

Model Name: GA-H81M-DS2V

Revision 1.01

SHEET

TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1150-A
05	CPU_LGA1150-B
06	CPU_LGA1150-C
07	DDR III CHANNEL A
08	DDR III CHANNEL B
09	PCH_FDI,DMI,USB,PCIE,NVRAM
10	PCH_DP,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCI EXPRESS*16 SLOT
15	PCI EXPRESS X1 *3 SLOT
16	PCI SLOT (NA)
17	ITE 8620 LPC IO
18	COM,KB_MS_USB,USB30_20
19	HWM,FAN CTRL,OV
20	DUAL BIOS
21	FP,FUSB,SPK,SATALED
22	Realtek ALC887-VD2
23	REAR AUDIO JACK
24	REALTEK RTL8111F
25	DISCRETE POWER
26	ATX
27	VCORE ISL95812_1

SHEET

TITLE

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

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Cover Sheet

Size Custom	Document Number GA-H81M-DS2V	Rev 1.01
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Model Name:
GA-H81M-DS2V

Component value change history

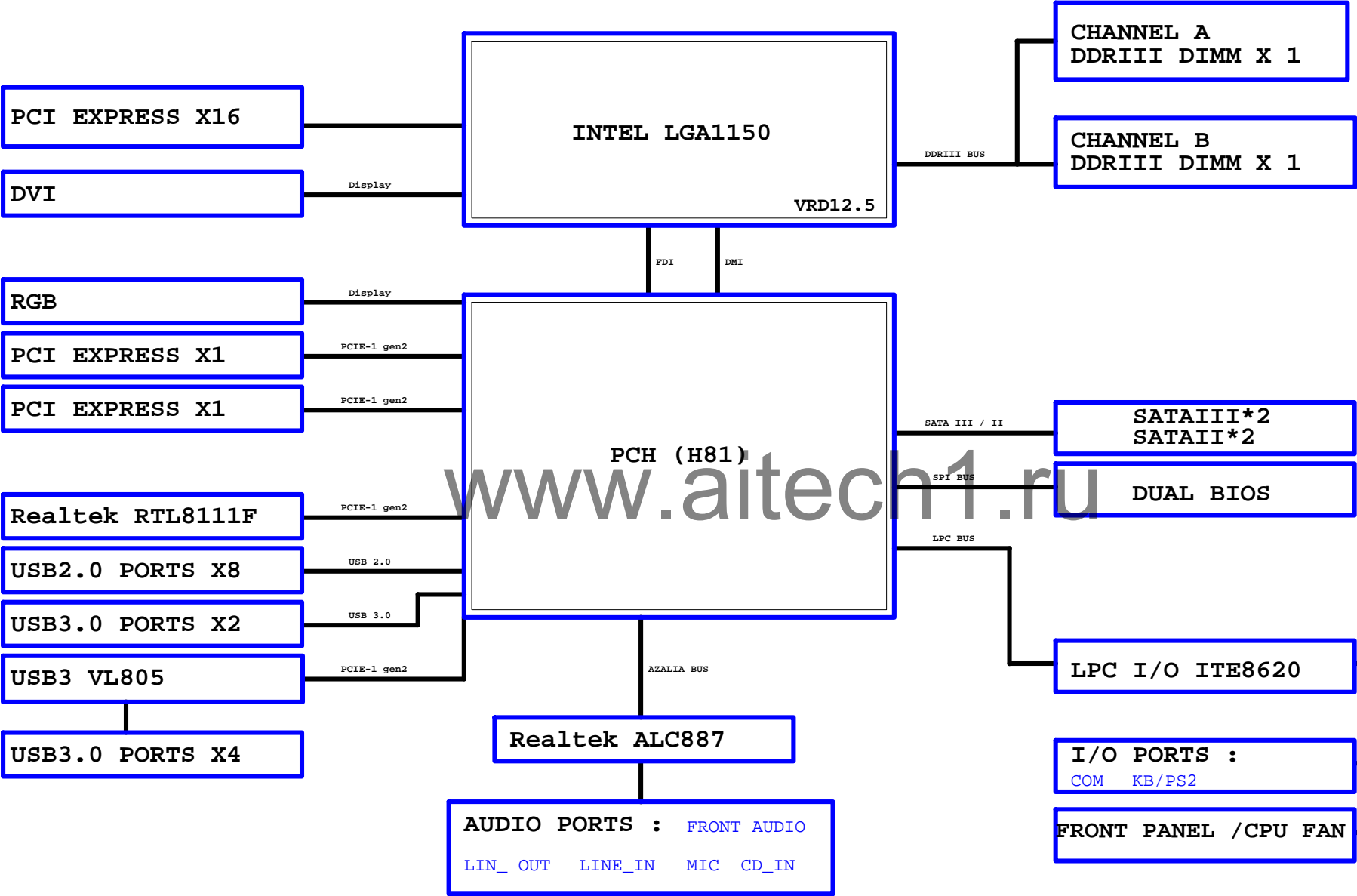
2013/05/17

[illegible]

Circuit or PCB layout change

[illegible]

BLOCK DIAGRAM



[illegible]

PCEIEX16:16S5/5S16(breakout min 10/4/4/4/10)					
Impedance=80 +/- 17.5%					
LGAI1590C					
PA EXP RXP0	E15	PEG_RXP0	TXP0	A12	PA EXP TXP0
PA EXP RXN0	F15	PEG_RXN0	PEG_TXN0	B12	PA EXP TXN0
PA EXP RXP1	D14	PEG_RXP1	TXP1	B11	PA EXP TXP1
PA EXP RXN1	E14	PEG_RXN1	PEG_TXN1	C11	PA EXP TXN1
PA EXP RPX2	E13	PEG_RXP2	TXP2	C10	PA EXP TXP2
PA EXP RXN2	F13	PEG_RXN2	PEG_TXN2	D10	PA EXP TXN2
PA EXP RPX3	D12	PEG_RXP3	TXP3	B9	PA EXP TXP3
PA EXP RXN3	E12	PEG_RXN3	PEG_TXN3	C9	PA EXP TXN3
PA EXP RPX4	E11	PEG_RXP4	TXP4	C8	PA EXP TXP4
PA EXP RXN4	F11	PEG_RXN4	PEG_TXN4	D8	PA EXP TXN4
PA EXP RPX5	F10	PEG_RXP5	TXP5	B7	PA EXP TXP5
PA EXP RXN5	G10	PEG_RXN5	PEG_TXN5	C7	PA EXP TXN5
PA EXP RPX6	E9	PEG_RXP6	TXP6	A6	PA EXP TXP6
PA EXP RXN6	F9	PEG_RXN6	PEG_TXN6	B6	PA EXP TXN6
PA EXP RPX7	F8	PEG_RXP7	TXP7	B5	PA EXP TXP7
PA EXP RXN7	G8	PEG_RXN7	PEG_TXN7	C5	PA EXP TXN7
PA EXP RPX8	D3	PEG_RXP8	TXP8	E1	PA EXP TXP8
PA EXP RXN8	D4	PEG_RXN8	PEG_TXN8	F2	PA EXP TXN8
PA EXP RPX9	E4	PEG_RXP9	TXP9	F2	PA EXP TXP9
PA EXP RXN9	E5	PEG_RXN9	PEG_TXN9	F3	PA EXP TXN9
PA EXP RPX10	F5	PEG_RPX10	TXP10	G1	PA EXP TXP10
PA EXP RXN10	F6	PEG_RXN10	PEG_TXN10	G2	PA EXP TXN10
PA EXP RPX11	G4	PEG_RXP11	TXP11	H2	PA EXP TXP11
PA EXP RXN11	G5	PEG_RXN11	PEG_TXN11	J1	PA EXP TXN11
PA EXP RPX12	H5	PEG_RXP12	TXP12	J1	PA EXP TXP12
PA EXP RXN12	H6	PEG_RXN12	PEG_TXN12	J2	PA EXP TXN12
PA EXP RPX13	J4	PEG_RXP13	TXP13	K2	PA EXP TXP13
PA EXP RXN13	J5	PEG_RXN13	PEG_TXN13	K3	PA EXP TXN13
PA EXP RPX14	K5	PEG_RXP14	TXP14	M2	PA EXP TXP14
PA EXP RXN14	K6	PEG_RXN14	PEG_TXN14	M3	PA EXP TXN14
PA EXP RPX15	L4	PEG_RXP15	TXP15	L1	PA EXP TXP15
PA EXP RXN15	L5	PEG_RXN15	PEG_TXN15	L2	PA EXP TXN15
(A) DMI ORXP	U3	DMI_RXP0	DMI_TXP0	AA4	D MI OTXP → A
(B) DMI ORXN	T3	DMI_RXN0	DMI_TXN0	AA5	D MI OTXN → A
(C) DMI IRXP	U1	DMI_RXP1	DMI_TXP1	AB3	A DI MTXP → A
(D) DMI IRXN	V1	DMI_RXN1	DMI_TXN1	AB4	A DI MTXN → A
(E) DMI TRXP	W2	DMI_RXP2	DMI_TXP2	AC5	A DI TTPX → A
(F) DMI TRXN	V2	DMI_RXN2	DMI_TXN2	AC4	A DI TTXX → A
(G) DMI SRXP	X3	DMI_RXP3	DMI_TXP3	AC1	A DI STXP → A
(H) DMI SRRN	W3	DMI_RXN3	DMI_TXN3	AC2	A DI STXX → A
		D1	RSVD_TP		
		C2	RSVD_TP		
		E3	RSVD_TP		
		A4	RSVD_TP		
<div style="float:left; width:30%;"> <p>W=12 mil out of CPU S=15 mil out of CPU</p> </div> <div style="float:right; width:30%; text-align:center;"> </div> <div style="clear:both;"></div>					
VCCIOA_LO WRTIS 24.9/41 GRCOMP P3 RSVD_RCOMP					

1.1V分壓

VCC3

WR26
2K4/1X

WR31
1K4/1X

A_CPURST

BC102
1n/407R/50V/K

A_CPURST (11,17)

For IT8620 Ctrl

CPU PU/PD

CPU_VTT_OR ○

WR3 90.9/4/1X PVIDSLCK
WR2 115/4/1 PVIDSOUT
WR4 75/4/1 -PVIDALRT

WR14 51/4/1X A TMS
WR16 51/4/1X A TDO
WR17 51/4/1X A TDI
WR30 51/4/1 A -HPRDY

WR11 51/4/1 A TCK
WR9 51/4/1 A -TRST

CPU_VTT_OR ○

WR28 1K/4/1X A PECI
WR10 1K/4/1X A CATERR-
WR25 1K/4/1 A -PROCHOT
WR56 51/4/1X N CPUPWROK
WR55 1K/4/1X

A -THRMTRIP WR8 1K/4/1 VCC1_05_PCH

A_PWR_DEBUG WR34 150/4/1 VCC1_05_PCH
WR33 10K/4/1X

WR21 8.2K/4/X 3VDUAL
WR20 0/4/X N_SYS_RST (12.2V)

A_DDR_COMP0 WR28 100/4/1
A_DDR_COMP1 WR19 75/4/1
A_TESTLOW_1 WR18 49.9/4/1
A_TESTLOW_2 WR12 49.9/4/1
A_HSW_CFG_RCOMP WR24 49.9/4/1

SM REF

DDR_15V

WR62 100/4/1

A SM VREF

WR60 100/4/1

WC3 0.1u/4/X/7R/16V/K

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CPU LGA1150-A

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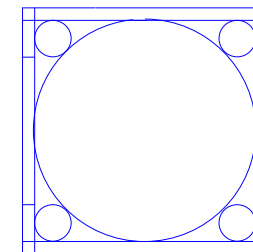
LGA1150A

HASWELL/I10SC1-F01150-11R 10SC1-F01150-12R1

LGA1150B

HASWELL/I10SC1-F01150-11R I10SC1-F01150-12R

CR
CPU RETAINTION/X

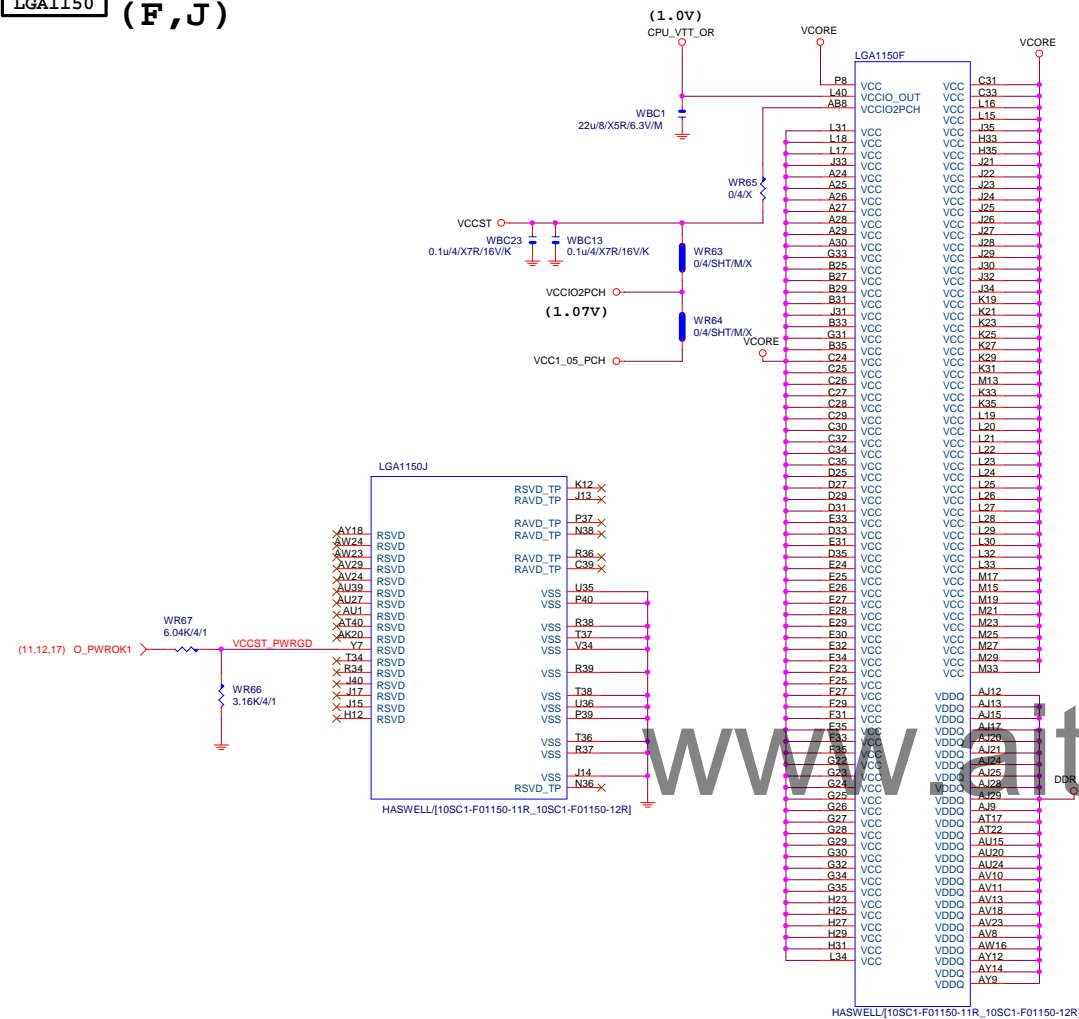
**LGA1150**

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

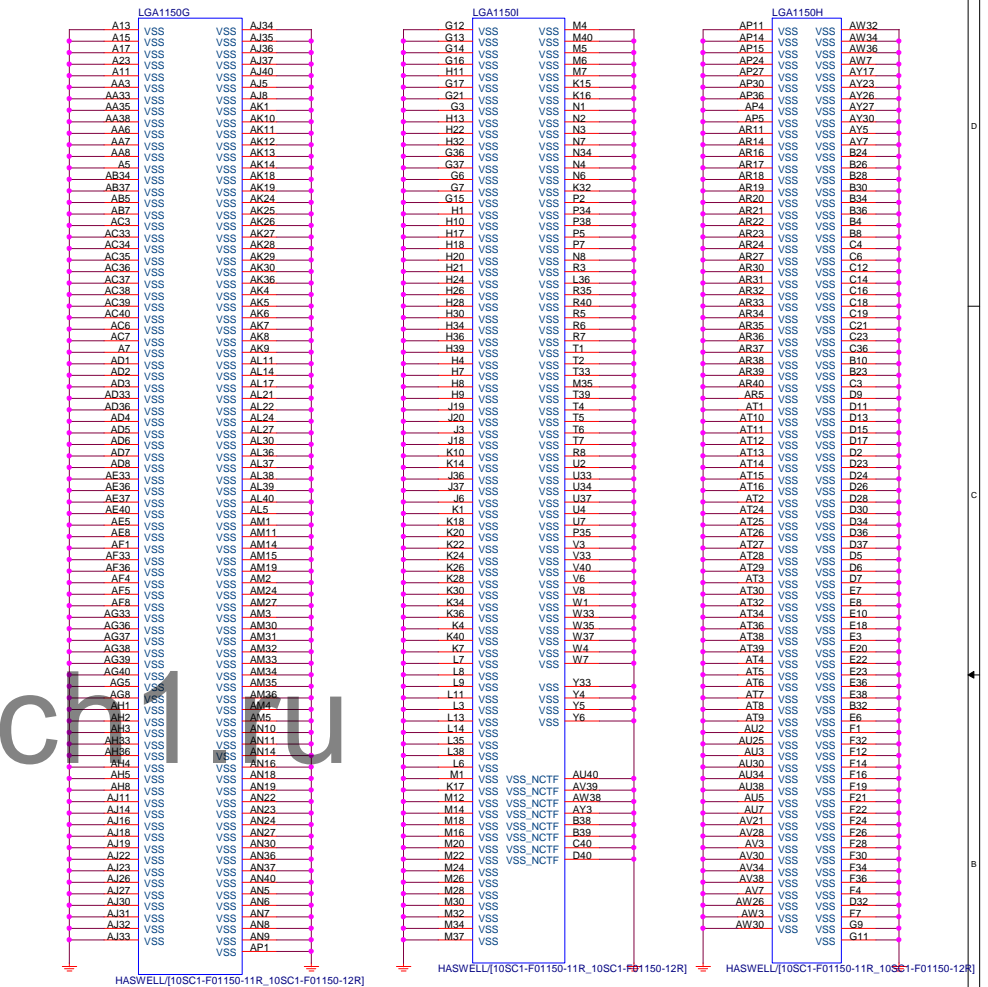
DDR BUS

(7)	MODT_A[0..1]	↔	MODT_A0_1
(8)	MODT_B[0..1]	↔	MODT_B0_1
(7)	MDA[0..63]	↔	MDA0_63
(8)	MDB[0..63]	↔	MDB0_63
(7)	DQSA[0..7]	↔	DQSA0_7
(7)	-DQSA[0..7]	↔	-DQSA0_7
(7)	MAAA[0..15]	↔	MAAA0_15
(8)	MAAB[0..15]	↔	MAAB0_15
(8)	DQSB[0..7]	↔	DQSB0_7
(8)	-DQSB[0..7]	↔	-DQSB0_7

LGA1150 (F,J)

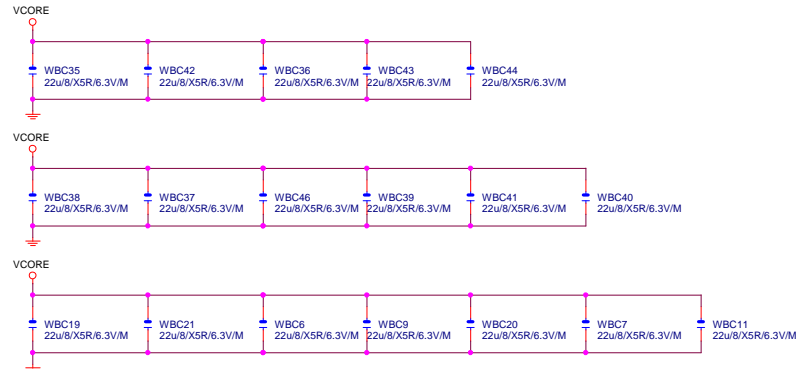


LGA1155 (G,H,I)



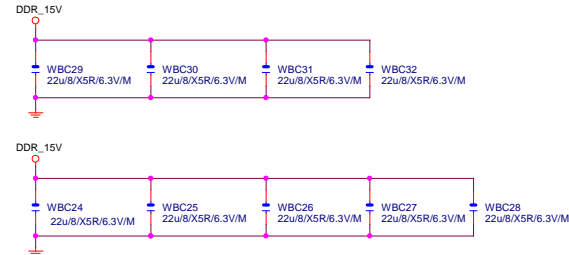
VCore CAP

(X18)



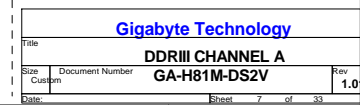
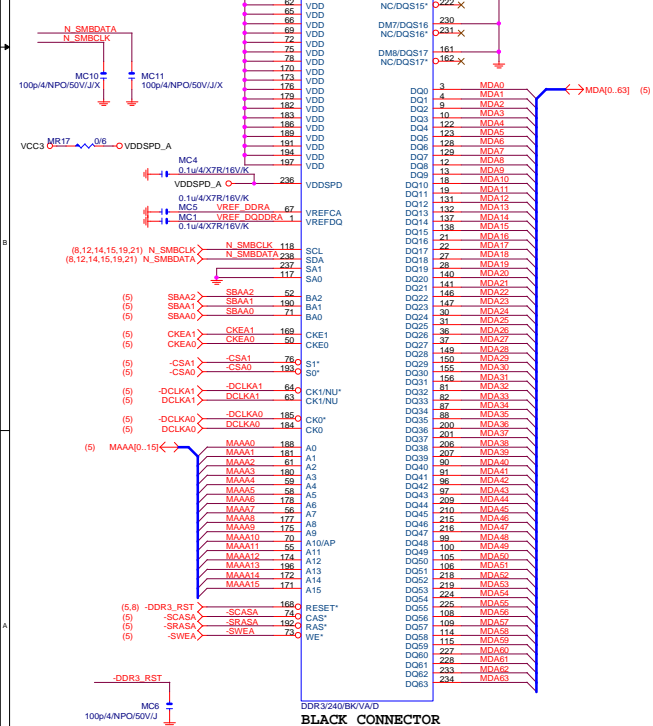
DDR CAP

(x9)



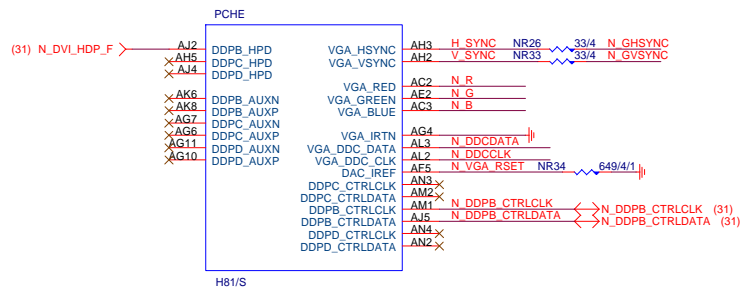
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Title			
CPU LGA1150-C			
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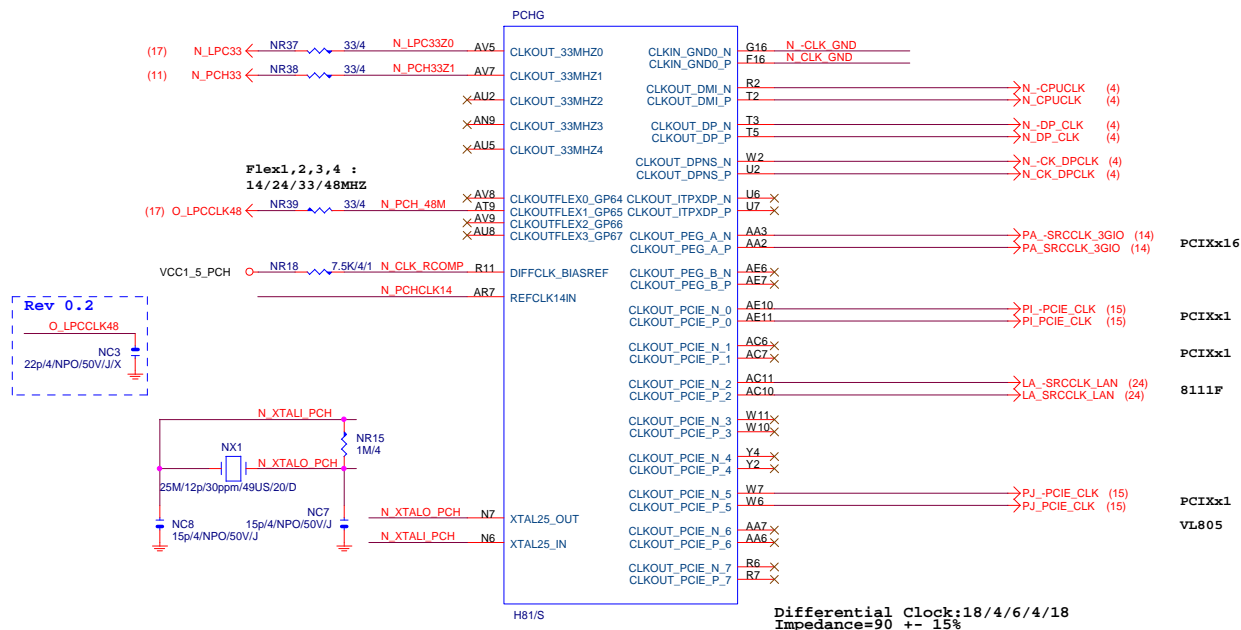
PCH

(E)

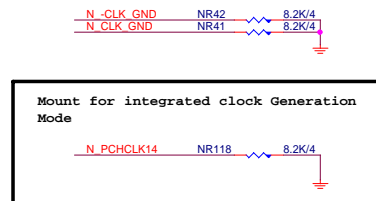


PCH

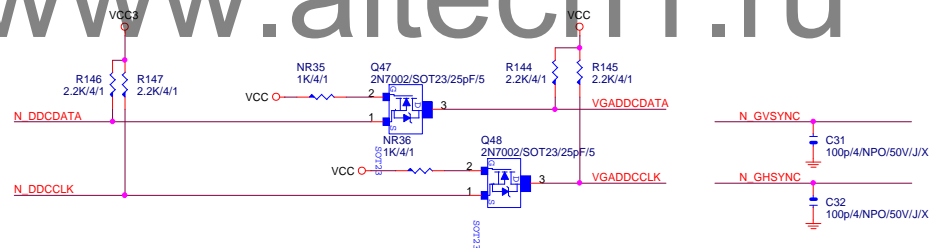
(G)



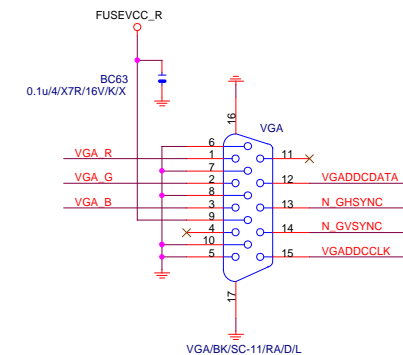
PCH CLK PD



VGA DDC

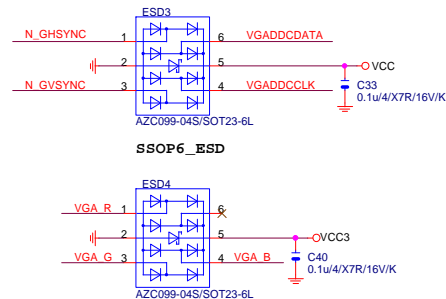


VGA CONNECTOR

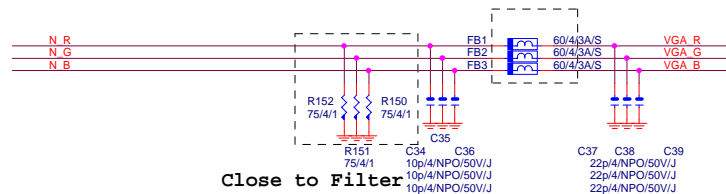


BLACK CONNECTOR

VGA ESD



VGA DDC



Gigabyte Technology

PCH DISPLAY_CLK BUFFER

GA-H81M-DS2V

Rev 1.01

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(C)

PCHC			
CL_CLK	CLINK	SATA_RXN_0	B28 N SATA0RXN
CL_DATA		SATA_RXP_0	F28 N SATA0RXP
CL_RSTB		SATA_TXN_0	F31 N SATA0TXN
APWROK		SATA_TXP_0	H31 N SATA0TXP
		SATA_RXN_1	C30 N SATA1RXN
		SATA_RXP_1	C30 N SATA1RXP
		SATA_TXN_1	B34 N SATA1TXN
		SATA_TXP_1	C34 N SATA1TXP



SATA CONNECTOR

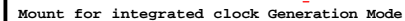


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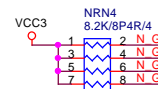
(A)



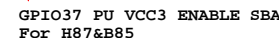
PCH	CLK	PD
-----	-----	----



PCH	PU/PD
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ME PWROK

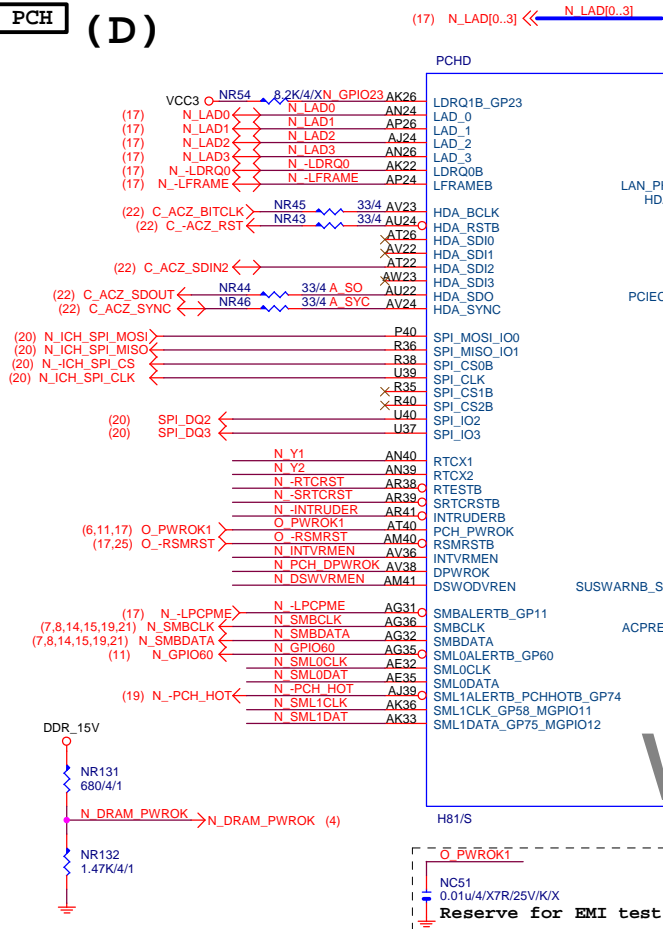


GPI038 Ctrl

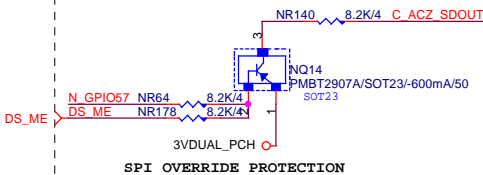


Title			
PCH HOST , SATA, PCI			
Size	Document Number		Rev
Custom	GA-H81M-DS2V		1.0
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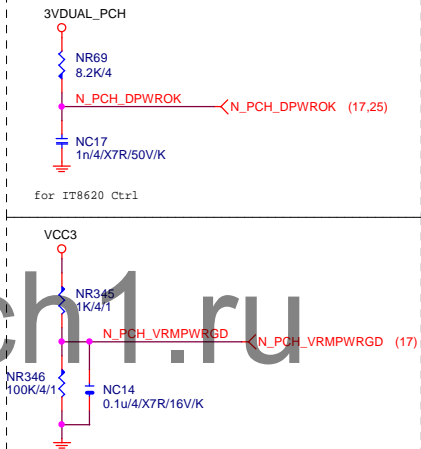
(D)



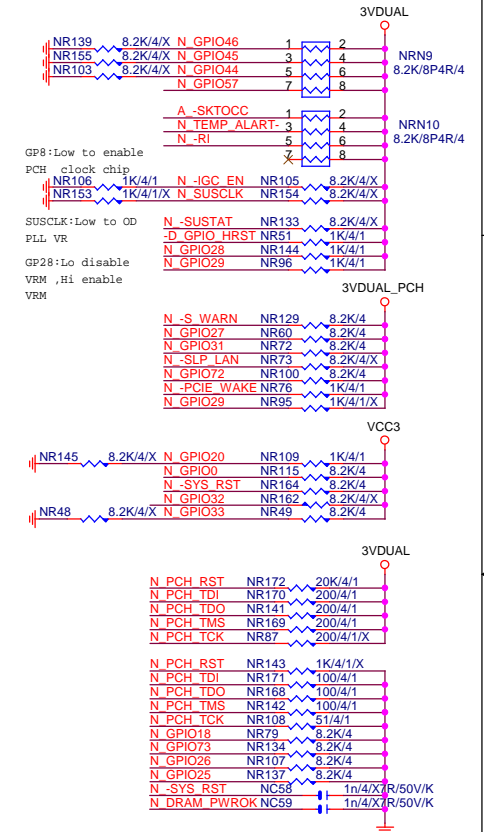
ACZ_SDOUT



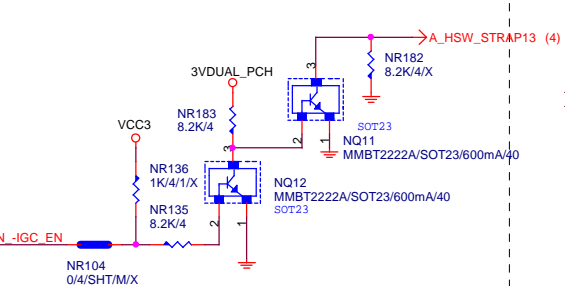
PCH_DPWROK



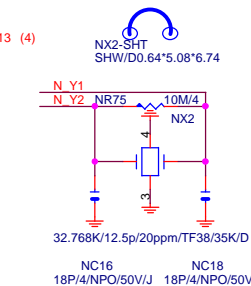
PCH	PU/PD
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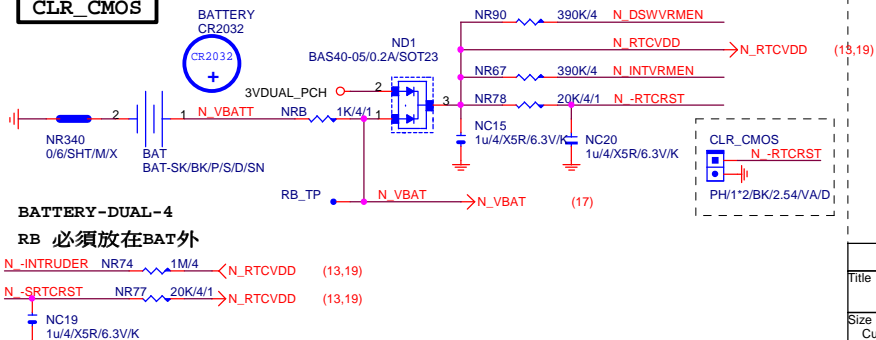
HSW_STRAP13



32.768KHZ



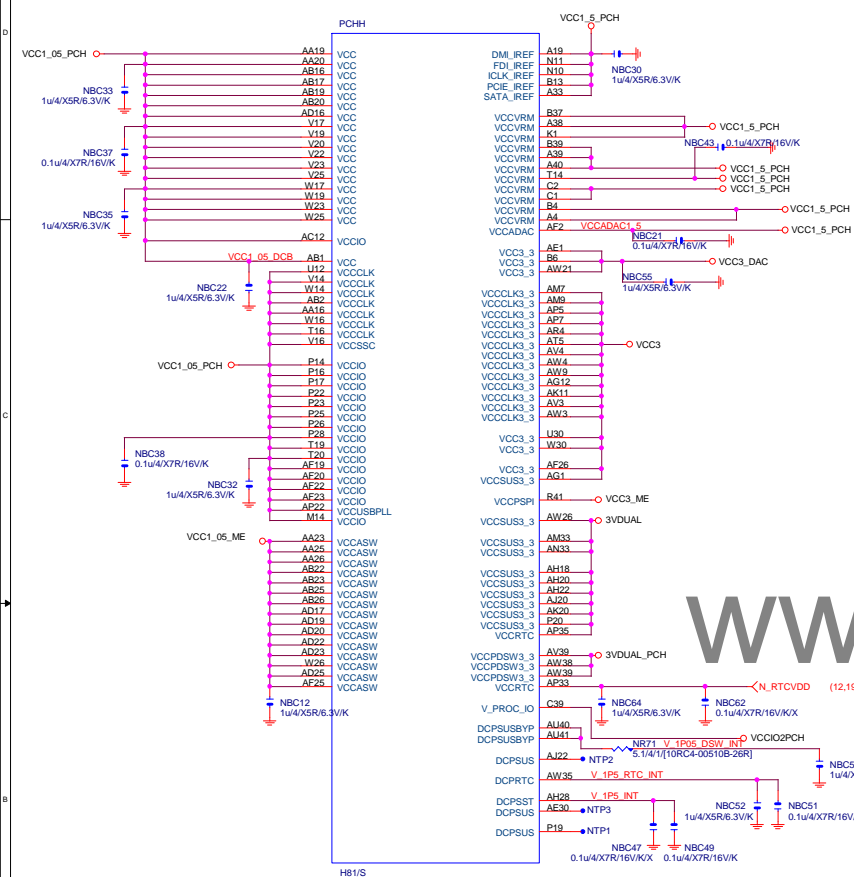
CLR_CMOS



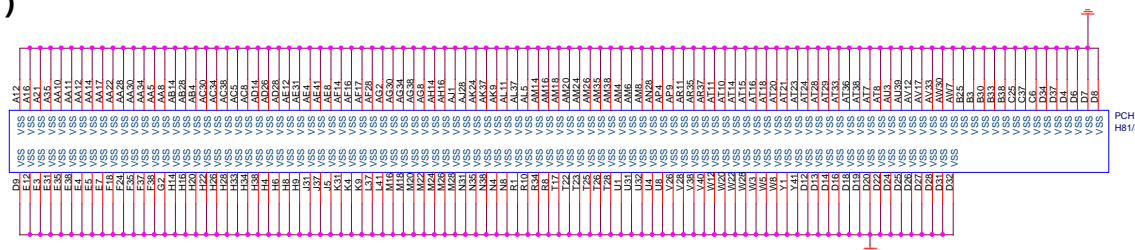
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Title			
PCH GPIO , CTRL , AUDIO			
Size	Document Number	Rev	
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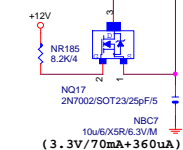
PCH (H)



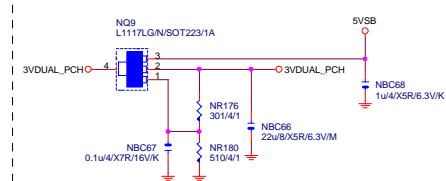
PCH (I)



VCC3_DAC



3VDUAL_PCH



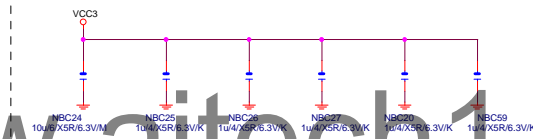
SHT PWR



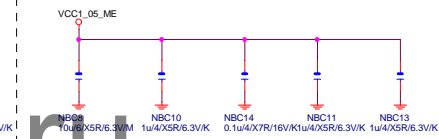
CAP



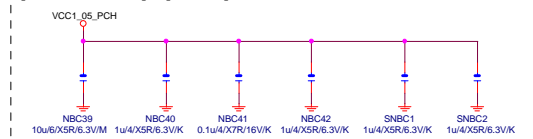
(3.3V) (X6)



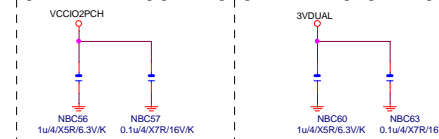
(1.05V) (x5)



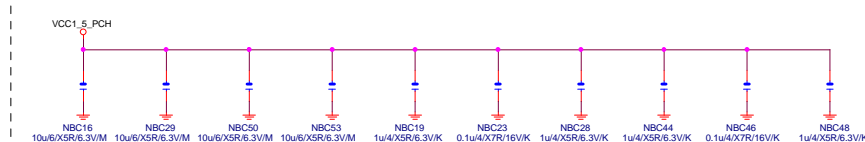
(1.05V)(x6)



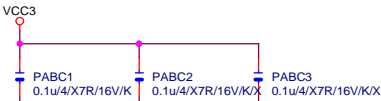
(1.05V)(x2) (3.3V) (x2)



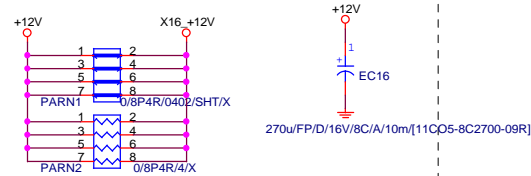
(1.05V) (x10)



PCIEX16 CAP



PCIEX16 PROTECT SHT



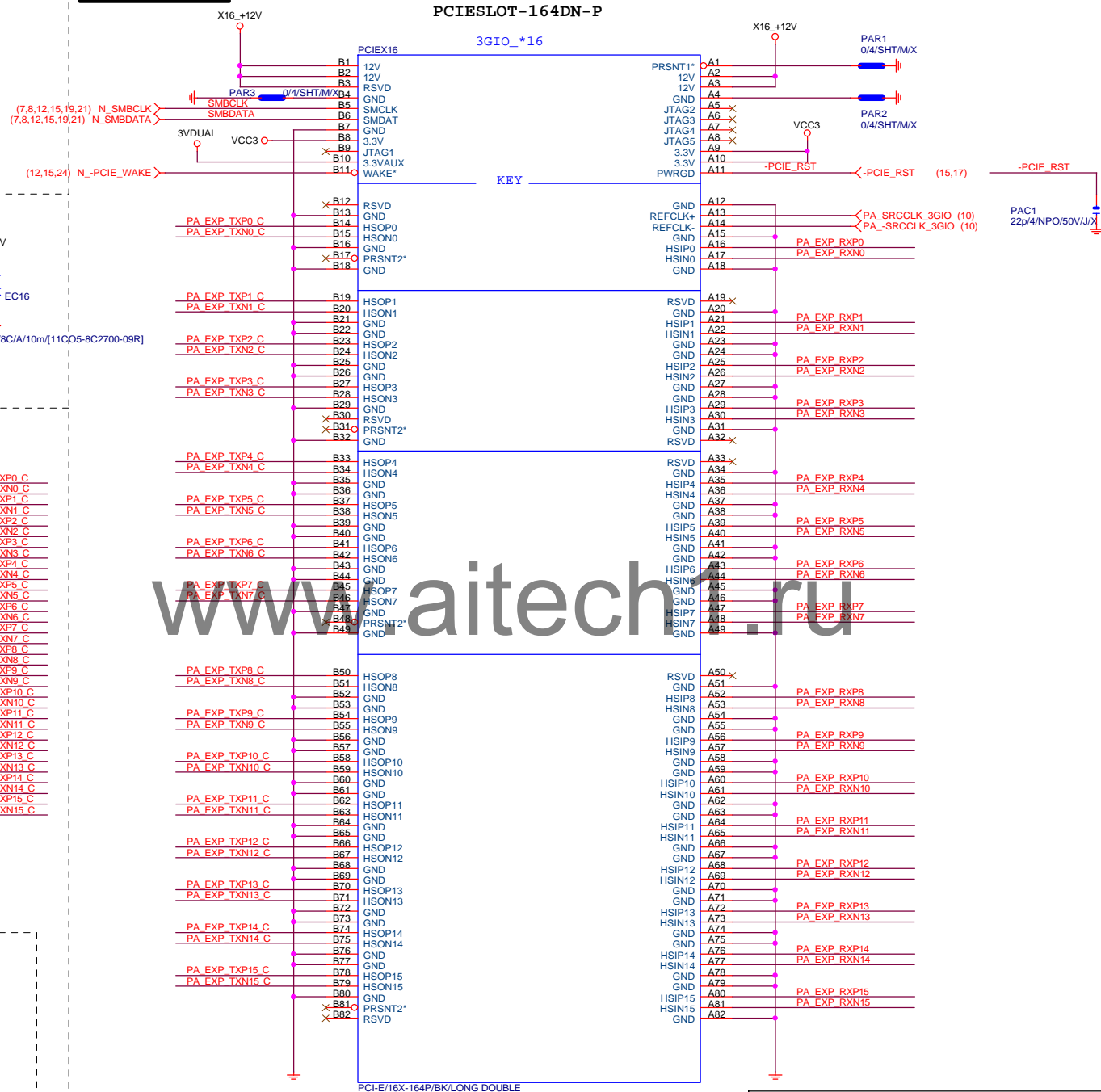
PCIEX16 AC CAP

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	PAC18	0.22u4/X5R/6.3V/K	PA EXP TXP7 C
PA EXP TXN7	PAC19	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 RXP0.[15] >>> PA_EXP_RXP[0..15] (4)
PA EXP RXN0.[15] >>> PA_EXP_RXN[0..15] (4)
PA EXP TXP0.[15] >>> PA_EXP_TXP[0..15] (4)
PA EXP TXN0.[15] >>> PA_EXP_TXN[0..15] (4)

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

PCIEX16 SLOT

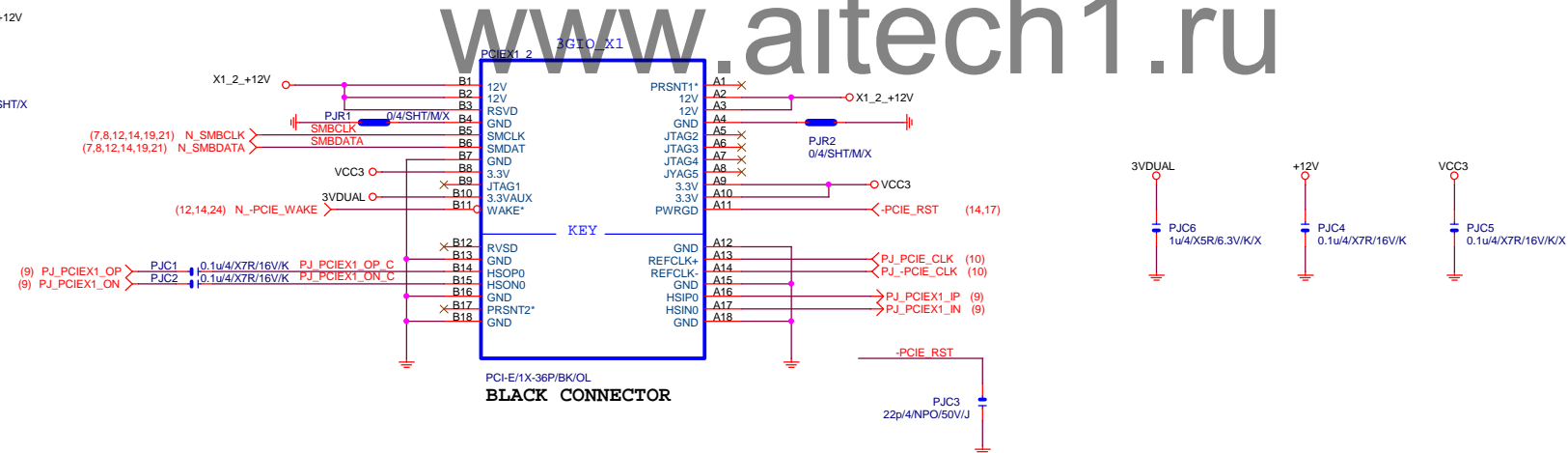
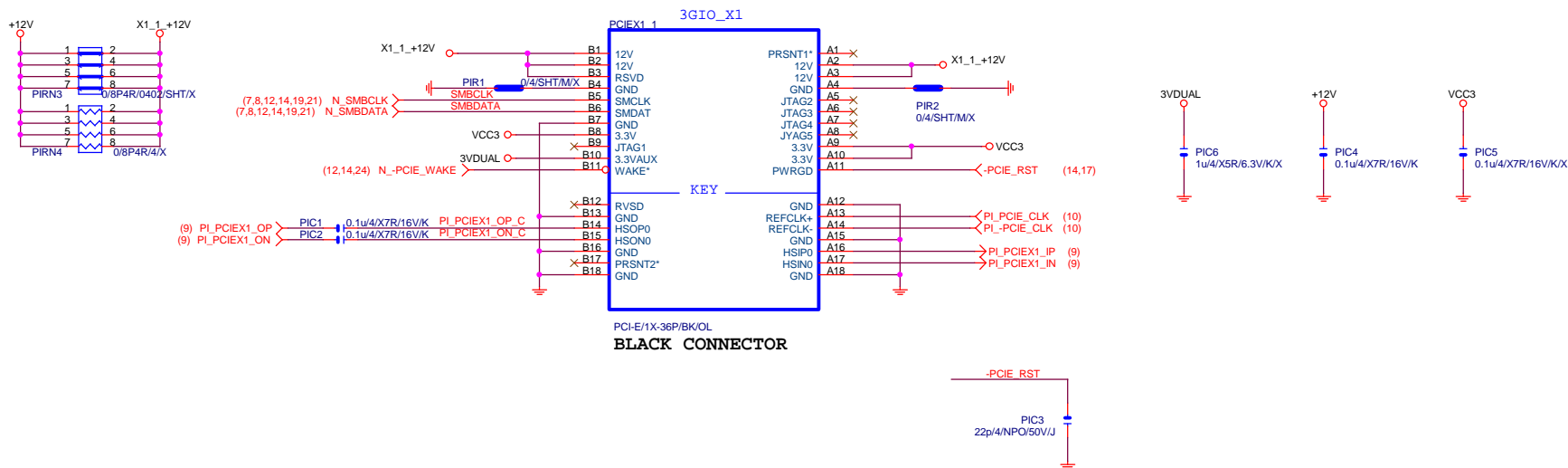


BLACK CONNECTOR

Gigabyte Technology

Title			PCI EXPRESS * 16	
Size			GA-H81M-DS2V	
Custom			Rev 1.01	
Date:			Thursday, October 31, 2013	Sheet 14 of 33

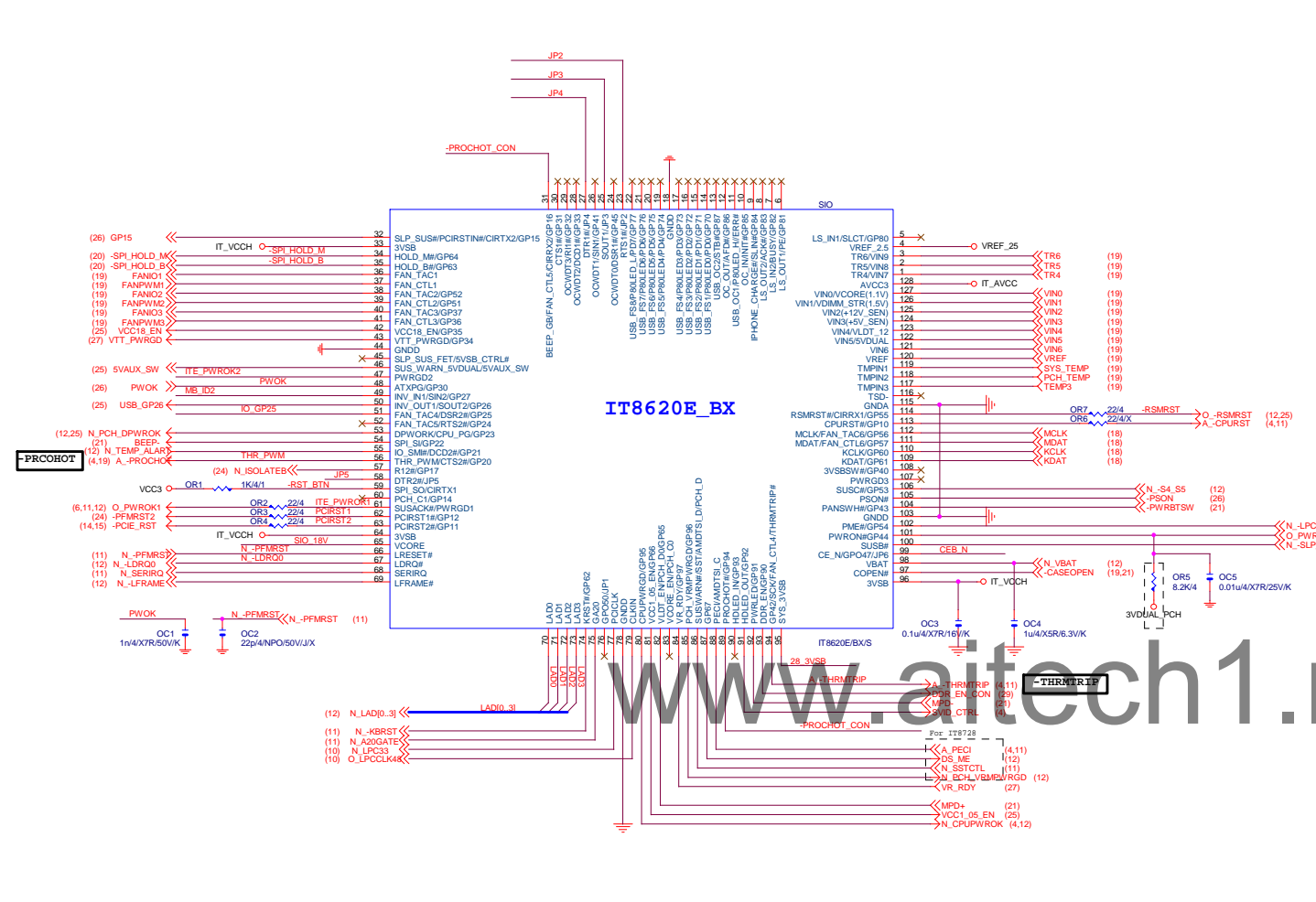
PCIEX1 SLOT



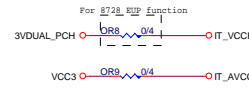
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Gigabyte Technology			
Title			
PCI SLOT 1&2			
Size	Document Number		Rev
Custom	GA-H81M-DS2V		1.01
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	2		1

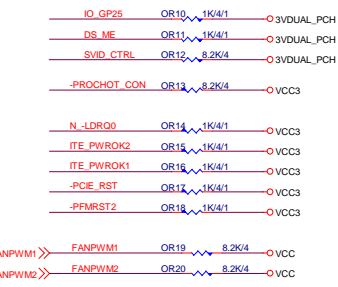
SIO IT8620



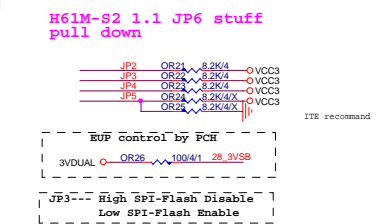
PWR SHT



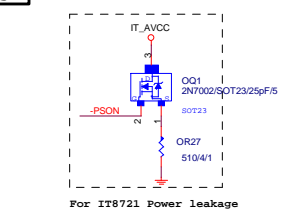
SIO PU



SIO STRAP



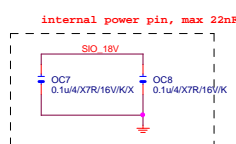
Power leakage



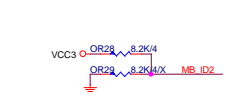
DUAL BIOS OPT STRAP



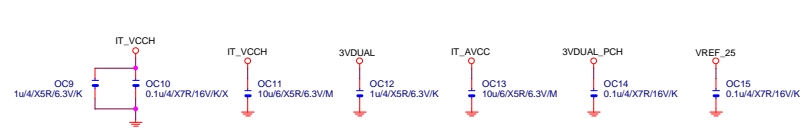
SIO_18V



MB ID



SIO CAP



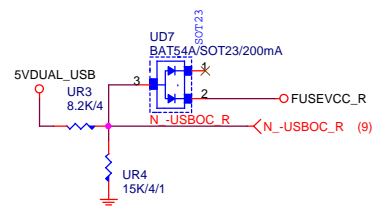
COM

COM RI

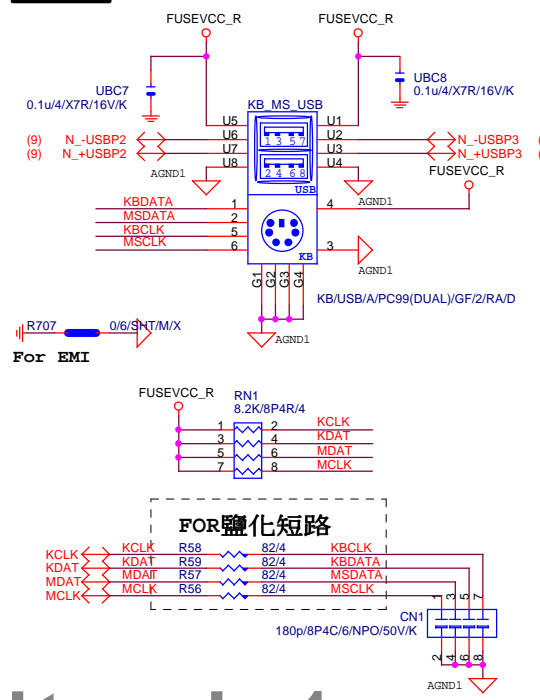
USB30_20

USB30_20 PWR

-USBOC_R



KB/MS

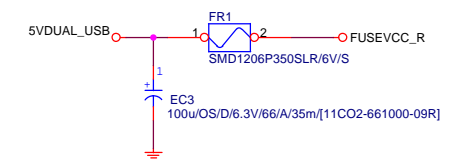


USB30_20 ESD PROTECT

USB3.0 ESD

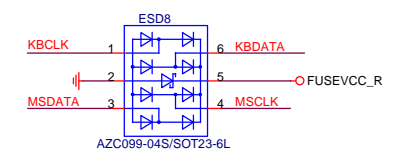
USB2.0 PWR

FUSE-0805
KB_MS_USB 2-Port 2.0A

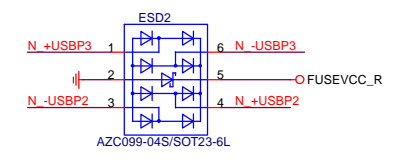


Close to connector

KB/MS ESD

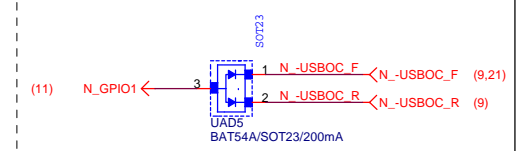


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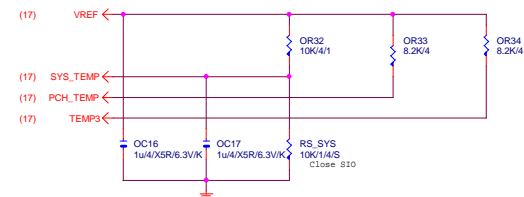


USB2.0 ESD

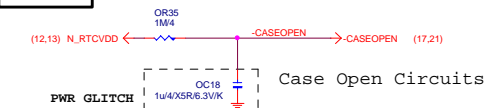
USB POWER PROTECT



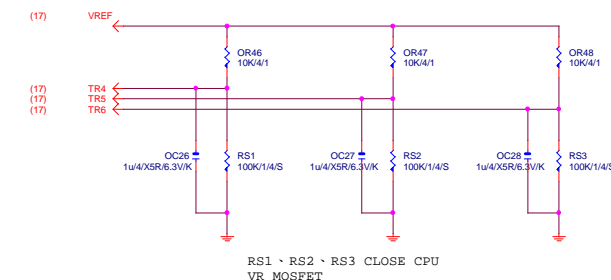
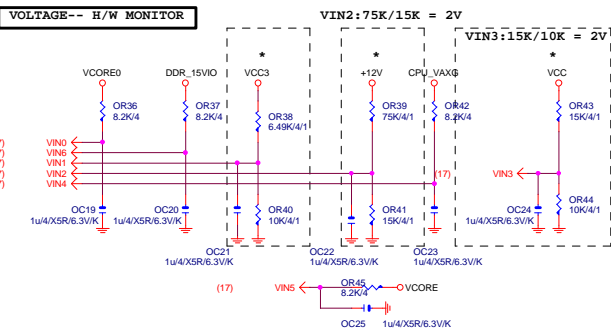
TEMP H/W MONITOR



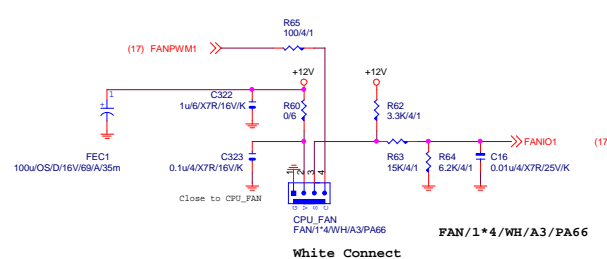
CASE OPEN



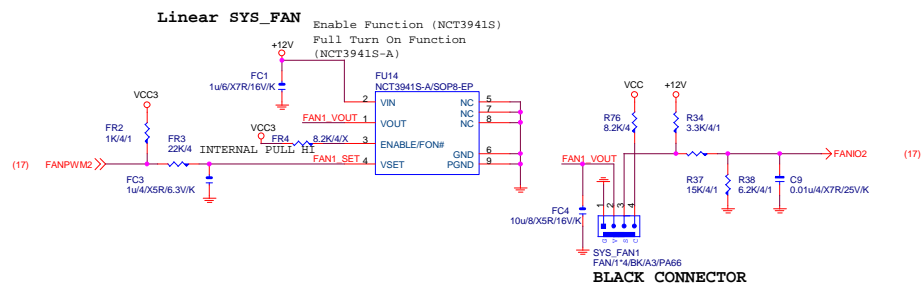
VOLTAGE-- H/W MONITOR



CPU SMART FAN



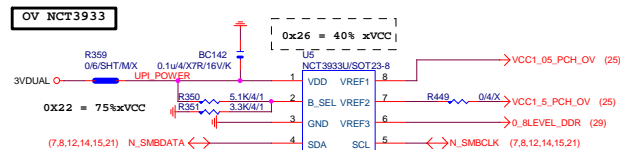
SYS SMART FAN



-PROHOT

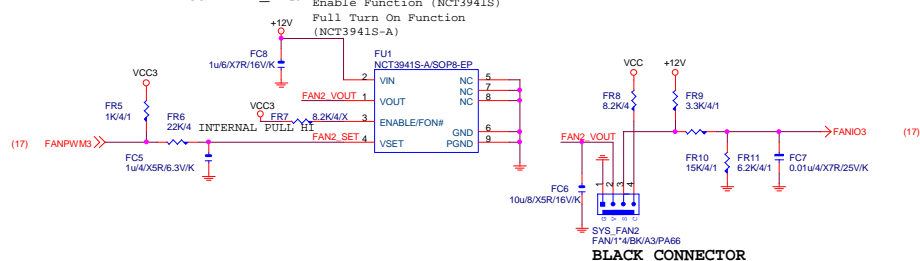


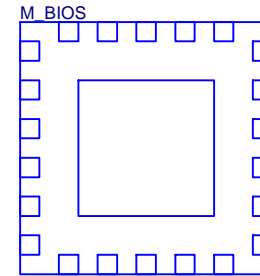
OV NCT3933



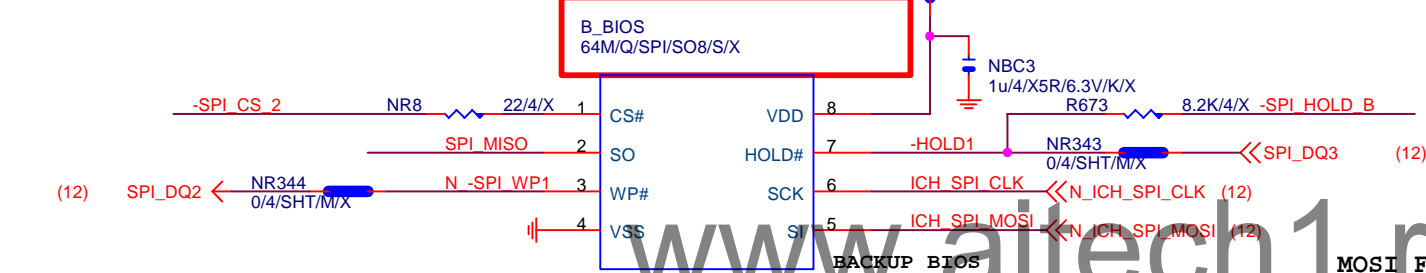
NCT3933	0X2A	0X20	0X22
VREF1	DDRVTT	VREF_DDRA_DQ	PCH Core
VREF2	VREF_DDRA_CA	N/A	VCC1_5_PCH
VREF3	VREF_DDRA_CA	VREF_DDRB_DQ	SMREF

Linear SYS_FAN





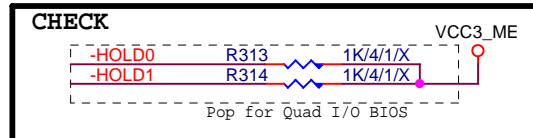
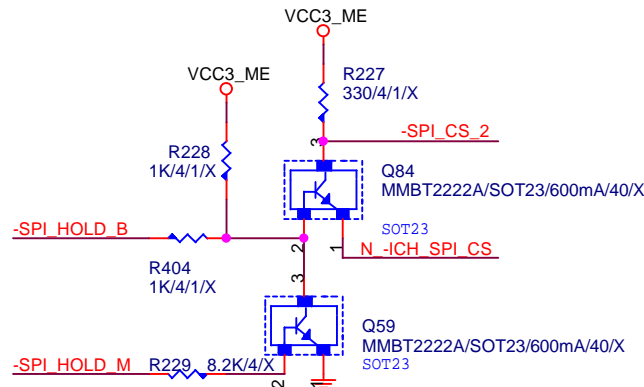
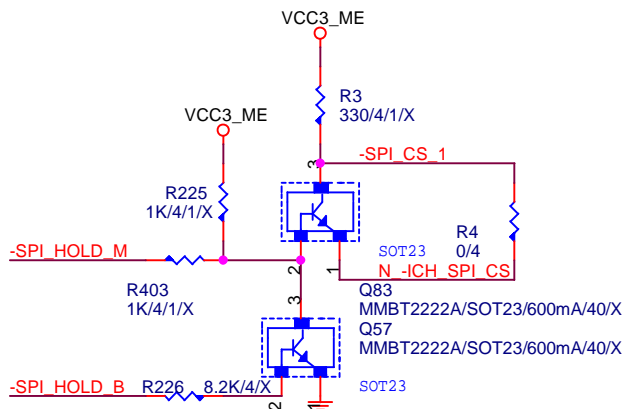
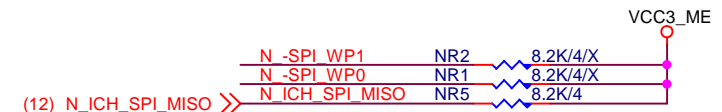
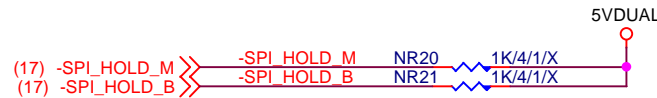
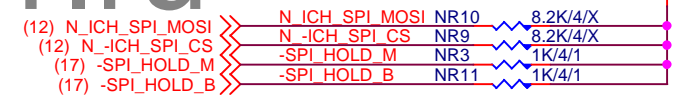
LCP/G-FL/1.27mm/200MIL/WHITE[10SL2-000008-31R]/X



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



Gigabyte Technology

DUAL BIOS

GA-H81M-DS2V

Rev
1.01

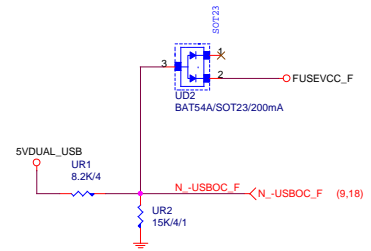
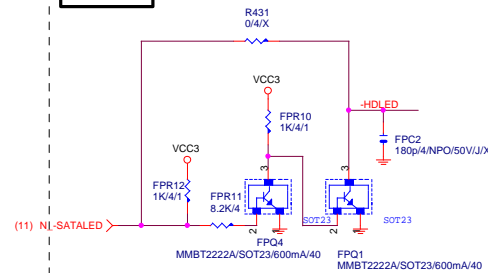
Title		
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F_USB30

F_USB30 PWR

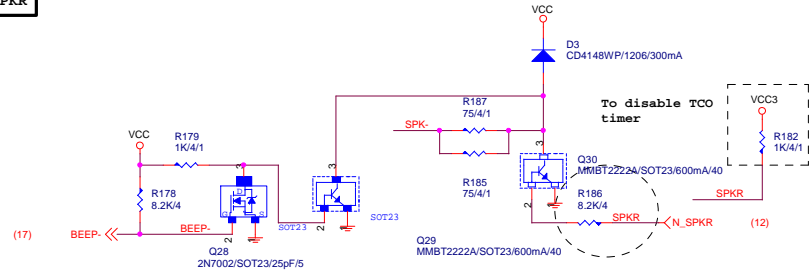
SATA LED

-USB0C_F



F_USB30 ESD PROTECT

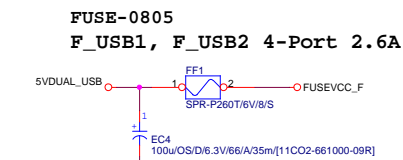
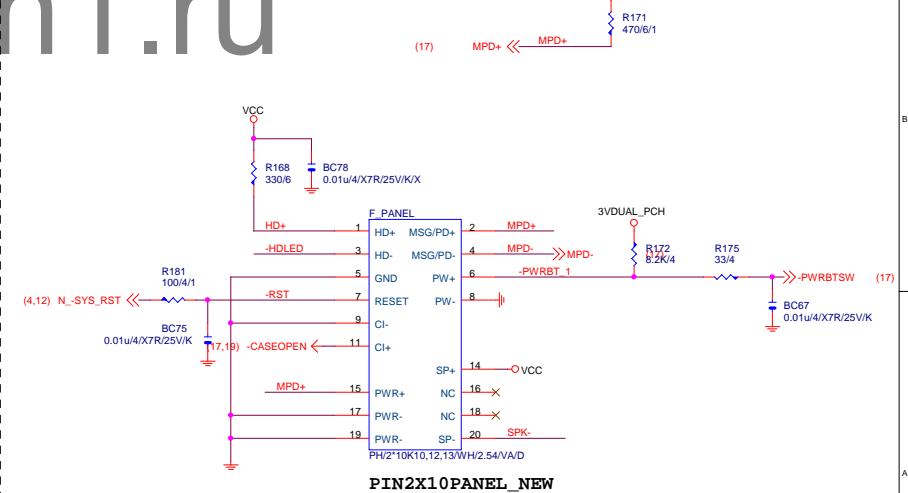
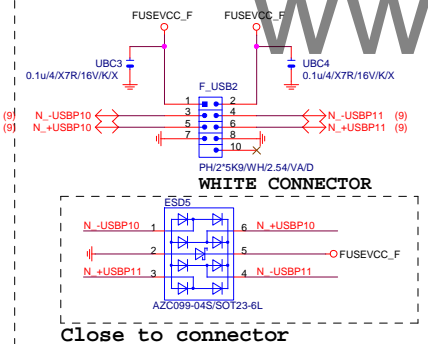
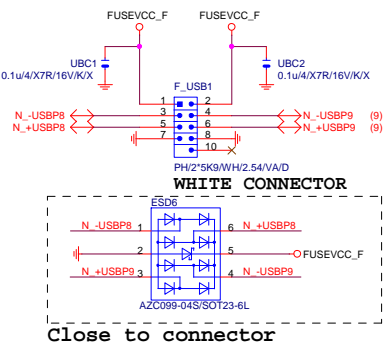
SPKR



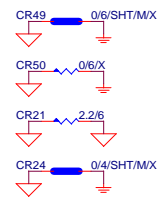
FRONT USB1

FRONT USB2

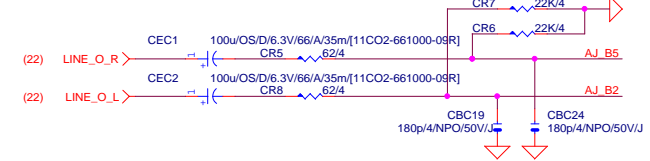
INTEL FRONT PANEL



Gigabyte Technology			
FP,F_USB,USB PWR,SPKR,SATA LED			
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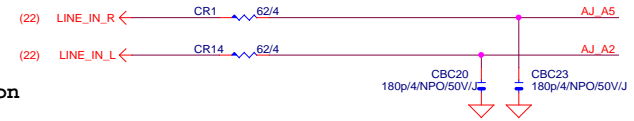
LINE-OUT



LINE-IN

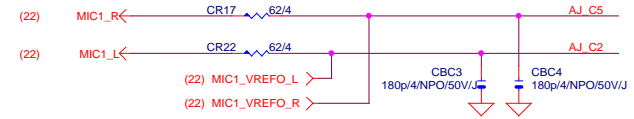
Verify MIC function
in LINE-in

Only reserved for ALC888



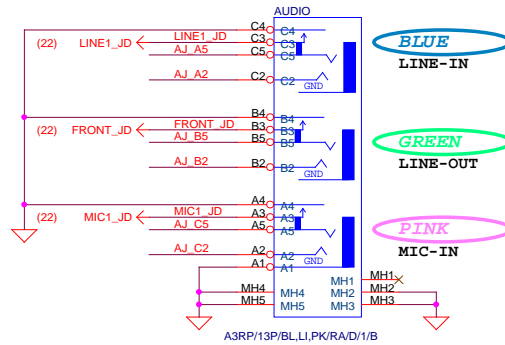
For 889A/888

MIC-IN

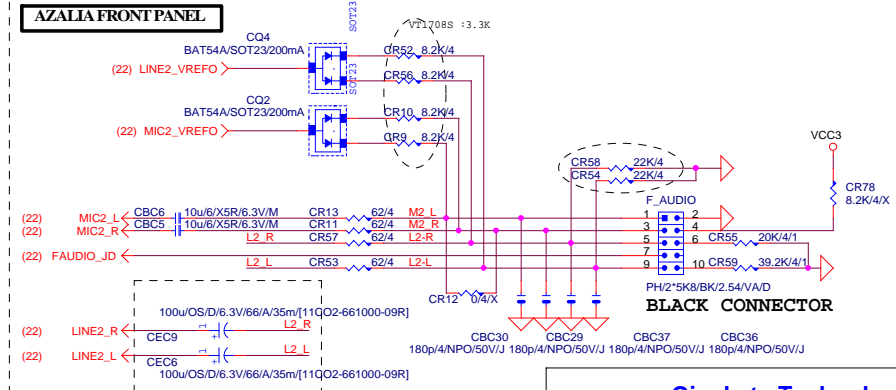


SPDIF_OUT

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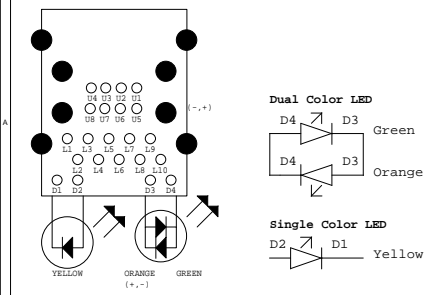
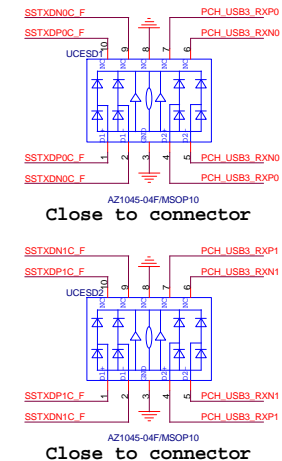
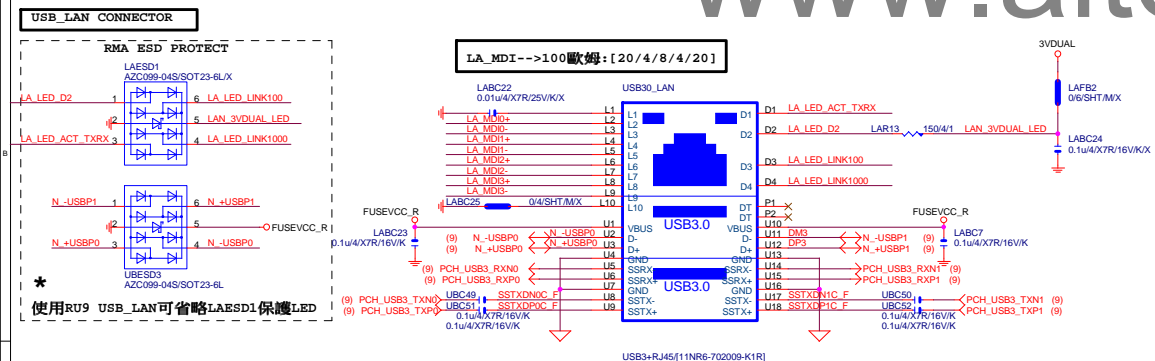
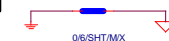
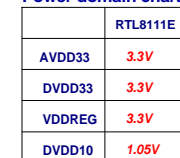
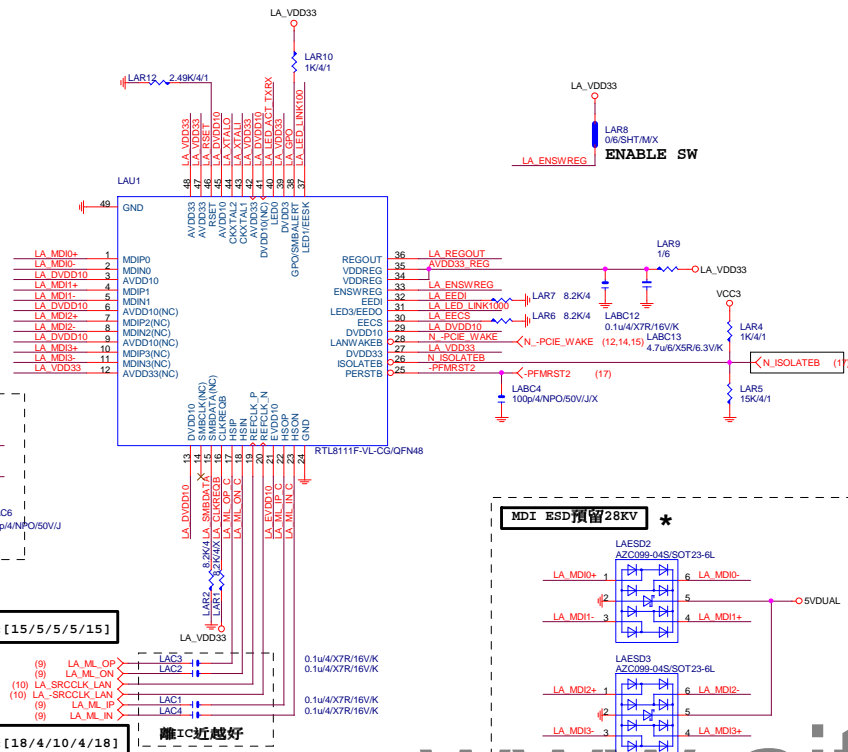


AZALIA FRONT PANEL



Gigabyte Technology

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

BOM NOTICE *

料號	規格	廠商
11NR6-702009-96R 1G LAN (12core)		UDE(RU9 ESD+)
[LED獨立走線,可省略外加AZC099料件LAESD1]		

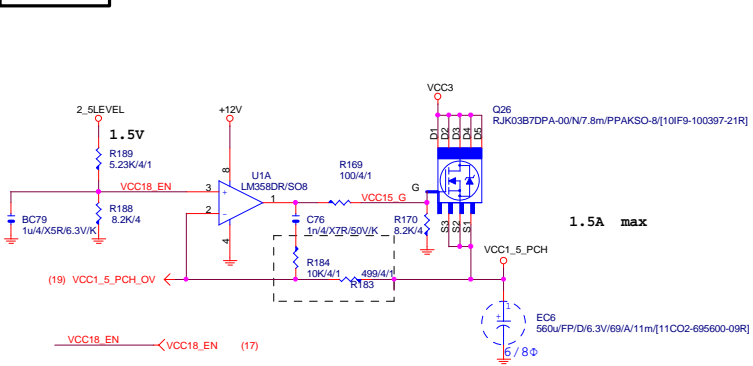
1. 9KV ESD BOM:
USB_LAN (RU9):11NR6-702009-96R

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

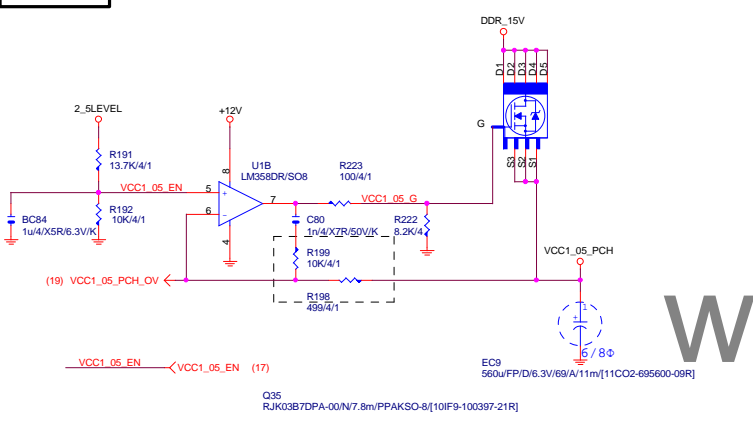
Gigabyte Technology

Gigabyte Technology			
Title			
Realtek RTL8111G			
Size	Document Number		
Custom	GA-H81M-DS2V		
Date:	Thursday, October 31, 2013	Sheet	24 of 33

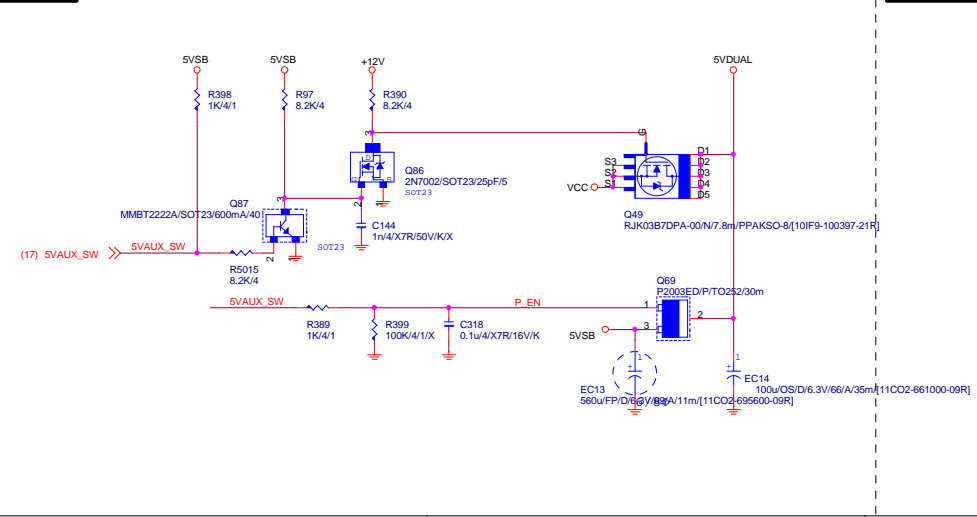
VCC1_8_PCH



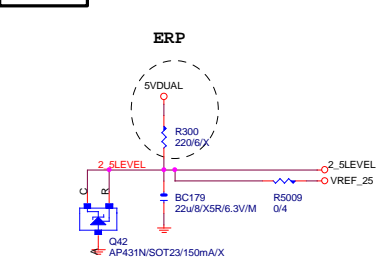
VCC1_05_PCH



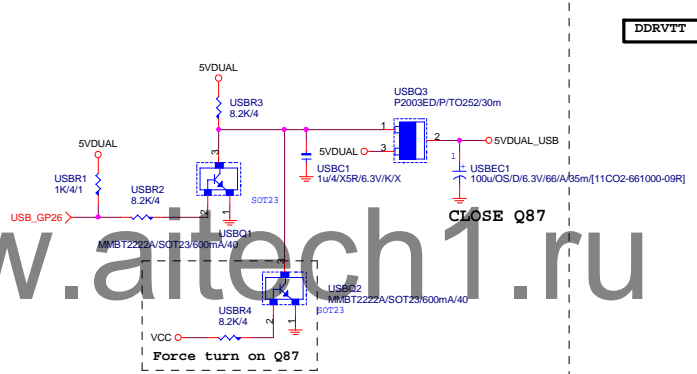
5VDUAL



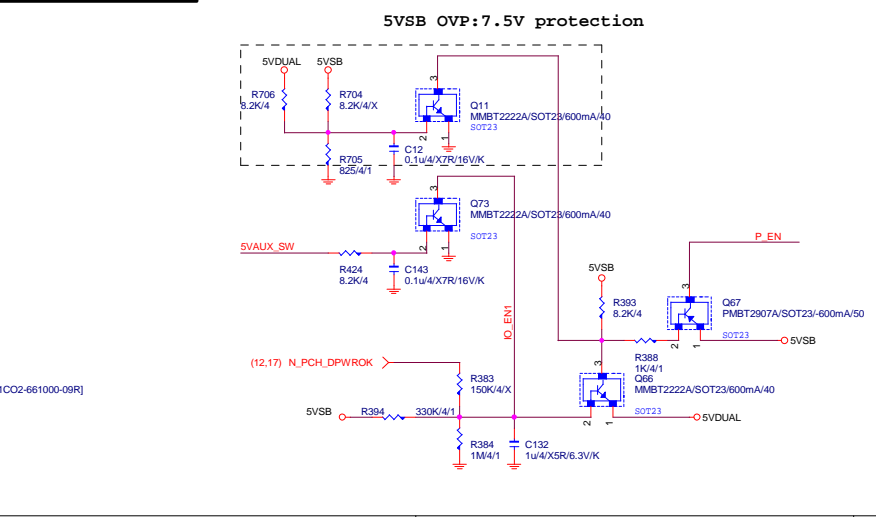
2_5LEVEL



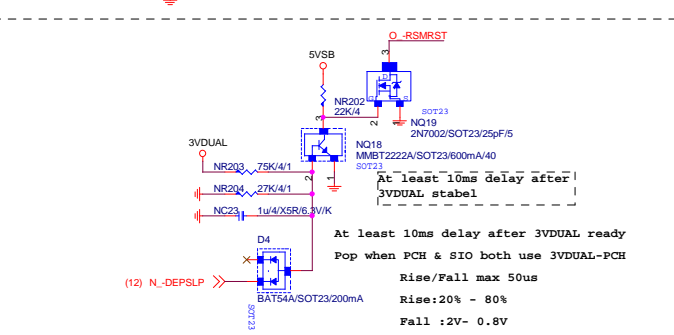
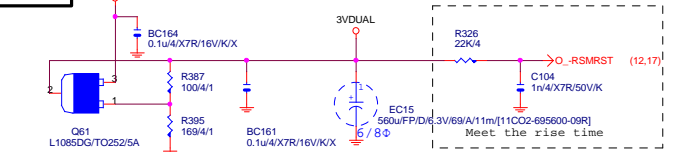
5VDUAL_USB Ctrl	GPIO	5VDUAL_USB
KB_USB, R_USB30,	High	Power ON
USB_LAN_F_USB30,	Low	Power OFF
F_USB2 Power		



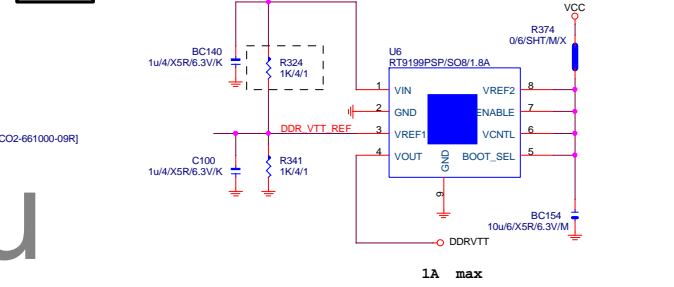
5VDUAL SHORT PROTECT



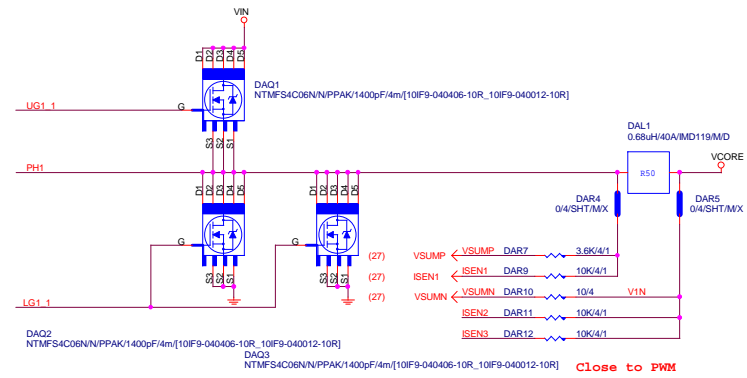
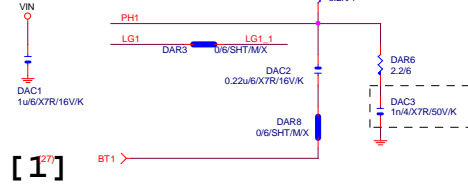
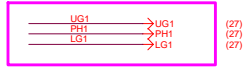
3VDUAL



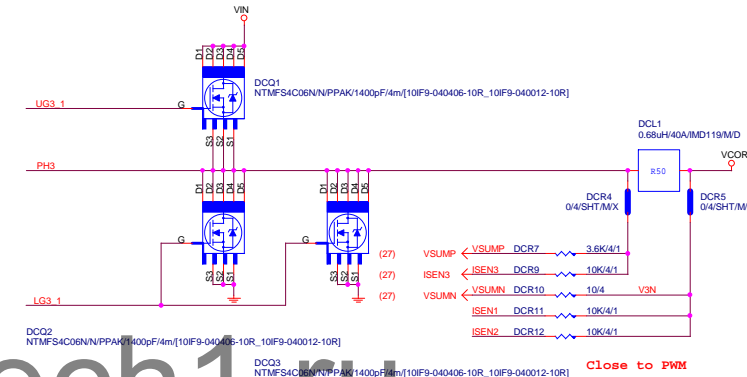
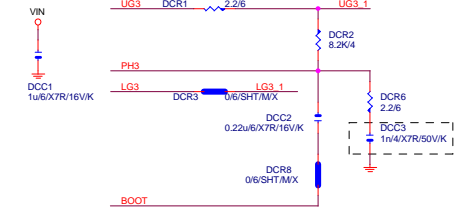
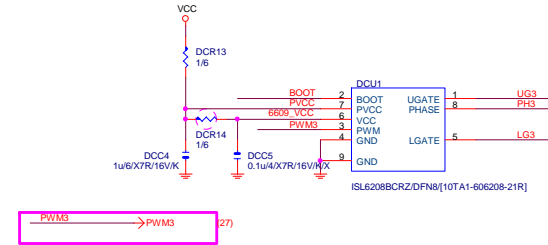
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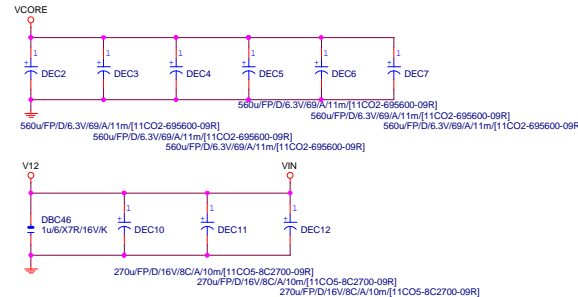
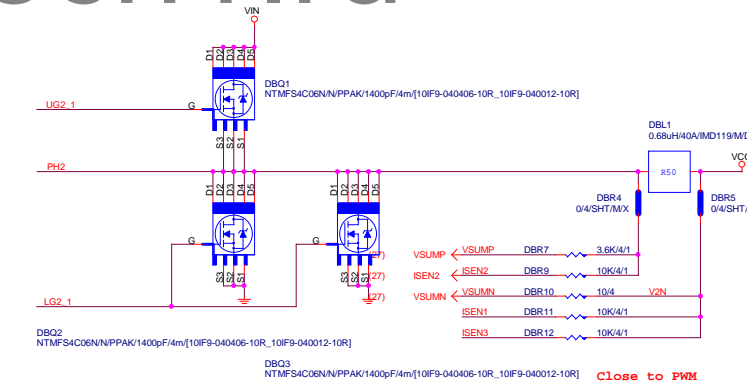
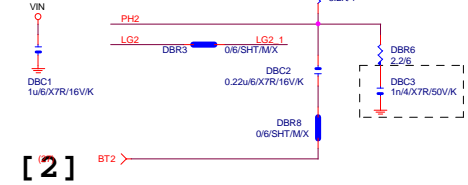
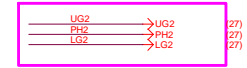
PHASE 1



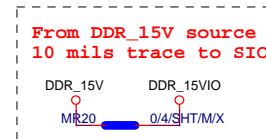
PHASE 3



PHASE 2



Gigabyte Technology			
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<p align="center"><i>Gigabyte Technology</i></p>			
<p align="center">DDR POWER</p>			
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VCC1_05_ME

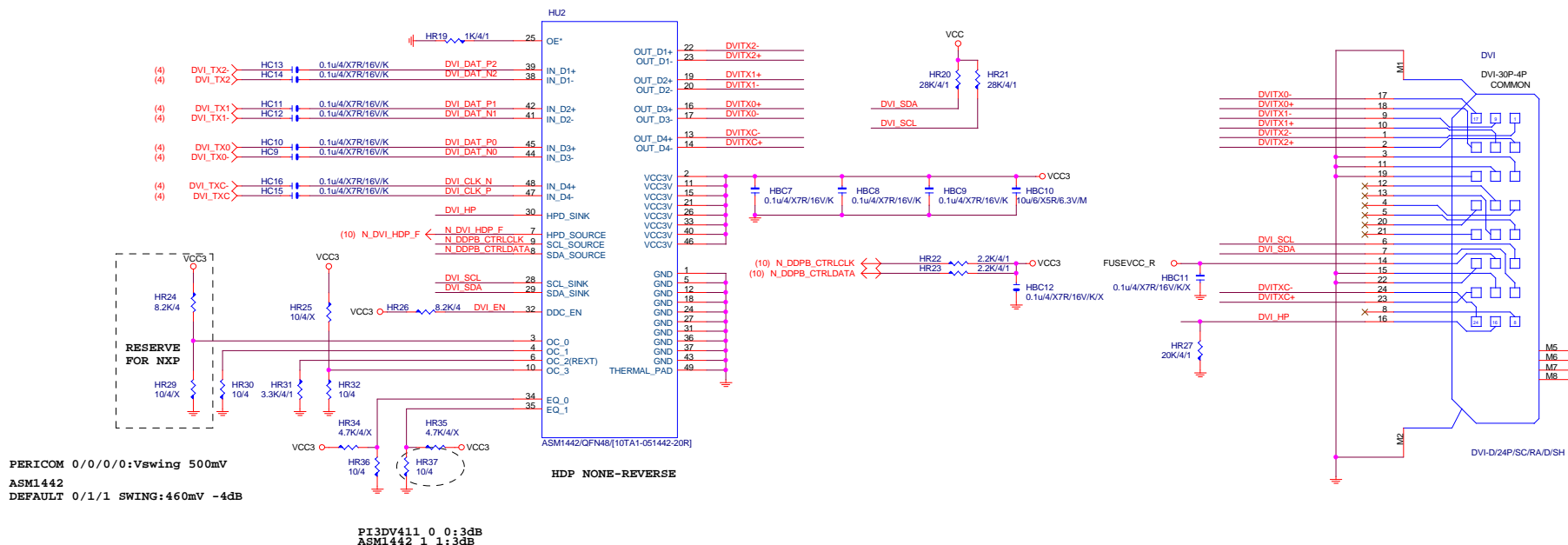
【技術通報R&D技術通報156】
(RICHTEK), (NUVOTON), (EMC)做共用
PIN7分壓阻值須做修改為100K以上電阻值

VCC3_ME

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DVI LEVEL SHIFT



HDMI LEVEL SHIFT

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ITE IT8892E			
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<i>Gigabyte Technology</i>			
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