

Model Name: GA-H170-Gaming 3

SHEET TITLE Rev 1.1

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1150-A
05	CPU_LGA1150-B_DDR4
06	CPU_LGA1150-C
07	CPU_LGA1150-D
08	DDR4 CHANNEL A 1,2
09	DDR4 CHANNEL B 1,2
10	PCH_RGB,CLK BUFFER
11	PCH DMI,USB,PCIE
12	PCH MISC
13	PCH SATA,PCIE,SATA EXPRESS
14	PCH_PWR,GND
15	DUAL BIOS
16	ITE 8628 LPC IO
17	HMW
18	FAN CTRL--SIO
19	PCI EXPRESS X16 SLOT
20	PCI EXPRESS X4 SLOT(PCH)
21	PCI EXPRESS X1 SLOTS
22	M.2 X4
23	SATA EXPRESS
24	ISL95856 PWM
25	ISL95856 MOS_VCORE
26	ISL95856 MOS_VCCGT
27	VCCSA_VCCIO_VCCPLL
28	RT8120_DDR

SHEET

TITLE

29	RT8120_VPP
30	RT8120_PCH
31	DISCRETE POWER1
32	NCT3933
33	ATX POWER , A_-PROCHOT
34	KB_MS_USB
35	DVI CONN
36	PTN3356 - DP to VGA - IC
37	PTN3356 - DP to VGA - Conn
38	HDMI CONN
39	R_USB30
40	KILLER LAN E2400
41	USB30 LAN CONNECTOR-E2201
42	Realtek ALC1150
43	REAR AUDIO JACK
44	Audio Power
45	F_USB30
46	F_USB BOX Header
47	COM,TPM,THB
48	F_PANEL
49	ASM1083
50	PCI SLOT 1&2
51	IDT6V41530_CLK BUFFER
52	EMI ESD
53	2nd M.2 X4
54	M.2 SWITCH
55	TABLE LIST

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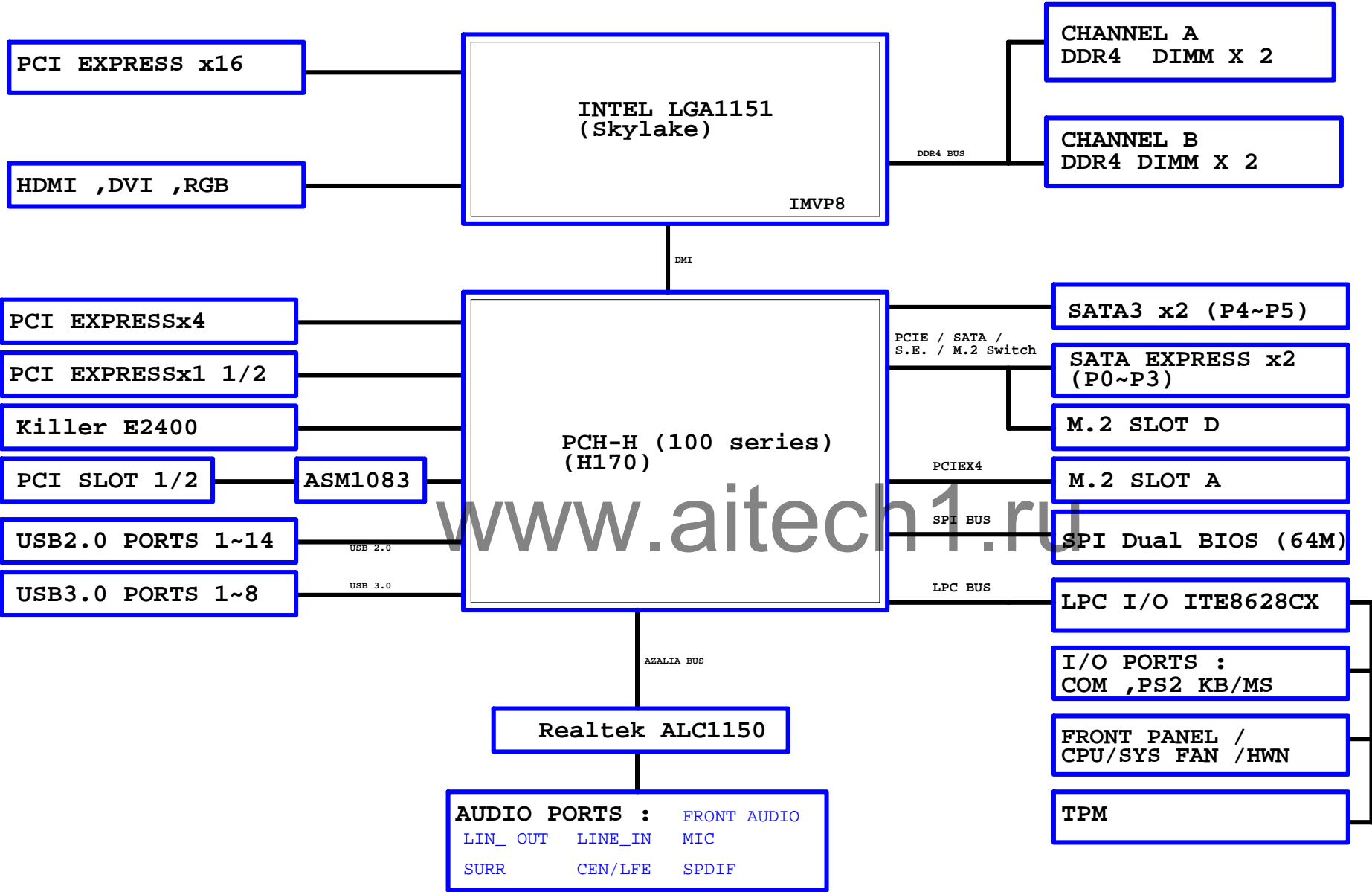
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Custom			
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P-Code: U15040-0
9MH170G3-00

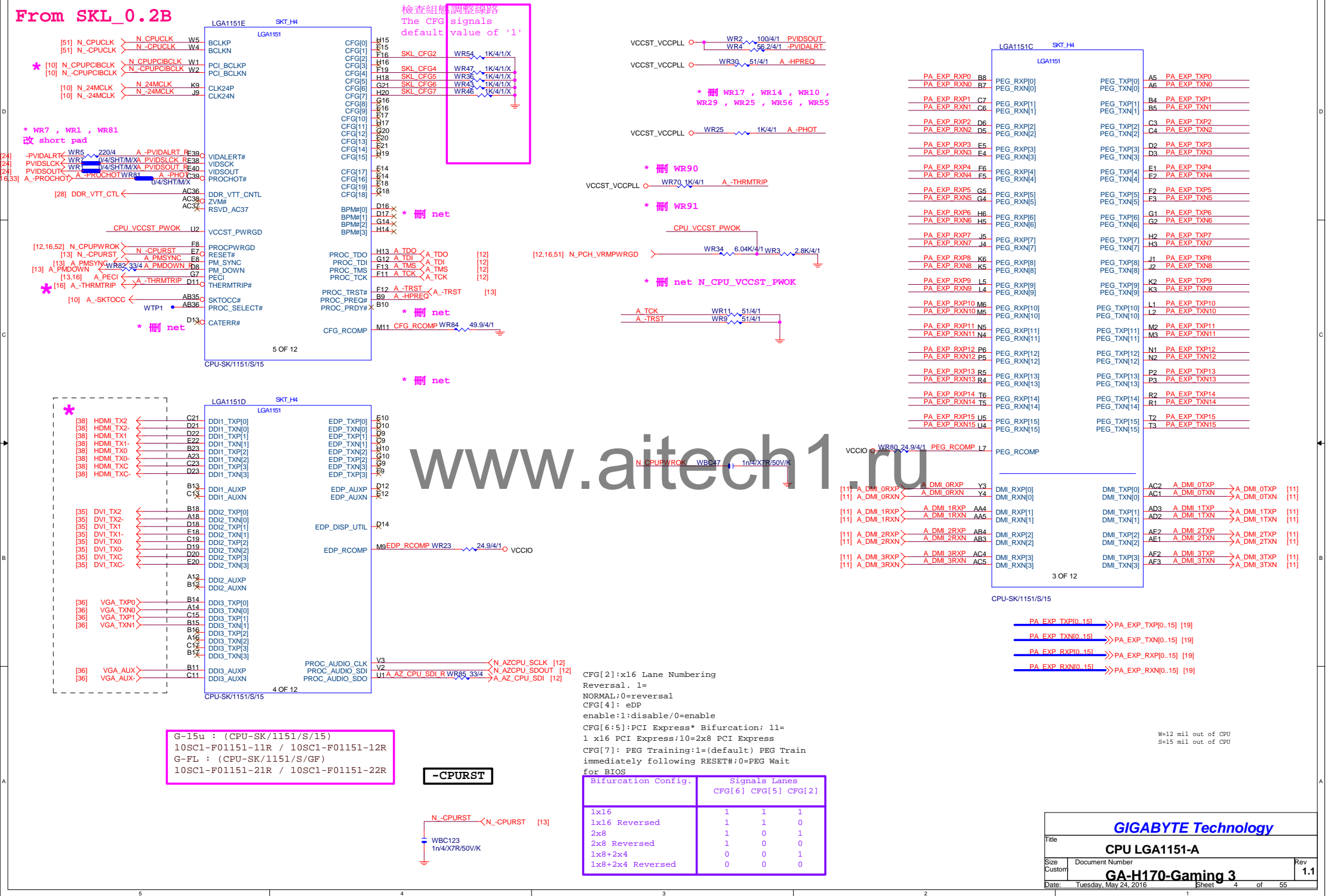
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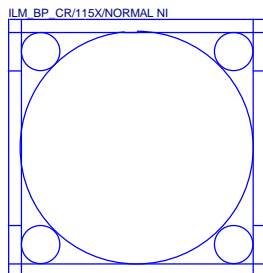
BLOCK DIAGRAM



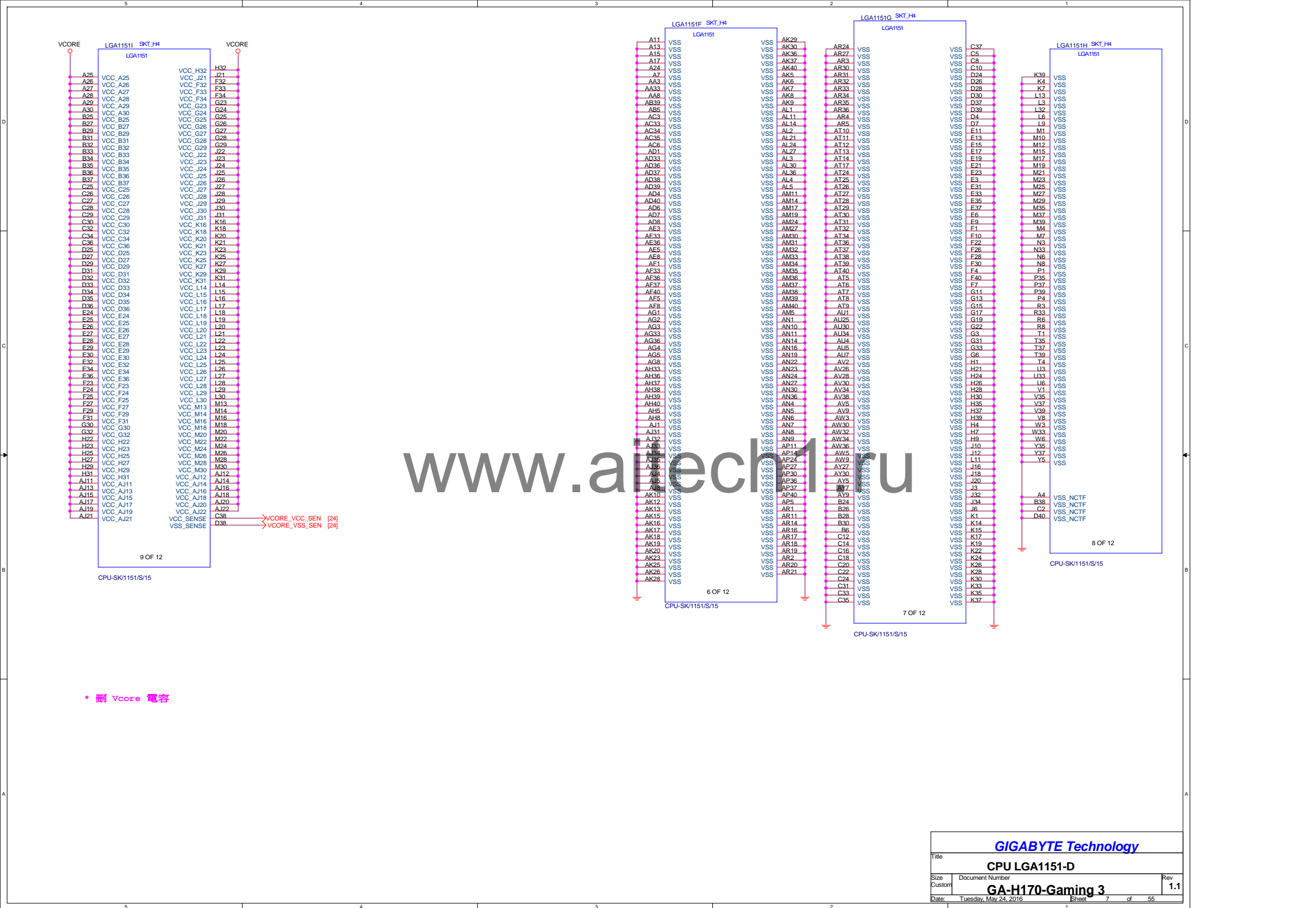
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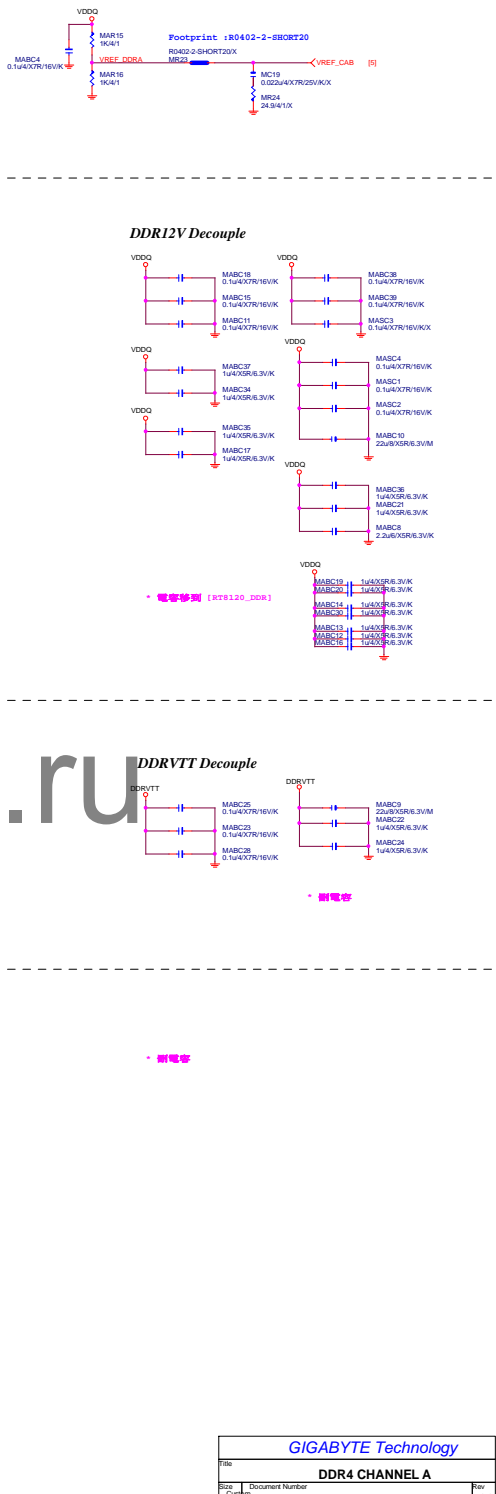
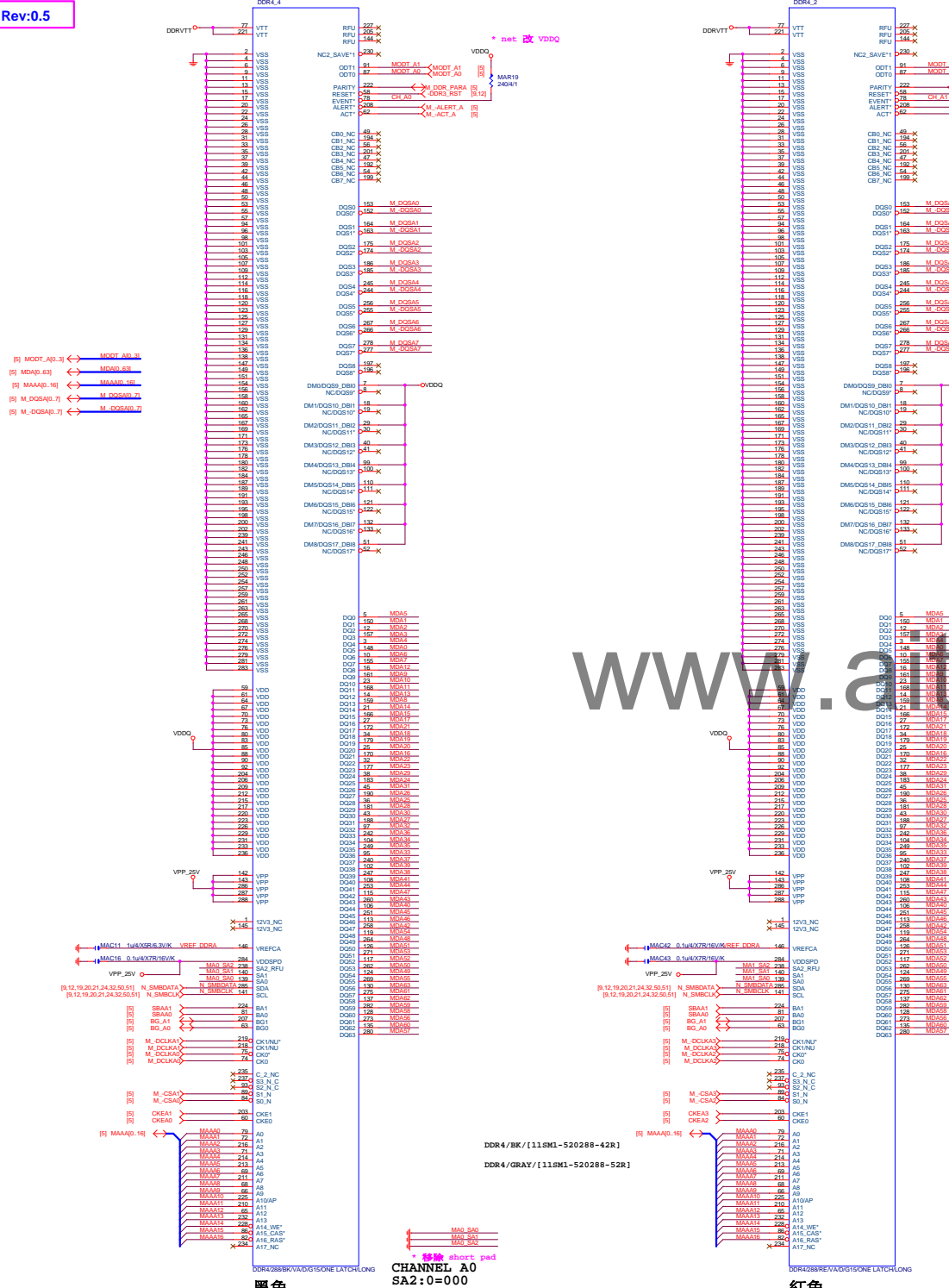


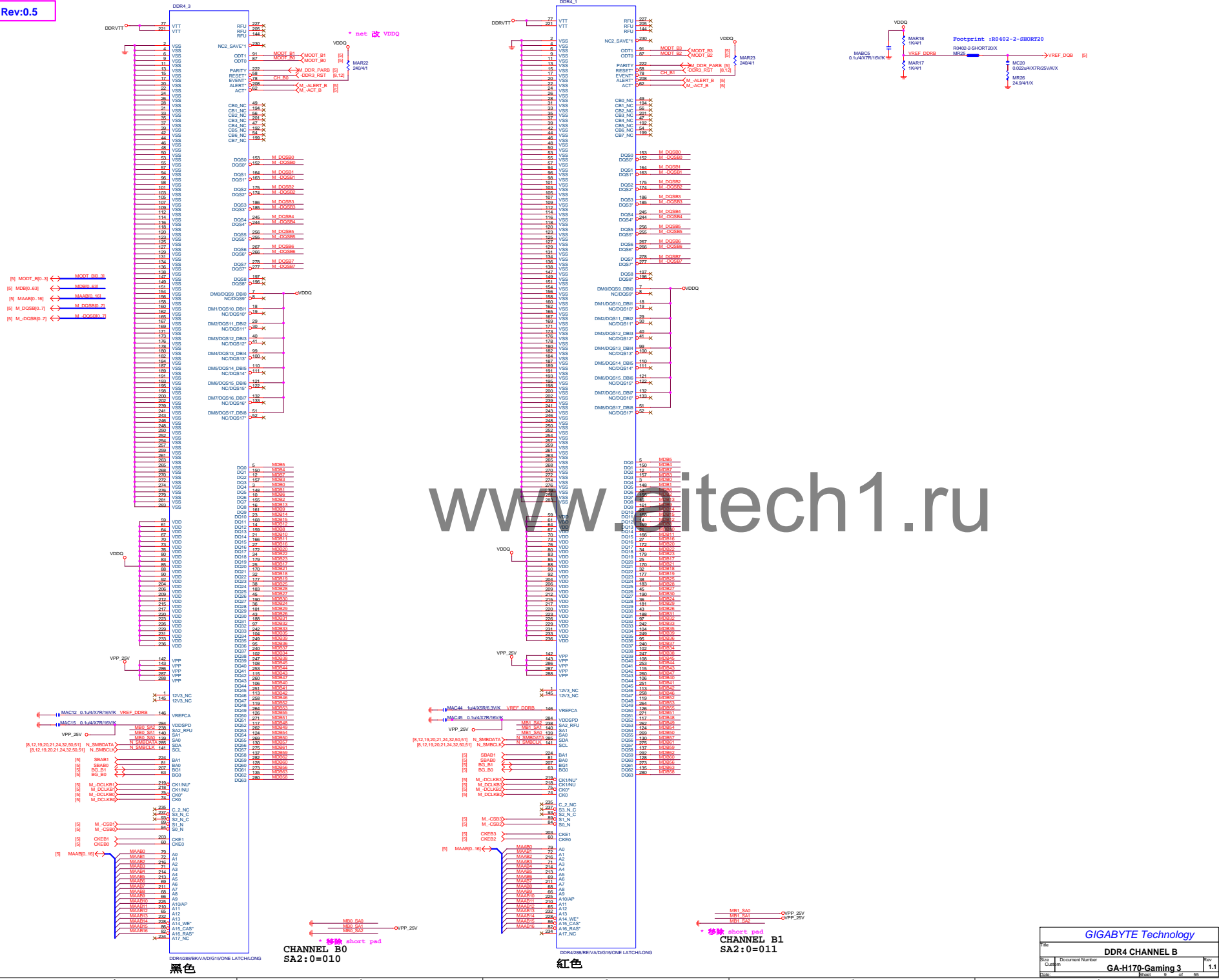
* 改DDR4 net

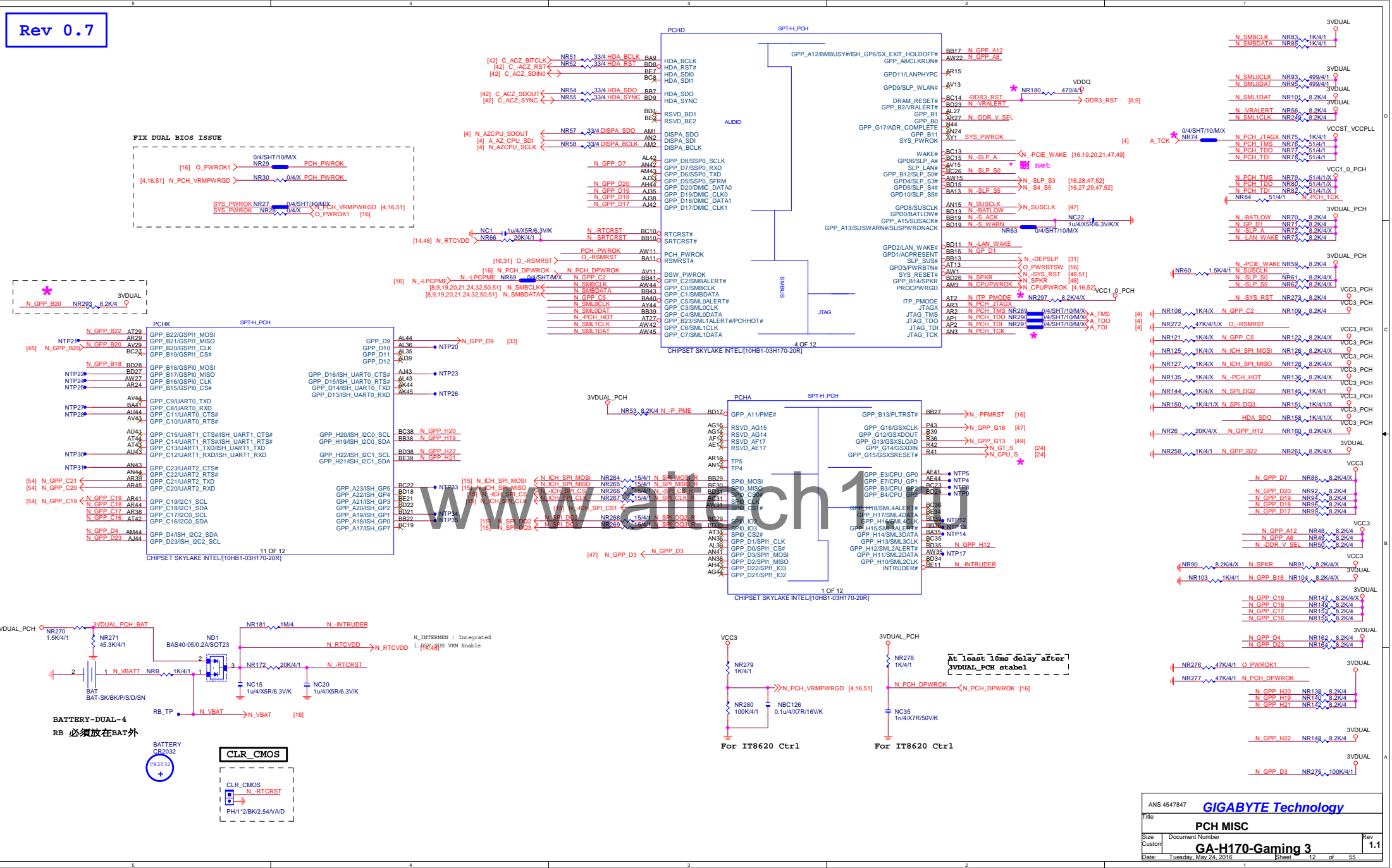


Need check the new CPU ME

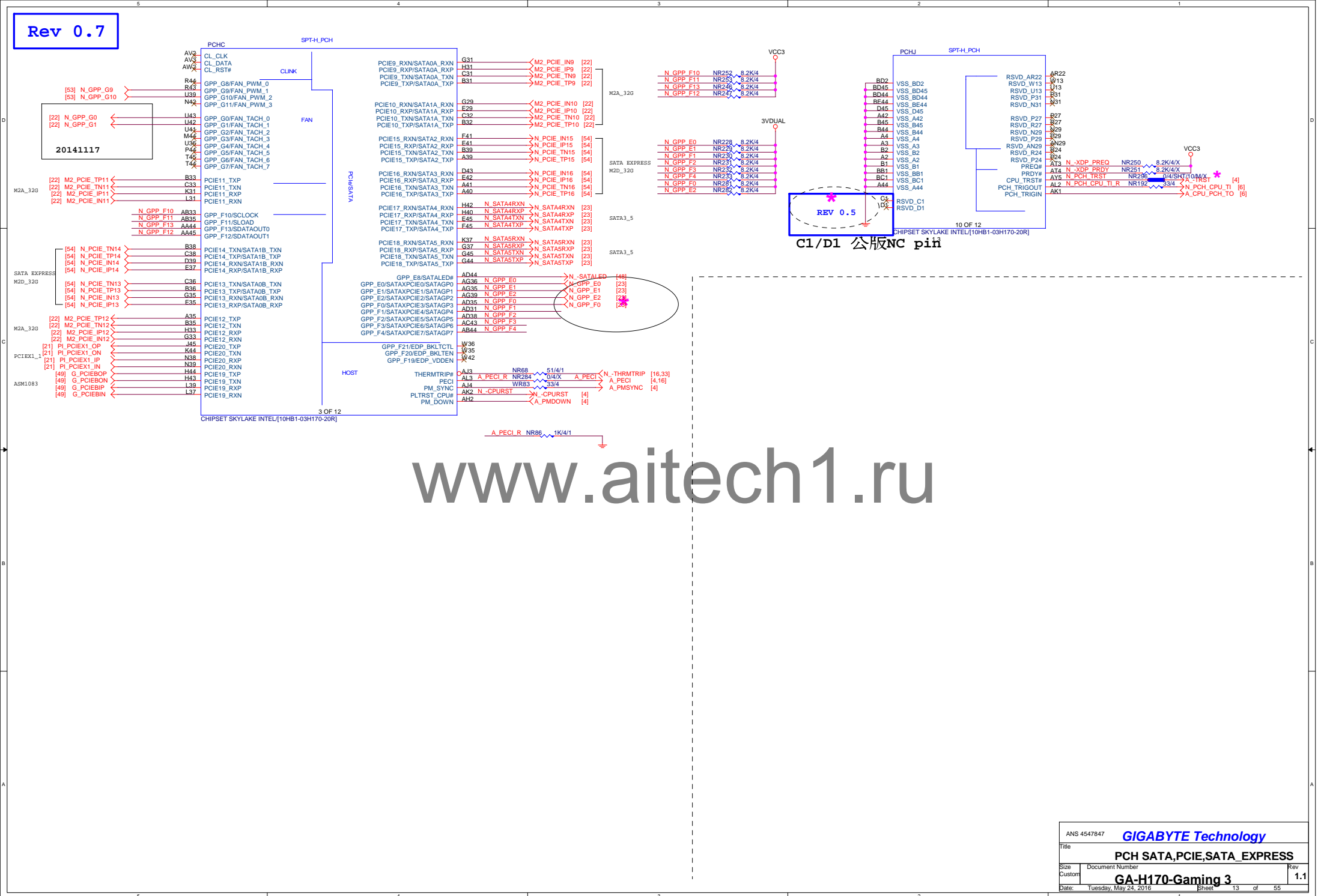


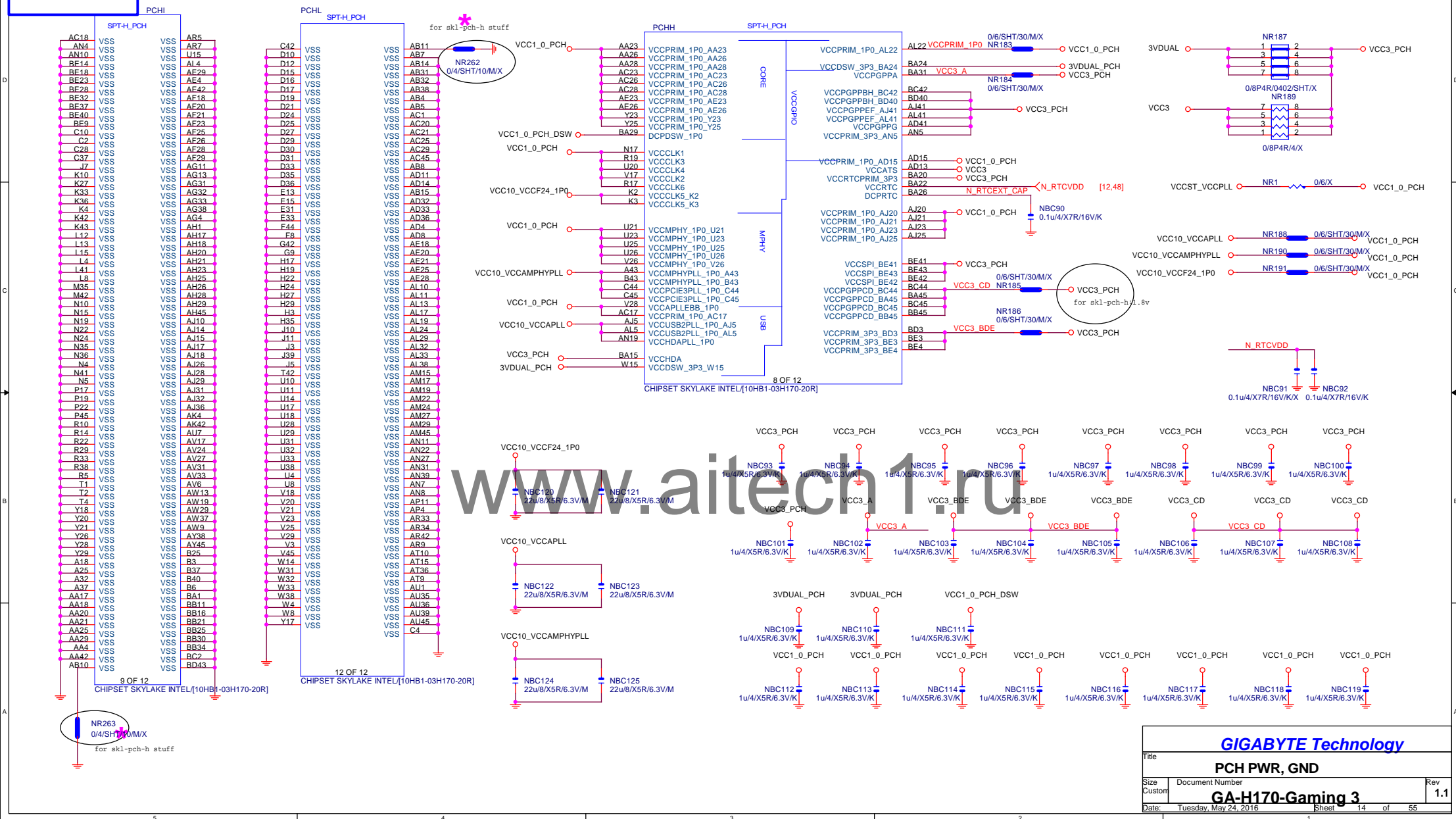






Rev 0.7



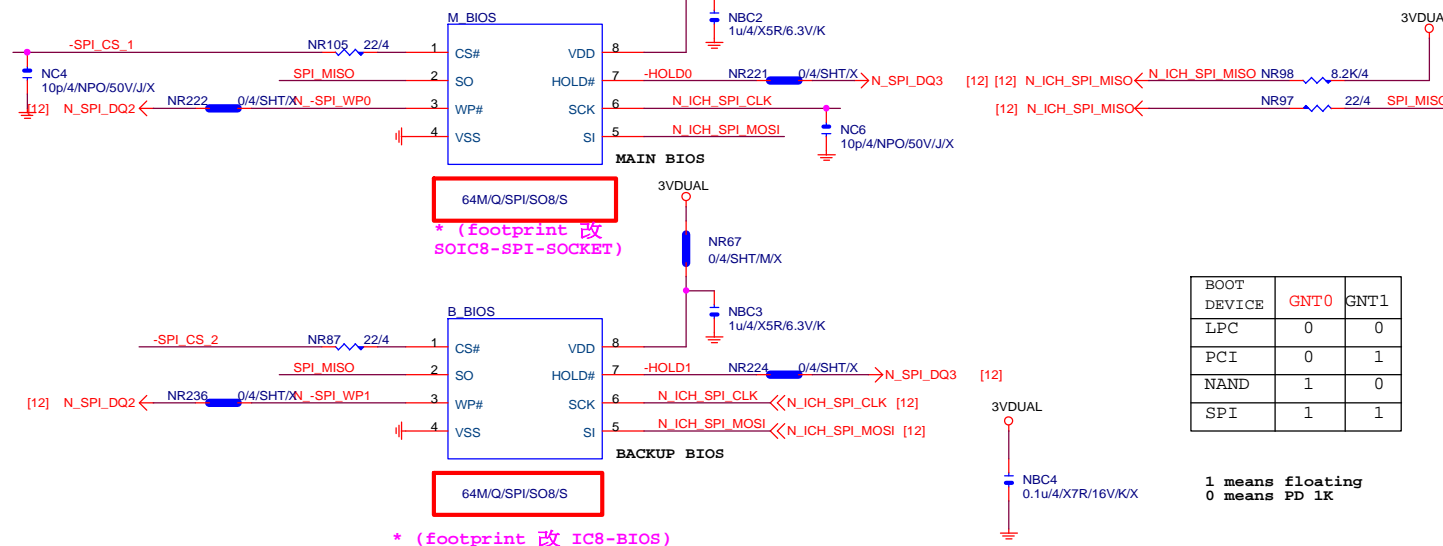


DUAL BIOS

MOSI For DMI RX Termination Voltage

指定用DII

指定用DII

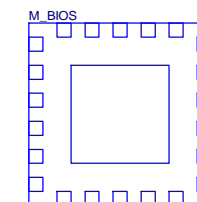


BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

1 means floating
0 means PD 1K

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Rev: 0.42

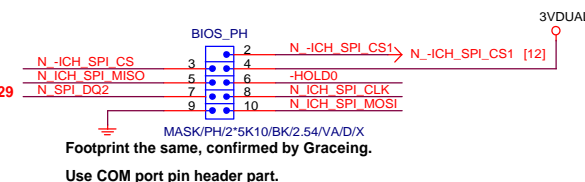


LCP/G-FL/1.27mm/200MIL/WHITE[10SL2-000008-31R]X

* 試産先上, PVT 移除, SPI Move to SMD

BIOS_PH

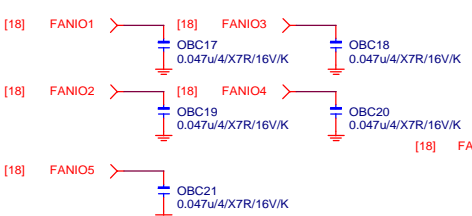
★Update 2015-01-29



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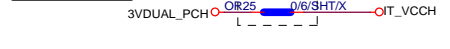
SIO IT8628CX REV:1.08



ERP WAKE on LAN (依LAN組態選擇)



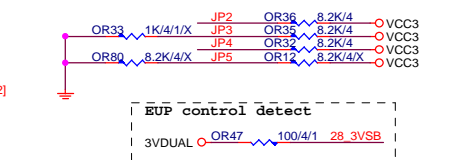
PWR SHT



SIO PU



SIO STRAP



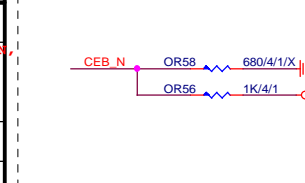
JP2	1	Disable WDT
JP2	0	Enable WDT to rest PWROK
JP3	1	Dual BIOS CS PIN Disable
JP3	0	Dual BIOS CS PIN Enable
JP4	1	k8 power sequency function is Disable
JP4	0	k8 power sequency function is Enable
JP5	1	anti-surge Disable
JP5	0	anti-surge Enable
JP3	1 1	The default value of EC Index 63h/6Bh/73h is 80h.
JP3	1 0	The default value of EC Index 63h/6Bh/73h is FFh.
JP5	0 1	The default value of EC Index 63h/6Bh/73h is 00h.
JP5	0 0	The default value of EC Index 63h/6Bh/73h is 40h.

CPU 端 A_-THRMTRIP不可與PCH及SIO N_-THRMTRIP直接連接。否則會出現無法拉Low情況。

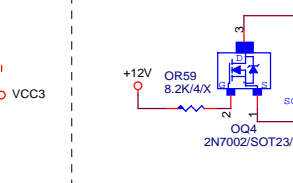
FAN TABLE	Rev:1.08
CPU_FAN	FAN_CTL1 FAN_TAC1
SYS_FAN1	FAN_CTL4 FAN_TAC4
SYS_FAN2	FAN_CTL3 FAN_TAC3
SYS_FAN3	FAN_CTL5 FAN_TAC5
OPT_FAN	FAN_CTL2 FAN_TAC2
THRMTRIP1	YES PIN60

IT8620E GPIO問題匯整	
PIN 50	GP26-第一次接上POWER時會拉 LO
PIN 90/91	DEFAULT 為 HDLED FUNCTION GP93 BYPASS TO GP92 高溫時 GP92 會被拉Lo(ITE BUG)
PIN 108	GP40--- POWER ON 時會拉 LO
PIN 111/112	MOUSE 跟FAN6 FUNCTION 擇一使用, 不然會互相干擾
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。

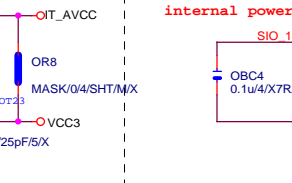
DUAL BIOS OPT STRAP



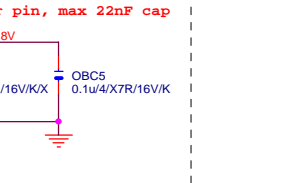
Power leakage



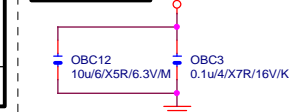
SIO_18V



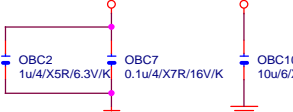
MB ID



SIO CAP



IT_VCC



IT_AVCC



3VDUAL_PCH

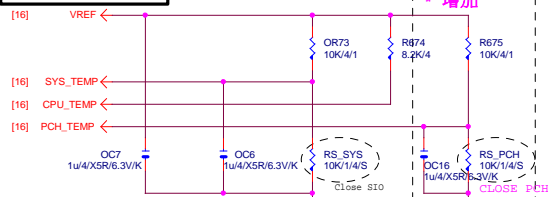


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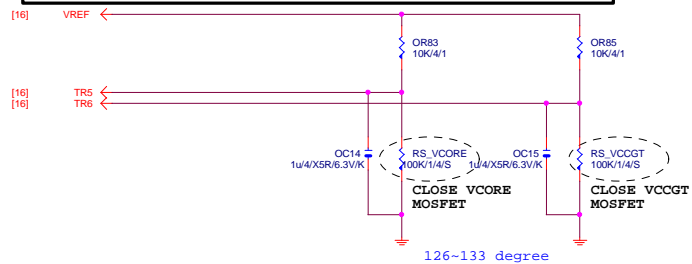
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REV:1.07

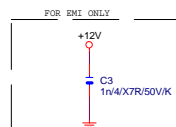
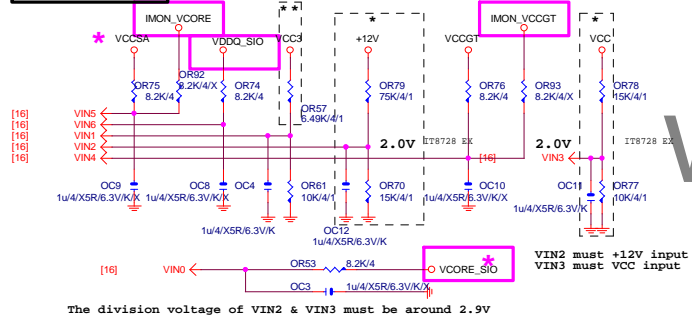
TEMP H/W MONITOR



RS_VCORE、RS_VCCGT、CLOSE CPU_VCORE & VCCGT MOSFET

~~PROCHOT: 有mos meartsink 不用prochot function~~

VOLTAGE-- H/W MONITOR

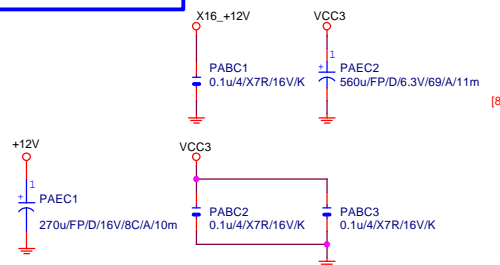


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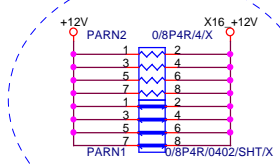
Rev 0.3

PCIEX16 CAP



PCIEX16 PROTECT SHT

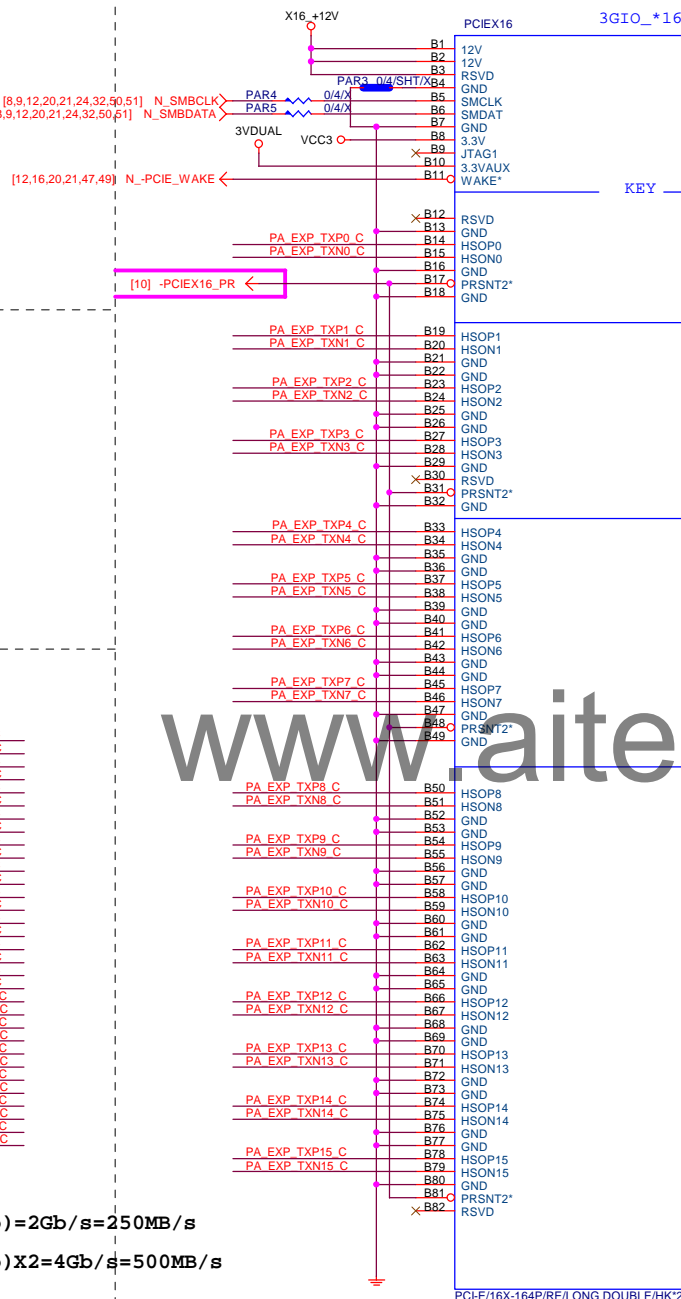
+12 protect short-wire test



PCIEX16 AC CAP

PA EXP TXP0	PAC5	0.22u/4/X5R/6.3V/K	PA EXP TXP0 C
PA EXP TXN0	PAC4	0.22u/4/X5R/6.3V/K	PA EXP TXN0 C
PA EXP TXP1	PAC6	0.22u/4/X5R/6.3V/K	PA EXP TXP1 C
PA EXP TXN1	PAC7	0.22u/4/X5R/6.3V/K	PA EXP TXN1 C
PA EXP TXP2	PAC8	0.22u/4/X5R/6.3V/K	PA EXP TXP2 C
PA EXP TXN2	PAC9	0.22u/4/X5R/6.3V/K	PA EXP TXN2 C
PA EXP TXP3	PAC10	0.22u/4/X5R/6.3V/K	PA EXP TXP3 C
PA EXP TXN3	PAC11	0.22u/4/X5R/6.3V/K	PA EXP TXN3 C
PA EXP TXP4	PAC12	0.22u/4/X5R/6.3V/K	PA EXP TXP4 C
PA EXP TXN4	PAC13	0.22u/4/X5R/6.3V/K	PA EXP TXN4 C
PA EXP TXP5	PAC14	0.22u/4/X5R/6.3V/K	PA EXP TXP5 C
PA EXP TXN5	PAC15	0.22u/4/X5R/6.3V/K	PA EXP TXN5 C
PA EXP TXP6	PAC16	0.22u/4/X5R/6.3V/K	PA EXP TXP6 C
PA EXP TXN6	PAC17	0.22u/4/X5R/6.3V/K	PA EXP TXN6 C
PA EXP TXP7	PAC18	0.22u/4/X5R/6.3V/K	PA EXP TXP7 C
PA EXP TXN7	PAC19	0.22u/4/X5R/6.3V/K	PA EXP TXN7 C
PA EXP TXP8	PAC20	0.22u/4/X5R/6.3V/K	PA EXP TXP8 C
PA EXP TXN8	PAC21	0.22u/4/X5R/6.3V/K	PA EXP TXN8 C
PA EXP TXP9	PAC22	0.22u/4/X5R/6.3V/K	PA EXP TXP9 C
PA EXP TXN9	PAC23	0.22u/4/X5R/6.3V/K	PA EXP TXN9 C
PA EXP TXP10	PAC24	0.22u/4/X5R/6.3V/K	PA EXP TXP10 C
PA EXP TXN10	PAC25	0.22u/4/X5R/6.3V/K	PA EXP TXN10 C
PA EXP TXP11	PAC26	0.22u/4/X5R/6.3V/K	PA EXP TXP11 C
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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

PCIEX16 SLOT



PCIESLOT-164DN-Q

3GIO_*16

PCI-E/16X-164P/RE/LONG DOUBLE/HK*2(11AC1-023164-E1R)

紅色

PCIEX16:16/5/5/5/16

PA EXP RXP0.15]	>>PA_EXP_RXP0.15] [4]
PA EXP RXN0.15]	>>PA_EXP_RXN0.15] [4]
PA EXP TXP0.15]	>>PA_EXP_TXP0.15] [4]
PA EXP TXN0.15]	>>PA_EXP_TXN0.15] [4]

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Title			
PCI EXPRESS * 16			
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PCI-E REV:1.1--> 2.5GHZ

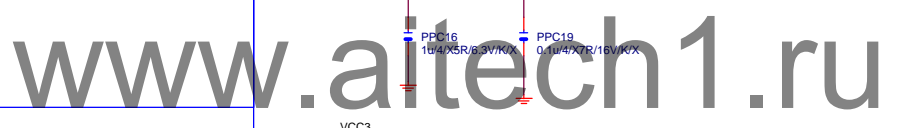
PCE-E X1(單向) BANDWITH=2.5GHz*(8b/10b)=2Gb/s=250MB/s

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

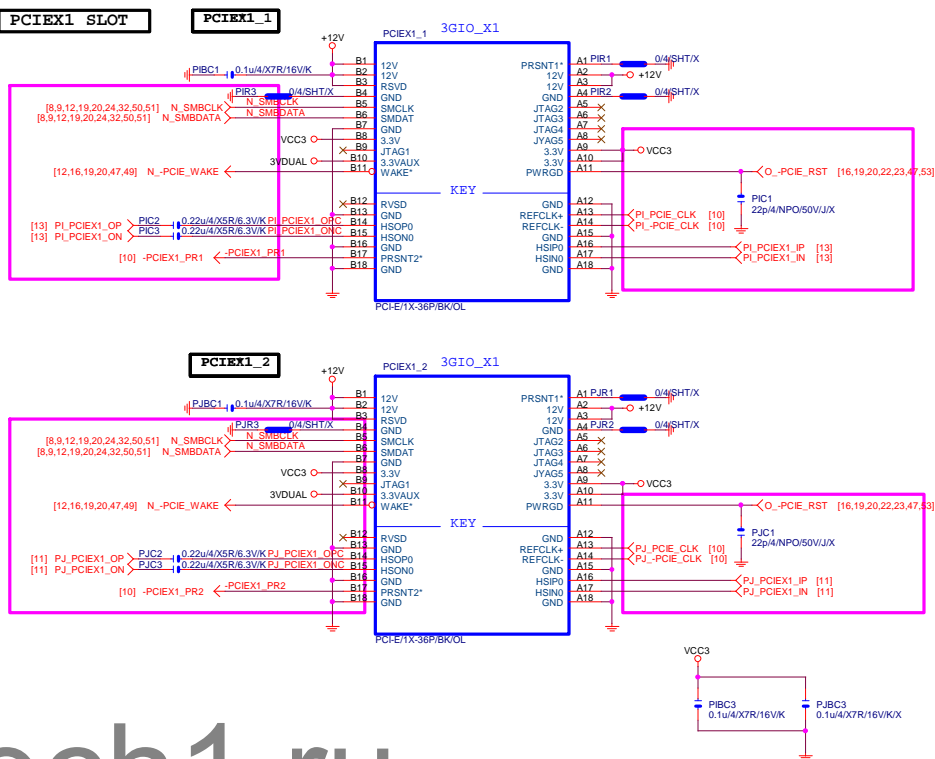
PCE-E X16(單向) BANDWITH=2.5GHz*(8b/10b)X16=32Gb/s=4GB/s

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

PCI-E REV:2.0--> 5GHZ



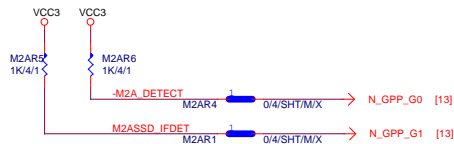
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PCIE_X4			
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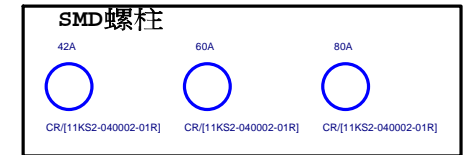
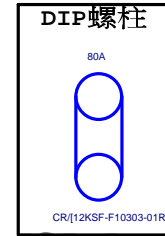
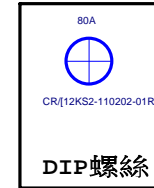
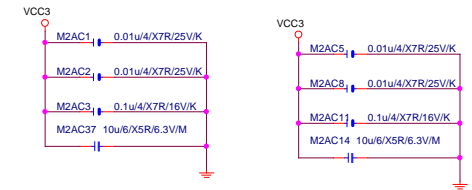
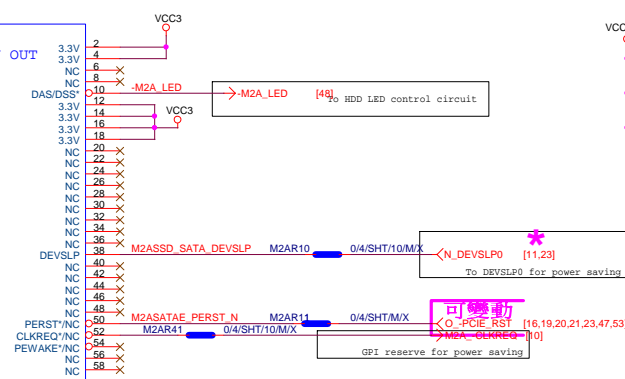
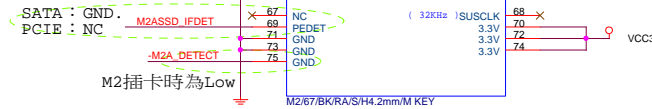
PCIEX4/X1 SWITCH

支援SATA and M.2 function



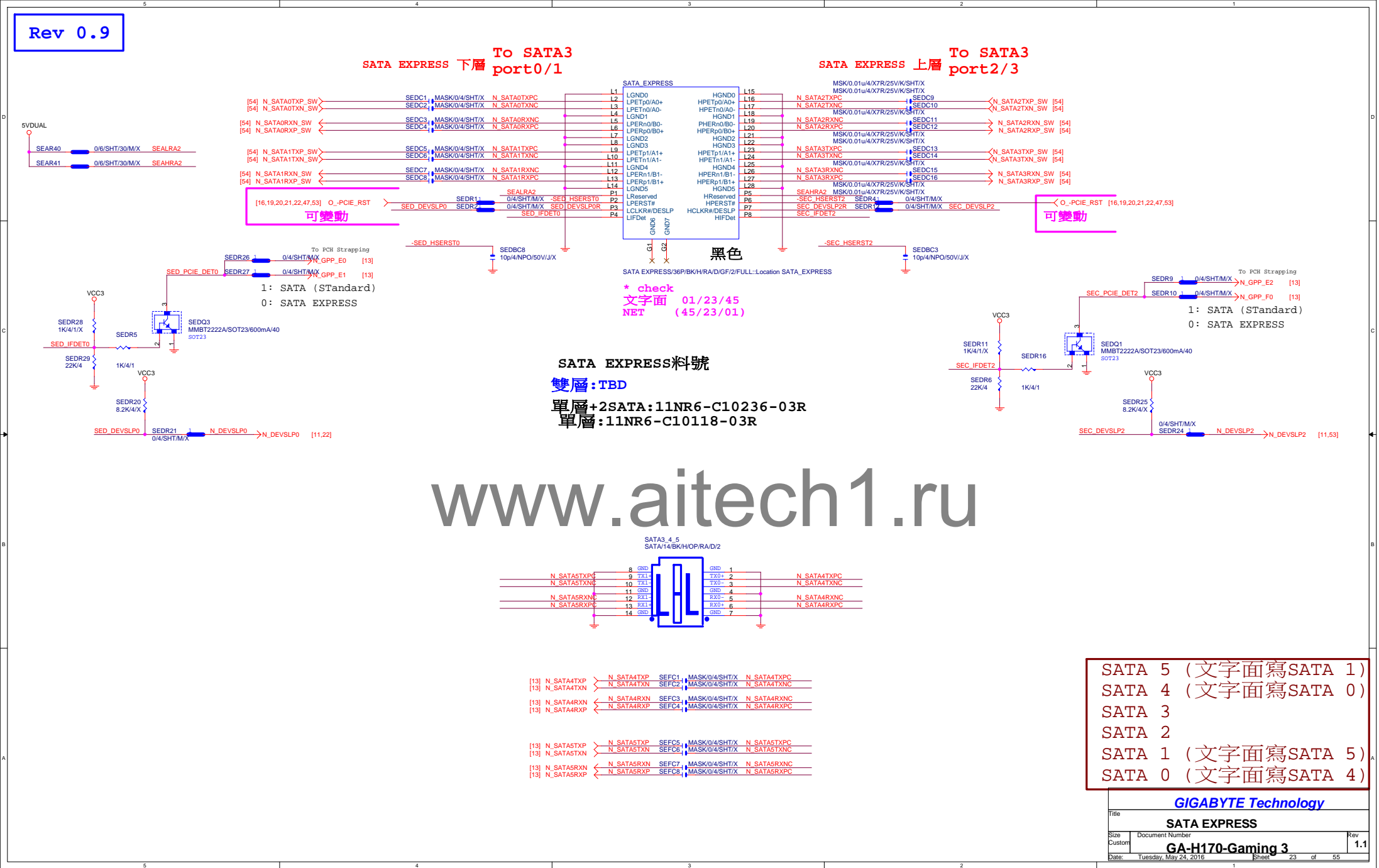
[10] CK_M2A_100M_DN
[10] CK_M2A_100M_DP

需與M2_-CLKREQ對應



M.2 有插卡 /沒插卡 GPP_G0	M.2插何種卡？ GPP_G1	SATA Express 插何種硬碟？ GPP_E0/E2/F1	I015 (S0)	I016 (S1)	I017	I018	I019 (S0)	I020 (S1)
有插卡 (Low)	SATA Mode (Low)	SATA (Hi)	SATA (M.2)	PCIE x1	PCIE x1	PCIE X1	PCIE x1	SATA
		SATA Express (Low)	SATA (M.2)	PCIE x1	PCIE x1	PCIE x1	SATA Express	
	PCIE Mode (Hi)	SATA (Hi)	PCIE x4 (For M.2)				SATA	SATA
		SATA Express (Low)	PCIE x4 (For M.2)				SATA Express	
沒插卡 (Hi)	Don't Care (Hi)	SATA (Hi)	PCIE x4				SATA	SATA
		SATA Express (Low)	PCIE x4				SATA Express	

Rev 0.9

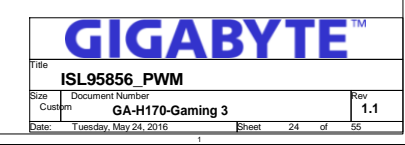


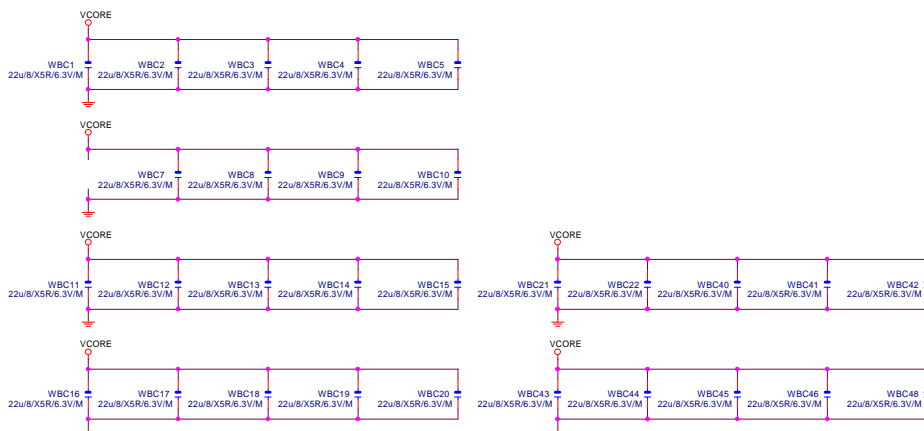
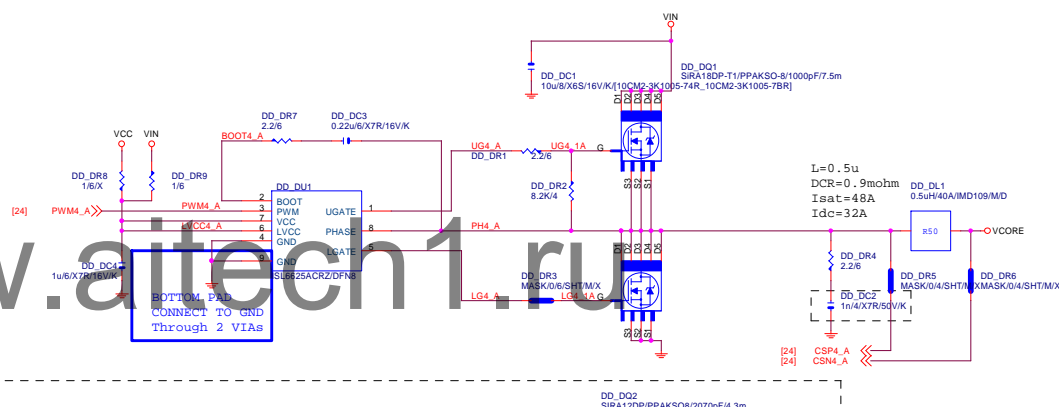
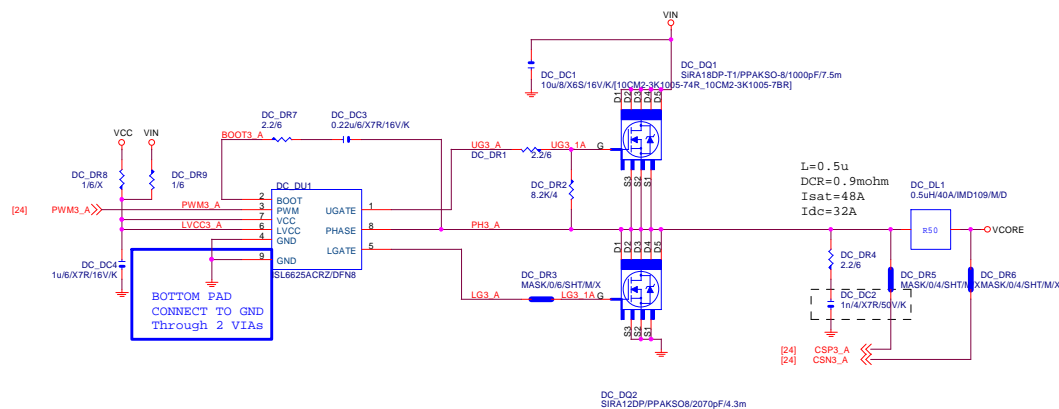
SATA 5	(文字面寫SATA 1)
SATA 4	(文字面寫SATA 0)
SATA 3	
SATA 2	
SATA 1	(文字面寫SATA 5)
SATA 0	(文字面寫SATA 4)

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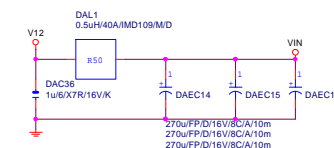
SATA EXPRESS

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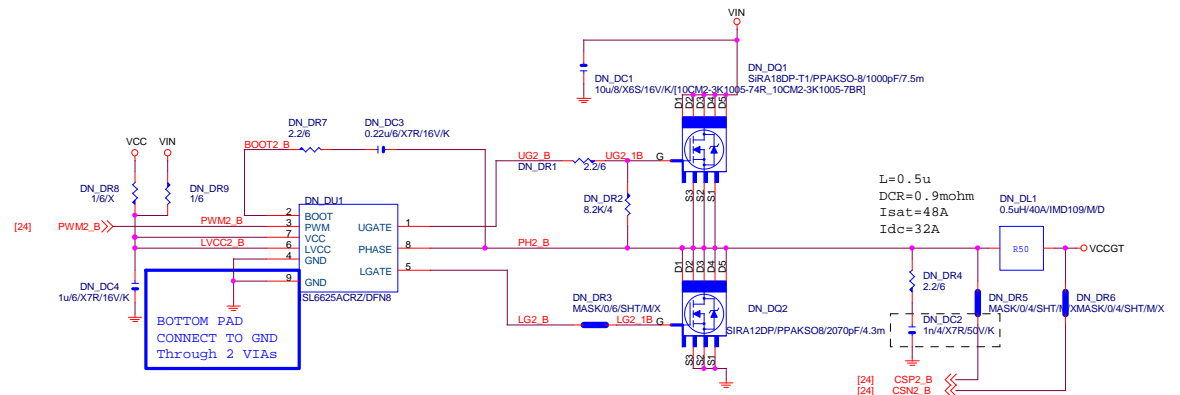


VIN CAP	270u*3PCS
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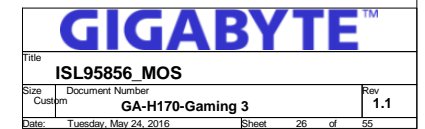
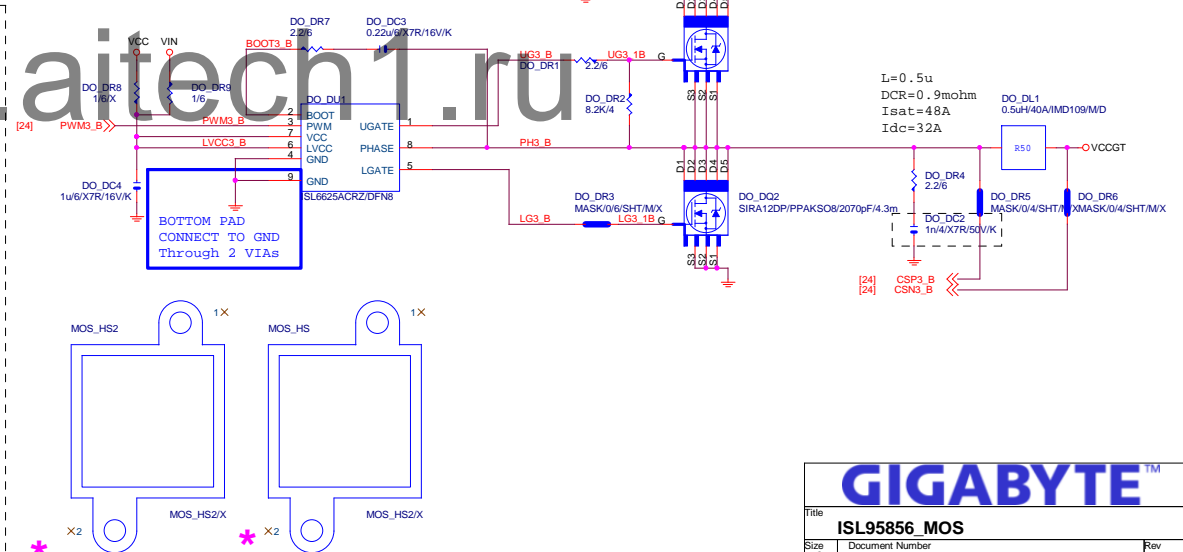
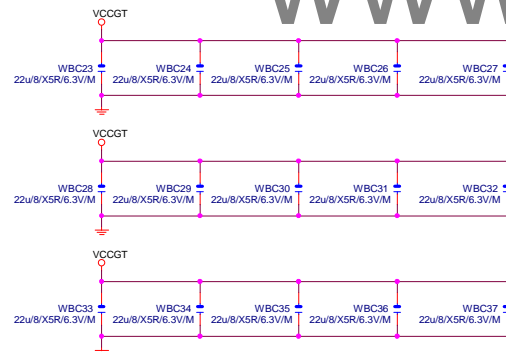
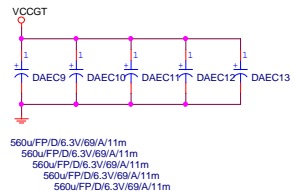


GIGABYTE

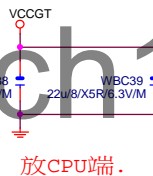
Title			
ISL95856_MOS			
Size	Document Number	Rev	
Custom	GA-H170-Gaming 3	1.1	
Date:	Tuesday, May 24, 2016	Sheet	25 of 55

[illegible]

VCCGT CAP 560u*5PCS
22u*15PCS



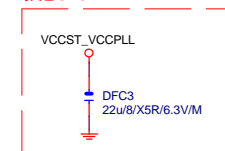
VCCSA



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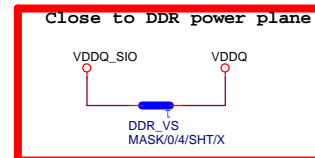
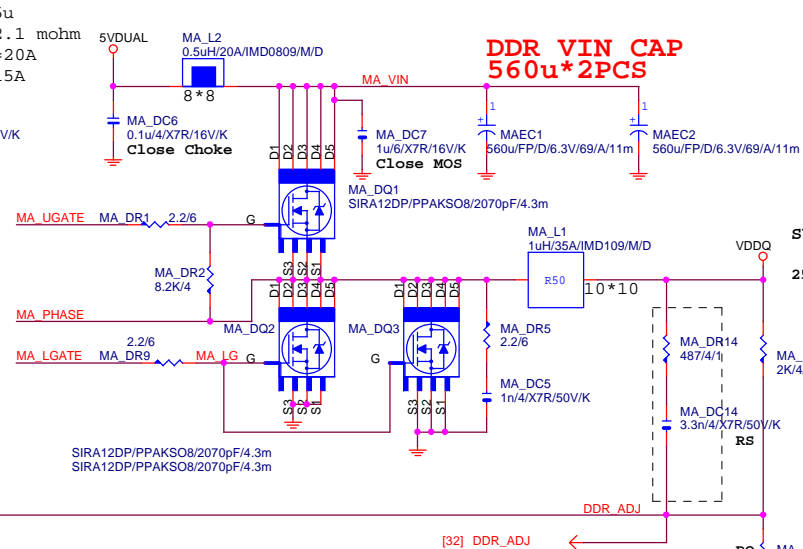
放CPU端.

VCCST_VCCPLL

**GIGABYTE™**

Title			
VCCSA_VCCIO_no 44E			
Size	Document Number	Rev	
Custom	GA-H170-Gaming 3	1.1	
Date:	Tuesday, May 24, 2016	Sheet	27 of 55

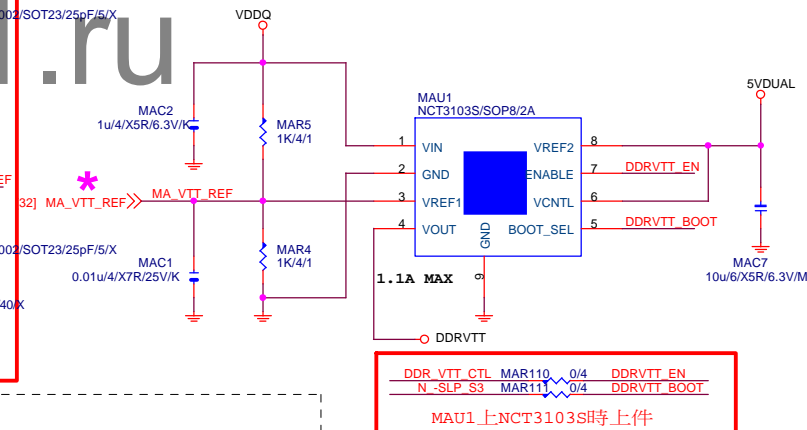
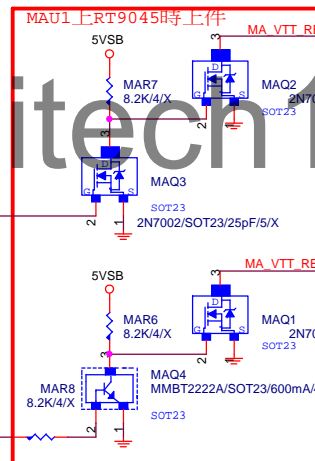
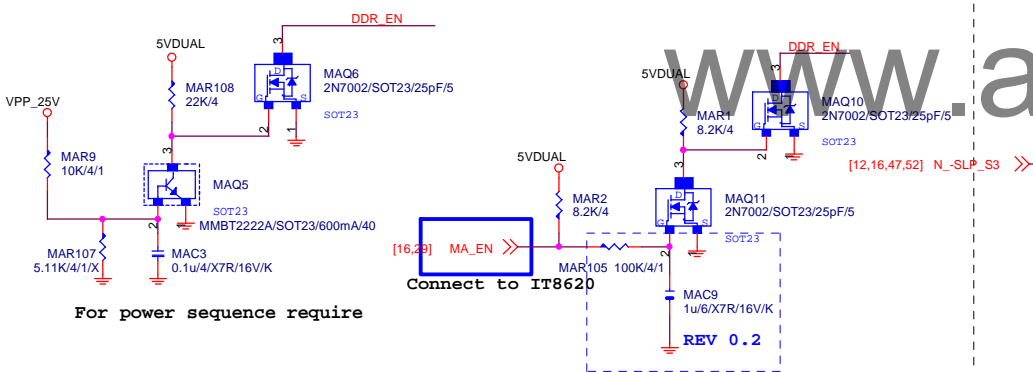
DDR4



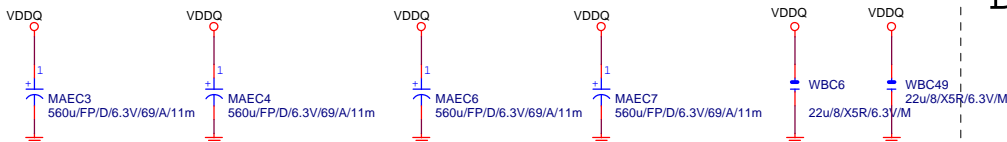
SUPPORT DDR4 1.2V

25A MAX
L=0.5u
DCR=1.05 mohm
Isat=40A
MA DR13
Idc=30A

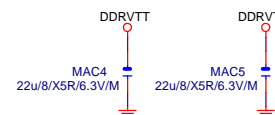
Remote sense請從最重的負載端點拉回



DDR CAP 560u*4PCS * 大電容 x4

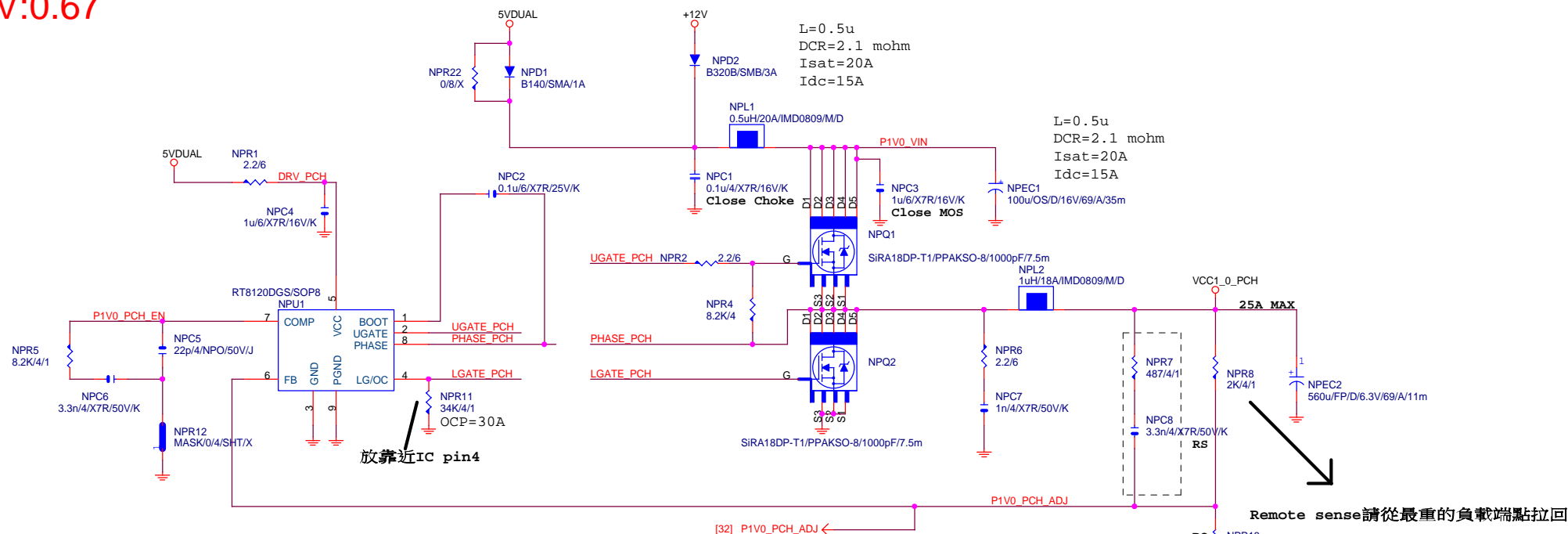


DDRVTT CAP

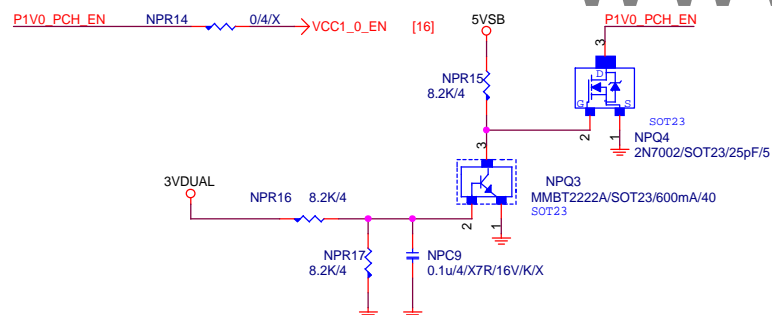
**GIGABYTE™**

Title			
RT8120_DDR4 POWER			
Size	Document Number	Rev	
Custom	GA-H170-Gaming 3	1.1	
Date:	Tuesday, May 24, 2016	Sheet	28 of 55

REV:0.67



PWR SEQ



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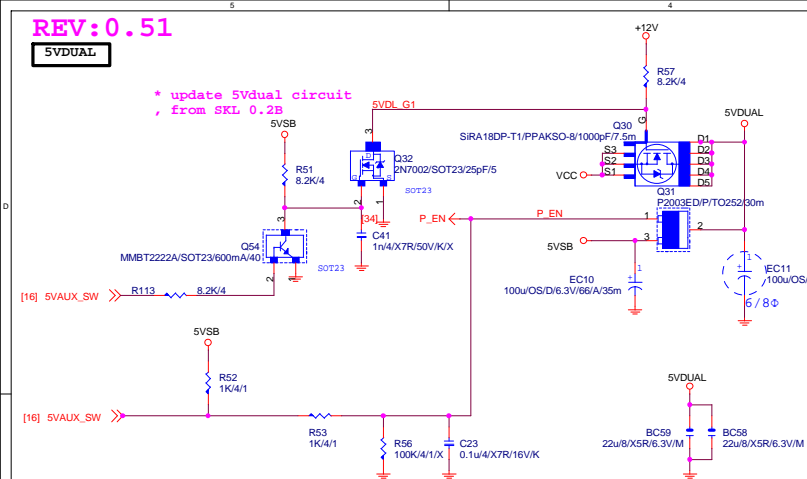
請放置CHOKE一出來的地方

GIGABYTE™

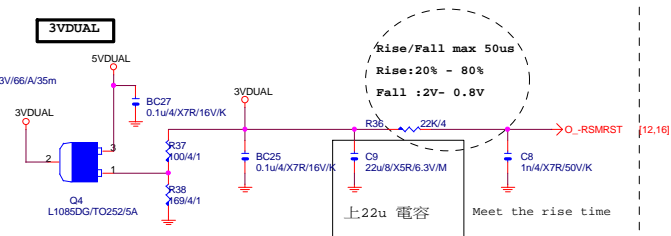
Title			
RT8120_PCH POWER			
Size	Document Number	Rev	
Custom	GA-H170-Gaming 3	1.1	
Date:	Tuesday, May 24, 2016	Sheet	30 of 55

5VDUAL

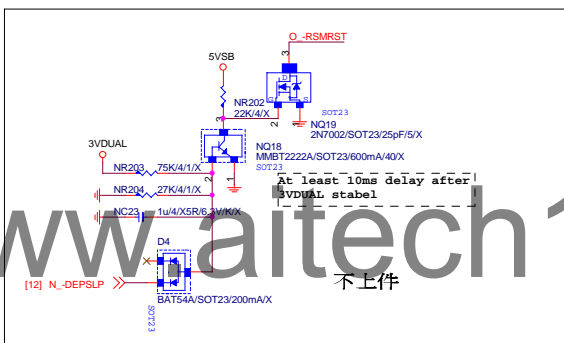
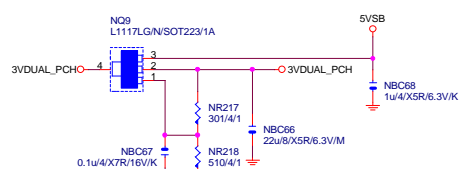
* update 5Vdual circuit
 , from SKL 0.2B



3VDUAL



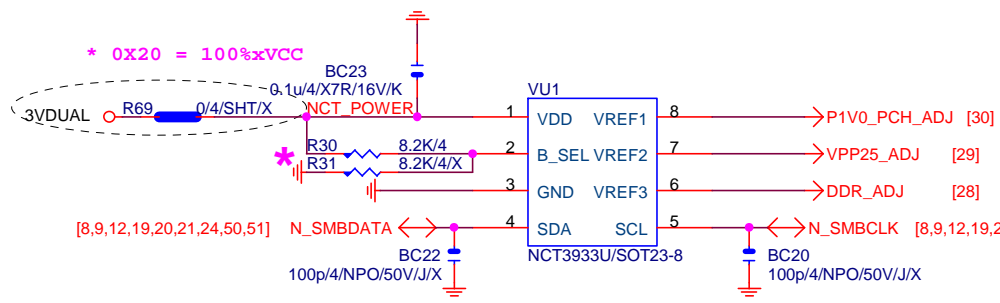
3VDUAL_PCH



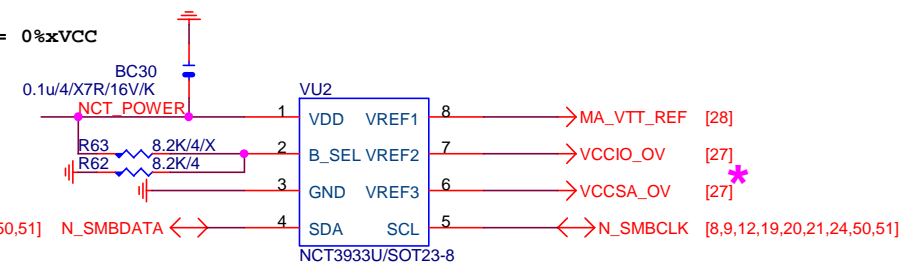
GIGABYTE Technology

Title		
DISCRETE POWER		
Size	Document Number	Rev
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OVER VOLTAGE



0X2A = 0%xVCC



0X22 = 75%xVCC

NCT3933	0X2A	0X20	0X22
VREF1	DDRVTT	VREF_DDRA_DQ	PCH Core
VREF2	VREF_DDRA_CA	N/A	VCCL_5_PCH
VREF3	VREF_DDRA_CA	VREF_DDRB_DQ	SMREF

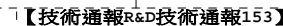
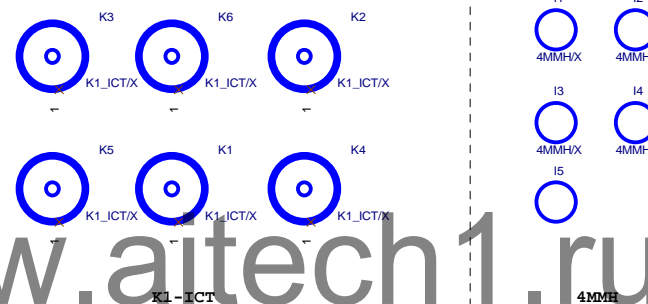
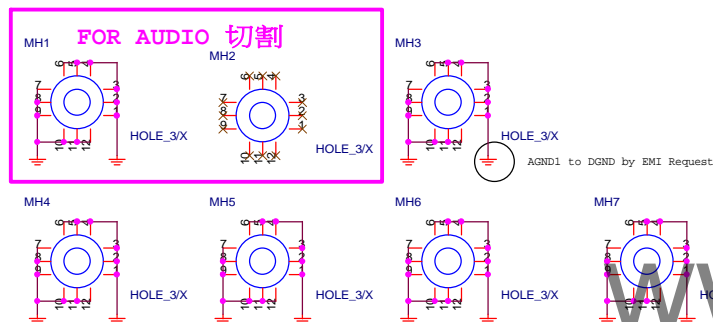
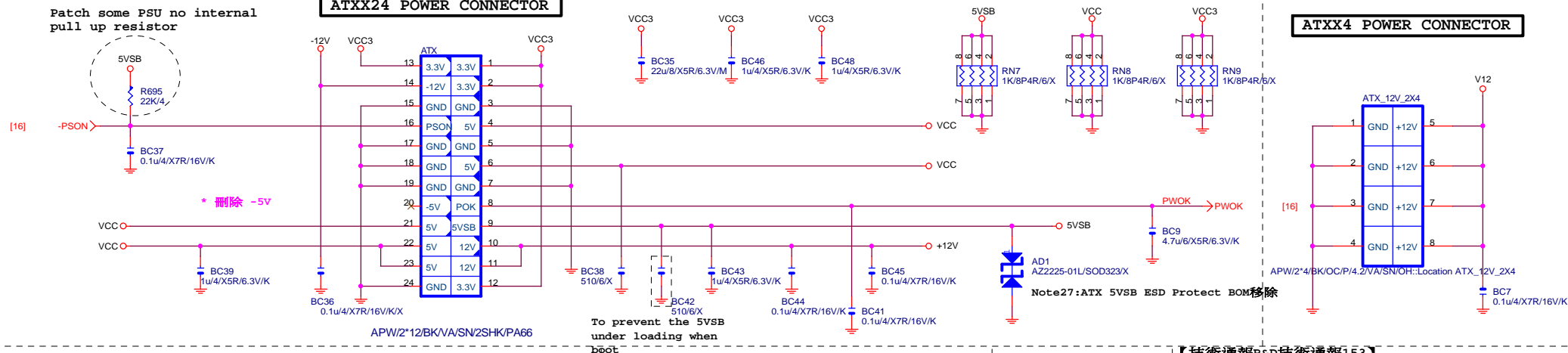
GIGABYTE Technology

Title: NCT3933

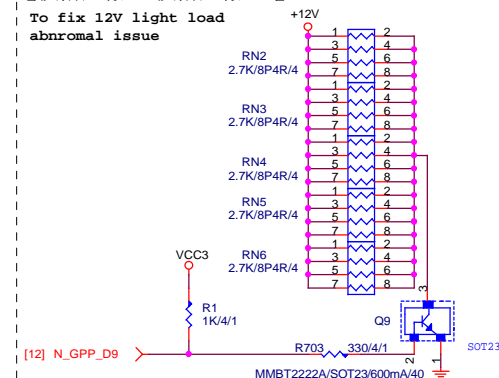
Size: Custom Document Number: GA-H170-Gaming 3 Rev: 1.1

Date: Tuesday, May 24, 2016 Sheet 32 of 55

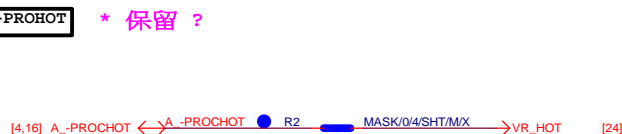
ATXX4 POWER CONNECTOR



To fix 12V light load
abnromal issue

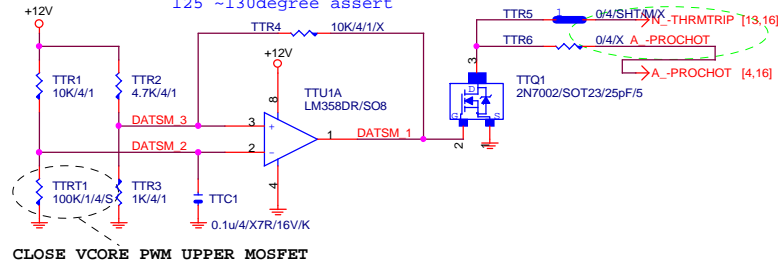


-PROHOT * 保留 ?



-PROHOT

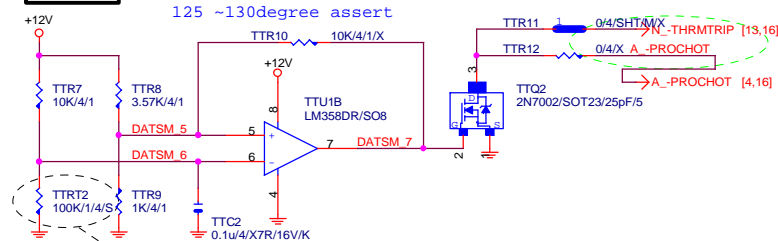
OTP:132度 / PCB THERMAL TRIP:122 度
125 ~130degree assert



CLOSE VCORE PWM UPPER MOSFET

-PROHOT

OTP:132度 / PCB THERMAL TRIP:122 度
125 ~130degree assert



CLOSE VCCGT PWM UPPER MOSFET



GIGABYTE Technology

ATX POWER CONNECTOR

GA-H170-Gaming 3

Rev
1.1

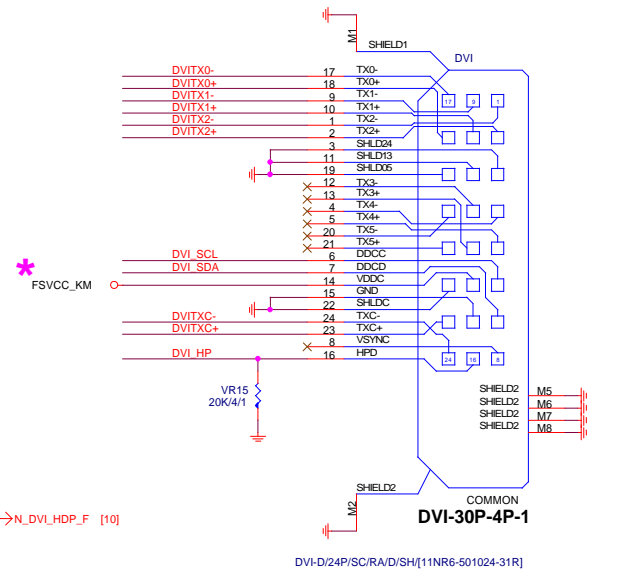
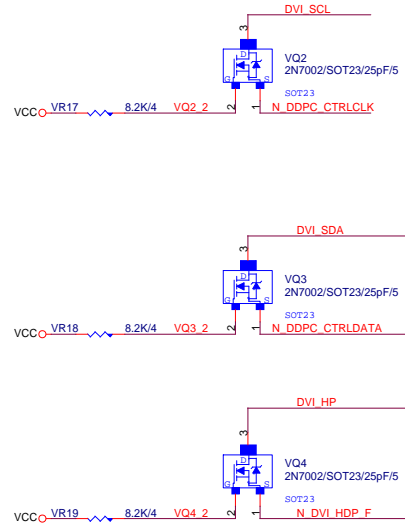
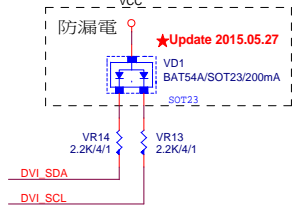
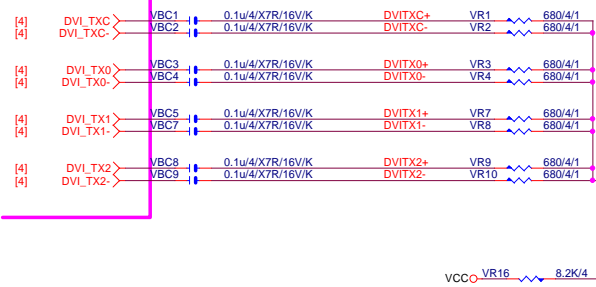
Date: Tuesday, May 24, 2016

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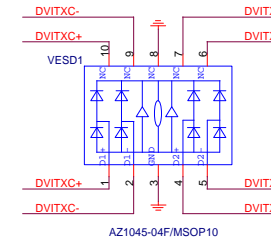
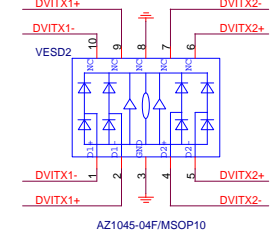
NET 可變

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

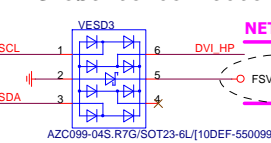


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Close to connector



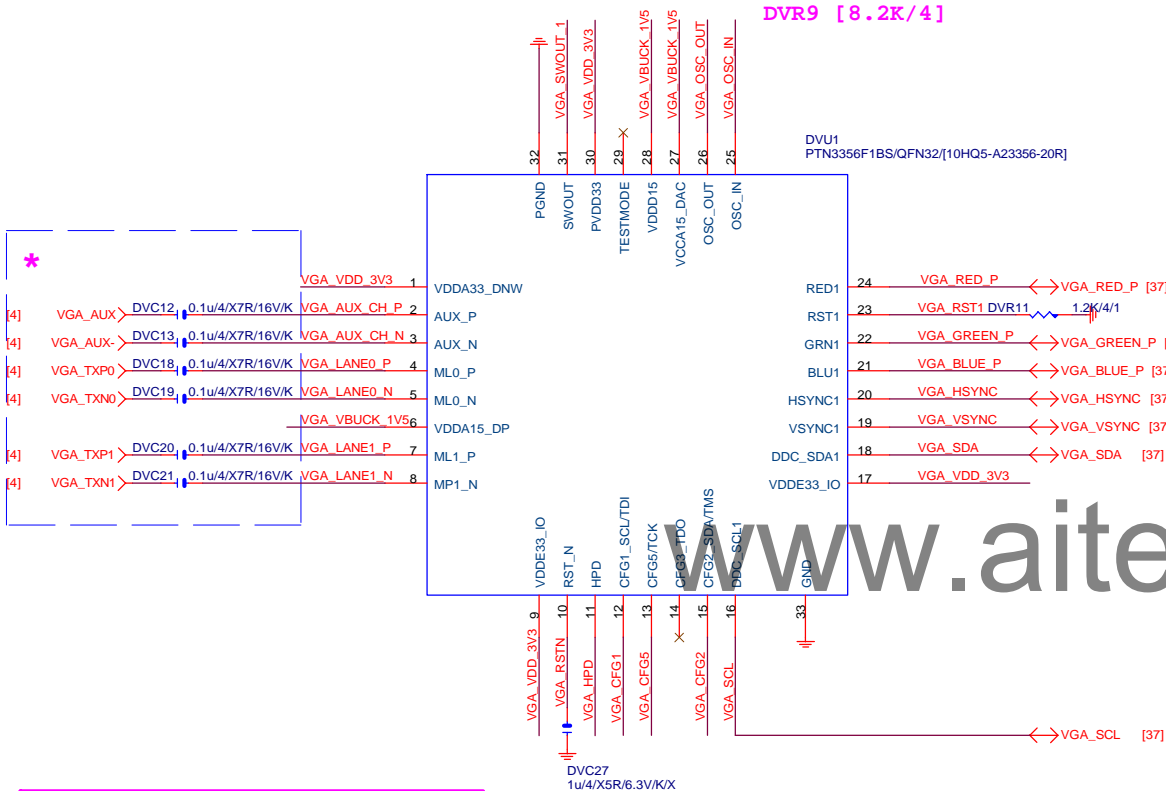
Close to connector



GIGABYTE Technology			
Title			
DVI CONN			
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1. 上件:
DVC28 [10p/4/NPO/50V/J]
DVC11 [10p/4/NPO/50V/J]~修改值
DVR10 [8.2K/4]

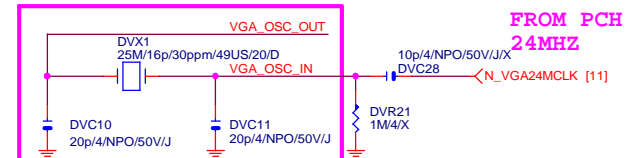
2. 刪除:
DVX1 [25M/16p/30ppm/49US/20/D]
DVC10 [20p/4/NPO/50V/J]
DVR9 [8.2K/4]



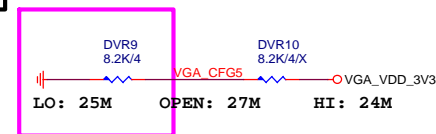
放置PCH端



From PCH 24MHz Issue



For Crystal Less



VCC3

DVL1
0/6/SHT/M/X

VGA_VDD_3V3

DVC14
4.7uF/X5R/6.3V/K

DVC15
0.1uF/X7R/16V/K

DVC16
0.1uF/X7R/16V/K

DVC17
0.1uF/X7R/16V/K

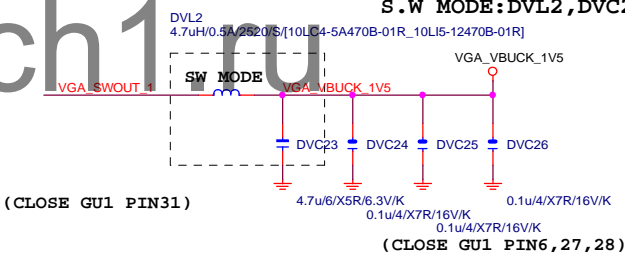
DVC22
0.1uF/X7R/16V/K

(CLOSE GU1 PIN1,9,17,30)

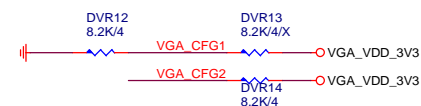
```

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

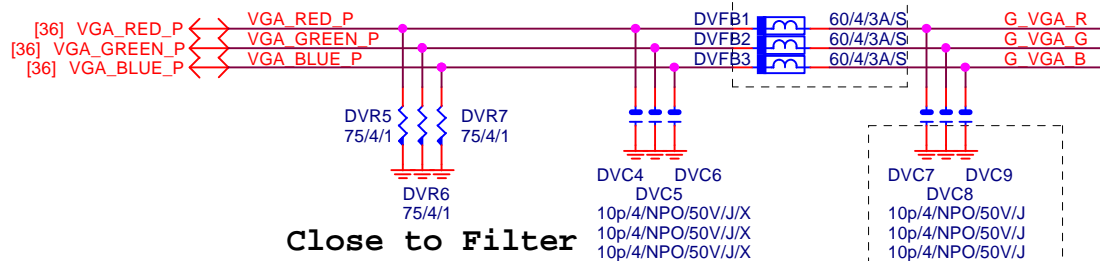
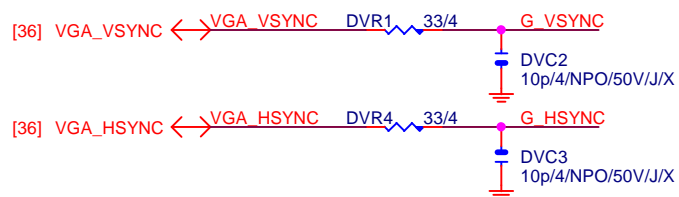
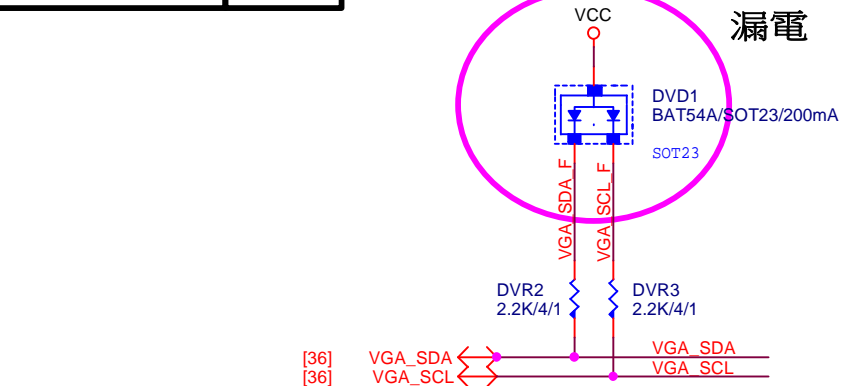
```



Non-Compliant

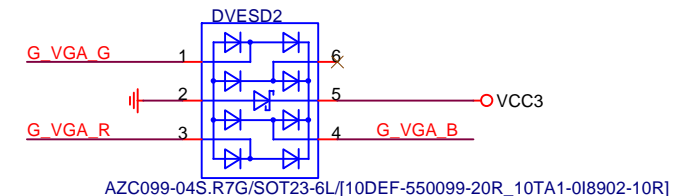
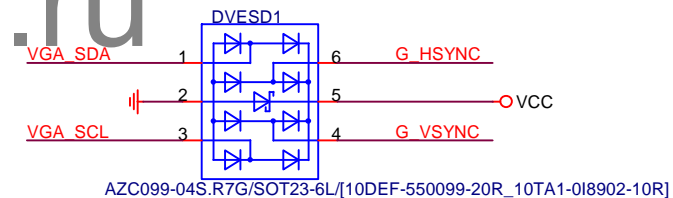
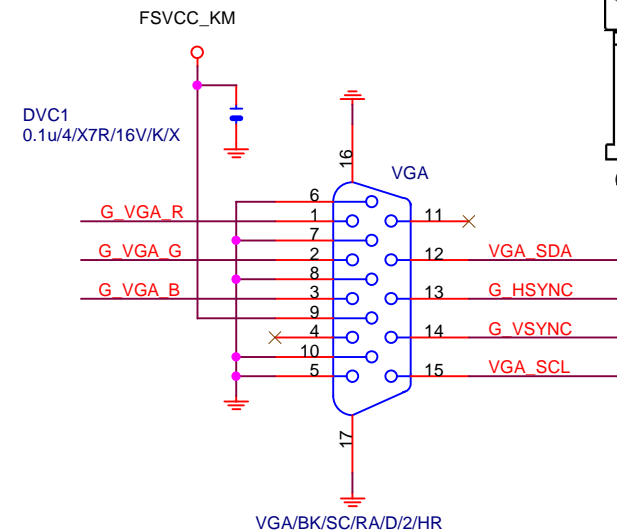


The diagram shows a horizontal line representing the signal N_VGA_HDP_F [10]. A red vertical arrow labeled "VGA_HPD" points to the rising edge of the signal. A blue vertical arrow labeled "DVR16 100K/4/1/X" points to the falling edge of the signal. The signal transitions from high to low at the rising edge of VGA_HPD.



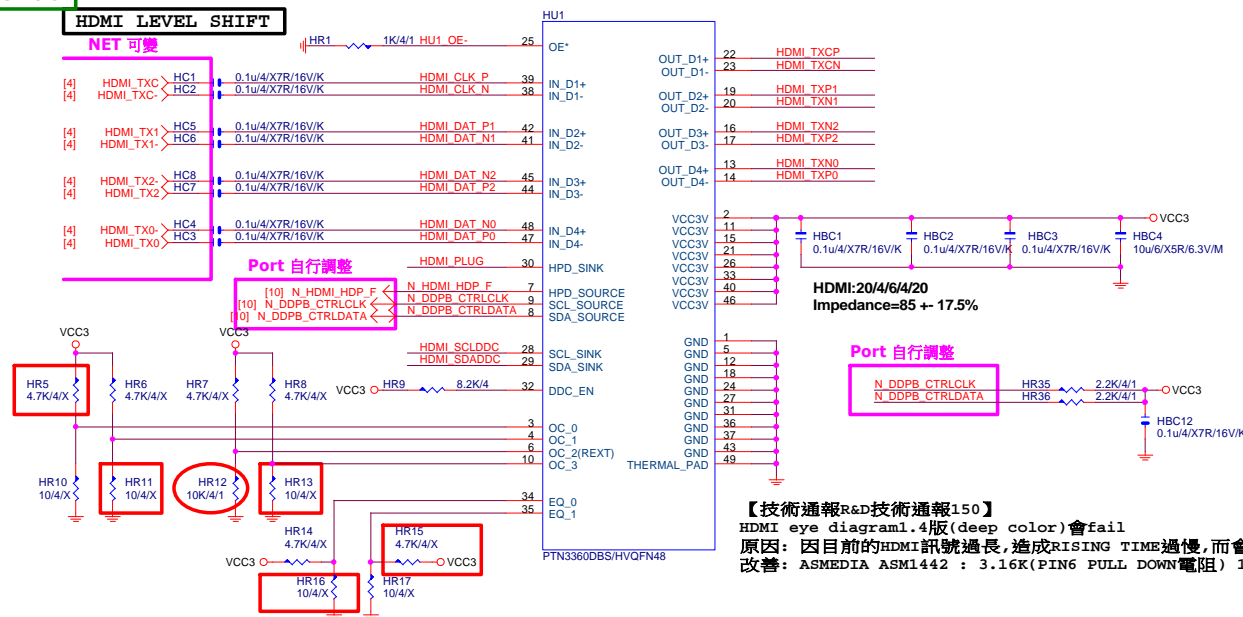
Close to Filter

FOR EMI



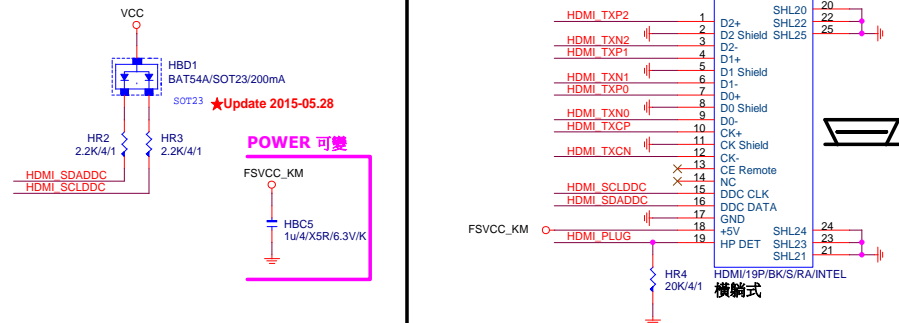
Gigabyte Technology
NXP-PTN3356

Title		
Size	Document Number	Rev
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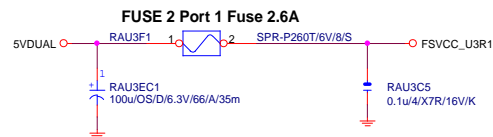
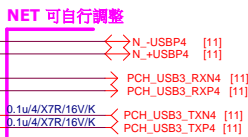
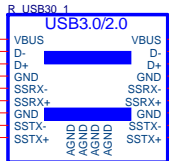
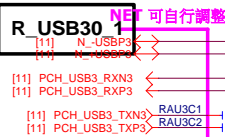
PTN3360:PIN 4/10/34/35 NC PIN,都不上值;只上HR12:10K
PTN3360DBS/HVQFN48

ASM1442:紅色框要上,HR12:3.16K
ASM1442K/QFN-48L/[10TA1-051442-30R]

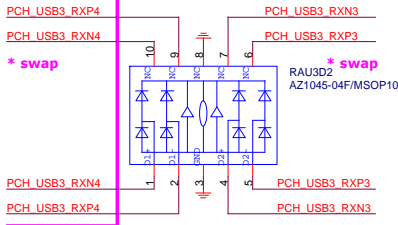


【技術通報R&D技術通報150】
HDMI eye diagram1.4版(deep color)會fail
原因: eye diagram的HDMI訊號過長,造成RISING TIME過慢,而會壓到eye diagram
改善: ASMEDIA ASM1442 : 3.16K(PIN6 PULL DOWN電阻) 10ohm(PIN4 PULL DOWN電阻)

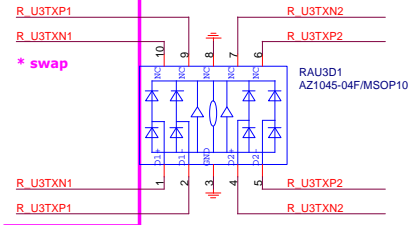
Rev: 0.53



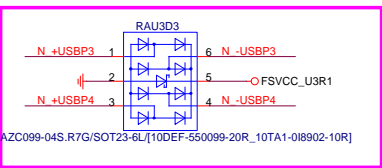
NET 可自行調整



NET 可自行調整

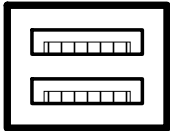


NET 可自行調整



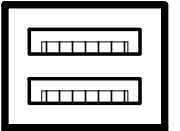
CONNECTOR 自行調整

2 port USB 3.0 Capture:
USB/18P/BU/OS/RA/D/2/1U/SB



Footprint:USB30_20

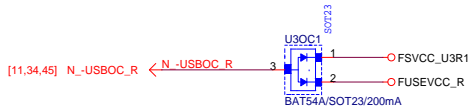
2 port USB 3.0 with TYPE C Capture:
USB/18P/BU/OS/RA/D/2/HR



架高

Footprint:USB30_H

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GIGABYTE Technology

Title R_USB30,F_USB30, USB_OC

Size Custom Document Number GA-H170-Gaming 3 Rev 1.1

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LAN: E2201 R1.05

離IC近越好

[10] LA_SRCCLK_LAN
[10] LA_SRCCLK_LAN

[11] LA_ML_OP
[11] LA_ML_ON

LAC1 0.1u/4/X7R/16V/K
LAC2 0.1u/4/X7R/16V/K

LA_ML_OP C
LA_ML_ON C

LA_ML-->80歐姆:[15/5/5/5/15]

SRCCLK-->50歐姆:[18/4/10/4/18]

LABC5
0.1u/4/X7R/16V/K

LABC4
1u/4/X5R/6.3V/K

LABC3
0.1u/4/X7R/16V/K

[41] LA_LED_ACT_TXRX
[41] LA_LED_LINK100

LA_AVDDVCO

LABC7
0.1u/4/X7R/16V/K

LABC8
4.7u/6/X5R/6.3V/K

AR8161-->(O)

LA_ML-->80歐姆:[15/5/5/5/15]

離IC近越好

LA_ML_IP C LAC12 0.1u/4/X7R/16V/K
LA_ML_IN C LAC13 0.1u/4/X7R/16V/K

LA_PPS
LA_LED_LINK1000
LA_AVDDH
LA_MDI3- [41]

LAR9 0/4/X
LABC14 0.1u/4/X7R/16V/K/X

LABC17 0.1u/4/X7R/16V/K

3VDUAL_LAN1

LABC9 10u/6/X5R/6.3V/M

LABC10 1u/4/X5R/6.3V/K

LABC11 0.1u/4/X7R/16V/K

LAC33 100p/4/NPO/50V/J/X

LAR6 8.2K/4

[16.49] O_-RFMRST2
[16] N_PCF1_WAKE

LAREQ1 0/4/SHT/M/X

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

LABC12 1u/4/X5R/6.3V/K/X

LABC15 1u/4/X5R/6.3V/K

LABC16 0.1u/4/X7R/16V/K

LABC18 1u/4/X5R/6.3V/K

LABC19 0.1u/4/X7R/16V/K

LAR10 2.37K/4/1

LAX1 25M/16p/30ppm/49US/20/D

LA_XTALI

LA_XTALO

LAC31 20p/4/NPO/50V/J

LAC32 20p/4/NPO/50V/J

Qualcomm
(Atheros)
Killer
E2201

EGND

TX_P
TX_N
NC

TESTMODE2
TESTMODE1
TESTMODE0

PPS
LED2
AVDDH
TRXN3

LA_MDI0-
LA_MDI0
LA_MDI1-
LA_MDI1
LA_MDI2-
LA_MDI2
LA_MDI3-
LA_MDI3

LABC20 0.1u/4/X7R/16V/K/X

LABC21 0.1u/4/X7R/16V/K

LAR19 MASK/0/4/SHT/X 3VDUAL_LAN1

LABC22 1u/4/X5R/6.3V/K

E2400-R1V1-R1-RODFN40
E2400-S1V1-R1-RODFN40
Change E2400 LAN FW BOOT ROM 需Update

LAN POWER

LAL1 4.7uH/0.8A/3225/S/10LC4-5A470B-01R

LA_LX OUT

LA_LX

CLOSE
LA_LX 200mH

LABC1 10u/6/X5R/6.3V/M

LABC2 0.1u/4/X7R/16V/K

LA_DVDDL

LAR5 MASK/0/6/SHT/XLAFB1 30/4/4A/S

AR8161-->(O)

AR8161-->BEAD

LA_AVDDL

LAFB3 30/4/4A/S

AR8161-->BEAD

LA_AVDDH

LAR7 8.2K/4

LA_LED_ACT_TXRX

LAR8 8.2K/4

LA_LED_LINK100

VCC3

LAR11 8.2K/4

LA_VDDCT

GIGABYTE Technology

KILLER E2400

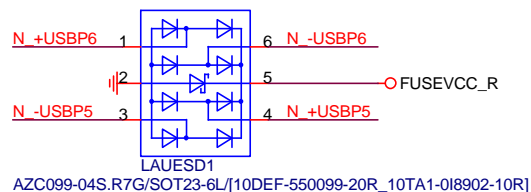
GA-H170-Gaming 3

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R1.05

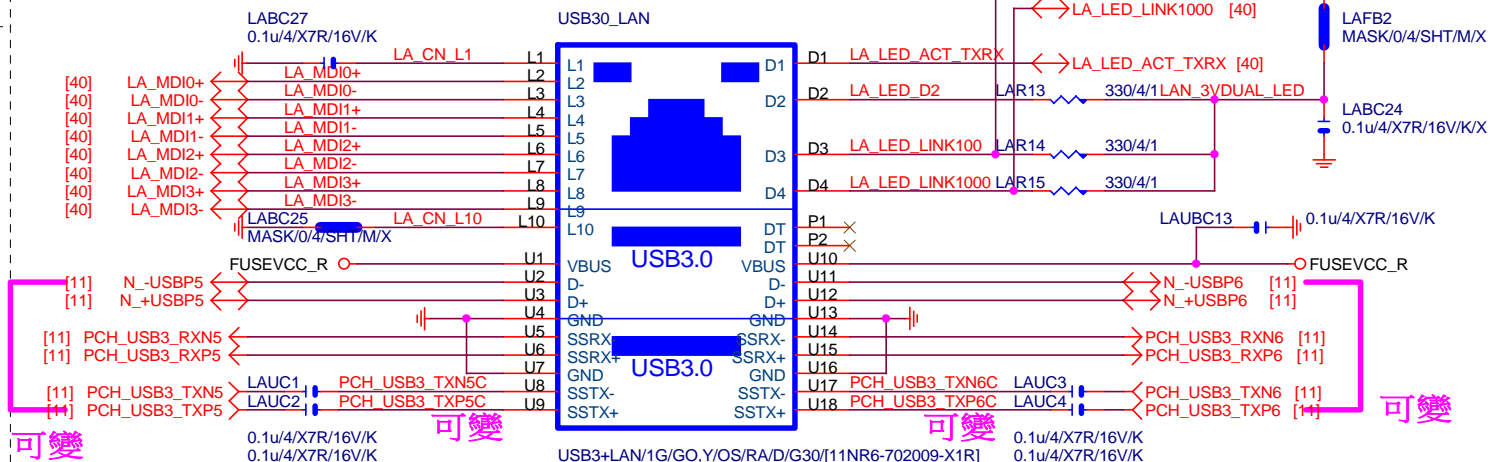
note:可變更USB NAME

可變



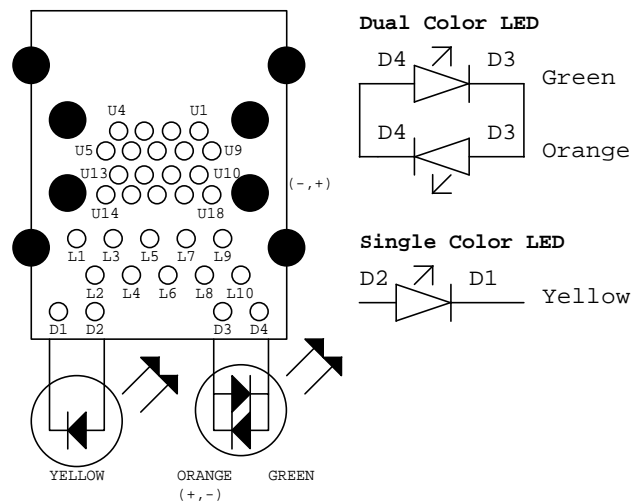
note:可變更USB NAME

[E2201]



LA MDI-->100歐姆:[20/4/8/4/20]

Dual Color LED



FOOT PRINT:LAN COVER

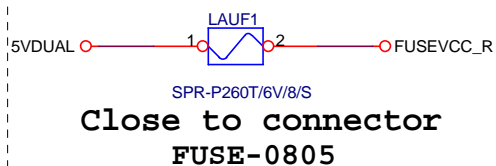
可變
[視SPEC需求]

LAN
COVER
E2400

LAN_HS/[11NH1-LNC001-21R]

note:可變更FUSE

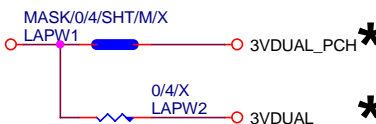
可變



PS:視EMI需求

LAR24 MASK/0/4/SHT/M/X

可變



GIGABYTE Technology

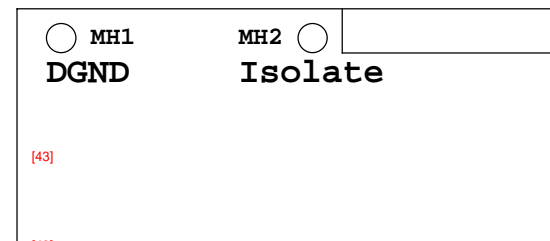
LAN CONNECTOR-E2400

GA-H170-Gaming 3

Title			
LAN CONNECTOR-E2400			
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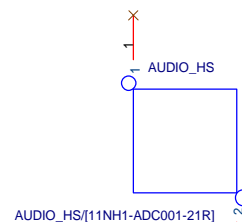
ALC1150 五孔+SPDIF
AUDIO JACK

1. MH1空間夠,下DGND
空間不夠,改為Isolate
2. MH2一律改為Isolate
3. Codec下方,第二層必須參考GND



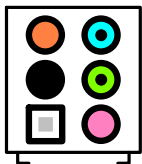
音效區域印刷

Close to ALC1150

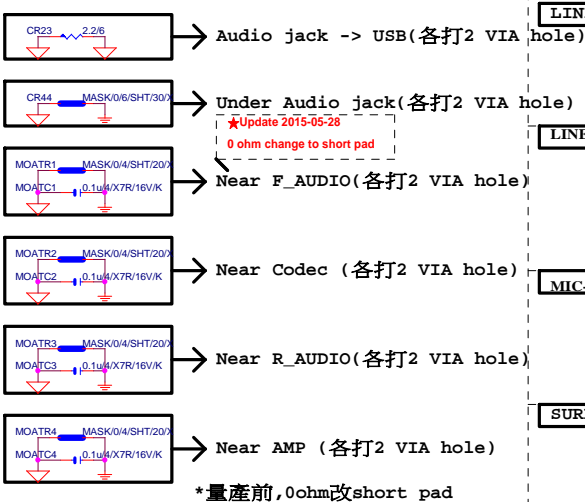
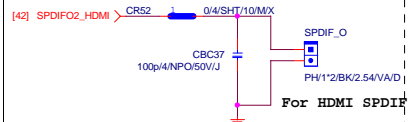


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ALC1150			
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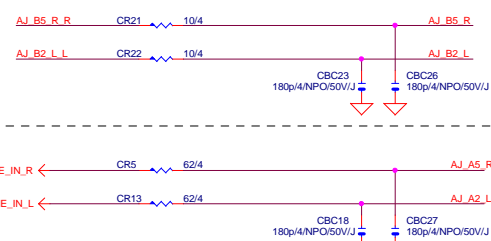
AZALIA JACK



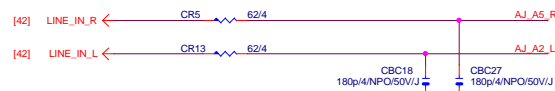
SPDIF_OUT



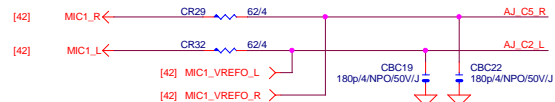
LINE-OUT



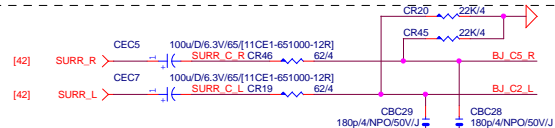
LINE-IN



MIC-IN

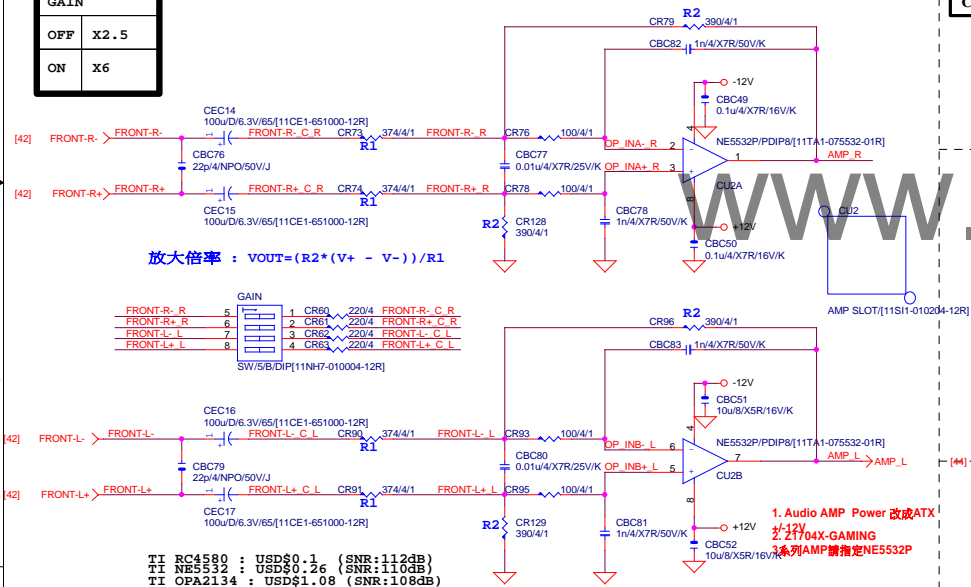
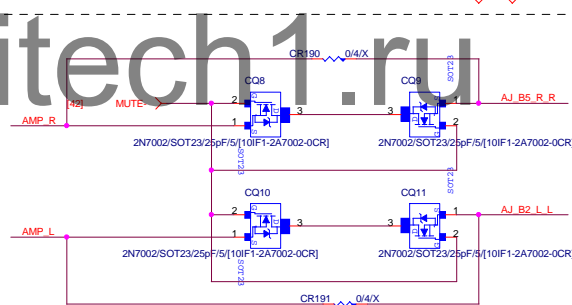
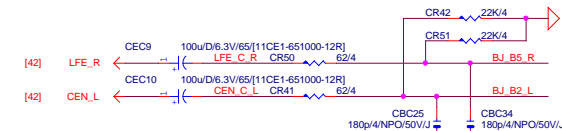


SURROUND

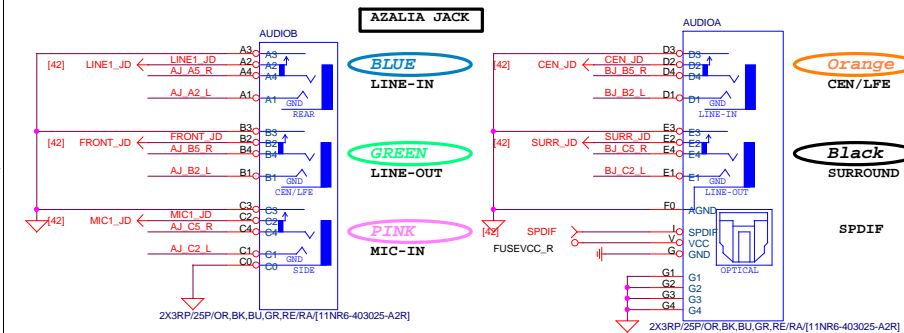
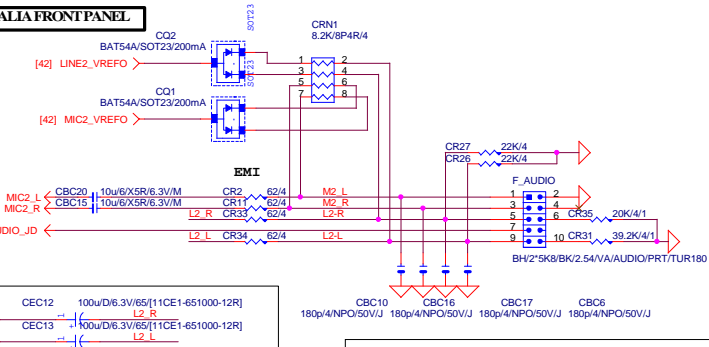


GAIN	
OFF	X2.5
ON	X6

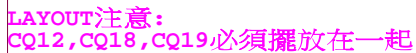
Differential to Single-End AMPLIFIED

**CEN/LFE**

AZALIA FRONT PANEL

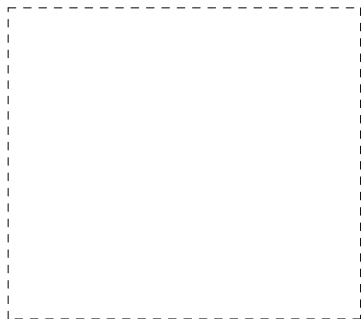


[GAMING系列--> 紅光LED(紅色):LED/R/H/0603/S]

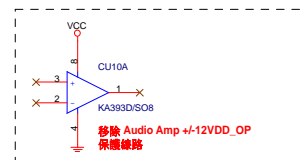


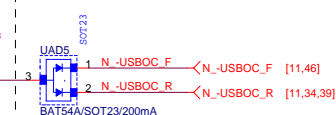
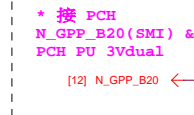
	IO_GP80
R AR LED ON	H
R AR LED OFF	L

LAYOUT OPTION : 除了GAMING3系列和Z1704N-GAMING5不要LAYOUT, 其餘GAMING系列機種都要留LAYOUT

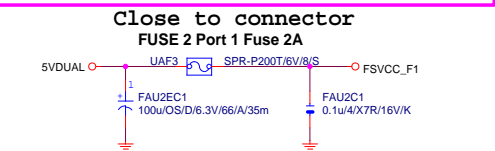
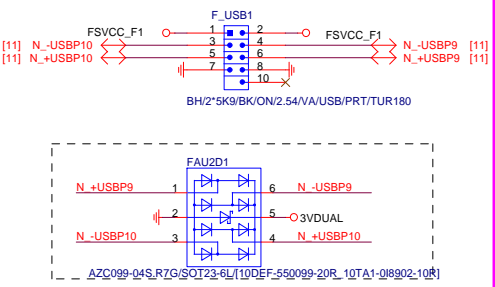


	IO GP82	IO GP83	IO GP91
Sleep Mode	L	H	L
OFF Mode	L	L	L
Pulse Mode	L	H	BREATH
Beat Mode	OD	H	L

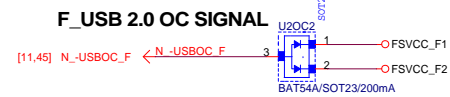
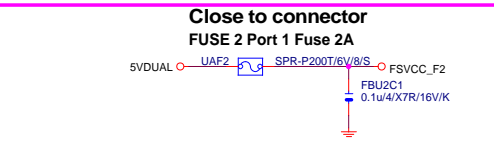
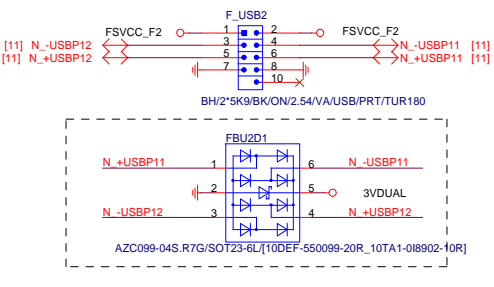




NET 可變



NET 可變



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COM PORT

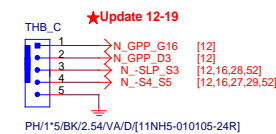
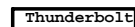


TURBO KEY

LPT PORT

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TPM CONNECT

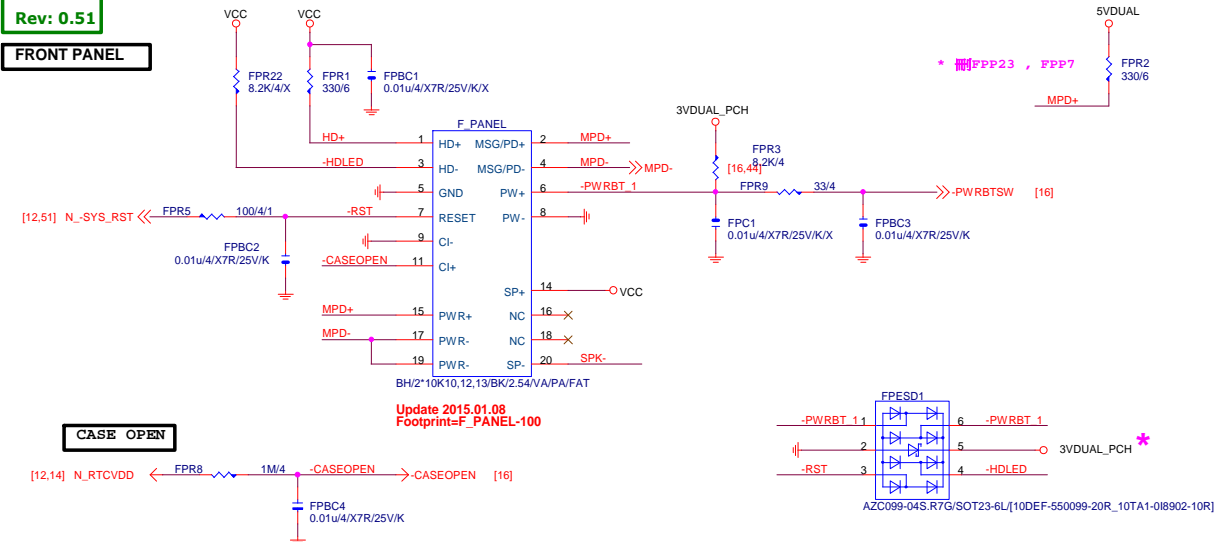


GIGABYTE Technology

Title			
COM,TPM,THB			
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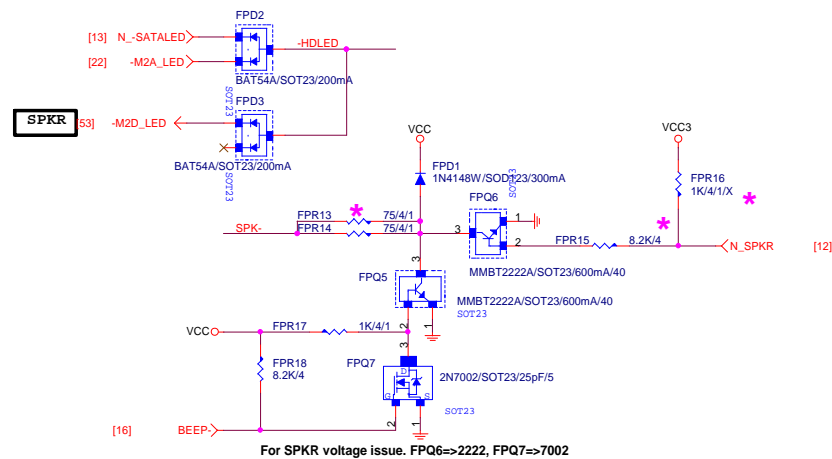
Rev: 0.51

FRONT PANEL



SATA LED

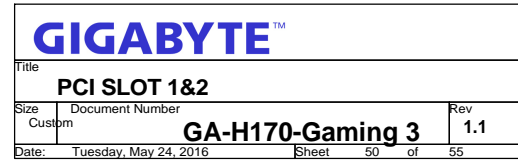
SPKR



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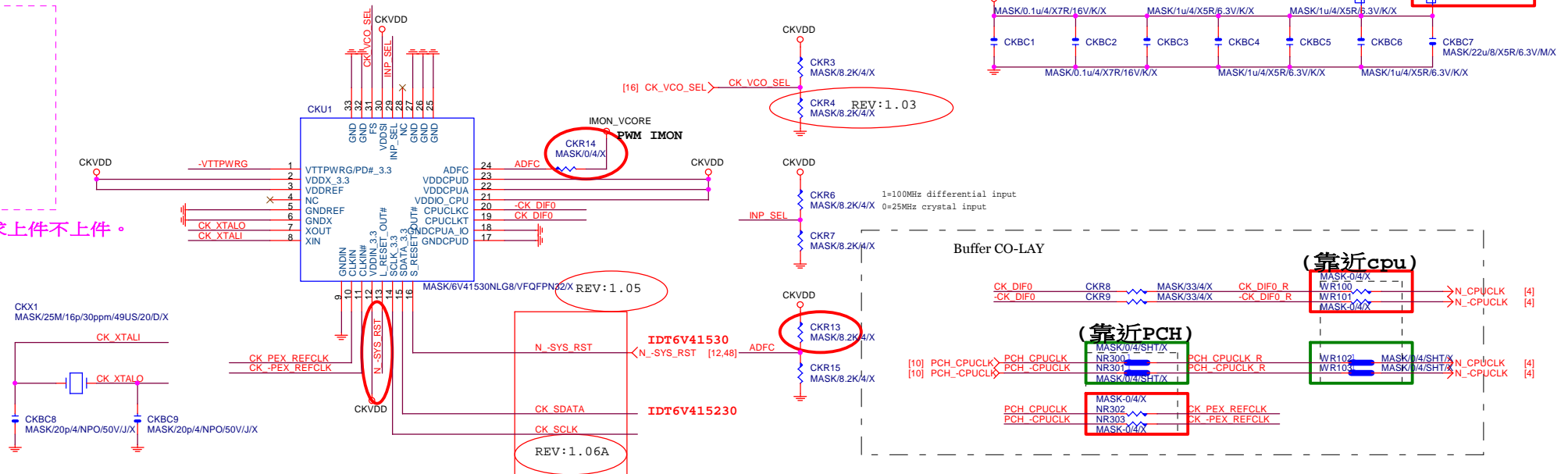
GIGABYTE Technology

Title			FRONT PANEL	
Size	Document Number	GA-H170-Gaming 3		Rev
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IDT6V41510 / IDT6V41520 / IDT6V41530

*可變，依需求上件不上件。



請依使用情況(0 ohm 請修改為short Pad)

Location	CLK BUFFER	PCH CLK
WR100	MOUNT	N/A
WR101	MOUNT	N/A
NR302	MOUNT	N/A
NR303	MOUNT	N/A
WR102	N/A	MOUNT
WR103	N/A	MOUNT
NR300	N/A	MOUNT
NR301	N/A	MOUNT

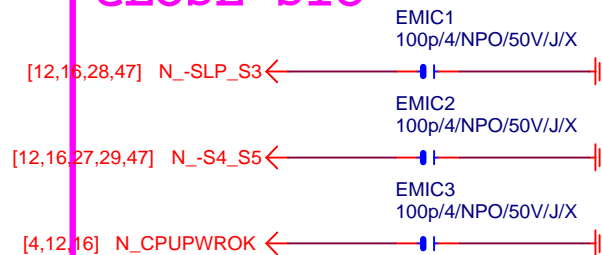
CLK BUFFER 未上件時，零件FOOTPRINT需修改為IC32QFN-SL-MASK



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GIGABYTE™				
Title IDT6V41510_CLK BUFFER				
Size Custom	Document Number GA-H170-Gaming 3			Rev 1.1
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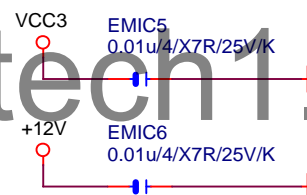
CLOSE SIO



CLOSE PCH



EMI Alain 2015/03/04 modify

**GIGABYTE™**

Title

EMI/ESDSize
A

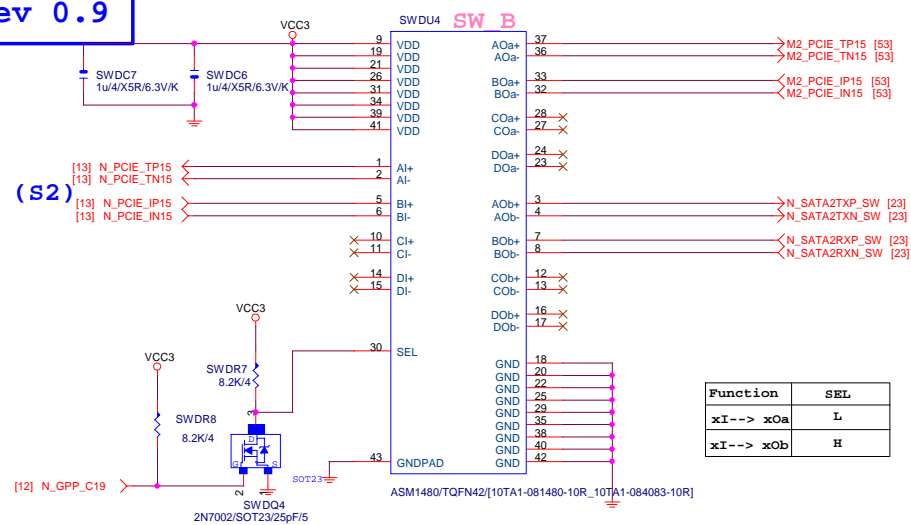
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GA-H170-Gaming 3Rev
1.1

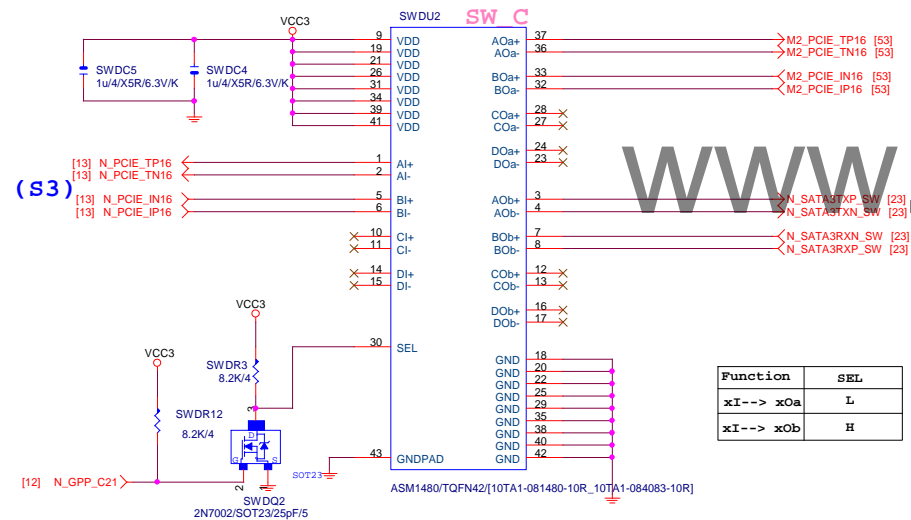
Date: Tuesday, May 24, 2016

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PCH (S2)

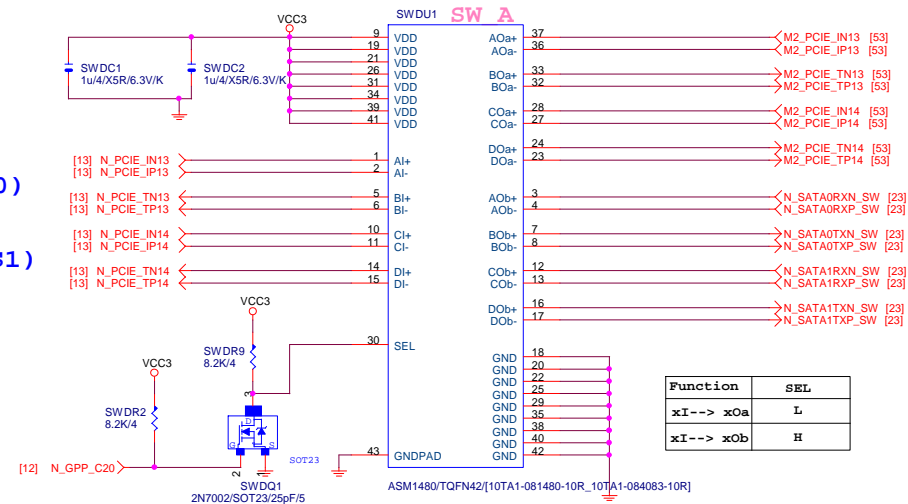


PCH (S3)



PCH (S0)

PCH (S1)



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M.2 SWITCH

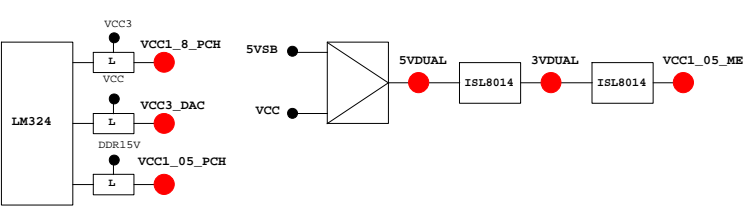
Title	GA-H170-Gaming 3			Rev	1.1
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PCH GPIO LIST TABLE					
PIN NAME	PWR	Default	USAGE	NOTE	
GP0	MAIN	H-Z	GPI	GPIO0	N/A
GP1/TACH1	MAIN		GPI	GPIO1	N/A
GP2/PIRQ#	MAIN		GPI	-PIRQE	P/U 8.2K VCC3
GP3/PIRQF#	MAIN		GPI	-PIRQF	P/U 8.2K VCC3
GP4/PIRQG#	MAIN		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

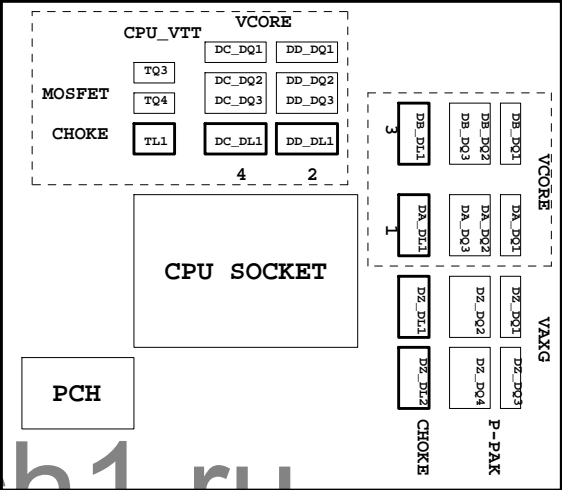
Super I/O ITE8720 GPIO Table

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#CIRRXL/GP55	-RSMRST	
PME#/GP54	-LPCPME	
PD5/GP75/BUSS00	N/A	

PIN NAME	USAGE	NOTE
FAN_TAC2/GP52	FANIO2	
FAN_TAC3/GP37	FANIO3	
VIDO3/FAN_TAC4/GP25/DSR2#	FANIO4	
FAN_CTL2/GP51	FANPWM2	
FAN_CTL3/GP36	FANPWM3	
VID4/GP34	BEEP-	
VID3/GP33	TURBO1	
VID2/GP32	TURBO0	
VCORE_GOOD/VID6/GP63	CPUT_LED1_C	
VID5/GP35	CPUT_LED2_C	
VID1/GP31	CPUT_LED3_C	
VID0/GP30	-LAN1_DSM	NBT_LED1_C
SLCT/GP80	CPU_LED1_C	
PE/GP81	CPU_LED2_C	
BUSY/GP82	CPU_LED3_C	
PD3/GP73/BUSSI1	SB_LED1_C	
PD4/GP74/BUSSI2	SB_LED2_C	
VCORE_EN/VID7/GP64	IT_GP64	SB_LED3_C
PD0/GP70	NB_LED1_C	
PD1/GP71	NB_LED2_C	
PD2/GP72/BUSSI0	NB_LED3_C	
GP22/SCK	LOW_PWR_1	
VID05/GP27/SIN2	LOW_PWR_2	
PCIRST2#/GP11	-PWRST1	
PCIRST1#/GP12	-PWRST2	
3VBSBW#/GP40	CSI_F0	BSEL166_1
SUSC#/GP53	CSI_F1	BSEL166_2
GP23/SI	BSEL166_3/CSISBSL	
VID00/GP20/CTS2#	CPUT_LED1_C	BSEL166_4
GP65/VDDA_EN/GB_01	MB_ID2	
PD6/GP76/BUSS01	MB_ID3	
PD7/GP77/BUSS02	MB_ID4	
AFD#/GP86/SMBC_R	SEC_PIN	FST_2X8
INIT#/GP85/SMBD_M	SEC_2x8	GTLREF_AD2
ACK#/GP83	DDR_LED1_C	
VID01/GP21/DCD2#	DDR_LED2_C	
STB#/GP87/SMBC_M	DDR_LED3_C	
PWRON#/GP44	VCORE_OV1	
PANSWH#/GP43	PWRBTSW	
KDAT/GP61	-PWRBTSW	
KCLK/GP60	KDAT	
MDAT/GP57	KCLK	
MACL/GP56	MDAT	
GP66/VLDT_EN/GB_02	NBT_LED1_C	MCLK
SVD/PCIRSTIN#/CIRTX/GP15	PWM2_CR	
KDAT/GP61	PWM2_CR	
GP67/CPU_PG/GB_03	EN_LOADLINE	IT_GP67/-EN_PWM2
SLIN#/GP84/SMBD_R	-EN_PWM2	
PSI_L/FAN_CLT5/CIRRXL2/GP16	-THERM	
VID04/GP26/SOUT2	DDR18V_PH2_EN	
VID02/FAN_TAC5/GP24/DSR2#	DDR18V_LED	
VID06/GP17/RI2#	1_1V_PH_EN	
VID07/JP6/DTR2#	JP6	
PD5/GP75/BUSS00	SB_LED3_C	



PWM各相位的擺法如下：



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