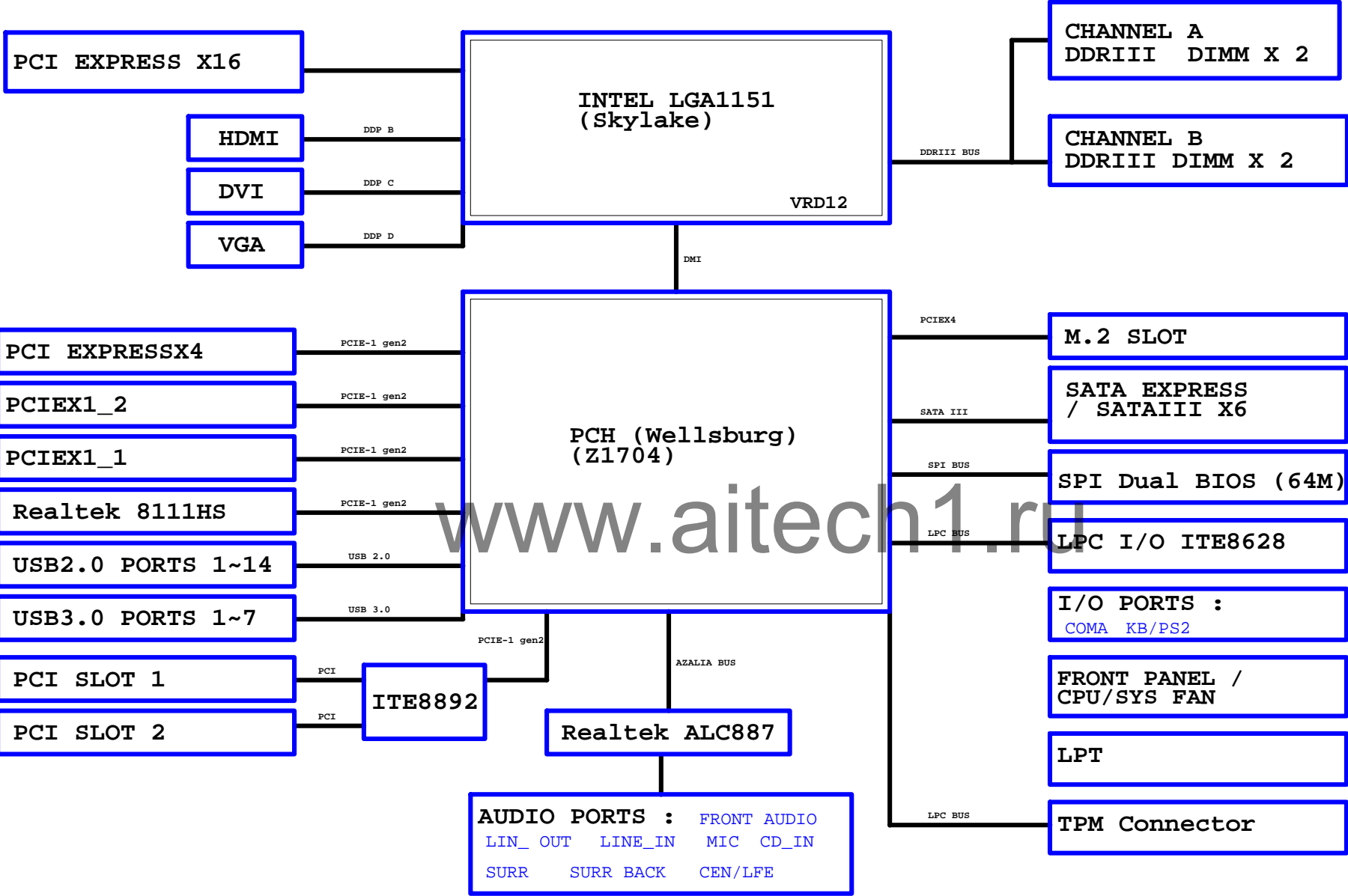


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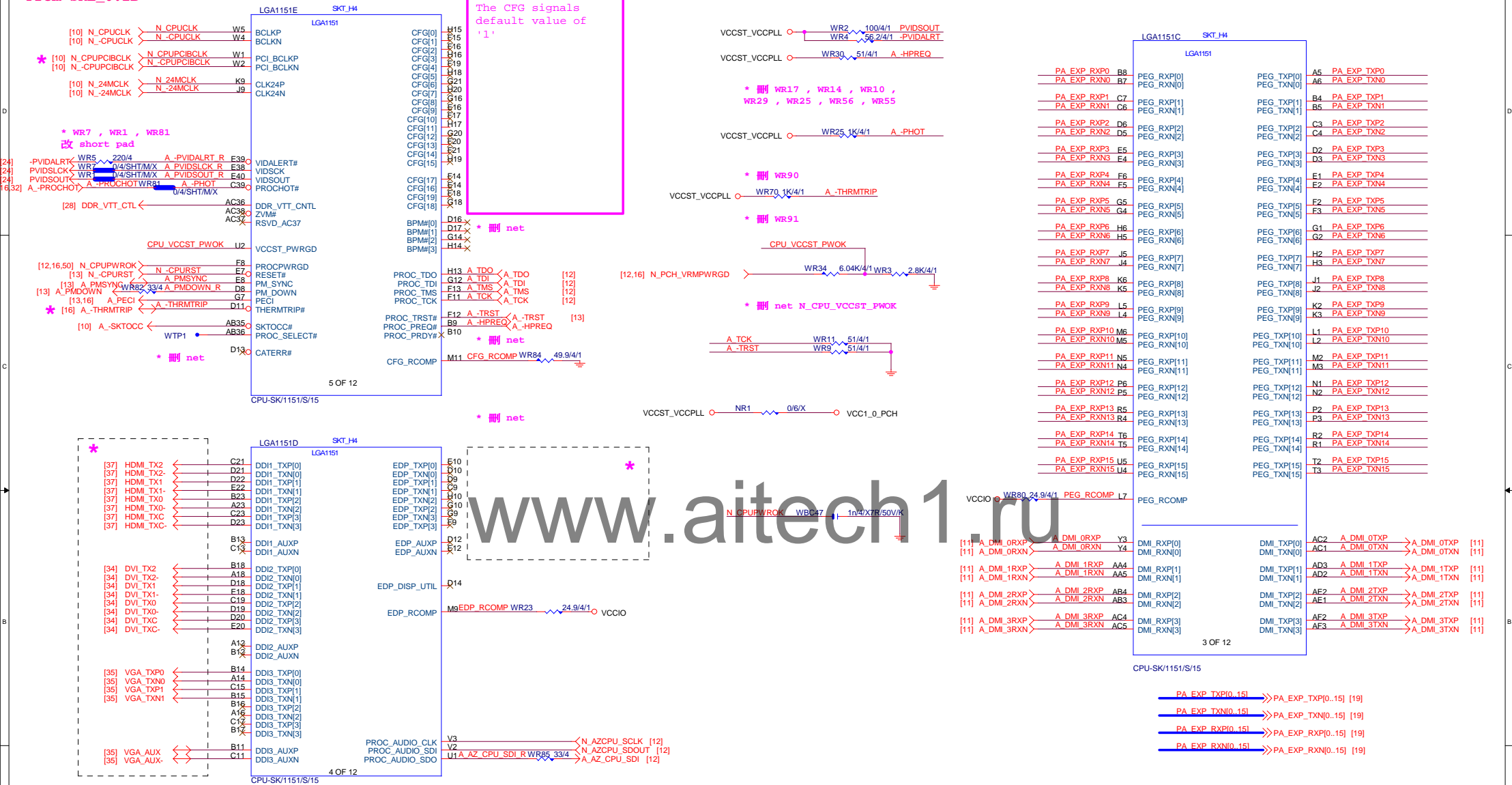
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Title		<b>Cover Sheet</b>	
Size Custom	Document Number	<b>GA-H170-HD3 DDR3</b>	
Date:	Tuesday, July 21, 2015	Sheet	1 of 51



BLOCK DIAGRAM

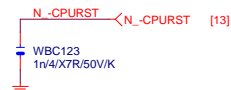


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**-CPURST**



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2x8	1	0	1
2x8 Reversed	1	0	0
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1x8+2x4 Reversed	0	0	0

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

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<p align="center"><b>CPU LGA1151-A</b></p>			
Size Custom	Document Number		Rev
<p align="center"><b>GA-H170-HD3 DDR3</b></p>		<p align="right"><b>1.0</b></p>	
Date	Tuesday, July 21, 2015	Sheet 4 of 51	

\* 改DDR net

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MDA0 AE38	DDR0_DQ[0]	DDR0_CKP[0]	AW18 M_DCLKA0 > M_DCLKA0 [8]
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MDA2 AG38	DDR0_DQ[2]	DDR0_CKP[1]	AW17 M_DCLKA1 > M_DCLKA1 [8]
MDA3 AG37	DDR0_DQ[3]	DDR0_CKN[1]	AW17 M_DCLKA1 > M_DCLKA1 [8]
MDA4 AE39	DDR0_DQ[4]	DDR0_CKP[2]	AW16 M_DCLKA2 > M_DCLKA2 [8]
MDA5 AE40	DDR0_DQ[5]	DDR0_CKN[2]	AW16 M_DCLKA2 > M_DCLKA2 [8]
MDA6 AG39	DDR0_DQ[6]	DDR0_CKP[3]	AV16 M_DCLKA3 > M_DCLKA3 [8]
MDA7 AG40	DDR0_DQ[7]	DDR0_CKN[3]	AV16 M_DCLKA3 > M_DCLKA3 [8]
MDA8 AJ38	DDR0_DQ[8]	DDR0_CKP[0]	AY24 CKEA0 > CKEA0 [8]
MDA9 AJ37	DDR0_DQ[9]	DDR0_CKE[0]	AY24 CKEA1 > CKEA1 [8]
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MDA11 AL37	DDR0_DQ[11]	DDR0_CKE[2]	AY25 CKEA3 > CKEA3 [8]
MDA12 AJ40	DDR0_DQ[12]	DDR0_CKE[3]	
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MDA20 AN39	DDR0_DQ[20]	DDR0_ODT[2]	AU10 MODT_A3 > MODT_A3 [8]
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MDA42 AT1	DDR0_DQ[42]	DDR0_ODT[0]	AV12 MAA12 > MAA12 [8]
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MDA44 AV3	DDR0_DQ[44]	DDR0_ODT[2]	AV22 MAA14 > MAA14 [8]
MDA45 AW4	DDR0_DQ[45]	DDR0_ODT[3]	AV22 MAA15 > MAA15 [8]
MDA46 AT4	DDR0_DQ[46]	DDR0_ODT[0]	
MDA47 AT3	DDR0_DQ[47]	DDR0_ODT[1]	
MDA48 AP2	DDR0_DQ[48]	DDR0_ODT[2]	
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MDA51 AM3	DDR0_DQ[51]	DDR0_ODT[1]	
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MDA56 AK3	DDR0_DQ[56]	DDR0_ODT[2]	
MDA57 AH1	DDR0_DQ[57]	DDR0_ODT[3]	
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DDR0\_ALERT#

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MDB1 AD35	DDR1_DQ[1]/DDR0_DQ[17]	DDR1_CKN[0]	AM21 M_DCLKB0 > M_DCLKB0 [9]
MDB2 AG35	DDR1_DQ[2]/DDR0_DQ[18]	DDR1_CKP[1]	AP22 M_DCLKB1 > M_DCLKB1 [9]
MDB3 AH35	DDR1_DQ[3]/DDR0_DQ[19]	DDR1_CKN[1]	AP21 M_DCLKB1 > M_DCLKB1 [9]
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MDB5 AE34	DDR1_DQ[5]/DDR0_DQ[21]	DDR1_CKN[2]	AN21 M_DCLKB2 > M_DCLKB2 [9]
MDB6 AG34	DDR1_DQ[6]/DDR0_DQ[22]	DDR1_CKP[3]	AP21 M_DCLKB3 > M_DCLKB3 [9]
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DDR1\_ALERT#

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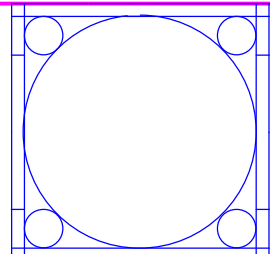
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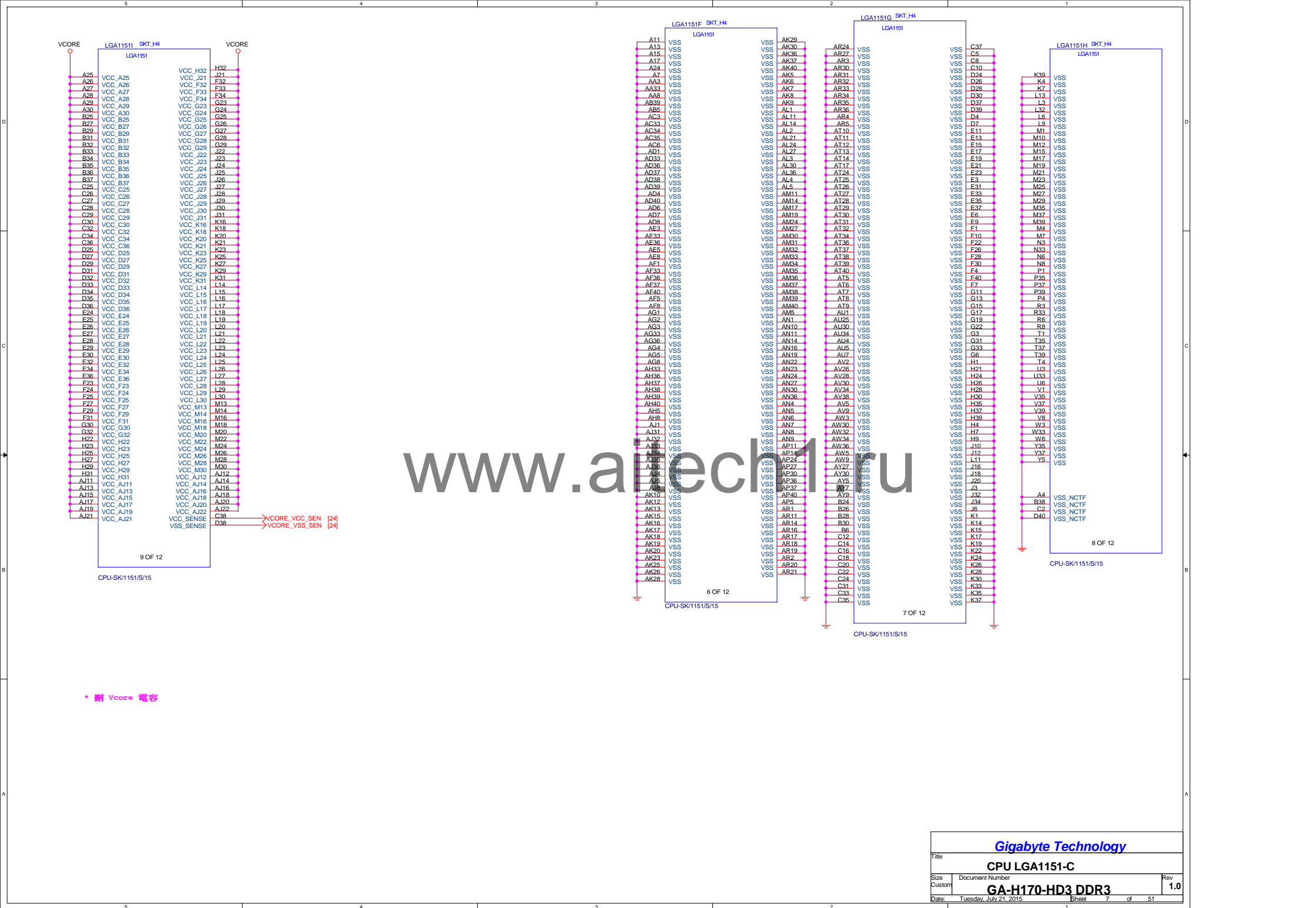
Gigabyte Technology		
Title		
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Size	Document Number	Rev
Custom	GA-H170-HD3 DDR3	1.0
Date:	Tuesday, July 21, 2015	Sheet 5 of 51

ILM\_BP\_CR/115X/NORMAL NI[12KRC-0F0001-52R]



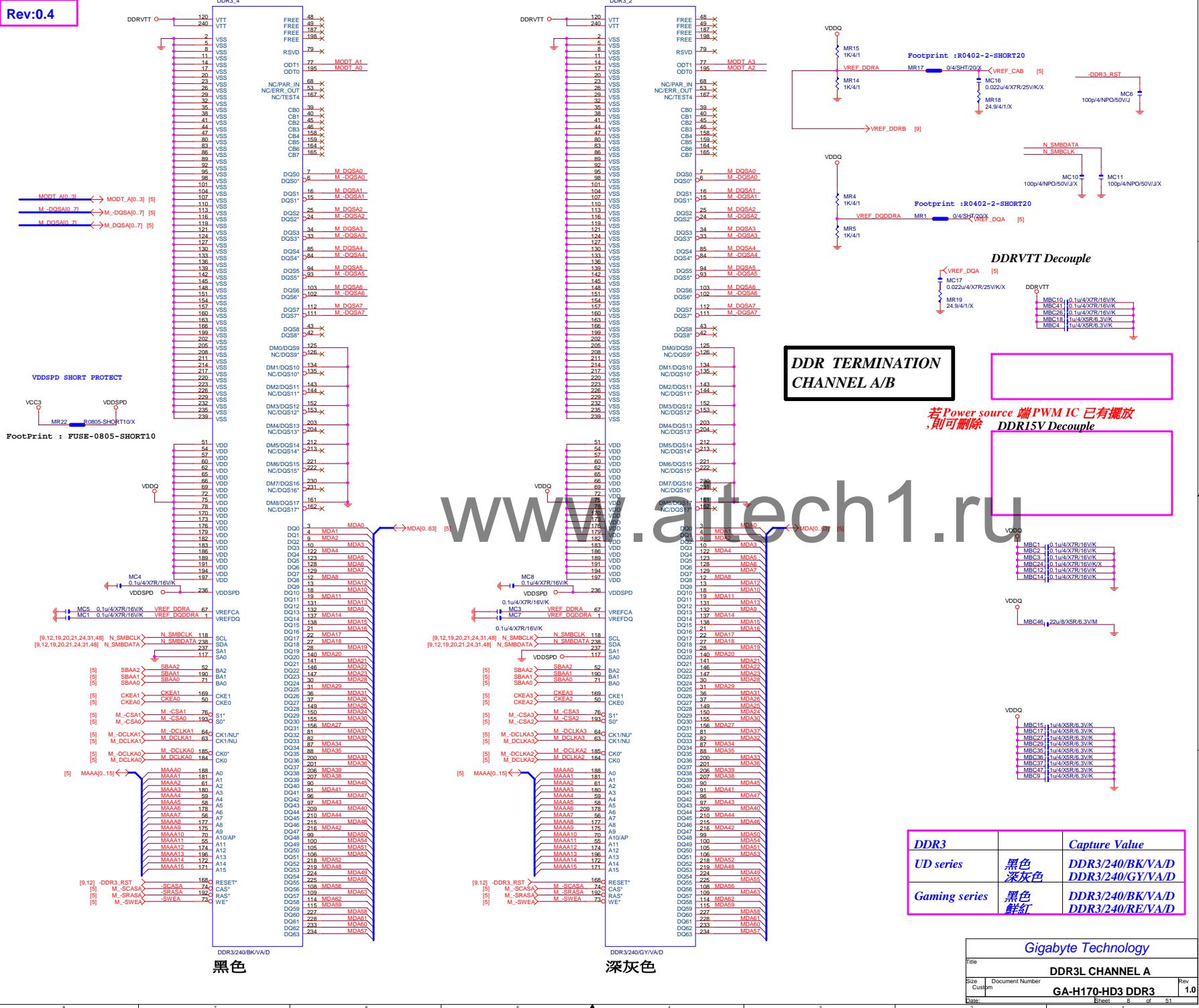
Need check the new CPU MB







Rev:0.4

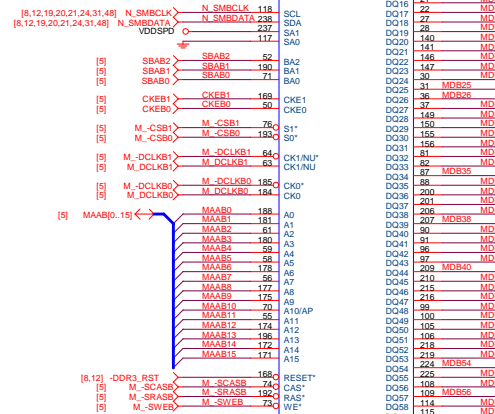


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UD series	黑色 深灰色	DDR3/240/BK/VA/D DDR3/240/GY/VA/D
Gaming series	黑色 鮮紅	DDR3/240/BK/VA/D DDR3/240/RE/VA/D

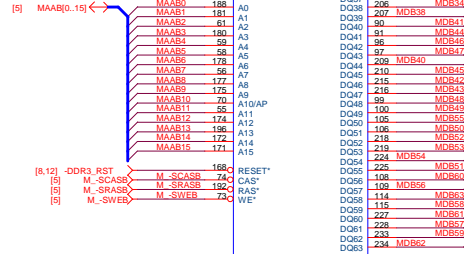
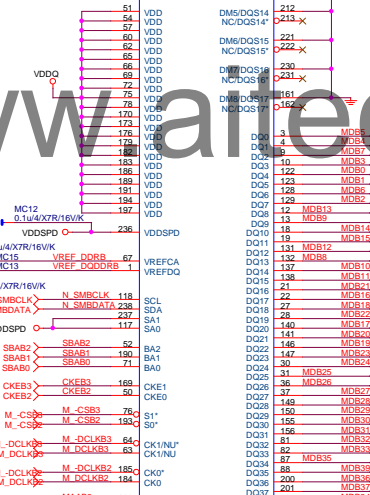
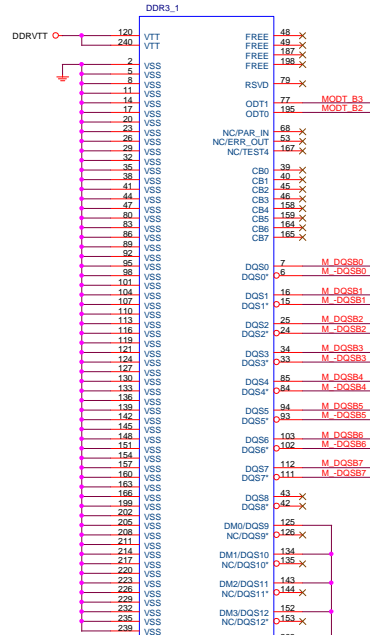
Gigabyte Technology		
Title	DDR3L CHANNEL A	
Size	Document Number	Rev
Custom	GA-H170-HD3 DDR3	1.0
Date	Sheet 8 of 51	



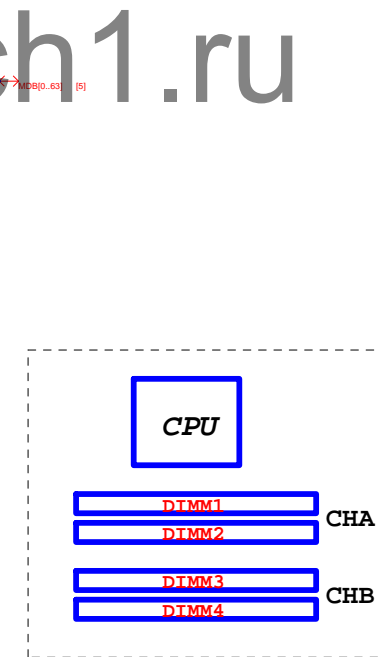
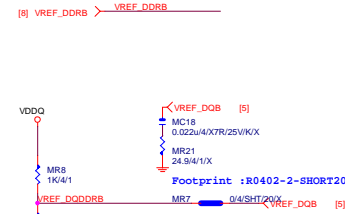
**Rev:0.4**




黑色



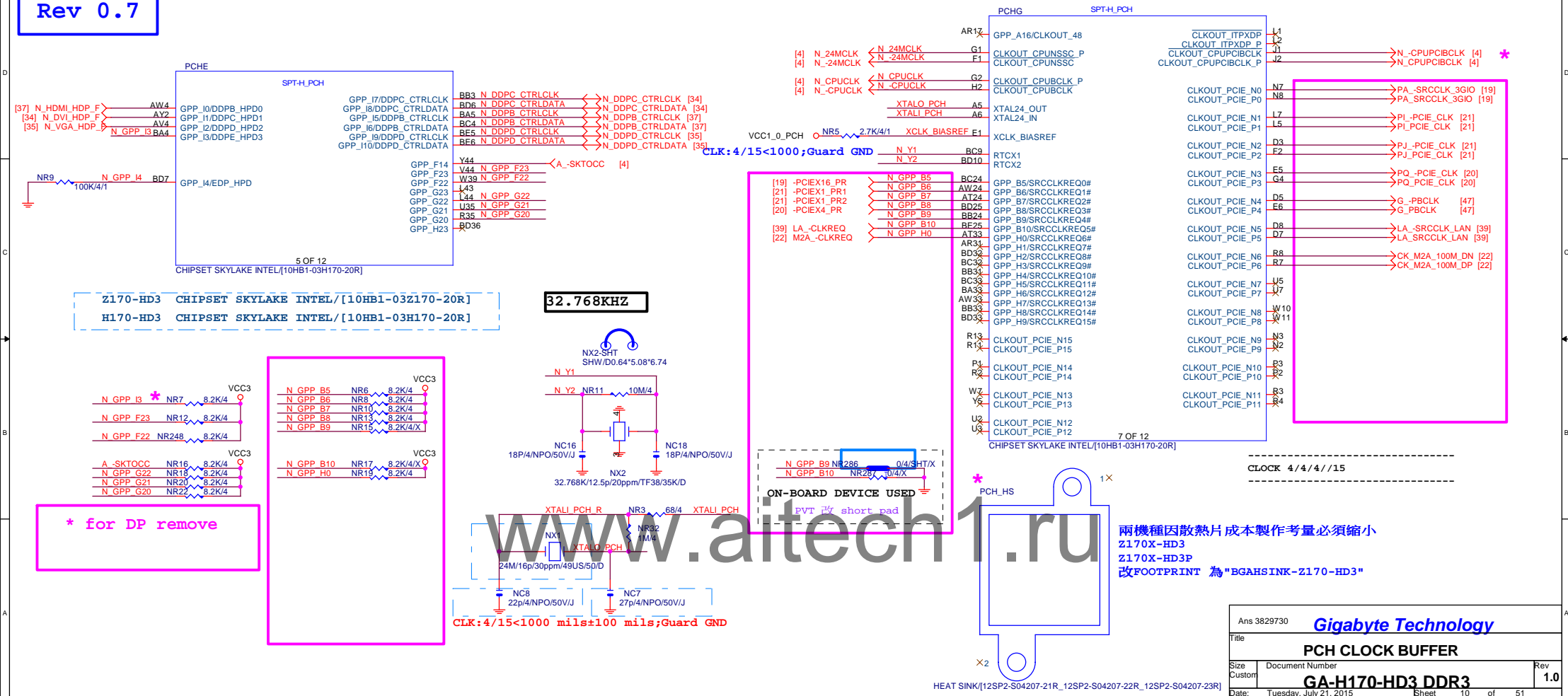
深灰色



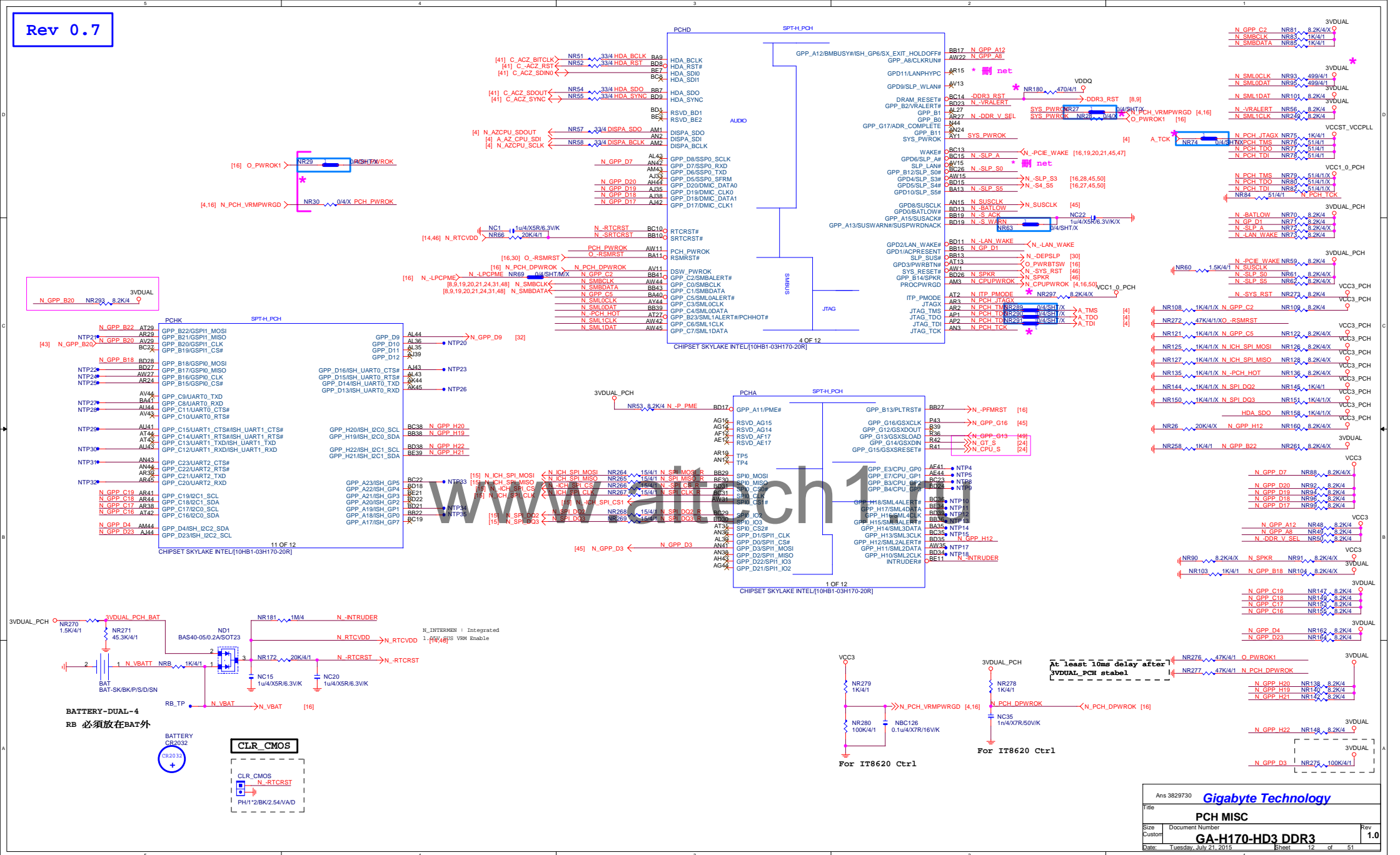
*Gigabyte Technology*

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Title			
DDR3L CHANNEL B			
Size	Document Number	Rev	
Custom	GA-H170-HD3 DDR3	1.0	
Date:	Sheet	9	of 51

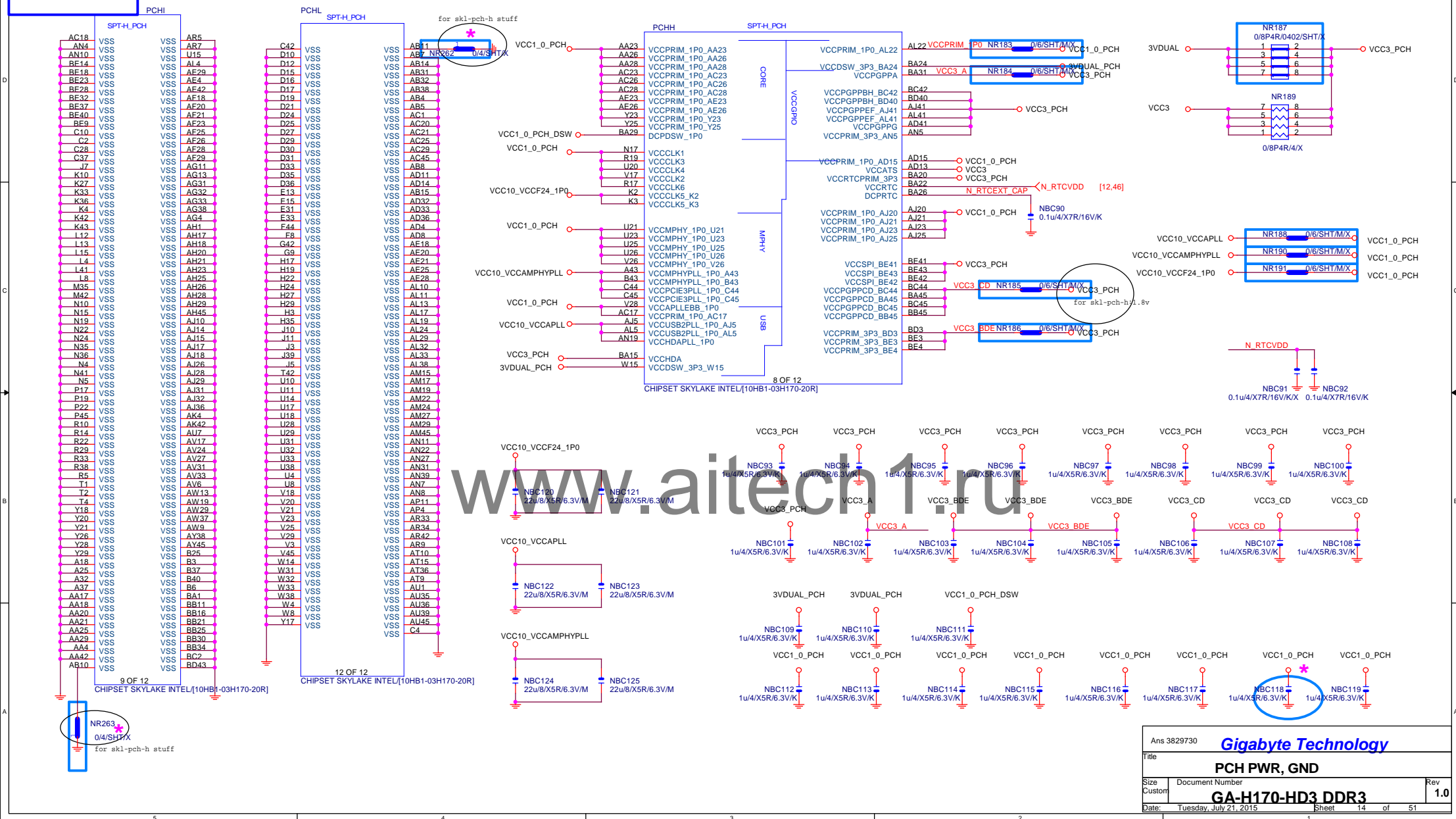
Rev 0.7











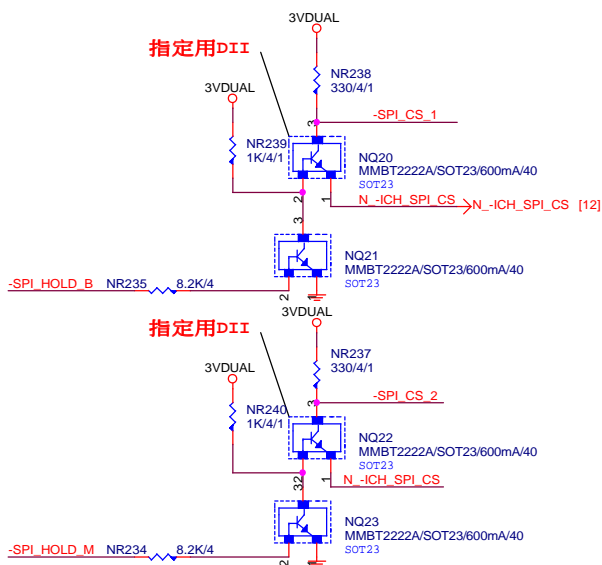


Rev 0.1

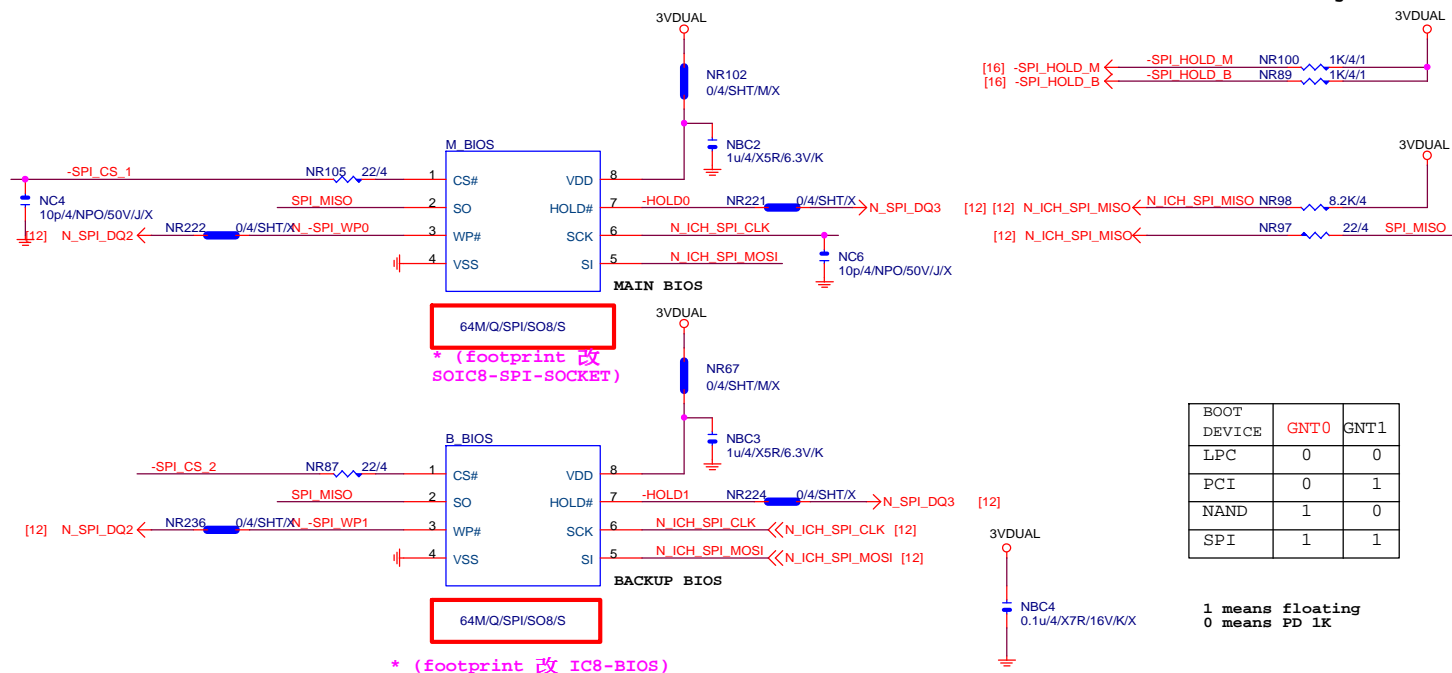
DUAL BIOS

MOSI For DMI RX Termination Voltage

指定用DII

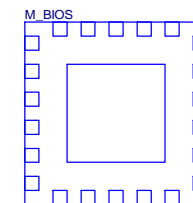


指定用DII



\* (footprint 改 IC8-BIOS)

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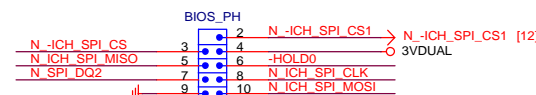
LCP/G-FL/1.27mm/200MIL/WHITE[10SL2-000008-31R]X

\* 試産先上, PVT 移除

BIOS\_PH

PVT

改FOOTPRINT 為"BIOS2X5-RH-1-MASK"

★Update  
2015-01.29

Footprint the same, confirmed by Graceing.

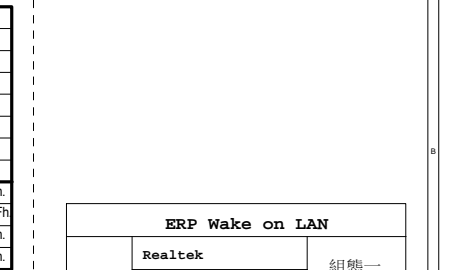
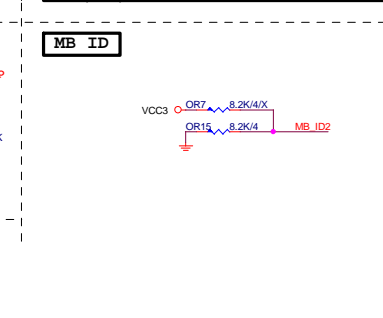
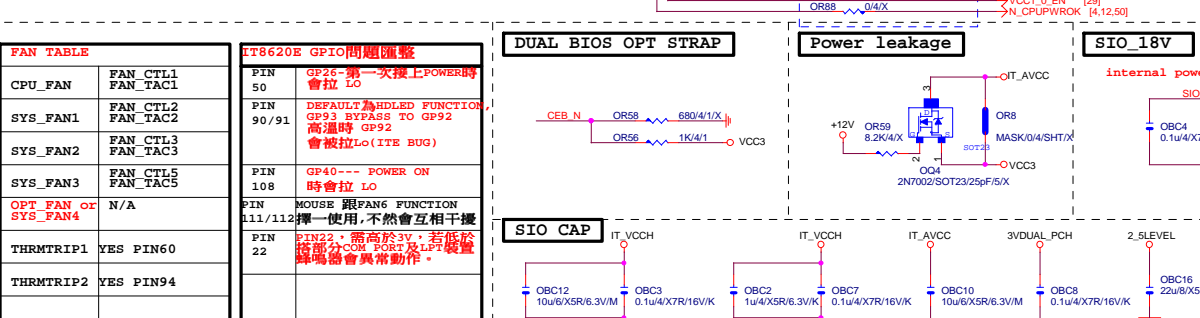
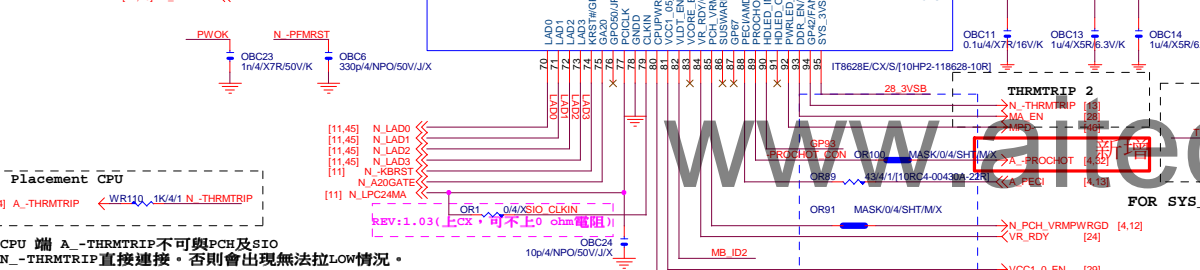
Use COM port pin header part.

\* 試産先上, PVT mask

Gigabyte Technology

Title			BIOS
Size	Document Number	GA-H170-HD3 DDR3	
Custom		Rev	1.0
Date:	Tuesday, July 21, 2015	Sheet	15 of 51



[illegible]

Single LAN	Atheros	組態二
	Intel 219	
Dual LAN	Atheros+Atheros	組態一
	Intel 219+Atheros	組態三
	Intel 219+Intel 210	
No Support ERP	BOM不上	N/A

## Gigabyte Technology

Title

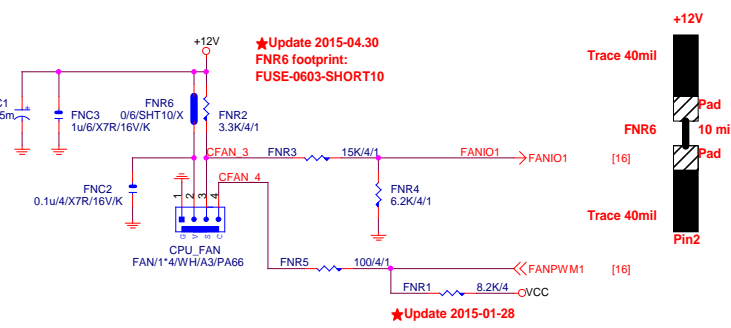
ITE 8628 LPC IO

Size	Document Number	Rev
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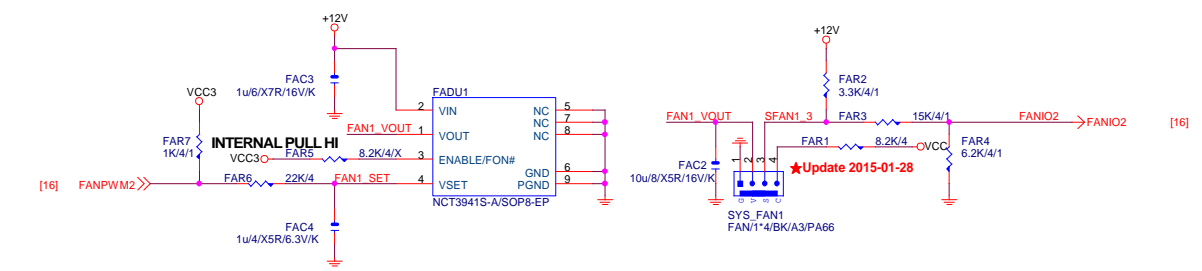
CPU SMART FAN

★Update 2015-04.02 FNEC1  
only for Z170/H170 series, B150  
or H110 don't keep footprint.



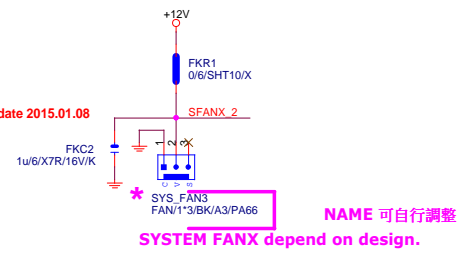
SYSTEM FAN1

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

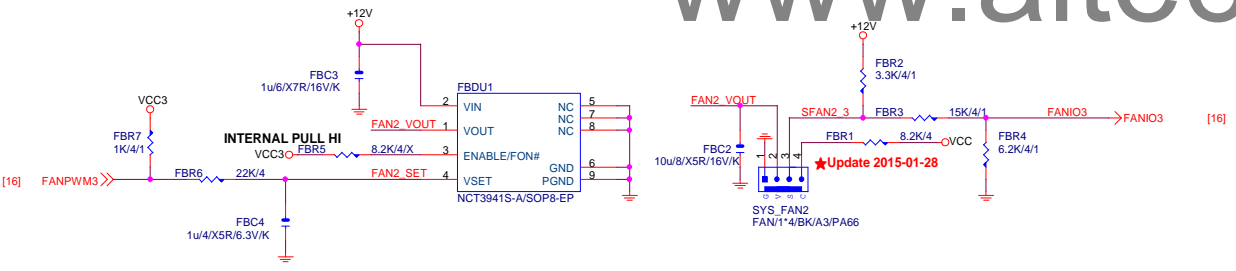


SYSTEM FANX

★Update 2015.01.08



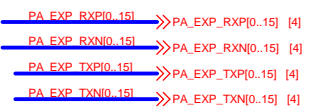
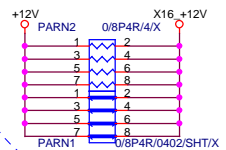
SYSTEM FAN2



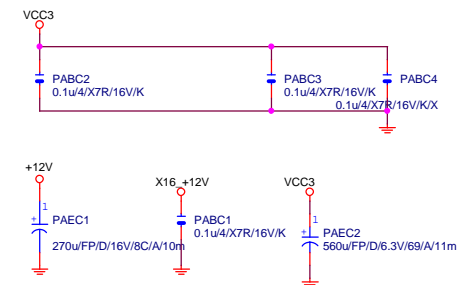
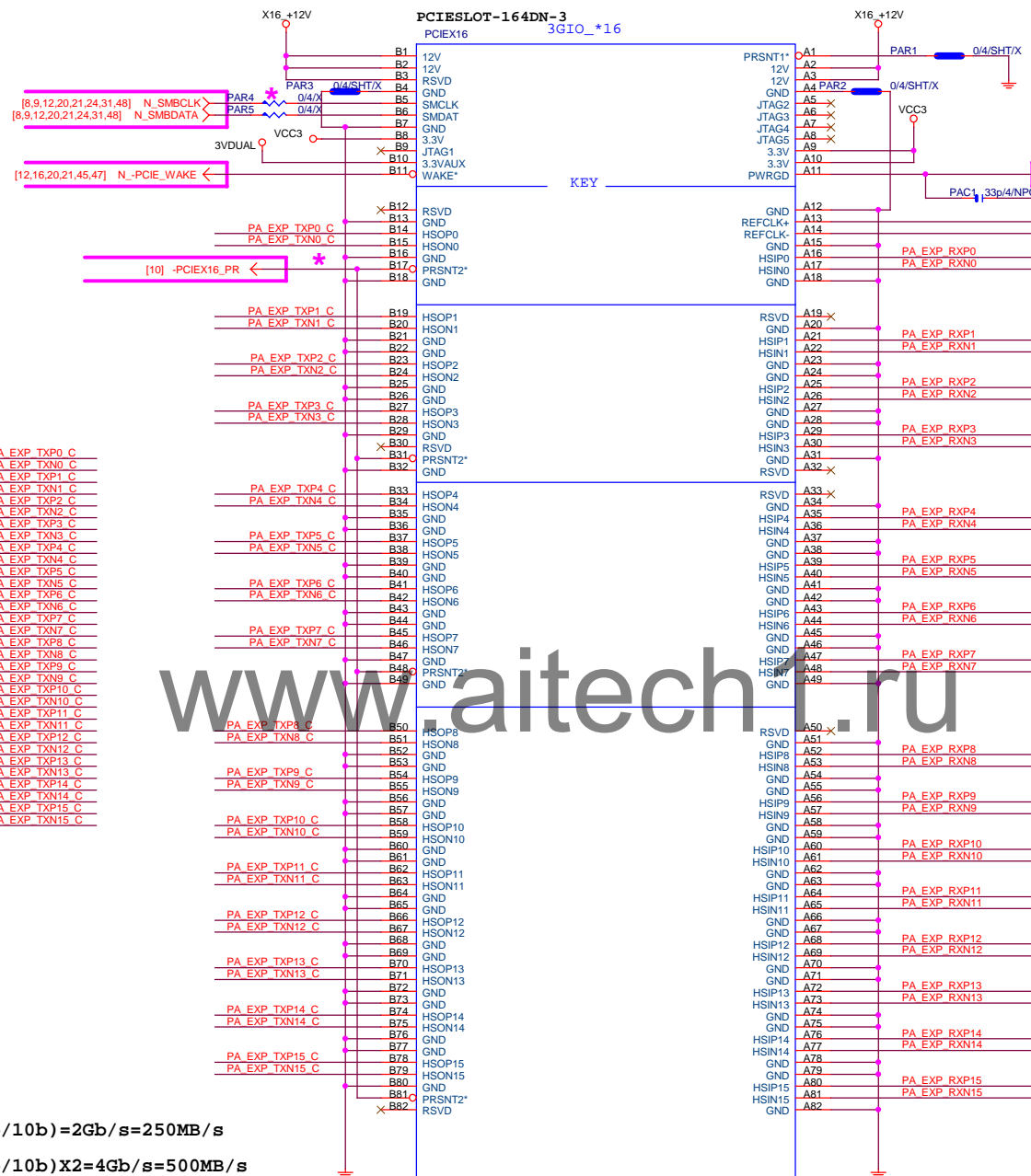
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Rev 0.1

```
/* +12 protect
short-wire test
```



PA EXP TXP0	PAC5	0.22u4/X5R6.3V/3K	PA EXP TXP0 C
PA EXP TXP0	PAC4	0.22u4/X5R6.3V/3K	PA EXP TXP0 C
PA EXP TXP1	PAC6	0.22u4/X5R6.3V/3K	PA EXP TXP1 C
PA EXP TXN1	PAC7	0.22u4/X5R6.3V/3K	PA EXP TXN1 C
PA EXP TXP2	PAC8	0.22u4/X5R6.3V/3K	PA EXP TXP2 C
PA EXP TXN2	PAC9	0.22u4/X5R6.3V/3K	PA EXP TXN2 C
PA EXP TXP3	PAC10	0.22u4/X5R6.3V/3K	PA EXP TXP3 C
PA EXP TXN3	PAC11	0.22u4/X5R6.3V/3K	PA EXP TXN3 C
PA EXP TXP4	PAC12	0.22u4/X5R6.3V/3K	PA EXP TXP4 C
PA EXP TXN4	PAC13	0.22u4/X5R6.3V/3K	PA EXP TXN4 C
PA EXP TXP5	PAC14	0.22u4/X5R6.3V/3K	PA EXP TXP5 C
PA EXP TXN5	PAC15	0.22u4/X5R6.3V/3K	PA EXP TXN5 C
PA EXP TXP6	PAC16	0.22u4/X5R6.3V/3K	PA EXP TXP6 C
PA EXP TXN6	PAC17	0.22u4/X5R6.3V/3K	PA EXP TXN6 C
PA EXP TXP7	PAC18	0.22u4/X5R6.3V/3K	PA EXP TXP7 C
PA EXP TXN7	PAC19	0.22u4/X5R6.3V/3K	PA EXP TXN7 C
PA EXP TXP8	PAC21	0.22u4/X5R6.3V/3K	PA EXP TXP8 C
PA EXP TXN8	PAC20	0.22u4/X5R6.3V/3K	PA EXP TXN8 C
PA EXP TXP9	PAC22	0.22u4/X5R6.3V/3K	PA EXP TXP9 C
PA EXP TXN9	PAC23	0.22u4/X5R6.3V/3K	PA EXP TXN9 C
PA EXP TXP10	PAC24	0.22u4/X5R6.3V/3K	PA EXP TXP10 C
PA EXP TXN10	PAC25	0.22u4/X5R6.3V/3K	PA EXP TXN10 C
PA EXP TXP11	PAC26	0.22u4/X5R6.3V/3K	PA EXP TXP11 C
PA EXP TXN11	PAC27	0.22u4/X5R6.3V/3K	PA EXP TXN11 C
PA EXP TXP12	PAC28	0.22u4/X5R6.3V/3K	PA EXP TXP12 C
PA EXP TXN12	PAC29	0.22u4/X5R6.3V/3K	PA EXP TXN12 C
PA EXP TXP13	PAC30	0.22u4/X5R6.3V/3K	PA EXP TXP13 C
PA EXP TXN13	PAC31	0.22u4/X5R6.3V/3K	PA EXP TXN13 C
PA EXP TXP14	PAC32	0.22u4/X5R6.3V/3K	PA EXP TXP14 C
PA EXP TXN14	PAC33	0.22u4/X5R6.3V/3K	PA EXP TXN14 C
PA EXP TXP15	PAC34	0.22u4/X5R6.3V/3K	PA EXP TXP15 C
PA EXP TXN15	PAC35	0.22u4/X5R6.3V/3K	PA EXP TXN15 C



PCIEX16:16/5/5/5/16

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

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

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

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

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

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

PCI-E/16X-164P/GY/LONG DOUBLE/HK\*2

## PCIEX16需更新無強化孔的Footprint

一般Footprint :PCIESLOT-164P

**Gigabyte Technology**

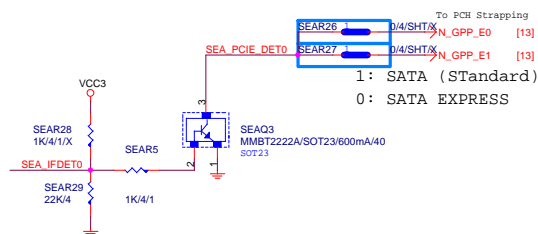
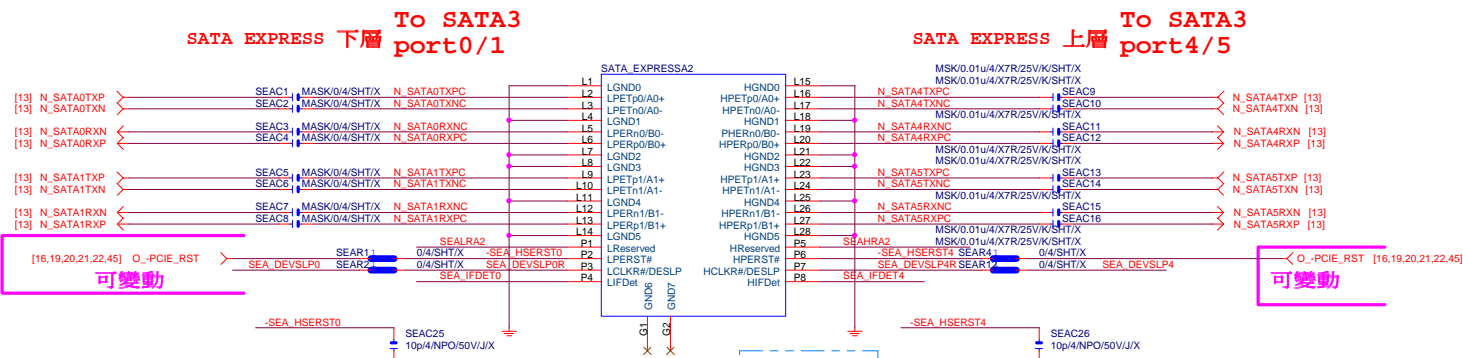
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PCI EXPRESS * 16			
Size	Document Number		Rev
Custom	GA-H170-HD3 DDR3		1.
Date:	Tuesday, July 21, 2015	Sheet	19 of 51









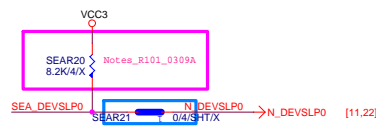
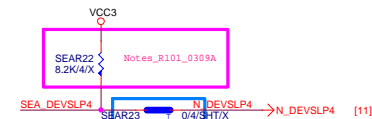


SATA EXPRESS料號

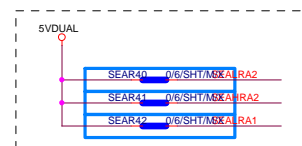
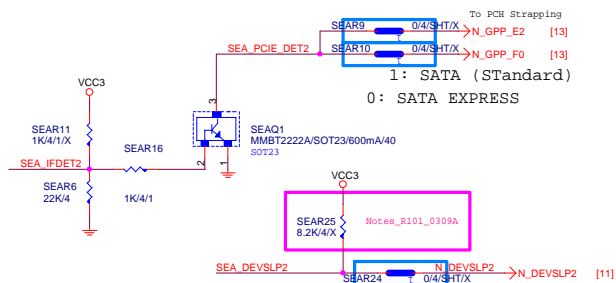
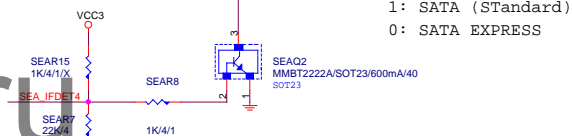
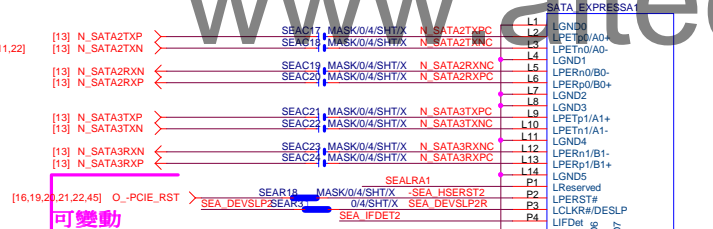
雙層:11NR6-C10236-11R

單層+2SATA : 11NR6-C10232-11R

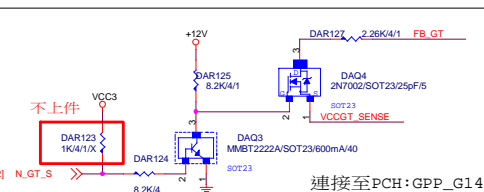
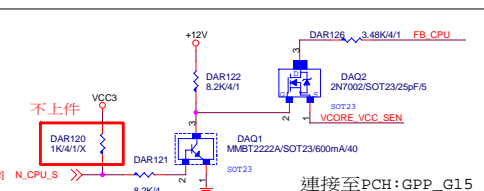
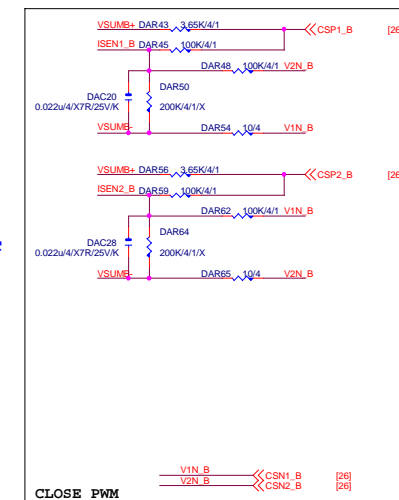
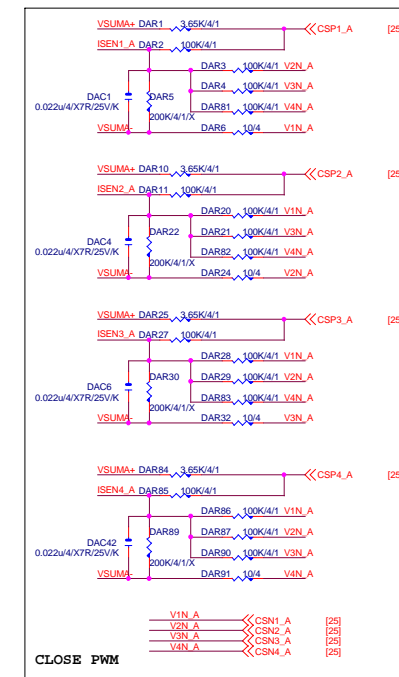
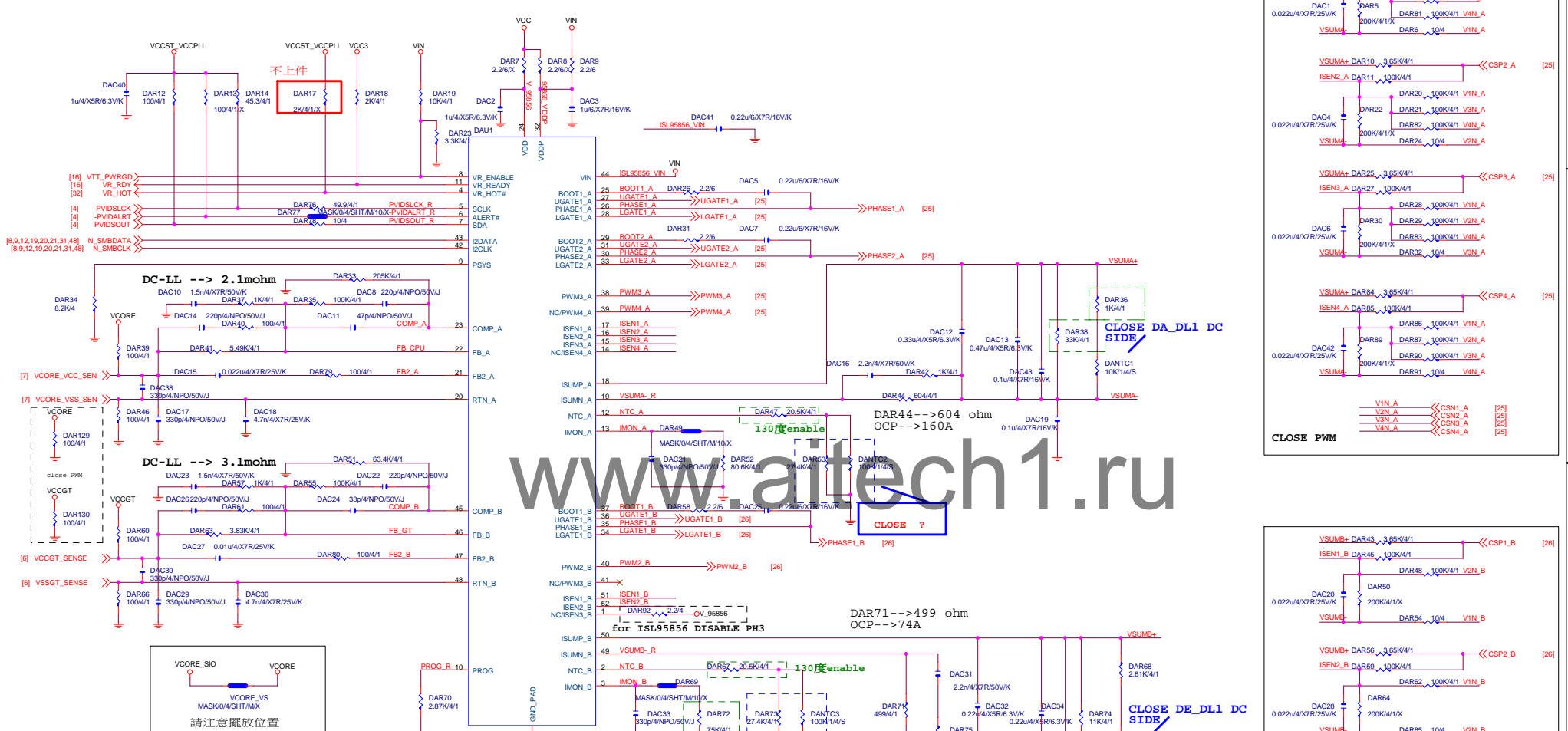
單層:11NR6-C10118-31R



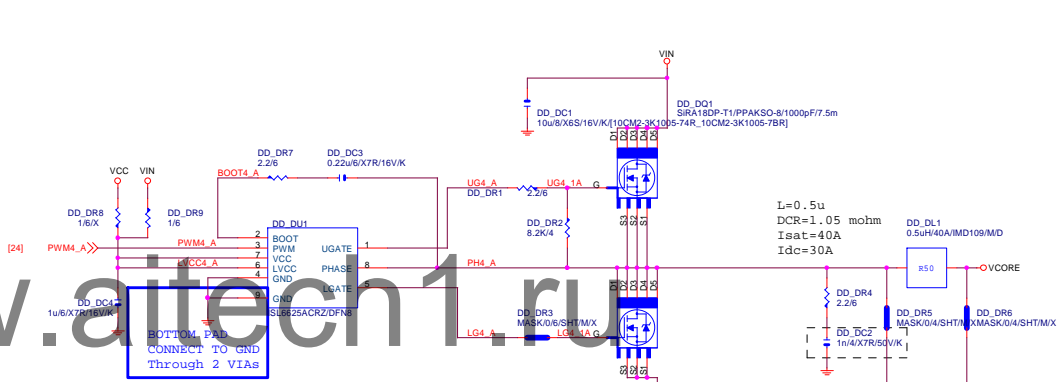
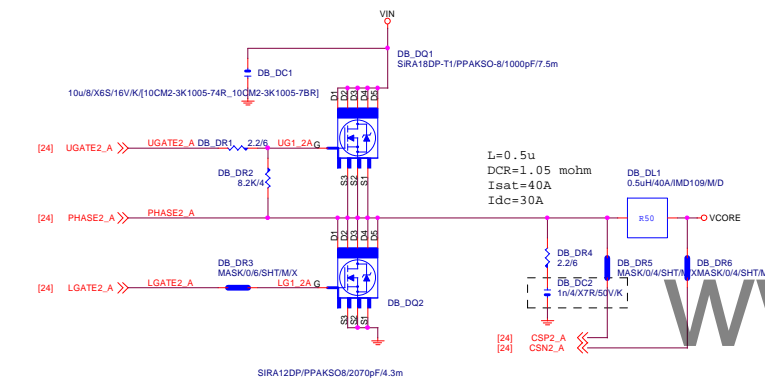
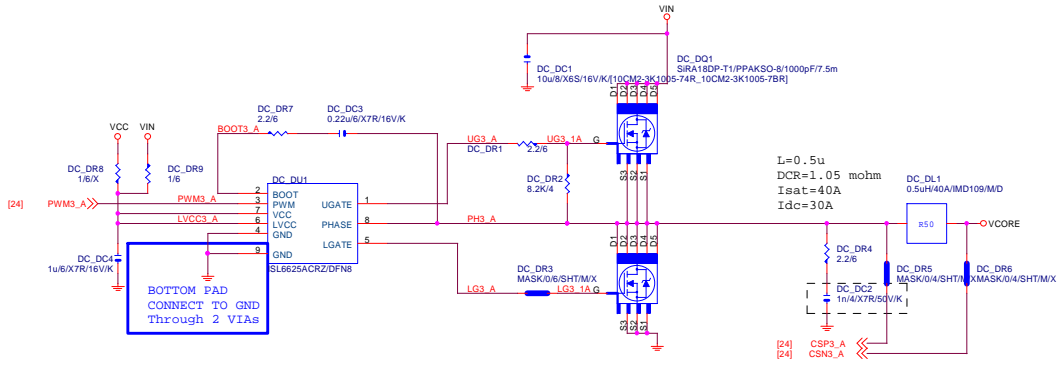
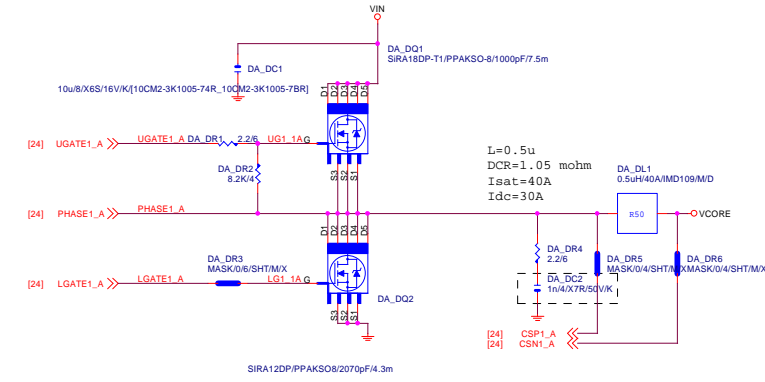
To SATA3  
port 2/3



SATA 5	(文字面寫SATA 1)
SATA 4	(文字面寫SATA 0)
SATA 3	
SATA 2	
SATA 1	(文字面寫SATA 5)
SATA 0	(文字面寫SATA 4)

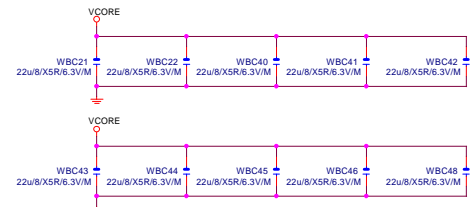
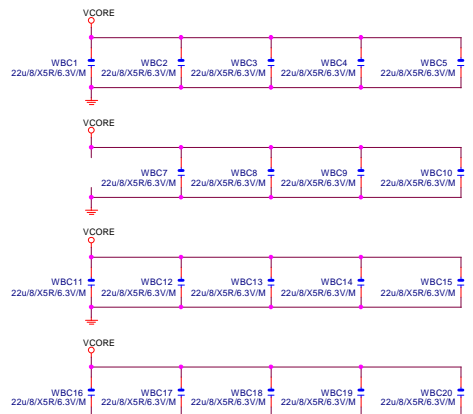
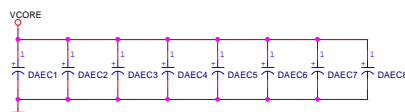


VCORE



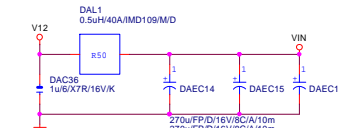
VCORE CAP

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



VIN CAP

270u\*3PCS

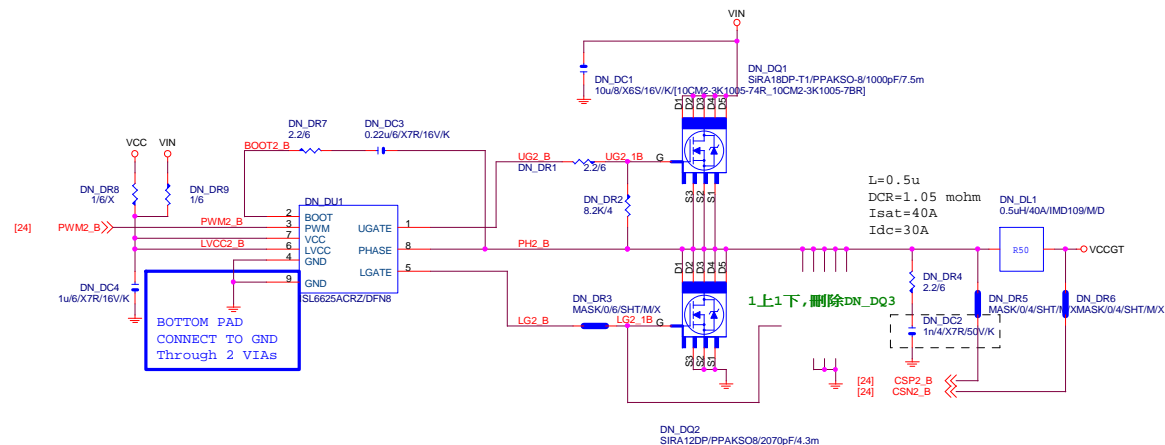
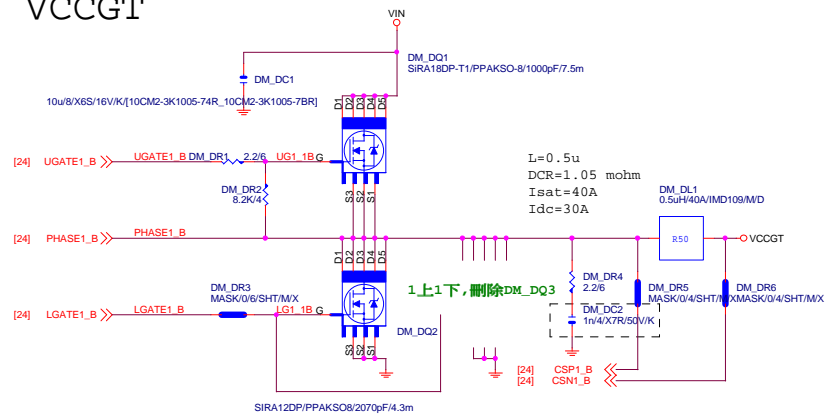


\*改台系固態電容

\*改台系固態電容

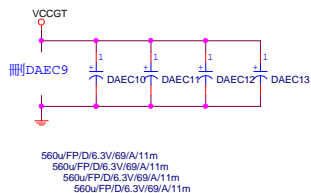
GIGABYTE™		
ISL95856_MOS		
Size	Document Number	Rev
Custom	GA-H170-HD3 DDR3	1.0
Date:	Tuesday, July 21, 2015	Sheet 25 of 51

# VCCGT



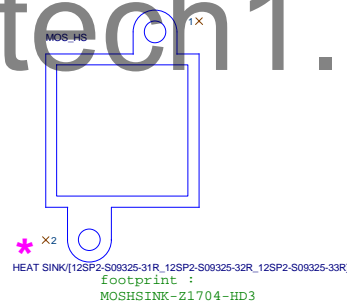
## VCCGT CAP

560u\*5PCS  
22u\*15PCS



\*改台系固態電容

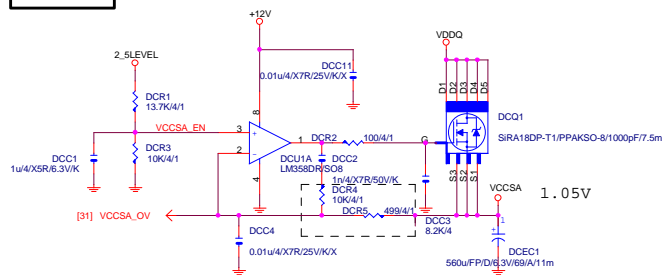
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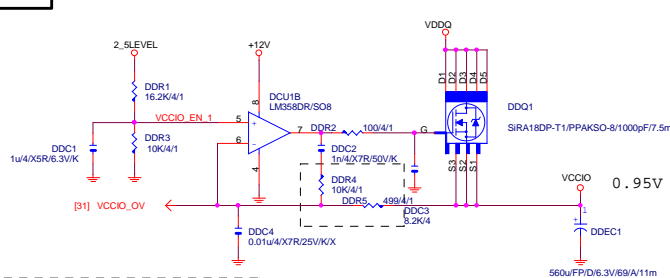
GIGABYTE™			
Title			
ISL95856_MOS			
Size	Document Number	Rev	
Custom	GA-H170-HD3 DDR3	1.0	
Date:	Tuesday, July 21, 2015	Sheet	26 of 51

REV:0.1

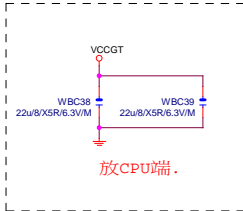
VCCSA



VCCIO

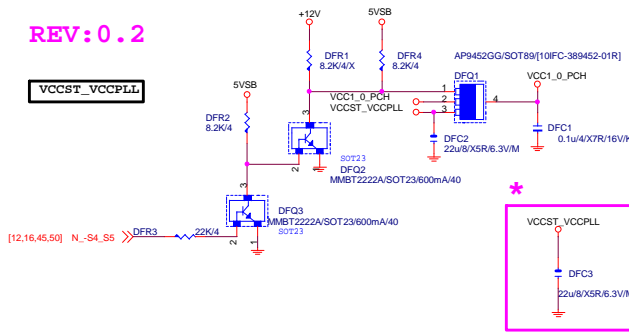


Connect to IT8620



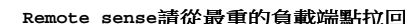
REV:0.2

VCCST\_VCCPLL



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## DDR3



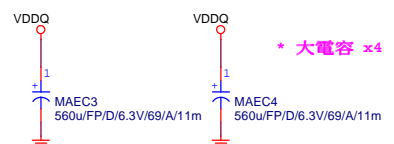
PWR	SEQ
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**DDRVTT**

DDR_VTT_CTL	MAR110	0/4	DDRVTT_EN
N -SLP_S3	MAR111	0/4	DDRVTT_BOOT

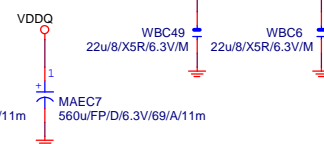
MAU1上NCT3103S時上件

DDR CAP 560u\*4PCS



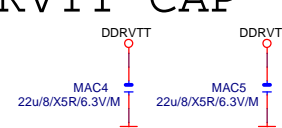
\* 大電容 x4

22u\*2PCS



\* 大電容 x(

DDRVTT CAP



# GIGABYTE™

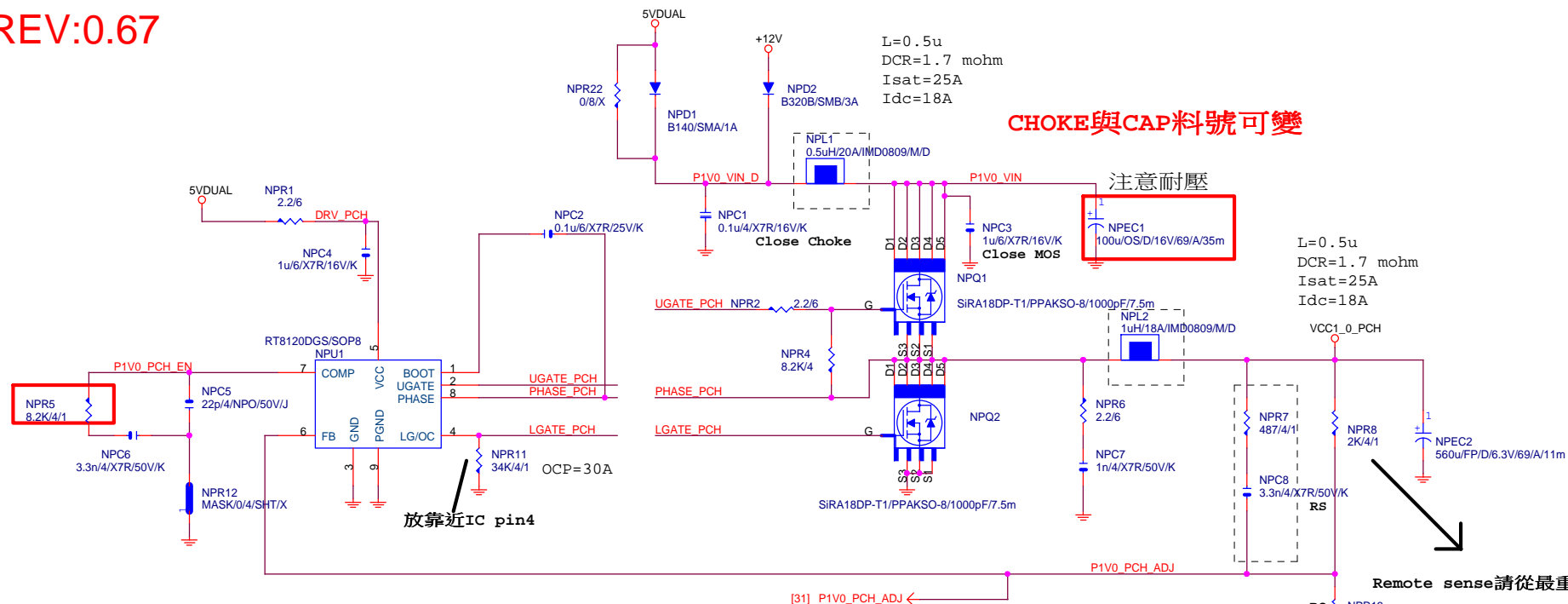
Title	RT8120 DDR4 POWER
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Size	Document Number
Custom	GA-H170-HD3 DDR3

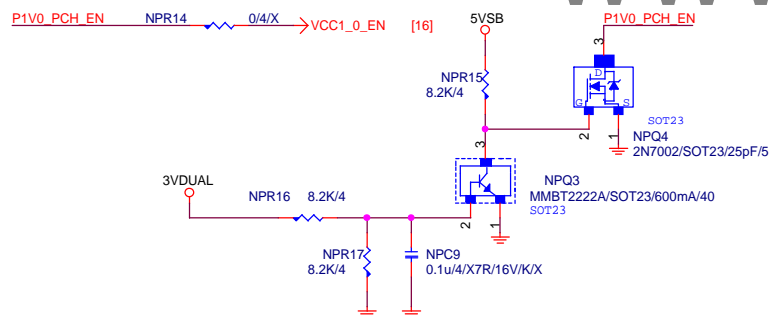
Rev	1.0
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Date: Tuesday, July 21, 2015 Sheet 28 of 51

REV:0.67



PWR\_SEQ



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GIGABYTE™

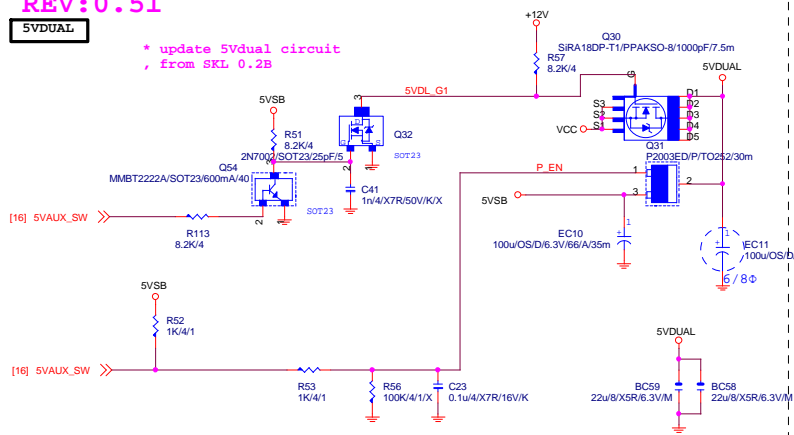
Title		
RT8120_PCH POWER		
Size	Document Number	Rev
Custom	GA-H170-HD3 DDR3	1.0
Date:	Tuesday, July 21, 2015	Sheet 29 of 51



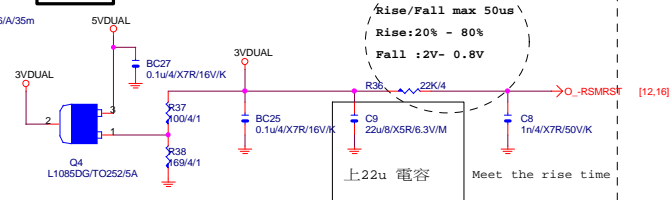
REV:0.51

5VDUAL

\* update 5Vdual circuit  
from SKL 0.2B



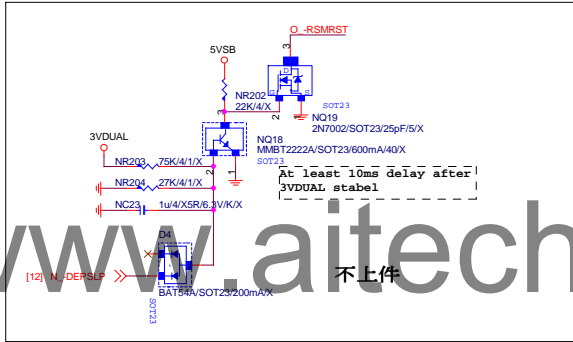
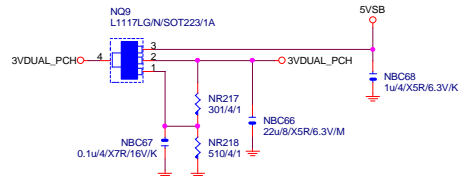
3VDUAL



Rise/Fall max 50us  
Rise:20% - 80%  
Fall :2V- 0.8V

上22u 电容  
Meet the rise time

3VDUAL\_PCH



At least 10ms delay after  
3VDUAL stabel

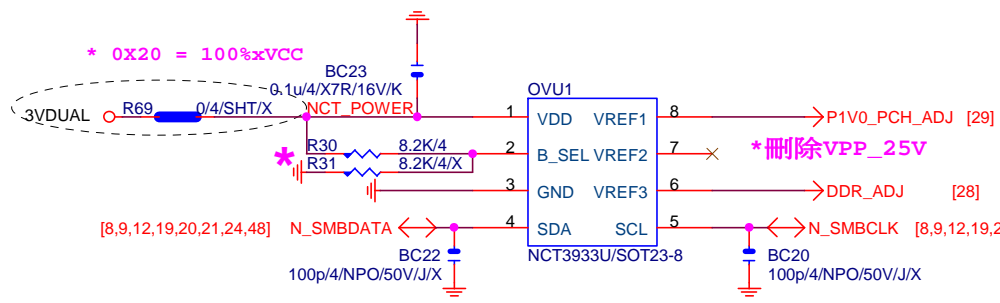
www.aitech1.ru

不上件

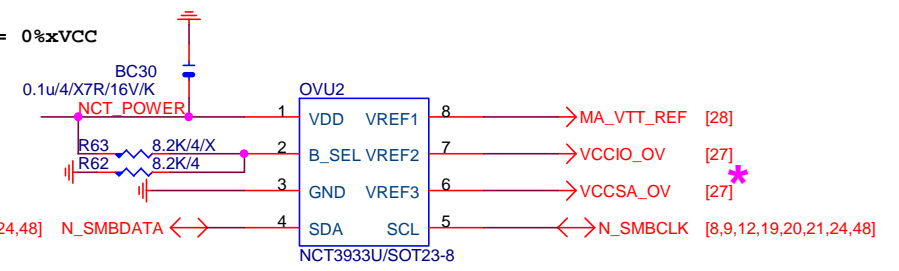
Gigabyte Technology

Title			
DISCRETE POWER			
Size	Document Number	GA-H170-HD3 DDR3	Rev
Custom			1.0
Date:	Tuesday, July 21, 2015	Sheet	30 of 51

OVER VOLTAGE



0X2A = 0%xVCC



0X22 = 75%xVCC

\* 删除 OVU3

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

**Gigabyte Technology**

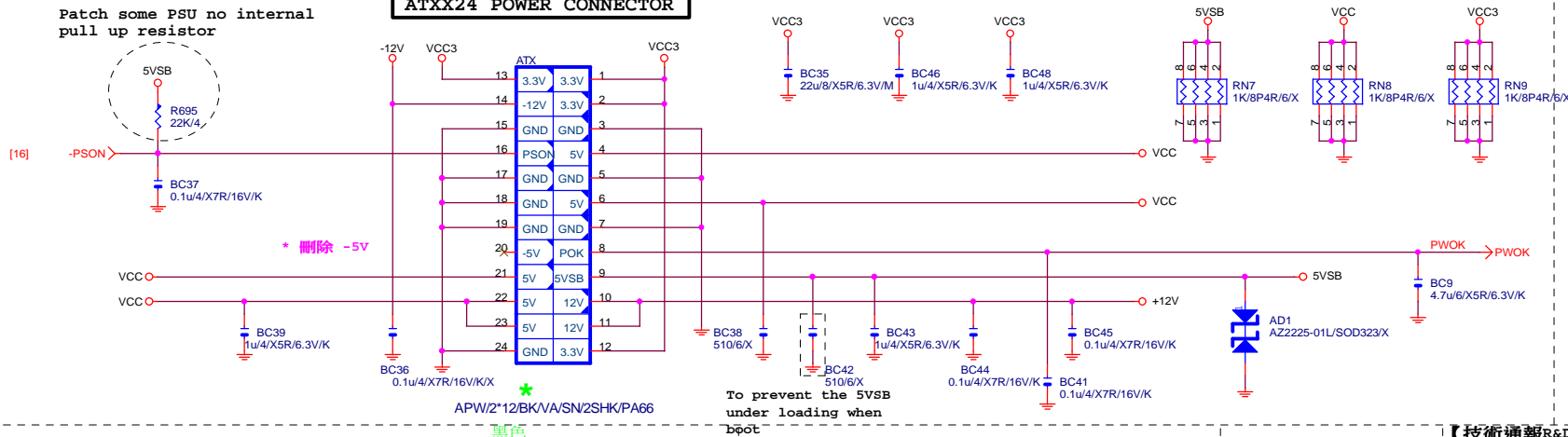
Title: CPU CORE VR-2

Size: Custom Document Number: GA-H170-HD3 DDR3 Rev 1.0

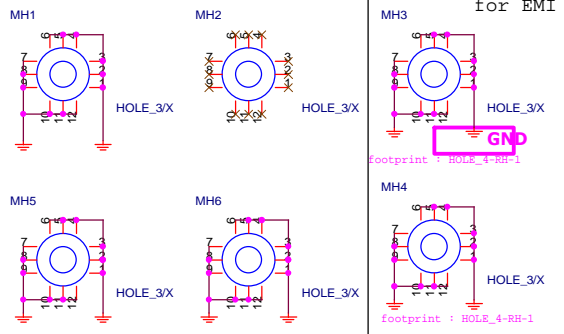
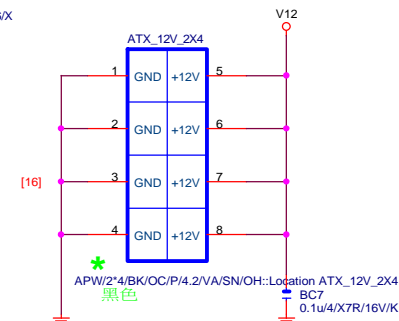
Date: Tuesday, July 21, 2015 Sheet 31 of 51

Patch some PSU no internal pull up resistor

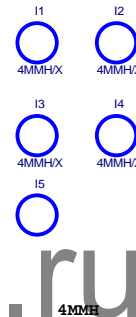
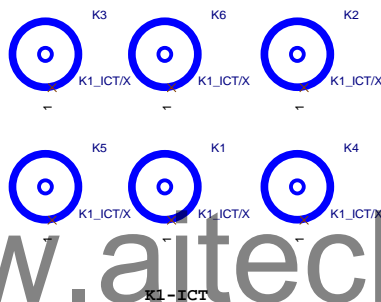
# ATXX24 POWER CONNECTOR



# ATXX4 POWER CONNECTOR

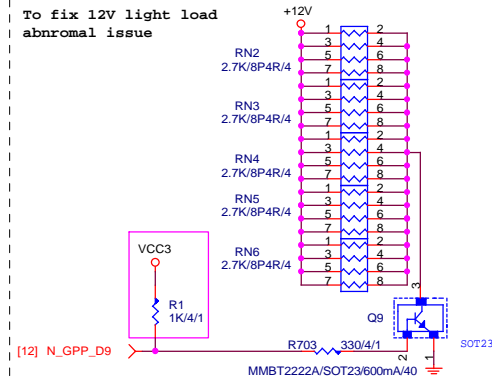


沒有TYPE-C螺絲洞改整圈, footprint :HOLE\_4-RH-1



# 【技術通報R&D技術通報153】

To fix 12V light load abnormal issue



# -PROHOT



# COUPON



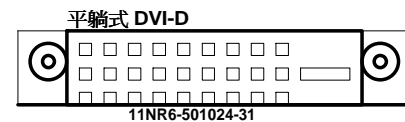
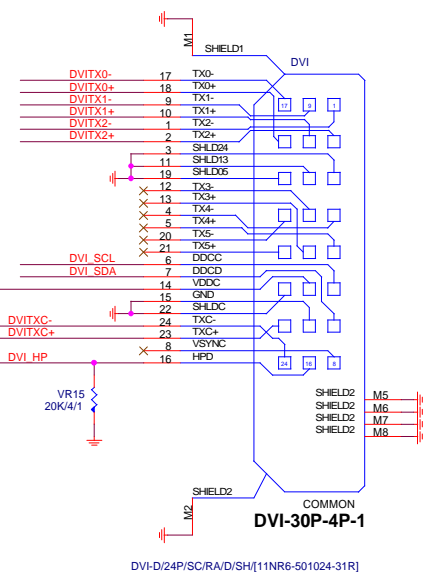
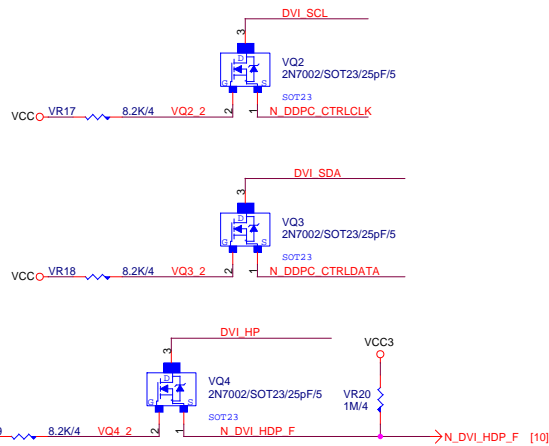
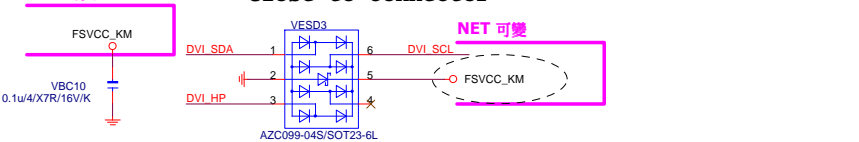
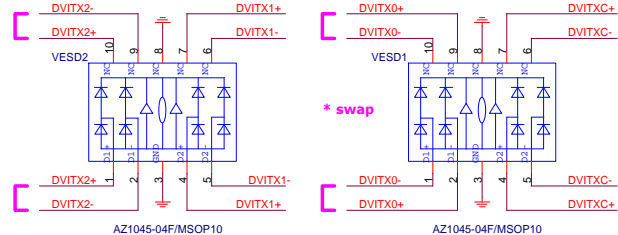
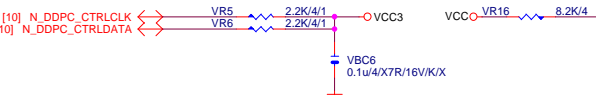
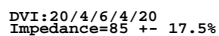
# Gigabyte Technology

Title			
ATX POWER CONNECTOR			
Size	Document Number	GA-H170-HD3 DDR3	
Custom			Rev 1.0
Date:	Tuesday, July 21, 2015	Sheet	32 of 51



USB\_DAC

[www.aitech1.ru](http://www.aitech1.ru)



PTN3356 R1.08

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

FLASH PART:

PTN3356F1BS/[10HQ5-A23356-20R]

省X'TAL COST DOWN:

1. 上件:

DVC28 [10p/4/NPO/50V/J]

DVC11 [10p/4/NPO/50V/J]~修改值

DVR10 [8.2K/4]

2. 删除:

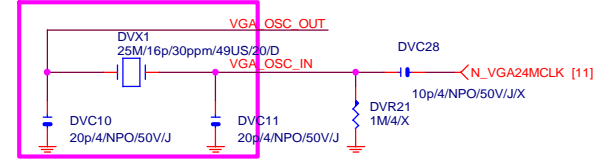
DVX1 [25M/16p/30ppm/49US/20/D]

DVC10 [20p/4/NPO/50V/J]

DVR9 [8.2K/4]

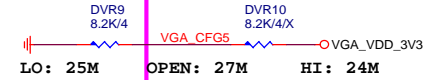
25M Crystal

FROM PCH 24MHZ ISSUE

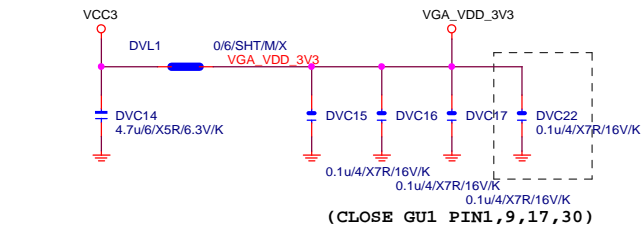


CFG5

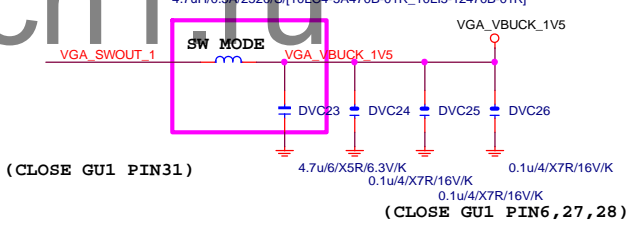
For Crystal Less



ADAPTER POWER

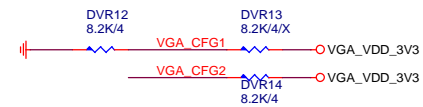


LDO MODE: DVL2, DVC23-->X  
S.W MODE: DVL2, DVC23-->O

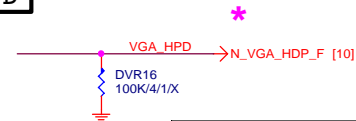


CFG1&2

Non-Compliant



HPD

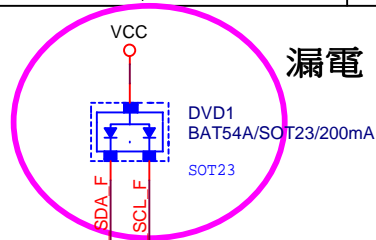


Gigabyte Technology  
NXP-PTN3356

Title	Document Number	Rev
Size	GA-H170-HD3 DDR3	1.0
Custom		
Date:	Tuesday, July 21, 2015	Sheet 35 of 51

放置PCH端





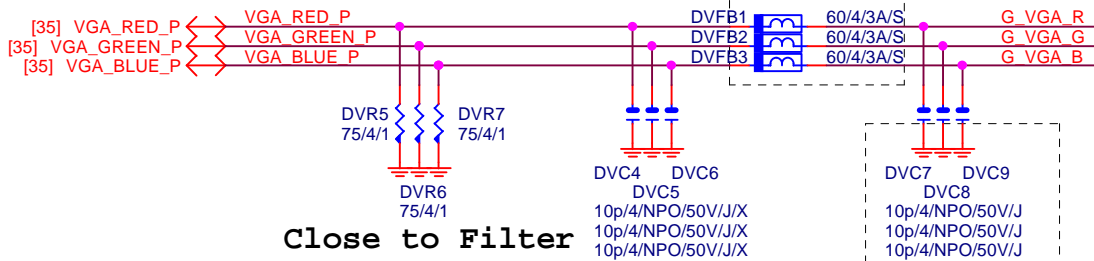
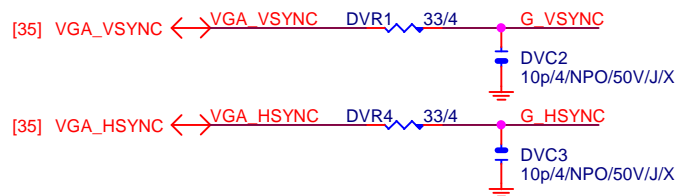
漏電

DVR2 2.2K/4/1

DVR3 2.2K/4/1

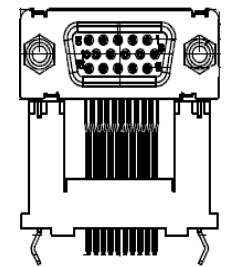
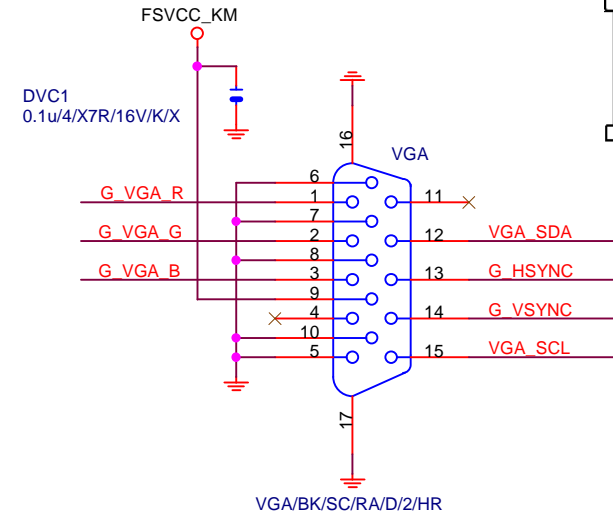
[35] VGA\_SDA

[35] VGA\_SCL

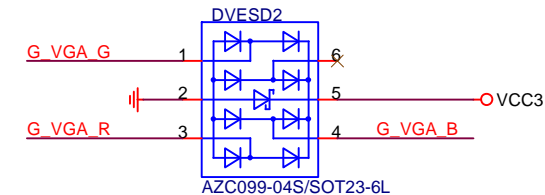
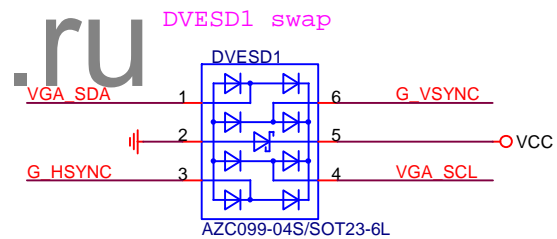


Close to Filter

FOR EMI

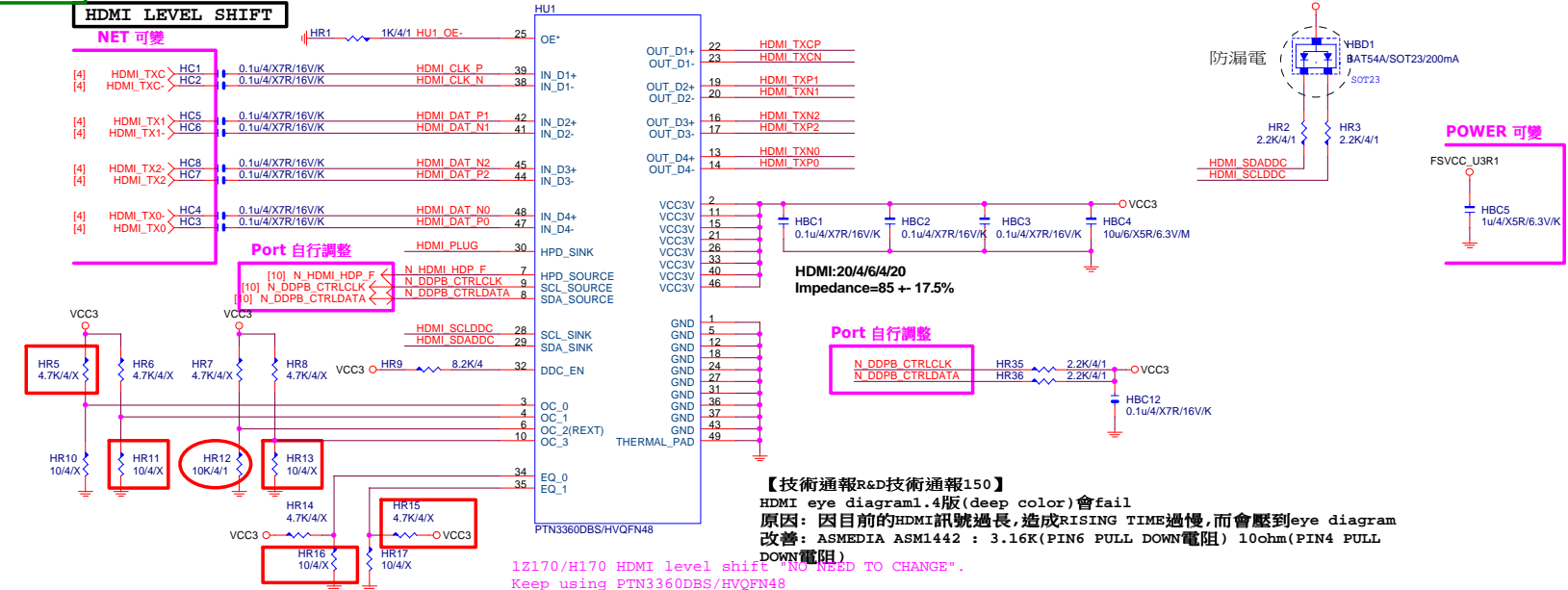


www.aitech1.ru



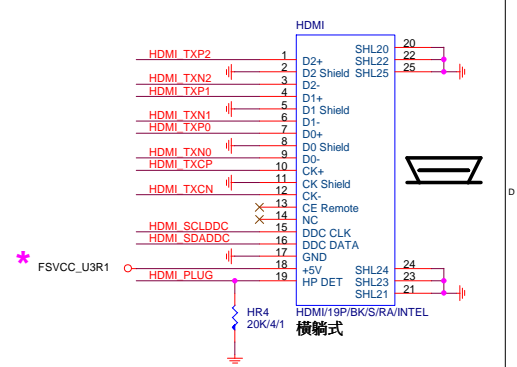
Gigabyte Technology			
NXP-PTN3356			
Title			
Size	Document Number	GA-H170-HD3 DDR3	
Custom			Rev 1.0
Date:	Tuesday, July 21, 2015	Sheet 36	of 51





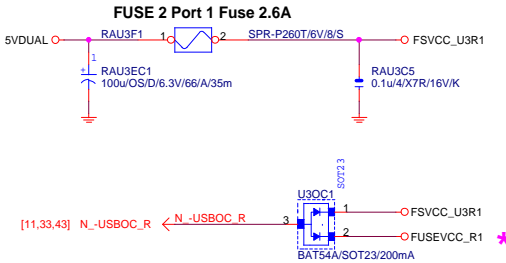
PTN3360:PIN 4/10/34/35 NC PIN,都不上值;只上HR12:10K  
ASM1442:紅色框要上,HR12:3.16K

【技術通報R&D技術通報150】  
HDMI eye diagram1.4版(deep color)會fail  
原因: 因目前的HDMI訊號過長,造成RISING TIME過慢,而會壓到eye diagram  
改善: ASMEDIA ASM1442 : 3.16K(PIN6 PULL DOWN電阻) 10ohm(PIN4 PULL DOWN電阻)  
1Z170/H170 HDMI level shift "NO NEED TO CHANGE".  
Keep using PTN3360DBS/HVQFN48



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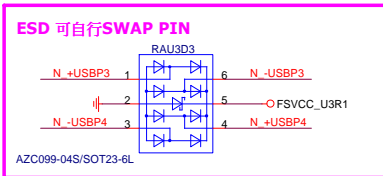
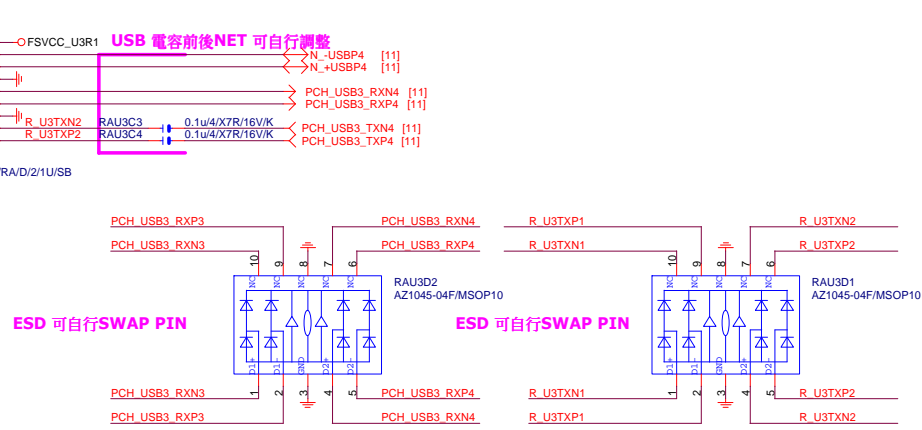
R\_USB30\_1



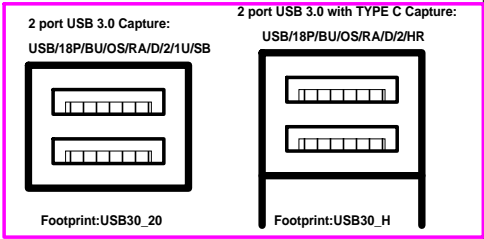
R\_USB30\_2

KB\_MS\_USB3

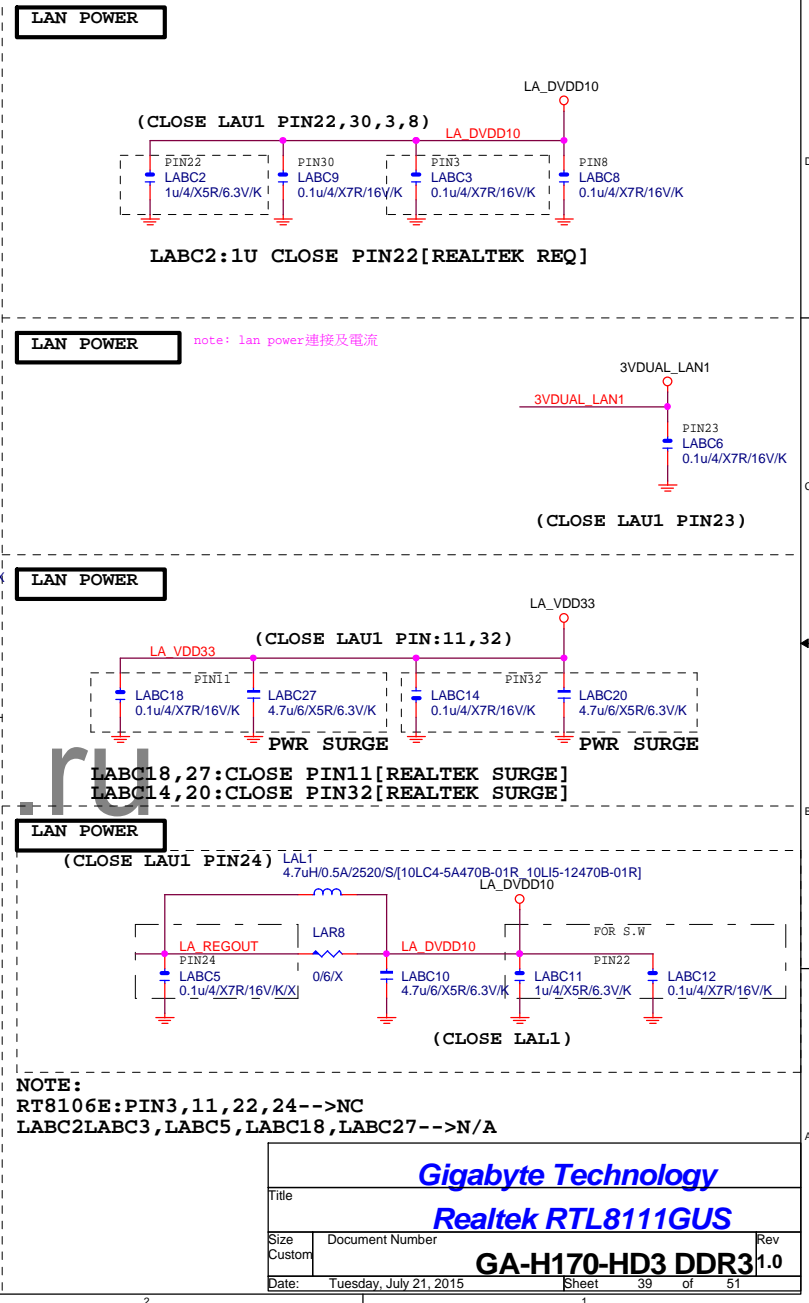
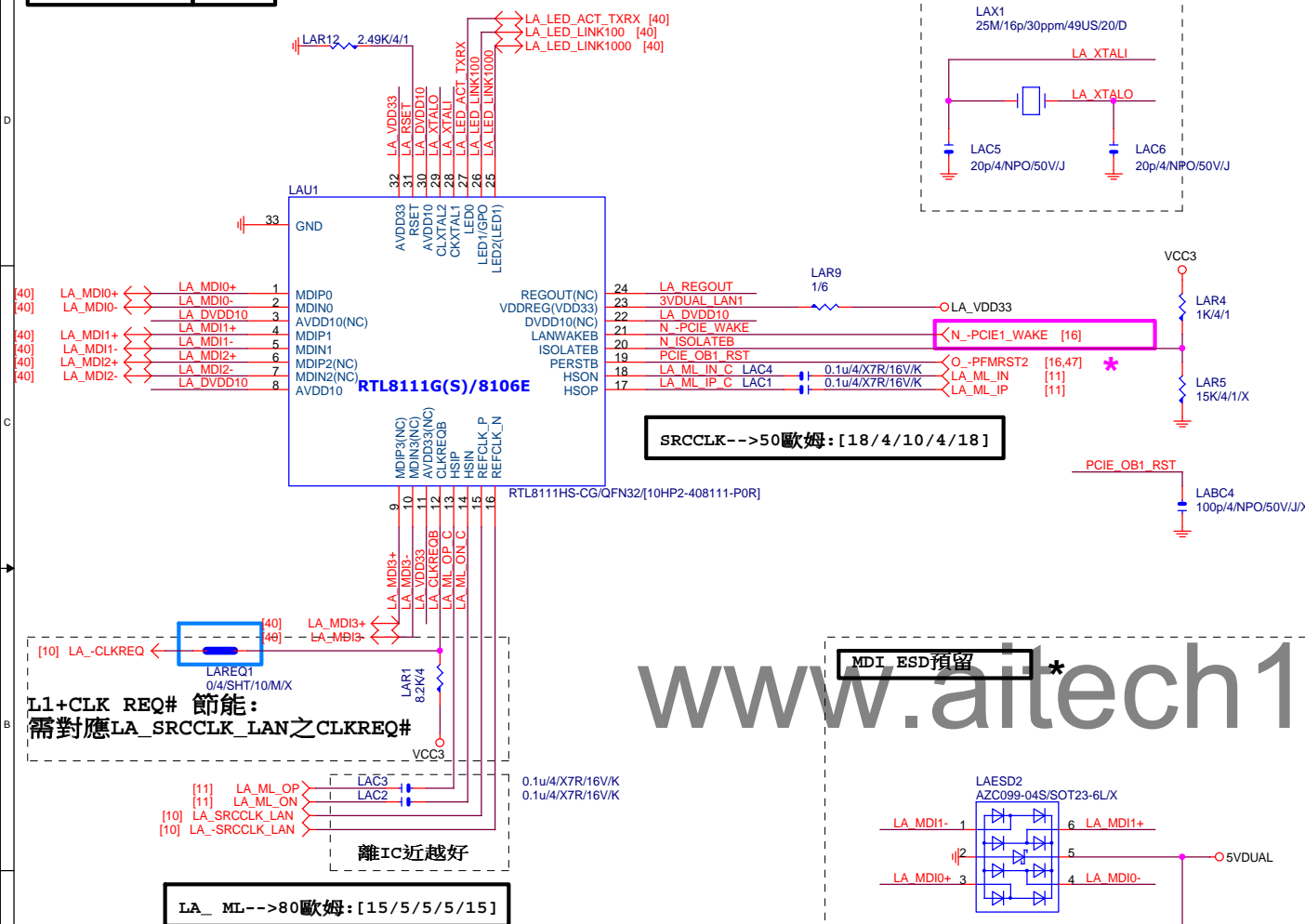
USB3.0/2.0



CONNECTOR 自行調整

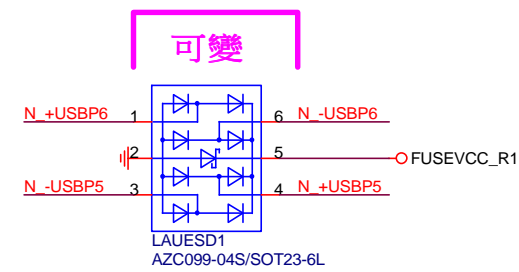


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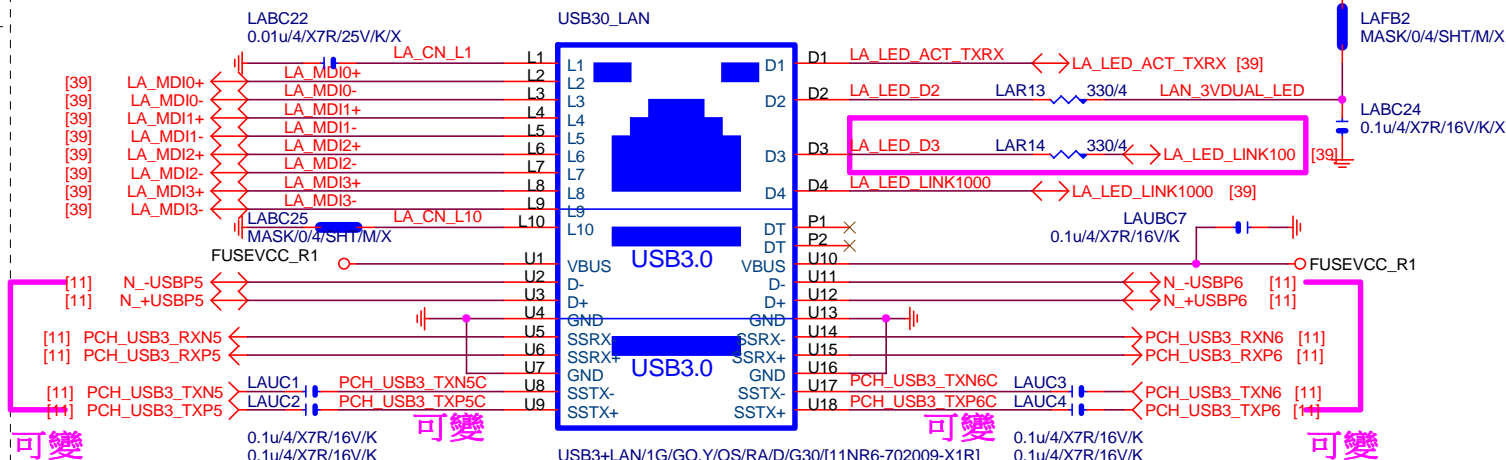


# USB\_LAN CONNECTOR R1.06

## RMA ESD PROTECT note:可變更USB NAME

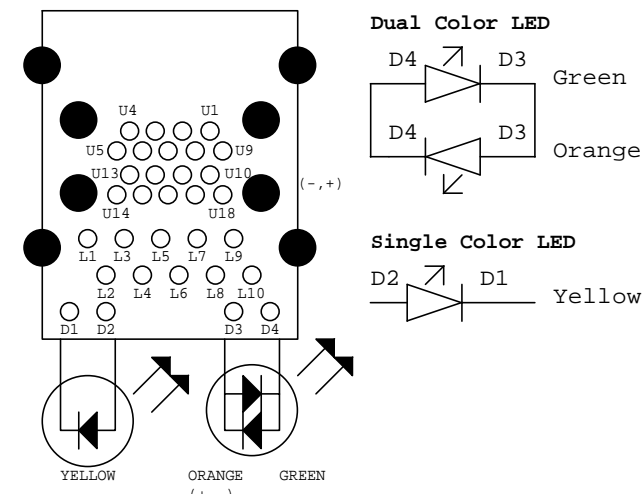


# USB\_LAN CONNECTOR [RTL8111GUS]

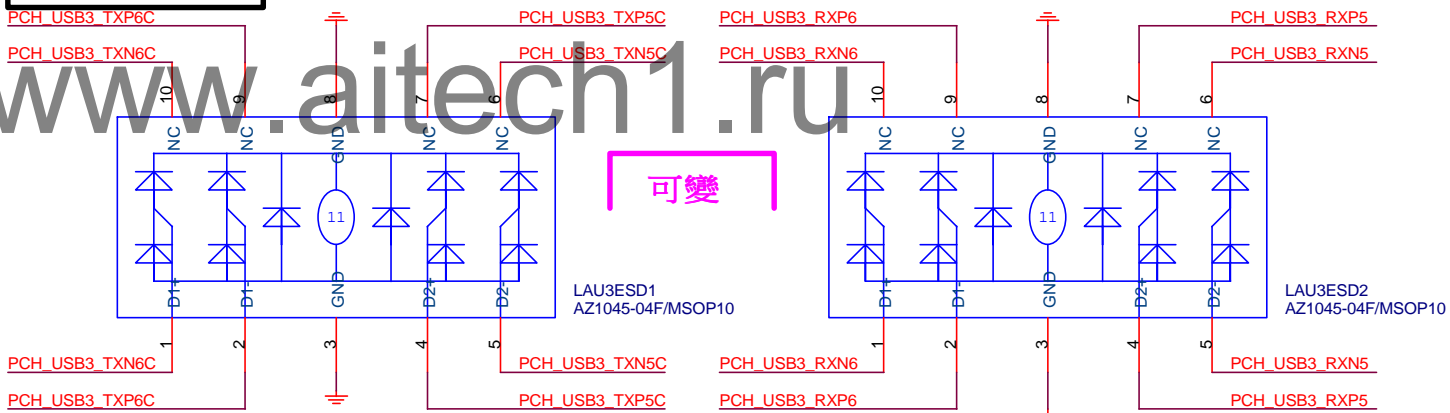


LA\_MDI-->100歐姆:[20/4/8/4/20]

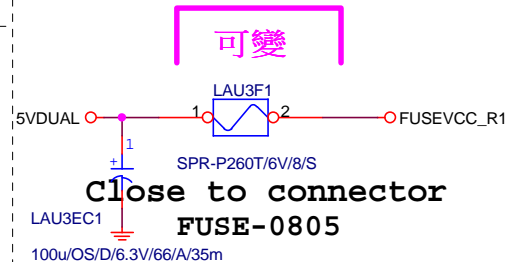
## USB30 LAN LAYOUT示意圖



## RMA ESD PROTECT note:可變更USB NAME



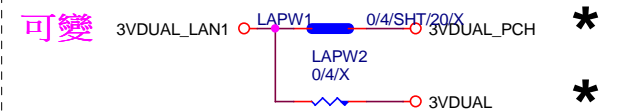
## USB POWER note:可變更FUSE



## EMI SHORT PAD PS:視EMI需求

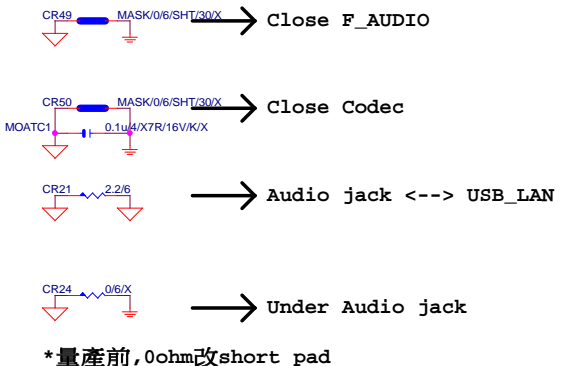


## LAN POWER note: lan power連接及電流

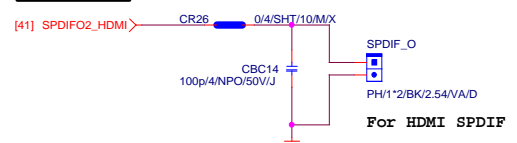


Gigabyte Technology			
LAN CONNECTOR-RTL8111GUS			
Title	Document Number	Rev	
Size	Custom	GA-H170-HD3 DDR3	
Date:	Tuesday, July 21, 2015	Sheet	40 of 51



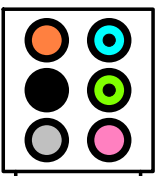


SPDIF\_OUT

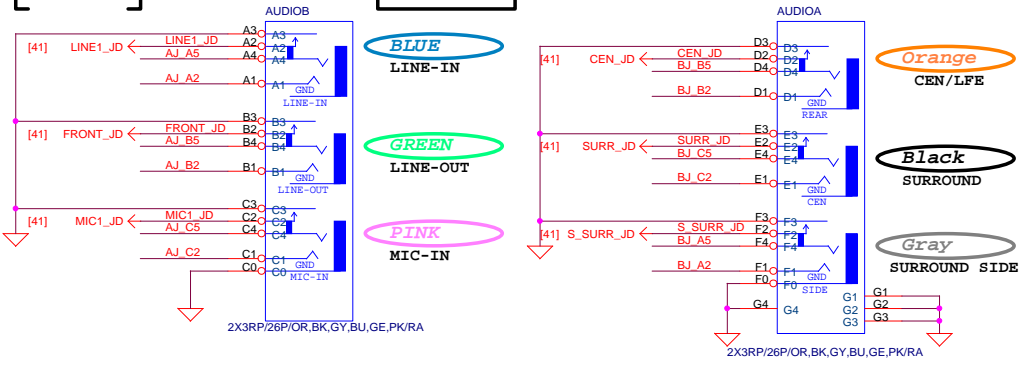


SPDIF\_IN

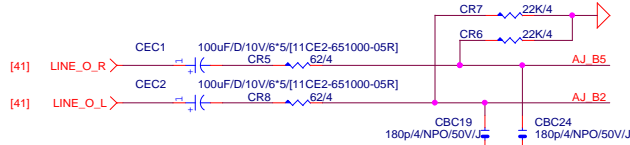
AZALIA JACK



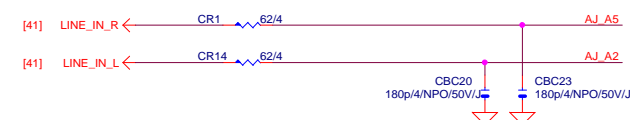
AZALIA JACK



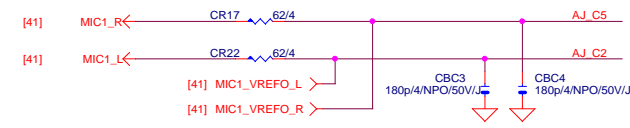
LINE-OUT



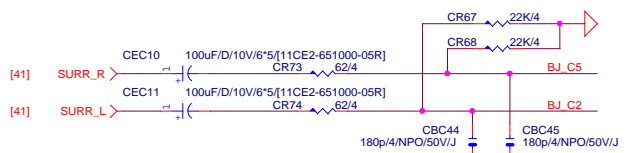
LINE-IN



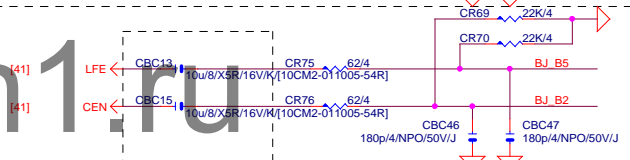
MIC-IN



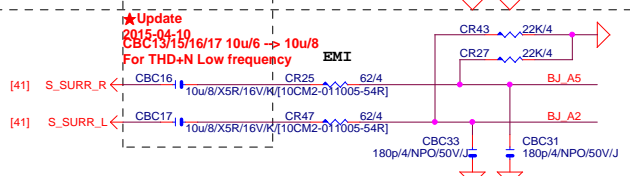
SURROUND



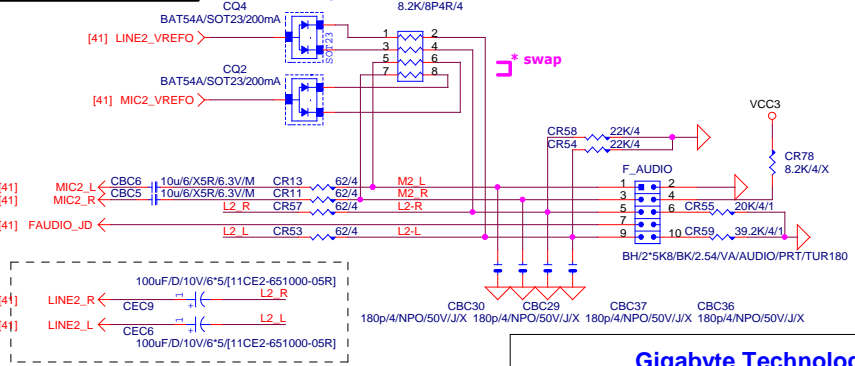
CEN/LFE



SURRBACK



AZALIA FRONT PANEL

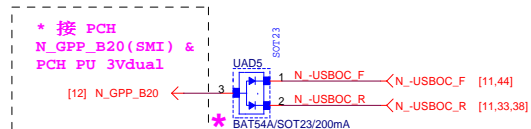


Gigabyte Technology

AUDIO JACK

GA-H170-HD3 DDR3

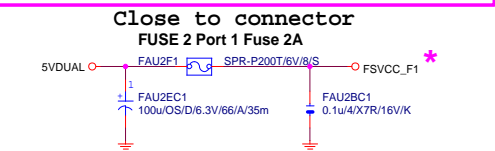
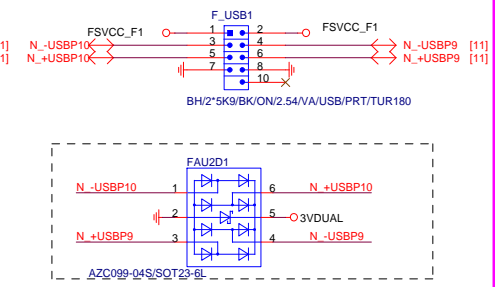
Title	Document Number	Rev
	GA-H170-HD3 DDR3	1.0
Size Custom		
Date: Tuesday, July 21, 2015	Sheet 42 of 51	





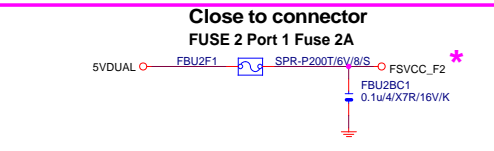
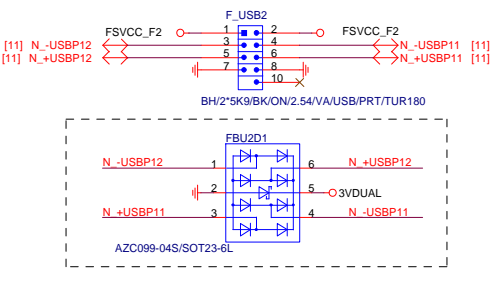
FRONT USB1

NET 可變



FRONT USB2

NET 可變

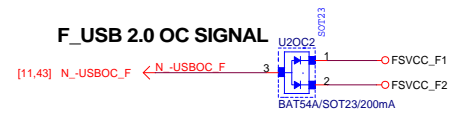


FRONT USB3

FRONT USB4

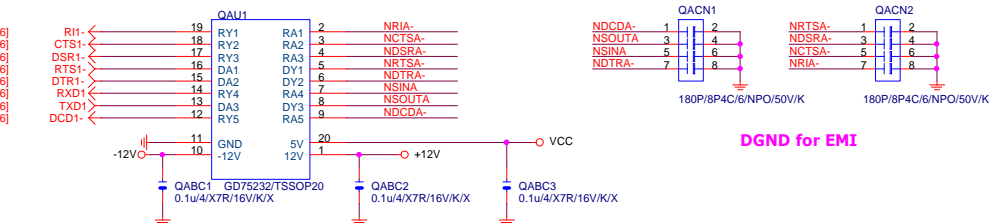
REAR USB1

REAR USB2



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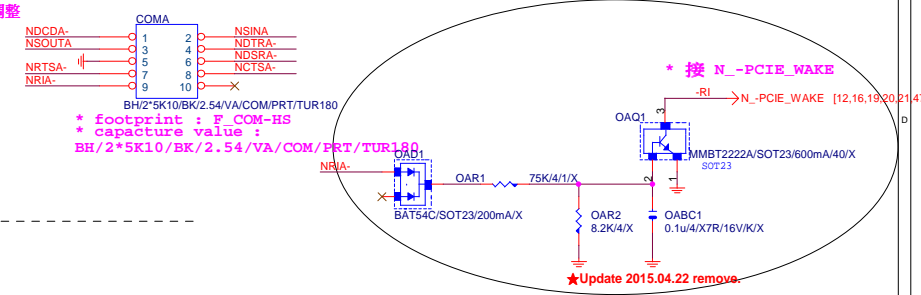
COM PORT



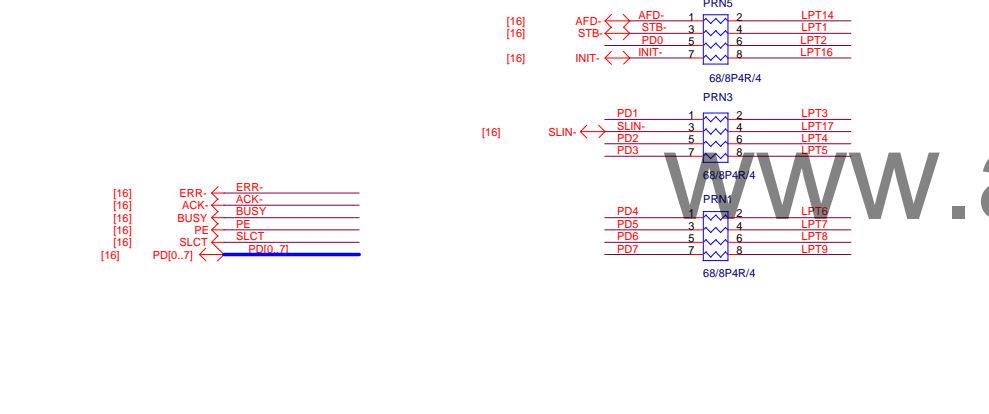
COMA

COMA 自行調整

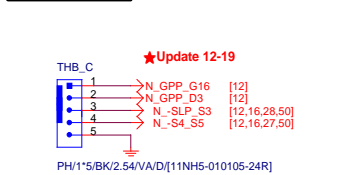
OR



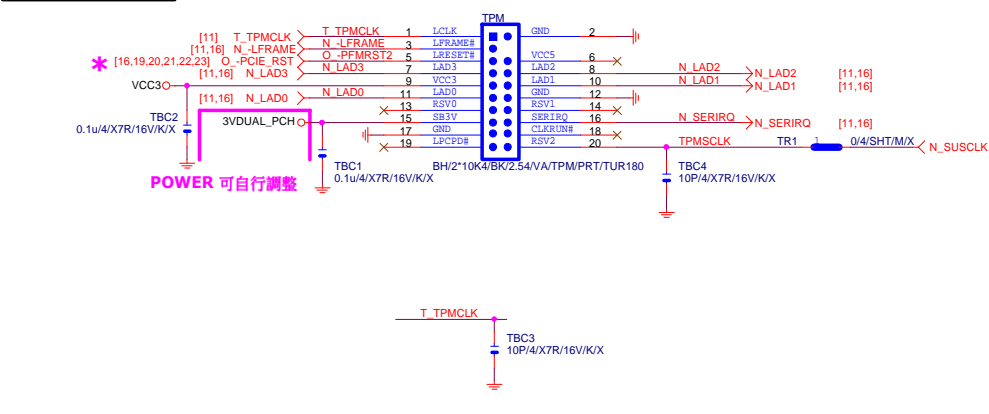
LPT PORT



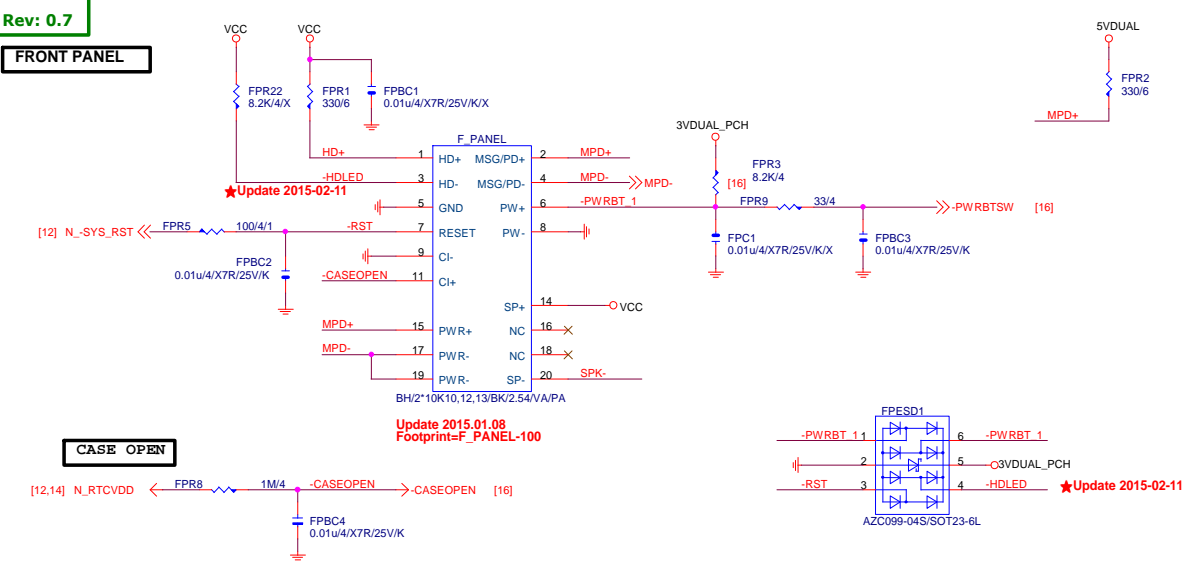
Thunderbolt



TPM CONNECTOR



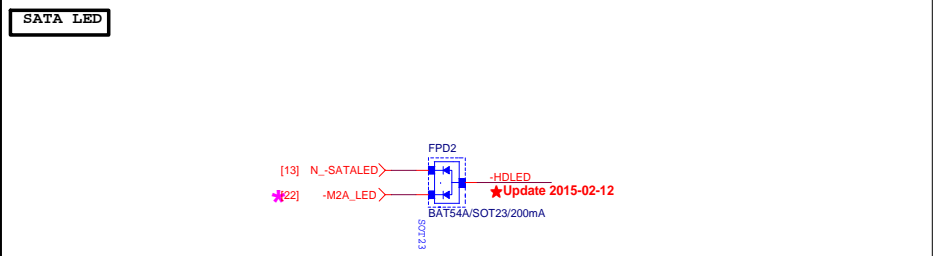
FRONT PANEL



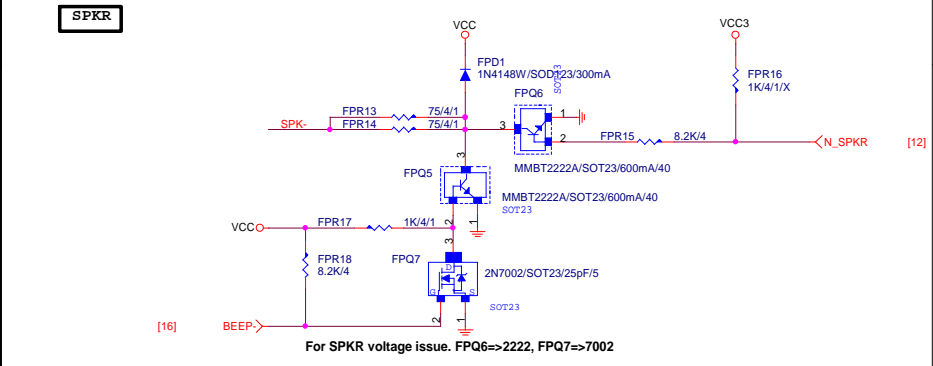
CASE OPEN

FRONT PANEL SHORT

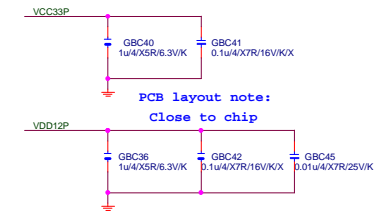
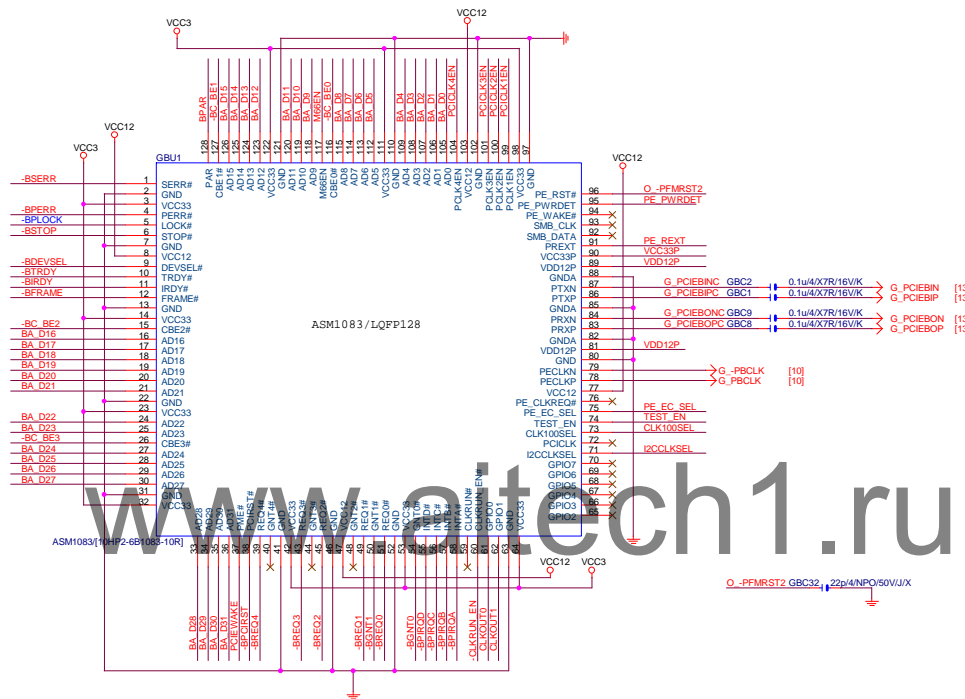
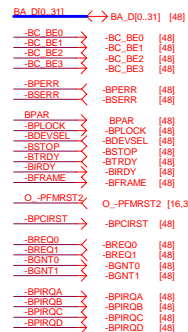
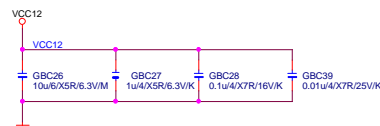
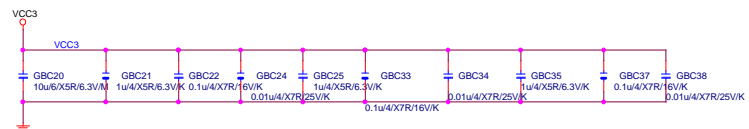
SATA LED



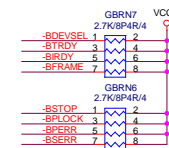
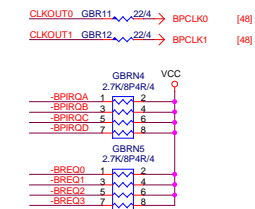
SPKR



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PCB layout note:  
Close to chip



GBRN4 & GBRN6 swap

## CLK100SEL Strapping Set

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

```
PE_EC_SEL-
"H" for Express Card mode
"L" for PCIe Riser Card mode
```

CLK100SEL-  
 "H" for PECLK input only  
 "L" for PECLK & PCICLK input

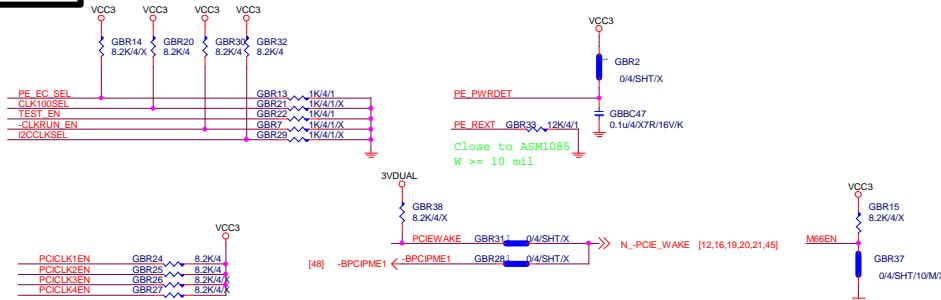
TEST\_EN-  
 "H" for Test Mode Enable  
 "L" for Test Mode Disable

-CLKRUN\_EN-

"H" for CLKRUN Mode Disable

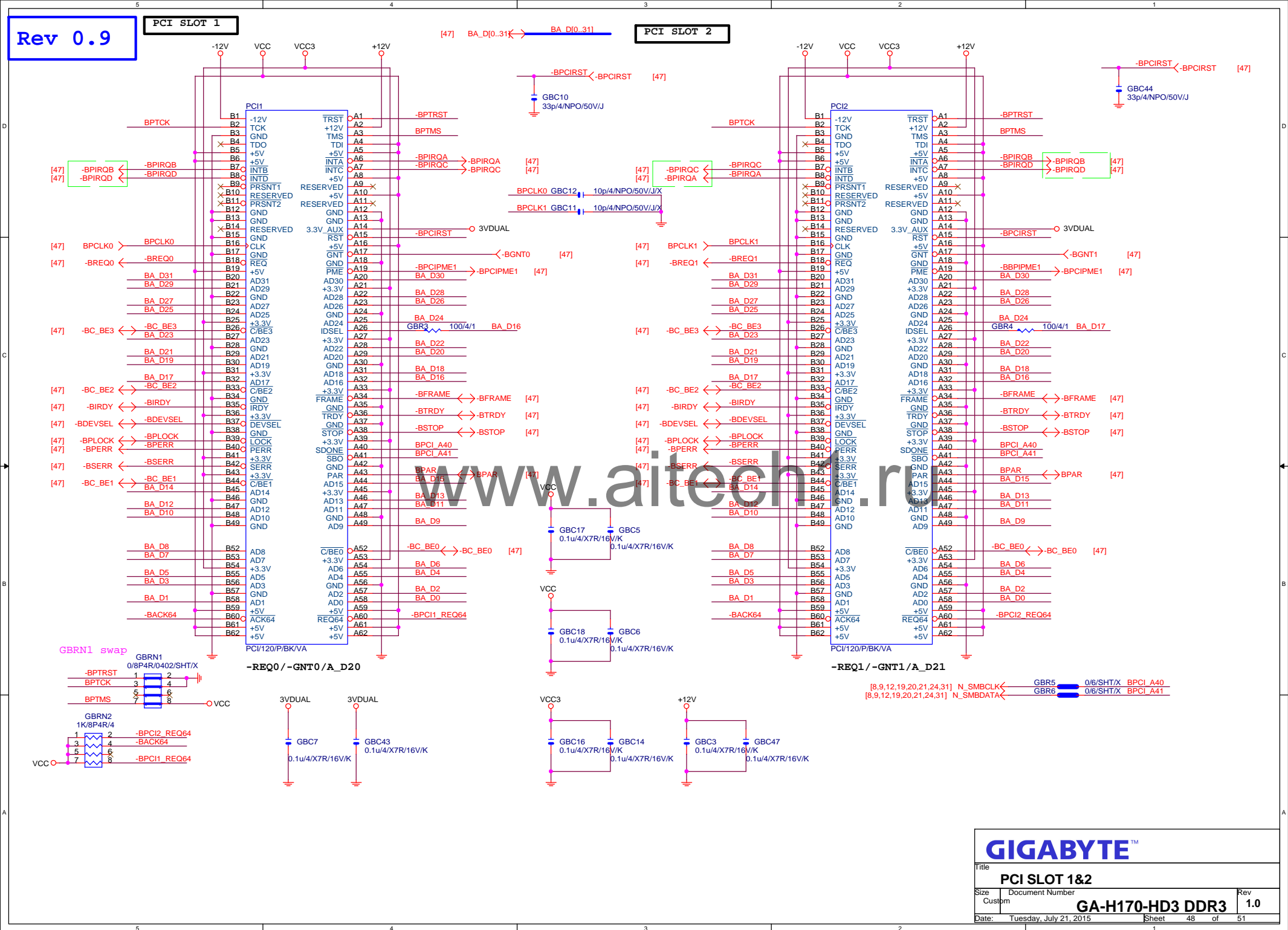
"L" for CLKRUN Mode Enable

```
I2CCLKSEL-
"H" is 135KHz I2CCLK
"L" is 67.5KHz I2CCLK
```



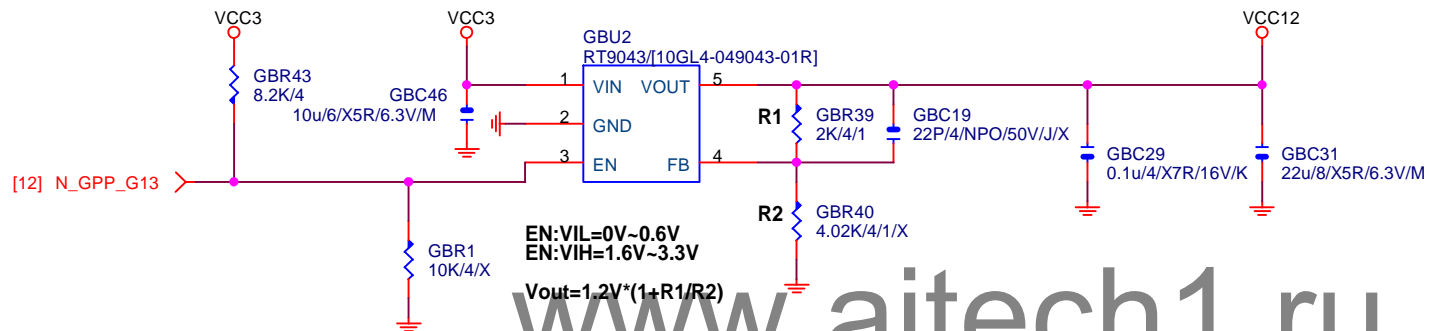
PCI SLOT 1

PCI SLOT 2
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<b>GIGABYTE™</b>			
Title <b>PCI SLOT 1&amp;2</b>			
Size Custom	Document Number <b>GA-H170-HD3 DDR3</b>	Rev <b>1.0</b>	
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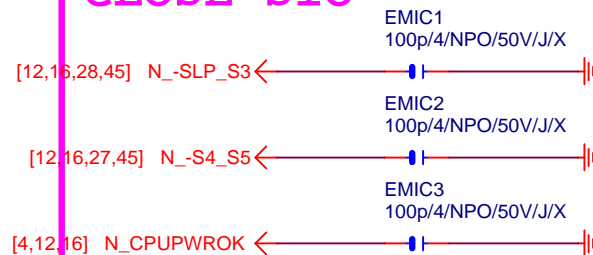
Rev 0.9



Gigabyte Technology

Title			ASM1085 POWER
Size	Document Number	GA-H170-HD3 DDR3	
Custom		Rev	1.0
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Title

**EMI/ESD**

Size  
A

Document Number

**GA-H170-HD3 DDR3**

Rev

**1.0**

Date: Tuesday, July 21, 2015

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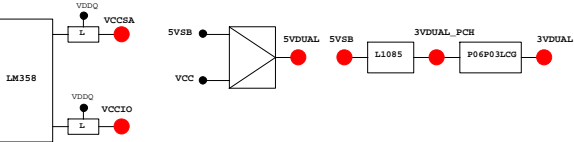
# PCB GPIO LIST TABLE

PIN NAME	PWR	Default	USAGE	NOTE
GPP_A0	MAIN	NATIVE	N_-KBRST	P/U 8.2K VCC3
GPP_A1	MAIN	NATIVE	N_LAD0	N/A
GPP_A2	MAIN	NATIVE	N_LAD1	N/A
GPP_A3	MAIN	NATIVE	N_LAD2	N/A
GPP_A4	MAIN	NATIVE	N_LAD3	N/A
GPP_A5	MAIN	NATIVE	N_-LFRAME	N/A
GPP_A6	MAIN	NATIVE	N_SBR1RQ	P/U 8.2K VCC3
GPP_A7	MAIN	NATIVE	N_-LDRQ0	P/U 8.2K 3VDUAL
GPP_A8	MAIN	NATIVE	N_GPP_A8	P/U 8.2K VCC3
GPP_A9	MAIN	NATIVE	N_LPC24MB	N/A
GPP_A10	MAIN	NATIVE	N_LPC24MA	N/A
GPP_A11	MAIN	NATIVE	N_-P_FMR	P/U 8.2K 3VDUAL_PCH
GPP_A12	MAIN	GPIO	N_GPP_A12	P/U 8.2K VCC3
GPP_A13	MAIN	NATIVE	N_-S_WARN	N/A
GPP_A14	MAIN	NATIVE	N_GPP_A14	P/U 8.2K 3VDUAL
GPP_A15	MAIN	NATIVE	N_-S_ACK	N/A
GPP_B0	MAIN	CORE_V1D0	N_-DDR_V_SEL	P/U 8.2K VCC3
GPP_B1	MAIN	CORE_V1D1	N/A	N/A
GPP_B2	MAIN	GPIO	N_-VREALRT	P/U 8.2K 3VDUAL
GPP_B5	MAIN	GPIO	-PCITEX1_6_PR	P/U 8.2K VCC3
GPP_B6	MAIN	GPIO	-PCITEX1_PR1	P/U 8.2K VCC3
GPP_B7	MAIN	GPIO	-PCITEX1_PR2	P/U 8.2K VCC3
GPP_B8	MAIN	GPIO	-PCITEX4_PR	P/U 8.2K VCC3
GPP_B9	MAIN	GPIO	N/A	N/A
GPP_B10	MAIN	GPIO	N/A	N/A
GPP_B11	MAIN	GPO	N/A	N/A
GPP_B12	MAIN	SLP_S0	N_SLP_S0	N/A
GPP_B13	MAIN	PLTRST	N_-PFMRST	N/A
GPP_B14	MAIN	H-Z	GPO	N_SFPR
GPP_B18	MAIN	H-Z	GPO	N_GPP_B18
GPP_B20	MAIN	GPIO	N_GPP_B20	P/U 8.2K 3VDUAL
GPP_B22	MAIN	GPIO	N_GPP_B22	P/U 1K GND
GPP_C0	MAIN	SMCLK	N/A	N/A
GPP_C1	MAIN	SMMDATA	N/A	N/A
GPP_C2	MAIN	H-Z	GPO	N_-LPCVME
GPP_C3	MAIN	SMCLK	N_SMLCLK	P/U 499 3VDUAL
GPP_C4	MAIN	SMCLK	N_SMLCLK	P/U 499 3VDUAL
GPP_C5	MAIN	H-Z	GPO	N_GPP_C5
GPP_C6	MAIN	GPIO	N_SMLCLK	P/U 8.2K 3VDUAL
GPP_C7	MAIN	GPIO	N_SMLCLK	P/U 8.2K 3VDUAL
GPP_D4	MAIN	GPIO	N_GPP_D4	P/U 8.2K 3VDUAL
GPP_D7	MAIN	GPIO	N_GPP_D7	N/A
GPP_D9	MAIN	GPIO	N_GPP_D9	N/A
GPP_D17	MAIN	GPIO	N_GPP_D17	P/U 8.2K VCC3
GPP_D18	MAIN	GPIO	N_GPP_D18	P/U 8.2K VCC3
GPP_D19	MAIN	GPIO	N_GPP_D19	P/U 8.2K VCC3
GPP_D20	MAIN	GPIO	N_GPP_D20	P/U 8.2K VCC3
GPP_D23	MAIN	GPIO	N_GPP_D23	P/U 8.2K 3VDUAL
GPP_E0	MAIN	NATIVE	N_GPP_E0	P/U 8.2K VCC3
GPP_E1	MAIN	NATIVE	N_GPP_E1	P/U 8.2K VCC3
GPP_E2	MAIN	NATIVE	N_GPP_E2	P/U 8.2K VCC3
GPP_E3	MAIN	GPIO	N_CPU_S	P/U 8.2K VCC3
GPP_E4	MAIN	GPIO	N_DEVSLP0	P/U 8.2K VCC3
GPP_E6	MAIN	GPIO	N_DEVSLP2	P/U 8.2K VCC3
GPP_E7	MAIN	GPIO	N_GT_S	P/U 8.2K VCC3
GPP_E8	MAIN	GPIO	N_-SATALED	N/A
GPP_E9	MAIN	H-Z	GPIO	N_-USB0C_F
GPP_E10	MAIN	H-Z	GPIO	N_-USB0C_R
GPP_E11	MAIN	H-Z	GPIO	N_-USB0C_R
GPP_E12	MAIN	H-Z	GPIO	N_-USB0C_F
GPP_F0	MAIN	NATIVE	N_GPP_F0	P/U 8.2K VCC3
GPP_F1	MAIN	NATIVE	N_GPP_F1	P/U 8.2K VCC3
GPP_F2	MAIN	NATIVE	N_GPP_F2	P/U 8.2K VCC3
GPP_F3	MAIN	GPIO	N_GPP_F3	P/U 8.2K VCC3
GPP_F4	MAIN	GPIO	N_GPP_F4	P/U 8.2K VCC3
GPP_F5	MAIN	GPIO	N_GPP_F5	P/U 8.2K VCC3
GPP_F6	MAIN	GPIO	N_DEVSLP4	P/U 8.2K VCC3
GPP_F10	MAIN	GPIO	N_GPP_F10	P/U 8.2K VCC3
GPP_F11	MAIN	GPIO	N_GPP_F11	P/U 8.2K VCC3
GPP_F12	MAIN	GPIO	N_GPP_F12	P/U 8.2K VCC3
GPP_F13	MAIN	GPIO	N_GPP_F13	P/U 8.2K VCC3
GPP_F14	MAIN	GPIO	A_-SKTOCC	P/U 8.2K VCC3
GPP_F15	MAIN	GPIO	N_-USB0C_F	N/A
GPP_F16	MAIN	GPIO	N_-USB0C_F	N/A
GPP_F17	MAIN	GPIO	N_-USB0C_R	N/A
GPP_F18	MAIN	GPIO	N_-USB0C_F	P/U 8.2K 3VDUAL
GPP_F22	MAIN	GPIO	N_GPP_F22	P/U 8.2K VCC3
GPP_F23	MAIN	GPIO	N_GPP_F23	P/U 8.2K VCC3
GPP_G0	MAIN	GPIO	N_GPP_G0	P/U 1K VCC3
GPP_G1	MAIN	GPIO	N_GPP_G1	P/U 1K VCC3
GPP_G12	MAIN	GPIO	N_GPP_G12	P/U 3.3K VCC3
GPP_G16	MAIN	GPIO	N_GPP_G16	N/A
GPP_G18	MAIN	GPIO	N_GPP_G18	P/U 8.2K VCC3
GPP_G19	MAIN	GPIO	N_GPP_G19	P/U 8.2K VCC3
GPP_G20	MAIN	GPIO	N_GPP_G20	P/U 8.2K VCC3
GPP_G21	MAIN	GPIO	N_GPP_G21	P/U 8.2K VCC3
GPP_G22	MAIN	GPIO	N_GPP_G22	P/U 8.2K VCC3
GPP_H0	MAIN	GPIO	M2_-CLKREQ	P/U 8.2K VCC3
GPP_H12	MAIN	GPO	N_GPP_H12	P/U 8.2K VCC3
GPP_H19	MAIN	GPIO	N_GPP_H19	P/U 8.2K 3VDUAL
GPP_H20	MAIN	GPIO	N_GPP_H20	P/U 8.2K 3VDUAL
GPP_H21	MAIN	GPIO	N_GPP_H21	P/U 8.2K 3VDUAL
GPP_H22	MAIN	GPIO	N_GPP_H22	P/U 8.2K 3VDUAL
GPP_I0	MAIN	GPIO	N_HDMI_HDP_F	N/A
GPP_I1	MAIN	GPIO	N_DVI_HDP_F	P/U 1M VCC3
GPP_I2	MAIN	GPIO	N_VGA_HDP_F	N/A

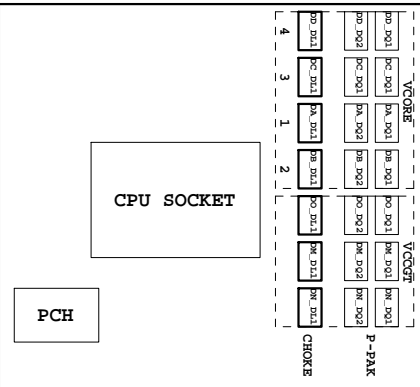
PIN NAME	PWR	Default	USAGE	NOTE
GPP_I3	MAIN	GPIO	N_GPP_I3	P/U 8.2K VCC3
GPP_I4	MAIN	GPIO	N_GPP_I4	P/D 100K GND
GPP_I5	MAIN	GPIO	N_DDPB_CTRLCLK	P/U 2.2K VCC3
GPP_I6	MAIN	GPO	N_DDPB_CTRLCLK	P/U 2.2K VCC3
GPP_I7	MAIN	GPIO	N_DDPB_CTRLCLK	P/U 2.2K VCC3
GPP_I8	MAIN	GPIO	N_DDPB_CTRLCLK	P/U 2.2K VCC3
GPP_I9	MAIN	GPIO	N_DDPB_CTRLCLK	P/U 2.2K VCC3
GPP_I10	MAIN	GPIO	N_DDPB_CTRLCLK	P/U 2.2K VCC3
GPD0	STBY	BATLOW	N_-BATLOW	P/U 8.2K 3VDUAL_PCH
GPD1	STBY	ACPRESENT	N_GF_D1	P/U 8.2K 3VDUAL_PCH
GPD2	STBY	LAM_MAKE	N_-LAM_MAKE	N/A
GPD3	STBY	PMRSTN	O_PMRSTN	P/U 8.2K 3VDUAL_PCH
GPD4	STBY	SLP_S3	N_-SLP_S3	N/A
GPD5	STBY	SLP_S4	N_-SLP_S4	N/A
GPD6	STBY	SLP_A	N_-SLP_A	P/U 8.2K 3VDUAL
GPD7	STBY	NATIVE	N_-S_ACK	N/A
GPD8	STBY	SUSCLK	N_SUSCLK	N/A
GPD10	STBY	SLP_S5	N_-SLP_S5	N/A

## Super I/O ITE8720 GPIO Table

PIN NAME	USAGE	NOTE
PCIRSTF3#/GP10/VDINH_STR_EN	N/A	
PCIRSTF2#/GP11	O_-PCIRST_RST	
PCIRSTF1#/GP12	O_-PFMRST2	
SVC/FRC1_RQ7/GP14	TPM_GP14	
SLP_SUS#/PCIRSTIN/CIKTX2/GP15	-PCIRSTIN	
PSI_L/FAN_CLT5/CIKRX2/GP16	N_-THERMTRIP	
R12#/GP17	MB_ID2	
THR_PWM_CTS2#/GP20	N_-THERMTRIP	
IO_SM1#DCD2#/GP21	<a href="#">PIN</a>	
SPI_S1/GP22	BEEP-	
DPWRKOK/CPU_RQ/GP23	N_PCH_DPWRKOK	
FAN_TACS/RTS2#/GP24	<a href="#">PIN</a>	
FAN_TAC4/DSR2#/GP25	FANIO4	
INV_OUT1_SOUT2/GP26	Q_PLED	
INV_IN1/SIN2/GP27	INV_IN1	
ATXPG/GP30	FWOK	
CTS1/GP31	CTS1-	
OCWD13/R11#/GP32	R11-	
OCWD12/DCD1#/GP33	DCD1-	
VTT_PWRGD/GP34	VTT_PWRGD	
VCC18_EN/GP35	VCCIO_EN	
FAN_CTL3/GP36	FANPWM3	
FAN_TAC3/GP37	FANIO3	
3VSB#W#/GP40	<a href="#">PIN</a>	
OCWD11/SIN1/GP41	RXD1	
GP42/CLK/FAN_CTL4	<a href="#">PIN</a>	
PANSW#/GP43	-PWRBTSW	
PMRGN#/GP44	O_PMRSTN	
OCWD10/DSR1#/GP45	DSR1-	
CE2_N/GP47/JP6	CEB_N	
GP50/GP1	<a href="#">PIN</a>	
FAN_CTL4/GP51	FANPWM2	
FAN_TAC5/GP52	FANIO2	
SUSOC/GP53	N_-SA_S5	
PWR#/GP54	N_-LPCVME	
RSMBST#/CIKRX1/GP55	O_-RSMBST	
KCLK/FAN_TAC5/GP56	KCLK	
MDAT/FAN_CTL6/GP57	MDAT	
KCLK/GP60	KCLK	
KDAT/GP61	KDAT	
KRST#/GP62	N_-KRST	
HOLD_B#/GP63	-SPI_HOLD_B	
HOLD_B#/GP64	-SPI_HOLD_M	
VLD1T_EN/PCH_D0/GP65	<a href="#">PIN</a>	
VCC1_05_EN/GP66	VCC1_0_EN	
GP67	<a href="#">PIN</a>	
USB_FS1/PD0/GP70	PD0	
USB_FS2/PD1/GP71	PD1	
USB_FS3/PD2/GP72	PD2	
USB_FS3/PD3/GP73	PD3	
USB_FS5/PD4/GP74	PD4	
USB_FS6/PD5/GP75	PD5	
USB_FS7/PD7/GP76	PD6	
USB_FS8/PD8/GP77	PD7	
LS_IN1/SLCT/GP80	SLCT	
LS_OUT1/PE/GP81	PE	
LS_IN2/BUSY/GP82	BUSY	
LS_OUT2/ACK#/GP83	ACK-	
IPHONE_CHARGE#/SLIN#/GP84	SLIN-	
OC_IN/INIT#/GP85	INIT-	
OC_OUT/AFD#/GP86	AFD-	
USB_OC4/STB#/GP87	STB-	
DOX_EN/GP90	NA_EN	
PWRLED/GP91	HPD-	
HOLD_OUT/GP92	<a href="#">PIN</a>	
HDLED_IN/GP93	<a href="#">PIN</a>	
PROCHOT#/GP94	-PROCHOT_CON	
CPUPWRGD/GP95	<a href="#">PIN</a>	
PCH_VRMPWRGD/GP96	N_PCH_VRMPWRGD	
VR_RDY/GP97	VR_RDY	



PWM各相位の擺法如下:



BIOS超電壓對應表:

散熱模組料號:

Z1704-HD3 :

PCH :

MOSFET :

線路圖名稱	BIOS選項
Vcore	CPU Vcore
VCCGT	CPU Graphic Voltage
VCCSA	CPU System Agent Voltage
VCCIO	CPU I/O Voltage
VCC1_0_PCH	CPU Vcore
VDDQ	DRAM voltage
VPP_25V	DRAM VPP voltage
DDRVTT	DRAM Terminatio
VREF_DQ_AVREF_DQ_B	DRAM Data Ref

	3 pin FAN control	4 pin FAN control	FAN speed	Controller
CPU FAN	+12V	FANPWM1	FANIO1	IT8628
SYS FAN1	FANPWM2	VCC	FANIO2	IT8628
	FAN1_VOUT	N/A	N/A	NCT3941
SYS FAN2	FANPWM3	VCC	FANIO3	IT8628
	FAN2_VOUT	N/A	N/A	NCT3941
SYS FAN3	+12V	N/A	FANIO4	IT8628

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TABLE LIST			
File	Document Number	Rev	
Size	GA-H170-HD3 DDR3	H.0	
Rev	Table	Rev	