

Model Name: GA-H81M-DS2 CN

SHEET

TITLE

Revision 2.0

SHEET

TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1150-A
05	CPU_LGA1150-B
06	CPU_LGA1150-C
07	DDR III CHANNEL A
08	DDR III CHANNEL B
09	PCH_FDI,DMI,USB,PCIE,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 X1 *2 SLOT
16	ITE 8620 LPC IO
17	COM,KB_MS_USB,USB30_20
18	HWM,FAN CTRL,OV,-PROCHOT
19	DUAL BIOS
20	FP,FUSB,SPK,SATALED
21	Realtek ALC887-VD2
22	REAR AUDIO JACK
23	REALTEK RTL8111F
24	DISCRETE POWER
25	ATX , CLOCK GEN
26	VCORE ISL95812_1
27	VCORE ISL95812_2

28	RT8120_DDR POWER
29	LPT

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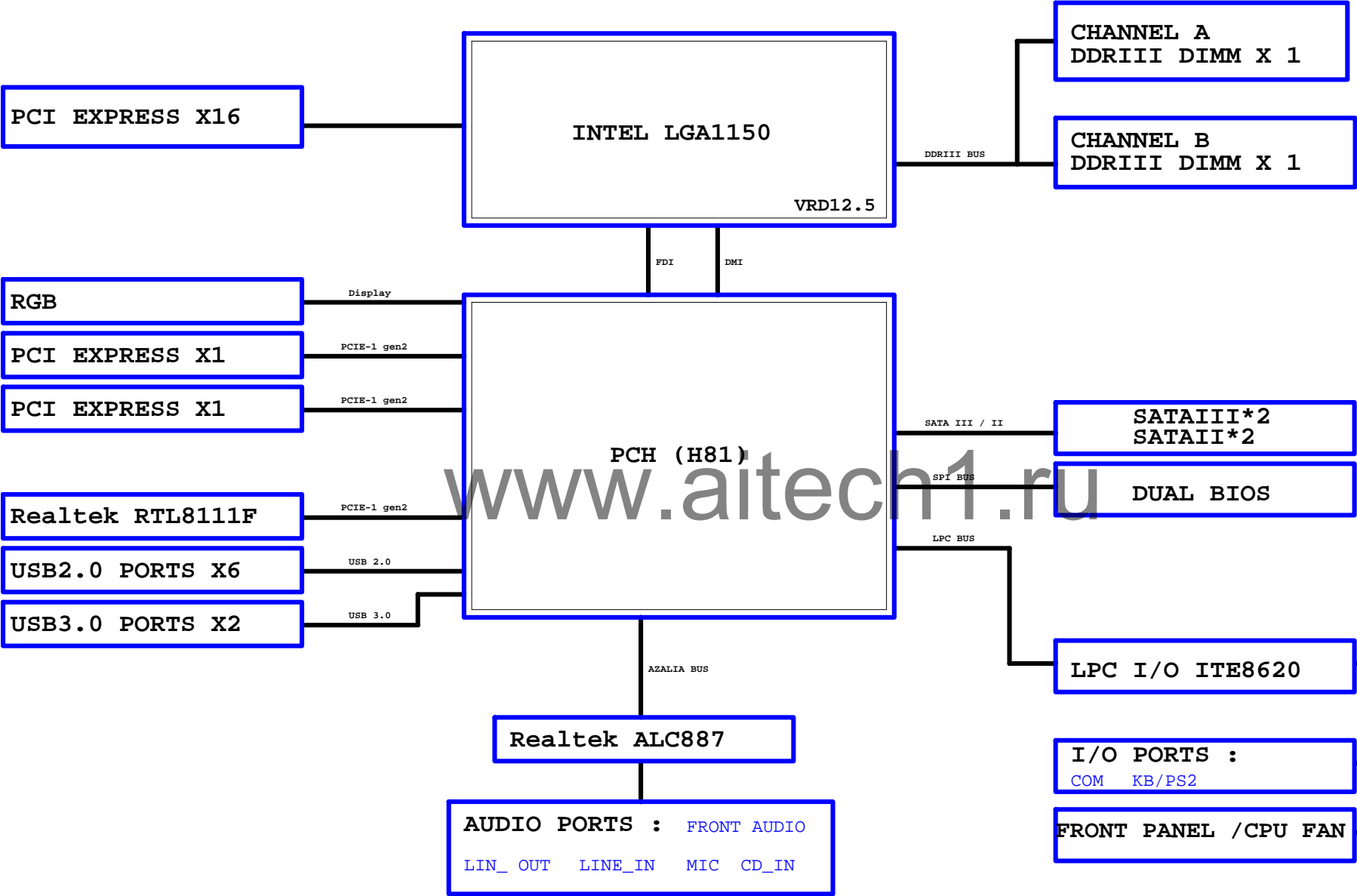
Gigabyte Technology		
Cover Sheet		
Size Custom	Document Number	Rev 2.0
GA-H81M-DS2 CN		
Date: Monday, October 14, 2013	Sheet 1 of 29	

Revision 2.0

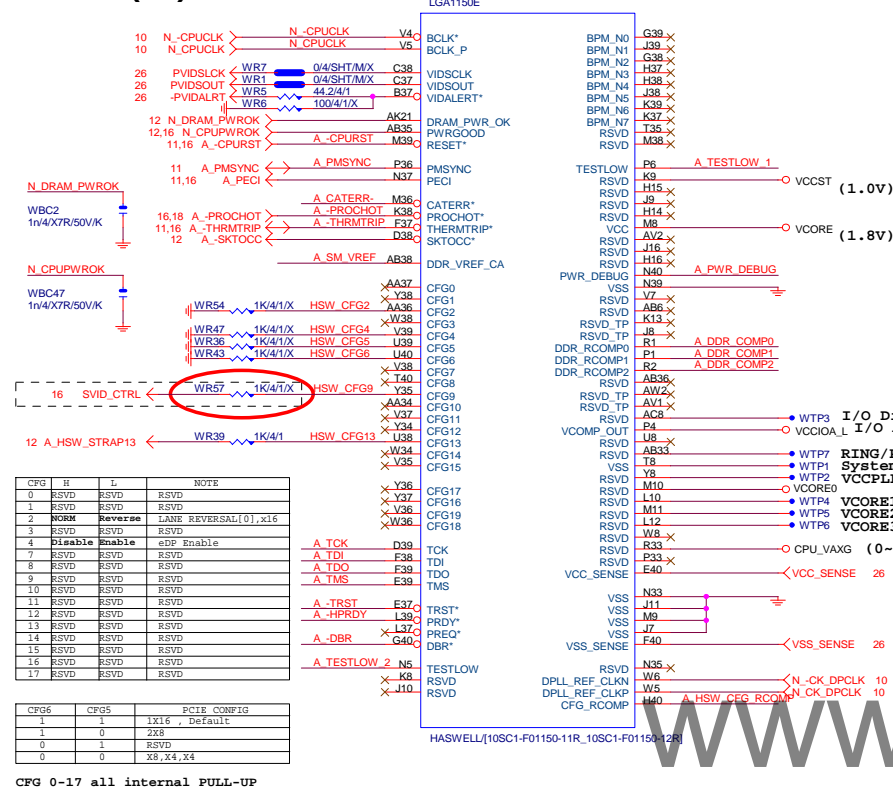
2013/06/27

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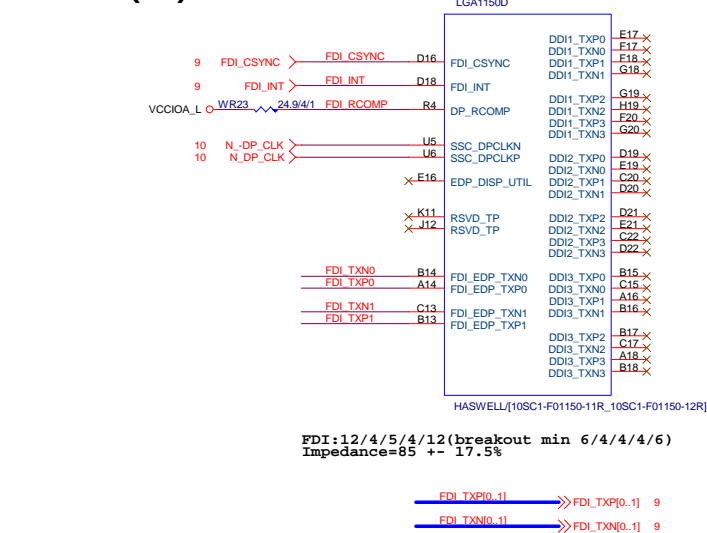
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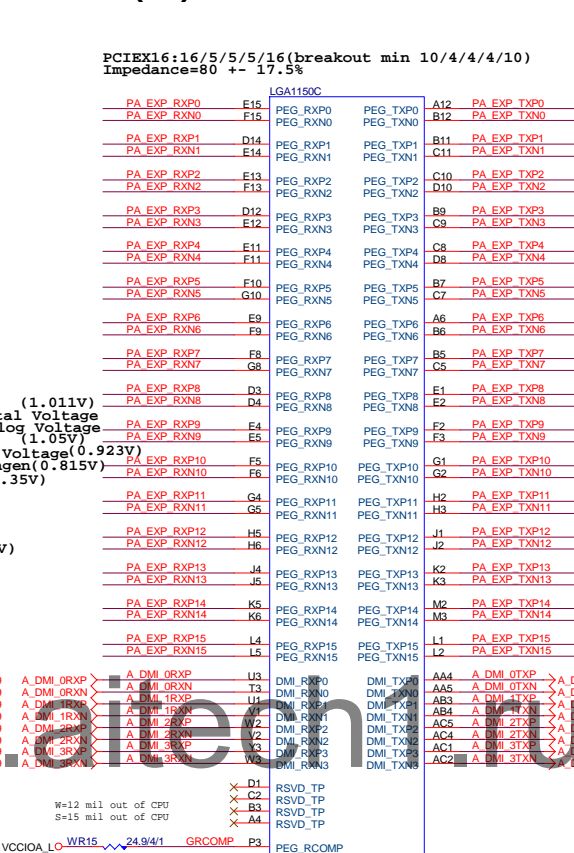
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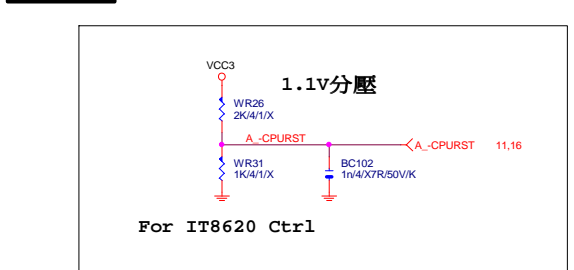
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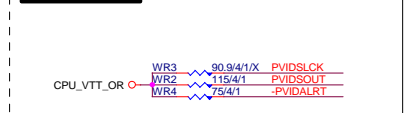
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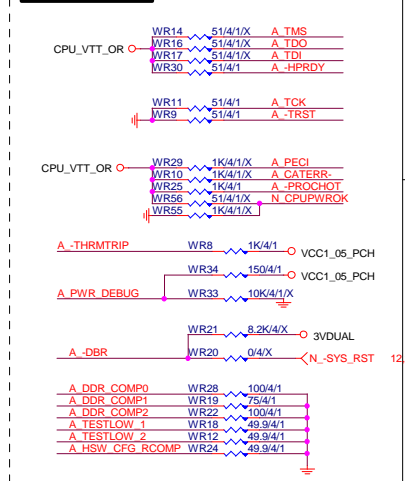
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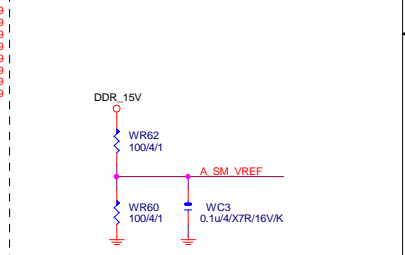
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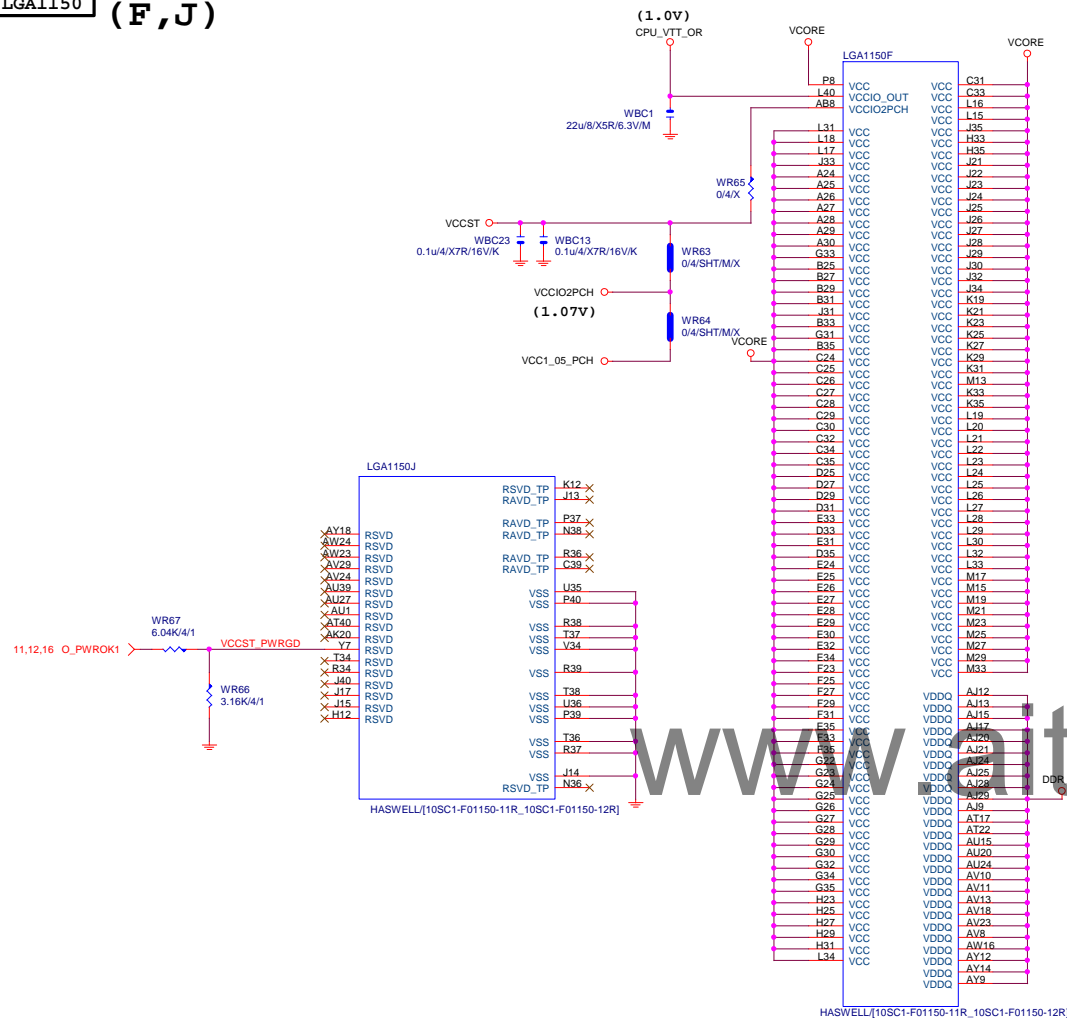
CPU PU/PD



SM REF



LGA1150 (F,J)

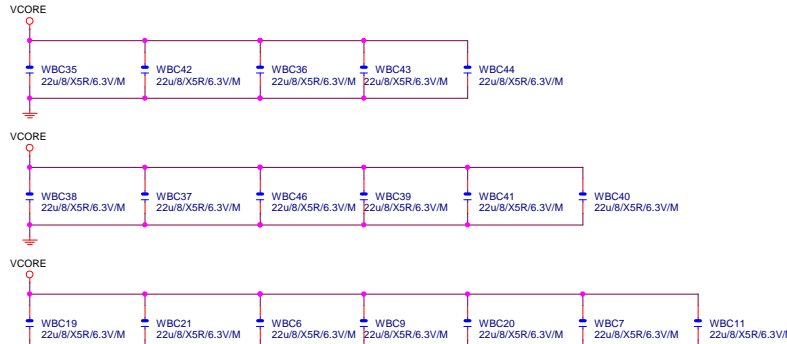


LGA1155 (G,H,I)



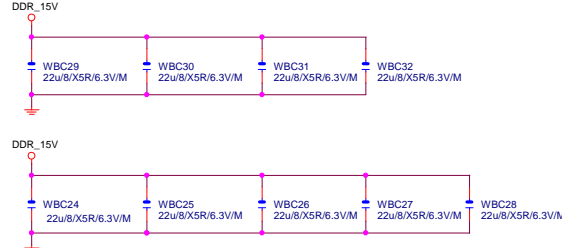
VCore CAP

(X18)



DDR CAP

(X9)

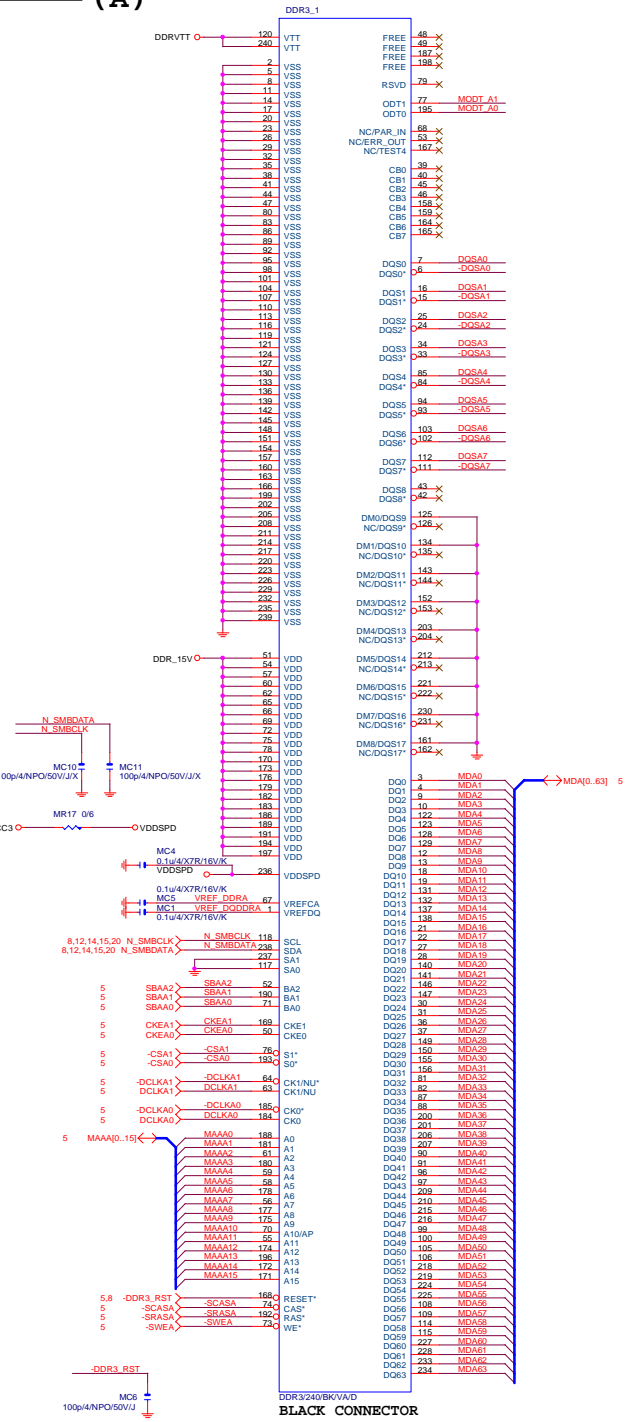


Gigabyte Technology

Title	CPU LGA1150-C	Rev	2.0
Size	Custom	Document Number	GA-H81M-DS2 CN
Date	Monday, October 14, 2013	Sheet	6 of 29

DDR3

(A)

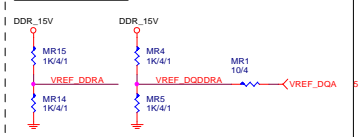


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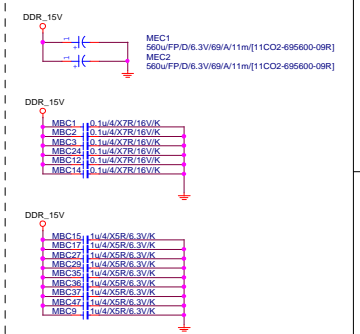
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DQSA0..71
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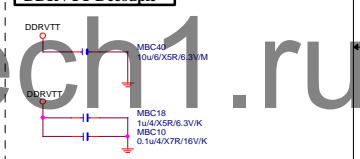
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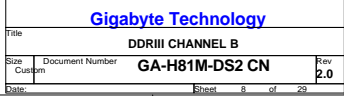


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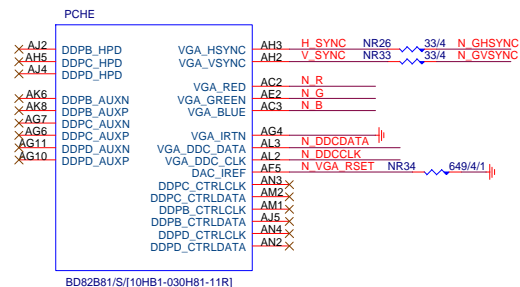


DDRVT Decouple

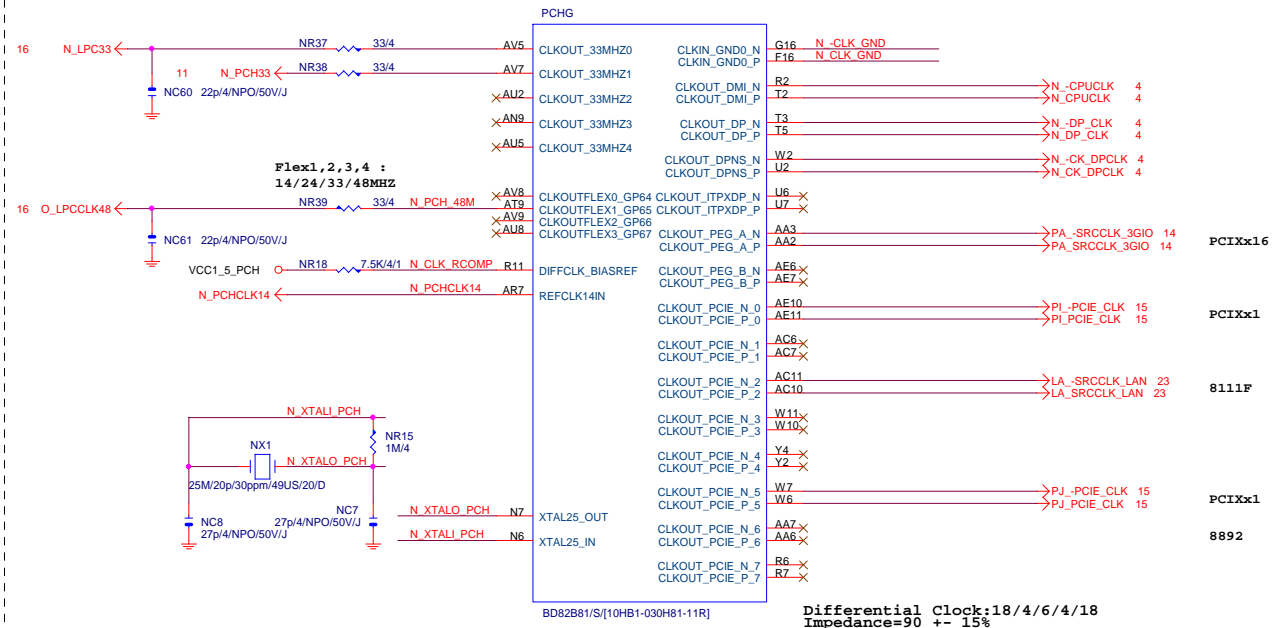




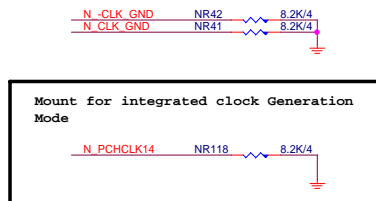
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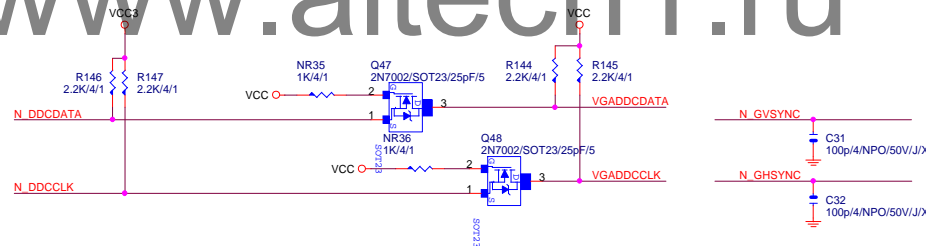
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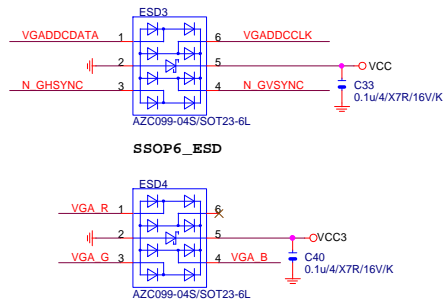
PCH CLK PD



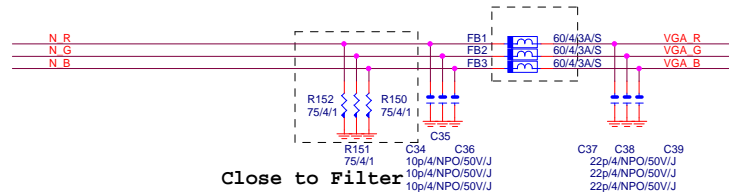
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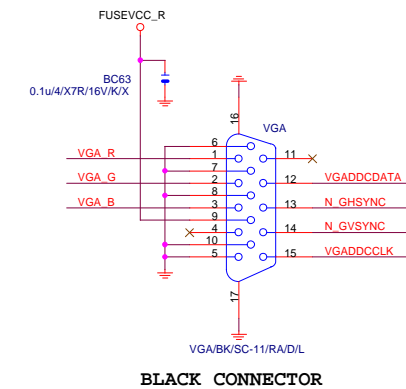
VGA ESD



VGA DDC



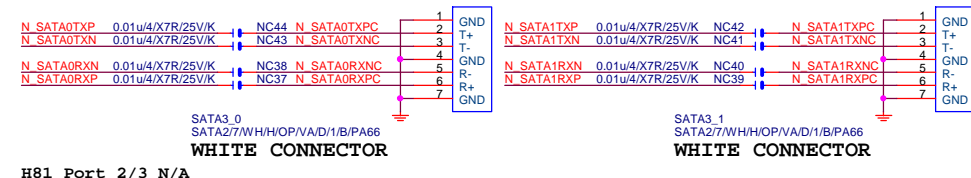
VGA CONNECTOR



Gigabyte Technology			
Title			
PCH DISPLAY ,CLK BUFFER			
Size	Document Number	GA-H81M-DS2 CN	
Custom			
Date:	Thursday, December 19, 2013	Sheet	10 of 29
Rev 2.0			

(C)

PCHC			
CL_CLK	CLINK	SATA_RXN_0	B28 N SATA0RXN
CL_DATA		SATA_RXP_0	F28 N SATA0RXP
CL_RSTB		SATA_TXN_0	F31 N SATA0TXN
APWROK		SATA_TXP_0	H31 N SATA0TXP
		SATA_RXN_1	C30 N SATA1RXN
		SATA_RXP_1	C30 N SATA1RXP
		SATA_TXN_1	B34 N SATA1TXN
		SATA_TXP_1	C34 N SATA1TXP



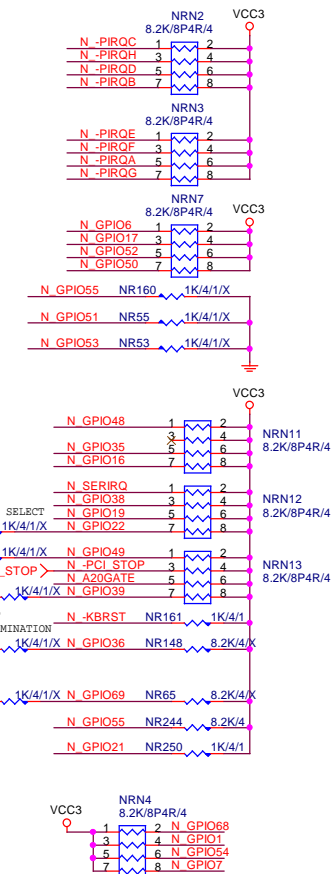
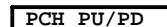
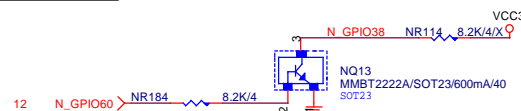
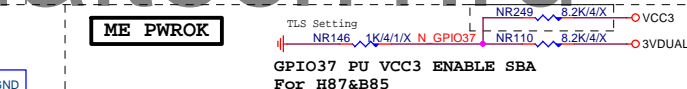
N_CATACTYD 2.01-11/27D/25V/5

SATA2_2
SATA2/7/BKH/OP/VA/D1/B
BLACK CONNECTOR

SATA2_3
SATA2/7/BKH/OP/VA/D1/B
BLACK CONNECTOR

5

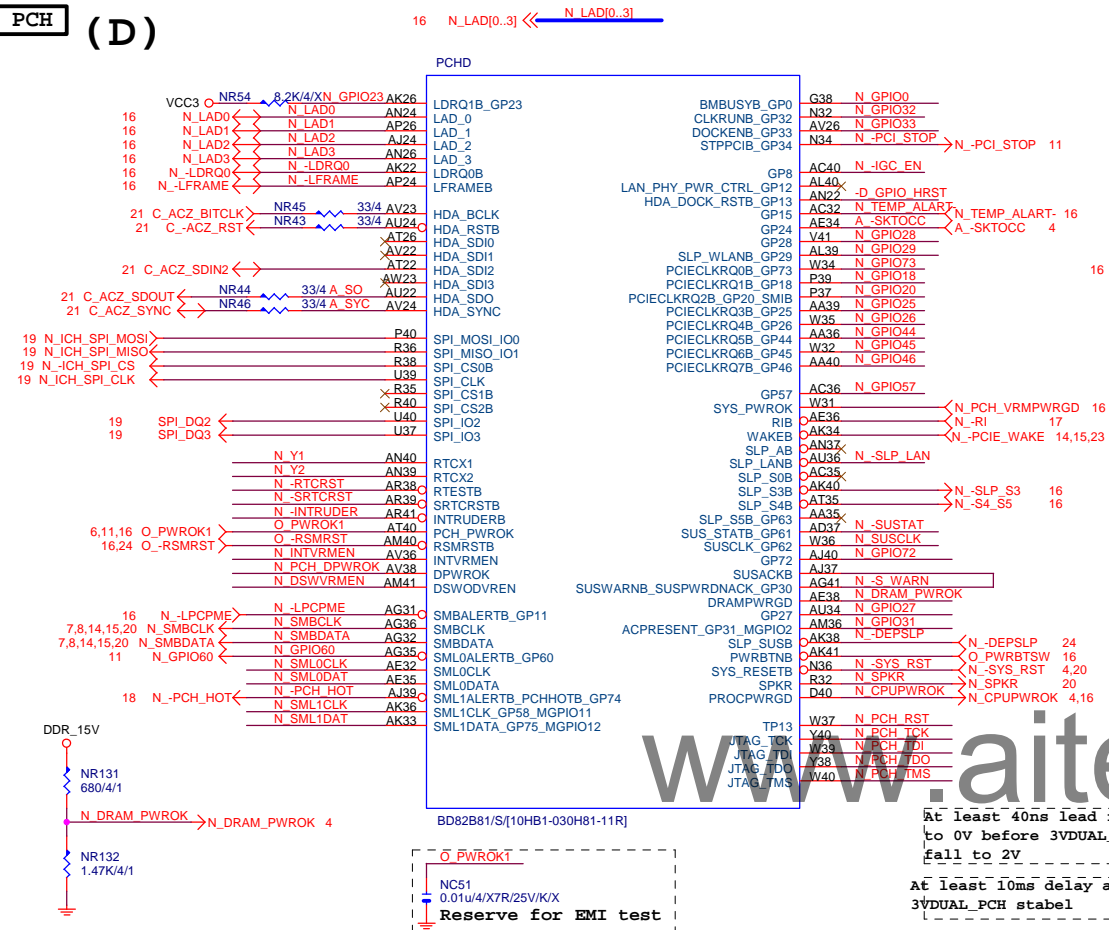
(A)



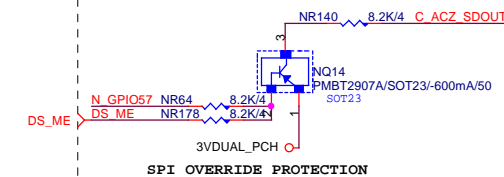
PCH HOST SATA PCI

Date: Thursday, December 19, 2013 Sheet 11 of 29

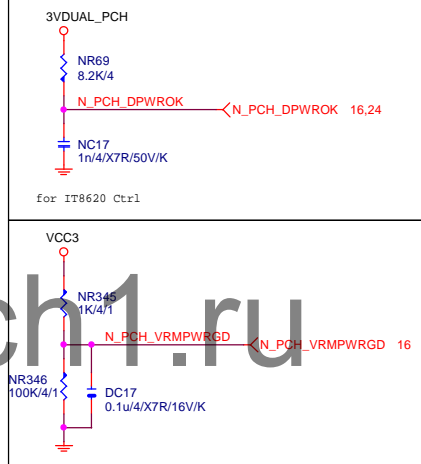
(D)



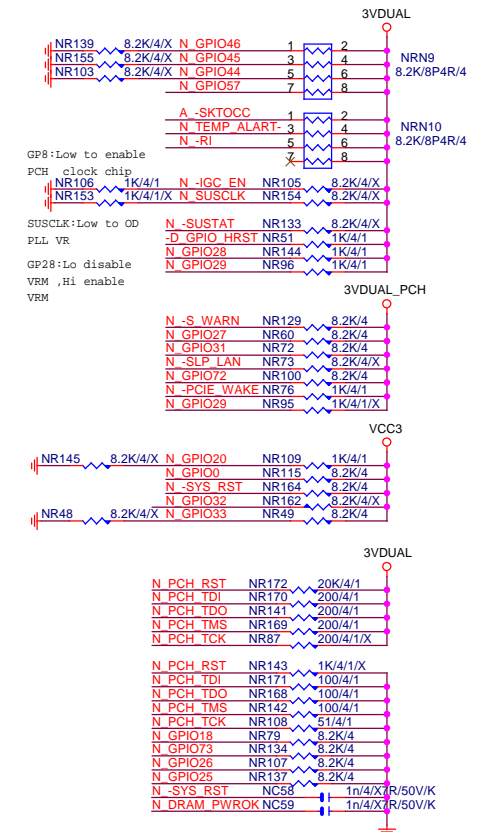
ACZ_SDOUT



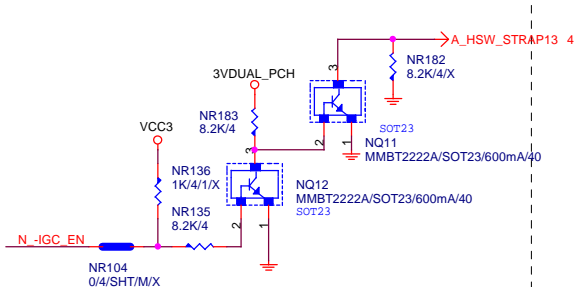
PCH_DPWROK



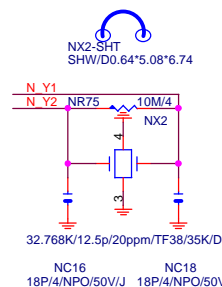
PCH	PU/PD
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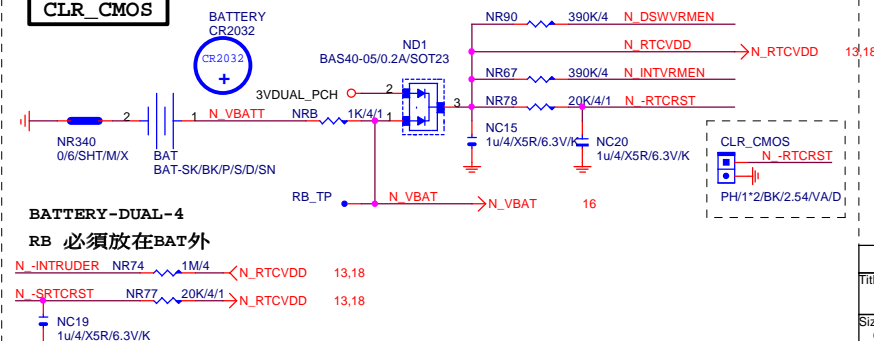
HSW_STRAP13



32.768KHZ



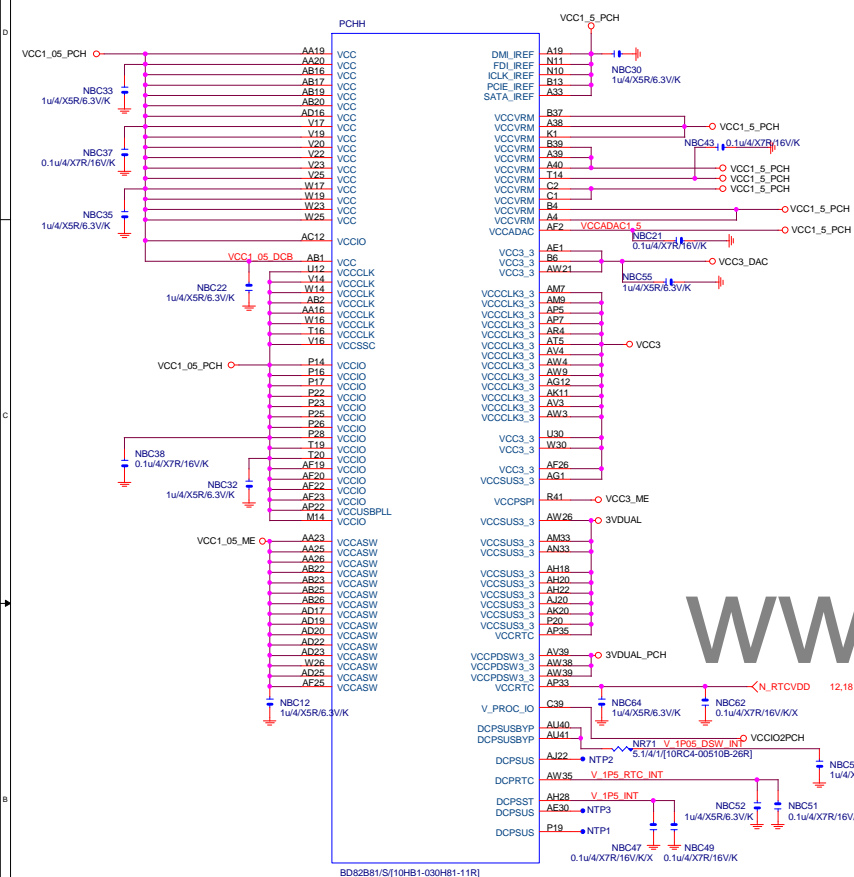
CLR_CMOS



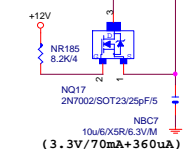
Gigabyte Technology

Title			
PCH GPIO , CTRL , AUDIO			
Size	Document Number	Rev	
Custom	GA-H81M-DS2 CN	2.0	
Date:	Thursday, December 19, 2013	Sheet	12 of 29

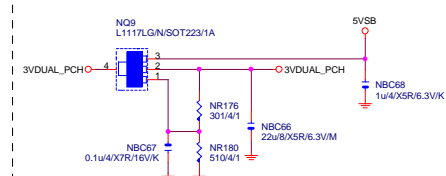
PCH (H)



VCC3_DAC



3VDUAL_PCH



SHT PWR

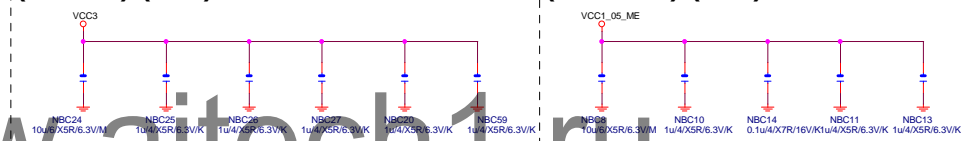


CAP

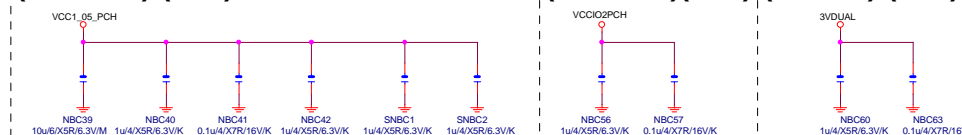


(3.3V) (X6)

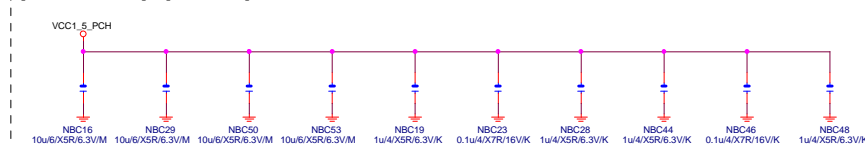
(1.05V) (x5)



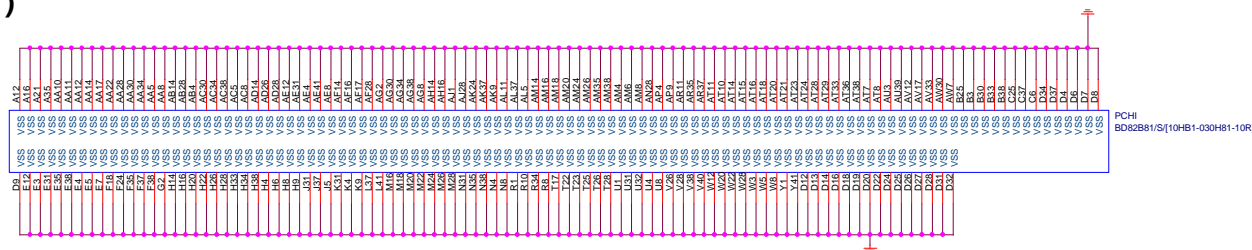
(1.05V)(x6)

$$(1.05V)(x_2) - (3.3V)(x_2)$$


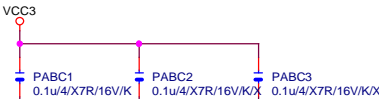
(1.05V) (x10)



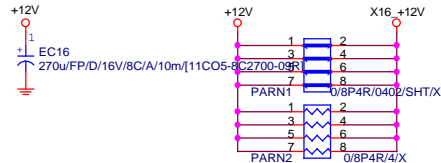
PCH (I)



PCIEX16 CAP



PCIEX16 PROTECT SHT

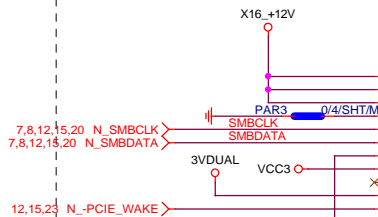


PCIEX16 AC CAP

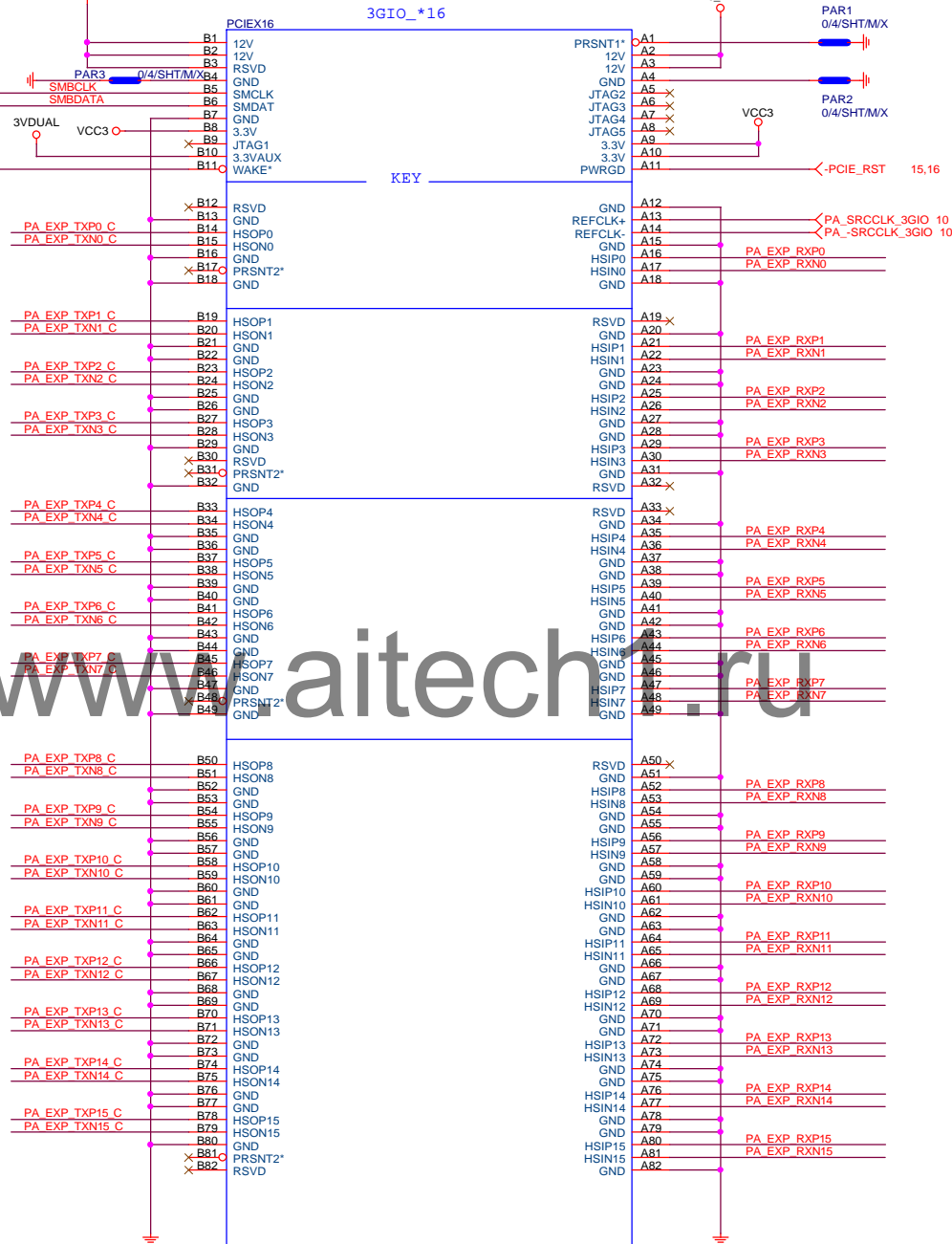
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PA EXP TXN0	PAC4	0.22u4/X5R/6.3V/K	PA EXP TXN0 C
PA EXP TXP1	PAC6	0.22u4/X5R/6.3V/K	PA EXP TXP1 C
PA EXP TXN1	PAC7	0.22u4/X5R/6.3V/K	PA EXP TXN1 C
PA EXP TXP2	PAC8	0.22u4/X5R/6.3V/K	PA EXP TXP2 C
PA EXP TXN2	PAC9	0.22u4/X5R/6.3V/K	PA EXP TXN2 C
PA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

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

PCIEX16 SLOT



PCIESLOT-164DN-P

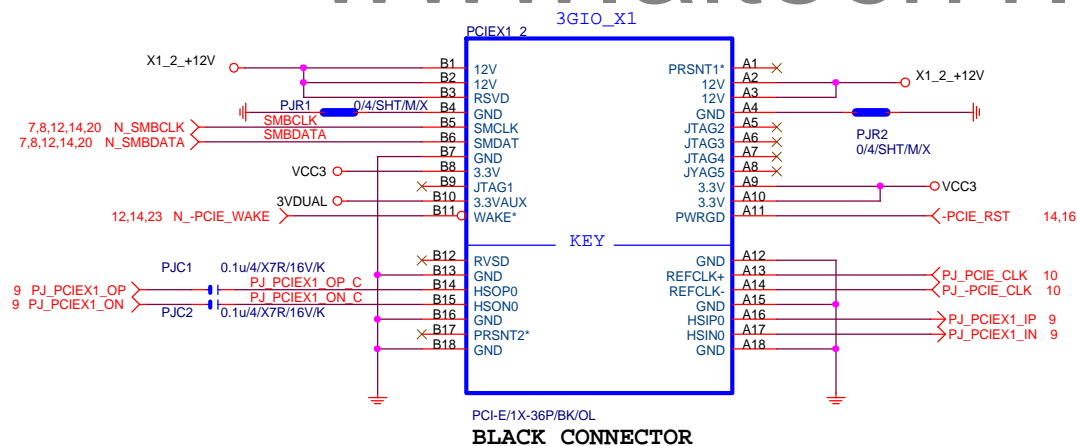
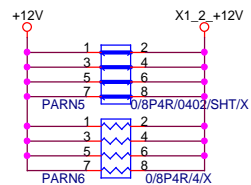
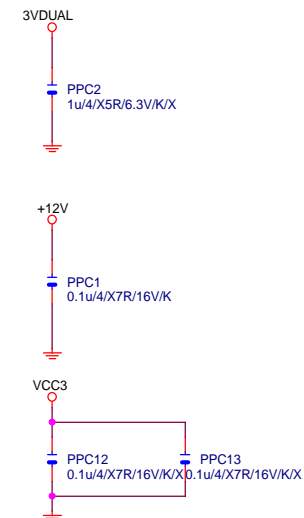
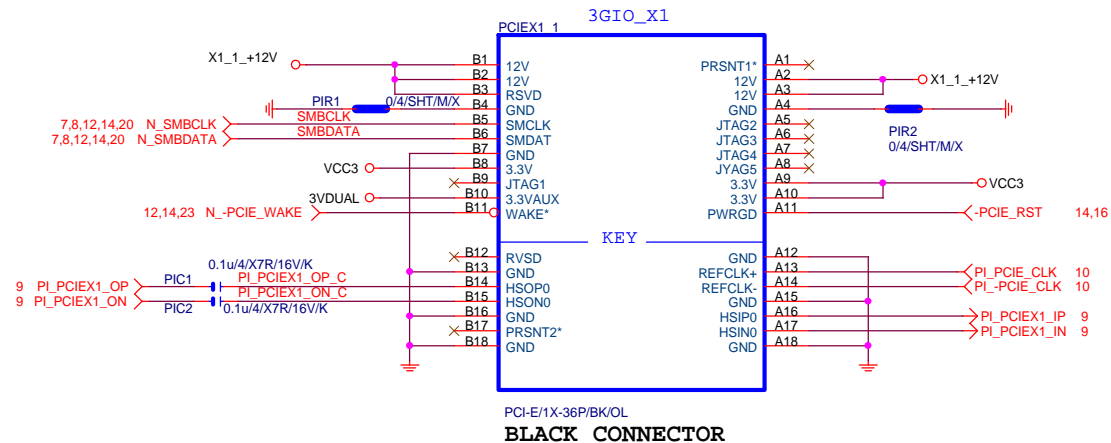
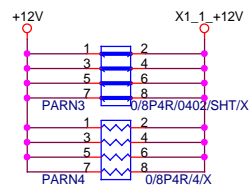


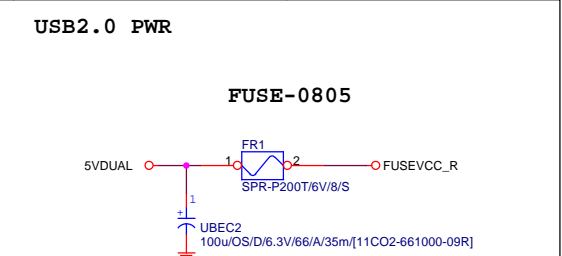
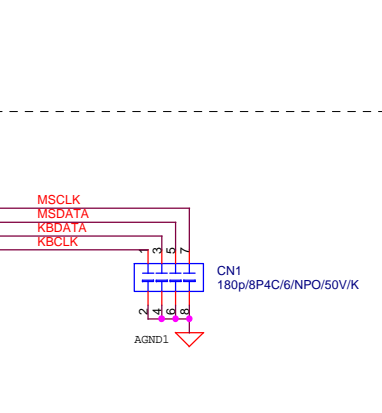
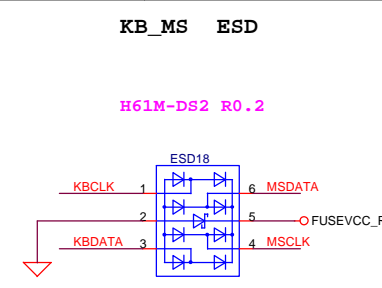
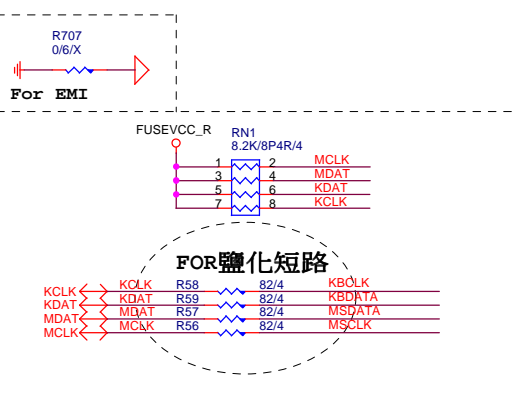
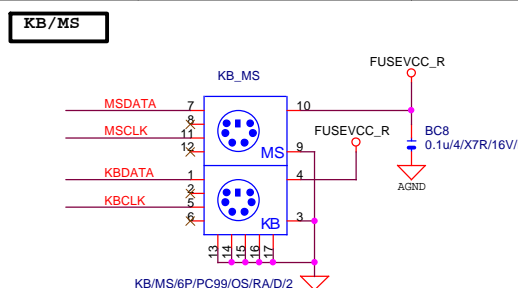
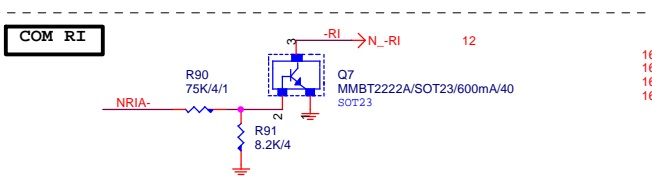
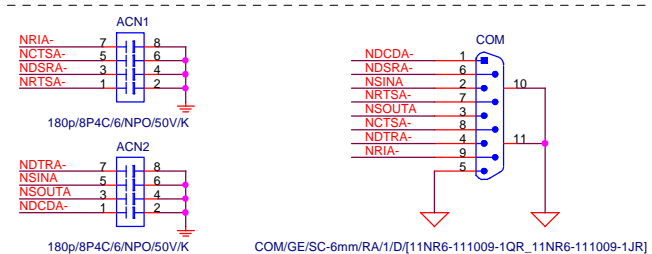
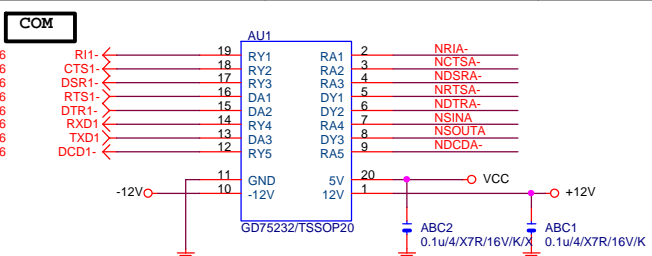
BLACK CONNECTOR

Gigabyte Technology

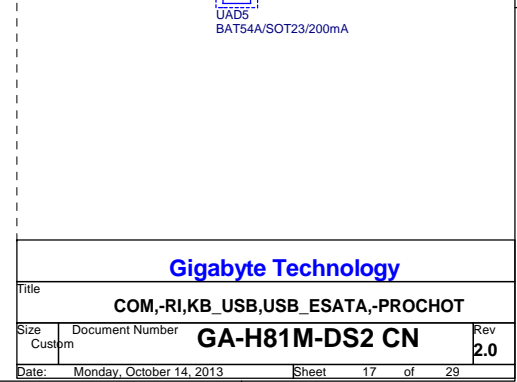
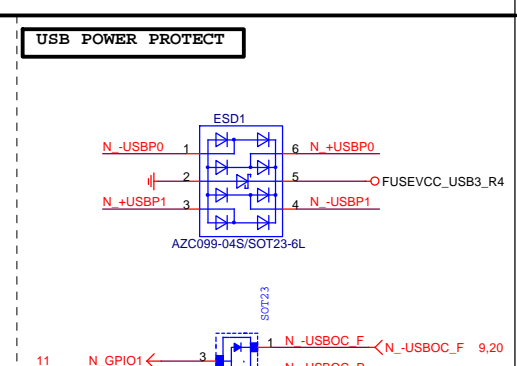
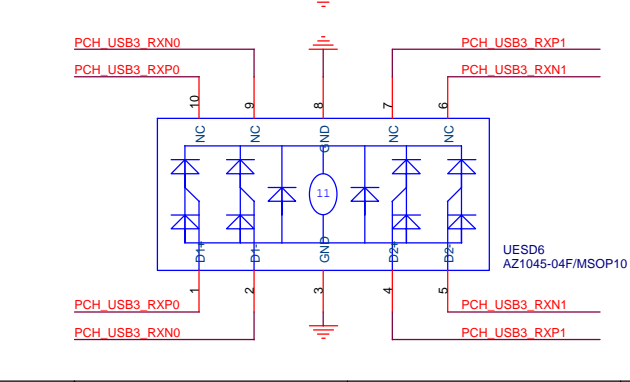
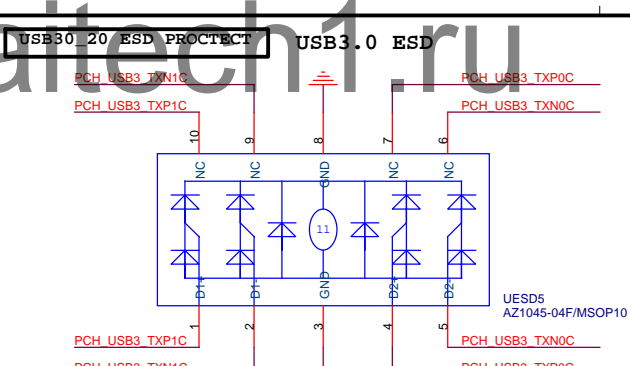
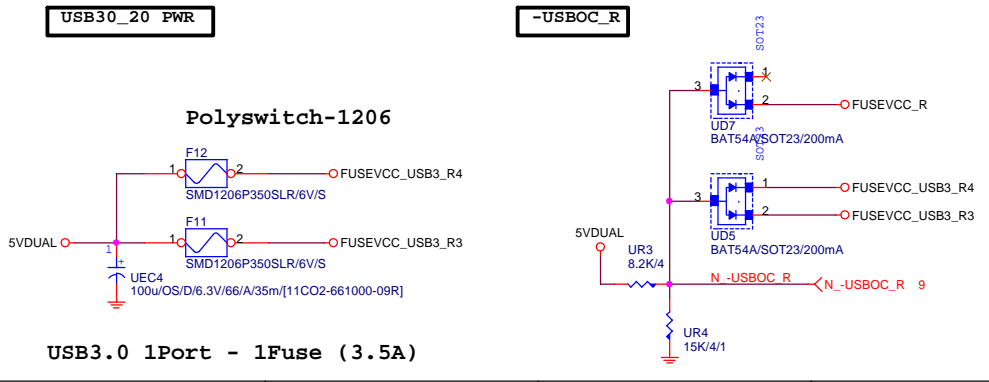
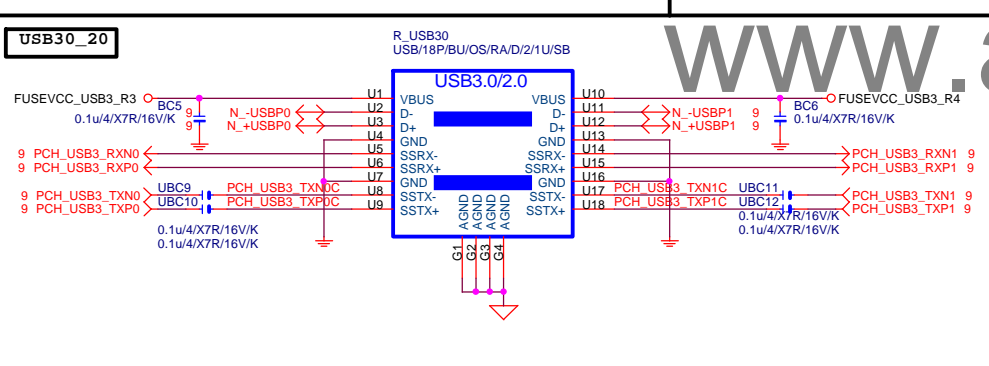
Title			PCI EXPRESS * 16	
Size			GA-H81M-DS2 CN	
Custom			Rev 2.0	
Date:			Monday, October 14, 2013	Sheet 14 of 29

PCIEX1 PROTECT SHT

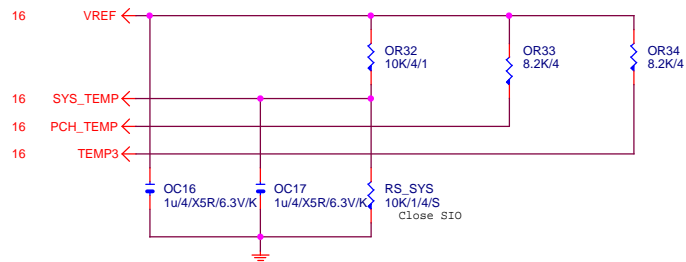




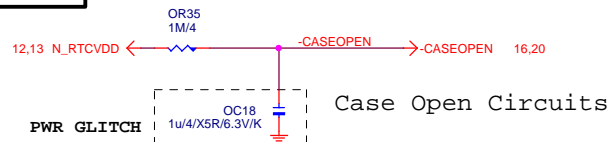
Close to connector



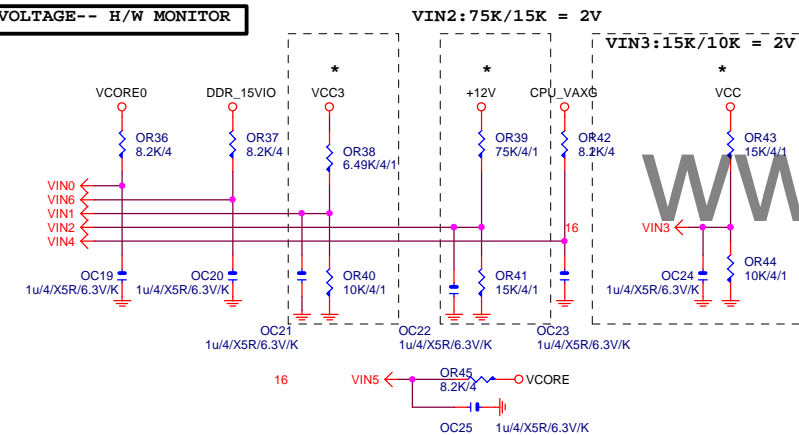
TEMP H/W MONITOR



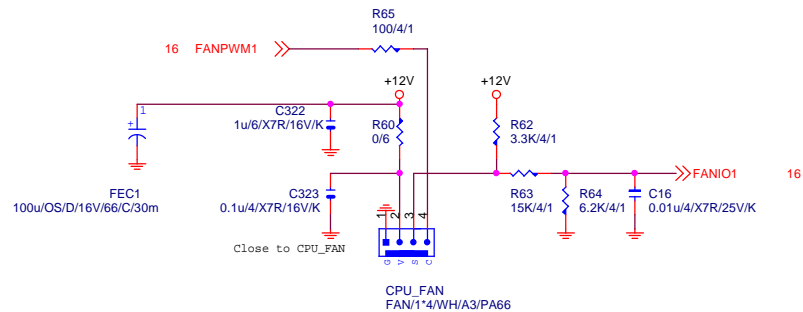
CASE OPEN



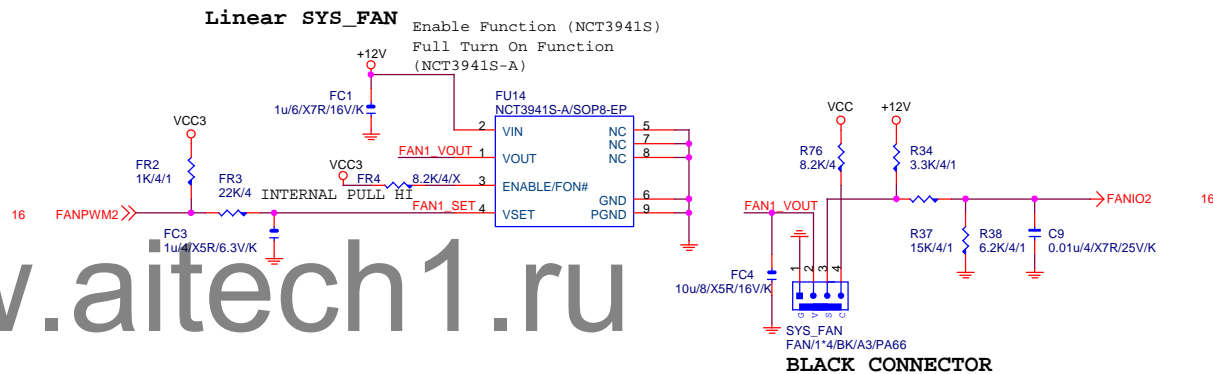
VOLTAGE-- H/W MONITOR



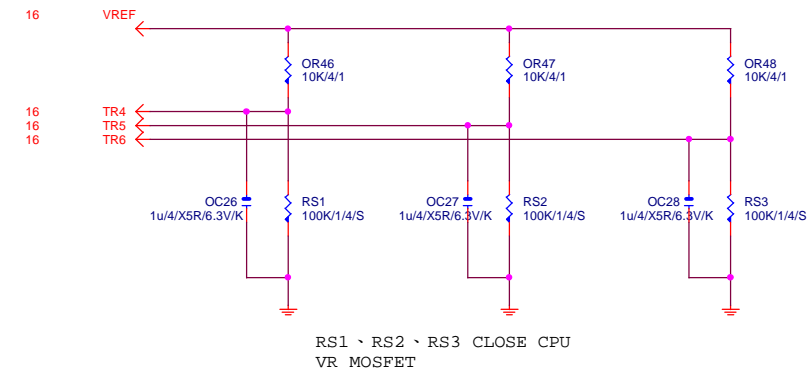
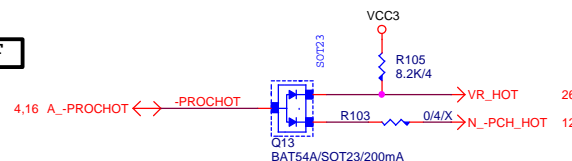
CPU SMART FAN

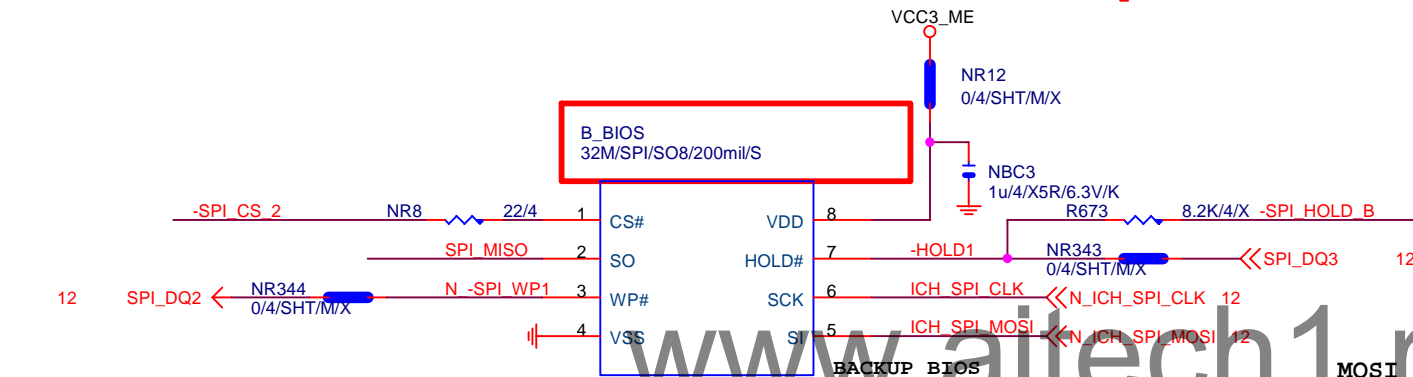
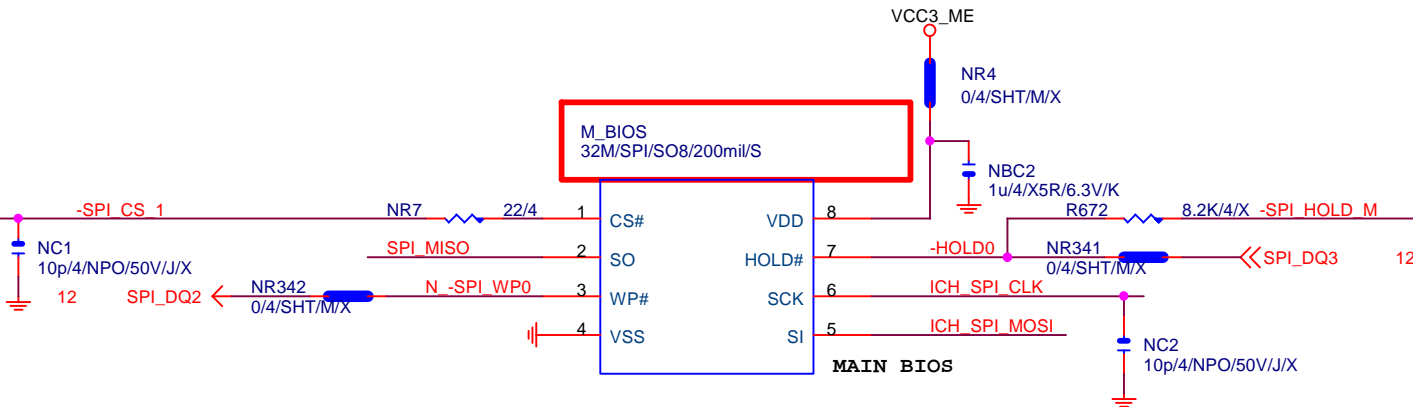


SYS SMART FAN



-PROHOT

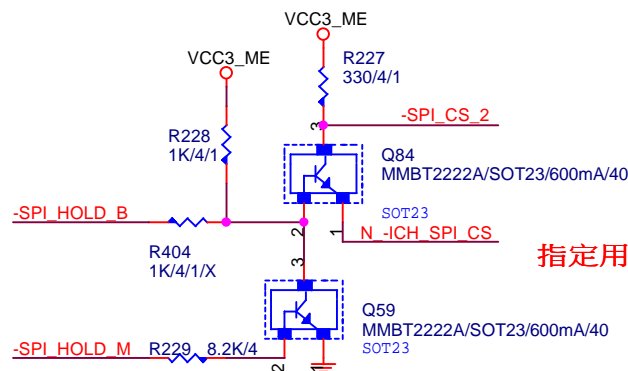
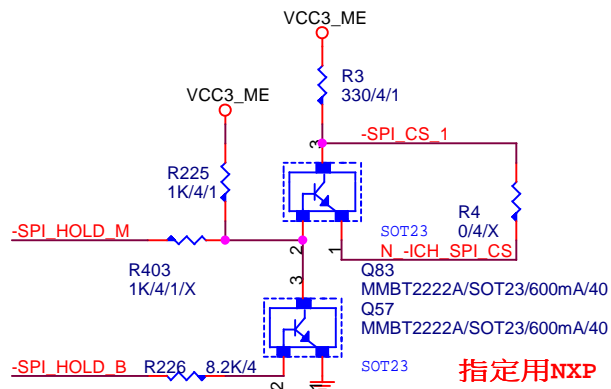
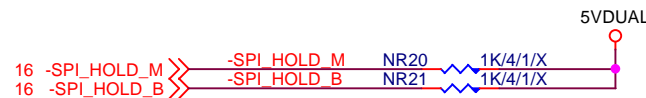
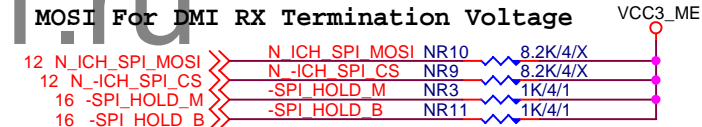




BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

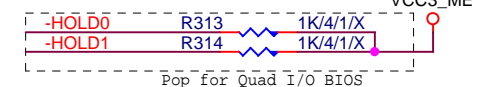
1 means floating
0 means PD 1K

MOSI For DMI RX Termination Voltage



指定用NXP

CHECK

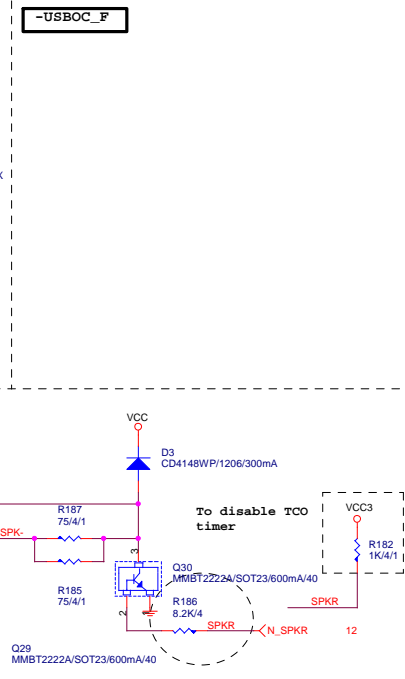
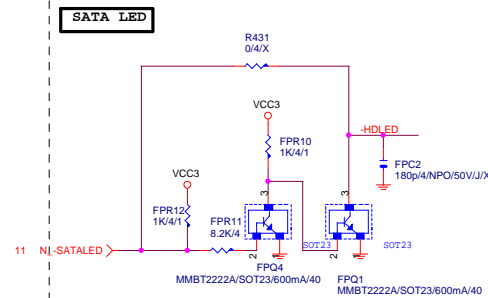


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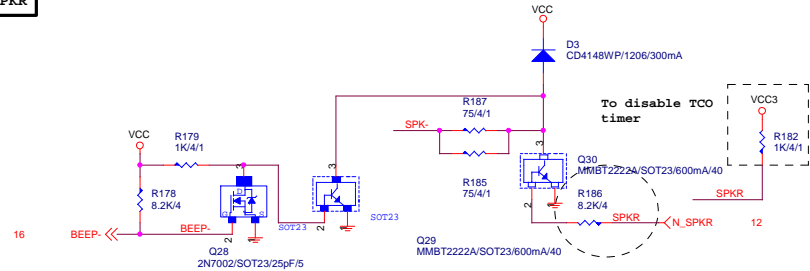
DUAL BIOS

GA-H81M-DS2 CN

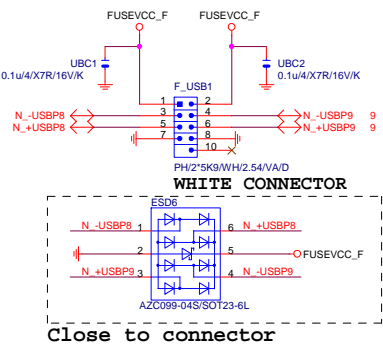
Title	GA-H81M-DS2 CN		Rev
Size	Document Number		2.0
Custom			
Date:	Monday, October 14, 2013	Sheet	19 of 29



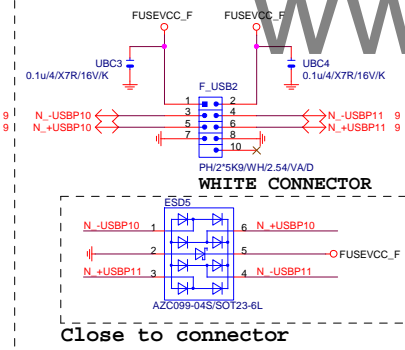
SPKR



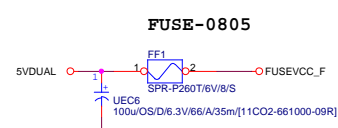
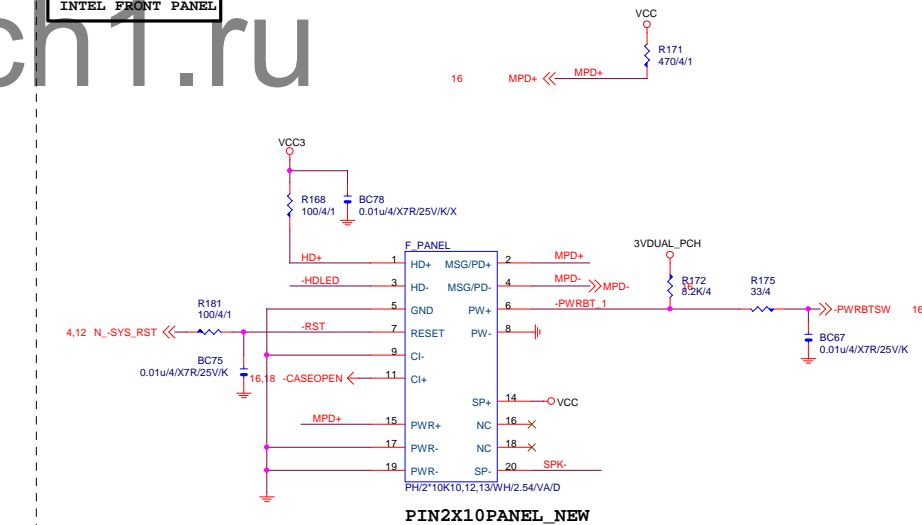
FRONT USB1



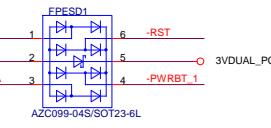
FRONT USB2



INTEL FRONT PANEL



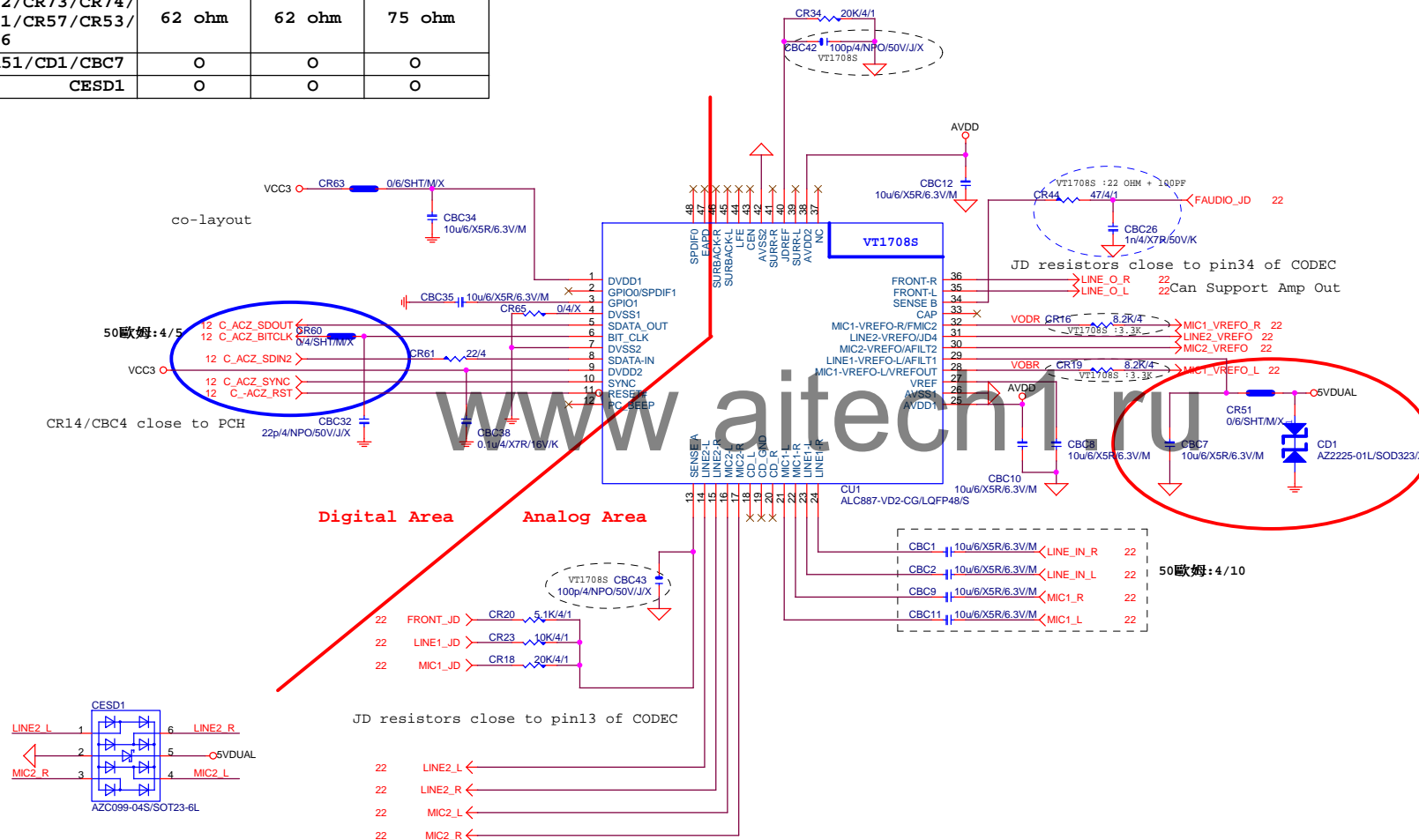
F_USB1, F_USB2 4-Port 2.6A

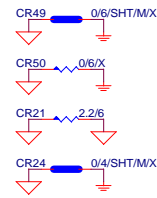


Gigabyte Technology			
FP,F_USB,USB PWR,SPKR,SATA LED			
GA-H81M-DS2 CN			
Rev	2.0		

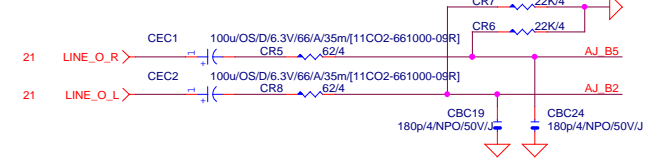
AZALIA CODEC ALC892/ALC887-VD2/VT1708-CE Colay

	ALC892	ALC887-VD2	VT1708S-CE
CR44/CBC26	47ohm+1nF	47ohm+1nF	22ohm+100P
CBC42/CBC43	X	X	100P/4
CR6/CR7/CR58/CR54/ CR67/CR68/CR69/CR70	22K/4	22K/4	10K/4/1
CR5/CR8/CR1/CR14/ CR17/CR22/CR73/CR74/ CR13/CR11/CR57/CR53/ CR75/CR76	62 ohm	62 ohm	75 ohm
CR51/CD1/CBC7	O	O	O
CESD1	O	O	O





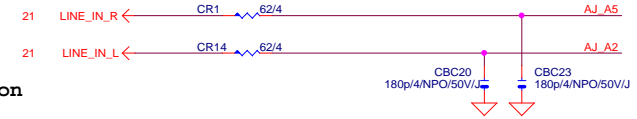
LINE-OUT



LINE-IN

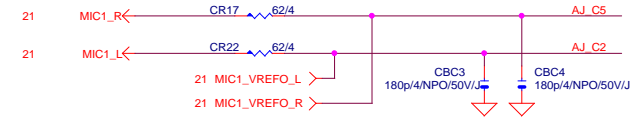
Verify MIC function
in LINE-in

Only reserved for ALC888



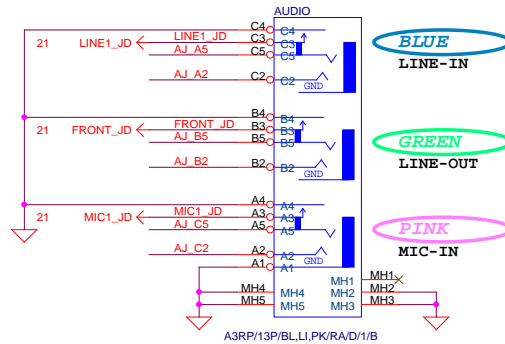
For 889A/888

MIC-IN

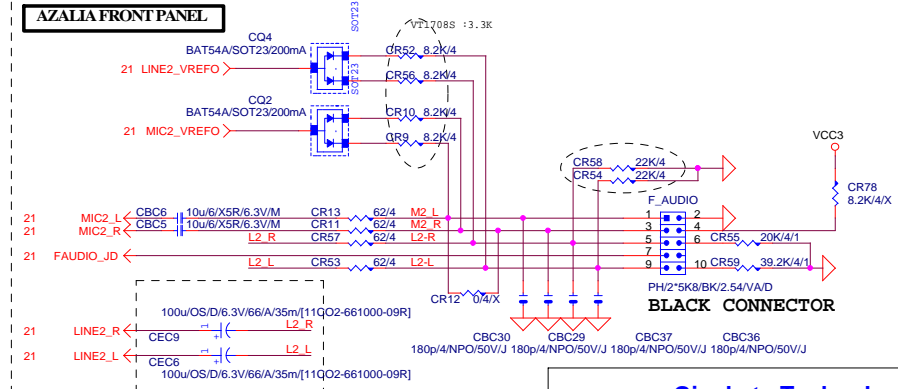


SPDIF_OUT

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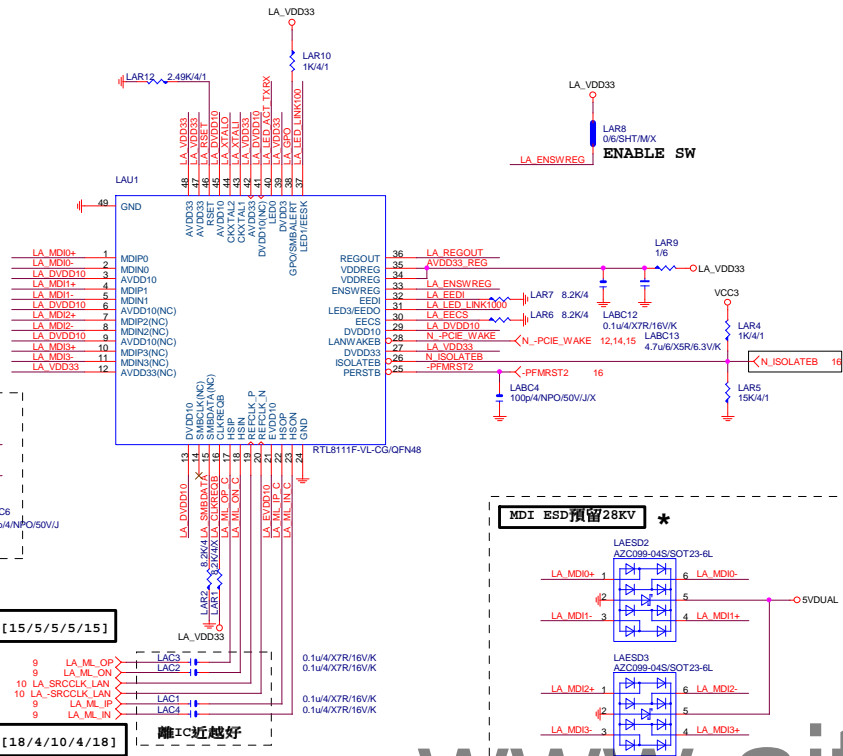
AZALIA FRONT PANEL



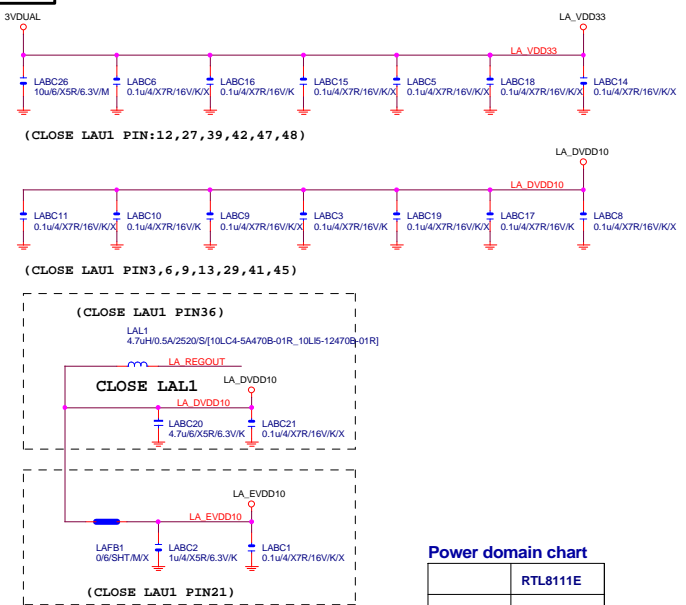
Gigabyte Technology

Title			
AUDIO JACK			
Size	Document Number	GA-H81M-DS2 CN	
Custom			Rev 2.0
Date:	Monday, October 14, 2013	Sheet	22 of 29

LAN:RTL8111F/VB/VL



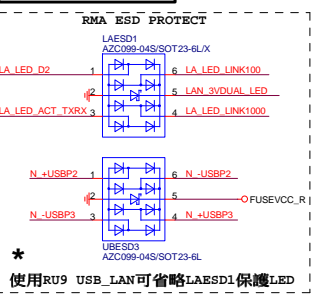
LAN POWER



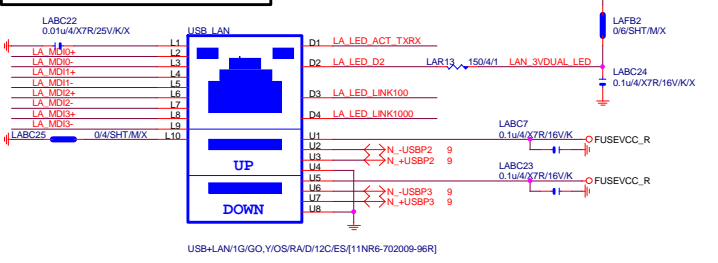
Power domain chart

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

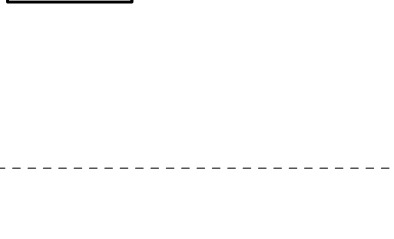
USB LAN CONNECTOR



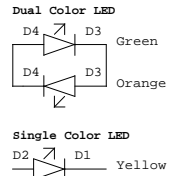
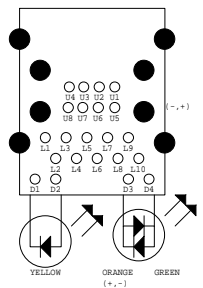
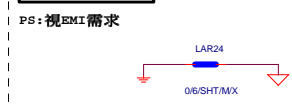
LA_MDI-->100歐姆:[20/4/8/4/20]



USB X3 POWER



EMI SHORT PAD



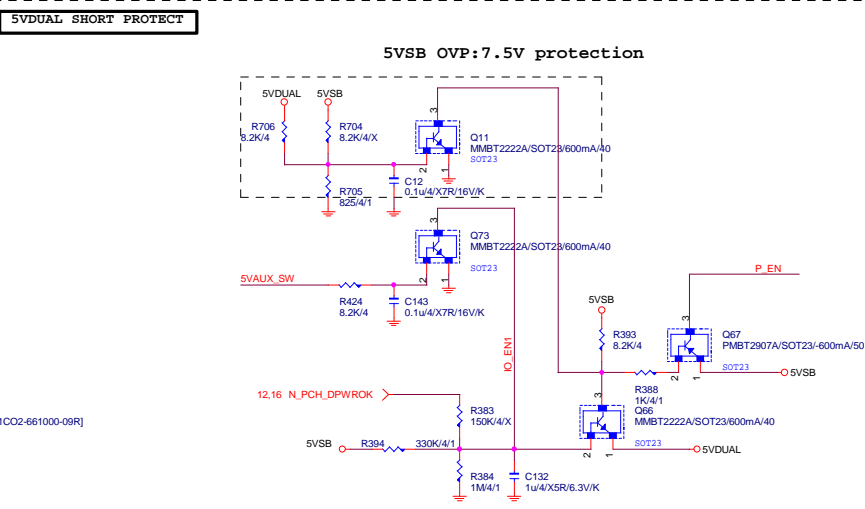
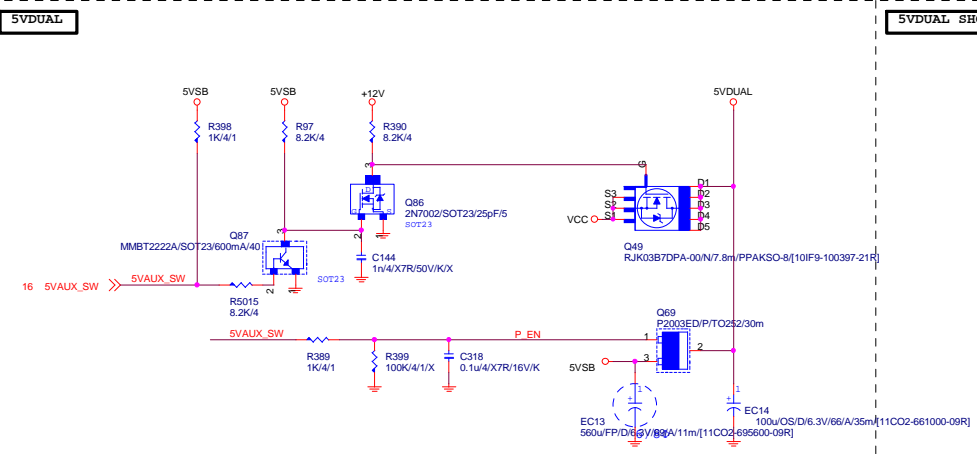
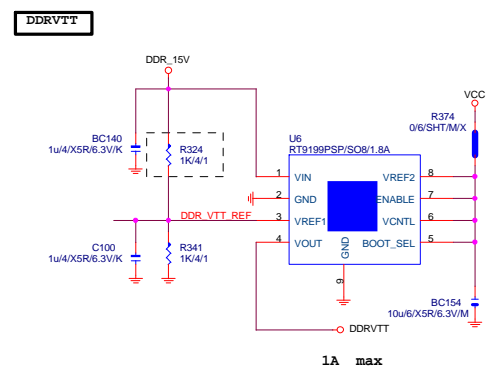
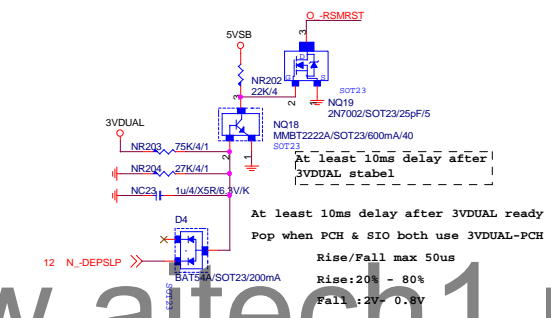
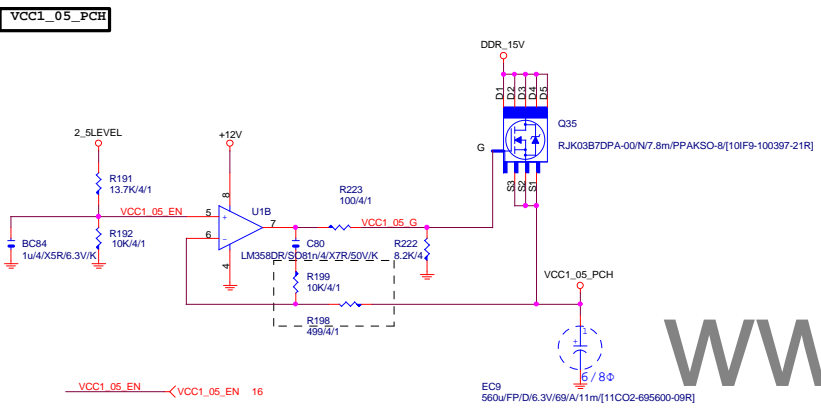
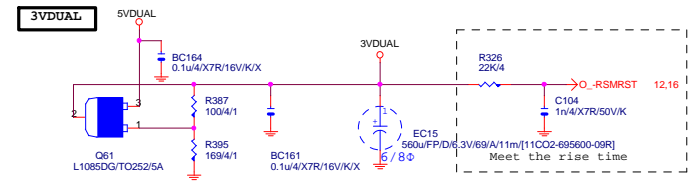
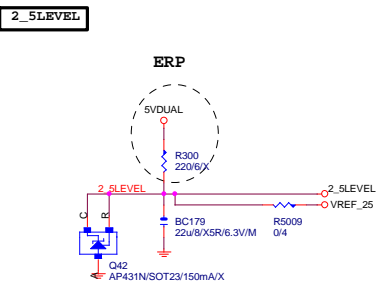
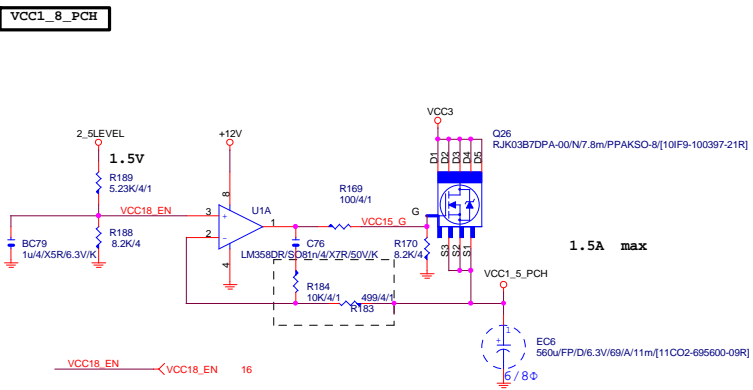
注意:USB PORT(目前:暫代6,7PORT)
USB-->90歐姆:[15/4.5/7.5/4.5/15]

BOM NOTICE *

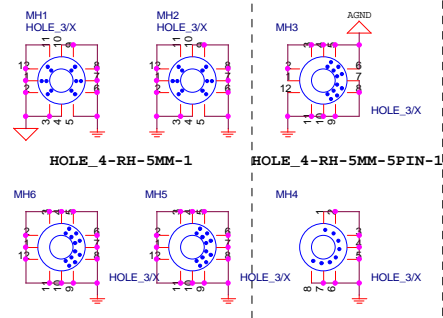
料號	規格	廠商
11NR6-702009-96R	1G LAN (12core)	UDE(RU9 ESD+)
[LED獨立走線,可省略外加AZC099料件LAESD1]		
1. 9KV ESD BOM:		
USB_LAN (RU9):11NR6-702009-96R		
2. 28KV ESD BOM:		
USB_LAN (RU9):11NR6-702009-96R		
LAESD2,LAESD3:上件AZC398-04S		

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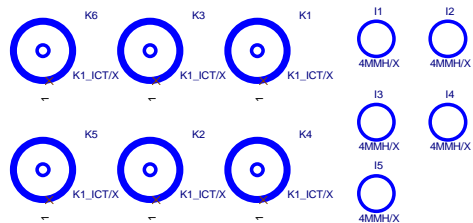
Title	Realtek RTL8111G
Size	Document Number
Custom	GA-H81M-DS2 CN
Date	Monday, October 14, 2013
Sheet	23 of 29
Rev	2.0



【技術通報R&D技術通報155】

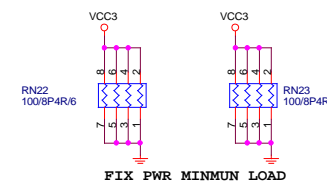
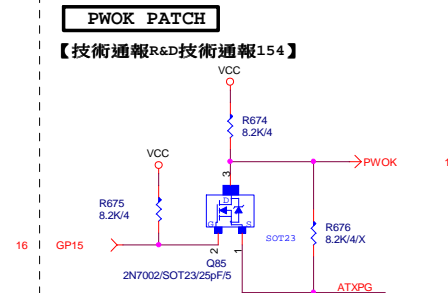
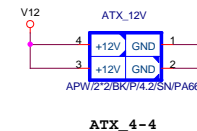
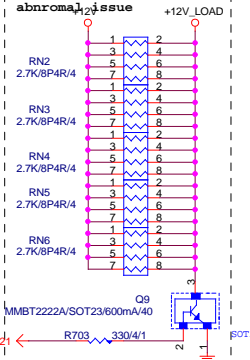


To prevent the 5VSB
under loading when
boot



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To fix 12V light load
abnromal issue +12V



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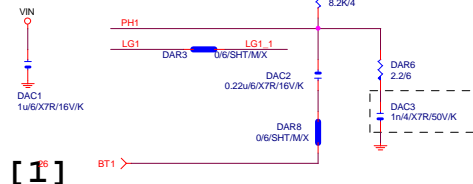
ATX CONNECTOR

GA-H81M-DS2 CN

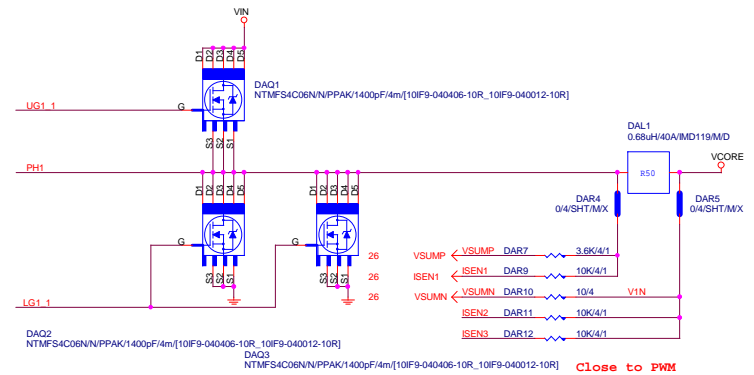
Rev	2.0
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Date: Monday, October 14, 2013 Sheet 25 of 25

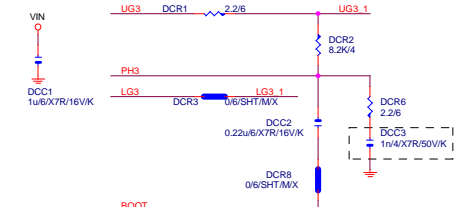
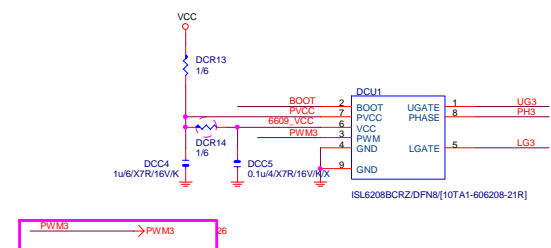
PHASE 1



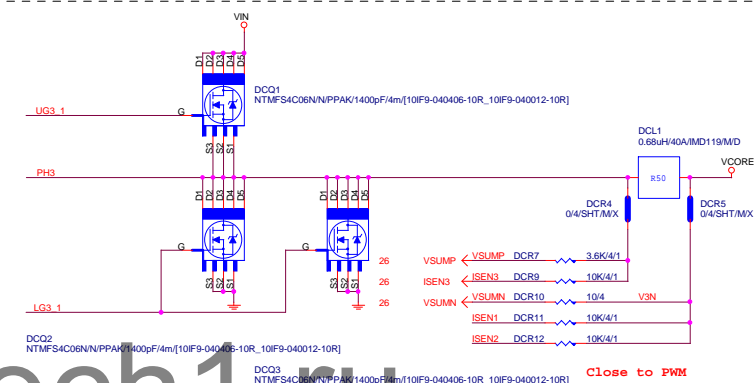
[1]



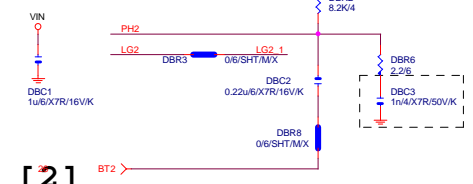
PHASE 3



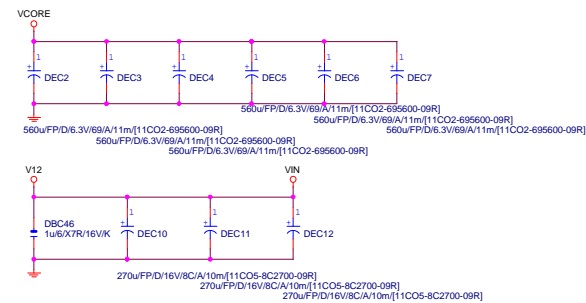
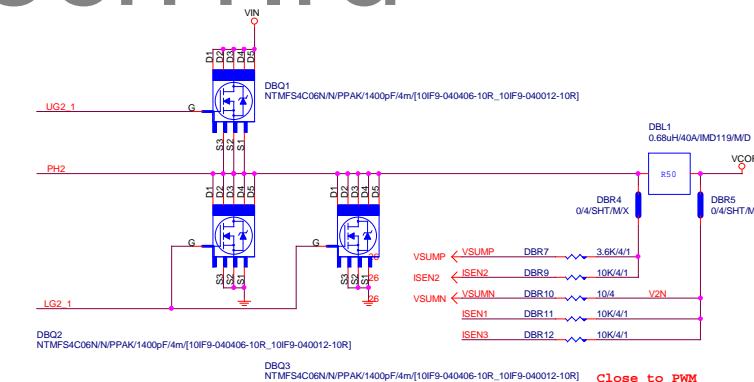
[3]



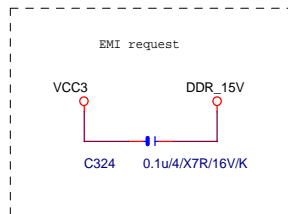
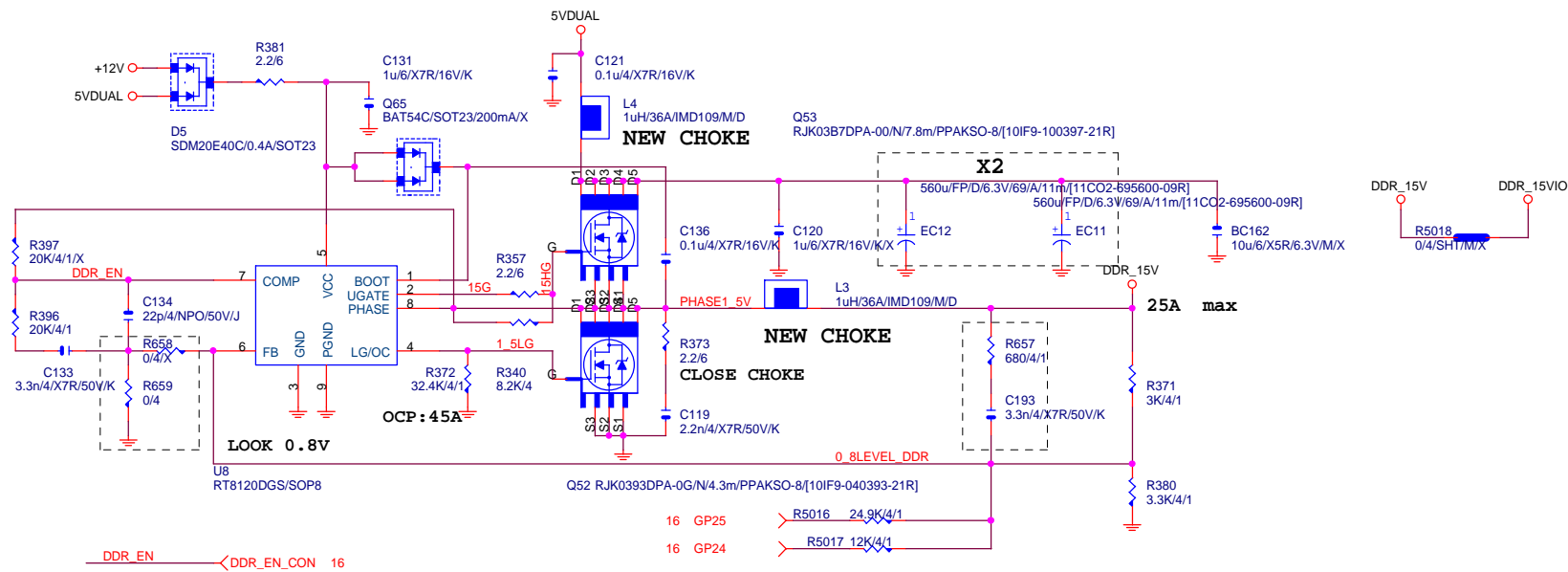
PHASE 2



[2]



Gigabyte Technology			
Title		CPU CORE VR-2	
Size	Document Number	GA-H81M-DS2 CN	Rev 2.0
Date	Monday, October 14, 2013	Sheet 27 of 29	



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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

$Rocset = (Iocp * Lgate, rdson) / Iocset$

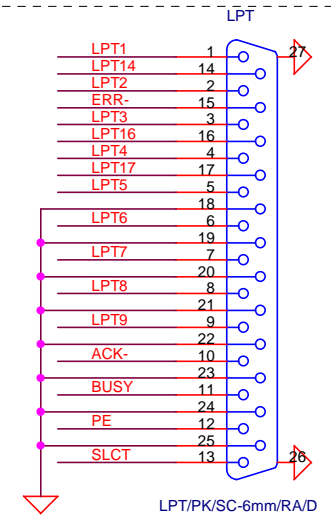
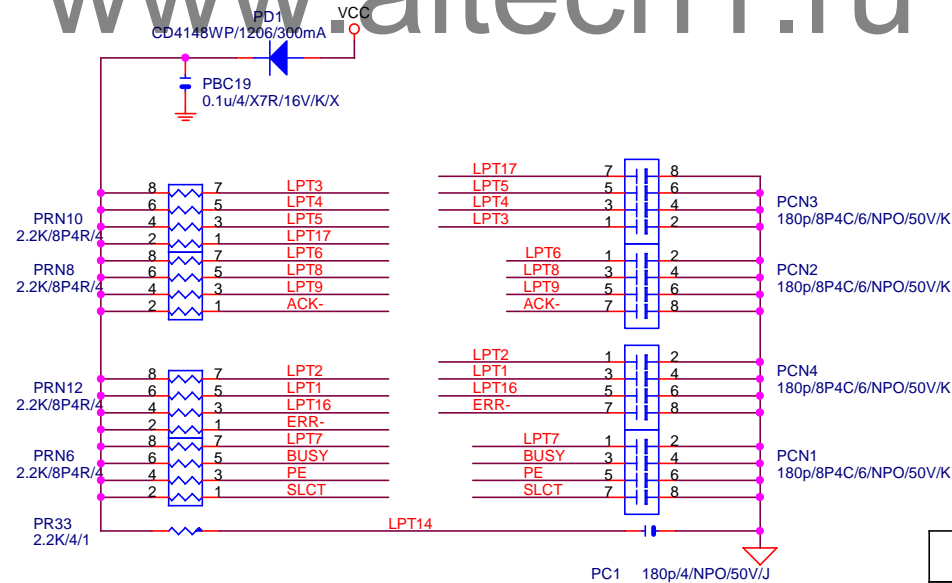
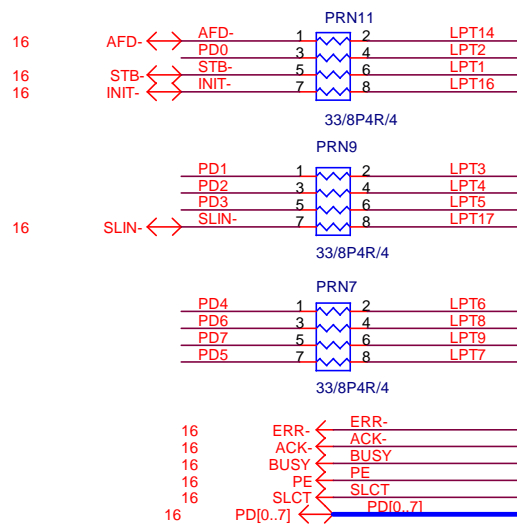
$Rocset = (45A * 6.7m\Omega) / 10uA = 30K$

$Iocset = 10uA$

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Title			
DDR POWER			
Size	Document Number	GA-H81M-DS2 CN	
Custom			Rev 2.0
Date:	Monday, October 14, 2013	Sheet	28 of 29

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Gigabyte Technology			
Title			
LPT			
Size	Document Number	GA-H81M-DS2 CN	
Custom		Rev 2.0	
Date:	Monday, October 14, 2013	Sheet	29 of 29