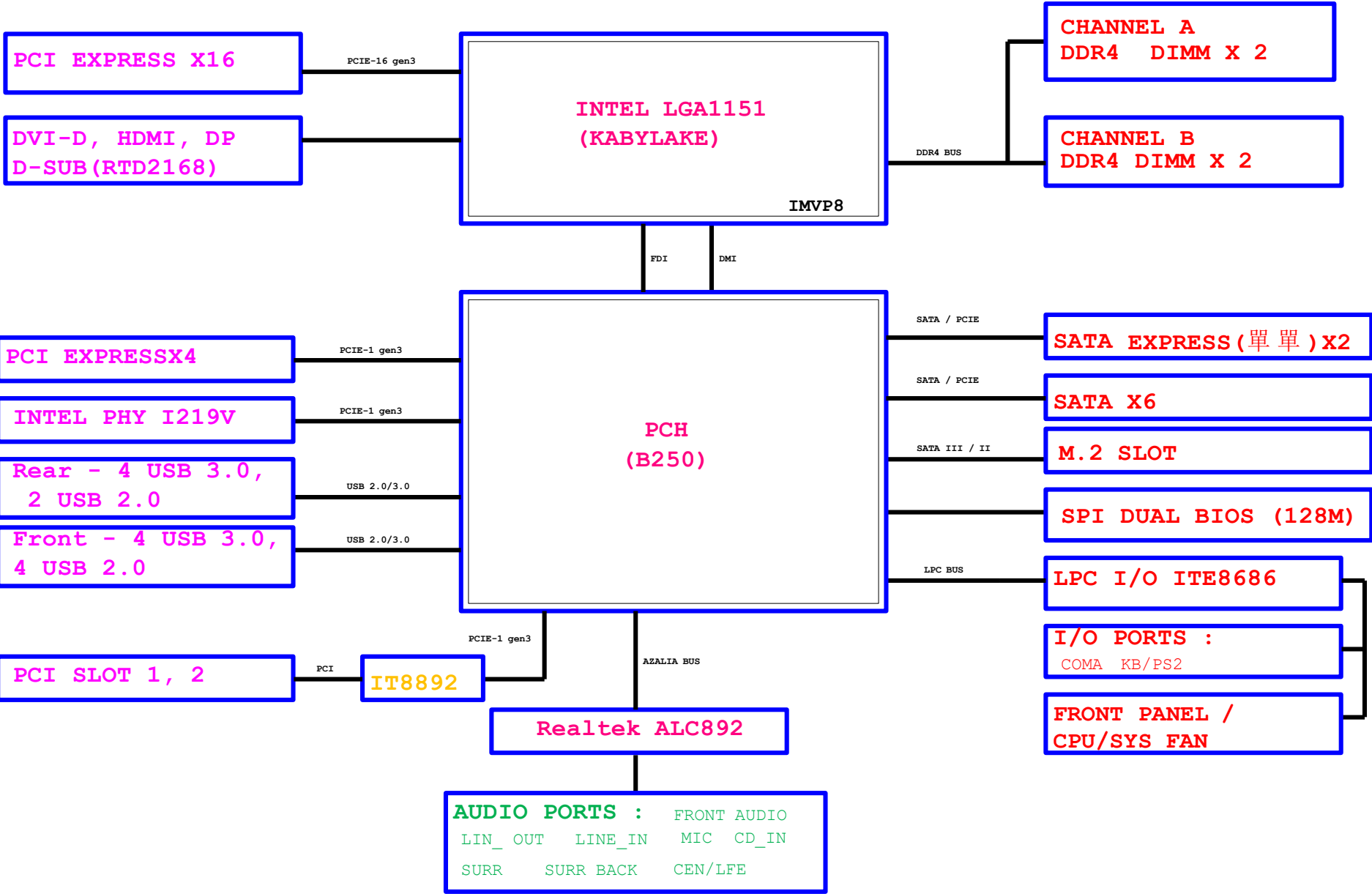


## Circuit or PCB layout change

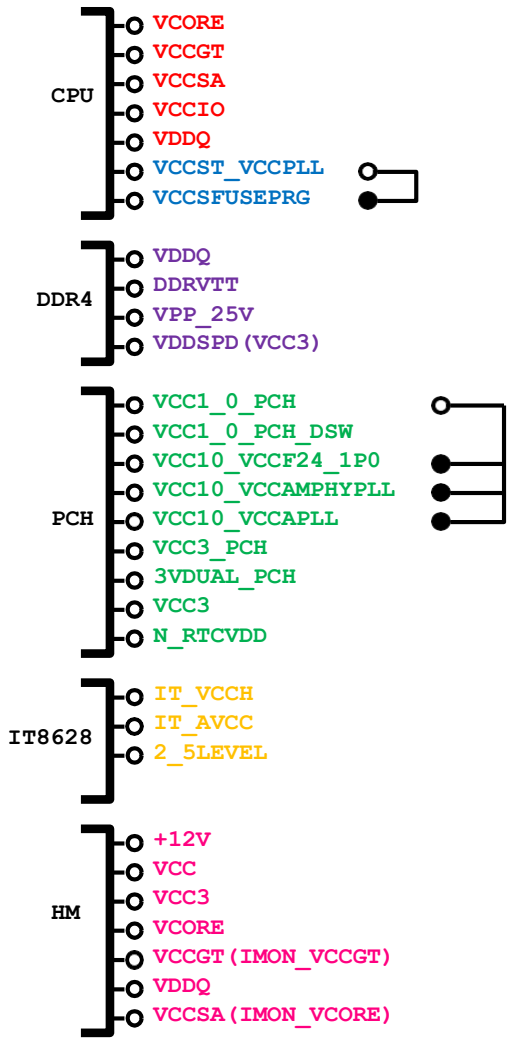
## 2016/07/19

[illegible]

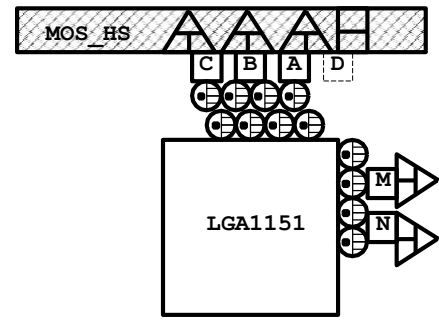
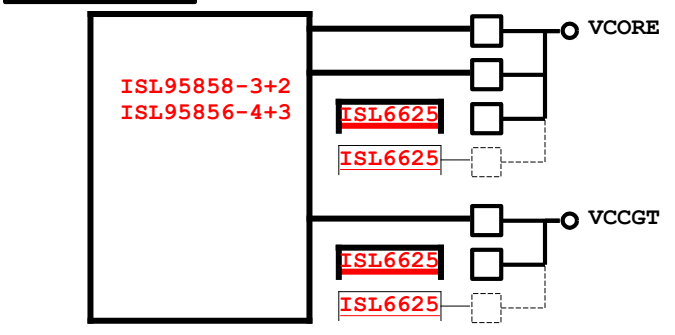
BLOCK DIAGRAM



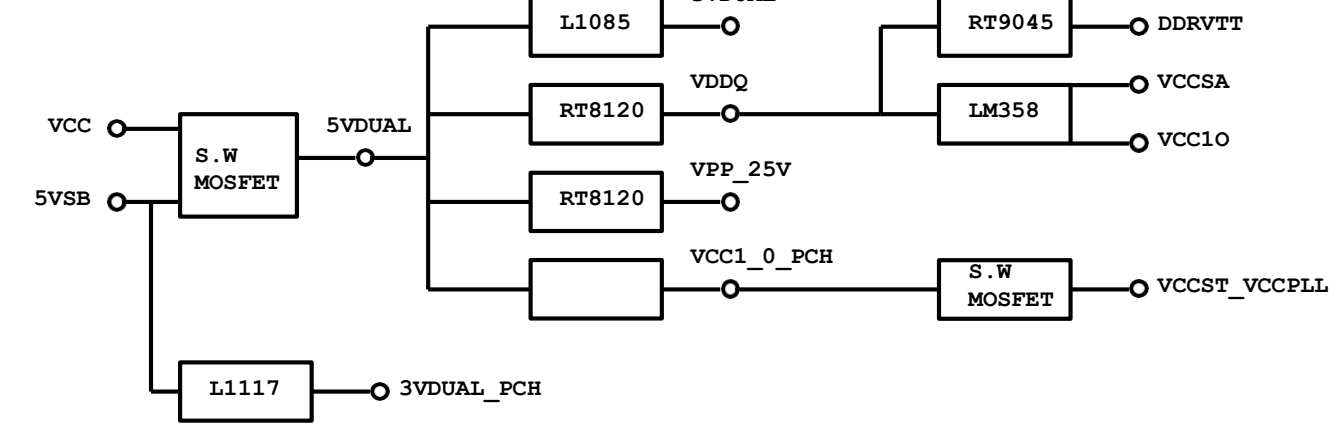
POWER BLOCK MAP



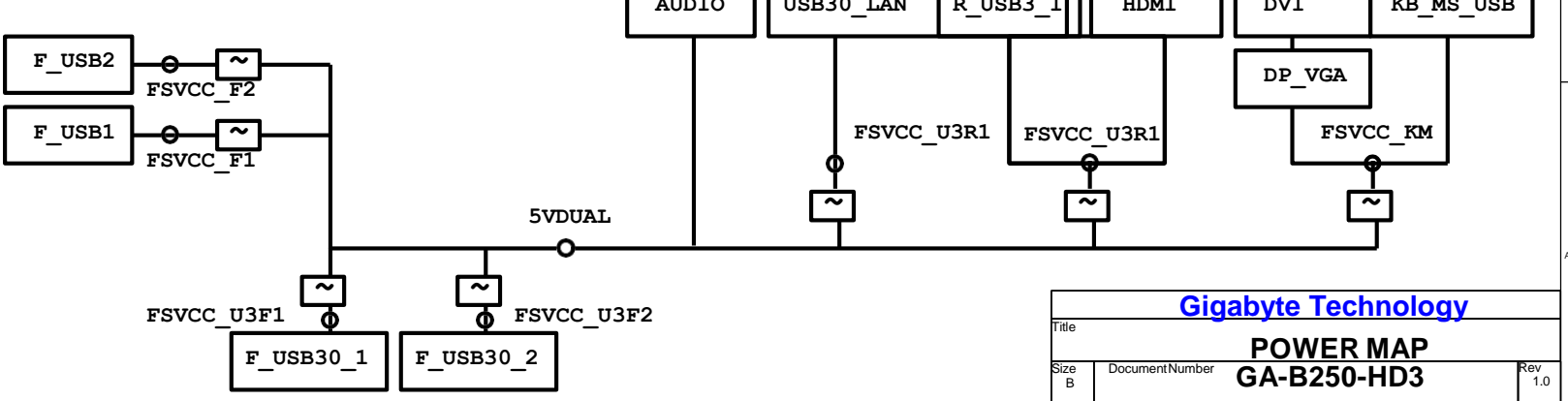
VCORE/VCCGT

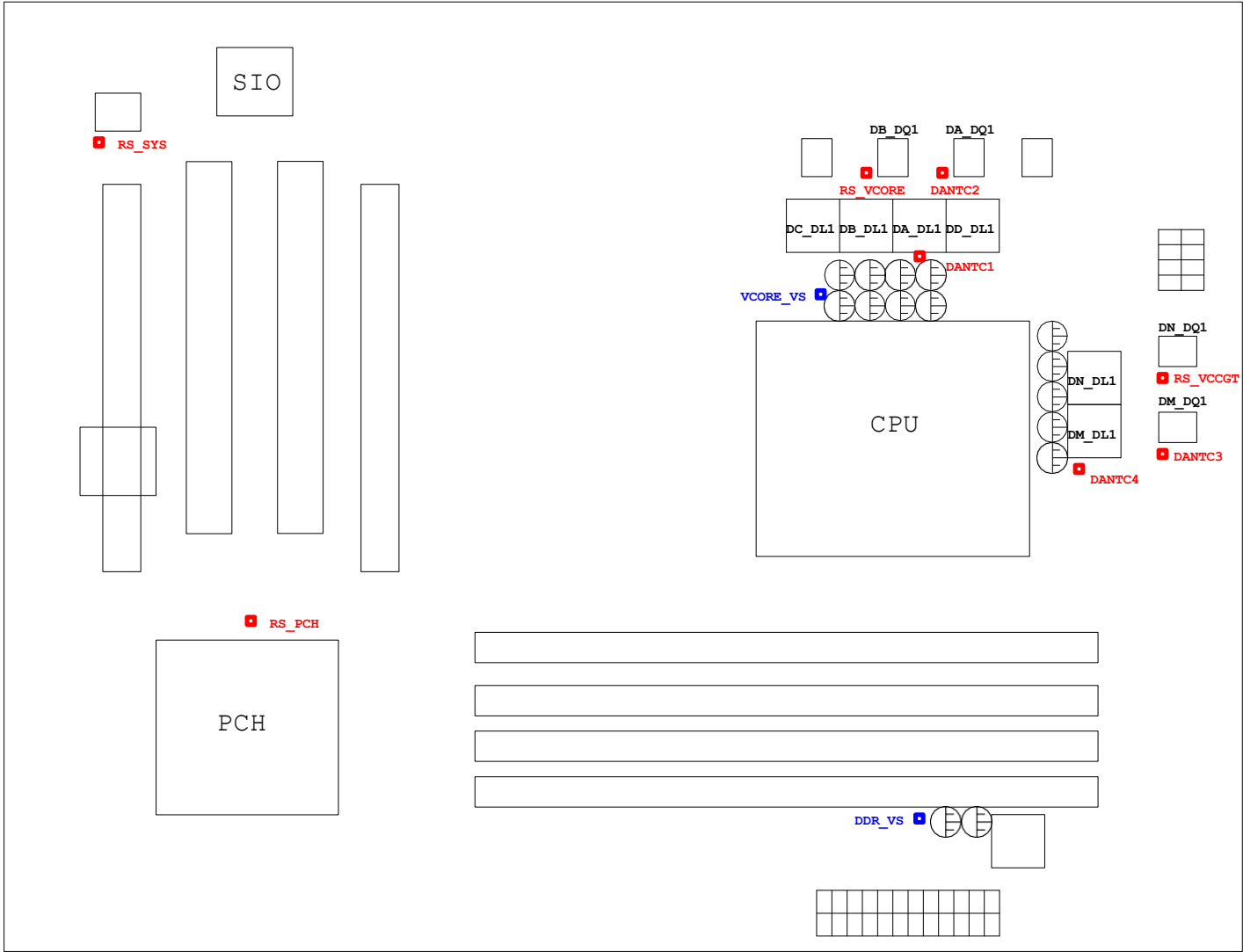


POWER



FUSE POWER F/R

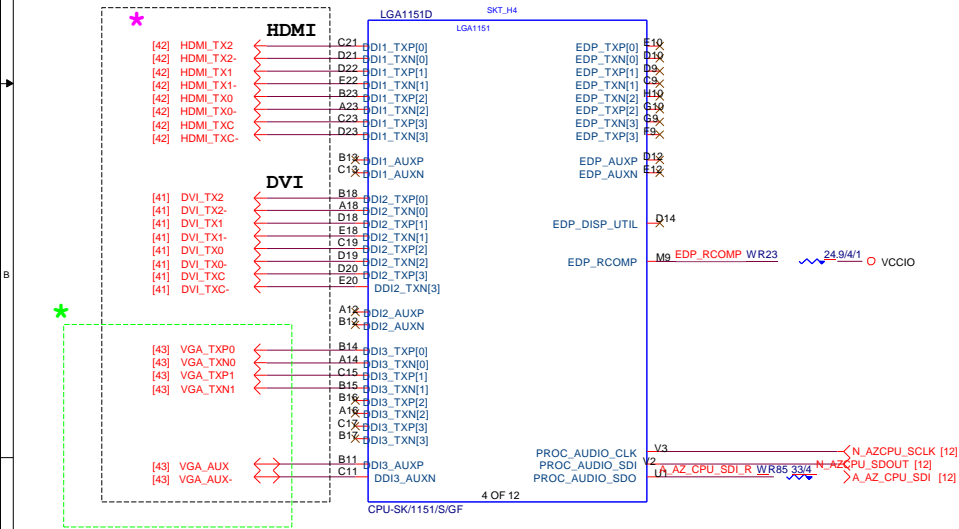
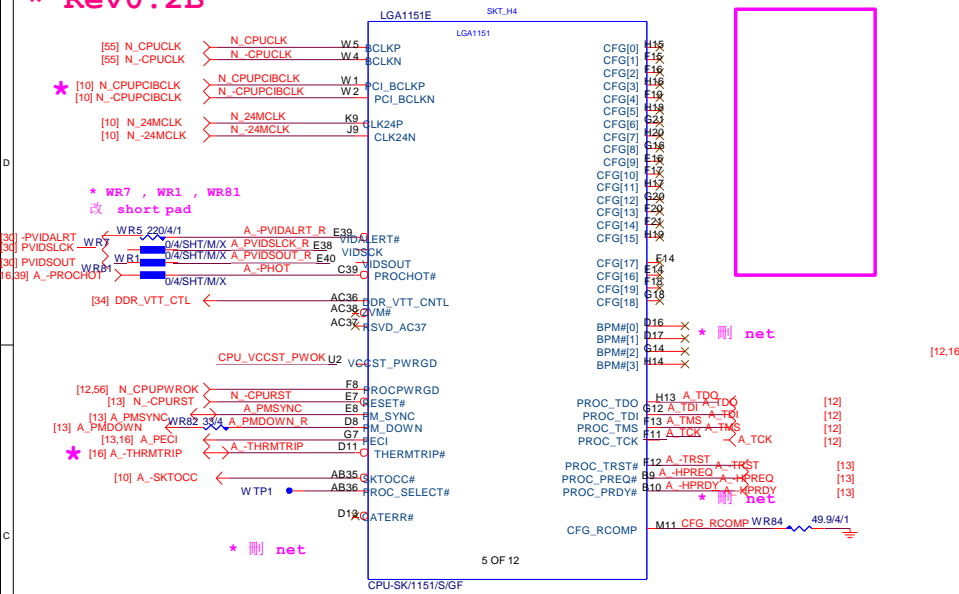




熱熱熱熱	擺擺擺擺擺擺	走走走走
DANTC1	DA_DL1	N/A
DANTC2	DA_DQ1	Differential
DANTC3	DM_DQ1	N/A
DANTC4	DM_DL1	Differential
RS_VCORE	DB_DQ1	N/A
RS_VCCGT	DN_DQ1	N/A
RS_PCH	PCH	N/A
RS_SYS	CU1	N/A



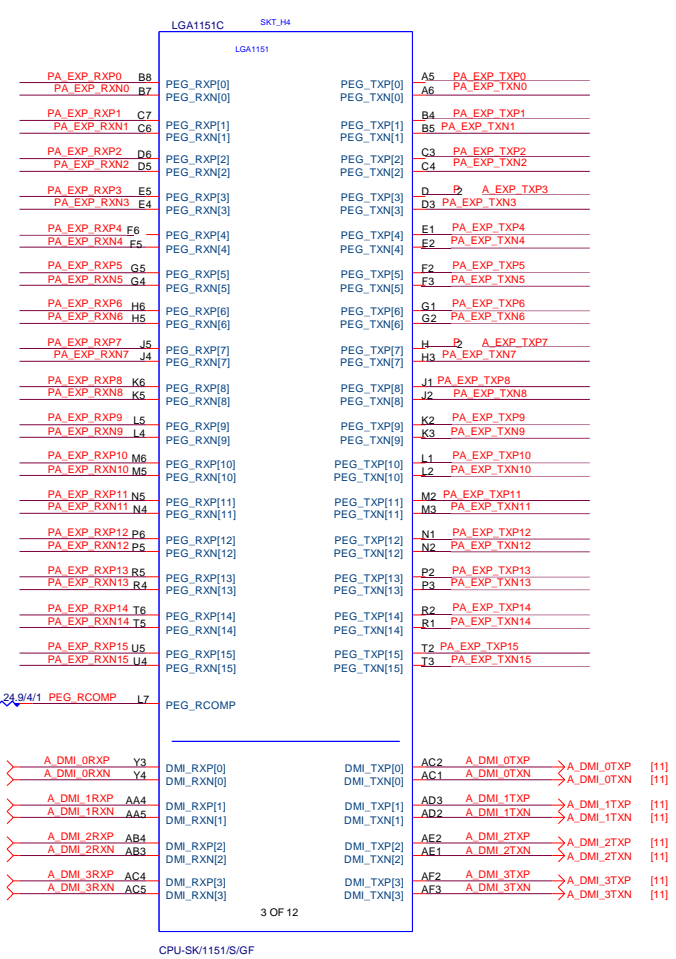
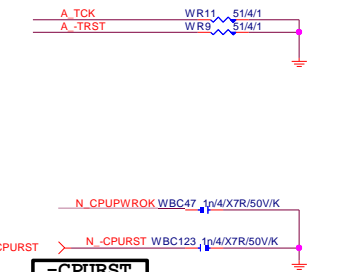
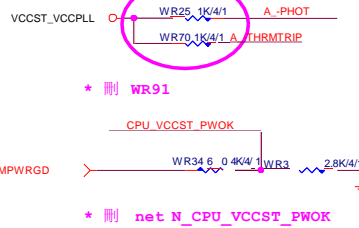
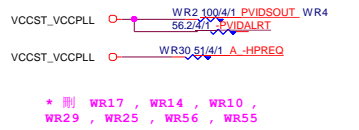
\* Rev0.2B



```
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%



[11]	A DMI_0RXP	A DMI_0RXP Y3	DMI_RXP[0]	DMI_TXP[0]	AC2 A DMI_0TXP	A DMI_0TXP	[11]
[11]	A DMI_0RXN	A DMI_0RXN Y4	DMI_RXN[0]	DMI_TXN[0]	AC1 A DMI_0TXN	A DMI_0TXN	[11]
[11]	A DMI_1RXP	A DMI_1RXP AA4	DMI_RXP[1]	DMI_TXP[1]	AD3 A DMI_1TXP	A DMI_1TXP	[11]
[11]	A DMI_1RXN	A DMI_1RXN AA5	DMI_RXN[1]	DMI_TXN[1]	AD2 A DMI_1TXN	A DMI_1TXN	[11]
[11]	A DMI_2RXP	A DMI_2RXP AB4	DMI_RXP[2]	DMI_TXP[2]	AE2 A DMI_2TXP	A DMI_2TXP	[11]
[11]	A DMI_2RXN	A DMI_2RXN AB5	DMI_RXN[2]	DMI_TXN[2]	AE1 A DMI_2TXN	A DMI_2TXN	[11]
[11]	A DMI_3RXP	A DMI_3RXP AC4	DMI_RXP[3]	DMI_TXP[3]	AF2 A DMI_3TXP	A DMI_3TXP	[11]
[11]	A DMI_3RXN	A DMI_3RXN AC5	DMI_RXN[3]	DMI_TXN[3]	AF3 A DMI_3TXN	A DMI_3TXN	[11]

PA_EXP_TXP[0..15]	>>>PA_EXP_TXP[0..15] [19]
PA_EXP_TXN[0..15]	>>>PA_EXP_TXN[0..15] [19]
PA_EXP_RXP[0..15]	>>>PA_EXP_RXP[0..15] [19]
PA_EXP_RXN[0..15]	>>>PA_EXP_RXN[0..15] [19]

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

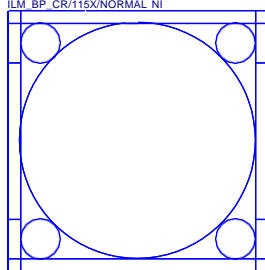
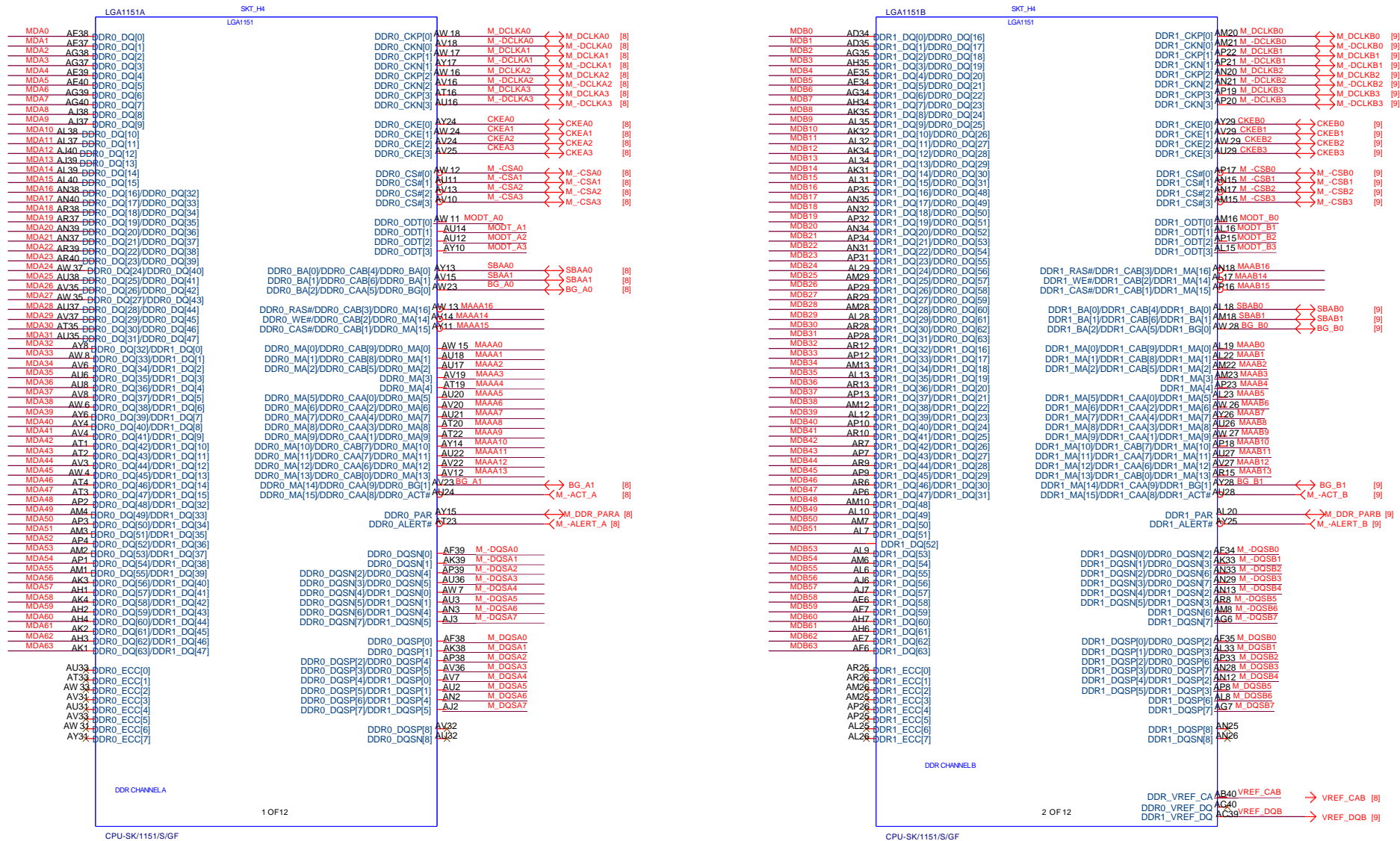
Impedance=85 +- 15%

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

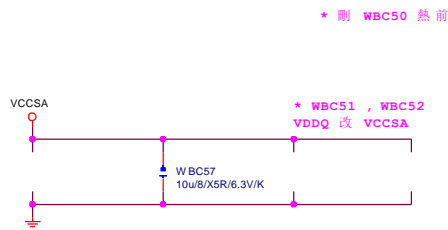
Bifurcation Config.	Signals Lanes		
	CFG[6]	CFG[5]	CFG[2]
1x16	1	1	1
1x16 Reversed	1	1	0
2x8	1	0	1
2x8 Reversed	1	0	0
1x8+2x4	0	0	1
1x8+2x4 Reversed	0	0	0

<b><i>Gigabyte Technology</i></b>			
Title			
<b>CPU LGA1151-A</b>			
Size Custom	Document Number		Rev
	<b>GA-B250-HD3</b>		<b>1.0</b>
Date: Monday, December 19, 2016		Sheet	4 of 59

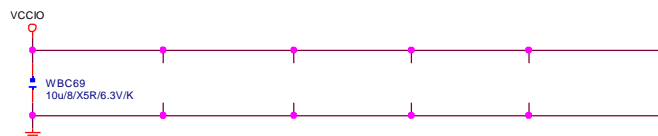
## \* 改 DDR4 net



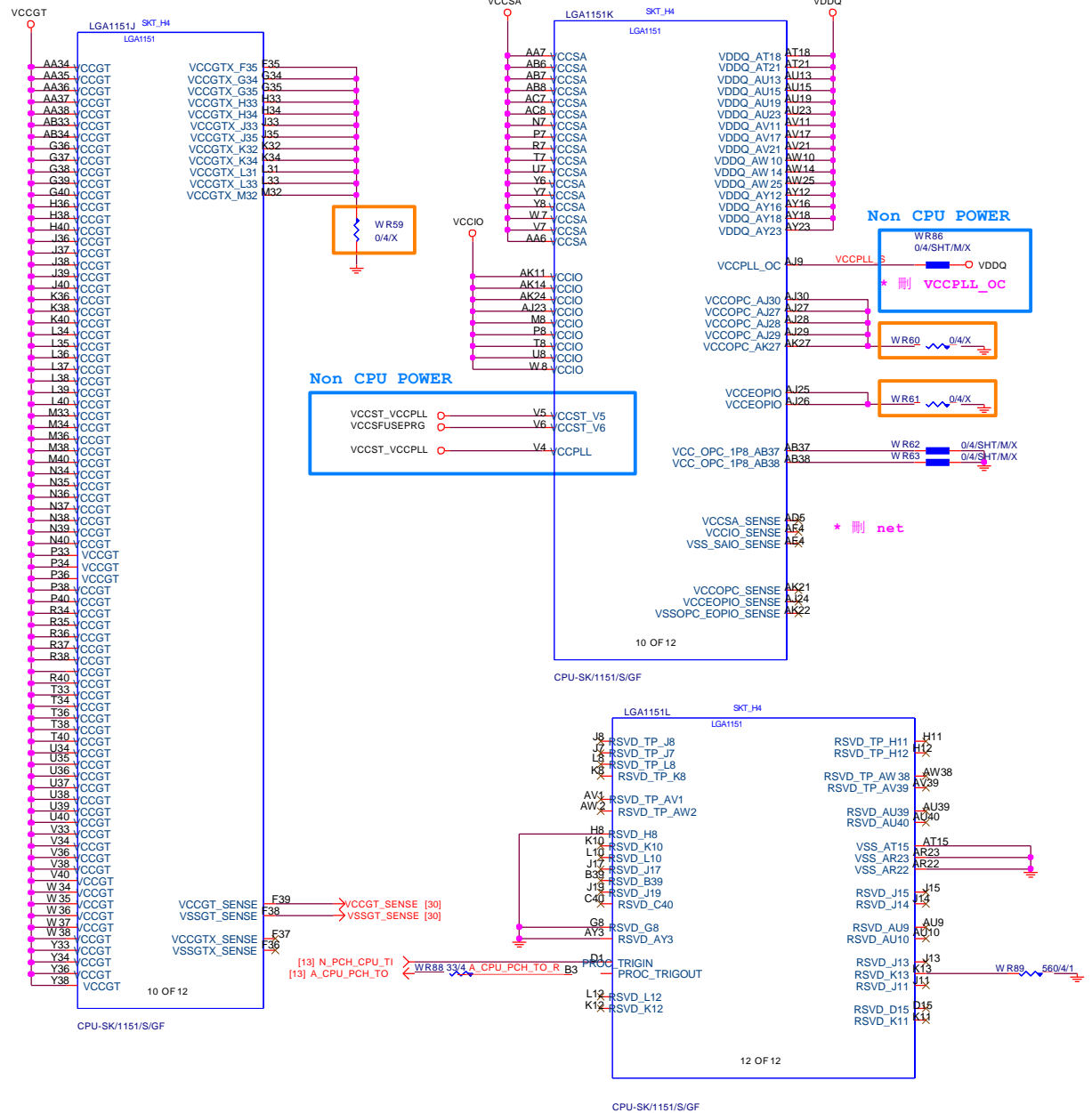
Need check the new CPU ME



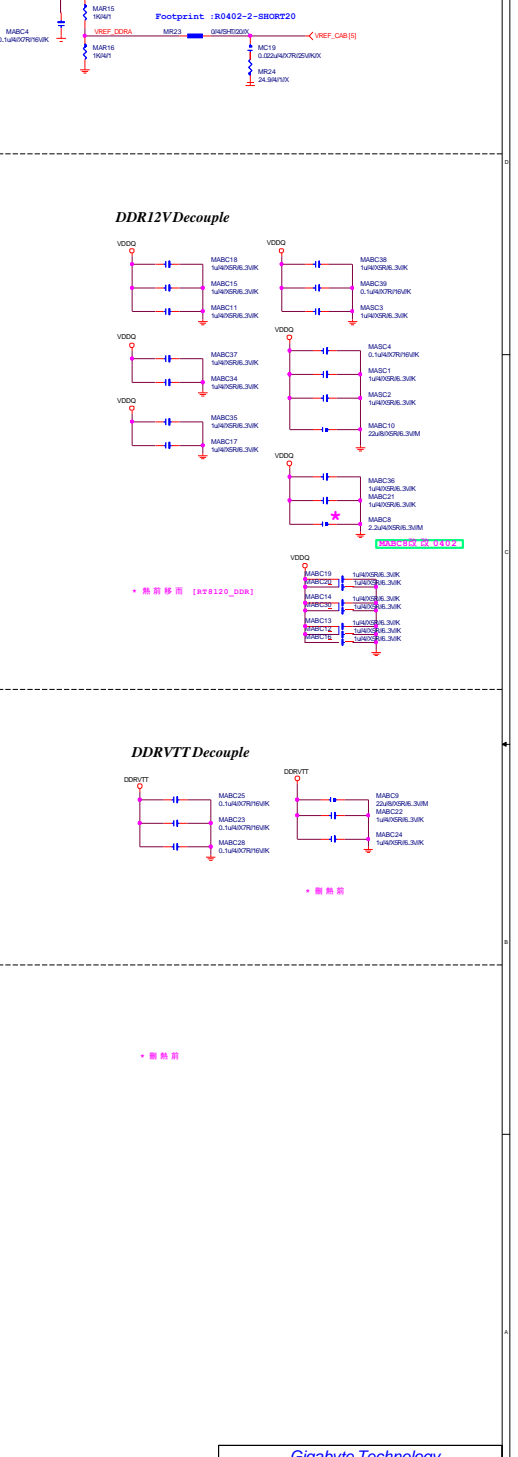
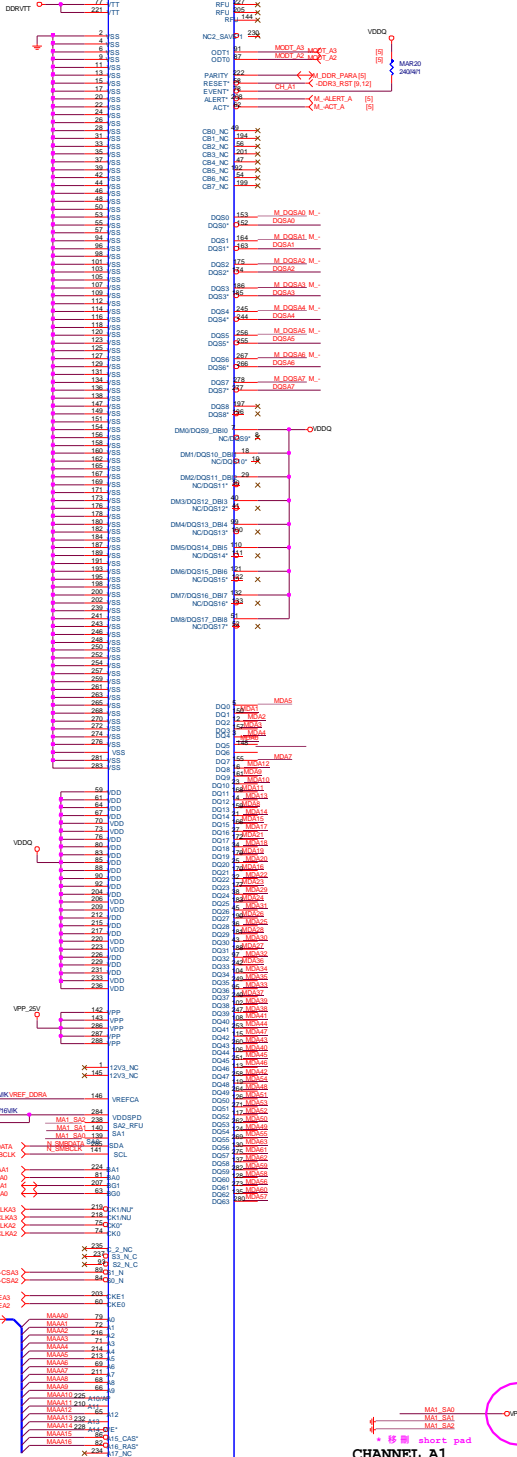
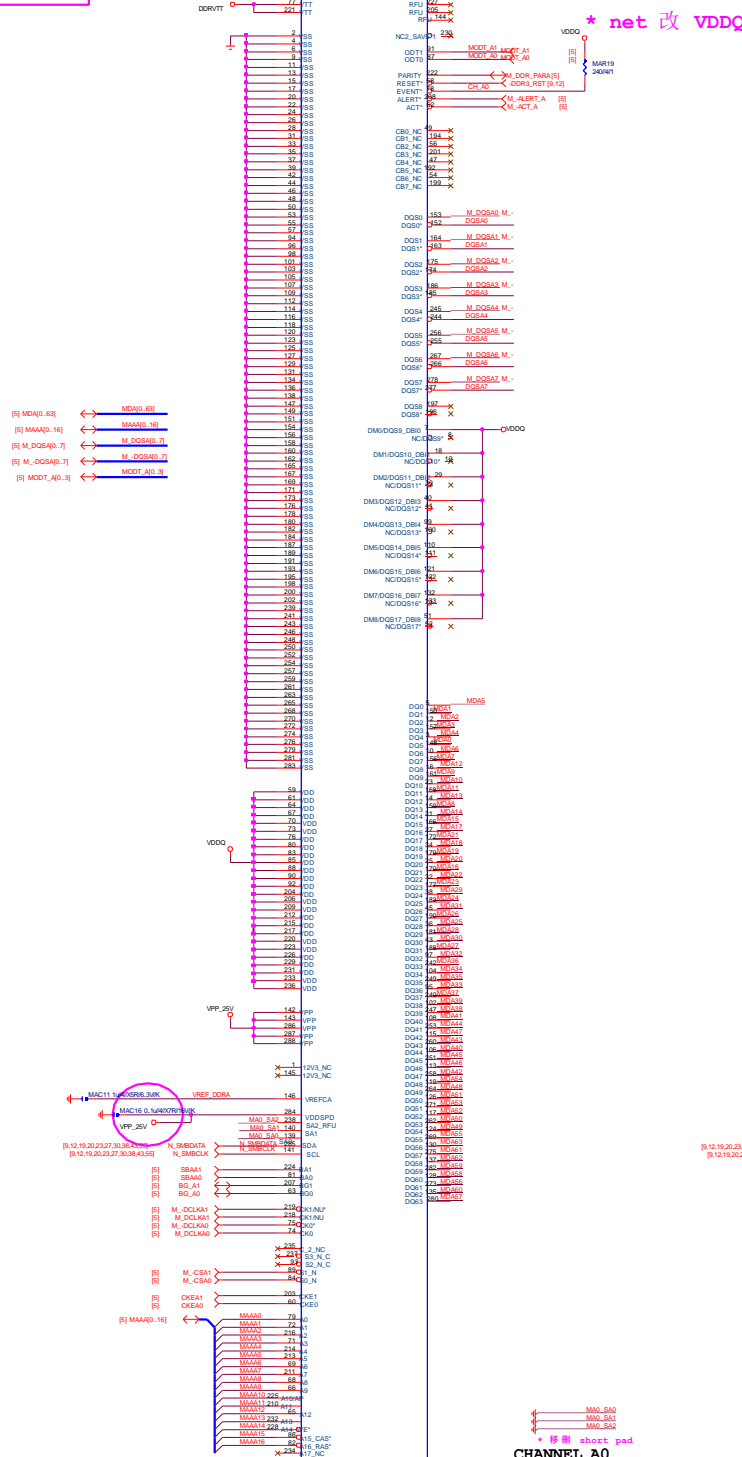
\* 刪 WBC124 , WBC125 , WBC126 , WBC127 熱前

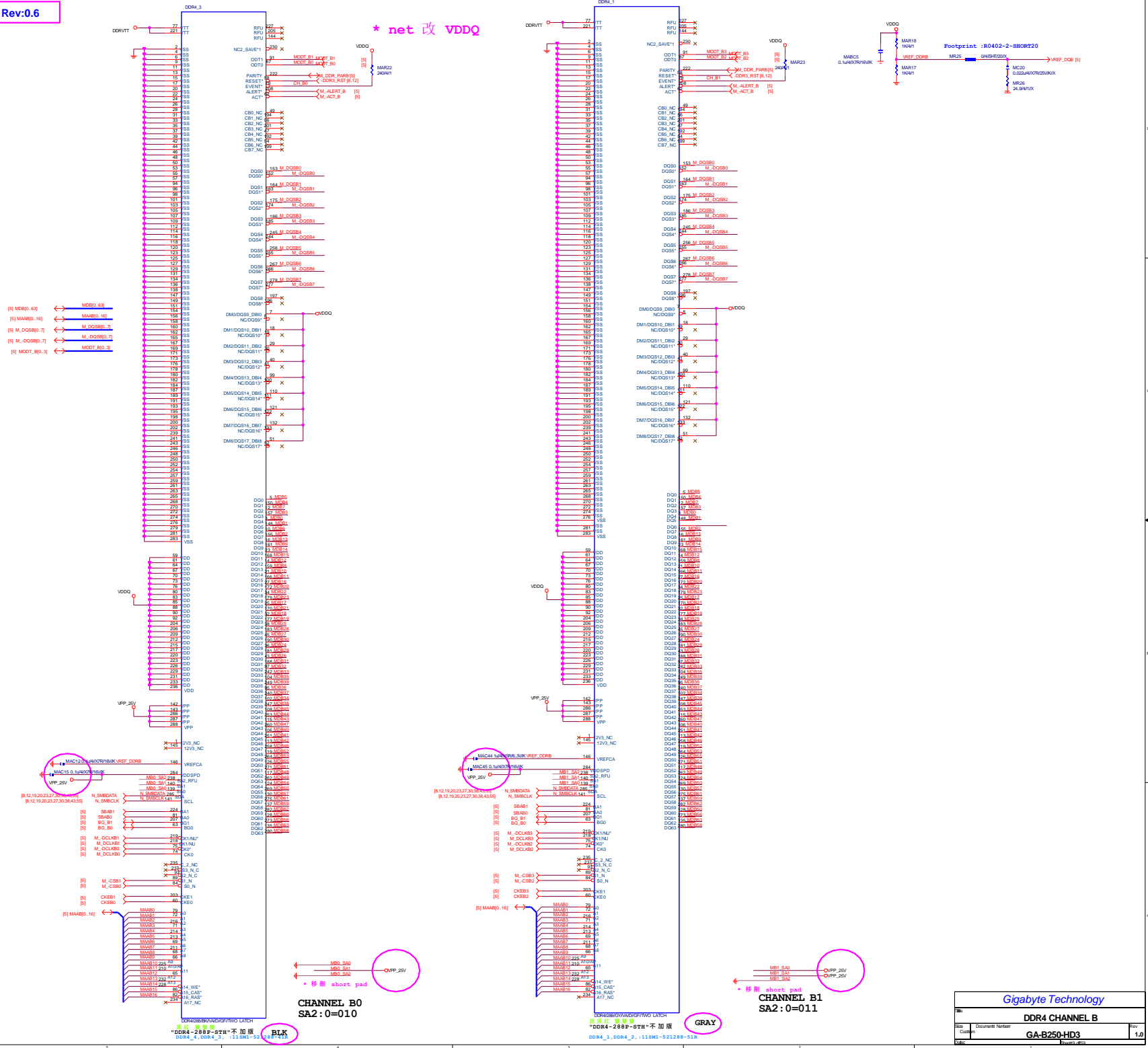


\* 刪 VCCGT 熱前

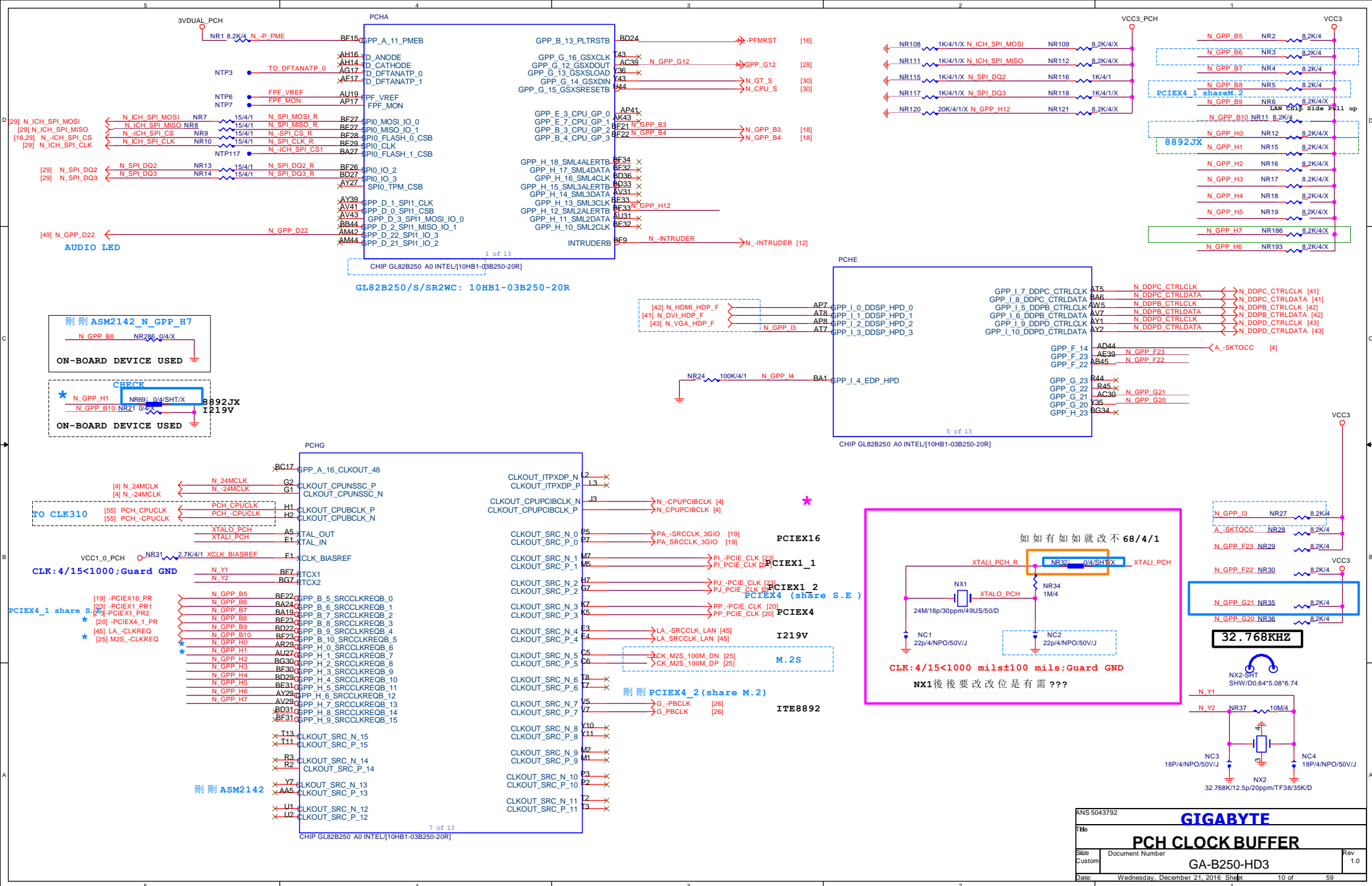


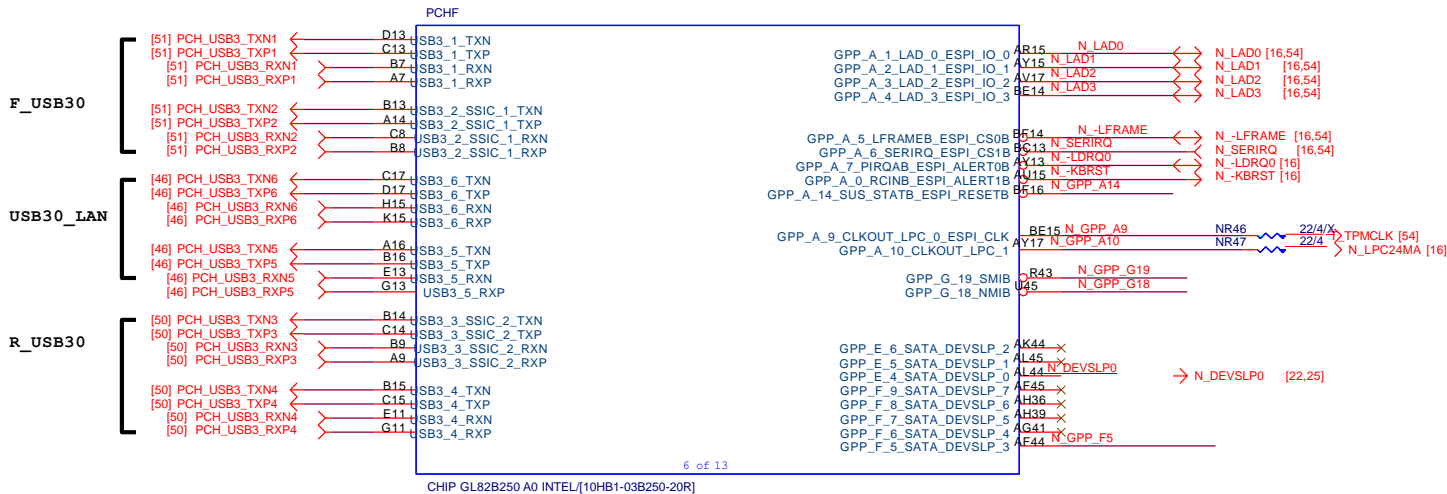
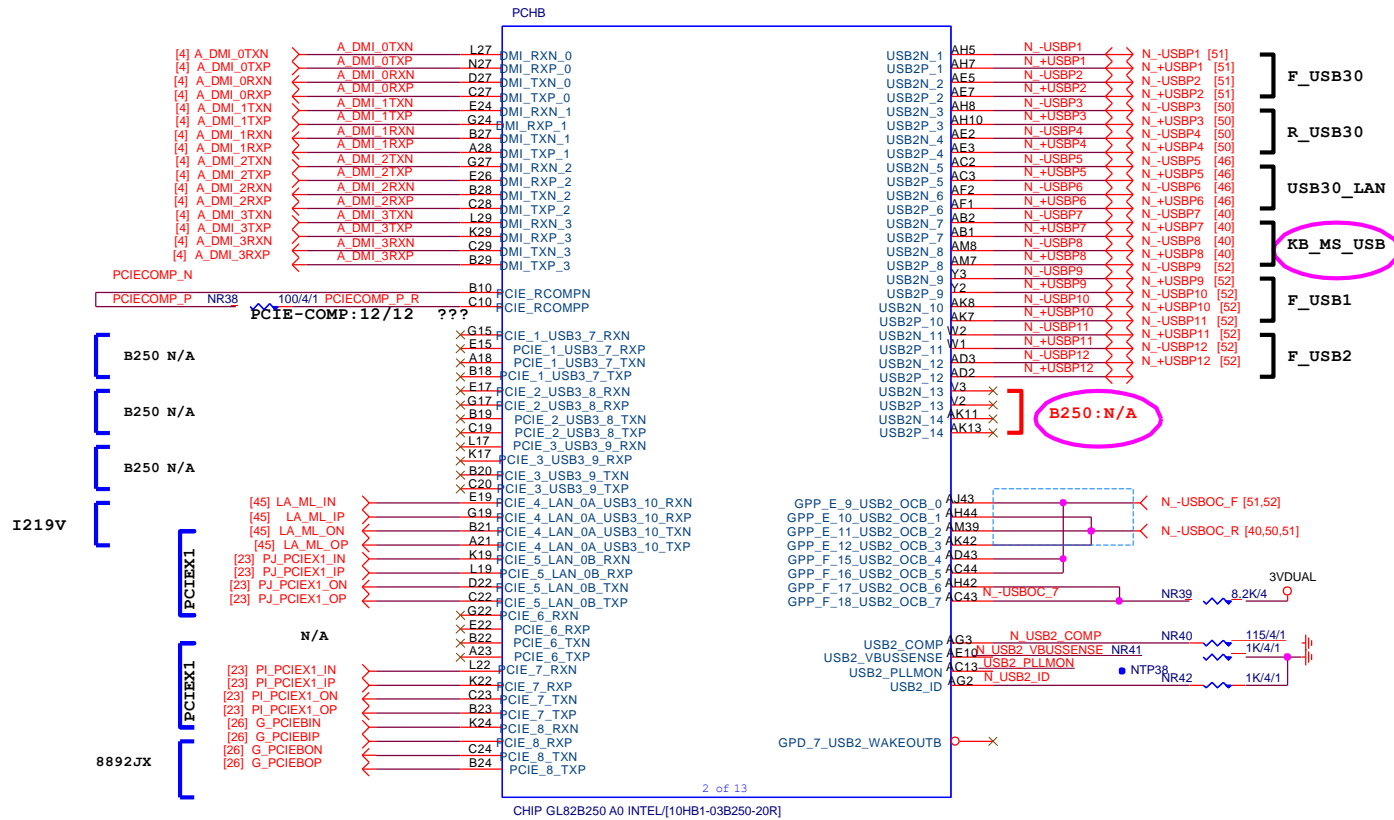




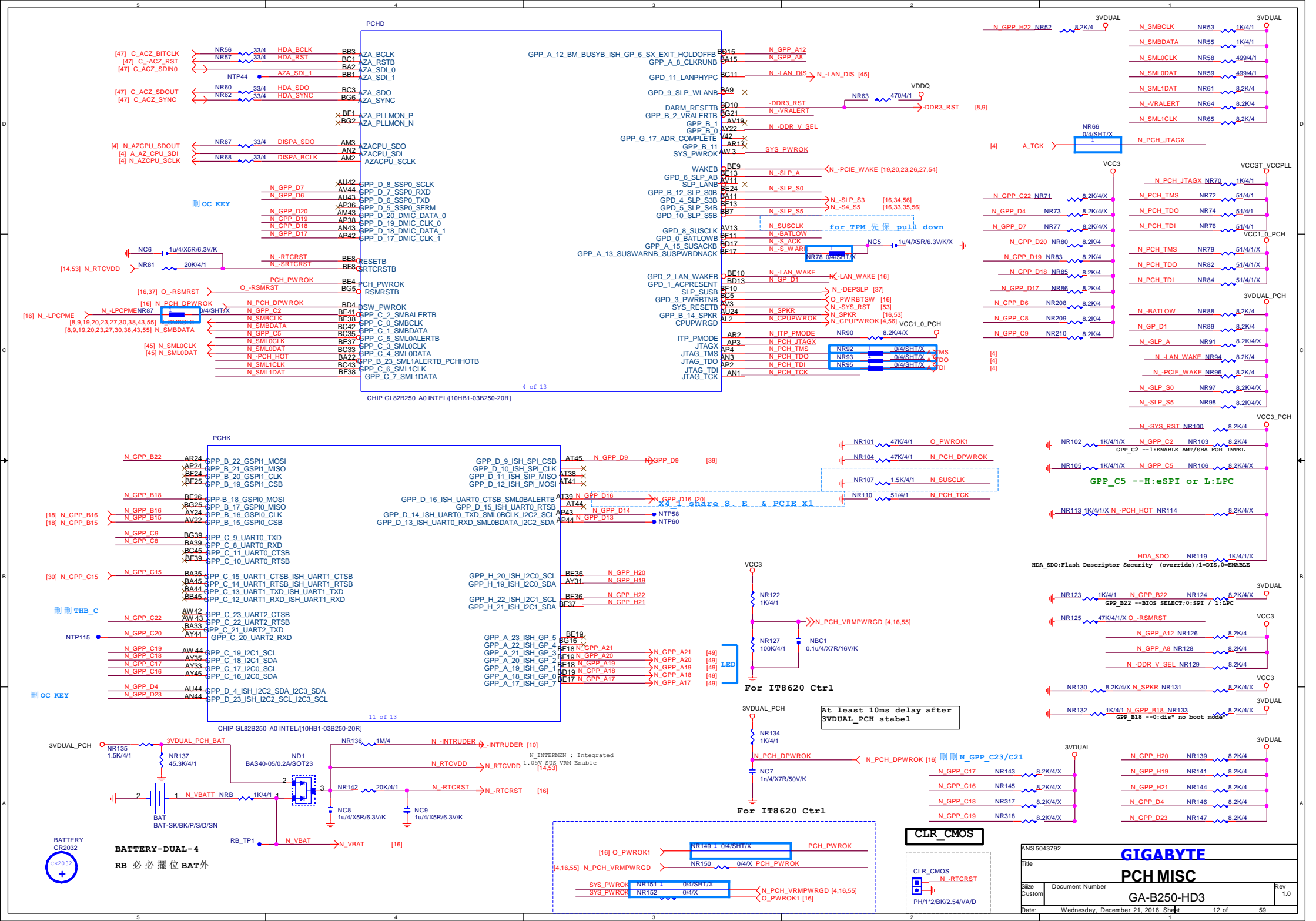


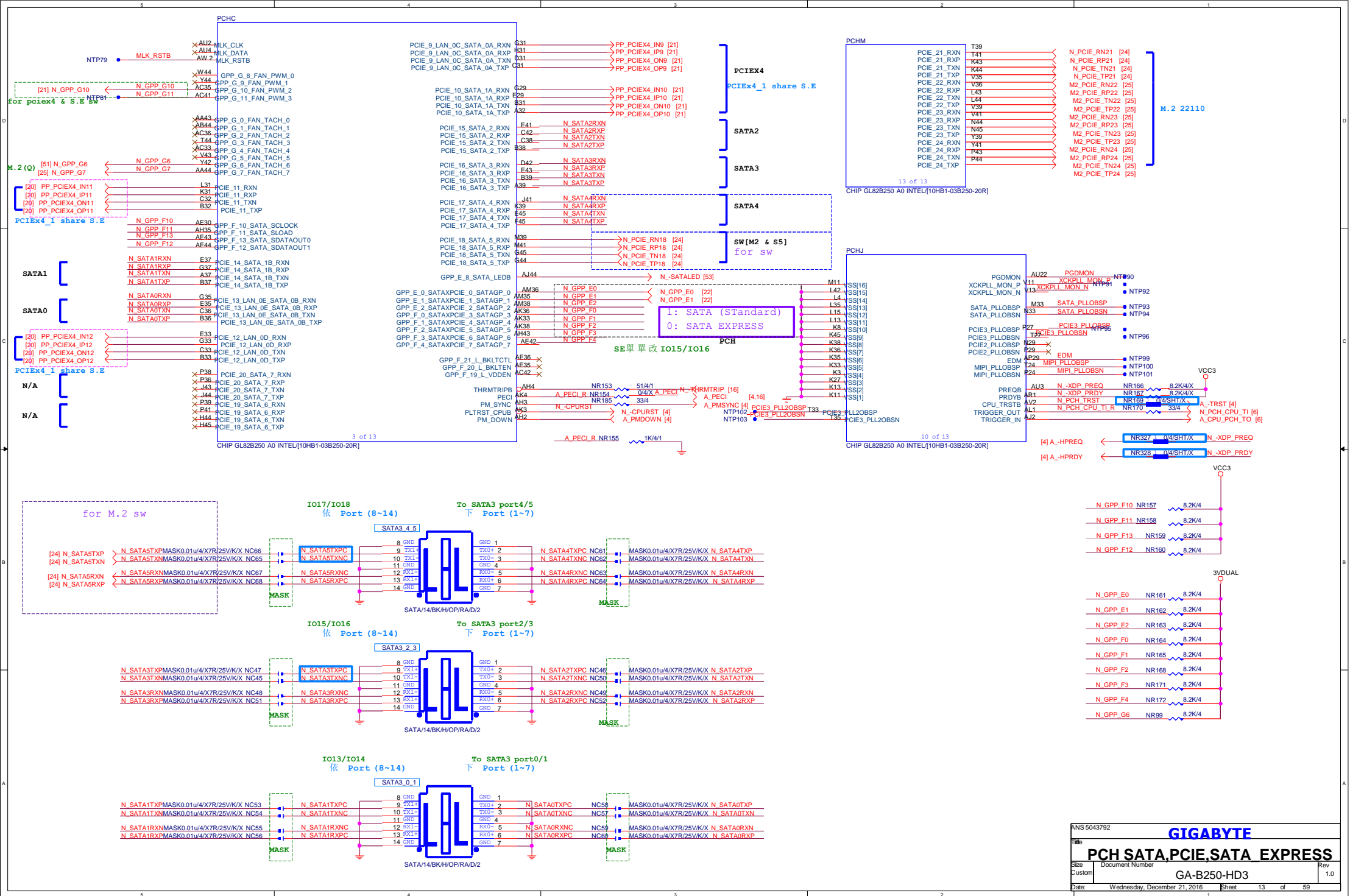


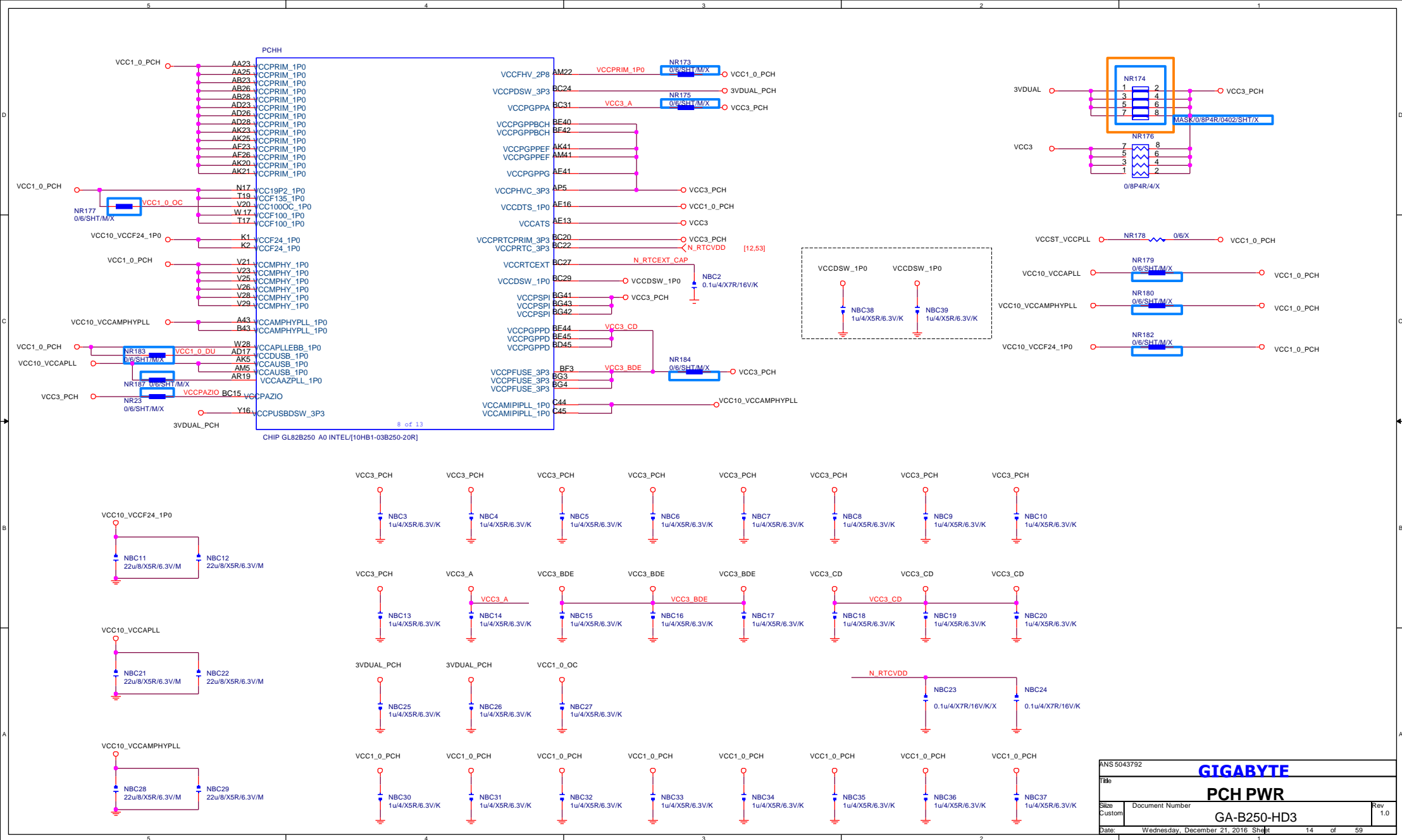












PCHI		
A25	VSS	A42
A30	VSS	D45
P22	VSS	BG44
AV38	VSS	BF44
AV45	VSS	BF45
AV8	VSS	BF2
AY11	VSS	BG18
AY19	VSS	A35
AY37	VSS	A40
AY4	VSS	A41
AY42	VSS	AA17
AY8	VSS	AA18
B25	VSS	AA20
B3	VSS	AA21
B30	VSS	AA26
B35	VSS	AA28
B4	VSS	AA29
B41	VSS	AB17
BA13	VSS	AC32
BA17	VSS	AE4
BA29	VSS	AE8
BA31	VSS	AF18
BA37	VSS	AF20
BA4	VSS	AF21
BA42	VSS	AF25
BB40	VSS	AF28
BC38	VSS	AF29
BC40	VSS	AF4
BC9	VSS	AF42
BD11	VSS	AG18
BD16	VSS	AG20
BD2	VSS	AG21
BD21	VSS	AG23
BD25	VSS	AG25
F2	VSS	AG26
E31	VSS	AG28
E6	VSS	AG29
E8	VSS	AH11
F39	VSS	AH13
F43	VSS	AH30
G4	VSS	AH32
G40	VSS	AH33
G42	VSS	AH38
H6	VSS	AJ1
H9	VSS	AJ17
H11	VSS	AJ18
H13	VSS	AJ20
H17	VSS	AJ21
H19	VSS	AJ23
H22	VSS	AJ25
H24	VSS	AJ26
H27	VSS	AJ28
H29	VSS	AJ29
H33	VSS	AJ45
H35	VSS	AK10
H38	VSS	AK14
H4	VSS	AK16
H42	VSS	AK17
H9	VSS	AK18
J4	VSS	AK26
M36	VSS	AK28
M38	VSS	AM14
M4	VSS	AN14
M8	VSS	AP19
M9	VSS	AR22
N13	VSS	AR31
N15	VSS	AR33
N19	VSS	AU29
N22	VSS	AU33
N24	VSS	AV1
N31	VSS	AV10
N42	VSS	AV15
P10	VSS	AV24
P12	VSS	AV27
AV35	VSS	AV33

9 of 13

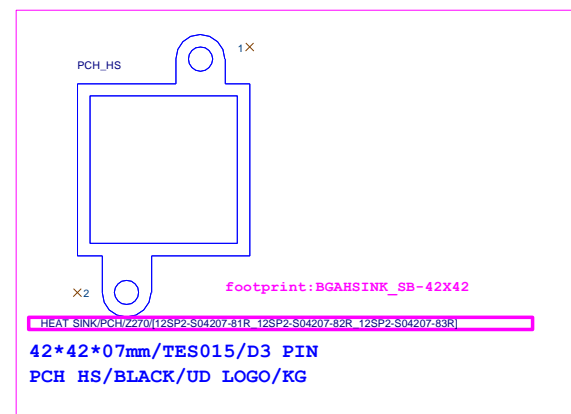
CHIP GL82B250 A0 INTEL[10HB1-03B250-20R]

PCHL		
BD34	VSS[70]	AB18
BD39	VSS[71]	AB20
BD7	VSS[72]	AB21
BF44	VSS[73]	AB25
BF43	VSS[74]	AB29
BF5	VSS[75]	AB4
BG18	VSS[76]	AB42
BG23	VSS[77]	AC10
BG28	VSS[78]	AC11
BG32	VSS[79]	AC14
BG37	VSS[80]	AC16
BG40	VSS[81]	AC38
BC9	VSS[82]	AC4
C1	VSS[83]	AC5
A12	VSS[84]	AC7
C2	VSS[85]	AC8
C37	VSS[86]	AD1
A6	VSS[87]	AD18
C9	VSS[88]	AD20
D1	VSS[89]	AD21
D10	VSS[90]	AD25
D12	VSS[91]	AD29
D15	VSS[92]	AD45
D16	VSS[93]	AE11
B12	VSS[94]	AE14
D19	VSS[95]	AE32
D21	VSS[96]	AE33
D24	VSS[97]	AE38
D25	VSS[98]	AK29
D29	VSS[99]	AK30
D30	VSS[100]	AK32
D33	VSS[101]	AK35
D35	VSS[102]	AK39
D36	VSS[103]	AL4
D39	VSS[104]	AL42
D44	VSS[105]	AM10
D7	VSS[106]	AM11
P13	VSS[107]	AM13
P15	VSS[108]	AM17
P17	VSS[109]	AM19
P19	VSS[110]	AM24
P31	VSS[111]	AM27
P33	VSS[112]	AM29
P35	VSS[113]	AM32
P4	VSS[114]	AM33
P42	VSS[115]	AM4
P8	VSS[116]	AN45
RT1	VSS[117]	AP10
R32	VSS[118]	AP11
T10	VSS[119]	AP13
T14	VSS[120]	AP15
T22	VSS[121]	AP22
T29	VSS[122]	AP27
T32	VSS[123]	AP31
T36	VSS[124]	AP33
T38	VSS[125]	AP34
Y36	VSS[126]	AP39
Y4	VSS[151]	
Y8	VSS[152]	W26
T42	VSS[153]	V16
T5	VSS[154]	V17
U4	VSS[155]	V18
U42	VSS[156]	V30
V10	VSS[157]	V32
V14	VSS[158]	V33
W3	VSS[159]	V38
AR13	VSS[144]	V4
AR31	VSS[58]	V8
AR33	VSS[59]	
AR4	VSS[60]	W18
AT10	VSS[61]	W20
AT13	VSS[62]	W21
AT35	VSS[63]	W23
AT37	VSS[64]	W25
AT42	VSS[65]	
AU11	VSS[66]	A44
AU17	VSS[67]	BE1
BD30	VSS[68]	BD1
W45	VSS[69]	BT
Y13	VSS[145]	A2
Y14	VSS[146]	B2
Y30	VSS[147]	A3
Y32	VSS[148]	A4
Y33	VSS[149]	B44
BG14	VSS[150]	B45
VSS_BG14	VSS	

12 of 13

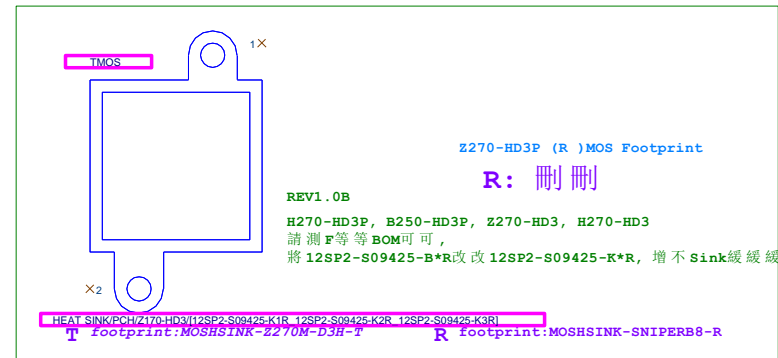
CHIP GL82B250 A0 INTEL[10HB1-03B250-20R]

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



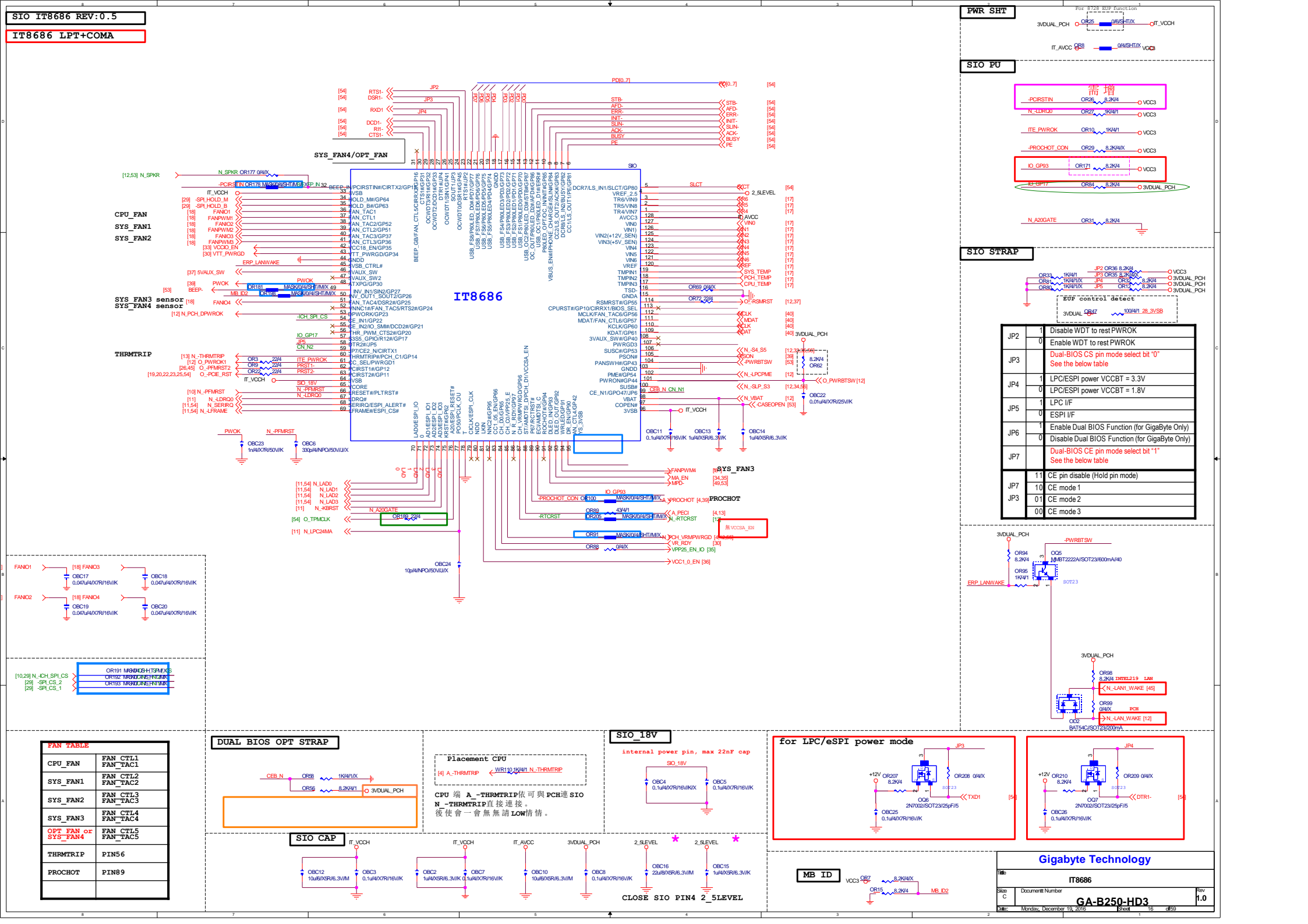
B85M-D3H Series PCH  
Heatsink

H270-HD3P//B250-HD3P///B250-HD3 相架 (T) MOS Footprint

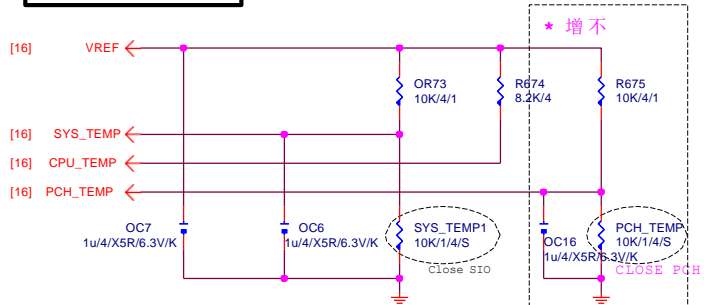


TMOS HS/BLACK/GBT MK/D4 PIN/KG  
TMOS HS/BLACK/GBT MK/D4 PIN/KG

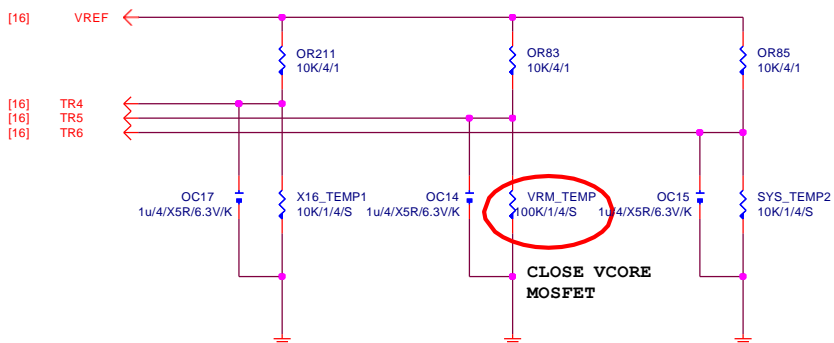
ANS 5043792			<b>GIGABYTE</b>	
Title			<b>PCH GND</b>	
Size	Document Number		GA-B250-HD3	
Custom				Rev 1.0
Date	Wednesday, December 21, 2016	Sheet	15	of 59



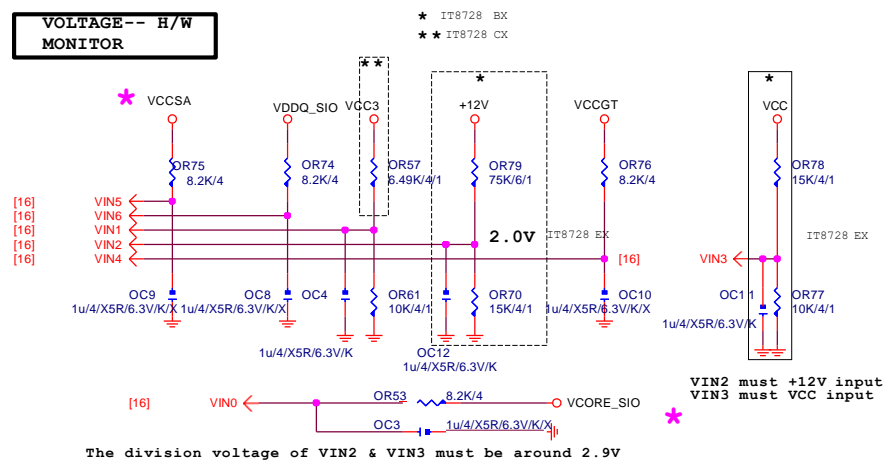
# TEMP H/W MONITOR



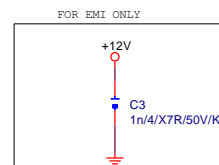
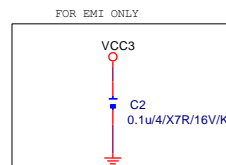
# 5每FAN時有有



# VOLTAGE-- H/W MONITOR



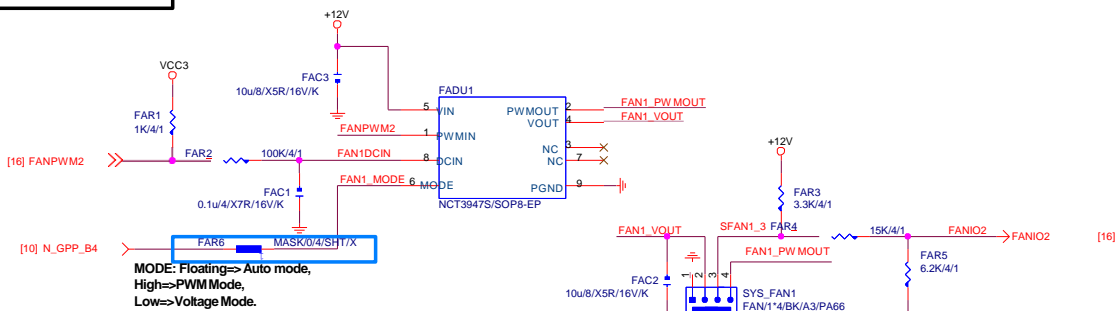
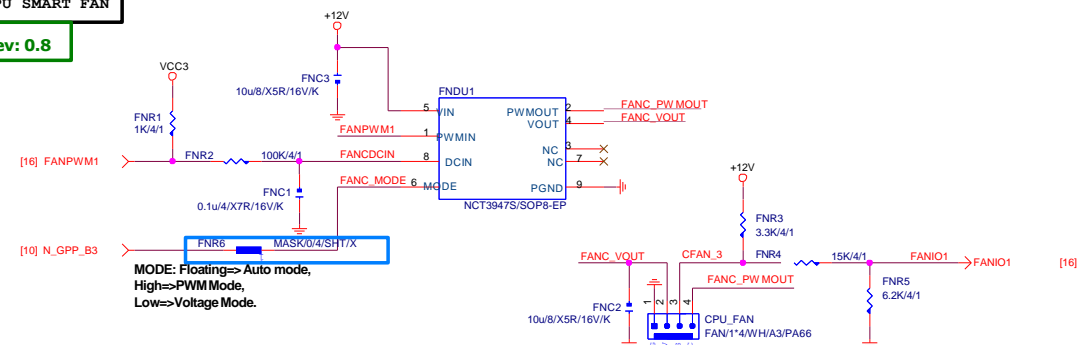
★Update 2015-04.24



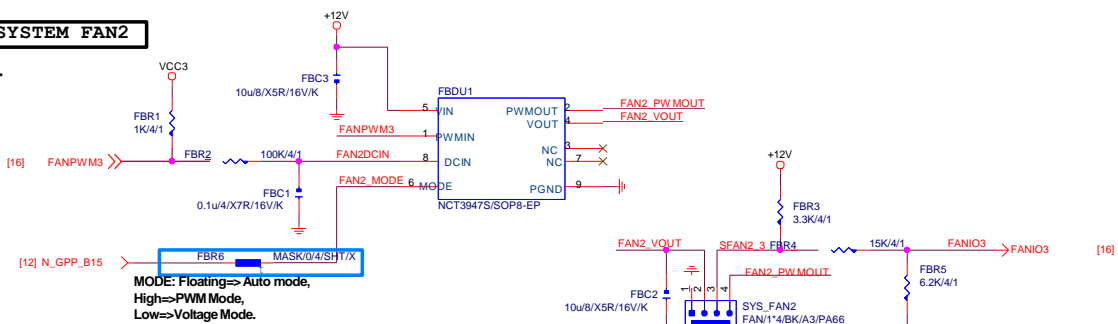
Gigabyte Technology

Title			HWM,KB/MS, FAN CTRL
Size	Document Number	Rev	
Custom	GA-B250-HD3	1.0	
Date:	Monday, December 19, 2016	Sheet	17 of 59

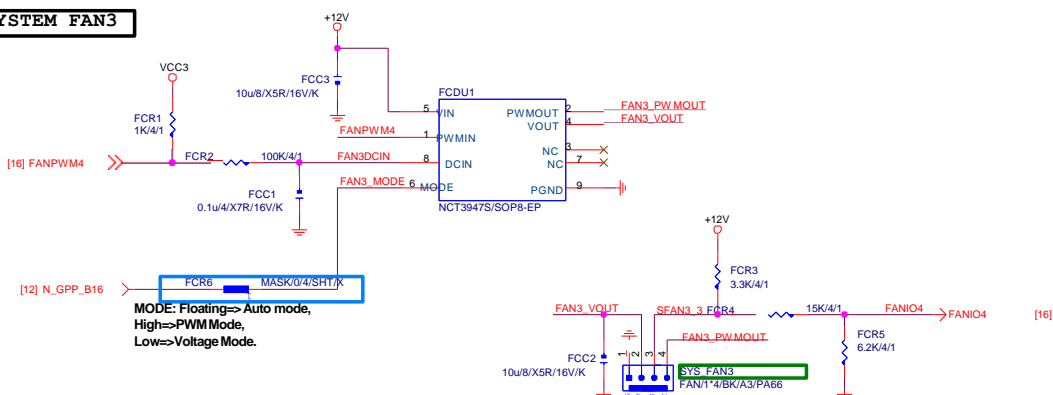
## Rev: 0.8



**B.**



C.



## Gigabyte Technology

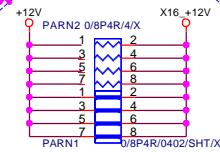
FAN CTRL

Size	Document Number	Rev
Custom	<b>GA-B250-HD3</b>	<b>1.0</b>
Date:	Monday, December 19, 2016	Sheet 18 of 59



Rev 0.2

+12 protect  
short-wire test



PA\_EXP\_RXP[0..15] >> PA\_EXP\_RXP[0..15] [4]  
PA\_EXP\_RXN[0..15] >> PA\_EXP\_RXN[0..15] [4]  
PA\_EXP\_TXP[0..15] >> PA\_EXP\_TXP[0..15] [4]  
PA\_EXP\_TXN[0..15] >> PA\_EXP\_TXN[0..15] [4]

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

PCIEX16:16/5/5/5/16

PCI-E REV:1.1--> 2.5GHZ

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

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

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

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

PCI-E REV:2.0--> 5GHZ

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

PCI-E REV:3.0--> 8GHZ

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

PCIESLOT-164STH

3GIO\_\*16

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

黑紅(先保合金不加,依依)

Gigabyte Technology		
PCI EXPRESS * 16		
Size Custom	Document Number	Rev 1.0
GA-B250-HD3		
Date: Monday, December 19, 2016	Sheet	19 of 59



Rev 0.3

PCIE9~12  
SLOT5

Footprint "PCIESLOT-64STH-1"

PCIE\*4

PCIE4

3GIO\_\*4

PP

[8,9,12,19,23,27,30,38,43,55] N\_SMBCLK  
[8,9,12,19,23,27,30,38,43,55] N\_SMBDATA

N\_SMBCLK  
N\_SMBDATA

[12,19,23,26,27,54] N\_-PCIE\_WAKE

-PCIE4\_1\_PR

[13] PP\_PCIE4\_OP12  
[13] PP\_PCIE4\_ON12

[13] PP\_PCIE4\_OP11  
[13] PP\_PCIE4\_ON11

[21] PP\_PCIE4\_OP10\_SW  
[21] PP\_PCIE4\_ON10\_SW

[21] PP\_PCIE4\_OP9\_SW  
[21] PP\_PCIE4\_ON9\_SW

to SWMU1

PCIE Lane Reverse

[10] -PCIE4\_1\_PR

[12] N\_GPP\_D16

for x4 & S.E SW

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

"PCIESLOT-64STH-1"不加版

黑紅 (先保合金不加,依依)

PRNT1\*  
12V  
12V  
GND  
JTAG2  
JTAG3  
JTAG4  
JTAG5  
3.3V  
3.3V  
PWRGD

GND  
REFCLK+  
REFCLK-  
GND  
HSIP0  
HSIN0  
GND

RSVD  
GND  
HSIP1  
HSIN1  
GND  
HSIP2  
HSIN2  
GND  
HSIP3  
HSIN3  
GND  
RSVD

PRNT1\*  
12V  
12V  
GND  
JTAG2  
JTAG3  
JTAG4  
JTAG5  
3.3V  
3.3V  
PWRGD

GND  
REFCLK+  
REFCLK-  
GND  
HSIP0  
HSIN0  
GND

RSVD  
GND  
HSIP1  
HSIN1  
GND  
HSIP2  
HSIN2  
GND  
HSIP3  
HSIN3  
GND  
RSVD

PCIE Lane Reverse

Gigabyte Technology

Title			PCIE_X4
Size	Document Number	GA-B250-HD3	
Custom		Rev	1.0
Date:	Monday, December 19, 2016	Sheet	20 of 59

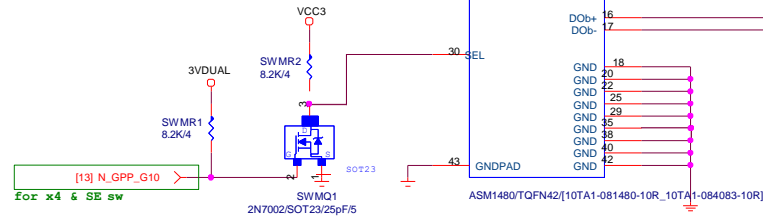
(M) TYPE

X4 & S.E

PCIEx4 share S.E

From PCH

For x4 & SE sw

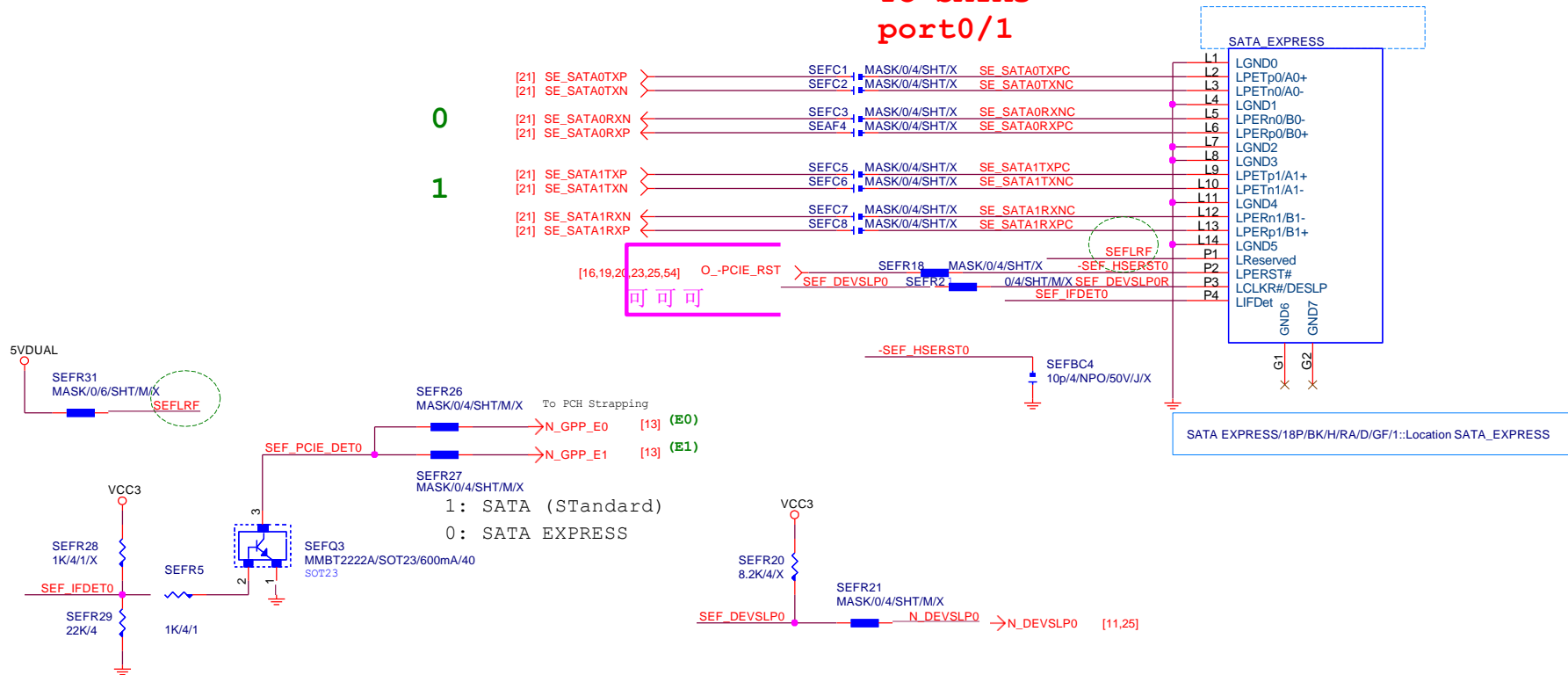


Function	SEL
xI--> xOa	L
xI--> xOb	H

B250-HD3	PCIEx4 / S.E.	GPI				GPO				M.E. Config			
		N_GPP_ D16		N_GPP E0	N_GPP G10		-	-	-	P12	P11	P10(S1)	P9(S0)
	PCIEx4(優先) Only	0		1	0					PCIEx4 (Reverse)			
	S.E. 有插	x		0	1					PCIEx2(Reverse)		SATA Express	
		#PEx4_Dct		#SE_Dct									

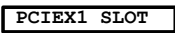
Rev 0.7

To SATA3  
port0/1



SATA EXPRESS需增power for USB3.1小插  
每每CONNECT都要保位類0603 0  
OHM,走走40MILS 即可

\*



## PCIEX1\_1

PCIEX1\_1 3GIO\_X1



PCIEX1\_2 3GIO\_X1

PCIEX4/X1 SWITCH

Title				
<Title>				
Size	Document Number			Rev
	CustomGA-B250-HD3			1.0
Date:	Monday, December 19, 2016		Sheet	23 of 59

Type Q

Remark:Type Q,但後 from B250-HD3P comp name 就就就 (S )

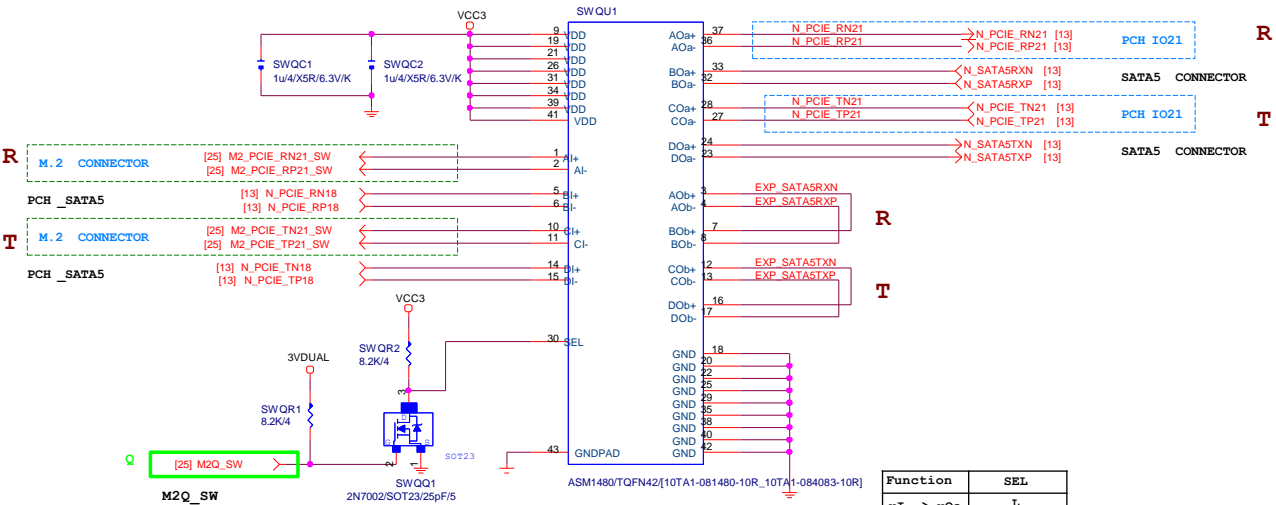
刪除 第2根 X4 & SWSU1 & SWSU2 ,  
M.2 改 SWQU1 切切 SATA 5 & M2\_PCIE\_IN21\_SW2 ~

Rev 0.1

(Q) TYPE

舊的 Switch,價規低 P & N SWAP

SATA5 & M.2 SW



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

M2Q\_SW  
High : M2X4 + SATA 5 OK  
Low : M2 (SATA) + SATA 5 NA

Title <Title>		
Size	Document Number	Rev 1.0
CustomGA-B250-HD3		
Date	Monday, December 19, 2016	Sheet 24 of 59

Type Q

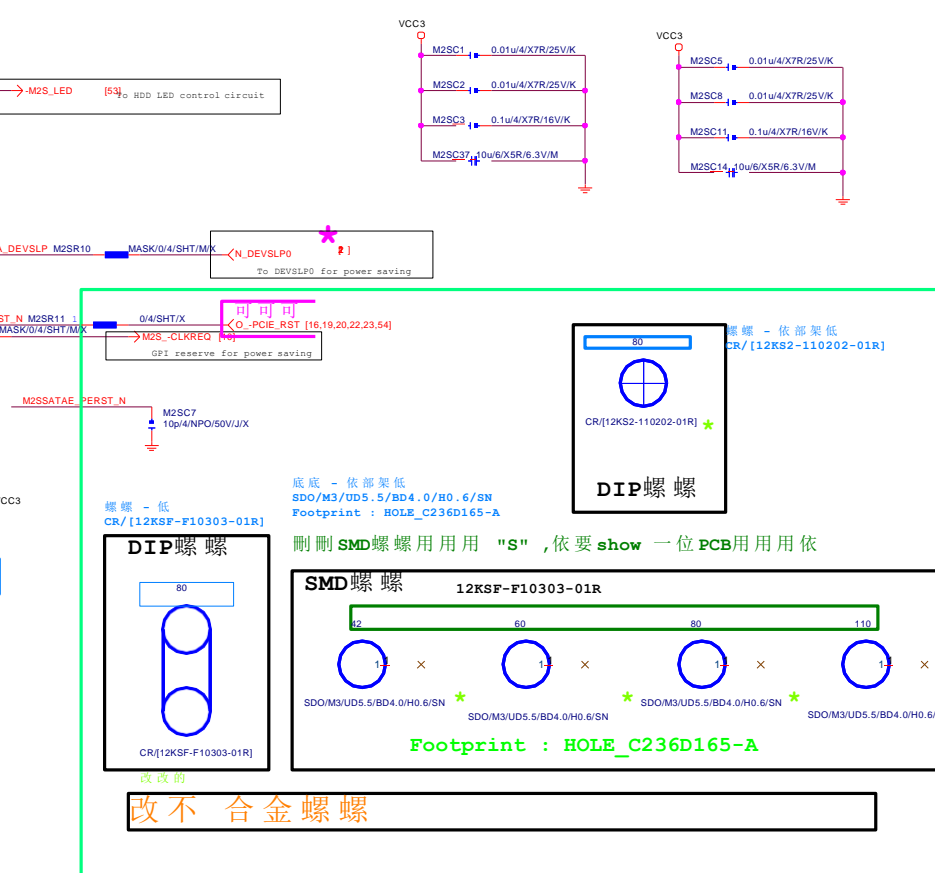
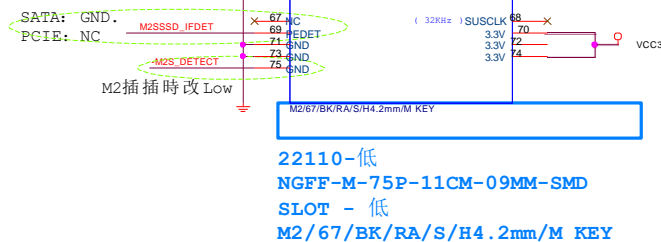
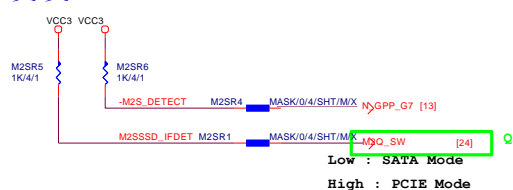
M.2 Lane4 from PCH IO24

### M.2 Lane3 from PCH IO23

**M.2 Lane2 from PCH IO22**

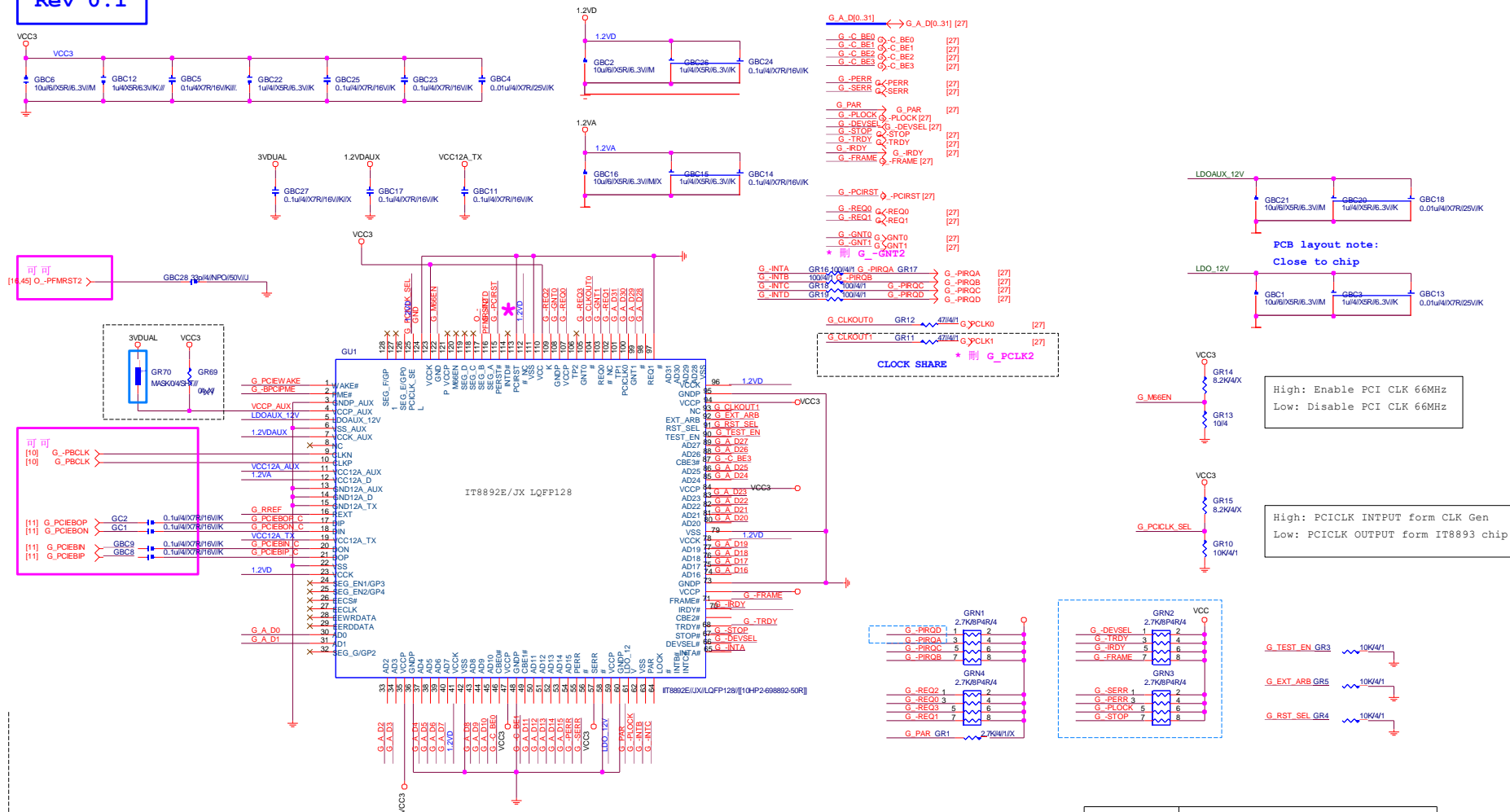
M.2 Lane1 from PCH IO21

## 支支 SATA and M.2 function



M2P	GPI			GPO	M.E. Config			
	N_GPP_G7	N_GPP_G8	N_GPP_D13	N_GPP_G4	P12	P11	P10	P9
M2x4 Only	0	1	1	1	PCIEx4			
PCIEx4 Only	1	1	0	0	PCIEx4			
M2S_32G First	0	1	0	1	PCIEx4			
M2S_SATA First	0	0	0	1	PCIEx1	PCIEx1	SATA	SATA

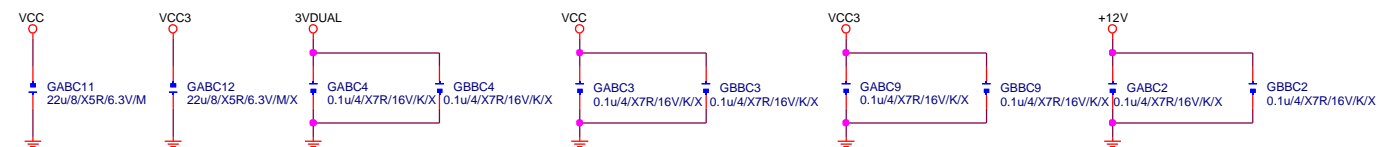
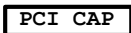
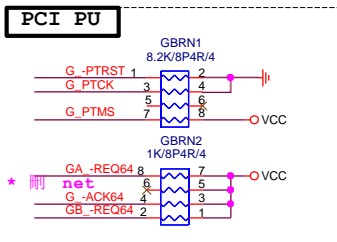
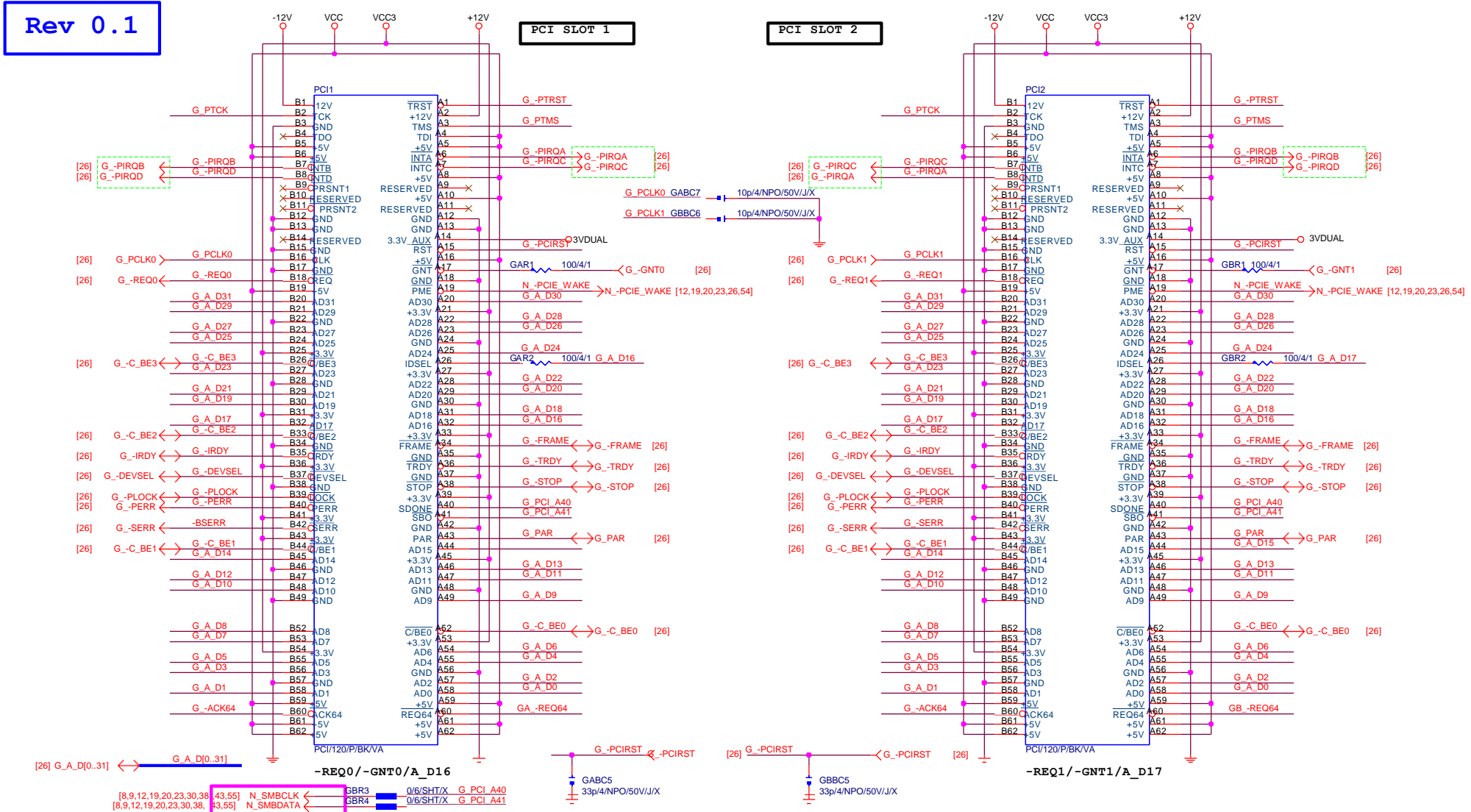
Rev 0.1



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

**Gigabyte Technology**

Rev 0.1



**GIGABYTE™**

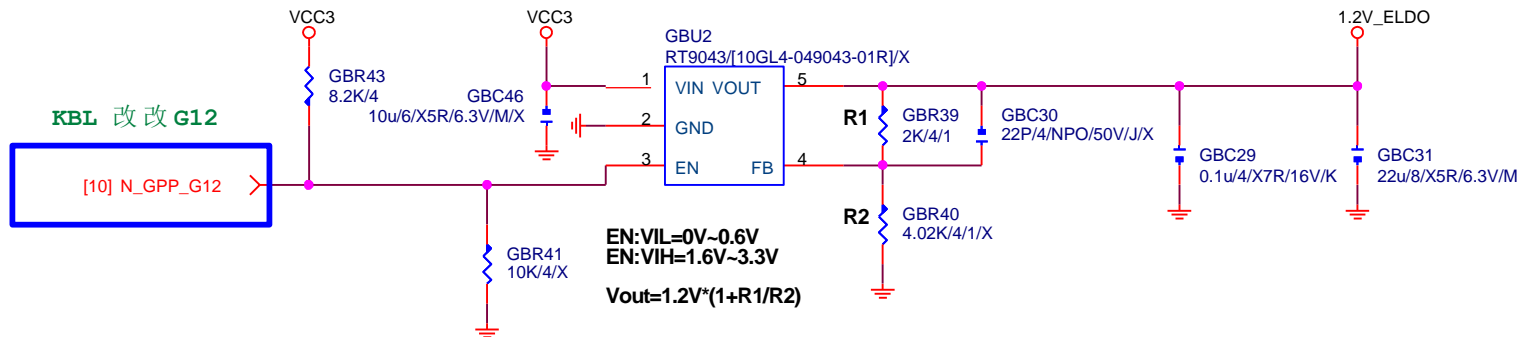
Title  
**PCI SLOT 1&2**

Size	Document Number
Custom	<b>GA-B250-HD3</b>

Date: Monday, December 19, 2016 Sheet 27 of 59



Rev 0.1

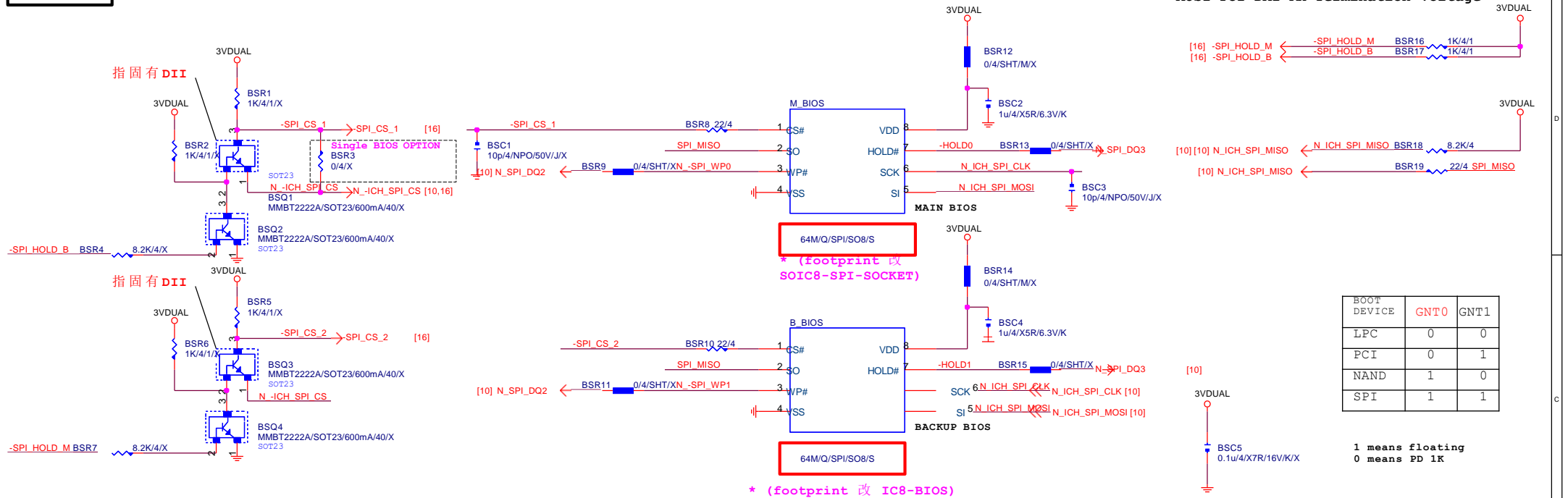


Gigabyte Technology

Title		
ASM1085 POWER		
Size Custom	Document Number GA-B250-HD3	Rev 1.0
Date:	Monday, December 19, 2016	Sheet 28 of 59

DUAL BIOS

MOSI For DMI RX Termination Voltage



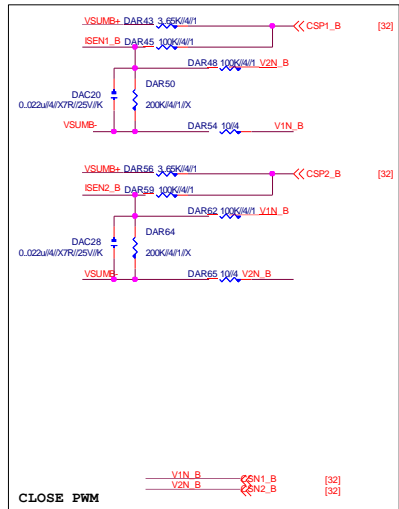
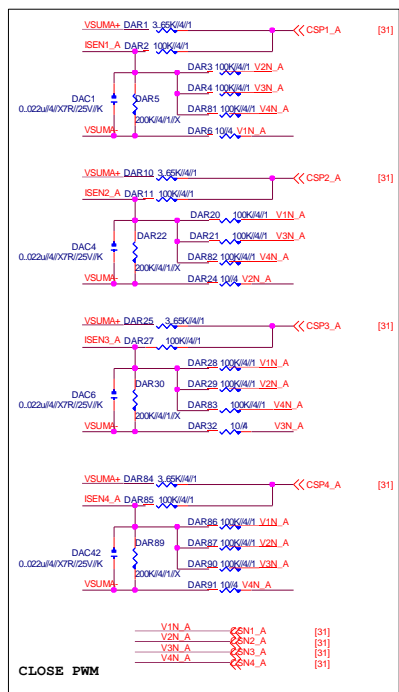
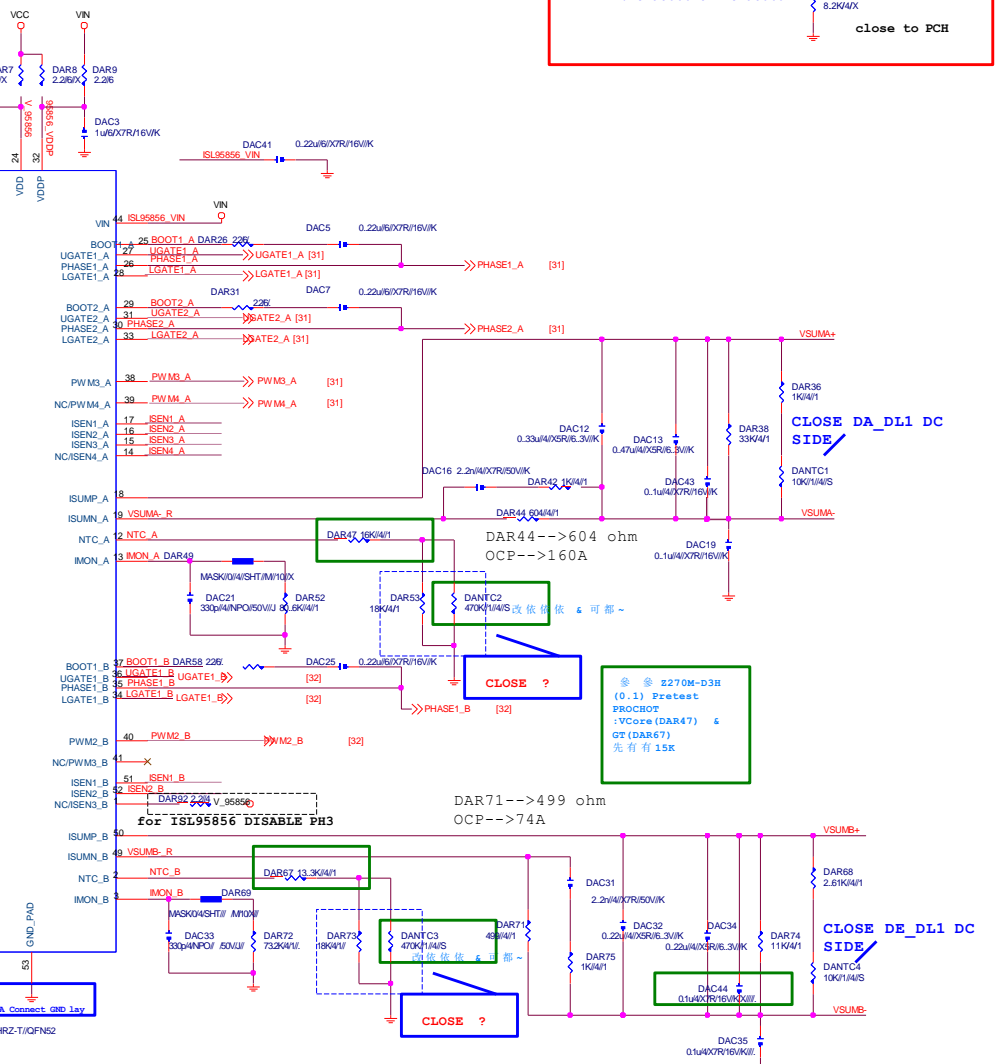
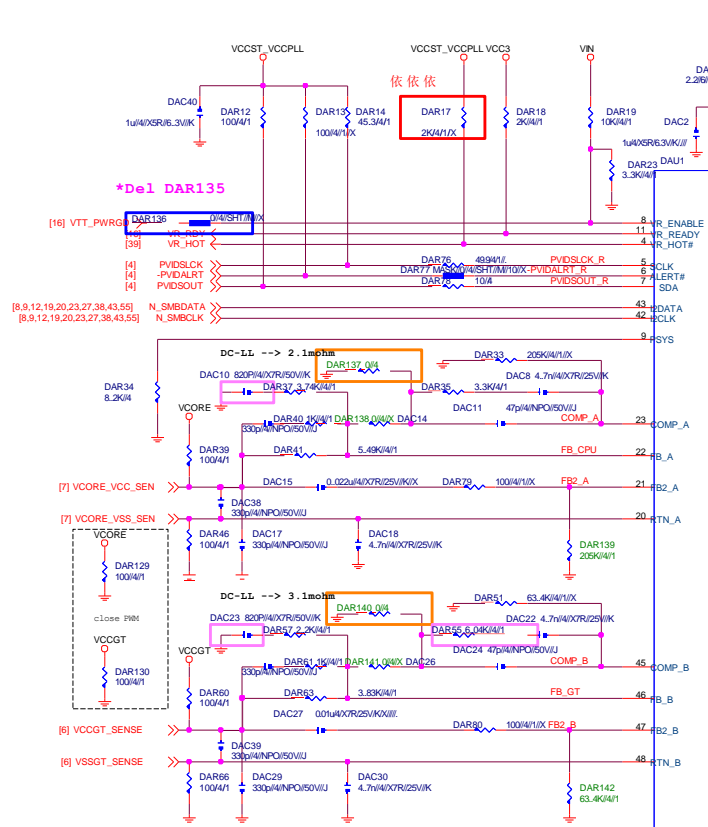
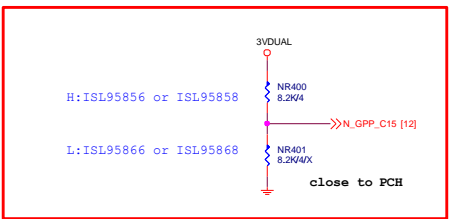
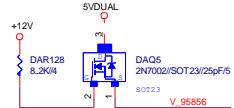
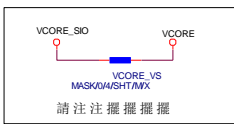
Gigabyte Technology

BIOS

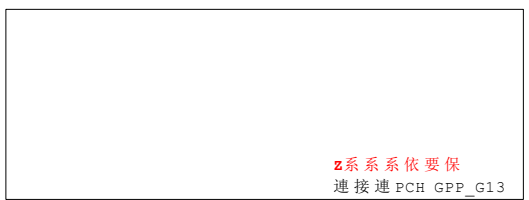
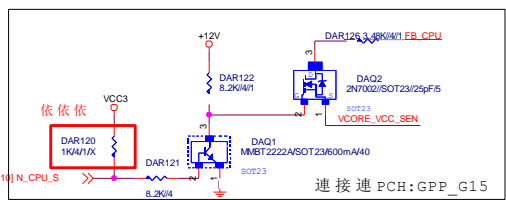
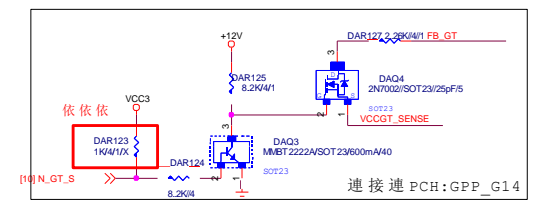
GA-B250-HD3

Monday, December 19, 2016

Sheet 29 of 59

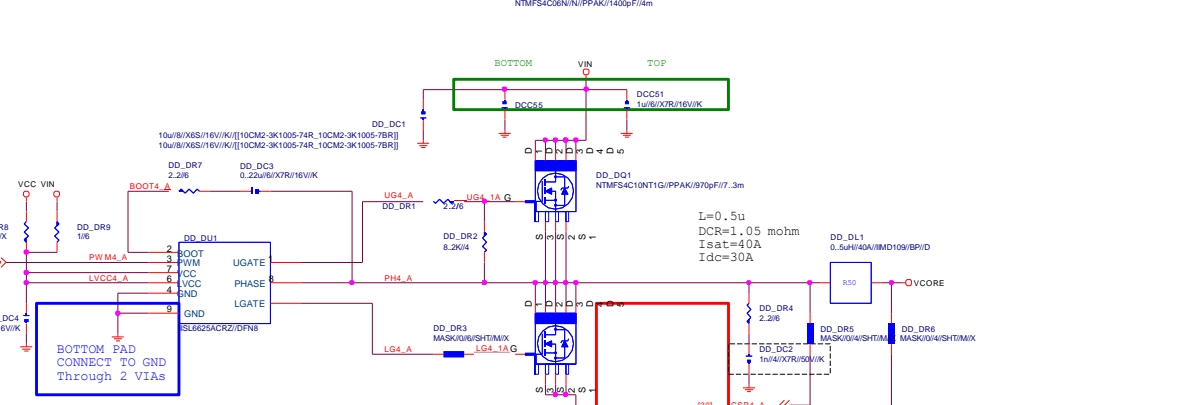
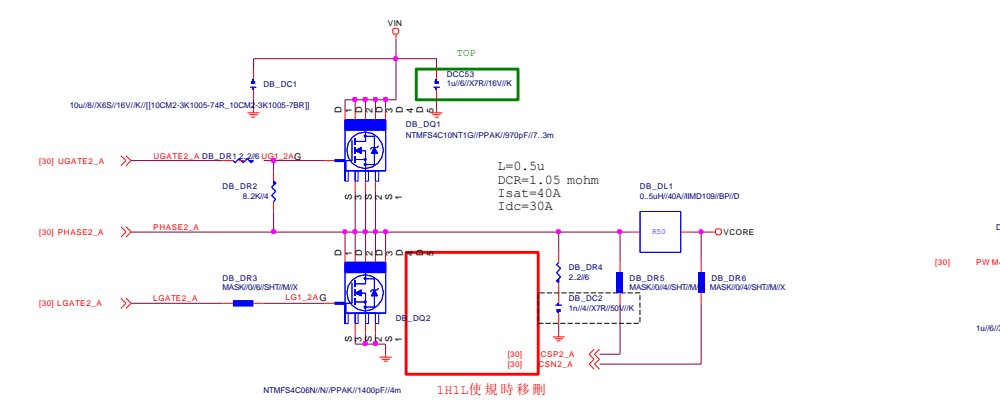
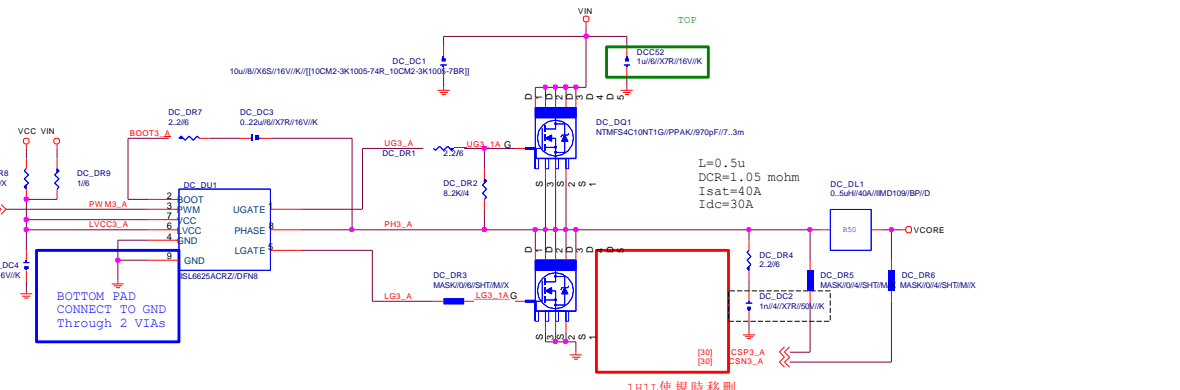
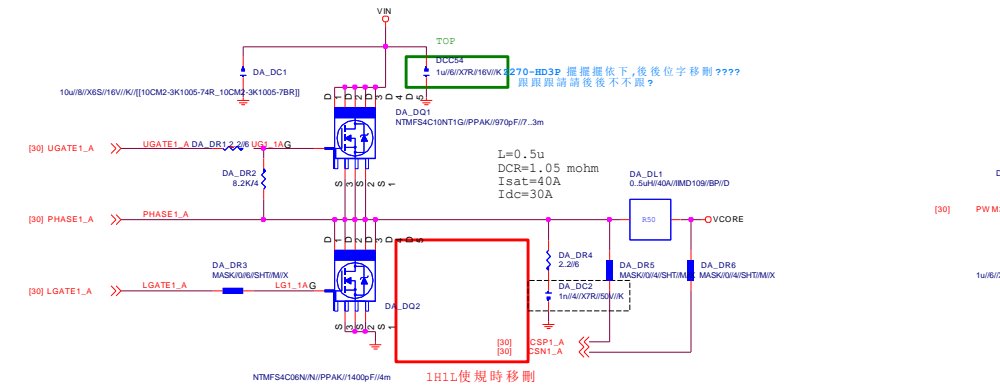


Vcore	ISL95856	ISL95866	VCCGT	ISL95856	ISL95866
DAR137	X	V	DAR140	X	V
DAR138	V	X	DAR141	V	X
DAR139	X	V	DAR142	X	V
DAC15	V	X	DAC27	V	X
DAR79	V	X	DAR80	V	X
DAR33	V	X	DAR51	V	X

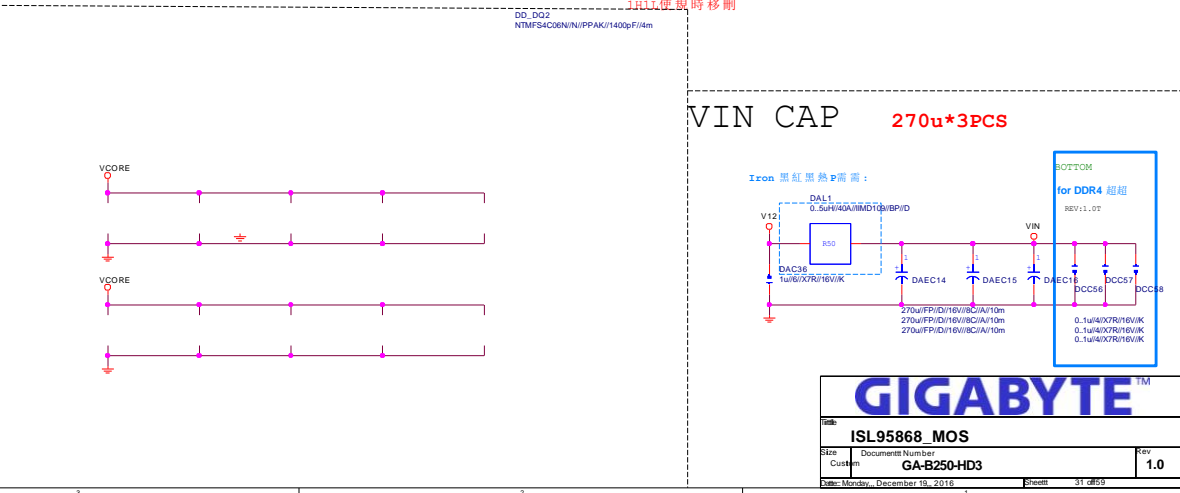
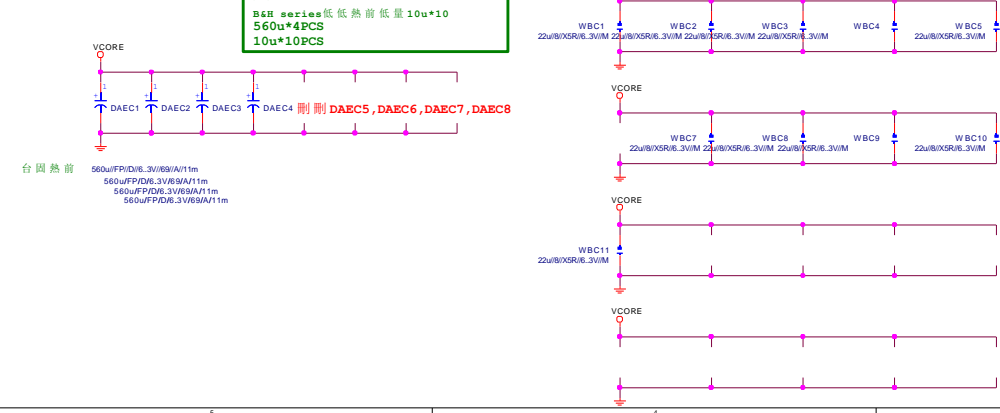


0.3

VCORE



VCORE CAP



GIGABYTE

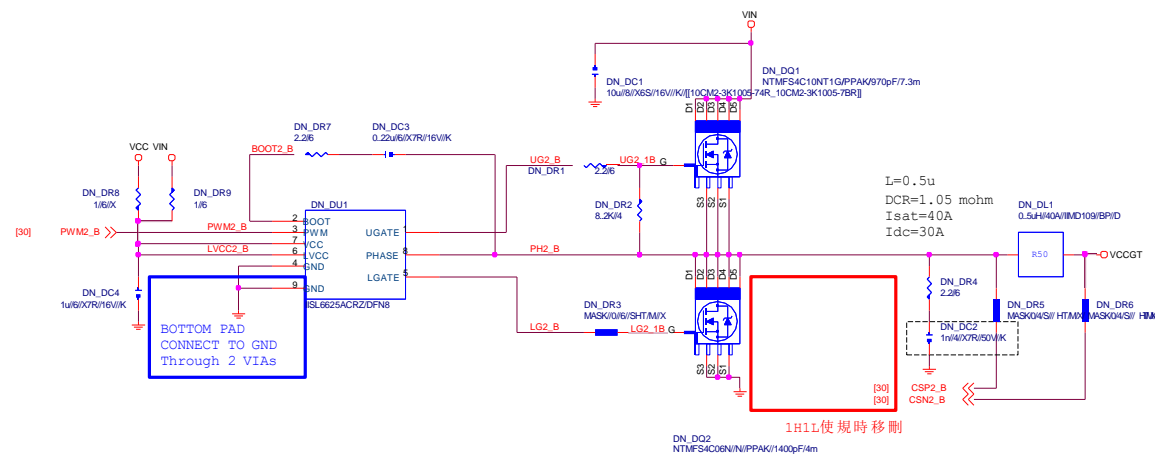
ISL95868 MOS

GA-B250-HD3

Rev: 1.0

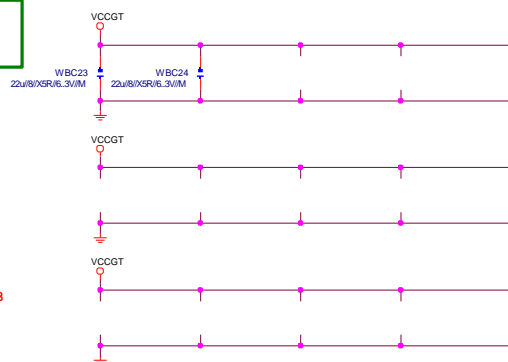
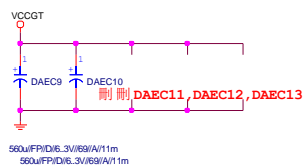
31 2859

VCCGT

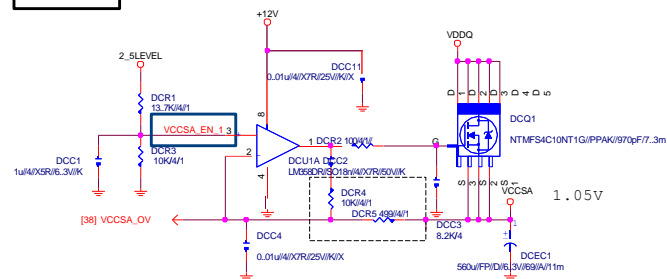


先先 B250M-D3H 低量  
B&H series 低低熱前低量 10u\*10  
560u\*2PCS  
10u\*2PCS

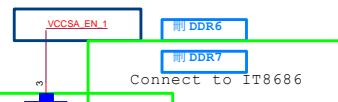
VCCGT CAP



VCCSA



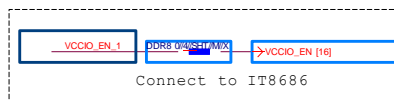
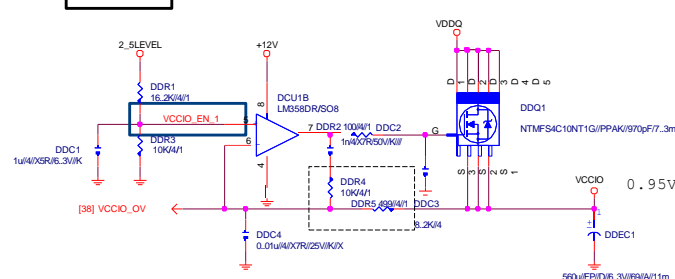
Connect to IT8793



SIO PIN5 . PIN7 有位與function時  
DCQ2 依依  
DDR7 依依要先保

SIO PIN5 . PIN7接VDDQ . VCCIO時  
DCQ2 依依  
DDR7 依依

VCCIO

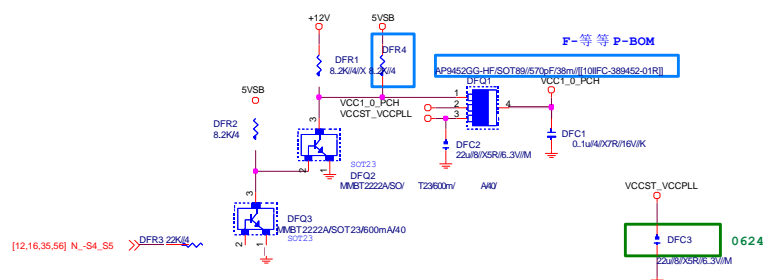


Connect to IT8793

VCCGT總總2顆：剛WBC38 , WBC39

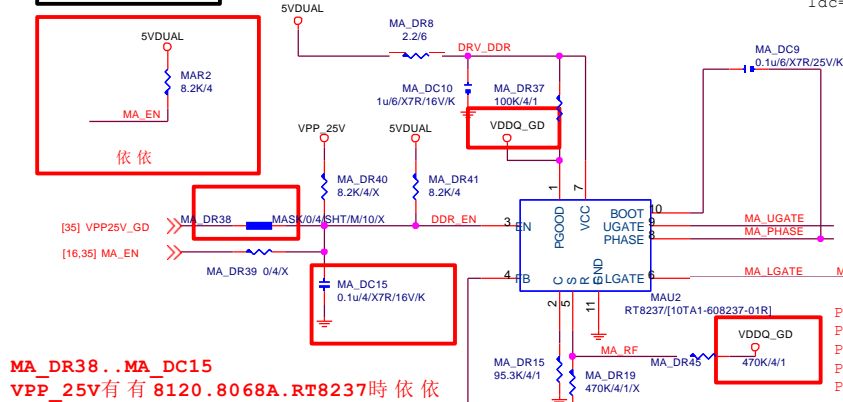


VCCST\_VCCPLL



REV:0.1

DDR4



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

Iron 黑紅黑熱P需需:

DDR VIN CAP  
560u\*2PCS

CHOKE與CAP需需可

SUPPORT DDR4 1.2V

25A MAX  
L=1u  
DCR=2.5 mohm  
Isat=35A  
Idc=28A

請擺擺CHOKE位一一擺擺.先无保.  
請可請請ripple料不後固後依依

Remote sense請請請請請請端光請不

PWR SEQ

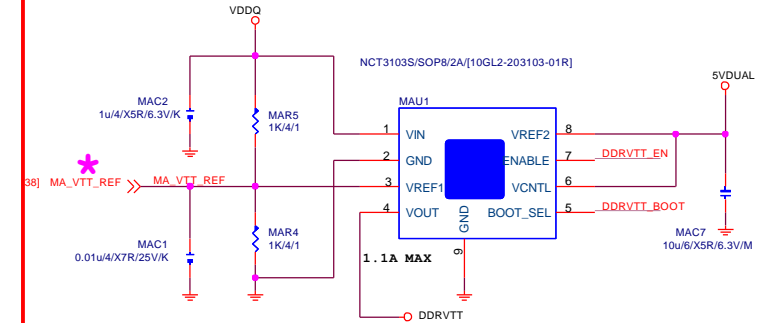
CLOSE TO DDR POWER PLANE

For power sequence require

VPP\_25V有有8120時依依

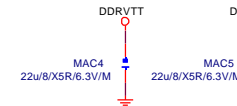
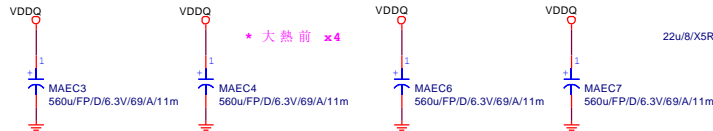
MAU1依RT9045時依依(依可MASK)

DDRVTT



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

DDRVTT CAP



VDDQ總總3顆: WBC49, MAC60, MABC10

GIGABYTE™			
Title RT8237_DDR4 POWER			
Size Custom	Document Number GA-B250-HD3	Rev 1.0	
Date: Monday, December 19, 2016 Sheet 34 of 59			

**VPP\_25V**

5V DUAL

MA\_DR20 0/6/SHT/30/MX

MA\_ZD1 A2Z225-01L/SOD323

MA\_DR24 100K/4/1/X

MA\_DC20 10uF/6X5R/6.3V/M

MA\_DC21 1uF/6X7R/16V/K

MA\_L3 1.0uH/15A/S/6.7m

MA\_DR27 4.02K/4/1

MA\_DR31 1.27K/4/1

MA\_DR30 8.2K/4

RT8068AZQW/WDFN-10L

2.5V

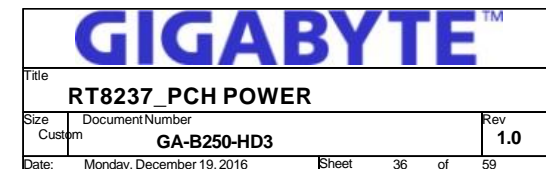
SUPPORT DDR4

依依

Title			
RT8068A_VPP25 POWER			
Size	Document Number	Rev	
Custom	GA-B250-HD3	1.0	
Date:	Monday, December 19, 2016	Sheet	35 of 59

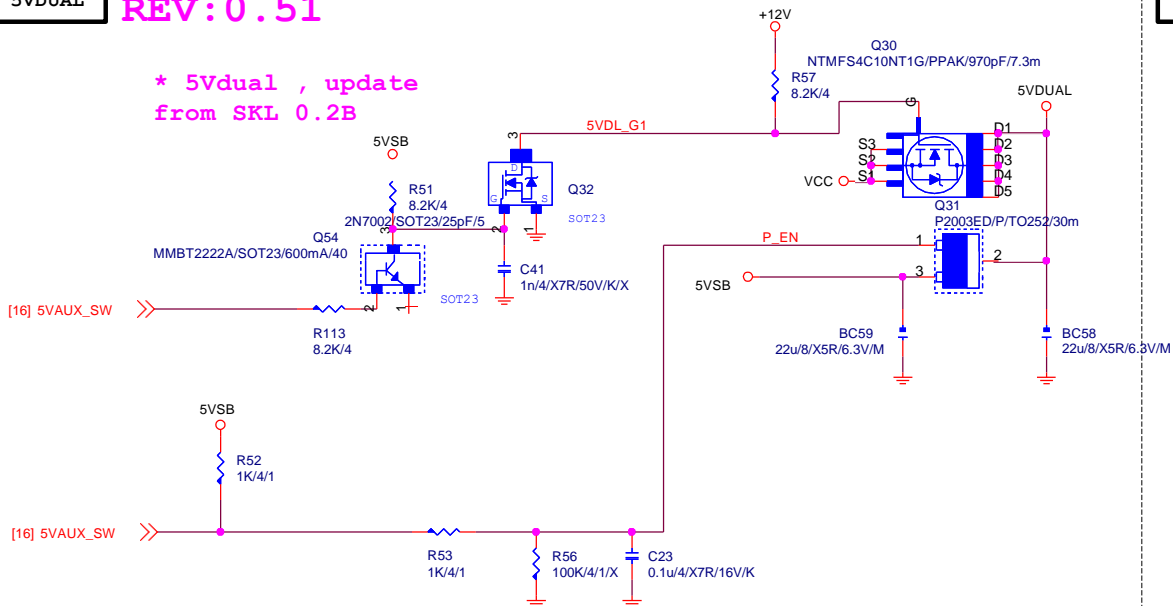


10E F-等等:for  
部部 POWER會一會，斷AC料無無 POWER情情.



## REV: 0.51

[16] 5VAUX\_SW



Rise: 20% - 80%  
Fall : 2V- 0.8V

依 22u 熱前

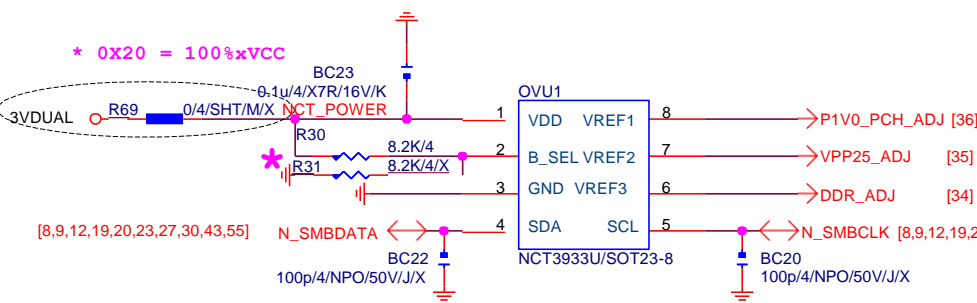
Meet the rise time

[illegible]

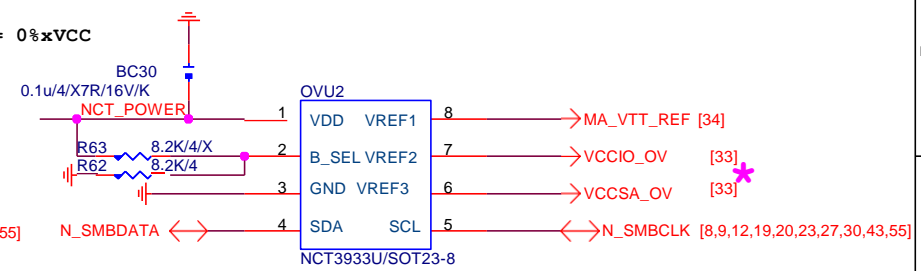
## Gigabyte Technology

Title			
<b>DISCRETE POWER</b>			
Size	Document Number		Rev
Custom	<b>GA-B250-HD3</b>		<b>1.0</b>
Date:	Monday, December 19, 2016	Sheet	37 of 59

OVER VOLTAGE



0X2A = 0%xVCC



0X22 = 75%xVCC

\* 删除 OVU3

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

**Gigabyte Technology**

TitleCPU CORE VR-2

Size Custom

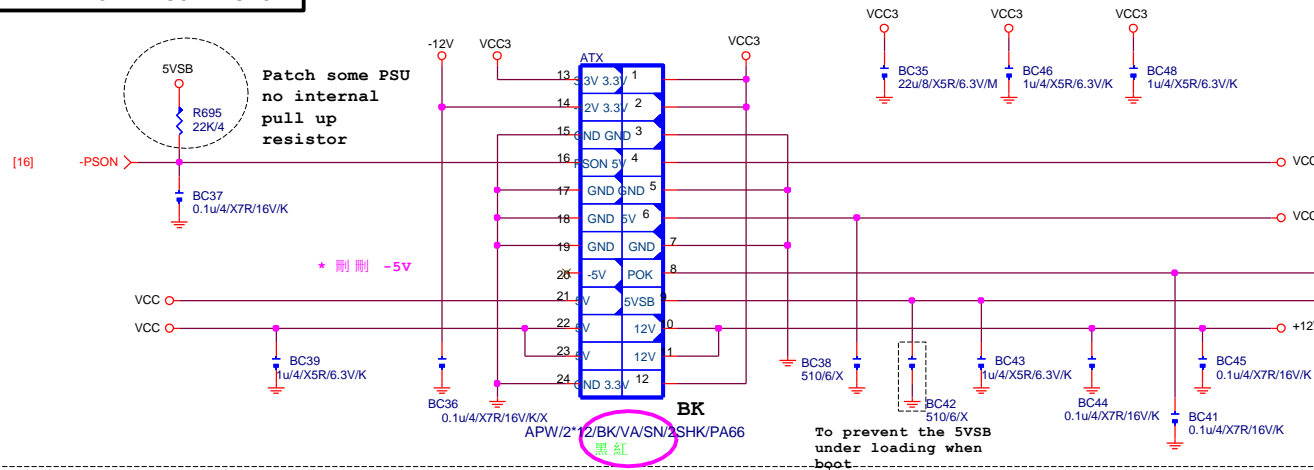
Document Number

Rev1.0

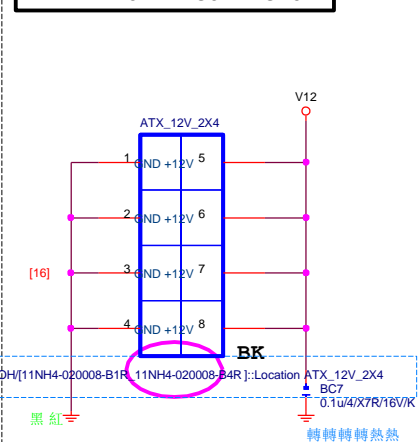
Date: Monday, December 19, 2016

Sheet 38 of 59

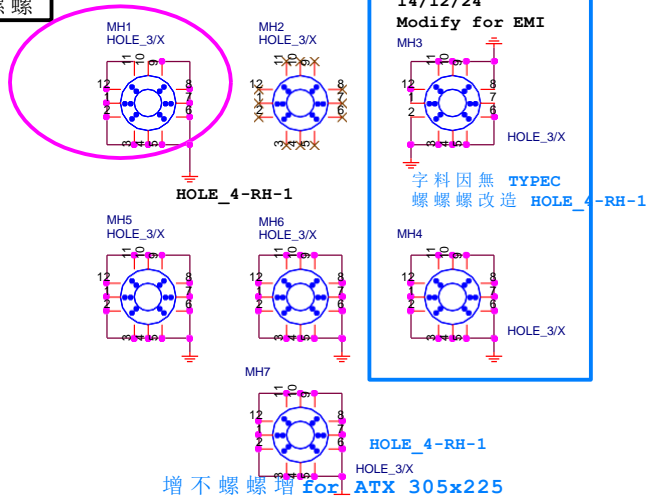
## ATXX24 POWER CONNECTOR



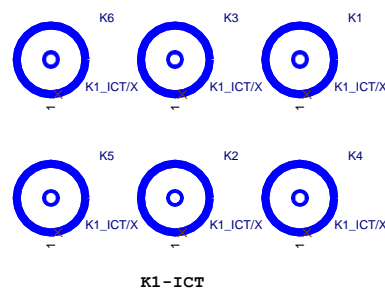
## ATXX4 POWER CONNECTOR



## 螺 螺 螺

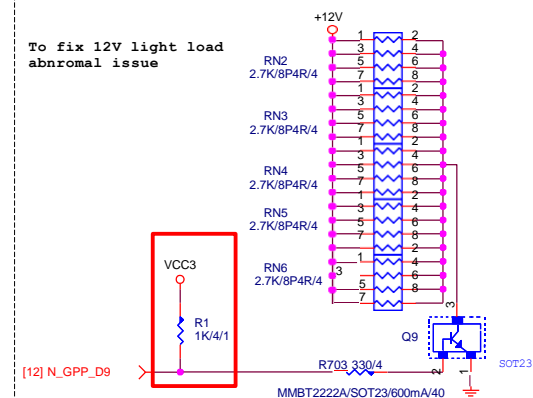


固固螺 / 測光光



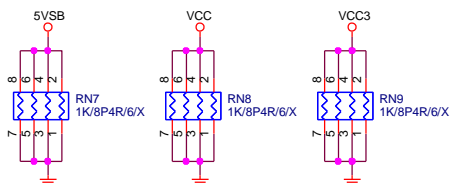
To prevent the 5VSB  
under loading when  
boot

## +12V DUMMY LOAD

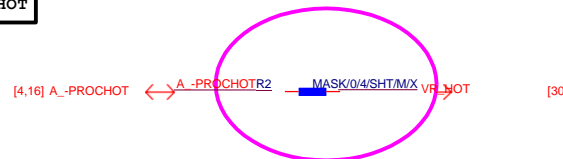


【技技技技 R&D技技技技 153】

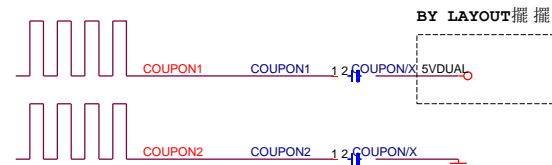
DUMMY LOAD	
1	2
3	4
5	6
7	8
9	10
11	12
13	14
15	16
17	18
19	20
21	22
23	24
25	26
27	28
29	30
31	32
33	34
35	36
37	38
39	40
41	42
43	44
45	46
47	48
49	50
51	52
53	54
55	56
57	58
59	60
61	62
63	64
65	66
67	68
69	70
71	72
73	74
75	76
77	78
79	80
81	82
83	84
85	86
87	88
89	90
91	92
93	94
95	96
97	98
99	100



-PROHOT



## COUPON



BY LAYOUT擺擺

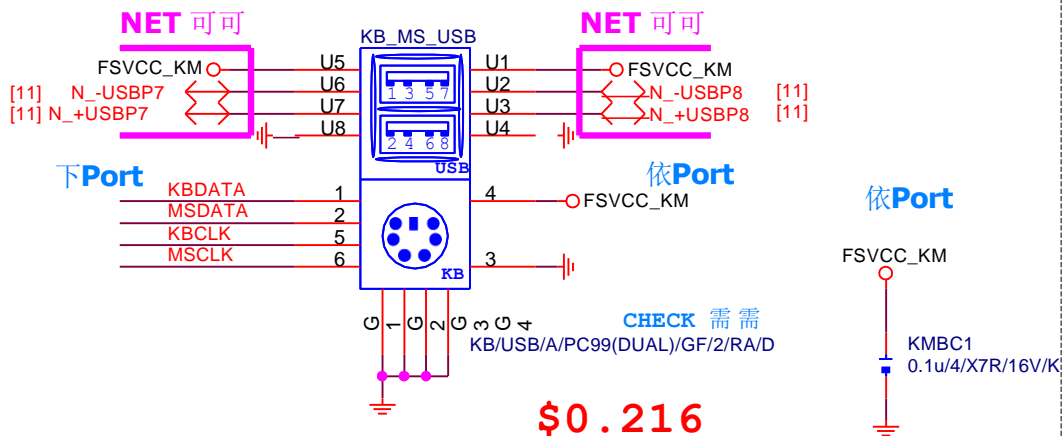
## Gigabyte Technology

Title			
<b>ATX POWER CONNECTOR</b>			
Size Custom	Document Number	<b>GA-B250-HD3</b>	Rev <b>1.0</b>
Date:	Monday, December 19, 2016	Sheet 39 of 59	

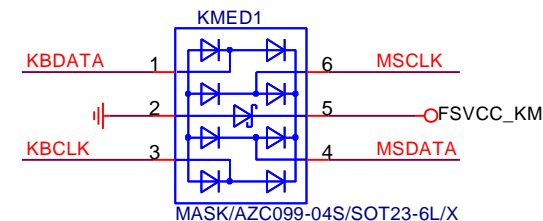
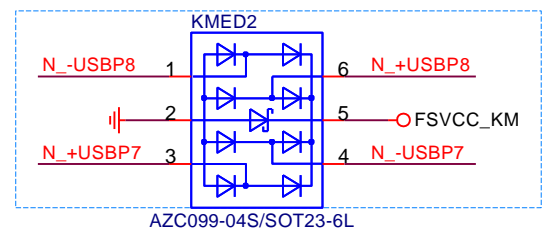
## KB\_MS\_USB

Rev: 0.81

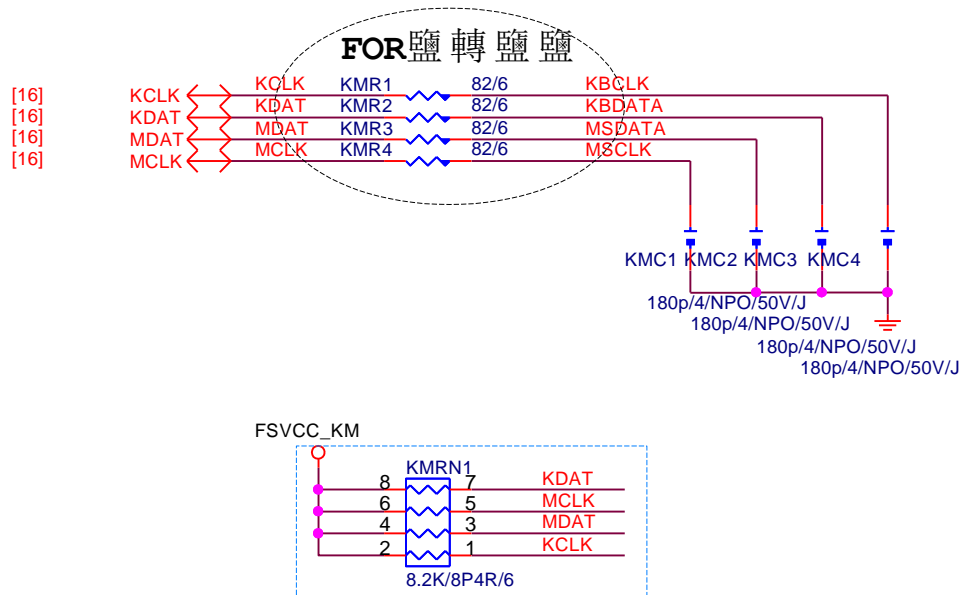
需connector : PS2(位依)+USB2.0\*2(位下) 字改因因會與因因connector有有有 且且且因訊因且籃空  
所所依有有  
所有200 series 請下位版改不原請有需: PS2(位下)+USB2.0\*2(位依)



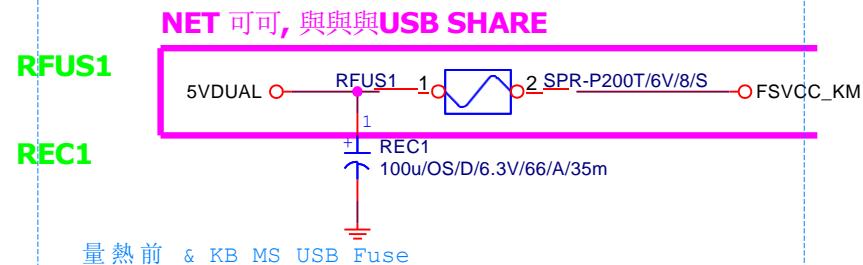
## ESD



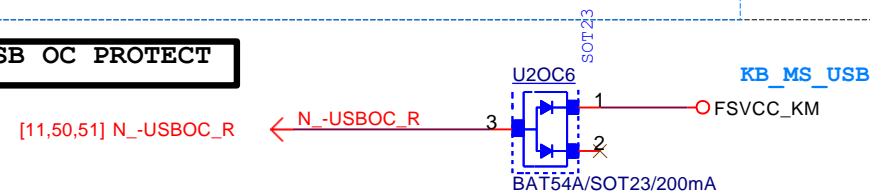
## KB\_MS\_USB DAMPING/PU



## KB\_MS\_USB PWR



## USB OC PROTECT



Gigabyte Technology

Title

KB\_MS\_USB

Size  
A

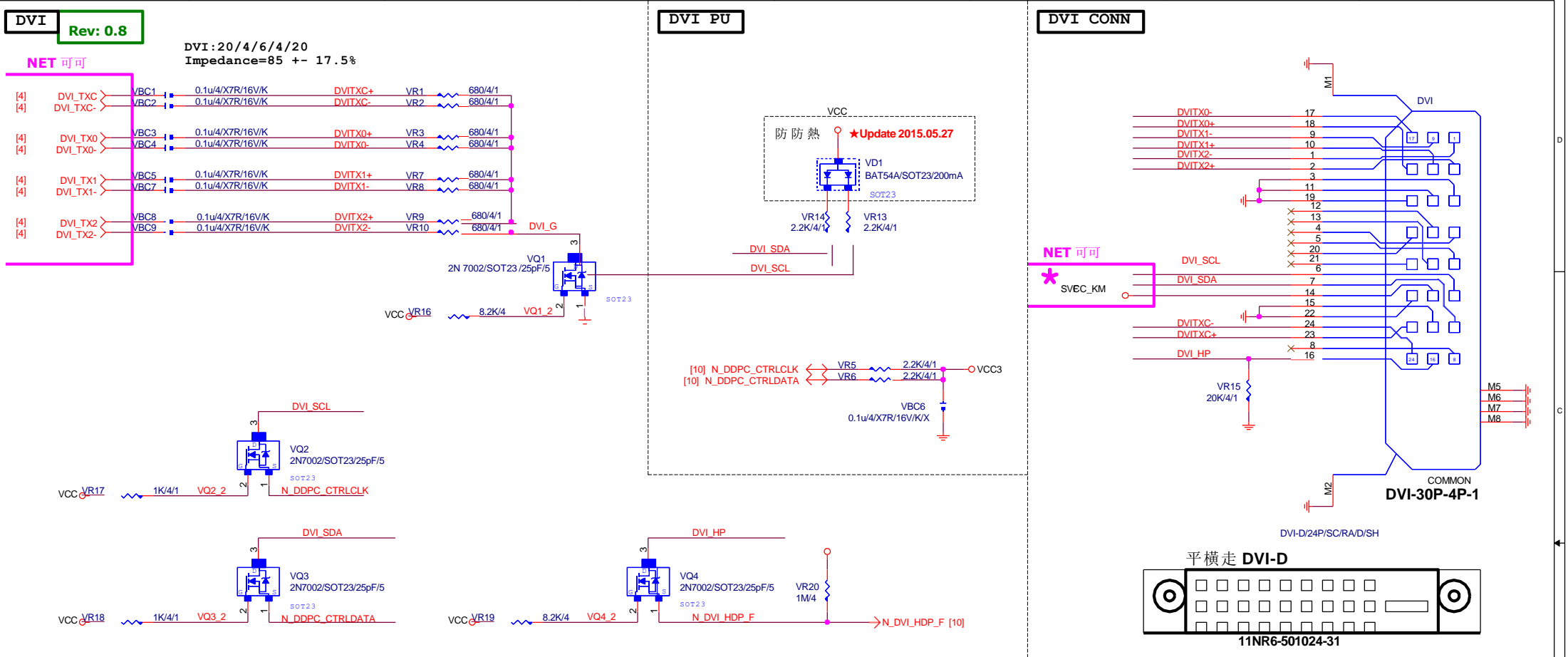
Document Number

GA-B250-HD3

Rev  
1.0

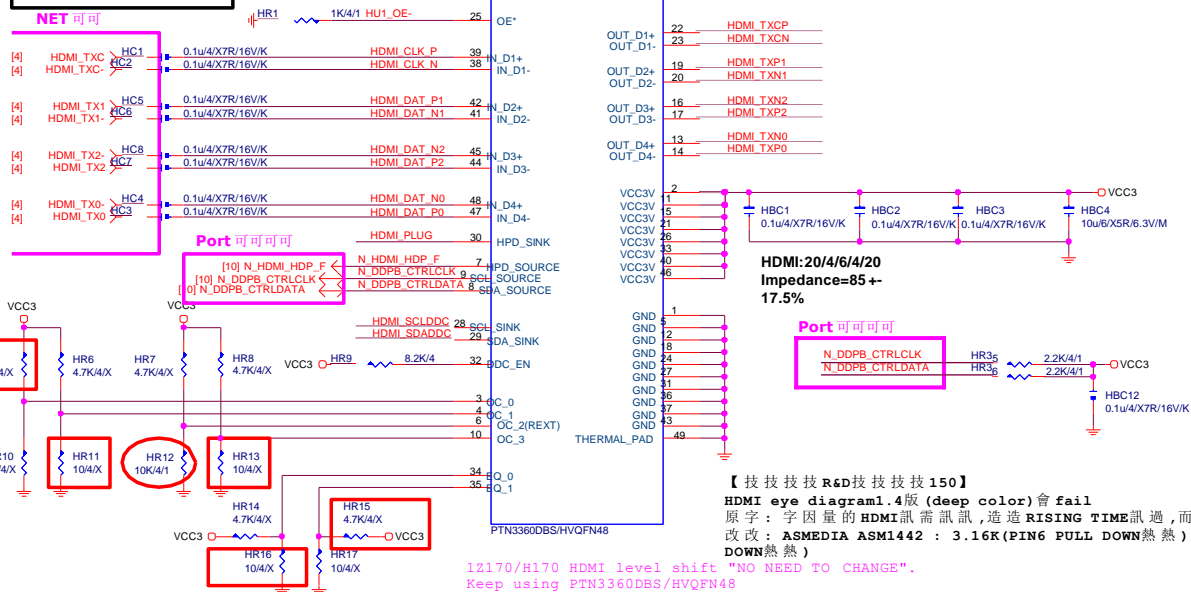
Date: Monday, December 19, 2016

Sheet 40 of 59

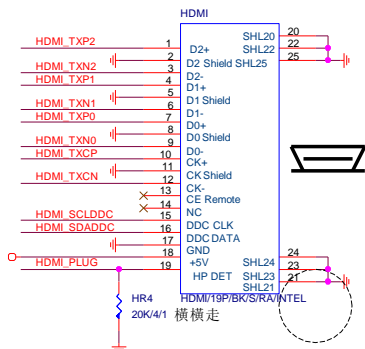
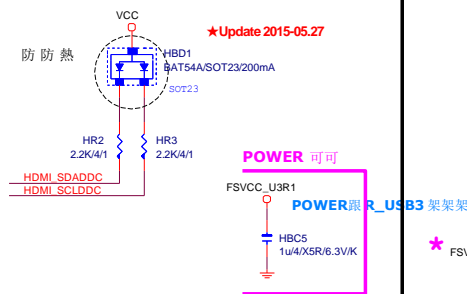


**Rev: 0.82**

## HDMI LEVEL SHIFT

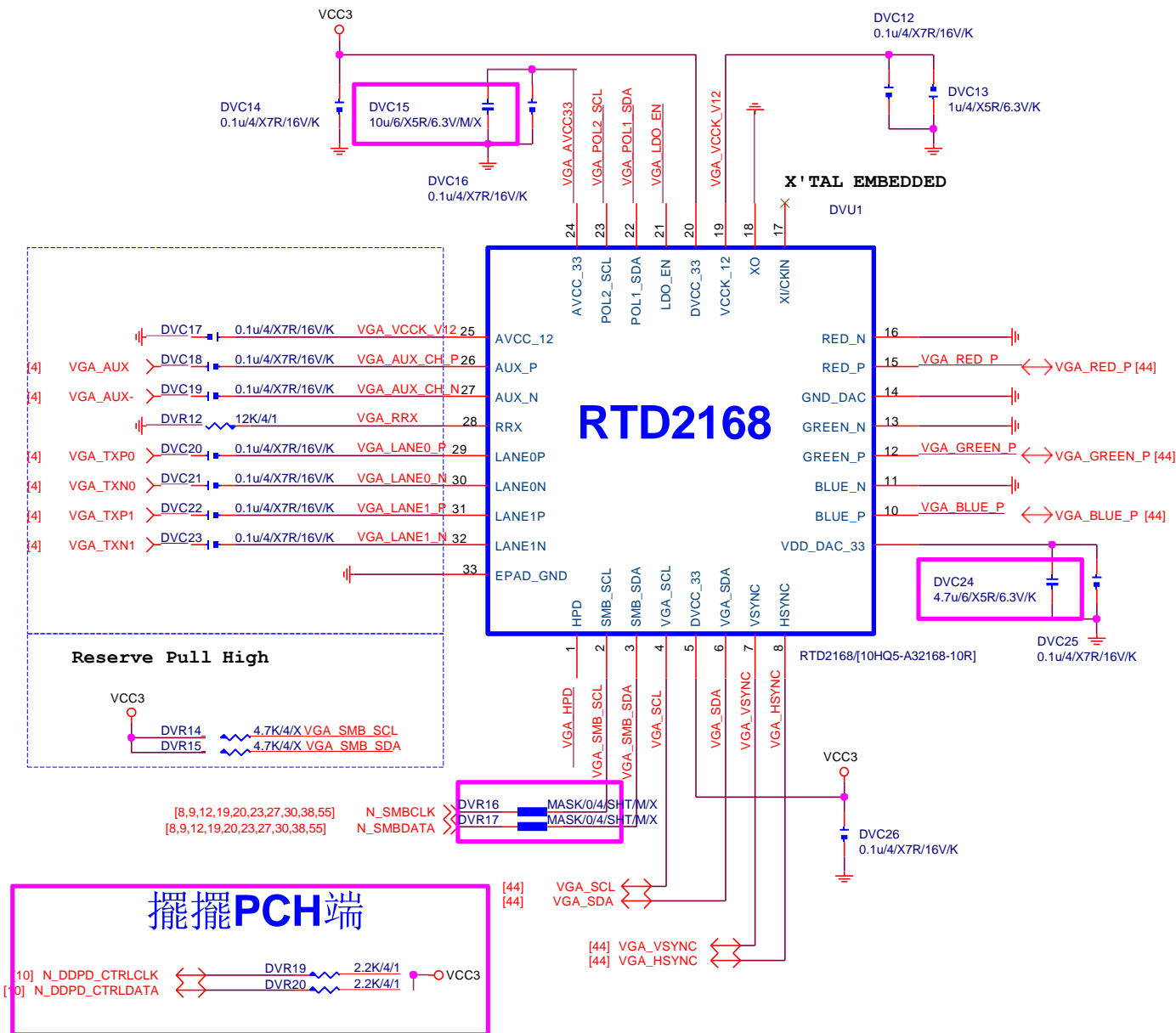


PTN3360:PIN 4/10/34/35 NC PIN,都依依都;只依HR12:10K  
 ASM1442:紅紅紅要依,HR12:3.16K

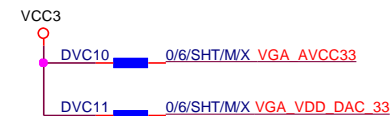


跟 R\_USB3 改改有架架.所所HDMI依依

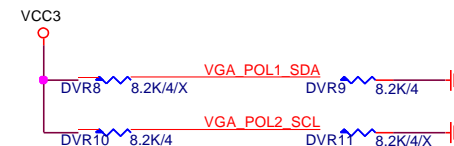




## POWER

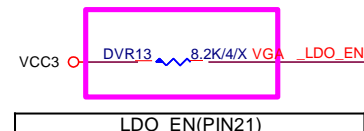


Power on latch



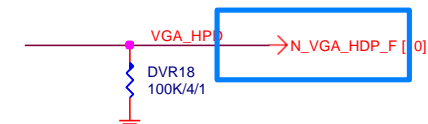
		POL1_SDA(PIN22)	
		0	1
POL2_SCL (PIN23)	0	X	EP MODE
	1	<b>ROM ONLY MODE</b>	<b>EEPROM MODE</b>

## Embedded LDO

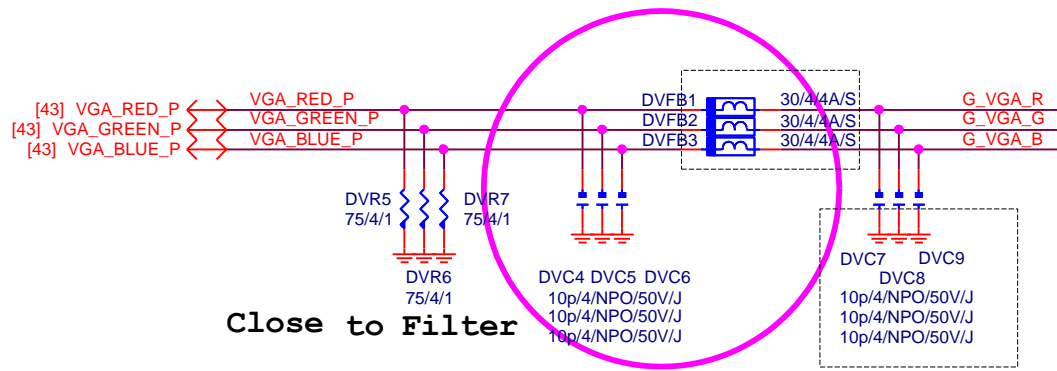
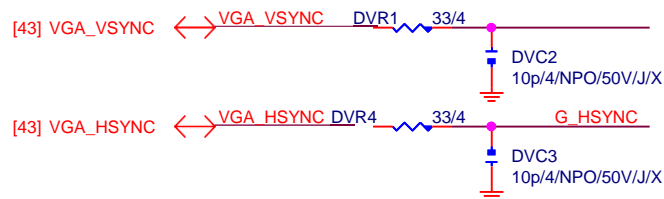
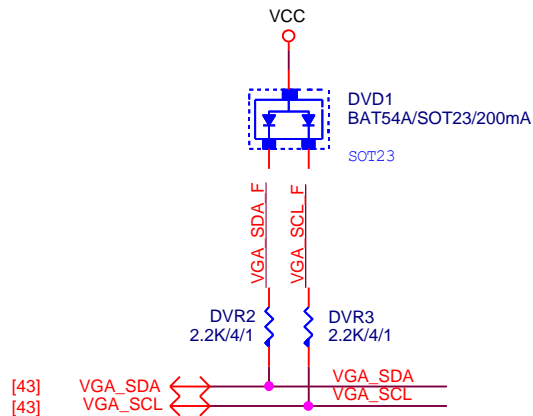


LDO_EN(PIN21)	
0	1
VCCK_V12 from External 1.2V	VCCK_V12 from Embedded LDO

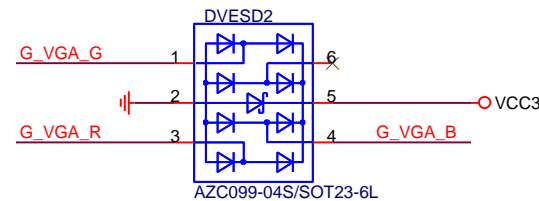
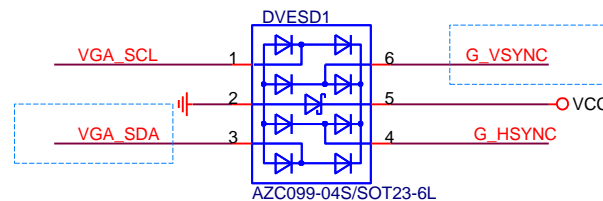
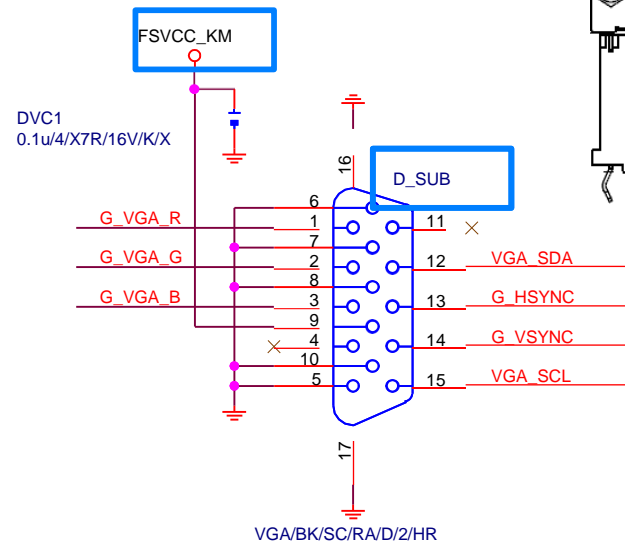
## DP HPD







FOR EMI

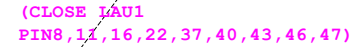


**R1.1**

依需需 LA SRCCLK LAN之 CLKREQ#



## LAN POWER



## Gigabyte Technology

**INTEL I219**

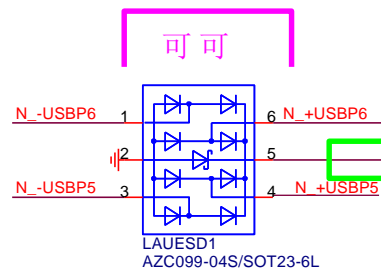
**GA-B250-HD3**

Rev  
1.0

Date:	Monday, December 19, 2016	Sheet	45	of	59
-------	---------------------------	-------	----	----	----

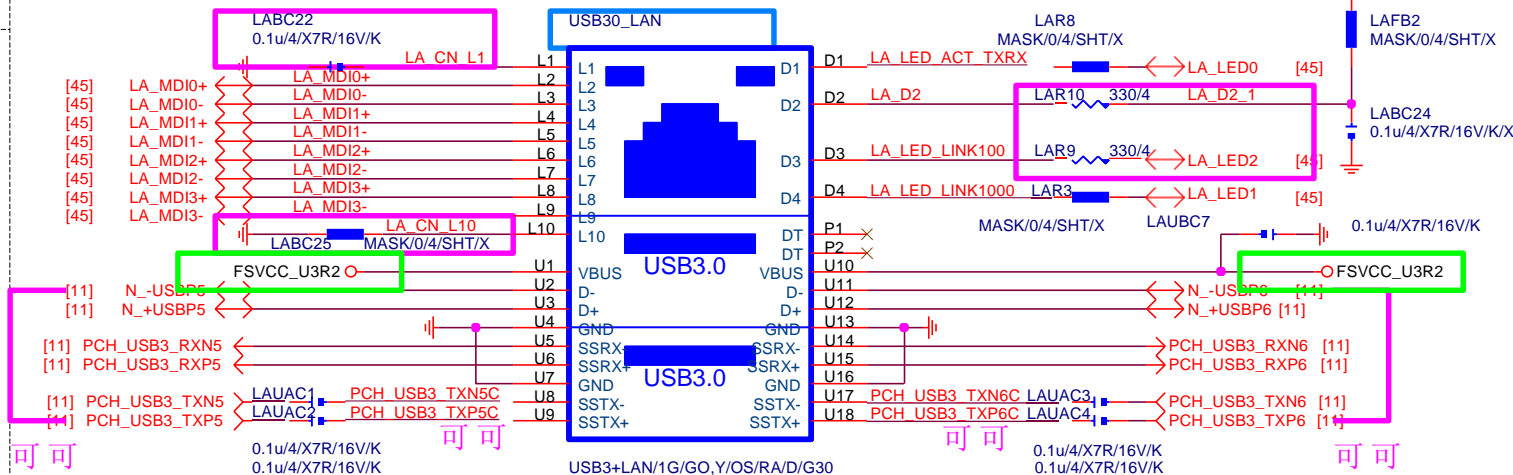
**R1.1**

note:可可可 USB NAME



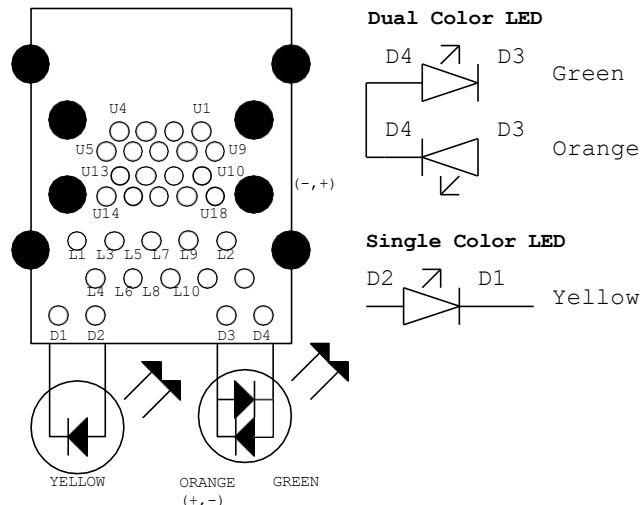
note: 可可 USB NAME

[I219]



LA MDI-->100歐 歐 : [20/4/8/4/20]

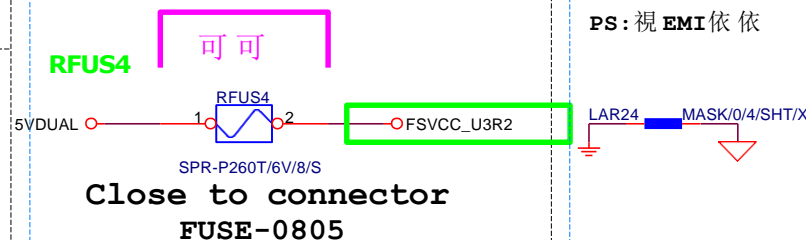
## Dual Color LED



FOOT PRINT: LAN COVER

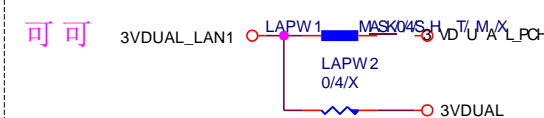


note: 可可可 FUSE



PS:視EMI依依

note: lan power連接連熱限

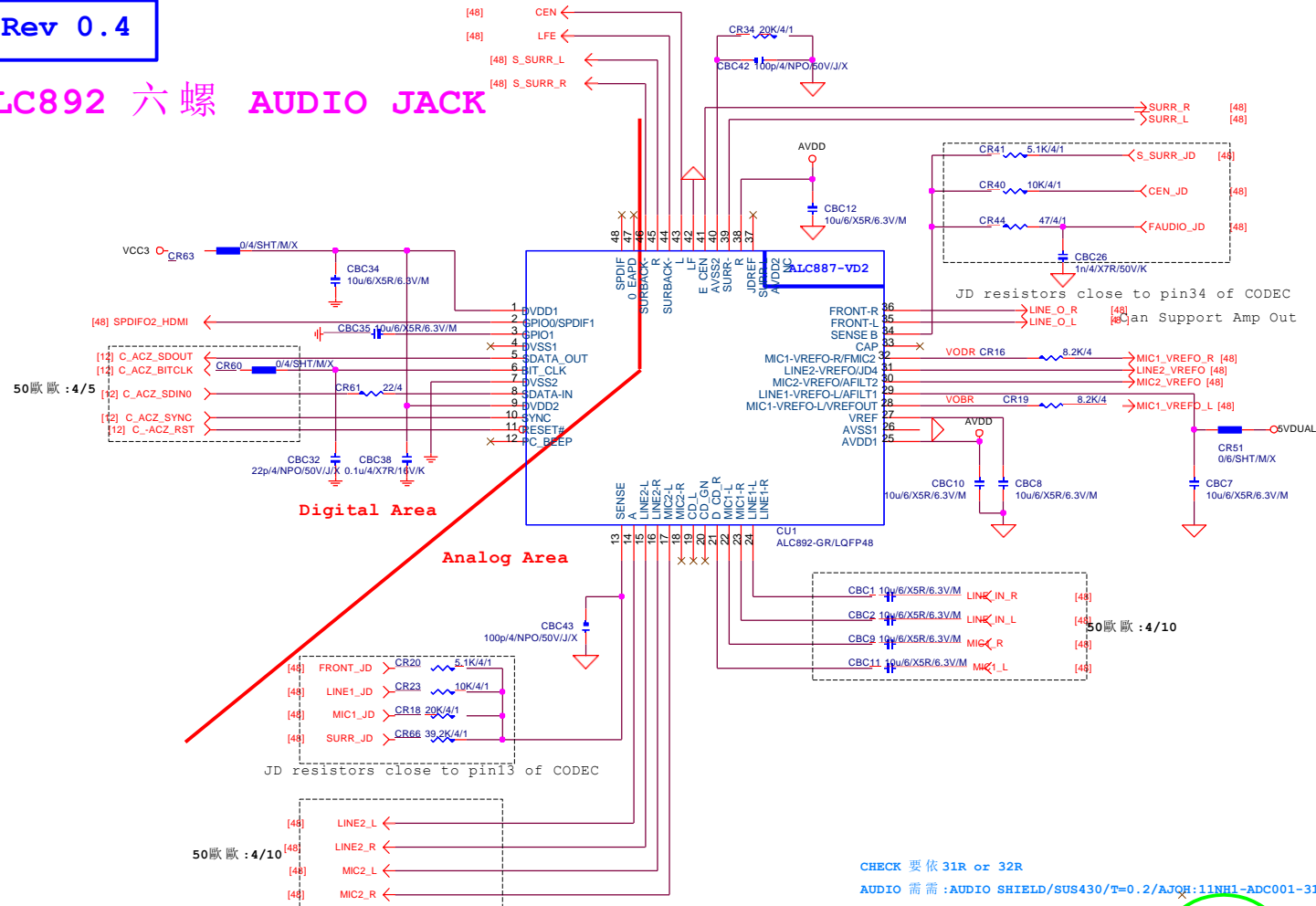


**Gigabyte Technology**  
**LAN CONNECTOR-I219**

# GA-B250-HD3

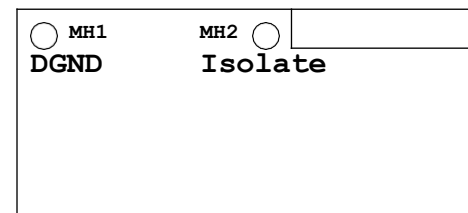
Size Custom	Document Number <b>GA-B250-HD3</b>	Rev 1.0
Date:	Monday, December 19, 2016	Sheet 46 of 59

## ALC892 六螺 AUDIO JACK

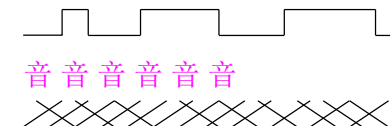


**LAYOUT注意: 螺螺螺下 GND 走走**

- MH1 箕空空, 下 DGND  
箕空依空, 改改 Isolate
- MH2 位一 改改 Isolate

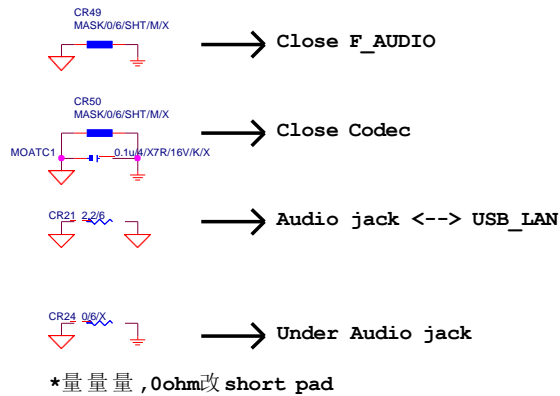


**LAYOUT注意: 要不 GND 切切走**

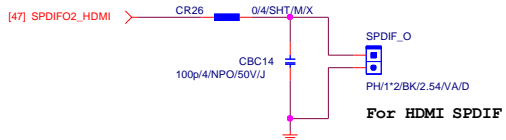


需需料料

Rev 0.4

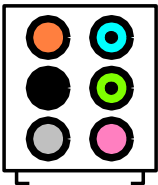


### SPDIF\_OUT



### SPDIF\_IN

### AZALIA JACK

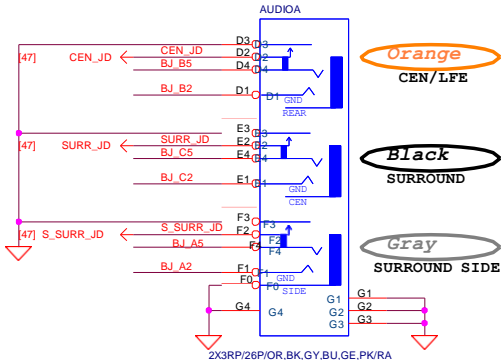
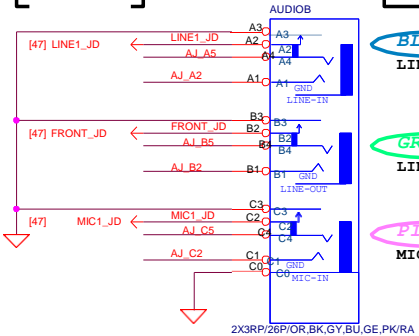


### AZALIA JACK

BLUE  
LINE-IN

GREEN  
LINE-OUT

PINK  
MIC-IN

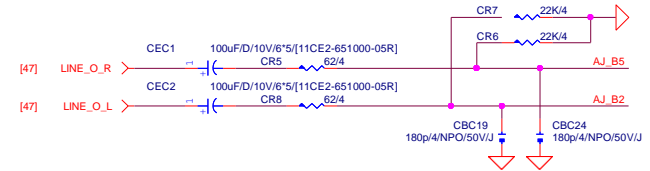


Orange  
CEN/LFE

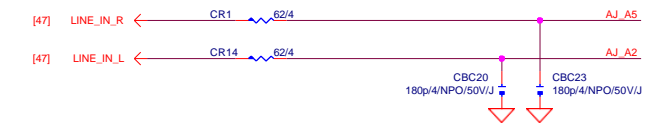
Black  
SURROUND

Gray  
SURROUND SIDE

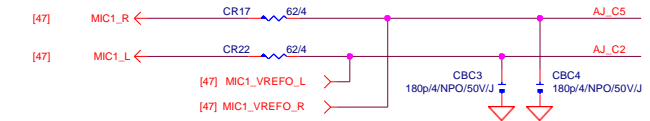
### LINE-OUT



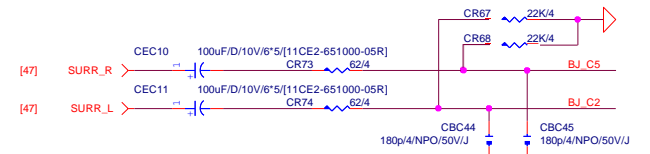
### LINE-IN



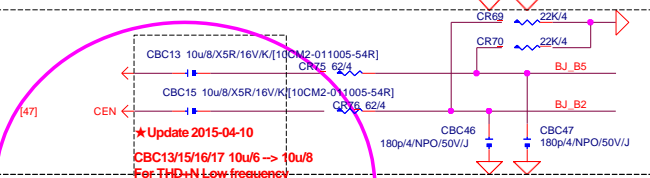
### MIC-IN



### SURROUND

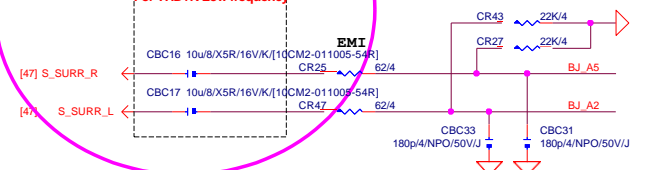


### CEN/LFE

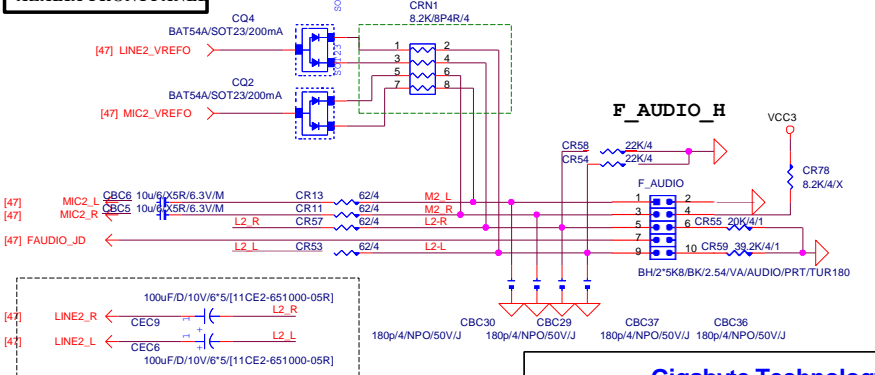


★Update 2015-04-10  
CBC13/15/16/17 10u/6 --> 10u/8  
For THD+N Low frequency

### SURRBACK



### AZALIA FRONTPANEL



Gigabyte Technology

AUDIO JACK

GA-B250-HD3

Rev 1.0

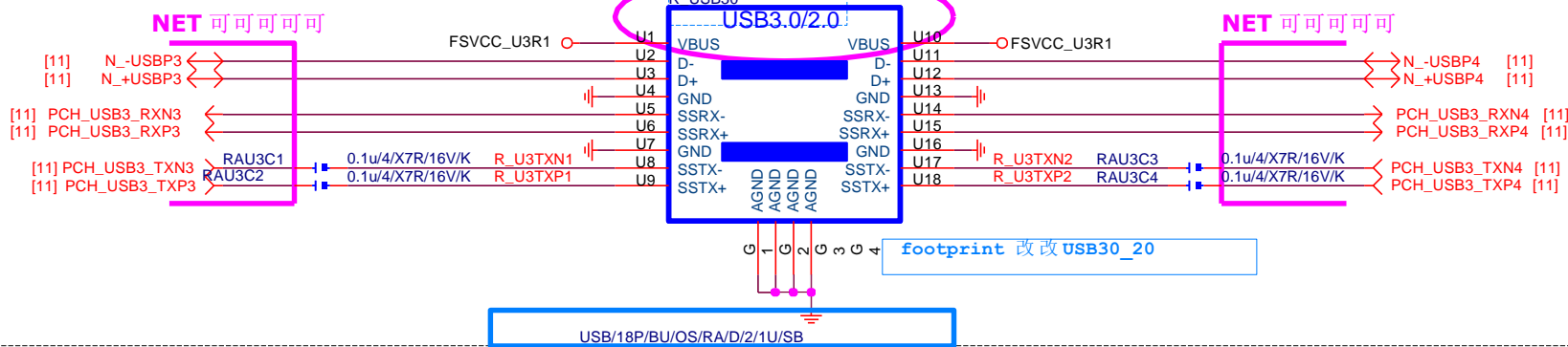
Date: Monday, December 15, 2016 Sheet 48 of 59

Rev: 0.7

ESD 可可可SWAP PIN ,CONN端 NET 名名 依可

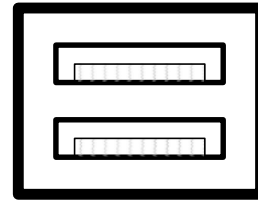
下 Port

依 Port



2 port USB 3.0 Capture:

USB/18P/BU/OS/RA/D/2/1U/SB



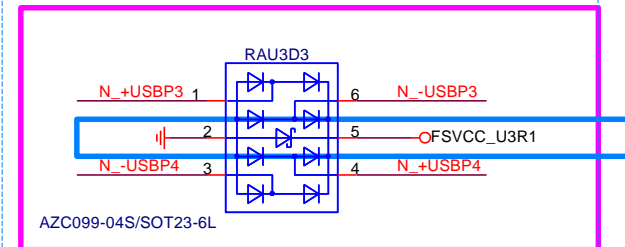
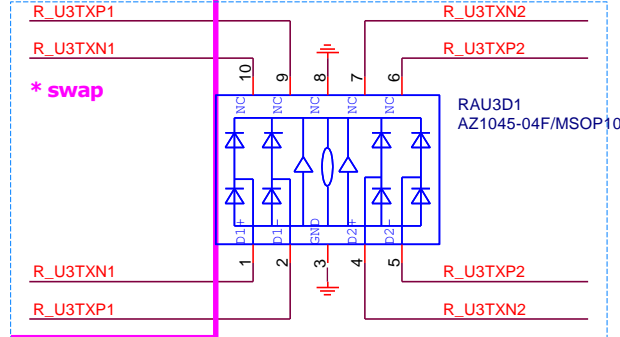
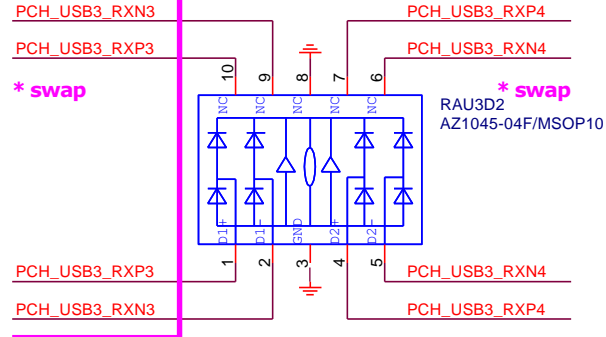
Footprint:USB30\_20

ESD

NET 可可可

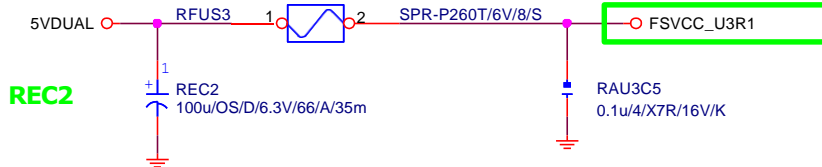
NET 可可可

NET 可可可



FUSE

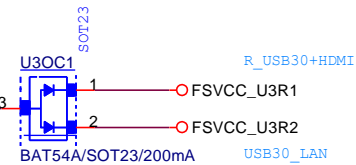
RFUS3 FUSE 2 Port 1 Fuse 2.6A



[11,40,51] N\_-USBOC\_R

<

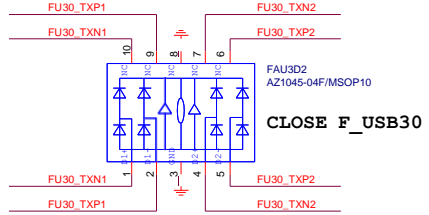
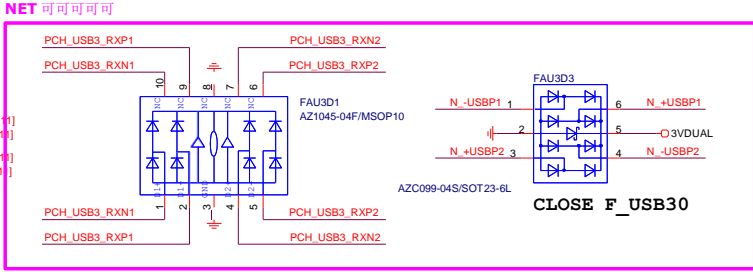
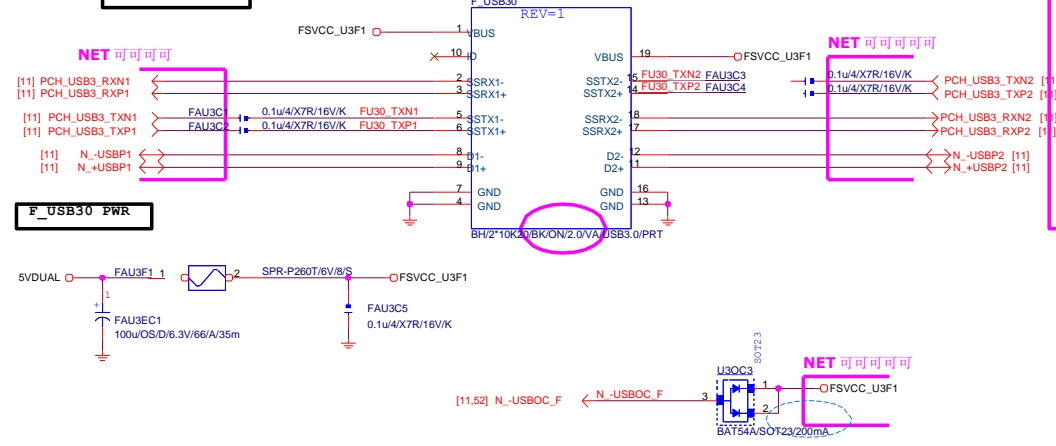
N\_-USBOC\_R



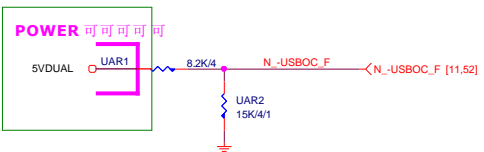
Gigabyte Technology

Title		
R_USB30,USB_OC		
Size	Document Number	Rev
Custom	GA-B250-HD3	1.0
Date:	Monday, December 19, 2016	Sheet 50 of 59

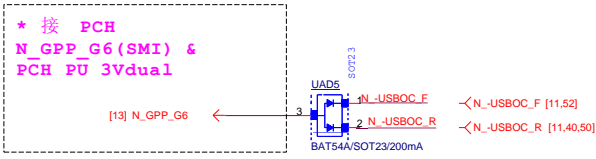
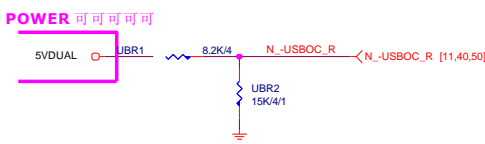
Front USB3.0



-USBOC\_F



-USBOC\_R

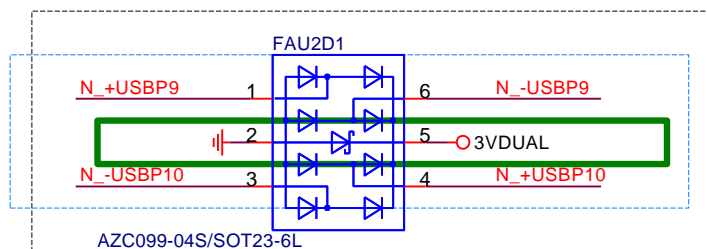
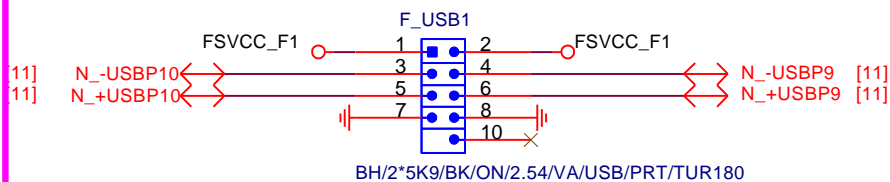


Rev: 0.7

## FRONT USB1

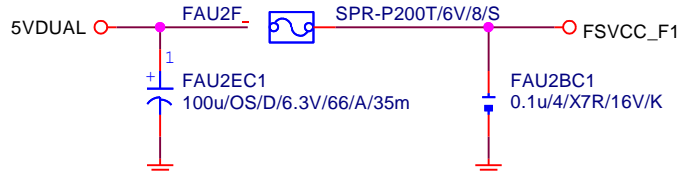
NET 可可

## FUSB2X5-HS



Close to connector

FUSE 2 Port 1 Fuse 2A

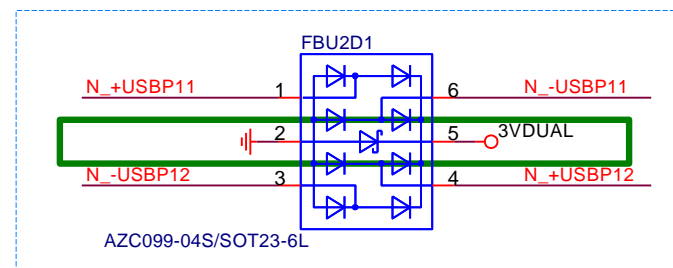
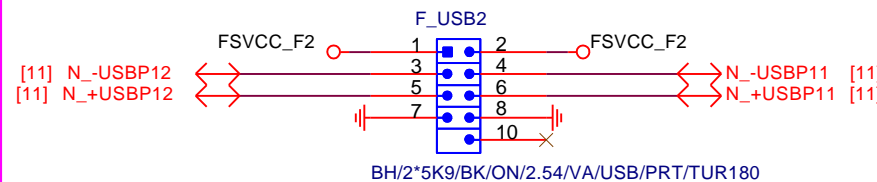


## F\_USB 2.0 OC SIGNAL

## FRONT USB2

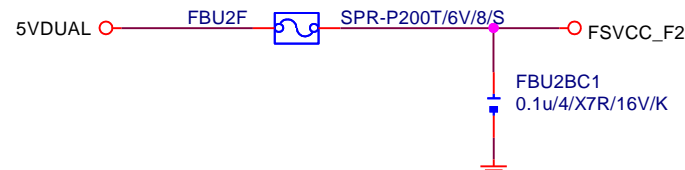
NET 可可

## FUSB2X5-HS

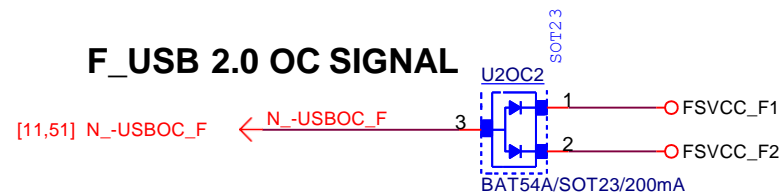


Close to connector

FUSE 2 Port 1 Fuse 2A



## F\_USB 2.0 OC SIGNAL



Gigabyte Technology

Title

USB2.0

Size  
A

Document Number

GA-B250-HD3

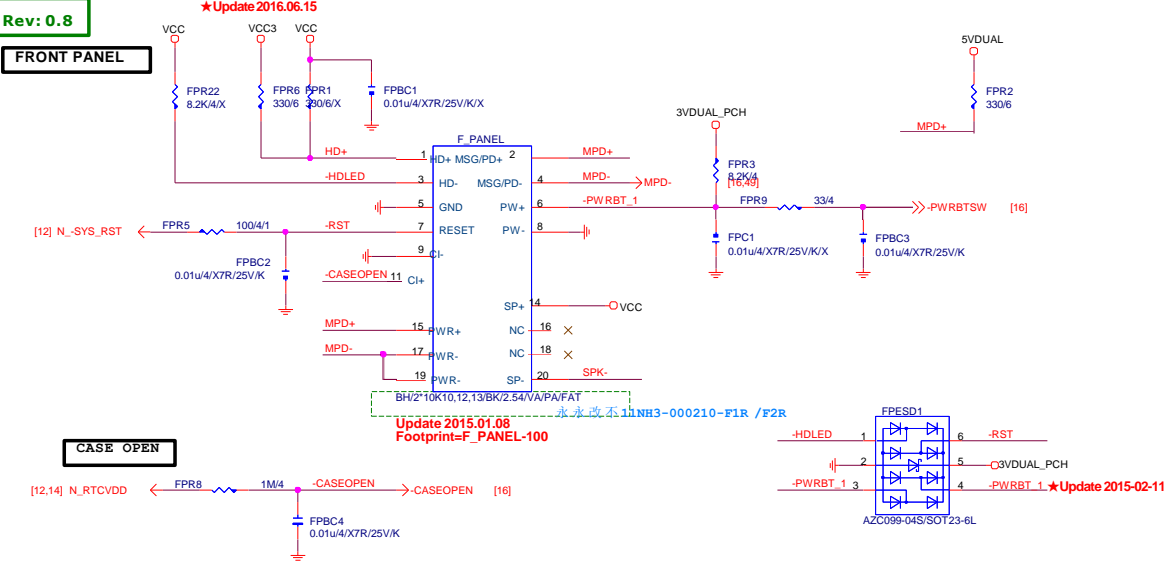
Rev  
1.0

Date: Monday, December 19, 2016

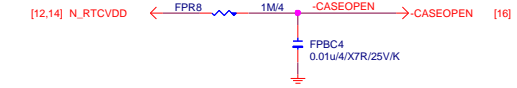
Sheet 52 of 59



FRONT PANEL

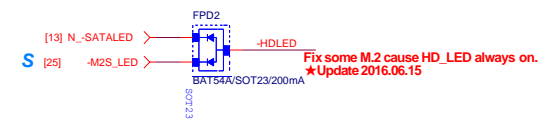


CASE OPEN

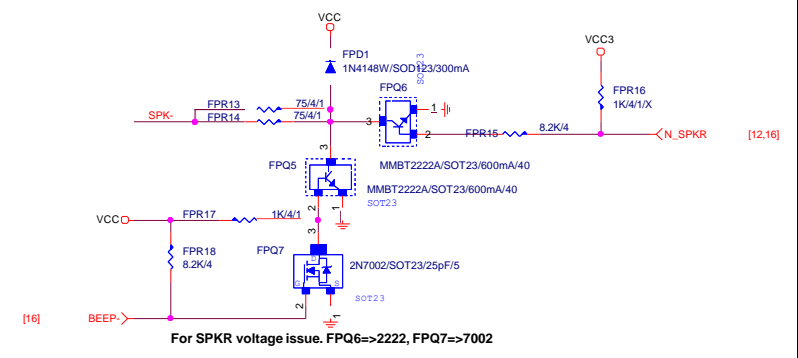


FRONT PANEL SHORT

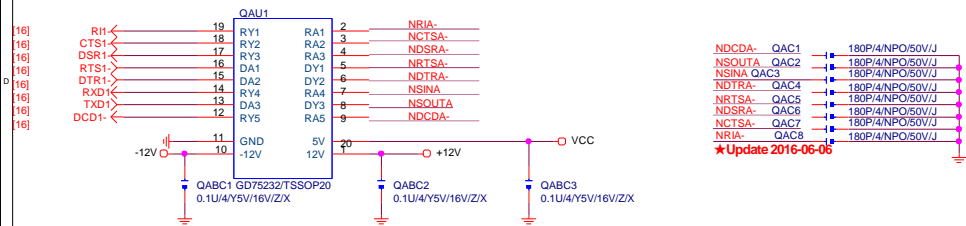
SATA/M.2 LED



SPKR

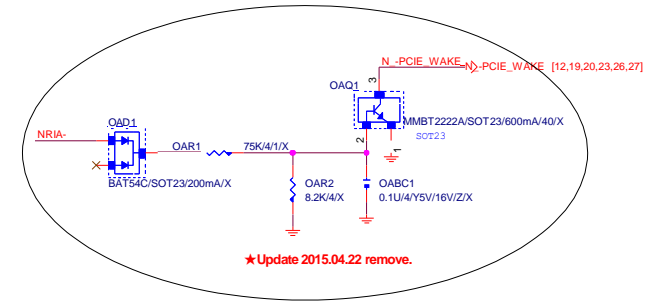
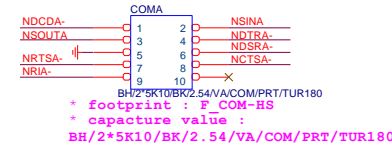


COM PORT Rev: 0.81

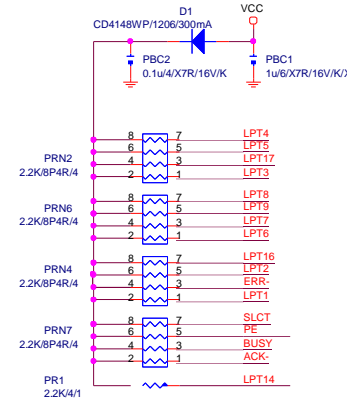
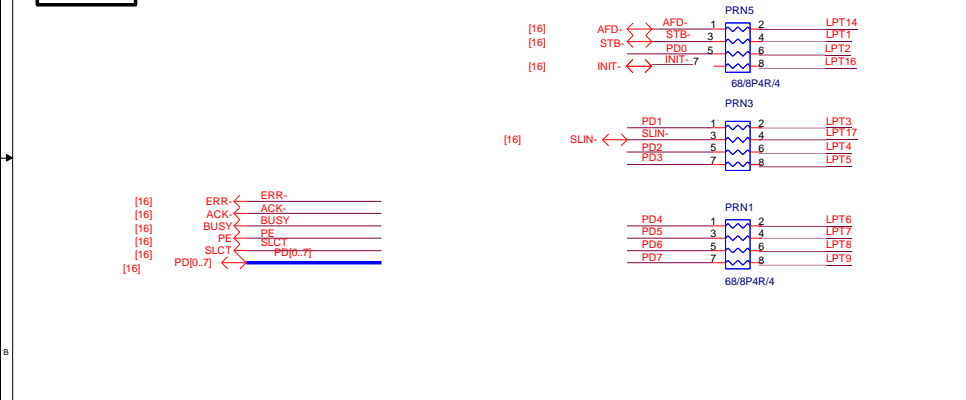


COM RI N/A

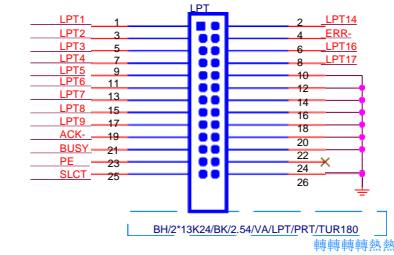
COMA



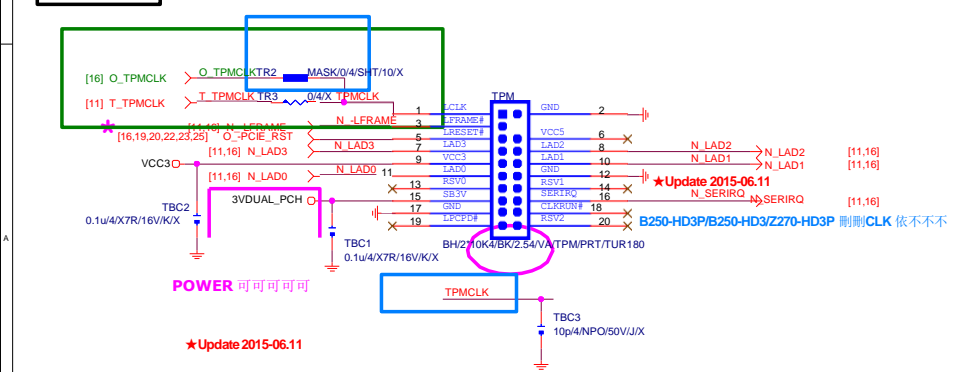
LPT PORT



R&D技技技151 有有有 PRINT PORT的  
MODEL, 依有有需需需:10HP2-118728-72R。(CHIP IT8728F/EX (GB) ITE/SMD  
QFP128 PRINTPORT SORTING)需依。串熱熱33 ohm改改68 ohm。



TPM CONNECT



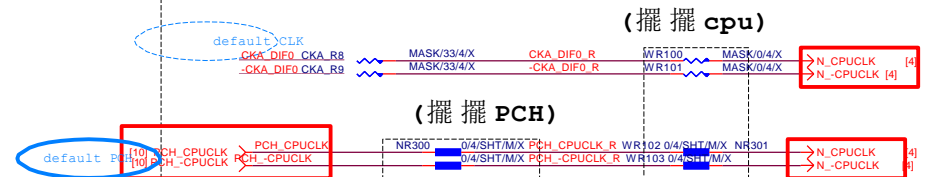
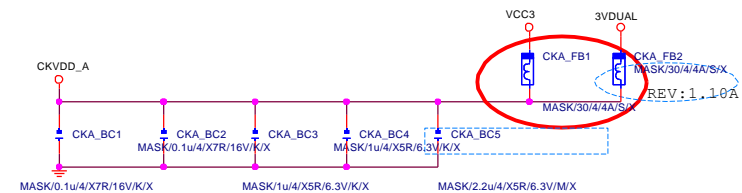
Thunderbolt

★Update 2015-12-29

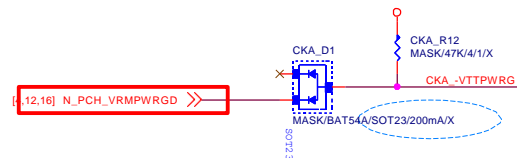
Thunderbolt 3 pin header 移刪

Reserve IDT OC3S 9FGP310 ,依依依

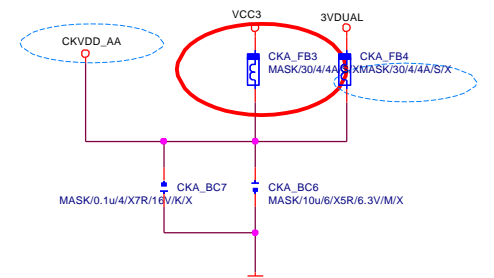
# MASK



```
OPTION .
For PCH:NR300,NR301,WR102,WR103.
For CLK:CKA_R8,CKA_R9,WR100,WR101,CKA_D1,CKA_FB2,CKA_FB4
```



## SMBUS



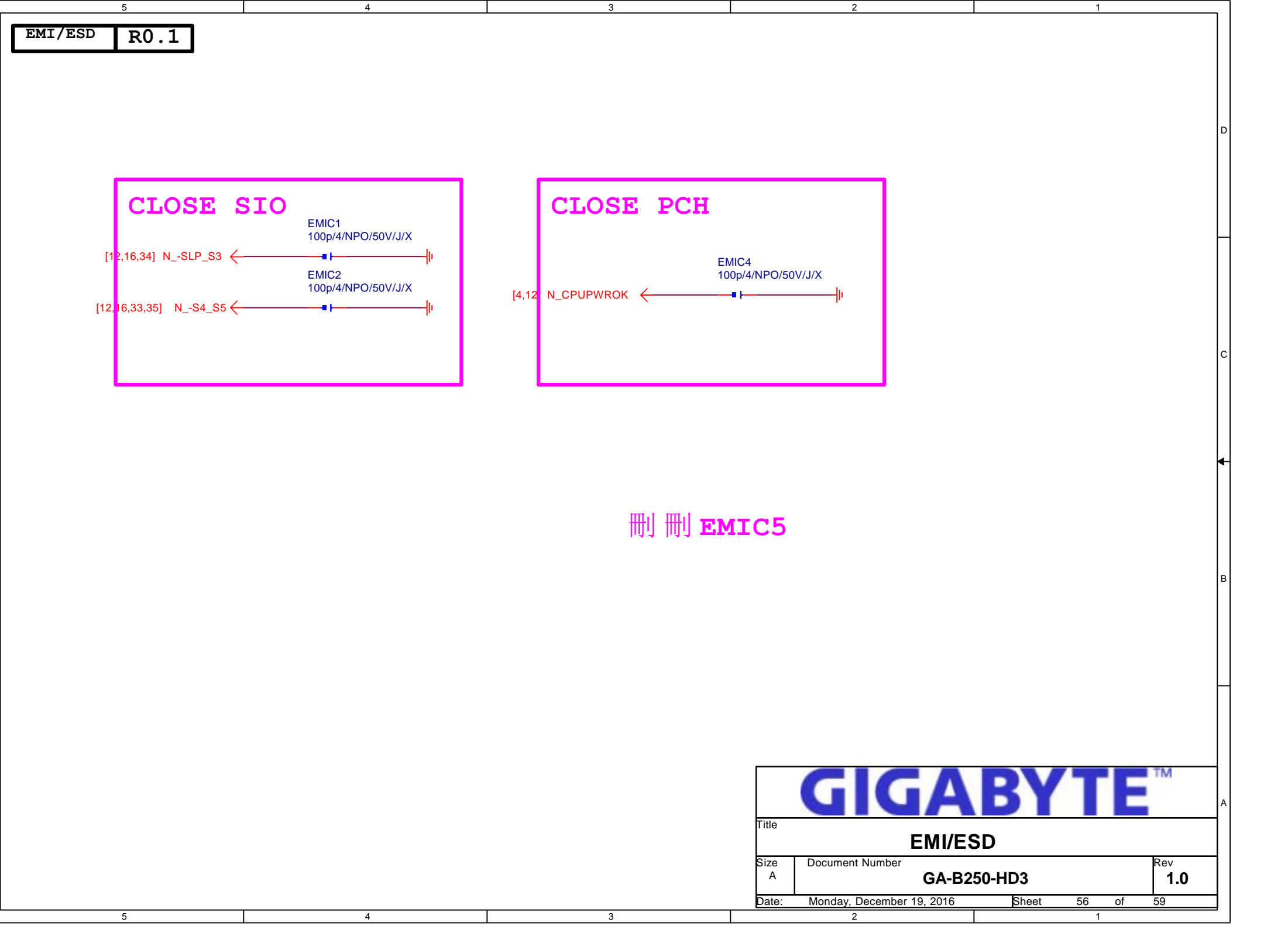
```

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

```



\*可可，依依依依依依依依。



CLOSE SIO

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

[12,16,34] N\_-SLP\_S3 ←

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

[12,16,33,35] N\_-S4\_S5 ←

CLOSE PCH

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

[4,12] N\_CPUPWROK ←

刪 刪 EMIC5

GIGABYTE™

Title			
EMI/ESD			
Size A	Document Number GA-B250-HD3		Rev 1.0
Date:	Monday, December 19, 2016	Sheet	56 of 59

5

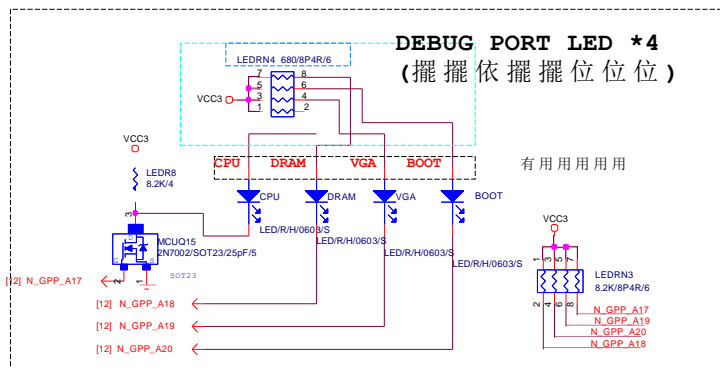
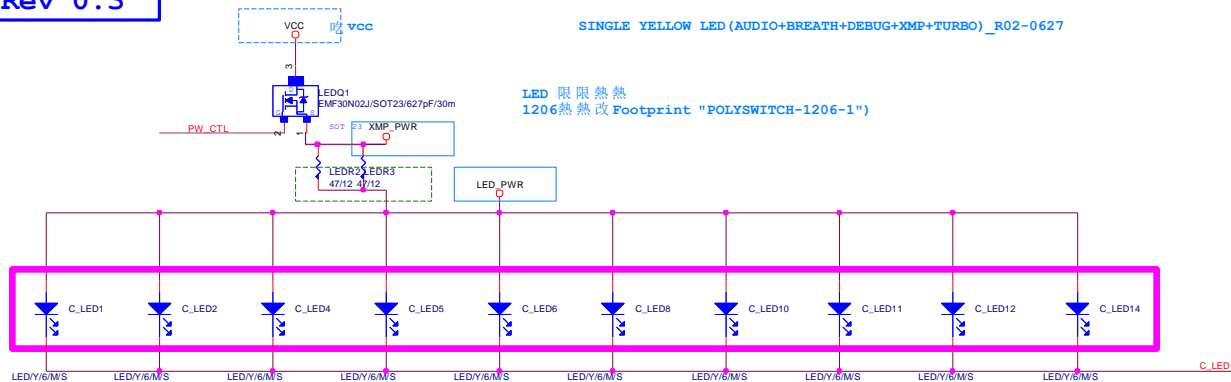
4

3

2

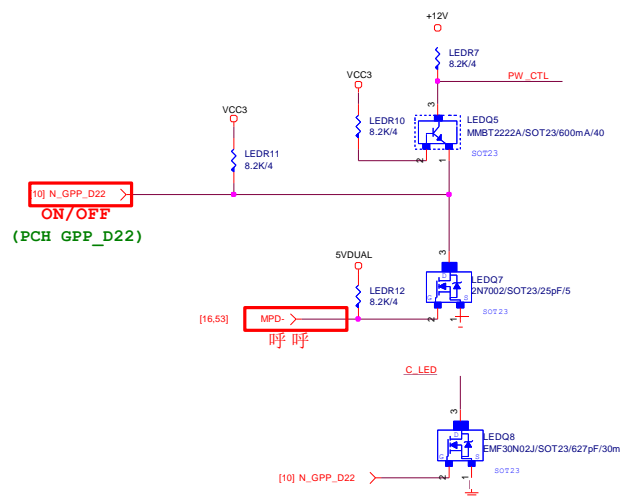
1

Rev 0.3

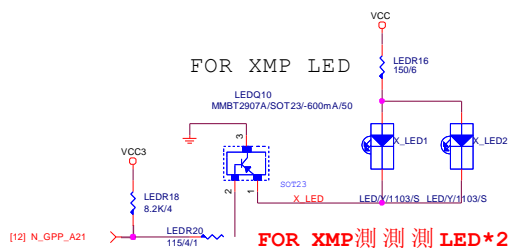


## Ambient LED Control

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



FOR TURBO LED



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 share SE
21	PCIEX4 share SE SWITCH
22	SATA EXPRESS
23	PCI_EXPRESS X1 SLOTS
24	M.2 X4_S5 SWITCH
25	M.2 X4 (Q)
26	
27	PCI SLOT 1& 2
28	IT8892 LDO POWER
29	DUAL BIOS
30	ISL95866 PWM-I-1H1L

SHEET

TITLE

31	ISL95866 MOS_VCORE-I-1H1L
32	ISL95866 MOS_VCCGT-I-1H1L
33	VCCSA_VCCIO_VCCPLL-B.H系系
34	
35	RT8068A_VPP-合合
36	RT8237_PCH-CHOKE-IRON
37	
38	
39	
40	
41	
42	
43	
44	
45	
47	
48	
49	Audio / DEBUG / XMP LED
50	
51	
54	COM, LPT, TPM, THB
55	IDT9FGP310_CLK
56	EMI-ESD
57	NTC MAP
58	POWER MAP
59	OC BUTTON

Gigabyte Technology

Cover Sheet		
File	Document Number	Rev
Size	GA-B250-HD3	1.0
Custom		
Date	Monday, December 13, 2016	Sheet 1 of 59