

Model Name: GA-B250M-HD3

rev 1.0

SHEET

TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1151-A
05	CPU_LGA1151-B-DDR4
06	CPU_LGA1151-C
07	CPU_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 EXPRESS*4 & *1 SLOT
21	
22	DUAL BIOS
23	
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27	ISL95858 PWM-IRON
28	ISL95858 VCORE-IRON

SHEET

TITLE

29	ISL95858 VCCGT-IRON
30	VCCSA_VCCIO_VCCPLL
31	RT8237_DDR_BEAD
32	RT8068A_VPP
33	RT8237_PCH-BEAD
34	DISCRETE POWER
35	NCT3933
36	ATX POWER , A_-PROCHOT
37	KB_MS_USB
38	DVI CONN
39	RTD2168 - DP to VGA - IC
40	RTD2168 - DP to VGA - Conn
41	HDMI
42	REALTEK 8111G
43	USB30_LAN CONNECTOR-8111G
44	Realtek ALC887
45	REAR AUDIO JACK
46	ADUIO LED
47	F_USB30
48	F_USB
49	R_USB30
50	F_PANEL
51	M.2 X4 (Q)
52	M.2X4_S5 SWITCH
53	COM, LPT, TPM
54	EMI-ESD
55	POWER MAP
56	NTC MAP

Gigabyte Technology

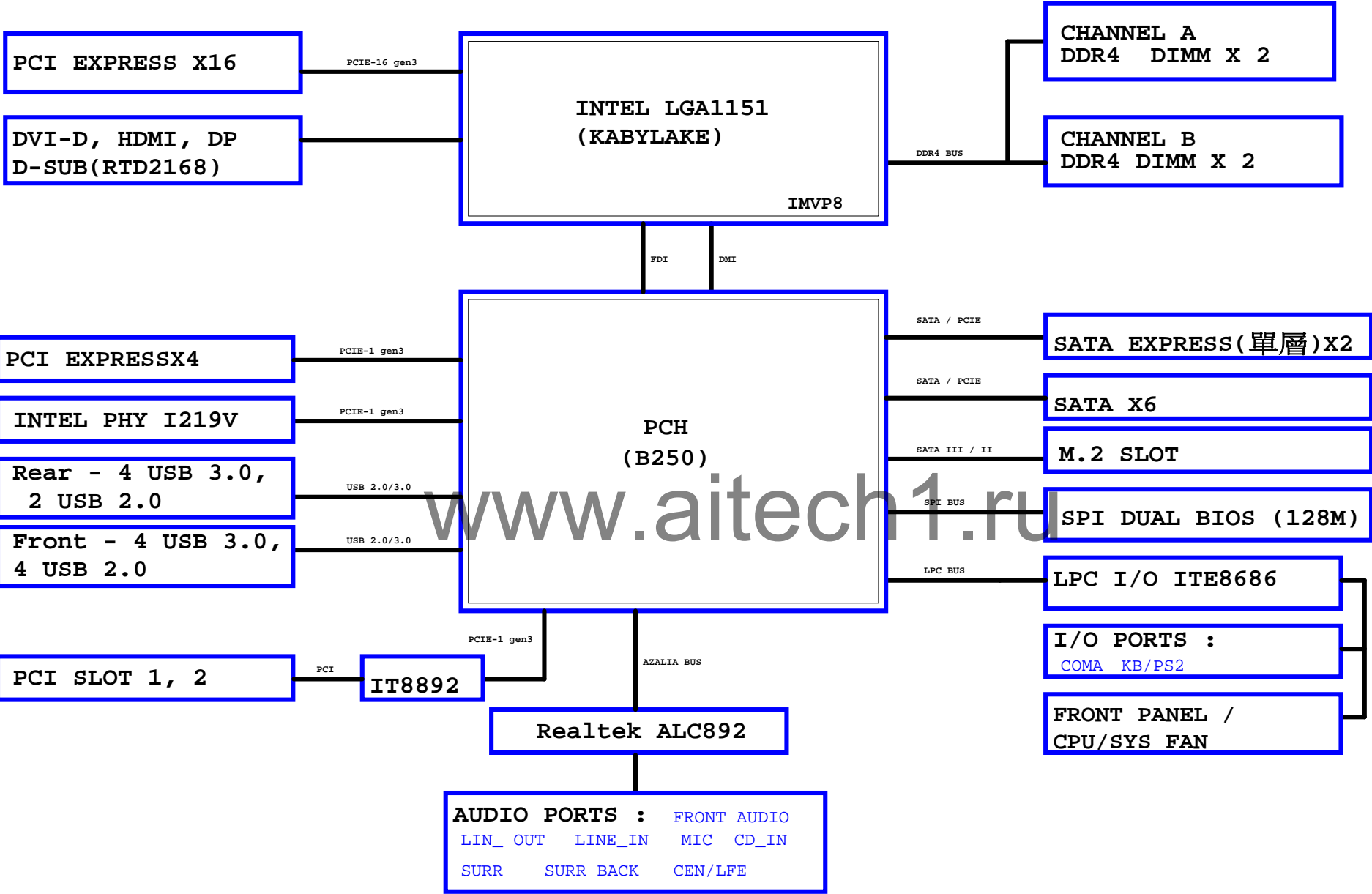
Title			Cover Sheet
Size	Document Number	GA-B250M-HD3	
Custom			Rev 1.0
Date:	Wednesday, November 02, 2016	Sheet 1	of 56

Circuit or PCB layout change

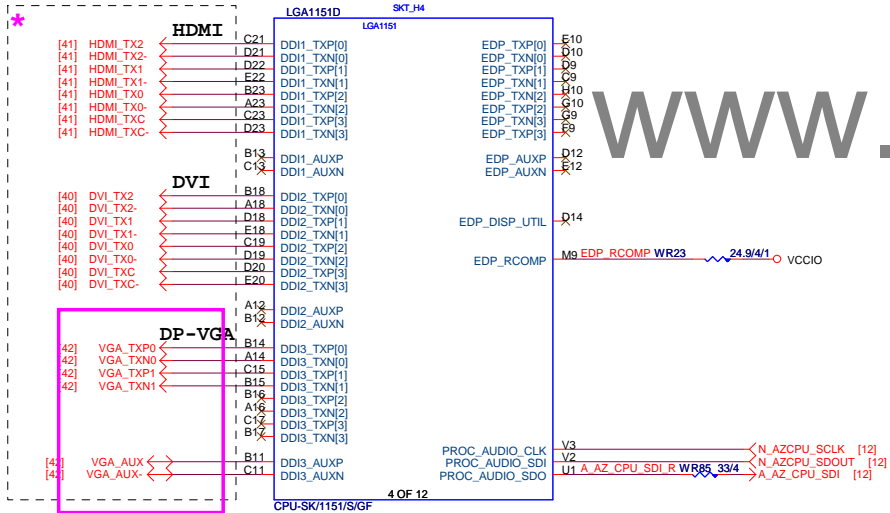
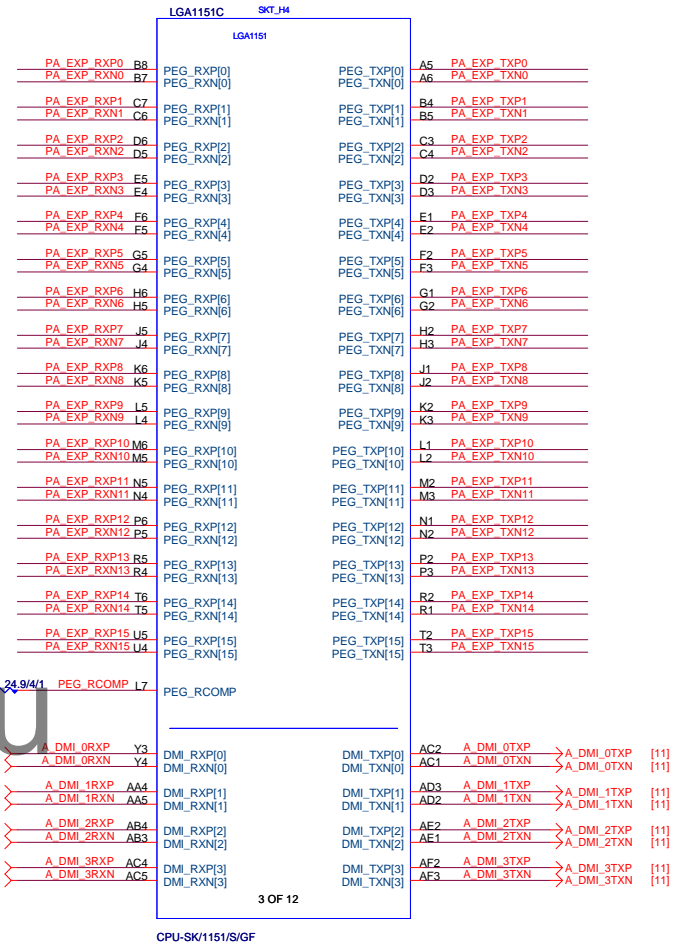
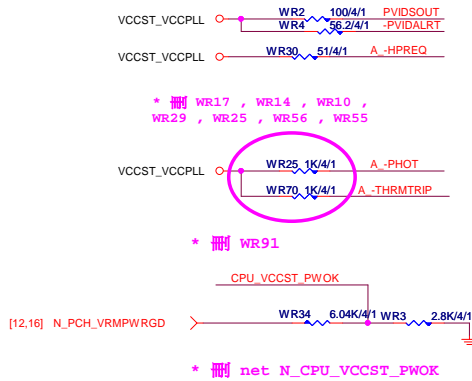
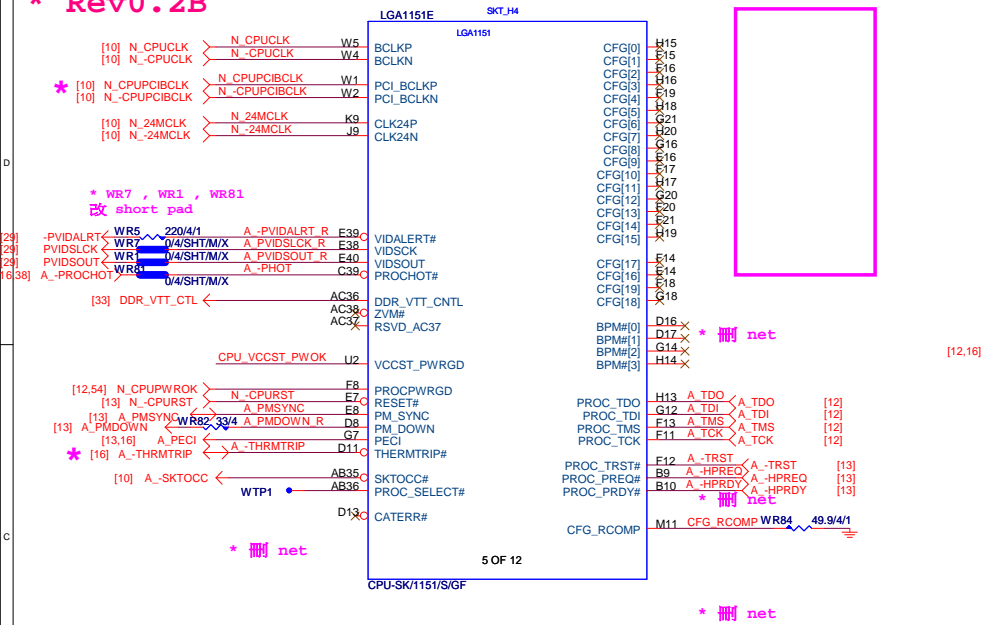
2016/11/03

[illegible][illegible]

BLOCK DIAGRAM



*** 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; 1l=
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

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
```

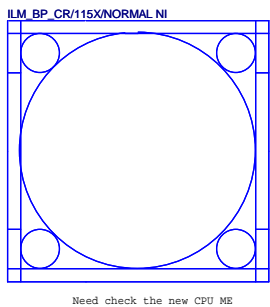
Gigabyte Technology

CPU LGA1151-A

GA-B250M-HD3

1.0

* 改DDR4 net



[8] MODT_A[0..1] ↔ MODT_A[0..1]

[9] MODT_B[0..1] ↔ MODT_B[0..1]

[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] MAA[0..16] ↔ MAA[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]

Gigabyte Technology

CPU LGA1151-B

GA-B250M-HD3

Rev 1.0

File: _____

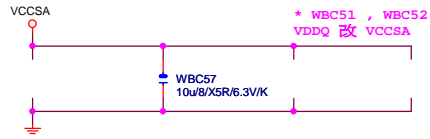
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Custom: _____

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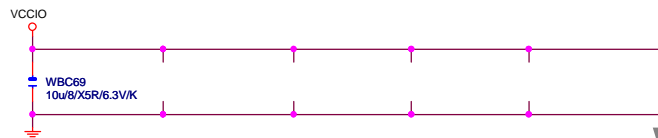
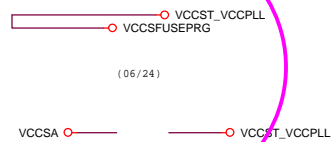
Sheet 5 of 56

* 刪 WBC50 電容

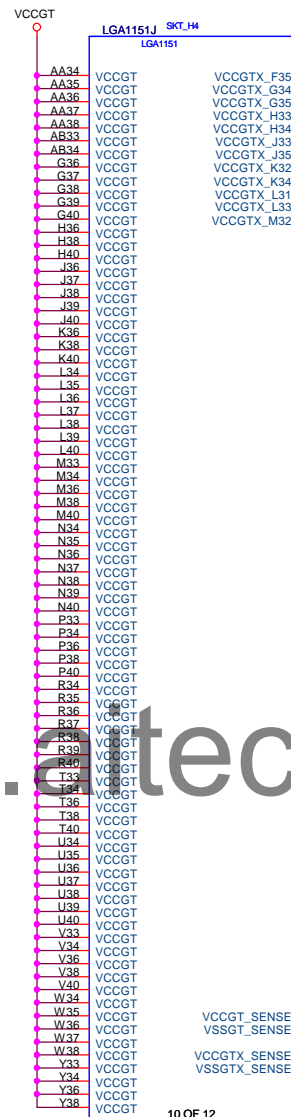


* 刪 WBC124, WBC125, WBC126, WBC127 電容

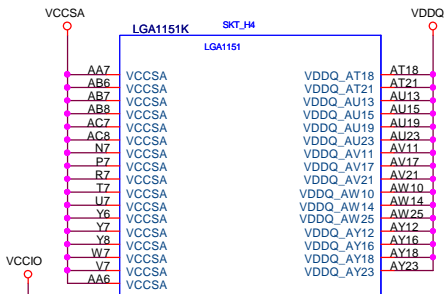
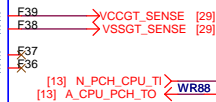
* WR94, WR59, WR86, WR60, WR61, WR62, WR63 改 short pad



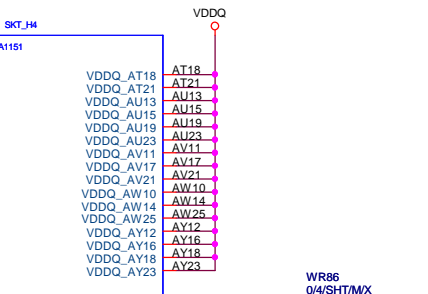
* 刪 VCCGT 電容



CPU-SK/1151/S/GF



CPU-SK/1151/S/GF



* 刪 VCCPLL_OC

* 刪 net

* 刪 net

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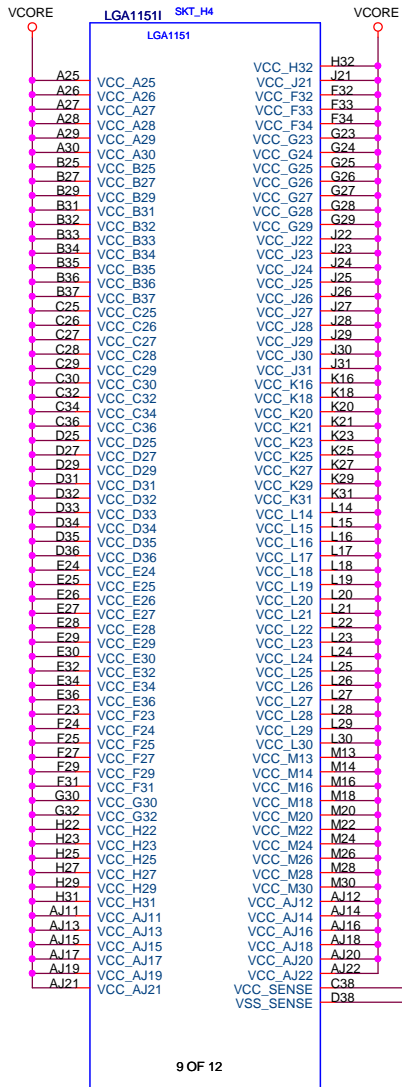
* 刪 net

* 刪 net

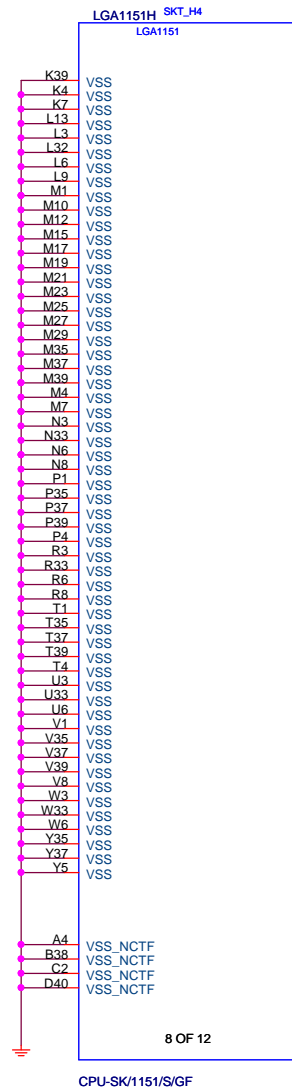
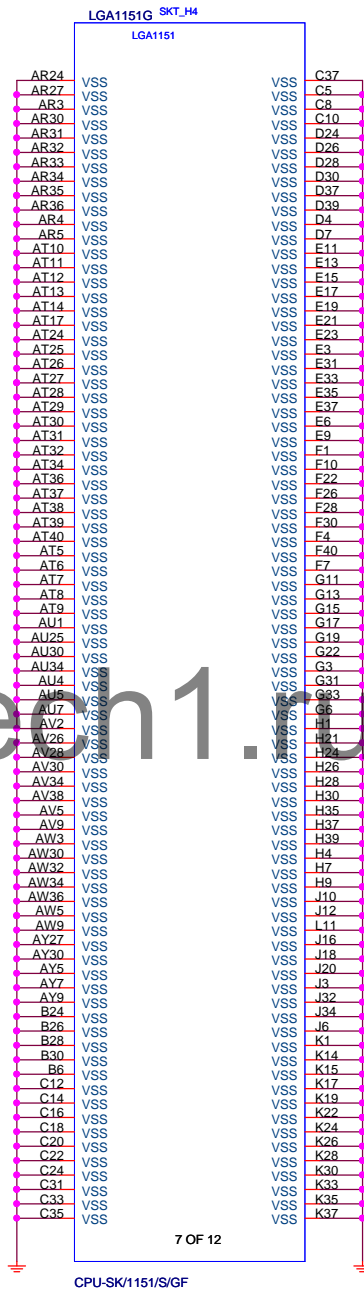
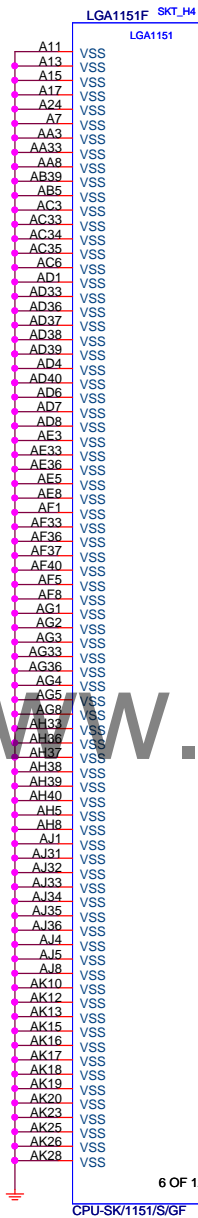
* 刪 net

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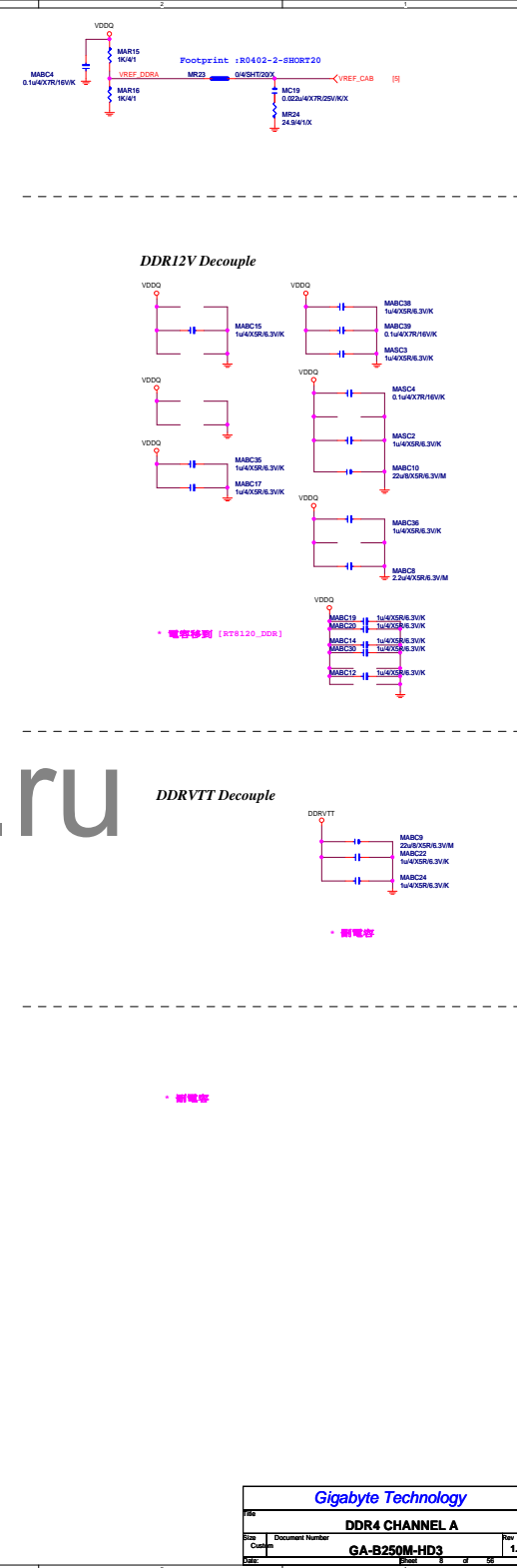
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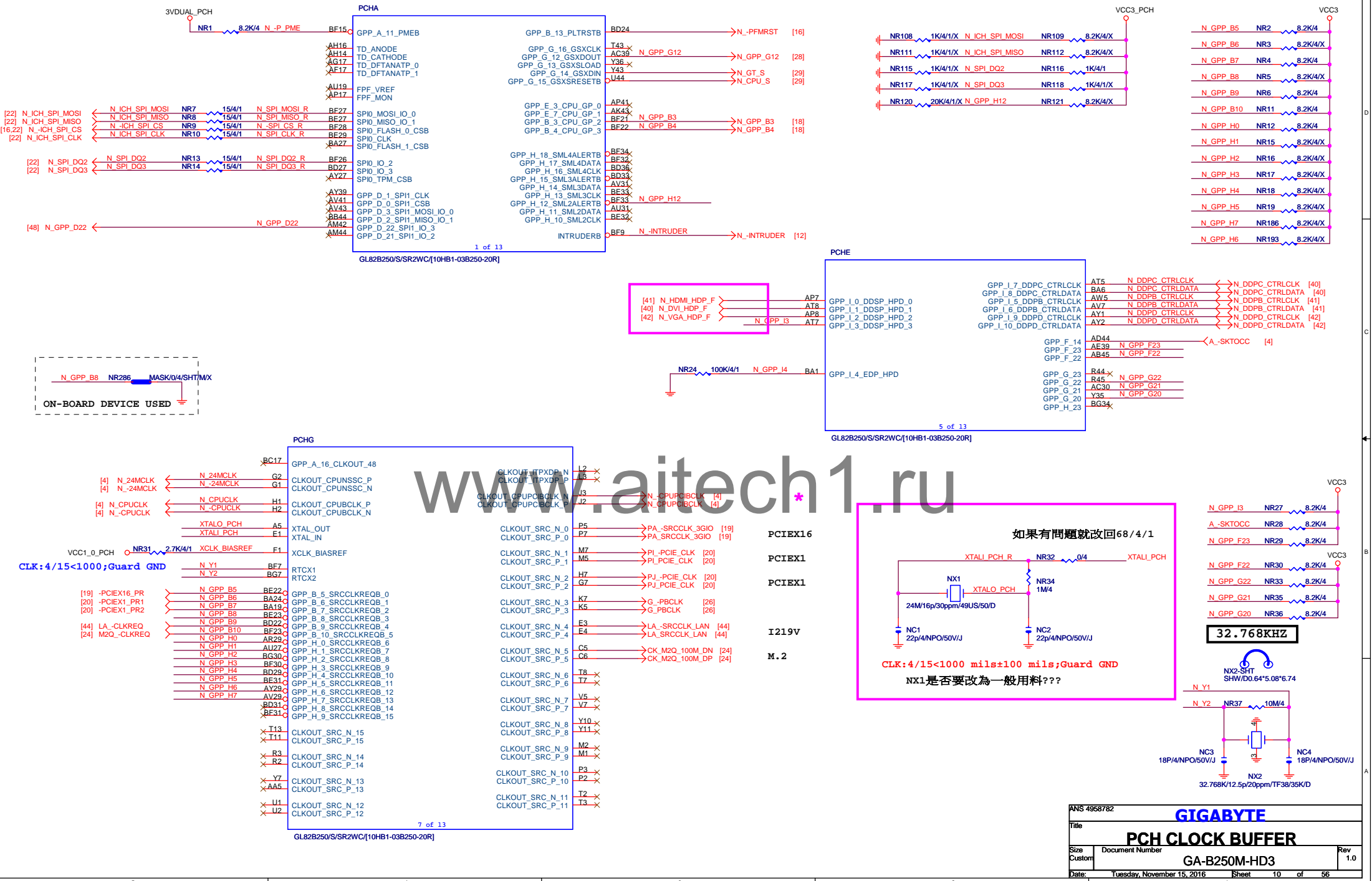


* 刪 Vcore 電容

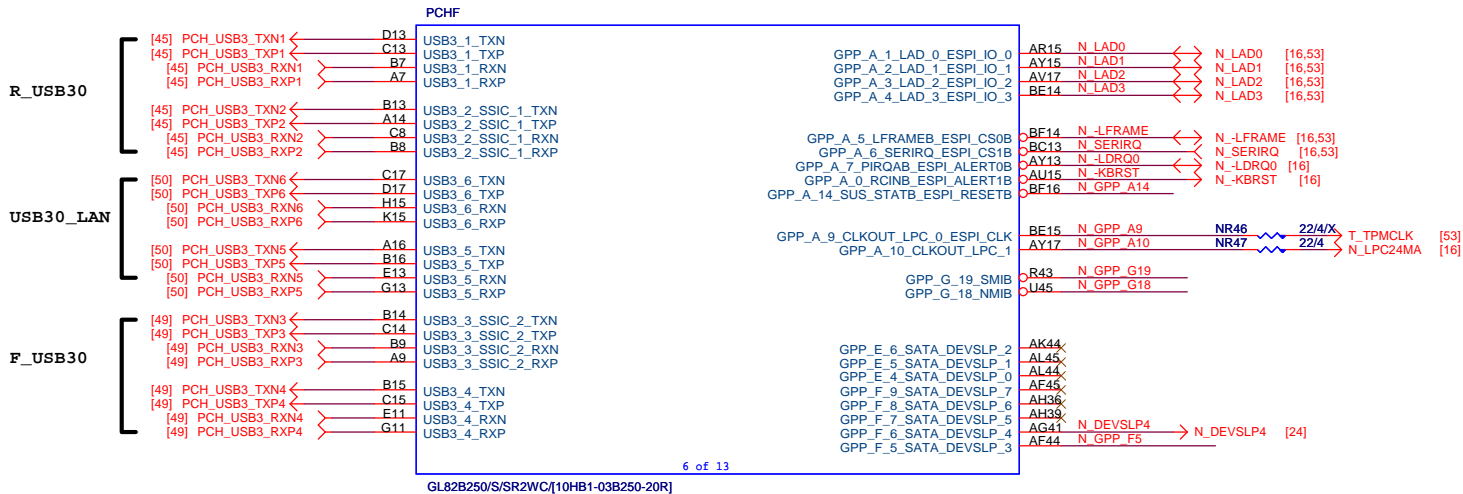
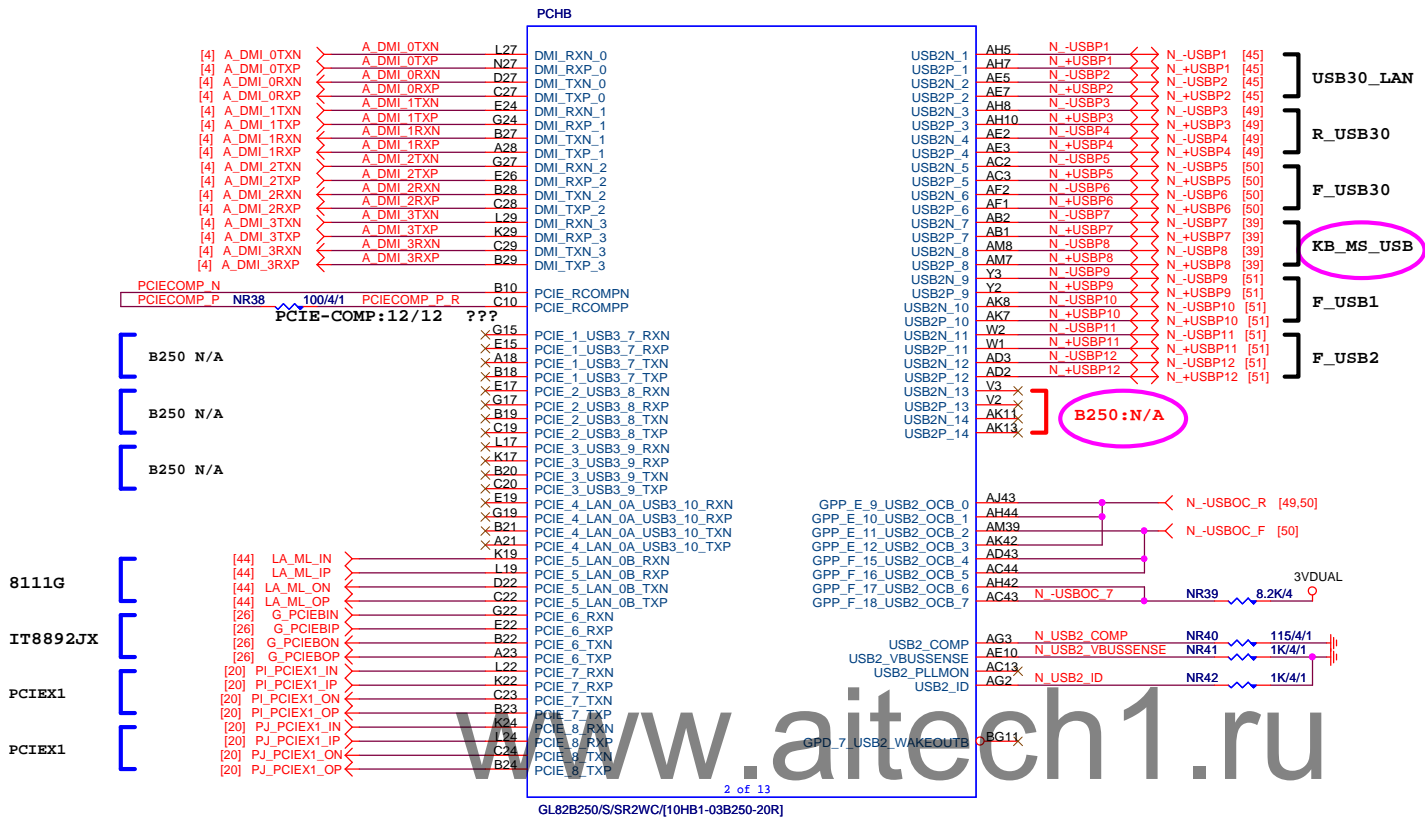


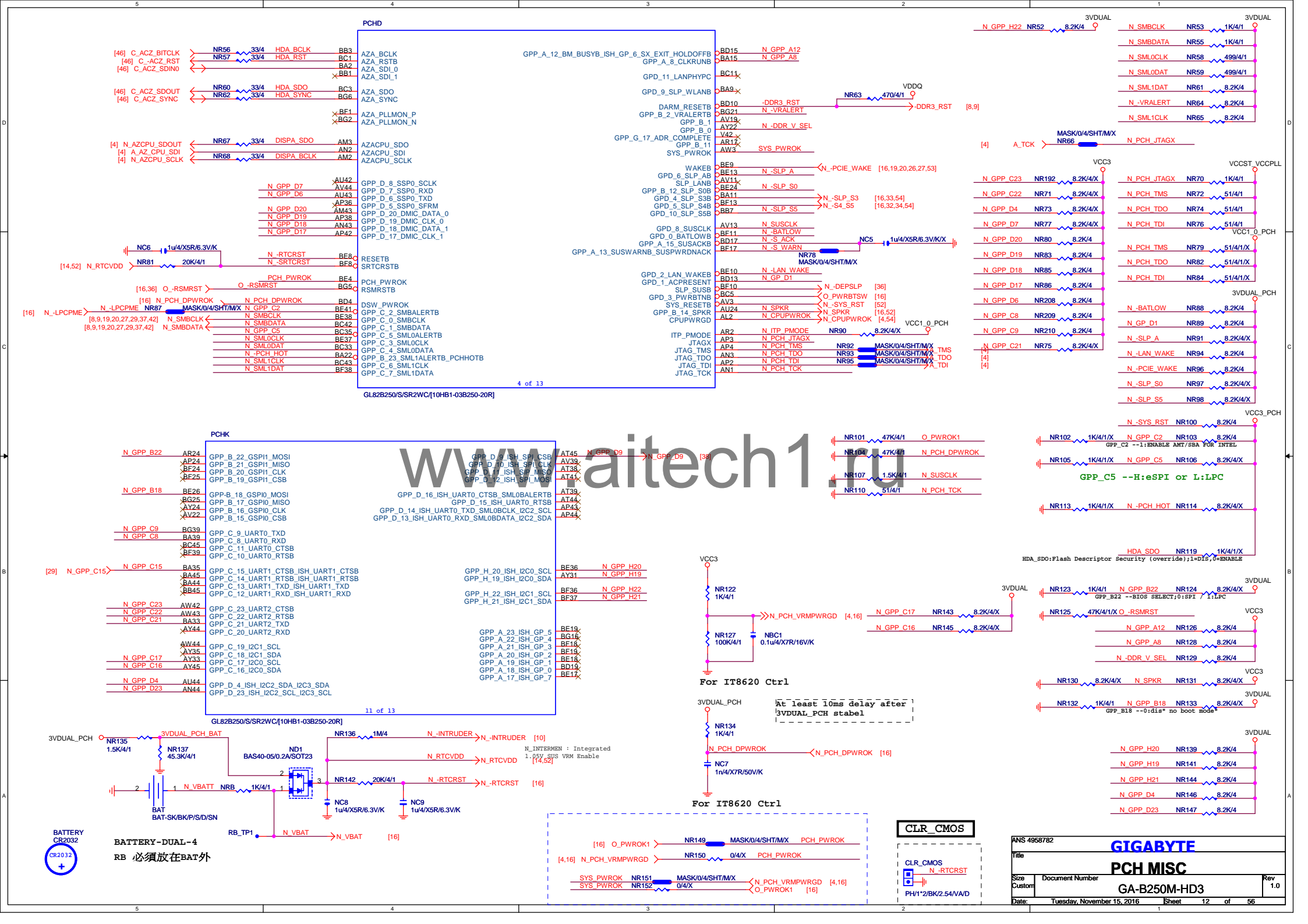
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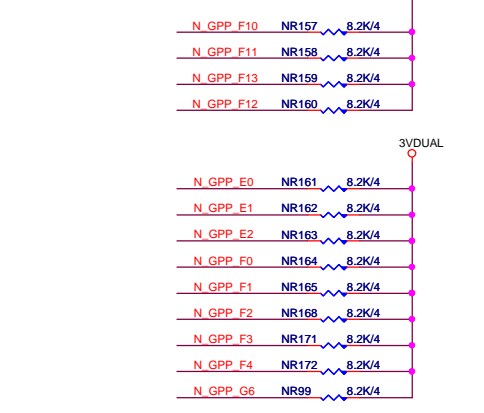
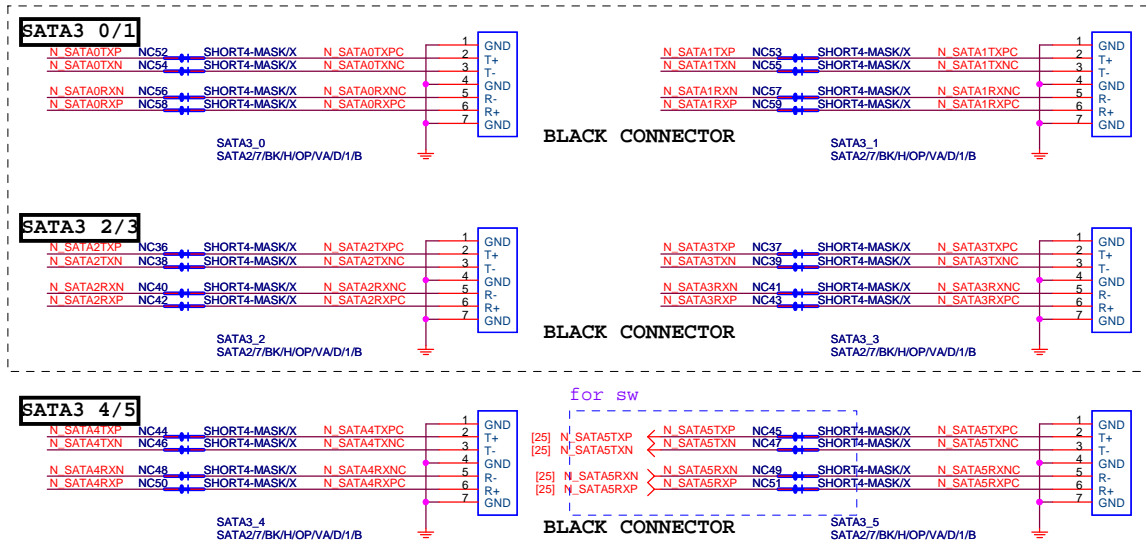
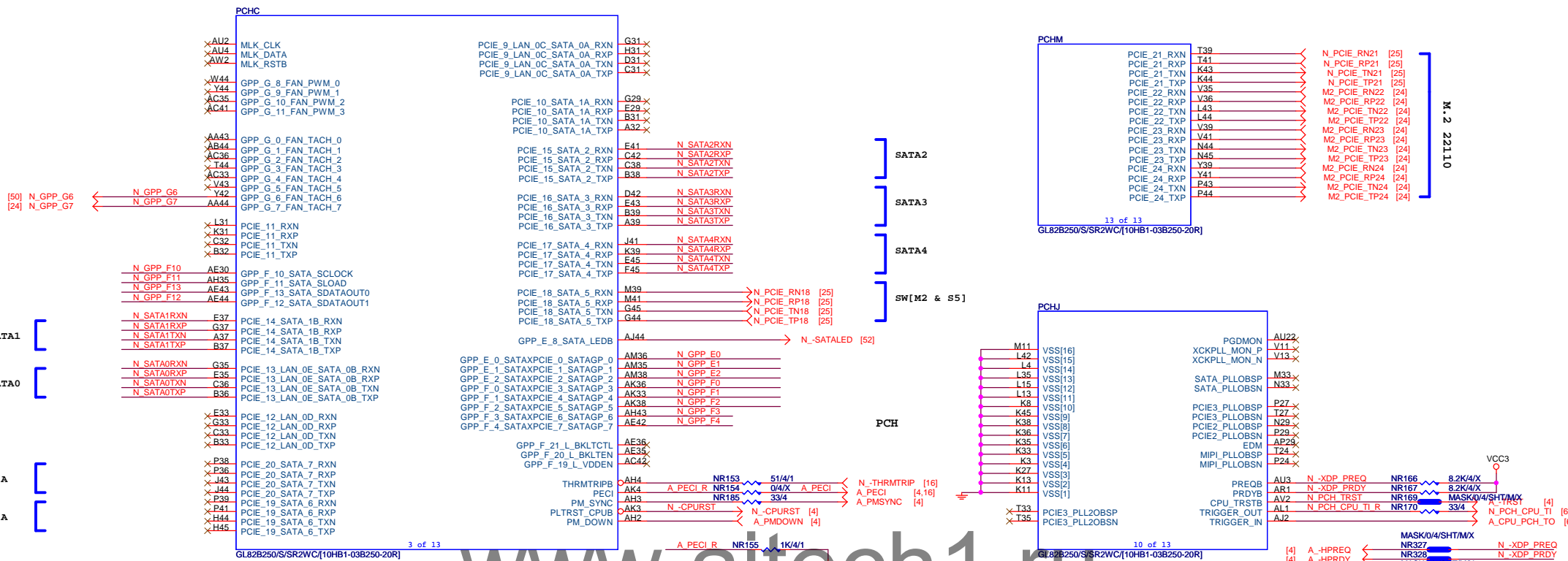


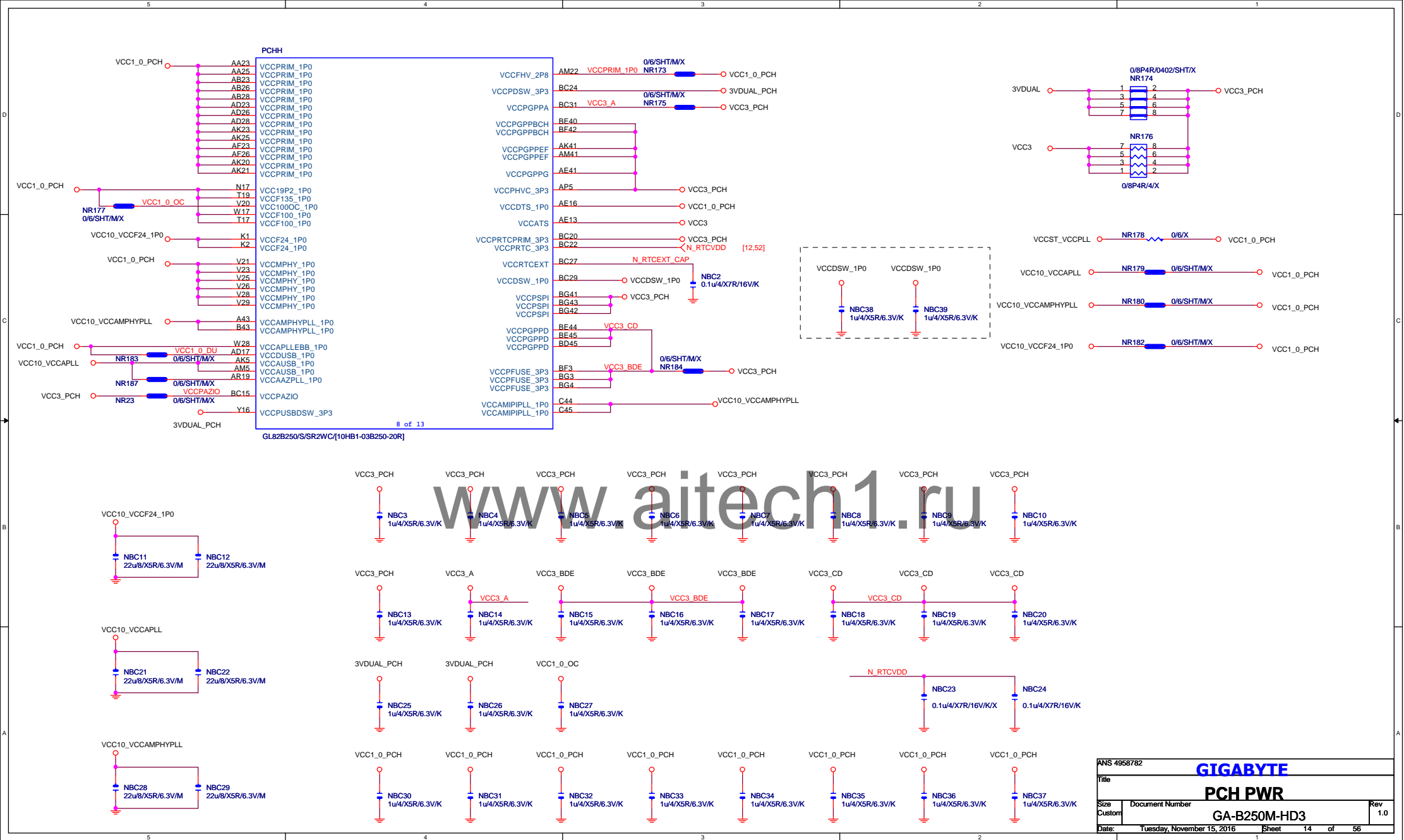


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ANS 4968782		GIGABYTE	
Title		PCH PWR	
Size	Document Number	GA-B250M-HD3	
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Date:	Tuesday, November 15, 2016	Sheet	14 of 56

PCH1		
A25	VSS	A42
A30	VSS	D45
P22	VSS	BG44
AV38	VSS	BE44
AV45	VSS	BF43
AV8	VSS	BF2
AY11	VSS	W29
AY19	VSS	A35
AY37	VSS	A40
AY4	VSS	AA1
AY42	VSS	AA17
AY8	VSS	AA18
B25	VSS	AA20
B3	VSS	C1
B30	VSS	AA26
B35	VSS	AA28
B4	VSS	AA29
B41	VSS	AB17
BA13	VSS	AC32
BA17	VSS	AE4
BA37	VSS	AE8
BA29	VSS	AF18
BA31	VSS	AF20
BA37	VSS	AF21
BA4	VSS	AF25
BA42	VSS	AF28
BB40	VSS	AF29
BC38	VSS	AF4
BC40	VSS	AF42
BC9	VSS	AG18
BD11	VSS	AG20
BD16	VSS	AG21
BD2	VSS	AG23
BD21	VSS	AG25
BD25	VSS	AG26
F2	VSS	AG28
F31	VSS	AG28
E6	VSS	AH11
E8	VSS	AH13
F39	VSS	AH30
F43	VSS	AH32
G4	VSS	AH33
G40	VSS	AH38
G42	VSS	AJ1
F6	VSS	AJ17
G9	VSS	AJ18
H11	VSS	AJ20
H13	VSS	AJ21
H17	VSS	AJ23
H19	VSS	AJ26
H22	VSS	AJ26
H24	VSS	AJ28
H27	VSS	AJ29
H29	VSS	AJ45
H33	VSS	AK10
H35	VSS	AK16
H38	VSS	AK17
H4	VSS	AK18
H42	VSS	AK26
H9	VSS	AK28
J4	VSS	AM14
M36	VSS	AN14
M4	VSS	AP19
M8	VSS	AR22
M9	VSS	AR27
N13	VSS	AU29
N15	VSS	AU33
N19	VSS	AV1
N22	VSS	AV10
N24	VSS	AV15
N31	VSS	AV24
N42	VSS	AV27
P10	VSS	AV33
P12	VSS	
AV35	VSS	

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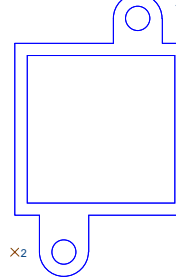
GL82B250/S/SR2WC[10HB1-03B250-20R]

PCHL		
BD34	VSS[70]	AB18
BD39	VSS[71]	AB20
BD7	VSS[72]	AB21
BE2	VSS[73]	AB25
BF43	VSS[74]	AB29
BF2	VSS[75]	AB4
BG18	VSS[76]	AB42
BG23	VSS[77]	AC10
BG28	VSS[78]	AC14
BG32	VSS[79]	AC16
BG37	VSS[80]	AC38
BG40	VSS[81]	AC4
BG9	VSS[83]	AC5
C1	VSS[84]	AC7
A12	VSS[85]	AC8
C2	VSS[86]	AD1
C37	VSS[87]	AD18
A6	VSS[88]	AD20
C9	VSS[89]	AD21
D1	VSS[90]	AD25
AE8	VSS[91]	AD29
D10	VSS[92]	AD45
D12	VSS[93]	AE11
D15	VSS[94]	AE14
D16	VSS[95]	AE32
B12	VSS[96]	AE33
D19	VSS[97]	AK29
D21	VSS[98]	AK30
D24	VSS[99]	AK32
D25	VSS[100]	AK35
D29	VSS[101]	AK39
D30	VSS[102]	AL4
D33	VSS[103]	AL42
D35	VSS[104]	AM10
D36	VSS[105]	AM11
D39	VSS[106]	AM13
D44	VSS[107]	AM17
D7	VSS[108]	AM19
P13	VSS[109]	AM24
P15	VSS[110]	AM27
P17	VSS[111]	AM29
P19	VSS[112]	AM32
P31	VSS[113]	AM33
P33	VSS[114]	AM4
P35	VSS[115]	AN45
AJ17	VSS[116]	AP10
P4	VSS[117]	AP11
P42	VSS[118]	AP13
P8	VSS[119]	AP15
R1	VSS[120]	AP22
R32	VSS[121]	AP27
T10	VSS[122]	AP31
T14	VSS[123]	AP33
T22	VSS[124]	AP34
T29	VSS[125]	AP39
T32	VSS[126]	Y4
T36	VSS[127]	Y8
T38	VSS[128]	Y16
Y38	VSS[129]	Y17
Y4	VSS[130]	V15
Y8	VSS[131]	V30
Y16	VSS[132]	V32
Y17	VSS[133]	V33
U4	VSS[134]	V38
U42	VSS[135]	V4
V10	VSS[136]	V8
V14	VSS[137]	W18
W3	VSS[138]	W20
AR13	VSS[139]	W21
AR31	VSS[140]	W23
AR33	VSS[141]	W25
AR4	VSS[142]	
AT10	VSS[143]	A44
AT13	VSS[144]	BE1
AT35	VSS[145]	BD1
AT37	VSS[146]	B1
AT42	VSS[147]	A2
AU11	VSS[148]	A3
AU17	VSS[149]	A4
BD30	VSS[150]	B44
W45	VSS[151]	B45
Y13	VSS[152]	
Y14	VSS[153]	
Y30	VSS[154]	
Y32	VSS[155]	
Y33	VSS[156]	
BG14	VSS[157]	

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GL82B250/S/SR2WC[10HB1-03B250-20R]

SB_HEATSIN



1× 業務指定使用B150M-EVO Heatsink

LOW COST ICH7 HEATSINK

BGAHSINK_SB-N

PCH_HS

PCH_HS[12SP2-S03507-61R_12SP2-S03507-62R_12SP2-S03507-63R]

X2

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ANS 4958782

GIGABYTE

Title

PCH GND

Size

Custom

Document Number

GA-B250M-HD3

Rev

1.0

Date:

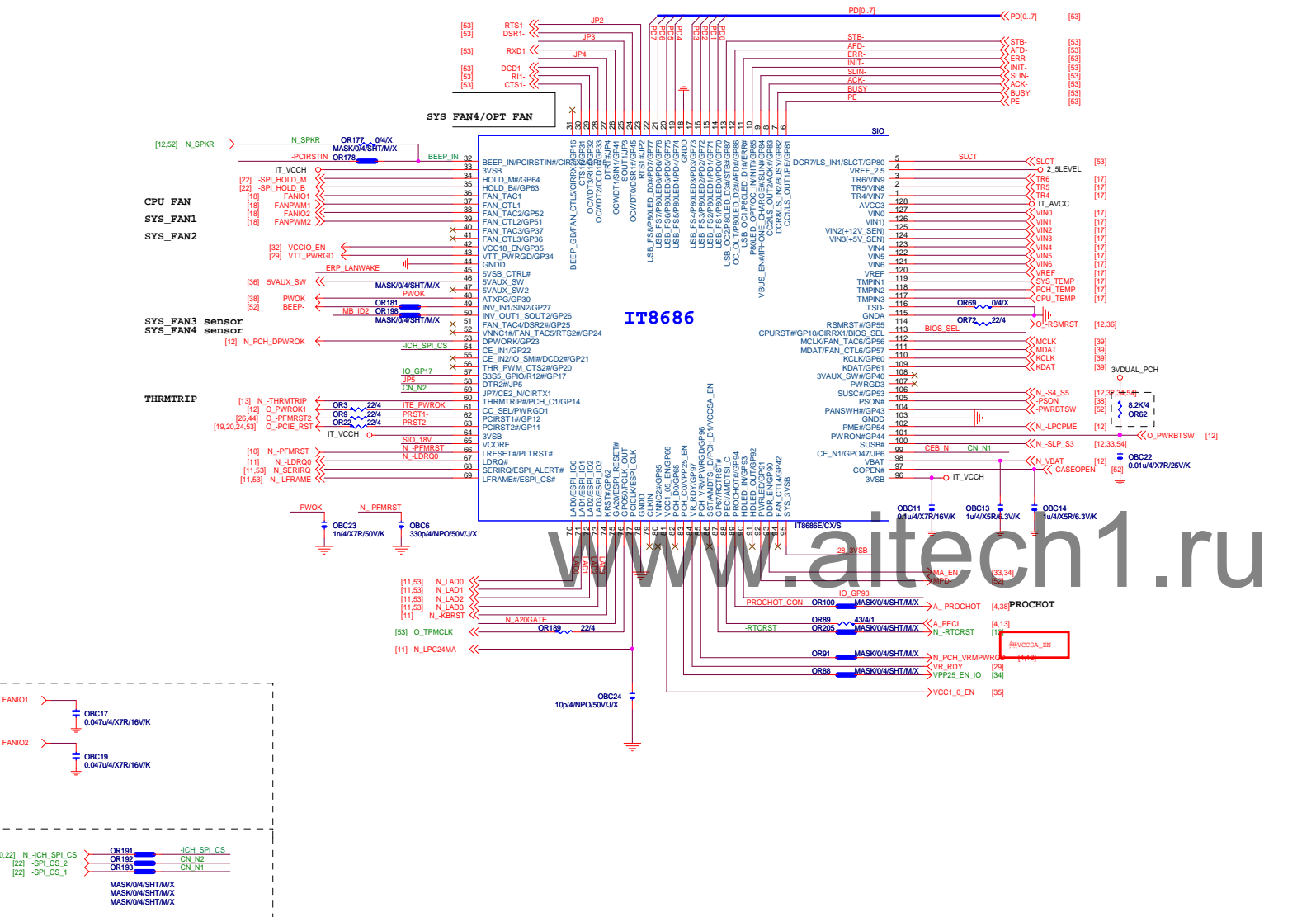
Tuesday, November 15, 2016

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of

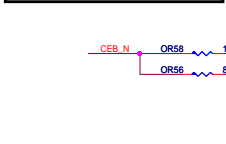
56



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



SIO CAP

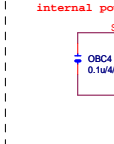


Placement CPU

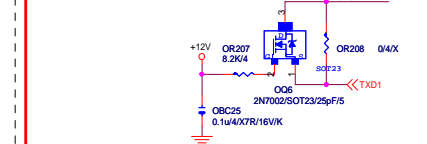
[4] A -THRMTRIP ← WR10_1K/4/1 N-THRMTRIP

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。

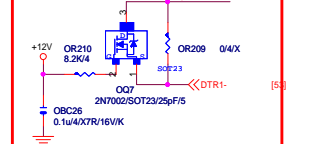
SIO_18V



for LPC/eSPI power mode



for LPC/eSPI power mode



PWR_SHT



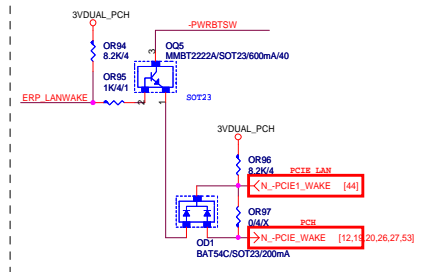
SIO_PU



SIO_STRAP



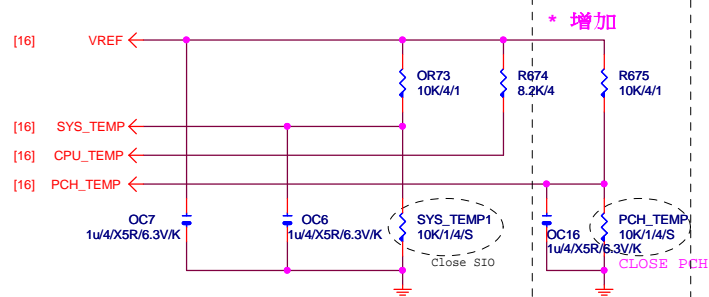
JP2	1	Disable WDT to rest PWROK
JP2	0	Enable WDT to rest PWROK
JP3		Dual-BIOS CS pin mode select bit "0" See the below table
JP4	1	LPC/ESPI power VCCBT = 3.3V
JP4	0	LPC/ESPI power VCCBT = 1.8V
JP5	0	ESPI I/F
JP6	1	Enable Dual BIOS Function (for GigaByte Only)
JP6	0	Disable Dual BIOS Function (for GigaByte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



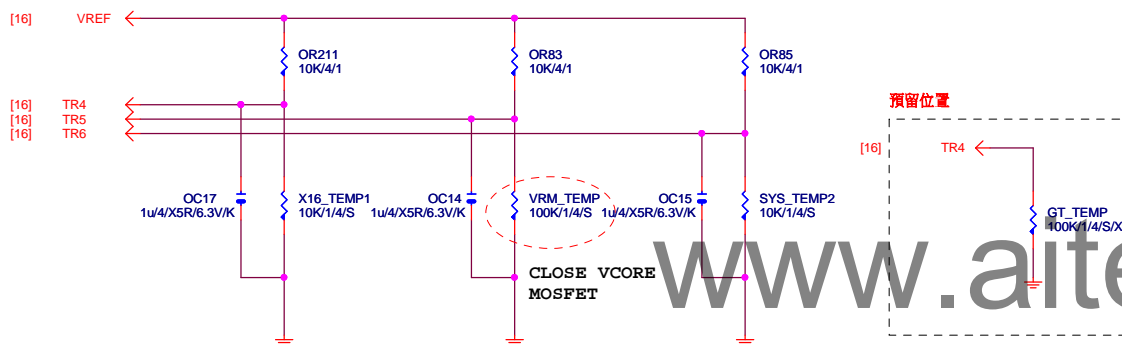
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C		Rev 1.0
Date:	Wednesday, November 02, 2016	Sheet 16 of 56

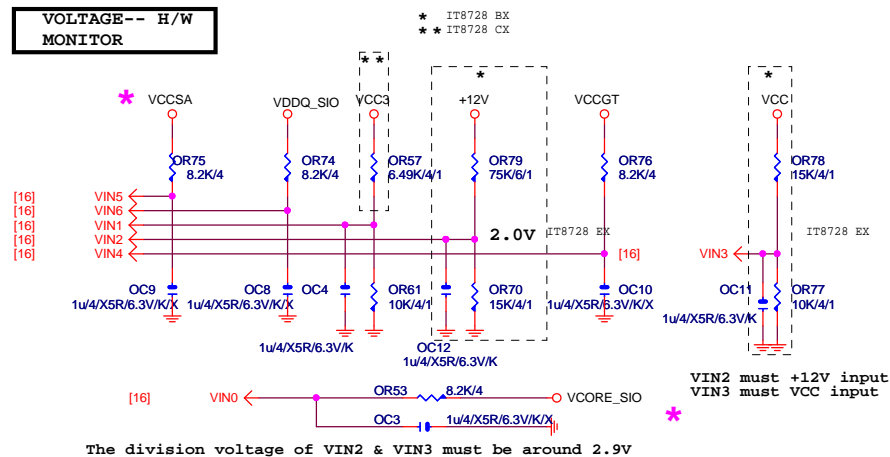
TEMP H/W MONITOR



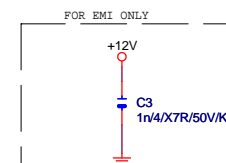
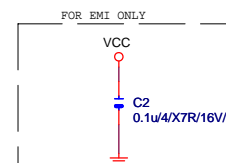
5個FAN時使用



VOLTAGE-- H/W MONITOR



★Update 2015-04.24

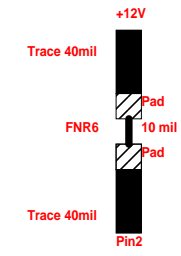
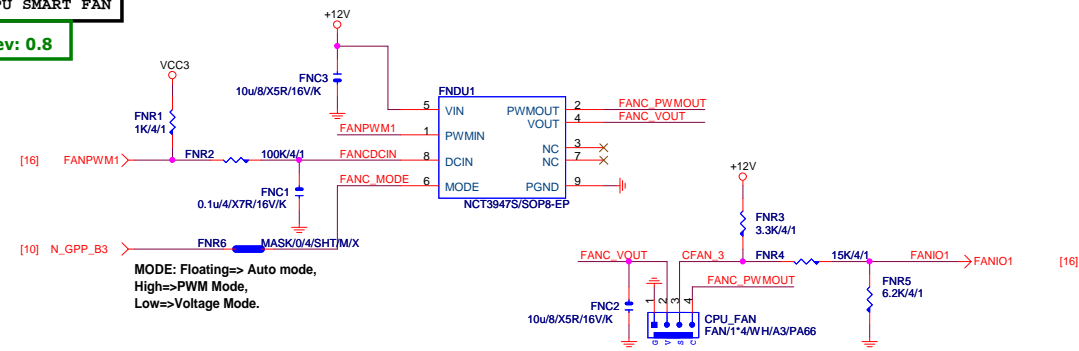


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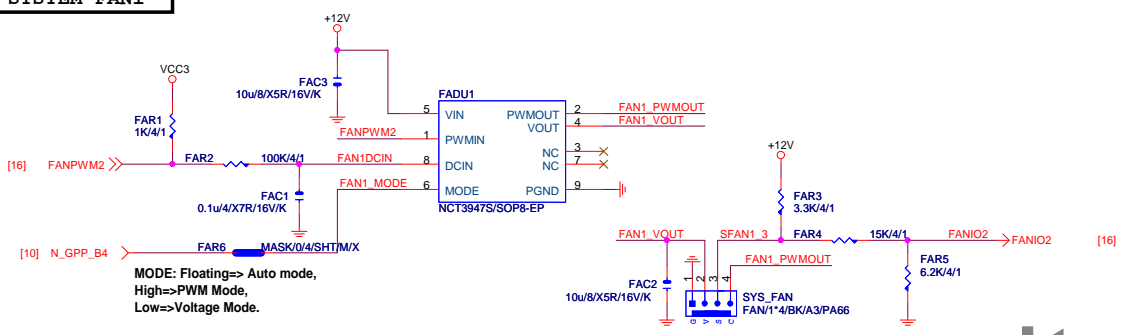
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Size	Document Number	Rev
Custom	GA-B250M-HD3	1.0
Date:	Wednesday, November 02, 2016	Sheet 17 of 56

CPU SMART FAN

Rev: 0.8



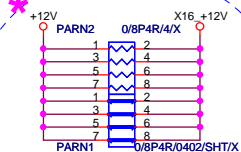
A. SYSTEM FAN1



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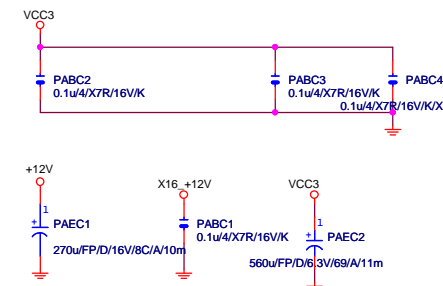
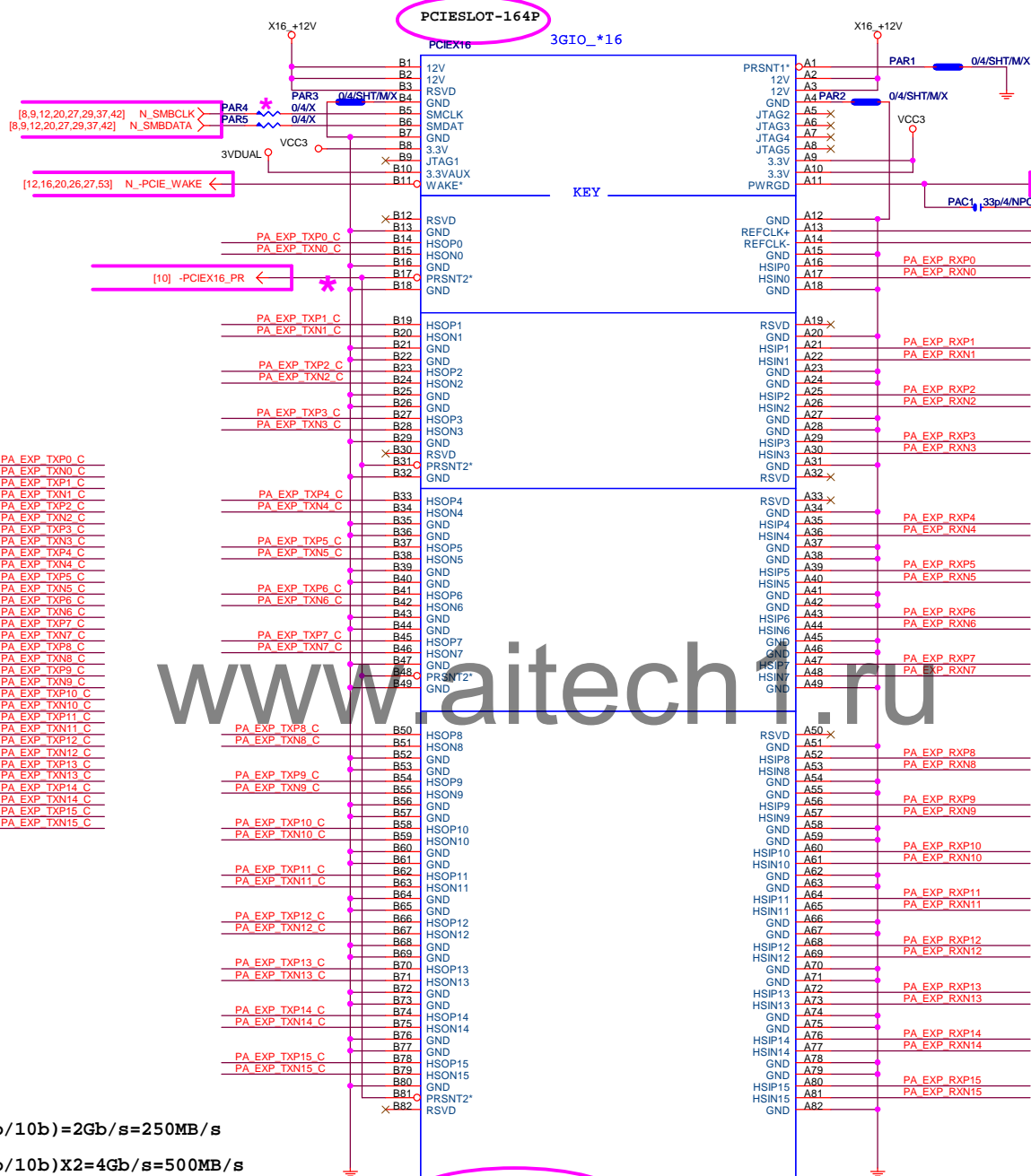
Gigabyte Technology

Title			
FAN CTRL			
Size	Document Number	Rev	
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+12 - protect
short-wire test

PA_EXP_RXP0[0..15] >> PA_EXP_RXP[0..15] [4]
 PA_EXP_RXN0[0..15] >> PA_EXP_RXN[0..15] [4]
 PA_EXP_TXP0[0..15] >> PA_EXP_TXP[0..15] [4]
 PA_EXP_TXN0[0..15] >> PA_EXP_TXN[0..15] [4]

PA_EXP_TXP0	PAC5	0.22u4/X5R6.3V/K	PA_EXP_TXP0_C
PA_EXP_TXN0	PAC4	0.22u4/X5R6.3V/K	PA_EXP_TXN0_C
PA_EXP_TXP1	PAC6	0.22u4/X5R6.3V/K	PA_EXP_TXP1_C
PA_EXP_TXN1	PAC7	0.22u4/X5R6.3V/K	PA_EXP_TXN1_C
PA_EXP_TXP2	PAC8	0.22u4/X5R6.3V/K	PA_EXP_TXP2_C
PA_EXP_TXN2	PAC9	0.22u4/X5R6.3V/K	PA_EXP_TXN2_C
PA_EXP_TXP3	PAC10	0.22u4/X5R6.3V/K	PA_EXP_TXP3_C
PA_EXP_TXN3	PAC11	0.22u4/X5R6.3V/K	PA_EXP_TXN3_C
PA_EXP_TXP4	PAC12	0.22u4/X5R6.3V/K	PA_EXP_TXP4_C
PA_EXP_TXN4	PAC13	0.22u4/X5R6.3V/K	PA_EXP_TXN4_C
PA_EXP_TXP5	PAC14	0.22u4/X5R6.3V/K	PA_EXP_TXP5_C
PA_EXP_TXN5	PAC15	0.22u4/X5R6.3V/K	PA_EXP_TXN5_C
PA_EXP_TXP6	PAC16	0.22u4/X5R6.3V/K	PA_EXP_TXP6_C
PA_EXP_TXN6	PAC17	0.22u4/X5R6.3V/K	PA_EXP_TXN6_C
PA_EXP_TXP7	PAC18	0.22u4/X5R6.3V/K	PA_EXP_TXP7_C
PA_EXP_TXN7	PAC19	0.22u4/X5R6.3V/K	PA_EXP_TXN7_C
PA_EXP_TXP8	PAC21	0.22u4/X5R6.3V/K	PA_EXP_TXP8_C
PA_EXP_TXN8	PAC20	0.22u4/X5R6.3V/K	PA_EXP_TXN8_C
PA_EXP_TXP9	PAC22	0.22u4/X5R6.3V/K	PA_EXP_TXP9_C
PA_EXP_TXN9	PAC23	0.22u4/X5R6.3V/K	PA_EXP_TXN9_C
PA_EXP_TXP10	PAC24	0.22u4/X5R6.3V/K	PA_EXP_TXP10_C
PA_EXP_TXN10	PAC25	0.22u4/X5R6.3V/K	PA_EXP_TXN10_C
PA_EXP_TXP11	PAC26	0.22u4/X5R6.3V/K	PA_EXP_TXP11_C
PA_EXP_TXN11	PAC27	0.22u4/X5R6.3V/K	PA_EXP_TXN11_C
PA_EXP_TXP12	PAC28	0.22u4/X5R6.3V/K	PA_EXP_TXP12_C
PA_EXP_TXN12	PAC29	0.22u4/X5R6.3V/K	PA_EXP_TXN12_C
PA_EXP_TXP13	PAC30	0.22u4/X5R6.3V/K	PA_EXP_TXP13_C
PA_EXP_TXN13	PAC31	0.22u4/X5R6.3V/K	PA_EXP_TXN13_C
PA_EXP_TXP14	PAC32	0.22u4/X5R6.3V/K	PA_EXP_TXP14_C
PA_EXP_TXN14	PAC33	0.22u4/X5R6.3V/K	PA_EXP_TXN14_C
PA_EXP_TXP15	PAC34	0.22u4/X5R6.3V/K	PA_EXP_TXP15_C
PA_EXP_TXN15	PAC35	0.22u4/X5R6.3V/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

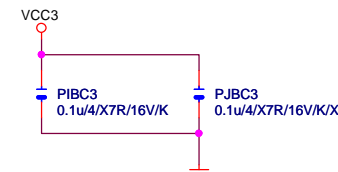
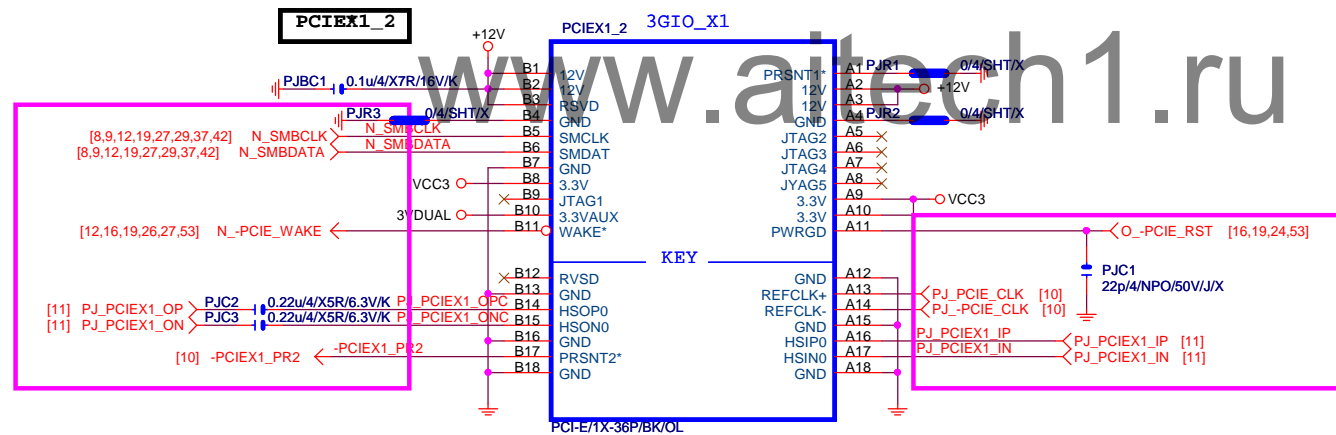
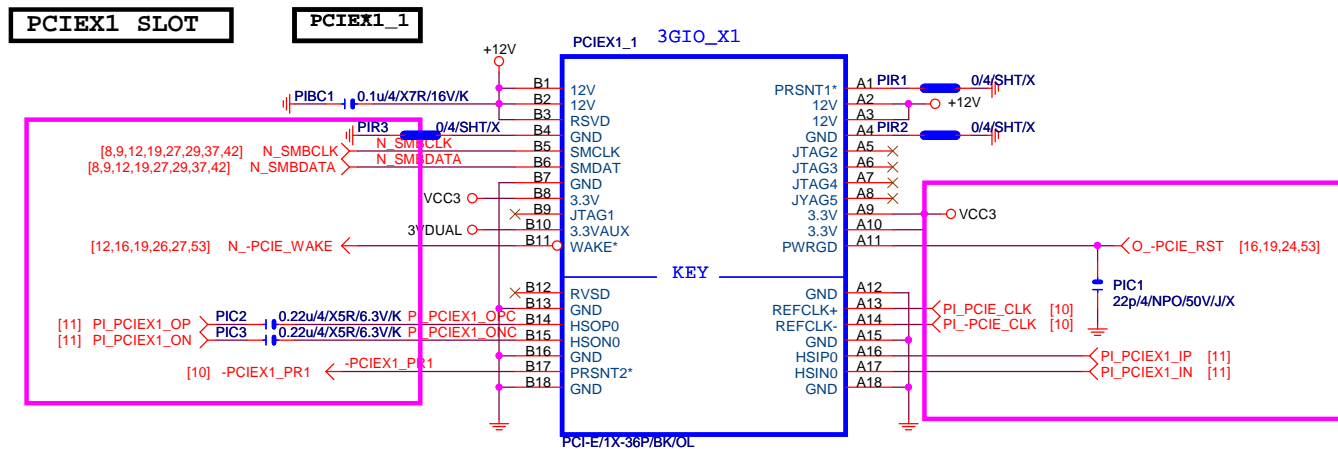
PCI-E REV:2.0--> 5GHZ

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

黑色SLOT

Gigabyte Technology

Title			PCI EXPRESS * 16
Size	Document Number		
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Gigabyte Technology

Title

PCIE_X4

Size

Document Number

Rev

GA-B250M-HD3

1.0

Date:

Wednesday, November 02, 2016

Sheet

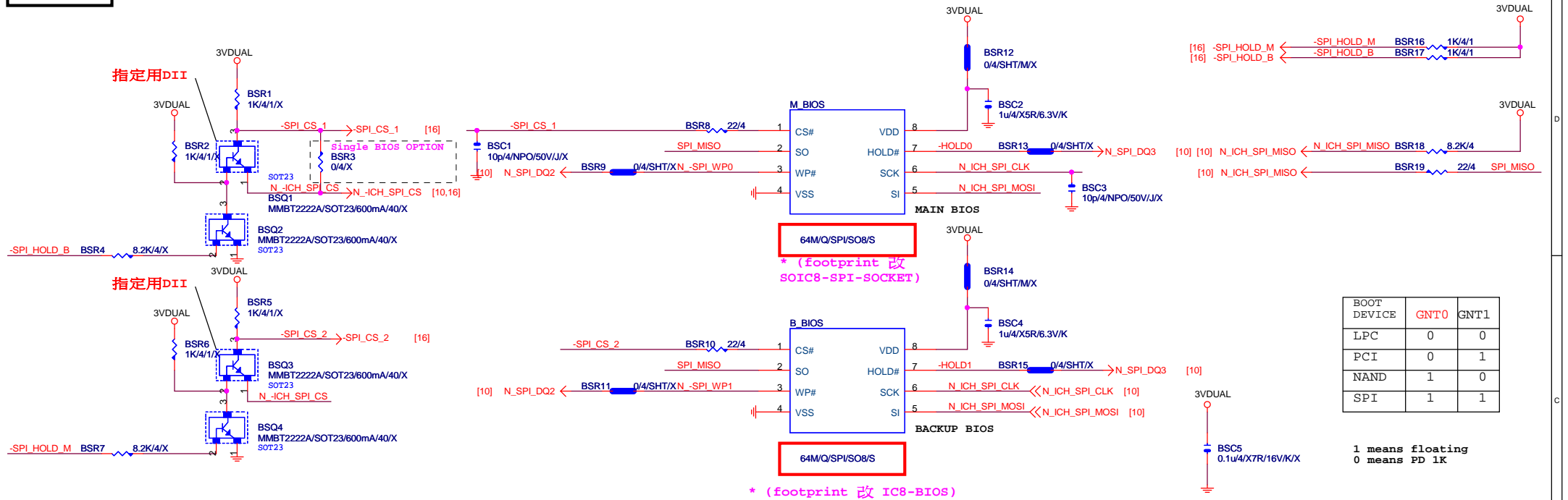
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of

56

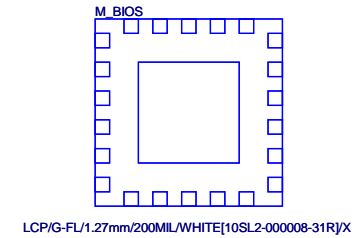
DUAL BIOS

MOSI For DMI RX Termination Voltage



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

1 means floating
0 means PD 1K



* 試産先上, PVT 移除

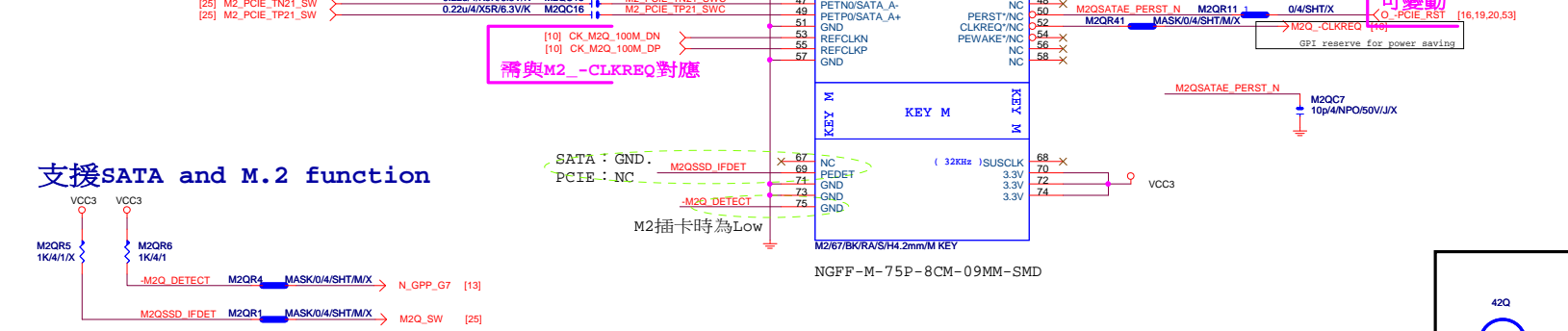
Rev 0.1

M.2 Lane4 from PCH port24

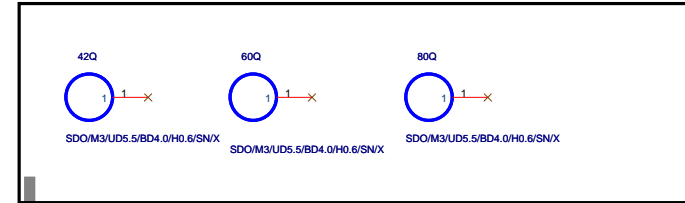
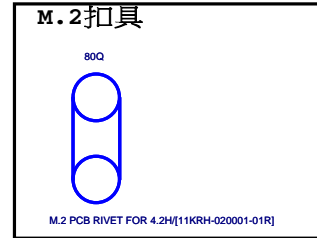
M.2 Lane3 from PCH port23

M.2 Lane2 from PCH port22

M.2 Lane1 from PCH port21

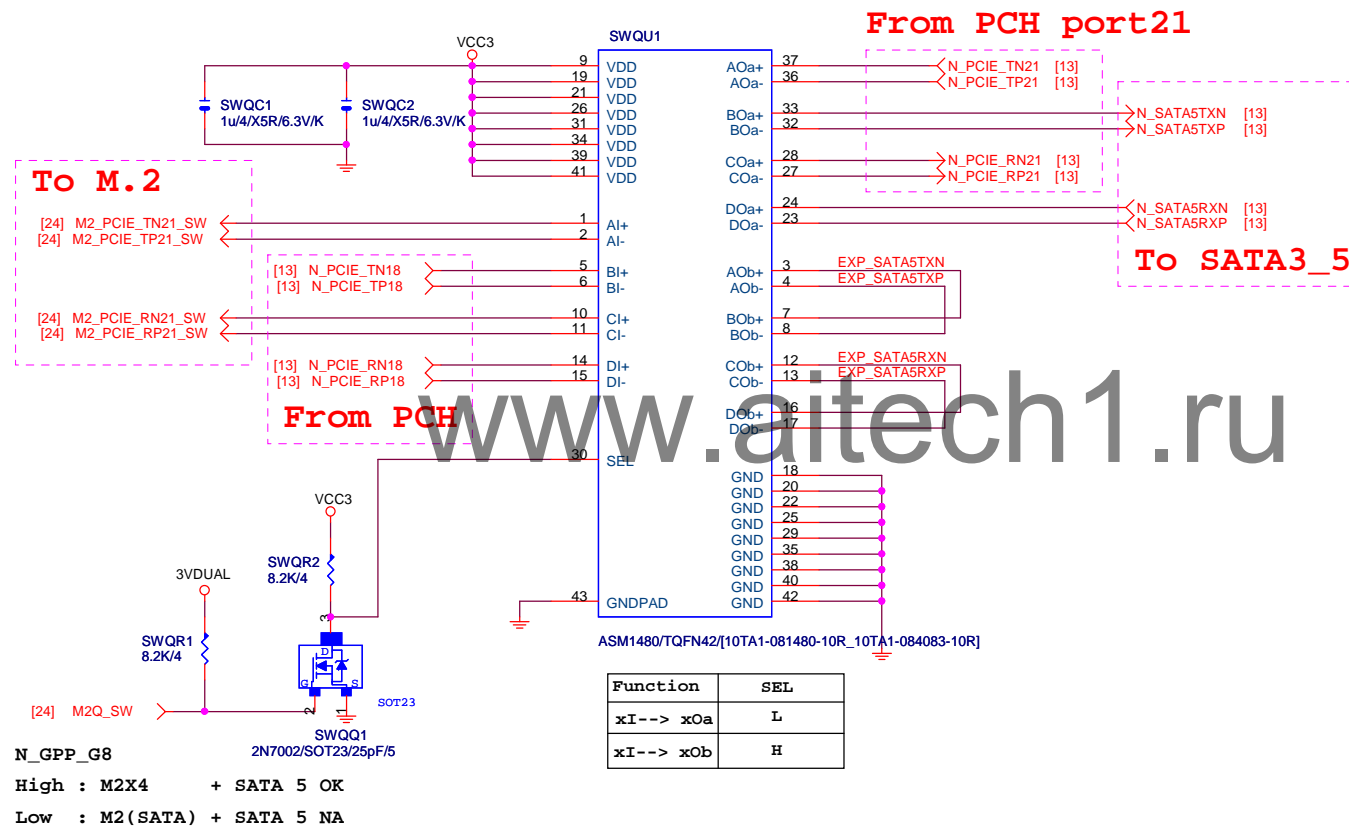


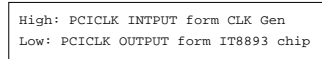
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* Footprint : HOLE_165NP

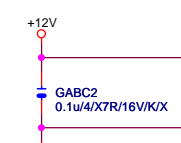
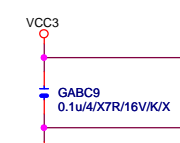
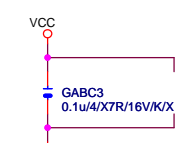
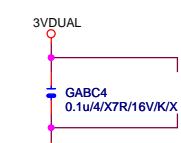
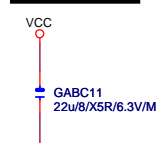
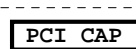
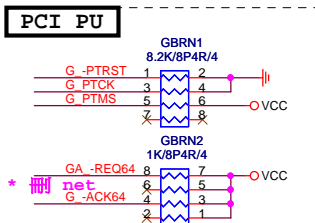
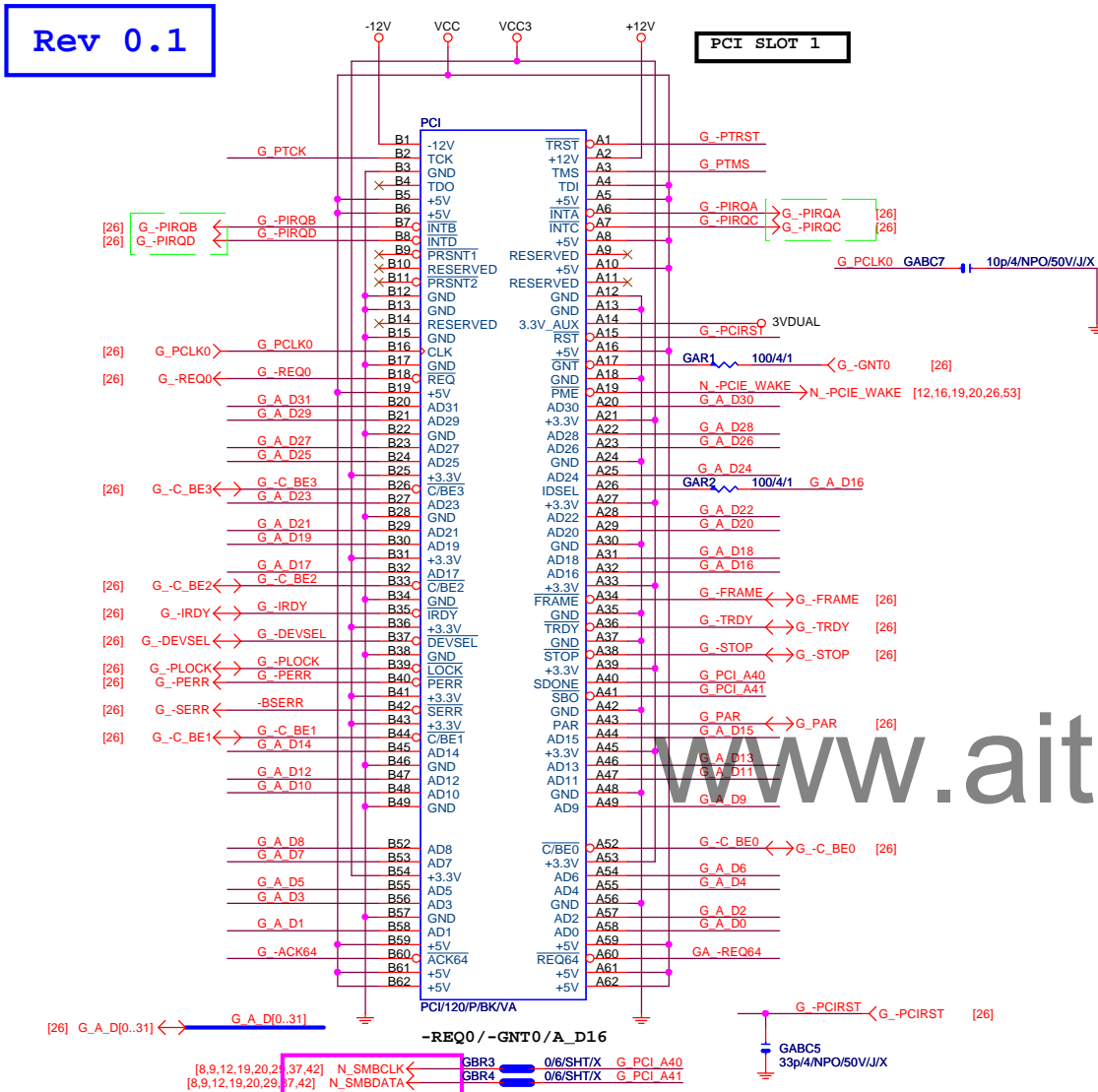
舊的Switch,價格低






<i>Gigabyte Technology</i>			
Title			
IT8892E			
Size Custom	Document Number GA-B250M-HD3		Rev 1.0
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Rev 0.1



			
Title			
PCI SLOT 1&2			
Size	Document Number	Rev	
Custom	GA-B250M-HD3	1.0	
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Rev 0.1

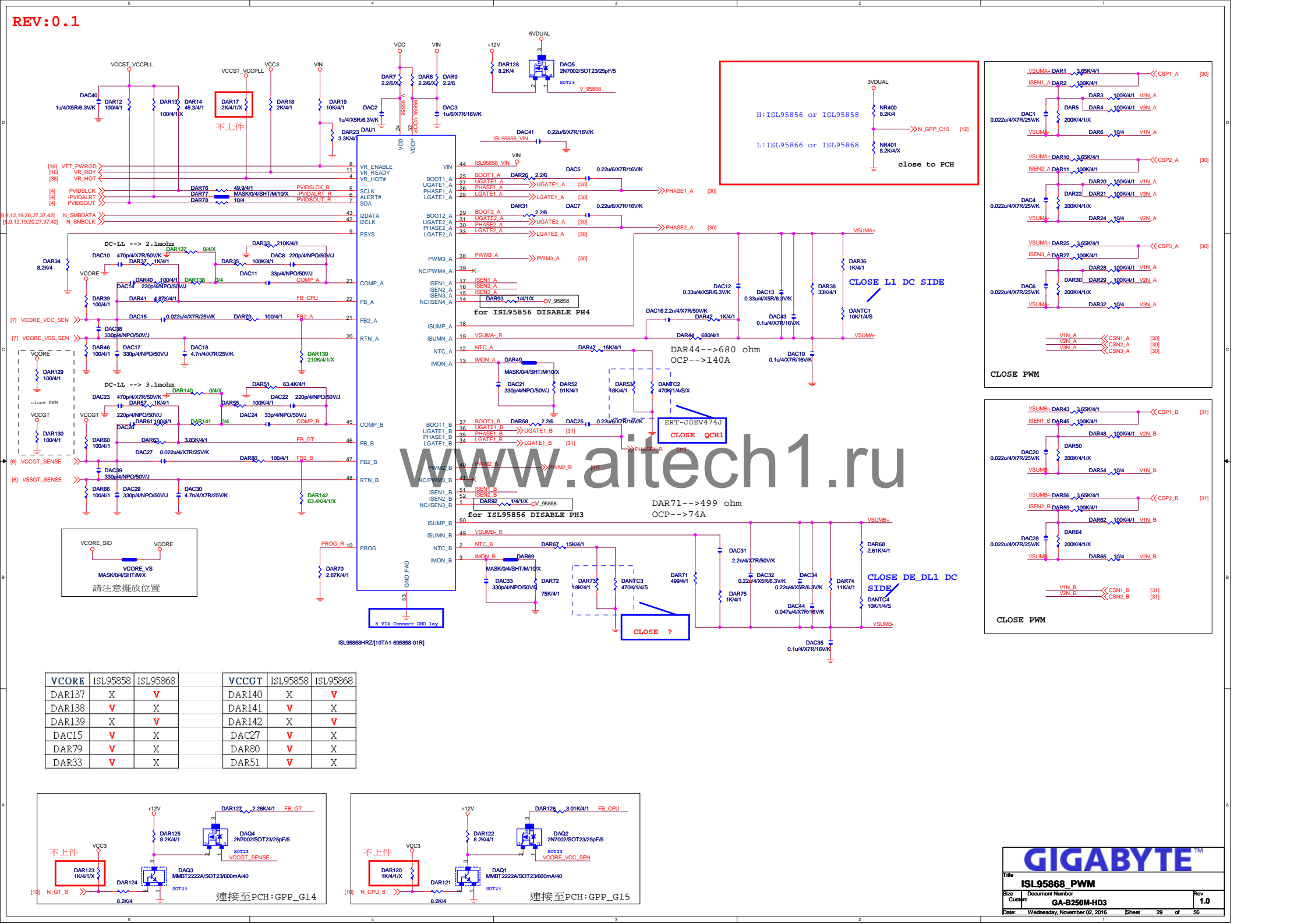


Gigabyte Technology			
ASM1085 POWER			
Size	Document Number	Rev	
Custom	GA-B250M-HD3	1.0	
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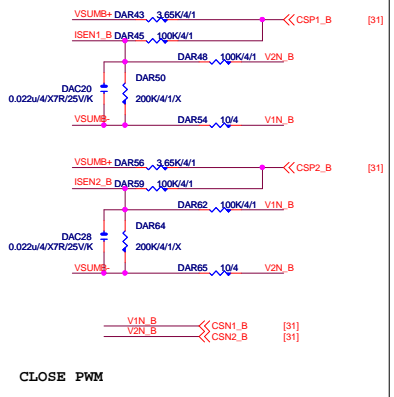
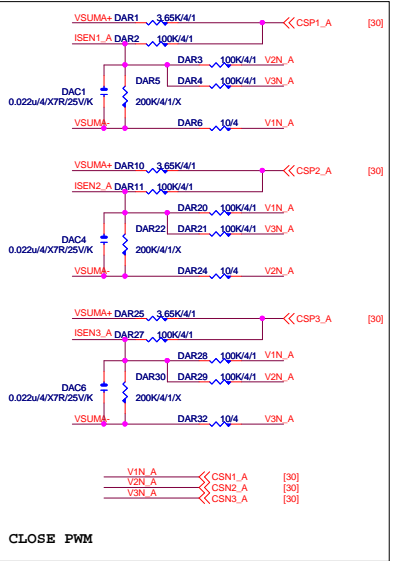
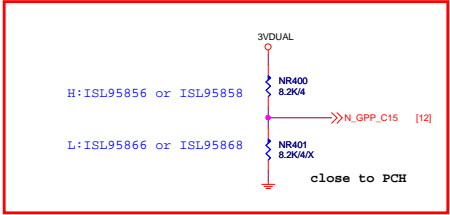
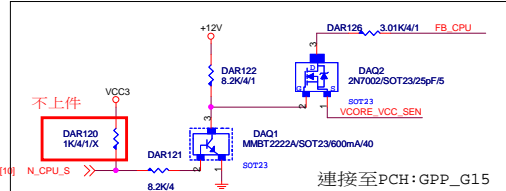
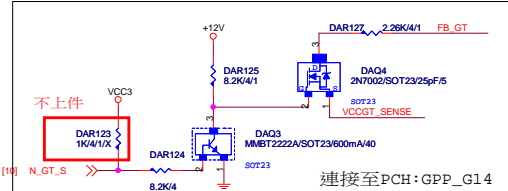
GA-B250M-HD3

Rev
1.0

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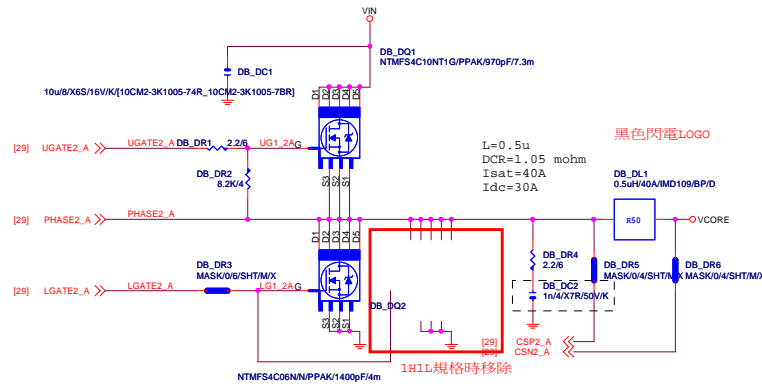
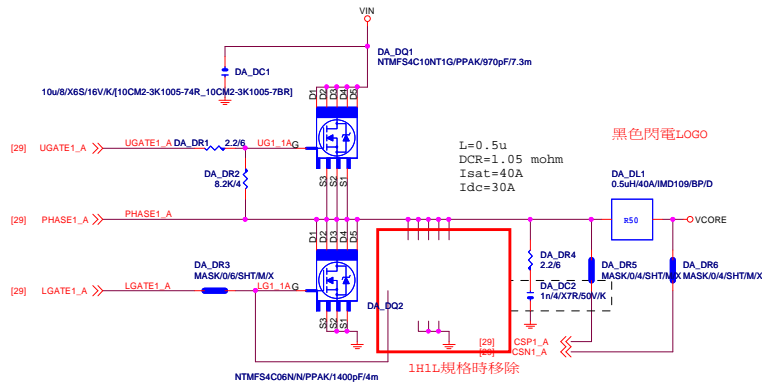


VCCORE	ISL95858	ISL95868	VCCGT	ISL95858	ISL95868
DAR137	X	V	DAR140	X	V
DAR138	V	X	DAR141	V	X
DAR139	X	V	DAR142	X	V
DAC15	V	X	DAC27	V	X
DAR79	V	X	DAR80	V	X
DAR33	V	X	DAR51	V	X

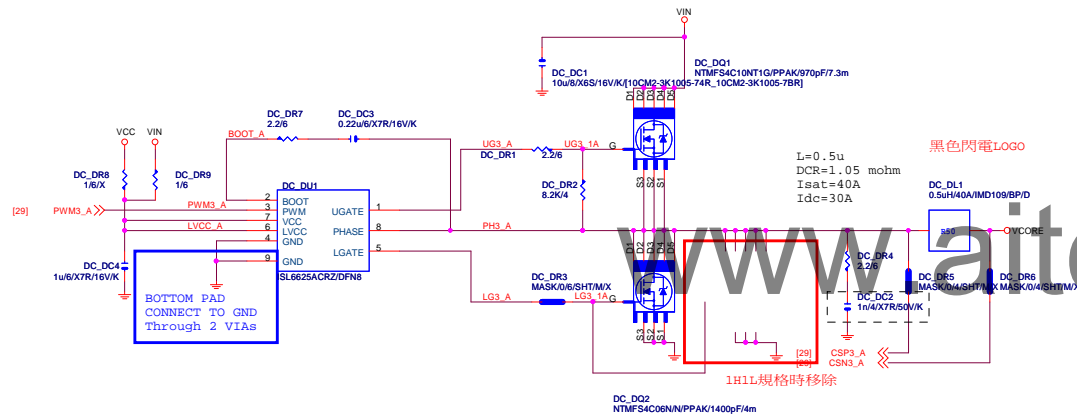
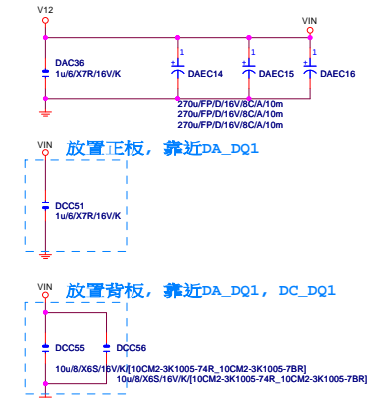
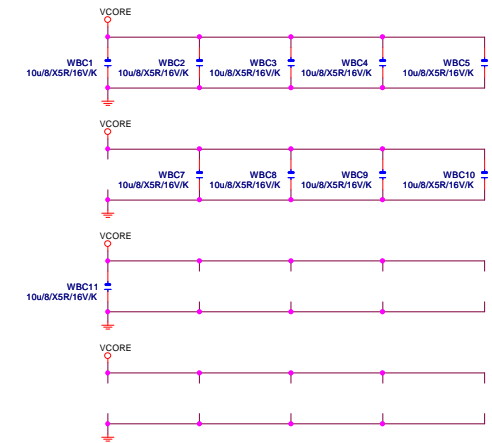
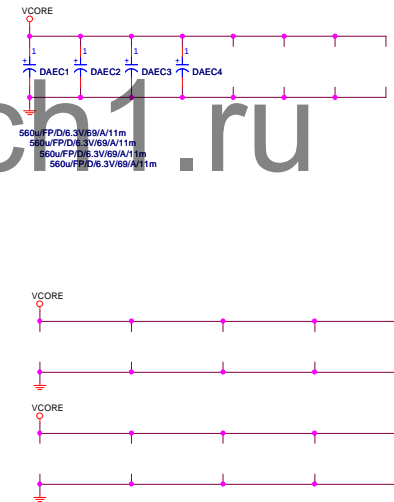


REV:0.1

VCORE



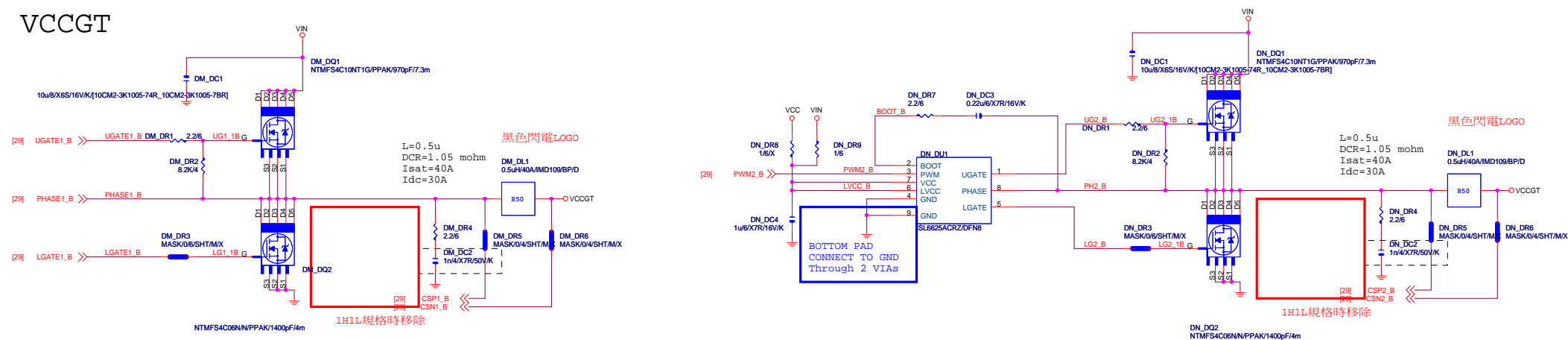
VIN CAP 270u*3PCS

VCORE CAP 560u*4PCS
10u*10PCS

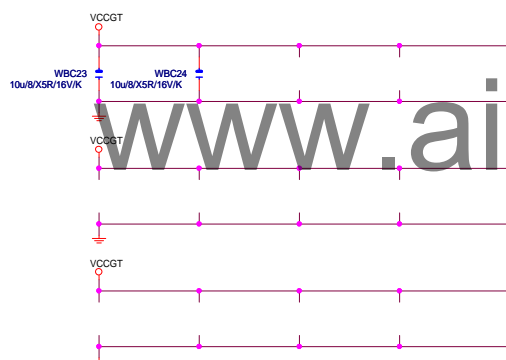
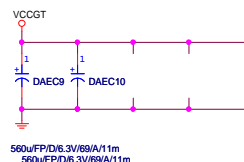
GIGABYTE™

File	ISL95868_MOS	Rev	1.0
Size	Document Number	GA-B250M-HD3	
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VCCGT



VCCGT CAP 560u*2PCS
10u*2PCS

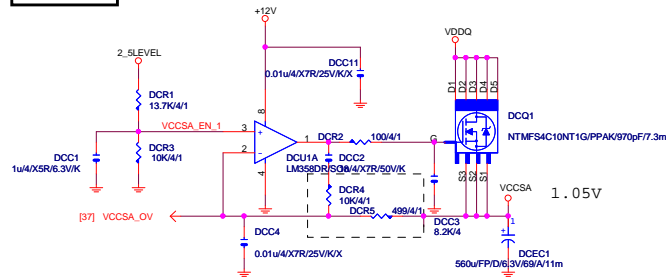


WBC24
10u8/XSR/16V/K

COGT

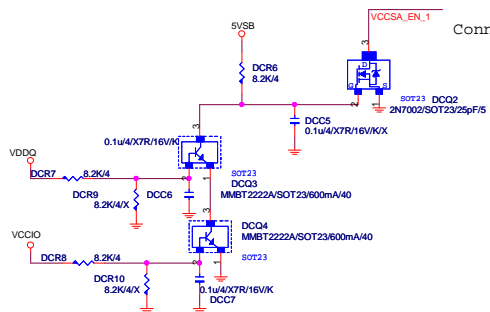
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VCCSA

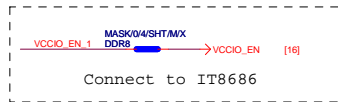
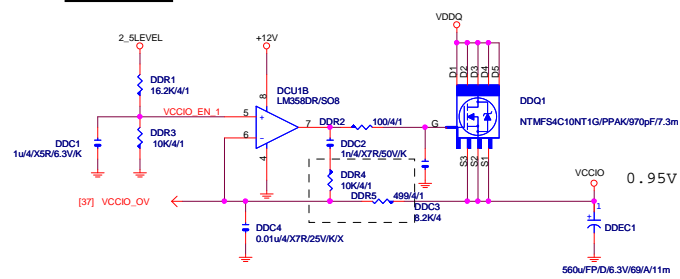


Connect to IT8793

Connect to IT8686

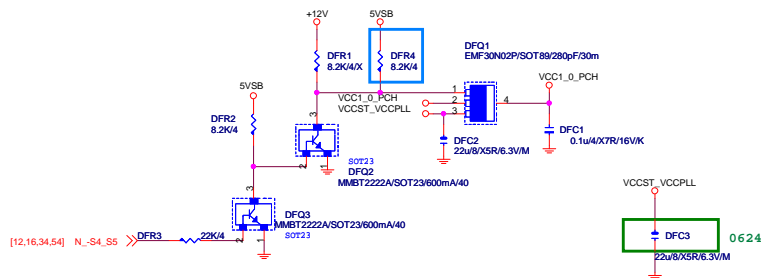


VCCIO



VCCGT
放CPU端。

VCCST_VCCPLL



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REV:0.2

DDR4

CHOKE與CAP料號可變

DDR VIN CAP
560u*2PCS

1.2V

SUPPORT DDR4

25A MAX

 $L=1\mu$
 $DCR=2.5\text{ mohm}$
 $I_{sat}=35A$
 $I_{dc}=28A$

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

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

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]

FS=290K
OCP=40A

MA_DR38.MA_DC15
VPP_25V使用8120.8068A.RT8237時上件

PWR SEQ

CLOSE TO DDR POWER PLANE

For power sequence require

VPP_25V使用8120時上件

MAU1上RT9045時上件(不可MASK)

DDRVTT

DDRVTT CAP

[4] DDR_VTT_CTL >> DDR_VTT_CTL MAR110 = MASK/0/4/SHT/M/10/X_DDRVTT_EN
[2,16,54] N_SLP_S3 >> N_SLP_S3 MAR111 = MASK/0/4/SHT/M/10/X_DDRVTT_BOOT

GIGABYTE™

RT8237_DDR4 POWER

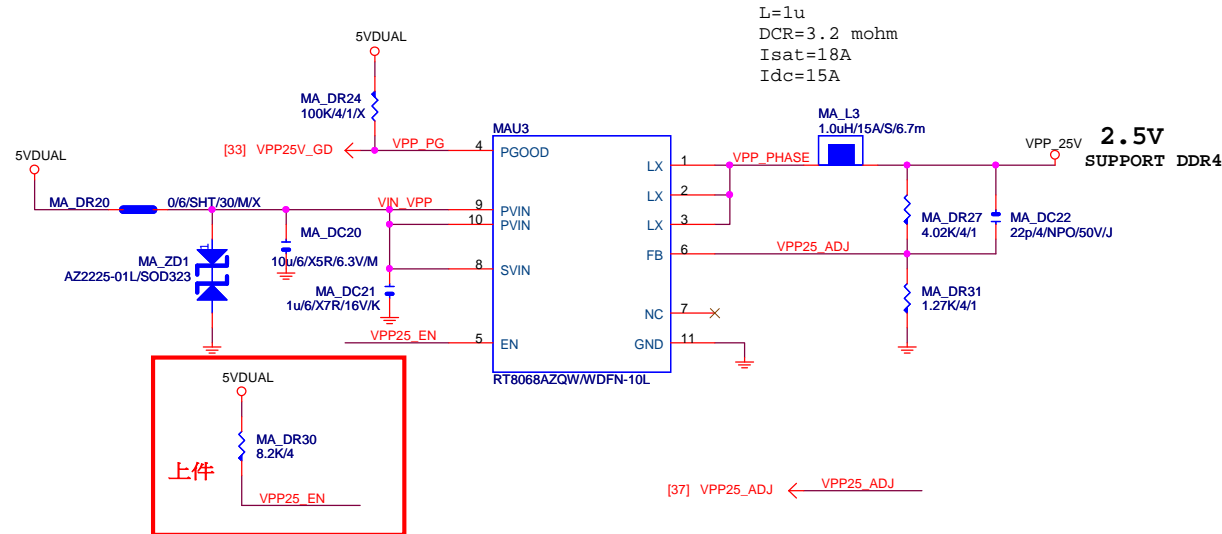
Size	Document Number	Rev
Custom	GA-B250M-HD3	1.0

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VPP_25V

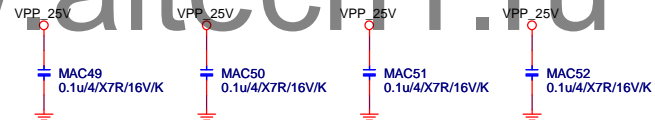
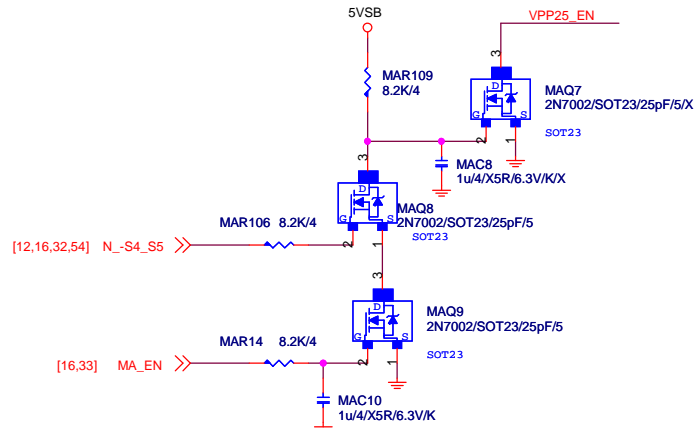
CHOKES與CAP料號可變



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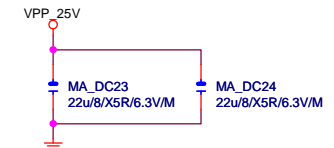
PWR	SEQ
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* 删除 MA_DR32




VPP CAP 22u*1PCS

* 大電容 x0



[16] VPP25_EN_IO >> MASK/0/4/SHT/M/X MAR114 VPP25_EN

			
Title			
RT8068A_VPP25 POWER			
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Custom	GA-B250M-HD3		1.0
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REV:0.1

CHOKES與CAP料號可變

注意耐壓

黑色閃電LOGO

Remote sense請從最重的負載端點拉回

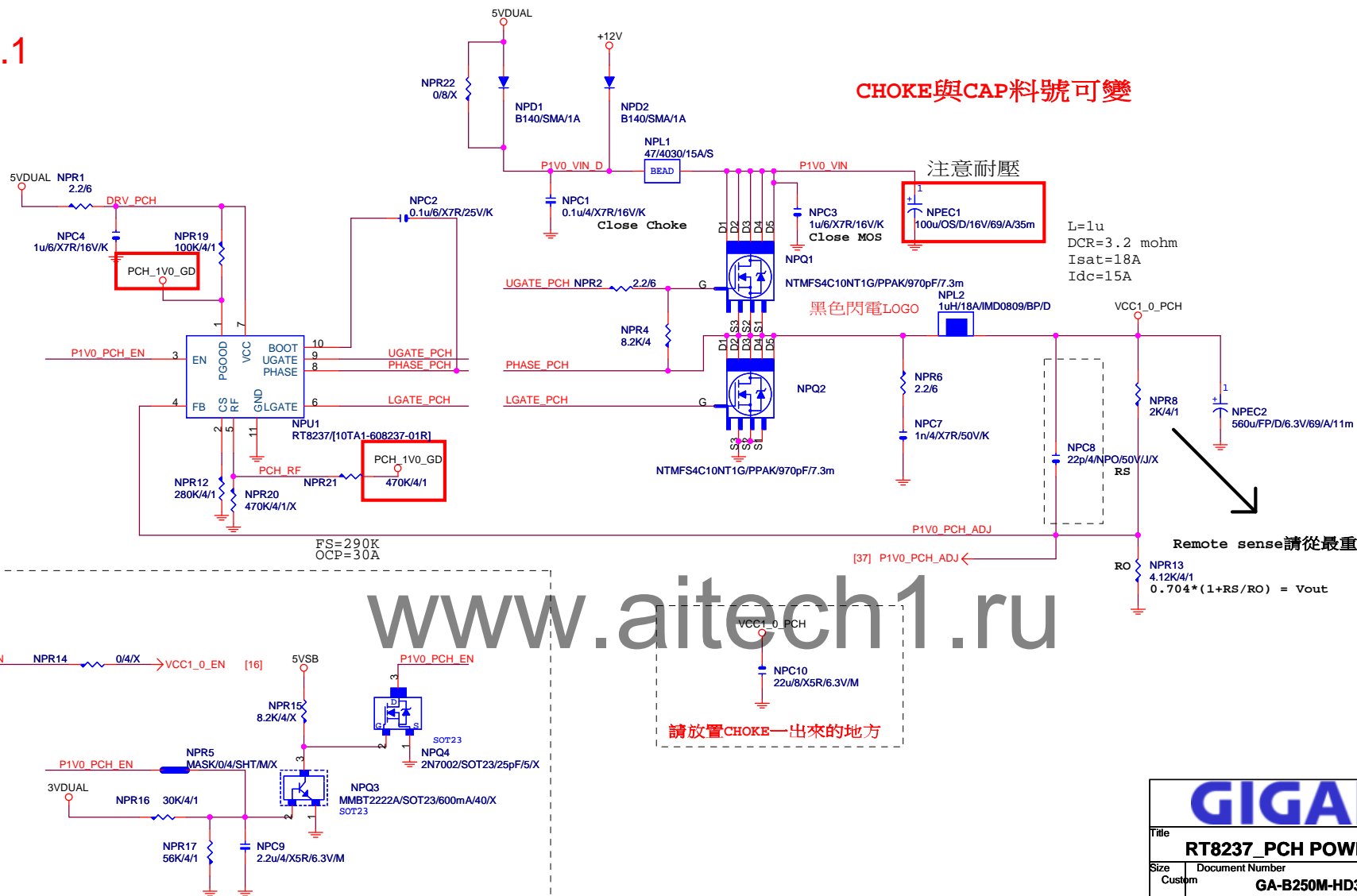
請放置CHOKES—出來的地方

PWR_SEQ

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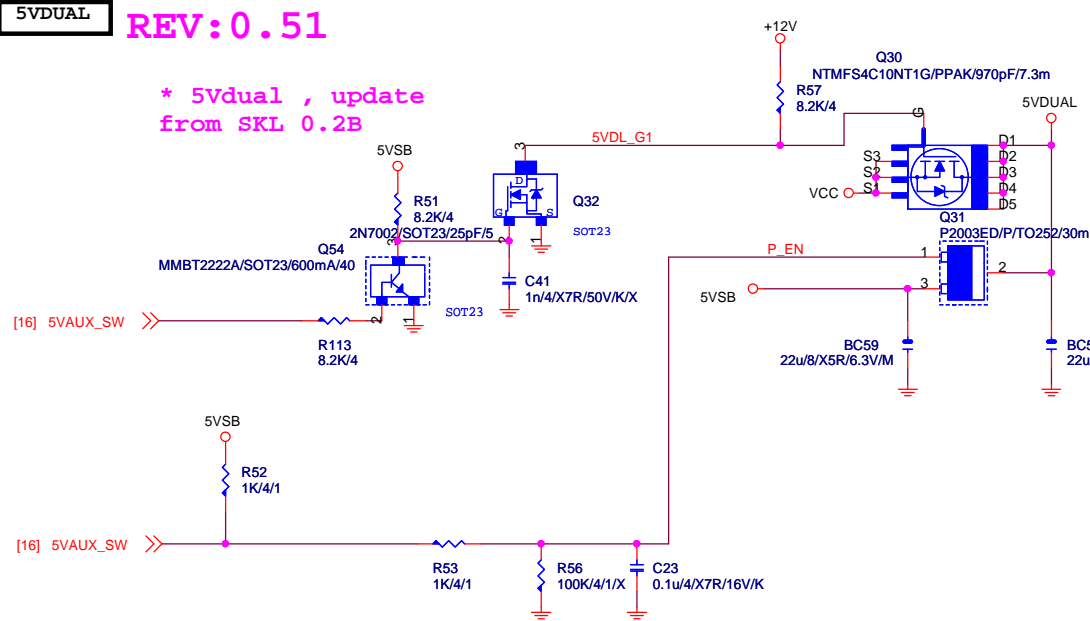
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Size	Document Number	Rev	
Custom	GA-B250M-HD3	1.0	
Date:	Wednesday, November 02, 2016	Sheet	35 of 56



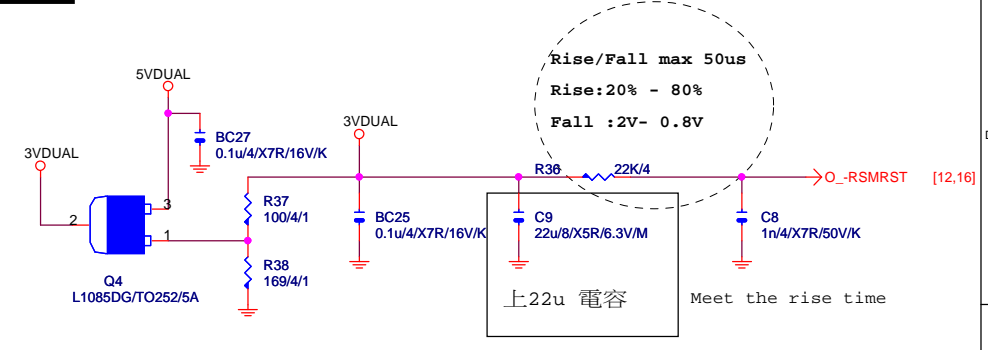
5VDUAL

REV:0.51

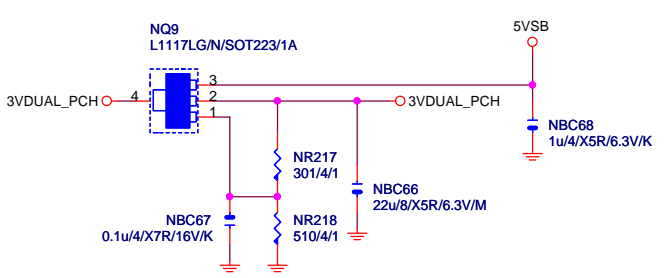
* 5Vdual , update
from SKL 0.2B



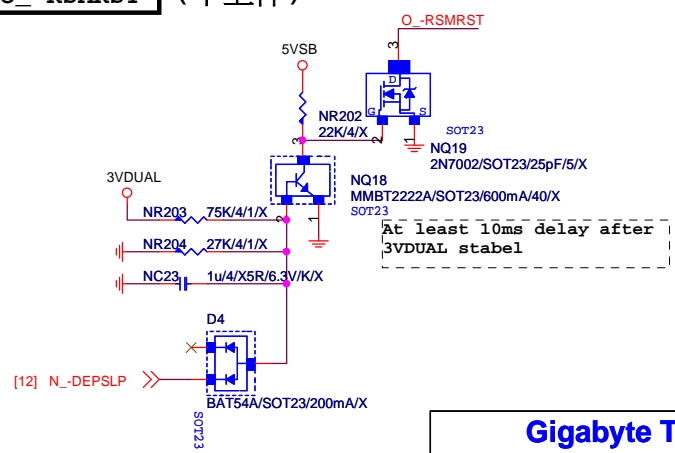
3VDUAL



3VDUAL_PCH



O_-RSMRST (不上件)



Gigabyte Technology

Title

Size Document Number

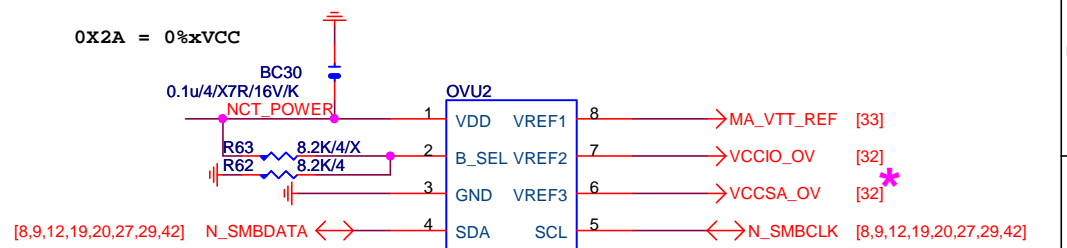
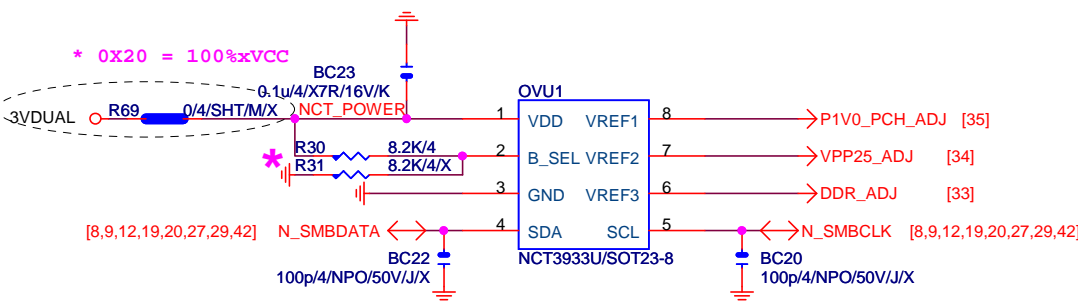
Custom GA-B250M-HD3

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OVER VOLTAGE



0X22 = 75%xVCC

* 删除 OVU3

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

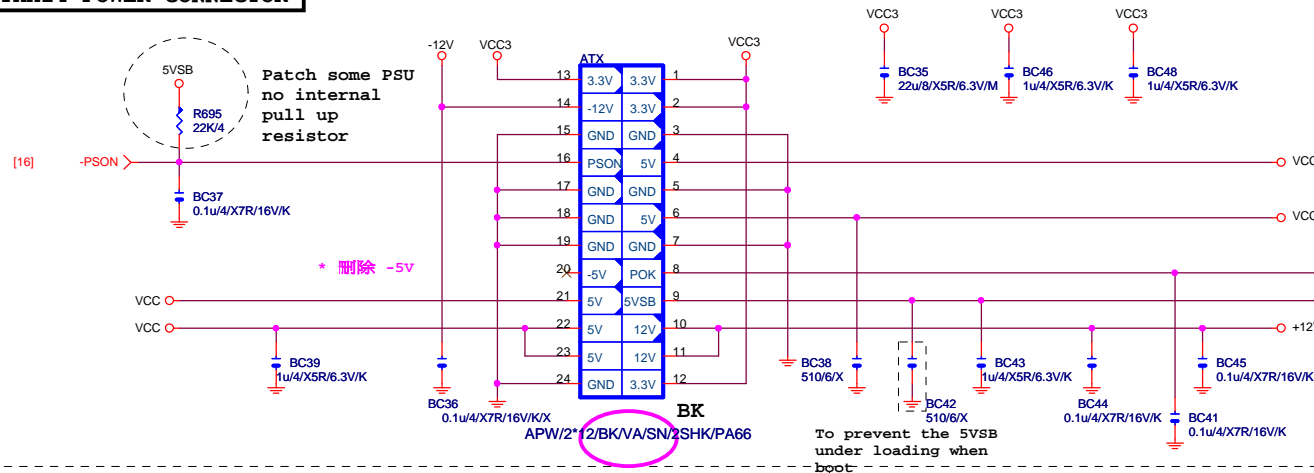
Gigabyte Technology

Title CPU CORE VR-2

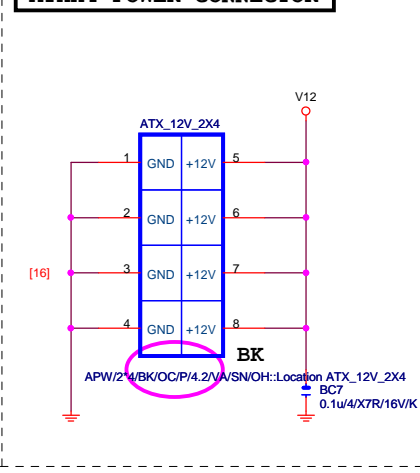
Size Custom	Document Number	GA-B250M-HD3	Rev 1.0
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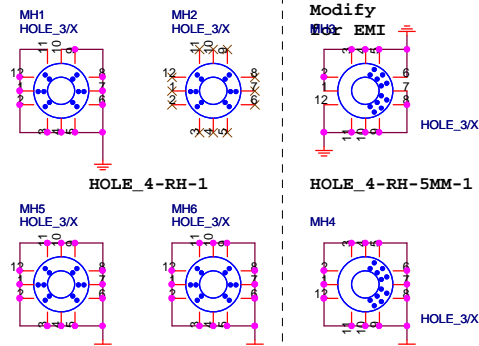
ATXX24 POWER CONNECTOR



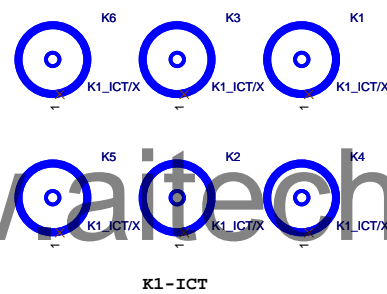
ATXX4 POWER CONNECTOR



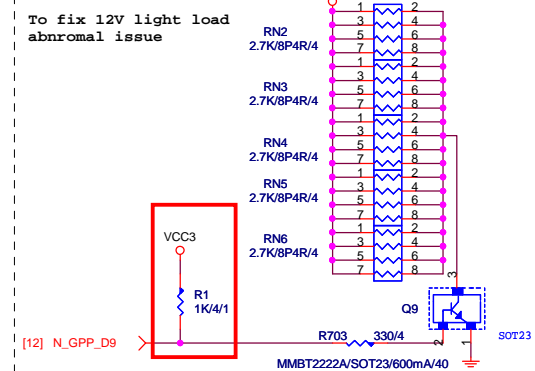
螺絲孔



固定孔/光學點

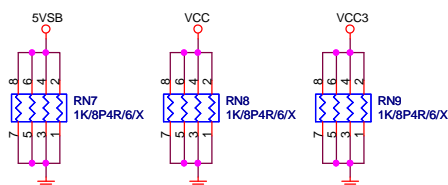


+12V DUMMY LOAD

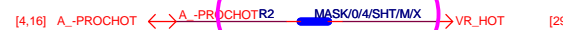


【技術通報R&D技術通報153】

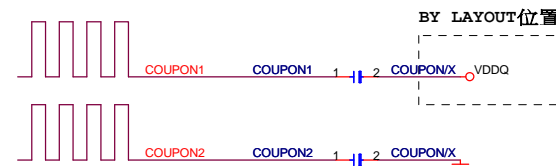
DUMMY LOAD



-PROHOT



COUPON

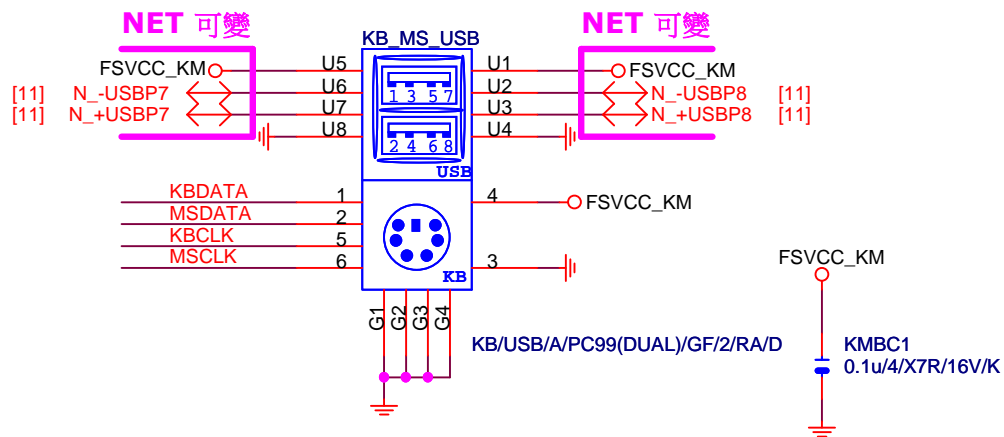


Gigabyte Technology

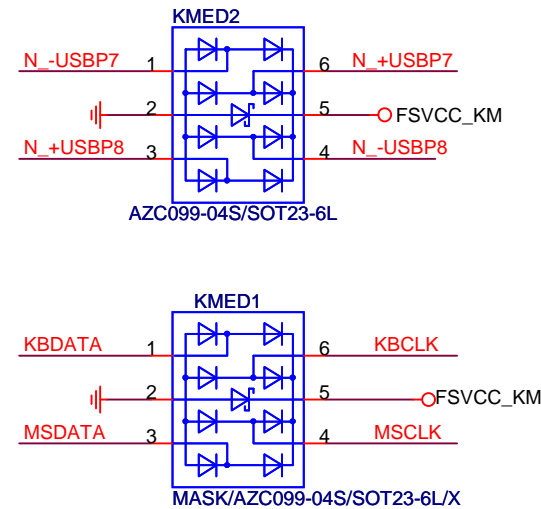
Title			ATX POWER CONNECTOR
Size	Document Number	GA-B250M-HD3	
Custom			Rev 1.0
Date:	Wednesday, November 02, 2016	Sheet	38 of 56

KB_MS_USB

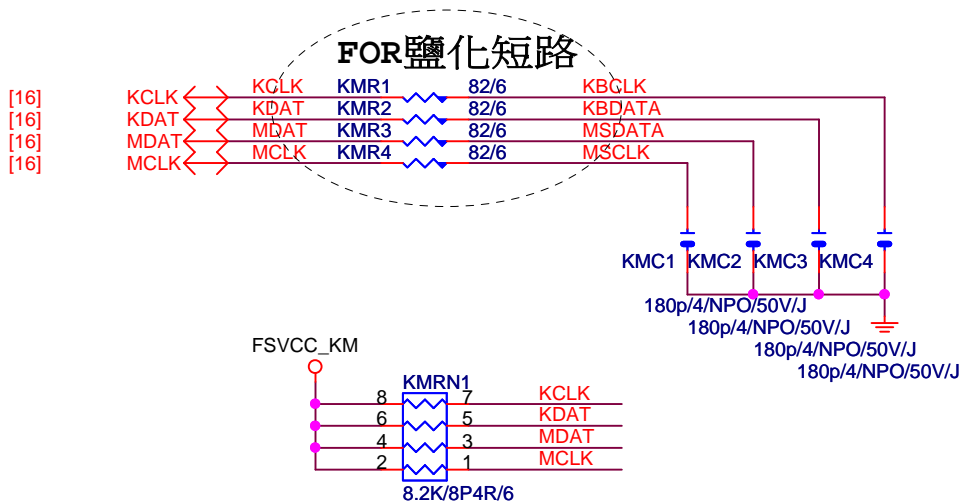
Rev: 0.7



ESD

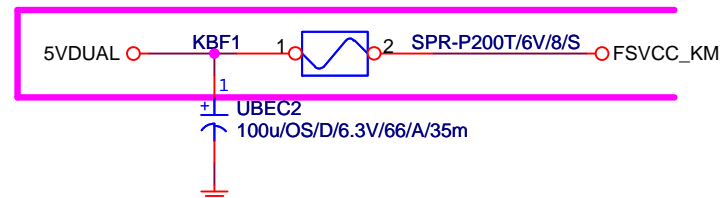


KB_MS_USB DAMPING/PU



KB_MS_USB PWR

NET 可變, 與其他USB SHARE



USB OC PROTECT

Gigabyte Technology

Title

KB_MS_USB

Size

Document Number

GA-B250M-HD3

Rev

1.0

Date:

Wednesday, November 02, 2016

Sheet

39

of

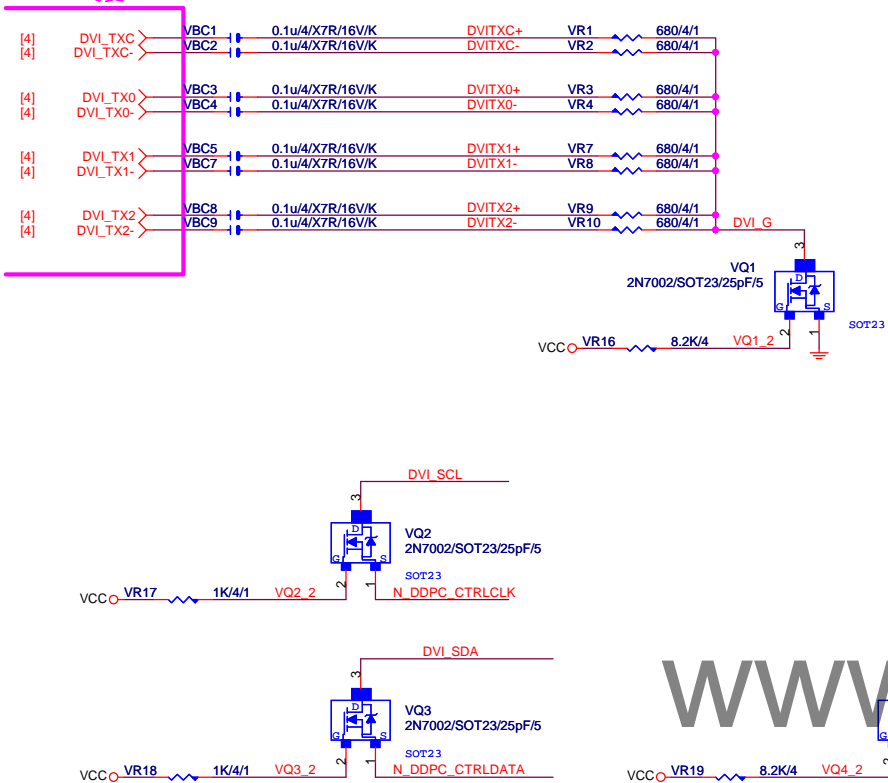
56

DVI

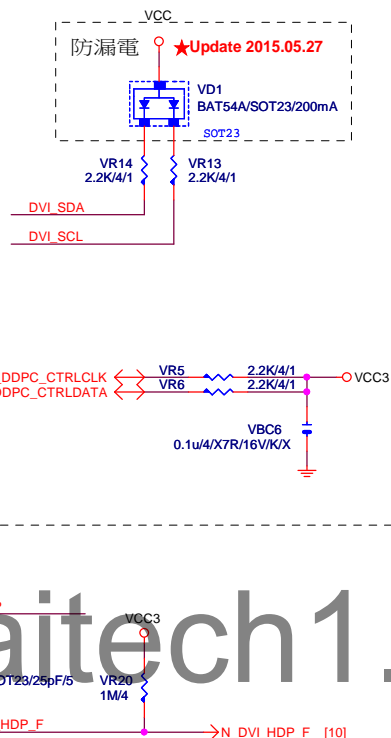
Rev: 0.8

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

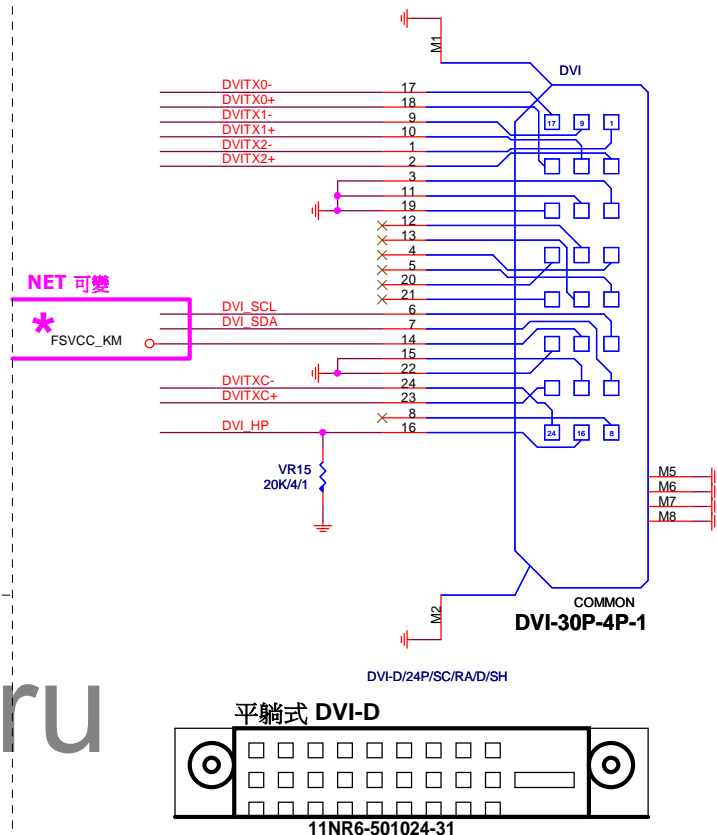
NET 可變



DVI PU

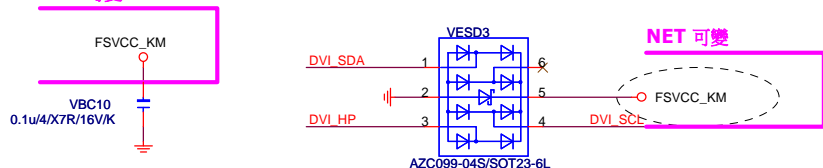


DVI CONN

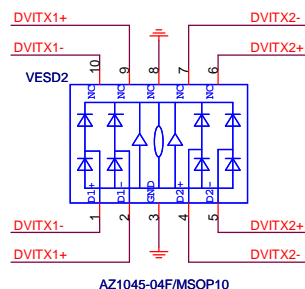


ESD

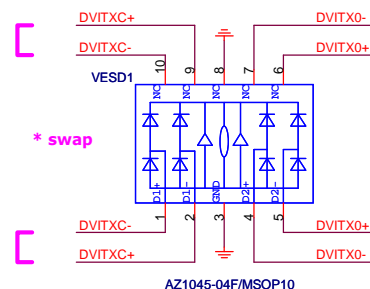
NET 可變



Close to connector



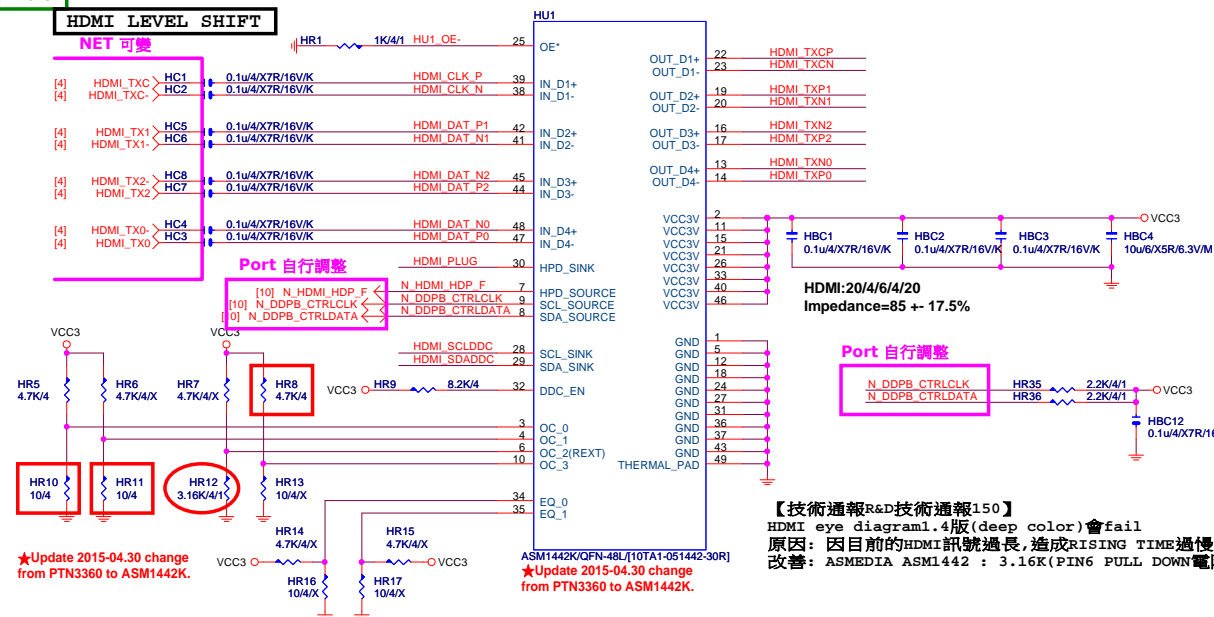
Close to connector



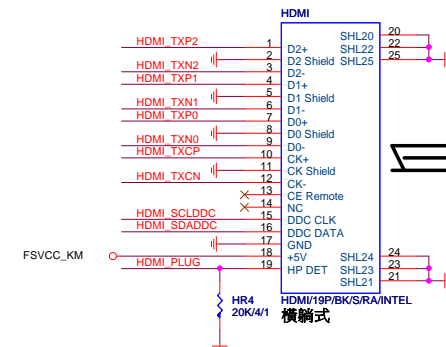
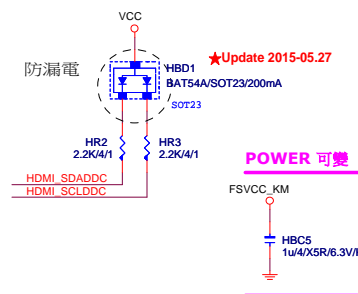
Close to connector

Gigabyte Technology

Title			
DVI			
Size Custom	Document Number	GA-B250M-HD3	Rev 1.0
Date:	Wednesday, November 02, 2016	Sheet 40 of 56	



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

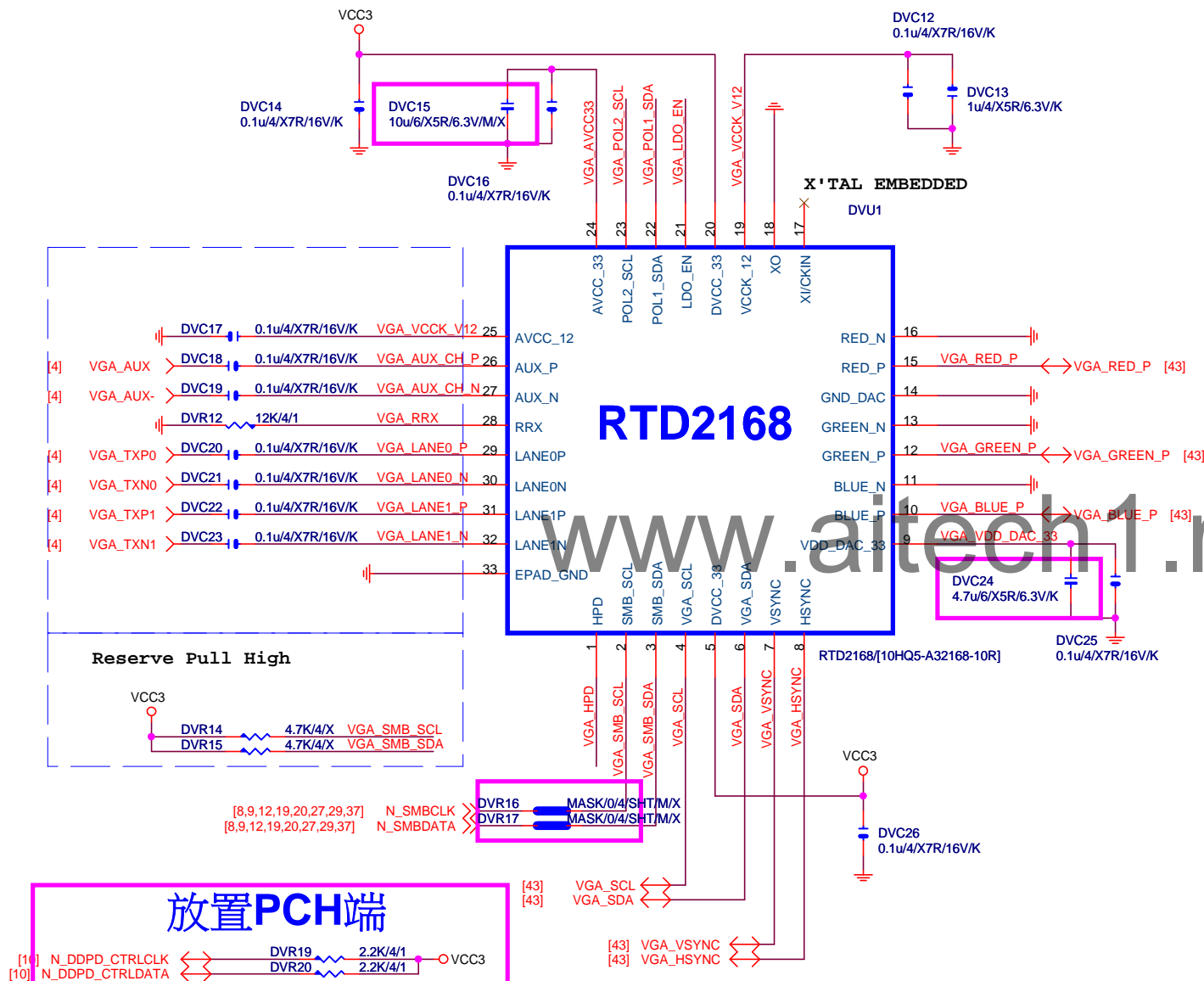


【技術通報R&D技術通報150】

HDMI eye diagram1.4版(deep color)會fail

原因：因目前的HDMI訊號過長，造成RISING TIME過慢，而會壓到eye diagram

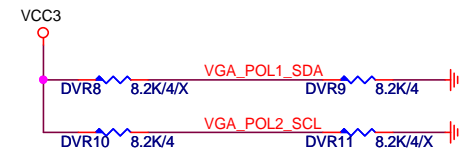
改善: ASMEDIA ASM1442 : 3.16K(PIN6 PULL DOWN電阻) 10ohm(PIN4 PULL DOWN電阻)



POWER

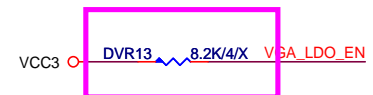


Power on latch



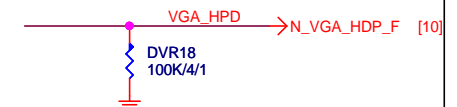
		POL1_SDA(PIN22)	
		0	1
POL2_SCL (PIN23)	0	X	EP MODE
	1	ROM ONLY MODE	EEPROM MODE

Embedded LDO

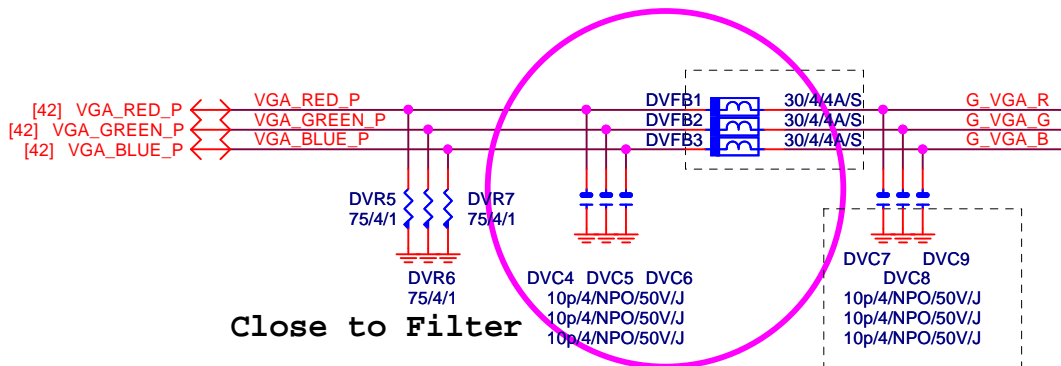
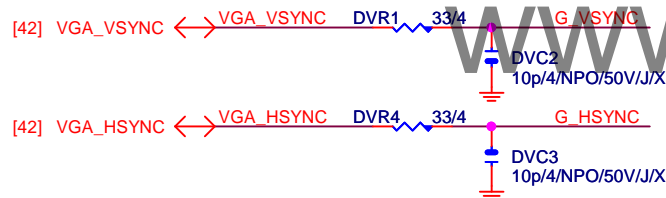
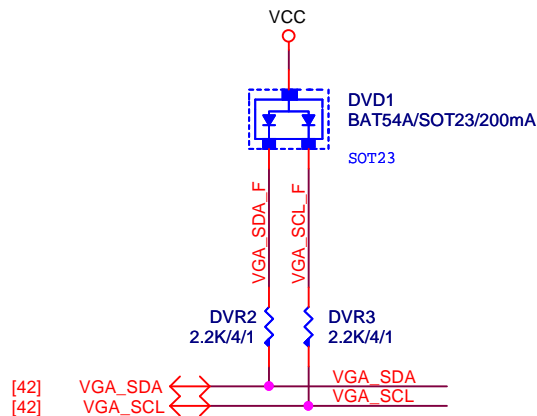


LDO_EN(PIN21)	
0	1
VCCK_V12 from External 1.2V	VCCK_V12 from Embedded LDO

DP HPD



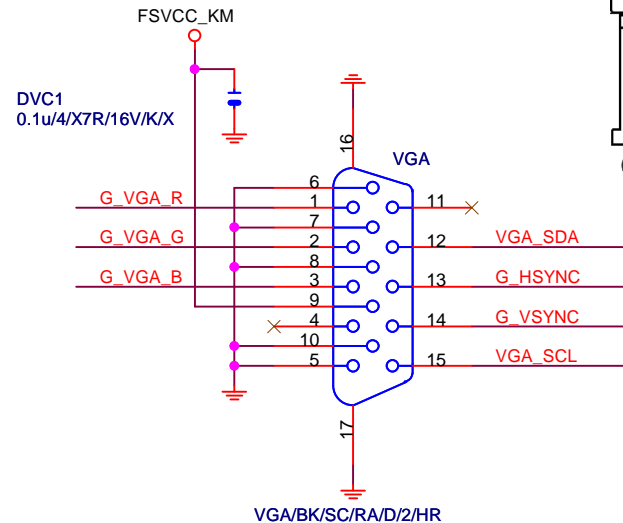
VGA SIGNAL R1.03



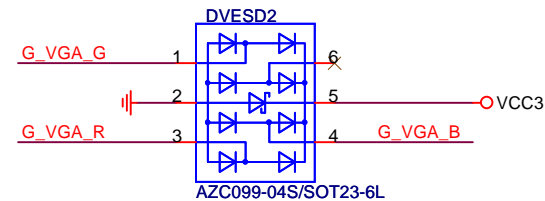
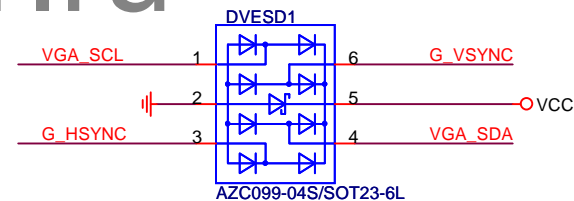
Close to Filter

FOR EMI

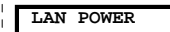
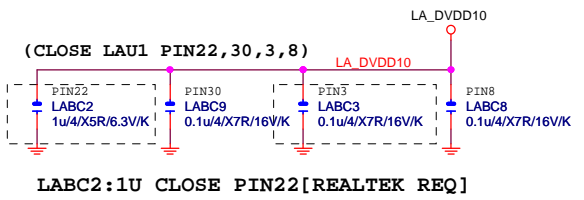
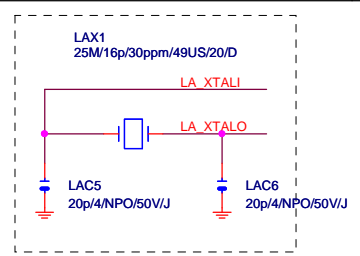
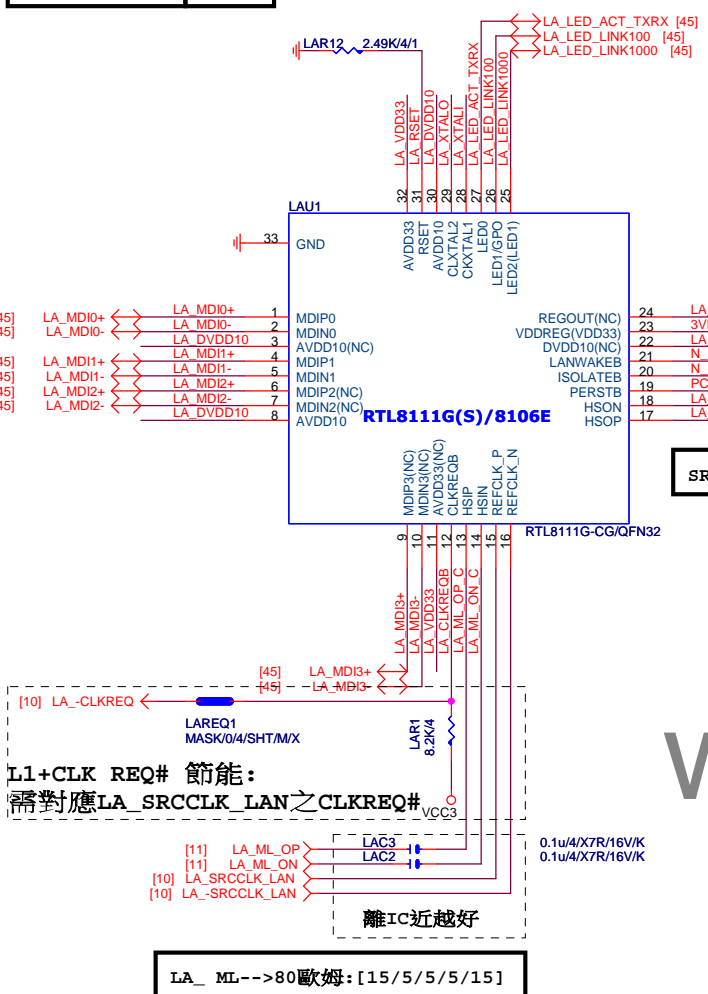
VGA CONN. 架高型VGA (BLACK)



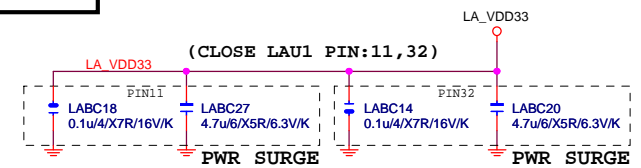
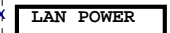
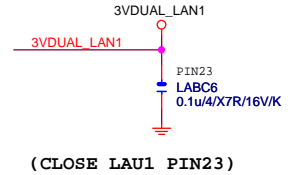
VGA ESD



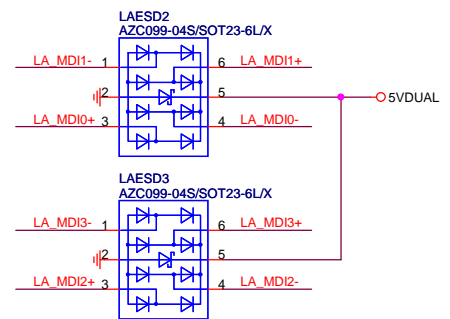
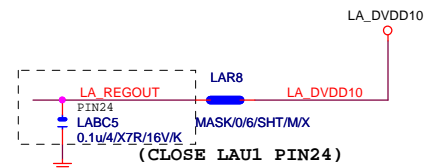
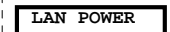
Gigabyte Technology			
Title DP-VGA RTD2168			
Size Custom	Document Number GA-B250M-HD3		Rev 1.0
Date:	Wednesday, November 02, 2016	Sheet 43	of 56



note: lan power 連接及電流

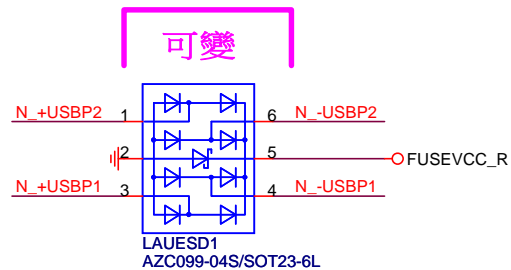


```
LABC18,27:CLOSE PIN11[REALTEK SURGE]
LABC14,20:CLOSE PIN32[REALTEK SURGE]
```



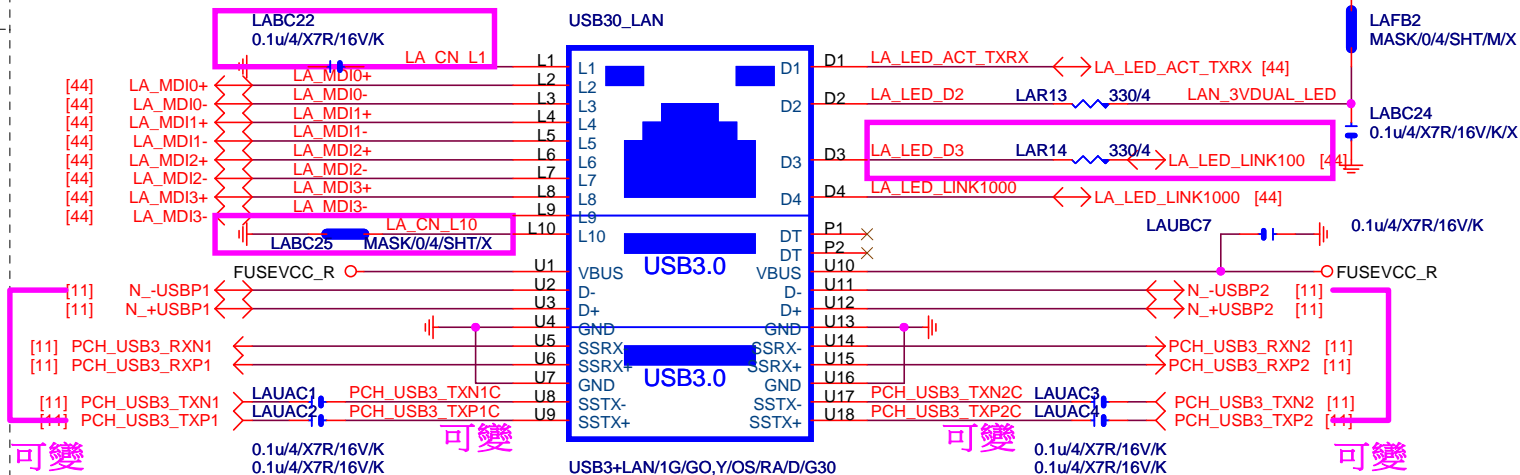
R1.1

note:可變更USB NAME



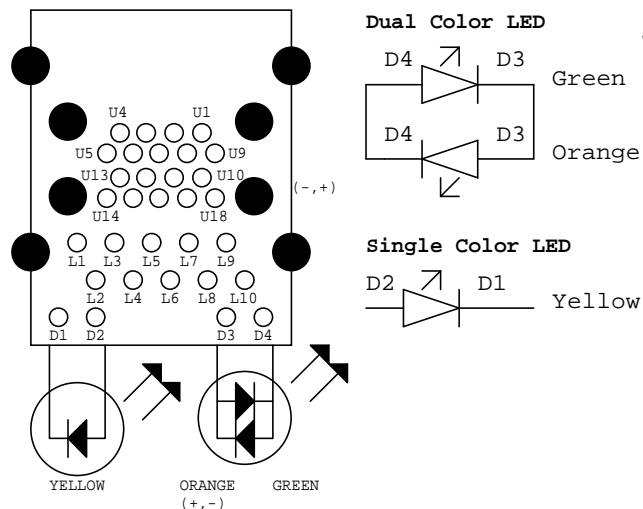
note:可變更USB NAME

USB30_LAN



LA MDI-->100歐姆:[20/4/8/4/20]

Dual Color LED

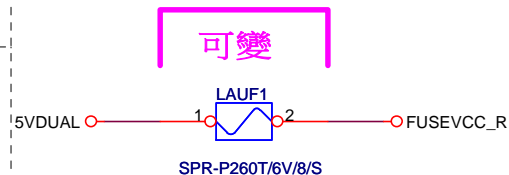


FOOT PRINT:LAN COVER

可變 [視SPEC需求]

[-D3H不加蓋]

note:可變更FUSE

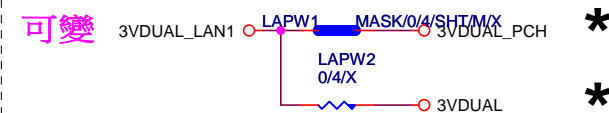


Close to connector
FUSE-0805

PS:視EMI需求



note: lan power連接及電流

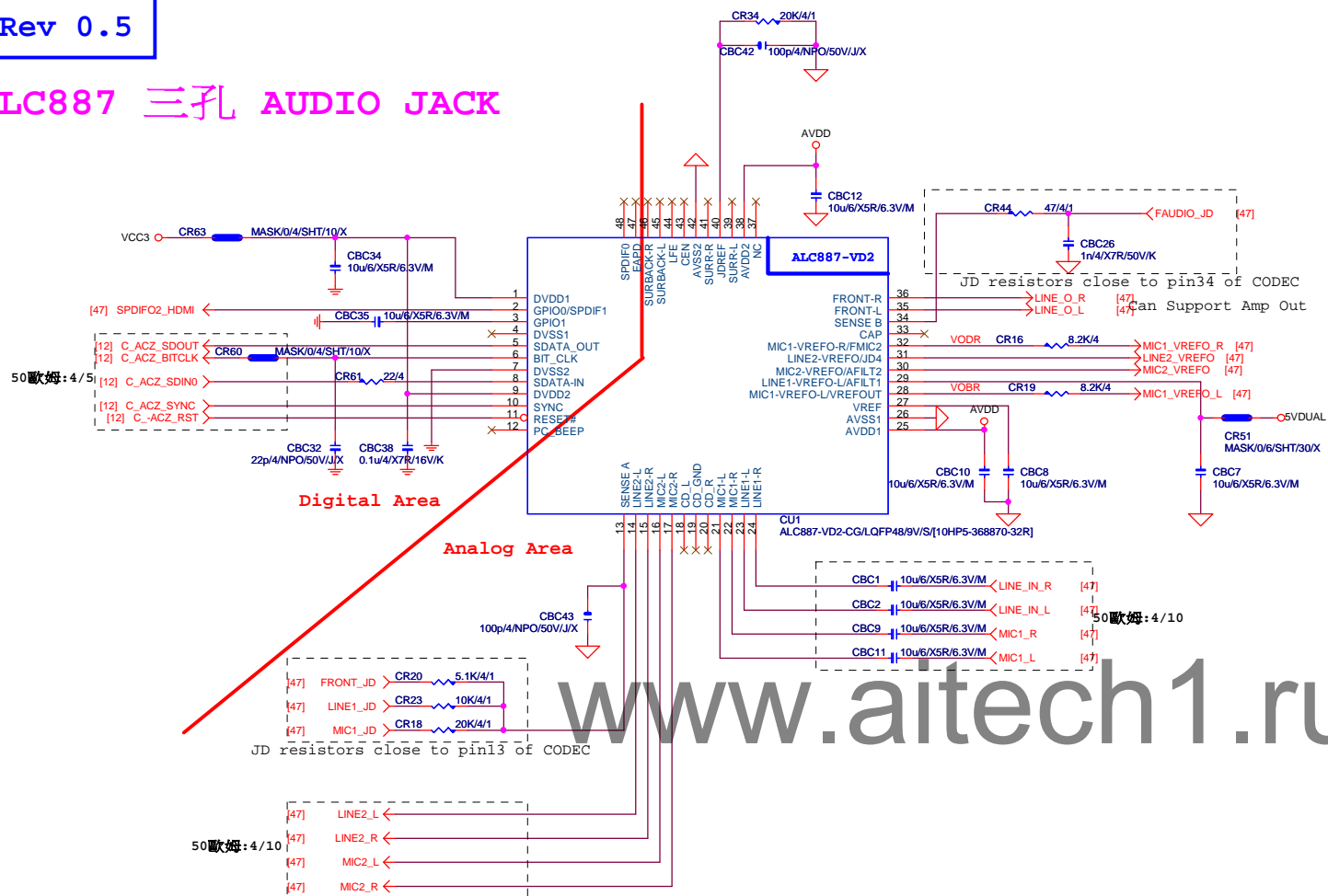


Gigabyte Technology
LAN CONNECTOR-I219

GA-B250M-HD3

Rev	1.0
-----	-----

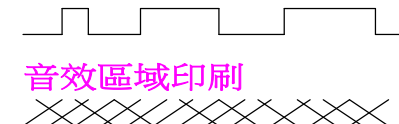
ALC887 三孔 AUDIO JACK



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

<input type="radio"/> MH1	<input type="radio"/> MH2
DGND	Isolate

LAYOUT注意: 要加
 GND切割線



Rev 0.5

CR49 MASK/0/6/SHT/20/X → Close F_AUDIO

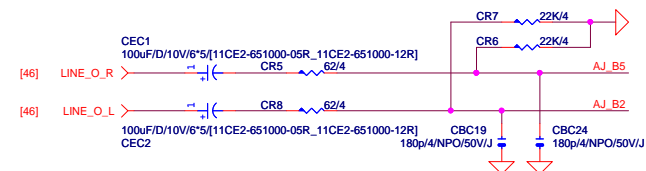
CR50 MASK/0/6/SHT/20/X → Close Codec
MOATC1 0.1uF/X7R/16V/K/X

CR21 2.2/6 → Audio jack <--> USB_LAN

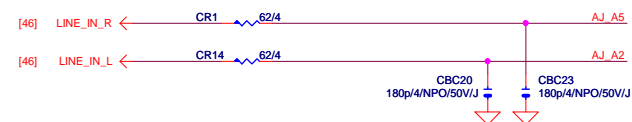
CR24 0/6/X → Under Audio jack

*量産前,0ohm改short pad

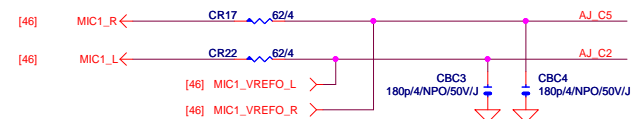
LINE-OUT



LINE-IN



MIC-IN

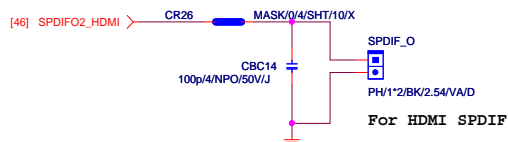


SURROUND

CEN/LFE

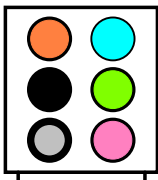
SURR BACK

SPDIF_OUT

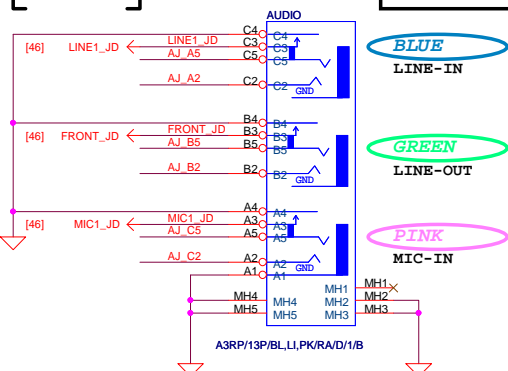


SPDIF_IN

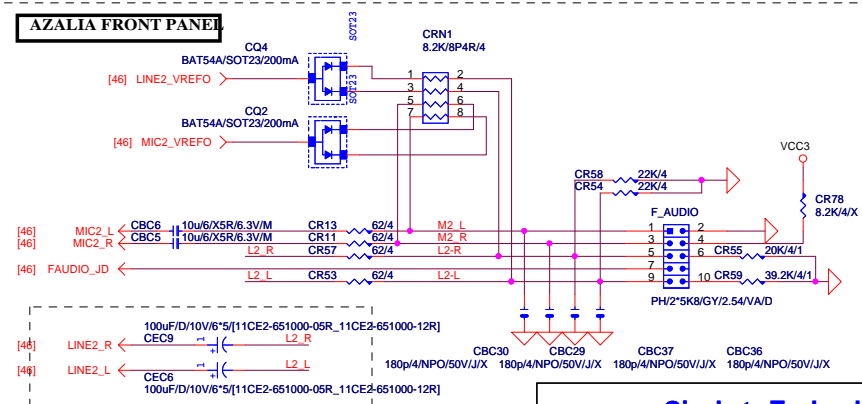
AZALIA JACK



AZALIA JACK

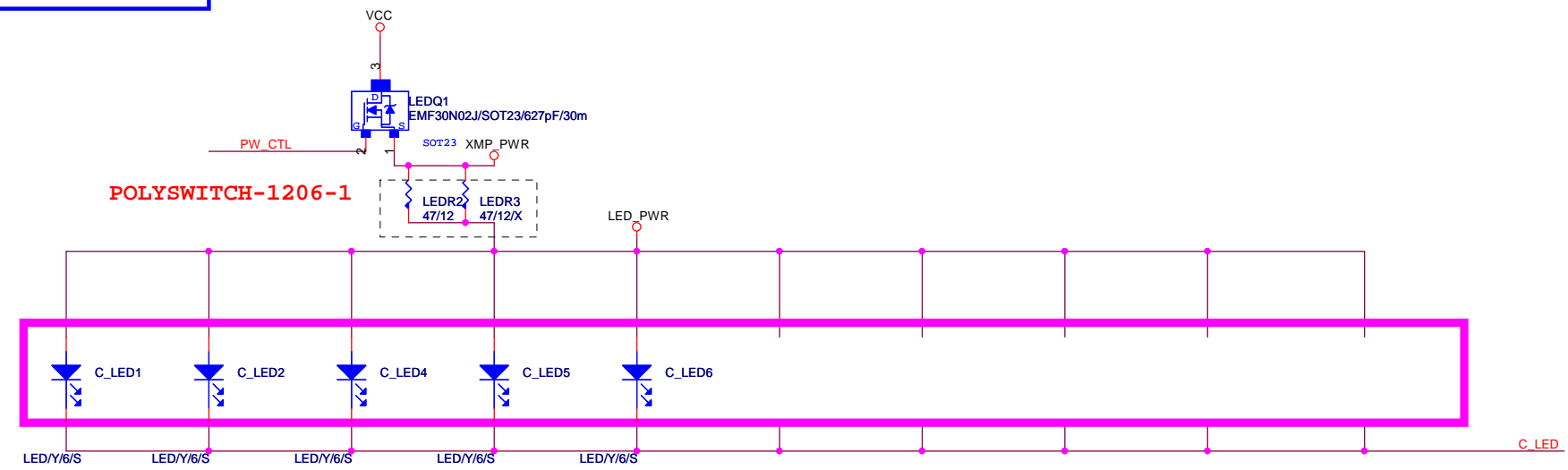


AZALIA FRONT PANEL



Gigabyte Technology

Title		
AUDIO JACK		
Size	Document Number	Rev
Custom	GA-B250M-HD3	1.0
Date:	Wednesday, November 02, 2016	Sheet 47 of 56

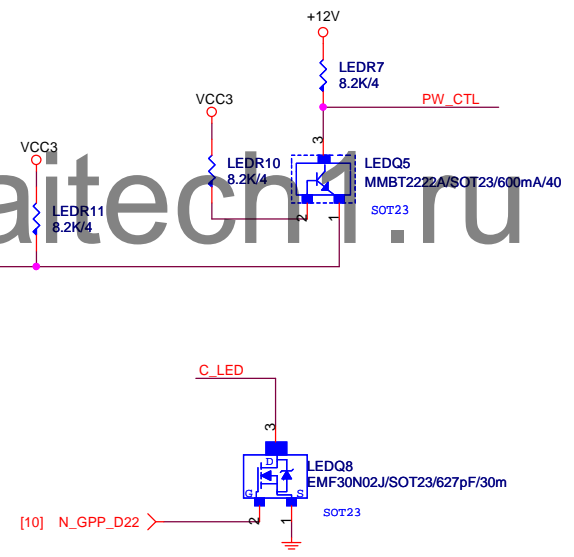


Ambient LED Control

	N_GPP_D22
Full Mode	H
OFF Mode	L

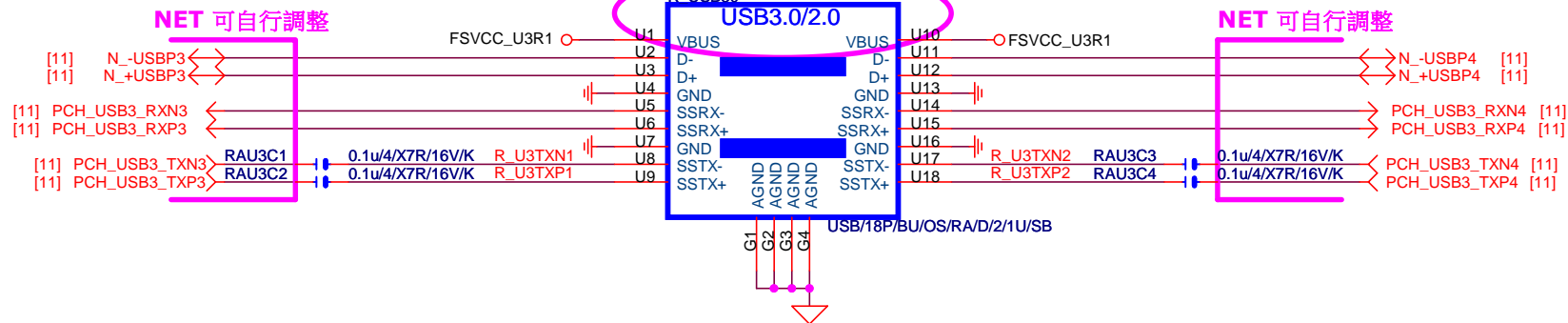
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[10] N_GPP_D22 >
ON/OFF



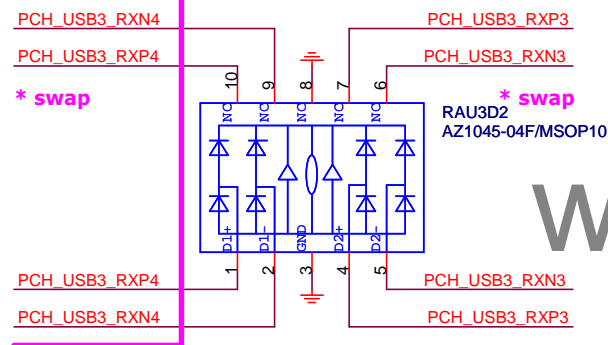
Rev: 0.7

ESD 可自行SWAP PIN ,CONN端 NET 名稱 不可

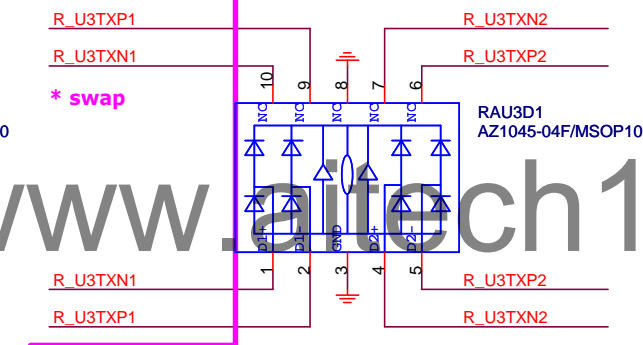


ESD

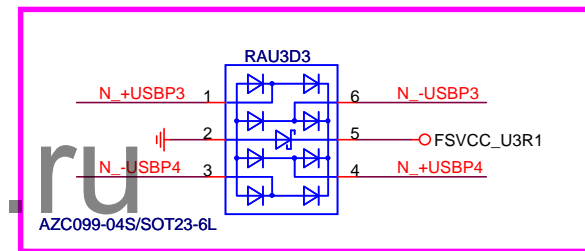
NET 可自行調整



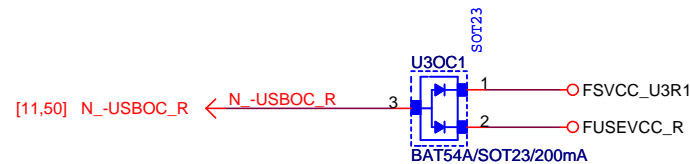
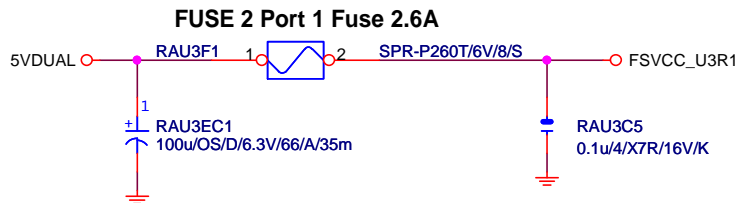
NET 可自行調整



NET 可自行調整

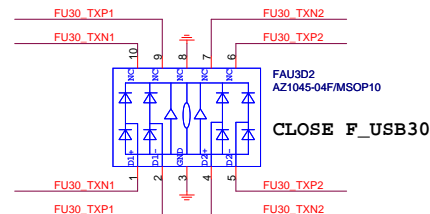


FUSE

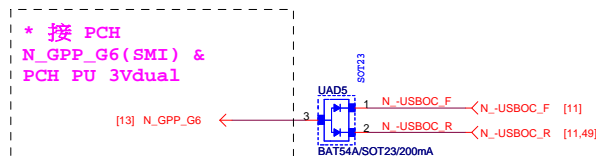
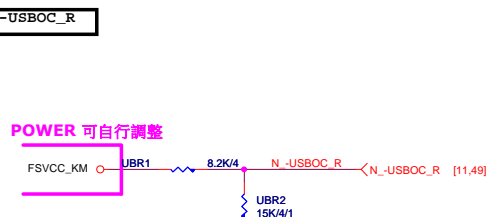


Gigabyte Technology

Title		
R_USB30,USB_OC		
Size	Document Number	Rev
Custom	GA-B250M-HD3	1.0
Date:	Wednesday, November 02, 2016	Sheet 49 of 56



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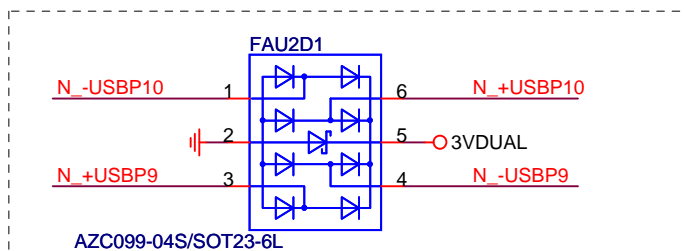
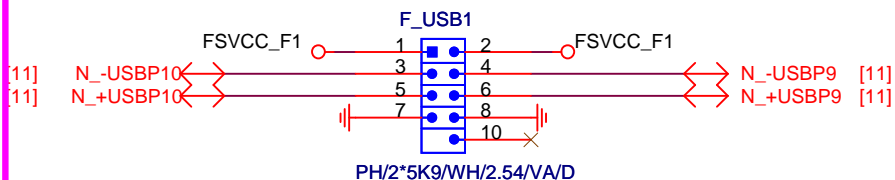


Rev: 0.7

FRONT USB1

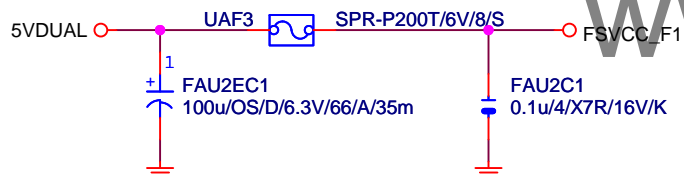
NET 可變

FUSB2X5-HS



Close to connector

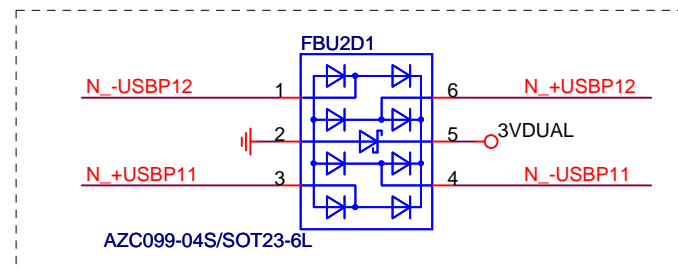
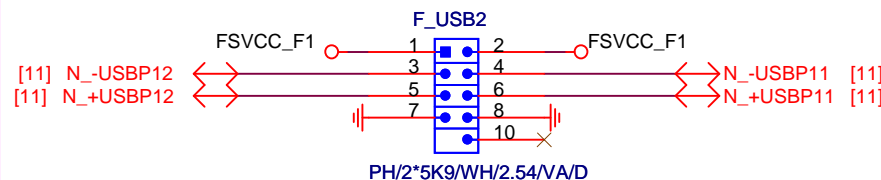
FUSE 2 Port 1 Fuse 2A



FRONT USB2

NET 可變

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

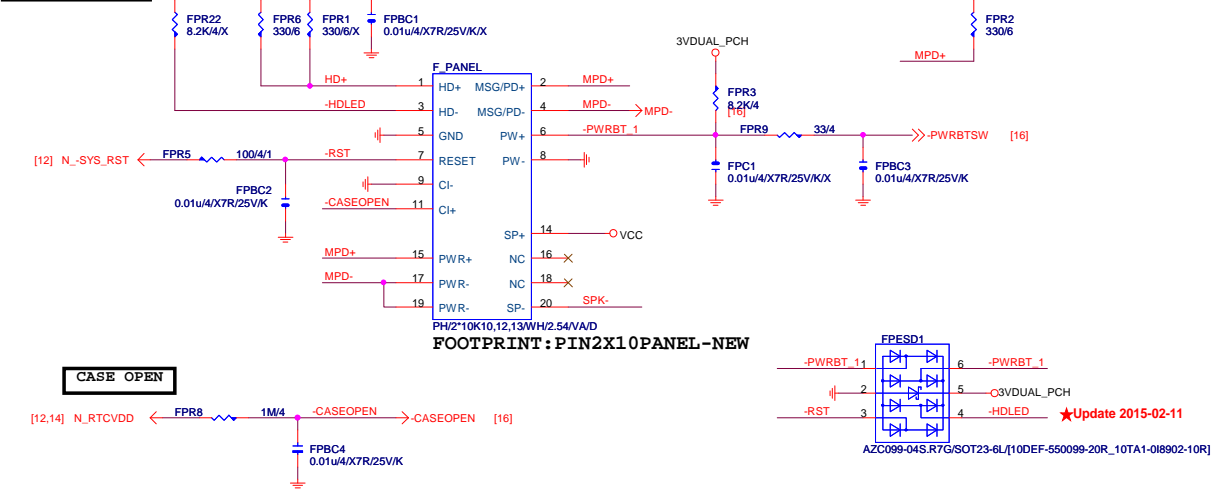
GA-B250M-HD3

Rev
1.0

Date: Wednesday, November 02, 2016

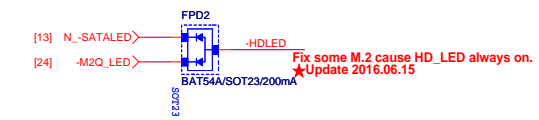
Sheet 51 of 56

FRONT PANEL

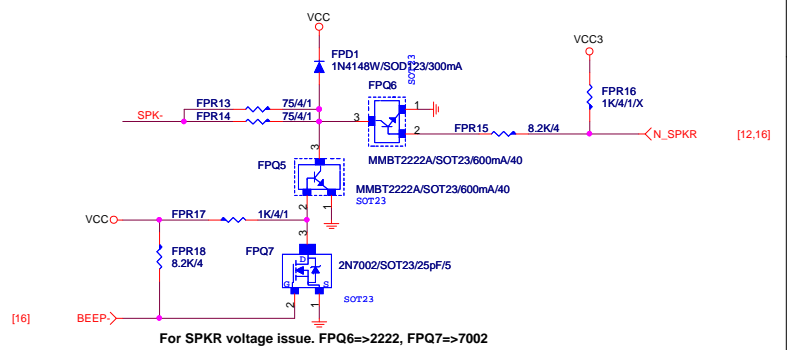


FRONT PANEL SHORT

SATA/M.2 LED



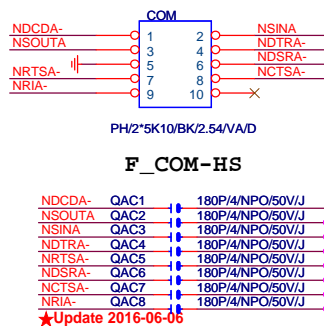
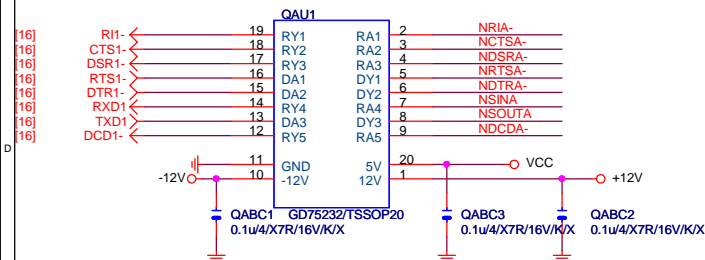
SPKR



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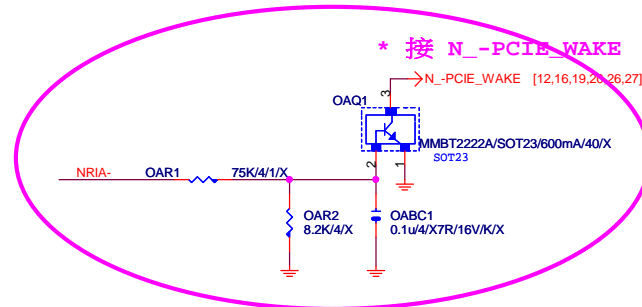
COM PORT

Rev: 0.7

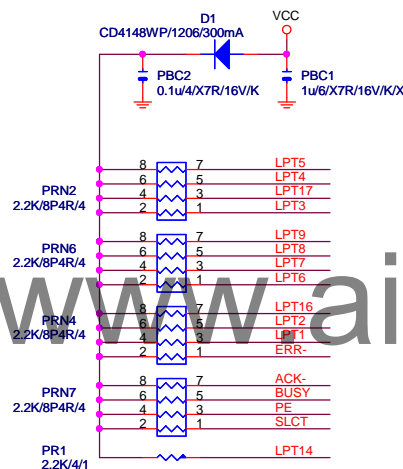
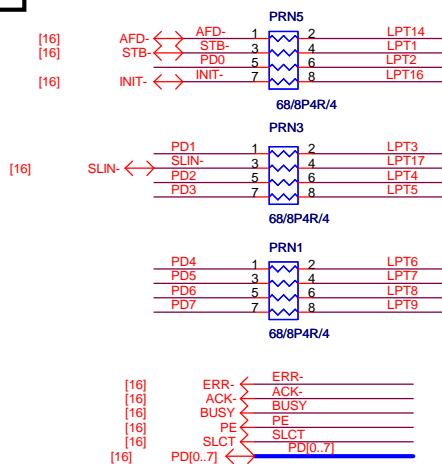


COM RI

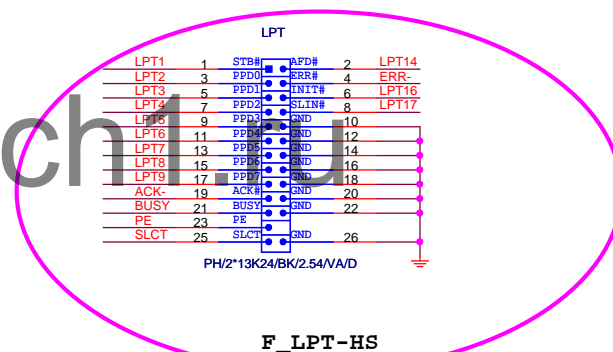
N/A



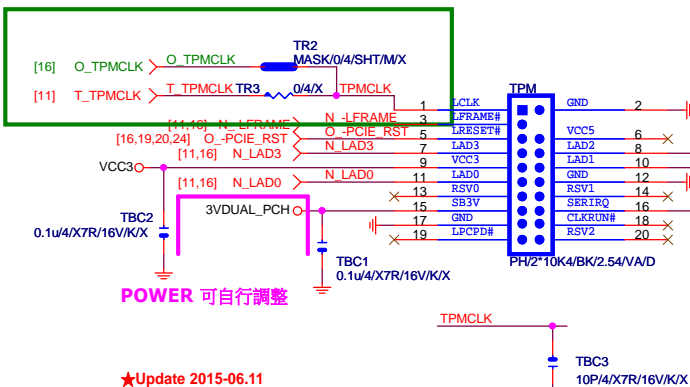
LPT PORT



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



Thunderbolt

★Update 2015-12-29

Gigabyte Technology

Title			FP,F_USB,USB PWR,BZ
Size Custom			GA-B250M-HD3
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CLOSE SIO

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

[12,16,33] N_SLP_S3 ←

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

[12,16,32,34] N_S4_S5 ←

CLOSE PCH

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

[4,12] N_CPUPWROK ←

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Title

EMI/ESDSize
A

Document Number

GA-B250M-HD3

Rev

1.0

Date: Wednesday, November 02, 2016

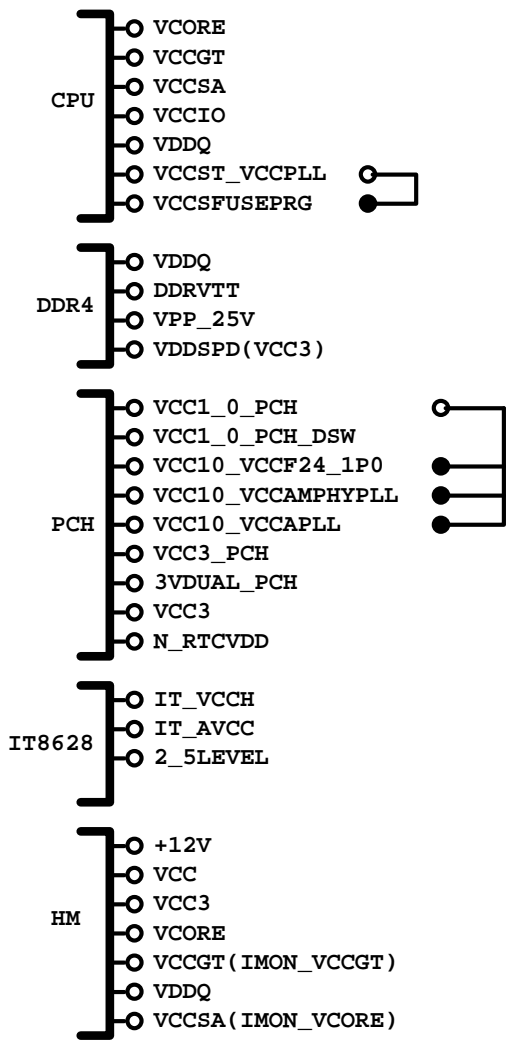
Sheet

54

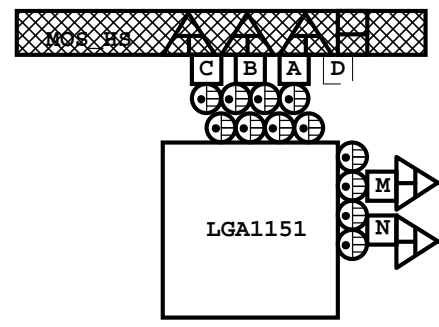
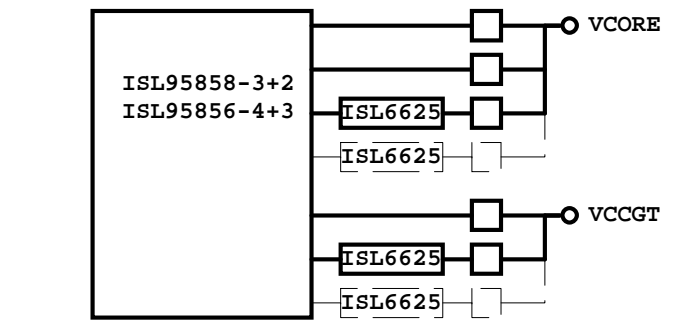
of

56

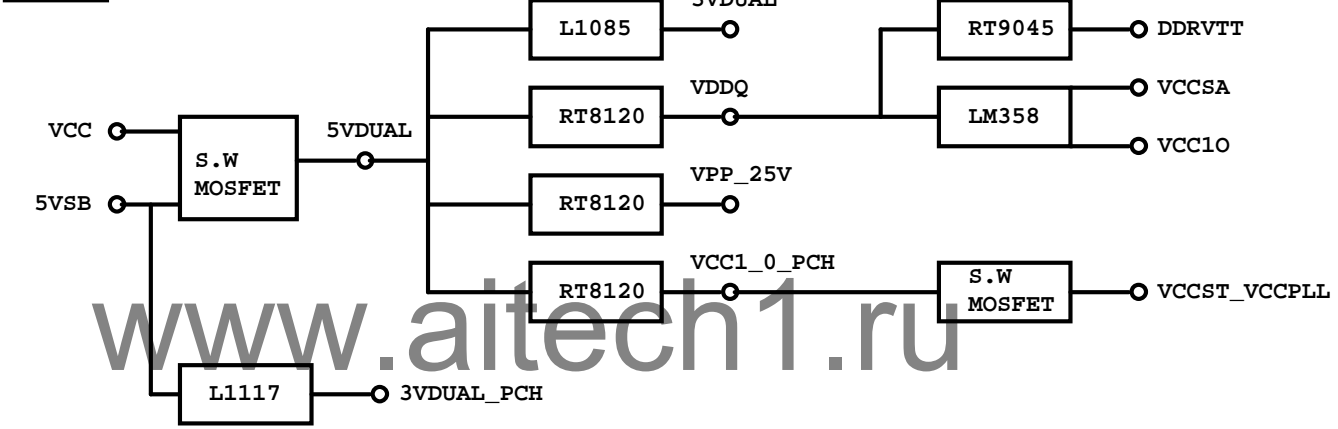
POWER BLOCK MAP



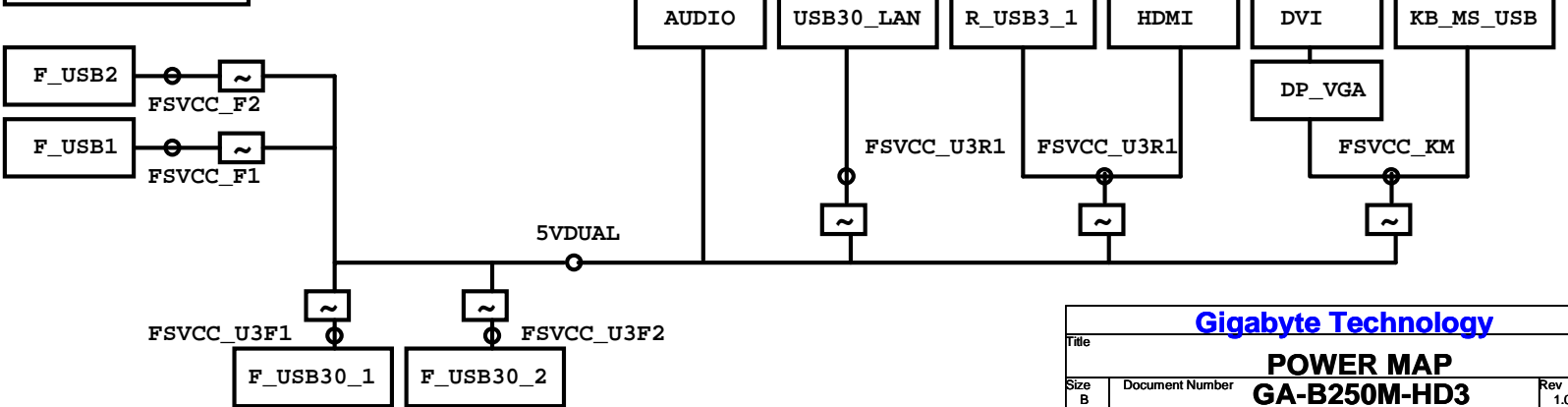
VCORE/VCCGT



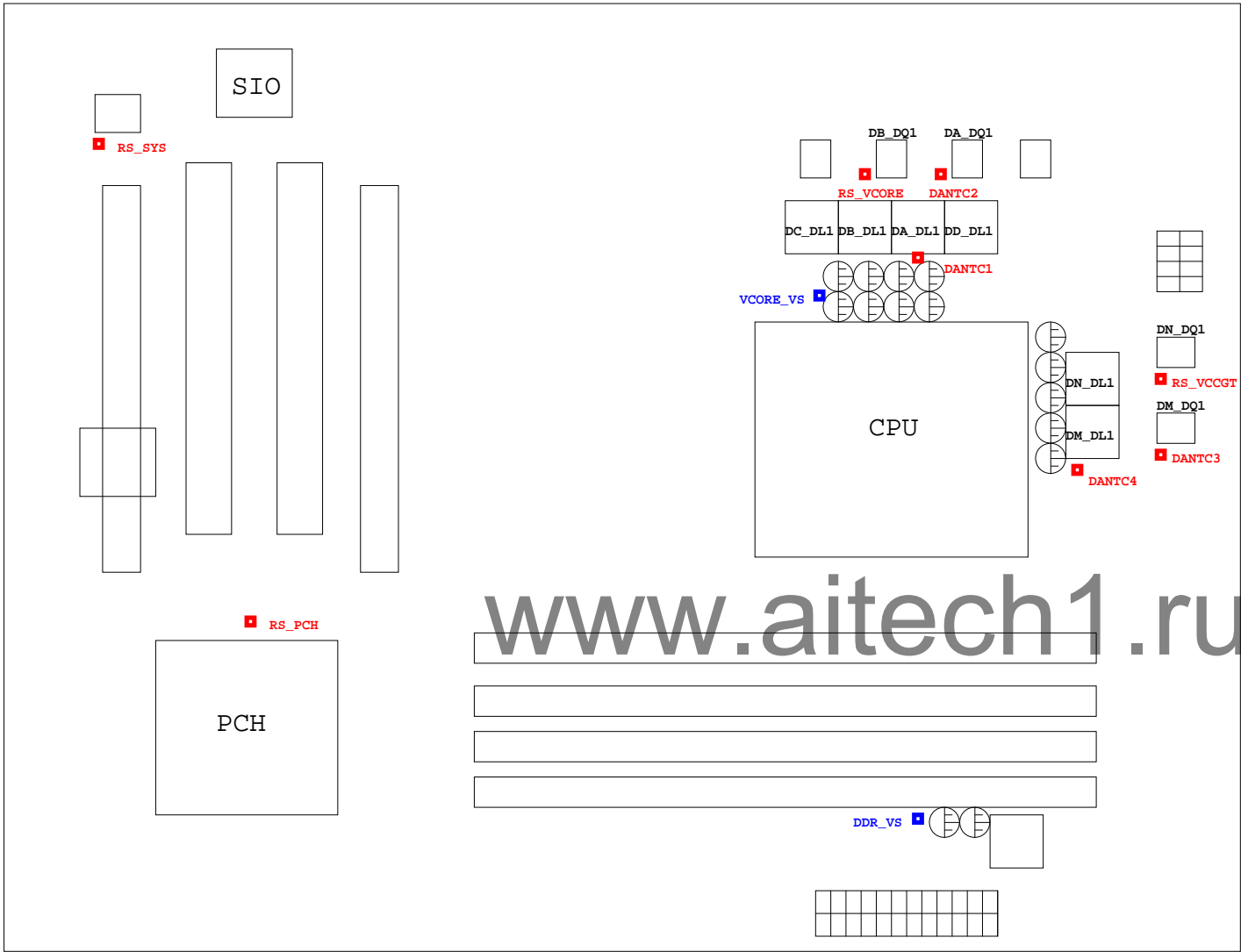
POWER



FUSE POWER F/R



Gigabyte Technology			
Title			
POWER MAP			
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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