA

VGA_VSYNC

VGA_HSYNC

VCC3

DVC26 0.1u/4/X7R/16V/K

放置PCH端

10 N_DDPD_CTRLCLK DVR19 2.2K/4/1

10 N_DDPD_CTRLDATA DVR20 2.2K/4/1

VCC3

VGA SIGNAL | R1.02

VCC

DVD1 BAT54A/SOT23/200mA

SOT23

DVR2 2.2K/4/1

DVR3 2.2K/4/1

VGA_SCL

VGA_SDA

VGA_RED_P

VGA_GREEN_P

VGA_BLUE_P

DVFB1 30/4/4A/SI G_VGA_R

DVFB2 30/4/4A/SI G_VGA_G

DVFB3 30/4/4A/SI G_VGA_B

DVR5 75/4/1

DVR7 75/4/1

DVR6 75/4/1

DVC4 DVC5 DVC6 10p/4/NPO/50V/J

DVC7 DVC9 DVC8 10p/4/NPO/50V/J

Close to Filter

FOR EMI

VGA_VSYNC DVR1 33/4 G_VSYNC

DVC2 10p/4/NPO/50V/J/X

VGA_HSYNC DVR4 33/4 G_HSYNC

DVC3 10p/4/NPO/50V/J/X

VGA CONN VGA(BLACK)

VGA

G_VGA_R	6	11	
G_VGA_G	1	12	VGA_SDA
G_VGA_B	7	13	G_HSYNC
FSVCC_KM	2	14	G_VSYNC
	8	15	VGA_SCL
	3		
	9		
	4		
	10		
	5		

16 17

VGA/BK/SC-11/RA/D/L

FSVCC_KM

DVC1 0.1u/4/X7R/16V/K

VGA ESD

DVESD1

G_VSYNC 1 6 VGA_SCL

2 5 VCC

G_HSYNC 3 4 VGA_SDA

AZC099-04S/SOT23-6L

DVESD2

G_VGA_G 1 6

2 5 VCC3

G_VGA_R 3 4 G_VGA_B

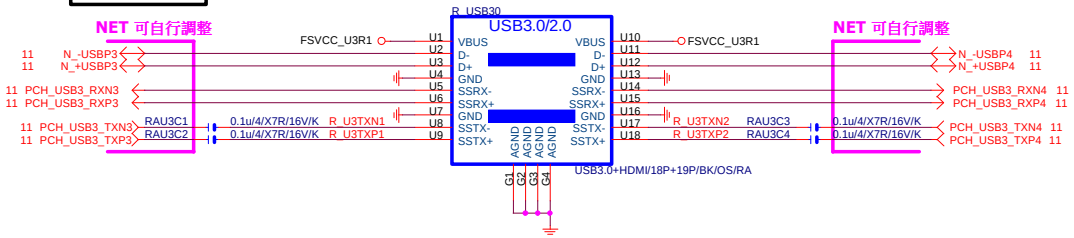
AZC099-04S/SOT23-6L

Title	Gigabyte Technology DP-VGA RTD2168		
Size: Custom	Document Number: GA-H110M-S2PH DDR3		Rev: 1.0
Date: Thursday, October 15, 2015	Sheet 33 of 44		

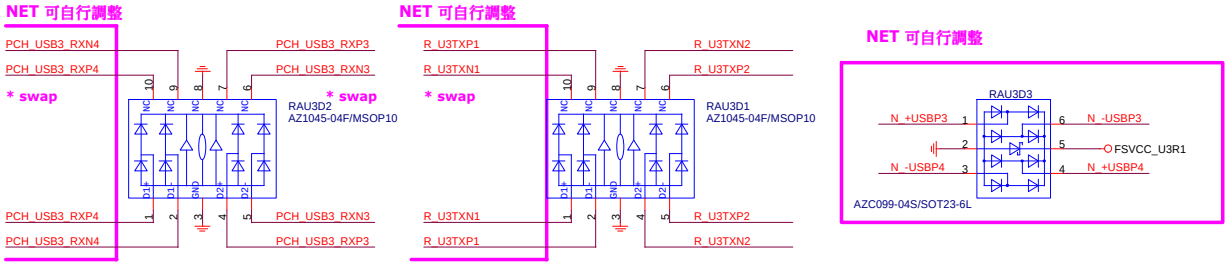
Rev: 0.53

R_USB30_1

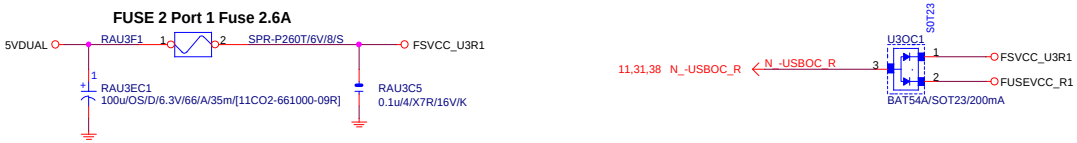
ESD 可自行SWAP PIN ,CONN端 NET 名稱 不可



ESD



FUSE



Gigabyte Technology

Title: R_USB30,F_USB30, USB_OC

Size: Custom | Document Number: GA-H110M-S2PH DDR3 | Rev: 1.0

Date: Thursday, October 15, 2015 | Sheet 34 of 44

LAN:RTL8111G R1.06

LAR12 2.49K/4/1

LA_LED_ACT_TXRX
LA_LED_LINK100
LA_LED_LINK1000

LAU1
RTL8111G(S)/8106E
RTL8111G-CG/QFN32

LAX1
25M/16p/30ppm/49US/20/D
LA_XTALI
LA_XTALO
LAC5 20p/4/NPO/50V/J
LAC6 20p/4/NPO/50V/J

LAR9 MASK/0/6/SHT/M/X FOR ERP WAKEUP
LA_VDD33
N_-PCIE1_WAKE 16
VCC3
LAR4 1K/4/1
LAR5 15K/4/1/X

SRCCLK-->50歐姆:[18/4/10/4/18]

PCIE_OB1_RST
LABC4 100p/4/NPO/50V/J/X

LAREQ1 0/4/SHT/M/X
LAR1 8.2K/4
VCC3

L1+CLK REQ# 節能:
需對應LA_SRCCLK_LAN之CLKREQ#

LAC3 0.1u/4/X7R/16V/K
LAC2 0.1u/4/X7R/16V/K
離IC近越好

LA_ ML-->80歐姆:[15/5/5/5/15]

MDI ESD預留 *
LAESD2 AZC099-04S/SOT23-6L/X
LAESD3 AZC099-04S/SOT23-6L/X

LAN POWER
(CLOSE LAU1 PIN22,30,3,8)
LABC2:1U CLOSE PIN22[REALTEK REQ]

LAN POWER
note: lan power連接及電流
(CLOSE LAU1 PIN23)

LAN POWER
(CLOSE LAU1 PIN:11,32)
PWR SURGE
PWR SURGE
LABC18,27:CLOSE PIN11[REALTEK SURGE]
LABC14,20:CLOSE PIN32[REALTEK SURGE]

LAN POWER
(CLOSE LAU1 PIN24)

LAN POWER
note: lan power連接及電流
可變
LAPW1 MASK/0/4/SHT/M/X
LAPW2 0/4/X
3VDUAL_PCH *
3VDUAL *

USB30_LAN LAYOUT示意圖
Dual Color LED
Green
Orange
Single Color LED
Yellow
YELLOW ORANGE GREEN (+,-)

USB_LAN CONNECTOR R1.06
RMA ESD PROTECT
note:可變更USB NAME
可變
LAUESD1 AZC099-04S/SOT23-6L
EMI SHORT PAD
PS:視EMI需求
LAR24 MASK/0/4/SHT/M/X

USB_LAN CONNECTOR
note:可變更USB NAME
[RTL8111G]
LABC22 0.01u/4/X7R/25V/K/X
LABC25 MASK/0/4/SHT/M/X
LAFB2 MASK/0/4/SHT/M/X
LABC24 0.1u/4/X7R/16V/K/X
LAUBC7 0.1u/4/X7R/16V/K
UP
DOWN
USB+LAN/1G/GO,Y/OS/RA/D/12C/ES/[11NR6-702009-Z1R_11NR6-702009-R2R]
LA_MDI-->100歐姆:[20/4/8/4/20]

USB POWER
note:可變更FUSE
可變
LAU3F1 SPR-P260T/6V/8/S
Close to connector FUSE-0805

Gigabyte Technology
Title: Realtek RTL8111GUS
Size: Custom
Document Number: GA-H110M-S2PH DDR3
Rev: R1.0
Date: Thursday, October 15, 2015
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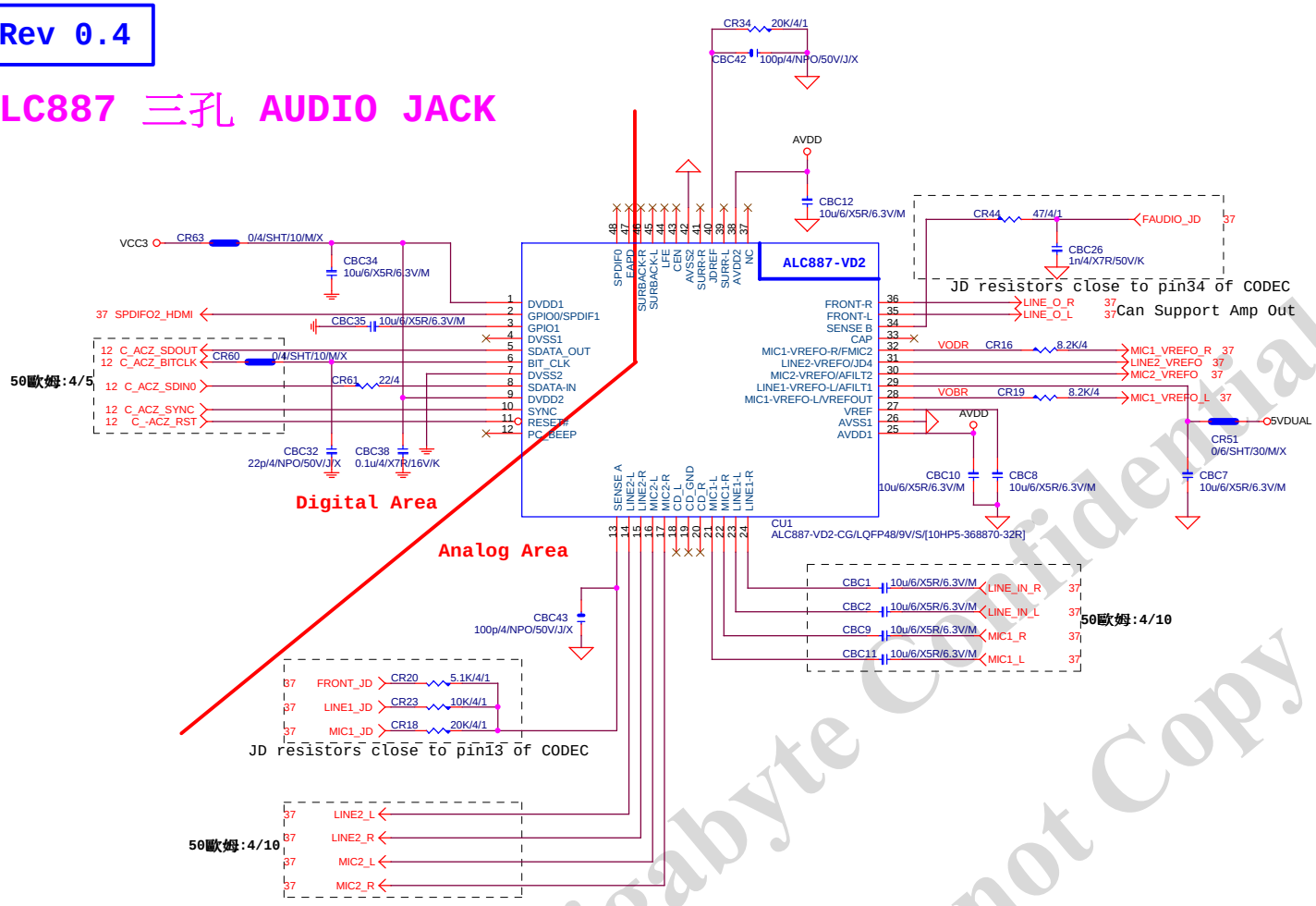
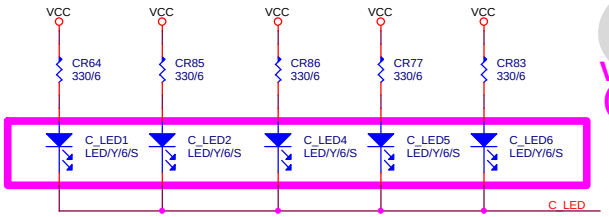
Rev 0.4

ALC887 三孔 AUDIO JACK

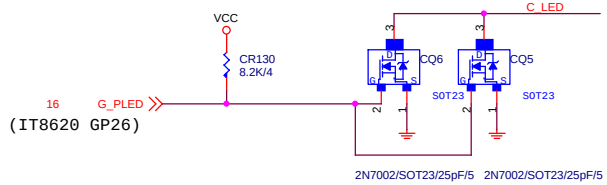


LAYOUT注意:螺絲孔下GND方式
1. MH1空間夠,下DGND
   空間不夠,改為Isolate
2. MH2一律改為Isolate

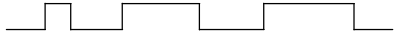
MH1	MH2
DGND	Isolate



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



LAYOUT注意:要加
GND切割線



音效區域印刷

*LAYOUT與否,依照各Model spec

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

Gigabyte Technology			
Title	HD AUDIO ALC887		
Size: Custom	Document Number: GA-H110M-S2PH DDR3		Rev: 1.0
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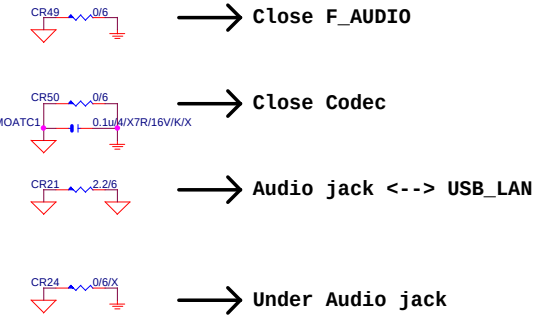
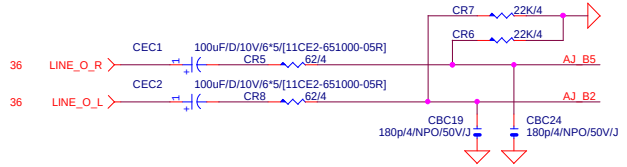
Rev 0.4



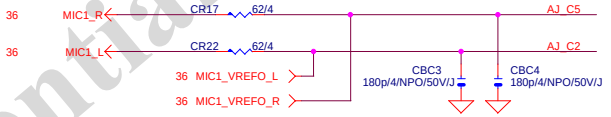
*量產前,0ohm改short pad

LINE-OUT



LINE-IN

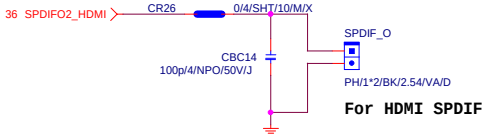
MIC-IN



SURROUND

CEN/LFE

SPDIF_OUT

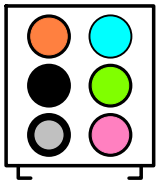


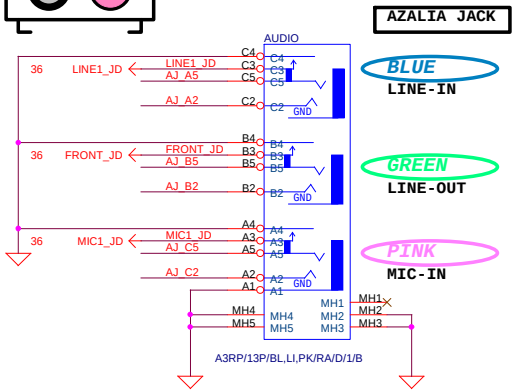
For HDMI SPDIF

SPDIF_IN

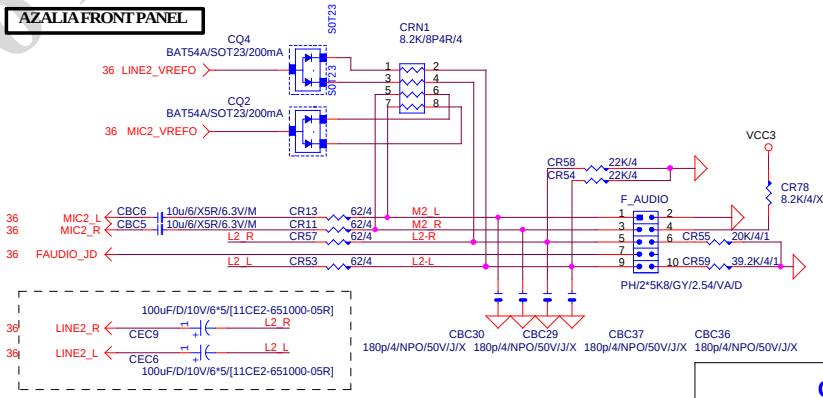
SURR BACK

AZALIA JACK





AZALIA FRONT PANEL



Gigabyte Technology

Title: AUDIO JACK

Size: Custom | Document Number: GA-H110M-S2PH DDR3 | Rev: 1.0

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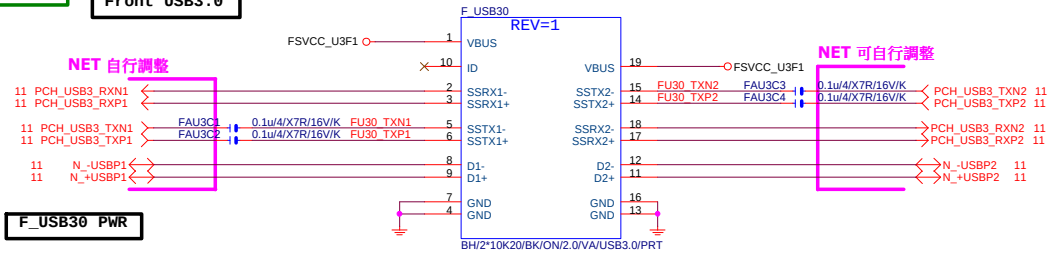
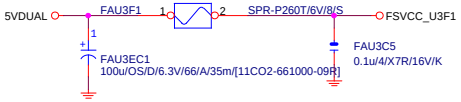
Rev: 0.53

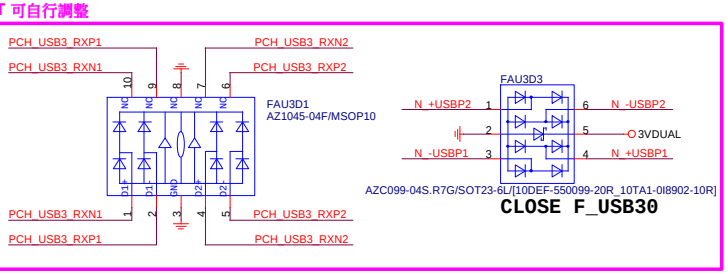
Front USB3.0

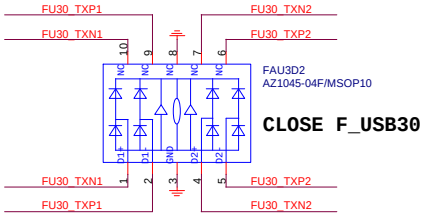


F_USB30 PWR



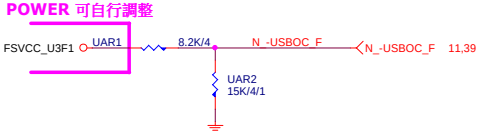
NET 可自行調整





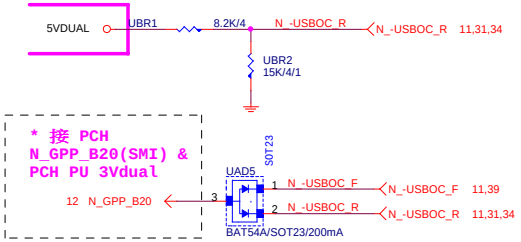
-USBOC_F

POWER 可自行調整



-USBOC_R

POWER 可自行調整



Gigabyte Technology		
Title: R_USB30,F_USB30, USB_OC		
Size: Custom	Document Number: GA-H110M-S2PH DDR3	Rev: 1.0
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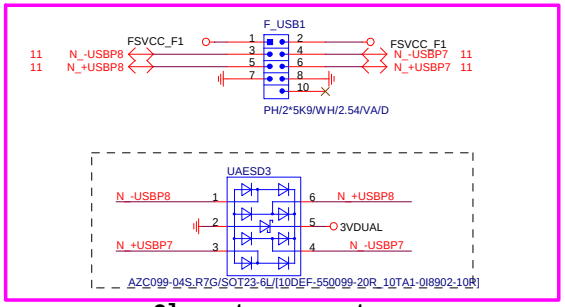
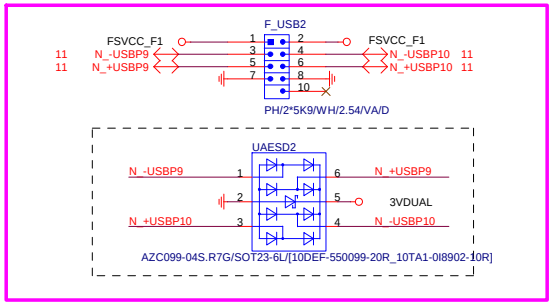
FRONT USB1

NET 可變



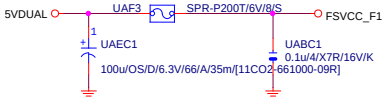
FRONT USB2

NET 可變

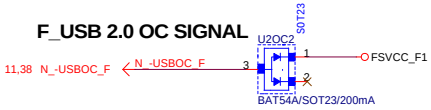


Close to connector

FUSE 2 Port 1 Fuse 2A



F_USB 2.0 OC SIGNAL



Gigabyte Technology		
Title: USB2.0		
Size: Custom	Document Number: GA-H110M-S2PH DDR3	Rev: 1.0
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COM PORT

QAU1 — GD75232/TSSOP20

RI1-	RY1	RA1	NRIA-
CTS1-	RY2	RA2	NCTSA-
DSR1-	RY3	RA3	NDSRA-
RTS1-	DA1	DY1	NRTSA-
DTR1-	DA2	DY2	NDTRA-
RXD1	RY4	RA4	NSINA
TXD1	DA3	DY3	NSOUTA
DCD1-	RY5	RA5	NDCDA-
	GND -12V	5V 12V	

-12V, +12V, VCC

QABC1 0.1u/4/X7R/16V/K/X — QABC2 0.1u/4/X7R/16V/K/X — QABC3 0.1u/4/X7R/16V/K/X

COMA — COM/GE/SC-6mm/RA/1/D

NDCDA-	1	
NDSRA-	6	
NSINA	2	10
NRTSA-	7	
NSOUTA	3	
NCTSA-	8	
NDTRA-	4	11
NRIA-	9	
	5	

QACN1

NDCDA-	1	2	
NSOUTA	3	4	
NSINA	5	6	
NDTRA-	7	8	

QACN2

NRTSA-	1	2	
NDSRA-	3	4	
NCTSA-	5	6	
NRIA-	7	8	

* EMI — 180p/8P4C/6/NPO/50V/K/X

COM RI

* 接 N_-PCIE_WAKE

N_-PCIE_WAKE 12,16,19,20,21,22

NRIA-, NRIB- — OAD1 BAT54C/SOT23/200mA/X — OAR1 75K/4/1/X — OAQ1 MMBT2222A/SOT23/600mA/40/X SOT23 — OAR2 8.2K/4/X — OABC1 0.1u/4/X7R/16V/K/X

COMB

QBU1 — GD75232/TSSOP20

RI2-	RY1	RA1	NRIB-
CTS2-	RY2	RA2	NCTSB-
DSR2-	RY3	RA3	NDSRB-
RTS2-	DA1	DY1	NRTSB-
DTR2-	DA2	DY2	NDTRB-
RXD2	RY4	RA4	NSINB
TXD2	DA3	DY3	NSOUTB
DCD2-	RY5	RA5	NDCDB-
	GND -12V	5V 12V	

-12V, +12V, VCC

QBBC1 0.1U/4/Y5V/16V/Z/X — QBBC2 0.1U/4/Y5V/16V/Z/X — QBBC3 0.1U/4/Y5V/16V/Z/X

COMB

NDCDB-	1	2	NSINB
NSOUTB	3	4	NDTRB-
	5	6	NDSRB-
NRTSB-	7	8	NCTSB-
NRIB-	9	10	

PH/2*5K10/BK/2.54/VA/D

QBCN1

NDTRB-	1	2	
NSINB	3	4	
NSOUTB	5	6	
NDCDB-	7	8	

QBCN2

NRIB-	1	2	
NCTSB-	3	4	
NDSRB-	5	6	
NRTSB-	7	8	

180P/8P4C/6/NPO/50V/K/X

LPT PORT

D1 CD4148WP/1206/300mA — VCC

PBC2 0.1u/4/X7R/16V/K — PBC1 1u/6/X7R/16V/K/X

PRN2 2.2K/8P4R/4	8	7	LPT5
	6	5	LPT4
	4	3	LPT17
	2	1	LPT3
PRN6 2.2K/8P4R/4	8	7	LPT9
	6	5	LPT8
	4	3	LPT7
	2	1	LPT6
PRN4 2.2K/8P4R/4	8	7	LPT16
	6	5	LPT2
	4	3	LPT1
	2	1	ERR-
PRN7 2.2K/8P4R/4	8	7	SLCT
	6	5	PE
	4	3	BUSY
	2	1	ACK-
PR1 2.2K/4/1			LPT14

PRN5 68/8P4R/4

AFD-	1	2	LPT14
STB-	3	4	LPT1
PD0	5	6	LPT2
INIT-	7	8	LPT16

PRN3 68/8P4R/4

PD1	1	2	LPT3
SLIN-	3	4	LPT17
PD2	5	6	LPT4
PD3	7	8	LPT5

PRN1 68/8P4R/4

PD4	1	2	LPT6
PD5	3	4	LPT7
PD6	5	6	LPT8
PD7	7	8	LPT9

ERR-, ACK-, BUSY, PE, SLCT, PD[0..7]

★Update 2015.03.24

LPT — LPT/BK/SC/RA/D/H Black

LPT1	1	27	
LPT14	14		
LPT2	2		
ERR-	15		
LPT3	3		
LPT16	16		
LPT4	4		
LPT17	17		
LPT5	5		
	18		
LPT6	6		
	19		
LPT7	7		
	20		
LPT8	8		
	21		
LPT9	9		
	22		
ACK-	10		
	23		
BUSY	11		
	24		
PE	12		
	25		
SLCT	13	26	

Gigabyte Technology

Title: FP,F_USB,USB PWR,BZ

Size: Custom | Document Number: GA-H110M-S2PH DDR3 | Rev: 1.0

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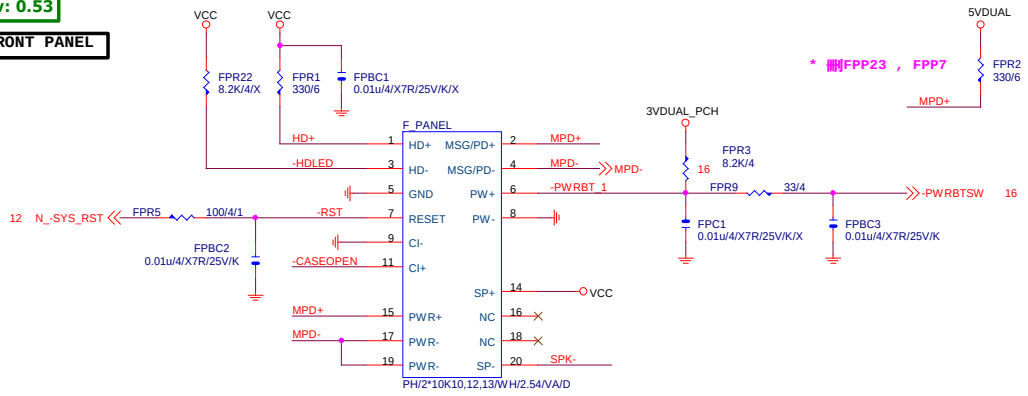
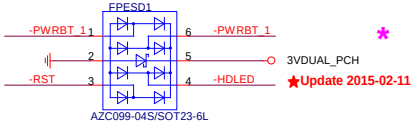
Rev: 0.53

FRONT PANEL

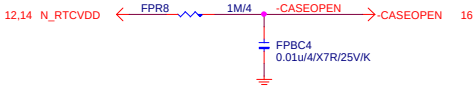


FOOTPRINT:PIN2X10PANEL-NEW

ESD

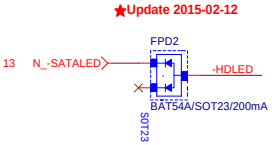


CASE OPEN

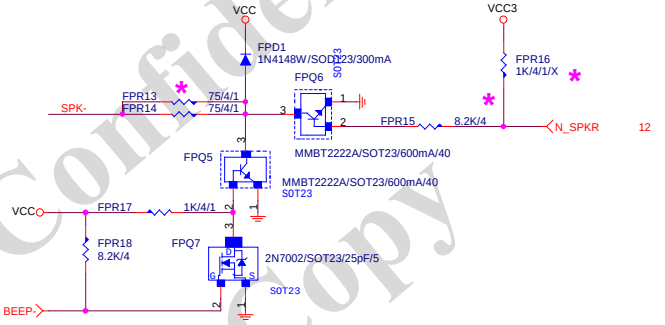


SATA LED

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



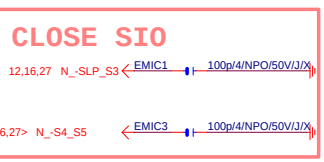
SPKR



EMI/ESD R0.1

close to Front Panel

CLOSE SIO



CLOSE PCH

For EMI

For EMI

Gigabyte Technology

Title: FRONT PANEL

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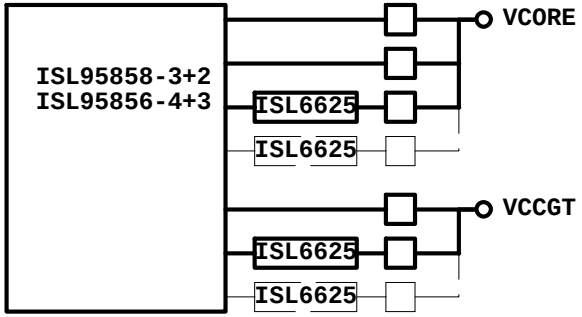
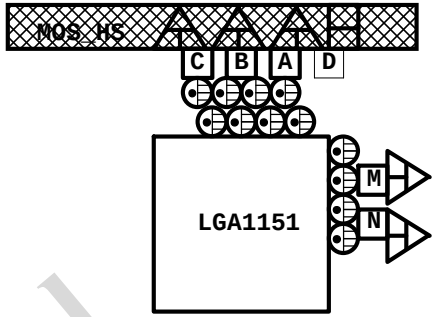
POWER BLOCK MAP

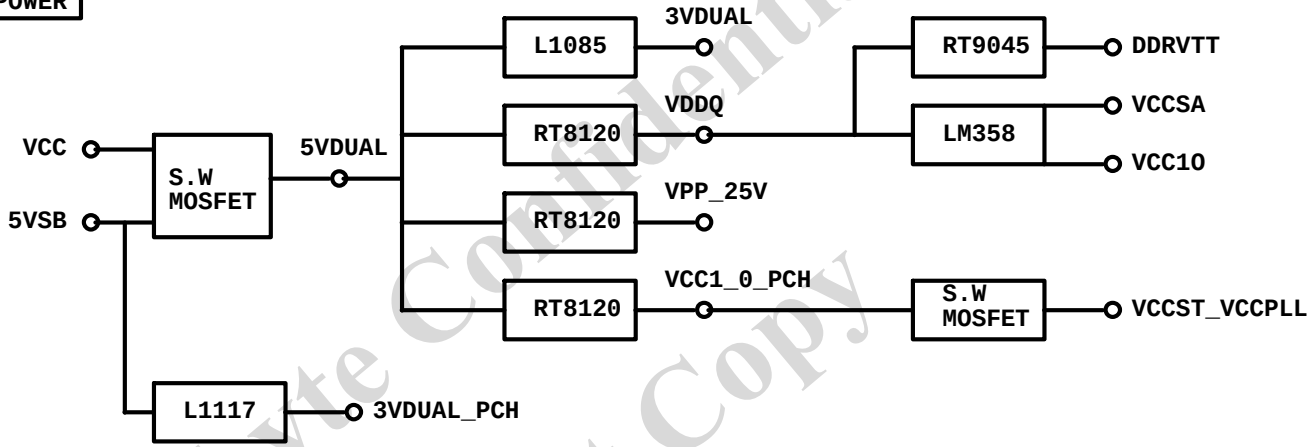
- CPU
  - VCORE
  - VCCGT
  - VCCSA
  - VCCIO
  - VDDQ
  - VCCST_VCCPLL
  - VCCSFUSEPRG
- DDR4
  - VDDQ
  - DDRVTT
  - VPP_25V
  - VDDSPD(VCC3)
- PCH
  - VCC1_0_PCH
  - VCC1_0_PCH_DSW
  - VCC10_VCCF24_1P0
  - VCC10_VCCAMPHYPLL
  - VCC10_VCCAPLL
  - VCC3_PCH
  - 3VDUAL_PCH
  - VCC3
  - N_RTCVDD
- IT8628
  - IT_VCCH
  - IT_AVCC
  - 2_5LEVEL
- HM
  - +12V
  - VCC
  - VCC3
  - VCORE
  - VCCGT(IMON_VCCGT)
  - VDDQ
  - VCCSA(IMON_VCORE)

VCORE/VCCGT

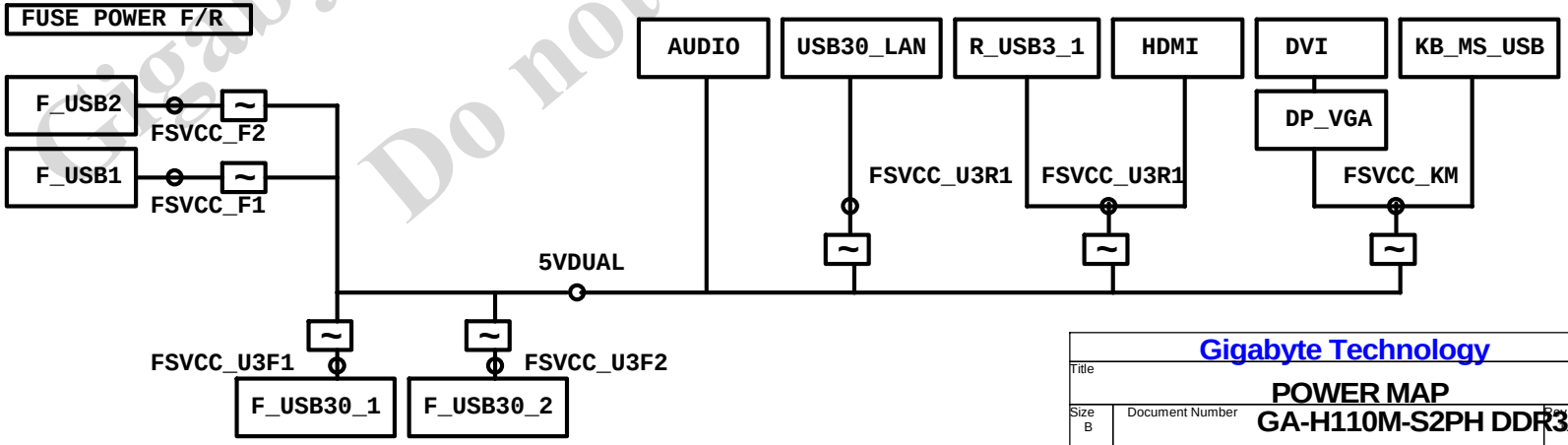




POWER



FUSE POWER F/R



Gigabyte Technology		
Title: POWER MAP		
Size: B	Document Number: GA-H110M-S2PH DDR3	Rev: 1.0
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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
11CO5-C82700-01R	270u/FP/D/16V/88/C/12m
11CO5-C61000-01R	100u/OS/D/16V/66/C/30m
11CO2-C51000-01R	100u/FP/D/6.3V/65/C/13m

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

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

IRON CHOKE

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

Ferrite

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

BEAD

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

PWM料號

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

GIGABYTE™

Title: POWER零件使用表

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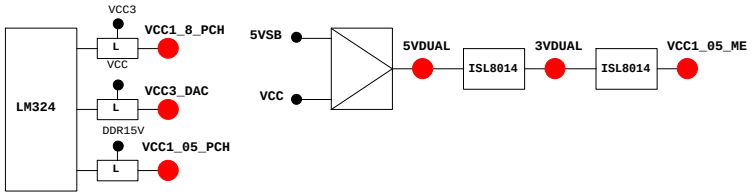
PCH GPIO LIST TABLE

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

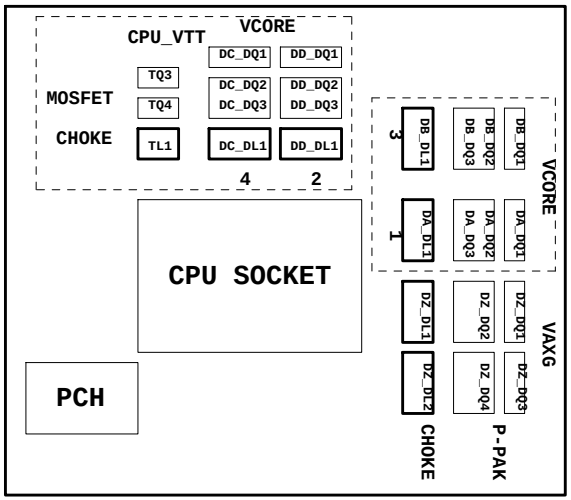
Super I/O ITE8720 GPIO Table

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

Gigabyte Technology

Title: TABLE LIST

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