Model Name: GA-H81M-D3V-JP

Revision 1.0

SHEET	TITLE
01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1150-A
05	CPU_LGA1150-B
06	CPU_LGA1150-C
07	DDR III CHANNEL A
08	DDR III CHANNEL B
09	PCH_FDI,DMI,USB,PCIE,NVRAM
10	PCH_DP,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCI EXPRESS*16 SLOT
15	PCI EXPRESS X1 *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	Rev: 1.0
Date: Thursday, August 29, 2013	Sheet 1 of 33	

Model Name: GA-H81M-D3V-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O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

Gigabyte Technology

Title: BOM & PCB MODIFY HISTORY

Size: Custom | Document Number: GA-H81M-D3V-JP | Rev: 1.0

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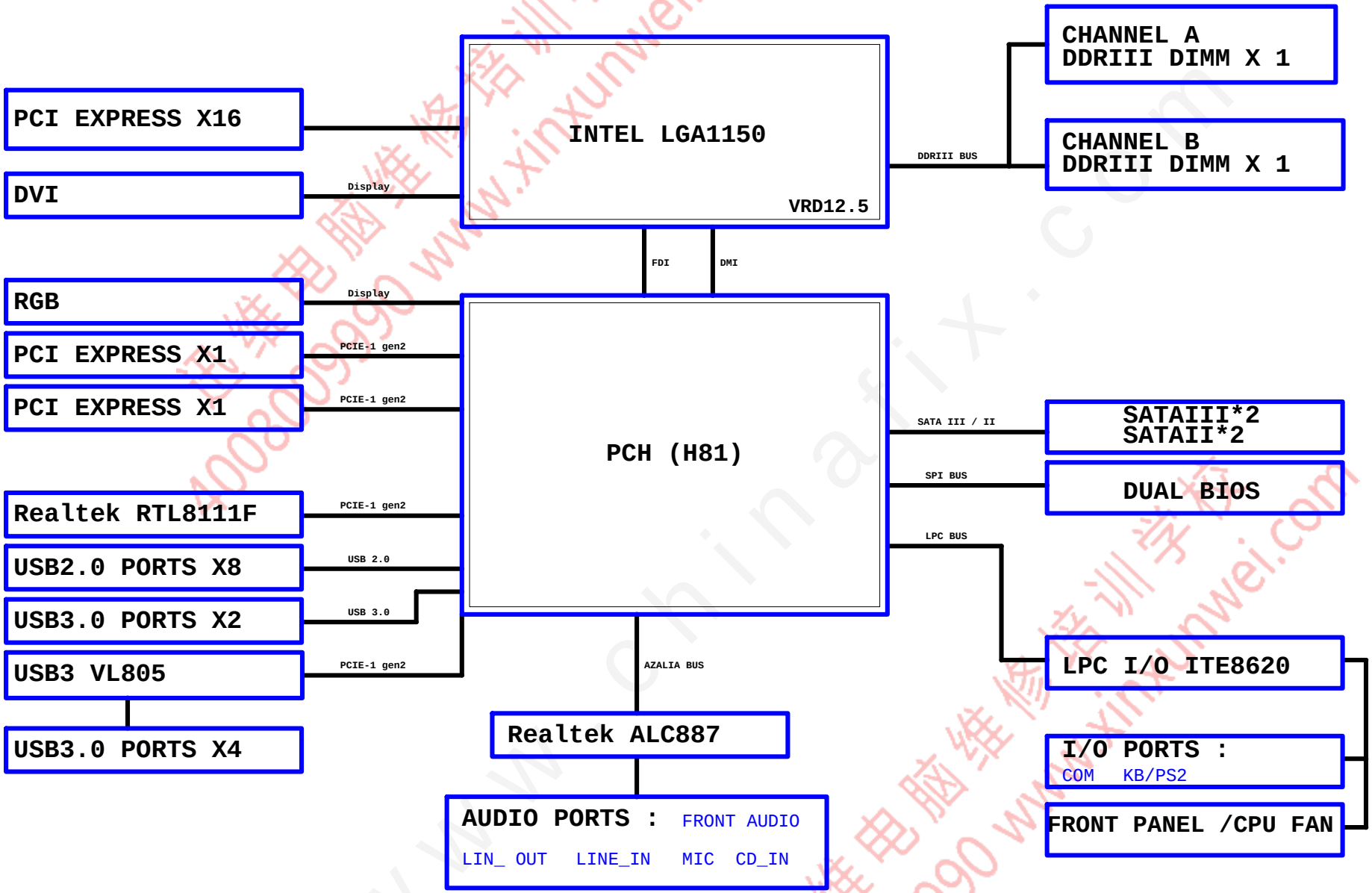
BLOCK DIAGRAM



Gigabyte Technology		
Title	BLOCK DIAGRAM	
Size C	Document Number GA-H81M-D3V-JP	Rev 1.0
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LGA1150 (E)

LGA1150E

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

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

LGA1150 (D)

LGA1150D

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

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

LGA1155 (C)

LGA1150C

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

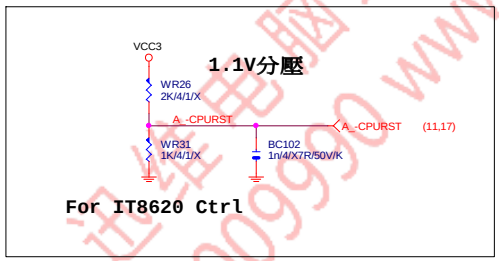
(1.011V)
(1.05V)

I/O Digatal Voltage
I/O Analog Voltage
RING/PLL Voltage(0.923V)
System Angen(0.815V)
VCCPLL (1.35V)
VCORE1
VCORE2
VCORE3

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

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

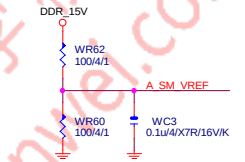
-CPURST



CPU SVID

CPU PU/PD

SM REF



Title	CPU LGA1150-A
Size	Custom
Document Number	GA-H81M-D3V-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	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			AM39	MDA21
MODT_A1	AY8	DDR0_ODT0	DDR0_DQ17	AP38	MDA18
	AW9	DDR0_ODT1	DDR0_DQ18	AP39	MDA19
	AU8	DDR0_ODT2	DDR0_DQ19	AM37	MDA20
		DDR0_ODT3	DDR0_DQ20	AM38	MDA16
			DDR0_DQ21	AP37	MDA22
	AW33		DDR0_DQ22	AP40	MDA23
	AV33	DDR0_ECC0	DDR0_DQ23	AV37	MDA25
	AU31	DDR0_ECC1	DDR0_DQ24	AW37	MDA29
	AV31	DDR0_ECC2	DDR0_DQ25	AU35	MDA26
	AT33	DDR0_ECC3	DDR0_DQ26	AV35	MDA27
	AU33	DDR0_ECC4	DDR0_DQ27	AT37	MDA28
	AT31	DDR0_ECC5	DDR0_DQ28	AU37	MDA24
	AW31	DDR0_ECC6	DDR0_DQ29	AT35	MDA30
		DDR0_ECC7	DDR0_DQ30	AW35	MDA31
			DDR0_DQ31	AY6	MDA33
(7) SBAA0	AV12	DDR0_BA0	DDR0_DQ32	AU6	MDA37
(7) SBAA1	AY11	DDR0_BA1	DDR0_DQ33	AV4	MDA34
(7) SBAA2	AT21	DDR0_BA2	DDR0_DQ34	AU4	MDA35
			DDR0_DQ35	AW6	MDA36
(7) CKEA0	AV22	DDR0_CKE0	DDR0_DQ36	AV6	MDA32
(7) CKEA1	AT23	DDR0_CKE1	DDR0_DQ37	AW4	MDA38
	AU22	DDR0_CKE2	DDR0_DQ38	AY4	MDA39
	AU23	DDR0_CKE3	DDR0_DQ39	AR1	MDA41
			DDR0_DQ40	AR4	MDA45
(7) -CSA0	AU14	DDR0_CS_N0	DDR0_DQ41	AN3	MDA42
(7) -CSA1	AV9	DDR0_CS_N1	DDR0_DQ42	AN4	MDA43
	AU10	DDR0_CS_N2	DDR0_DQ43	AR2	MDA44
	AW8	DDR0_CS_N3	DDR0_DQ44	AR3	MDA40
			DDR0_DQ45	AN2	MDA46
(7) DCLKA0	AY15	DDR0_CLK_P0	DDR0_DQ46	AN1	MDA47
(7) -DCLKA0	AY16	DDR0_CLK_N0	DDR0_DQ47	AL1	MDA49
(7) DCLKA1	AW15	DDR0_CLK_P1	DDR0_DQ48	AL4	MDA53
(7) -DCLKA1	AV15	DDR0_CLK_N1	DDR0_DQ49	AJ3	MDA50
	AY14	DDR0_CLK_P2	DDR0_DQ50	AJ4	MDA51
	AW14	DDR0_CLK_N2	DDR0_DQ51	AL2	MDA52
	AW13	DDR0_CLK_P3	DDR0_DQ52	AL3	MDA48
	AY13	DDR0_CLK_N3	DDR0_DQ53	AJ2	MDA54
			DDR0_DQ54	AJ1	MDA55
	AW12	RSVD	DDR0_DQ55	AG1	MDA57
			DDR0_DQ56	AG4	MDA61
			DDR0_DQ57	AE3	MDA58
			DDR0_DQ58	AE4	MDA59
			DDR0_DQ59	AG2	MDA60
			DDR0_DQ60	AG3	MDA56
			DDR0_DQ61	AE2	MDA62
(7) -SRASA	AU12	DDR0_RAS*	DDR0_DQ62	AE1	MDA63
(7) -SWEA	AU11	DDR0_WE*	DDR0_DQ63	AJ39	DQSA0
	AV20	RSVD	DDR0_DQS_P0	AJ39	DQSA1
	AW27	RSVD	DDR0_DQS_P1	AN39	DQSA2
(7) -SCASA	AU9	DDR0_CAS*	DDR0_DQS_P2	AV36	DQSA3
			DDR0_DQS_P3	AV5	DQSA4
(7,8) -DDR3_RST	AK22	DDR_RESET*	DDR0_DQS_P4	AP3	DQSA5
			DDR0_DQS_P5	AK3	DQSA6
			DDR0_DQS_P6	AE3	DQSA7
			DDR0_DQS_P7	AV32	
			DDR0_DQS_P8	AE38	-DQSA0
			DDR0_DQS_N0	AJ38	-DQSA1
			DDR0_DQS_N1	AN38	-DQSA2
			DDR0_DQS_N2	AU36	-DQSA3
			DDR0_DQS_N3	AW5	-DQSA4
			DDR0_DQS_N4	AP2	-DQSA5
			DDR0_DQS_N5	AK2	-DQSA6
			DDR0_DQS_N6	AF2	-DQSA7
			DDR0_DQS_N7	AU32	
			DDR0_DQS_N8		

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
(8) SBAB0	AK17	DDR1_BA0	DDR1_DQ32	AR12	MDB32
(8) SBAB1	AL18	DDR1_BA1	DDR1_DQ33	AP12	MDB33
(8) SBAB2	AW28	DDR1_BA2	DDR1_DQ34	AL13	MDB34
			DDR1_DQ35	AL12	MDB35
(8) CKEB0	AW29	DDR1_CKE0	DDR1_DQ36	AR13	MDB36
(8) 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	AP17	DDR1_CS_N0	DDR1_DQ41	AP9	MDB41
(8) -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
(8) DCLKB0	AM20	DDR1_CLK_P0	DDR1_DQ48	AM9	MDB52
(8) -DCLKB0	AM21	DDR1_CLK_N0	DDR1_DQ49	AL9	MDB53
(8) DCLKB1	AP22	DDR1_CLK_P1	DDR1_DQ50	AL6	MDB50
(8) -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
(8) -SCASB	AP16	DDR1_CAS*	DDR1_DQ58	AE6	MDB59
	AL20	RSVD	DDR1_DQ59	AE7	MDB63
(8) -SRASB	AM18	DDR1_RAS*	DDR1_DQ60	AJ6	MDB56
(8) -SWEB	AK16	DDR1_WE*	DDR1_DQ61	AJ7	MDB57
			DDR1_DQ62	AF6	MDB58
			DDR1_DQ63	AF7	MDB62
(7) VREF_DQA	AB39	DDR_VREF_DQ0	DDR1_DQS_P0	AE35	DQSB0
(8) 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]

Gigabyte Technology			
Title: CPU LGA1150-B			
Size: Custom	Document Number: GA-H81M-D3V-JP		Rev: 1.0
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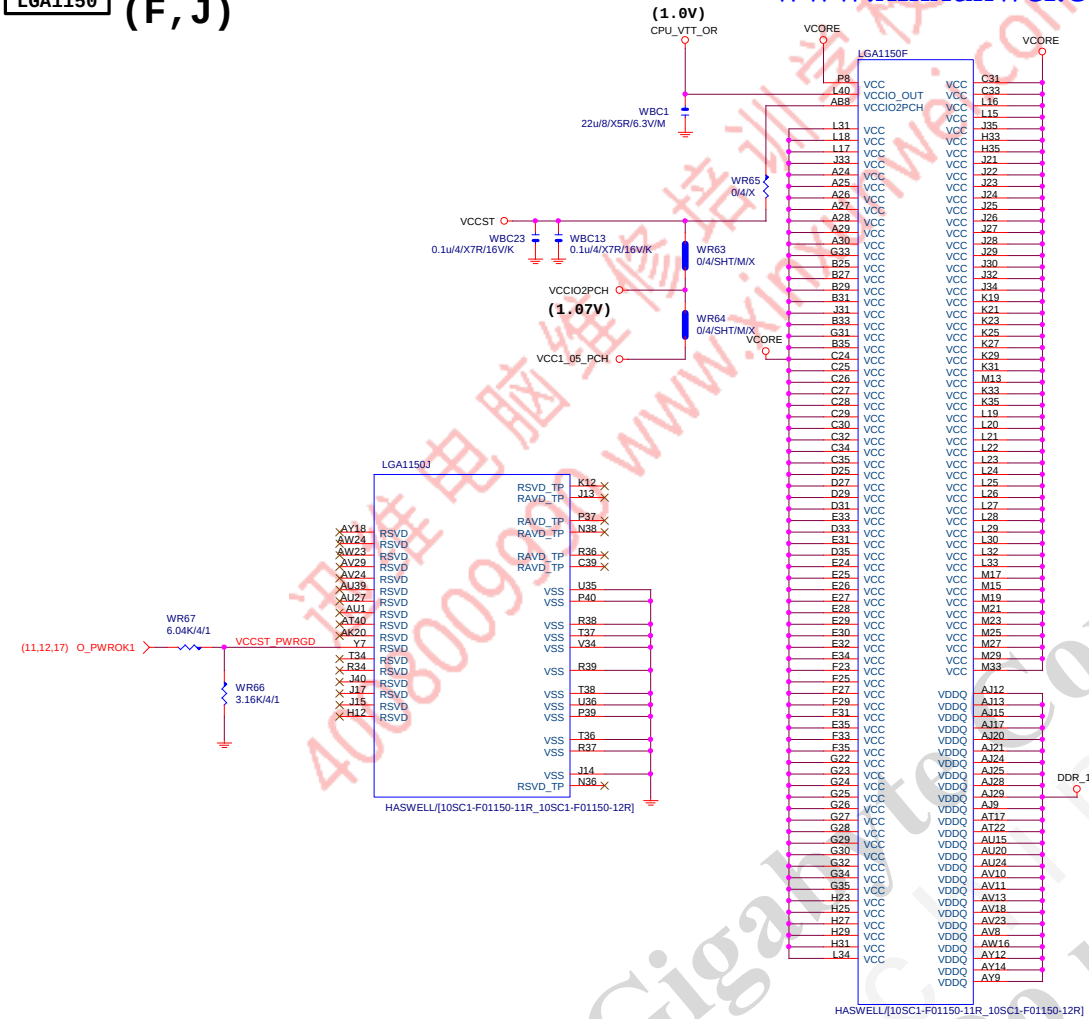
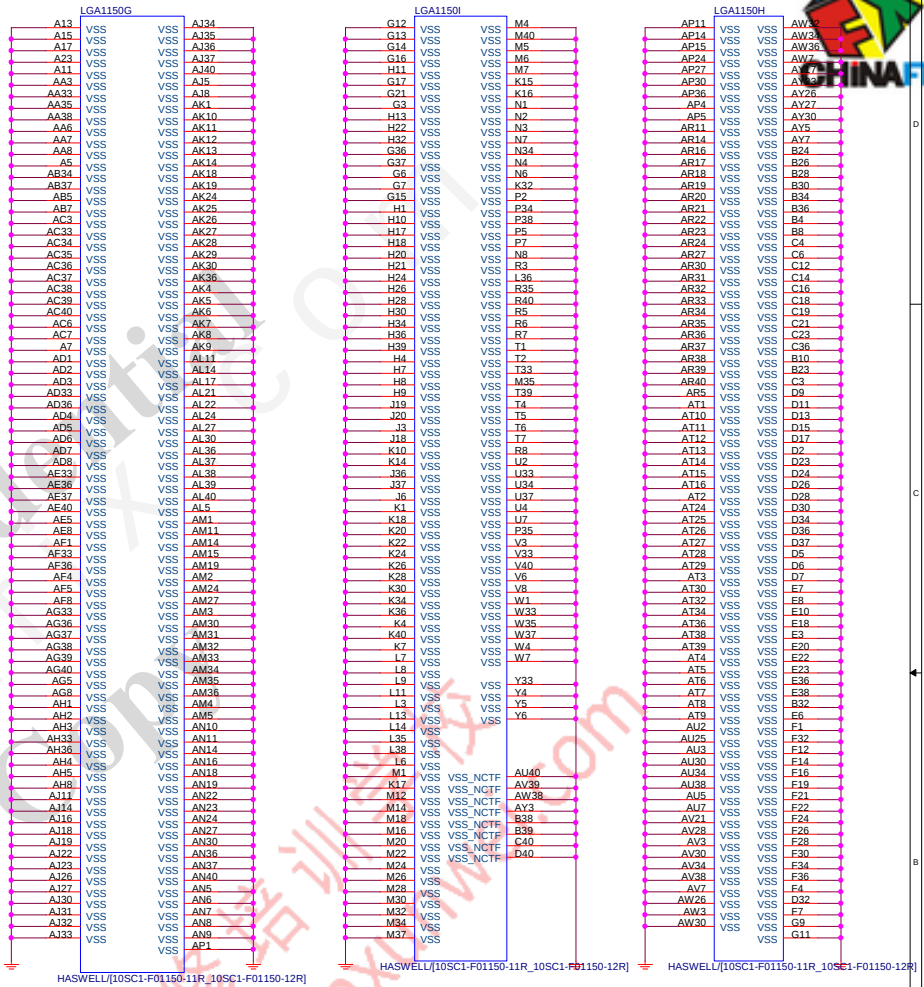
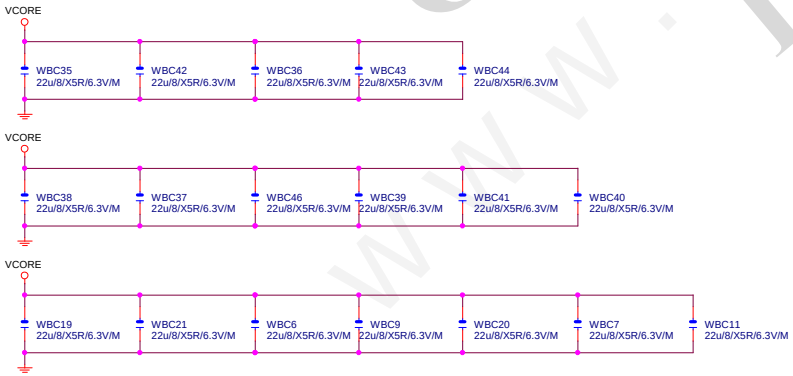
LGA1150 (F,J)



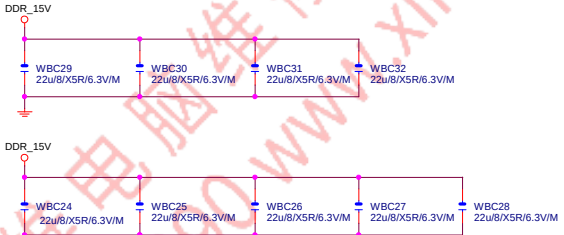
LGA1155 (G,H,I)



VCore CAP (X18)



DDR CAP (X9)



Gigabyte Technology			
Title: CPU LGA1150-C			
Size: Custom	Document Number: GA-H81M-D3V-JP		Rev: 1.0
Date: Thursday, August 29, 2013	Sheet 6 of 33		

DDR3 (A)

DDR3_1

DDRVTT
DDR_15V
VCC3
VDDSPD_A
VDDSPD
VREFCA
VREFDQ
N_SMBDATA
N_SMBCLK
MC10 100p/4/NPO/50V/J/X
MC11 100p/4/NPO/50V/J/X
MR17 0/4
MC4 0.1u/4/X7R/16V/K
MC5 0.1u/4/X7R/16V/K
MC1 0.1u/4/X7R/16V/K
VREF_DDRA
VREF_DDDRA

DDR3/240/BK/VA/D
BLACK CONNECTOR

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

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
MR4 1K/4/1
MR5 1K/4/1
MR1 10/4
VREF_DDRA
VREF_DDDRA
VREF_DQA (5)

DDR15V Decouple

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

MBC40 10u/6/X5R/6.3V/M
MBC18 1u/4/X5R/6.3V/K
MBC10 0.1u/4/X7R/16V/K

Gigabyte Technology

Title: DDRIII CHANNEL A
Size: Custom
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Date:
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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*

MODT_B1 MODT_B0

DQSB0 -DQSB0 DQSB1 -DQSB1 DQSB2 -DQSB2 DQSB3 -DQSB3 DQSB4 -DQSB4 DQSB5 -DQSB5 DQSB6 -DQSB6 DQSB7 -DQSB7

DDR_15V

VDD VDDSPD

MR18 0/4 VCC3 VDDSPD_B

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

MC14 0.1u/4/X7R/16V/K VREF_DDRB

MC9 0.1u/4/X7R/16V/K VREF_DQDDRB

VREFCA VREFDQ

(7,12,14,15,19,21) N_SMBCLK N_SMBCLK SCL

(7,12,14,15,19,21) N_SMBDATA N_SMBDATA SDA

VDDSPD_B SA1 SA0

(5) SBAB2 SBAB2 BA2

(5) SBAB1 SBAB1 BA1

(5) SBAB0 SBAB0 BA0

(5) CKEB1 CKEB1 CKE1

(5) CKEB0 CKEB0 CKE0

(5) -CSB1 -CSB1 S1*

(5) -CSB0 -CSB0 S0*

(5) -DCLKB1 -DCLKB1 CK1/NU*

(5) DCLKB1 DCLKB1 CK1/NU

(5) -DCLKB0 -DCLKB0 CK0*

(5) DCLKB0 DCLKB0 CK0

(5) MAAB[0..15]

MAAB0 MAAB1 MAAB2 MAAB3 MAAB4 MAAB5 MAAB6 MAAB7 MAAB8 MAAB9 MAAB10 MAAB11 MAAB12 MAAB13 MAAB14 MAAB15

A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 A10/AP A11 A12 A13 A14 A15

(5,7) -DDR3_RST -DDR3_RST RESET*

(5) -SCASB -SCASB CAS*

(5) -SRASB -SRASB RAS*

(5) -SWEB -SWEB 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

MDB0 MDB1 MDB2 MDB3 MDB4 MDB5 MDB6 MDB7 MDB8 MDB9 MDB10 MDB11 MDB12 MDB13 MDB14 MDB15 MDB16 MDB17 MDB18 MDB19 MDB20 MDB21 MDB22 MDB23 MDB24 MDB25 MDB26 MDB27 MDB28 MDB29 MDB30 MDB31 MDB32 MDB33 MDB34 MDB35 MDB36 MDB37 MDB38 MDB39 MDB40 MDB41 MDB42 MDB43 MDB44 MDB45 MDB46 MDB47 MDB48 MDB49 MDB50 MDB51 MDB52 MDB53 MDB54 MDB55 MDB56 MDB57 MDB58 MDB59 MDB60 MDB61 MDB62 MDB63

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

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

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 — PCIE

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

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

H81/S

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

VCC1_5_PCH — NR50 7.5K/4/1 DMI_COMP, PCIE_COMP — NR40 7.5K/4/1

CK_-SRCCLK_PCH
CK_SRCCLK_PCH

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)

NR130 8.2K/4 — N_GPIO14 — 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

PCH (F)

PCHF

USB3_RXN_0 USB3_RXP_0 USB3_TXN_0 USB3_TXP_0 — FDI_RXN_0 FDI_RXP_0 FDI_RXN_1 FDI_RXP_1 — FDI_TXN0 FDI_TXP0 FDI_TXN1 FDI_TXP1
USB3_RXN_1 USB3_RXP_1 USB3_TXN_1 USB3_TXP_1 — FDI_CSYNC — FDI_INT
USB3_RXN_4 USB3_RXP_4 USB3_TXN_4 USB3_TXP_4 — FDI_RCOMP — NR29 7.5K/4/1 VCC1_5_PCH
USB3_RXN_5 USB3_RXP_5 USB3_TXN_5 USB3_TXP_5
TACH6_GP70 TACH7_GP71

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

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)

PCHE

(31) N_DVI_HDP_F

DDPB_HPD AJ2
DDPC_HPD AH5
DDPD_HPD AJ4
DDPB_AUXN AK6
DDPB_AUXP AK8
DDPC_AUXN AG7
DDPC_AUXP AG6
DDPD_AUXN AG11
DDPD_AUXP AG10

VGA_HSYNC AH3 H_SYNC NR26 33/4 N_GHSYNC
VGA_VSYNC AH2 V_SYNC NR33 33/4 N_GVSYNC
VGA_RED AC2 N_R
VGA_GREEN AE2 N_G
VGA_BLUE AC3 N_B
VGA_IRTN AG4
VGA_DDC_DATA AL3 N_DDCDATA
VGA_DDC_CLK AL2 N_DDCCLK
DAC_IREF AE5 N_VGA_RSET NR34 649/4/1
DDPC_CTRLCLK AN3
DDPC_CTRLDATA AM2
DDPB_CTRLCLK AM1 N_DDPB_CTRLCLK (31)
DDPB_CTRLDATA AJ5 N_DDPB_CTRLDATA (31)
DDPD_CTRLCLK AN4
DDPD_CTRLDATA AN2

H81/S

PCH (G)

PCHG

(17) N_LPC33 NR37 33/4 N_LPC33Z0 AV5
(11) N_PCH33 NR38 33/4 N_PCH33Z1 AV7

CLKOUT_33MHZ0
CLKOUT_33MHZ1
CLKOUT_33MHZ2 AU2
CLKOUT_33MHZ3 AN9
CLKOUT_33MHZ4 AU5

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

(17) O_LPCCLK48 NR39 33/4 N_PCH_48M AV8
CLKOUTFLEX0_GP64 AT9
CLKOUTFLEX1_GP65 AV9
CLKOUTFLEX2_GP66 AU8
CLKOUTFLEX3_GP67

VCC1_5_PCH NR18 7.5K/4/1 N_CLK_RCOMP R11
DIFFCLK_BIASREF
N_PCHCLK14 AR7
REFCLK14IN

Rev 0.2
O_LPCCLK48
NC3
22p/4/NPO/50V/J/X

N_XTALI_PCH
NR15 1M/4
NX1
N_XTALO_PCH
25M/20p/30ppm/49US/20/D
NC8 27p/4/NPO/50V/J
NC7 27p/4/NPO/50V/J
N_XTALO_PCH N7 XTAL25_OUT
N_XTALI_PCH N6 XTAL25_IN

CLKIN_GND0_N G16 N_CLK_GND
CLKIN_GND0_P F16 N_CLK_GND

CLKOUT_DMI_N R2 N_CPUCLK (4)
CLKOUT_DMI_P T2 N_CPUCLK (4)
CLKOUT_DP_N T3 N_DP_CLK (4)
CLKOUT_DP_P T5 N_DP_CLK (4)
CLKOUT_DPNS_N W2 N_CK_DPCLK (4)
CLKOUT_DPNS_P U2 N_CK_DPCLK (4)
CLKOUT_ITPXDP_N U6
CLKOUT_ITPXDP_P U7
CLKOUT_PEG_A_N AA3 PA_SRCCLK_3GIO (14)
CLKOUT_PEG_A_P AA2 PA_SRCCLK_3GIO (14)
CLKOUT_PEG_B_N AE6
CLKOUT_PEG_B_P AE7
CLKOUT_PCIE_N_0 AE10 PI_PCIE_CLK (15)
CLKOUT_PCIE_P_0 AE11 PI_PCIE_CLK (15)
CLKOUT_PCIE_N_1 AC6
CLKOUT_PCIE_P_1 AC7
CLKOUT_PCIE_N_2 AC11 LA_SRCCLK_LAN (24)
CLKOUT_PCIE_P_2 AC10 LA_SRCCLK_LAN (24)
CLKOUT_PCIE_N_3 W11
CLKOUT_PCIE_P_3 W10
CLKOUT_PCIE_N_4 Y4
CLKOUT_PCIE_P_4 Y2
CLKOUT_PCIE_N_5 W7 PJ_PCIE_CLK (15)
CLKOUT_PCIE_P_5 W6 PJ_PCIE_CLK (15)
CLKOUT_PCIE_N_6 AA7
CLKOUT_PCIE_P_6 AA6
CLKOUT_PCIE_N_7 R6
CLKOUT_PCIE_P_7 R7

PCIEx16
PCIEx1
PCIEx1
8111F
PCIEx1
VL805

H81/S

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

PCH CLK PD

N_CLK_GND NR42 8.2K/4
N_CLK_GND NR41 8.2K/4

Mount for integrated clock Generation Mode

N_PCHCLK14 NR118 8.2K/4

VGA DDC

VCC3
R146 2.2K/4/1
R147 2.2K/4/1
N_DDCDATA
NR35 1K/4/1
VCC
Q47 2N7002/SOT23/25pF/5
R144 2.2K/4/1
R145 2.2K/4/1
VGADDCDATA
NR36 1K/4/1
Q48 2N7002/SOT23/25pF/5
N_DDCCLK
VGADDCCLK
SOT23

VCC
N_GVSYNC
C31 100p/4/NPO/50V/J/X
N_GHSYNC
C32 100p/4/NPO/50V/J/X

VGA CONNECTOR

FUSEVCC_R
BC63 0.1u/4/X7R/16V/K/X
VGA
VGA_R
VGA_G
VGA_B
VGADDCDATA
N_GHSYNC
N_GVSYNC
VGADDCCLK
VGA/BK/SC-11/RA/D/L

BLACK CONNECTOR

VGA ESD

ESD3
N_GHSYNC
N_GVSYNC
VGADDCDATA
VGADDCCLK
VCC
C33 0.1u/4/X7R/16V/K
AZC099-04S/SOT23-6L

SSOP6_ESD

ESD4
VGA_R
VGA_G
VGA_B
VCC3
C40 0.1u/4/X7R/16V/K
AZC099-04S/SOT23-6L

VGA DDC

N_R
N_G
N_B
FB1 60/4/3A/S
FB2 60/4/3A/S
FB3 60/4/3A/S
VGA_R
VGA_G
VGA_B
R152 75/4/1
R150 75/4/1
R151 75/4/1
C35
C34 10p/4/NPO/50V/J
C36 10p/4/NPO/50V/J
C37 22p/4/NPO/50V/J
C38 22p/4/NPO/50V/J
C39 22p/4/NPO/50V/J

Close to Filter

Gigabyte Technology

Title	PCH DISPLAY ,CLK BUFFER	
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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%

PCHC

H81/S

N/A

PCH (A)

PCHA

H81/S

PCH CLK PD

Mount for integrated clock Generation Mode

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

TLS Setting

GPIO37 PU VCC3 ENABLE SBA
For H87&B85

GPIO38 Ctrl

NQ13
MMBT2222A/SOT23/600mA/40
SOT23

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

GP8:Low to enable PCH clock chip

SUSCLK:Low to OD PLL VR

GP28:Lo disable VRM ,Hi enable VRM

HSW_STRAP13

32.768KHZ

32.768K/12.5p/20ppm/TF38/35K/D

CLR_CMOS

BATTERY-DUAL-4

RB 必须放在BAT外

O_PWROK1 NC51 0.01u/4/X7R/25V/K/X Reserve for EMI test

Title	PCH GPIO , CTRL , AUDIO
Size	Custom
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PCH (H)

VCC3_DAC

CLOSE北桥(注意震盪水波紋)

3VDUAL_PCH

SHT PWR

CAP

(3.3V)(X6)

(1.05V)(X5)

(1.05V)(X6)

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

(1.05V)(X10)

PCH (I)

Title	PCH PWR ,GND
Size / Custom	Document Number GA-H81M-D3V-JP
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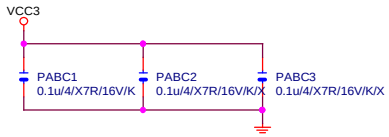
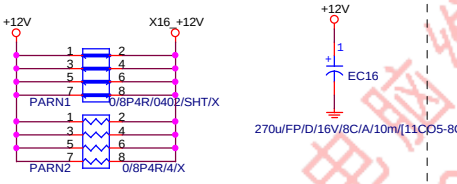
Gigabyte Technology

PCIEX16 CAP



PCIEX16 PROTECT SHT



PCIEX16 AC CAP

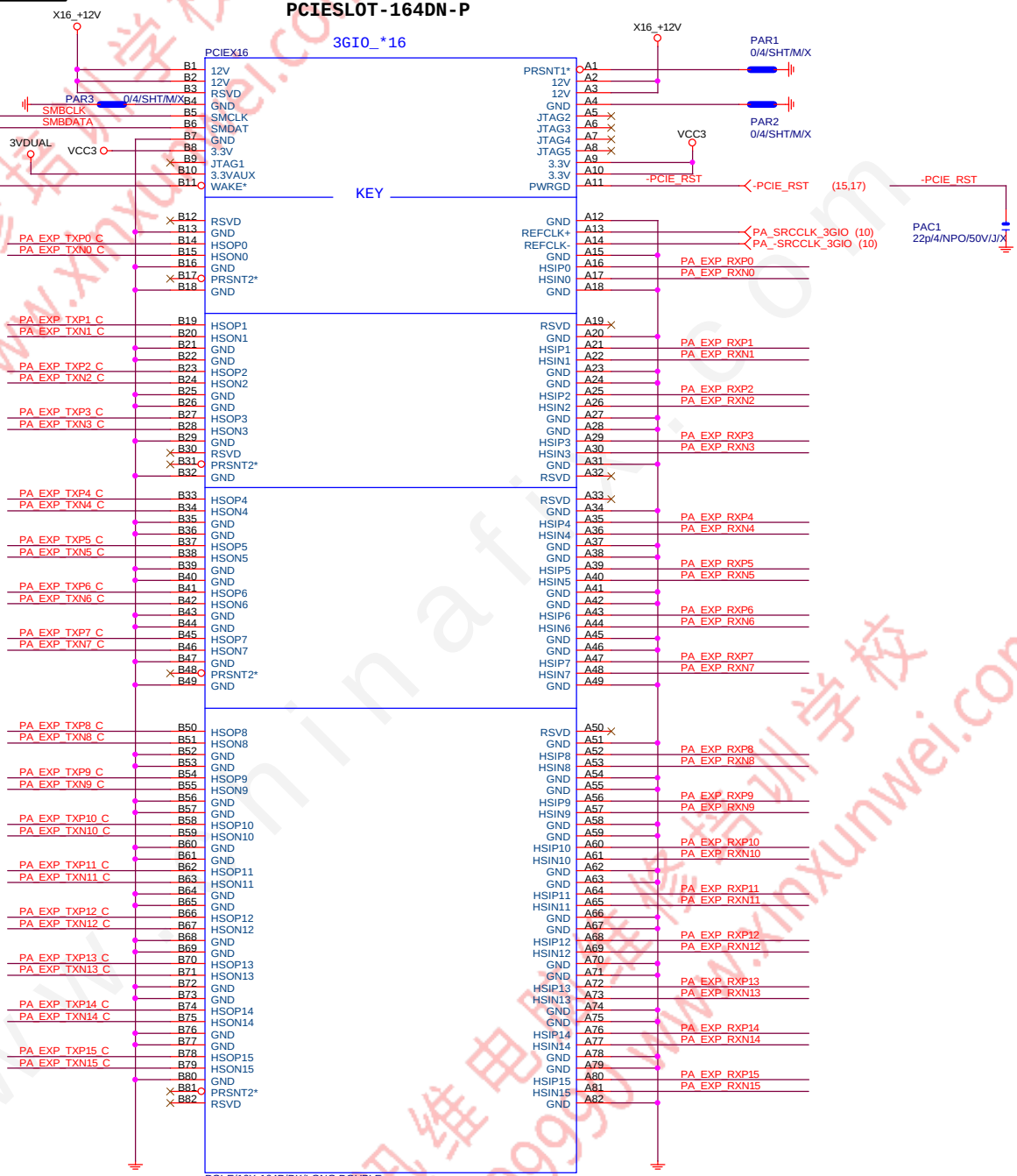
PA_EXP_TXP0	PAC5	0.22u/4/X5R/6.3V/K	PA_EXP_TXP0_C
PA_EXP_TXN0	PAC4	0.22u/4/X5R/6.3V/K	PA_EXP_TXN0_C
PA_EXP_TXP1	PAC6	0.22u/4/X5R/6.3V/K	PA_EXP_TXP1_C
PA_EXP_TXN1	PAC7	0.22u/4/X5R/6.3V/K	PA_EXP_TXN1_C
PA_EXP_TXP2	PAC8	0.22u/4/X5R/6.3V/K	PA_EXP_TXP2_C
PA_EXP_TXN2	PAC9	0.22u/4/X5R/6.3V/K	PA_EXP_TXN2_C
PA_EXP_TXP3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

PA_EXP_RXP[0..15] >> PA_EXP_RXP[0..15] (4)
PA_EXP_RXN[0..15] >> PA_EXP_RXN[0..15] (4)
PA_EXP_TXP[0..15] >> PA_EXP_TXP[0..15] (4)
PA_EXP_TXN[0..15] >> PA_EXP_TXN[0..15] (4)

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

PCIEX16 SLOT

PCIESLOT-164DN-P

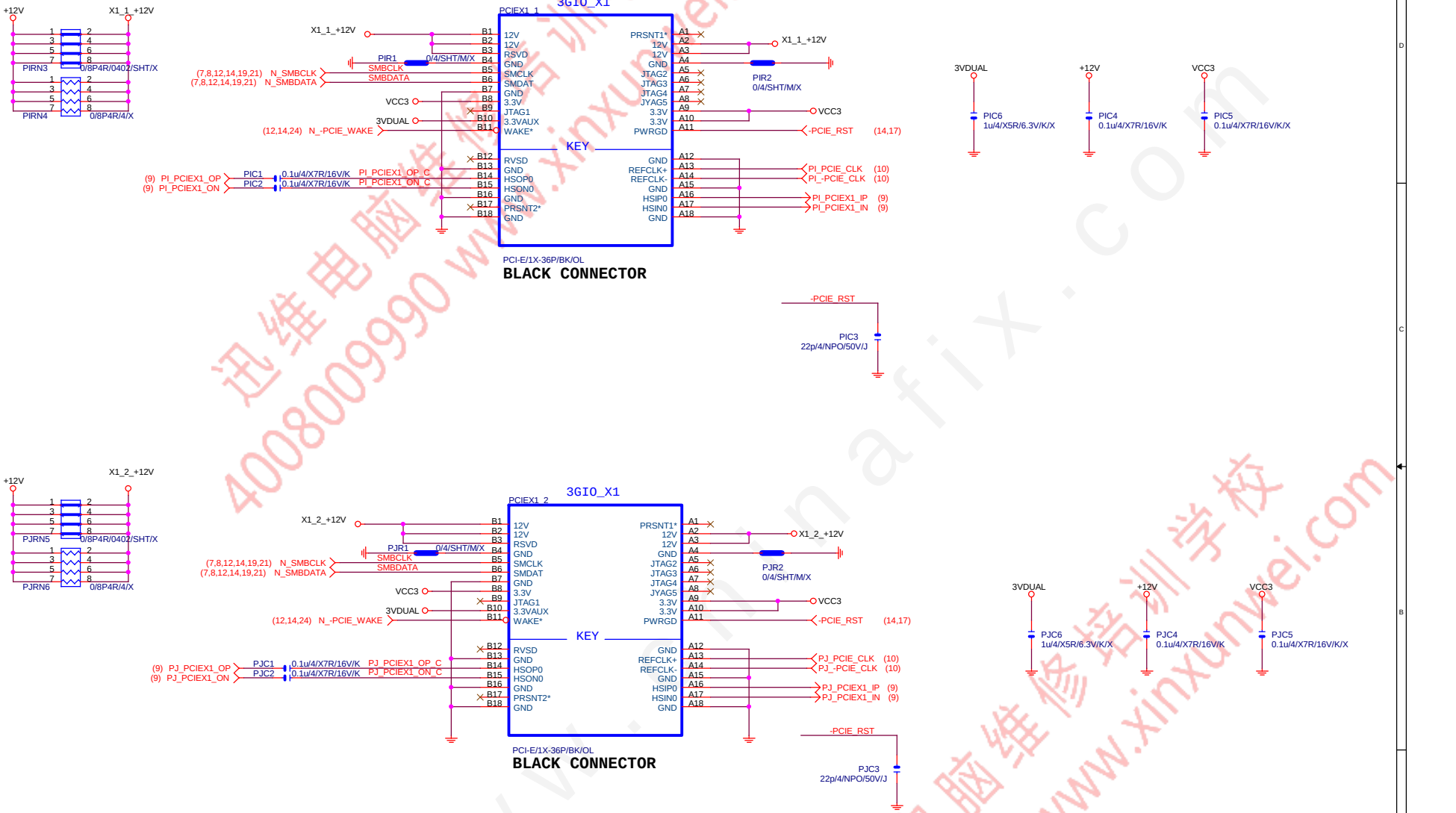


BLACK CONNECTOR

Title	PCI EXPRESS * 16		
Size: Custom	Document Number: GA-H81M-D3V-JP		Rev: 1.0
Date: Thursday, August 29, 2013	Sheet 14 of 33		

Gigabyte Technology

PCIEX1 SLOT



Gigabyte Technology		
Title: PCI EXPRESS X 1 PORT		
Size: Custom	Document Number: GA-H81M-D3V-JP	Rev: 1.0
Date: Thursday, August 29, 2013	Sheet 15 of 33	

Gigabyte Technology			
Title: PCI SLOT 1&2			
Size: Custom	Document Number: GA-H81M-D3V-JP		Rev: 1.0
Date: Thursday, August 29, 2013		Sheet 16 of 33	

SIO IT8620

IT8620E_BX

-PRCOHOT

-THRMTRIP

PWR SHT

For 8728 EUP function

3VDUAL_PCH — OR8 0/4 — IT_VCCH

VCC3 — OR9 0/4 — IT_AVCC

SIO PU

IO_GP25 OR10 1K/4/1 3VDUAL_PCH

DS_ME OR11 1K/4/1 3VDUAL_PCH

SVID_CTRL OR12 8.2K/4 3VDUAL_PCH

-PROCHOT_CON OR13 8.2K/4 VCC3

N_-LDRQ0 OR14 1K/4/1 VCC3

ITE_PWROK2 OR15 1K/4/1 VCC3

ITE_PWROK1 OR16 1K/4/1 VCC3

-PCIE_RST OR17 1K/4/1 VCC3

-PFMRST2 OR18 1K/4/1 VCC3

(19) FANPWM1 FANPWM1 OR19 8.2K/4 VCC

(19) FANPWM2 FANPWM2 OR20 8.2K/4 VCC

SIO STRAP

H61M-S2 1.1 JP6 stuff pull down

JP2 OR21 8.2K/4 VCC3

JP3 OR22 8.2K/4 VCC3

JP4 OR23 8.2K/4 VCC3

JP5 OR24 8.2K/4/X VCC3

OR25 8.2K/4/X

ITE recommand

EUP control by PCH

3VDUAL OR26 100/4/1 28_3VSB

JP3--- High SPI-Flash Disable

Low SPI-Flash Enable

Power leakage

IT_AVCC

OQ1 2N7002/SOT23/25pF/5

SOT23

-PSON

OR27 510/4/1

For IT8721 Power leakage

DUAL BIOS OPT STRAP

-CASEOPEN

OC6 1u/4/X5R/6.3V/K

CEB_N OR30 680/4/1

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

Gigabyte Technology	
Title	PCH GPIO , CTRL , AUDIO
Size C	Document Number GA-H81M-D3V-JP
Rev	1.0
Date: Thursday, August 29, 2013	Sheet 17 of 33

COM

COM RI

KB/MS

FUSEVCC_R
UBC7
0.1u/4/X7R/16V/K
KB_MS_USB
(9) N_-USBP2
(9) N_+USBP2
AGND1
KBDATA
MSDATA
KBCLK
MSCLK
KB
R707
0/6/SHT/M/X
For EMI
RN1
8.2K/8P4R/4
KCLK
KDAT
MDAT
MCLK
FOR鹽化短路
R58 82/4
R59 82/4
R57 82/4
R56 82/4
CN1
180p/8P4C/6/NPO/50V/K
KB/USB/A/PC99(DUAL)/GF/2/RA/D

USB2.0 PWR

FUSE-0805
KB_MS_USB 2-Port 2.0A

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

Close to connector

KB/MS ESD

ESD8
AZC099-04S/SOT23-6L

USB2.0 ESD

ESD2
AZC099-04S/SOT23-6L

USB30_20

USB30_20 PWR

-USBOC_R

UD7
BAT54A/SOT23/200mA
UR3
8.2K/4
UR4
15K/4/1

USB30_20 ESD PROCTECT

USB3.0 ESD

USB2.0 ESD

USB POWER PROTECT

UAD5
BAT54A/SOT23/200mA

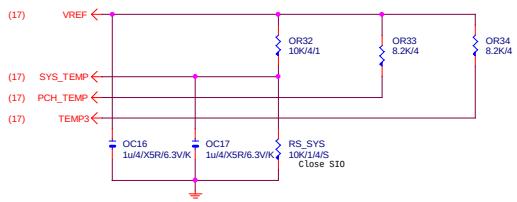
Gigabyte Technology

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

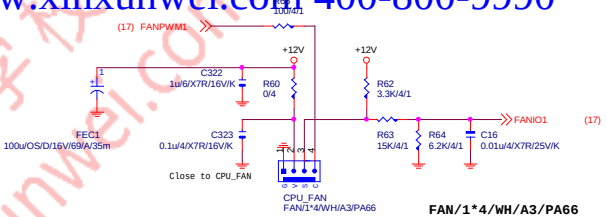
Size: Custom | Document Number: GA-H81M-D3V-JP | Rev: 1.0

Date: Thursday, August 29, 2013 | Sheet 18 of 33

TEMP H/W MONITOR



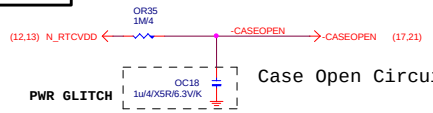
CPU SMART FAN



FAN/1*4/WH/A3/PA66

White Connect

CASE OPEN

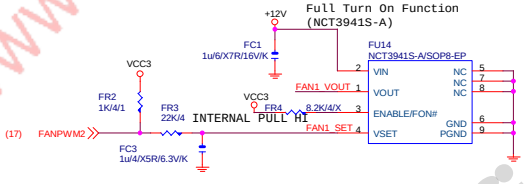


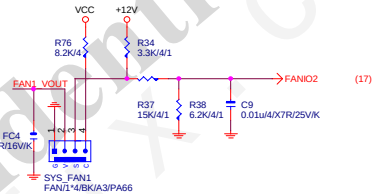
Case Open Circuits

SYS SMART FAN

Linear SYS_FAN

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



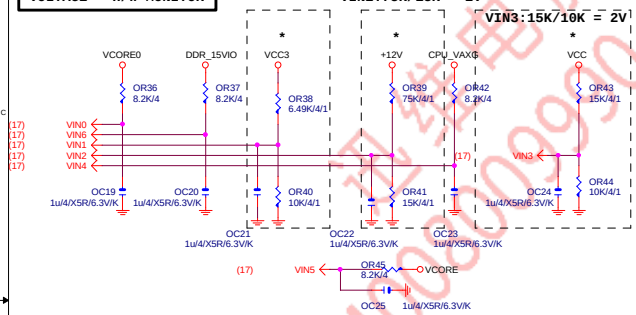


BLACK CONNECTOR

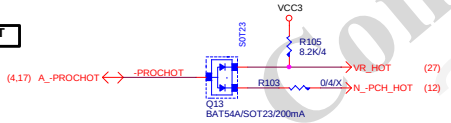
VOLTAGE-- H/W MONITOR

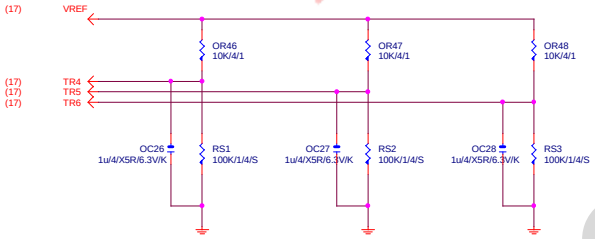
VIN2:75K/15K = 2V

VIN3:15K/10K = 2V



-PROHOT

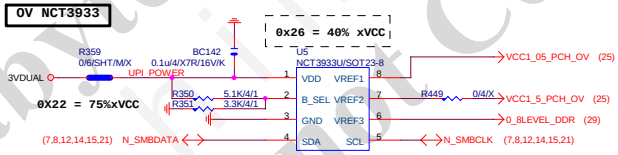




RS1、RS2、RS3 CLOSE CPU
VR MOSFET

接pwm feedback pin

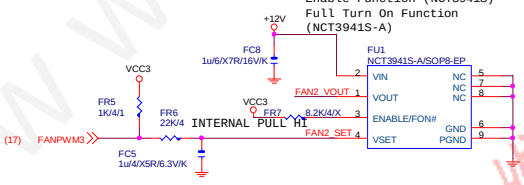
OV NCT3933

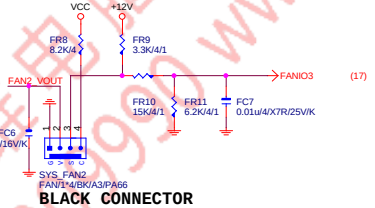


NCT3933	0X2A	0X20	0X22
VREF1	DDRVTT	VREF_DDRA_DQ	PCH Core
VREF2	VREF_DDRA_CA	N/A	VCC1_5_PCH
VREF3	VREF_DDRA_CA	VREF_DDRB_DQ	SMREF

Linear SYS_FAN

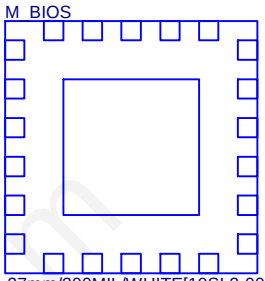
Enable Function (NCT3941S)
Full Turn On Function
(NCT3941S-A)





BLACK CONNECTOR

Gigabyte Technology			
Title	HWM,FAN CTRL,OV		
Size: Custom	Document Number: GA-H81M-D3V-JP		Rev: 1.0
Date: Thursday, August 29, 2013	Sheet 19 of 33		



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 — 1 CS#
SPI_MISO — 2 SO
N_-SPI_WP0 — NR342 0/4/SHT/M/X — 3 WP#
4 VSS
8 VDD
7 HOLD# — -HOLD0 — R672 8.2K/4/X -SPI_HOLD_M — NR341 0/4/SHT/M/X — SPI_DQ3 (12)
6 SCK — ICH_SPI_CLK
5 SI — ICH_SPI_MOSI

NC1 10p/4/NPO/50V/J/X
(12) SPI_DQ2
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 — 1 CS#
SPI_MISO — 2 SO
(12) SPI_DQ2 — NR344 0/4/SHT/M/X — N_-SPI_WP1 — 3 WP#
4 VSS
8 VDD
7 HOLD# — -HOLD1 — R673 8.2K/4/X -SPI_HOLD_B — NR343 0/4/SHT/M/X — SPI_DQ3 (12)
6 SCK — ICH_SPI_CLK — N_ICH_SPI_CLK (12)
5 SI — 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

(12) N_ICH_SPI_MISO — N_-SPI_WP1 NR2 8.2K/4/X; N_-SPI_WP0 NR1 8.2K/4/X; N_ICH_SPI_MISO NR5 8.2K/4

SPI_MISO — NR6 22/4 — N_ICH_SPI_MISO (12)

CHECK

VCC3_ME

-HOLD0 — R313 1K/4/1/X
-HOLD1 — R314 1K/4/1/X

Pop for Quad I/O BIOS

VCC3_ME

R3 330/4/1/X

VCC3_ME

R225 1K/4/1/X

-SPI_CS_1

-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

-SPI_HOLD_B R226 8.2K/4/X — S0T23

VCC3_ME

R227 330/4/1/X

VCC3_ME

R228 1K/4/1/X

-SPI_CS_2

-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

Gigabyte Technology

Title: **DUAL BIOS**

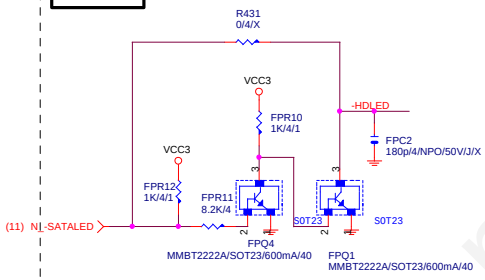
Size: Custom | Document Number: **GA-H81M-D3V-JP** | Rev: **1.0**

Date: Thursday, August 29, 2013 | Sheet 20 of 33

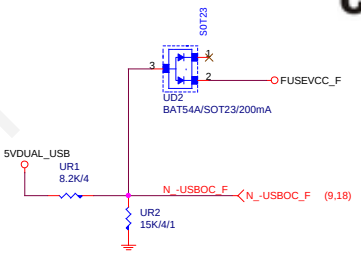
F_USB30

F_USB30 PWR

SATA LED

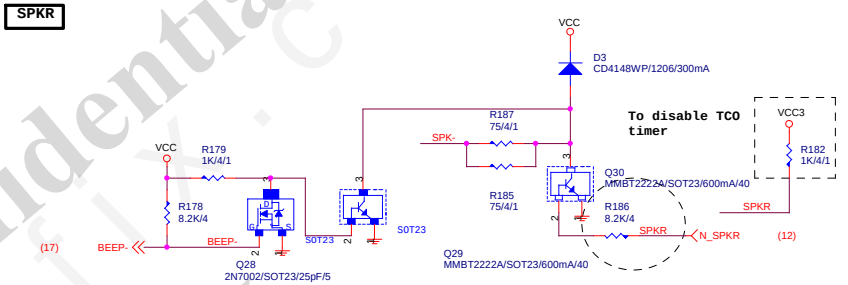


-USBOC_F

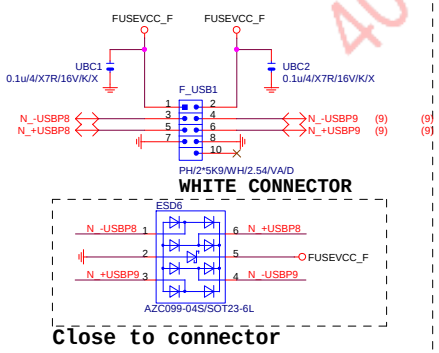


F_USB30 ESD PROTECT

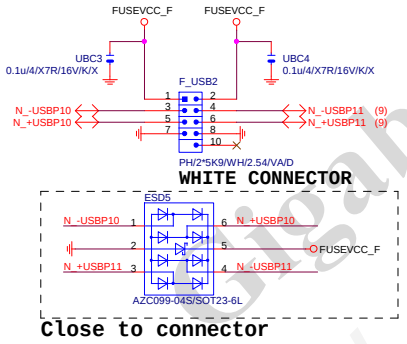
SPKR



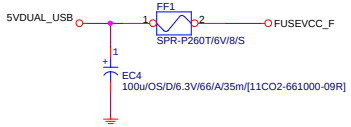
FRONT USB1



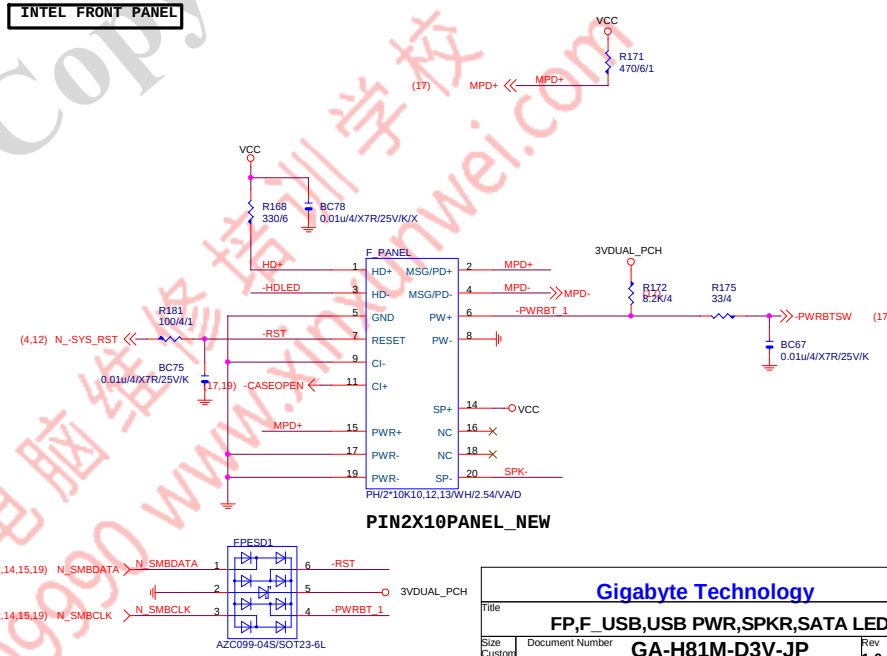
FRONT USB2



FUSE-0805
F_USB1, F_USB2 4-Port 2.6A



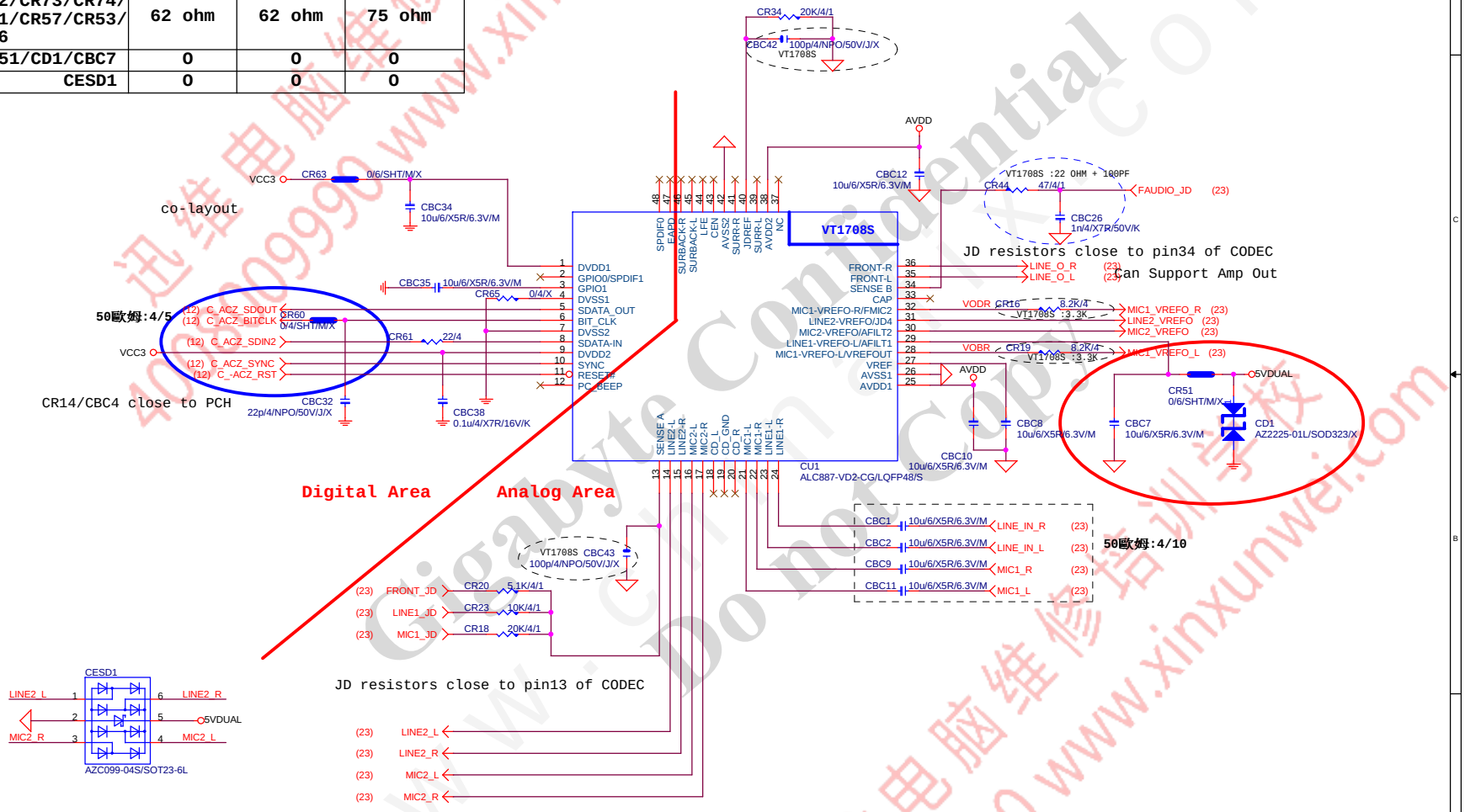
INTEL FRONT PANEL



Gigabyte Technology		
Title	FP,F_USB,USB PWR,SPKR,SATA LED	
Size: Custom	Document Number: GA-H81M-D3V-JP	Rev: 1.0
Date: Thursday, August 29, 2013	Sheet 21 of 33	

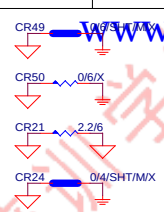
AZALIA CODEC *ALC892/ALC887-VD2/VT1708-CE Colay*

	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

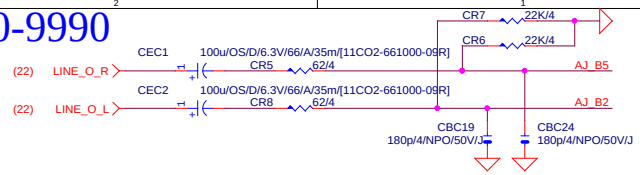


Title	HD AUDIO ALC887B-VD2/VT1708S/VT2021
Size / Document Number	Custom / GA-H81M-D3V-JP
Rev	1.0
Date:	Thursday, August 29, 2013
Sheet	22 of 33

Gigabyte Technology

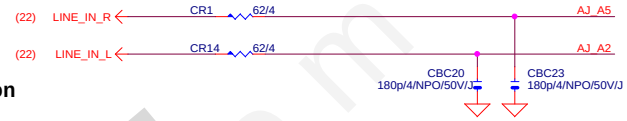


LINE-OUT



Only reserved for ALC888

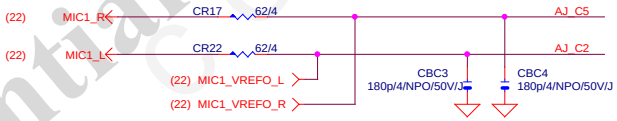
LINE-IN



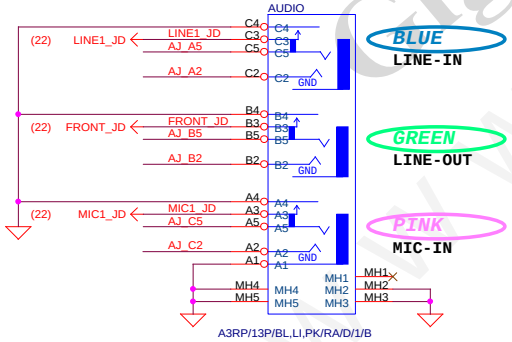
Verify MIC function in LINE-in

For 889A/888

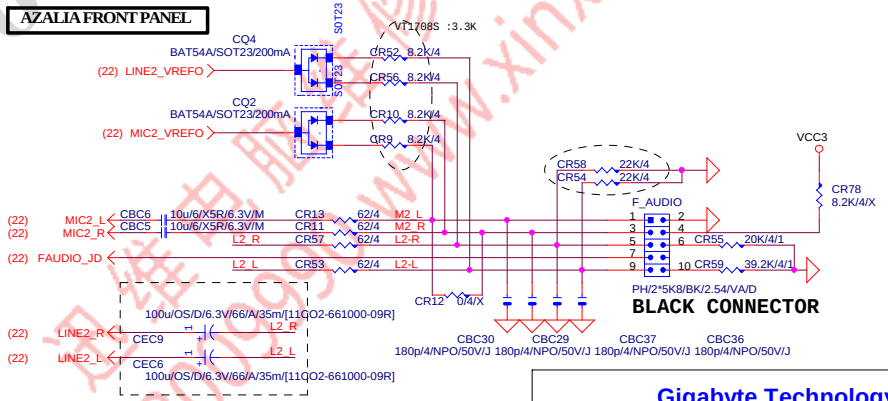
MIC-IN



SPDIF_OUT



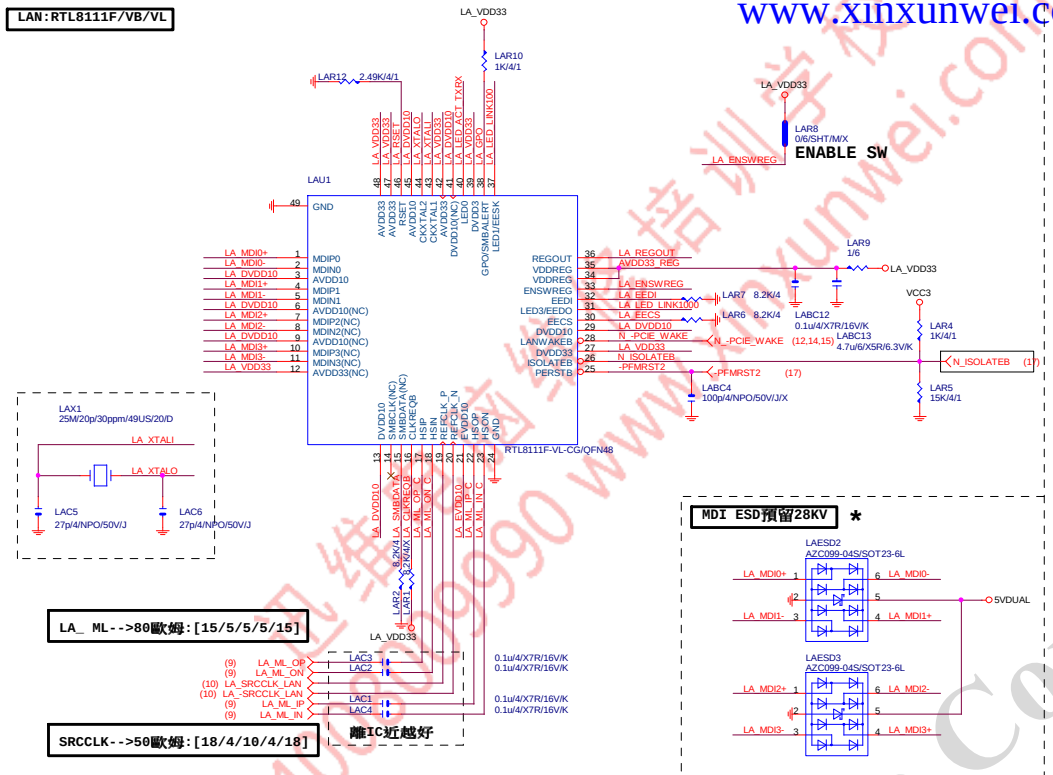
AZALIA FRONT PANEL



Gigabyte Technology

Title	AUDIO JACK	
Size: Custom	Document Number: GA-H81M-D3V-JP	Rev: 1.0
Date: Thursday, August 29, 2013	Sheet 23 of 33	

LAN:RTL8111F/VB/VL



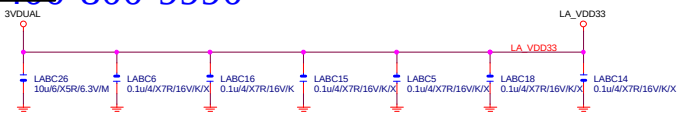
LA_ ML-->80歐姆:[15/5/5/5/15]

SRCCLK-->50歐姆:[18/4/10/4/18]

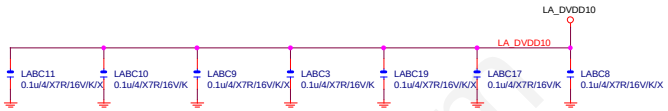
離IC近越好

MDI ESD預留28KV *

LAN POWER

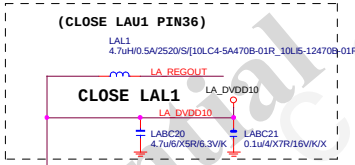


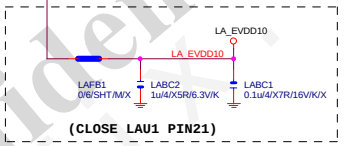
(CLOSE LAU1 PIN:12,27,39,42,47,48)



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

(CLOSE LAU1 PIN36)





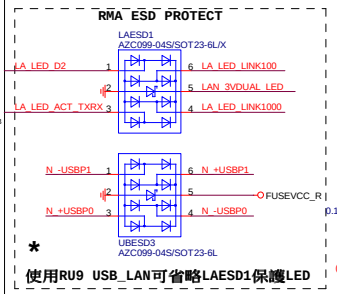
(CLOSE LAU1 PIN21)

Power domain chart

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

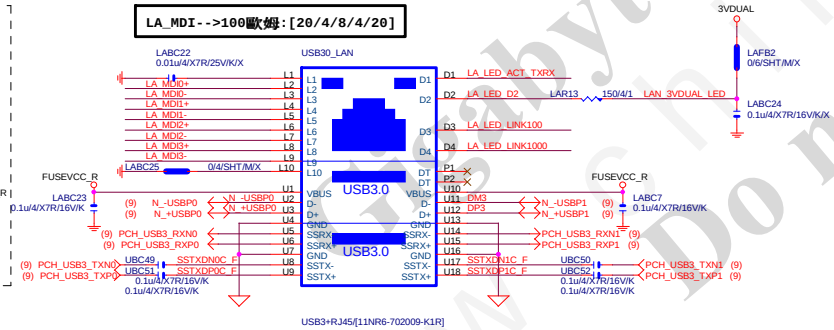
USB_LAN CONNECTOR

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]



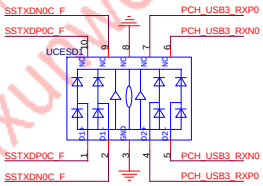
USB3+RJ45/[11NR6-702009-K1R]

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

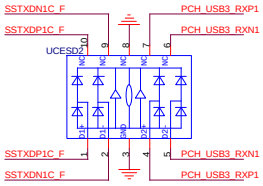
USB X3 POWER

EMI SHORT PAD

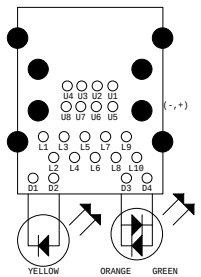
PS:視EMI需求



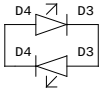
Close to connector



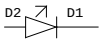
Close to connector



Dual Color LED



Single Color LED



BOM NOTICE *

料號	規格	廠商
11NR6-702009-96R	1G LAN (12core)	UDE(RU9 ESD+)

[LED獨立走線,可省略外加AZC099料件LAESD1]

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

Gigabyte Technology			
Title: Realtek RTL8111G			
Size: Custom	Document Number: GA-H81M-D3V-JP		Rev: 1.0
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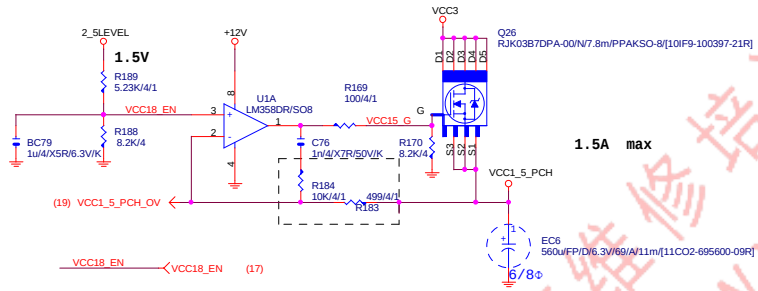
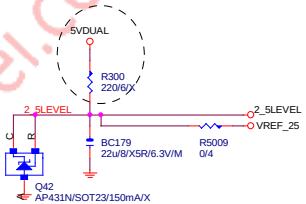
VCC1_8_PCH

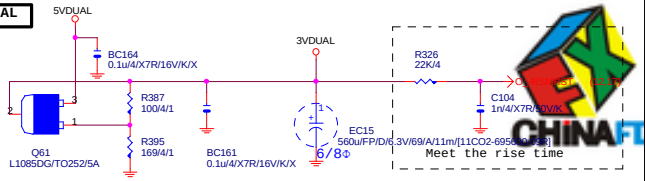


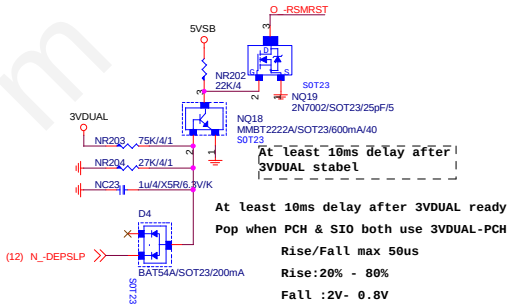
2_5LEVEL

ERP

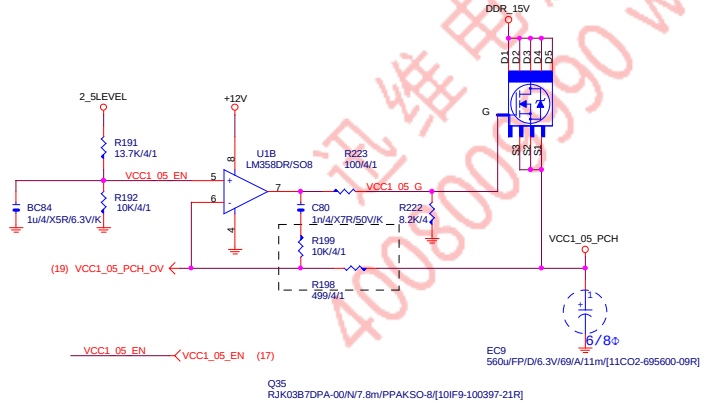


3VDUAL



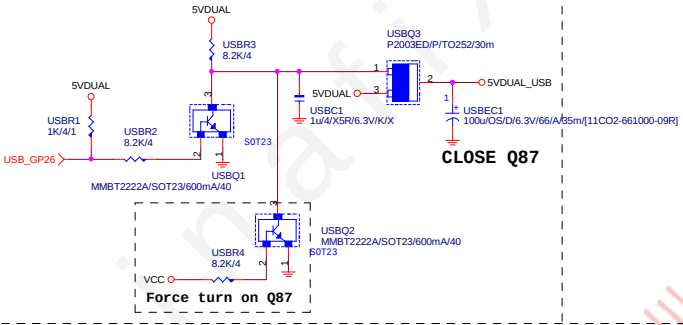


VCC1_05_PCH

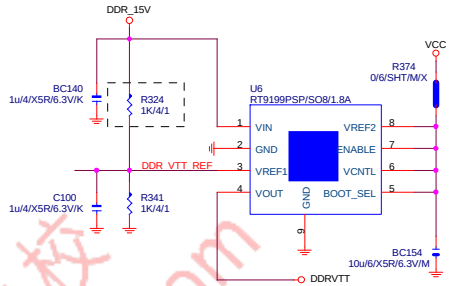


5VDUAL_USB Ctrl
KB_USB, R_USB30,
USB_LAN_F_USB30,
F_USB2 Power

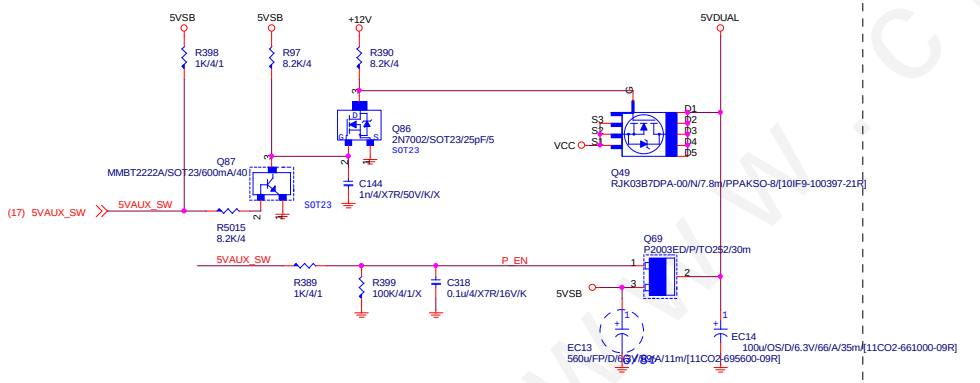
GPIO	5VDUAL_USB
High	Power ON
Low	Power OFF



DDRVTT

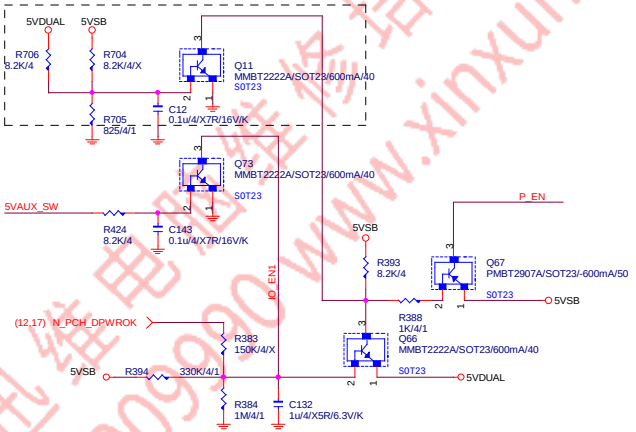


5VDUAL



5VDUAL SHORT PROTECT

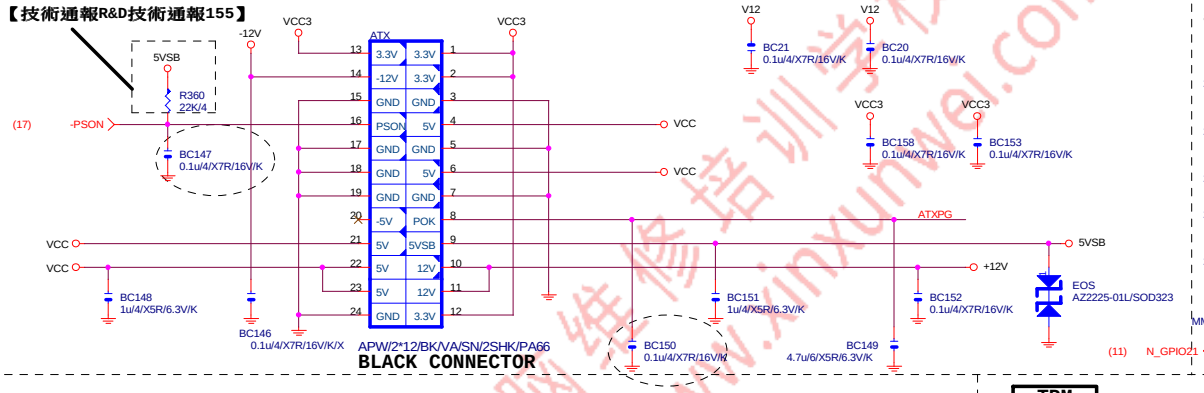
5VSB OVP:7.5V protection



Title	Gigabyte Technology		
	DISCRETE POWER		
Size: Custom	Document Number: GA-H81M-D3V-JP		Rev: 1.0
Date: Thursday, August 29, 2013	Sheet 25 of 33		

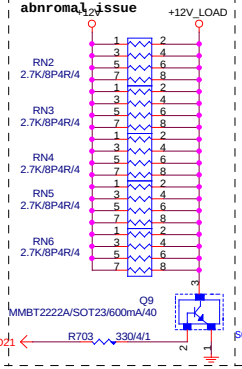
ATXX24 POWER CONNECTOR

【技術通報R&D技術通報155】

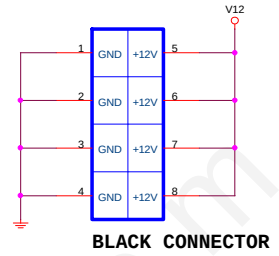


【技術通報R&D技術通報158】

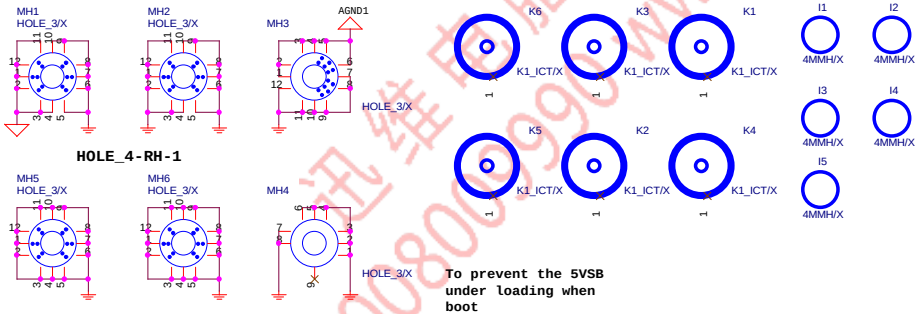
To fix 12V light load abnroma l issue



ATXX4 POWER CONNECTOR



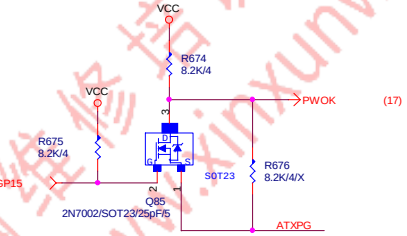
TPM

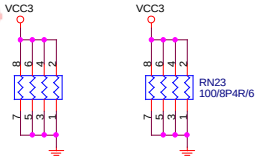


To prevent the 5VSB under loading when boot

PWOK PATCH

【技術通報R&D技術通報154】





FIX PWR MINMUN LOAD

Gigabyte Technology

Title: ATX CONNECTOR

Size: Custom | Document Number: GA-H81M-D3V-JP | Rev: 1.0

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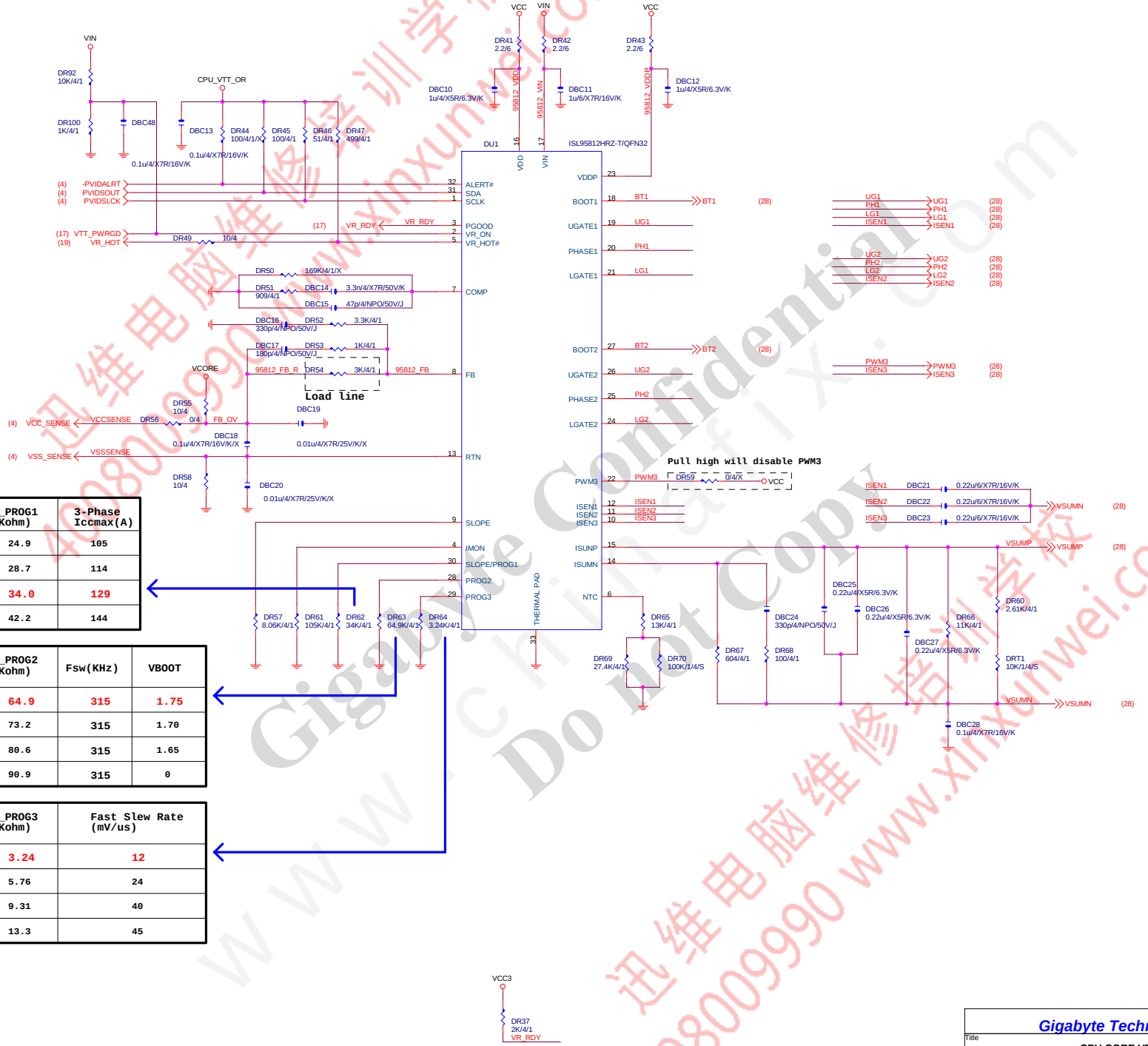

R_PROG1 (Kohm)	3-Phase Iccmax(A)
24.9	105
28.7	114
34.0	129
42.2	144

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		Rev: 1.0
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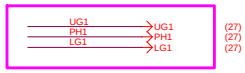
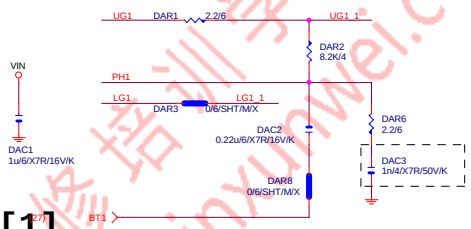
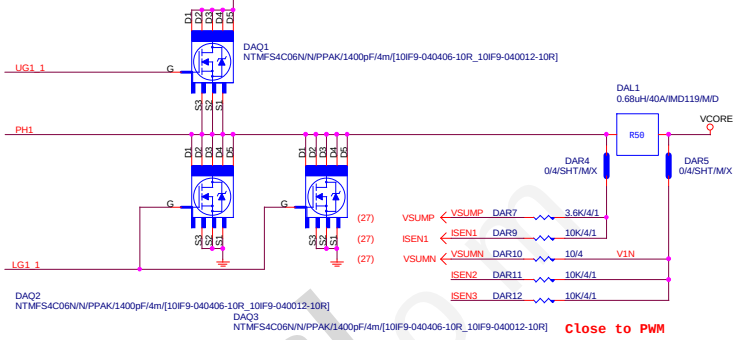
PHASE 1

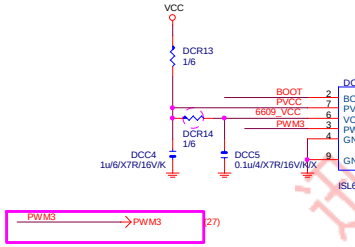


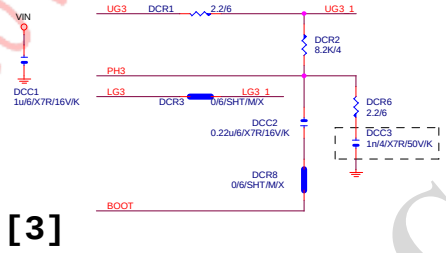


[1]

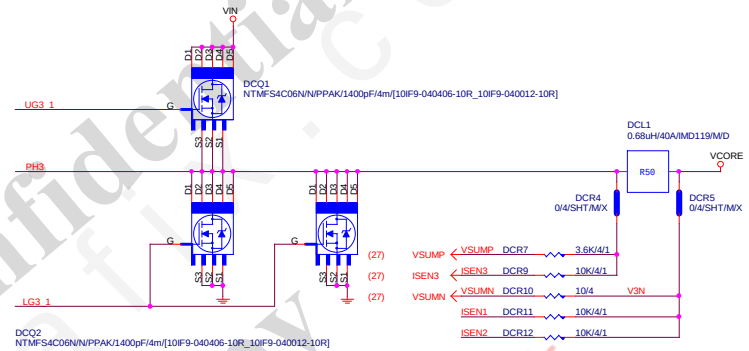


PHASE 3

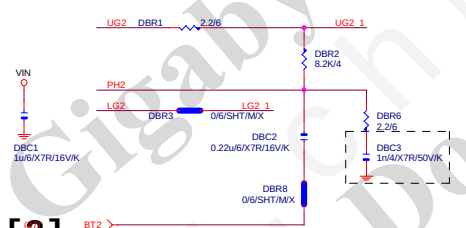




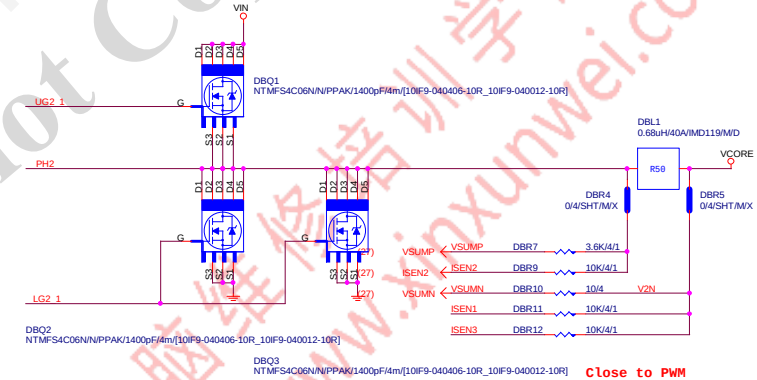
[3]

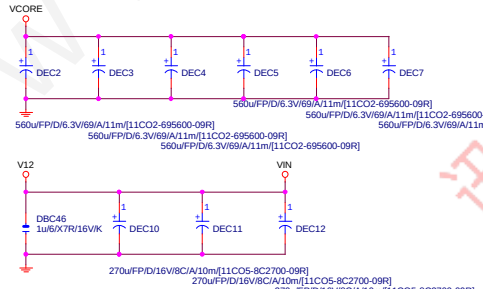


PHASE 2



[2]





Gigabyte Technology			
Title: CPU CORE VR-2			
Size: Custom	Document Number: GA-H81M-D3V-JP		Rev: 1.0
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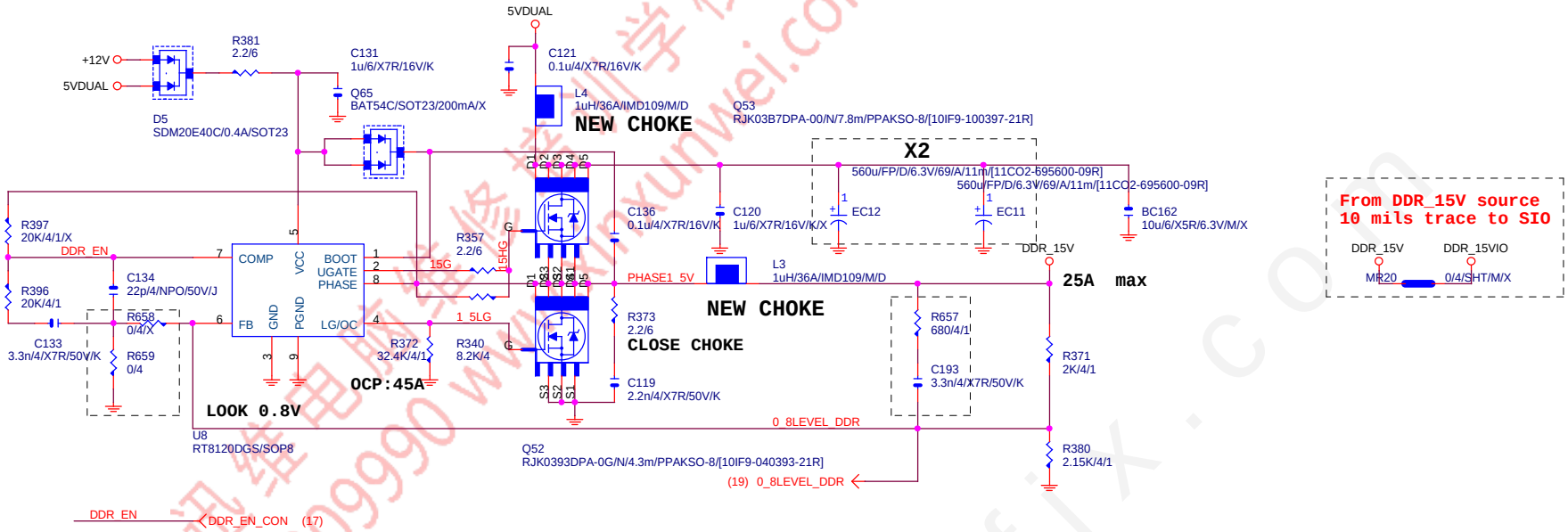
DDR15V



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			
Size: Custom	Document Number: GA-H81M-D3V-JP		Rev: 1.0
Date: Thursday, August 29, 2013	Sheet 29 of 33		

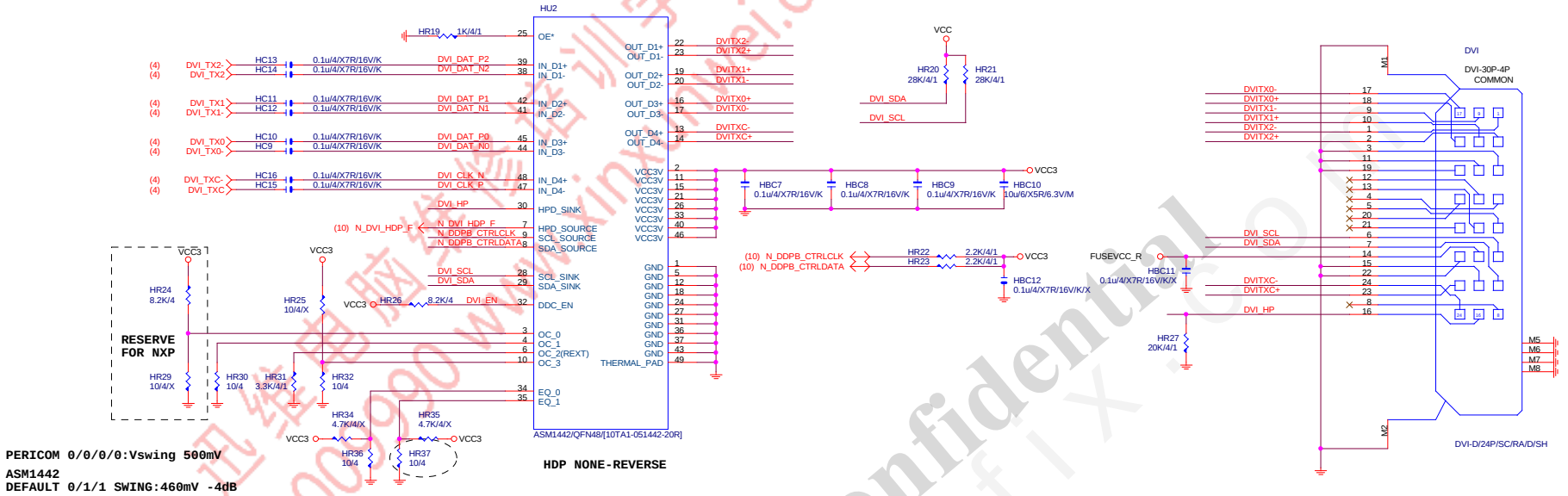
VCC1_05_ME

【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		
Size: Custom	Document Number: GA-H81M-D3V-JP	Rev: 1.0
Date: Thursday, August 29, 2013	Sheet 30 of 33	

DVI LEVEL SHIFT



HDMI LEVEL SHIFT

Gigabyte Technology		
Title: DVI		
Size: Custom	Document Number: GA-H81M-D3V-JP	Rev: 1.0
Date: Thursday, August 29, 2013	Sheet 31 of 33	

Gigabyte Technology		
Title: ITE IT8892E		
Size: Custom	Document Number: GA-H81M-D3V-JP	Rev: 1.0
Date: Thursday, August 29, 2013	Sheet 32 of 33	

Gigabyte Technology		
Title	USB3 EJ188	
Size C	Document Number GA-H81M-D3V-JP	Rev 1.0
Date: Thursday, August 29, 2013	Sheet 33 of 33	