Model Name: GA-H81M-D3V-JP JP

SHEET	TITLE	Revision 1.01
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 *3 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-D3V-JP JP | Rev: 1.01

Date: Friday, November 08, 2013 | Sheet 1 of 33

Model Name:
GA-H81M-D3V-JP JP

Component value change history

2013/05/17

Data	Change Item	Reason
2013/05/15	New BOM	9MH81MD2V-00-01

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0開頭	Rev 0.1
2013/05/17	H81M-D2V_R01_0514A-BOM.DSN 1. 由H81M-D2V Rev 0.1 來修改 2. COM port change to pin header 3. VGA connect 改為不架高 4. Add PCIEX1 slot 3 5. U1 改LM358	Rev 0.1
2013/05/17	1.由H81M-D3V-JP Rev 1.0改文字面	Rev 1.0
2013/09/13	1.修改PCH 25MHz走線,跟旁邊所有走線40 mils以上 2.R60 change to 0603 3.PPAK footprint change to Q_TDSON8-GDS-T 4.1206 fuse change to POLYSWITCH-1206-1 5.MR17 change to 0603 6.NCT3941S footprint 改為SOP8-NCT3941S 7.PCIEX16 footprint change to PCIESLOT-164DN-Q-1	Rev 1.01

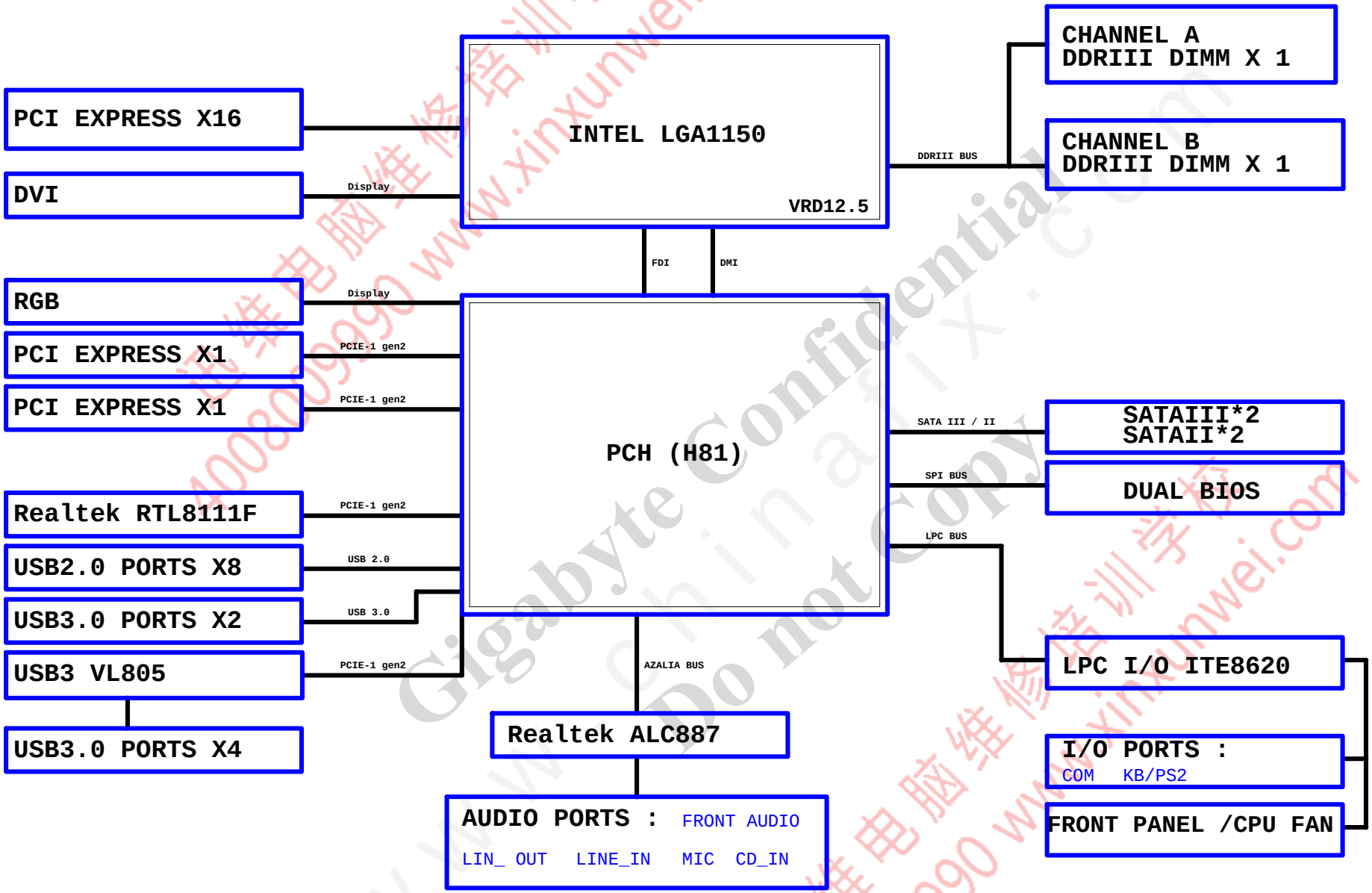
Gigabyte Technology

Title: BOM & PCB MODIFY HISTORY

Size: Custom | Document Number: GA-H81M-D3V-JP UC | Rev: 1.01

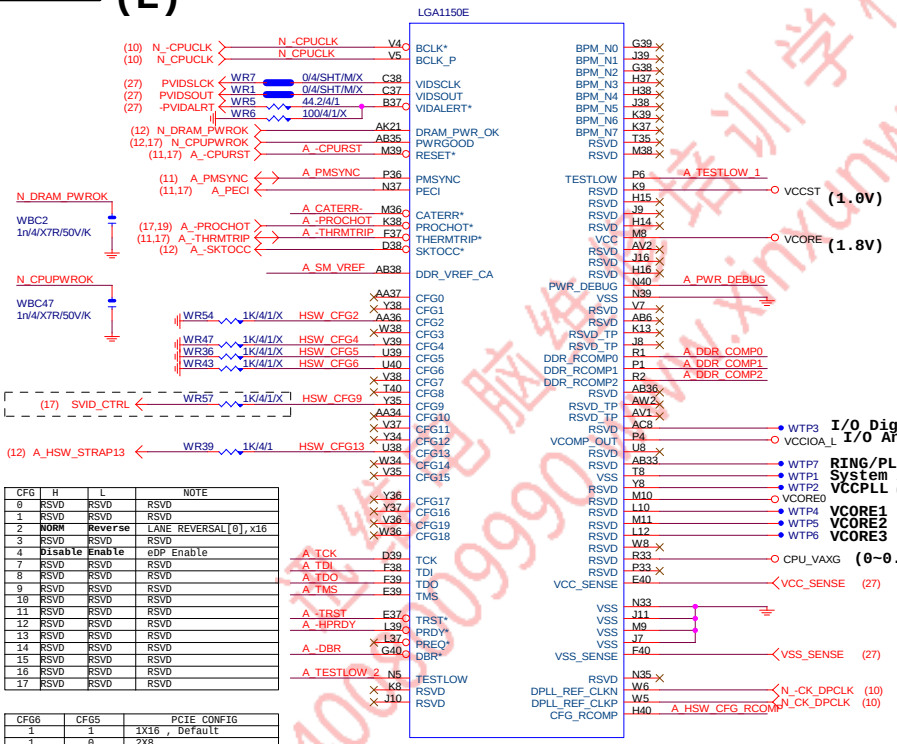
Date: Friday, November 08, 2013 | Sheet 2 of 33

BLOCK DIAGRAM



Gigabyte Technology		
Title: BLOCK DIAGRAM		
Size: C	Document Number: GA-H81M-D3V-JP JP	Rev: 1.01
Date: Friday, November 08, 2013	Sheet 3 of 33	

LGA1150 (E)

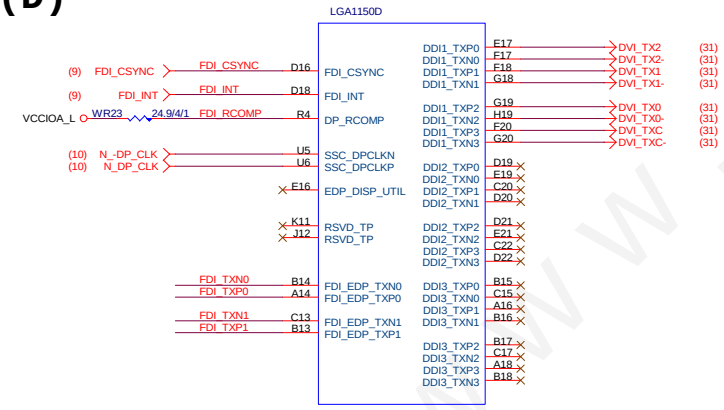


CFG	H	L	NOTE
0	RSVD	RSVD	RSVD
1	RSVD	RSVD	RSVD
2	**NORM**	**Reverse**	LANE REVERSAL[0],x16
3	RSVD	RSVD	RSVD
4	**Disable**	**Enable**	eDP Enable
7	RSVD	RSVD	RSVD
8	RSVD	RSVD	RSVD
9	RSVD	RSVD	RSVD
10	RSVD	RSVD	RSVD
11	RSVD	RSVD	RSVD
12	RSVD	RSVD	RSVD
13	RSVD	RSVD	RSVD
14	RSVD	RSVD	RSVD
15	RSVD	RSVD	RSVD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

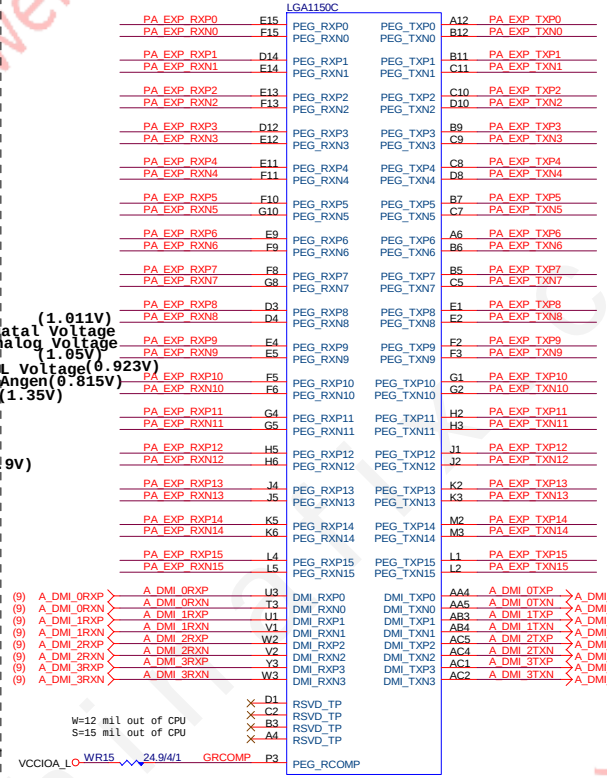


FDI:12/4/5/4/12(breakout min 6/4/4/4/6)
Impedance=85 +- 17.5%

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

LGA1155 (C)

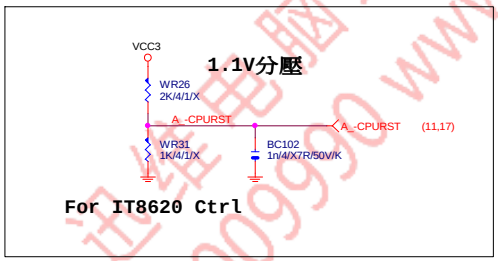
PCIEX16:16/5/5/5/16(breakout min 10/4/4/4/10)
Impedance=80 +- 17.5%



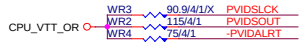
DMI:12/4/4/4/12(breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%

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)

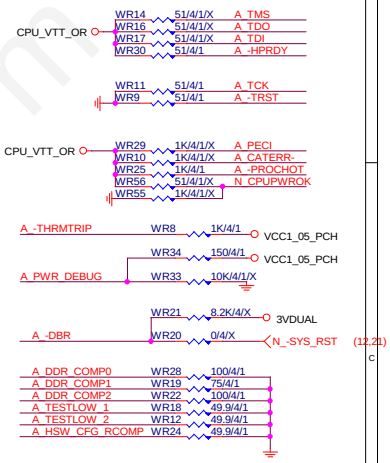
-CPURST



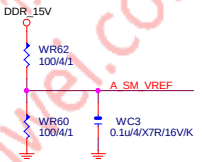
CPU SVID



CPU PU/PD



SM REF



Title	CPU LGA1150-A
Size / Custom	Document Number: GA-H81M-D3V-JP JP
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Gigabyte Technology

LGA1150 (A)

LGA1150A

MAAA0	AU13	DDR0_MA0	DDR0_DQ0	AD38	MDA0
MAAA1	AV16	DDR0_MA1	DDR0_DQ1	AD39	MDA1
MAAA2	AU16	DDR0_MA2	DDR0_DQ2	AF38	MDA2
MAAA3	AW17	DDR0_MA3	DDR0_DQ3	AF39	MDA3
MAAA4	AU17	DDR0_MA4	DDR0_DQ4	AD37	MDA4
MAAA5	AW18	DDR0_MA5	DDR0_DQ5	AD40	MDA5
MAAA6	AV17	DDR0_MA6	DDR0_DQ6	AE37	MDA6
MAAA7	AT18	DDR0_MA7	DDR0_DQ7	AF40	MDA7
MAAA8	AU18	DDR0_MA8	DDR0_DQ8	AH40	MDA9
MAAA9	AT19	DDR0_MA9	DDR0_DQ9	AH39	MDA13
MAAA10	AW11	DDR0_MA10	DDR0_DQ10	AK38	MDA10
MAAA11	AV19	DDR0_MA11	DDR0_DQ11	AK39	MDA11
MAAA12	AU19	DDR0_MA12	DDR0_DQ12	AH37	MDA12
MAAA13	AV10	DDR0_MA13	DDR0_DQ13	AH38	MDA8
MAAA14	AT20	DDR0_MA14	DDR0_DQ14	AK37	MDA14
MAAA15	AU21	DDR0_MA15	DDR0_DQ15	AK40	MDA15
			DDR0_DQ16	AM40	MDA17
MODT_A0	AW10		DDR0_DQ17	AM39	MDA21
MODT_A1	AY8	DDR0_ODT0	DDR0_DQ18	AP38	MDA18
	AW9	DDR0_ODT1	DDR0_DQ19	AP39	MDA19
	AU8	DDR0_ODT2	DDR0_DQ20	AM37	MDA20
		DDR0_ODT3	DDR0_DQ21	AM38	MDA16
			DDR0_DQ22	AP37	MDA22
	AW33		DDR0_DQ23	AP40	MDA23
	AV33	DDR0_ECC0	DDR0_DQ24	AV37	MDA25
	AU31	DDR0_ECC1	DDR0_DQ25	AW37	MDA29
	AV31	DDR0_ECC2	DDR0_DQ26	AU35	MDA26
	AT33	DDR0_ECC3	DDR0_DQ27	AV35	MDA27
	AU33	DDR0_ECC4	DDR0_DQ28	AT37	MDA28
	AT31	DDR0_ECC5	DDR0_DQ29	AU37	MDA24
	AW31	DDR0_ECC6	DDR0_DQ30	AT35	MDA30
		DDR0_ECC7	DDR0_DQ31	AW35	MDA31
			DDR0_DQ32	AY6	MDA33
SBAA0	AV12	DDR0_BA0	DDR0_DQ33	AU6	MDA37
SBAA1	AY11	DDR0_BA1	DDR0_DQ34	AV4	MDA34
SBAA2	AT21	DDR0_BA2	DDR0_DQ35	AU4	MDA35
			DDR0_DQ36	AW6	MDA36
CKEA0	AV22	DDR0_CKE0	DDR0_DQ37	AV6	MDA32
CKEA1	AT23	DDR0_CKE1	DDR0_DQ38	AW4	MDA38
	AU22	DDR0_CKE2	DDR0_DQ39	AY4	MDA39
	AU23	DDR0_CKE3	DDR0_DQ40	AR1	MDA41
			DDR0_DQ41	AR4	MDA45
-CSA0	AU14	DDR0_CS_N0	DDR0_DQ42	AN3	MDA42
-CSA1	AV9	DDR0_CS_N1	DDR0_DQ43	AN4	MDA43
	AU10	DDR0_CS_N2	DDR0_DQ44	AR2	MDA44
	AW8	DDR0_CS_N3	DDR0_DQ45	AR3	MDA40
			DDR0_DQ46	AN2	MDA46
DCLKA0	AY15	DDR0_CLK_P0	DDR0_DQ47	AN1	MDA47
-DCLKA0	AY16	DDR0_CLK_N0	DDR0_DQ48	AL1	MDA49
DCLKA1	AW15	DDR0_CLK_P1	DDR0_DQ49	AL4	MDA53
-DCLKA1	AV15	DDR0_CLK_N1	DDR0_DQ50	AJ3	MDA50
	AY14	DDR0_CLK_P2	DDR0_DQ51	AJ4	MDA51
	AW14	DDR0_CLK_N2	DDR0_DQ52	AL2	MDA52
	AW13	DDR0_CLK_P3	DDR0_DQ53	AL3	MDA48
	AY13	DDR0_CLK_N3	DDR0_DQ54	AJ2	MDA54
			DDR0_DQ55	AJ1	MDA55
	AW12	RSVD	DDR0_DQ56	AG1	MDA57
			DDR0_DQ57	AG4	MDA61
			DDR0_DQ58	AE3	MDA58
			DDR0_DQ59	AE4	MDA59
			DDR0_DQ60	AG2	MDA60
			DDR0_DQ61	AG3	MDA56
			DDR0_DQ62	AE2	MDA62
			DDR0_DQ63	AE1	MDA63
SRASA	AU12	DDR0_RAS*	DDR0_DQS_P0	AJ39	DQSA0
SWEA	AU11	DDR0_WE*	DDR0_DQS_P1	AJ39	DQSA1
	AV20	RSVD	DDR0_DQS_P2	AN39	DQSA2
	AW27	RSVD	DDR0_DQS_P3	AV36	DQSA3
			DDR0_DQS_P4	AV5	DQSA4
			DDR0_DQS_P5	AP3	DQSA5
SCASA	AU9	DDR0_CAS*	DDR0_DQS_P6	AK3	DQSA6
			DDR0_DQS_P7	AE3	DQSA7
DDR3_RST	AK22	DDR_RESET*	DDR0_DQS_P8	AV32	
			DDR0_DQS_N0	AE38	-DQSA0
			DDR0_DQS_N1	AJ38	-DQSA1
			DDR0_DQS_N2	AN38	-DQSA2
			DDR0_DQS_N3	AU36	-DQSA3
			DDR0_DQS_N4	AW5	-DQSA4
			DDR0_DQS_N5	AP2	-DQSA5
			DDR0_DQS_N6	AK2	-DQSA6
			DDR0_DQS_N7	AF2	-DQSA7
			DDR0_DQS_N8	AU32	

WR61 0/4/SHT/M/X

WC4 0.1u/4/X7R/16V/K/X

HASWELL/[10SC1-F01150-11R_10SC1-F01150-12R]

LGA1150 (B)

LGA1150B

MAAB0	AL19	DDR1_MA0	DDR1_DQ0	AE34	MDB0
MAAB1	AK23	DDR1_MA1	DDR1_DQ1	AE35	MDB1
MAAB2	AM22	DDR1_MA2	DDR1_DQ2	AG35	MDB2
MAAB3	AM23	DDR1_MA3	DDR1_DQ3	AH35	MDB3
MAAB4	AP23	DDR1_MA4	DDR1_DQ4	AD34	MDB4
MAAB5	AL23	DDR1_MA5	DDR1_DQ5	AD35	MDB5
MAAB6	AY24	DDR1_MA6	DDR1_DQ6	AG34	MDB6
MAAB7	AV25	DDR1_MA7	DDR1_DQ7	AH34	MDB7
MAAB8	AU26	DDR1_MA8	DDR1_DQ8	AL34	MDB8
MAAB9	AW25	DDR1_MA9	DDR1_DQ9	AL35	MDB9
MAAB10	AP18	DDR1_MA10	DDR1_DQ10	AK31	MDB10
MAAB11	AY25	DDR1_MA11	DDR1_DQ11	AL31	MDB11
MAAB12	AV26	DDR1_MA12	DDR1_DQ12	AK34	MDB12
MAAB13	AR15	DDR1_MA13	DDR1_DQ13	AK35	MDB13
MAAB14	AV27	DDR1_MA14	DDR1_DQ14	AK32	MDB14
MAAB15	AY28	DDR1_MA15	DDR1_DQ15	AL32	MDB15
			DDR1_DQ16	AN34	MDB17
MODT_B0	AM17		DDR1_DQ17	AP34	MDB21
MODT_B1	AL16	DDR1_ODT0	DDR1_DQ18	AN31	MDB19
	AM16	DDR1_ODT1	DDR1_DQ19	AP31	MDB23
	AK15	DDR1_ODT2	DDR1_DQ20	AN35	MDB20
		DDR1_ODT3	DDR1_DQ21	AP35	MDB16
	AM26		DDR1_DQ22	AN32	MDB18
	AM25	DDR1_ECC0	DDR1_DQ23	AP32	MDB22
	AP25	DDR1_ECC1	DDR1_DQ24	AM29	MDB25
	AP26	DDR1_ECC2	DDR1_DQ25	AM28	MDB28
	AL26	DDR1_ECC3	DDR1_DQ26	AR29	MDB27
	AL25	DDR1_ECC4	DDR1_DQ27	AR28	MDB30
	AR26	DDR1_ECC5	DDR1_DQ28	AL29	MDB24
	AR25	DDR1_ECC6	DDR1_DQ29	AL28	MDB29
		DDR1_ECC7	DDR1_DQ30	AP29	MDB26
			DDR1_DQ31	AP28	MDB31
SBAB0	AK17	DDR1_BA0	DDR1_DQ32	AR12	MDB32
SBAB1	AL18	DDR1_BA1	DDR1_DQ33	AP12	MDB33
SBAB2	AW28	DDR1_BA2	DDR1_DQ34	AL13	MDB34
			DDR1_DQ35	AL12	MDB35
CKEB0	AW29	DDR1_CKE0	DDR1_DQ36	AR13	MDB36
CKEB1	AY29	DDR1_CKE1	DDR1_DQ37	AP13	MDB37
	AU28	DDR1_CKE2	DDR1_DQ38	AM13	MDB38
	AU29	DDR1_CKE3	DDR1_DQ39	AM12	MDB39
			DDR1_DQ40	AR9	MDB45
-CSB0	AP17	DDR1_CS_N0	DDR1_DQ41	AP9	MDB41
-CSB1	AN15	DDR1_CS_N1	DDR1_DQ42	AR6	MDB47
	AN17	DDR1_CS_N2	DDR1_DQ43	AP6	MDB43
	AL15	DDR1_CS_N3	DDR1_DQ44	AR10	MDB44
			DDR1_DQ45	AP10	MDB40
			DDR1_DQ46	AR7	MDB46
			DDR1_DQ47	AP7	MDB42
DCLKB0	AM20	DDR1_CLK_P0	DDR1_DQ48	AM9	MDB52
-DCLKB0	AM21	DDR1_CLK_N0	DDR1_DQ49	AL9	MDB53
DCLKB1	AP22	DDR1_CLK_P1	DDR1_DQ50	AL6	MDB50
-DCLKB1	AP21	DDR1_CLK_N1	DDR1_DQ51	AL7	MDB55
			DDR1_DQ52	AM10	MDB48
	AN20	DDR1_CLK_P2	DDR1_DQ53	AL10	MDB49
	AN21	DDR1_CLK_N2	DDR1_DQ54	AM6	MDB54
	AP19	DDR1_CLK_P3	DDR1_DQ55	AM7	MDB51
	AP20	DDR1_CLK_N3	DDR1_DQ56	AH6	MDB61
			DDR1_DQ57	AH7	MDB60
SCASB	AP16	DDR1_CAS*	DDR1_DQ58	AE6	MDB59
	AL20	RSVD	DDR1_DQ59	AE7	MDB63
SRASB	AM18	DDR1_RAS*	DDR1_DQ60	AJ6	MDB56
SWEB	AK16	DDR1_WE*	DDR1_DQ61	AJ7	MDB57
			DDR1_DQ62	AF6	MDB58
			DDR1_DQ63	AF7	MDB62
VREF_DQA	AB39	DDR_VREF_DQ0	DDR1_DQS_P0	AE35	DQSB0
VREF_DQB	AB40	DDR_VREF_DQ1	DDR1_DQS_P1	AL33	DQSB1
			DDR1_DQS_P2	AP33	DQSB2
			DDR1_DQS_P3	AN28	DQSB3
			DDR1_DQS_P4	AN12	DQSB4
			DDR1_DQS_P5	AP8	DQSB5
			DDR1_DQS_P6	AL8	DQSB6
			DDR1_DQS_P7	AG7	DQSB7
			DDR1_DQS_P8	AN25	
			DDR1_DQS_N0	AE34	-DQSB0
			DDR1_DQS_N1	AK33	-DQSB1
			DDR1_DQS_N2	AN33	-DQSB2
			DDR1_DQS_N3	AN29	-DQSB3
			DDR1_DQS_N4	AN13	-DQSB4
			DDR1_DQS_N5	AR8	-DQSB5
			DDR1_DQS_N6	AM8	-DQSB6
			DDR1_DQS_N7	AG6	-DQSB7
			DDR1_DQS_N8	AN26	

VREF_DQA
VREF_DQB
WBC34 0.1u/4/X7R/16V/K
WBC33 0.1u/4/X7R/16V/K
Place in CPU bottom side

HASWELL/[10SC1-F01150-11R_10SC1-F01150-12R]

LGA1150 (CR)

CR
CPU RETAINTION/X

LGA1150

ILM_BP/1156/CSP/ILM_BP/1156/CSP/[12KRC-0F0001-52R_12KRC-0F0001-51R]

DDR BUS

(7) MODT_A[0..1] <> MODT_A[0..1]
(8) MODT_B[0..1] <> MODT_B[0..1]

(7) MDA[0..63] <> MDA[0..63]
(8) MDB[0..63] <> MDB[0..63]

(7) DQSA[0..7] <> DQSA[0..7]
(7) -DQSA[0..7] <> -DQSA[0..7]

(7) MAAA[0..15] <> MAAA[0..15]
(8) MAAB[0..15] <> MAAB[0..15]

(8) DQSB[0..7] <> DQSB[0..7]
(8) -DQSB[0..7] <> -DQSB[0..7]

Title	Gigabyte Technology
	CPU LGA1150-B
Size: Custom	Document Number: GA-H81M-D3V-JP JP
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LGA1150 (F,J)

(1.0V)
CPU_VTT_OR

WBC1
22u/8/X5R/6.3V/M

VCCST

WBC23
0.1u/4/X7R/16V/K

WBC13
0.1u/4/X7R/16V/K

WR65
0/4/X

WR63
0/4/SHT/M/X

VCCIO2PCH
(1.07V)

WR64
0/4/SHT/M/X

VCC1_05_PCH

VCORE

LGA1150F

LGA1150J

WR67
6.04K/4/1

(11,12,17) O_PWROK1

VCCST_PWRGD

WR66
3.16K/4/1

HASWELL/[10SC1-F01150-11R_10SC1-F01150-12R]

DDR_15V

LGA1155 (G,H,I)

LGA1150G

LGA1150I

LGA1150H

HASWELL/[10SC1-F01150-11R_10SC1-F01150-12R]

VCore CAP
(X18)

WBC35 WBC42 WBC36 WBC43 WBC44
WBC38 WBC37 WBC46 WBC39 WBC41 WBC40
WBC19 WBC21 WBC6 WBC9 WBC20 WBC7 WBC11
22u/8/X5R/6.3V/M

DDR CAP
(X9)

WBC29 WBC30 WBC31 WBC32
WBC24 WBC25 WBC26 WBC27 WBC28
22u/8/X5R/6.3V/M

Gigabyte Technology	
Title	CPU LGA1150-C
Size: Custom	Document Number: GA-H81M-D3V-JP JP
Rev	1.01
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DDR3 (A)

DDR3_1

DDRVTT

DDR_15V

VDDSPD_A

N_SMBDATA

N_SMBCLK

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

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

VCC3 MR17 0/6 VDDSPD_A

MC4 0.1u/4/X7R/16V/K

MC5 VREF_DDRA

MC1 VREF_DQDDRA

0.1u/4/X7R/16V/K

(8,12,14,15,19,21) N_SMBCLK

(8,12,14,15,19,21) N_SMBDATA

(5) SBAA2 SBAA1 SBAA0

(5) CKEA1 CKEA0

(5) -CSA1 -CSA0

(5) -DCLKA1 DCLKA1

(5) -DCLKA0 DCLKA0

(5) MAAA[0..15]

(5,8) -DDR3_RST

(5) -SCASA -SRASA -SWEA

-DDR3_RST

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

DDR3/240/BK/VA/D

BLACK CONNECTOR

MODT_A[0..1] MODT_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_DDDDRA

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

DDR_15V

MBC15 MBC17 MBC27 MBC29 MBC35 MBC36 MBC37 MBC47 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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DDR3 (B)

DDR3_2

DDRVTT

VTT VTT FREE FREE FREE FREE

VSS RSVD ODT1 ODT0 NC/PAR_IN NC/ERR_OUT NC/TEST4 CB0 CB1 CB2 CB3 CB4 CB5 CB6 CB7

DQS0 DQS0* DQS1 DQS1* DQS2 DQS2* DQS3 DQS3* DQS4 DQS4* DQS5 DQS5* DQS6 DQS6* DQS7 DQS7* DQS8 DQS8*

DM0/DQS9 NC/DQS9* DM1/DQS10 NC/DQS10* DM2/DQS11 NC/DQS11* DM3/DQS12 NC/DQS12* DM4/DQS13 NC/DQS13* DM5/DQS14 NC/DQS14* DM6/DQS15 NC/DQS15* DM7/DQS16 NC/DQS16* DM8/DQS17 NC/DQS17*

VDD

DDR_15V

MR18 0/4 VCC3 VDDSPD_B

MC2 0.1u/4/X7R/16V/K VDDSPD_B VDDSPD

MC14 0.1u/4/X7R/16V/K VREF_DDRB MC9 0.1u/4/X7R/16V/K VREF_DDDRB VREFCA VREFDQ

(7,12,14,15,19,21) N_SMBCLK (7,12,14,15,19,21) N_SMBDATA VDDSPD_B SCL SDA SA1 SA0

(5) SBAB2 (5) SBAB1 (5) SBAB0 BA2 BA1 BA0

(5) CKEB1 (5) CKEB0 CKE1 CKE0

(5) -CSB1 (5) -CSB0 S1* S0*

(5) -DCLKB1 (5) DCLKB1 CK1/NU* CK1/NU

(5) -DCLKB0 (5) DCLKB0 CK0* CK0

(5) MAAB[0..15] A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 A10/AP A11 A12 A13 A14 A15

(5,7) -DDR3_RST (5) -SCASB (5) -SRASB (5) -SWEB RESET* CAS* RAS* WE*

DQ0 DQ1 DQ2 DQ3 DQ4 DQ5 DQ6 DQ7 DQ8 DQ9 DQ10 DQ11 DQ12 DQ13 DQ14 DQ15 DQ16 DQ17 DQ18 DQ19 DQ20 DQ21 DQ22 DQ23 DQ24 DQ25 DQ26 DQ27 DQ28 DQ29 DQ30 DQ31 DQ32 DQ33 DQ34 DQ35 DQ36 DQ37 DQ38 DQ39 DQ40 DQ41 DQ42 DQ43 DQ44 DQ45 DQ46 DQ47 DQ48 DQ49 DQ50 DQ51 DQ52 DQ53 DQ54 DQ55 DQ56 DQ57 DQ58 DQ59 DQ60 DQ61 DQ62 DQ63

MDB[0..63] (5)

DDR3/240/BK/VA/D

BLACK CONNECTOR

-DQSB[0..7] -DQSB[0..7] (5)

DQSB[0..7] DQSB[0..7] (5)

MODT_B[0..1] MODT_B[0..1] (5)

DDR3 VREF

DDR_15V DDR_15V

MR10 1K/4/1 MR11 1K/4/1 VREF_DDRB

MR8 1K/4/1 MR9 1K/4/1 MR7 10/4 VREF_DQDDRB VREF_DQB (5)

COUPON

COUPON1 COUPON1 1 2 COUPON/X VCC3

COUPON2 COUPON2 1 2 COUPON/X

CPU

DIMM4 DIMM2 CHA

DIMM3 DIMM1 CHB

Gigabyte Technology

Title: DDRIII CHANNEL B

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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

PCHB

DMI_RXN_0 DMI_RXP_0 DMI_TXN_0 DMI_TXP_0 DMI_RXN_1 DMI_RXP_1 DMI_TXN_1 DMI_TXP_1 DMI_RXN_2 DMI_RXP_2 DMI_TXN_2 DMI_TXP_2 DMI_RXN_3 DMI_RXP_3 DMI_TXN_3 DMI_TXP_3 DMI_RCOMP PCIE_RCOMP CLKIN_DMI_N CLKIN_DMI_P

USBN_0 USBP_0 USBN_1 USBP_1 USBN_2 USBP_2 USBN_3 USBP_3 USBN_4 USBP_4 USBN_5 USBP_5 USBN_6 USBP_6 USBN_7 USBP_7 USBN_8 USBP_8 USBN_9 USBP_9 USBN_10 USBP_10 USBN_11 USBP_11 USBN_12 USBP_12 USBN_13 USBP_13

PCIE_PERN_1_USB3_RXN_2 PCIE_PERP_1_USB3_RXP_2 PCIE_PETN_1_USB3_TXN_2 PCIE_PETP_1_USB3_TXP_2 PCIE_PERN_2_USB3_RXN_3 PCIE_PERP_2_USB3_RXP_3 PCIE_PETN_2_USB3_TXN_3 PCIE_PETP_2_USB3_TXP_3 PCIE_PERN_3 PCIE_PERP_3 PCIE_PETN_3 PCIE_PETP_3 PCIE_PERN_4 PCIE_PERP_4 PCIE_PETN_4 PCIE_PETP_4 PCIE_PERN_5 PCIE_PERP_5 PCIE_PETN_5 PCIE_PETP_5 PCIE_PERN_6 PCIE_PERP_6 PCIE_PETN_6 PCIE_PETP_6 PCIE_PERN_7 PCIE_PERP_7 PCIE_PETN_7 PCIE_PETP_7 PCIE_PERN_8 PCIE_PERP_8 PCIE_PETN_8 PCIE_PETP_8

OC0B_GP59 OC1B_GP40 OC2B_GP41 OC3B_GP42 OC4B_GP43 OC5B_GP9 OC6B_GP10 OC7B_GP14 USBRBIASB USBRBIAS CLKIN_DOT96N CLKIN_DOT96P

H81/S

W=4 mil out of PCH
S=15 mil out of PCH

VCC1_5_PCH — NR50 7.5K/4/1 DMI_COMP B19 — PCIE_COMP C13 — NR40 7.5K/4/1

CK_-SRCCLK_PCH G22 — CK_SRCCLK_PCH F22

PCIE Only

8111G

VL805

PCIEx1

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)

N_GPIO14 — NR130 8.2K/4 — 3VDUAL

N_USBRBIAS — NR47 22.6/4/1

N_-USBOC_F — NBC82 0.1u/4/X7R/16V/K

N_-USBOC_R — NBC83 0.1u/4/X7R/16V/K

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

PCH (F)

PCHF

USB3_RXN_0 USB3_RXP_0 USB3_TXN_0 USB3_TXP_0 USB3_RXN_1 USB3_RXP_1 USB3_TXN_1 USB3_TXP_1 USB3_RXN_4 USB3_RXP_4 USB3_TXN_4 USB3_TXP_4 USB3_RXN_5 USB3_RXP_5 USB3_TXN_5 USB3_TXP_5 TACH6_GP70 TACH7_GP71

FDI_RXN_0 FDI_RXP_0 FDI_RXN_1 FDI_RXP_1 FDI_CSYNC FDI_INT FDI_RCOMP

FDI_TXN0 FDI_TXP0 FDI_TXN1 FDI_TXP1 FDI_CSYNC — FDI_CSYNC (4) FDI_INT — FDI_INT (4) NR29 7.5K/4/1 — VCC1_5_PCH

N/A

VCC3 — NR62 8.2K/4 — NR63 8.2K/4

H81/S

FDI_TXP[0..1] (4)
FDI_TXN[0..1] (4)

USB3.0:20/5/7/5/20 (breakout min 8/4/4/4/8) ; ONLY 3 VIAS
Impedance=85 +- 17.5%
Back Panel < 10000 MILS
Front Panel < 6000 MILS

PCH CLK PD

CK_SRCCLK_PCH — NR89 8.2K/4
CK_-SRCCLK_PCH — NR88 8.2K/4

Mount for integrated clock Generation Mode

CK_DOTCLK — NR92 8.2K/4
CK_-DOTCLK — NR91 8.2K/4

NR225 short to GND in non graphic SKU

PCH (J)

PCHJ

VSS_NCTF

TP22 TP23 TP21 TP20 TP14 TP15 TP12 TP10 TP11 TP9 TP3 TP4 TP1 TP2 TP5 TP6 TP7 TP8 VSS VSS VSS

U11 U10 AJ14 AK14 K34 K33 AH24 L16 K16 AM34 R12 N12 L22 K22 R4 K5 P5 L5 AC31 AF3 AV21

H81/S

PCH H/S

LOW COST ICH7 HEATSINK

SB_HEATSIN

GRAY HS

PCH_HS
PCH_HS/[12SP2-030005-41R]

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

Gigabyte Technology

Title: PCH FDI,DMI,USB ,PCIE,NVRAM
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PCH (E)

PCH (G)

PCHE

PCHG

Flex1,2,3,4 :
14/24/33/48MHZ

Rev 0.2

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

PCIEx16

PCIEx1

PCIEx1

8111F

PCIEx1

VL805

PCH CLK PD

Mount for integrated clock Generation Mode

VGA DDC

VGA CONNECTOR

VGA ESD

SSOP6_ESD

VGA DDC

Close to Filter

BLACK CONNECTOR

Gigabyte Technology	
Title	PCH DISPLAY ,CLK BUFFER
Size: Custom	Document Number: GA-H81M-D3V-JP JP
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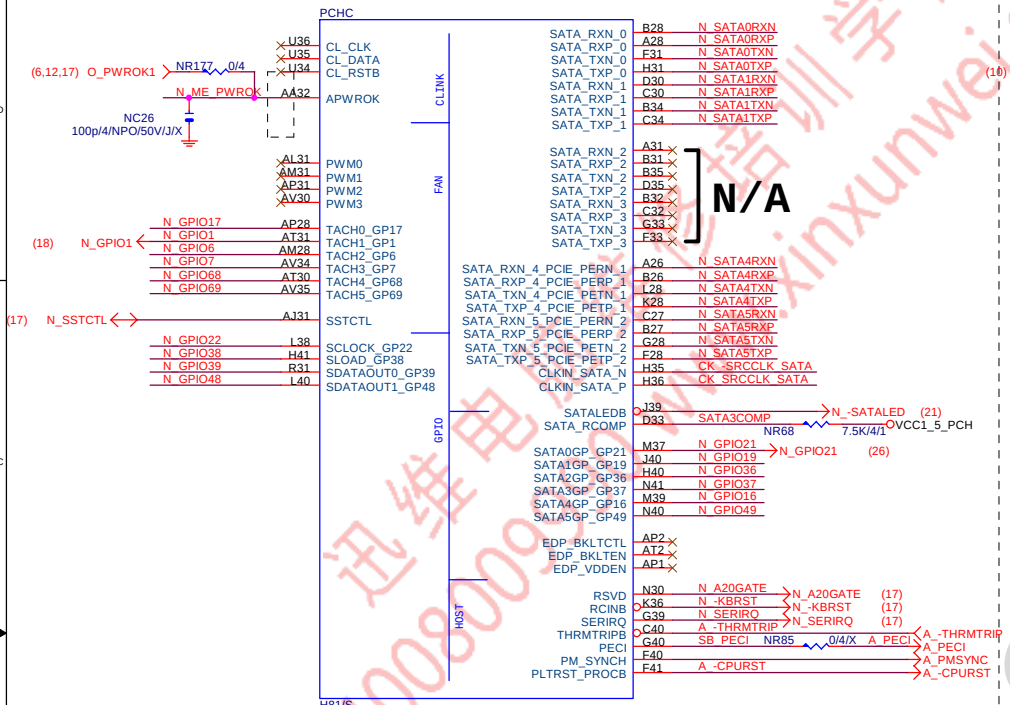
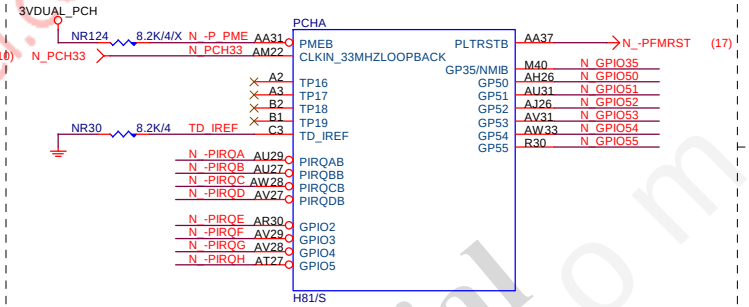
PCH (C)

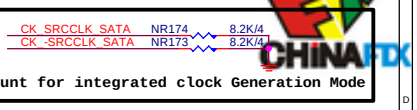
SATA3 : 20/7.5/4.5/7.5/20 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%
SATA2 : 15/7.5/4.5/7.5/15 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%



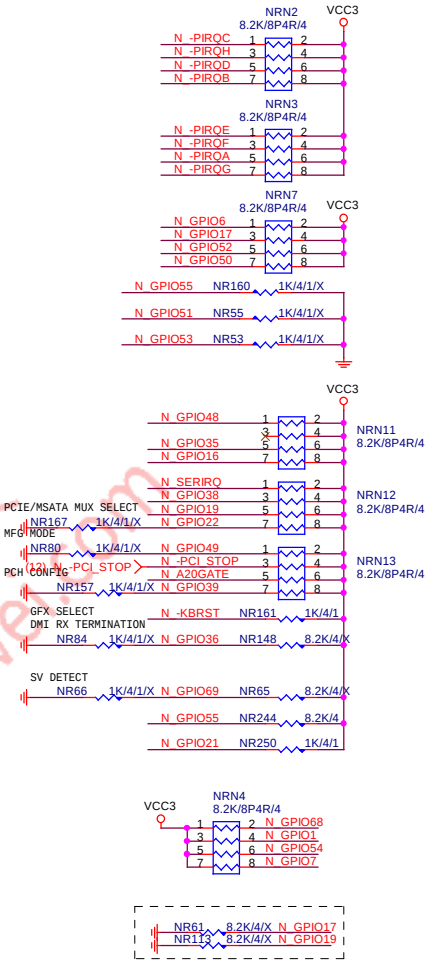
PCH (A)



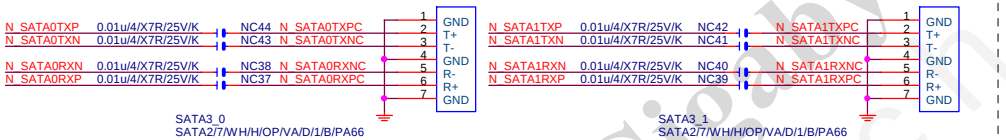
PCH CLK PD



PCH PU/PD



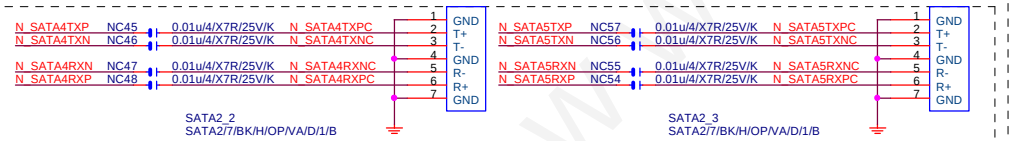
SATA CONNECTOR



SATA3_0
SATA2/7/WH/H/OP/VA/D/1/B/PA66
WHITE CONNECTOR

SATA3_1
SATA2/7/WH/H/OP/VA/D/1/B/PA66
WHITE CONNECTOR

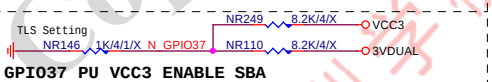
** Z87/H87 Port 4&5 SATA3.0
** B85 Port 4&5 SATA2.0



SATA2_2
SATA2/7/BK/H/OP/VA/D/1/B
BLACK CONNECTOR

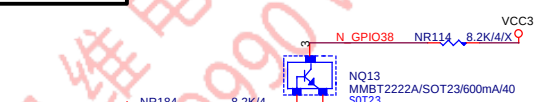
SATA2_3
SATA2/7/BK/H/OP/VA/D/1/B
BLACK CONNECTOR

ME PWROK



GPIO37 PU VCC3 ENABLE SBA
For H87&B85

GPIO38 Ctrl



Gigabyte Technology			
Title: PCH HOST , SATA, PCI			
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PCH (D)

PCHD

H81/S

ACZ_SDOUT

SPI OVERRIDE PROTECTION

PCH_DPWROK

for IT8620 Ctrl

At least 40ns lead fall to 0V before 3VDUAL_PCH fall to 2V

At least 10ms delay after 3VDUAL_PCH stabel

PCH PU/PD

HSW_STRAP13

32.768KHZ

CLR_CMOS

BATTERY-DUAL-4

RB 必须放在BAT外

Title	PCH GPIO , CTRL , AUDIO
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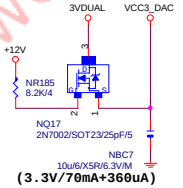
PCH (H)

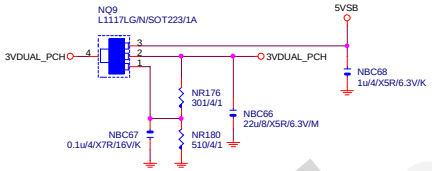
VCC3_DAC

CLOSE北桥(注意震盪水波紋)



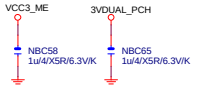
(3.3V/70mA+360uA)

3VDUAL_PCH

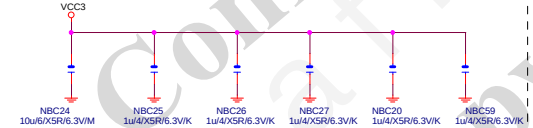


SHT PWR

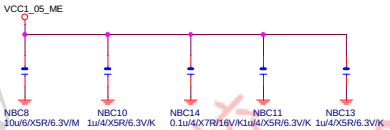
CAP



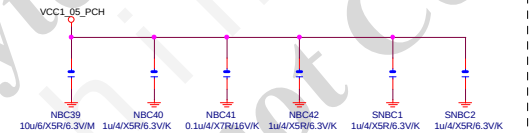
(3.3V)(X6)



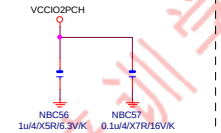
(1.05V)(X5)



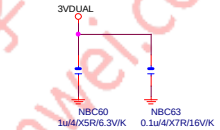
(1.05V)(X6)



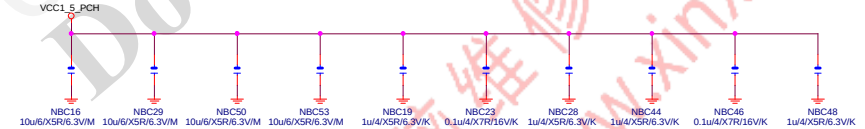
(1.05V)(X2)



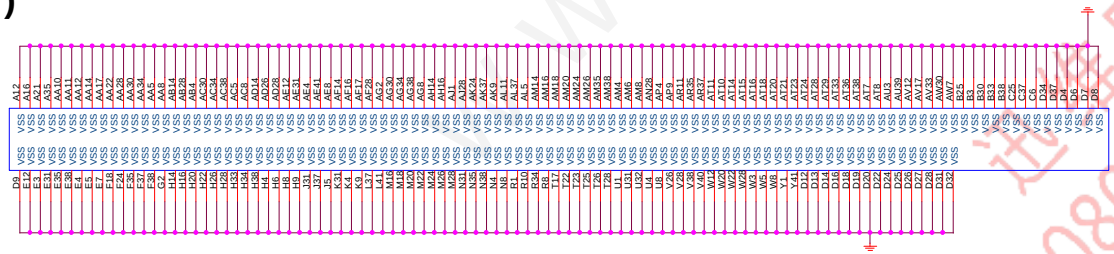
(3.3V)(X2)



(1.05V)(X10)



PCH (I)



Title	PCH PWR ,GND
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Gigabyte Technology

PCIEX16 CAP

VCC3

PABC1 0.1u/4/X7R/16V/K

PABC2 0.1u/4/X7R/16V/K/X

PABC3 0.1u/4/X7R/16V/K/X

PCIEX16 PROTECT SHT

+12V

X16_+12V

PARN1 0/8P4R/0402/SHT/X

PARN2 0/8P4R/4/X

+12V

EC16

270u/FP/D/16V/8C/A/10m/[11CO5-8C2700-09R]

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

X16_+12V

PCIEX16

PAR3 0/4/SHT/M/X

PAR1 0/4/SHT/M/X

PAR2 0/4/SHT/M/X

3VDUAL

VCC3

KEY

	B1	12V	PRSNT1*	A1	
	B2	12V	12V	A2	
	B3	RSVD	12V	A3	
	B4	GND	GND	A4	
(7,8,12,15,19,21) N_SMBCLK	B5	SMBCLK	JTAG2	A5	
(7,8,12,15,19,21) N_SMBDATA	B6	SMBDAT	JTAG3	A6	
	B7	GND	JTAG4	A7	
	B8	3.3V	JTAG5	A8	
	B9	JTAG1	3.3V	A9	
(12,15,24) N_-PCIE_WAKE	B10	3.3VAUX	3.3V	A10	
	B11	WAKE*	PWRGD	A11	-PCIE_RST >> -PCIE_RST (15,17)
	B12	RSVD	GND	A12	
	B13	GND	REFCLK+	A13	PA_SRCCLK_3GIO (10)
PA_EXP_TXP0_C	B14	HSOP0	REFCLK-	A14	PA_-SRCCLK_3GIO (10)
PA_EXP_TXN0_C	B15	HSON0	GND	A15	
	B16	GND	HSIP0	A16	PA_EXP_RXP0
	B17	PRSNT2*	HSIN0	A17	PA_EXP_RXN0
	B18	GND	GND	A18	
PA_EXP_TXP1_C	B19	HSOP1	RSVD	A19	
PA_EXP_TXN1_C	B20	HSON1	GND	A20	
	B21	GND	HSIP1	A21	PA_EXP_RXP1
	B22	GND	HSIN1	A22	PA_EXP_RXN1
PA_EXP_TXP2_C	B23	HSOP2	GND	A23	
PA_EXP_TXN2_C	B24	HSON2	GND	A24	
	B25	GND	HSIP2	A25	PA_EXP_RXP2
	B26	GND	HSIN2	A26	PA_EXP_RXN2
PA_EXP_TXP3_C	B27	HSOP3	GND	A27	
PA_EXP_TXN3_C	B28	HSON3	GND	A28	
	B29	GND	HSIP3	A29	PA_EXP_RXP3
	B30	RSVD	HSIN3	A30	PA_EXP_RXN3
	B31	PRSNT2*	GND	A31	
	B32	GND	RSVD	A32	
PA_EXP_TXP4_C	B33	HSOP4	RSVD	A33	
PA_EXP_TXN4_C	B34	HSON4	GND	A34	
	B35	GND	HSIP4	A35	PA_EXP_RXP4
	B36	GND	HSIN4	A36	PA_EXP_RXN4
PA_EXP_TXP5_C	B37	HSOP5	GND	A37	
PA_EXP_TXN5_C	B38	HSON5	GND	A38	
	B39	GND	HSIP5	A39	PA_EXP_RXP5
	B40	GND	HSIN5	A40	PA_EXP_RXN5
PA_EXP_TXP6_C	B41	HSOP6	GND	A41	
PA_EXP_TXN6_C	B42	HSON6	GND	A42	
	B43	GND	HSIP6	A43	PA_EXP_RXP6
	B44	GND	HSIN6	A44	PA_EXP_RXN6
PA_EXP_TXP7_C	B45	HSOP7	GND	A45	
PA_EXP_TXN7_C	B46	HSON7	GND	A46	
	B47	GND	HSIP7	A47	PA_EXP_RXP7
	B48	PRSNT2*	HSIN7	A48	PA_EXP_RXN7
	B49	GND	GND	A49	
PA_EXP_TXP8_C	B50	HSOP8	RSVD	A50	
PA_EXP_TXN8_C	B51	HSON8	GND	A51	
	B52	GND	HSIP8	A52	PA_EXP_RXP8
	B53	GND	HSIN8	A53	PA_EXP_RXN8
PA_EXP_TXP9_C	B54	HSOP9	GND	A54	
PA_EXP_TXN9_C	B55	HSON9	GND	A55	
	B56	GND	HSIP9	A56	PA_EXP_RXP9
	B57	GND	HSIN9	A57	PA_EXP_RXN9
PA_EXP_TXP10_C	B58	HSOP10	GND	A58	
PA_EXP_TXN10_C	B59	HSON10	GND	A59	
	B60	GND	HSIP10	A60	PA_EXP_RXP10
	B61	GND	HSIN10	A61	PA_EXP_RXN10
PA_EXP_TXP11_C	B62	HSOP11	GND	A62	
PA_EXP_TXN11_C	B63	HSON11	GND	A63	
	B64	GND	HSIP11	A64	PA_EXP_RXP11
	B65	GND	HSIN11	A65	PA_EXP_RXN11
PA_EXP_TXP12_C	B66	HSOP12	GND	A66	
PA_EXP_TXN12_C	B67	HSON12	GND	A67	
	B68	GND	HSIP12	A68	PA_EXP_RXP12
	B69	GND	HSIN12	A69	PA_EXP_RXN12
PA_EXP_TXP13_C	B70	HSOP13	GND	A70	
PA_EXP_TXN13_C	B71	HSON13	GND	A71	
	B72	GND	HSIP13	A72	PA_EXP_RXP13
	B73	GND	HSIN13	A73	PA_EXP_RXN13
PA_EXP_TXP14_C	B74	HSOP14	GND	A74	
PA_EXP_TXN14_C	B75	HSON14	GND	A75	
	B76	GND	HSIP14	A76	PA_EXP_RXP14
	B77	GND	HSIN14	A77	PA_EXP_RXN14
PA_EXP_TXP15_C	B78	HSOP15	GND	A78	
PA_EXP_TXN15_C	B79	HSON15	GND	A79	
	B80	GND	HSIP15	A80	PA_EXP_RXP15
	B81	PRSNT2*	HSIN15	A81	PA_EXP_RXN15
	B82	RSVD	GND	A82	

PCI-E/16X-164P/BK/LONG DOUBLE

BLACK CONNECTOR

-PCIE_RST >> -PCIE_RST

PAC1 22p/4/NPO/50V/J/X

Gigabyte Technology

Title: PCI EXPRESS * 16

Size: Custom | Document Number: GA-H81M-D3V-JP JP | Rev: 1.01

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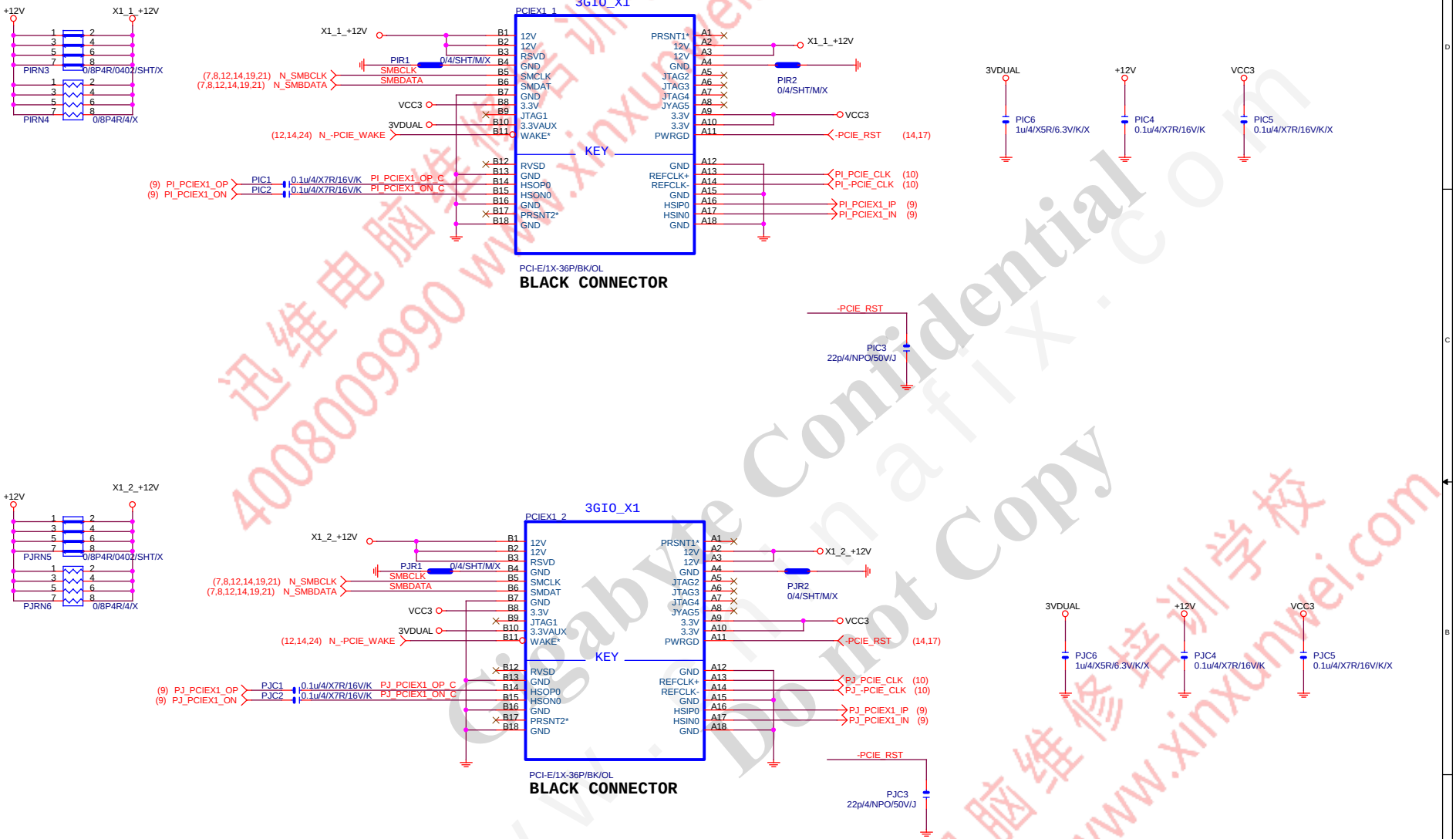
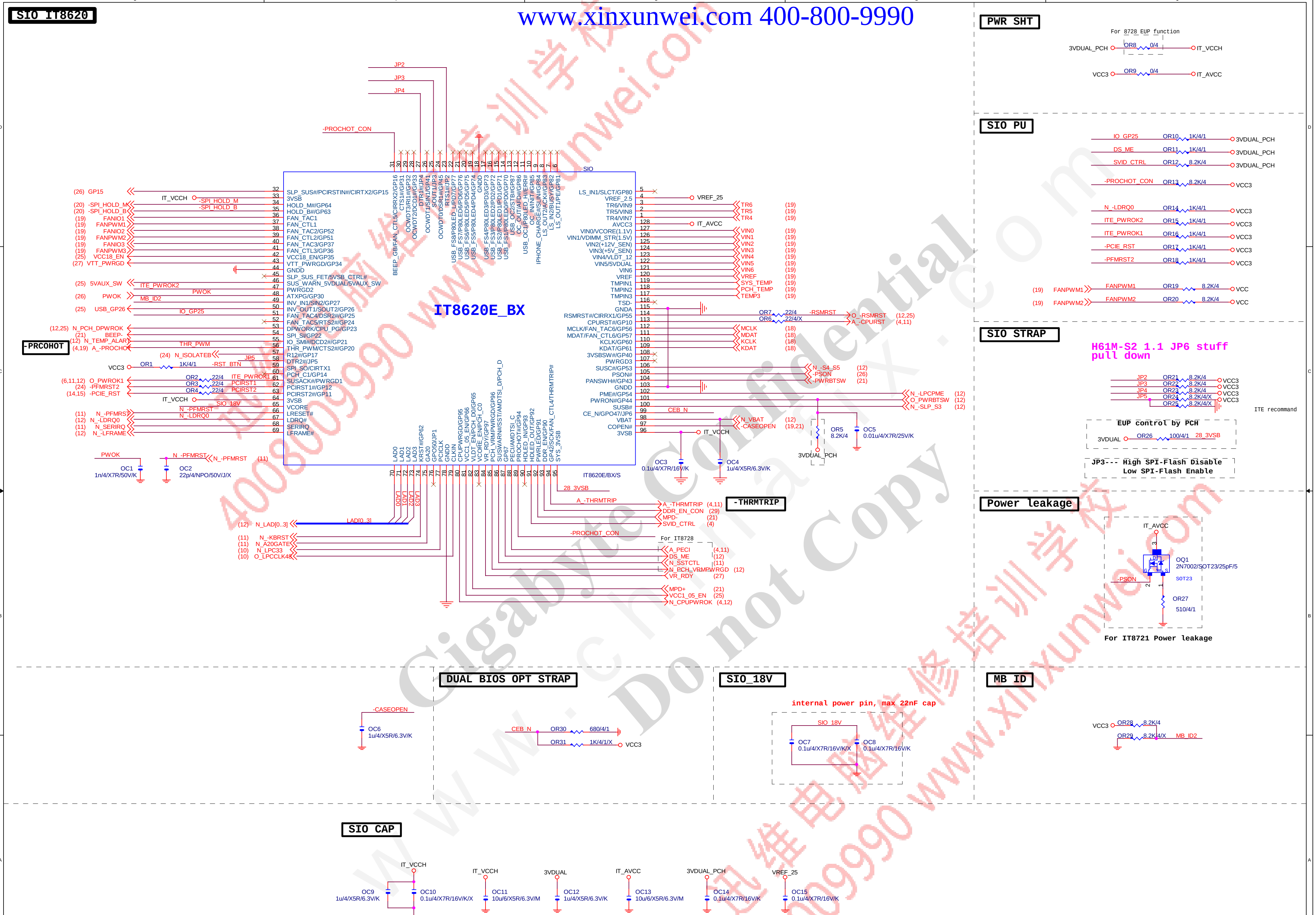
PCIEX1 SLOT



Gigabyte Technology		
Title	PCI EXPRESS X 1 PORT	
Size: Custom	Document Number: GA-H81M-D3V-JP JP	Rev: 1.01
Date: Friday, November 08, 2013	Sheet 15 of 33	

Gigabyte Technology			
Title: PCI SLOT 1&2			
Size: Custom	Document Number: GA-H81M-D3V-JP JP		Rev: 1.01
Date: Friday, November 08, 2013		Sheet 16 of 33	



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
FANPWM1 OR19 8.2K/4 VCC
FANPWM2 OR20 8.2K/4 VCC
SIO STRAP
H61M-S2 1.1 JP6 stuff pull down
JP2 OR21 8.2K/4
JP3 OR22 8.2K/4
JP4 OR23 8.2K/4
JP5 OR24 8.2K/4/X
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
-PRCHOT
-THRMTRIP
DUAL BIOS OPT STRAP
-CASEOPEN
OC6 1u/4/X5R/6.3V/K
CEB_N OR30 680/4/1
OR31 1K/4/1/X VCC3
SIO_18V
internal power pin, max 22nF cap
SIO_18V
OC7 0.1u/4/X7R/16V/K/X
OC8 0.1u/4/X7R/16V/K
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
OC1 1n/4/X7R/50V/K
OC2 22p/4/NPO/50V/J/X
OC3 0.1u/4/X7R/16V/K
OC4 1u/4/X5R/6.3V/K
OC5 0.01u/4/X7R/25V/K
OR5 8.2K/4
OR1 1K/4/1
OR2 22/4 ITE_PWROK1
OR3 22/4 PCIRST1
OR4 22/4 PCIRST2
OR6 22/4/X
OR7 22/4 -RSMRST
For IT8728

Gigabyte Technology

Title: PCH GPIO , CTRL , AUDIO

Size: C | Document Number: GA-H81M-D3V-JP JP | Rev: 1.01

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COM

COM RI

KB/MS

FUSEVCC_R
UBC7
0.1u/4/X7R/16V/K
KB_MS_USB
U5 U6 U7 U8
(9) N_-USBP2
(9) N_+USBP2
AGND1
U1 U2 U3 U4
N_-USBP3 (9)
N_+USBP3 (9)
FUSEVCC_R
UBC8
0.1u/4/X7R/16V/K
AGND1
KBDATA
MSDATA
KBCLK
MSCLK
KB
AGND1
G1 G2 G3 G4
KB/USB/A/PC99(DUAL)/GF/2/RA/D
AGND1
R707 0/6/SHT/M/X
For EMI

FUSEVCC_R
RN1
8.2K/8P4R/4
KCLK
KDAT
MDAT
MCLK

FOR鹽化短路

(17) KCLK R58 82/4 KBCLK
(17) KDAT R59 82/4 KBDATA
(17) MDAT R57 82/4 MSDATA
(17) MCLK R56 82/4 MSCLK
CN1
180p/8P4C/6/NPO/50V/K
AGND1

USB2.0 PWR

FUSE-0805
KB_MS_USB 2-Port 2.0A

5VDUAL_USB
FR1
SMD1206P350SLR/6V/S
FUSEVCC_R
EC3
100u/OS/D/6.3V/66/A/35m/[11CO2-661000-09R]

Close to connector

KB/MS ESD

ESD8
KBCLK 1
MSDATA 3
6 KBDATA
5 FUSEVCC_R
4 MSCLK
AZC099-04S/SOT23-6L

USB2.0 ESD

ESD2
N_+USBP3 1
N_-USBP2 3
6 N_-USBP3
5 FUSEVCC_R
4 N_+USBP2
AZC099-04S/SOT23-6L

USB30_20

USB30_20 PWR

-USBOC_R

UD7
BAT54A/SOT23/200mA
SOT23
5VDUAL_USB
UR3
8.2K/4
N_-USBOC_R
FUSEVCC_R
N_-USBOC_R (9)
UR4
15K/4/1

USB30_20 ESD PROCTECT

USB3.0 ESD

USB2.0 ESD

USB POWER PROTECT

SOT23
(11) N_GPIO1
N_-USBOC_F
N_-USBOC_R
N_-USBOC_F (9,21)
N_-USBOC_R (9)
UAD5
BAT54A/SOT23/200mA

Gigabyte Technology

Title: COM,-RI,KB_USB,USB_ESATA,-PROCHOT

Size: Custom | Document Number: GA-H81M-D3V-JP JP | Rev: 1.01

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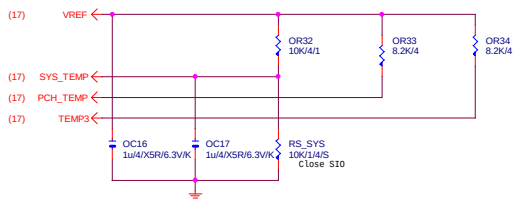
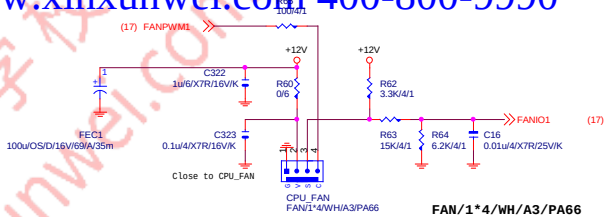
TEMP H/W MONITOR



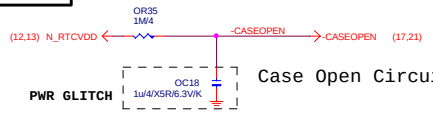
CPU SMART FAN



FAN/1*4/WH/A3/PA66

White Connect

CASE OPEN



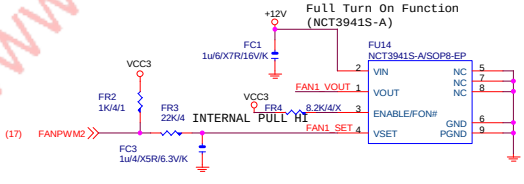
PWR GLITCH

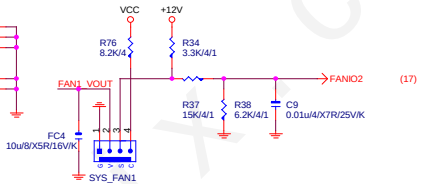
Case Open Circuits

SYS SMART FAN

Linear SYS_FAN

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



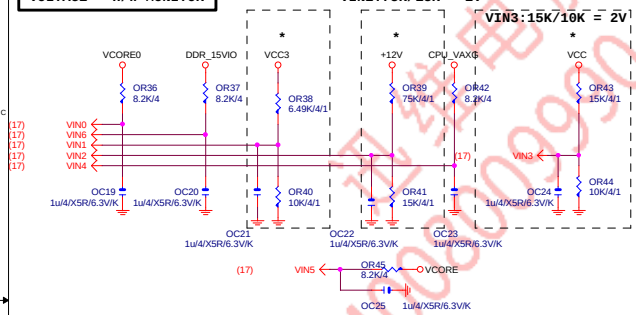


BLACK CONNECTOR

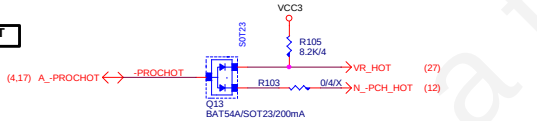
VOLTAGE-- H/W MONITOR

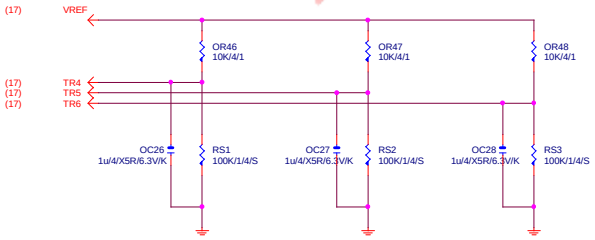
VIN2:75K/15K = 2V

VIN3:15K/10K = 2V



-PROHOT

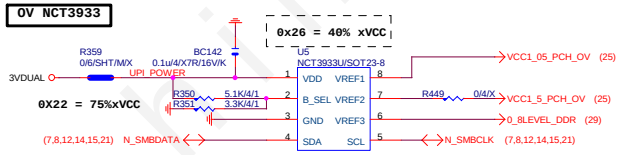




RS1、RS2、RS3 CLOSE CPU
VR MOSFET

接pwm feedback pin

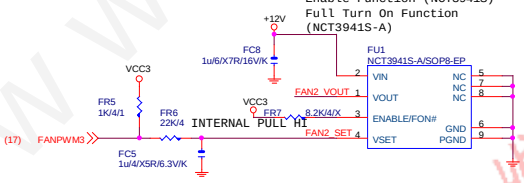
OV NCT3933

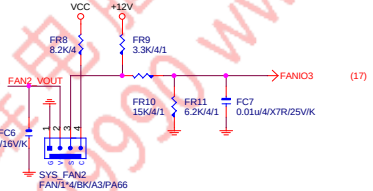


NCT3933	0X2A	0X20	0X22
VREF1	DDRVTT	VREF_DDRA_DQ	PCH Core
VREF2	VREF_DDRA_CA	N/A	VCC1_5_PCH
VREF3	VREF_DDRA_CA	VREF_DDRB_DQ	SMREF

Linear SYS_FAN

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





BLACK CONNECTOR

Gigabyte Technology	
Title	HWM,FAN CTRL,OV
Size: Custom	Document Number: GA-H81M-D3V-JP JP
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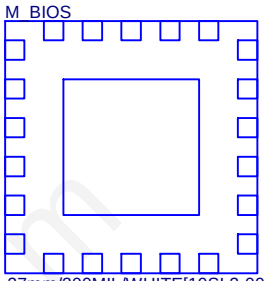


VCC3_ME
NR4 0/4/SHT/M/X
M_BIOS 64M/Q/SPI/SO8/S
NBC2 1u/4/X5R/6.3V/K
-SPI_CS_1 NR7 22/4
NC1 10p/4/NPO/50V/J/X
SPI_MISO
(12) SPI_DQ2 NR342 0/4/SHT/M/X
N_-SPI_WP0
CS# SO WP# VSS VDD HOLD# SCK SI
R672 8.2K/4/X -SPI_HOLD_M
-HOLD0 NR341 0/4/SHT/M/X SPI_DQ3 (12)
ICH_SPI_CLK
ICH_SPI_MOSI
NC2 10p/4/NPO/50V/J/X
MAIN BIOS

VCC3_ME
NR12 0/4/SHT/M/X
B_BIOS 64M/Q/SPI/SO8/S/X
NBC3 1u/4/X5R/6.3V/K/X
-SPI_CS_2 NR8 22/4/X
SPI_MISO
(12) SPI_DQ2 NR344 0/4/SHT/M/X
N_-SPI_WP1
CS# SO WP# VSS VDD HOLD# SCK SI
R673 8.2K/4/X -SPI_HOLD_B
-HOLD1 NR343 0/4/SHT/M/X SPI_DQ3 (12)
ICH_SPI_CLK N_ICH_SPI_CLK (12)
ICH_SPI_MOSI N_ICH_SPI_MOSI (12)
BACKUP BIOS

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

VCC3_ME
(12) N_ICH_SPI_MOSI — N_ICH_SPI_MOSI NR10 8.2K/4/X
(12) N_-ICH_SPI_CS — N_-ICH_SPI_CS NR9 8.2K/4/X
(17) -SPI_HOLD_M — -SPI_HOLD_M NR3 1K/4/1
(17) -SPI_HOLD_B — -SPI_HOLD_B NR11 1K/4/1

5VDUAL
(17) -SPI_HOLD_M — -SPI_HOLD_M NR20 1K/4/1/X
(17) -SPI_HOLD_B — -SPI_HOLD_B NR21 1K/4/1/X

VCC3_ME
N_-SPI_WP1 NR2 8.2K/4/X
N_-SPI_WP0 NR1 8.2K/4/X
(12) N_ICH_SPI_MISO — N_ICH_SPI_MISO NR5 8.2K/4
SPI_MISO NR6 22/4 N_ICH_SPI_MISO (12)

VCC3_ME
R3 330/4/1/X
VCC3_ME
-SPI_CS_1
R225 1K/4/1/X
-SPI_HOLD_M
R403 1K/4/1/X
R4 0/4
S0T23
N_-ICH_SPI_CS
Q83 MMBT2222A/SOT23/600mA/40/X
Q57 MMBT2222A/SOT23/600mA/40/X
S0T23
-SPI_HOLD_B R226 8.2K/4/X

VCC3_ME
R227 330/4/1/X
VCC3_ME
-SPI_CS_2
R228 1K/4/1/X
-SPI_HOLD_B
R404 1K/4/1/X
Q84 MMBT2222A/SOT23/600mA/40/X
S0T23
N_-ICH_SPI_CS
Q59 MMBT2222A/SOT23/600mA/40/X
S0T23
-SPI_HOLD_M R229 8.2K/4/X

CHECK
VCC3_ME
-HOLD0 R313 1K/4/1/X
-HOLD1 R314 1K/4/1/X
Pop for Quad I/O BIOS

Gigabyte Technology

Title: **DUAL BIOS**

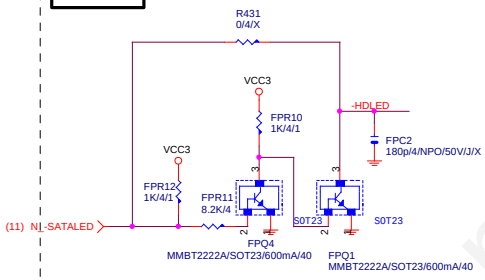
Size: Custom | Document Number: **GA-H81M-D3V-JP JP** | Rev: **1.01**

Date: Friday, November 08, 2013 | Sheet 20 of 33

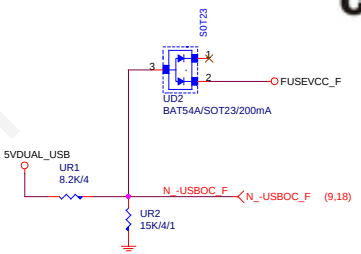
F_USB30

F_USB30 PWR

SATA LED

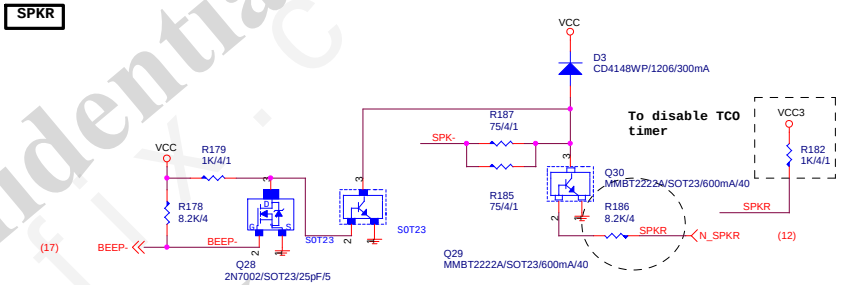


-USBOC_F

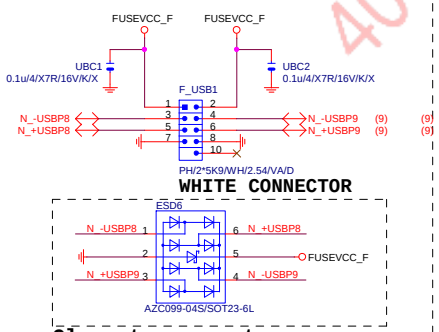


F_USB30 ESD PROTECT

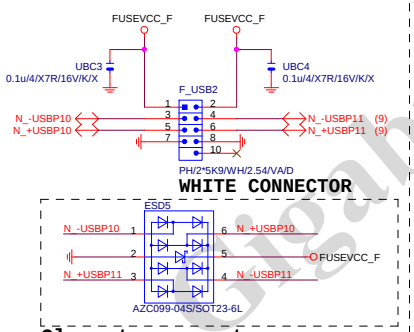
SPKR



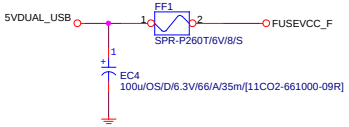
FRONT USB1



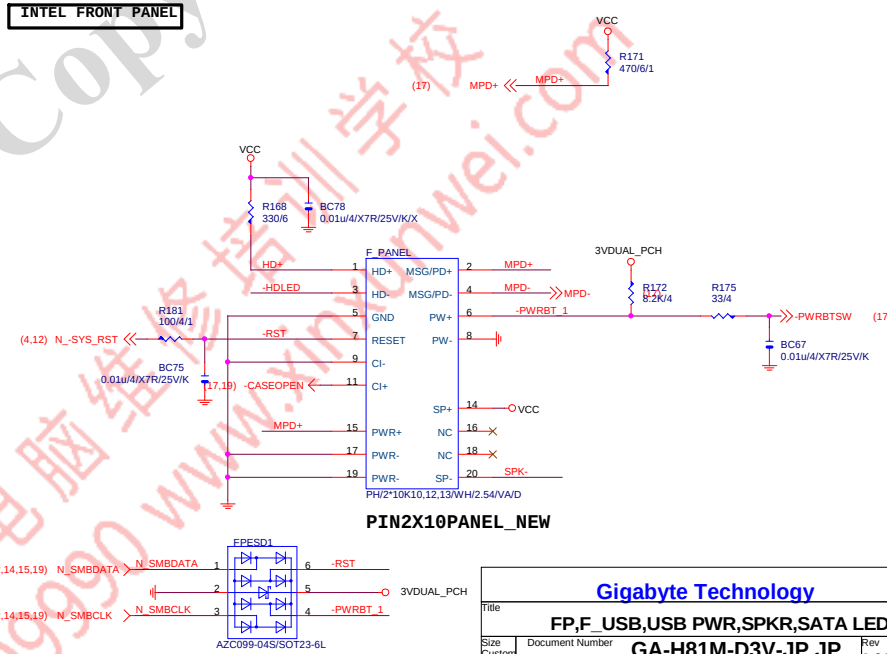
FRONT USB2



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-D3V-JP JP		Rev: 1.01
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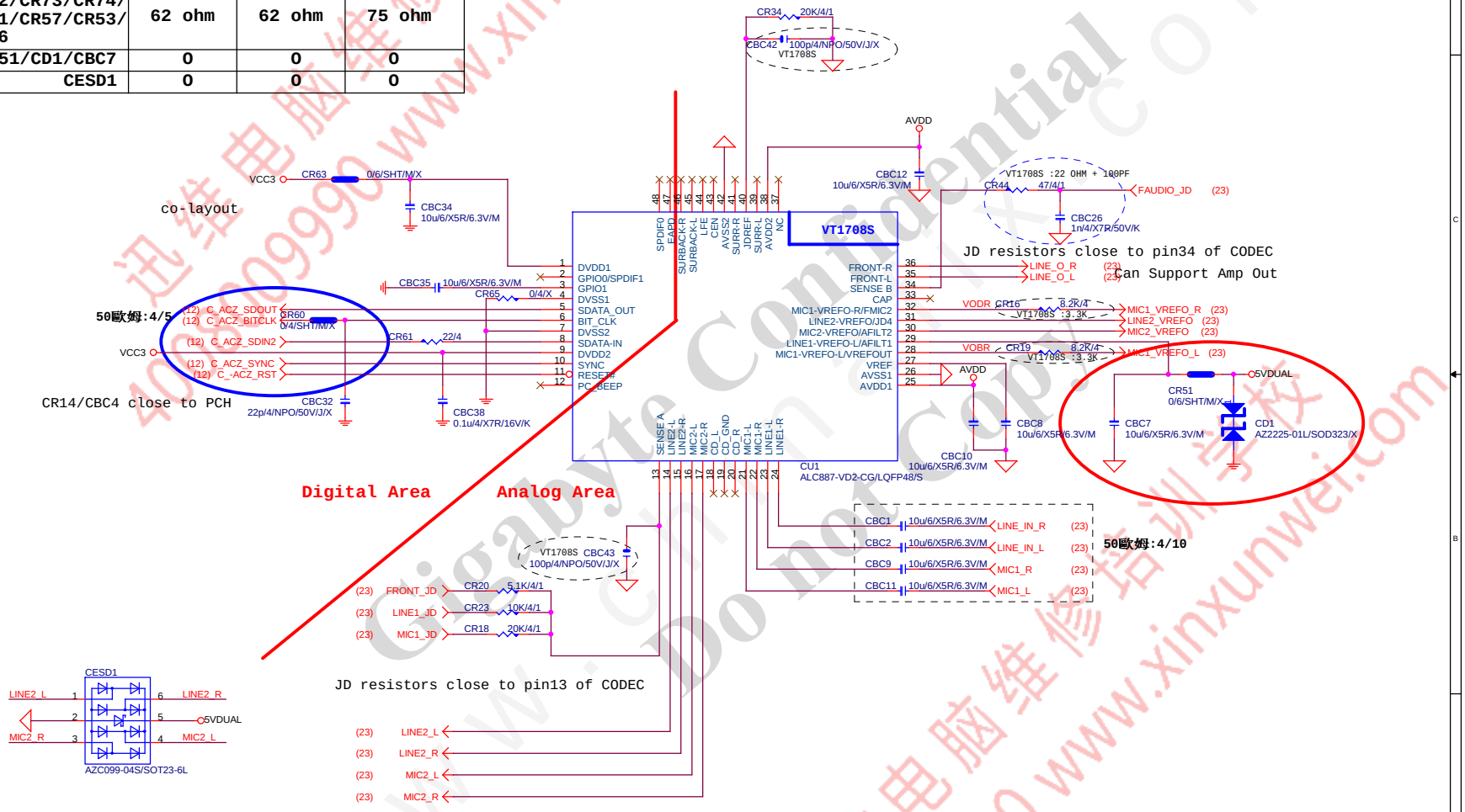
AZALIA CODEC *ALC892/ALC887-VD2/VT1708-CE Colay*

	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



Title	HD AUDIO ALC887B-VD2/VT1708S/VT2021
Size / Document Number	Custom / GA-H81M-D3V-JP JP
Rev	1.01
Date:	Friday, November 08, 2013
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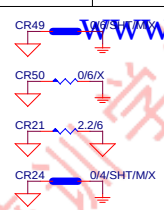
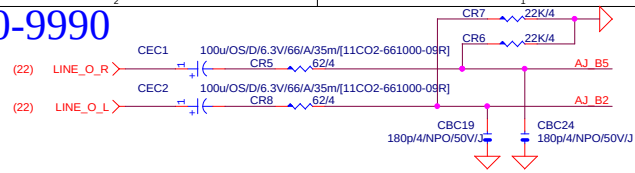
Gigabyte Technology

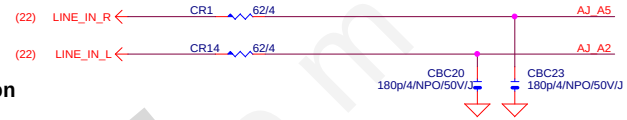


LINE-OUT



Only reserved for ALC888

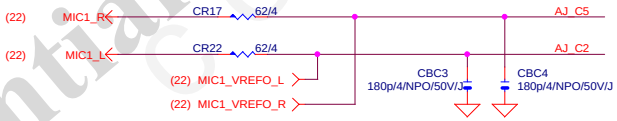
LINE-IN



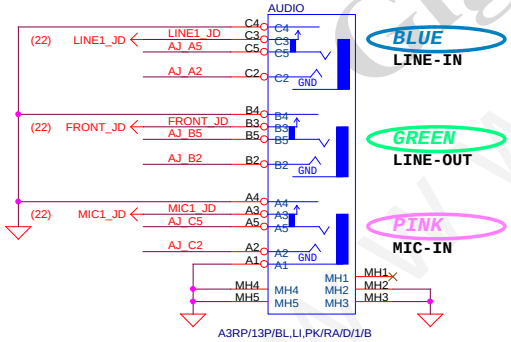
Verify MIC function in LINE-in

For 889A/888

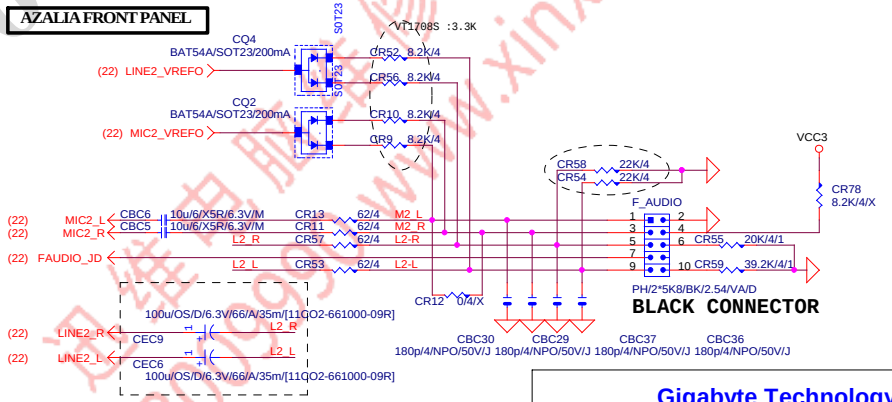
MIC-IN



SPDIF_OUT



AZALIA FRONT PANEL



Gigabyte Technology

Title: AUDIO JACK

Size: Custom | Document Number: GA-H81M-D3V-JP JP | Rev: 1.01

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LAN:RTL8111F/VB/VL

LA_VDD33

LAR10 1K/4/1

LAR12 2.49K/4/1

LAU1

RTL8111F-VL-CG/QFN48

LAX1 25M/20p/30ppm/49US/20/D

LA_XTALI

LA_XTALO

LAC5 27p/4/NPO/50V/J

LAC6 27p/4/NPO/50V/J

LA_ ML-->80歐姆:[15/5/5/5/15]

SRCCLK-->50歐姆:[18/4/10/4/18]

LAC1 0.1u/4/X7R/16V/K

LAC2 0.1u/4/X7R/16V/K

LAC3 0.1u/4/X7R/16V/K

LAC4 0.1u/4/X7R/16V/K

離IC近越好

ENABLE SW

LA_VDD33

LAR8 0/6/SHT/M/X

LA_ENSWREG

LA_REGOUT

LAR9 1/6

LA_VDD33

LAR7 8.2K/4

LAR6 8.2K/4

LABC12 0.1u/4/X7R/16V/K

LABC13 4.7u/6/X5R/6.3V/K

VCC3

LAR4 1K/4/1

LAR5 15K/4/1

N_ISOLATEB (17)

-PFMRST2 (17)

LABC4 100p/4/NPO/50V/J/X

MDI ESD預留28KV *

LAESD2 AZC099-04S/SOT23-6L

LA_MDI0+

LA_MDI0-

LA_MDI1+

LA_MDI1-

5VDUAL

LAESD3 AZC099-04S/SOT23-6L

LA_MDI2+

LA_MDI2-

LA_MDI3+

LA_MDI3-

LAN POWER

3VDUAL

LA_VDD33

LABC26 10u/6/X5R/6.3V/M

LABC6 0.1u/4/X7R/16V/K/X

LABC16 0.1u/4/X7R/16V/K

LABC15 0.1u/4/X7R/16V/K/X

LABC5 0.1u/4/X7R/16V/K/X

LABC18 0.1u/4/X7R/16V/K/X

LABC14 0.1u/4/X7R/16V/K/X

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

LA_DVDD10

LABC11 0.1u/4/X7R/16V/K/X

LABC10 0.1u/4/X7R/16V/K

LABC9 0.1u/4/X7R/16V/K/X

LABC3 0.1u/4/X7R/16V/K

LABC19 0.1u/4/X7R/16V/K/X

LABC17 0.1u/4/X7R/16V/K/X

LABC8 0.1u/4/X7R/16V/K/X

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

(CLOSE LAU1 PIN36)

LAL1 4.7uH/0.5A/2520/S/[10LC4-5A470B-01R_10LI5-124708-01R]

CLOSE LAL1

LABC20 4.7u/6/X5R/6.3V/K

LABC21 0.1u/4/X7R/16V/K/X

LA_EVDD10

LAFB1 0/6/SHT/M/X

LABC2 1u/4/X5R/6.3V/K

LABC1 0.1u/4/X7R/16V/K/X

(CLOSE LAU1 PIN21)

Power domain chart

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

USB_LAN CONNECTOR

RMA ESD PROTECT

LAESD1 AZC099-04S/SOT23-6L/X

LA_LED_D2

LA_LED_ACT_TXRX

LA_LED_LINK100

LAN_3VDUAL_LED

LA_LED_LINK1000

N_-USBP1

N_+USBP0

FUSEVCC_R

UBESD3 AZC099-04S/SOT23-6L

* 使用RU9 USB_LAN可省略LAESD1保護LED

LA_MDI-->100歐姆:[20/4/8/4/20]

LABC22 0.01u/4/X7R/25V/K/X

USB30_LAN

USB3.0

LABC25 0/4/SHT/M/X

LABC23 0.1u/4/X7R/16V/K

LAFB2 0/6/SHT/M/X

LABC24 0.1u/4/X7R/16V/K/X

LAR13 150/4/1

LABC7 0.1u/4/X7R/16V/K

UBC49 SSTXDN0C_F

UBC51 SSTXDP0C_F

UBC50 SSTXDN1C_F

UBC52 SSTXDP1C_F

0.1u/4/X7R/16V/K

USB3+RJ45/[11NR6-702009-K1R]

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

EMI SHORT PAD

PS:視EMI需求

LAR24 0/6/SHT/M/X

SSTXDN0C_F

SSTXDP0C_F

PCH_USB3_RXP0

PCH_USB3_RXN0

UCESD1

SSTXDP0C_F

SSTXDN0C_F

PCH_USB3_RXN0

PCH_USB3_RXP0

AZ1045-04F/MSOP10

Close to connector

SSTXDN1C_F

SSTXDP1C_F

PCH_USB3_RXP1

PCH_USB3_RXN1

UCESD2

SSTXDP1C_F

SSTXDN1C_F

PCH_USB3_RXN1

PCH_USB3_RXP1

AZ1045-04F/MSOP10

Close to connector

U4 U3 U2 U1 U8 U7 U6 U5 (-,+)

L1 L3 L5 L7 L9 L2 L4 L6 L8 L10

D1 D2 D3 D4

YELLOW ORANGE GREEN (+,-)

Dual Color LED

D4 D3 Green

D4 D3 Orange

Single Color LED

D2 D1 Yellow

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

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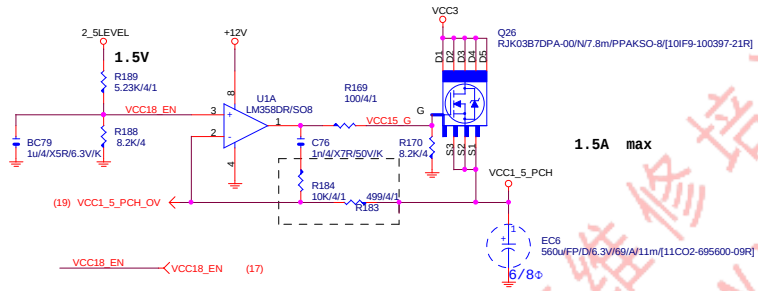
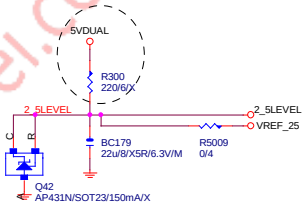
VCC1_8_PCH

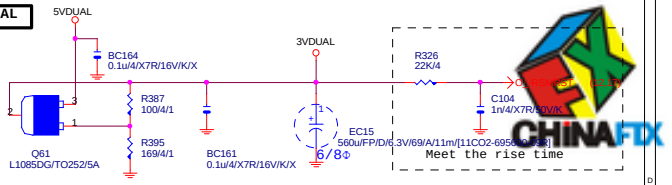


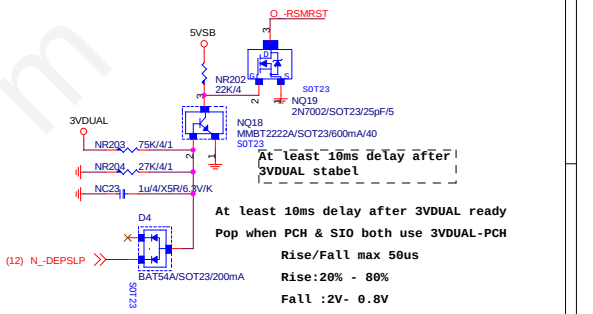
2_5LEVEL

ERP

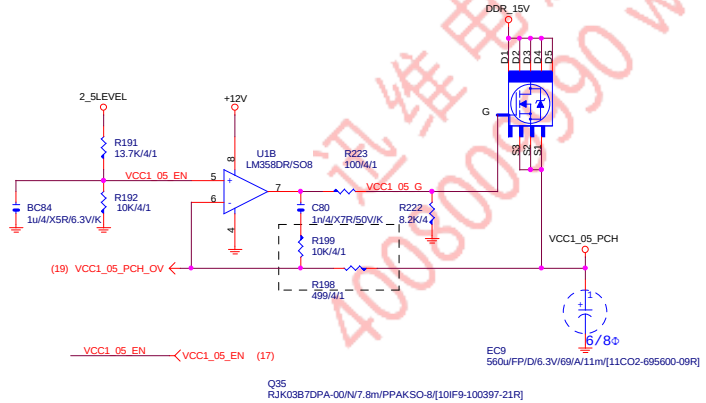


3VDUAL



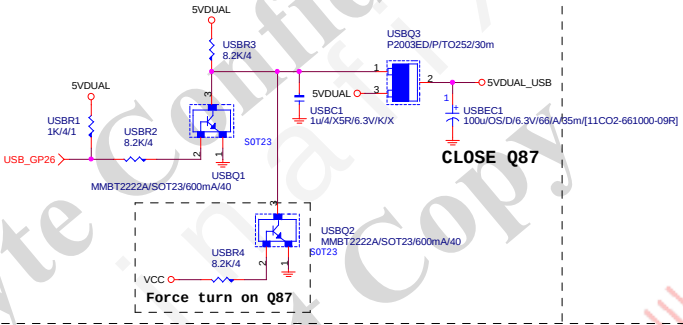


VCC1_05_PCH

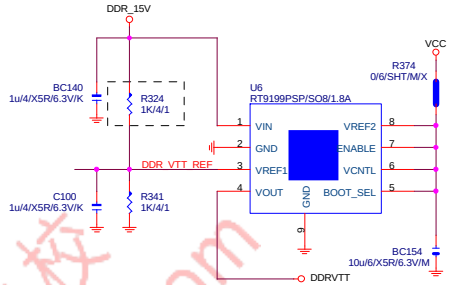


5VDUAL_USB Ctrl
KB_USB, R_USB30,
USB_LAN_F_USB30,
F_USB2 Power

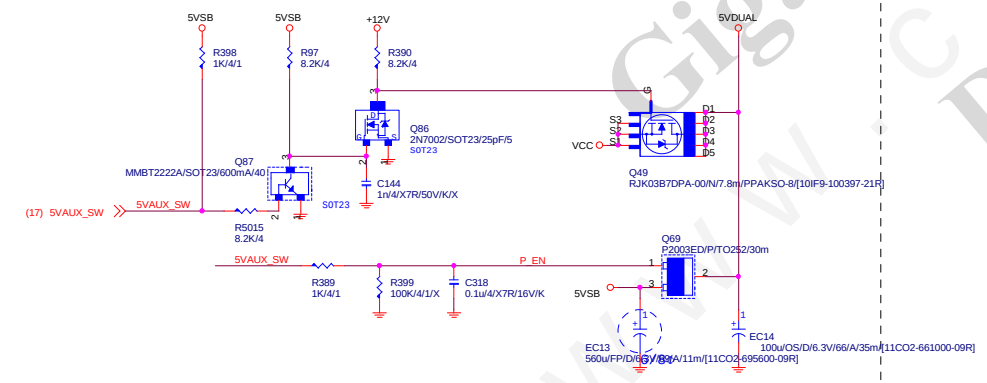
GPIO	5VDUAL_USB
High	Power ON
Low	Power OFF



DDRVTT

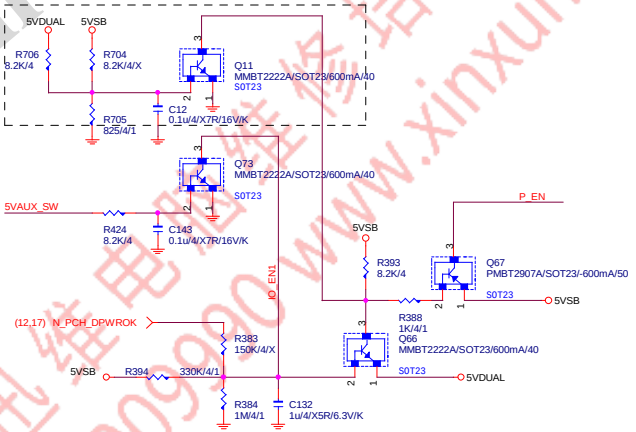


5VDUAL



5VDUAL SHORT PROTECT

5VSB OVP:7.5V protection



Title	Gigabyte Technology		
	DISCRETE POWER		
Size: Custom	Document Number: GA-H81M-D3V-JP JP	Rev: 1.01	
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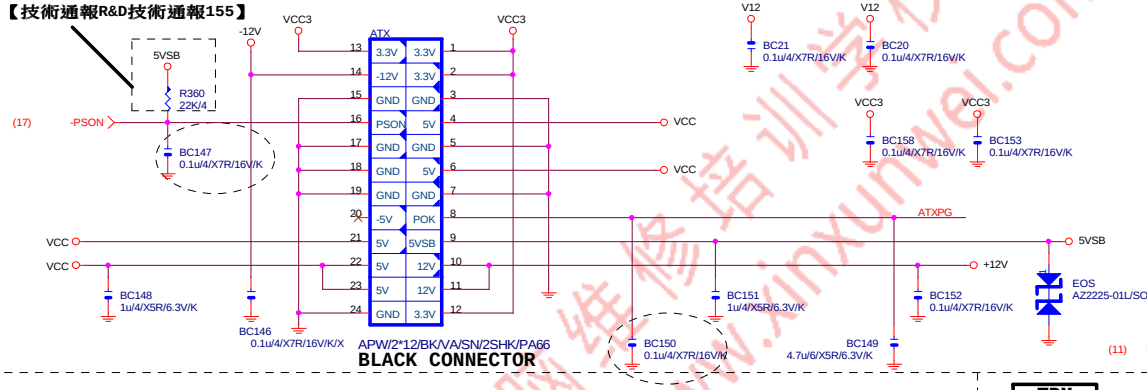
ATXX24 POWER CONNECTOR

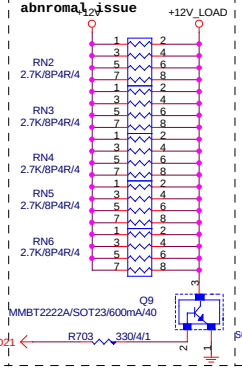
【技術通報R&D技術通報155】



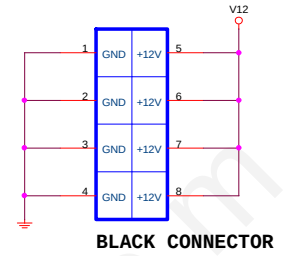
BLACK CONNECTOR

【技術通報R&D技術通報158】

To fix 12V light load abnroma l issue



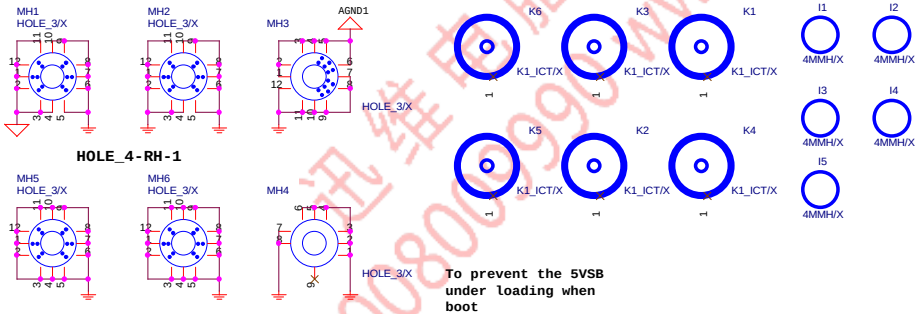
ATXX4 POWER CONNECTOR



BLACK CONNECTOR

ATX_12V_2X4
APW/2*4/BK/OC/P/4.2/VA/SN/OH::Location ATX_12V_2X4

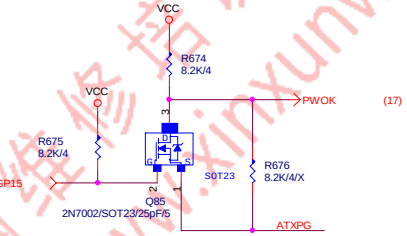
TPM

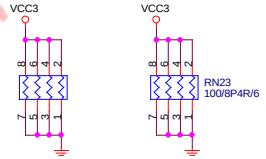


To prevent the 5VSB under loading when boot

PWOK PATCH

【技術通報R&D技術通報154】





FIX PWR MINMUN LOAD

Gigabyte Technology

Title	ATX CONNECTOR	
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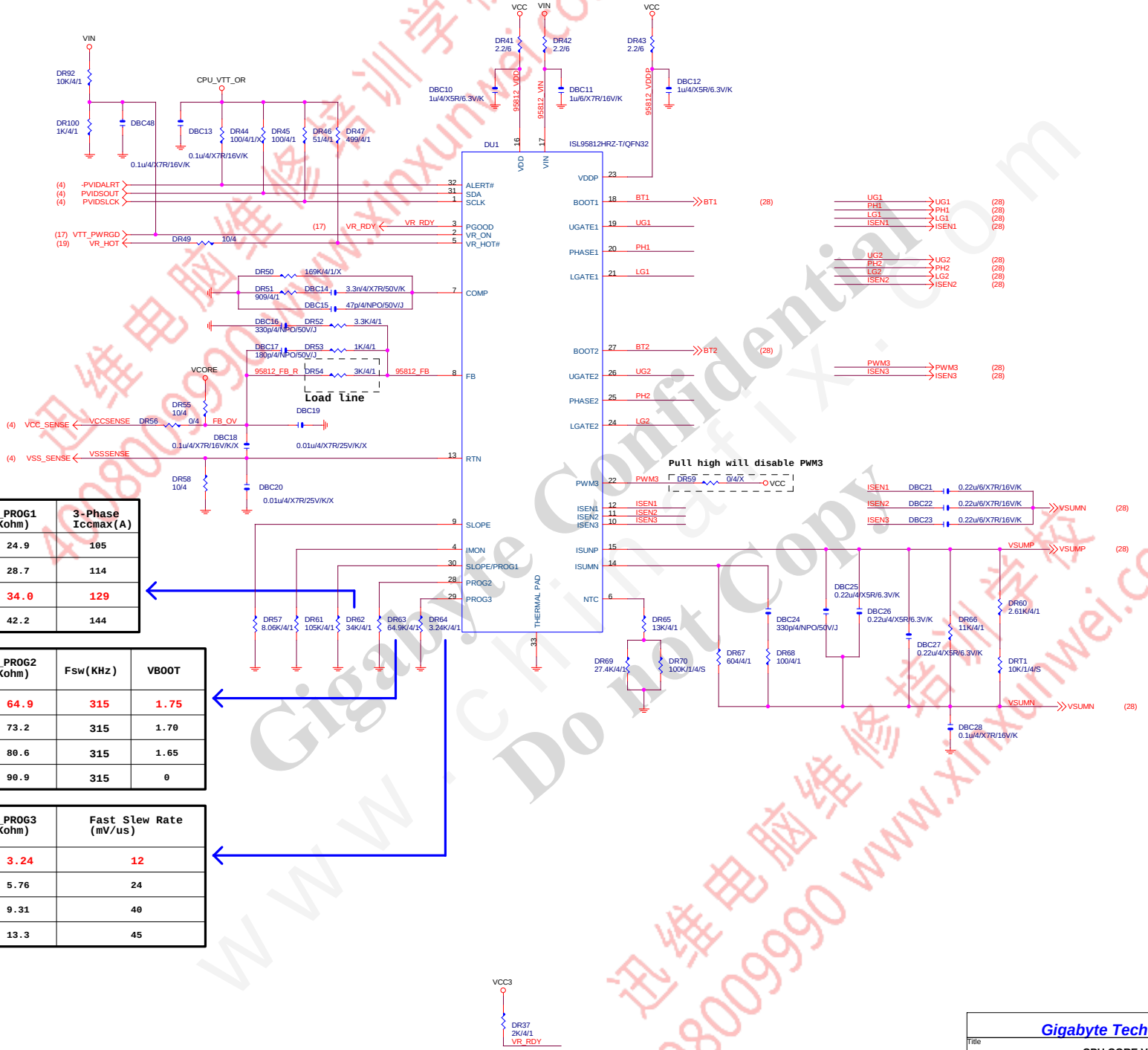


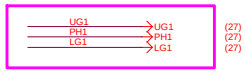
R_PROG1 (Kohm)	3-Phase Iccmax(A)
24.9	105
28.7	114
34.0	129
42.2	144

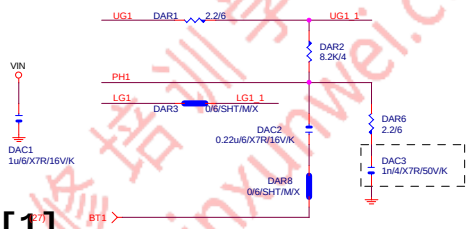
R_PROG2 (Kohm)	Fsw(KHz)	VBOOT
64.9	315	1.75
73.2	315	1.70
80.6	315	1.65
90.9	315	0

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

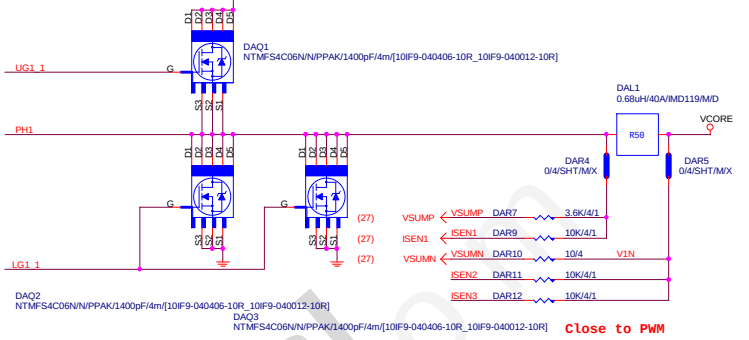
Gigabyte Technology	
Title	CPU CORE VR-1
Size: Custom	Document Number: GA-H81M-D3V-JP JP
Rev: 1.01	
Date: Friday, November 08, 2013	Sheet 27 of 33

PHASE 1

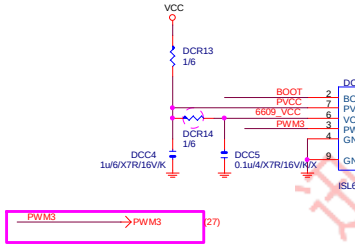


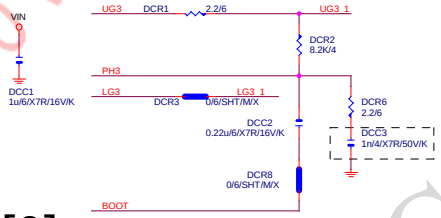


[1]

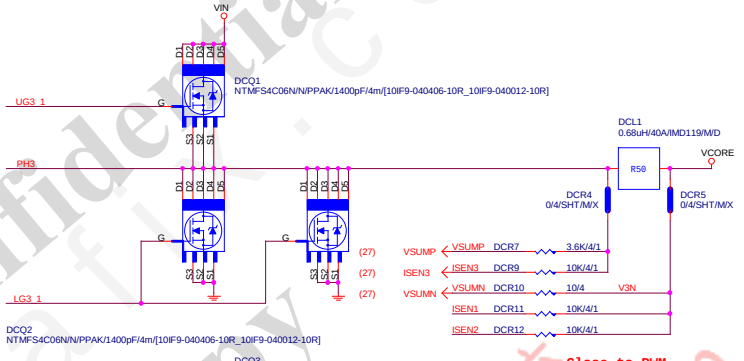


PHASE 3

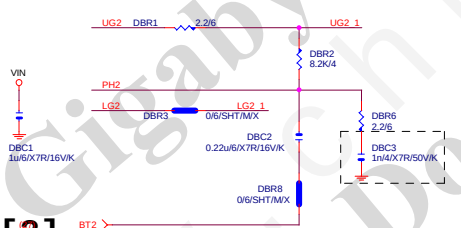




[3]



PHASE 2



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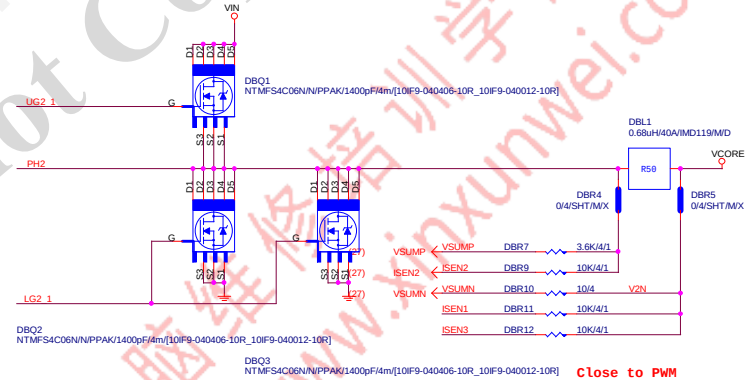

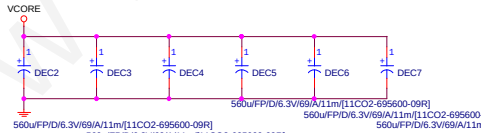

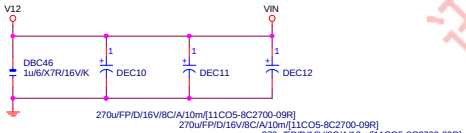

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Title	CPU CORE VR-2	
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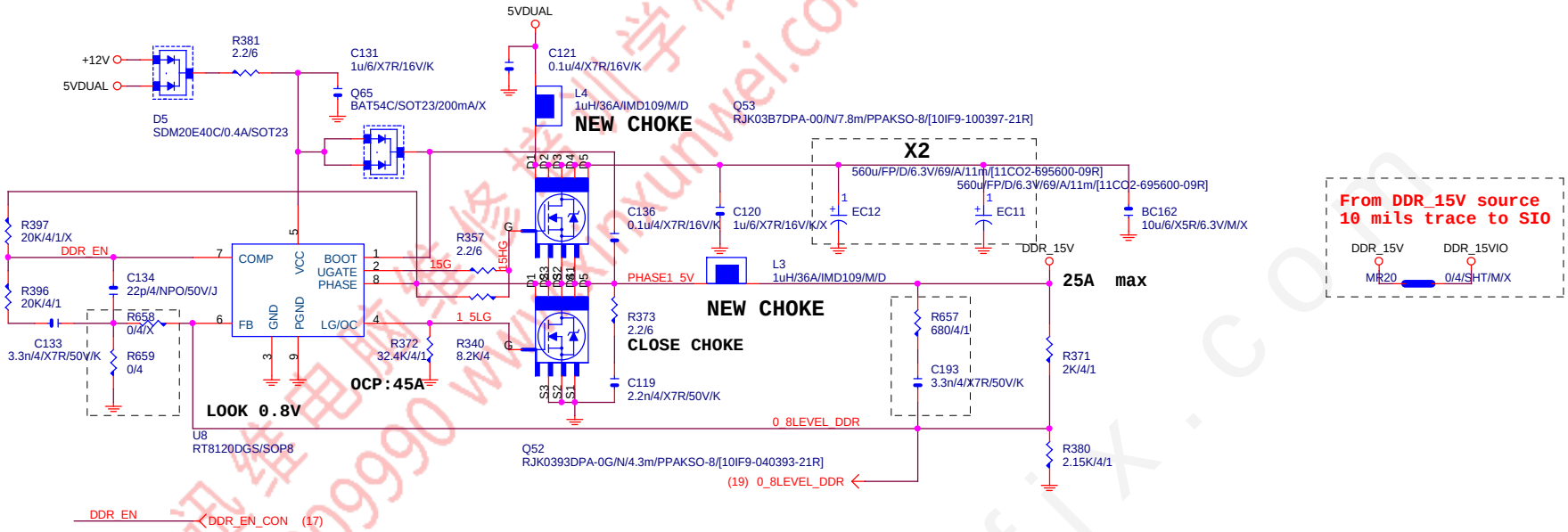
DDR15V



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			
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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

Gigabyte Technology

Title: LPT

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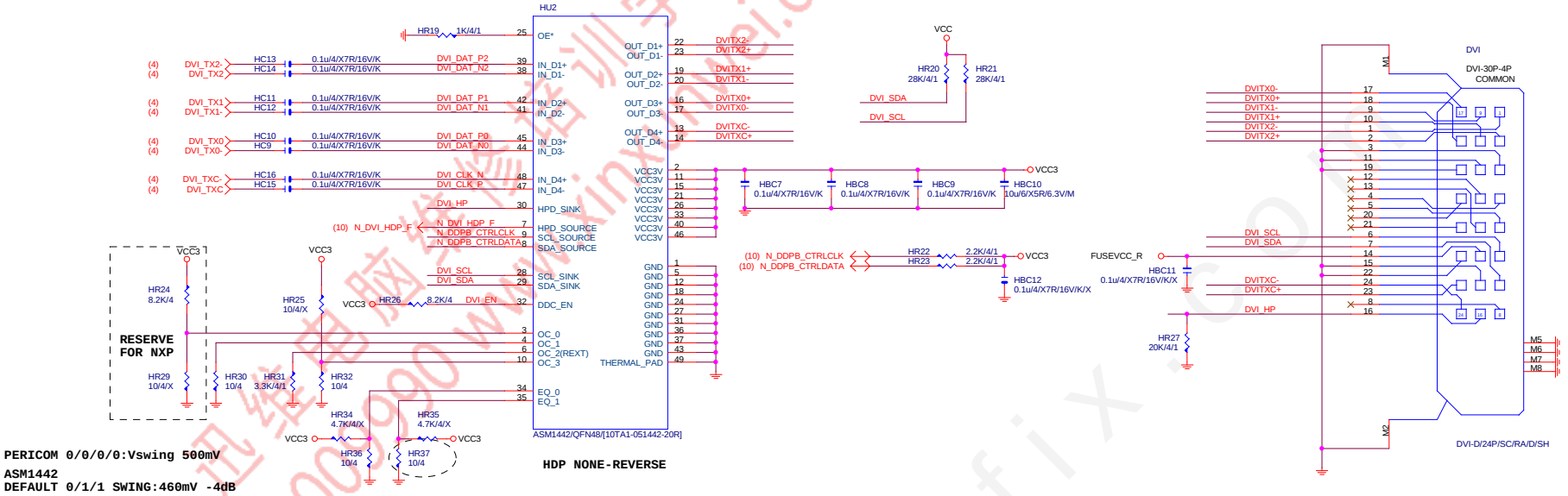
DVI LEVEL SHIFT



PERICOM 0/0/0/0:Vswing 500mV

ASM1442
DEFAULT 0/1/1 SWING:460mV -4dB

HDP NONE-REVERSE

PI3DV411 0 0:3dB
ASM1442 1 1:3dB

HDMI LEVEL SHIFT

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Title: ITE IT8892E		
Size: Custom	Document Number: GA-H81M-D3V-JP JP	Rev: 1.01
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Gigabyte Technology		
Title: USB3 EJ188		
Size: C	Document Number: GA-H81M-D3V-JP JP	Rev: 1.01
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