Model Name: GA-H81M-D2W

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 (NA)
17	ITE 8620 LPC IO
18	COM,KB_MS_USB,USB30_20
19	HWM,FAN CTRL,OV
20	DUAL BIOS
21	FP,FUSB,SPK,SATALED
22	Realtek ALC887-VD2
23	REAR AUDIO JACK
24	REALTEK RTL8111F
25	DISCRETE POWER
26	ATX
27	VCORE ISL95812_1

SHEET	TITLE
28	VCORE ISL95812_2
29	RT8120_DDR POWER
30	LPT
31	DVI
32	IT8892E (NA)
33	USB3 VL805

Gigabyte Technology

Title: Cover Sheet

Size: Custom | Document Number: GA-H81M-D2W | Rev: 1.0

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Model Name: GA-H81M-D2W

Component value change history

2013/04/08

Data	Change Item	Reason
2013/05/15	New BOM	9MH81MD2V-00-01
2013/06/19 9MH81MD2V-00-01	*** 插件位置重覆 *** 新舊線路,元件值不同********** Old BOM LGA1150HASWELL/[10SC1-F01150-11R_10SC1-F01150-12R] New BOM LGA1150HASWELL/[10SC1-F01150-11R_10SC1-F01150-12R] LGA1150ILM_BP/1156/CSP/ILM_BP/1156/CSP/[12KRC-0F0001-52R_12KRC-0F0001-51R] *** 更換 *** 新舊線路中,元件值不同;共 6 個********** U1,'LM324DR/SO14變更為'LM358DR/SO8 LAR13,'150/6變更為'150/4/1 Q59,Q83,Q84,Q57,MMBT2222A/SOT23/600mA/40/[10IT1-002222-11R]變更為MMBT2222A/SOT23/600mA/40 *** 增加 *** 只在新線路中,不在舊線路中;共 2 個********** FEC1,'100u/OS/D/16V/69/A/35m NC3,'22p/4/NPO/50V/J *** 刪除 *** 只在舊線路中,不在新線路中;共 2 個********** R364,'0/4 LGA1150_P,'ILM_BP/1156/CSP/ILM_BP/1156/CSP/[12KRC-0F0001-52R_12KRC-0F0001-51R]	

Circuit or PCB layout change

DATE	Change Item	Reason
2013/04/22	1.由B85M-HD3 Rev 1.0來修改 2.SIO change to IT8620 3.PWM change to ISL95812+6208 4.Delete 2 port SATA3 5.Add VL805 6.Delete HDMI 7.COM port change to rear 8.Delete PCI IT8892E 9.Fan control change to NCT3941S 10.SIO 統一命名O開頭	Rev 0.1
2013/05/23	1.U1 change to LM358	Rev 0.2
2013/06/27	1.PCH pin AD40 接到N_GPIO14 2.Add R394,請靠近R384&C132 3.Remove Q60 4.Add O_-RSMRST delay circuit	Rev 1.0
2013/07/22	1.由H81M-D2V Rev 1.0來修改 2.VGA change to DVI-I 3.COM change to pin header 4.Remove one port one fuse 5.F_PANEL改 2x5 6.Remove DVI level shift	Rev 0.1
2013/08/09	1.修正DVI-I的訊號	Rev 0.2
2013/08/26	1.文字面 UEFI DualBIOS 改為 UEFI BIOS 2.增加X'TAL 切割獨立GND	Rev 1.0

PCB : S4VNB (精成,全成信,伊利安達)

S:單文
4:四層板
V:第二層是VCC
N:咖啡色
B:製程

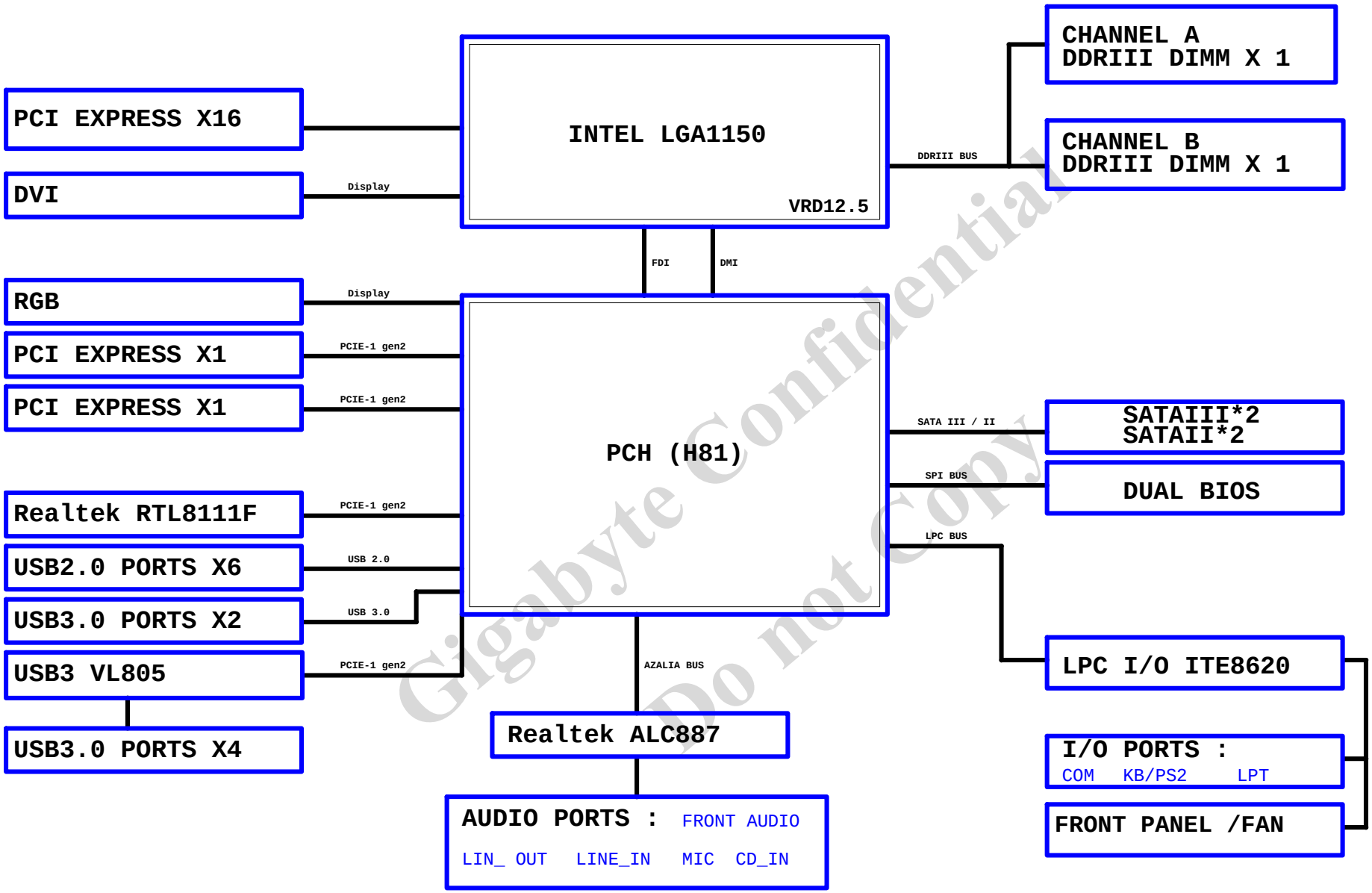
Gigabyte Technology

Title: BOM & PCB MODIFY HISTORY

Size: Custom | Document Number: GA-H81M-D2W | Rev: 1.0

Date: Thursday, September 05, 2013 | Sheet 2 of 33

BLOCK DIAGRAM



Gigabyte Technology		
Title: BLOCK DIAGRAM		
Size: C	Document Number: GA-H81M-D2W	Rev: 1.0
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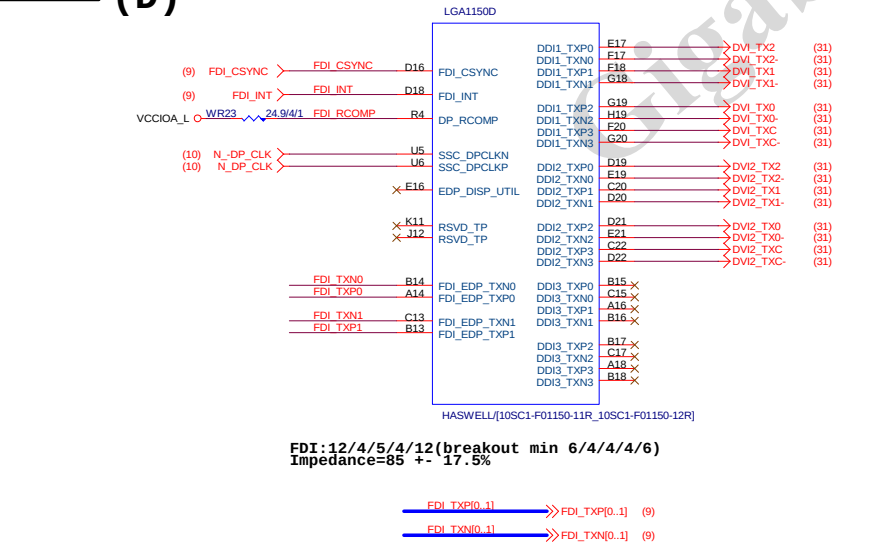
LGA1150 (E)

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

CFG6	CFG5	PCIE CONFIG
1	1	1X16 , Default
1	0	2X8
0	1	RSVD
0	0	X8,X4,X4

CFG 0-17 all internal PULL-UP

LGA1150 (D)

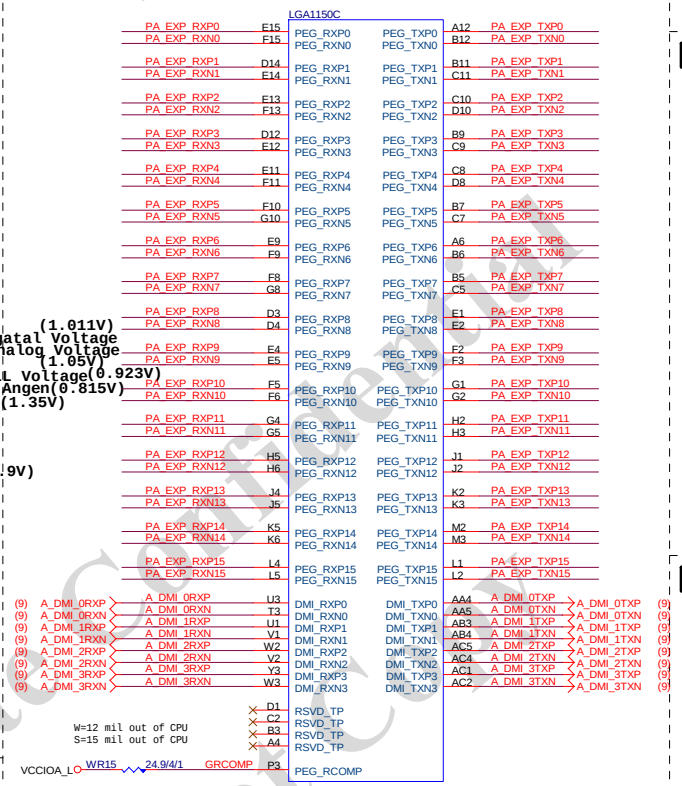


FDI:12/4/5/4/12(breakout min 6/4/4/4/6)
Impedance=85 +- 17.5%

FDI_TXP[0..1] → FDI_TXP[0..1] (9)
FDI_TXN[0..1] → FDI_TXN[0..1] (9)

LGA1155 (C)

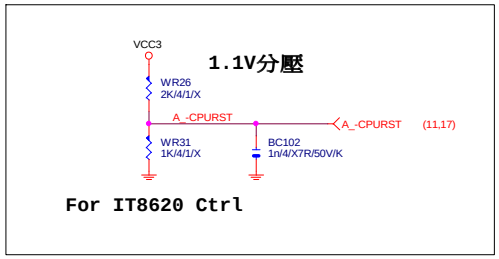
PCIEX16:16/5/5/5/16(breakout min 10/4/4/4/10)
Impedance=80 +- 17.5%



DMI:12/4/4/4/12(breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%

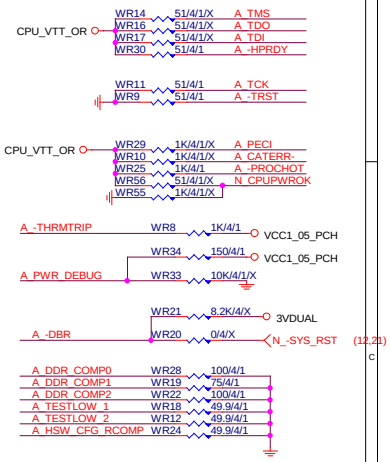
PA_EXP_TXP[0..15] → PA_EXP_TXP[0..15] (14)
PA_EXP_TXN[0..15] → PA_EXP_TXN[0..15] (14)
PA_EXP_RXP[0..15] → PA_EXP_RXP[0..15] (14)
PA_EXP_RXN[0..15] → PA_EXP_RXN[0..15] (14)

-CPURST

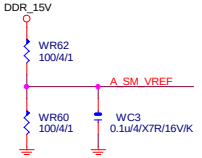


CPU SVID

CPU PU/PD



SM REF



Title	CPU LGA1150-A
Size	Custom
Document Number	GA-H81M-D2W
Rev	1.0
Date:	Thursday, September 05, 2013
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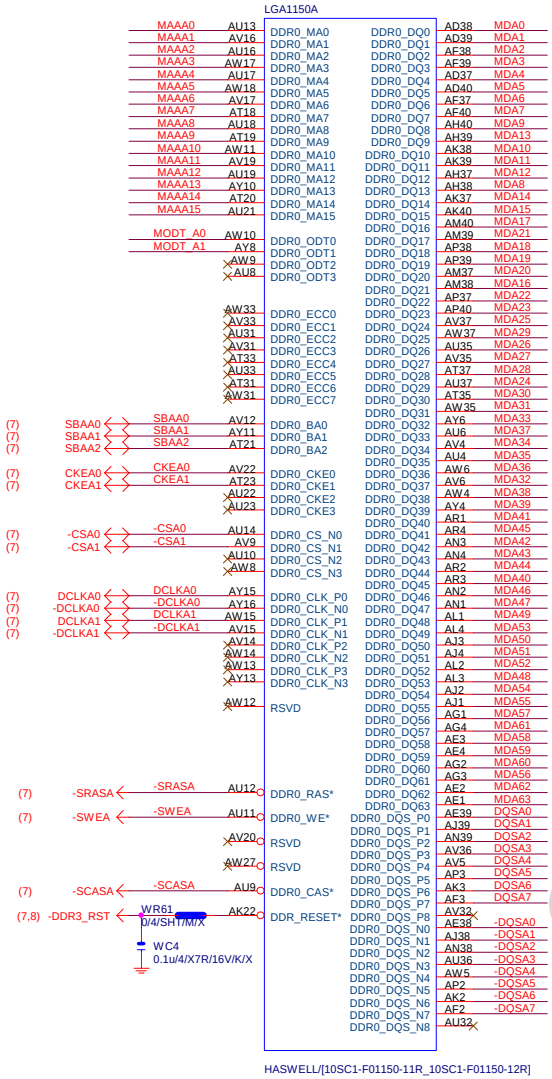
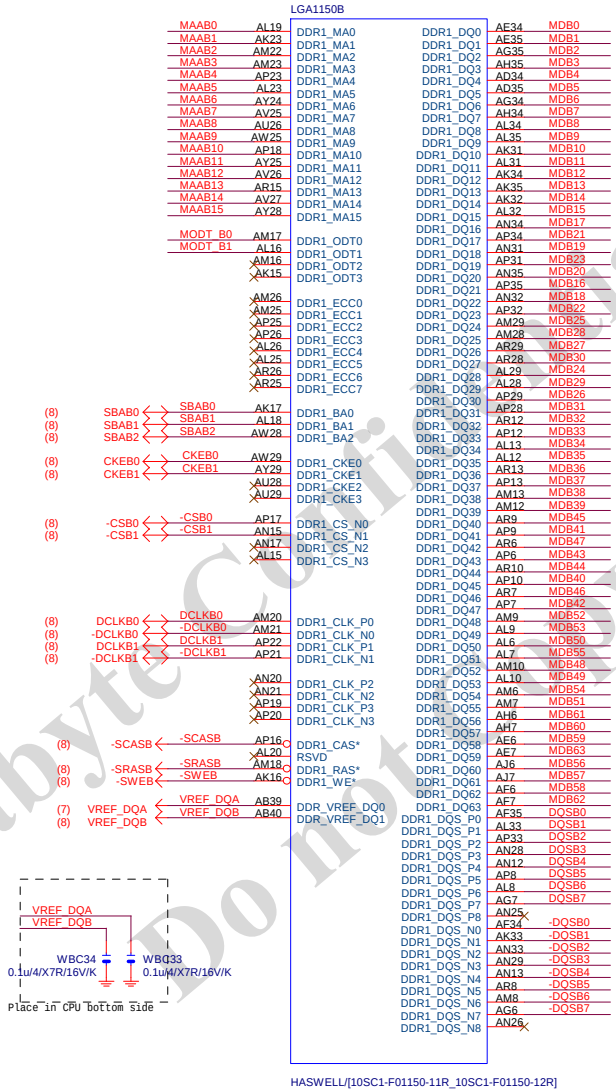
Gigabyte Technology

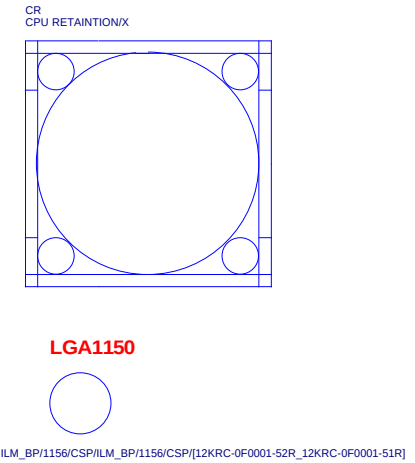
LGA1150 (A)



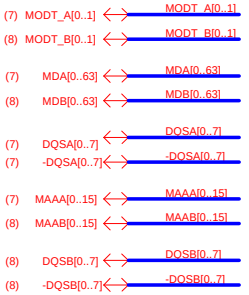
LGA1150 (B)



LGA1150 (CR)



DDR BUS



Gigabyte Technology			
Title: CPU LGA1150-B			
Size: Custom	Document Number: GA-H81M-D2W		Rev: 1.0
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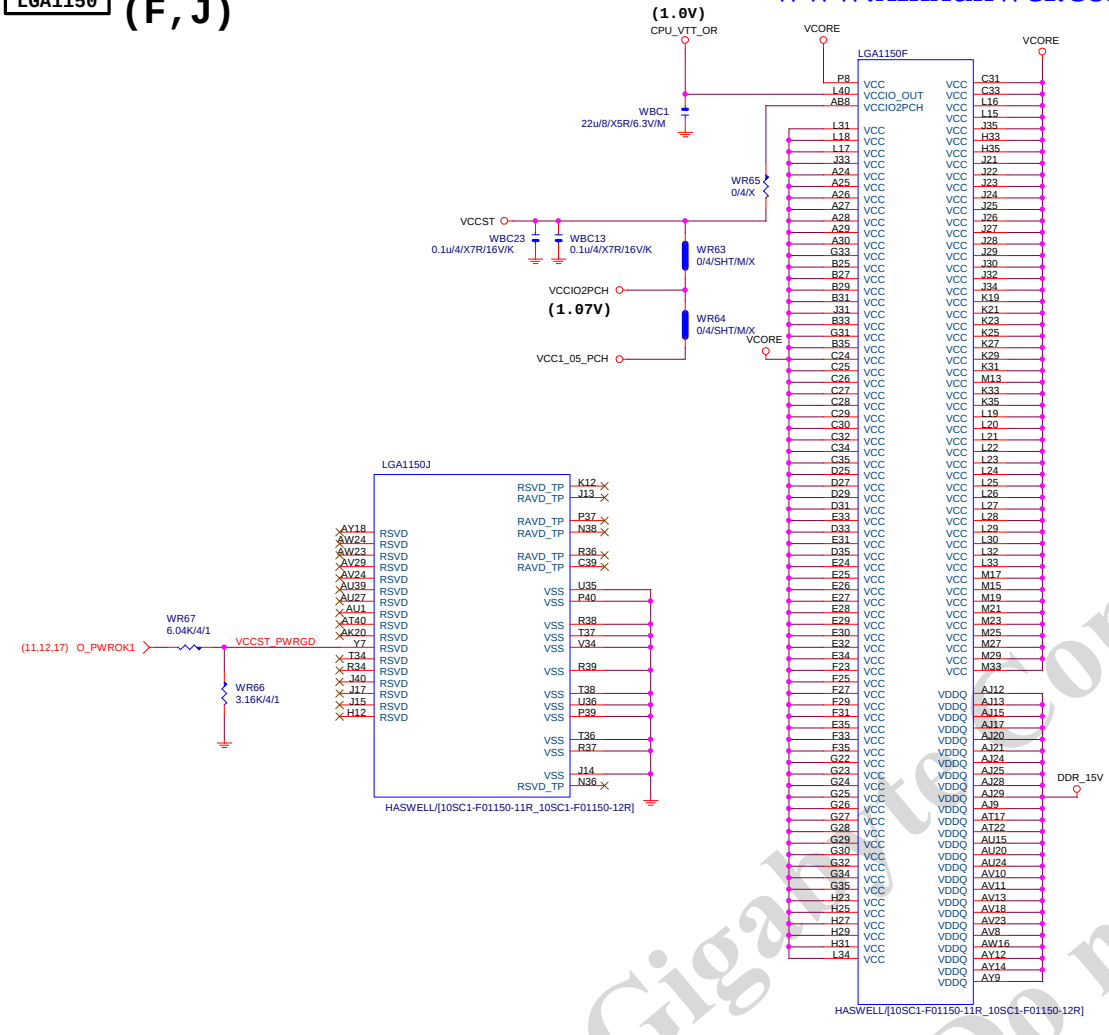
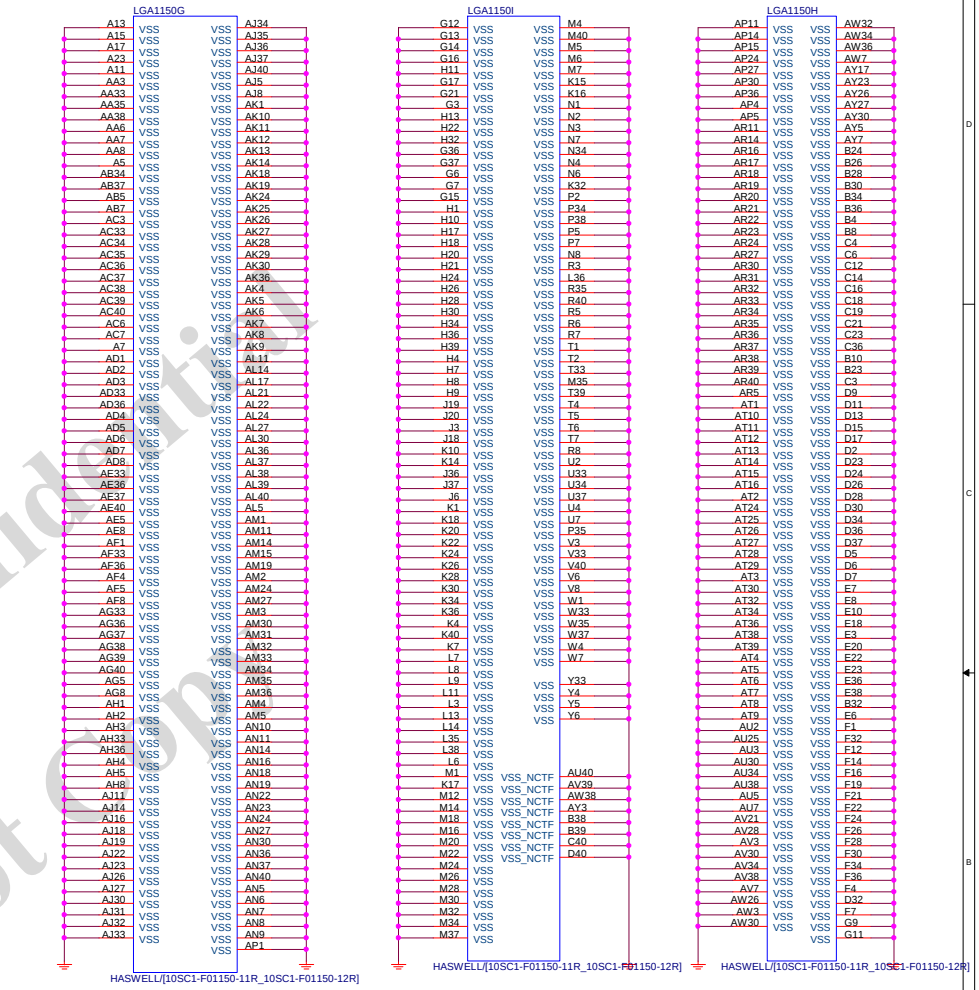
LGA1150 (F,J)

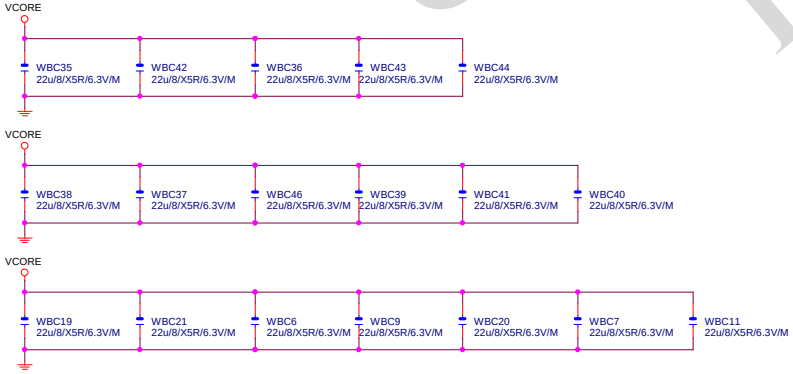


LGA1155 (G,H,I)



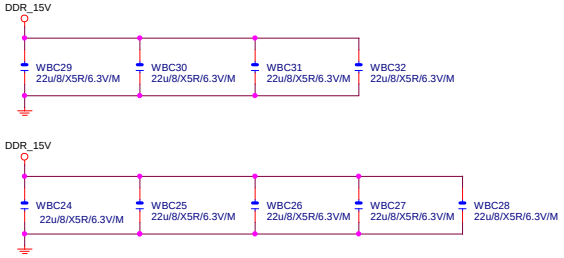
VCore CAP

(X18)



DDR CAP

(X9)



Gigabyte Technology		
Title: CPU LGA1150-C		
Size: Custom	Document Number: GA-H81M-D2W	Rev: 1.0
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DDR3 (A)

DDR3_1

DDRVTT

DDR_15V

N_SMBDATA
N_SMBCLK

MC10 100p/4/NPO/50V/J/X
MC11 100p/4/NPO/50V/J/X

MR17 0/4
VCC3
VDDSPD_A

MC4 0.1u/4/X7R/16V/K
MC5 VREF_DDRA
MC1 VREF_DQDDRA
0.1u/4/X7R/16V/K

(8,12,14,15,19) N_SMBCLK
(8,12,14,15,19) N_SMBDATA

(5) SBAA2
(5) SBAA1
(5) SBAA0

(5) CKEA1
(5) CKEA0

(5) -CSA1
(5) -CSA0

(5) -DCLKA1
(5) DCLKA1

(5) -DCLKA0
(5) DCLKA0

(5) MAAA[0..15]

(5,8) -DDR3_RST
(5) -SCASA
(5) -SRASA
(5) -SWEA

-DDR3_RST
MC6 100p/4/NPO/50V/J

DDR3/240/BK/VA/D

BLACK CONNECTOR

MDQT_A[0..1] → MDQT_A[0..1] (5)
-DQSA[0..7] → -DQSA[0..7] (5)
DQSA[0..7] → DQSA[0..7] (5)

MDA[0..63] (5)

DDR3 VREF

DDR_15V

MR15 1K/4/1
MR14 1K/4/1
VREF_DDRA

MR4 1K/4/1
MR5 1K/4/1
VREF_DQDDRA

MR1 10/4
VREF_DQA (5)

DDR15V Decouple

DDR_15V

MEC1 560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]
MEC2 560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]

DDR_15V

MBC1 0.1u/4/X7R/16V/K
MBC2 0.1u/4/X7R/16V/K
MBC3 0.1u/4/X7R/16V/K
MBC24 0.1u/4/X7R/16V/K
MBC12 0.1u/4/X7R/16V/K
MBC14 0.1u/4/X7R/16V/K

DDR_15V

MBC15 1u/4/X5R/6.3V/K
MBC17 1u/4/X5R/6.3V/K
MBC27 1u/4/X5R/6.3V/K
MBC29 1u/4/X5R/6.3V/K
MBC35 1u/4/X5R/6.3V/K
MBC36 1u/4/X5R/6.3V/K
MBC37 1u/4/X5R/6.3V/K
MBC47 1u/4/X5R/6.3V/K
MBC9 1u/4/X5R/6.3V/K

DDRVTT Decouple

DDRVTT

MBC40 10u/6/X5R/6.3V/M

DDRVTT

MBC18 1u/4/X5R/6.3V/K
MBC10 0.1u/4/X7R/16V/K

Gigabyte Technology

Title: DDRIII CHANNEL A

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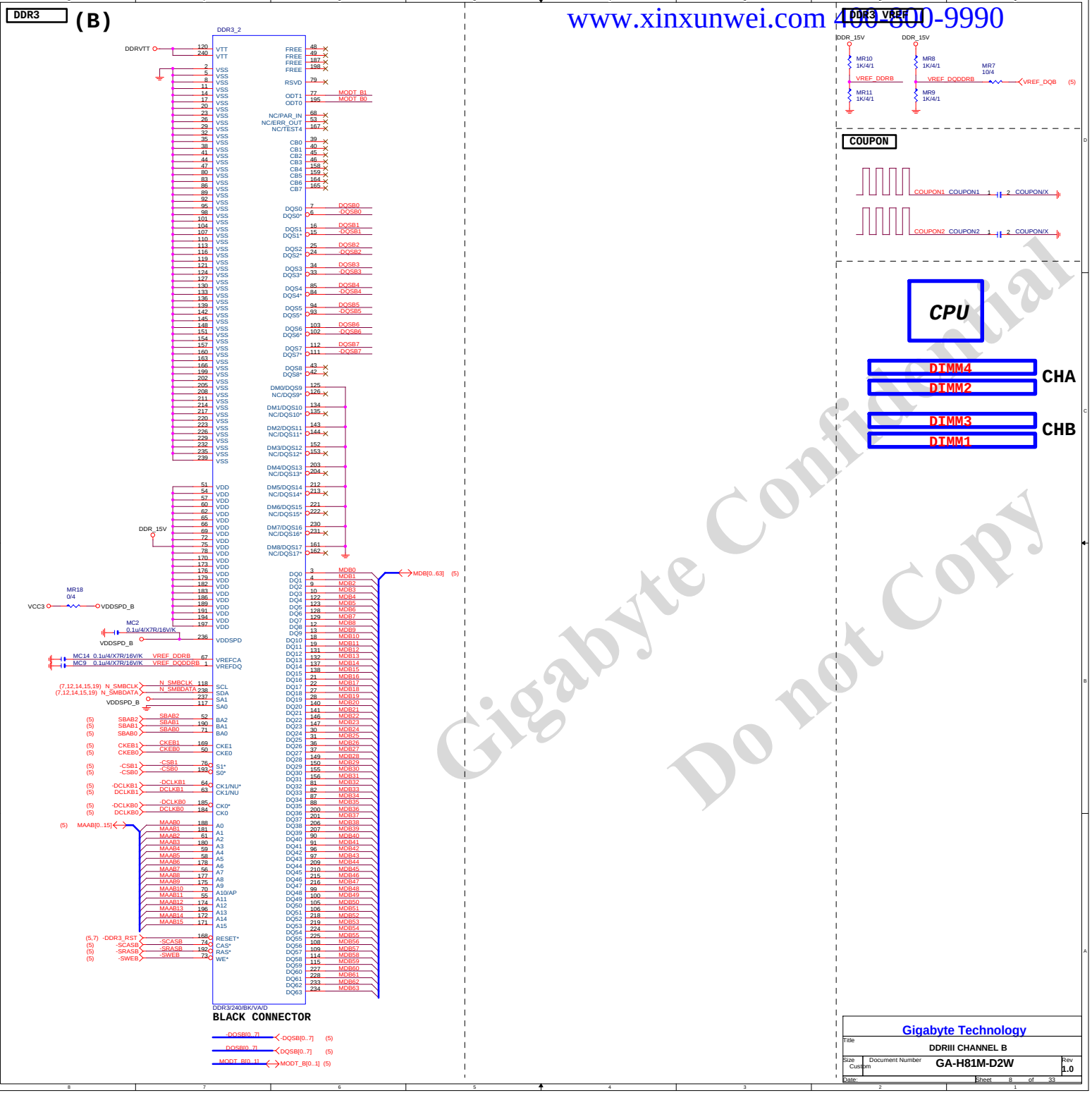


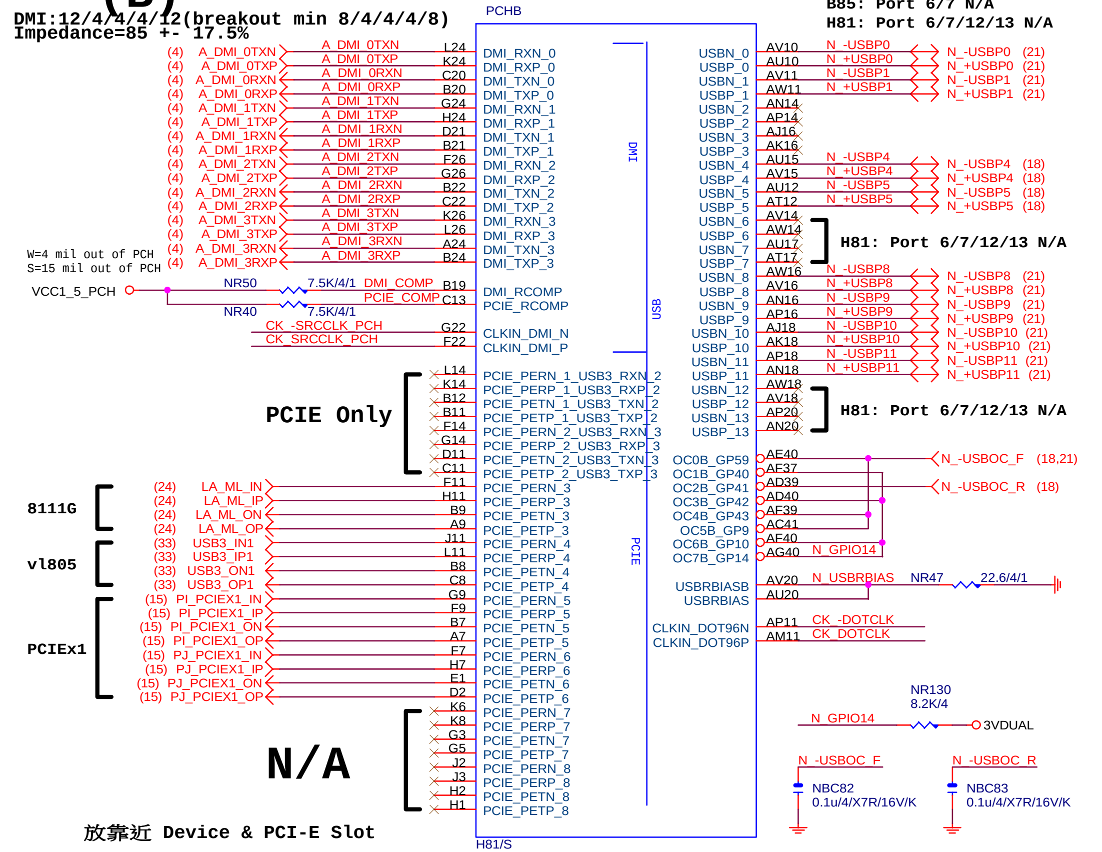
Gigabyte Technology			
Title: DDRIII CHANNEL B			
Size: Custom	Document Number: GA-H81M-D2W		Rev: 1.0
Date:	Sheet 8 of 33		

PCH (B)

DMI:12/4/4/4/12(breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%

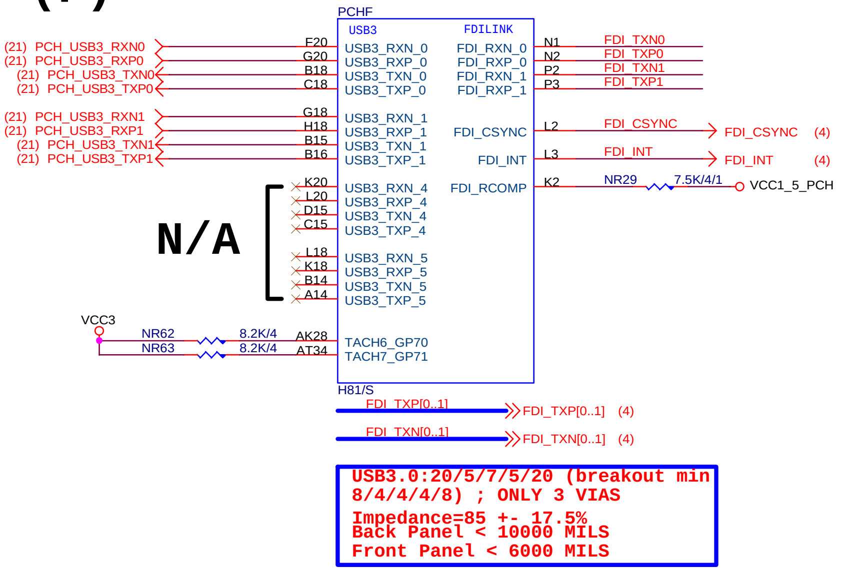
USB2.0 : 12/4.5/7.5/4.5/12 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%

B85: Port 6/7 N/A
H81: Port 6/7/12/13 N/A

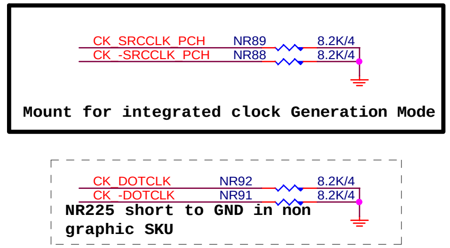


放靠近 Device & PCI-E Slot
Impedance=80 +- 17.5%
PCIEX1:16/5/5/5/16 (breakout min 8/4/4/4/8)

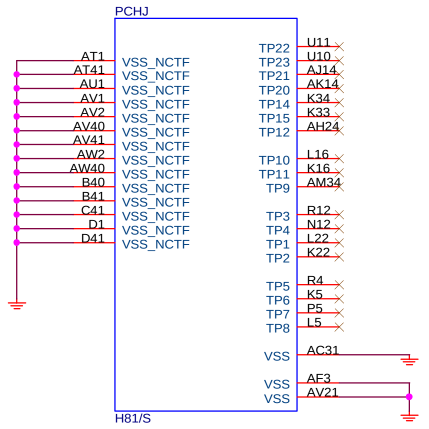
PCH (F)



PCH CLK PD

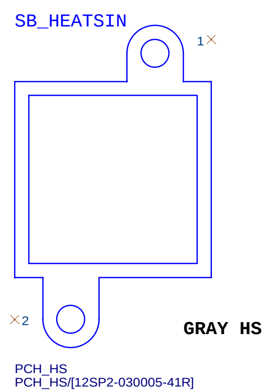


PCH (J)



PCH H/S

LOW COST ICH7 HEATSINK

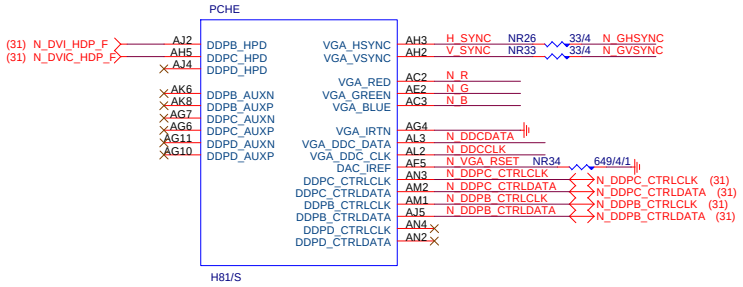


USB TABLE

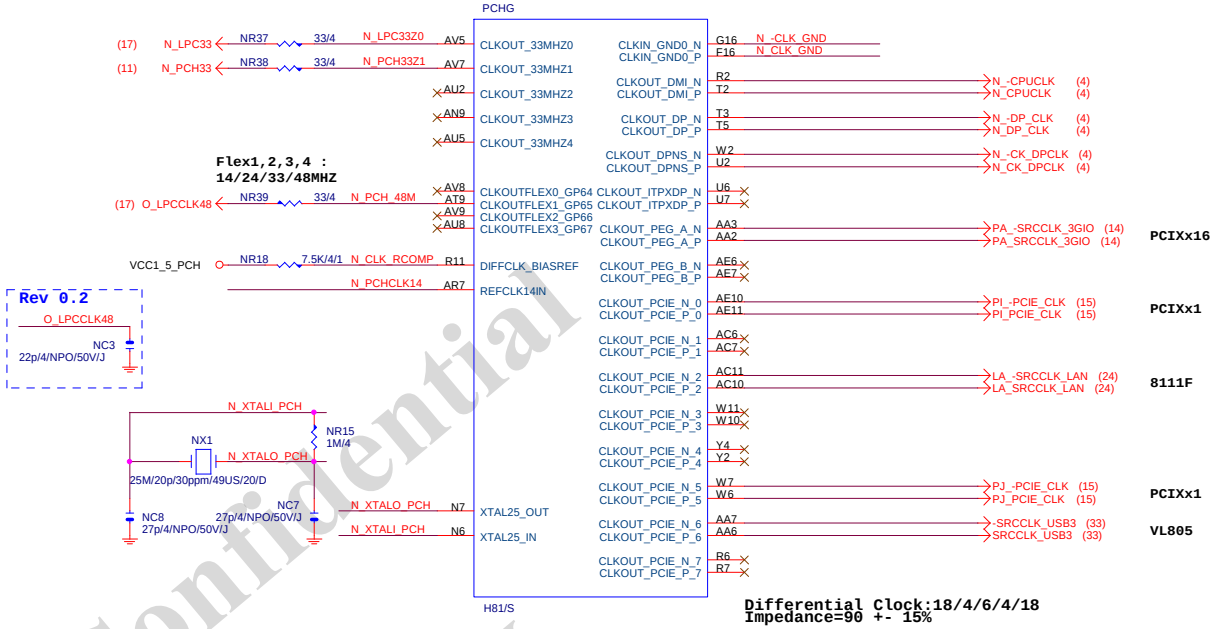
OC[3:0]# for Device 29 (ports 0-7)
OC[7:4]# for Device 26 (ports 8-13)

USB OC# Configure	
OC0#	F_USB30
OC1#	USB_LAN
OC2#	R_USB30
OC3#	N/A
OC4#	F_USB1
OC5#	F_USB2
OC6#	KB_MS_USB
OC7#	Not Use

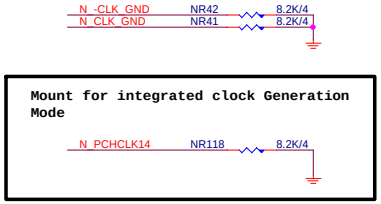
PCH (E)



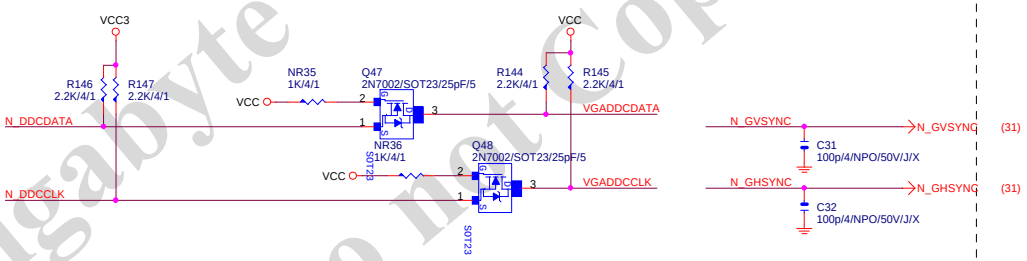
PCH (G)



PCH CLK PD

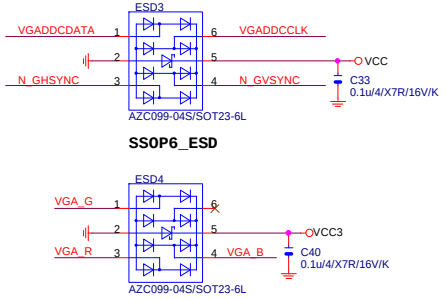


VGA DDC

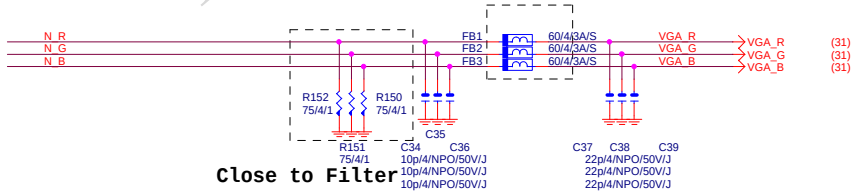


VGA CONNECTOR

VGA ESD



VGA DDC

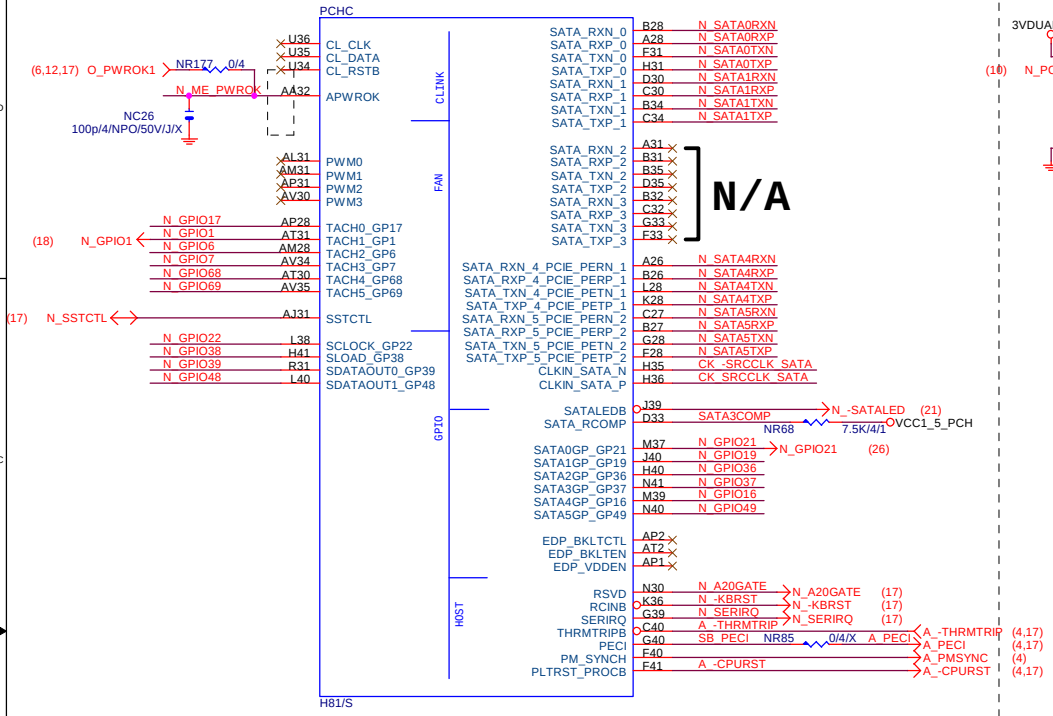


Close to Filter

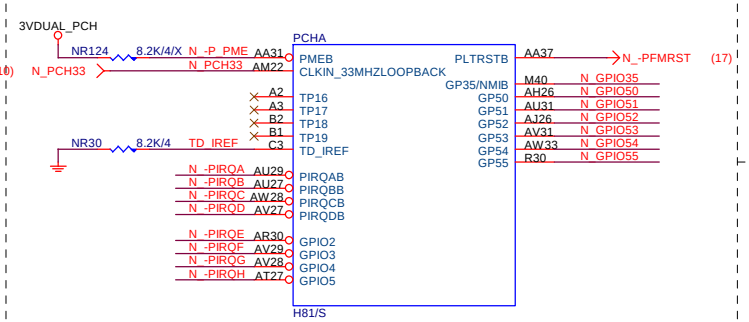
Gigabyte Technology		
Title	PCH DISPLAY ,CLK BUFFER	
Size: Custom	Document Number: GA-H81M-D2W	Rev: 1.0
Date: Thursday, September 05, 2013	Sheet 10 of 33	

PCH (C)

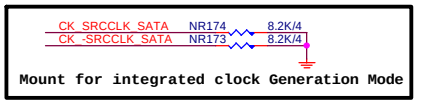
SATA3 : 20/7.5/4.5/7.5/20 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%
SATA2 : 15/7.5/4.5/7.5/15 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%



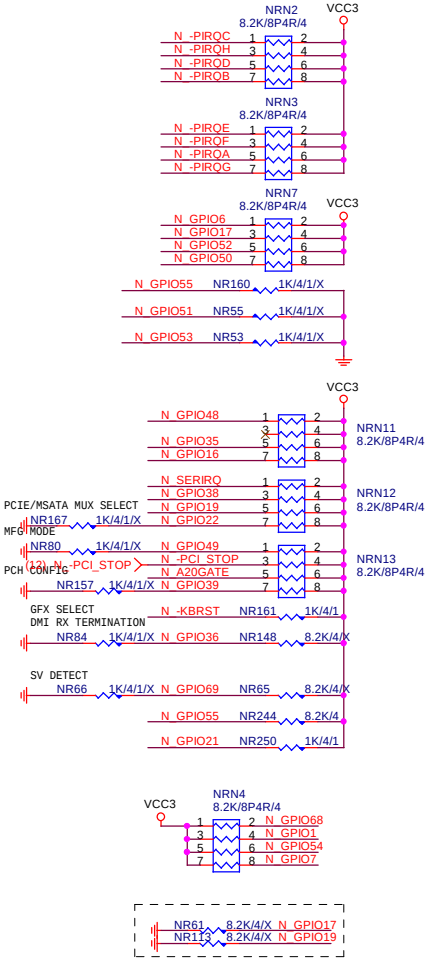
PCH (A)



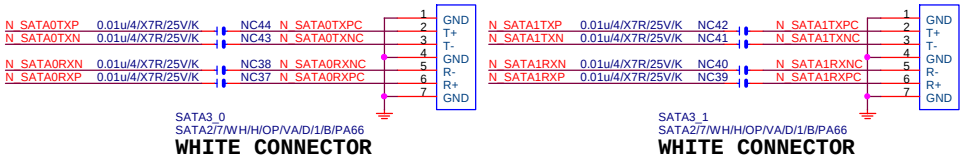
PCH CLK PD



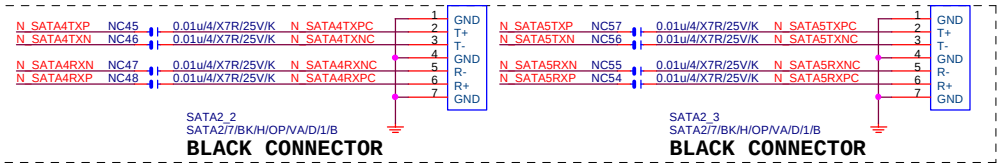
PCH PU/PD



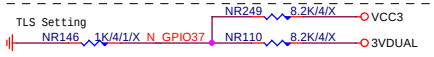
SATA CONNECTOR



** Z87/H87 Port 4&5 SATA3.0
** B85 Port 4&5 SATA2.0

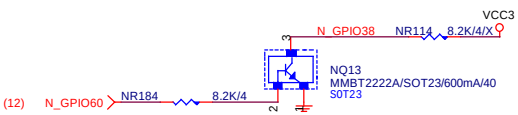


ME PWROK



GPIO37 PU VCC3 ENABLE SBA
For H87&B85

GPIO38 Ctrl



Gigabyte Technology

Title: PCH HOST , SATA, PCI

Size: Custom | Document Number: GA-H81M-D2W | Rev: 1.0

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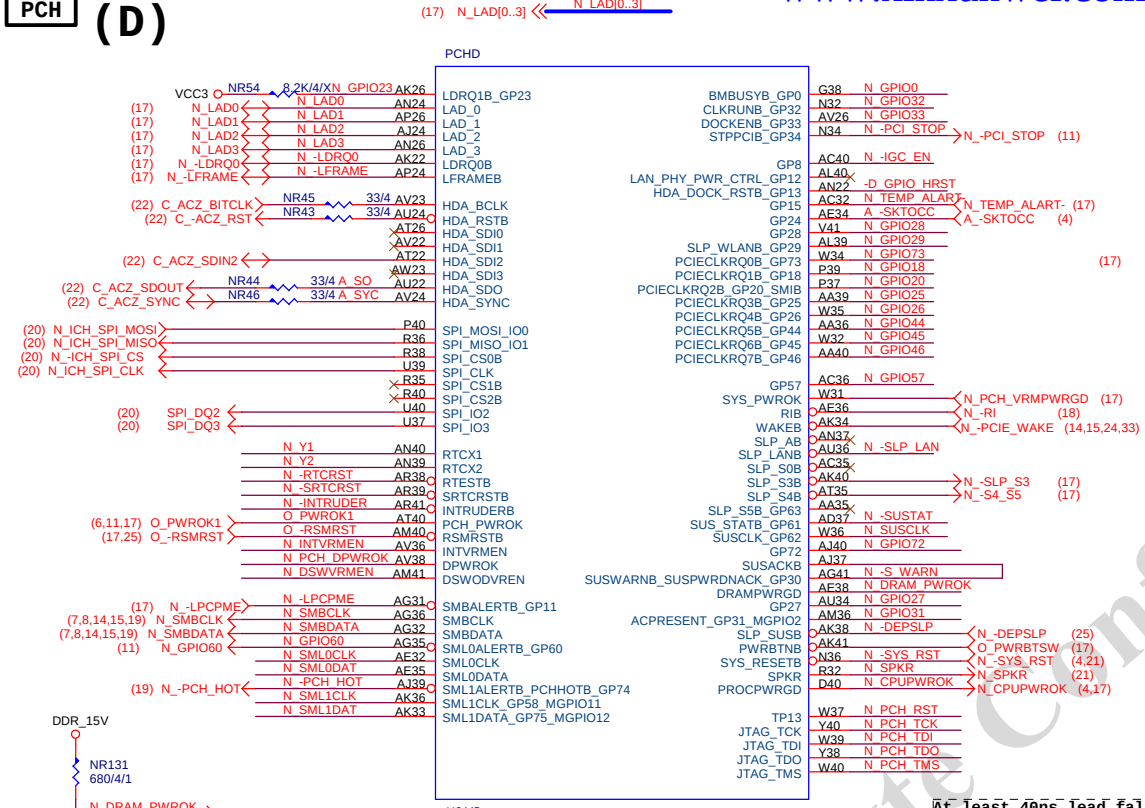
PCH (D)

PCHD



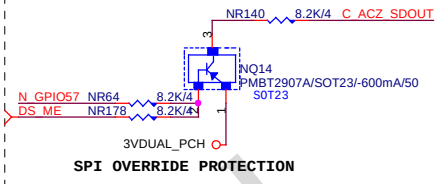
DDR_15V
NR131 680/4/1
N_DRAM_PWROK N_DRAM_PWROK (4)
NR132 1.47K/4/1

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

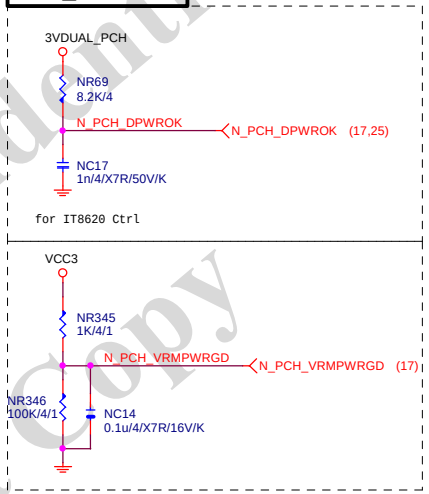
At least 10ms delay after 3VDUAL_PCH stabel

ACZ_SDOUT

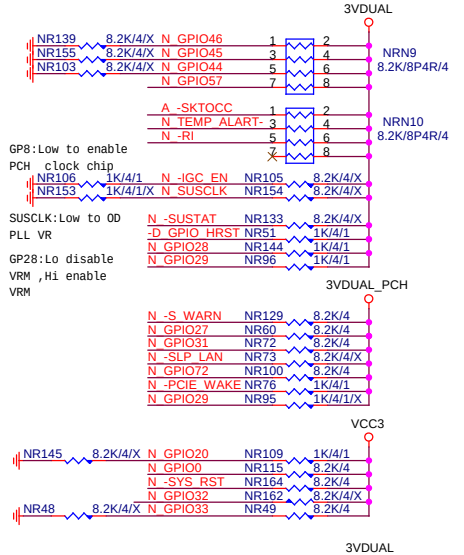


SPI OVERRIDE PROTECTION

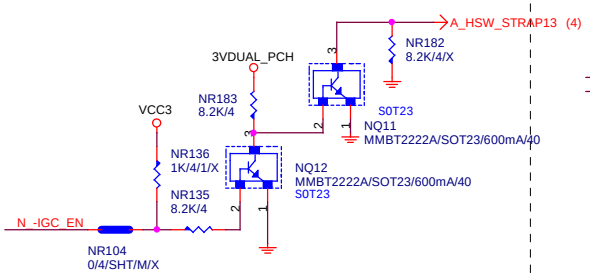
PCH_DPWROK



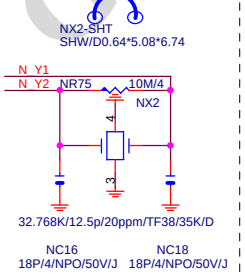
PCH PU/PD



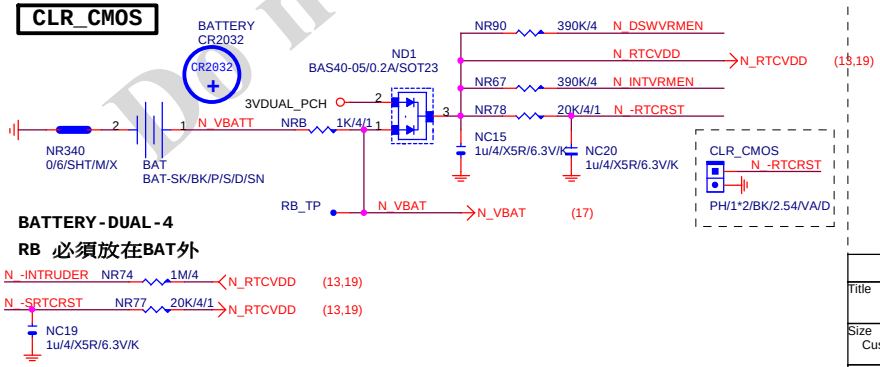
HSW_STRAP13



32.768KHZ

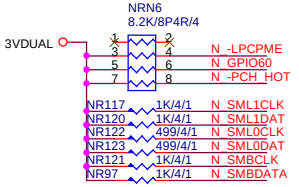


CLR_CMOS



BATTERY-DUAL-4

RB 必须放在BAT外



Gigabyte Technology			
Title: PCH GPIO , CTRL , AUDIO			
Size: Custom	Document Number: GA-H81M-D2W		Rev: 1.0
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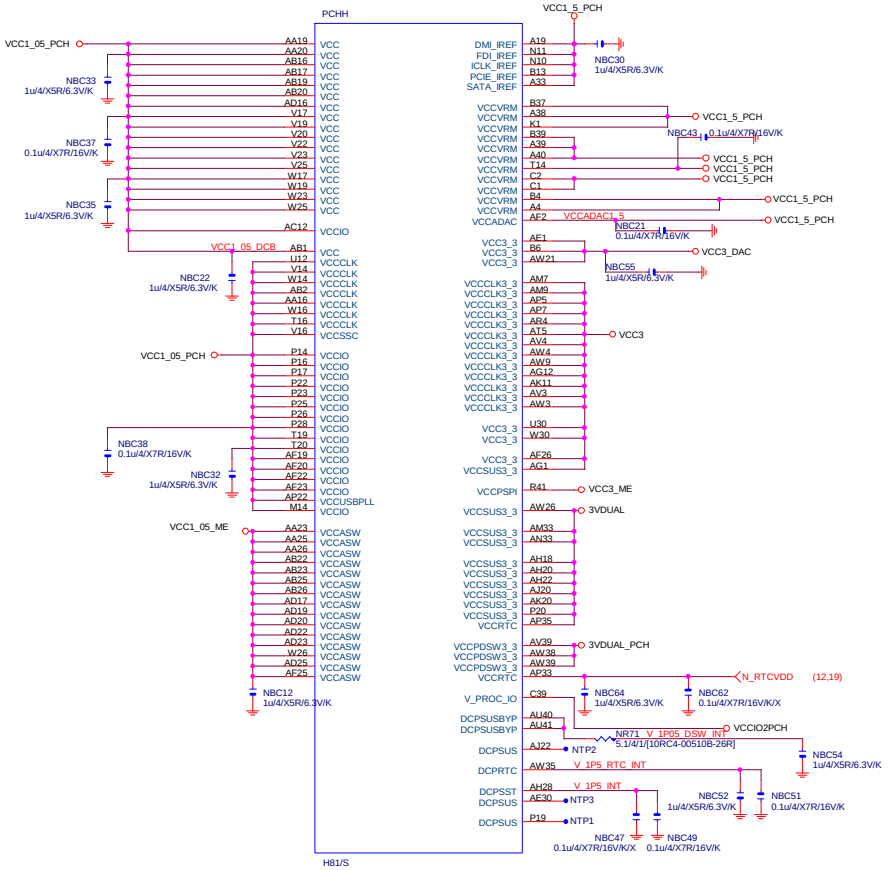
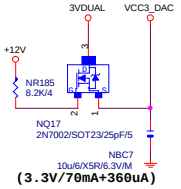
PCH (H)

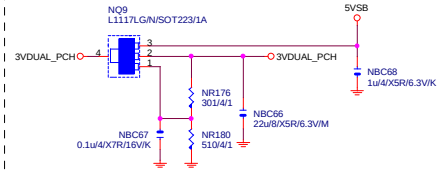


VCC3_DAC

CLOSE北橋(注意震盪水波紋)

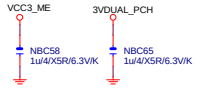


3VDUAL_PCH

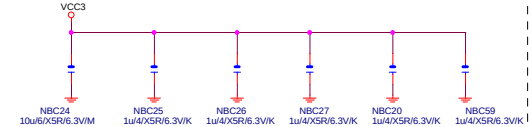


SHT PWR

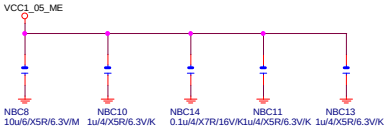
CAP



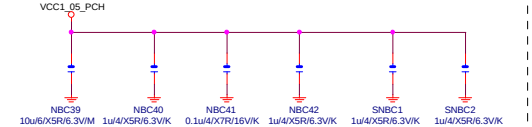
(3.3V)(X6)



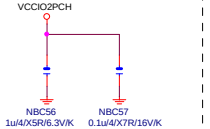
(1.05V)(X5)



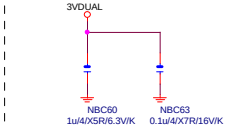
(1.05V)(X6)



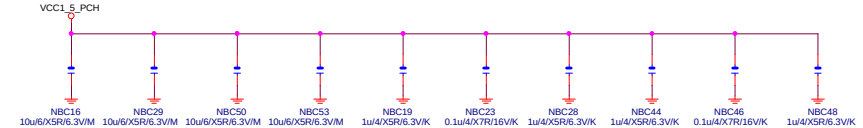
(1.05V)(X2)



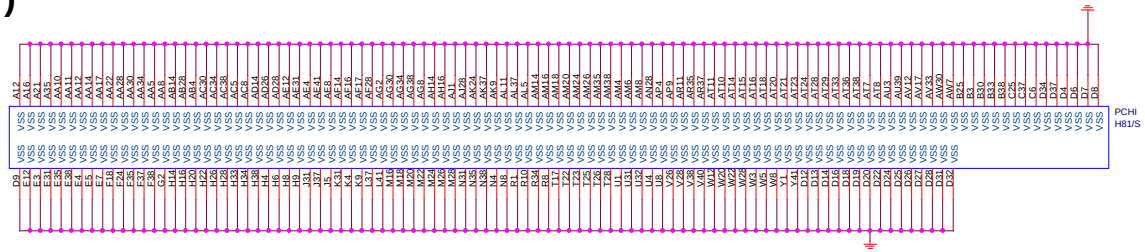
(3.3V)(X2)



(1.05V)(X10)



PCH (I)



Gigabyte Technology			
Title: PCH PWR ,GND			
Size: Custom	Document Number: GA-H81M-D2W		Rev: 1.0
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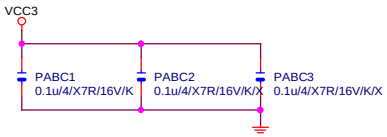
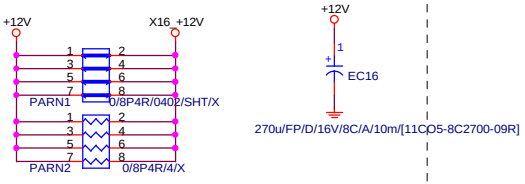
PCIEX16 CAP



PCIEX16 PROTECT SHT



PCIEX16 AC CAP

PA_EXP_TXP0	PAC5	0.22u/4/X5R/6.3V/K	PA_EXP_TXP0_C
PA_EXP_TXN0	PAC4	0.22u/4/X5R/6.3V/K	PA_EXP_TXN0_C
PA_EXP_TXP1	PAC6	0.22u/4/X5R/6.3V/K	PA_EXP_TXP1_C
PA_EXP_TXN1	PAC7	0.22u/4/X5R/6.3V/K	PA_EXP_TXN1_C
PA_EXP_TXP2	PAC8	0.22u/4/X5R/6.3V/K	PA_EXP_TXP2_C
PA_EXP_TXN2	PAC9	0.22u/4/X5R/6.3V/K	PA_EXP_TXN2_C
PA_EXP_TXP3	PAC10	0.22u/4/X5R/6.3V/K	PA_EXP_TXP3_C
PA_EXP_TXN3	PAC11	0.22u/4/X5R/6.3V/K	PA_EXP_TXN3_C
PA_EXP_TXP4	PAC12	0.22u/4/X5R/6.3V/K	PA_EXP_TXP4_C
PA_EXP_TXN4	PAC13	0.22u/4/X5R/6.3V/K	PA_EXP_TXN4_C
PA_EXP_TXP5	PAC14	0.22u/4/X5R/6.3V/K	PA_EXP_TXP5_C
PA_EXP_TXN5	PAC15	0.22u/4/X5R/6.3V/K	PA_EXP_TXN5_C
PA_EXP_TXP6	PAC16	0.22u/4/X5R/6.3V/K	PA_EXP_TXP6_C
PA_EXP_TXN6	PAC17	0.22u/4/X5R/6.3V/K	PA_EXP_TXN6_C
PA_EXP_TXP7	PAC19	0.22u/4/X5R/6.3V/K	PA_EXP_TXP7_C
PA_EXP_TXN7	PAC18	0.22u/4/X5R/6.3V/K	PA_EXP_TXN7_C
PA_EXP_TXP8	PAC20	0.22u/4/X5R/6.3V/K	PA_EXP_TXP8_C
PA_EXP_TXN8	PAC21	0.22u/4/X5R/6.3V/K	PA_EXP_TXN8_C
PA_EXP_TXP9	PAC22	0.22u/4/X5R/6.3V/K	PA_EXP_TXP9_C
PA_EXP_TXN9	PAC23	0.22u/4/X5R/6.3V/K	PA_EXP_TXN9_C
PA_EXP_TXP10	PAC24	0.22u/4/X5R/6.3V/K	PA_EXP_TXP10_C
PA_EXP_TXN10	PAC25	0.22u/4/X5R/6.3V/K	PA_EXP_TXN10_C
PA_EXP_TXP11	PAC26	0.22u/4/X5R/6.3V/K	PA_EXP_TXP11_C
PA_EXP_TXN11	PAC27	0.22u/4/X5R/6.3V/K	PA_EXP_TXN11_C
PA_EXP_TXP12	PAC28	0.22u/4/X5R/6.3V/K	PA_EXP_TXP12_C
PA_EXP_TXN12	PAC29	0.22u/4/X5R/6.3V/K	PA_EXP_TXN12_C
PA_EXP_TXP13	PAC30	0.22u/4/X5R/6.3V/K	PA_EXP_TXP13_C
PA_EXP_TXN13	PAC31	0.22u/4/X5R/6.3V/K	PA_EXP_TXN13_C
PA_EXP_TXP14	PAC32	0.22u/4/X5R/6.3V/K	PA_EXP_TXP14_C
PA_EXP_TXN14	PAC33	0.22u/4/X5R/6.3V/K	PA_EXP_TXN14_C
PA_EXP_TXP15	PAC34	0.22u/4/X5R/6.3V/K	PA_EXP_TXP15_C
PA_EXP_TXN15	PAC35	0.22u/4/X5R/6.3V/K	PA_EXP_TXN15_C

PA_EXP_RXP[0..15] >> PA_EXP_RXP[0..15] (4)

PA_EXP_RXN[0..15] >> PA_EXP_RXN[0..15] (4)

PA_EXP_TXP[0..15] >> PA_EXP_TXP[0..15] (4)

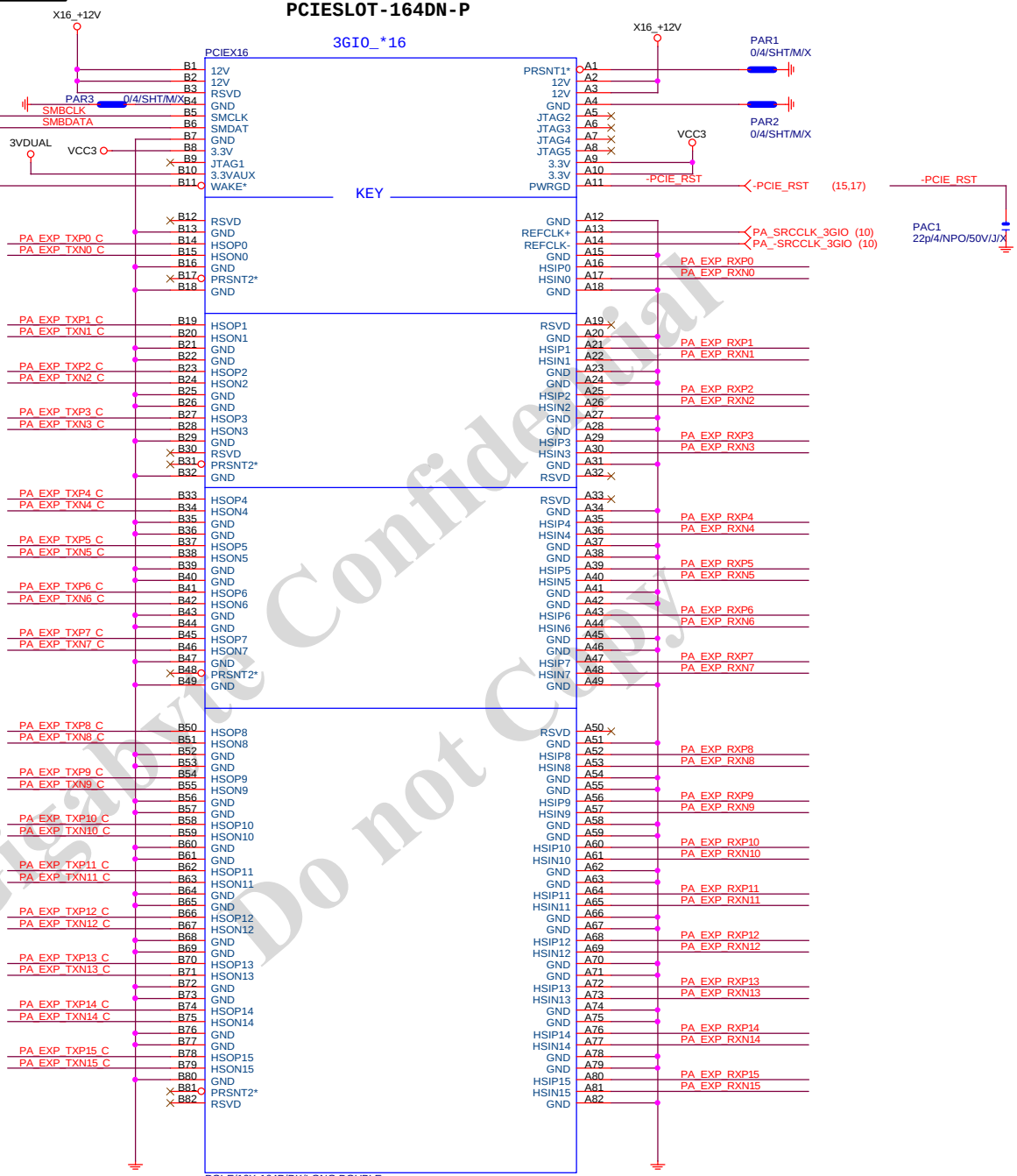
PA_EXP_TXN[0..15] >> PA_EXP_TXN[0..15] (4)

The auxiliary reset circuit is only required for PCIe Gen3 margining and functional link training

PCIEX16 SLOT

PCIESLOT-164DN-P

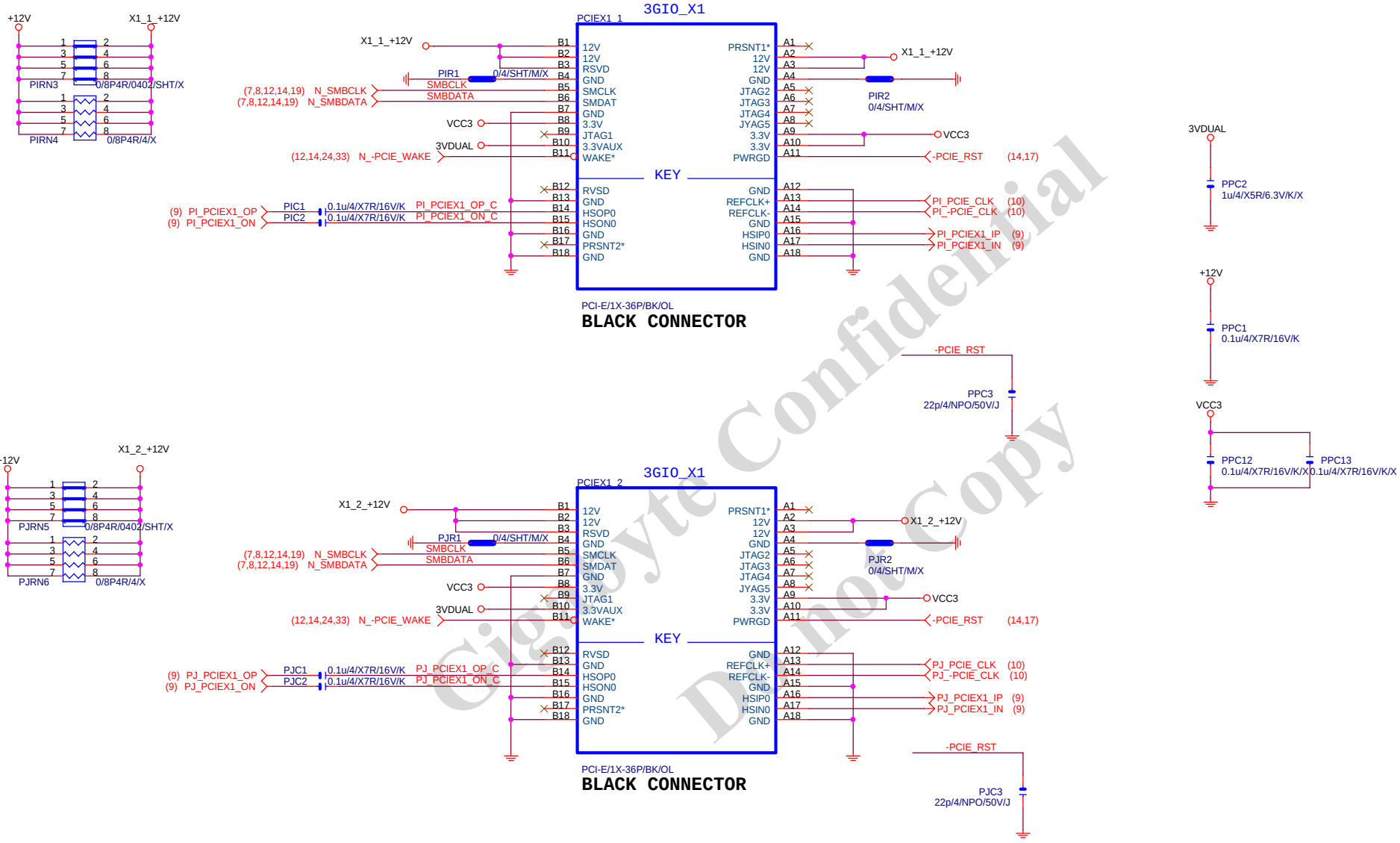
3GIO_*16



BLACK CONNECTOR

Gigabyte Technology			
Title: PCI EXPRESS * 16			
Size: Custom	Document Number: GA-H81M-D2W		Rev: 1.0
Date: Thursday, September 05, 2013	Sheet 14 of 33		

PCIEX1 SLOT



Gigabyte Technology		
Title: PCI EXPRESS X 1 PORT		
Size: Custom	Document Number: GA-H81M-D2W	Rev: 1.0
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Gigabyte Technology			
Title: PCI SLOT 1&2			
Size: Custom	Document Number: GA-H81M-D2W		Rev: 1.0
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SIO IT8620

IT8620E_BX

IT8620E/BX/S

PWR SHT

For 8728 EUP function

3VDUAL_PCH — OR8 0/4 — IT_VCCH

VCC3 — OR9 0/4 — IT_AVCC

SIO PU

IO_GP25 OR10 1K/4/1 3VDUAL_PCH

DS_ME OR11 1K/4/1 3VDUAL_PCH

SVID_CTRL OR12 8.2K/4 3VDUAL_PCH

-PROCHOT_CON OR13 8.2K/4 VCC3

N_-LDRQ0 OR14 1K/4/1 VCC3

ITE_PWROK2 OR15 1K/4/1 VCC3

ITE_PWROK1 OR16 1K/4/1 VCC3

-PCIE_RST OR17 1K/4/1 VCC3

-PFMRST2 OR18 1K/4/1 VCC3

(19) FANPWM1 FANPWM1 OR19 8.2K/4 VCC

(19) FANPWM2 FANPWM2 OR20 8.2K/4 VCC

SIO STRAP

H61M-S2 1.1 JP6 stuff pull down

JP2 OR21 8.2K/4 VCC3

JP3 OR22 8.2K/4 VCC3

JP4 OR23 8.2K/4 VCC3

JP5 OR24 8.2K/4/X VCC3

OR25 8.2K/4/X

ITE recommand

EUP control by PCH

3VDUAL OR26 100/4/1 28_3VSB

JP3--- High SPI-Flash Disable

Low SPI-Flash Enable

Power leakage

IT_AVCC — OQ1 2N7002/SOT23/25pF/5 — SOT23 — -PSON — OR27 510/4/1

For IT8721 Power leakage

DUAL BIOS OPT STRAP

-CASEOPEN — OC6 1u/4/X5R/6.3V/K

CEB_N — OR30 680/4/1/X — OR31 1K/4/1 — VCC3

SIO_18V

internal power pin, max 22nF cap

SIO_18V — OC7 0.1u/4/X7R/16V/K — OC8 0.1u/4/X7R/16V/K/X

MB ID

VCC3 — OR28 8.2K/4 — OR29 8.2K/4/X MB_ID2

SIO CAP

IT_VCCH — OC9 1u/4/X5R/6.3V/K — OC10 0.1u/4/X7R/16V/K/X

IT_VCCH — OC11 10u/6/X5R/6.3V/M

3VDUAL — OC12 1u/4/X5R/6.3V/K

IT_AVCC — OC13 10u/6/X5R/6.3V/M

3VDUAL_PCH — OC14 0.1u/4/X7R/16V/K

VREF_25 — OC15 0.1u/4/X7R/16V/K

Gigabyte Technology			
Title: PCH GPIO , CTRL , AUDIO			
Size: C	Document Number: GA-H81M-D2W		Rev: 1.0
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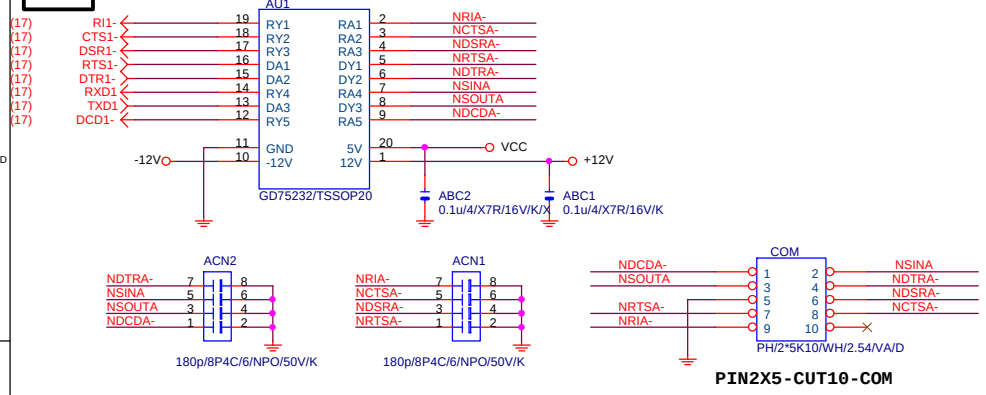
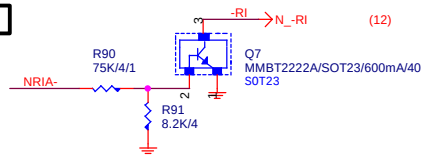
COM

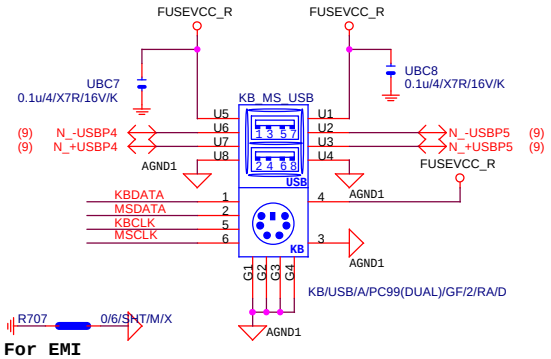


PIN2X5-CUT10-COM

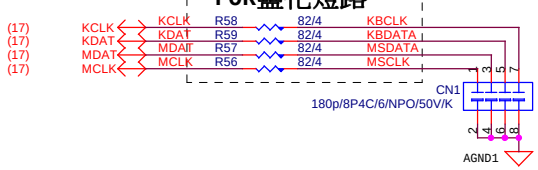
COM RI



KB/MS

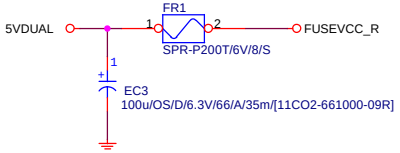


FOR鹽化短路



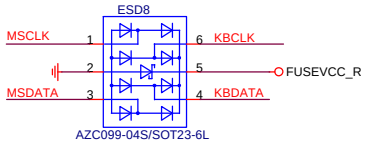
USB2.0 PWR

FUSE-0805
KB_MS_USB 2-Port 2.0A

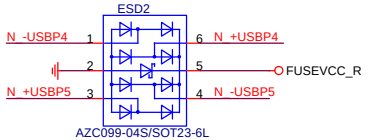


Close to connector

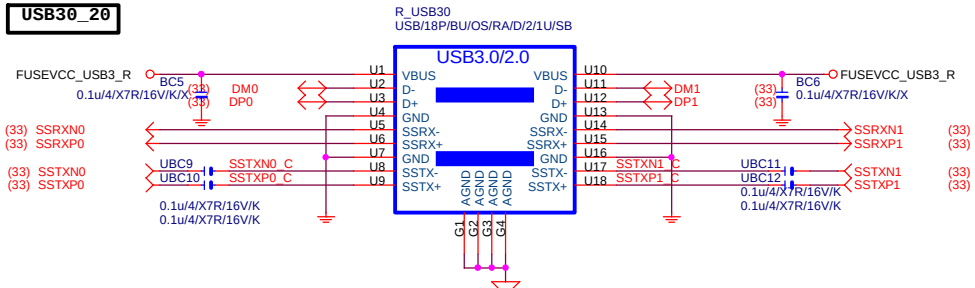
KB/MS ESD



USB2.0 ESD

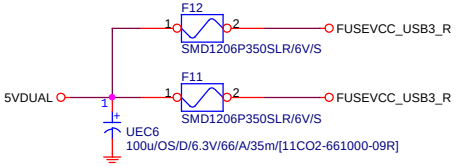


USB30_20



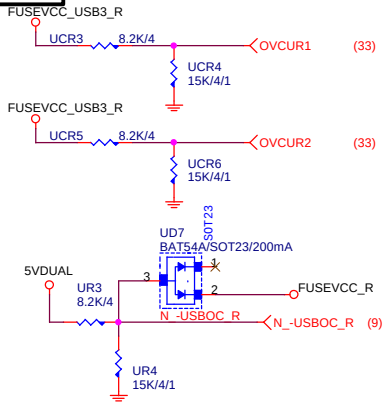
USB30_20 PWR

Polyswitch-1206



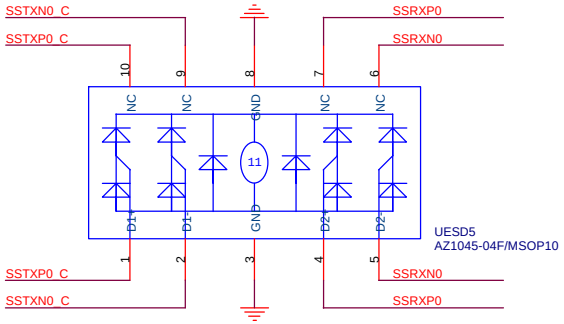
USB3.0 1Port - 1Fuse (3.5A)

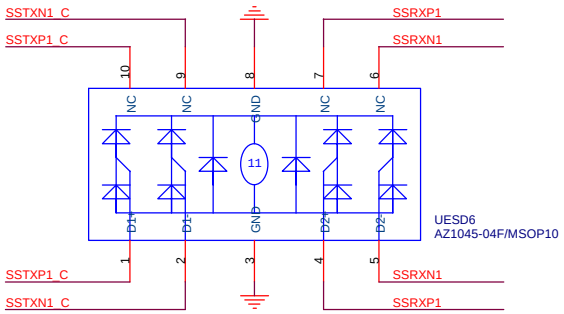
-USBOC_R



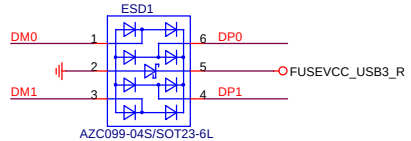
USB30_20 ESD PROCTECT

USB3.0 ESD

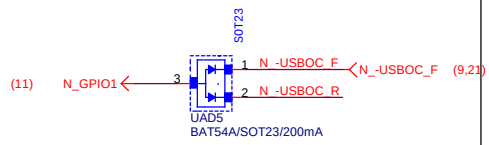




USB2.0 ESD



USB POWER PROTECT



Gigabyte Technology

Title	COM,-RI,KB_USB,USB_ESATA,-PROCHOT		
Size: Custom	Document Number: GA-H81M-D2W		Rev: 1.0
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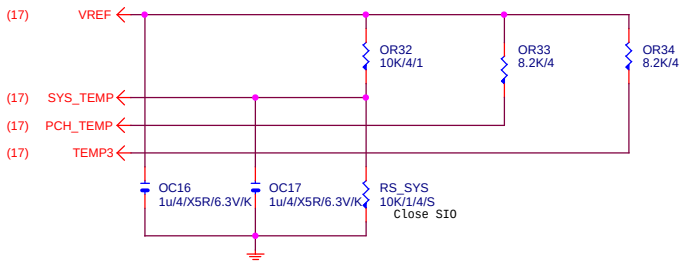
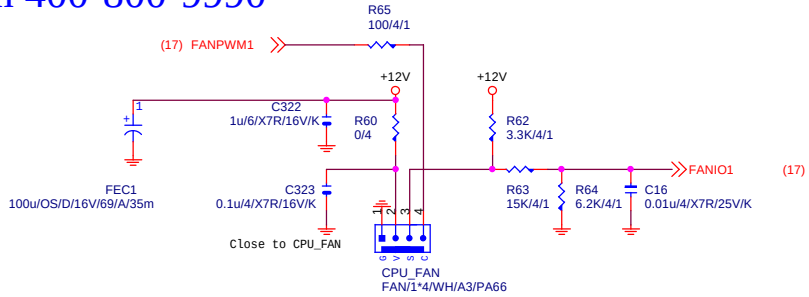
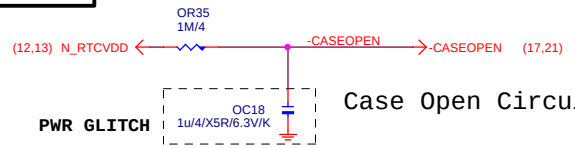
TEMP H/W MONITOR



CPU SMART FAN

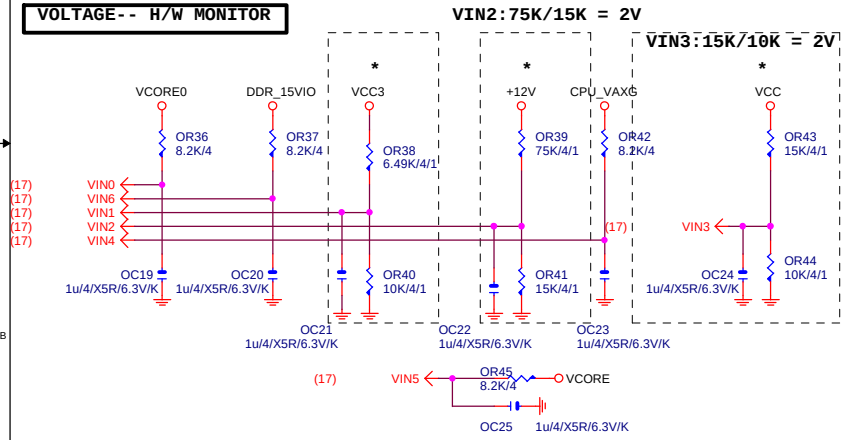


CASE OPEN



Case Open Circuits

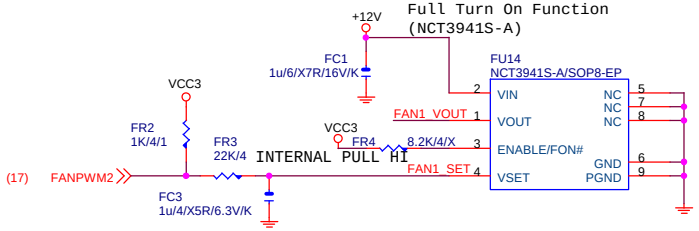
VOLTAGE-- H/W MONITOR

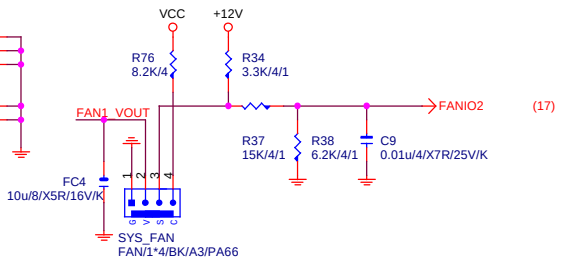


SYS SMART FAN

Linear SYS_FAN

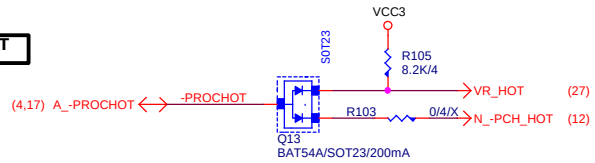
Enable Function (NCT3941S)
Full Turn On Function
(NCT3941S-A)

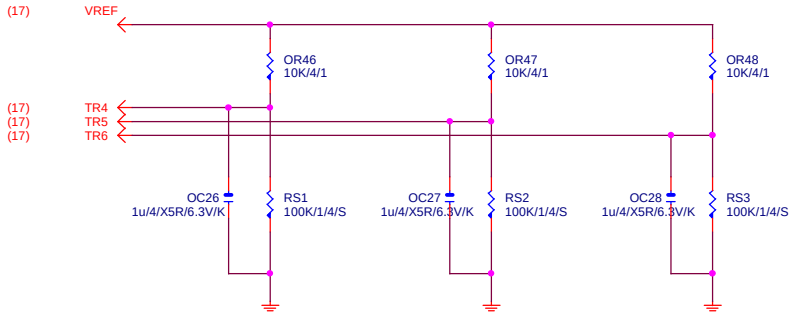




BLACK CONNECTOR

-PROHOT

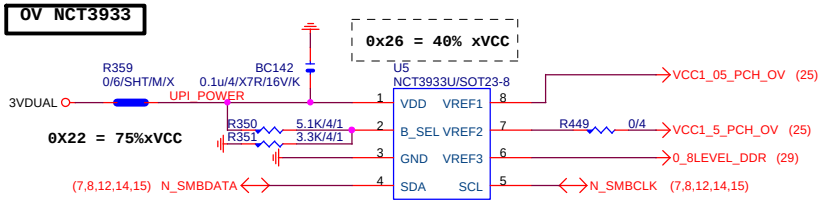




RS1、RS2、RS3 CLOSE CPU
VR MOSFET

接pwm feedback pin

OV NCT3933



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

Gigabyte Technology

Title: HWM,FAN CTRL,OV

Size: Custom | Document Number: GA-H81M-D2W | Rev: 1.0

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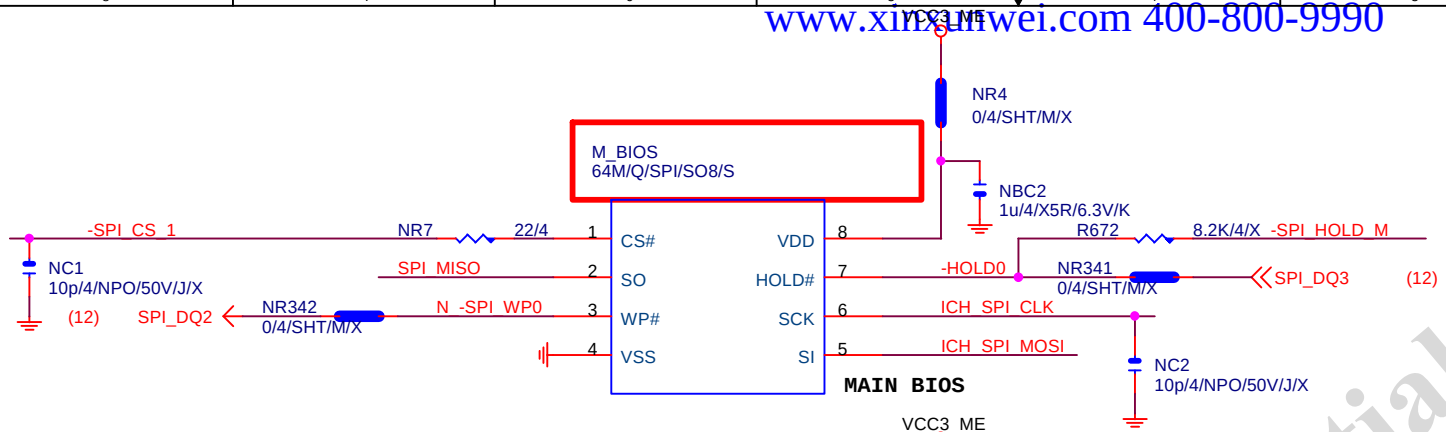
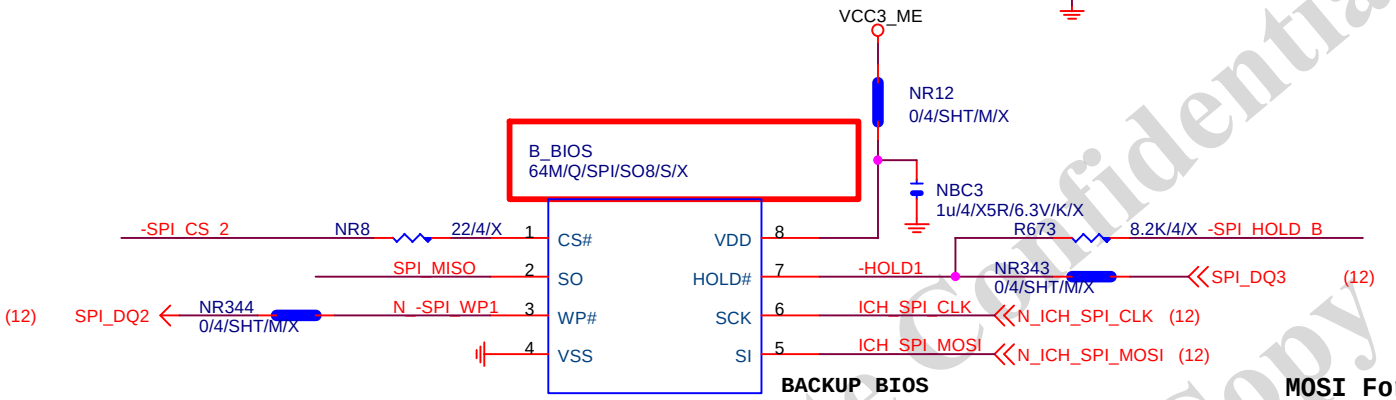
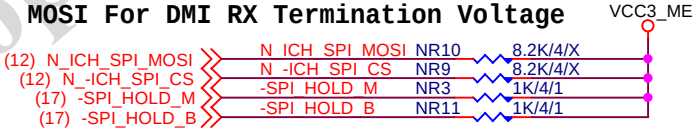


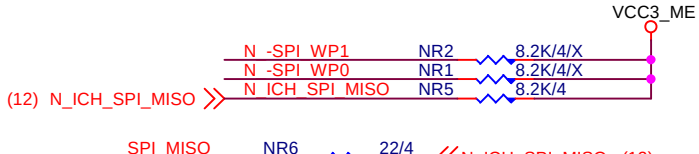


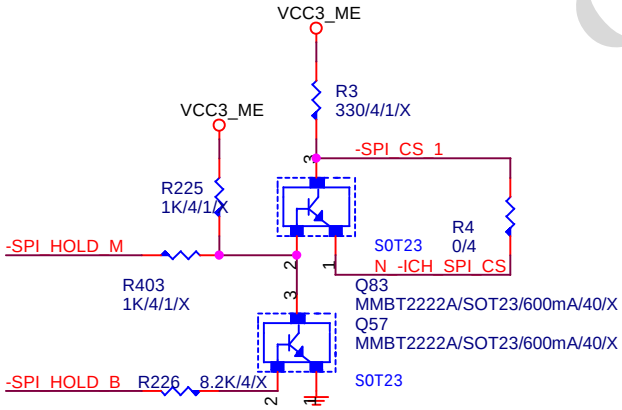
BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

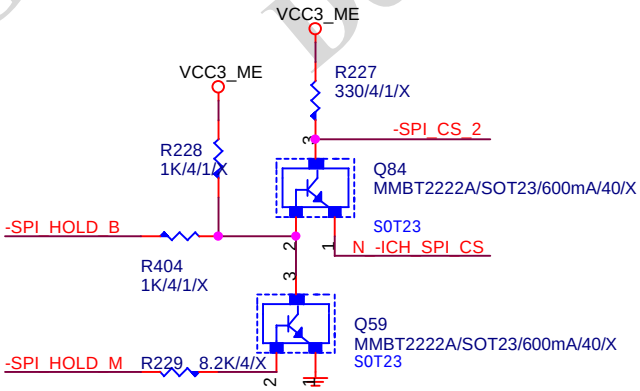
1 means floating
0 means PD 1K

MOSI For DMI RX Termination Voltage

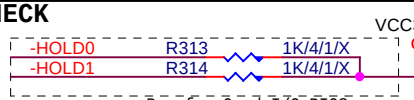






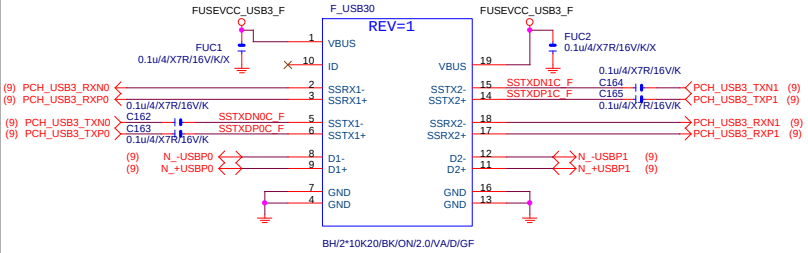


CHECK



Gigabyte Technology		
Title: DUAL BIOS		
Size: Custom	Document Number: GA-H81M-D2W	Rev: 1.0
Date: Thursday, September 05, 2013	Sheet 20 of 33	

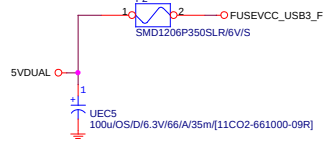
F_USB30



BLACK CONNECTOR

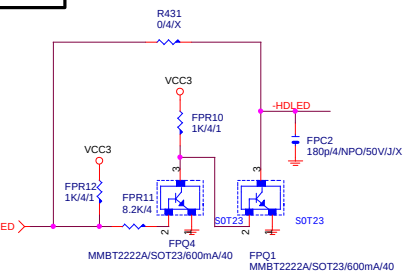
F_USB30 PWR

Polyswitch-1206

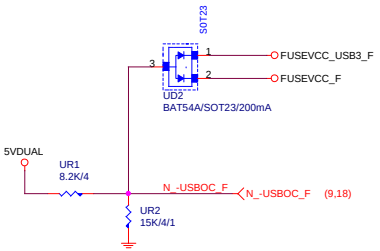


USB3.0 1Port - 1Fuse (3.5A)

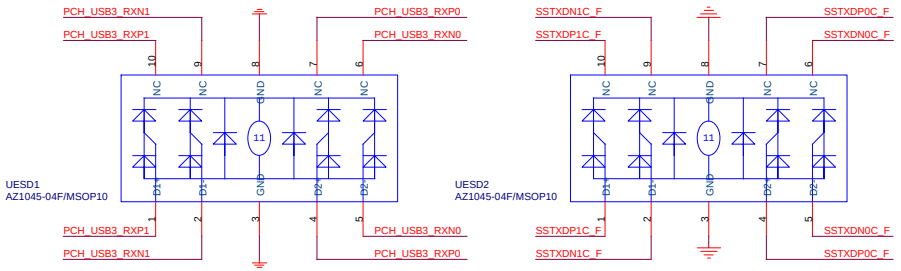
SATA LED

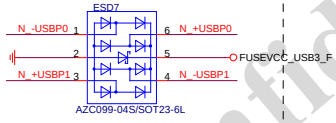


-USBOC_F



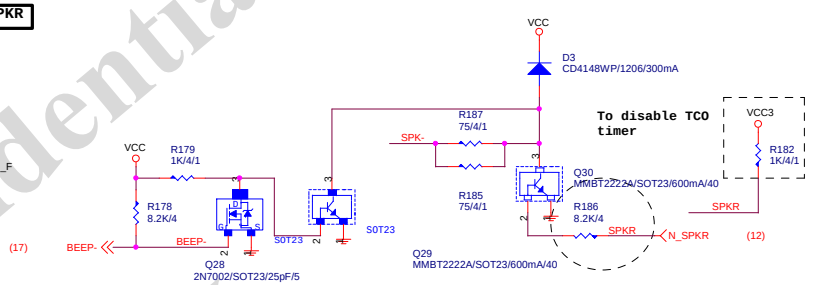
F_USB30 ESD PROTECT



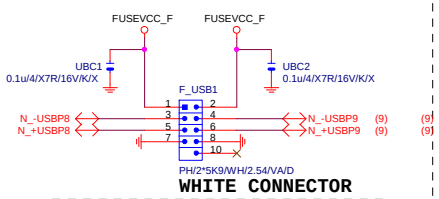


Close to connector

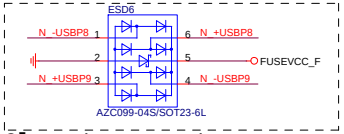
SPKR



FRONT USB1

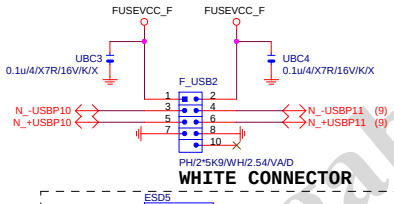


WHITE CONNECTOR

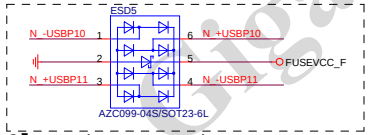


Close to connector

FRONT USB2

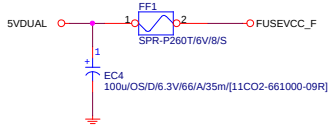


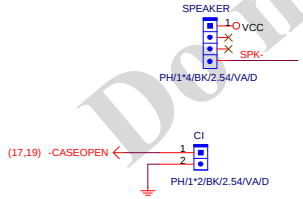
WHITE CONNECTOR



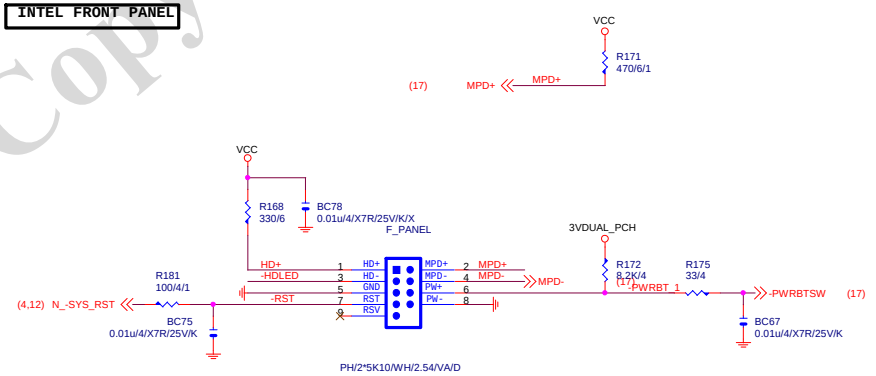
Close to connector

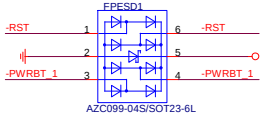
FUSE-0805
F_USB1, F_USB2 4-Port 2.6A





INTEL FRONT PANEL





Gigabyte Technology		
Title: FP,F_USB,USB PWR,SPKR,SATA LED		
Size: Custom	Document Number: GA-H81M-D2W	Rev: 1.0
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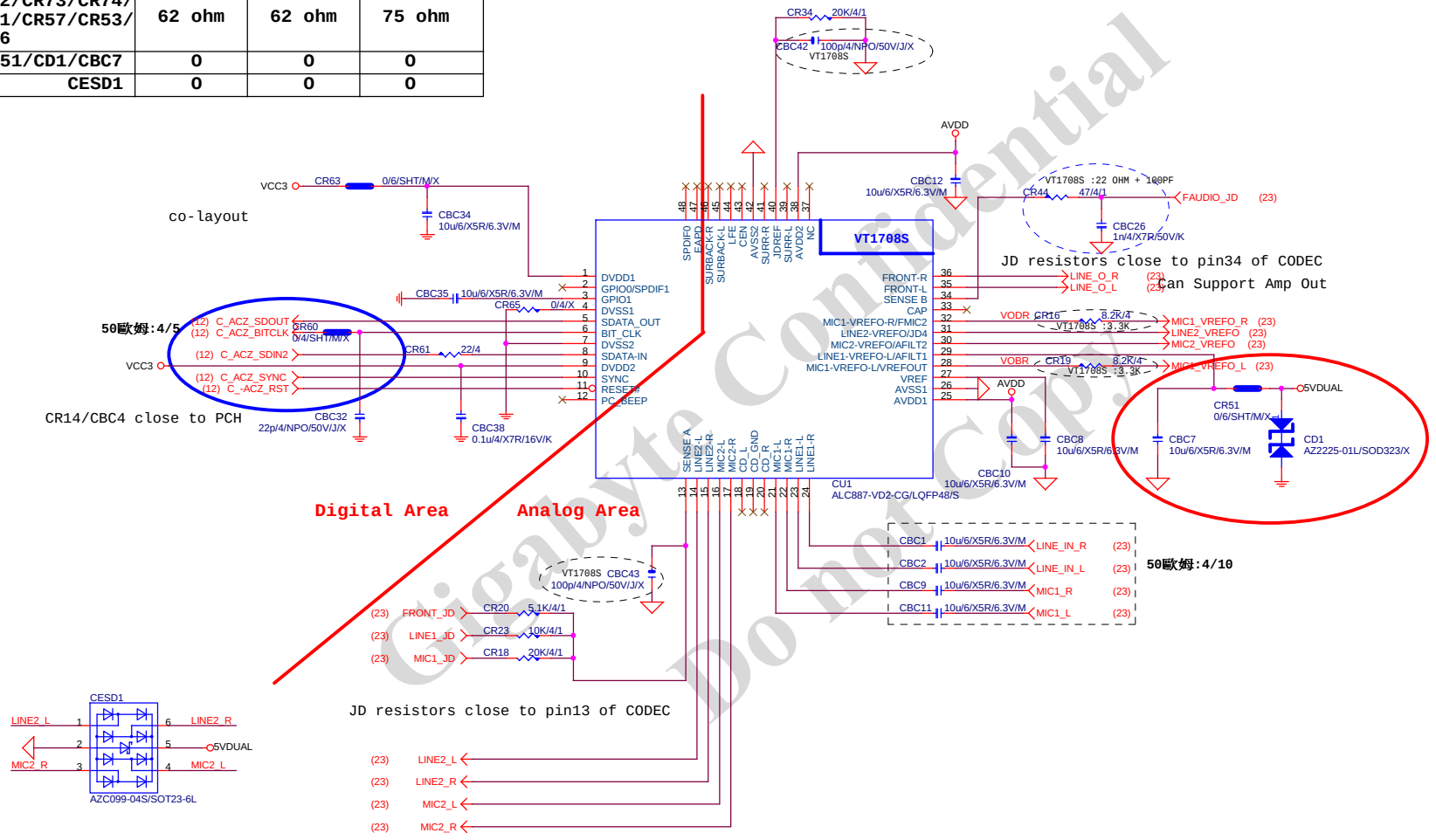
AZALIA CODEC ***ALC892/ALC887-VD2/VT1708-CE Colay***

	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	0	0	0
CESD1	0	0	0



Gigabyte Technology		
Title: HD AUDIO ALC887B-VD2/VT1708S/VT2021		
Size: Custom	Document Number: GA-H81M-D2W	Rev: 1.0
Date: Thursday, September 05, 2013	Sheet 22 of 33	

CR49 0/6/SHT/M/X
CR50 0/6/X
CR21 2.2/6
CR24 0/4/SHT/M/X

LINE-OUT

CR7 22K/4
CR6 22K/4
(22) LINE_O_R — CEC1 100u/OS/D/6.3V/66/A/35m/[11CO2-661000-09R] — CR5 62/4 — AJ_B5
(22) LINE_O_L — CEC2 100u/OS/D/6.3V/66/A/35m/[11CO2-661000-09R] — CR8 62/4 — AJ_B2
CBC19 180p/4/NPO/50V/J
CBC24 180p/4/NPO/50V/J

Only reserved for ALC888

LINE-IN

(22) LINE_IN_R — CR1 62/4 — AJ_A5
(22) LINE_IN_L — CR14 62/4 — AJ_A2
CBC20 180p/4/NPO/50V/J
CBC23 180p/4/NPO/50V/J

Verify MIC function in LINE-in

For 889A/888

MIC-IN

(22) MIC1_R — CR17 62/4 — AJ_C5
(22) MIC1_L — CR22 62/4 — AJ_C2
(22) MIC1_VREFO_L
(22) MIC1_VREFO_R
CBC3 180p/4/NPO/50V/J
CBC4 180p/4/NPO/50V/J

SPDIF_OUT

AUDIO

(22) LINE1_JD — LINE1_JD — AJ_A5 — AJ_A2 — C4 C3 C5 C2 — GND — **BLUE LINE-IN**
(22) FRONT_JD — FRONT_JD — AJ_B5 — AJ_B2 — B4 B3 B5 B2 — GND — **GREEN LINE-OUT**
(22) MIC1_JD — MIC1_JD — AJ_C5 — AJ_C2 — A4 A3 A5 A2 A1 — GND — **PINK MIC-IN**
MH1 MH2 MH3 MH4 MH5

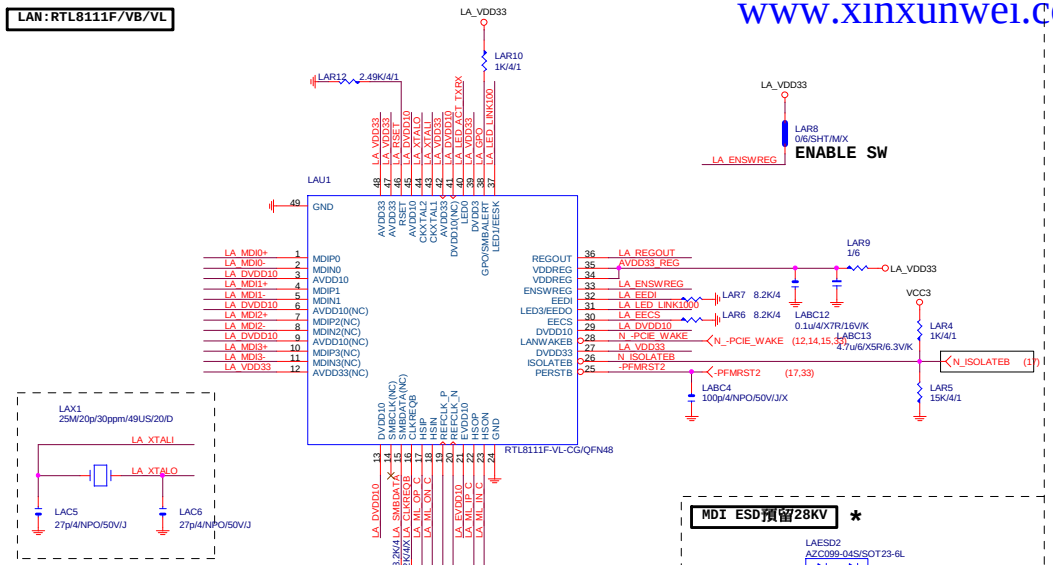
A3RP/13P/BL,LI,PK/RA/D/1/B

AZALIA FRONT PANEL

CQ4 BAT54A/SOT23/200mA — SOT23 — VT1708S :3.3K — (22) LINE2_VREFO — CR52 8.2K/4 — CR56 8.2K/4
CQ2 BAT54A/SOT23/200mA — (22) MIC2_VREFO — CR10 8.2K/4 — CR9 8.2K/4
CR58 22K/4
CR54 22K/4
F_AUDIO
(22) MIC2_L — CBC6 10u/6/X5R/6.3V/M — CR13 62/4 — M2_L
(22) MIC2_R — CBC5 10u/6/X5R/6.3V/M — CR11 62/4 — M2_R
L2_R — CR57 62/4 — L2-R
(22) FAUDIO_JD
L2_L — CR53 62/4 — L2-L
CR12 0/4/X
CR55 20K/4/1
CR59 39.2K/4/1
VCC3
CR78 8.2K/4/X
PH/2*5K8/BK/2.54/VA/D
BLACK CONNECTOR
(22) LINE2_R — CEC9 — L2_R
(22) LINE2_L — CEC6 — L2_L
100u/OS/D/6.3V/66/A/35m/[11CO2-661000-09R]
CBC30 CBC29 CBC37 CBC36
180p/4/NPO/50V/J 180p/4/NPO/50V/J 180p/4/NPO/50V/J 180p/4/NPO/50V/J

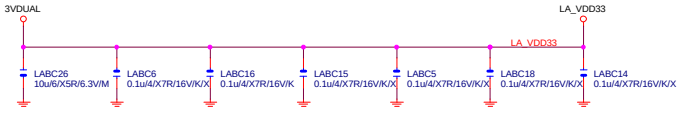
Gigabyte Technology		
Title: AUDIO JACK		
Size: Custom	Document Number: GA-H81M-D2W	Rev: 1.0
Date: Thursday, September 05, 2013	Sheet 23 of 33	

LAN:RTL8111F/VB/VL

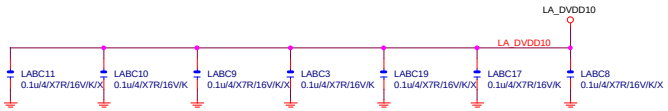


ENABLE SW

LAN POWER

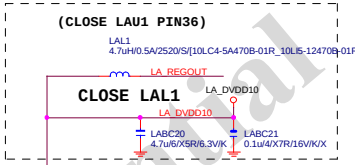


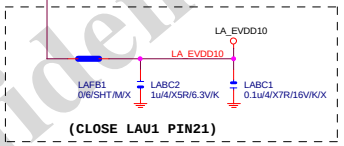
(CLOSE LAU1 PIN:12,27,39,42,47,48)



(CLOSE LAU1 PIN3,6,9,13,29,41,45)

(CLOSE LAU1 PIN36)





(CLOSE LAU1 PIN21)

Power domain chart

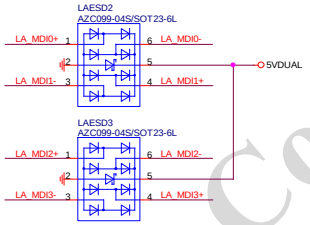
	RTL8111E
AVDD33	3.3V
DVDD33	3.3V
VDDREG	3.3V
DVDD10	1.05V

LA_ ML-->80歐姆:[15/5/5/5/15]

SRCCLK-->50歐姆:[18/4/10/4/18]

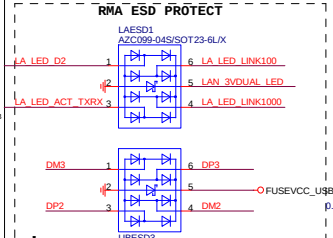
離IC近越好

MDI ESD預留28KV *



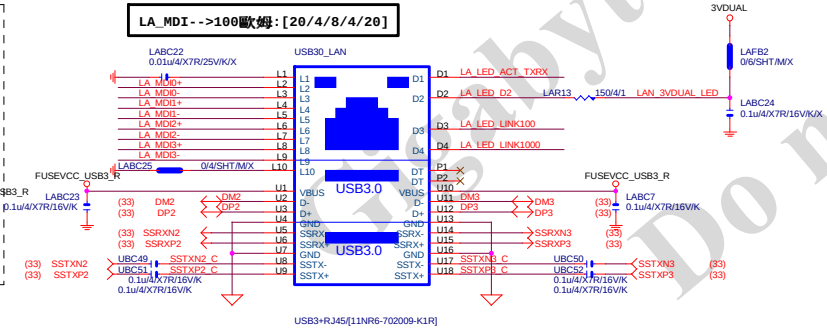
USB_LAN CONNECTOR

RMA ESD PROTECT



* 使用RU9 USB_LAN可省略LAESD1保護LED

LA_MDI-->100歐姆:[20/4/8/4/20]

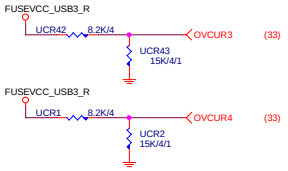


注意:USB PORT(目前:暫代6,7PORT)
USB-->90歐姆:[15/4.5/7.5/4.5/15]

USB X3 POWER

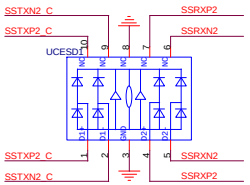
Polyswitch-1206

USB3.0 1Port - 1Fuse (3.5A)

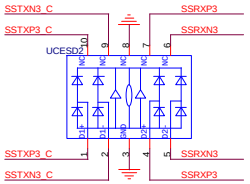


EMI SHORT PAD

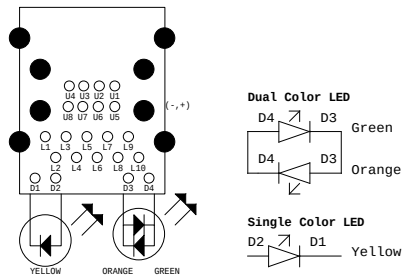
PS:視EMI需求



Close to connector



Close to connector



Dual Color LED

Single Color LED

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

Gigabyte Technology

Title: Realtek RTL8111G

Size: Custom | Document Number: GA-H81M-D2W | Rev: 1.0

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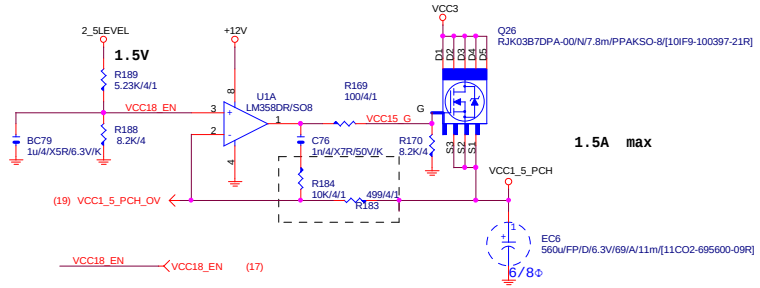
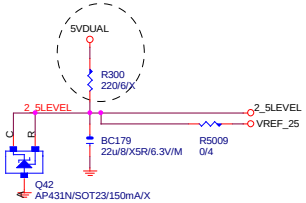
VCC1_8_PCH

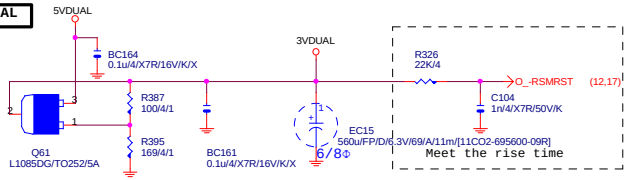


2_5LEVEL

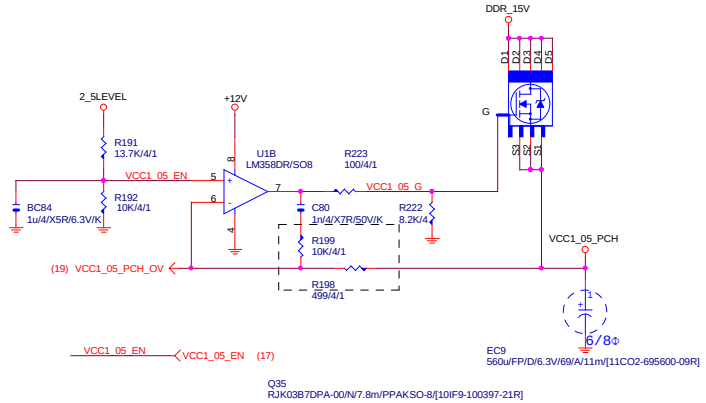
ERP

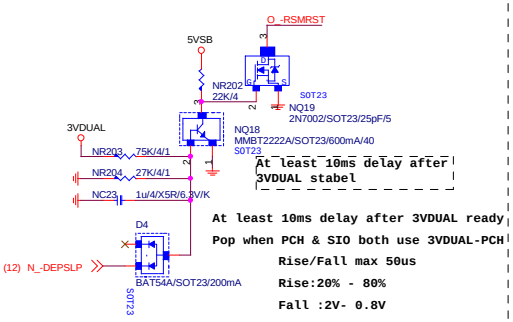


3VDUAL

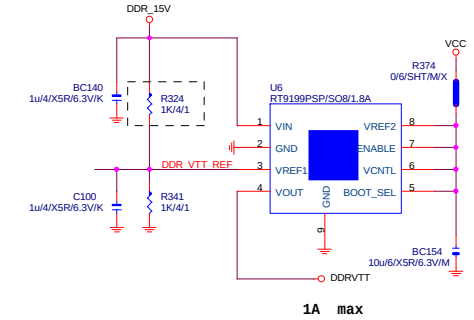


VCC1_05_PCH

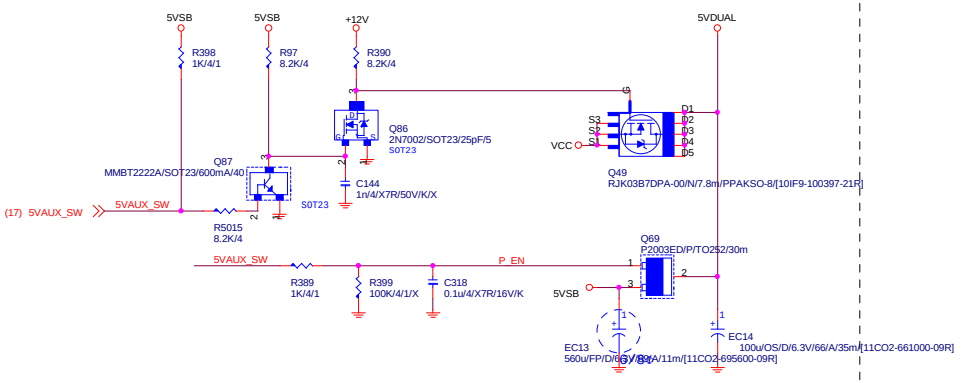




DDRVTT

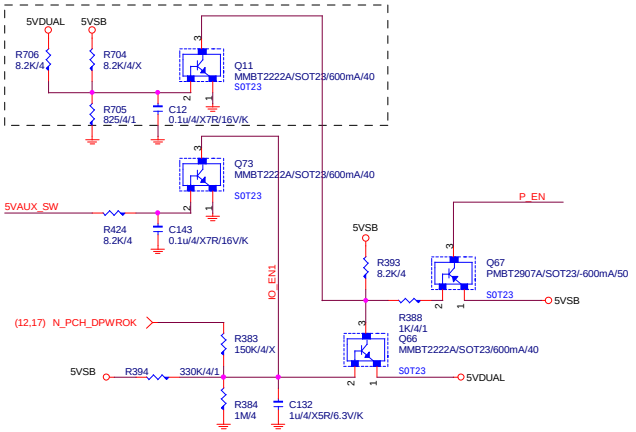


5VDUAL



5VDUAL SHORT PROTECT

5VSB OVP:7.5V protection



Gigabyte Technology		
Title: DISCRETE POWER		
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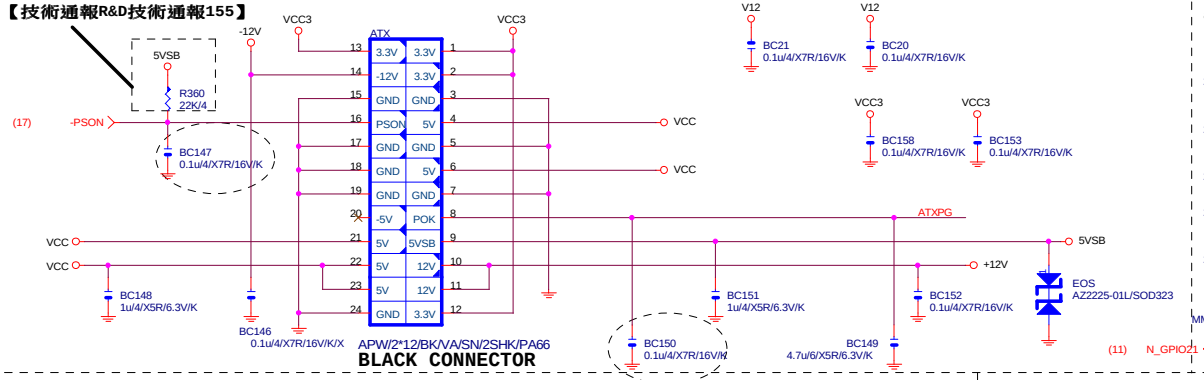
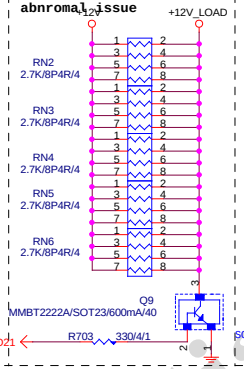
ATXX24 POWER CONNECTOR

【技術通報R&D技術通報155】

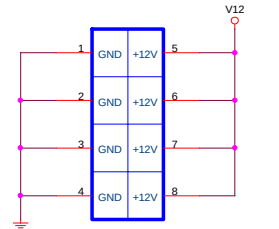


【技術通報R&D技術通報158】

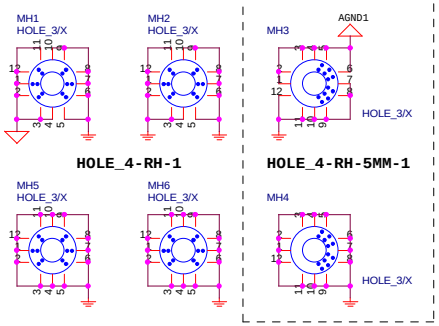
To fix 12V light load abnroma l issue

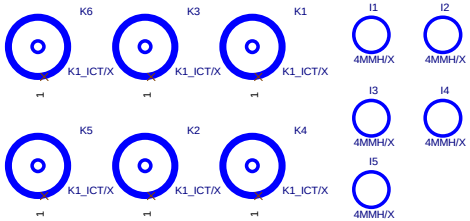


ATXX4 POWER CONNECTOR



TPM

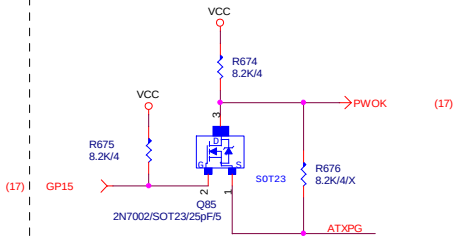


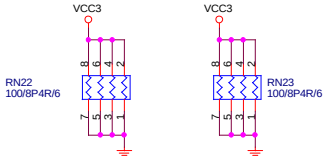


To prevent the 5VSB under loading when boot

PWOK PATCH

【技術通報R&D技術通報154】





FIX PWR MINMUN LOAD

Gigabyte Technology

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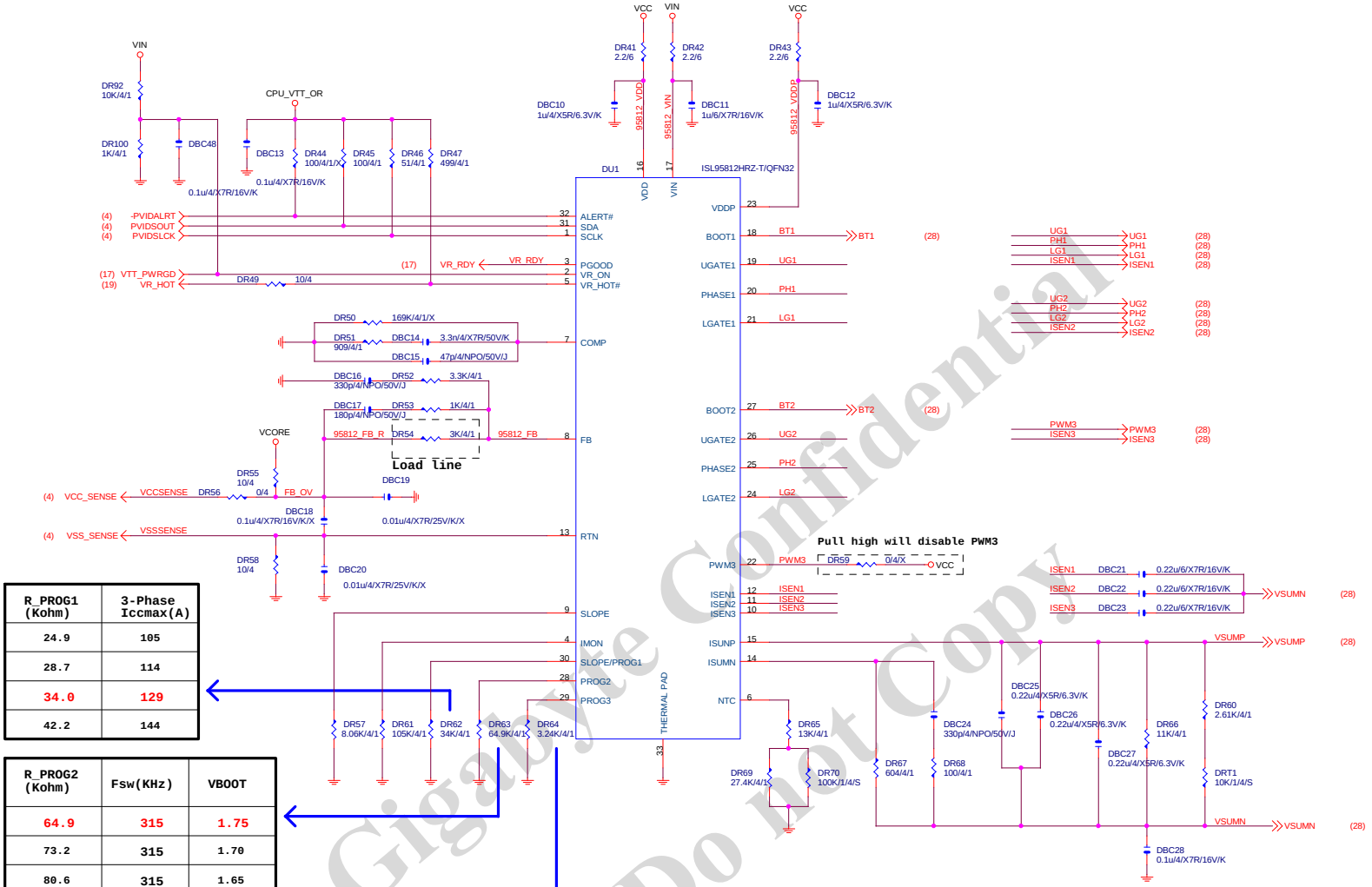

R_PROG1 (Kohm)	3-Phase Iccmax(A)
24.9	105
28.7	114
34.0	129
42.2	144

R_PROG2 (Kohm)	Fsw(KHz)	VBOOT
64.9	315	1.75
73.2	315	1.70
80.6	315	1.65
90.9	315	0

R_PROG3 (Kohm)	Fast Slew Rate (mV/us)
3.24	12
5.76	24
9.31	40
13.3	45

Gigabyte Technology			
Title: CPU CORE VR-1			
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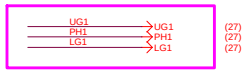
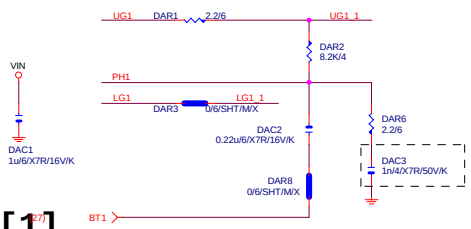
PHASE 1





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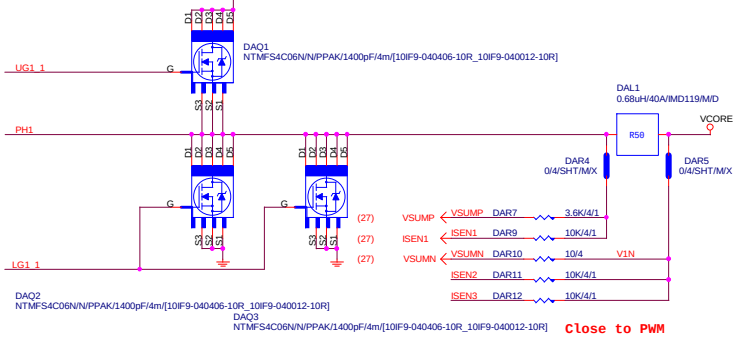
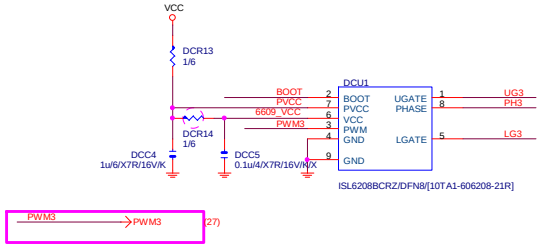
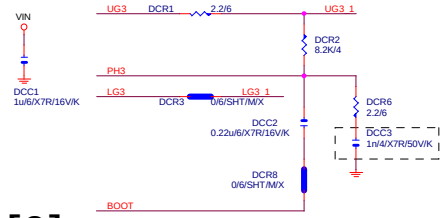


Close to PWM

PHASE 3





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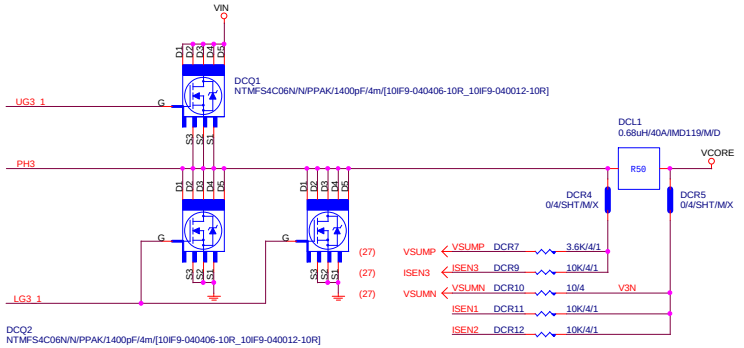
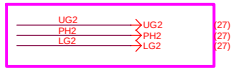
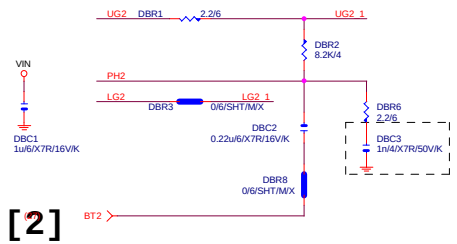


Close to PWM

PHASE 2





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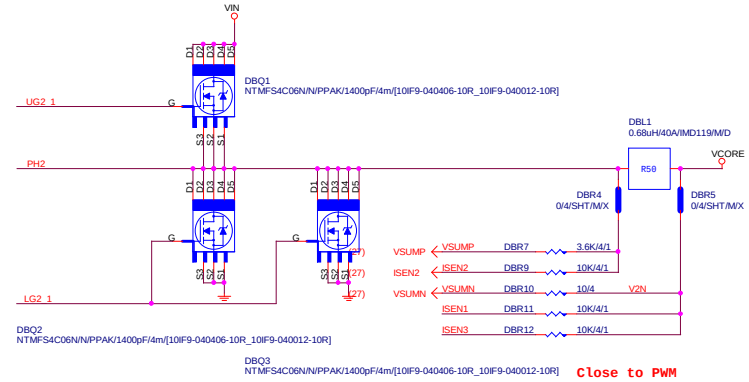
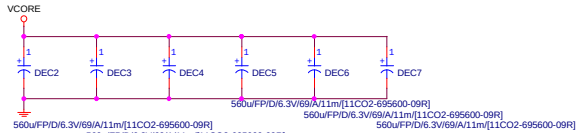
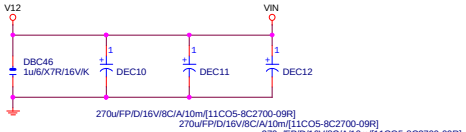


Close to PWM





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Title: CPU CORE VR-2		
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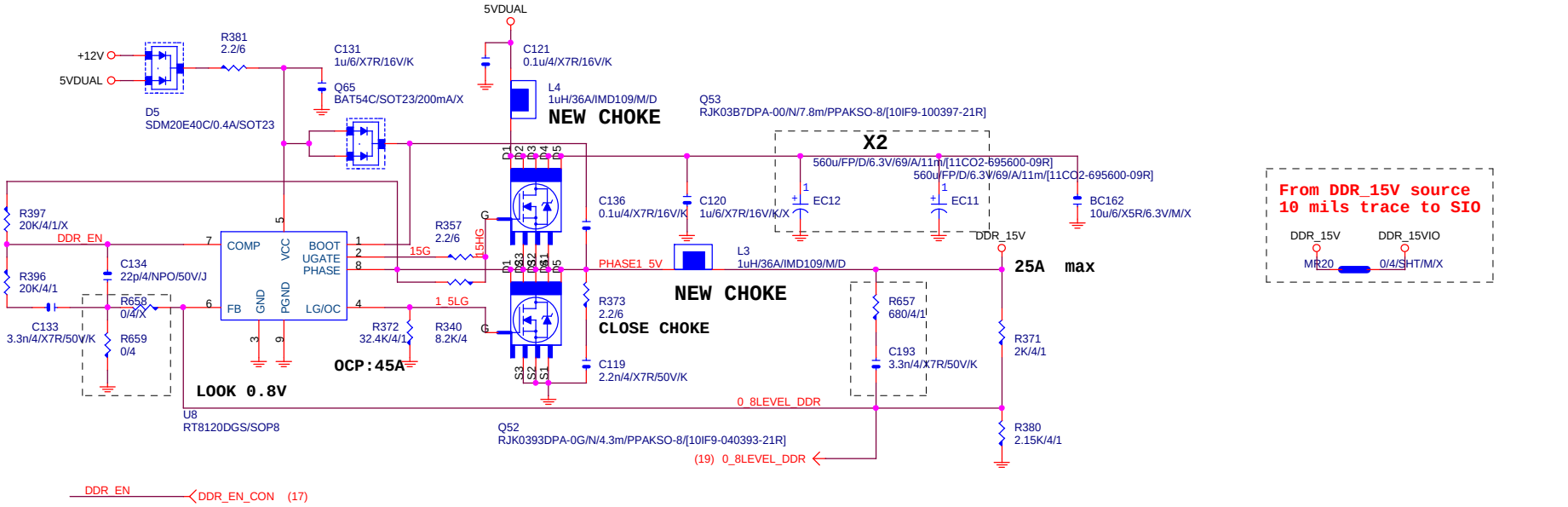
DDR15V



From DDR_15V source
10 mils trace to SIO

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℃),1(105℃)

VIN Ripple current=4.7X1.7=7.99A(85℃)
-->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			
Size: Custom	Document Number: GA-H81M-D2W		Rev: 1.0
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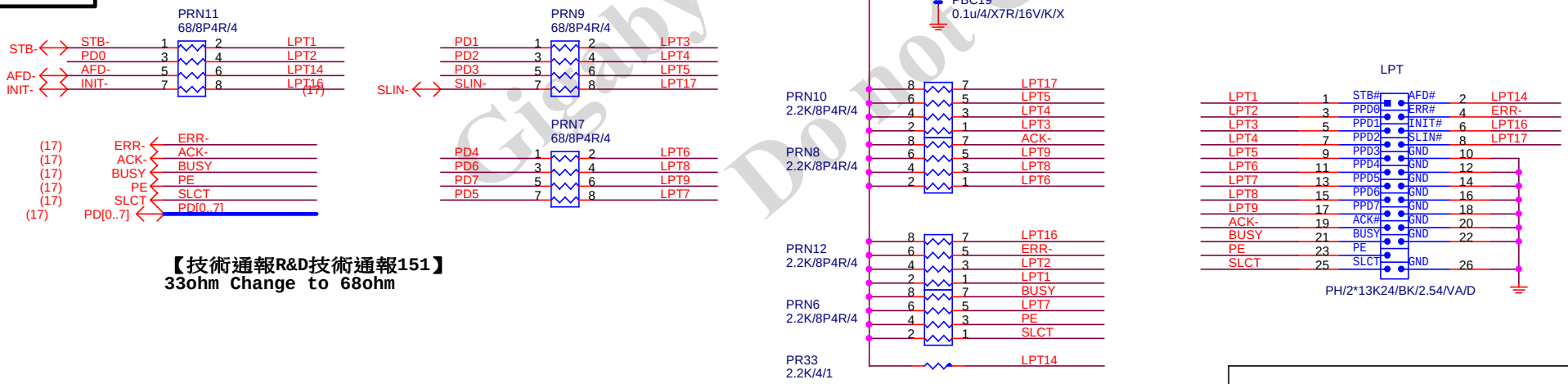
VCC1_05_ME

【技術通報R&D技術通報156】
(RICHTEK), (NUVOTON), (EMC)做共用
PIN7分壓阻值須做修改為100K以上電阻值

VCC3_ME

LPT PORT



【技術通報R&D技術通報151】
33ohm Change to 68ohm

Gigabyte Technology			
Title: LPT			
Size: Custom	Document Number: GA-H81M-D2W		Rev: 1.0
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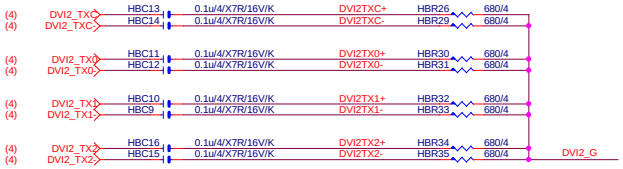
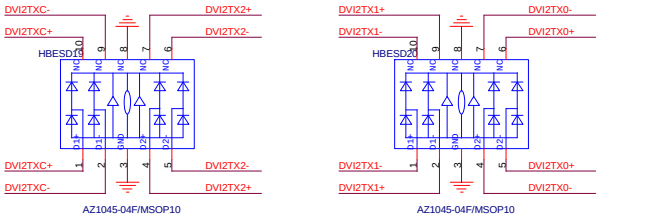
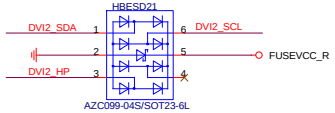
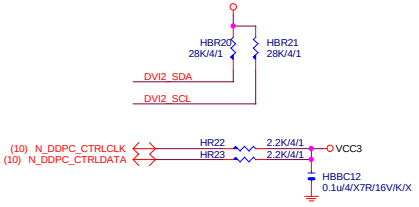


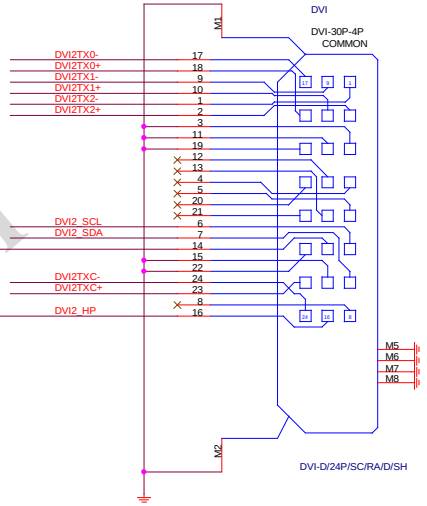


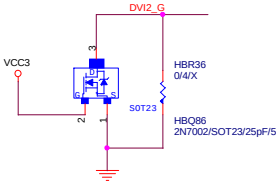
Close to connector

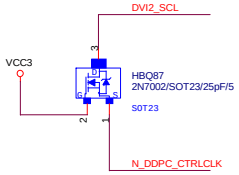
Close to connector

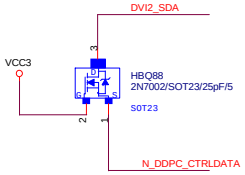


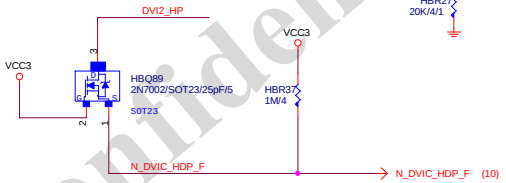


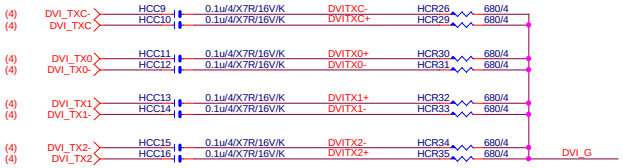


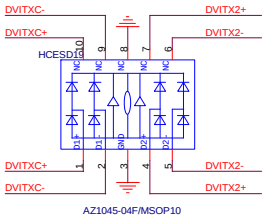




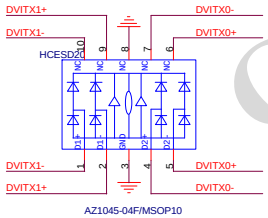




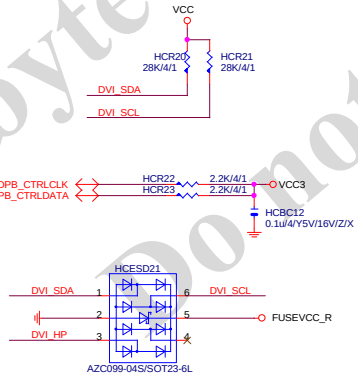


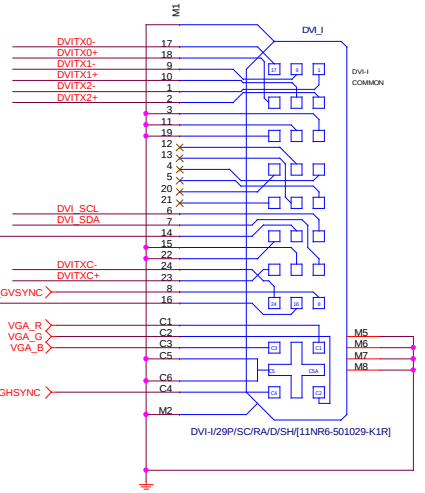


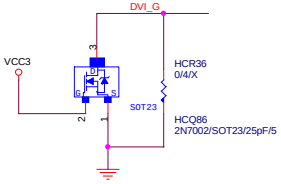
Close to connector

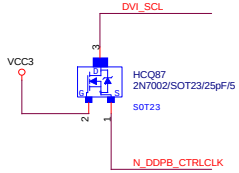


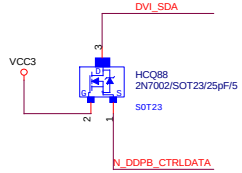
Close to connector

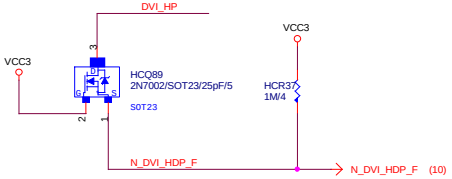












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Title: DVI		
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Gigabyte Technology		
Title: ITE IT8892E		
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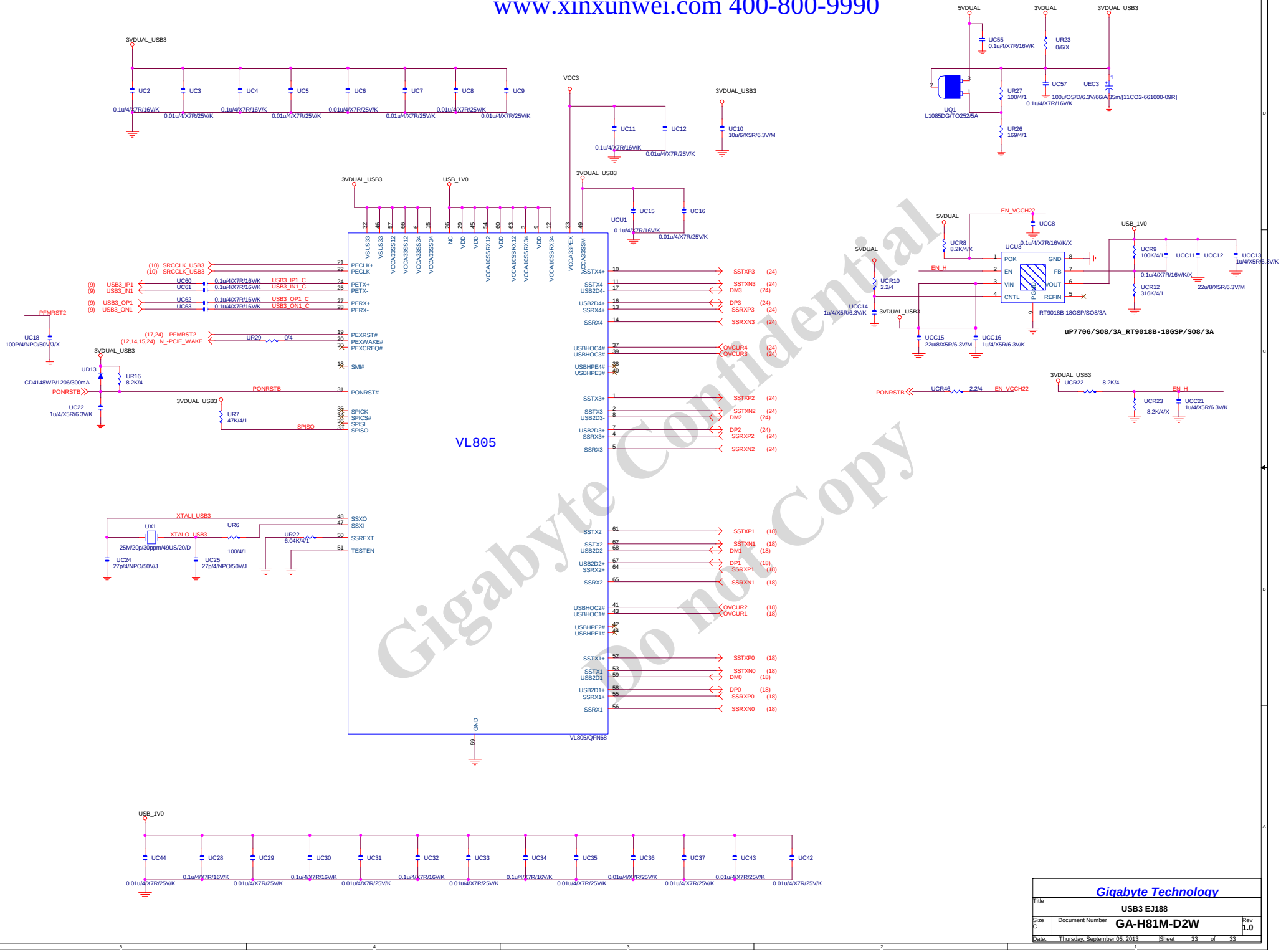

Gigabyte Technology			
Title	USB3 EJ188		
Size C	Document Number GA-H81M-D2W		Rev 1.0
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