Model Name: GA-H81M-DS2V WP

Revision 2.0

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

Layout: 俊平 1992
RDPM:Anne 1941

Gigabyte Technology
Title: Cover Sheet
Size: Custom | Document Number: GA-H81M-DS2V WP | Rev: 2.0
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Model Name: GA-H81M-DS2V WP

Component value change history

2013/05/17

Data	Change Item	Reason
2013/05/15 9MH81MD2V-00-01	New BOM	
2013/03/17 9MH81MD2V-00-20A	H81M-DS2V_R20_0314B.BOM_Compare.xls	
2013/04/08 9MH81MD2V-00-20B	*** 更換 *** 新舊線路中,元件值不同;共 1 個********** DR61,'105K/4/1變更為'41.2K/4/110RC4-004122-22R,10RC4-004122-26R, *** 增加 *** 只在新線路中,不在舊線路中;共 3 個********** OR47,'10K/4/1 OC27,'1u/4/X5R/6.3V/K RS2,'100K/1/4/S *** 刪除 *** 只在舊線路中,不在新線路中;共 3 個********** OR48,'10K/4/1 OC28,1u/4/X5R/6.3V/K RS3,'100K/1/4/S	

Circuit or PCB layout change

DATE	Change Item	Reason
2013/04/22	1.由B85M-HD3 Rev 1.0來修改 2.SIO change to IT8620 3.PWM change to ISL95812+6208 4.Delete 2 port SATA3 5.Add VL805 6.Delete HDMI 7.COM port change to rear 8.Delete PCI IT8892E 9.Fan control change to NCT3941S 10.SIO 統一命名0開頭	Rev 0.1
2013/05/17	H81M-D2V_R01_0514A-BOM.DSN 1. 由H81M-D2V Rev 0.1 來修改 2. COM port change to pin header 3. VGA connect 改為不架高 4. Add PCIEX1 slot 3 5. U1 改LM358	Rev 0.1
2013/05/17	1.由H81M-D3V-JP Rev 1.0改文字面	Rev 1.0
2013/09/13	1.修改PCH 25MHz走線,跟旁邊所有走線40 mils以上 2.R60 change to 0603 3.PPAK footprint change to Q_TDSON8-GDS-T 4.1206 fuse change to POLYSWITCH-1206-1 5.MR17 change to 0603 6.NCT3941S footprint 改為SOP8-NCT3941S 7.PCIEX16 footprint change to PCIESLOT-164DN-Q-1	Rev 1.01
2013/12/19	1. 修改DDR VDDSPD為0805 Fuse	Rev 1.02
2014/02/20	1.由H81M-DS2V Rev 1.02來修改 2.修改IT8620 Power leakage circuit 3.Remove USB Power disable circuit 4.Mask PPAK DAQ2,DCQ3,DBQ2 5.Remove DVI level shift (Copy B85M-D2V) 6.PCB size 244x170 change to 226x170 7.H81 統一排阻修改 8. Add NC60 for ESD	Rev 2.0

Gigabyte Technology

Title: BOM & PCB MODIFY HISTORY

Size: Custom | Document Number: GA-H81M-DS2V WP | Rev: 2.0

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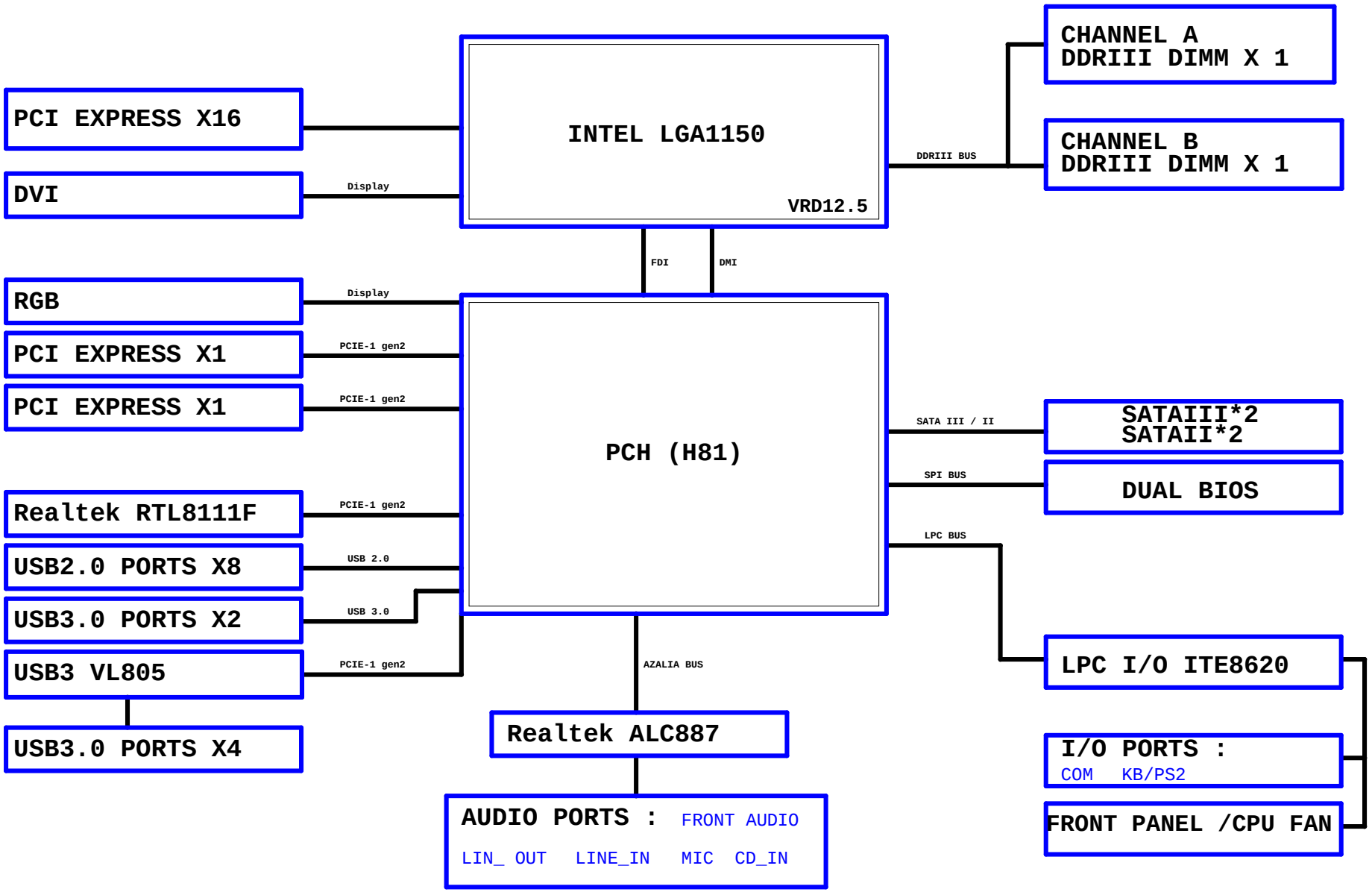
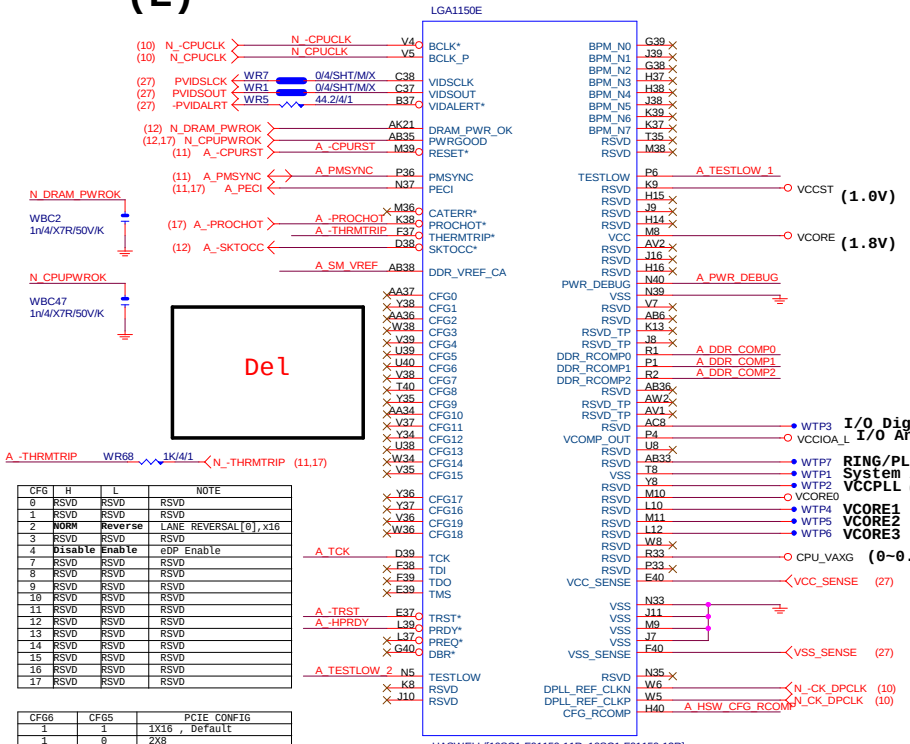
BLOCK DIAGRAM



Gigabyte Technology		
Title: BLOCK DIAGRAM		
Size: C	Document Number: GA-H81M-DS2V WP	Rev: 2.0
Date: Wednesday, February 11, 2015	Sheet 3 of 33	

LGA1150 (E)

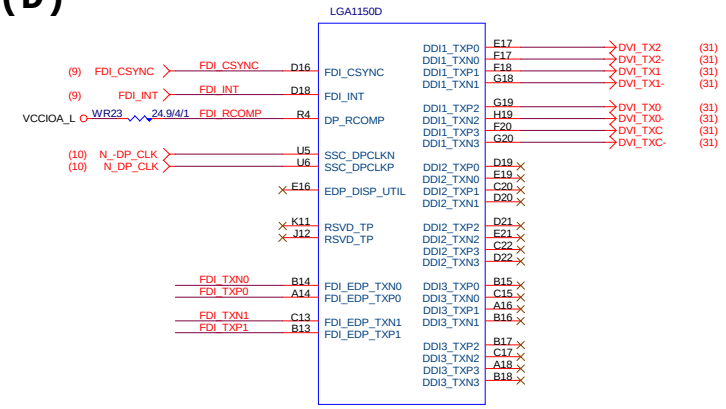


CFG	H	L	NOTE
0	RSVD	RSVD	RSVD
1	RSVD	RSVD	RSVD
2	**NORM**	**Reverse**	LANE REVERSAL[0],x16
3	RSVD	RSVD	RSVD
4	**Disable**	**Enable**	eDP Enable
7	RSVD	RSVD	RSVD
8	RSVD	RSVD	RSVD
9	RSVD	RSVD	RSVD
10	RSVD	RSVD	RSVD
11	RSVD	RSVD	RSVD
12	RSVD	RSVD	RSVD
13	RSVD	RSVD	RSVD
14	RSVD	RSVD	RSVD
15	RSVD	RSVD	RSVD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

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

CFG 0-17 all internal PULL-UP

LGA1150 (D)

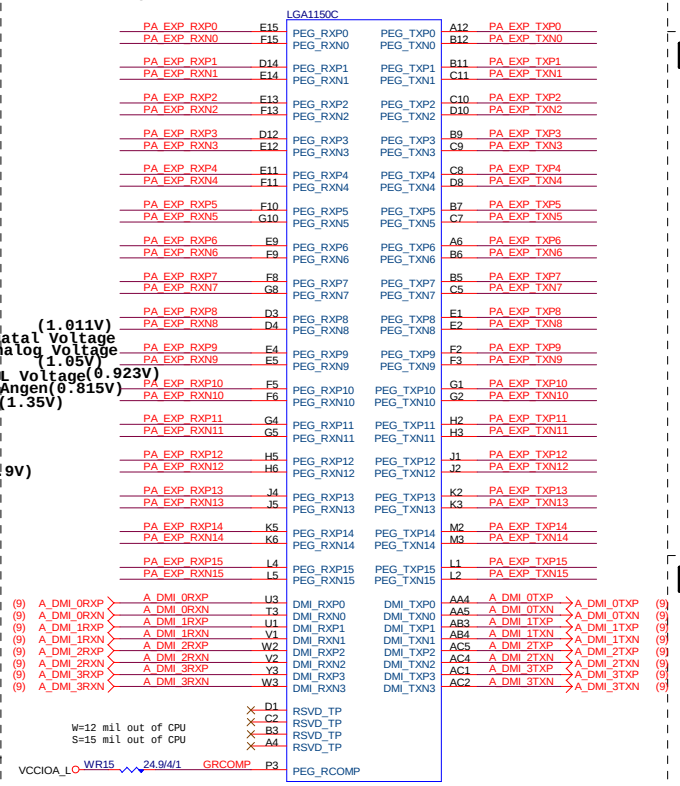


FDI:12/4/5/4/12(breakout min 6/4/4/4/6)
Impedance=85 +- 17.5%

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

LGA1155 (C)

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

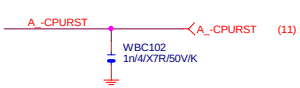


DMI:12/4/4/4/12(breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%

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

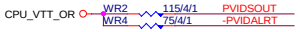
-CPURST

1.1V分壓

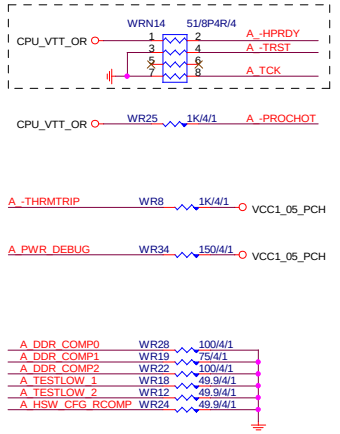


For IT8620 Ctrl

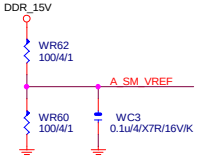
CPU SVID



CPU PU/PD



SM REF



Gigabyte Technology

Title	CPU LGA1150-A	
Size: Custom	Document Number: GA-H81M-DS2V WP	Rev: 2.0
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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	MDA9
MAAA9	AT19	DDR0_MA9	DDR0_DQ9	AH39	MDA13
MAAA10	AW11	DDR0_MA10	DDR0_DQ10	AK38	MDA10
MAAA11	AV19	DDR0_MA11	DDR0_DQ11	AK39	MDA11
MAAA12	AU19	DDR0_MA12	DDR0_DQ12	AH37	MDA12
MAAA13	AY10	DDR0_MA13	DDR0_DQ13	AH38	MDA8
MAAA14	AT20	DDR0_MA14	DDR0_DQ14	AK37	MDA14
MAAA15	AU21	DDR0_MA15	DDR0_DQ15	AK40	MDA15
			DDR0_DQ16	AM40	MDA17
MODT_A0	AW10	DDR0_ODT0	DDR0_DQ17	AM39	MDA21
MODT_A1	AY8	DDR0_ODT1	DDR0_DQ18	AP38	MDA18
	AW9	DDR0_ODT2	DDR0_DQ19	AP39	MDA19
	AU8	DDR0_ODT3	DDR0_DQ20	AM37	MDA20
			DDR0_DQ21	AM38	MDA16
	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
(7) SBAA0	SBAA0	AV12	DDR0_BA0	AY6	MDA33
(7) SBAA1	SBAA1	AY11	DDR0_BA1	AU6	MDA37
(7) SBAA2	SBAA2	AT21	DDR0_BA2	AV4	MDA34
			DDR0_DQ32	AU4	MDA35
(7) CKEA0	CKEA0	AV22	DDR0_CKE0	AW6	MDA36
(7) CKEA1	CKEA1	AT23	DDR0_CKE1	AV6	MDA32
		AU22	DDR0_CKE2	AW4	MDA38
		AU23	DDR0_CKE3	AY4	MDA39
			DDR0_DQ33	AR1	MDA41
			DDR0_DQ34	AR4	MDA45
(7) -CSA0	-CSA0	AU14	DDR0_CS_N0	AN3	MDA42
(7) -CSA1	-CSA1	AV9	DDR0_CS_N1	AN4	MDA43
		AU10	DDR0_CS_N2	AR2	MDA44
		AW8	DDR0_CS_N3	AR3	MDA40
			DDR0_DQ35	AN2	MDA46
(7) DCLKA0	DCLKA0	AY15	DDR0_CLK_P0	AN1	MDA47
(7) -DCLKA0	-DCLKA0	AY16	DDR0_CLK_N0	AL1	MDA49
(7) DCLKA1	DCLKA1	AW15	DDR0_CLK_P1	AL4	MDA53
(7) -DCLKA1	-DCLKA1	AV15	DDR0_CLK_N1	AJ3	MDA50
		AY14	DDR0_CLK_P2	AJ4	MDA51
		AW14	DDR0_CLK_N2	AL2	MDA52
		AW13	DDR0_CLK_P3	AL3	MDA48
		AY13	DDR0_CLK_N3	AJ2	MDA54
			DDR0_DQ36	AJ1	MDA55
	AW12	RSVD	DDR0_DQ37	AG1	MDA57
			DDR0_DQ38	AG4	MDA61
			DDR0_DQ39	AE3	MDA58
			DDR0_DQ40	AE4	MDA59
			DDR0_DQ41	AG2	MDA60
			DDR0_DQ42	AG3	MDA56
			DDR0_DQ43	AE2	MDA62
(7) -SRASA	-SRASA	AU12	DDR0_RAS*	AE1	MDA63
			DDR0_DQ44	AE39	DQSA0
(7) -SWEA	-SWEA	AU11	DDR0_WE*	AJ39	DQSA1
		AV20	RSVD	AN39	DQSA2
			DDR0_DQS_P0	AV36	DQSA3
		AW27	RSVD	AV5	DQSA4
			DDR0_DQS_P1	AP3	DQSA5
(7) -SCASA	-SCASA	AU9	DDR0_CAS*	AK3	DQSA6
			DDR0_DQS_P2	AE3	DQSA7
			DDR0_DQS_P3	AV32	
(7,8) -DDR3_RST	WR61 0/4/SHT/MIX	AK22	DDR_RESET*	AE38	-DQSA0
			DDR0_DQS_P4	AJ38	-DQSA1
	WC4 0.1u/4/X7R/16V/K/X			AN38	-DQSA2
			DDR0_DQS_P5	AU36	-DQSA3
			DDR0_DQS_P6	AW5	-DQSA4
			DDR0_DQS_P7	AP2	-DQSA5
			DDR0_DQS_P8	AK2	-DQSA6
			DDR0_DQS_N0	AF2	-DQSA7
			DDR0_DQS_N1	AU32	
			DDR0_DQS_N2		
			DDR0_DQS_N3		
			DDR0_DQS_N4		
			DDR0_DQS_N5		
			DDR0_DQS_N6		
			DDR0_DQS_N7		
			DDR0_DQS_N8		

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

LGA1150 (B)

LGA1150B

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

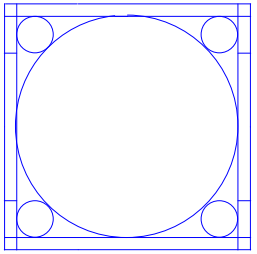
VREF_DQA
VREF_DQB
WBC34 0.1u/4/X7R/16V/K/X
WBC33 0.1u/4/X7R/16V/K/X
Place in CPU bottom side

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]

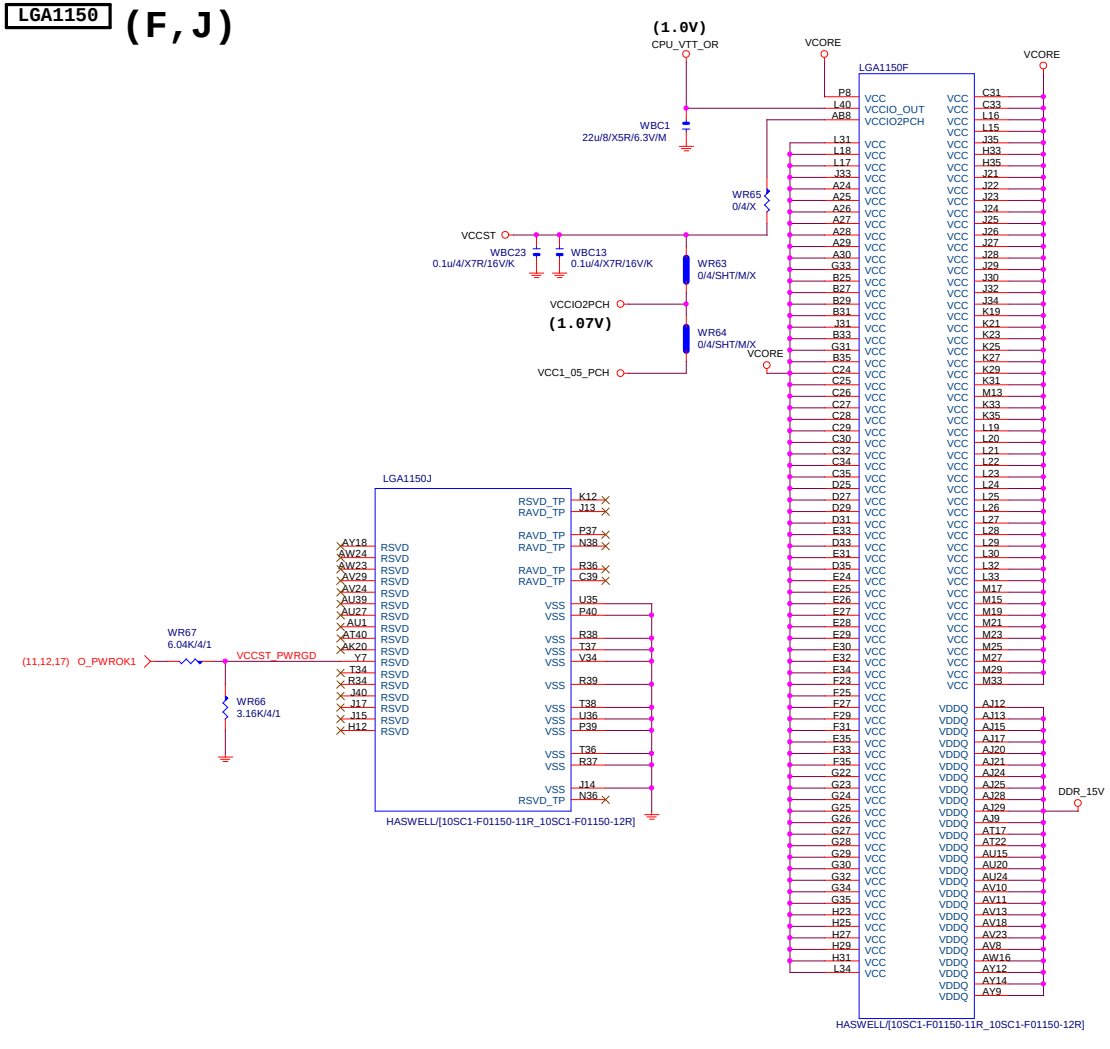
(7) DQSA[0..7] <> DQSA[0..7]
(7) -DQSA[0..7] <> -DQSA[0..7]

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

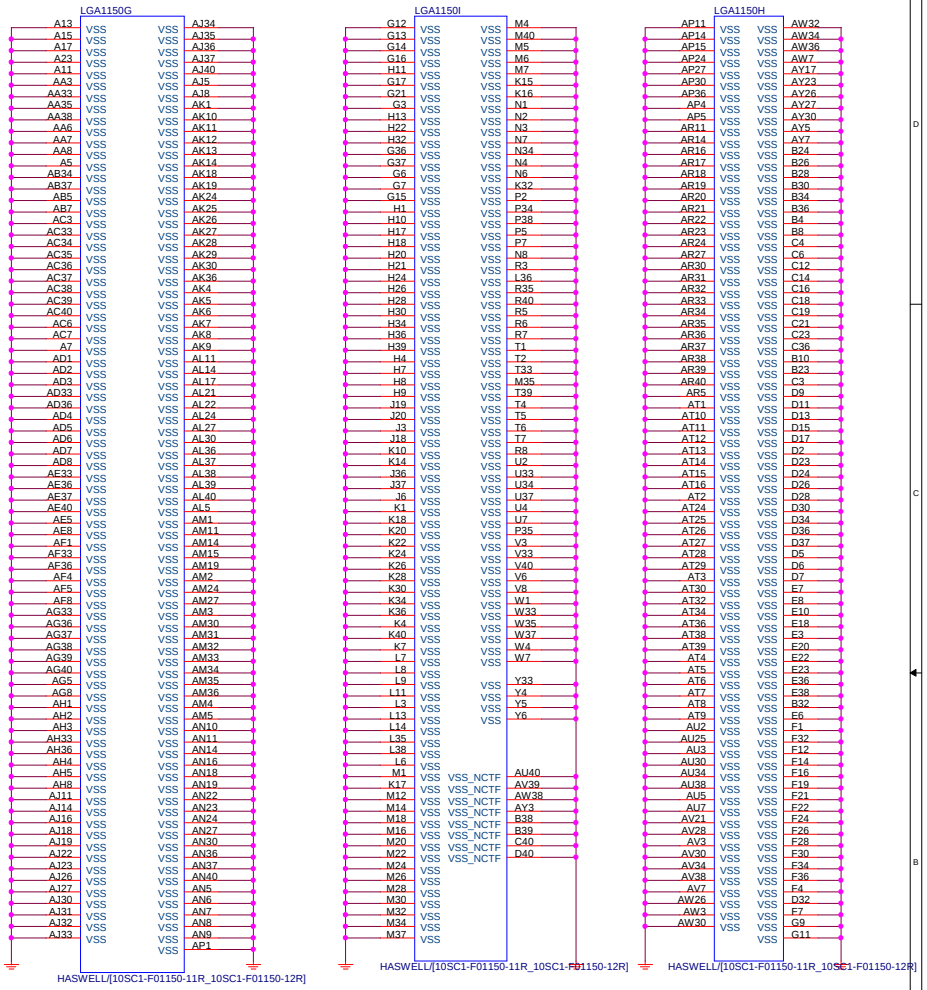
(8) DQSB[0..7] <> DQSB[0..7]
(8) -DQSB[0..7] <> -DQSB[0..7]

Gigabyte Technology			
Title: CPU LGA1150-B			
Size: Custom	Document Number: GA-H81M-DS2V WP		Rev: 2.0
Date: Wednesday, February 11, 2015	Sheet 5 of 33		

LGA1150 (F,J)

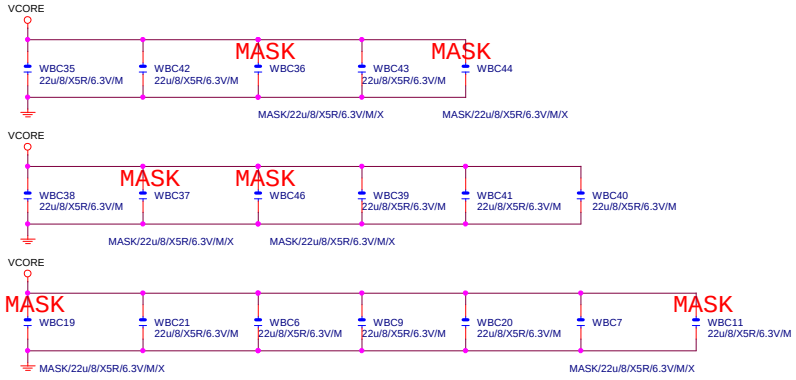


LGA1155 (G,H,I)



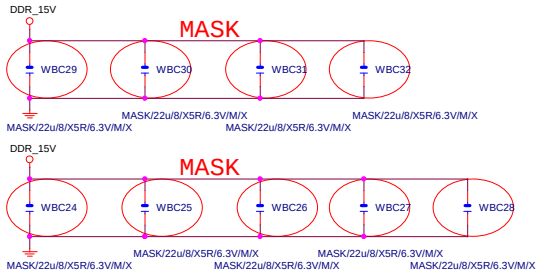
VCore CAP

(X18)

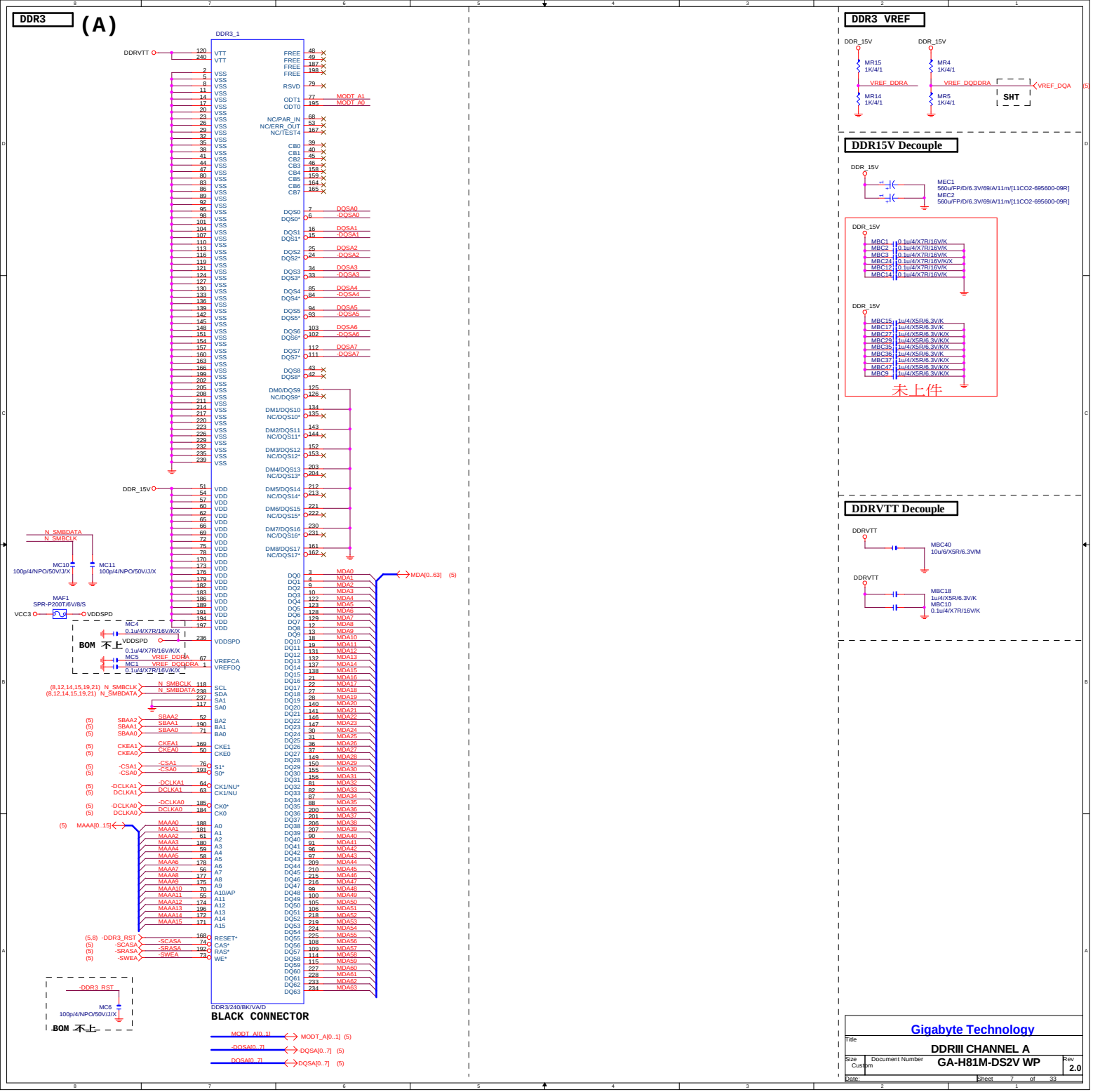


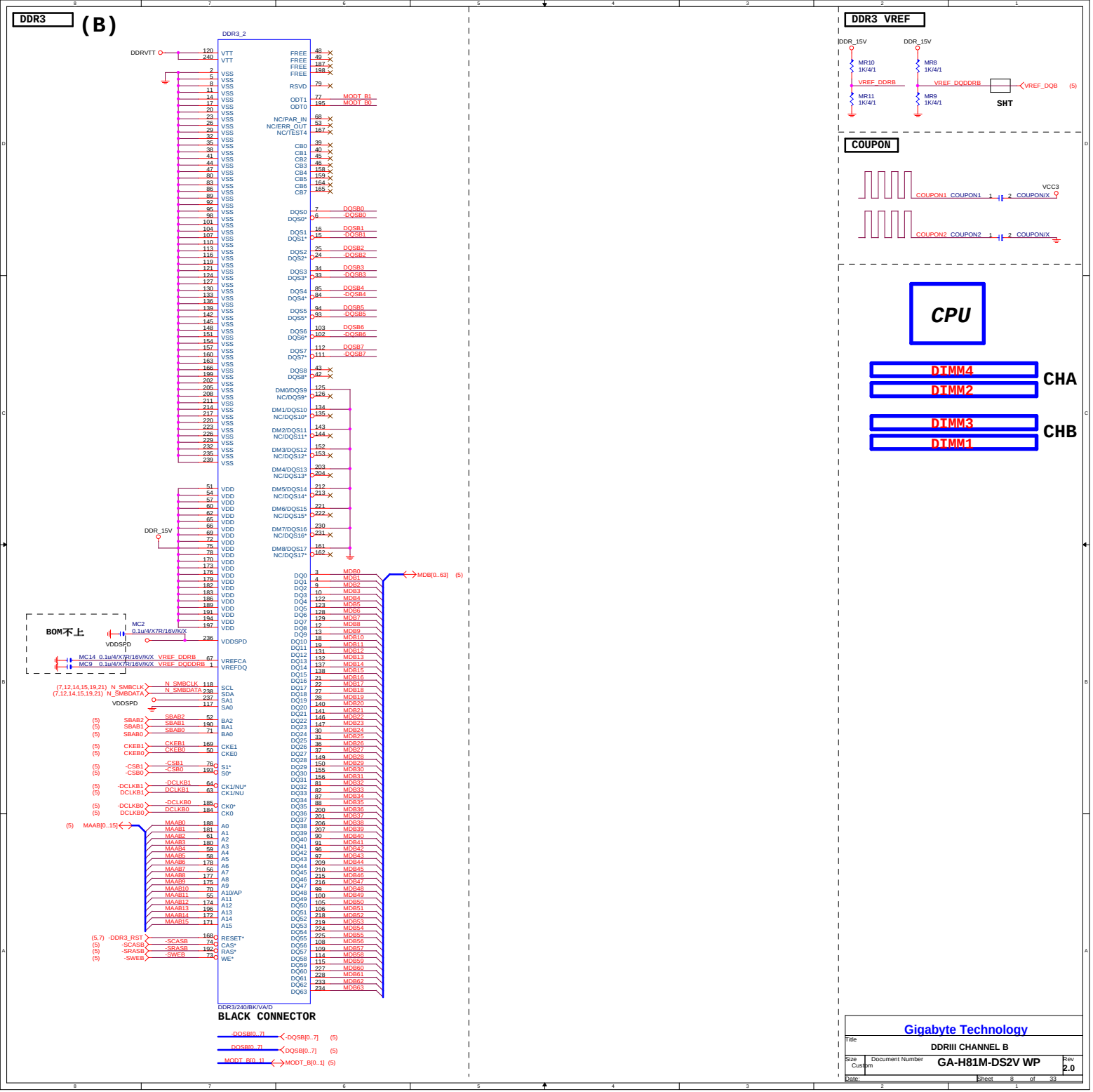
DDR CAP

(X9)



Gigabyte Technology		
Title: CPU LGA1150-C		
Size: Custom	Document Number: GA-H81M-DS2V WP	Rev: 2.0
Date: Wednesday, February 11, 2015	Sheet 6 of 33	


DDR3
(A)
DDR3_1
DDRVTT
DDR_15V
VDDSPD
VREFCA
VREFDQ
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
MC4
0.1u/4/X7R/16V/K/X
BOM 不上
MC5
VREF_DDRA
MC1
VREF_DQDDRA
0.1u/4/X7R/16V/K/X
MDA[0..63]
MAAA[0..15]
-DDR3_RST
MC6
100p/4/NPO/50V/J/X
BOM 不上
DDR3/240/BK/VA/D
BLACK CONNECTOR
MODT_A[0..1]
-DQSA[0..7]
DQSA[0..7]
DDR3 VREF
DDR_15V
MR15
1K/4/1
MR4
1K/4/1
VREF_DDRA
VREF_DQDDRA
MR14
1K/4/1
MR5
1K/4/1
SHT
VREF_DQA
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
MBC2
MBC3
MBC24
MBC12
MBC14
0.1u/4/X7R/16V/K
MBC15
MBC17
MBC27
MBC29
MBC35
MBC36
MBC37
MBC47
MBC9
1u/4/X5R/6.3V/K
1u/4/X5R/6.3V/K/X
未上件
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
DDRIII CHANNEL_A
GA-H81M-DS2V WP
2.0
Sheet 7 of 33



Gigabyte Technology

Title	DDRIII CHANNEL B		
Size: Custom	Document Number: GA-H81M-DS2V WP		Rev: 2.0
Date:	Sheet 8 of 33		

PCH (B)

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

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

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

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

A_DMI_0TXN L24, A_DMI_0TXP K24, A_DMI_0RXN C20, A_DMI_0RXP B20, A_DMI_1TXN G24, A_DMI_1TXP H24, A_DMI_1RXN D21, A_DMI_1RXP B21, A_DMI_2TXN F26, A_DMI_2TXP G26, A_DMI_2RXN B22, A_DMI_2RXP C22, A_DMI_3TXN K26, A_DMI_3TXP L26, A_DMI_3RXN A24, A_DMI_3RXP B24

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

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

CLKIN_DMI_N
CLKIN_DMI_P — (10) CK_-SRCCLK_PCH — CK_-SRCCLK_PCH G22, (10) CK_SRCCLK_PCH — CK_SRCCLK_PCH F22

USB

USBN_0 AV10 N_-USBP0 → N_-USBP0 (24)
USBP_0 AU10 N_+USBP0 → N_+USBP0 (24)
USBN_1 AV11 N_-USBP1 → N_-USBP1 (24)
USBP_1 AW11 N_+USBP1 → N_+USBP1 (24)
USBN_2 AN14 N_-USBP2 → N_-USBP2 (18)
USBP_2 AP14 N_+USBP2 → N_+USBP2 (18)
USBN_3 AJ16 N_-USBP3 → N_-USBP3 (18)
USBP_3 AK16 N_+USBP3 → N_+USBP3 (18)
USBN_4 AU15
USBP_4 AV15
USBN_5 AU12
USBP_5 AT12
USBN_6 AV14
USBP_6 AW14
USBN_7 AU17
USBP_7 AT17

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

USBN_8 AW16 N_-USBP8 → N_-USBP8 (21)
USBP_8 AV16 N_+USBP8 → N_+USBP8 (21)
USBN_9 AN16 N_-USBP9 → N_-USBP9 (21)
USBP_9 AP16 N_+USBP9 → N_+USBP9 (21)
USBN_10 AJ18 N_-USBP10 → N_-USBP10 (21)
USBP_10 AK18 N_+USBP10 → N_+USBP10 (21)
USBN_11 AP18 N_-USBP11 → N_-USBP11 (21)
USBP_11 AN18 N_+USBP11 → N_+USBP11 (21)
USBN_12 AW18
USBP_12 AV18
USBN_13 AP20
USBP_13 AN20

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

PCIE Only

PCIE_PERN_1_USB3_RXN_2 L14, PCIE_PERP_1_USB3_RXP_2 K14, PCIE_PETN_1_USB3_TXN_2 B12, PCIE_PETP_1_USB3_TXP_2 B11, PCIE_PERN_2_USB3_RXN_3 F14, PCIE_PERP_2_USB3_RXP_3 G14, PCIE_PETN_2_USB3_TXN_3 D11, PCIE_PETP_2_USB3_TXP_3 C11

8111G

(24) LA_ML_IN → PCIE_PERN_3 H11
(24) LA_ML_IP → PCIE_PERP_3 B9
(24) LA_ML_ON → PCIE_PETN_3 A9
(24) LA_ML_OP → PCIE_PETP_3 J11

VL805

PCIE_PERN_4 L11, PCIE_PERP_4 B8, PCIE_PETN_4 C8, PCIE_PETP_4 G9

PCIEx1

(15) PI_PCIEX1_IN → PCIE_PERN_5 F9
(15) PI_PCIEX1_IP → PCIE_PERP_5 B7
(15) PI_PCIEX1_ON → PCIE_PETN_5 A7
(15) PI_PCIEX1_OP → PCIE_PETP_5 E7
(15) PJ_PCIEX1_IN → PCIE_PERN_6 H7
(15) PJ_PCIEX1_IP → PCIE_PERP_6 E1
(15) PJ_PCIEX1_ON → PCIE_PETN_6 D2
(15) PJ_PCIEX1_OP → PCIE_PETP_6 K6

N/A

PCIE_PERN_7 K8, PCIE_PERP_7 G3, PCIE_PETN_7 G5, PCIE_PETP_7 J2, PCIE_PERN_8 J3, PCIE_PERP_8 H2, PCIE_PETP_8 H1

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

OC0B_GP59 AE40
OC1B_GP40 AF37 → N_-USBOC_R (18)
OC2B_GP41 AD39
OC3B_GP42 AD40
OC4B_GP43 AE39 → N_-USBOC_F (21)
OC5B_GP9 AC41
OC6B_GP10 AE40
OC7B_GP14 AG40 N_GPIO14

USBRBIASB AV20 N_USBRBIAS NR47 22.6/4/1
USBRBIAS AU20

CLKIN_DOT96N AP11 CK_-DOTCLK
CLKIN_DOT96P AM11 CK_DOTCLK

NR130 8.2K/4 — N_GPIO14 — 3VDUAL

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

H81/S

PCH (F)

PCHF

(24) PCH_USB3_RXN0 F20 USB3_RXN_0 — FDILINK FDI_RXN_0 N1 FDI_TXN0
(24) PCH_USB3_RXP0 G20 USB3_RXP_0 FDI_RXP_0 N2 FDI_TXP0
(24) PCH_USB3_TXN0 B18 USB3_TXN_0 FDI_RXN_1 P2 FDI_TXN1
(24) PCH_USB3_TXP0 C18 USB3_TXP_0 FDI_RXP_1 P3 FDI_TXP1

(24) PCH_USB3_RXN1 G18 USB3_RXN_1
(24) PCH_USB3_RXP1 H18 USB3_RXP_1 FDI_CSYNC L2 FDI_CSYNC → FDI_CSYNC (4)
(24) PCH_USB3_TXN1 B15 USB3_TXN_1
(24) PCH_USB3_TXP1 B16 USB3_TXP_1 FDI_INT L3 FDI_INT → FDI_INT (4)

USB3_RXN_4 K20
USB3_RXP_4 L20
USB3_TXN_4 D15
USB3_TXP_4 C15 FDI_RCOMP K2 NR29 7.5K/4/1 → VCC1_5_PCH

N/A

USB3_RXN_5 L18
USB3_RXP_5 K18
USB3_TXN_5 B14
USB3_TXP_5 A14

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

TACH6_GP70
TACH7_GP71

未上件

H81/S

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

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

PCH CLK PD

Mount for integrated clock Generation Mode

(10) N_PCHCLK14 — N_PCHCLK14 — NRN16 8.2K/8P4R/4
CK_DOTCLK
CK_-DOTCLK

NR225 short to GND in non graphic SKU

PCH (J)

PCHJ

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

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

VSS AC31
VSS AF3
VSS AV21

H81/S

PCH H/S

LOW COST ICH7 HEATSINK

SB_HEATSIN

GRAY HS

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

USB TABLE

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

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

Gigabyte Technology

Title: PCH FDI,DMI,USB ,PCIE,NVRAM
Size: Custom | Document Number: GA-H81M-DS2V WP | Rev: 2.0
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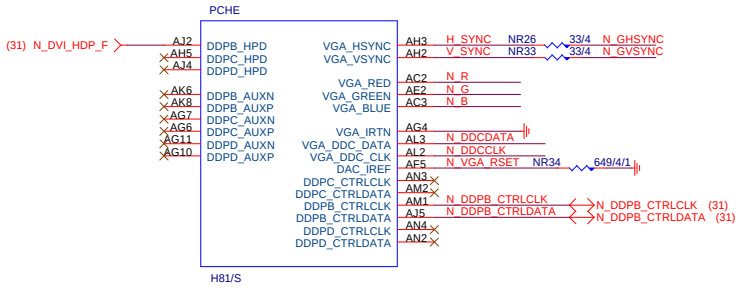
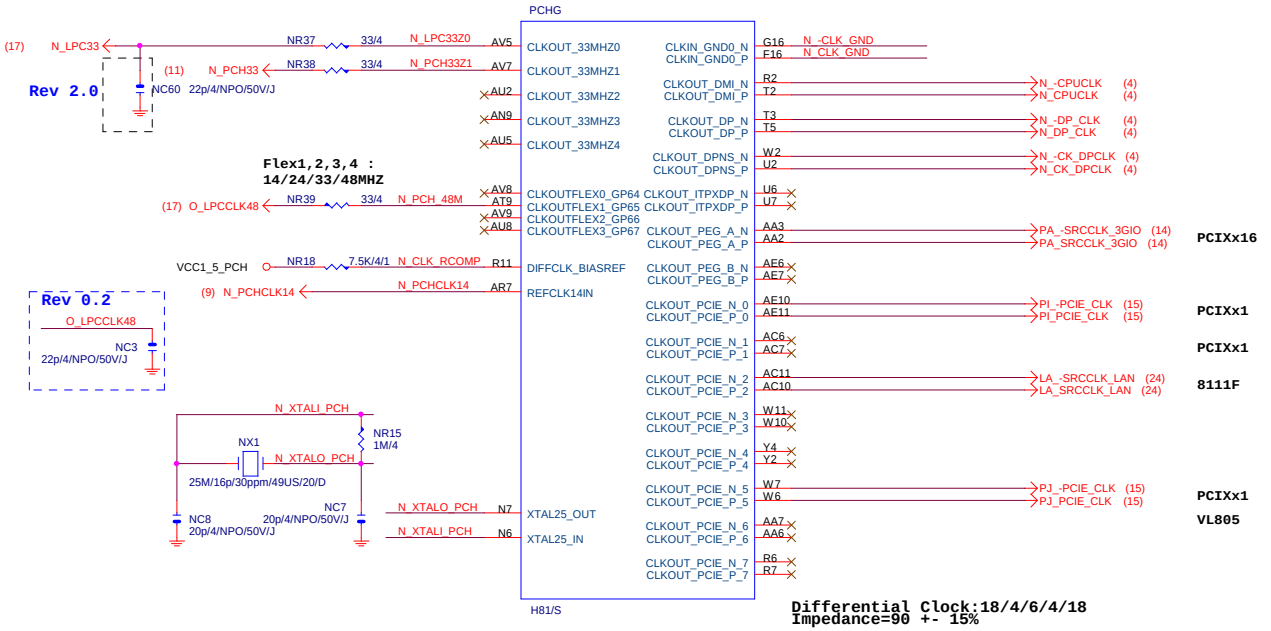
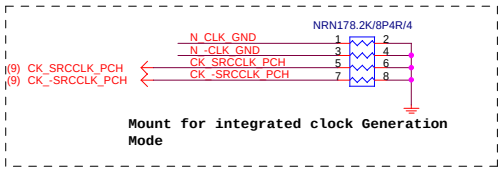
PCH (E)



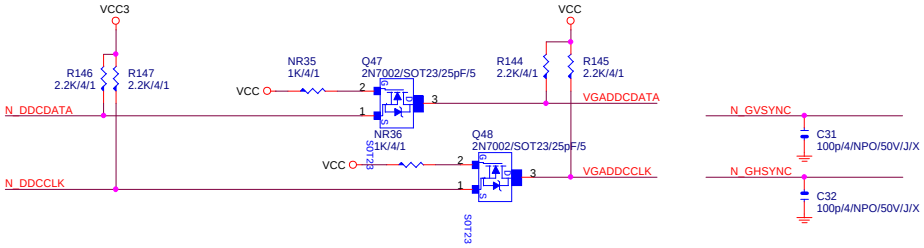
PCH (G)



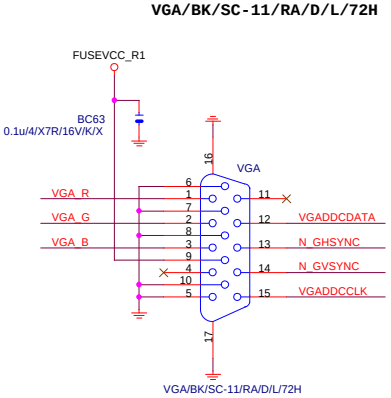
PCH CLK PD



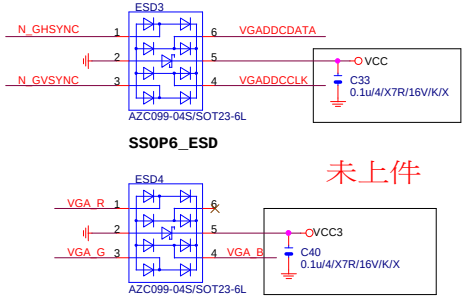
VGA DDC



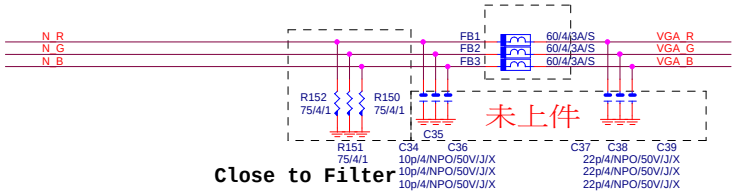
VGA CONNECTOR



VGA ESD



VGA DDC



Gigabyte Technology		
Title	PCH DISPLAY ,CLK BUFFER	
Size: Custom	Document Number: GA-H81M-DS2V WP	Rev: 2.0
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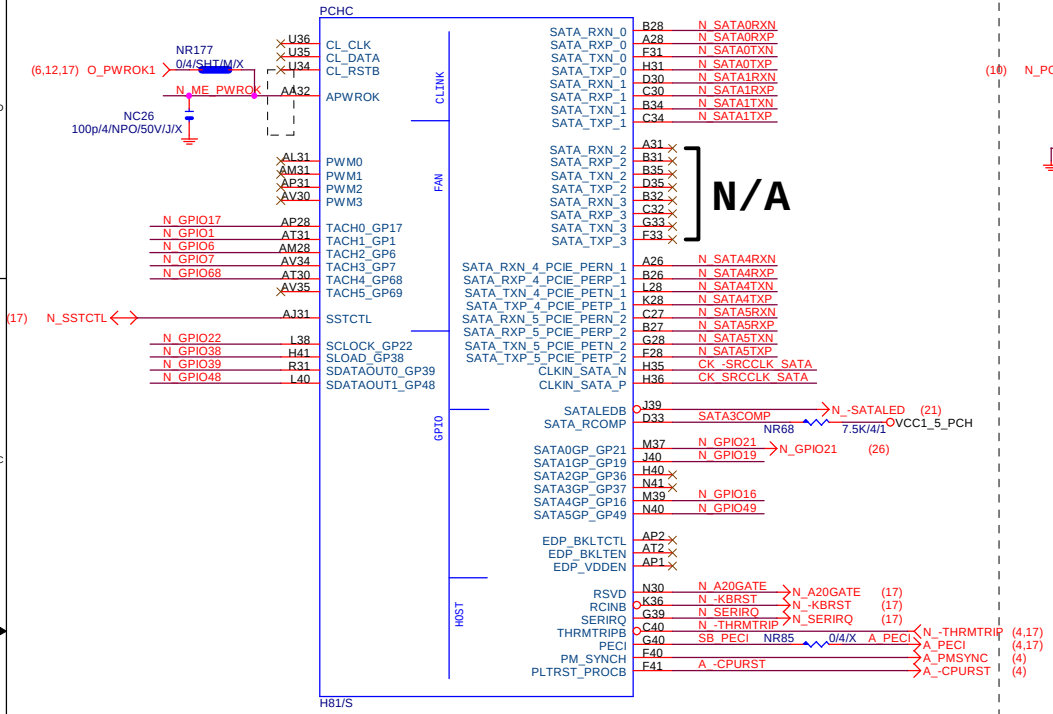
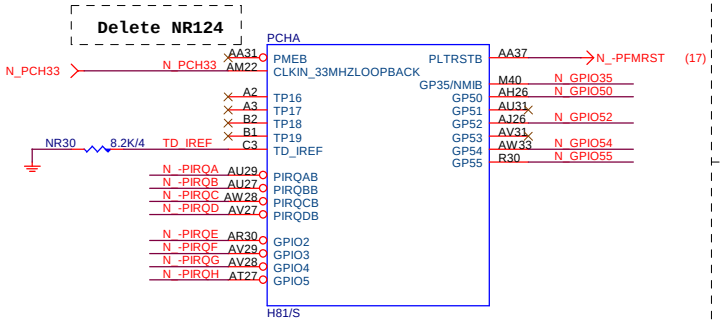
PCH (C)

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%

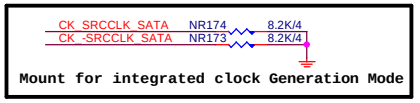


PCH (A)

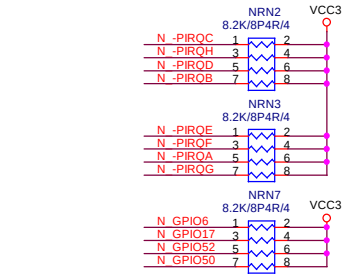
Delete NR124

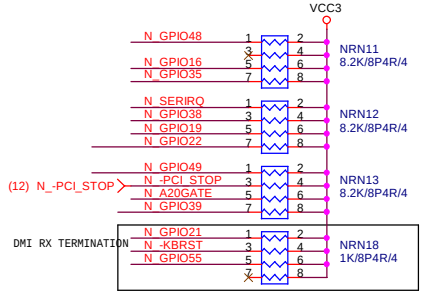


PCH CLK PD

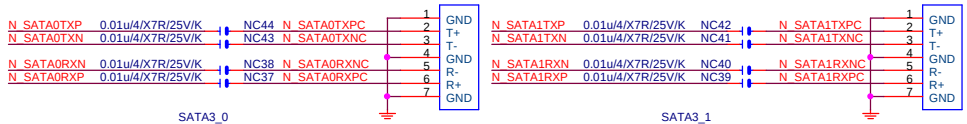


PCH PU/PD

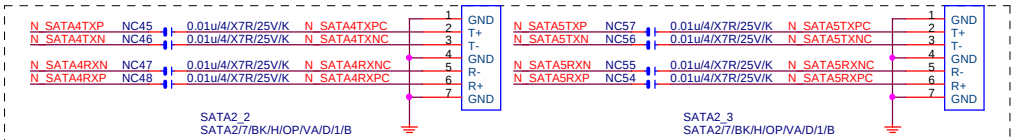




SATA CONNECTOR



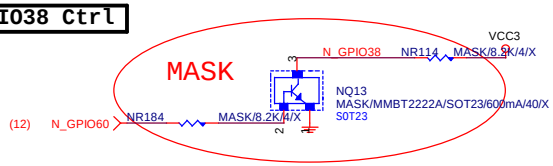
** Z87/H87 Port 4&5 SATA3.0
** B85 Port 4&5 SATA2.0



ME PWROK

Delete GPIO37 Resistor

GPIO38 Ctrl



Gigabyte Technology

Title: PCH HOST , SATA, PCI

Size: Custom | Document Number: GA-H81M-DS2V WP | Rev: 2.0

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PCH (D)

(17) N_LAD[0..3] → N_LAD[0..3]

PCHD

VCC3 NR54 8.2K/4/X N_GPIO23 AK26

(17)	N_LAD0	N_LAD0	AN24	LDRQ1B_GP23 / LAD_0	
(17)	N_LAD1	N_LAD1	AP26	LAD_1	
(17)	N_LAD2	N_LAD2	AJ24	LAD_2	
(17)	N_LAD3	N_LAD3	AN26	LAD_3	
(17)	N_-LDRQ0	N_-LDRQ0	AK22	LDRQ0B	
(17)	N_-LFRAME	N_-LFRAME	AP24	LFRAMEB	
(22) C_ACZ_SDOUT	A_SO		AV23	HDA_BCLK	
(22) C_ACZ_BITCLK	A_SYC		AU24	HDA_RSTB	
(22) C_ACZ_SYNC			AT26	HDA_SDI0	
(22) C_-ACZ_RST			AV22	HDA_SDI1	
	(22) C_ACZ_SDIN2		AT22	HDA_SDI2	
	A_SO		AW23	HDA_SDI3	
	A_SYC		AU22	HDA_SDO	
			AV24	HDA_SYNC	

NRN29 33/8P4R/4

(20) N_ICH_SPI_MOSI	P40	SPI_MOSI_IO0	
(20) N_ICH_SPI_MISO	R36	SPI_MISO_IO1	
(20) N_-ICH_SPI_CS	R38	SPI_CS0B	
(20) N_ICH_SPI_CLK	U39	SPI_CLK	
	R35	SPI_CS1B	
	R40	SPI_CS2B	
(20) SPI_DQ2	U40	SPI_IO2	
(20) SPI_DQ3	U37	SPI_IO3	

N_Y1	AN40	RTCX1	
N_Y2	AN39	RTCX2	
N_-RTCRST	AR38	RTESTB	
N_-SRTCRST	AR39	SRTCRSTB	
N_-INTRUDER	AR41	INTRUDERB	
(6,11,17) O_PWROK1	AT40	PCH_PWROK	
(17,25) O_-RSMRST	AM40	RSMRSTB	
N_INTVRMEN	AV36	INTVRMEN	
N_PCH_DPWROK	AV38	DPWROK	
N_DSWVRMEN	AM41	DSWODVREN	

(17) N_-LPCPME	N_-LPCPME	AG31	SMBALERTB_GP11
(7,8,14,15,19,21) N_SMBCLK	N_SMBCLK	AG36	SMBCLK
(7,8,14,15,19,21) N_SMBDATA	N_SMBDATA	AG32	SMBDATA
(11) N_GPIO60	N_GPIO60	AG35	SML0ALERTB_GP60
	N_SML0CLK	AE32	SML0CLK
	N_SML0DAT	AE35	SML0DATA
	N_-PCH_HOT	AJ39	SML1ALERTB_PCHHOTB_GP74
	N_SML1CLK	AK36	SML1CLK_GP58_MGPIO11
	N_SML1DAT	AK33	SML1DATA_GP75_MGPIO12

	BMBUSYB_GP0	G38	N_GPIO0
	CLKRUNB_GP32	N32	
	DOCKENB_GP33	AV26	N_GPIO33
	STPPCIB_GP34	N34	N_-PCI_STOP (11)
	GP8	AC40	N_-IGC_EN
	LAN_PHY_PWR_CTRL_GP12	AL40	
	HDA_DOCK_RSTB_GP13	AN22	-D_GPIO_HRST
	GP15	AC32	N_TEMP_ALART- (17)
	GP24	AE34	A_-SKTOCC (4)
	GP28	V41	N_GPIO28
SLP_WLANB_GP29		AL39	N_GPIO29
PCIECLKRQ0B_GP73		W34	N_GPIO73
PCIECLKRQ1B_GP18		P39	N_GPIO18
PCIECLKRQ2B_GP20_SMIB		P37	N_GPIO20
PCIECLKRQ3B_GP25		AA39	N_GPIO25
PCIECLKRQ4B_GP26		W35	N_GPIO26
PCIECLKRQ5B_GP44		AA36	N_GPIO44
PCIECLKRQ6B_GP45		W32	N_GPIO45
PCIECLKRQ7B_GP46		AA40	N_GPIO46
GP57		AC36	N_GPIO57
SYS_PWROK		W31	N_PCH_VRMPWRGD (17)
RIB		AE36	N_-RI
WAKEB		AK34	N_-PCIE_WAKE (14,15,24)
SLP_AB		AN37	
SLP_LANB		AU36	
SLP_S0B		AC35	
SLP_S3B		AK40	N_-SLP_S3 (17)
SLP_S4B		AT35	N_-S4_S5 (17)
SLP_S5B_GP63		AA35	
SUS_STATB_GP61		AD37	
SUSCLK_GP62		W36	
GP72		AJ40	N_GPIO72
SUSACKB		AJ37	
SUSWARNB_SUSPWRDNACK_GP30		AG41	N_-S_WARN
DRAMPWRGD		AE38	N_DRAM_PWROK
GP27		AU34	N_GPIO27
ACPRESENT_GP31_MGPIO2		AM36	N_GPIO31
SLP_SUSB		AK38	N_-DEPSLP
PWRBTNB		AK41	O_PWRBTSW
SYS_RESETB		N36	N_-SYS_RST
SPKR		R32	N_SPKR
PROCPWRGD		D40	N_CPUPWROK
TP13		W37	N_PCH_RST
JTAG_TCK		Y40	N_PCH_TCK
JTAG_TDI		W39	N_PCH_TDI
JTAG_TDO		Y38	N_PCH_TDO
JTAG_TMS		W40	N_PCH_TMS

H81/S

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

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

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

At least 10ms delay after 3VDUAL_PCH stabel

ACZ_SDOUT

Remove C_ACZ_SDOUT circuit

PCH_DPWROK

3VDUAL_PCH
NR69 8.2K/4
N_PCH_DPWROK → N_PCH_DPWROK (17)
NC17 1n/4/X7R/50V/K
for IT8620 Ctrl

VCC3
NR345 1K/4/1
N_PCH_VRMPWRGD → N_PCH_VRMPWRGD (17)
NR346 100K/4/1
NC14 0.1u/4/X7R/16V/K

PCH PU/PD

GP8:Low to enable PCH clock chip
NR106 1K/4/1 N_-IGC_EN

3VDUAL

N_GPIO46		
N_GPIO45		
N_GPIO44		NRN9 8.2K/8P4R/4
N_GPIO57		
A_-SKTOCC		
N_TEMP_ALART-		NRN10 8.2K/8P4R/4
N_-RI		

SUSCLK:Low to OD
PLL VR
GP28:Lo disable
VRM ,Hi enable
VRM

-D_GPIO_HRST	NR51	1K/4/1
N_GPIO28	NR144	1K/4/1
N_GPIO29	NR96	1K/4/1

3VDUAL_PCH

N_-S_WARN		
N_GPIO31		
N_GPIO27		NRN20 8.2K/8P4R/4
N_GPIO72		
N_-PCIE_WAKE	NR76	1K/4/1

VCC3

N_GPIO33	NR49	8.2K/4
N_GPIO0		
N_GPIO20		NRN21 8.2K/8P4R/4
N_-SYS_RST		

3VDUAL

N_PCH_RST	NR172	20K/4/1
N_PCH_TDI		
N_PCH_TMS		NRN22 200/8P4R/4
N_PCH_TDO		

N_PCH_TDI		
N_PCH_TMS		NRN23 100/8P4R/4
N_PCH_TDO		
N_PCH_TCK	NR108	51/4/1
N_GPIO18		
N_GPIO73		NRN24 8.2K/8P4R/4
N_GPIO26		
N_GPIO25		
N_-SYS_RST	NC58	1n/4/X7R/50V/K
N_DRAM_PWROK	NC59	1n/4/X7R/50V/K

NRN6 8.2K/8P4R/4

3VDUAL

	N_-LPCPME
	N_GPIO60
	N_-PCH_HOT

NRN25 1K/8P4R/4

N_SML1DAT	
N_SML1CLK	
N_SMBCLK	
N_SMBDATA	

NR122	499/4/1	N_SML0CLK
NR123	499/4/1	N_SML0DAT

HSW_STRAP13

Remove A_HSW_STRAP13 control

32.768KHZ

NX2-SHT SHW/D0.64*5.08*6.74
N_Y1
N_Y2 NR75 10M/4 NX2
32.768K/12.5p/20ppm/TF38/35K/D
NC16 18P/4/NPO/50V/J
NC18 18P/4/NPO/50V/J

CLR_CMOS

BATTERY CR2032
ND1 BAS40-05/0.2A/SOT23
3VDUAL_PCH
NR340 0/6/SHT/M/X
BAT BAT-SK/BK/P/S/D/SN
N_VBATT NRB 1K/4/1
NR90 390K/4 N_DSWVRMEN
N_RTCVDD → N_RTCVDD (13,19)
NR67 390K/4 N_INTVRMEN
NR78 20K/4/1 N_-RTCRST
NC15 1u/4/X5R/6.3V/K
NC20 1u/4/X5R/6.3V/K
RB_TP
N_VBAT → N_VBAT (17)

CLR_CMOS
N_-RTCRST
PH/1*2/BK/2.54/VA/D

BATTERY-DUAL-4
RB 必须放在BAT外

N_-INTRUDER NR74 1M/4 → N_RTCVDD (13,19)
N_-SRTCRST NR77 20K/4/1 → N_RTCVDD (13,19)
NC19 1u/4/X5R/6.3V/K

Gigabyte Technology

Title	PCH GPIO , CTRL , AUDIO		
Size Custom	Document Number GA-H81M-DS2V WP		Rev 2.0
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PCH (H)

Remove

Remove

Remove

PCHH

H81/S

VCC1_05_PCH

VCC1_05_DCB

VCC1_05_ME

VCC1_5_PCH

VCC3_DAC

VCC3

3VDUAL

3VDUAL_PCH

N_RTCVDD (12,19)

VCCIO2PCH

V_1P05_DSW_INT

V_1P5_RTC_INT

V_1P5_INT

NTP1

NTP2

NTP3

NBC30 1u/4/X5R/6.3V/K

NBC21 0.1u/4/X7R/16V/K

NBC55 1u/4/X5R/6.3V/K

NBC22 1u/4/X5R/6.3V/K

NBC64 1u/4/X5R/6.3V/K

NBC62 0.1u/4/X7R/16V/K/X

NR71 5.1/4/1/[10RC4-00510B-26R]

NBC54 1u/4/X5R/6.3V/K

NBC52 1u/4/X5R/6.3V/K

NBC51 0.1u/4/X7R/16V/K

NBC47 0.1u/4/X7R/16V/K/X

NBC49 0.1u/4/X7R/16V/K

VCC3_DAC

CLOSE北橋(注意震盪水波紋)

+12V

3VDUAL

VCC3_DAC

NR185 8.2K/4

NQ17 2N7002/SOT23/25pF/5

NBC7 10u/6/X5R/6.3V/M

(3.3V/70mA+360uA)

3VDUAL_PCH

NQ9 L1117LG/N/SOT223/1A

5VSB

3VDUAL_PCH

NR176 301/4/1

NR180 510/4/1

NBC68 1u/4/X5R/6.3V/K

NBC66 22u/8/X5R/6.3V/M

NBC67 0.1u/4/X7R/16V/K

SHT PWR

VCC3_ME — VCC3

VCC1_05_ME — VCC1_05_PCH

CAP

VCC3_ME

3VDUAL_PCH

NBC58 1u/4/X5R/6.3V/K

NBC65 1u/4/X5R/6.3V/K

(3.3V)(X6)

VCC3

NBC26 1u/4/X5R/6.3V/K

NBC27 1u/4/X5R/6.3V/K

NBC20 1u/4/X5R/6.3V/K

Remove

(1.05V)(X5)

Remove

(1.05V)(X6)

Remove

(1.05V)(X2)

VCCIO2PCH

NBC56 1u/4/X5R/6.3V/K

NBC57 0.1u/4/X7R/16V/K

(3.3V)(X2)

3VDUAL

NBC60 1u/4/X5R/6.3V/K

NBC63 0.1u/4/X7R/16V/K

(1.05V)(X10)

VCC1_5_PCH

NBC19 1u/4/X5R/6.3V/K

NBC23 0.1u/4/X7R/16V/K

NBC28 1u/4/X5R/6.3V/K

NBC44 1u/4/X5R/6.3V/K

NBC46 0.1u/4/X7R/16V/K

Remove

PCH (I)

PCHI

H81/S

Title	PCH PWR ,GND
Size	Custom
Document Number	GA-H81M-DS2V WP
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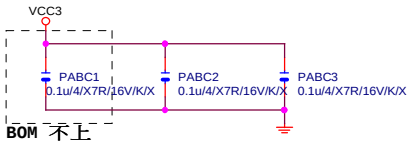
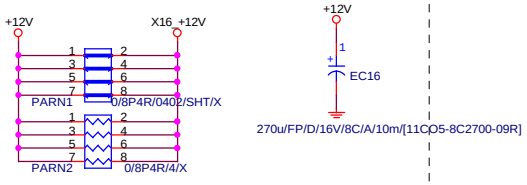
Gigabyte Technology

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)

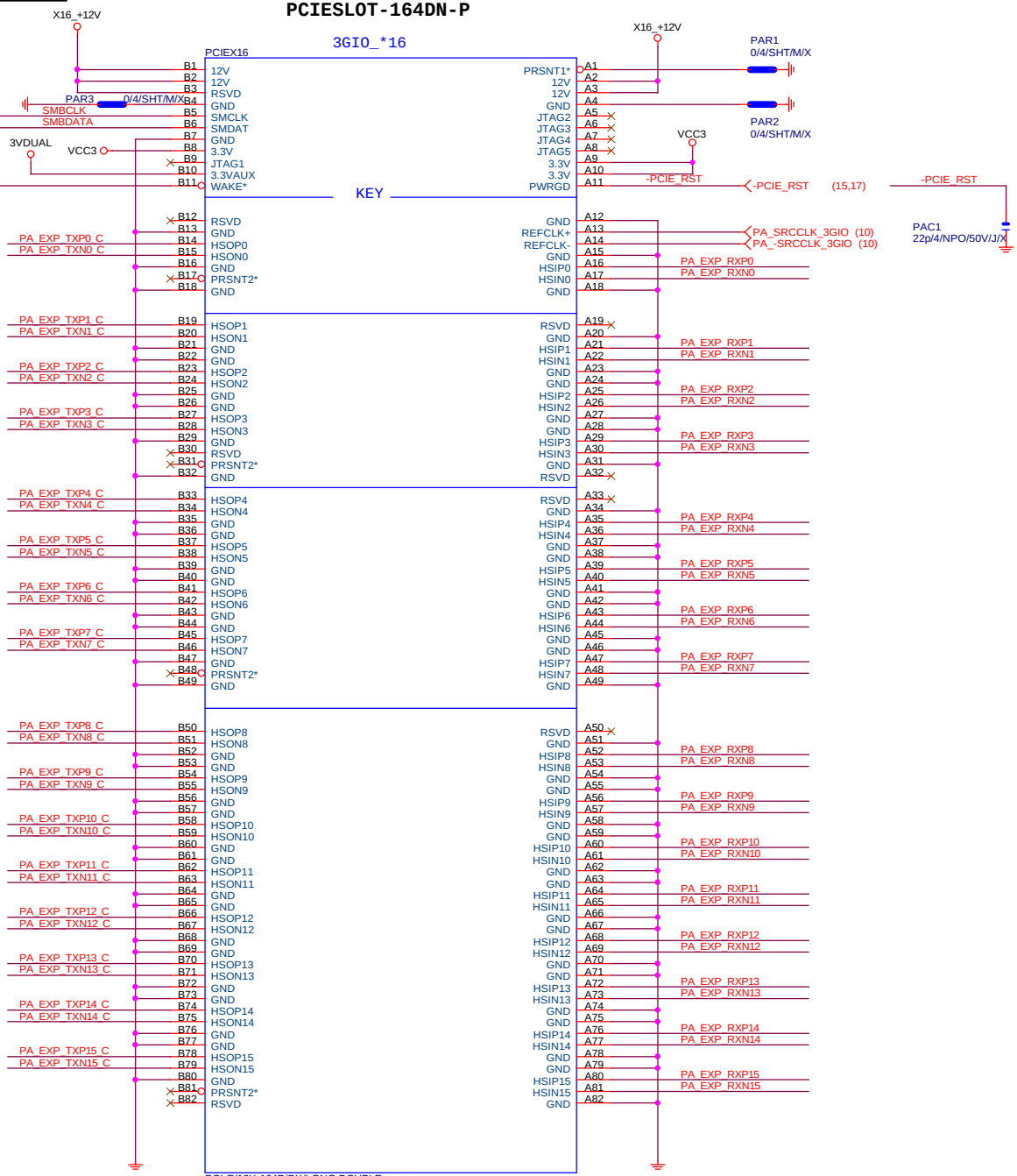
PA_EXP_TXN[0..15] >> PA_EXP_TXN[0..15] (4)

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

PCIEX16 SLOT

PCIESLOT-164DN-P

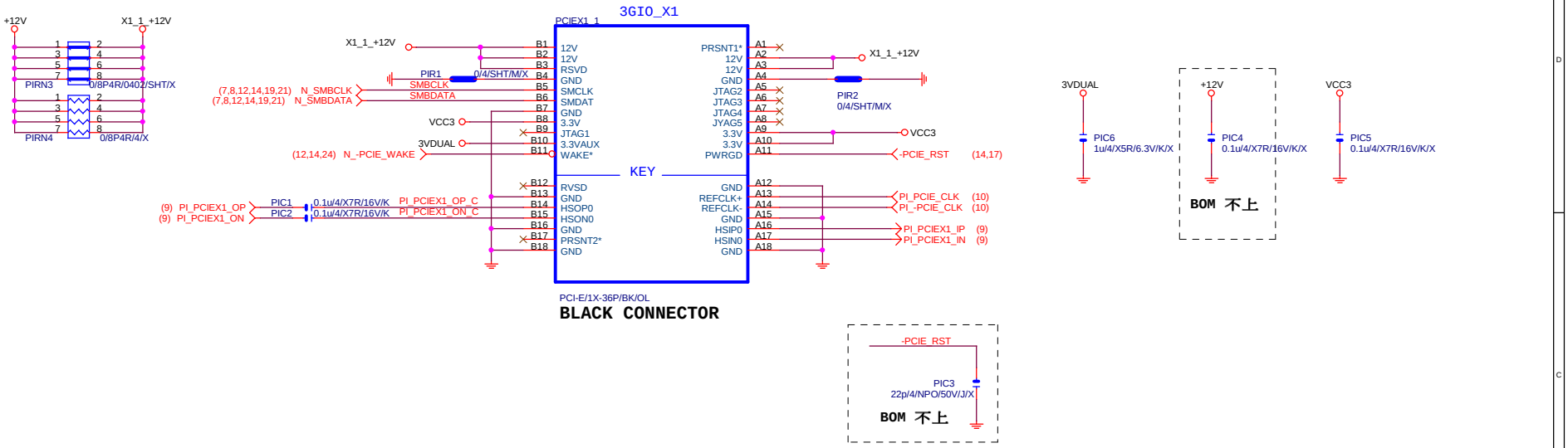
3GIO_*16

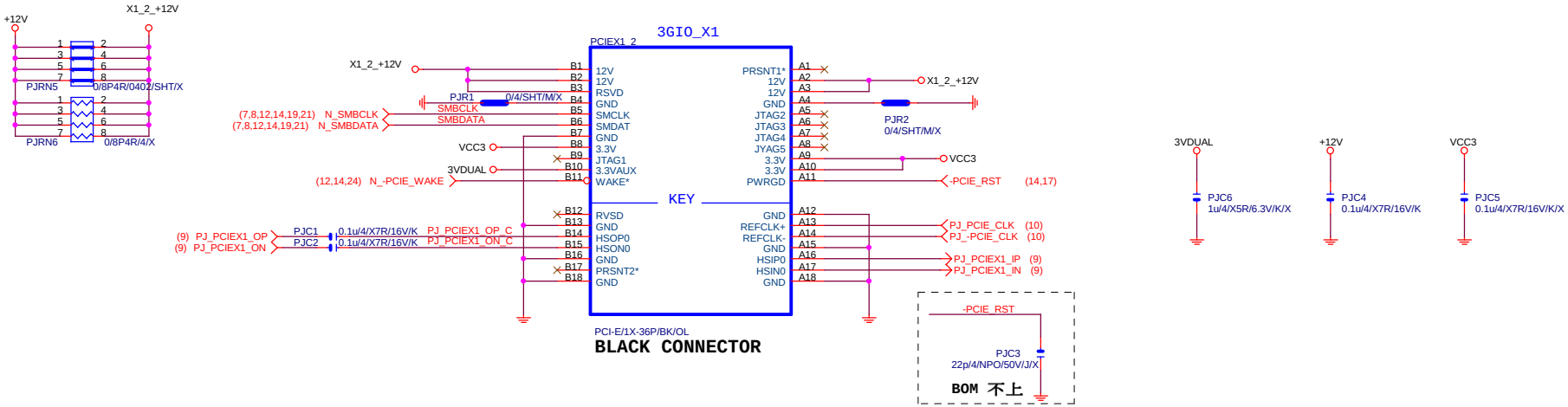


BLACK CONNECTOR

Gigabyte Technology			
Title: PCI EXPRESS * 16			
Size: Custom	Document Number: GA-H81M-DS2V WP		Rev: 2.0
Date: Wednesday, February 11, 2015	Sheet 14 of 33		

PCIEX1 SLOT





Gigabyte Technology		
Title: PCI EXPRESS X 1 PORT		
Size: Custom	Document Number: GA-H81M-DS2V WP	Rev: 2.0
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Gigabyte Technology

Title

PCI SLOT 1&2

Size	Document Number	Rev
Custom	GA-H81M-DS2V WP	2.0

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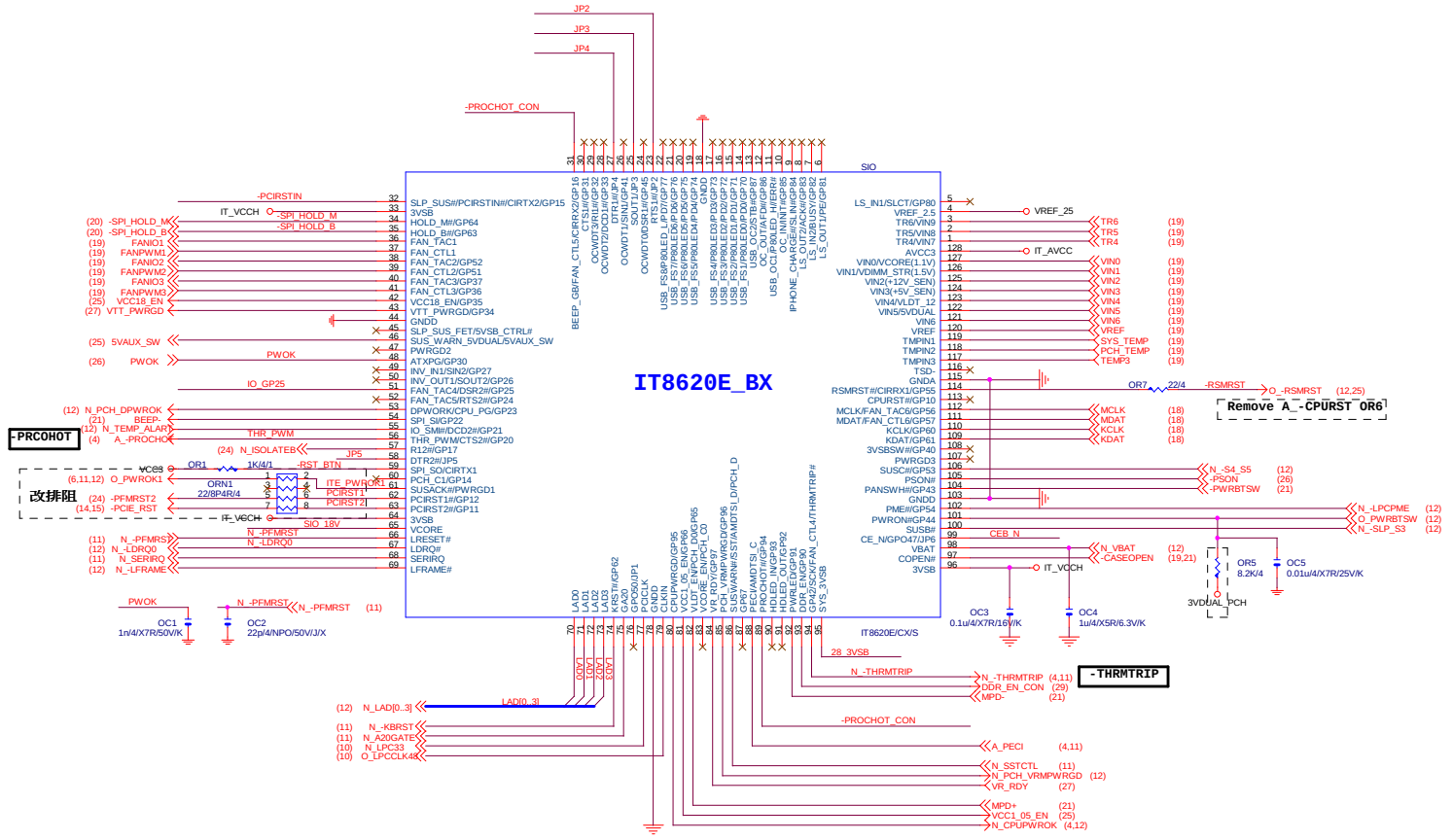
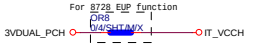
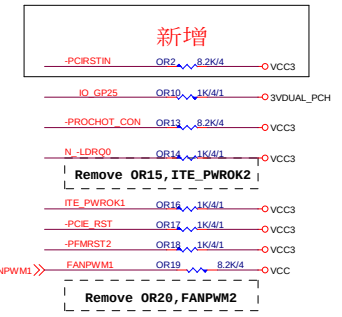
SIO IT8620



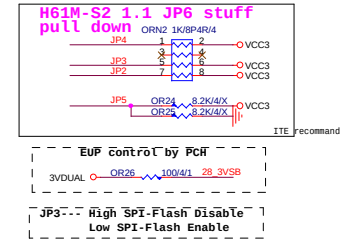
PWR SHT



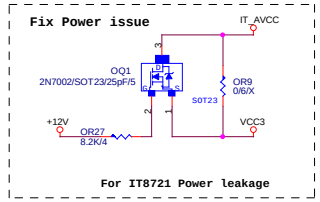
SIO PU



SIO STRAP

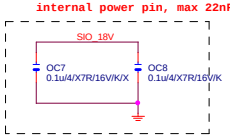


Power leakage



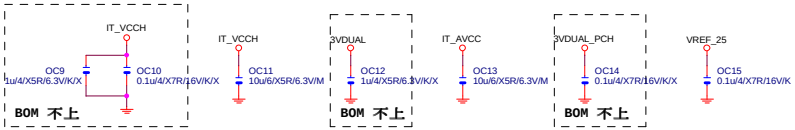
DUAL BIOS OPT STRAP

SIO_18V



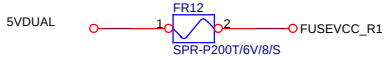
MB ID

SIO CAP



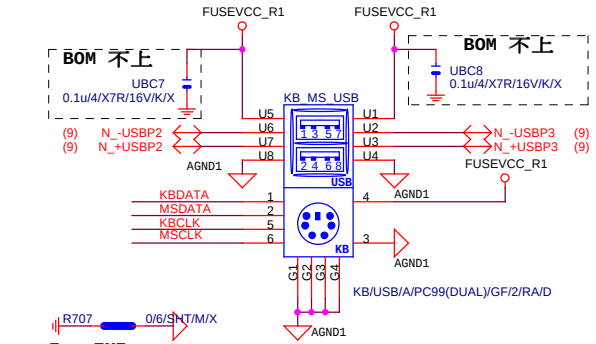
Gigabyte Technology			
Title	PCH GPIO , CTRL , AUDIO		
Size C	Document Number GA-H81M-DS2V WP		Rev 2.0
Date: Wednesday, February 11, 2015	Sheet 17 of 33		

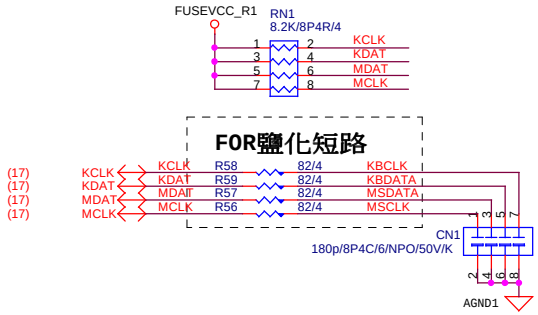
COM



COM RI

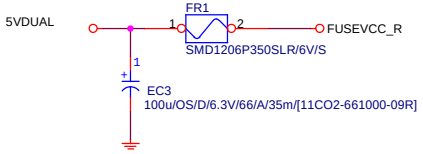
KB/MS





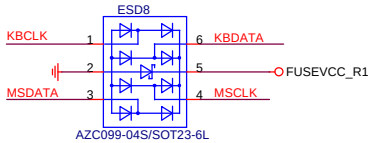
USB2.0 PWR

FUSE-0805
KB_MS_USB 2-Port 2.0A

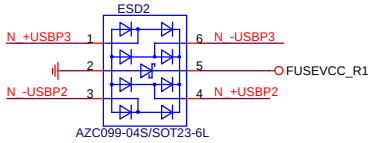


Close to connector

KB/MS ESD



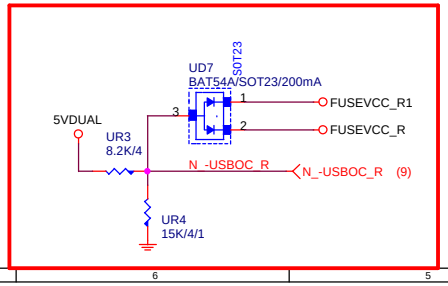
USB2.0 ESD



USB30_20

USB30_20 PWR

-USBOC_R



USB30_20 ESD PROCTECT

USB3.0 ESD

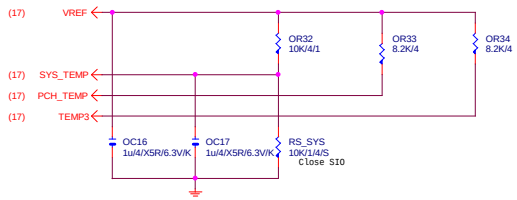
USB2.0 ESD

USB POWER PROTECT

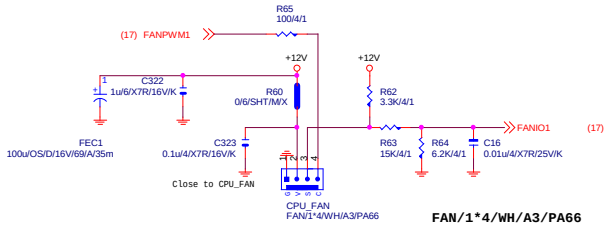
Gigabyte Technology

Title	COM,-RI,KB_USB,USB_ESATA,-PROCHOT		
Size: Custom	Document Number: GA-H81M-DS2V WP		Rev: 2.0
Date: Wednesday, February 11, 2015	Sheet 18 of 33		

TEMP H/W MONITOR



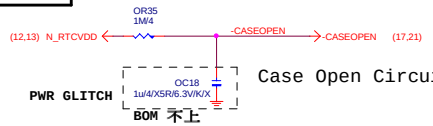
CPU SMART FAN



FAN/1*4/WH/A3/PA66

White Connect

CASE OPEN



PWR GLITCH

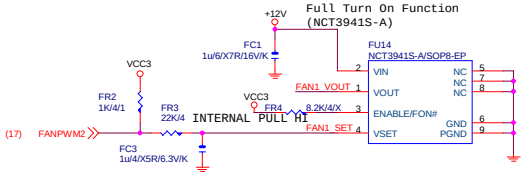
Case Open Circuits

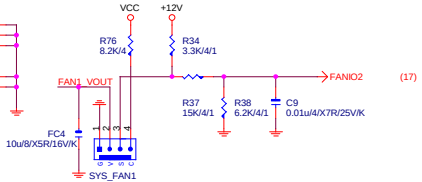
BOM 不上

SYS SMART FAN

Linear SYS_FAN

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





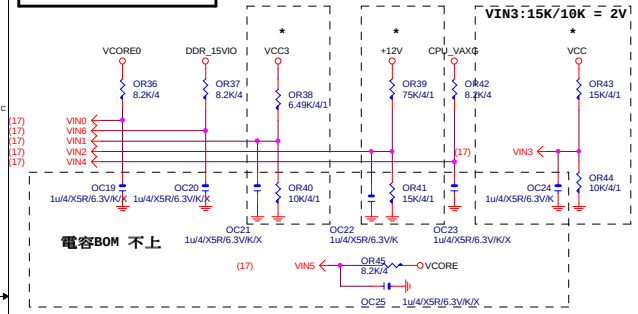
BLACK CONNECTOR

-PROHOT

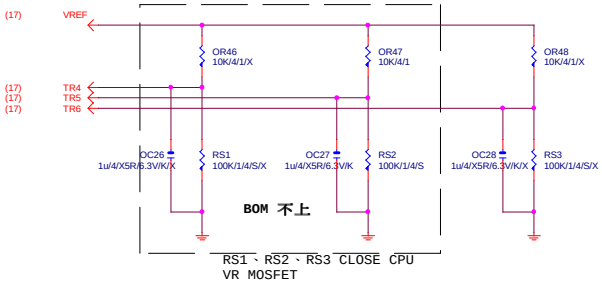
VOLTAGE-- H/W MONITOR

VIN2:75K/15K = 2V

VIN3:15K/10K = 2V



電容BOM 不上

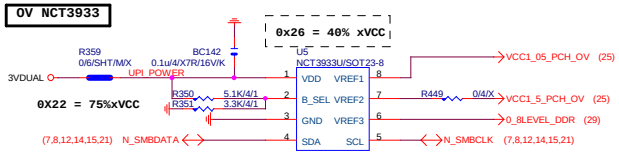


BOM 不上

RS1、RS2、RS3 CLOSE CPU
VR MOSFET

接pwm feedback pin

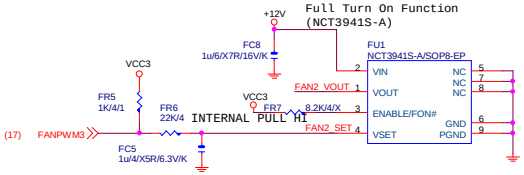
OV NCT3933

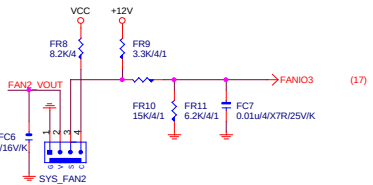


NCT3933	0X2A	0X20	0X22
VREF1	DDRVTT	VREF_DDRA_DQ	PCH Core
VREF2	VREF_DDRA_CA	N/A	VCC1_5_PCH
VREF3	VREF_DDRA_CA	VREF_DDRB_DQ	SMREF

Linear SYS_FAN

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

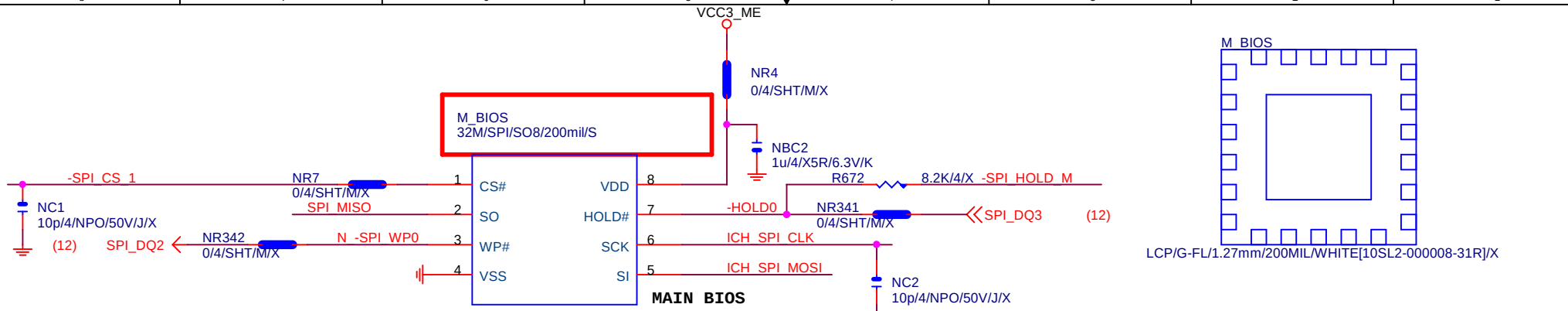


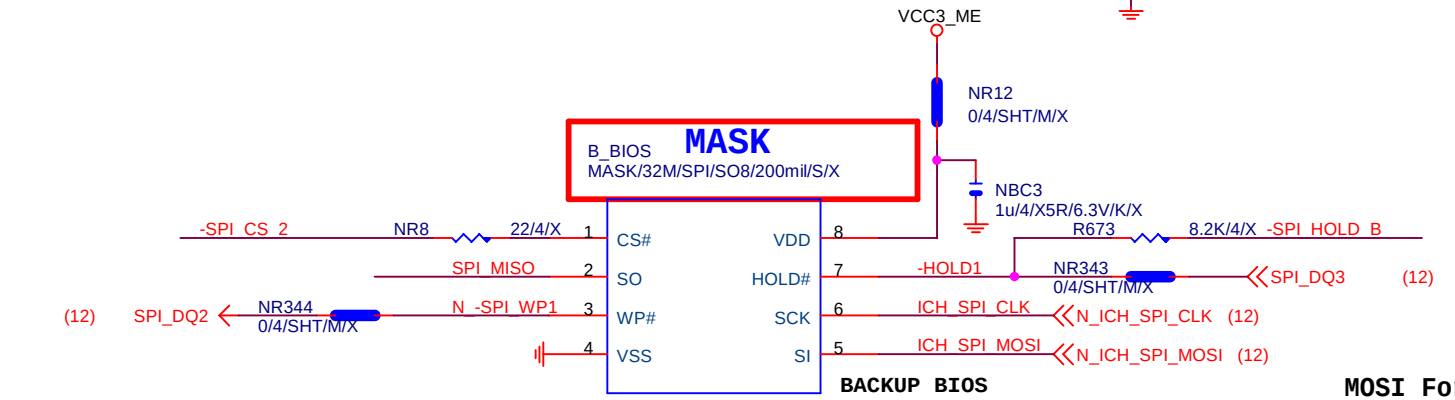


BLACK CONNECTOR

Gigabyte Technology

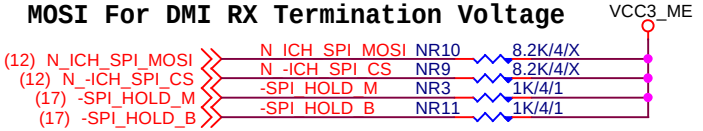
Title	HWM,FAN CTRL,OV	
Size: Custom	Document Number: GA-H81M-DS2V WP	Rev: 2.0
Date: Wednesday, February 11, 2015	Sheet 19 of 33	

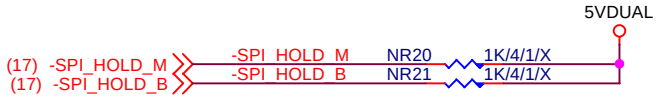


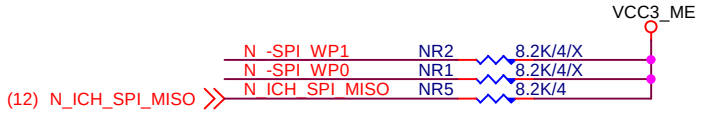


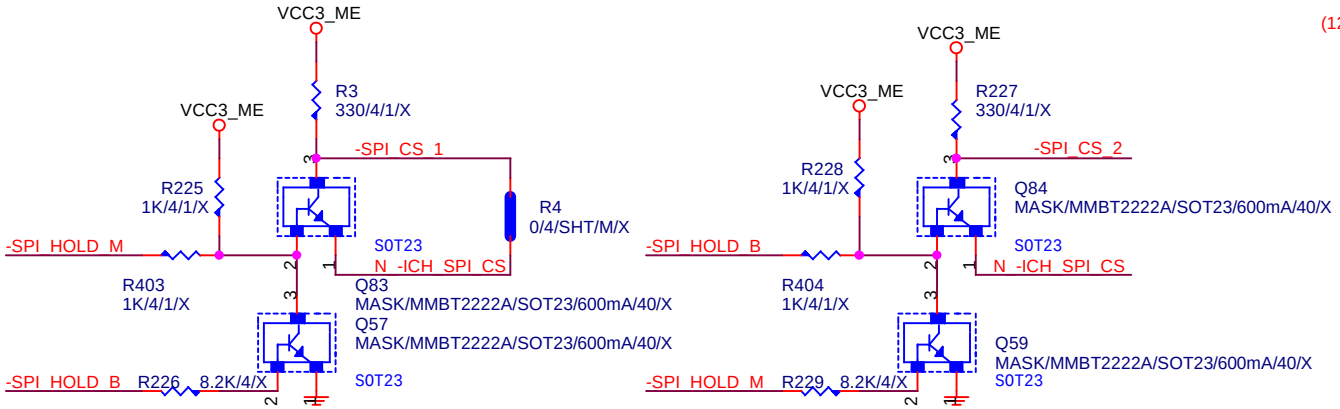
BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

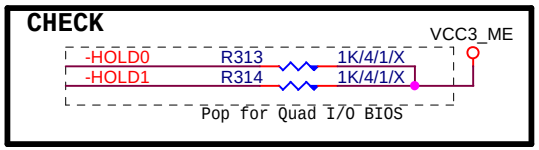
1 means floating
0 means PD 1K











Gigabyte Technology

Title: DUAL BIOS

Size: Custom | Document Number: GA-H81M-DS2V WP | Rev: 2.0

Date: Wednesday, February 11, 2015 | Sheet 20 of 33

F_USB30

F_USB30 PWR

SATA LED

(11) N_-SATALED -HDLED

Remove Level shift

-USBOC_F

Delete UD2,UR1改接 FUSEVCC_F

FUSEVCC_F
UR1 8.2K/4
N_-USBOC_F
N_-USBOC_F (9)
UR2 15K/4/1

F_USB30 ESD PROTECT

SPKR

VCC
D3 CD4148WP/1206/300mA
R187 75/4/1
SPK-
To disable TCO timer
VCC3
R182 1K/4/1
VCC
R179 1K/4/1
R178 8.2K/4
(17) BEEP-
BEEP-
Q28 2N7002/SOT23/25pF/5
SOT23
Q30 MMBT2222A/SOT23/600mA/40
R185 75/4/1
R186 8.2K/4
SPKR
N_SPKR (12)
Q29 MMBT2222A/SOT23/600mA/40

FRONT USB1

FUSEVCC_F FUSEVCC_F
UBC1 0.1u/4/X7R/16V/K
UBC2 0.1u/4/X7R/16V/K
F_USB1
N_-USBP8 N_-USBP9 (9)
N_+USBP8 N_+USBP9 (9)
PH/2*5K9/WH/2.54/VA/D
WHITE CONNECTOR

ESD6
N_-USBP8 N_+USBP8
FUSEVCC_F
N_+USBP9 N_-USBP9
AZC099-04S/SOT23-6L

Close to connector

FUSE-0805
F_USB1, F_USB2 4-Port 2.6A

5VDUAL
FF1
FUSEVCC_F
SPR-P200T/6V/8/S
SPR-P260T/6V/8/S
EC4 100u/OS/D/6.3V/66/A/35m/[11CO2-661000-09R]

FRONT USB2

FUSEVCC_F FUSEVCC_F
UBC3 0.1u/4/X7R/16V/K
UBC4 0.1u/4/X7R/16V/K
F_USB2
N_-USBP10 N_-USBP11 (9)
N_+USBP10 N_+USBP11 (9)
PH/2*5K9/WH/2.54/VA/D
WHITE CONNECTOR

ESD5
N_-USBP10 N_+USBP10
FUSEVCC_F
N_+USBP11 N_-USBP11
AZC099-04S/SOT23-6L

Close to connector

INTEL FRONT PANEL

VCC
R171 470/6/1
(17) MPD+
MPD+

R168改接VCC3

VCC3
R168 330/6
BC78 0.01u/4/X7R/25V/K/X
F_PANEL
HD+
-HDLED
R181 100/4/1
(12) N_-SYS_RST
-RST
BC75 0.01u/4/X7R/25V/K
(17,19) -CASEOPEN
MPD+
HD+ MSG/PD+
HD- MSG/PD-
GND PW+
RESET PW-
CI-
CI+
PWR+ NC
PWR- NC
PWR- SP-
SP+
VCC
SPK-
PH/2*10K10,12,13/WH/2.54/VA/D
3VDUAL_PCH
R172 8.2K/4
R175 33/4
-PWRBT_1
-PWRBTSW (17)
BC67 0.01u/4/X7R/25V/K

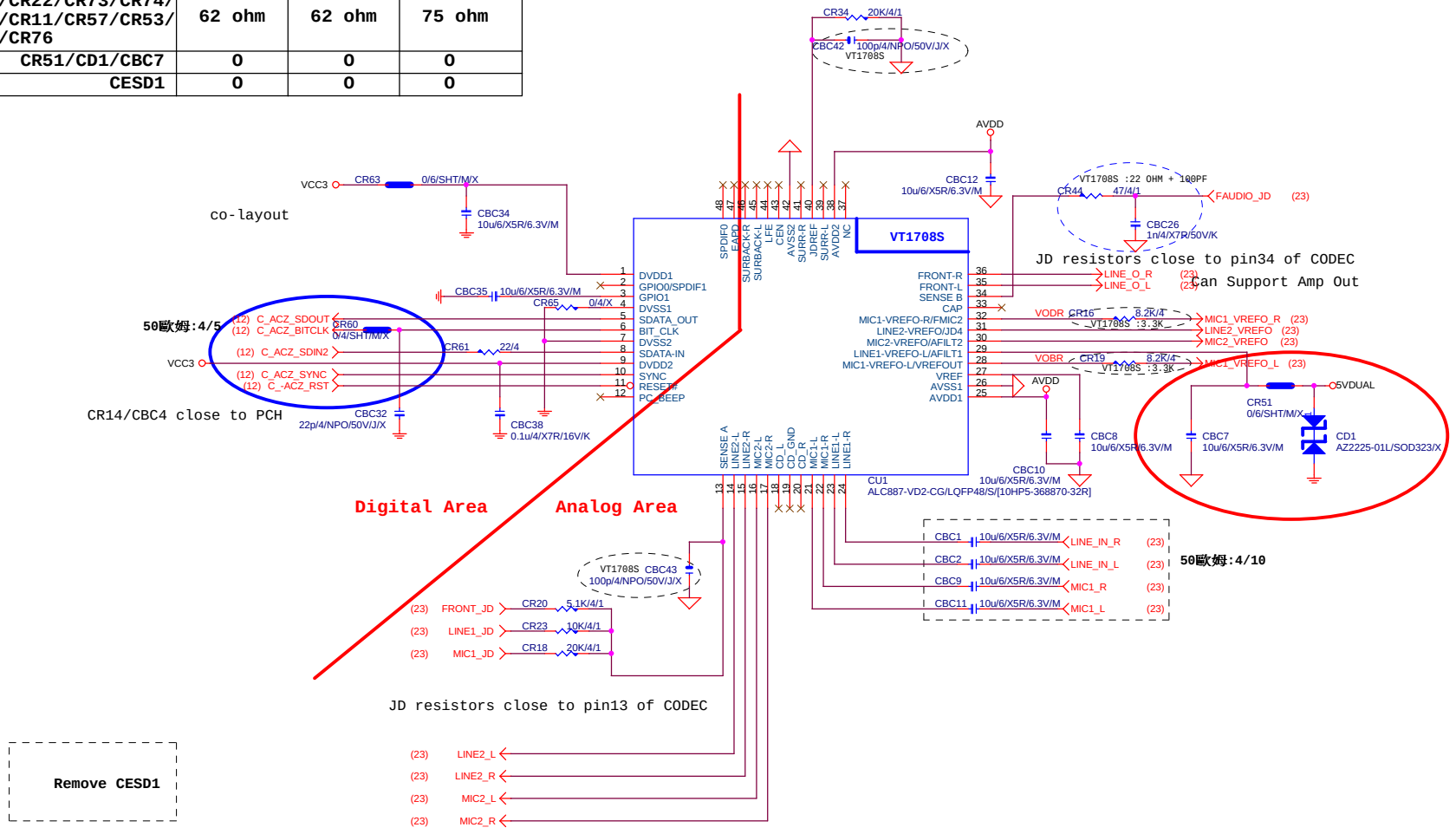
PIN2X10PANEL_NEW

FPESD1
(7,8,12,14,15,19) N_SMBCLK
(7,8,12,14,15,19) N_SMBDATA
N_SMBCLK N_SMBDATA
-RST -PWRBT_1
3VDUAL_PCH
AZC099-04S/SOT23-6L

Gigabyte Technology			
Title: FP,F_USB,USB PWR,SPKR,SATA LED			
Size: Custom	Document Number: GA-H81M-DS2V WP		Rev: 2.0
Date: Wednesday, February 11, 2015	Sheet 21 of 33		

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

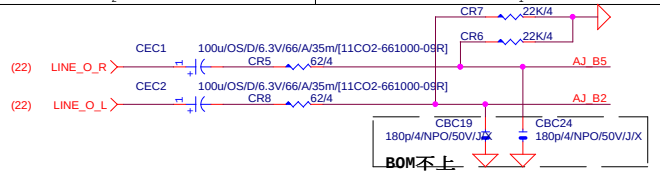
	ALC892	ALC887-VD2	VT1708S-CE
CR44/CBC26	47ohm+1nF	47ohm+1nF	22ohm+100P
CBC42/CBC43	X	X	100P/4
CR6/CR7/CR58/CR54/ CR67/CR68/CR69/CR70	22K/4	22K/4	10K/4/1
CR5/CR8/CR1/CR14/ CR17/CR22/CR73/CR74/ CR13/CR11/CR57/CR53/ CR75/CR76	62 ohm	62 ohm	75 ohm
CR51/CD1/CBC7	0	0	0
CESD1	0	0	0



Gigabyte Technology			
Title	HD AUDIO ALC887B-VD2/VT1708S/VT2021		
Size Custom	Document Number GA-H81M-DS2V WP		Rev 2.0
Date: Wednesday, February 11, 2015	Sheet 22 of 33		

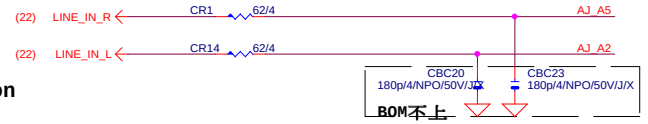
CR49 0/6/SHT/M/X
CR50 0/6/X
CR21 2.2/6
CR24 0/4/SHT/M/X

LINE-OUT



Only reserved for ALC888

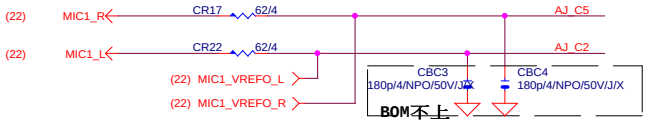
LINE-IN



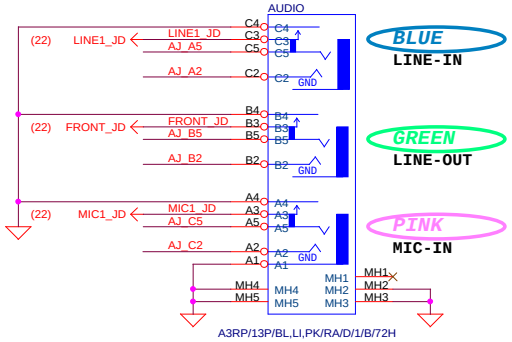
Verify MIC function in LINE-in

For 889A/888

MIC-IN

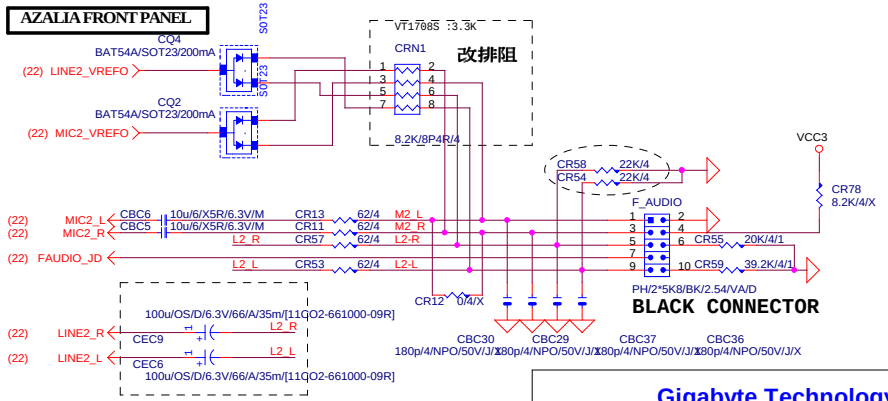


SPDIF_OUT



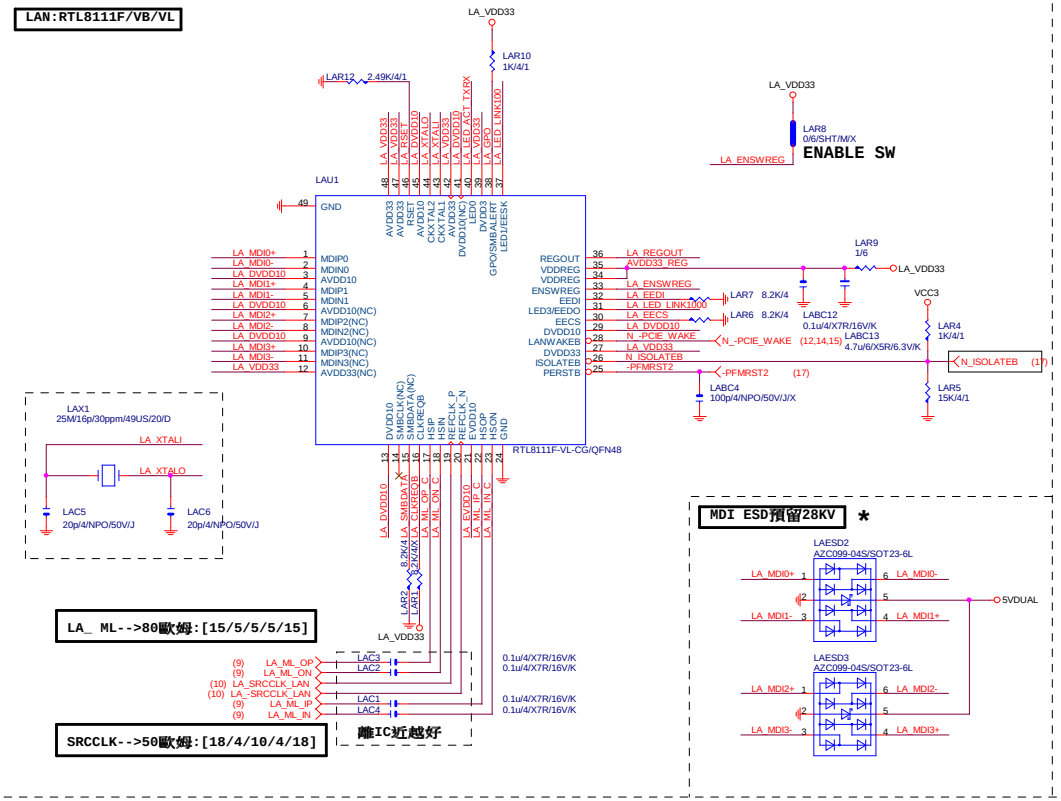
A3RP/13P/BL,LI,PK/RA/D/1/B/72H

AZALIA FRONT PANEL



Gigabyte Technology			
Title: AUDIO JACK			
Size: Custom	Document Number: GA-H81M-DS2V WP		Rev: 2.0
Date: Wednesday, February 11, 2015	Sheet 23 of 33		

LAN:RTL8111F/VB/VL



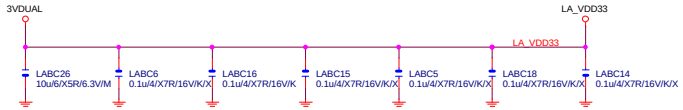
LA_ ML-->80歐姆:[15/5/5/5/15]

SRCCLK-->50歐姆:[18/4/10/4/18]

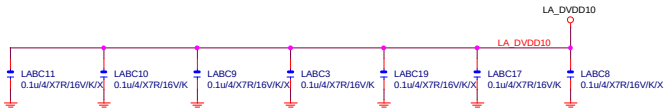
ENABLE SW

MDI ESD預留28KV *

LAN POWER

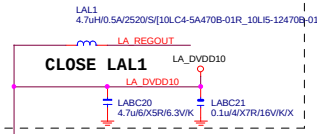


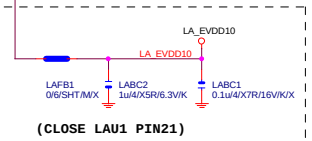
(CLOSE LAU1 PIN:12,27,39,42,47,48)



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

(CLOSE LAU1 PIN36)





(CLOSE LAU1 PIN21)

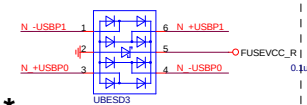
Power domain chart

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

USB_LAN CONNECTOR

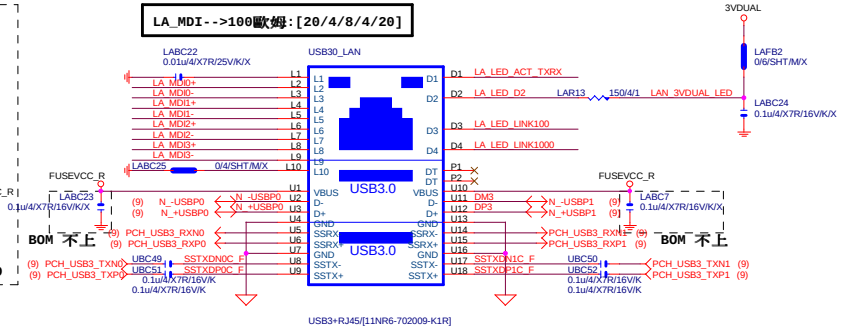
RMA ESD PROTECT

Remove LAESD1,LED



* 使用RU9 USB_LAN可省略LAESD1保護LED

LA_MDI-->100歐姆:[20/4/8/4/20]



BOM 不上

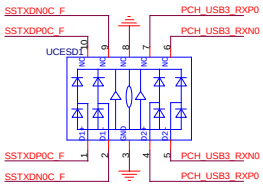
BOM 不上

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

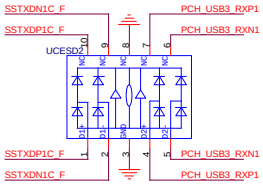
USB X3 POWER

EMI SHORT PAD

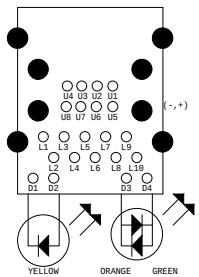
PS:視EMI需求



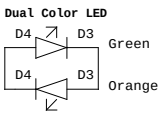
Close to connector



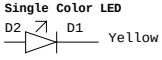
Close to connector



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

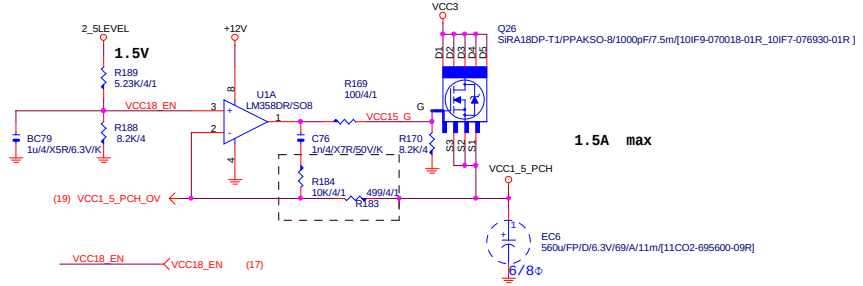
Gigabyte Technology

Title: Realtek RTL8111G

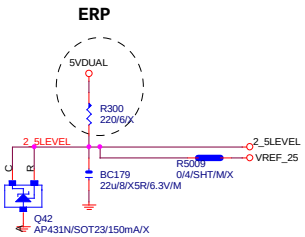
Size: Custom | Document Number: GA-H81M-DS2V WP | Rev: 2.0

Date: Wednesday, February 11, 2015 | Sheet 24 of 33

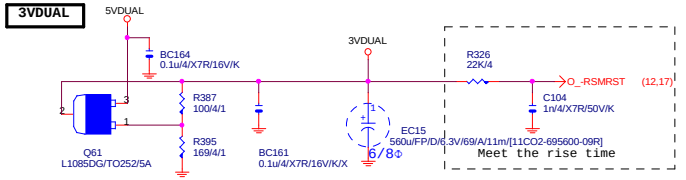
VCC1_8_PCH

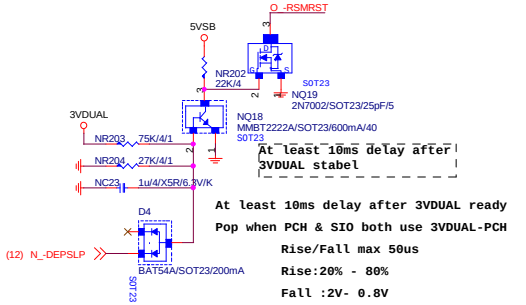


2_5LEVEL

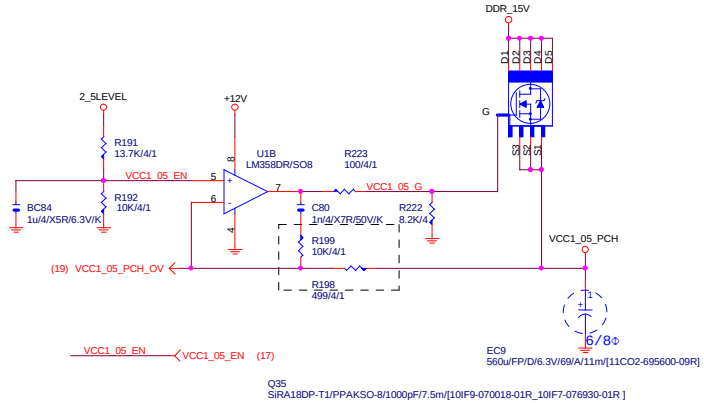


3VDUAL





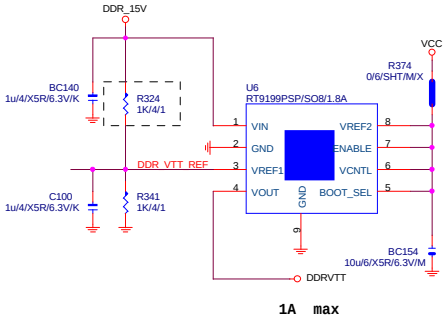
VCC1_05_PCH



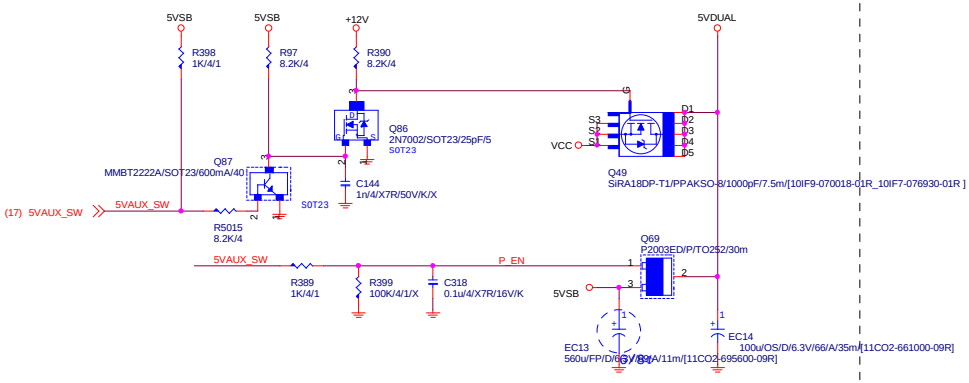
5VDUAL_USB Ctrl
KB_USB, R_USB30,
USB_LAN_F_USB30,
F_USB2 Power

GPIO	5VDUAL_USB
High	Power ON
Low	Power OFF

DDRVTT



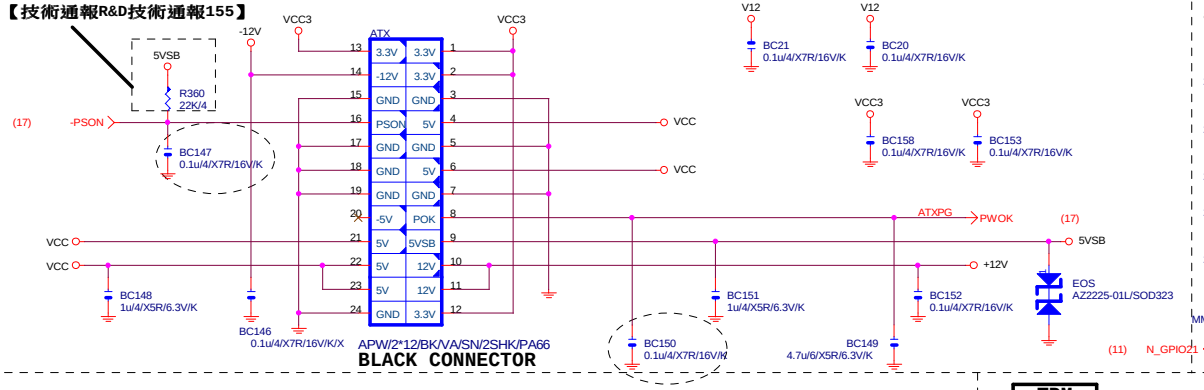
5VDUAL



5VDUAL SHORT PROTECT

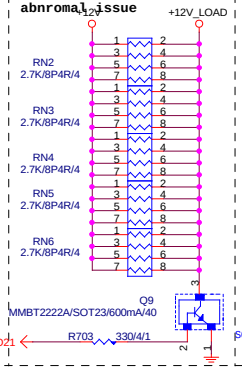
ATXX24 POWER CONNECTOR

【技術通報R&D技術通報155】

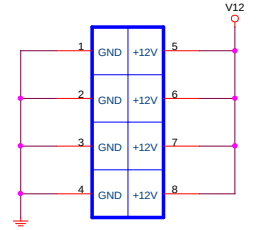


【技術通報R&D技術通報153】

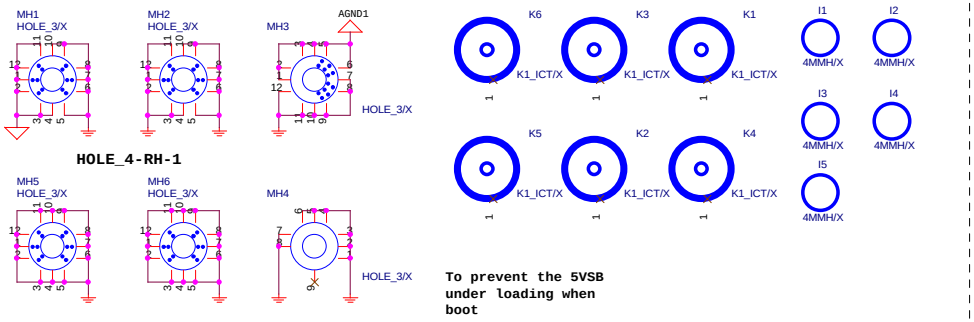
To fix 12V light load abnroma l issue



ATXX4 POWER CONNECTOR



TPM

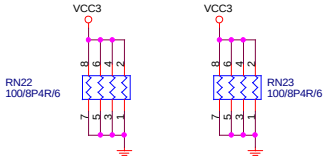


To prevent the 5VSB under loading when boot

PWOK PATCH

【技術通報R&D技術通報154】

Remove PWOK control circuit



FIX PWR MINMUN LOAD

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Title: ATX CONNECTOR

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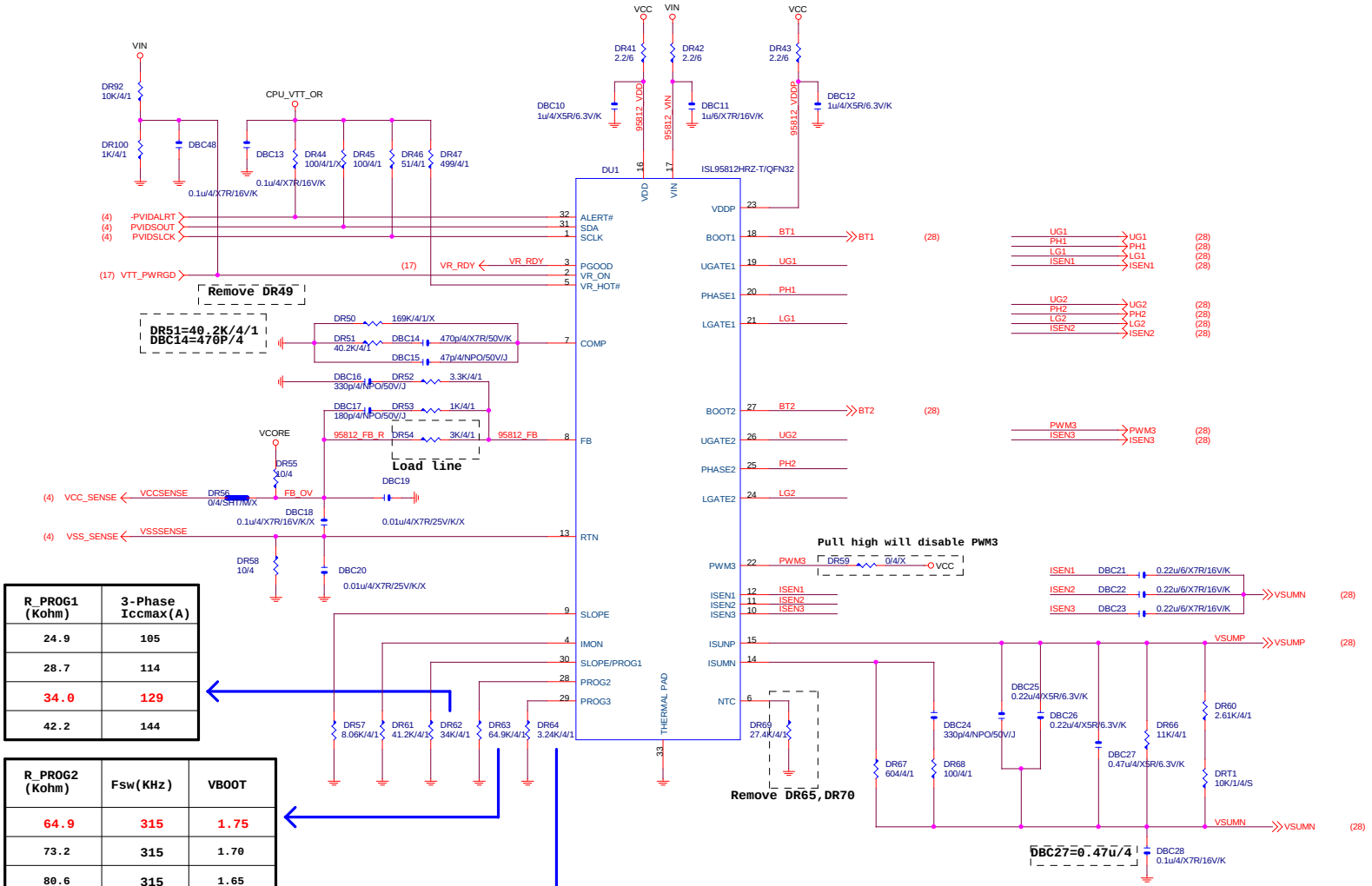

R_PROG1 (Kohm)	3-Phase Iccmax(A)
24.9	105
28.7	114
34.0	129
42.2	144

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

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Title: CPU CORE VR-1

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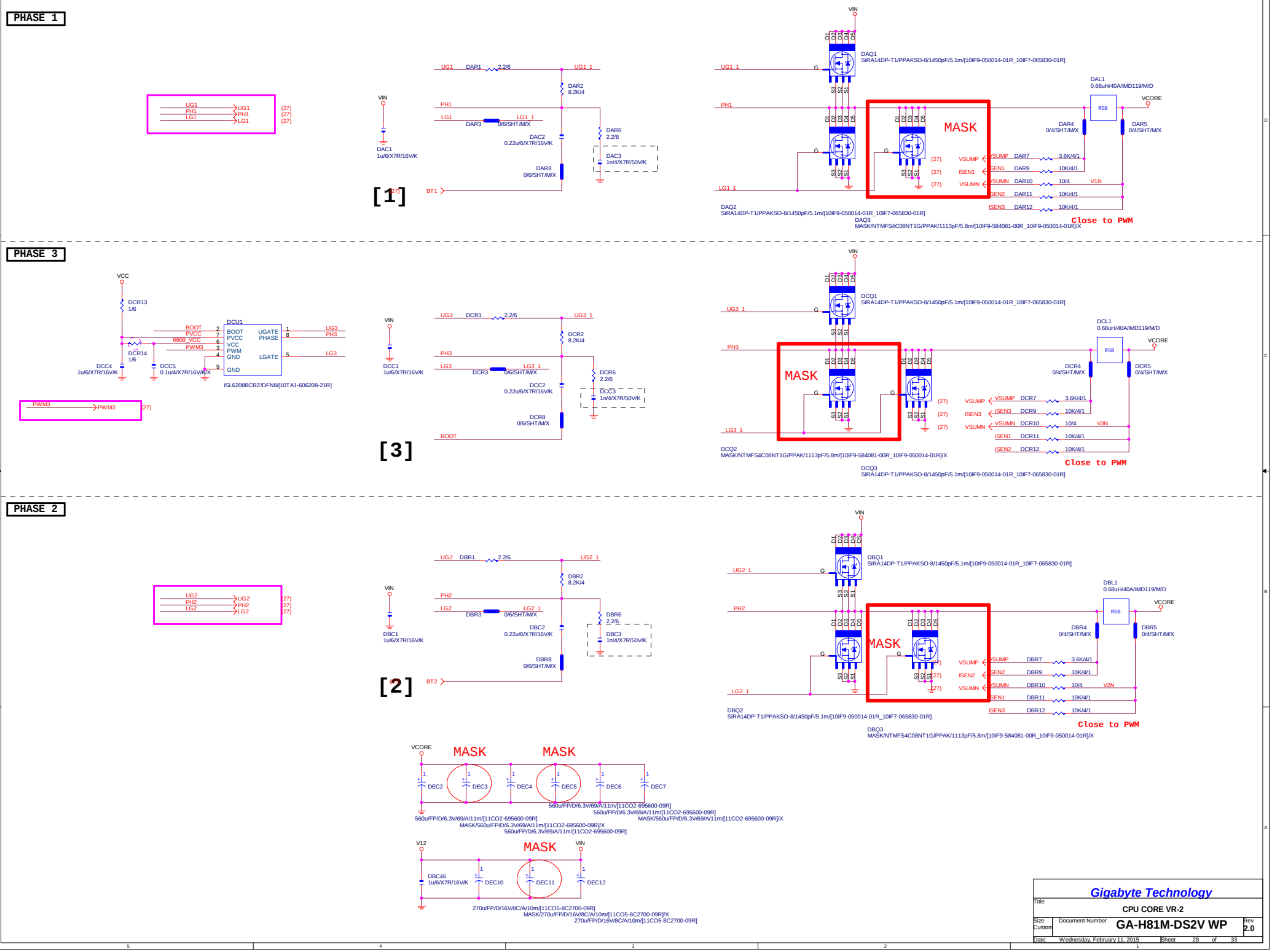
PHASE 1
UG1
PH1
LG1
(27)
VIN
DAC1
1u/6/X7R/16V/K
DAR1 2.2/6
DAR2
8.2K/4
DAR3
0/6/SHT/M/X
DAC2
0.22u/6/X7R/16V/K
DAR6
2.2/6
DAC3
1n/4/X7R/50V/K
DAR8
0/6/SHT/M/X
BT1
[1]
DAQ1
SiRA14DP-T1/PPAKSO-8/1450pF/5.1m/[10IF9-050014-01R_10IF7-065830-01R]
DAL1
0.68uH/40A/IMD119/M/D
VCORE
R50
DAR4
0/4/SHT/M/X
DAR5
0/4/SHT/M/X
MASK
VSUMP
ISEN1
VSUMN
DAR7
DAR9
DAR10
DAR11
DAR12
3.6K/4/1
10K/4/1
10/4
V1N
DAQ2
SiRA14DP-T1/PPAKSO-8/1450pF/5.1m/[10IF9-050014-01R_10IF7-065830-01R]
DAQ3
MASK/NTMFS4C08NT1G/PPAK/1113pF/5.8m/[10IF9-584081-00R_10IF9-050014-01R]/X
Close to PWM
PHASE 3
VCC
DCR13
1/6
DCR14
1/6
DCC4
1u/6/X7R/16V/K
DCC5
0.1u/4/X7R/16V/M/X
DCU1
BOOT
PVCC
6609_VCC
PWM3
UGATE
PHASE
LGATE
GND
UG3
PH3
LG3
ISL6208BCRZ/DFN8/[10TA1-606208-21R]
DCC1
1u/6/X7R/16V/K
DCR1 2.2/6
DCR2
8.2K/4
DCR3
0/6/SHT/M/X
DCC2
0.22u/6/X7R/16V/K
DCR6
2.2/6
DCC3
1n/4/X7R/50V/K
DCR8
0/6/SHT/M/X
BOOT
[3]
DCQ1
SiRA14DP-T1/PPAKSO-8/1450pF/5.1m/[10IF9-050014-01R_10IF7-065830-01R]
DCL1
0.68uH/40A/IMD119/M/D
VCORE
R50
DCR4
0/4/SHT/M/X
DCR5
0/4/SHT/M/X
MASK
VSUMP
ISEN3
VSUMN
DCR7
DCR9
DCR10
DCR11
DCR12
3.6K/4/1
10K/4/1
10/4
V3N
DCQ2
MASK/NTMFS4C08NT1G/PPAK/1113pF/5.8m/[10IF9-584081-00R_10IF9-050014-01R]/X
DCQ3
SiRA14DP-T1/PPAKSO-8/1450pF/5.1m/[10IF9-050014-01R_10IF7-065830-01R]
Close to PWM
PHASE 2
UG2
PH2
LG2
(27)
VIN
DBC1
1u/6/X7R/16V/K
DBR1 2.2/6
DBR2
8.2K/4
DBR3
0/6/SHT/M/X
DBC2
0.22u/6/X7R/16V/K
DBR6
2.2/6
DBC3
1n/4/X7R/50V/K
DBR8
0/6/SHT/M/X
BT2
[2]
DBQ1
SiRA14DP-T1/PPAKSO-8/1450pF/5.1m/[10IF9-050014-01R_10IF7-065830-01R]
DBL1
0.68uH/40A/IMD119/M/D
VCORE
R50
DBR4
0/4/SHT/M/X
DBR5
0/4/SHT/M/X
MASK
VSUMP
ISEN2
VSUMN
ISEN1
ISEN3
DBR7
DBR9
DBR10
DBR11
DBR12
3.6K/4/1
10K/4/1
10/4
V2N
DBQ2
SiRA14DP-T1/PPAKSO-8/1450pF/5.1m/[10IF9-050014-01R_10IF7-065830-01R]
DBQ3
MASK/NTMFS4C08NT1G/PPAK/1113pF/5.8m/[10IF9-584081-00R_10IF9-050014-01R]/X
Close to PWM
VCORE
MASK
MASK
DEC2
DEC3
DEC4
DEC5
DEC6
DEC7
560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]
MASK/560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]/X
V12
VIN
MASK
DBC46
1u/6/X7R/16V/K
DEC10
DEC11
DEC12
270u/FP/D/16V/8C/A/10m/[11CO5-8C2700-09R]
MASK/270u/FP/D/16V/8C/A/10m/[11CO5-8C2700-09R]/X
Gigabyte Technology
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CPU CORE VR-2
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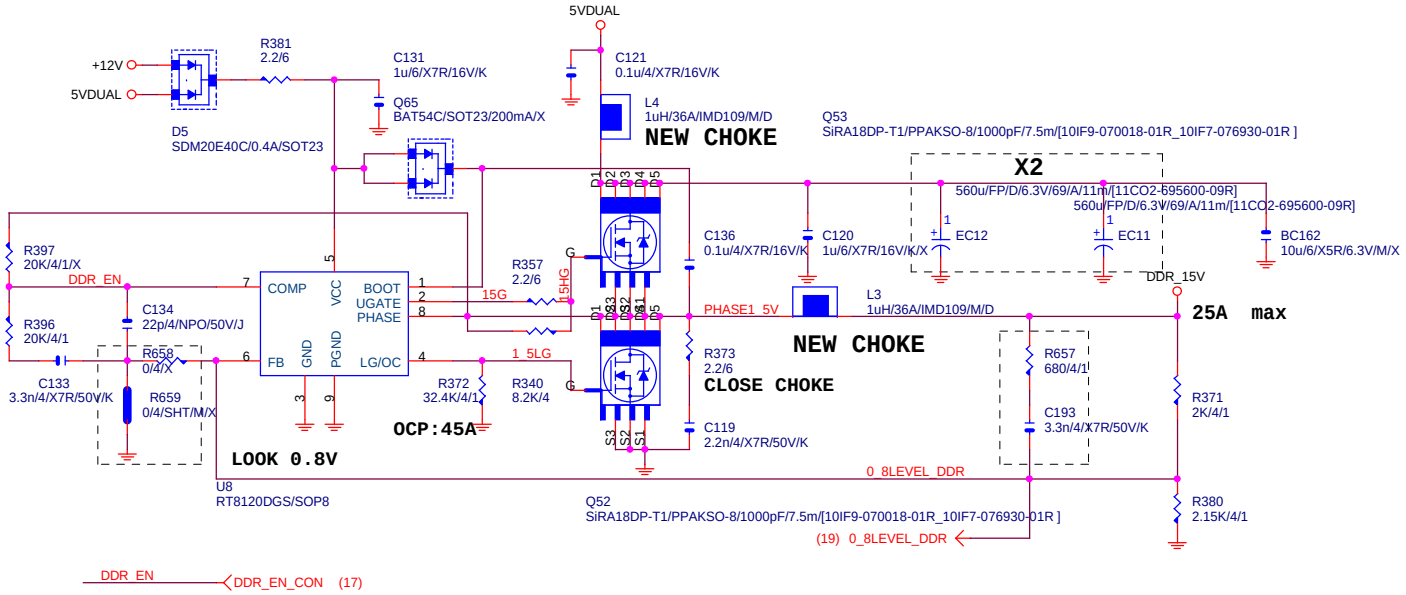
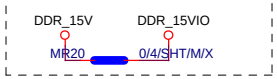
DDR15V



From DDR_15V source
10 mils trace to SIO



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

560u/FP/D/6.3V/68/8m RIPPLE CURRENT=4.7A
Coefficient=1.7(85℃),1(105℃)

VIN Ripple current=4.7X1.7=7.99A(85℃)
-->故固態電容須2X7.99=15.98>11.45A

Rocset=(Iocp*Lgate,rdson)/Iocset
Rocset=(45A*6.7mOhm)/10uA = 30K
Iocset=10uA

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VCC1_05_ME

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

VCC3_ME

Gigabyte Technology

Title
LPT

Size
Custom

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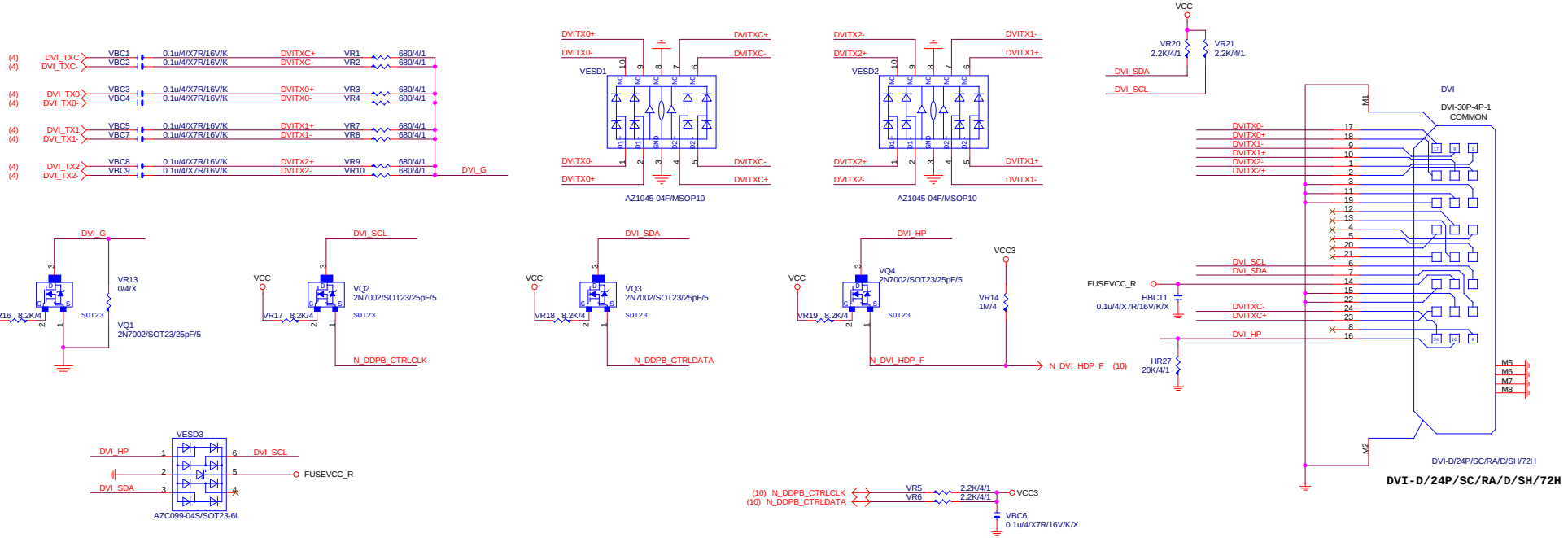
DVI



HDMI LEVEL SHIFT

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Gigabyte Technology

Title: ITE IT8892E

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Title: USB3 EJ188

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