

Model Name: GA-B75M-HD3

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 X2 SLOT
16	PCI SLOT1
17	ITE 8728 LPC IO
18	COM,KB_MS_USB,USB30_20
19	HWM,FAN CTRL,OV,-PROCHOT
20	DUAL BIOS
21	FP,FUSB,SPK,SATALED
22	Realtek ALC887-VD2
23	REAR AUDIO JACK
24	REALTEK RTL8111F-VL
25	DISCRETE POWER
26	ATX, M3 POWER
27	RT8120_CPU_VTT

SHEET

TITLE

28	VCORE ISL95836_1
29	VCORE ISL95836_2
30	RT8120_DDR POWER
31	LPT
32	DVI

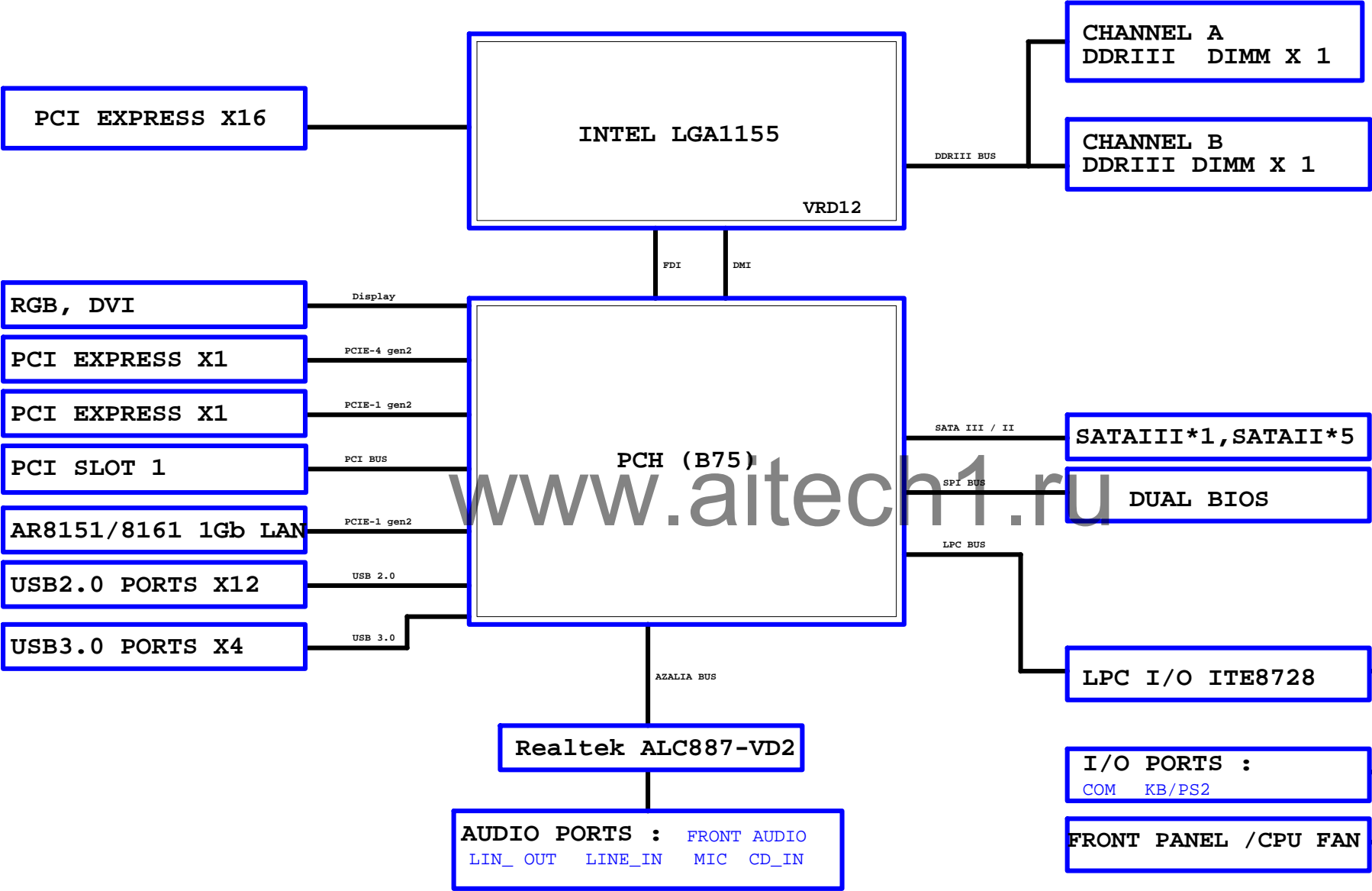
www.aitech1.ru

Gigabyte Technology

Title			Cover Sheet
Size	Document Number	GA-B75M-HD3	
Custom			Rev 1.0
Date:	Thursday, September 20, 2012	Sheet 1	of 32

C

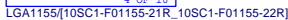
BLOCK DIAGRAM



LGA1155E



LGA1155D



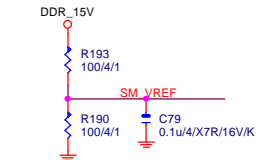
LGA1155



R218 1K/4/1 R215 200/4/1 1.1V分壓



SM	REF
----	-----



Title			
CPU LGA1155-A			
Size	Document Number		Rev
Custom	GA-B75M-HD3		1.0
Date:	Thursday, September 20, 2012	Sheet	4 of 32

(A)



LGA1155/[10SC1-F01155-21R_10SC1-F01155-22R]

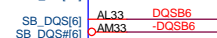
(B)



LGA1155/[10SC1-F01155-21R_10SC1-F01155-22R]

(CR)

ILM_BP/1156/CSP/ILM_BP/1156/CSP/[12KRC-0F0001-05R_12KRC-0F0001-31R]



LGA1155/[10SC1-F01155-21R_10SC1-F01155-22R]

Gigabyte Technology

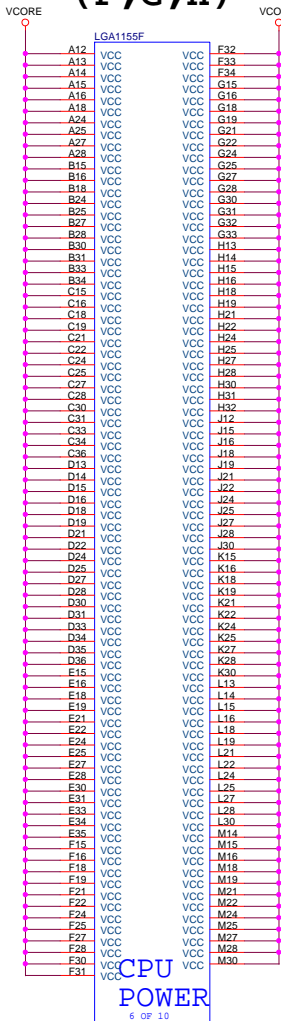
CPU LGA1156-B

Size	Document Number	GA-B75M-HD3
Custom		

1.0

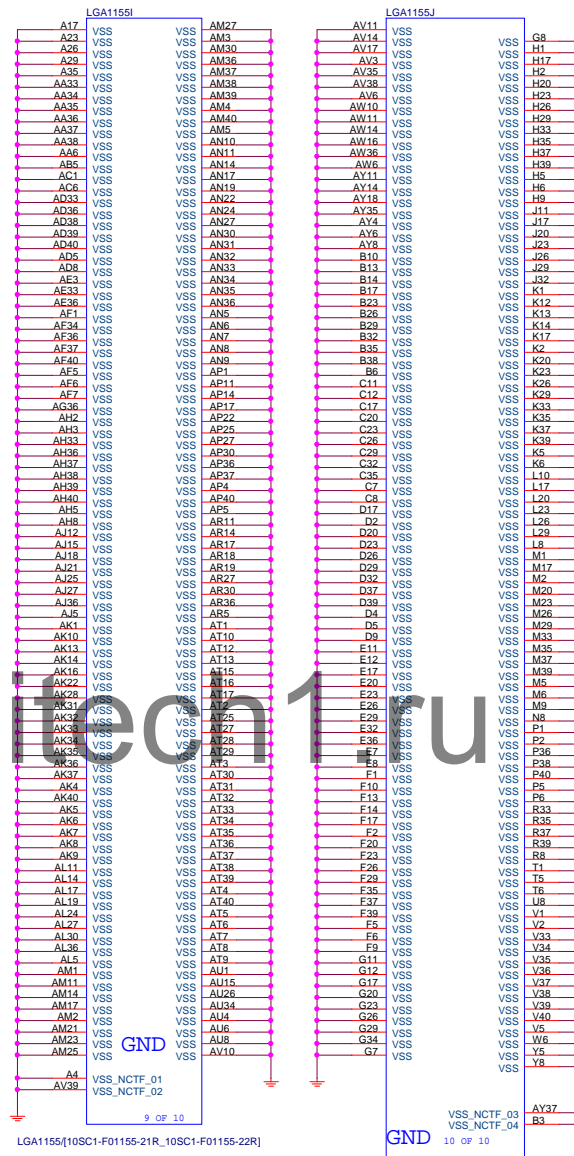
Date: Thursday, September 20, 2012 Sheet 5 of 32

LGA1155 (F,G,H)



LGA1155/[10SC1-F01155-21R_10SC1-F01155-22R]

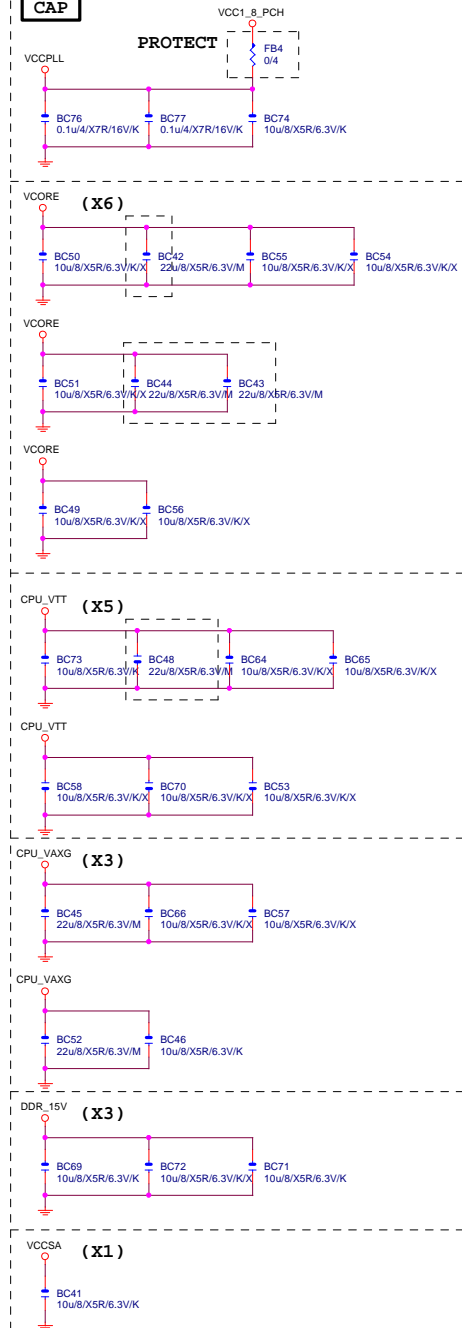
LGA1155 (I,J)



LGA1155/[10SC1-F01155-21R_10SC1-F01155-22R]

LGA1155/[10SC1-F01155-21R_10SC1-F01155-22R

CAP



Gigabyte Technology				
Title CPU LGA1156-C				
Size	Document Number	GA-B75M-HD3		Rev 1.0
Custom				
Date:	Thursday, September 20, 2012		Sheet	6 of 32

(B)



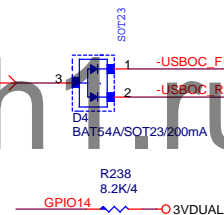
LOW COST ICH7 HEATSINK
BGAHSINK_SB-N



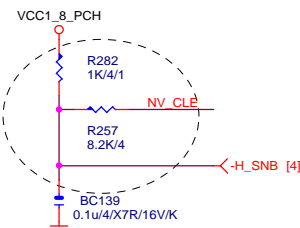
(E)



(G)



VCC1_8_PCH



USB TABLE

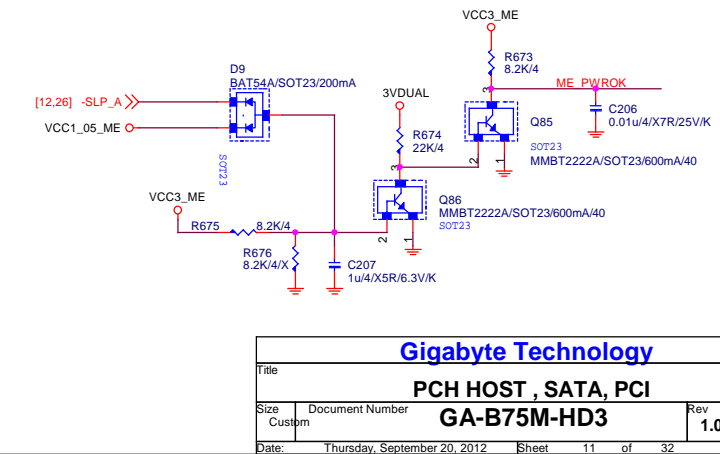
USB OC# Configure	
OC0#	USB0,1(F_USB30)
OC1#	USB2,3(USB30_20)
OC2#	USB4,5(F_USB1)
OC3#	USB6,7(B75:N/A)
OC4#	USB8,9(F_USB2)
OC5#	USB10,11(USB_LAN)
OC6#	USB12,13(KB_USB)
OC7#	N/A

Gigabyte Technology

Title			
PCH FDI,DMI,USB ,PCIE,NVRAM			
Size	Document Number		Rev
Custom	GA-B75M-HD3		1.0
Date:	Thursday, September 20, 2012	Sheet	9 of 32

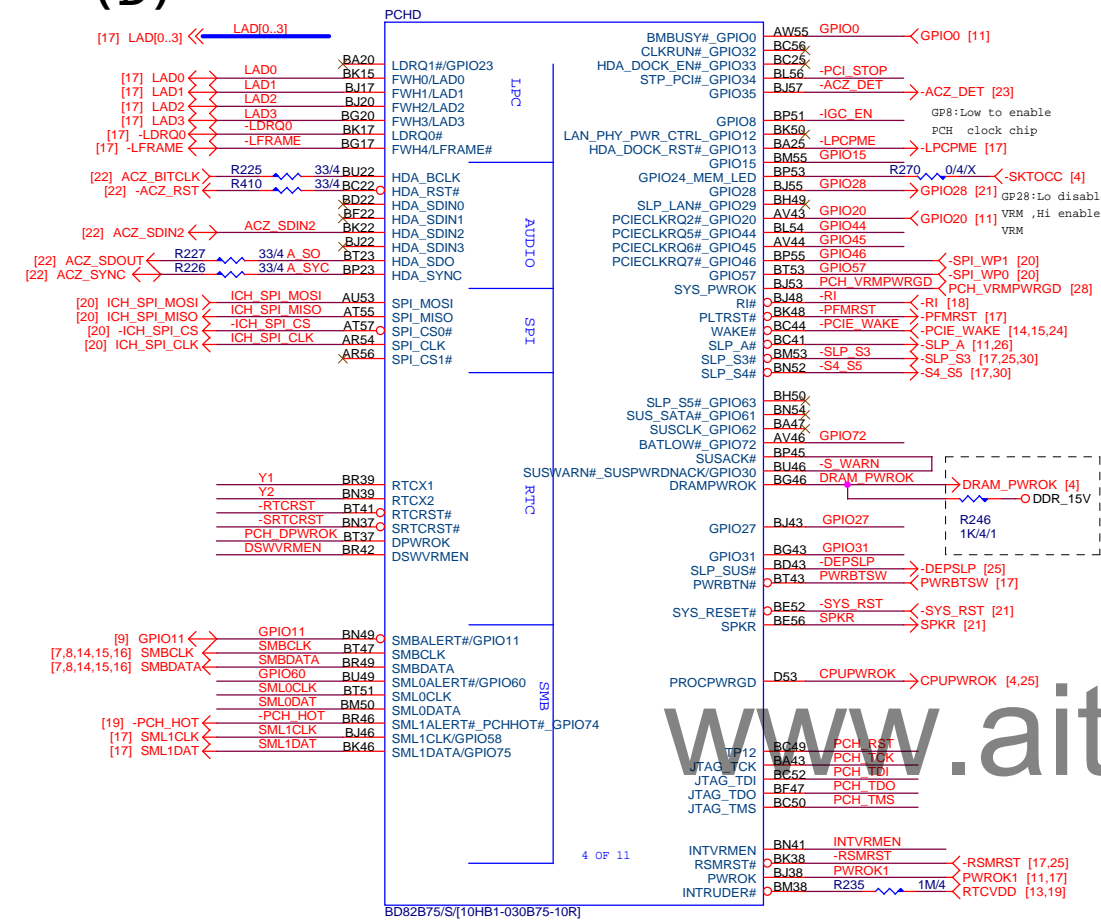
(C)

PCHC

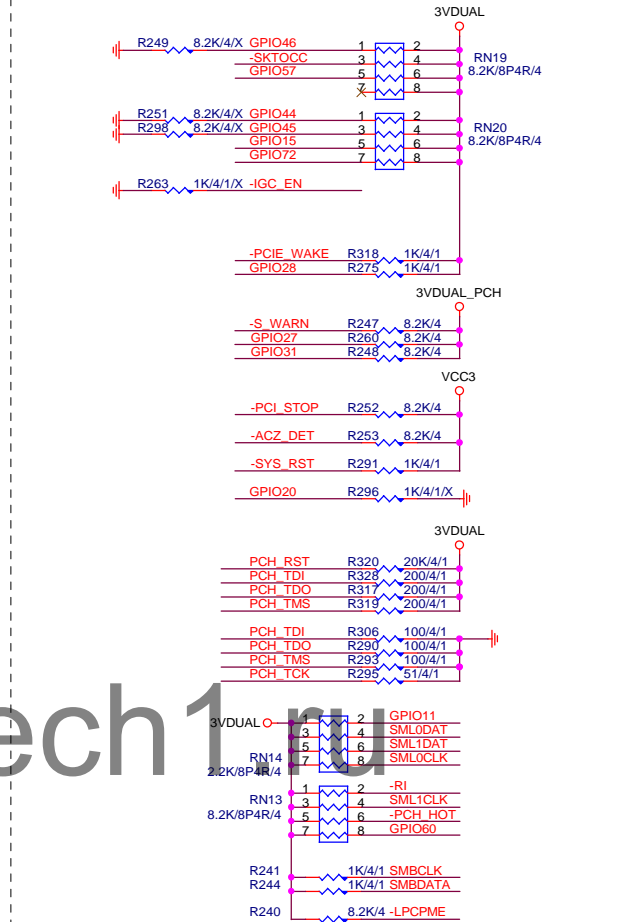


PCH

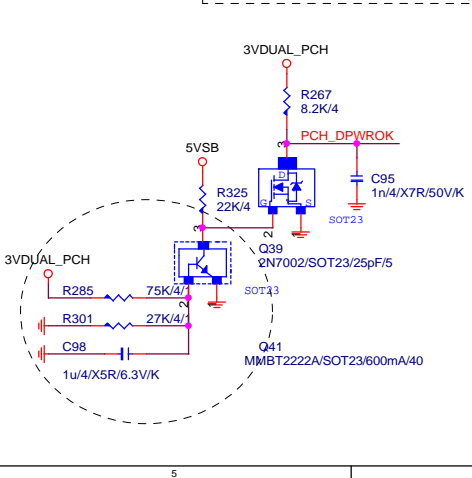
(D)



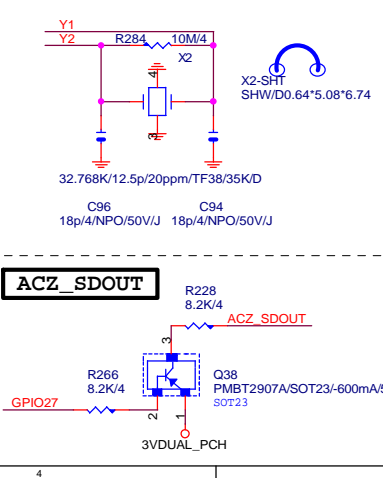
PCH PU/PD



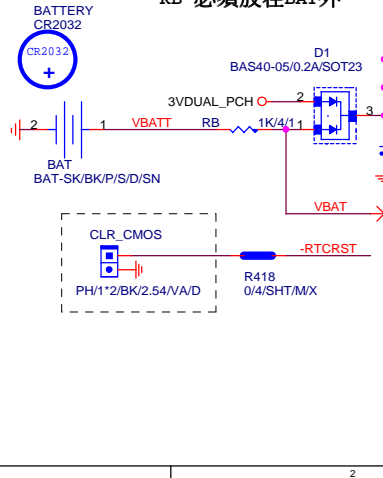
PCH_DPWROK



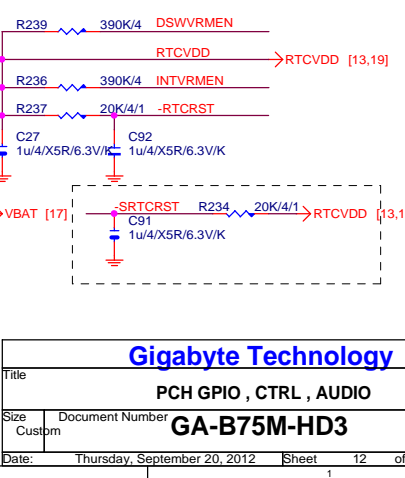
32.768KHZ



CLR_CMOS

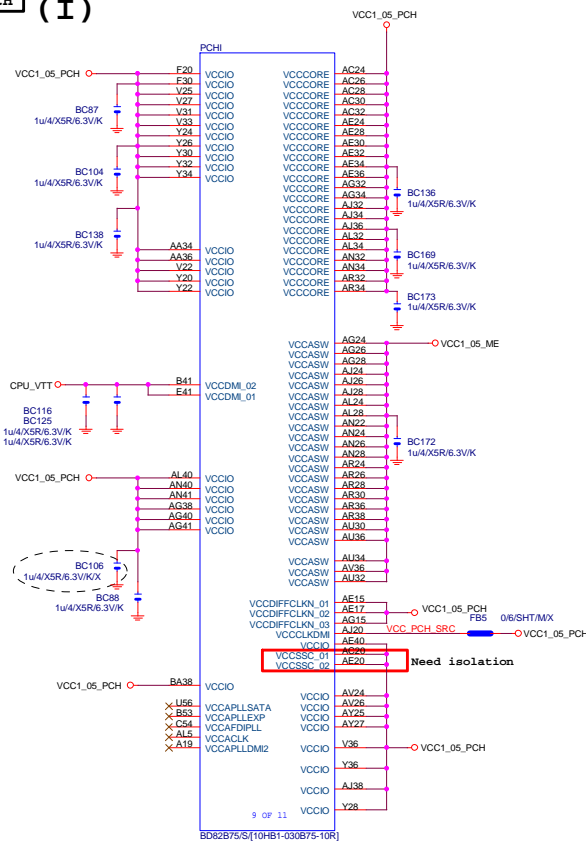


BATTERY-DUAL-4

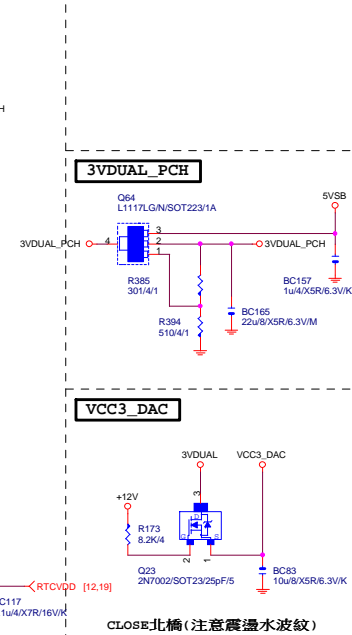
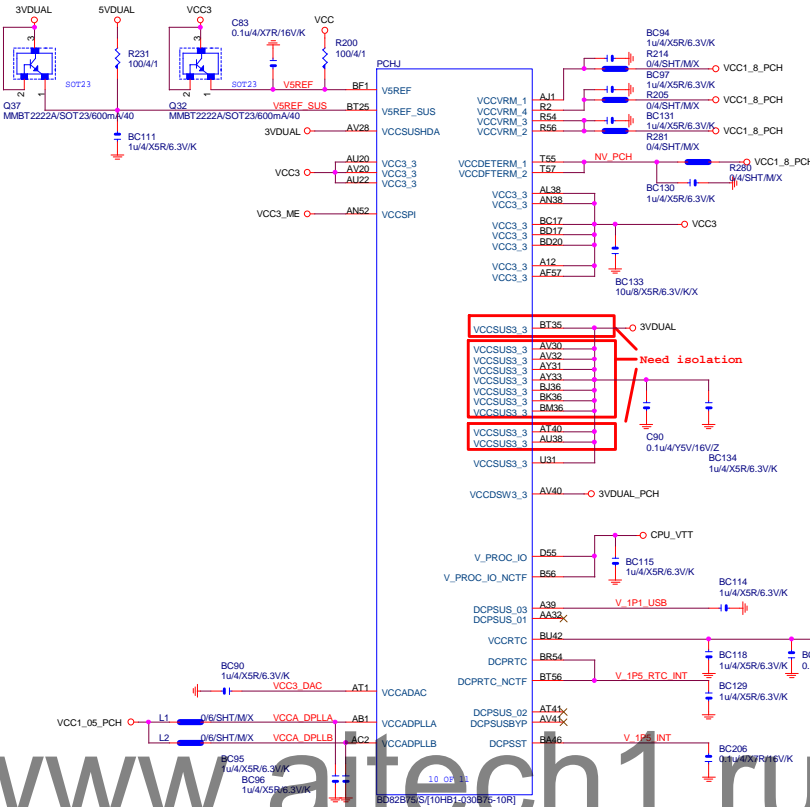


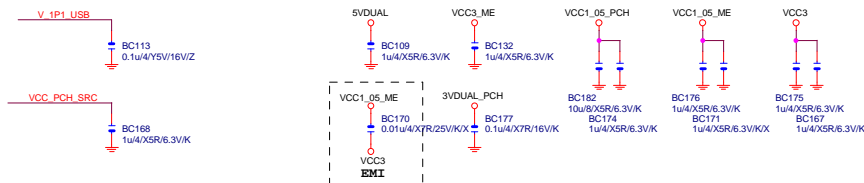
Gigabyte Technology		
Title PCH GPIO , CTRL , AUDIO		
Size	Document Number	Rev
Custom	GA-B75M-HD3	1.0
Date:	Thursday, September 20, 2012	Sheet 12 of 32

(I)

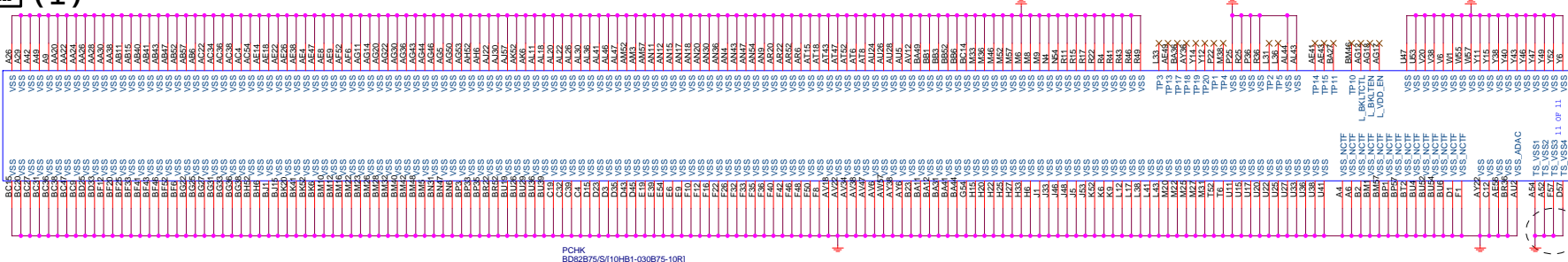


(J)

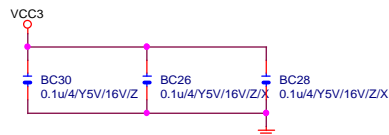




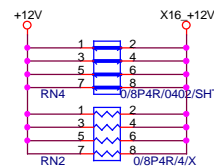
(I)



PCIEX16 CAP



PCIEX16 PROTECT SHT



PCIEX16 AC CAP

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

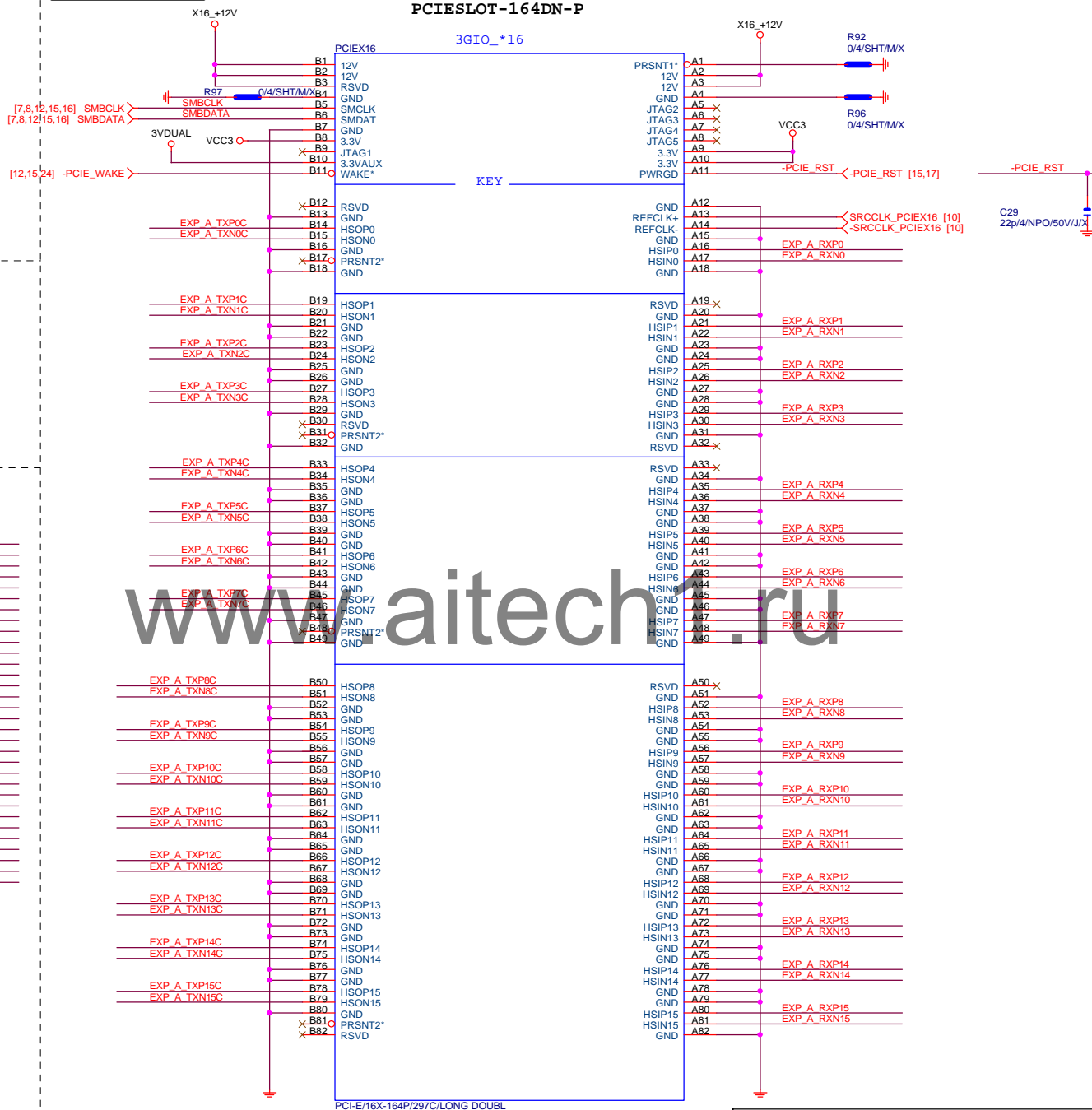
EXP A RXP0.15] >> EXP_A_RXP0.15] [4]

EXP A RXN0.15] >> EXP_A_RXN0.15] [4]

EXP A TXP0.15] >> EXP_A_TXP0.15] [4]

EXP A TXN0.15] >> EXP_A_TXN0.15] [4]

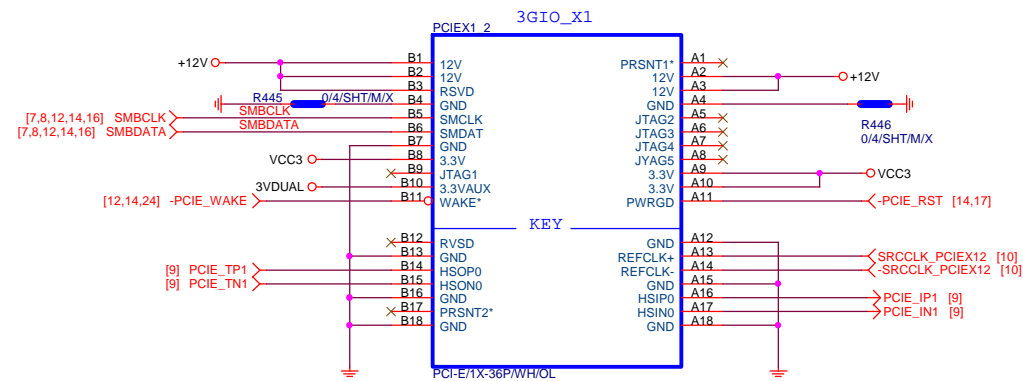
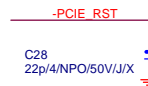
PCIEX16 SLOT



Gigabyte Technology

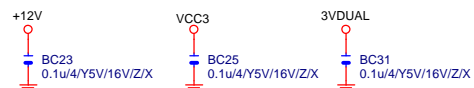
Title			PCI EXPRESS * 16	
Size			GA-B75M-HD3	
Custom			Rev 1.0	
Date:			Thursday, September 20, 2012	Sheet 14 of 32

PCIEX1 CAP



www.aitech1.ru

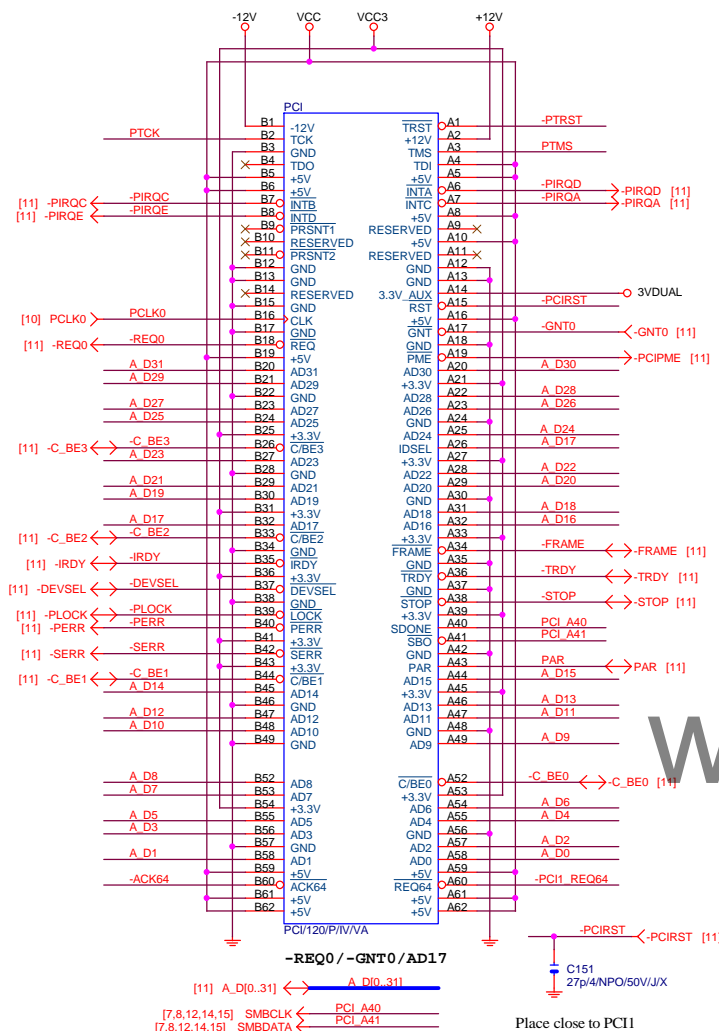
PCIEX1 CAP



Gigabyte Technology

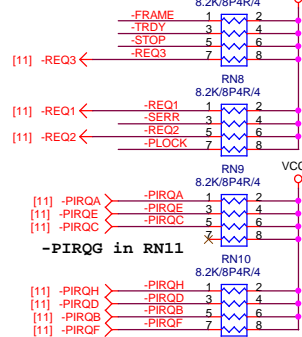
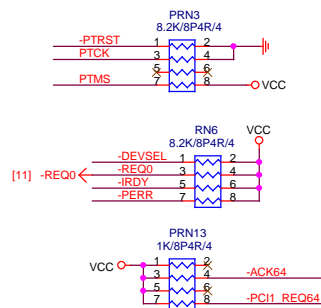
Title				PCI EXPRESS X 1 PORT			
Size	Document Number	GA-B75M-HD3				Rev	
Custom						1.0	
Date:	Thursday, September 20, 2012	Sheet	15	of	32		

PCI SLOT

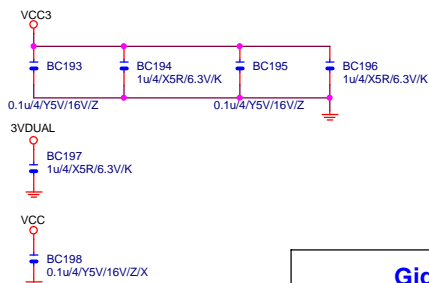


Place close to PCI1

PCI	PU
-----	----



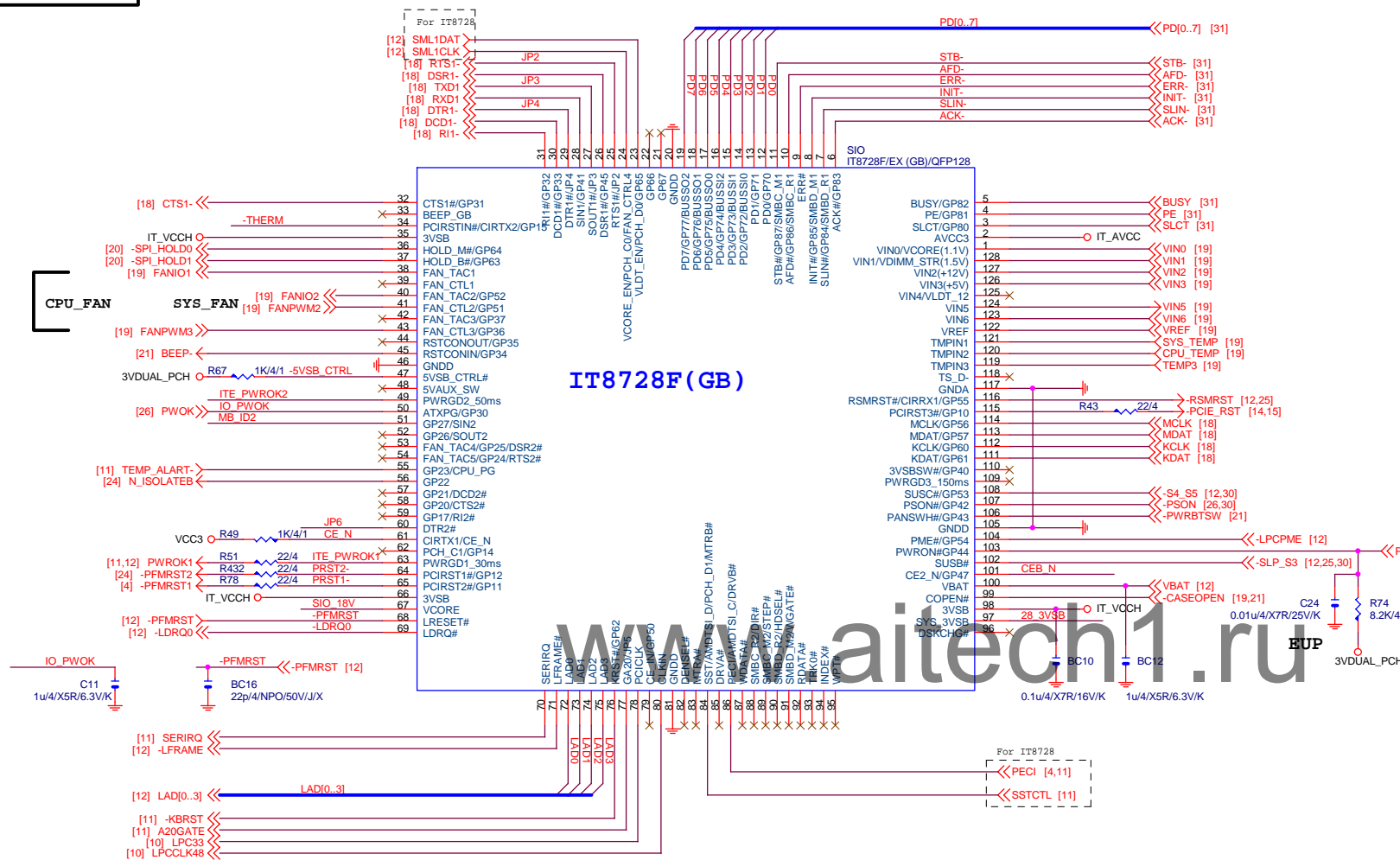
PCI CAP



Gigabyte Technology

Title			
PCI SLOT 1&2			
Size Custom	Document Number	GA-B75M-HD3	Rev 1.0
Date:	Thursday, September 20, 2012	Sheet 16 of 32	

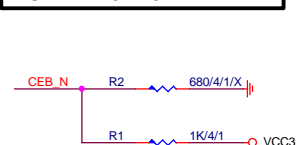
SIO IT8728F



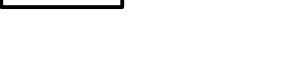
IT8728F NOTE

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

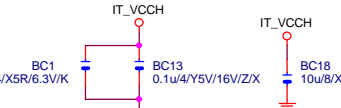
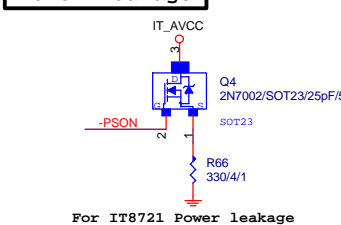
DUAL BIOS OPT STRAP



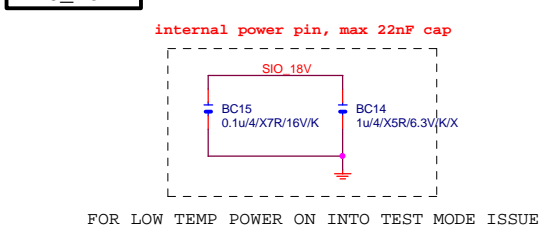
SIO CAP



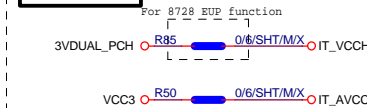
Power leakage



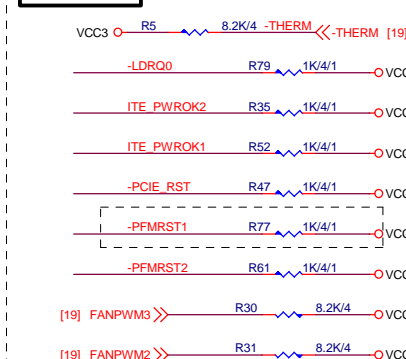
SIO_18V



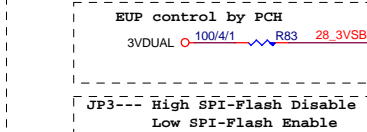
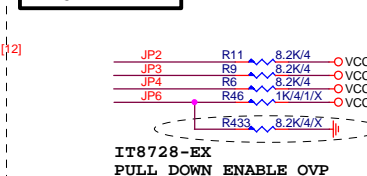
PWR SHT



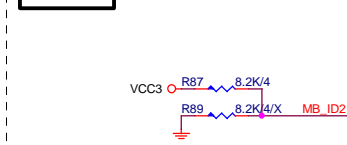
SIO PU



SIO STRAP

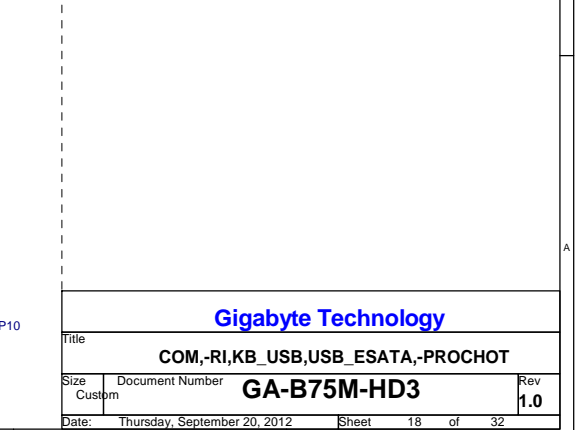
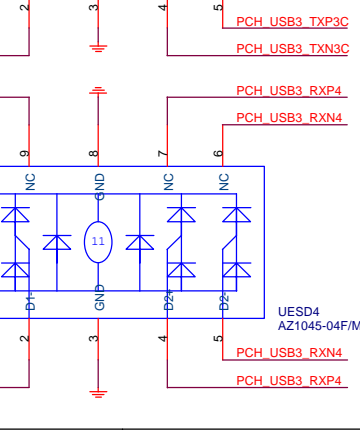
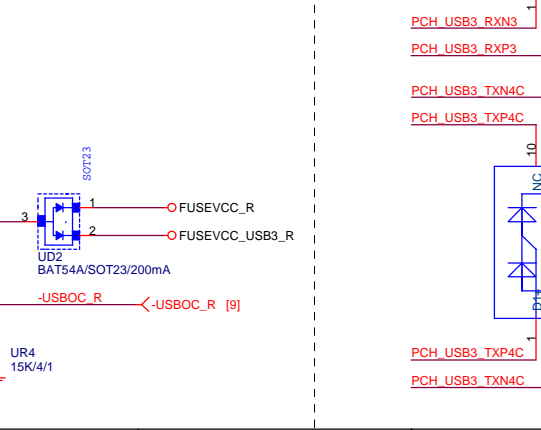
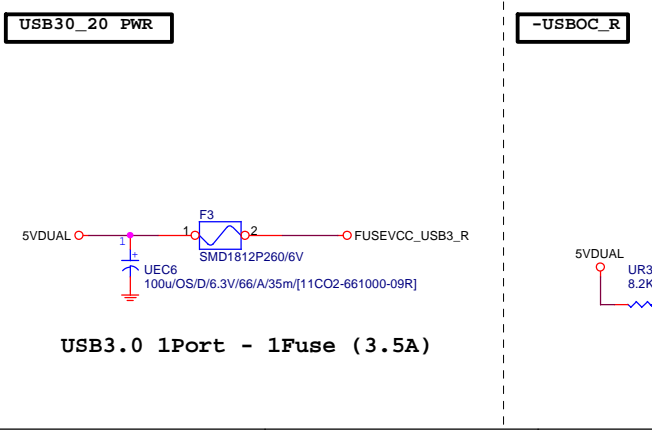
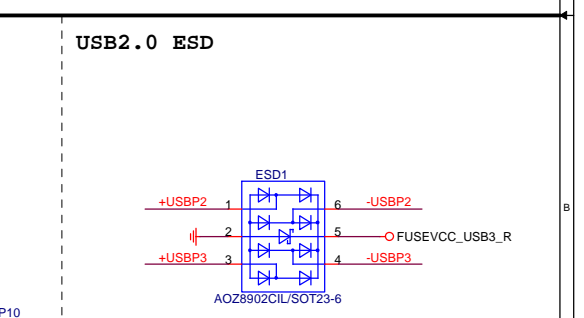
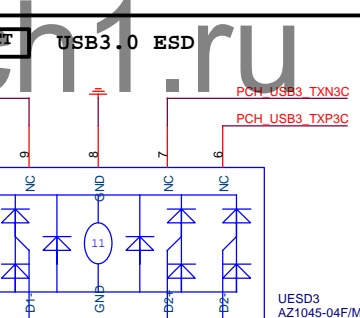
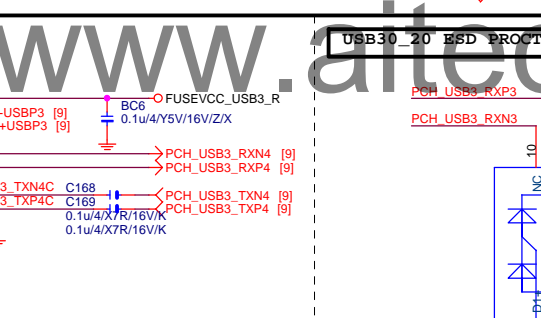
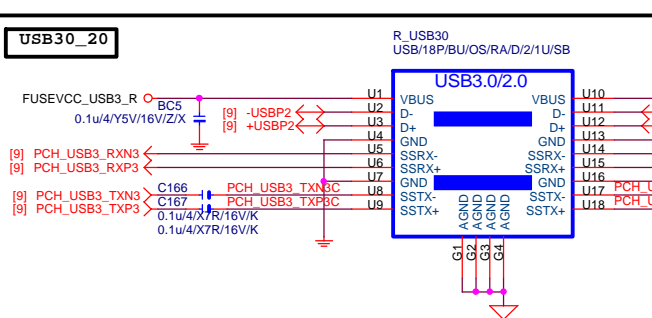
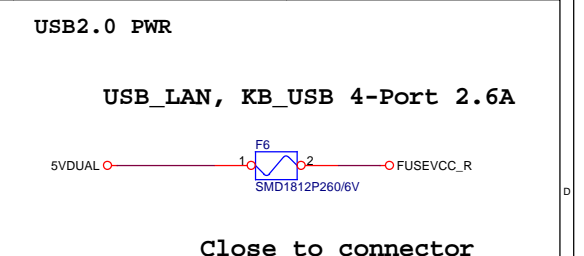
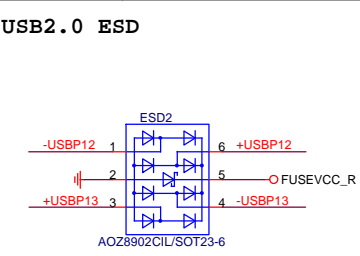
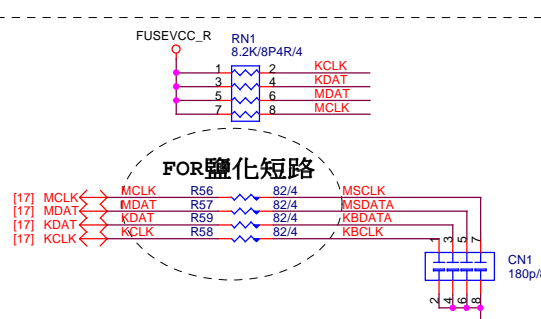
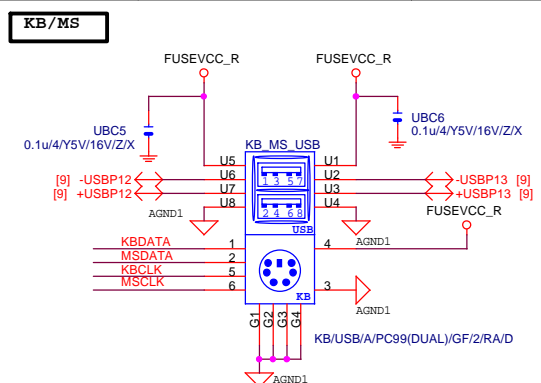
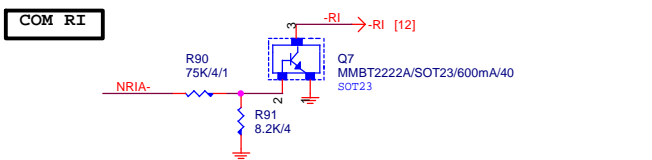
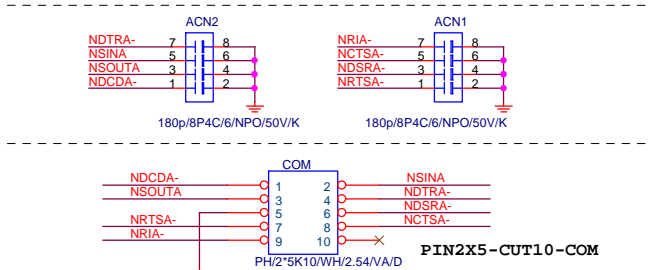
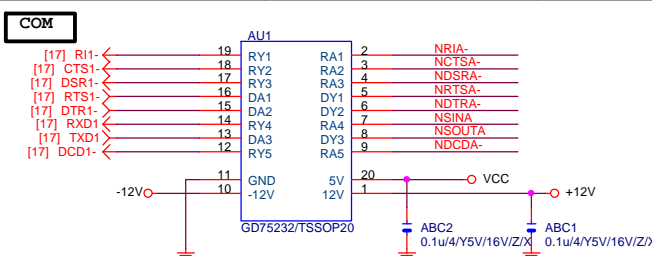


MB ID

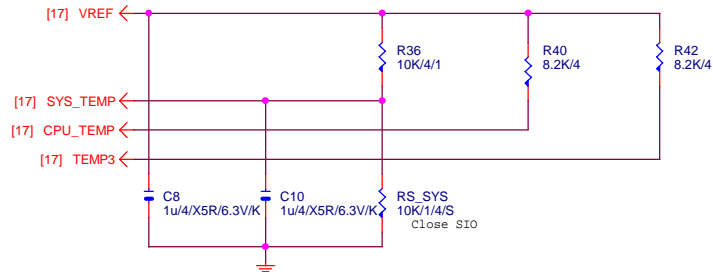


Gigabyte Technology

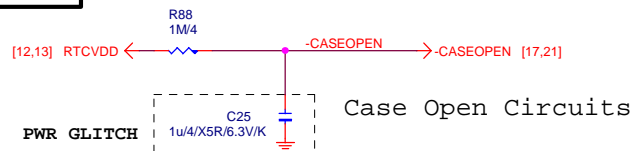
Title		ITE 8728 LPC IO	
Size	Document Number	GA-B75M-HD3	
Custom			Rev 1.0
Date:	Thursday, September 20, 2012	Sheet	17 of 32



TEMP H/W MONITOR

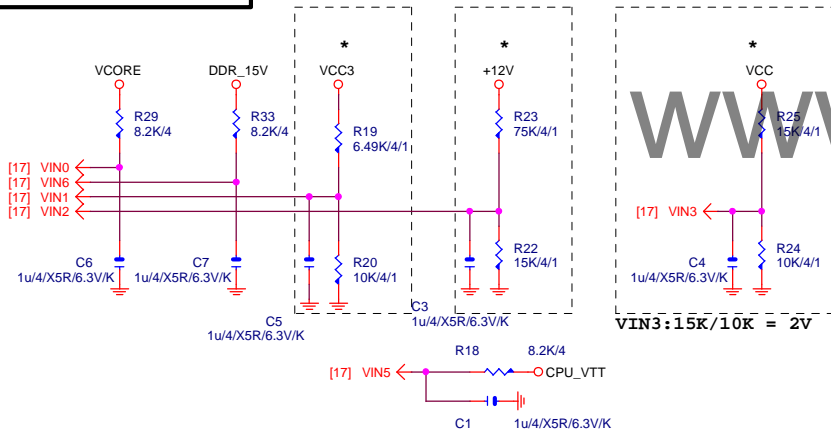


CASE OPEN

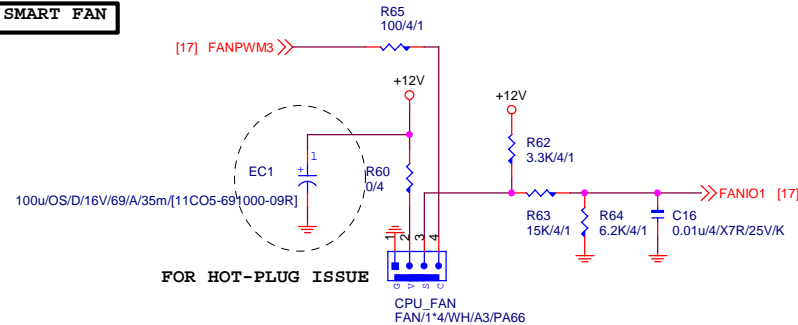


VOLTAGE-- H/W MONITOR

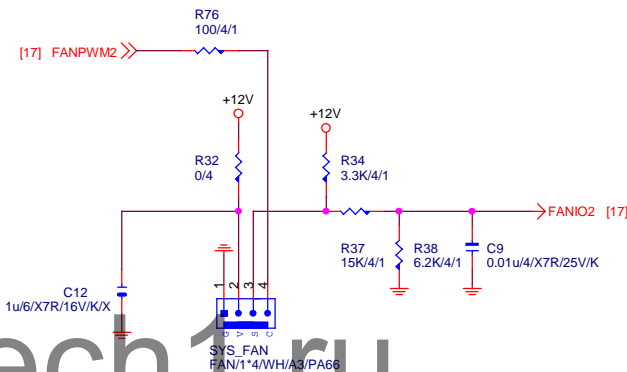
VIN2:75K/15K = 2V



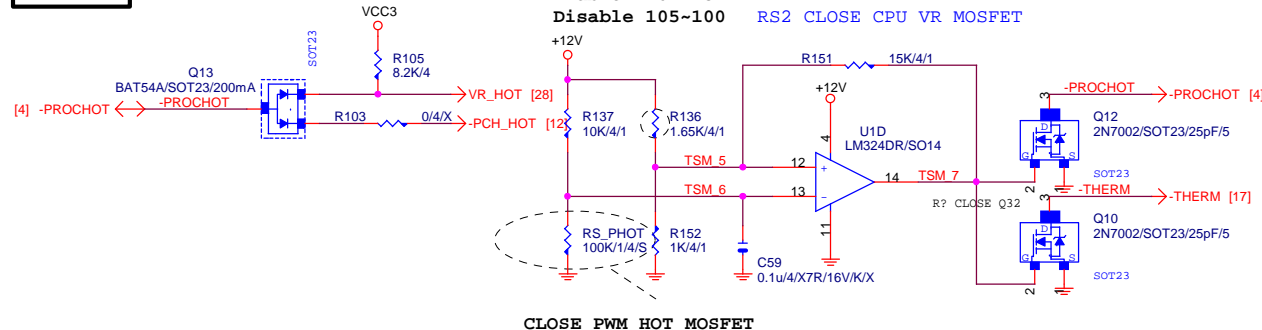
CPU SMART FAN



SYS SMART FAN



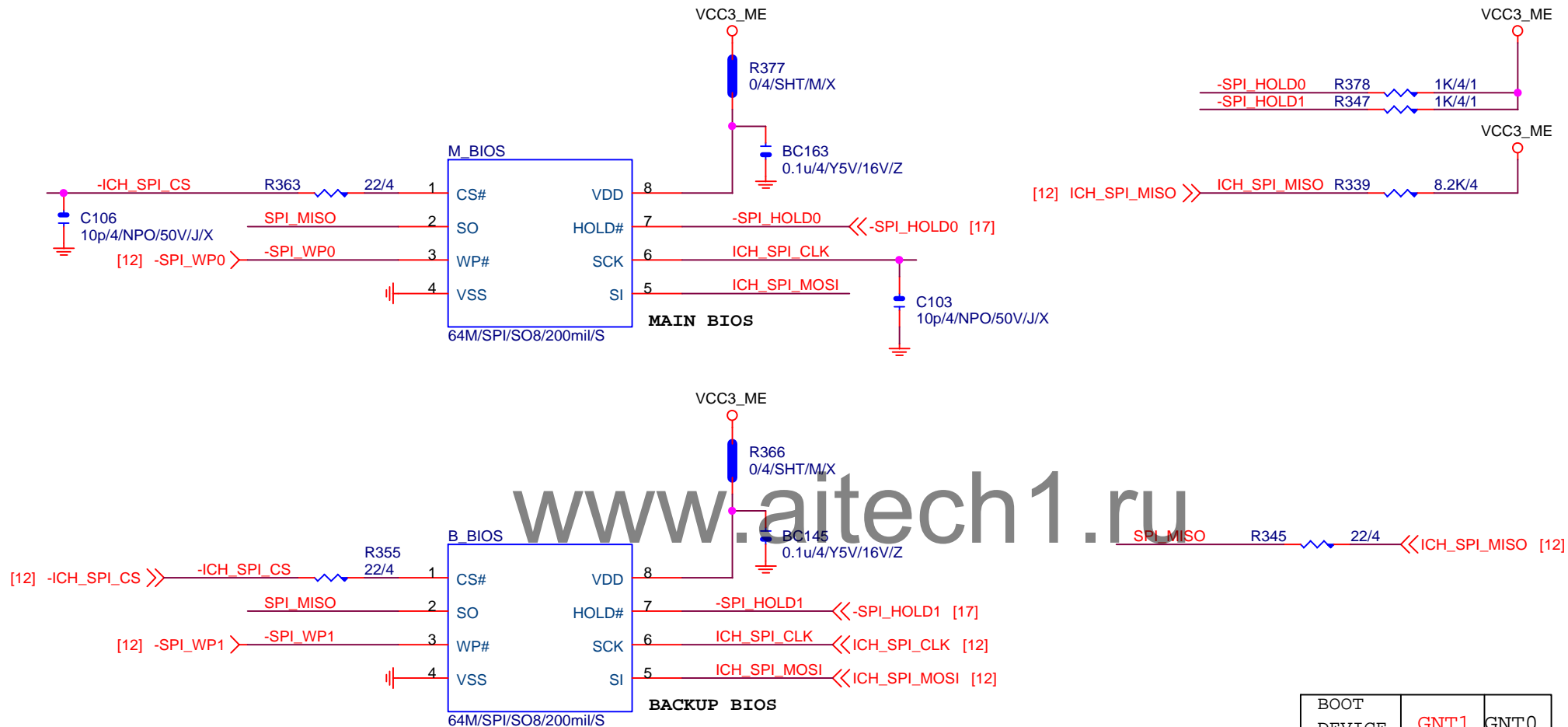
-PROHOT



Gigabyte Technology

Title			HWM,FAN CTRL,OV
Size	Document Number	GA-B75M-HD3	
Custom		Rev	1.0
Date:	Thursday, September 20, 2012	Sheet	19 of 32

DUAL BIOS



B65使用64M BIOS

使用H67暫用32M

H61使用32M BIOS

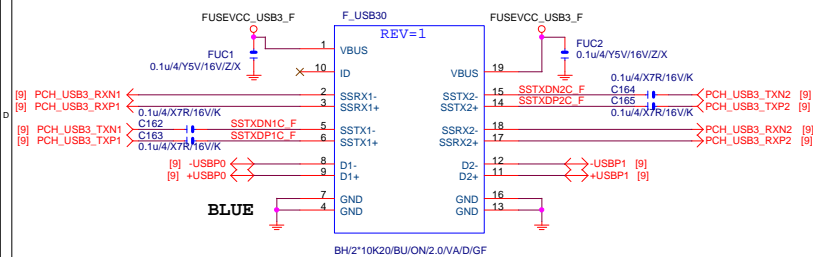
BOOT DEVICE	GNT1	GNT0
LPC	0	0
PCI	0	1
SPI	1	1

1 means floating
0 means PD 1K

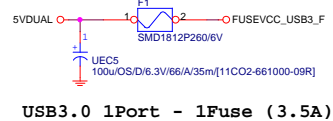
Gigabyte Technology

Title		
DUAL BIOS		
Size A	Document Number GA-B75M-HD3	Rev 1.0
Date:	Thursday, September 20, 2012	Sheet 20 of 32

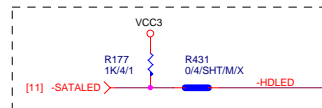
F_USB30



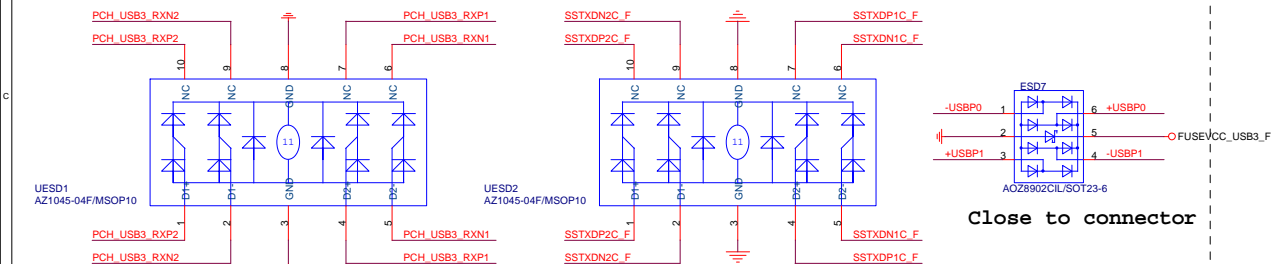
F_USB30 PWR



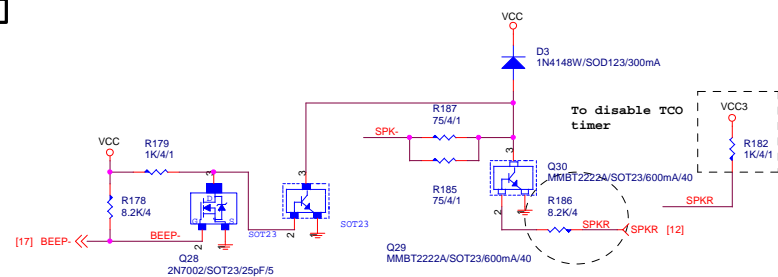
SATA LED



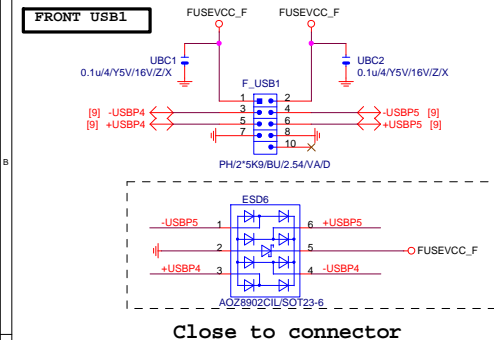
F_USB30 ESD PROTECT



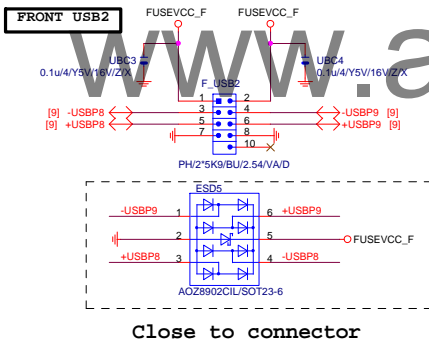
SPKR



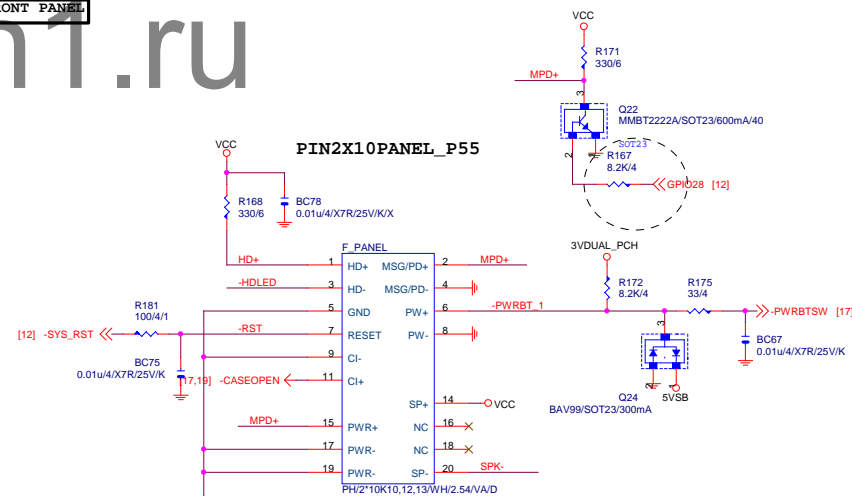
FRONT USB1



FRONT USB2

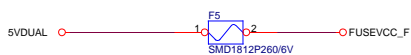


INTEL FRONT PANEL



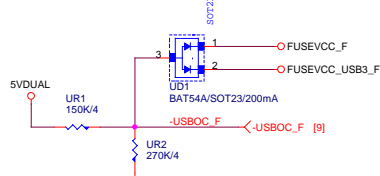
FUSEVCC_F

F_USB1, F_USB2 4-Port 2.6A



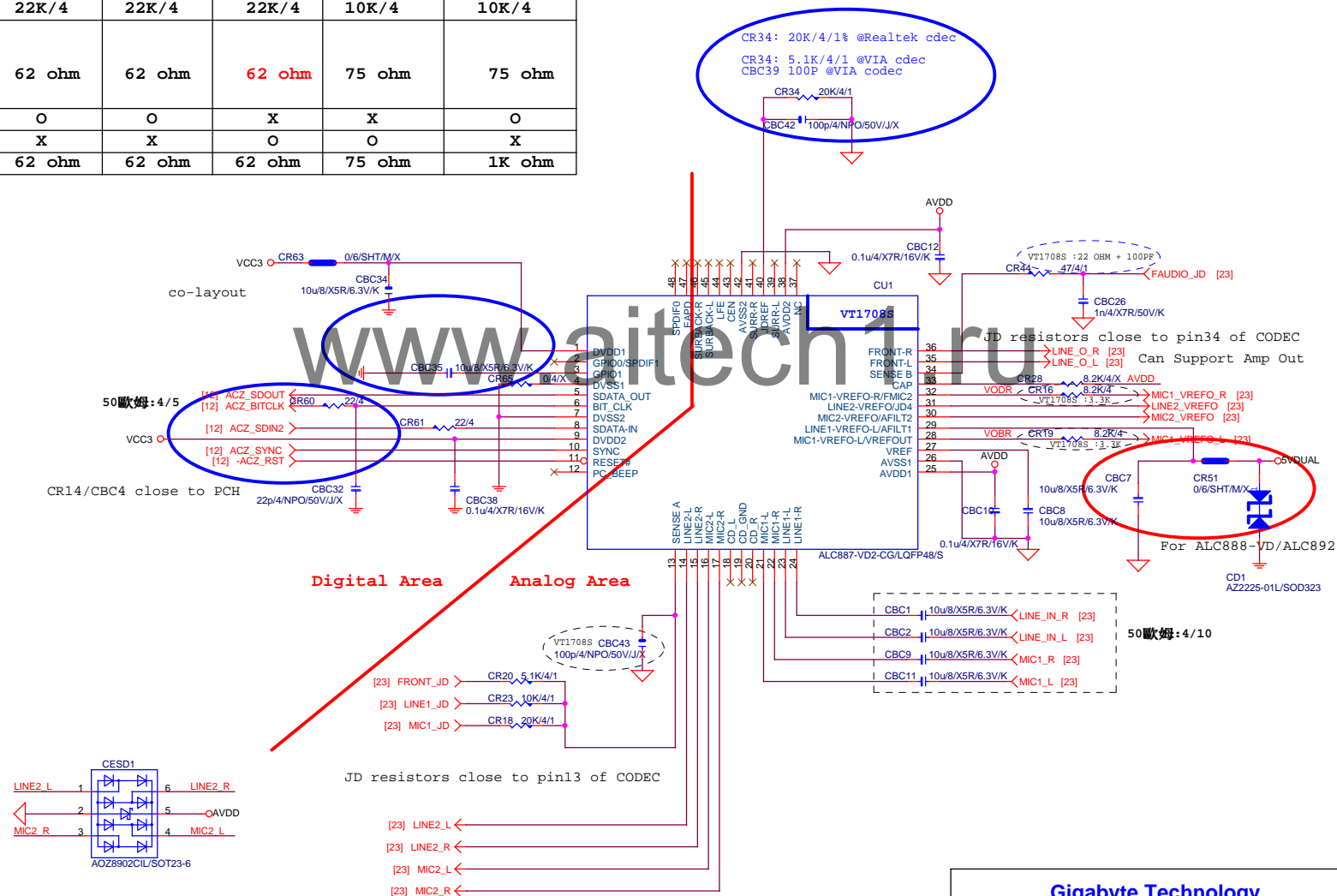
-USBOC_F

F_USB30

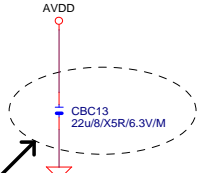
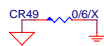
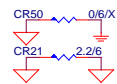


Gigabyte Technology			
FP,F_USB,USB PWR,SPKR,SATA LED			
GA-B75M-HD3			
Size	Document Number	Rev	1.0
Custom			
Date:	Thursday, September 20, 2012	Sheet	21 of 32

	ALC662	ALC887-VD2	ALC889	VT1708S	VT1708SCE
CR65	X	X	O	O	X
CR64	X	X	X	X	0.1u/4
CBC35	O	O	X	X	O
CR44/CBC6	47ohm+1nF	47ohm+1nF	47ohm+1nF	22ohm+100P	22ohm+100P
CR31	X	O	O	O	O
CR30	O	X	X	X	X
CBC1/CBC2	22uF/X5R	22uF/X5R	22uF/X5R	22uF/X5R	22uF/X5R
CR20	5.11K/4/1	5.11K/4/1	5.11K/4/1	5.1K/4/1	5.1K/4/1
CR34	20K/4/1	20K/4/1	20K/4/1	5.1K/4/1	20K/4/1
CBC39/CBC40	N/A	N/A	N/A	100P/4	100P/4
CR6/CR7/CR54/CR58	22K/4	22K/4	22K/4	10K/4	10K/4
CR5/CR8/CR11/CR4/ CR17/CR22/CR45/CR33/ CR47/CR40/CR26/CR37/ CR13/CR11/CR57/CR53	62 ohm	62 ohm	62 ohm	75 ohm	75 ohm
CR51/CD1/CBC7	O	O	X	X	O
CD2/CD3/CQ3/CQ5	X	X	O	O	X
CR1/CR14/CR17/CR22	62 ohm	62 ohm	62 ohm	75 ohm	1K ohm

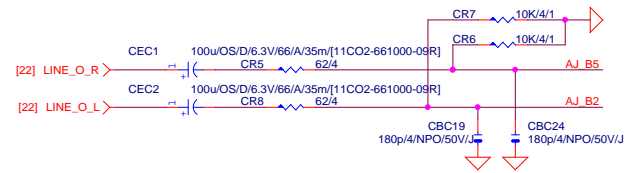


CODEC POWER/EMI PAD

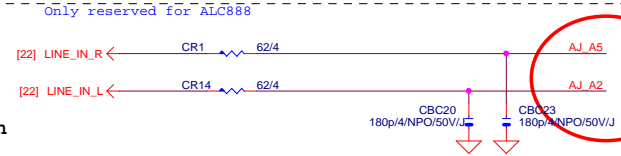


上ALC892時,此顆電容要保留
ADD CD2 For ESD PROTECT DIODE

LINE-OUT



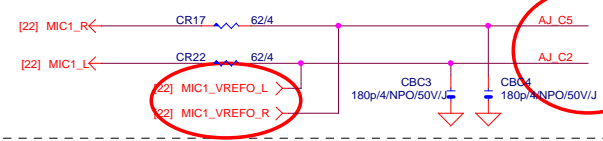
LINE-IN



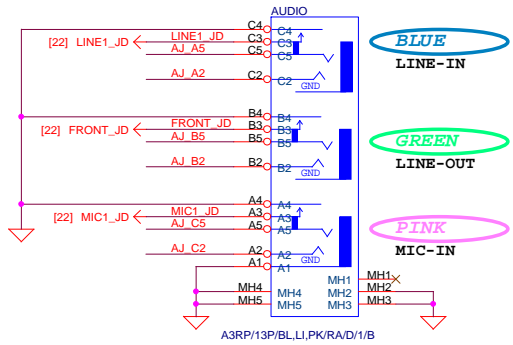
Verify MIC function
in LINE-in

For 889A/888

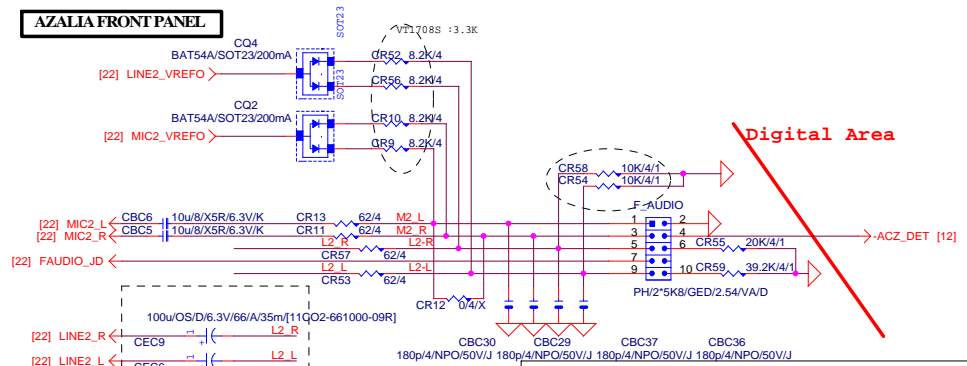
MIC-IN



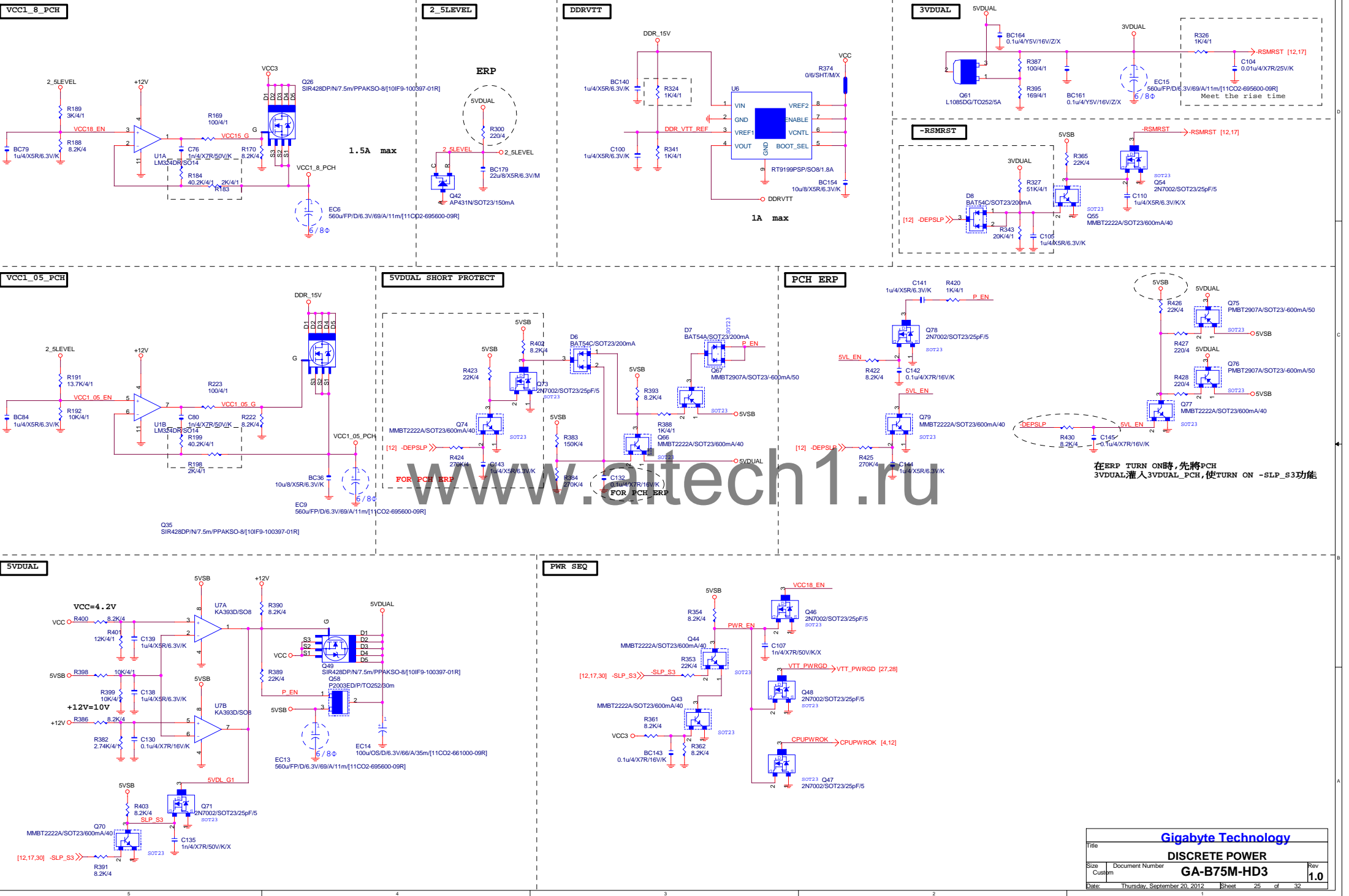
SPDIF_OUT



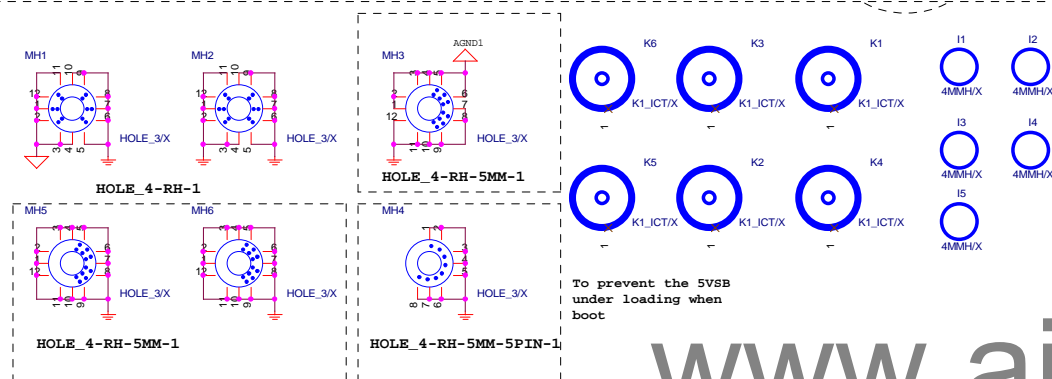
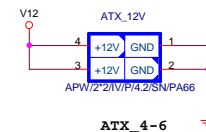
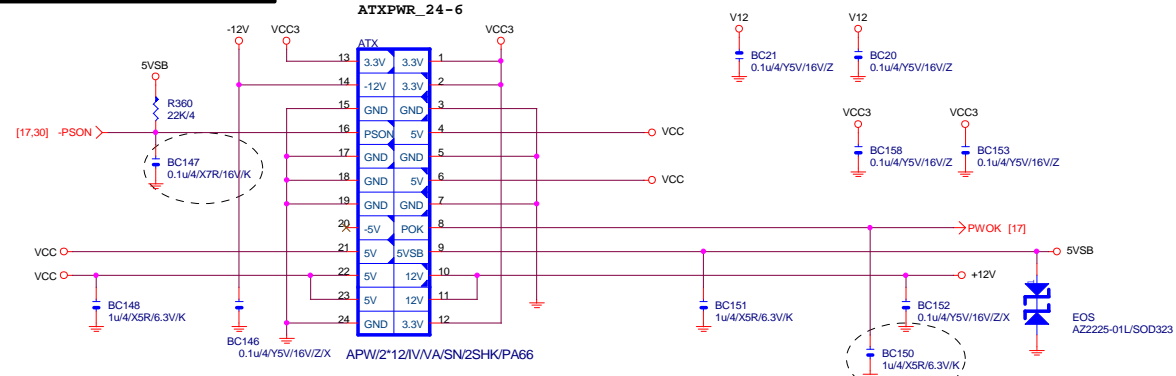
AZALIA FRONT PANEL



Gigabyte Technology			
Title			
AUDIO JACK			
Size			
Custom			
Date: Thursday, September 20, 2012			
Sheet 23 of 32			
Rev 1.0			

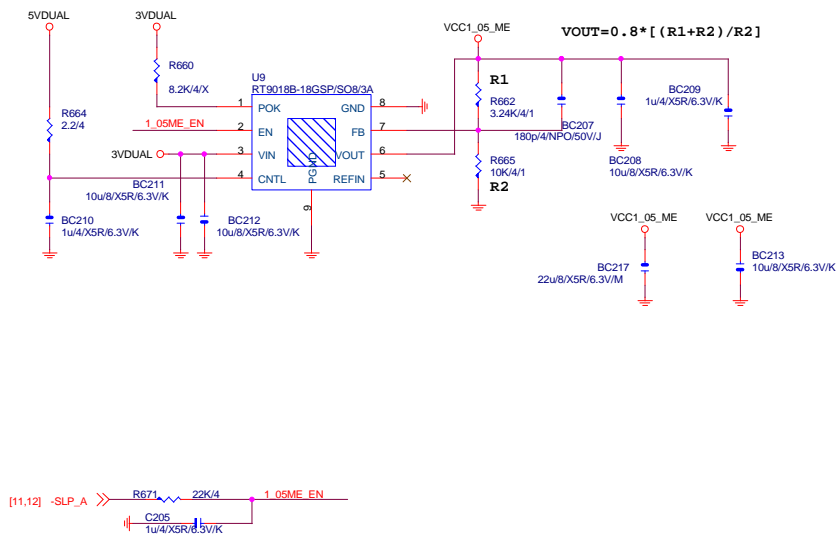


ATXX24 POWER CONNECTOR

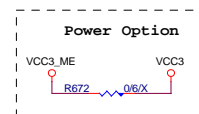
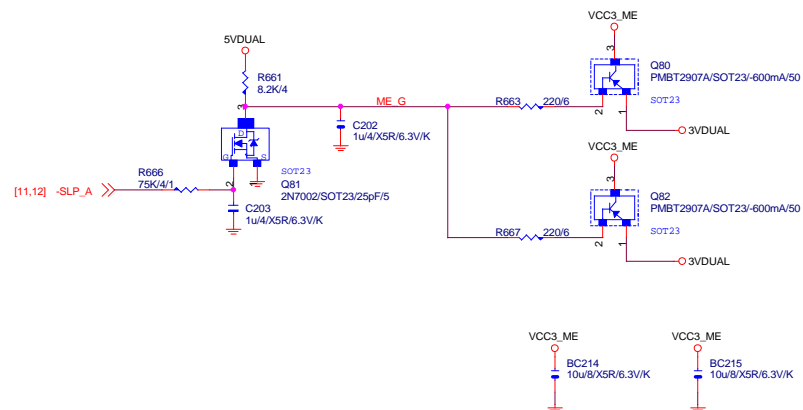


www.aitech1.ru

VCC1_05_ME



VCC3_ME



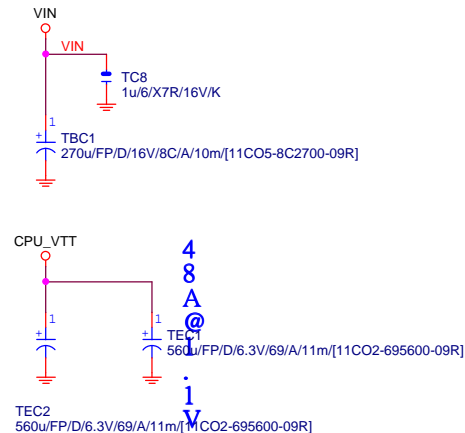
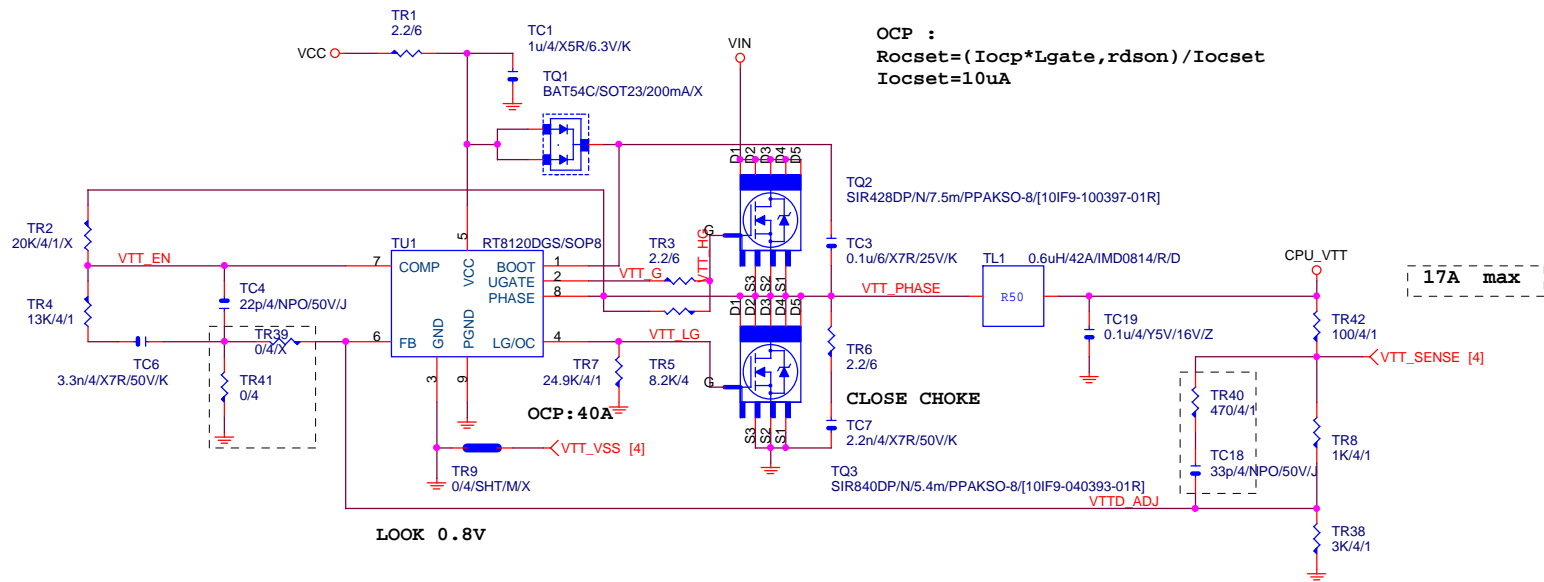
Gigabyte Technology

ATX CONNECTOR

GA-B75M-HD3

1.0

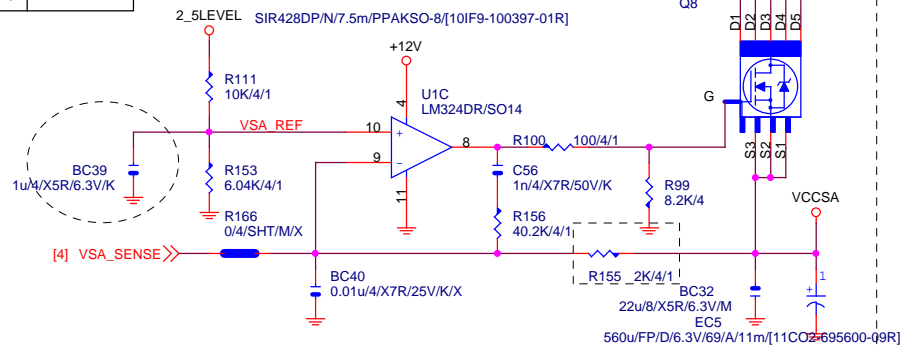
CPU_VTT



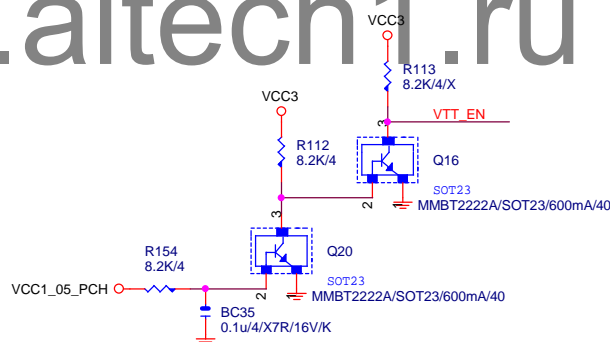
VCCSA

PDG 0.8

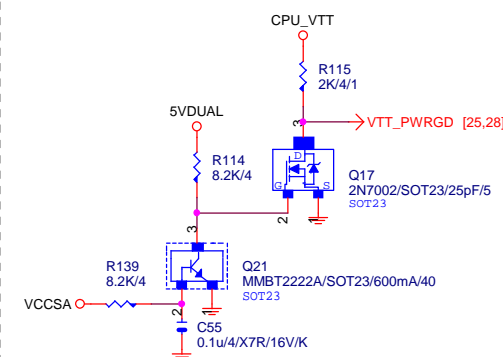
	VSA_SEL
HI	0.85V
LO	0.925V

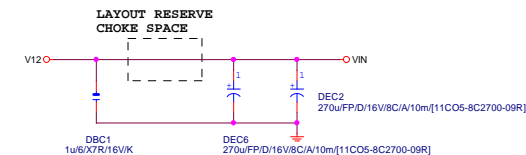


CPU_VTT PWR SEQ

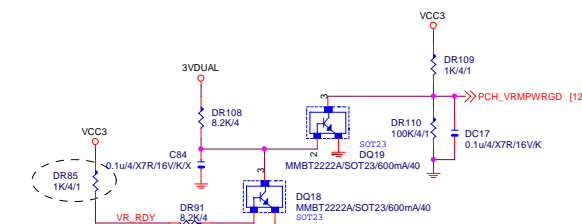


VTT_PWRGD

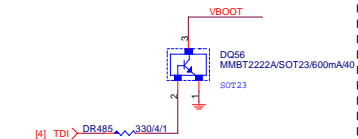




The diagram shows two horizontal lines representing signal traces. The top line is labeled 'PWM3' and the bottom line is labeled 'ISEN3'. Both lines have a red arrow pointing to the right, indicating a signal path. To the right of the arrows, the text 'PWM3 [29' and 'ISEN3 [29' is visible, suggesting a connection to a 29-pin connector.



```
Set VBOOT=GND for Vboot=0V
VBOOT=OPEN for
Vboot=1.1V
```



DR485->X, DQ56 -> 7002
DR485->O, DQ56 -> 2222

PHASE 1



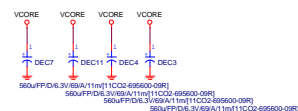
PHASE 3



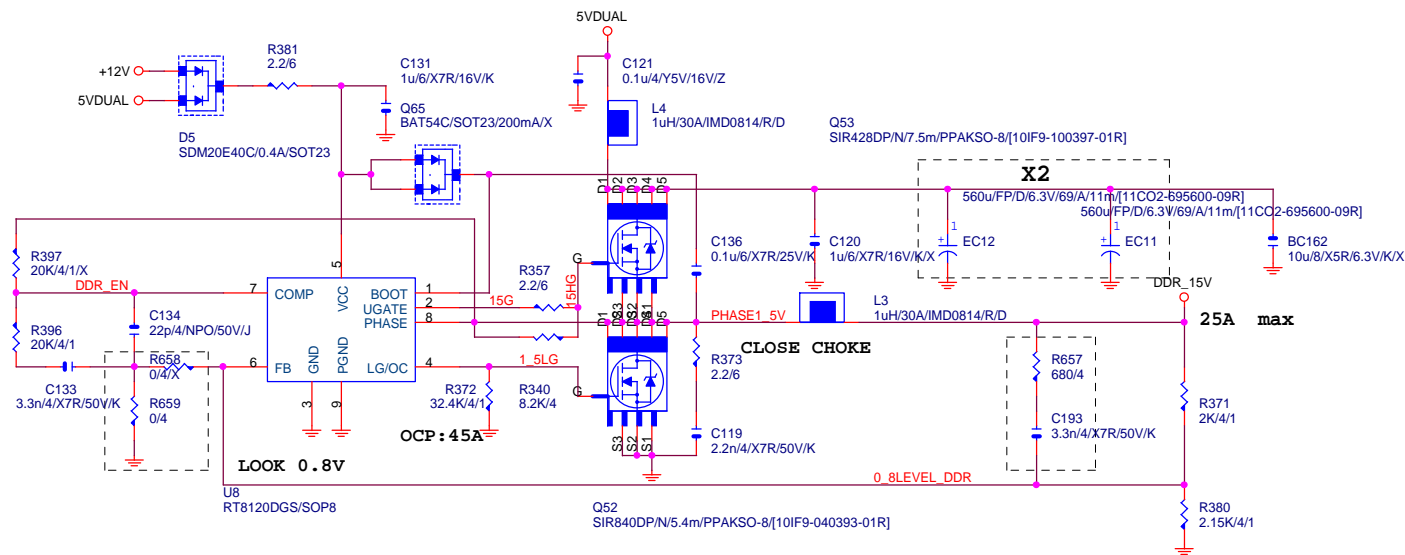
PHASE 2



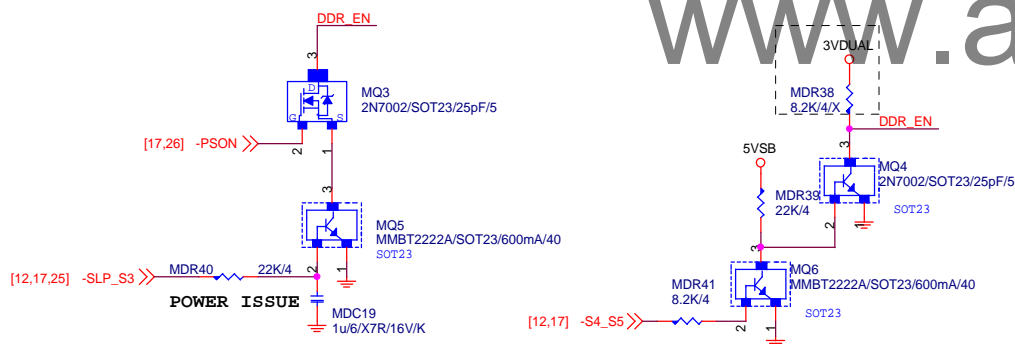
VAXG



DDR15V



PWR SEQ



VIN=5V, VOUT=1.5V, IOU=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 $2 \times 7.99 = 15.98 > 11.45A$

$$\text{Rocset} = (\text{Iocp} * \text{Lgate}, \text{rdson}) / \text{Iocset}$$

$$R_{ocset} = (45A * 6.7mOhm) / 10uA = 30K$$

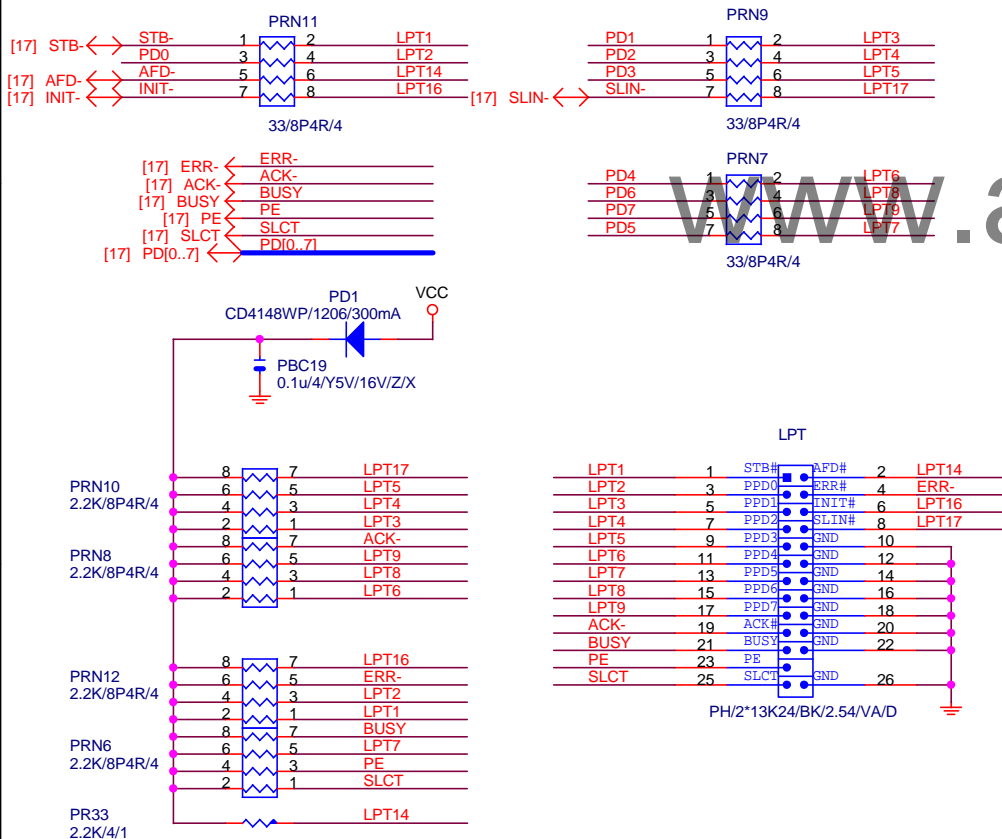
Iocset=10uA

Gigabyte Technology

Title			
DDR POWER			
Size	Document Number		Rev
Custom	GA-B75M-HD3		1.0
Date:	Thursday, September 20, 2012	Sheet	30 of 32

TPM

LPT PORT



Gigabyte Technology

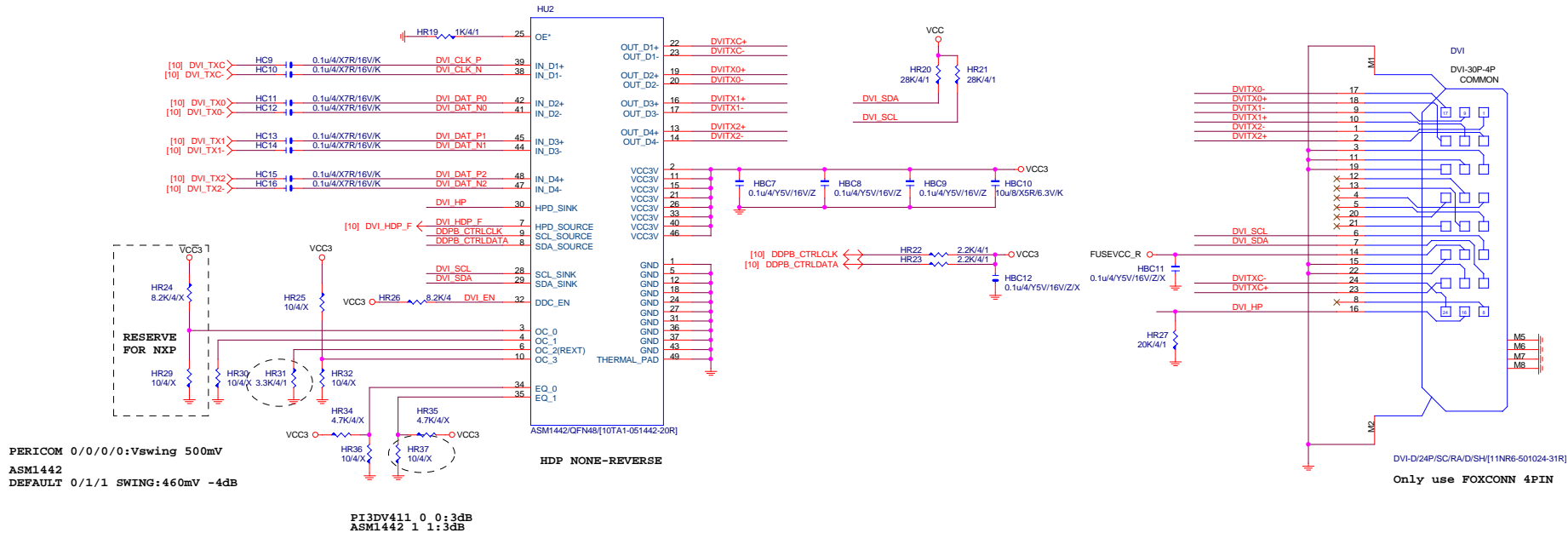
LPT

Document Number **GA-B75M-HD3**

Rev
1.0

Date: Thursday, September 20, 2012 Sheet 31 of 32

DVI LEVEL SHIFT



www.aitech1.ru

HDMI LEVEL SHIFT

