

Model Name: GA-H61M-S2PT

Revision 1.0

SHEET

TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1155-A
05	CPU_LGA1155-B
06	CPU_LGA1155-C
07	DDR III CHANNEL A
08	DDR III CHANNEL B
09	PCH_FDI,DMI,USB,PCIE,NVRAM
10	PCH_DP,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCI EXPRESS*16 SLOT
15	PCI EXPRESS*1 SLOT
16	IT8892E
17	PCI SLOT1&2
18	ITE 8620 LPC IO
19	COM,KB_USB,USB_ESATA,-PROCHOT
20	HWM,FAN CTRL,OV,
21	DUAL BIOS
22	FP,FUSB,SPK,SATALED
23	Realtek ALC887-VD2
24	REAR AUDIO JACK
25	REALTEK RTL8111F-VL
26	DISCRETE POWER
27	ATX

SHEET

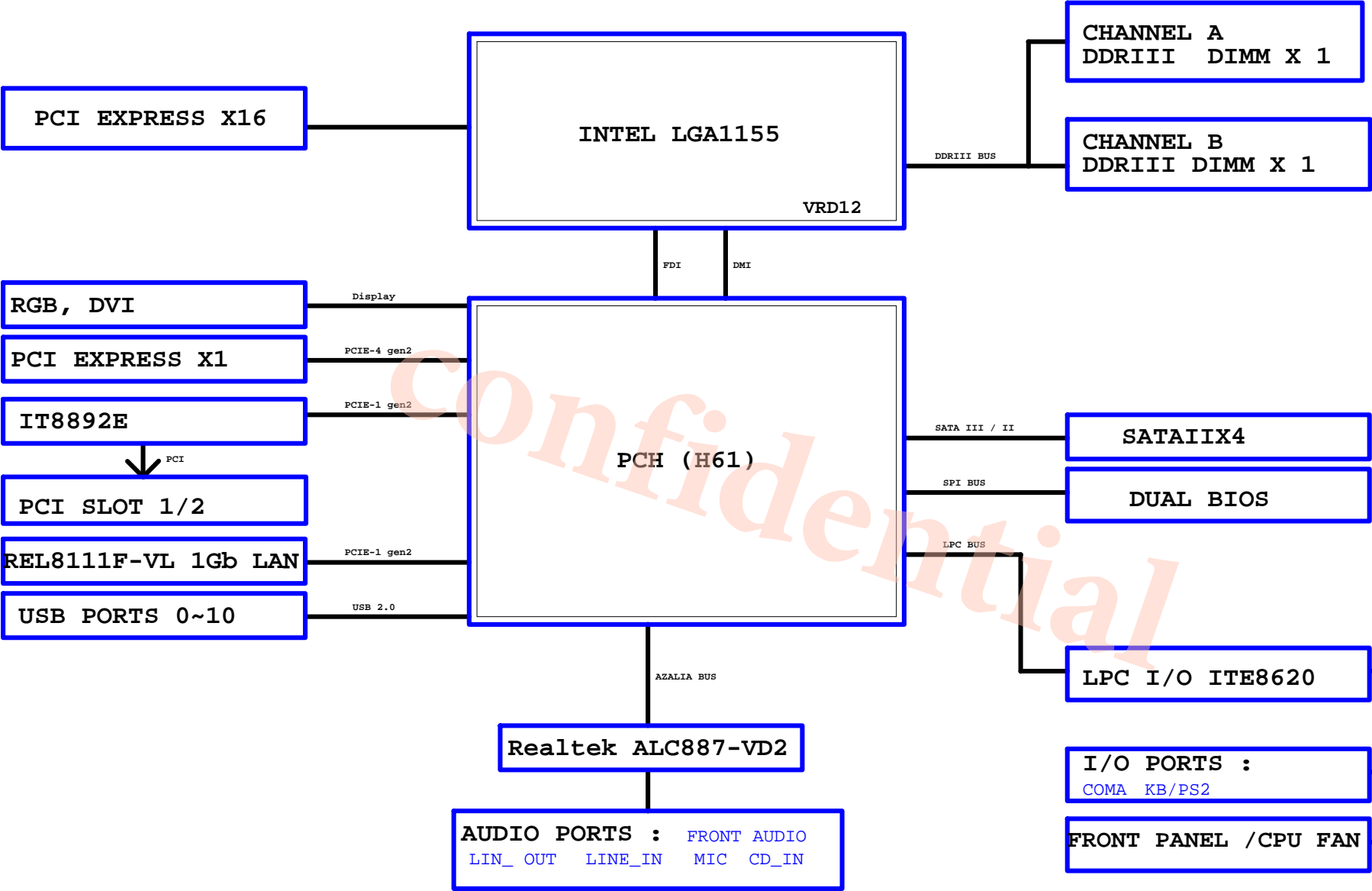
TITLE

28	LINEAR CPU_VTT
29	VCORE ISL95836_1
30	VCORE ISL95836_2
31	VCORE ISL95836_3
32	LPT

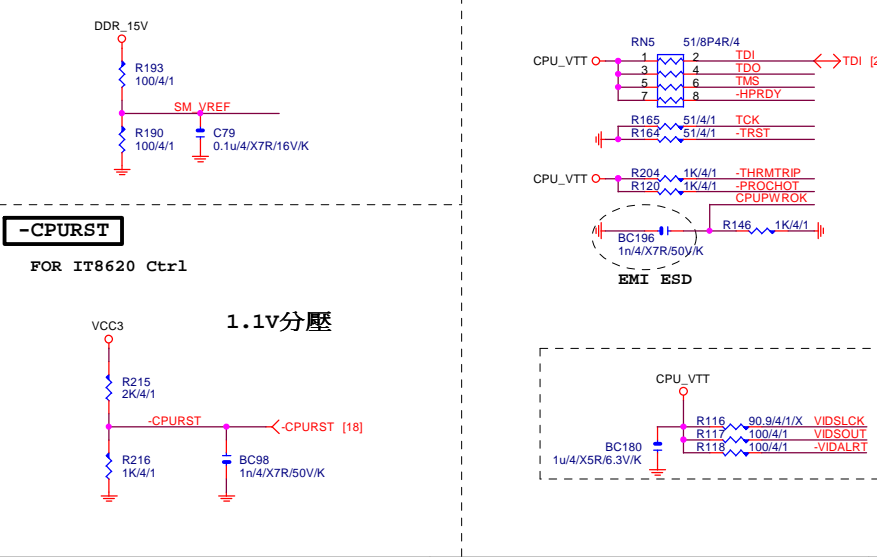
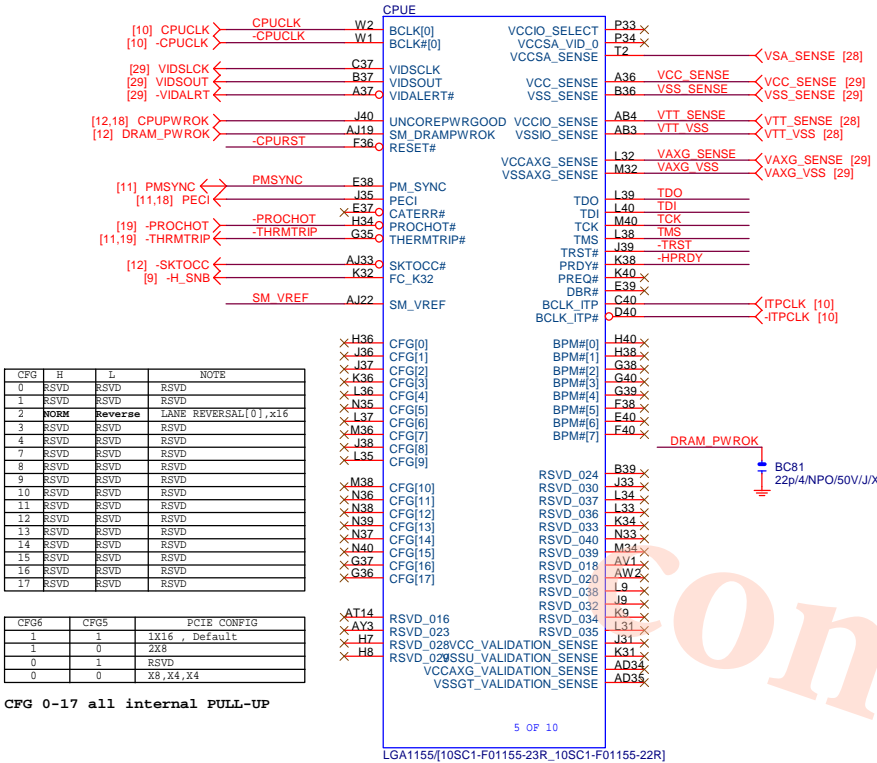
T

Gigabyte Technology		
Title		
Cover Sheet		
Size	Document Number	Rev
Custom	GA-H61M-S2PT	1.0
Date:	Friday, January 10, 2014	Sheet 1 of 32

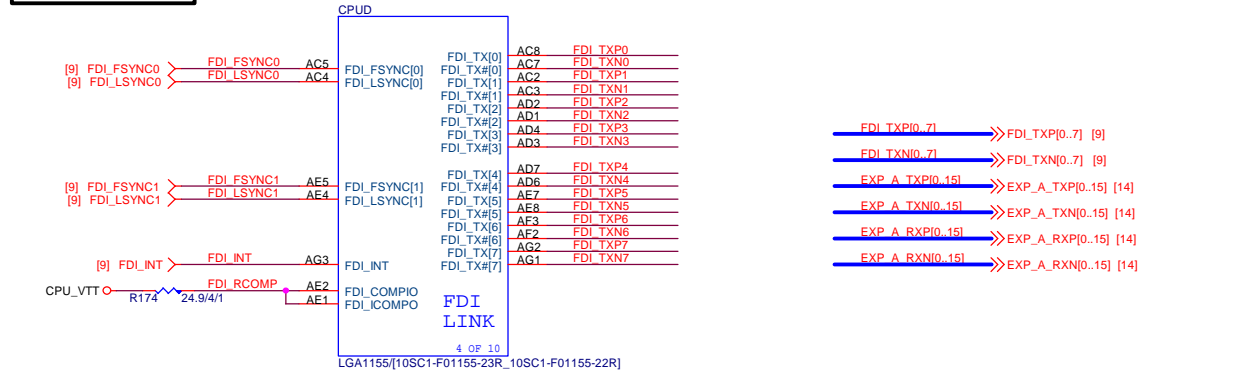
BLOCK DIAGRAM



CPU E



CPU D FDI



CPU C

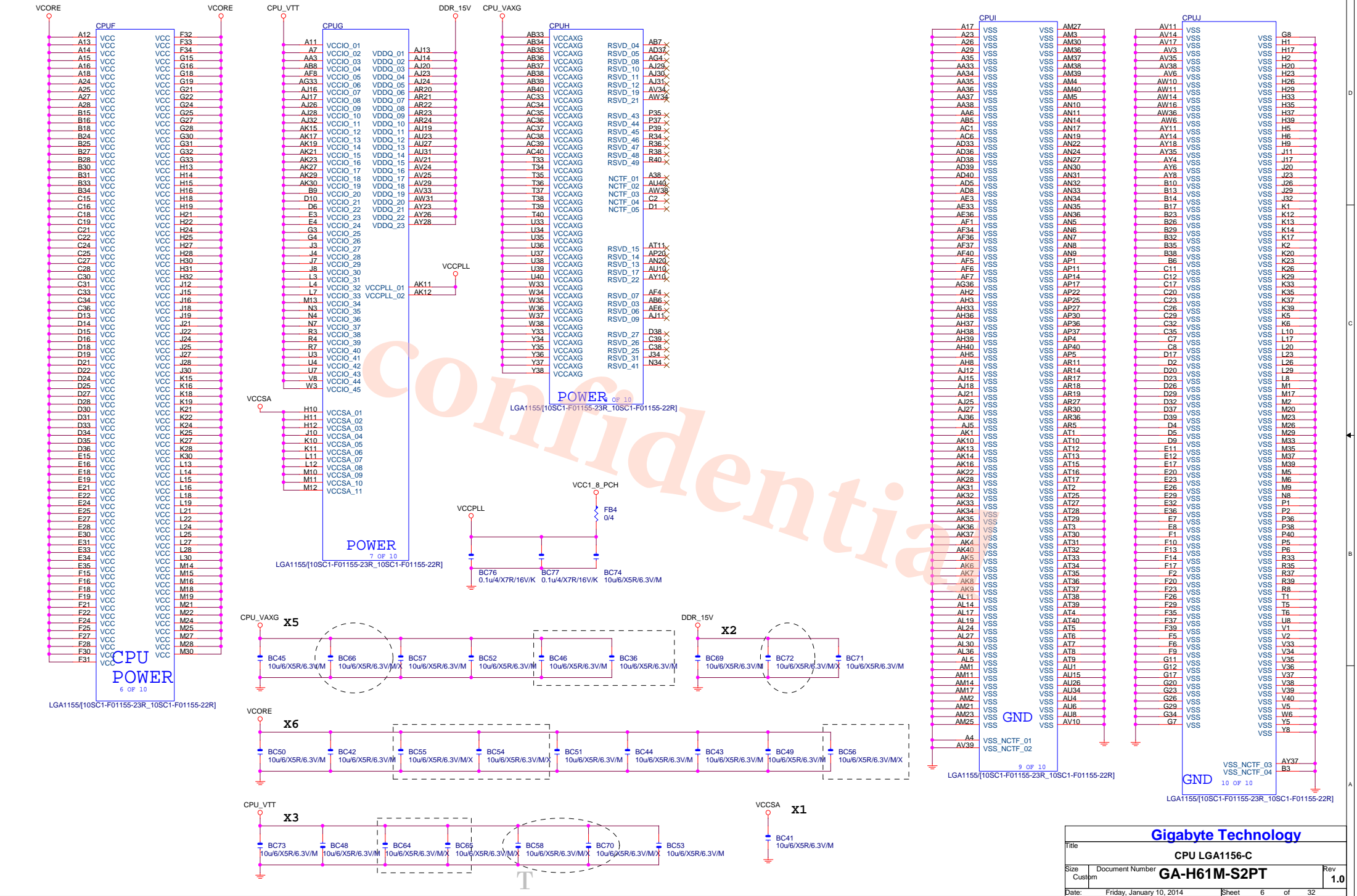


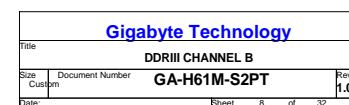
STITCHING CAP.



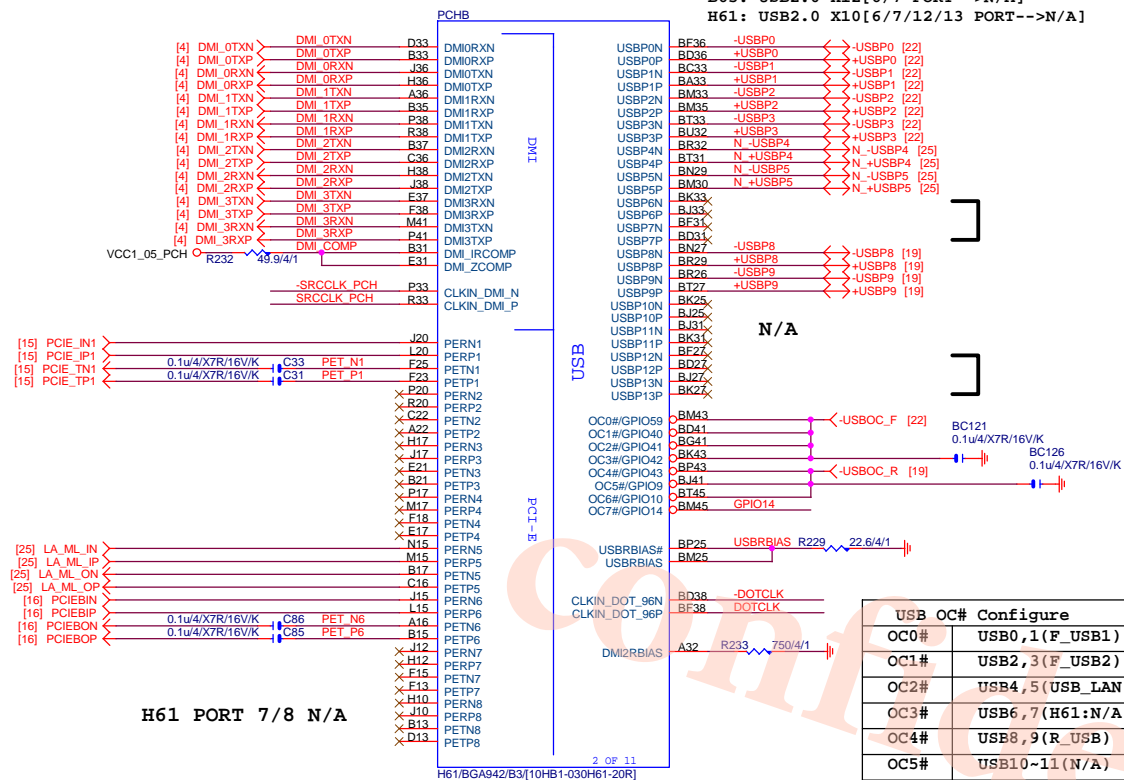
CPU F,G,H POWER

CPU I,J GND



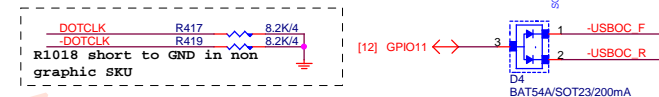
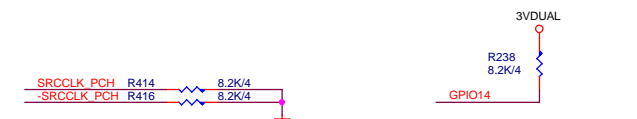
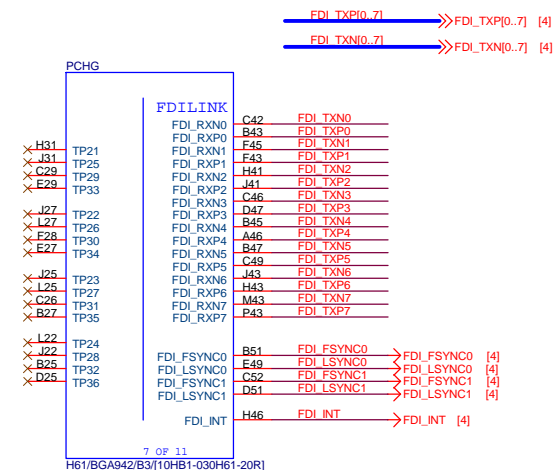


PCH B



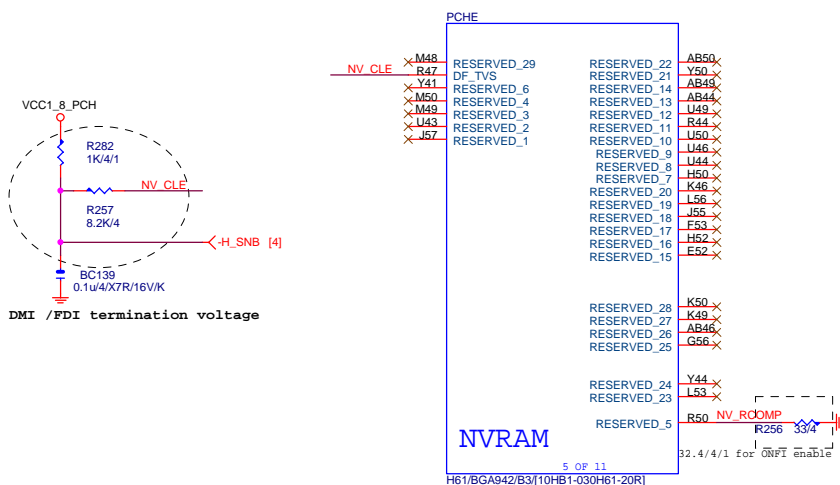
USB OC#	Configure
OC0#	USB0,1(F_USB1)
OC1#	USB2,3(F_USB2)
OC2#	USB4,5(USB_LAN)
OC3#	USB6,7(H61:N/A)
OC4#	USB8,9(R_USB)
OC5#	USB10~11(N/A)
OC6#	USB12~13(N/A)
OC7#	GPIO14

PCH	G	FDI
-----	---	-----



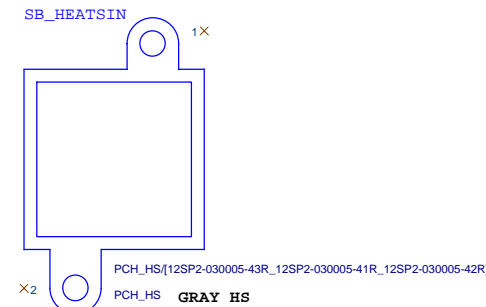
FOR FUSE SHORT GPIO

PCH E

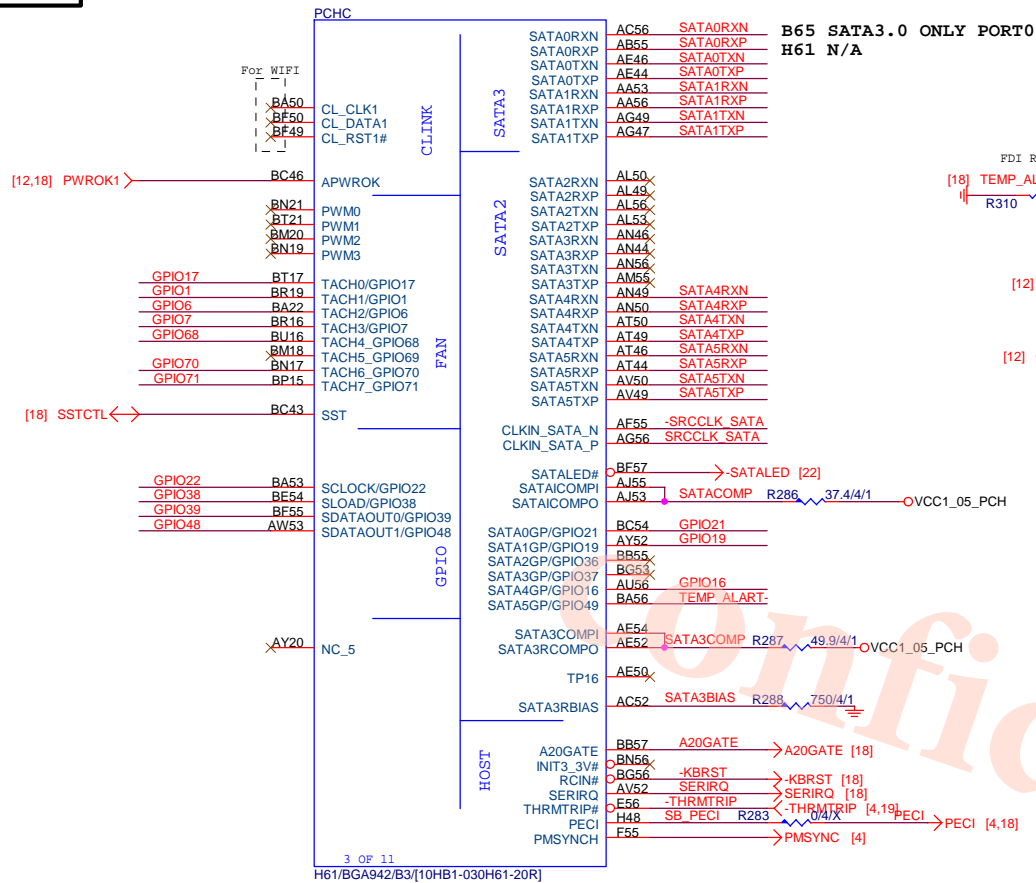


PCH HS

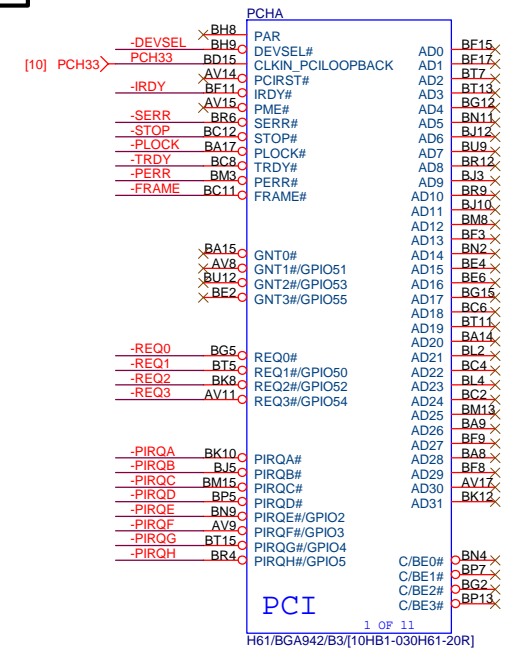
LOW COST ICH7 HEATSINK



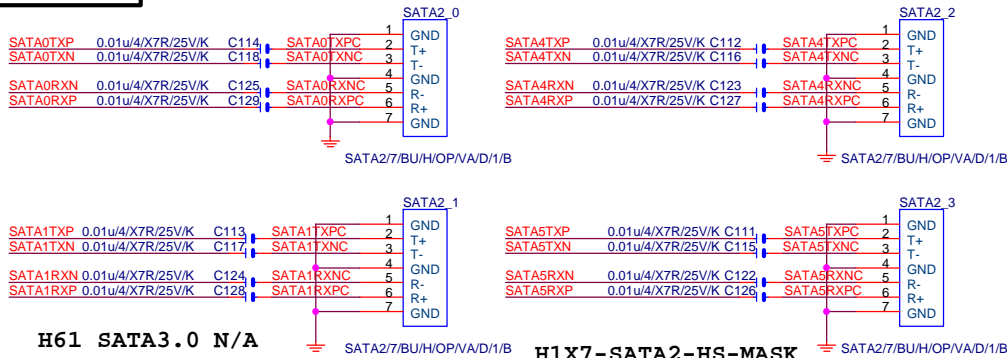
PCH C



PCH A



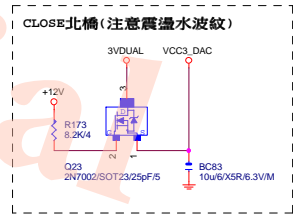
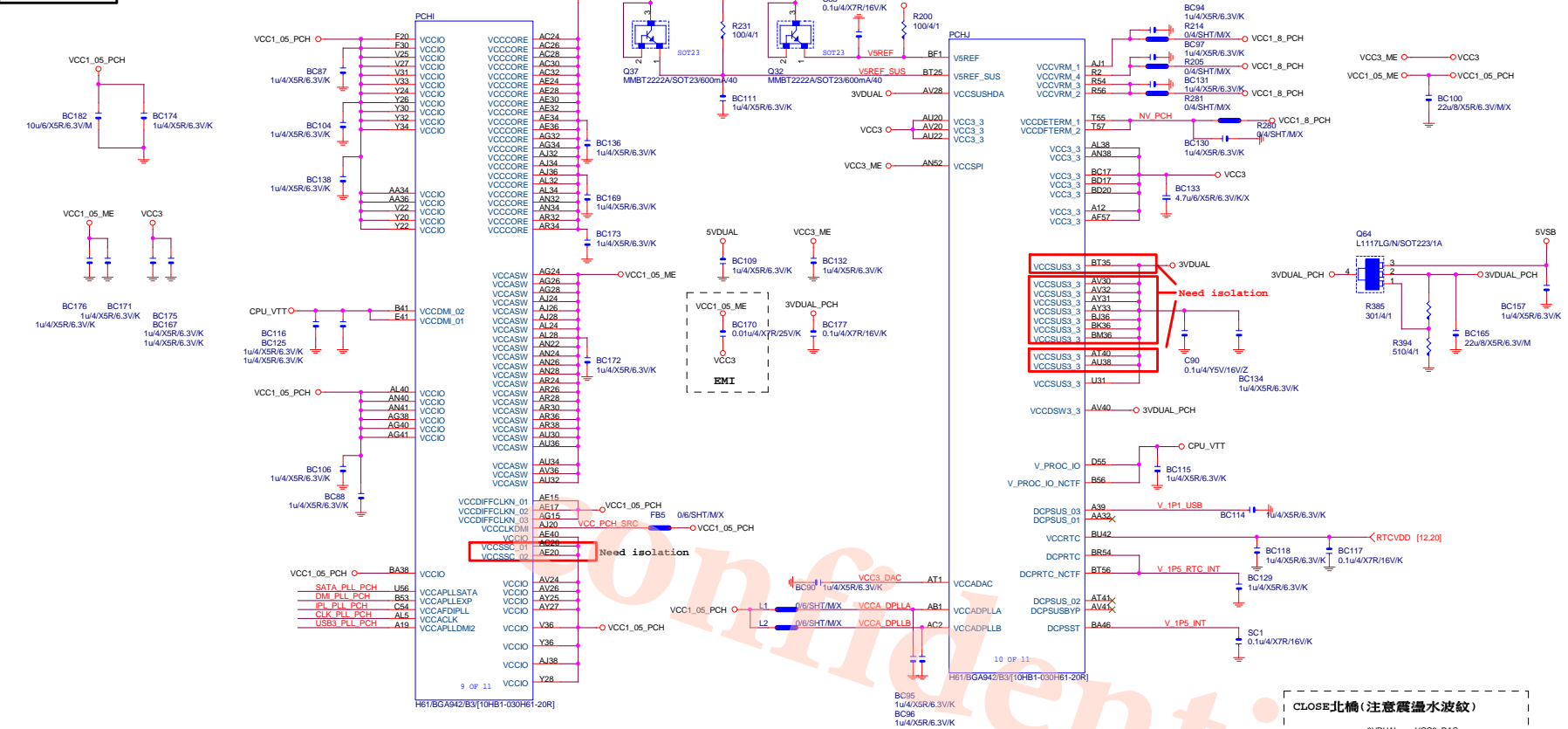
SATA CONN.



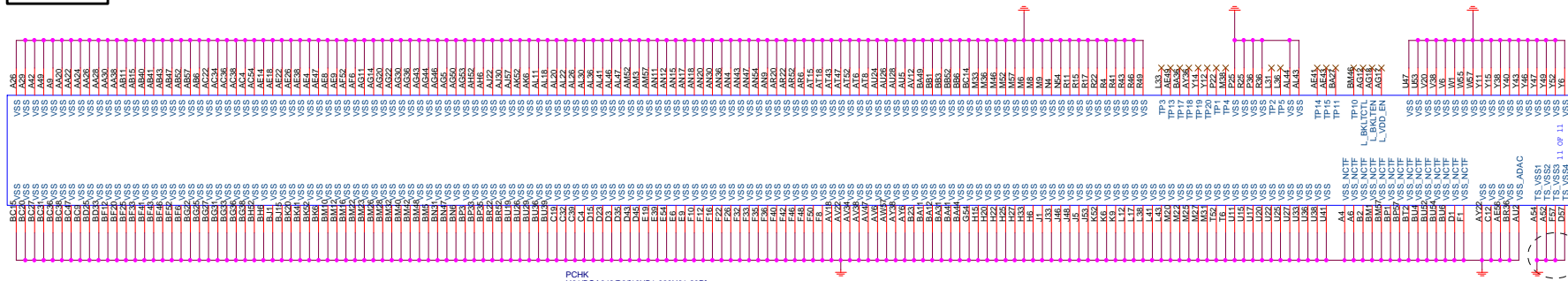
Gigabyte Technology

Title		PCH HOST , SATA, PCI	
Size B	Document Number	GA-H61M-S2PT	
Date:	Friday, January 10, 2014	Sheet	11 of 32

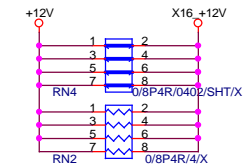
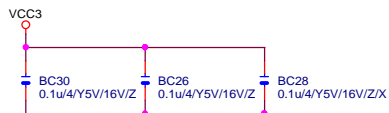
PCH I POWER
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100



PCH K GND

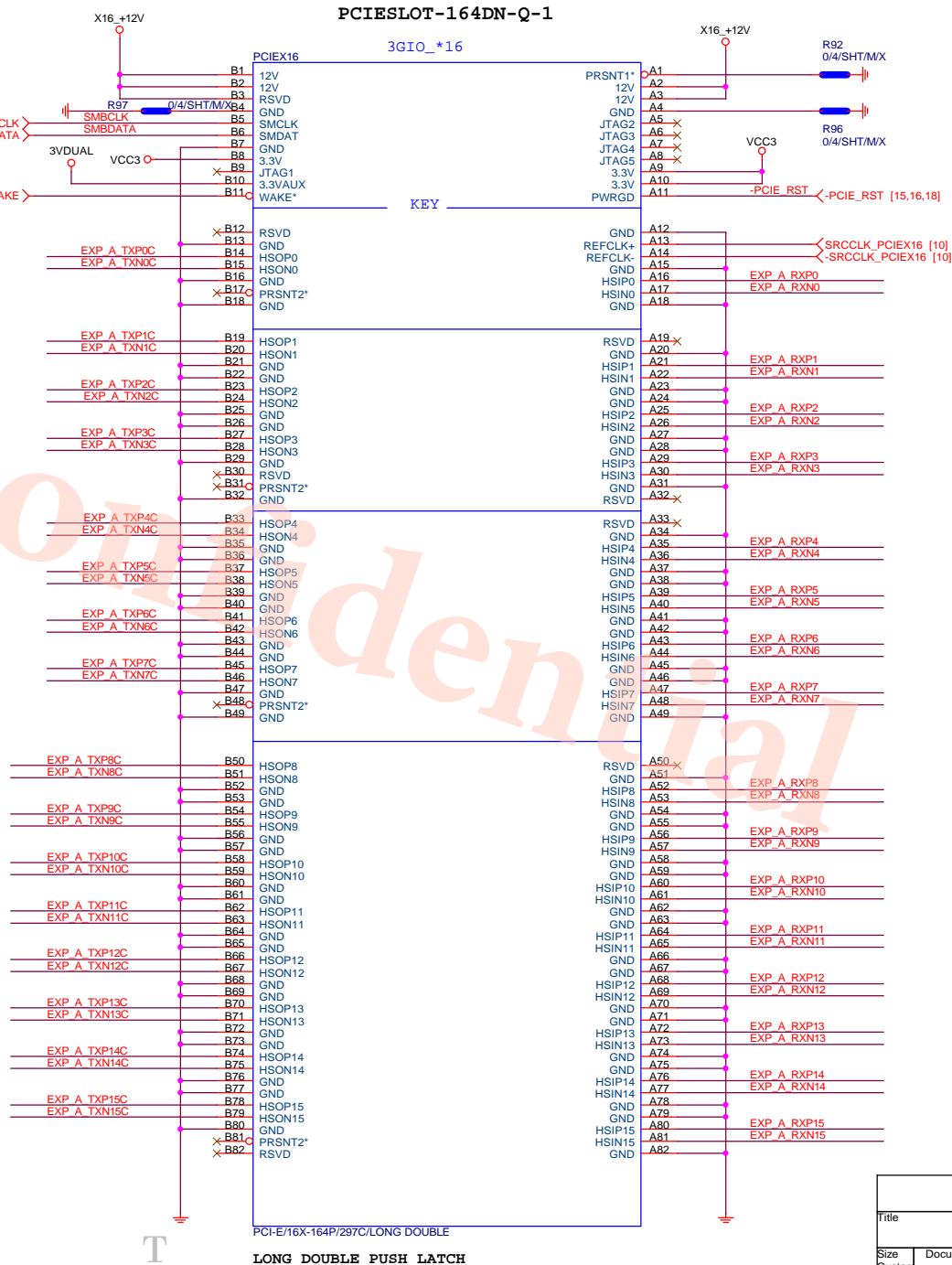


PCIEX16



EXP A RXP0..15] >> EXP_A_RXP[0..15] [4]
 EXP A RXN0..15] >> EXP_A_RXN[0..15] [4]
 EXP A TXP0..15] >> EXP_A_TXP[0..15] [4]
 EXP A TXN0..15] >> EXP_A_TXN[0..15] [4]

EXP A TXP0	C32	0.22u/4/X5R/6.3V/K	EXP A TXP0C
EXP A TXN0	C30	0.22u/4/X5R/6.3V/K	EXP A TXN0C
EXP A TXP1	C35	0.22u/4/X5R/6.3V/K	EXP A TXP1C
EXP A TXN1	C37	0.22u/4/X5R/6.3V/K	EXP A TXN1C
EXP A TXP2	C39	0.22u/4/X5R/6.3V/K	EXP A TXP2C
EXP A TXN2	C41	0.22u/4/X5R/6.3V/K	EXP A TXN2C
EXP A TXP3	C43	0.22u/4/X5R/6.3V/K	EXP A TXP3C
EXP A TXN3	C45	0.22u/4/X5R/6.3V/K	EXP A TXN3C
EXP A TXP4	C46	0.22u/4/X5R/6.3V/K	EXP A TXP4C
EXP A TXN4	C49	0.22u/4/X5R/6.3V/K	EXP A TXN4C
EXP A TXP5	C50	0.22u/4/X5R/6.3V/K	EXP A TXP5C
EXP A TXN5	C51	0.22u/4/X5R/6.3V/K	EXP A TXN5C
EXP A TXP6	C52	0.22u/4/X5R/6.3V/K	EXP A TXP6C
EXP A TXN6	C54	0.22u/4/X5R/6.3V/K	EXP A TXN6C
EXP A TXP7	C57	0.22u/4/X5R/6.3V/K	EXP A TXP7C
EXP A TXN7	C58	0.22u/4/X5R/6.3V/K	EXP A TXN7C
EXP A TXP8	C60	0.22u/4/X5R/6.3V/K	EXP A TXP8C
EXP A TXN8	C61	0.22u/4/X5R/6.3V/K	EXP A TXN8C
EXP A TXP9	C62	0.22u/4/X5R/6.3V/K	EXP A TXP9C
EXP A TXN9	C63	0.22u/4/X5R/6.3V/K	EXP A TXN9C
EXP A TXP10	C64	0.22u/4/X5R/6.3V/K	EXP A TXP10C
EXP A TXN10	C65	0.22u/4/X5R/6.3V/K	EXP A TXN10C
EXP A TXP11	C66	0.22u/4/X5R/6.3V/K	EXP A TXP11C
EXP A TXN11	C67	0.22u/4/X5R/6.3V/K	EXP A TXN11C
EXP A TXP12	C68	0.22u/4/X5R/6.3V/K	EXP A TXP12C
EXP A TXN12	C70	0.22u/4/X5R/6.3V/K	EXP A TXN12C
EXP A TXP13	C72	0.22u/4/X5R/6.3V/K	EXP A TXP13C
EXP A TXN13	C73	0.22u/4/X5R/6.3V/K	EXP A TXN13C
EXP A TXP14	C74	0.22u/4/X5R/6.3V/K	EXP A TXP14C
EXP A TXN14	C75	0.22u/4/X5R/6.3V/K	EXP A TXN14C
EXP A TXP15	C77	0.22u/4/X5R/6.3V/K	EXP A TXP15C
EXP A TXN15	C78	0.22u/4/X5R/6.3V/K	EXP A TXN15C

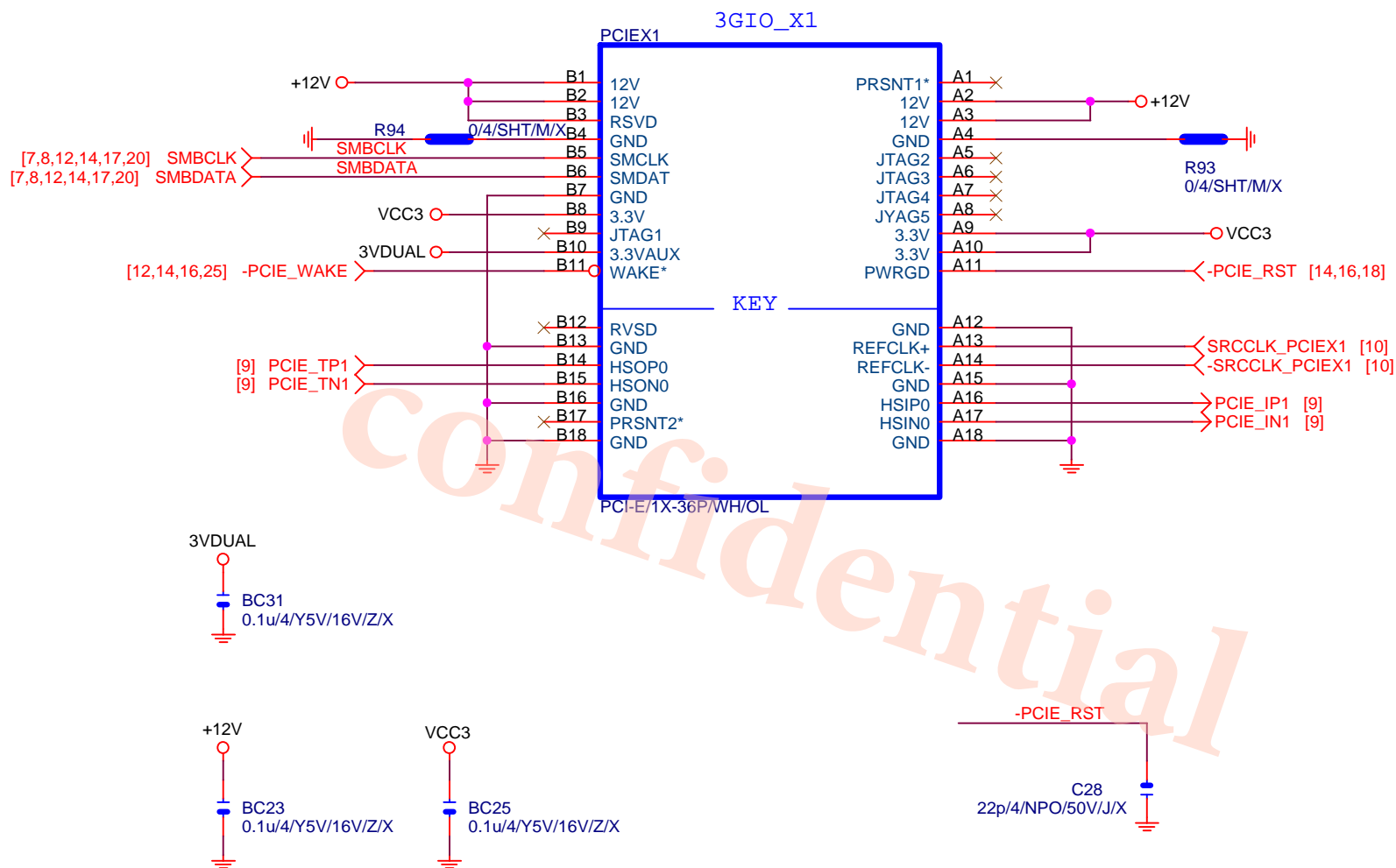


PCI-E/16X-164P/297C/LONG DOUBLE

LONG DOUBLE PUSH LATCH

Gigabyte Technology

Title			
PCI EXPRESS * 16			
Size			
Custom			
Document Number			
GA-H61M-S2PT			
Date:			
Friday, January 10, 2014			
Sheet			
14 of 32			
Rev			
1.0			



Gigabyte Technology			
Title			
PCI EXPRESS X 1 PORT			
Size A	Document Number		Rev
	GA-H61M-S2PT		1.0
Date:	Friday, January 10, 2014	Sheet	15 of 32

PCIe TO PCI

PCI:5/4/5 Impedance=50 +- 15%

BA D0..31] <-> BA D0..31] [17]

-BC BE0 <-> BC BE0 [17]
-BC BE1 <-> BC BE1 [17]
-BC BE2 <-> BC BE2 [17]
-BC BE3 <-> BC BE3 [17]

-BPERR <-> BPERR [17]
-BSERR <-> BSERR [17]

BPAR <-> BPAR [17]
-BPLOCK <-> BPLOCK [17]
-BDEVSEL <-> BDEVSEL [17]
-BSTOP <-> BSTOP [17]
-BTRDY <-> BTRDY [17]
-BIRDY <-> BIRDY [17]
-BFRAME <-> BFRAME [17]

-PCIE_RST <-> PCIE_RST [14,15,18]

-BPCIRST <-> BPCIRST [17]

-BREQ0 <-> BREQ0 [17]
-BREQ1 <-> BREQ1 [17]
-BGNT0 <-> BGNT0 [17]
-BGNT1 <-> BGNT1 [17]

-BPCIPME1 <-> BPCIPME1 [17]

[17] BPCLK0 <-> PR24 47/4/1 CLKOUT0

[17] BPCLK1 <-> PR19 47/4/1 CLKOUT1

RREF PR13 12K/4/1

TEST_EN PR21 10K/4/1

EXT_ARB PR22 10K/4/1

RST_SEL PR7 10K/4/1

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

M66EN
PR42 1K/4/1

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

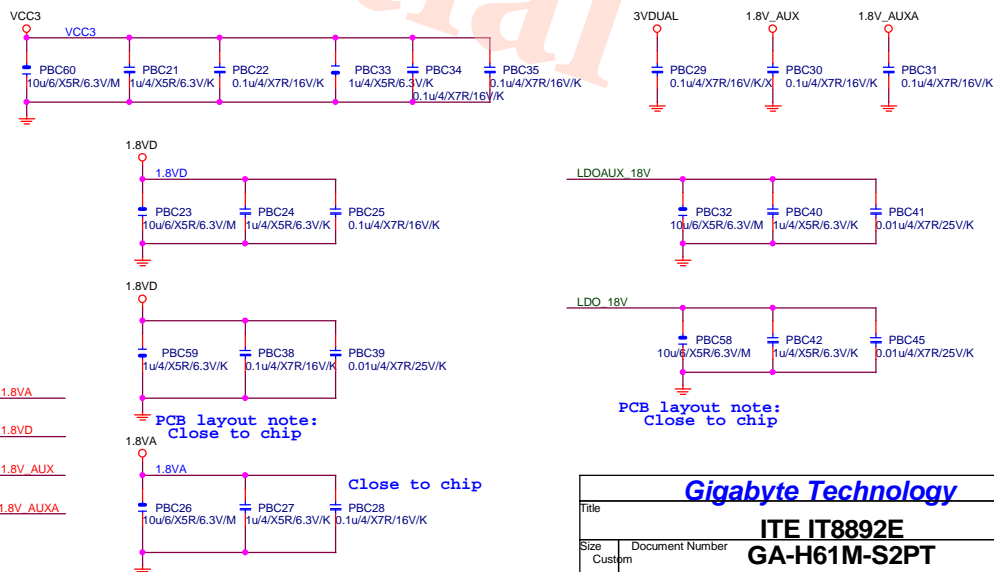
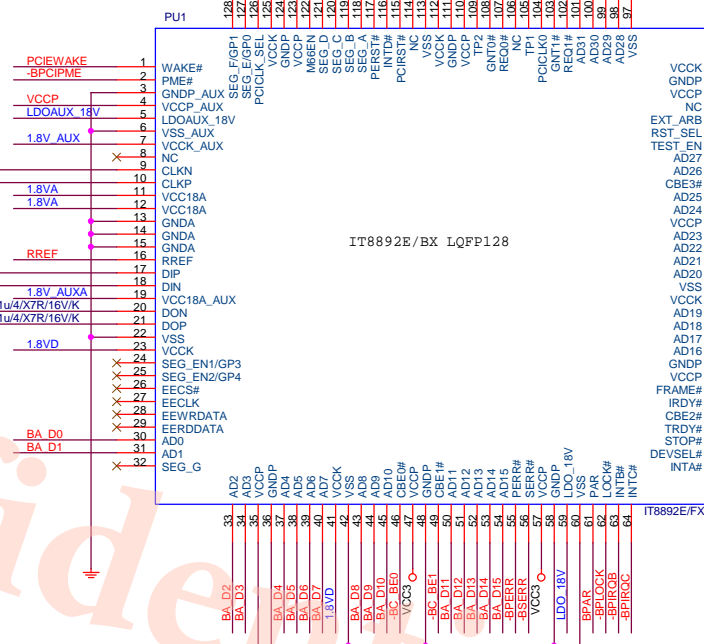
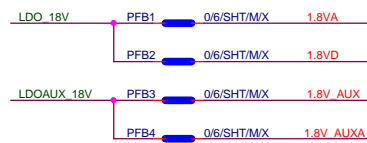
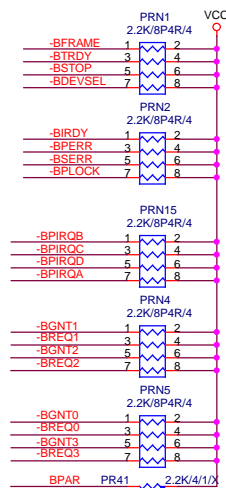
PCICLK_SEL
PR37 10K/4/1

IT8892

PCI slot

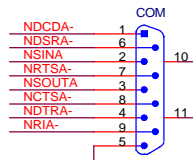
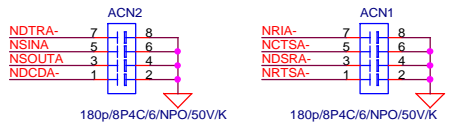
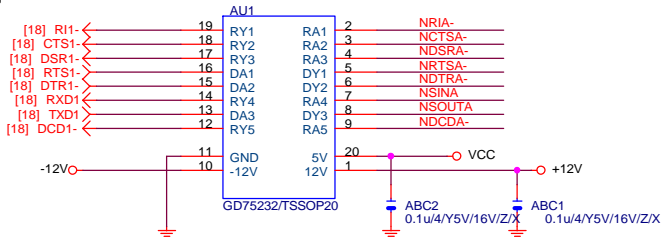
PCI slot

chipset side



Gigabyte Technology			
Title			
ITE IT8892E			
GA-H61M-S2PT			
Size	Document Number	Rev	
Custom		1.0	
Date:	Friday, January 10, 2014	Sheet	16 of 32

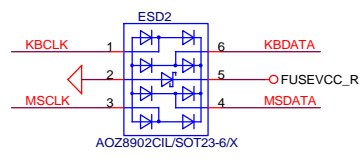
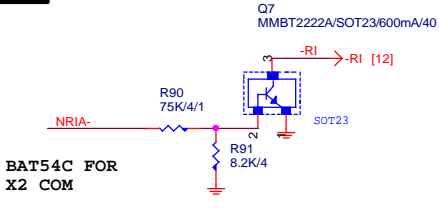
COM



COM/GE/SC-6mm/RA/1/D/[11NR6-111009-1QR_11NR6-111009-1JR]

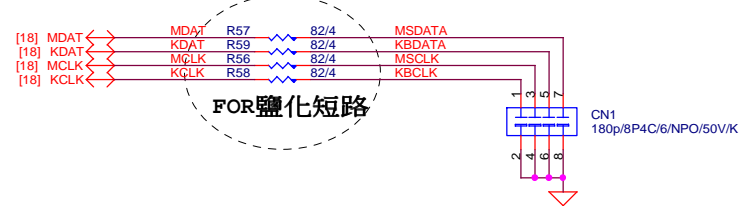
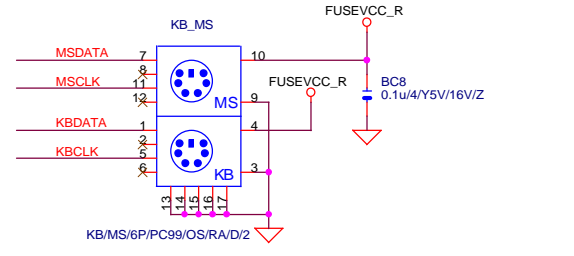
VITE -1QR

COM RI

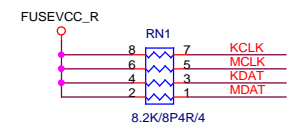


CLOSE KB_MS

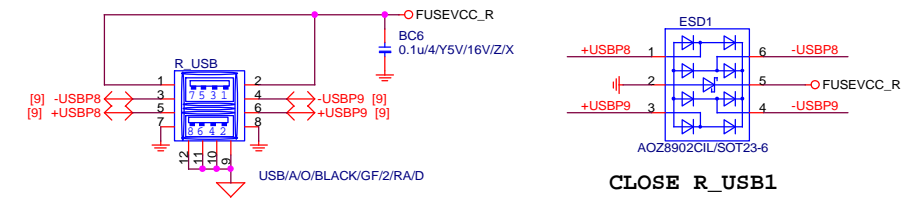
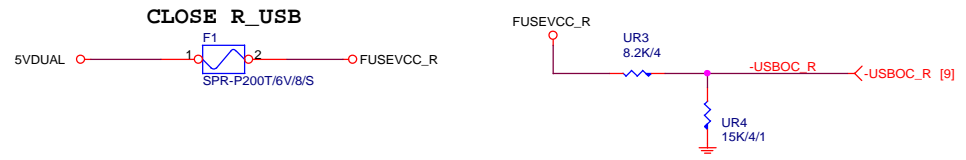
KB/MS



FOR鹽化短路

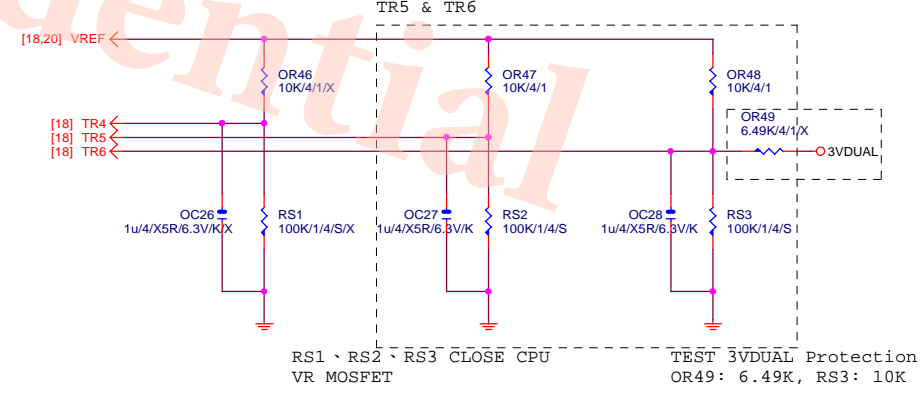


R_USB

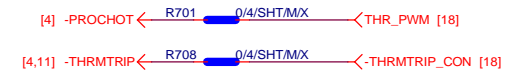


CLOSE R_USB1

THERMAL SENSOR

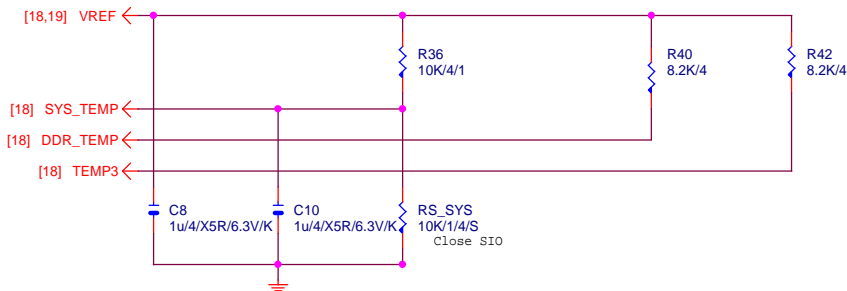


-PROHOT & THERMALTRIP

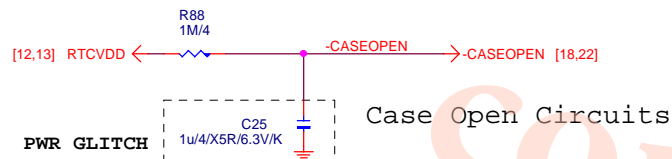


Gigabyte Technology			
Title			
COM,-RI,KB_USB,USB_ESATA,-PROHOT			
Size	Document Number	GA-H61M-S2PT	
Custom		Rev 1.0	
Date:	Friday, January 10, 2014	Sheet	19 of 32

TEMP H/W MONITOR

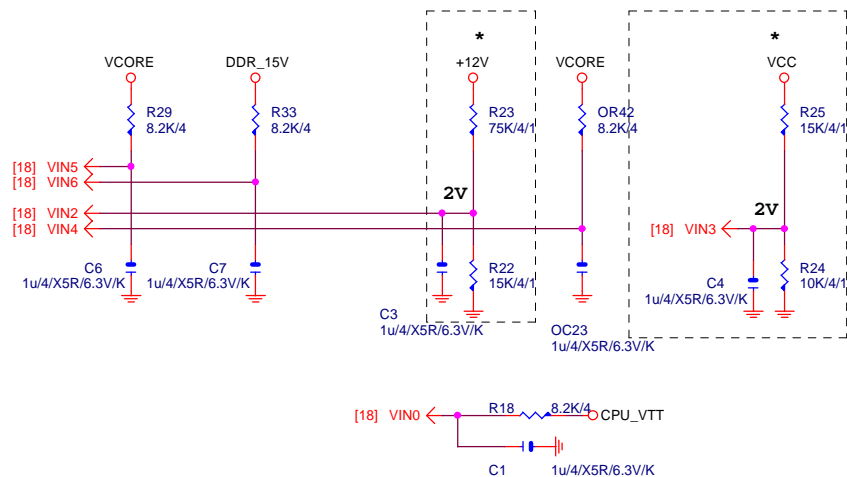


CASE OPEN

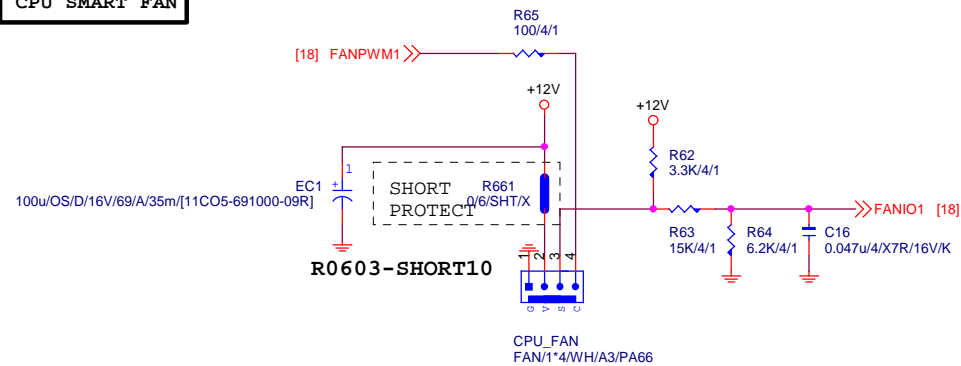


VOLTAGE-- H/W MONITOR

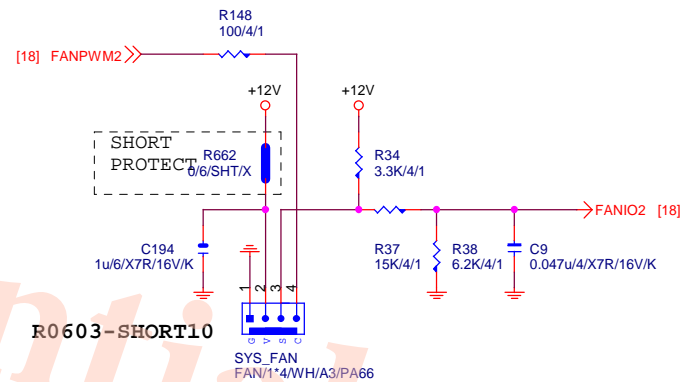
IT8728/EX VIN2/VIN3-->2V



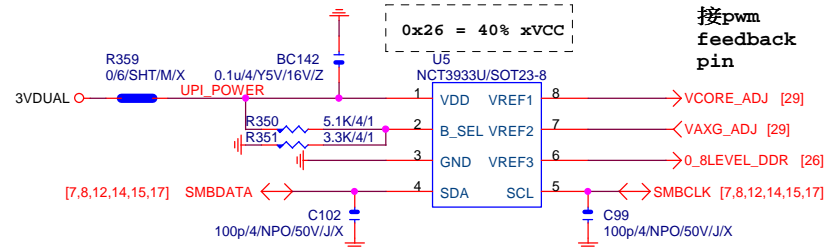
CPU SMART FAN



SYS SMART FAN



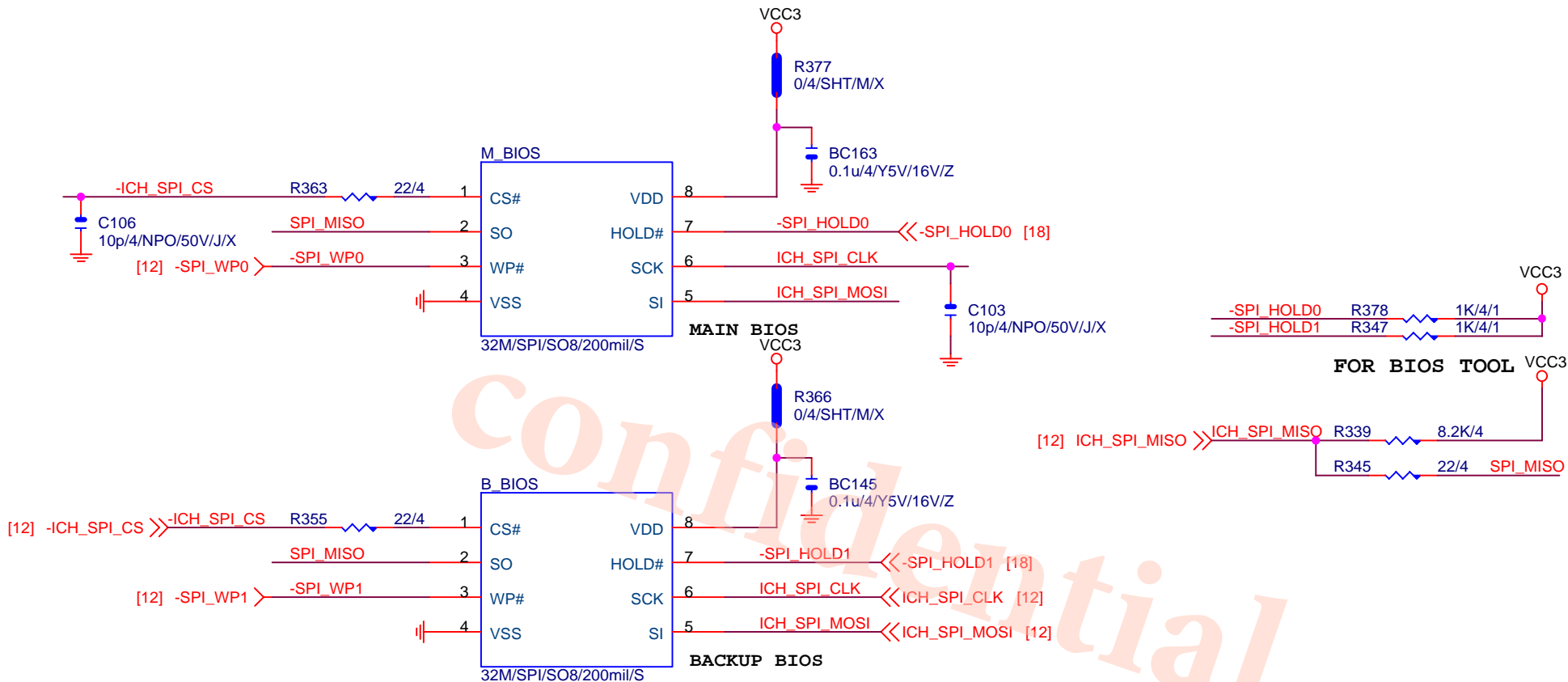
O.V.



Gigabyte Technology

Title		HWM,FAN CTRL,OV	
Size	Custom	Document Number	GA-H61M-S2PT
Date:	Friday, January 10, 2014	Sheet	20 of 32
		Rev	1.0

DUAL BIOS



B65使用64M BIOS
使用H67暫用32M
H61使用32M BIOS

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

1 means floating
0 means PD 1K

Gigabyte Technology

Title

DUAL BIOS

Size
A

Document Number

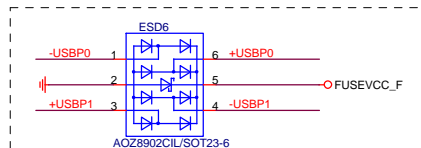
GA-H61M-S2PT

Rev
1.0

Date: Friday, January 10, 2014

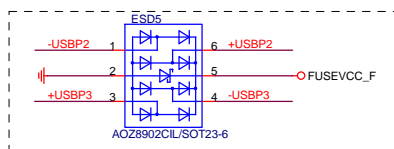
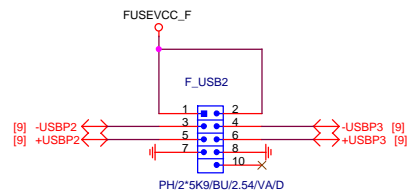
Sheet 21 of 32

FRONT USB1



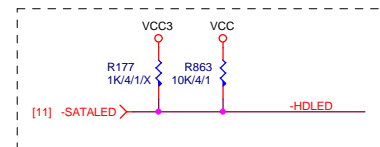
Close to connector

FRONT USB2

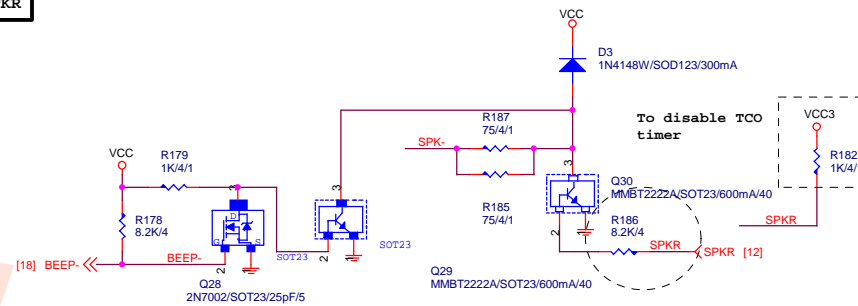


Close to connector

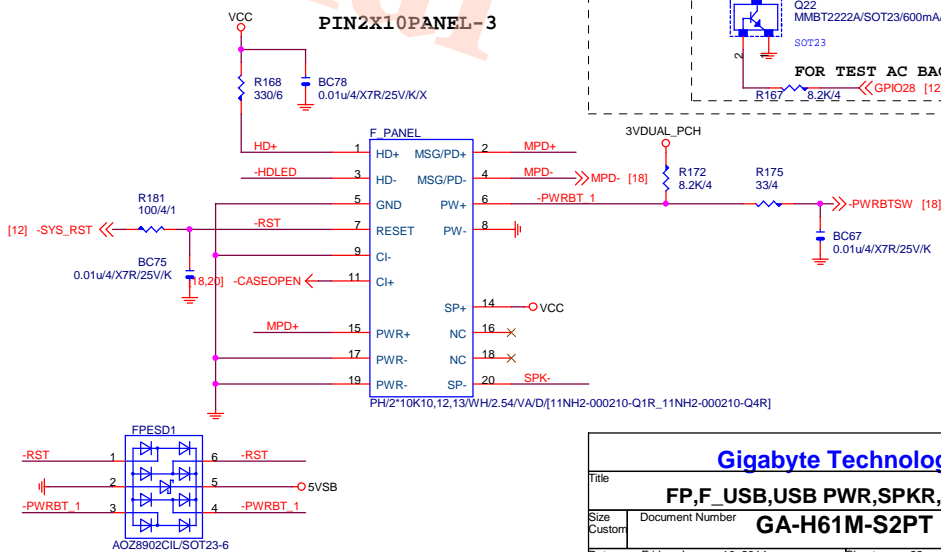
SATA LED



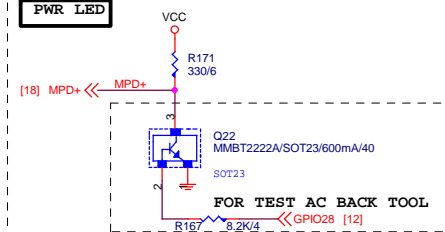
SPKR



INTEL FRONT PANEL



PWR LED



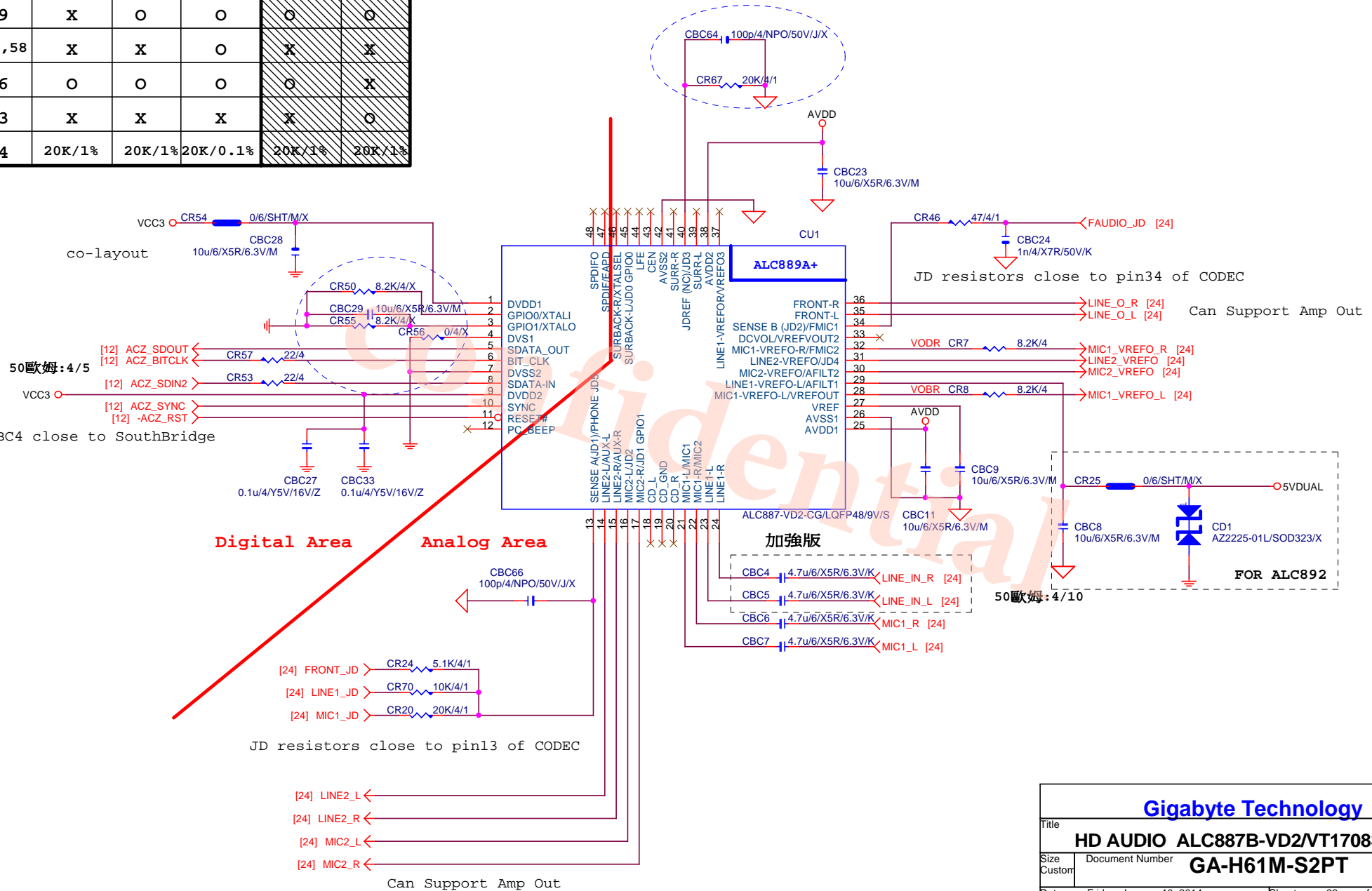
Gigabyte Technology

Title			FP,F_USB,USB PWR,SPKR,SATA LED	
Size	Document Number	GA-H61M-S2PT		Rev
Custom				1.0
Date:	Friday, January 10, 2014	Sheet	22	of 32

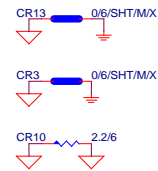
AZALIA CODEC

ALC892/ALC889A/ALC889/ALC888B Colay

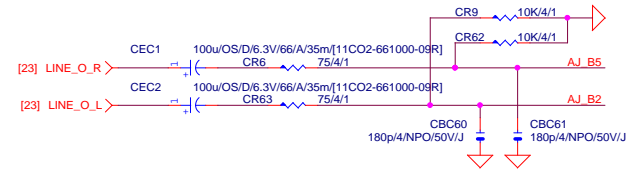
	ALC888B	ALC888-VA	ALC889A	ALC888-VD	ALC892
CR59	X	O	O	O	O
CR53,58	X	X	O	X	X
CR56	O	O	O	O	X
CR63	X	X	X	X	O
CR34	20K/1%	20K/1%	20K/0.1%	20K/1%	20K/1%



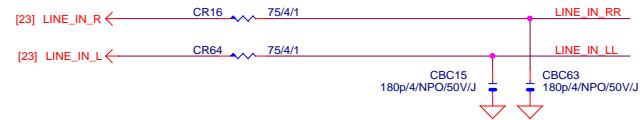
CODEC POWER/EMI PAD



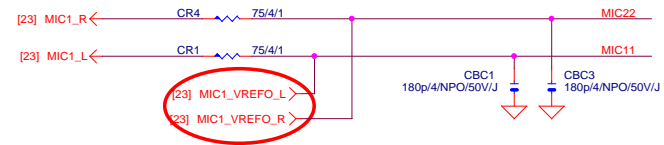
LINE-OUT



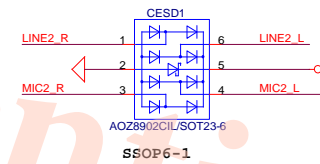
LINE-IN



MIC-IN



F_AUDIOESD

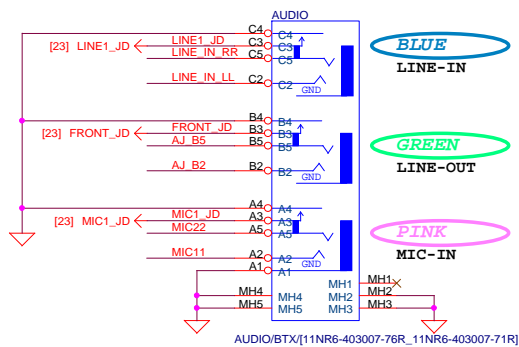


ALC892: X
ALC887: O

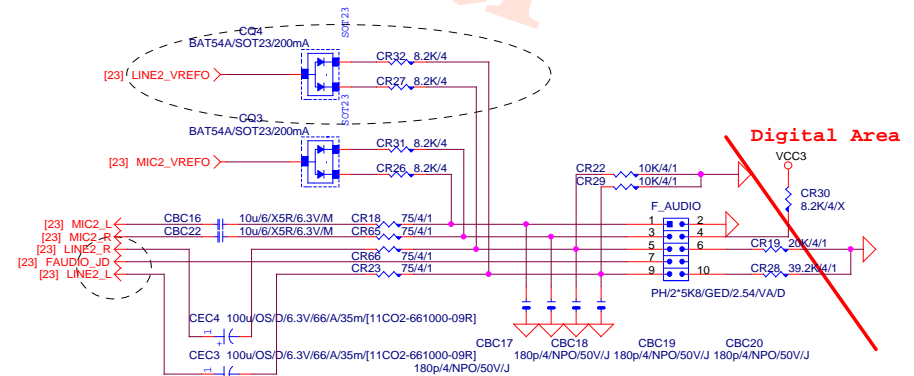
SPDIF

N/A

AZALIA JACK



AZALIA FRONT PANEL



Gigabyte Technology

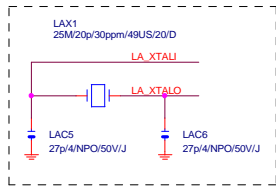
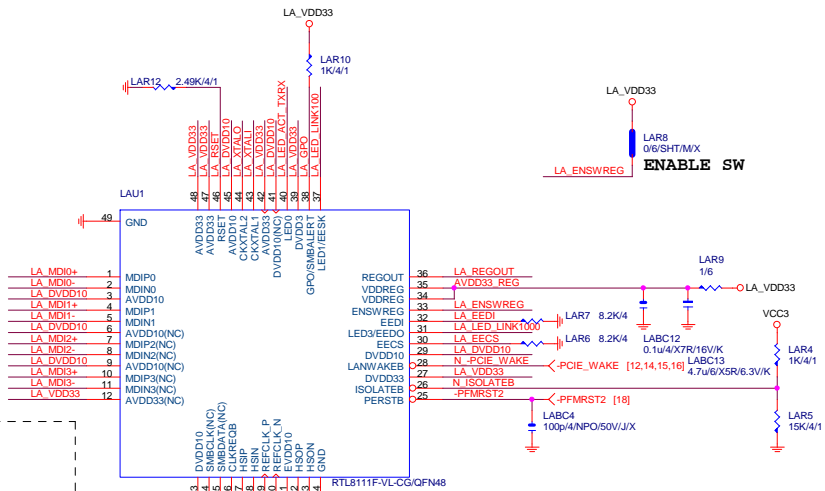
AUDIO JACK

GA-H61M-S2PT

Rev
1.0

Title	Document Number	Rev
Size	Custom	1.0
Date:	Friday, January 10, 2014	Sheet 24 of 32

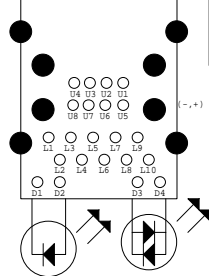
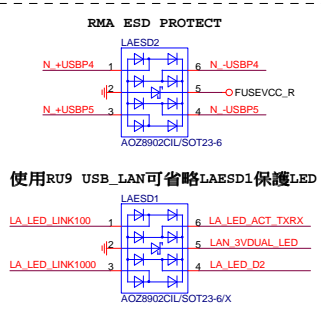
LAN:RTL8111E/VB/VL



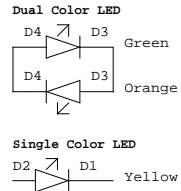
LA_ ML-->80歐姆:[15/5/5/15]

SRCLK-->50歐姆:[18/4/10/4/18]

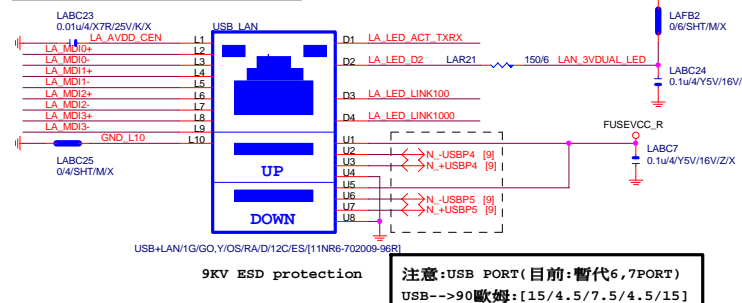
USB_LAN CONNECTOR



注意:LAN LED PROTECT:(CO-LAYOUT)
1.ESD(6PIN):AOZ8902CIL/SOT23-6(DEFAULT)
2.SURGE(5PIN):AZ2025-04S/SOT23-5L



LA_MDI-->100歐姆:[20/4/8/4/20]

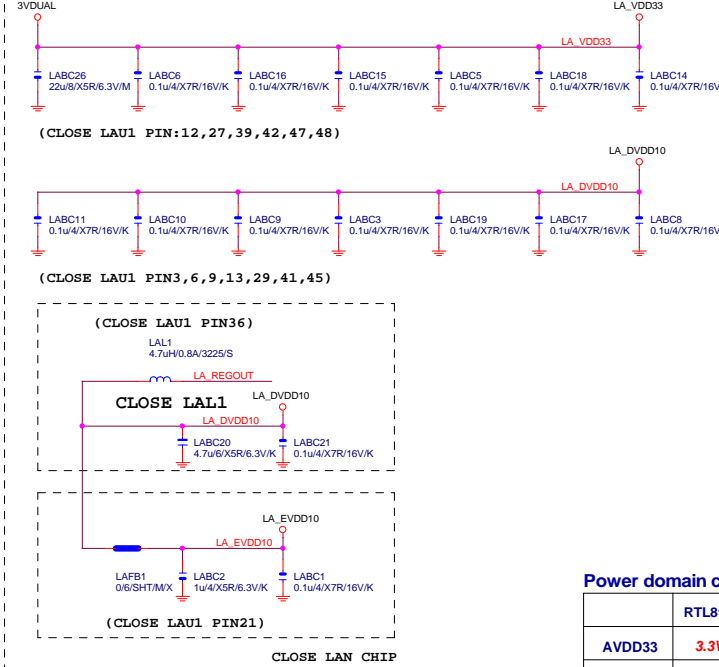


注意:USB PORT(目前:暫代6,7PORT)
USB-->90歐姆:[15/4.5/7.5/4.5/15]

料號	規格	廠商
11NR6-702009-0ER	1G LAN (12core)	UDE
11NR6-702009-91R	1G LAN (8 core)	FOXCONN
11NR6-702009-92R	1G LAN (8 core)	UDE
11NR6-702009-11R	1G LAN (12core/RED)	UDE
11NR6-702009-12R	1G LAN (8 core/RED)	FOXCONN

USB_LAN BOM區分:
1.(紅色/12CORE/三倍):USB+LAN/1G/GO,Y/OS/RA/D/1/RED
2.(黑色/12CORE):USB+LAN/1G/GO,Y/OS/RA/D/1
3.(黑色/8CORE):USB+LAN/1G/GO,Y/OS/RA/D/8C

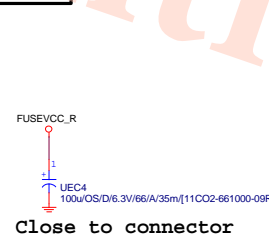
LAN POWER



Power domain chart

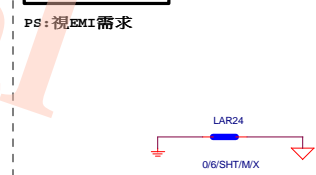
	RTL8111E
AVDD33	3.3V
DVDD33	3.3V
VDDREG	3.3V
DVDD10	1.05V

USB X3 POWER



Close to connector

EMI SHORT PAD

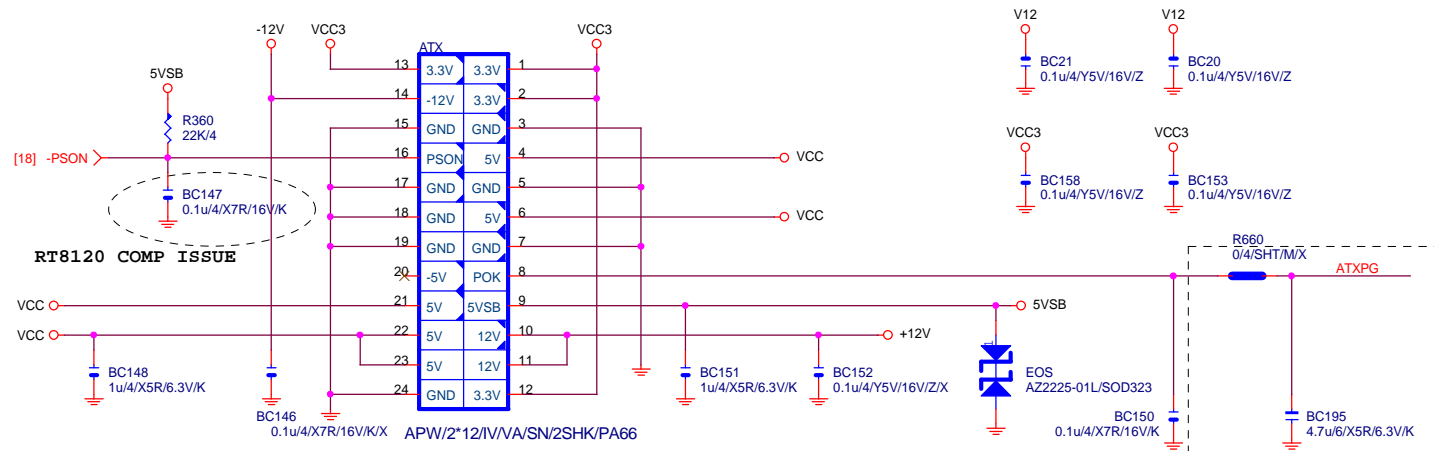


PS:視EMI需求

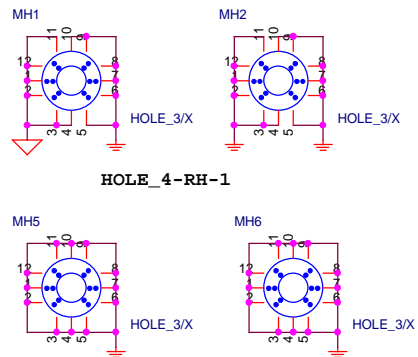
Gigabyte Technology

File		REALTEK RTL8111F-VL	
Size	Document Number	GA-H61M-S2PT	
Custom		Rev	1.0
Date	Friday, January 10, 2014	Sheet	25 of 32

ATXX24 POWER CONNECTOR



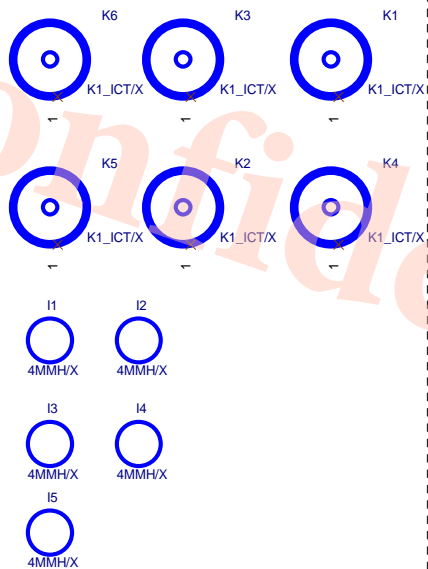
To prevent the 5VSB under loading when boot



HOLE_4-RH-1

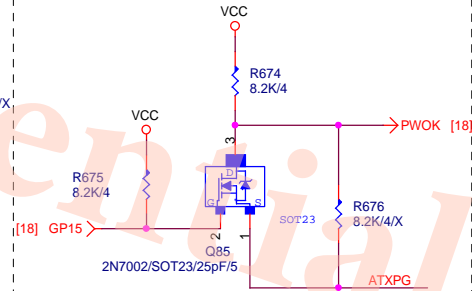
HOLE_4-RH-5MM-1

HOLE_4-RH-5MM-2

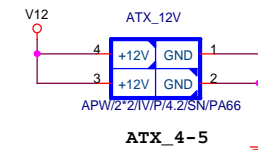


PWOK PATCH

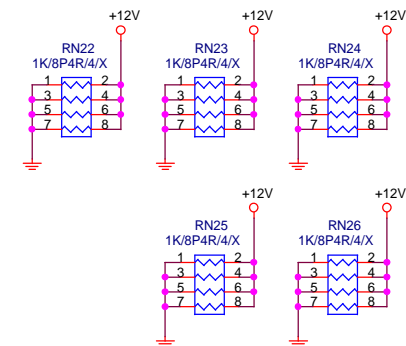
【技術通報R&D技術通報154】



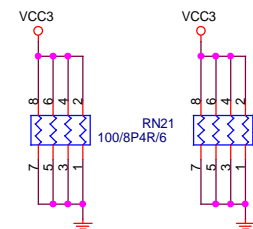
ATXX4 POWER CONNECTOR



MIN. LOAD



FIX PWR MINMUN LOAD



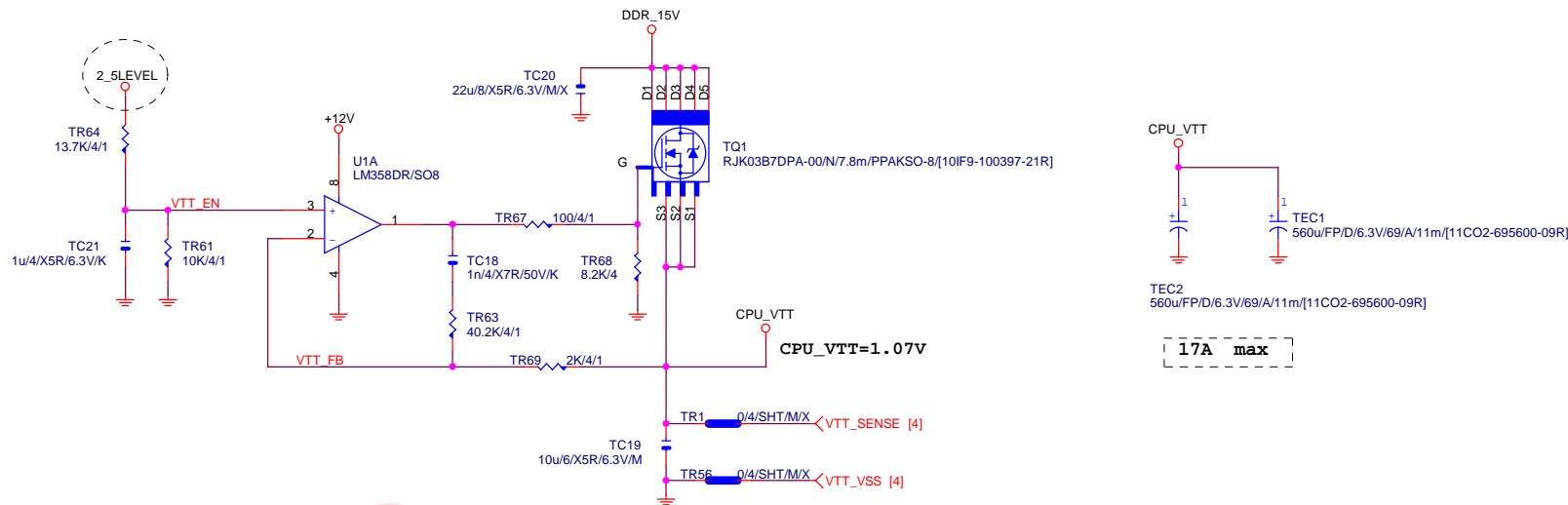
Gigabyte Technology

ATX CONNECTOR

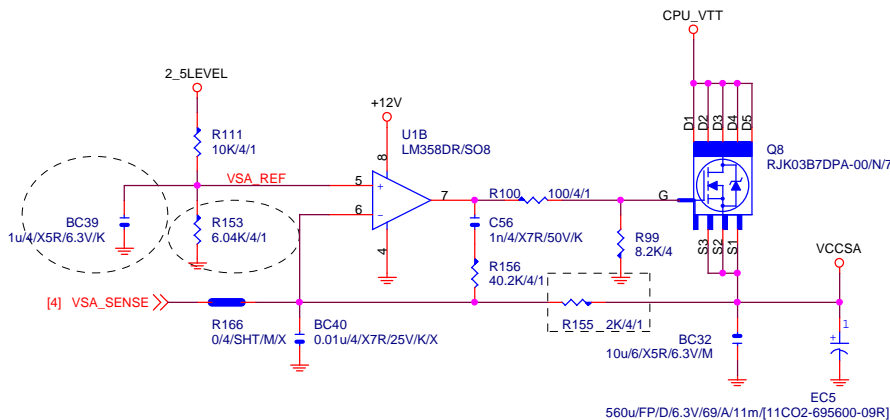
GA-H61M-S2PT

Title	Document Number	Rev
Size	Custom	1.0
Date:	Friday, January 10, 2014	Sheet 27 of 32

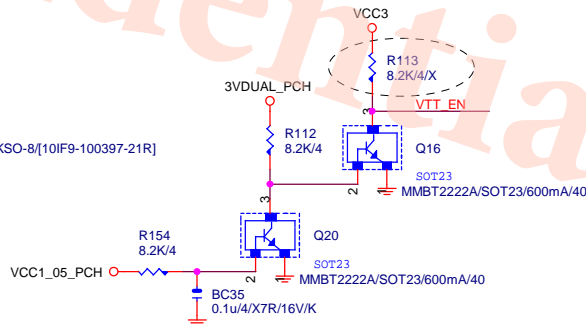
CPU_VTT



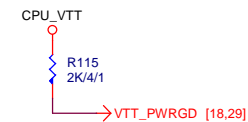
VCCSA



CPU_VTT PWR SEQ



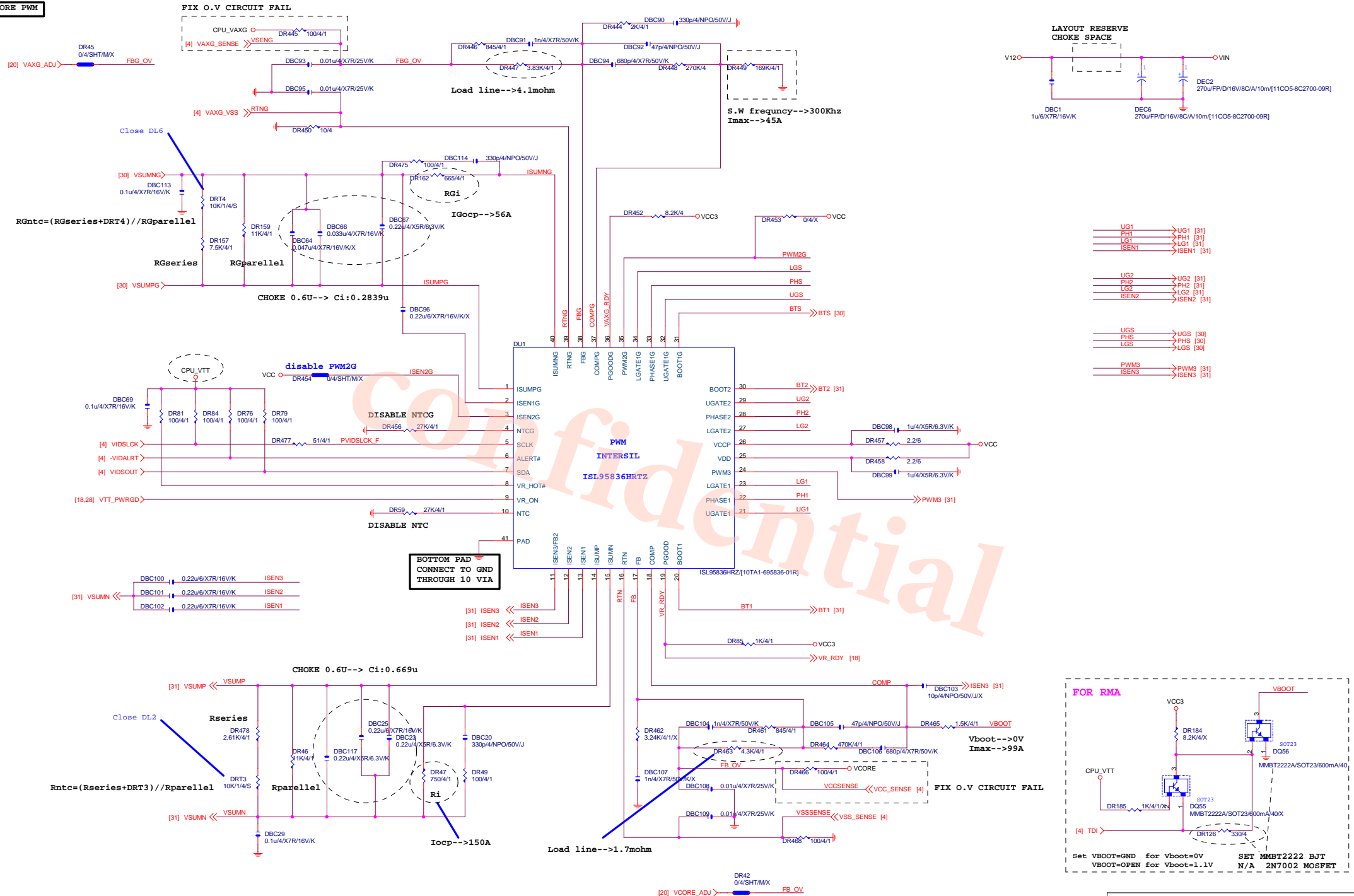
VTT_PWRGD



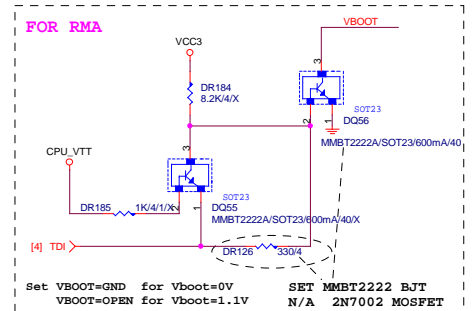
GIGABYTE™

Title		
CPU_VTT		
Size	Document Number	Rev
B	GA-H61M-S2PT	1.0
Date:	Friday, January 10, 2014	Sheet 28 of 32

VCORE PWM

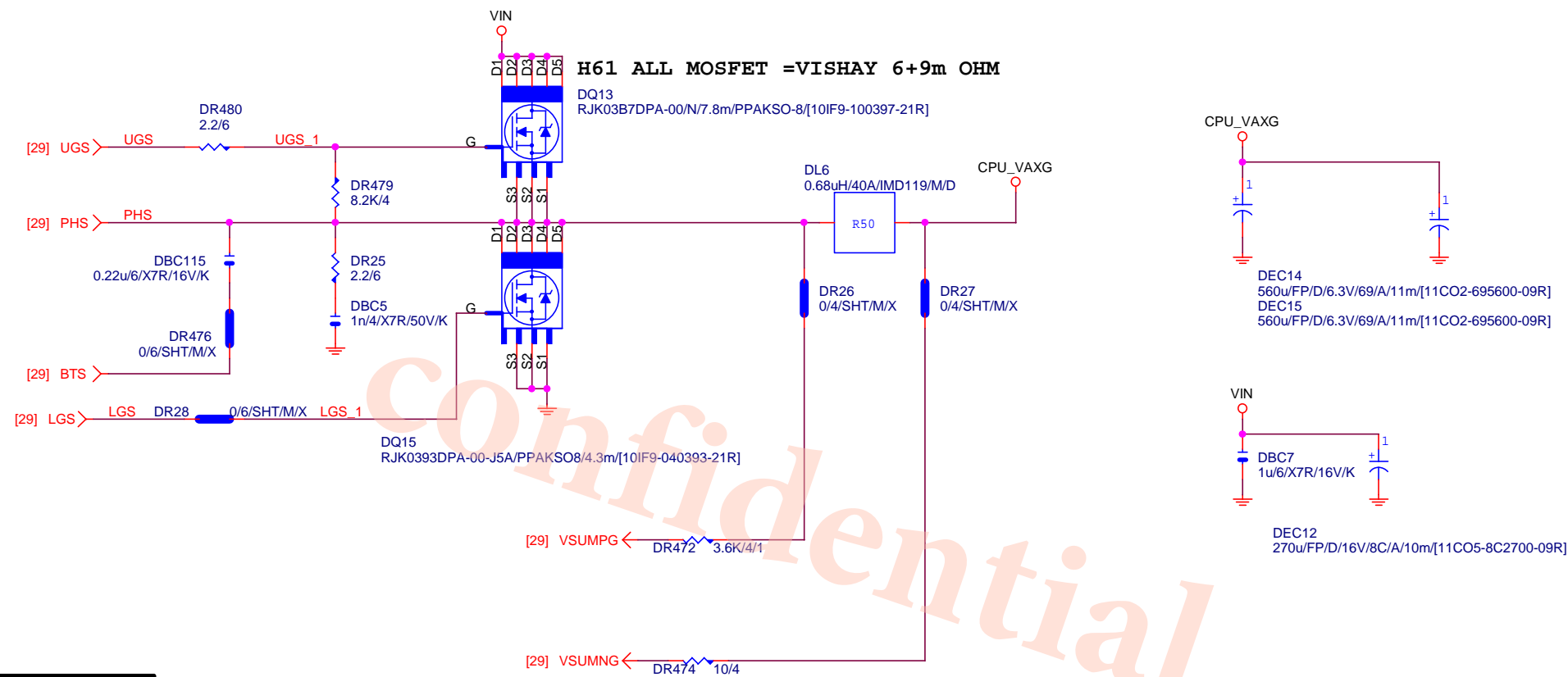


FOR RMA



Gigabyte Technology			
Title		CPU CORE VR-1	
Size Custom	Document Number	GA-H61M-S2PT	Rev 1.0
Date:	Friday, January 10, 2014	Sheet 29 of 32	

VAXG

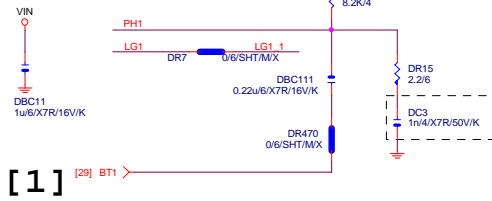


MOS HEATSINK

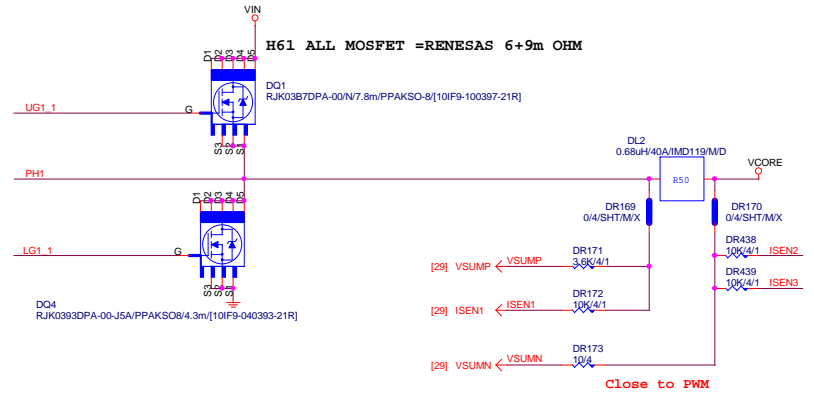
N/A

Gigabyte Technology			
Title			
CPU CORE VR-2			
Size	Document Number	GA-H61M-S2PT	
Custom		Rev 1.0	
Date:	Friday, January 10, 2014	Sheet	30 of 32

PHASE 1

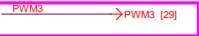
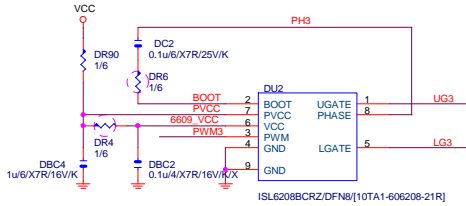


[1]

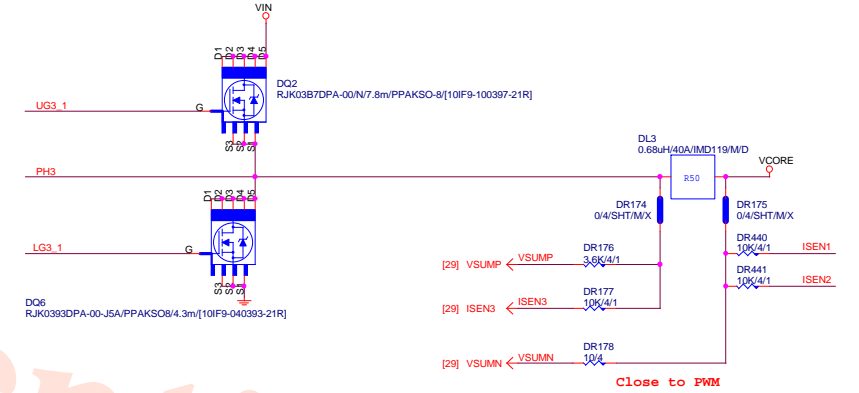
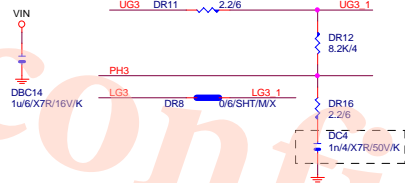


PHASE 3

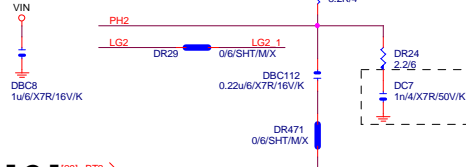
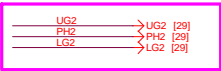
Pop ISL6625CB for PS1
[ISL6625CBZ/S08]



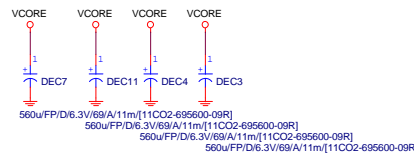
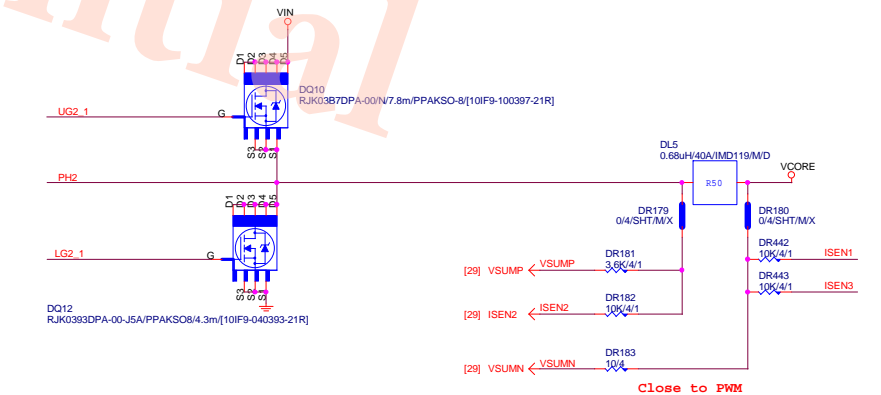
[3]



PHASE 2



[2]



Gigabyte Technology			
CPU CORE VR-3			
Title		Rev	
Size	Document Number	1.0	
Custom	GA-H61M-S2PT		
Date:	Friday, January 10, 2014	Sheet	31 of 32

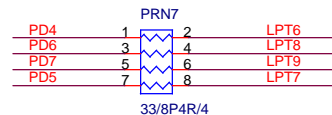
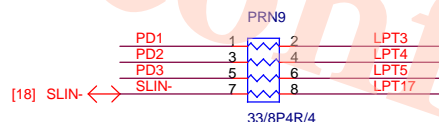
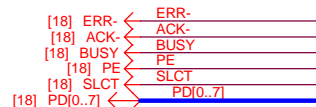
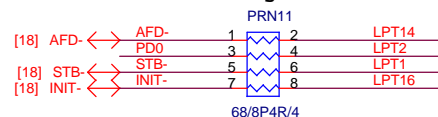
TPM

N/A

LPT PORT

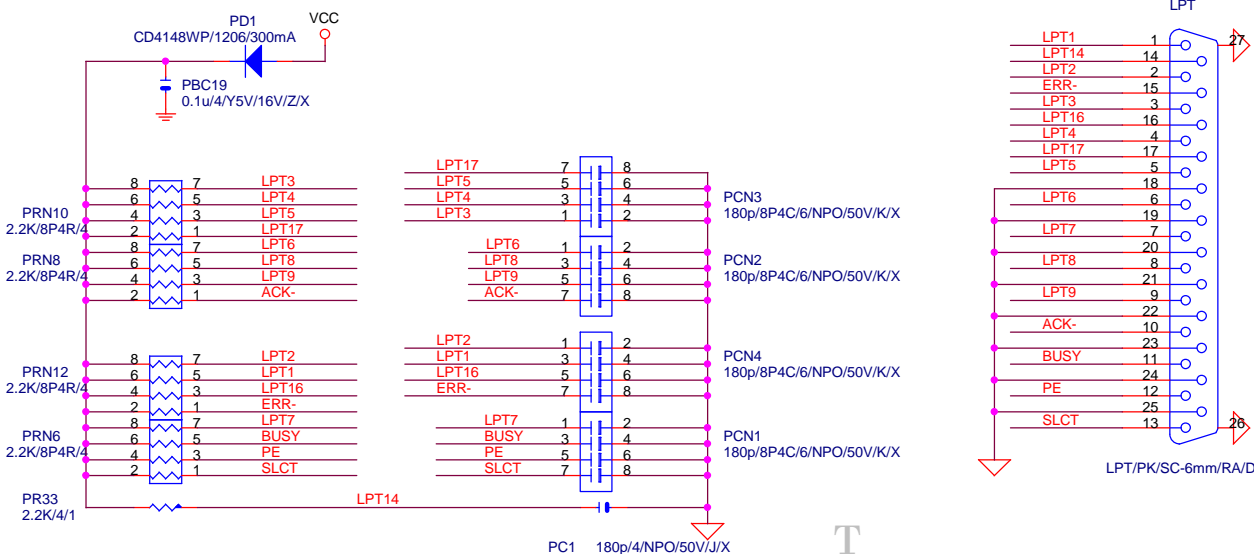
【技術通報R&D技術通報151】

33ohm Change to 68ohm



COMB

N/A



Gigabyte Technology

LPT

GA-H61M-S2PT

Rev
1.0

Title

Size
Custom

Document Number

Date:

Friday, January 10, 2014

Sheet

32

of

32