

# Model Name: GA-B85-HD3

2.1

SHEET

TITLE

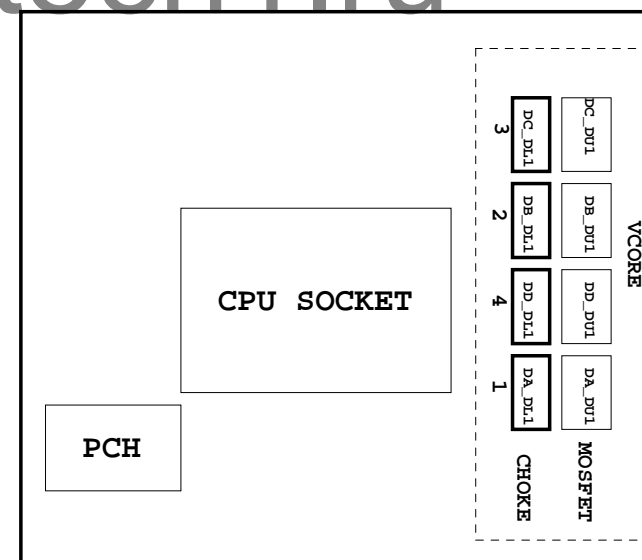
01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1150-A
05	CPU_LGA1150-B
06	CPU_LGA1150-C
07	DDR III CHANNEL A
08	DDR III CHANNEL B
09	PCH_FDI,DMI,USB,PCIE
10	PCH_RGB,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCI EXPRESS*16 SLOT
15	PCIEX1*2 , PCIEX4 SLOT
16	ITE8892 PCI BRIDGE
17	PCI SLOT 1&2
18	I/O ITE8620
19	COM, -PROHOT, R_USB
20	Dual BIOS / LPT
21	ALC887-VD2 CODEC
22	REAR AUDIO JACK
23	VCORE_ ISL95820_1
24	VCORE_ ISL95820_2
25	DDR15V / M3 POWER
26	NCP3933 OVER VOLTAGE
27	DISCRETE POWER

SHEET

TITLE

28	F_PANEL , F_USB2.0/3.0
29	ATX POWER, CLOCK GEN
30	HWM , KB/MS , FAN CTRL
31	Realtek 8111F-VL
32	DVI
33	HDMI
34	TABLE LIST
35	
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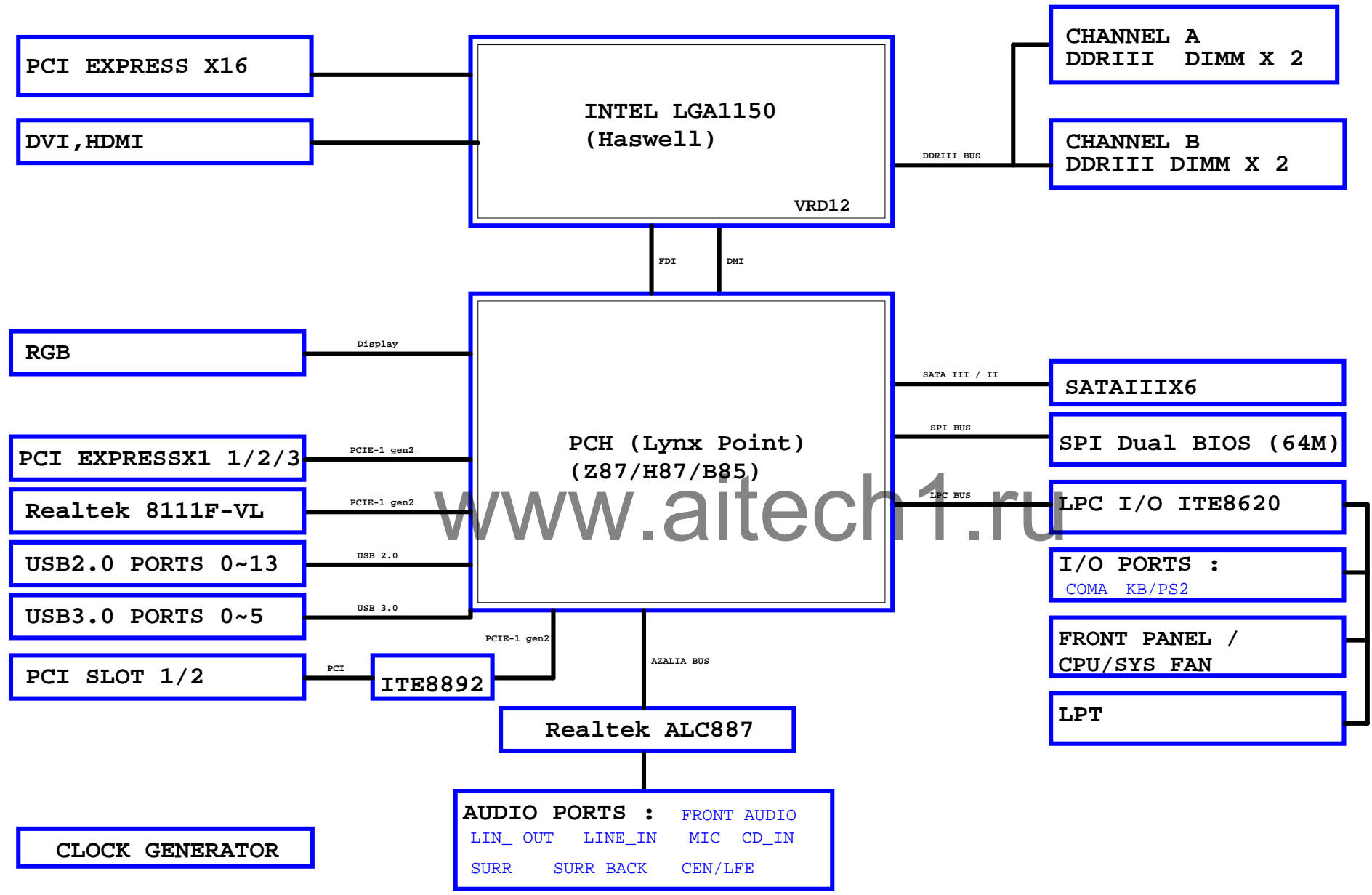


## Component value change history

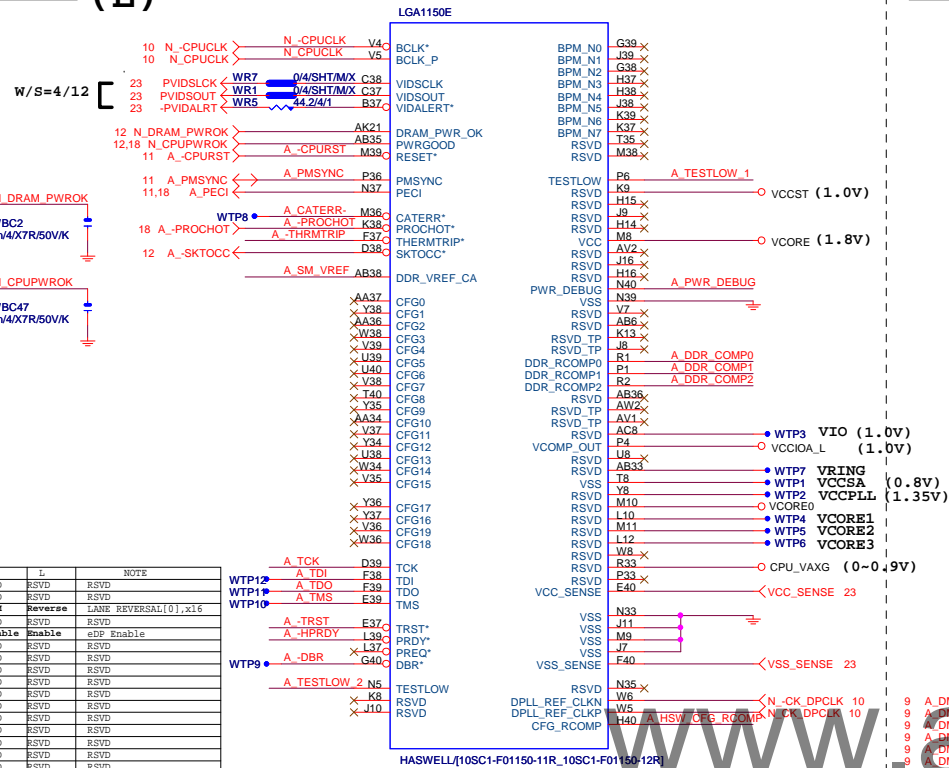
[illegible]

DATE	Change Item	Reason
2013/08/13 PCB:1.5	1. 由Z87-DS3H REV0.1 修改成B85-HD3-1.5 (原B85-HD3-1.1 304.8X225 --> B85-HD3-1.5 304.8X190)	
2013/01/16 PCB:2.0	1. 0ohm SHORT PAD	
	2. PE_SRCCLK_3GIO1/PE_-SRCCLK_3GIO1 change to PCH pin W6/W7	
	3. MR17 footprint update "R0603-RH"	
	4. CPU_FAN R676 update "R0603-RH"	
	5. PCH 25MHz NX1 layout修改 , Trace 4mils	
	6. 32.768KHz will REF "GND" , Trace 4mil	
	7. Update "POLYSWITCH-1206-1"	
	8. 所有的PPAK footprint改為Q_TDS0N8-GDS-T (增加NXP相容)	
	9. U14-U15 update footprint "SOP8-NCT3941S"	
	1. 工廠反應NBC39有可能被PCH_HS壓壞	
2014/05/09 PCB:2.1	1. LAN to RTL8111G	
	2. VCORE MOSFET to 1上1下	
	3. H81 series Cost down rule	
	4. K/B_MOUSE排阻0402改為0603	
	5. DVI remove level shift	
	6. Remove 短路保護	
	7. 1206 3.5A fuse to 0805 2.6A	
	8. Remove 3933	
	1. PRN1的FOOTPRINT 改為SHORT PAD	

BLOCK DIAGRAM



LGA1150 (E)

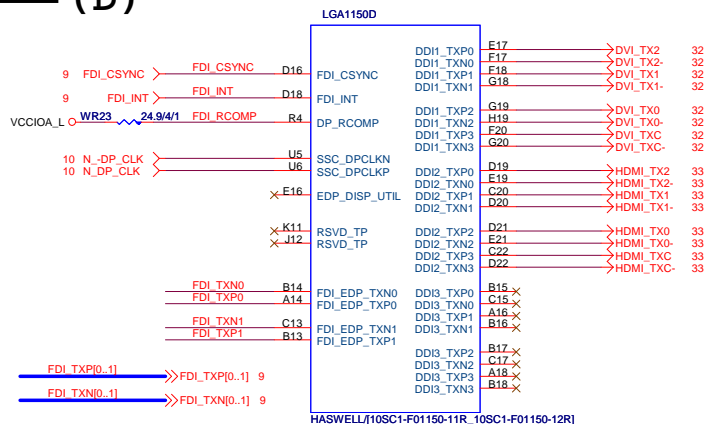


CFG	H	L	NOTE
0	RSVD	RSVD	RSVD
1	RSVD	RSVD	RSVD
2	NORM	Reverse	LANS REVERSAL[0,x16]
3	RSVD	RSVD	RSVD
4	Disable	Enable	csc Enable
7	RSVD	RSVD	RSVD
8	RSVD	RSVD	RSVD
9	RSVD	RSVD	RSVD
10	RSVD	RSVD	RSVD
11	RSVD	RSVD	RSVD
12	RSVD	RSVD	RSVD
13	RSVD	RSVD	RSVD
14	RSVD	RSVD	RSVD
15	RSVD	RSVD	RSVD
16	RSVD	RSVD	RSVD
17	RSVD	RSVD	RSVD

CFG6	CFG5	PCIE CONFIG
1	1	1x16 , Default
1	0	2x8
0	1	RSVD
0	0	x8_x4_x4

CFG 0-17 all internal PULL-UP

**LGA1150 (D)**



FDI:4/4/4//15(breakout min 4/4/4//8)  
Impedance=85 +- 15%

DP/HDMI 4/4/4//20      FDI 4/4/4/12

Impedance=85 +- 15%

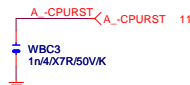
LGA1155 (C)



CPU PEG 5/5/5//20 Impedance=80 +- 15%

DMI 4/4/4//15 Impedance=85 +- 15%

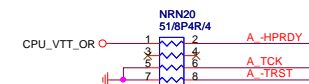
**-CPURST**



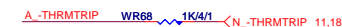
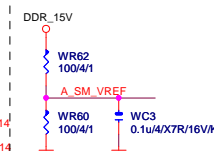
## CPU SVID



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100	100



SM	REF
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LGA1150A									
		MAAA0	AU13	DDR0_MA0	DDR0_D00	AD38	MDA0		
		MAAA1	AV16	DDR0_MA1	DDR0_D01	AF39	MDA1		
		MAAA2	AU16	DDR0_MA2	DDR0_D02	AF38	MDA2		
		MAAA3	AW17	DDR0_MA3	DDR0_D03	AF39	MDA3		
		MAAA4	AU17	DDR0_MA4	DDR0_D04	AD37	MDA4		
		MAAA5	AW18	DDR0_MA5	DDR0_D05	AD40	MDA5		
		MAAA6	AV17	DDR0_MA6	DDR0_D06	AF37	MDA6		
		MAAA7	AU18	DDR0_MA7	DDR0_D07	AF40	MDA7		
		MAAA8	AV19	DDR0_MA8	DDR0_D08	AF39	MDA13		
		MAAA9	AU18	DDR0_MA9	DDR0_D09	AF40	MDA9		
		MAAA10	AW11	DDR0_MA10	DDR0_D10	AD38	MDA11		
		MAAA11	AU19	DDR0_MA11	DDR0_D11	AD39	MDA12		
		MAAA12	AV19	DDR0_MA12	DDR0_D12	AF38	MDA8		
		MAAA13	AV19	DDR0_MA13	DDR0_D13	AF37	MDA14		
		MAAA14	AT20	DDR0_MA14	DDR0_D14	AK40	MDA15		
		MAAA15	AT21	DDR0_MA15	DDR0_D15	MDA17			
				DDR0_D16	AM38	MDA21			
		MODT_A0	AW10	DDR0_ODT0	DDR0_D17	PM39	MDA18		
		MODT_A1	AY8	DDR0_ODT1	DDR0_D18	AP37	MDA19		
		MODT_A2	AU9	DDR0_ODT2	DDR0_D19	AM37	MDA20		
		MODT_A3	AW8	DDR0_ODT3	DDR0_D20	AM38	MDA16		
					DDR0_D21	AP37	MDA22		
					DDR0_D22	PM39	MDA25		
			AW33	DDR0_ECC0	DDR0_D23	AV35	MDA29		
			AU31	DDR0_ECC1	DDR0_D24	AW37	MDA29		
			AV31	DDR0_ECC2	DDR0_D25	AV35	MDA26		
			AU33	DDR0_ECC3	DDR0_D26	AV37	MDA27		
			AT33	DDR0_ECC4	DDR0_D27	AT35	MDA27		
			AT31	DDR0_ECC5	DDR0_D28	AU37	MDA24		
			AW31	DDR0_ECC6	DDR0_D29	AT35	MDA30		
				DDR0_ECC7	DDR0_D30	AW35	MDA31		
		SBA0	AV12	DDR0_D31	DDR0_D31	AY6	MDA33		
7		SBA01	SBA1	DDR0_BA0	DDR0_D32	AY6	MDA37		
7		SBA01	AT21	DDR0_BA1	DDR0_D33	AY6	MDA37		
7		SBA02	SBA2	DDR0_BA2	DDR0_D34	AW4	MDA35		
7			CKE50	DDR0_BA3	DDR0_D35	AW6	MDA36		
7		CKEA0	CKEA0	DDR0_CK0	DDR0_D36	AW4	MDA32		
7		CKEA1	CKEA2	DDR0_CK1	DDR0_D37	AW4	MDA38		
7		CKEA2	CKEA3	DDR0_CK2	DDR0_D38	AW4	MDA39		
7		CKEA3		DDR0_CK3	DDR0_D39	AN1	MDA41		
7		-CSA0	-CSA1	DDR0_D40	DDR0_D40	AN4	MDA42		
7		-CSA1	AU9	DDR0_CS_N0	DDR0_D41	AN2	MDA42		
7		-CSA2	AU10	DDR0_CS_N1	DDR0_D42	AN4	MDA43		
7		-CSA3	-CSA3	DDR0_CS_N2	DDR0_D43	AN2	MDA44		
7				DDR0_CS_N3	DDR0_D44	AN2	MDA45		
7					DDR0_D45	AN2	MDA46		
7		DCLKA0	DCLKA0	DDR0_CLK_P0	DDR0_D46	AN1	MDA47		
7		-DCLKA0	-DCLKA0	DDR0_CLK_N0	DDR0_D47	AN1	MDA49		
7		DCLKA1	DCLKA1	DDR0_CLK_P1	DDR0_D48	AN1	MDA49		
7		-DCLKA1	-DCLKA1	DDR0_CLK_N1	DDR0_D49	AN1	MDA50		
7		DCLKA2	DCLKA2	DDR0_CLK_P2	DDR0_D50	AL2	MDA51		
7		-DCLKA2	-DCLKA2	DDR0_CLK_N2	DDR0_D51	AL2	MDA52		
7		DCLKA3	DCLKA3	DDR0_CLK_P3	DDR0_D52	AL2	MDA53		
7		-DCLKA3	-DCLKA3	DDR0_CLK_N3	DDR0_D53	AL2	MDA54		
			AW12	RSVD	DDR0_D54	AL2	MDA55		
					DDR0_D55	AG1	MDA57		
					DDR0_D56	AG4	MDA61		
					DDR0_D57	AE3	MDA58		
					DDR0_D58	AE4	MDA59		
					DDR0_D59	AE2	MDA60		
					DDR0_D60	AE3	MDA56		
					DDR0_D61	AE3	MDA62		
7		-SRASA	-SRASA	DDR0_RAS*	DDR0_D62	AE1	MDA63		
7		-SWEA	-SWEA	DDR0_WE*	DDR0_D63	AE3	MDA59		
					DDR0_D64	AE3	MDA60		
			AW20	RSVD	DDR0_D65	AE3	MDA61		
			AW27C	RSVD	DDR0_D66	AE3	MDA62		
7		-SCASA	-SCASA	DDR0_CAS*	DDR0_D67	AE3	MDA63		
7.8		-DDR3_RST	WR61 D4/SH/TMX	AKK22	DDR0_RESET*	AV32	DSGA0		
			WC4			AE38	DSGA1		
			0.1uA/XCTR/16V/KX			AN38	DSGA2		
						AN36	DSGA3		
						AW5	DCSG4		
						AE2	DCSG5		
						AF2	DCSG6		
						AF2	DCSG7		
						AE32	DCSG8		

LGA1150

LGA150B

MAA80

MAA81

MAA82

MAA83

MAA84

MAA85

MAA86

MAA87

MAA88

MAA89

MAA90

MAA91

MAA92

MAA93

MAA94

MAA95

MODT\_B0

MODT\_B1

MODT\_B2

MODT\_B3

CKE80

CKE81

CKE82

CKE83

CS80

CS81

CS82

CS83

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CLK83

CLK84

CLK85

CLK86

CLK87

CLK88

CLK89

CSAB

SRASB

SWEB

AB39

AB40

AL19

AK23

AM22

AM23

AP23

AY24

AV25

AU26

AW28

AP18

AY25

AV26

AM15

AV27

AY28

AK17

AL18

AW28

AW29

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AP16

AM18

AK16

AB39

AB40

DDR1\_MA0

DDR1\_MA1

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DDR1\_MA9

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DDR1\_D0T0

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DDR1\_EC00

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DDR1\_BA0

DDR1\_BA1

DDR1\_BA2

DDR1\_CKE0

DDR1\_CKE1

DDR1\_CKE2

DDR1\_CKE3

DDR1\_CS\_N0

DDR1\_CS\_N1

DDR1\_CS\_N2

DDR1\_CS\_N3

DDR1\_CLK\_P0

DDR1\_CLK\_N0

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DDR1\_CAS\*

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DDR\_VREF\_DQ0

DDR\_VREF\_DQ1

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LGA1150

DDR BUS

7	MODT_A[0..3]	↔	MODT_A[0..3]
8	MODT_B[0..3]	↔	MODT_B[0..3]
7	MDA[0..63]	↔	MDA[0..63]
8	MDB[0..63]	↔	MDB[0..63]
7	DQSA[0..7]	↔	DQSA[0..7]
7	-DQSA[0..7]	↔	-DQSA[0..7]
7	MAAA[0..15]	↔	MAAA[0..15]
8	MAAB[0..15]	↔	MAAB[0..15]
8	DQSB[0..7]	↔	DQSB[0..7]
8	-DQSB[0..7]	↔	-DQSB[0..7]

<b>Gigabyte Technology</b>				
Title				
<b>CPU LGA1150-B</b>				
Size	Document Number			Rev
Custom	<b>GA-B85-HD3</b>			<b>2.1</b>
Date:	Monday, May 19, 2014		Sheet	5 of 34

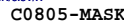
**(F, J)**



**(G,H,I)**

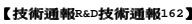


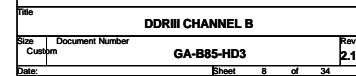
(X18)



(x9)







DMI:12/4/4/4/12(breakout min 8/4/4/4/8)  
Impedance=85 +- 17.5%

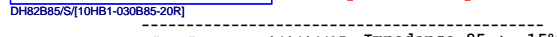
DMI:12/4/4/4/12(breakout min 8/4/4/4/8)  
Impedance=85 +- 17.5%



放靠近 Device & PCI-E Slot

PCHB Impedance=85 +- 15%

PCHB Impedance=85 +- 15%



PCH PCIE ,DMI 4/4/4//15 Impedance=85 +- 15%

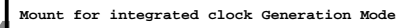
usb2.0 5/7/5//12

Impedance=85 +- 15%

28 PCH\_USB3\_RXN0 



USB3.0:20/5/7/5/20 (breakout min  
8/4/4/4/8) ; ONLY 3 VIAS  
Impedance=85 +- 17.5%  
Back Panel < 10000 MILS  
Front Panel < 6000 MILS



DH82B85/S/I10HB1-030B85-20F



HEAT SINK/N-BG/GBT MK/Z87/KWOG/12SP2-S04208-61R 12SP2-S04208-62R 12SP2-S04208-63R

OC[3:0]# for Device 29 (ports 0-7)

OC[7:4]# for Device 26 (ports 8-13)

USB OC# Configure	
OC0#	USB0.1

OC1#	USB2,3
OC2#	USB4,5

OC2#	USB4, 5
OC3#	USB6, 7

OC4#	USB8,9
------	--------

OC5#	USB10,11
------	----------

OC6#	USB12,13
------	----------

OC7#	Not Use
------	---------

# Gigabyte Technology

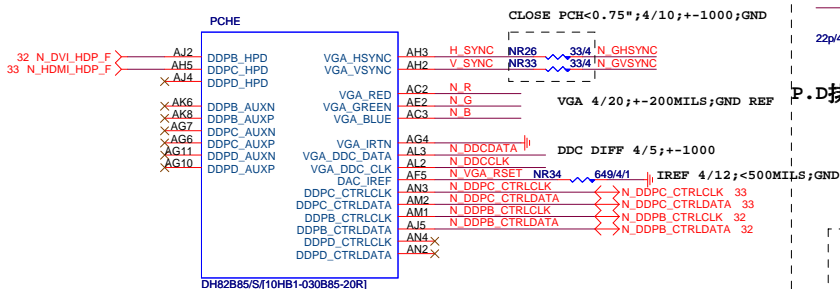
PCH FDI,DMI,USB ,PCIE	
-----------------------	--

Size	Document Number	Rev
Custom	<b>GA-B85-HD3</b>	2.1

Date: Monday, May 19, 2014 Sheet 9 of 34

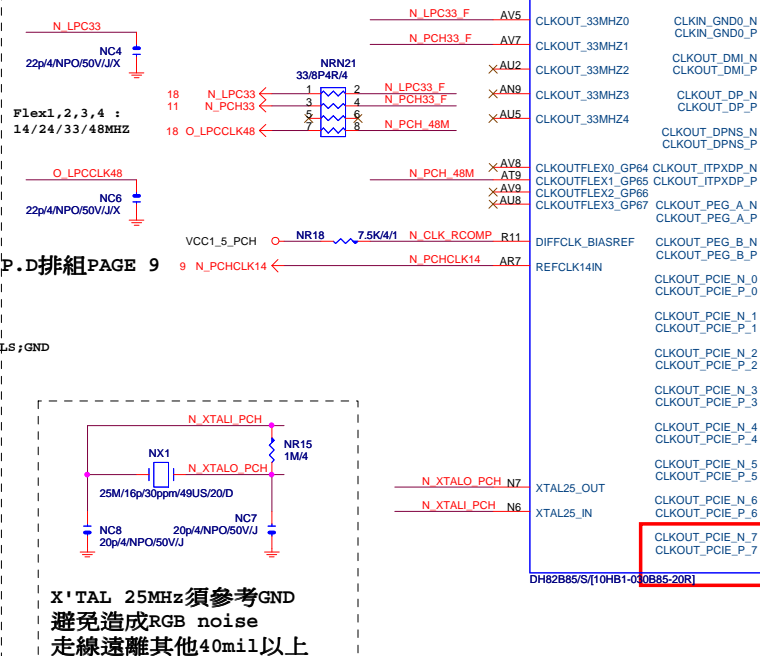


**PCH (E)**



VGA_DISABLE
R,G,B NC OR GND
IRTN / IREF GND
VGA_HSYNC, VGA_VSYNC, DDC_CLK, DDC_DATA NC
POWER VCCADAC(AF2), VCCADACBG(AE1) GND

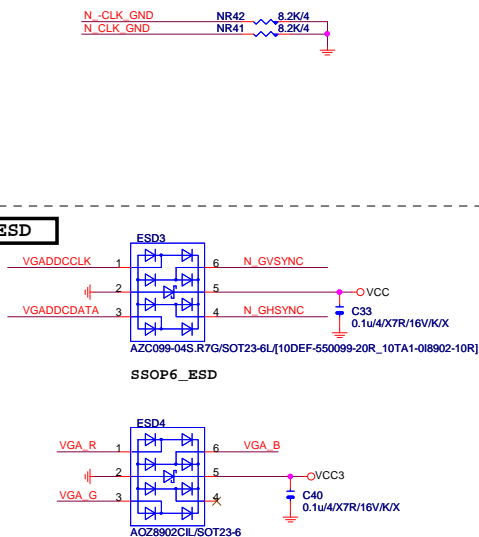
**PCH (G)**



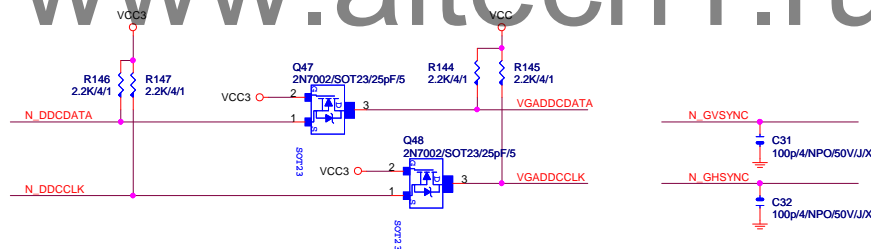
**禁用此 2 PIN, 避免訊號被25MHz干擾**

Differential Clock:18/4/6/4/18  
Impedance=90 +- 15%

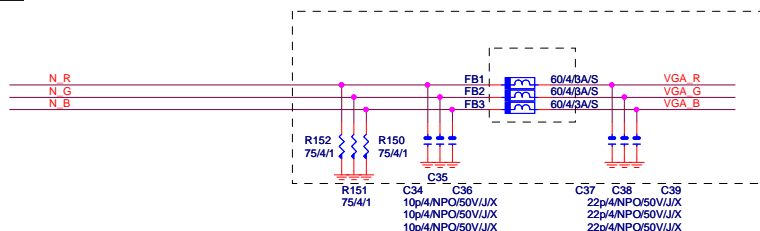
PCH CLK PD
------------



## VGA DDC

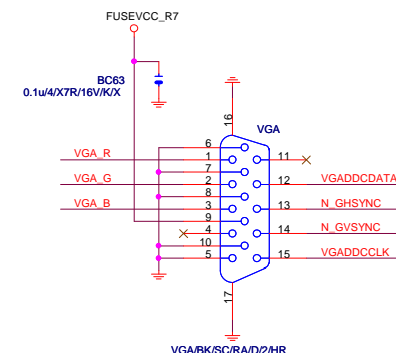


## VGA DDC



Close to VGA connector

## VGA CONNECTOR



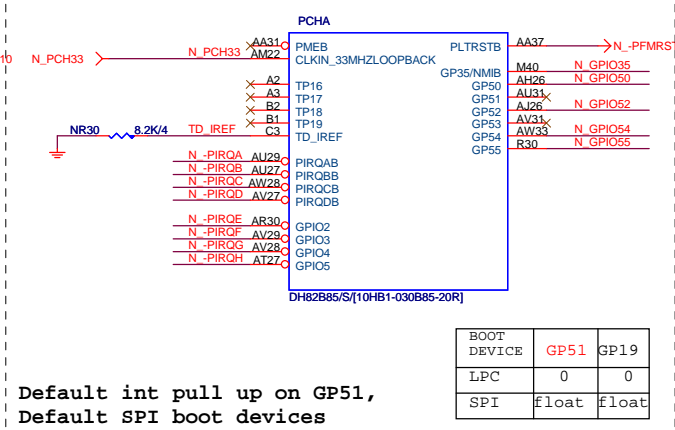
## Gigabyte Technology

Title			
PCH DISPLAY ,CLK BUFFER			
Size	Document Number	Rev	
Custom	GA-B85-HD3	2.1	
Date:	Monday, May 19, 2014	Sheet	10 of 34

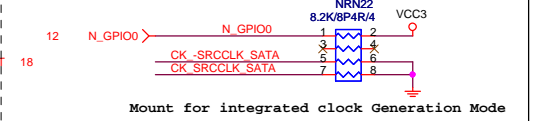
**PCH (C)**



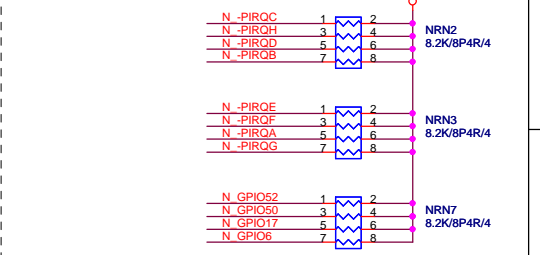
**PCH (A)**



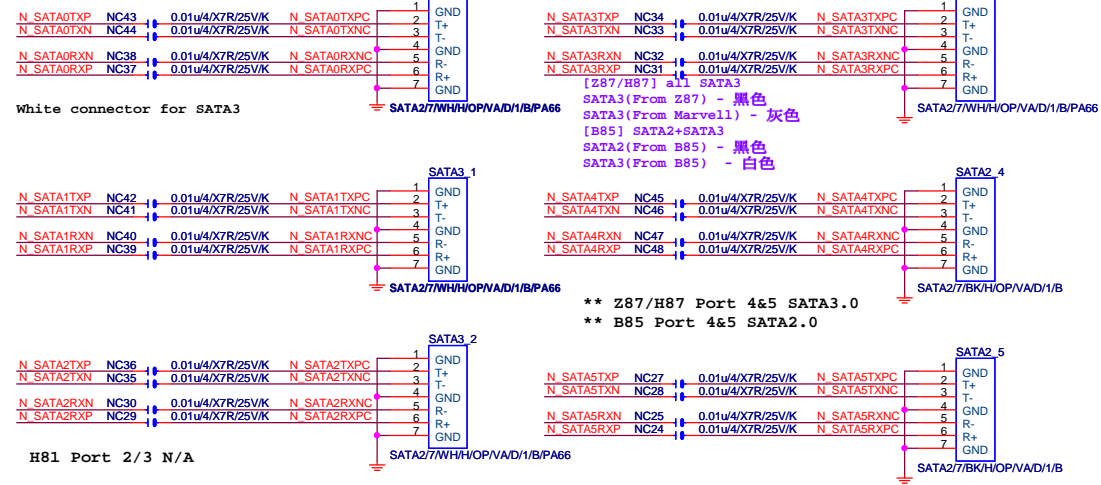
PCH CLK PD



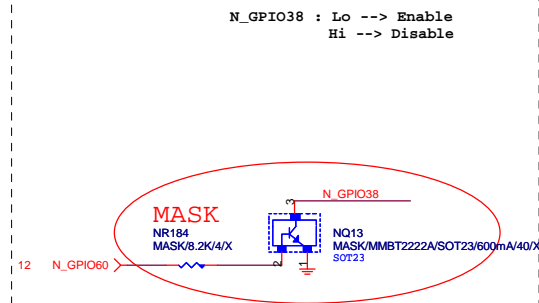
PCH PU/PD



## SATA CONNECTOR



GPIO38 Ctrl



soft strap	GP16	GP49
0	pcie1	pcie2
1	sata4	sata5

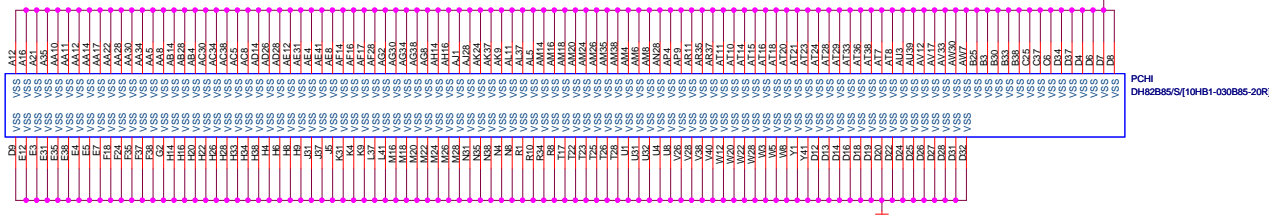
## Gigabyte Technology

Title			
PCH HOST , SATA, PCI			
Size	Document Number	Rev	
Custom	GA-B85-HD3	2.1	
Date:	Monday, May 19, 2014	Sheet	11 of 34

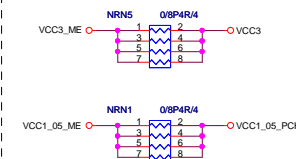
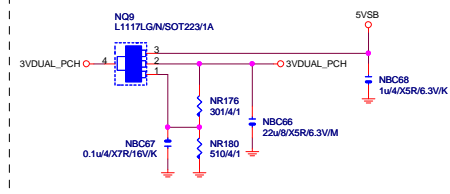
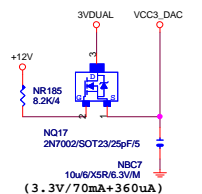




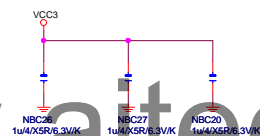
**PCH (I)**



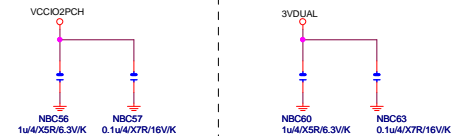
SHT PWR



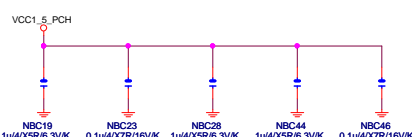
( 3.3V ) ( X3 )



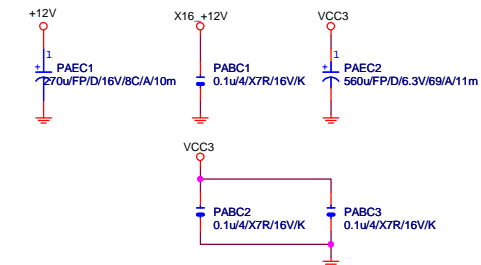
(1.05V)(x2) (3.3V) (x2)



(1.5V) (x5)

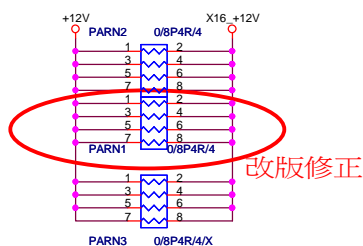


## PCIEX16 CAP



## PCIEX16 PROTECT SHT

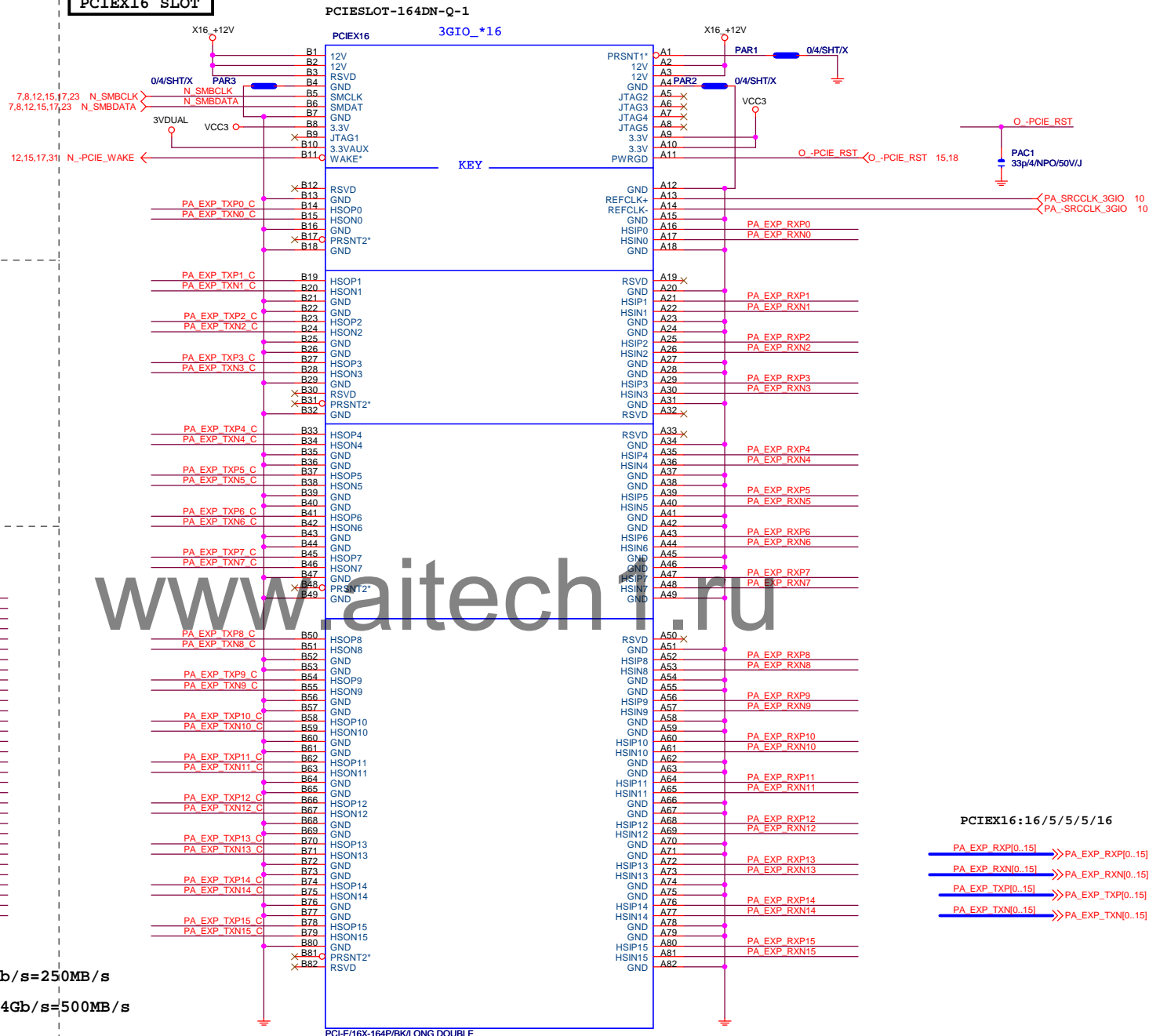
+12 protect short-wire test



## PCIEX16 AC CAP

PA EXP TXP0	PAC5	0.22u/4/X5R/6.3V/K	PA EXP TXP0 C
PA EXP TXN0	PAC4	0.22u/4/X5R/6.3V/K	PA EXP TXN0 C
PA EXP TXP1	PAC6	0.22u/4/X5R/6.3V/K	PA EXP TXP1 C
PA EXP TXN1	PAC7	0.22u/4/X5R/6.3V/K	PA EXP TXN1 C
PA EXP TXP2	PAC8	0.22u/4/X5R/6.3V/K	PA EXP TXP2 C
PA EXP TXN2	PAC9	0.22u/4/X5R/6.3V/K	PA EXP TXN2 C
PA EXP TXP3	PAC10	0.22u/4/X5R/6.3V/K	PA EXP TXP3 C
PA EXP TXN3	PAC11	0.22u/4/X5R/6.3V/K	PA EXP TXN3 C
PA EXP TXP4	PAC12	0.22u/4/X5R/6.3V/K	PA EXP TXP4 C
PA EXP TXN4	PAC13	0.22u/4/X5R/6.3V/K	PA EXP TXN4 C
PA EXP TXP5	PAC14	0.22u/4/X5R/6.3V/K	PA EXP TXP5 C
PA EXP TXN5	PAC15	0.22u/4/X5R/6.3V/K	PA EXP TXN5 C
PA EXP TXP6	PAC16	0.22u/4/X5R/6.3V/K	PA EXP TXP6 C
PA EXP TXN6	PAC17	0.22u/4/X5R/6.3V/K	PA EXP TXN6 C
PA EXP TXP7	PAC19	0.22u/4/X5R/6.3V/K	PA EXP TXP7 C
PA EXP TXN7	PAC18	0.22u/4/X5R/6.3V/K	PA EXP TXN7 C
PA EXP TXP8	PAC20	0.22u/4/X5R/6.3V/K	PA EXP TXP8 C
PA EXP TXN8	PAC21	0.22u/4/X5R/6.3V/K	PA EXP TXN8 C
PA EXP TXP9	PAC22	0.22u/4/X5R/6.3V/K	PA EXP TXP9 C
PA EXP TXN9	PAC23	0.22u/4/X5R/6.3V/K	PA EXP TXN9 C
PA EXP TXP10	PAC24	0.22u/4/X5R/6.3V/K	PA EXP TXP10 C
PA EXP TXN10	PAC25	0.22u/4/X5R/6.3V/K	PA EXP TXN10 C
PA EXP TXP11	PAC26	0.22u/4/X5R/6.3V/K	PA EXP TXP11 C
PA EXP TXN11	PAC27	0.22u/4/X5R/6.3V/K	PA EXP TXN11 C
PA EXP TXP12	PAC28	0.22u/4/X5R/6.3V/K	PA EXP TXP12 C
PA EXP TXN12	PAC29	0.22u/4/X5R/6.3V/K	PA EXP TXN12 C
PA EXP TXP13	PAC30	0.22u/4/X5R/6.3V/K	PA EXP TXP13 C
PA EXP TXN13	PAC31	0.22u/4/X5R/6.3V/K	PA EXP TXN13 C
PA EXP TXP14	PAC32	0.22u/4/X5R/6.3V/K	PA EXP TXP14 C
PA EXP TXN14	PAC33	0.22u/4/X5R/6.3V/K	PA EXP TXN14 C
PA EXP TXP15	PAC34	0.22u/4/X5R/6.3V/K	PA EXP TXP15 C
PA EXP TXN15	PAC35	0.22u/4/X5R/6.3V/K	PA EXP TXN15 C

## PCIEX16 SLOT



PCIEX16:16/5/5/5/16

PA EXP RXP0..15]	>>>PA_EXP_RXP[0..15]	4
PA EXP RXN0..15]	>>>PA_EXP_RXN[0..15]	4
PA EXP TXP0..15]	>>>PA_EXP_TXP[0..15]	4
PA EXP TXN0..15]	>>>PA_EXP_TXN[0..15]	4

Gigabyte Technology

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

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

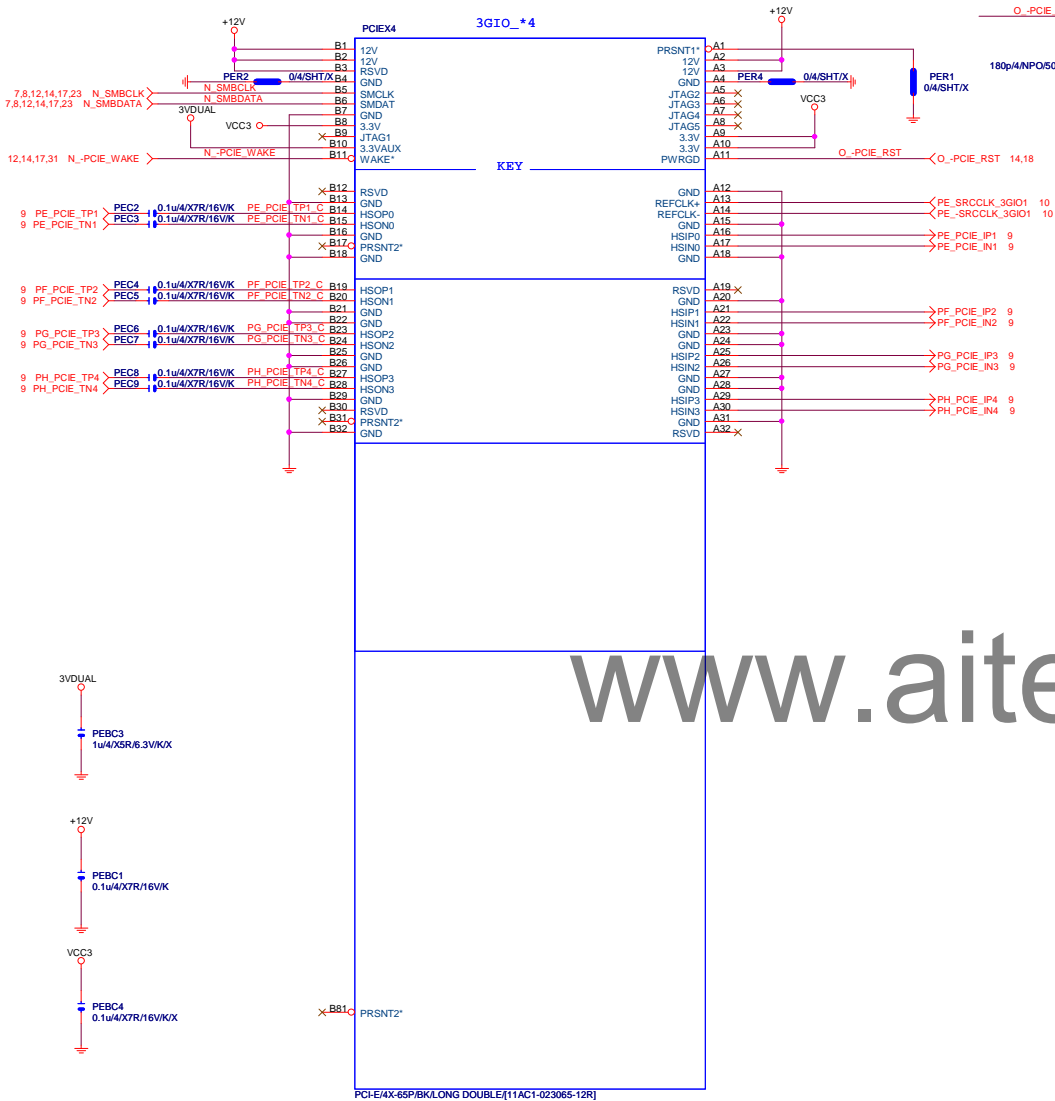
PCE-E X1(雙向) BANDWITH=2.5GHz\*(8b/10b)X2=4Gb/s=500MB/s

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

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

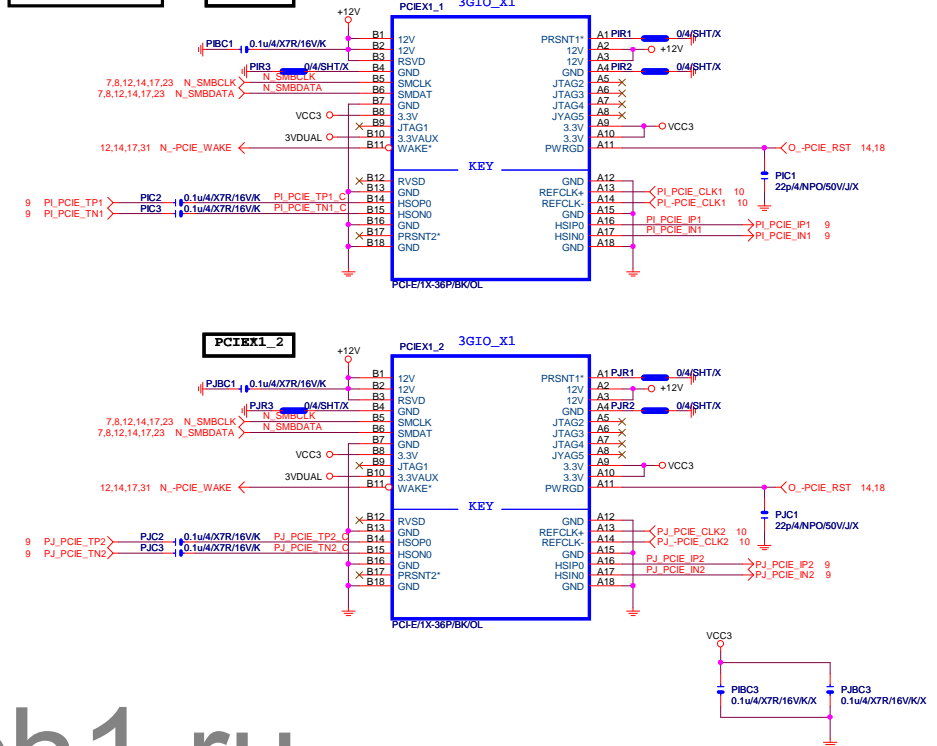
PCI-E REV:2.0--> 5GHZ

# PCIEX4 SLOT

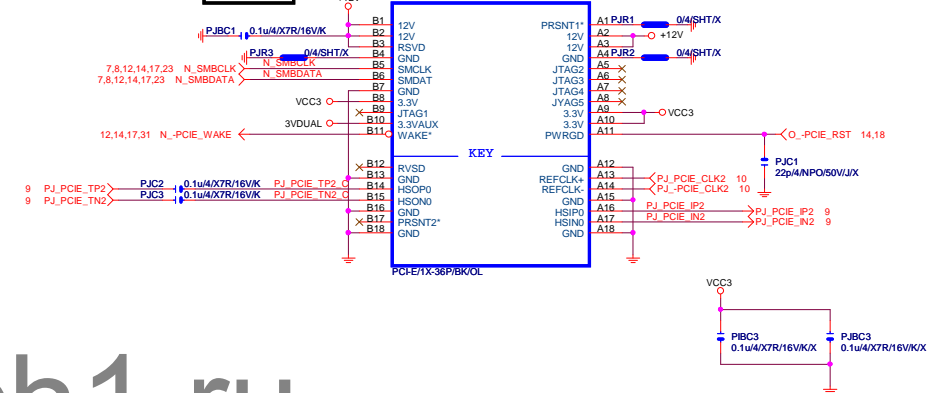


# PCIEX1 SLOT

# PCIEX1\_1



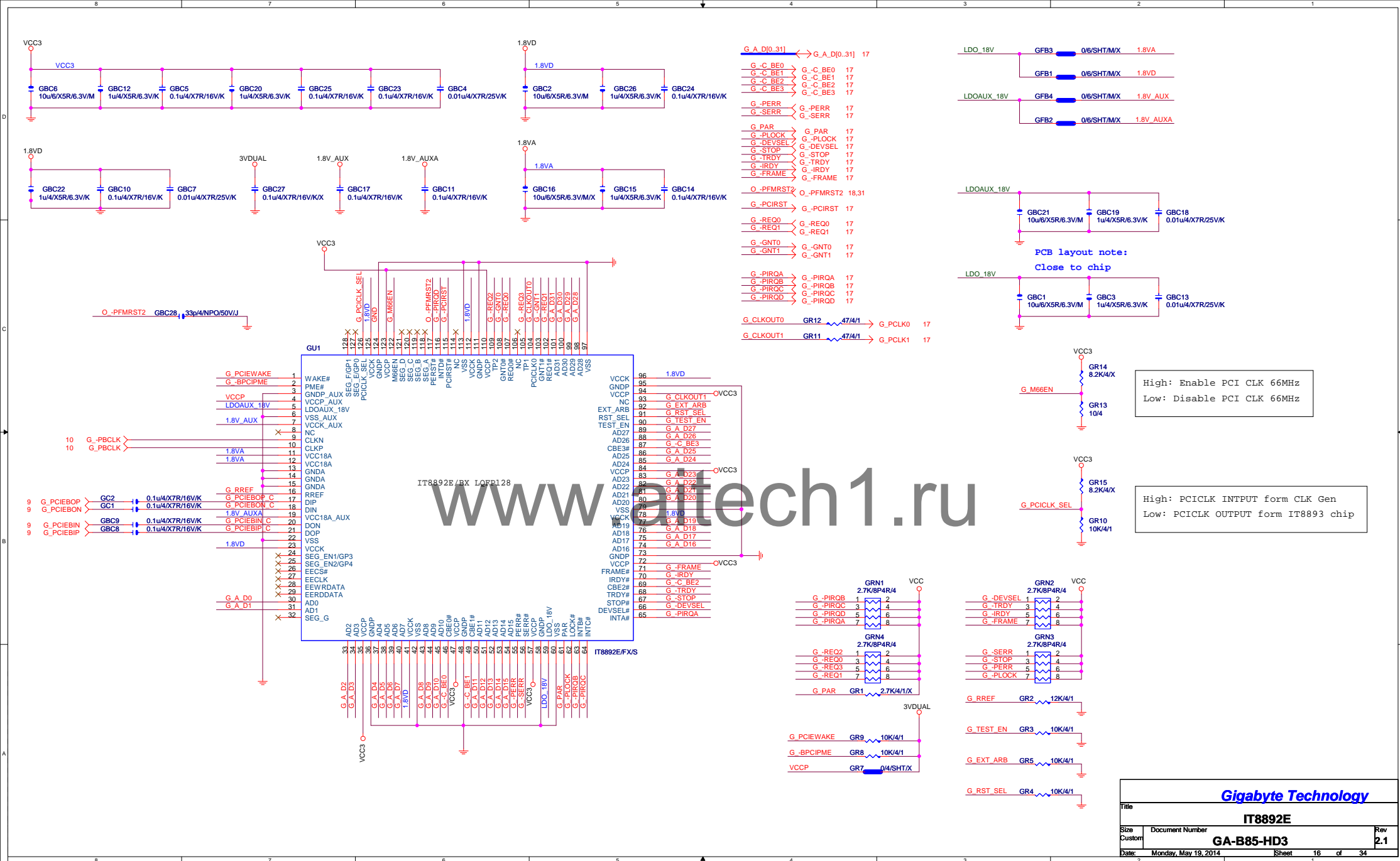
# PCIEX1\_2



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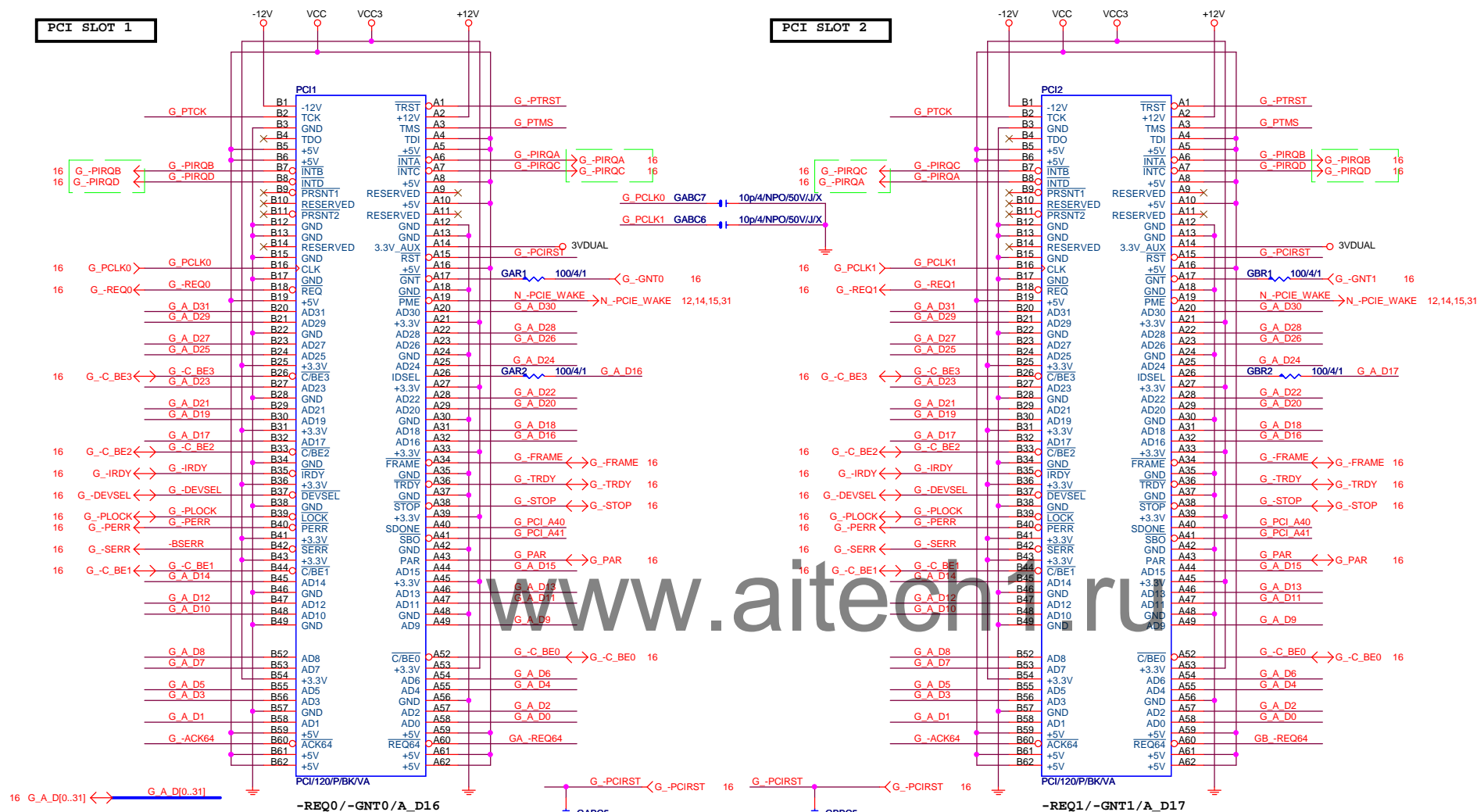
Gigabyte Technology

Title		PCIEX1 1,2	
Size	Document Number	GA-B85-HD3	
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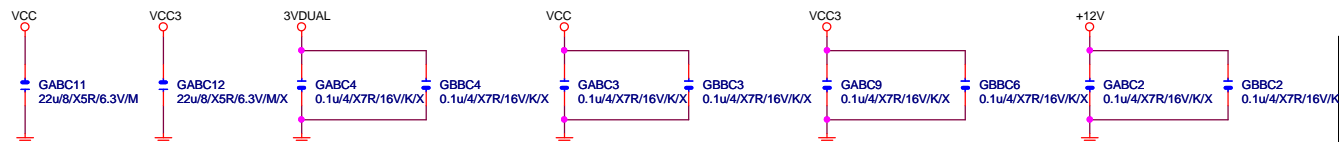
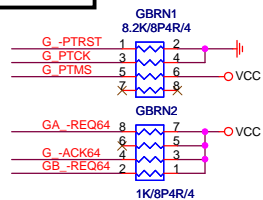
# PCI SLOT 1

# PCI SLOT 2



## PCI PU

## PCI CAP

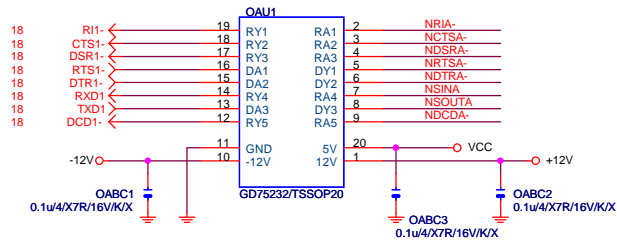


### PCI SLOT 1&2

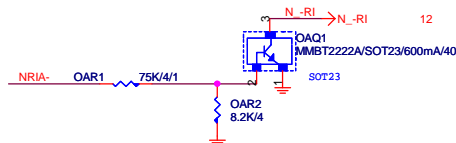
Size	Document Number	Rev
Custom	<b>GA-B85-HD3</b>	<b>2.1</b>
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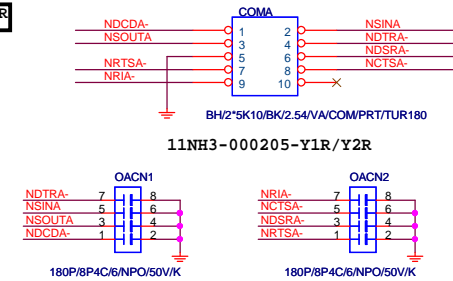
## COMA



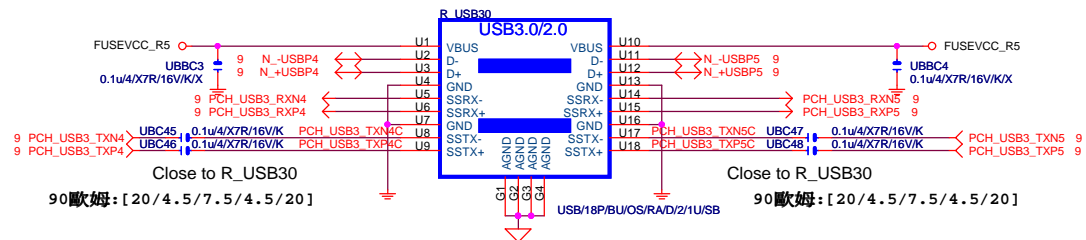
## COM RI



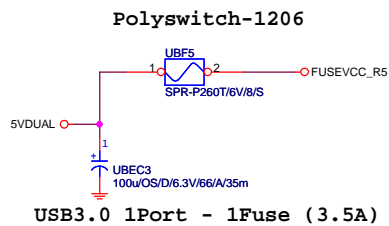
## COM BUFFER



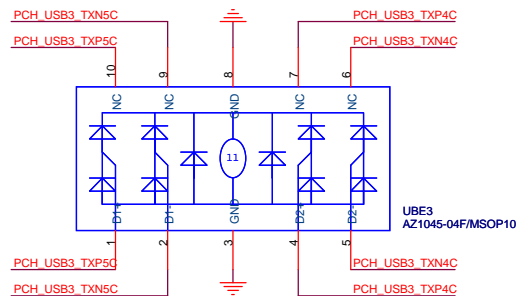
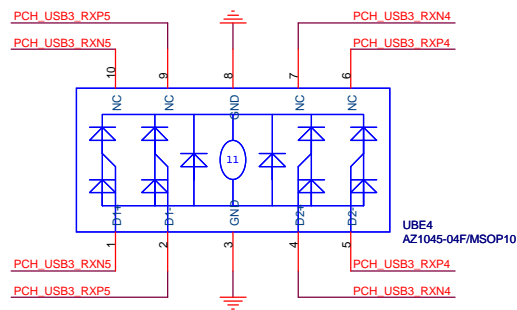
## USB30\_20 CONNECT



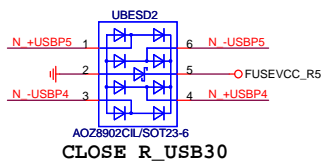
## USB30\_PWR



## USB30 ESD PROTECT



## USB20 ESD PROTECT



Gigabyte Technology

File			COM/ PROHOT/ R_USB	
Size	Document Number	GA-B85-HD3		Rev
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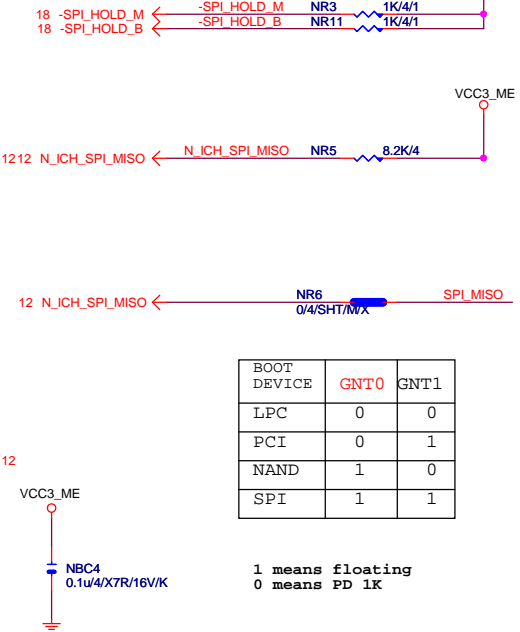
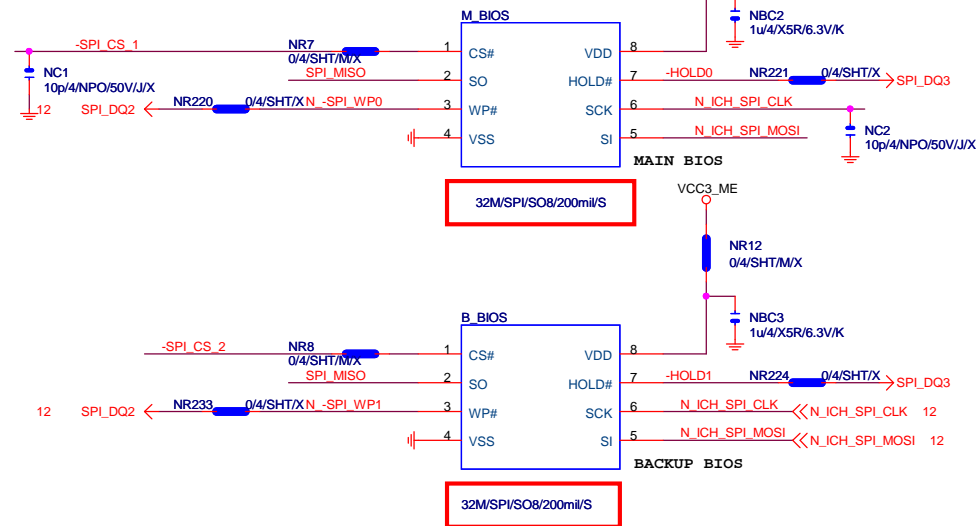


## DUAL BIOS

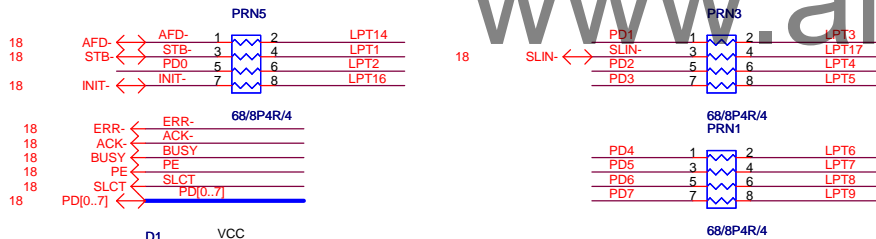
## MOSI For DMI RX Termination Voltage

指定用DII

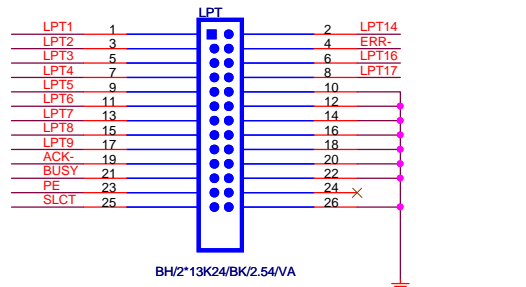
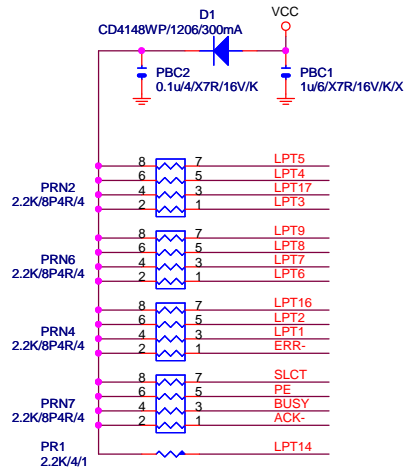
指定用DII



## 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 (GP) ITE/SMD  
QFP128 PRINTPORT SORTING)料件。串電阻33 ohm改為68 ohm。

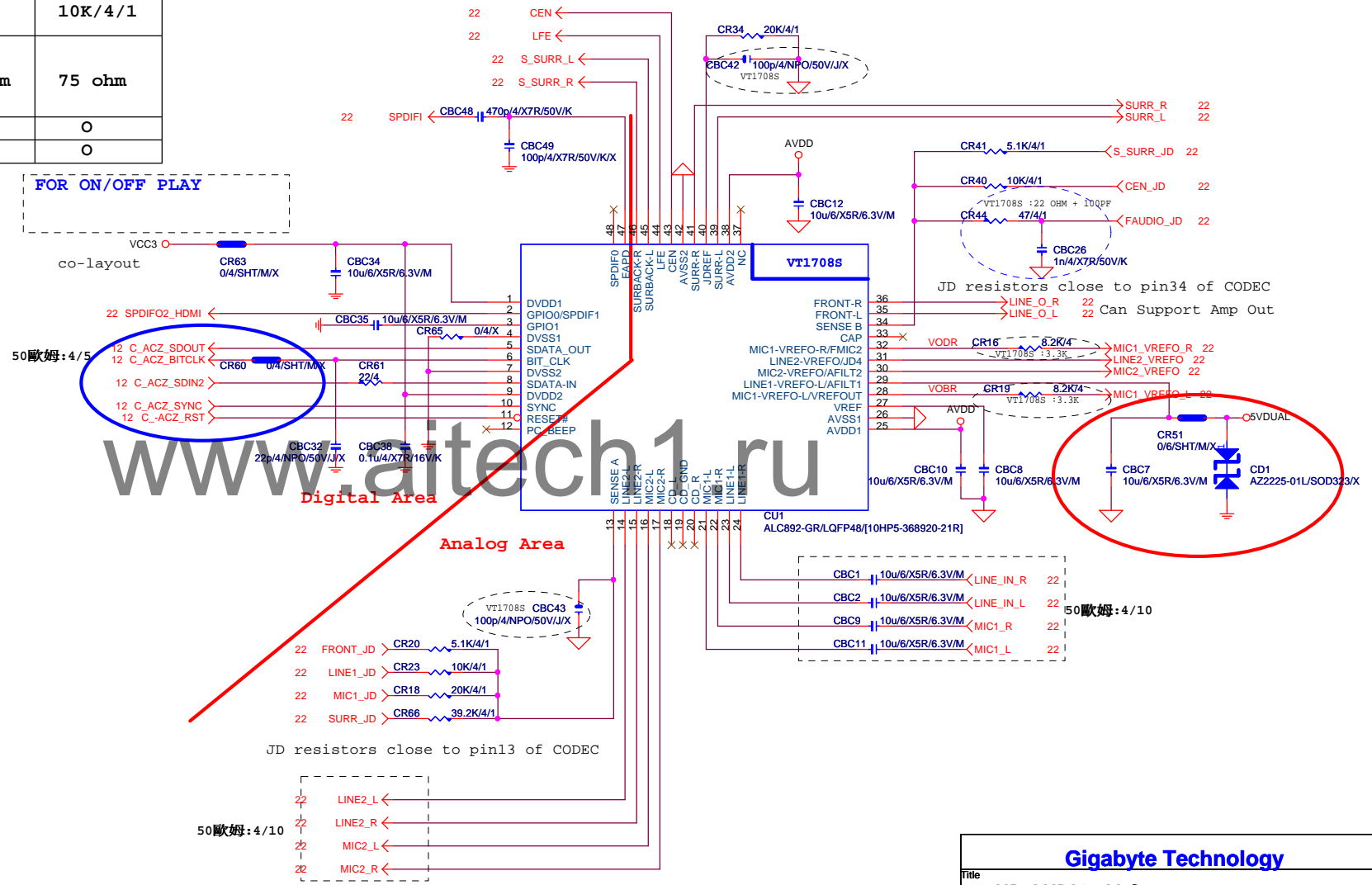


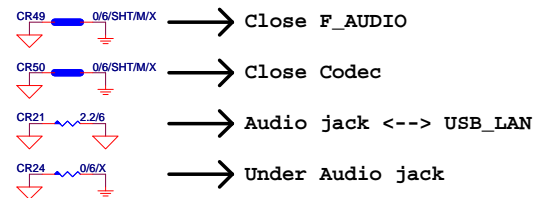
Gigabyte Technology

Title			BIOS
Size	Document Number	GA-B85-HD3	
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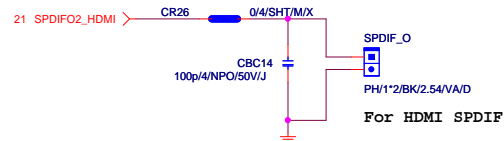


	ALC892	ALC887-VD2	VT1708S-CE
CR44/CBC26	47ohm+1nF	47ohm+1nF	22ohm+100P
CBC42/CBC43	X	X	100P/4
CR16/CR19 CR52/CR56/CR10/CR9	8.2K/4	8.2K/4	3.3K/4/1
CR6/CR7/CR58/CR54/ CR67/CR68/CR69/CR70	22K/4	22K/4	10K/4/1
CR5/CR8/CR1/CR14/ CR17/CR22/CR73/CR74/ CR13/CR11/CR57/CR53/ CR75/CR76	62 ohm	62 ohm	75 ohm
CR51/CD1/CBC7	O	O	O
CESD1	X	O	O

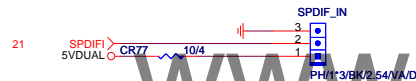




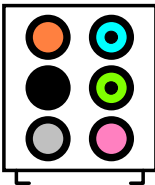
#### SPDIF\_OUT



#### SPDIF\_IN



#### AZALIA JACK

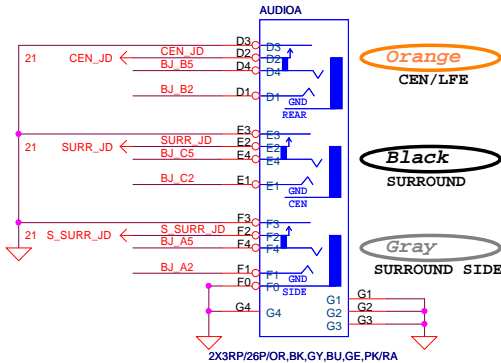
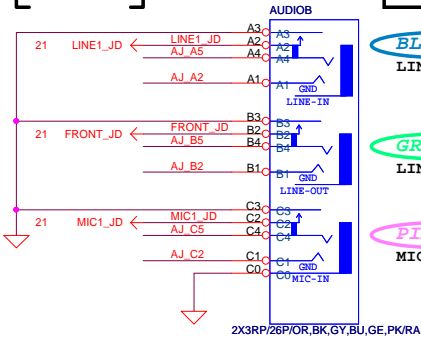


#### AZALIA JACK

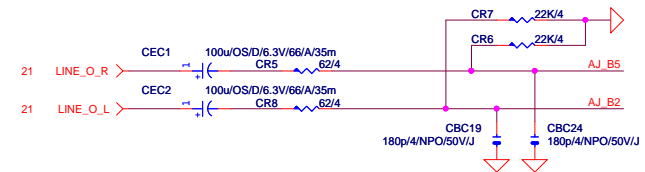
BLUE  
LINE-IN

GREEN  
LINE-OUT

PINK  
MIC-IN



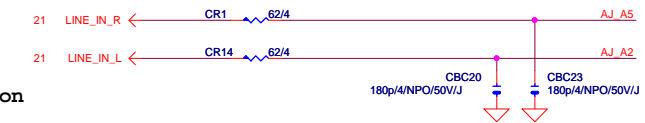
#### LINE-OUT



#### LINE-IN

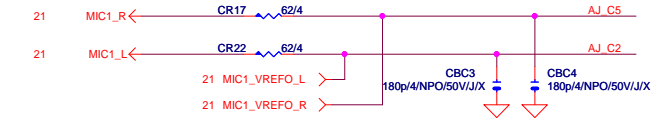
Verify MIC function  
in LINE-in

Only reserved for ALC888

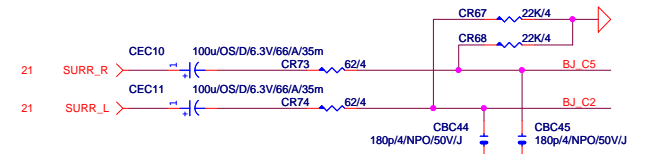


For 889A/888

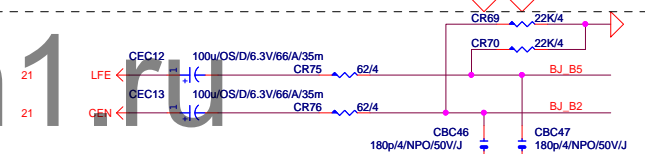
#### MIC-IN



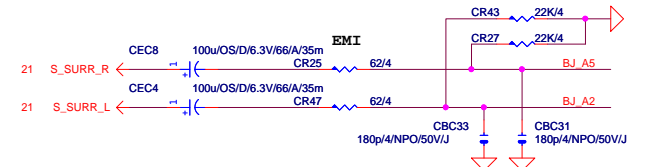
#### SURROUND



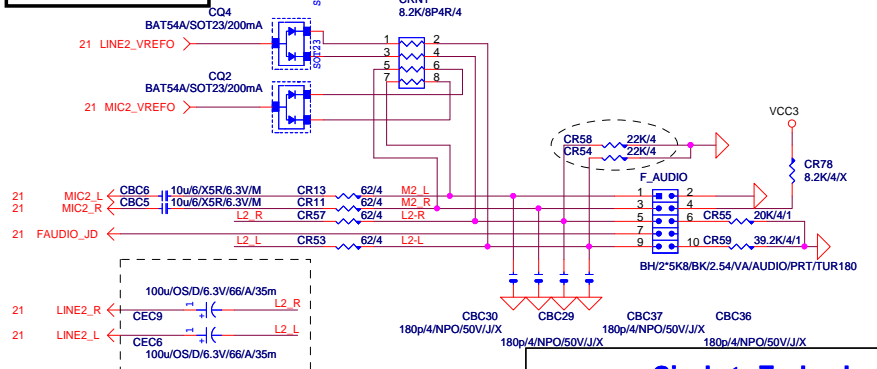
#### CEN/LFE



#### SURR BACK

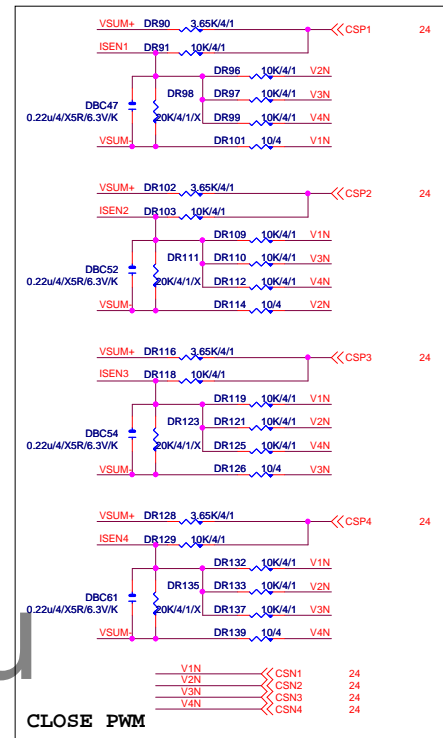
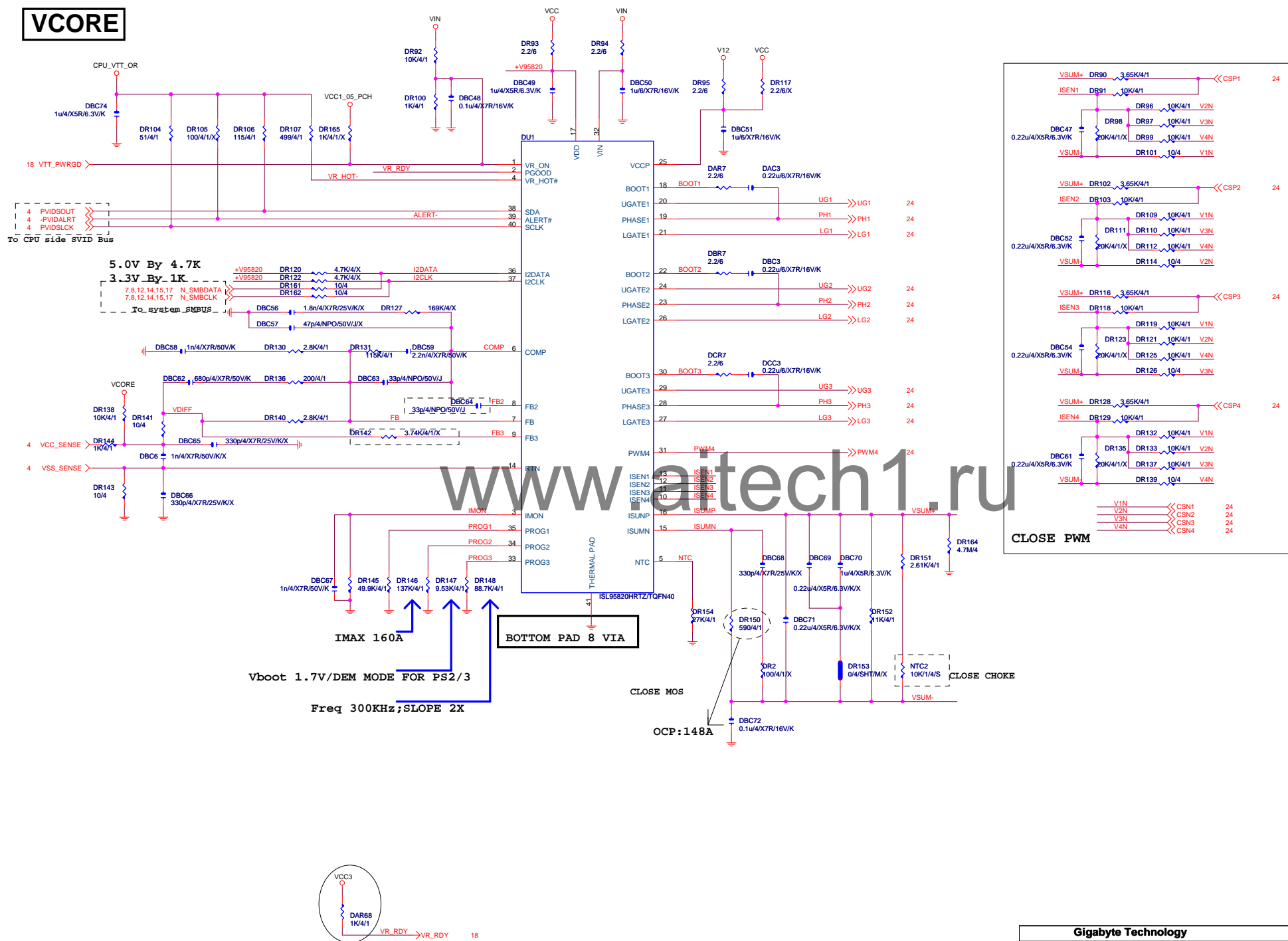


#### AZALIA FRONT PANEL



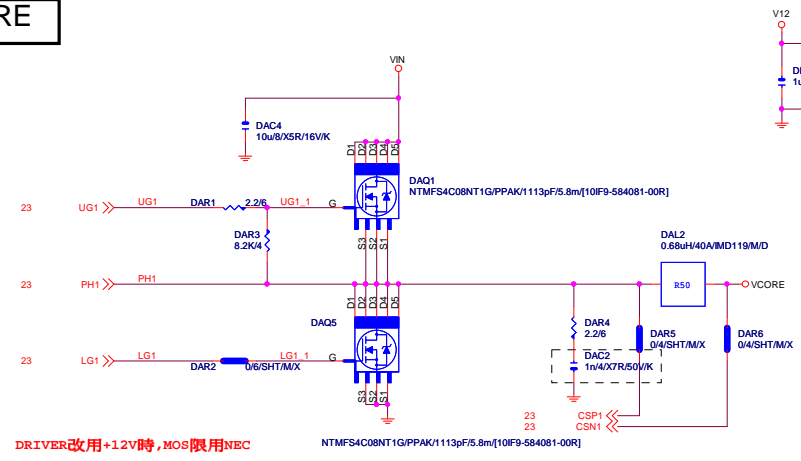
Gigabyte Technology

Title		
AUDIO JACK		
Size	Document Number	Rev
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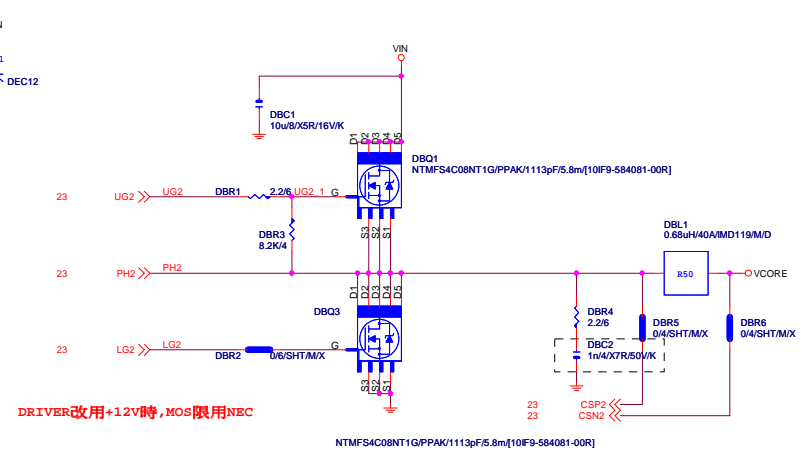
**VCORE**

# VCORE

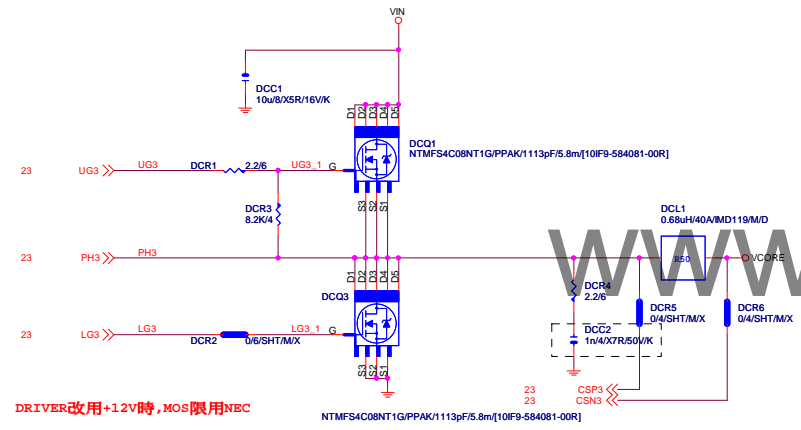
[ 1 ]



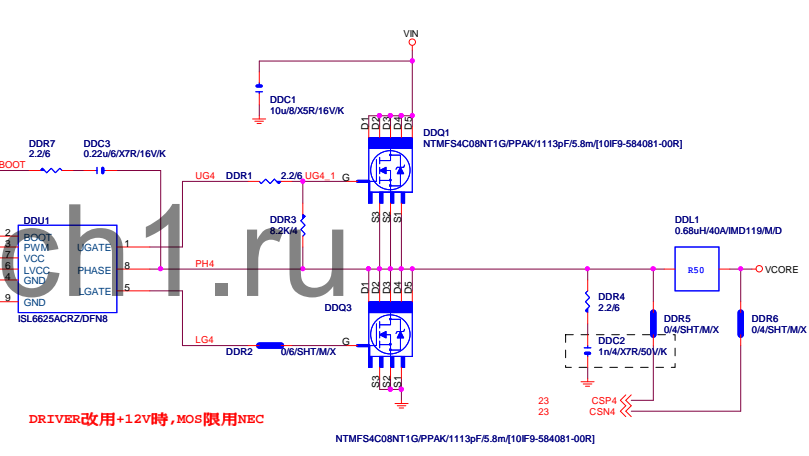
[ 2 ]



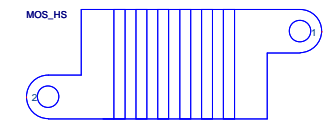
[ 3 ]



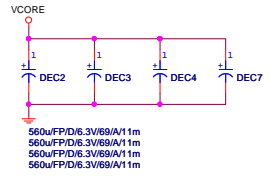
[ 4 ]



# MOSFET HEATSINK

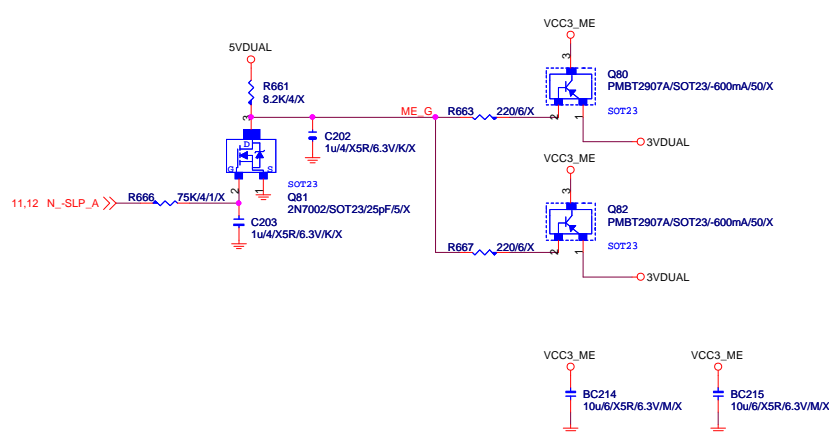


MOS\_HeatSink[12SP2-S07517-01R\_12SP2-S07517-02R\_12SP2-S07517-03R]

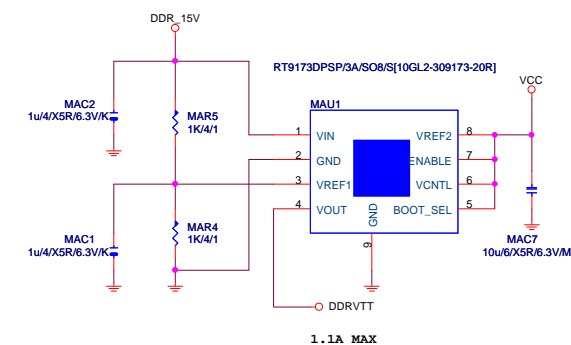


Gigabyte Technology			
Title	ISL95820_2		
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## VCC3\_ME



DDRVTT



OCP:40A for  $R_{ds}=8.9\sim 10.8m$  for on@4.5V  
OCP:40A for  $R_{ds}=5.8\sim 6.95m$  for on@10V  
OCP:66.67~37.A=Roset\*Iocset /  $R_{ds}(on)$   
=20K\*10uA / 3~5.4m

Remote sense 請從最重的負載端點拉回

A\_DR12  
64K4/1

$$.8 * (1 + RS / RO) = V_{out}$$
$$.8 * [1 + 2K / 2.2K] =$$
$$.527V$$

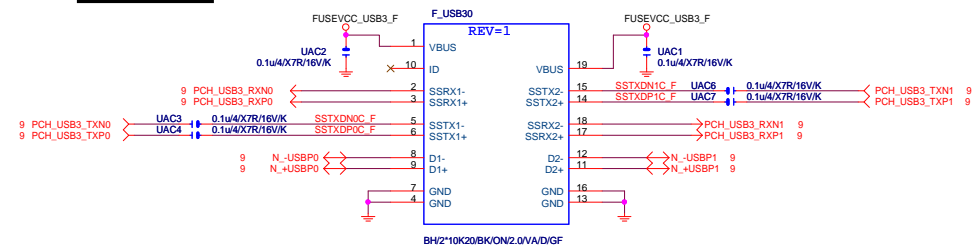
	5	4	3	2	1
D					
C					
B					
A					

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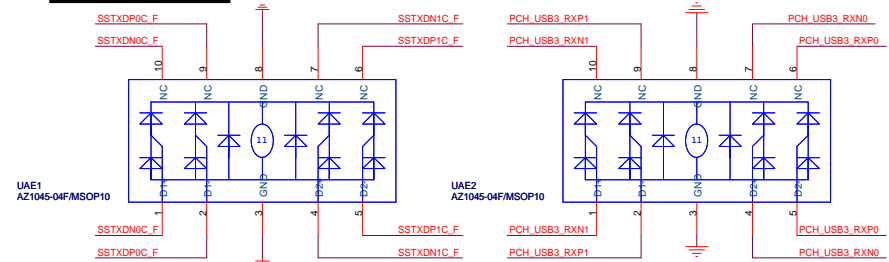
Gigabyte Technology		
Title CPU CORE VR-2		
Size Custom	Document Number GA-B85-HD3	Rev 2.1
Date: Monday, May 19, 2014	Sheet 26 of 34	
2	1	



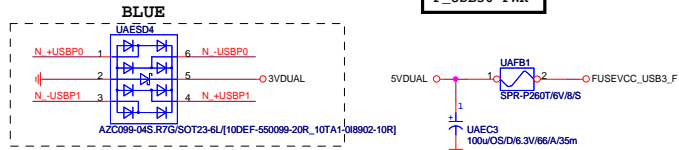
## Front USB3.0



F\_USB30 ESD PROTECT

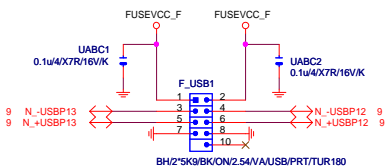


F_USB30 PWR	
-------------	--



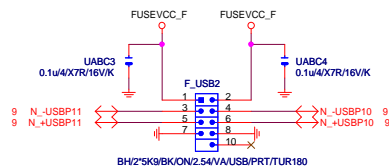
Close to connector

FRONT USB1



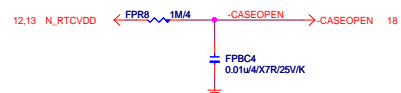
Close to connector

FRONT USB2

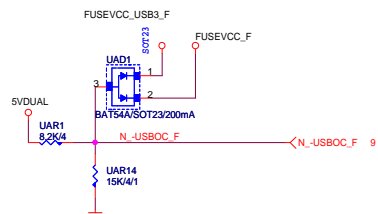


Close to connector

## CASE OPEN



## -USB\_OC\_F

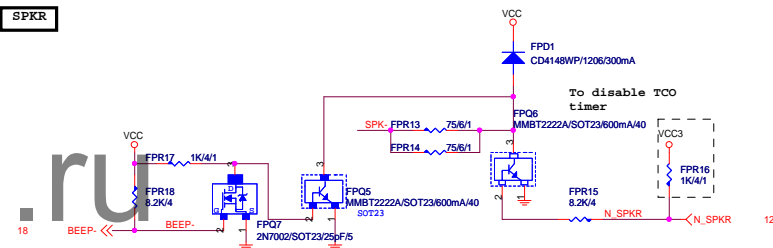


SATA LED

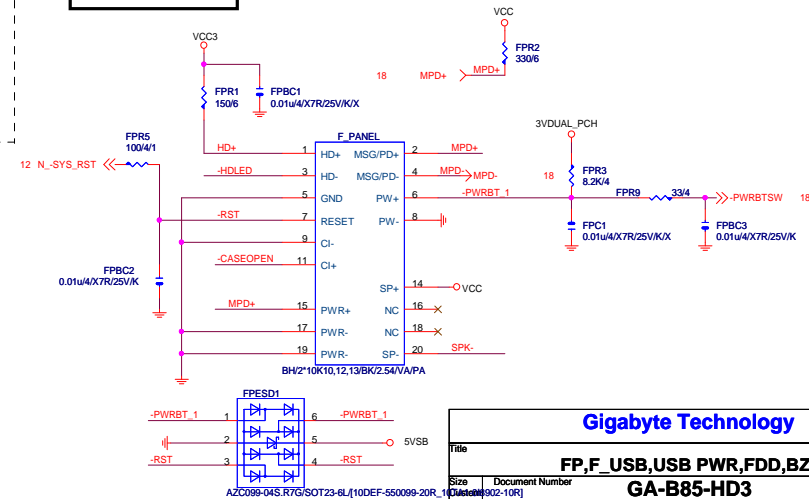
11 N\_SATALED > -HDLED

Remove Level shift

## SPKR



## INTEL FRONT PANEL



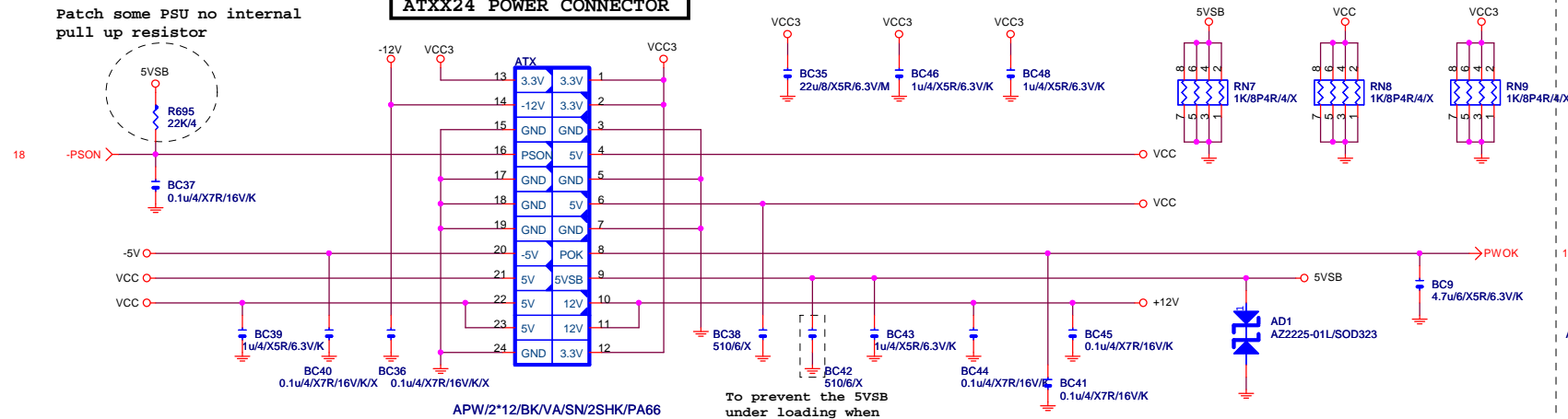
## Gigabyte Technology

Title				FP,F_USB,USB PWR,FDD,BZ			
Size		Document Number		GA-B85-HD3		Rev	
R_1010210902-10R						2.1	
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Patch some PSU no internal pull up resistor

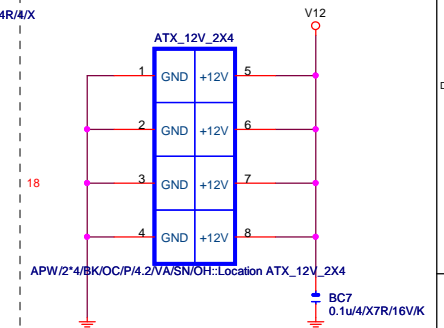
## ATXX24 POWER CONNECTOR



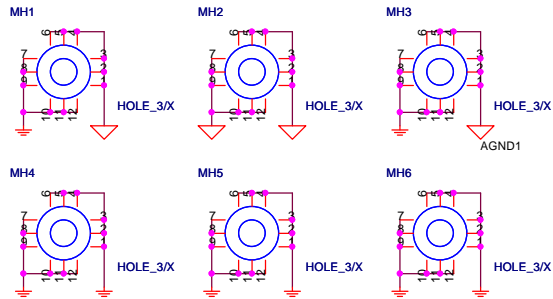
APW/2\*12/BK/VA/SN/2SHK/PA66

To prevent the 5VSB under loading when boot

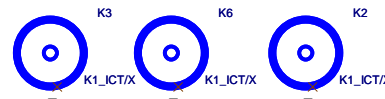
## ATXX4 POWER CONNECTOR



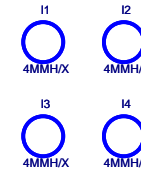
APW/2\*4/BK/OC/P/4.2VA/SN/OH:Location ATX\_12V\_2X4



HOLE\_4-RH-1



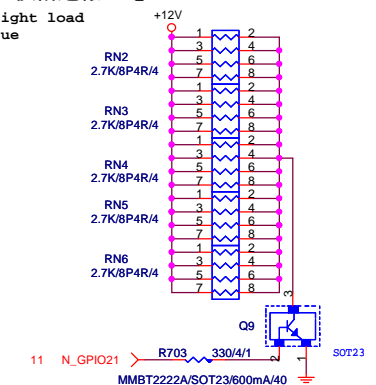
K1-ICT



4MMH

## 【技術通報R&D技術通報153】

To fix 12V light load abnormal issue



## CLK GEN

### CPU Frequency Selection

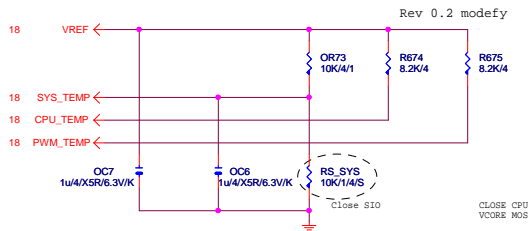
FSLB	FSLA	CPU
0	0	100M <Default>
0	1	133M
1	0	200M
1	1	166M

## PWOK PATCH

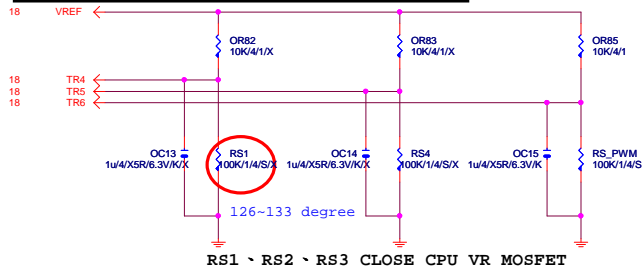
Gigabyte Technology

Title	ATX POWER CONNECTOR		
Size	Document Number	GA-B85-HD3	Rev
Custom			2.1
Date:	Monday, May 19, 2014	Sheet	29 of 34

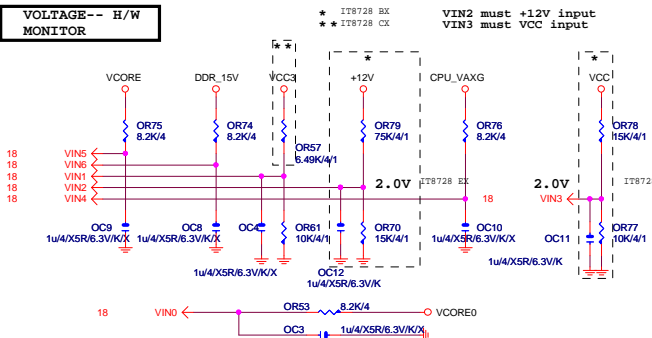
## TEMP H/W MONITOR



-PROCHOT:有mos heartsink不用prochot function

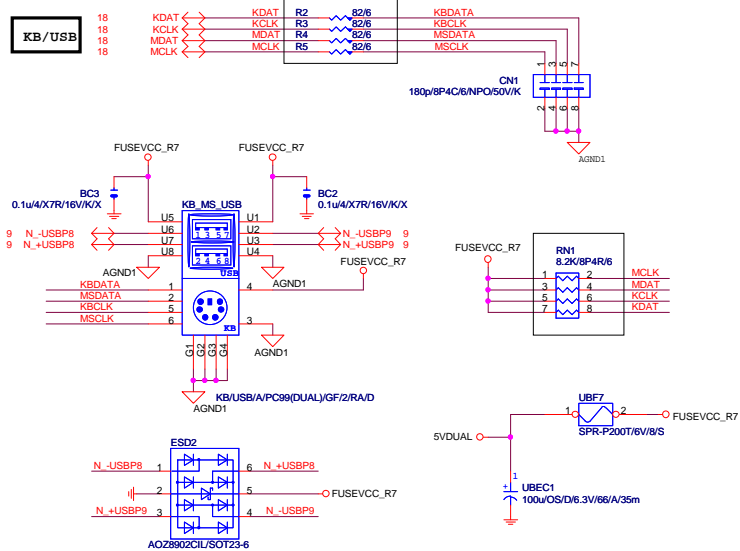


VOLTAGE-- H/W
MONITOR

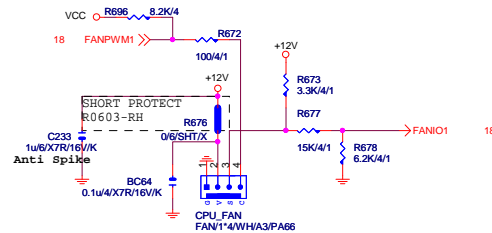


The division voltage of VIN2 & VIN3 must be around 2.9V

## KB/USB

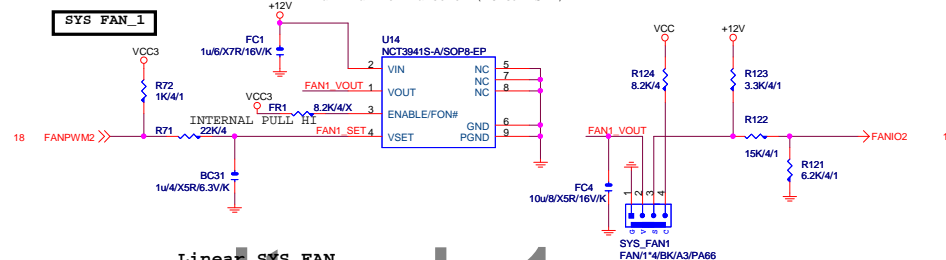


## CPU SMART FAN

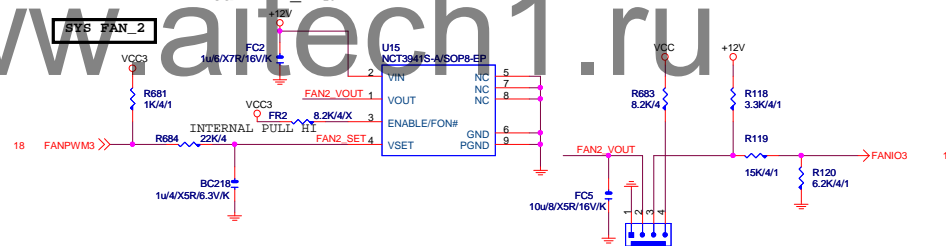


Linear SYS\_FAN

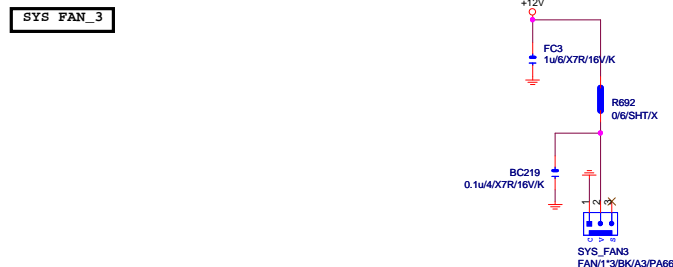
Enable Function (NCT3941S)  
Full Turn On Function (NCT3941S-A)



Linear SYS\_FAN



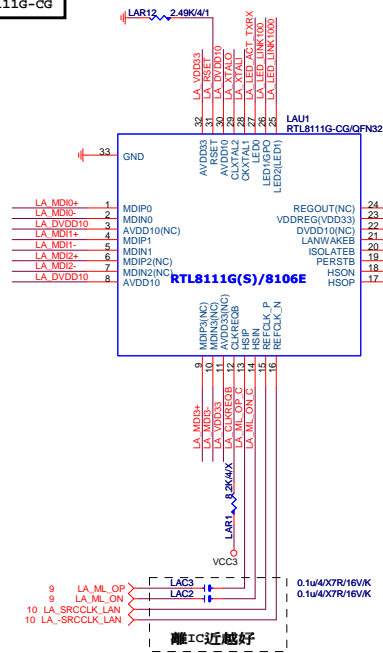
Linear SYS\_FAN



## Gigabyte Technology

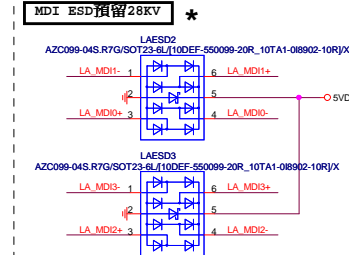
Title				HWM,KB/MS, FAN CTRL			
Size	Document Number						Rev
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# LAN RTL8111G-CG

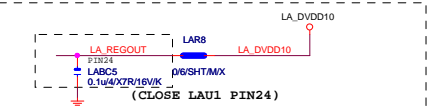
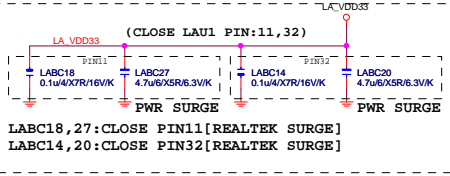
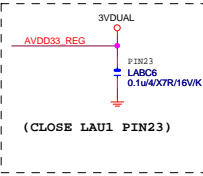
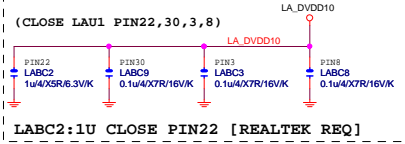


SRCCLK-->50歐姆:[18/4/10/4/18]

LA\_ML-->80歐姆:[15/5/5/5/15]



## LAN POWER



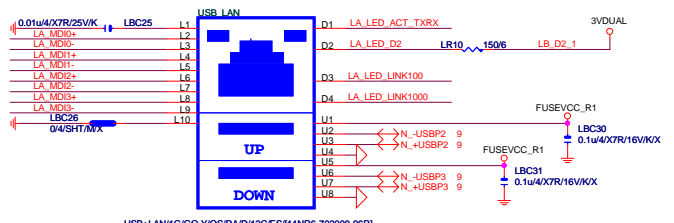
NOTE:  
RT8106E:PIN3,11,22,24-->NC  
LABC2LABC3,LABC5,LABC18,LABC27-->N/A

## BOM NOTICE

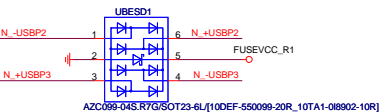
- 料號 規格 廠商
- 11NR6-702009-96R 1G LAN (12core) UDE(RU9 ESD+)
- [LED獨立走線,可省略外加AZC099-04S材料LAESD1]
- 1. 9KV ESD BOM:  
USB\_LAN (RU9):11NR6-702009-96R
- 2. 28KV ESD BOM:  
USB\_LAN (RU9):11NR6-702009-96R
- LAESD2,LAESD3:上件AZC398-04S

## USB30\_LAN CONNECTOR

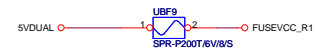
100歐姆:[20/4/10/4/20]



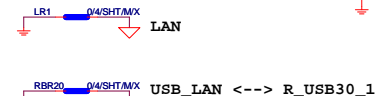
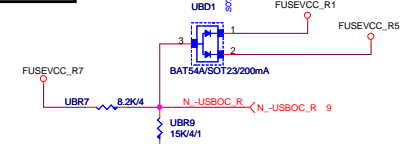
90歐姆:[12/5/7/5/12]

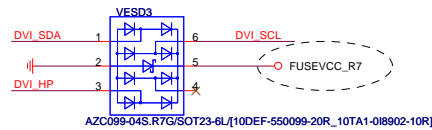
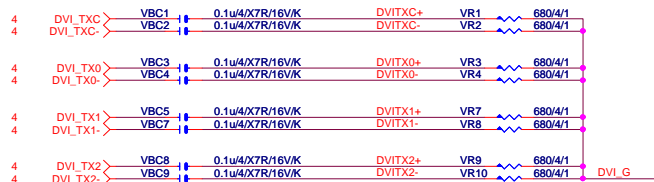


CLOSE USB30\_LAN

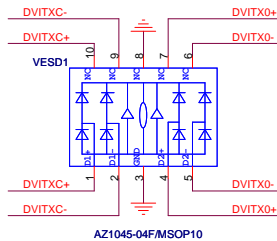
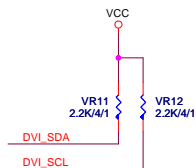


## -USBOC\_R

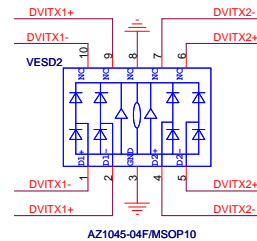
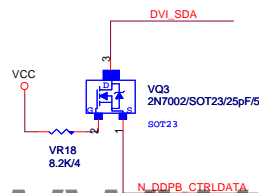
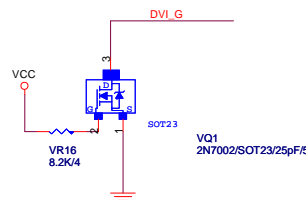




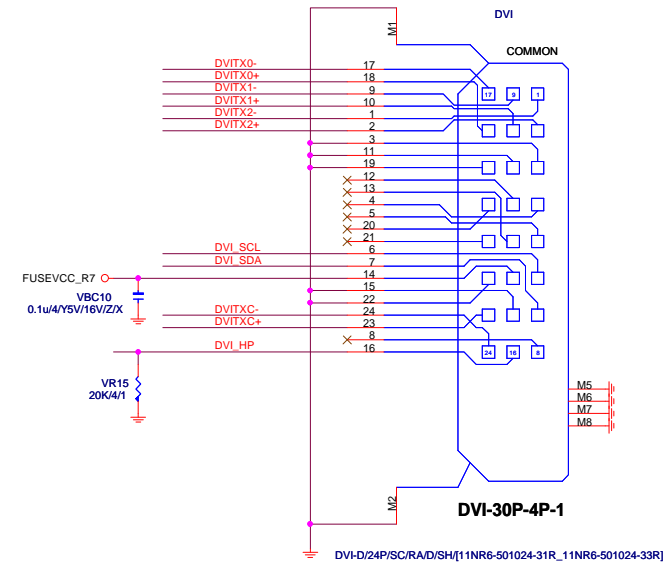
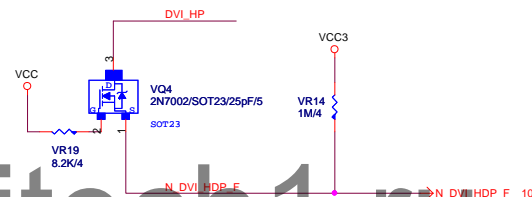
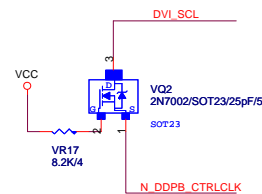
Close to connector



Close to connector



Close to connector



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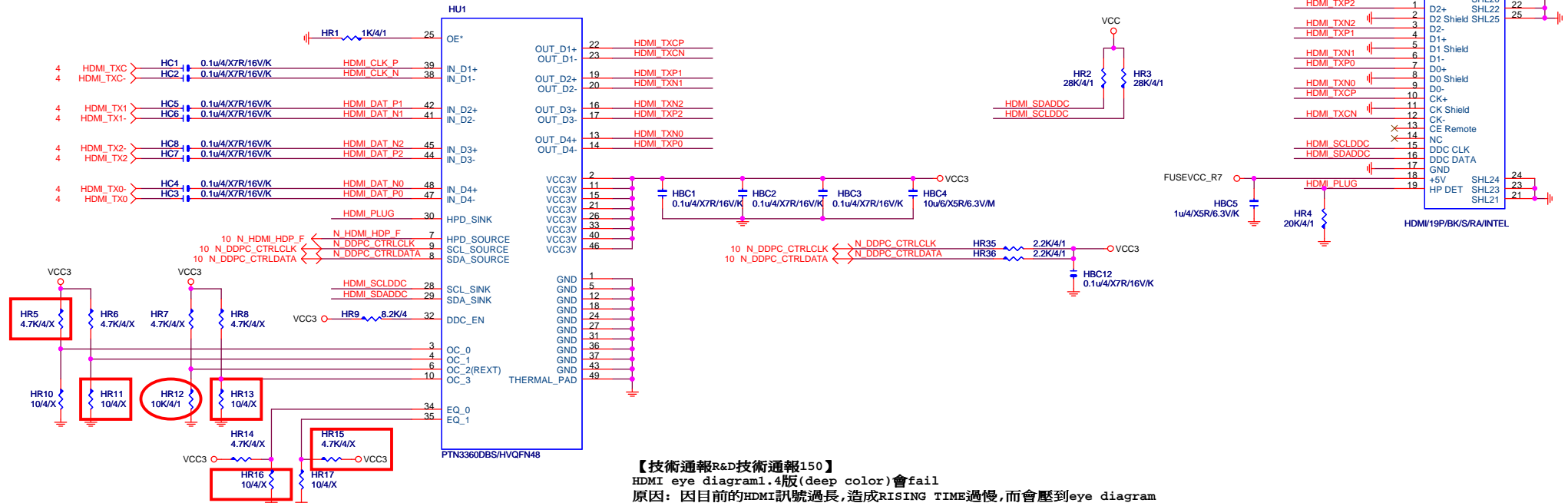
Title		
DVI		
Size	Document Number	Rev
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## HDMI LEVEL SHIFT

HDMI:20/4/6/4/20

Impedance=85 +- 17.5%



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&amp;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)

**GIGABYTE™**

Title	HDMI
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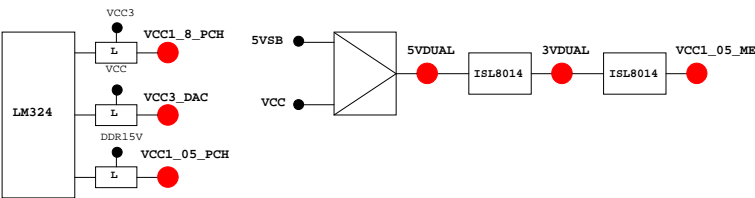
PCB GPIO LIST TABLE

PIN NAME	PWR	Default	USAGE	NOTE
GP0	MAIN	H-Z	GPIO0	N/A
GP1/TACH1	MAIN	GPI	GPIO1	N/A
GP2/PIRQE#	MAIN	GPI	~PIRQE	P/U 8.2K VCC3
GP3/PIRQF#	MAIN	GPI	~PIRQF	P/U 8.2K VCC3
GP4/PIRQG#	MAIN	GPI	~PIRQG	P/U 8.2K VCC3
GP5/PIRQH#	MAIN	GPI	~PIRQH	P/U 8.2K VCC3
GP6/TACH2	MAIN	GPI	PCIE1 Detect	P/U 8.2K VCC3
GP7/TACH3	MAIN	MAIN	GPIO7	P/U 8.2K VCC3
GP8	STBY	H	GPIO8	N/A
GP9/OC5#	STBY	NATIVE	USB OC5#	N/A
GP10/OC6#	STBY	NATIVE	USB OC6#	N/A
GP11/SMBALERT#	STBY	NATIVE	USB PWR protect	P/U 8.2K 3VDUAL
GP12	STBY	L	GPIO12	N/A
GP13	STBY	L	LPCPME#	P/U 8.2K 3VDUAL
GP14/OC7#	STBY	NATIVE	USB OC7#	N/A
GP15	STBY	L	GPIO15(TLS Enable)	P/U 8.2K 3VDUAL
GP16	MAIN	GPI	GPIO16	P/U 8.2K VCC3
GP17/TACH0	MAIN	GPI	GPIO17	P/U 8.2K VCC3
GP18	MAIN	GPI	Mobile Only	N/A
GP19	MAIN	GPI	GPIO19	P/U 8.2K VCC3
GP20	MAIN	GPI	GPIO20	P/U 8.2K VCC3
GP21	MAIN	GPI	GPIO21	P/U 8.2K VCC3
GP22	MAIN	H-Z	GPIO22	P/U 8.2K VCC3
GP23	MAIN	GPI	GPIO23	N/A
GP24	STBY	L	SKTOCC#	N/A
GP25	STBY		Mobile Only	N/A
GP26	STBY		Mobile Only	N/A
GP27	STBY	H	GPO GPIO27	P/U 8.2K 3VDUAL
GP28	STBY	H	GPO PWR LED	P/U 8.2K 3VDUAL
GP29	STBY	L	GPIO29	N/A
GP30	STBY	H-Z	GPI Mobile Only	N/A
GP31	STBY	H-Z	GPI Mobile Only	N/A
GP32	MAIN	H	GPO N/A	N/A
GP33	MAIN	H	GPO N/A	N/A
GP34	MAIN	H-Z	GPI ~PCI_STOP	P/U 8.2K VCC3
GP35	MAIN	L	GPO -ACZ_DET	P/U 8.2K VCC3
GP36	MAIN	GPI	N/A	N/A
GP37	MAIN	GPI	N/A	N/A
GP38	MAIN	H-Z	PCIEX4 Detect	P/U 8.2K VCC3
GP39	MAIN	H-Z	GPI GPIO39	P/U 8.2K VCC3
GP40	STBY	NATIVE	USB OC1#	N/A
GP41	STBY	NATIVE	USB OC2#	N/A
GP42	STBY	NATIVE	USB OC3#	N/A
GP43	STBY	NATIVE	USB OC4#	N/A
GP44	STBY	L	NATIVE GPIO44	P/U 8.2K 3VDUAL
GP45	STBY	NATIVE	GPIO45	P/U 8.2K 3VDUAL
GP46	STBY	L	NATIVE GPIO46	P/U 8.2K 3VDUAL
GP47	STBY		Mobile Only	N/A
GP48	MAIN	H-Z	IN GPIO48	P/U 8.2K 3VDUAL
GP49	MAIN	H-Z	IN GPIO49	P/U 8.2K 3VDUAL
GP50	MAIN	NATIVE	~REQ1	P/U 2.2K VCC
GP51	MAIN	H	NATIVE ~GNT1	N/A
GP52	MAIN	NATIVE	~REQ2	P/U 2.2K VCC
GP53	MAIN	H	NATIVE ~GNT2	N/A
GP54	MAIN	NATIVE	~REQ3	P/U 2.2K VCC
GP55	MAIN	H	NATIVE ~GNT3	N/A
GP56	STBY	NATIVE	Mobile Only	N/A
GP57	STBY	H-Z	IN VCORE_OV1	P/U 8.2K 3VDUAL
GP58	STBY	H-Z	NATIVE F_USB_OC	P/U 8.2K 3VDUAL
GP59	STBY	NATIVE	USB_OC0#	N/A
GP60	STBY	H-Z	NATIVE N/A(Reverse)	P/U 8.2K 3VDUAL
GP61	STBY	L	NATIVE ~SUSTAT	N/A
GP62	STBY	L	NATIVE SUSCLK	N/A
GP63	STBY	L	NATIVE GPIO63	N/A
GP64	MAIN	L	NATIVE CLKOUTFLEX0	N/A
GP65	MAIN	L	NATIVE CLKOUTFLEX1	N/A
GP66	MAIN	L	NATIVE CLKOUTFLEX2	N/A
GP67	MAIN	L	NATIVE CLKOUTFLEX3	N/A
GP72	STBY	H-Z	NATIVE VCORE_OV4	P/U 8.2K 3VDUAL
GP73	STBY		Mobile Only	N/A
GP74	STBY	H-Z	NATIVE 1_05V_OV2	P/U 8.2K 3VDUAL
GP75	STBY	H-Z	NATIVE N/A(Reverse)	P/U 8.2K 3VDUAL

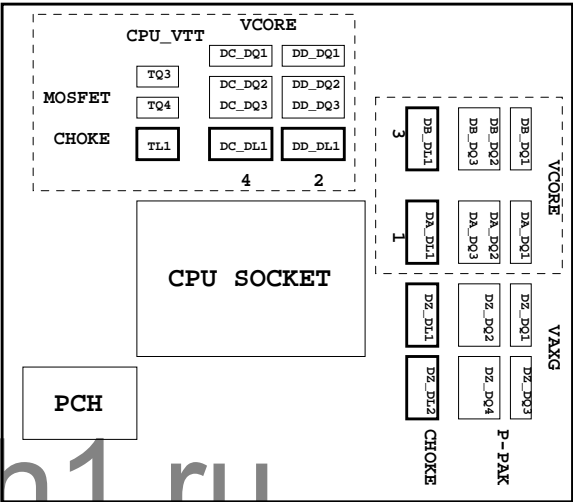
Super I/O ITE8720 GPIO Table

PIN NAME	USAGE	NOTE
SVC/PECI_RQT/GP14	-PECI_REQ	
PWROK1/GP13	PWROK1/ITE_PWROK	
KRST#/GP62	-KBRST	
SO/GP50	-ICH_SPI_CS	
IRTX/GP47/CE2_N/JP7	CEB_N	
GP46/IRRX	-LAN2_DSM	
PSION#/GP42	-PSON	
PWROK2#/GP41	PECI_CTL	
PCIRST3#/GP10/VDIMM_STR_EN	-PCIE_RST	
RSMRST#CIRRX1/GP55	-RSMRST	
PME#/GP54	-LPCPME	
PD5/GP75/BUSS00	N/A	

PIN NAME	USAGE	NOTE
FAN_TAC2/GP52	FANIO2	
FAN_TAC3/GP37	FANIO3	
VIDO3/FAN_TAC4/GP25/DSR2#	FANIO4	
FAN_CTL2/GP51	FANPWM2	
FAN_CTL3/GP36	FANPWM3	
VID4/GP34	BEEP-	
VID3/GP33	TURBO1	
VID2/GP32	TURBO0	
VCORE_GOOD/VID6/GP63	CPUT_LED1_C	
VID5/GP35	CPUT_LED2_C	
VID1/GP31	CPUT_LED3_C	
VID0/GP30	-LAN1_DSM	NBT_LED1_C
SLCT/GP80	CPU_LED1_C	
PE/GP81	CPU_LED2_C	
BUSY/GP82	CPU_LED3_C	
PD3/GP73/BUSS11	SB_LED1_C	
PD4/GP74/BUSS12	SB_LED2_C	
VCORE_EN/VID7/GP64	IT_GP64	SB_LED3_C
PD0/GP70	NB_LED1_C	
PD1/GP71	NB_LED2_C	
PD2/GP72/BUSS10	NB_LED3_C	
GP22/SEN	LOW_PWR_1	
VID05/GP27/SEN2	LOW_PWR_2	
PCIRST2#/GP11	-PFMRST1	
PCIRST1#/GP12	-PFMRST2	
3VSB5W#/GP40	CSI_F0	BSEL166_1
SUSCH#/GP53	CSI_F1	BSEL166_2
GP23/SI	BSEL166_3/CsisBSL	
VID00/GP20/CTS2#	CPUT_LED1_C	BSEL166_4
GP65/VDDA_EN/GB_01	MB_ID2	
PD6/GP76/BUSS01	MB_ID3	
PD7/GP77/BUSS02	MB_ID4	
AFD#/GP86/SMBC_R	PIN	FST_2X8
INIT#/GP85/SMBD_M	SEC_2x8	GTLREF_AD2
ACK#/GP83	DDR_LED1_C	
VID01/GP21/DCD2#	DDR_LED2_C	
STB#/GP87/SMBC_M	DDR_LED3_C	
PWRON#/GP44	VCORE_OV1	
PANSWH#/GP43	PWRBTSW	
KDAT/GP61	-PWRBTSW	
KCLK/GP60	KDAT	
MDAT/GP57	KCLK	
MACL/GP56	MDAT	
GP66/VLDT_EN/GB_02	NBT_LED1_C	MCLK
SVD/PCIRSTIN#/CIRTX/GP15	PWM2_CR	
KDAT/GP61	PWM2_CR	
GP67/CPU_PG/GB_03	EN_LOADLINE	IT_GP67/-EN_PWM2
SLIN#/GP84/SMBD_R	-EN_PWM2	
PSI_L/FAN_CLT5/CIRRX2/GP16	-THERM	
VID04/GP26/SOUT2	DDR18V_PH2_EN	
VID02/FAN_TAC5/GP24/DSR2#	DDR18V_LED	
VID06/GP17/RI2#	1_1V_PH_EN	
VID07/JP6/DTR2#	JP6	
PD5/GP75/BUSS00	SB_LED3_C	



PWM各相位的擺法如下：



BIOS超電壓對應表：

線路圖名稱	BIOS選項
Vcore	CPU Vcore
CPU_VTT	CPU Termination
CPU_VAXG	CPU Graphic Core
VCC1_8_PCH	CPU PLL
VCC1_05_PCH	PCH core
3VDUAL	3VDUAL
DDR15V	DRAM voltage
DDRVTT	DRAM Termination
VREF_CA_A/VREF_CA_B	DRAM Address Ref
VREF_DQ_A/VREF_DQ_B	DRAM Data Ref

散熱模組料號：

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

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

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TABLE LIST			
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