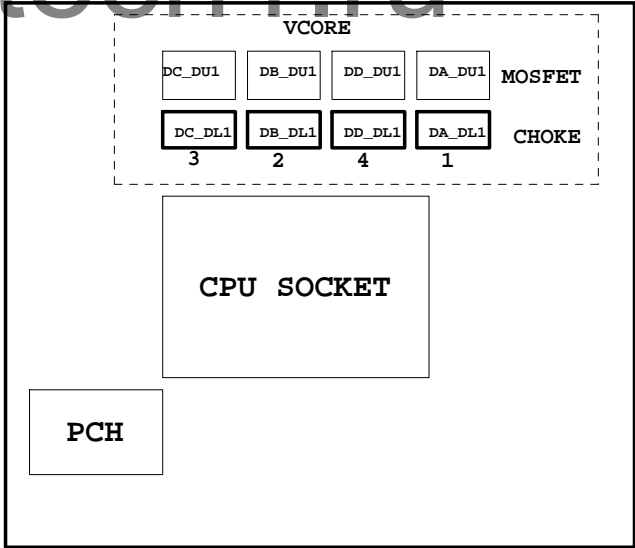


01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1150-A
05	CPU_LGA1150-B
06	CPU_LGA1150-C
07	DDR III CHANNEL A
08	DDR III CHANNEL B
09	PCH_FDI,DMI,USB,PCIE
10	PCH_RGB,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCI EXPRESS*16 SLOT
15	PCIEX1*2 , PCIEX4 SLOT
16	ITE8892 PCI BRIDGE
17	PCI SLOT 1&2
18	I/O ITE8728
19	COM, -PROHOT, R_USB
20	Dual BIOS / LPT
21	ALC892 CODEC
22	REAR AUDIO JACK
23	VCORE_ ISL95820_1
24	VCORE_ ISL95820_2
25	DDR15V / M3 POWER
26	NCP3933 OVER VOLTAGE
27	DISCRETE POWER

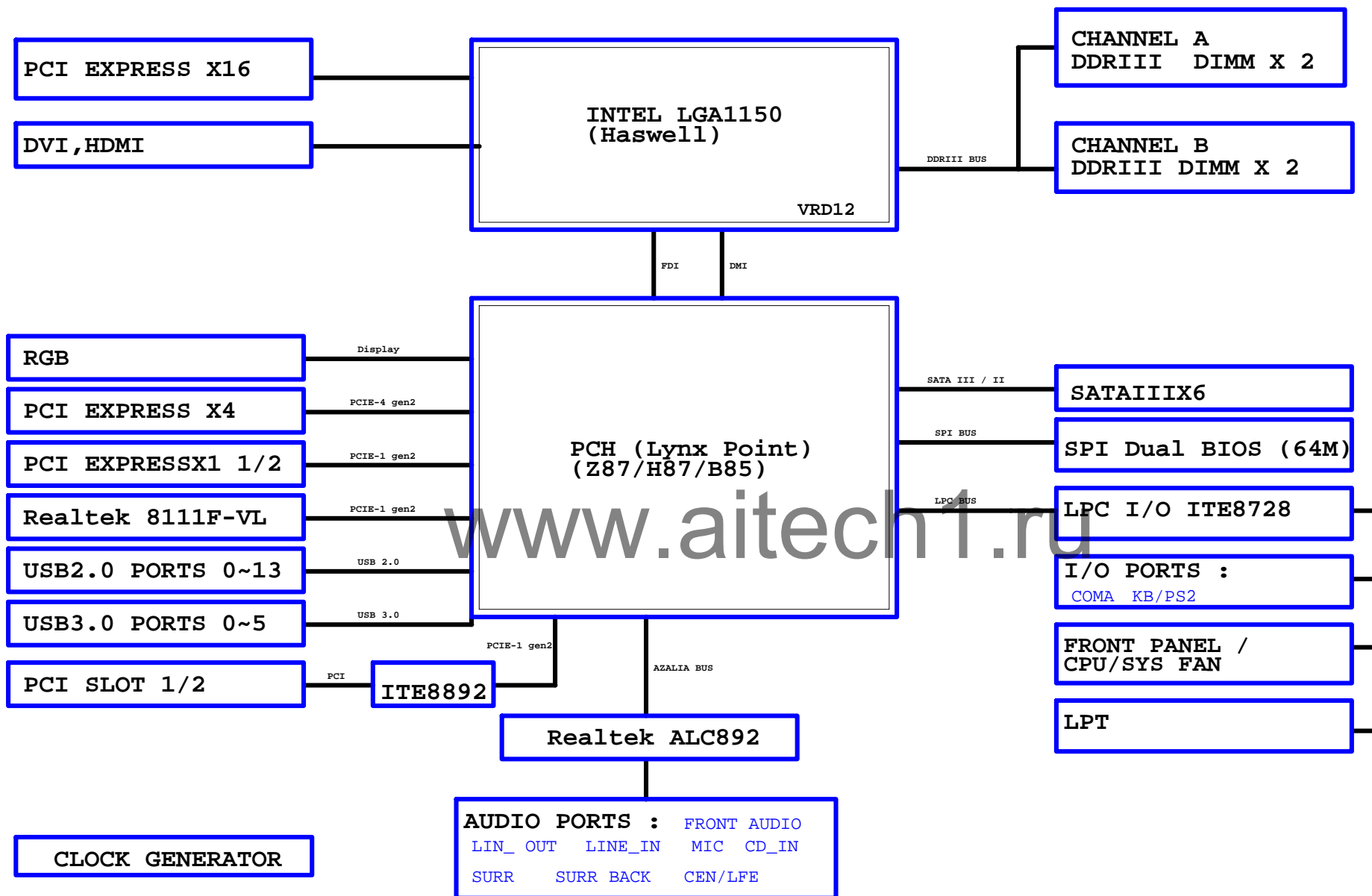
28	F_PANEL , F_USB2.0/3.0
29	ATX POWER, CLOCK GEN
30	HWM , KB/MS , FAN CTRL
31	Realtek 8111F-VL
32	DVI
33	HDMI
34	TABLE LIST
35	
36	
37	
38	
39	
40	



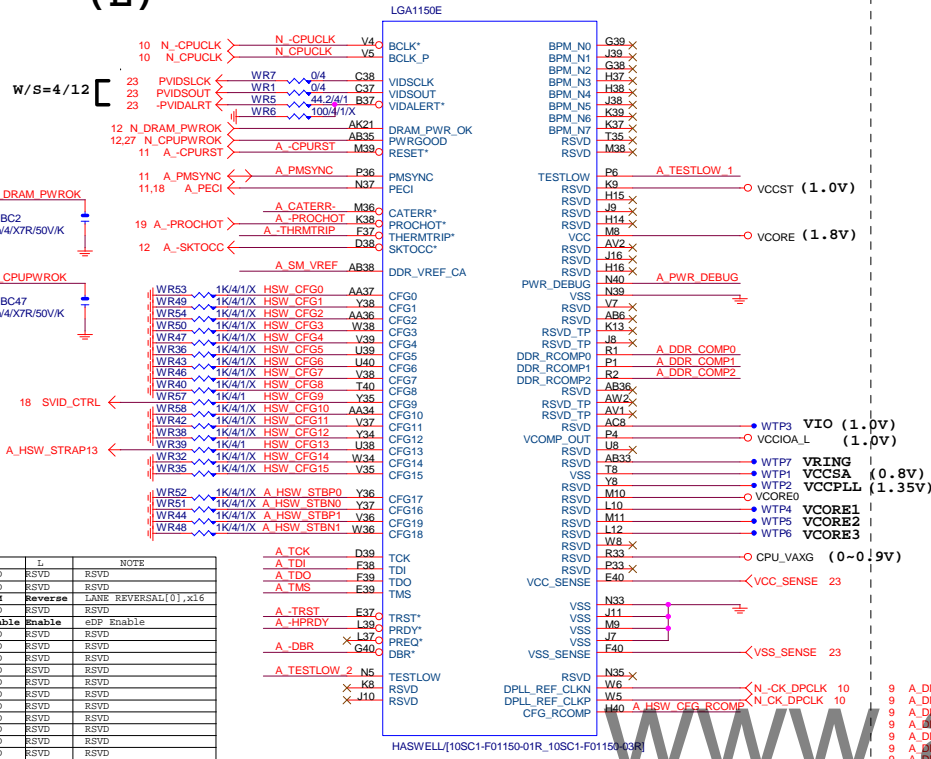
Component value change history

[illegible][illegible]

BLOCK DIAGRAM



LGA1150 (E)

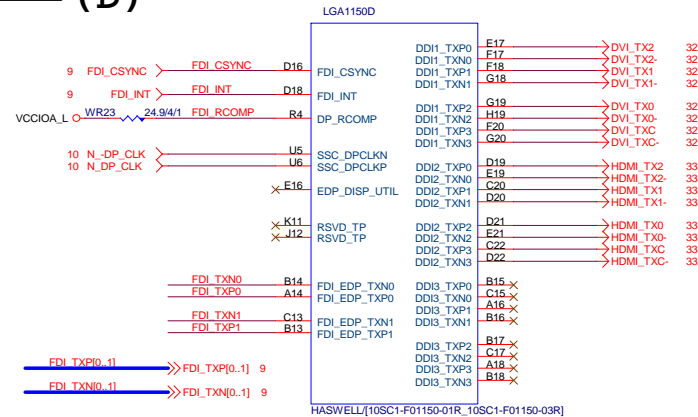


CFG	H	L	NOTE
0	RSVD	RSVD	RSVD
1	RSVD	RSVD	RSVD
2	NORM	Reverse	LANE REVERSAL[0], x16
3	RSVD	RSVD	RSVD
4	Disable	Enable	eDE Enable
7	RSVD	RSVD	RSVD
8	RSVD	RSVD	RSVD
9	RSVD	RSVD	RSVD
10	RSVD	RSVD	RSVD
11	RSVD	RSVD	RSVD
12	RSVD	RSVD	RSVD
13	RSVD	RSVD	RSVD
14	RSVD	RSVD	RSVD
15	RSVD	RSVD	RSVD
16	RSVD	RSVD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

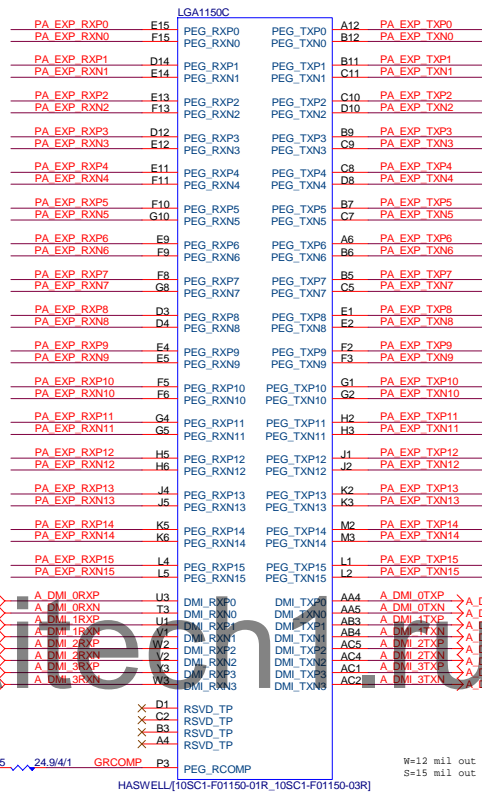


FDI:4/4/4//15(breakout min 4/4/4//8)
Impedance=85 +- 15%

DP/HDMI 4/4/4//20 FDI 4/4/4/12

Impedance=85 +- 15%

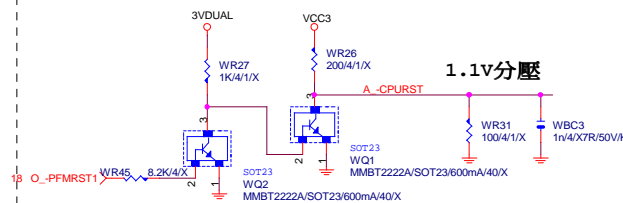
LGA1155 (C)



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

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

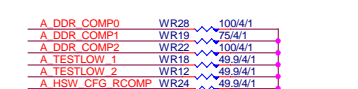
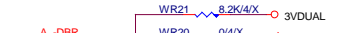
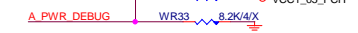
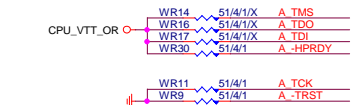
-CPURST



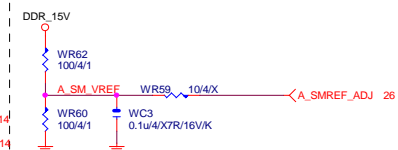
CPU SVID



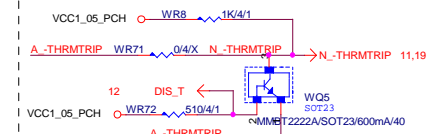
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98	98
99	99
100	100



SM REF



THRMTRIP DISABLE FOR Z87 OVERCLOCK



Gigabyte Technology

CPU LGA1150-A

GA-H87-HD3

Rev	1 11
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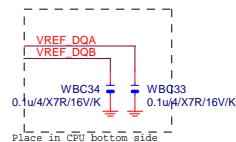
LGA1150 (A)

LGA1150A		DDR0_MA0	DDR0_D00	AD38	MDA0
MAAA0	AU13	DDR0_MA1	DDR0_D01	AD39	MDA1
MAAA1	AV16	DDR0_MA2	DDR0_D02	AF38	MDA2
MAAA2	AU16	DDR0_MA3	DDR0_D03	AF39	MDA3
MAAA3	AW17	DDR0_MA4	DDR0_D04	AD37	MDA4
MAAA4	AU17	DDR0_MA5	DDR0_D05	AD40	MDA5
MAAA5	AW18	DDR0_MA6	DDR0_D06	AE37	MDA6
MAAA6	AV17	DDR0_MA7	DDR0_D07	AF40	MDA7
MAAA7	AT18	DDR0_MA8	DDR0_D08	AH40	MDA9
MAAA8	AU18	DDR0_MA9	DDR0_D09	AH39	MDA10
MAAA9	AT19	DDR0_MA10	DDR0_D10	AK38	MDA10
MAAA10	AW11	DDR0_MA11	DDR0_D11	AK39	MDA11
MAAA11	AV19	DDR0_MA12	DDR0_D12	AH37	MDA12
MAAA12	AU19	DDR0_MA13	DDR0_D13	AH38	MDA12
MAAA13	AT20	DDR0_MA14	DDR0_D14	AK37	MDA14
MAAA14	AW21	DDR0_MA15	DDR0_D15	AK40	MDA15
MAAA15	AU21	DDR0_MA16	DDR0_D16	AM40	MDA17
MODT_A0	AW10	DDR0_ODT0	DDR0_D17	AM39	MDA21
MODT_A1	AV8	DDR0_ODT1	DDR0_D18	AP38	MDA18
MODT_A2	AW9	DDR0_ODT2	DDR0_D19	AP39	MDA19
MODT_A3	AU8	DDR0_ODT3	DDR0_D20	AM37	MDA20
			DDR0_D21	AM38	MDA16
			DDR0_D22	AP37	MDA22
			DDR0_D23	AP40	MDA23
			DDR0_D24	AV37	MDA25
			DDR0_D25	AW37	MDA29
			DDR0_D26	AU35	MDA26
			DDR0_D27	AV35	MDA27
			DDR0_D28	AT37	MDA28
			DDR0_D29	AU37	MDA24
			DDR0_D30	AT35	MDA30
			DDR0_D31	AW35	MDA31
			DDR0_D32	AY6	MDA33
			DDR0_D33	AU6	MDA37
			DDR0_D34	AV4	MDA34
			DDR0_D35	AU4	MDA35
			DDR0_D36	AW6	MDA32
			DDR0_D37	AW4	MDA38
			DDR0_D38	AY4	MDA39
			DDR0_D39	AR1	MDA41
			DDR0_D40	AR4	MDA45
			DDR0_D41	AN3	MDA42
			DDR0_D42	AN4	MDA43
			DDR0_D43	AR2	MDA44
			DDR0_D44	AR3	MDA40
			DDR0_D45	AN2	MDA46
			DDR0_D46	AN1	MDA47
			DDR0_D47	AL1	MDA49
			DDR0_D48	AL4	MDA53
			DDR0_D49	AL4	MDA50
			DDR0_D50	AJ4	MDA51
			DDR0_D51	AL2	MDA52
			DDR0_D52	AL3	MDA48
			DDR0_D53	AJ2	MDA54
			DDR0_D54	AJ1	MDA55
			DDR0_D55	AG1	MDA57
			DDR0_D56	AG4	MDA61
			DDR0_D57	AE3	MDA58
			DDR0_D58	AE4	MDA59
			DDR0_D59	AG2	MDA60
			DDR0_D60	AG3	MDA56
			DDR0_D61	AE2	MDA62
			DDR0_D62	AE1	MDA63
			DDR0_D63	AE39	DQSA0
			DDR0_D64	AJ39	DQSA1
			DDR0_D65	AN39	DQSA2
			DDR0_D66	AV36	DQSA3
			DDR0_D67	AV5	DQSA4
			DDR0_D68	AP3	DQSA5
			DDR0_D69	AK3	DQSA6
			DDR0_D70	AF3	DQSA7
			DDR0_D71	AV32	
			DDR0_D72	AE38	-DQSA0
			DDR0_D73	AJ38	-DQSA1
			DDR0_D74	AN38	-DQSA2
			DDR0_D75	AJ36	-DQSA3
			DDR0_D76	AW5	-DQSA4
			DDR0_D77	AP2	-DQSA5
			DDR0_D78	AK2	-DQSA6
			DDR0_D79	AF2	-DQSA7
			DDR0_D80	AU32	

HASWELL[10SC1-F01150-01R_10SC1-F01150-03R]

LGA1150 (B)

LGA1150B		DDR1_MA0	DDR1_D00	AE34	MDB0
MAAB0	AL19	DDR1_MA1	DDR1_D01	AE35	MDB1
MAAB1	AK23	DDR1_MA2	DDR1_D02	AG35	MDB2
MAAB2	AM22	DDR1_MA3	DDR1_D03	AH35	MDB3
MAAB3	AM23	DDR1_MA4	DDR1_D04	AD34	MDB4
MAAB4	AP23	DDR1_MA5	DDR1_D05	AD35	MDB5
MAAB5	AL23	DDR1_MA6	DDR1_D06	AG34	MDB6
MAAB6	AY24	DDR1_MA7	DDR1_D07	AH34	MDB7
MAAB7	AV25	DDR1_MA8	DDR1_D08	AL34	MDB8
MAAB8	AU26	DDR1_MA9	DDR1_D09	AL35	MDB9
MAAB9	AW25	DDR1_MA10	DDR1_D10	AK31	MDB10
MAAB10	AP18	DDR1_MA11	DDR1_D11	AK34	MDB11
MAAB11	AY25	DDR1_MA12	DDR1_D12	AK35	MDB12
MAAB12	AV26	DDR1_MA13	DDR1_D13	AK32	MDB13
MAAB13	AR15	DDR1_MA14	DDR1_D14	AL32	MDB14
MAAB14	AV27	DDR1_MA15	DDR1_D15	AL34	MDB17
MAAB15	AY28	DDR1_MA16	DDR1_D16	AP34	MDB21
MODT_B0	AM17	DDR1_ODT0	DDR1_D17	AN31	MDB19
MODT_B1	AL16	DDR1_ODT1	DDR1_D18	AP31	MDB23
MODT_B2	AM16	DDR1_ODT2	DDR1_D19	AN35	MDB20
MODT_B3	AK15	DDR1_ODT3	DDR1_D20	AP35	MDB16
			DDR1_D21	AN32	MDB18
			DDR1_D22	AP32	MDB22
			DDR1_D23	AM29	MDB25
			DDR1_D24	AM28	MDB28
			DDR1_D25	AR29	MDB27
			DDR1_D26	AR28	MDB30
			DDR1_D27	AL28	MDB24
			DDR1_D28	AL28	MDB29
			DDR1_D29	AP29	MDB26
			DDR1_D30	AP28	MDB31
			DDR1_D31	AR12	MDB32
			DDR1_D32	AL13	MDB33
			DDR1_D33	AL12	MDB35
			DDR1_D34	AR13	MDB36
			DDR1_D35	AP13	MDB37
			DDR1_D36	AM13	MDB38
			DDR1_D37	AM12	MDB39
			DDR1_D38	AR9	MDB45
			DDR1_D39	AP9	MDB41
			DDR1_D40	AR6	MDB47
			DDR1_D41	AP6	MDB43
			DDR1_D42	AR10	MDB44
			DDR1_D43	AP10	MDB40
			DDR1_D44	AR7	MDB46
			DDR1_D45	AP7	MDB42
			DDR1_D46	AM9	MDB52
			DDR1_D47	AL9	MDB53
			DDR1_D48	AL6	MDB50
			DDR1_D49	AL7	MDB55
			DDR1_D50	AM10	MDB48
			DDR1_D51	AL10	MDB49
			DDR1_D52	AM6	MDB54
			DDR1_D53	AM7	MDB51
			DDR1_D54	AH6	MDB61
			DDR1_D55	AH7	MDB60
			DDR1_D56	AE6	MDB59
			DDR1_D57	AE7	MDB63
			DDR1_D58	AJ6	MDB56
			DDR1_D59	AJ7	MDB57
			DDR1_D60	AG6	MDB58
			DDR1_D61	AF7	MDB62
			DDR1_D62	AF35	DQSB0
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			DDR1_D64	AN28	DQSB2
			DDR1_D65	AN28	DQSB3
			DDR1_D66	AN12	DQSB4
			DDR1_D67	AP8	DQSB5
			DDR1_D68	AL8	DQSB6
			DDR1_D69	AG7	DQSB7
			DDR1_D70	AN25	
			DDR1_D71	AE34	-DQSB0
			DDR1_D72	AK33	-DQSB1
			DDR1_D73	AN33	-DQSB2
			DDR1_D74	AN29	-DQSB3
			DDR1_D75	AN13	-DQSB4
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			DDR1_D79	AN26	

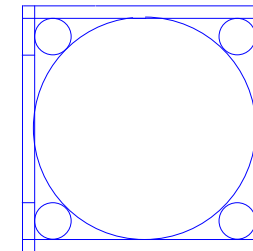


Place in CPU bottom side

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MAAB0	AL19	DDR1_MA1	DDR1_D01	AE35	MDB1
MAAB1	AK23	DDR1_MA2	DDR1_D02	AG35	MDB2
MAAB2	AM22	DDR1_MA3	DDR1_D03	AH35	MDB3
MAAB3	AM23	DDR1_MA4	DDR1_D04	AD34	MDB4
MAAB4	AP23	DDR1_MA5	DDR1_D05	AD35	MDB5
MAAB5	AL23	DDR1_MA6	DDR1_D06	AG34	MDB6
MAAB6	AY24	DDR1_MA7	DDR1_D07	AH34	MDB7
MAAB7	AV25	DDR1_MA8	DDR1_D08	AL34	MDB8
MAAB8	AU26	DDR1_MA9	DDR1_D09	AL35	MDB9
MAAB9	AW25	DDR1_MA10	DDR1_D10	AK31	MDB10
MAAB10	AP18	DDR1_MA11	DDR1_D11	AK34	MDB11
MAAB11	AY25	DDR1_MA12	DDR1_D12	AK35	MDB12
MAAB12	AV26	DDR1_MA13	DDR1_D13	AK32	MDB13
MAAB13	AR15	DDR1_MA14	DDR1_D14	AL32	MDB14
MAAB14	AV27	DDR1_MA15	DDR1_D15	AL34	MDB17
MAAB15	AY28	DDR1_MA16	DDR1_D16	AP34	MDB21
MODT_B0	AM17	DDR1_ODT0	DDR1_D17	AN31	MDB19
MODT_B1	AL16	DDR1_ODT1	DDR1_D18	AP31	MDB23
MODT_B2	AM16	DDR1_ODT2	DDR1_D19	AN35	MDB20
MODT_B3	AK15	DDR1_ODT3	DDR1_D20	AP35	MDB16
			DDR1_D21	AN32	MDB18
			DDR1_D22	AP32	MDB22
			DDR1_D23	AM29	MDB25
			DDR1_D24	AM28	MDB28
			DDR1_D25	AR29	MDB27
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			DDR1_D27	AL28	MDB24
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			DDR1_D32	AL13	MDB33
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			DDR1_D40	AR6	MDB47
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			DDR1_D43	AP10	MDB40
			DDR1_D44	AR7	MDB46
			DDR1_D45	AP7	MDB42
			DDR1_D46	AM9	MDB52
			DDR1_D47	AL9	MDB53
			DDR1_D48	AL6	MDB50
			DDR1_D49	AL7	MDB55
			DDR1_D50	AM10	MDB48
			DDR1_D51	AL10	MDB49
			DDR1_D52	AM6	MDB54
			DDR1_D53	AM7	MDB51
			DDR1_D54	AH6	MDB61
			DDR1_D55	AH7	MDB60
			DDR1_D56	AE6	MDB59
			DDR1_D57	AE7	MDB63
			DDR1_D58	AJ6	MDB56
			DDR1_D59	AJ7	MDB57
			DDR1_D60	AG6	MDB58
			DDR1_D61	AF7	MDB62
			DDR1_D62	AF35	DQSB0
			DDR1_D63	AL33	DQSB1
			DDR1_D64	AN28	DQSB2
			DDR1_D65	AN28	DQSB3
			DDR1_D66	AN12	DQSB4
			DDR1_D67	AP8	DQSB5
			DDR1_D68	AL8	DQSB6
			DDR1_D69	AG7	DQSB7
			DDR1_D70	AN25	
			DDR1_D71	AE34	-DQSB0
			DDR1_D72	AK33	-DQSB1
			DDR1_D73	AN33	-DQSB2
			DDR1_D74	AN29	-DQSB3
			DDR1_D75	AN13	-DQSB4
			DDR1_D76	AR8	-DQSB5
			DDR1_D77	AM8	-DQSB6
			DDR1_D78	AG6	-DQSB7
			DDR1_D79	AN26	

HASWELL[10SC1-F01150-01R_10SC1-F01150-03R]

LGA1150 (CR)

LGA1150
ILM_BP/1156/CSP

DDR BUS

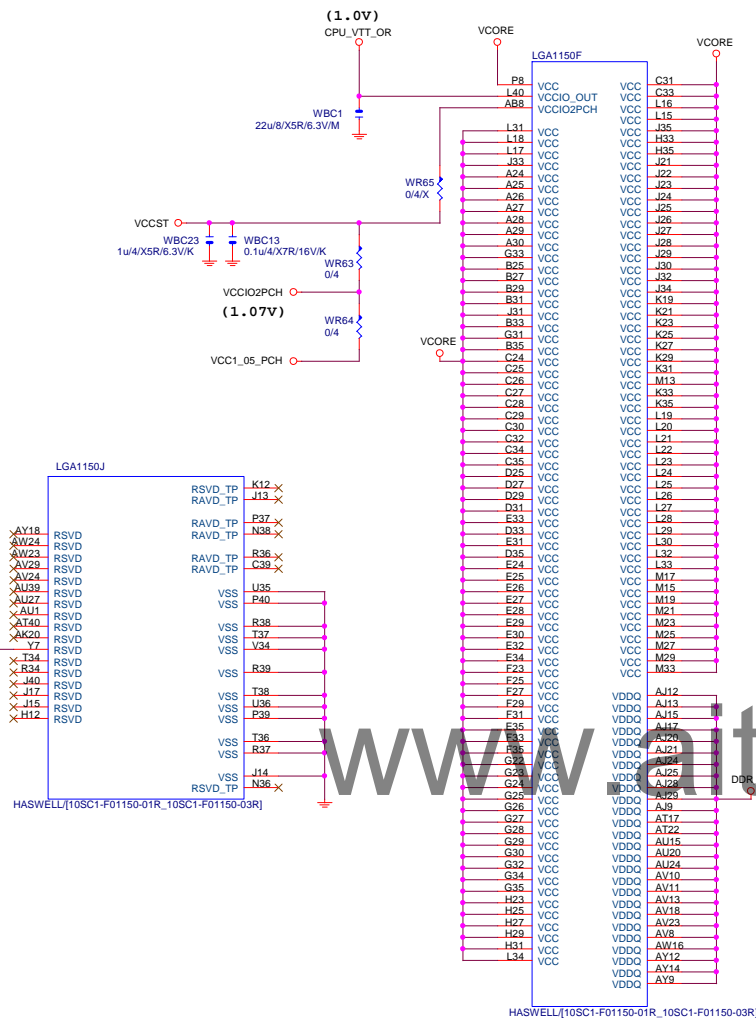
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8	MODT_B[0..3]	MODT_B0..3
7	MDA[0..63]	MDA0..63
8	MDB[0..63]	MDB0..63
7	DQSA[0..7]	DQSA0..7
7	-DQSA[0..7]	-DQSA0..7
7	MAAA[0..15]	MAAA0..15
8	MAAB[0..15]	MAAB0..15
8	DQSB[0..7]	DQSB0..7
8	-DQSB[0..7]	-DQSB0..7

Gigabyte Technology

Title		CPU LGA1150-B	
Size	Document Number	GA-H87-HD3	
Custom			Rev 1.1
Date:	Wednesday, October 16, 2013	Sheet	5 of 34

LGA1150

(F,J)



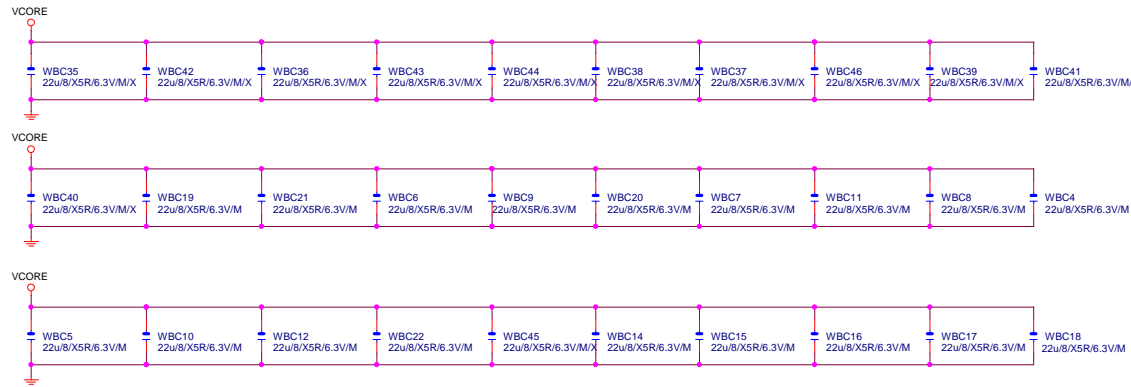
LGA1150

(G,H,I)

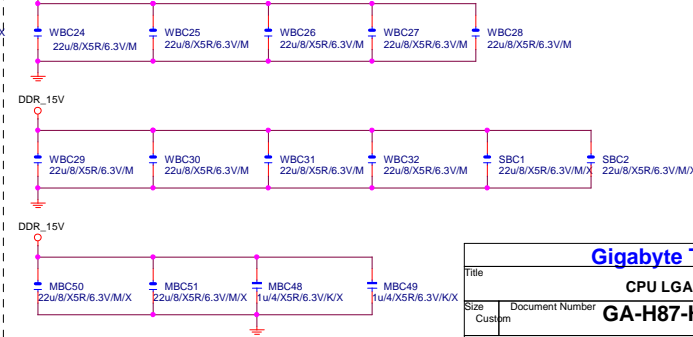


VCore CAP

(X30)



DDR_15V



DDR CAP

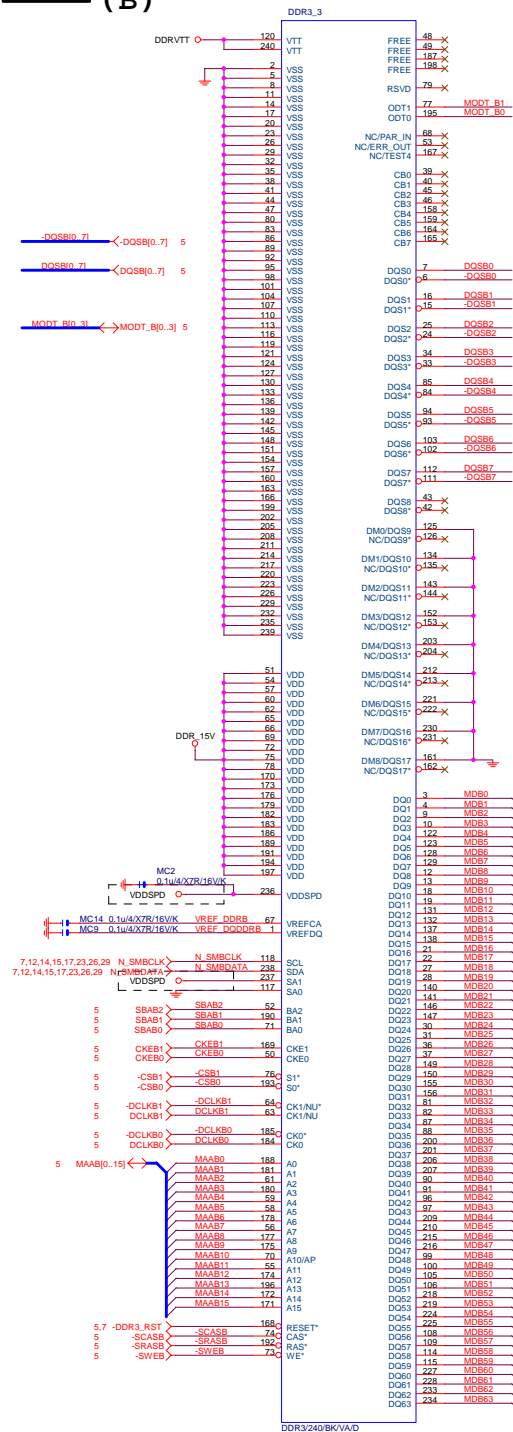
(X15)

Gigabyte Technology

KX	Title				
	CPU LGA1150-C				
	Size	Document Number	Rev		
	Custom	GA-H87-HD3			1.1
Date: Wednesday, October 16, 2013		Sheet	6	of	34

DDR3

(B)



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%

PCHB

PCIEB

PCIEB

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PCIEB

PCH

(F)

PCHF

FDILINK

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

FDI_TXP0_11
FDI_TXN0_11

FDI_TXP0_11
FDI_TXN0_11

FDI_TXP0_11
FDI_TXN0_11

FDI_TXP0_11
FDI_TXN0_11

FDI_TXP0_11
FDI_TXN0_11

FDI_TXP0_11
FDI_TXN0_11

FDI_TXP0_11
FDI_TXN0_11

FDI_TXP0_11
FDI_TXN0_11

FDI_TXP0_11
FDI_TXN0_11

FDI_TXP0_11
FDI_TXN0_11

FDI_TXP0_11
FDI_TXN0_11

FDI_TXP0_11
FDI_TXN0_11

FDI_TXP0_11
FDI_TXN0_11

FDI_TXP0_11
FDI_TXN0_11

FDI_TXP0_11
FDI_TXN0_11

REAR USB3.0

B85/H81:USB N/A

LAN AR8161

ITE8892 PCI

Bridge

PCIEX4 port1

PCIEX4 port2

PCIEX4 port3

PCIEX1_1

H81:PCIE 7/8X

PCIEX4 port4

PCIEX1_2

放靠近 Device & PCI-E Slot

H87/S[10HB1-030H87-20R]

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

usb2.0 5/7/5/12 Impedance=85 +- 15%

usb3.0 5/7/5/20

H81:12/13 N/A

B85/H81: 5/7 N/A

H81:USB3.0 N/A

H81:12/13 N/A

H81:12/13 N/A

H81:12/13 N/A

H81:12/13 N/A

H81:12/13 N/A

H81:12/13 N/A

H81:12/13 N/A

H81:12/13 N/A

H81:12/13 N/A

H81:12/13 N/A

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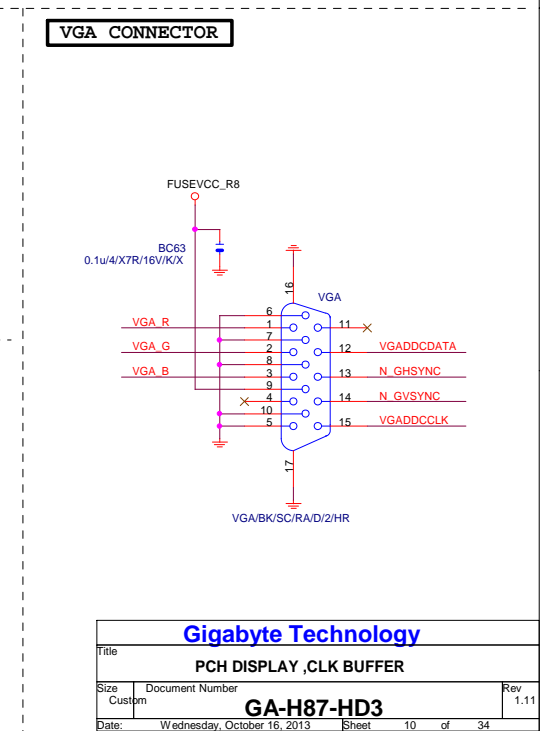
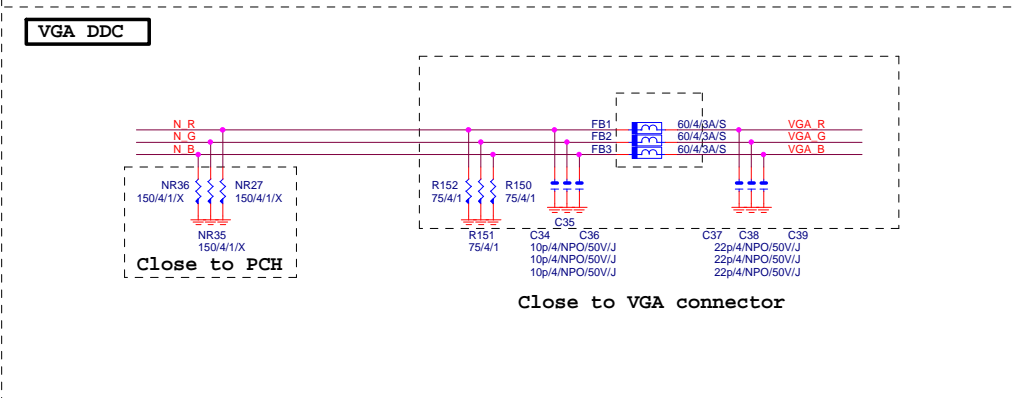
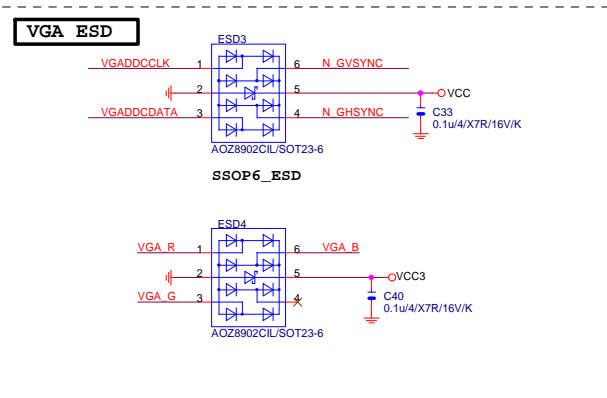
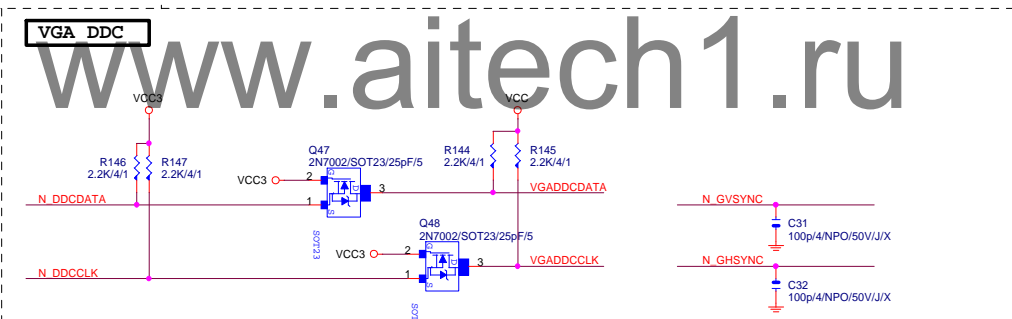
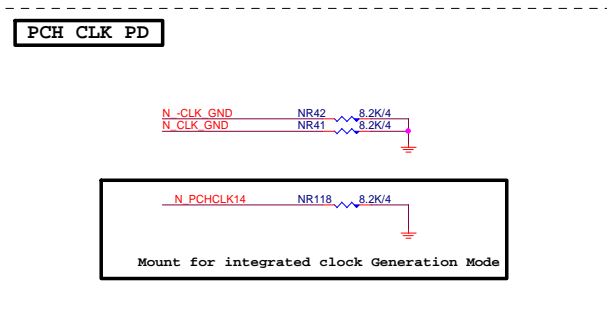
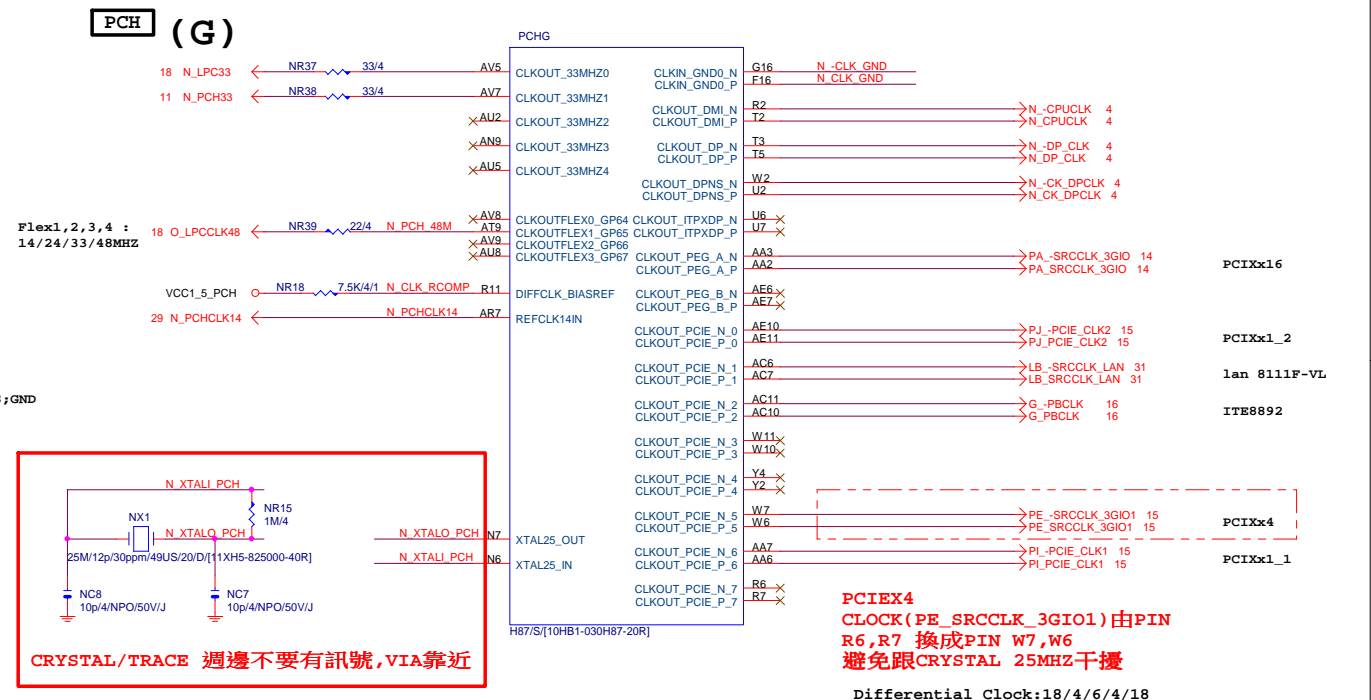
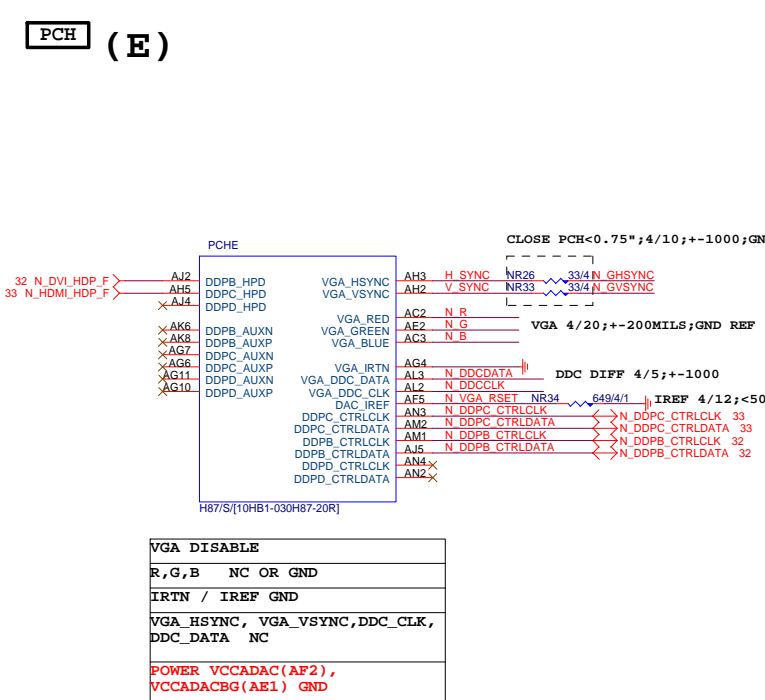
USB TABLE

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
OC3#	USB6,7
OC4#	USB8,9
OC5#	USB10,11
OC6#	USB12,13
OC7#	Not Use

Gigabyte Technology

Title	PCH FDI,DMI,USB,PCIE	Rev	1.11
Size	Document Number		
Custom	GA-H87-HD3		
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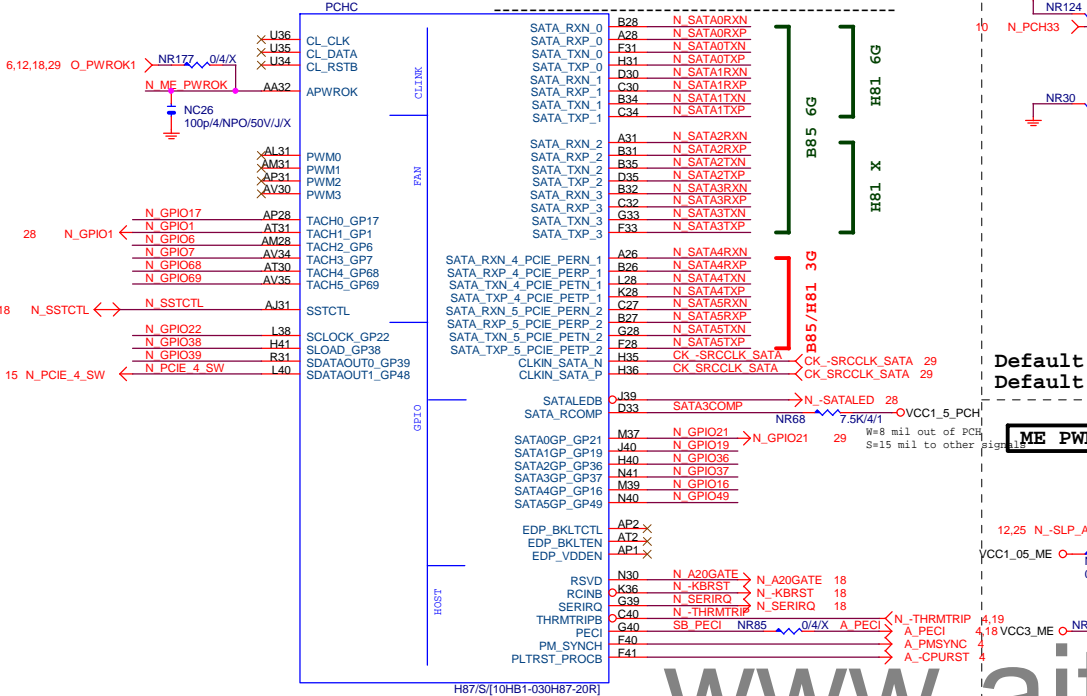
PCH (C)

SATA3 : 20/4/4/4/20 (breakout min 8/4/4/4/8)

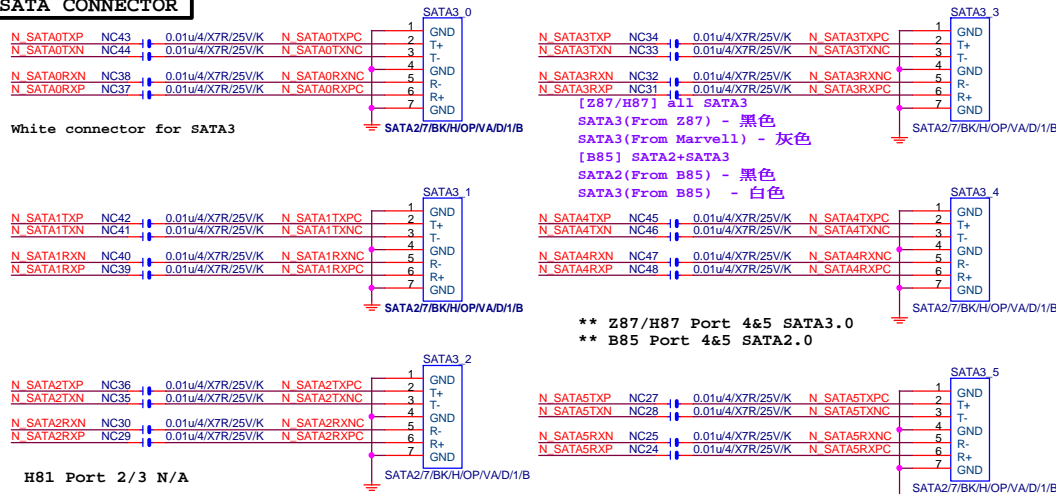
Impedance=8:

SATA2 4/4/4//15

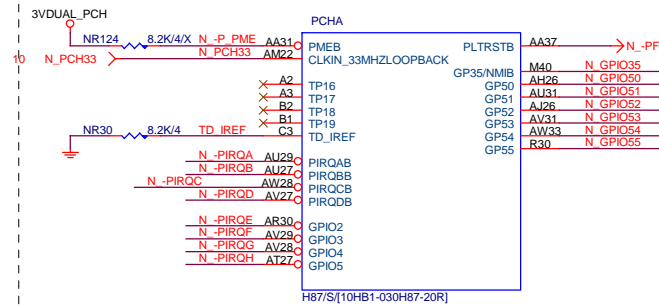
SATA3 4/4/4//20



SATA CONNECTOR



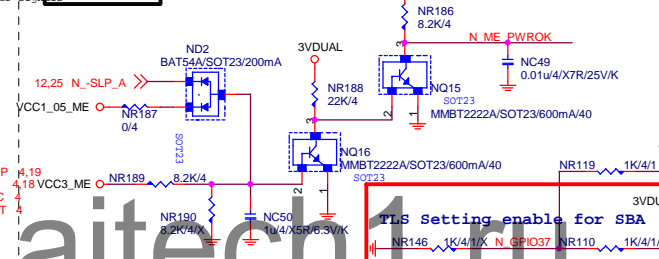
PCH (A)



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

BOOT DEVICE	GP51	GP19
LPC	0	0
SPI	float	float

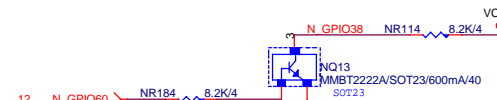
ME PWROK



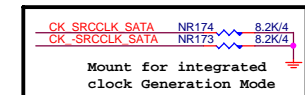
GPIO38 Ctrl

MFG Mode

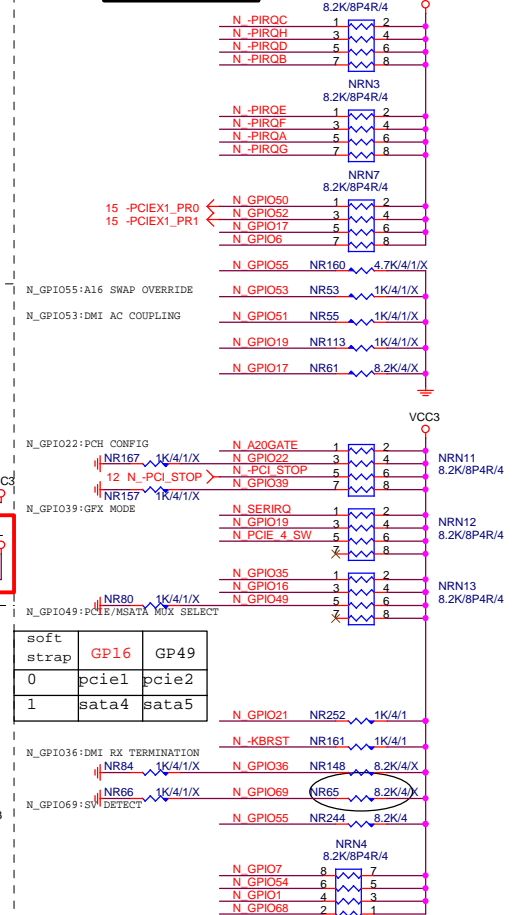
```
N_GPIO38 : Lo --> Enable
           Hi --> Disable
```



PCH CLK PD



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



soft
strap
0
1

N_GPIO36:DMI RX TERMINATION
NR84 1K/4/1/X
NR66 1K/4/1/X
N_GPIO69:SV DETECT

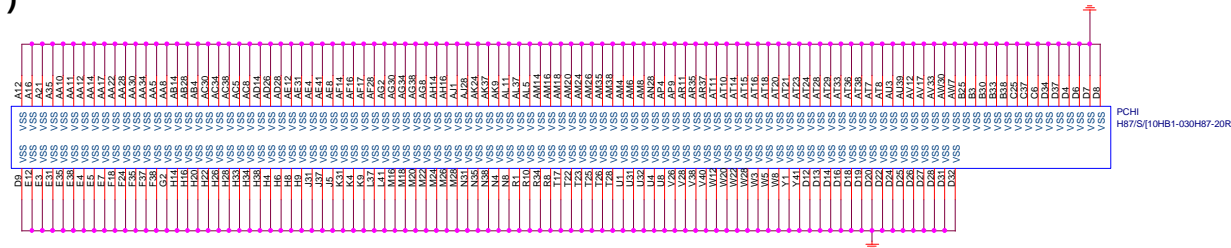
N_GPIO69:SV DETECT

1111

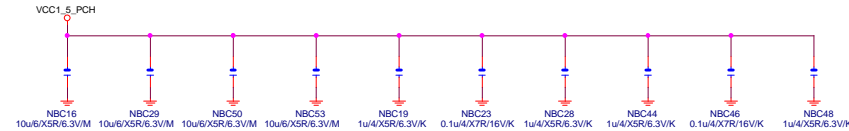
Gigabyte Technology

Title			
PCH HOST , SATA, PCI			
Size	Document Number	Rev	
Custom	GA-H87-HD3	1.11	
Date:	Wednesday, October 16, 2013	Sheet	11 of 34

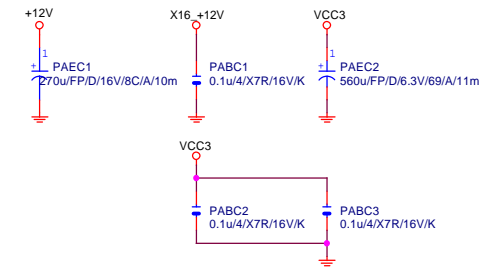
PCH (I)



SHT PWR

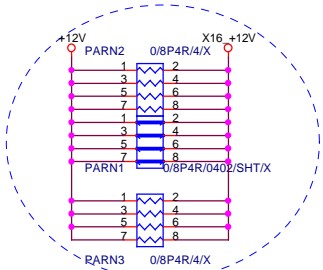


PCIEX16 CAP



PCIEX16 PROTECT SHT

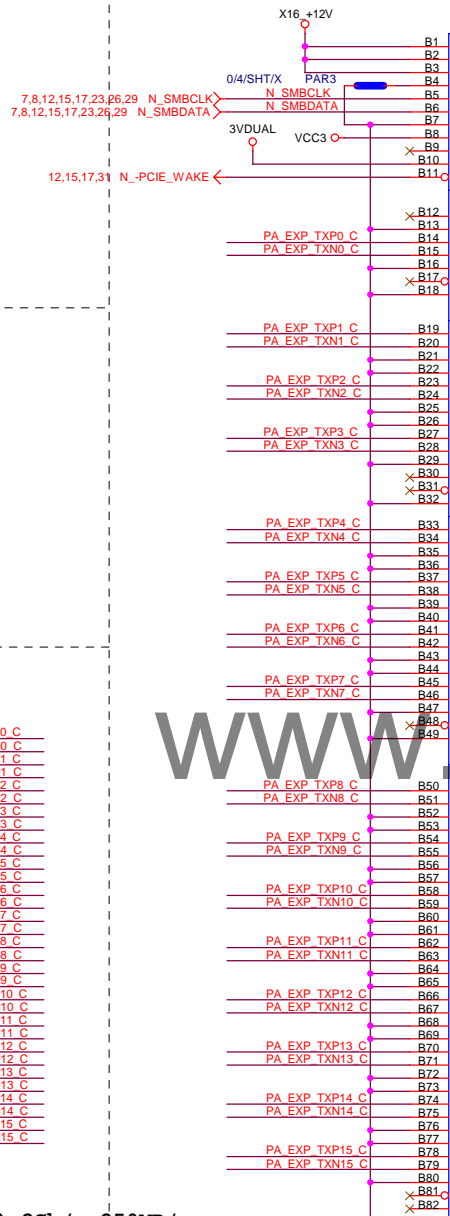
+12 protect short-wire test



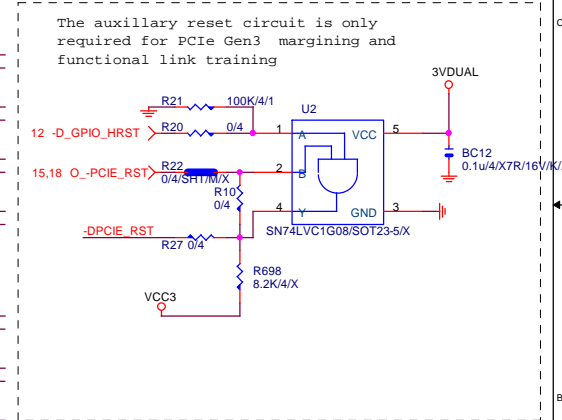
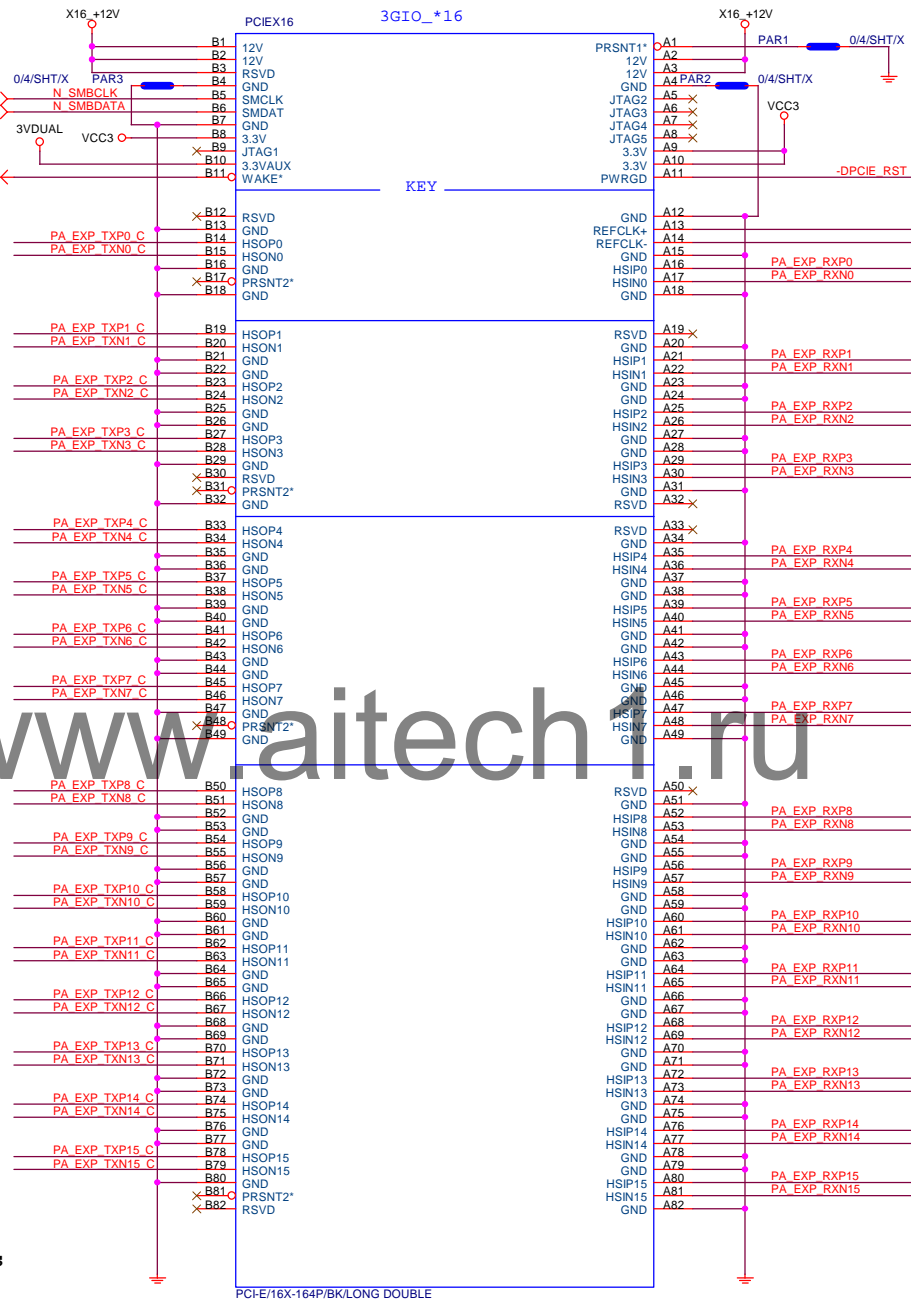
PCIEX16 AC CAP

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	PAC18	0.22u/4/X5R/6.3V/K	PA EXP TXP7 C
PA EXP TXN7	PAC19	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



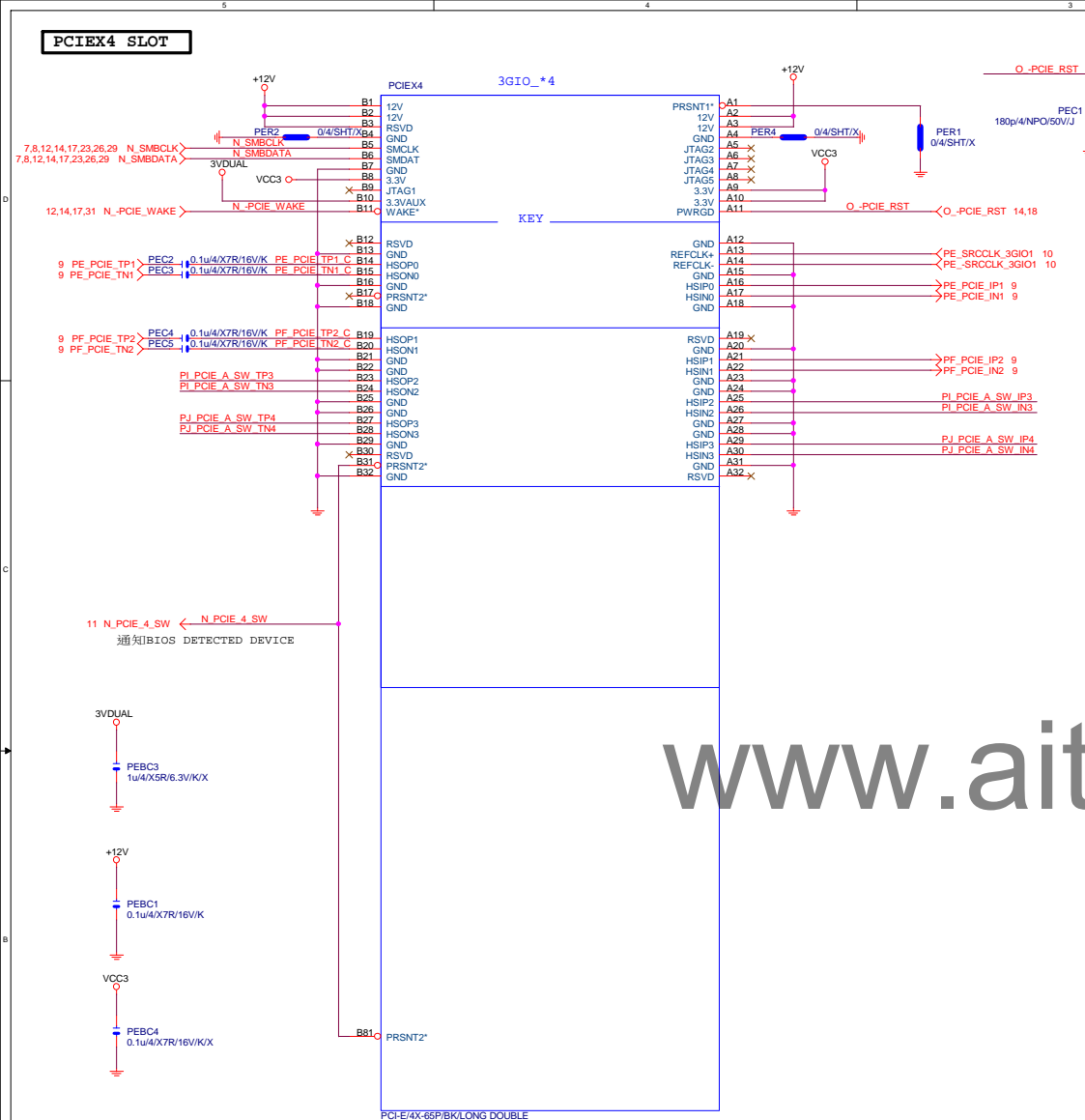
PCIESLOT-164DN-Q



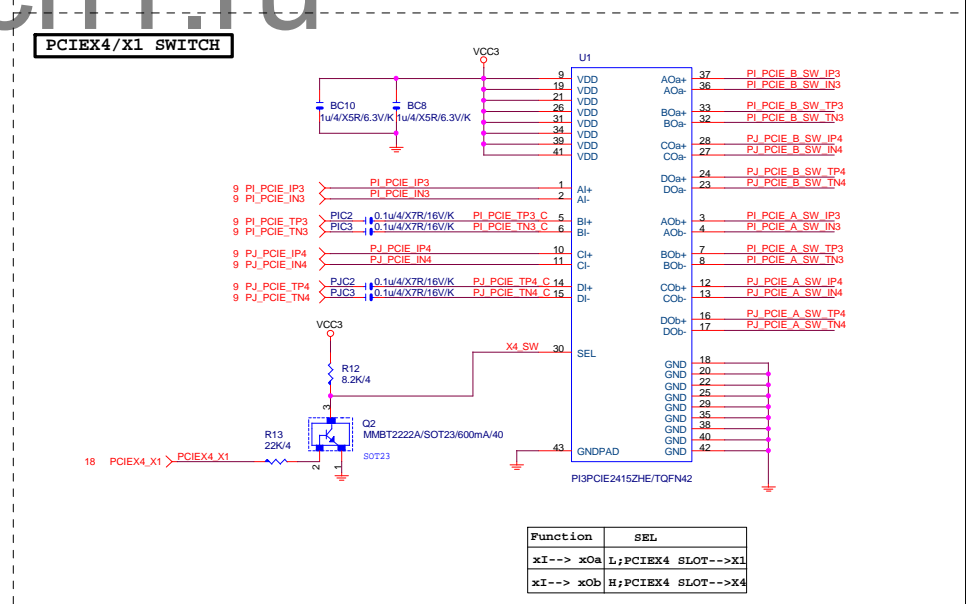
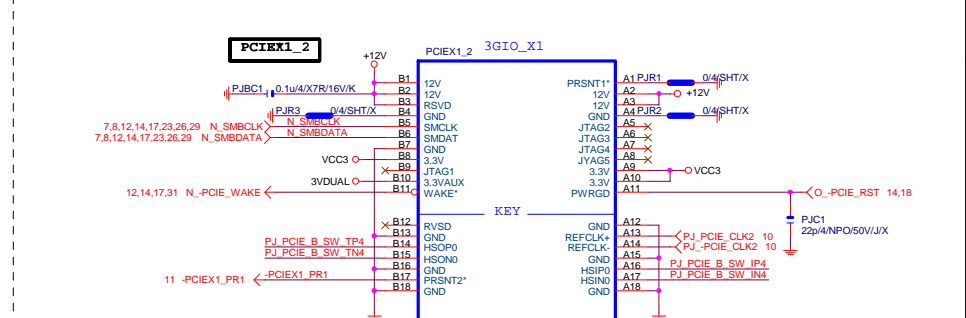
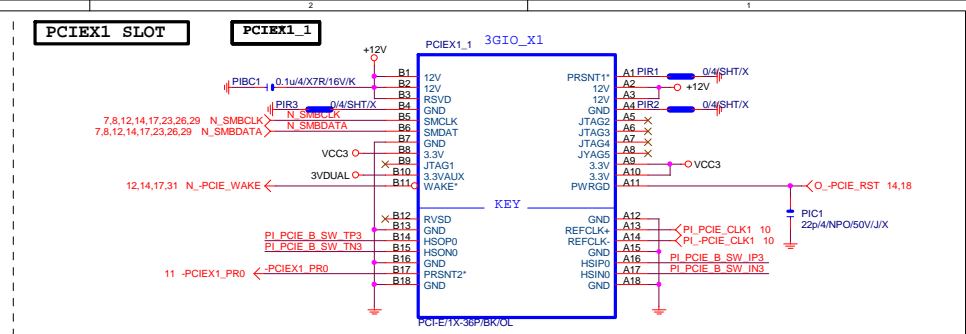
PCIEX16:16/5/5/5/16

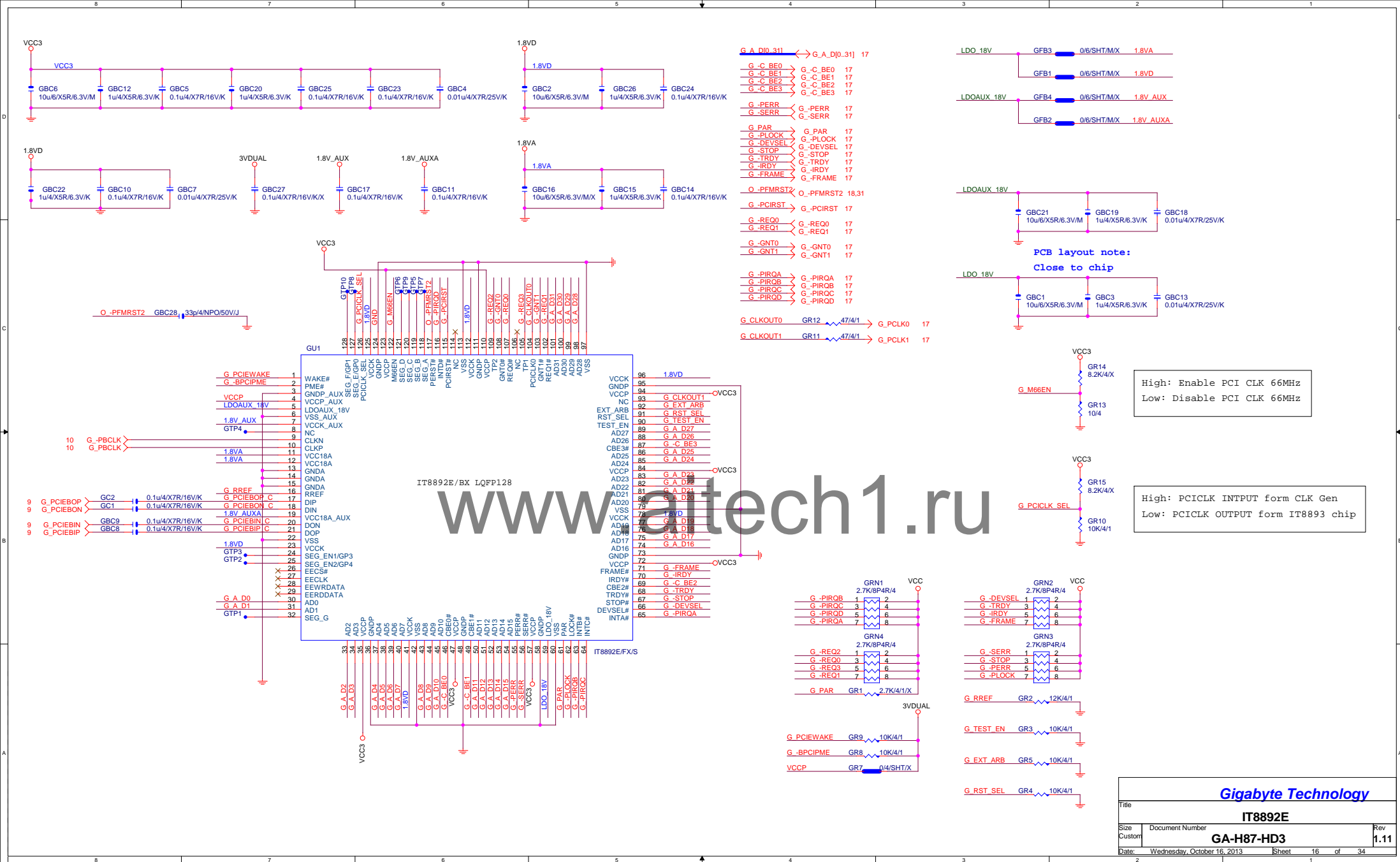
PA EXP RXP0.15I	>>>PA_EXP_RXP[0..15] 4
PA EXP RXN0.15I	>>>PA_EXP_RXN[0..15] 4
PA EXP TXP0.15I	>>>PA_EXP_TXP[0..15] 4
PA EXP TXN0.15I	>>>PA_EXP_TXN[0..15] 4

Gigabyte Technology			
PCI EXPRESS * 16			
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Date:	Rev	1.11	



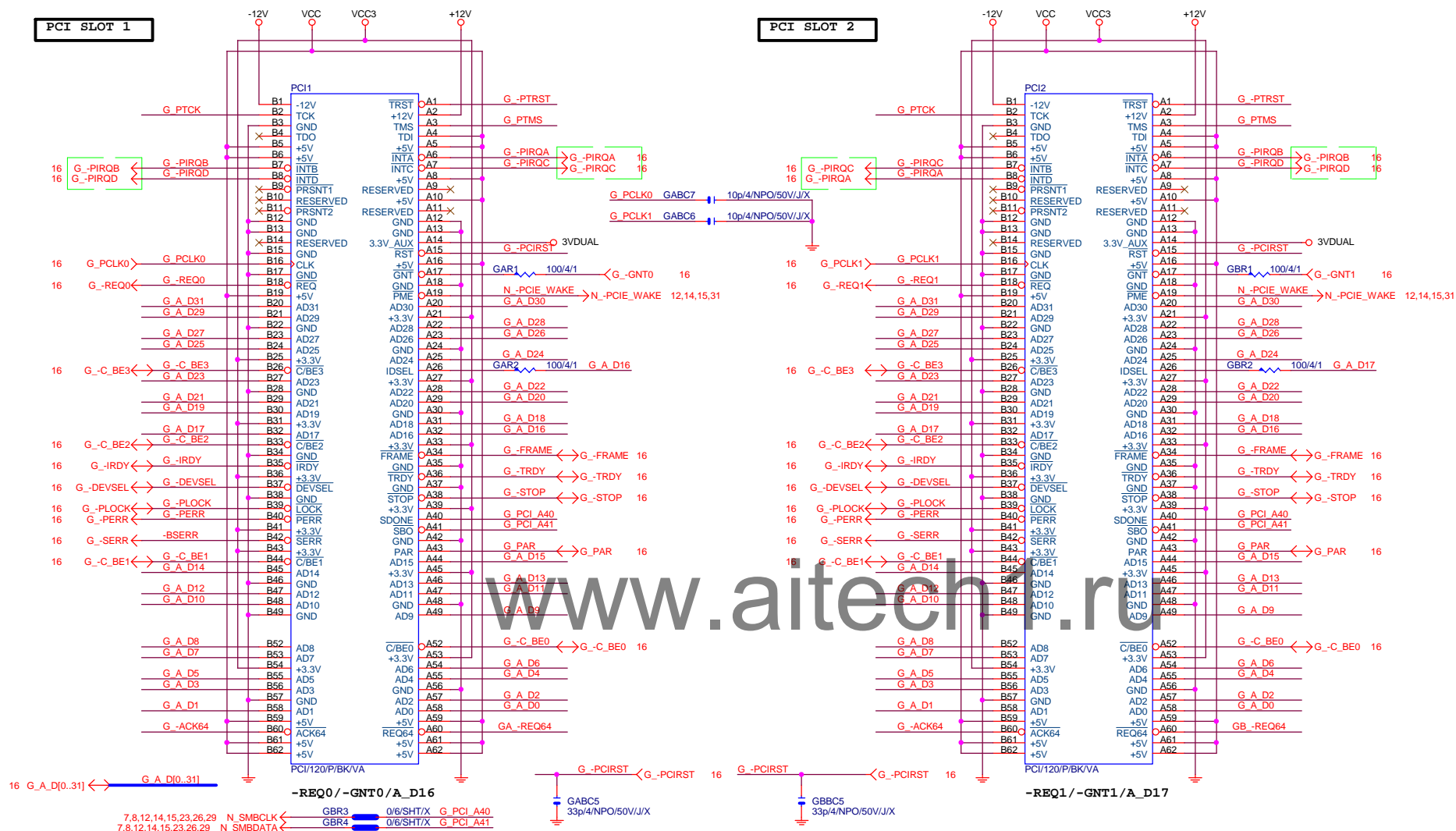
	N_PCIE_4_SW (PCH GPIO48)	PCIEX4_X1 (SIO_GPIO26)
PCIEX1, PCIEX4 --> X1 (Default)	H	H
PCIEX4 No devices PCIEX4 --> X1	H	H
PCIEX4 Have devices PCIEX4 --> X4	L	L
PCIEX1_1/2 --> N/A		





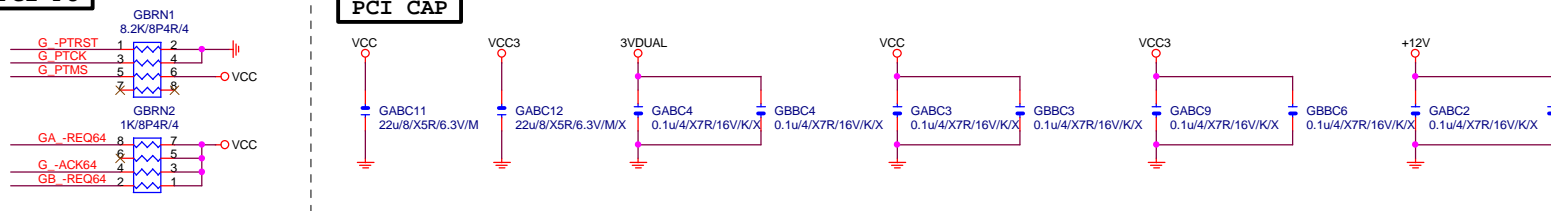
PCI SLOT 1

PCI SLOT 2



PCI PU

PCI CAP

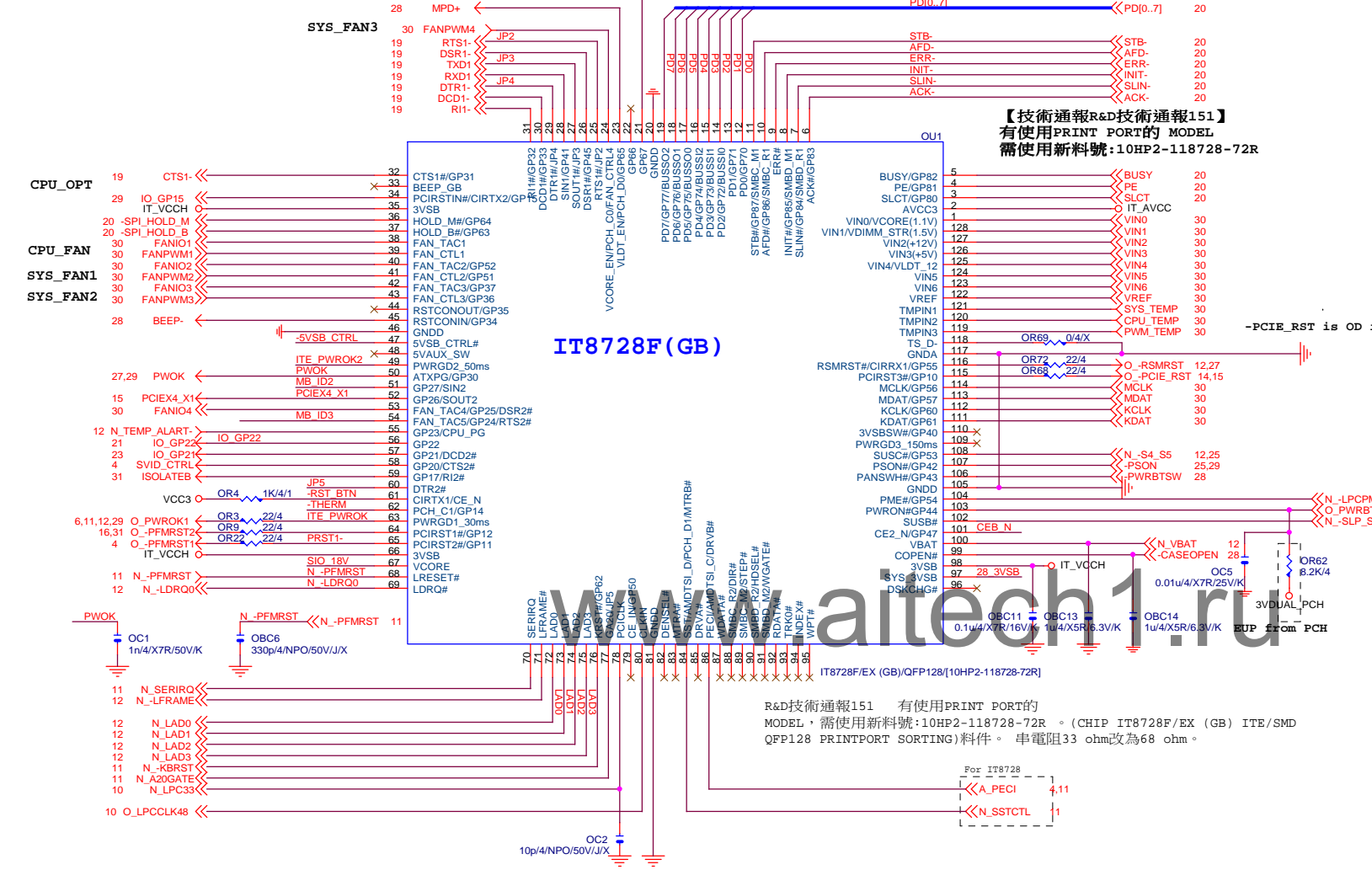


GIGABYTE™

PCI SLOT 1&2

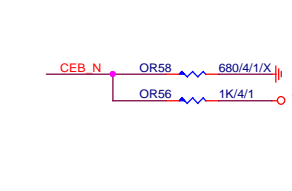
Size	Document Number	Rev
Custom	GA-H87-HD3	1.11
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SIO IT8728F



IT8728F NOTE	
IT8728	
PIN121	VCORE_EN/PCH_C0
PIN120	VLD1_EN/PCH_D0
PIN19	ATXPG
PIN31	PCH_C1
PIN53	SST/AMDTSI_D/MTRB#PCH_D1
PIN55	PRCI/AMDTSI_C/DRVB#
PIN66	SYS_3VSB
PIN70	GP47
PIN95	VIN2(VCC5)
PIN96	VIN1(VCC12)
PIN97	VIN1/VDIMM_STR(1.5V)
PIN98	VIN0/VCORE(1.1V)/NC

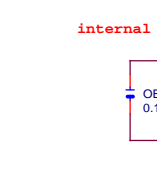
DUAL BIOS OPT STRAP



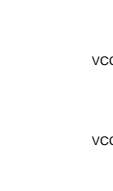
Power leakage



SIO_18V



MB ID



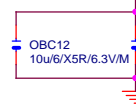
SIO CAP



IT_VCC



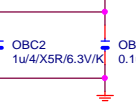
IT_VCC



IT_VCC



3VDUAL_PCH



PWR SHT

For 8728 EUP function

3VDUAL_PCH OR25 0/6/SHT/X IT_VCC

VCC3 OR49 0/6/SHT/X IT_AVCC

SIO PU

SVID_CTRL OR84 8.2K/4 3VDUAL_PCH

PCIE_X4_X1 OR14 8.2K/4 3VDUAL_PCH

-5VSB_CTRL OR6 8.2K/4 3VDUAL_PCH

-THERM OR28 8.2K/4 VCC3

N_LDRQ0 OR27 1K/4/1 VCC3

ITE_PWROK2 OR16 1K/4/1 VCC3

ITE_PWROK OR10 1K/4/1 VCC3

O_PCIE_RST OR71 1K/4/1 VCC3

O_PFMIRST1 OR19 1K/4/1X VCC3

O_PFMIRST2 OR2 1K/4/1X VCC3

N_A20GATE OR31 680/4/1X

Hi:Disable WDT
Lo:Enable WDT to rest PWROK

SIO STRAP

JP3--- High SPI-Flash Disable
Low SPI-Flash Enable

JP5: N/A FOR 8728 DX
JP5: PULL DOWN FOR 8728 EX
anti-surge enable

EUP control detect

3VDUAL OR47 100/4/1 28 3VSB

JP4	1	k8 power sequency function is Disable
JP4	0	k8 power sequency function is Enable
JP3	1 1	The default value of EC Index 63h/6Bh/73h is 80h.
JP3	1 0	The default value of EC Index 63h/6Bh/73h is FFh.
JP5	0 1	The default value of EC Index 63h/6Bh/73h is 00h.
JP5	0 0	The default value of EC Index 63h/6Bh/73h is 40h.

Gigabyte Technology

Title: ITE 8728 LPC IO

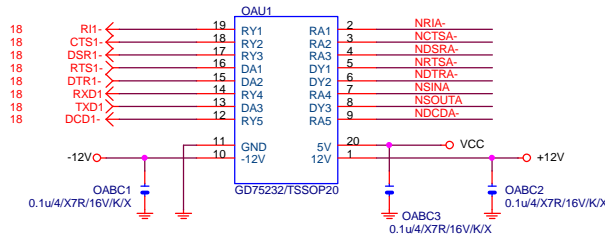
Size B Document Number: GA-H87-HD3 Rev 1.11

Date: Wednesday, October 16, 2013 Sheet 18 of 34

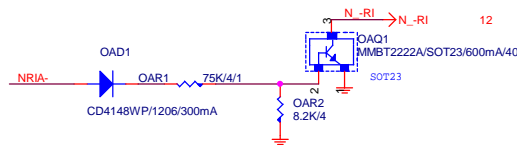
R&D技術通報151 有使用PRINT PORTの
MODEL・需使用新料號:10HP2-118728-72R (CHIP IT8728F/EX (GB) ITE/SMD
QFP128 PRINTPORT SORTING) 料件。串電阻33 ohm改為68 ohm。

For IT8728
A_PECI 4,11
N_SSTCTL 1

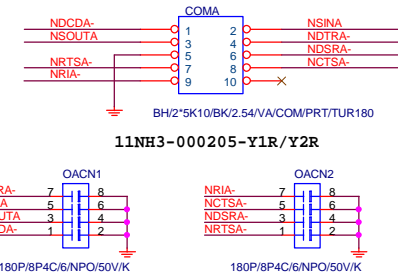
COMA



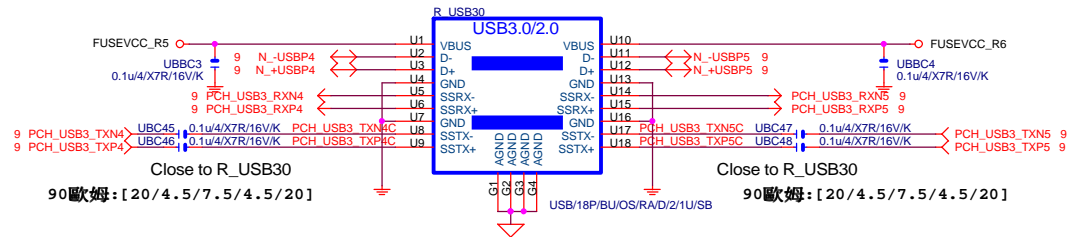
COM RI



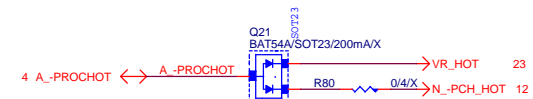
COM BUFFER



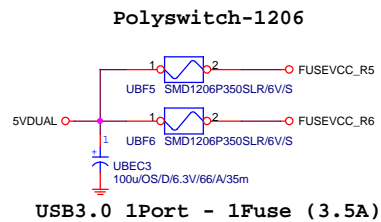
USB3_20 CONNECT



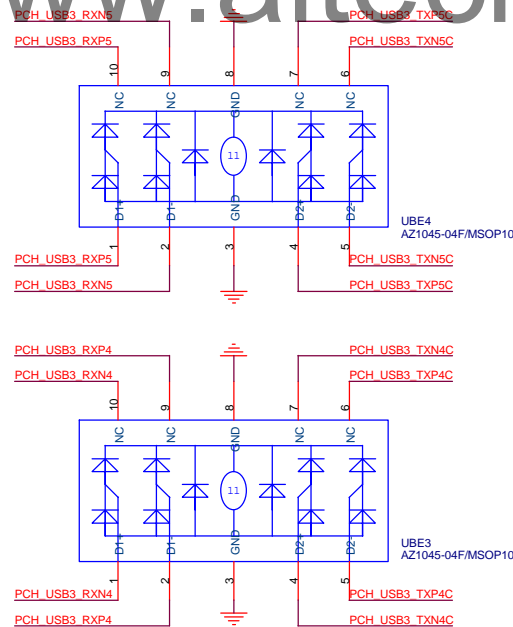
-PROHOT



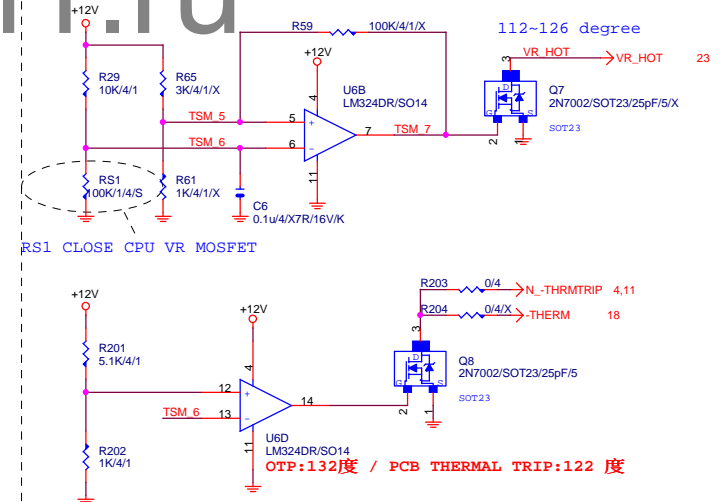
USB30 PWR



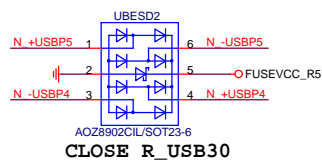
USB30 ESD PROTECT



-PROHOT



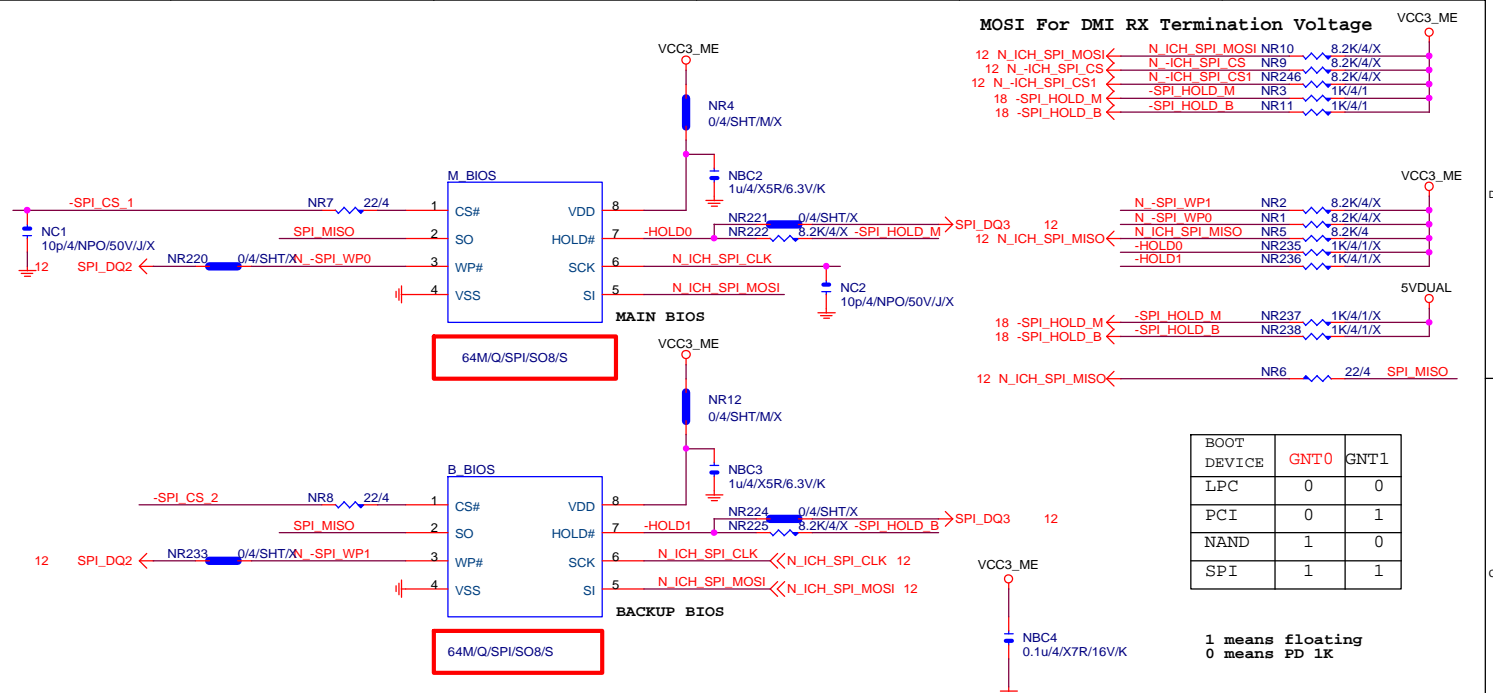
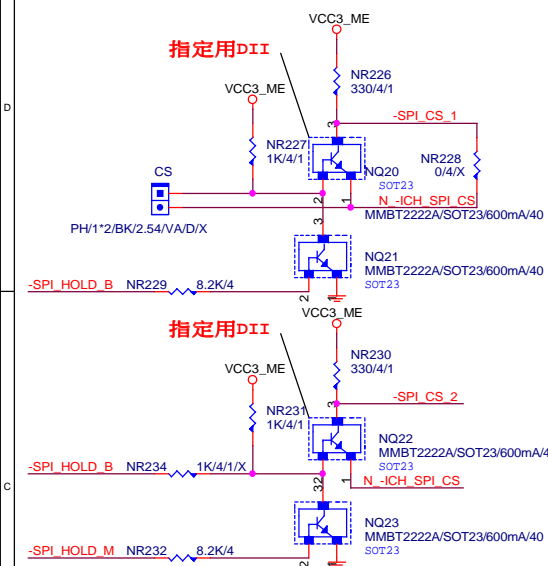
USB20 ESD PROTECT



Gigabyte Technology

Title	COM/ PROHOT/ R_USB	Rev	1.11
Size	Document Number		
Custpm			
Date:	Wednesday, October 16, 2013	Sheet	19 of 34

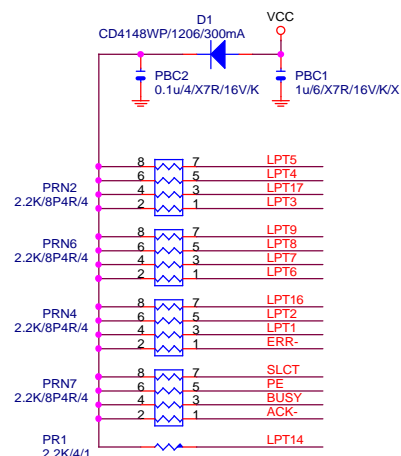
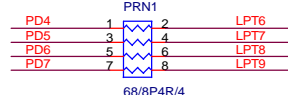
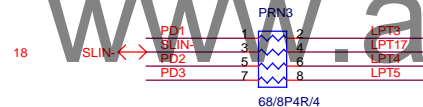
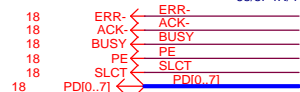
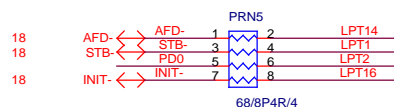
DUAL BIOS



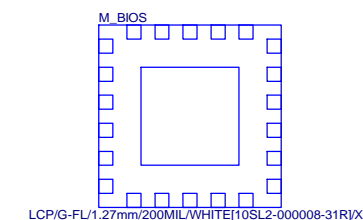
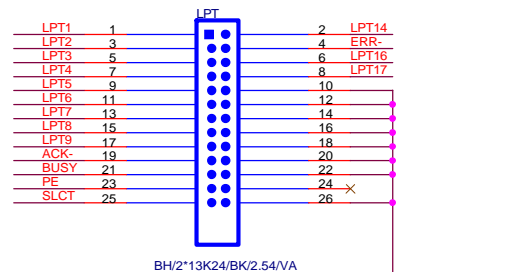
BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

1 means floating
0 means PD 1K

LPT PORT



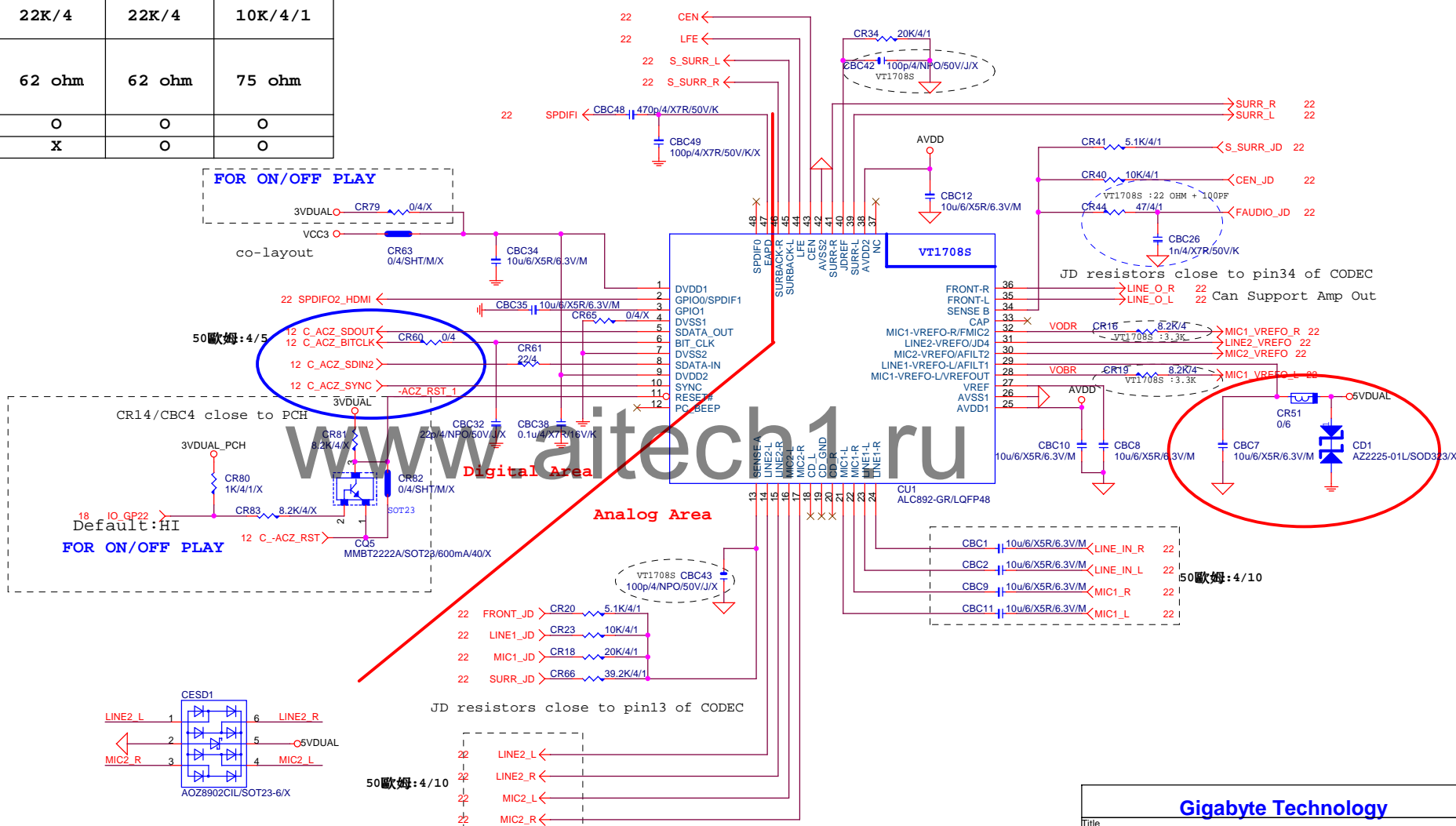
R&D技術通報151 有使用PRINT PORT的
MODEL, 需使用新料號:10HP2-118728-72R。(CHIP IT8728F/EX (GB) ITE/SMD
QFP128 PRINTPORT SORTING)料件。串電阻33 ohm改為68 ohm。

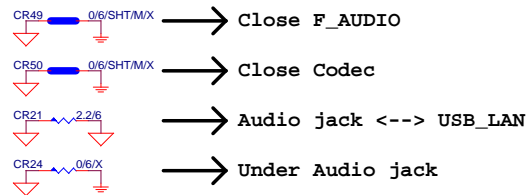


Gigabyte Technology

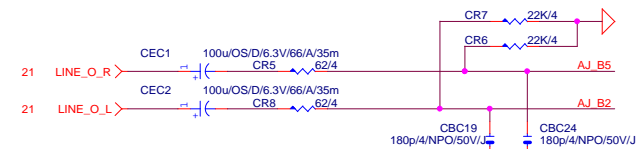
Title		BIOS		
Size Custom	Document Number	GA-H87-HD3		Rev 1.11
Date:	Wednesday, October 16, 2013	Sheet	20 of 34	

ALC892	ALC887-VD2	VT1708S-CE
470hm+1nF	470hm+1nF	220hm+100P
X	X	100P/4
8.2K/4	8.2K/4	3.3K/4/1
22K/4	22K/4	10K/4/1
62 ohm	62 ohm	75 ohm
O	O	O
X	O	O



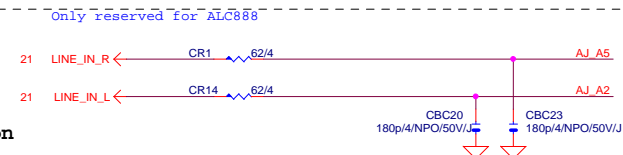


LINE-OUT



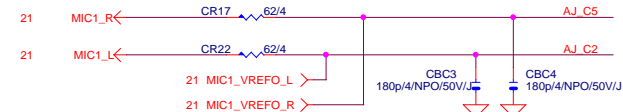
LINE-IN

Verify MIC function
in LINE-in

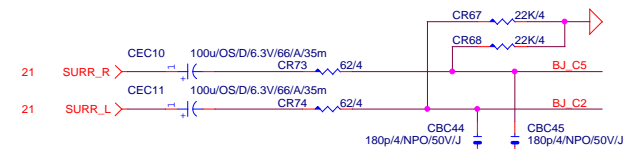


For 889A/888

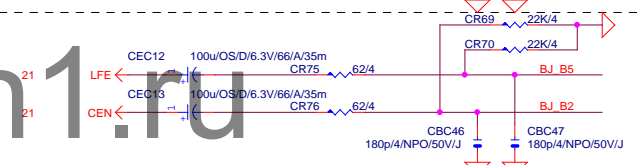
MIC-IN



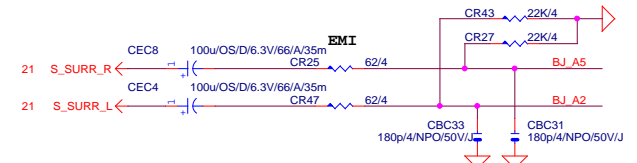
SURROUND



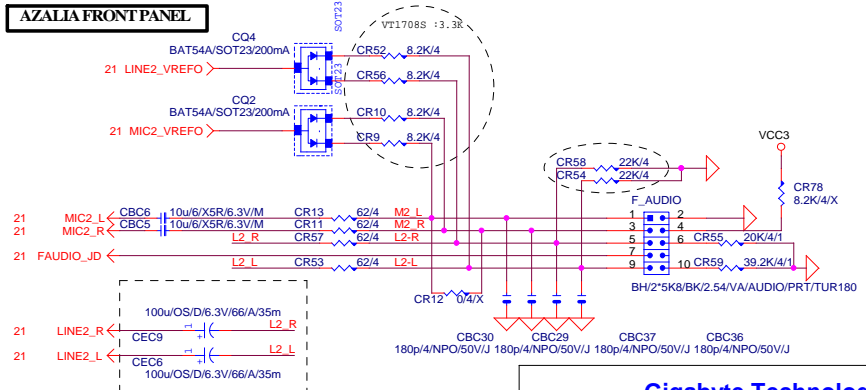
CEN/LFE



SURRBACK



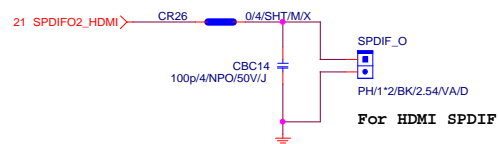
AZALIA FRONT PANEL



Gigabyte Technology

Title			
AUDIO JACK			
Size	Document Number	GA-H87-HD3	
Custom			Rev 1.11
Date:	Wednesday, October 16, 2013	Sheet 22	of 34

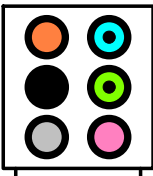
SPDIF_OUT



SPDIF_IN



AZALIA JACK



AZALIA JACK

BLUE

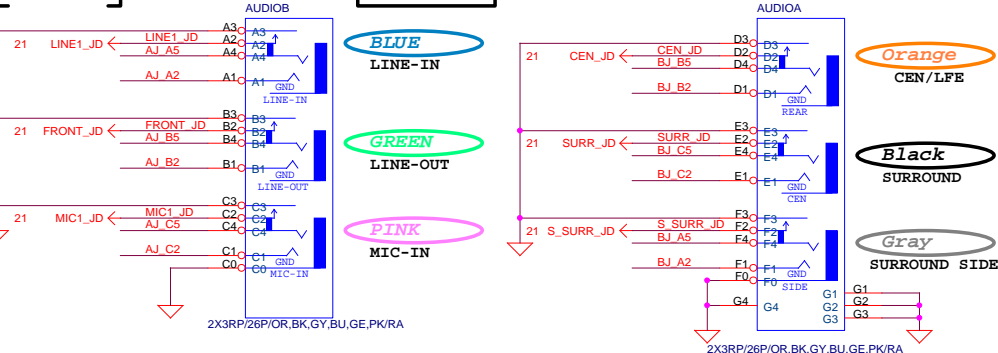
LINE-IN

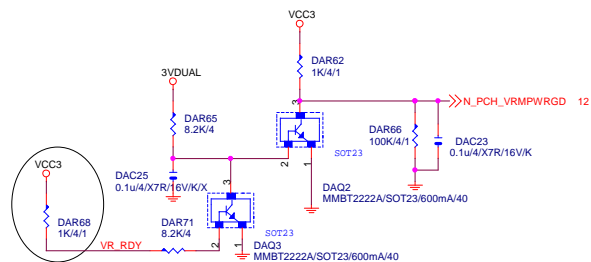
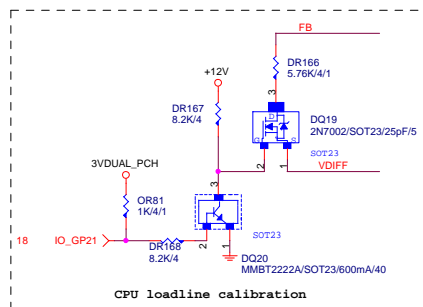
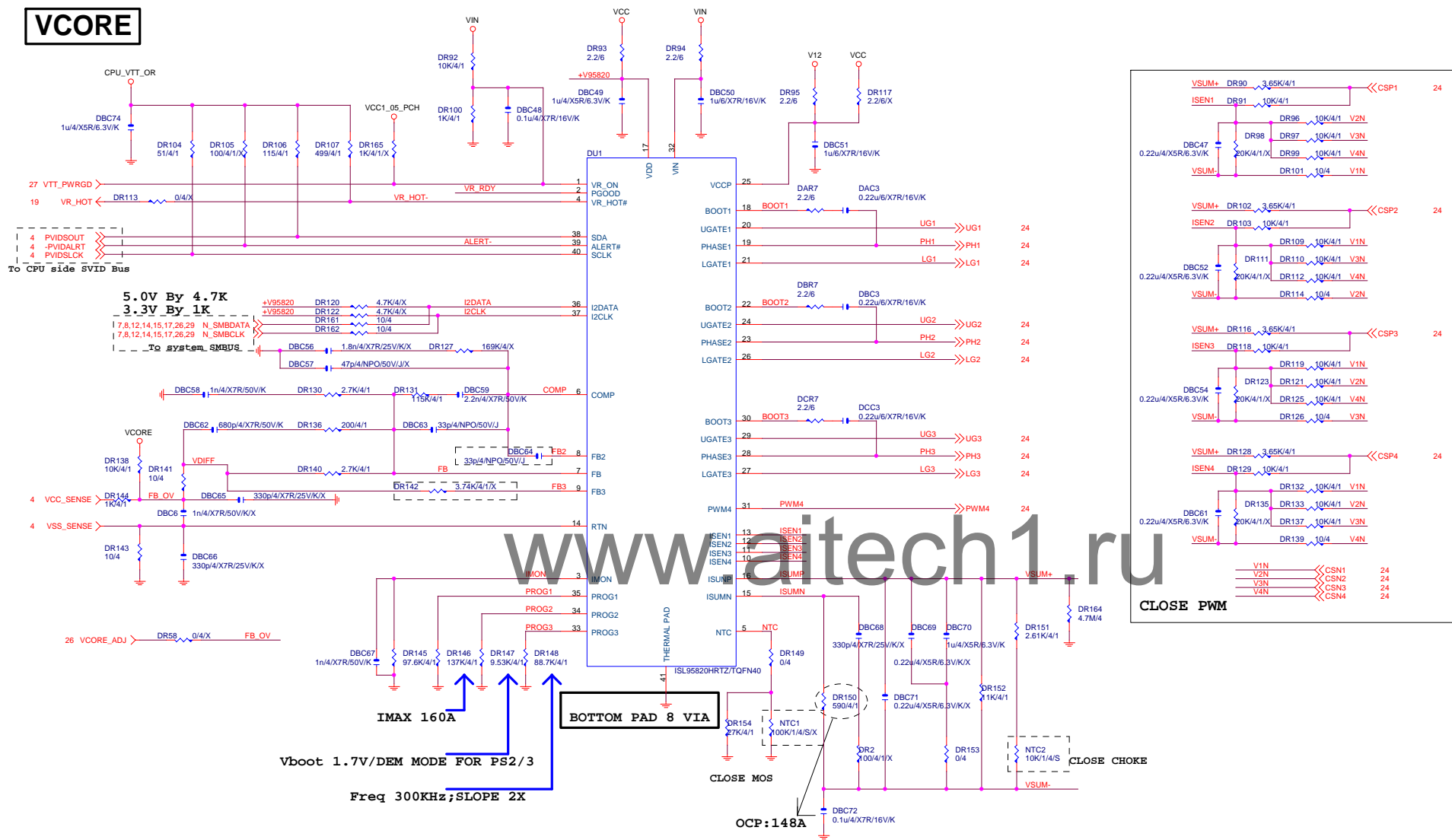
GREEN

LINE-OUT

PINK

MIC-IN

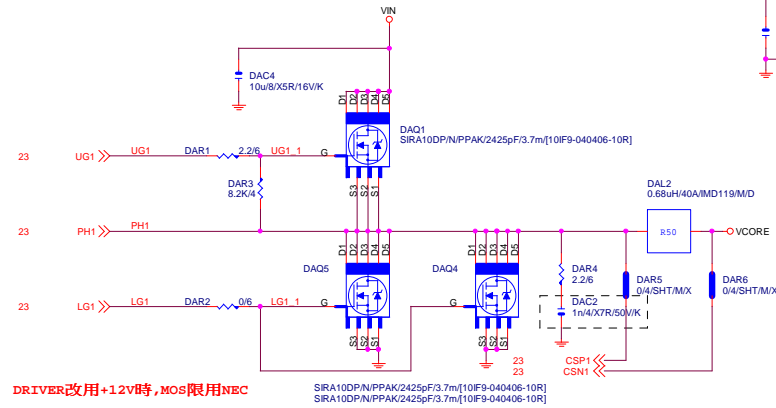


VCORE

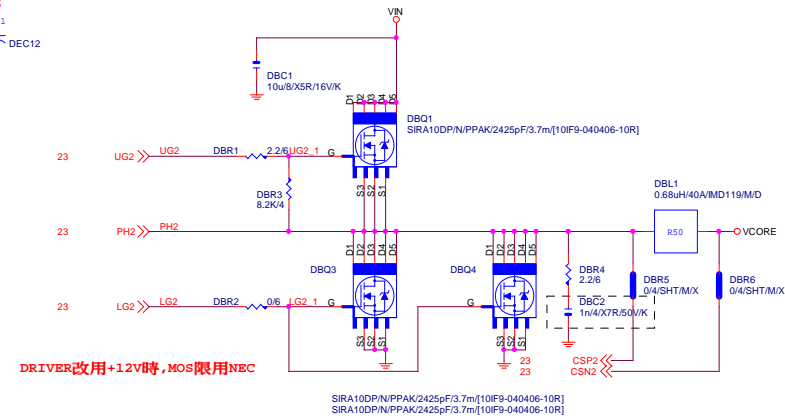
Gigabyte Technology				
Title VCORE_ ISL95820				
Size	Document Number			Rev
Custom	GA-H87-HD3			1
Date:	Wednesday, October 16, 2013	Sheet	23	of 34

VCORE

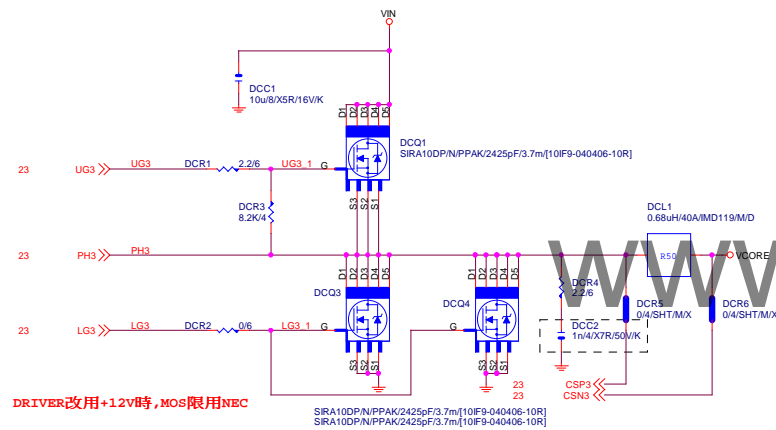
[1]



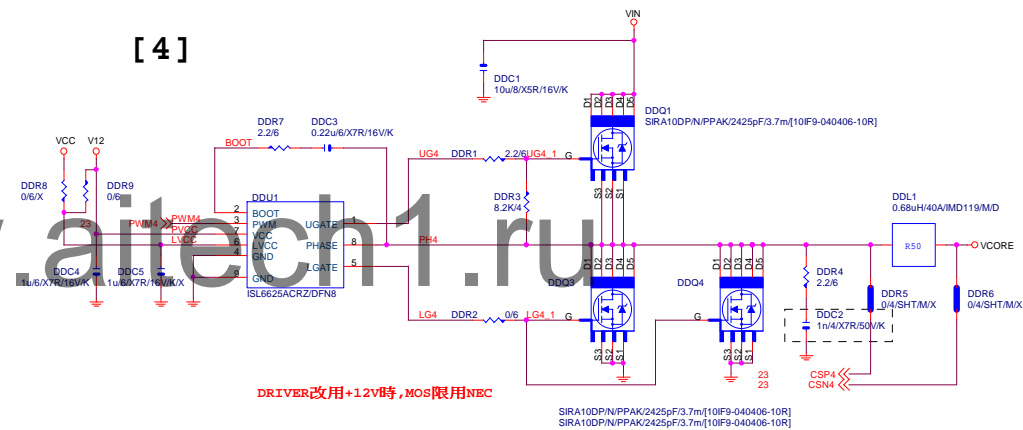
[2]



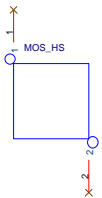
[3]



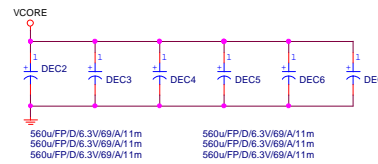
[4]



MOSFET HEATSINK

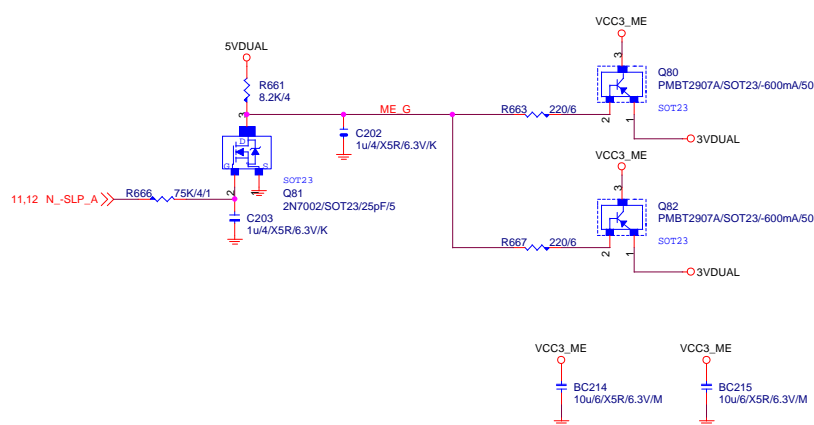


MOS HS[12SP2-S08824-71R_12SP2-S08824-72R_12SP2-S08824-73R]

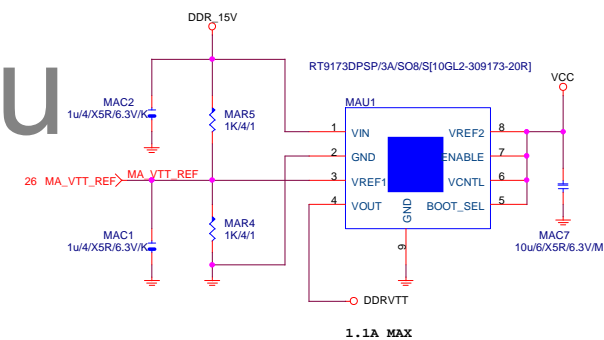


Gigabyte Technology			
Title	ISL95820_2		
Size	Document Number	GA-H87-HD3	
Custom			Rev 1.11
Date	Wednesday, October 16, 2013	Sheet	24 of 34

VCC3_ME



DDRVTT



Remote sense請從最重的負載端點拉回

$$0.8 \cdot (1 + R_S/R_O) = V_{out}$$

$$0.8 \cdot [1 + 2K/2.2K] =$$

$$1.527V$$

VIN=5V,VOUT=1.5V,IOUT=25A,PHASE=1
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

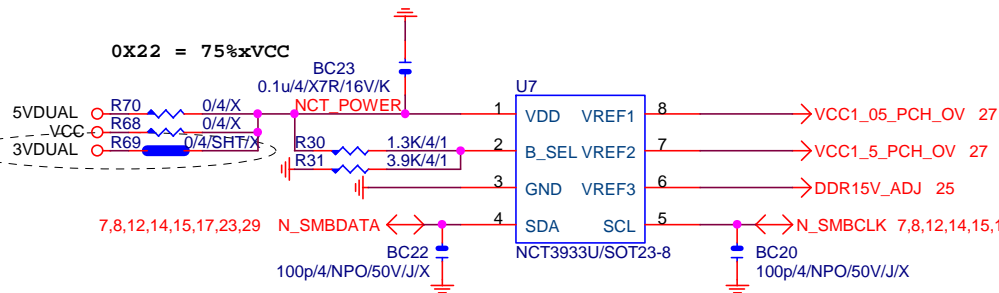
```
OCP:35.82A for Rds=6.7m for vishay@4.5V
OCP:72.727A for Rds=3.3m for renesas@10V
OCP:48A=Roset*Iocset / Rds(on)
      =12K*10uA / [5/5]
```

GIGABYTE

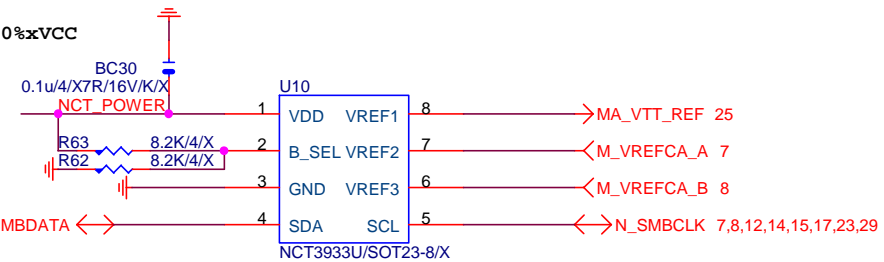
DDR15V / M3 POWER

Size	Document Number	Rev
Custom	GA-H87-HD3	1.11
Date:	Wednesday, October 16, 2013	Sheet 25 of 34

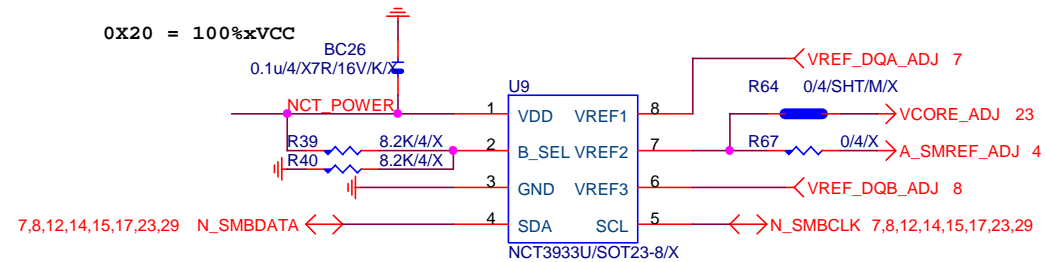
OVER VOLTAGE



0X2A = 0%xVCC



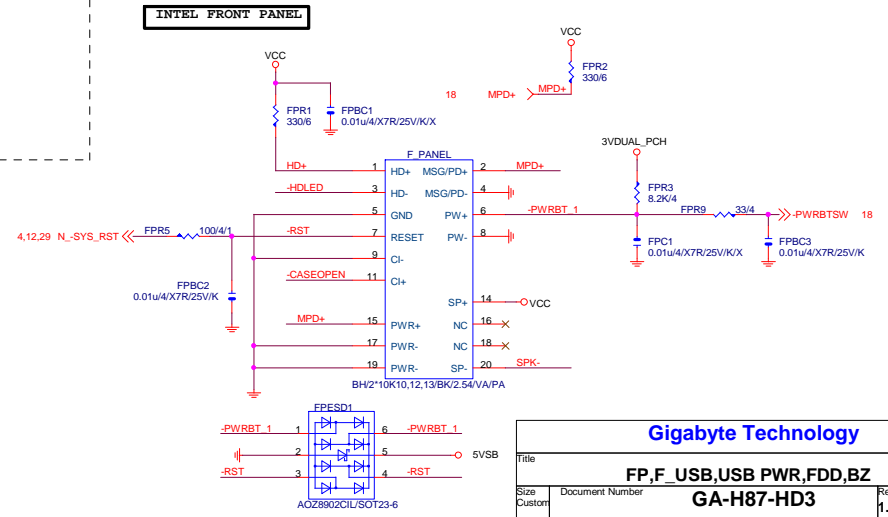
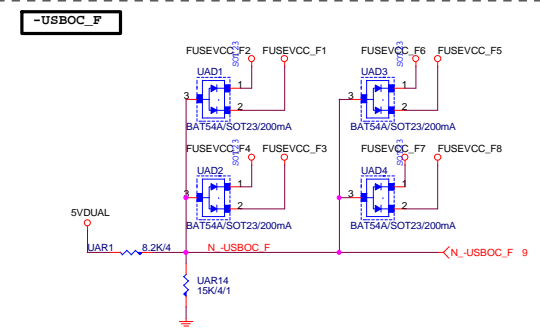
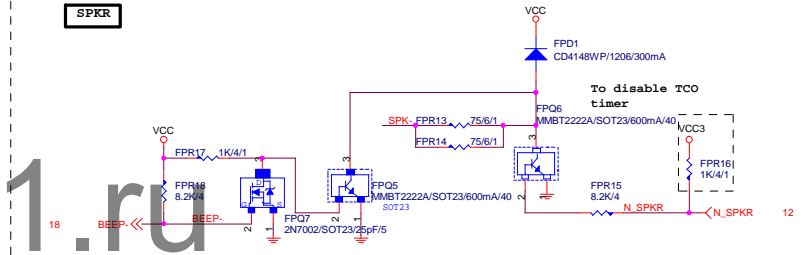
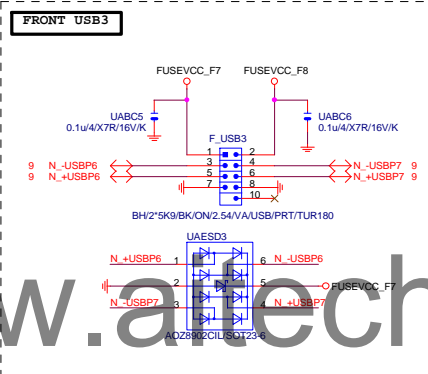
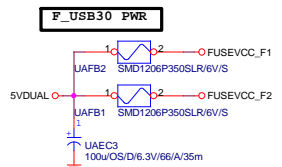
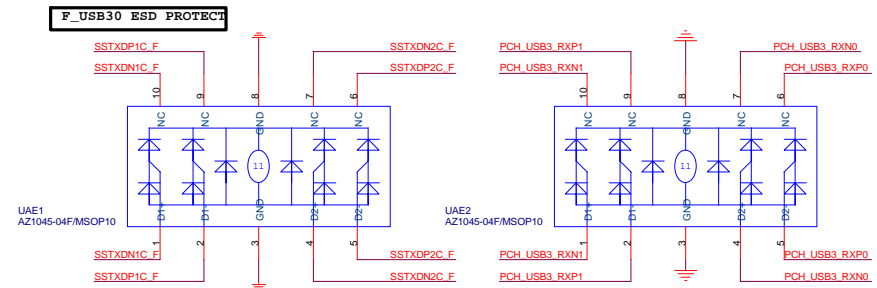
0X20 = 100%xVCC



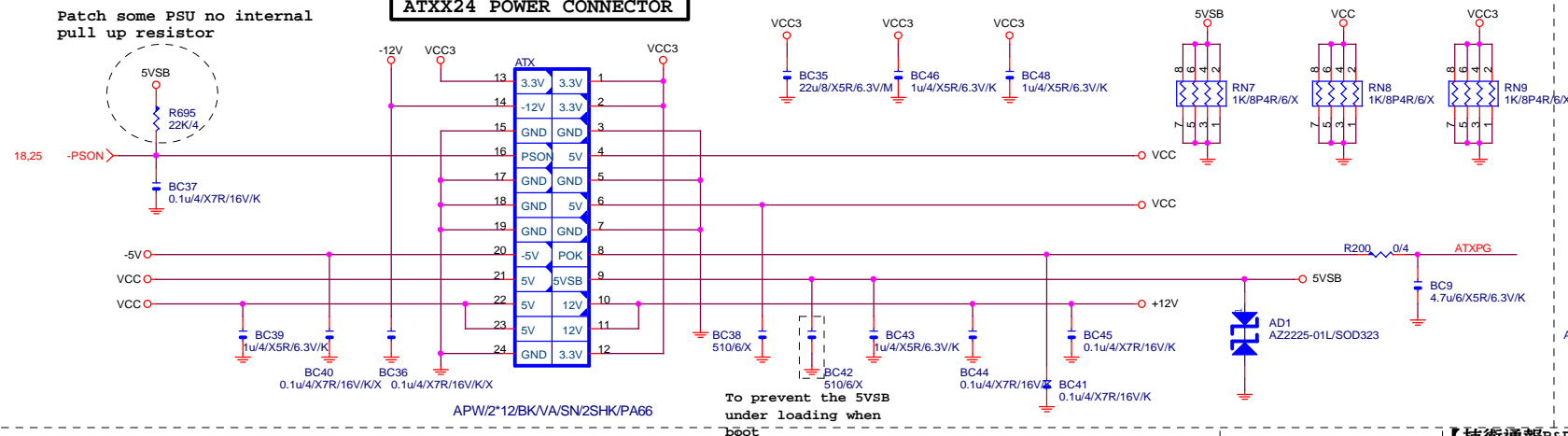
NCT3933	0X2A	0X20	0X22
VREF1	DDRVTT	VREF_DDRA_DQ	PCH Core
VREF2	VREF_DDRA_CA	N/A	VCC1_5_PCH
VREF3	VREF_DDRA_CA	VREF_DDRB_DQ	SMREF

Gigabyte Technology

Title		
CPU CORE VR-2		
Size	Document Number	Rev
Custom	GA-H87-HD3	1.11
Date:	Wednesday, October 16, 2013	Sheet 26 of 34

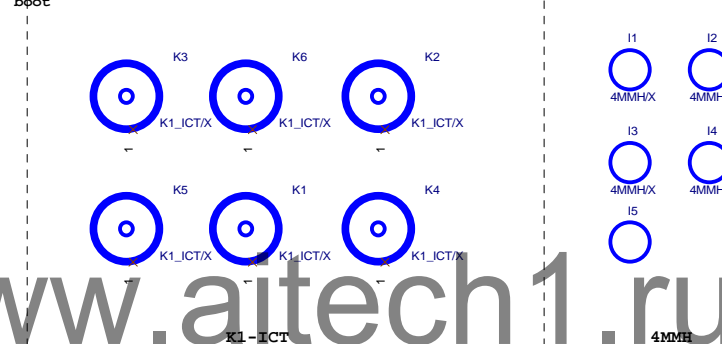
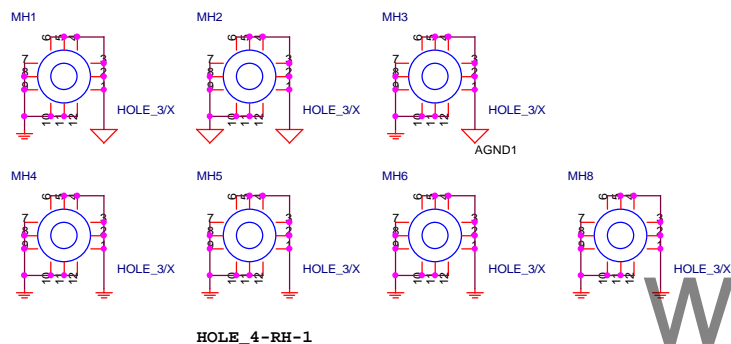


Patch some PSU no internal
pull up resistor



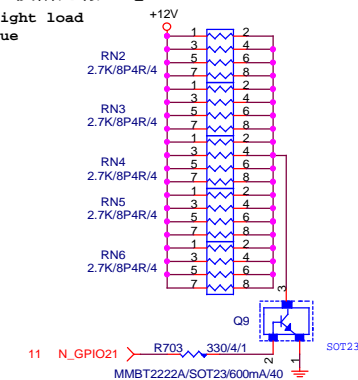
APW/2*4/BK/OC/P/4.2/VA/SN/0H: Location ATX_12V_2X4

Legend: BC7 0.1u4/XTR/16V/K



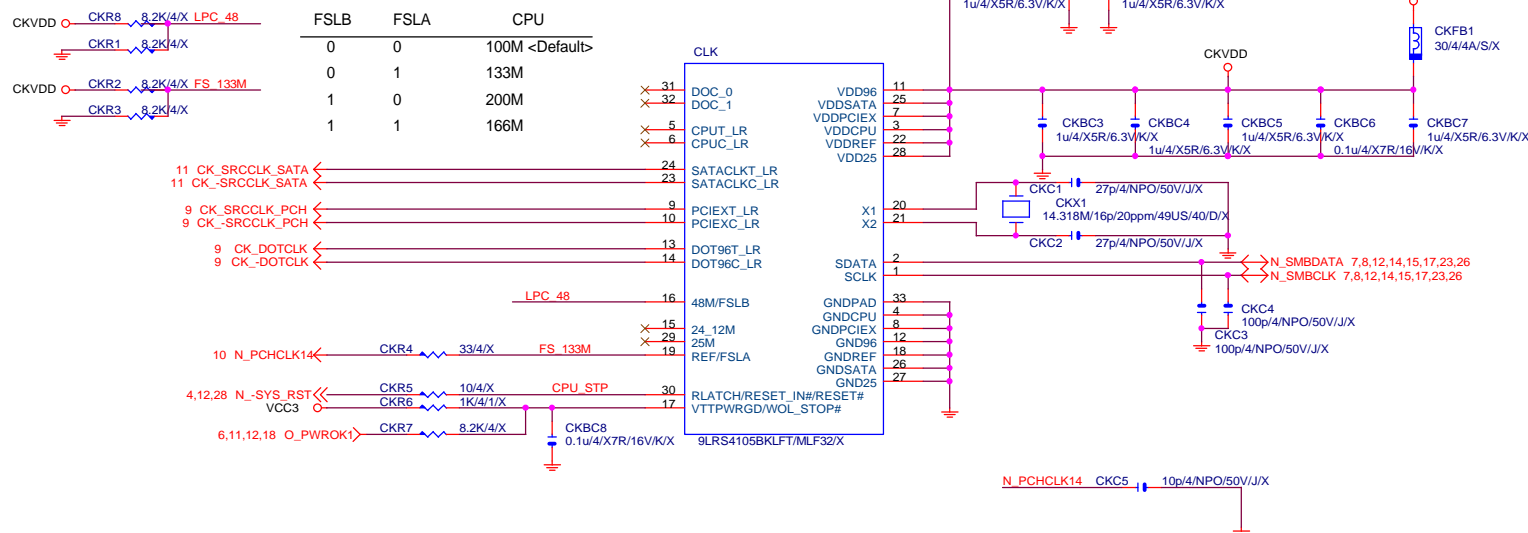
【技術通報R&D技術通報153】

To fix 12V light load
abnromal issue

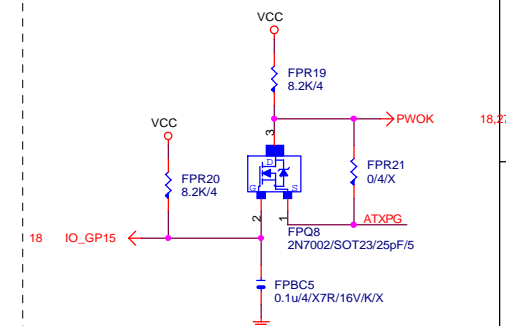


CPU Frequency Selection

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



【技術通報R&D技術通報154】

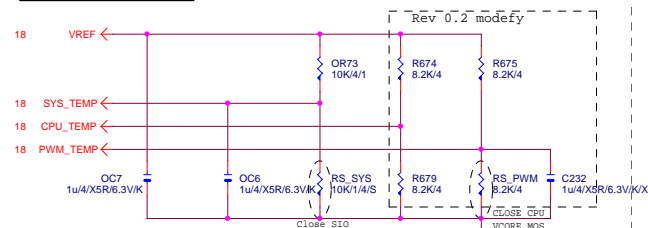


Gigabyte Technology

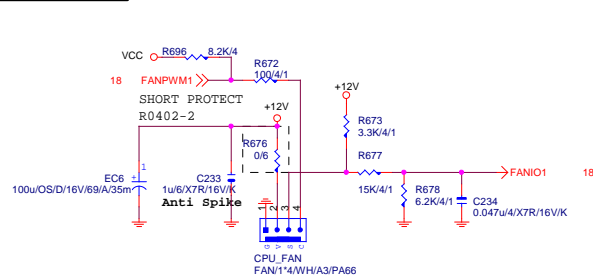
Title		ATX POWER CONNECTOR
Size	Document Number	GA-H87-HD3
Custom		

Rev
1.11

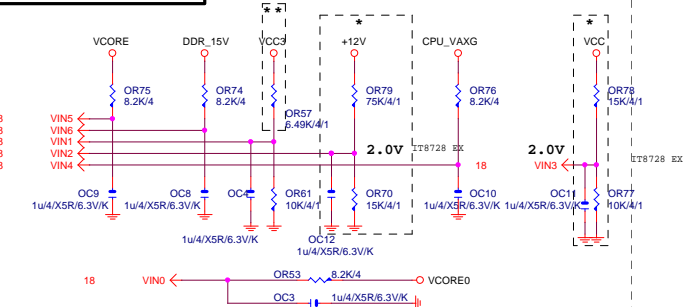
TEMP H/W MONITOR



CPU SMART FAN

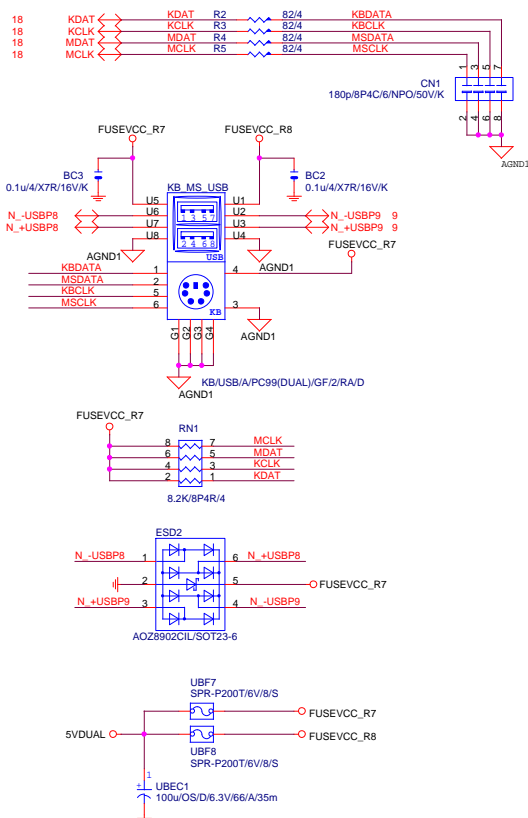


VOLTAGE-- H/W MONITOR



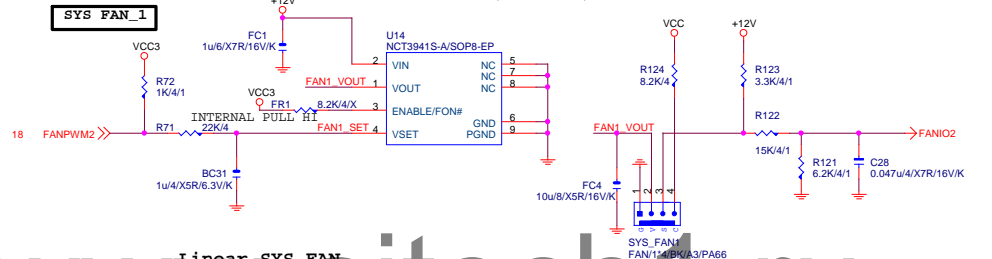
The division voltage of VIN2 & VIN3 must be around 2.9V

KB/USB

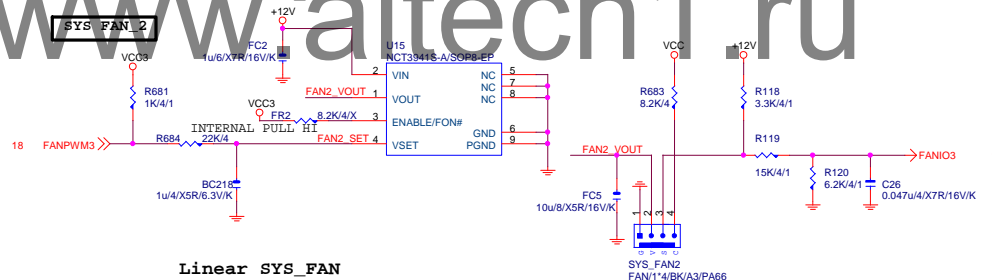


Linear SYS_FAN

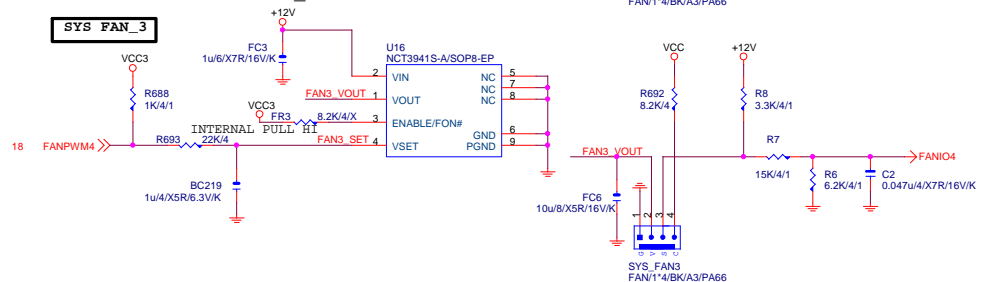
Enable Function (NCT3941S)
Full Turn On Function (NCT3941S-A)



Linear SYS_FAN



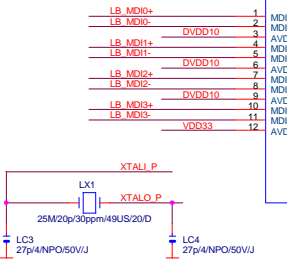
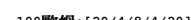
Linear SYS FAN



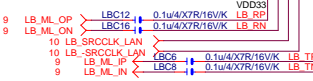
Gigabyte Technology

Title						HWM,KB/MS, FAN CTRL					
Size		Document Number								Rev	
Custom		GA-H87-HD3								1.1	
Date: Wednesday, October 16, 2013				Sheet		30		of		34	

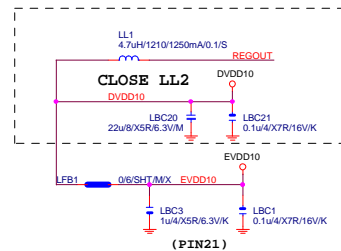
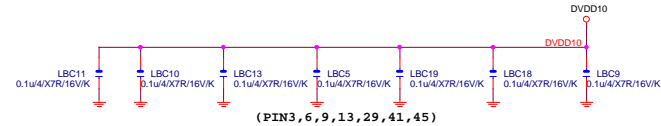
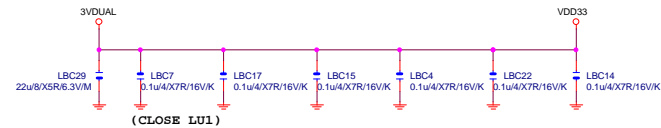
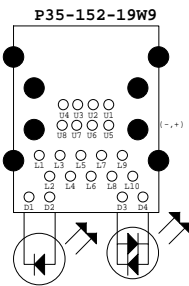
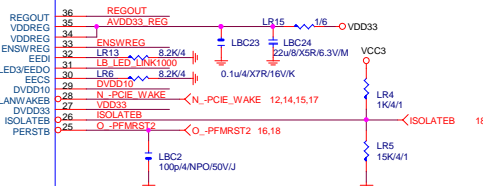
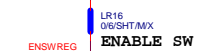
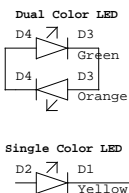
LAN:INTEL I217



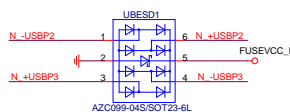
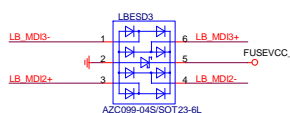
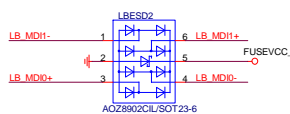
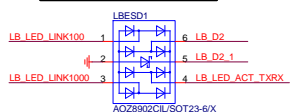
80歐姆:[15/5/5/5/15]



SRCCLK 50歐姆:[18/4/10/4/18]

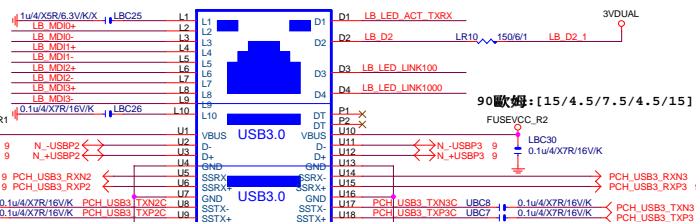


USB30_LAN CONNECTOR



CLOSE USB30_LAN

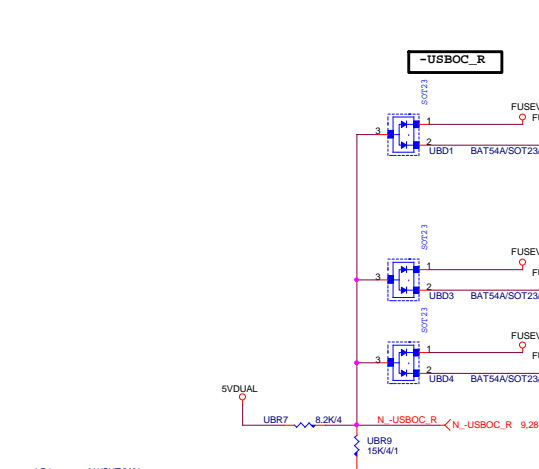
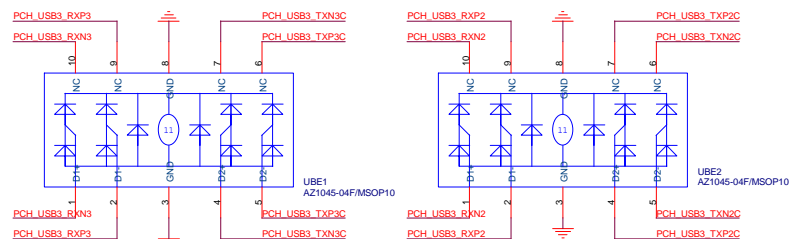
100歐姆:[20/4/8/4/20]



90歐姆:[15/4.5/7.5/4.5/15]



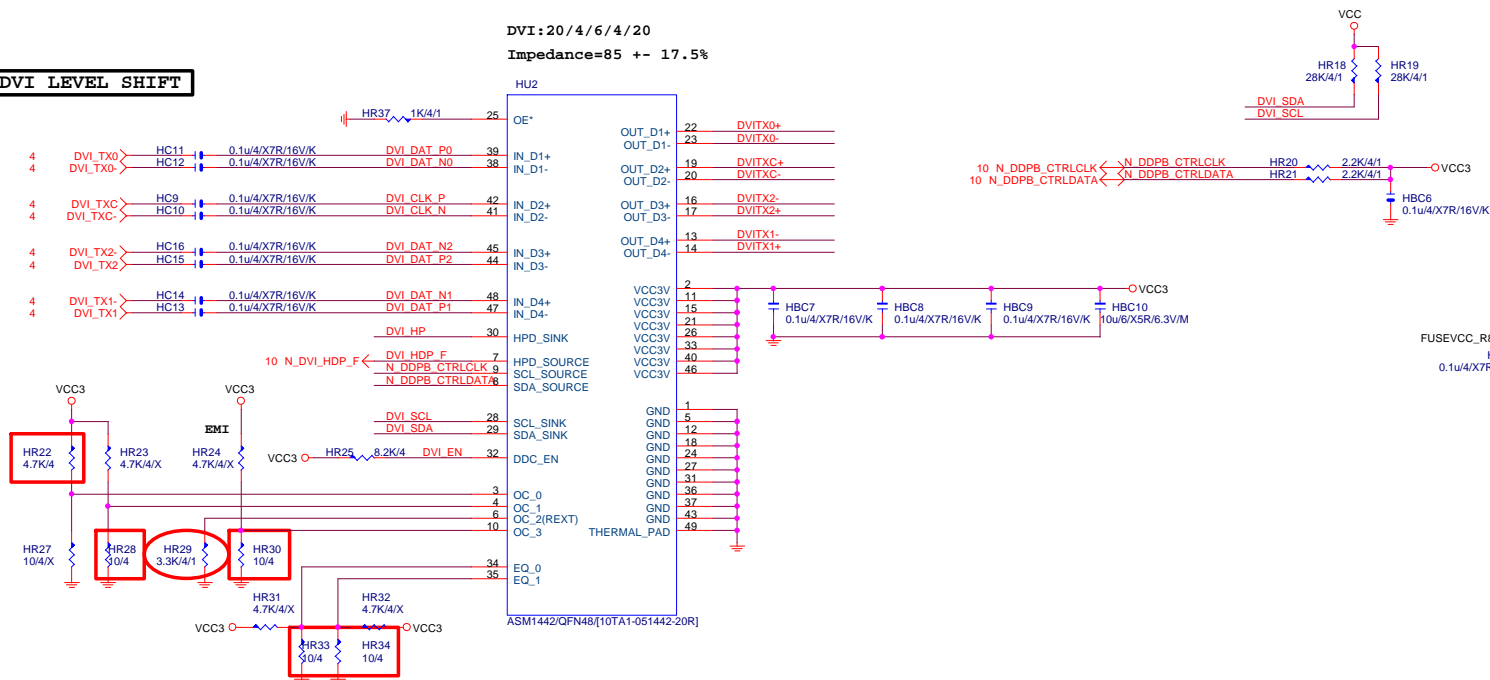
CLOSE USB30 LAN



LAN

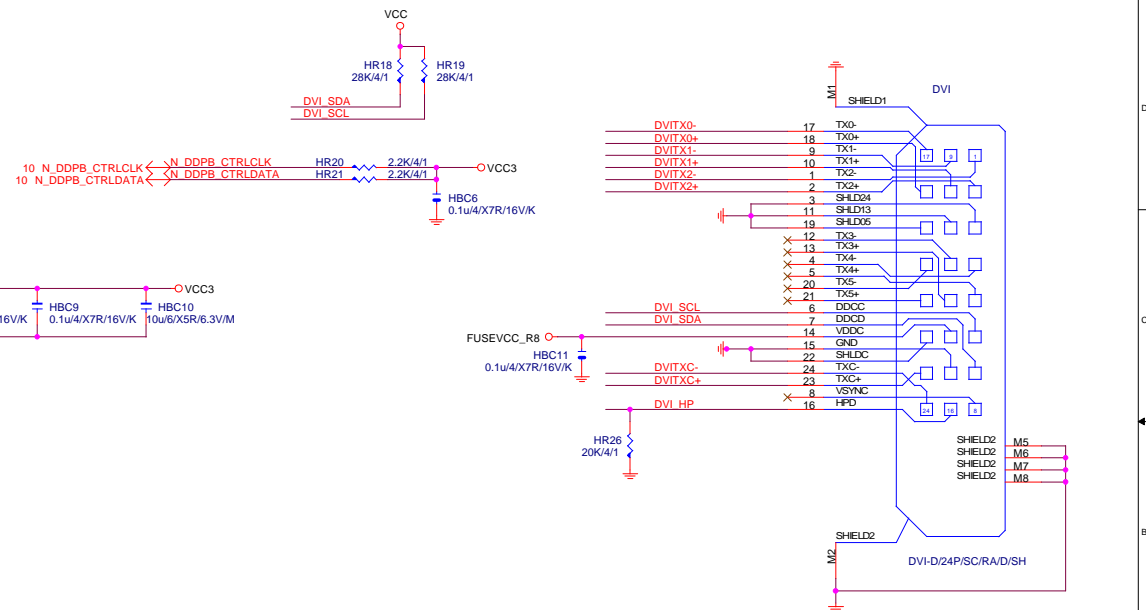
```
USB_LAN <--> R_USB30_1
```

DVI LEVEL SHIFT



PTN3360:PIN 4/10/34/35 NC PIN,都不上值;只上HR29:10K

ASM1442:紅色框要上,HR29:3.3K

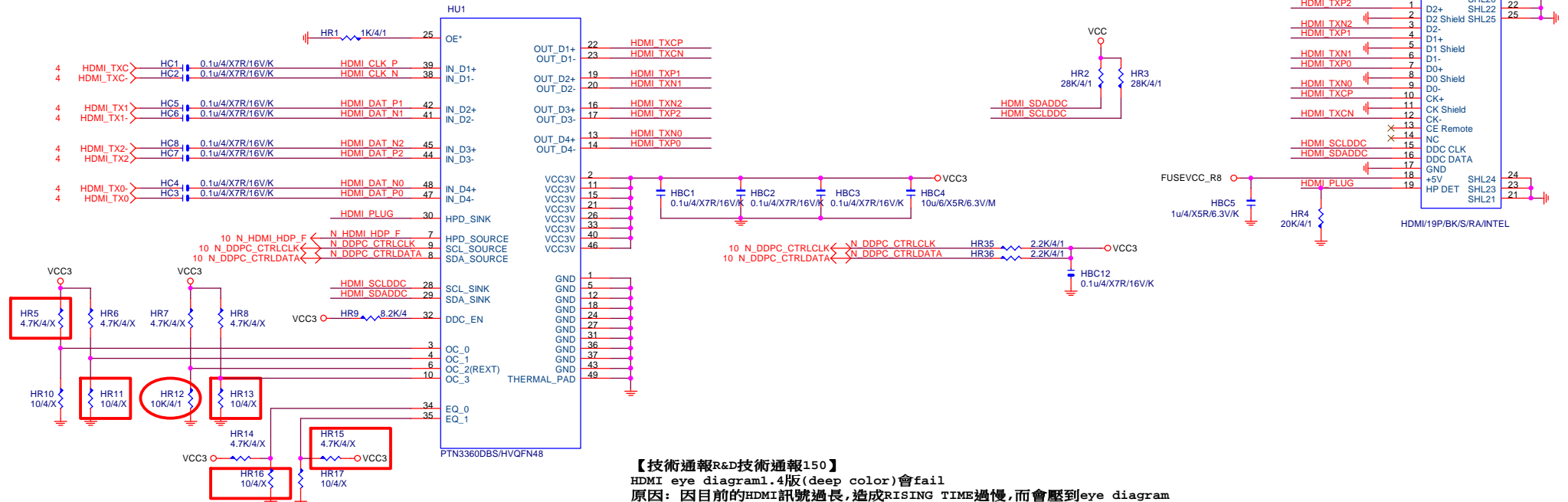


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<i>Gigabyte Technology</i>			
Title			
TI TSB43AB23 1394			
Size Custom	Document Number		Rev
	GA-H87-HD3		1.11
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HDMI LEVEL SHIFT

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



【技術通報R&D技術通報150】

HDMI eye diagram 1.4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)

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

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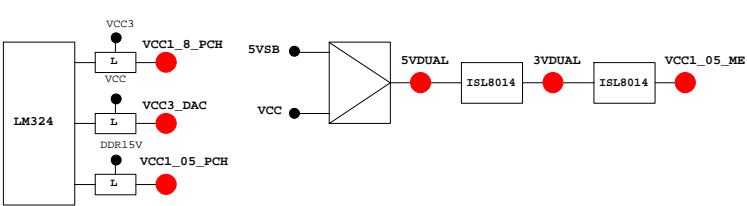
Title			
HDMI			
Size	Document Number	Rev	
Custom	GA-H87-HD3	1.11	
Date:	Wednesday, October 16, 2013	Sheet	33 of 34

PCH GPIO LIST TABLE					
PIN NAME	PWR	Default	USAGE	NOTE	
GP0	MAIN	H-Z	GPI	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		GPI	GPIO7	P/U 8.2K VCC3
GP8	STBY	H	GPI	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	N/A
GP13	STBY	L	GPI	LPCPME#	P/U 8.2K 3VDUAL
GP14/OC7#	STBY		NATIVE	USB OC7#	N/A
GP15	STBY	L	GPI	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	GPI	GPIO22	P/U 8.2K VCC3
GP23	MAIN		GPI	GPIO23	N/A
GP24	STBY	L	GPI	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	GPI	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	GPI	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	-PCI_E_RST	
RSMRST#CIRRXL/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/BUSSI1	SB_LED1_C	
PD4/GP74/BUSSI2	SB_LED2_C	
VCORE_EN/VID7/GP64	IT_GP64	SB_LED3_C
PD0/GP70	NB_LED1_C	
PD1/GP71	NB_LED2_C	
PD2/GP72/BUSSI0	NB_LED3_C	
GP22/SCK	LOW_PWR_1	
VID05/GP27/SIN2	LOW_PWR_2	
PCIRST2#/GP11	-PWRST1	
PCIRST1#/GP12	-PWRST2	
3VBSBW#/GP40	CSI_F0	BSEL166_1
SUSC#/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	SEC_PIN	FST_2X8
INIT#/GP85/SMB_D_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	
PANSW#/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/SMB_D_R	-EN_PWM2	
PSI_L/FAN_CLT5/CIRRXL2/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：

