

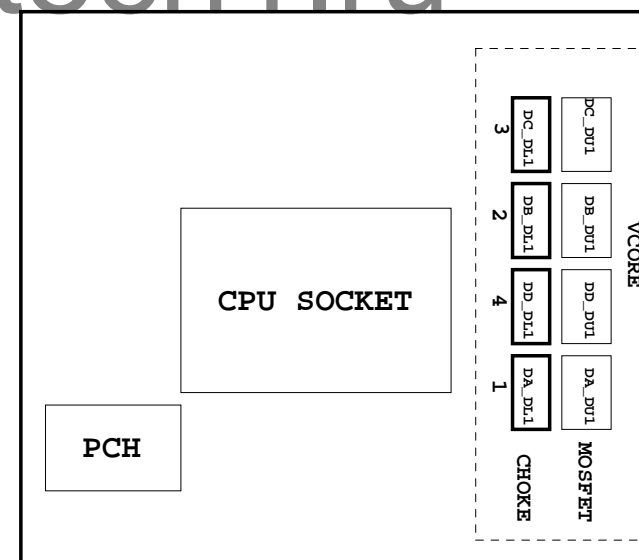
Model Name: GA-B85-HD3-SI 2.11

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	
36	
37	
38	
39	
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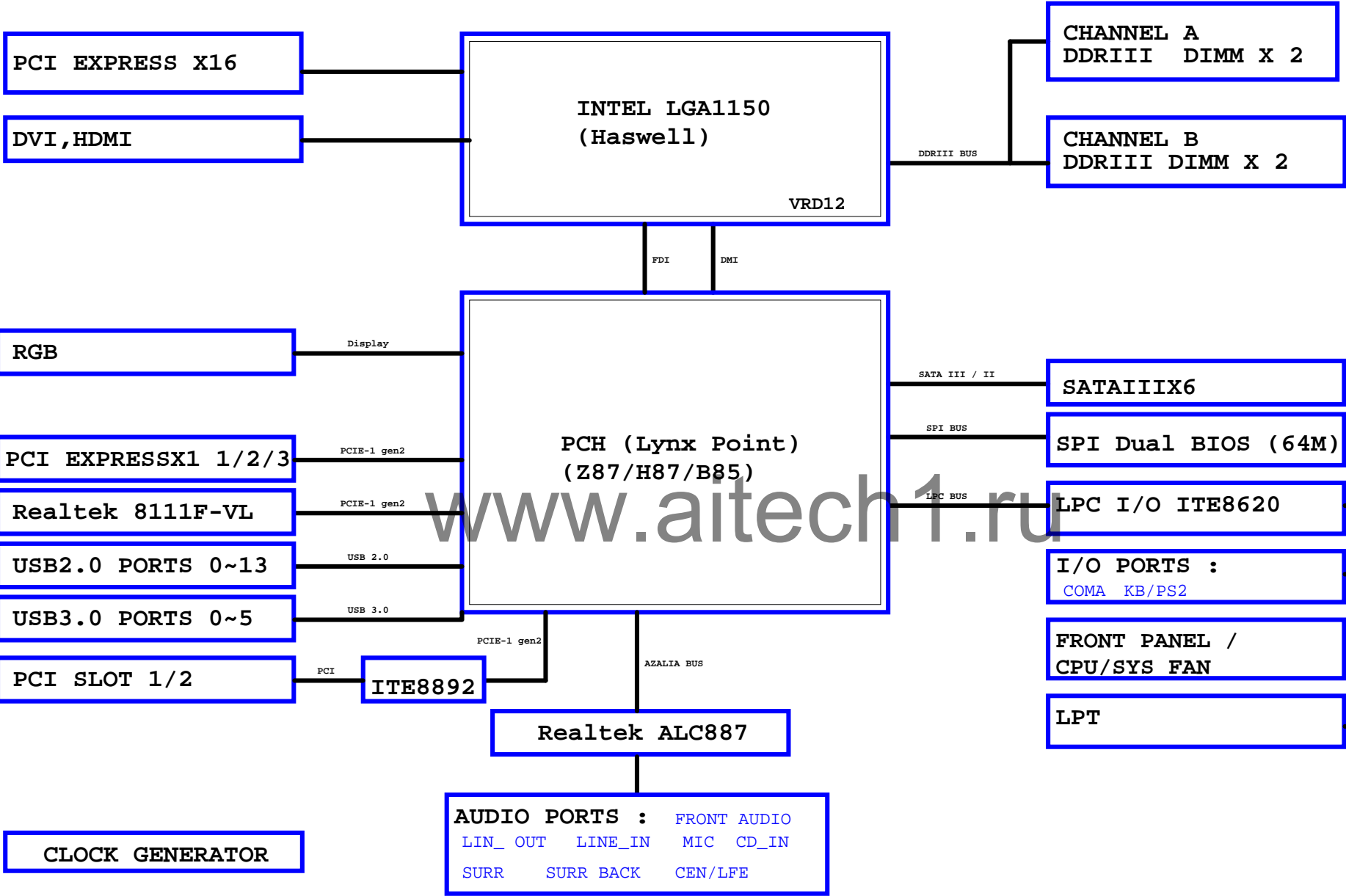


## Component value change history

[illegible][illegible]

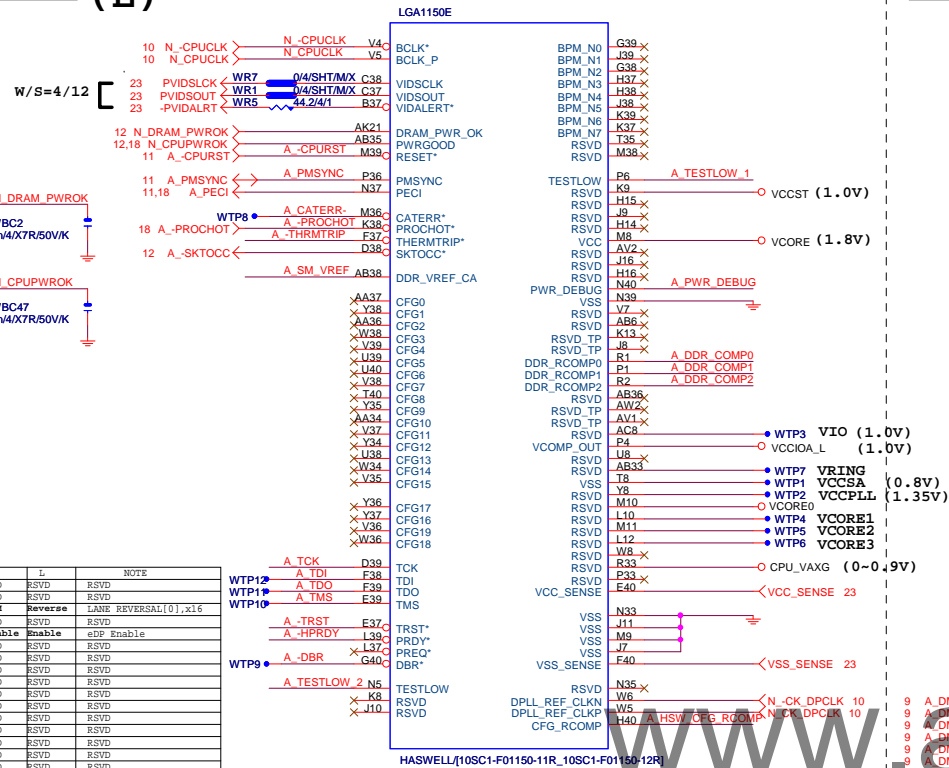


BLOCK DIAGRAM





LGA1150 (E)

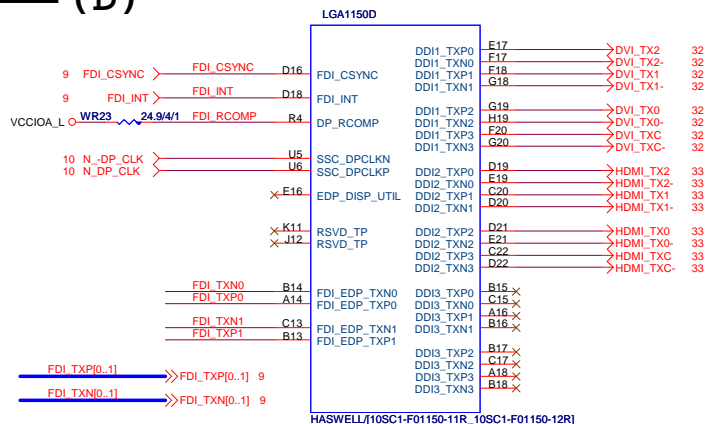


CFG	H	L	NOTE
0	RSVD	RSVD	RSVD
1	RSVD	RSVD	RSVD
2	NORM	Reverse	LANS REVERSAL[0,x16]
3	RSVD	RSVD	RSVD
4	Disable	Enable	cpu Enable
7	RSVD	RSVD	RSVD
8	RSVD	RSVD	RSVD
9	RSVD	RSVD	RSVD
10	RSVD	RSVD	RSVD
11	RSVD	RSVD	RSVD
12	RSVD	RSVD	RSVD
13	RSVD	RSVD	RSVD
14	RSVD	RSVD	RSVD
15	RSVD	RSVD	RSVD
16	RSVD	RSVD	RSVD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

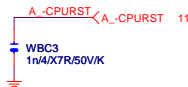
LGA1155 (C)



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

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

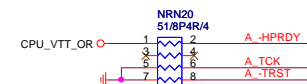
**-CPURST**



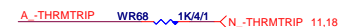
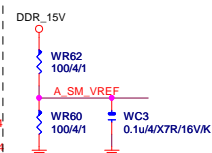
## CPU SVID



CPU	PU/PD
-----	-------



SM	REF
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LGA1150 (A)

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	AV19	DDR0_MA11	DDR0_D11	AD39	MDA12		
		MAAA12	AY10	DDR0_MA12	DDR0_D12	AF38	MDA8		
		MAAA13	AY19	DDR0_MA13	DDR0_D13	AF37	MDA14		
		MAAA14	AT20	DDR0_MA14	DDR0_D14	AK40	MDA15		
		MAAA15	AU21	DDR0_MA15	DDR0_D15	MDA17			
				DDR0_D16	PM38	MDA21			
		MODT_A0	AW10	DDR0_ODT0	DDR0_D17	PM39	MDA18		
		MODT_A1	AY8	DDR0_ODT1	DDR0_D18	AP39	MDA19		
		MODT_A2	AW9	DDR0_ODT2	DDR0_D19	AM37	MDA20		
		MODT_A3	AU8	DDR0_ODT3	DDR0_D20	AM38	MDA16		
					DDR0_D21	AP37	MDA22		
					DDR0_D22	PM37	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		
		SBAA0	AY12	DDR0_BA0	DDR0_D31	AY6	MDA33		
7		SBAA1	AT21	DDR0_BA1	DDR0_D32	AY8	MDA37		
7		SBAA2	AT21	DDR0_BA2	DDR0_D33	AY4	MDA37		
					DDR0_D34	AW4	MDA35		
					DDR0_D35	AW6	MDA36		
		CKEA0	CKEA0	DDR0_CK00	DDR0_D36	AW4	MDA32		
7		CKEA1	CKEA1	DDR0_CK01	DDR0_D37	AW4	MDA38		
7		CKEA2	CKEA2	DDR0_CK02	DDR0_D38	AW4	MDA39		
7		CKEA3	CKEA3	DDR0_CK03	DDR0_D39	AR1	MDA41		
					DDR0_D40	AR4	MDA42		
		-CSA0	-CSA1	DDR0_CS_N0	DDR0_D41	AN1	MDA43		
7		-CSA1	AY9	DDR0_CS_N1	DDR0_D42	AN2	MDA44		
7		-CSA2	AW10	DDR0_CS_N2	DDR0_D43	AN4	MDA44		
7		-CSA3	-CSA3	DDR0_CS_N3	DDR0_D44	AN2	MDA45		
					DDR0_D45	AN2	MDA46		
7		DCLKA0	DCLKA0	DDR0_CLK_P0	DDR0_D46	AN1	MDA47		
7		-DCLKA0	-DCLKA0	DDR0_CLK_N0	DDR0_D47	AL1	MDA49		
7		DCLKA1	DCLKA1	DDR0_CLK_P1	DDR0_D48	AL3	MDA50		
7		-DCLKA1	-DCLKA1	DDR0_CLK_N1	DDR0_D49	AL3	MDA50		
7		DCLKA2	DCLKA2	DDR0_CLK_P2	DDR0_D50	AL4	MDA51		
7		-DCLKA2	-DCLKA2	DDR0_CLK_N2	DDR0_D51	AL2	MDA52		
7		DCLKA3	DCLKA3	DDR0_CLK_P3	DDR0_D52	AL3	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	MDA64		
					DDR0_D64	AE3	MDA65		
			AW20	RSVD	DDR0_D65	AE3	MDA66		
			AW27C	RSVD	DDR0_D66	AE3	MDA67		
					DDR0_D67	AE3	MDA68		
7		-SCASA	-SCASA	DDR0_CAS*	DDR0_D68	AE3	MDA69		
			AU9C		DDR0_D69	AE3	MDA70		
7.8		-DDR3_RST	WR61 D4/SH/TMX	AKK22	DDR0_RESET*	AE32	DDSA0		
			WC4			AE38	DDSA1		
			0.1uA/XCTR/16V/KX			AN38	DDSA2		
						AN38	DDSA3		
						AW5	DDSA4		
						AE2	DDSA5		
						AE2	DDSA6		
						AE2	DDSA7		
						AE32	DDSA8		
						AE32	DDSA9		
						AE32	DDSA10		
						AE32	DDSA11		
						AE32	DDSA12		
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						AE32	DDSA99		
						AE32	DDSA100		

HASWELL/[10SC1-F01150-11R\_10SC1-F01150-12R]

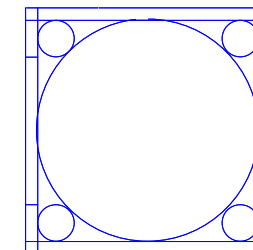
LGA1150 (B)

LGA1150B			
MAA80	AL19	DDR1_MA0	DDR1_D00
MAA81	AK23	DDR1_MA1	DDR1_D01
MAA82	AM22	DDR1_MA2	DDR1_D02
MAA83	AM23	DDR1_MA3	DDR1_D03
MAA84	AM23	DDR1_MA4	DDR1_D04
MAA85	AP23	DDR1_MA5	DDR1_D05
MAA86	AY24	DDR1_MA6	DDR1_D06
MAA87	AV25	DDR1_MA7	DDR1_D07
MAA88	AU26	DDR1_MA8	DDR1_D08
MAA89	AP18	DDR1_MA9	DDR1_D09
MAA90	AW25	DDR1_MA10	DDR1_D10
MAA91	AY25	DDR1_MA11	DDR1_D11
MAA92	AV26	DDR1_MA12	DDR1_D12
MAA93	AM15	DDR1_MA13	DDR1_D13
MAA94	AV27	DDR1_MA14	DDR1_D14
MAA95	AY28	DDR1_MA15	DDR1_D15
MODT_B0	AM17	DDR1_ODT0	DDR1_D16
MODT_B1	AM16	DDR1_ODT1	DDR1_D17
MODT_B2	AM16	DDR1_ODT2	DDR1_D18
MODT_B3	AK15	DDR1_ODT3	DDR1_D19
			DDR1_D20
			DDR1_D21
			DDR1_D22
			DDR1_D23
			DDR1_D24
			DDR1_D25
			DDR1_D26
			DDR1_D27
			DDR1_D28
			DDR1_D29
			DDR1_D30
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			DDR1_D110
			DDR1_D111
			DDR1_D112

HASWELL/10SC1-F01150-11R\_10SC1-F01150-12R

**LGA1150 (CR)**

LGA1150  
ILM\_BP/1156/CSP/12KRC-0F0001-52R\_12KRC-0F0001-51R]



## 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]



**(F, J)**



**(G,H,I)**



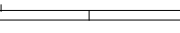
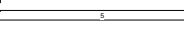
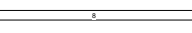
## VCORE

C0805-MASK

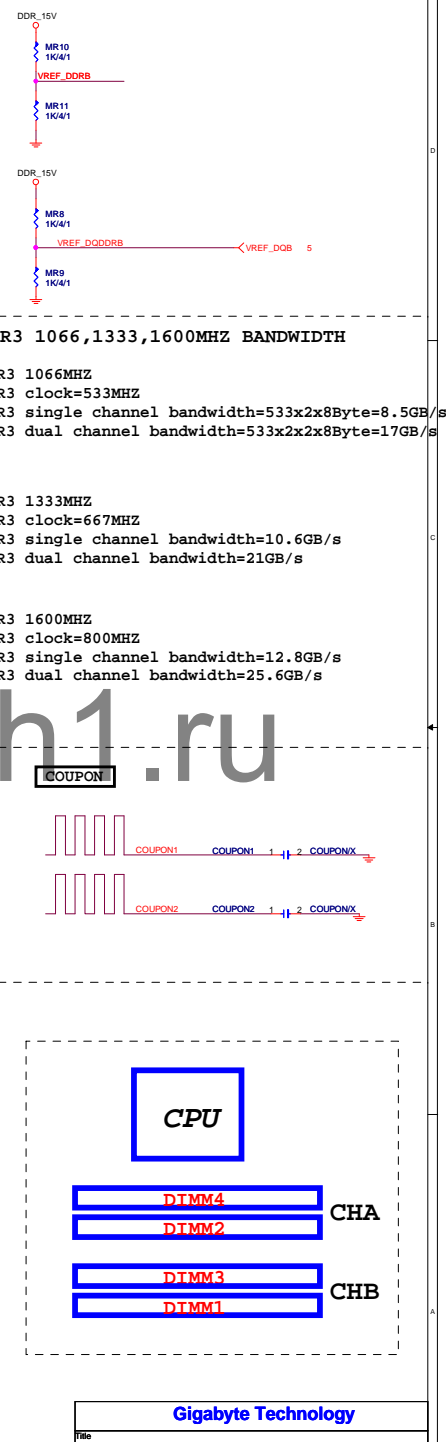
(x9)













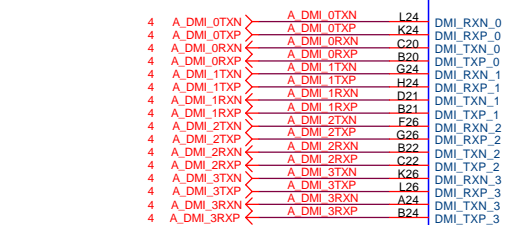
PCH

(B)

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

USB2.0 : 12/5/7/5/12 (breakout min 8/4/4/4/8)

Impedance=85 +- 15%



VCC1\_5\_PCH  
W=8 mil out of PCH  
S=15 mil to other signals

PCIEX1 port1

PCIEX1 port2

LAN RTL8111F-VL

ITE8892 PCI Bridge

PCIEX4 port1

PCIEX4 port2

PCIEX4 port3

H81:PCIE 7/8 N/A

PCIEX4 port4

放靠近 Device &amp; PCI-E Slot

DH82B85/S(10HB1-030B85-20R)

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

usb2.0 5/7/5//12

usb3.0 5/7/5//20

Impedance=85 +- 15%

PCH

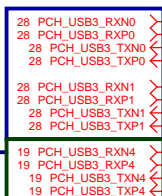
(F)

Port要對應

B85/H81: 6/7 N/A

H81:12/13 N/A

H81:USB3.0 N/A



VCC3

NR62

NR63

8.2K/4/X

8.2K/4/X

AK28

AT34

PCHF

FDILINK

USB3

FDI\_RXN\_0

FDI\_RXP\_0

FDI\_TXN\_0

FDI\_TXP\_0

FDI\_RXN\_1

FDI\_RXP\_1

FDI\_TXN\_1

FDI\_TXP\_1

FDI\_CS

FDI\_INT

FDI\_RCOMP

USB3\_RXN\_0

USB3\_RXP\_0

USB3\_TXN\_0

USB3\_TXP\_0

USB3\_RXN\_1

USB3\_RXP\_1

USB3\_TXN\_1

USB3\_TXP\_1

USB3\_RXN\_4

USB3\_RXP\_4

USB3\_TXN\_4

USB3\_TXP\_4

USB3\_RXN\_5

USB3\_RXP\_5

USB3\_TXN\_5

USB3\_TXP\_5

TACH6\_GP70

TACH7\_GP71

DH82B85/S(10HB1-030B85-20R)

FDI\_TXP[0..1]

FDI\_TXN[0..1]

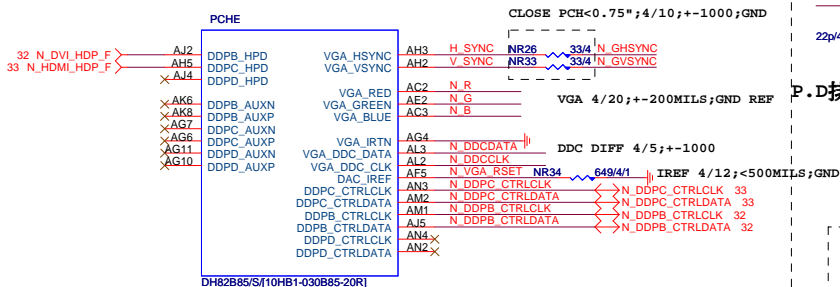
USB3.0:20/5/7/5/20 (breakout min 8/4/4/4/8) ; ONLY 3 VIAS  
Impedance=85 +- 17.5%  
Back Panel < 10000 MILS  
Front Panel < 6000 MILS

Mount for integrated clock Generation Mode



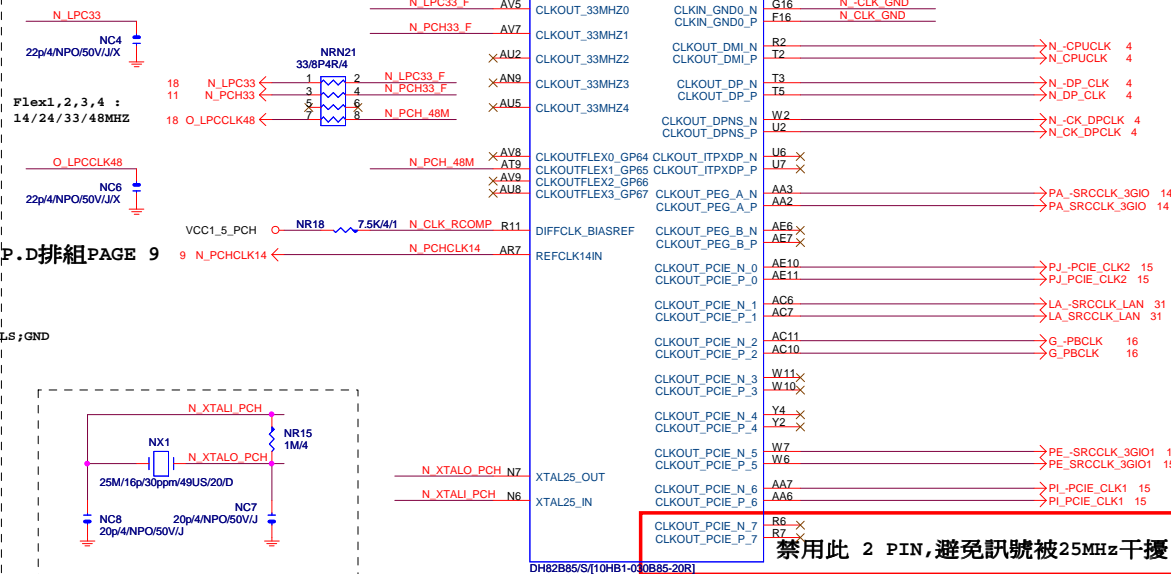


**PCH (E)**



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)**



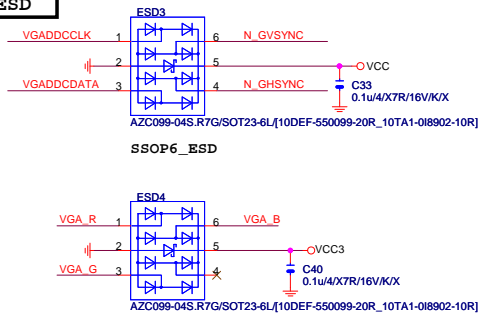
X'TAL 25MHz須參考GND  
避免造成RGB noise  
走線遠離其他40mil以上

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

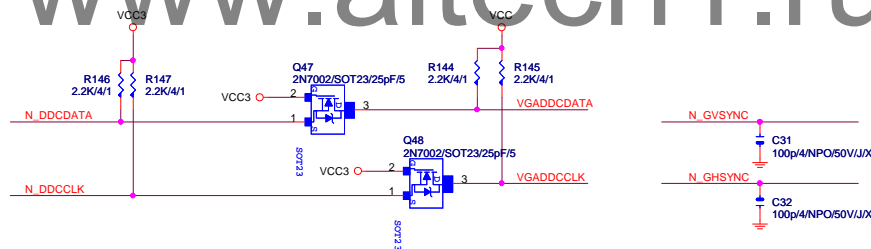
PCH CLK PD
------------



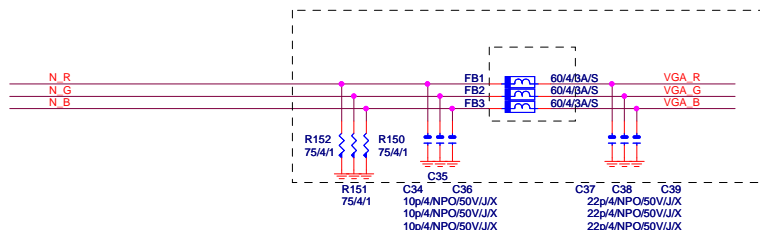
## VGA ESD



## VGA DDC

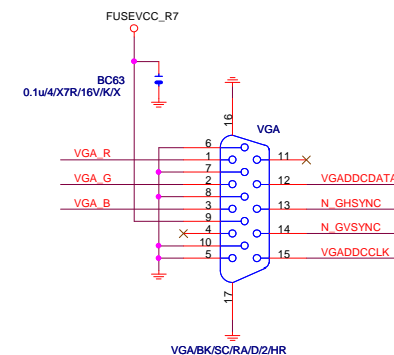


## VGA DDC



Close to VGA connector

## VGA CONNECTOR

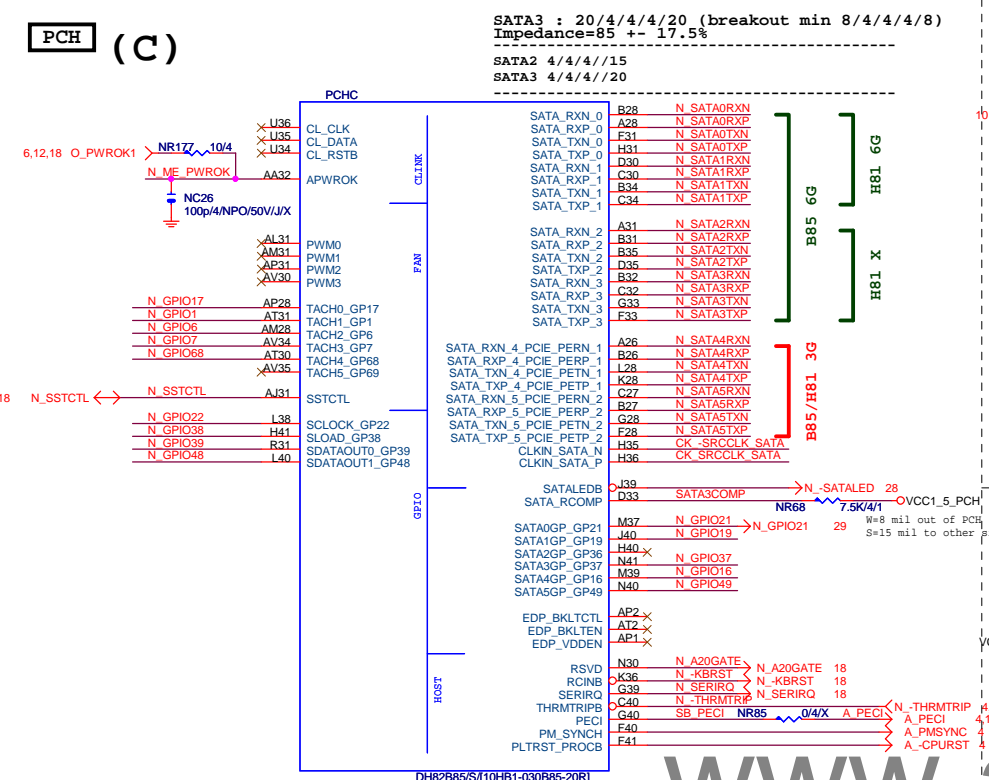


## Gigabyte Technology

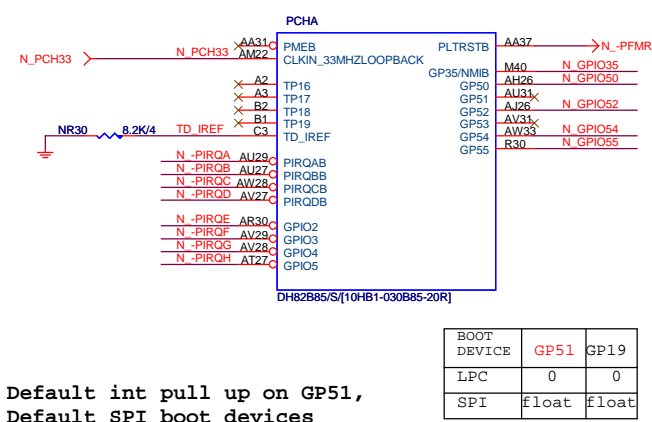
Title			
PCH DISPLAY ,CLK BUFFER			
Size	Document Number		Rev
Custom	GA-B85-HD3-SI		2.11
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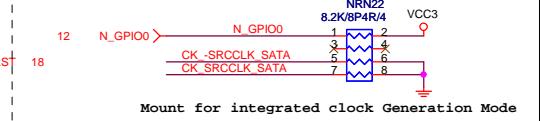
**PCH (C)**



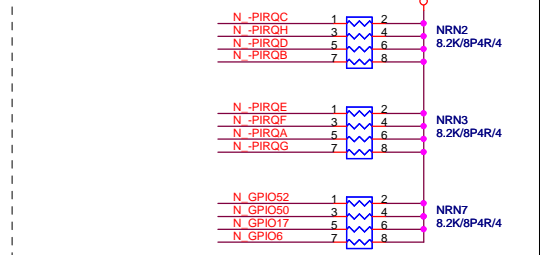
**PCH (A)**



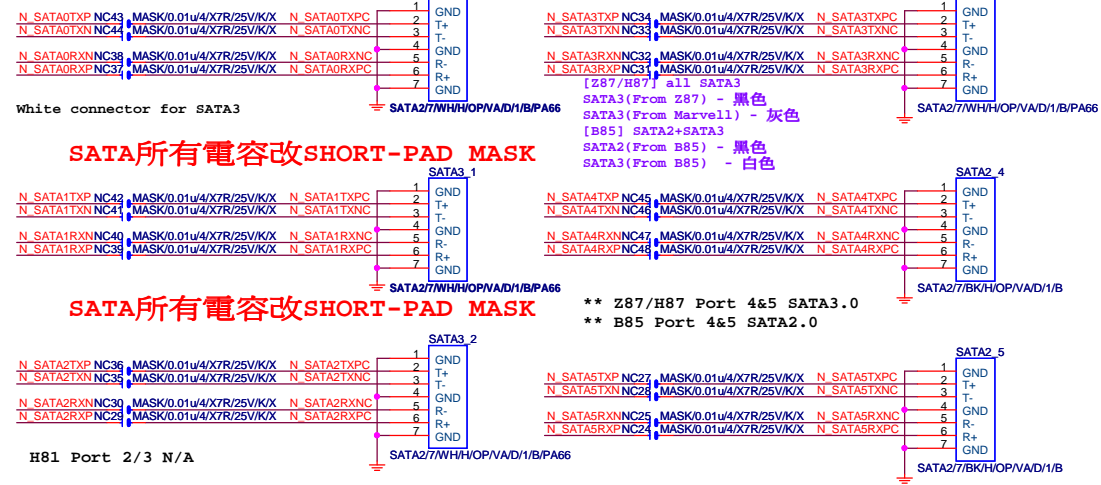
PCH CLK PD



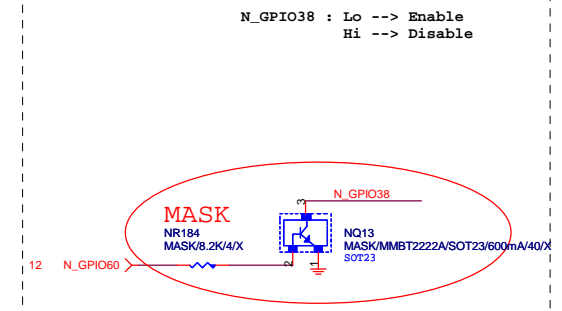
PCH PU/PD



## 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
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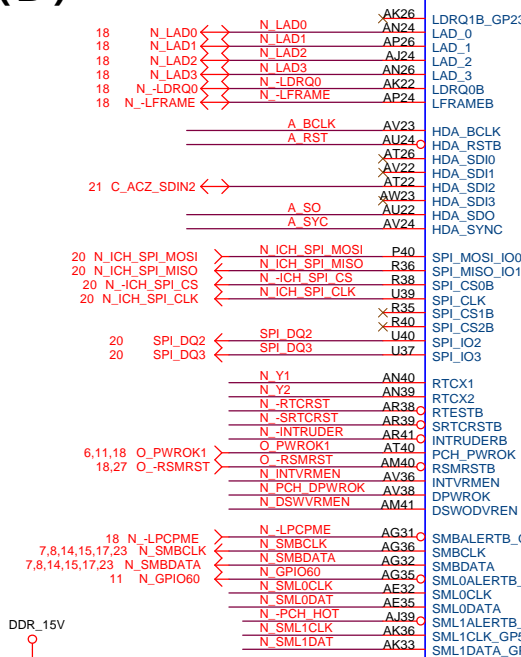


# PCH

(D)

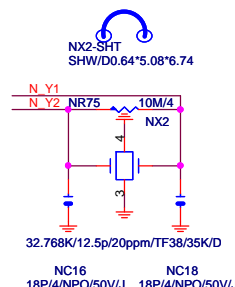


## PCHD

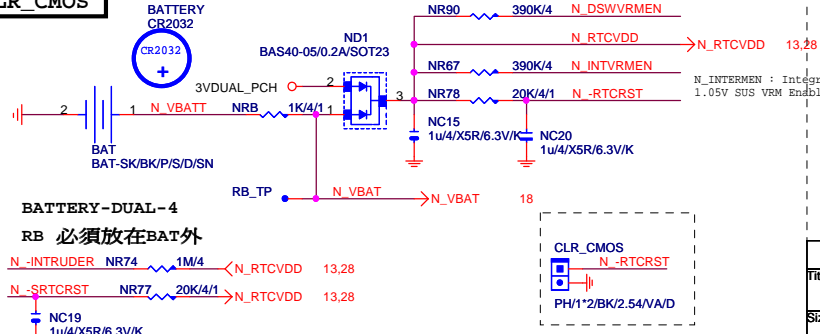


DH82B85/S[10HB1-030B85-20R]

32.768KHZ



CLR\_CMOS

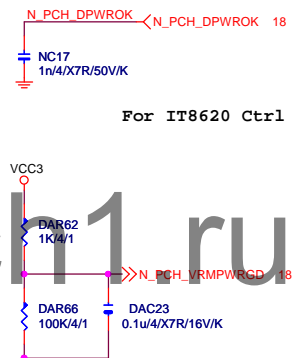


ACZ\_SDOUT

N/A

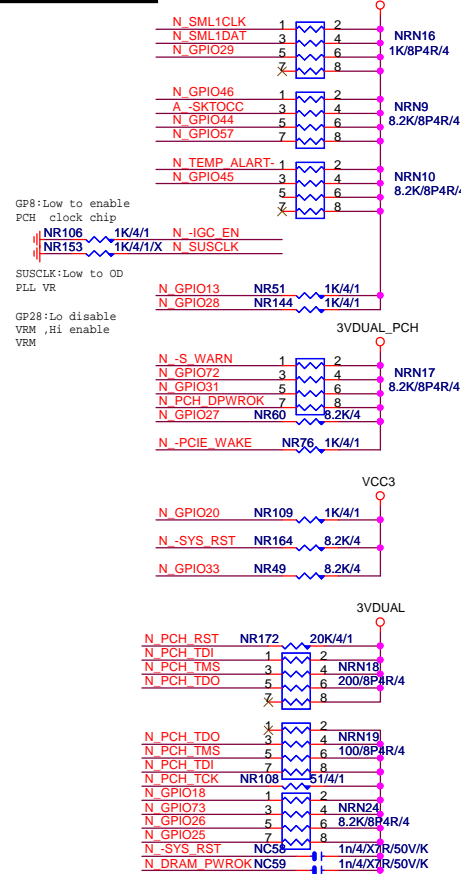
PCH\_DPWROK

At least 10ms delay after 3VDUAL\_PCH stable



For IT8620 Ctrl

PCH PU/PD



Gigabyte Technology

PCH GPIO, CTRL, AUDIO

Title	Document Number	Rev
Size	Custom	2.11
Date:	Thursday, November 20, 2014	Sheet 12 of 34

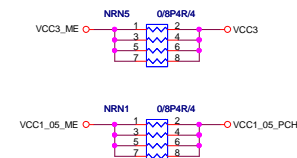
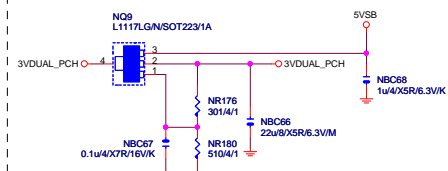
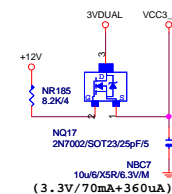
GA-B85-HD3-SI



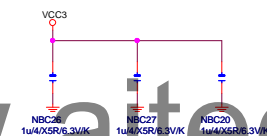
**PCH (I)**



SHT PWR

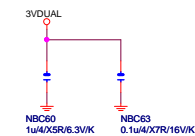
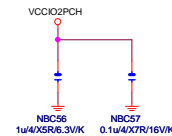


( 3.3V ) ( X3 )

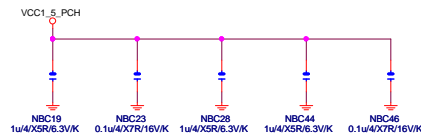


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**(1.05V)(x2) (3.3V) (x2)**

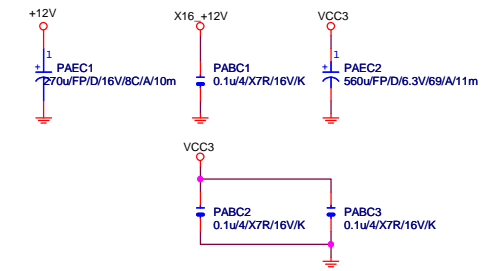


(1.5V) (x5)



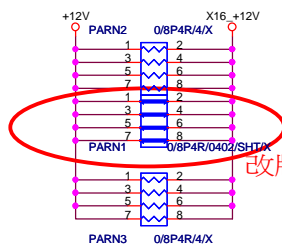


# PCIEX16 CAP



# PCIEX16 PROTECT SHT

+12 protect short-wire test



改版修正

# 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

PCI-E REV:1.1--> 2.5GHZ

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

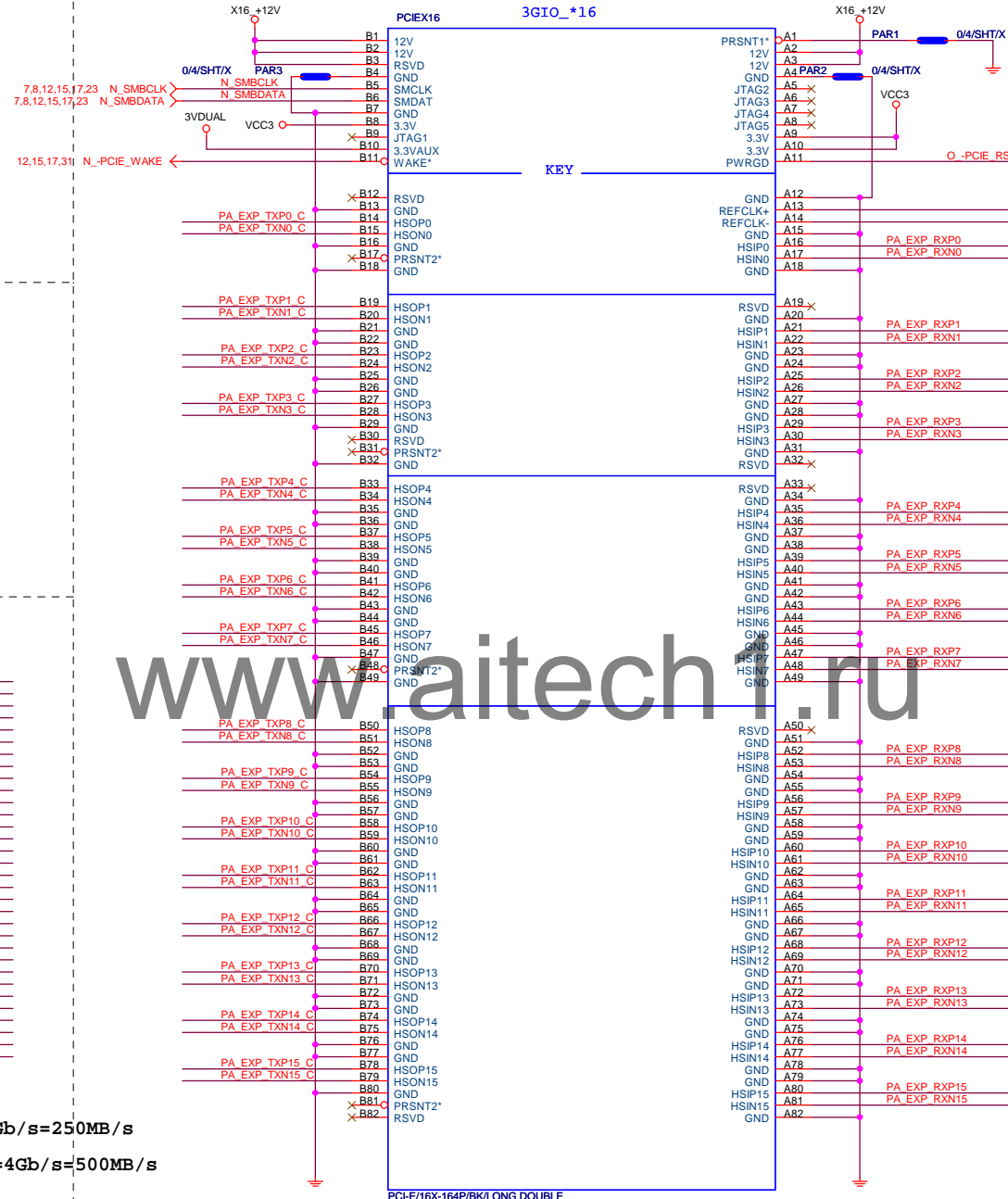
PCE-E X1(雙向) BANDWITH=2.5GHz\*(8b/10b)X2=4Gb/s=500MB/s

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

# PCIEX16 SLOT



PCI-E16X-164P/BK/LONG DOUBLE

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

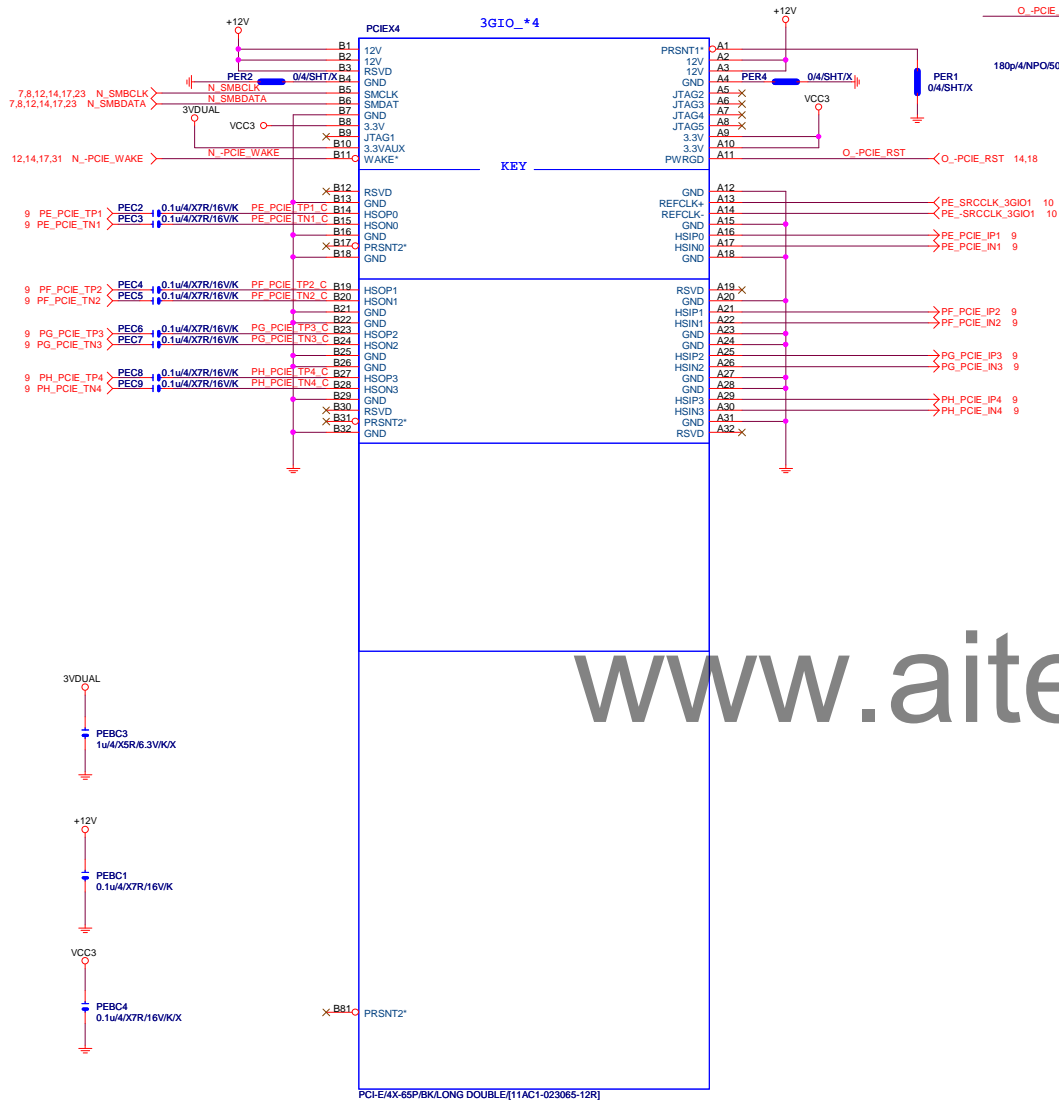
Gigabyte Technology

PCI EXPRESS \* 16

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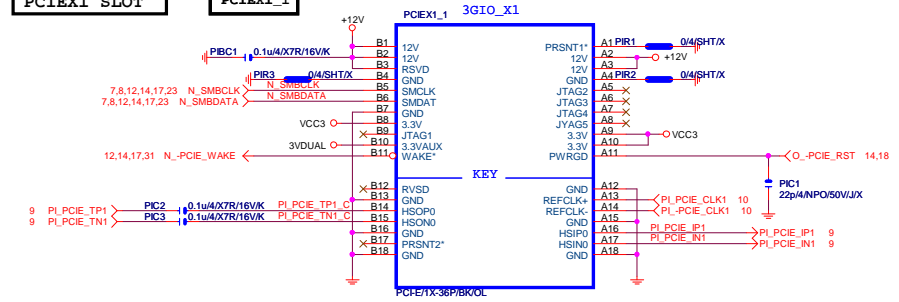


## PCIEX4 SLOT

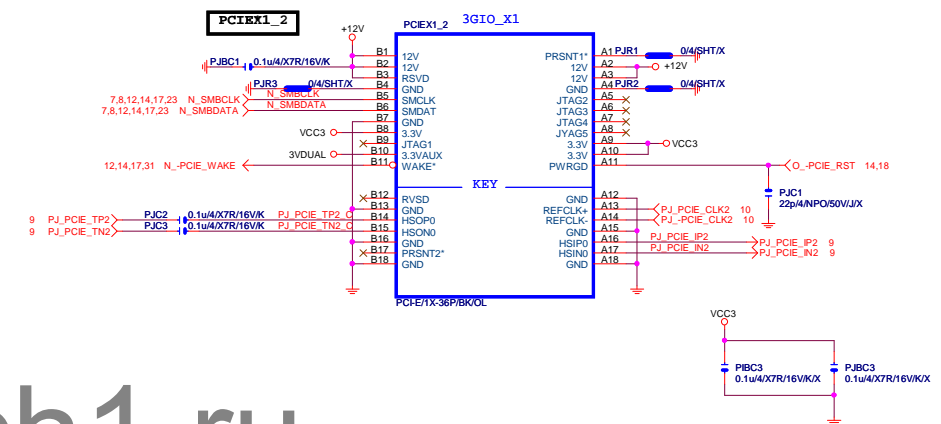


## PCIEX1 SLOT

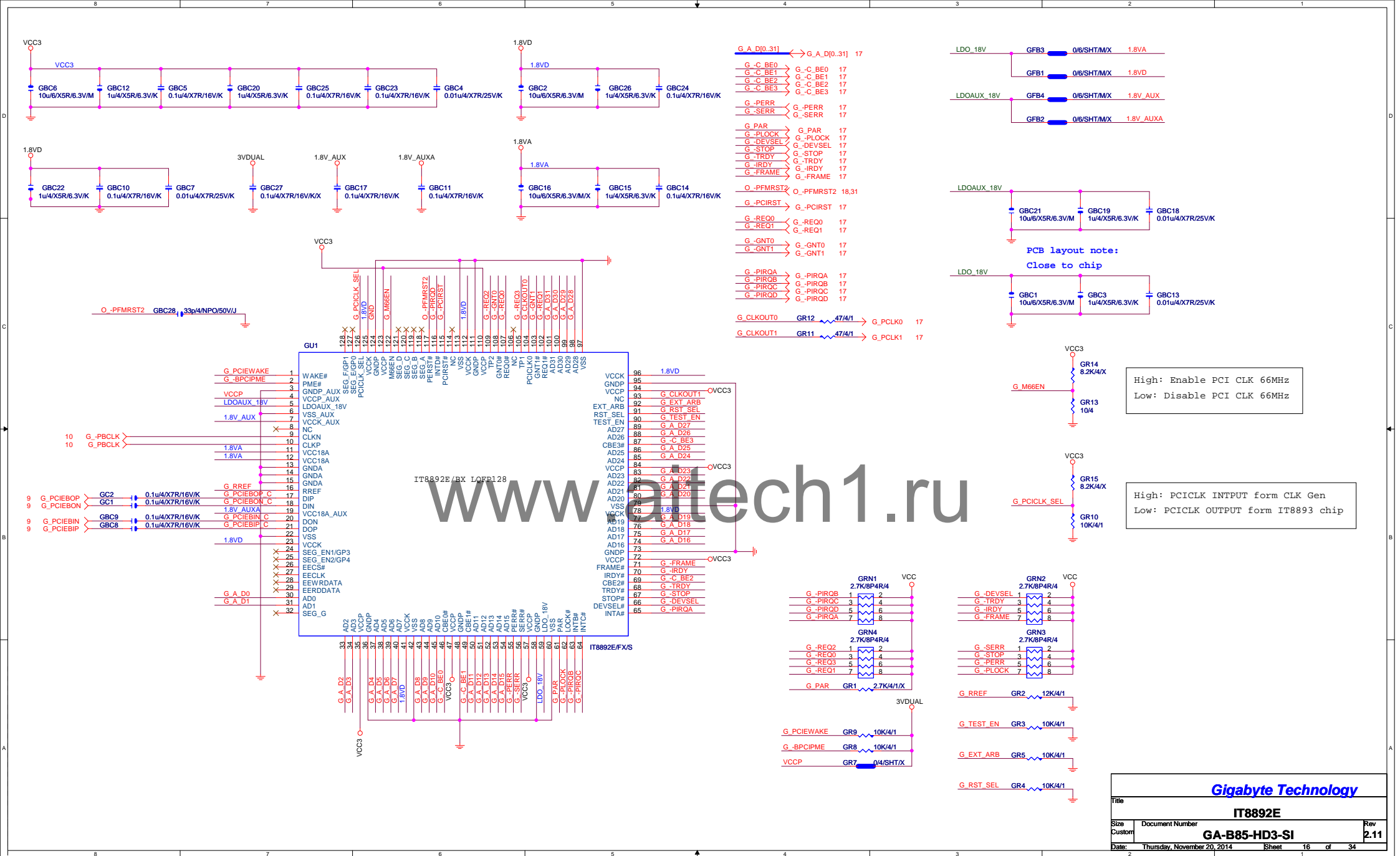
## PCIEX1\_1



## PCIEX1\_2





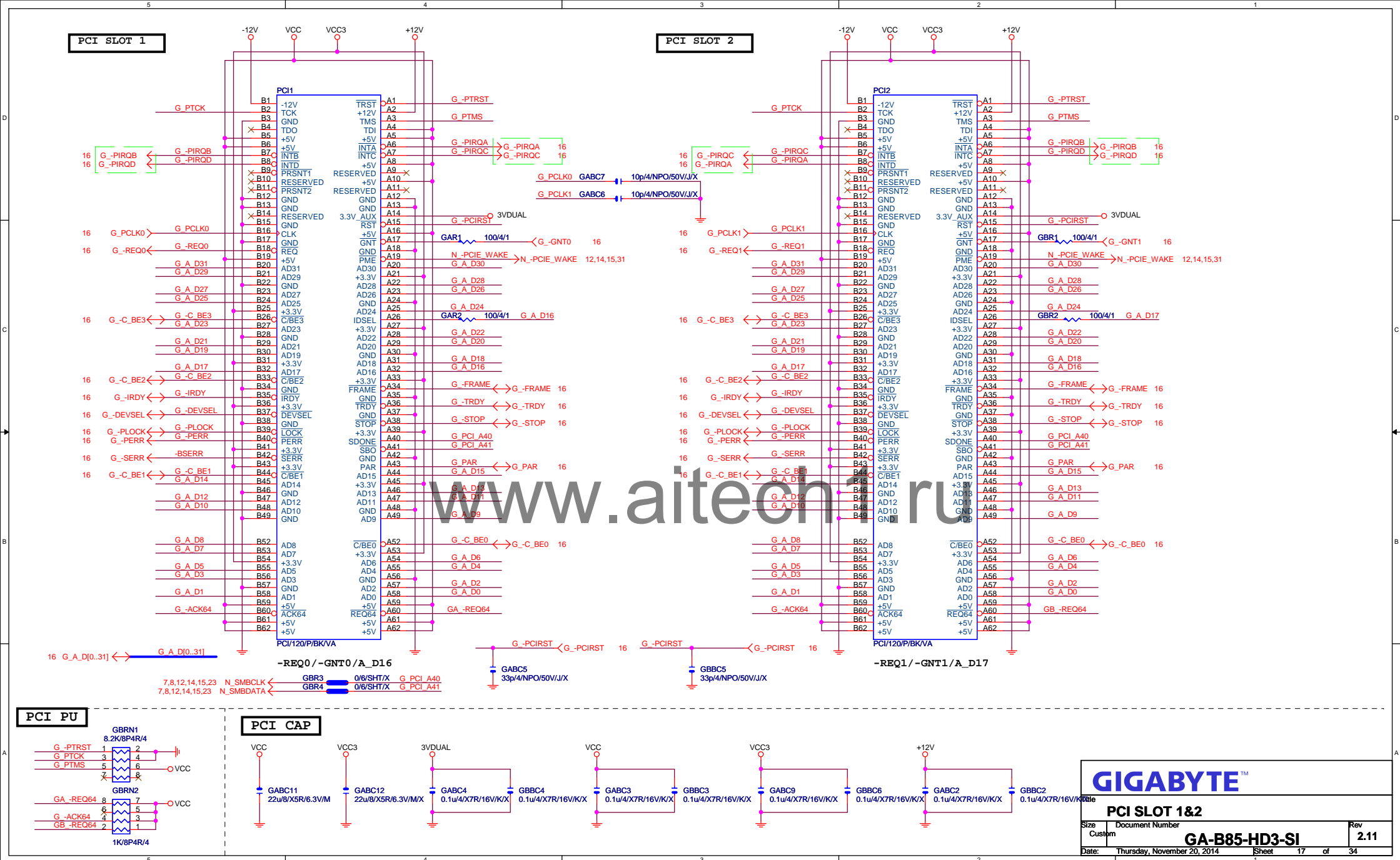


High: Enable PCI CLK 66MHz  
Low: Disable PCI CLK 66MHz

High: PCICLK INPUT form CLK Gen  
Low: PCICLK OUTPUT form IT8893 chip

Gigabyte Technology		
Title		
IT8892E		
Size	Document Number	Rev
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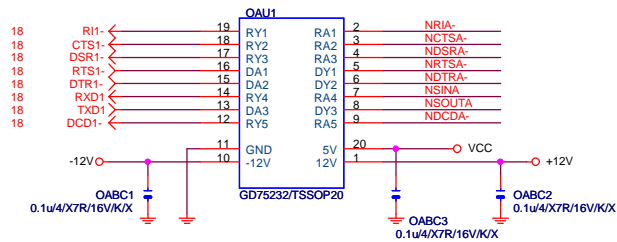




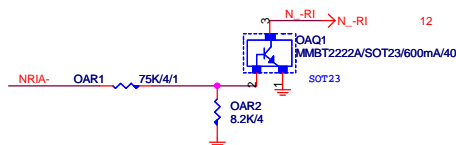




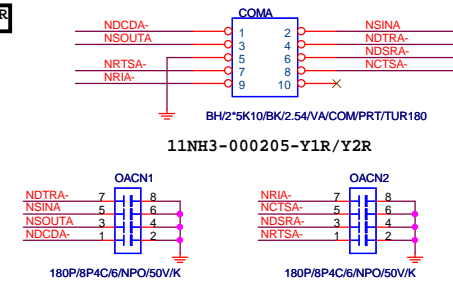
## COMA



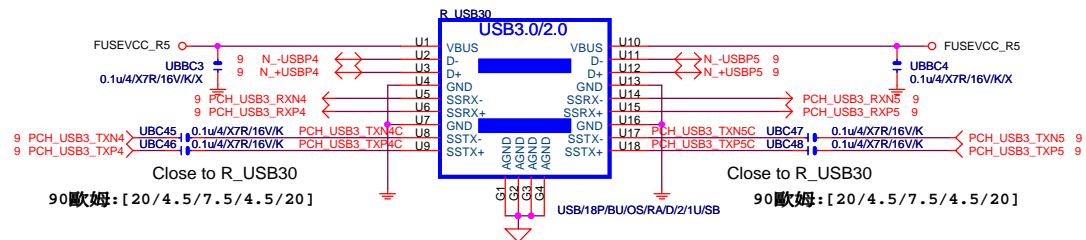
## COM RI



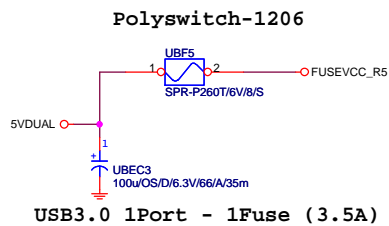
## COM BUFFER



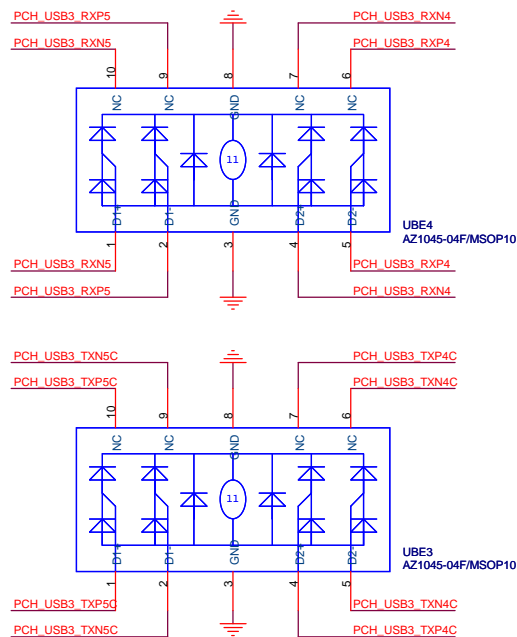
## USB30\_20 CONNECT



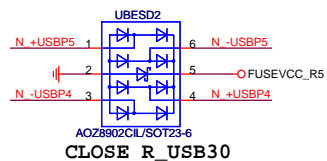
## USB30 PWR



## USB30 ESD PROTECT



## USB20 ESD PROTECT



Gigabyte Technology

File			
COM/ PROHOT/ R_USB			
Size	Document Number	Rev	
Custom	GA-B85-HD3-SI	2.11	
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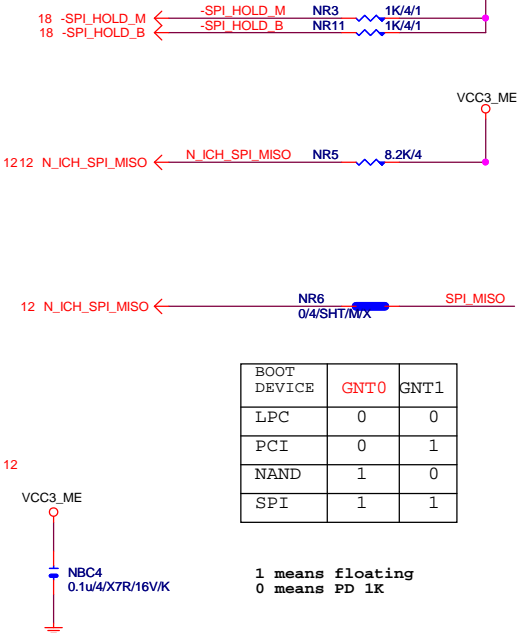
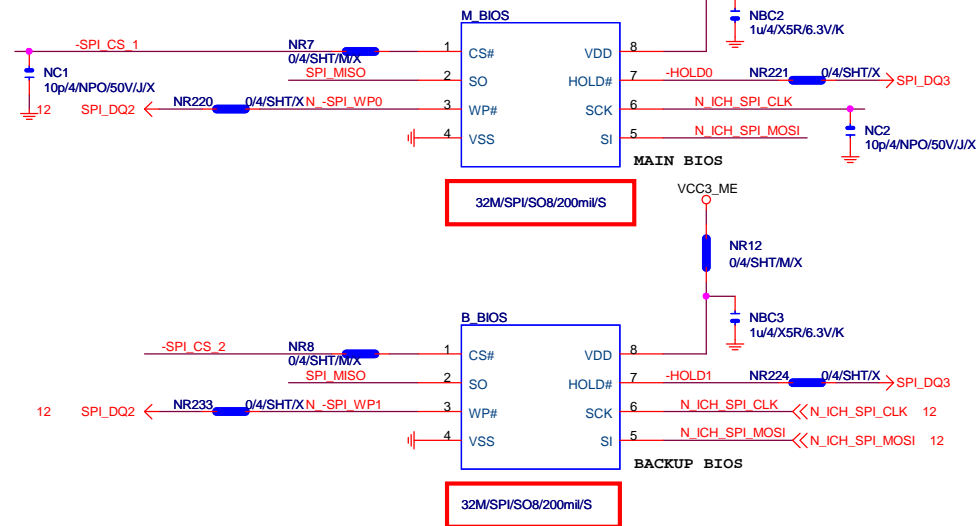


## DUAL BIOS

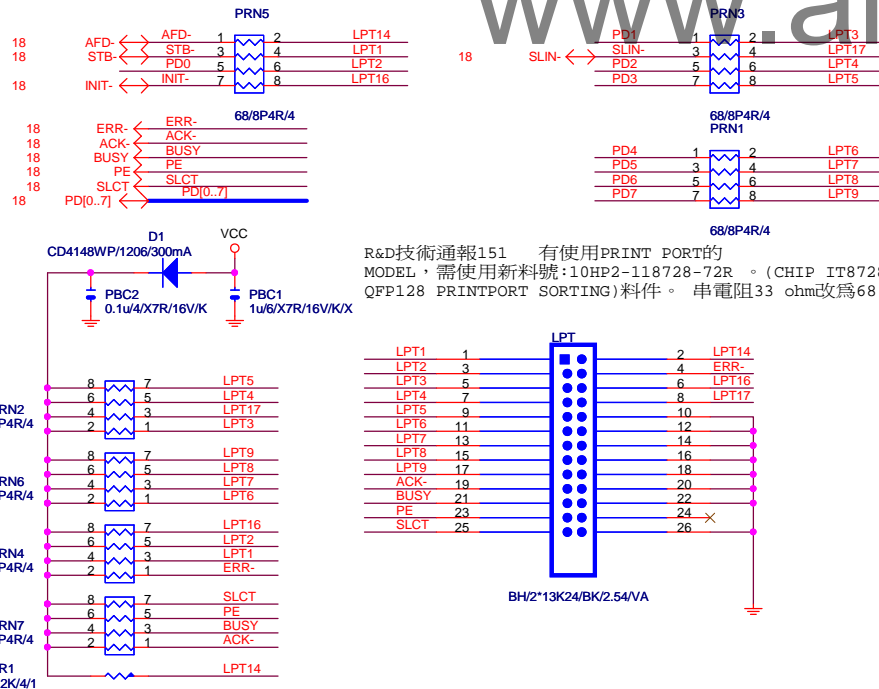
## MOSI For DMI RX Termination Voltage

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

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Title			BIOS
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FOR ON/OFF PLAY

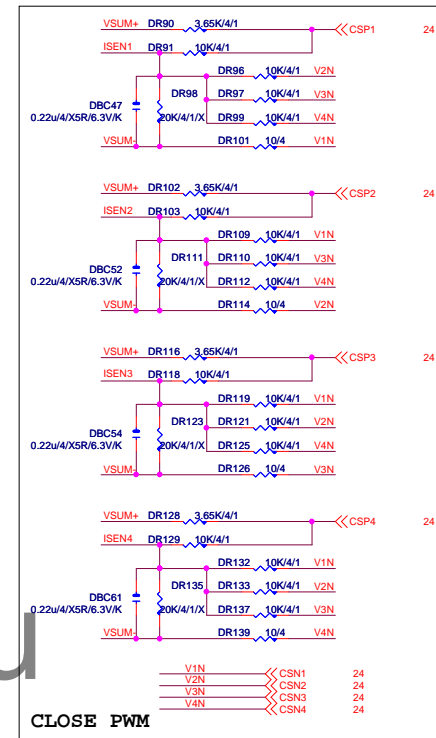
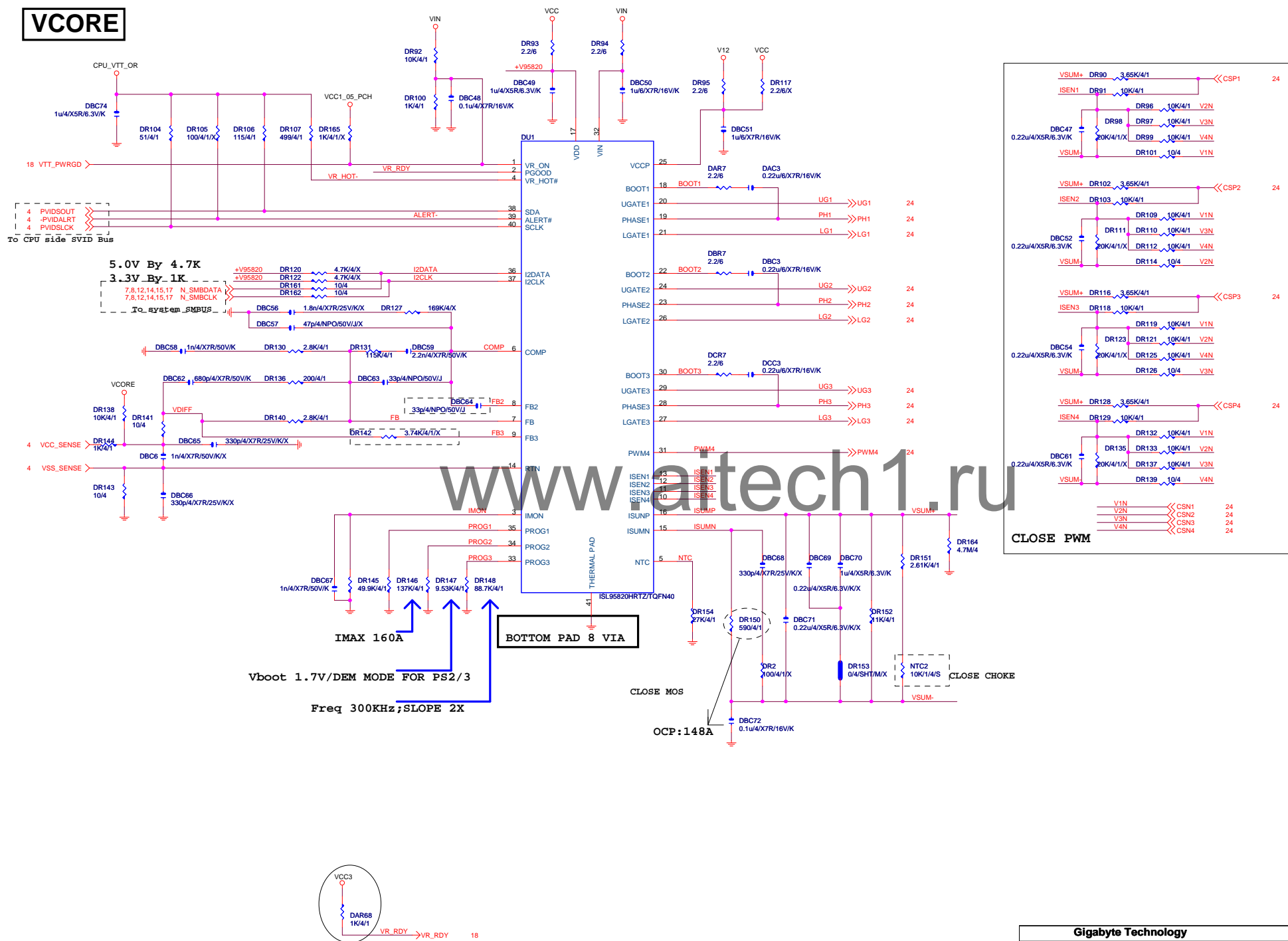


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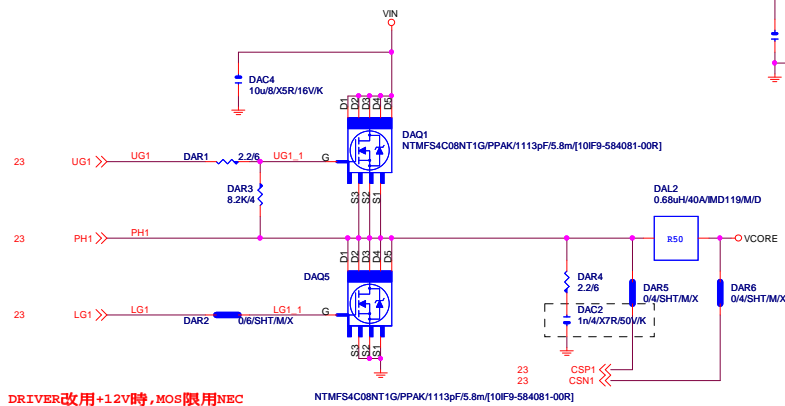


**VCORE**

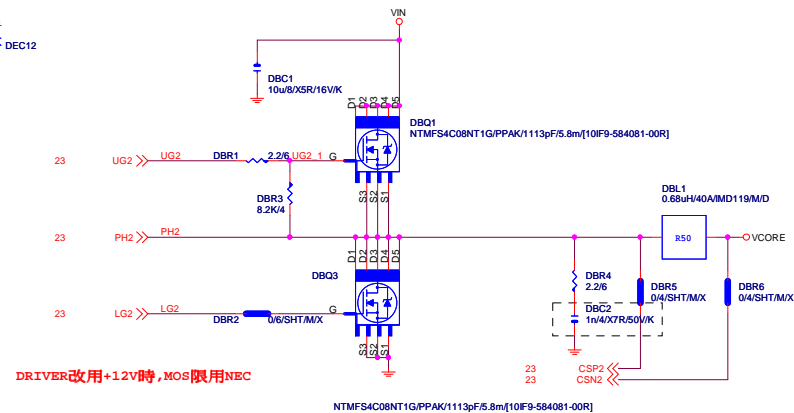


# VCORE

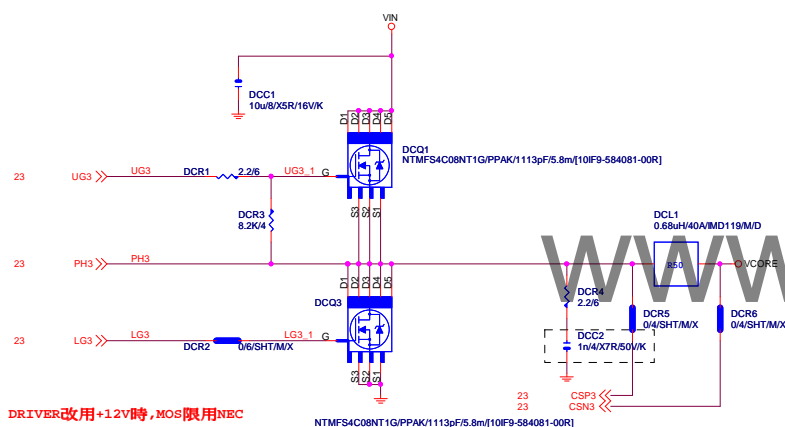
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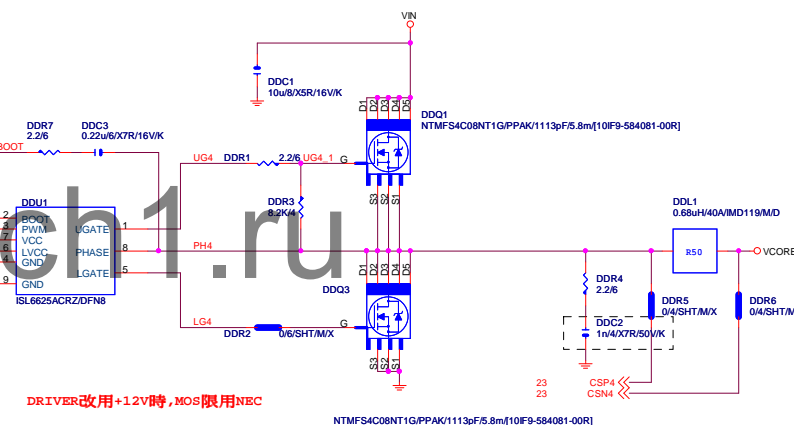
[2]



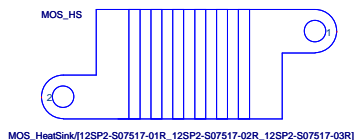
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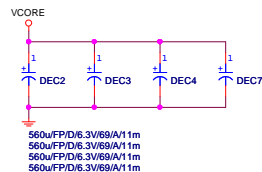
[4]



# MOSFET HEATSINK



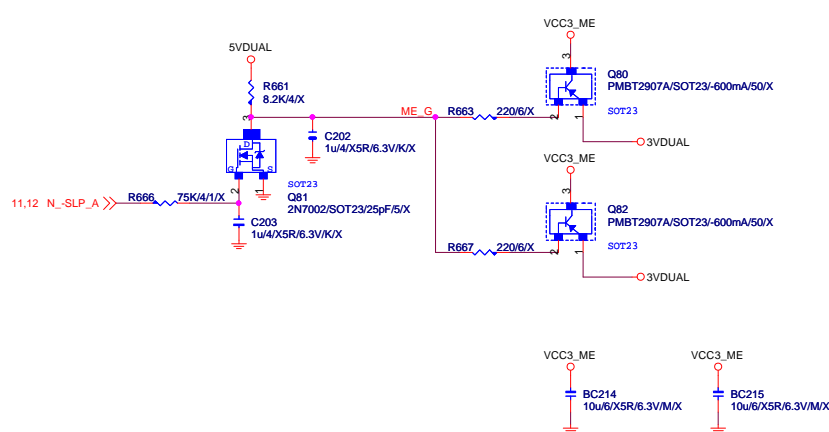
MOS\_HeatSink[12SP2-S07517-01R\_12SP2-S07517-02R\_12SP2-S07517-03R]



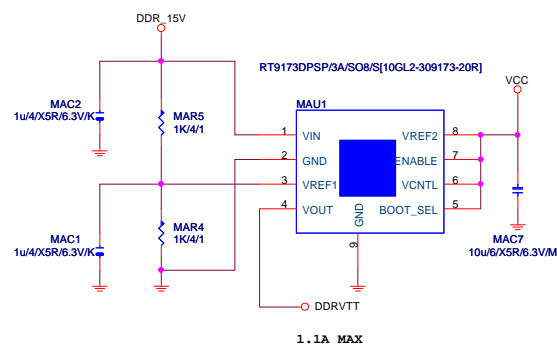
Gigabyte Technology			
Title	ISL95820_2		
Size	Document Number	GA-B85-HD3-SI	
Custom			Rev 2.11
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## VCC3\_ME



DDRVTT



DDR\_EN < DDR\_EN\_CON 18

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

$$.8 * (1 + RS/RO) = V_{out}$$

$$.8 * [1 + 2K/2.2K] =$$

$$.527V$$



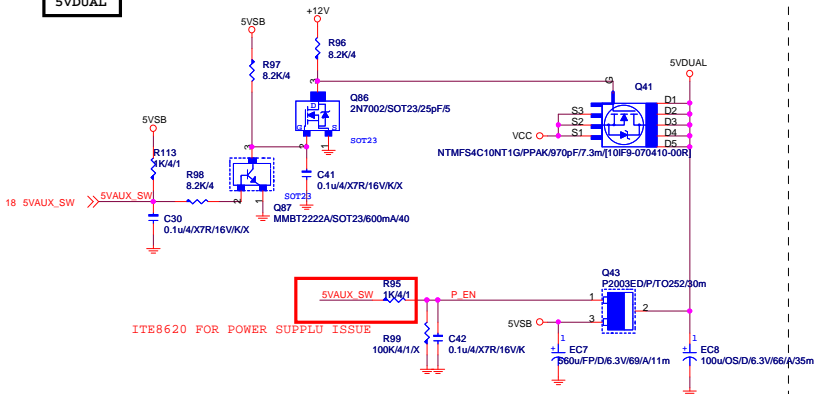
	5	4	3	2	1
D					
C					
B					
A					

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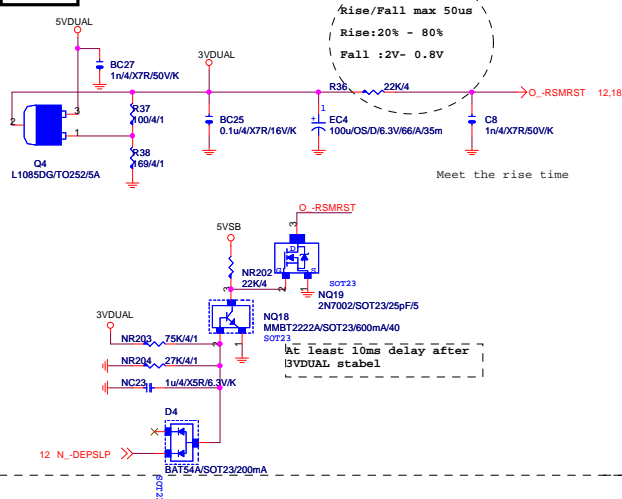
Gigabyte Technology				
Title		CPU CORE VR-2		
Size Custom	Document Number		GA-B85-HD3-SI	Rev 2.11
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	5	4	3	2



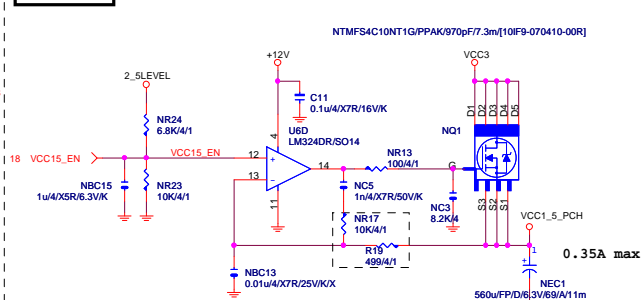
# 5VDUAL



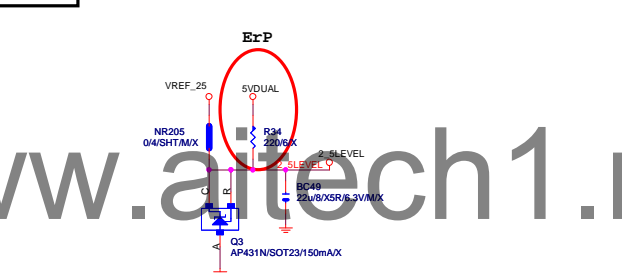
# 3VDUAL



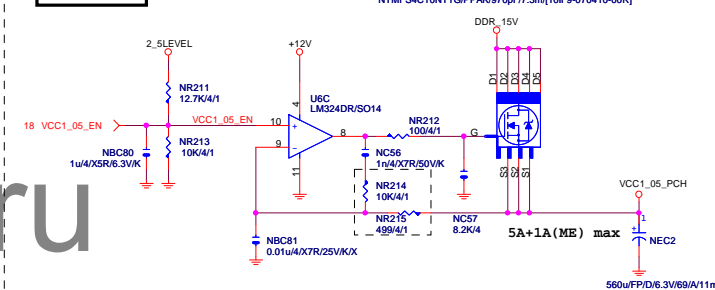
# VCC1\_5\_PCH



# 2\_5LEVEL



# VCC1\_05\_PCH



# PWR\_SEQ



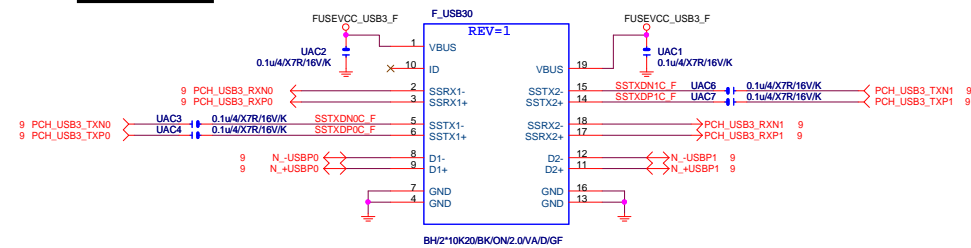
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Gigabyte Technology

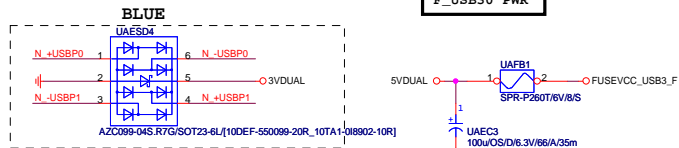
Title			DISCRETE POWER
Size	Document Number	GA-B85-HD3-SI	Rev
Custom			2.11
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## Front USB3.0

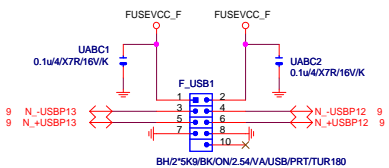


## F\_USB30 PWR

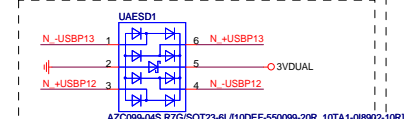


Close to connector

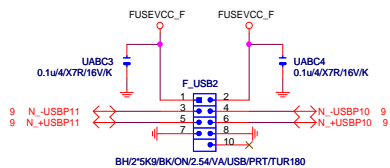
FRONT USB1



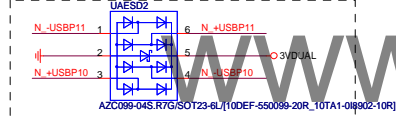
Close to connector



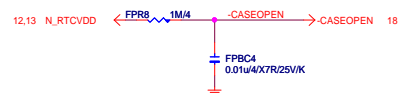
FRONT USB2



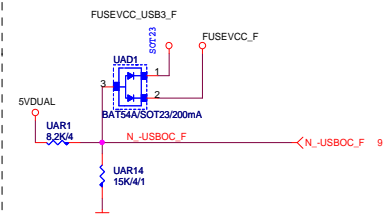
Close to connector



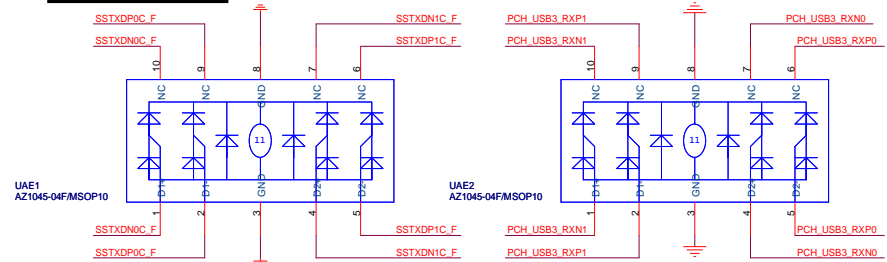
## CASE OPEN



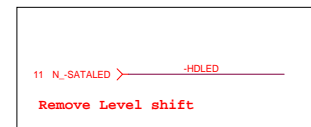
## -USB\_OC\_F



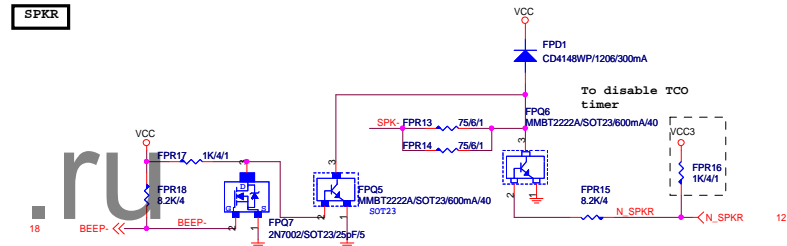
F\_USB30 ESD PROTECT



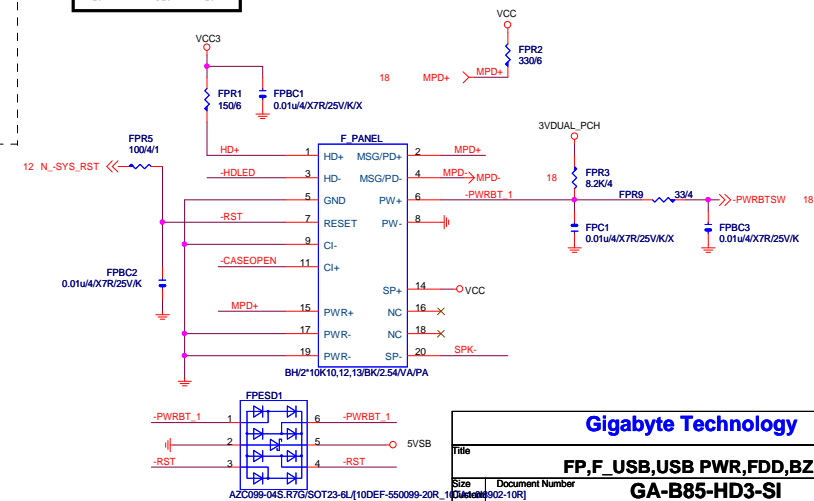
SATA LED



## SPKR



## INTEL FRONT PANEL



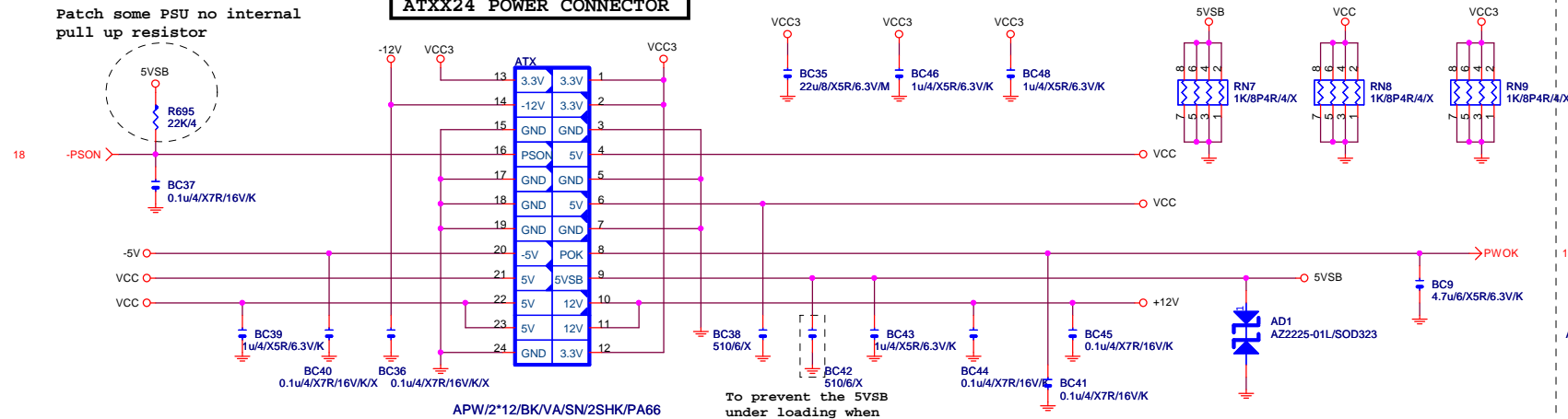
## Gigabyte Technology

Title				FP,F_USB,USB PWR,FDD,BZ			
Size	Document Number			GA-B85-HD3-SI			Rev
101510102-10R							2.11
Date:	Thursday, November 20, 2014			Sheet	28	of	34



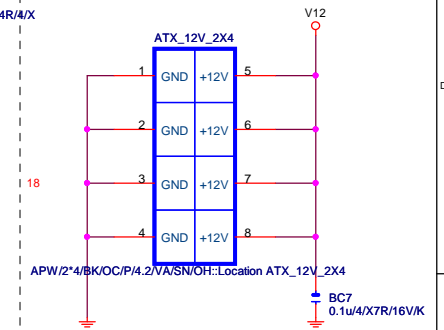
Patch some PSU no internal pull up resistor

## ATXX24 POWER CONNECTOR

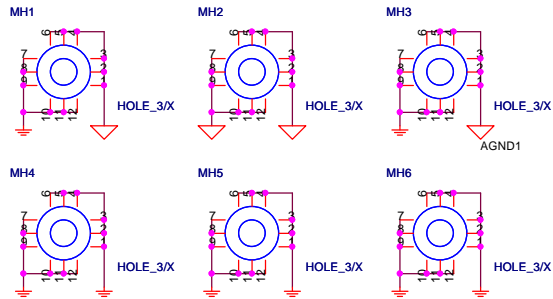


APW/2\*12/BK/VA/SN/2SHK/PA66

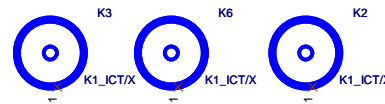
## ATXX4 POWER CONNECTOR



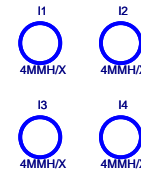
APW/2\*4/BK/OC/P/4.2VA/SN/OH:Location ATX\_12V\_2X4



HOLE\_4-RH-1



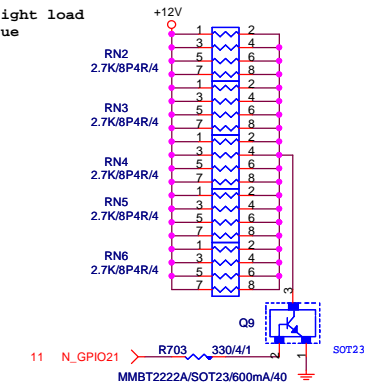
K1-1CT



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

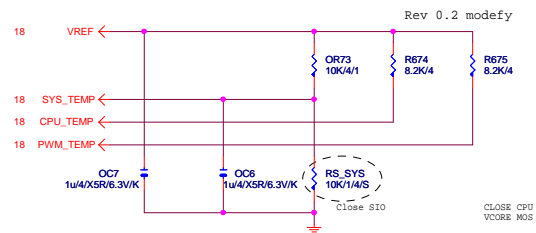
## PWOK PATCH

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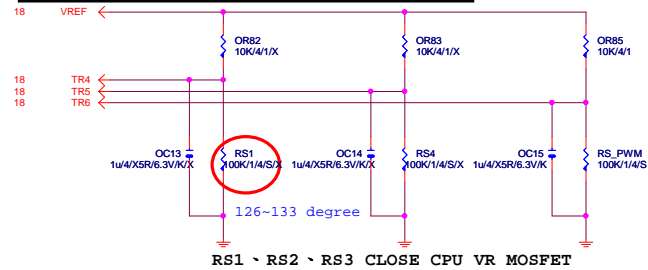
Title	ATX POWER CONNECTOR		
Size	Document Number	GA-B85-HD3-SI	Rev
Custom			2.11
Date:	Thursday, November 20, 2014	Sheet	29 of 34



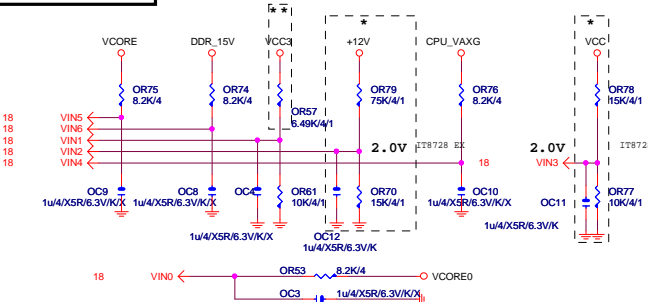
## TEMP H/W MONITOR



-PROCHOT:有mos heartsink不用prochot function

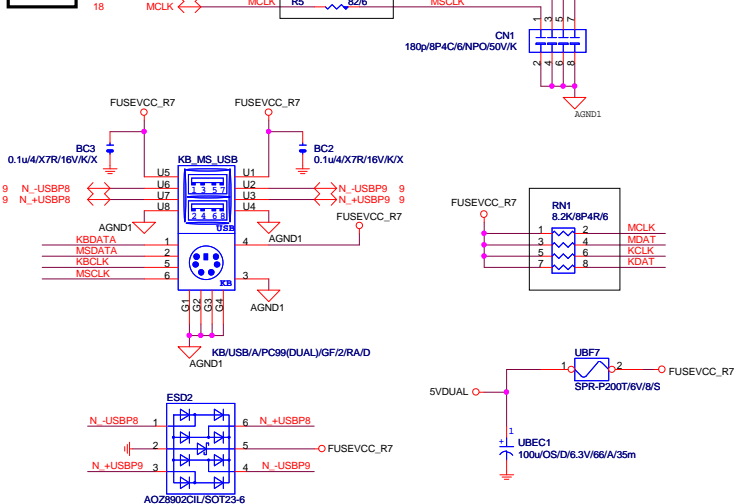


VOLTAGE-- H/W
MONITOR

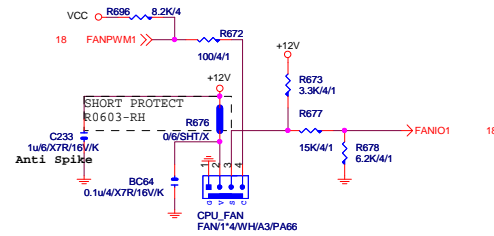


The division voltage of VIN2 & VIN3 must be around 2.9V

## KB/USB

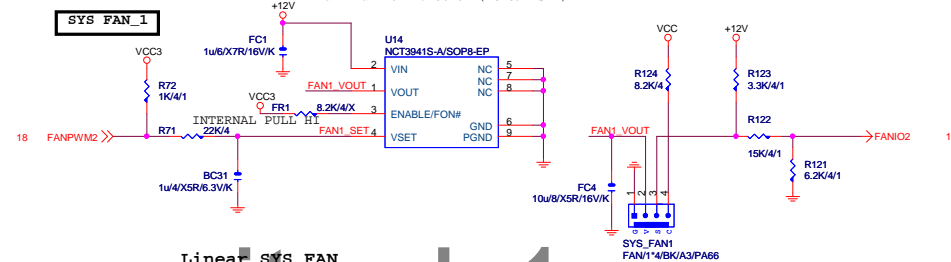


## CPU SMART FAN

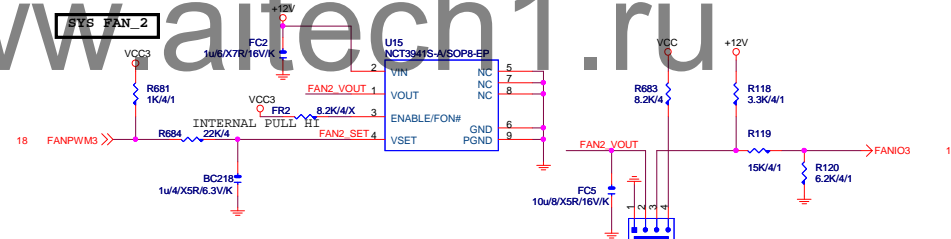


Linear SYS\_FAN

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



Linear SYS\_FAN

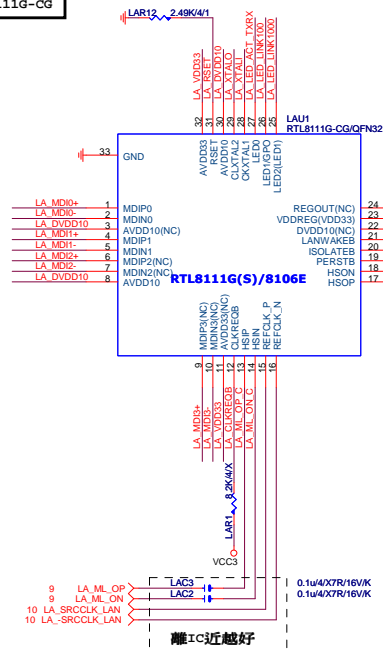


## Linear SYS\_FAN



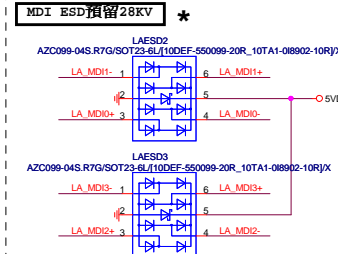


# LAN RTL8111G-CG

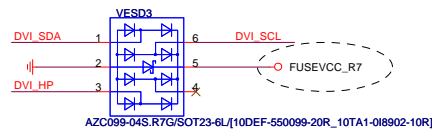
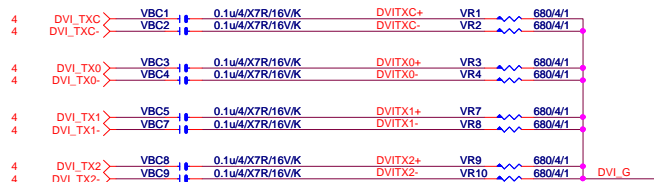


SRCCLK-->50歐姆:[18/4/10/4/18]

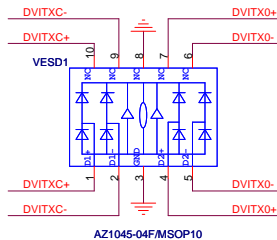
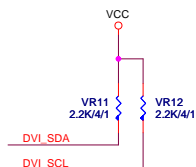
LA\_ML-->80歐姆:[15/5/5/5/15]



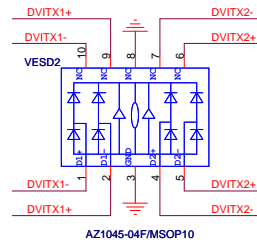
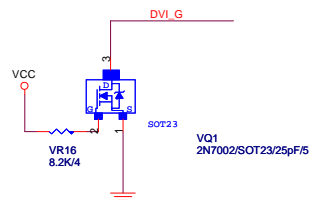




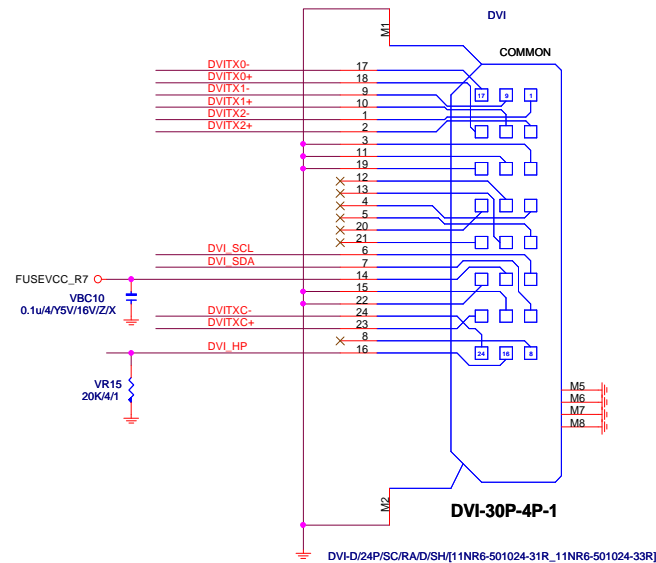
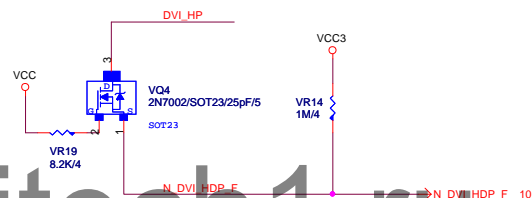
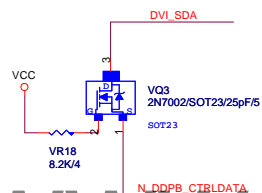
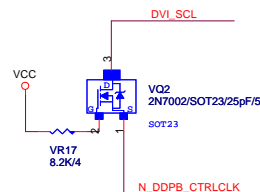
Close to connector



Close to connector



Close to connector



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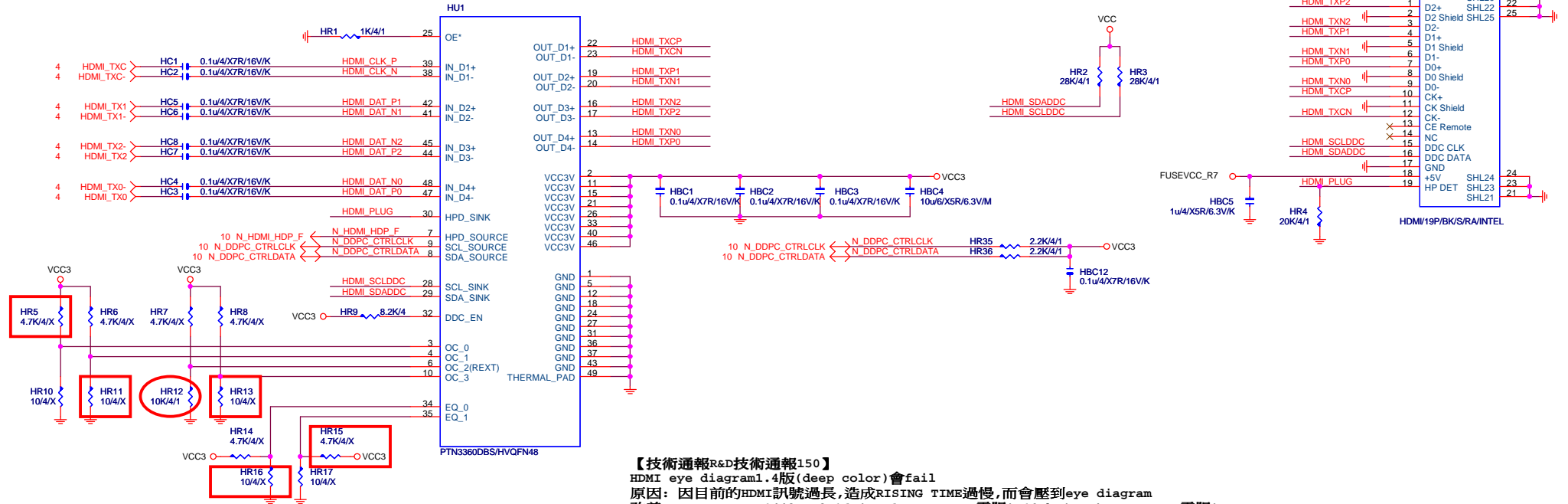
Title		
DVI		
Size	Document Number	Rev
Custom	GA-B85-HD3-SI	2.11
Date:	Thursday, November 20, 2014	Sheet 32 of 34

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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&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)

<b>GIGABYTE™</b>			
Title <b>HDMI</b>			
Size Custom	Document Number <b>GA-B85-HD3-SI</b>		Rev <b>2.11</b>
Date: Thursday, November 20, 2014	Sheet 33		of 34



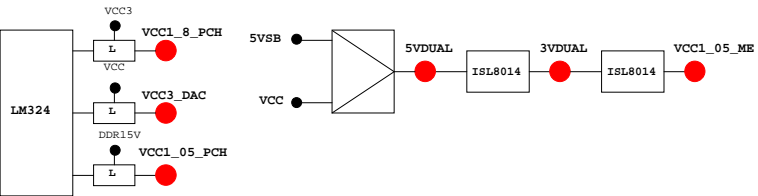
PCB GPIO LIST TABLE

PIN NAME	PWR	Default	USAG	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	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(TL8 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
GP28	STBY	H	GPO	PWR LED
GP29	STBY	L	GPI	GPIO29
GP30	STBY	H-Z	GPI	Mobile Only
GP31	STBY	H-Z	GPI	Mobile Only
GP32	MAIN	H	GPO	N/A
GP33	MAIN	H	GPO	N/A
GP34	MAIN	H-Z	GPI	-PCI_STOP
GP35	MAIN	L	GPO	-ACZ_DET
GP36	MAIN	GPI	N/A	N/A
GP37	MAIN	GPI	N/A	N/A
GP38	MAIN	H-Z	GPI	PCIE4 Detect
GP39	MAIN	H-Z	GPI	GPIO39
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
GP45	STBY	NATIVE	GPIO45	P/U 8.2K 3VDUAL
GP46	STBY	L	NATIVE	GPIO46
GP47	STBY		Mobile Only	N/A
GP48	MAIN	H-Z	IN	GPIO48
GP49	MAIN	H-Z	IN	GPIO49
GP50	MAIN	NATIVE	-REQ1	P/U 2.2K VCC
GP51	MAIN	H	NATIVE	-GNT1
GP52	MAIN	NATIVE	-REQ2	P/U 2.2K VCC
GP53	MAIN	H	NATIVE	-GNT2
GP54	MAIN	NATIVE	-REQ3	P/U 2.2K VCC
GP55	MAIN	H	NATIVE	-GNT3
GP56	STBY	NATIVE	Mobile Only	N/A
GP57	STBY	H-Z	IN	VCORE_OV1
GP58	STBY	H-Z	NATIVE	F_USB_OC
GP59	STBY	NATIVE	USB_OC0#	N/A
GP60	STBY	H-Z	NATIVE	N/A(Reverse)
GP61	STBY	L	NATIVE	-SUSTAT
GP62	STBY	L	NATIVE	SUSCLK
GP63	STBY	L	NATIVE	GPIO63
GP64	MAIN	L	NATIVE	CLKOUTFLEX0
GP65	MAIN	L	NATIVE	CLKOUTFLEX1
GP66	MAIN	L	NATIVE	CLKOUTFLEX2
GP67	MAIN	L	NATIVE	CLKOUTFLEX3
GP72	STBY	H-Z	NATIVE	VCORE_OV4
GP73	STBY		Mobile Only	N/A
GP74	STBY	H-Z	NATIVE	1_05V_OV2
GP75	STBY	H-Z	NATIVE	N/A(Reverse)

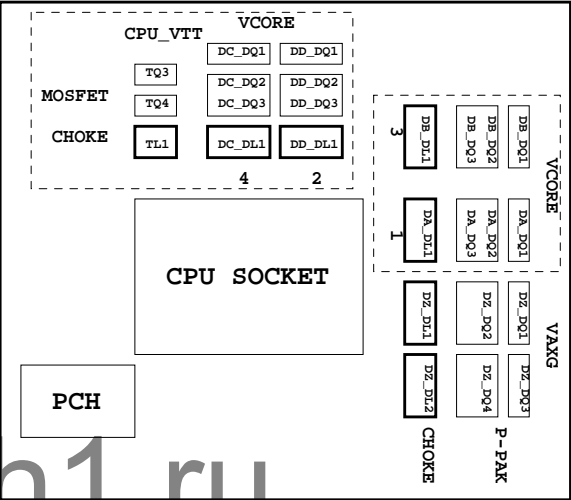
Super I/O ITE8720 GPIO Table

PIN NAME	USAG	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	USAG	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	
VIDO5/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	
VIDO0/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	2X PIN	FST_2X8
INIT#/GP85/SMBC_M	SEC_2x8	GTLREF_AD2
ACK#/GP83	DDR_LED1_C	
VIDO1/GP21/DCD2#	DDR_LED2_C	
STB#/GP87/SMBC_M	DDR_LED3_C	
PWRON#/GP44	VCORE_OV1	
PANSWH#/GP43	PWRBTSW	
KDAT/GP61	-PWRBTSW	
KCLK/GP60	KDAT	
MDAT/GP57	KCLK	
MACL/GP56	MDAT	
GP66/VLDT_EN/GB_02	NBT_LED1_C	MCLK
SVD/PCIRSTIN#/CIRTX/GP15	PWM2_CR	
KDAT/GP61	PWM2_CR	
GP67/CPU_PG/GB_03	EN_LOADLINE	IT_GP67/-EN_PWM2
SLIN#/GP84/SMBC_R	-EN_PWM2	
PSI_L/FAN_CLT5/CIRRX2/GP16	-THERM	
VIDO4/GP26/SOUT2	DDR18V_PH2_EN	
VIDO2/FAN_TAC5/GP24/DSR2#	DDR18V_LED	
VIDO6/GP17/RI2#	1_1V_PH_EN	
VIDO7/JP6/DTR2#	JP6	
PD5/GP75/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

Gigabyte Technology			
TABLE LIST			
Size C	Document Number	Rev	
	GA-B85-HD3-SI	2.11	
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