Model Name: GA-H81M-D2V

Revision 1.02

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

SHEET	TITLE
28	VCORE ISL95812_2
29	RT8120_DDR POWER
30	LPT
31	DVI
32	IT8892E (NA)
33	USB3 VL805

Gigabyte Technology

Title: Cover Sheet		
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Model Name: GA-H81M-D2V

Component value change history

2013/04/08

Data	Change Item	Reason
2013/05/15	New BOM	9MH81MD2V-00-01
2013/06/19 9MH81MD2V-00-01	*** 插件位置重覆 *** 新舊線路,元件值不同********** Old BOM LGA1150HASWELL/[10SC1-F01150-11R_10SC1-F01150-12R] New BOM LGA1150HASWELL/[10SC1-F01150-11R_10SC1-F01150-12R] LGA1150ILM_BP/1156/CSP/ILM_BP/1156/CSP/[12KRC-0F0001-52R_12KRC-0F0001-51R] *** 更換 *** 新舊線路中,元件值不同;共 6 個********** U1,'LM324DR/SO14變更為'LM358DR/SO8 LAR13,'150/6變更為'150/4/1 Q59,Q83,Q84,Q57,MMBT2222A/SOT23/600mA/40/[10IT1-002222-11R]變更為MMBT2222A/SOT23/600mA/40 *** 增加 *** 只在新線路中,不在舊線路中;共 2 個********** FEC1,'100u/OS/D/16V/69/A/35m NC3,'22p/4/NPO/50V/J *** 刪除 *** 只在舊線路中,不在新線路中;共 2 個********** R364,'0/4 LGA1150_P,'ILM_BP/1156/CSP/ILM_BP/1156/CSP/[12KRC-0F0001-52R_12KRC-0F0001-51R]	

Circuit or PCB layout change

DATE	Change Item	Reason
2013/04/22	1.由B85M-HD3 Rev 1.0來修改 2.SIO change to IT8620 3.PWM change to ISL95812+6208 4.Delete 2 port SATA3 5.Add VL805 6.Delete HDMI 7.COM port change to rear 8.Delete PCI IT8892E 9.Fan control change to NCT3941S 10.SIO 統一命名O開頭	Rev 0.1
2013/05/23	1.U1 change to LM358	Rev 0.2
2013/06/27	1.PCH pin AD40 接到N_GPIO14 2.Add R394,請靠近R384&C132 3.Remove Q60 4.Add O_-RSMRST delay circuit	Rev 1.0
2013/10/15	1.修改PCH crystal 走線 (技術通報164)	Rev 1.02

PCB : S4VNB (精成,全成信,伊利安達)
S:單文
4:四層板
V:第二層是VCC
N:咖啡色
B:製程

Gigabyte Technology		
Title	BOM & PCB MODIFY HISTORY	
Size: Custom	Document Number: GA-H81M-D2V	Rev: 1.02
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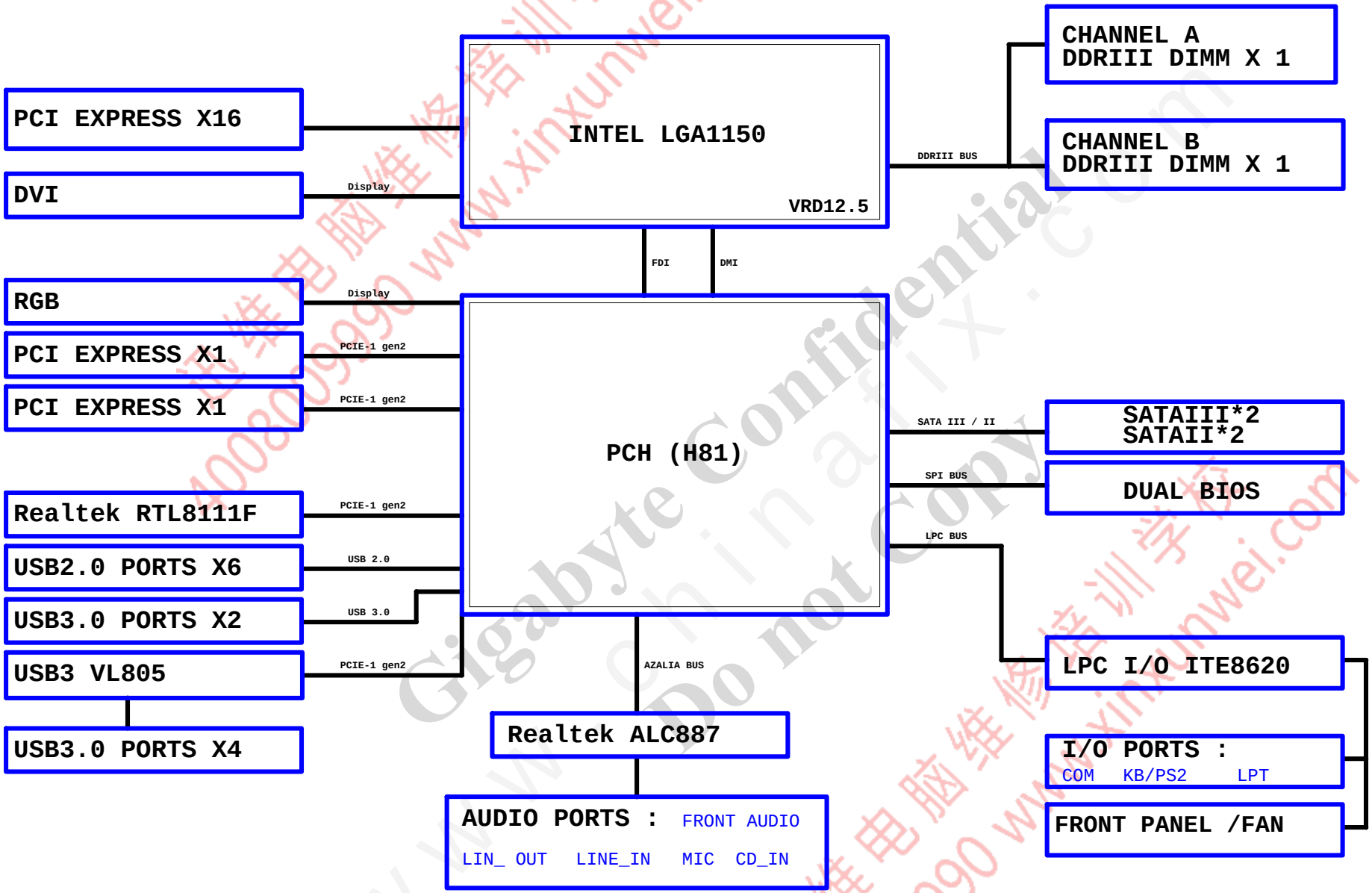
BLOCK DIAGRAM



Gigabyte Technology			
Title: BLOCK DIAGRAM			
Size: C	Document Number: GA-H81M-D2V		Rev: 1.02
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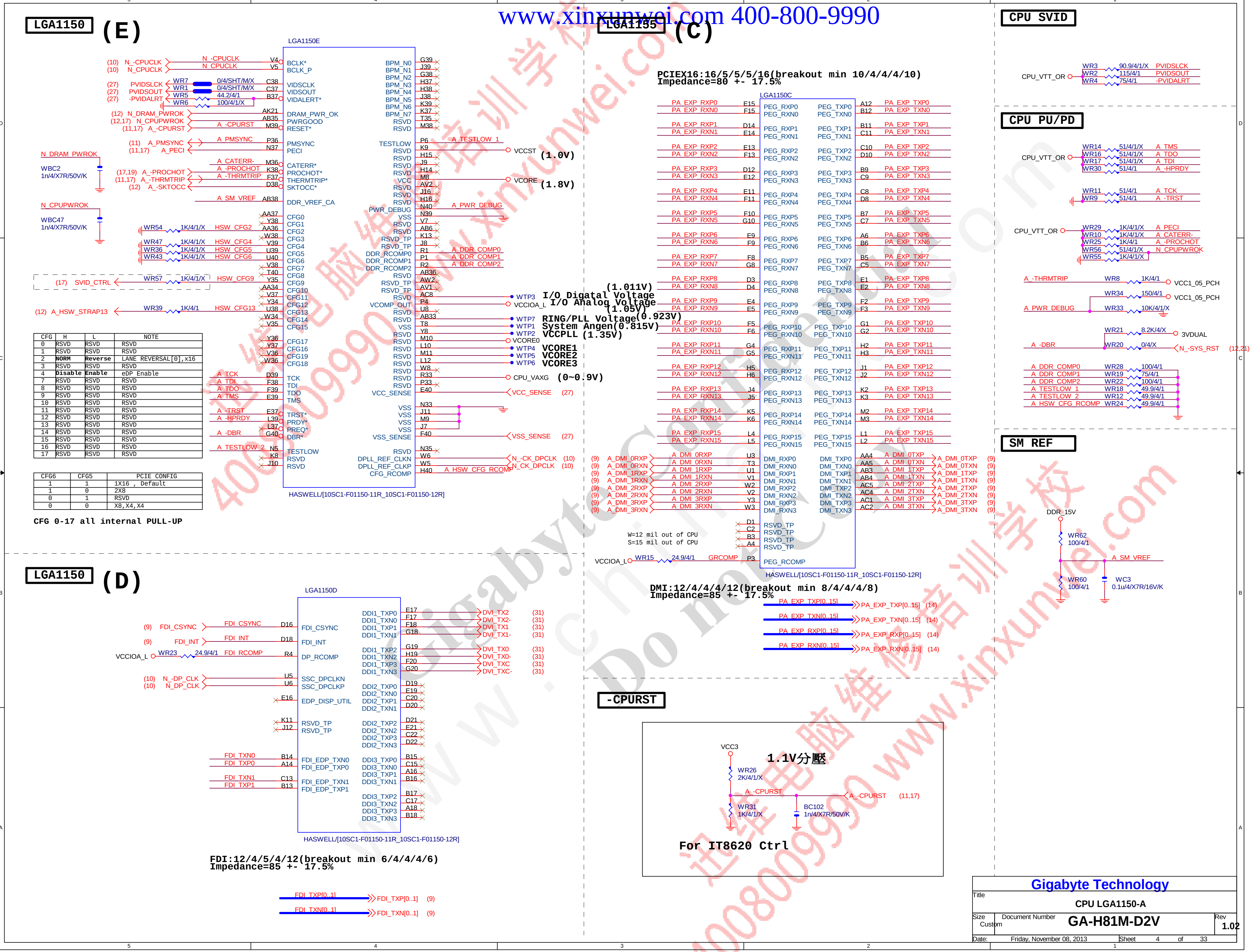

CFG	H	L	NOTE
0	RSVD	RSVD	RSVD
1	RSVD	RSVD	RSVD
2	NORM	Reverse	LANE REVERSAL[0],x16
3	RSVD	RSVD	RSVD
4	Disable	Enable	eDP Enable
7	RSVD	RSVD	RSVD
8	RSVD	RSVD	RSVD
9	RSVD	RSVD	RSVD
10	RSVD	RSVD	RSVD
11	RSVD	RSVD	RSVD
12	RSVD	RSVD	RSVD
13	RSVD	RSVD	RSVD
14	RSVD	RSVD	RSVD
15	RSVD	RSVD	RSVD
16	RSVD	RSVD	RSVD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

Gigabyte Technology

Title: CPU LGA1150-A

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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_DQ17	AM39	MDA21
MODT_A1	AY8	DDR0_ODT0	DDR0_DQ18	AP38	MDA18
	AW9	DDR0_ODT1	DDR0_DQ19	AP39	MDA19
	AU8	DDR0_ODT2	DDR0_DQ20	AM37	MDA20
		DDR0_ODT3	DDR0_DQ21	AM38	MDA16
			DDR0_DQ22	AP37	MDA22
	AW33		DDR0_DQ23	AP40	MDA23
	AV33	DDR0_ECC0	DDR0_DQ24	AV37	MDA25
	AU31	DDR0_ECC1	DDR0_DQ25	AW37	MDA29
	AV31	DDR0_ECC2	DDR0_DQ26	AU35	MDA26
	AT33	DDR0_ECC3	DDR0_DQ27	AV35	MDA27
	AU33	DDR0_ECC4	DDR0_DQ28	AT37	MDA28
	AT31	DDR0_ECC5	DDR0_DQ29	AU37	MDA24
	AW31	DDR0_ECC6	DDR0_DQ30	AT35	MDA30
		DDR0_ECC7	DDR0_DQ31	AW35	MDA31
			DDR0_DQ32	AY6	MDA33
(7) SBAA0	SBAA0	AV12	DDR0_BA0	DDR0_DQ33	AU6	MDA37
(7) SBAA1	SBAA1	AY11	DDR0_BA1	DDR0_DQ34	AV4	MDA34
(7) SBAA2	SBAA2	AT21	DDR0_BA2	DDR0_DQ35	AU4	MDA35
(7) CKEA0	CKEA0	AV22	DDR0_CKE0	DDR0_DQ36	AW6	MDA36
(7) CKEA1	CKEA1	AT23	DDR0_CKE1	DDR0_DQ37	AV6	MDA32
		AU22	DDR0_CKE2	DDR0_DQ38	AW4	MDA38
		AU23	DDR0_CKE3	DDR0_DQ39	AY4	MDA39
				DDR0_DQ40	AR1	MDA41
(7) -CSA0	-CSA0	AU14	DDR0_CS_N0	DDR0_DQ41	AR4	MDA45
(7) -CSA1	-CSA1	AV9	DDR0_CS_N1	DDR0_DQ42	AN3	MDA42
		AU10	DDR0_CS_N2	DDR0_DQ43	AN4	MDA43
		AW8	DDR0_CS_N3	DDR0_DQ44	AR2	MDA44
				DDR0_DQ45	AR3	MDA40
(7) DCLKA0	DCLKA0	AY15	DDR0_CLK_P0	DDR0_DQ46	AN2	MDA46
(7) -DCLKA0	-DCLKA0	AY16	DDR0_CLK_N0	DDR0_DQ47	AN1	MDA47
(7) DCLKA1	DCLKA1	AW15	DDR0_CLK_P1	AL1	MDA49
(7) -DCLKA1	-DCLKA1	AV15	DDR0_CLK_N1	AL4	MDA53
		AY14	DDR0_CLK_P2	AJ3	MDA50
		AW14	DDR0_CLK_N2	AJ4	MDA51
		AW13	DDR0_CLK_P3	AL2	MDA52
		AY13	DDR0_CLK_N3	AL3	MDA48
				AJ2	MDA54
	AW12	RSVD	DDR0_DQ55	AJ1	MDA55
			DDR0_DQ56	AG1	MDA57
			DDR0_DQ57	AG4	MDA61
			DDR0_DQ58	AE3	MDA58
			DDR0_DQ59	AE4	MDA59
			DDR0_DQ60	AG2	MDA60
			DDR0_DQ61	AG3	MDA56
(7) -SRASA	-SRASA	AU12	DDR0_RAS*	DDR0_DQ62	AE2	MDA62
(7) -SWEA	-SWEA	AU11	DDR0_WE*	DDR0_DQ63	AE1	MDA63
		AV20	RSVD	DDR0_DQS_P0	AJ39	DQSA0
				DDR0_DQS_P1	AJ39	DQSA1
	AW27	RSVD	DDR0_DQS_P2	AN39	DQSA2
				DDR0_DQS_P3	AV36	DQSA3
(7) -SCASA	-SCASA	AU9	DDR0_CAS*	DDR0_DQS_P4	AV5	DQSA4
				DDR0_DQS_P5	AP3	DQSA5
				DDR0_DQS_P6	AK3	DQSA6
				DDR0_DQS_P7	AE3	DQSA7
(7,8) -DDR3_RST	WR61 0/4/SHT/M/X	AK22	DDR_RESET*	DDR0_DQS_P8	AV32	
				DDR0_DQS_N0	AE38	-DQSA0
				DDR0_DQS_N1	AJ38	-DQSA1
				DDR0_DQS_N2	AN38	-DQSA2
				DDR0_DQS_N3	AU36	-DQSA3
				DDR0_DQS_N4	AW5	-DQSA4
				DDR0_DQS_N5	AP2	-DQSA5
				DDR0_DQS_N6	AK2	-DQSA6
				DDR0_DQS_N7	AF2	-DQSA7
				DDR0_DQS_N8	AU32	

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

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

LGA1150 (B)

LGA1150B

MAAB0	AL19	DDR1_MA0	DDR1_DQ0	AE34	MDB0
MAAB1	AK23	DDR1_MA1	DDR1_DQ1	AE35	MDB1
MAAB2	AM22	DDR1_MA2	DDR1_DQ2	AG35	MDB2
MAAB3	AM23	DDR1_MA3	DDR1_DQ3	AH35	MDB3
MAAB4	AP23	DDR1_MA4	DDR1_DQ4	AD34	MDB4
MAAB5	AL23	DDR1_MA5	DDR1_DQ5	AD35	MDB5
MAAB6	AY24	DDR1_MA6	DDR1_DQ6	AG34	MDB6
MAAB7	AV25	DDR1_MA7	DDR1_DQ7	AH34	MDB7
MAAB8	AU26	DDR1_MA8	DDR1_DQ8	AL34	MDB8
MAAB9	AW25	DDR1_MA9	DDR1_DQ9	AL35	MDB9
MAAB10	AP18	DDR1_MA10	DDR1_DQ10	AK31	MDB10
MAAB11	AY25	DDR1_MA11	DDR1_DQ11	AL31	MDB11
MAAB12	AV26	DDR1_MA12	DDR1_DQ12	AK34	MDB12
MAAB13	AR15	DDR1_MA13	DDR1_DQ13	AK35	MDB13
MAAB14	AV27	DDR1_MA14	DDR1_DQ14	AK32	MDB14
MAAB15	AY28	DDR1_MA15	DDR1_DQ15	AL32	MDB15
			DDR1_DQ16	AN34	MDB17
MODT_B0	AM17		DDR1_DQ17	AP34	MDB21
MODT_B1	AL16	DDR1_ODT0	DDR1_DQ18	AN31	MDB19
	AM16	DDR1_ODT1	DDR1_DQ19	AP31	MDB23
	AK15	DDR1_ODT2	DDR1_DQ20	AN35	MDB20
		DDR1_ODT3	DDR1_DQ21	AP35	MDB16
	AM26		DDR1_DQ22	AN32	MDB18
	AM25	DDR1_ECC0	DDR1_DQ23	AP32	MDB22
	AP25	DDR1_ECC1	DDR1_DQ24	AM29	MDB25
	AP26	DDR1_ECC2	DDR1_DQ25	AM28	MDB28
	AL26	DDR1_ECC3	DDR1_DQ26	AR29	MDB27
	AL25	DDR1_ECC4	DDR1_DQ27	AR28	MDB30
	AR26	DDR1_ECC5	DDR1_DQ28	AL29	MDB24
	AR25	DDR1_ECC6	DDR1_DQ29	AL28	MDB29
		DDR1_ECC7	DDR1_DQ30	AP29	MDB26
			DDR1_DQ31	AP28	MDB31
(8) SBAB0	SBAB0	AK17	DDR1_BA0	DDR1_DQ32	AR12	MDB32
(8) SBAB1	SBAB1	AL18	DDR1_BA1	DDR1_DQ33	AP12	MDB33
(8) SBAB2	SBAB2	AW28	DDR1_BA2	DDR1_DQ34	AL13	MDB34
(8) CKEB0	CKEB0	AW29	DDR1_DQ35	AL12	MDB35
(8) CKEB1	CKEB1	AY29	DDR1_CKE0	DDR1_DQ36	AR13	MDB36
		AU28	DDR1_CKE1	DDR1_DQ37	AP13	MDB37
		AU29	DDR1_CKE2	DDR1_DQ38	AM13	MDB38
			DDR1_CKE3	DDR1_DQ39	AM12	MDB39
				DDR1_DQ40	AR9	MDB45
(8) -CSB0	-CSB0	AP17	DDR1_CS_N0	DDR1_DQ41	AP9	MDB41
(8) -CSB1	-CSB1	AN15	DDR1_CS_N1	DDR1_DQ42	AR6	MDB47
		AN17	DDR1_CS_N2	DDR1_DQ43	AP6	MDB43
		AL15	DDR1_CS_N3	DDR1_DQ44	AR10	MDB44
				DDR1_DQ45	AP10	MDB40
				DDR1_DQ46	AR7	MDB46
				DDR1_DQ47	AP7	MDB42
(8) DCLKB0	DCLKB0	AM20	DDR1_CLK_P0	DDR1_DQ48	AM9	MDB52
(8) -DCLKB0	-DCLKB0	AM21	DDR1_CLK_N0	DDR1_DQ49	AL9	MDB53
(8) DCLKB1	DCLKB1	AP22	DDR1_CLK_P1	DDR1_DQ50	AL6	MDB50
(8) -DCLKB1	-DCLKB1	AP21	DDR1_CLK_N1	DDR1_DQ51	AL7	MDB55
				DDR1_DQ52	AM10	MDB48
		AN20	DDR1_CLK_P2	DDR1_DQ53	AL10	MDB49
		AN21	DDR1_CLK_N2	DDR1_DQ54	AM6	MDB54
		AP19	DDR1_CLK_P3	DDR1_DQ55	AM7	MDB51
		AP20	DDR1_CLK_N3	DDR1_DQ56	AH6	MDB61
				DDR1_DQ57	AH7	MDB60
(8) -SCASB	-SCASB	AP16	DDR1_CAS*	DDR1_DQ58	AE6	MDB59
		AL20	RSVD	DDR1_DQ59	AE7	MDB63
(8) -SRASB	-SRASB	AM18	DDR1_RAS*	DDR1_DQ60	AJ6	MDB56
(8) -SWEB	-SWEB	AK16	DDR1_WE*	DDR1_DQ61	AJ7	MDB57
				DDR1_DQ62	AF6	MDB58
				DDR1_DQ63	AF7	MDB62
(7) VREF_DQA	VREF_DQA	AB39	DDR_VREF_DQ0	DDR1_DQS_P0	AE35	DQSB0
(8) VREF_DQB	VREF_DQB	AB40	DDR_VREF_DQ1	DDR1_DQS_P1	AL33	DQSB1
				DDR1_DQS_P2	AP33	DQSB2
				DDR1_DQS_P3	AN28	DQSB3
				DDR1_DQS_P4	AN12	DQSB4
				DDR1_DQS_P5	AP8	DQSB5
				DDR1_DQS_P6	AL8	DQSB6
				DDR1_DQS_P7	AG7	DQSB7
				DDR1_DQS_P8	AN25	
				DDR1_DQS_N0	AE34	-DQSB0
				DDR1_DQS_N1	AK33	-DQSB1
				DDR1_DQS_N2	AN33	-DQSB2
				DDR1_DQS_N3	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
WBC33 0.1u/4/X7R/16V/K
Place in CPU bottom side

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

LGA1150 (CR)

CR
CPU RETAINTION/X

LGA1150

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

DDR BUS

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

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

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

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

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

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Title: CPU LGA1150-B			
Size: Custom	Document Number: GA-H81M-D2V		Rev: 1.02
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LGA1150 (F,J)

(1.0V)
CPU_VTT_OR

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

VCCST

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

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

WR65
0/4/X

WR63
0/4/SHT/M/X

VCCIO2PCH
(1.07V)

WR64
0/4/SHT/M/X

VCC1_05_PCH

VCORE

LGA1150F

P8	VCC	VCC	C31
L40	VCCIO_OUT	VCC	C33
AB8	VCCIO2PCH	VCC	L16
		VCC	L15
L31	VCC	VCC	J35
L18	VCC	VCC	H33
L17	VCC	VCC	H35
J33	VCC	VCC	J21
A24	VCC	VCC	J22
A25	VCC	VCC	J23
A26	VCC	VCC	J24
A27	VCC	VCC	J25
A28	VCC	VCC	J26
A29	VCC	VCC	J27
A30	VCC	VCC	J28
G33	VCC	VCC	J29
B25	VCC	VCC	J30
B27	VCC	VCC	J32
B29	VCC	VCC	J34
B31	VCC	VCC	K19
J31	VCC	VCC	K21
B33	VCC	VCC	K23
G31	VCC	VCC	K25
B35	VCC	VCC	K27
C24	VCC	VCC	K29
C25	VCC	VCC	K31
C26	VCC	VCC	M13
C27	VCC	VCC	K33
C28	VCC	VCC	K35
C29	VCC	VCC	L19
C30	VCC	VCC	L20
C32	VCC	VCC	L21
C34	VCC	VCC	L22
C35	VCC	VCC	L23
D25	VCC	VCC	L24
D27	VCC	VCC	L25
D29	VCC	VCC	L26
D31	VCC	VCC	L27
E33	VCC	VCC	L28
D33	VCC	VCC	L29
E31	VCC	VCC	L30
D35	VCC	VCC	L32
E24	VCC	VCC	L33
E25	VCC	VCC	M17
E26	VCC	VCC	M15
E27	VCC	VCC	M19
E28	VCC	VCC	M21
E29	VCC	VCC	M23
E30	VCC	VCC	M25
E32	VCC	VCC	M27
E34	VCC	VCC	M29
F23	VCC	VCC	M33
F25	VCC		
F27	VCC	VDDQ	AJ12
F29	VCC	VDDQ	AJ13
F31	VCC	VDDQ	AJ15
E35	VCC	VDDQ	AJ17
F33	VCC	VDDQ	AJ20
F35	VCC	VDDQ	AJ21
G22	VCC	VDDQ	AJ24
G23	VCC	VDDQ	AJ25
G24	VCC	VDDQ	AJ28
G25	VCC	VDDQ	AJ29
G26	VCC	VDDQ	AJ9
G27	VCC	VDDQ	AT17
G28	VCC	VDDQ	AT22
G29	VCC	VDDQ	AU15
G30	VCC	VDDQ	AU20
G32	VCC	VDDQ	AU24
G34	VCC	VDDQ	AV10
G35	VCC	VDDQ	AV11
H23	VCC	VDDQ	AV13
H25	VCC	VDDQ	AV18
H27	VCC	VDDQ	AV23
H29	VCC	VDDQ	AV8
H31	VCC	VDDQ	AW16
L34	VCC	VDDQ	AY12
		VDDQ	AY14
		VDDQ	AY9

DDR_15V

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

LGA1150J

AY18	RSVD	RSVD_TP	K12
AW24	RSVD	RAVD_TP	J13
AW23	RSVD	RAVD_TP	P37
AV29	RSVD	RAVD_TP	N38
AV24	RSVD	RAVD_TP	R36
AU39	RSVD	RAVD_TP	C39
AU27	RSVD	VSS	U35
AU1	RSVD	VSS	P40
AT40	RSVD	VSS	R38
AK20	RSVD	VSS	T37
Y7	RSVD	VSS	V34
T34	RSVD	VSS	R39
R34	RSVD	VSS	T38
J40	RSVD	VSS	U36
J17	RSVD	VSS	P39
J15	RSVD	VSS	T36
H12	RSVD	VSS	R37
		VSS	J14
		RSVD_TP	N36

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

WR67
6.04K/4/1

(11,12,17) O_PWROK1

VCCST_PWRGD

WR66
3.16K/4/1

LGA1155 (G,H,I)

LGA1150G

A13	VSS	VSS	AJ34
A15	VSS	VSS	AJ35
A17	VSS	VSS	AJ36
A23	VSS	VSS	AJ37
A11	VSS	VSS	AJ40
AA3	VSS	VSS	AJ5
AA33	VSS	VSS	AJ8
AA35	VSS	VSS	AK1
AA38	VSS	VSS	AK10
AA6	VSS	VSS	AK11
AA7	VSS	VSS	AK12
AA8	VSS	VSS	AK13
A5	VSS	VSS	AK14
AB34	VSS	VSS	AK18
AB37	VSS	VSS	AK19
AB5	VSS	VSS	AK24
AB7	VSS	VSS	AK25
AC3	VSS	VSS	AK26
AC33	VSS	VSS	AK27
AC34	VSS	VSS	AK28
AC35	VSS	VSS	AK29
AC36	VSS	VSS	AK30
AC37	VSS	VSS	AK36
AC38	VSS	VSS	AK4
AC39	VSS	VSS	AK5
AC40	VSS	VSS	AK6
AC6	VSS	VSS	AK7
AC7	VSS	VSS	AK8
A7	VSS	VSS	AK9
AD1	VSS	VSS	AL11
AD2	VSS	VSS	AL14
AD3	VSS	VSS	AL17
AD33	VSS	VSS	AL21
AD36	VSS	VSS	AL22
AD4	VSS	VSS	AL24
AD5	VSS	VSS	AL27
AD6	VSS	VSS	AL30
AD7	VSS	VSS	AL36
AD8	VSS	VSS	AL37
AE33	VSS	VSS	AL38
AE36	VSS	VSS	AL39
AE37	VSS	VSS	AL40
AE40	VSS	VSS	AL5
AE5	VSS	VSS	AM1
AE8	VSS	VSS	AM11
AF1	VSS	VSS	AM14
AF33	VSS	VSS	AM15
AF36	VSS	VSS	AM19
AF4	VSS	VSS	AM2
AF5	VSS	VSS	AM24
AF8	VSS	VSS	AM27
AG33	VSS	VSS	AM3
AG36	VSS	VSS	AM30
AG37	VSS	VSS	AM31
AG38	VSS	VSS	AM32
AG39	VSS	VSS	AM33
AG40	VSS	VSS	AM34
AG5	VSS	VSS	AM35
AG8	VSS	VSS	AM36
AH1	VSS	VSS	AM4
AH2	VSS	VSS	AM5
AH3	VSS	VSS	AN10
AH33	VSS	VSS	AN11
AH36	VSS	VSS	AN14
AH4	VSS	VSS	AN16
AH5	VSS	VSS	AN18
AH8	VSS	VSS	AN19
AJ11	VSS	VSS	AN22
AJ14	VSS	VSS	AN23
AJ16	VSS	VSS	AN24
AJ18	VSS	VSS	AN27
AJ19	VSS	VSS	AN30
AJ22	VSS	VSS	AN36
AJ23	VSS	VSS	AN37
AJ26	VSS	VSS	AN40
AJ27	VSS	VSS	AN5
AJ30	VSS	VSS	AN6
AJ31	VSS	VSS	AN7
AJ32	VSS	VSS	AN8
AJ33	VSS	VSS	AN9
		VSS	AP1

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

LGA1150I

G12	VSS	VSS	M4
G13	VSS	VSS	M40
G14	VSS	VSS	M5
G16	VSS	VSS	M6
H11	VSS	VSS	M7
G17	VSS	VSS	K15
G21	VSS	VSS	K16
G3	VSS	VSS	N1
H13	VSS	VSS	N2
H22	VSS	VSS	N3
H32	VSS	VSS	N7
G36	VSS	VSS	N34
G37	VSS	VSS	N4
G6	VSS	VSS	N6
G7	VSS	VSS	K32
G15	VSS	VSS	P2
H1	VSS	VSS	P34
H10	VSS	VSS	P38
H17	VSS	VSS	P5
H18	VSS	VSS	P7
H20	VSS	VSS	N8
H21	VSS	VSS	R3
H24	VSS	VSS	L36
H26	VSS	VSS	R35
H28	VSS	VSS	R40
H30	VSS	VSS	R5
H34	VSS	VSS	R6
H36	VSS	VSS	R7
H39	VSS	VSS	T1
H4	VSS	VSS	T2
H7	VSS	VSS	T33
H8	VSS	VSS	M35
H9	VSS	VSS	T39
J19	VSS	VSS	T4
J20	VSS	VSS	T5
J3	VSS	VSS	T6
J18	VSS	VSS	T7
K10	VSS	VSS	R8
K14	VSS	VSS	U2
J36	VSS	VSS	U33
J37	VSS	VSS	U34
J6	VSS	VSS	U37
K1	VSS	VSS	U4
K18	VSS	VSS	U7
K20	VSS	VSS	P35
K22	VSS	VSS	V3
K24	VSS	VSS	V33
K26	VSS	VSS	V40
K28	VSS	VSS	V6
K30	VSS	VSS	V8
K34	VSS	VSS	W1
K36	VSS	VSS	W33
K4	VSS	VSS	W35
K40	VSS	VSS	W37
K7	VSS	VSS	W4
L7	VSS	VSS	W7
L8	VSS		
L9	VSS	VSS	Y33
L11	VSS	VSS	Y4
L3	VSS	VSS	Y5
L13	VSS	VSS	Y6
L14	VSS		
L35	VSS		
L38	VSS		
L6	VSS		
M1	VSS	VSS_NCTF	AU40
K17	VSS	VSS_NCTF	AV39
M12	VSS	VSS_NCTF	AW38
M14	VSS	VSS_NCTF	AY3
M18	VSS	VSS_NCTF	B38
M16	VSS	VSS_NCTF	B39
M20	VSS	VSS_NCTF	C40
M22	VSS	VSS_NCTF	D40
M24	VSS		
M26	VSS		
M28	VSS		
M30	VSS		
M32	VSS		
M34	VSS		
M37	VSS		

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

LGA1150H

AP11	VSS	VSS	AW32
AP14	VSS	VSS	AW34
AP15	VSS	VSS	AW36
AP24	VSS	VSS	AW7
AP27	VSS	VSS	AW9
AP30	VSS	VSS	AY1
AP36	VSS	VSS	AY26
AP4	VSS	VSS	AY27
AP5	VSS	VSS	AY30
AR11	VSS	VSS	AY5
AR14	VSS	VSS	AY7
AR16	VSS	VSS	B24
AR17	VSS	VSS	B26
AR18	VSS	VSS	B28
AR19	VSS	VSS	B30
AR20	VSS	VSS	B34
AR21	VSS	VSS	B36
AR22	VSS	VSS	B4
AR23	VSS	VSS	B8
AR24	VSS	VSS	C4
AR27	VSS	VSS	C6
AR30	VSS	VSS	C12
AR31	VSS	VSS	C14
AR32	VSS	VSS	C16
AR33	VSS	VSS	C18
AR34	VSS	VSS	C19
AR35	VSS	VSS	C21
AR36	VSS	VSS	C23
AR37	VSS	VSS	C36
AR38	VSS	VSS	B10
AR39	VSS	VSS	B23
AR40	VSS	VSS	C3
AR5	VSS	VSS	D9
AT1	VSS	VSS	D11
AT10	VSS	VSS	D13
AT11	VSS	VSS	D15
AT12	VSS	VSS	D17
AT13	VSS	VSS	D2
AT14	VSS	VSS	D23
AT15	VSS	VSS	D24
AT16	VSS	VSS	D26
AT2	VSS	VSS	D28
AT24	VSS	VSS	D30
AT25	VSS	VSS	D34
AT26	VSS	VSS	D36
AT27	VSS	VSS	D37
AT28	VSS	VSS	D5
AT29	VSS	VSS	D6
AT3	VSS	VSS	D7
AT30	VSS	VSS	E7
AT32	VSS	VSS	E8
AT34	VSS	VSS	E10
AT36	VSS	VSS	E18
AT38	VSS	VSS	E3
AT39	VSS	VSS	E20
AT4	VSS	VSS	E22
AT5	VSS	VSS	E23
AT6	VSS	VSS	E36
AT7	VSS	VSS	E38
AT8	VSS	VSS	B32
AT9	VSS	VSS	E6
AU2	VSS	VSS	F1
AU25	VSS	VSS	F32
AU3	VSS	VSS	F12
AU30	VSS	VSS	F14
AU34	VSS	VSS	F16
AU38	VSS	VSS	F19
AU5	VSS	VSS	F21
AU7	VSS	VSS	F22
AV21	VSS	VSS	F24
AV28	VSS	VSS	F26
AV3	VSS	VSS	F28
AV30	VSS	VSS	F30
AV34	VSS	VSS	F34
AV38	VSS	VSS	F36
AV7	VSS	VSS	F4
AW26	VSS	VSS	D32
AW3	VSS	VSS	F7
AW30	VSS	VSS	G9
	VSS	VSS	G11

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

VCore CAP (X18)

VCORE

WBC35 22u/8/X5R/6.3V/M
WBC42 22u/8/X5R/6.3V/M
WBC36 22u/8/X5R/6.3V/M
WBC43 22u/8/X5R/6.3V/M
WBC44 22u/8/X5R/6.3V/M

VCORE

WBC38 22u/8/X5R/6.3V/M
WBC37 22u/8/X5R/6.3V/M
WBC46 22u/8/X5R/6.3V/M
WBC39 22u/8/X5R/6.3V/M
WBC41 22u/8/X5R/6.3V/M
WBC40 22u/8/X5R/6.3V/M

VCORE

WBC19 22u/8/X5R/6.3V/M
WBC21 22u/8/X5R/6.3V/M
WBC6 22u/8/X5R/6.3V/M
WBC9 22u/8/X5R/6.3V/M
WBC20 22u/8/X5R/6.3V/M
WBC7 22u/8/X5R/6.3V/M
WBC11 22u/8/X5R/6.3V/M

DDR CAP (X9)

DDR_15V

WBC29 22u/8/X5R/6.3V/M
WBC30 22u/8/X5R/6.3V/M
WBC31 22u/8/X5R/6.3V/M
WBC32 22u/8/X5R/6.3V/M

DDR_15V

WBC24 22u/8/X5R/6.3V/M
WBC25 22u/8/X5R/6.3V/M
WBC26 22u/8/X5R/6.3V/M
WBC27 22u/8/X5R/6.3V/M
WBC28 22u/8/X5R/6.3V/M

Gigabyte Technology			
Title	CPU LGA1150-C		
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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

MR17 0/4
VCC3
VDDSPD_A

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

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

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
MR4 1K/4/1
MR5 1K/4/1
MR1 10/4
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
MBC12 0.1u/4/X7R/16V/K
MBC14 0.1u/4/X7R/16V/K

DDR_15V
MBC15 1u/4/X5R/6.3V/K
MBC17 1u/4/X5R/6.3V/K
MBC27 1u/4/X5R/6.3V/K
MBC29 1u/4/X5R/6.3V/K
MBC35 1u/4/X5R/6.3V/K
MBC36 1u/4/X5R/6.3V/K
MBC37 1u/4/X5R/6.3V/K
MBC47 1u/4/X5R/6.3V/K
MBC9 1u/4/X5R/6.3V/K

DDRVTT Decouple

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

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

Gigabyte Technology

Title: DDRIII CHANNEL A

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DDR3 (B)

DDR3_2

DDRVTT
DDR_15V
VDDSPD_B
VCC3

MR18 0/4
MC2 0.1u/4/X7R/16V/K
MC14 0.1u/4/X7R/16V/K VREF_DDRB
MC9 0.1u/4/X7R/16V/K VREF_DQDDRB

(7,12,14,15,19) N_SMBCLK
(7,12,14,15,19) N_SMBDATA

(5) SBAB2
(5) SBAB1
(5) SBAB0
(5) CKEB1
(5) CKEB0
(5) -CSB1
(5) -CSB0
(5) -DCLKB1
(5) DCLKB1
(5) -DCLKB0
(5) DCLKB0
(5) MAAB[0..15]
(5,7) -DDR3_RST
(5) -SCASB
(5) -SRASB
(5) -SWEB

MDB[0..63] (5)

DDR3_VREF

MR10 1K/4/1
MR11 1K/4/1
MR8 1K/4/1
MR9 1K/4/1
MR7 10/4
VREF_DDRB
VREF_DQDDRB
VREF_DQB (5)

COUPON

COUPON1 COUPON1 1 2 COUPON/X
COUPON2 COUPON2 1 2 COUPON/X

CPU

DIMM4
DIMM2
CHA
DIMM3
DIMM1
CHB

DDR3/240/BK/VA/D
BLACK CONNECTOR

-DQSB[0..7] -DQSB[0..7] (5)
DQSB[0..7] DQSB[0..7] (5)
MODT_B[0..1] MODT_B[0..1] (5)

Gigabyte Technology

Title: DDRIII CHANNEL B
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PCH (B)

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

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

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

PCHB

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

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

N_-USBP0 (21) N_+USBP0 (21) N_-USBP1 (21) N_+USBP1 (21) N_-USBP4 (18) N_+USBP4 (18) N_-USBP5 (18) N_+USBP5 (18) N_-USBP8 (21) N_+USBP8 (21) N_-USBP9 (21) N_+USBP9 (21) N_-USBP10 (21) N_+USBP10 (21) N_-USBP11 (21) N_+USBP11 (21)

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

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

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

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

CK_-SRCCLK_PCH G22
CK_SRCCLK_PCH F22

PCIE Only

PCIE_PERN_1_USB3_RXN_2 PCIE_PERP_1_USB3_RXP_2 PCIE_PETN_1_USB3_TXN_2 PCIE_PETP_1_USB3_TXP_2 PCIE_PERN_2_USB3_RXN_3 PCIE_PERP_2_USB3_RXP_3 PCIE_PETN_2_USB3_TXN_3 PCIE_PETP_2_USB3_TXP_3

OC0B_GP59 OC1B_GP40 OC2B_GP41 OC3B_GP42 OC4B_GP43 OC5B_GP9 OC6B_GP10 OC7B_GP14

N_-USBOC_F (18,21) N_-USBOC_R (18) N_GPIO14

USBRBIASB USBRBIAS

N_USBRBIAS NR47 22.6/4/1

CLKIN_DOT96N CLKIN_DOT96P

CK_-DOTCLK 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

8111G: (24) LA_ML_IN (24) LA_ML_IP (24) LA_ML_ON (24) LA_ML_OP

vl805: (33) USB3_IN1 (33) USB3_IP1 (33) USB3_ON1 (33) USB3_OP1

PCIEx1: (15) PI_PCIEX1_IN (15) PI_PCIEX1_IP (15) PI_PCIEX1_ON (15) PI_PCIEX1_OP (15) PJ_PCIEX1_IN (15) PJ_PCIEX1_IP (15) PJ_PCIEX1_ON (15) PJ_PCIEX1_OP

N/A

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

H81/S

PCH (F)

PCHF

(21) PCH_USB3_RXN0 (21) PCH_USB3_RXP0 (21) PCH_USB3_TXN0 (21) PCH_USB3_TXP0
(21) PCH_USB3_RXN1 (21) PCH_USB3_RXP1 (21) PCH_USB3_TXN1 (21) PCH_USB3_TXP1

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

FDI_RXN_0 FDI_RXP_0 FDI_TXN_0 FDI_RXN_1 FDI_RXP_1 FDI_CSYNC FDI_INT FDI_RCOMP

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

N/A

VCC3 — NR62 8.2K/4 — NR63 8.2K/4

TACH6_GP70 TACH7_GP71

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

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

Mount for integrated clock Generation Mode

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

NR225 short to GND in non graphic SKU

PCH (J)

PCHJ

VSS_NCTF

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

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

VSS VSS VSS

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

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PCH (E)

PCHE

(31) N_DVI_HDP_F

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

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

H81/S

PCH (G)

PCHG

(17) N_LPC33 — NR37 33/4 — N_LPC33Z0 — AV5 CLKOUT_33MHZ0
(11) N_PCH33 — NR38 33/4 — N_PCH33Z1 — AV7 CLKOUT_33MHZ1
AU2 CLKOUT_33MHZ2
AN9 CLKOUT_33MHZ3
AU5 CLKOUT_33MHZ4

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

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

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

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

N_XTALI_PCH — NR15 1M/4
NX1 — N_XTALO_PCH
25M/12p/30ppm/49US/20/D
NC8 12p/4/NPO/50V/J
NC7 12p/4/NPO/50V/J
N_XTALO_PCH — N7 XTAL25_OUT
N_XTALI_PCH — N6 XTAL25_IN

CLKIN_GND0_N G16 — N_-CLK_GND
CLKIN_GND0_P F16 — N_CLK_GND
CLKOUT_DMI_N R2 — N_-CPUCLK (4)
CLKOUT_DMI_P T2 — N_CPUCLK (4)
CLKOUT_DP_N T3 — N_-DP_CLK (4)
CLKOUT_DP_P T5 — N_DP_CLK (4)
CLKOUT_DPNS_N W2 — N_-CK_DPCLK (4)
CLKOUT_DPNS_P U2 — N_CK_DPCLK (4)
CLKOUT_ITPXDP_N U6
CLKOUT_ITPXDP_P U7
CLKOUT_PEG_A_N AA3 — PA_-SRCCLK_3GIO (14)
CLKOUT_PEG_A_P AA2 — PA_SRCCLK_3GIO (14) — PCIEx16
CLKOUT_PEG_B_N AE6
CLKOUT_PEG_B_P AE7
CLKOUT_PCIE_N_0 AE10 — PI_-PCIE_CLK (15)
CLKOUT_PCIE_P_0 AE11 — PI_PCIE_CLK (15) — PCIEx1
CLKOUT_PCIE_N_1 AC6
CLKOUT_PCIE_P_1 AC7
CLKOUT_PCIE_N_2 AC11 — LA_-SRCCLK_LAN (24)
CLKOUT_PCIE_P_2 AC10 — LA_SRCCLK_LAN (24) — 8111F
CLKOUT_PCIE_N_3 W11
CLKOUT_PCIE_P_3 W10
CLKOUT_PCIE_N_4 Y4
CLKOUT_PCIE_P_4 Y2
CLKOUT_PCIE_N_5 W7 — PJ_-PCIE_CLK (15)
CLKOUT_PCIE_P_5 W6 — PJ_PCIE_CLK (15) — PCIEx1
CLKOUT_PCIE_N_6 AA7 — SRCCLK_USB3 (33)
CLKOUT_PCIE_P_6 AA6 — SRCCLK_USB3 (33) — VL805
CLKOUT_PCIE_N_7 R6
CLKOUT_PCIE_P_7 R7

H81/S

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

PCH CLK PD

N_-CLK_GND NR42 8.2K/4
N_CLK_GND NR41 8.2K/4

Mount for integrated clock Generation Mode

N_PCHCLK14 NR118 8.2K/4

VGA DDC

VCC3
R146 2.2K/4/1
R147 2.2K/4/1
N_DDCDATA
N_DDCCLK
NR35 1K/4/1
NR36 1K/4/1
Q47 2N7002/SOT23/25pF/5
Q48 2N7002/SOT23/25pF/5
SOT23
VCC
R144 2.2K/4/1
R145 2.2K/4/1
VGADDCDATA
VGADDCCLK
N_GVSYNC
N_GHSYNC
C31 100p/4/NPO/50V/J/X
C32 100p/4/NPO/50V/J/X

VGA CONNECTOR

FUSEVCC_R
BC63 0.1u/4/X7R/16V/K/X
VGA
VGA_R
VGA_G
VGA_B
VGADDCDATA
N_GHSYNC
N_GVSYNC
VGADDCCLK
VGA/BK/SC/RA/D/2/HR

BLACK CONNECTOR

VGA ESD

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

SSOP6_ESD

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

VGA DDC

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

Close to Filter

Gigabyte Technology

Title: PCH DISPLAY ,CLK BUFFER

Size: Custom | Document Number: GA-H81M-D2V | Rev: 1.02

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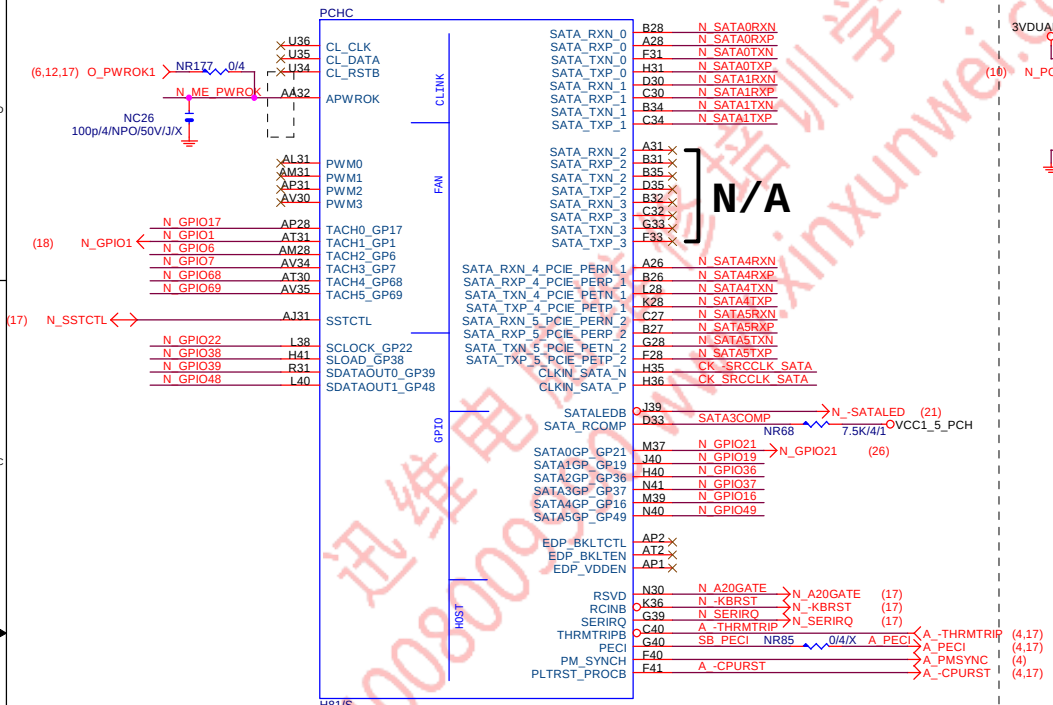
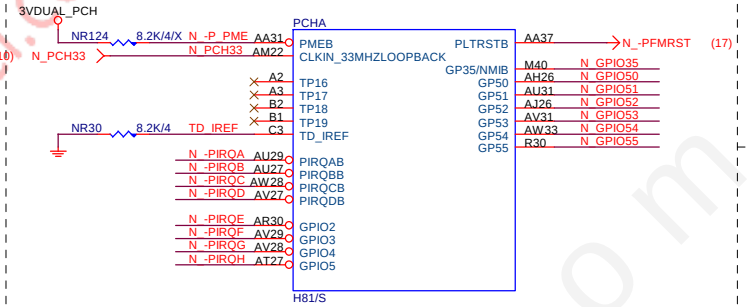
PCH (C)

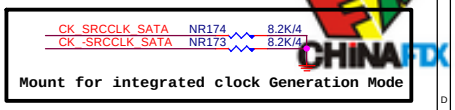
SATA3 : 20/7.5/4.5/7.5/20 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%
SATA2 : 15/7.5/4.5/7.5/15 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%



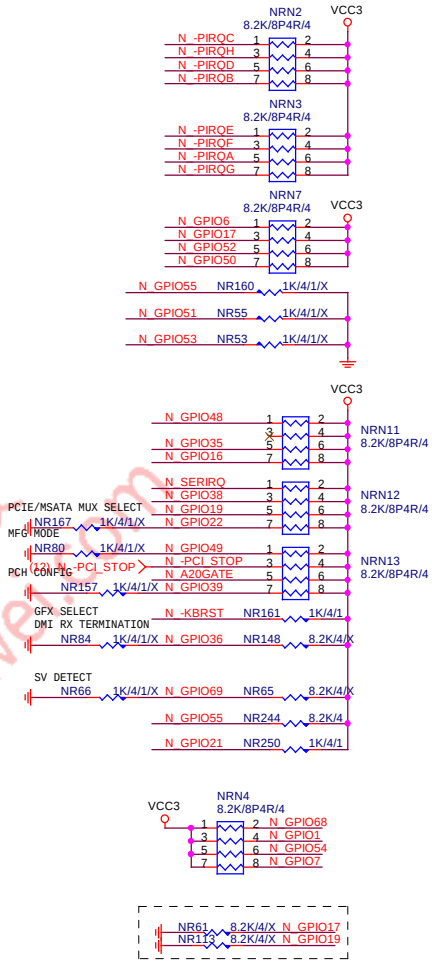
PCH (A)



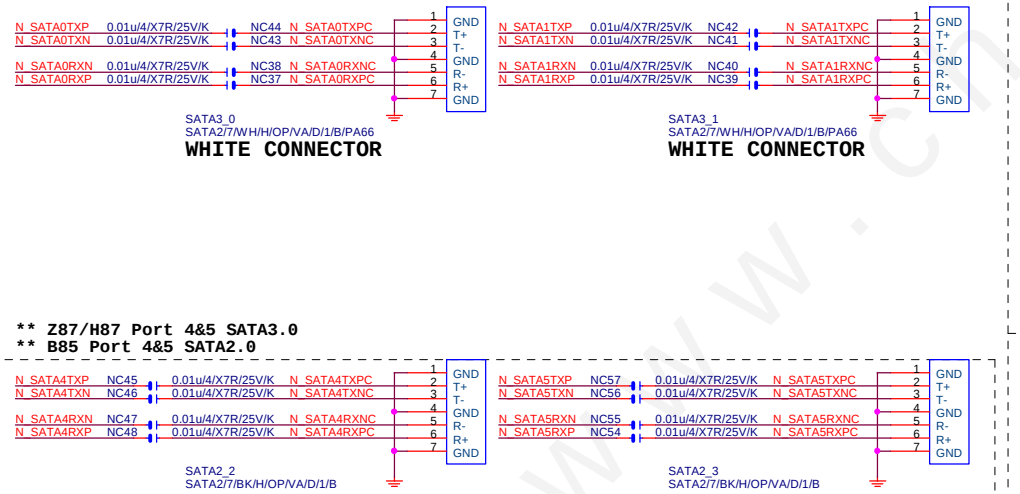
PCH CLK PD



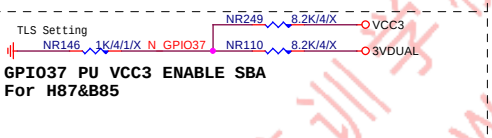
PCH PU/PD



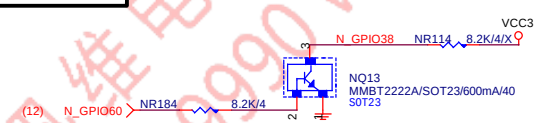
SATA CONNECTOR



ME PWROK



GPIO38 Ctrl



Gigabyte Technology

Title: PCH HOST , SATA, PCI

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PCH (D)

PCHD

H81/S

ACZ_SDOUT

SPI OVERRIDE PROTECTION

PCH_DPWROK

PCH PU/PD

HSW_STRAP13

32.768KHZ

CLR_CMOS

BATTERY-DUAL-4

RB 必须放在BAT外

Title	PCH GPIO , CTRL , AUDIO
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PCH (H)

VCC3_DAC

CLOSE北桥(注意震盪水波紋)

3VDUAL_PCH

SHT PWR

CAP

(3.3V)(X6)

(1.05V)(X5)

(1.05V)(X6)

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

(1.05V)(X10)

PCH (I)

Gigabyte Technology			
Title	PCH PWR ,GND		
Size: Custom	Document Number: GA-H81M-D2V		Rev: 1.02
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PCIEX16 CAP

VCC3

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

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

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

PCIEX16 PROTECT SHT

+12V

X16_+12V

PARN1 0/8P4R/0402/SHT/X

PARN2 0/8P4R/4/X

+12V

EC16

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

PCIEX16 AC CAP

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

PA_EXP_RXP[0..15] PA_EXP_RXP[0..15] (4)

PA_EXP_RXN[0..15] PA_EXP_RXN[0..15] (4)

PA_EXP_TXP[0..15] PA_EXP_TXP[0..15] (4)

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

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

PCIEX16 SLOT

PCIESLOT-164DN-P

X16_+12V

3GIO_*16

PAR3 0/4/SHT/M/X

PAR1 0/4/SHT/M/X

PAR2 0/4/SHT/M/X

(7,8,12,15,19) N_SMBCLK

(7,8,12,15,19) N_SMBDATA

3VDUAL

VCC3

(12,15,24,33) N_-PCIE_WAKE

KEY

-PCIE_RST

-PCIE_RST (15,17)

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

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

BLACK CONNECTOR

Pin	Signal	Pin	Signal
B1	12V	A1	PRSNT1*
B2	12V	A2	12V
B3	RSVD	A3	12V
B4	GND	A4	GND
B5	SMCLK	A5	JTAG2
B6	SMDAT	A6	JTAG3
B7	GND	A7	JTAG4
B8	3.3V	A8	JTAG5
B9	JTAG1	A9	3.3V
B10	3.3VAUX	A10	3.3V
B11	WAKE*	A11	PWRGD
B12	RSVD	A12	GND
B13	GND	A13	REFCLK+
B14	HSOP0	A14	REFCLK-
B15	HSON0	A15	GND
B16	GND	A16	HSIP0
B17	PRSNT2*	A17	HSIN0
B18	GND	A18	GND
B19	HSOP1	A19	RSVD
B20	HSON1	A20	GND
B21	GND	A21	HSIP1
B22	GND	A22	HSIN1
B23	HSOP2	A23	GND
B24	HSON2	A24	GND
B25	GND	A25	HSIP2
B26	GND	A26	HSIN2
B27	HSOP3	A27	GND
B28	HSON3	A28	GND
B29	GND	A29	HSIP3
B30	RSVD	A30	HSIN3
B31	PRSNT2*	A31	GND
B32	GND	A32	RSVD
B33	HSOP4	A33	RSVD
B34	HSON4	A34	GND
B35	GND	A35	HSIP4
B36	GND	A36	HSIN4
B37	HSOP5	A37	GND
B38	HSON5	A38	GND
B39	GND	A39	HSIP5
B40	GND	A40	HSIN5
B41	HSOP6	A41	GND
B42	HSON6	A42	GND
B43	GND	A43	HSIP6
B44	GND	A44	HSIN6
B45	HSOP7	A45	GND
B46	HSON7	A46	GND
B47	GND	A47	HSIP7
B48	PRSNT2*	A48	HSIN7
B49	GND	A49	GND
B50	HSOP8	A50	RSVD
B51	HSON8	A51	GND
B52	GND	A52	HSIP8
B53	GND	A53	HSIN8
B54	HSOP9	A54	GND
B55	HSON9	A55	GND
B56	GND	A56	HSIP9
B57	GND	A57	HSIN9
B58	HSOP10	A58	GND
B59	HSON10	A59	GND
B60	GND	A60	HSIP10
B61	GND	A61	HSIN10
B62	HSOP11	A62	GND
B63	HSON11	A63	GND
B64	GND	A64	HSIP11
B65	GND	A65	HSIN11
B66	HSOP12	A66	GND
B67	HSON12	A67	GND
B68	GND	A68	HSIP12
B69	GND	A69	HSIN12
B70	HSOP13	A70	GND
B71	HSON13	A71	GND
B72	GND	A72	HSIP13
B73	GND	A73	HSIN13
B74	HSOP14	A74	GND
B75	HSON14	A75	GND
B76	GND	A76	HSIP14
B77	GND	A77	HSIN14
B78	HSOP15	A78	GND
B79	HSON15	A79	GND
B80	GND	A80	HSIP15
B81	PRSNT2*	A81	HSIN15
B82	RSVD	A82	GND

PA_EXP_TXP0_C	PA_EXP_TXN0_C	PA_EXP_RXP0	PA_EXP_RXN0
PA_EXP_TXP1_C	PA_EXP_TXN1_C	PA_EXP_RXP1	PA_EXP_RXN1
PA_EXP_TXP2_C	PA_EXP_TXN2_C	PA_EXP_RXP2	PA_EXP_RXN2
PA_EXP_TXP3_C	PA_EXP_TXN3_C	PA_EXP_RXP3	PA_EXP_RXN3
PA_EXP_TXP4_C	PA_EXP_TXN4_C	PA_EXP_RXP4	PA_EXP_RXN4
PA_EXP_TXP5_C	PA_EXP_TXN5_C	PA_EXP_RXP5	PA_EXP_RXN5
PA_EXP_TXP6_C	PA_EXP_TXN6_C	PA_EXP_RXP6	PA_EXP_RXN6
PA_EXP_TXP7_C	PA_EXP_TXN7_C	PA_EXP_RXP7	PA_EXP_RXN7
PA_EXP_TXP8_C	PA_EXP_TXN8_C	PA_EXP_RXP8	PA_EXP_RXN8
PA_EXP_TXP9_C	PA_EXP_TXN9_C	PA_EXP_RXP9	PA_EXP_RXN9
PA_EXP_TXP10_C	PA_EXP_TXN10_C	PA_EXP_RXP10	PA_EXP_RXN10
PA_EXP_TXP11_C	PA_EXP_TXN11_C	PA_EXP_RXP11	PA_EXP_RXN11
PA_EXP_TXP12_C	PA_EXP_TXN12_C	PA_EXP_RXP12	PA_EXP_RXN12
PA_EXP_TXP13_C	PA_EXP_TXN13_C	PA_EXP_RXP13	PA_EXP_RXN13
PA_EXP_TXP14_C	PA_EXP_TXN14_C	PA_EXP_RXP14	PA_EXP_RXN14
PA_EXP_TXP15_C	PA_EXP_TXN15_C	PA_EXP_RXP15	PA_EXP_RXN15

Gigabyte Technology		
Title	PCI EXPRESS * 16	
Size: Custom	Document Number: GA-H81M-D2V	Rev: 1.02
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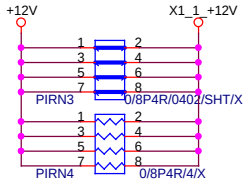
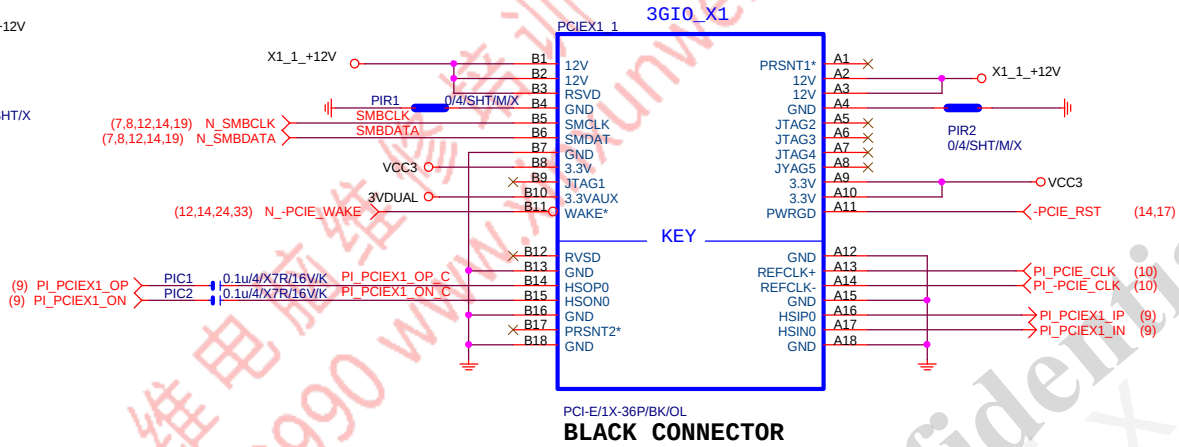
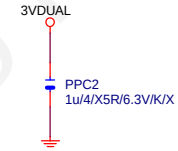
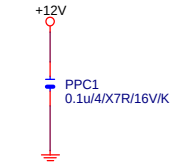
PCIEX1 SLOT

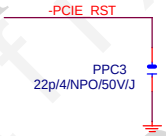


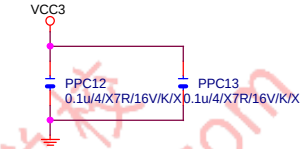


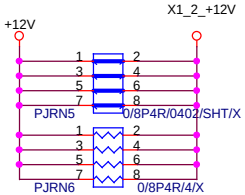
BLACK CONNECTOR

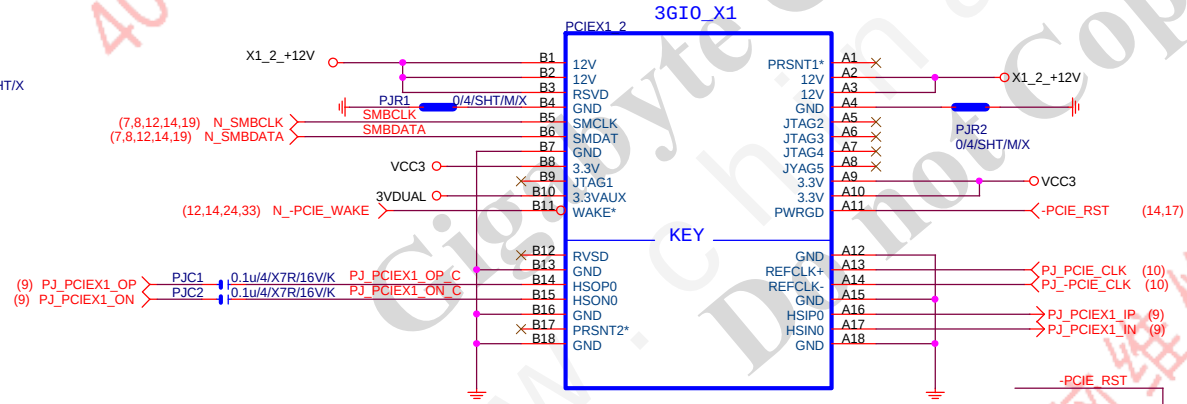




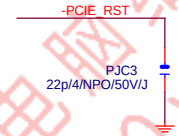








BLACK CONNECTOR



Gigabyte Technology		
Title: PCI EXPRESS X 1 PORT		
Size: Custom	Document Number: GA-H81M-D2V	Rev: 1.02
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Gigabyte Technology		
Title: PCI SLOT 1&2		
Size: Custom	Document Number: GA-H81M-D2V	Rev: 1.02
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SIO IT8620

IT8620E_BX

-PRCOHOT

-THRMTRIP

PWR SHT

SIO PU

SIO STRAP

H61M-S2 1.1 JP6 stuff pull down

EUP control by PCH

JP3--- High SPI-Flash Disable
Low SPI-Flash Enable

Power leakage

For IT8721 Power leakage

DUAL BIOS OPT STRAP

SIO_18V

internal power pin, max 22nF cap

MB ID

SIO CAP

Gigabyte Technology	
Title	PCH GPIO , CTRL , AUDIO
Size C	Document Number GA-H81M-D2V Rev 1.02
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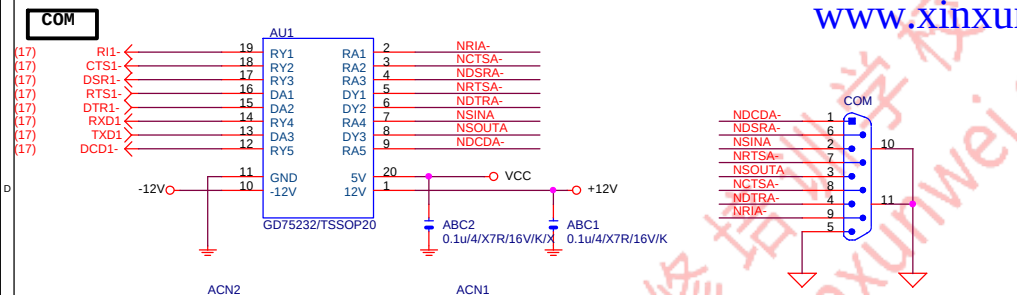
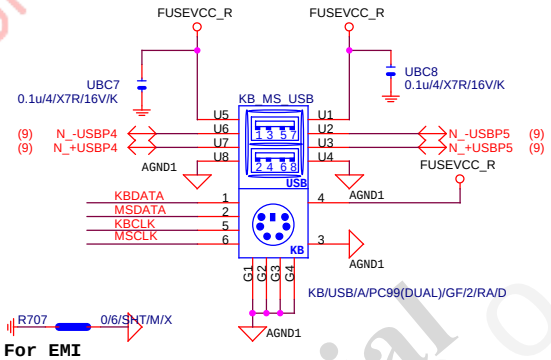
COM

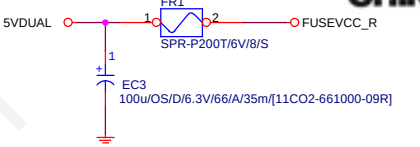


KB/MS



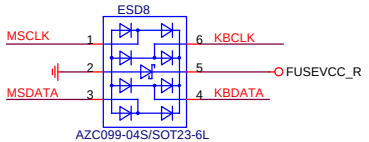
USB2.0 PWR

FUSE-0805
KB_MS_USB 2-Port 2.0A

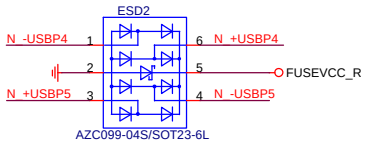


Close to connector

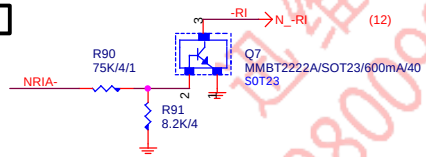
KB/MS ESD



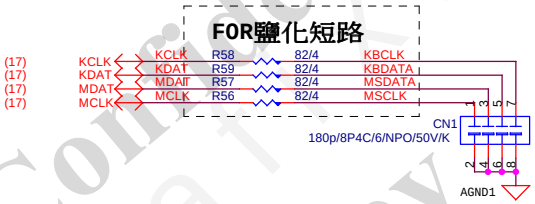
USB2.0 ESD



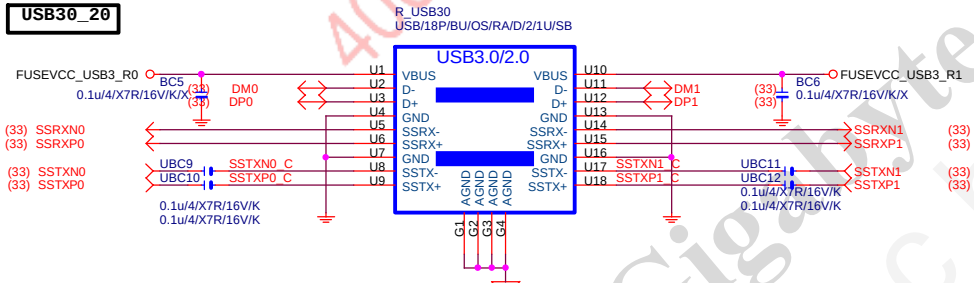
COM RI



FOR鹽化短路

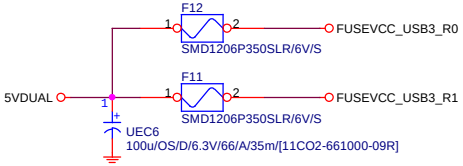


USB30_20



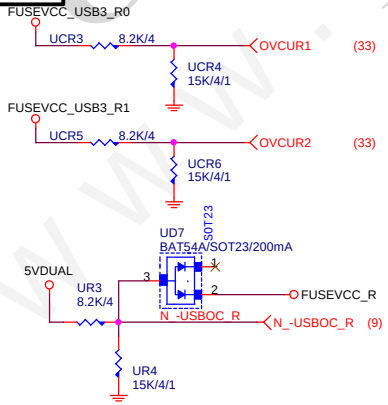
USB30_20 PWR

Polyswitch-1206



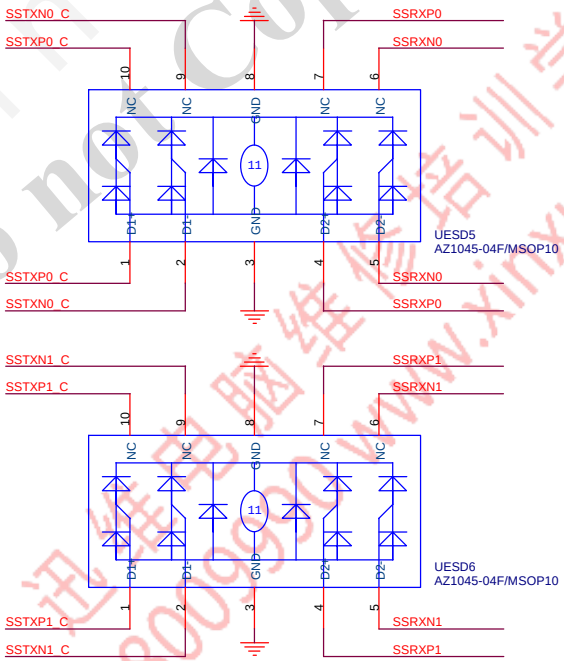
USB3.0 1Port - 1Fuse (3.5A)

-USBOC_R

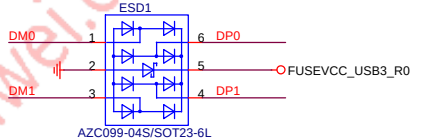


USB30_20 ESD PROCTECT

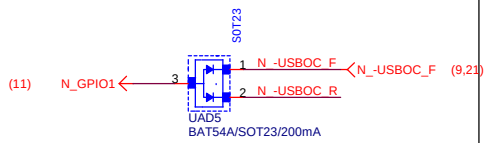
USB3.0 ESD



USB2.0 ESD



USB POWER PROTECT



Gigabyte Technology		
Title: COM,-RI,KB_USB,USB_ESATA,-PROCHOT		
Size: Custom	Document Number: GA-H81M-D2V	Rev: 1.02
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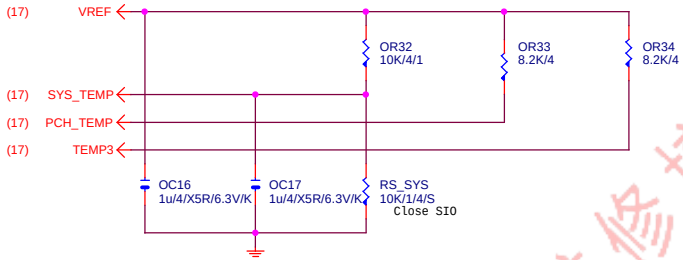
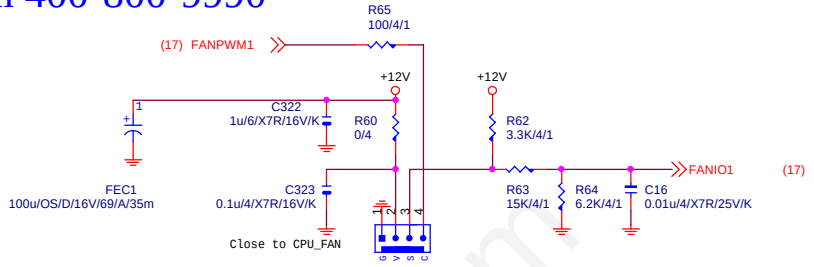
TEMP H/W MONITOR

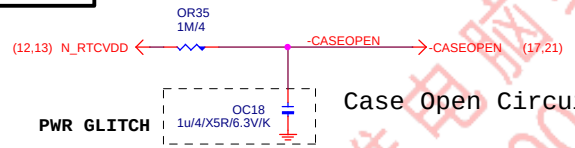


CPU SMART FAN



BLACK CONNECTOR

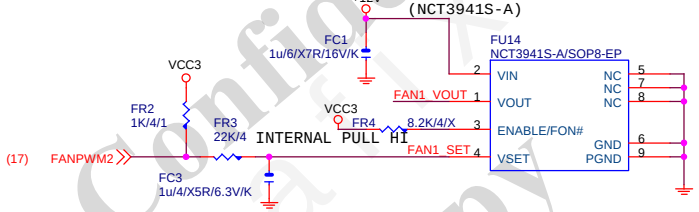
CASE OPEN

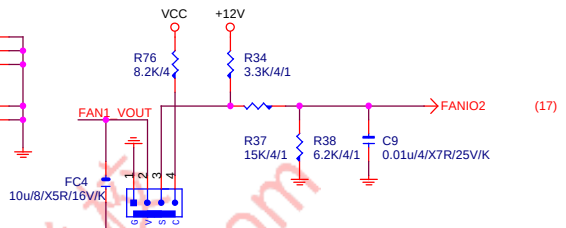


SYS SMART FAN

Linear SYS_FAN

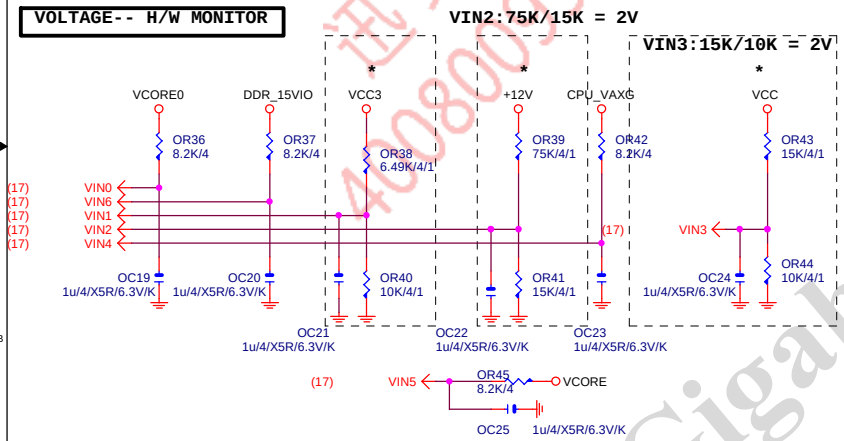
Enable Function (NCT3941S)
Full Turn On Function
(NCT3941S-A)



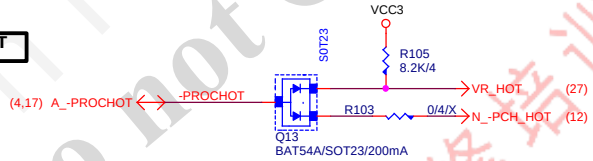


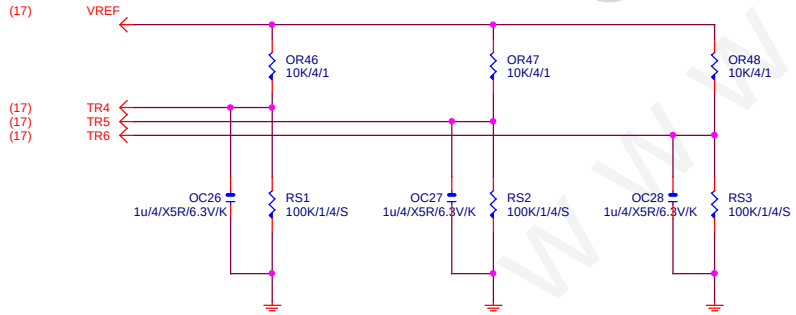
BLACK CONNECTOR

VOLTAGE-- H/W MONITOR



-PROHOT

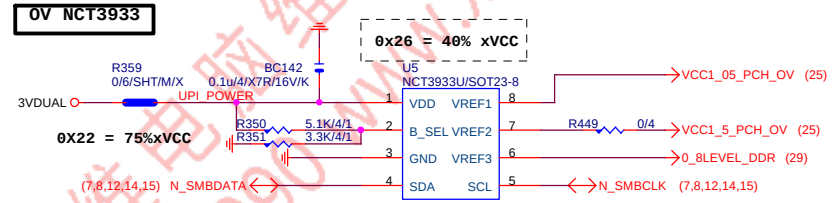




RS1、RS2、RS3 CLOSE CPU
VR MOSFET

接pwm feedback pin

OV NCT3933



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

Gigabyte Technology

Title: HWM,FAN CTRL,OV

Size: Custom | Document Number: GA-H81M-D2V | Rev: 1.02

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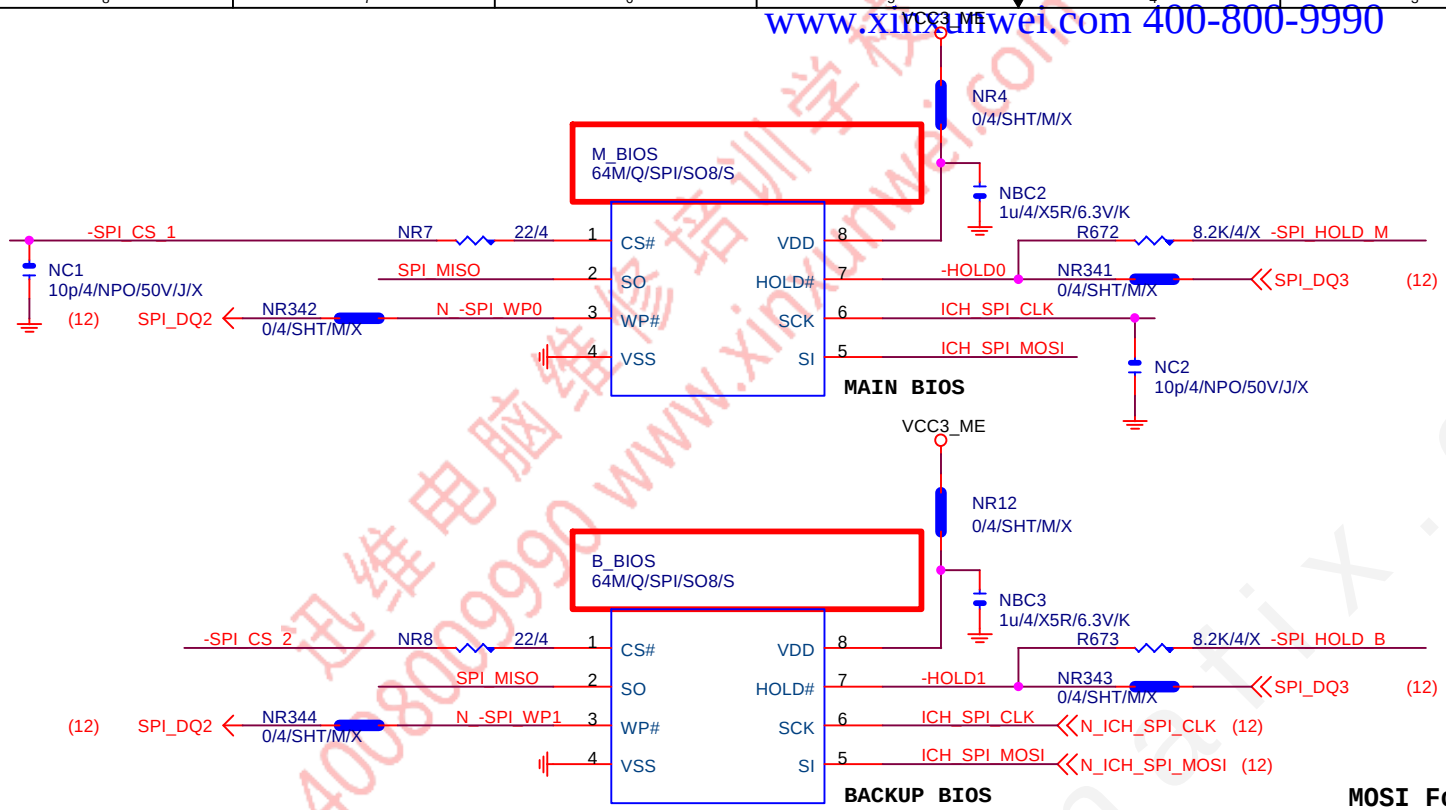
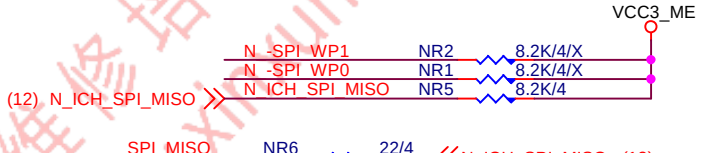
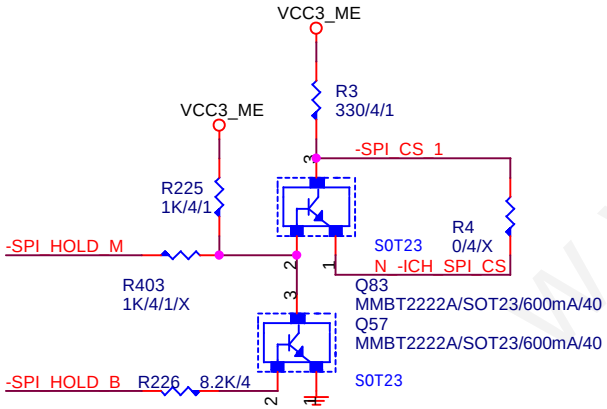
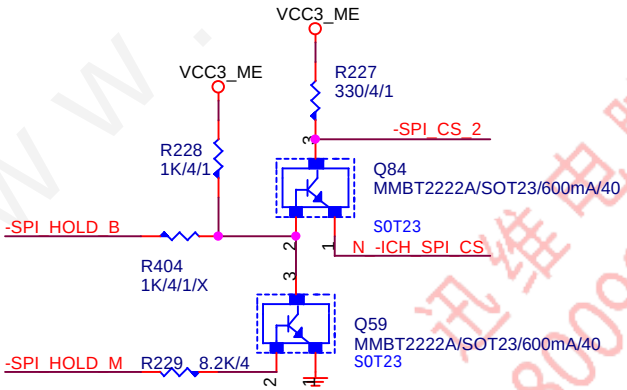


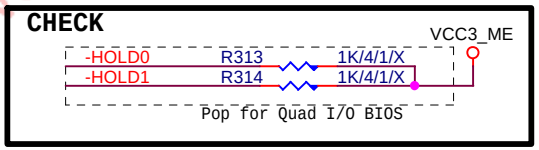
BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

1 means floating
0 means PD 1K









Gigabyte Technology

Title: **DUAL BIOS**

Size: Custom | Document Number: **GA-H81M-D2V** | Rev: **1.02**

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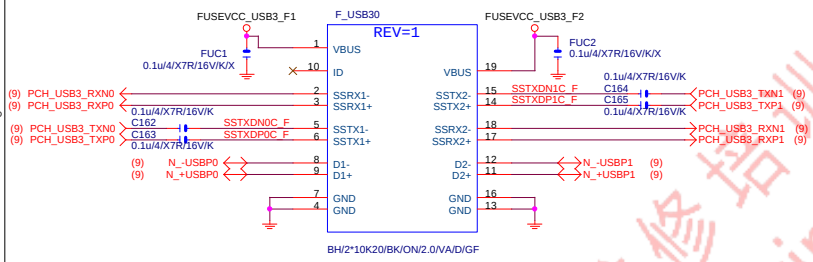
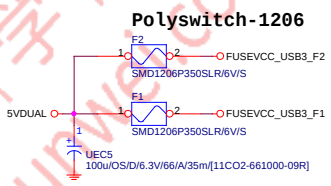
F_USB30



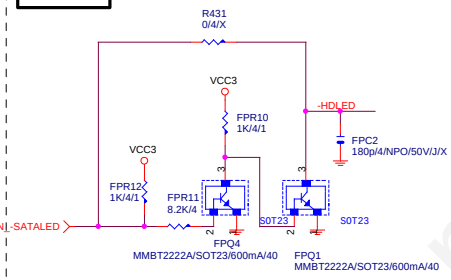
BLACK CONNECTOR

F_USB30 PWR

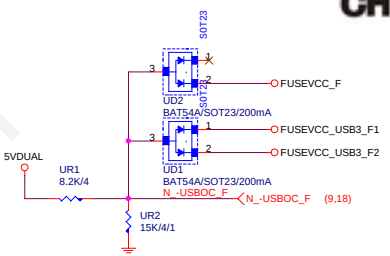


USB3.0 1Port - 1Fuse (3.5A)

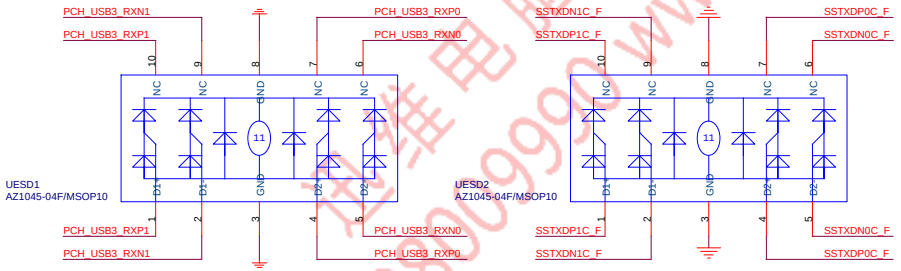
SATA LED

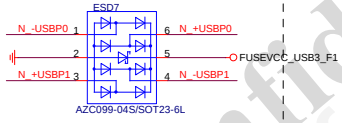


-USBOC_F



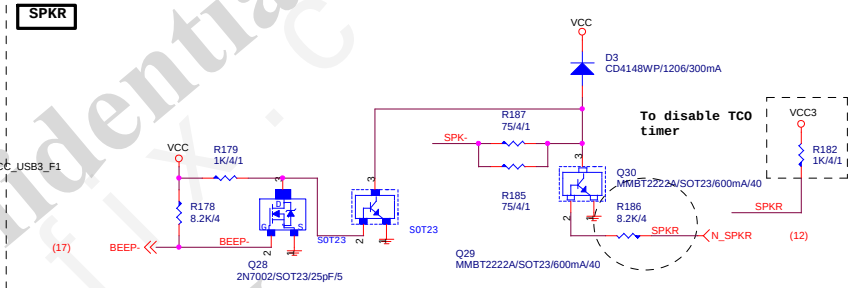
F_USB30 ESD PROTECT



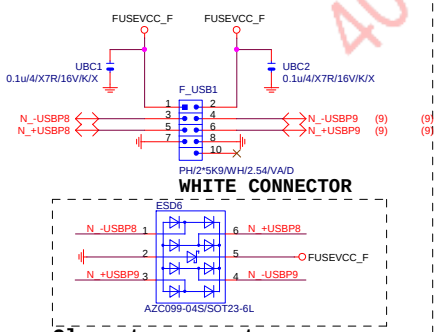


Close to connector

SPKR



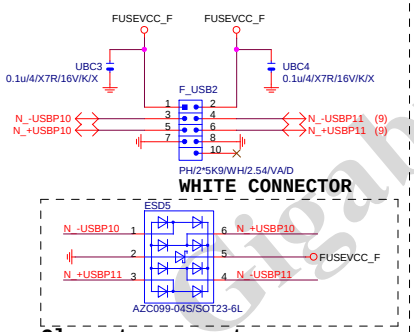
FRONT USB1



WHITE CONNECTOR

Close to connector

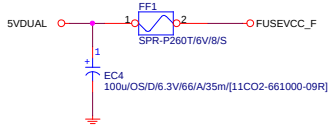
FRONT USB2



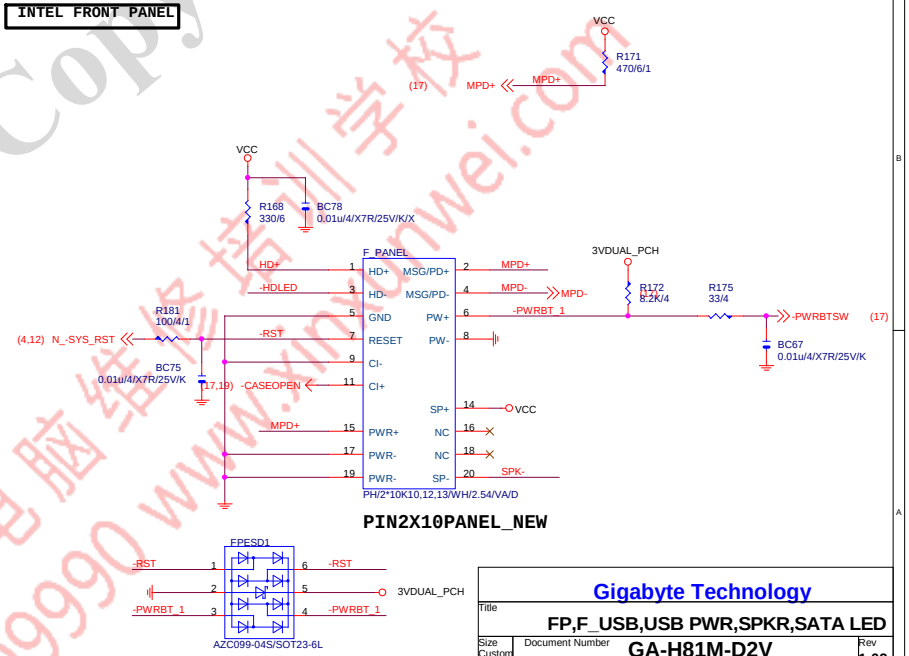
WHITE CONNECTOR

Close to connector

FUSE-0805
F_USB1, F_USB2 4-Port 2.6A



INTEL FRONT PANEL



PIN2X10PANEL_NEW

Gigabyte Technology		
Title: FP,F_USB,USB PWR,SPKR,SATA LED		
Size: Custom	Document Number: GA-H81M-D2V	Rev: 1.02
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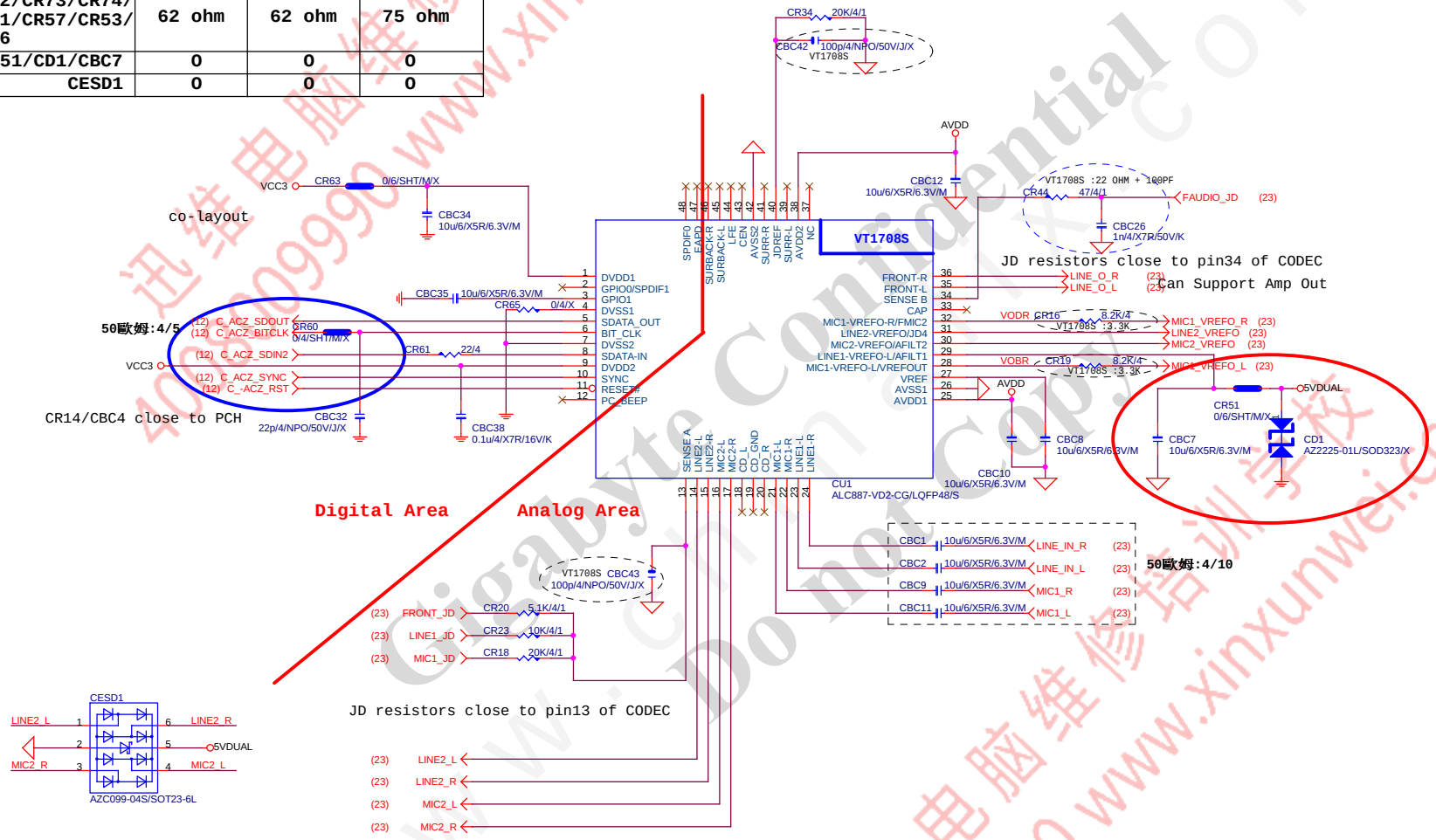
AZALIA CODEC *ALC892/ALC887-VD2/VT1708-CE Colay*

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



Title	HD AUDIO ALC887B-VD2/VT1708S/VT2021
Size / Custom	Document Number GA-H81M-D2V
Rev	1.02
Date:	Friday, November 08, 2013
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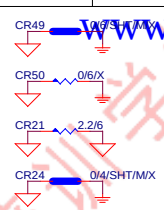
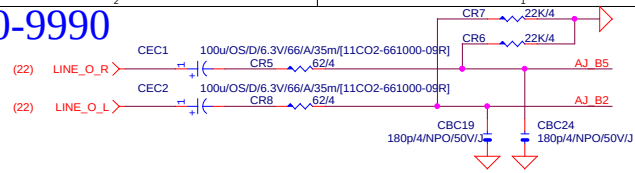
Gigabyte Technology

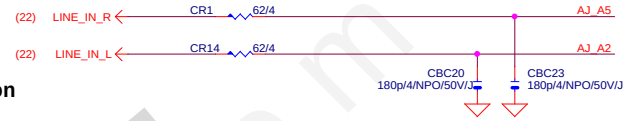


LINE-OUT



Only reserved for ALC888

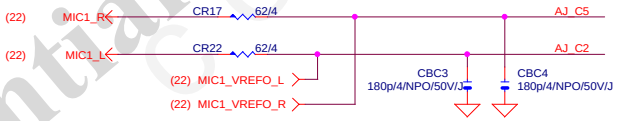
LINE-IN



Verify MIC function in LINE-in

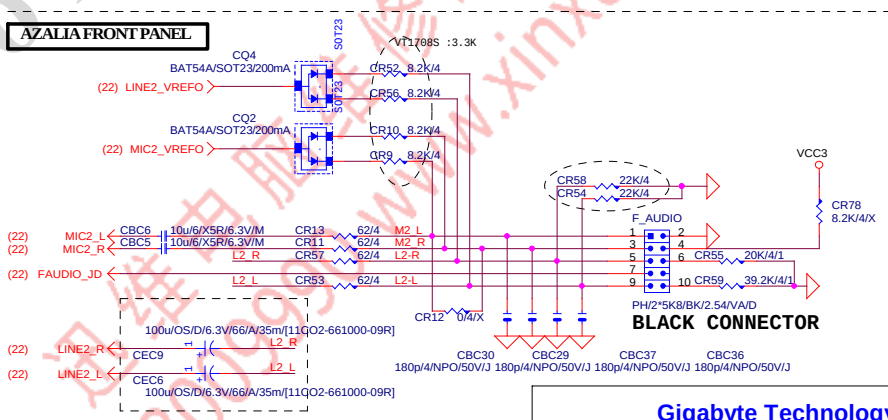
For 889A/888

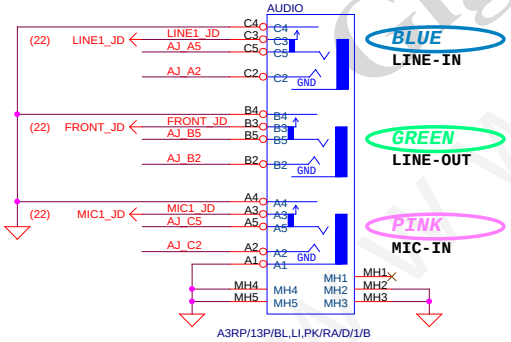
MIC-IN



SPDIF_OUT

AZALIA FRONT PANEL





Gigabyte Technology		
Title	AUDIO JACK	
Size: Custom	Document Number: GA-H81M-D2V	Rev: 1.02
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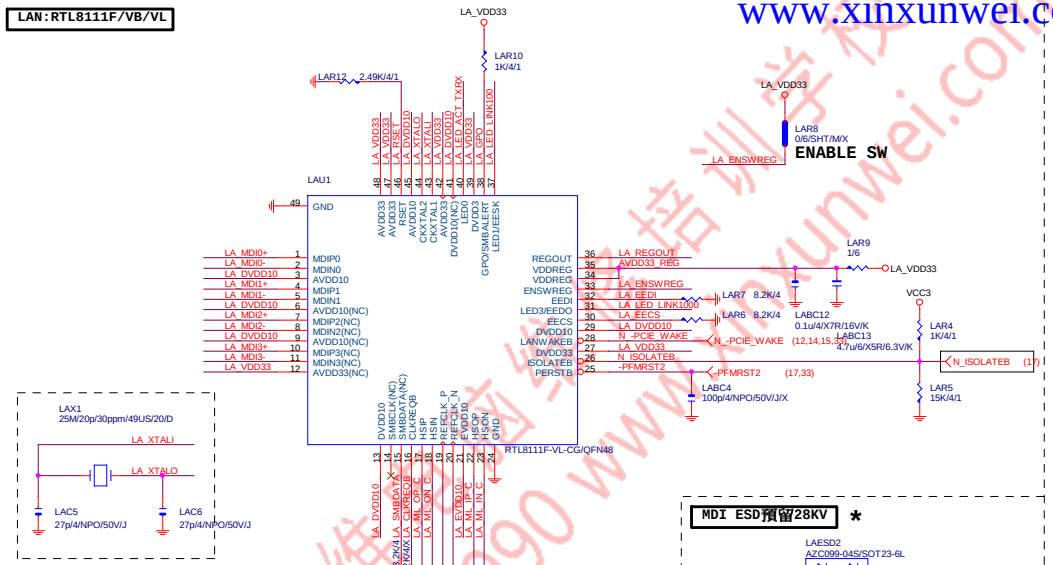
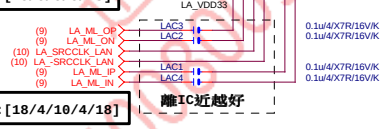
LAN:RTL8111F/VB/VL



ENABLE SW

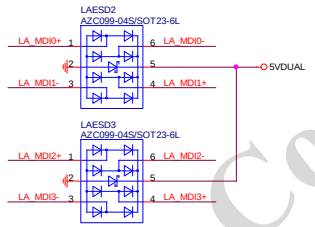
LA_ML-->80歐姆:[15/5/5/5/15]

SRCCLK-->50歐姆:[18/4/10/4/18]

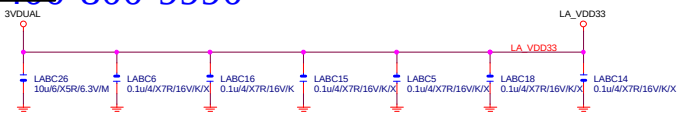


離IC近越好

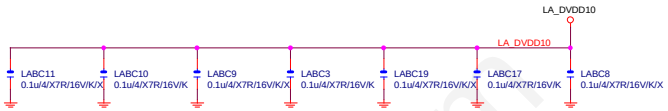
MDI ESD預留28KV *



LAN POWER

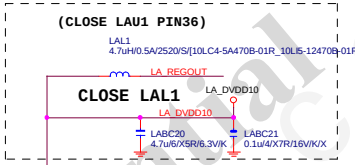


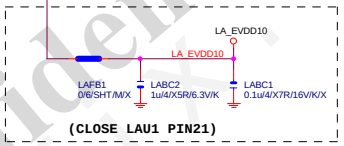
(CLOSE LAU1 PIN:12,27,39,42,47,48)



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

(CLOSE LAU1 PIN36)





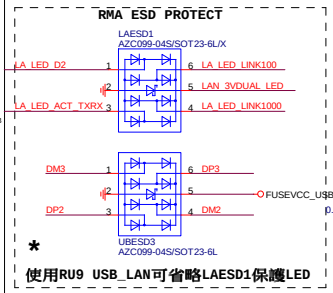
(CLOSE LAU1 PIN21)

Power domain chart

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

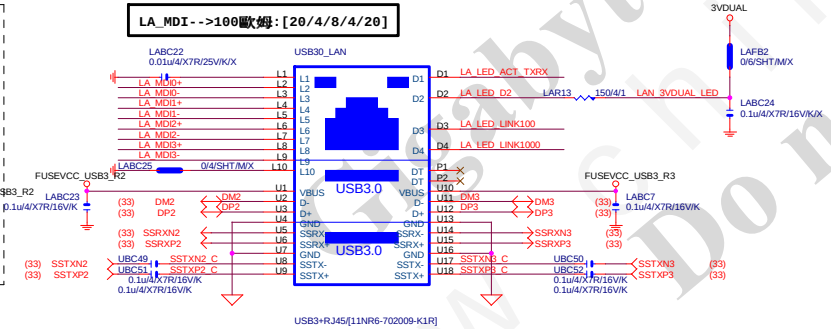
USB_LAN CONNECTOR

RMA ESD PROTECT



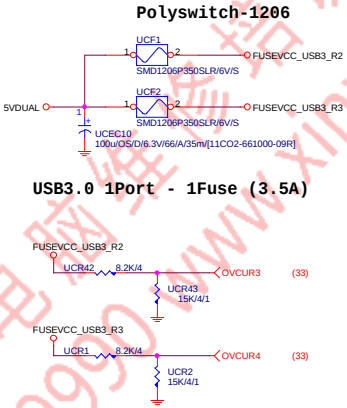
* 使用RU9 USB_LAN可省略LAESD1保護LED

LA_MDI-->100歐姆:[20/4/8/4/20]



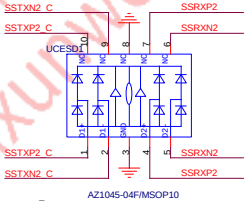
注意:USB PORT(目前:暫代6,7PORT)
USB-->90歐姆:[15/4.5/7.5/4.5/15]

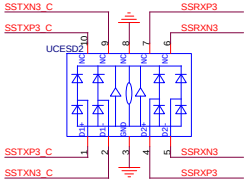
USB X3 POWER

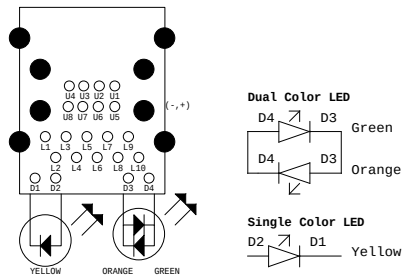


EMI SHORT PAD

PS:視EMI需求







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

Title	Realtek RTL8111G
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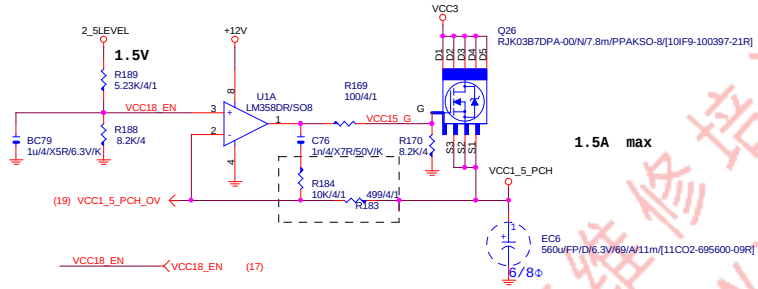
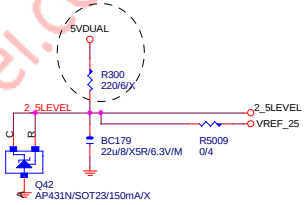
Gigabyte Technology

VCC1_8_PCH

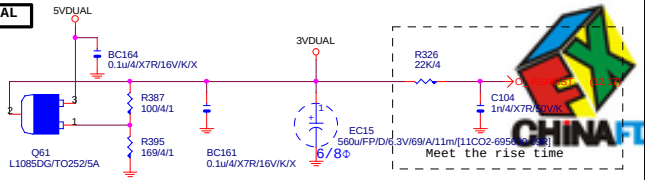


2_5LEVEL

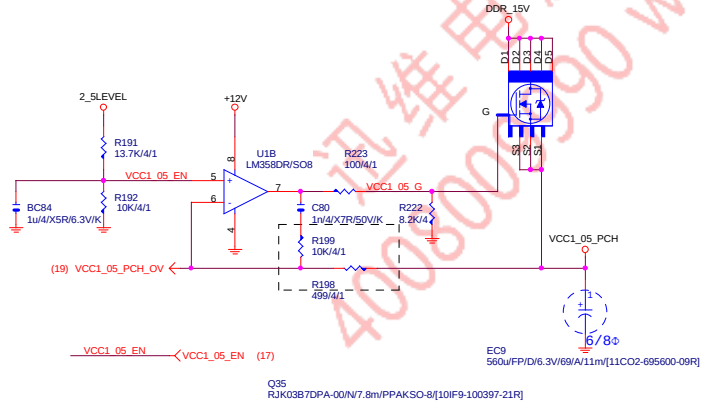
ERP

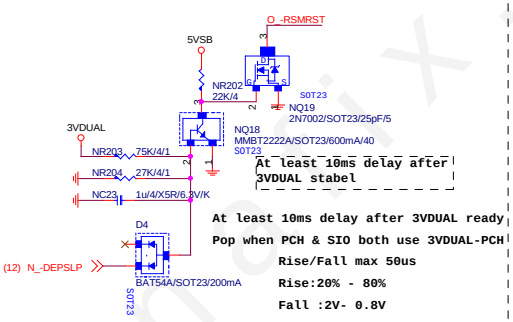


3VDUAL

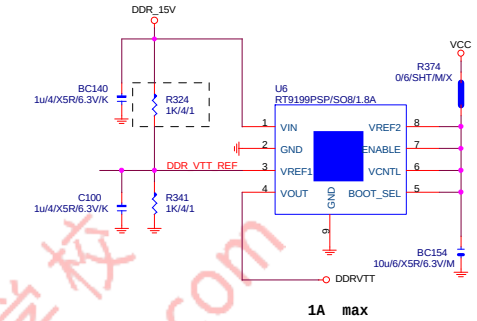


VCC1_05_PCH

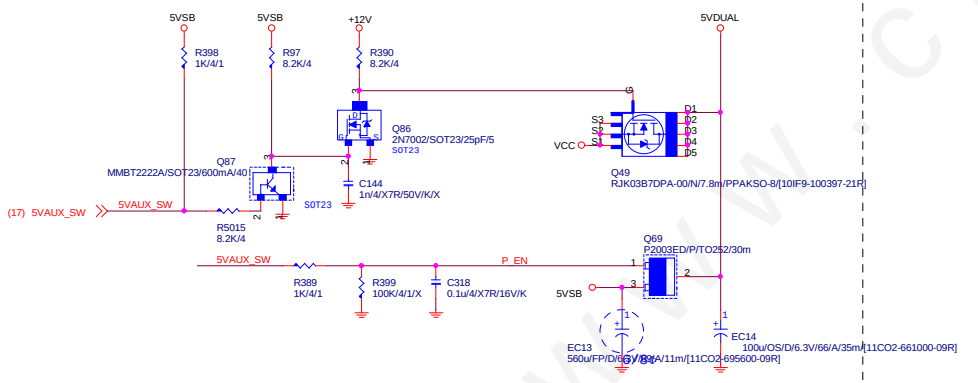




DDRVTT

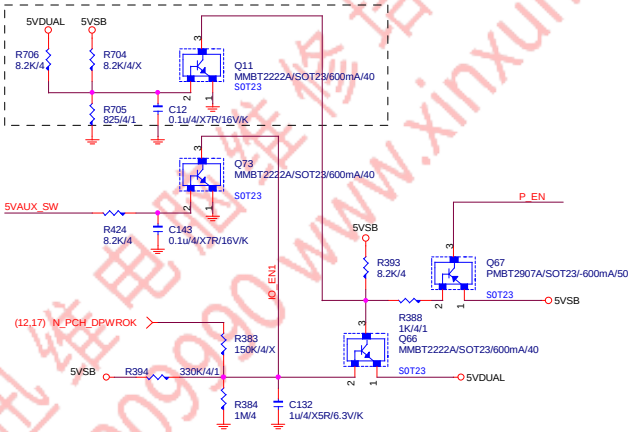


5VDUAL



5VDUAL SHORT PROTECT

5VSB OVP:7.5V protection



Gigabyte Technology		
Title: DISCRETE POWER		
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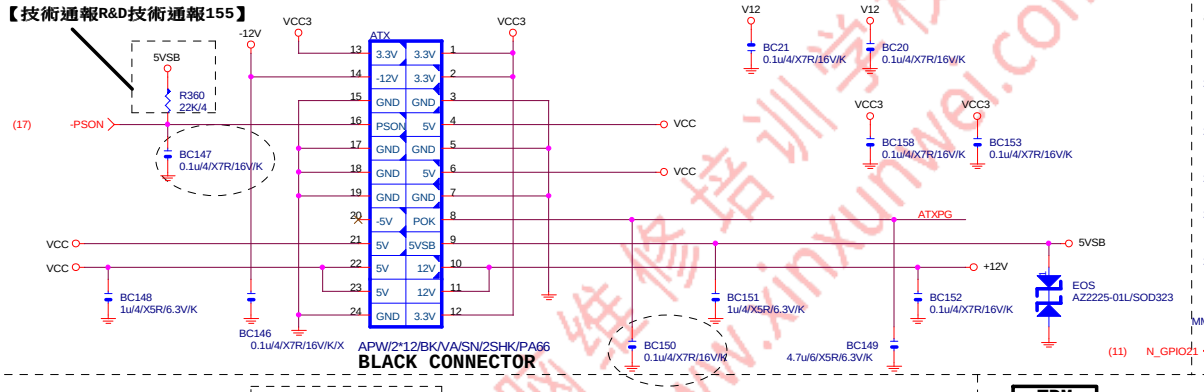
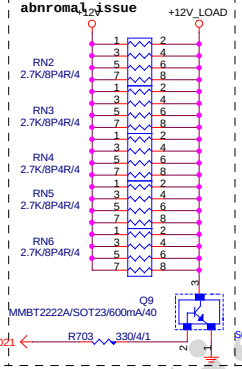
ATXX24 POWER CONNECTOR

【技術通報R&D技術通報155】

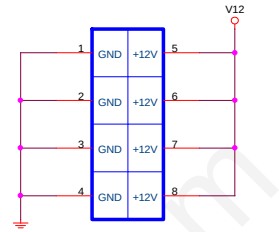


【技術通報R&D技術通報158】

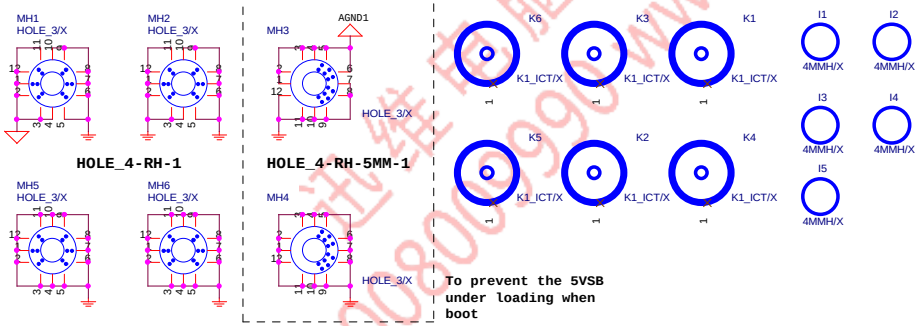
To fix 12V light load abnroma l issue



ATXX4 POWER CONNECTOR



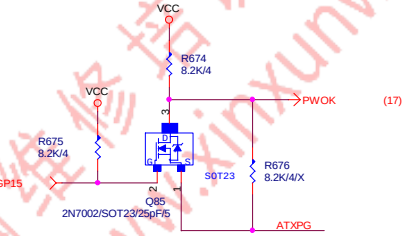
TPM

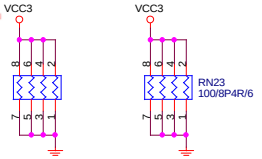


To prevent the 5VSB under loading when boot

PWOK PATCH

【技術通報R&D技術通報154】





FIX PWR MINMUN LOAD

Gigabyte Technology

Title: ATX CONNECTOR

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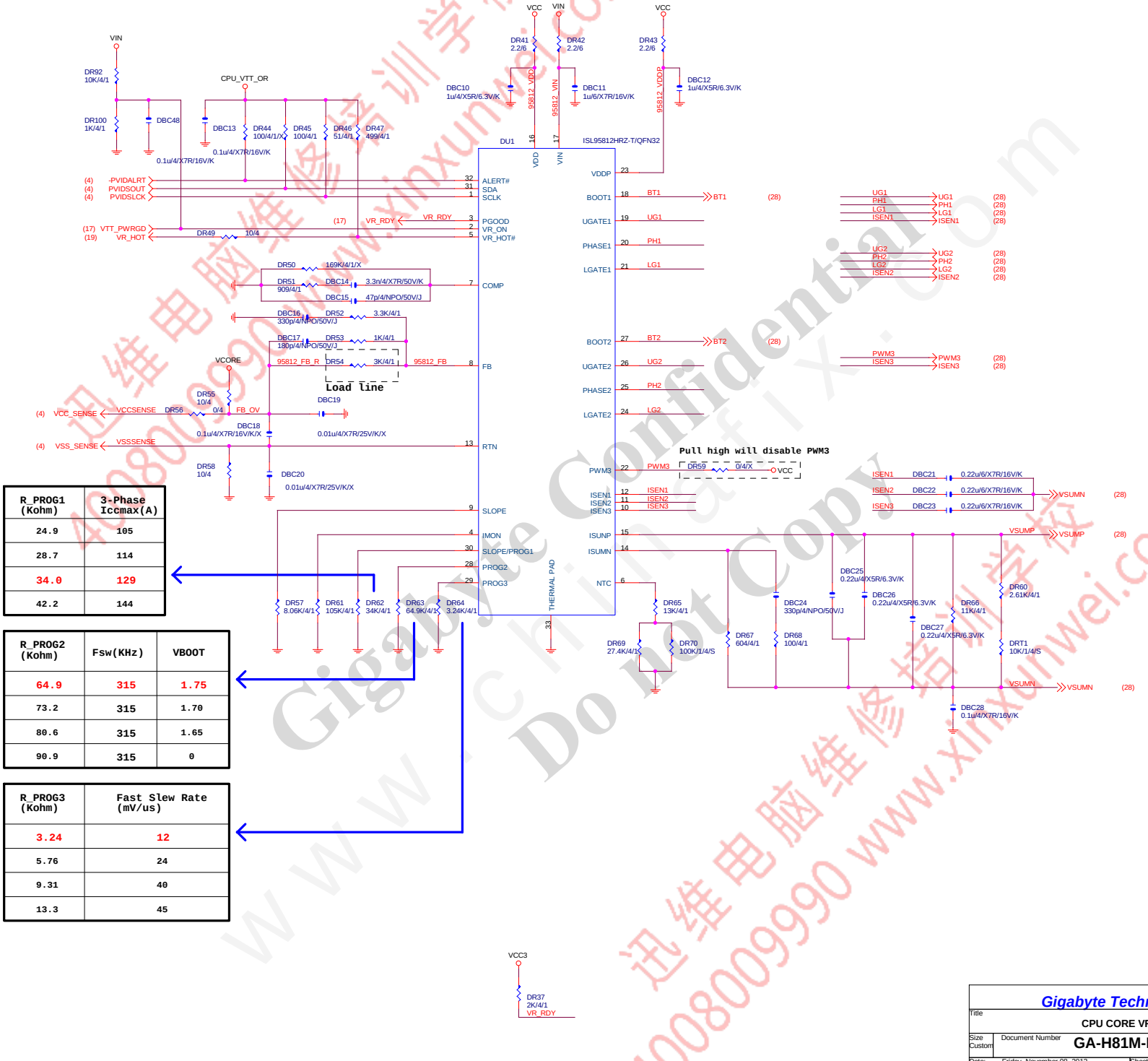

R_PROG1 (Kohm)	3-Phase Iccmax(A)
24.9	105
28.7	114
34.0	129
42.2	144

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
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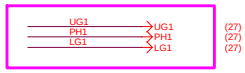
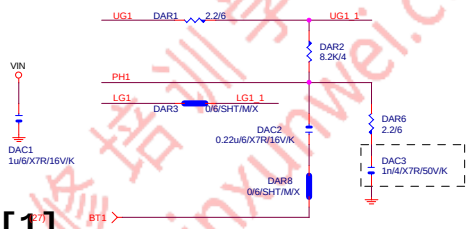
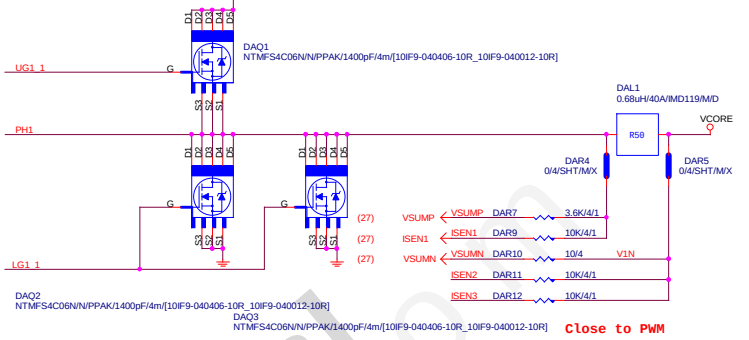
PHASE 1

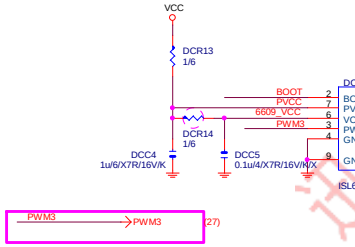


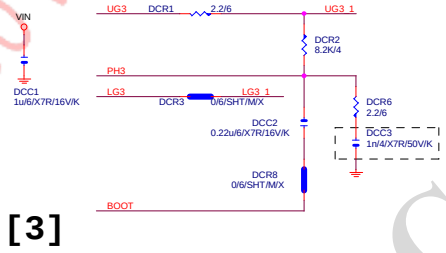


[1]

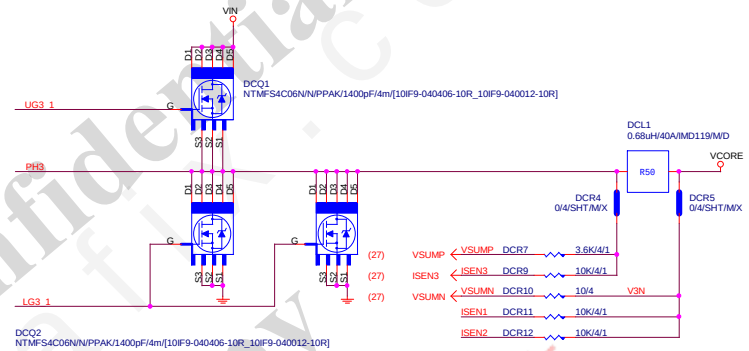


PHASE 3

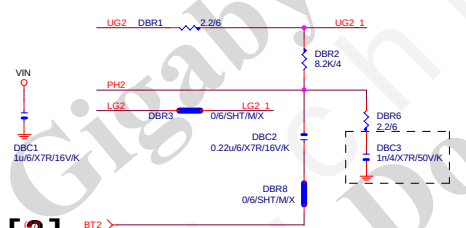




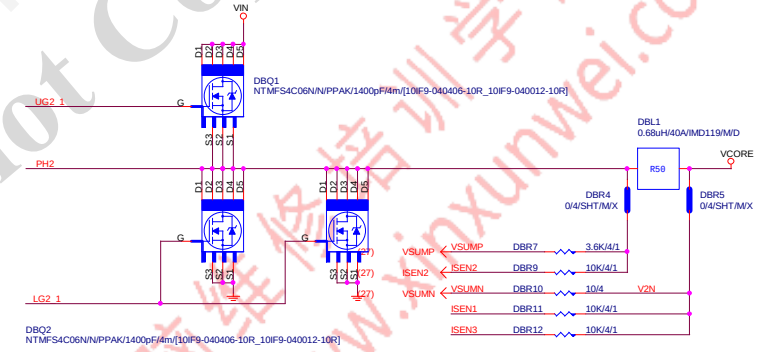
[3]

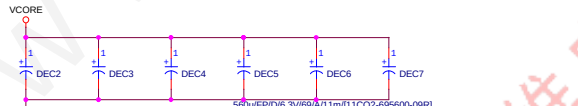


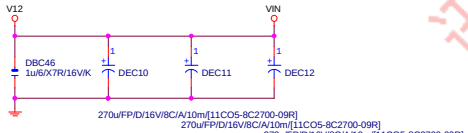
PHASE 2



[2]







Gigabyte Technology		
Title	CPU CORE VR-2	
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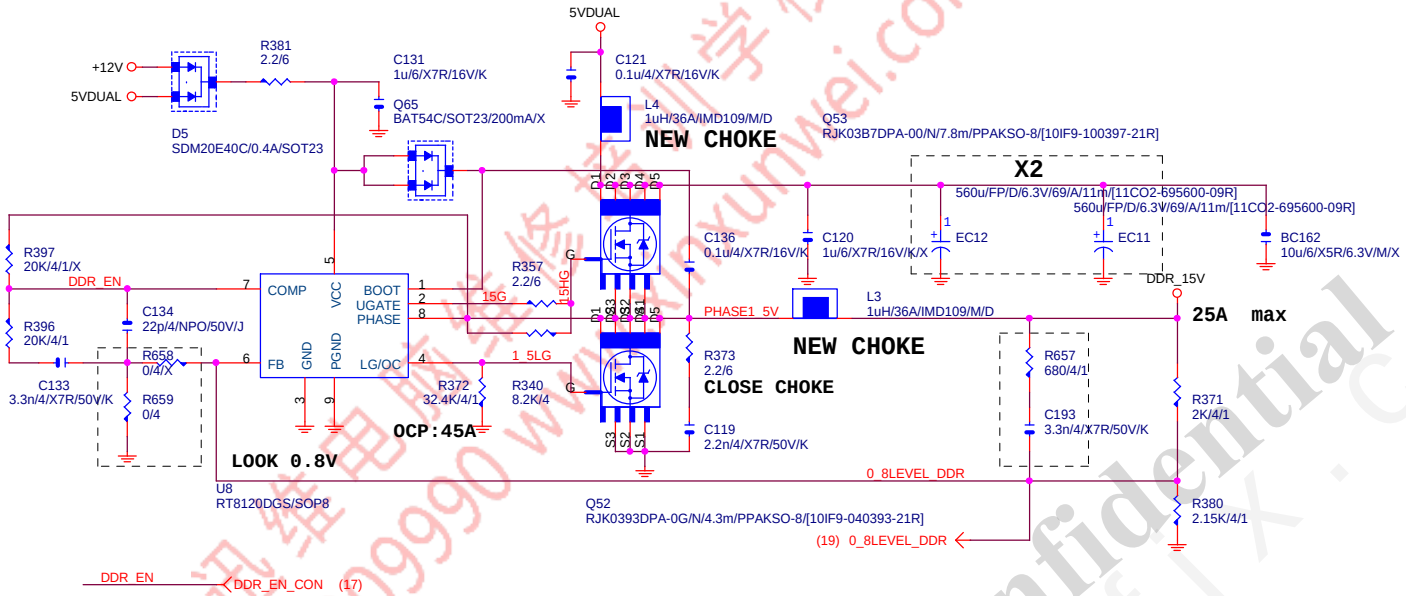
DDR15V



From DDR_15V source
10 mils trace to SIO

DDR_15V — MR20 — DDR_15VIO — 0/4/SHT/M/X

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

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

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

Rocset=(Iocp*Lgate,rdson)/Iocset

Rocset=(45A*6.7mOhm)/10uA = 30K

Iocset=10uA

Gigabyte Technology			
Title: DDR POWER			
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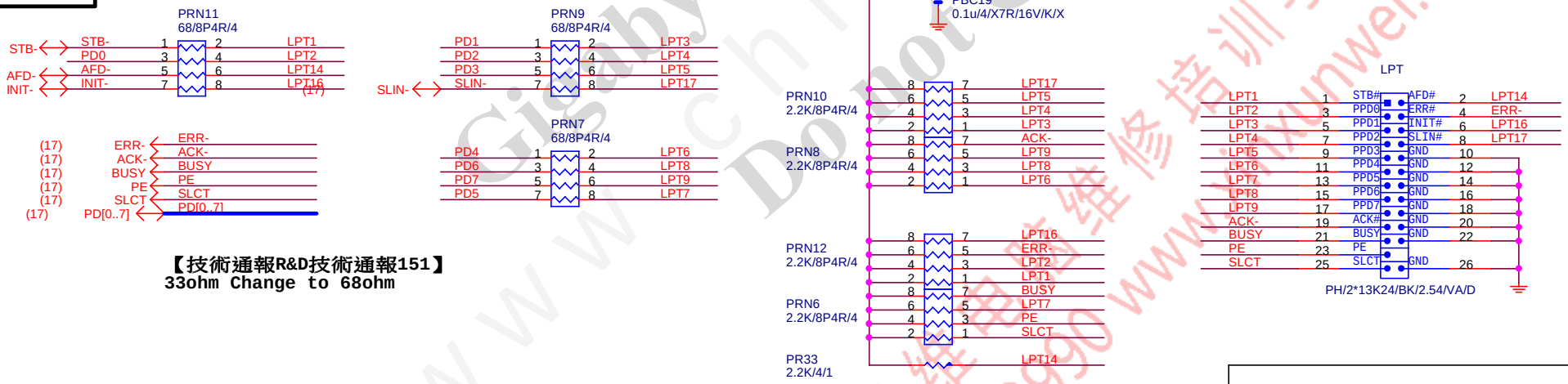
VCC1_05_ME

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

VCC3_ME

LPT PORT



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

Gigabyte Technology			
Title: LPT			
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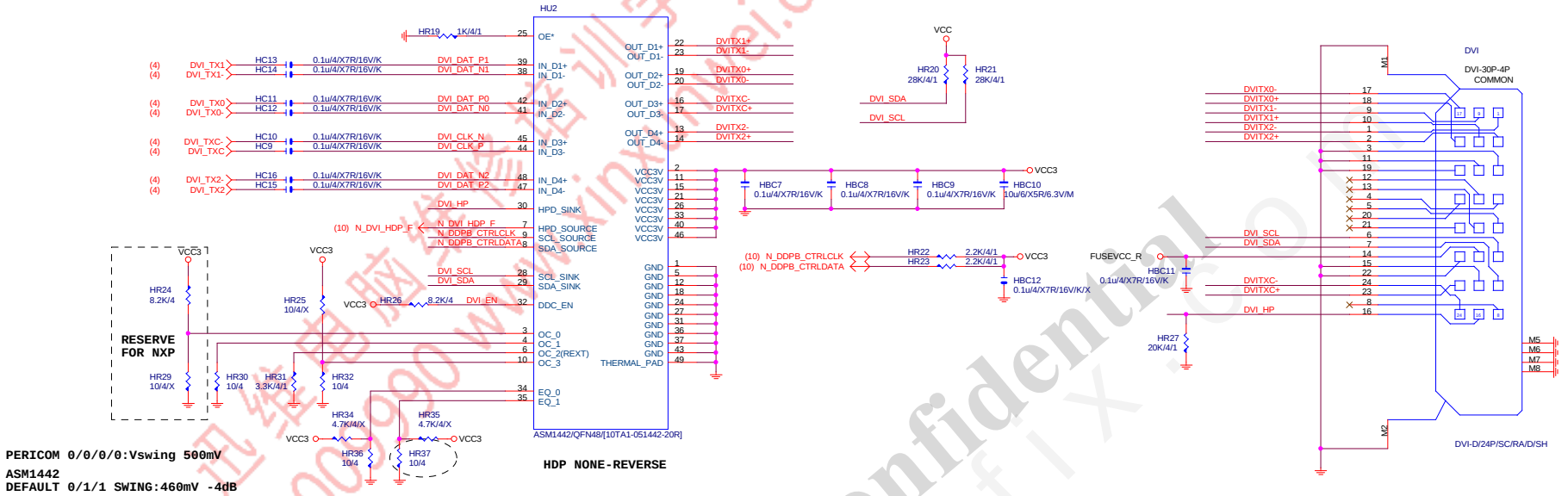
DVI LEVEL SHIFT



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

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

HDP NONE-REVERSE

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

HDMI LEVEL SHIFT

Gigabyte Technology		
Title: DVI		
Size: Custom	Document Number: GA-H81M-D2V	Rev: 1.02
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Gigabyte Technology			
Title: ITE IT8892E			
Size: Custom	Document Number: GA-H81M-D2V		Rev: 1.02
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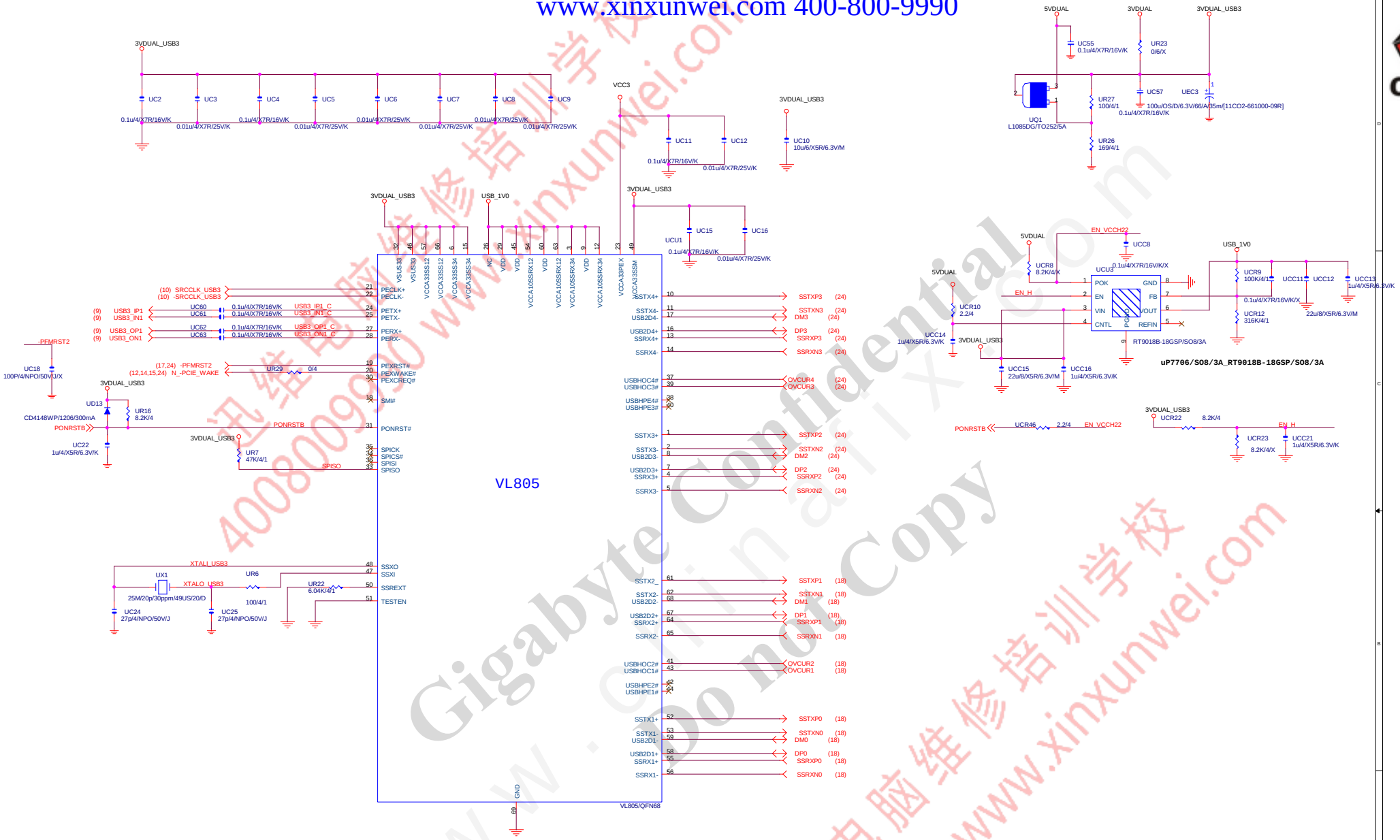

Gigabyte Technology		
Title	USB3 EJ188	
Size C	Document Number GA-H81M-D2V	Rev 1.02
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