Model Name: GA-H81M-S1

Revision 2.1

SHEET	TITLE
01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1150-A
05	CPU_LGA1150-B
06	CPU_LGA1150-C
07	DDR III CHANNEL A
08	DDR III CHANNEL B
09	PCH_FDI,DMI,USB,PCIE,NVRAM
10	PCH_DP,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCI EXPRESS*16 SLOT
15	PCI EXPRESS X1 *2 SLOT
16	ITE 8620 LPC IO
17	COM,KB_MS_USB,USB30_20
18	HWM,FAN CTRL,OV,-PROCHOT
19	DUAL BIOS
20	FP,FUSB,SPK,SATALED
21	Realtek ALC887-VD2
22	REAR AUDIO JACK
23	REALTEK RTL8111F
24	DISCRETE POWER
25	ATX , CLOCK GEN
26	VCORE ISL95812_1
27	VCORE ISL95812_2

SHEET	TITLE
28	RT8120_DDR POWER

Gigabyte Technology

Title: Cover Sheet

Size: Custom | Document Number: GA-H81M-S1 | Rev: 2.1

Date: Monday, April 07, 2014 | Sheet 1 of 29

Model Name: GA-H81M-S1

Revision 2.1

Component value change history

2014/03/13

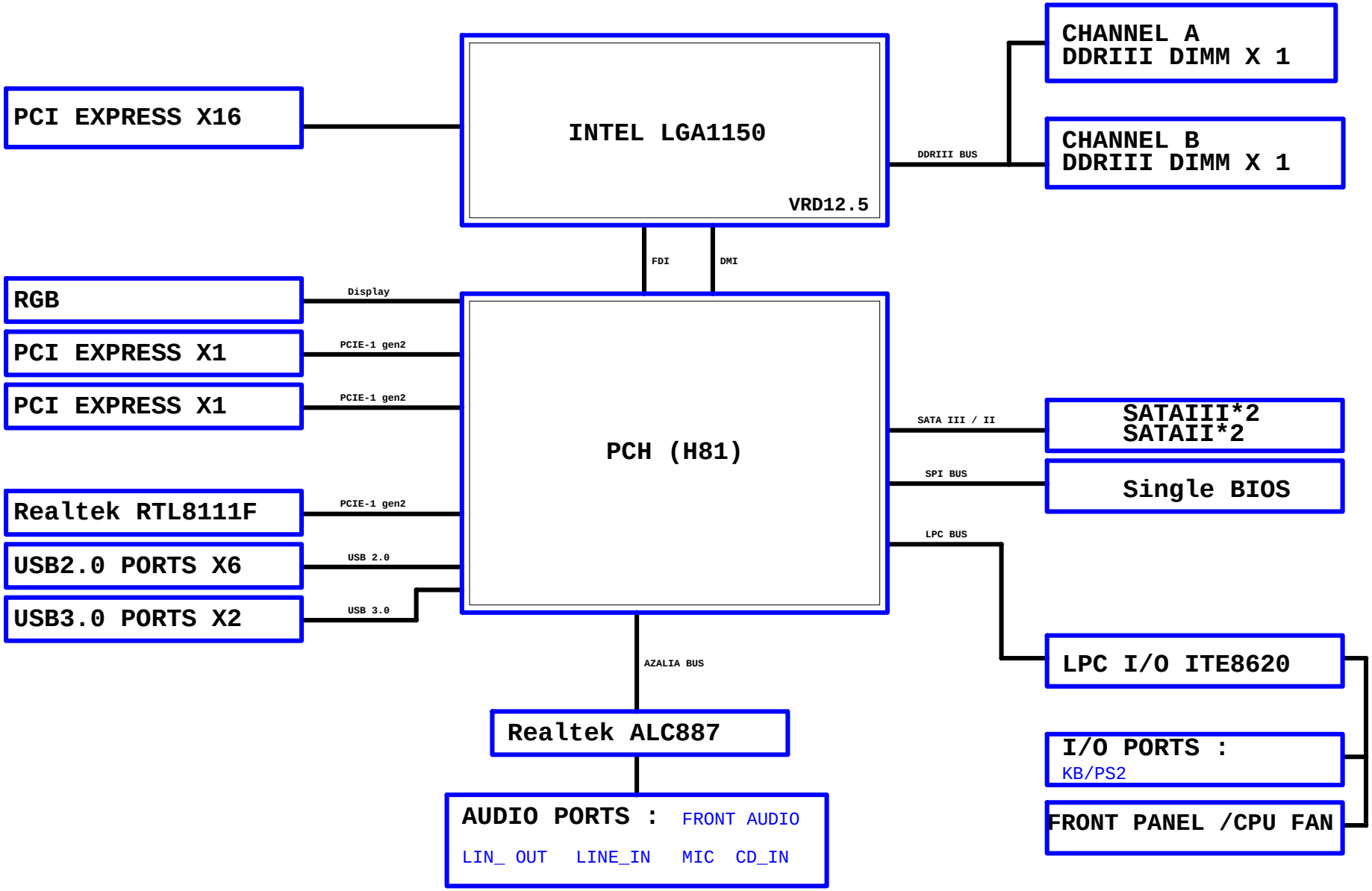
Data	Change Item	Reason
2013/07/01		9MH81MDS2-00-10A
2013/09/13	1、Change CPU_FAN to White Connector 2、Change R60、MR17 to 0603 3、Change M_BIOS/B_BIOS to 32M	9MH81MDS2-00-20A
2013/04/22	Change from B85M-HD3 Rev 1.0 1、Change KB_MS_USB to KB_MS 2、Change SIO IT8728 to IT8620 3、Del F_USB 3.0 4、Del HDMI/DVI 5、Del SATA3 2&3 6、Change VRIN PWM to ISL95812 7、Change COM/LPT to Rear 8、Del PCI slot	9MB85MHD3-00-10A
2013/06/25	1、Add FEC1、R394 2、Change location LGA1150_P to LGA1150 (DFM issue)	9MH81MDS2-00-10A
2013/09/11	1、Change Polyswitch 1206 footprint. 2、Change Power-PAK MOSFET footprint. 3、Change PXIEX16 footprint. 4、Change R60、MR17 to 0603 footprint. 5、Del MR18.	9MH81MDS2-00-20A
2014/02/25	1、Change MAF1 Polyswitch 0805 footprint. 2、Change Vcore Mosfet to 1High/1Low 3、MASK VCORE&DDR_15V CAP	

Circuit or PCB layout change

DATE	Change Item	Reason
2014/03/05	1、Dual Bios -> Single BIOS 2、Del LPT & COM 3、CPU以外改電解電容	H81M-DS2 r2.1 -> H81M-S1 r2.1
2014/03/10	1、EMI 7顆電容補回	
2014/03/11	1、R4 改 short pad (BIOS) 2、Del NBC3 (BIOS) 3、BC164 改 1nF (EMI)	
2014/03/13	1、CR58 , CR54 2.2K 補回 (Audio) 2、OC22 1uF 補回 (HW Monitor 12V) 3、F_AUDIO 改灰色 PH/2*5K8/GY/2.54/VA/D	9MH81MS1-00-21A
2014/03/18	1、OC24 1uF 補回 (HW Monitor 5V)	9MH81MS1-00-21A (E-BOM 變更)
2014/03/27	1、DR61 100K -> 41.2K (IMON)	
2014/04/07		9MH81MS1-00-21B (P-BOM)

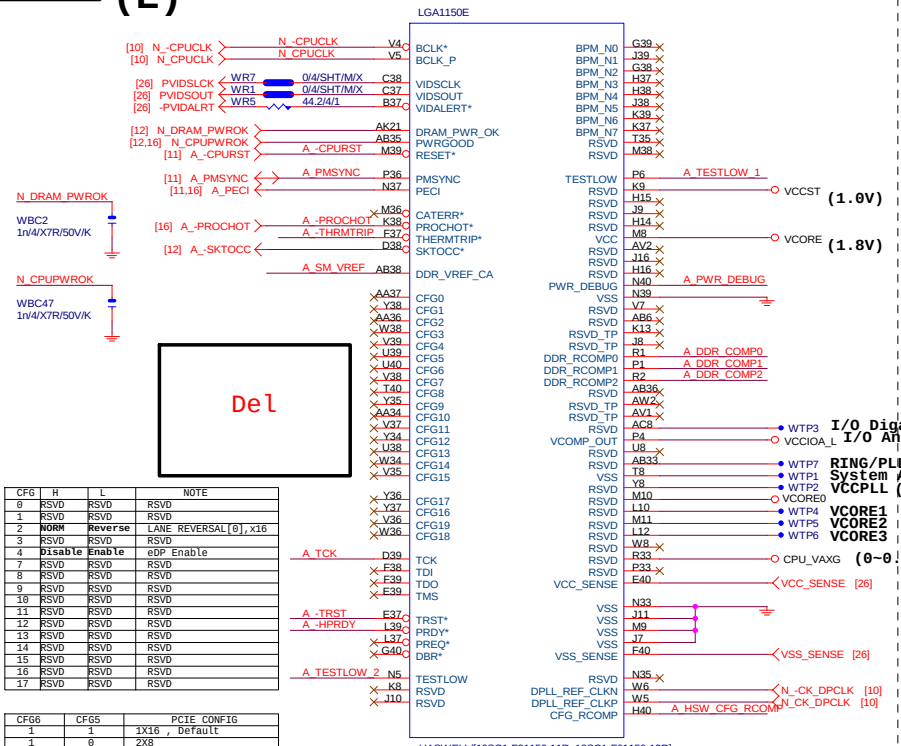
Gigabyte Technology			
Title: BOM & PCB MODIFY HISTORY			
Size: Custom	Document Number: GA-H81M-S1		Rev: 2.1
Date: Monday, April 07, 2014	Sheet 2 of 29		

BLOCK DIAGRAM



Gigabyte Technology		
Title: BLOCK DIAGRAM		
Size: C	Document Number: GA-H81M-S1	Rev: 2.1
Date: Monday, April 07, 2014	Sheet 3 of 29	

LGA1150 (E)

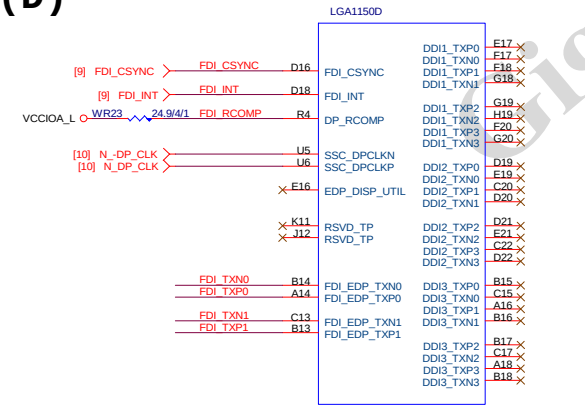


CFG	H	L	NOTE
0	RSVD	RSVD	RSVD
1	RSVD	RSVD	RSVD
2	**NORM**	**Reverse**	LANE REVERSAL[0],x16
3	RSVD	RSVD	RSVD
4	**Disable**	**Enable**	eDP Enable
7	RSVD	RSVD	RSVD
8	RSVD	RSVD	RSVD
9	RSVD	RSVD	RSVD
10	RSVD	RSVD	RSVD
11	RSVD	RSVD	RSVD
12	RSVD	RSVD	RSVD
13	RSVD	RSVD	RSVD
14	RSVD	RSVD	RSVD
15	RSVD	RSVD	RSVD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

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

CFG 0-17 all internal PULL-UP

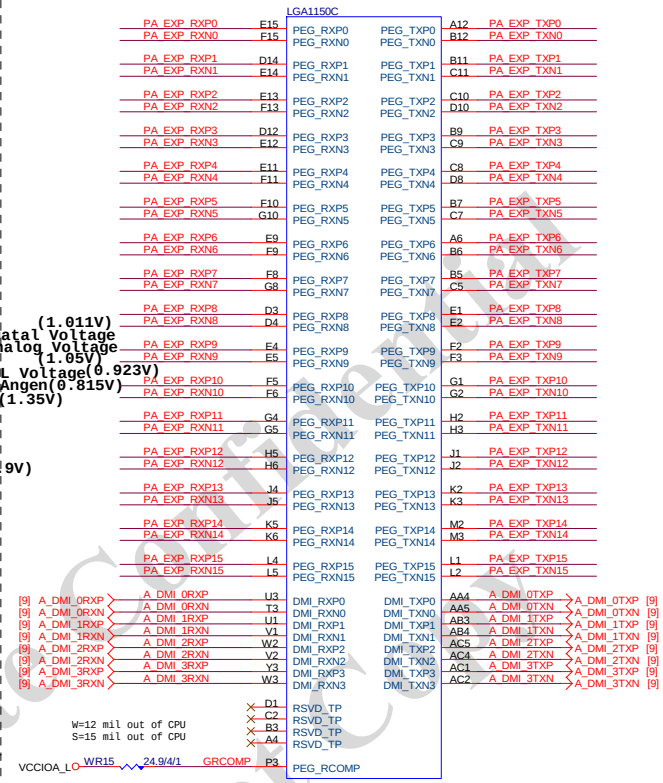
LGA1150 (D)



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

LGA1155 (C)

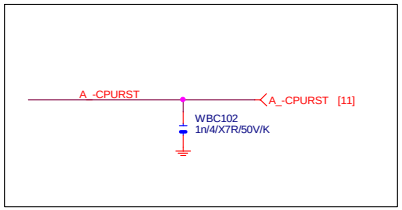
PCIEX16:16/5/5/5/16(breakout min 10/4/4/4/10)
Impedance=80 +- 17.5%



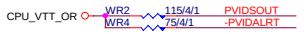
DMI:12/4/4/4/12(breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%

PA_EXP_TXP[0..15] [14]
PA_EXP_TXN[0..15] [14]
PA_EXP_RXP[0..15] [14]
PA_EXP_RXN[0..15] [14]

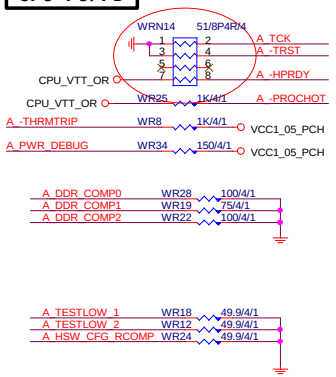
-CPURST



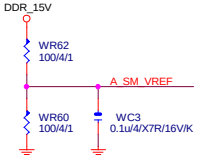
CPU SVID



CPU PU/PD



SM REF



Gigabyte Technology			
Title: CPU LGA1150-A			
Size: Custom	Document Number: GA-H81M-S1		Rev: 2.1
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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	MDA8
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
	AW33	DDR0_ECC0	DDR0_DQ22	AP37	MDA22
	AV33	DDR0_ECC1	DDR0_DQ23	AP40	MDA23
	AU31	DDR0_ECC2	DDR0_DQ24	AV37	MDA25
	AV31	DDR0_ECC3	DDR0_DQ25	AW37	MDA29
	AT33	DDR0_ECC4	DDR0_DQ26	AU35	MDA26
	AU33	DDR0_ECC5	DDR0_DQ27	AV35	MDA27
	AT31	DDR0_ECC6	DDR0_DQ28	AT37	MDA28
	AW31	DDR0_ECC7	DDR0_DQ29	AU37	MDA24
			DDR0_DQ30	AT35	MDA30
			DDR0_DQ31	AW35	MDA31
SBAA0	AV12	DDR0_BA0	DDR0_DQ32	AY6	MDA33
SBAA1	AY11	DDR0_BA1	DDR0_DQ33	AU6	MDA37
SBAA2	AT21	DDR0_BA2	DDR0_DQ34	AV4	MDA34
			DDR0_DQ35	AU4	MDA35
CKEA0	AV22	DDR0_CKE0	DDR0_DQ36	AW6	MDA36
CKEA1	AT23	DDR0_CKE1	DDR0_DQ37	AV6	MDA32
	AV22	DDR0_CKE2	DDR0_DQ38	AW4	MDA38
	AU23	DDR0_CKE3	DDR0_DQ39	AY4	MDA39
			DDR0_DQ40	AR1	MDA41
-CSA0	AU14	DDR0_CS_N0	DDR0_DQ41	AR4	MDA45
-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
DCLKA0	AY15	DDR0_CLK_P0	DDR0_DQ46	AN2	MDA46
-DCLKA0	AY16	DDR0_CLK_N0	DDR0_DQ47	AN1	MDA47
DCLKA1	AW15	DDR0_CLK_P1	DDR0_DQ48	AL1	MDA49
-DCLKA1	AV15	DDR0_CLK_N1	DDR0_DQ49	AL4	MDA53
	AY14	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
			DDR0_DQ62	AE2	MDA62
			DDR0_DQ63	AE1	MDA63
SRASA	AU12	DDR0_RAS*	DDR0_DQS_P0	AE39	DQSA0
SWEA	AU11	DDR0_WE*	DDR0_DQS_P1	AJ39	DQSA1
	AV20	RSVD	DDR0_DQS_P2	AN39	DQSA2
	AW27	RSVD	DDR0_DQS_P3	AV36	DQSA3
			DDR0_DQS_P4	AV5	DQSA4
SCASA	AU9	DDR0_CAS*	DDR0_DQS_P5	AP3	DQSA5
			DDR0_DQS_P6	AK3	DQSA6
			DDR0_DQS_P7	AE3	DQSA7
			DDR0_DQS_P8	AV32	
DDR3_RST	AK22	DDR_RESET*	DDR0_DQS_N0	AE38	-DQSA0
			DDR0_DQS_N1	AJ38	-DQSA1
			DDR0_DQS_N2	AN38	-DQSA2
			DDR0_DQS_N3	AU36	-DQSA3
			DDR0_DQS_N4	AW5	-DQSA4
			DDR0_DQS_N5	AP2	-DQSA5
			DDR0_DQS_N6	AK2	-DQSA6
			DDR0_DQS_N7	AF2	-DQSA7
			DDR0_DQS_N8	AU32	

WR61 0/4/SHT/MIX

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
SBAB0	AK17	DDR1_BA0	DDR1_DQ31	AP28	MDB31
SBAB1	AL18	DDR1_BA1	DDR1_DQ32	AR12	MDB32
SBAB2	AW28	DDR1_BA2	DDR1_DQ33	AP12	MDB33
			DDR1_DQ34	AL13	MDB34
CKEB0	AW29	DDR1_CKE0	DDR1_DQ35	AL12	MDB35
CKEB1	AY29	DDR1_CKE1	DDR1_DQ36	AR13	MDB36
	AU28	DDR1_CKE2	DDR1_DQ37	AP13	MDB37
	AU29	DDR1_CKE3	DDR1_DQ38	AM13	MDB38
			DDR1_DQ39	AM12	MDB39
-CSB0	AP17	DDR1_CS_N0	DDR1_DQ40	AR9	MDB45
-CSB1	AN15	DDR1_CS_N1	DDR1_DQ41	AP9	MDB41
	AN17	DDR1_CS_N2	DDR1_DQ42	AR6	MDB47
	AL15	DDR1_CS_N3	DDR1_DQ43	AP6	MDB43
			DDR1_DQ44	AR10	MDB44
			DDR1_DQ45	AP10	MDB40
			DDR1_DQ46	AR7	MDB46
			DDR1_DQ47	AP7	MDB42
DCLKB0	AM20	DDR1_CLK_P0	DDR1_DQ48	AM9	MDB52
-DCLKB0	AM21	DDR1_CLK_N0	DDR1_DQ49	AL9	MDB53
DCLKB1	AP22	DDR1_CLK_P1	DDR1_DQ50	AL6	MDB50
-DCLKB1	AP21	DDR1_CLK_N1	DDR1_DQ51	AL7	MDB55
			DDR1_DQ52	AM10	MDB48
	AN20	DDR1_CLK_P2	DDR1_DQ53	AL10	MDB49
	AN21	DDR1_CLK_N2	DDR1_DQ54	AM6	MDB54
	AP19	DDR1_CLK_P3	DDR1_DQ55	AM7	MDB51
	AP20	DDR1_CLK_N3	DDR1_DQ56	AH6	MDB61
			DDR1_DQ57	AH7	MDB60
SCASB	AP16	DDR1_CAS*	DDR1_DQ58	AE6	MDB59
	AL20	RSVD	DDR1_DQ59	AE7	MDB63
SRASB	AM18	DDR1_RAS*	DDR1_DQ60	AJ6	MDB56
SWEB	AK16	DDR1_WE*	DDR1_DQ61	AJ7	MDB57
			DDR1_DQ62	AF6	MDB58
VREF_DQA	AB39	DDR_VREF_DQ0	DDR1_DQ63	AF7	MDB62
VREF_DQB	AB40	DDR_VREF_DQ1	DDR1_DQS_P0	AE35	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	

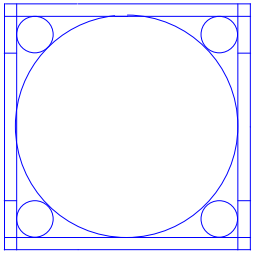
VREF_DQA
VREF_DQB
WBC34 0.1u/4/X7R/16V/K/X
WBC33 0.1u/4/X7R/16V/K/X
Place in CPU bottom side

未上件

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-S1		Rev: 2.1
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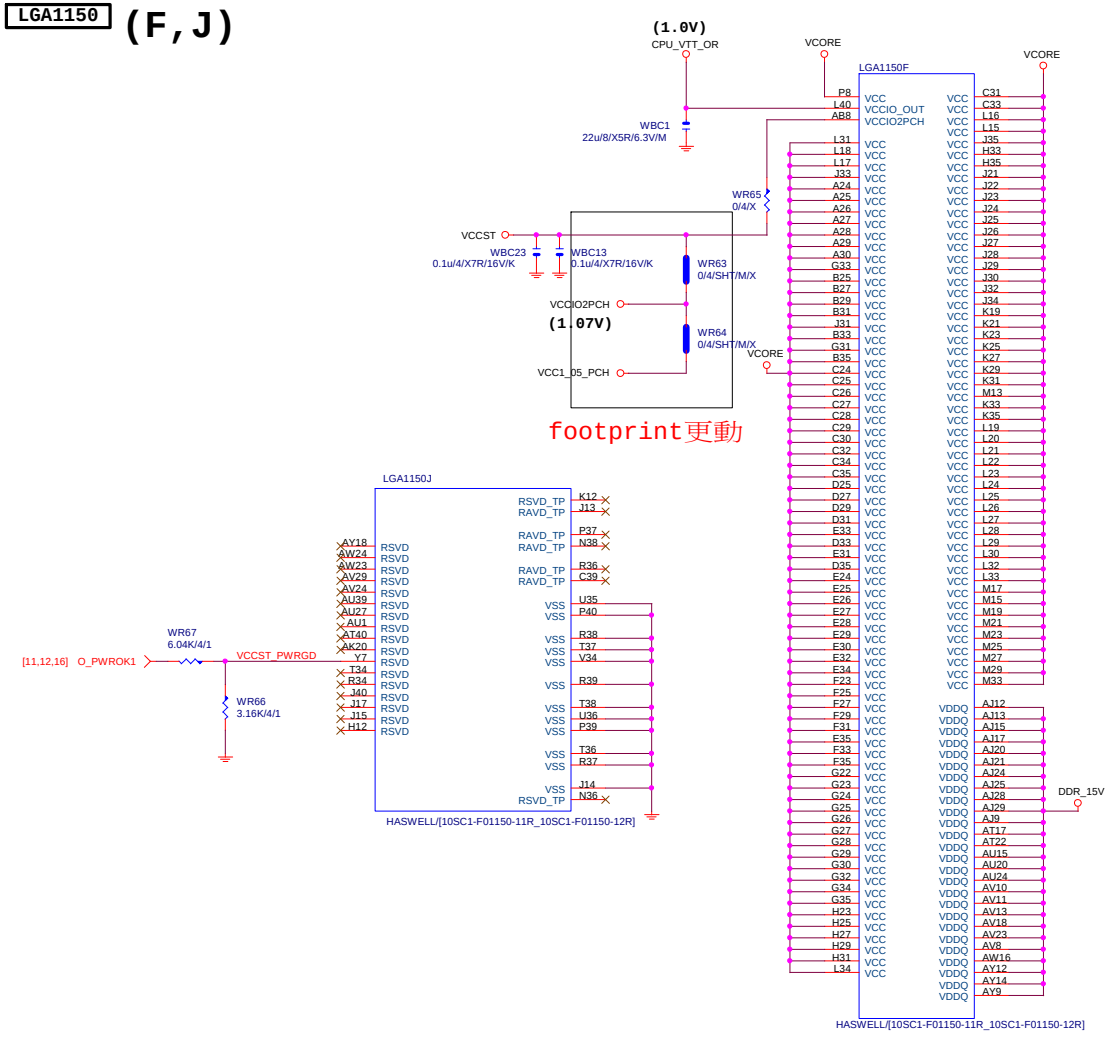
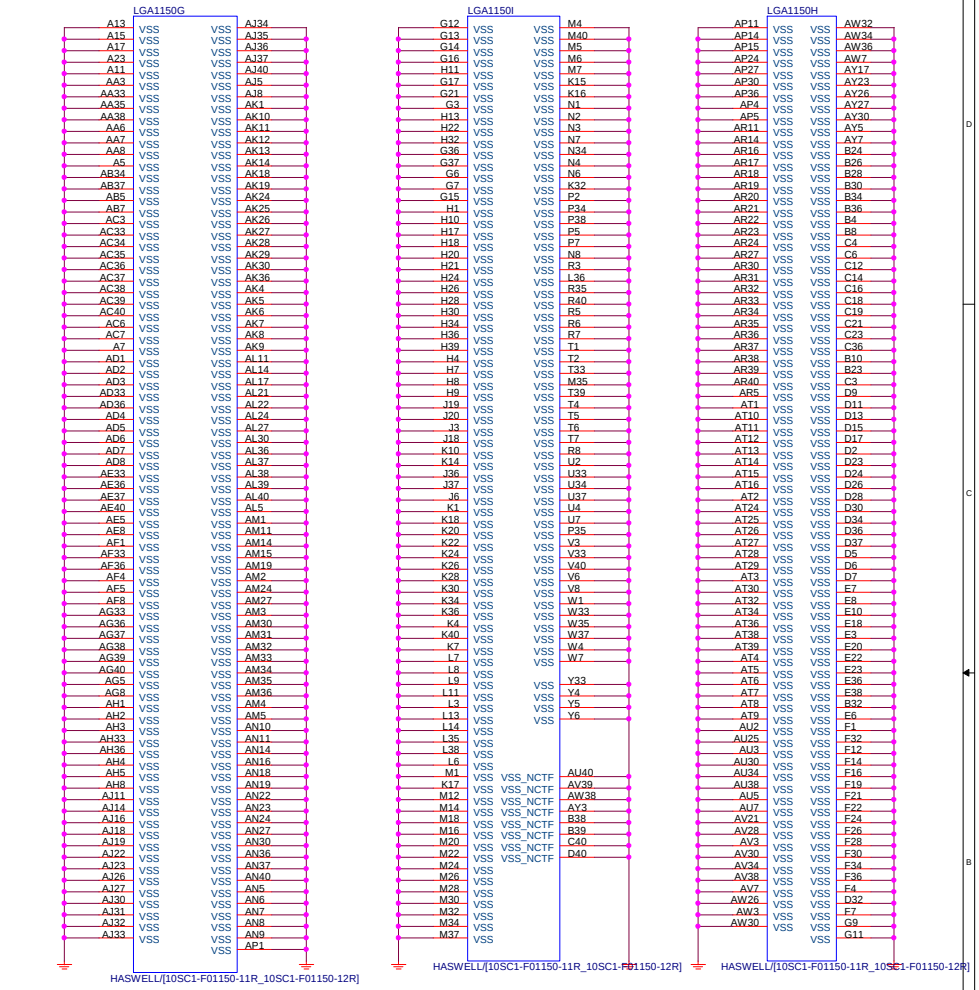
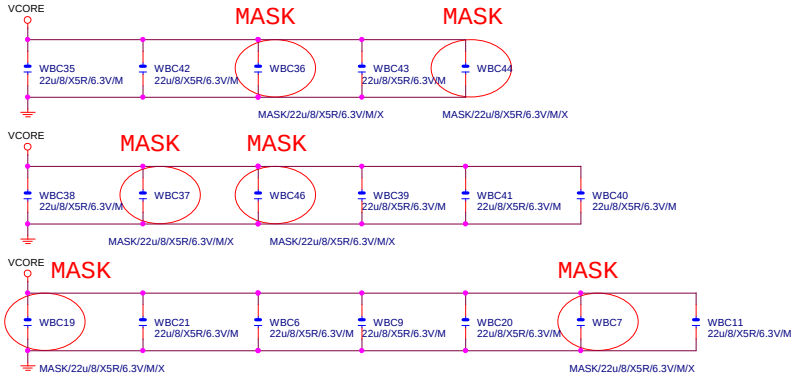
LGA1150 (F,J)



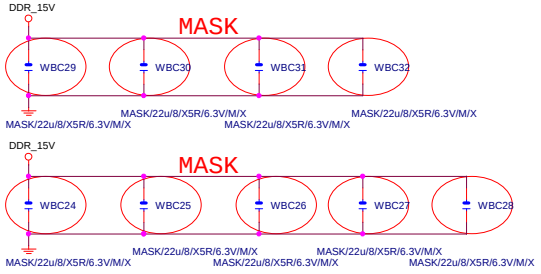
LGA1155 (G,H,I)



VCore CAP (X18)



DDR CAP (X9)



Gigabyte Technology		
Title: CPU LGA1150-C		
Size: Custom	Document Number: GA-H81M-S1	Rev: 2.1
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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

MAF1 SPR-P200T/6V/8/S
VCC3 VDDSPD

MC4 0.1u/4/X7R/16V/K/X VDDSPD
MC5 VREF_DDRA
MC1 VREF_DQDDRA 1
0.1u/4/X7R/16V/K/X

未上件

[8,12,14,15,20] N_SMBCLK
[8,12,14,15,20] N_SMBDATA

[5] SBAA2
[5] SBAA1
[5] SBAA0

[5] CKEA1
[5] CKEA0

[5] -CSA1
[5] -CSA0

[5] -DCLKA1
[5] DCLKA1

[5] -DCLKA0
[5] DCLKA0

[5] MAAA[0..15]

[5,8] -DDR3_RST
[5] -SCASA
[5] -SRASA
[5] -SWEA

-DDR3_RST
MC6 100p/4/NPO/50V/J/X
未上件

DDR3/240/BK/VA/D

BLACK CONNECTOR

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

MDA[0..63] [5]

DDR3 VREF

DDR_15V
MR15 1K/4/1
MR14 1K/4/1
VREF_DDRA

DDR_15V
MR4 1K/4/1
MR5 1K/4/1
VREF_DQDDRA
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/X
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/X
MBC29 1u/4/X5R/6.3V/K/X
MBC35 1u/4/X5R/6.3V/K/X
MBC36 1u/4/X5R/6.3V/K
MBC37 1u/4/X5R/6.3V/K/X
MBC47 1u/4/X5R/6.3V/K/X
MBC9 1u/4/X5R/6.3V/K/X

未上件

DDRVTT Decouple

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

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

Gigabyte Technology

Title: DDRIII CHANNEL A

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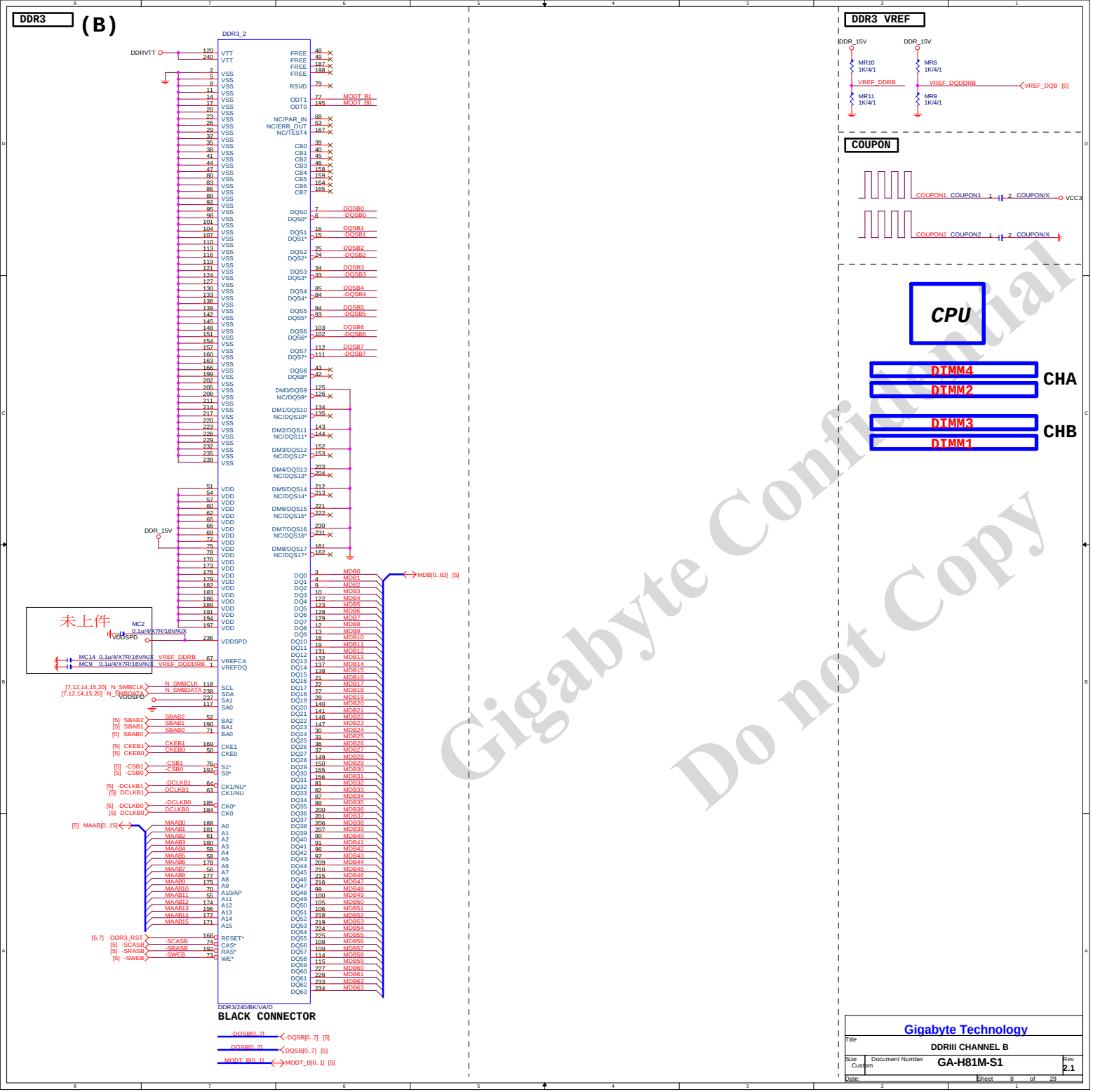
Date: | Sheet 7 of 29



Gigabyte Technology

Title: DDRIII CHANNEL B

Size: Custom | Document Number: GA-H81M-S1 | Rev: 2.1

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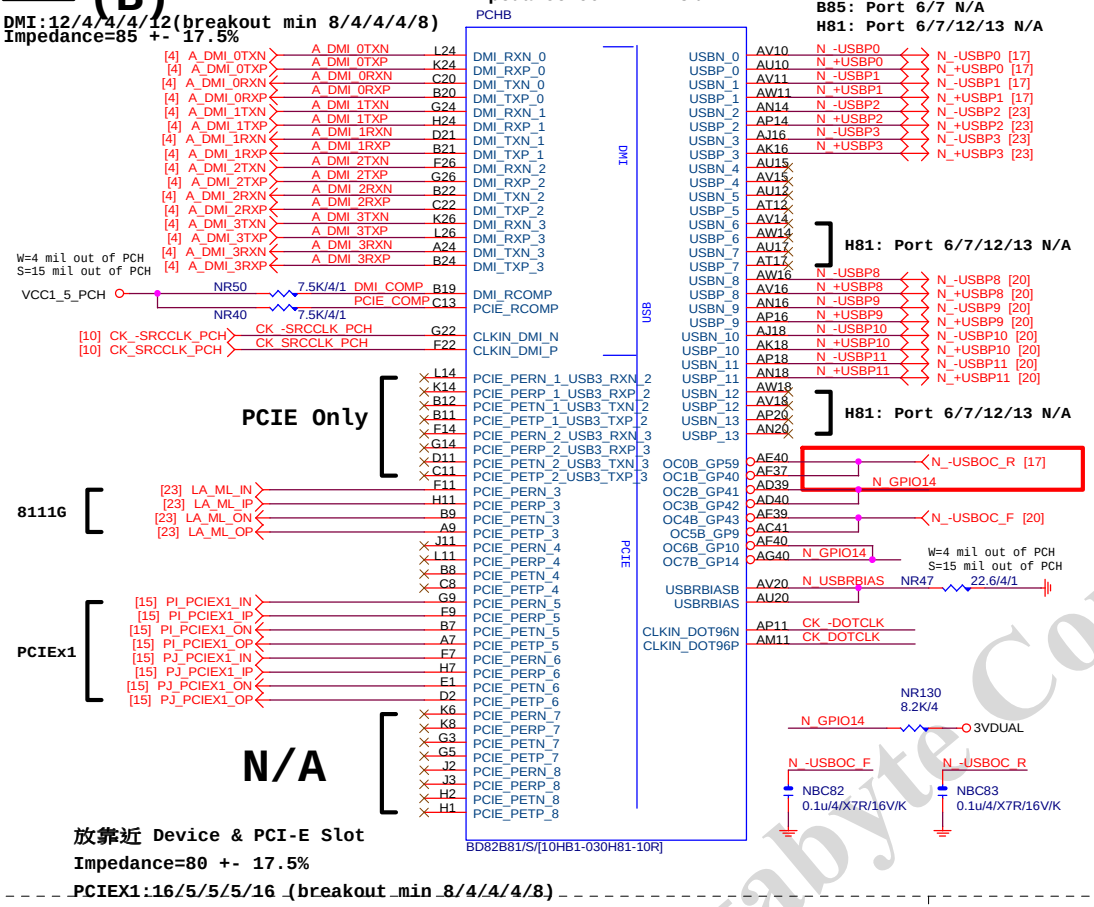
PCH (B)

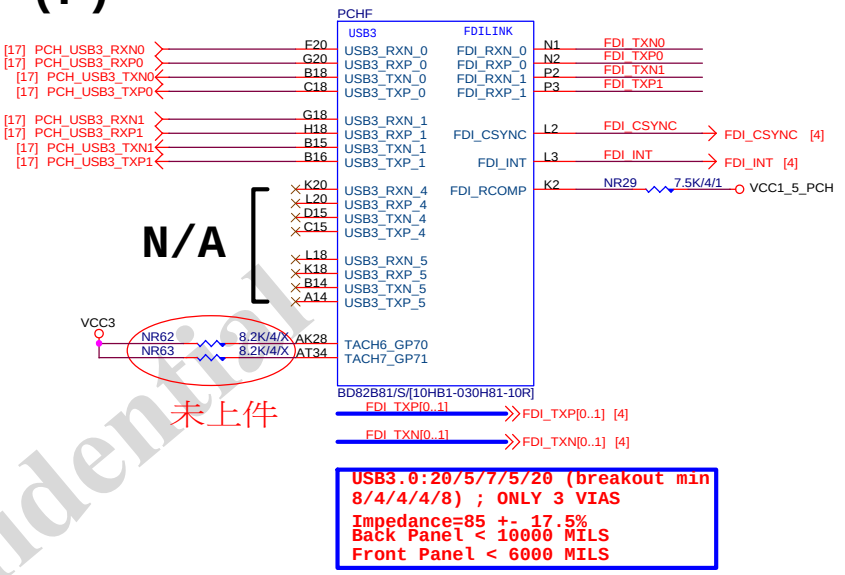
DMI:12/4/4/4/12(breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%

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

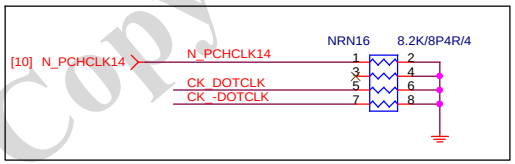


PCH (F)



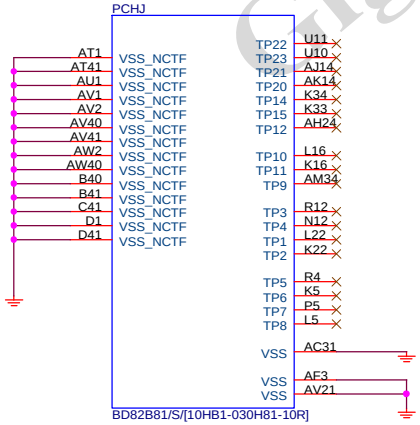
PCH CLK PD

Mount for integrated clock Generation Mode



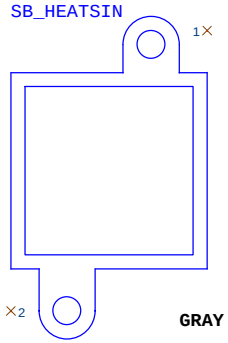
NR225 short to GND in non graphic SKU

PCH (J)



PCH H/S

LOW COST ICH7 HEATSINK



USB TABLE

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

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

Gigabyte Technology

Title: PCH FDI,DMI,USB ,PCIE,NVRAM

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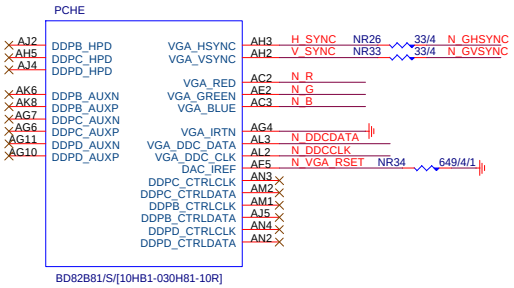
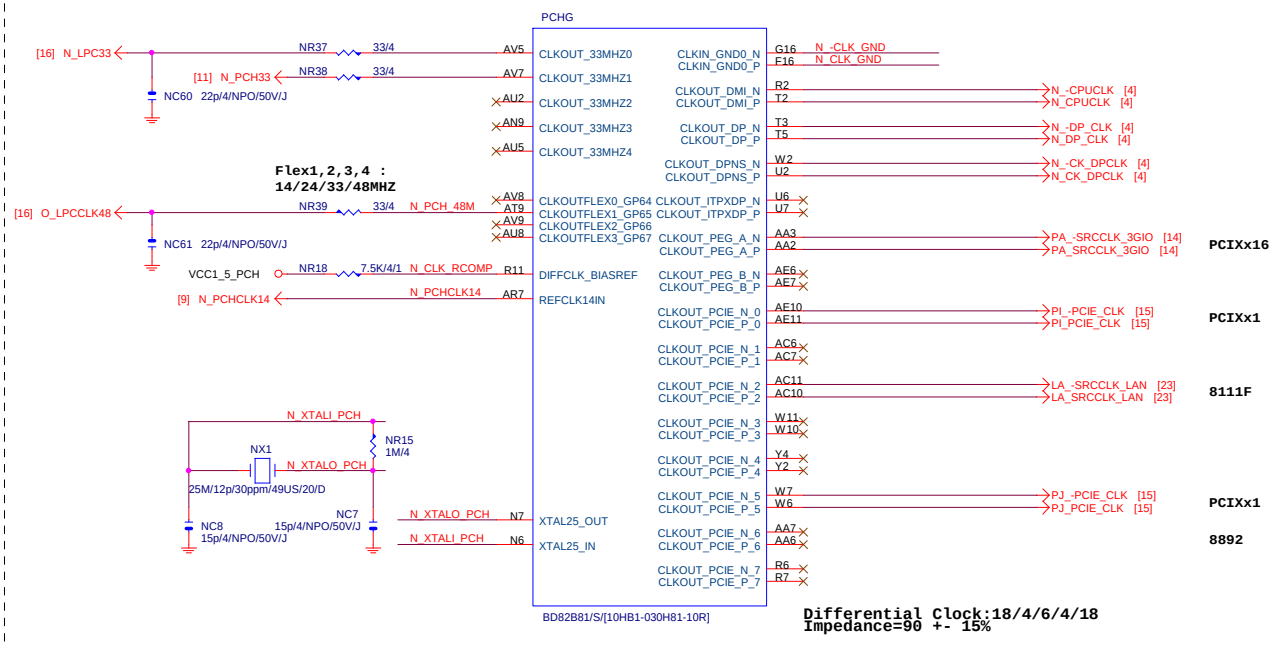
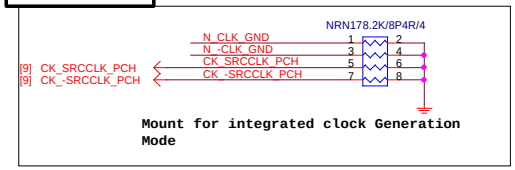
PCH (E)



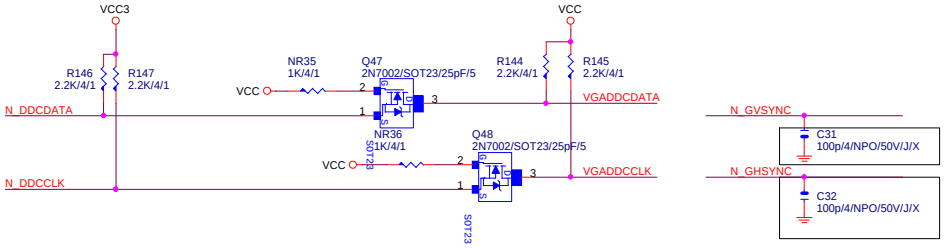
PCH (G)



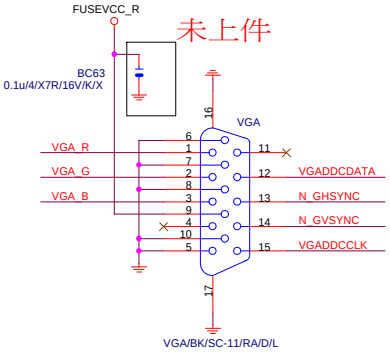
PCH CLK PD



VGA DDC

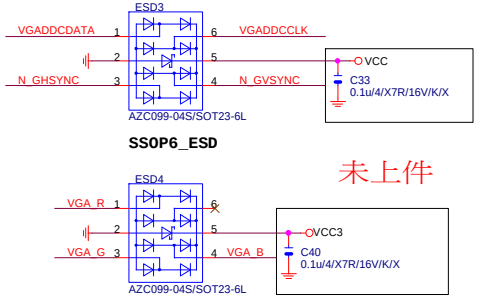


VGA CONNECTOR



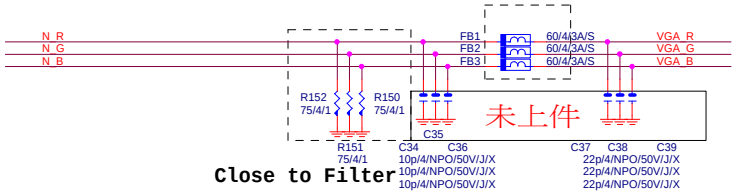
BLACK CONNECTOR

VGA ESD



VGA DDC

未上件



Close to Filter

Gigabyte Technology			
Title	PCH DISPLAY ,CLK BUFFER		
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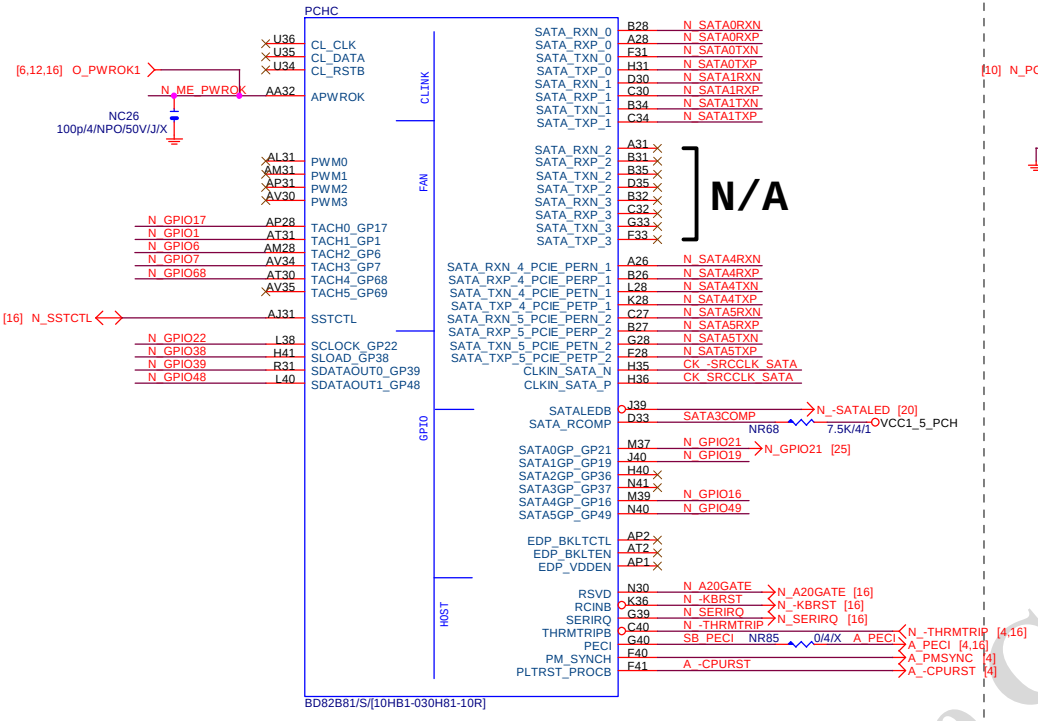
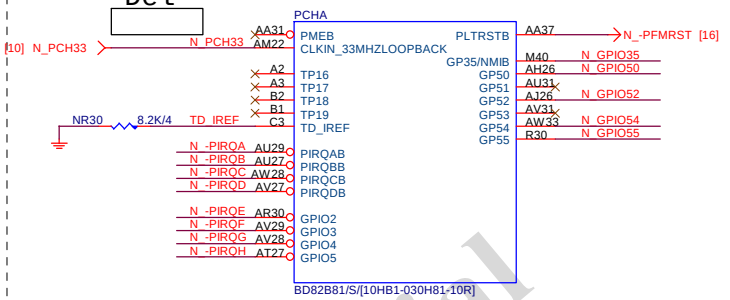
PCH (C)

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%

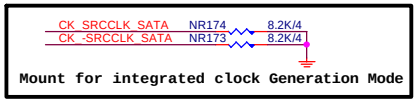


PCH (A)

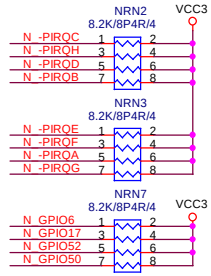
Del

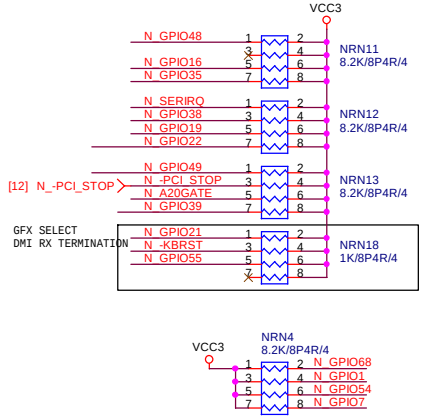


PCH CLK PD

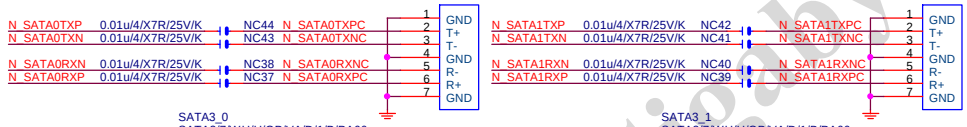


PCH PU/PD



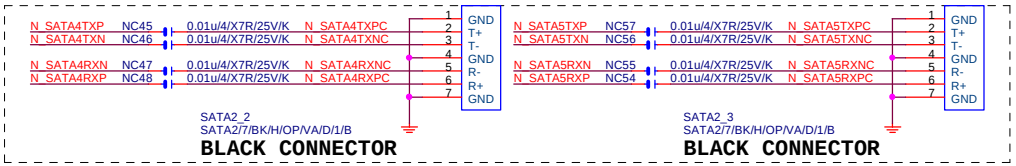


SATA CONNECTOR



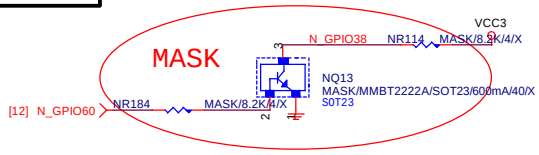
H81 Port 2/3 N/A

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



ME PWROK

GPIO38 Ctrl



Gigabyte Technology

Title: PCH HOST , SATA, PCI

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PCH (D)

PCHD

BD82B81/S/[10HB1-030H81-10R]

ACZ_SDOUT

PCH_DPWROK

PCH PU/PD

HSW_STRAP13

32.768KHZ

CLR_CMOS

BATTERY-DUAL-4

RB 必須放在BAT外

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

At least 10ms delay after 3VDUAL_PCH stabel

Reserve for EMI test

Gigabyte Technology	
Title	PCH GPIO , CTRL , AUDIO
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PCH (H)

VCC3_DAC

3VDUAL_PCH

SHT PWR

CLOSE北橋(注意震盪水波紋)

(3.3V/70mA+360uA)

CAP

(3.3V)(X6)

(1.05V)(X2)

(3.3V)(X2)

(1.05V)(X10)

PCH (I)

Title	PCH PWR ,GND
Size	Custom
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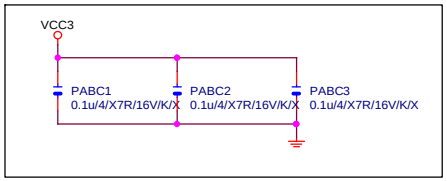
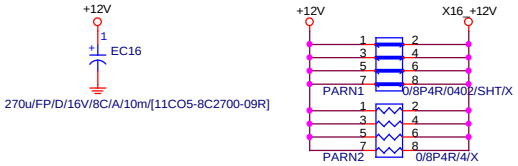
Gigabyte Technology

PCIEX16 CAP



PCIEX16 PROTECT SHT



PCIEX16 AC CAP

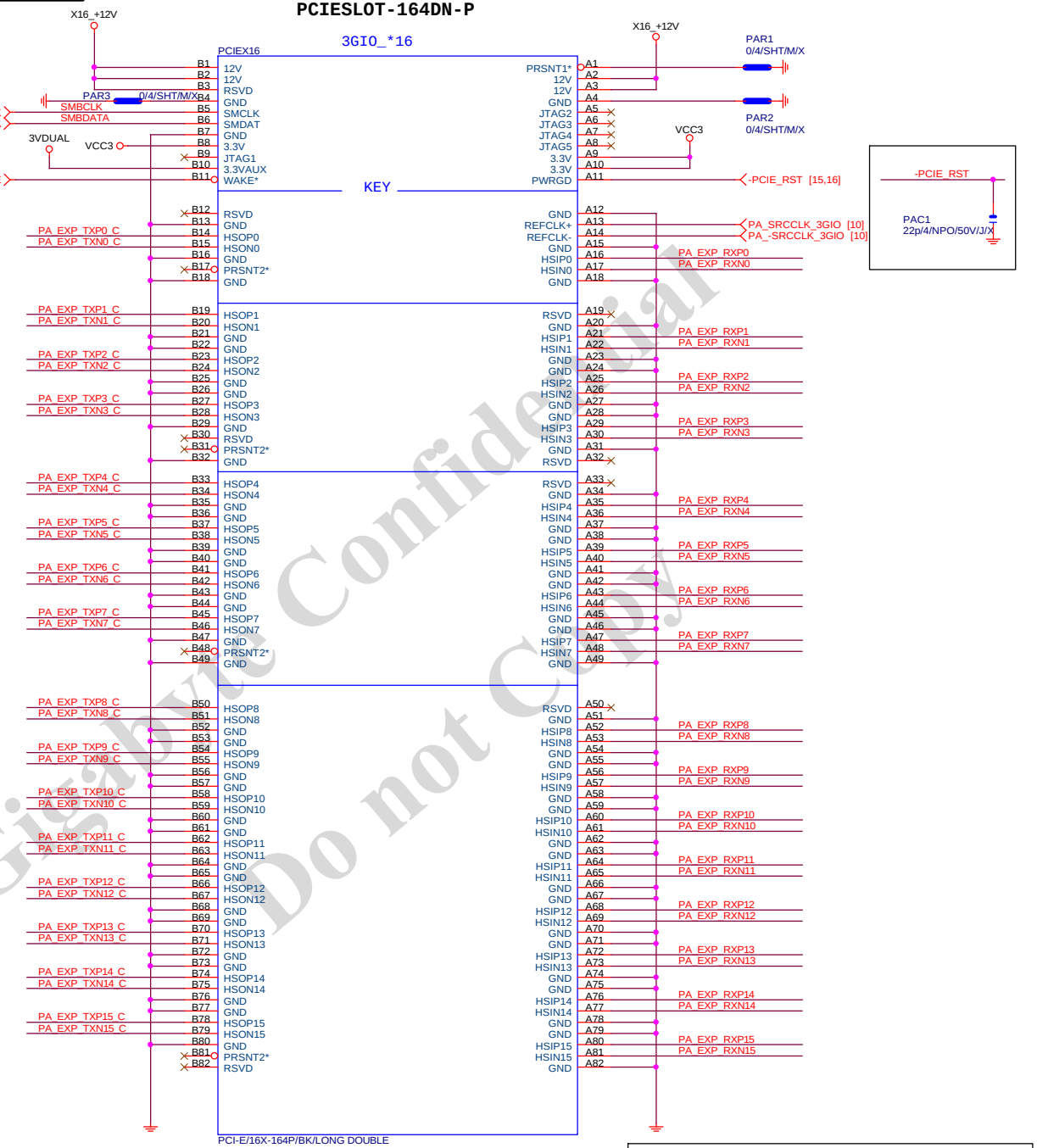
PA_EXP_TXP0	PAC5	0.22u/4/X5R/6.3V/K	PA_EXP_TXP0_C
PA_EXP_TXN0	PAC4	0.22u/4/X5R/6.3V/K	PA_EXP_TXN0_C
PA_EXP_TXP1	PAC6	0.22u/4/X5R/6.3V/K	PA_EXP_TXP1_C
PA_EXP_TXN1	PAC7	0.22u/4/X5R/6.3V/K	PA_EXP_TXN1_C
PA_EXP_TXP2	PAC8	0.22u/4/X5R/6.3V/K	PA_EXP_TXP2_C
PA_EXP_TXN2	PAC9	0.22u/4/X5R/6.3V/K	PA_EXP_TXN2_C
PA_EXP_TXP3	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]

PCIEX16 SLOT

PCIESLOT-164DN-P

3GIO_*16



BLACK CONNECTOR

Title	Gigabyte Technology
	PCI EXPRESS * 16
Size: Custom	Document Number: GA-H81M-S1
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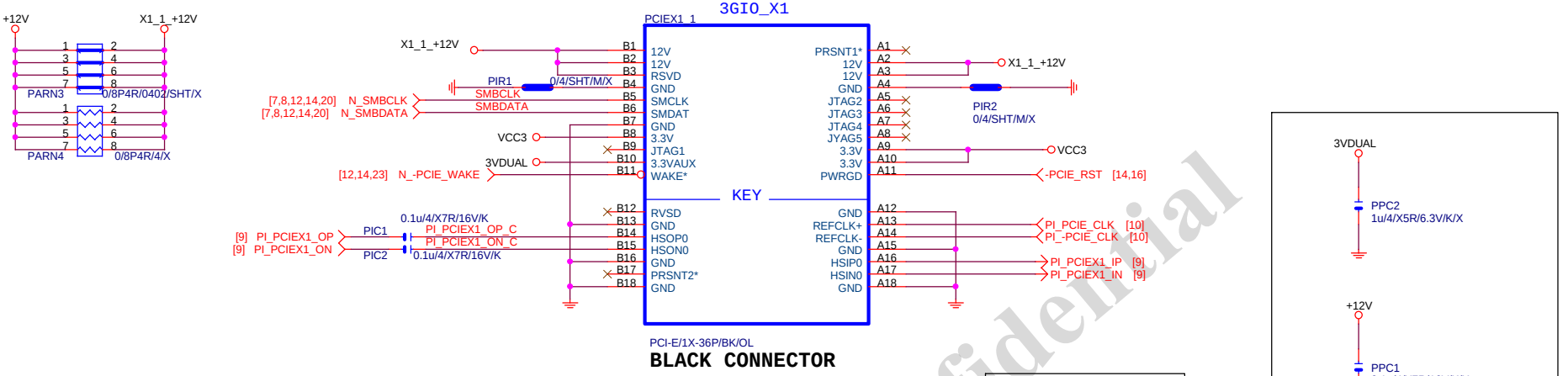
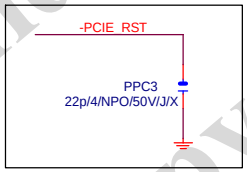
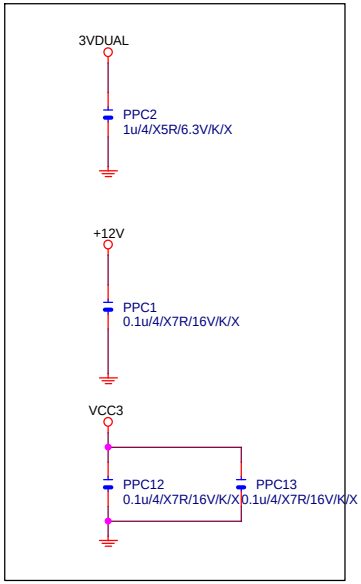
PCIEX1 SLOT

PCIEX1 PROTECT SHT

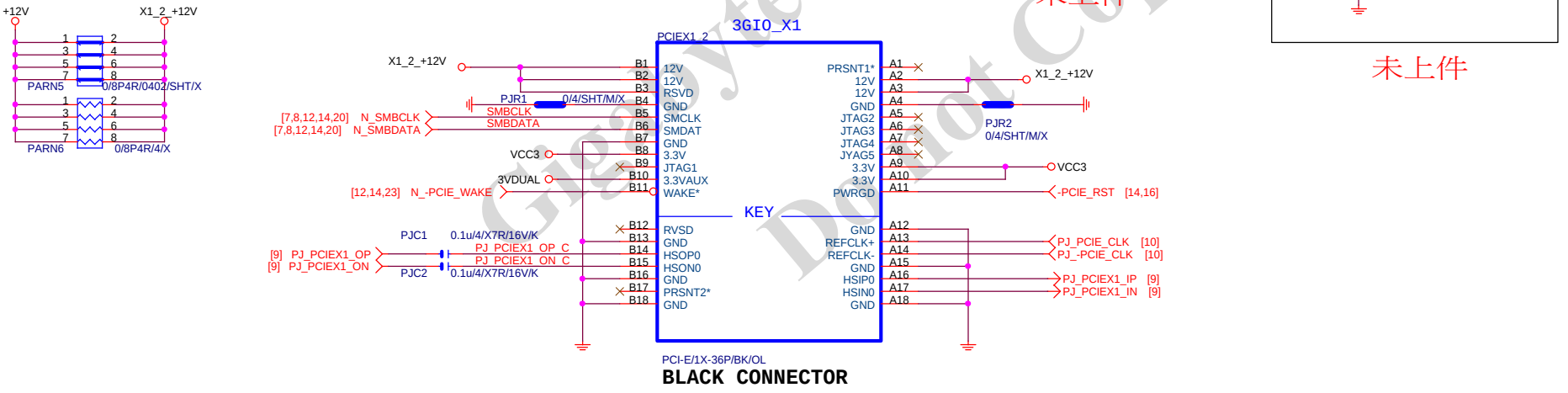






未上件

未上件



Gigabyte Technology		
Title: PCI EXPRESS X 1 PORT		
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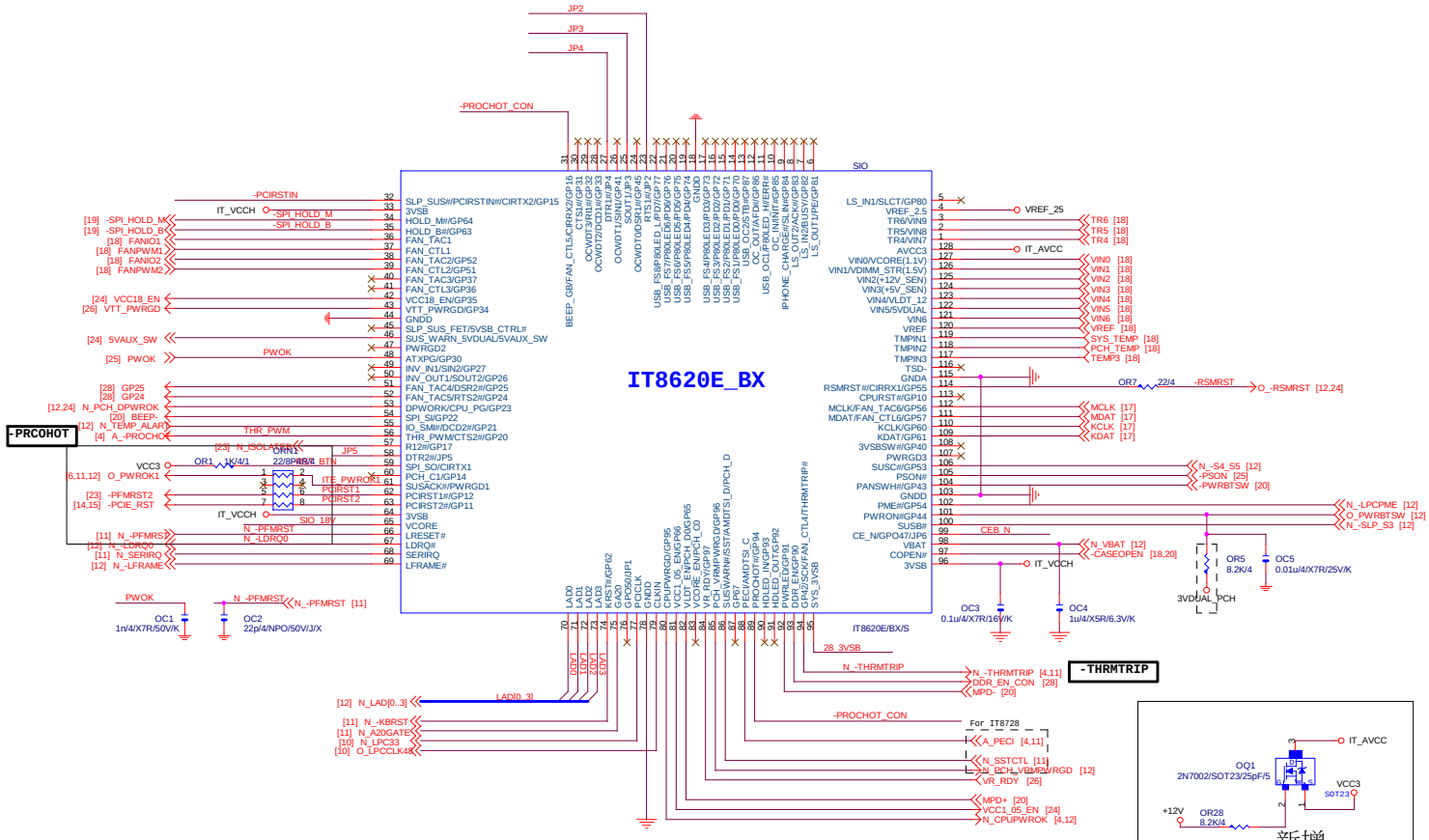
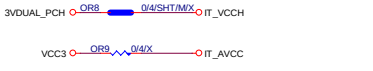
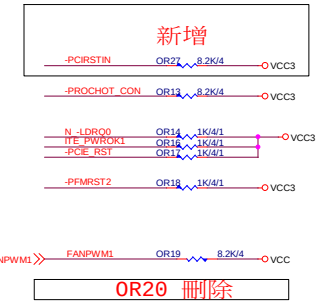
SIO IT8620



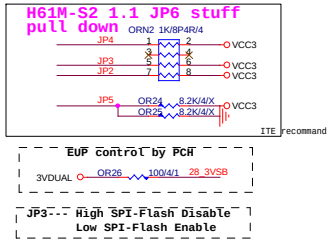
PWR SHT



SIO PU



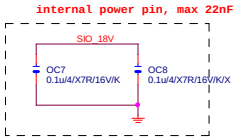
SIO STRAP



Power leakage

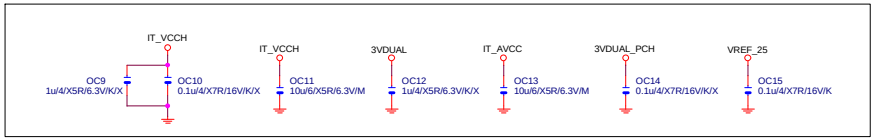
DUAL BIOS OPT STRAP

SIO_18V



MB ID

SIO CAP



未上件

Gigabyte Technology		
Title	PCH GPIO , CTRL , AUDIO	
Size C	Document Number GA-H81M-S1	Rev 2.1
Date: Monday, April 07, 2014	Sheet 16 of 29	

COM

COM RI

KB/MS

KB_MS ESD

KB_MS

MSDATA

MSCLK

KBDATA

KBCLK

MS

KB

KB/MS/6P/PC99/OS/RA/D/2

AGND

FUSEVCC_R

BC8
0.1u/4/X7R/16V/K/X

未上件

ESD18

AZC099-04S/SOT23-6L

USB2.0 PWR

FUSE-0805

5VDUAL

FR1

SPR-P200T/6V/8/S

FUSEVCC_R

UBEC2

100u/D/10V/57

Close to connector

R707
0/6/X

For EMI

RN1
8.2K/8P4R/4

MCLK
MDAT
KDAT
KCLK

FOR鹽化短路

R58 82/4
R59 82/4
R57 82/4
R56 82/4

[16] KCLK
[16] KDAT
[16] MDAT
[16] MCLK

KBCLK
KBDATA
MSDATA
MSCLK

CN1
180p/8P4C/6/NPO/50V/K

AGND1

USB30_20

R_USB30
USB/18P/BU/OS/RA/D/2/1U/SB

USB3.0/2.0

FUSEVCC_USB3_R3

BC5
0.1u/4/X7R/16V/K/X

N_-USBP0
N_+USBP0

BC6
0.1u/4/X7R/16V/K/X

N_-USBP1
N_+USBP1

PCH_USB3_RXN0
PCH_USB3_RXP0

PCH_USB3_RXN1
PCH_USB3_RXP1

UBC9
UBC10

PCH_USB3_TXN0C
PCH_USB3_TXP0C

PCH_USB3_TXN0
PCH_USB3_TXP0

PCH_USB3_TXN1C
PCH_USB3_TXP1C

UBC11
UBC12

PCH_USB3_TXN1
PCH_USB3_TXP1

0.1u/4/X7R/16V/K

删除 F12、UD7

USB30_20 PWR

Polyswitch-1206

5VDUAL

F11

SMD1206P350SLR/6V/S

UEC4

100u/D/10V/57

FUSEVCC_USB3_R3

-USBOC_R0

SOT23

UD5
BAT54A/SOT23/200mA

FUSEVCC_R

FUSEVCC_USB3_R3

UR3
8.2K/4

N_-USBOC_R

N_-USBOC_R [9]

UR4
15K/4/1

USB30_20 ESD PROCTECT

USB3.0 ESD

PCH_USB3_TXN1C
PCH_USB3_TXP1C
PCH_USB3_TXP0C
PCH_USB3_TXN0C

UESD5
AZ1045-04F/MSOP10

PCH_USB3_RXN0
PCH_USB3_RXP0
PCH_USB3_RXP1
PCH_USB3_RXN1

UESD6
AZ1045-04F/MSOP10

USB POWER PROTECT

ESD1

N_-USBP0
N_+USBP0
N_+USBP1
N_-USBP1

FUSEVCC_USB3_R3

AZC099-04S/SOT23-6L

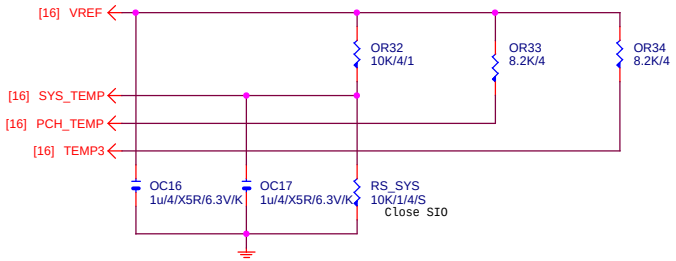
Gigabyte Technology

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

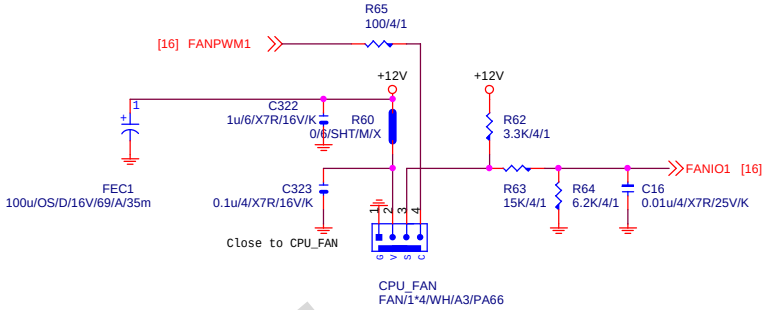
Size: Custom | Document Number: GA-H81M-S1 | Rev: 2.1

Date: Monday, April 07, 2014 | Sheet 17 of 29

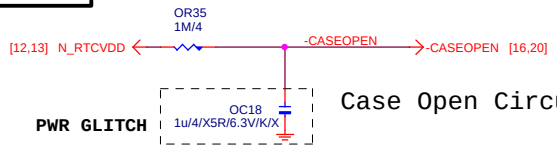
TEMP H/W MONITOR



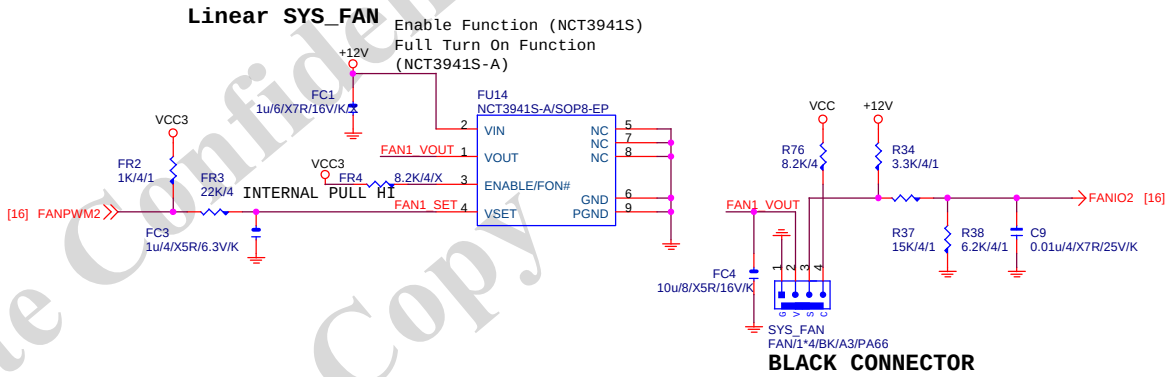
CPU SMART FAN



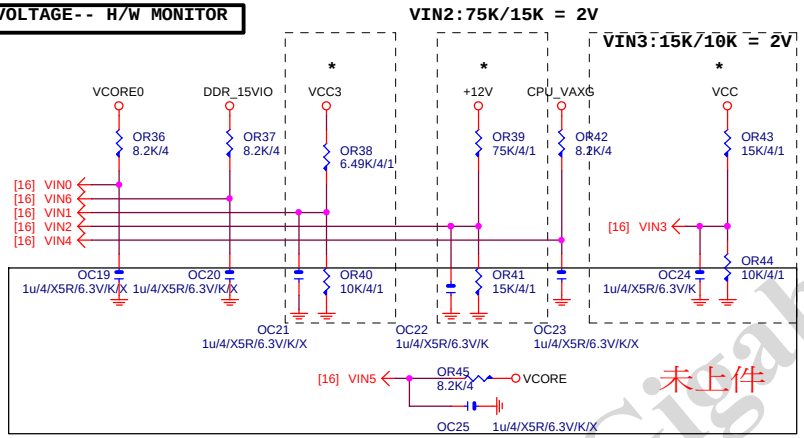
CASE OPEN



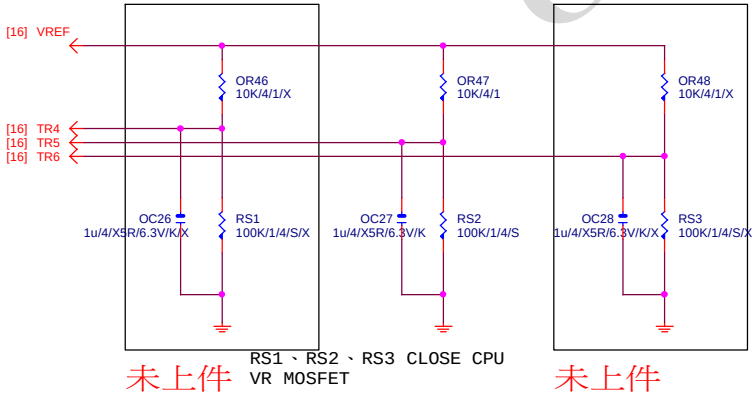
SYS SMART FAN



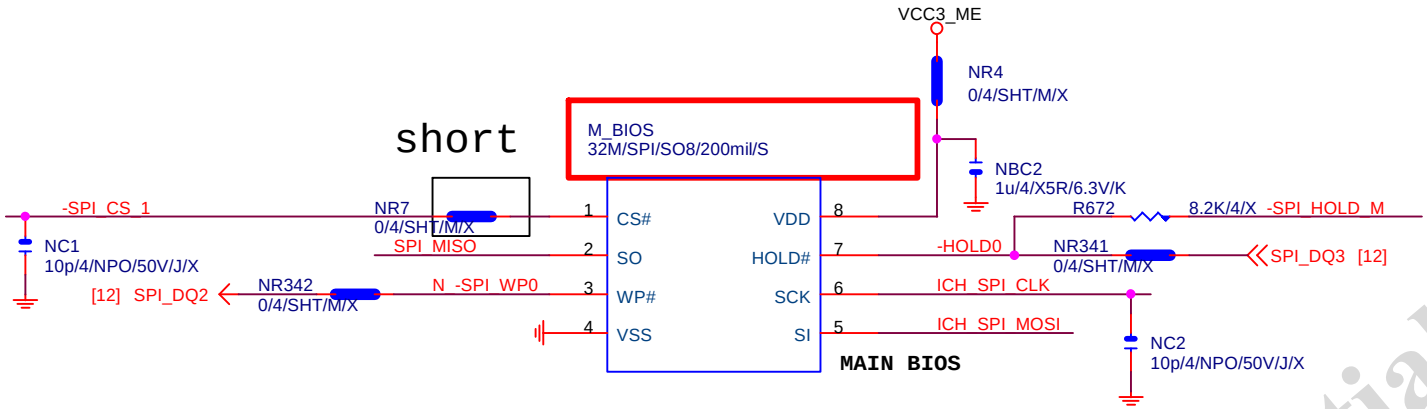
VOLTAGE-- H/W MONITOR

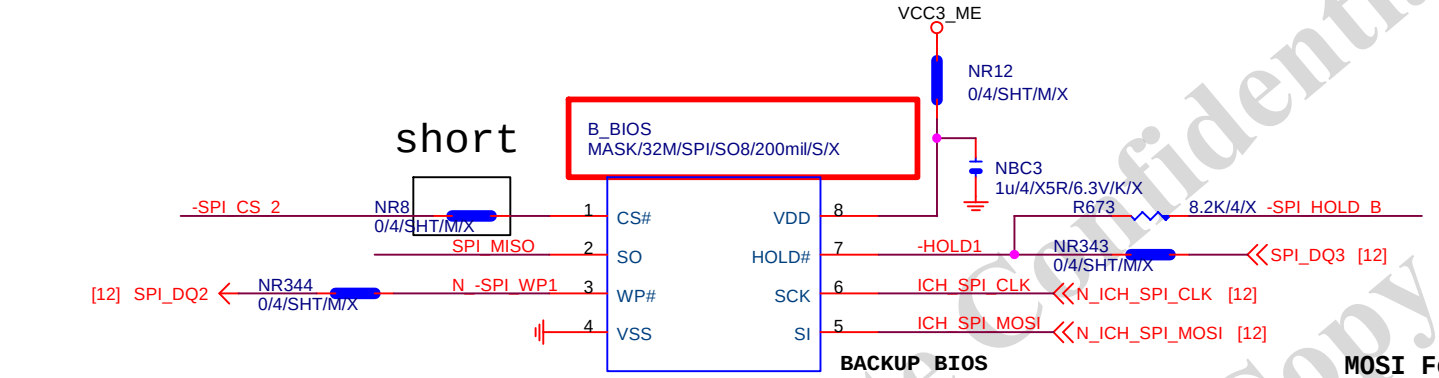


-PROHOT



Gigabyte Technology		
Title: HWM,FAN CTRL,OV		
Size: Custom	Document Number: GA-H81M-S1	Rev: 2.1
Date: Monday, April 07, 2014	Sheet 18 of 29	

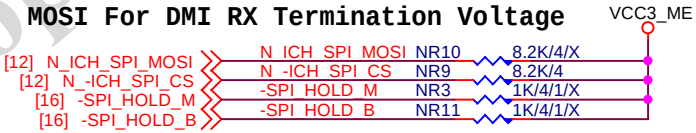


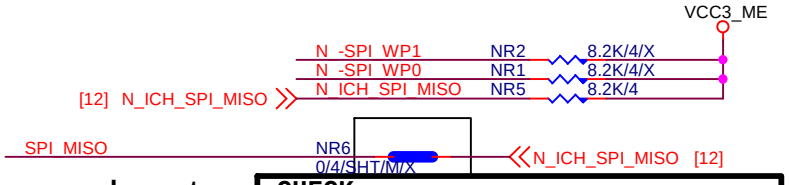


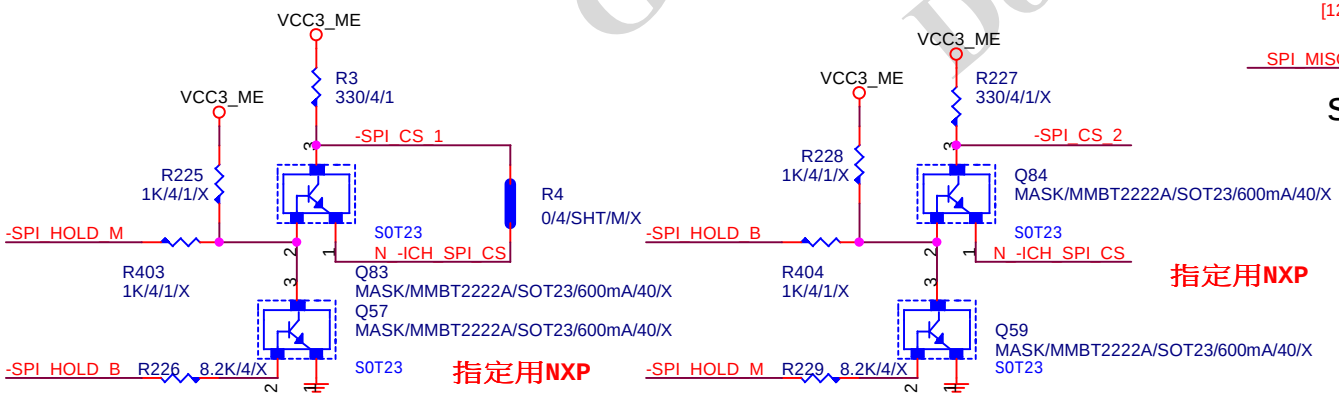
BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

1 means floating
0 means PD 1K

MOSI For DMI RX Termination Voltage







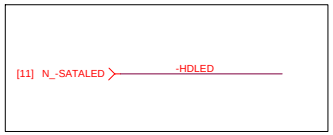
Gigabyte Technology

Title: DUAL BIOS

Size: Custom | Document Number: GA-H81M-S1 | Rev: 2.1

Date: Monday, April 07, 2014 | Sheet 19 of 29

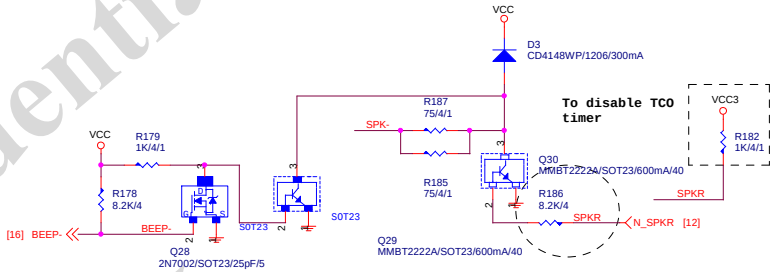
SATA LED



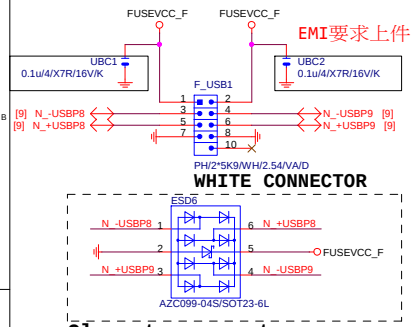
新增

-USBOC_F

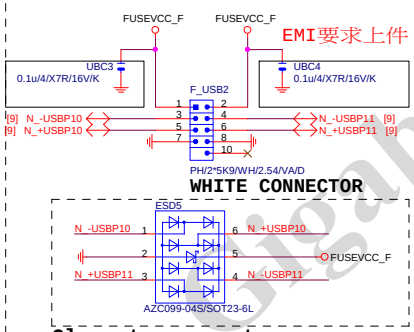
SPKR



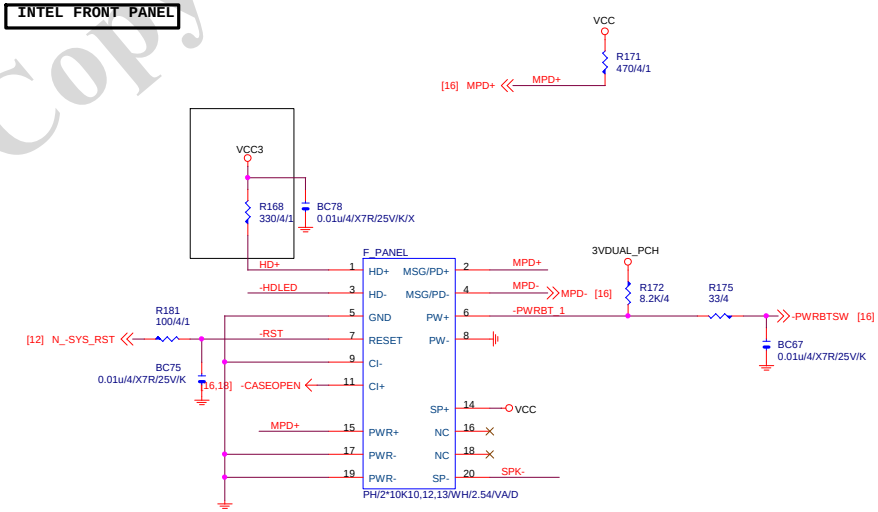
FRONT USB1



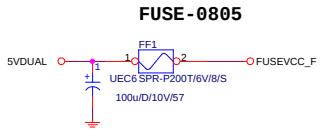
FRONT USB2



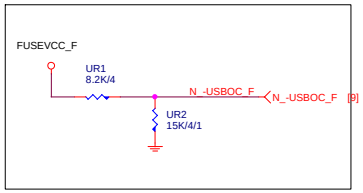
INTEL FRONT PANEL



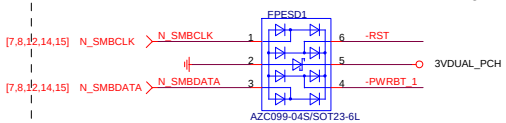
FUSE-0805



F_USB1, F_USB2 4-Port 2.6A



刪UD8，原UR1 5VDUAL改接FUSEVCC_F



Gigabyte Technology

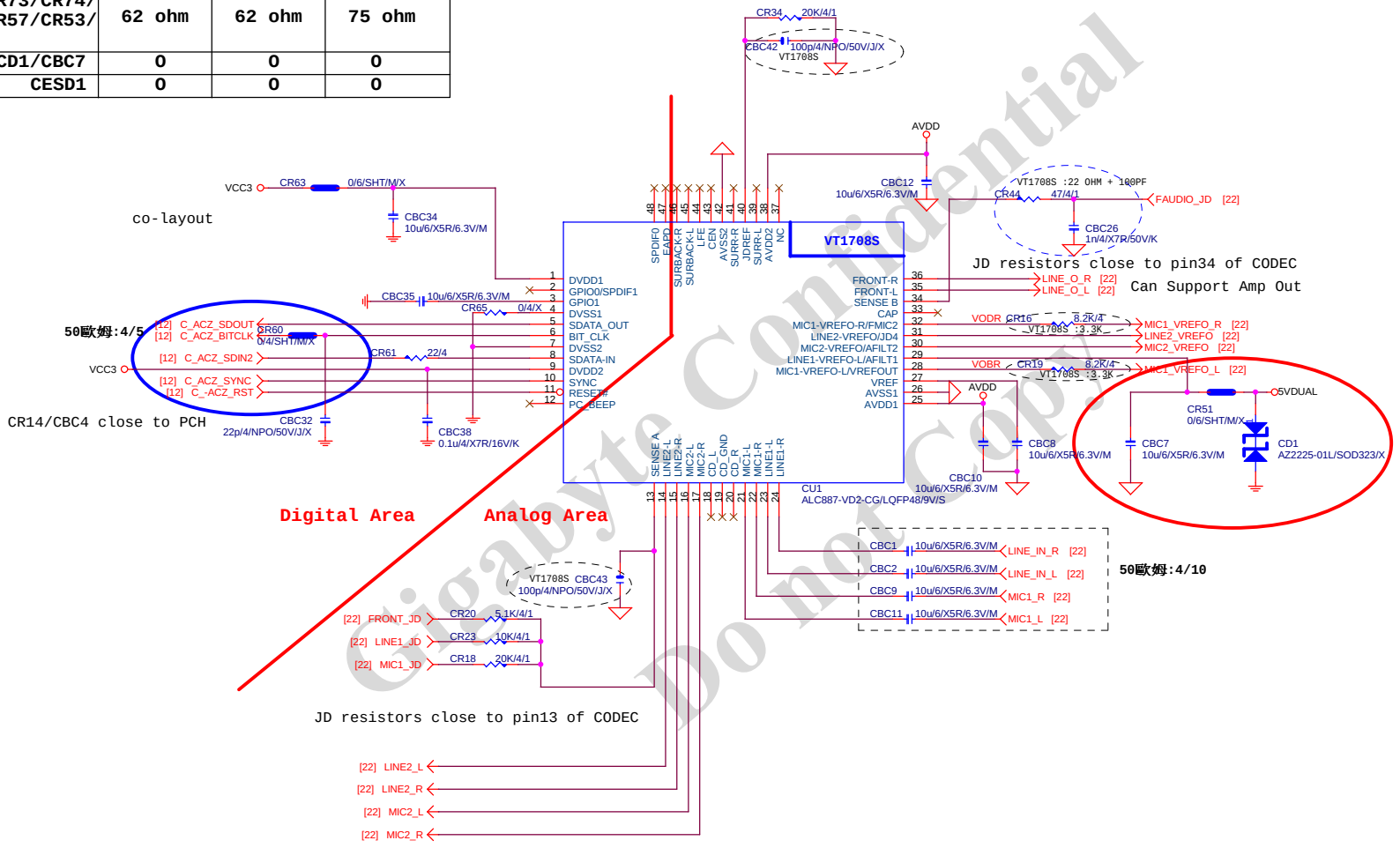
Title: FP,F_USB,USB PWR,SPKR,SATA LED

Size: Custom | Document Number: GA-H81M-S1 | Rev: 2.1

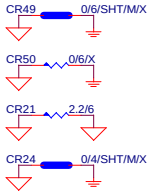
Date: Monday, April 07, 2014 | Sheet 20 of 29

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

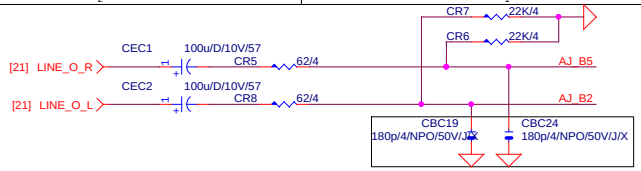
	ALC892	ALC887-VD2	VT1708S-CE
CR44/CBC26	47ohm+1nF	47ohm+1nF	22ohm+100P
CBC42/CBC43	X	X	100P/4
CR6/CR7/CR58/CR54/ CR67/CR68/CR69/CR70	22K/4	22K/4	10K/4/1
CR5/CR8/CR1/CR14/ CR17/CR22/CR73/CR74/ CR13/CR11/CR57/CR53/ CR75/CR76	62 ohm	62 ohm	75 ohm
CR51/CD1/CBC7	0	0	0
CESD1	0	0	0



Gigabyte Technology			
Title: HD AUDIO ALC887B-VD2/VT1708S/VT2021			
Size: Custom	Document Number: GA-H81M-S1		Rev: 2.1
Date: Monday, April 07, 2014	Sheet 21 of 29		

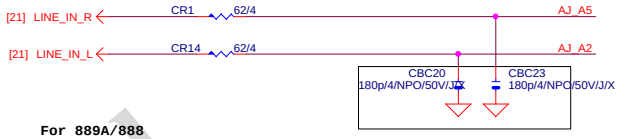


LINE-OUT



Only reserved for ALC888

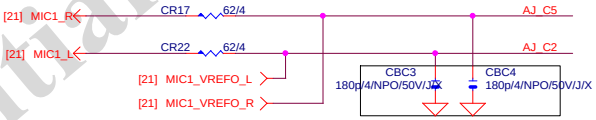
LINE-IN



Verify MIC function in LINE-in

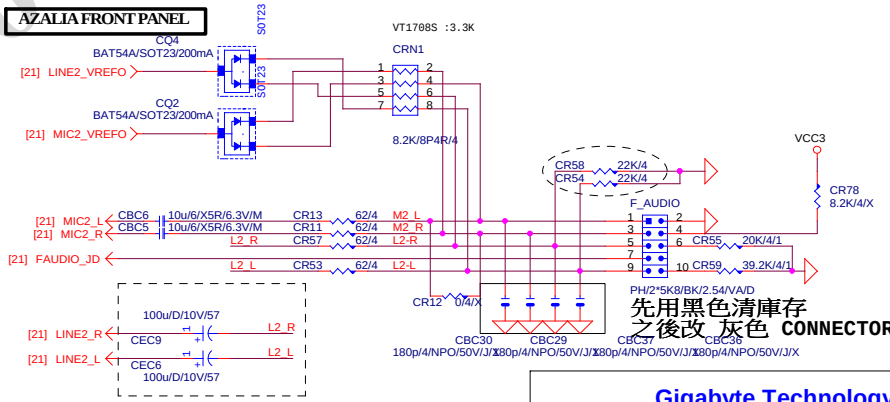
For 889A/888

MIC-IN

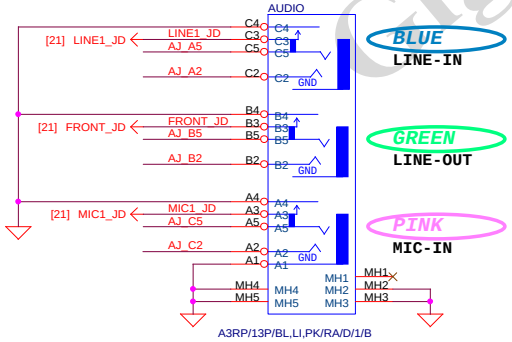


SPDIF_OUT

AZALIA FRONT PANEL

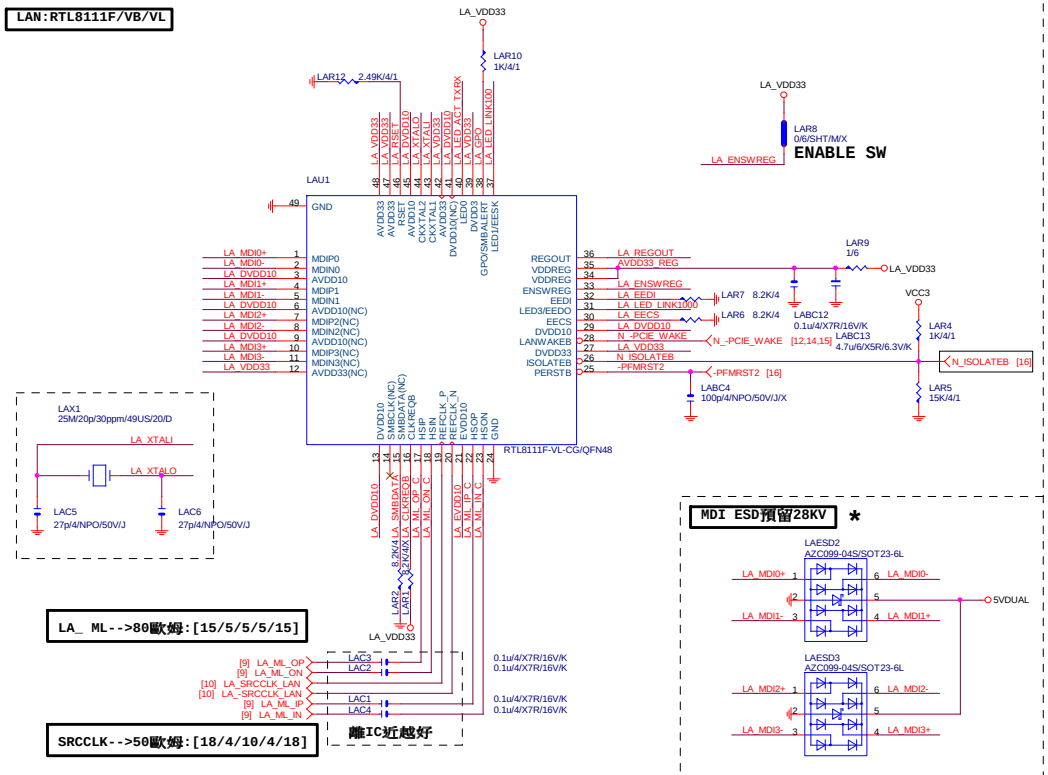


先用黑色清庫存
之後改 灰色 **CONNECTOR**



Gigabyte Technology			
Title: AUDIO JACK			
Size: Custom	Document Number: GA-H81M-S1		Rev: 2.1
Date: Monday, April 07, 2014	Sheet 22 of 29		

LAN:RTL8111F/VB/VL



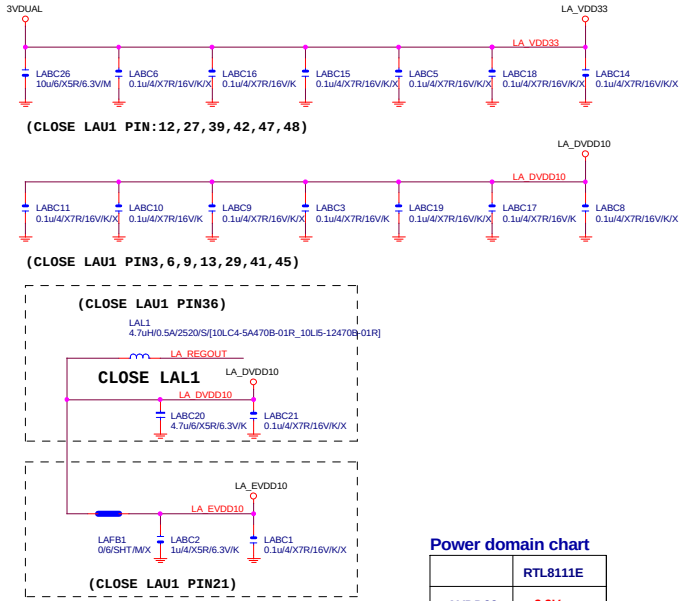
LA_ ML-->80歐姆:[15/5/5/5/15]

SRCCLK-->50歐姆:[18/4/10/4/18]

離IC近越好

MDI ESD預留28KV *

LAN POWER

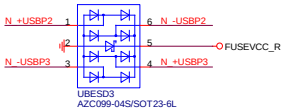


Power domain chart

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

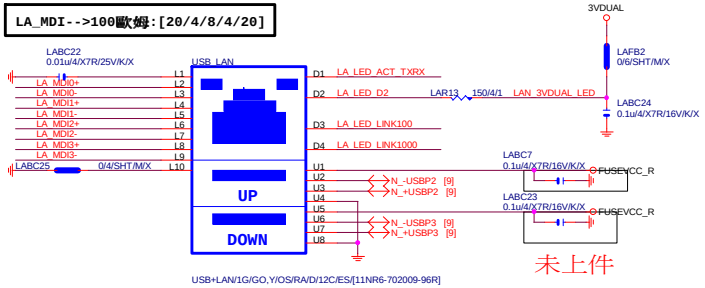
USB_LAN CONNECTOR

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]

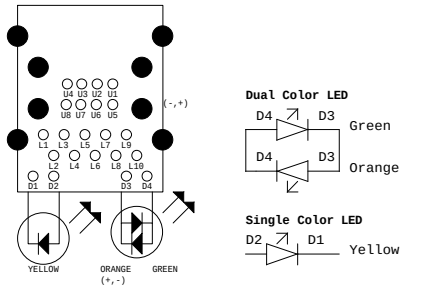
未上件

USB X3 POWER

EMI SHORT PAD

PS:視EMI需求

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



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

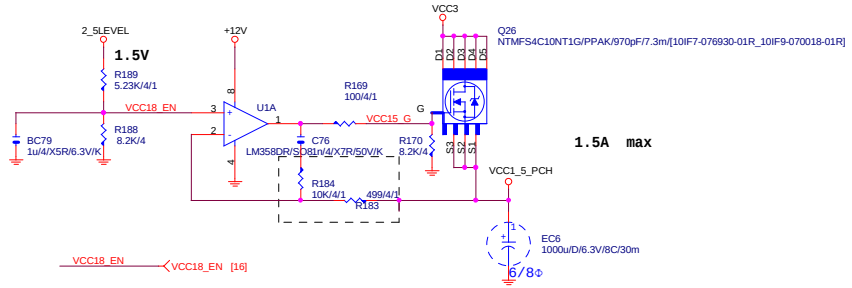
Gigabyte Technology

Title: Realtek RTL8111G

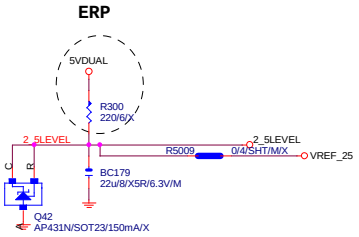
Size: Custom | Document Number: GA-H81M-S1 | Rev: 2.1

Date: Monday, April 07, 2014 | Sheet 23 of 29

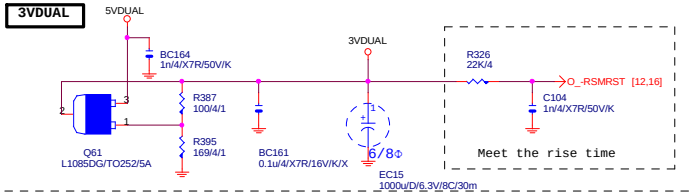
VCC1_8_PCH



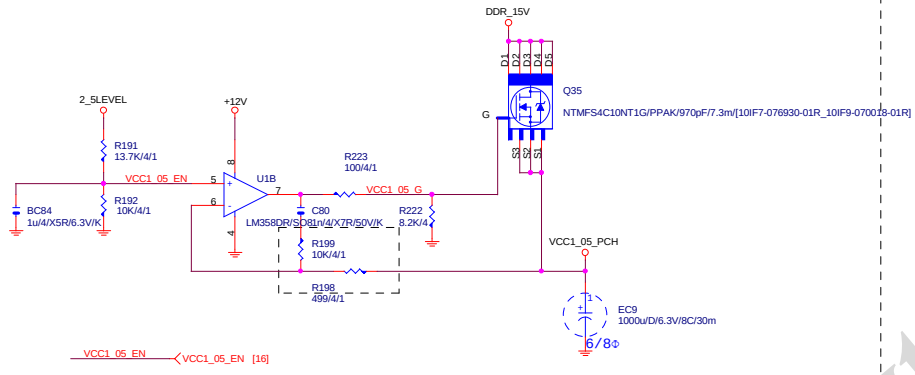
2_5LEVEL

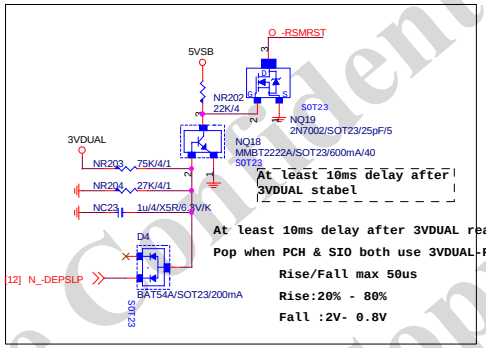


3VDUAL

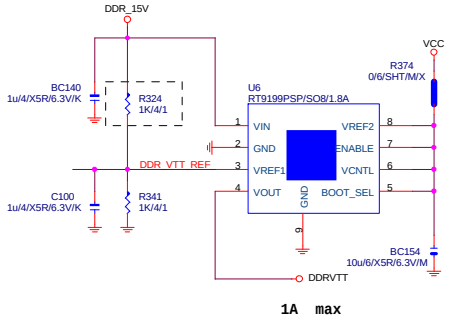


VCC1_05_PCH

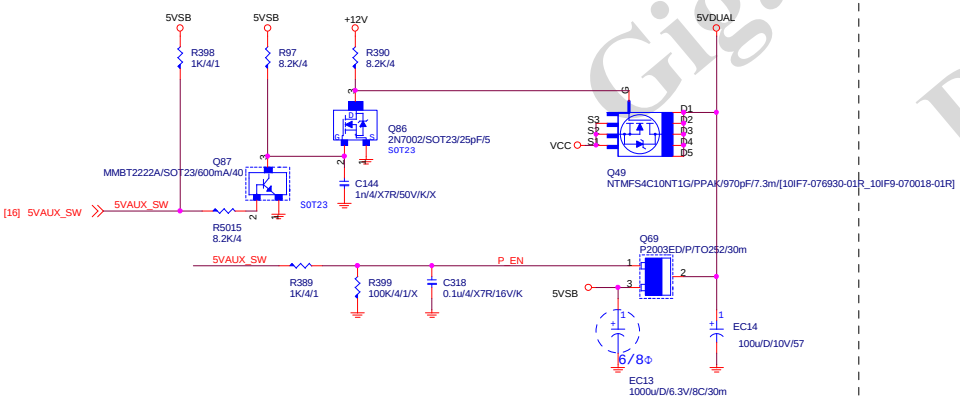




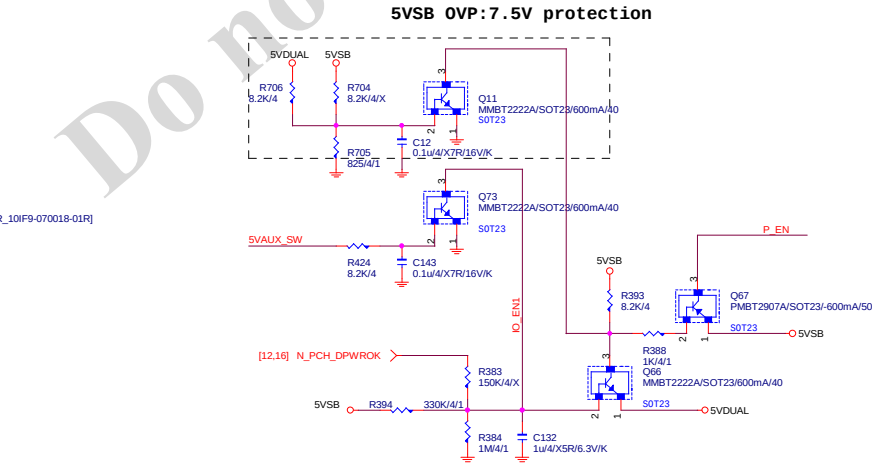
DDRVTT



5VDUAL



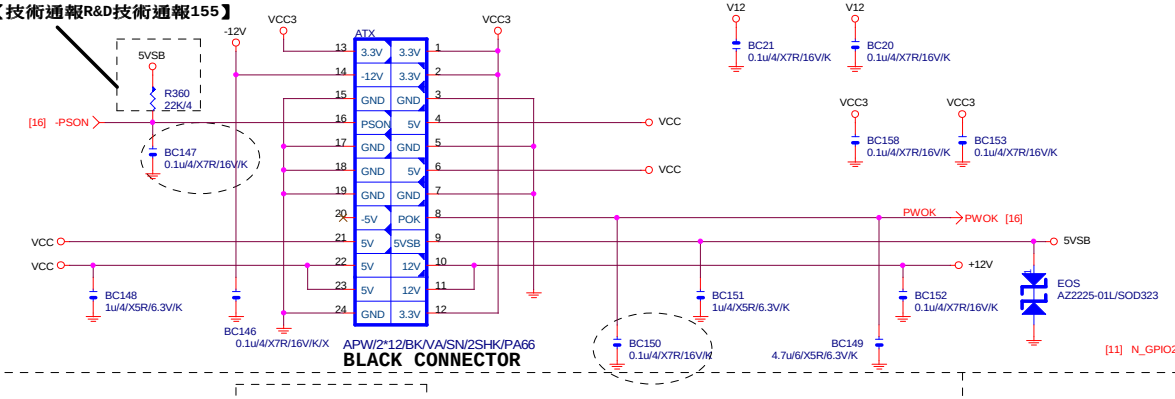
5VDUAL SHORT PROTECT



Title	Gigabyte Technology	
	DISCRETE POWER	
Size: Custom	Document Number: GA-H81M-S1	Rev: 2.1
Date: Monday, April 07, 2014	Sheet 24 of 29	

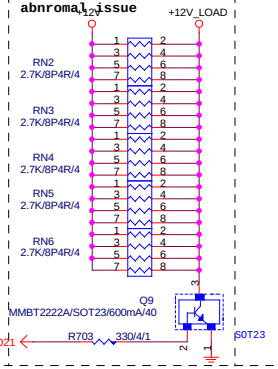
ATXX24 POWER CONNECTOR

【技術通報R&D技術通報155】

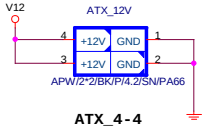


【技術通報R&D技術通報153】

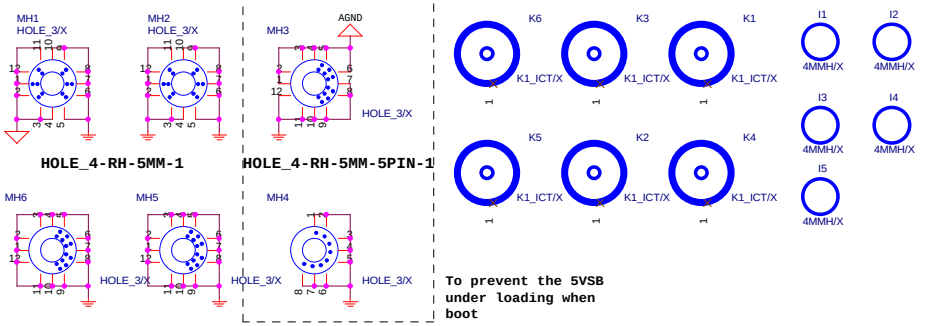
To fix 12V light load abnroma1 issue



ATXX4 POWER CONNECTOR



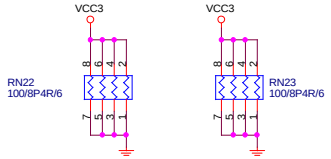
ATX_4-4



To prevent the 5VSB under loading when boot

PWOK PATCH

【技術通報R&D技術通報154】



FIX PWR MINMUN LOAD

Gigabyte Technology

Title: ATX CONNECTOR

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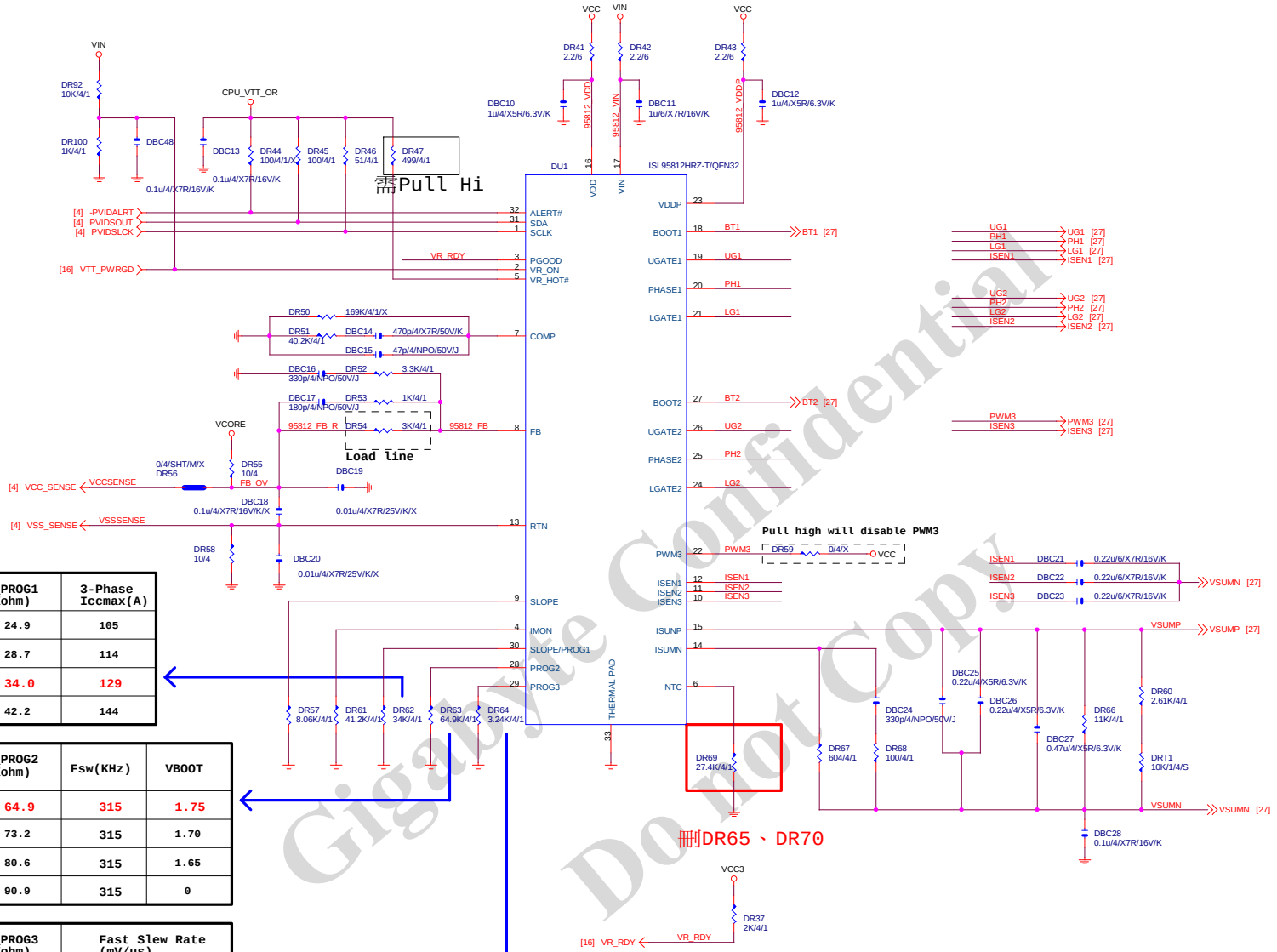

R_PROG1 (Kohm)	3-Phase Iccmax(A)
24.9	105
28.7	114
34.0	129
42.2	144

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

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

Gigabyte Technology			
Title	CPU CORE VR-1		
Size: Custom	Document Number: GA-H81M-S1		Rev: 2.1
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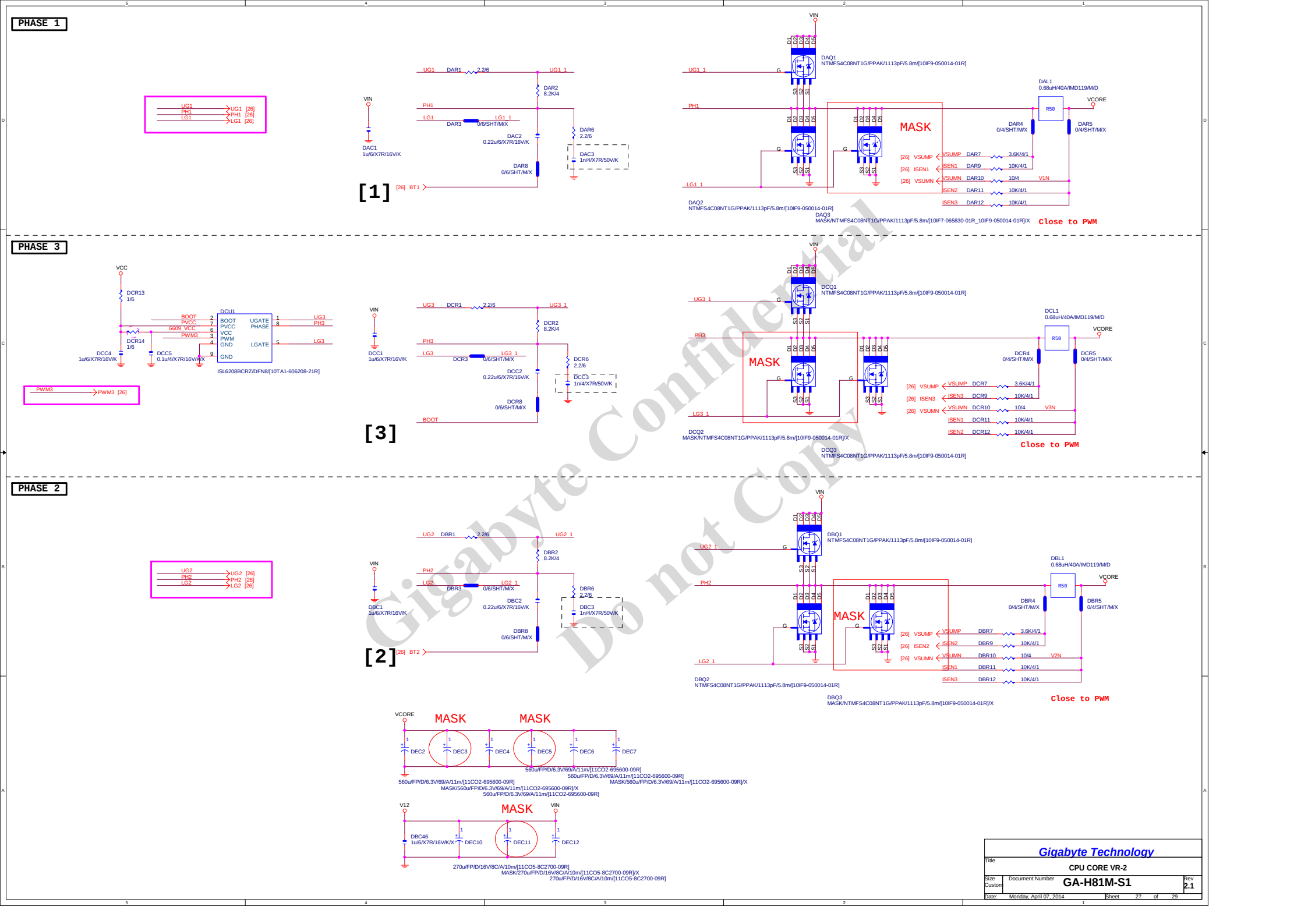

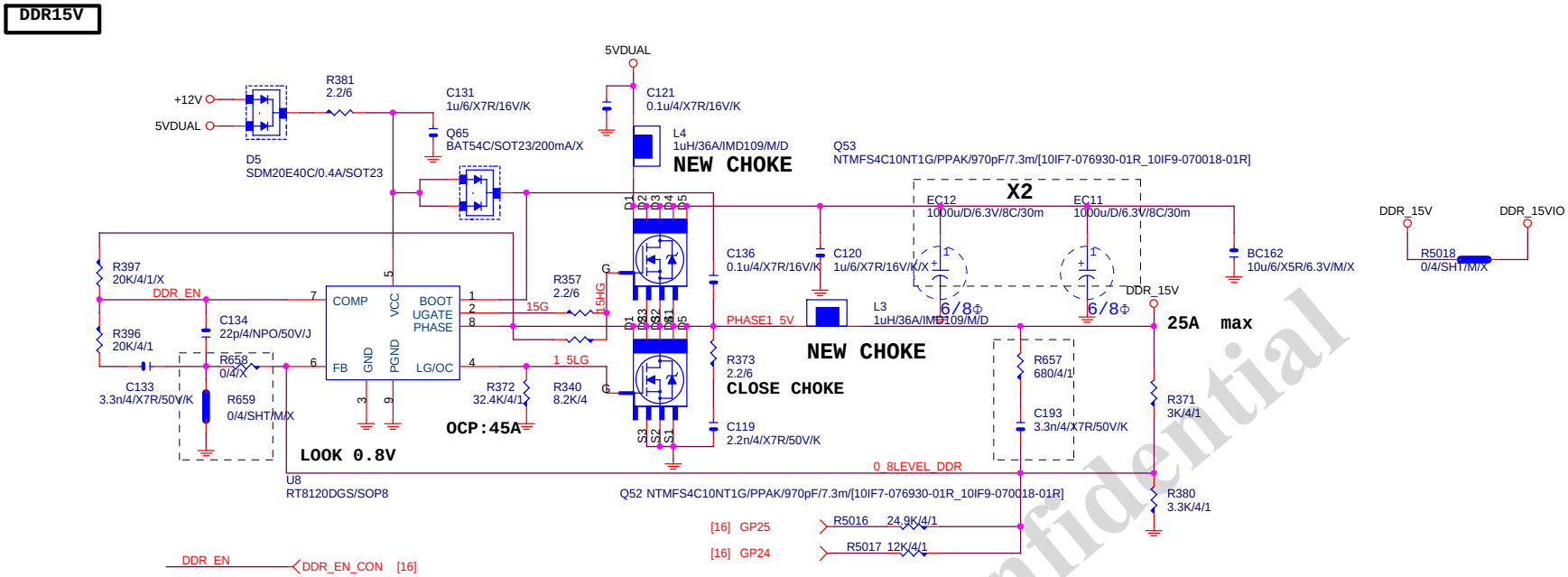

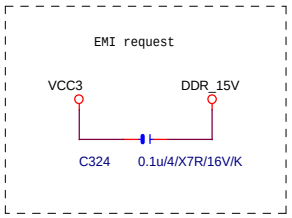

VIN=5V,VOUT=1.5V,IOUT=25A,PHASE=1
IRMS=11.45A

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-S1	Rev: 2.1
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