

Model Name: GA-H81M-DS2

Revision 1.0

SHEET

TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1150-A
05	CPU_LGA1150-B
06	CPU_LGA1150-C
07	DDR III CHANNEL A
08	DDR III CHANNEL B
09	PCH_FDI,DMI,USB,PCIE,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	PCI SLOT
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
25	DISCRETE POWER
26	ATX , CLOCK GEN
27	VCORE ISL95820_1

SHEET

TITLE

28	VCORE ISL95820_2
29	RT8120_DDR POWER
30	LPT, M3 POWER
31	DVI, HDMI
32	IT8892E

Gigabyte Technology

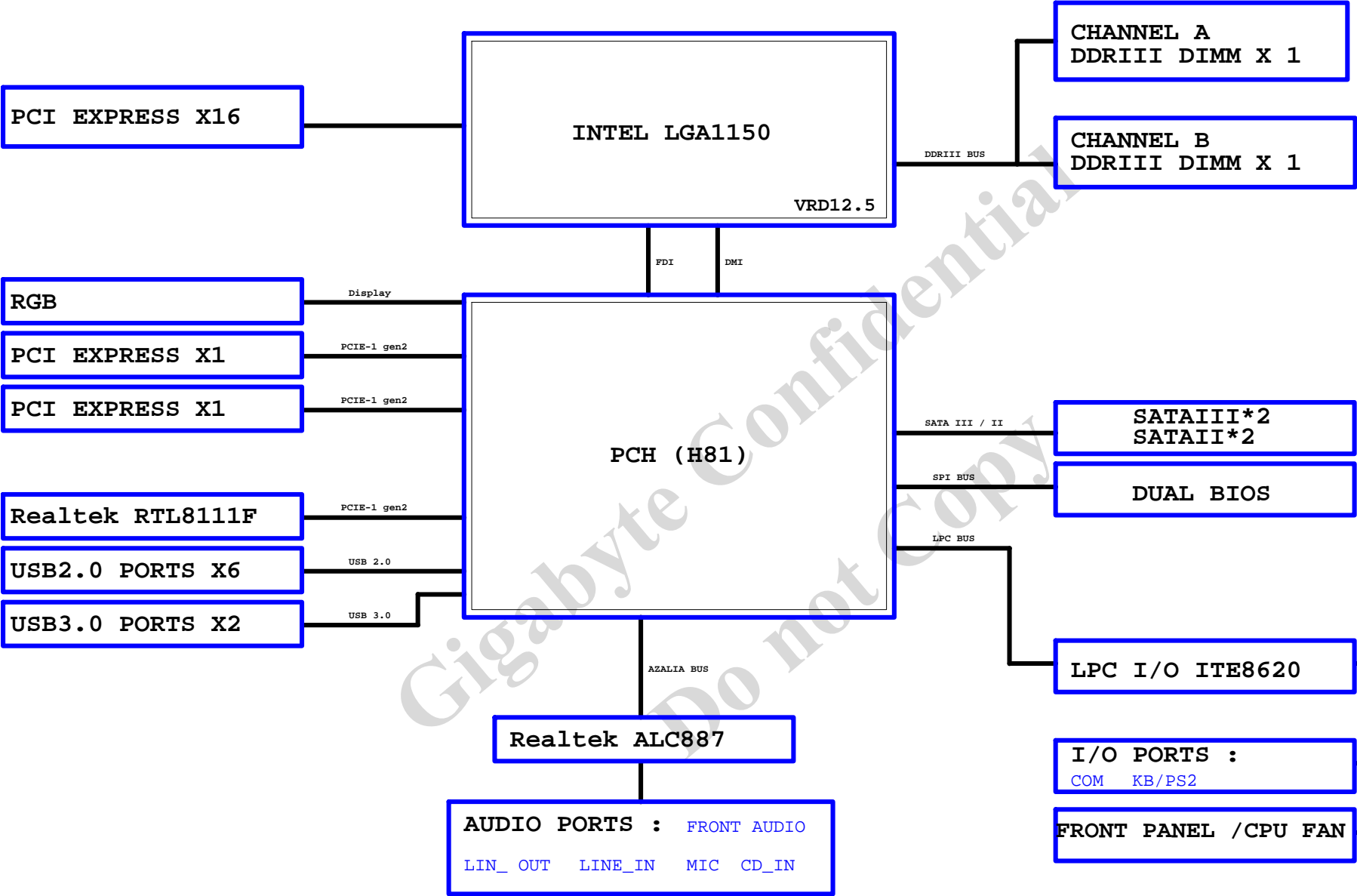
Cover Sheet

Size Custom	Document Number <b>GA-H81M-DS2</b>	Rev <b>1.0</b>
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## D

CD

BLOCK DIAGRAM



**Figure 9-7** HWCFG0-17 internal pull-up

Diagram illustrating the pin connections for the LGA1150D package, showing connections for FDI\_CSYNC, FDI\_INT, FDI\_RCOMP, N\_DP\_CLK, and FDI\_TXN0-FDI\_TXP1.

Connections shown:

- FDI\_CSYNC (D16) to FDI\_CSYNC (D16)
- FDI\_INT (D18) to FDI\_INT (D18)
- FDI\_RCOMP (R4) to FDI\_RCOMP (R4)
- N\_DP\_CLK (U5) to N\_DP\_CLK (U5)
- N\_DP\_CLK (U6) to N\_DP\_CLK (U6)
- FDI\_TXN0 (B14) to FDI\_TXN0 (B14)
- FDI\_TXP0 (A14) to FDI\_TXP0 (A14)
- FDI\_TXN1 (C13) to FDI\_TXN1 (C13)
- FDI\_TXP1 (B13) to FDI\_TXP1 (B13)

Summary of connections:

Pin	Signal	Package Pin	Board Pin
9	FDI_CSYNC	D16	FDI_CSYNC
9	FDI_INT	D18	FDI_INT
10	N_DP_CLK	U5	N_DP_CLK
10	N_DP_CLK	U6	N_DP_CLK
	FDI_TXN0	B14	FDI_TXN0
	FDI_TXP0	A14	FDI_TXP0
	FDI_TXN1	C13	FDI_TXN1
	FDI_TXP1	B13	FDI_TXP1

Impedance values:

- FDI: 12/4/5/4/12 (breakout min 6/4/4/4/6)
- Impedance = 85 +/- 17.5%

PCIEX16:16/5/5/16(breakout min 10/4/4/4/10)									
Impedance=80 +- 17.5%									
LGAI1500C									
PA EXP RXP0	E15	PEG_RXP0	A12	PA EXP TXP0					
PA EXP RXN0	F15	PEG_RXN0	B12	PA EXP TXN0					
PA EXP RXP1	D14	PEG_RXP1	B11	PA EXP TXP1					
PA EXP RXN1	E14	PEG_RXN1	C11	PA EXP TXN1					
PA EXP RXP2	E13	PEG_RXP2	C10	PA EXP TXP2					
PA EXP RXN2	F13	PEG_RXN2	D10	PA EXP TXN2					
PA EXP RXP3	D12	PEG_RXP3	B9	PA EXP TXP3					
PA EXP RXN3	E12	PEG_RXN3	C9	PA EXP TXN3					
PA EXP RXP4	E11	PEG_RXP4	C8	PA EXP TXP4					
PA EXP RXN4	F11	PEG_RXN4	D8	PA EXP TXN4					
PA EXP RXP5	F10	PEG_RXP5	B7	PA EXP TXP5					
PA EXP RXN5	G10	PEG_RXN5	C7	PA EXP TXN5					
PA EXP RXP6	E9	PEG_RXP6	A6	PA EXP TXP6					
PA EXP RXN6	F9	PEG_RXN6	B6	PA EXP TXN6					
PA EXP RXP7	F8	PEG_RXP7	B5	PA EXP TXP7					
PA EXP RXN7	G8	PEG_RXN7	C5	PA EXP TXN7					
PA EXP RXP8	D3	PEG_RXP8	E1	PA EXP TXP8					
PA EXP RXN8	D4	PEG_RXN8	F1	PA EXP TXN8					
PA EXP RXP9	E4	PEG_RXP9	F2	PA EXP TXP9					
PA EXP RXN9	E5	PEG_RXN9	F3	PA EXP TXN9					
PA EXP RXP10	F5	PEG_RXP10	G1	PA EXP TXP10					
PA EXP RXN10	F6	PEG_RXN10	G2	PA EXP TXN10					
PA EXP RXP11	G4	PEG_RXP11	H2	PA EXP TXP11					
PA EXP RXN11	G5	PEG_RXN11	J1	PA EXP TXN11					
PA EXP RXP12	H5	PEG_RXP12	J1	PA EXP TXP12					
PA EXP RXN12	H6	PEG_RXN12	J2	PA EXP TXN12					
PA EXP RXP13	J4	PEG_RXP13	K2	PA EXP TXP13					
PA EXP RXN13	J5	PEG_RXN13	K3	PA EXP TXN13					
PA EXP RXP14	K5	PEG_RXP14	M2	PA EXP TXP14					
PA EXP RXN14	K6	PEG_RXN14	M3	PA EXP TXN14					
PA EXP RXP15	L4	PEG_RXP15	L1	PA EXP TXP15					
PA EXP RXN15	L5	PEG_RXN15	L2	PA EXP TXN15					
A DMI_0RXP	A DMI_0RXP	U3	DMI_0TXP0	AA4	A DMI_0TXP	→ A			
A DMI_0RXN	A DMI_0RXN	T3	DMI_0TXN0	AA5	A DMI_0TXN	→ A			
A DMI_1RXP	A DMI_1RXP	U1	DMI_1TXP1	AB3	A DMI_1TXP	→ A			
A DMI_1RXN	A DMI_1RXN	V1	DMI_1TXN1	AB4	A DMI_1TXN	→ A			
A DMI_2RXP	A DMI_2RXP	W2	DMI_2TXP2	AC5	A DMI_2TXP	→ A			
A DMI_2RXN	A DMI_2RXN	V2	DMI_2TXN2	AC4	A DMI_2TXN	→ A			
A DMI_3RXP	A DMI_3RXP	Y3	DMI_3TXP3	AC1	A DMI_3TXP	→ A			
A DMI_3RXN	A DMI_3RXN	W3	DMI_3TXN3	AC2	A DMI_3TXN	→ A			
		D1	RSVD_TP						
		C2	RSVD_TP						
		A4	RSVD_TP						
		A4	RSVD_TP						
W=12 mil out of CPU									
S=15 mil out of CPU									
VCCIOA_LO	WR15	24.9/4.1	GRCOMP	P3	PEG_RCOMP				

1.1V分壓

11,16

For IT8620 Ctrl

Signal	Value	Function
WR3	90.9/4/1/X	PVIDSLCK
WR2	115/4/1	PVIDSOUT
WR4	75/4/1	-PVIDALRT

CPU\_VTT\_OR

WR14	51/4/1/X	A TMS
WR16	51/4/1/X	A TDO
WR17	51/4/1/X	A TDI
WR30	51/4/1	A -HPRDY
WR11	51/4/1	A TCK
WR9	51/4/1	A -TRST

[illegible]

A DDR_COMP0	WR28	100/4/1
A DDR_COMP1	WR19	75/4/1
A DDR_COMP2	WR22	100/4/1
A TESTLOW_1	WR18	49.9/4/1
A TESTLOW_2	WR12	49.9/4/1
A HSW_CFG_RCOMP	WR24	49.9/4/1

DDR\_15V

LGA1150

(A)

LGA1150

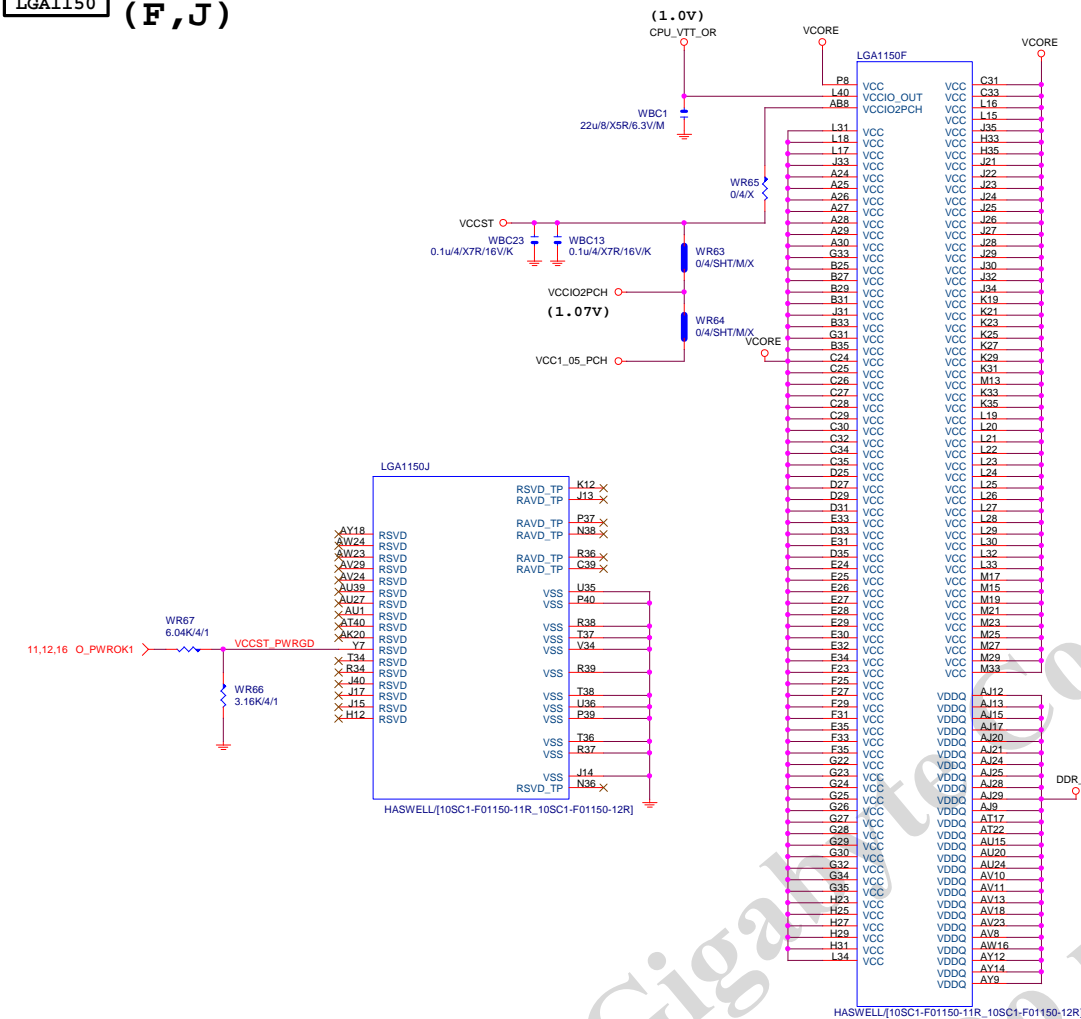
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LGA1150

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LGA1150A			
MAAA0	AU13	DDR0_MA0	DDR0_D00
MAAA1	AV16	DDR0_MA1	DDR0_D01
MAAA2	AU16	DDR0_MA2	DDR0_D02
MAAA3	AW17	DDR0_MA3	DDR0_D03
MAAA4	AU17	DDR0_MA4	DDR0_D04
MAAA5	AW18	DDR0_MA5	DDR0_D05
MAAA6	AV17	DDR0_MA6	DDR0_D06
MAAA7	AT18	DDR0_MA7	DDR0_D07
MAAA8	AU18	DDR0_MA8	DDR0_D08
MAAA9	AT19	DDR0_MA9	DDR0_D09
MAAA10	AW11	DDR0_MA10	DDR0_D10
MAAA11	AV19	DDR0_MA11	DDR0_D11
MAAA12	AU19	DDR0_MA12	DDR0_D12
MAAA13	AY10	DDR0_MA13	DDR0_D13
MAAA14	AT20	DDR0_MA14	DDR0_D14
MAAA15	AU21	DDR0_MA15	DDR0_D15
MODT_A0	AW10	DDR0_ODT0	DDR0_D16
MODT_A1	AY8	DDR0_ODT1	DDR0_D17
	AW9	DDR0_ODT2	DDR0_D18
	AW8	DDR0_ODT3	DDR0_D19
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LGA1150 (F, J)

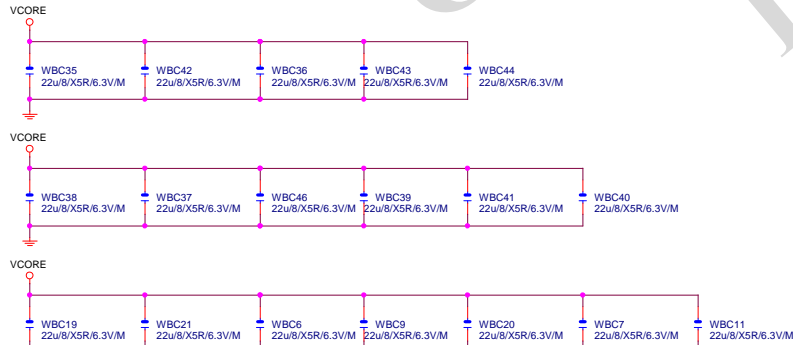


LGA1155 (G,H,I)



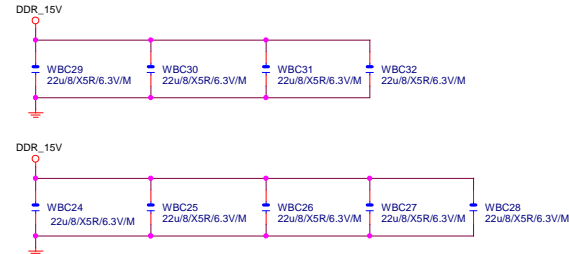
## VCore CAP

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## DDR CAP

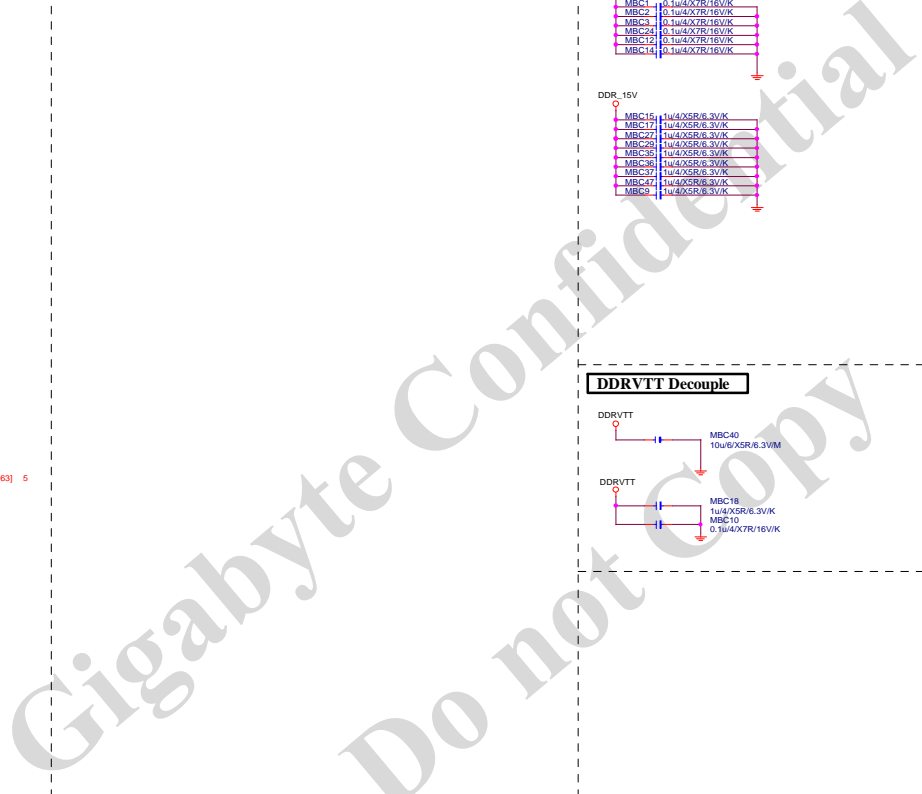
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## Gigabyte Technology

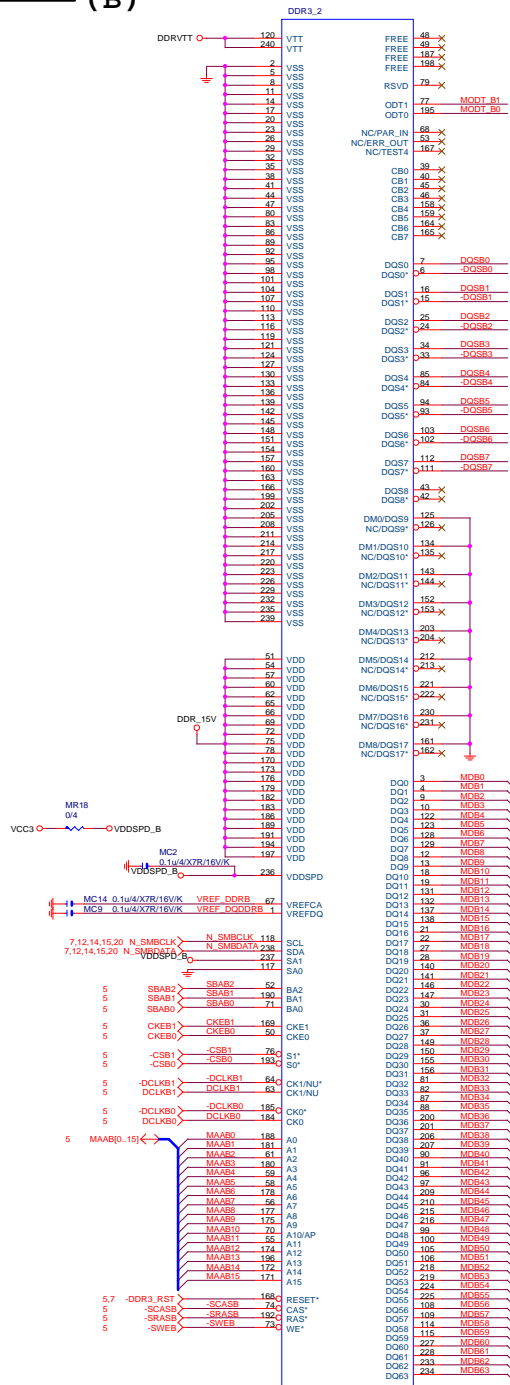
Title	CPU LGA1150-C
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Size Custom	Document Number <b>GA--H81M-DS2</b>	Rev <b>1.0</b>
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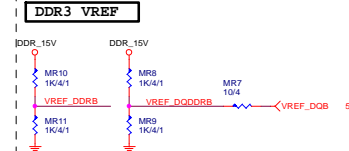
DDR3/240/BK/VAD

**BLACK CONNECTOR**

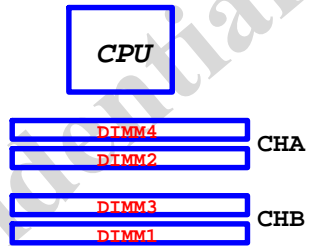
**-DQSB[0..7]**  **-DQSB[0..7]** 5

DQSB[0..7] < DQSB[0..7]

MODT\_BI[0..11]  $\longleftrightarrow$  MODT\_B[0..1] 5



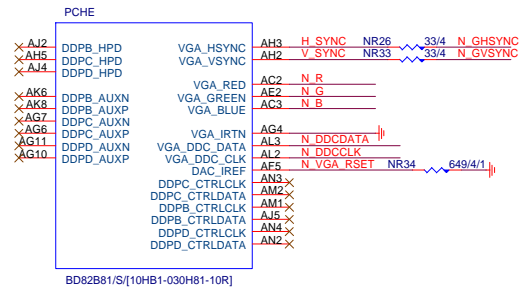
**COUPON**



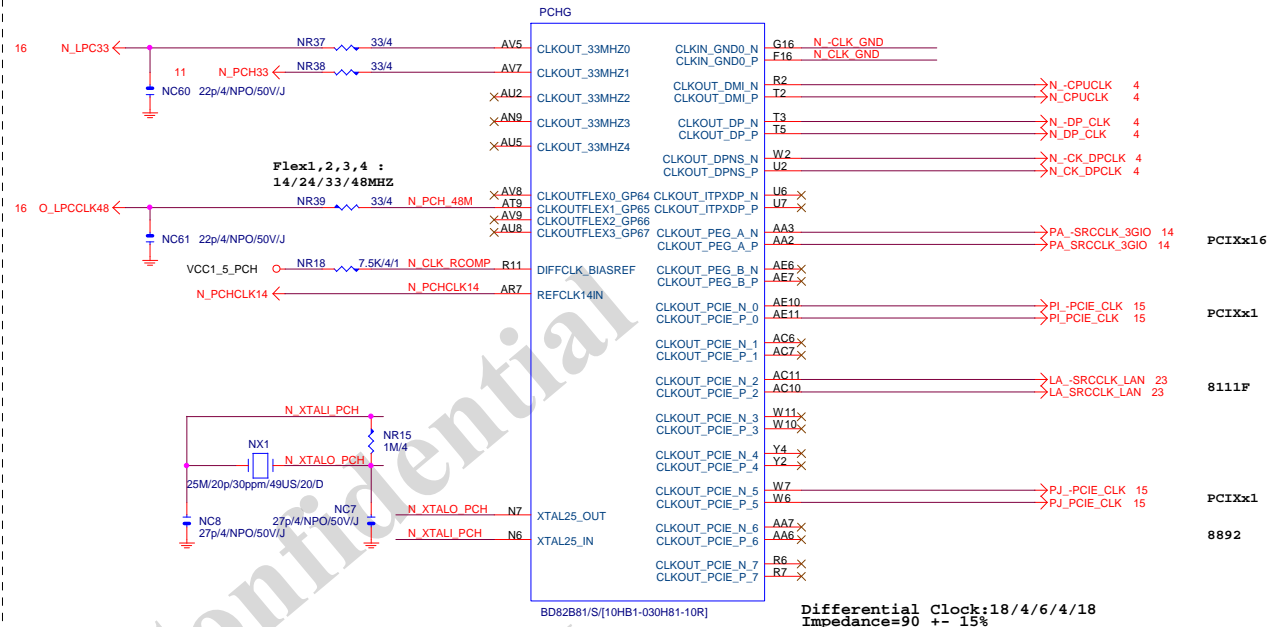




# PCH (E)

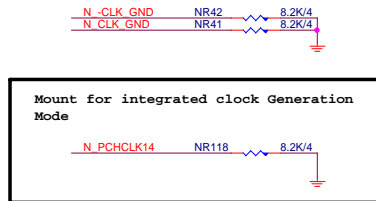


# PCH (G)

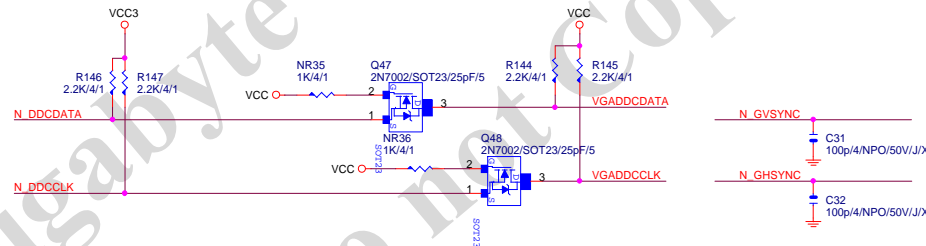


Differential Clock:18/4/6/4/18  
Impedance=90 +/- 15%

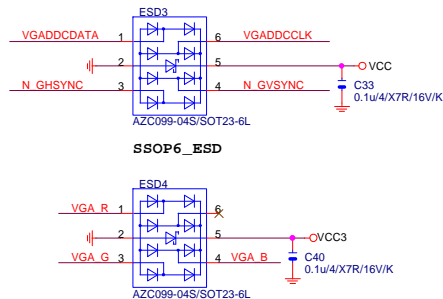
## PCH CLK PD



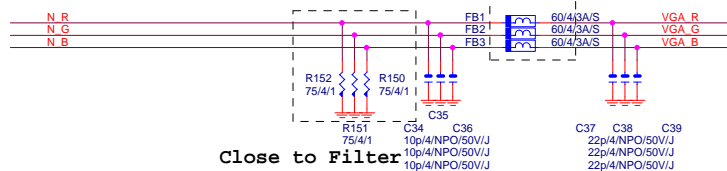
## VGA DDC



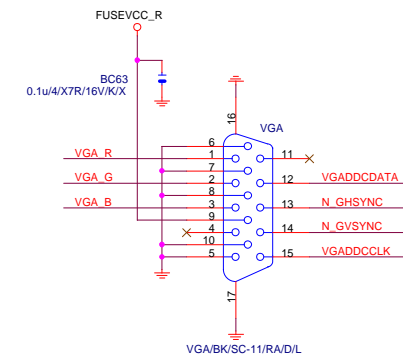
## VGA ESD



## VGA DDC



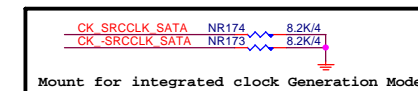
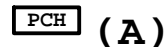
## VGA CONNECTOR



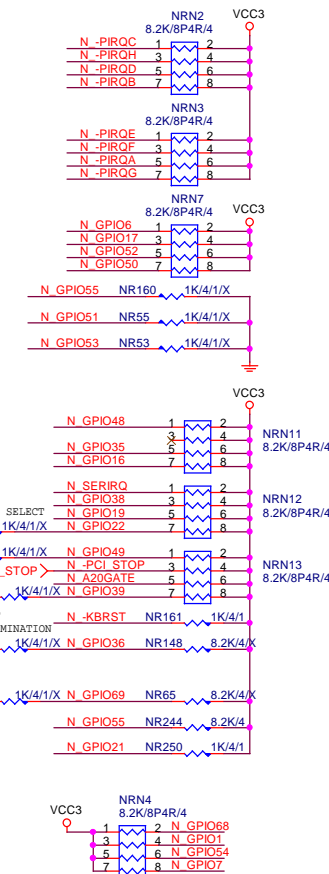
BLACK CONNECTOR

Gigabyte Technology			
PCH DISPLAY_CLK BUFFER			
GA-H81M-DS2			
Size	Document Number	Rev	1.0
Custom			
Date:	Friday, July 05, 2013	Sheet	10 of 29

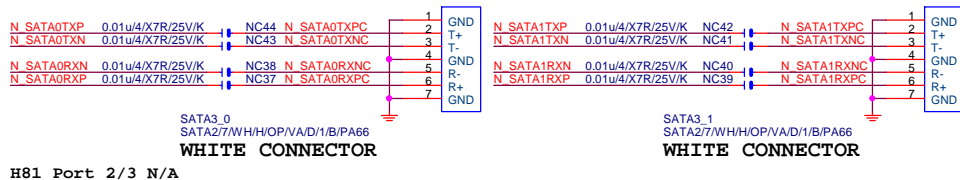
SATA3 : 20/7.5/4.5/7.5/20 (breakout min 8/4/4/4/8)  
Impedance=90 +- 17.5%  
SATA2 : 15/7.5/4.5/7.5/15 (breakout min 8/4/4/4/8)  
Impedance=90 +- 17.5%



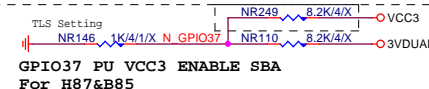
PCH	PU/PD
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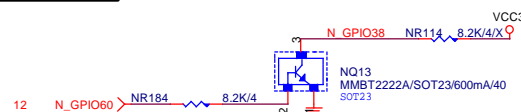
## SATA CONNECTOR



ME PWROK



GPI038 Ctrl



## Gigabyte Technology

Title				PCH HOST , SATA, PCI				Rev	
Size		Document Number		GA--H81M-DS2				1.0	
Custom									
Date:		Friday, July 05, 2013		Sheet		11		of 29	

# PCH (D)

16 N\_LAD[0..3] <-- N\_LAD[0..3]

PCHD

VCC3 O NR54 8.2K/4/XN GPIO23 AK26  
16 N\_LAD0 <-- N\_LAD0 AN24  
16 N\_LAD1 <-- N\_LAD1 AP26  
16 N\_LAD2 <-- N\_LAD2 AN26  
16 N\_LAD3 <-- N\_LAD3 AN26  
16 N\_LDRQ0 <-- N\_LDRQ0 AK22  
16 N\_LFRAME <-- N\_LFRAME AP24  
21 C\_ACZ\_BITCLK <-- NR45 33/4 AV23  
21 C\_ACZ\_RST <-- NR43 33/4 AU24  
21 C\_ACZ\_SDIN2 <-- NR44 33/4 A\_SO  
21 C\_ACZ\_SDO <-- NR46 33/4 A\_SYC  
21 C\_ACZ\_SYNC <-- NR46 33/4 A\_SYC  
19 N\_ICH\_SPL\_MOSI <-- P40  
19 N\_ICH\_SPL\_MISO <-- R36  
19 N\_ICH\_SPL\_CS <-- R38  
19 N\_ICH\_SPL\_CLK <-- U39  
19 SPI\_DQ2 <-- R35  
19 SPI\_DQ3 <-- R40  
19 SPI\_DQ4 <-- U40  
19 SPI\_DQ5 <-- U37  
N Y1 AN40  
N Y2 AN39  
N\_RTORST AR38  
N\_SRTCST AR39  
N\_INTRUDER AR41  
O\_PWROK1 AT40  
O\_RSMRST AM40  
N\_INTRVREN AV36  
N\_PCH\_DPWROK AV38  
N\_DSVMREN AM41  
N\_LPCPME AG31  
N\_SMBCLK AG36  
N\_SMBDATA AG32  
N\_GPIO60 AG35  
N\_SMLCLK AE32  
N\_SMLDAT AE35  
N\_PCH\_HOT AJ39  
N\_SML1CLK AK36  
N\_SML1DAT AK33  
LDRQ1B\_GP23  
LAD\_0  
LAD\_1  
LAD\_2  
LAD\_3  
LDRQ0B  
LFRAMEB  
HDA\_BCLK  
HDA\_RSTB  
HDA\_SDI0  
HDA\_SDI1  
HDA\_SDI2  
HDA\_SDI3  
HDA\_SDO  
HDA\_SYNC  
SPL\_MOSI\_IO0  
SPL\_MISO\_IO1  
SPL\_CS0B  
SPL\_CLK  
SPL\_CS1B  
SPL\_CS2B  
SPL\_IO2  
SPL\_IO3  
RTCX1  
RTCX2  
RTESTB  
SRTCSTB  
INTRUDERB  
PCH\_PWROK  
RSMRSTB  
INTRVREN  
DPWROK  
DSWODVREN  
SMBALERTB\_GP11  
SMBCLK  
SMBDATA  
SMLALERTB\_GP60  
SMLCLK  
SMLDAT  
SML1ALERTB\_PCHHOTB\_GP74  
SML1CLK\_GP58\_MGPIO11  
SML1DAT\_GP75\_MGPIO12  
BMBUSYB\_GP0  
CLKRUNB\_GP32  
DOCKENB\_GP33  
STPCIB\_GP34  
GP8  
LAN\_PHY\_PWR\_CTRL\_GP12  
HDA\_DOCK\_RSTB\_GP13  
GP15  
GP24  
GP28  
SLP\_WLANB\_GP29  
PCIECLKRQ0B\_GP73  
PCIECLKRQ1B\_GP18  
PCIECLKRQ2B\_GP20\_SMIIB  
PCIECLKRQ3B\_GP25  
PCIECLKRQ4B\_GP26  
PCIECLKRQ5B\_GP44  
PCIECLKRQ6B\_GP45  
PCIECLKRQ7B\_GP46  
GP8  
AL40  
AN22  
AC32  
V41  
AL39  
W34  
P39  
P37  
AA39  
W35  
AA36  
W32  
AA40  
AC36  
W31  
AE36  
AK34  
AK37  
AC38  
AK40  
AT35  
AA35  
AD37  
W36  
AJ37  
AC41  
AE38  
AU34  
AM36  
AK38  
AK41  
CN36  
P32  
D40  
W37  
Y40  
Y39  
Y38  
W40  
GP57  
SYS\_PWROK  
RIB  
WAKEB  
SLP\_AB  
SLP\_LANB  
SLP\_S0B  
SLP\_S3B  
SLP\_S4B  
SLP\_S5B  
SUS\_STATB\_GP61  
SUSCLKB\_GP62  
GP72  
SUSACKB  
SUSWARNB\_SUSPWDRNACK\_GP30  
DRAMPWROK  
GP27  
ACPRESENT\_GP31\_MGPIO2  
SLP\_SUSEB  
PWRBTN  
SYS\_RESETB  
SPKR  
PROC\_PWROK  
TP13  
JTAG\_TCK  
JTAG\_TDI  
JTAG\_TDO  
JTAG\_TMS  
BD82B81/S[10HB1-030H81-10R]  
O\_PWROK1  
NC51  
0.01u/4/X7R/25V/K/X  
Reserve for EMI test

19 N\_ICH\_SPL\_MOSI <-- P40  
19 N\_ICH\_SPL\_MISO <-- R36  
19 N\_ICH\_SPL\_CS <-- R38  
19 N\_ICH\_SPL\_CLK <-- U39  
19 SPI\_DQ2 <-- R35  
19 SPI\_DQ3 <-- R40  
19 SPI\_DQ4 <-- U40  
19 SPI\_DQ5 <-- U37

N Y1 AN40  
N Y2 AN39  
N\_RTORST AR38  
N\_SRTCST AR39  
N\_INTRUDER AR41  
O\_PWROK1 AT40  
O\_RSMRST AM40  
N\_INTRVREN AV36  
N\_PCH\_DPWROK AV38  
N\_DSVMREN AM41

N\_LPCPME AG31  
N\_SMBCLK AG36  
N\_SMBDATA AG32  
N\_GPIO60 AG35  
N\_SMLCLK AE32  
N\_SMLDAT AE35  
N\_PCH\_HOT AJ39  
N\_SML1CLK AK36  
N\_SML1DAT AK33

LDRQ1B\_GP23  
LAD\_0  
LAD\_1  
LAD\_2  
LAD\_3  
LDRQ0B  
LFRAMEB  
HDA\_BCLK  
HDA\_RSTB  
HDA\_SDI0  
HDA\_SDI1  
HDA\_SDI2  
HDA\_SDI3  
HDA\_SDO  
HDA\_SYNC

SPL\_MOSI\_IO0  
SPL\_MISO\_IO1  
SPL\_CS0B  
SPL\_CLK  
SPL\_CS1B  
SPL\_CS2B  
SPL\_IO2  
SPL\_IO3  
RTCX1  
RTCX2  
RTESTB  
SRTCSTB  
INTRUDERB  
PCH\_PWROK  
RSMRSTB  
INTRVREN  
DPWROK  
DSWODVREN

SMBALERTB\_GP11  
SMBCLK  
SMBDATA  
SMLALERTB\_GP60  
SMLCLK  
SMLDAT  
SML1ALERTB\_PCHHOTB\_GP74  
SML1CLK\_GP58\_MGPIO11  
SML1DAT\_GP75\_MGPIO12

BMBUSYB\_GP0  
CLKRUNB\_GP32  
DOCKENB\_GP33  
STPCIB\_GP34  
GP8  
LAN\_PHY\_PWR\_CTRL\_GP12  
HDA\_DOCK\_RSTB\_GP13  
GP15  
GP24  
GP28  
SLP\_WLANB\_GP29  
PCIECLKRQ0B\_GP73  
PCIECLKRQ1B\_GP18  
PCIECLKRQ2B\_GP20\_SMIIB  
PCIECLKRQ3B\_GP25  
PCIECLKRQ4B\_GP26  
PCIECLKRQ5B\_GP44  
PCIECLKRQ6B\_GP45  
PCIECLKRQ7B\_GP46

GP8  
AL40  
AN22  
AC32  
V41  
AL39  
W34  
P39  
P37  
AA39  
W35  
AA36  
W32  
AA40  
AC36  
W31  
AE36  
AK34  
AK37  
AC38  
AK40  
AT35  
AA35  
AD37  
W36  
AJ37  
AC41  
AE38  
AU34  
AM36  
AK38  
AK41  
CN36  
P32  
D40  
W37  
Y40  
Y39  
Y38  
W40

GP57  
SYS\_PWROK  
RIB  
WAKEB  
SLP\_AB  
SLP\_LANB  
SLP\_S0B  
SLP\_S3B  
SLP\_S4B  
SLP\_S5B  
SUS\_STATB\_GP61  
SUSCLKB\_GP62  
GP72  
SUSACKB  
SUSWARNB\_SUSPWDRNACK\_GP30  
DRAMPWROK  
GP27  
ACPRESENT\_GP31\_MGPIO2  
SLP\_SUSEB  
PWRBTN  
SYS\_RESETB  
SPKR  
PROC\_PWROK  
TP13  
JTAG\_TCK  
JTAG\_TDI  
JTAG\_TDO  
JTAG\_TMS

BD82B81/S[10HB1-030H81-10R]  
O\_PWROK1  
NC51  
0.01u/4/X7R/25V/K/X  
Reserve for EMI test

At least 40ns lead fall  
to 0V before 3VDUAL\_PCH  
fall to 2V  
At least 10ms delay after  
3VDUAL\_PCH stabel

At least 40ns lead fall  
to 0V before 3VDUAL\_PCH  
fall to 2V  
At least 10ms delay after  
3VDUAL\_PCH stabel

At least 40ns lead fall  
to 0V before 3VDUAL\_PCH  
fall to 2V  
At least 10ms delay after  
3VDUAL\_PCH stabel

At least 40ns lead fall  
to 0V before 3VDUAL\_PCH  
fall to 2V  
At least 10ms delay after  
3VDUAL\_PCH stabel

At least 40ns lead fall  
to 0V before 3VDUAL\_PCH  
fall to 2V  
At least 10ms delay after  
3VDUAL\_PCH stabel

At least 40ns lead fall  
to 0V before 3VDUAL\_PCH  
fall to 2V  
At least 10ms delay after  
3VDUAL\_PCH stabel

At least 40ns lead fall  
to 0V before 3VDUAL\_PCH  
fall to 2V  
At least 10ms delay after  
3VDUAL\_PCH stabel

At least 40ns lead fall  
to 0V before 3VDUAL\_PCH  
fall to 2V  
At least 10ms delay after  
3VDUAL\_PCH stabel

At least 40ns lead fall  
to 0V before 3VDUAL\_PCH  
fall to 2V  
At least 10ms delay after  
3VDUAL\_PCH stabel

At least 40ns lead fall  
to 0V before 3VDUAL\_PCH  
fall to 2V  
At least 10ms delay after  
3VDUAL\_PCH stabel

At least 40ns lead fall  
to 0V before 3VDUAL\_PCH  
fall to 2V  
At least 10ms delay after  
3VDUAL\_PCH stabel

At least 40ns lead fall  
to 0V before 3VDUAL\_PCH  
fall to 2V  
At least 10ms delay after  
3VDUAL\_PCH stabel

At least 40ns lead fall  
to 0V before 3VDUAL\_PCH  
fall to 2V  
At least 10ms delay after  
3VDUAL\_PCH stabel

At least 40ns lead fall  
to 0V before 3VDUAL\_PCH  
fall to 2V  
At least 10ms delay after  
3VDUAL\_PCH stabel

At least 40ns lead fall  
to 0V before 3VDUAL\_PCH  
fall to 2V  
At least 10ms delay after  
3VDUAL\_PCH stabel

At least 40ns lead fall  
to 0V before 3VDUAL\_PCH  
fall to 2V  
At least 10ms delay after  
3VDUAL\_PCH stabel

## ACZ\_SDOUT

NR140 8.2K/4 C ACZ\_SDOUT

NR140 8.2K/4 C ACZ\_SDOUT

NR140 8.2K/4 C ACZ\_SDOUT

NR140 8.2K/4 C ACZ\_SDOUT

NR140 8.2K/4 C ACZ\_SDOUT

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NR140 8.2K/4 C ACZ\_SDOUT

NR140 8.2K/4 C ACZ\_SDOUT

NR140 8.2K/4 C ACZ\_SDOUT

NR140 8.2K/4 C ACZ\_SDOUT

NR140 8.2K/4 C ACZ\_SDOUT

NR140 8.2K/4 C ACZ\_SDOUT

## PCH PU/PD

NR139 8.2K/4/X N GPIO46 1 2  
NR155 8.2K/4/X N GPIO45 3 4  
NR103 8.2K/4/X N GPIO44 5 6  
N GPIO57 7 8  
NRN9 8.2K/8P4R/4  
NRN10 8.2K/8P4R/4  
NR106 1K/4/1 N -IGC\_EN NR105 8.2K/4/X  
NR153 1K/4/1X N SUSCLK NR154 8.2K/4/X  
N -SUSTAT NR133 8.2K/4/X  
N -D\_GPIO\_HRST NR51 1K/4/1  
N GPIO28 NR144 1K/4/1  
N GPIO29 NR96 1K/4/1  
NR129 8.2K/4  
NR60 8.2K/4  
NR72 8.2K/4  
NR73 8.2K/4/X  
NR100 8.2K/4  
NR76 1K/4/1  
NR95 1K/4/1X  
NR145 8.2K/4/X N GPIO20 NR109 1K/4/1  
N GPIO0 NR115 8.2K/4  
N -SYS\_RST NR164 8.2K/4  
N GPIO32 NR162 8.2K/4/X  
N GPIO33 NR49 8.2K/4  
NR172 20K/4/1  
NR170 200/4/1  
NR141 200/4/1  
NR169 200/4/1  
NR87 200/4/1X  
NR143 1K/4/1X  
NR171 100/4/1  
NR168 100/4/1  
NR142 100/4/1  
NR108 51/4/1  
NR79 8.2K/4  
NR134 8.2K/4  
NR107 8.2K/4  
NR137 8.2K/4  
NC58 1n/4/X/R/50V/K  
NC59 1n/4/X/R/50V/K  
NR6 8.2K/8P4R/4  
NR117 1K/4/1 N SML1CLK  
NR120 1K/4/1 N SML1DAT  
NR122 499/4/1 N SML0CLK  
NR123 499/4/1 N SML0DAT  
NR121 1K/4/1 N SMBCLK  
NR97 1K/4/1 N SMBDATA  
NR172 20K/4/1  
NR170 200/4/1  
NR141 200/4/1  
NR169 200/4/1  
NR87 200/4/1X  
NR143 1K/4/1X  
NR171 100/4/1  
NR168 100/4/1  
NR142 100/4/1  
NR108 51/4/1  
NR79 8.2K/4  
NR134 8.2K/4  
NR107 8.2K/4  
NR137 8.2K/4  
NC58 1n/4/X/R/50V/K  
NC59 1n/4/X/R/50V/K  
NR6 8.2K/8P4R/4  
NR117 1K/4/1 N SML1CLK  
NR120 1K/4/1 N SML1DAT  
NR122 499/4/1 N SML0CLK  
NR123 499/4/1 N SML0DAT  
NR121 1K/4/1 N SMBCLK  
NR97 1K/4/1 N SMBDATA

NR139 8.2K/4/X N GPIO46 1 2  
NR155 8.2K/4/X N GPIO45 3 4  
NR103 8.2K/4/X N GPIO44 5 6  
N GPIO57 7 8  
NRN9 8.2K/8P4R/4  
NRN10 8.2K/8P4R/4  
NR106 1K/4/1 N -IGC\_EN NR105 8.2K/4/X  
NR153 1K/4/1X N SUSCLK NR154 8.2K/4/X  
N -SUSTAT NR133 8.2K/4/X  
N -D\_GPIO\_HRST NR51 1K/4/1  
N GPIO28 NR144 1K/4/1  
N GPIO29 NR96 1K/4/1  
NR129 8.2K/4  
NR60 8.2K/4  
NR72 8.2K/4  
NR73 8.2K/4/X  
NR100 8.2K/4  
NR76 1K/4/1  
NR95 1K/4/1X  
NR145 8.2K/4/X N GPIO20 NR109 1K/4/1  
N GPIO0 NR115 8.2K/4  
N -SYS\_RST NR164 8.2K/4  
N GPIO32 NR162 8.2K/4/X  
N GPIO33 NR49 8.2K/4  
NR172 20K/4/1  
NR170 200/4/1  
NR141 200/4/1  
NR169 200/4/1  
NR87 200/4/1X  
NR143 1K/4/1X  
NR171 100/4/1  
NR168 100/4/1  
NR142 100/4/1  
NR108 51/4/1  
NR79 8.2K/4  
NR134 8.2K/4  
NR107 8.2K/4  
NR137 8.2K/4  
NC58 1n/4/X/R/50V/K  
NC59 1n/4/X/R/50V/K  
NR6 8.2K/8P4R/4  
NR117 1K/4/1 N SML1CLK  
NR120 1K/4/1 N SML1DAT  
NR122 499/4/1 N SML0CLK  
NR123 499/4/1 N SML0DAT  
NR121 1K/4/1 N SMBCLK  
NR97 1K/4/1 N SMBDATA

NR139 8.2K/4/X N GPIO46 1 2  
NR155 8.2K/4/X N GPIO45 3 4  
NR103 8.2K/4/X N GPIO44 5 6  
N GPIO57 7 8  
NRN9 8.2K/8P4R/4  
NRN10 8.2K/8P4R/4  
NR106 1K/4/1 N -IGC\_EN NR105 8.2K/4/X  
NR153 1K/4/1X N SUSCLK NR154 8.2K/4/X  
N -SUSTAT NR133 8.2K/4/X  
N -D\_GPIO\_HRST NR51 1K/4/1  
N GPIO28 NR144 1K/4/1  
N GPIO29 NR96 1K/4/1  
NR129 8.2K/4  
NR60 8.2K/4  
NR72 8.2K/4  
NR73 8.2K/4/X  
NR100 8.2K/4  
NR76 1K/4/1  
NR95 1K/4/1X  
NR145 8.2K/4/X N GPIO20 NR109 1K/4/1  
N GPIO0 NR115 8.2K/4  
N -SYS\_RST NR164 8.2K/4  
N GPIO32 NR162 8.2K/4/X  
N GPIO33 NR49 8.2K/4  
NR172 20K/4/1  
NR170 200/4/1  
NR141 200/4/1  
NR169 200/4/1  
NR87 200/4/1X  
NR143 1K/4/1X  
NR171 100/4/1  
NR168 100/4/1  
NR142 100/4/1  
NR108 51/4/1  
NR79 8.2K/4  
NR134 8.2K/4  
NR107 8.2K/4  
NR137 8.2K/4  
NC58 1n/4/X/R/50V/K  
NC59 1n/4/X/R/50V/K  
NR6 8.2K/8P4R/4  
NR117 1K/4/1 N SML1CLK  
NR120 1K/4/1 N SML1DAT  
NR122 499/4/1 N SML0CLK  
NR123 499/4/1 N SML0DAT  
NR121 1K/4/1 N SMBCLK  
NR97 1K/4/1 N SMBDATA

NR139 8.2K/4/X N GPIO46 1 2  
NR155 8.2K/4/X N GPIO45 3 4  
NR103 8.2K/4/X N GPIO44 5 6  
N GPIO57 7 8  
NRN9 8.2K/8P4R/4  
NRN10 8.2K/8P4R/4  
NR106 1K/4/1 N -IGC\_EN NR105 8.2K/4/X  
NR153 1K/4/1X N SUSCLK NR154 8.2K/4/X  
N -SUSTAT NR133 8.2K/4/X  
N -D\_GPIO\_HRST NR51 1K/4/1  
N GPIO28 NR144 1K/4/1  
N GPIO29 NR96 1K/4/1  
NR129 8.2K/4  
NR60 8.2K/4  
NR72 8.2K/4  
NR73 8.2K/4/X  
NR100 8.2K/4  
NR76 1K/4/1  
NR95 1K/4/1X  
NR145 8.2K/4/X N GPIO20 NR109 1K/4/1  
N GPIO0 NR115 8.2K/4  
N -SYS\_RST NR164 8.2K/4  
N GPIO32 NR162 8.2K/4/X  
N GPIO33 NR49 8.2K/4  
NR172 20K/4/1  
NR170 200/4/1  
NR141 200/4/1  
NR169 200/4/1  
NR87 200/4/1X  
NR143 1K/4/1X  
NR171 100/4/1  
NR168 100/4/1  
NR142 100/4/1  
NR108 51/4/1  
NR79 8.2K/4  
NR134 8.2K/4  
NR107 8.2K/4  
NR137 8.2K/4  
NC58 1n/4/X/R/50V/K  
NC59 1n/4/X/R/50V/K  
NR6 8.2K/8P4R/4  
NR117 1K/4/1 N SML1CLK  
NR120 1K/4/1 N SML1DAT  
NR122 499/4/1 N SML0CLK  
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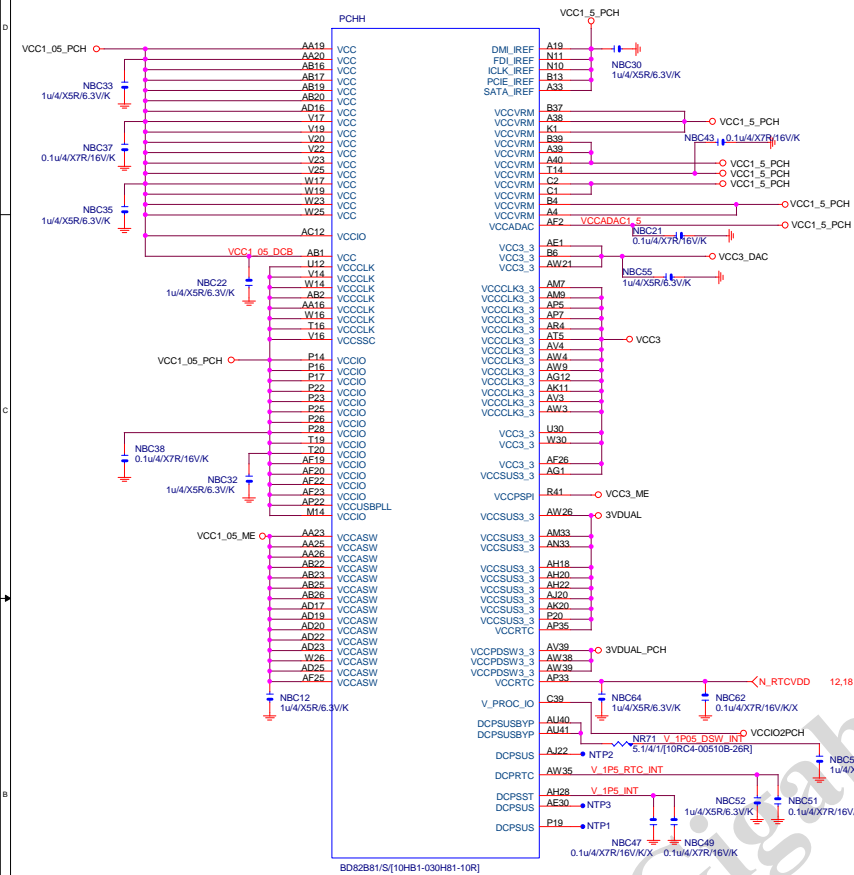
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N GPIO57 7 8  
NRN9 8.2K/8P4R/4  
NRN10 8.2K/8P4R/4  
NR106 1K/4/1 N -IGC\_EN NR105 8.2K/4/X  
NR153 1K/4/1X N SUSCLK NR154 8.2K/4/X  
N -SUSTAT NR133 8.2K/4/X  
N -D\_GPIO\_HRST NR51 1K/4/1  
N GPIO28 NR144 1K/4/1  
N GPIO29 NR96 1K/4/1  
NR129 8.2K/4  
NR60 8.2K/4  
NR72 8.2K/4  
NR73 8.2K/4/X  
NR100 8.2K/4  
NR76 1K/4/1  
NR95 1K/4/1X  
NR145 8.2K/4/X N GPIO20 NR109 1K/4/1  
N GPIO0 NR115 8.2K/4  
N -SYS\_RST NR164 8.2K/4  
N GPIO32 NR162 8.2K/4/X  
N GPIO33 NR49 8.2K/4  
NR172 20K/4/1  
NR170 200/4/1  
NR141 200/4/1  
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NR134 8.2K/4  
NR107 8.2K/4  
NR137 8.2K/4  
NC58 1n/4/X/R/50V/K  
NC59 1n/4/X/R/50V/K  
NR6 8.2K/8P4R/4  
NR117 1K/4/1 N SML1CLK  
NR120 1K/4/1 N SML1DAT  
NR122 499/4/1 N SML0CLK  
NR123 499/4/1 N SML0DAT  
NR121 1K/4/1 N SMBCLK  
NR97 1K/4/1 N SMBDATA

NR139 8.2K/4/X N GPIO46 1 2  
NR155 8.2K/4/X N GPIO45 3 4  
NR103 8.2K/4/X N GPIO44 5 6  
N GPIO57 7 8  
NRN9 8.2K/8P4R/4  
NRN10 8.2K/8P4R/4  
NR106 1K/4/1 N -IGC\_EN NR105 8.2K/4/X  
NR153 1K/4/1X N SUSCLK NR154 8.2K/4/X  
N -SUSTAT NR133 8.2K/4/X  
N -D\_GPIO\_HRST NR51 1K/4/1  
N GPIO28 NR144 1K/4/1  
N GPIO29 NR96 1K/4/1  
NR129 8.2K/4  
NR60 8.2K/4  
NR72 8.2K/4  
NR73 8.2K/4/X  
NR100 8.2K/4  
NR76 1K/4/1  
NR95 1K/4/1X  
NR145 8.2K/4/X N GPIO20 NR109 1K/4/1  
N GPIO0 NR115 8.2K/4  
N -SYS\_RST NR164 8.2K/4  
N GPIO32 NR162 8.2K/4/X  
N GPIO33 NR49 8.2K/4  
NR172 20K/4/1  
NR170 200/4/1  
NR141 200/4/1  
NR169 200/4/1  
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NR6 8.2K/8P4R/4  
NR117 1K/4/1 N SML1CLK  
NR120 1K/4/1 N SML1DAT  
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NR121 1K/4/1 N SMBCLK  
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NR139 8.2K/4/X N GPIO46 1 2  
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NR103 8.2K/4/X N GPIO44 5 6  
N GPIO57 7 8  
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NR106 1K/4/1 N -IGC\_EN NR105 8.2K/4/X  
NR153 1K/4/1X N SUSCLK NR154 8.2K/4/X  
N -SUSTAT NR133 8.2K/4/X  
N -D\_GPIO\_HRST NR51 1K/4/1  
N GPIO28 NR144 1K/4/1  
N GPIO29 NR96 1K/4/1  
NR129 8.2K/4  
NR60 8.2K/4  
NR72 8.2K/4  
NR73 8.2K/4/X  
NR100 8.2K/4  
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NR95 1K/4/1X  
NR145 8.2K/4/X N GPIO20 NR109 1K/4/1  
N GPIO0 NR115 8.2K/4  
N -SYS\_RST NR164 8.2K/4  
N GPIO32 NR162 8.2K/4/X  
N GPIO33 NR49 8.2K/4  
NR172 20K/4/1  
NR170 200/4/1  
NR141 200/4/1  
NR169 200/4/1  
NR87 200/4/1X  
NR143 1K/4/1X  
NR171 100/4/1  
NR168 100/4/1  
NR142 100/4/1  
NR108 51/4/1  
NR79 8.2K/4  
NR134 8.2K/4  
NR107 8.2K/4  
NR137 8.2K/4  
NC58 1n/4/X/R/50V/K  
NC59 1n/4/X/R/50V/K  
NR6 8.2K/8P4R/4  
NR117 1K/4/1 N SML1CLK  
NR120 1K/4/1 N SML1DAT  
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NR121 1K/4/1 N SMBCLK  
NR97 1K/4/1 N SMBDATA

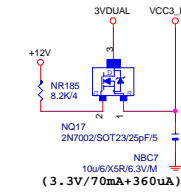
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NR155 8.2K/4/X N GPIO45 3 4  
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N GPIO57 7 8  
NRN9 8.2K/8P4R/4  
NRN10

PCH (H)

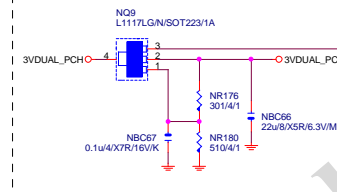


VCC3\_DAC

CLOSE北橋(注意震盪水波紋)



3VDUAL\_PCH

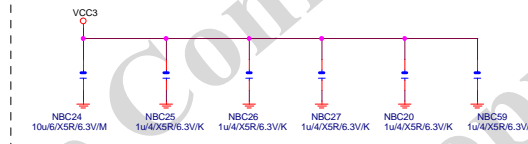


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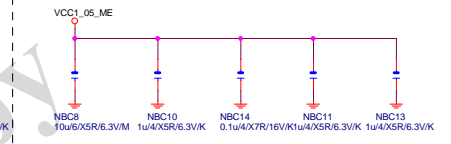


CAP

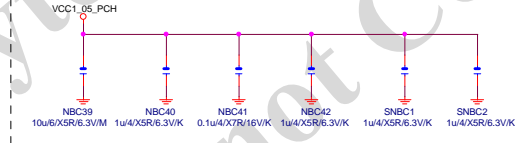
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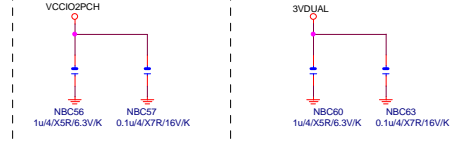
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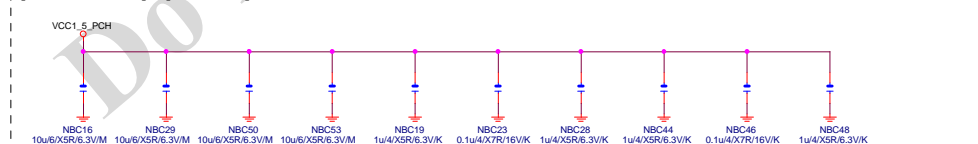
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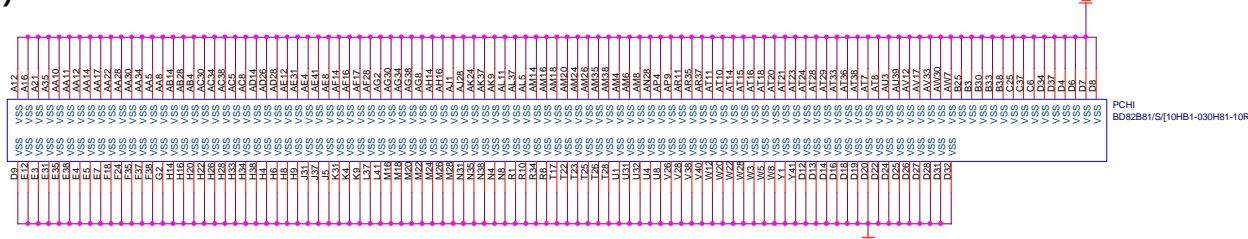
(1.05V) (X2) (3.3V) (X2)



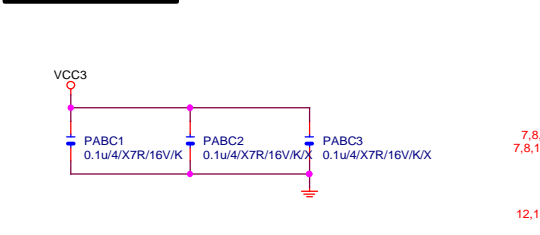
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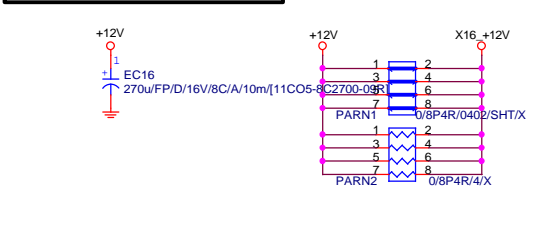
PCH (I)



# 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	PAC19	0.22u4/X5R/6.3V/K	PA EXP TXP7 C
PA EXP TXN7	PAC18	0.22u4/X5R/6.3V/K	PA EXP TXN7 C
PA EXP TXP8	PAC20	0.22u4/X5R/6.3V/K	PA EXP TXP8 C
PA EXP TXN8	PAC21	0.22u4/X5R/6.3V/K	PA EXP TXN8 C
PA EXP TXP9	PAC22	0.22u4/X5R/6.3V/K	PA EXP TXP9 C
PA EXP TXN9	PAC23	0.22u4/X5R/6.3V/K	PA EXP TXN9 C
PA EXP TXP10	PAC24	0.22u4/X5R/6.3V/K	PA EXP TXP10 C
PA EXP TXN10	PAC25	0.22u4/X5R/6.3V/K	PA EXP TXN10 C
PA EXP TXP11	PAC26	0.22u4/X5R/6.3V/K	PA EXP TXP11 C
PA EXP TXN11	PAC27	0.22u4/X5R/6.3V/K	PA EXP TXN11 C
PA EXP TXP12	PAC28	0.22u4/X5R/6.3V/K	PA EXP TXP12 C
PA EXP TXN12	PAC29	0.22u4/X5R/6.3V/K	PA EXP TXN12 C
PA EXP TXP13	PAC30	0.22u4/X5R/6.3V/K	PA EXP TXP13 C
PA EXP TXN13	PAC31	0.22u4/X5R/6.3V/K	PA EXP TXN13 C
PA EXP TXP14	PAC32	0.22u4/X5R/6.3V/K	PA EXP TXP14 C
PA EXP TXN14	PAC33	0.22u4/X5R/6.3V/K	PA EXP TXN14 C
PA EXP TXP15	PAC34	0.22u4/X5R/6.3V/K	PA EXP TXP15 C
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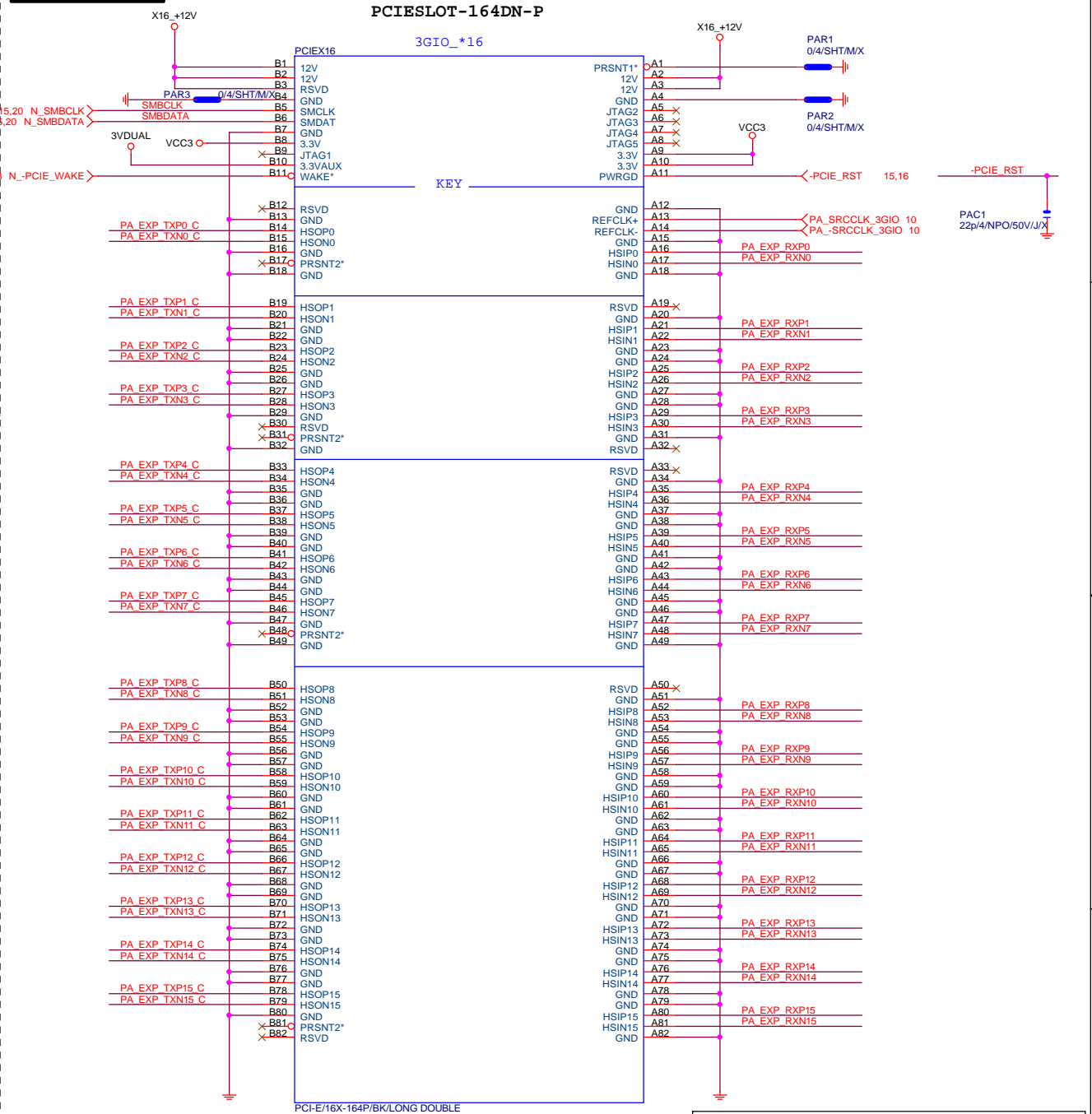
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PA EXP RXN0.[15] >>>PA\_EXP\_RXN[0..15] 4

PA EXP TXIP0.[15] >>>PA\_EXP\_TXIP[0..15] 4

PA EXP TXN0.[15] >>>PA\_EXP\_TXN[0..15] 4

# PCIEX16 SLOT



BLACK CONNECTOR

Gigabyte Technology

Title

PCI EXPRESS \* 16

Size

Document Number

Rev

Custom

GA--H81M-DS2

1.0

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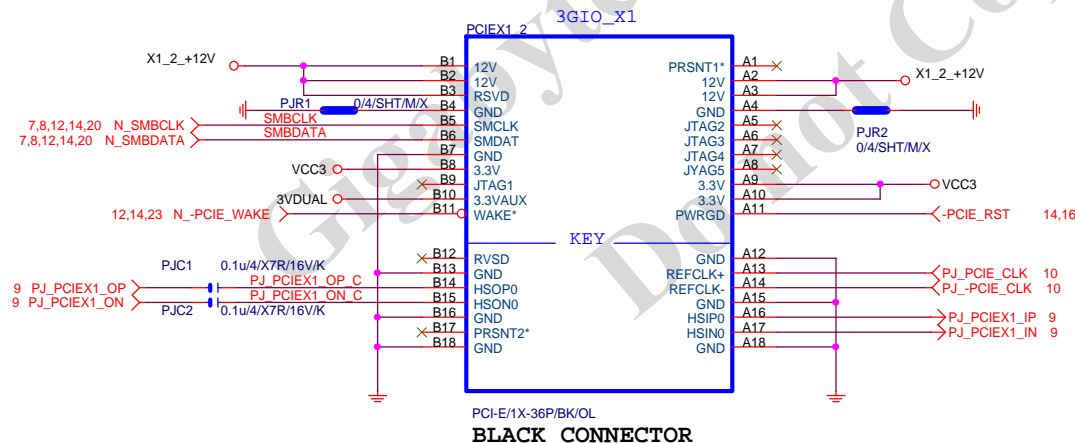
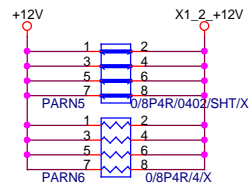
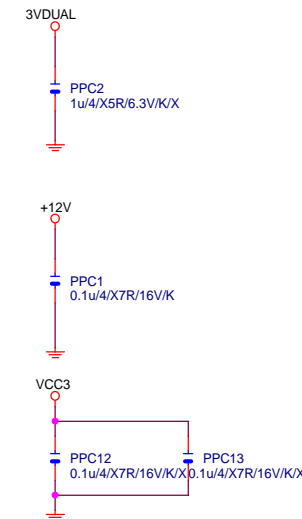
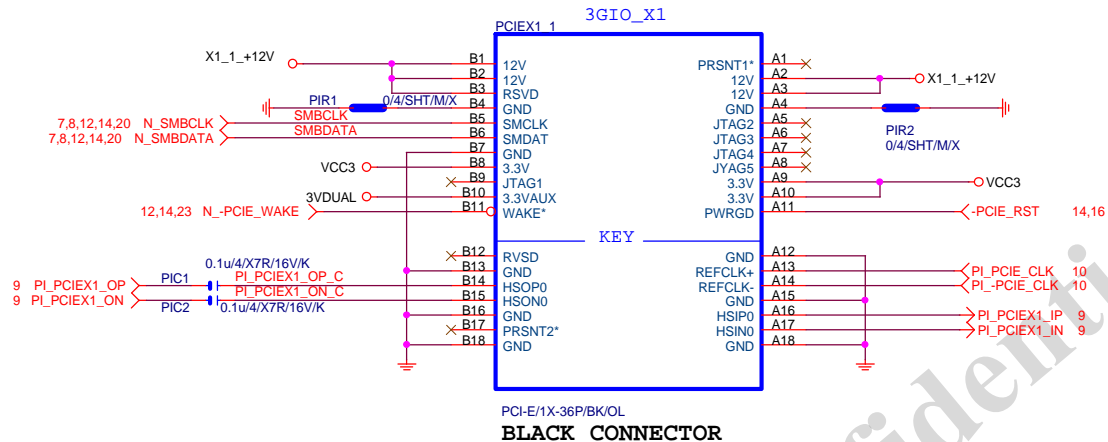
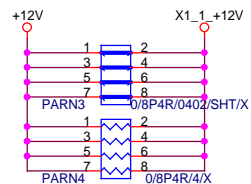
of

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# PCIEX1 SLOT

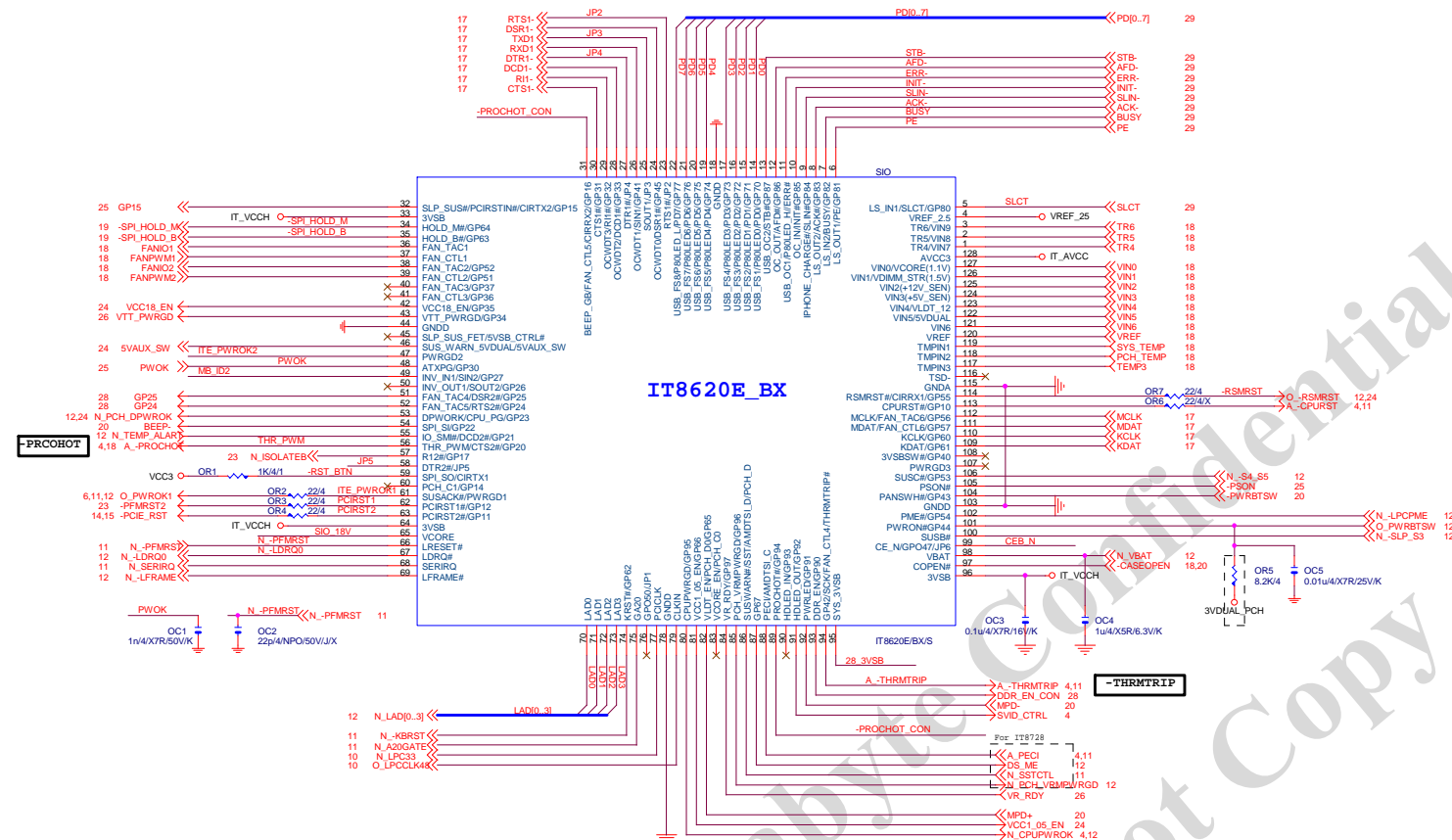
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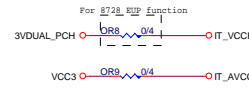
Gigabyte Technology			
PCI EXPRESS X 1 PORT			
Title	Document Number	Rev	
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Date:	Friday, July 05, 2013	Sheet	15 of 29



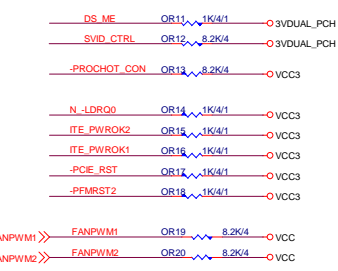
SIO IT8620



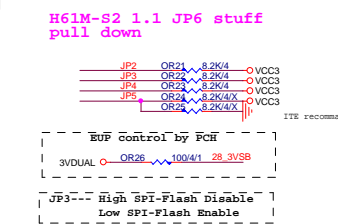
PWR SHT



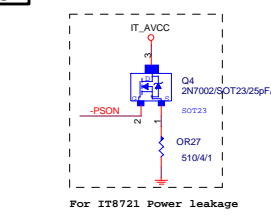
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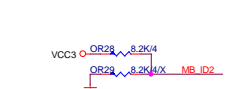
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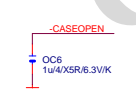
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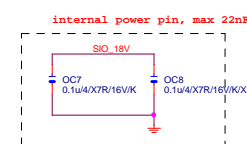
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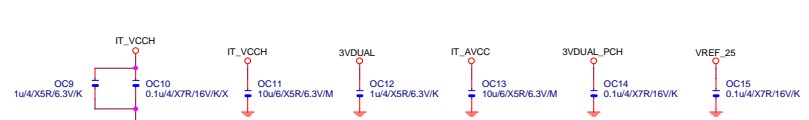
DUAL BIOS OPT STRAP

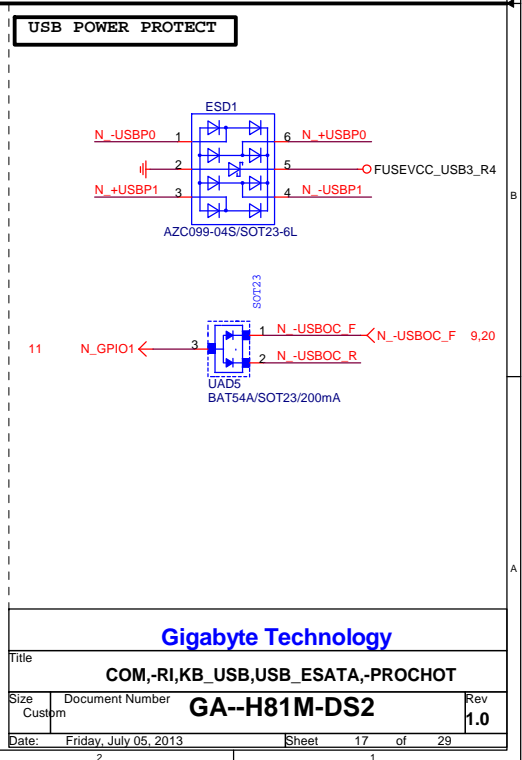
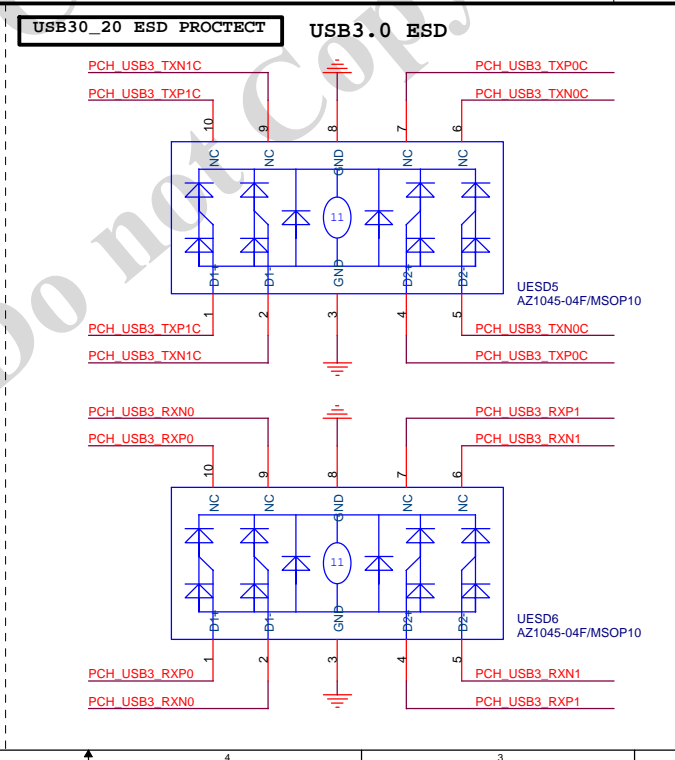
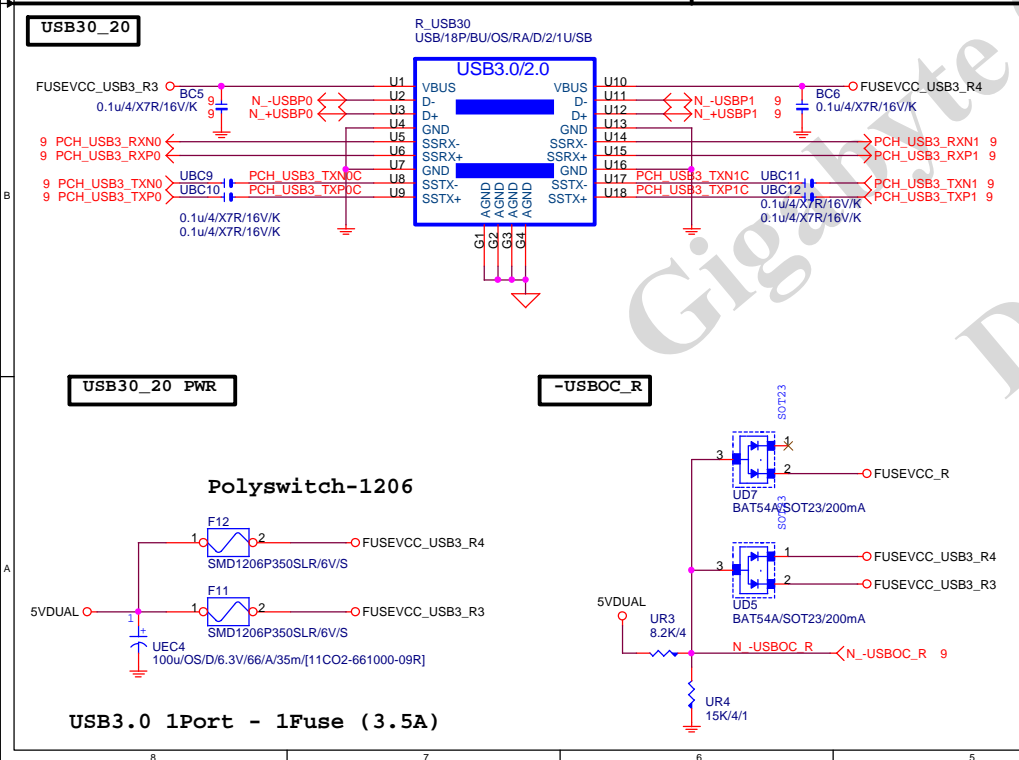
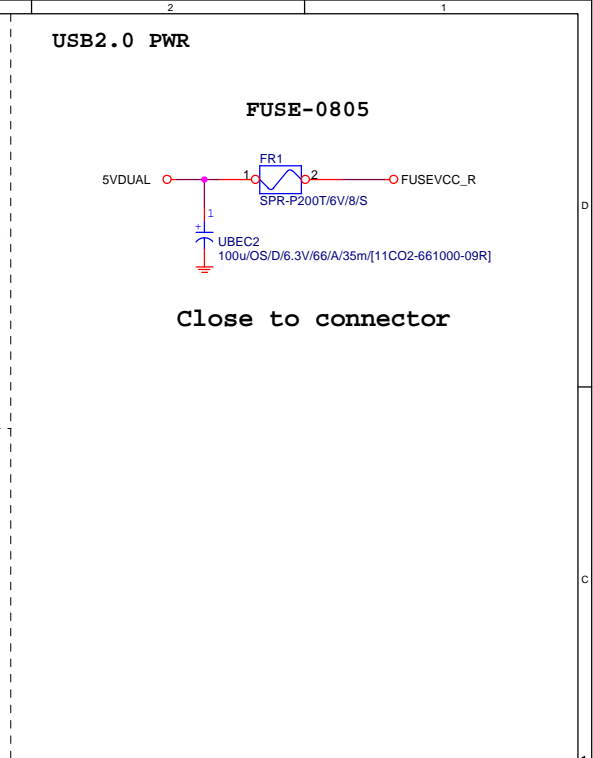
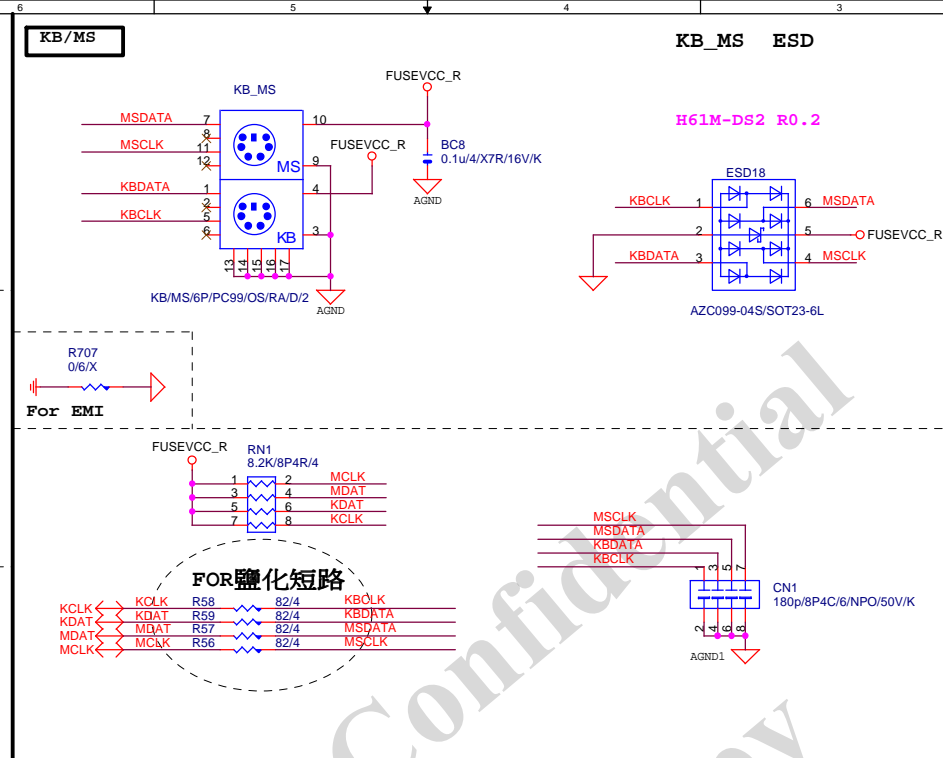
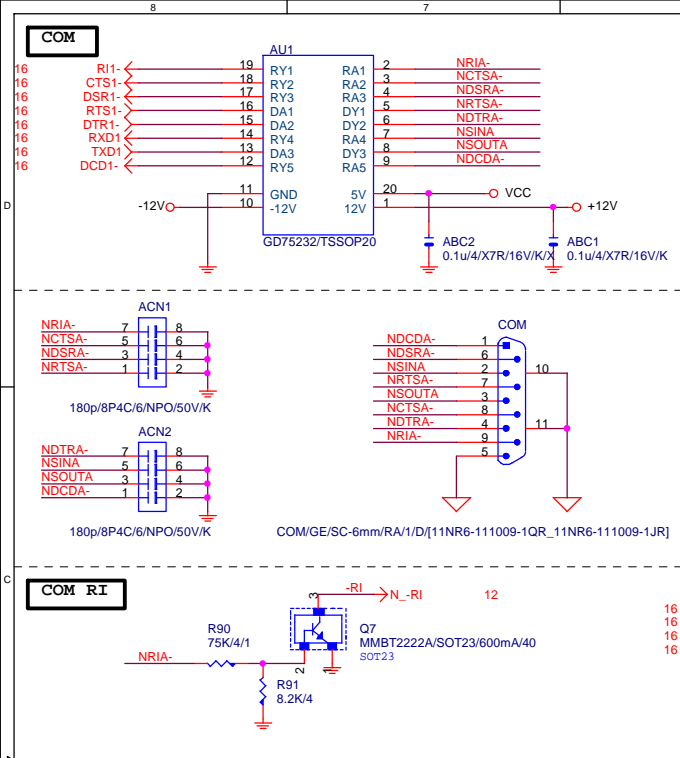


SIO 18V

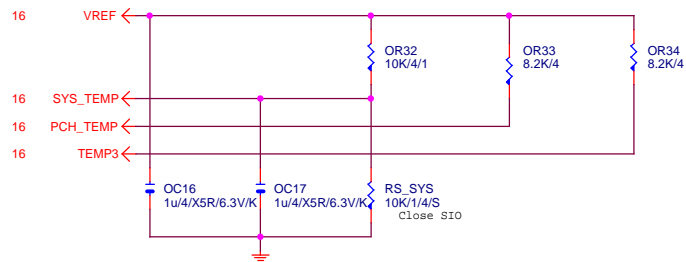


SIO CAP

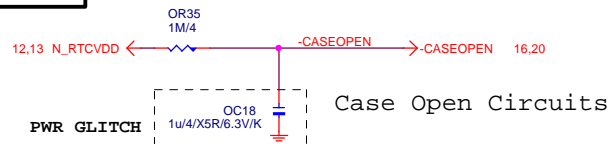




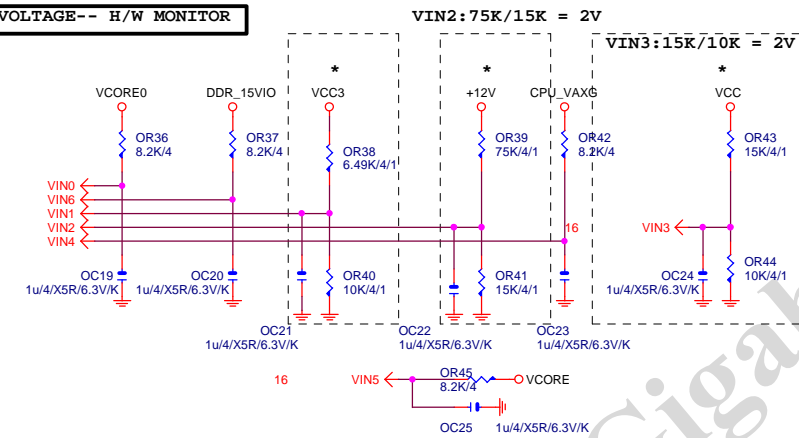
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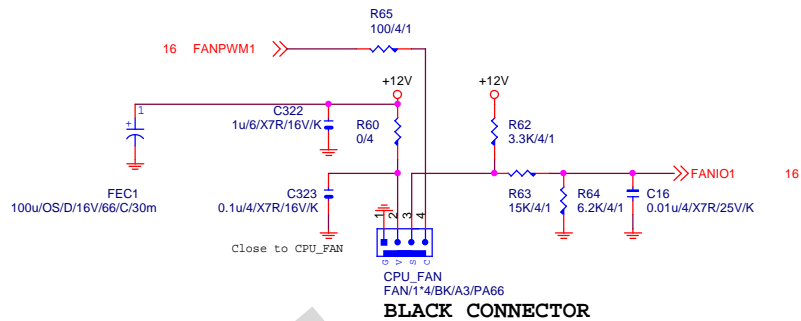
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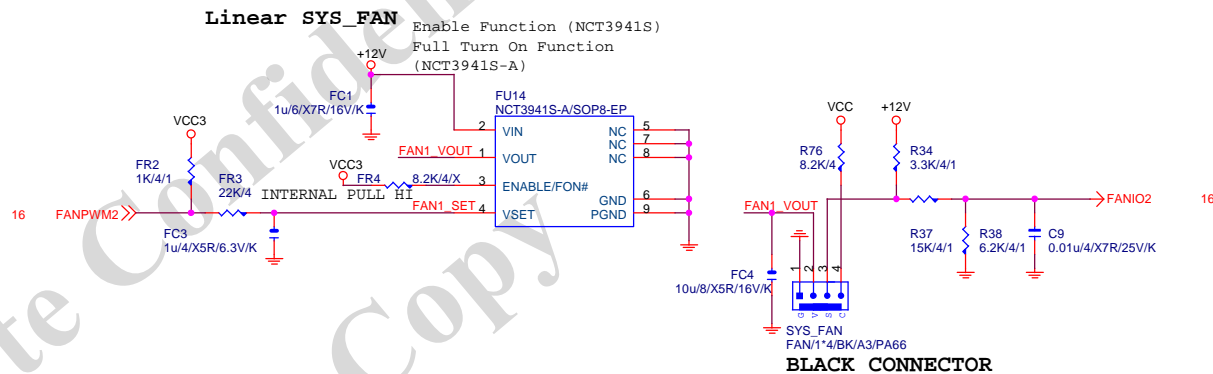
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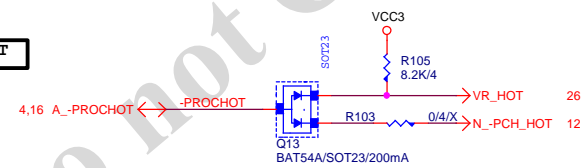
# CPU SMART FAN



# SYS SMART FAN



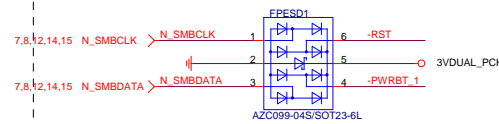
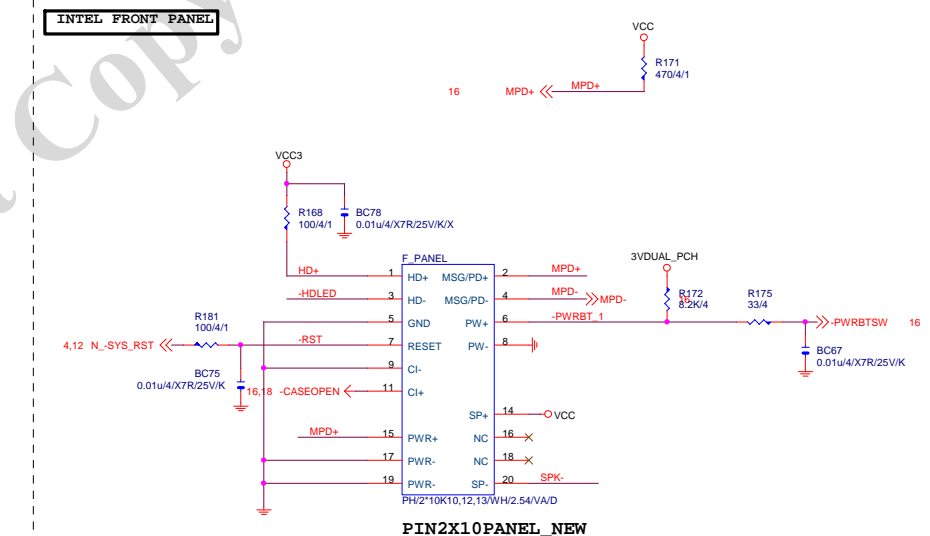
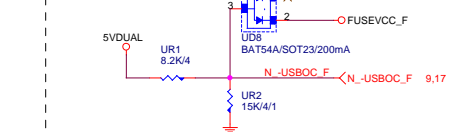
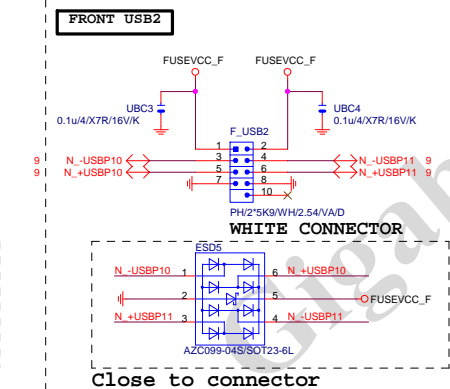
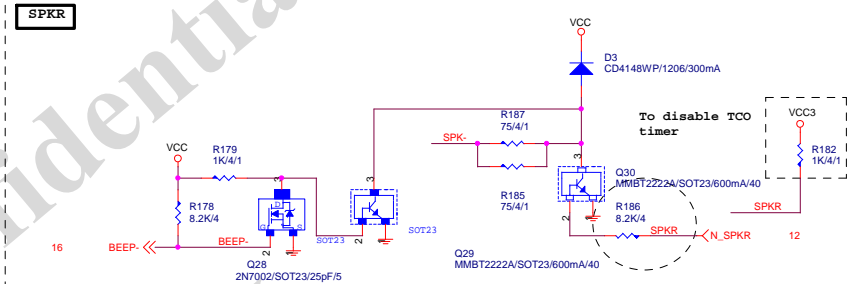
# -PROHOT



Gigabyte Technology

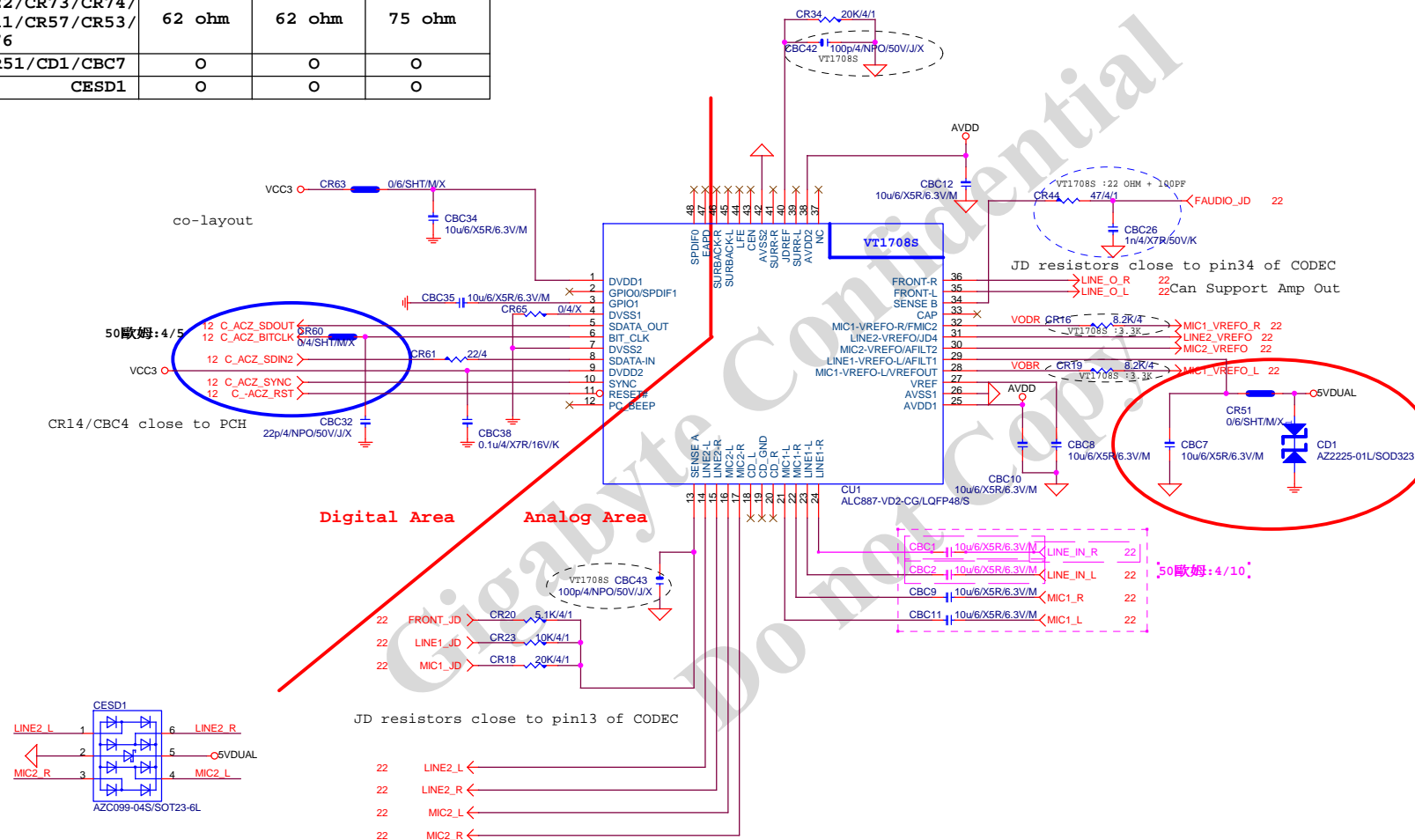
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Size	Document Number	GA-H81M-DS2	
Custom		Rev 1.0	
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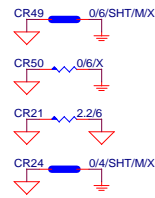




AZALIA CODEC ALC892/ALC887-VD2/VT1708-CE Colay

	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





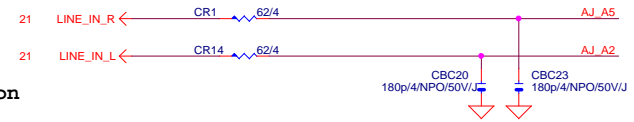
## LINE-OUT



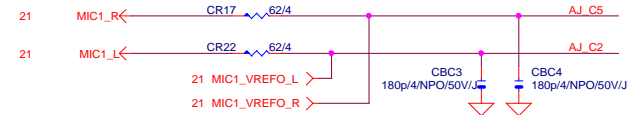
## LINE-IN

Verify MIC function  
in LINE-in

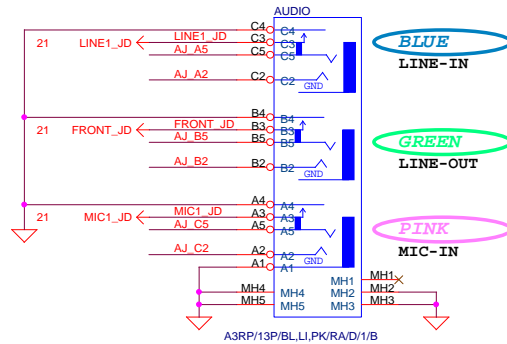
Only reserved for ALC888



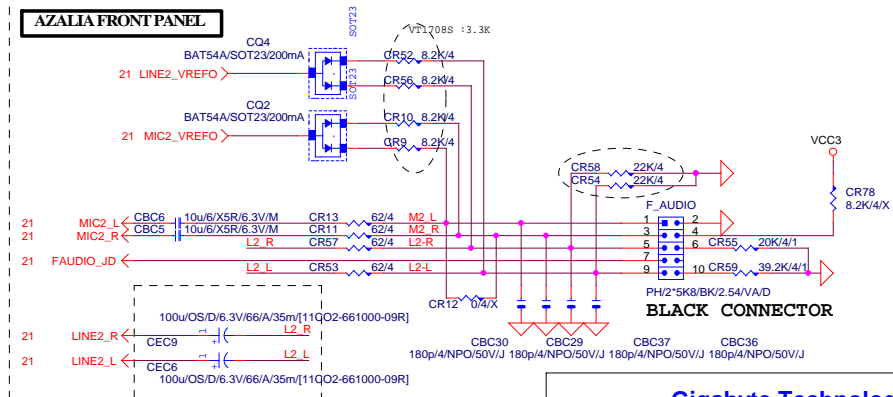
## MIC-IN



## SPDIF\_OUT



## AZALIA FRONT PANEL

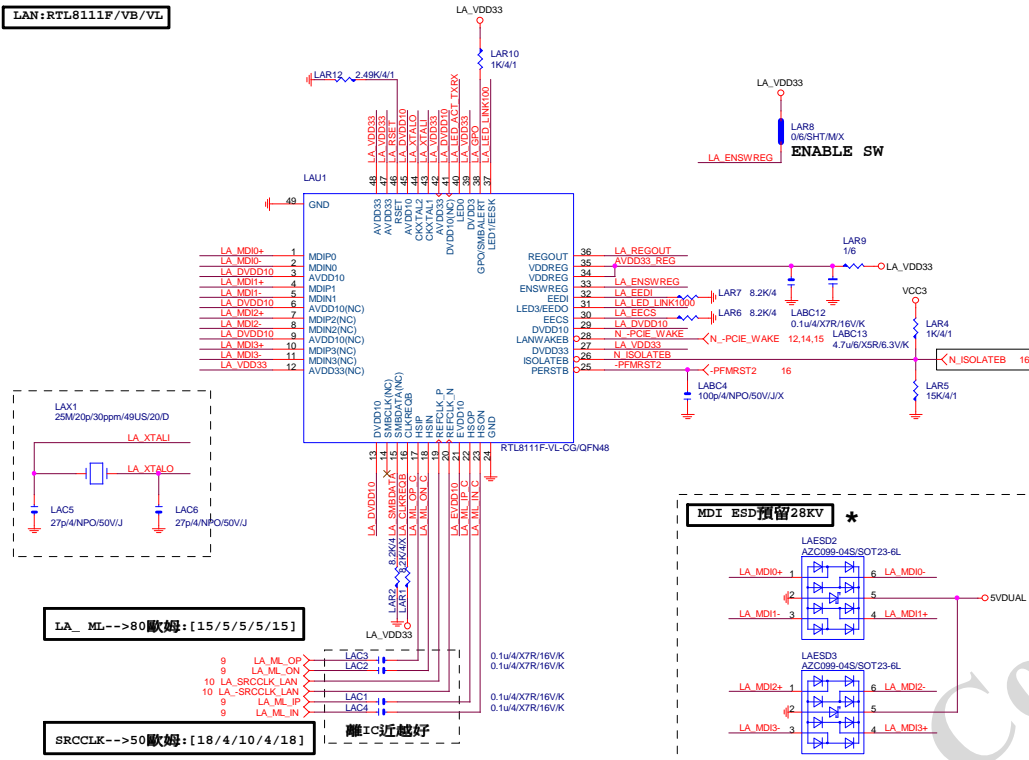


Gigabyte Technology

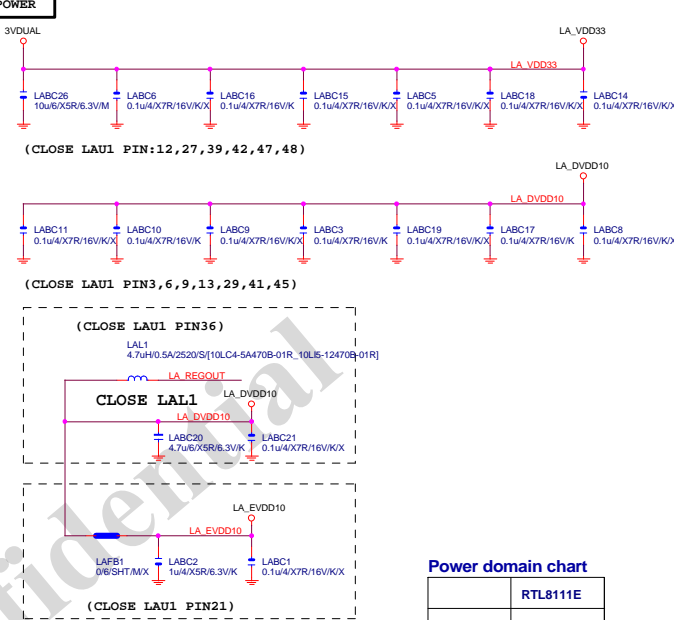
Title			
AUDIO JACK			
Size	Document Number	Rev	
Custom	GA--H81M-DS2	1.0	
Date:	Friday, June 28, 2013	Sheet	22 of 29



```
LAN:RTL8111F/VB/VL
```



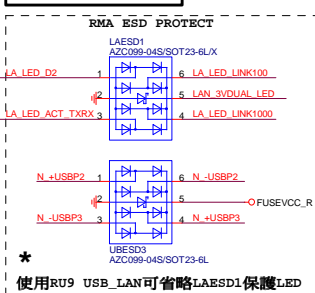
## POWER



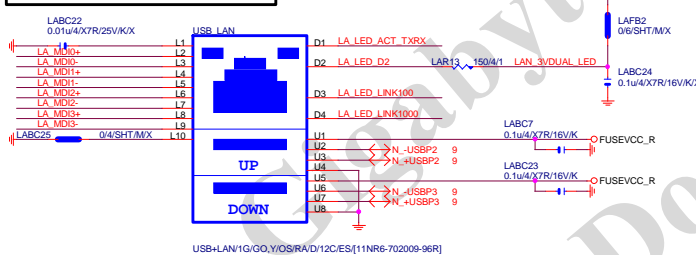
### Power domain chart

	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]

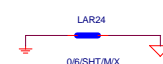


USB X3 POWER



## EMI SHORT PAD

PS:視EMI需求



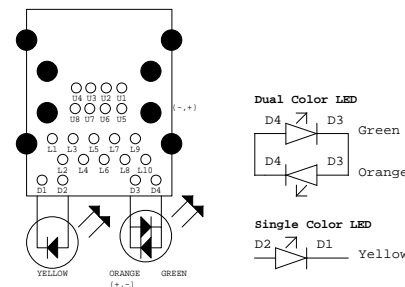
注意:USB PORT(目前:暫代6,7PORT)  
USB-->90歐姆:[15/4.5/7.5/4.5/15]

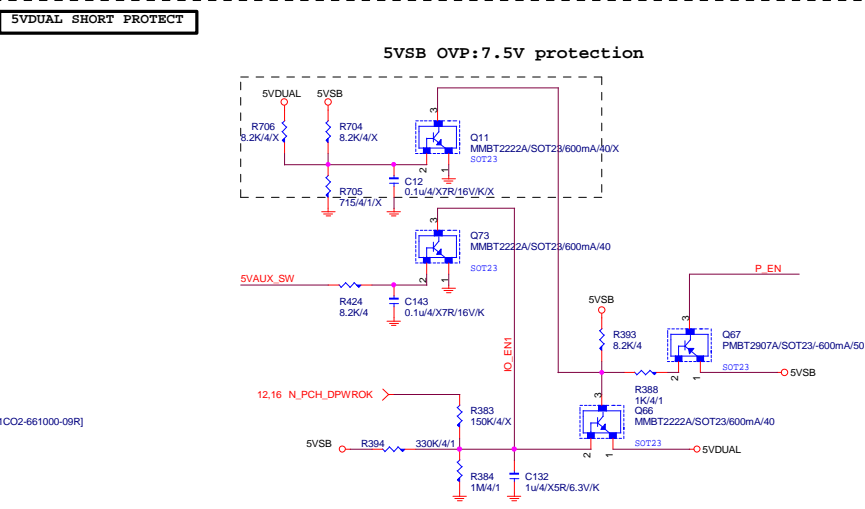
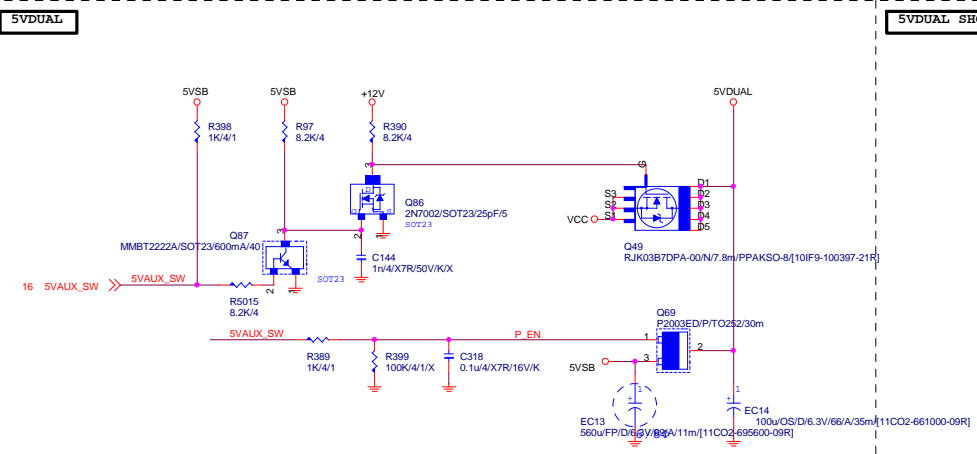
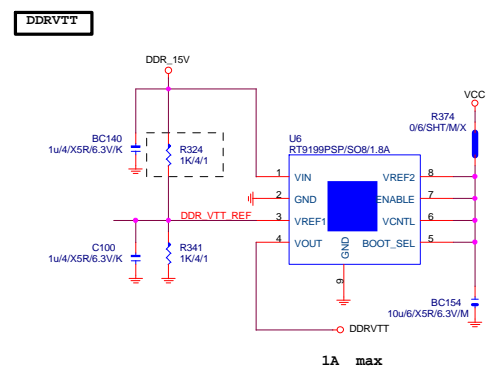
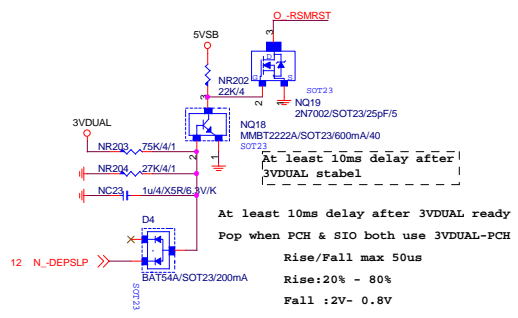
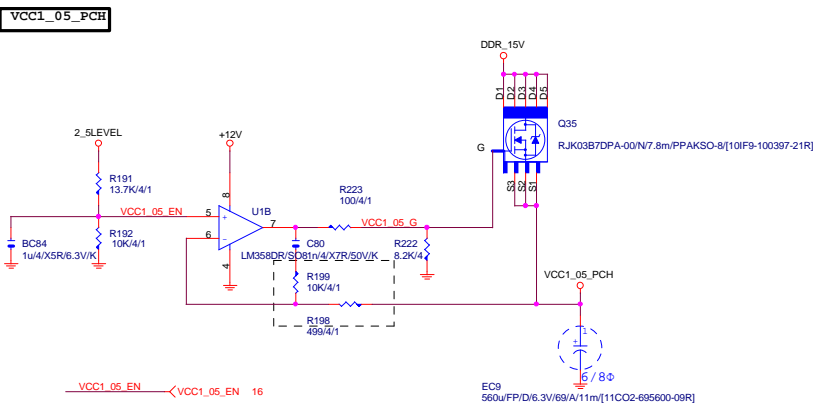
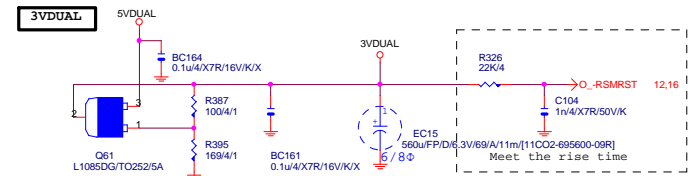
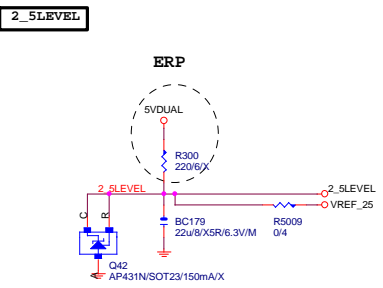
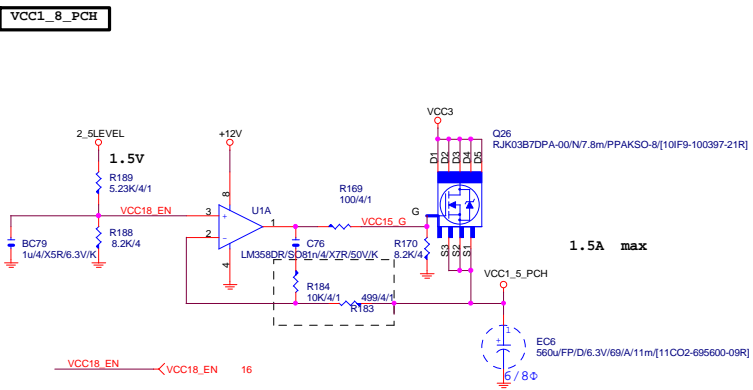
BOM NOTICE \*

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PCO99料件LAESD1]		

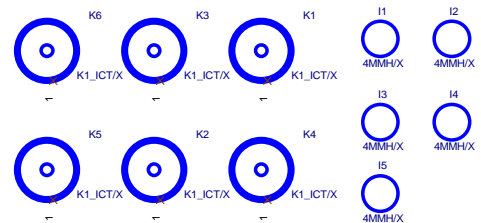
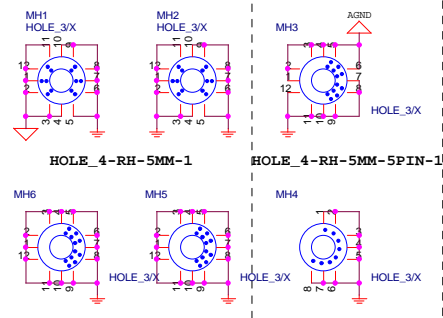
  

1. 9KV ESD BOM:  
USB\_LAN (RU9):11NR6-702009-96R
2. 28KV ESD BOM:  
USB\_LAN (RU9):11NR6-702009-96R  
LAESD2, LAESD3: 上件AZC398-04S





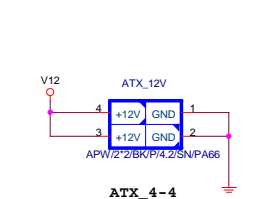
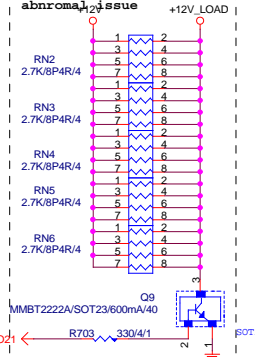
## 【技術通報R&amp;D技術通報155】



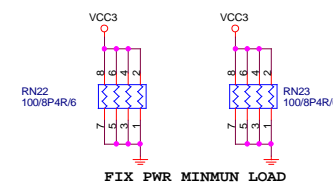
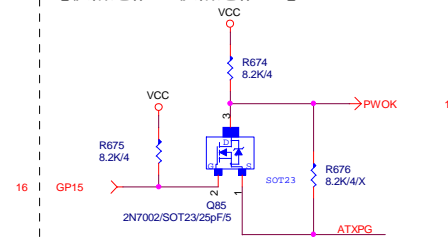
To prevent the 5VSB  
under loading when  
boot

To fix 12V light load

To fix 12V light load  
abnromal issue +12V



## 【技術通報R&amp;D技術通報154】



## Gigabyte Technology

## ATX CONNECTOR

GA--H81M-DS2

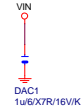
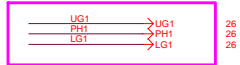
Rev	1.0
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Date: Friday, July 05, 2013

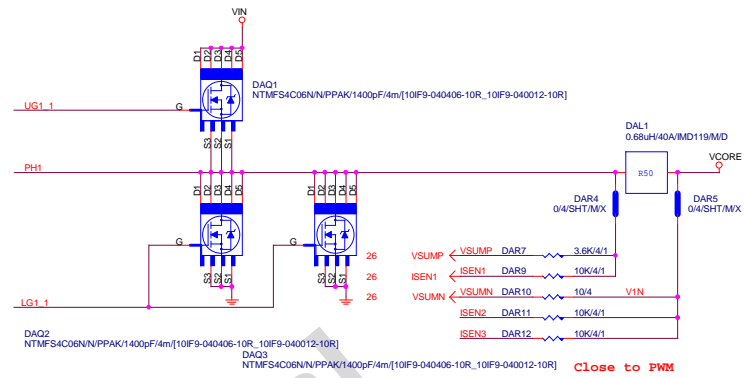
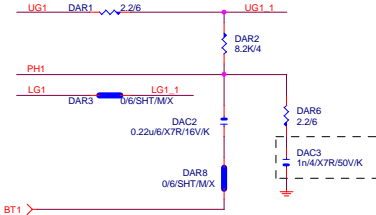
Sheet 25 of 29



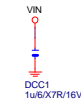
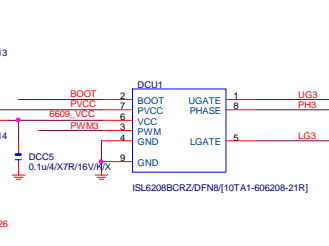
# PHASE 1



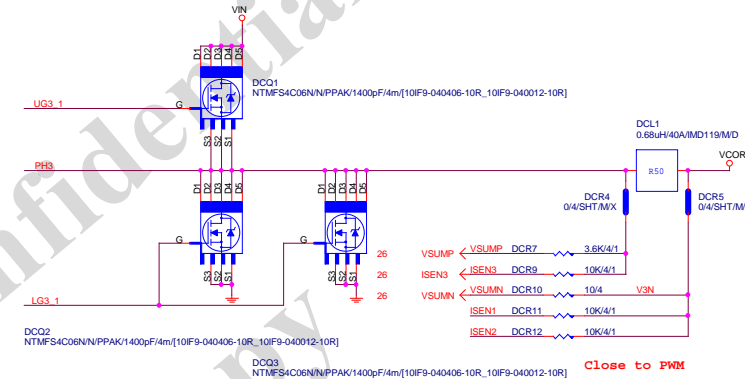
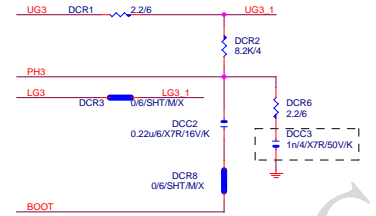
[ 1 ]



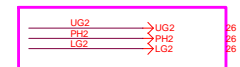
# PHASE 3



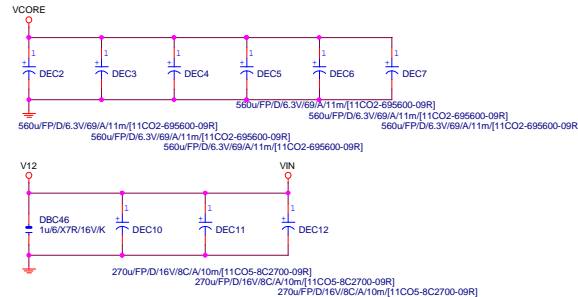
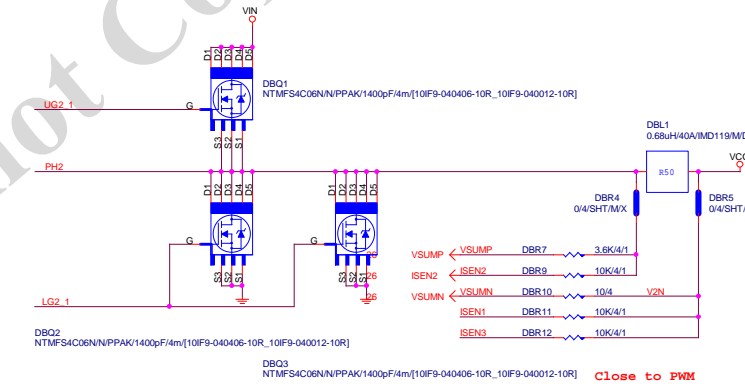
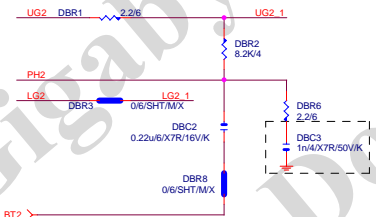
[ 3 ]



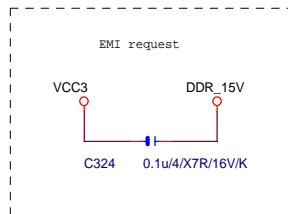
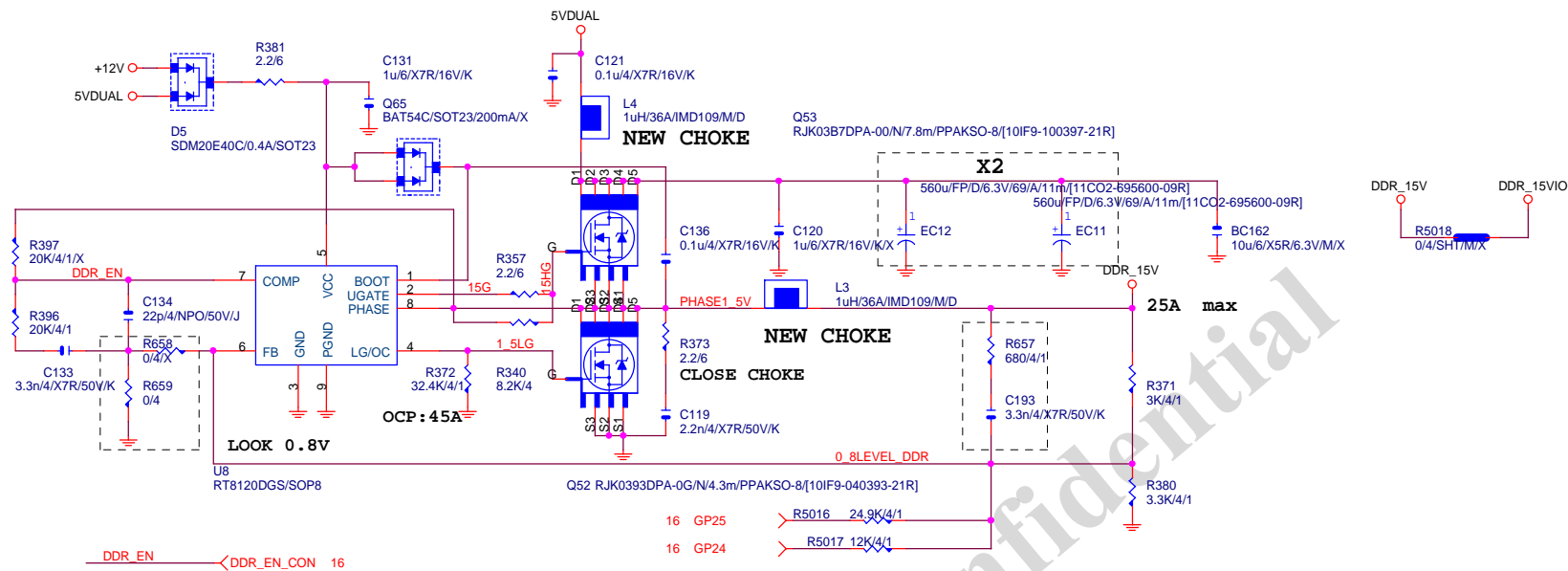
# PHASE 2



[ 2 ]



Gigabyte Technology			
Title		CPU CORE VR-2	
Size	Document Number	GA--H81M-DS2	
Custom			Rev 1.0
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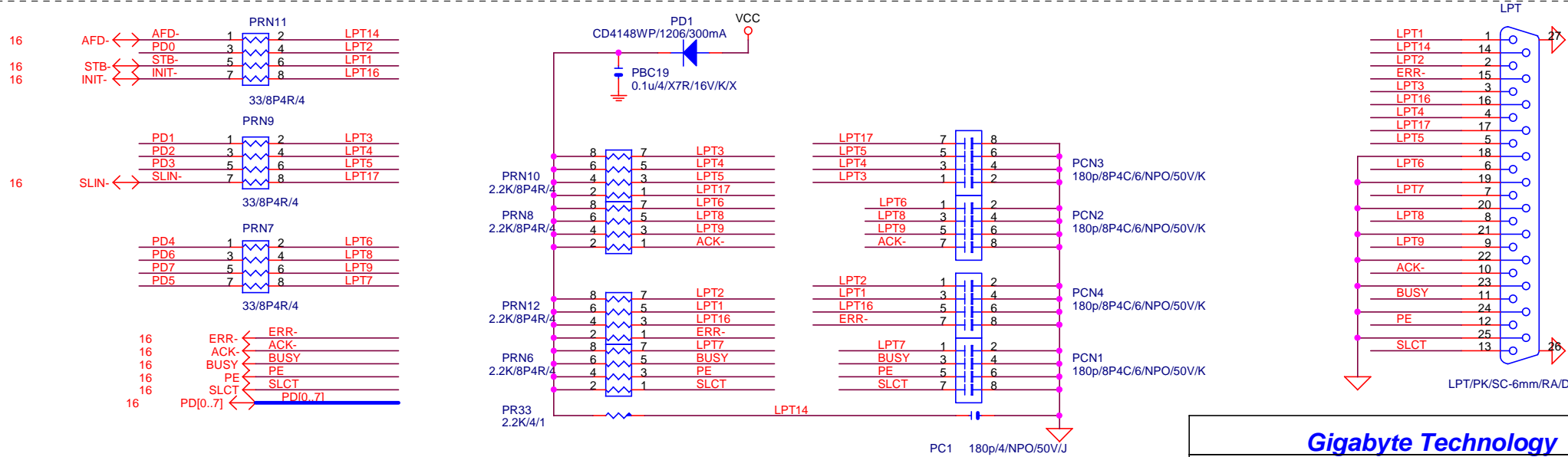


VIN=5V, VOUT=1.5V, IOUT=25A, PHASE=1  
 IRMS=11.45A  
 560uF/FP/D/6.3V/68/8m RIPPLe CURRENT=4.7A  
 Coefficient=1.7(85°C), 1(105°C)  
 VIN Ripple current=4.7A\*1.7=7.99A(85°C)  
 -->故固態電容須2X7.99=15.98>11.45A

$Rocset = (Iocp * Lgate, rdson) / Iocset$   
 $Rocset = (45A * 6.7mOhm) / 10uA = 30K$   
 $Iocset = 10uA$

Gigabyte Technology

Title			
DDR POWER			
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Custom			Rev 1.0
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Gigabyte Technology

Title			
LPT			
Size	Document Number	Rev	
Custom	GA--H81M-DS2	1.0	
Date:	Friday, July 05, 2013	Sheet	29 of 29