Model Name: GA-B250-HD3P

rev 1.0

ISL95858 VCORE-IRON

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_LGA1150-D
08	DDR4 CHANNEL A
09	DDR4 CHANNEL B
10	PCH_CLK BUFFER
11	PCH_DMI,USB,PCIE
12	PCH_MISC
13	PCH SATA,PCIE,SATA_EXPRESS
14	PCH PWR
15	PCH GND
16	ITE 8686 LPC IO
17	HWM
18	FAN CTRL--SIO
19	PCI EXPRESS*16 SLOT
20	PCI EXPRESSX4 _1 sheare SE
21	PCIEX4_1 share SE SWITCH
22	SATA EXPRESS
23	PCI EXPRESS X1 SLOTs
24	PCI EXPRESSX4 _2 sheare M2
25	PCIEX4_2 share M2(S) SWITCH
26	M.2 X4 (S)
27	IT8892
28	PCI SLOT 1
29	IT8892 LDO POWER
30	DUAL BIOS

SHEET	TITLE
31	ISL95866 PWM-I-1H1L
32	ISL95866 MOS_VCORE-I-1H1L
33	ISL95866 MOS_VCCGT-I-1H1L
34	VCCSA_VCCIO_VCCPLL-B.H系列
35	RT8237_DDR_CHOKE-IRON-2L
36	RT8068A_VPP-合金
37	RT8237_PCH-CHOKE-IRON
38	DISCRETE POWER
39	NCT3933
40	ATX POWER , A_-PROCHOT
41	KB_MS_USB
42	DVI CONN
43	HDMI
44	RTD2168 - DP to VGA - IC
45	RTD2168 - DP to VGA - Conn
46	INTEL I219
47	USB30_LAN CONNECTOR-I219
48	Realtek ALC892
49	REAR AUDIO JACK
50	Audio / DEBUG / XMP LED
51	R_USB30
52	F_USB30
53	F_USB
54	F_PANEL
55	COM, LPT, TPM, THB
56	IDT9FGP310_CLK
57	ASM2142 USB31A
58	EMI-ESD
59	TI HD3SS3212&Etron EJ179 B
60	U3.1 PORT A
61	NTC MAP
62	POWER MAP
63	OC BUTTON

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Title: Cover Sheet

Size: Custom | Document Number: GA-B250-HD3P | Rev: 1.0

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Model Name: GA-B250-HD3P

rev1.0

Component value change history

2016/07/19

Data	Change Item	Reason
2016/07/19	Update Spec VCORE 1H1L	

Circuit or PCB layout change

DATE	Change Item	Reason
2016/06/22	Update VPP25_EN	
	Update PCH Power 模組	

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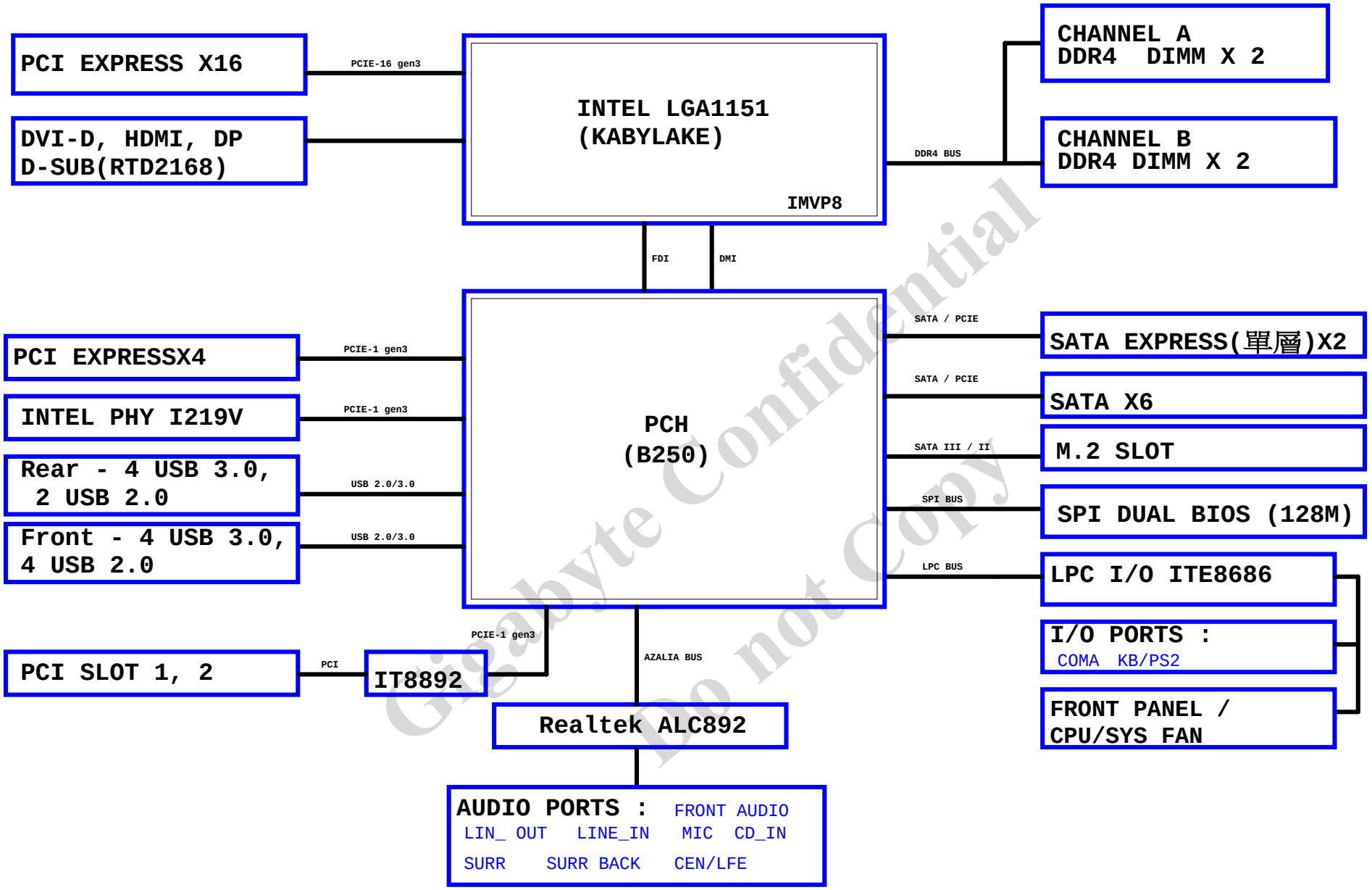
Title	BOM & PCB MODIFY HISTORY	
Size: Custom	Document Number: GA-B250-HD3P	Rev: 1.0
Date: Tuesday, November 15, 2016	Sheet 2 of 63	

BLOCK DIAGRAM



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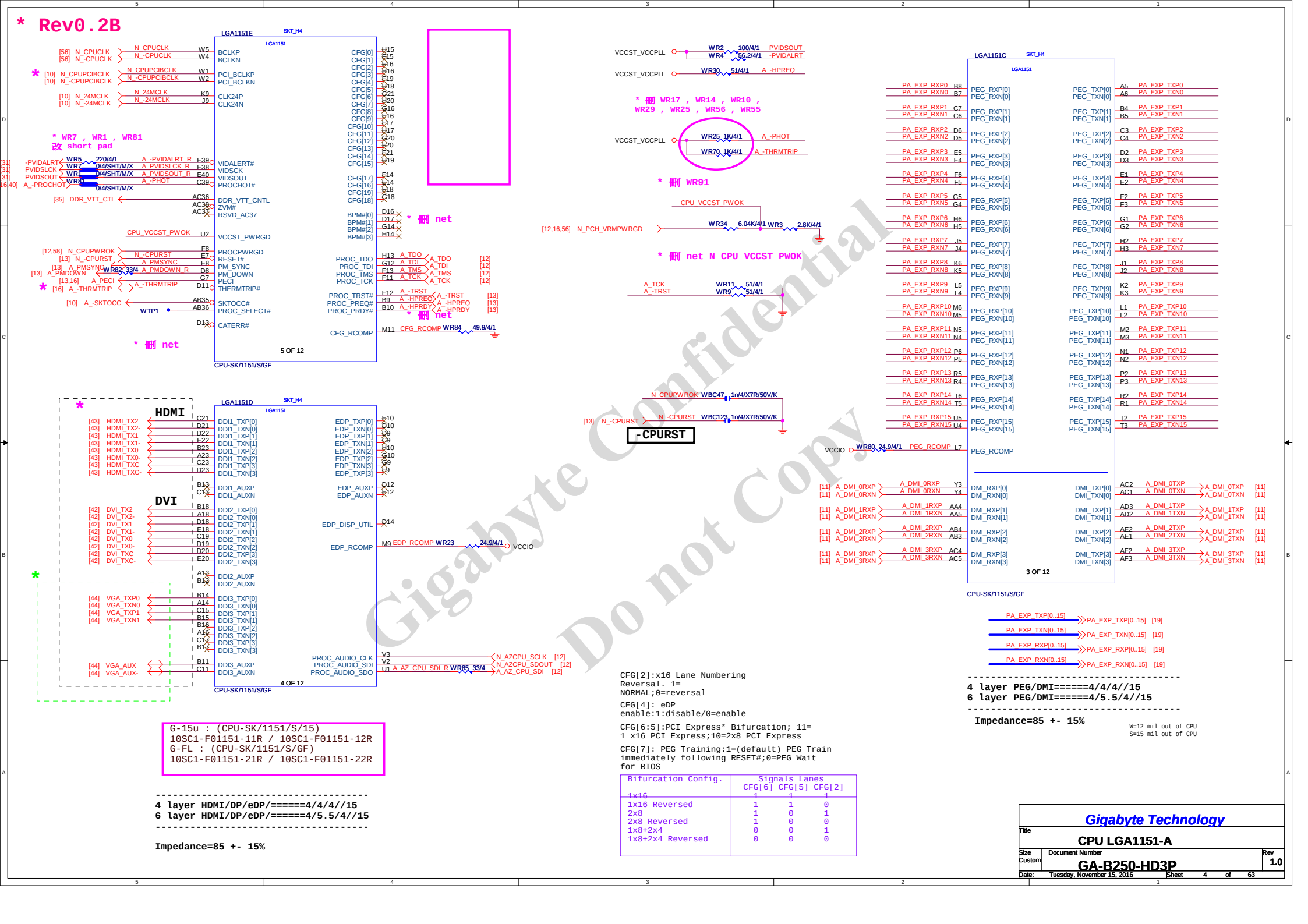
Gigabyte Technology		
Title: BLOCK DIAGRAM		
Size: C	Document Number: GA-B250-HD3P	Rev: 1.0
Date: Tuesday, November 15, 2016	Sheet 3 of 63	

* Rev0.2B



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

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

Impedance=85 +- 15%

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

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

Impedance=85 +- 15%

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

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Title: CPU LGA1151-A

Size: Custom | Document Number: GA-B250-HD3P | Rev: 1.0

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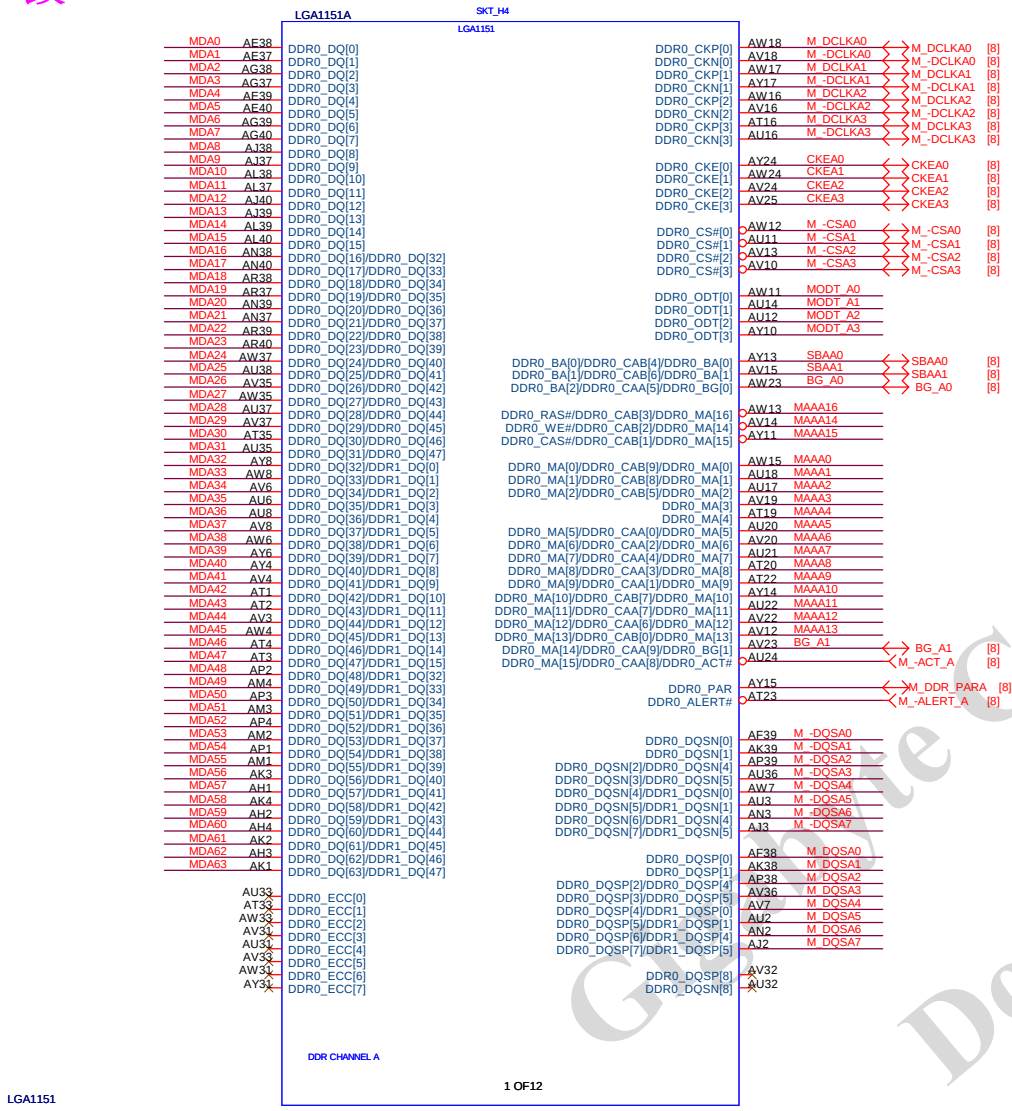
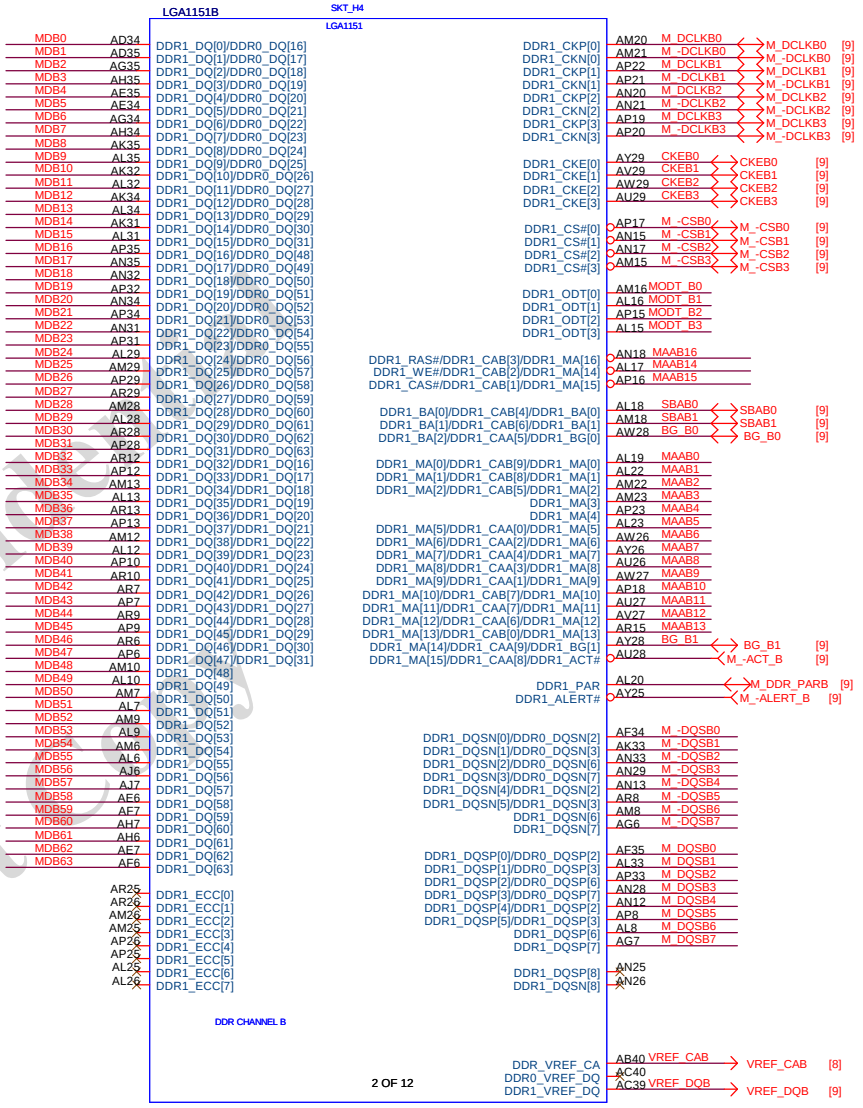
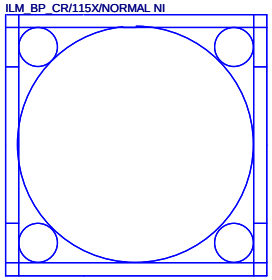
* 改DDR4 net





ILM_BP_CR/115X/NORMAL NI



Need check the new CPU ME

[8] MODT_A[0..3] ⟷ MODT_A[0..3]
[9] MODT_B[0..3] ⟷ MODT_B[0..3]
[8] MDA[0..63] ⟷ MDA[0..63]
[9] MDB[0..63] ⟷ MDB[0..63]
[8] M_DQSA[0..7] ⟷ M_DQSA[0..7]
[8] M_-DQSA[0..7] ⟷ M_-DQSA[0..7]
[8] MAAA[0..16] ⟷ MAAA[0..16]
[9] MAAB[0..16] ⟷ MAAB[0..16]
[9] M_DQSB[0..7] ⟷ M_DQSB[0..7]
[9] M_-DQSB[0..7] ⟷ M_-DQSB[0..7]

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Gigabyte Technology			
Title: CPU LGA1151-B			
Size: Custom	Document Number: GA-B250-HD3P		Rev: 1.0
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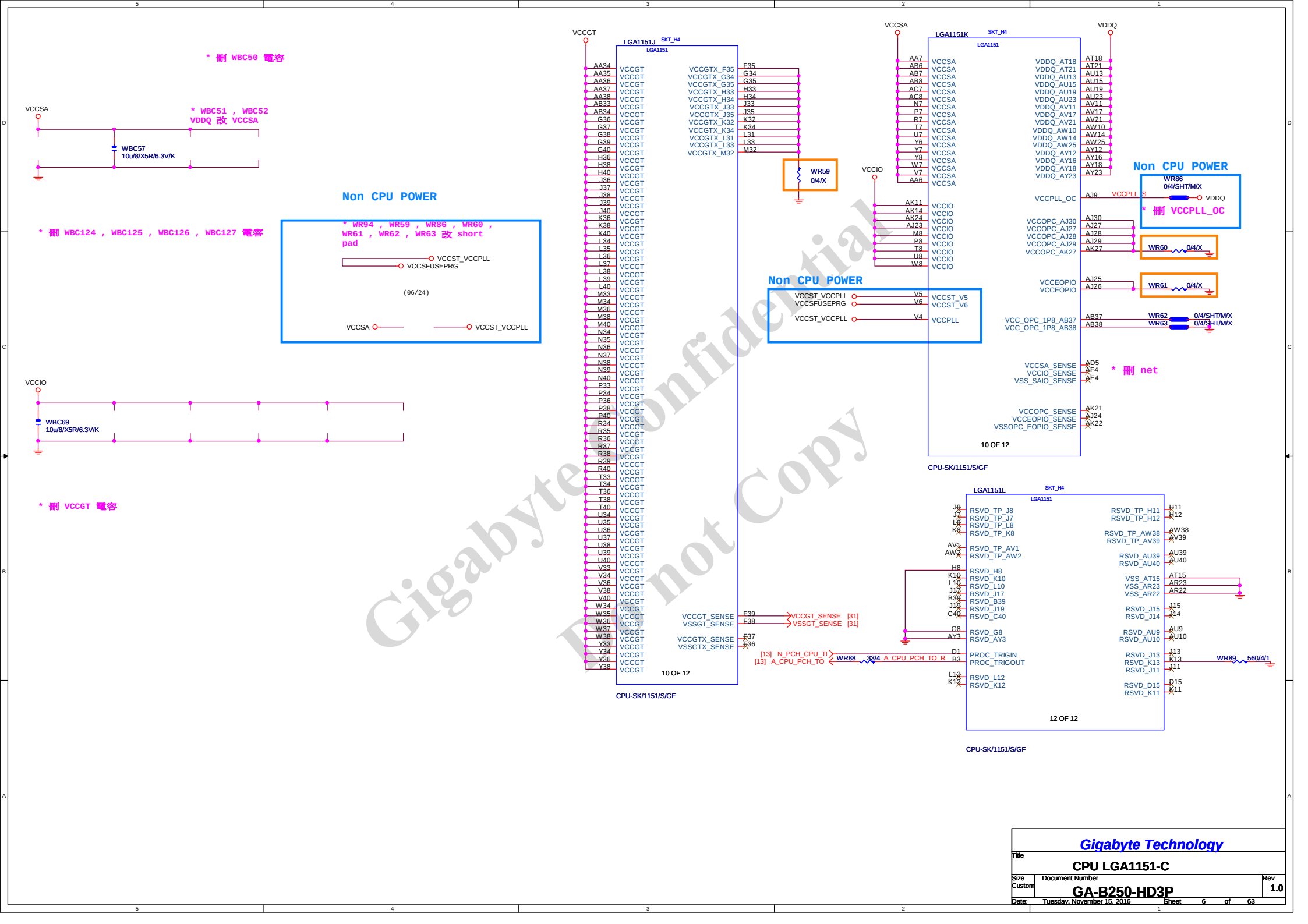
* 刪 WBC50 電容
VCCSA
* WBC51 , WBC52
VDDQ 改 VCCSA
WBC57
10u/8/X5R/6.3V/K
* 刪 WBC124 , WBC125 , WBC126 , WBC127 電容
Non CPU POWER
* WR94 , WR59 , WR86 , WR60 ,
WR61 , WR62 , WR63 改 short
pad
VCCST_VCCPLL
VCCSFUSEPRG
(06/24)
VCCSA
VCCST_VCCPLL
VCCIO
WBC69
10u/8/X5R/6.3V/K
* 刪 VCCGT 電容
VCCGT
LGA1151J
SKT_H4
LGA1151
AA34 AA35 AA36 AA37 AA38 AB33 AB34 G36 G37 G38 G39 G40 H36 H38 H40 J36 J37 J38 J39 J40 K36 K38 K40 L34 L35 L36 L37 L38 L39 L40 M33 M34 M36 M38 M40 N34 N35 N36 N37 N38 N39 N40 P33 P34 P36 P38 P40 R34 R35 R36 R37 R38 R39 R40 T33 T34 T36 T38 T40 U34 U35 U36 U37 U38 U39 U40 V33 V34 V36 V38 V40 W34 W35 W36 W37 W38 Y33 Y34 Y36 Y38
VCCGT
VCCGTX_F35 VCCGTX_G34 VCCGTX_G35 VCCGTX_H33 VCCGTX_H34 VCCGTX_J33 VCCGTX_J35 VCCGTX_K32 VCCGTX_K34 VCCGTX_L31 VCCGTX_L33 VCCGTX_M32
E35 G34 G35 H33 H34 J33 J35 K32 K34 L31 L33 M32
WR59
0/4/X
VCCGT_SENSE VSSGT_SENSE
E39 E38
VCCGTX_SENSE VSSGTX_SENSE
E37 E36
10 OF 12
CPU-SK/1151/S/GF
VCCSA
LGA1151K
SKT_H4
LGA1151
AA7 AB6 AB7 AB8 AC7 AC8 N7 P7 R7 T7 U7 Y6 Y7 Y8 W7 V7 AA6
VCCSA
VCCIO
AK11 AK14 AK24 AJ23 M8 P8 T8 U8 W8
VCCIO
VCCST_VCCPLL
VCCSFUSEPRG
VCCST_VCCPLL
V5 V6 V4
VCCST_V5 VCCST_V6 VCCPLL
Non CPU POWER
VDDQ
VDDQ_AT18 VDDQ_AT21 VDDQ_AU13 VDDQ_AU15 VDDQ_AU19 VDDQ_AU23 VDDQ_AV11 VDDQ_AV17 VDDQ_AV21 VDDQ_AW10 VDDQ_AW14 VDDQ_AW25 VDDQ_AY12 VDDQ_AY16 VDDQ_AY18 VDDQ_AY23
AT18 AT21 AU13 AU15 AU19 AU23 AV11 AV17 AV21 AW10 AW14 AW25 AY12 AY16 AY18 AY23
VCCPLL_OC
AJ9
VCCPLL_S
VDDQ
WR86
0/4/SHT/M/X
* 刪 VCCPLL_OC
VCCOPC_AJ30 VCCOPC_AJ27 VCCOPC_AJ28 VCCOPC_AJ29 VCCOPC_AK27
AJ30 AJ27 AJ28 AJ29 AK27
WR60 0/4/X
VCCEOPIO VCCEOPIO
AJ25 AJ26
WR61 0/4/X
VCC_OPC_1P8_AB37 VCC_OPC_1P8_AB38
AB37 AB38
WR62 WR63
0/4/SHT/M/X 0/4/SHT/M/X
VCCSA_SENSE VCCIO_SENSE VSS_SAIO_SENSE
AD5 AF4 AE4
* 刪 net
VCCOPC_SENSE VCCEOPIO_SENSE VSSOPC_EOPIO_SENSE
AK21 AJ24 AK22
10 OF 12
CPU-SK/1151/S/GF
LGA1151L
SKT_H4
LGA1151
J8 J7 L8 K8 AV1 AW2 H8 K10 L10 J17 B39 J19 C40 G8 AY3 D1 B3 L12 K12
RSVD_TP_J8 RSVD_TP_J7 RSVD_TP_L8 RSVD_TP_K8 RSVD_TP_AV1 RSVD_TP_AW2 RSVD_H8 RSVD_K10 RSVD_L10 RSVD_J17 RSVD_B39 RSVD_J19 RSVD_C40 RSVD_G8 RSVD_AY3 PROC_TRIGIN PROC_TRIGOUT RSVD_L12 RSVD_K12
[13] N_PCH_CPU_TI
[13] A_CPU_PCH_TO
WR88 33/4 A_CPU_PCH_TO_R
RSVD_TP_H11 RSVD_TP_H12 RSVD_TP_AW38 RSVD_TP_AV39 RSVD_AU39 RSVD_AU40 VSS_AT15 VSS_AR23 VSS_AR22 RSVD_J15 RSVD_J14 RSVD_AU9 RSVD_AU10 RSVD_J13 RSVD_K13 RSVD_J11 RSVD_D15 RSVD_K11
H11 H12 AW38 AV39 AU39 AU40 AT15 AR23 AR22 J15 J14 AU9 AU10 J13 K13 J11 D15 K11
WR89 560/4/1
12 OF 12
CPU-SK/1151/S/GF
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Gigabyte Technology
Title
CPU LGA1151-C
Size Custom
Document Number
GA-B250-HD3P
Rev 1.0
Date: Tuesday, November 15, 2016
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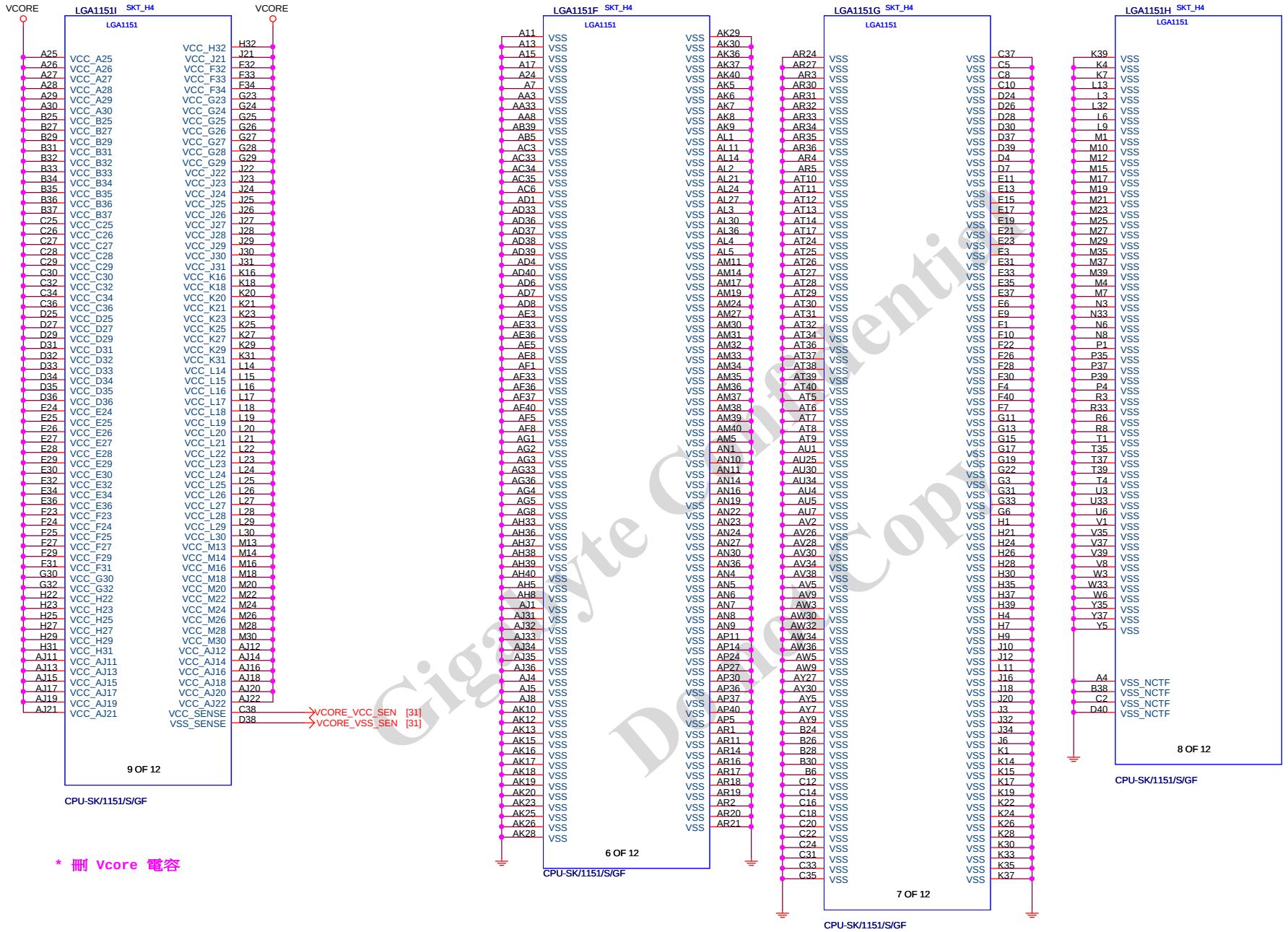

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Gigabyte Technology		
Title: CPU LGA1151-C		
Size: Custom	Document Number: GA-B250-HD3P	Rev: 1.0
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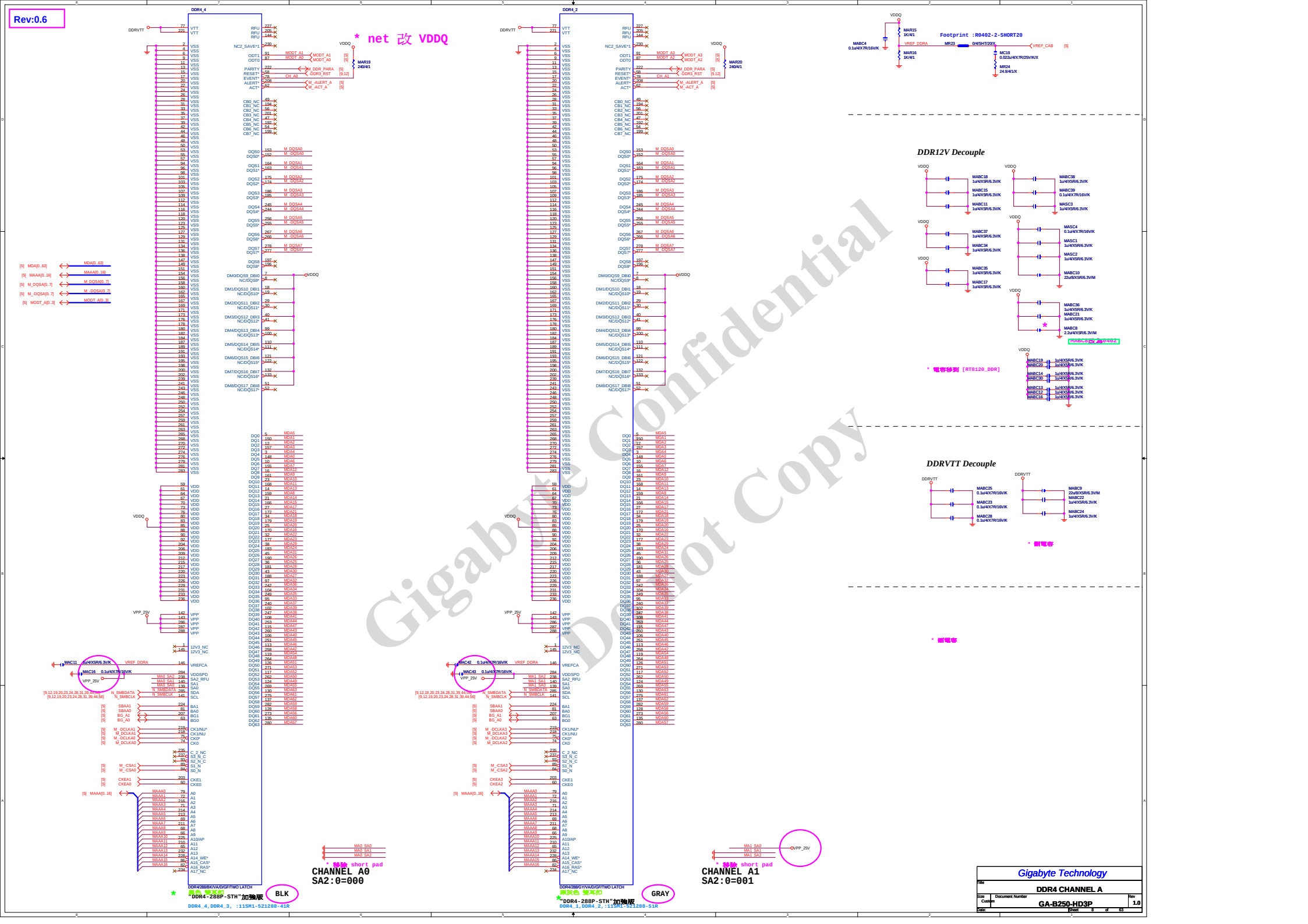
Rev:0.6



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Gigabyte Technology			
Title: DDR4 CHANNEL A			
Size: Custom	Document Number: GA-B250-HD3P		Rev: 1.0
Date:	Sheet 8 of 63		

Rev:0.6

* net 改 VDDQ

DDR4_3

DDR4_1

DDRVTT

VDDQ

VPP_25V

MAR22 240/4/1

MAR23 240/4/1

MAR18 1K/4/1

MAR17 1K/4/1

MABC5 0.1u/4/X7R/16V/K

MR25 0/4/5HT/20X

Footprint :R0402-2-SHORT20

MC20 0.022u/4/X7R/25V/K/X

MR26 24.9/4/1/X

VREF_DDRB

VREF_DQB

MAC12 0.1u/4/X7R/16V/K

MAC15 0.1u/4/X7R/16V/K

MAC44 10u/4/X5R/6.3V/K

MAC45 0.1u/4/X7R/16V/K

MDB[0..63]

MAAB[0..16]

M_DQSB[0..7]

M_DQSB[0..7]

MDQT_B[0..3]

DDR4_4,DDR4_3, 11SM1-521288-51R

DDR4_1,DDR4_2 ,11SM1-521288-51R

"DDR4-288P-STH"加強版

BLK

GRAY

* 移除 short pad

CHANNEL B0
SA2:0=010

CHANNEL B1
SA2:0=011

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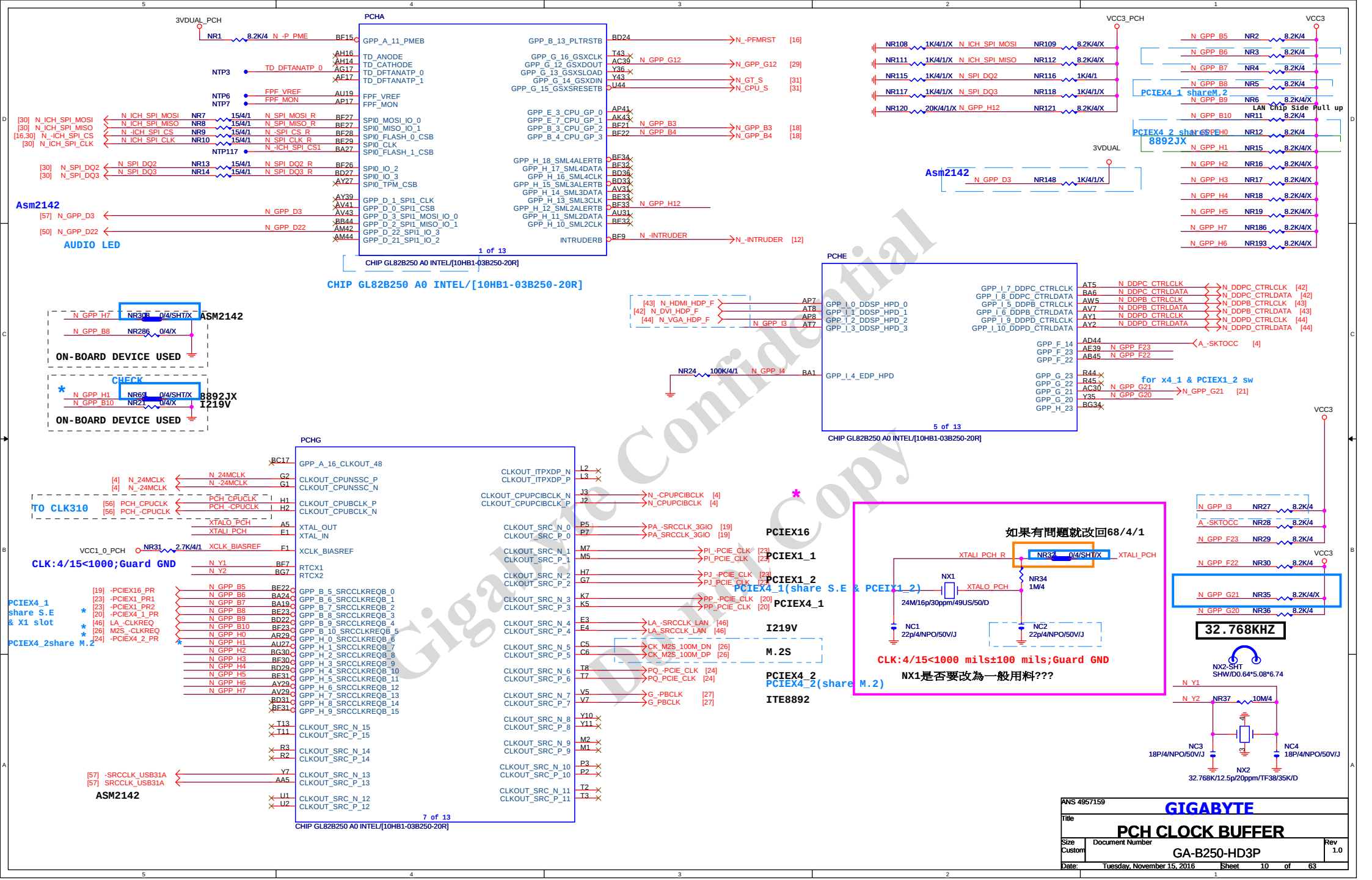
Title: DDR4 CHANNEL B			
Size: Custom	Document Number: GA-B250-HD3P		Rev: 1.0
Date:	Sheet 9 of 63		



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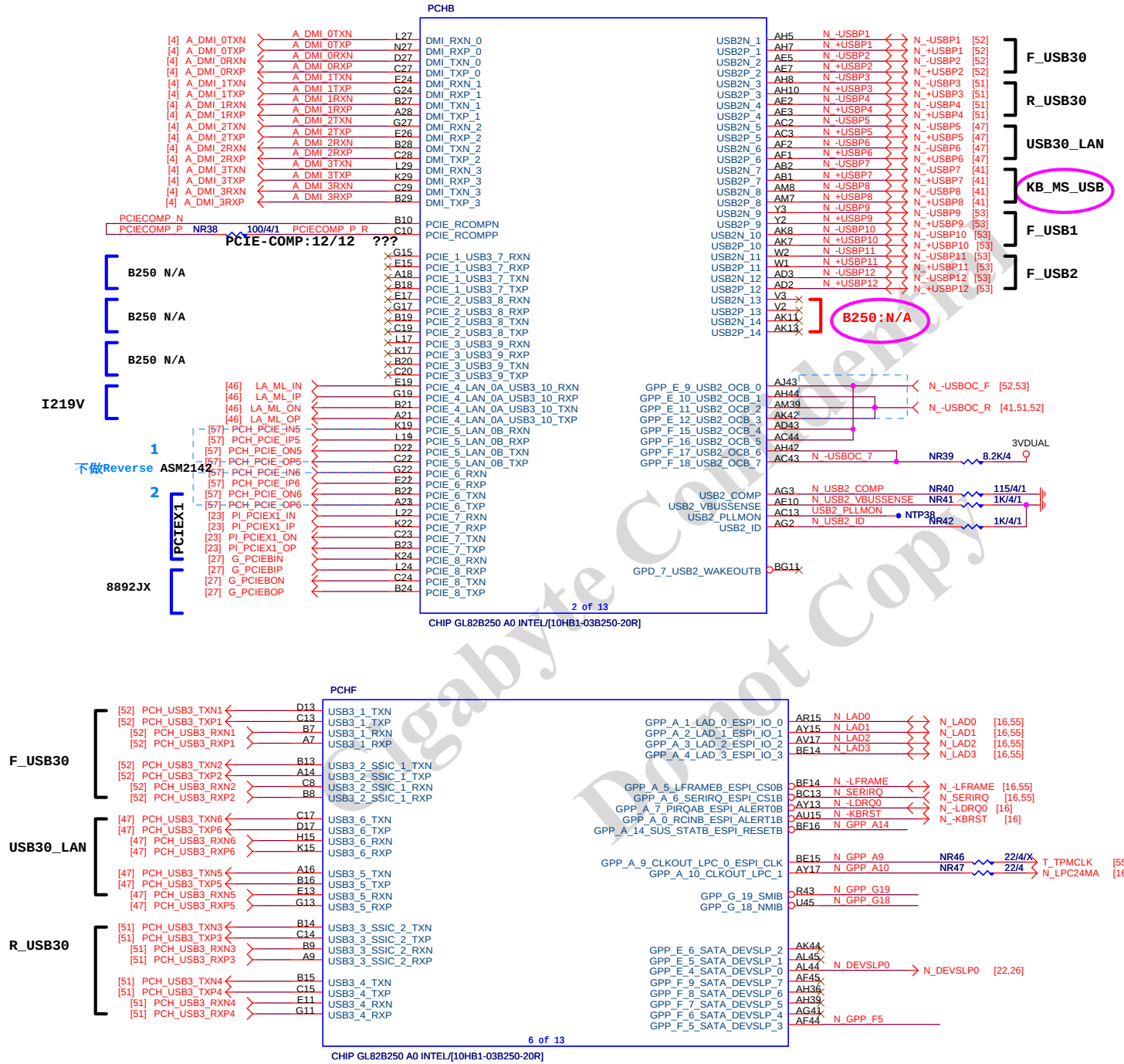

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ANS	4957159
Title	PCH DMI,USB,PCIE
Size	Custom
Document Number	GA-B250-HD3P
Rev	1.0
Date:	Tuesday, November 15, 2016
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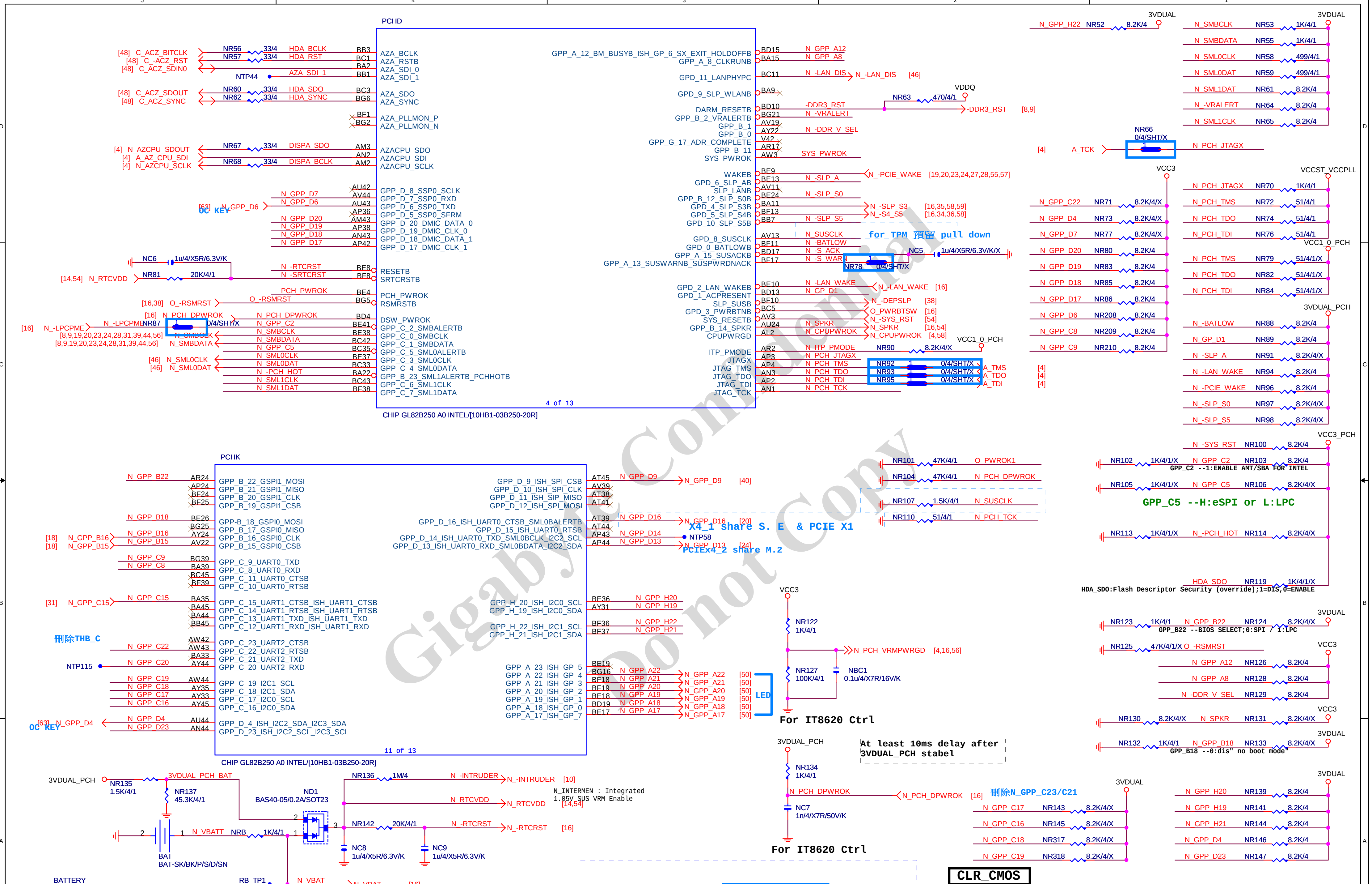
PCHD
CHIP GL82B250 A0 INTEL/[10HB1-03B250-20R]
4 of 13
PCHK
11 of 13
for TPM 預留 pull down
X4_1 share S. E & PCIE X1
PCIEx4_2 share M.2
GPP_C2 --1:ENABLE AMT/SBA FOR INTEL
GPP_C5 --H:eSPI or L:LPC
HDA_SDO:Flash Descriptor Security (override);1=DIS,0=ENABLE
GPP_B22 --BIOS SELECT;0:SPI / 1:LPC
GPP_B18 --0:dis" no boot mode"
刪除THB_C
OC KEY
LED
For IT8620 Ctrl
At least 10ms delay after 3VDUAL_PCH stabel
刪除N_GPP_C23/C21
N_INTERMEN : Integrated 1.05V SUS VRM Enable
BATTERY CR2032
BATTERY-DUAL-4
RB 必須放在BAT外
BAT BAT-SK/BK/P/S/D/SN
ND1 BAS40-05/0.2A/SOT23
CLR_CMOS
PH/1*2/BK/2.54/VA/D

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ANS 4957159

GIGABYTE

Title: PCH MISC

Size	Document Number	Rev
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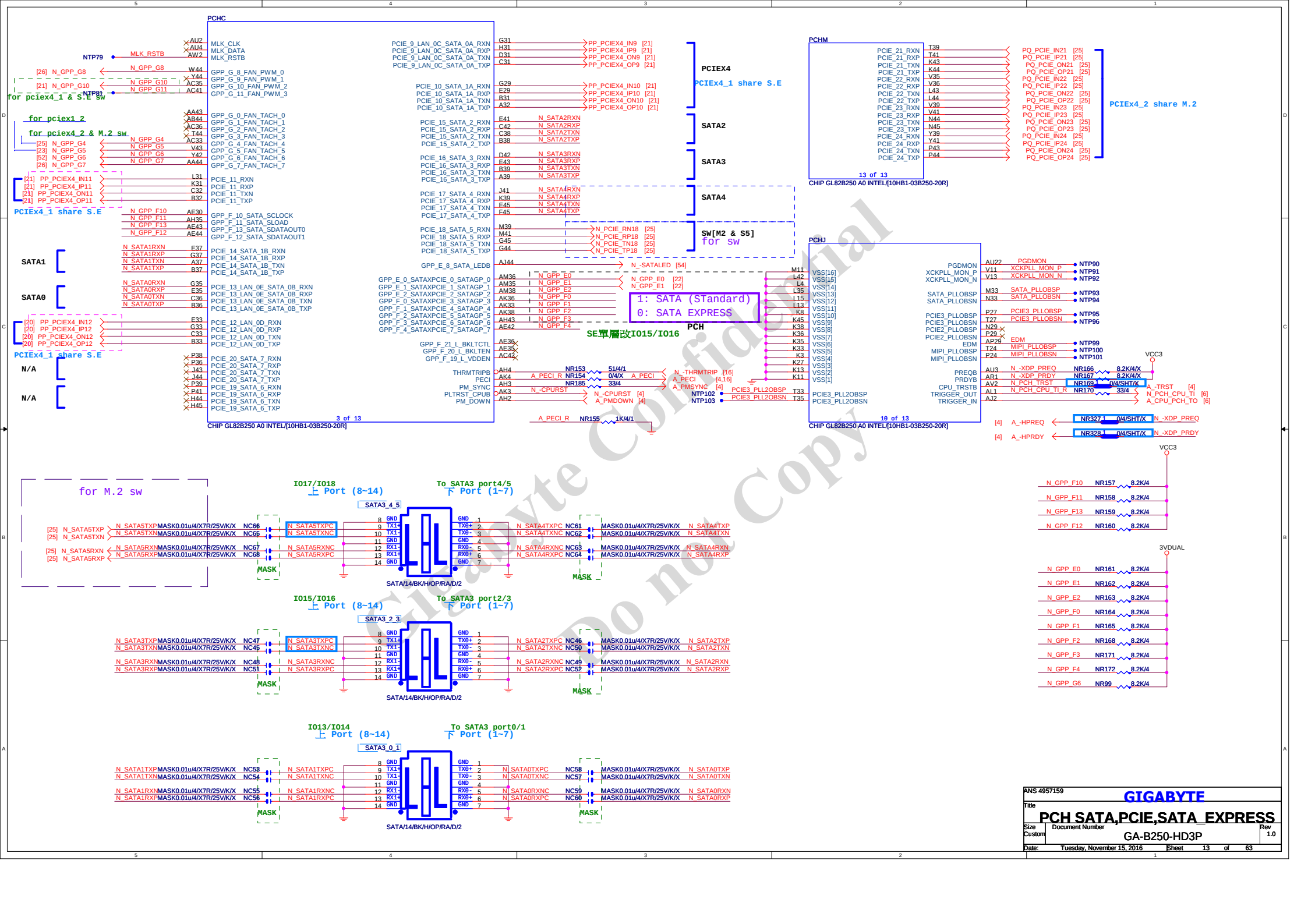
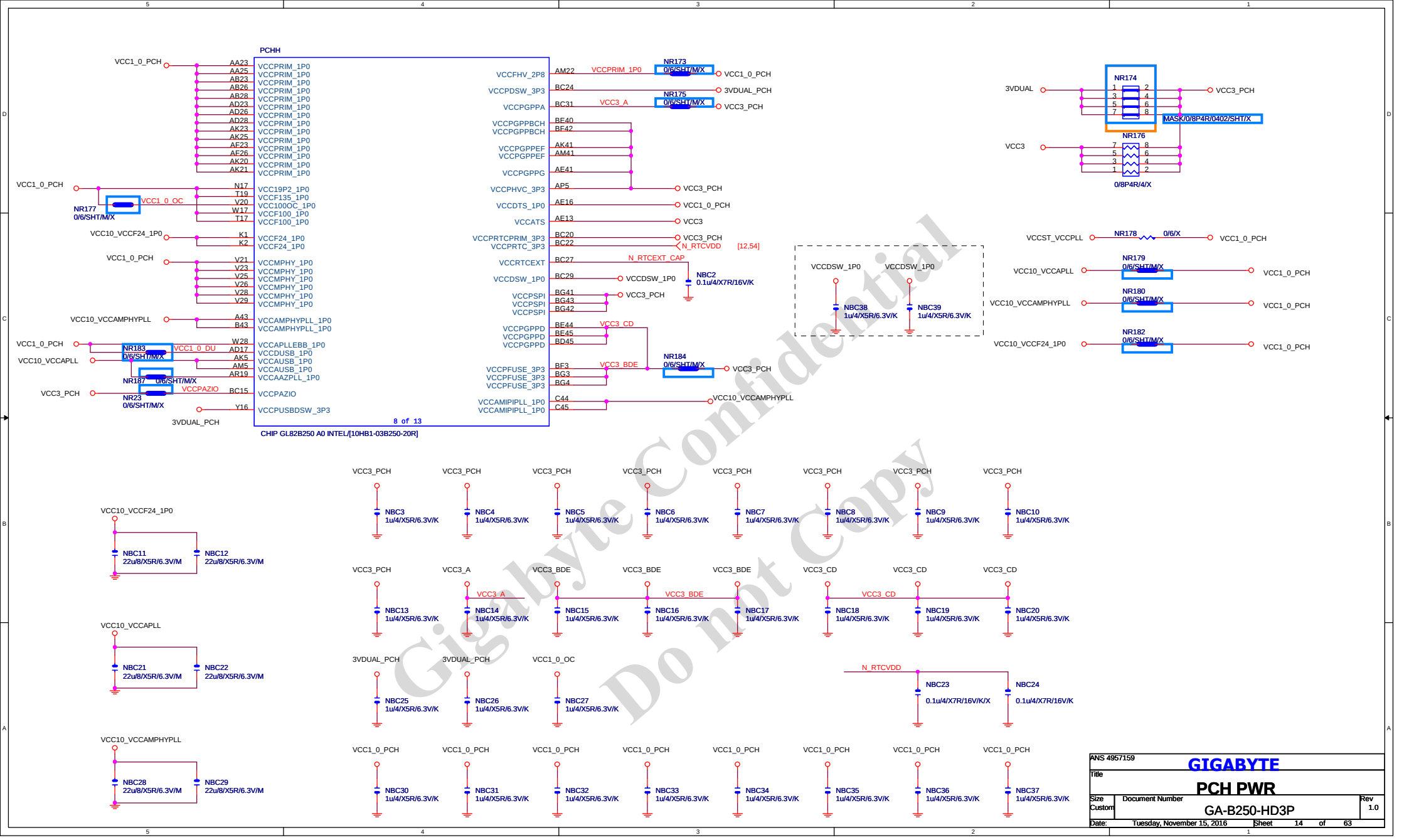


ANS 4957159	GIGABYTE		
Title	PCH SATA,PCIE,SATA_EXPRESS		
Size Custom	Document Number GA-B250-HD3P		Rev 1.0
Date: Tuesday, November 15, 2016	Sheet 13 of 63		



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Title: PCH PWR

Size	Document Number	Rev
Custom	GA-B250-HD3P	1.0

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PCHI

A25	VSS	VSS	A42
A30	VSS	VSS	D45
P22	VSS	VSS	BG44
AV38	VSS	VSS	BF44
AV45	VSS	VSS	BF45
AV8	VSS	VSS	BF2
AY11	VSS	VSS	W29
AY19	VSS	VSS	A35
AY37	VSS	VSS	A40
AY4	VSS	VSS	A41
AY42	VSS	VSS	AA17
AY8	VSS	VSS	AA18
B25	VSS	VSS	AA20
B3	VSS	VSS	AA21
B30	VSS	VSS	AA26
B35	VSS	VSS	AA28
B4	VSS	VSS	AA29
B41	VSS	VSS	AB17
BA13	VSS	VSS	AC32
BA17	VSS	VSS	AE4
BA29	VSS	VSS	AE8
BA31	VSS	VSS	AF18
BA37	VSS	VSS	AF20
BA4	VSS	VSS	AF21
BA42	VSS	VSS	AF25
BB40	VSS	VSS	AF28
BC38	VSS	VSS	AF29
BC40	VSS	VSS	AF4
BC9	VSS	VSS	AF42
BD11	VSS	VSS	AG18
BD16	VSS	VSS	AG20
BD2	VSS	VSS	AG21
BD21	VSS	VSS	AG23
BD25	VSS	VSS	AG25
F2	VSS	VSS	AG26
E31	VSS	VSS	AG28
E6	VSS	VSS	AG29
E8	VSS	VSS	AH11
F39	VSS	VSS	AH13
F43	VSS	VSS	AH30
G4	VSS	VSS	AH32
G40	VSS	VSS	AH33
G42	VSS	VSS	AH38
F6	VSS	VSS	AJ1
G9	VSS	VSS	AJ17
H11	VSS	VSS	AJ18
H13	VSS	VSS	AJ20
H17	VSS	VSS	AJ21
H19	VSS	VSS	AJ23
H22	VSS	VSS	AJ25
H24	VSS	VSS	AJ26
H27	VSS	VSS	AJ28
H29	VSS	VSS	AJ29
H33	VSS	VSS	AJ45
H35	VSS	VSS	AK10
H38	VSS	VSS	AK14
H4	VSS	VSS	AK16
H42	VSS	VSS	AK17
H9	VSS	VSS	AK18
J4	VSS	VSS	AK26
M36	VSS	VSS	AK28
M38	VSS	VSS	AM14
M4	VSS	VSS	AN14
M8	VSS	VSS	AP19
M9	VSS	VSS	AR22
N13	VSS	VSS	AR27
N15	VSS	VSS	AU29
N19	VSS	VSS	AU33
N22	VSS	VSS	AV1
N24	VSS	VSS	AV10
N31	VSS	VSS	AV15
N42	VSS	VSS	AV24
P10	VSS	VSS	AV27
P12	VSS	VSS	AV33
AV35	VSS		

9 of 13

CHIP GL82B250 A0 INTEL/[10HB1-03B250-20R]

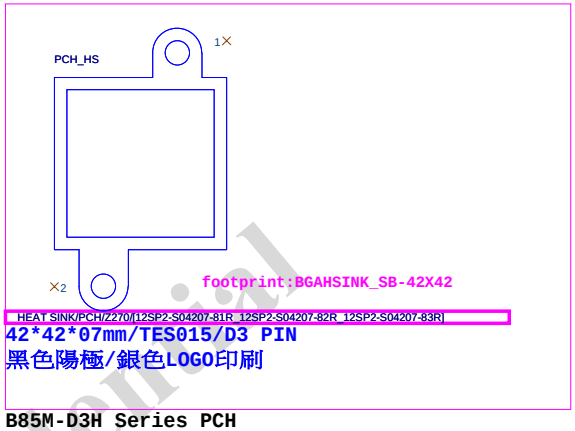
PCHL

BD34	VSS[70]	VSS[1]	AB18
BD39	VSS[71]	VSS[2]	AB20
BD7	VSS[72]	VSS[3]	AB21
BE2	VSS[73]	VSS[4]	AB25
BF43	VSS[74]	VSS[5]	AB29
BF5	VSS[75]	VSS[6]	AB4
BG18	VSS[76]	VSS[7]	AB42
BG23	VSS[77]	VSS[8]	AC10
BG28	VSS[78]	VSS[9]	AC11
BG32	VSS[79]	VSS[10]	AC14
BG37	VSS[80]	VSS[11]	AC16
BG40	VSS[81]	VSS[12]	AC38
BG9	VSS[83]	VSS[13]	AC4
C1	VSS[84]	VSS[14]	AC5
A12	VSS[85]	VSS[15]	AC7
C2	VSS[86]	VSS[16]	AC8
C37	VSS[87]	VSS[17]	AD1
A6	VSS[88]	VSS[18]	AD18
C9	VSS[89]	VSS[19]	AD20
D1	VSS[90]	VSS[20]	AD21
D10	VSS[91]	VSS[21]	AD25
D12	VSS[92]	VSS[22]	AD29
D15	VSS[93]	VSS[23]	AD45
D16	VSS[94]	VSS[24]	AE11
B12	VSS[95]	VSS[25]	AE14
D19	VSS[96]	VSS[26]	AE32
D21	VSS[97]	VSS[27]	AE33
D24	VSS[98]	VSS[28]	AE38
D25	VSS[99]	VSS[29]	AK29
D29	VSS[100]	VSS[30]	AK30
D30	VSS[101]	VSS[31]	AK32
D33	VSS[102]	VSS[32]	AK35
D35	VSS[103]	VSS[33]	AK39
D36	VSS[104]	VSS[34]	AL4
D39	VSS[105]	VSS[35]	AL42
D44	VSS[106]	VSS[36]	AM10
D7	VSS[107]	VSS[37]	AM11
P13	VSS[108]	VSS[38]	AM13
P15	VSS[109]	VSS[39]	AM17
P17	VSS[110]	VSS[40]	AM19
P19	VSS[111]	VSS[41]	AM24
P31	VSS[112]	VSS[42]	AM27
P33	VSS[113]	VSS[43]	AM29
P35	VSS[114]	VSS[44]	AM32
P4	VSS[115]	VSS[45]	AM33
P42	VSS[116]	VSS[46]	AM4
P8	VSS[117]	VSS[47]	AN45
R1	VSS[118]	VSS[48]	AP10
R32	VSS[119]	VSS[49]	AP11
T10	VSS[120]	VSS[50]	AP13
T14	VSS[121]	VSS[51]	AP15
T22	VSS[122]	VSS[52]	AP22
T29	VSS[123]	VSS[53]	AP27
T32	VSS[124]	VSS[54]	AP31
T36	VSS[125]	VSS[55]	AP33
T38	VSS[126]	VSS[56]	AP34
Y38	VSS[151]	VSS[57]	AP39
Y4	VSS[152]	VSS[127]	T4
Y8	VSS[153]	VSS[143]	W26
T42	VSS[154]	VSS[128]	V16
T5	VSS[155]	VSS[129]	V17
U4	VSS[156]	VSS[130]	V18
U42	VSS[157]	VSS[131]	V30
V10	VSS[158]	VSS[132]	V32
V14	VSS[159]	VSS[133]	V33
W3	VSS[144]	VSS[134]	V38
AR13	VSS[58]	VSS[135]	V4
AR31	VSS[59]	VSS[136]	V8
AR33	VSS[60]		
AR4	VSS[61]	VSS[138]	W18
AT10	VSS[62]	VSS[139]	W20
AT13	VSS[63]	VSS[140]	W21
AT35	VSS[64]	VSS[141]	W23
AT37	VSS[65]	VSS[142]	W25
AT42	VSS[66]		
AU11	VSS[67]	VSS_1	A44
AU17	VSS[68]	VSS_10	BE1
BD30	VSS[69]	VSS_11	BD1
W45	VSS[145]	VSS_14	B1
Y13	VSS[146]	VSS_15	A2
Y14	VSS[147]	VSS_16	B2
Y30	VSS[148]	VSS_17	A3
Y32	VSS[149]	VSS_18	A4
Y33	VSS[150]	VSS_2	B44
BG14	VSS_BG14	VSS_3	B45

12 of 13

CHIP GL82B250 A0 INTEL/[10HB1-03B250-20R]

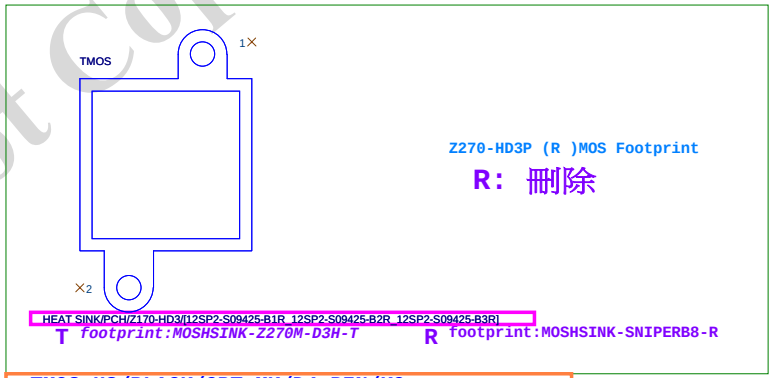
Z270-HD3P//H270-HD3P//B250-HD3P////B250-HD3 相同PCH Footprint



42*42*07mm/TES015/D3 PIN
黑色陽極/銀色LOGO印刷

B85M-D3H Series PCH
Heatsink

H270-HD3P//B250-HD3P////B250-HD3 相同(T)MOS Footprint
MOS_HS 改為由61.Sniper B8 (L型)



TMOS HS/BLACK/GBT MK/D4 PIN/KG
28*94*25mm/GAP PAD/L CUT
黑色陽極/銀色LOGO印刷/PUSHPIN

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ANS 4957159

GIGABYTE

Title: PCH GND

Size: Custom | Document Number: GA-B250-HD3P | Rev: 1.0

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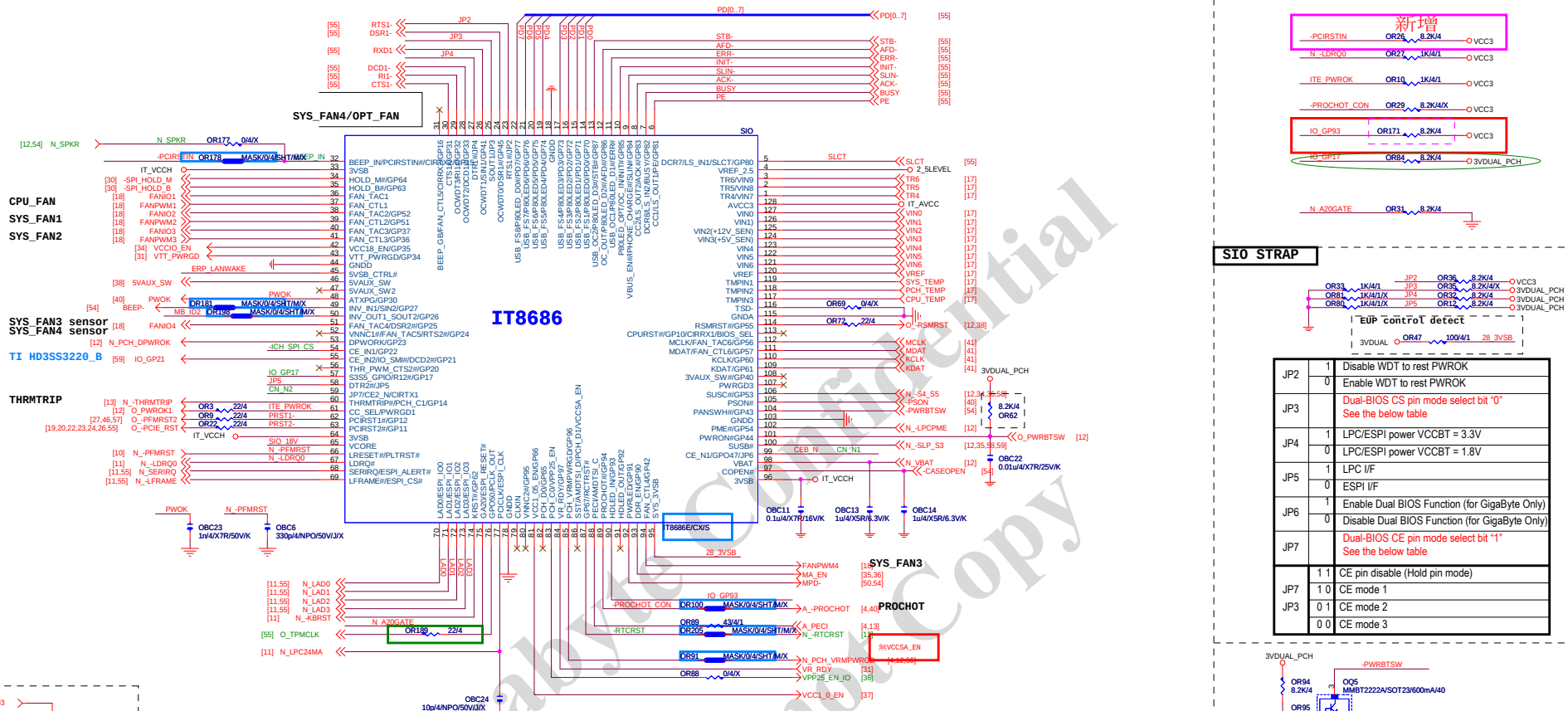
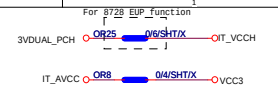
SIO IT8686 REV:0.1

IT8686 LPT+COMA



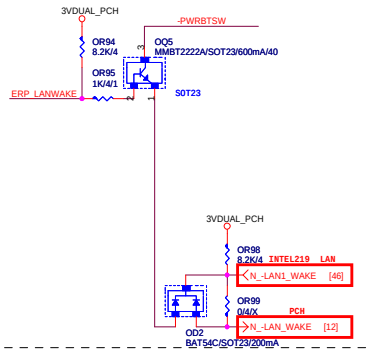
PWR SHT



SIO PU

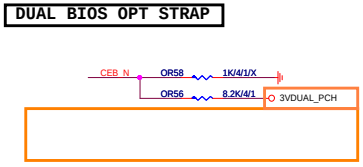
SIO STRAP

JP2	1	Disable WDT to rest PWROK
	0	Enable WDT to rest PWROK
JP3		Dual-BIOS CS pin mode select bit "0" See the below table
JP4	1	LPC/ESPI power VCCBT = 3.3V
	0	LPC/ESPI power VCCBT = 1.8V
JP5	1	LPC I/F
	0	ESPI I/F
JP6	1	Enable Dual BIOS Function (for GigaByte Only)
	0	Disable Dual BIOS Function (for GigaByte Only)
JP7		Dual-BIOS CE pin mode select bit "1" See the below table
JP7 JP3	1 1	CE pin disable (Hold pin mode)
	1 0	CE mode 1
	0 1	CE mode 2
	0 0	CE mode 3

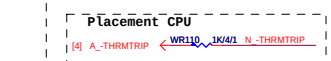


FAN TABLE	
CPU_FAN	FAN_CTL1 FAN_TAC1
SYS_FAN1	FAN_CTL2 FAN_TAC2
SYS_FAN2	FAN_CTL3 FAN_TAC3
SYS_FAN3	FAN_CTL4 FAN_TAC4
OPT_FAN or SYS_FAN4	FAN_CTL5 FAN_TAC5
THRMTRIP	PIN56
PROCHOT	PIN89

DUAL BIOS OPT STRAP



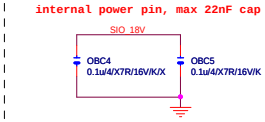
Placement CPU



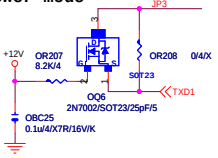
CPU 端 A_-THRMTRIP不可與PCH及SIO N_-THRMTRIP直接連接。
否則會出現無法拉LOW情況。

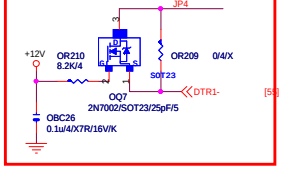
SIO_18V

internal power pin, max 22nF cap

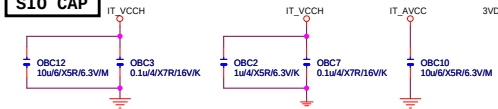


for LPC/eSPI power mode





SIO CAP



CLOSE SIO PIN4 2_5LEVEL

MB ID

Gigabyte Technology		
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Date: Tuesday, November 15, 2016	Sheet 16 of 63	

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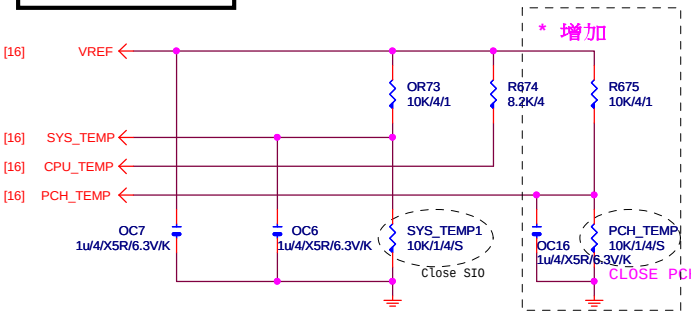
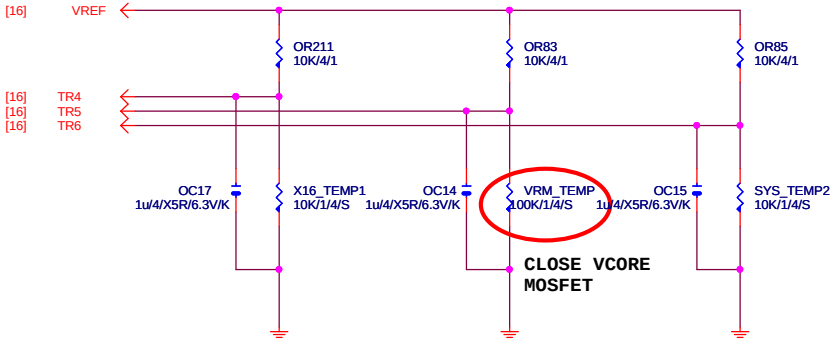
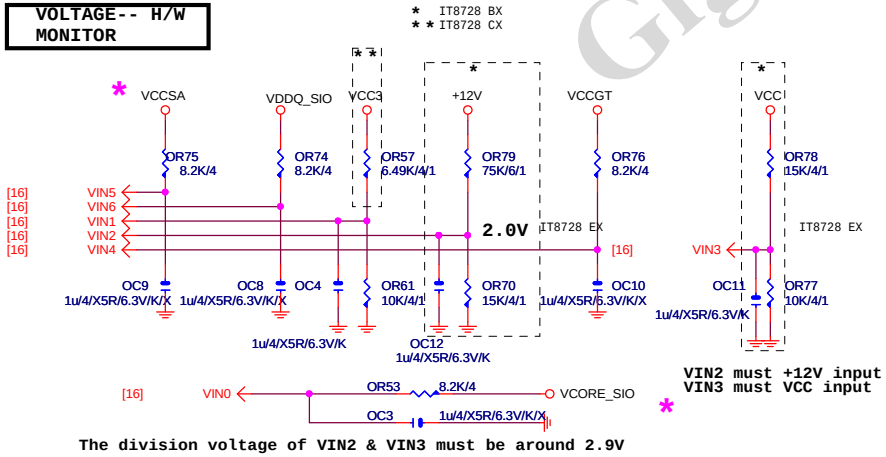
TEMP H/W MONITOR



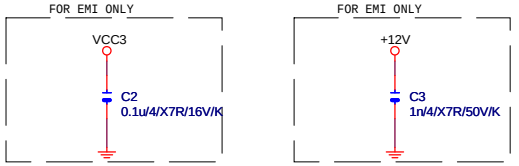
5個FAN時使用



VOLTAGE-- H/W MONITOR



★Update 2015-04.24



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Gigabyte Technology		
Title: HWM,KB/MS, FAN CTRL		
Size: Custom	Document Number: GA-B250-HD3P	Rev: 1.0
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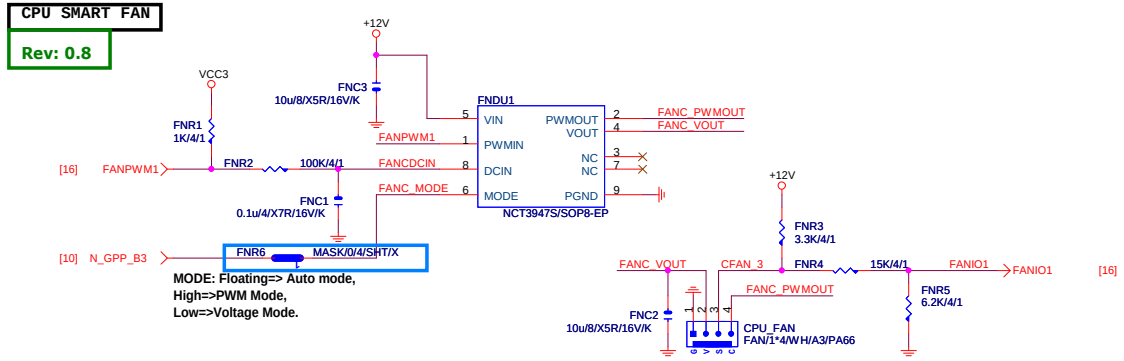
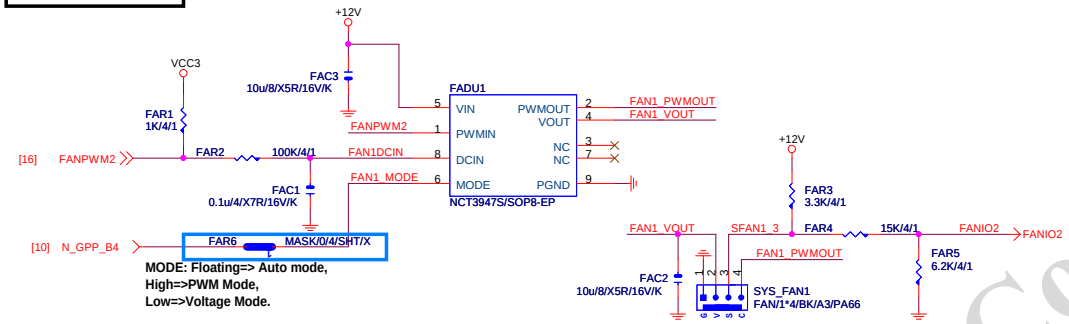
CPU SMART FAN

Rev: 0.8

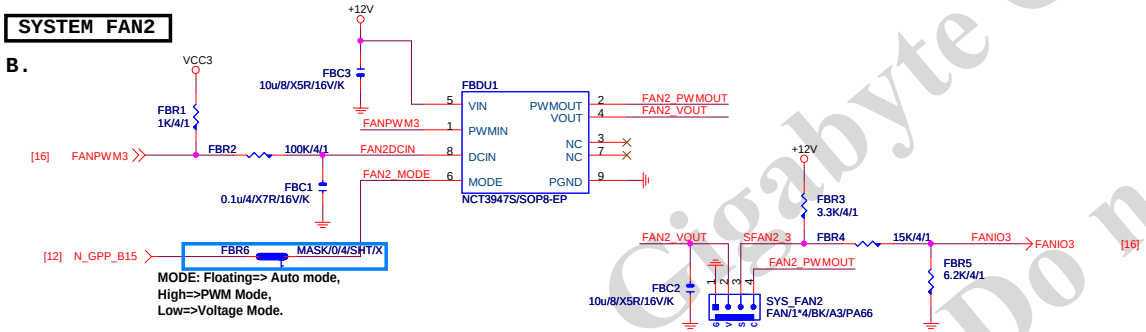


A. SYSTEM FAN1



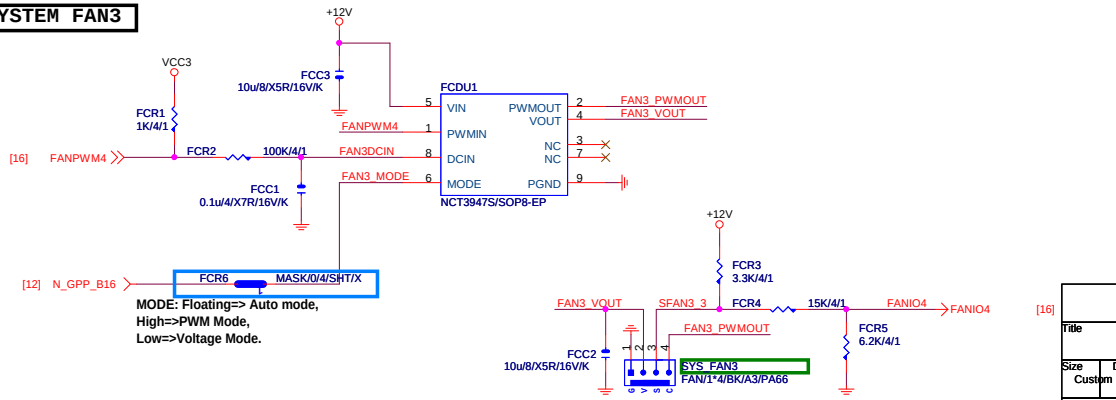
SYSTEM FAN2

B.



SYSTEM FAN3

C.



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Gigabyte Technology		
Title: FAN CTRL		
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Rev 0.2

+12 protect
short-wire test

PCIESLOT-164STH

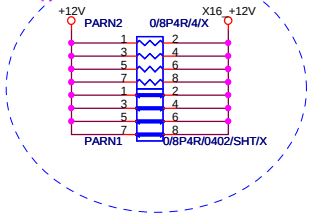
3GIO_*16

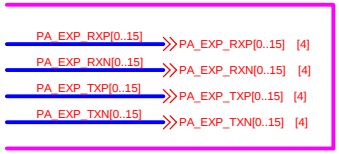
PCIEX16

KEY

PCI-E/16X-164P/BK/LONG DOUBLE

黑色(預留金屬加強,不上)





PA_EXP_TXP0	PAC5	0.22u/4/X5R/6.3V/K	PA_EXP_TXP0_C
PA_EXP_TXN0	PAC4	0.22u/4/X5R/6.3V/K	PA_EXP_TXN0_C
PA_EXP_TXP1	PAC6	0.22u/4/X5R/6.3V/K	PA_EXP_TXP1_C
PA_EXP_TXN1	PAC7	0.22u/4/X5R/6.3V/K	PA_EXP_TXN1_C
PA_EXP_TXP2	PAC8	0.22u/4/X5R/6.3V/K	PA_EXP_TXP2_C
PA_EXP_TXN2	PAC9	0.22u/4/X5R/6.3V/K	PA_EXP_TXN2_C
PA_EXP_TXP3	PAC10	0.22u/4/X5R/6.3V/K	PA_EXP_TXP3_C
PA_EXP_TXN3	PAC11	0.22u/4/X5R/6.3V/K	PA_EXP_TXN3_C
PA_EXP_TXP4	PAC12	0.22u/4/X5R/6.3V/K	PA_EXP_TXP4_C
PA_EXP_TXN4	PAC13	0.22u/4/X5R/6.3V/K	PA_EXP_TXN4_C
PA_EXP_TXP5	PAC14	0.22u/4/X5R/6.3V/K	PA_EXP_TXP5_C
PA_EXP_TXN5	PAC15	0.22u/4/X5R/6.3V/K	PA_EXP_TXN5_C
PA_EXP_TXP6	PAC16	0.22u/4/X5R/6.3V/K	PA_EXP_TXP6_C
PA_EXP_TXN6	PAC17	0.22u/4/X5R/6.3V/K	PA_EXP_TXN6_C
PA_EXP_TXP7	PAC18	0.22u/4/X5R/6.3V/K	PA_EXP_TXP7_C
PA_EXP_TXN7	PAC19	0.22u/4/X5R/6.3V/K	PA_EXP_TXN7_C
PA_EXP_TXP8	PAC21	0.22u/4/X5R/6.3V/K	PA_EXP_TXP8_C
PA_EXP_TXN8	PAC20	0.22u/4/X5R/6.3V/K	PA_EXP_TXN8_C
PA_EXP_TXP9	PAC22	0.22u/4/X5R/6.3V/K	PA_EXP_TXP9_C
PA_EXP_TXN9	PAC23	0.22u/4/X5R/6.3V/K	PA_EXP_TXN9_C
PA_EXP_TXP10	PAC24	0.22u/4/X5R/6.3V/K	PA_EXP_TXP10_C
PA_EXP_TXN10	PAC25	0.22u/4/X5R/6.3V/K	PA_EXP_TXN10_C
PA_EXP_TXP11	PAC26	0.22u/4/X5R/6.3V/K	PA_EXP_TXP11_C
PA_EXP_TXN11	PAC27	0.22u/4/X5R/6.3V/K	PA_EXP_TXN11_C
PA_EXP_TXP12	PAC28	0.22u/4/X5R/6.3V/K	PA_EXP_TXP12_C
PA_EXP_TXN12	PAC29	0.22u/4/X5R/6.3V/K	PA_EXP_TXN12_C
PA_EXP_TXP13	PAC30	0.22u/4/X5R/6.3V/K	PA_EXP_TXP13_C
PA_EXP_TXN13	PAC31	0.22u/4/X5R/6.3V/K	PA_EXP_TXN13_C
PA_EXP_TXP14	PAC32	0.22u/4/X5R/6.3V/K	PA_EXP_TXP14_C
PA_EXP_TXN14	PAC33	0.22u/4/X5R/6.3V/K	PA_EXP_TXN14_C
PA_EXP_TXP15	PAC34	0.22u/4/X5R/6.3V/K	PA_EXP_TXP15_C
PA_EXP_TXN15	PAC35	0.22u/4/X5R/6.3V/K	PA_EXP_TXN15_C

PCIEX16:16/5/5/5/16
PCI-E REV:1.1--> 2.5GHZ
PCE-E X1(單向) BANDWITH=2.5GHz*(8b/10b)=2Gb/s=250MB/s
PCE-E X1(雙向) BANDWITH=2.5GHz*(8b/10b)X2=4Gb/s=500MB/s
PCE-E X16(單向) BANDWITH=2.5GHz*(8b/10b)X16=32Gb/s=4GB/s
PCE-E X16(雙向) BANDWITH=2.5GHz*(8b/10b)X16X2=64Gb/s=8GB/s

PCI-E REV:2.0--> 5GHZ
PCE-E X1(單向) BANDWITH=5GHz*(8b/10b)=4Gb/s=500MB/s

PCI-E REV:3.0--> 8GHZ
PCE-E X1(單向) BANDWITH=8GHz*(128b/130b)=8Gb/s=1GB/s

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Gigabyte Technology	
Title	PCI EXPRESS * 16
Size: Custom	Document Number: GA-B250-HD3P
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Rev 0.3

PP

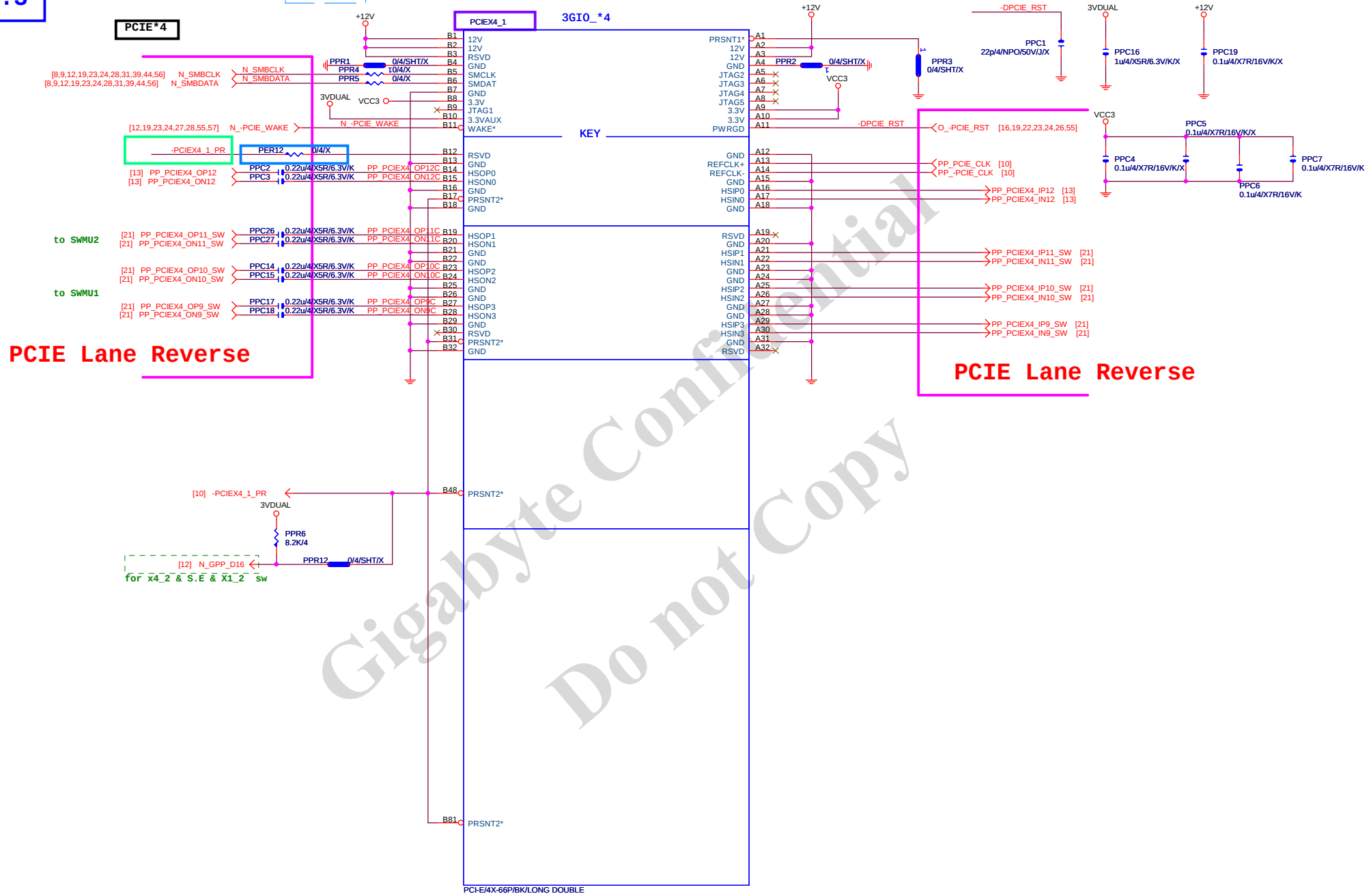
PCIE9~12
SLOT5

Footprint "PCIESLOT-64STH-1"

PCIE*4

PCIEX4_1

3GIO_*4



"PCIESLOT-64STH-1"加強版

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Gigabyte Technology		
Title: PCIE_X4		
Size: Custom	Document Number: GA-B250-HD3P	Rev: 1.0
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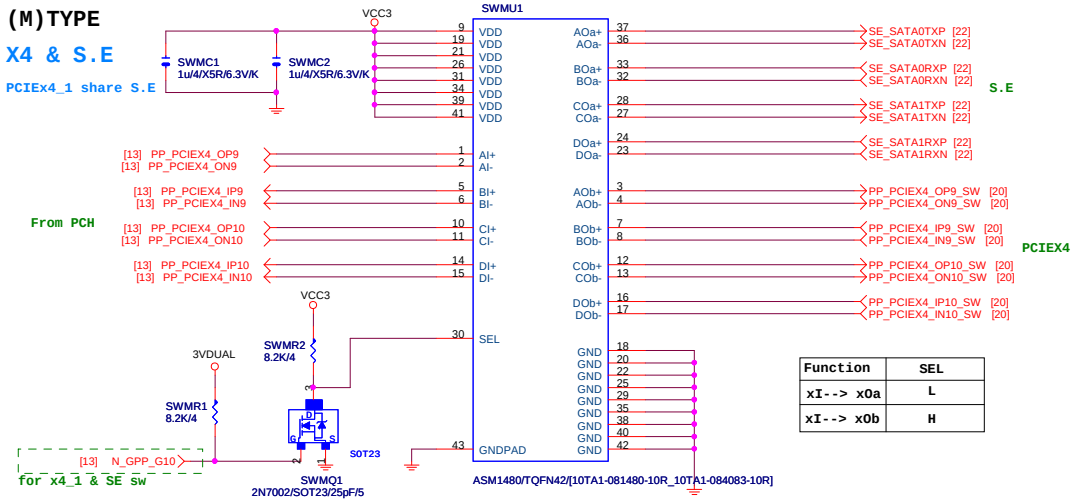
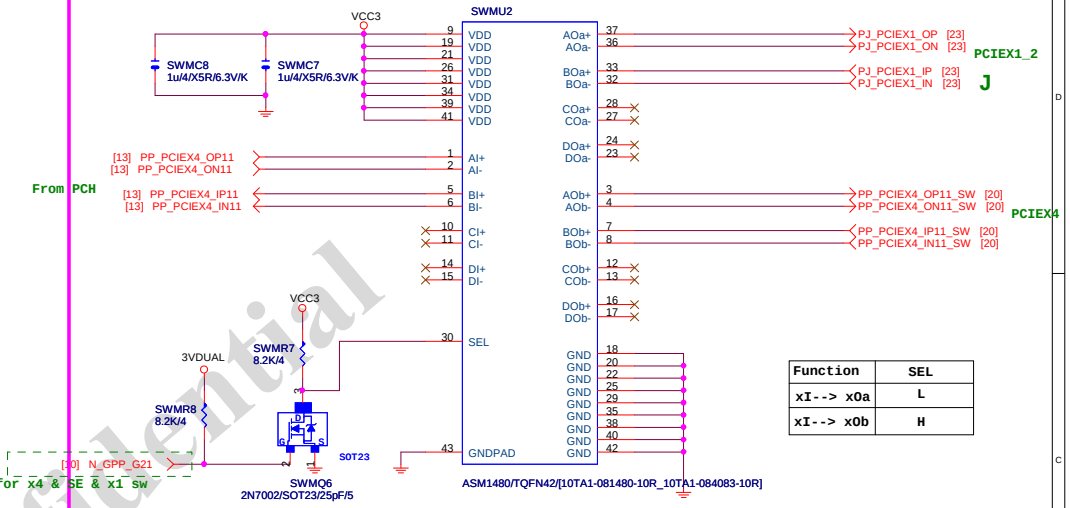
Rev 0.3



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



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

B250-HD3P

~~B250-HD3~~

PCIEx4 / S.E.	GPI				GPO					M.E. Config			
	N_GPP_D16		N_GPP_G5	N_GPP_E0	N_GPP_G10	N_GPP_G21	-	-	-	P12	P11	P10(S1)	P9(S0)
PCIEx4(優先) Only	0		1	1	0	0				PCIEx4 (Reverse)			
S.E. 有插	x		1	0	1	0				PCIEx2(Reverse)		SATA Express	
x1 有插	x		0	x	1	1				PCIEx1	PCIEx1	SATA Express	

#PEx4 Det #PEx1 Det #SE Det

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Gigabyte Technology			
Title: PCI EXPRESS X16 SWITCH			
Size: Custom	Document Number: GA-B250-HD3P		Rev: 1.0
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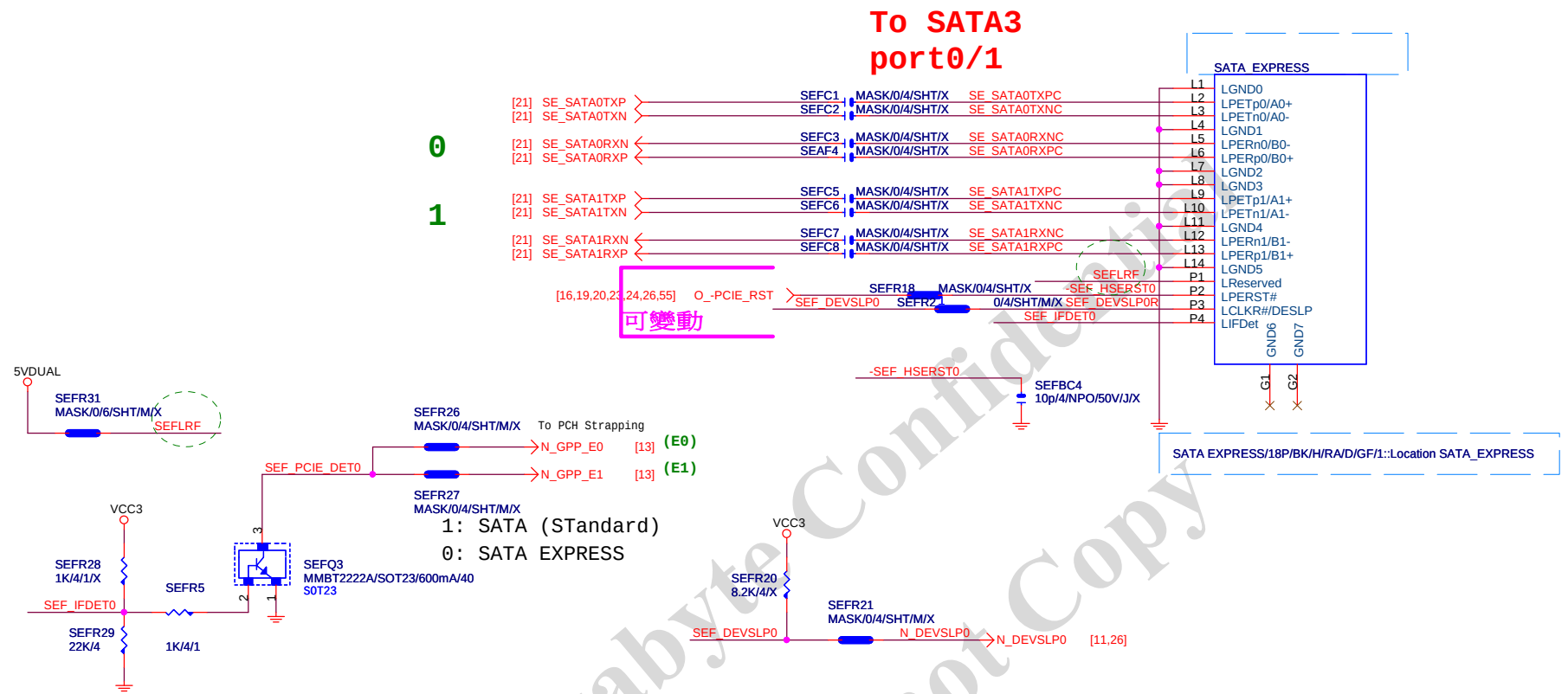
Rev 0.7



SATA EXPRESS新增power for USB3.1小卡
每個CONNECT都要留一顆0603 0
OHM,走線40MILS 即可

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Title: SATA EXPRESS		
Size: Custom	Document Number: GA-B250-HD3P	Rev: 1.0
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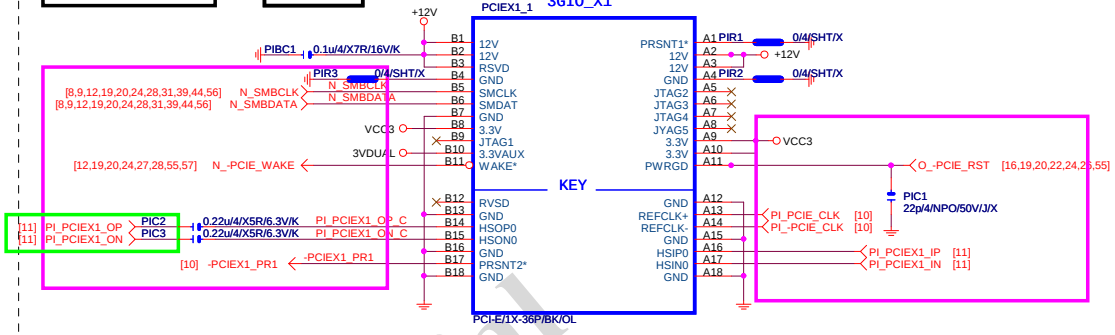
Rev 0.51

*

刪PCIEX1_3

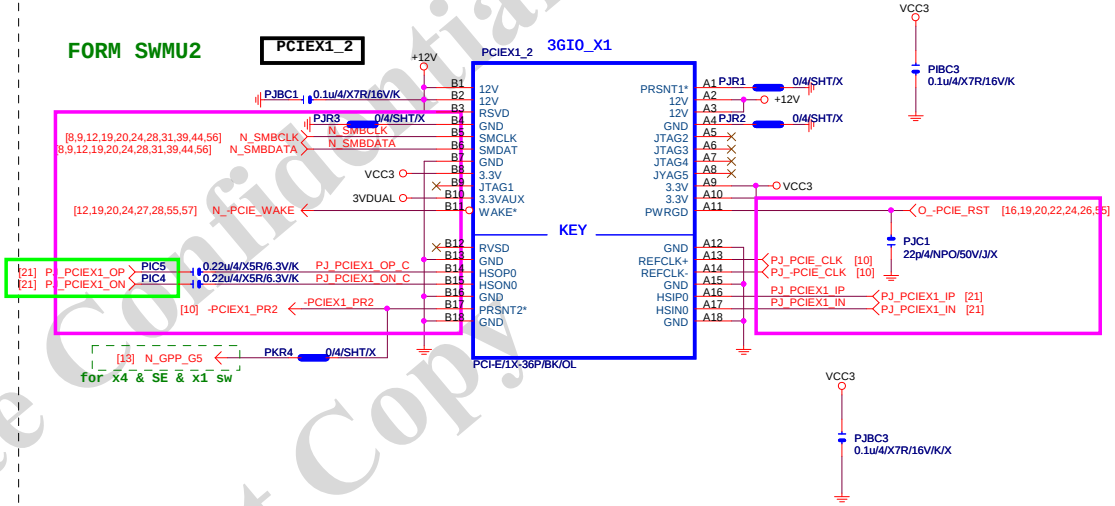
PCIEX1 SLOT

PCIEX1_1



FORM SWMU2

PCIEX1_2



PCIEX4/X1 SWITCH

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Title	<Title>		
Size	Document Number		Rev
CustomGA-B250-HD3P		1.0	
Date:	Tuesday, November 15, 2016	Sheet 23 of 63	

Rev 0.1

PQ

Type [M2S_32G(G1.SNIPERB8)_R01_20160715B]

PCIE21~24 SLOT7

Footprint "PCIESLOT-64P-1"

PCIEX4_2

3GIO_*4

KEY

PCIEX4_2 share M.2

for x4_1 & M.2 sw

PCI-E/4X-66P/BK/LONG DOUBLE

PCIEx4_2 用一般

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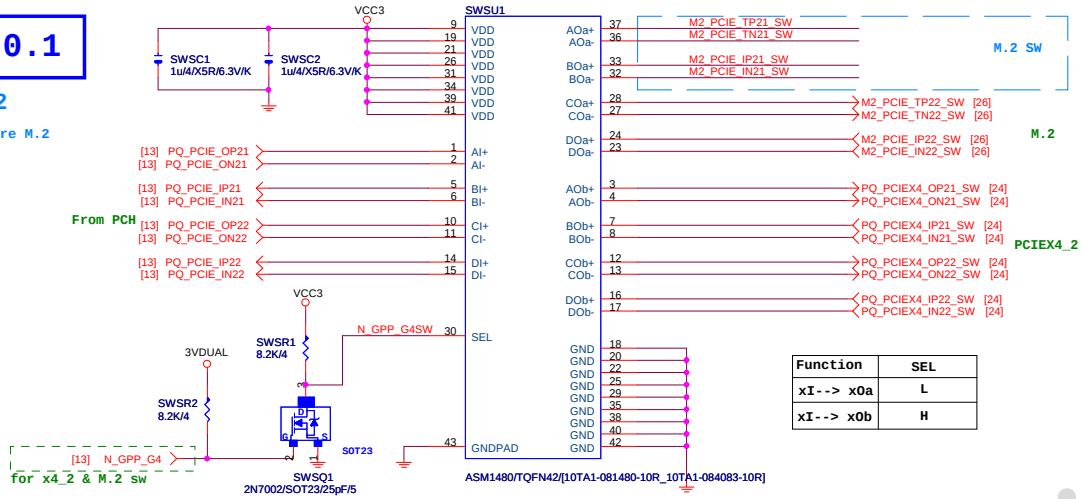
Gigabyte Technology			
Title: PCIE_X4			
Size: Custom	Document Number: GA-B250-HD3P		Rev: 1.0
Date: Tuesday, November 15, 2016	Sheet 24 of 63		

(S)TYPE

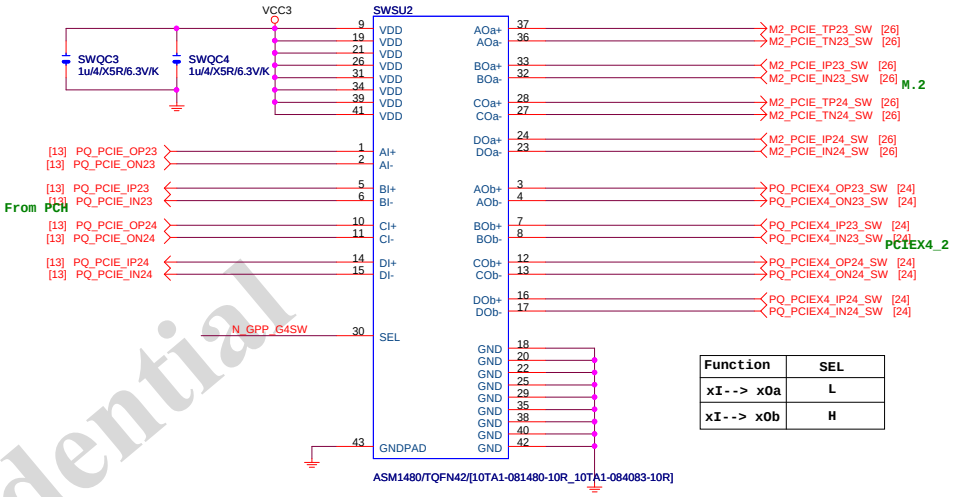
Rev 0.1

X4 & M.2

PCIEx4_2 share M.2



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



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

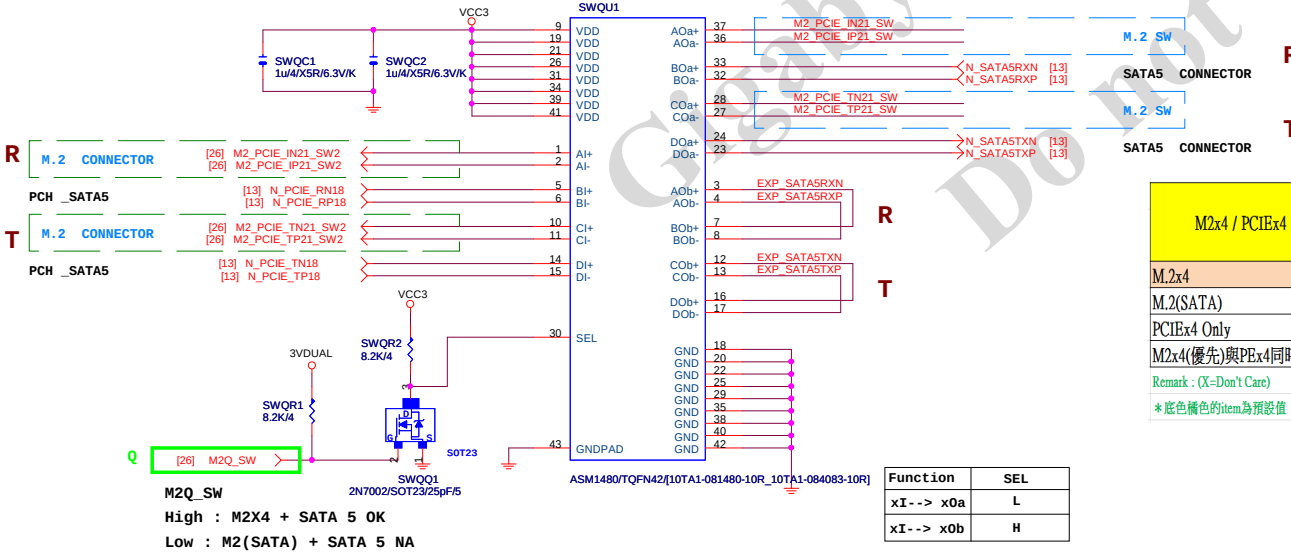
Rev 0.1

(Q)TYPE

舊的Switch,價格低

P & N SWAP

SATA5 & M.2 SW



M2Q_SW

High : M2X4 + SATA 5 OK

Low : M2(SATA) + SATA 5 NA

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

M2x4 / PCIEx4	GPI			GPO				M.E. Config			
	N_GPP_G7	-	-	N_GPP_D13	N_GPP_G4	-	-	-	-	P24	P23	P22	P21
M.2x4	0			1	1					PCIEx4			
M.2(SATA)	0			X	1					PCIEx4			
PCIEx4 Only	1			0	0					PCIEx4			
M2x4(優先)與PEx4同時插	0			0	1					PCIEx4			
Remark : (X=Don't Care)	#M2_Det	#M2(S)Det		#PEx4_Det									
*底色橘色的item為預設值													

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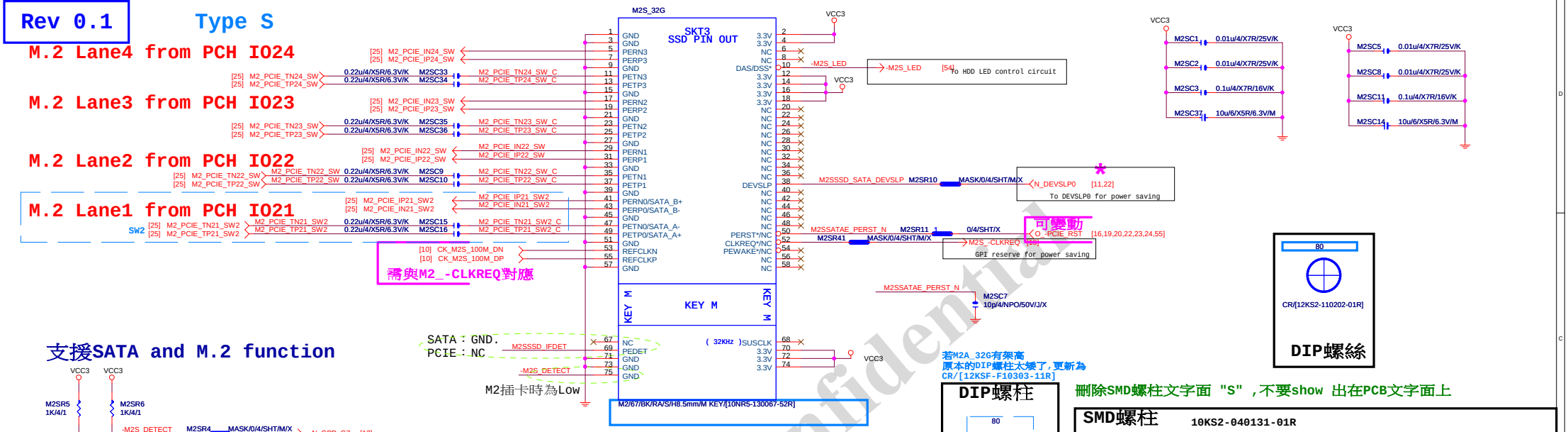
Type S

M.2 Lane4 from PCH IO24

M.2 Lane3 from PCH IO23

M.2 Lane2 from PCH IO22

M.2 Lane1 from PCH IO21



SATA : GND.
PCIE : NC

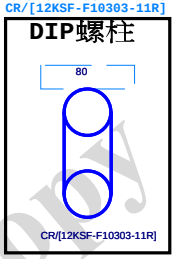
M2插卡時為Low

Footprint : NGFF-M-75P-11CM-3-SMD

架高 10NR5-130067-52R

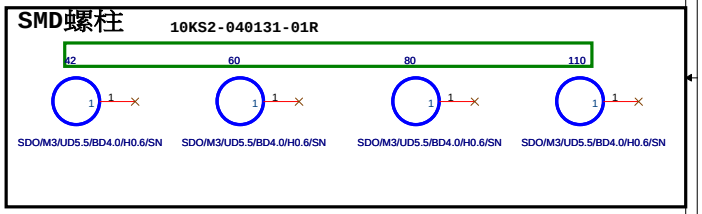
若M2A_32G有架高
原本的DIP螺柱太矮了,更新為
CR/[12KSF-F10303-11R]

DIP螺柱

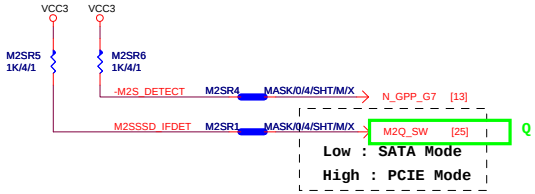


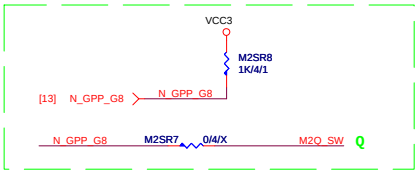
刪除SMD螺柱文字面 "S" ,不要show 出在PCB文字面上

SMD螺柱 10KS2-040131-01R



支援SATA and M.2 function





M2P	GPI			GPO
	N_GPP_G7	N_GPP_G8	N_GPP_D13	N_GPP_G4
M2x4 Only	0	1	1	1
PCIEx4 Only	1	1	0	0
M2S_32G First	0	1	0	1
M2S_SATA First	0	0	0	1

M.E. Config			
P12	P11	P10	P9
PCIEx4			
PCIEx4			
PCIEx4			
PCIEx1	PCIEx1	SATA	SATA

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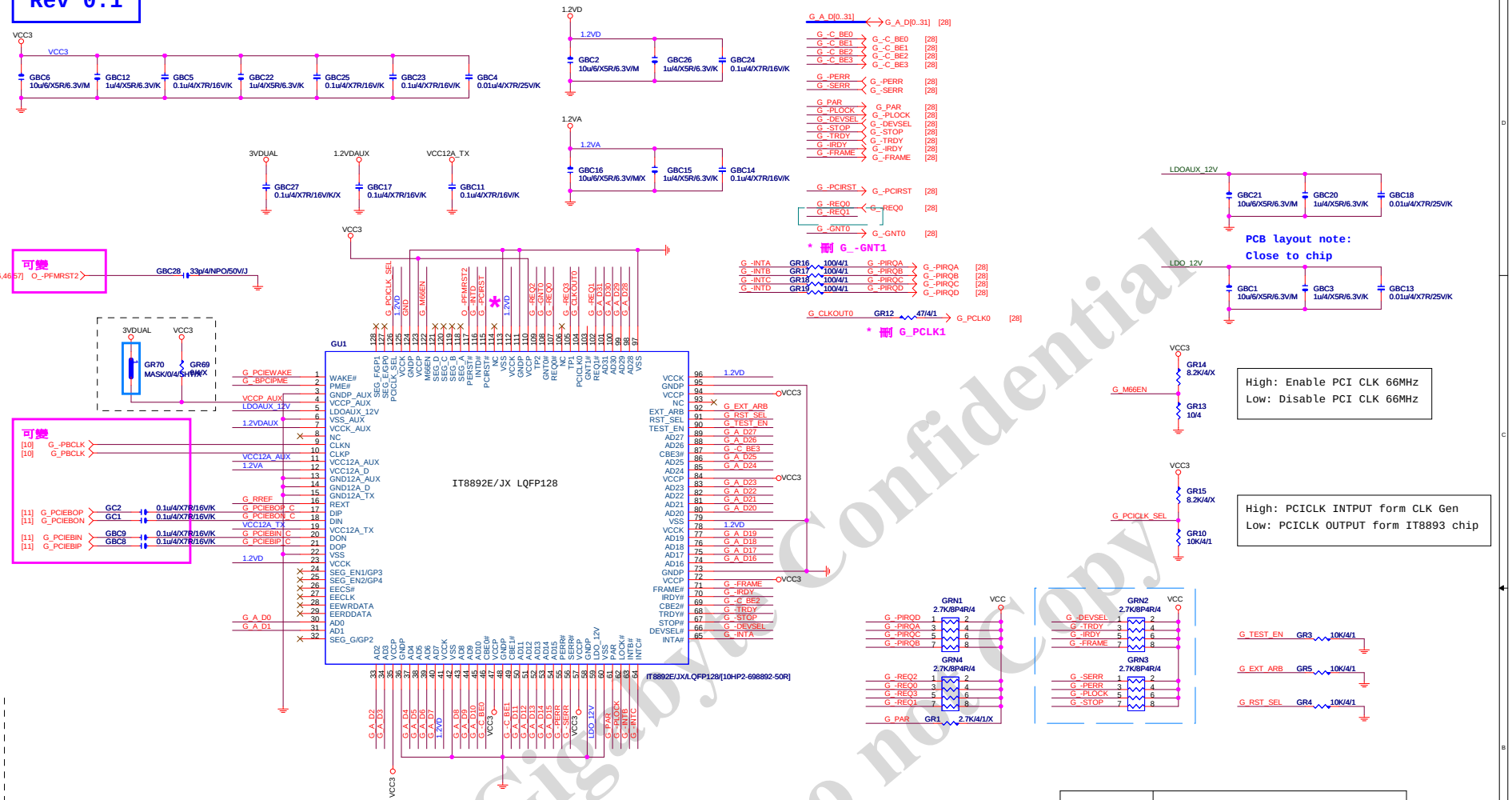

	Component change note
IT8892FX	GR70,GR74,GR76,GR78,GR66 : ON GR69,GR73,GR75,GR77,GR67 : NC GR44 resistor is 12k ohm GL14,GL10,GL16,GL17 : ON GL19,GL21,GL23,GL25: NC
IT8892JX	GR70,GR73,GR75,GR78,GR66 : ON GR69,GR74,GR76,GR77,GR67 : NC GR44 resistor is 18k ohm GL14,GL10,GL16,GL17 : ON GL19,GL21,GL23,GL25: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

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Title: IT8892E

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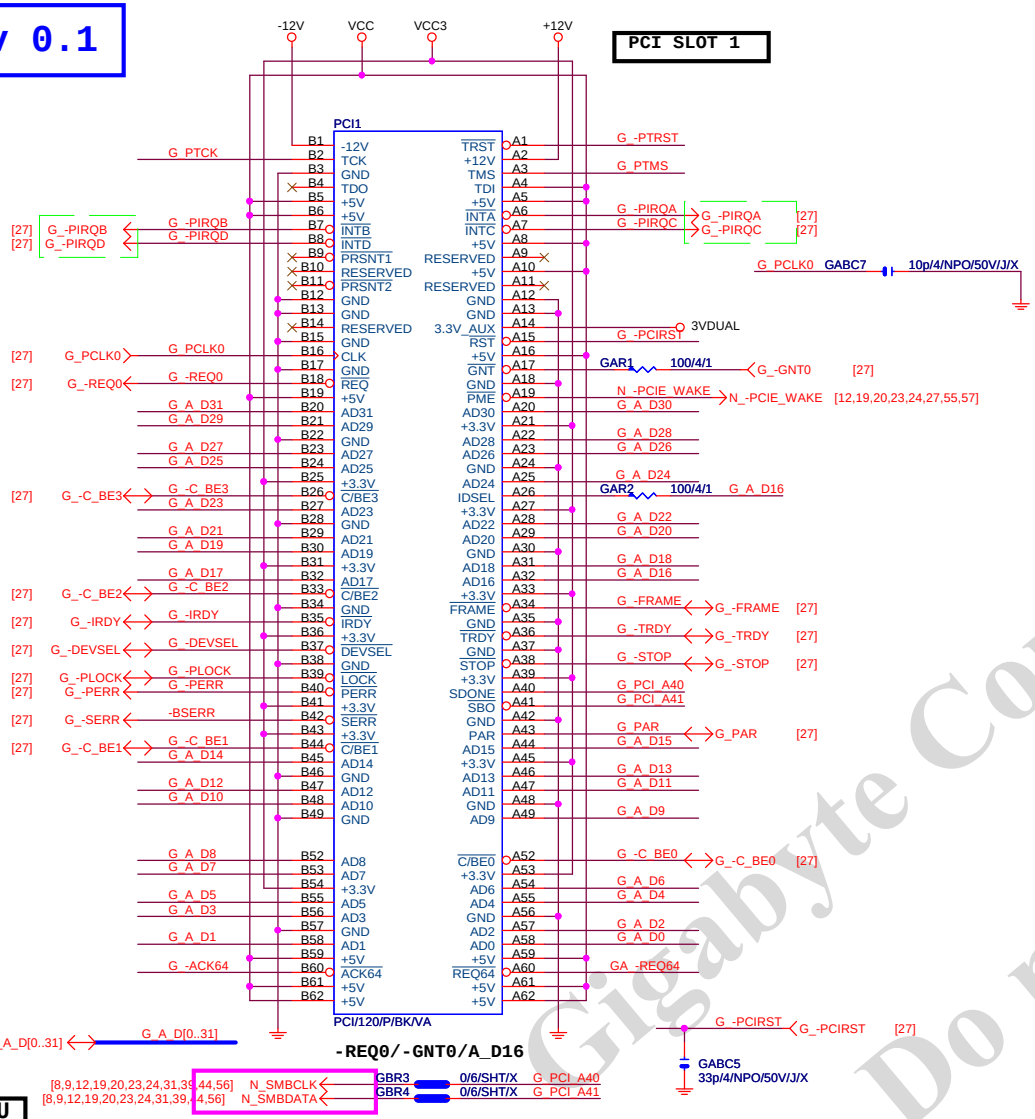
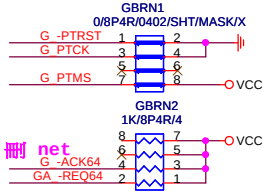
PCI SLOT 1

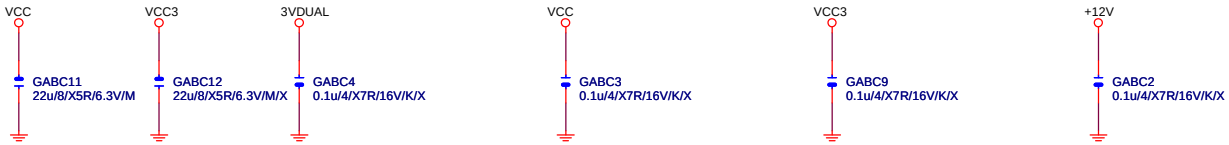


PCI PU

footprint改為R8P4R-0402-SHORT-MASK



PCI CAP



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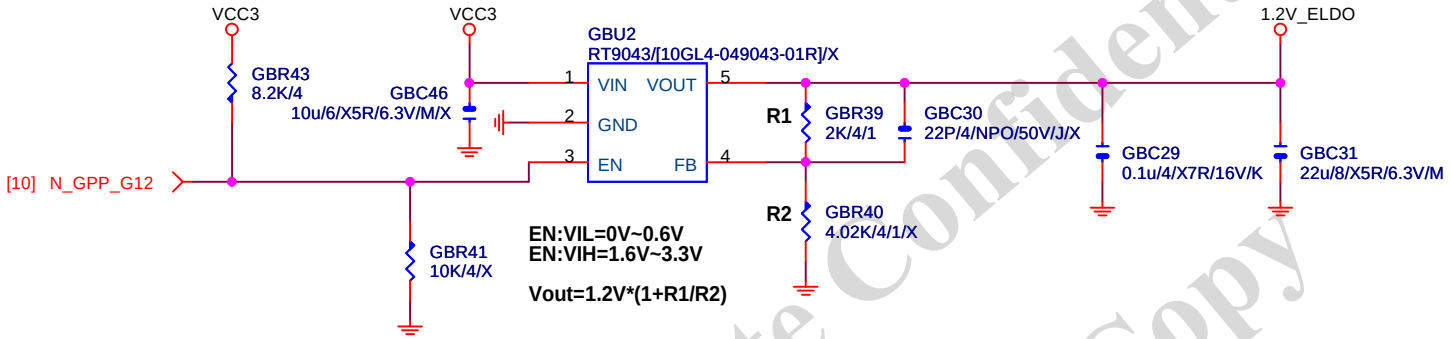

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M_BIOS :SMD SPI SOCKET 8P 200MIL LOTES

* 試產先上 , PVT 移除

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REV:0.3

VCORE_SIO — VCORE
VCORE_VS
MASK/0/4/SHT/M/X
請注意擺放位置

+12V — DAR128 8.2K/4 — DAQ5 2N7002/SOT23/25pF/5 — SOT23 — V_95856

H:ISL95856 or ISL95858
L:ISL95866 or ISL95868
3VDUAL — NR400 8.2K/4 — N_GPP_C15 [12]
NR401 8.2K/4/X
close to PCH

*Del DAR135

VCCST_VCCPLL — DAC40 1u/4/X5R/6.3V/K — DAR12 100/4/1 — DAR13 100/4/1/X — DAR14 45.3/4/1
不上件 — DAR17 2K/4/1/X
VCCST_VCCPLL — VCC3 — DAR18 2K/4/1
VIN — DAR19 10K/4/1 — DAC2 1u/4/X5R/6.3V/K — DAR23 3.3K/4/1
VCC — VIN — DAR7 2.2/6/X — DAR8 2.2/6/X — DAR9 2.2/6 — DAC3 1u/6/X7R/16V/K
DAU1 ISL95866HRZ-T/QFN52
DAC41 0.22u/6/X7R/16V/K — ISL95856_VIN

[16] VTT_PWRGD — DAR136 0/4/SHT/M/X
[16] VR_HOT
[40] VR_HOT
[4] PVIDSLCK — DAR76 49.9/4/1 — PVIDSLCK_R
[4] -PVIDALRT — DAR77 MASK/0/4/SHT/M/10/X — -PVIDALRT_R
[4] PVIDSOUT — DAR78 10/4 — PVIDSOUT_R
[9,12,19,20,23,24,28,39,44,56] N_SMBDATA
[9,12,19,20,23,24,28,39,44,56] N_SMBCLK

VR_ENABLE
VR_READY
VR_HOT#
SCLK
ALERT#
SDA
I2DATA
I2CLK
PSYS

DC-LL --> 2.1mohm
DAR137 0/4 — DAR33 205K/4/1/X — DAR34 8.2K/4 — DAC10 820P/4/X7R/50V/K — DAR37 3.74K/4/1 — DAR35 3.3K/4/1 — DAC8 4.7n/4/X7R/25V/K
VCORE — DAC11 47p/4/NPO/50V/J — COMP_A — DAC14 330p/4/NPO/50V/J — DAR40 1K/4/1 — DAR138 0/4/X
DAR39 100/4/1 — DAR41 5.49K/4/1 — FB_CPU
[7] VCORE_VCC_SEN — DAC15 0.022u/4/X7R/25V/K/X — DAR79 100/4/1/X — FB2_A
[7] VCORE_VSS_SEN — DAC38 330p/4/NPO/50V/J
VCORE — DAR46 100/4/1 — DAC17 330p/4/NPO/50V/J — DAC18 4.7n/4/X7R/25V/K — DAR139 205K/4/1
close PWM — DAR129 100/4/1

DC-LL --> 3.1mohm
DAR140 0/4 — DAR51 63.4K/4/1/X — DAC23 820P/4/X7R/50V/K — DAR57 2.2K/4/1 — DAC22 4.7n/4/X7R/25V/K — DAR55 6.04K/4/1
VCCGT — DAC24 47p/4/NPO/50V/J — COMP_B — DAC26 330p/4/NPO/50V/J — DAR61 1K/4/1 — DAR141 0/4/X
DAR60 100/4/1 — DAR63 3.83K/4/1 — FB_GT
[6] VCCGT_SENSE — DAC27 0.01u/4/X7R/25V/K/X — DAR80 100/4/1/X — FB2_B
[6] VSSGT_SENSE — DAC39 330p/4/NPO/50V/J
DAR66 100/4/1 — DAC29 330p/4/NPO/50V/J — DAC30 4.7n/4/X7R/25V/K — DAR142 63.4K/4/1
VCCGT — DAR130 100/4/1

PROG_R — DAR70 2.87K/4/1 — PROG
GND_PAD — 53 — 8 VIA Connect GND lay

VIN — ISL95856_VIN
BOOT1_A — UGATE1_A — PHASE1_A — LGATE1_A — DAR26 2.2/6 — DAC5 0.22u/6/X7R/16V/K — PHASE1_A [32]
BOOT2_A — UGATE2_A — PHASE2_A — LGATE2_A — DAR31 2.2/6 — DAC7 0.22u/6/X7R/16V/K — PHASE2_A [32]
PWM3_A — PWM3_A [32]
NC/PWM4_A — PWM4_A [32]
ISEN1_A — ISEN2_A — ISEN3_A — ISEN4_A
ISUMP_A — ISUMN_A — NTC_A — IMON_A
VSUMA+ — DAR36 1K/4/1 — DAC12 0.33u/4/X5R/6.3V/K — DAC13 0.47u/4/X5R/6.3V/K — DAR38 33K/4/1 — DANTC1 10K/1/4/S
DAC16 2.2n/4/X7R/50V/K — DAR42 1K/4/1 — DAC43 0.1u/4/X7R/16V/K
VSUMA- — DAR44 604/4/1
DAR47 16.5K/4/1
DAR49 MASK/0/4/SHT/M/10/X — DAC21 330p/4/NPO/50V/J — DAR52 60.6K/4/1 — DAR53 18K/4/1 — DANTC2 470K/1/4/S 改需上件 & 調值~
DAC19 0.1u/4/X7R/16V/K

CLOSE DA_DL1 DC SIDE
DAR44-->604 ohm
OCP-->160A
CLOSE ?

BOOT1_B — UGATE1_B — PHASE1_B — LGATE1_B — DAR58 2.2/6 — DAC25 0.22u/6/X7R/16V/K — PHASE1_B [33]
PWM2_B — PWM2_B [33]
NC/PWM3_B
ISEN1_B — ISEN2_B — NC/ISEN3_B
DAR92 2.2/4 — V_95856
for ISL95856 DISABLE PH3

參考 Z270M-D3H (0.1) Pretest PROCHOT :VCore(DAR47) & GT(DAR67) 先使用15K

DAR71-->499 ohm
OCP-->74A

ISUMP_B — ISUMN_B — NTC_B — IMON_B
VSUMB- — DAR67 14.3K/4/1
DAR69 MASK/0/4/SHT/M/10/X — DAC33 330p/4/NPO/50V/J — DAR72 73.2K/4/1 — DAR73 18K/4/1 — DANTC3 470K/1/4/S 改需上件 & 調值~ — DAR71 499/4/1
DAR75 1K/4/1
VSUMB+ — DAC31 2.2n/4/X7R/50V/K — DAC32 0.22u/4/X5R/6.3V/K — DAC34 0.22u/4/X5R/6.3V/K — DAR74 11K/4/1 — DAR68 2.61K/4/1 — DANTC4 10K/1/4/S
DAC44 0.1u/4/X7R/16V/K/X — DAC35 0.1u/4/X7R/16V/K

CLOSE DE_DL1 DC SIDE
CLOSE ?

VCORE	ISL95856	ISL95866
DAR137	X	V
DAR138	V	X
DAR139	X	V
DAC15	V	X
DAR79	V	X
DAR33	V	X

VCCGT	ISL95856	ISL95866
DAR140	X	V
DAR141	V	X
DAR142	X	V
DAC27	V	X
DAR80	V	X
DAR51	V	X

+12V — DAR127 2.26K/4/1 — FB_GT — DAR125 8.2K/4/1 — DAQ4 2N7002/SOT23/25pF/5 — SOT23 — VCCGT_SENSE
不上件 — VCC3 — DAR123 1K/4/1/X — DAR124 8.2K/4 — DAQ3 MMBT2222A/SOT23/600mA/40 — SOT23
[10] N_GT_S
連接至PCH:GPP_G14

+12V — DAR126 3.48K/4/1 — FB_CPU — DAR122 8.2K/4/1 — DAQ2 2N7002/SOT23/25pF/5 — SOT23 — VCORE_VCC_SEN
不上件 — VCC3 — DAR120 1K/4/1/X — DAR121 8.2K/4 — DAQ1 MMBT2222A/SOT23/600mA/40 — SOT23
[10] N_CPU_S
連接至PCH:GPP_G15

Z系列才需要留
連接至PCH GPP_G13

VSUMA+ — DAR1 3.65K/4/1 — CSP1_A [32]
ISEN1_A — DAR2 100K/4/1
DAR3 100K/4/1 V2N_A
DAR4 100K/4/1 V3N_A
DAC1 0.022u/4/X7R/25V/K — DAR5 200K/4/1/X — DAR81 100K/4/1 V4N_A
VSUMA- — DAR6 10/4 V1N_A

VSUMA+ — DAR10 3.65K/4/1 — CSP2_A [32]
ISEN2_A — DAR11 100K/4/1
DAR20 100K/4/1 V1N_A
DAR22 — DAR21 100K/4/1 V3N_A
DAC4 0.022u/4/X7R/25V/K — DAR82 100K/4/1 V4N_A — 200K/4/1/X
VSUMA- — DAR24 10/4 V2N_A

VSUMA+ — DAR25 3.65K/4/1 — CSP3_A [32]
ISEN3_A — DAR27 100K/4/1
DAR28 100K/4/1 V1N_A
DAR30 — DAR29 100K/4/1 V2N_A
DAC6 0.022u/4/X7R/25V/K — DAR83 100K/4/1 V4N_A — 200K/4/1/X
VSUMA- — DAR32 10/4 V3N_A

VSUMA+ — DAR84 3.65K/4/1 — CSP4_A [32]
ISEN4_A — DAR85 100K/4/1
DAR86 100K/4/1 V1N_A
DAR89 — DAR87 100K/4/1 V2N_A
DAC42 0.022u/4/X7R/25V/K — DAR90 100K/4/1 V3N_A — 200K/4/1/X
VSUMA- — DAR91 10/4 V4N_A

V1N_A — CSN1_A [32]
V2N_A — CSN2_A [32]
V3N_A — CSN3_A [32]
V4N_A — CSN4_A [32]
CLOSE PWM

VSUMB+ — DAR43 3.65K/4/1 — CSP1_B [33]
ISEN1_B — DAR45 100K/4/1
DAR48 100K/4/1 V2N_B
DAR50 — DAC20 0.022u/4/X7R/25V/K — 200K/4/1/X
VSUMB- — DAR54 10/4 V1N_B

VSUMB+ — DAR56 3.65K/4/1 — CSP2_B [33]
ISEN2_B — DAR59 100K/4/1
DAR62 100K/4/1 V1N_B
DAR64 — DAC28 0.022u/4/X7R/25V/K — 200K/4/1/X
VSUMB- — DAR65 10/4 V2N_B

V1N_B — CSN1_B [33]
V2N_B — CSN2_B [33]
CLOSE PWM

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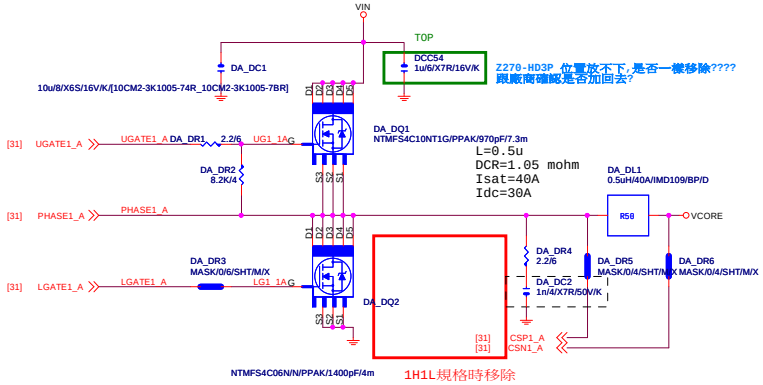
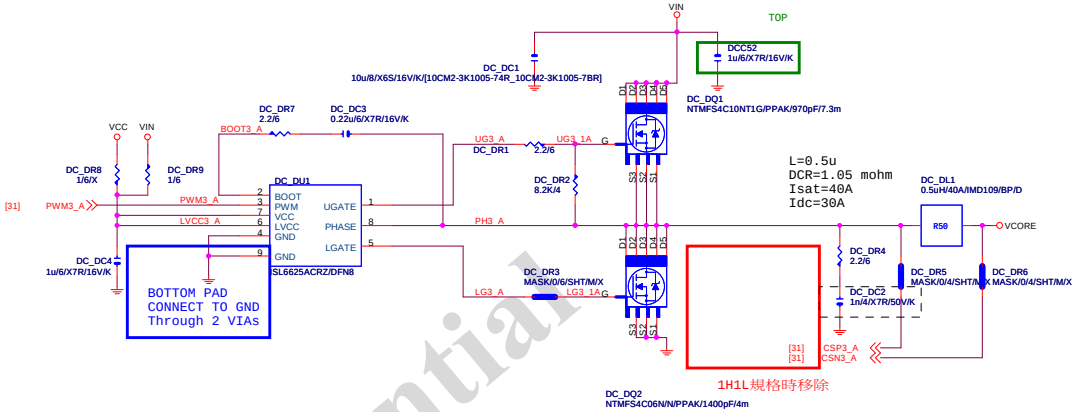
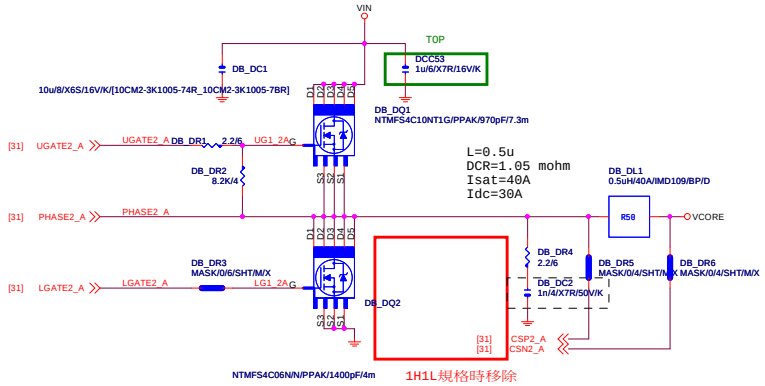
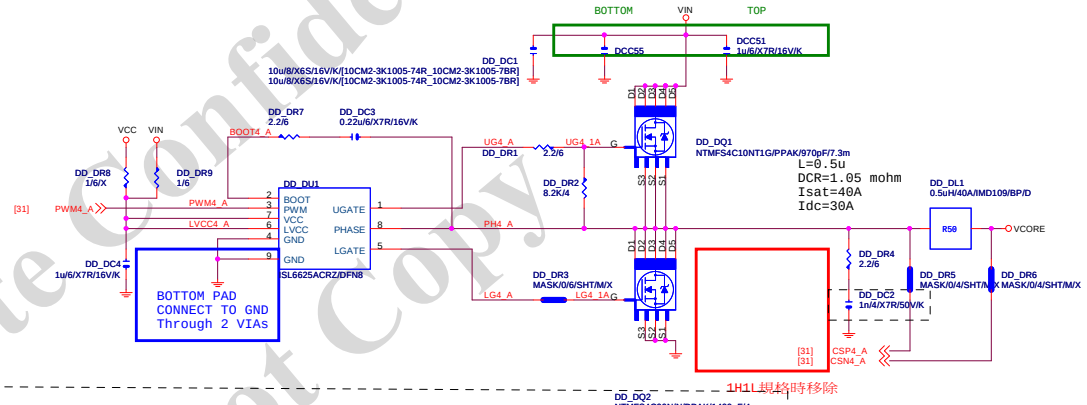
VCORE





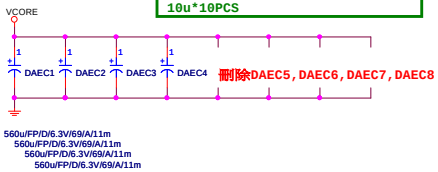




VCORE CAP

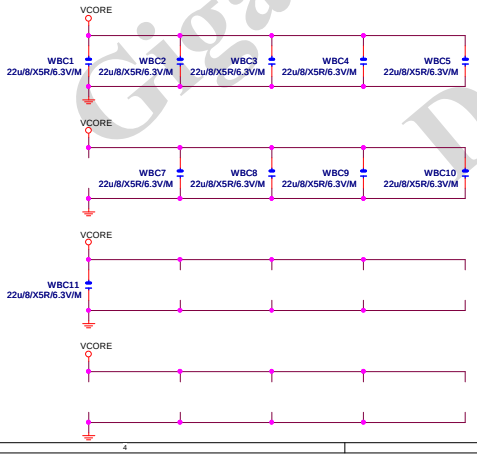
560u*8PCS
22u*29PCS

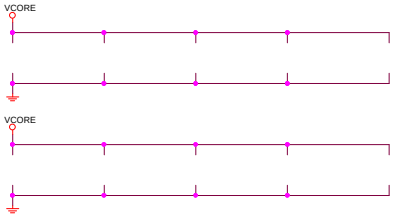
先照B250M-D3H 數量
B&H series低階電容數量10u*10
560u*4PCS
10u*10PCS



台固電容

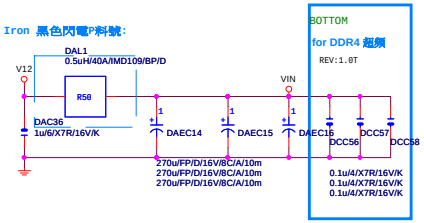
560u/FP/D/6.3V/69/A/11m
560u/FP/D/6.3V/69/A/11m
560u/FP/D/6.3V/69/A/11m
560u/FP/D/6.3V/69/A/11m





VIN CAP

270u*3PCS



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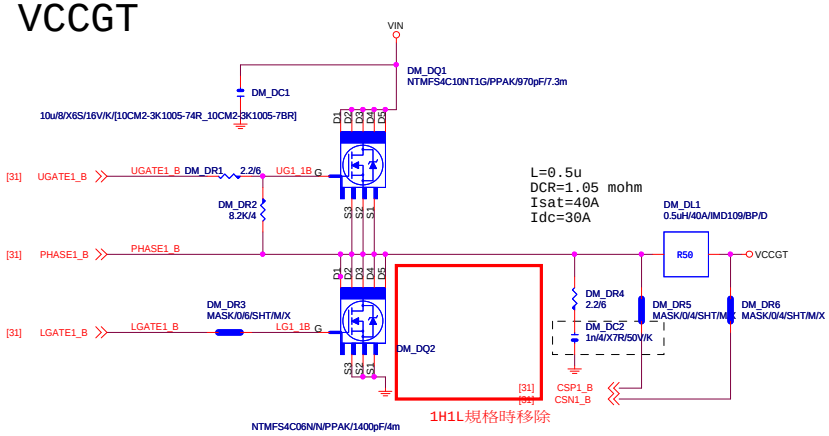
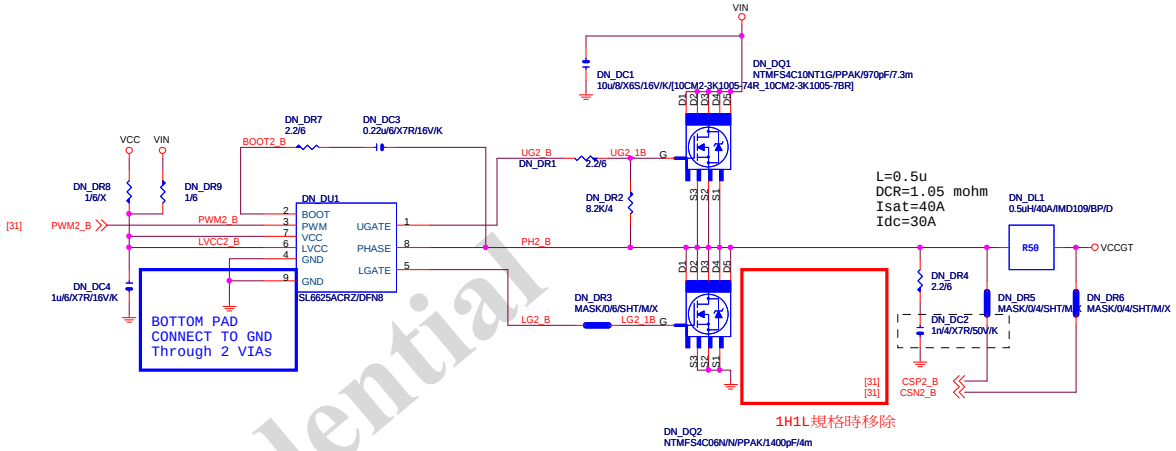
REV::0.1

VCCGT

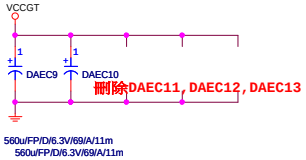


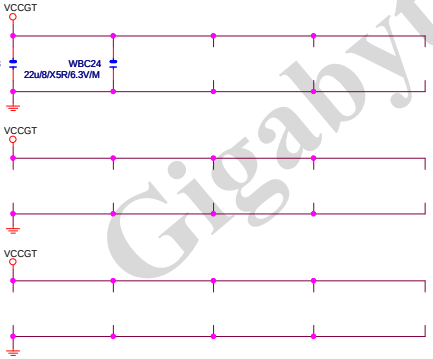


560u*5PCS
22u*15PCS

先照B250M-D3H 數量
B&H series低階電容數量10u*10
560u*2PCS
10u*2PCS

VCCGT CAP





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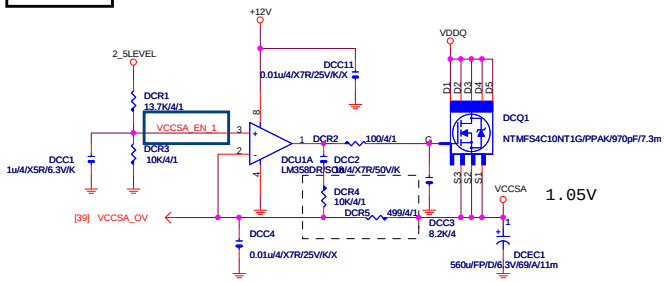
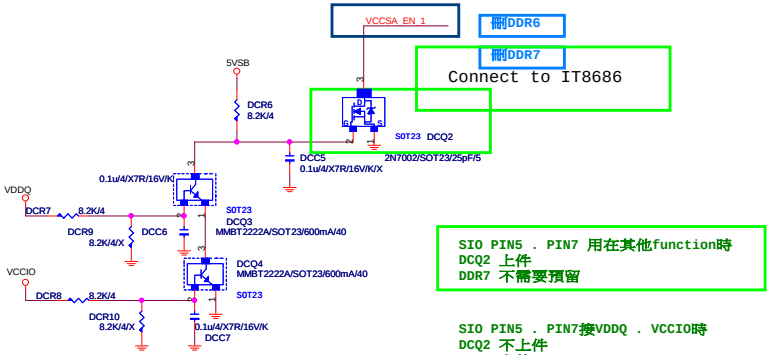
REV:0.21

VCCSA



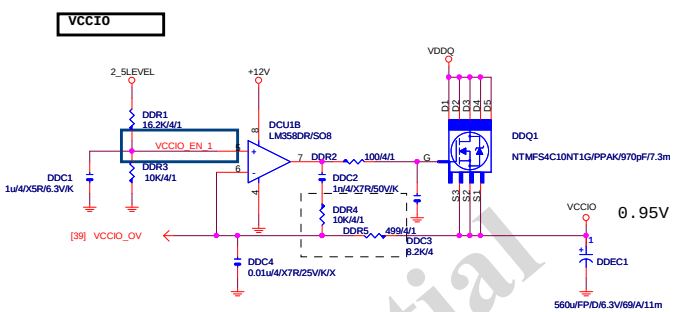
Connect to IT8793

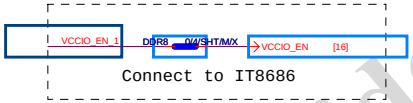


SIO PIN5 . PIN7 用在其他function時
DCQ2 上件
DDR7 不需要預留

SIO PIN5 . PIN7接VDDQ . VCCIO時
DCQ2 不上件
DDR7 上件

VCCIO



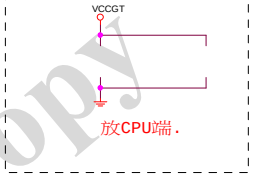


Connect to IT8686

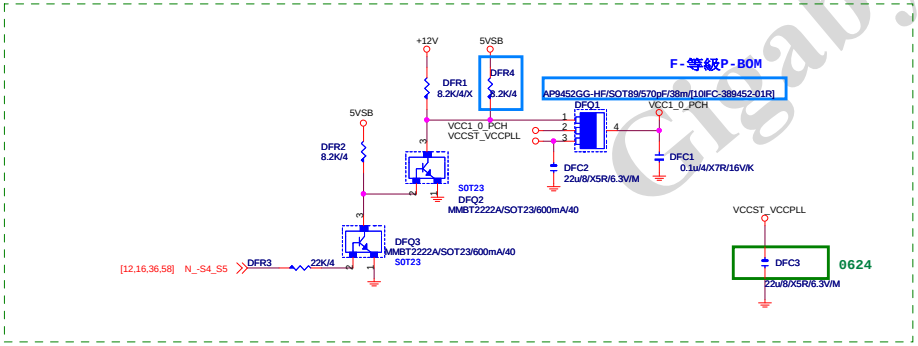
刪DDR9

Connect to IT8793

VCCGT總共2顆 ： 刪WBC38 ，WBC39



VCCST_VCCPLL



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Title	VCCSA_VCCIO_no 44E	
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REV:0.1

DDR4

5VDUAL
MAR2 8.2K/4
MA_EN
上件

5VDUAL
MA_DR8 2.2/6
DRV_DDR
MA_DC10 1u/6/X7R/16V/K
MA_DR37 100K/4/1
VDDQ_GD
VPP_25V
MA_DR40 8.2K/4/X
MA_DR41 8.2K/4
[36] VPP25V_GD
MA_DR38
MASK/0/4/SHT/M/10/X
DDR_EN
[16,36] MA_EN
MA_DR39 0/4/X
MA_DC15 0.1u/4/X7R/16V/K

MAU2
RT8237/[10TA1-608237-01R]
EN PGOOD VCC BOOT UGATE PHASE FB CS RF GLGATE GND

MA_DC9 0.1u/6/X7R/25V/K
MA_UGATE
MA_PHASE
MA_LGATE
MA_RF
MA_DR45
VDDQ_GD 470K/4/1
MA_DR15 95.3K/4/1
MA_DR19 470K/4/1/X

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

Iron 黑色閃電P料號:
5VDUAL
MA_L2 0.5uH/20A/IMD0809/BP/D
8*8
MA_VIN
MA_DC6 0.1u/4/X7R/16V/K Close Choke
MA_DC7 1u/6/X7R/16V/K Close MOS
MAEC1 560u/FP/D/6.3V/69/A/11m
MAEC2 560u/FP/D/6.3V/69/A/11m
MA_DQ1 NTMFS4C06N/N/PPAK/1400pF/4m
MA_UGATE MA_DR1 2.2/6
MA_DR2 8.2K/4
MA_PHASE
MA_DQ2
MA_DQ3
MA_DR5 2.2/6
MA_DC5 1n/4/X7R/50V/K
MA_LGATE MA_DR9 2.2/6 MA_LG
NTMFS4C06N/N/PPAK/1400pF/4m
NTMFS4C06N/N/PPAK/1400pF/4m

DDR VIN CAP
560u*2PCS

CHOKE與CAP料號可變

Iron 黑色閃電P料號:
MA_L1 1uH/35A/IMD109/BP/D
R50
10*10
VDDQ
SUPPORT DDR4 1.2V
25A MAX

L=1u
DCR=2.5 mohm
Isat=35A
Idc=28A

MA_DR13 1K/4/1
MA_DC14 22p/4/NPO/50V/J/X
RS
RO
MA_DR12 1.4K/4/1
DDR_ADJ
[39] DDR_ADJ

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

MA_DR38..MA_DC15
VPP_25V使用8120.8068A.RT8237時上件

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

1H1L規格移除

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

FS=290K
OCP=40A

MOSFET請依MOSFET使用規則.自行選擇
ON-->10IF9-040406-10R[NTMFS4C06N/N/PPAK/1400pF/4m]
VISHAY-->10IF9-040012-10R[SIRA12DP/PPAKS08/2070pF/4.3m]

VDDQ_SIO VDDQ
DDR_VS
MASK/0/4/SHT/M/X

CLOSE TO DDR POWER PLANE

PWR SEQ

For power sequence require

VPP_25V使用8120時上件

MAU1上RT9045時上件(不可MASK)

DDRVTT

VDDQ
NCT3103S/SOP8/2A/[10GL2-203103-01R]
MAU1
VIN GND VREF1 VOUT VREF2 ENABLE VCNTL BOOT_SEL GND
MAC2 1u/4/X5R/6.3V/K
MAR5 1K/4/1
MA_VTT_REF
[39] MA_VTT_REF
MAR4 1K/4/1
MAC1 0.01u/4/X7R/25V/K
1.1A MAX
DDRVTT_EN
DDRVTT_BOOT
5VDUAL
MAC7 10u/6/X5R/6.3V/M
DDRVTT

[4] DDR_VTT_CTL
[12,15,58,59] N_SLP_S3
DDR_VTT_CTL MAR110 MASK/0/4/SHT/M/10/X DDRVTT_EN
N_SLP_S3 MAR111 MASK/0/4/SHT/M/10/X DDRVTT_BOOT

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

VDDQ
MAEC3 560u/FP/D/6.3V/69/A/11m
MAEC4 560u/FP/D/6.3V/69/A/11m
MAEC6 560u/FP/D/6.3V/69/A/11m
MAEC7 560u/FP/D/6.3V/69/A/11m
* 大電容 x4

VDDQ
WBC49 22u/8/X5R/6.3V/M
VDDQ
刪除WBC6

VDDQ總共3顆 : WBC49 ,MAC60 ,MABC10

DDRVTT CAP

* 大電容 x0

DDRVTT
MAC4 22u/8/X5R/6.3V/M
DDRVTT
MAC5 22u/8/X5R/6.3V/M

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REV:0.1

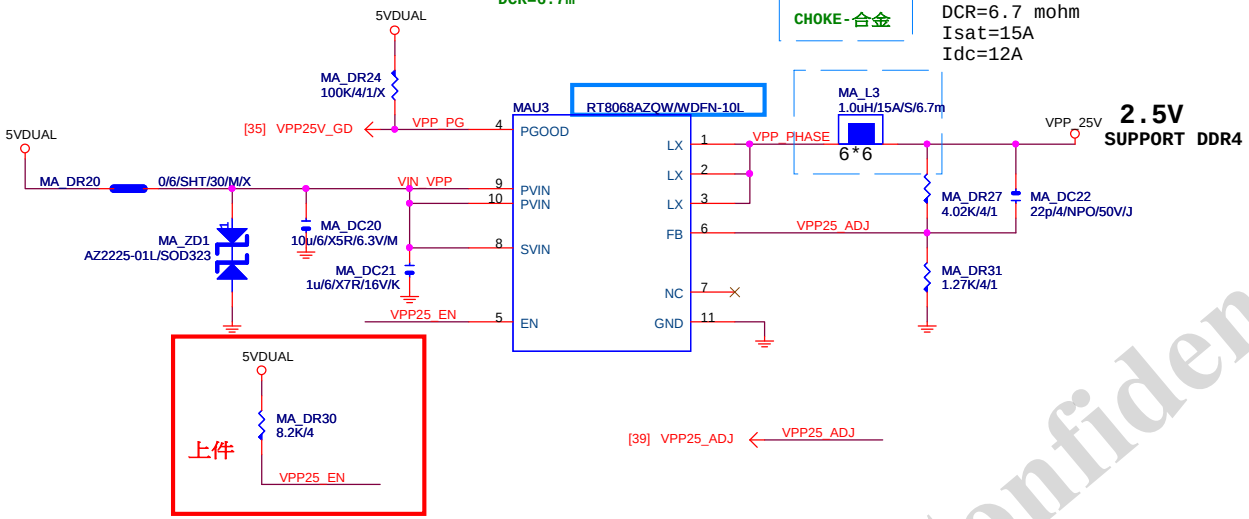
VPP_25V

SMD Molding(合金)
10LC4-15100B-01R CORE 1.0uH 15A
TAI-TECH SMD TMPA0603S-1R0MN-D
DCR=6.7m

CHOKE-合金

CHOKE與CAP料號可變

L=1u
DCR=6.7 mohm
Isat=15A
Idc=12A



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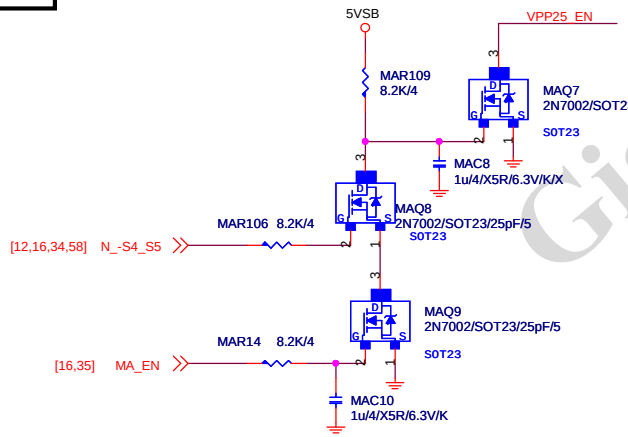
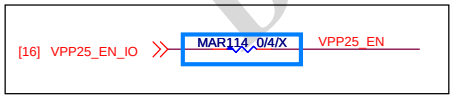
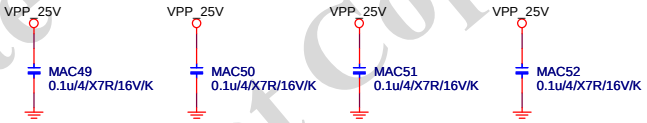
PWR SEQ

* 刪 MA_DR32

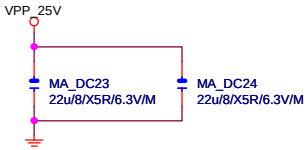






VPP CAP 22u*1PCS

* 大電容 x0



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Title: RT8068A_VPP25 POWER

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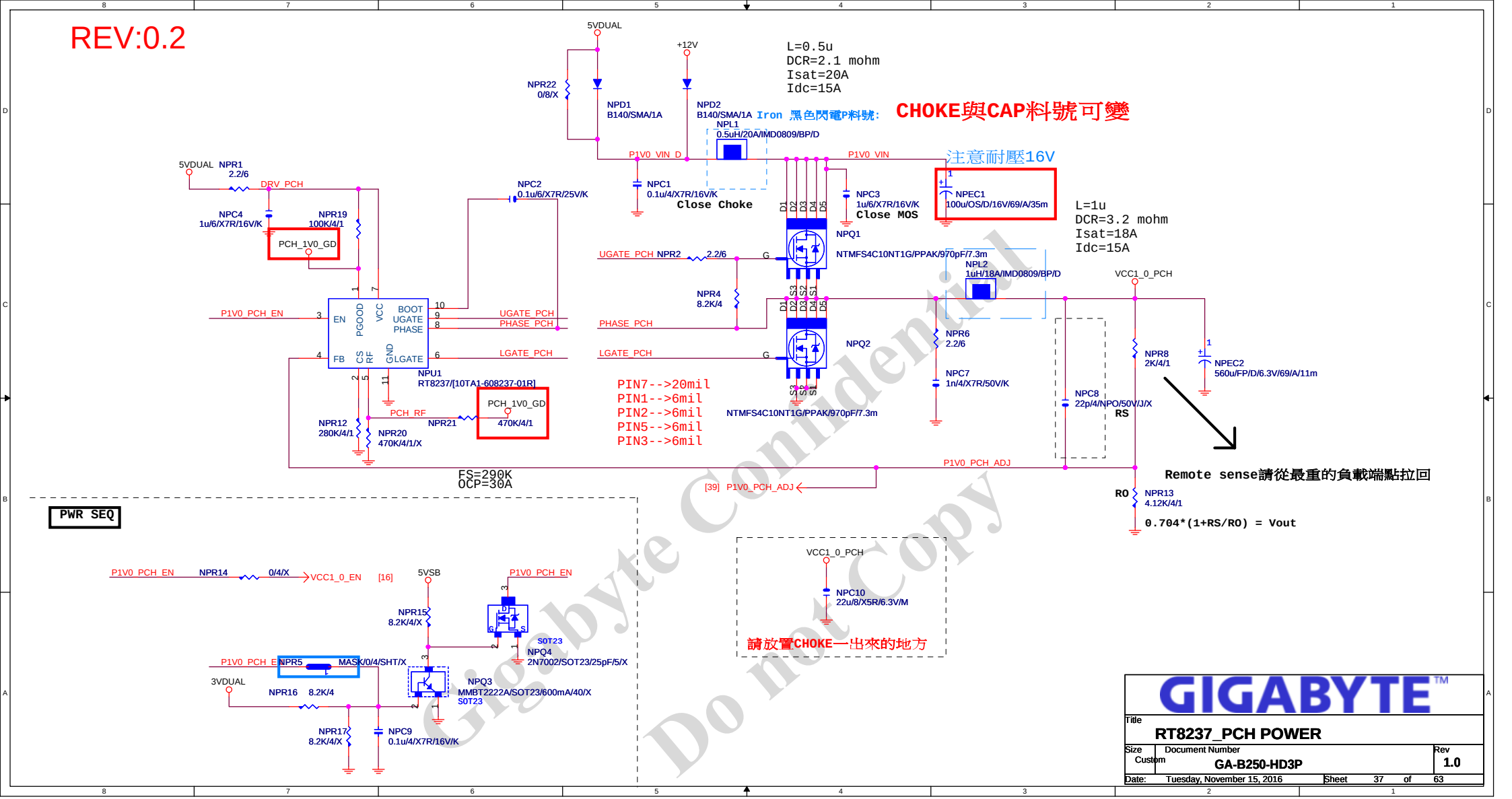
REV:0.2
5VDUAL
+12V
L=0.5u
DCR=2.1 mohm
Isat=20A
Idc=15A
NPR22
0/8/X
NPD1
B140/SMA/1A
NPD2
B140/SMA/1A
Iron 黑色閃電P料號:
CHOKE與CAP料號可變
NPL1
0.5uH/20A/IMD0809/BP/D
P1V0_VIN_D
P1V0_VIN
注意耐壓16V
NPC1
0.1u/4/X7R/16V/K
Close Choke
NPC3
1u/6/X7R/16V/K
Close MOS
NPEC1
100u/OS/D/16V/69/A/35m
NPQ1
NTMFS4C10NT1G/PPAK/970pF/7.3m
L=1u
DCR=3.2 mohm
Isat=18A
Idc=15A
NPL2
1uH/18A/IMD0809/BP/D
VCC1_0_PCH
5VDUAL
NPR1
2.2/6
DRV_PCH
NPC2
0.1u/6/X7R/25V/K
NPC4
1u/6/X7R/16V/K
NPR19
100K/4/1
PCH_1V0_GD
UGATE_PCH
NPR2
2.2/6
NPR4
8.2K/4
P1V0_PCH_EN
EN
PGOOD
VCC
BOOT
UGATE
PHASE
FB
CS
RF
GND
LGATE
NPU1
RT8237/[10TA1-608237-01R]
PHASE_PCH
LGATE_PCH
NPQ2
NTMFS4C10NT1G/PPAK/970pF/7.3m
NPR6
2.2/6
NPC7
1n/4/X7R/50V/K
NPR8
2K/4/1
NPEC2
560u/FP/D/6.3V/69/A/11m
NPC8
22p/4/NPO/50V/J/X
RS
RO
NPR13
4.12K/4/1
0.704*(1+RS/RO) = Vout
Remote sense請從最重的負載端點拉回
PCH_RF
NPR21
470K/4/1
NPR12
280K/4/1
NPR20
470K/4/1/X
FS=290K
OCP=30A
PIN7-->20mil
PIN1-->6mil
PIN2-->6mil
PIN5-->6mil
PIN3-->6mil
P1V0_PCH_ADJ
[39] P1V0_PCH_ADJ
PWR SEQ
P1V0_PCH_EN
NPR14
0/4/X
VCC1_0_EN
[16]
5VSB
NPR15
8.2K/4/X
NPQ4
2N7002/SOT23/25pF/5/X
NPR5
MASK/0/4/SHT/X
3VDUAL
NPR16
8.2K/4
NPQ3
MMBT2222A/SOT23/600mA/40/X
NPR17
8.2K/4/X
NPC9
0.1u/4/X7R/16V/K
NPC10
22u/8/X5R/6.3V/M
請放置CHOKE一出來的地方
GIGABYTE
Title
RT8237_PCH POWER
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Custom
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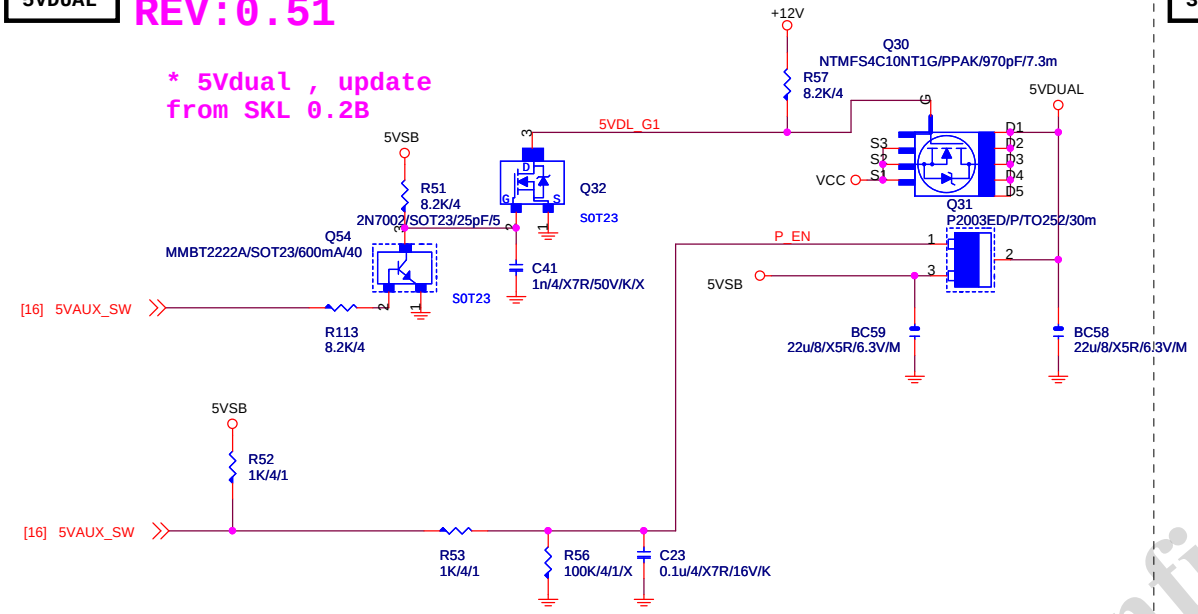
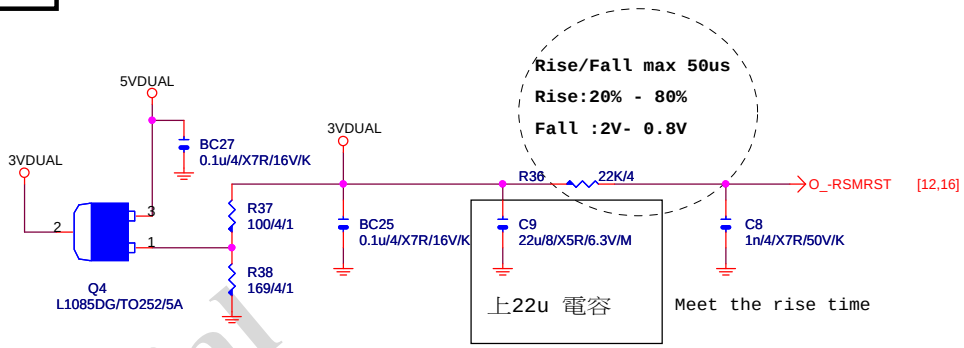
5VDUAL

REV:0.51

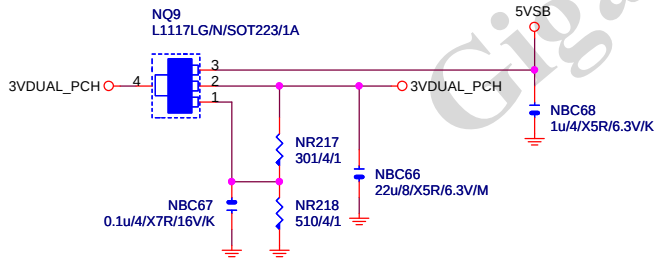
* 5Vdual , update from SKL 0.2B



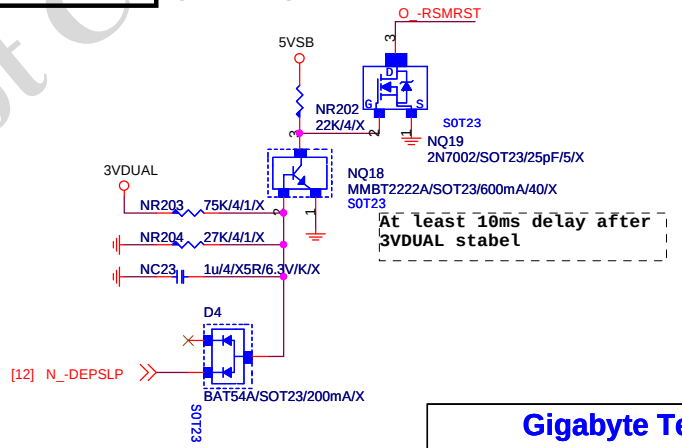
3VDUAL



3VDUAL_PCH



O_-RSMRST (不上件)



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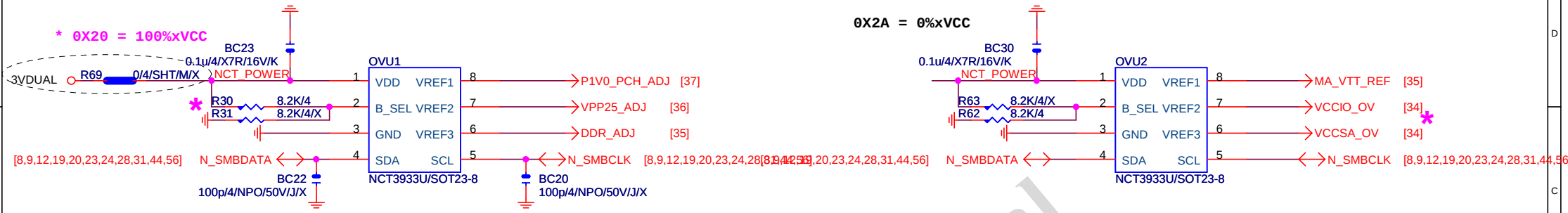
OVER VOLTAGE



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

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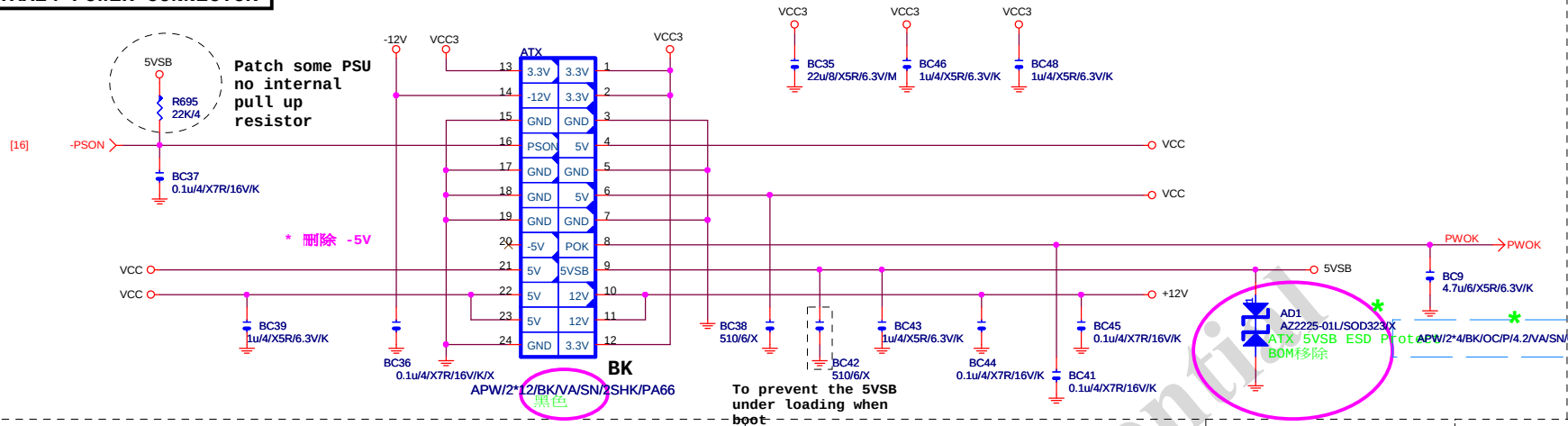
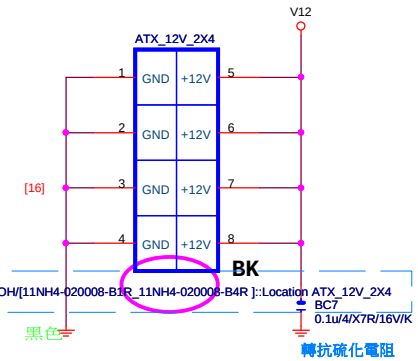
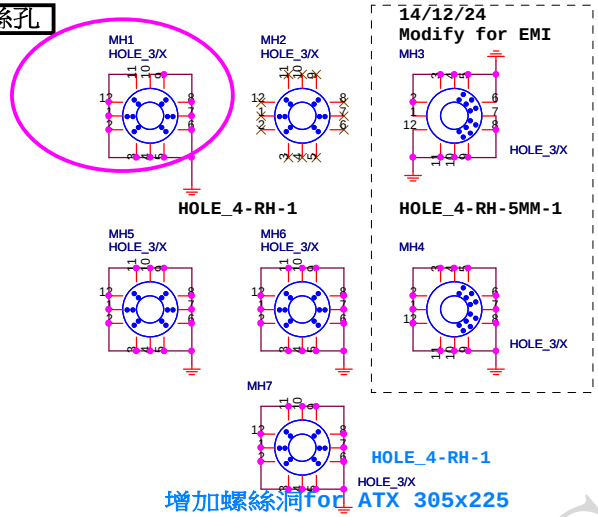
ATXX24 POWER CONNECTOR



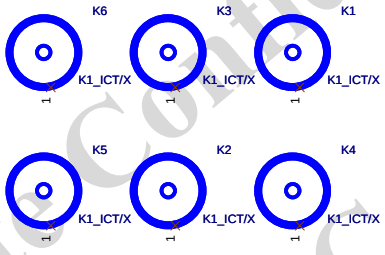
ATXX4 POWER CONNECTOR

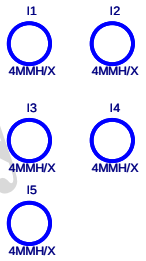


螺絲孔

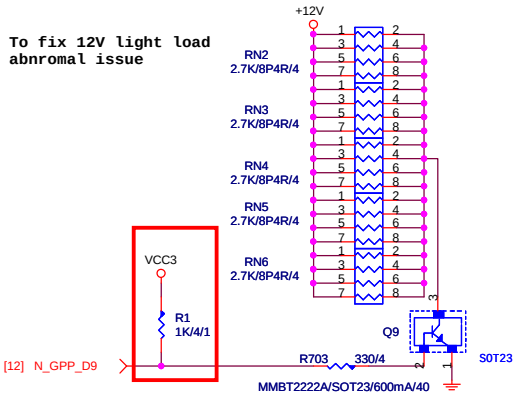


固定孔/光學點



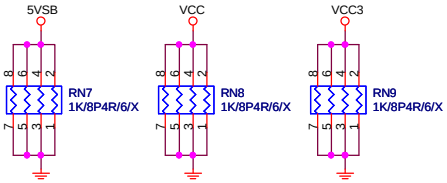


+12V DUMMY LOAD

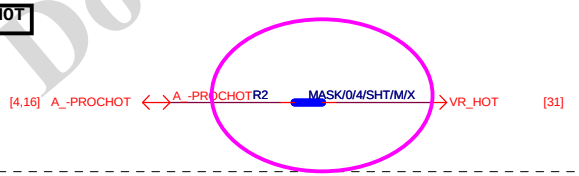


【技術通報R&D技術通報153】

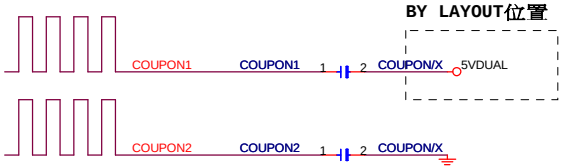
DUMMY LOAD



-PROHOT



COUPON



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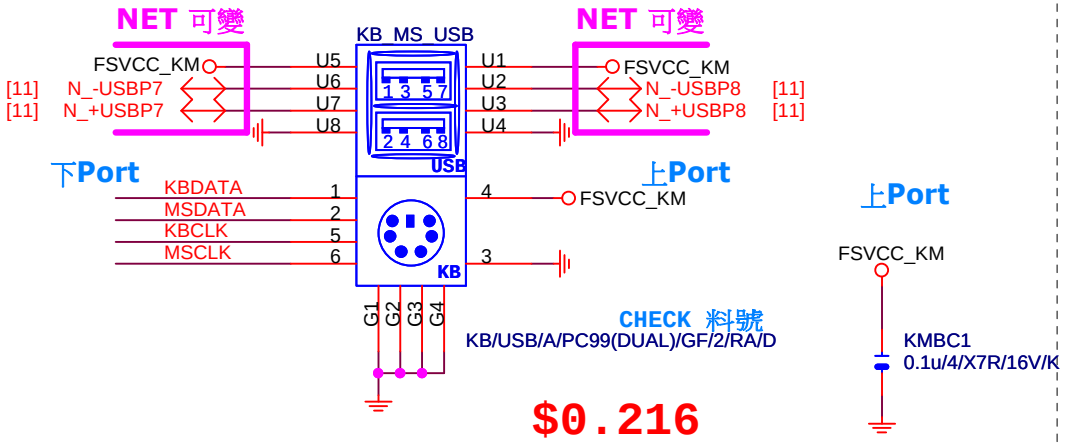
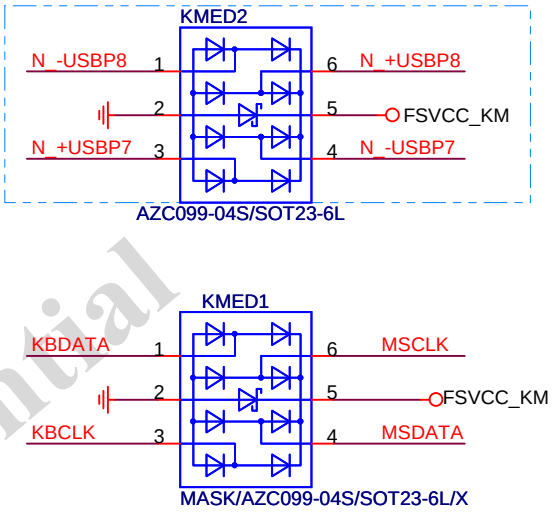
KB_MS_USB

Rev: 0.81

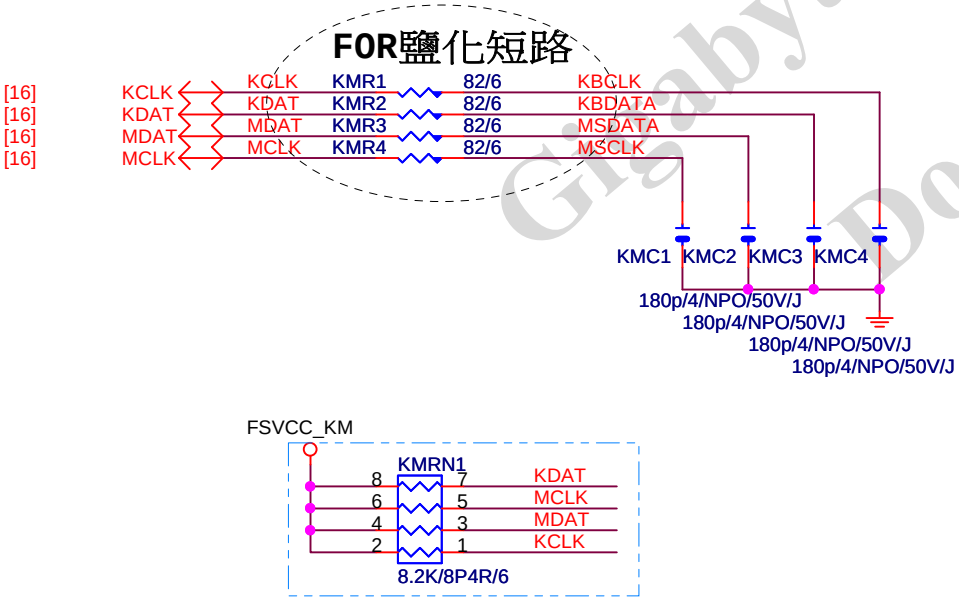
新connector : PS2(在上)+USB2.0*2(在下) 因為比較會與旁邊connector有干涉 且深度較長較佔空間
所以不使用
所有200 series 請下一版改回原本用料: PS2(在下)+USB2.0*2(在上)



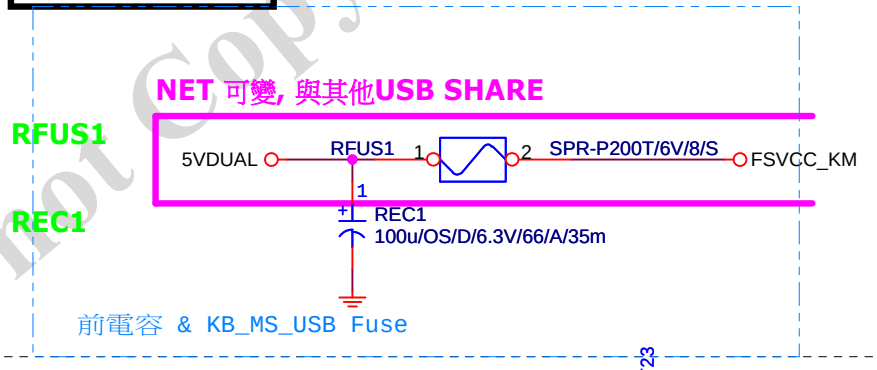
ESD



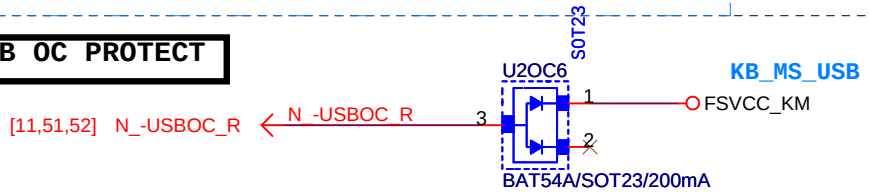
KB_MS_USB DAMPING/PU



KB_MS_USB PWR



USB OC PROTECT



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Do not Copy

Gigabyte Technology			
Title: KB_MS_USB			
Size: A	Document Number: GA-B250-HD3P		Rev: 1.0
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DVI

Rev: 0.8

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

NET 可變

[4] DVI_TXC
[4] DVI_TXC-
VBC1 0.1u/4/X7R/16V/K DVITXC+ VR1 680/4/1
VBC2 0.1u/4/X7R/16V/K DVITXC- VR2 680/4/1

[4] DVI_TX0
[4] DVI_TX0-
VBC3 0.1u/4/X7R/16V/K DVITX0+ VR3 680/4/1
VBC4 0.1u/4/X7R/16V/K DVITX0- VR4 680/4/1

[4] DVI_TX1
[4] DVI_TX1-
VBC5 0.1u/4/X7R/16V/K DVITX1+ VR7 680/4/1
VBC7 0.1u/4/X7R/16V/K DVITX1- VR8 680/4/1

[4] DVI_TX2
[4] DVI_TX2-
VBC8 0.1u/4/X7R/16V/K DVITX2+ VR9 680/4/1
VBC9 0.1u/4/X7R/16V/K DVITX2- VR10 680/4/1

DVI_G

VQ1
2N7002/SOT23/25pF/5
SOT23

VCC VR16 8.2K/4 VQ1_2

DVI_SCL

VQ2
2N7002/SOT23/25pF/5
SOT23

VCC VR17 1K/4/1 VQ2_2 N_DDPC_CTRLCLK

DVI_SDA

VQ3
2N7002/SOT23/25pF/5
SOT23

VCC VR18 1K/4/1 VQ3_2 N_DDPC_CTRLDATA

DVI PU

VCC

防漏電 ★Update 2015.05.27

VD1
BAT54A/SOT23/200mA
SOT23

VR14 2.2K/4/1
VR13 2.2K/4/1

DVI_SDA
DVI_SCL

[10] N_DDPC_CTRLCLK
[10] N_DDPC_CTRLDATA
VR5 2.2K/4/1
VR6 2.2K/4/1
VCC3

VBC6
0.1u/4/X7R/16V/K/X

DVI_HP

VQ4
2N7002/SOT23/25pF/5
SOT23

VCC3
VR20 1M/4
VCC VR19 8.2K/4 VQ4_2 N_DVI_HDP_F
N_DVI_HDP_F [10]

DVI CONN

NET 可變

FSVCC_KM

DVITX0-
DVITX0+
DVITX1-
DVITX1+
DVITX2-
DVITX2+
DVI_SCL
DVI_SDA
DVITXC-
DVITXC+
DVI_HP

VR15 20K/4/1

M1 M2 M5 M6 M7 M8

DVI
COMMON
DVI-30P-4P-1

DVI-D/24P/SC/RA/D/SH

平躺式 DVI-D

11NR6-501024-31

ESD

NET 可變

FSVCC_KM

VBC10
0.1u/4/X7R/16V/K

Close to connector

VESD3
AZC099-04S/SOT23-6L

NET 可變

DVI_SCL
FSVCC_KM
DVI_HP
DVI_SDA

VESD2
AZ1045-04F/MSOP10

DVITX2-
DVITX2+
DVITX1+
DVITX1-

Close to connector

VESD1
AZ1045-04F/MSOP10

* swap

DVITX0+
DVITX0-
DVITXC+
DVITXC-

Close to connector

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Gigabyte Technology		
Title: DVI		
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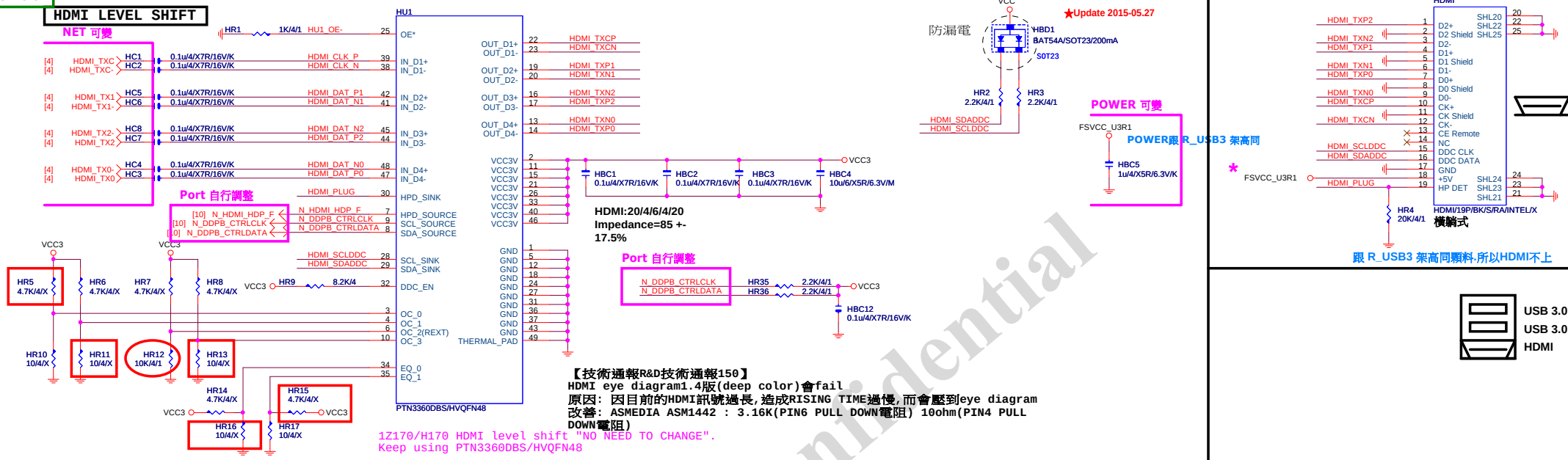
Rev: 0.82



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

1Z170/H170 HDMI level shift "NO NEED TO CHANGE".
Keep using PTN3360DBS/HVQFN48

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

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Gigabyte Technology			
Title: DP PORT			
Size: Custom	Document Number: GA-B250-HD3P		Rev: 1.0
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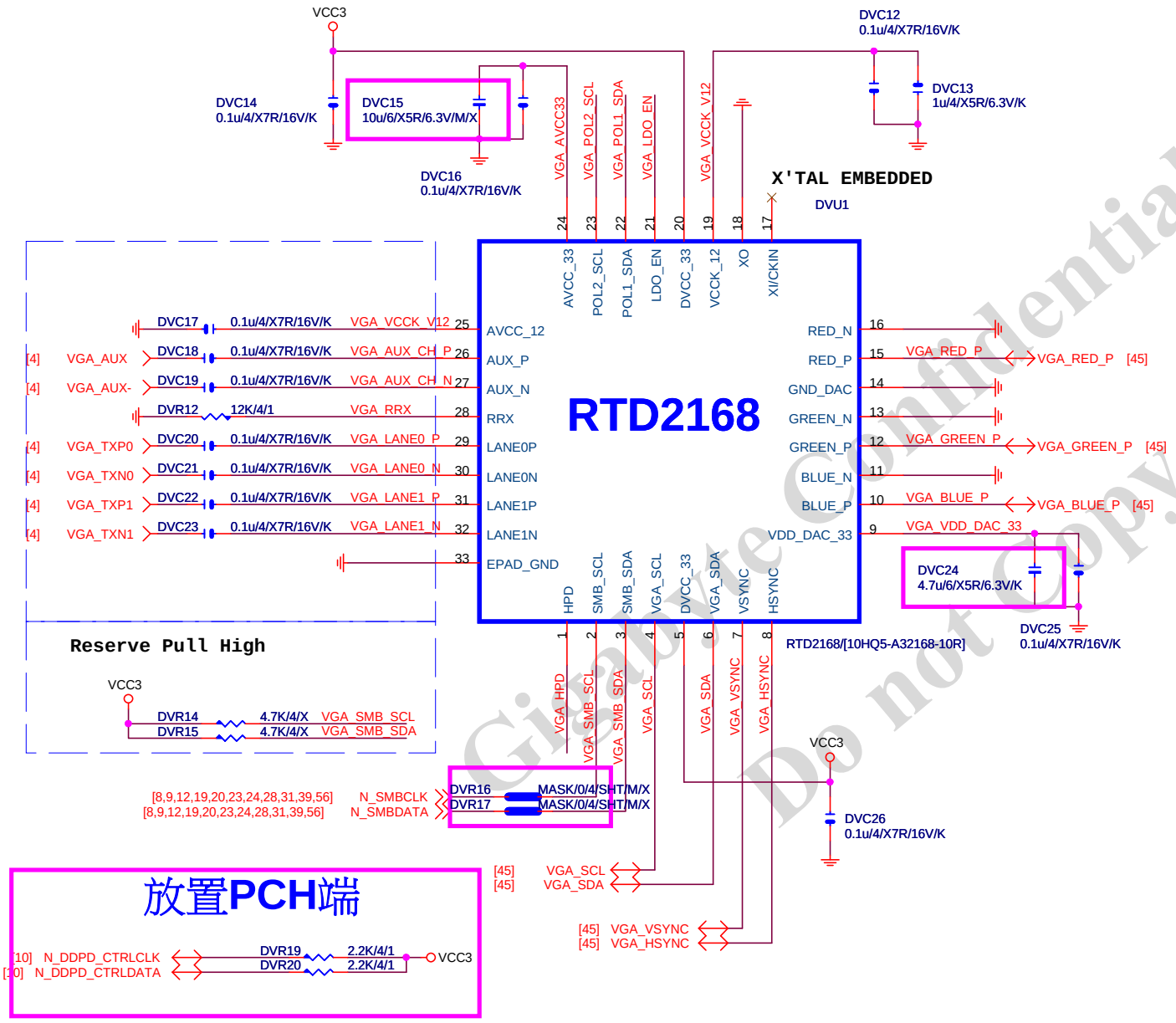
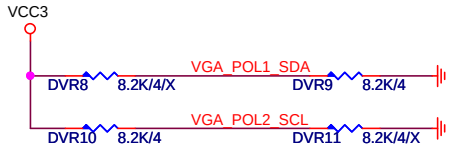
RTD2168 R1.03



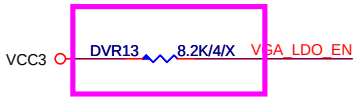
POWER

Power on latch



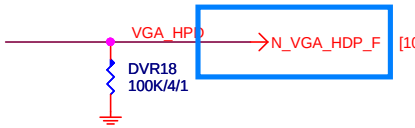
POL2_SCL (PIN23) \ POL1_SDA(PIN22)	0	1
0	X	EP MODE
1	**ROM ONLY MODE**	EEPROM MODE

Embedded LDO



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

DP HPD



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Size: Custom	Document Number: GA-B250-HD3P		Rev: 1.0
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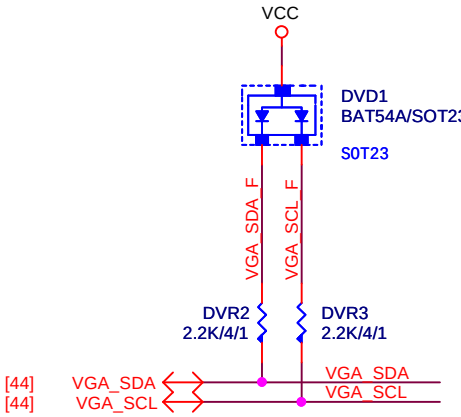
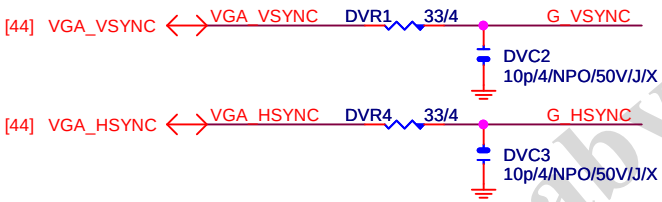
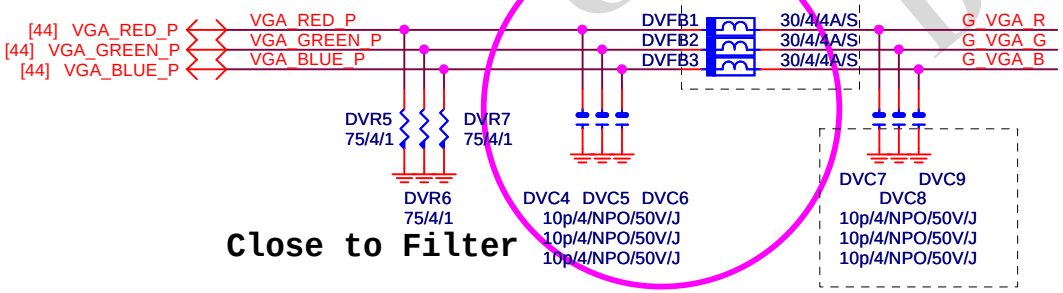
VGA SIGNAL R1.03



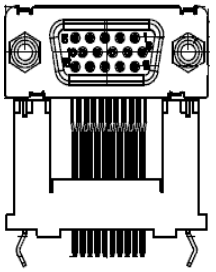


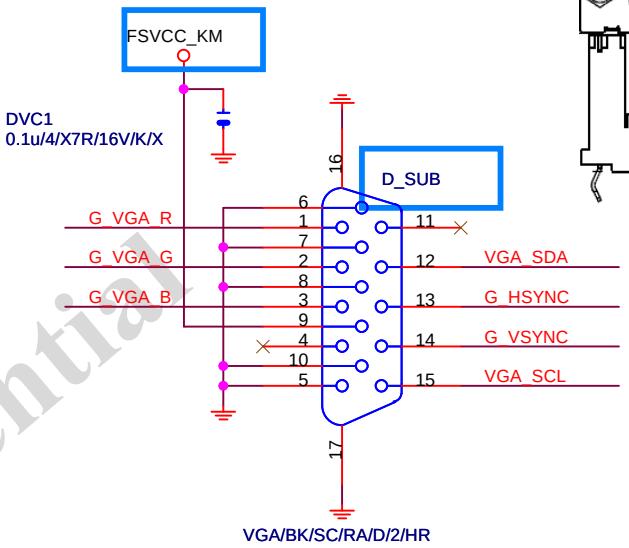


Close to Filter

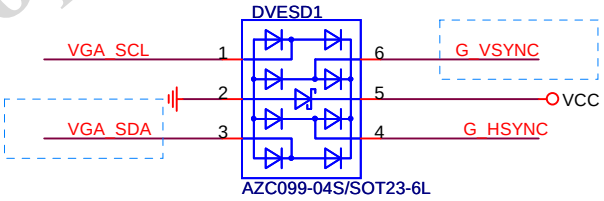
FOR EMI

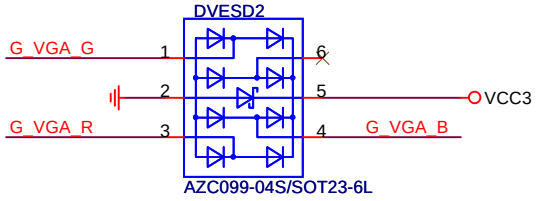
VGA CONN. 架高型VGA(BLACK)





VGA ESD





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Gigabyte Technology		
Title: DP-VGA RTD2168		
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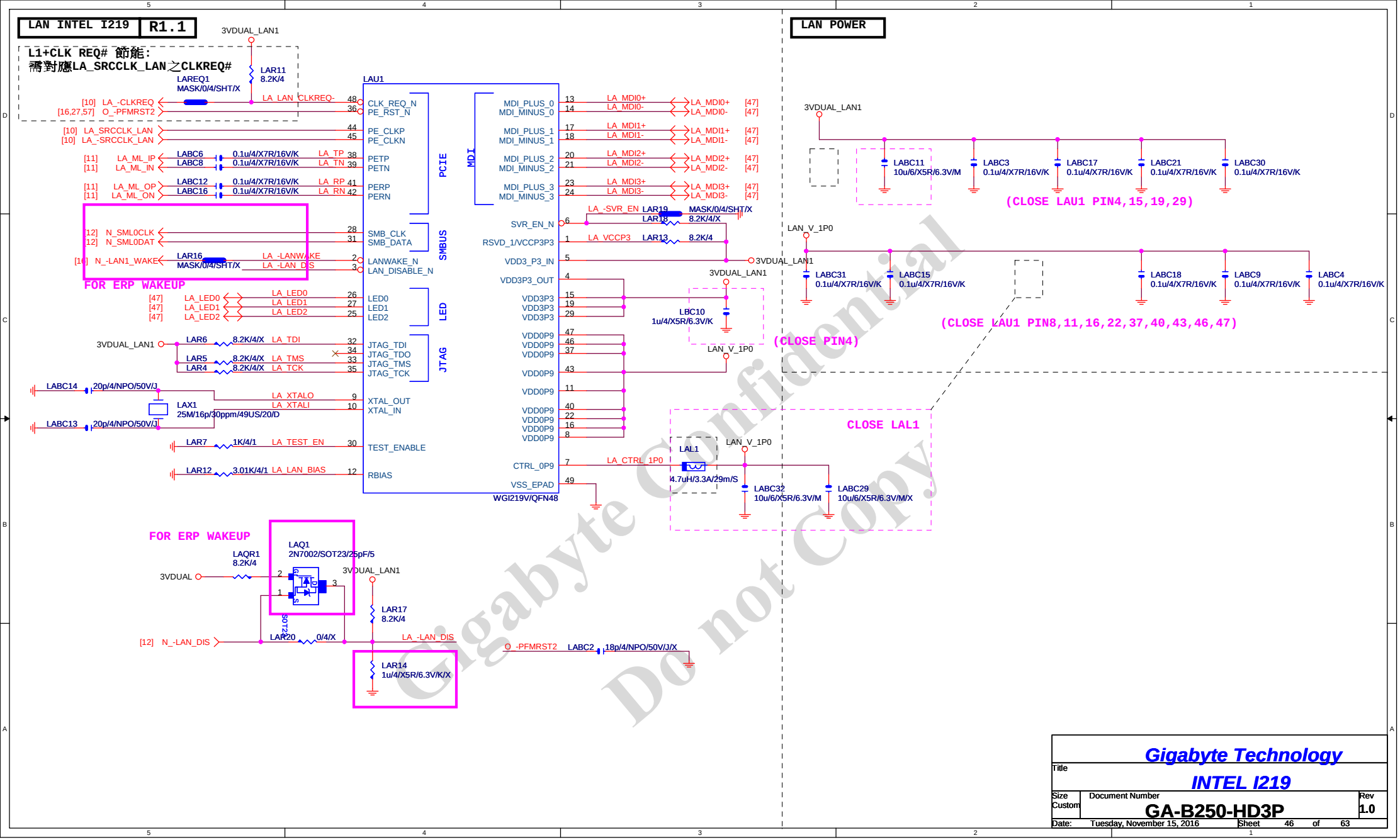
LAN INTEL I219 R1.1
L1+CLK REQ# 節能:
需對應LA_SRCCLK_LAN之CLKREQ#
3VDUAL_LAN1
LAR11 8.2K/4
LAREQ1 MASK/0/4/SHT/X
[10] LA_-CLKREQ
[16,27,57] O_-PFMRST2
LA_LAN_CLKREQ-
LAU1
CLK_REQ_N
PE_RST_N
PE_CLKP
PE_CLKN
PETP
PETN
PERP
PERN
PCIE
[10] LA_SRCCLK_LAN
[10] LA_-SRCCLK_LAN
[11] LA_ML_IP
[11] LA_ML_IN
[11] LA_ML_OP
[11] LA_ML_ON
LABC6 0.1u/4/X7R/16V/K
LABC8 0.1u/4/X7R/16V/K
LABC12 0.1u/4/X7R/16V/K
LABC16 0.1u/4/X7R/16V/K
LA_TP
LA_TN
LA_RP
LA_RN
FOR ERP WAKEUP
[12] N_SML0CLK
[12] N_SML0DAT
SMB_CLK
SMB_DATA
SMBUS
[10] N_-LAN1_WAKE
LAR16 MASK/0/4/SHT/X
LA_-LANWAKE
LA_-LAN_DIS
LANWAKE_N
LAN_DISABLE_N
[47] LA_LED0
[47] LA_LED1
[47] LA_LED2
LED0
LED1
LED2
LED
3VDUAL_LAN1
LAR6 8.2K/4/X LA_TDI
LAR5 8.2K/4/X LA_TMS
LAR4 8.2K/4/X LA_TCK
JTAG_TDI
JTAG_TDO
JTAG_TMS
JTAG_TCK
JTAG
LABC14 20p/4/NPO/50V/J
LABC13 20p/4/NPO/50V/J
LAX1 25M/16p/30ppm/49US/20/D
LA_XTALO
LA_XTALI
XTAL_OUT
XTAL_IN
LAR7 1K/4/1 LA_TEST_EN
TEST_ENABLE
LAR12 3.01K/4/1 LA_LAN_BIAS
RBIAS
WGI219V/QFN48
MDI_PLUS_0
MDI_MINUS_0
MDI_PLUS_1
MDI_MINUS_1
MDI_PLUS_2
MDI_MINUS_2
MDI_PLUS_3
MDI_MINUS_3
MDI
LA_MDI0+
LA_MDI0-
LA_MDI1+
LA_MDI1-
LA_MDI2+
LA_MDI2-
LA_MDI3+
LA_MDI3-
[47]
SVR_EN_N
RSVD_1/VCCP3P3
VDD3_P3_IN
VDD3P3_OUT
VDD3P3
VDD0P9
CTRL_0P9
VSS_EPAD
LA_-SVR_EN
LAR19 LAR18 MASK/0/4/SHT/X 8.2K/4/X
LA_VCCP3
LAR13 8.2K/4
3VDUAL_LAN1
LBC10 1u/4/X5R/6.3V/K
LAN_V_1P0
(CLOSE PIN4)
LA_CTRL_1P0
LAL1 4.7uH/3.3A/29m/S
LABC32 10u/6/X5R/6.3V/M
LABC29 10u/6/X5R/6.3V/M/X
CLOSE LAL1
FOR ERP WAKEUP
LAQR1 8.2K/4
LAQ1 2N7002/SOT23/25pF/5
3VDUAL
3VDUAL_LAN1
SOT23
LAR17 8.2K/4
[12] N_-LAN_DIS
LAR20 0/4/X
LA_-LAN_DIS
LAR14 1u/4/X5R/6.3V/K/X
O_-PFMRST2
LABC2 18p/4/NPO/50V/J/X
LAN POWER
3VDUAL_LAN1
LABC11 10u/6/X5R/6.3V/M
LABC3 0.1u/4/X7R/16V/K
LABC17 0.1u/4/X7R/16V/K
LABC21 0.1u/4/X7R/16V/K
LABC30 0.1u/4/X7R/16V/K
(CLOSE LAU1 PIN4,15,19,29)
LAN_V_1P0
LABC31 0.1u/4/X7R/16V/K
LABC15 0.1u/4/X7R/16V/K
LABC18 0.1u/4/X7R/16V/K
LABC9 0.1u/4/X7R/16V/K
LABC4 0.1u/4/X7R/16V/K
(CLOSE LAU1 PIN8,11,16,22,37,40,43,46,47)
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Gigabyte Technology
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INTEL I219
Size Custom
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USB_LAN CONNECTOR R1.1

RMA ESD PROTECT

note:可變更USB NAME

可變

N_-USBP6 1 6 N_+USBP6
2 5 FSVCC_U3R2
N_-USBP5 3 4 N_+USBP5

LAUESD1
AZC099-04S/SOT23-6L

USB_LAN CONNECTOR

note:可變更USB NAME

[I219]

LABC22
0.1u/4/X7R/16V/K
LA_CN_L1

USB30_LAN

[46] LA_MDI0+ L1 D1
[46] LA_MDI0- L2 D2
[46] LA_MDI1+ L3 D3
[46] LA_MDI1- L4 D4
[46] LA_MDI2+ L5 DT
[46] LA_MDI2- L6 DT
[46] LA_MDI3+ L7 VBUS
[46] LA_MDI3- L8 D-
L9 D+
LA_CN_L10 L10 GND
LABC25 MASK/0/4/SHT/X SSRX-
SSRX+
GND
SSTX-
SSTX+

USB3.0
USB3.0

FSVCC_U3R2
[11] N_-USBP5 U1 VBUS
[11] N_+USBP5 U2 D-
U3 D+
U4 GND
[11] PCH_USB3_RXN5 U5 SSRX-
[11] PCH_USB3_RXP5 U6 SSRX+
U7 GND
[11] PCH_USB3_TXN5 LAUAC1 PCH_USB3_TXN5C U8 SSTX-
[11] PCH_USB3_TXP5 LAUAC2 PCH_USB3_TXP5C U9 SSTX+

可變 可變

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

USB3+LAN1G/GO,Y/OS/RA/D/G30

P1
P2
U10 FSVCC_U3R2
U11 N_-USBP6 [11]
U12 N_+USBP6 [11]
U13
U14 PCH_USB3_RXN6 [11]
U15 PCH_USB3_RXP6 [11]
U16
U17 PCH_USB3_TXN6C LAUAC3 PCH_USB3_TXN6 [11]
U18 PCH_USB3_TXP6C LAUAC4 PCH_USB3_TXP6 [11]

可變 可變

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

3VDUAL_LAN1
LAFB2
MASK/0/4/SHT/X
LABC24
0.1u/4/X7R/16V/K/X

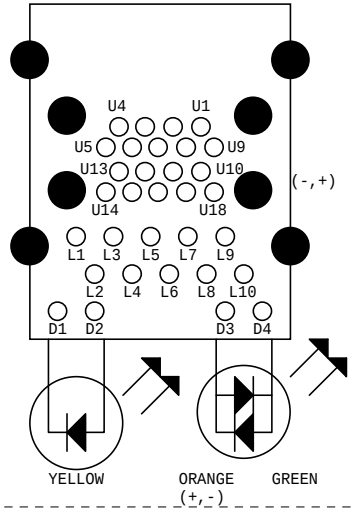
LAR8
MASK/0/4/SHT/X
LA_LED_ACT_TXRX LA_LED0 [46]
LA_D2 LAR10 330/4 LA_D2_1
LA_LED_LINK100 LAR9 330/4 LA_LED2 [46]
LA_LED_LINK1000 LAR3 LA_LED1 [46]

MASK/0/4/SHT/X LAUBC7 0.1u/4/X7R/16V/K

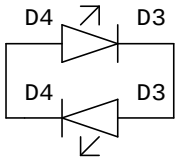
FSVCC_U3R2

LA_MDI-->100歐姆:[20/4/8/4/20]

USB30_LAN LAYOUT示意圖

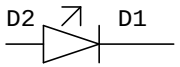


Dual Color LED



Green
Orange

Single Color LED



Yellow

PCH_USB3_TXP6C
PCH_USB3_TXN6C
PCH_USB3_TXP5C
PCH_USB3_TXN5C
PCH_USB3_RXN6
PCH_USB3_RXP6
PCH_USB3_RXP5
PCH_USB3_RXN5

NC NC GND NC NC
10 9 8 7 6
11
D1 D1 GND D2 D2
1 2 3 4 5

note:可變更USB NAME
可變

LAU3ESD1
AZ1045-04F/MSOP10

LAU3ESD2
AZ1045-04F/MSOP10

LAN_COVER

FOOT PRINT:LAN_COVER

USB_LAN_HS
LAN_HS/[11NH1-LNC001-11R]/X

LAN COVER

可變
[視SPEC需求]

USB POWER

note:可變更FUSE

可變
RFUS4
RFUS4
5VDUAL 1 2 FSVCC_U3R2
SPR-P260T/6V/8/S

Close to connector
FUSE-0805

EMI SHORT PAD

PS:視EMI需求

LAR24 MASK/0/4/SHT/X

LAN POWER

note: lan power連接及電流

可變
3VDUAL_LAN1 LAPW1 MASK/0/4/SHT/M/X 3VDUAL_PCH
LAPW2
0/4/X
3VDUAL

*
*

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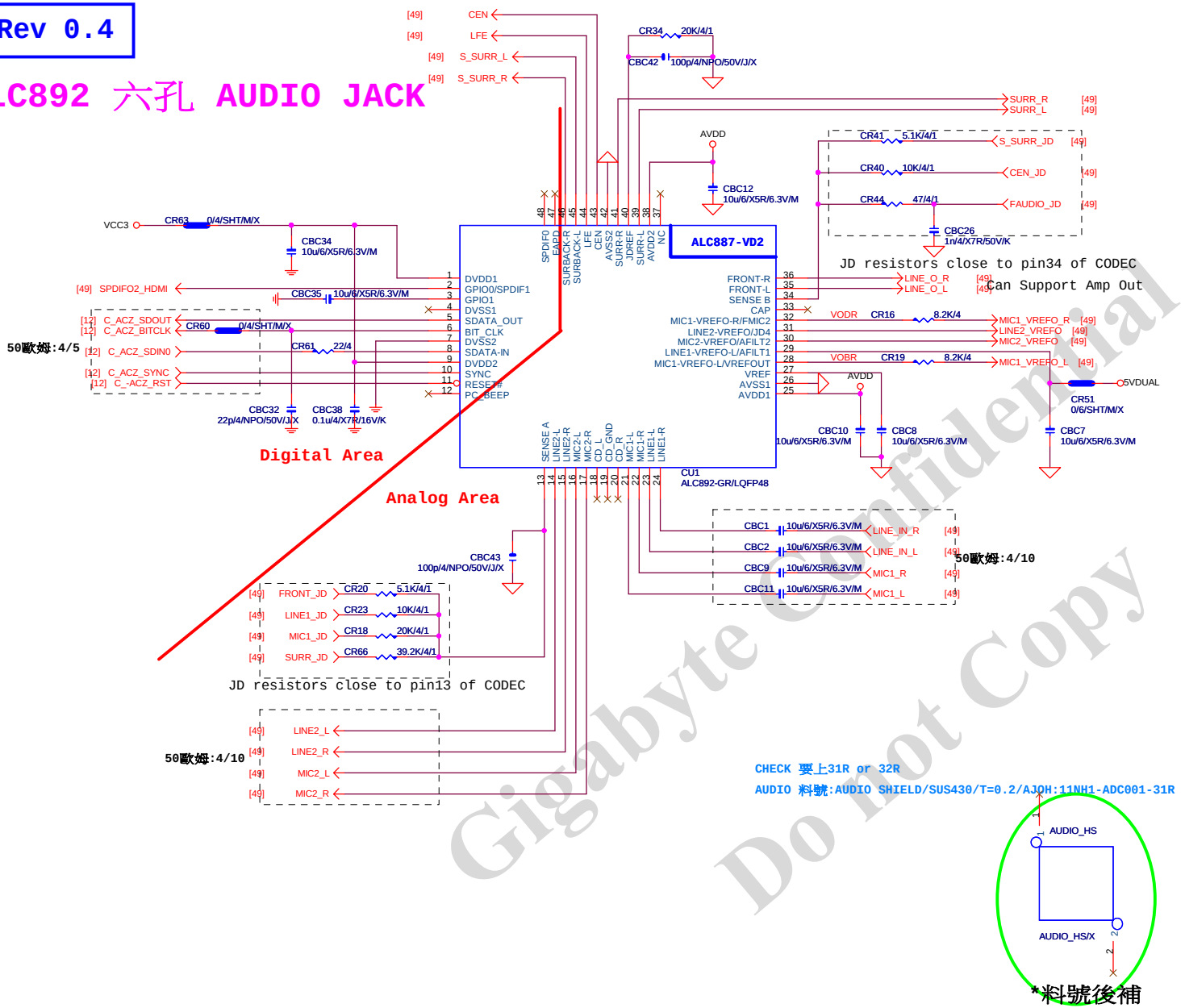
Rev 0.4

ALC892 六孔 AUDIO JACK



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

MH1	MH2
DGND	Isolate

LAYOUT注意:要加
GND切割線

音效區域印刷

Gigabyte Technology			
Title: HD AUDIO ALC892			
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Rev 0.4

CR49 MASK/0/6/SHT/M/X → Close F_AUDIO

CR50 MASK/0/6/SHT/M/X, MOATC1, 0.1u/6/X7R/16V/K/X → Close Codec

CR21 2.2/6 → Audio jack <--> USB_LAN

CR24 0/6/X → Under Audio jack

*量產前,0ohm改short pad

SPDIF_OUT

[48] SPDIFO2_HDMI — CR26 0/4/SHT/M/X — SPDIF_O

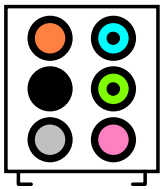
CBC14 100p/4/NPO/50V/J

PH/1*2/BK/2.54/VA/D

For HDMI SPDIF

SPDIF_IN

AZALIA JACK



AUDIOB

[48] LINE1_JD — LINE1_JD, AJ_A5, AJ_A2 — A3, A2, A4, A1 — GND — LINE-IN

[48] FRONT_JD — FRONT_JD, AJ_B5, AJ_B2 — B3, B2, B4, B1 — GND — LINE-OUT

[48] MIC1_JD — MIC1_JD, AJ_C5, AJ_C2 — C3, C2, C4, C1, C0 — GND — MIC-IN

2X3RP/26P/OR,BK,GY,BU,GE,PK/RA

AZALIA JACK

BLUE — LINE-IN

GREEN — LINE-OUT

PINK — MIC-IN

AUDIOA

[48] CEN_JD — CEN_JD, BJ_B5, BJ_B2 — D3, D2, D4, D1 — GND — REAR

[48] SURR_JD — SURR_JD, BJ_C5, BJ_C2 — E3, E2, E4, E1 — GND — CEN

[48] S_SURR_JD — S_SURR_JD, BJ_A5, BJ_A2 — F3, F2, F4, F1, F0 — GND — SIDE

G4 — G1, G2, G3

2X3RP/26P/OR,BK,GY,BU,GE,PK/RA

Orange — CEN/LFE

Black — SURROUND

Gray — SURROUND SIDE

LINE-OUT

CEC1 100uF/D/10V/6*5/[11CE2-651000-05R]

[48] LINE_O_R — CR5 62/4 — CR7 22K/4 — AJ_B5

CEC2 100uF/D/10V/6*5/[11CE2-651000-05R]

[48] LINE_O_L — CR8 62/4 — CR6 22K/4 — AJ_B2

CBC19 180p/4/NPO/50V/J — CBC24 180p/4/NPO/50V/J

LINE-IN

[48] LINE_IN_R — CR1 62/4 — AJ_A5

[48] LINE_IN_L — CR14 62/4 — AJ_A2

CBC20 180p/4/NPO/50V/J — CBC23 180p/4/NPO/50V/J

MIC-IN

[48] MIC1_R — CR17 62/4 — AJ_C5

[48] MIC1_L — CR22 62/4 — AJ_C2

[48] MIC1_VREFO_L

[48] MIC1_VREFO_R

CBC3 180p/4/NPO/50V/J — CBC4 180p/4/NPO/50V/J

SURROUND

CEC10 100uF/D/10V/6*5/[11CE2-651000-05R]

[48] SURR_R — CR73 62/4 — CR67 22K/4 — BJ_C5

CEC11 100uF/D/10V/6*5/[11CE2-651000-05R]

[48] SURR_L — CR74 62/4 — CR68 22K/4 — BJ_C2

CBC44 180p/4/NPO/50V/J — CBC45 180p/4/NPO/50V/J

CEN/LFE

[48] LFE — CBC13 10u/8/X5R/16V/K/[10CM2-011005-54R] — CR75 62/4 — CR69 22K/4 — BJ_B5

[48] CEN — CBC15 10u/8/X5R/16V/K/[10CM2-011005-54R] — CR76 62/4 — CR70 22K/4 — BJ_B2

CBC46 180p/4/NPO/50V/J — CBC47 180p/4/NPO/50V/J

★Update 2015-04-10

CBC13/15/16/17 10u/6 --> 10u/8

For THD+N Low frequeney

SURR BACK

EMI

[48] S_SURR_R — CBC16 10u/8/X5R/16V/K/[10CM2-011005-54R] — CR25 62/4 — CR43 22K/4 — BJ_A5

[48] S_SURR_L — CBC17 10u/8/X5R/16V/K/[10CM2-011005-54R] — CR47 62/4 — CR27 22K/4 — BJ_A2

CBC33 180p/4/NPO/50V/J — CBC31 180p/4/NPO/50V/J

AZALIA FRONT PANEL

CQ4 BAT54A/SOT23/200mA — [48] LINE2_VREFO

CQ2 BAT54A/SOT23/200mA — [48] MIC2_VREFO

SOT23 — CRN1 8.2K/8P4R/4

F_AUDIO_H

VCC3

CR58 22K/4 — CR54 22K/4 — CR78 8.2K/4/X

F_AUDIO

[48] MIC2_L — CBC6 10u/6/X5R/6.3V/M — CR13 62/4 — M2_L

[48] MIC2_R — CBC5 10u/6/X5R/6.3V/M — CR11 62/4 — M2_R

L2_R — CR57 62/4 — L2-R — CR55 20K/4/1

[48] FAUDIO_JD

L2_L — CR53 62/4 — L2-L — CR59 39.2K/4/1

BH/2*5K8/BK/2.54/VA/AUDIO/PRT/TUR180

100uF/D/10V/6*5/[11CE2-651000-05R]

[48] LINE2_R — CEC9 — L2_R

[48] LINE2_L — CEC6 — L2_L

100uF/D/10V/6*5/[11CE2-651000-05R]

CBC30 180p/4/NPO/50V/J — CBC29 180p/4/NPO/50V/J — CBC37 180p/4/NPO/50V/J — CBC36 180p/4/NPO/50V/J

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Gigabyte Technology		
Title: AUDIO JACK		
Size: Custom	Document Number: GA-B250-HD3P	Rev: 1.0
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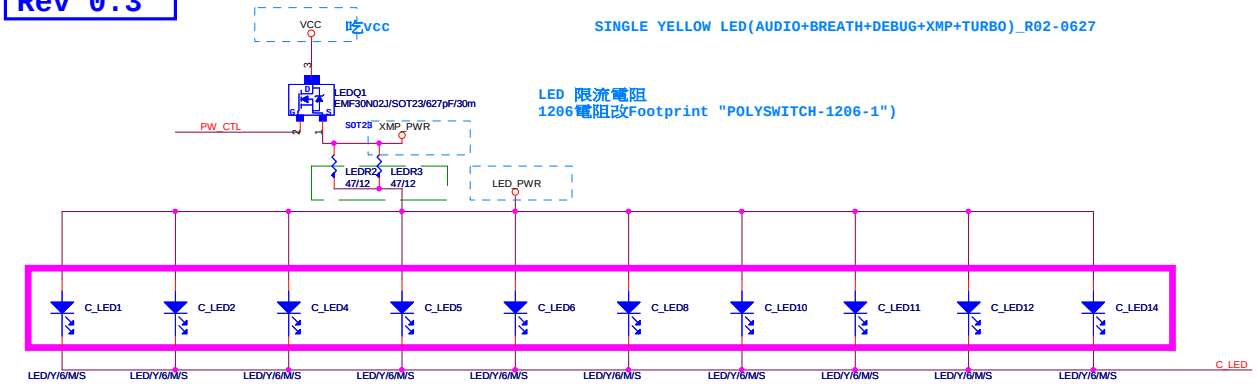
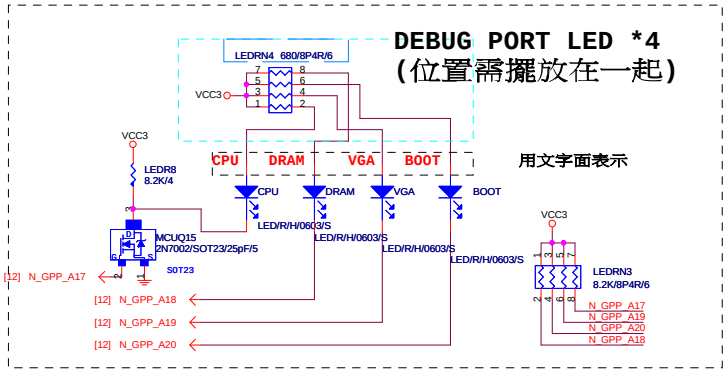
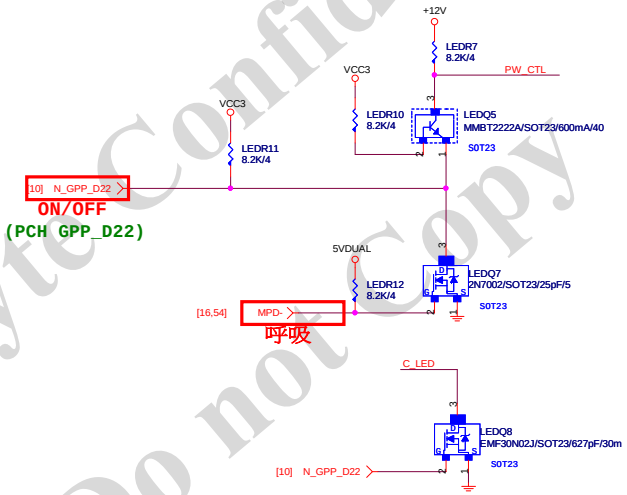
Rev 0.3

SINGLE YELLOW LED(AUDIO+BREATH+DEBUG+XMP+TURBO)_R02-0627

LED 限流電阻
1206電阻改Footprint "POLYSWITCH-1206-1")

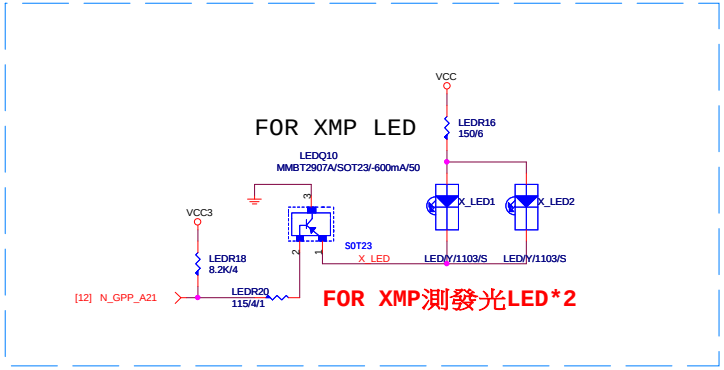


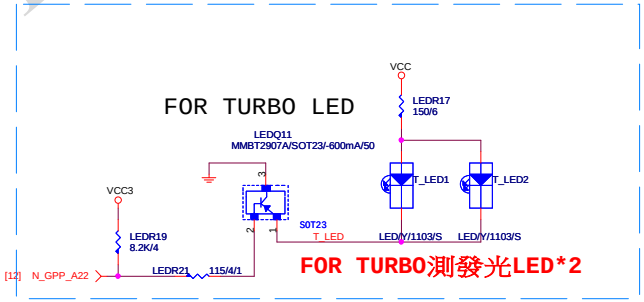




Ambient LED Control

	N_GPP_D22	IO_GP91
Still Mode	H	L
OFF Mode	L	L
Pluse Mode	H	BREATH





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GIGABYTE

Title	Amient Single LED	
Size: Custom	Document Number: GA-B250-HD3P	Rev: 1.0
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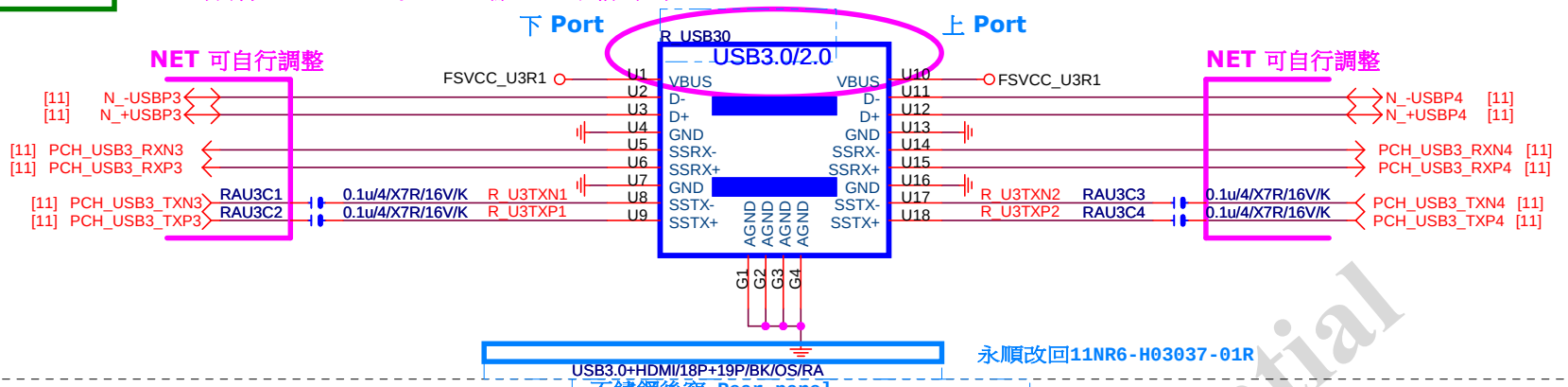
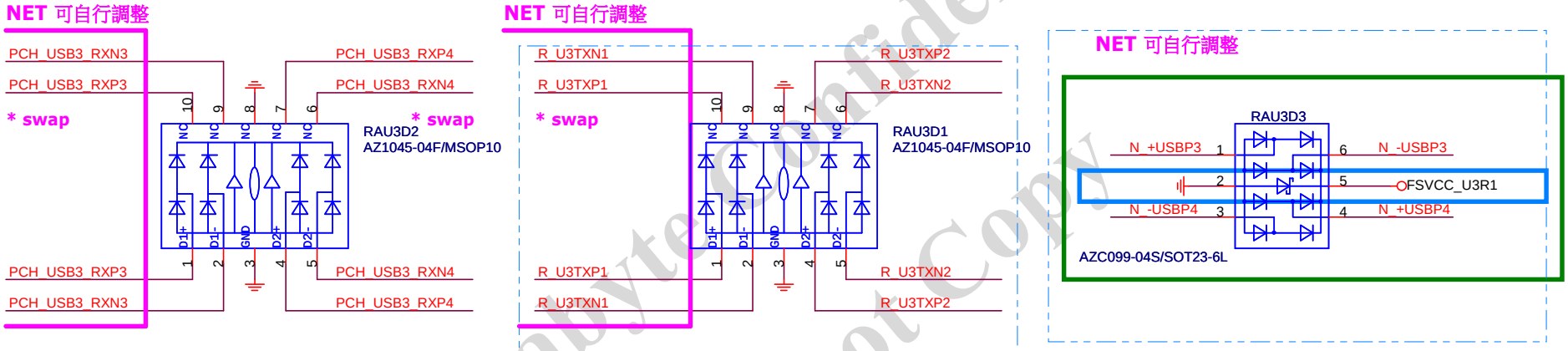
Rev: 0.7

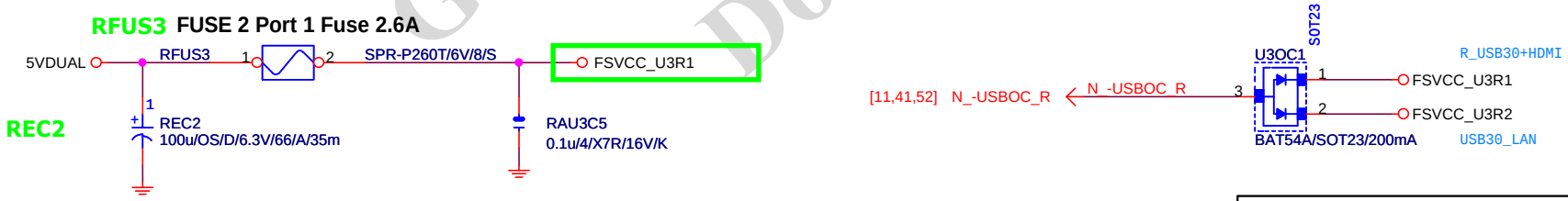
ESD 可自行SWAP PIN ,CONN端 NET 名稱 不可



ESD



FUSE



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Gigabyte Technology			
Title: R_USB30,USB_OC			
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Rev: 0.7

Front USB3.0

NET 自行調整

F_USB30 REV=1

FSVCC_U3F1 → VBUS (1)
ID (10)
[11] PCH_USB3_RXN1 → SSRX1- (2)
[11] PCH_USB3_RXP1 → SSRX1+ (3)
[11] PCH_USB3_TXN1 → FAU3C1 0.1u/4/X7R/16V/K FU30_TXN1 → SSTX1- (5)
[11] PCH_USB3_TXP1 → FAU3C2 0.1u/4/X7R/16V/K FU30_TXP1 → SSTX1+ (6)
[11] N_-USBP1 → D1- (8)
[11] N_+USBP1 → D1+ (9)
GND (7, 4)

VBUS (19) ← FSVCC_U3F1
FU30_TXN2 → FAU3C3 0.1u/4/X7R/16V/K → SSTX2- (15)
FU30_TXP2 → FAU3C4 0.1u/4/X7R/16V/K → SSTX2+ (14)
SSRX2- (18)
SSRX2+ (17)
D2- (12)
D2+ (11)
GND (16, 13)

BH/2*10K20/BK/ON/2.0/V/AUSB3.0/PRT

NET 可自行調整

0.1u/4/X7R/16V/K PCH_USB3_TXN2 [11]
0.1u/4/X7R/16V/K PCH_USB3_TXP2 [11]
PCH_USB3_RXN2 [11]
PCH_USB3_RXP2 [11]
N_-USBP2 [11]
N_+USBP2 [11]

NET 可自行調整

PCH_USB3_RXP1
PCH_USB3_RXN1
PCH_USB3_RXN2
PCH_USB3_RXP2

FAU3D1 AZ1045-04F/MSOP10

FAU3D3 AZC099-04S/SOT23-6L

N_-USBP1 ↔ N_+USBP1
3VDUAL
N_+USBP2 ↔ N_-USBP2

CLOSE F_USB30

F_USB30 PWR

5VDUAL → FAU3F1 → SPR-P260T/6V/8/S → FSVCC_U3F1
FAU3EC1 100u/OS/D/6.3V/66/A/35m
FAU3C5 0.1u/4/X7R/16V/K

NET 可自行調整

[11,53] N_-USBOC_F → U3OC3 (SOT23) → FSVCC_U3F1
BAT54A/SOT23/200mA

FU30_TXP1
FU30_TXN1
FU30_TXN2
FU30_TXP2

FAU3D2 AZ1045-04F/MSOP10

CLOSE F_USB30

-USBOC_F

POWER 可自行調整

5VDUAL → UAR1 8.2K/4 → N_-USBOC_F → N_-USBOC_F [11,53]
UAR2 15K/4/1

-USBOC_R

POWER 可自行調整

5VDUAL → UBR1 8.2K/4 → N_-USBOC_R → N_-USBOC_R [11,41,51]
UBR2 15K/4/1

* 接 PCH N_GPP_G6(SMI) & PCH PU 3Vdual

[13] N_GPP_G6 → UAD5 (SOT23)
N_-USBOC_F → N_-USBOC_F [11,53]
N_-USBOC_R → N_-USBOC_R [11,41,51]
BAT54A/SOT23/200mA

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Gigabyte Technology		
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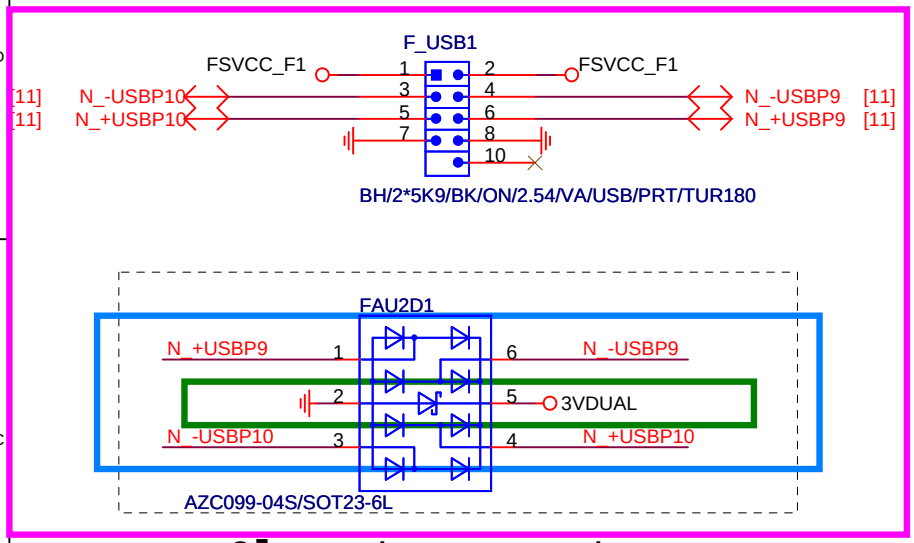
Rev: 0.7

FRONT USB1

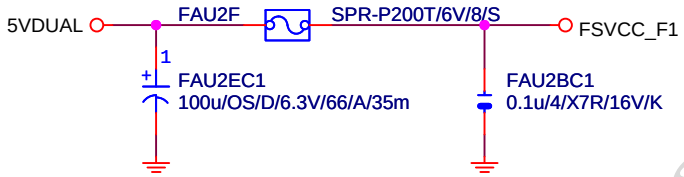
NET 可變

FUSB2X5-HS



Close to connector

FUSE 2 Port 1 Fuse 2A

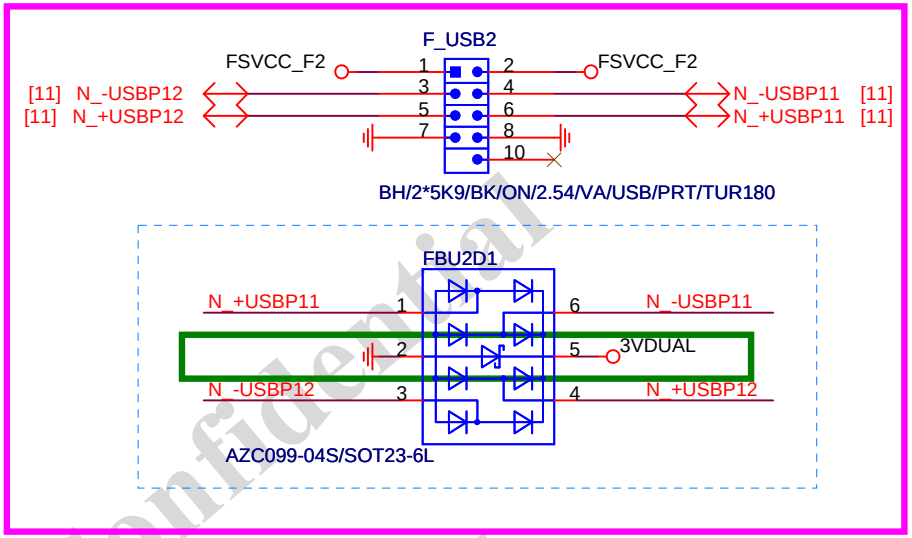


F_USB 2.0 OC SIGNAL

FRONT USB2

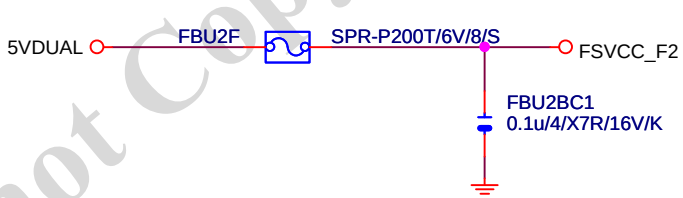
NET 可變

FUSB2X5-HS

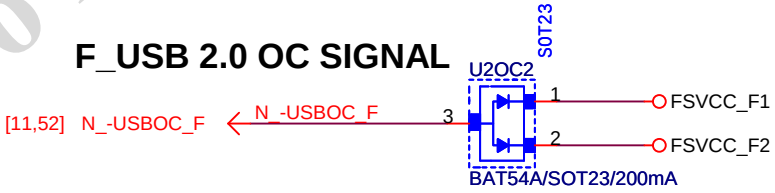


Close to connector

FUSE 2 Port 1 Fuse 2A



F_USB 2.0 OC SIGNAL



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Gigabyte Technology		
Title: USB2.0		
Size: A	Document Number: GA-B250-HD3P	Rev: 1.0
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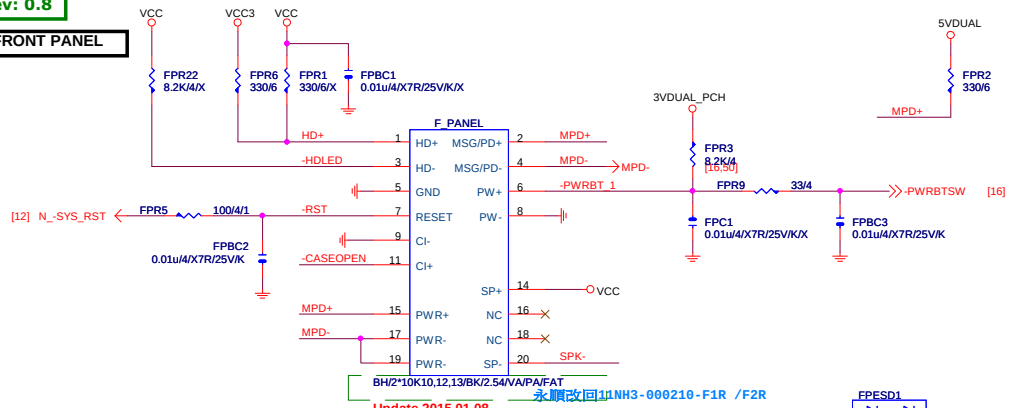
Rev: 0.8

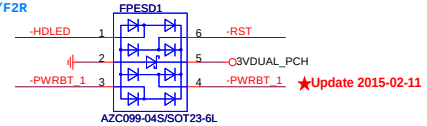
FRONT PANEL

★Update 2016.06.15



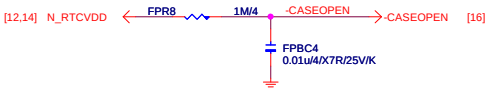
永順改回11NH3-000210-F1R /F2R

Update 2015.01.08
Footprint=F_PANEL-100

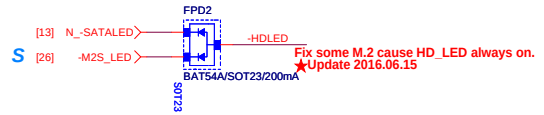


★Update 2015-02-11

CASE OPEN

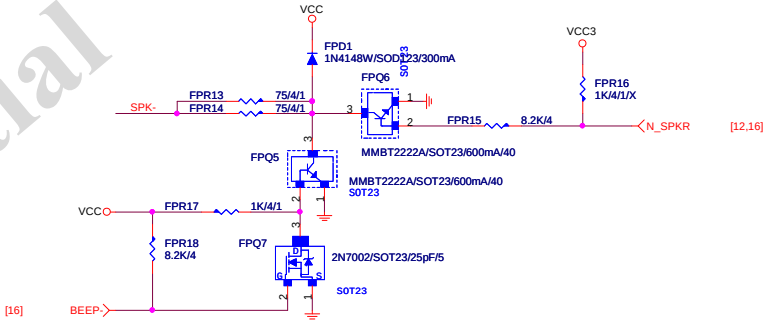


SATA/M.2 LED



Fix some M.2 cause HD_LED always on.
★Update 2016.06.15

SPKR



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

FRONT PANEL SHORT

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Gigabyte Technology		
Title: FRONT PANEL		
Size: Custom	Document Number: GA-B250-HD3P	Rev: 1.0
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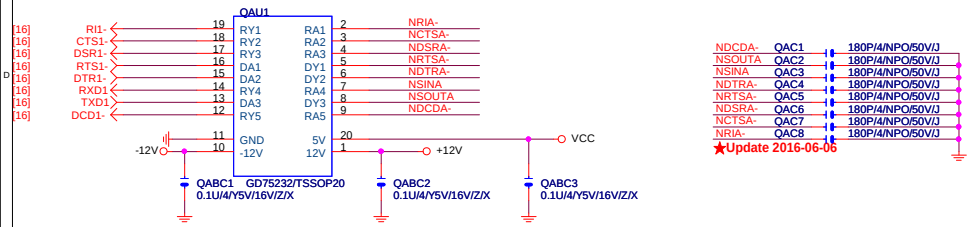
COM PORT

Rev: 0.81

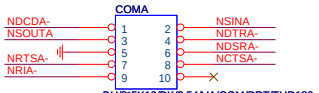


★Update 2016-06-06

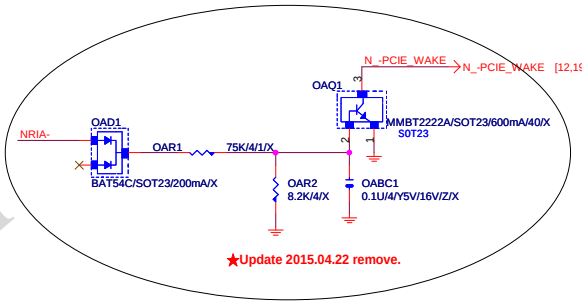
COM RI

N/A

COMA

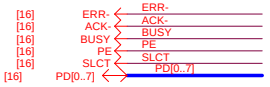


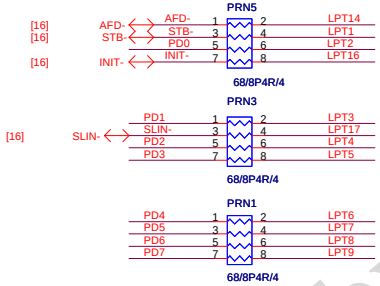
* footprint : F_COM-HS
* capacture value :
BH/2*5K10/BK/2.54/VA/COM/PRT/TUR180

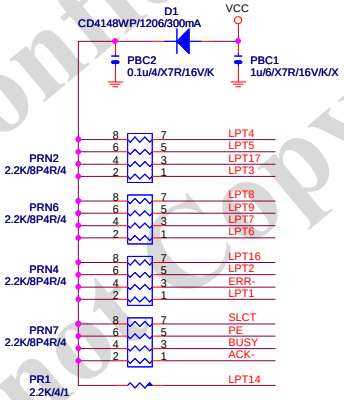


★Update 2015.04.22 remove.

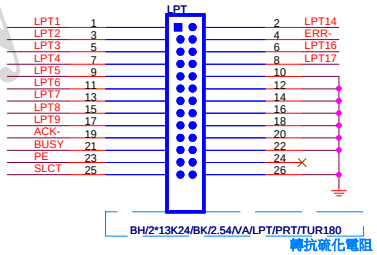
LPT PORT



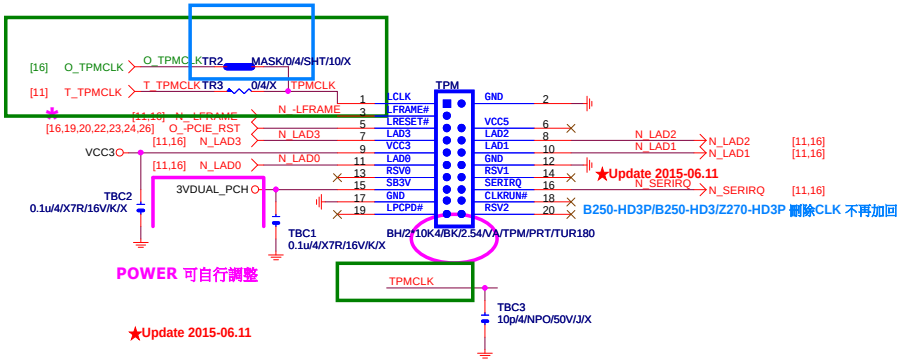




R&D技術通報151　有使用PRINT PORT的
MODEL，需使用新料號:10HP2-118728-72R 。(CHIP IT8728F/EX (GB) ITE/SMD
QFP128 PRINTPORT SORTING)料件。 串電阻33 ohm改為68 ohm。



TPM CONNECT



POWER 可自行調整

★Update 2015-06.11

★Update 2015-06.11

B250-HD3P/B250-HD3/Z270-HD3P 刪除CLK 不再加回

Thunderbolt

★Update 2015-12-29

Thunderbolt 3 pin header移除

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Gigabyte Technology		
Title: FP,F_USB,USB PWR,BZ		
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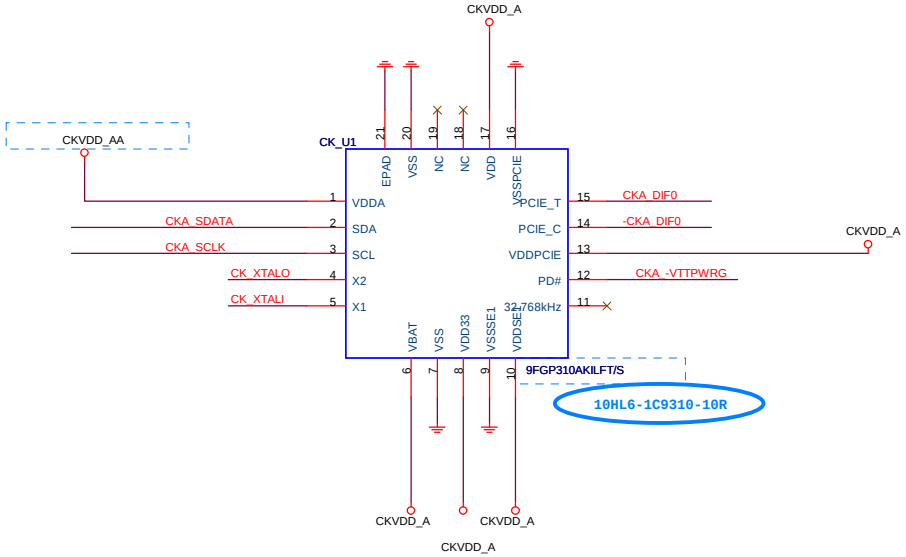
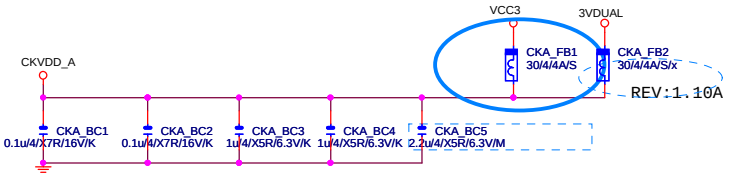
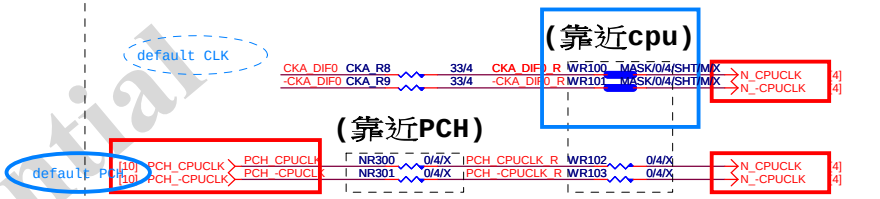
Date: Tuesday, November 15, 2016	Sheet 55 of 63	

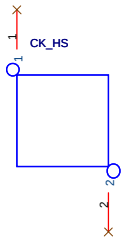
REV:0.5

IDT9FGP310

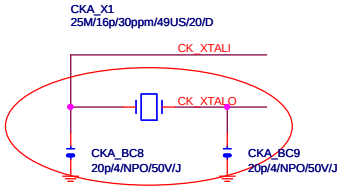


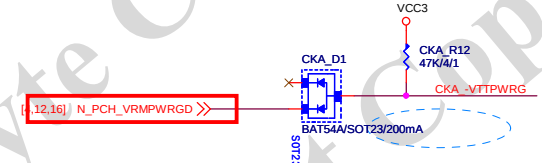




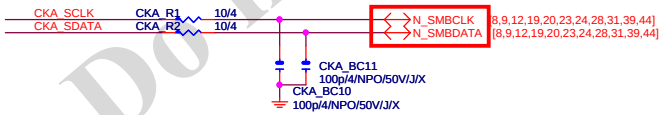


*可變，依需求上件不上件。

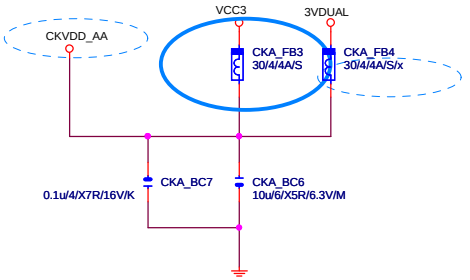




SMBUS



REV0.2
1.Add CKA_FB3、CKA_FB4、CKA_BC6、CKA_BC7
2.Change CK_U1 PIN1 to CKVDD_AA
3.Change CKA_BC5 to 2.2u/4/X5R/6.3V/M
4.Change CK_U1 Capture Value to 9FGP320AKILFT/VFQFPN20



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Title	9FGP320AKILFT CLK BUFFER	
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ASM2142 USB3 Host Rev0.1
PCIE Gen3 X2

Color markers can be changed by model

ASM2142 USB3.1

Base on ASM2142 0.1 Reference SCH

Change to 0402

PCH PCIe* Controller Lane Reversal / base on spec

To PCIE host.

不做Reverse

[11] PCH_PCIE_IP5 — 0.22U/4/X7R/16V/K — SSAC1 — PCIE_IP1C
[11] PCH_PCIE_IN5 — 0.22U/4/X7R/16V/K — SSAC2 — PCIE_IN1C
[11] PCH_PCIE_IP6 — 0.22U/4/X7R/16V/K — SSAC4 — PCIE_IP2C
[11] PCH_PCIE_IN6 — 0.22U/4/X7R/16V/K — SSAC3 — PCIE_IN2C
[11] PCH_PCIE_OP5 — 0.22U/4/X7R/16V/K — SSAC8 — PCIE_OP1C
[11] PCH_PCIE_ON5 — 0.22U/4/X7R/16V/K — SSAC14 — PCIE_ON1C
[11] PCH_PCIE_OP6 — 0.22U/4/X7R/16V/K — SSAC15 — PCIE_OP2C
[11] PCH_PCIE_ON6 — 0.22U/4/X7R/16V/K — SSAC16 — PCIE_ON2C

From PCIE host.

SSAB30_0/4/SHT/X — SSA120V
SSAC20 4.7U/6/X5R/6.3V/K

SSAU1 — ASM2142/QFN64

-SRCCLK_USB31A [10] — From PCIE CLK

SSAB31_0/4/SHT/X — SSA120V
SSAC27 4.7U/6/X5R/6.3V/K

To USB Conn

OCIA1A=>接:USB3.1
OCIA1B=>接:TypeC

To OC circuit

Close to ASM1142 IC
SSAD1 1N4148W/SOD123/300mA
SSAR11 100K/4/1
SSAC5 1u/4/X5R/6.3V/K

SSA_SMI- [10] N_GPP_D3
SPI_DO=>CSEL0
SSA_SPICK
SSA_SPIDO
SSA_SPICS-
SSA_SPIDI
SSA_PORST-
SSA_UARTRX
SSA_UARTTX
UART_RX=>CSEL1

SS20A_DM2 [59]
SS20A_DP2 [59]
VCCSUS_VCCLU
SS20A_DM1 [60]
SS20A_DP1 [60]
3VDUAL

SSATST_EN SSAR5 4.7K/4/1
PCIE_RST- — O_-PFMRST2 [16,27,46]
OCIA1B — OCIA1B [59]
OCIA1A — OCIA1A [60]
SSA_PPCB SSAR15 8.2K/4/1/X
SSA_PPCA SSAR16 8.2K/4/1/X
N_-PCIE_WAKE [12,19,20,23,24,27,28,55]

Pin 1/12/33 — SSAC30 SSAC31 SSAC32 — 0.1u/4/X7R/16V/K
Pin 21/34 — SSAC33 SSAC34 — 0.1u/4/X7R/16V/K
Pin 4/32 — SSAC35 SSAC36 — 0.1u/4/X7R/16V/K
Pin 24/20 — SSAC37 — 0.1u/4/X7R/16V/K
VCCSUS_VCCLU — SSAC38 — 0.1u/4/X7R/16V/K

Pin 35/47/52 — SSAC40 SSAC41 SSAC42 — 2.2u/4/X5R/6.3V/M
Pin 38/44/55/62 — SSAC43 SSAC44 SSAC45 SSAC46 — 2.2u/4/X5R/6.3V/M

SSAX1 — SSAC19 12P/4/NPO/50V/J — 20M/16p/30ppm/49US/20/D/[11XH5-820000-10R]

ASM 2142 Option

VCC25V — SSAR34 0/4
3VDUAL — SSAR33 0/4/X — VCCSUS_VCCLU
VCC25V — SSAR38 0/4
VCC3 — SSAR37 0/4/X — VSSA

ASM2142 SSAR34,SSAR38

3VDUAL — SSAQ1 AP7365-WG-7/SOT23-5/600mA
R1 SSAR22 316/4/1
R2 SSAR23 1K/4/1
SSAC25 22P/4/NPO/50V/J
SSAC26 10U/6/X5R/6.3V/M
SSAC24 2.2u/4/X5R/6.3V/M
Vout=0.8*(R1+R2)/R2

ASM2142 SSAR22=316,1.05V,50mA

ASM2142 SSAR28=31.6K,1.05V,800mA

VCC3 — SSAR25 8.2K/4 — SSAU3_EN
SSAR35 8.2K/4/X — SSAC7 1u/4/X5R/6.3V/K

SSAU3 — RT9018B-18GSP/SO8/3A/[10GL2-309018-31R_10GL2-305103-01R]
SSAR24 2.2/4
SSAC6 1u/4/X5R/6.3V/K
SSAC10 22u/8/X5R/6.3V/M
SSAC9 1u/4/X5R/6.3V/K
SSAR28 31.6K/4/1
SSAC11 0.1u/4/X7R/16V/K/X
SSAC13 22u/8/X5R/6.3V/M
SSAC12 1u/4/X5R/6.3V/K
SSAR29 100K/4/1

【技術通報R&D技術通報156】
RT9018(RICHTEK)與NCT3730(NUVOTON),
EM5103GE(EMC)做共用,針對PIN7(FB)分壓阻值部份
須做修改為100K以上電阻值

ASM2142 Option

VCC3 — SSAQ3 AP7365-WG-7/SOT23-5/600mA
R1 SSAR41 2.15K/4/1
R2 SSAR40 1K/4/1
SSAC47 22P/4/NPO/50V/J
SSAC48 10U/6/X5R/6.3V/M
SSAC49 2.2u/4/X5R/6.3V/M
Vout=0.8*(R1+R2)/R2

ASM2142 2.5V, 300mA

12.1K/4/1 SSAR18 SSA_REXT

3VDUAL — SSAR36 8.2K/4 — SSA_SMI-
VCC3 — SSAR27 8.2K/4 — SSA_SPICK
SSAR32 8.2K/4/1/X
VCC3 — SSAR4 8.2K/4 — SSA_UARTRX
SSAR3 2K/4/1/X
UART_RX=>CSEL1
VCC3 — SSAR8 8.2K/4 — SSA_UARTTX
SSAR7 2K/4/1/X
VCC3 — SSAR1 8.2K/4 — SSA_SPIDO
SSAR2 2K/4/1/X
SPI_DO=>CSEL0

CSEL1	CSEL0	
1	1	External 20MHz Crystal (Asynchronous)
0	1	48MHz clock input (Synchronous)
X	0	Reseved for Test

VCC3 — SSAU2 4M/SPI/SO8/200mil/S[10HP4-112540-30R]
SSAC21 0.1u/4/X7R/16V/K
SSA_SPICS- SSA_SPIDI SSA_SPIWP- SSA_SPICK SSA_SPIDO
VCC3 — SSAR6 8.2K/4 — SSA_SPIWP-

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Title: ASM1142 & ASM2142 co-lay

Size	Document Number	Rev
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EMI/ESD R0.1

CLOSE SIO

EMIC1
100p/4/NPO/50V/J/X

[12,16,35,59] N_-SLP_S3

EMIC2
100p/4/NPO/50V/J/X

[12,16,34,36] N_-S4_S5

CLOSE PCH

EMIC4
100p/4/NPO/50V/J/X

[4,12] N_CPUPWROK

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删除EMIC5

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Title	EMI/ESD	
Size A	Document Number GA-B250-HD3P	Rev 1.0
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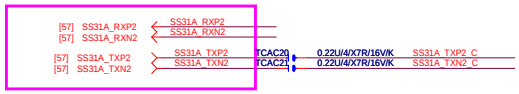
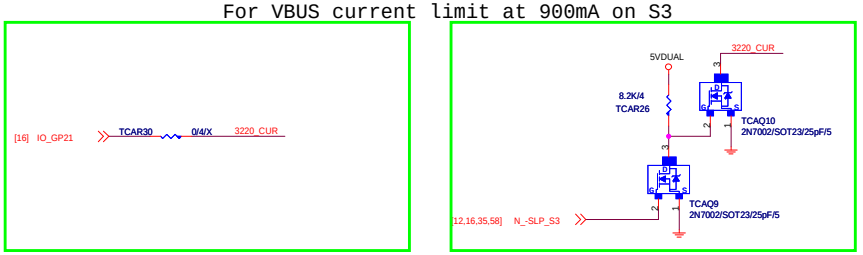
ASM2142 USB31 Host Rev0.1

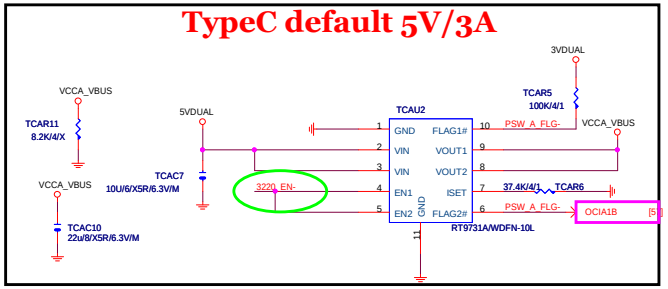
USB 3.x SuperSpeed



For VBUS current limit at 900mA on S3

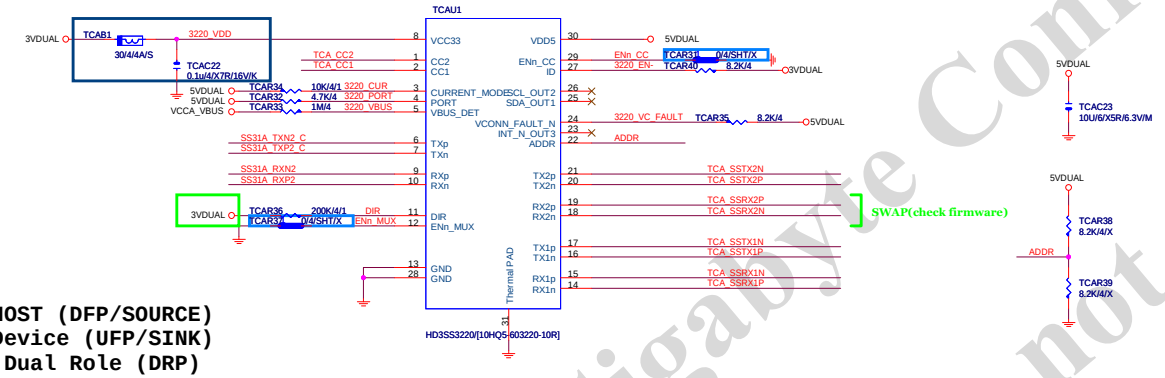


TypeC default 5V/3A



* 0902 for rev0.2 實驗, if PVT模組沒改,還是加回去
TCAB1:FB改0ohm & TCAC22:0.1u 不上件

1025 for rev1.0 實驗,PVT模組沒改,還是加回去



SWAP(check firmware)

PORT
H - HOST (DFP/SOURCE)
L - Device (UFP/SINK)
NC - Dual Role (DRP)

CURRENT MODE
L - Default (900mA) / Pull down to GND or NC
M - Medium (1.5A) / Pull up to VDD 500K
H - High (3.0A) / Pull up to VDD 10K

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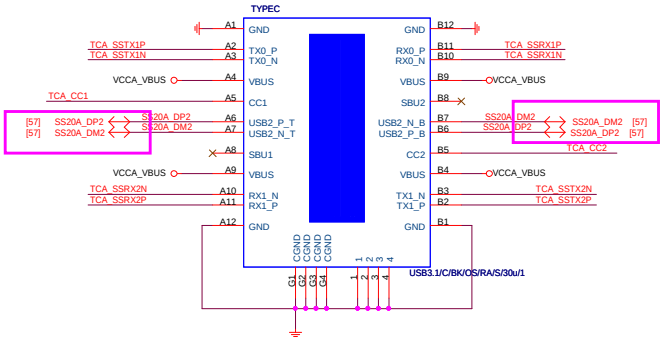
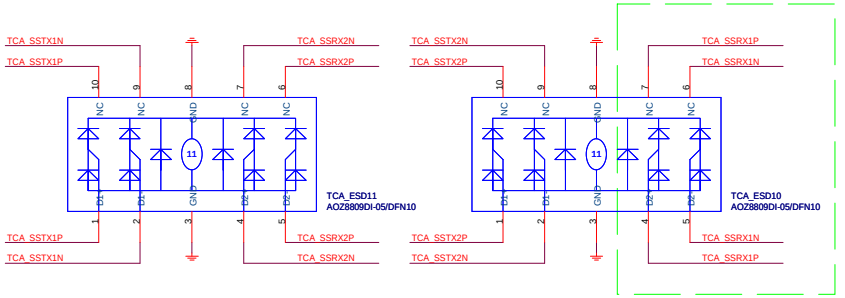
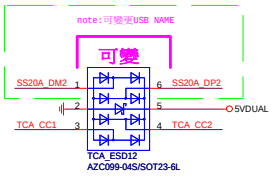
Color markers can be changed by model



USB2.0 can be used the same source





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Title	Etron EJ179S&D_A	
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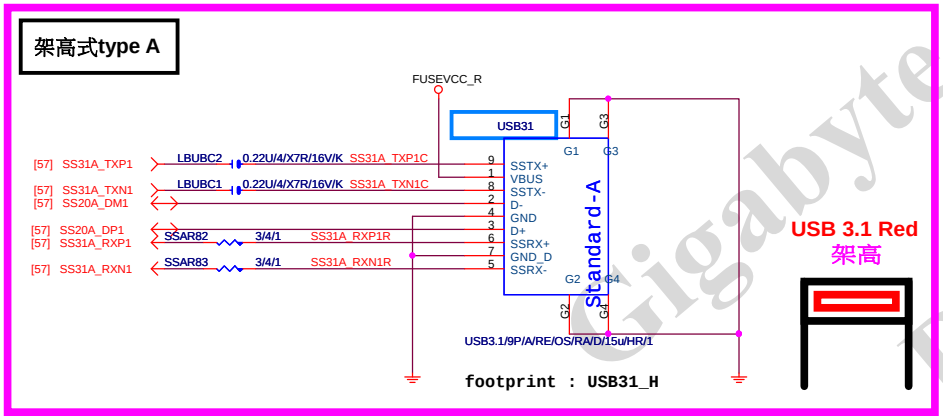
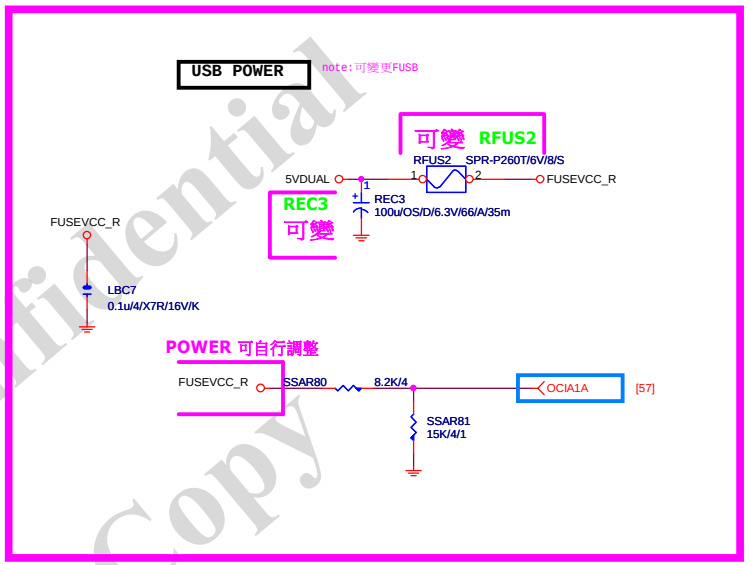
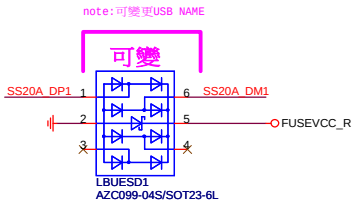
ASM2142 USB31 Host Rev0.1

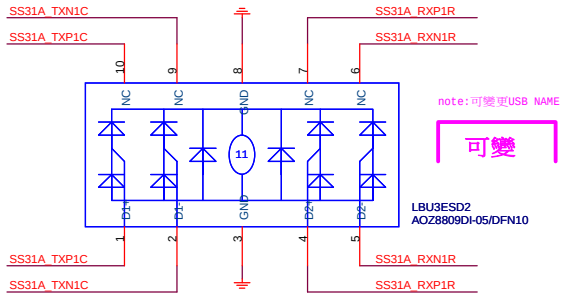
後窗Rule ： (後窗由左至右)
DIP電容 ： REC1, REC3, REC2
FUSE ： RFUS1, RFUS2, RFUS3,RFUS4...

USB31 TYPE A Connector which chooses for project demand









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Title	Type C port A	
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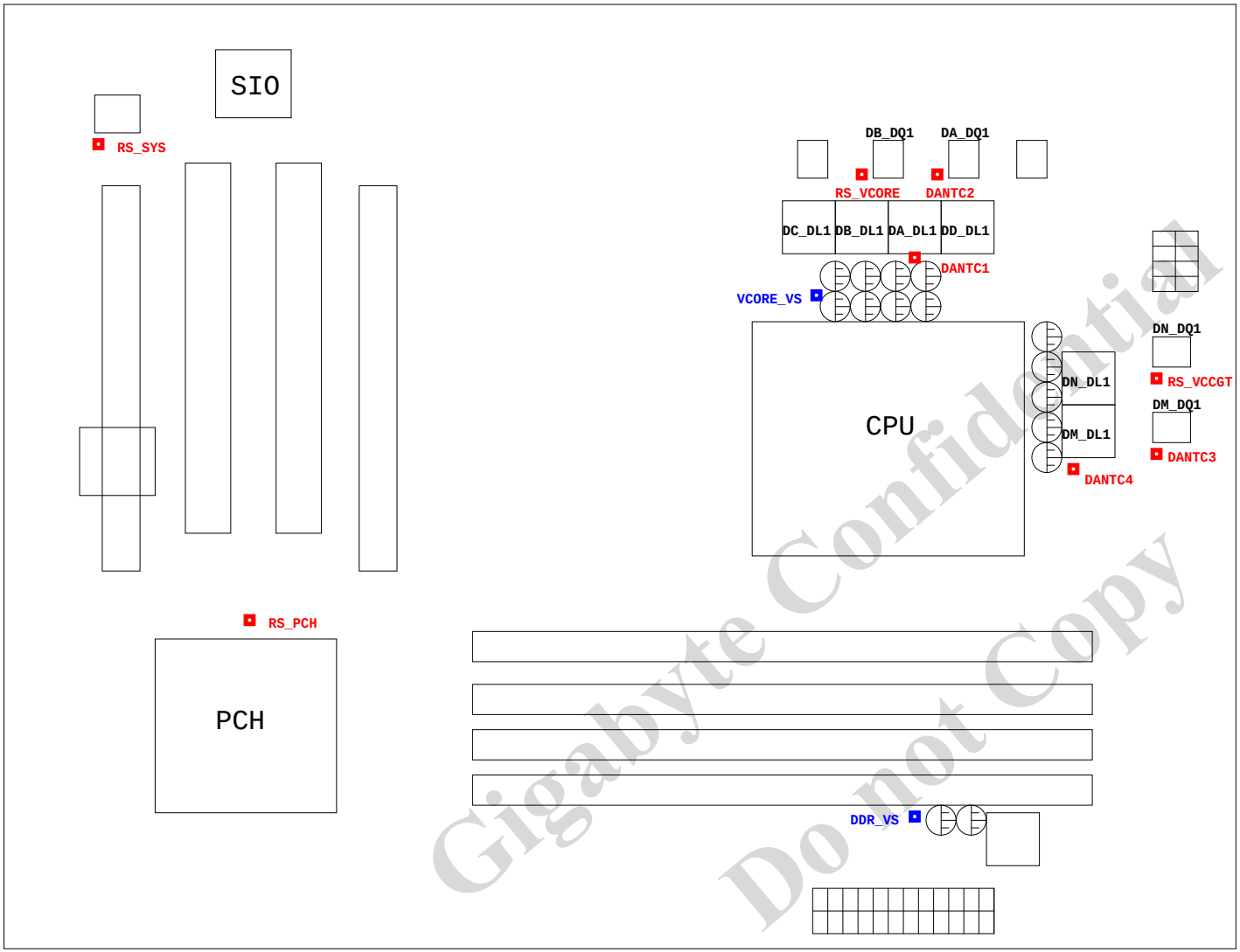

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熱敏電阻	擺放靠近位置	走線方式
DANTC1	DA_DL1	N/A
DANTC2	DA_DQ1	Differential
DANTC3	DM_DQ1	N/A
DANTC4	DM_DL1	Differential
RS_VCORE	DB_DQ1	N/A
RS_VCCGT	DN_DQ1	N/A
RS_PCH	PCH	N/A
RS_SYS	CU1	N/A

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Title: NTC MAP

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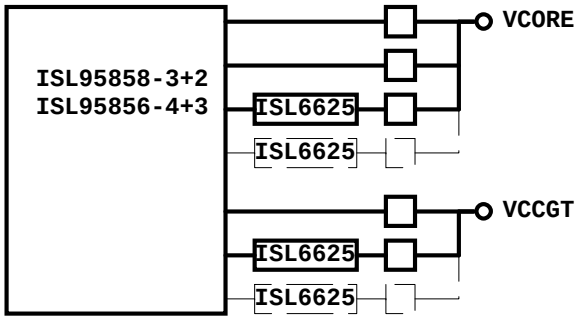
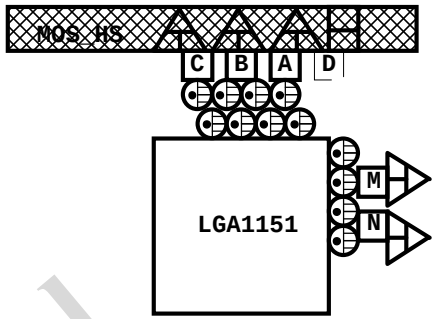
POWER BLOCK MAP

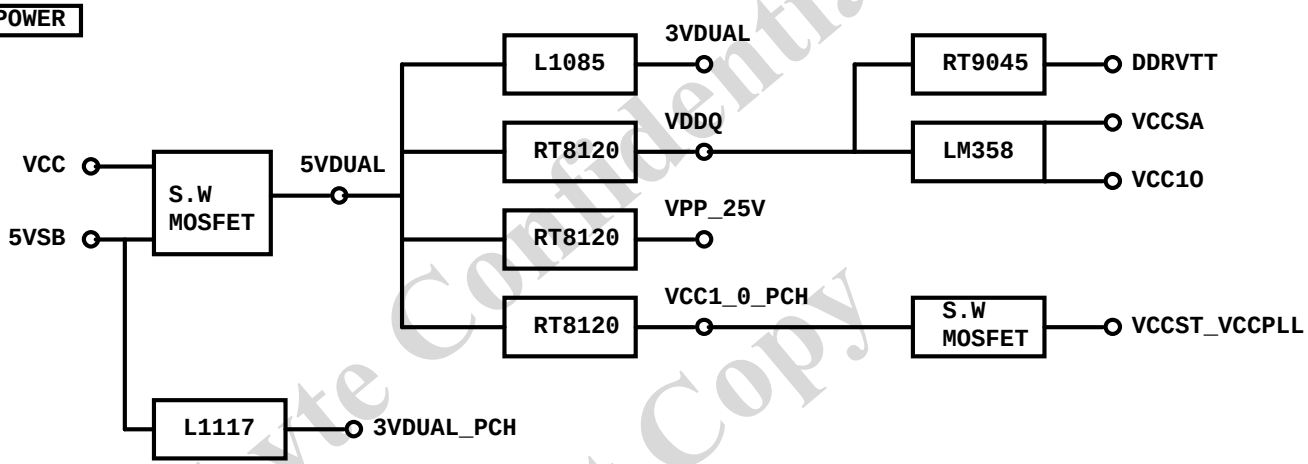
- CPU
  - VCORE
  - VCCGT
  - VCCSA
  - VCCIO
  - VDDQ
  - VCCST_VCCPLL
  - VCCSFUSEPRG
- DDR4
  - VDDQ
  - DDRVTT
  - VPP_25V
  - VDDSPD(VCC3)
- PCH
  - VCC1_0_PCH
  - VCC1_0_PCH_DSW
  - VCC10_VCCF24_1P0
  - VCC10_VCCAMPHYPLL
  - VCC10_VCCAPLL
  - VCC3_PCH
  - 3VDUAL_PCH
  - VCC3
  - N_RTCVDD
- IT8628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

VCORE/VCCGT

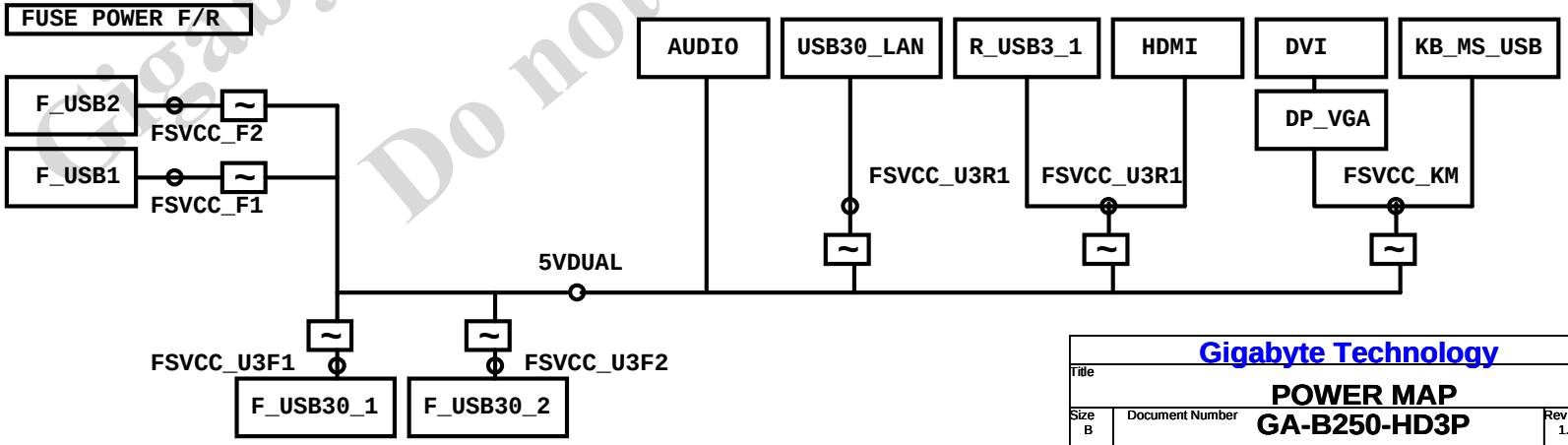




POWER



FUSE POWER F/R



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Gigabyte Technology		
Title: POWER MAP		
Size: B	Document Number: GA-B250-HD3P	Rev: 1.0
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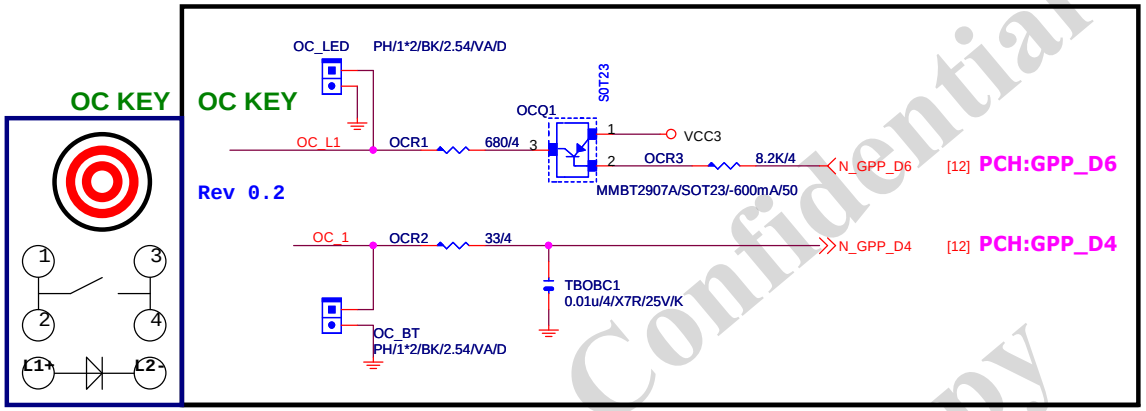
Rev: 0.8



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Title: OC BUTTOM		
Size: Custom	Document Number: GA-B250-HD3P	Rev: 1.0
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