

# Model Name: GA-H97-D3H

1.0

SHEET

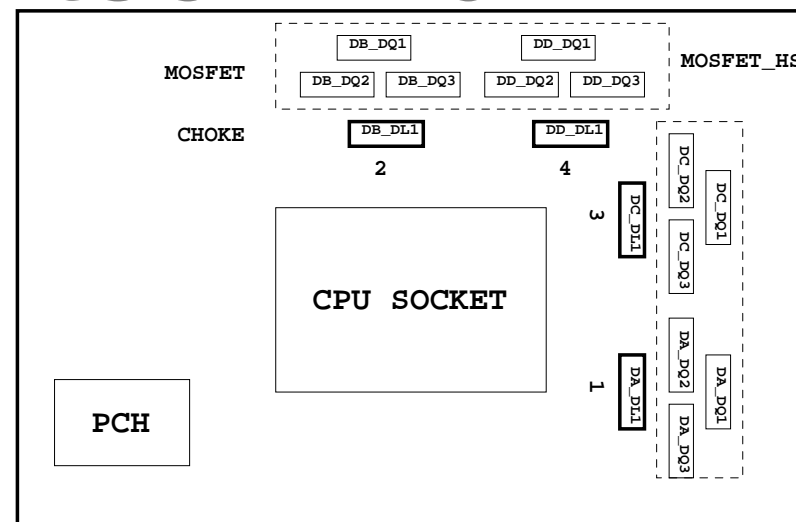
TITLE

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 ITE8728
19	COM, -PROHOT, R_USB
20	Dual BIOS , TPM SLB9635TT
21	ALC892 CODEC
22	REAR AUDIO JACK
23	VCORE PWM_IR3564a
24	VCORE+DDR PWM IR3553+IR3598
25	ME 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	LAN INTEL i217
32	DVI
33	HDMI , R_USB30
34	TABLE LIST
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<b>Gigabyte Technology</b>			
Title			
Cover Sheet			
Size	Document Number	Rev	
Custom	GA-H97-D3H	1.0	
Date:	Friday, February 28, 2014	Sheet	1 of 34

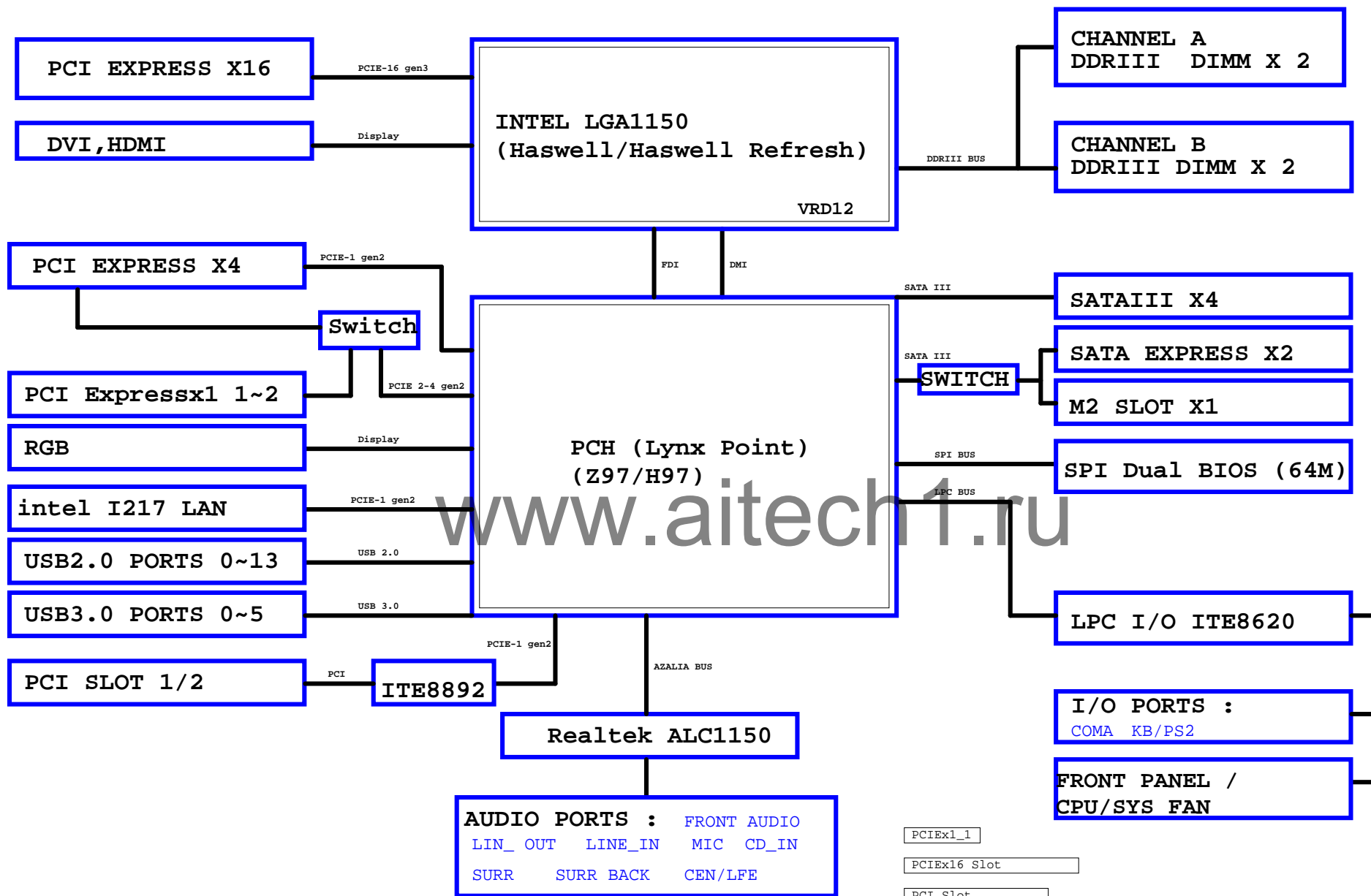
## Component value change history

PCB:1.0	1. All 0ohm SHORT PAD (包含0402,
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DATE	Change Item	Reason
2013/10/18	1. H87-D3H 1.12 修改成 Z97-D3H 0.1	
2013/01/10 PCB:0.2	1. DVI add level shifter IC 2. Fix M2 & SATA EXPRESS circuit 3. CPU_OPT & SYS_FAN1 FAN Control change	
PCB:0.3	1. All 0ohm SHORT PAD (包含0402,0603,0805,8P4R) 2. Vcore 一上二下 --> 另一顆是否mask? 3. Remove BIOS_PH 4. Update "NGFF-M-75P-8CM-1" & "C0402-2" 5. Add "SER11" for M2 control circuit 6. Fix Audio pop noise 7. 2_5LEVEL control , NR205 改R0402-2 , 改上AP431 8. 背面電容mask (包含CPU & PCH) 9. DFM check 10. BIOS_PH 改成 MASK	
PCB:1.0	1. All 0ohm SHORT PAD (包含0402,0603,0805,8P4R)	

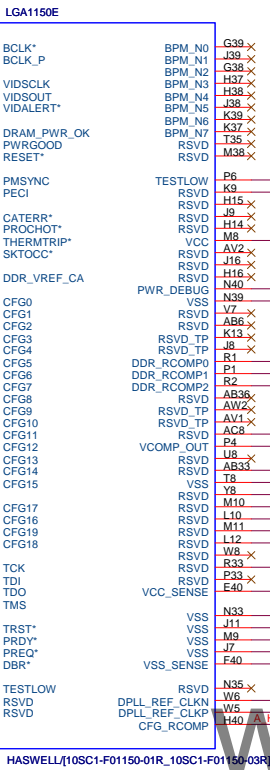
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<b>BOM &amp; PCB MODIFY HISTORY</b>			
Title			
Size	Document Number	Rev	
Custom	<b>GA-H97-D3H</b>	<b>1.0</b>	
Date:	Thursday, March 06, 2014	Sheet	2 of 34

# BLOCK DIAGRAM



- PCIEx1\_1
- PCIEx16 Slot
- PCI Slot
- PCI Slot
- PCIEx4
- PCI Slot
- PCIEx1\_2

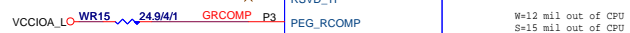
(E)



CFG6	CFG5	PCIE CONFIG
1	1	1x16 , Default
1	0	2x8
0	1	RSVD
0	0	x8,x4,x4

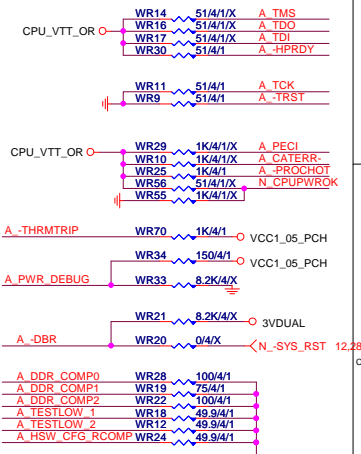
LGA1150 (D)

(C)

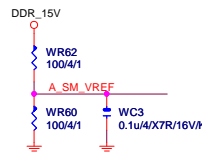


## CPU SVID

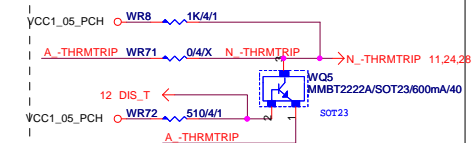
## CPU PU/PD



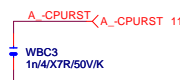
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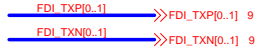
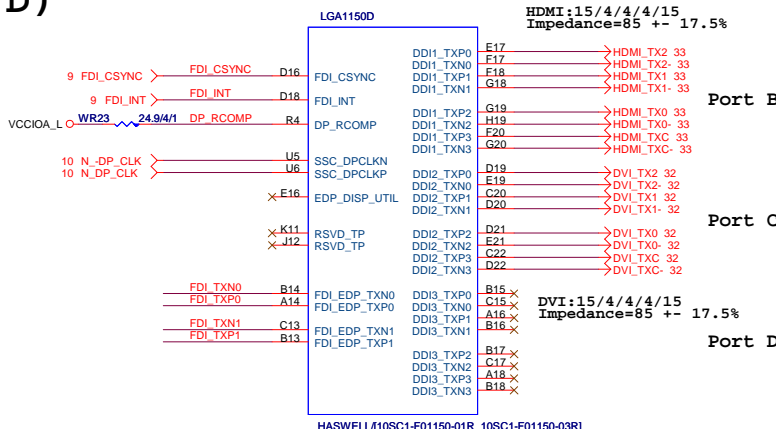
THRMTRIP	DISABLE
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## -CPURST



## HDMI 需接Port B For WHOL



## Gigabyte Technology

CPU LGA1150-A			
Size Custom	Document Number <b>GA-H97-D3H</b>	Rev <b>1.0</b>	
Date: Friday, February 28, 2014	Sheet	4	of 34



LGA1150A

	MAAA0	AU13	DDR0_M0	DDR0_D0	AD38	MDA0
	MAAA1	AV16	DDR0_M1	DDR0_D1	AD39	MDA1
	MAAA2	AU16	DDR0_M2	DDR0_D2	AF38	MDA2
	MAAA3	AW17	DDR0_M3	DDR0_D3	AF39	MDA3
	MAAA4	AU17	DDR0_M4	DDR0_D4	AD37	MDA4
	MAAA5	AW18	DDR0_M5	DDR0_D5	AD40	MDA5
	MAAA6	AV17	DDR0_M6	DDR0_D6	AD37	MDA6
	MAAA7	AW18	DDR0_M5	DDR0_D5	AF40	MDA7
	MAAA8	AT18	DDR0_M7	DDR0_D7	AH40	MDA9
	MAAA9	AT19	DDR0_M8	DDR0_D8	AH39	MDA13
	MAAA10	AW11	DDR0_M10	DDR0_D10	AK38	MDA10
	MAAA11	AV18	DDR0_M11	DDR0_D11	AK39	MDA11
	MAAA12	AY10	DDR0_M12	DDR0_D12	AJ37	MDA12
	MAAA13	AY10	DDR0_M13	DDR0_D13	AH38	MDA8
	MAAA14	AT20	DDR0_M14	DDR0_D14	AK37	MDA14
	MAAA15	AU21	DDR0_M15	DDR0_D15	AK40	MDA15
			DDR0_M16	DDR0_D16	AM39	MDA17
	MODT_A0	AW10	DDR0_ODT0	DDR0_D17	AP38	MDA18
	MODT_A1	AY8	DDR0_ODT1	DDR0_D17	AP39	MDA19
	MODT_A2	AW9	DDR0_ODT2	DDR0_D19	AM37	MDA16
	MODT_A3	AU8	DDR0_ODT3	DDR0_D20	AM38	MDA16
				DDR0_D21	AP37	MDA22
		AW33	DDR0_ECC0	DDR0_D22	AP40	MDA23
		AU33	DDR0_ECC1	DDR0_D24	AV37	MDA25
		AV31	DDR0_ECC2	DDR0_D25	AM38	MDA26
		AT33	DDR0_ECC3	DDR0_D26	AJ35	MDA27
		AU33	DDR0_ECC4	DDR0_D27	AT37	MDA28
		AT31	DDR0_ECC5	DDR0_D28	AT37	MDA24
		AW31	DDR0_ECC6	DDR0_D29	AT35	MDA30
			DDR0_ECC7	DDR0_D30	AW35	MDA31
			DDR0_D31	DDR0_D32	AW36	MDA33
			DDR0_D32	DDR0_D33	AU4	MDA37
			DDR0_D33	DDR0_D34	AU4	MDA34
			DDR0_D34	DDR0_D35	AU4	MDA35
			DDR0_D35	DDR0_D36	AW6	MDA36
			DDR0_D36	DDR0_D37	AW6	MDA32
			DDR0_D37	DDR0_D38	AW4	MDA33
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			DDR0_D40	DDR0_D41	AN4	MDA45
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			DDR0_D43	DDR0_D44	AN4	MDA40
			DDR0_D44	DDR0_D45	AN1	MDA46
			DDR0_D45	DDR0_D46	AN1	MDA48
			DDR0_D46	DDR0_D47	AN1	MDA49
			DDR0_D47	DDR0_D48	AL4	MDA53
			DDR0_D48	DDR0_D49	AJ3	MDA50
			DDR0_D49	DDR0_D50	AJ7	MDA52
			DDR0_D50	DDR0_D51	AJ2	MDA52
			DDR0_D51	DDR0_D52	AJ3	MDA48
			DDR0_D52	DDR0_D53	AJ1	MDA54
			DDR0_D53	DDR0_D54	AJ2	MDA54
		AW12	RSVD	DDR0_D55	AG1	MDA55
				DDR0_D56	AG4	MDA61
				DDR0_D57	AE3	MDA58
				DDR0_D58	AE4	MDA59
				DDR0_D59	AG3	MDA60
				DDR0_D60	AE2	MDA56
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				DDR0_D65	AV36	QDGA3
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				DDR0_D260		

HASWELL/[10SC1-F01150-01R\_10SC1-F01150-03R]

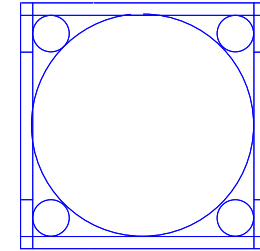
**LGA1150 (B)**

## LGA1150B

MAAB0	AL19	DDR1_MAO	DDR1_D00	AE34	MD80
MAAB1	AL20	DDR1_Ma1	DDR1_D01	AE35	MD81
MAAB2	AM22	DDR1_Ma2	DDR1_D02	AG35	MD82
MAAB3	AM23	DDR1_Ma3	DDR1_D03	AG36	MD83
MAAB4	AM24	DDR1_Ma4	DDR1_D04	AD34	MD84
MAAB5	AL23	DDR1_Ma5	DDR1_D05	AD35	MD85
MAAB6	Y724	DDR1_Ma6	DDR1_D06	AG34	MD86
MAAB7	AV25	DDR1_Ma7	DDR1_D07	AL34	MD87
MAAB8	AU26	DDR1_Ma8	DDR1_D08	AE36	MD88
MAAB9	AW25	DDR1_Ma9	DDR1_D09	AE35	MD89
MAAB10	AP18	DDR1_Ma10	DDR1_D010	AL31	MD810
MAAB11	Y725	DDR1_Ma11	DDR1_D011	AL31	MD811
MAAB12	AV26	DDR1_Ma12	DDR1_D012	AE34	MD812
MAAB13	AR15	DDR1_Ma13	DDR1_D013	AG35	MD813
MAAB14	AV27	DDR1_Ma14	DDR1_D014	AK32	MD814
MAAB15	Y728	DDR1_Ma15	DDR1_D015	AL32	MD815
			DDR1_D016	AP34	MD816
MODT_B0	AM17	DDR1_ODT0	DDR1_D017	AE34	MD821
MODT_B1	AL16	DDR1_ODT1	DDR1_D018	AN31	MD819
MODT_B2	AM16	DDR1_ODT2	DDR1_D019	AN31	MD823
MODT_B3	AK15	DDR1_ODT3	DDR1_D020	AN35	MD816
			DDR1_D021	AN32	MD817
AM26	DDR1_ECC0	DDR1_D022	DDR1_D022	AN32	MD818
AM25	DDR1_ECC1	DDR1_D023	DDR1_D023	AP2	MD822
AP26	DDR1_ECC2	DDR1_D024	DDR1_D024	AM29	MD825
AL26	DDR1_ECC3	DDR1_D025	DDR1_D025	AR28	MD827
AL25	DDR1_ECC4	DDR1_D026	DDR1_D026	AR28	MD830
AR26	DDR1_ECC5	DDR1_D027	DDR1_D027	AL29	MD824
AR25	DDR1_ECC6	DDR1_D028	DDR1_D028	AL28	MD823
	DDR1_ECC7	DDR1_D029	DDR1_D029	AP12	MD826
		DDR1_D030	DDR1_D030	AR28	MD831
SBAB0	AK17	DDR1_BA0	DDR1_D031	AP12	MD832
SBAB1	AL18	DDR1_BA1	DDR1_D032	AL12	MD833
SBAB2	AW28	DDR1_BA2	DDR1_D033	AL12	MD834
			DDR1_D034	AP12	MD835
CKEB0	AV29	DDR1_CKE0	DDR1_D035	AP13	MD836
CKEB1	Y729	DDR1_CKE1	DDR1_D036	AP13	MD836
CKEB2	AU28	DDR1_CKE2	DDR1_D037	AP13	MD838
CKEB3	AU29	DDR1_CKE3	DDR1_D038	AM12	MD839
			DDR1_D039	AR9	MD845
CSB0	AP17	DDR1_CS_N0	DDR1_D040	AP9	MD841
CSB1	AN15	DDR1_CS_N1	DDR1_D041	AR6	MD842
CSB2	AM17	DDR1_CS_N2	DDR1_D042	AP9	MD843
CSB3	AL15	DDR1_CS_N3	DDR1_D043	AP10	MD844
			DDR1_D044	AP10	MD840
			DDR1_D045	AR7	MD842
			DDR1_D046	AP7	MD842
			DDR1_D047	AM3	MD852
CLKBK0	AM20	DDR1_CLK_P0	DDR1_D049	AL9	MD853
CLKBK1	AM21	DDR1_CLK_N0	DDR1_D049	AL9	MD850
CLKBK2	AP21	DDR1_CLK_P1	DDR1_D050	AL7	MD849
CLKBK3	AP21	DDR1_CLK_N1	DDR1_D051	AL10	MD848
CLKBK4	AN20	DDR1_CLK_P2	DDR1_D052	AM10	MD849
CLKBK5	AN21	DDR1_CLK_N2	DDR1_D054	MD6	MD854
CLKBK6	AP20	DDR1_CLK_P3	DDR1_D055	AM7	MD856
CLKBK7	AP20	DDR1_CLK_N3	DDR1_D056	AE6	MD860
		DDR1_D057	DDR1_D057	AE6	MD859
SCASB	AP16C	DDR1_CAS_RSVD	DDR1_D058	AJ7	MD856
	AL20		DDR1_D059	AE6	MD859
SRASB	AM18	DDR1_RAS_RS	DDR1_D060	AJ7	MD856
SWEB	AP16C	DDR1_WE'	DDR1_D061	AE7	MD857
			DDR1_D062	AF7	MD858
			DDR1_D063	AF6	MD862
AB39		DDR_VREF_D00	DDR1_D063	AC35	MD860
AB40		DDR_VREF_D01	DDR1_D063	AL33	DSB1
			DDR1_D064	AP33	DSB2
			DDR1_D065	AN28	DSB3
			DDR1_D066	AN28	DSB4
			DDR1_D067	AP2	DSB5
			DDR1_D068	AL8	DSB6
			DDR1_D069	AG7	DSB7
			DDR1_D070	AN25	DSB8
			DDR1_D071	AE34	DSB1
			DDR1_D072	AN33	DSB2
			DDR1_D073	AN29	DSB3
			DDR1_D074	AN13	DSB4
			DDR1_D075	ARA	DSB5
			DDR1_D076	AM8	DSB6
			DDR1_D077	AG6	DSB7
			DDR1_D078	AN25	DSB8

HASWELL/[10SC1-F01150-01R\_10SC1-F01150-03R]

LGA1150 (CR)

LGA1150  
ILM\_BP\_CR/115X/NORMAL NI

## 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]

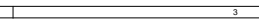
**(F, J)**



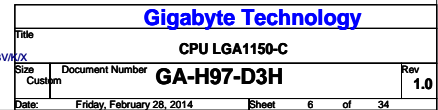
**(G,H,I)**



(X30)



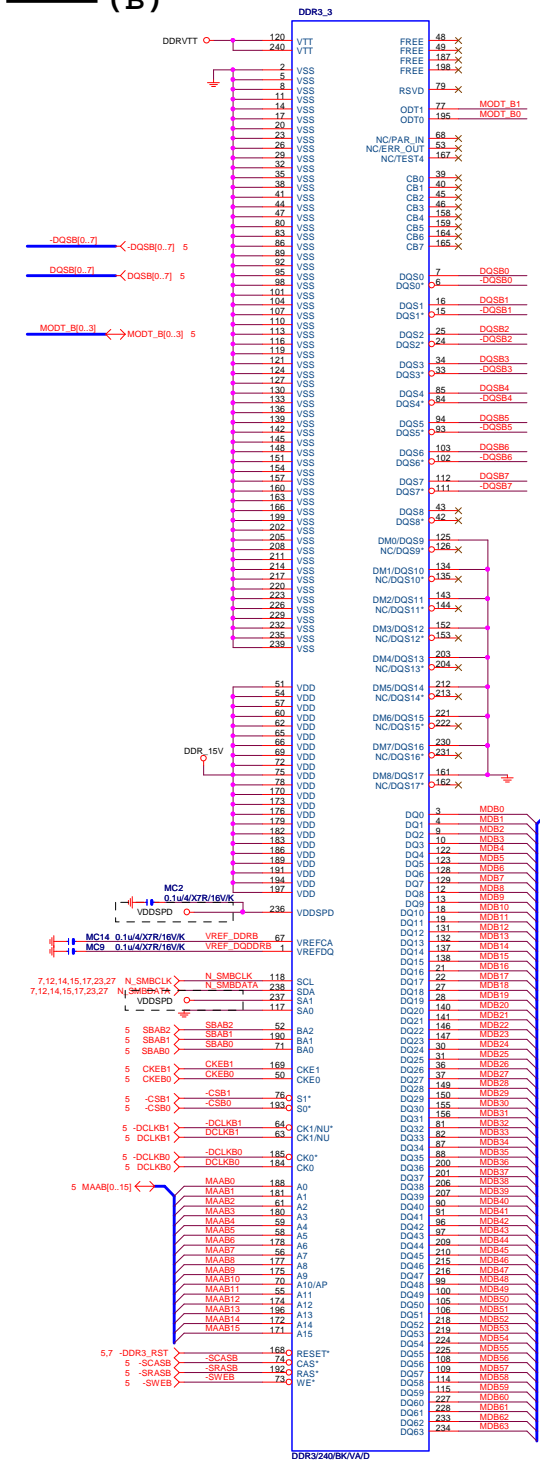
(X15)



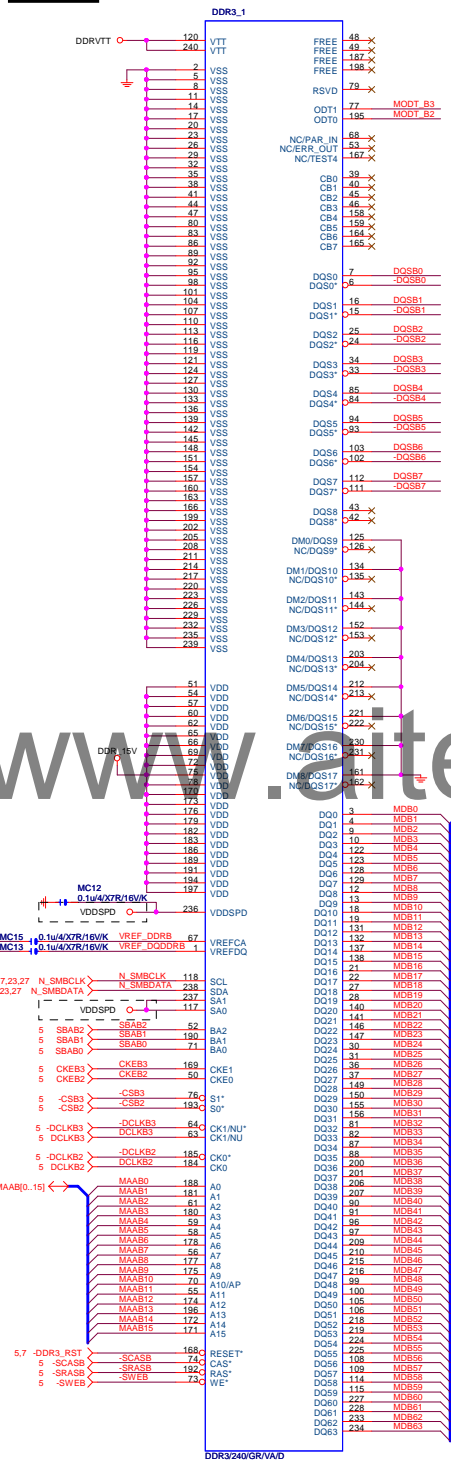


DDR3

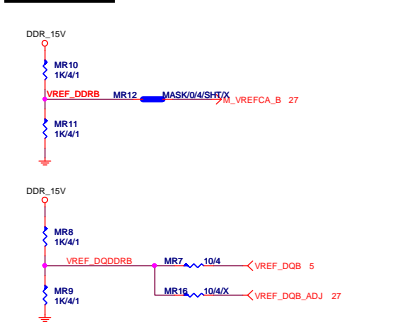
(B)



DDR3



DDR3 VREF



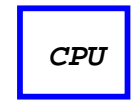
DDR3 1066,1333,1600MHZ BANDWIDTH

DDR3 1066MHZ  
DDR3 clock=533MHZ  
DDR3 single channel bandwidth=533x2x8Byte=8.5GB/s  
DDR3 dual channel bandwidth=533x2x2x8Byte=17GB/s

DDR3 1333MHZ  
DDR3 clock=667MHZ  
DDR3 single channel bandwidth=10.6GB/s  
DDR3 dual channel bandwidth=21GB/s

DDR3 1600MHZ  
DDR3 clock=800MHZ  
DDR3 single channel bandwidth=12.8GB/s  
DDR3 dual channel bandwidth=25.6GB/s

COUPON



- DIMM4 (黑色) CHA
- DIMM2 (棕色) CHA
- DIMM3 (黑色) CHB
- DIMM1 (棕色) CHB

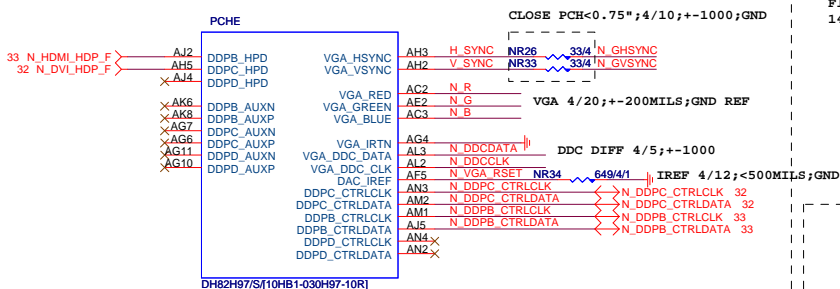
Gigabyte Technology

File		DDR3 CHANNEL B		Rev 1.0
Size	Document Number	GA-H97-D3H		
Date:	Sheet	8	of	34



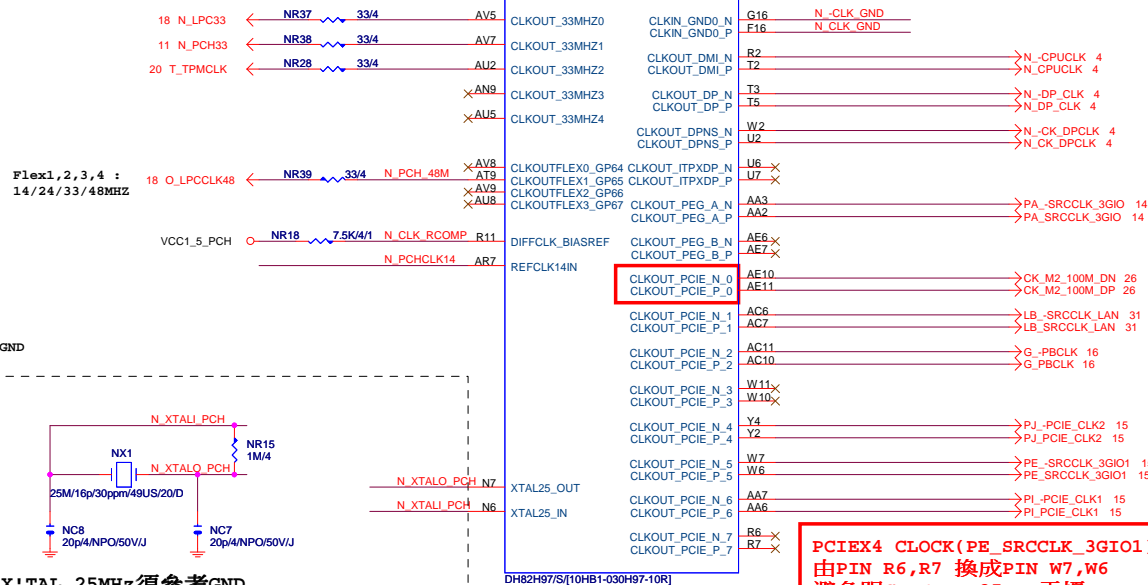


**PCH (E)**



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)**

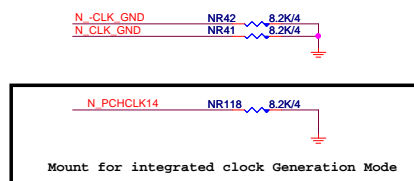


X'TAL 25MHz須參考GND  
CRYSTAL/TRACE 週邊不要有訊號,VIA靠近  
走線遠離其他40mil以上

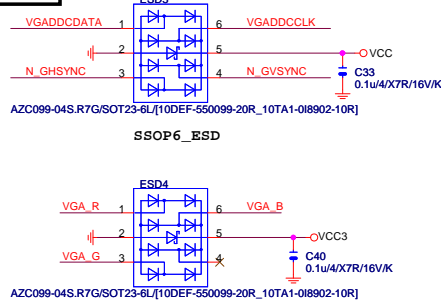
PCIEX4 CLOCK(PE\_SRCCLK\_3GIO1)  
由PIN R6,R7 換成PIN W7,W6  
避免跟CRYSTAL 25MHZ干擾

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

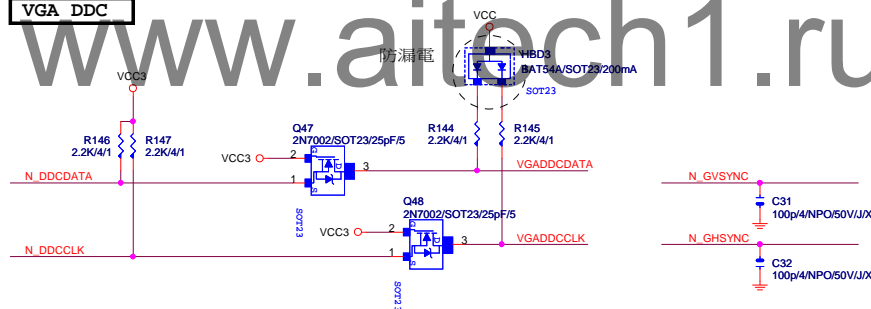
PCH CLK PD



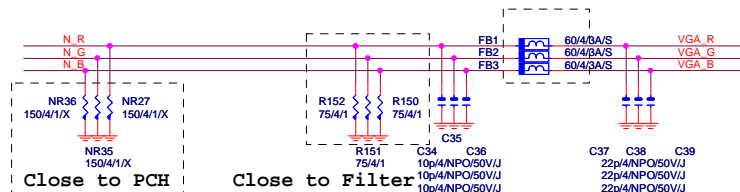
## VGA ESD



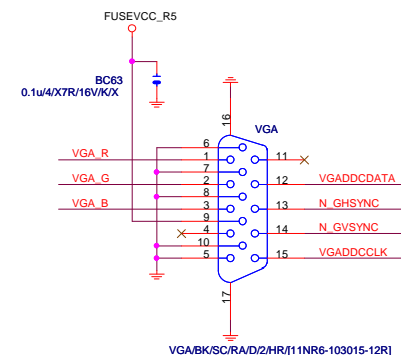
## VGA DDC



## VGA DDC



## VGA CONNECTOR

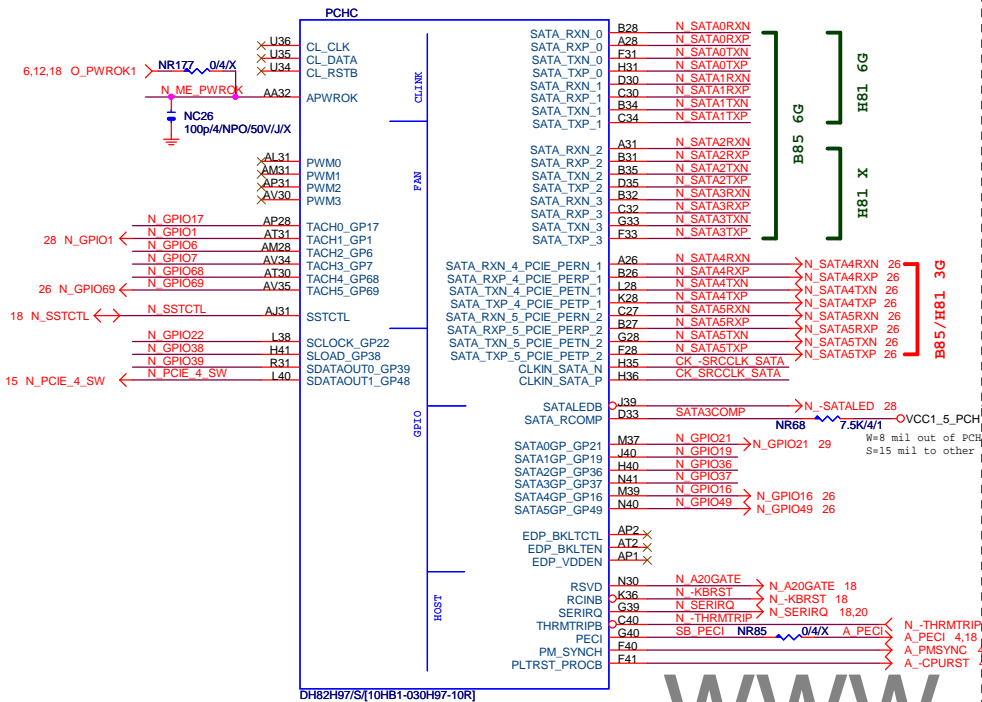


## Gigabyte Technology

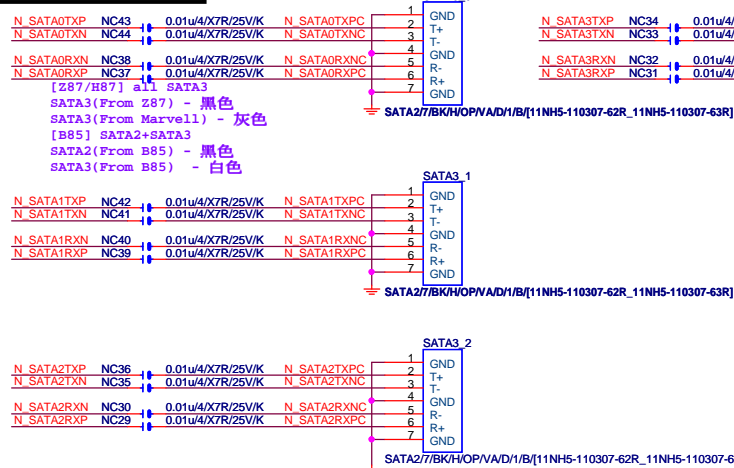
Title			
PCH DISPLAY ,CLK BUFFER			
Size	Document Number	Rev	
Custom	GA-H97-D3H	1.0	
Date:	Thursday, March 06, 2014	Sheet	10 of 34

(C)

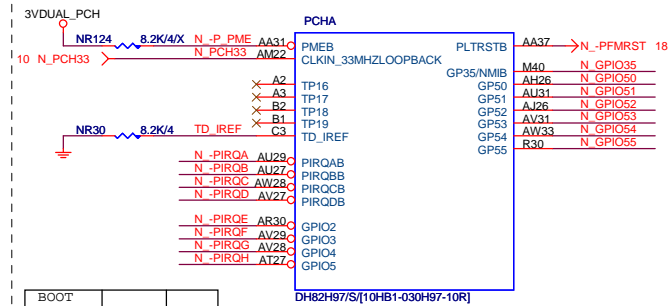
SATA3 : 20/4/4/4/20 (breakout min 8/4/4/4/8)  
Impedance=85 +- 17.5%



### SATA3 CONNECTOR



**PCH (A)**

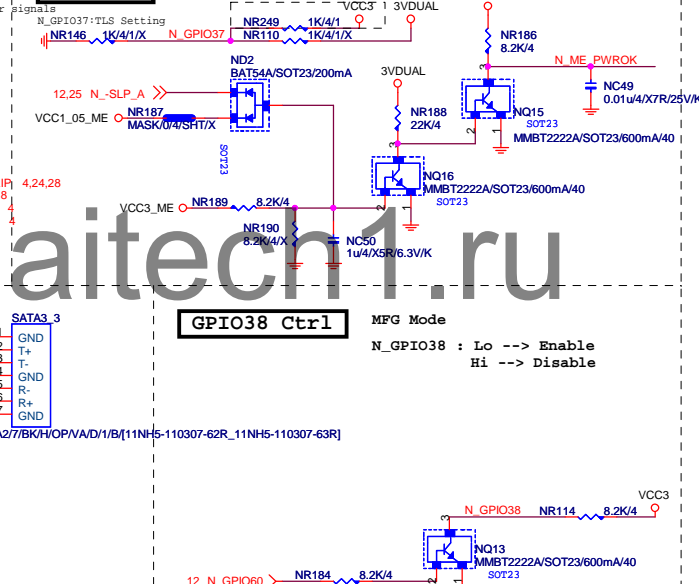


BOOT DEVICE	GP51	GP19
LPC	0	0
SPI	1	1

```
Default int pull up on GP51,  
Default SPI boot devices
```

## ME PWROK

N\_GPIO37 For H97/H87/B85

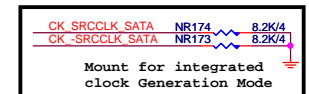


GPIO38 Ctrl

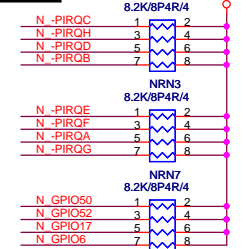
MFG Mode

```
N_GPIO38 : Lo --> Enable
           Hi --> Disable
```

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



PCH	PU/PD
-----	-------



N\_GPIO55:A16 SWAP OVERRIDE N\_GPIO55 NR160 1K/4/1/X

N\_GPIO53:DMI AC COUPLING

N\_GPIO22:PCH CONFIG VCC3

N\_GPIO39:GFX MODE

NR80 1K/4/1/X

N GPIO21 NR252 1K/4/1

NRN4





**Gigabyte Technology**

Title	PCH HOST , SATA, PCI
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Size	Document Number	Rev
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Custom	<b>GA-H97-D3H</b>
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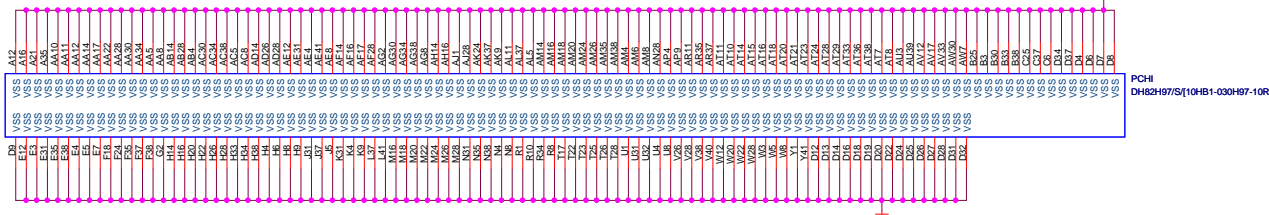
Date:	Friday, February 28, 2014	Sheet	11	of	34
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**PCH (I)**



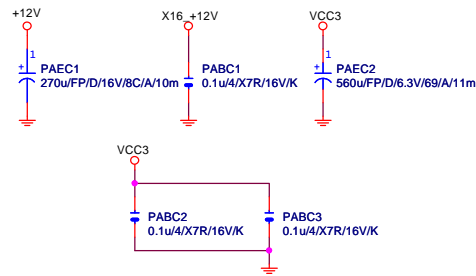
SHT PWR

(1.05V) (x5)

(1.05V)(X2) (3.3V) (X3)

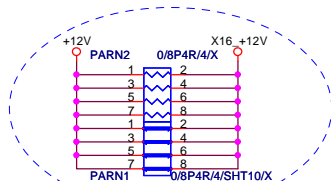
(1.5V) (x10)

# PCIEX16 CAP



# PCIEX16 PROTECT SHT

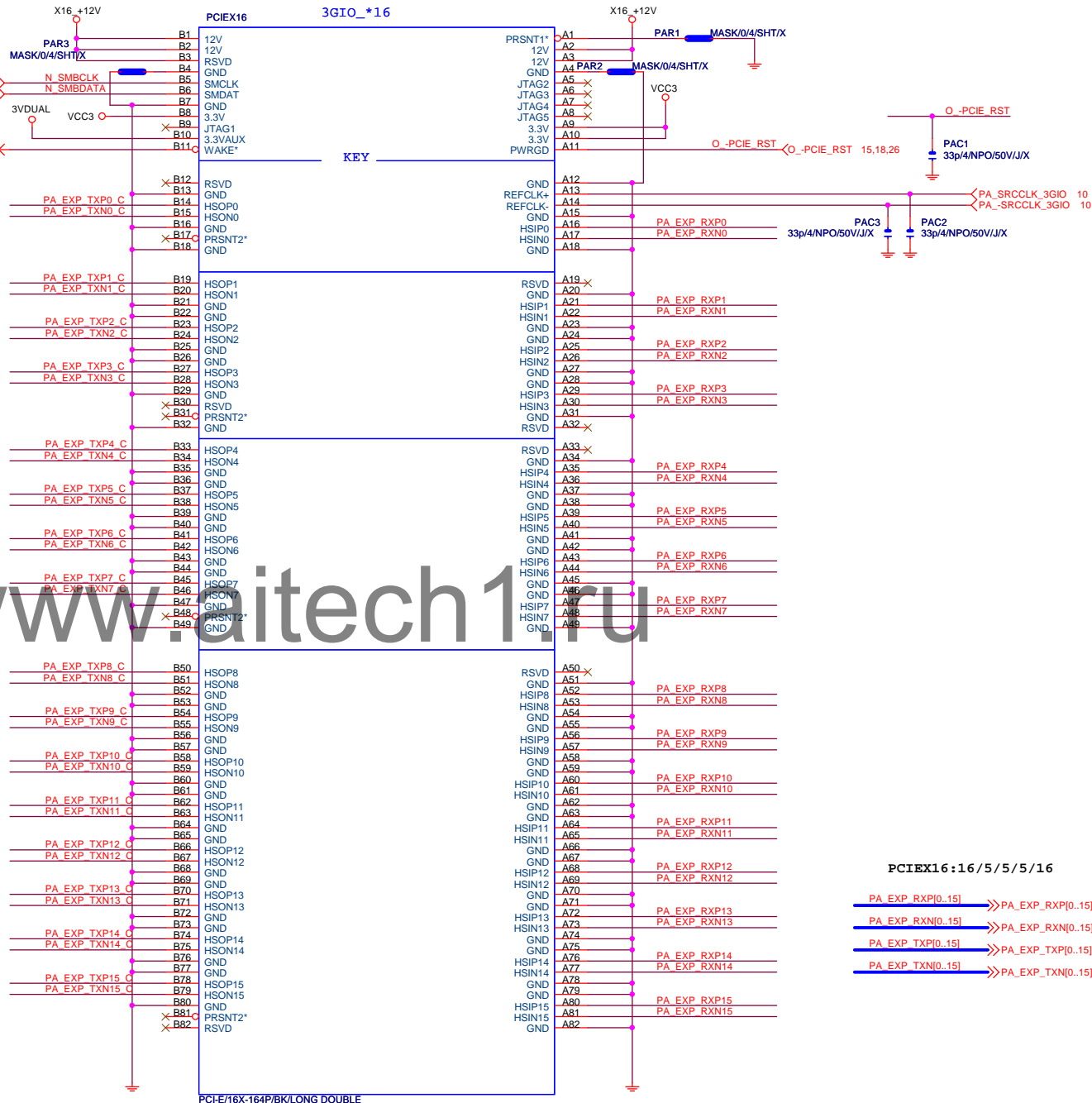
+12 protect  
short-wire test



# PCIEX16 AC CAP

PA EXP TXP0	PAC5	0.22u4/X5R/6.3V/K	PA EXP TXP0 C
PA EXP TXN0	PAC4	0.22u4/X5R/6.3V/K	PA EXP TXN0 C
PA EXP TXP1	PAC6	0.22u4/X5R/6.3V/K	PA EXP TXP1 C
PA EXP TXN1	PAC7	0.22u4/X5R/6.3V/K	PA EXP TXN1 C
PA EXP TXP2	PAC8	0.22u4/X5R/6.3V/K	PA EXP TXP2 C
PA EXP TXN2	PAC9	0.22u4/X5R/6.3V/K	PA EXP TXN2 C
PA EXP TXP3	PAC10	0.22u4/X5R/6.3V/K	PA EXP TXP3 C
PA EXP TXN3	PAC11	0.22u4/X5R/6.3V/K	PA EXP TXN3 C
PA EXP TXP4	PAC12	0.22u4/X5R/6.3V/K	PA EXP TXP4 C
PA EXP TXN4	PAC13	0.22u4/X5R/6.3V/K	PA EXP TXN4 C
PA EXP TXP5	PAC14	0.22u4/X5R/6.3V/K	PA EXP TXP5 C
PA EXP TXN5	PAC15	0.22u4/X5R/6.3V/K	PA EXP TXN5 C
PA EXP TXP6	PAC16	0.22u4/X5R/6.3V/K	PA EXP TXP6 C
PA EXP TXN6	PAC17	0.22u4/X5R/6.3V/K	PA EXP TXN6 C
PA EXP TXP7	PAC18	0.22u4/X5R/6.3V/K	PA EXP TXP7 C
PA EXP TXN7	PAC19	0.22u4/X5R/6.3V/K	PA EXP TXN7 C
PA EXP TXP8	PAC20	0.22u4/X5R/6.3V/K	PA EXP TXP8 C
PA EXP TXN8	PAC21	0.22u4/X5R/6.3V/K	PA EXP TXN8 C
PA EXP TXP9	PAC22	0.22u4/X5R/6.3V/K	PA EXP TXP9 C
PA EXP TXN9	PAC23	0.22u4/X5R/6.3V/K	PA EXP TXN9 C
PA EXP TXP10	PAC24	0.22u4/X5R/6.3V/K	PA EXP TXP10 C
PA EXP TXN10	PAC25	0.22u4/X5R/6.3V/K	PA EXP TXN10 C
PA EXP TXP11	PAC26	0.22u4/X5R/6.3V/K	PA EXP TXP11 C
PA EXP TXN11	PAC27	0.22u4/X5R/6.3V/K	PA EXP TXN11 C
PA EXP TXP12	PAC28	0.22u4/X5R/6.3V/K	PA EXP TXP12 C
PA EXP TXN12	PAC29	0.22u4/X5R/6.3V/K	PA EXP TXN12 C
PA EXP TXP13	PAC30	0.22u4/X5R/6.3V/K	PA EXP TXP13 C
PA EXP TXN13	PAC31	0.22u4/X5R/6.3V/K	PA EXP TXN13 C
PA EXP TXP14	PAC32	0.22u4/X5R/6.3V/K	PA EXP TXP14 C
PA EXP TXN14	PAC33	0.22u4/X5R/6.3V/K	PA EXP TXN14 C
PA EXP TXP15	PAC34	0.22u4/X5R/6.3V/K	PA EXP TXP15 C
PA EXP TXN15	PAC35	0.22u4/X5R/6.3V/K	PA EXP TXN15 C

# PCIEX16 SLOT



www.aitech1.ru

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

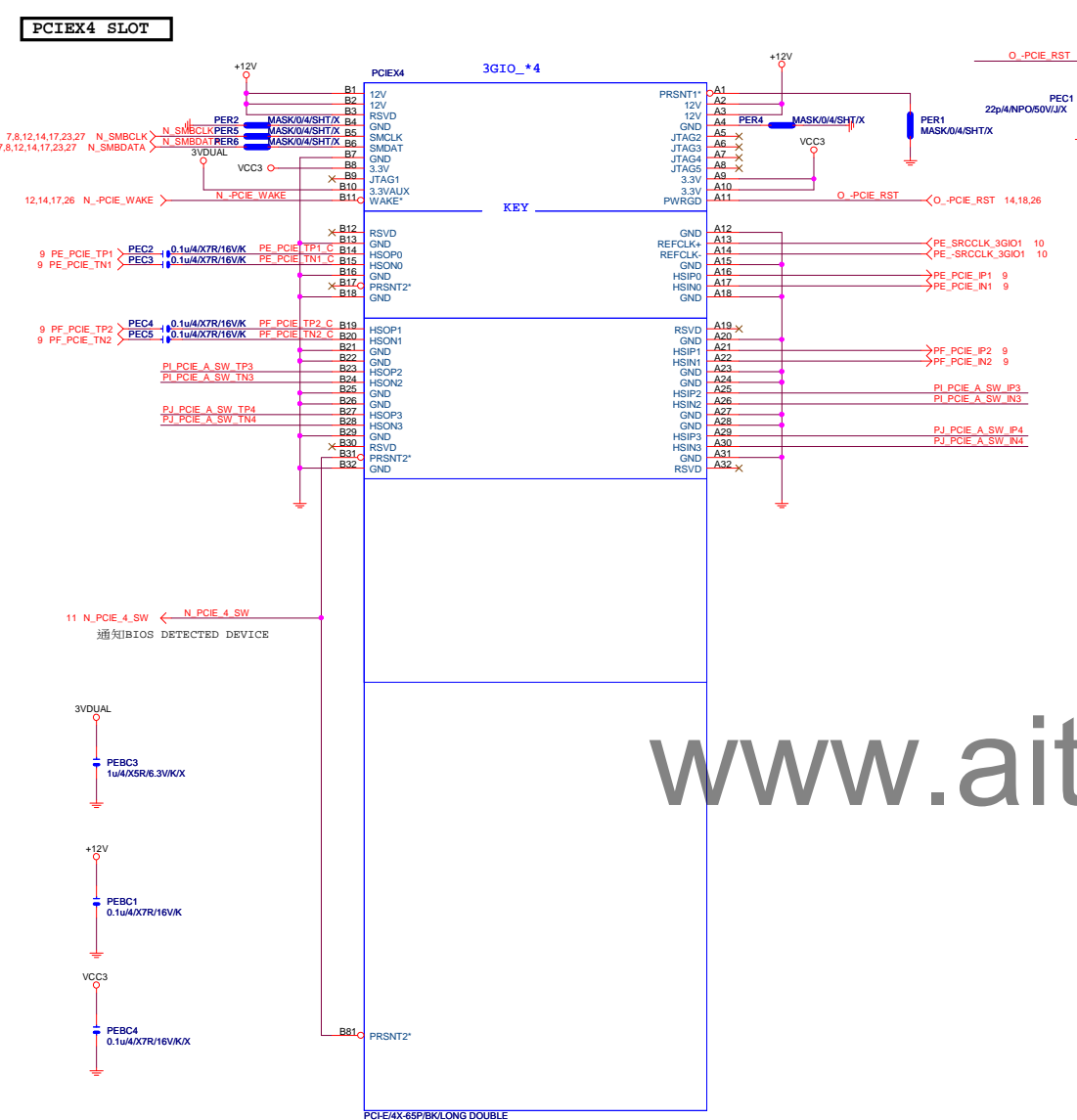
PCE-E X16(單向) BANDWITH=2.5GHZ\*(8b/10b)X16=32Gb/s=4GB/s

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

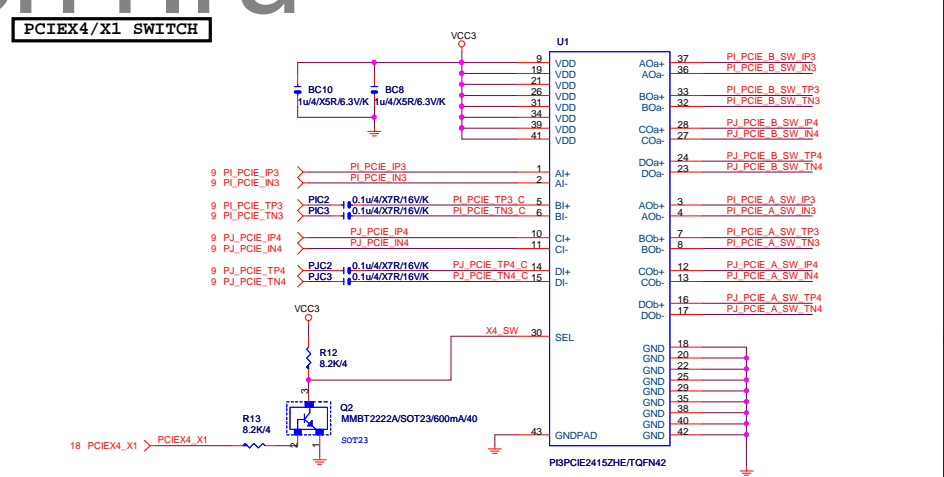
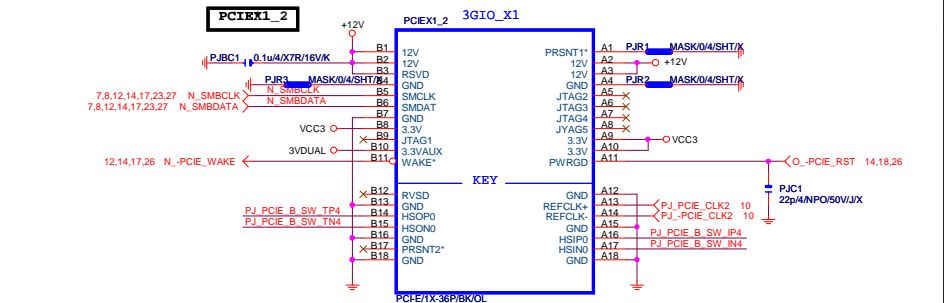
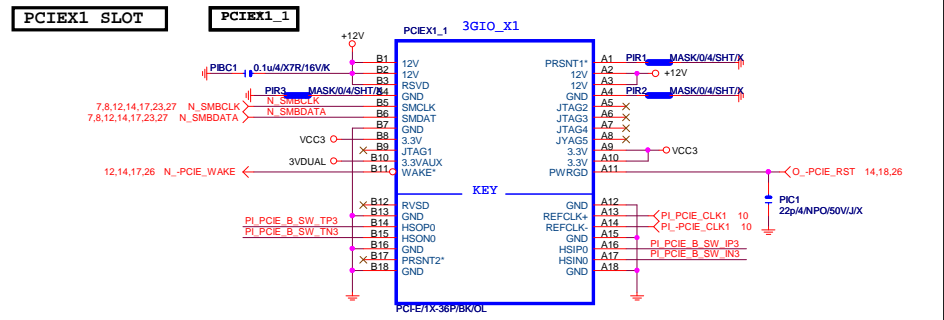
PCI-E REV:2.0--> 5GHZ

Gigabyte Technology

Title				PCI EXPRESS * 16			
Size	Custom	Document Number			GA-H97-D3H		Rev
							1.
Date:	Friday, February 28, 2014			Sheet	14	of	34

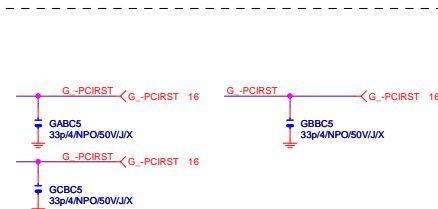
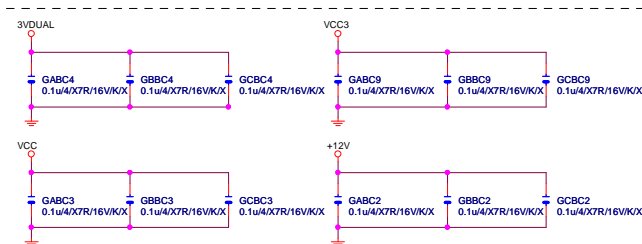
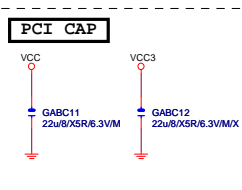
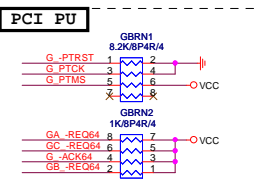
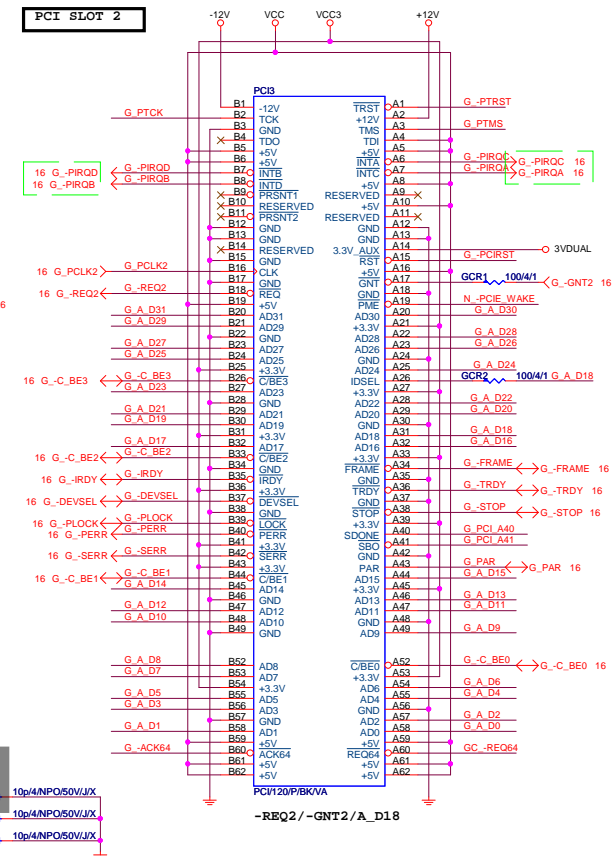
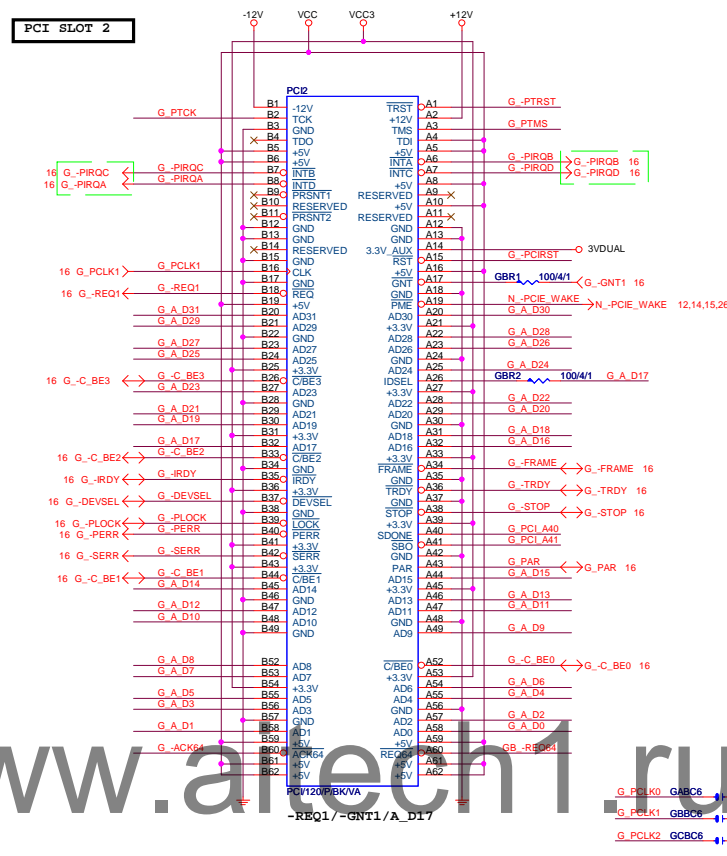
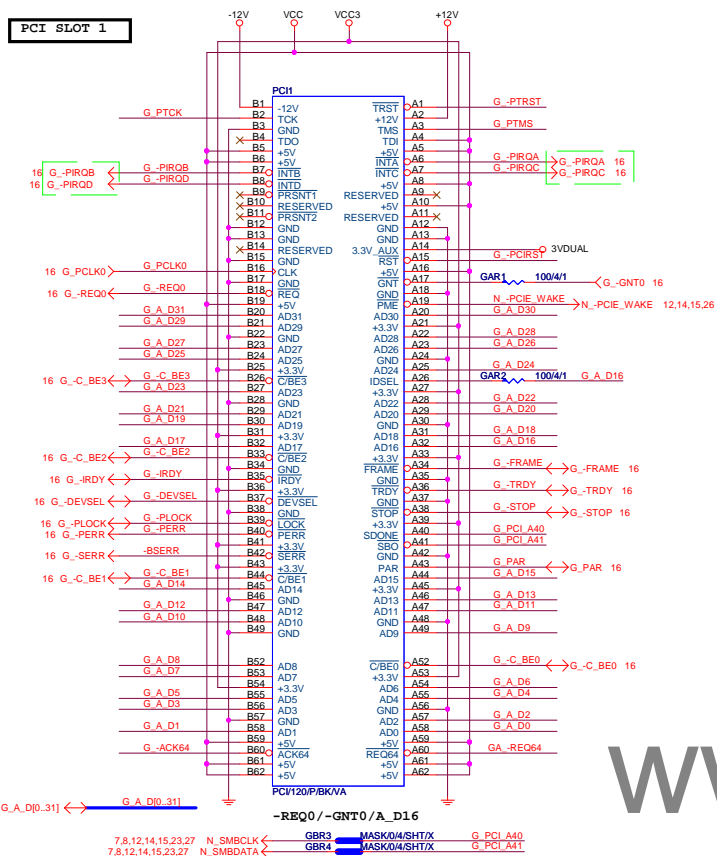


	N_PCIE_4_SW (PCH GPIO48)	PCIEX4_X1 (SIO_GPIO26)
PCIEX4 No devices	H	H
PCIEX4 -> X1	H	H
PCIEX4 Have devices	L	L
PCIEX4 -> X4	L	L
PCIEX1_1/2 --> N/A		



Function	SEL
xI--> x0A	L;PCIEX4 SLOT-->X1
xI--> x0B	H;PCIEX4 SLOT-->X4



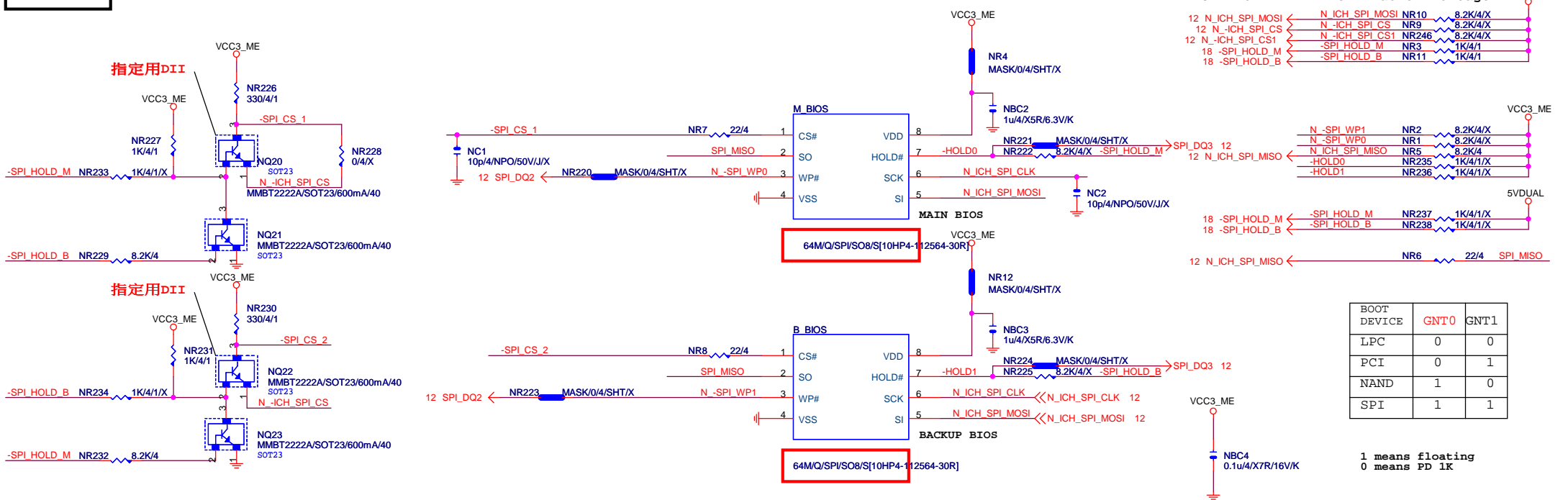




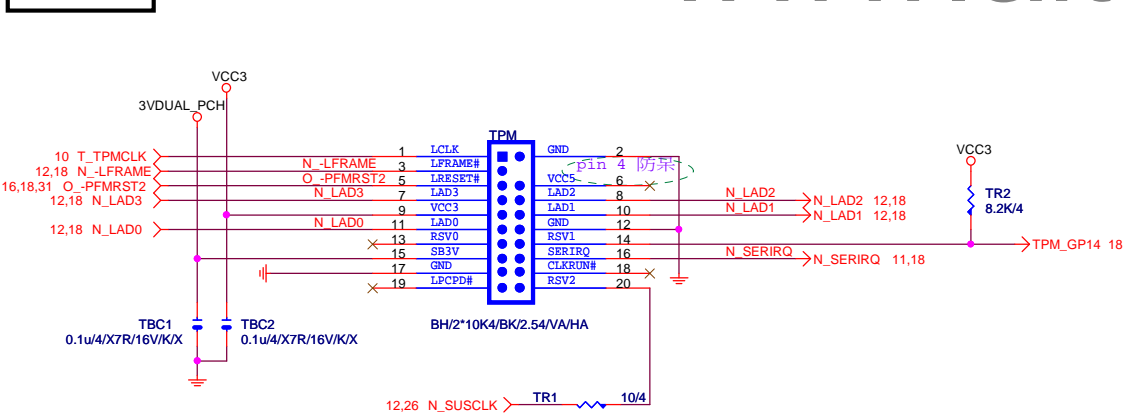




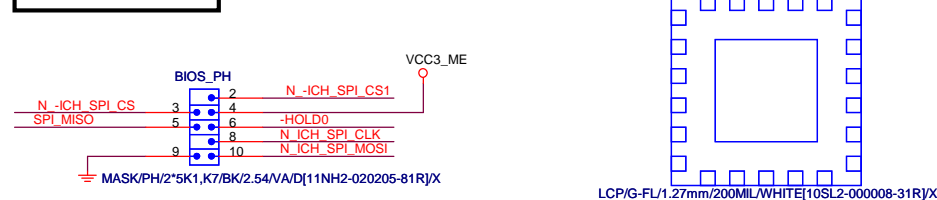
## DUAL BIOS



## TPM CONNECT



## BIOS Debug port



Gigabyte Technology

Title			BIOS
Size	Document Number	GA-H97-D3H	
Custom		Rev	1.0
Date:	Friday, February 28, 2014	Sheet	20 of 34



EAPD-

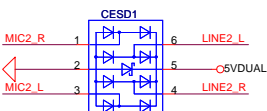
Thermal pad is DGND

Thermal pad is DGND

Digital Area

Analog Area

SMDATR1 MASK/0/6/X  
0/6/X For AGND/GND  
moat under Codec Body



MASK/AZC099-04S.R7G/SOT23-6L[10DEF-550099-20R\_10TA1-018902-10R]X

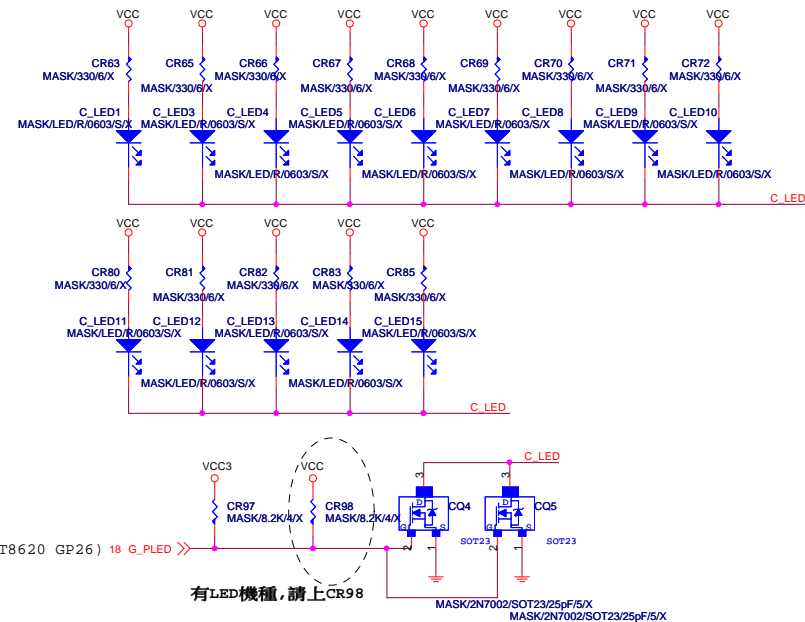
ALC1150/ALC887-VD2 default不上

ESD protection diode :  
Without : 6~7KV , With : 8.5~9.5KV

JD resistors close CODEC

EAPD: Default L  
H : ON  
L : OFF

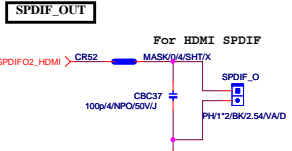
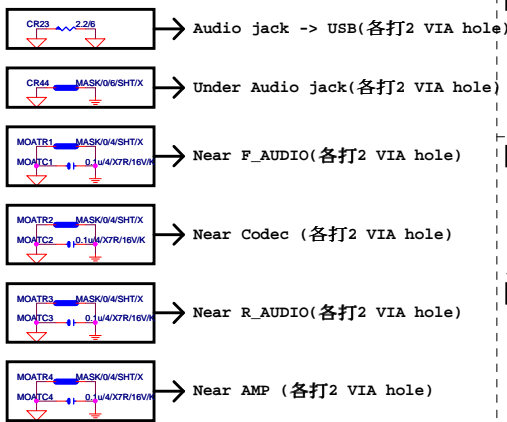
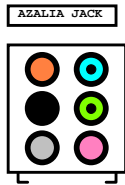
Close to ALC1150



- BOM OPTION :
1. 台固/日固/日黑固/MUSE MW音效電容
  2. 金屬外罩 Reserve
  3. LED Reserve (若LED有上,G\_PLED p-up請上CR98)

ALC1150 "CD1" 惠謀指定default要上

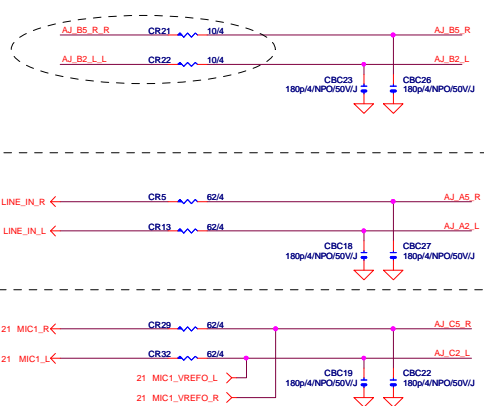
Gigabyte Technology			
Title			
HD AUDIO ALC1150			
Size	Document Number	Rev	
Custom	GA-H97-D3H	1.0	
Date:	Friday, February 28, 2014	Sheet	21 of 34



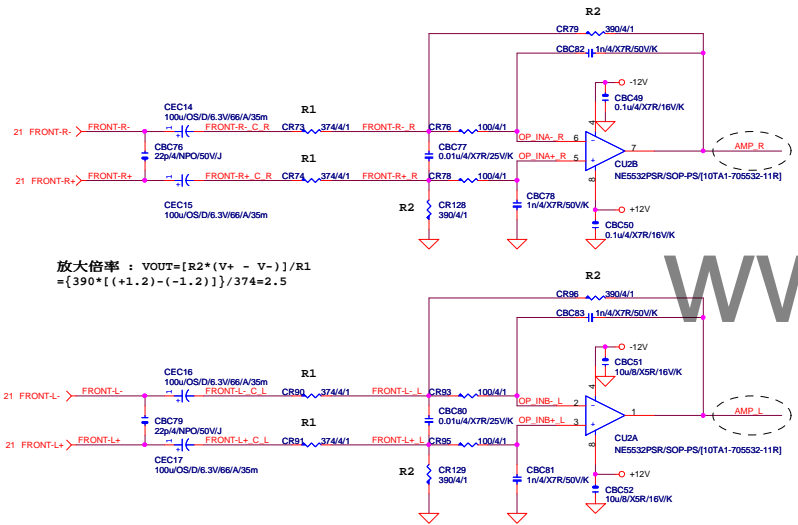
LINE-OUT

LINE-IN

MIC-IN



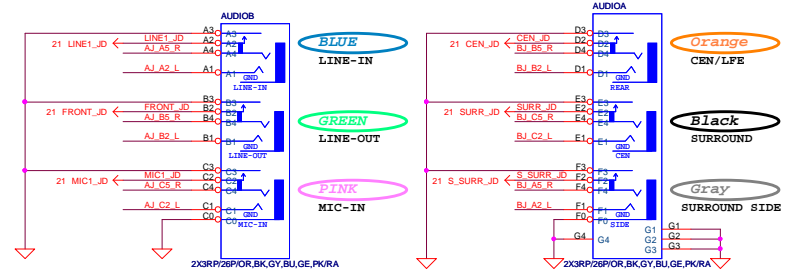
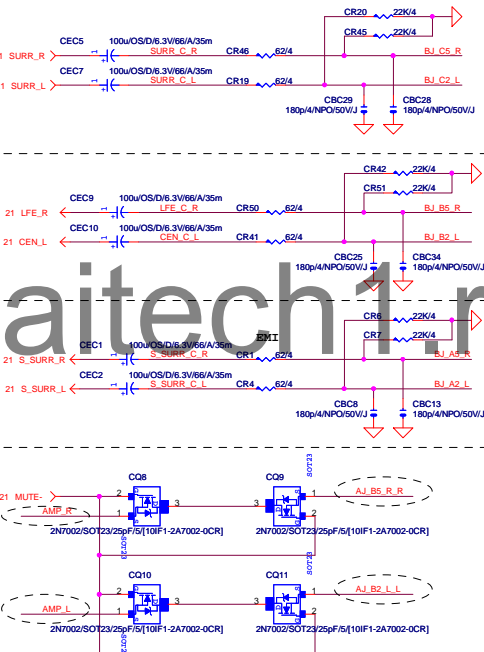
### Differential to Single-End AMPLIFIED



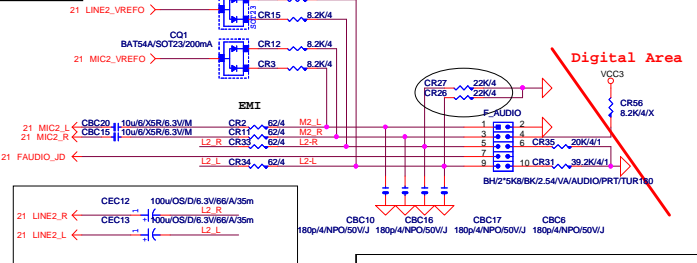
SURROUND

CEN/LFE

SURRBACK



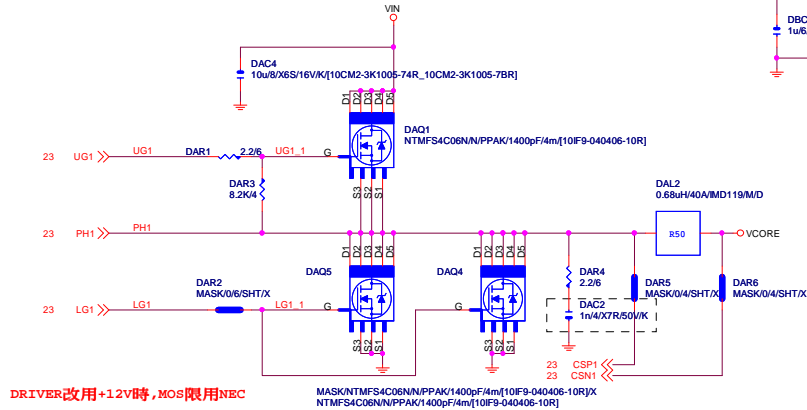
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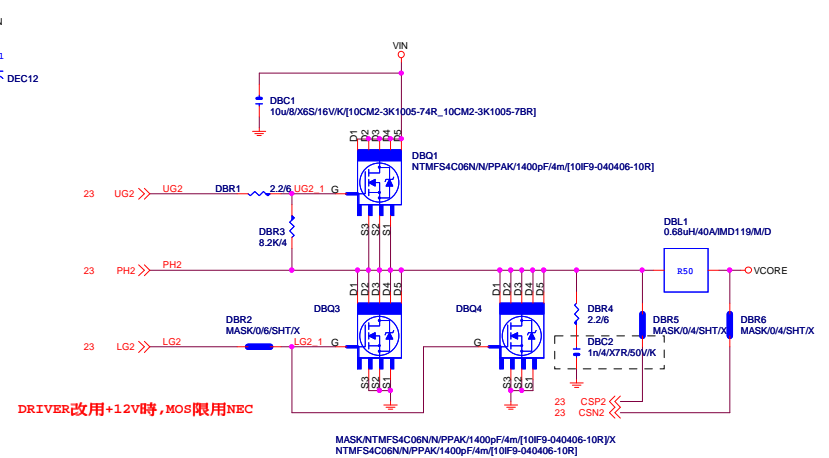


# VCORE

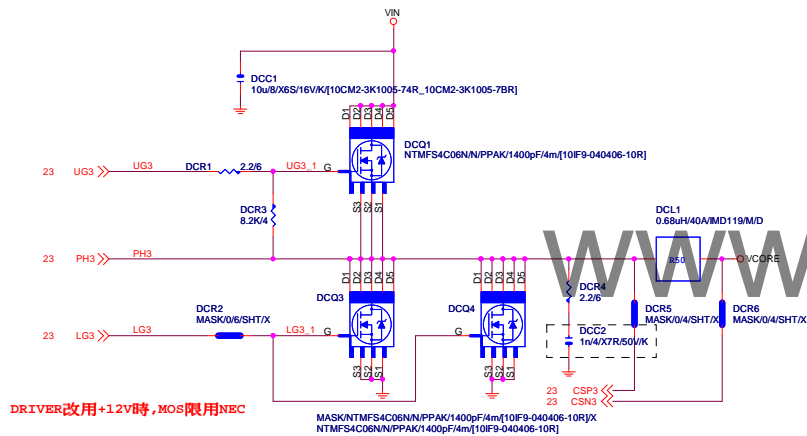
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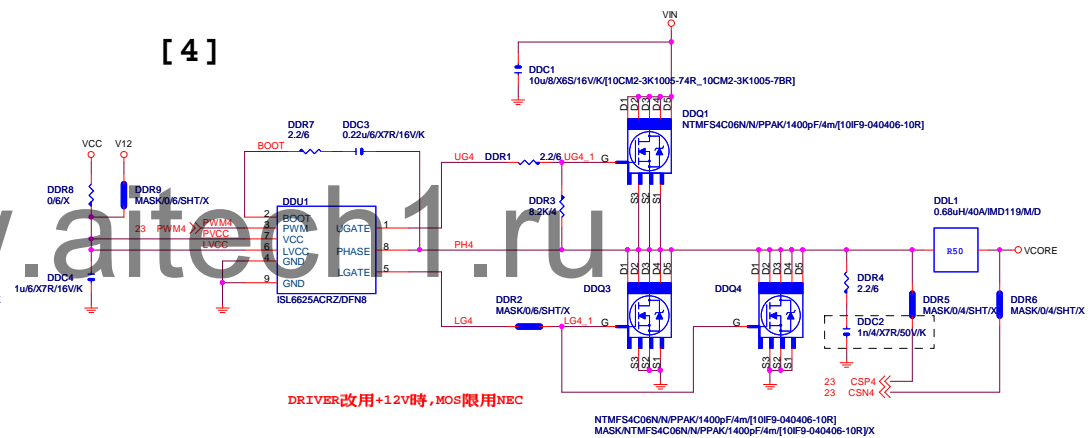
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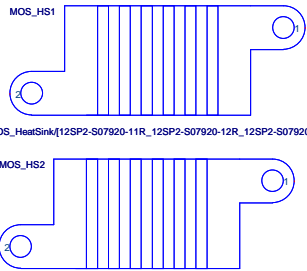
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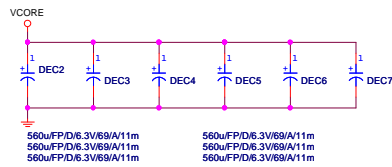
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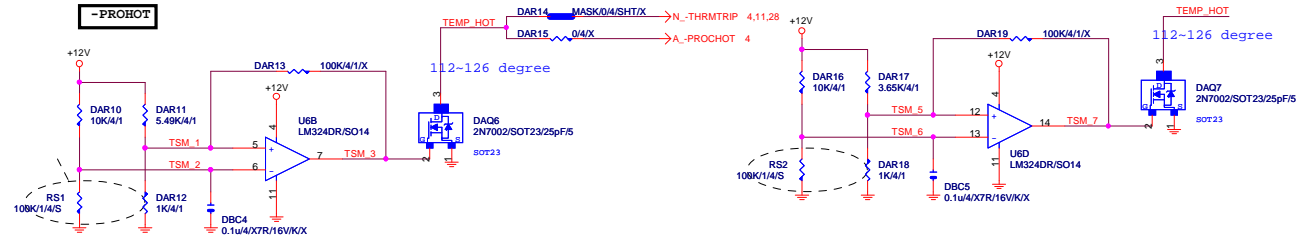
## MOSFET HEATSINK



MOSHHSINK-Z97X-SLI



-PROHOT

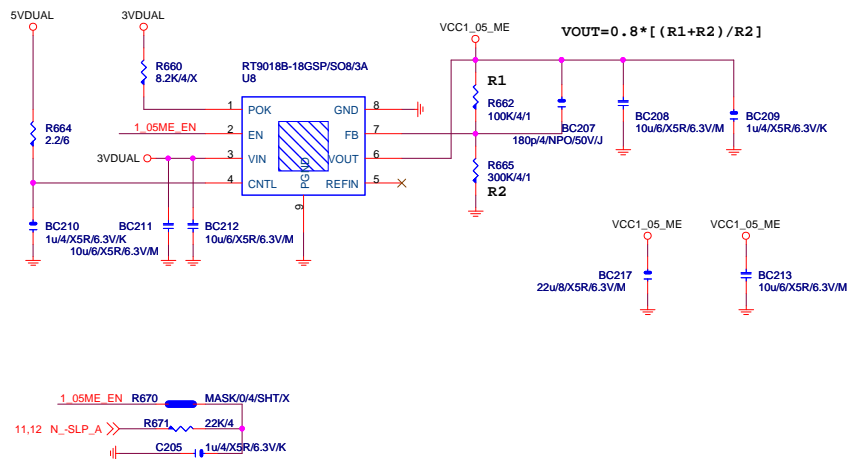


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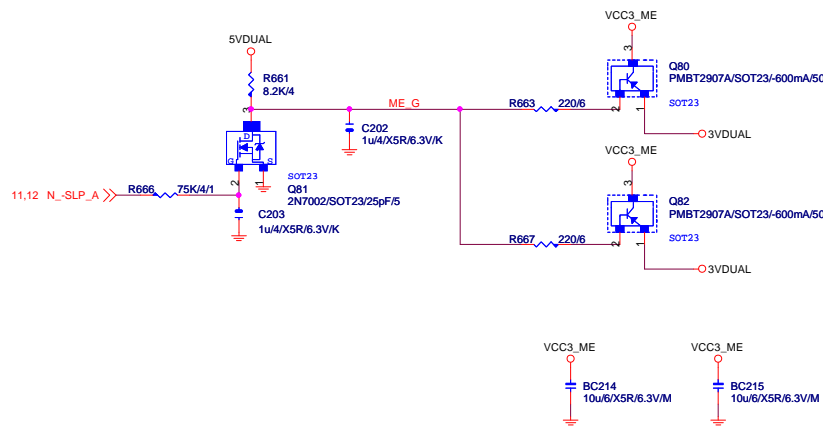
Title			ISL95820_2
Size			Document Number
Custom			GA-H97-D3H
Date	Friday, March 07, 2014	Sheet	24 of 34

Rev 1.0

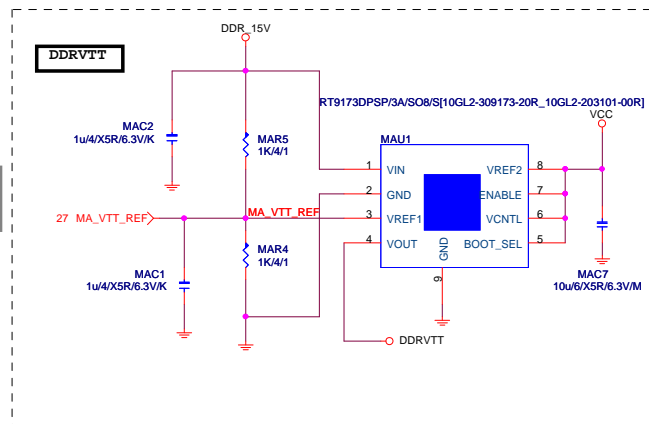
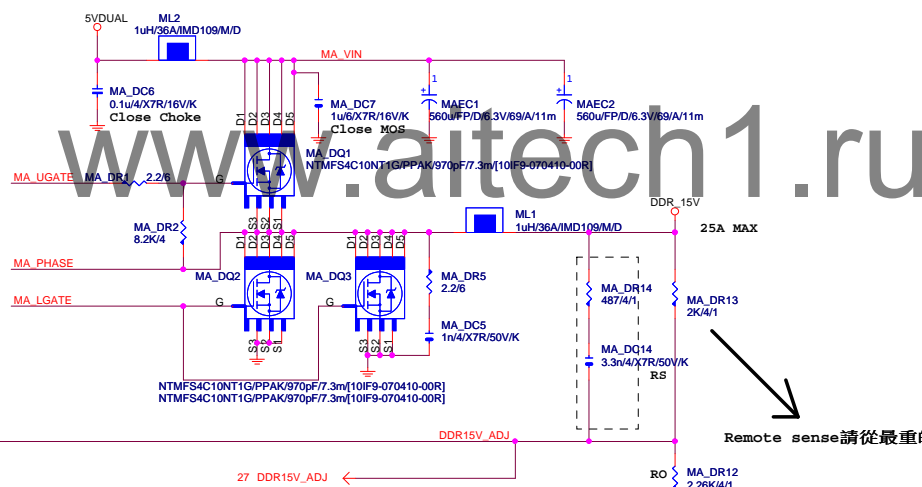
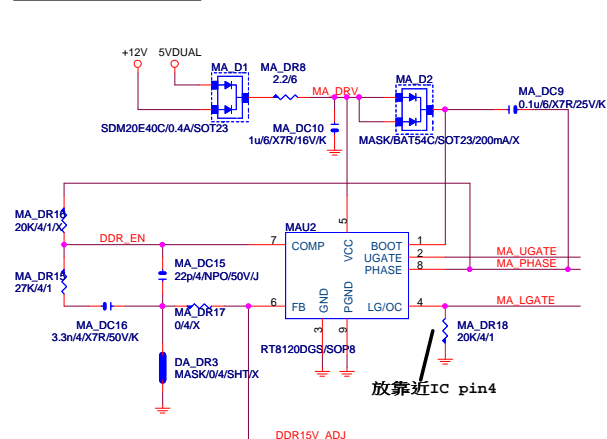
VCC1\_05\_ME



VCC3\_ME




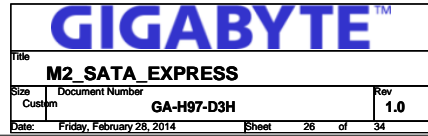
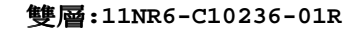
**DDR\_15V**



Remote sense請從最重的負載端點拉回

VIN=5V, VOUT=1.5V, IOUT=25A, PHASE=1 1.509V  
IRMS=11.45A  
560u/FP/D/6.3V/68/8m RIPPLE CURRENT=4.7A  
Coefficient=1.7(85°C), 1(105°C)  
VIN Ripple current=4.7X1.7=7.99A(85°C)  
-->故固態電容須2X7.99=15.98>11.45A  
OCF:35.82A for Rds=6.7m for vishay@4.5V  
OCF:72.727A for Rds=3.3m for renesas@10V  
OCF:48A=Roset\*Iocset / Rds(on)  
=12K\*10uA / [5//5]

			
Title			
RT8120_DDR_15V			
Size	Document Number		Rev
Custom	GA-H97-D3H		1.0
Date:	Thursday, March 06, 2014	Sheet	25 of 34



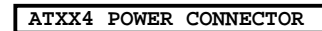








Patch some PSU no internal  
pull up resistor



```

To prevent the 5VSB
under loading when
boot - - - - -

```

Rev 0.2 modify

18 VREF

18 SYS\_TEMP

18 CPU\_TEMP

18 PCH\_TEMP

OC7  
1u4/XSR/6.3V/K

OC6  
1u4/XSR/6.3V/K

OR73  
10K/4

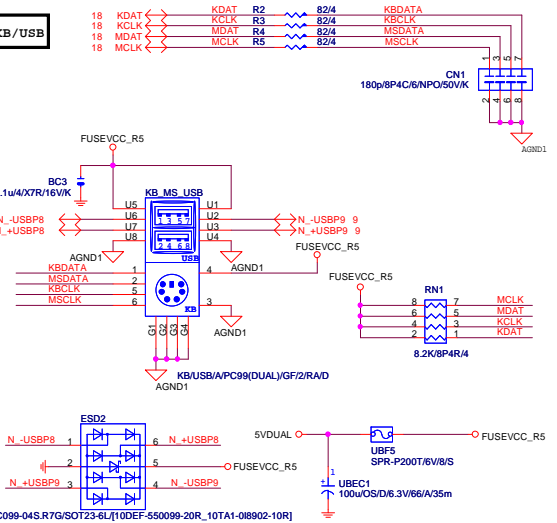
R674  
8.2K/4

R675  
8.2K/4

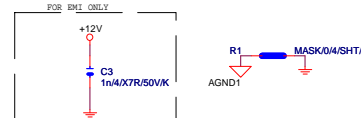
RS\_SYS  
10K/1/4/S

Close S10

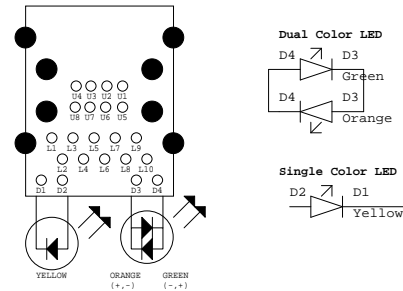
CLOSE VCCIO

[illegible]

**Linear SYS\_FAN**



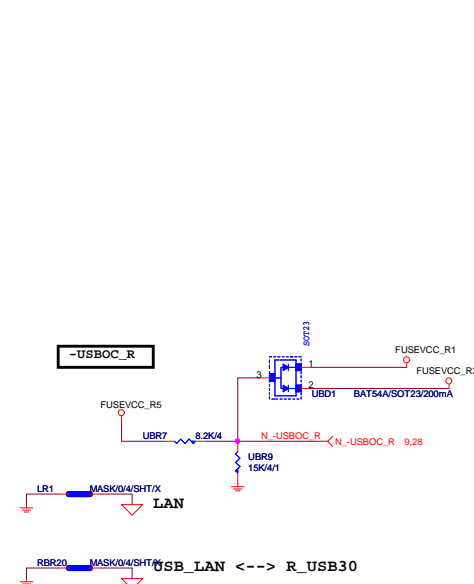
Title			
HWM,KB/MS, FAN CTRL			
Size	Document Number		Rev
Custom	GA-H97-D3H		1.0
Date:	Friday, February 28, 2014	Sheet	30 of 34



Single Color LED

D2 D1  
Yellow

Access	Blinking
Link	Yellow

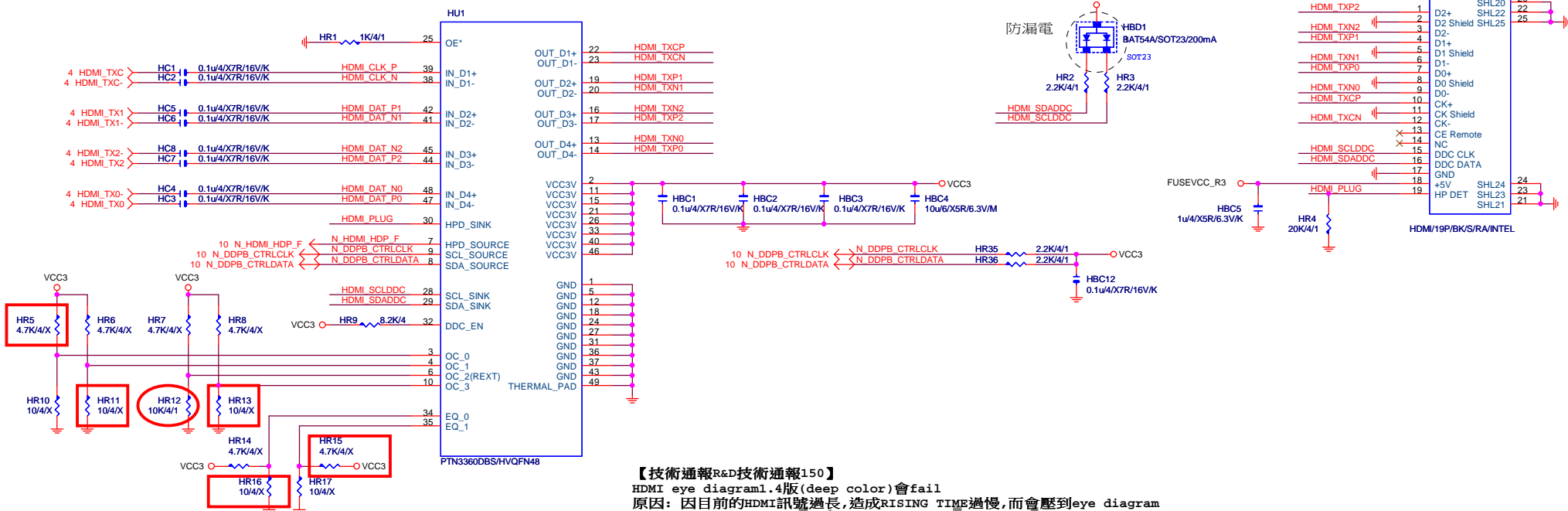




# HDMI LEVEL SHIFT

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)

GIGABYTE™			
Title			
HDMI & USB			
Size	Document Number	Rev	
Custom	GA-H97-D3H	1.0	
Date:	Friday, February 28, 2014	Sheet	33 of 34

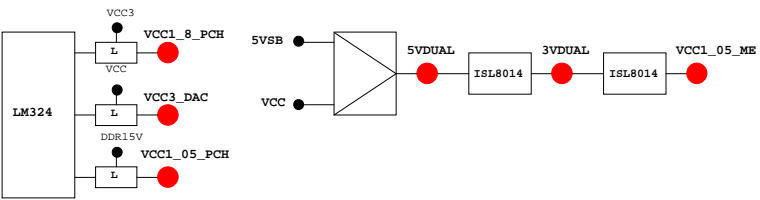
PCB GPIO LIST TABLE

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	PCIEX1 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	GPI	GPIO12
GP13	STBY	L	GPI	LPCPME#
GP14/OC7#	STBY	NATIVE	USB OC7#	N/A
GP15	STBY	L	GPI	GPIO15(TLS Enable)
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	GPI	GPIO22
GP23	MAIN	GPI	GPIO23	N/A
GP24	STBY	L	GPI	SKTOCC#
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	PCIEX4 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)

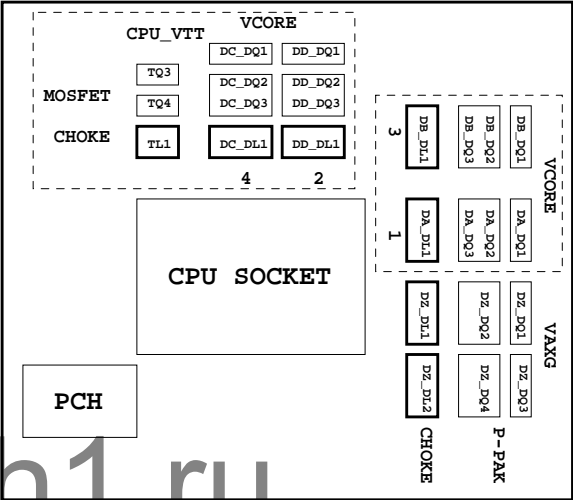
Super I/O ITE8720 GPIO Table

PIN NAME	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/SMB_C_R	2X PIN	FST_2X8
INIT#/GP85/SMBD_M	SEC_2x8	GTLREF_AD2
ACK#/GP83	DDR_LED1_C	
VID01/GP21/DCD2#	DDR_LED2_C	
STB#/GP87/SMB_C_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：

散熱模組料號：

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

	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			
Size C	Document Number	Rev	
	GA-H97-D3H	1.0	
Date:	Friday, February 28, 2014	Sheet	34 of 34