

Model Name: GA-H81M-H

SHEET

TITLE

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

SHEET

TITLE

28	RT8120_DDR POWER
29	HDMI
30	
31	
32	

Gigabyte Technology

Cover Sheet

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D

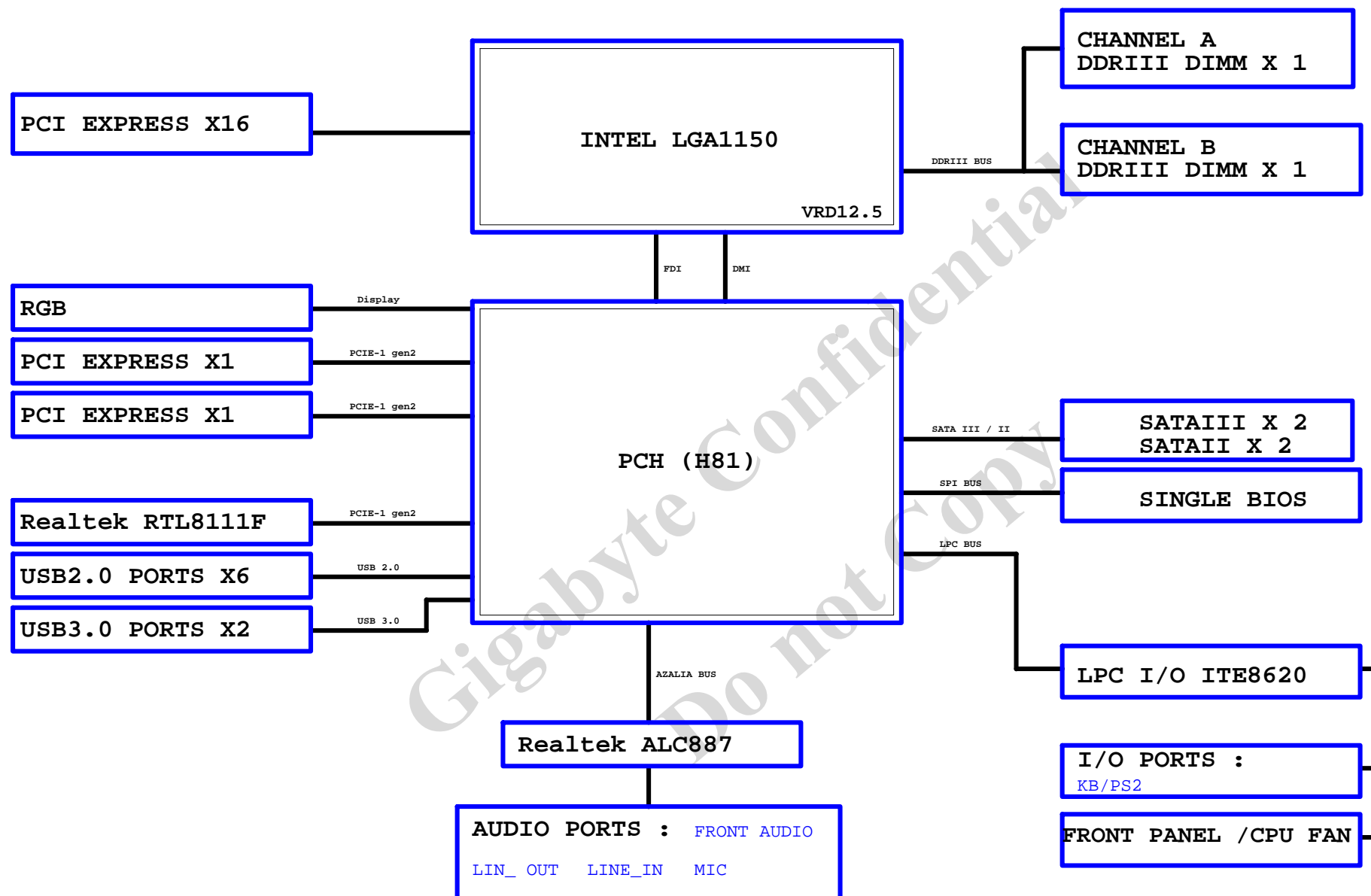
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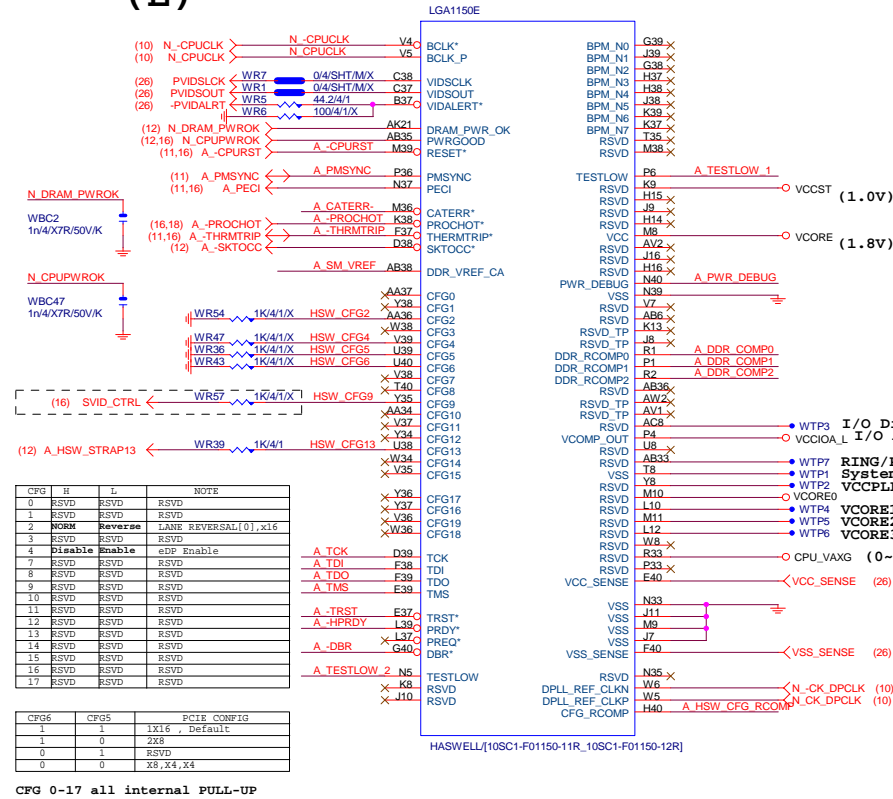
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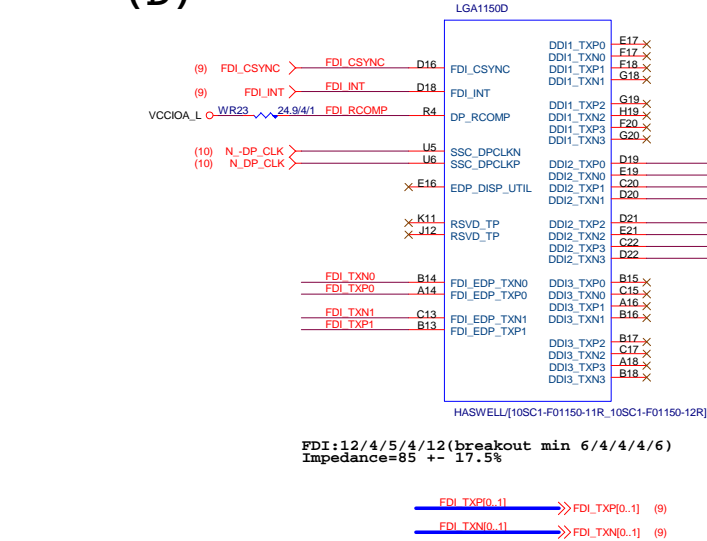
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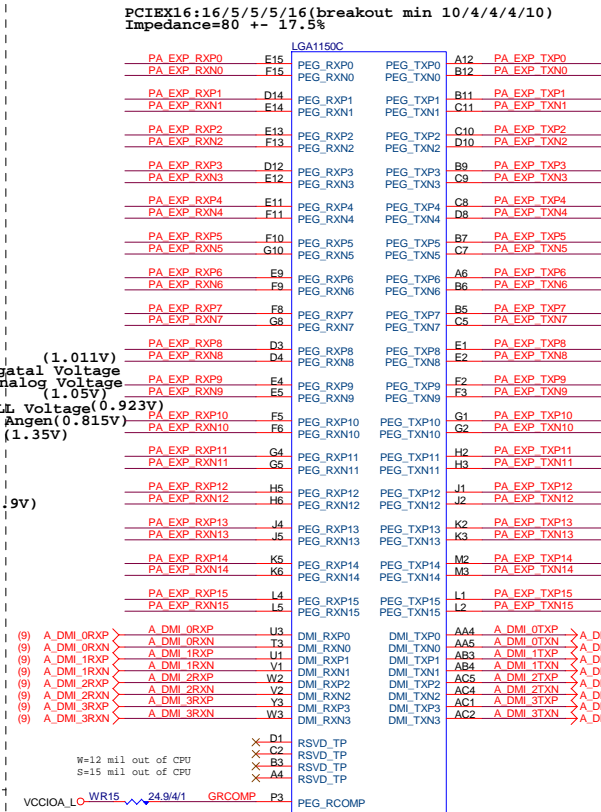
LGA1150 (E)



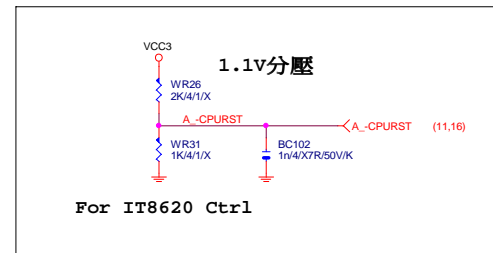
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LGA1155 (C)



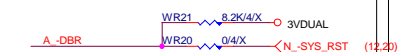
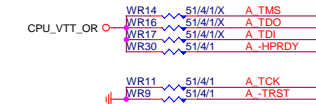
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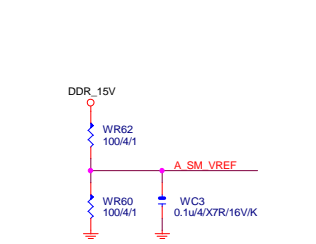
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SM	REF
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(A)

(CR)

LGA1150A

MMA00		AU13	DDR0_MA0	DDR0_D00	AD38_MDA0
	MMAA1	AU16	DDR0_MA0	DDR0_D01	AD39_MDA1
	MMAA2	AU16	DDR0_MA2	DDR0_D02	AF38_MDA2
	MMAA3	AU17	DDR0_MA3	DDR0_D03	AF39_MDA3
	MMAA4	AU17	DDR0_MA4	DDR0_D04	AD37_MDA4
	MMAA5	AU16	DDR0_MA4	DDR0_D04	AD40_MDA5
	MMAA6	AU17	DDR0_MA5	DDR0_D05	AF37_MDA6
	MMAA7	AT18	DDR0_MA6	DDR0_D06	AF36_MDA7
	MMAA8	AU18	DDR0_M7	DDR0_D07	AH40_MDA8
	MMAA9	AT18	DDR0_M8	DDR0_D08	AD39_MDA9
	MMAA10	AU11	DDR0_M8	DDR0_D08	AK38_MDA10
	MMAA11	AU19	DDR0_M9	DDR0_D09	AK39_MDA11
	MMAA12	AU18	DDR0_M10	DDR0_D10	AH37_MDA12
	MMAA13	AU10	DDR0_M11	DDR0_D11	AD38_MDA9
	MMAA14	AT20	DDR0_M12	DDR0_D12	AK37_MDA14
	MMAA15	AU21	DDR0_M13	DDR0_D13	AK37_MDA14
			DDR0_M14	DDR0_D14	AK40_MDA15
			DDR0_M15	DDR0_D15	AK40_MDA17
				DDR0_D16	AK39_MDA21
	MODT_A0	AU10		DDR0_D17	AP38_MDA18
	MODT_A1	AU9	DDR0_ODT0	DDR0_D18	AP39_MDA19
		AU8	DDR0_ODT1	DDR0_D19	AM37_MDA20
			DDR0_ODT2	DDR0_D20	AM38_MDA16
			DDR0_ODT3	DDR0_D21	AP37_MDA22
		AU33	DDR0_ECC0	DDR0_D22	AP37_MDA23
		AU33	DDR0_ECC1	DDR0_D23	AV37_MDA25
		AU31	DDR0_ECC2	DDR0_D24	AV37_MDA26
		AU31	DDR0_ECC3	DDR0_D25	AU35_MDA28
		AU33	DDR0_ECC4	DDR0_D26	AV35_MDA27
		AU33	DDR0_ECC5	DDR0_D27	AT37_MDA28
		AU31	DDR0_ECC6	DDR0_D28	AT36_MDA30
		AU31	DDR0_ECC7	DDR0_D29	AW35_MDA31
			DDR0_D30	DDR0_D31	AY6_MDA33
(7)	SBA00 ↔ SBA00	AU12	DDR0_BA0	DDR0_D32	AY6_MDA37
(7)	SBA1 ↔ SBA1	AT11	DDR0_BA1	DDR0_D33	AU4_MDA34
(7)	SBA2 ↔ SBA2	AT21	DDR0_BA2	DDR0_D34	AU4_MDA35
				DDR0_D35	AW6_MDA36
(7)	CKE40 ↔ CKE40	AT22	DDR0_CKE0	DDR0_D36	AV6_MDA32
(7)	CKE41 ↔ CKE41	AT23	DDR0_CKE1	DDR0_D37	AW4_MDA38
		AU22	DDR0_CKE2	DDR0_D38	AY4_MDA38
		AU23	DDR0_CKE3	DDR0_D39	AR1_MDA41
				DDR0_D40	AR4_MDA45
(7)	-CSA0 ↔ -CSA0	AU14	DDR0_CS_N0	DDR0_D41	AN3_MDA42
(7)	-CSA1 ↔ -CSA1	AU9	DDR0_CS_N1	DDR0_D42	AN4_MDA43
		AU8	DDR0_CS_N2	DDR0_D43	AR2_MDA44
		AU6	DDR0_CS_N3	DDR0_D44	AK3_MDA40
				DDR0_D45	AN2_MDA46
(7)	DCLKA0 ↔ DCLKA0	AU15	DDR0_CLK_P0	DDR0_D46	AN1_MDA47
(7)	DCLKA0 ↔ DCLKA1	AU16	DDR0_CLK_P0	DDR0_D47	AL4_MDA50
(7)	DCLKA1 ↔ DCLKA1	AU15	DDR0_CLK_P1	DDR0_D48	AJ3_MDA50
		AU14	DDR0_CLK_P2	DDR0_D49	AJ4_MDA51
		AU14	DDR0_CLK_P2	DDR0_D50	AL2_MDA52
		AU13	DDR0_CLK_N3	DDR0_D51	AL3_MDA48
		AU12	DDR0_CLK_N3	DDR0_D52	AJ1_MDA54
				DDR0_D53	AJ1_MDA55
			RSVD	DDR0_D54	AG1_MDA57
				DDR0_D55	AG4_MDA61
				DDR0_D56	AE3_MDA58
				DDR0_D57	AE4_MDA59
				DDR0_D58	MDA60
				DDR0_D59	AG3_MDA56
(7)	-SRASA ↔ -SRASA	AU12C	DDR0_D61	DDR0_D61	AE2_MDA62
(7)	-SWEA ↔ -SWEA	AU11C	DDR0_D62	DDR0_D62	AE1_MDA63
			DDR0_RAS*	DDR0_D63	AE39_DQSA0
			DDR0_WE*	DDR0_D64	D

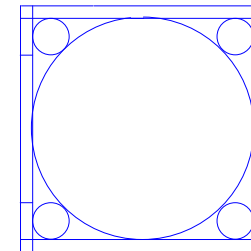
HASWELL/[10SC1-F01150-11R_10SC1-F01150-12R]

LGA1150B

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MAA81	AK23	DDR1_MA1	DDR1_D01	AE35	MD81
MAA82	AM22	DDR1_MA2	DDR1_D02	AE36	MD82
MAA83	AM23	DDR1_MA3	DDR1_D03	AH35	MD83
MAA84	AF23	DDR1_MA4	DDR1_D04	AD34	MD84
MAA85	AL23	DDR1_MA5	DDR1_D04	AD35	MD85
MAA86	AY24	DDR1_MA6	DDR1_D05	AG34	MD86
MAA87	AV25	DDR1_MA6	DDR1_D06	AH34	MD87
MAA88	AW25	DDR1_MA7	DDR1_D06	AH35	MD88
MAA89	AW26	DDR1_MA8	DDR1_D07	AL35	MD89
MAA90	AY26	DDR1_MA8	DDR1_D08	AL31	MD90
MAA91	AP18	DDR1_MA9	DDR1_D09	AK31	MD91
MAA92	AP18	DDR1_MA10	DDR1_D10	AK32	MD92
MAA93	AM22	DDR1_MA11	DDR1_D11	AK33	MD93
MAA94	AV22	DDR1_MA12	DDR1_D12	AK34	MD94
MAA95	AV22	DDR1_MA13	DDR1_D13	AK32	MD95
MAA96	AV27	DDR1_MA14	DDR1_D14	AK32	MD96
MAA97	AM28	DDR1_MA15	DDR1_D15	AL32	MD97
MODT_B0	AY17			AN34	MD98
MODT_B1	AM16	DDR1_ODT0	DDR1_D17	AF34	MD99
	AL16	DDR1_ODT1	DDR1_D18	AN31	MD99
	AK15	DDR1_ODT2	DDR1_D19	AP31	MD823
		DDR1_ODT3	DDR1_D20	AN35	MD820
			DDR1_D21	AN35	MD816
	AM26	DDR1_ECC0	DDR1_D22	AP32	MD822
	AM25	DDR1_ECC1	DDR1_D23	AM29	MD828
	AP25	DDR1_ECC2	DDR1_D24	AM28	MD828
	AP26	DDR1_ECC3	DDR1_D25	AE28	MD827
	AL26	DDR1_ECC4	DDR1_D26	AE28	MD830
	AR26	DDR1_ECC5	DDR1_D27	AL29	MD824
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	AR26	DDR1_ECC7	DDR1_D29	AP29	MD826
			DDR1_D30	AP28	MD831
SBAB0	AK17	DDR1_BA0	DDR1_D31	AR12	MD832
SBAB1	AL18	DDR1_BA1	DDR1_D32	AP28	MD833
SBAB2	AW28	DDR1_BA2	DDR1_D33	AL12	MD834
			DDR1_D34	AL12	MD835
CKEB0	AW29	DDR1_CK60	DDR1_D35	AR13	MD836
CKEB1	AY29	DDR1_CK61	DDR1_D36	AR13	MD837
	AY28	DDR1_CK62	DDR1_D37	AM113	MD838
	AY27	DDR1_CK63	DDR1_D38	AM12	MD839
CSB0	AP17	DDR1_CS_0	DDR1_D39	AR9	MD845
CSB1	AN15	DDR1_CS_1	DDR1_D40	AP9	MD841
	AN17	DDR1_CS_N2	DDR1_D41	AR6	MD847
	AL15	DDR1_CS_N3	DDR1_D42	AP8	MD845
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			DDR1_D44	AP10	MD840
			DDR1_D45	AP7	MD846
			DDR1_D46	AP7	MD846
			DDR1_D47	AM9	MD852
DCLKB0	AM20	DDR1_CLK_P0	DDR1_D48	AL9	MD853
DCLKB0	AM21	DDR1_CLK_P0	DDR1_D49	AL6	MD850
DCLKB1	AP22	DDR1_CLK_P1	DDR1_D50	AL7	MD855
DCLKB1	AP21	DDR1_CLK_P1	DDR1_D51	AM10	MD849
			DDR1_D52	AL10	MD849
AN20	DDR1_CLK_P2	DDR1_D53		AM6	MD854
AN21	DDR1_CLK_N2	DDR1_D54		AM7	MD851
AN19	DDR1_CLK_P3	DDR1_D55		AH6	MD861
AN20	DDR1_CLK_N3	DDR1_D56		AH6	MD860
		DDR1_D57		AE6	MD859
SCASB	AP16C	DDR1_CAS* RSDV	DDR1_D59	AE7	MD863
SRASB	AM18C	DDR1_RAS* SWEB	DDR1_D60	AJ6	MD856
	AK39	DDR1_WE*	DDR1_D61	AJ7	MD857
			DDR1_D62	AF6	MD858
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VREF_D0B		DDR_VREF_D01	DDR1_D64	AF35	DO880
			DDR1_D05_P0	AP33	DO882
			DDR1_D05_P2	AN28	DO883
			DDR1_D05_P3	AN12	DO884
			DDR1_D05_P4	AP8	DO886
			DDR1_D05_P5	AL8	DO886
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HASWELL/[10SC1-F01150-11R_10SC1-F01150-12R]

CPU RETENTION/X



LGA1150



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

DDR BUS

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(8)	MDB[0..63]	↔	MDB[0..63]
(7)	DQSA[0..7]	↔	DQSA[0..7]
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(7)	MAAA[0..15]	↔	MAAA[0..15]
(8)	MAAB[0..15]	↔	MAAB[0..15]
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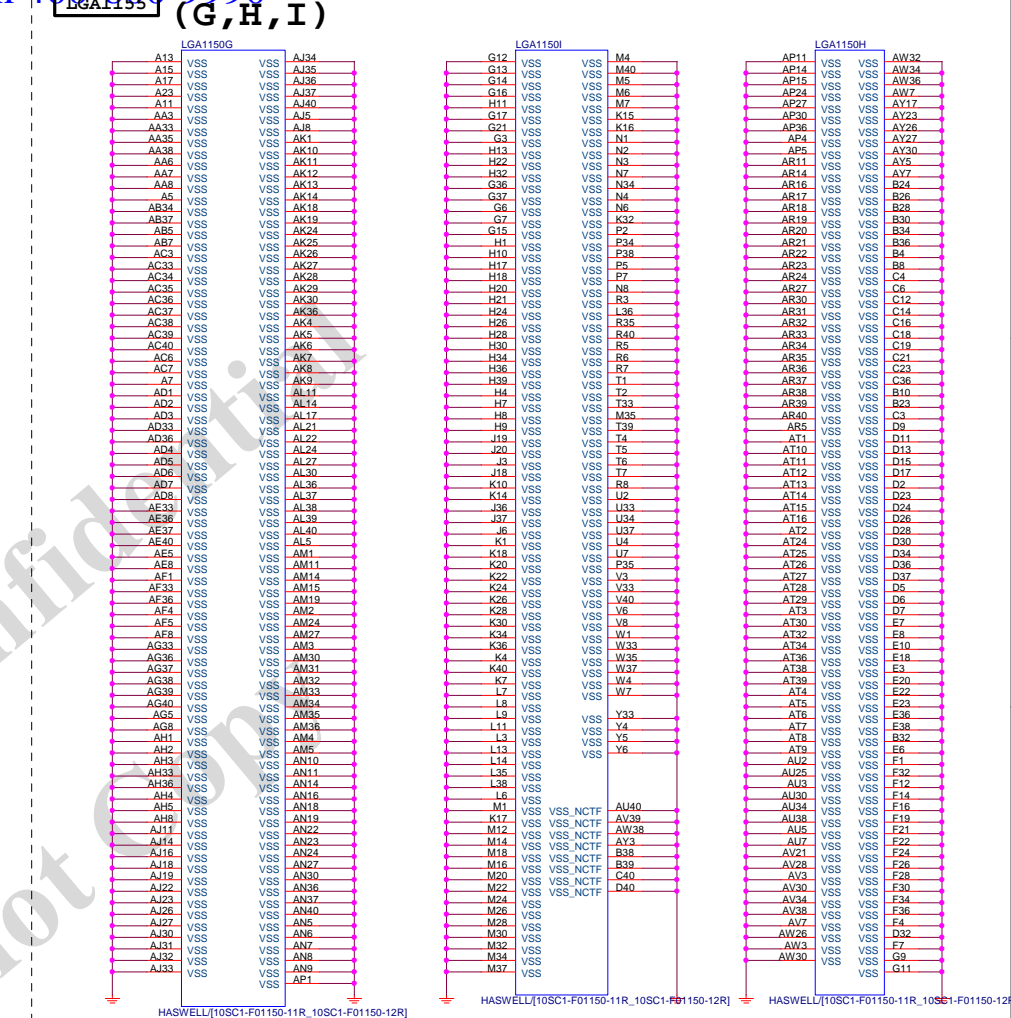
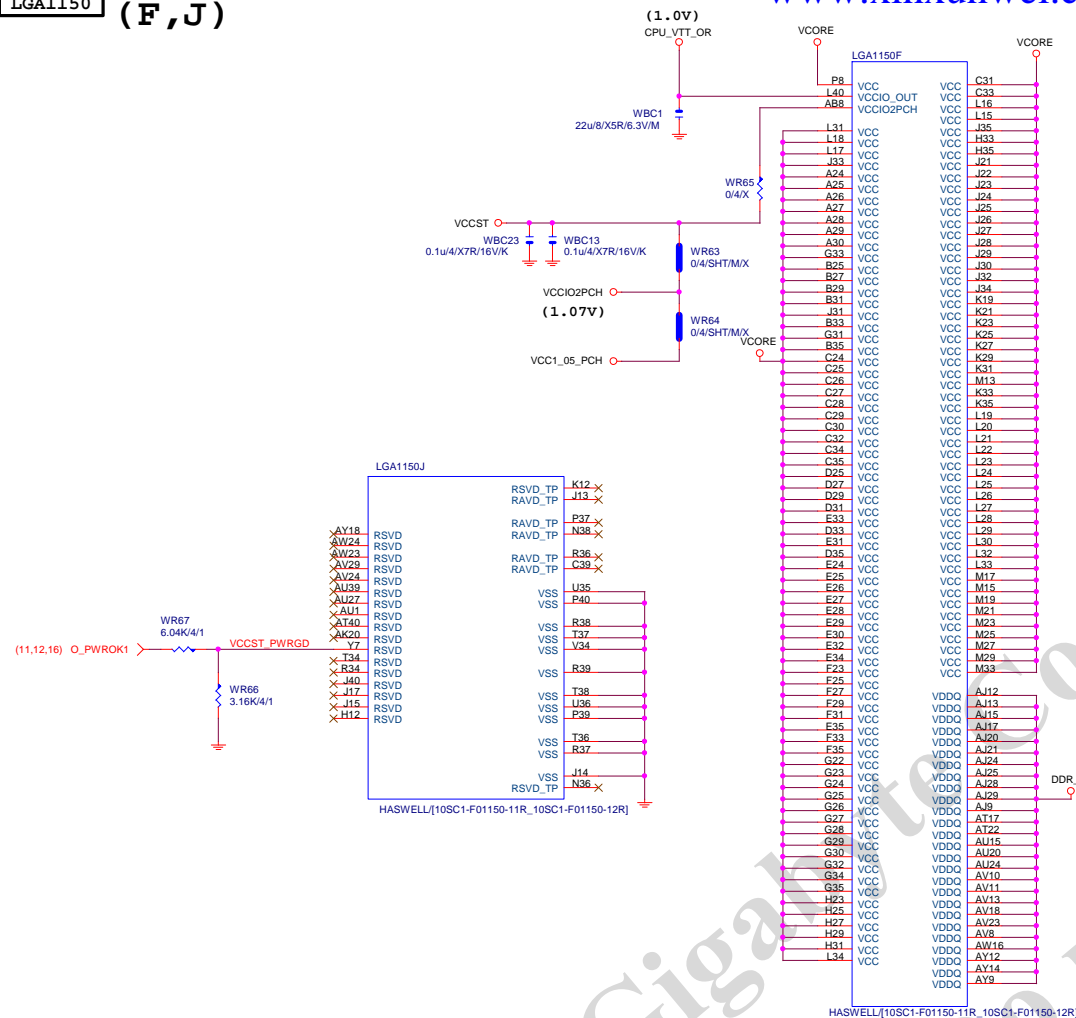
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LGA1150 (F,J)

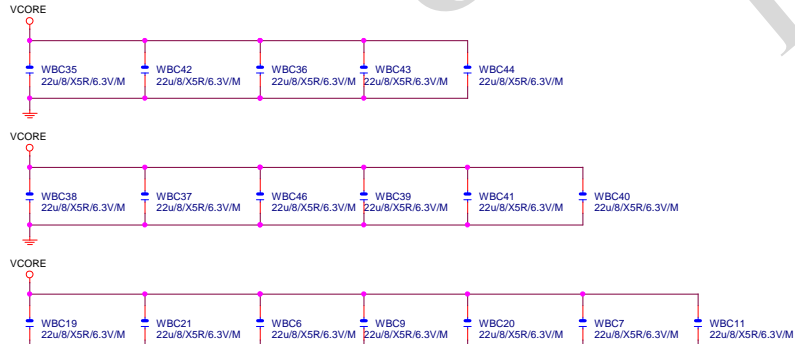
www.xinxunwei.com 400-890-9990

LGA1155 (G,H,I)



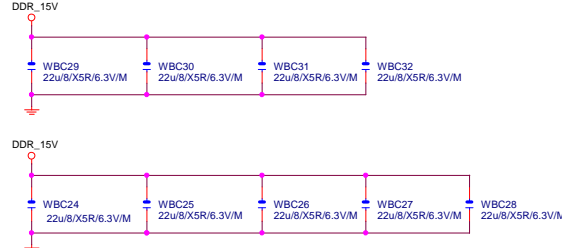
VCore CAP

(X18)



DDR CAP

(X9)



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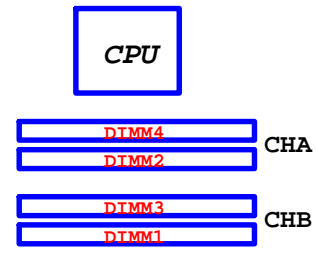
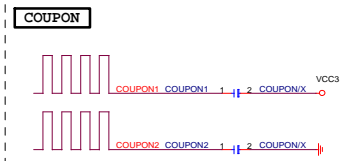
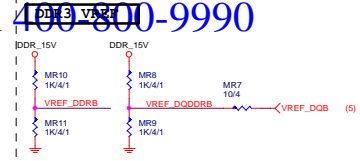
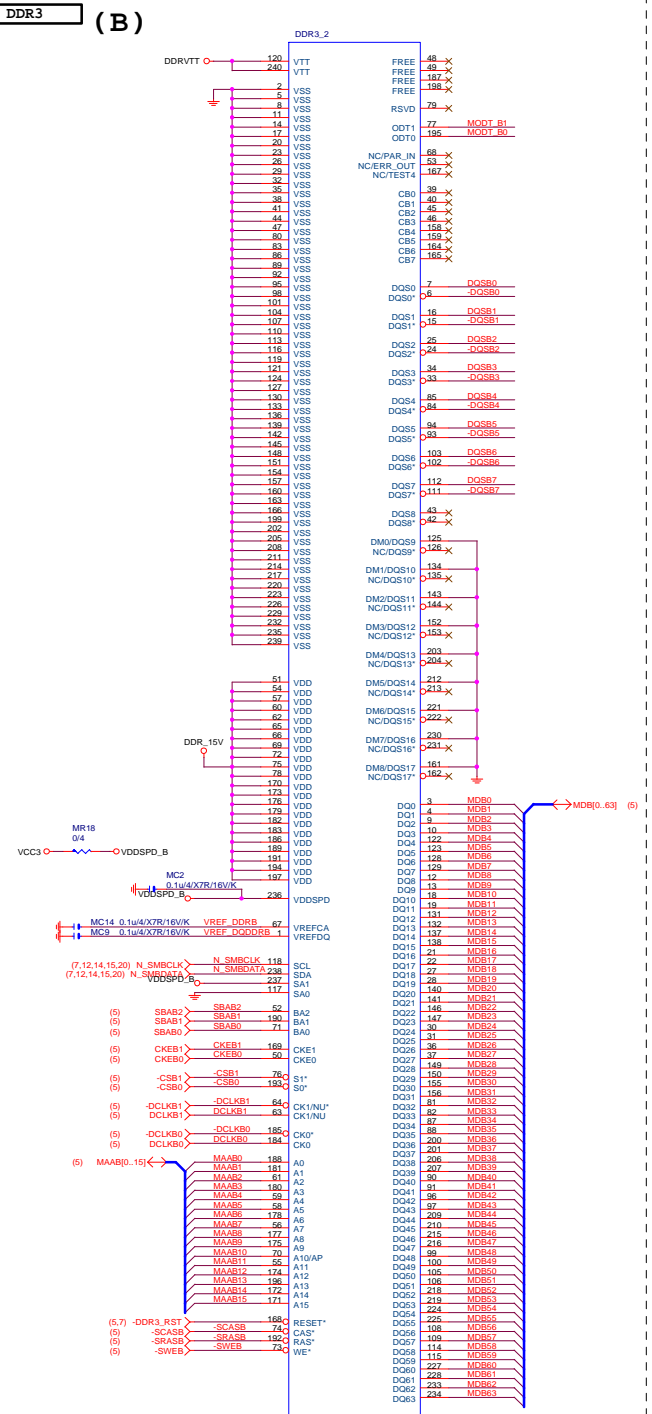
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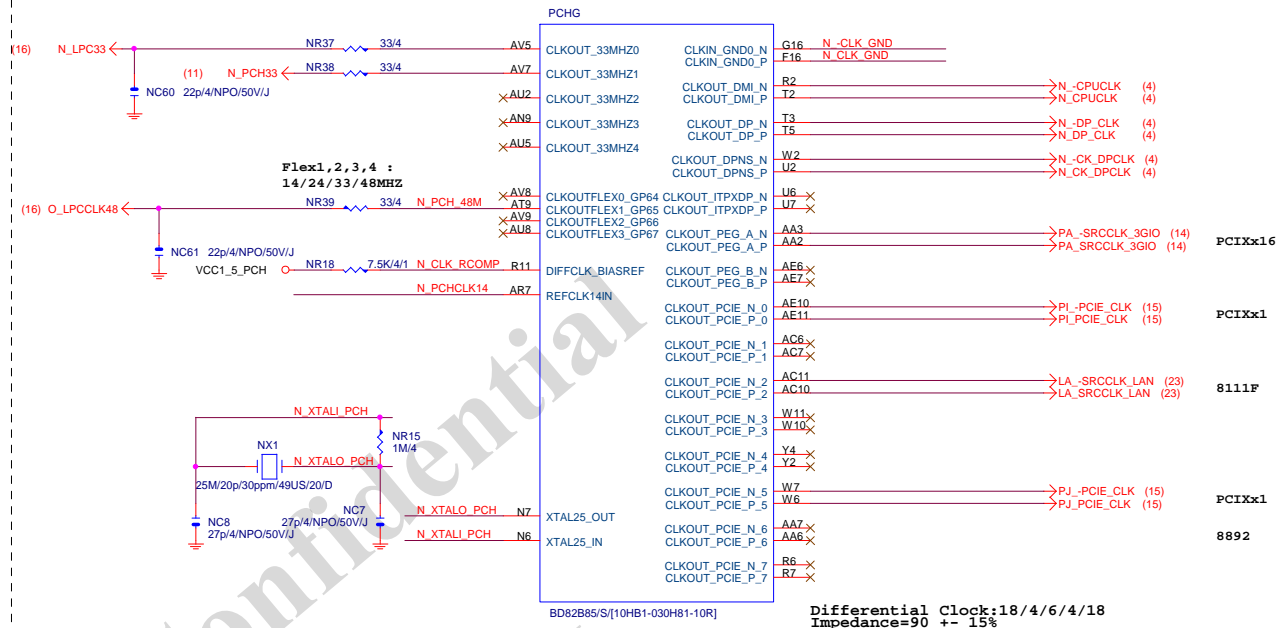
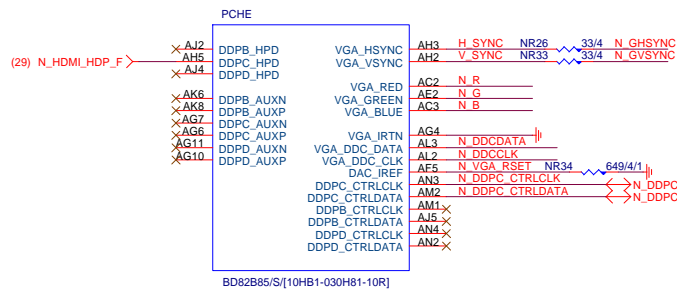


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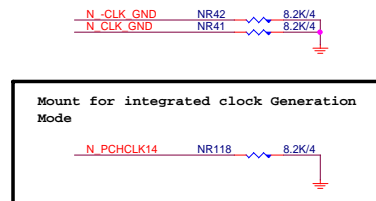
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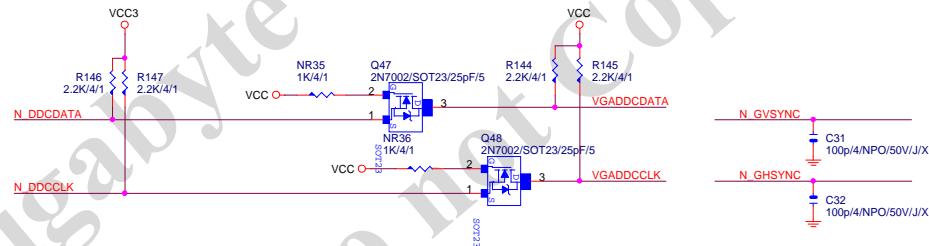
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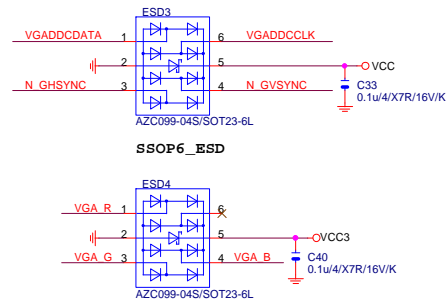
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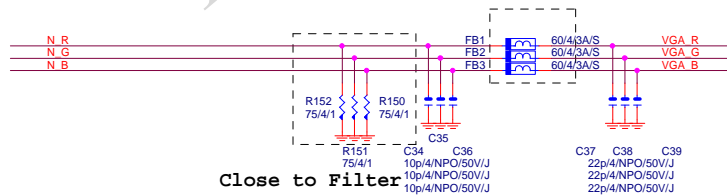
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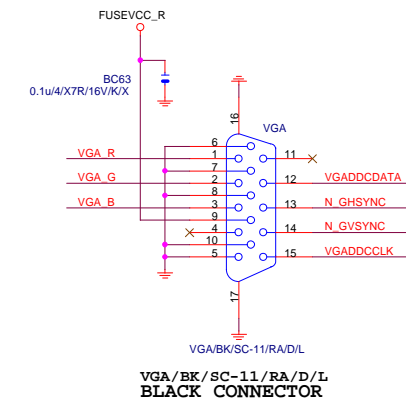
VGA ESD



VGA DDC

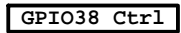
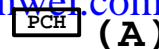


VGA CONNECTOR

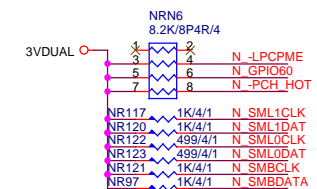
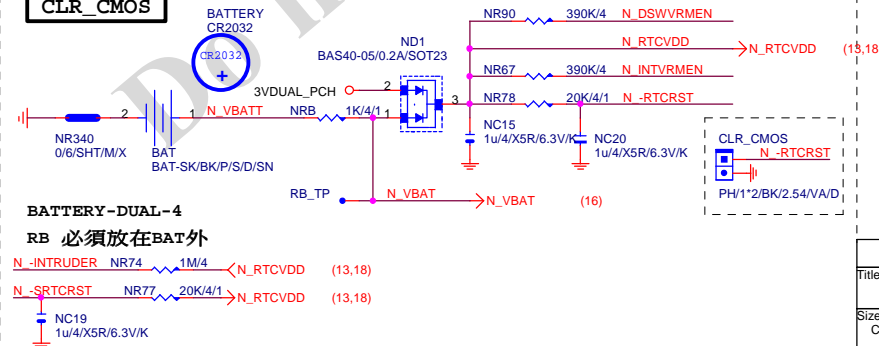
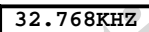
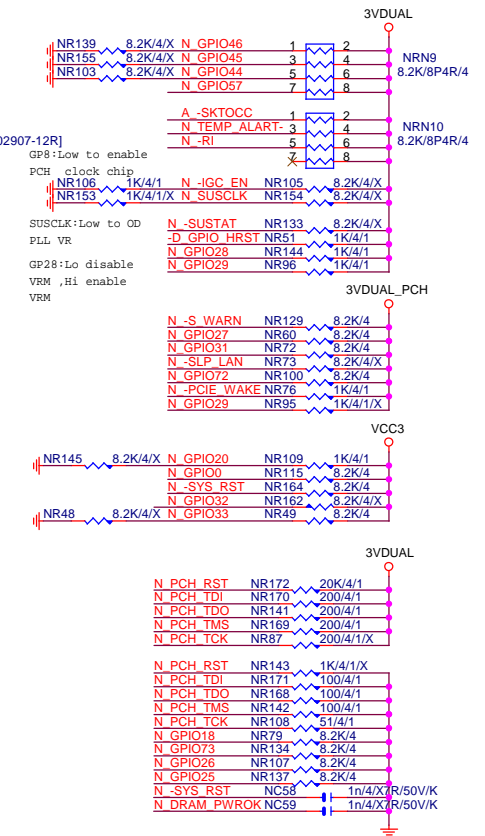
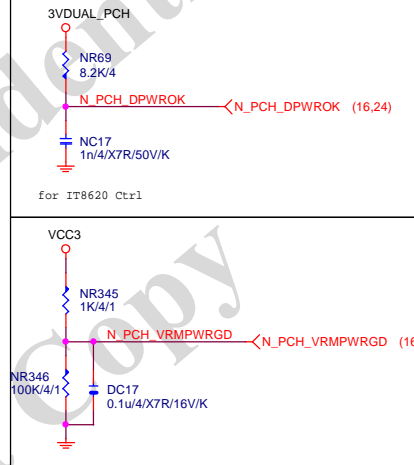


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PCH DISPLAY, CLK BUFFER		
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PCH HOST , SATA, PCI			
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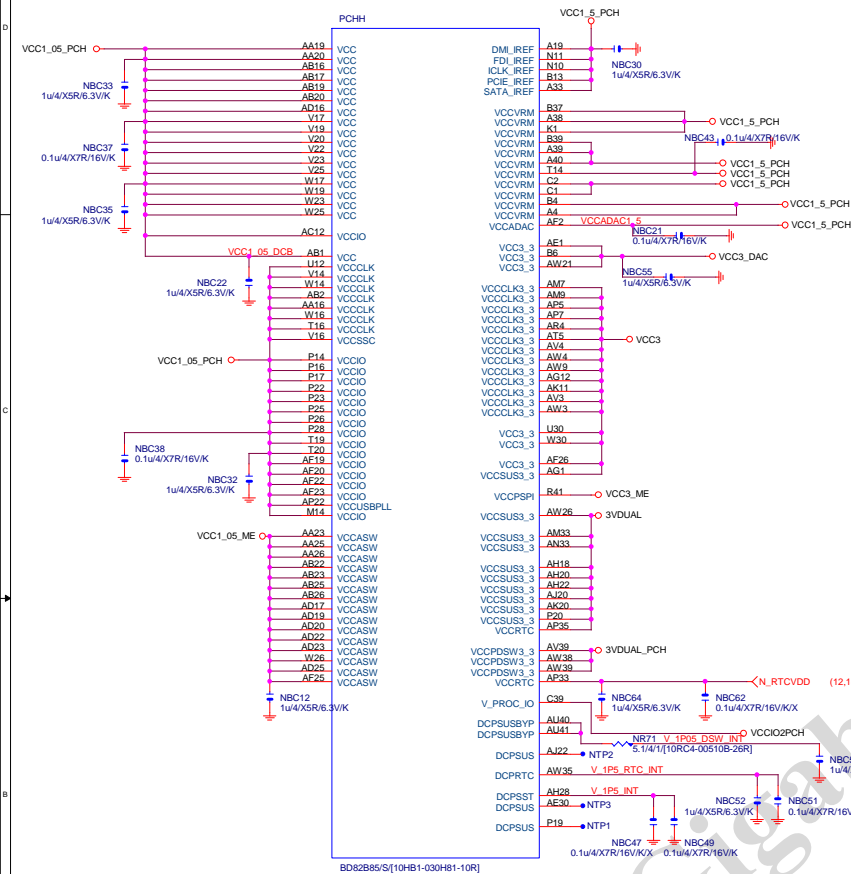


PCH (H)

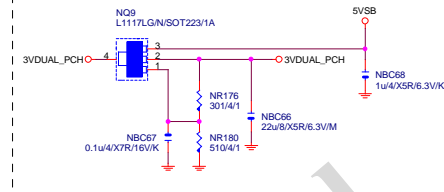
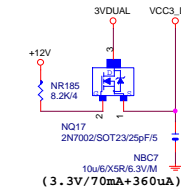
VCC3_DAC

3VDUAL_PCH

SHT_PWR



CLOSE北橋(注意震盪水波紋)

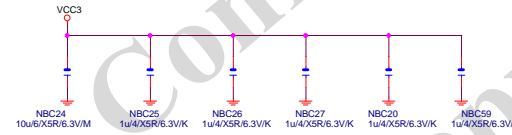


VCC3_ME

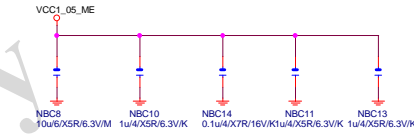
VCC1_05_PCH

CAP

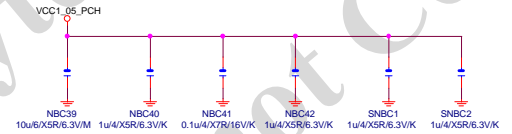
(3.3V) (X6)



(1.05V) (X5)



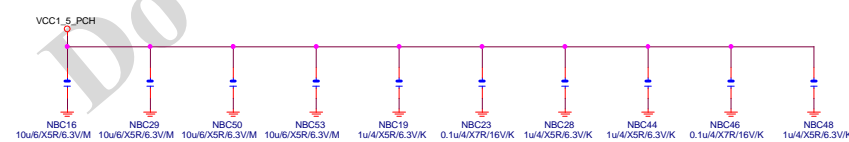
(1.05V) (X6)



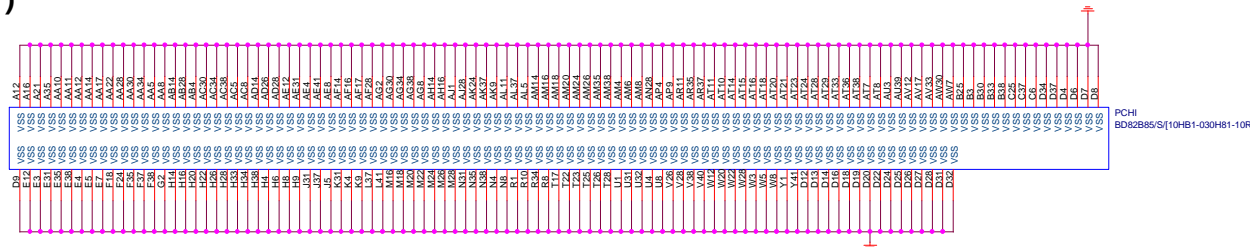
(1.05V) (X2) (3.3V) (X2)



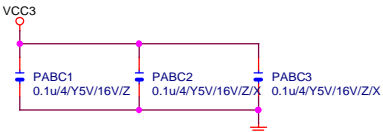
(1.05V) (X10)



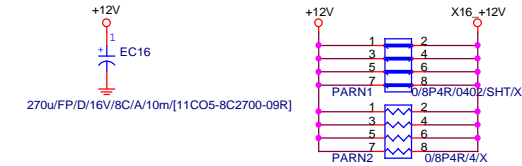
PCH (I)



PCIEX16 CAP



PCIEX16 PROTECT SHT

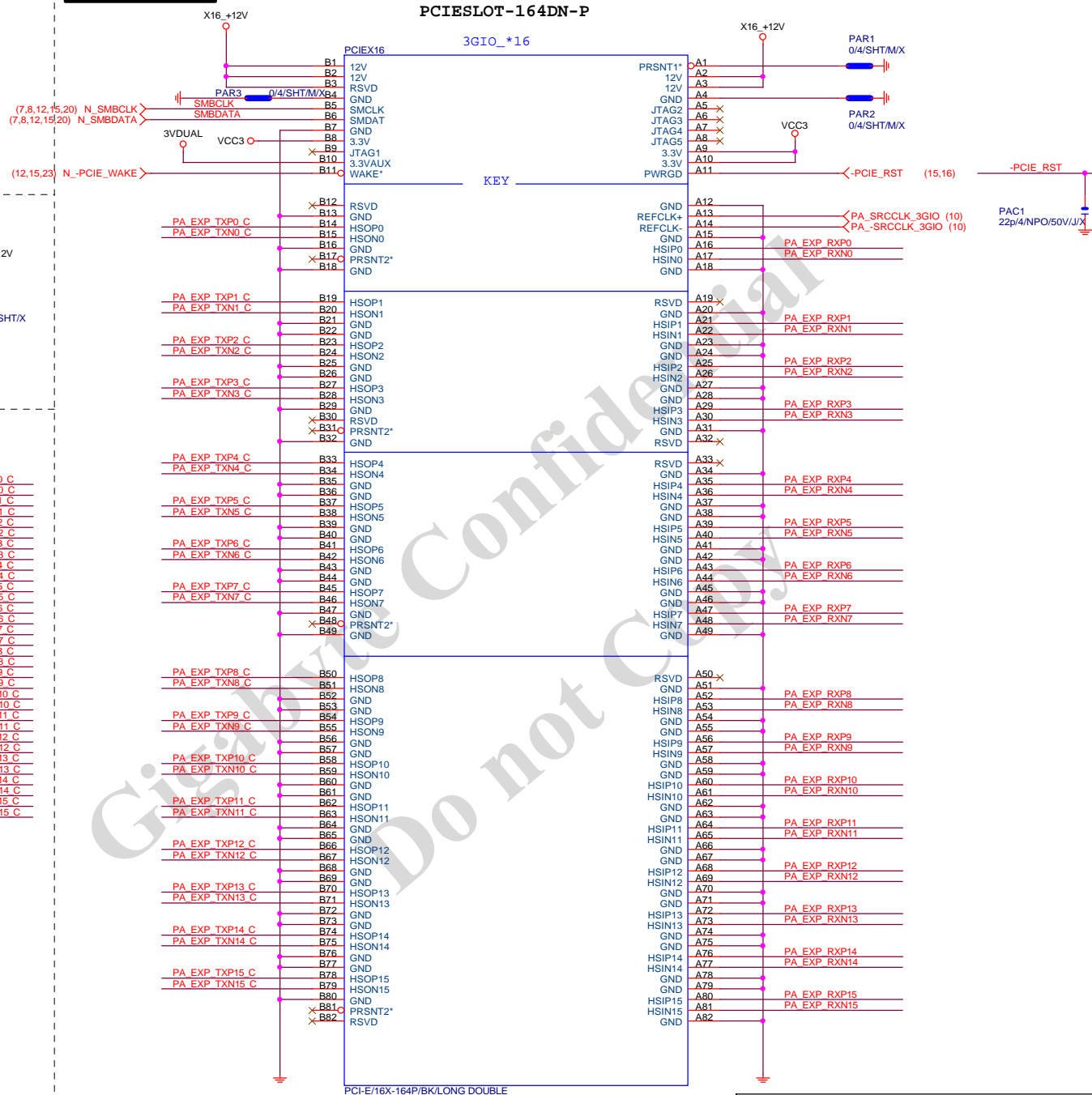


PCIEX16 AC CAP

PA EXP TXP0	PAC5	0.22u4/X5R/6.3V/K	PA EXP TXP0 C
PA EXP TXN0	PAC4	0.22u4/X5R/6.3V/K	PA EXP TXN0 C
PA EXP TXP1	PAC6	0.22u4/X5R/6.3V/K	PA EXP TXP1 C
PA EXP TXN1	PAC7	0.22u4/X5R/6.3V/K	PA EXP TXN1 C
PA EXP TXP2	PAC8	0.22u4/X5R/6.3V/K	PA EXP TXP2 C
PA EXP TXN2	PAC9	0.22u4/X5R/6.3V/K	PA EXP TXN2 C
PA EXP TXP3	PAC10	0.22u4/X5R/6.3V/K	PA EXP TXP3 C
PA EXP TXN3	PAC11	0.22u4/X5R/6.3V/K	PA EXP TXN3 C
PA EXP TXP4	PAC12	0.22u4/X5R/6.3V/K	PA EXP TXP4 C
PA EXP TXN4	PAC13	0.22u4/X5R/6.3V/K	PA EXP TXN4 C
PA EXP TXP5	PAC14	0.22u4/X5R/6.3V/K	PA EXP TXP5 C
PA EXP TXN5	PAC15	0.22u4/X5R/6.3V/K	PA EXP TXN5 C
PA EXP TXP6	PAC16	0.22u4/X5R/6.3V/K	PA EXP TXP6 C
PA EXP TXN6	PAC17	0.22u4/X5R/6.3V/K	PA EXP TXN6 C
PA EXP TXP7	PAC19	0.22u4/X5R/6.3V/K	PA EXP TXP7 C
PA EXP TXN7	PAC18	0.22u4/X5R/6.3V/K	PA EXP TXN7 C
PA EXP TXP8	PAC20	0.22u4/X5R/6.3V/K	PA EXP TXP8 C
PA EXP TXN8	PAC21	0.22u4/X5R/6.3V/K	PA EXP TXN8 C
PA EXP TXP9	PAC22	0.22u4/X5R/6.3V/K	PA EXP TXP9 C
PA EXP TXN9	PAC23	0.22u4/X5R/6.3V/K	PA EXP TXN9 C
PA EXP TXP10	PAC24	0.22u4/X5R/6.3V/K	PA EXP TXP10 C
PA EXP TXN10	PAC25	0.22u4/X5R/6.3V/K	PA EXP TXN10 C
PA EXP TXP11	PAC26	0.22u4/X5R/6.3V/K	PA EXP TXP11 C
PA EXP TXN11	PAC27	0.22u4/X5R/6.3V/K	PA EXP TXN11 C
PA EXP TXP12	PAC28	0.22u4/X5R/6.3V/K	PA EXP TXP12 C
PA EXP TXN12	PAC29	0.22u4/X5R/6.3V/K	PA EXP TXN12 C
PA EXP TXP13	PAC30	0.22u4/X5R/6.3V/K	PA EXP TXP13 C
PA EXP TXN13	PAC31	0.22u4/X5R/6.3V/K	PA EXP TXN13 C
PA EXP TXP14	PAC32	0.22u4/X5R/6.3V/K	PA EXP TXP14 C
PA EXP TXN14	PAC33	0.22u4/X5R/6.3V/K	PA EXP TXN14 C
PA EXP TXP15	PAC34	0.22u4/X5R/6.3V/K	PA EXP TXP15 C
PA EXP TXN15	PAC35	0.22u4/X5R/6.3V/K	PA EXP TXN15 C

PA EXP RXIP0.15] >>> PA_EXP_RXP[0.15] (4)
PA EXP RXN0.15] >>> PA_EXP_RXN[0.15] (4)
PA EXP TXIP0.15] >>> PA_EXP_TXP[0.15] (4)
PA EXP TXN0.15] >>> PA_EXP_TXN[0.15] (4)

PCIEX16 SLOT



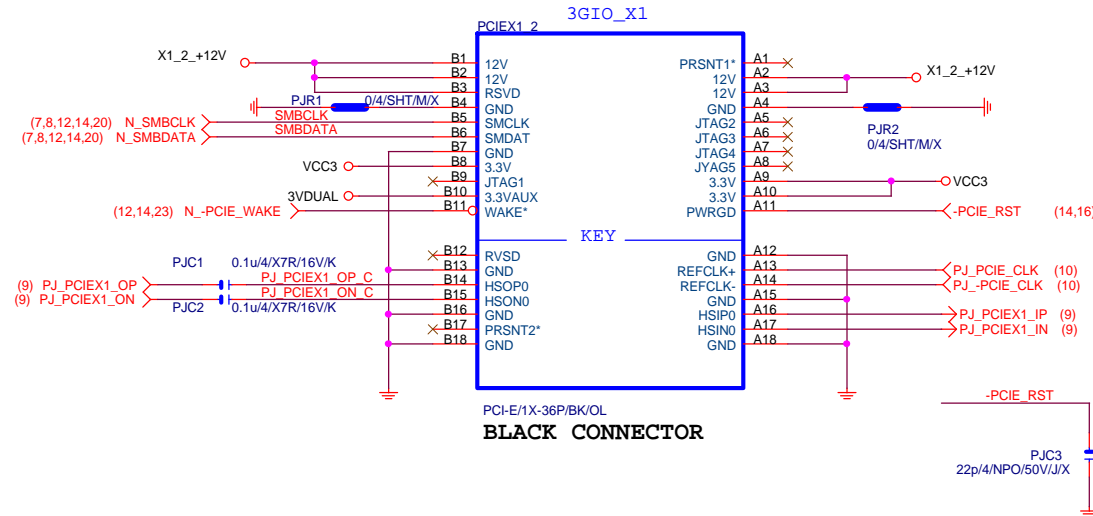
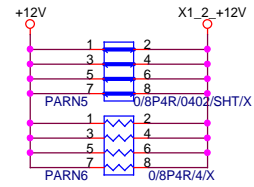
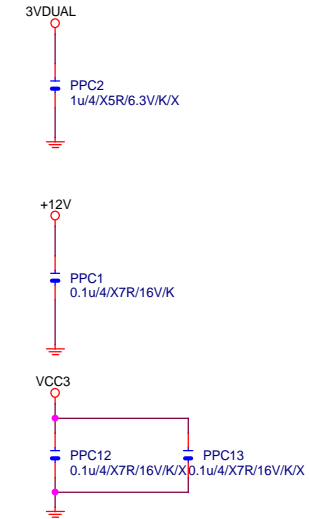
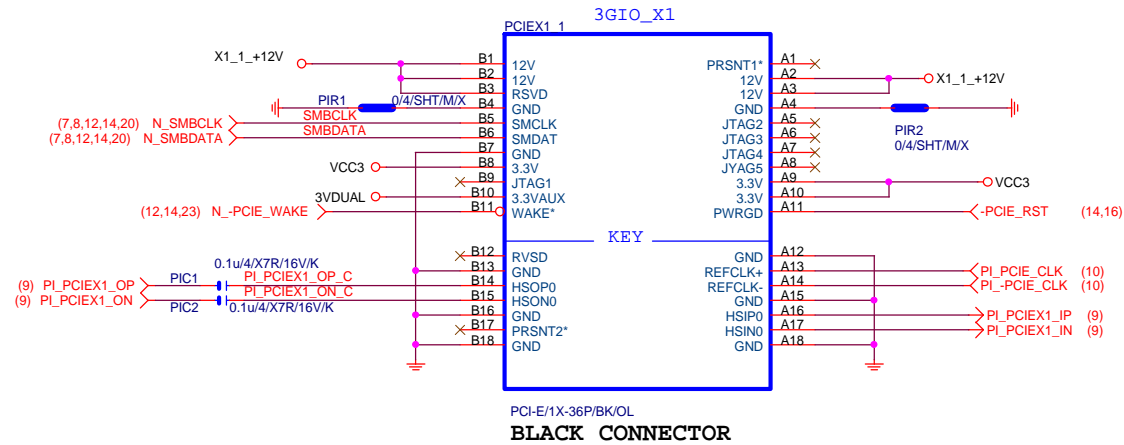
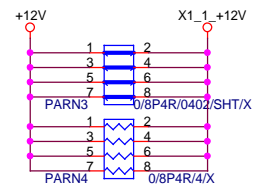
BLACK CONNECTOR

Gigabyte Technology

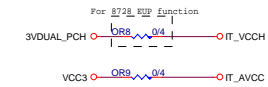
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Size			GA-H81M-H	
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PCIEX1 SLOT

PCIEX1 PROTECT SHT

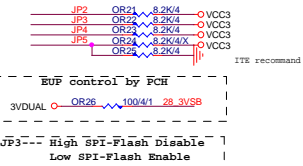


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PCI EXPRESS X 1 PORT			
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DS_ME	OR1_1	1K/4/1	3VDUAL_PCH
SVID_CTRL	OR12	8.2K/4	3VDUAL_PCH
PROCHOT_CON	OR13	8.2K/4	VCC3
N_LDRQ0	OR14	1K/4/1	VCC3
ITE_PWROK2	OR15	1K/4/1	VCC3
ITE_PWROK1	OR16	1K/4/1	VCC3
PCIE_RST	OR17	1K/4/1	VCC3
PFMRST2	OR18	1K/4/1	VCC3
FANPWM1	OR19	8.2K/4	VCC
FANPWM2	OR20	8.2K/4	VCC

H61M-S2 1.1 JP6 stuff
pull down



For IT8721 Power leakage

MB ID

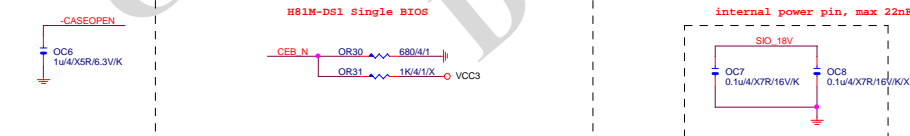
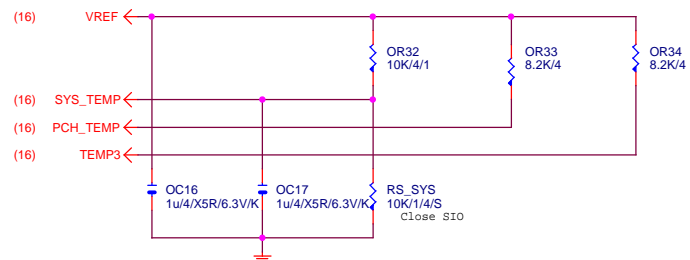
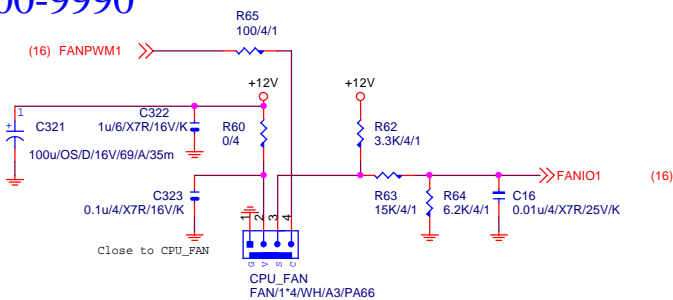
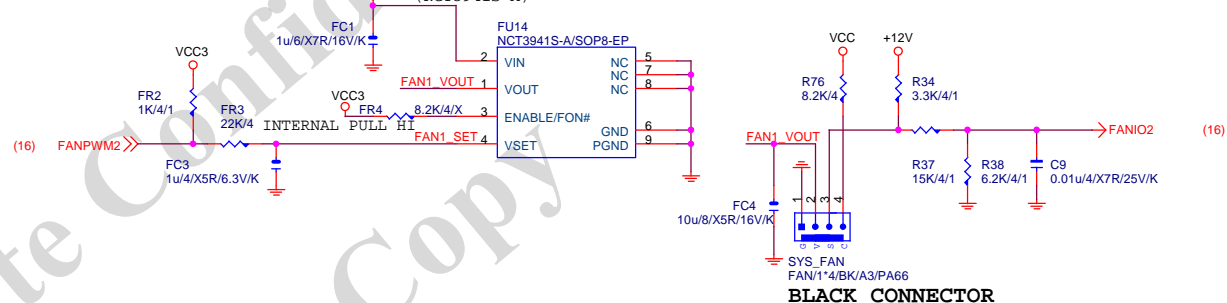


Figure 10 shows the I/O pin connections for the ADXL345. The connections are as follows:

- OC9 (1u4/XSR6.3V/K) and OC10 (0.1u4/Y5V16V/ZX) are connected to IT_VCOH.
- OC11 (10u6/XSR6.3V/M) is connected to 3VDDUAL.
- OC12 (1u4/XSR6.3V/K) is connected to IT_AVCC.
- OC13 (10u6/XSR6.3V/M) is connected to 3VDDUAL_PCH.
- OC14 (0.1u4/Y5V16V/Z) is connected to VREF_25.
- OC15 (0.1u4/XTR16V/H) is connected to VREF_25.

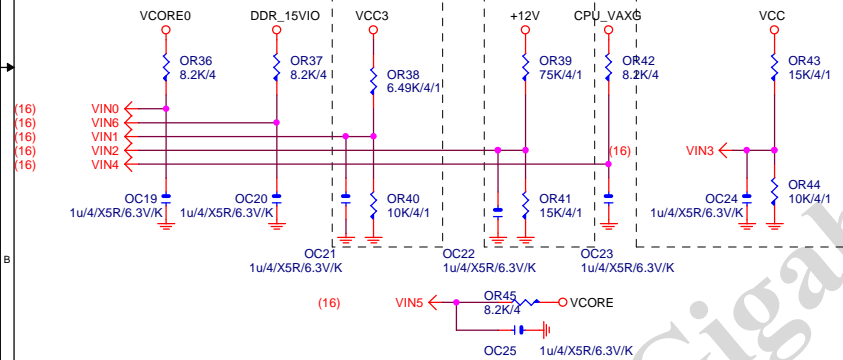
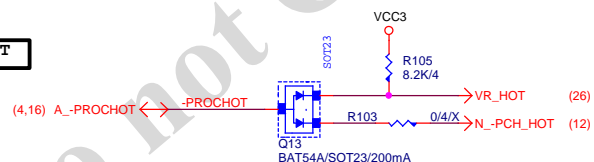
TEMP H/W MONITOR**CPU SMART FAN****CASE OPEN****SYS SMART FAN****Linear SYS_FAN**

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

**VOLTAGE-- H/W MONITOR**

VIN2:75K/15K = 2V

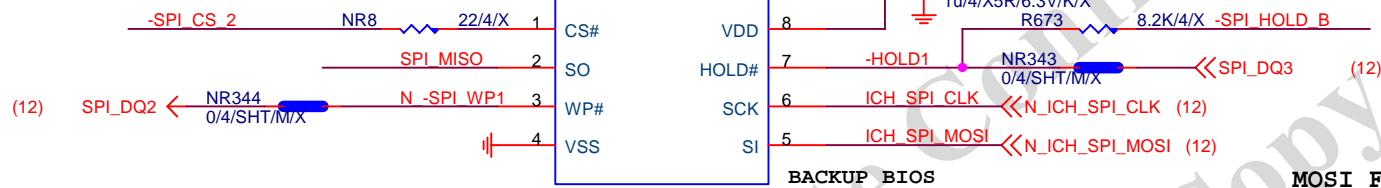
VIN3:15K/10K = 2V

**-PROHOT**

M_BIOS
32M/SPI/SO8/200mil/S



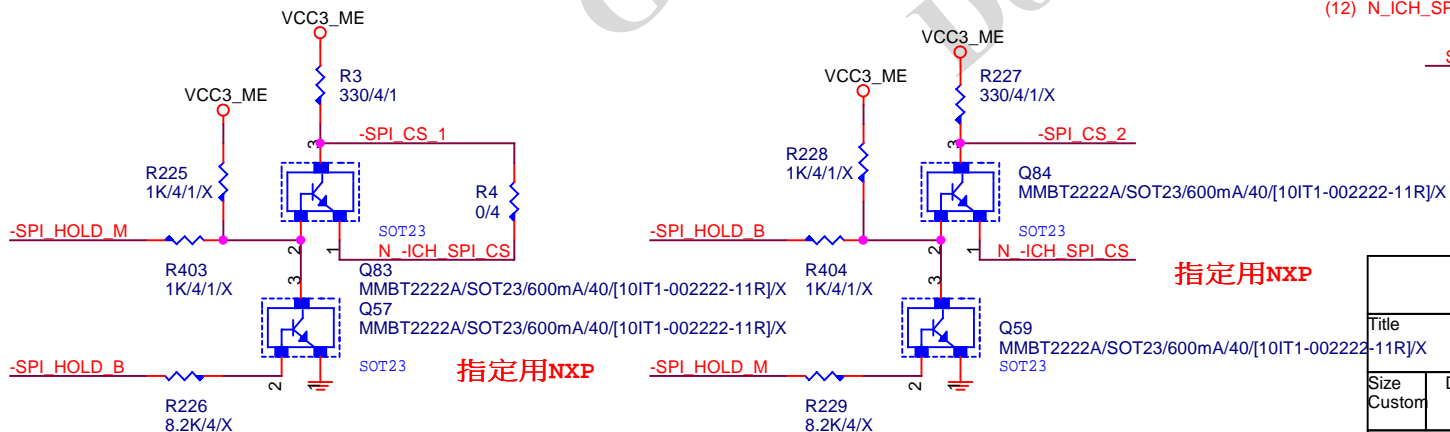
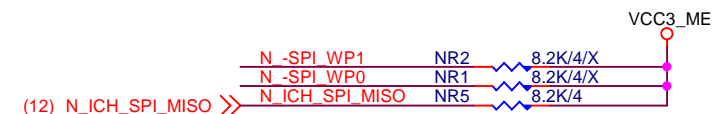
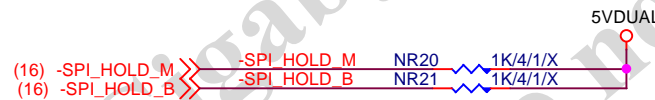
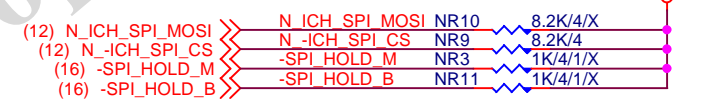
B_BIOS
64M/Q/SPI/SO8/S/X



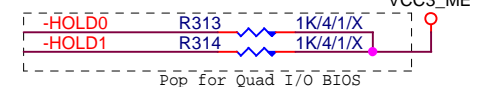
BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

1 means floating
0 means PD 1K

MOSI For DMI RX Termination Voltage



CHECK



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DUAL BIOS

GA-H81M-H

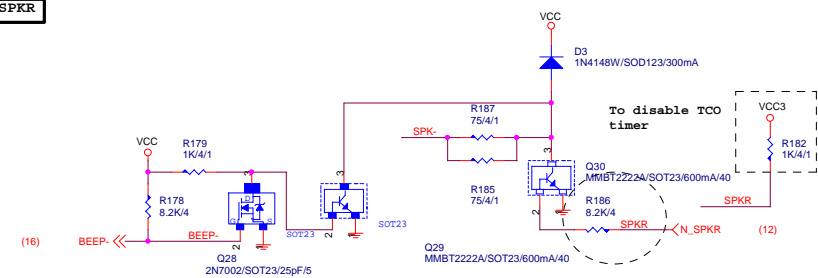
Rev
1.0

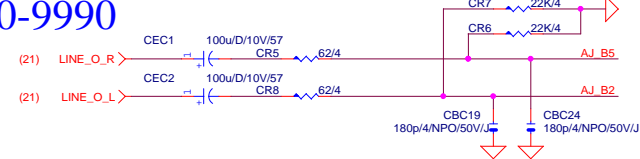
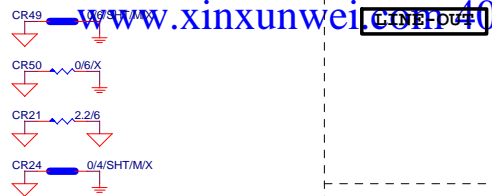
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Custom

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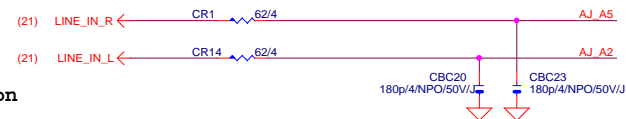




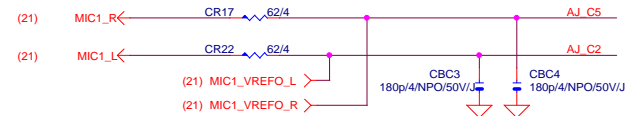
LINE-IN

Verify MIC function
in LINE-in

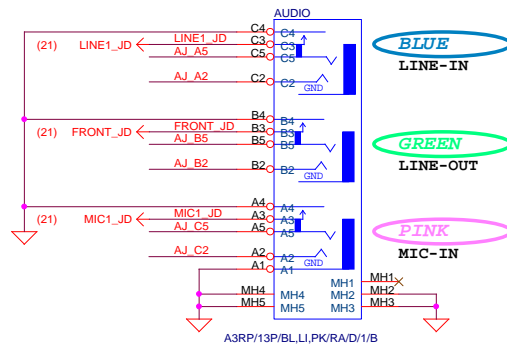
Only reserved for ALC888



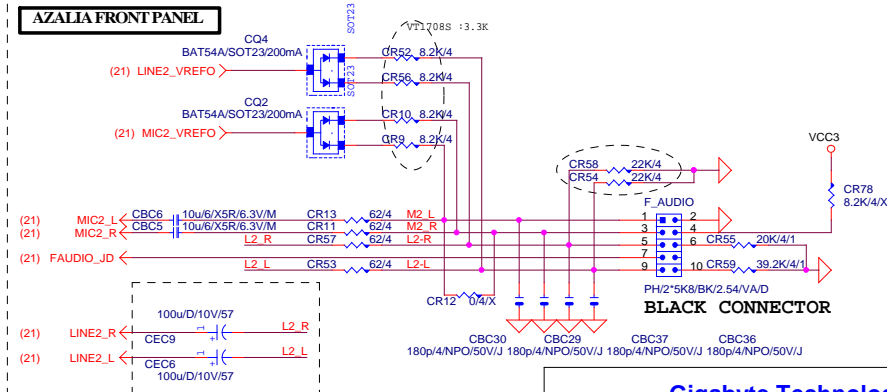
MIC-IN



SPDIF_OUT

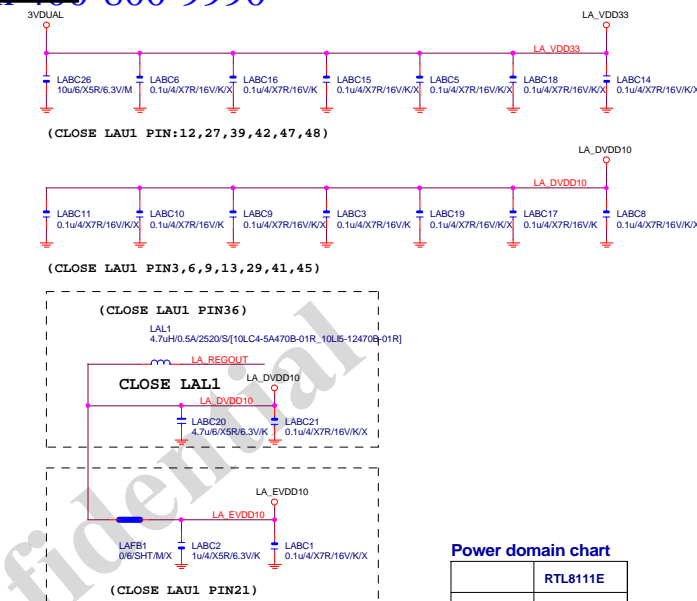
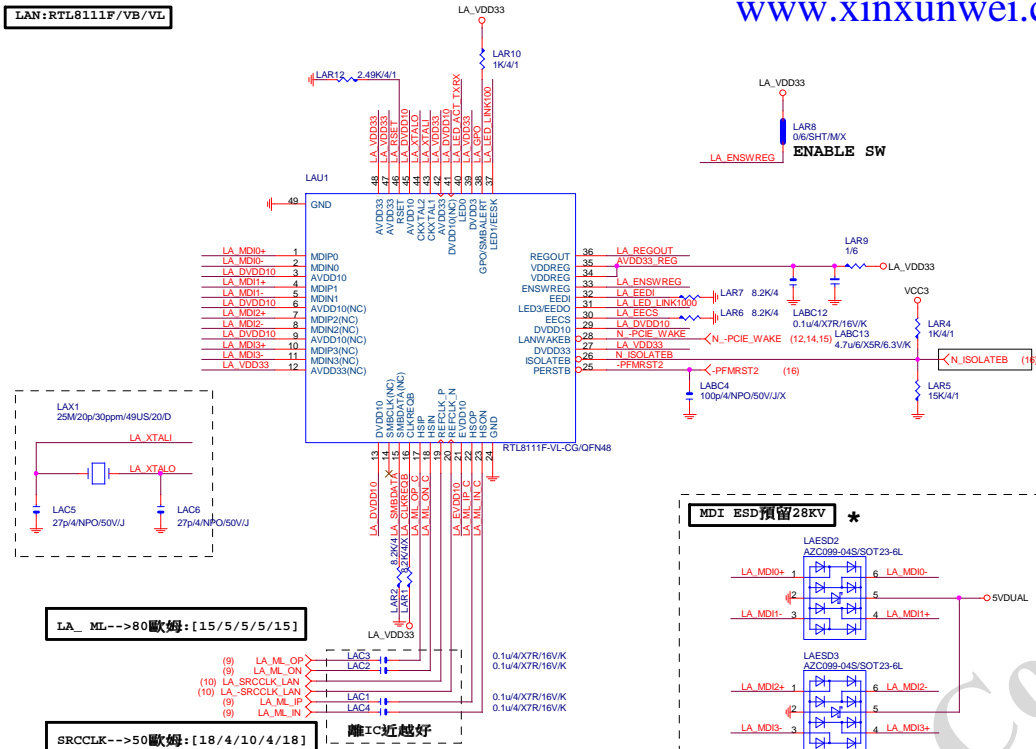


AZALIA FRONT PANEL



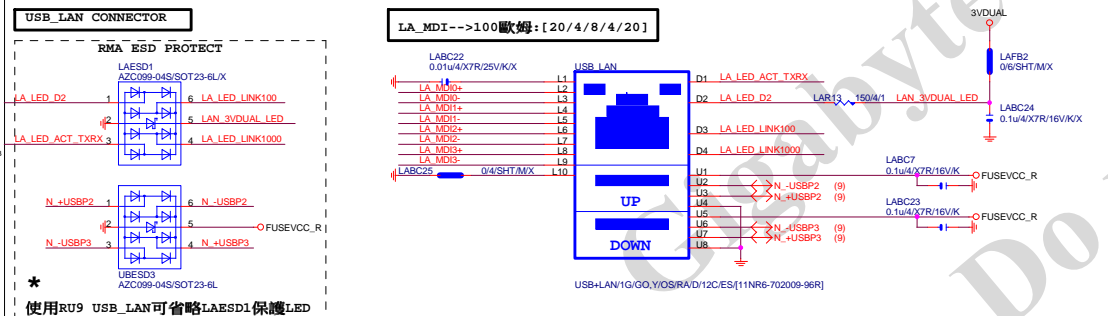
Gigabyte Technology

Title			
AUDIO JACK			
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Power domain chart

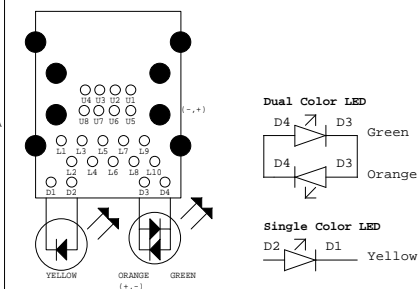
	RTL8111E
AVDD33	3.3V
DVDD33	3.3V
VDDREG	3.3V
DVDD10	1.05V



USB X3 POWER



EMI SHORT PAD

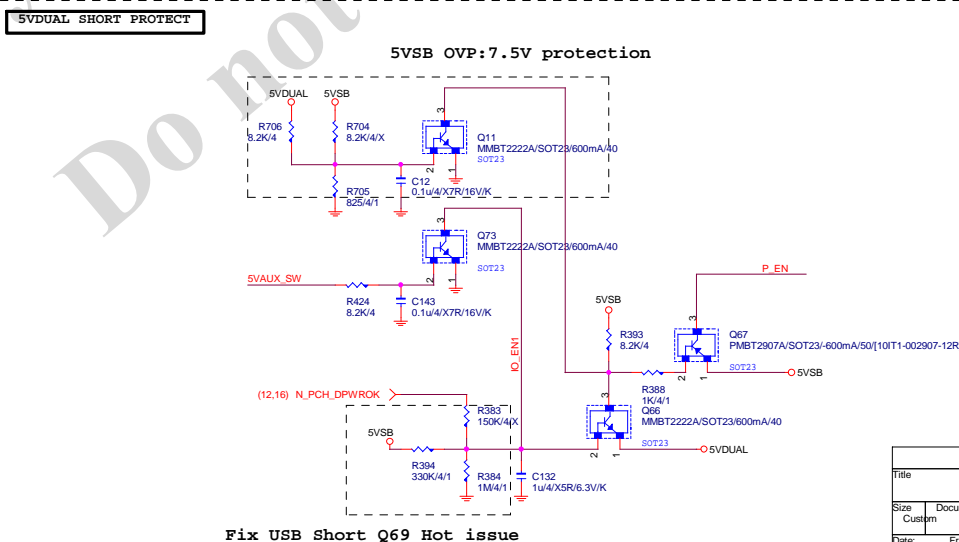
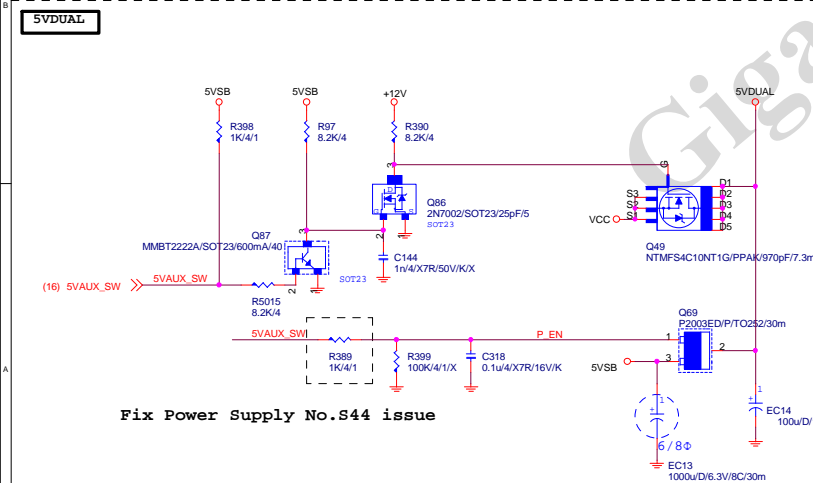
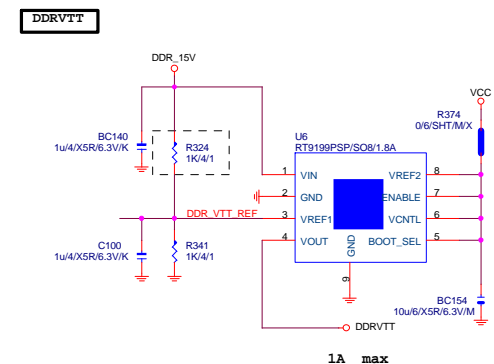
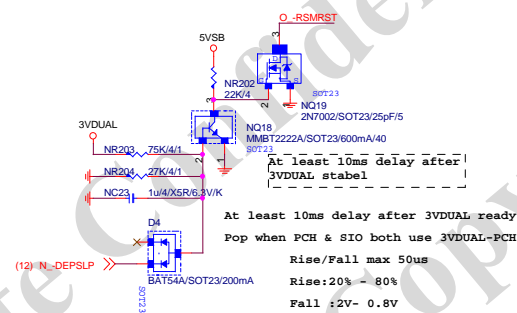
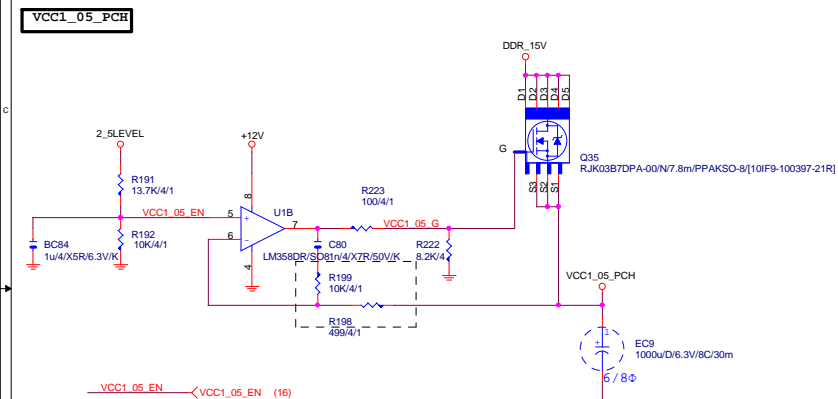
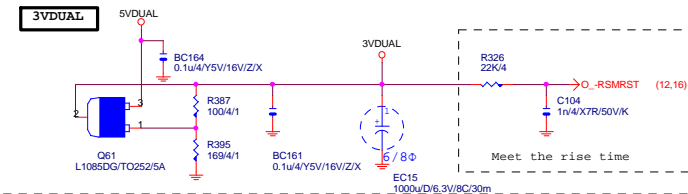
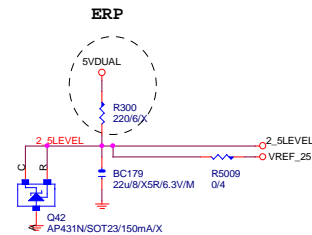
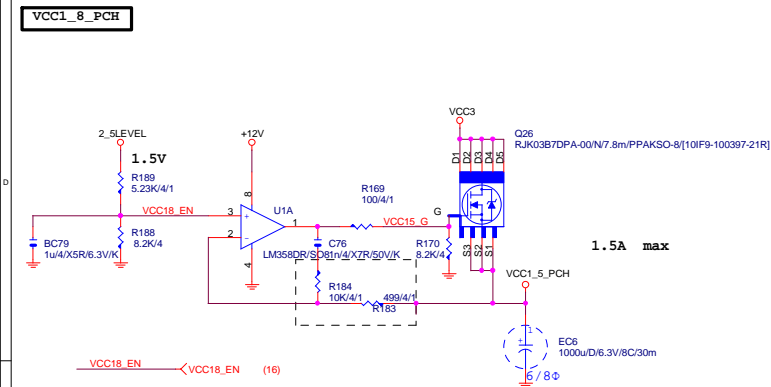


BOM NOTICE *

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

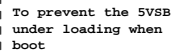
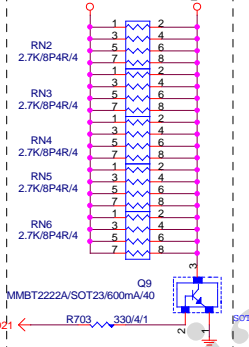
注意:USB PORT(目前:暫代6,7PORT)
USB-->90歐姆:[15/4.5/7.5/4.5/15]



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Title		DISCRETE POWER		
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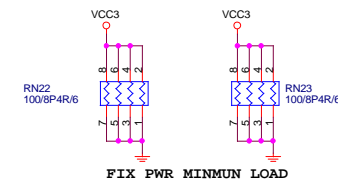
ATXX4 POWER CONNECTOR

【技術通報R&D技術通報153】



TPM

【技術通報R&D技術通報154】

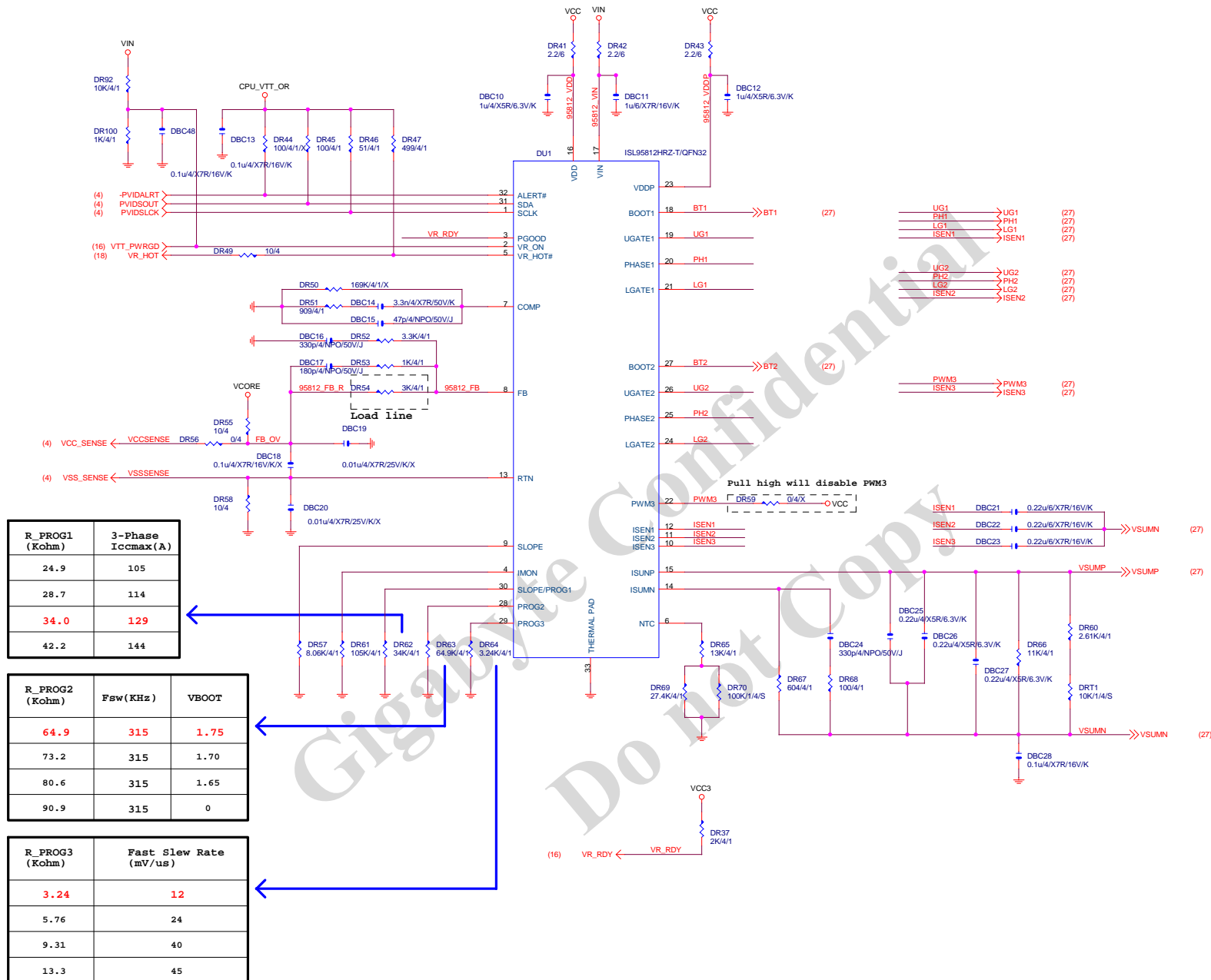


ATX CONNECTOR

GA-H81M-H

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1.0	

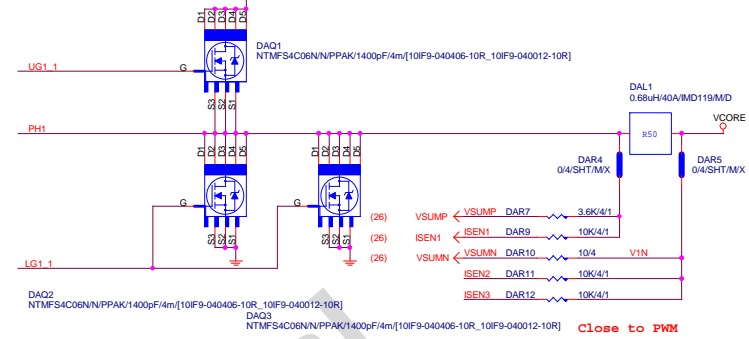
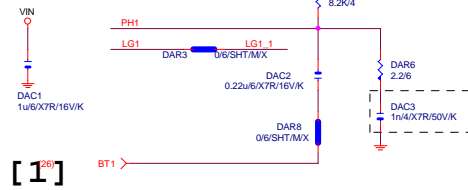
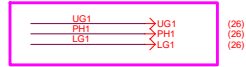
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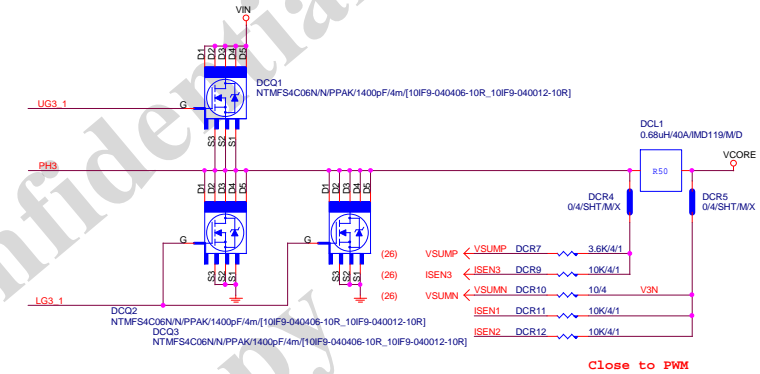
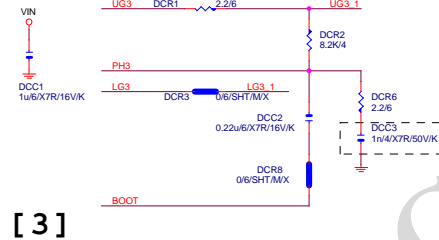
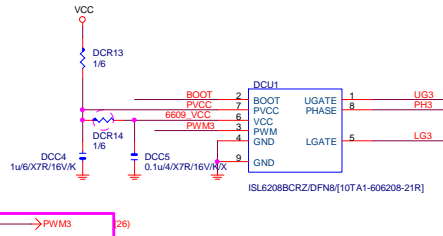
Gigabyte Technology

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CPU CORE VR-1		
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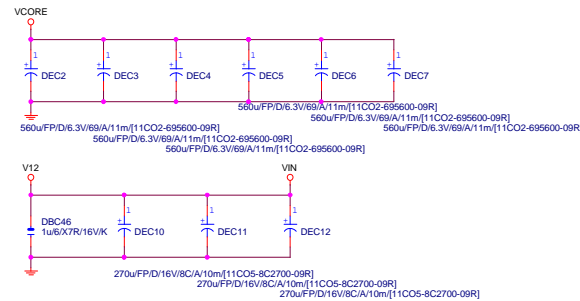
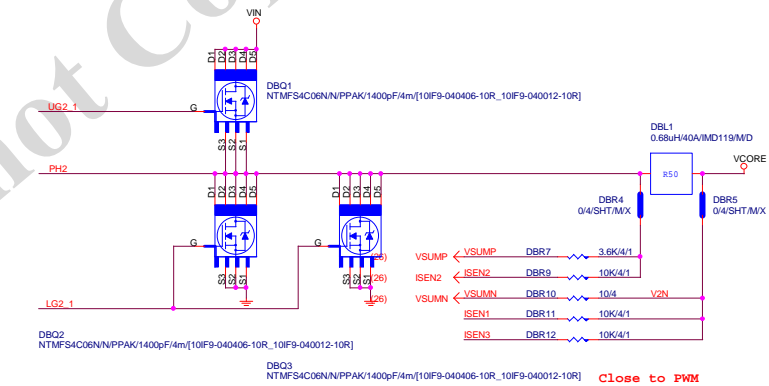
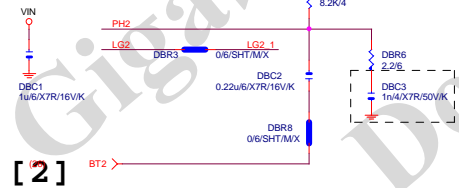
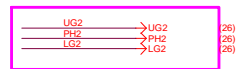
PHASE 1



PHASE 3

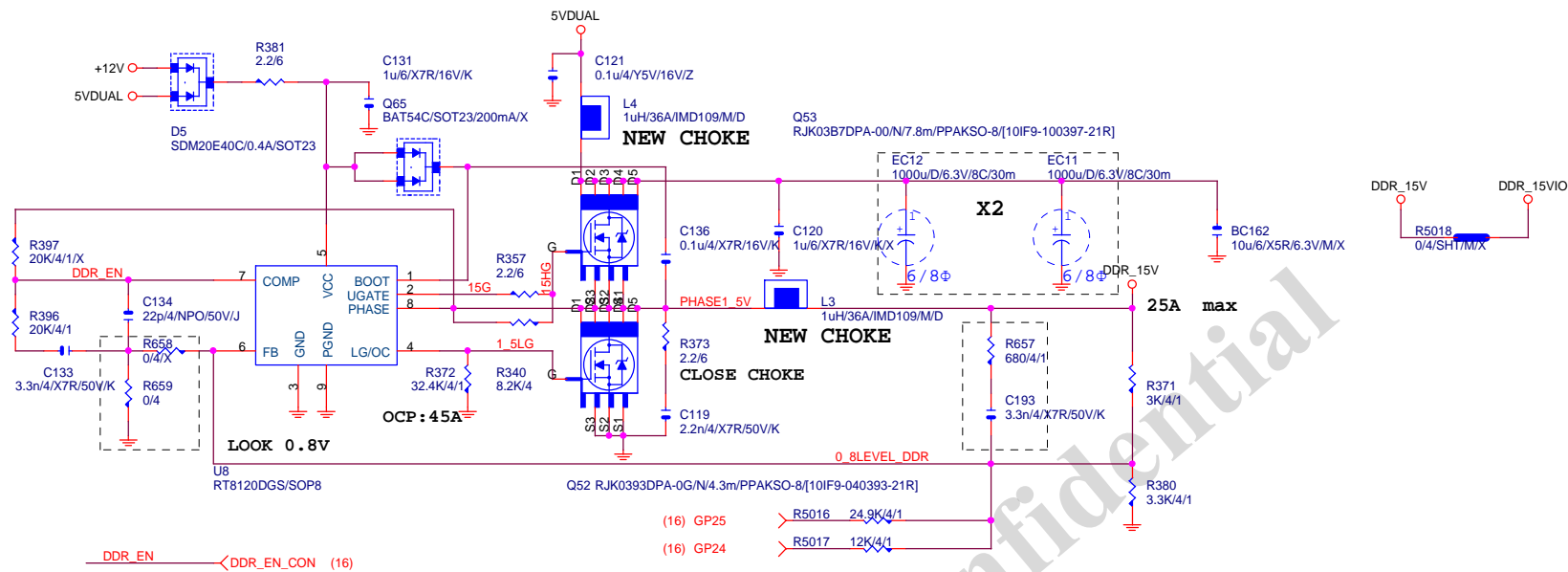


PHASE 2



Gigabyte Technology

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VIN=5V, VOUT=1.5V, IOUT=25A, PHASE=1
IRMS=11.45A
560uF/P/D/6.3V/68/8m RIPPLE CURRENT=4.7A
Coefficient=1.7(85°C), 1(105°C)
VIN Ripple current=4.7X1.7=7.99A(85°C)
-->故固態電容須2X7.99=15.98>11.45A

$$\begin{aligned} \text{Rocset} &= (\text{Iocp} * \text{Lgate}, \text{rdson}) / \text{Iocset} \\ \text{Rocset} &= (45\text{A} * 6.7\text{mOhm}) / 10\text{uA} = 30\text{K} \\ \text{Iocset} &= 10\text{uA} \end{aligned}$$

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