Model Name: GA-H81M-S2PH

Revision 1.02

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	ITE 8620 LPC IO
16	COM,KB_MS,USB PWR
17	IT8892E
18	PCI SLOT 1,2
19	PCI EXPRESS*1 SLOT.LPT
20	HWM,FAN CTRL,OV,-PROCHOT
21	DUAL BIOS
22	FP,F_USB,SPK,SATALED
23	Realtek ALC887-VD2
24	REAR AUDIO JACK
25	REALTEK RTL8111F
26	DISCRETE POWER
27	ATX,DUMMY LOAD

SHEET	TITLE
28	RT8120_DDR POWER
29	VCORE ISL95812_1
30	VCORE ISL95812_2
31	HDMI

Gigabyte Technology

Title	Cover Sheet		
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Model Name: GA-H81M-S2PH

Revision 1.02

Component value change history

2013/12/24

Data	Change Item	Reason
2013/05/17	BACK PANEL FOR EMI KB_MS,COMA,LPT -->AGND1.	
2013/06/18	R1.0 .MODIFY PROCHOT,5VSB CIRCUIT.BOM CHANGE R_USB30/HDMI.	
2013/06/28	R1.01.FIX RSMRST TIMMING.ADD 5VSB OVP PROTECTION.	
2013/09/13	R1.02. Follow Crystal Trace Rule.	
	SYS_FAN, DDR 0ohm 0402 -> 0603	
	Update Fuse 1206 Footprint "POLYSWITCH-1206-1"	
	Update PPAK Footprint "Q_TDSON8-GDS-T"	PBOM:9MH81MS2H-00-10D
2013/10/31	MODIFY 25MHZ X'TAL NC7/NC8 15PF.	PBOM:9MH81MS2H-00-10E
2013/12/19	MODIFY CODEC ALC887-VD2 ENHANCE VERSION.	PBOM:9MH81MS2H-00-10F
2013/12/24	USB30+HDMI 改為一體式	PBOM:9MH81MS2H-00-10G

Circuit or PCB layout change

DATE	Change Item	Reason

Gigabyte Technology

Title: BOM & PCB MODIFY HISTORY

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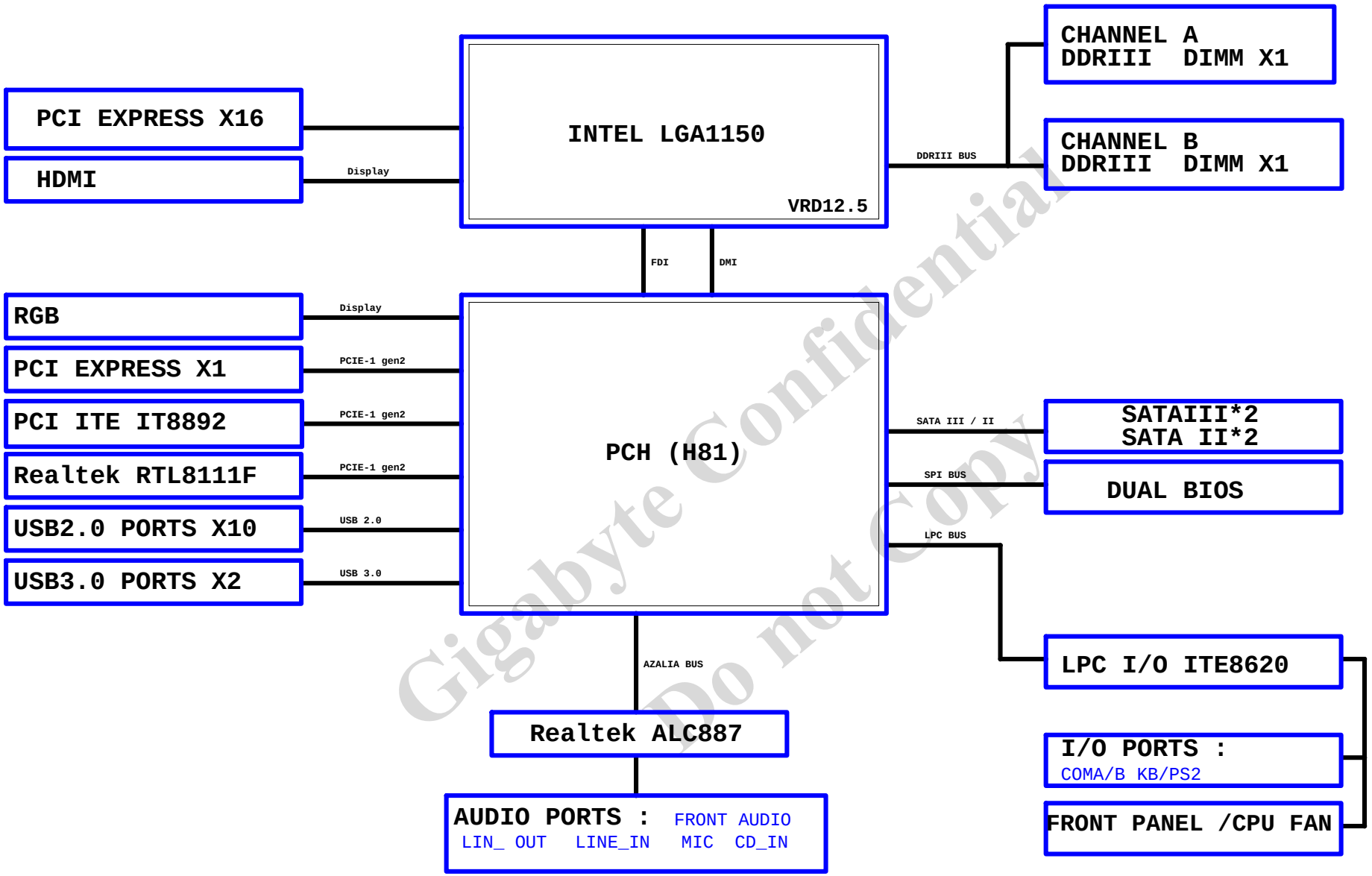
BLOCK DIAGRAM



Gigabyte Technology		
Title: BLOCK DIAGRAM		
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LGA1150 (E)

LGA1150E

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

Disable SVID

CFG 0-17 all internal PULL-UP

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

LGA1150 (D)

LGA1150D

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

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

LGA1155 (C)

LGA1150C

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

(1.011V) I/O Digatal Voltage
(1.05V) I/O Analog Voltage
(0.923V) RING/PLL Voltage
(0.815V) System Angen
(1.35V) VCCPLL

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

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

CPU SVID

CPU PU/PD

SM REF

-CPURST

FOR IT8620 Ctrl

For IT8620 Ctrl

THRMTRIP DISABLE

Title	CPU LGA1150-A		
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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	AE40	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	AY10	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_ODT0	DDR0_DQ17	AM39	MDA21
MODT_A1	AY8	DDR0_ODT1	DDR0_DQ18	AP38	MDA18
	AW9	DDR0_ODT2	DDR0_DQ19	AP39	MDA19
	AU8	DDR0_ODT3	DDR0_DQ20	AM37	MDA20
			DDR0_DQ21	AM38	MDA16
			DDR0_DQ22	AP37	MDA22
	AW33	DDR0_ECC0	DDR0_DQ23	AP40	MDA23
	AV33	DDR0_ECC1	DDR0_DQ24	AV37	MDA25
	AU31	DDR0_ECC2	DDR0_DQ25	AW37	MDA29
	AV31	DDR0_ECC3	DDR0_DQ26	AU35	MDA26
	AT33	DDR0_ECC4	DDR0_DQ27	AV35	MDA27
	AU33	DDR0_ECC5	DDR0_DQ28	AT37	MDA28
	AT31	DDR0_ECC6	DDR0_DQ29	AU37	MDA24
	AW31	DDR0_ECC7	DDR0_DQ30	AT35	MDA30
			DDR0_DQ31	AW35	MDA31
[7] SBAA0	SBAA0 AV12	DDR0_BA0	DDR0_DQ32	AY6	MDA33
[7] SBAA1	SBAA1 AY11	DDR0_BA1	DDR0_DQ33	AU6	MDA37
[7] SBAA2	SBAA2 AT21	DDR0_BA2	DDR0_DQ34	AV4	MDA34
			DDR0_DQ35	AU4	MDA35
[7] CKEA0	CKEA0 AV22	DDR0_CKE0	DDR0_DQ36	AW6	MDA36
[7] CKEA1	CKEA1 AT23	DDR0_CKE1	DDR0_DQ37	AV6	MDA32
	AU22	DDR0_CKE2	DDR0_DQ38	AW4	MDA38
	AU23	DDR0_CKE3	DDR0_DQ39	AY4	MDA39
			DDR0_DQ40	AR1	MDA41
[7] -CSA0	-CSA0 AU14	DDR0_CS_N0	DDR0_DQ41	AR4	MDA45
[7] -CSA1	-CSA1 AV9	DDR0_CS_N1	DDR0_DQ42	AN3	MDA42
	AU10	DDR0_CS_N2	DDR0_DQ43	AN4	MDA43
	AW8	DDR0_CS_N3	DDR0_DQ44	AR2	MDA44
			DDR0_DQ45	AR3	MDA40
[7] DCLKA0	DCLKA0 AY15	DDR0_CLK_P0	DDR0_DQ46	AN2	MDA46
[7] -DCLKA0	-DCLKA0 AY16	DDR0_CLK_N0	DDR0_DQ47	AN1	MDA47
[7] DCLKA1	DCLKA1 AW15	DDR0_CLK_P1	DDR0_DQ48	AL1	MDA49
[7] -DCLKA1	-DCLKA1 AW15	DDR0_CLK_N1	DDR0_DQ49	AL4	MDA53
	AV14	DDR0_CLK_P2	DDR0_DQ50	AJ3	MDA50
	AW14	DDR0_CLK_N2	DDR0_DQ51	AJ4	MDA51
	AW13	DDR0_CLK_P3	DDR0_DQ52	AL2	MDA52
	AY13	DDR0_CLK_N3	DDR0_DQ53	AL3	MDA48
			DDR0_DQ54	AJ2	MDA54
	AW12	RSVD	DDR0_DQ55	AJ1	MDA55
			DDR0_DQ56	AG1	MDA57
			DDR0_DQ57	AG4	MDA61
			DDR0_DQ58	AE3	MDA58
			DDR0_DQ59	AE4	MDA59
			DDR0_DQ60	AG2	MDA60
			DDR0_DQ61	AG3	MDA56
[7] -SRASA	-SRASA AU12	DDR0_RAS*	DDR0_DQ62	AE2	MDA62
[7] -SWEA	-SWEA AU11	DDR0_WE*	DDR0_DQ63	AE1	MDA63
			DDR0_DQS_P0	AE39	DQSA0
	AV20	RSVD	DDR0_DQS_P1	AJ39	DQSA1
			DDR0_DQS_P2	AN39	DQSA2
	AW27	RSVD	DDR0_DQS_P3	AV36	DQSA3
			DDR0_DQS_P4	AV5	DQSA4
[7] -SCASA	-SCASA AU9	DDR0_CAS*	DDR0_DQS_P5	AP3	DQSA5
			DDR0_DQS_P6	AK3	DQSA6
[7,8] -DDR3_RST	WR61 AK22	DDR_RESET*	DDR0_DQS_P7	AE3	DQSA7
	0/4/SHT/MX		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	

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_ODT0	DDR1_DQ17	AP34	MDB21
MODT_B1	AL16	DDR1_ODT1	DDR1_DQ18	AN31	MDB19
	AM16	DDR1_ODT2	DDR1_DQ19	AP31	MDB23
	AK15	DDR1_ODT3	DDR1_DQ20	AN35	MDB20
			DDR1_DQ21	AP35	MDB16
	AM26	DDR1_ECC0	DDR1_DQ22	AN32	MDB18
	AM25	DDR1_ECC1	DDR1_DQ23	AP32	MDB22
	AP25	DDR1_ECC2	DDR1_DQ24	AM29	MDB25
	AP26	DDR1_ECC3	DDR1_DQ25	AM28	MDB28
	AL26	DDR1_ECC4	DDR1_DQ26	AR29	MDB27
	AL25	DDR1_ECC5	DDR1_DQ27	AR28	MDB30
	AR26	DDR1_ECC6	DDR1_DQ28	AL29	MDB24
	AR25	DDR1_ECC7	DDR1_DQ29	AL28	MDB29
			DDR1_DQ30	AP29	MDB26
			DDR1_DQ31	AP28	MDB31
[8] SBAB0	SBAB0 AK17	DDR1_BA0	DDR1_DQ32	AR12	MDB32
[8] SBAB1	SBAB1 AL18	DDR1_BA1	DDR1_DQ33	AP12	MDB33
[8] SBAB2	SBAB2 AW28	DDR1_BA2	DDR1_DQ34	AL13	MDB34
			DDR1_DQ35	AL12	MDB35
[8] CKEB0	CKEB0 AW29	DDR1_CKE0	DDR1_DQ36	AR13	MDB36
[8] CKEB1	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
[8] -CSB0	-CSB0 AP17	DDR1_CS_N0	DDR1_DQ41	AP9	MDB41
[8] -CSB1	-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
[8] DCLKB0	DCLKB0 AM20	DDR1_CLK_P0	DDR1_DQ47	AP7	MDB42
[8] -DCLKB0	-DCLKB0 AM21	DDR1_CLK_N0	DDR1_DQ48	AM9	MDB52
[8] DCLKB1	DCLKB1 AP22	DDR1_CLK_P1	DDR1_DQ49	AL9	MDB53
[8] -DCLKB1	-DCLKB1 AP21	DDR1_CLK_N1	DDR1_DQ50	AL6	MDB50
			DDR1_DQ51	AL7	MDB55
	AN20	DDR1_CLK_P2	DDR1_DQ52	AM10	MDB48
	AN21	DDR1_CLK_N2	DDR1_DQ53	AL10	MDB49
	AP19	DDR1_CLK_P3	DDR1_DQ54	AM6	MDB54
	AP20	DDR1_CLK_N3	DDR1_DQ55	AM7	MDB51
			DDR1_DQ56	AH6	MDB61
			DDR1_DQ57	AH7	MDB60
[8] -SCASB	-SCASB AP16	DDR1_CAS*	DDR1_DQ58	AE6	MDB59
	AL20	RSVD	DDR1_DQ59	AE7	MDB63
[8] -SRASB	-SRASB AM18	DDR1_RAS*	DDR1_DQ60	AJ6	MDB56
[8] -SWEB	-SWEB AK16	DDR1_WE*	DDR1_DQ61	AJ7	MDB57
			DDR1_DQ62	AF6	MDB58
[7] VREF_DQA	VREF_DQA AB39	DDR_VREF_DQ0	DDR1_DQ63	AF7	MDB62
[8] VREF_DQB	VREF_DQB AB40	DDR_VREF_DQ1	DDR1_DQS_P0	AF35	DQSB0
			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	AF34	-DQSB0
			DDR1_DQS_N1	AK33	-DQSB1
			DDR1_DQS_N2	AN33	-DQSB2
			DDR1_DQS_N3	AP29	-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	

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

Place in CPU bottom side

VREF_DQA
VREF_DQB
WBC34 0.1u/4/X7R/16V/K
WBC33 0.1u/4/X7R/16V/K

LGA1150 (CR)

CR
CPU RETAINTION/X

LGA1150_P

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]

Gigabyte Technology			
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LGA1150 (F,J)

(1.0V)
CPU_VTT_OR
WBC1
22u/8/X5R/6.3V/M
VCORE
LGA1150F
P8 VCC
L40 VCCIO_OUT
AB8 VCCIO2PCH
WR65
0/4/X
VCCST
WBC23
0.1u/4/X7R/16V/K
WBC13
0.1u/4/X7R/16V/K
WR63
0/4/SHT/M/X
VCCIO2PCH
(1.07V)
WR64
0/4/SHT/M/X
VCC1_05_PCH
VCORE
VCORE
DDR_15V
HASWELL/[10SC1-F01150-11R_10SC1-F01150-12R]
LGA1150J
WR67
6.04K/4/1
[11,12,15] O_PWROK1
VCCST_PWRGD
WR66
3.16K/4/1
RSVD_TP K12
RAVD_TP J13
RAVD_TP P37
RAVD_TP N38
RAVD_TP R36
RAVD_TP C39
HASWELL/[10SC1-F01150-11R_10SC1-F01150-12R]

LGA1155 (G,H,I)

LGA1150G
LGA1150I
LGA1150H
HASWELL/[10SC1-F01150-11R_10SC1-F01150-12R]

VCore CAP (X18)

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

DDR CAP (X9)

DDR_15V
WBC29 22u/8/X5R/6.3V/M
WBC30 22u/8/X5R/6.3V/M
WBC31 22u/8/X5R/6.3V/M
WBC32 22u/8/X5R/6.3V/M
WBC24 22u/8/X5R/6.3V/M
WBC25 22u/8/X5R/6.3V/M
WBC26 22u/8/X5R/6.3V/M
WBC27 22u/8/X5R/6.3V/M
WBC28 22u/8/X5R/6.3V/M

Gigabyte Technology		
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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

【技術通報R&D技術通報162】
VDDSPD SHORT PROTECT
R0603-RH

VCC3 MR17 0/6 VDDSPD

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

[8,12,14,18,19,20] N_SMBCLK
[8,12,14,18,19,20] 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
[5] -SRASA
[5] -SWEA

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

DDR3/240/BK/VA/D
BLACK CONNECTOR

MDQT_A[0..1]
-DQSA[0..7]
DQSA[0..7]

MDA[0..63] [5]
MDQT_A[0..1] [5]
-DQSA[0..7] [5]
DQSA[0..7] [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

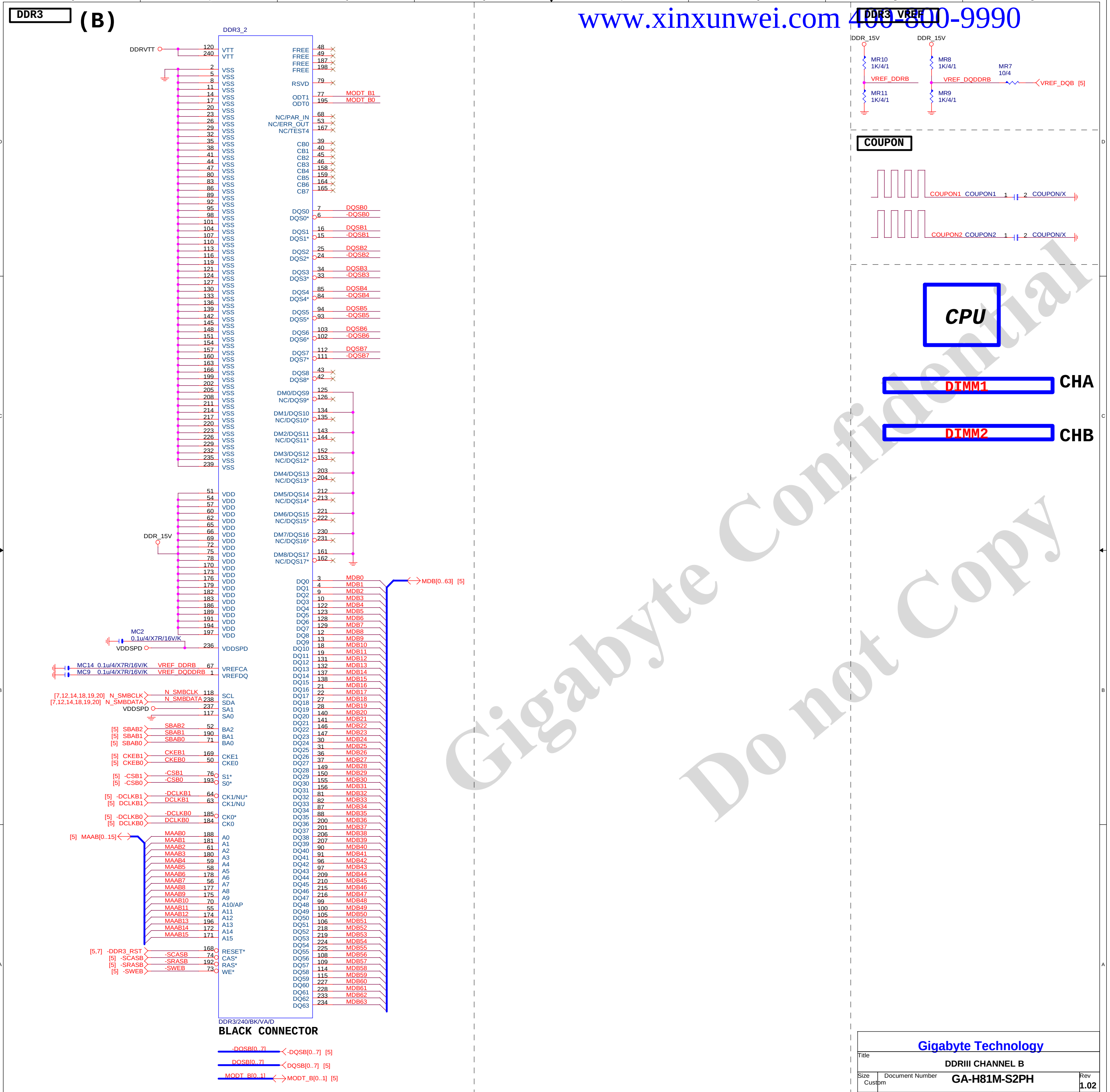
DDRVTT
MBC18 1u/4/X5R/6.3V/K
MBC10 0.1u/4/Y5V/16V/Z

Gigabyte Technology

Title: DDRIII CHANNEL A

Size: Custom | Document Number: GA-H81M-S2PH | Rev: 1.02

Date: | Sheet 7 of 31



Gigabyte Technology

Title	DDRIII CHANNEL B	
Size: Custom	Document Number: GA-H81M-S2PH	Rev: 1.02
Date:	Sheet 8 of 31	

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%

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

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 — USB

AV10 AU10 AV11 AW11 AN14 AP14 AJ16 AK16 AU15 AV15 AU12 AT12 AV14 AW14 AU17 AT17 AW16 AV16 AN16 AP16 AJ18 AK18 AP18 AN18 AW18 AV18 AP20 AN20

N_-USBP0 [22] N_+USBP0 [22] N_-USBP1 [22] N_+USBP1 [22] N_-USBP2 [25] N_+USBP2 [25] N_-USBP3 [25] N_+USBP3 [25]

N_-USBP8 [22] N_+USBP8 [22] N_-USBP9 [22] N_+USBP9 [22] N_-USBP10 [22] N_+USBP10 [22] N_-USBP11 [22] N_+USBP11 [22]

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

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

H81: USB3 only Port 0/1

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

L14 K14 B12 B11 F14 G14 D11 C11

LAN: [25] LA_ML_IN F11, [25] LA_ML_IP H11, [25] LA_ML_ON B9, [25] LA_ML_OP A9
8892: [17] G_PCIEBIN J11, [17] G_PCIEBIP L11, [17] G_PCIEBON B8, [17] G_PCIEBOP C8
PCIEx1: [19] PI_PCIEX1_IN G9, [19] PI_PCIEX1_IP F9, [19] PI_PCIEX1_ON B7, [19] PI_PCIEX1_OP A7

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 — PCIE

F7 H7 E1 D2 K6 K8 G3 G5 J2 J3 H2 H1

OC0B_GP59 OC1B_GP40 OC2B_GP41 OC3B_GP42 OC4B_GP43 OC5B_GP9 OC6B_GP10 OC7B_GP14

AE40 AF37 AD39 AD40 AF39 AC41 AF40 AG40

N_-USBOC_R [16]
N_-USBOC_F [16,22]
N_GPIO14
W=4 mil out of PCH
S=15 mil out of PCH

USBRBIASB USBRBIAS — AV20 N_USBRBIAS NR47 22.6/4/1 — AU20

CLKIN_DOT96N CLKIN_DOT96P — AP11 CK_-DOTCLK, AM11 CK_DOTCLK

NR130 8.2K/4 — N_GPIO14 — 3VDUAL

N_-USBOC_F — NBC82 0.1u/4/X7R/16V/K
N_-USBOC_R — NBC83 0.1u/4/X7R/16V/K

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

DH82H81/C2/[10HB1-030H81-10R]

PCH (F)

PCHF

[22] PCH_USB3_RXN0 [22] PCH_USB3_RXP0 [22] PCH_USB3_TXN0 [22] PCH_USB3_TXP0
[22] PCH_USB3_RXN1 [22] PCH_USB3_RXP1 [22] PCH_USB3_TXN1 [22] PCH_USB3_TXP1

USB3: F20 G20 B18 C18 G18 H18 B15 B16 K20 L20 D15 C15 L18 K18 B14 A14
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

FDILINK: N1 N2 P2 P3 L2 L3 K2
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_INT NR29 7.5K/4/1 VCC1_5_PCH

FDI_CSYNC [4]
FDI_INT [4]

H81: USB3 only Port 0/1

VCC3 — NR62 8.2K/4 — NR63 8.2K/4 — AK28 AT34

TACH6_GP70 TACH7_GP71

DH82H81/C2/[10HB1-030H81-10R]

FDI_TXP[0..1] — FDI_TXP[0..1] [4]
FDI_TXN[0..1] — 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

AT1 AT41 AU1 AV1 AV2 AV40 AV41 AW2 AW40 B40 B41 C41 D1 D41 — VSS_NCTF

TP22 TP23 TP21 TP20 TP14 TP15 TP12 — U11 U10 AJ14 AK14 K34 K33 AH24
TP10 TP11 TP9 — L16 K16 AM34
TP3 TP4 TP1 TP2 — R12 N12 L22 K22
TP5 TP6 TP7 TP8 — R4 K5 P5 L5
VSS — AC31
VSS VSS — AF3 AV21

DH82H81/C2/[10HB1-030H81-10R]

PCH H/S

LOW COST ICH7 HEATSINK

SB_HEATSIN

1 2

GRAY HS

PCH_HS
PCH_HS/[12SP2-030005-43R_12SP2-030005-41R_12SP2-030005-42R]

USB TABLE

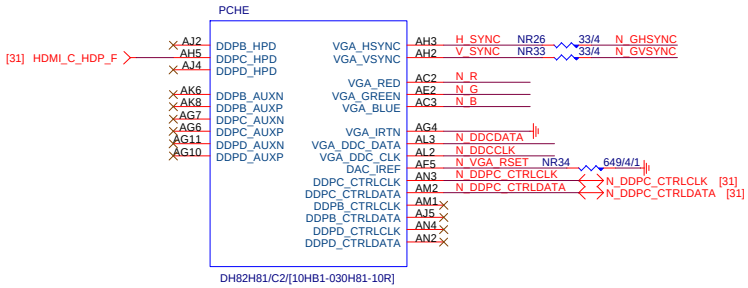
OC[3:0]# for Device 29 (ports 0-7)
OC[7:4]# for Device 26 (ports 8-13)

USB OC#	Configure
OC0#	USB30_HDMI
OC1#	R_USB
OC2#	N/A
OC3#	N/A
OC4#	F_USB1
OC5#	F_USB2
OC6#	N/A
OC7#	Not Use

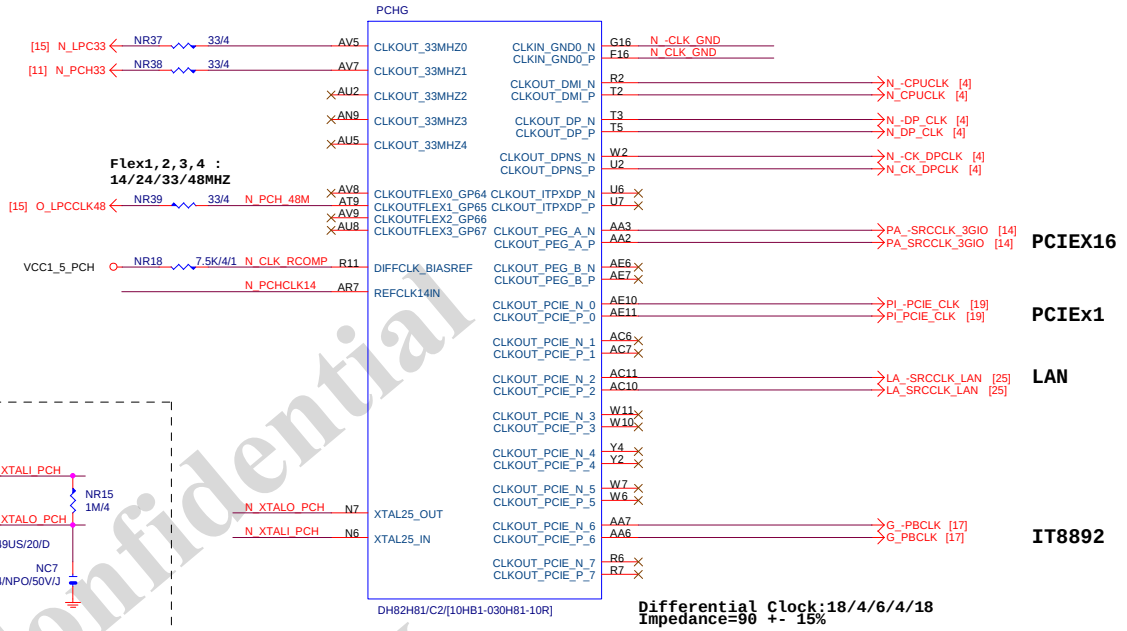
Gigabyte Technology

Title: PCH FDI,DMI,USB ,PCIE,NVRAM
Size: Custom | Document Number: GA-H81M-S2PH | Rev: 1.02
Date: Tuesday, December 24, 2013 | Sheet 9 of 31

PCH (E)

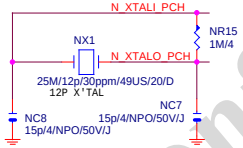


PCH (G)

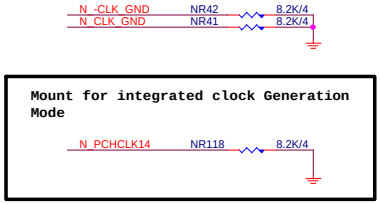


Differential Clock:18/4/6/4/18
Impedance=90 +- 15%

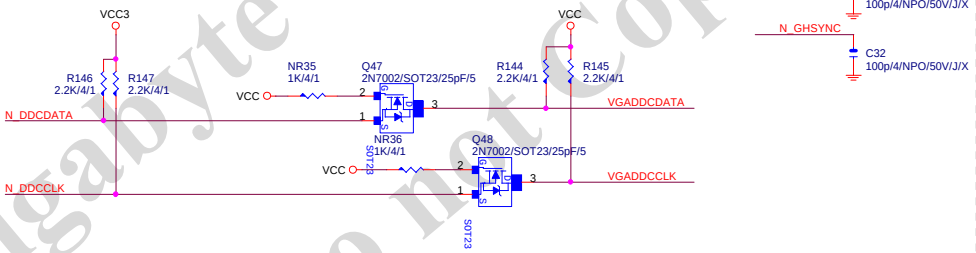
25MHZ X'TAL



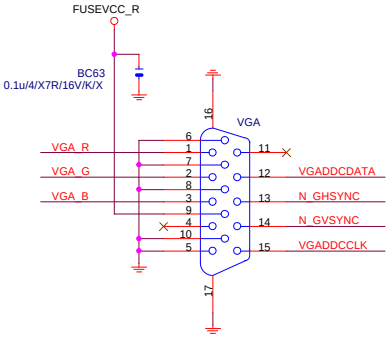
PCH CLK PD



VGA DDC



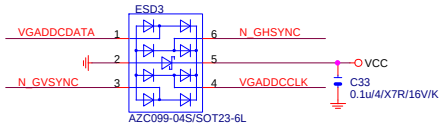
VGA CONNECTOR



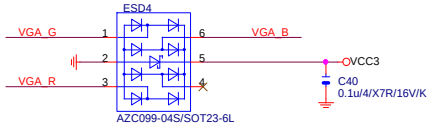
VGA/BK/SC-11/RA/D/L/[11NR6-103015-21R_11NR6-103015-22R]

BLACK D-SUB

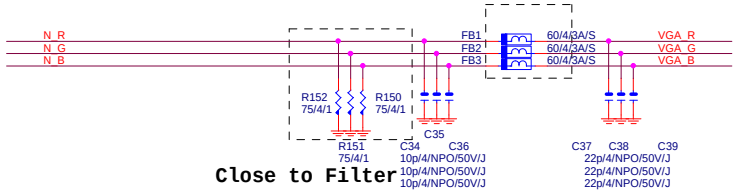
VGA ESD



SSOP6_ESD



VGA DDC

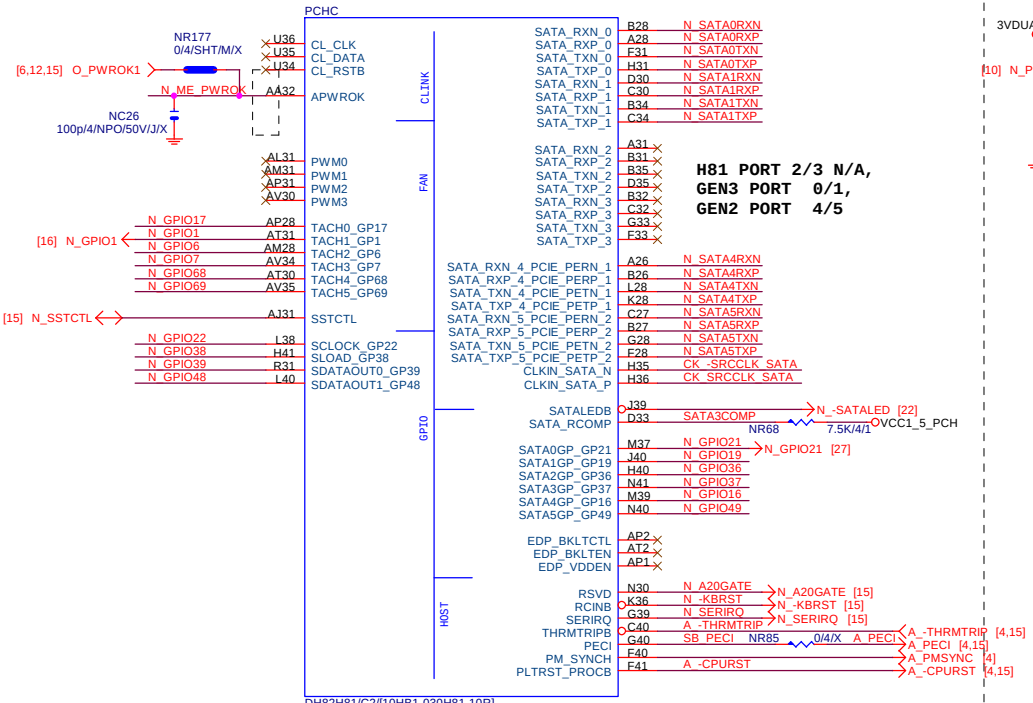


Close to Filter

Gigabyte Technology		
Title: PCH DISPLAY ,CLK BUFFER		
Size: Custom	Document Number: GA-H81M-S2PH	Rev: 1.02
Date: Tuesday, December 24, 2013	Sheet 10 of 31	

PCH (C)

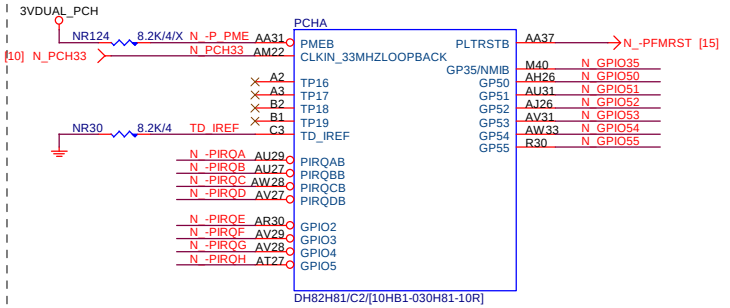
SATA3 : 20/7.5/4.5/7.5/20 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%
SATA2 : 15/7.5/4.5/7.5/15 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%



DH82H81/C2/[10HB1-030H81-10R]

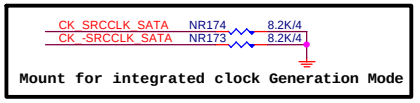
H81 PORT 2/3 N/A,
GEN3 PORT 0/1,
GEN2 PORT 4/5

PCH (A)

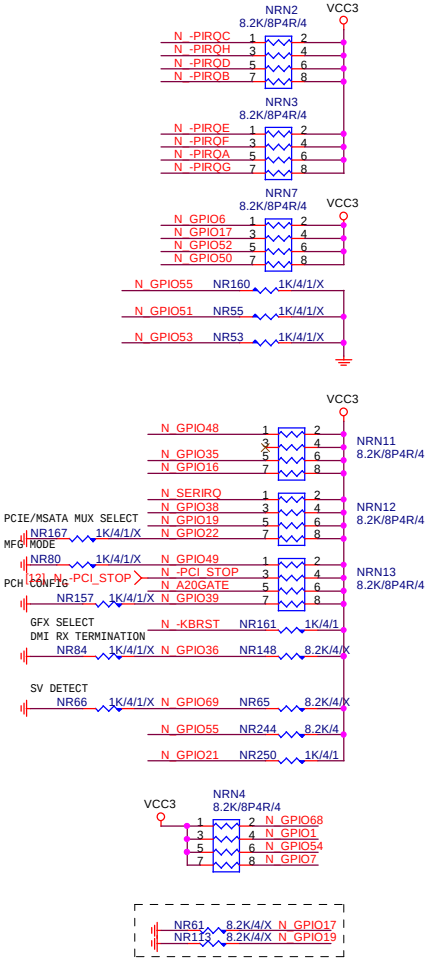


DH82H81/C2/[10HB1-030H81-10R]

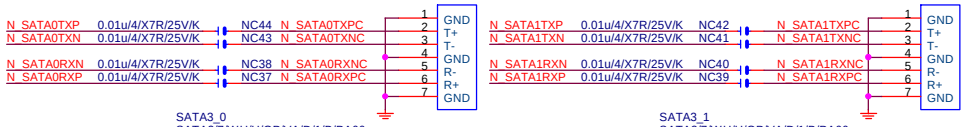
PCH CLK PD



PCH PU/PD



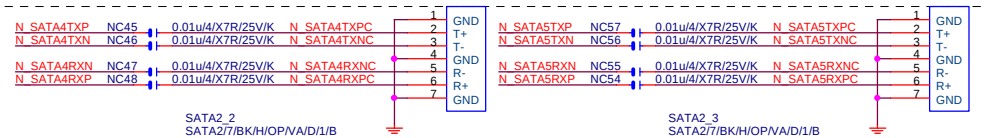
SATA CONNECTOR



WHITE CONNECTOR

WHITE CONNECTOR

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

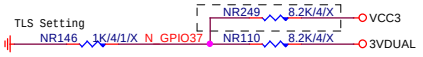


BLACK CONNECTOR

BLACK CONNECTOR

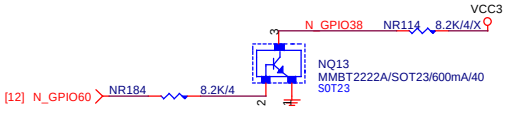
ME PWROK

H81 N/A



GPIO37 PU VCC3 ENABLE SBA
For H87&B85

GPIO38 Ctrl



Gigabyte Technology			
Title: PCH HOST , SATA, PCI			
Size: Custom	Document Number: GA-H81M-S2PH		Rev: 1.02
Date: Tuesday, December 24, 2013	Sheet 11 of 31		

PCH (D)

PCHD

DH82H81/C2/[10HB1-030H81-10R]

ACZ_SDOUT

SPI OVERRIDE PROTECTION

PCH PU/PD

PCH_DPWROK

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-S2PH
Rev	1.02
Date:	Tuesday, December 24, 2013
Sheet	12 of 31

PCH (H)

VCC3_DAC

CLOSE北橋(注意震盪水波紋)

3VDUAL_PCH

SHT PWR

M3 POWER

CAP

(3.3V)(X6)

(1.05V)(X5)

(1.05V)(X6)

(1.05V)(X2)

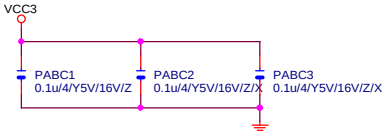
(3.3V)(X2)

(1.05V)(X10)

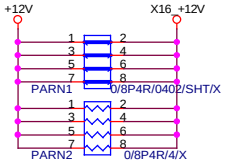
PCH (I)

Gigabyte Technology	
Title	PCH PWR ,GND
Size: Custom	Document Number: GA-H81M-S2PH
Rev	1.02
Date: Tuesday, December 24, 2013	Sheet 13 of 31

PCIEX16 CAP



PCIEX16 PROTECT SHT



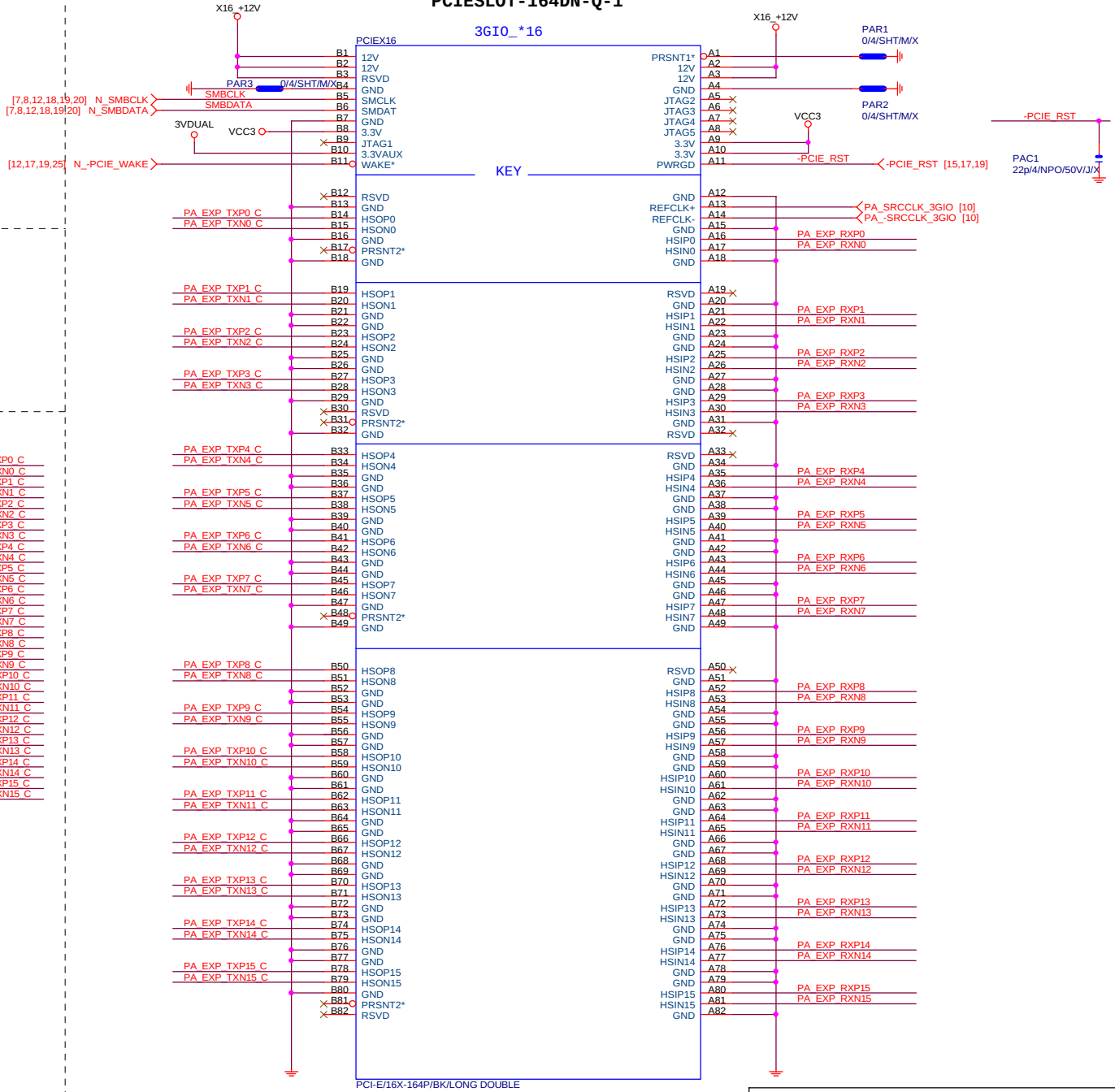
PCIEX16 AC CAP

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]

PCIEX16 SLOT

PCIESLOT-164DN-Q-1



BLACK CONNECTOR

Title	PCI EXPRESS * 16		
Size: Custom	Document Number: GA-H81M-S2PH		Rev: 1.02
Date: Tuesday, December 24, 2013	Sheet 14 of 31		

Gigabyte Technology

SIO IT8620E

FIX ATX 插拔漏電

PWR SHT

SIO PU

SIO STRAP

IT8620E

IT8620 NOTE

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

DUAL BIOS OPT STRAP

Power leakage

SIO_18V

internal power pin, max 22nF cap

FOR LOW TEMP POWER ON INTO TEST MODE ISSUE

MB ID

SIO CAP

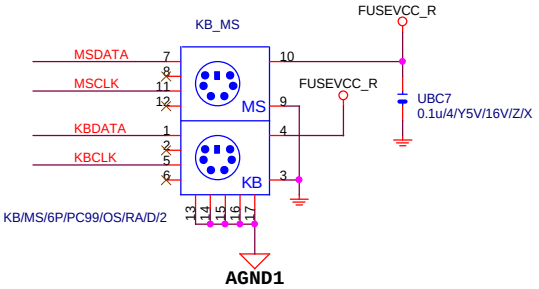
Gigabyte Technology

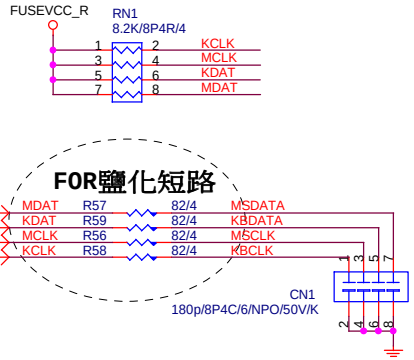
Title: ITE 8620 LPC IO

Size: Custom | Document Number: GA-H81M-S2PH | Rev: 1.02

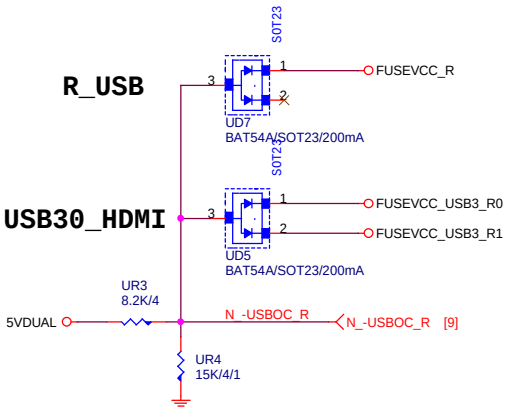
Date: Tuesday, December 24, 2013 | Sheet 15 of 31

KB/MS

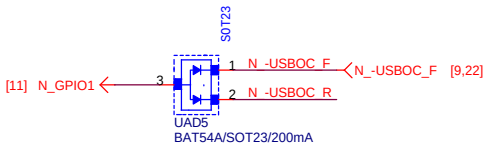




-USBOC_R



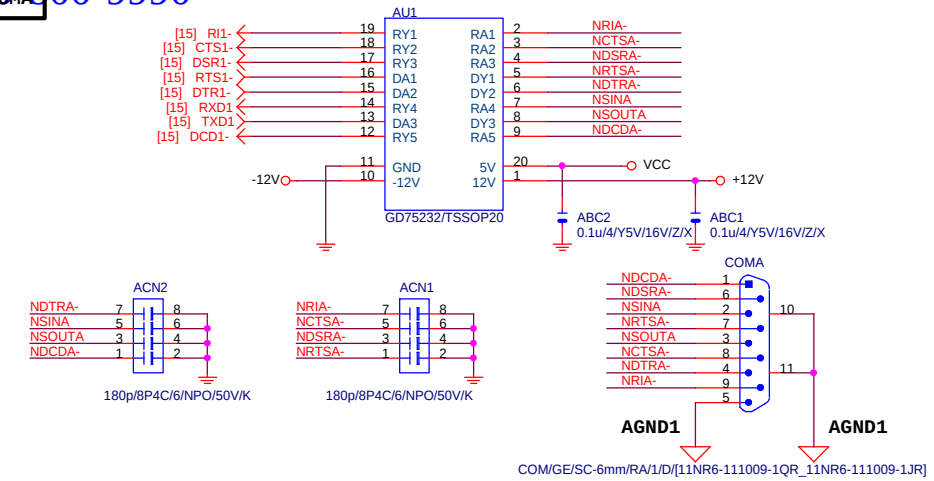
USB POWER PROTECT



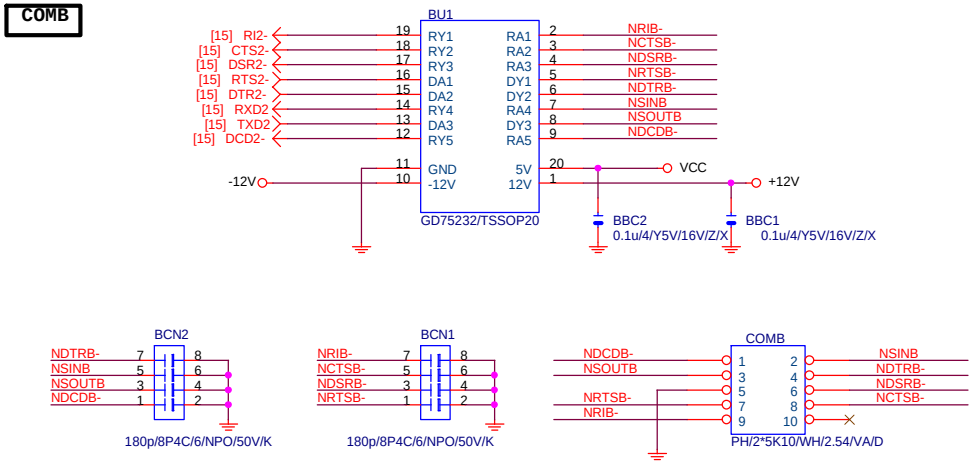
R_USB PWR

Close to connector
KB_MS_USB 2-Port 2.0A

COMA

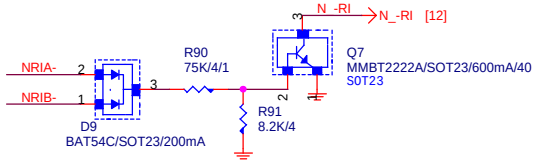


COMB



WHITE CONNECTOR PIN2X5-CUT10-COM

COM RI



Gigabyte Technology		
Title: COM,-RI,KB_MS		
Size: Custom	Document Number: GA-H81M-S2PH	Rev: 1.02
Date: Tuesday, December 24, 2013	Sheet 16 of 31	

PCIE TO PCI

PCI:5/4/5 Impedance=50 +- 15%

High: Enable PCI CLK 66MHz
Low: Disable PCI CLK 66MHz

High: PCICLK INTPUT form CLK Gen
Low: PCICLK OUTPUT form IT8893 chip

IT8892E/BX LQFP128

IT8892E/FX/S/[10HP2-698892-40R]

PCB layout note:
Close to chip

PCB layout note:
Close to chip

Close to chip

IT8892

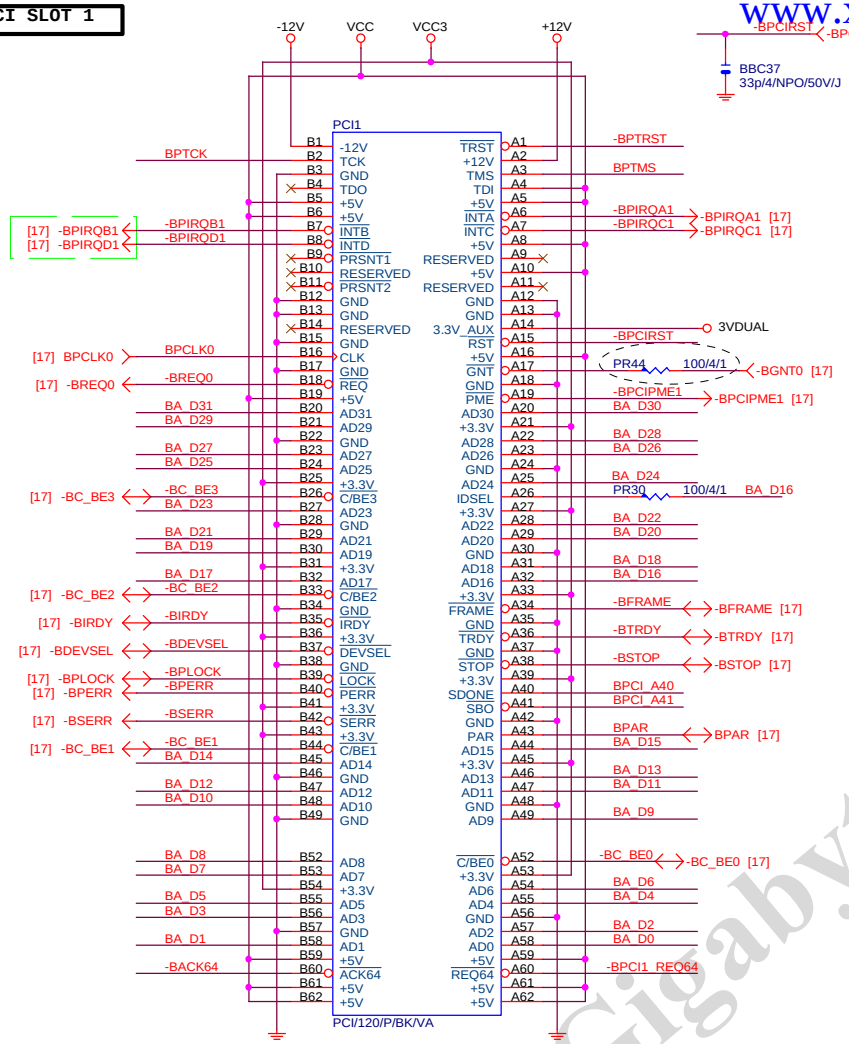
PCI slot

PCI slot

chipset side

Gigabyte Technology		
Title	ITE IT8892E	
Size: Custom	Document Number: GA-H81M-S2PH	Rev: 1.02
Date: Tuesday, December 24, 2013	Sheet 17 of 31	

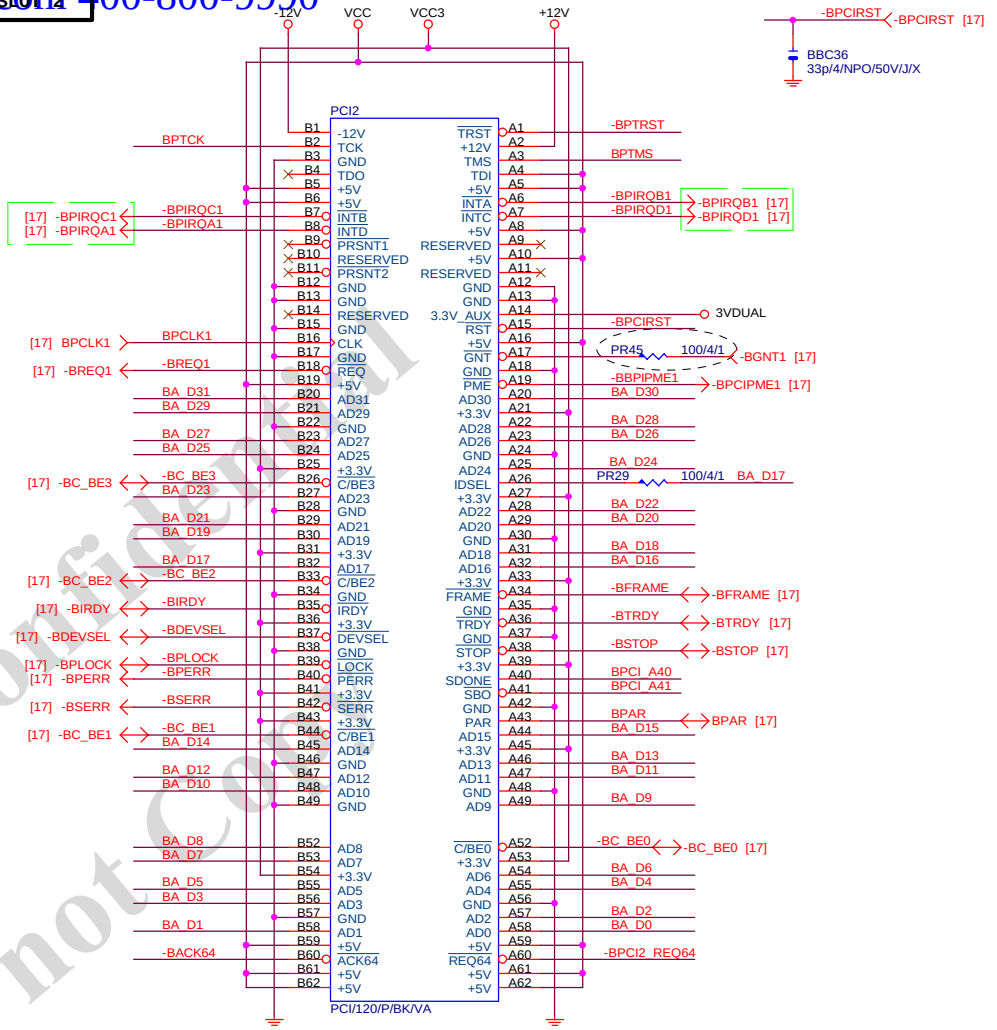
PCI SLOT 1



-REQ0/-GNT0/A_D16

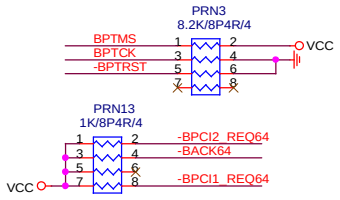
[17] BA_D[0..31] — BA_D[0..31]

PCI SLOT 2

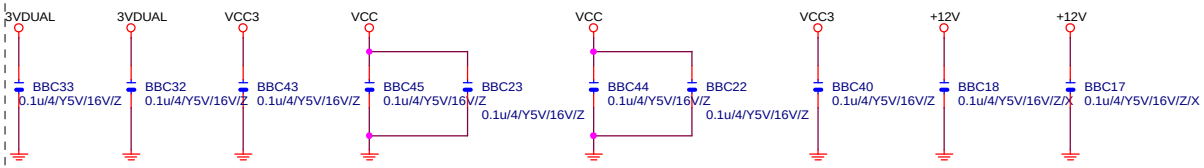


-REQ1/-GNT1/A_D17

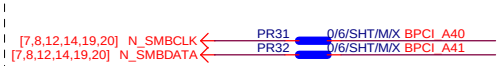
PCI PU



PCI CAP



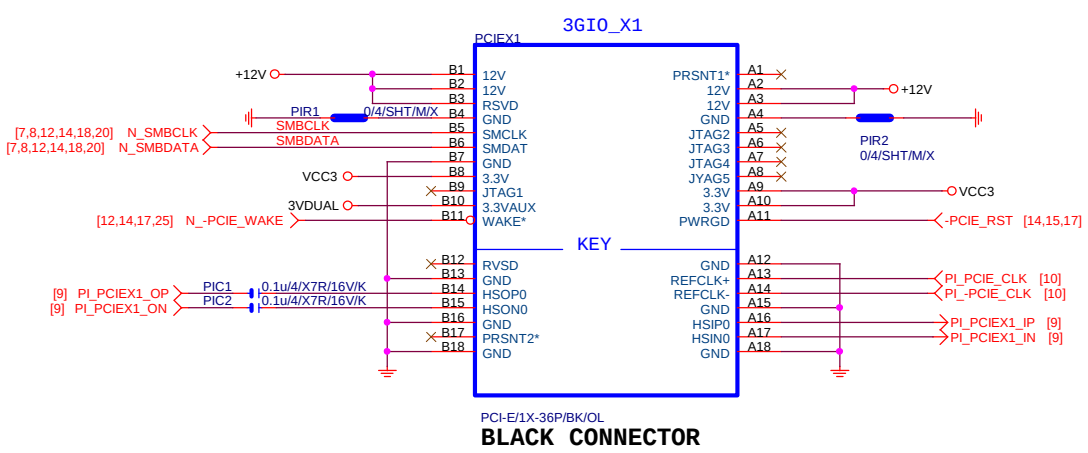
PCI SMBUS



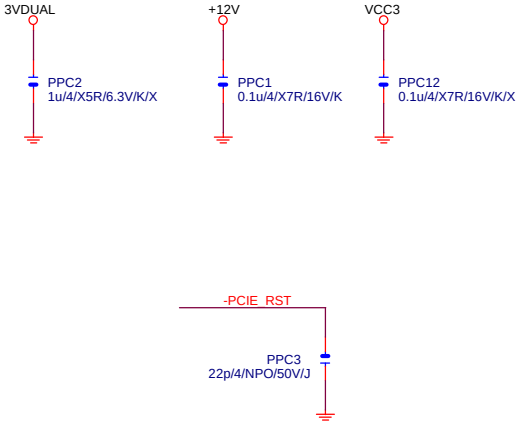
Gigabyte Technology

Title	PCI SLOT 1&2	
Size: Custom	Document Number: GA-H81M-S2PH	Rev: 1.02
Date: Tuesday, December 24, 2013	Sheet 18 of 31	

PCIEX1 SLOT

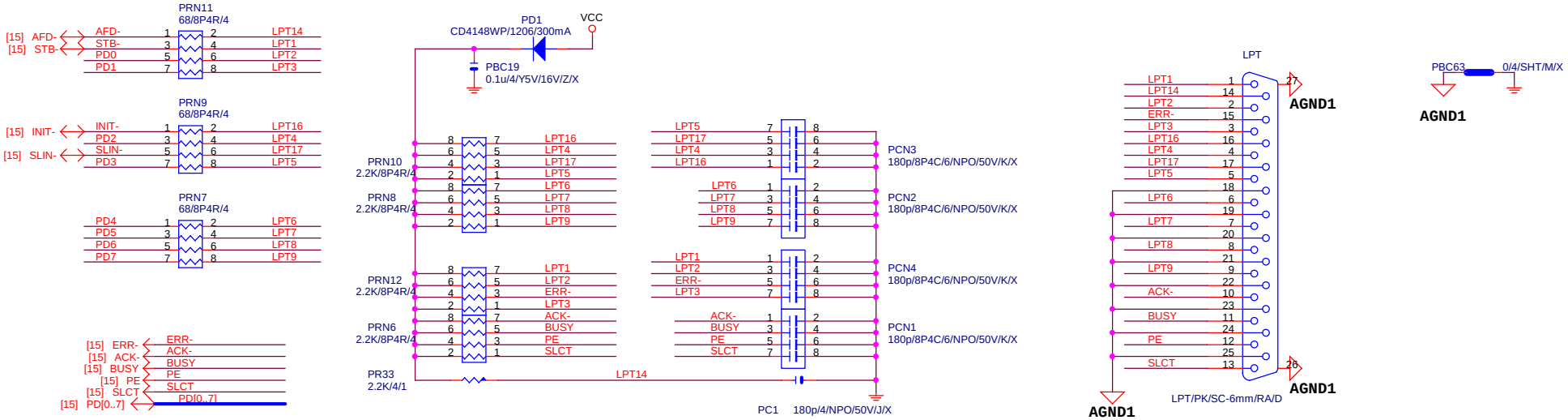


BLACK CONNECTOR



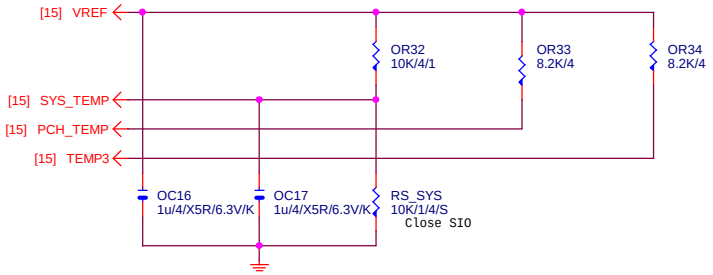
LPT PORT

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

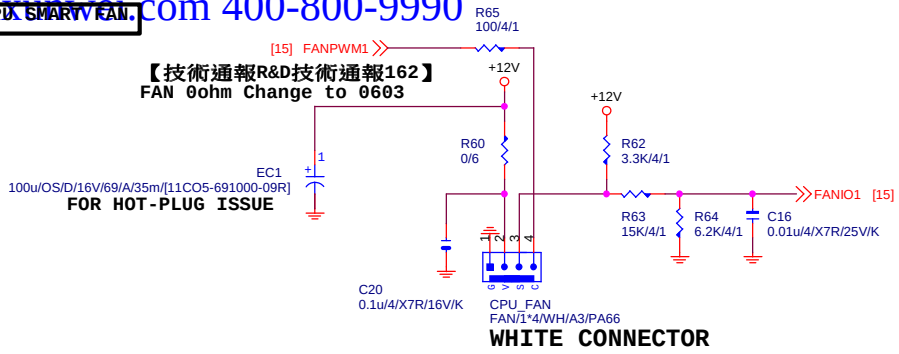


Gigabyte Technology			
Title: LPT			
Size: B	Document Number: GA-H81M-S2PH		Rev: 1.02
Date: Tuesday, December 24, 2013	Sheet 19 of 31		

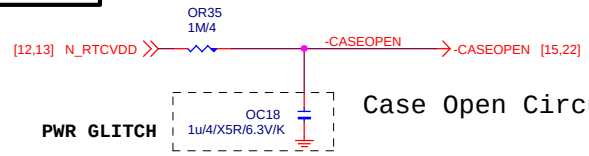
TEMP H/W MONITOR



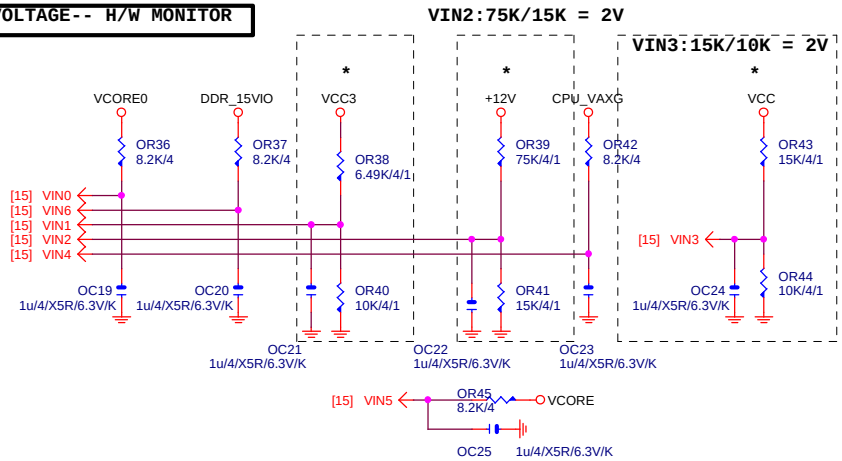
CPU SMART FAN



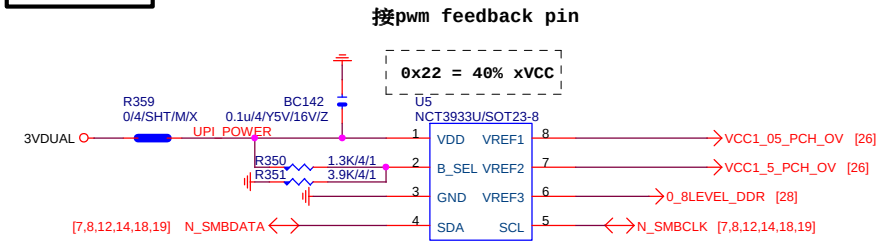
CASE OPEN



VOLTAGE-- H/W MONITOR

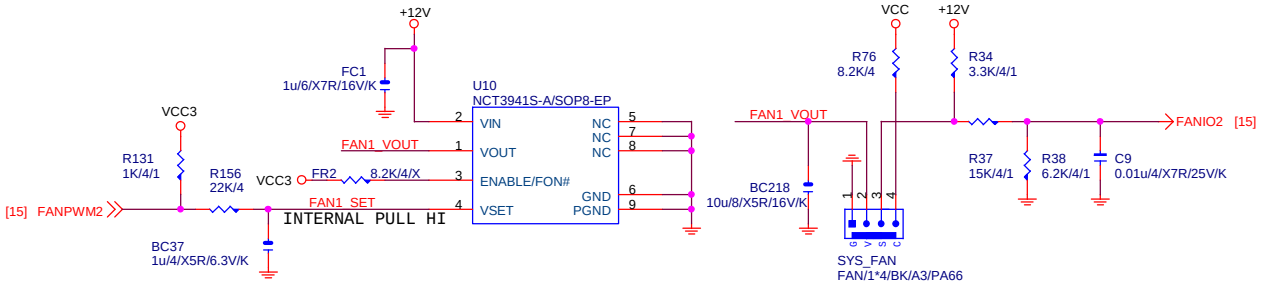


OV NCT3933

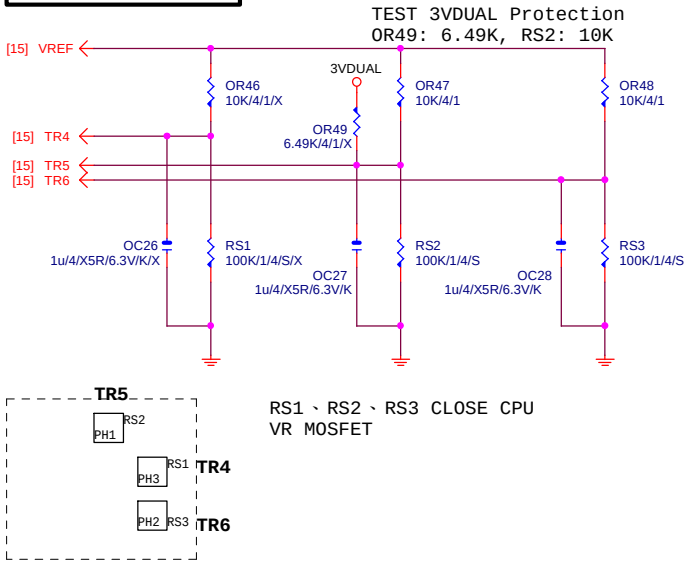


SYS SMART FAN

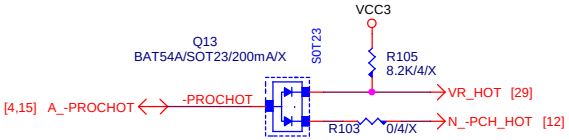
Linear SYS_FAN



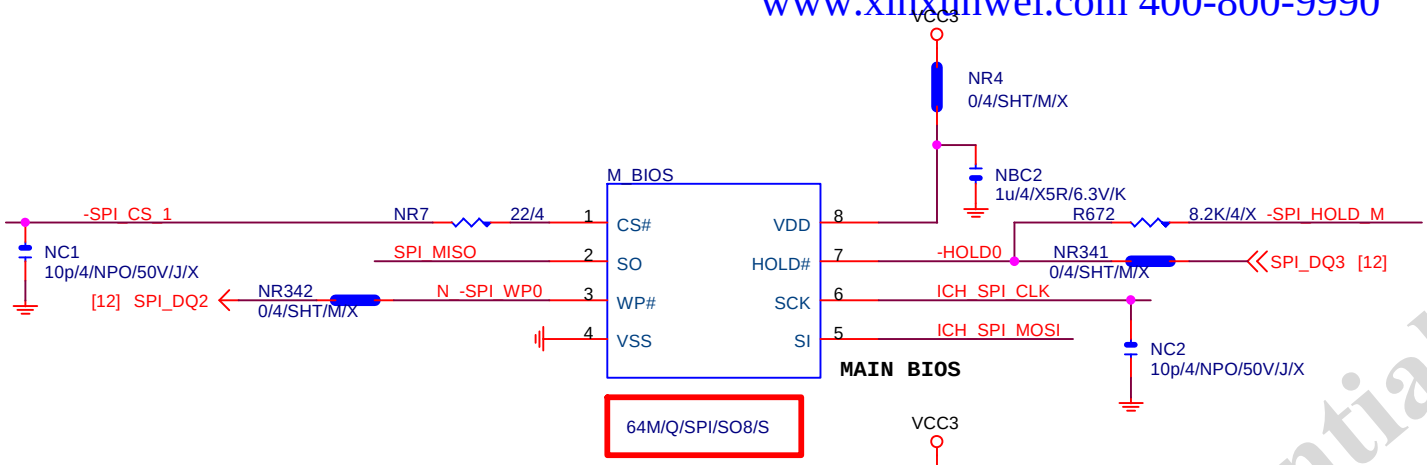
THERMISTOR MONITOR



-PROHOT

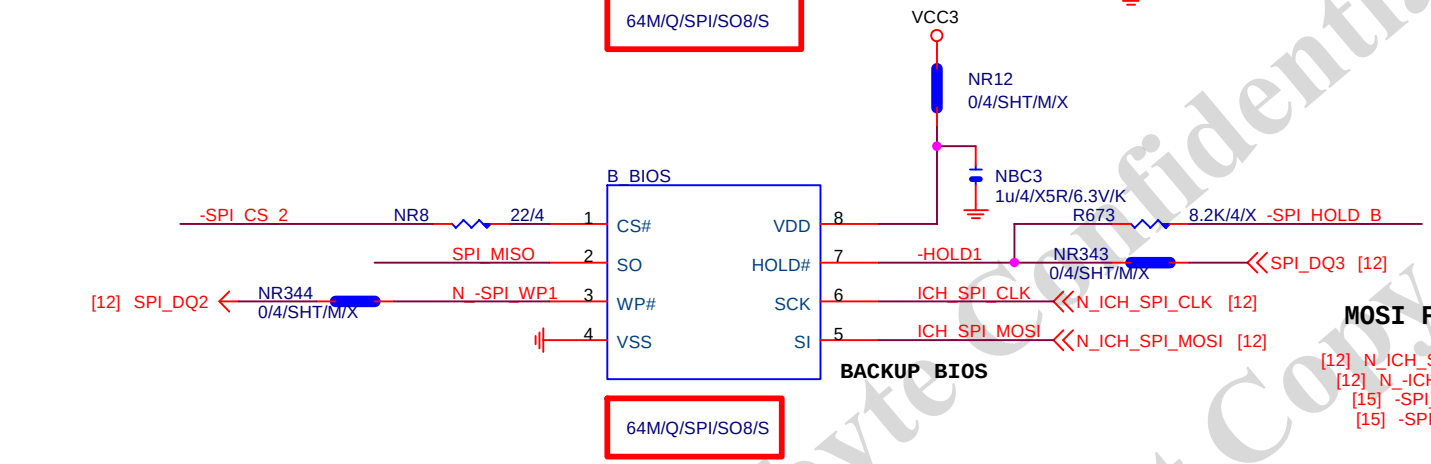


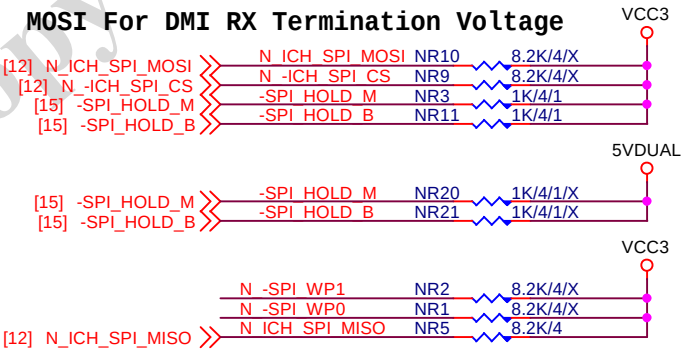
Gigabyte Technology			
Title: HWM,FAN CTRL,OV			
Size: Custom	Document Number: GA-H81M-S2PH		Rev: 1.02
Date: Tuesday, December 24, 2013	Sheet 20 of 31		

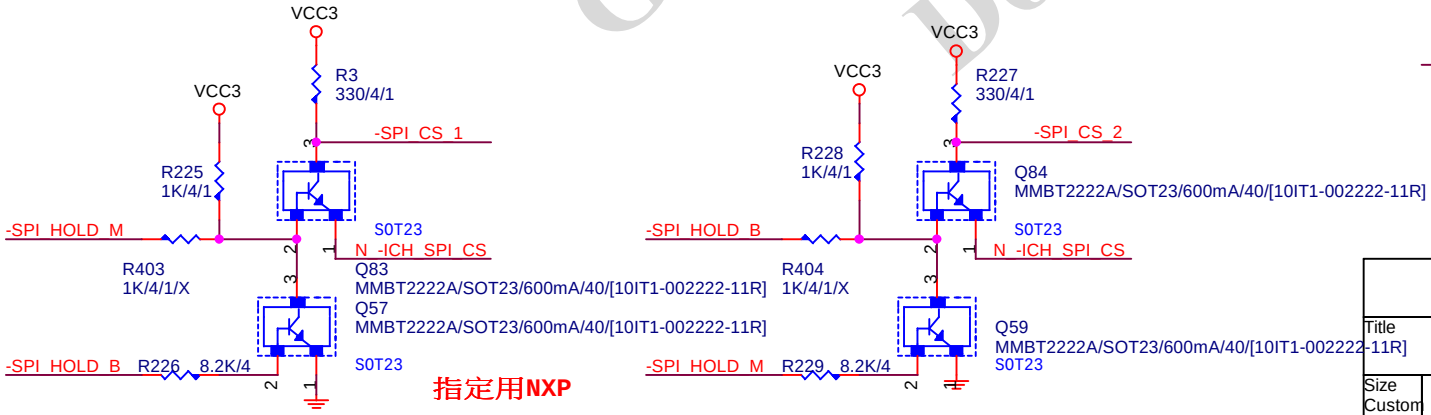


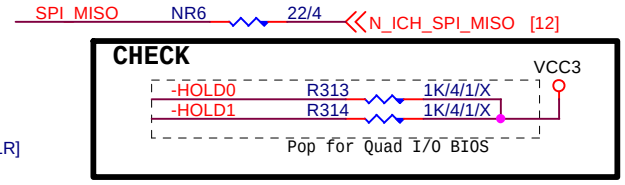
BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

1 means floating
0 means PD 1K









Gigabyte Technology		
Title: DUAL BIOS		
Size: Custom	Document Number: GA-H81M-S2PH	Rev: 1.02
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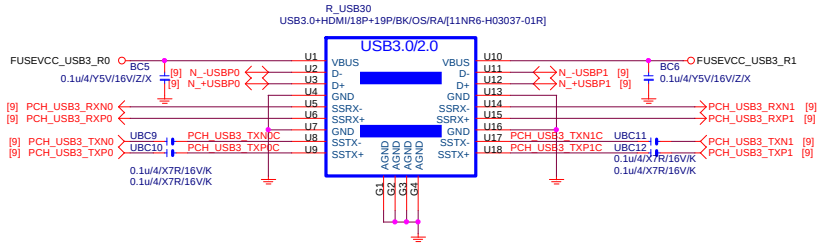
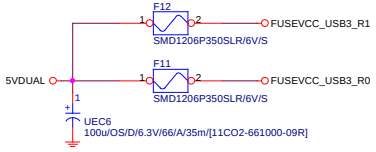
R_USB30

USB30+HDMI 一體式



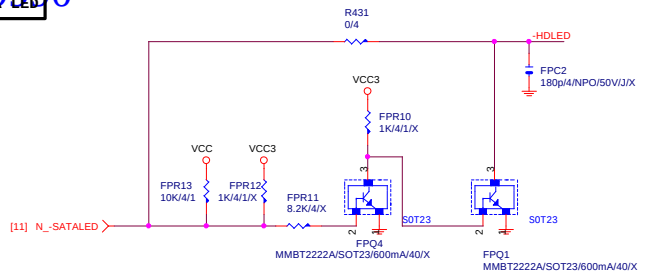
R_USB30_PWR

POLYSWITCH-1206-1

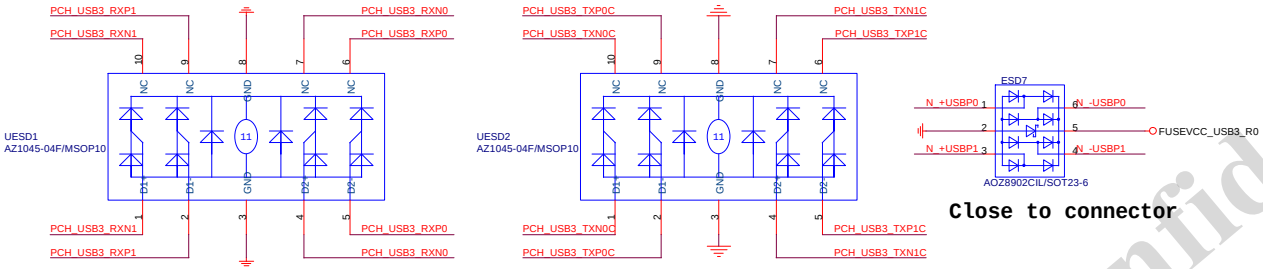


USB3.0 1Port - 1Fuse (3.5A)

SATA LED

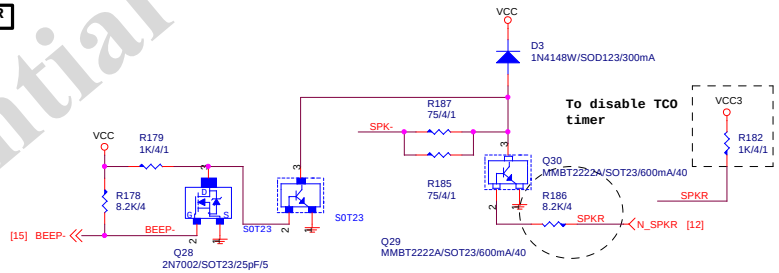


USB30_HDMI ESD PROTECT

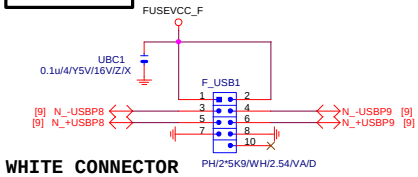


Close to connector

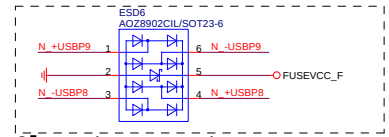
SPKR



FRONT USB1

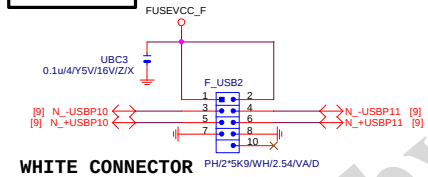


WHITE CONNECTOR

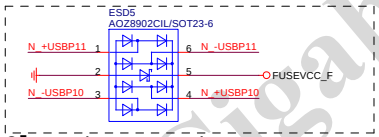


Close to connector

FRONT USB2

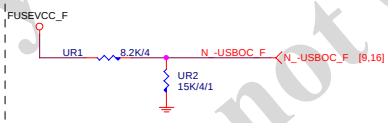


WHITE CONNECTOR

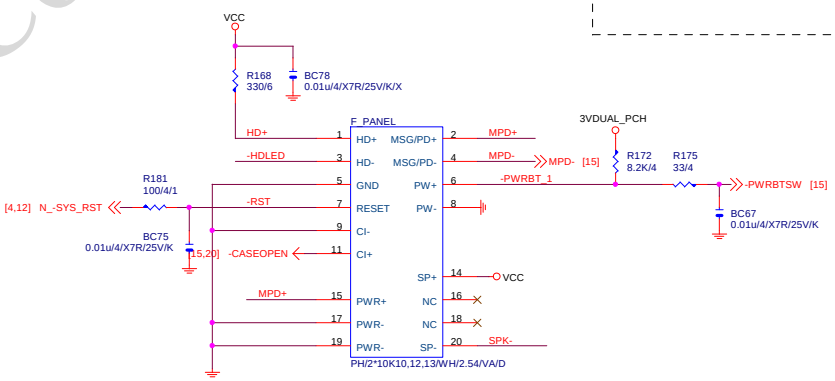


Close to connector

-USBOC_F



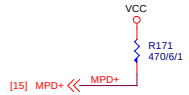
INTEL FRONT PANEL



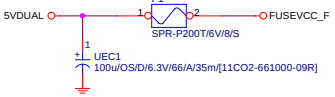
PIN2X10PANEL_NEW

PWR LED

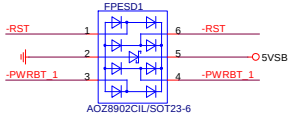
FOR IT8620 Ctrl



FUSEVCC_F



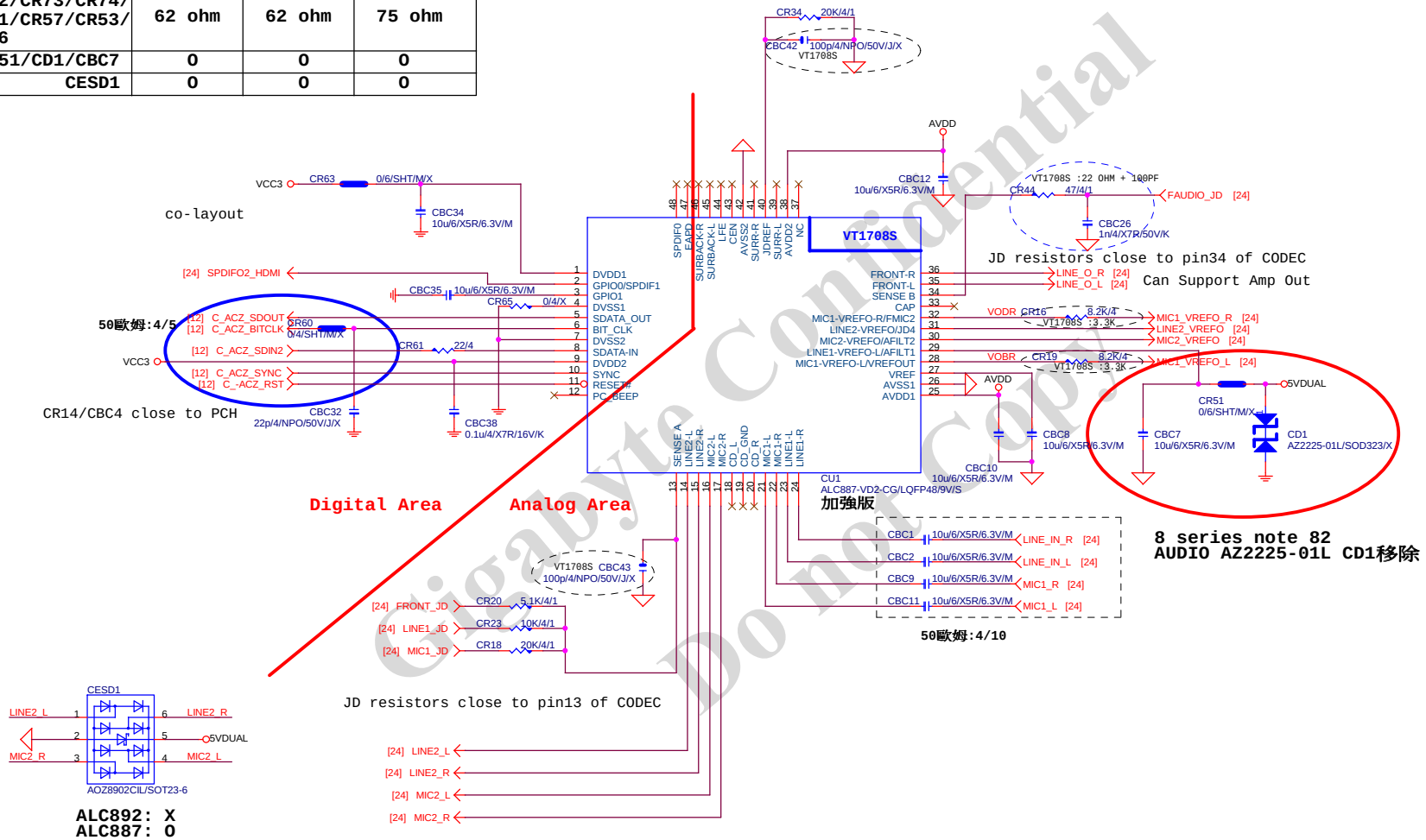
F_USB1, F_USB2 4-Port 2.6A



Gigabyte Technology		
Title: FP,F_USB,USB PWR,SPKR,SATA LED		
Size: Custom	Document Number: GA-H81M-S2PH	Rev: 1.02
Date: Tuesday, December 24, 2013	Sheet 22 of 31	

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-S2PH		Rev: 1.02
Date: Tuesday, December 24, 2013	Sheet 23 of 31		

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

LINE-OUT

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

Only reserved for ALC888

LINE-IN

[23] LINE_IN_R — CR1 62/4 — AJ_A5
[23] 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

SPDIF_OUT

[23] SPDIFO2_HDMI — CR26 0/4/SHT/M/X
CBC14 100p/4/NPO/50V/J
PIN
SPDIF_O
PH/1*2/BK/2.54/VA/D

For HDMI SPDIF

MIC-IN

[23] MIC1_R — CR17 62/4 — AJ_C5
[23] MIC1_L — CR22 62/4 — AJ_C2
[23] MIC1_VREFO_L
[23] MIC1_VREFO_R
CBC3 180p/4/NPO/50V/J
CBC4 180p/4/NPO/50V/J

SPDIF_OUT

AZALIA FRONT PANEL

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

AUDIO
[23] LINE1_JD — LINE1_JD — AJ_A5 — AJ_A2 — **BLUE LINE-IN**
[23] FRONT_JD — FRONT_JD — AJ_B5 — AJ_B2 — **GREEN LINE-OUT**
[23] MIC1_JD — MIC1_JD — AJ_C5 — AJ_C2 — **PINK MIC-IN**
GND
MH1 MH2 MH3 MH4 MH5
A3RP/13P/BL,LI,PK/RA/D/1/B

Gigabyte Technology			
Title: AUDIO JACK			
Size: Custom	Document Number: GA-H81M-S2PH		Rev: 1.02
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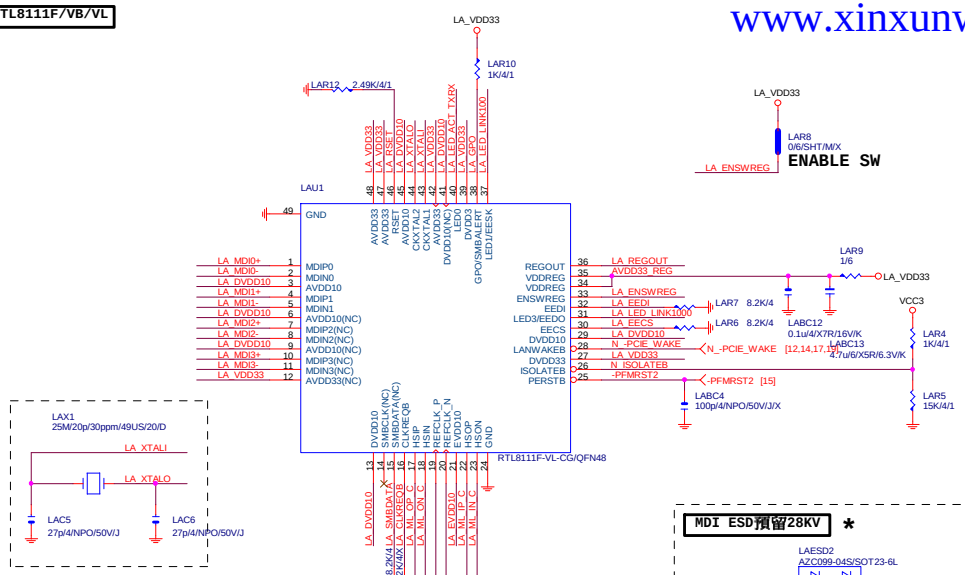
LAN:RTL8111F/VB/VL



LA_VDD33
LAR8 0/6/SHT/M/X
LA_ENSWREG
ENABLE SW

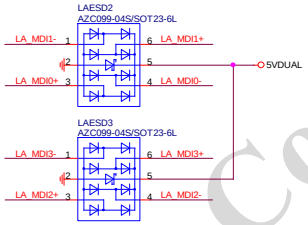
LAR9 1/6
LA_VDD33
LAR7 8.2K/4
LAR6 8.2K/4
LABC12 0.1u/4/X7R/16V/K
LABC13 4.7u/6/X5R/6.3V/K
VCC3
LAR4 1K/4/1
LAR5 15K/4/1
LABC4 100p/4/NPO/50V/J/X
LA_REGOUT
LA_EEDI
LA_LED_LINK1000
LA_EECS
LA_DVDD10
N_-PCIE_WAKE
LA_VDD33
N_ISOLATEB
-PFMRST2

LA_ ML-->80歐姆:[15/5/5/5/15]

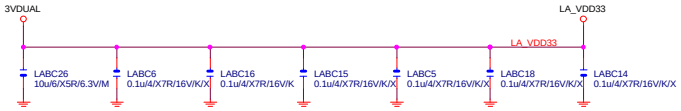
SRCCLK-->50歐姆:[18/4/10/4/18]

LA_VDD33
LAC3 0.1u/4/X7R/16V/K
LAC2 0.1u/4/X7R/16V/K
LAC1 0.1u/4/X7R/16V/K
LAC4 0.1u/4/X7R/16V/K
離IC近越好

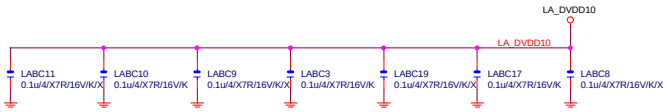
MDI ESD預留28KV *



LAN POWER

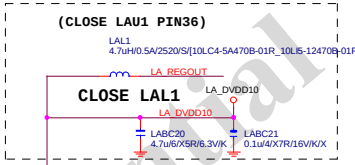


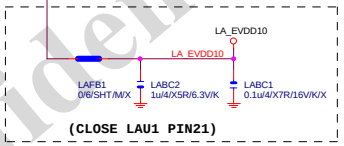
(CLOSE LAU1 PIN:12,27,39,42,47,48)



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

(CLOSE LAU1 PIN36)



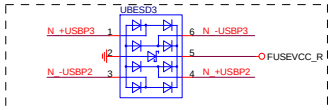


(CLOSE LAU1 PIN21)

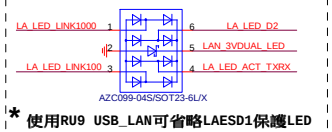
Power domain chart

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

USB_LAN CONNECTOR

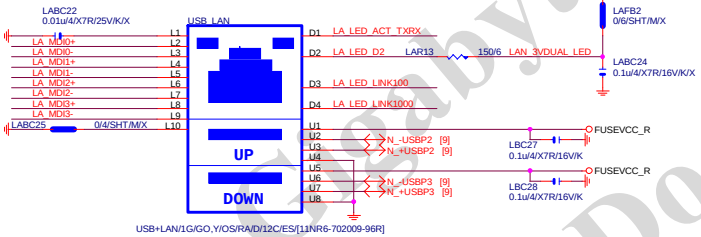


RMA ESD PROTECT



* 使用RU9 USB_LAN可省略LAESD1保護LED

LA_MDI-->100歐姆:[20/4/8/4/20]

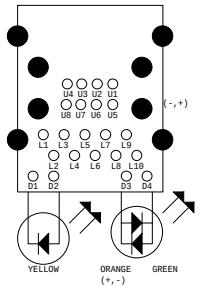


USB+LAN/1G/GO,Y/OS/RA/D/12C/ES/[11NR6-702009-96R]

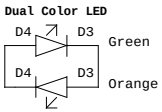
EMI SHORT PAD

PS:視EMI需求

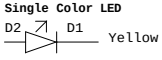
注意:USB PORT(目前:暫代6,7PORT)
USB-->90歐姆:[15/4.5/7.5/4.5/15]



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 RTL8111F			
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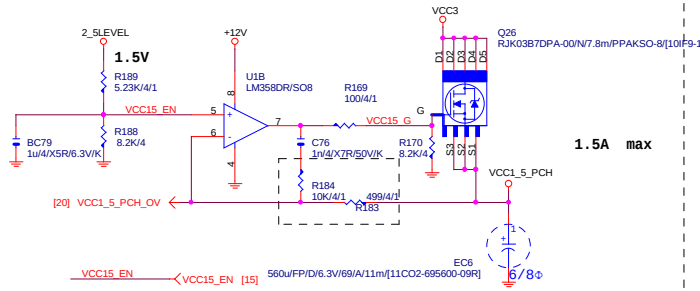
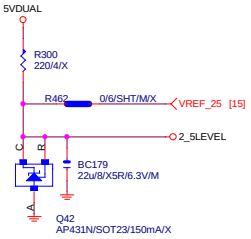
VCC1_5_PCH

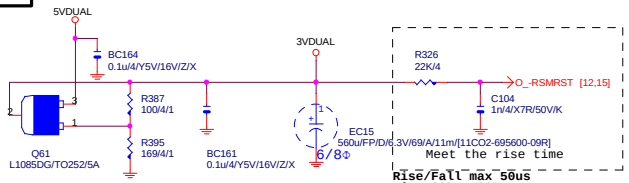


2_5LEVEL

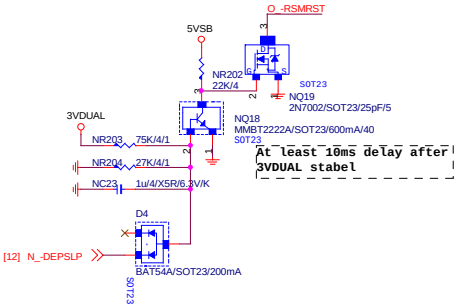
FROM I/O



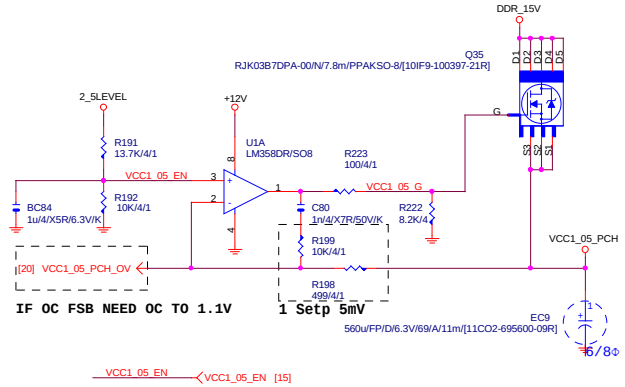
3VDUAL



-RSMRST

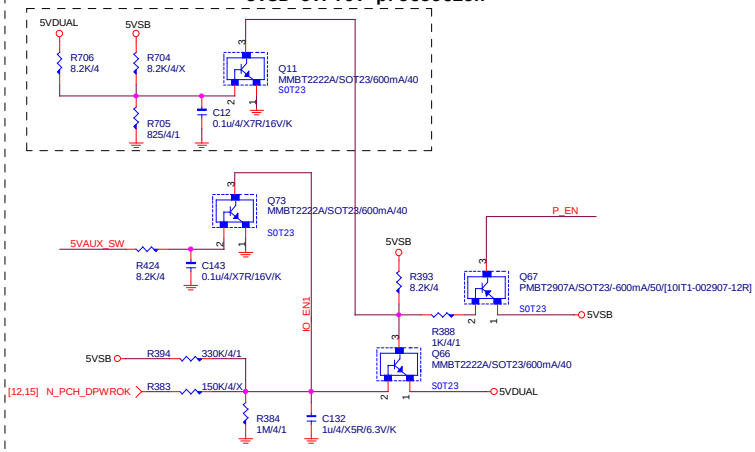


VCC1_05_PCH

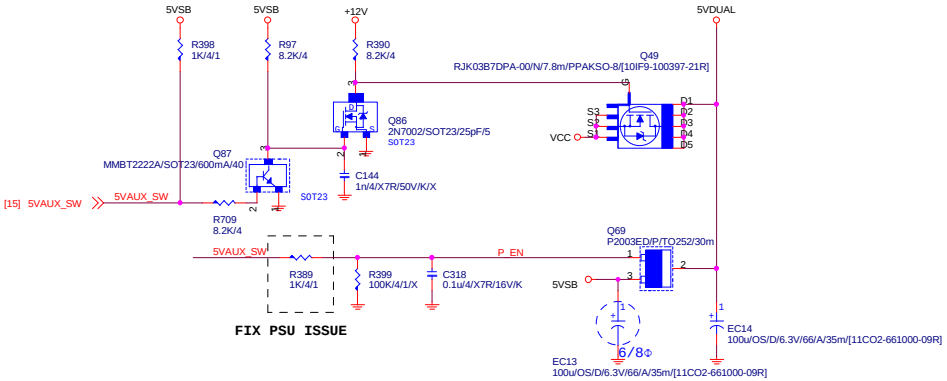


5VDUAL SHORT PROTECT

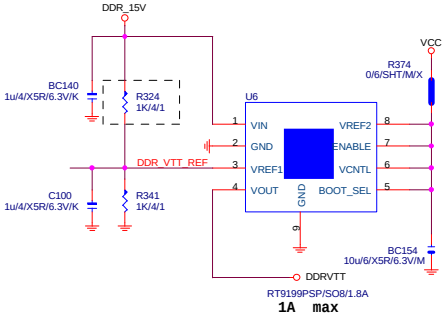
8 series note 82
5VSB OVP:6V protection



5VDUAL



DDRVTT



Title	Gigabyte Technology	
	DISCRETE POWER	
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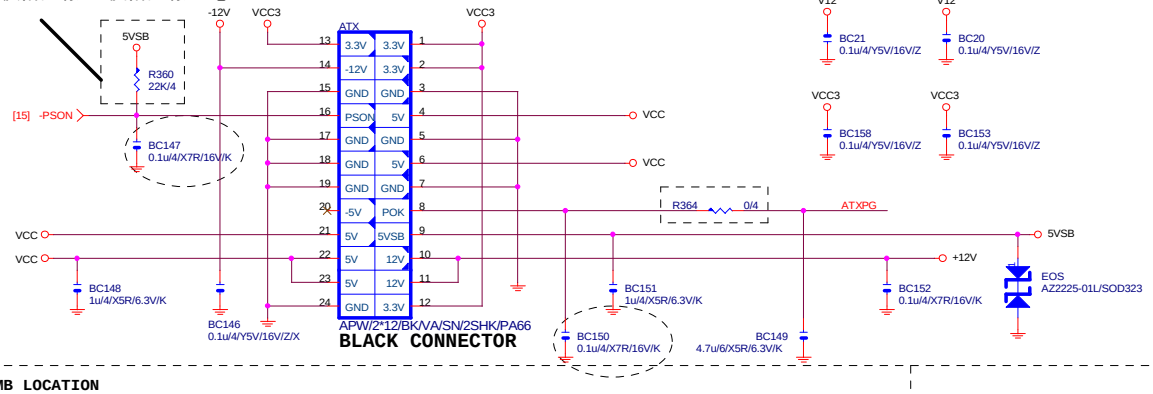
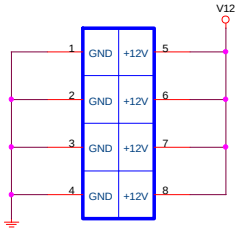
ATXX24 POWER CONNECTOR

【技術通報R&D技術通報155】



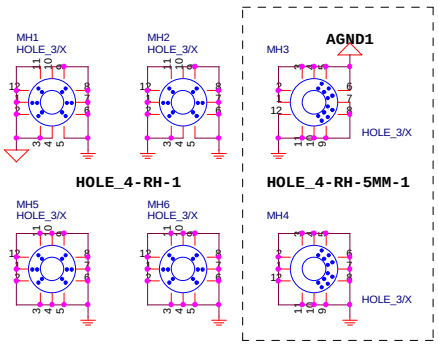
BLACK CONNECTOR

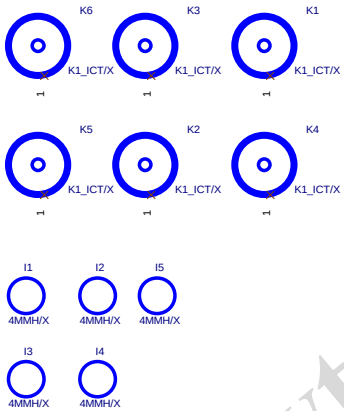
ATX4 POWER CONNECTOR



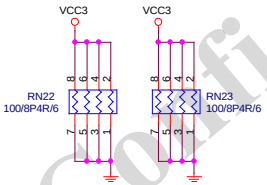
BLACK CONNECTOR

MB LOCATION



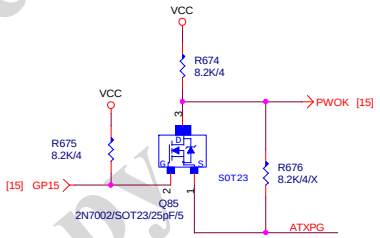


FIX PWR MINMUN LOAD



PWOK PATCH

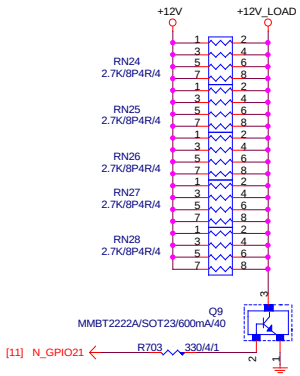
【技術通報R&D技術通報154】



CLK GEN

N/A

【技術通報R&D技術通報153】



To fix 12V light load abnromal issue

Gigabyte Technology			
Title: ATX CONNECTOR			
Size: Custom	Document Number: GA-H81M-S2PH		Rev: 1.02
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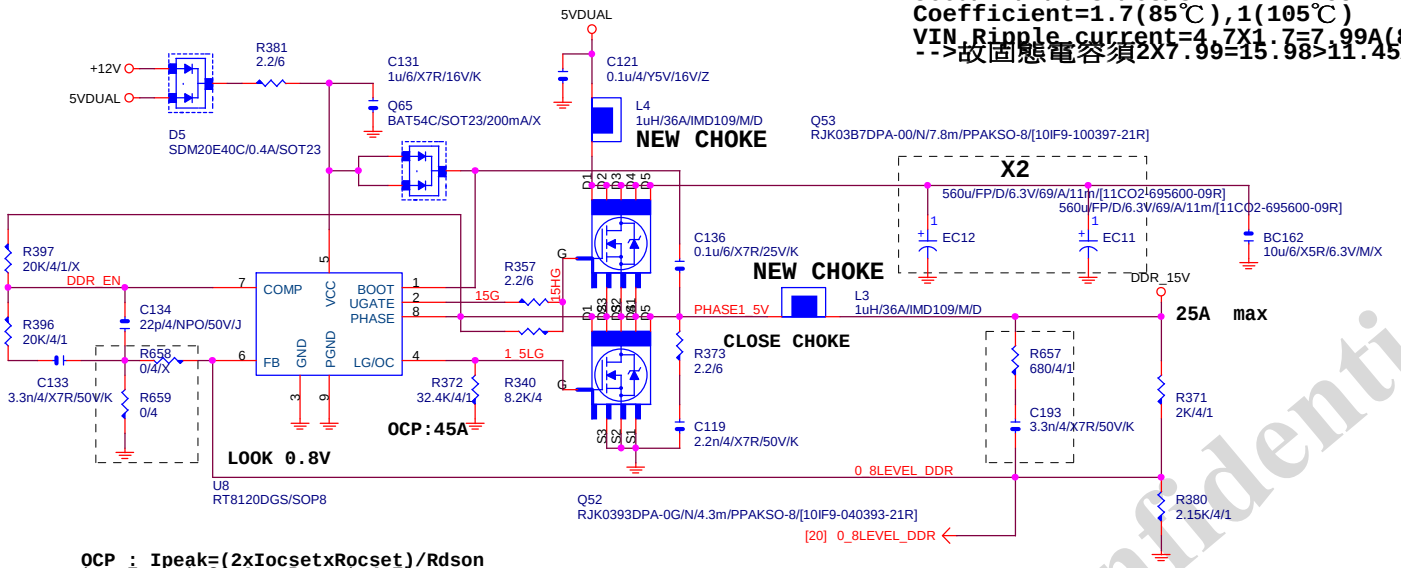
DDR15V

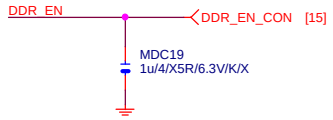
VIN=5V,VOUT=1.5V,IOUT=25A,PHASE=1
IRMS=11.45A
560u/FP/D/6.3V/68/8m RIPPLE_CURRENT=4.7A
Coefficient=1.7(85℃),1(105℃)
VIN_Ripple_current=4.7X1.7=7.99A(85℃)
-->故固態電容須2X7.99=15.98>11.45A



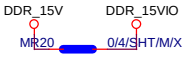
OCP : Ipeak=(2xIocsetxRocset)/Rdson
typ Iocset=20uA , Rocset=4.7k

OCP :53.71A=(2x20uax4.7k)/(7m//7m)

PWR SEQ



From DDR_15V source
10 mils trace to SIO



VCC1_05_ME

Z81 N/A

VCC3_ME

H81 N/A

Gigabyte Technology		
Title: DDR & M3 POWER		
Size: B	Document Number: GA-H81M-S2PH	Rev: 1.02
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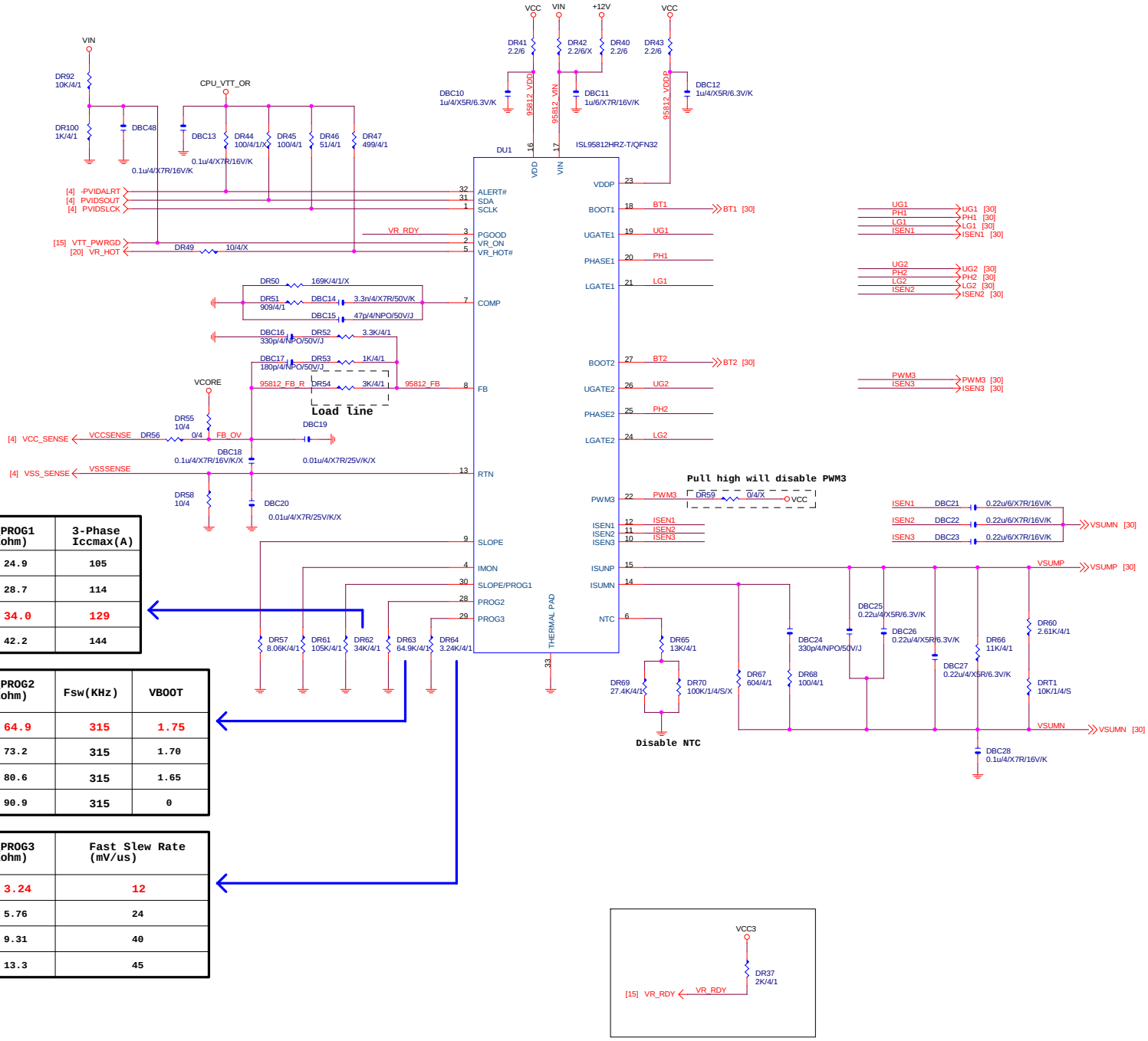

R_PROG1 (Kohm)	3-Phase Iccmax(A)
24.9	105
28.7	114
34.0	129
42.2	144

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-S2PH		Rev: 1.02
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PHASE 1

UG1 PH1 LG1 → UG1 [29] PH1 [29] LG1 [29]

[1]

UG1 DAR1 2.2/6 UG1_1
DAR2 8.2K/4
VIN
PH1
LG1 LG1_1 DAR3 0/6/SHT/M/X
DAC2 0.22u/6/X7R/16V/K
DAR6 2.2/6
DAC1 1u/6/X7R/16V/K
DAC3 1n/4/X7R/50V/K
DAR8 0/6/SHT/M/X
[29] BT1

DAQ1 NTMFS4C06N/N/PPAK/1400pF/4m/[10IF9-040406-10R_10IF9-040012-10R]
DAL1 0.68uH/40A/IMD119/M/D
VCORE
DAR4 0/4/SHT/M/X
DAR5 0/4/SHT/M/X
[29] VSUMP VSUMP DAR7 3.6K/4/1
[29] ISEN1 ISEN1 DAR9 10K/4/1
[29] VSUMN VSUMN DAR10 10/4 V1N
ISEN2 DAR11 10K/4/1
ISEN3 DAR12 10K/4/1
DAQ2 NTMFS4C06N/N/PPAK/1400pF/4m/[10IF9-040406-10R_10IF9-040012-10R]
DAQ3 NTMFS4C06N/N/PPAK/1400pF/4m/[10IF9-040406-10R_10IF9-040012-10R]

Close to PWM

PHASE 3

VCC
DCR13 1/6
DCR14 1/6
DCC4 1u/6/X7R/16V/K
DCC5 0.1u/4/X7R/16V/K
DCU1 BOOT PVCC 6609_VCC PWM3 VCC PWM GND UGATE PHASE LGATE → UG3 PH3 LG3
ISL6208BCRZ/DFN8[10TA1-606208-21R]
PWM3 → PWM3 [29]

[3]

UG3 DCR1 2.2/6 UG3_1
DCR2 8.2K/4
VIN
PH3
LG3 LG3_1 DCR3 0/6/SHT/M/X
DCC1 1u/6/X7R/16V/K
DCR6 2.2/6
DCC2 0.22u/6/X7R/16V/K
DCC3 1n/4/X7R/50V/K
DCR8 0/6/SHT/M/X
BOOT

DCQ1 NTMFS4C06N/N/PPAK/1400pF/4m/[10IF9-040406-10R_10IF9-040012-10R]
DCL1 0.68uH/40A/IMD119/M/D
VCORE
DCR4 0/4/SHT/M/X
DCR5 0/4/SHT/M/X
[29] VSUMP VSUMP DCR7 3.6K/4/1
[29] ISEN3 DCR9 10K/4/1
[29] VSUMN DCR10 10/4 V3N
ISEN1 DCR11 10K/4/1
ISEN2 DCR12 10K/4/1
DCQ2 NTMFS4C06N/N/PPAK/1400pF/4m/[10IF9-040406-10R_10IF9-040012-10R]
DCQ3 NTMFS4C06N/N/PPAK/1400pF/4m/[10IF9-040406-10R_10IF9-040012-10R]

Close to PWM

PHASE 2

UG2 PH2 LG2 → UG2 [29] PH2 [29] LG2 [29]

[2]

UG2 DBR1 2.2/6 UG2_1
DBR2 8.2K/4
VIN
PH2
LG2 LG2_1 DBR3 0/6/SHT/M/X
DBC1 1u/6/X7R/16V/K
DBR6 2.2/6
DBC2 0.22u/6/X7R/16V/K
DBC3 1n/4/X7R/50V/K
DBR8 0/6/SHT/M/X
[29] BT2

DBQ1 NTMFS4C06N/N/PPAK/1400pF/4m/[10IF9-040406-10R_10IF9-040012-10R]
DBL1 0.68uH/40A/IMD119/M/D
VCORE
DBR4 0/4/SHT/M/X
DBR5 0/4/SHT/M/X
[29] VSUMP VSUMP DBR7 3.6K/4/1
[29] ISEN2 DBR9 10K/4/1
[29] VSUMN DBR10 10/4 V2N
ISEN1 DBR11 10K/4/1
ISEN3 DBR12 10K/4/1
DBQ2 NTMFS4C06N/N/PPAK/1400pF/4m/[10IF9-040406-10R_10IF9-040012-10R]
DBQ3 NTMFS4C06N/N/PPAK/1400pF/4m/[10IF9-040406-10R_10IF9-040012-10R]

Close to PWM

VCORE
DEC2 DEC3 DEC4 DEC5 DEC6 DEC7
560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]

V12 VIN
DBC46 1u/6/X7R/16V/K
DEC10 DEC11 DEC12
270u/FP/D/16V/8C/A/10m/[11CO5-8C2700-09R]

Gigabyte Technology		
Title: CPU CORE VR-2		
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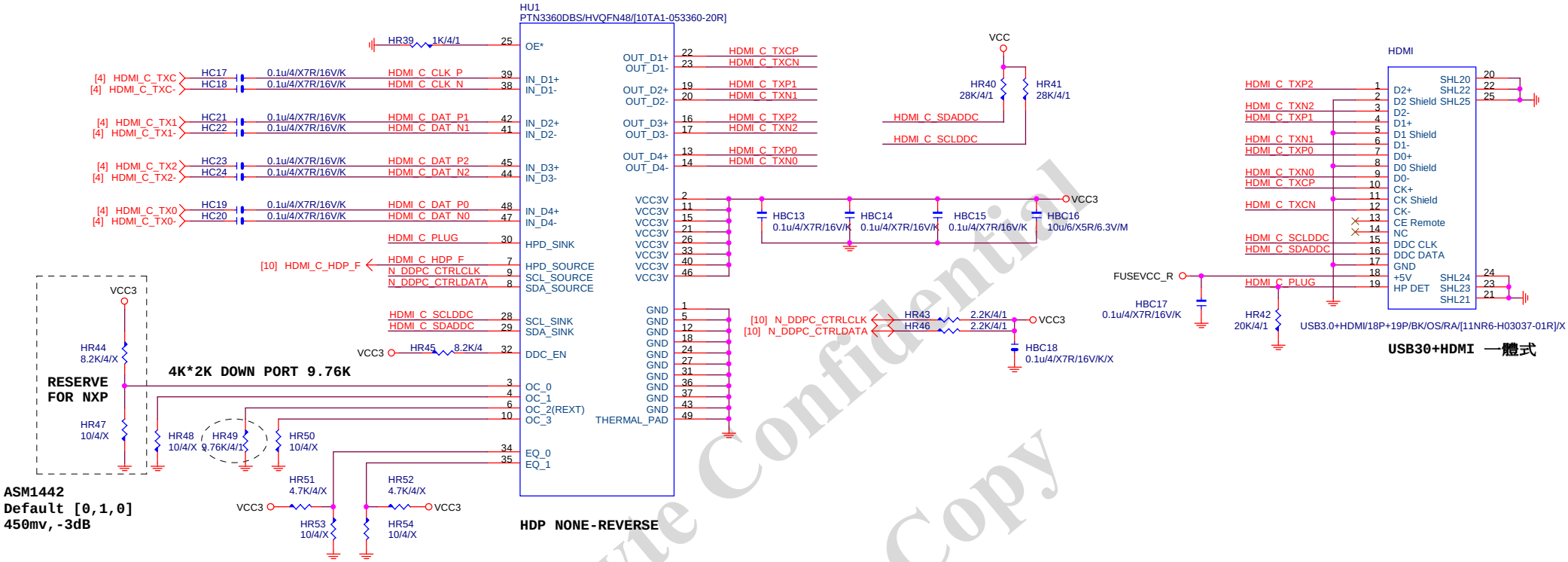
HDMI LEVEL SHIFT



Gigabyte Technology			
Title: HDMI			
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