

Model Name: GA-B250M-Gaming 5
SHEET TITLE

Rev 1.0

SHEET

TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1151-A
05	CPU_LGA1151-B_DDR4
06	CPU_LGA1151-C
07	CPU_LGA1151-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	PCH_GND
16	ITE 8686 LPC IO
17	HMW
18	FAN CTRL-KBL-SIO OPT
19	PCI EXPRESS X16 SLOT
20	PCI EXPRESS X1 SLOTS
21	ISL95866 PWM-IRON_1H2L
22	ISL95866 MOS_VCORE-IRON-1H2L
23	ISL95866 MOS_VCCGT-IRON-1H1L
24	VCCSA_VCCIO_VCCPLL
25	RT8120_DDR_CHOKE-IRON-2L
26	RT8120_VPP_CHOKE-IRON
27	RT8120_PCH-CHOKE
28	DISCRETE POWER
29	NCT3933
30	ATX POWER , A_-PROCHOT
31	M.2 X4 (S)
32	PCI EXPRESS X4 SLOT_1
33	PCIEX4_M.2S SWITCH
34	N/A
35	PCI EXPRESS X4 SLOT_2

36	N/A
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38	F_USB30
39	F_USB20
40	R_USB20
41	Realtek ALC1220
42	REAR AUDIO JACK
43	INTEL I219
44	USB30_LAN CONNECTOR-I219
45	ASM2142 USB31A
46	TI U3.1 PORT A
47	TI HD3SS3212&TUSB321_B
48	IDT9FGP320_CLK
49	COM , TPM , THB
50	F_PANEL
51	HDMI CONN
52	DVI CONN
53	IT8792/NA
54	Dual BIOS
55	USB_DAC
56	CPU / AUDIO / PCIE/REAR LED
57	PCB / PCH / DDR / LED_C LED
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59	EMI-ESD
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61	POWER MAP
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63	TABLE LIST

Model Name: GA-B250M-Gaming 5

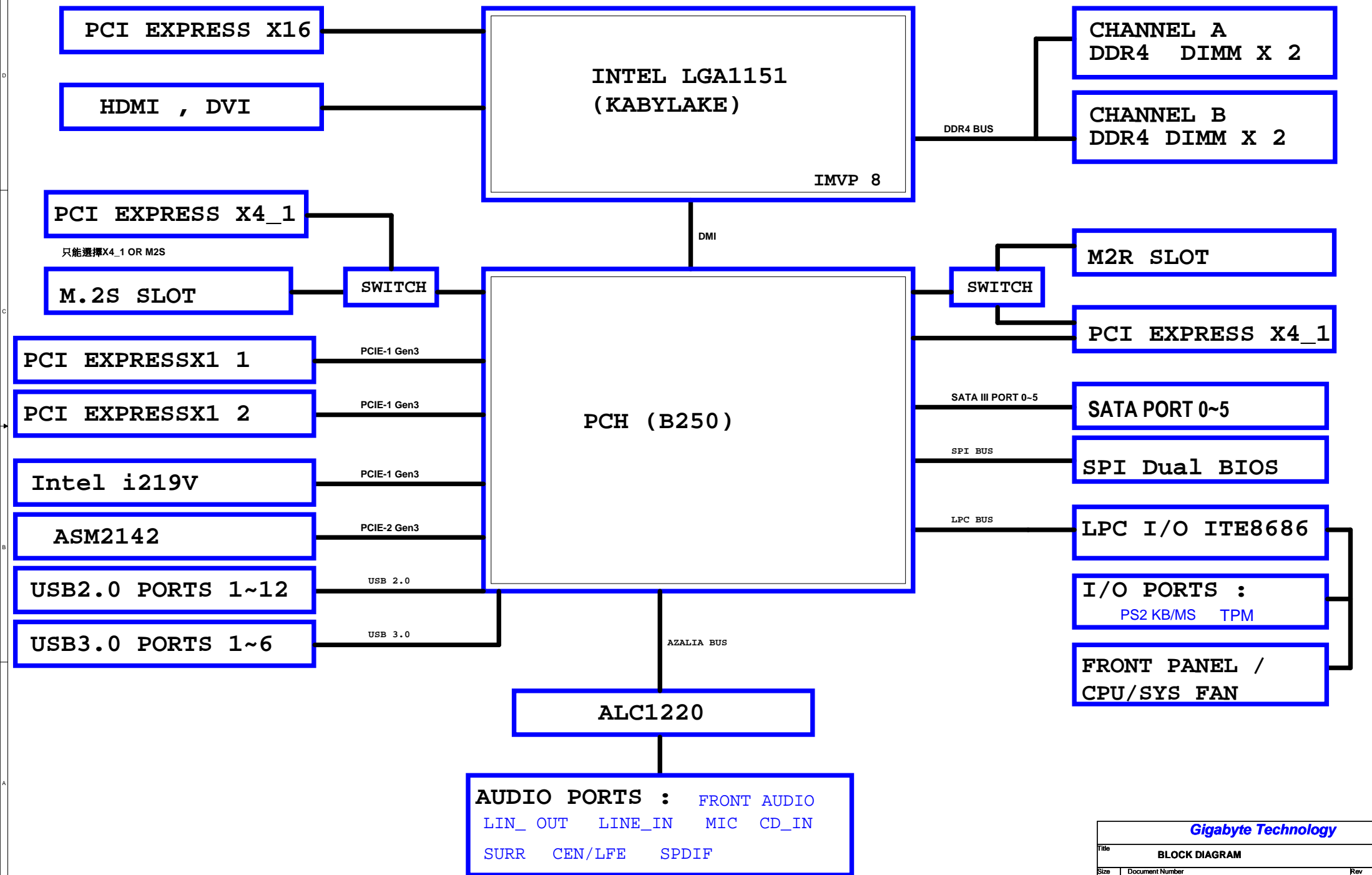
Component value change history

[illegible]

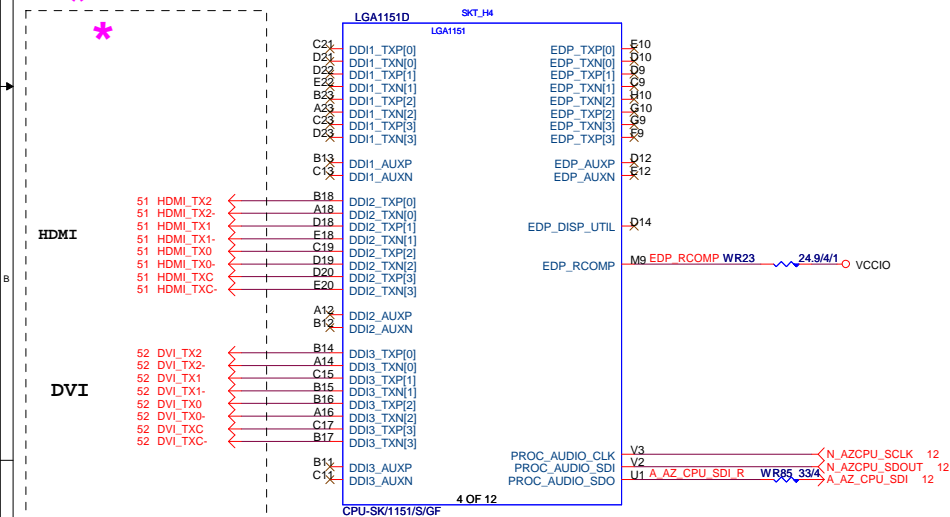
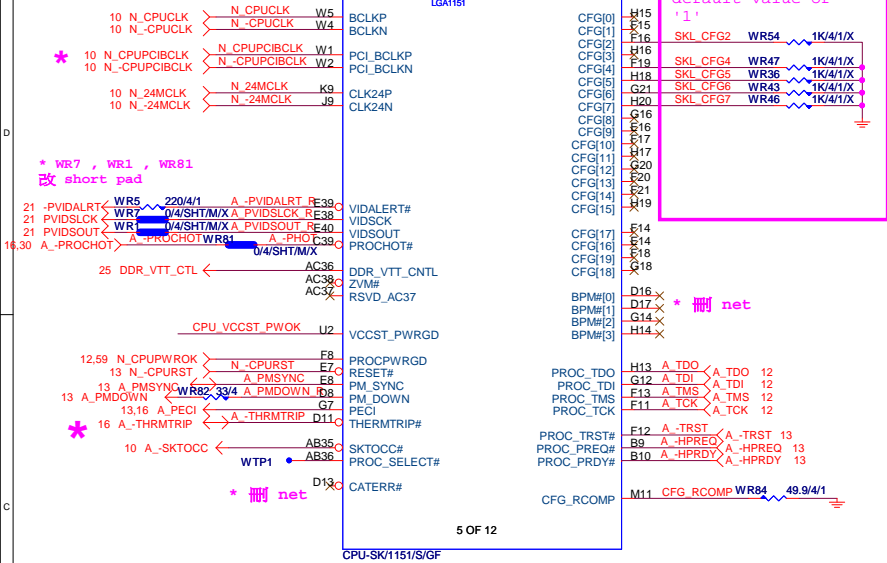
Circuit or PCB layout change

[illegible]

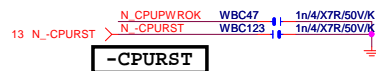
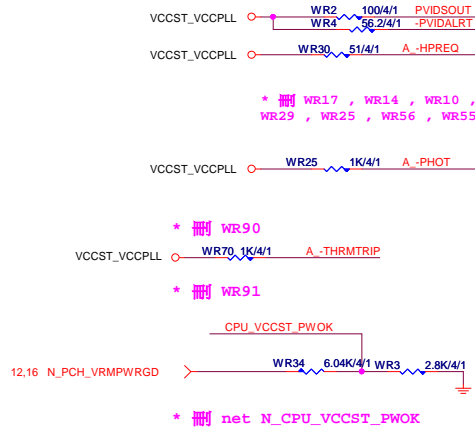
BLOCK DIAGRAM



From SKL_0.2B



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



```
CFG[2]:x16 Lane Numbering
Reversal_1=
NORMAL/0=reversal

CFG[4]: eDP
enable:1:disable/0=enable


CFG[6:5]:PCI Express* Bifurcation/ 11=
1 x16 PCI Express/10=2x8 PCI Express

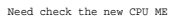
CFG[7]: PEG Training:1=(default) PEG Train
immediately following RESET#/0=PEG Wait
for BIOS
```

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



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

			
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CPU LGA1151-A			
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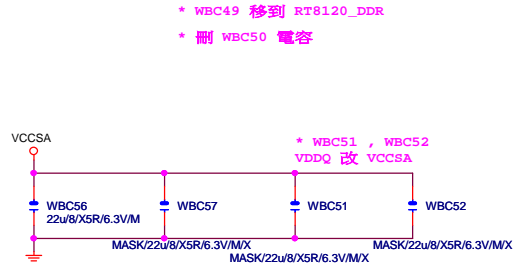
8 MODT_A[0..3] \longleftrightarrow MODT_B[0..3]
 9 MODT_B[0..3] \longleftrightarrow MODT_A[0..3]
 8 MDA[0..63] \longleftrightarrow MDB[0..63]
 9 MDB[0..63] \longleftrightarrow MDA[0..63]
 8 M_DQSA[0..7] \longleftrightarrow M_-DQSA[0..7]
 8 M_-DQSA[0..7] \longleftrightarrow M_DQSA[0..7]
 8 MAAA[0..16] \longleftrightarrow MAAB[0..16]
 9 MAAB[0..16] \longleftrightarrow MAAA[0..16]
 9 M_DQSBJ[0..7] \longleftrightarrow M_-DQSBJ[0..7]
 9 M_-DQSBJ[0..7] \longleftrightarrow M_DQSBJ[0..7]

Intel CRB**CPU LGA1151-B**

ment Number

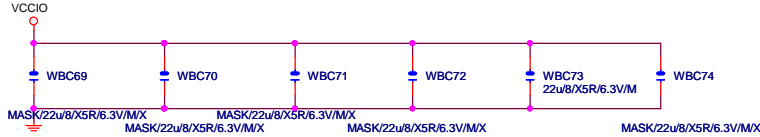
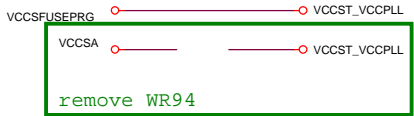
GA-B250M-Gaming 5

1.0

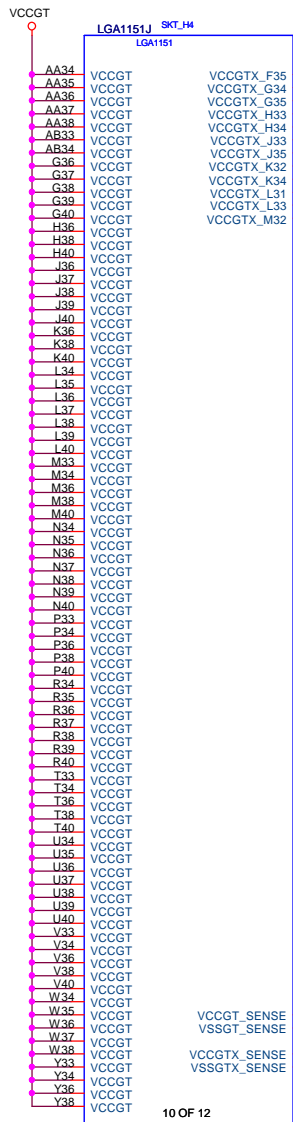


* 刪 WBC124 , WBC125 , WBC126 , WBC127 電容

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



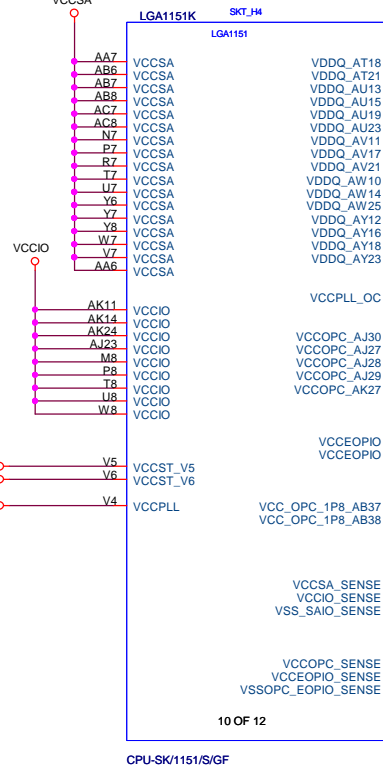
* 刪 VCCGT 電容



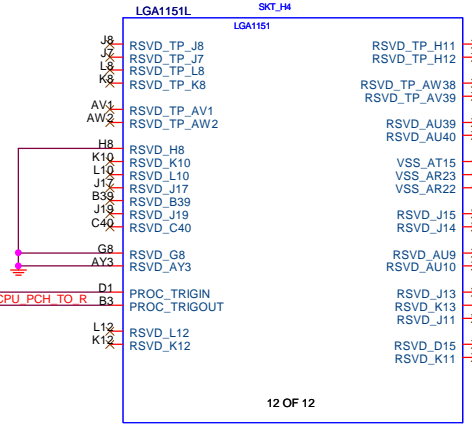
CPU-SK/1151/S/GF



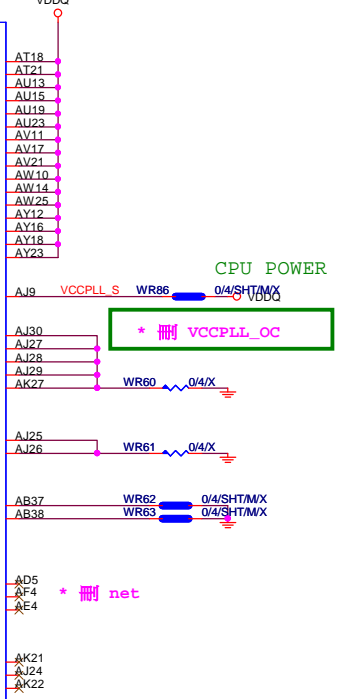
13_N_PCH_CPU_T1
13_A_CPU_PCH_TO



CPU-SK/1151/S/GF



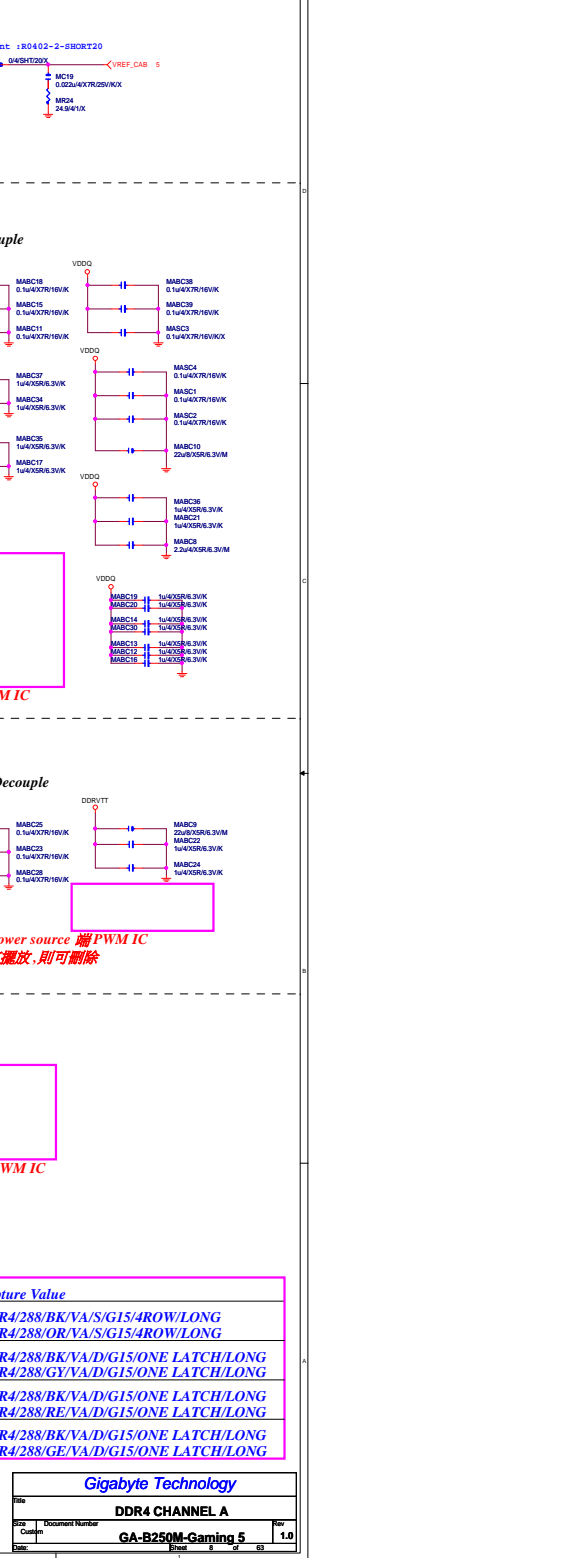
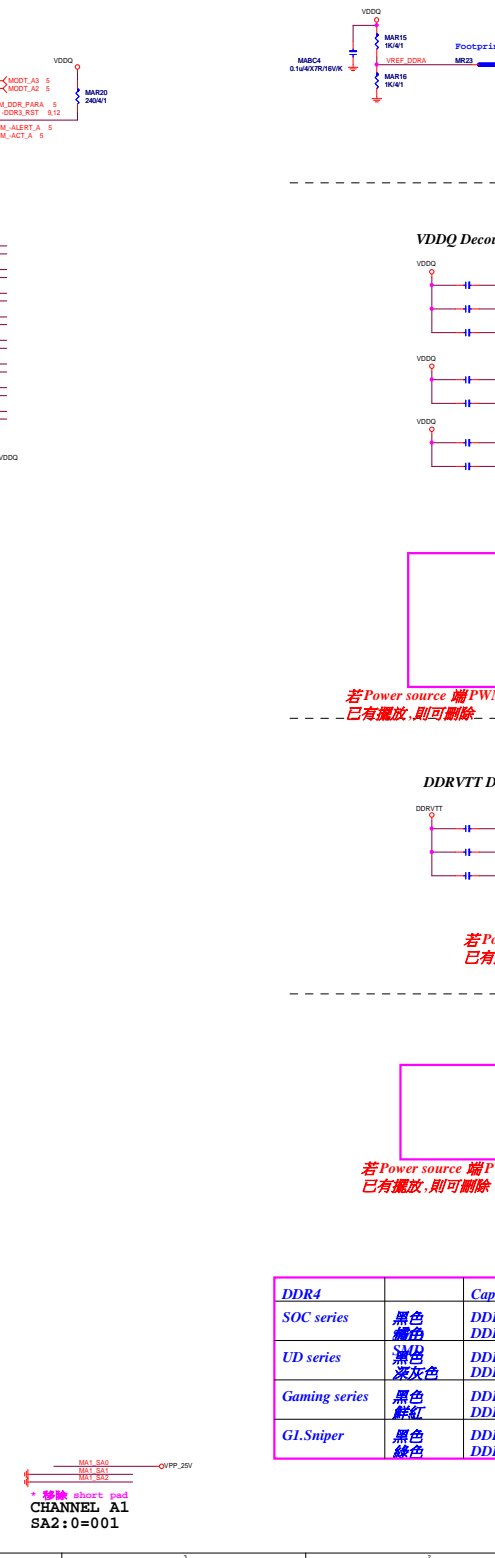
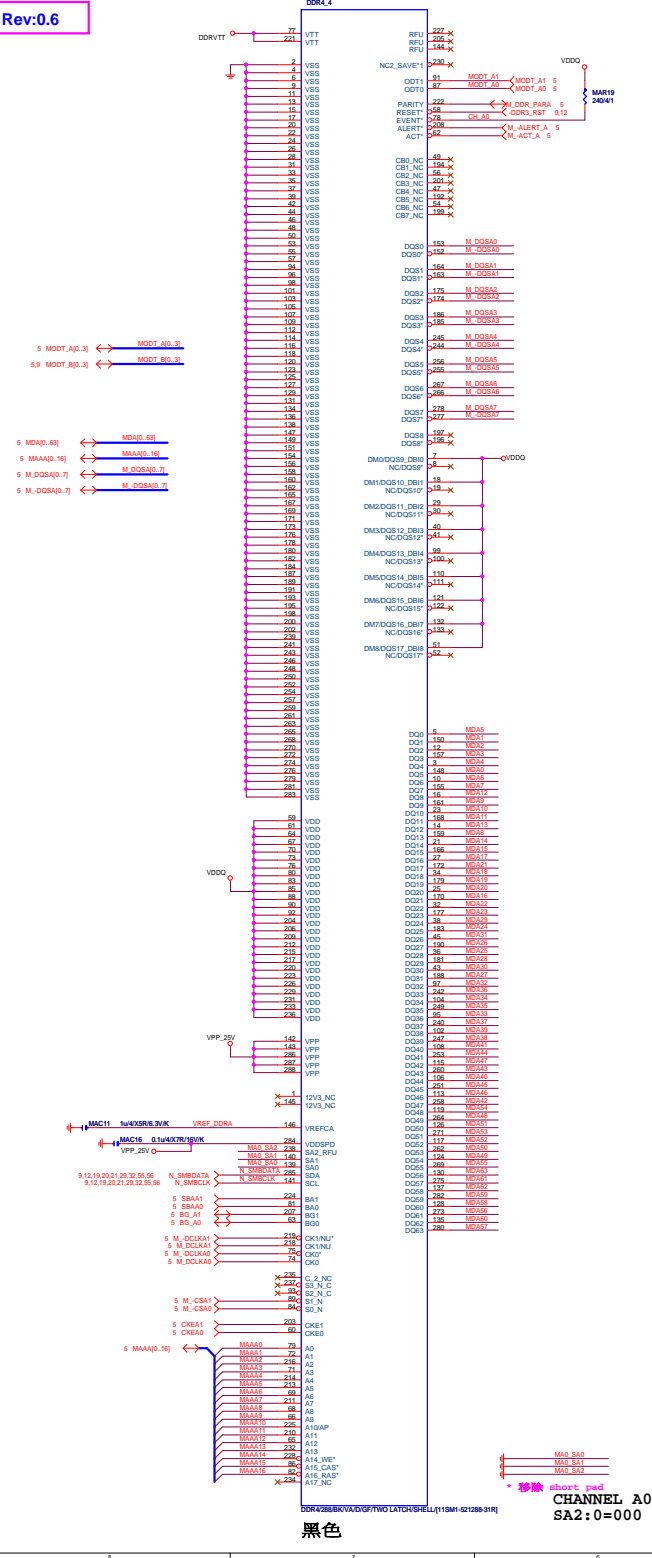
CPU-SK/1151/S/GF



CPU POWER



* 刪 net



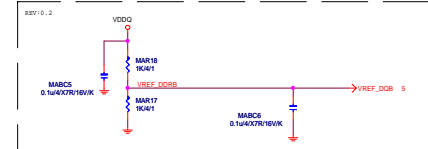
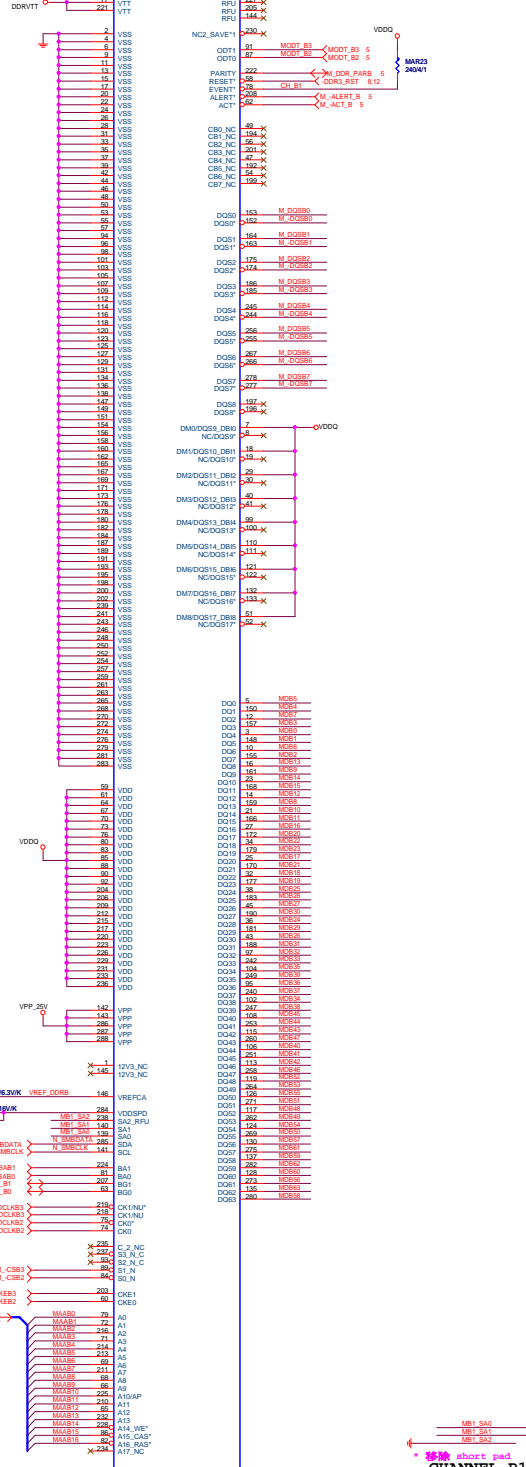
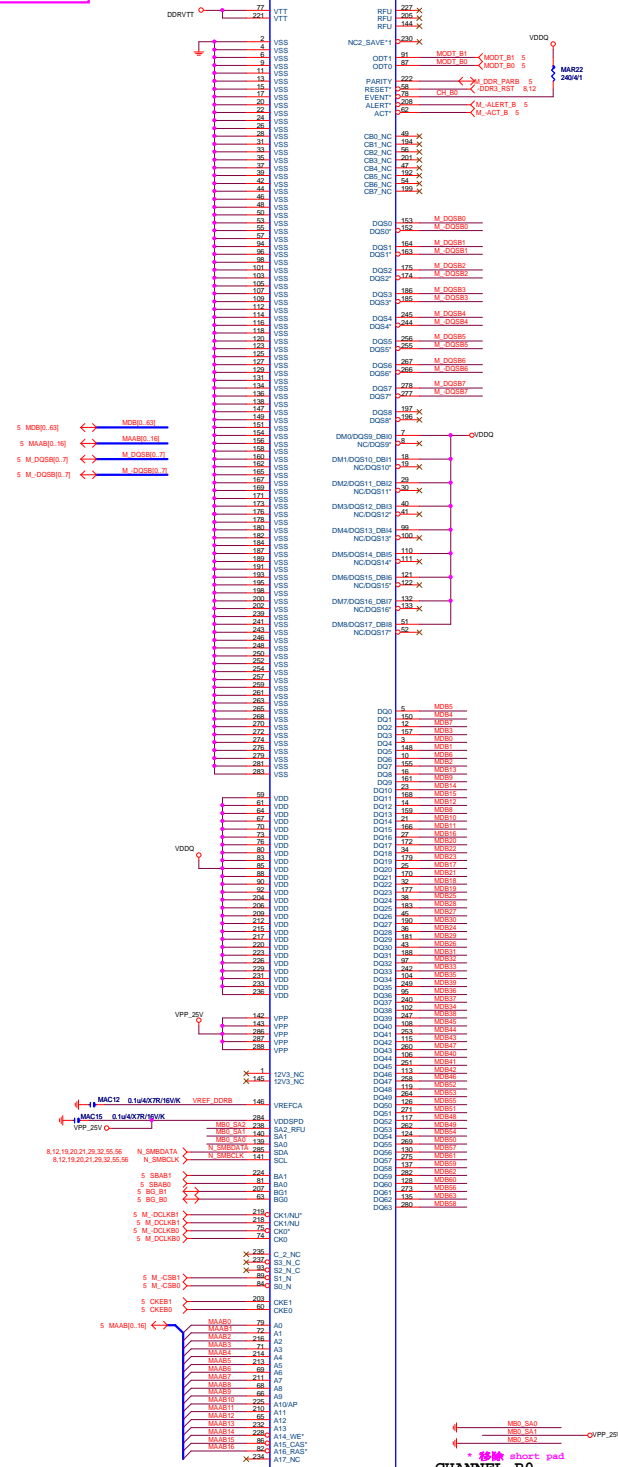
DDR4	Capture Value
SOC series	DDR4/288/BK/VA/S/G15/4ROW/LONG DDR4/288/OR/VA/S/G15/4ROW/LONG
UD series	DDR4/288/BK/VA/D/G15/ONE LATCH/LONG DDR4/288/GV/VA/D/G15/ONE LATCH/LONG
Gaming series	DDR4/288/BK/VA/D/G15/ONE LATCH/LONG DDR4/288/RE/VA/D/G15/ONE LATCH/LONG
GL Sniper	DDR4/288/BK/VA/D/G15/ONE LATCH/LONG DDR4/288/GE/VA/D/G15/ONE LATCH/LONG

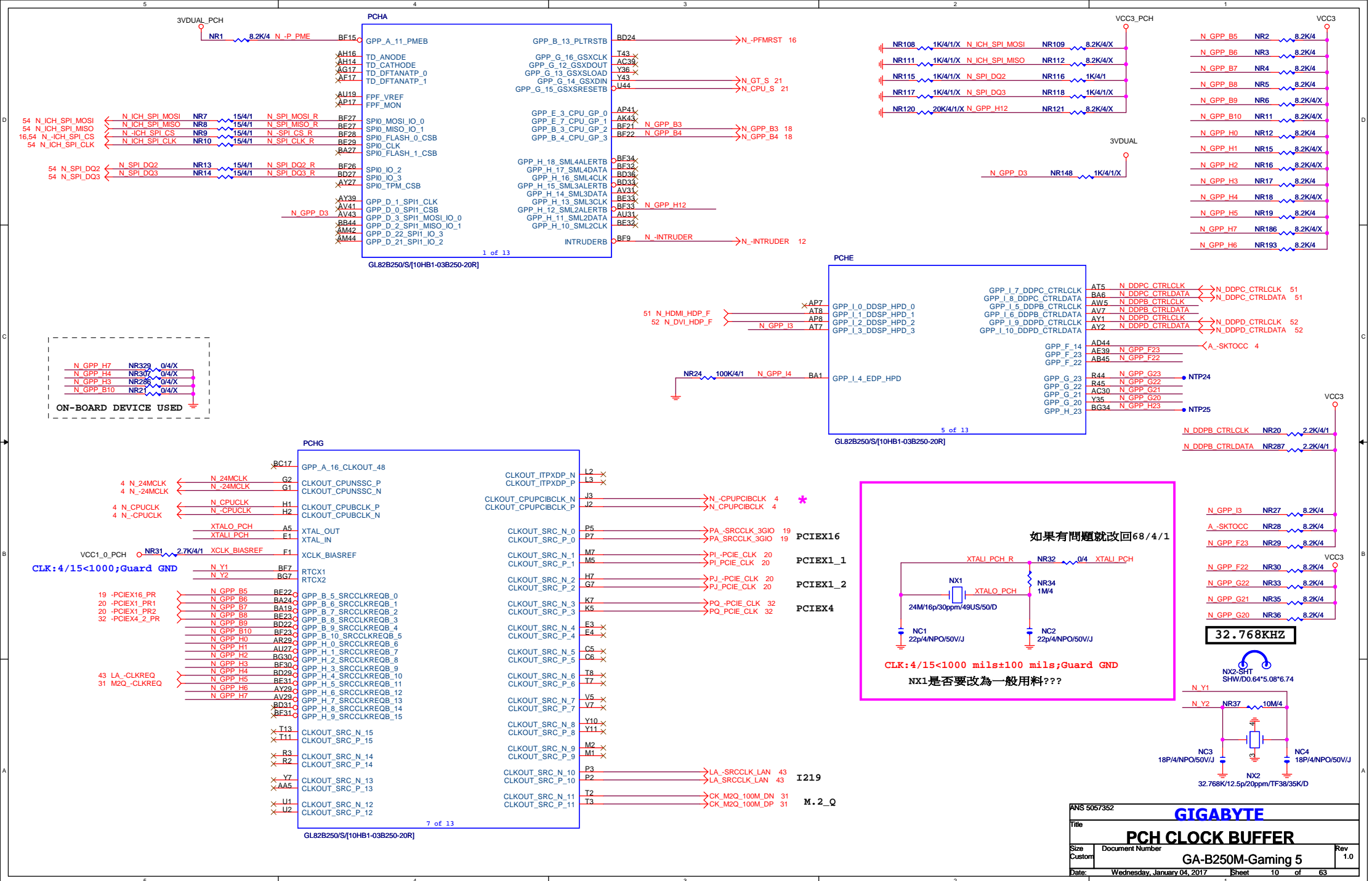
Gigabyte Technology

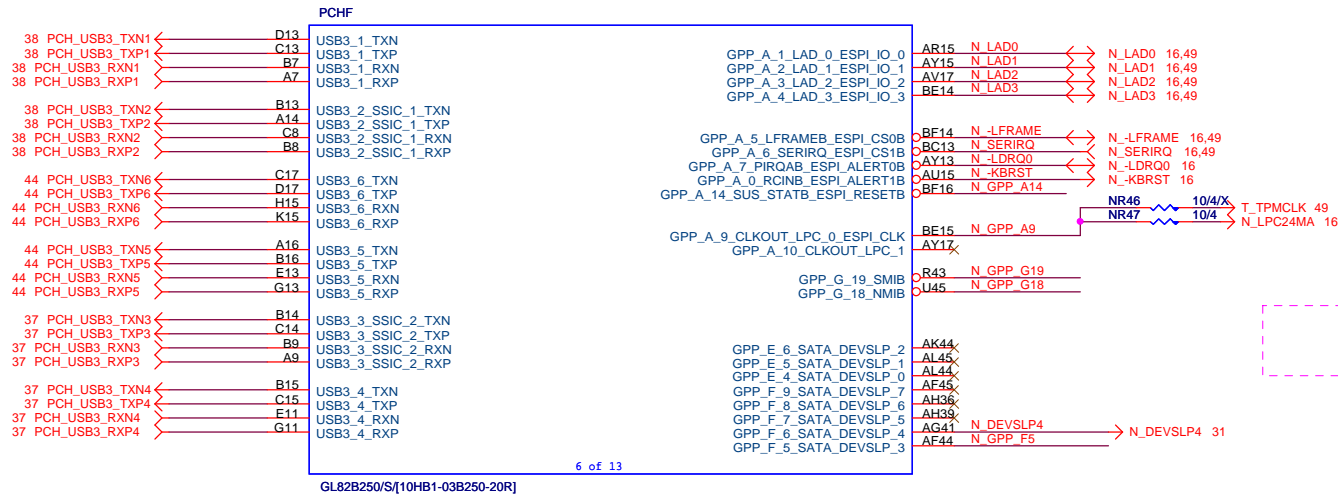
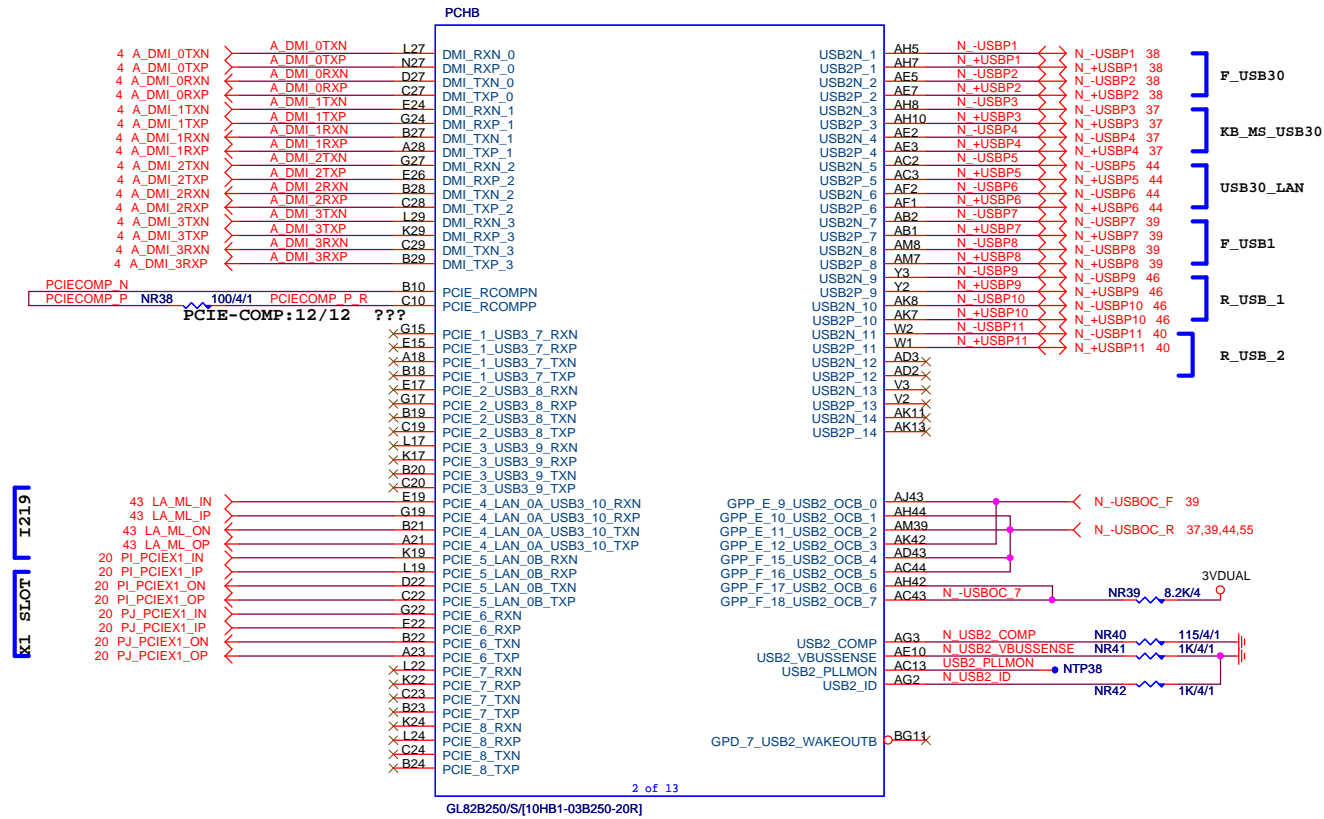
DDR4 CHANNEL A

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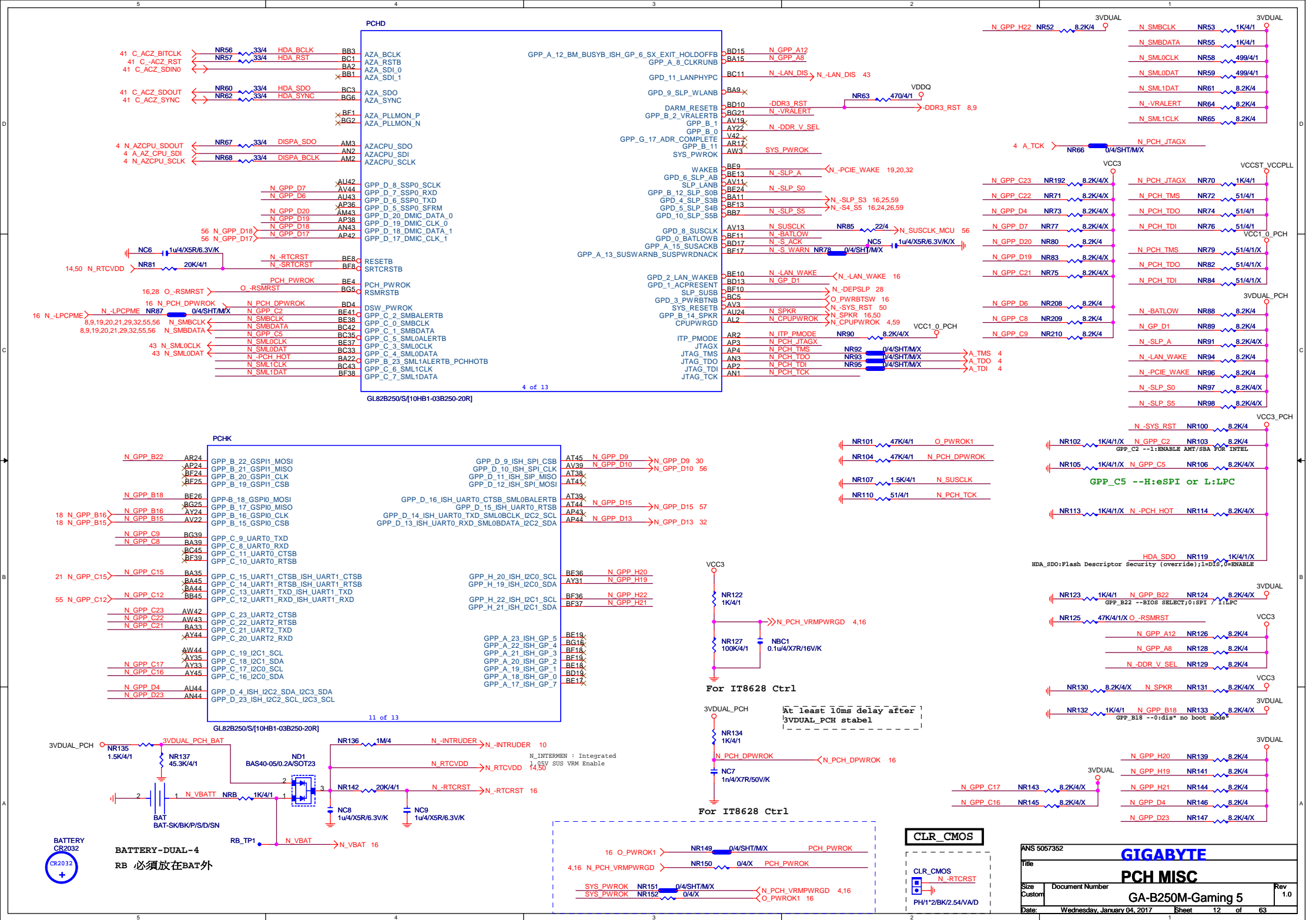


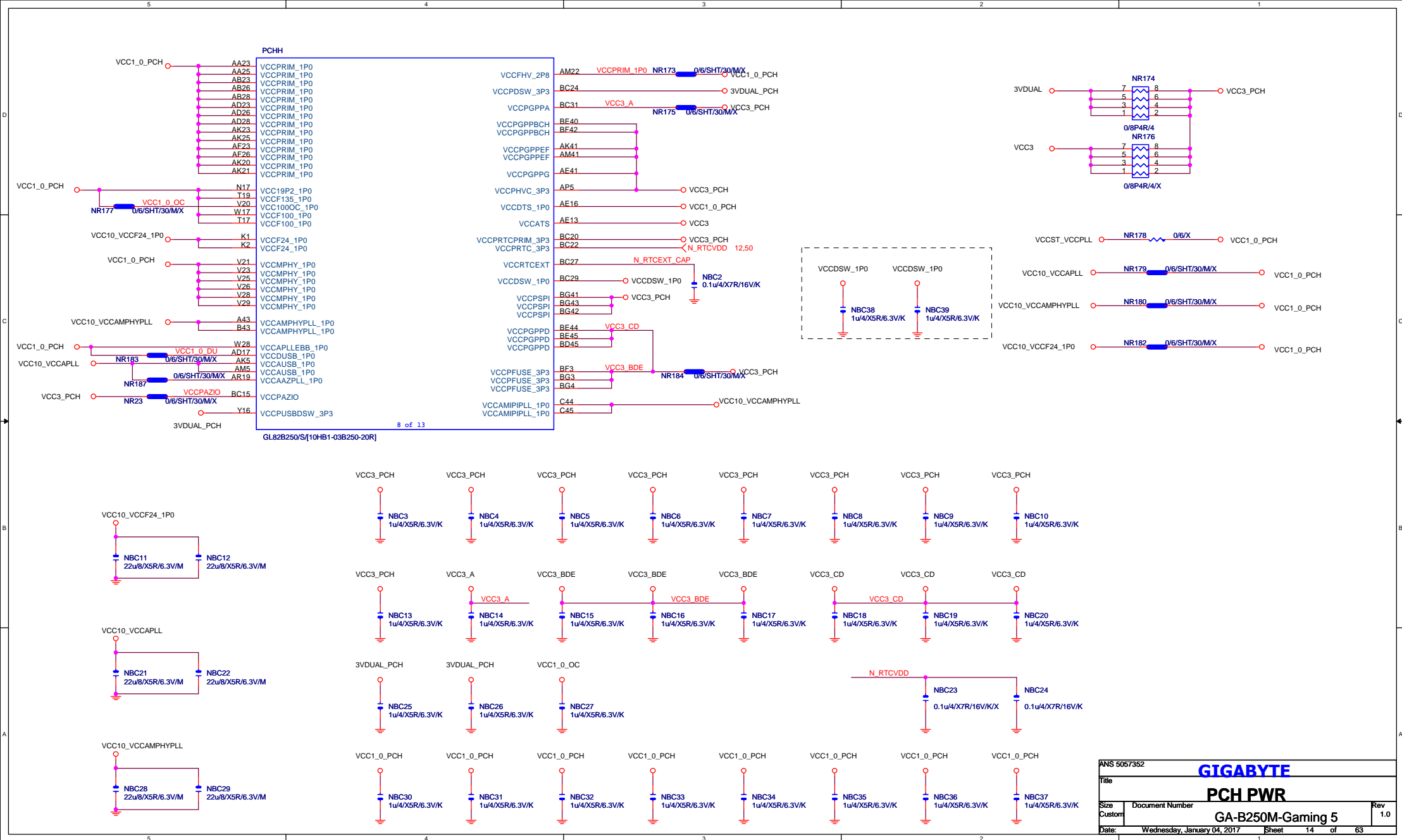


ANS 5057352

GIGABYTE

Title			
PCH DMI,USB,PCIE			
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PCHI		
A25	VSS	VSS
A30	VSS	VSS
P22	VSS	VSS
AV38	VSS	VSS
AV45	VSS	VSS
AV8	VSS	VSS
AY11	VSS	VSS
AY19	VSS	VSS
AY37	VSS	VSS
AY4	VSS	VSS
AY42	VSS	VSS
AY8	VSS	VSS
B25	VSS	VSS
B3	VSS	VSS
B30	VSS	VSS
B35	VSS	VSS
B4	VSS	VSS
B41	VSS	VSS
BA13	VSS	VSS
BA17	VSS	VSS
BA29	VSS	VSS
BA31	VSS	VSS
BA37	VSS	VSS
BA4	VSS	VSS
BA42	VSS	VSS
BB40	VSS	VSS
BC38	VSS	VSS
BC40	VSS	VSS
BC9	VSS	VSS
BD11	VSS	VSS
BD16	VSS	VSS
BD2	VSS	VSS
BD21	VSS	VSS
BD25	VSS	VSS
F2	VSS	VSS
F31	VSS	VSS
E6	VSS	VSS
E8	VSS	VSS
F39	VSS	VSS
F43	VSS	VSS
G4	VSS	VSS
G40	VSS	VSS
G42	VSS	VSS
F6	VSS	VSS
G9	VSS	VSS
H11	VSS	VSS
H19	VSS	VSS
H22	VSS	VSS
H24	VSS	VSS
H27	VSS	VSS
H29	VSS	VSS
H33	VSS	VSS
H35	VSS	VSS
H38	VSS	VSS
H4	VSS	VSS
H42	VSS	VSS
H9	VSS	VSS
J4	VSS	VSS
M36	VSS	VSS
M4	VSS	VSS
M8	VSS	VSS
M9	VSS	VSS
N13	VSS	VSS
N15	VSS	VSS
N19	VSS	VSS
N22	VSS	VSS
N24	VSS	VSS
N31	VSS	VSS
N42	VSS	VSS
P10	VSS	VSS
P12	VSS	VSS
AV35	VSS	VSS

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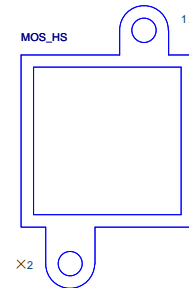
GL82B250/S/[10HB1-03B250-20R]

PCHL		
BD34	VSS[70]	AB18
BD39	VSS[71]	AB20
BD7	VSS[72]	AB21
BE2	VSS[73]	AB25
BF43	VSS[74]	AB29
BF2	VSS[75]	AB4
BG18	VSS[76]	AB42
A35	VSS[77]	AC10
BG23	VSS[78]	AC11
A40	VSS[79]	AC14
AA1	VSS[80]	AC16
AA17	VSS[81]	AC38
AA18	VSS[82]	AC4
AA20	VSS[83]	AC5
C1	VSS[84]	AC7
A12	VSS[85]	AC8
AA26	VSS[86]	AD1
AA28	VSS[87]	AD18
AA29	VSS[88]	AD20
AB17	VSS[89]	AD21
C9	VSS[90]	AD25
AE4	VSS[91]	AD29
AE8	VSS[92]	AD45
AF18	VSS[93]	AE11
AF20	VSS[94]	AE14
AF21	VSS[95]	AE32
AF25	VSS[96]	AE33
AF28	VSS[97]	AK29
AF29	VSS[98]	AK30
AF4	VSS[99]	AK32
AF42	VSS[100]	AK35
AG18	VSS[101]	AK39
AG20	VSS[102]	AL4
AG21	VSS[103]	AL42
AG23	VSS[104]	AM10
AG25	VSS[105]	AM11
AG26	VSS[106]	AM13
AG28	VSS[107]	AM17
AG29	VSS[108]	AM19
AH11	VSS[109]	AM24
AH13	VSS[110]	AM27
AH30	VSS[111]	AM29
AH32	VSS[112]	AM32
AH33	VSS[113]	AM33
AH38	VSS[114]	AM4
AJ1	VSS[115]	AN45
AJ17	VSS[116]	AP10
AJ18	VSS[117]	AP11
AJ20	VSS[118]	AP15
AJ21	VSS[119]	AP22
AJ23	VSS[120]	AP27
AJ26	VSS[121]	AP31
AJ28	VSS[122]	AP33
AJ29	VSS[123]	AP34
AJ45	VSS[124]	AP39
AK10	VSS[125]	T4
AK14	VSS[126]	W26
AK16	VSS[127]	V16
AK17	VSS[128]	V17
AK18	VSS[129]	V18
AK26	VSS[130]	V30
AK28	VSS[131]	V32
AM14	VSS[132]	V33
AN14	VSS[133]	V38
AP19	VSS[134]	V4
AR22	VSS[135]	V8
AR27	VSS[136]	W18
AU29	VSS[137]	W20
AU33	VSS[138]	W21
AV1	VSS[139]	W23
AV10	VSS[140]	W25
AV15	VSS[141]	A44
AV24	VSS[142]	BE1
AV27	VSS[143]	BD1
AV33	VSS[144]	B1
	VSS[145]	A2
	VSS[146]	A3
	VSS[147]	A4
	VSS[148]	B44
	VSS[149]	B45
	VSS[150]	
BG14	VSS_BG14	

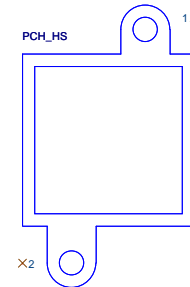
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GL82B250/S/[10HB1-03B250-20R]

装甲HEATSINK 分成二大部份



HEAT SINK[12SP2-S09425-M1R_12SP2-S09425-M2R_12SP2-S09425-M3R]



HEAT SINK[12SP2-S04207-91R_12SP2-S04207-92R_12SP2-S04207-93R]

ANS 5057352

GIGABYTE

Title

PCH GND

Size
Custom

Document Number

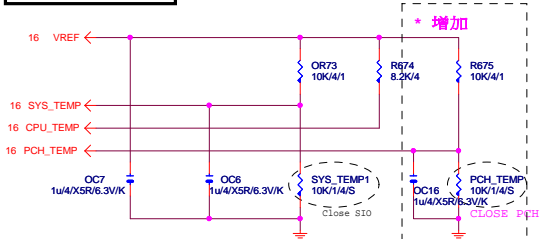
GA-B250M-Gaming 5

Rev
1.0

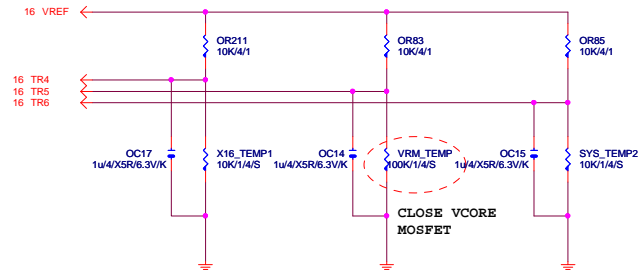
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TEMP H/W MONITOR

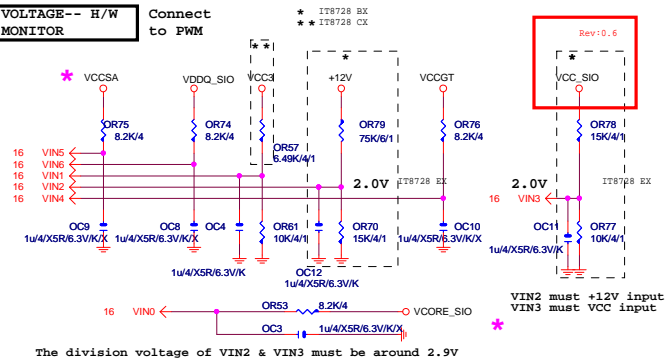


5個FAN時使用

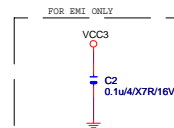
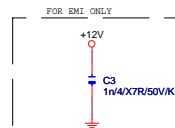


VOLTAGE-- H/W MONITOR

Connect to PWM



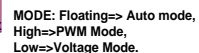
(靠近ATX CONNECTOR)



★Update 2015-04.24

Gigabyte Technology

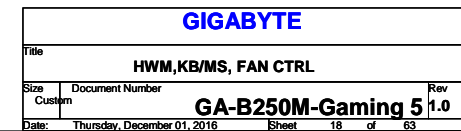
Title			HWM,KB/MS, FAN CTRL
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MODE: Floating=> Auto mode,
High=>PWM Mode,
Low=>Voltage Mode.

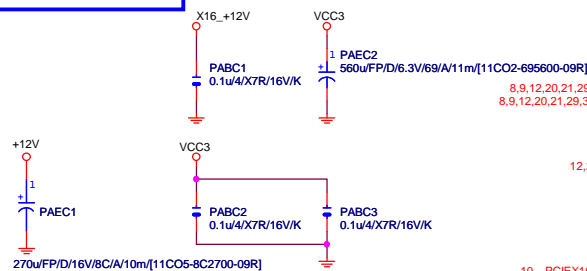
**MODE: Floating=> Auto mode,
High=>PWM Mode,
Low=>Voltage Mode.**

MODE: Floating=> Auto mode,
High=>PWM Mode,
Low=>Voltage Mode.

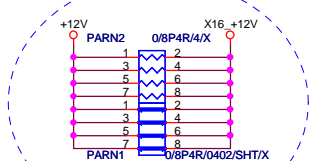


Rev 0.3

PCIEX16 CAP



PCIEX16 PROTECT SHT

+12 protect short-wire test

PCIEX16 AC CAP

PA EXP TXP0	PAC5	0.22u4/X5R/6.3V/K	PA EXP TXP0_C
PA EXP TXN0	PAC4	0.22u4/X5R/6.3V/K	PA EXP TXN0_C
PA EXP TXP1	PAC6	0.22u4/X5R/6.3V/K	PA EXP TXP1_C
PA EXP TXN1	PAC7	0.22u4/X5R/6.3V/K	PA EXP TXN1_C
PA EXP TXP2	PAC8	0.22u4/X5R/6.3V/K	PA EXP TXP2_C
PA EXP TXN2	PAC9	0.22u4/X5R/6.3V/K	PA EXP TXN2_C
PA EXP TXP3	PAC10	0.22u4/X5R/6.3V/K	PA EXP TXP3_C
PA EXP TXN3	PAC11	0.22u4/X5R/6.3V/K	PA EXP TXN3_C
PA EXP TXP4	PAC12	0.22u4/X5R/6.3V/K	PA EXP TXP4_C
PA EXP TXN4	PAC13	0.22u4/X5R/6.3V/K	PA EXP TXN4_C
PA EXP TXP5	PAC14	0.22u4/X5R/6.3V/K	PA EXP TXP5_C
PA EXP TXN5	PAC15	0.22u4/X5R/6.3V/K	PA EXP TXN5_C
PA EXP TXP6	PAC16	0.22u4/X5R/6.3V/K	PA EXP TXP6_C
PA EXP TXN6	PAC17	0.22u4/X5R/6.3V/K	PA EXP TXN6_C
PA EXP TXP7	PAC18	0.22u4/X5R/6.3V/K	PA EXP TXP7_C
PA EXP TXN7	PAC19	0.22u4/X5R/6.3V/K	PA EXP TXN7_C
PA EXP TXP8	PAC21	0.22u4/X5R/6.3V/K	PA EXP TXP8_C
PA EXP TXN8	PAC20	0.22u4/X5R/6.3V/K	PA EXP TXN8_C
PA EXP TXP9	PAC22	0.22u4/X5R/6.3V/K	PA EXP TXP9_C
PA EXP TXN9	PAC23	0.22u4/X5R/6.3V/K	PA EXP TXN9_C
PA EXP TXP10	PAC24	0.22u4/X5R/6.3V/K	PA EXP TXP10_C
PA EXP TXN10	PAC25	0.22u4/X5R/6.3V/K	PA EXP TXN10_C
PA EXP TXP11	PAC26	0.22u4/X5R/6.3V/K	PA EXP TXP11_C
PA EXP TXN11	PAC27	0.22u4/X5R/6.3V/K	PA EXP TXN11_C
PA EXP TXP12	PAC28	0.22u4/X5R/6.3V/K	PA EXP TXP12_C
PA EXP TXN12	PAC29	0.22u4/X5R/6.3V/K	PA EXP TXN12_C
PA EXP TXP13	PAC30	0.22u4/X5R/6.3V/K	PA EXP TXP13_C
PA EXP TXN13	PAC31	0.22u4/X5R/6.3V/K	PA EXP TXN13_C
PA EXP TXP14	PAC32	0.22u4/X5R/6.3V/K	PA EXP TXP14_C
PA EXP TXN14	PAC33	0.22u4/X5R/6.3V/K	PA EXP TXN14_C
PA EXP TXP15	PAC34	0.22u4/X5R/6.3V/K	PA EXP TXP15_C
PA EXP TXN15	PAC35	0.22u4/X5R/6.3V/K	PA EXP TXN15_C

PCI-E REV:1.1--> 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--> 5GHZ

PCE-E X1(單向) BANDWIDTH=5GHz*(8b/10b)=4Gb/s=500MB/s

PCI-E REV:3.0--> 8GHZ

PCE-E X1(單向) BANDWIDTH=8GHz*(128b/130b)=8Gb/s=1GB/s

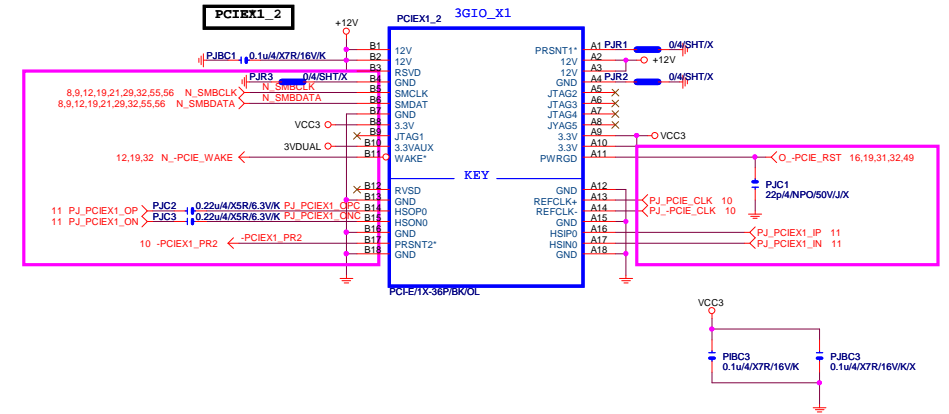
PCIEX16 SLOT

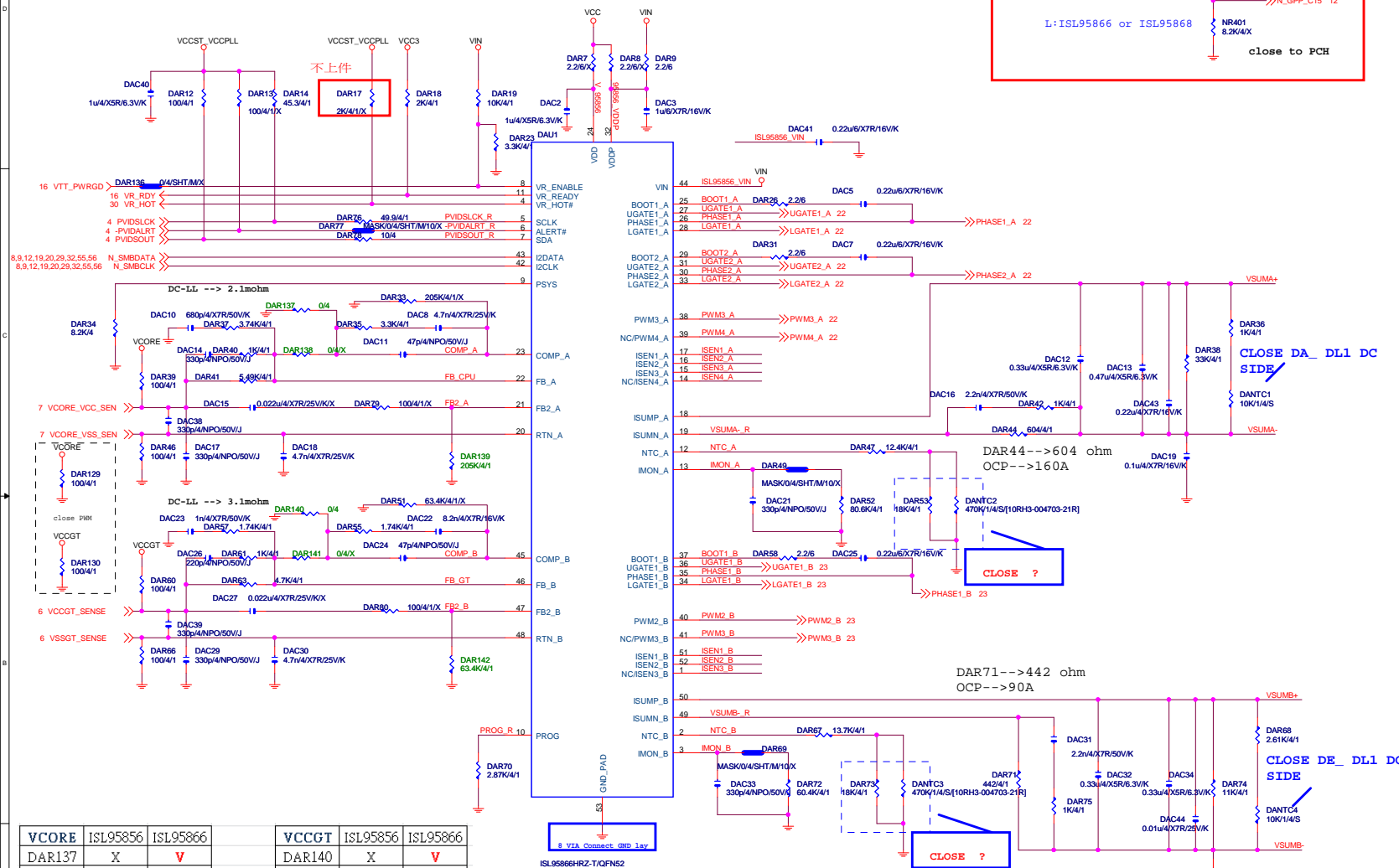
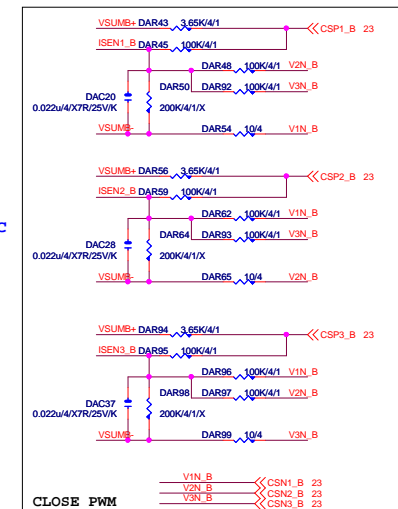
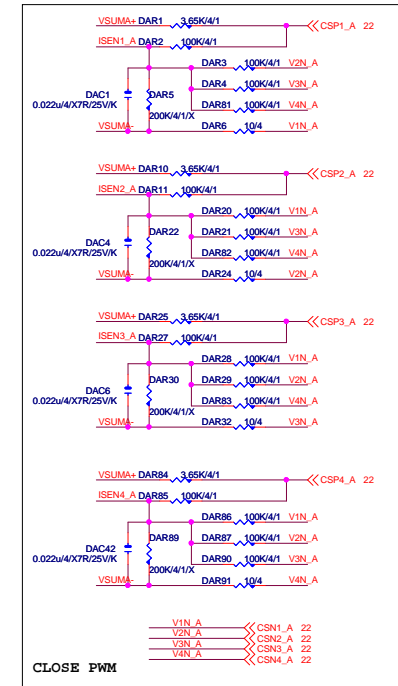
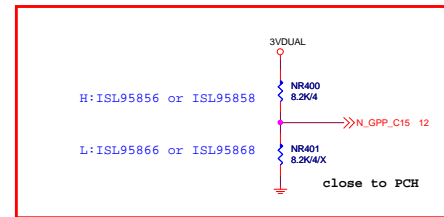
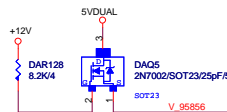


紅色金屬加強

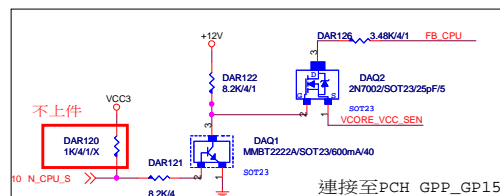
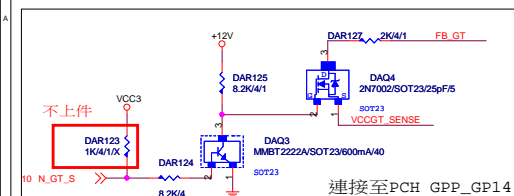
Gigabyte Technology

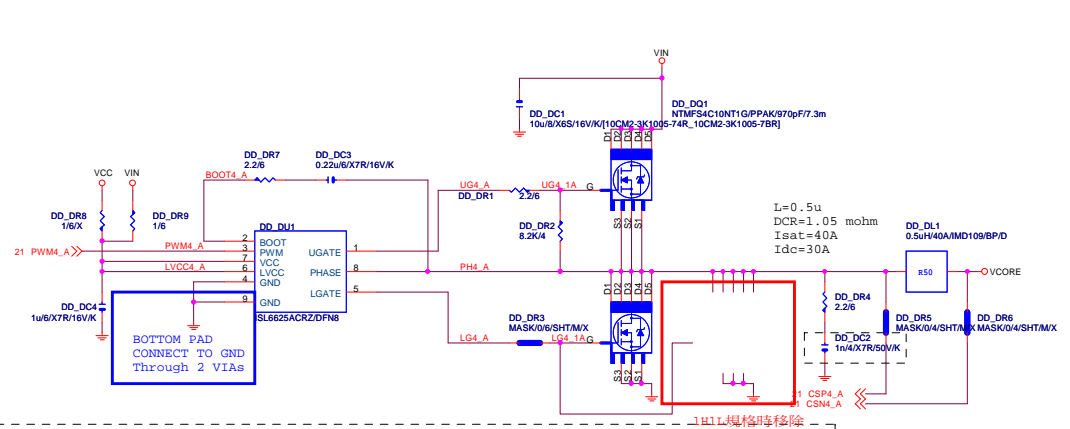
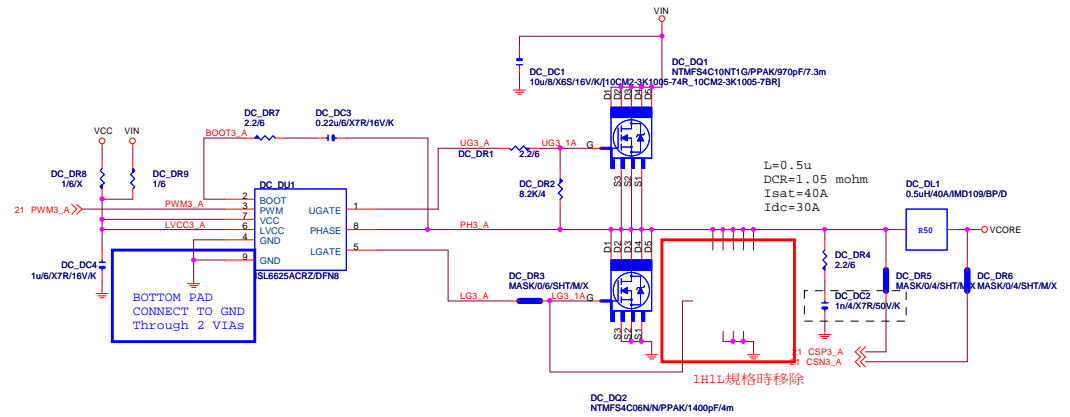
PCI EXPRESS * 16			
Size	Document Number	GA-B250M-Gaming 5	
Custom			Rev 1.0
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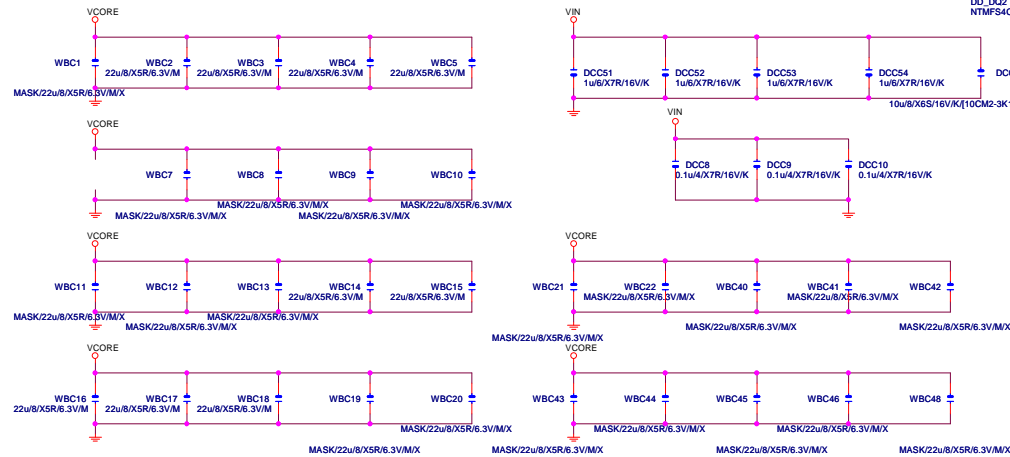


VSCORE	ISL95856	ISL95866	VCCGT	ISL95856	ISL95866
DAR137	X	V	DAR140	X	V
DAR138	V	X	DAR141	V	X
DAR139	X	V	DAR142	X	V
DAC15	V	X	DAC27	V	X
DAR79	V	X	DAR80	V	X
DAR33	V	X	DAR51	V	X

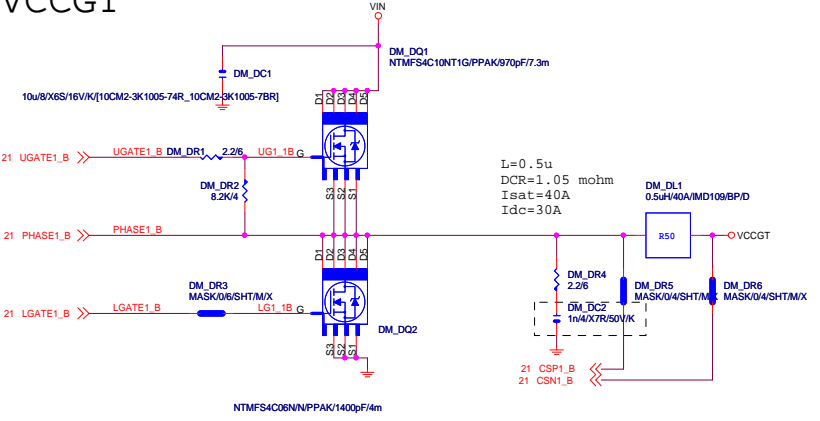




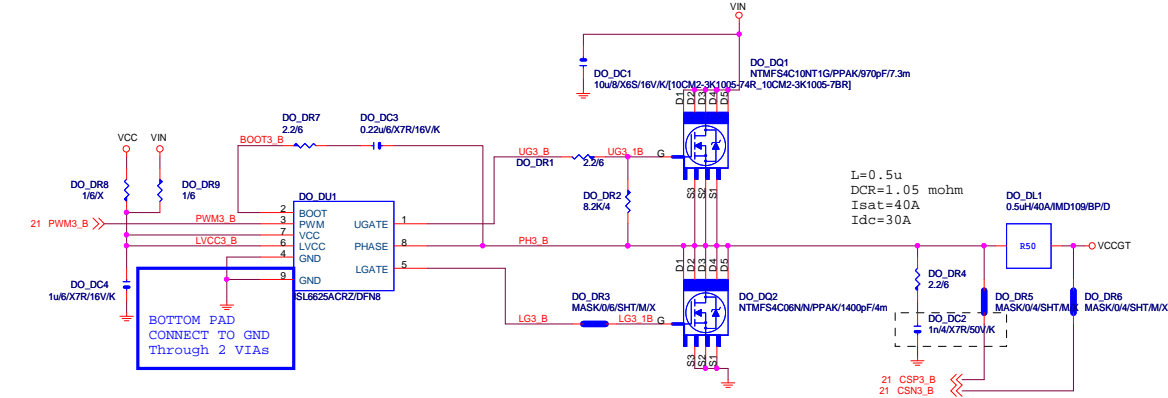
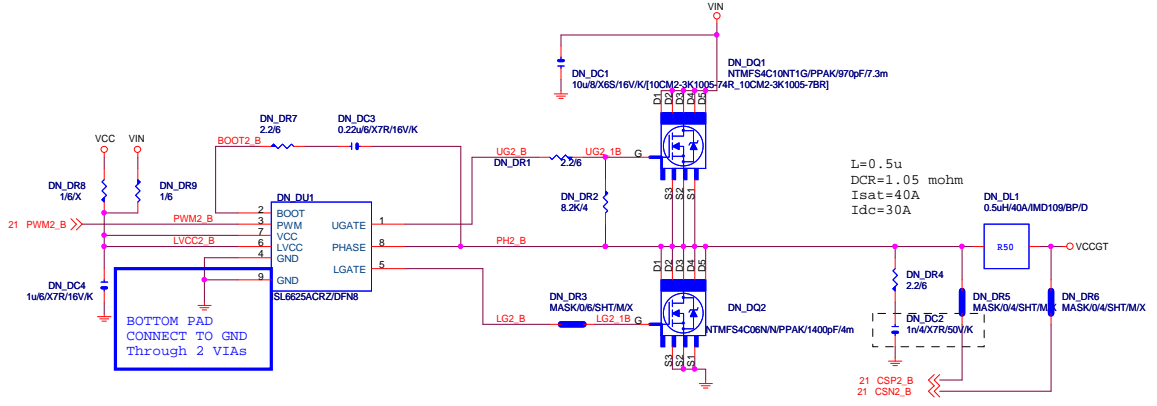
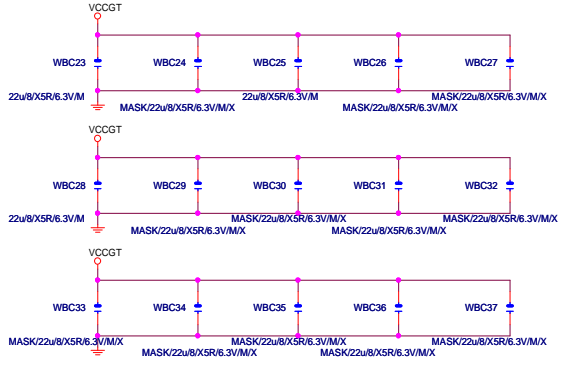
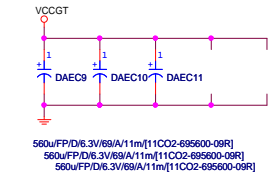
MASK560uP/D16.3V/69A/1m[1] IC22-495600-09R[X]
560uP/D16.3V/69A/1m[1] IC22-495600-09R[X]
MASK560uP/D16.3V/69A/1m[1] IC22-495600-09R[X]
560uP/D16.3V/69A/1m[1] IC22-495600-09R[X]
560uP/D16.3V/69A/1m[1] IC22-495600-09R[X]
560uP/D16.3V/69A/1m[1] IC22-495600-09R[X]



VCCGT

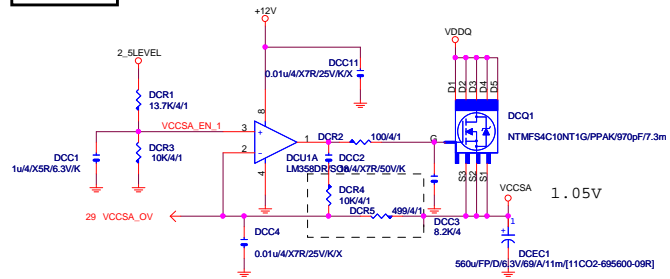


VCCGT CAP 560u*5PCS 22u*15PCS

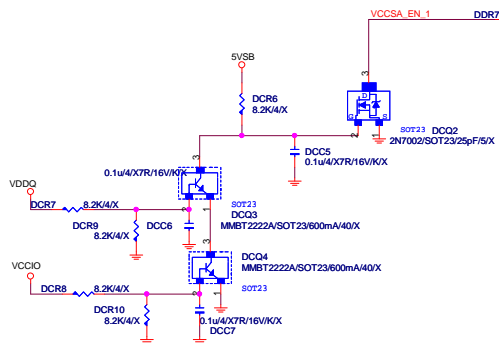


Title		
ISL95866_MOS		
Size	Document Number	Rev
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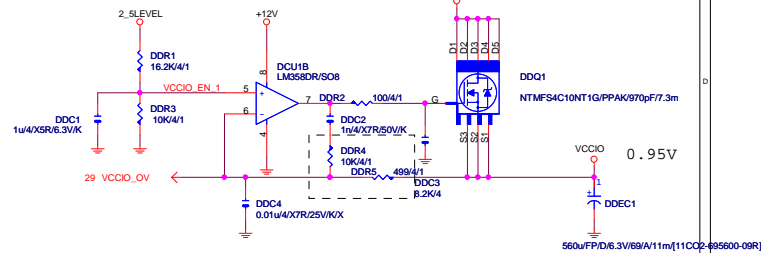
VCCSA



Connect to IT8686

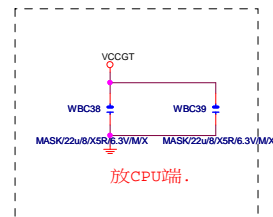


VCCIO

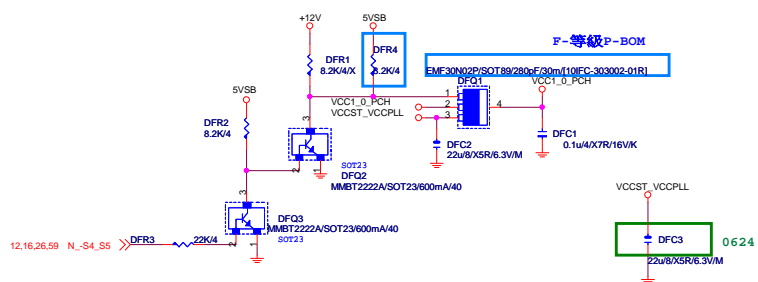


Connect to IT8686

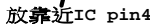
VCCIO_EN 1 DDR8 04/SHT/MX VCCIO_EN 16



VCCST_VCCPLL



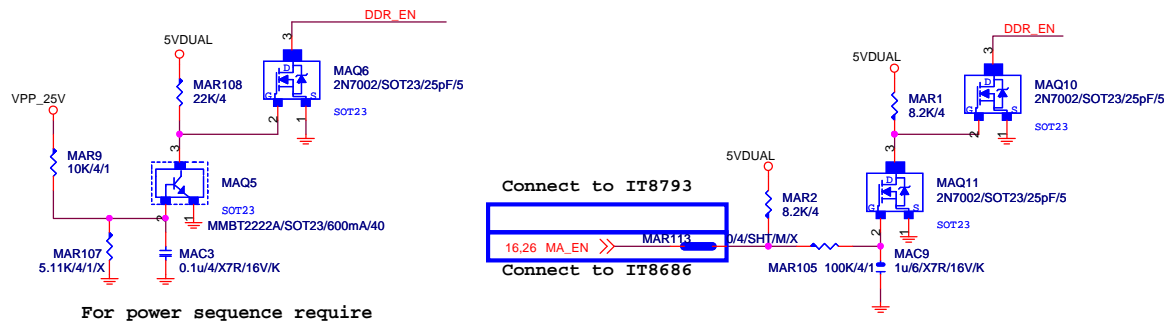
DDR4



請放置CHOKE一出來位置.先預留.
請自行確認ripple後再決定是否上件

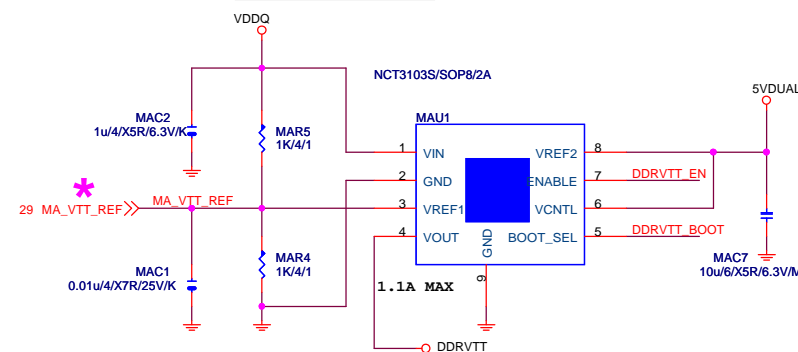
Remote sense請從最重的負載端點拉回

PWR	SEQ
-----	-----



For power sequence require

DDRVTT



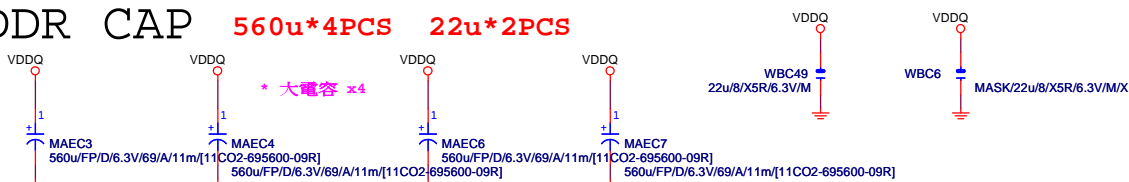
4 DDR_VTT_CTL 1216,59 N_SLP_S3

DDR_VTT_CTL MAR110 DDRVTT_EN
N_SLP_S3 MAR111 DDRVTT_BOOT

0/4SHT/M/X
0/4SHT/M/X

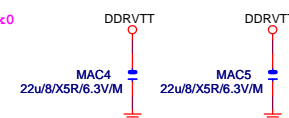
MAU1上NCT3103S時上件

DDR	CAP	560u*4PCS	22u*2PCS
-----	-----	-----------	----------



* 大電容 x4

DDRVTT CAP



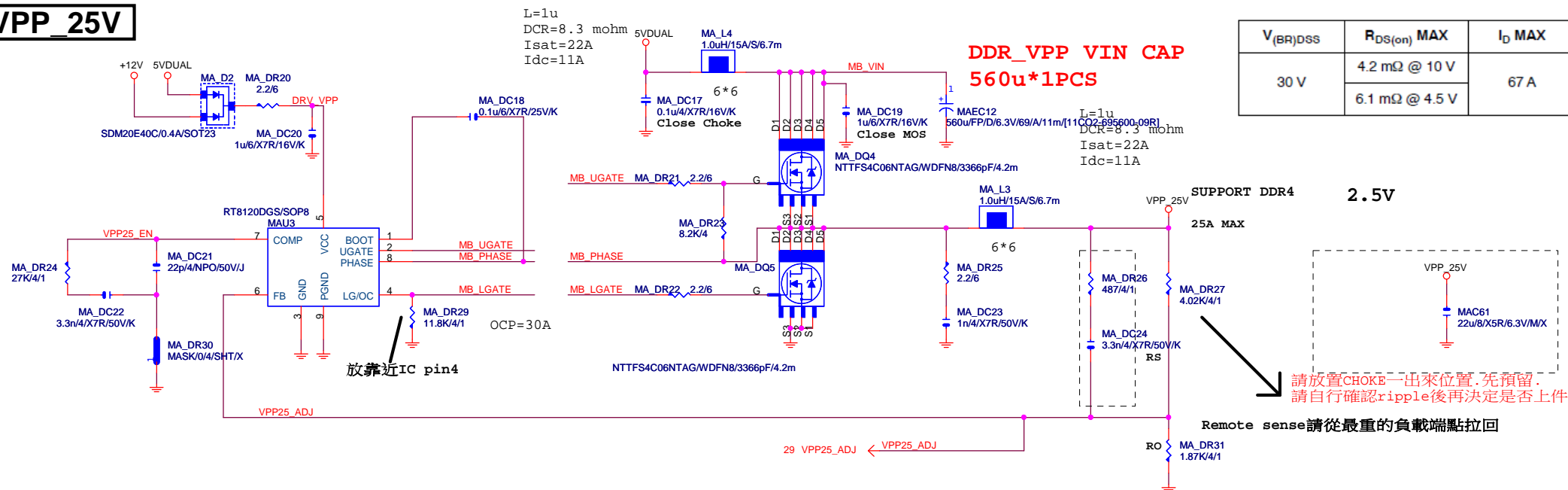
* 大電容 *

			
Title			
RT8120_DDR4 POWER			
Size	Document Number		Rev
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VPP_25V

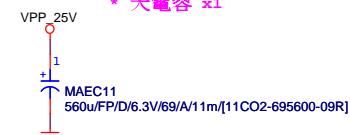
DDR_VPP VIN CAP
560u*1PCS

$V_{(BR)DSS}$	$R_{DS(on)} \text{ MAX}$	$I_D \text{ MAX}$
30 V	4.2 mΩ @ 10 V	67 A
	6.1 mΩ @ 4.5 V	

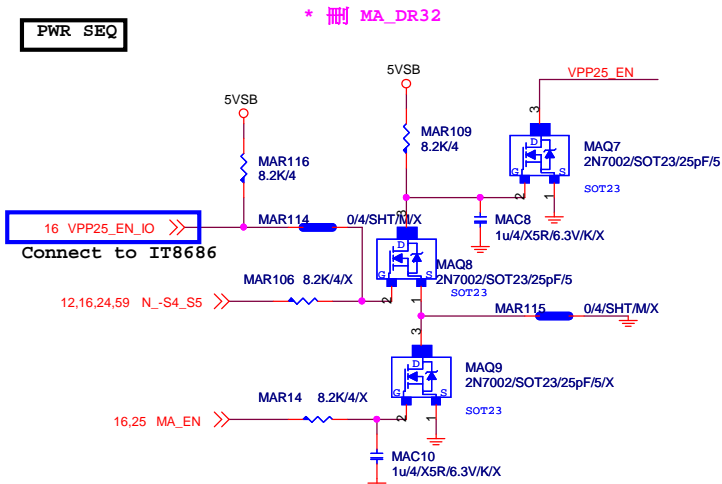


VPP CAP 560u*1PCS

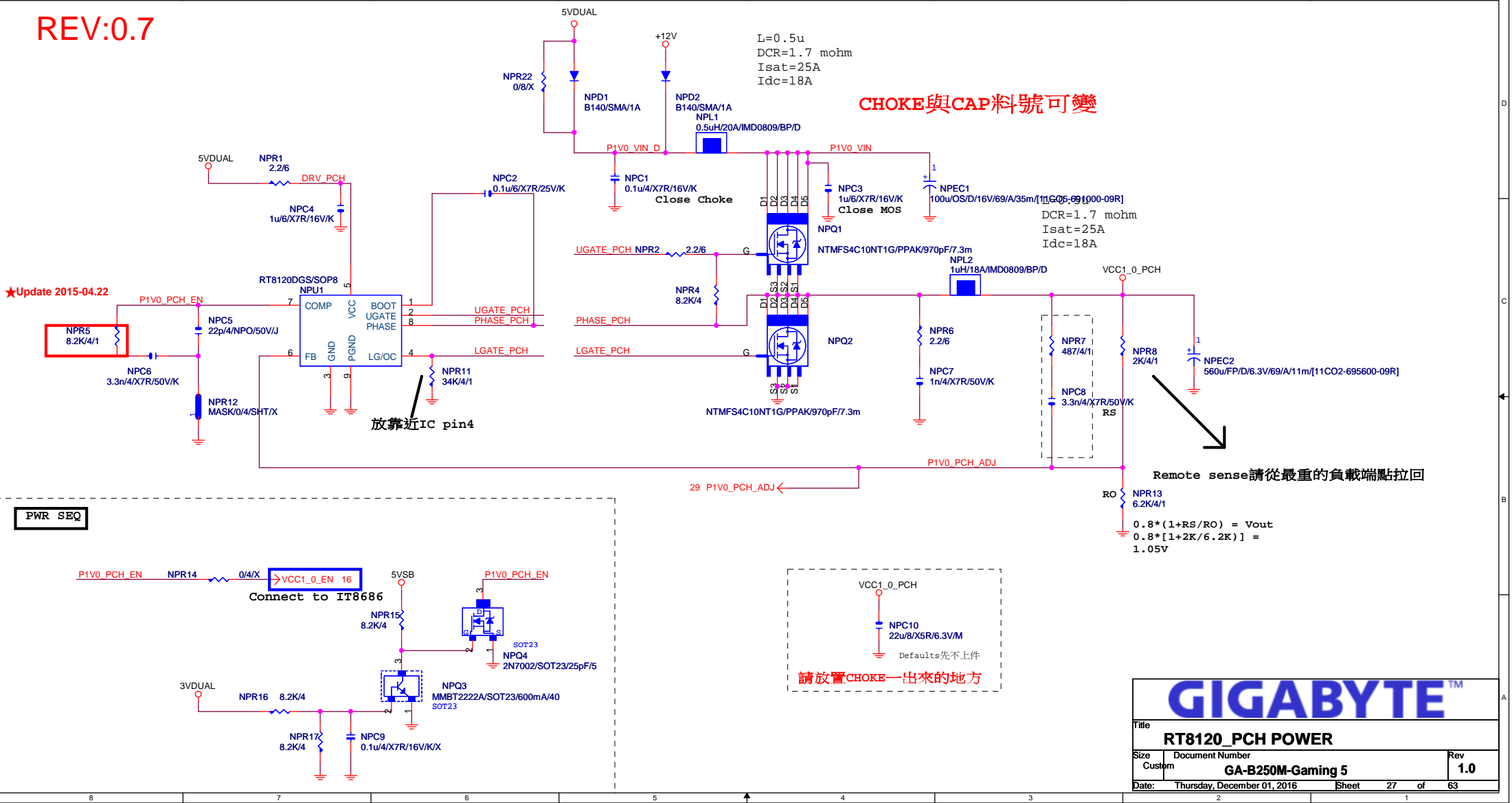
* 大電容 x1

**GIGABYTE™**

Title			
RT8120_VPP25 POWER			
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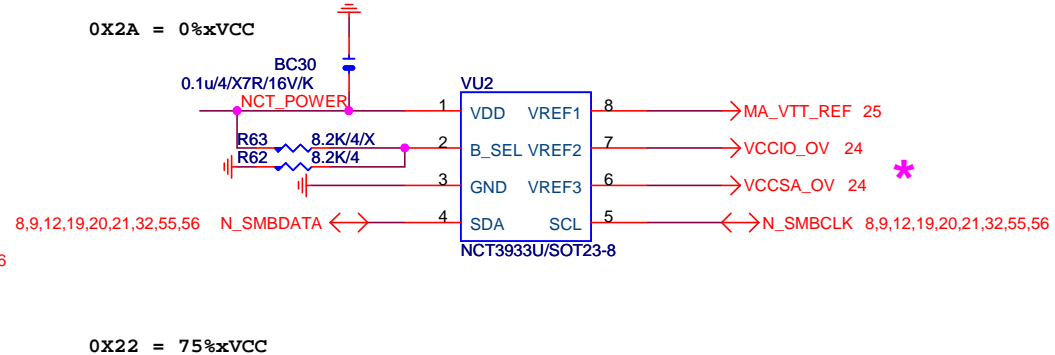
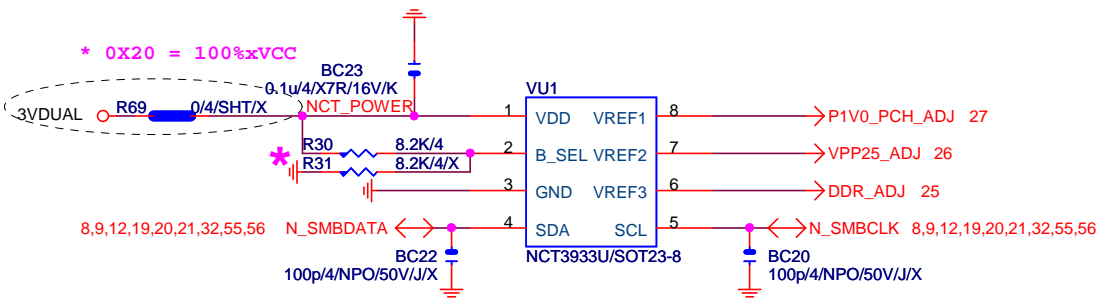


REV:0.7



GIGABYTE™			
Title			
RT8120_PCH POWER			
Size	Document Number	Rev	
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OVER VOLTAGE

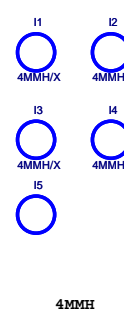
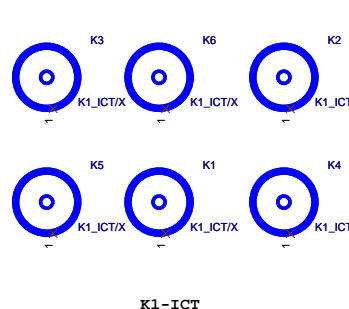
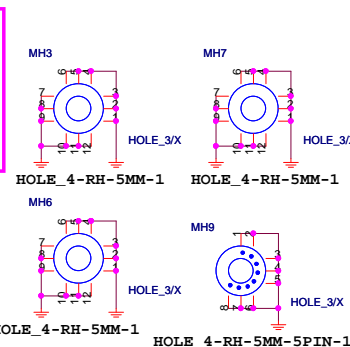
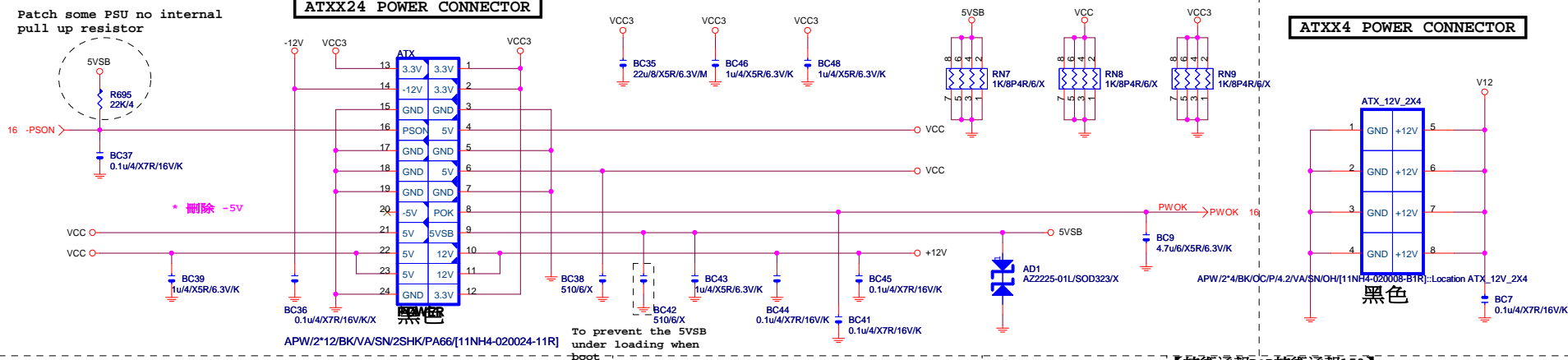


* 删除 ovu3

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

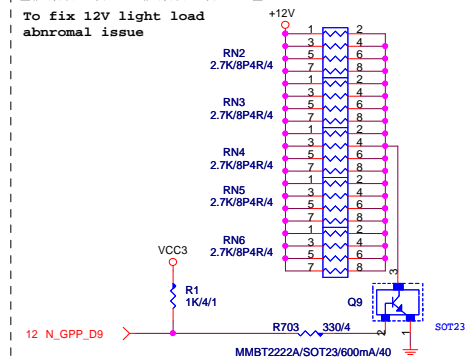
Gigabyte Technology			
Title CPU CORE VR-2			
Size Custom	Document Number GA-B250M-Gaming 5		Rev 1.0
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Patch some PSU no internal pull up resistor

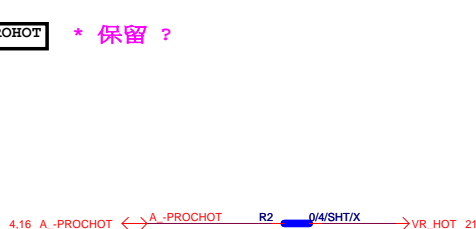


【技術通報R&D技術通報153】

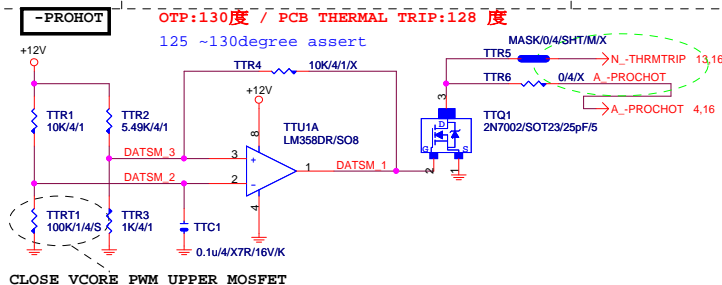
To fix 12V light load abnormal issue



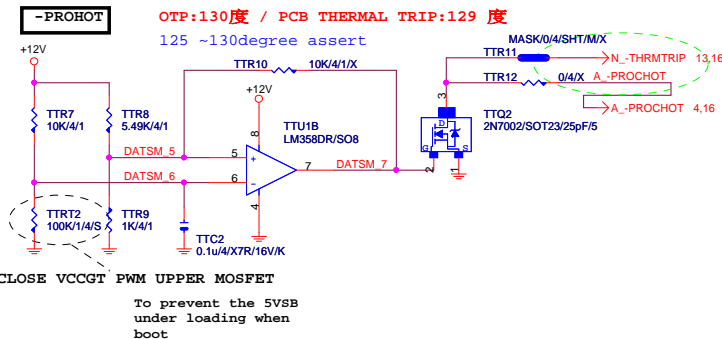
-PROHOT * 保留 ?



-PROHOT



-PROHOT



Rev 0.1

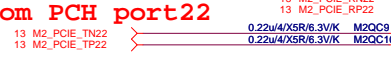
M.2 Lane4 from PCH port24



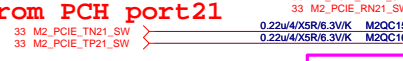
M.2 Lane3 from PCH port23



M.2 Lane2 from PCH port22

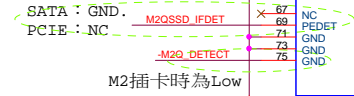
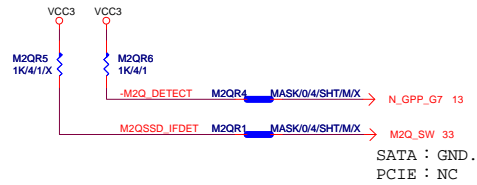


M.2 Lane2 from PCH port21



需與M2_-CLKREQ對應

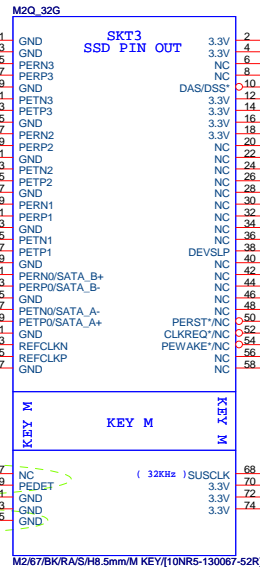
支援SATA and M.2 function



M2插卡時為Low

架高

M2678K/RA/S/H8.5mm/M KEY/[10NR5-130067-52R]

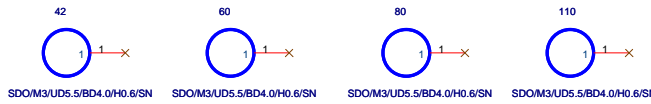


DIP螺柱

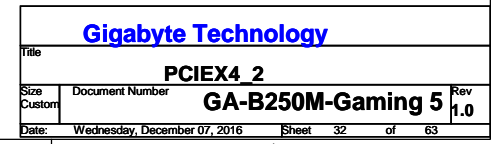


CR[12KSF-F10303-11R]

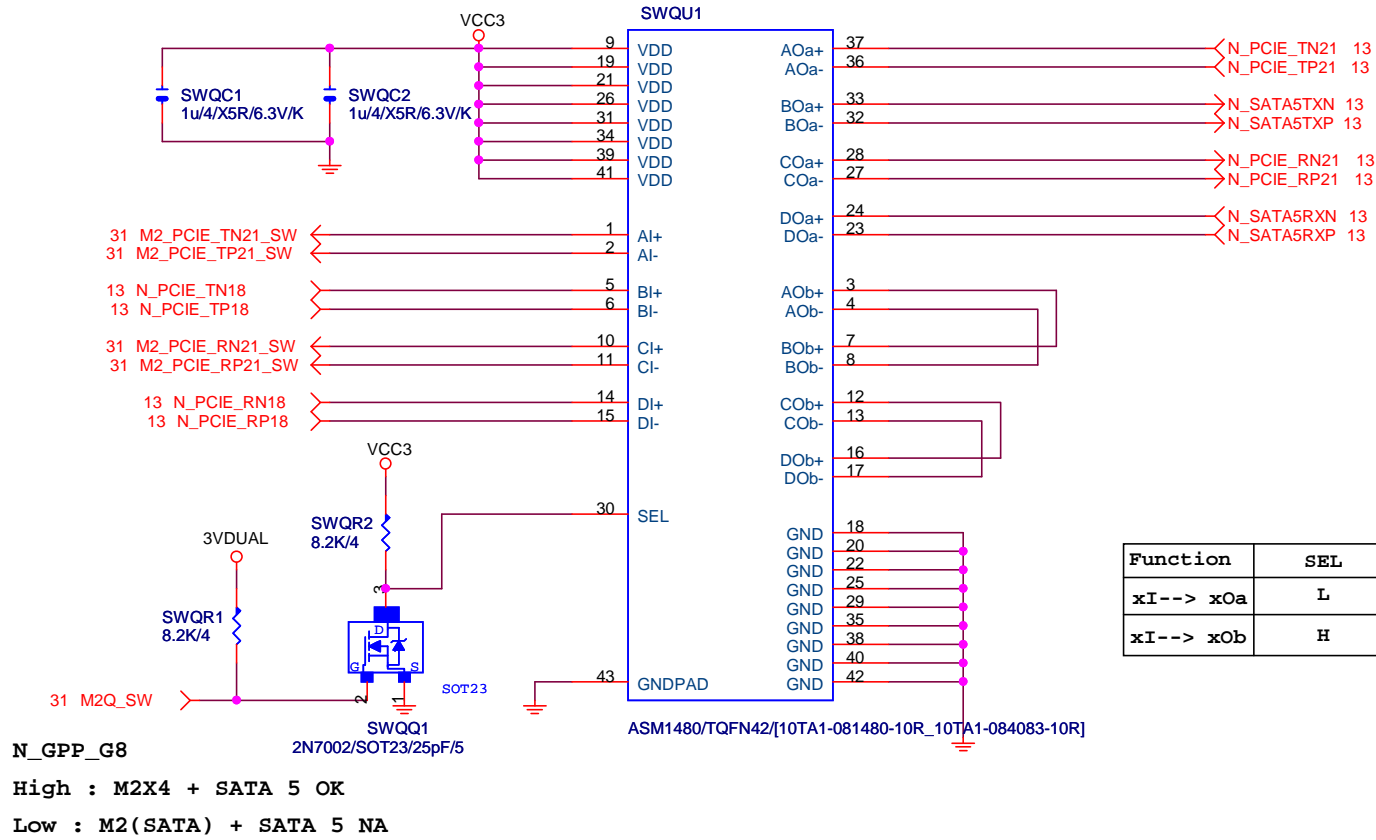
SMD螺柱



SDO/M3/UD5.5/BD4.0/H0.6/SN SDO/M3/UD5.5/BD4.0/H0.6/SN SDO/M3/UD5.5/BD4.0/H0.6/SN SDO/M3/UD5.5/BD4.0/H0.6/SN



舊的Switch,價格低

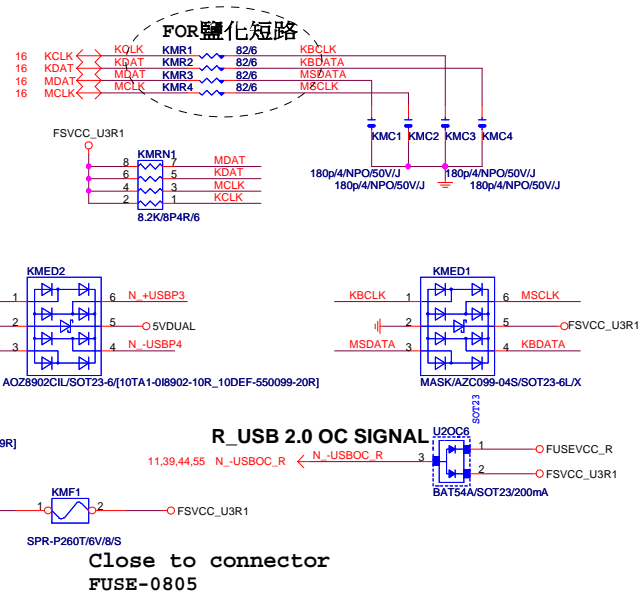


Function	SEL
xI--> xOa	L
xI--> xOb	H

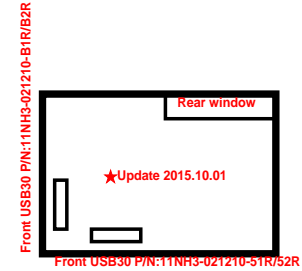
5	4	3	2	1
D				D
C				C
B				B
A				A
5	4	3	2	1

Gigabyte Technology			
Title			
PCI EXPRESS X4 SLOT 1			
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<p align="center">Gigabyte Technology SWITCH</p>			
<p>Title</p>			
Size	Document Number	GA-B250M-Gaming 5	Rev
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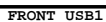
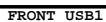


Front USB3.0

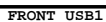


FRONT USB1

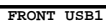
FRONT USB1



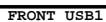
FRONT USB1

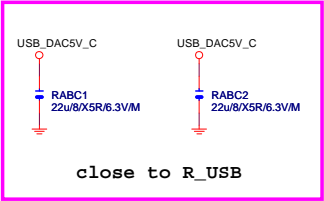
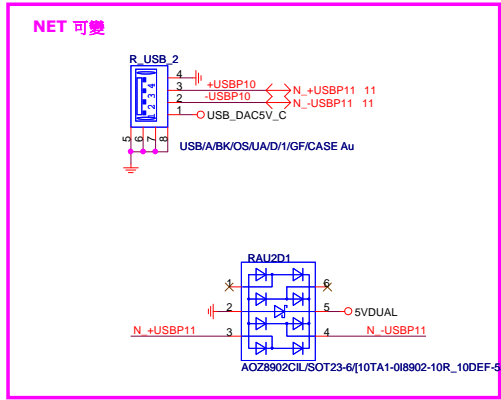


FRONT USB1

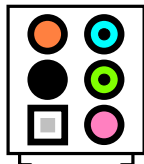
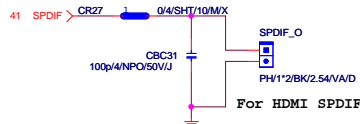


FRONT USB1





Gigabyte Technology		
Title		
KB_MS_USB3, R_USB30		
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**SPDIF_OUT**

CR19 2.2/6/X \Rightarrow Audio jack \rightarrow USB (各打2 VIA hole)

CR22 0/6 → Under Audio jack (各打2 VIA hole)

MOATC1 0.1uF/4X7R/16V/K → Near F_AUDIO(各打2 VIA hole)

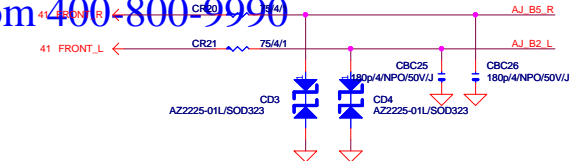
MOATC2 0.1u4/X7R/16V/K → Near Codec (各打2 VIA hole)

MOATC3, 0.1uH/X7R/16V/K → Near R_AUDIO(各打2 VIA hole)

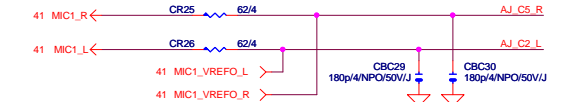
MOATR4 0.1uH/X7R/16V/K → Near AMP (各打2 VIA hole)

*量產前, 0ohm改short pad

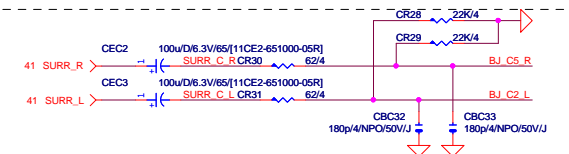
LINE-IN



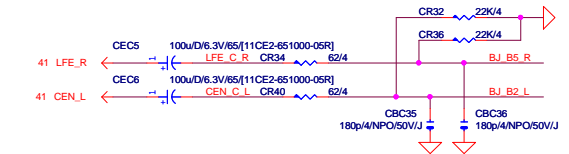
MIC-IN



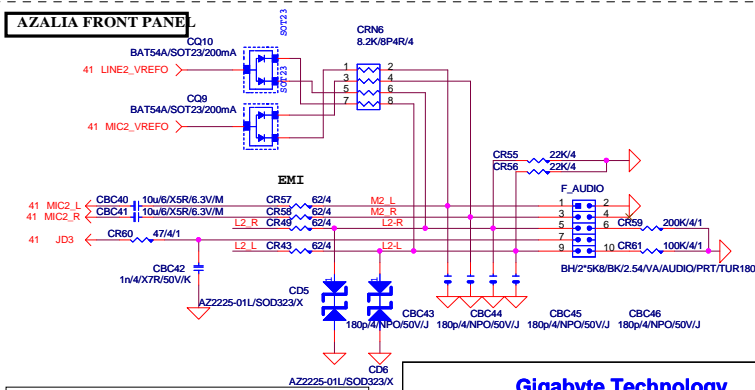
SURROUND



CEN/LFE

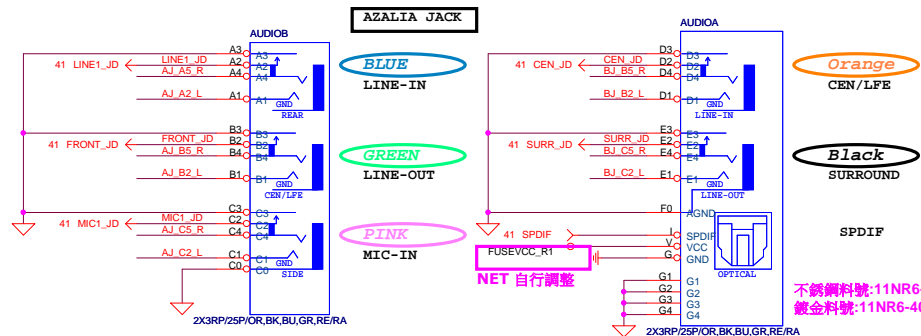


AZALIA FRONT PANE

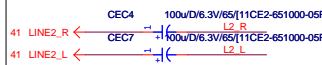


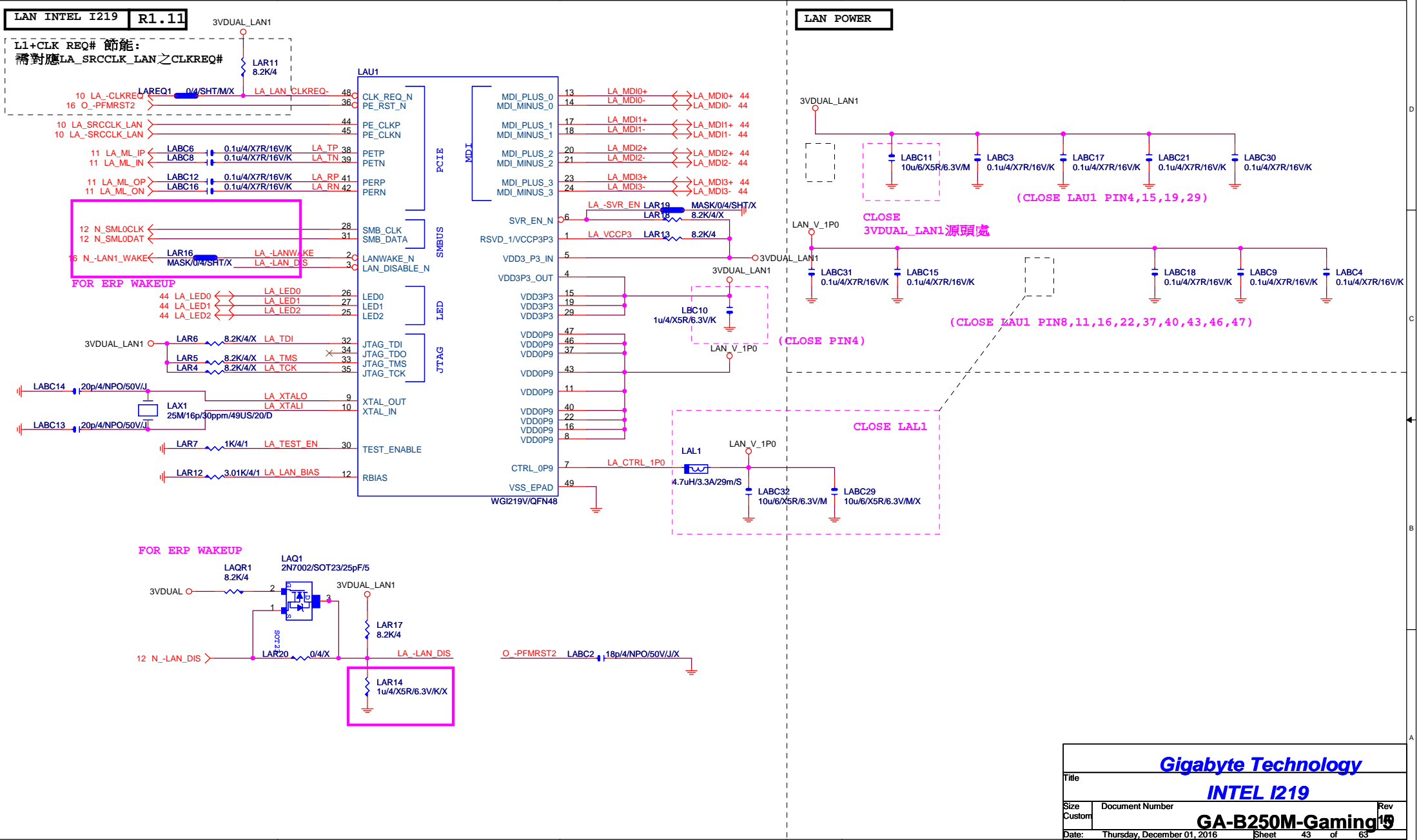
Gigabyte Technology

Title				AUDIO JACK		Rev	
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		GA-B250M-Gaming 5					
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不銹鋼料號:11NR6-403025-A2R
鍍金料號:11NR6-403025-92R

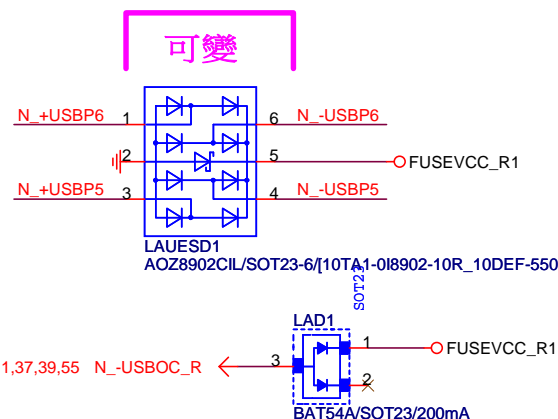




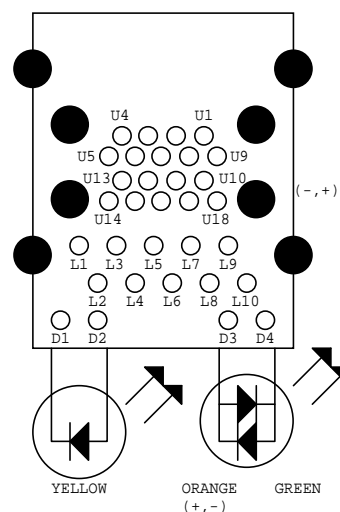
R1.11

RMA ESD PROTECT

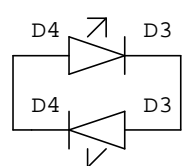
note:可變更USB NAME



USB30_LAN LAYOUT示意圖



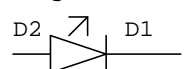
Dual Color LED



Green

Orange

Single Color LED

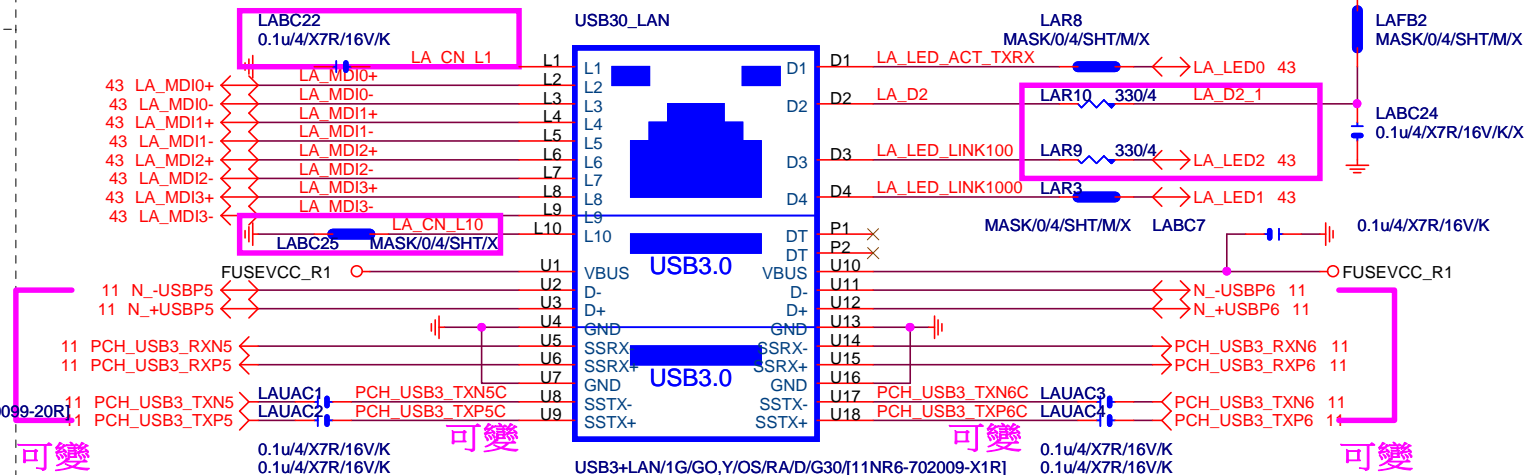


Yellow

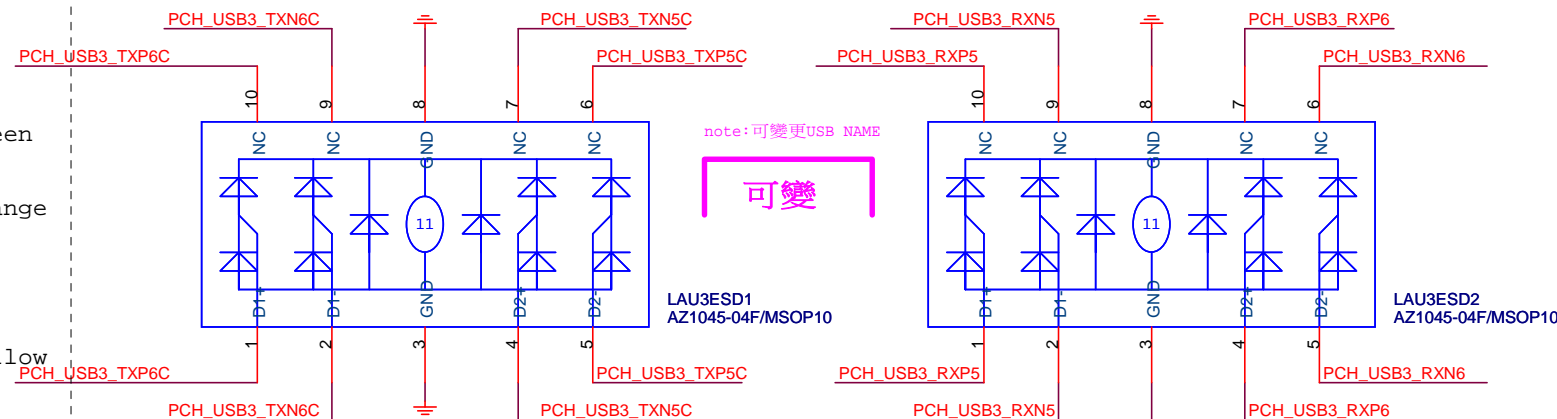
USB_LAN CONNECTOR

note:可變更USB NAME

[I219]

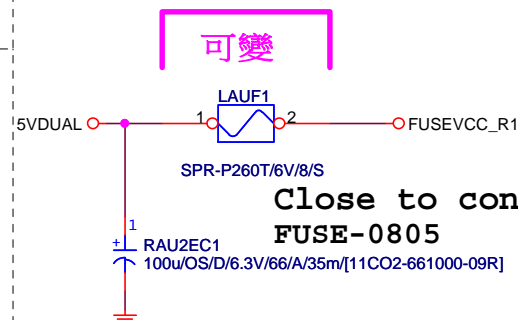


LA MDI-->100歐姆:[20/4/8/4/20]



USB POWER

note:可變更FUSE



Close to connector
FUSE-0805

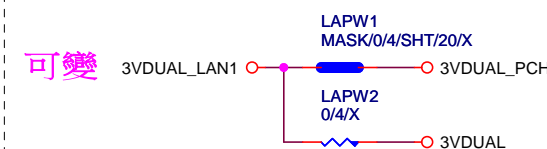
EMI SHORT PAD

PS:視EMI需求



LAN POWER

note: lan power連接及電流



Gigabyte Technology

LAN CONNECTOR-I219

GA-B250M-Gaming 5

Title

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Rev

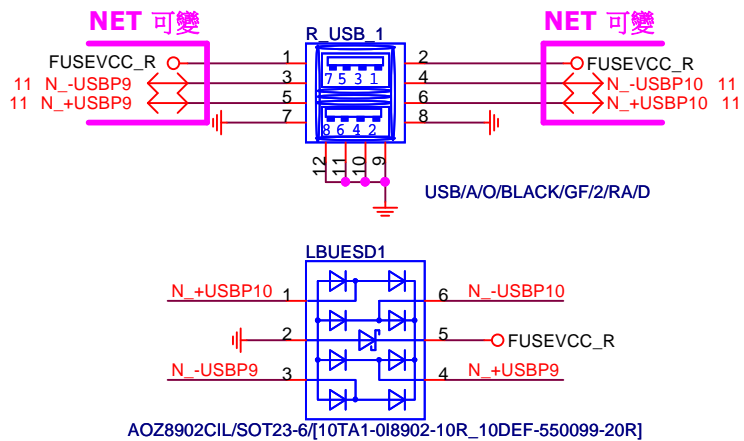
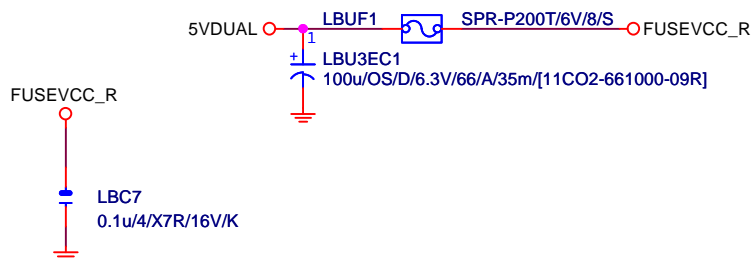


GIGABYTE™			
Title			
ASM2142			
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USB POWER

note:可變更FUSB

可變



GIGABYTE™

Title

TI Type C port A

Size

Document Number

Custom

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1.0

Date:

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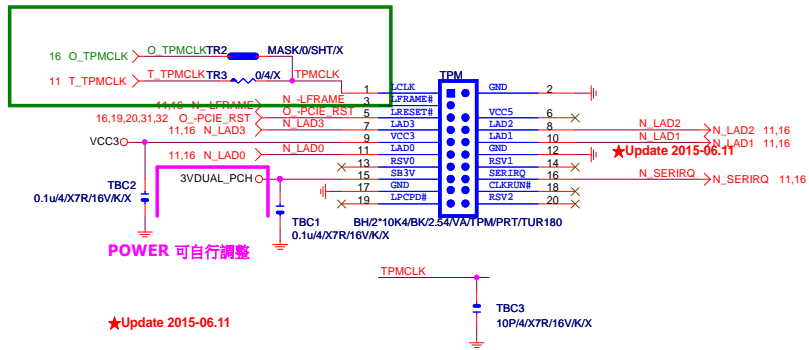


GIGABYTE™		
Title		
TI HD3SS3212		
Size	Document Number	Rev
C	GA-B250M-Gaming 5	1.0
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	5		4		3		2		1
D									
C									
B									
A									
	5		4		3		2		

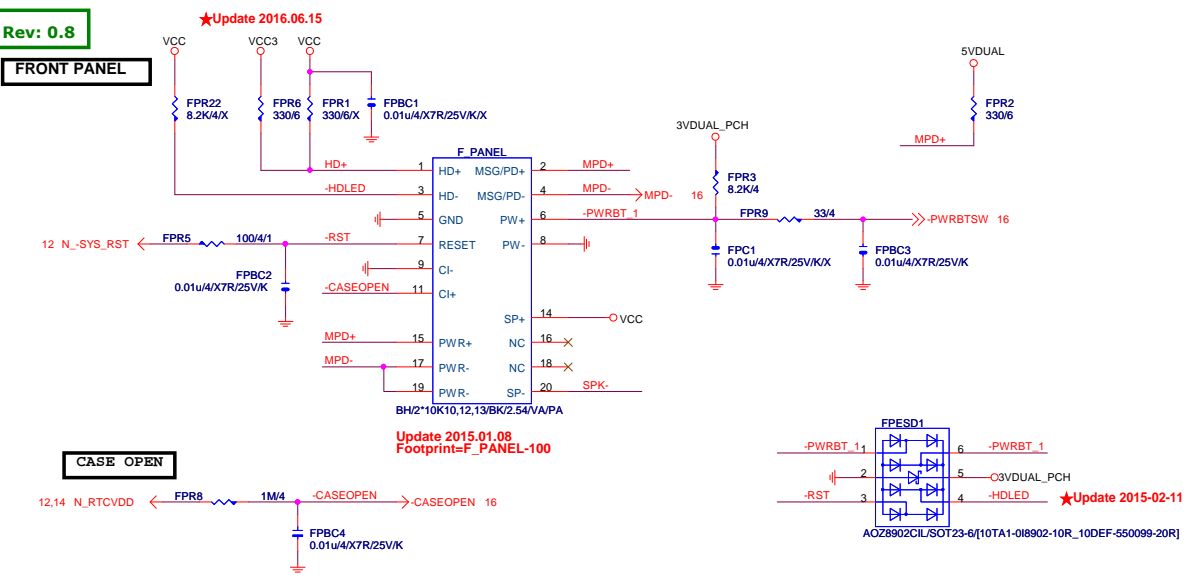
GIGABYTE™		
Title IDT9FGP320_CLK		
Size Custom	Document Number GA-B250M-Gaming 5	Rev 1.0
Date: Thursday, December 01, 2016	Sheet 48 of 63	

TPM CONNECT



Rev: 0.8

FRONT PANEL

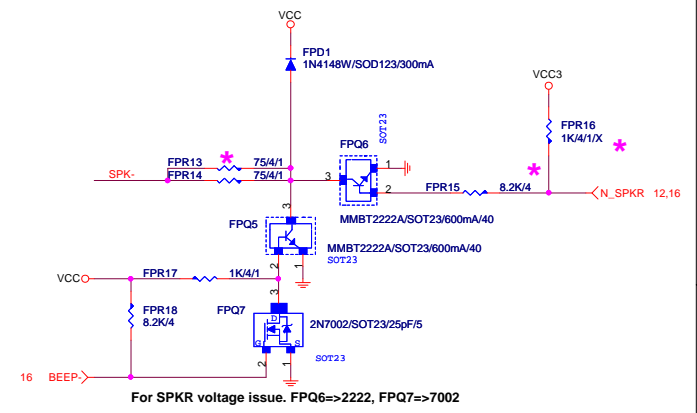


SATA/M.2 LED



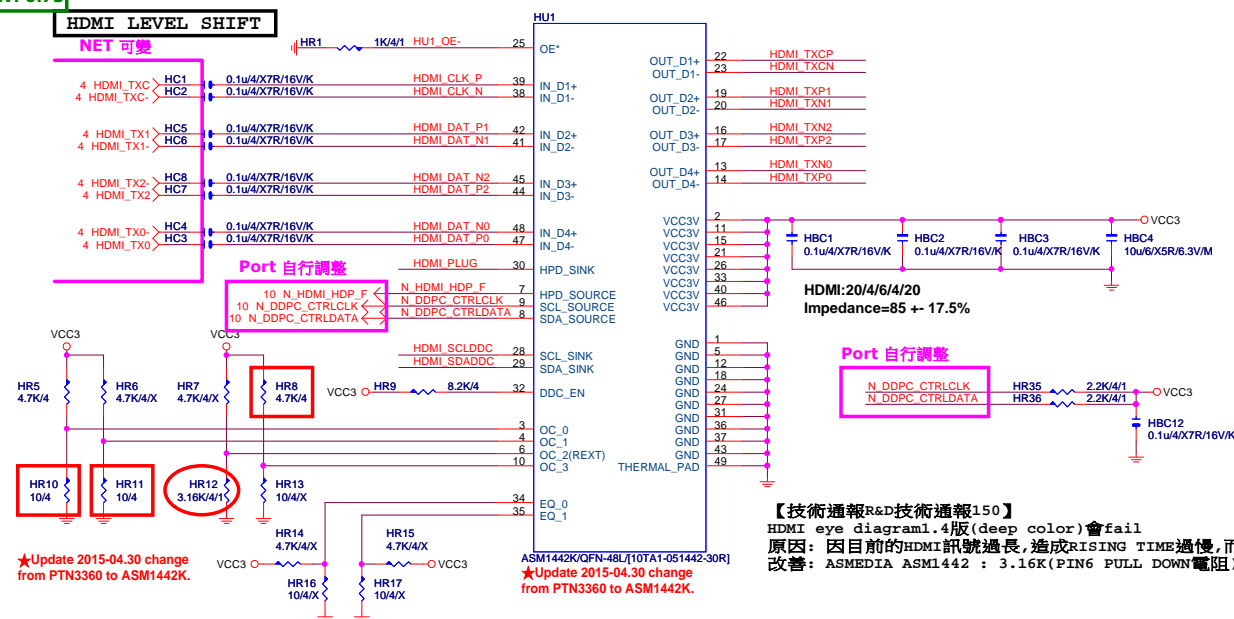
SPEAKER

For SPKR voltage issue. FPQ6=>2222, FPQ7=>7002

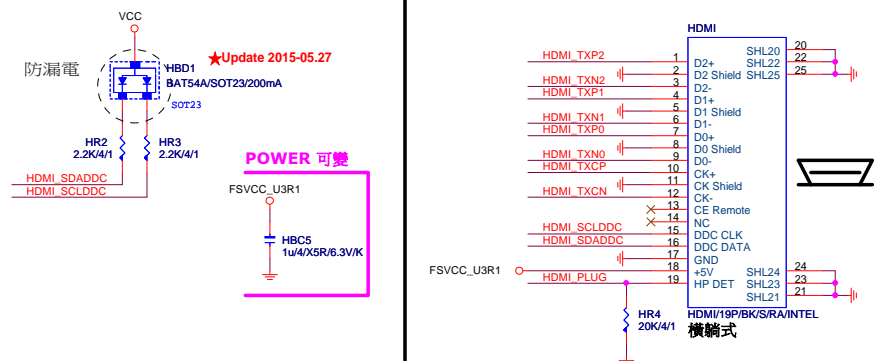


Gigabyte Technology

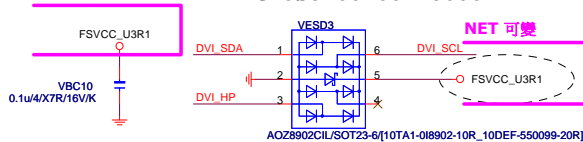
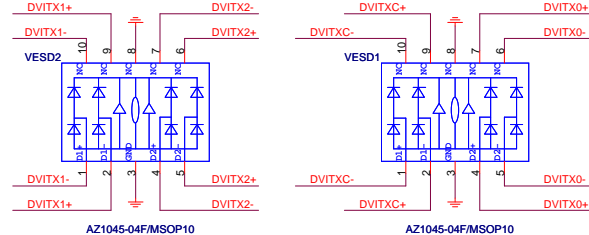
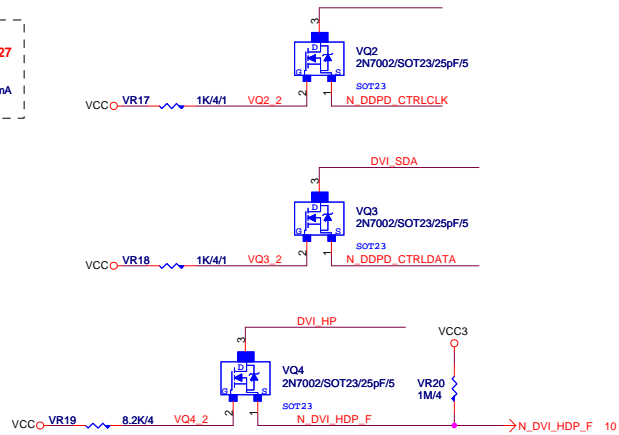
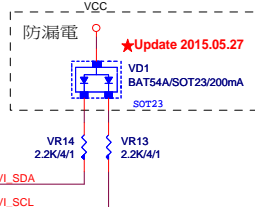
Title			
FRONT PANEL			
Size	Document Number	Rev	
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PTN3360:PIN 4/10/34/35 NC PIN,都不上值;只上HR12:10K
ASM1442:紅色框要上,HR12:3.16K

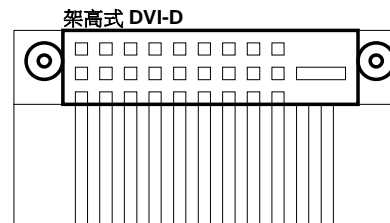


NET 可變

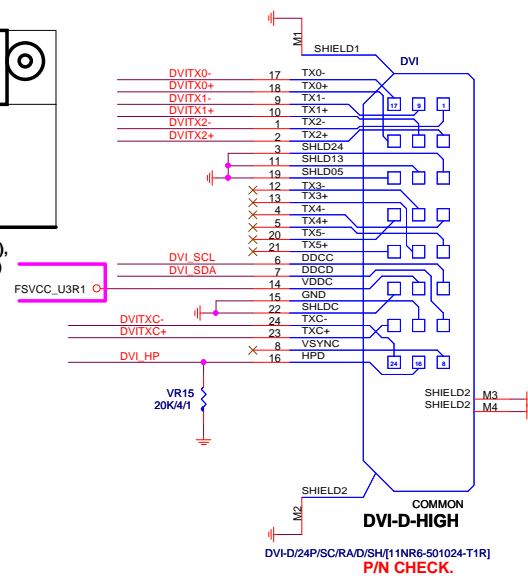


Close to connector

NET 可變



★Update 2015-03.24 11NR6-501024-R1R(Golden),
11NR6-501024-T1R(Normal)

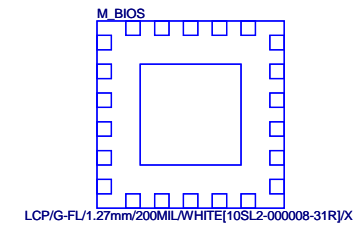


GIGABYTE

Title		DVI		Rev 1.0
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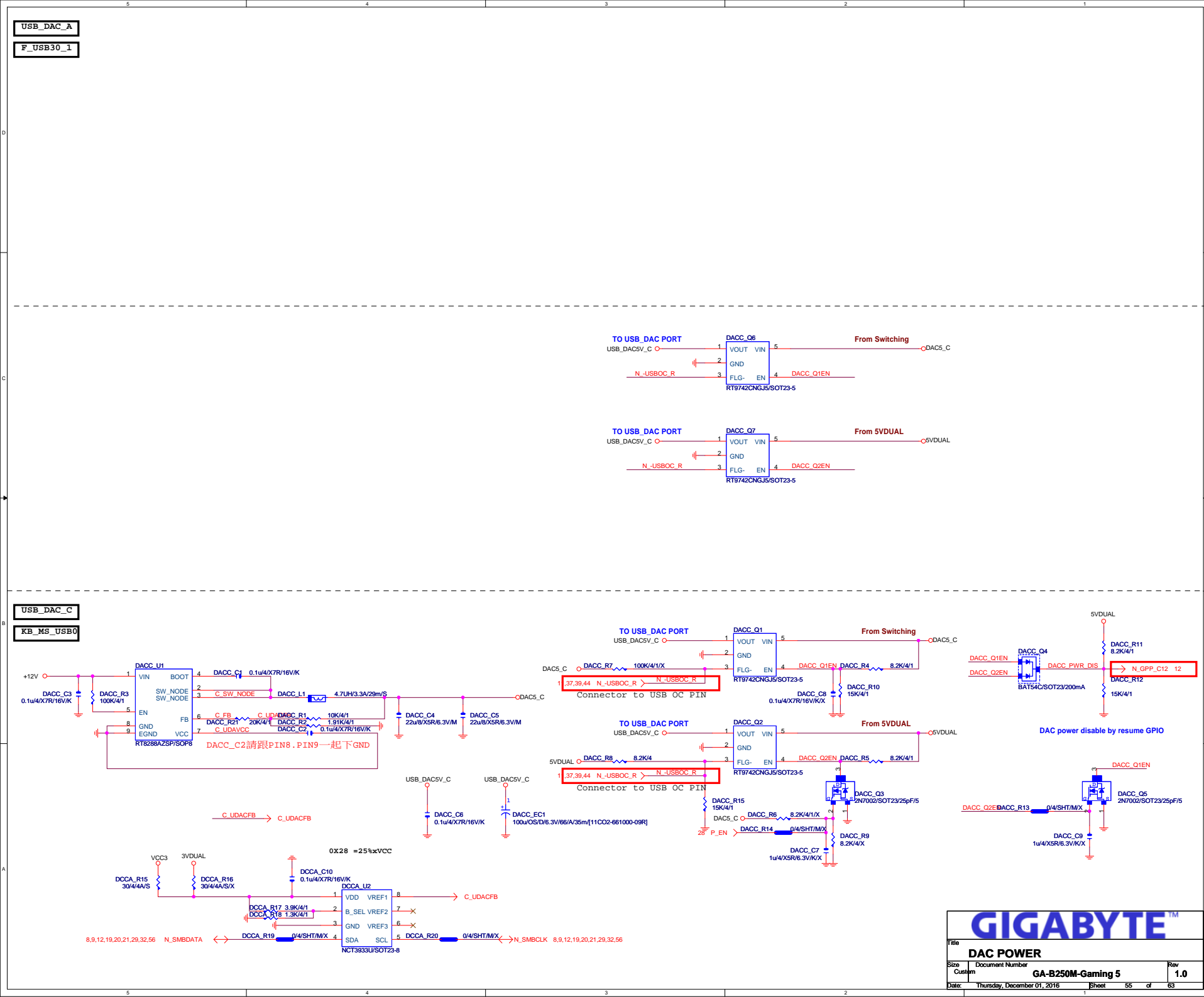


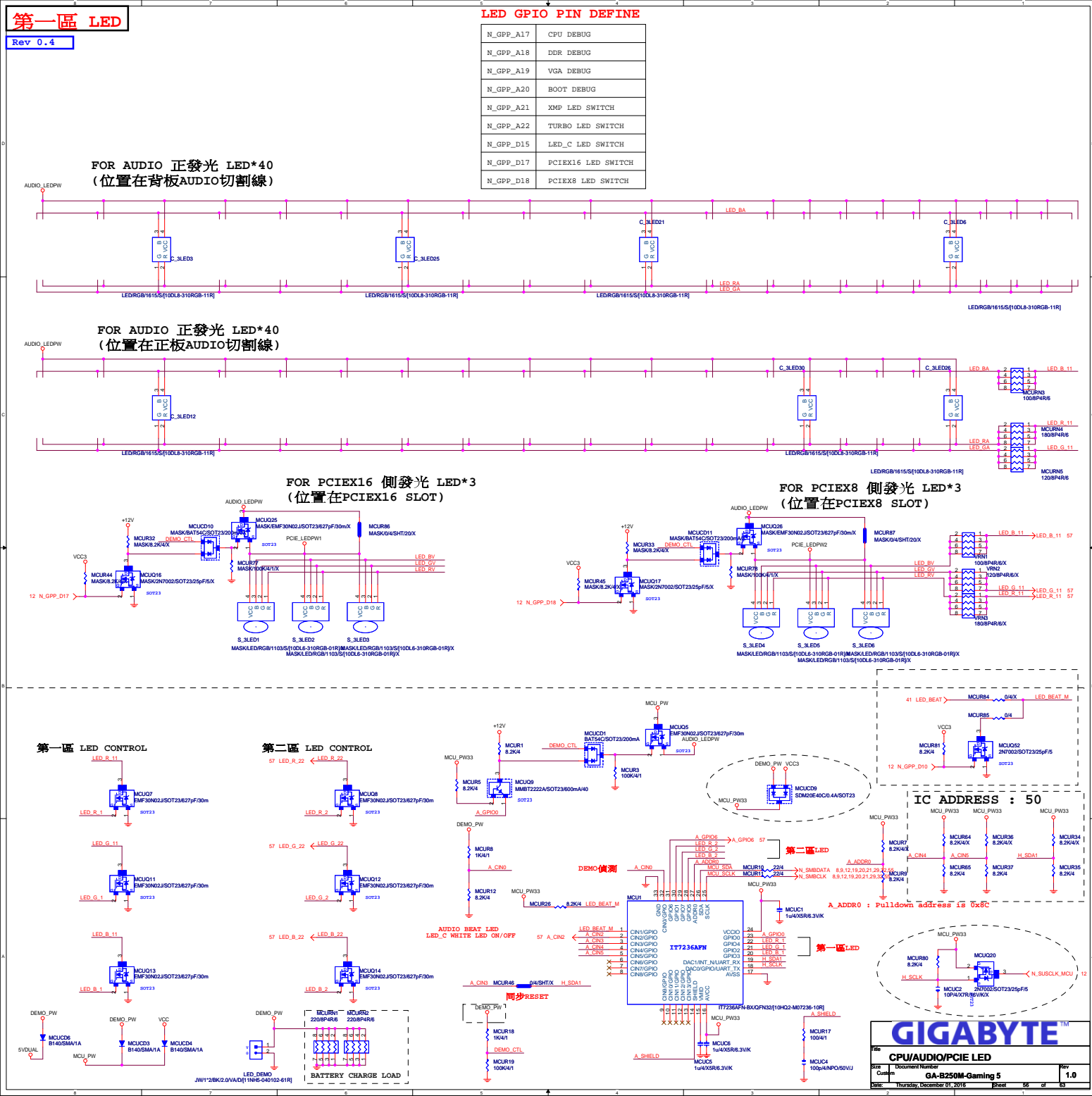
MOSI For DMI RX Termination Voltage



Gigabyte Technology

Title		BIOS	
Size Custom	Document Number	GA-B250M-Gaming	Rev 1.0
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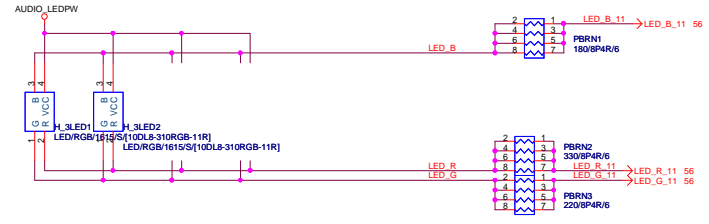




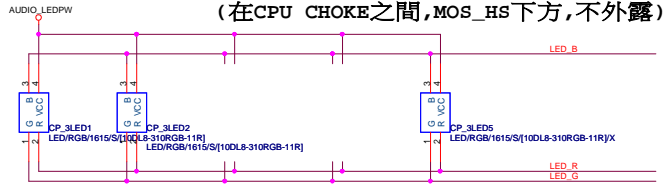
第二區 LED

Rev 0.6

FOR PCH 正發光 LED*4 (位置在正板,依據PCH_HS設計擺放)



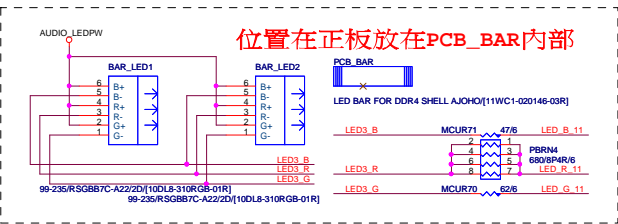
FOR CPU 正發光 LED*5
(在CPU CHOKE之間,MOS_HS下方,不外露)



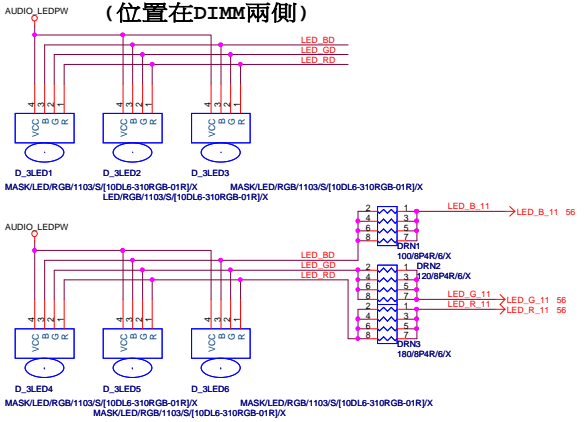
FOR Model name"G1 GAMING"正發光 LED*8
(位置在PCB下方背板板邊鑲空)



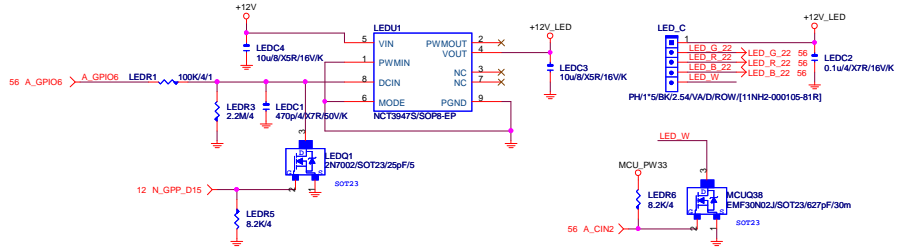
位置在正板放在PCB_BAR內部



FOR DIMM 側發光 LED*6
(位置在DIMM兩側)



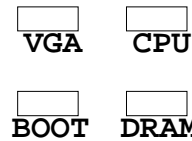
FOR 燈條 LED (LED_C放在PCB左邊板邊位置)



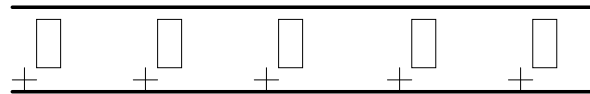
RGB LED LAYOUT 注意事項：

1. Debug LED 文字面表示如右所示 (LED請擺在一起)
2. 背板 RGB LED 方向整板請統一如下
(整板正極可統一朝下或朝上)
3. 正板 RGB LED 統一方向即可
4. LED RGB 10PCS 以上走20mils
LED RGB 10PCS 以下空間問題可以走10mils
LED電源一律走20mils
5. MCU LED 出pin的走線4mils,如:LED_R_1,LED_G_1,LED_B_1
過晶體的走線20mils,包含過排組到LED的走線如:LED_R_11,LED_G_11,LED_B_11..
6. XMP/TURBO/G1.GAMING 側發光 LED 位置如下

Debug LED 文字面 (單色LED)

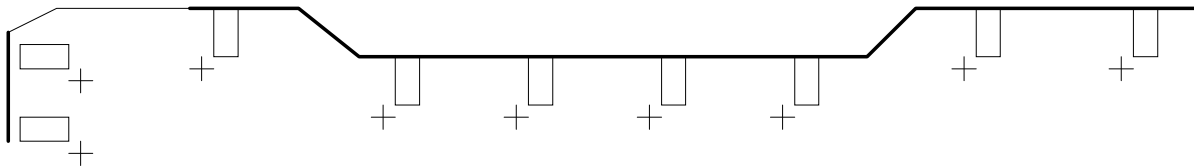


PCB板邊透光model name鏤空+背面 RGB LED



LED間距160mil
G1 GAMING

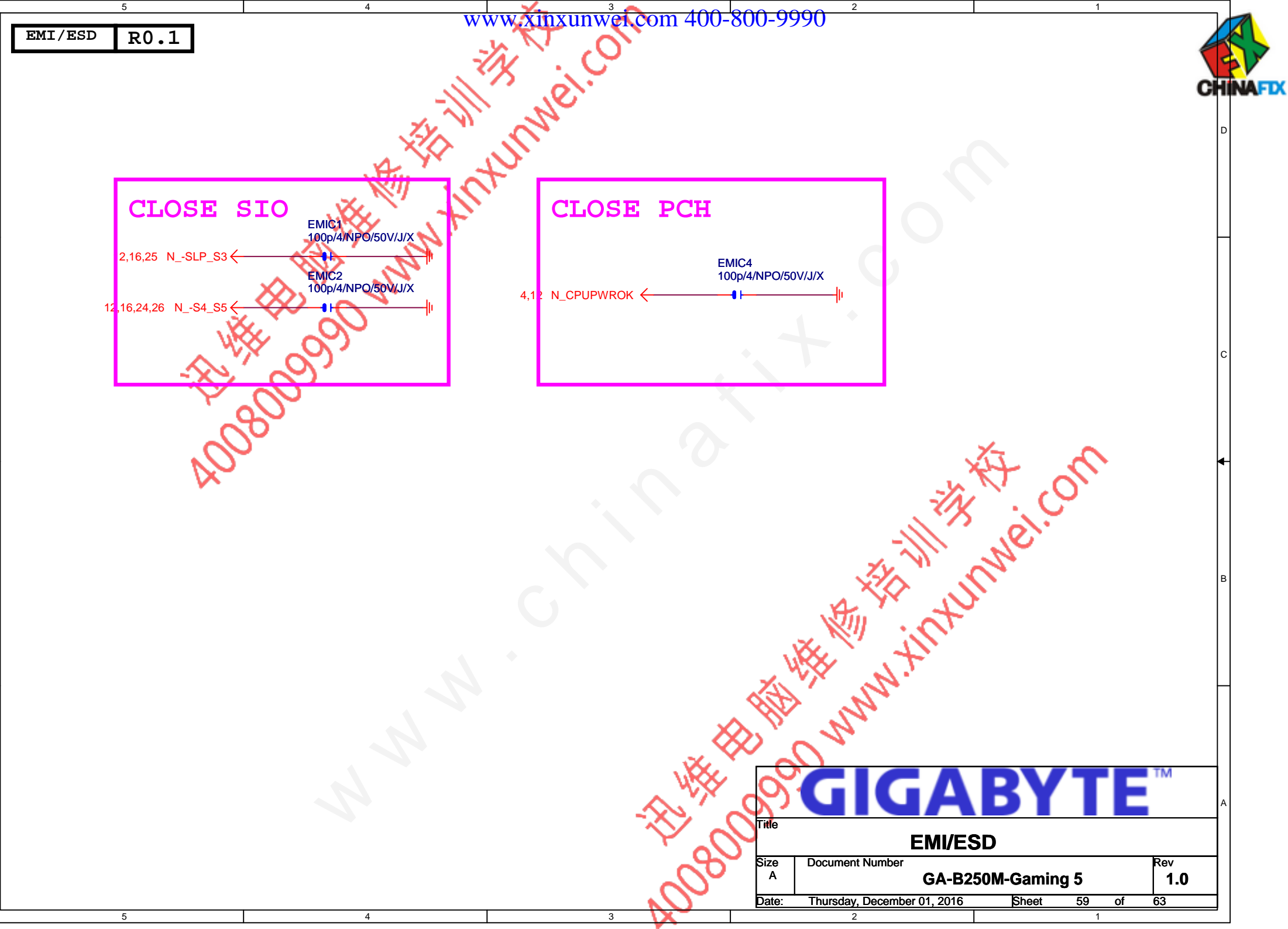
Audio Ground切割線+背面 RGB LED

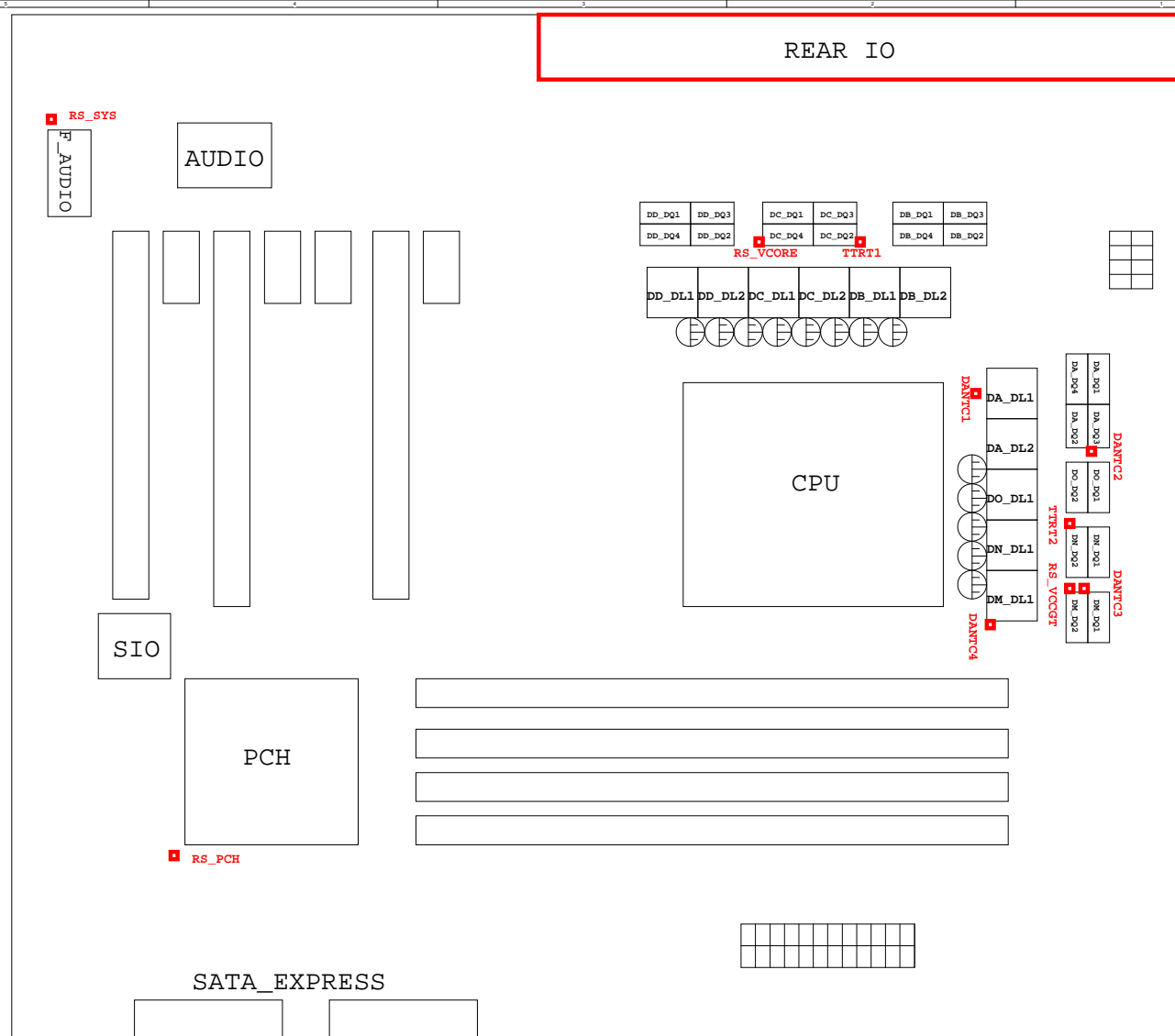


"Turbo", "XMP"字樣(分開控制) 鏤空+背面 RGB側發光 LED

LED間距200mil
TURBO
LED間距200mil
XMP

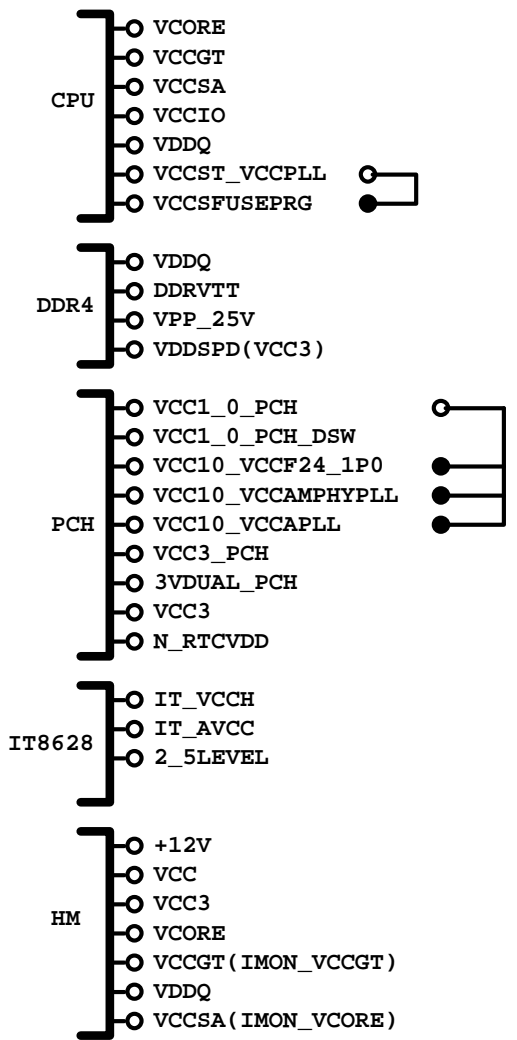
GIGABYTE™			
Title MODEL/PCB LED			
Size	Document Number	Rev	
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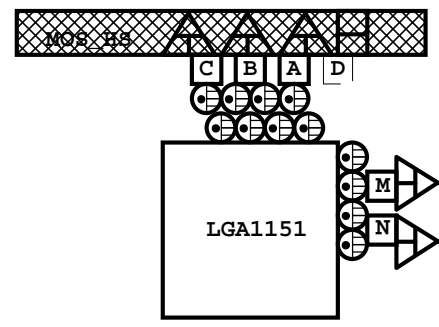
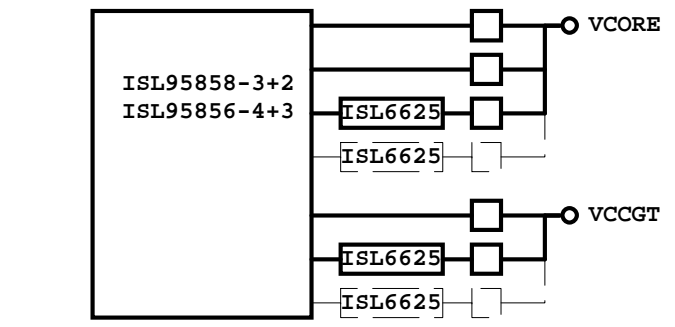


熱敏電阻	擺放靠近位置	走線方式
DANTC1	DA_DL2	Differential
DANTC2	DA_DQ3	Differential
DANTC3	DM_DQ2	Differential
DANTC4	DM_DL1	Differential
RS_VCORE	DC_DQ4	N/A
RS_VCCGT	DM_DQ2	N/A
TTRT1	DC_DQ2	N/A
TTRT2	DN_DQ2	N/A
RS_PCH	PCH	N/A
RS_SYS	F_AUDIO	N/A

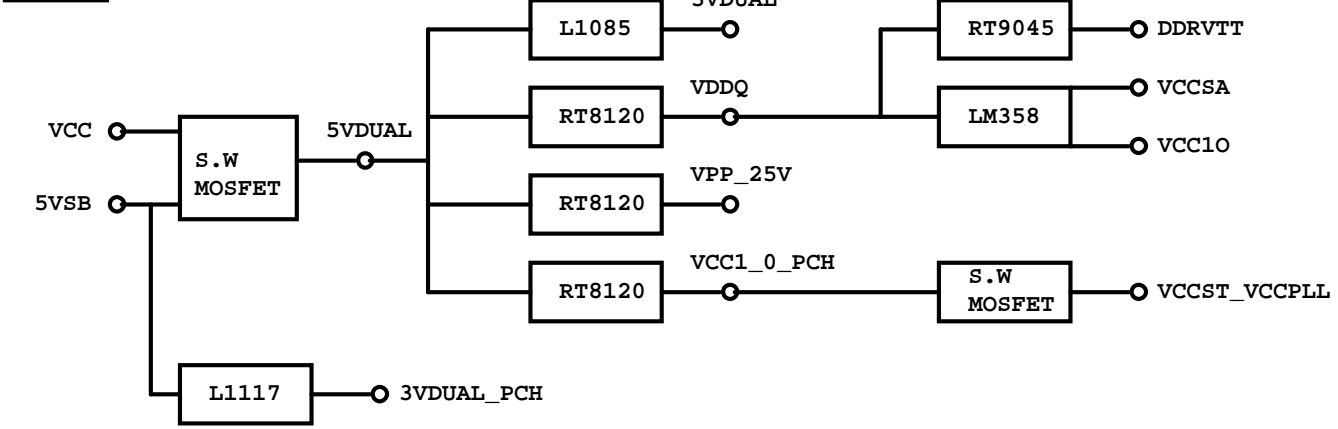
POWER BLOCK MAP



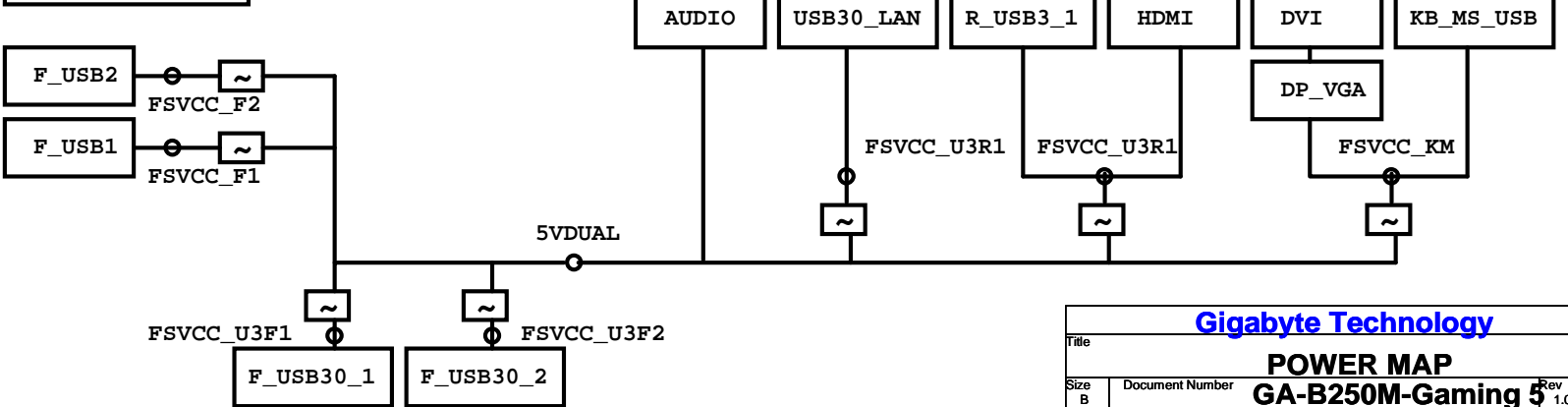
VCORE/VCCGT



POWER



FUSE POWER F/R



固態電容料號.請自行修改

日系黑色固態	Capture Value
11C02-C85600-01R	560u/FP/D/6.3V/68/C/8m
11C05-C82700-01R	270u/FP/D/16V/88/C/12m
11C05-C61000-01R	100u/OS/D/16V/66/C/30m
11C02-C51000-01R	100u/FP/D/6.3V/65/C/13m

日系一般固態	Capture Value
11C02-685600-01R	560u/FP/D/6.3V/68/8m
11C05-882700-01R	270u/FP/D/16V/88/12m
11C05-661000-03R	100u/OS/D/16V/66/30m
11C02-651000-02R	100u/OS/D/6.3V/66/30m

台系固態	Capture Value
11C02-661000-09R	100u/OS/D/6.3V/66/A/35m
11C05-691000-09R	100u/OS/D/16V/69/A/35m
11C05-8C2700-09R	270u/FP/D/16V/8C/A/10m
11C02-695600-09R	560u/FP/D/6.3V/69/A/11m

IRON CHOKE

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

Skylake Iron Choke閃電P導入機種如下:
[1] Z170/H170 機種全部導入
[2] B150/H110Gaming機種導入, 其餘不導入

Ferrite

	料號	Capture Value	SIZE	Footprint
DIP	11LC5-F3500C-11R	0.5uH/32A/INCG109/FSI/D	10*10	CHOKE05U-40A-1PQ-3
DIP	11LC5-F2500C-11R	0.5uH/25A/INC0809/F/D	8*8	CHOKE1U-R50M-IF
SMD	10LC5-F4300C-01R	0.3uH/40A/SIUC/FR/S	10*7	CHOKE11X8MM-SMD

BEAD

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

PWM料號

		料號	Capture Value	Footprint
PWM	ISL95856	10TA1-695856-01R		IC52QFN-6x6-G
PWM	ISL95858	10TA1-695858-01R		IC52QFN-6x6-G
PWM	IR35201	10TA1-635201-00R		IC56QFN-9VRS4339
PWM	IR3570	10TA1-603570-00R		IC40MLFP-ISL95835
PWM	RT8237C/D	10TA1-608237-01R		IC10DFN-NIS5132

REGULATOR

		料號	Capture Value	Footprint
	NCT3103S	10GL2-203103-01R	NCT3103S/SOP8/2A	IC8-EPSOIC

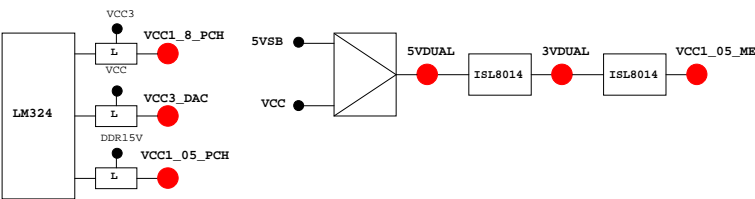


Title		RT8120_DDR4 POWER	
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PIN NAME	SWR	AFTER PLTRST	Default	USAGE	NOTE
GP0	MAIN	H-Z	GPI	GPIO0	N/A
GP1/TACH1	MAIN		GPI	GPIO1	N/A
GP2/PIRQE#	MAIN		GPI	-PIRQE	P/U 8.2K VCC3
GP3/PIRQF#	MAIN		GPI	-PIRQF	P/U 8.2K VCC3
GP4/PIRQG#	MAIN		GPI	-PIRQG	P/U 8.2K VCC3
GP5/PIRQH#	MAIN		GPI	-PIRQH	P/U 8.2K VCC3
GP6/TACH2	MAIN		GPI	PCIEI1 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_OV2	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

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	
VIDO5/GP27/SIN2	LOW_PWR_2	
PCIRST2#/GP11	-PFMRST1	
PCIRST1#/GP12	-PFMRST2	
3VBSBW#/GP40	CSI_F0	BSEL166_1
SUSC#/GP53	CSI_F1	BSEL166_2
GP23/SI	BSEL166_3/CSISBSL	
VIDO0/GP20/CTS2#	CPUT_LED1_C	BSEL166_4
GP65/VDDA_EN/GB_01	MB_ID2	
PD6/GP76/BUSSO1	MB_ID3	
PD7/GP77/BUSSO2	MB_ID4	
AFD#/GP86/SMBC_R	2X PIN	FST_2X8
INIT#/GP85/SMBD_M	SEC_2x8	GTLREF_AD2
ACK#/GP83	DDR_LED1_C	
VIDO1/GP21/DCD2#	DDR_LED2_C	
STB#/GP87/SMBC_M	DDR_LED3_C	
PWRON#GP44	VCORE_OV1	
PANSWH#/GP43	PWRBTSW	
KDAT/GP61	-PWRBTSW	
KCLK/GP60	KDAT	
MDAT/GP57	KCLK	
MACL/GP56	MDAT	
GP66/VLDT_EN/GB_02	NBT_LED1_C	MCLK
SVD/PCIRSTIN#/CIRTX/GP15	PWM2_CR	
KDAT/GP61	PWM2_CR	
GP67/CPU_PG/GB_03	EN_LOADLINE	IT_GP67/-EN_PWM2
SLIN#/GP84/SMBD_R	-EN_PWM2	
PSI_L/FAN_CLT5/CIRRX2/GP16	-THERM	
VIDO4/GP26/SOUT2	DDR18V_PH2_EN	
VIDO2/FAN_TAC5/GP24/DSR2#	DDR18V_LED	
VIDO6/GP17/RI2#	1_1V_PH_EN	
VIDO7/JP6/DTR2#	JP6	
PD5/GP75/BUSSO0	SB_LED3_C	

[illegible]

散熱模組料號:

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 Termination
VREF_CA_A/VREF_CA_B	DRAM Address Ref
VREF_DQ_A/VREF_DQ_B	DRAM Data Ref

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

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

Gigabyte Technology			
Title			
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