

Model Name: GA-Z87M-D3HP

Revision 1.0

SHEET

TITLE

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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 1,2
08	DDR III CHANNEL B 1,2
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*4 SLOT
16	PCI SLOT1,2
17	ITE 8728 LPC IO
18	COM,KB_MS_USB,USB30_20
19	HWM,FAN CTRL,OV,-PROCHOT
20	DUAL BIOS
21	FP,FUSB,SPK,SATALED
22	Realtek ALC892-GR
23	REAR AUDIO JACK
24	REALTEK RTL8111F
25	DISCRETE POWER
26	ATX , CLOCK GEN, TPM
27	VCORE ISL95820_1

SHEET

TITLE

28	VCORE ISL95820_2
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34	D720210 4port_Hub
35	CONN-KB_USB30
36	D720210 4port_Hub_B
37	D720210 4port_Hub_B
38	CONN-R_USB30, F_USB30

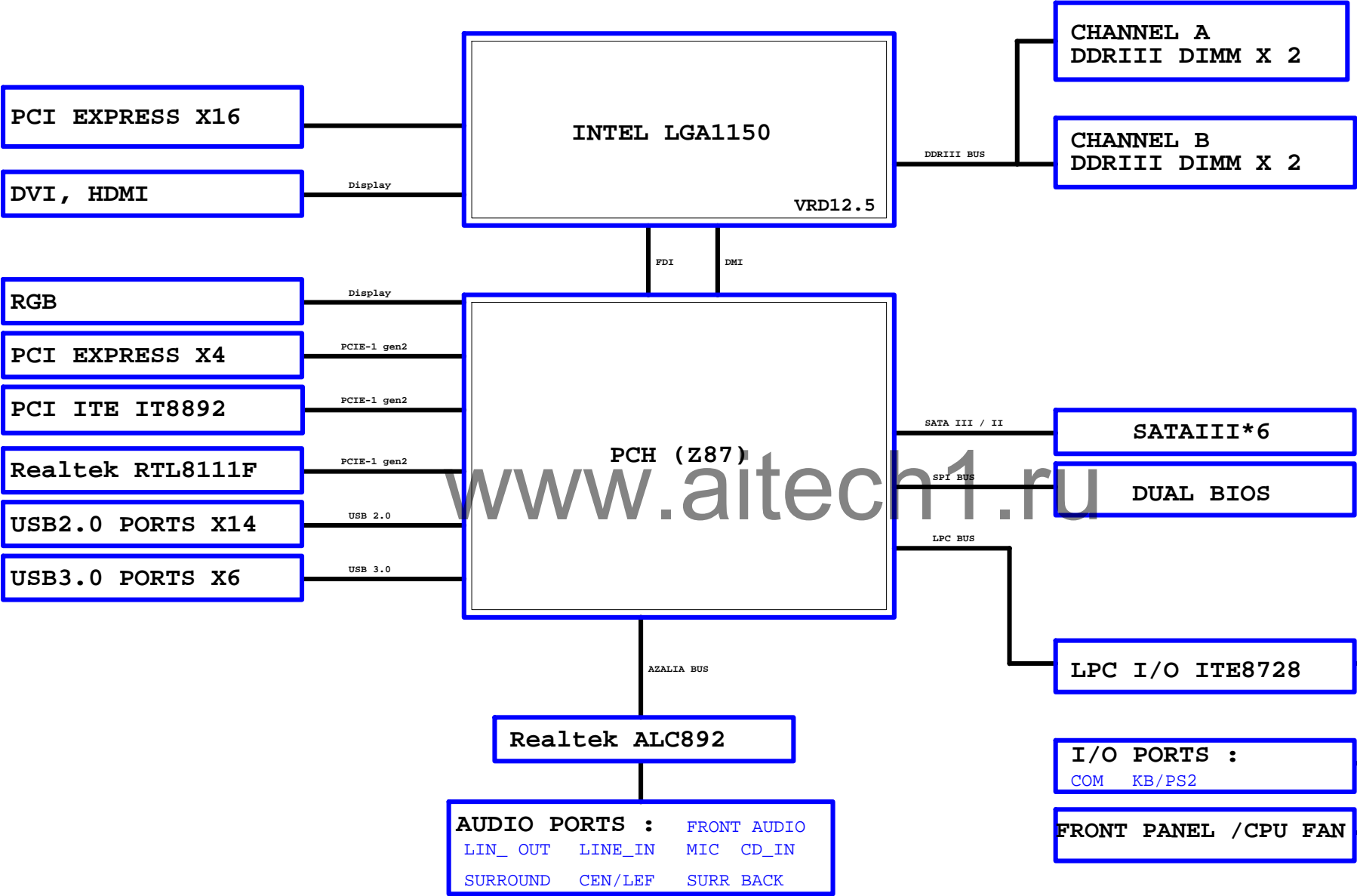
www.aitech1.ru

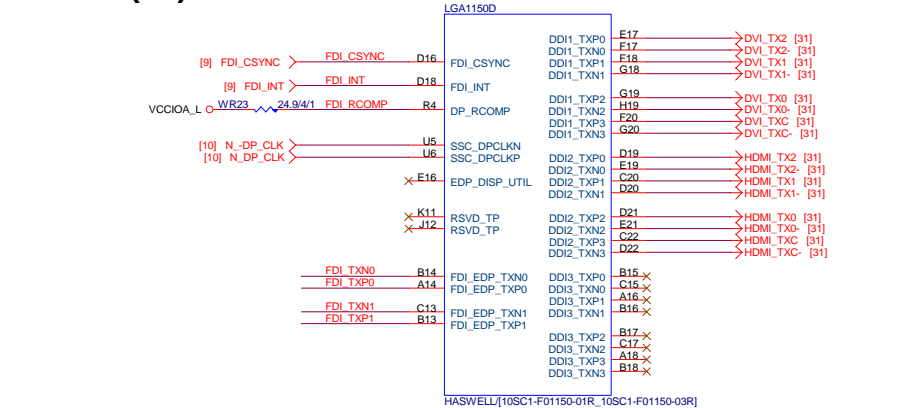
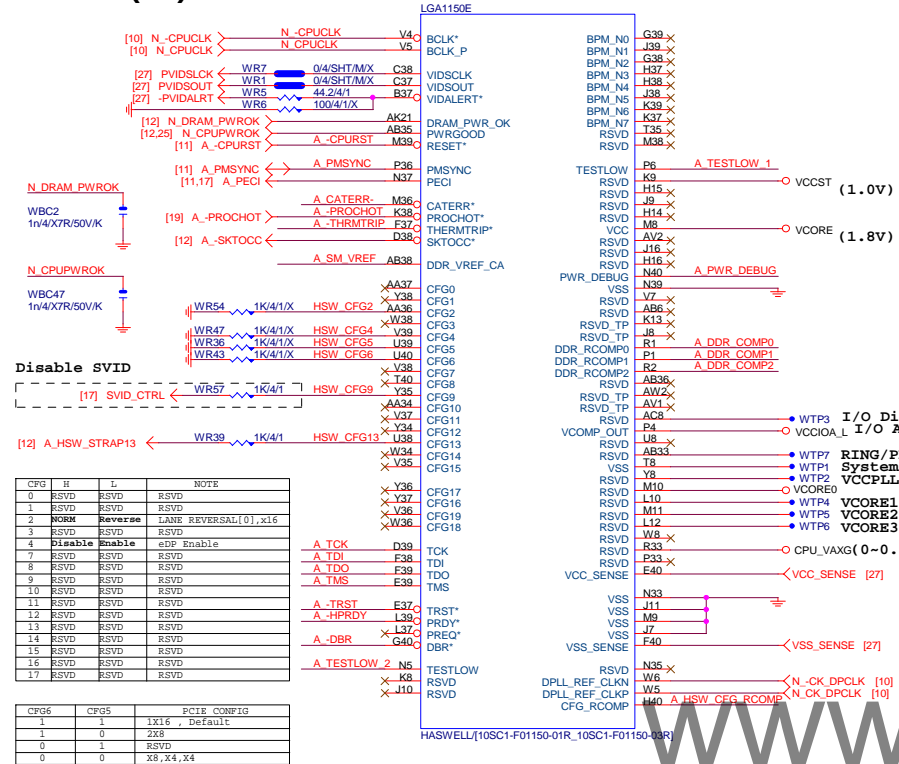
Gigabyte Technology

Title			Cover Sheet
Size	Document Number	GA-Z87M-D3HP	
Custom		Rev	1.0
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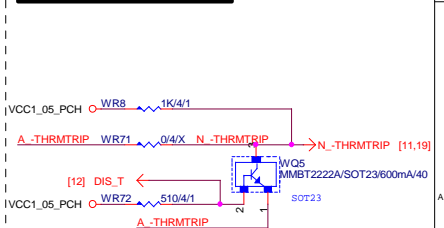
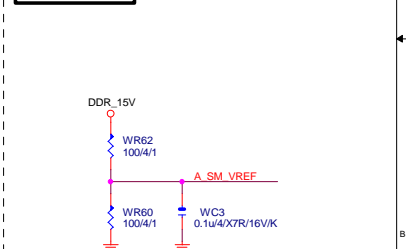
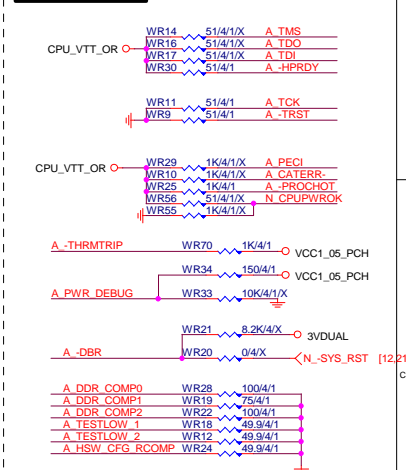
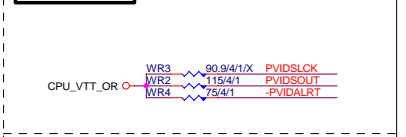
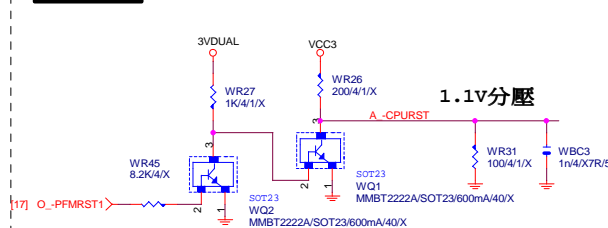
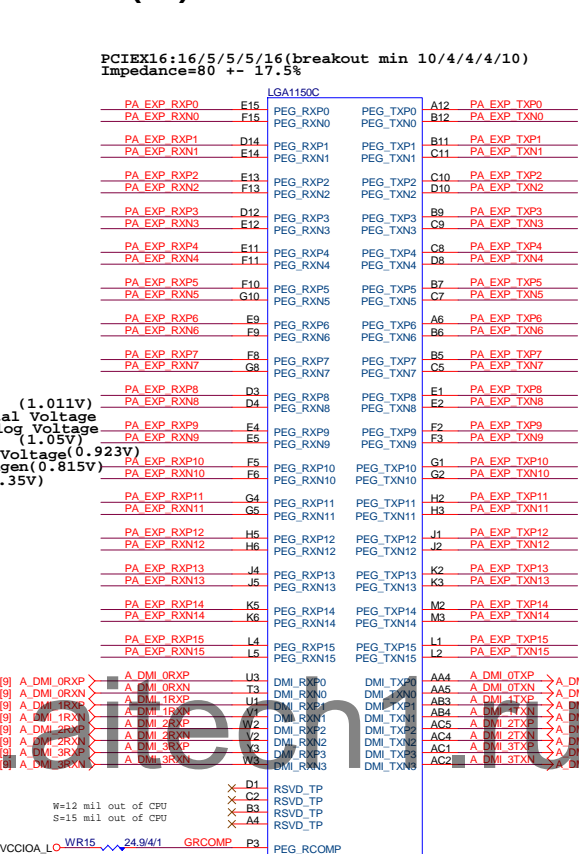
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BLOCK DIAGRAM





FDI\_TXP[0..1] >> FDI\_TXP[0..1] [9]  
FDI\_TXN[0..1] >> FDI\_TXN[0..1] [9]



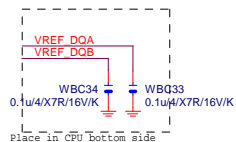
## LGA1150 (A)

LGA1150A		DDR0_MA0	DDR0_D00	AD38	MDA0
MAAA0	AU13	DDR0_MA1	DDR0_D01	AD39	MDA1
MAAA1	AV16	DDR0_MA2	DDR0_D02	AF38	MDA2
MAAA2	AU16	DDR0_MA3	DDR0_D03	AF39	MDA3
MAAA3	AW17	DDR0_MA4	DDR0_D04	AD37	MDA4
MAAA4	AW18	DDR0_MA5	DDR0_D05	AD40	MDA5
MAAA5	AW17	DDR0_MA6	DDR0_D06	AE37	MDA6
MAAA6	AT18	DDR0_MA7	DDR0_D07	AF40	MDA7
MAAA7	AU18	DDR0_MA8	DDR0_D08	AH40	MDA9
MAAA8	AT19	DDR0_MA9	DDR0_D09	AH39	MDA10
MAAA9	AW11	DDR0_MA10	DDR0_D10	AK38	MDA10
MAAA10	AV19	DDR0_MA11	DDR0_D11	AK39	MDA11
MAAA11	AU19	DDR0_MA12	DDR0_D12	AH37	MDA12
MAAA12	AY10	DDR0_MA13	DDR0_D13	AH38	MDA13
MAAA13	AT20	DDR0_MA14	DDR0_D14	AK37	MDA14
MAAA14	AU21	DDR0_MA15	DDR0_D15	AK40	MDA15
MAAA15	AU21	DDR0_MA16	DDR0_D16	AM40	MDA17
MODT_A0	AW10	DDR0_ODT0	DDR0_D17	AM39	MDA21
MODT_A1	AY8	DDR0_ODT1	DDR0_D18	AP38	MDA18
MODT_A2	AW9	DDR0_ODT2	DDR0_D19	AP39	MDA19
MODT_A3	AU8	DDR0_ODT3	DDR0_D20	AM37	MDA20
			DDR0_D21	AM38	MDA16
			DDR0_D22	AP37	MDA22
			DDR0_D23	AP40	MDA23
			DDR0_D24	AW37	MDA29
			DDR0_D25	AU35	MDA26
			DDR0_D26	AU35	MDA27
			DDR0_D27	T137	MDA28
			DDR0_D28	AU37	MDA24
			DDR0_D29	AT35	MDA30
			DDR0_D30	AW35	MDA31
			DDR0_D31	AY6	MDA33
			DDR0_D32	AU6	MDA37
			DDR0_D33	AW4	MDA34
			DDR0_D34	AW4	MDA35
			DDR0_D35	AW6	MDA32
			DDR0_D36	AW4	MDA38
			DDR0_D37	AW4	MDA39
			DDR0_D38	AR1	MDA41
			DDR0_D39	AR4	MDA45
			DDR0_D40	AN3	MDA42
			DDR0_D41	AN4	MDA43
			DDR0_D42	AR2	MDA44
			DDR0_D43	AR3	MDA40
			DDR0_D44	AN2	MDA46
			DDR0_D45	AN1	MDA47
			DDR0_D46	AL1	MDA49
			DDR0_D47	AL4	MDA53
			DDR0_D48	AL4	MDA50
			DDR0_D49	AJ4	MDA51
			DDR0_D50	AJ2	MDA52
			DDR0_D51	AJ2	MDA48
			DDR0_D52	AJ2	MDA54
			DDR0_D53	AJ1	MDA55
			DDR0_D54	AG1	MDA57
			DDR0_D55	AG4	MDA61
			DDR0_D56	AE3	MDA58
			DDR0_D57	AE4	MDA59
			DDR0_D58	AG2	MDA60
			DDR0_D59	AG3	MDA56
			DDR0_D60	AE2	MDA62
			DDR0_D61	AE1	MDA63
			DDR0_D62	AE39	DQSA0
			DDR0_D63	AJ39	DQSA1
			DDR0_D64	AN39	DQSA2
			DDR0_D65	AV36	DQSA3
			DDR0_D66	AV5	DQSA4
			DDR0_D67	AP3	DQSA5
			DDR0_D68	AK3	DQSA6
			DDR0_D69	AF3	DQSA7
			DDR0_D70	AV32	
			DDR0_D71	AE38	DQSA0
			DDR0_D72	AJ38	DQSA1
			DDR0_D73	AN38	DQSA2
			DDR0_D74	AJ36	DQSA3
			DDR0_D75	AW5	DQSA4
			DDR0_D76	AP2	DQSA5
			DDR0_D77	AK2	DQSA6
			DDR0_D78	AF2	DQSA7
			DDR0_D79	AU32	

HASWELL[10SC1-F01150-01R\_10SC1-F01150-03R]

## LGA1150 (B)

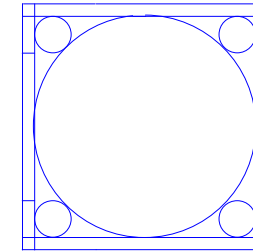
LGA1150B		DDR1_MA0	AE34	MDB0
MAAB0	AL19	DDR1_MA1	AE35	MDB1
MAAB1	AK23	DDR1_MA2	AG35	MDB2
MAAB2	AM23	DDR1_MA3	AH35	MDB3
MAAB3	AM23	DDR1_MA4	AD34	MDB4
MAAB4	AP23	DDR1_MA5	AD35	MDB5
MAAB5	AL23	DDR1_MA6	AG34	MDB6
MAAB6	AY24	DDR1_MA7	AH34	MDB7
MAAB7	AY25	DDR1_MA8	AL34	MDB8
MAAB8	AU26	DDR1_MA9	AL35	MDB9
MAAB9	AW25	DDR1_MA10	AL31	MDB10
MAAB10	AY25	DDR1_MA11	AL31	MDB11
MAAB11	AY25	DDR1_MA12	AK34	MDB12
MAAB12	AY26	DDR1_MA13	AK35	MDB13
MAAB13	AR15	DDR1_MA14	AK32	MDB14
MAAB14	AV27	DDR1_MA15	AL32	MDB15
MAAB15	AY28			
MODT_B0	AM17	DDR1_ODT0	AP34	MDB21
MODT_B1	AL16	DDR1_ODT1	AP31	MDB19
MODT_B2	AM16	DDR1_ODT2	AP31	MDB23
MODT_B3	AK15	DDR1_ODT3	AP35	MDB20
			AP35	MDB16
			AP32	MDB18
			AP32	MDB22
			AP29	MDB25
			AM28	MDB28
			AR29	MDB27
			AR28	MDB30
			AL28	MDB24
			AL28	MDB29
			AP29	MDB26
			AP28	MDB31
			AP12	MDB32
			AL12	MDB35
			AR13	MDB36
			AP13	MDB37
			AM13	MDB38
			AM12	MDB39
			AR9	MDB45
			AP9	MDB41
			AR6	MDB47
			AP6	MDB43
			AR10	MDB44
			AP10	MDB40
			AR7	MDB46
			AP7	MDB42
			AM9	MDB52
			AL9	MDB53
			AL6	MDB50
			AL7	MDB55
			AM10	MDB48
			AL10	MDB49
			AM6	MDB54
			AM7	MDB51
			AH6	MDB61
			AH7	MDB60
			AE6	MDB59
			AE7	MDB63
			AJ6	MDB56
			AJ7	MDB57
			AF6	MDB58
			AF7	MDB62
			AF35	DQSB0
			AL33	DQSB1
			AP33	DQSB2
			AN28	DQSB3
			AN12	DQSB4
			AP8	DQSB5
			AL8	DQSB6
			AG7	DQSB7
			AN25	
			AE34	DQSB0
			AK33	DQSB1
			AN33	DQSB2
			AN29	DQSB3
			AN13	DQSB4
			AR8	DQSB5
			AM8	DQSB6
			AG6	DQSB7
			AN26	



LGA1150B

HASWELL[10SC1-F01150-01R\_10SC1-F01150-03R]

## LGA1150 (CR)

CR  
CPU RETAINION/X

LGA1150\_P



ILM\_BP/1156/CSP/ILM\_BP/1156/CSP/[12KRC-0F0001-52R\_12KRC-0F0001-51R]

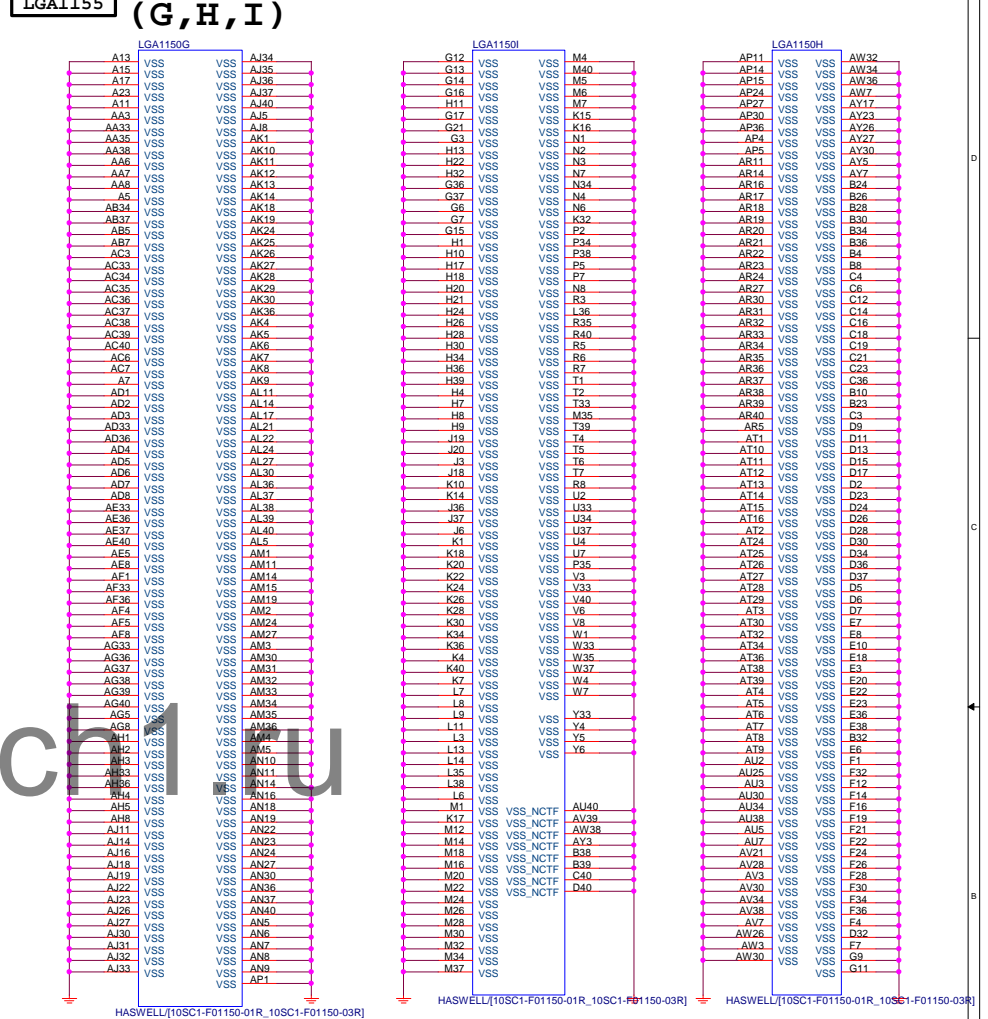
DDR BUS

[7] MODT_A[0..3]	MODT_A0..3
[8] MODT_B[0..3]	MODT_B0..3
[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] MAA[0..15]	MAA0..15
[8] MAB[0..15]	MAB0..15
[8] DQSB[0..7]	DQSB0..7
[8] DQSB[0..7]	DQSB0..7

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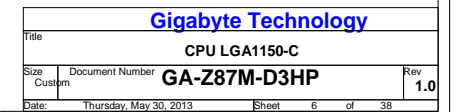
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CPU LGA1150-B			
Size	Document Number	Rev	
Custom	GA-Z87M-D3HP	1.0	
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LGA1155 (G,H,I)



## DDR CAP

(x9)

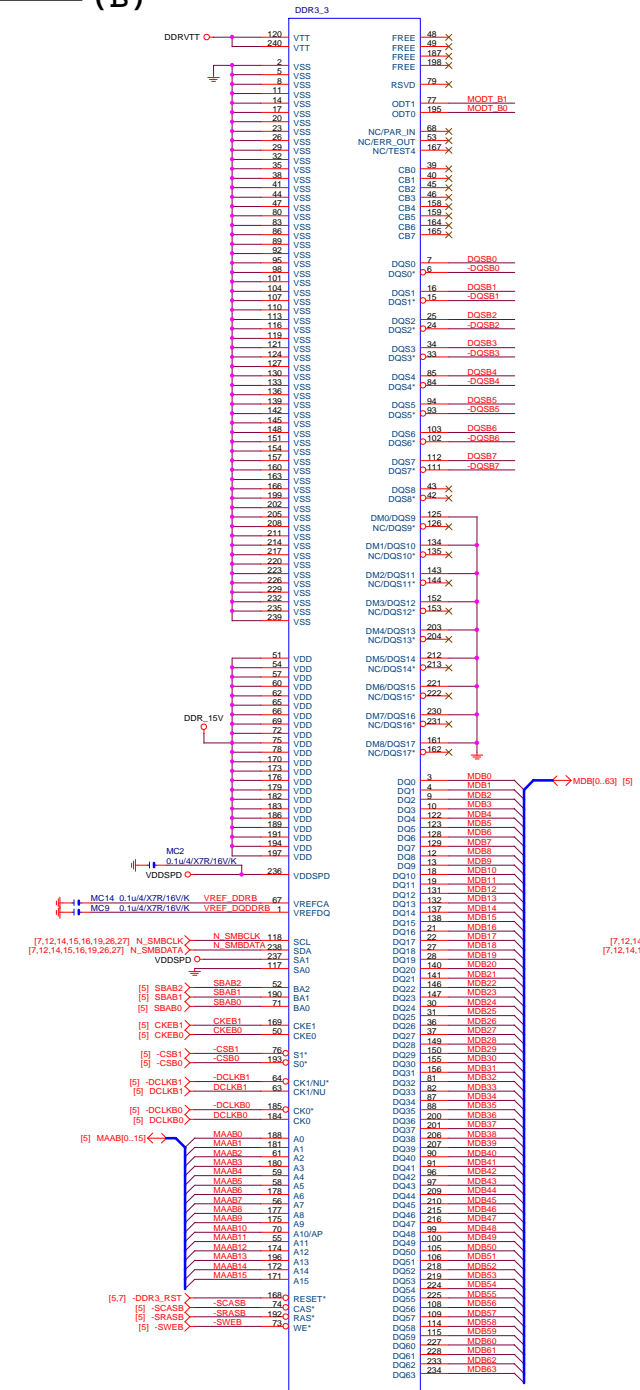






DDR3

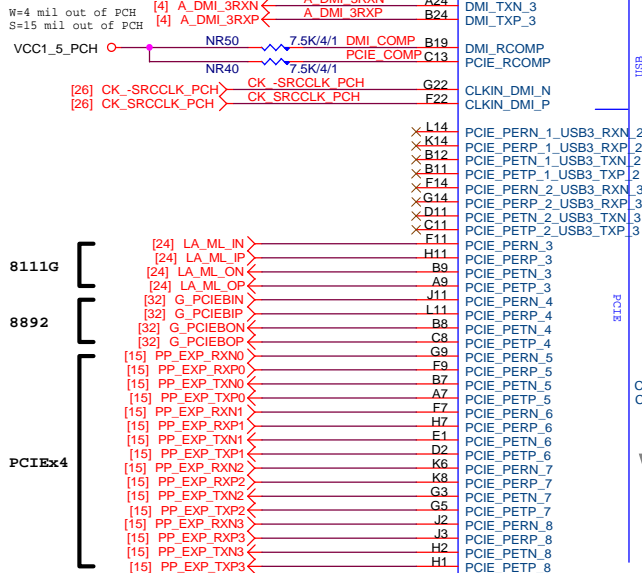
(B)



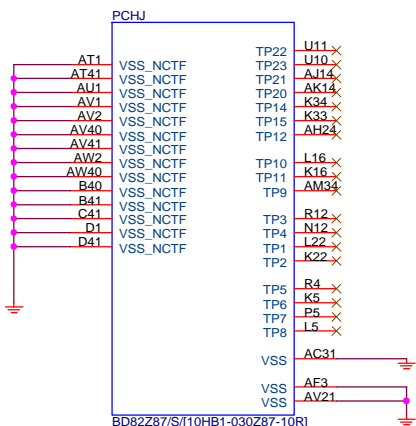


DMI:12/4/4/4/12(breakout min 8/4/4/4/8)  
Impedance=85 +- 17.5%

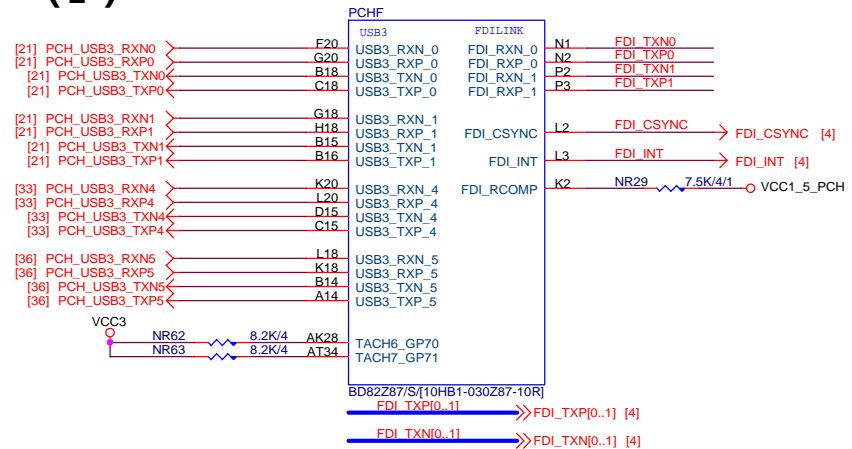
PCB#		B03: F01E 0/7 N/A		H81: Port 6/7/12/13 N/A	
DML_RXN_0	USBN_0	AV10	N -USBP0	N-USBP0	[21]
DML_RXP_0	USBP_0	AIU10	N +USBP0	N-USBP0	[21]
DML_TXN_0	USBN_1	AV11	N -USBP1	N-USBP1	[21]
DML_TXP_0	USBP_1	AW11	N +USBP1	N-USBP1	[21]
DML_RXN_1	USBN_2	AN14			
DML_RXP_1	USBP_2	AP14			
DML_TXN_1	USBN_3	AJ16			
DML_TXP_1	USBP_3	AK16			
DML_RXN_2	USBN_4	AIU15	N -USBP4	N-USBP4	[33]
DML_RXP_2	USBP_4	AV15	N +USBP4	N-USBP4	[33]
DML_TXN_2	USBN_5	AIU12	N -USBP5	N-USBP5	[36]
DML_TXP_2	USBP_5	AT12	N +USBP5	N-USBP5	[36]
DML_RXN_3	USBN_6	AV14	N -USBP6	N-USBP6	[21]
DML_RXP_3	USBP_6	AW14	N +USBP6	N-USBP6	[21]
DML_TXN_3	USBN_7	AIU17	N -USBP7	N-USBP7	[21]
DML_TXP_3	USBP_7	AT17	N +USBP7	N-USBP7	[21]
		AW16	N -USBP8		



PCIEX1:16/5/5/5/16 (breakout min 8/4/4/4/8)

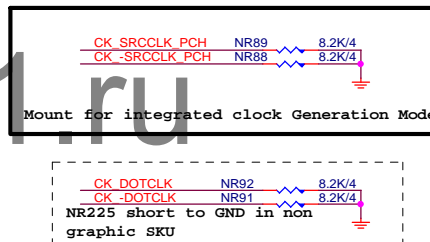


PCHF  
USB3

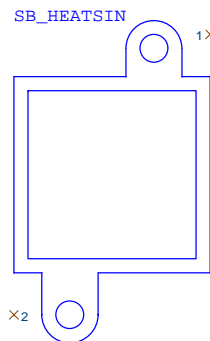


USB3.0:20/5/7/5/20 (breakout min  
8/4/4/4/8) ; ONLY 3 VIAS  
Impedance=85 +- 17.5%  
Back Panel < 10000 MILS  
Front Panel < 6000 MILS

CK\_SRCCLK\_PCH  
CK\_SRCCLK\_PCH



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PCH\_HS  
PCH\_HS[12SP2-S04209-01R\_12SP2-S04209-02R\_12SP2-S04209-03R]

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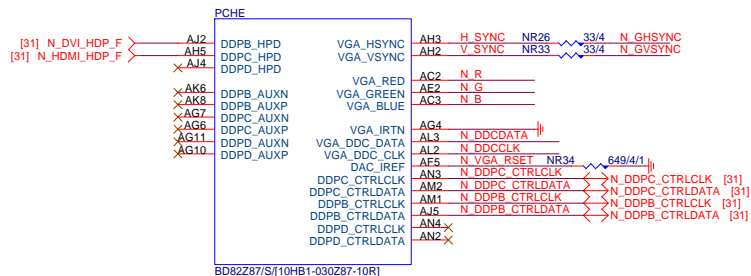
```
OC[3:0]# for Device 29 (ports 0-7)
OC[7:4]# for Device 26 (ports 8-13)
```

USB OC#	Configure
OC0#	F_USB30_2
OC1#	N/A
OC2#	HUBA,B
OC3#	F_USB3
OC4#	F_USB2
OC5#	N/A
OC6#	F_USB1
OC7#	Not Use

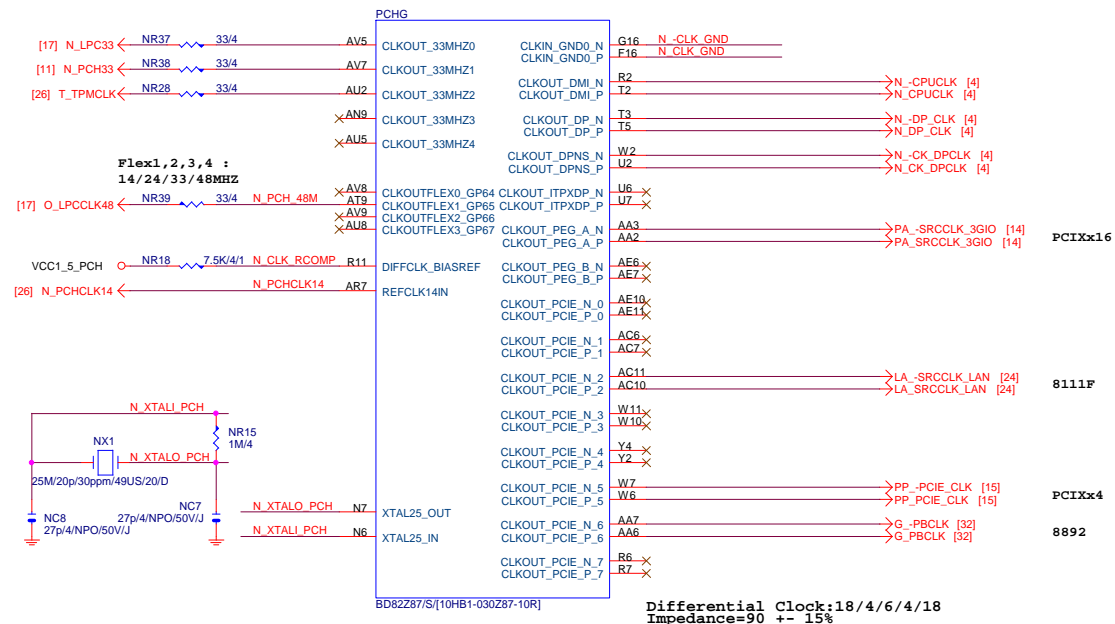
## Gigabyte Technology

Title			
PCH FDI,DMI,USB ,PCIE,NVRAM			
Size	Document Number		Rev
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**PCH (E)**



**PCH (G)**



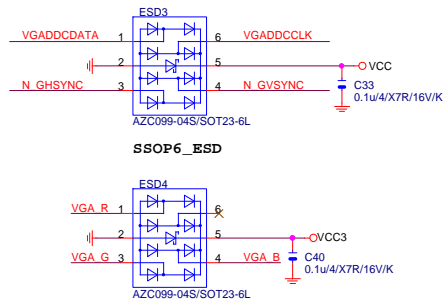
PCH CLK PD
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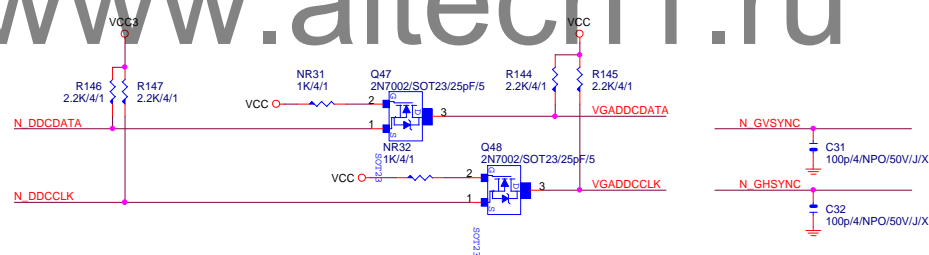
Mount for integrated clock Generation  
Mode



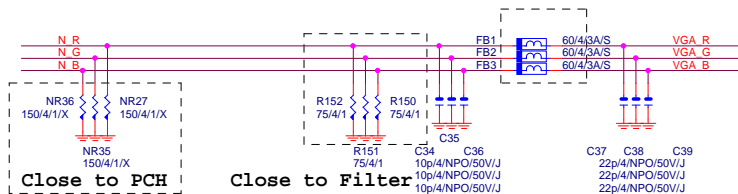
## VGA ESD



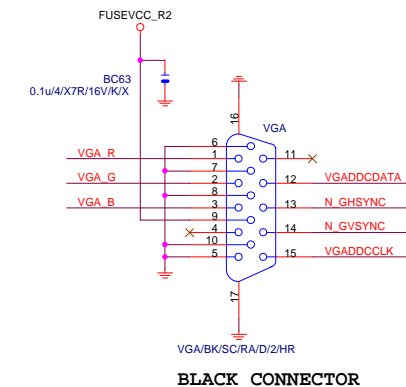
## VGA DDC



## VGA DDC



## VGA CONNECTOR



## Gigabyte Technology

### PCH DISPLAY ,CLK BUFFER

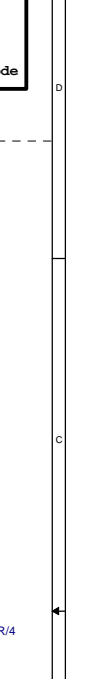
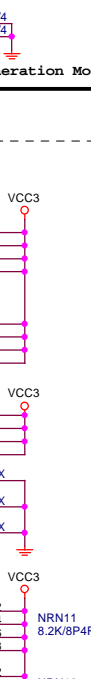
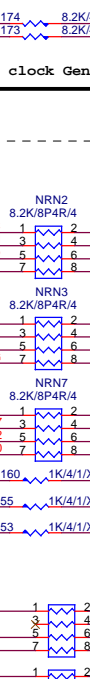
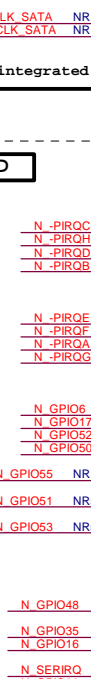
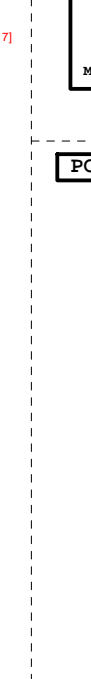
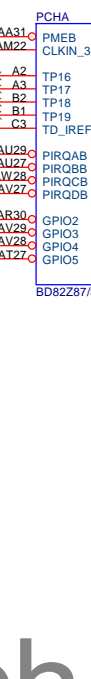
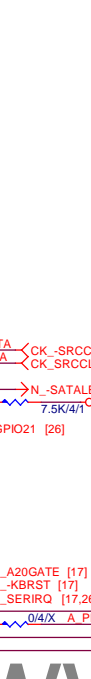
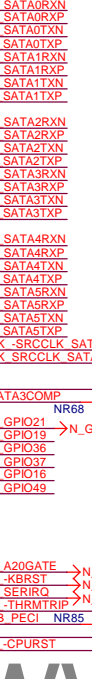
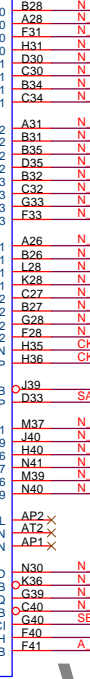
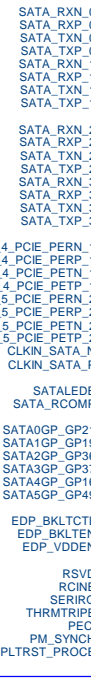
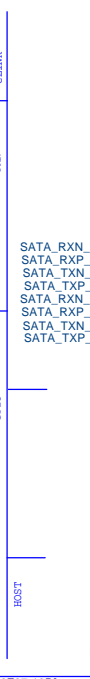
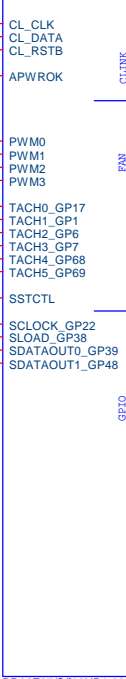
GA-Z87M-D3HP

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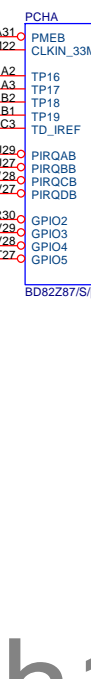
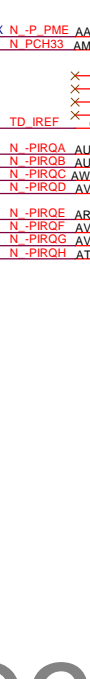
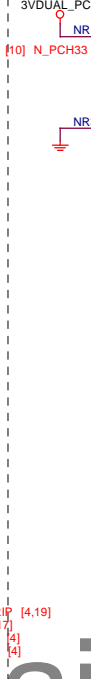
# PCH (C)

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%

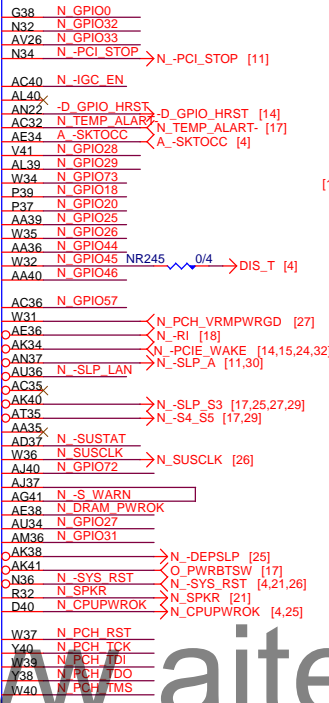
PCHC



# PCH (A)



(D)



The schematic shows the N\_PCH DPWROK signal path. It starts with a pull-up resistor NR69 (8.2K/4) connected to 3VDUAL\_PCH. The signal passes through a buffer consisting of two inverters: NR94 (22K/4) driving NQ3 (MMBT2222A/SOT23/600mA/40), which drives NR233 (0/4), which finally drives NQ2 (MMBT2222A/SOT28/600mA/40). A capacitor NC17 (1n4/X7R/50V/K) is connected between the input and output of the first inverter stage. The output of the second inverter stage is connected to 5VSB through a network of resistors: NR234 (6.19K/4/1/X) and NR235 (1K/4/1/X). A note specifies: "At least 10ms delay after 3VDUAL\_PCH stabel".

NR155 8.2K/4/X N GPIO45

3VDUAL

NR139 8.2K/4/X N GPIO46

NR103 8.2K/4/X N GPIO44  
N GPIO57

NR106 1K/4/1 N -JGC\_EN NR105 8.2K/4/X  
NR153 1K/4/1 N SUSCLK NR154 8.2K/4/X

GP8:Low to enable  
PCH clock chip

SUSCLK:Low to OD  
PLL VR

GP28:Lo disable  
VRM ,Hi enable  
VRM

A -SKTOCC 1 2  
N TEMP\_ALARM- 3 4  
N -RI 5 6  
X 7 8

NRN9 8.2K/8P  
NRN10 8.2K/8P

N -SUSTAT NR133 8.2K/4/X  
-D GPIO\_HRST NR51 1K/4/1  
N GPIO28 NR144 1K/4/1  
N GPIO29 NR96 1K/4/1

3VDUAL\_PCH

N -S\_WARN NR129 8.2K/4  
N GPIO27 NR60 8.2K/4  
N GPIO31 NR72 8.2K/4  
N -SLP\_LAN NR73 8.2K/4/X  
N GPIO72 NR100 8.2K/4  
N -PCIE\_WAKE NR76 1K/4/1  
N GPIO29 NR95 1K/4/1/X

VCC3

NR145 8.2K/4/X N GPIO20 NR109 1K/4/1  
N GPIO0 NR115 8.2K/4  
N -SYS\_RST NR164 8.2K/4  
N GPIO32 NR162 8.2K/4  
NR48 8.2K/4/X N GPIO33 NR49 8.2K/4/X

3VDUAL

N PCH\_RST NR172 20K/4/1  
N PCH\_TDI NR170 200/4/1  
N PCH\_TDO NR141 200/4/1  
N PCH\_TMS NR169 200/4/1  
N PCH\_TCK NR87 200/4/1/X

N PCH\_RST NR143 1K/4/1/X  
N PCH\_TDI NR171 100/4/1  
N PCH\_TDO NR168 100/4/1  
N PCH\_TMS NR142 100/4/1  
N PCH\_TCK NR108 51/4/1  
N GPIO18 NR79 8.2K/4  
N GPIO73 NR134 8.2K/4  
N GPIO26 NR107 8.2K/4  
N GPIO25 NR137 8.2K/4

N -SYS\_RST NC58 1n/4/X R/50V/K  
N DRAM\_PWROK NC59 1n/4/X R/50V/K

00mA/40X

3V DUAL PCH

VCC3

NR183 8.2K/4

NR136 1K/4/1/X

NR135 8.2K/4

NR182 8.2K/4/X

NR104 0/4/SHT/M/X

NQ11 MMBT2222A/SOT23/600mA/40

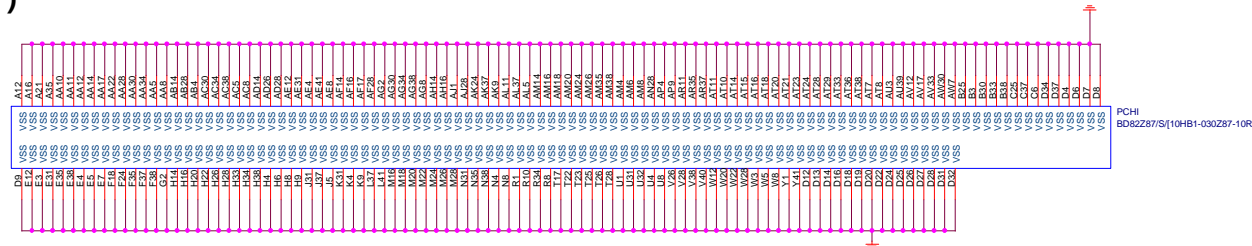
NQ12 MMBT2222A/SOT23/600mA/40

A\_HSW\_STRAP

[illegible]

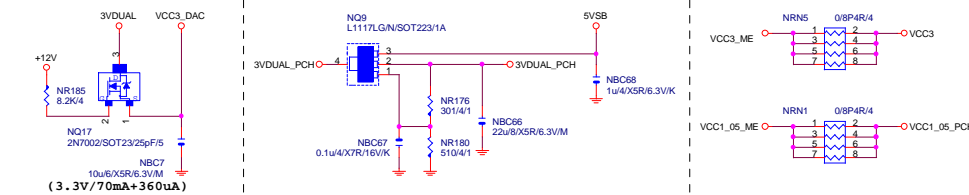
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PCH GPIO , CTRL , AUDIO			
Size	Document Number	Rev	
Custom	GA-Z87M-D3HP	1.0	
Date:	Thursday, May 30, 2013	Sheet	12 of 38

**PCH (I)**

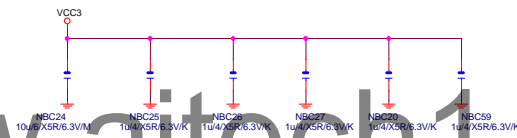


## 3VDUAL\_PCH

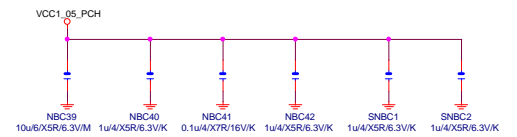
## H87 N/A



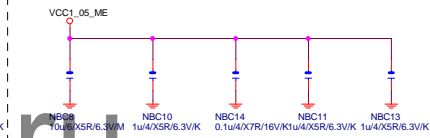
( 3.3V ) ( X6 )



(1.05V)(x6)



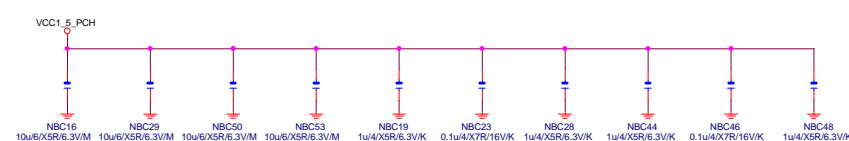
(1.05V) (x5)



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

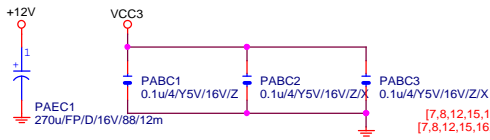


(1.05V) (x10)

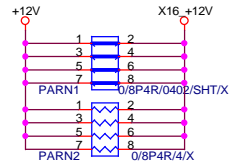




## PCIEX16 CAP



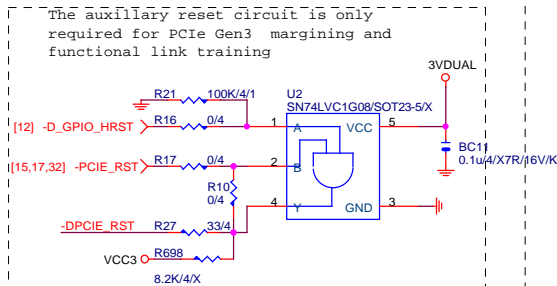
## PCIEX16 PROTECT SHT



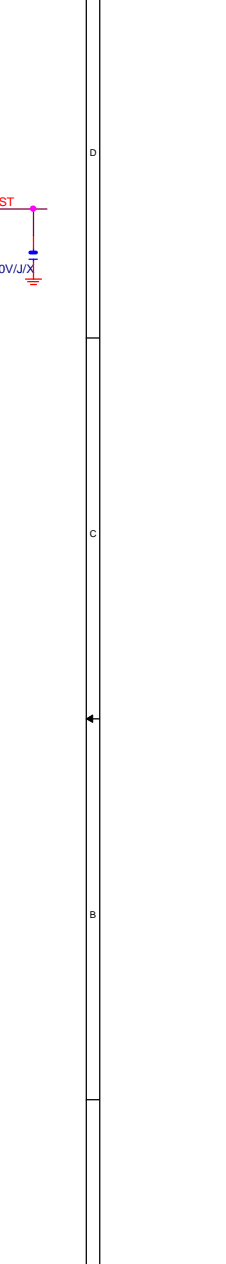
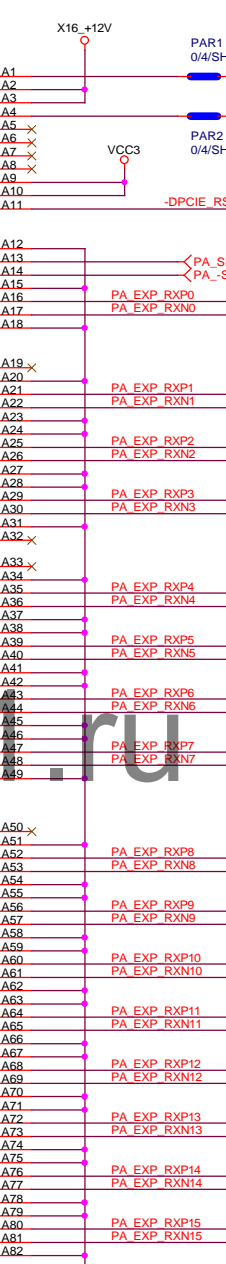
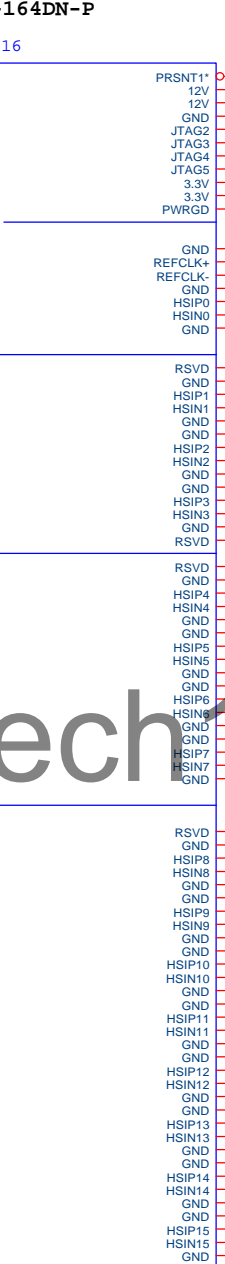
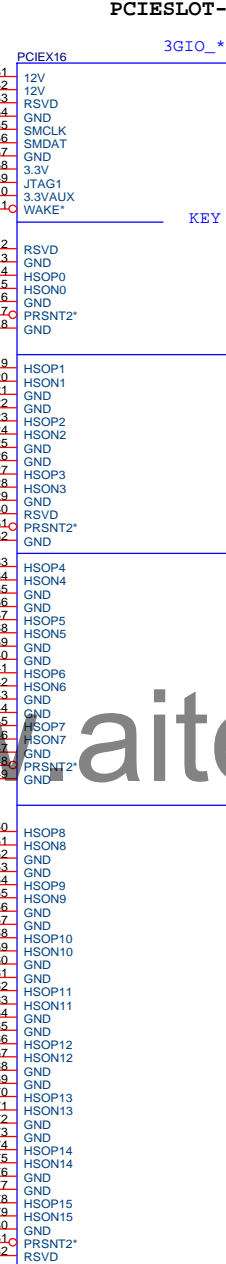
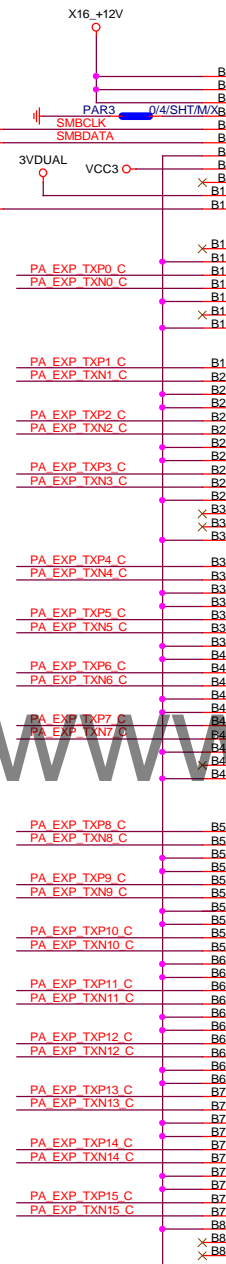
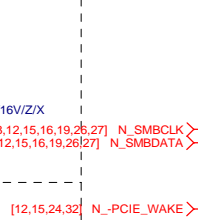
## PCIEX16 AC CAP

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
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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\_RXP0.15] [4]  
 PA EXP RXN0.15] >>> PA\_EXP\_RXN0.15] [4]  
 PA EXP TXP0.15] >>> PA\_EXP\_TXP0.15] [4]  
 PA EXP TXN0.15] >>> PA\_EXP\_TXN0.15] [4]



## PCIEX16 SLOT



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

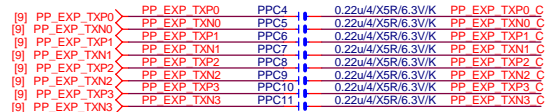
BLACK CONNECTOR

Gigabyte Technology

PCI EXPRESS \* 16

Title		
Size		
Custom		
Document Number		
GA-Z87M-D3HP		
Rev		
1.0		
Date		
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PCIEX4 SLOT

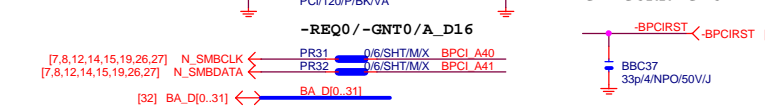
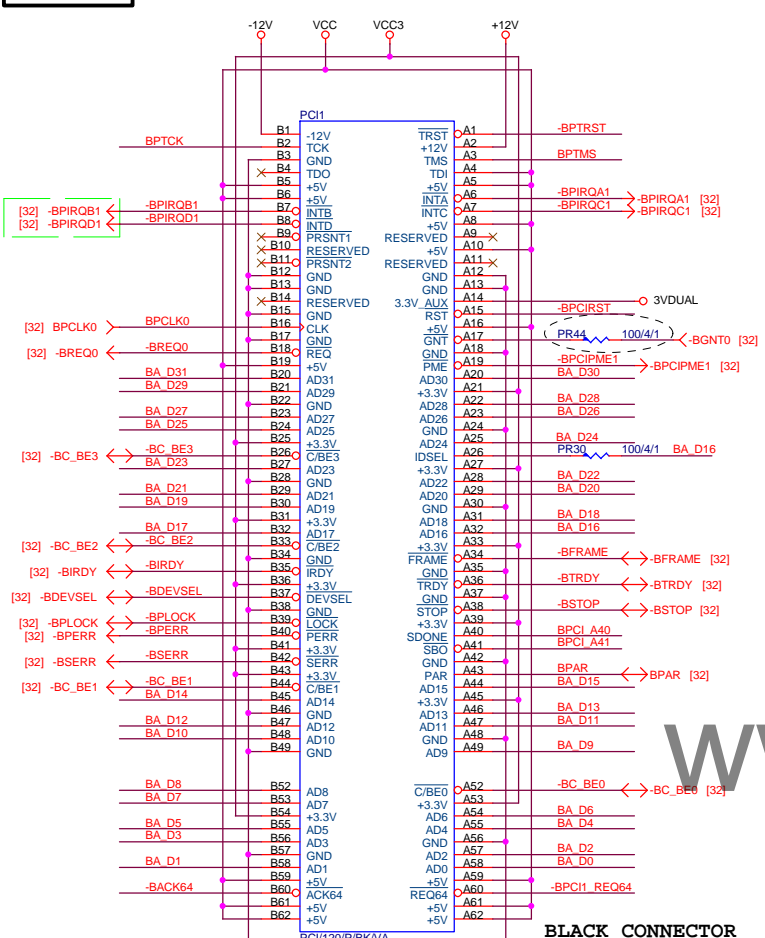


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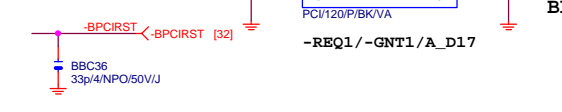
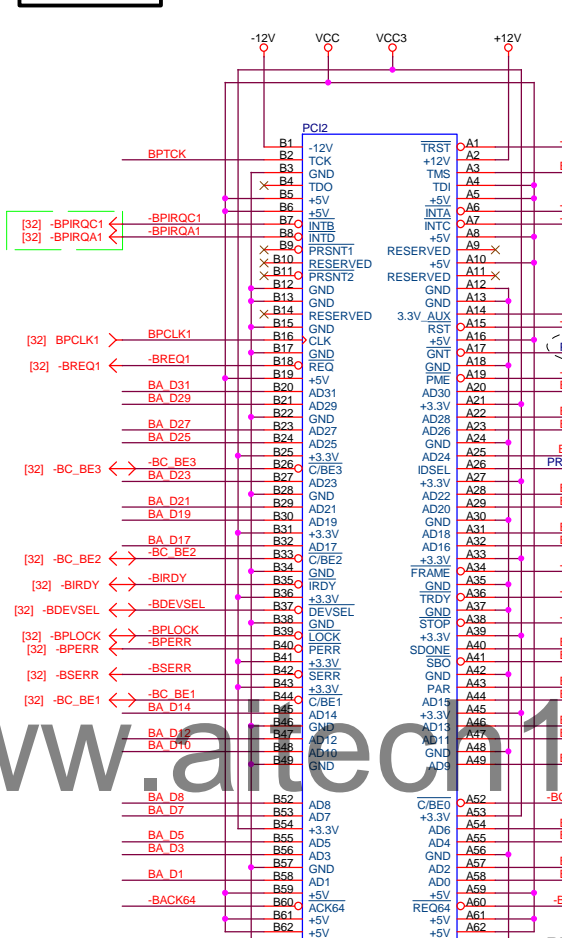
BLACK CONNECTOR



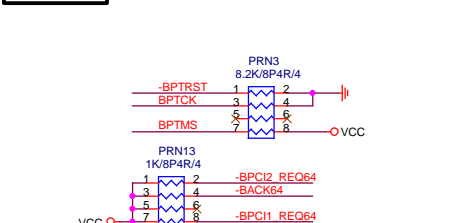
# PCI SLOT 1



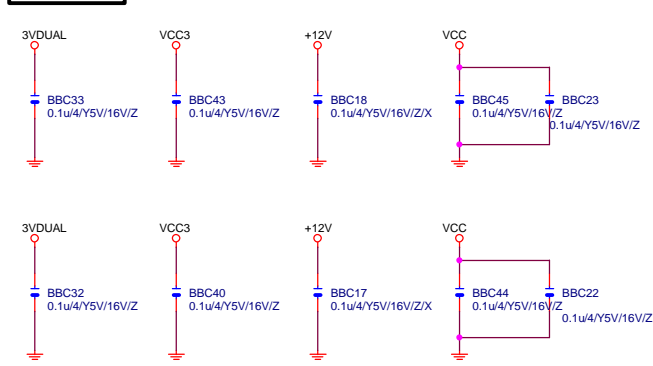
# PCI SLOT 2



# PCI PU

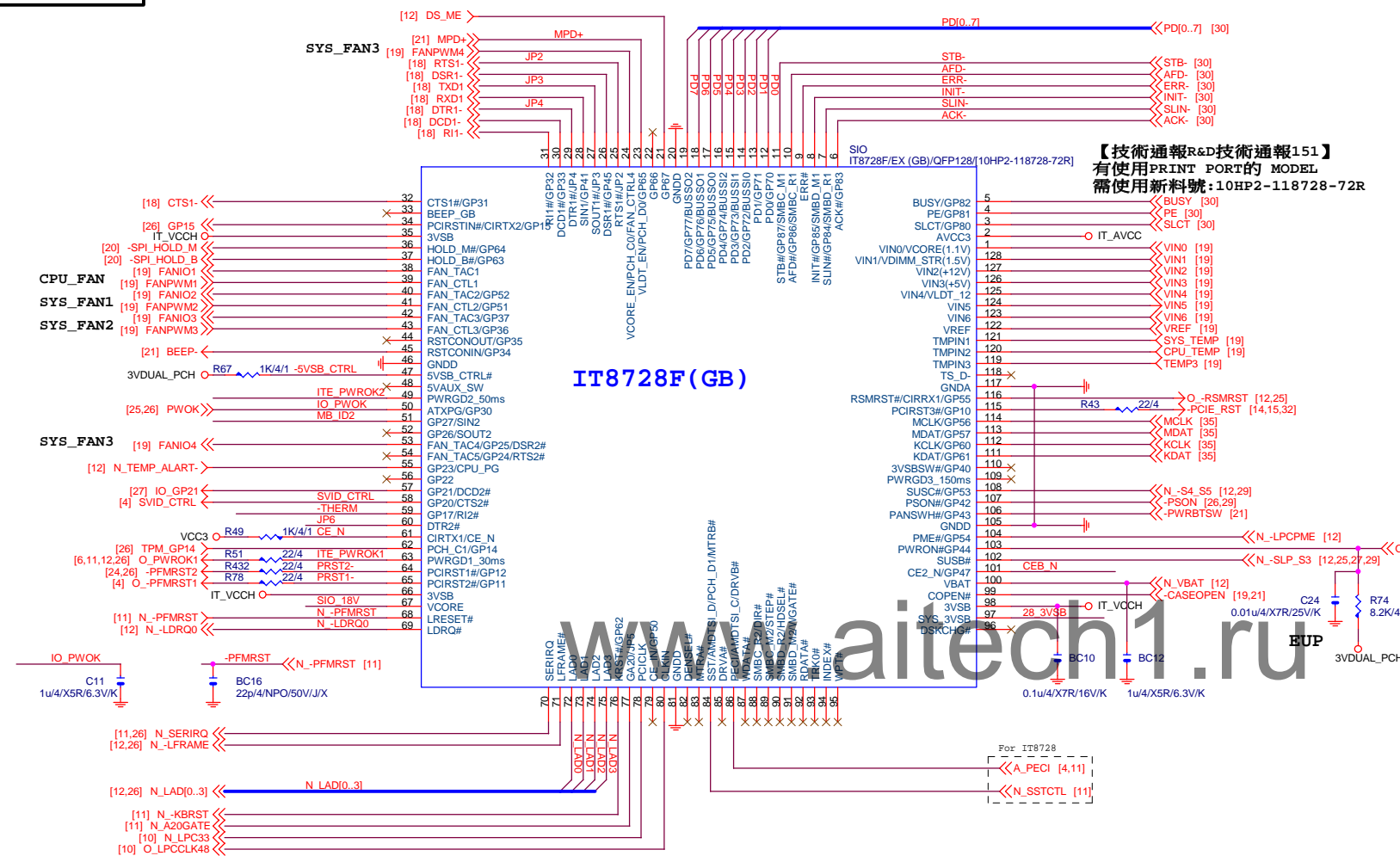


# PCI CAP

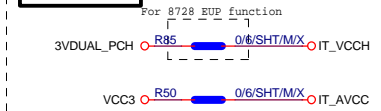


Gigabyte Technology			
Title			
PCI SLOT 1&2			
Size Custom			
Document Number			
GA-Z87M-D3HP			
Date: Thursday, May 30, 2013			
Sheet 16 of 38			
Rev 1.0			

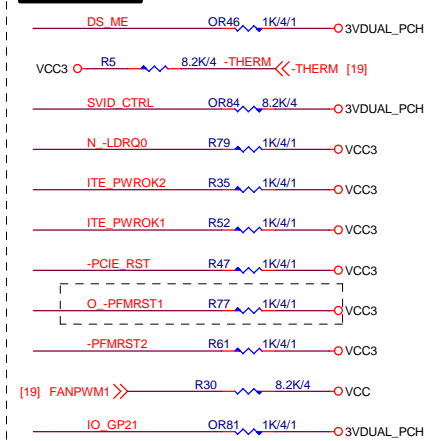
## SIO IT8728F



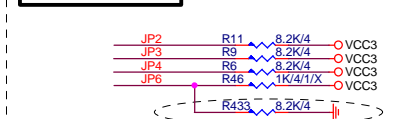
PWR	SHT
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SIO	PU
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SIO STRAP



IT8728-EX  
PULL DOWN

— —ENABLE

**QVP control by PCH**

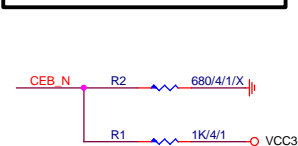
3VDUAL  28\_3VSB

\_\_\_\_\_

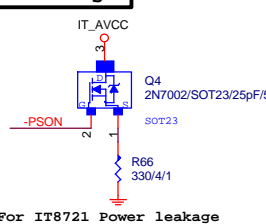
## IT8728F NOTE

	IT8728
PIN121	VCORE_EN/PCF_C0
PIN120	VLED_EN/PCF_D0
PIN19	ATKPG
PIN31	PCF_C1
PIN53	SST/AMDTSI_D_MTRB#/PCF_D1
PIN55	PECI/AMDTSI_C/DRV#
PIN66	SYS_3VSB
PIN70	GP47
PIN95	VIN2(VCC5)
PIN96	VIN1(VCC12)
PIN97	VIN1/VDIMM_STR(1.5V)
PIN98	VINO/VCORE(1.1V)/NC

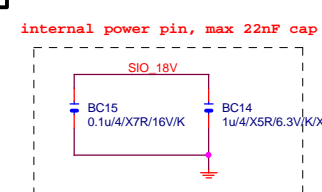
## DUAL BIOS OPT STRAP



## Power leakage

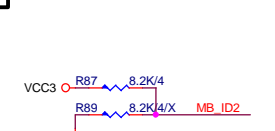


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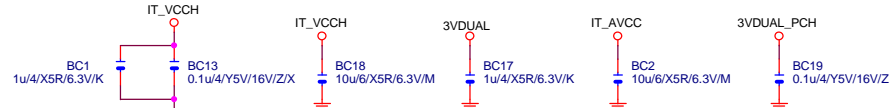


FOR LOW TEMP POWER ON INTO TEST MODE ISSUE

MB	ID
----	----

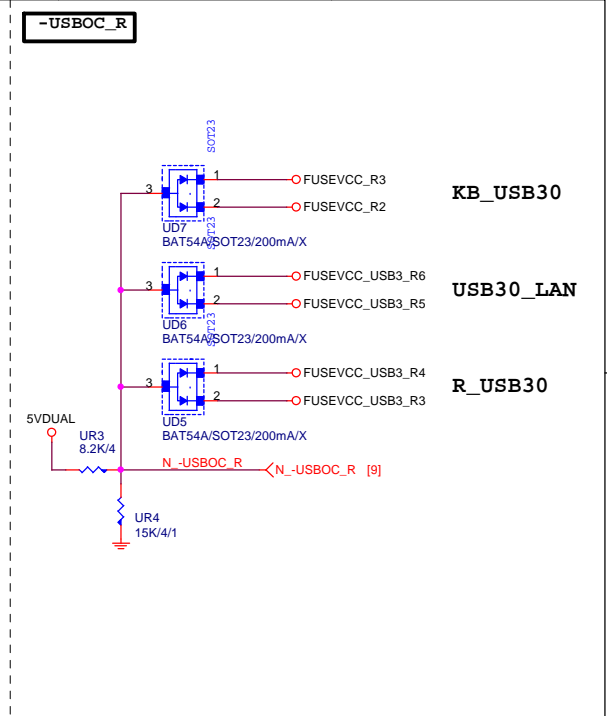
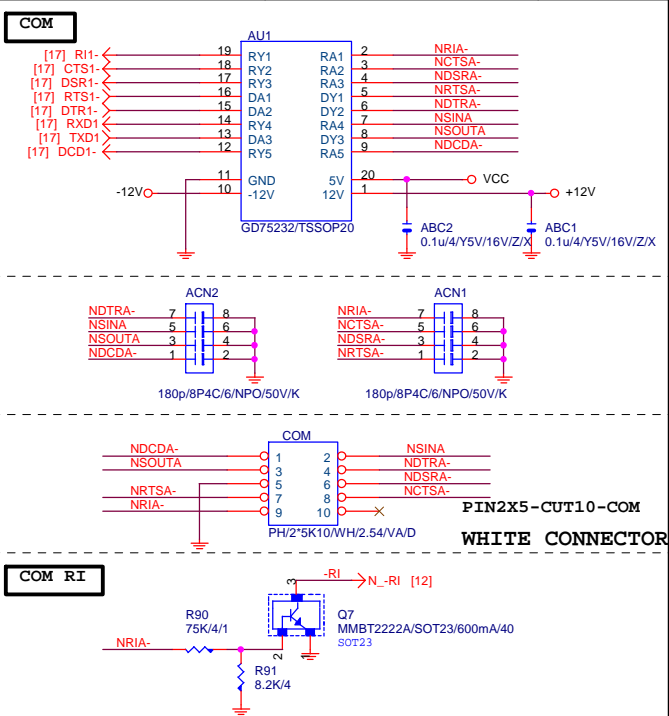


SIO CAP
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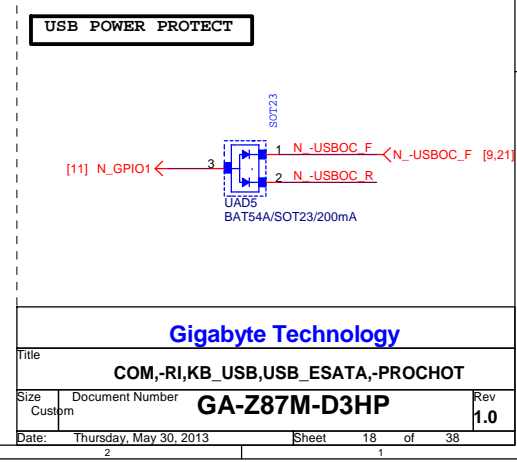


## Gigabyte Technology

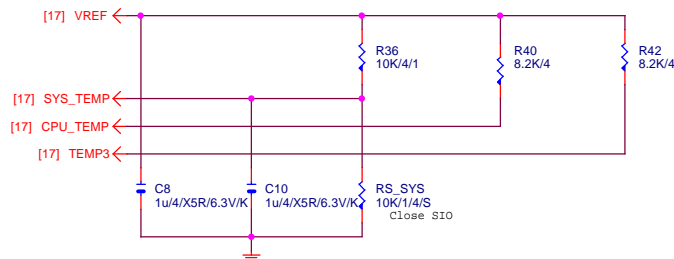
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ITE 8728 LPC IO			
Size	Document Number		Rev
Custom	GA-Z87M-D3HP		1.0
Date:	Thursday, May 30, 2013	Sheet	17 of 38



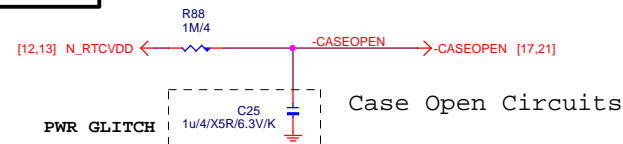
www.aitech1.ru



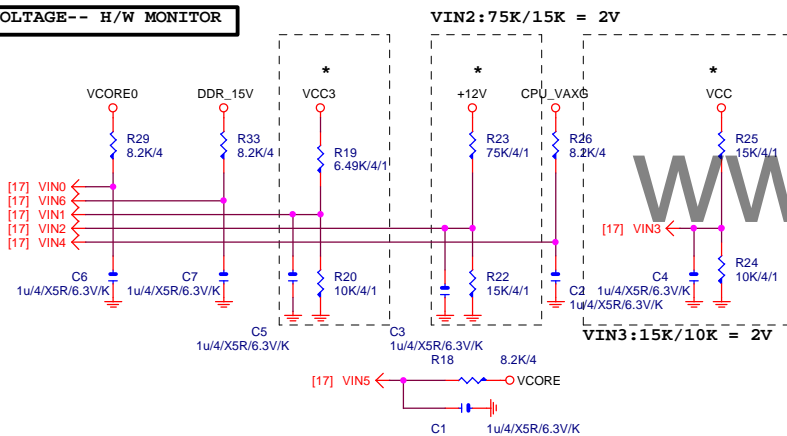
# TEMP H/W MONITOR



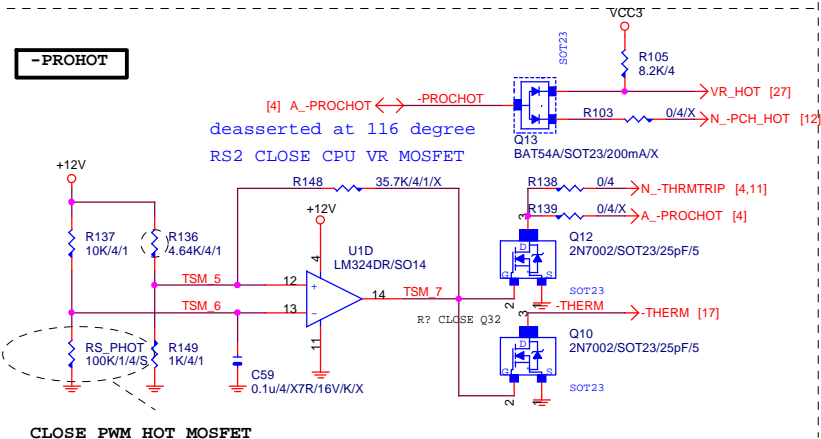
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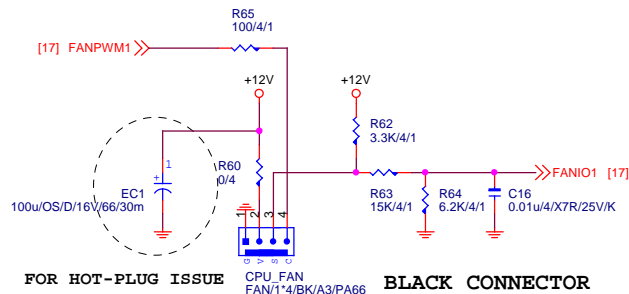
# VOLTAGE-- H/W MONITOR



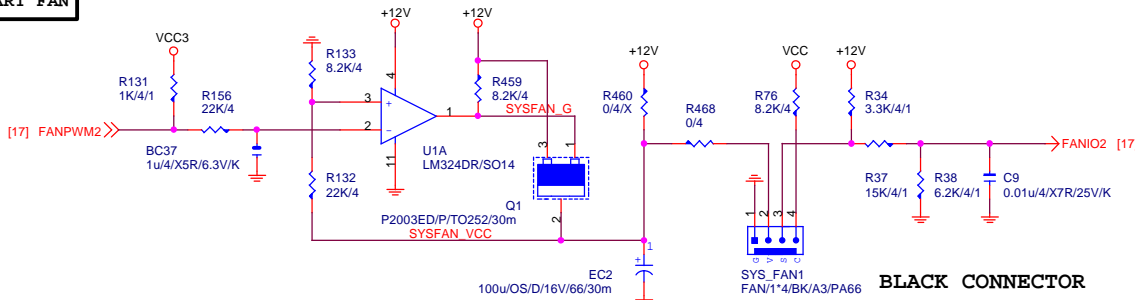
# -PROHOT



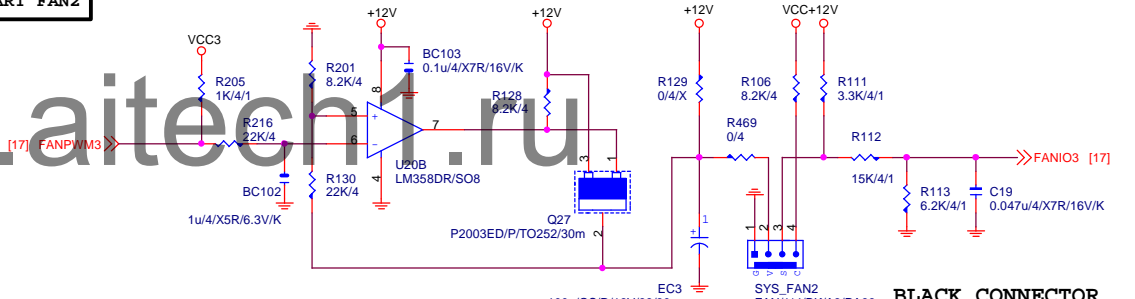
# CPU SMART FAN



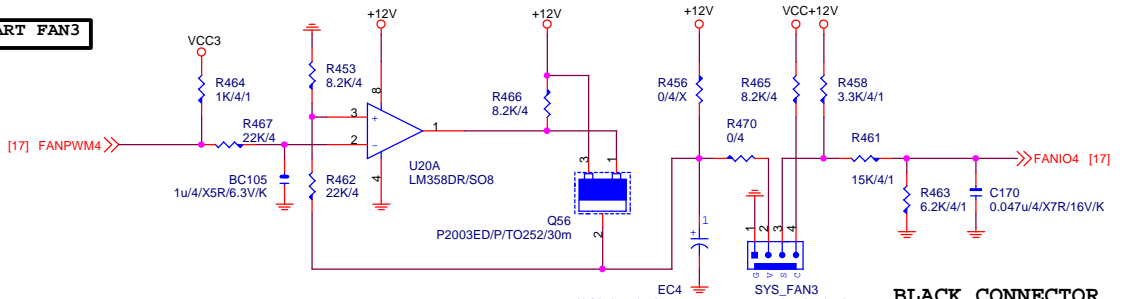
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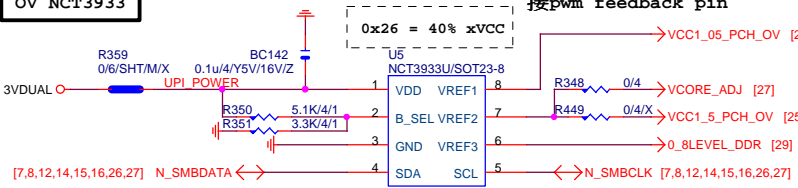
# SYS SMART FAN2



# SYS SMART FAN3



# OV NCT3933



**Gigabyte Technology**

Title: HWM,FAN CTRL,OV

Size: Custom

Document Number: GA-Z87M-D3HP

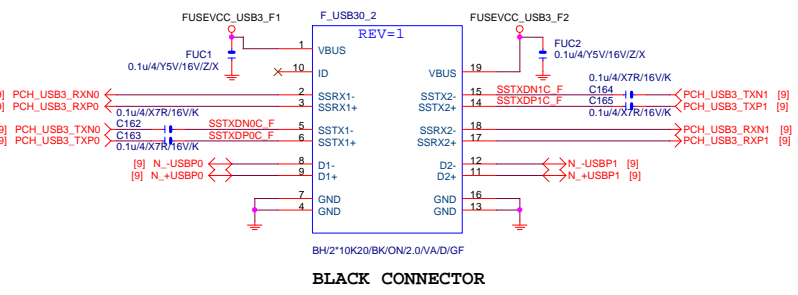
Date: Thursday, May 30, 2013

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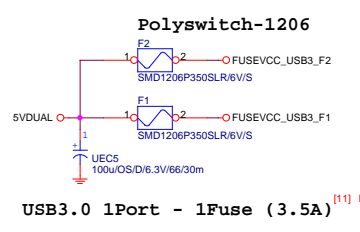
Rev: 1.0



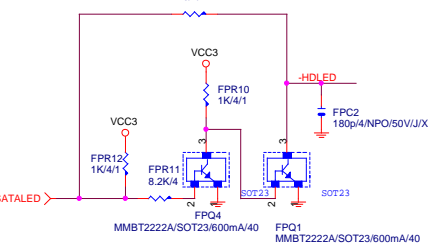
F\_USB30



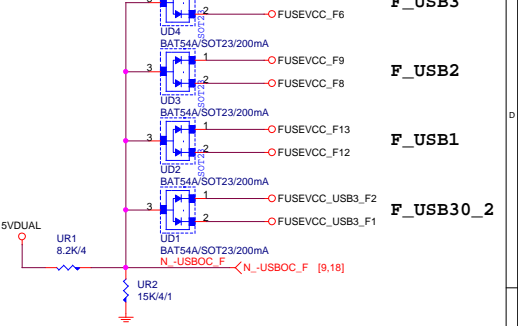
F\_USB30 PWR



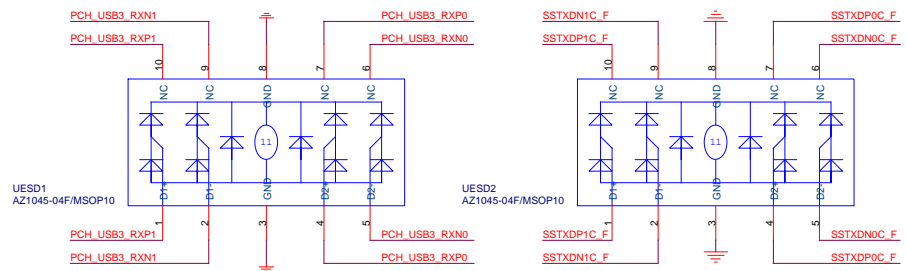
SATA LED



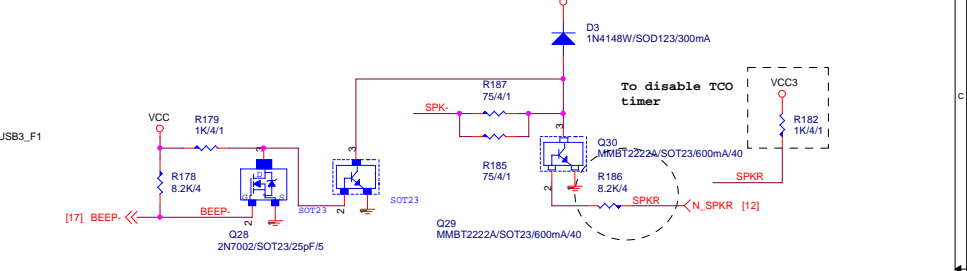
-USB0C\_F



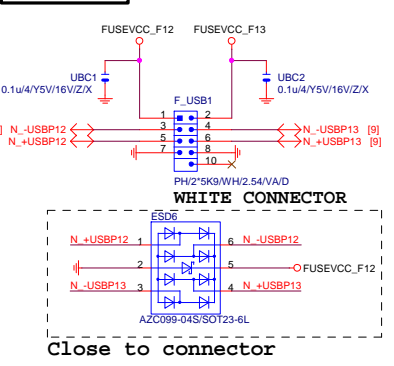
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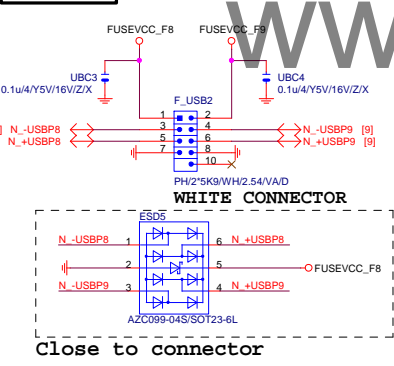
SPKR



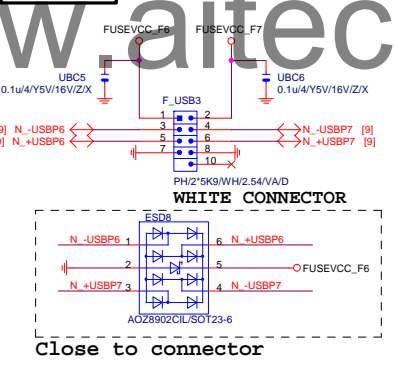
FRONT USB1



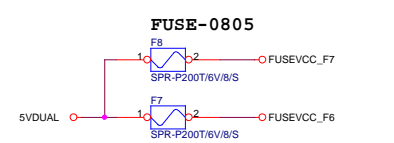
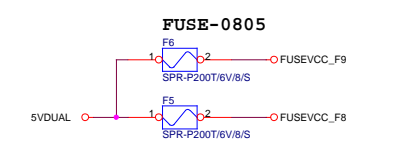
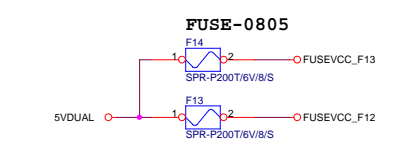
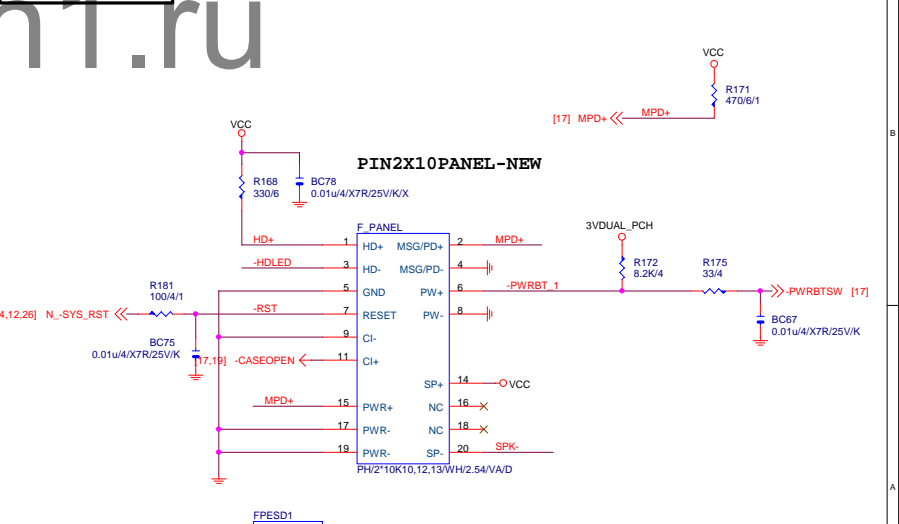
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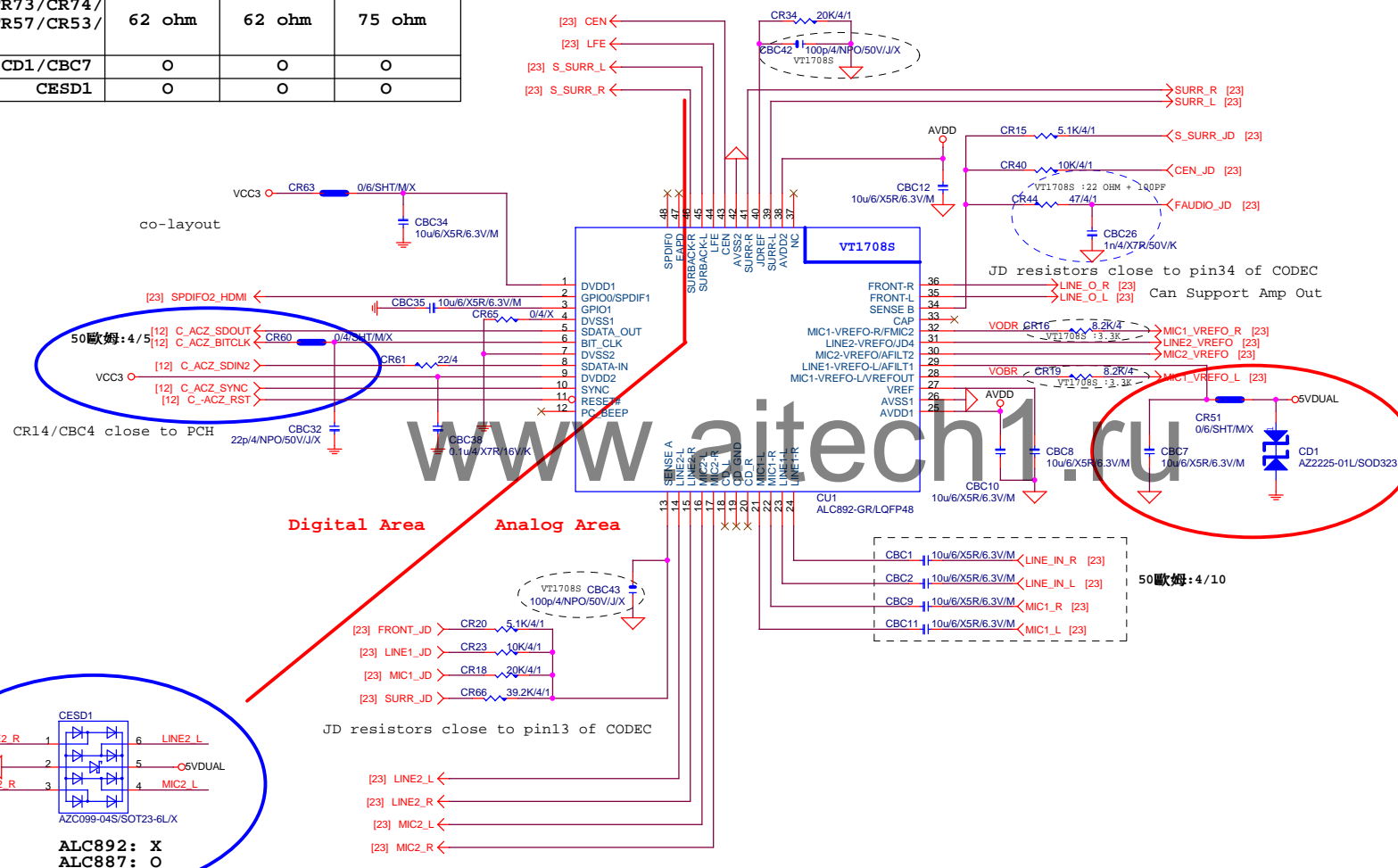
FRONT USB3



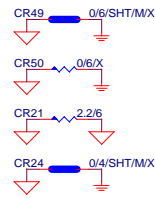
INTEL FRONT PANEL



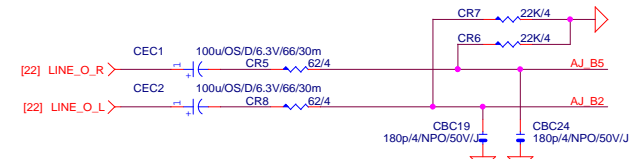
	ALC892	ALC887-VD2	VT1708S-CE
CR44/CBC26	47ohm+1nF	47ohm+1nF	22ohm+100P
CBC42/CBC43	X	X	100P/4
CR6/CR7/CR58/CR54/ CR67/CR68/CR69/CR70	22K/4	22K/4	10K/4/1
CR5/CR8/CR1/CR14/ CR17/CR22/CR73/CR74/ CR13/CR11/CR57/CR53/ CR75/CR76	62 ohm	62 ohm	75 ohm
CR51/CD1/CBC7	O	O	O
CESD1	O	O	O





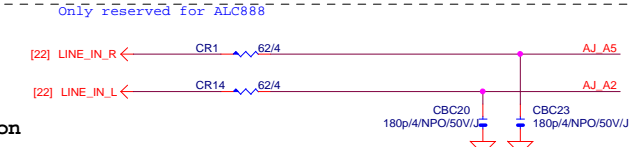


## LINE-OUT

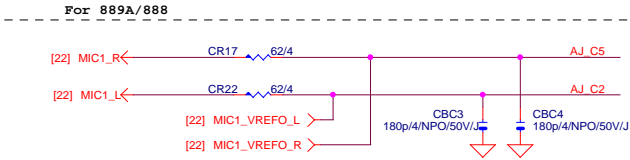


## LINE-IN

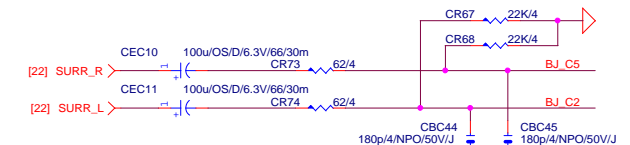
Verify MIC function  
in LINE-in



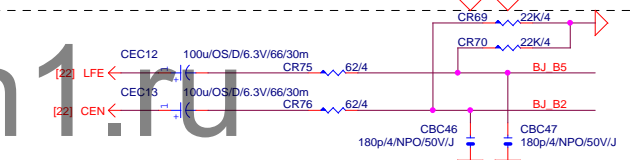
## MIC-IN



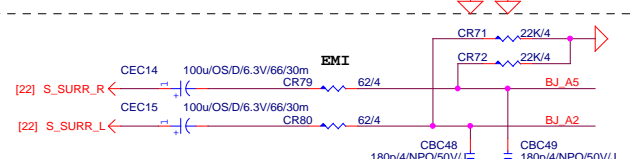
## SURROUND



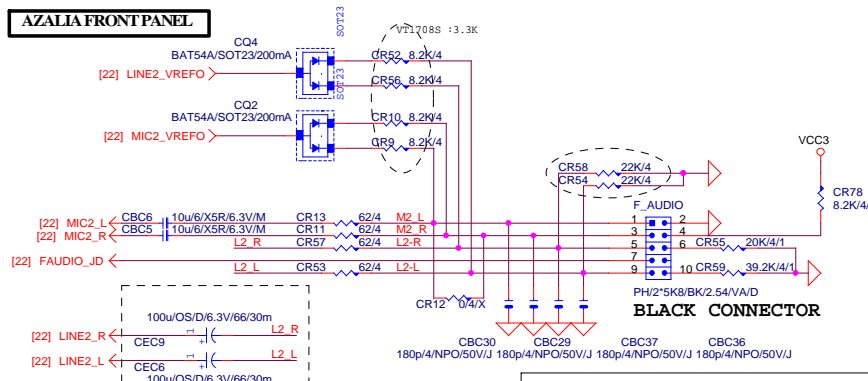
## CEN/LFE



## SURRBACK



## AZALIA FRONT PANEL



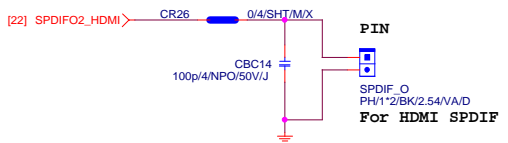
Gigabyte Technology

AUDIO JACK

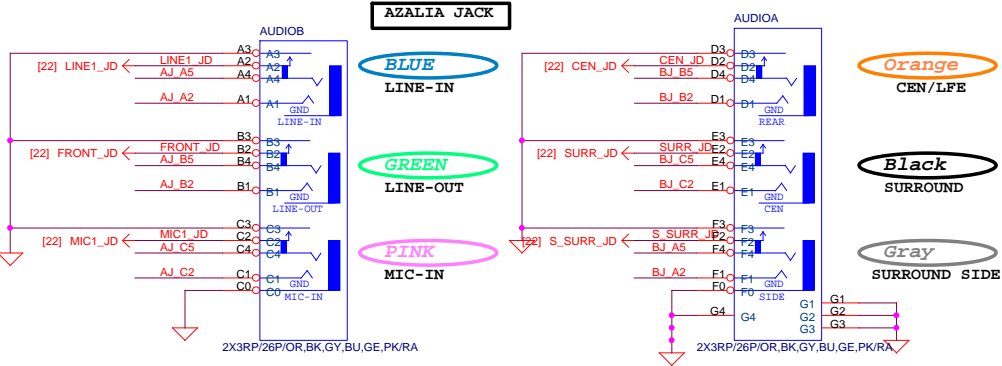
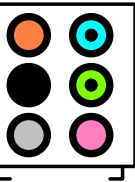
GA-Z87M-D3HP

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Size	Custom	1.0
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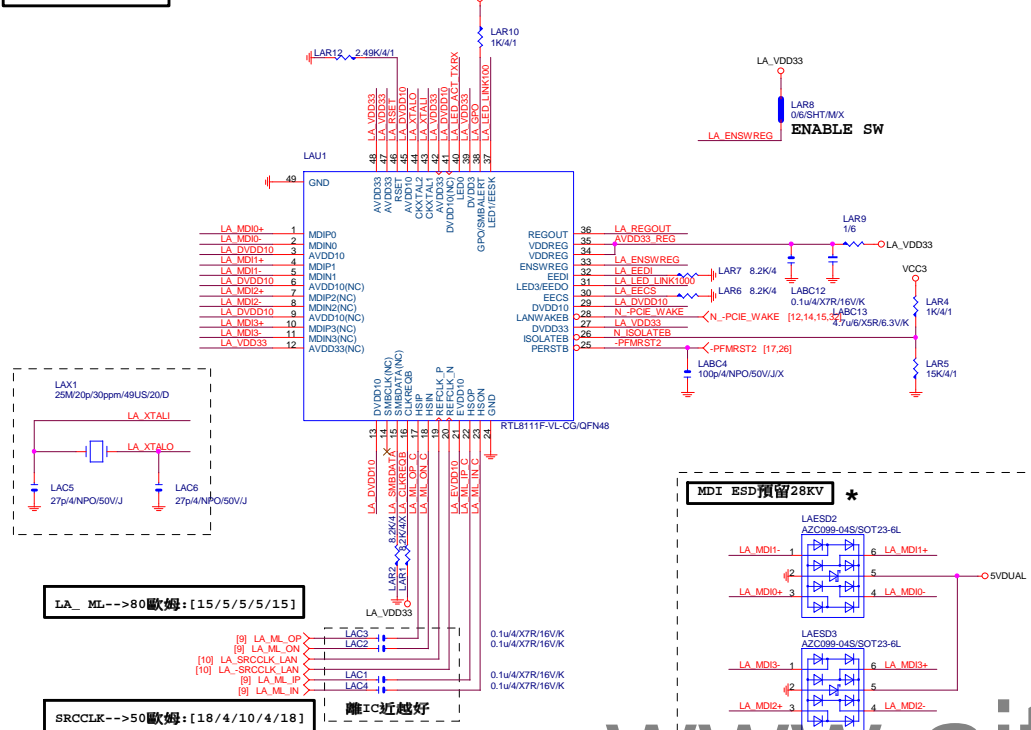
## SPDIF\_OUT



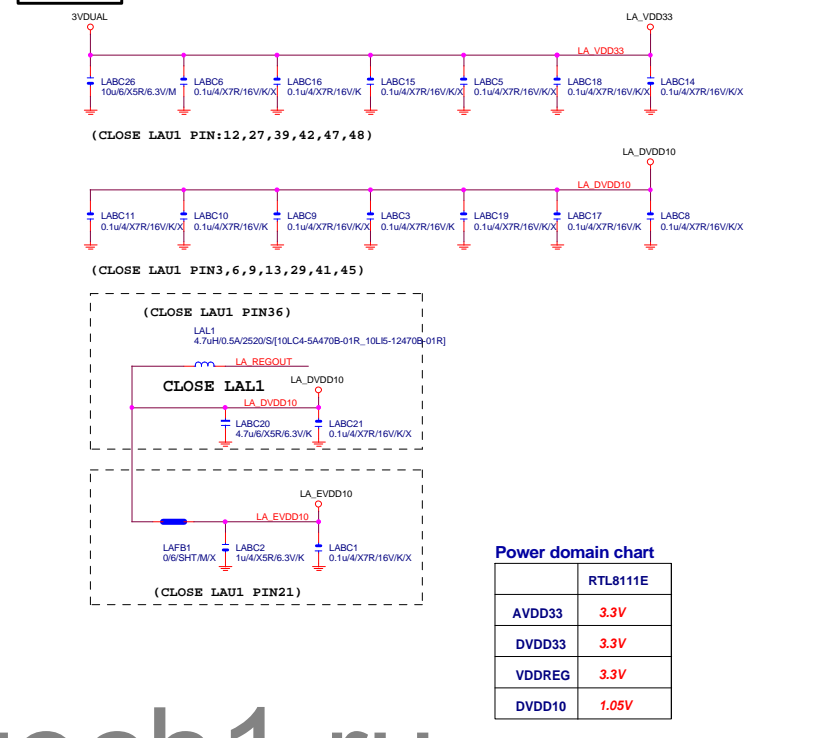
## AZALIA JACK



# LAN:RTL8111F/VB/VL



# LAN POWER

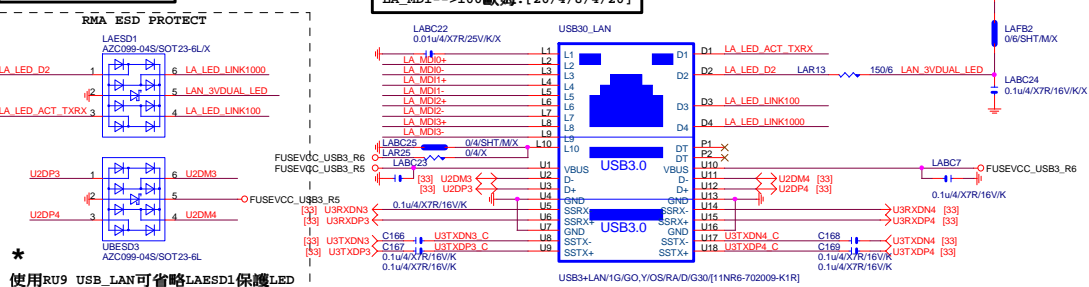


**Power domain chart**

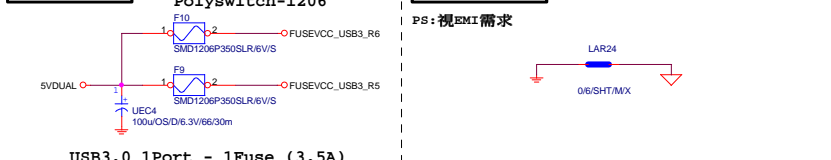
	RTL8111E
AVDD33	3.3V
DVDD33	3.3V
VDDREG	3.3V
DVDD10	1.05V

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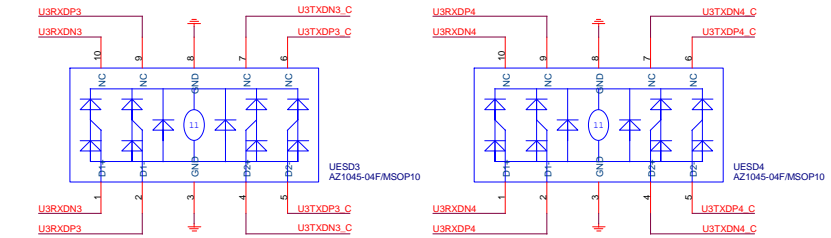
# USB LAN CONNECTOR



# USB X3 POWER

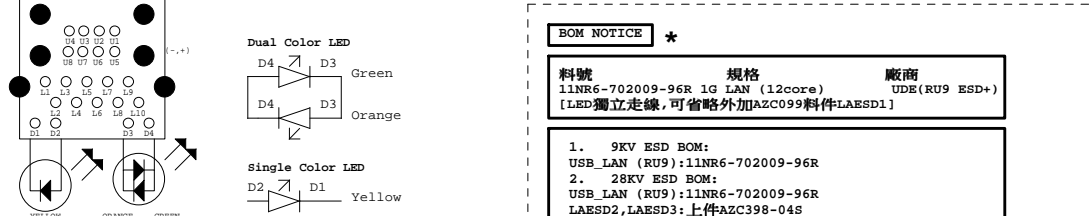


# USB3.0 1Port - 1Fuse (3.5A)



# 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		

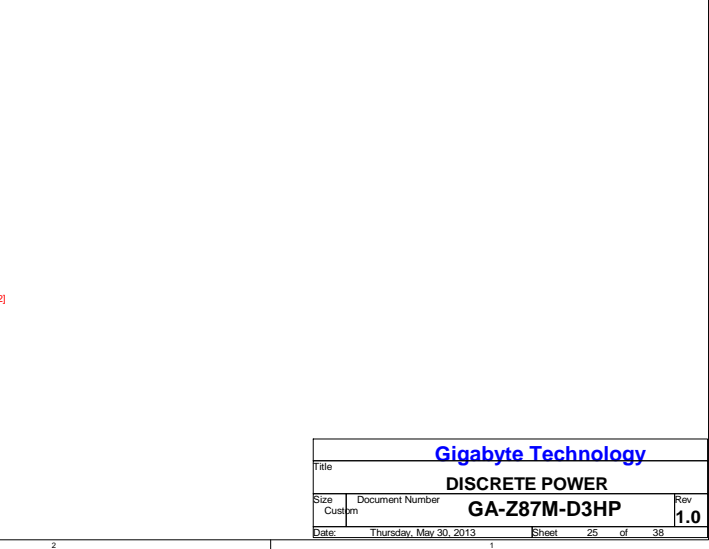
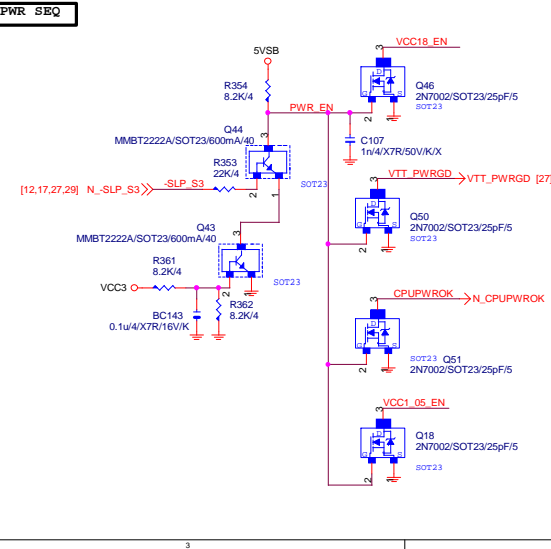
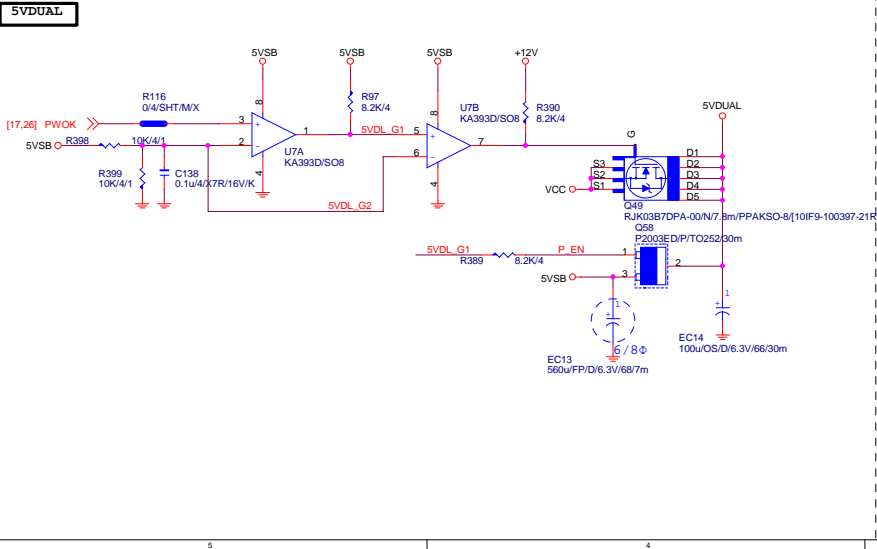
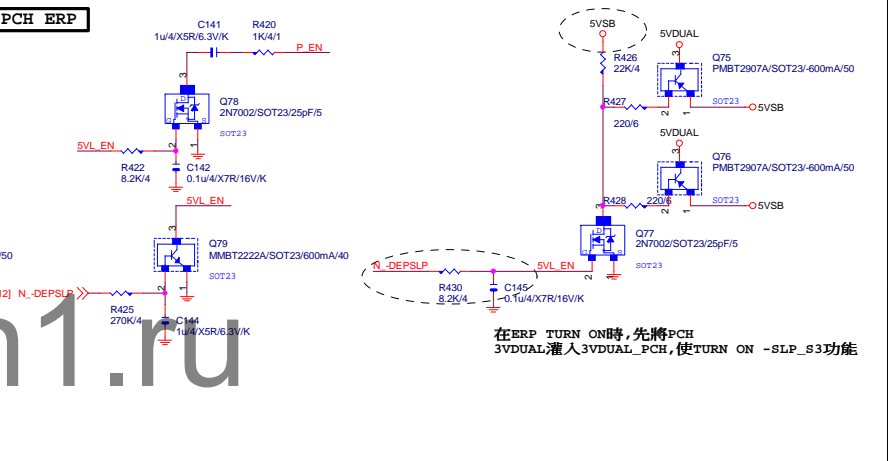
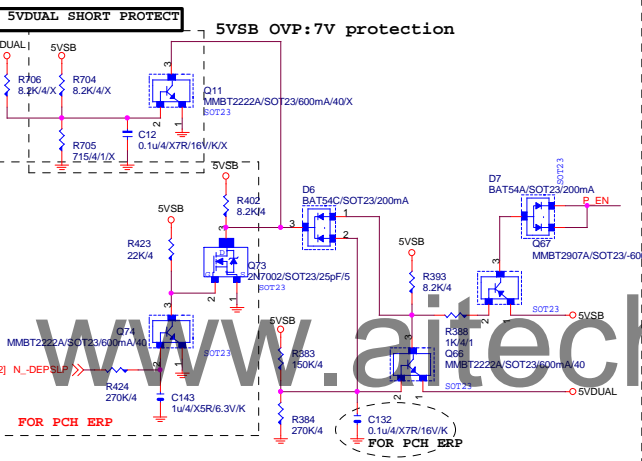
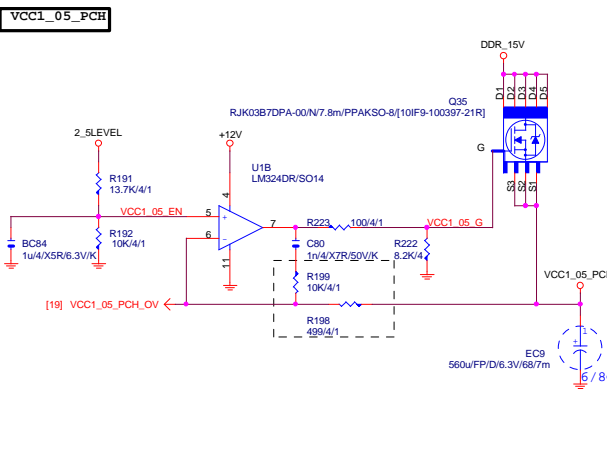
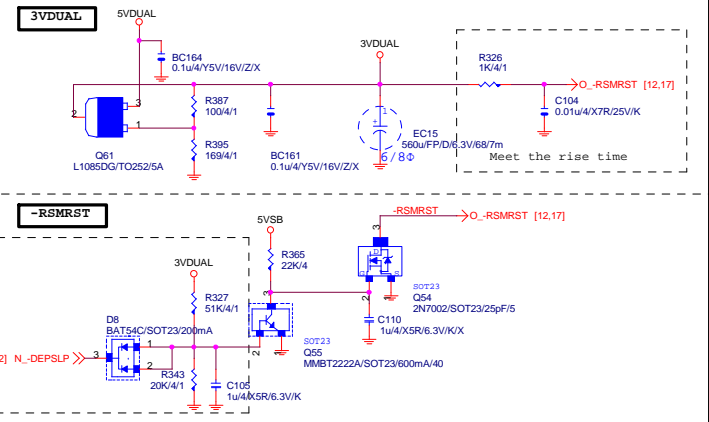
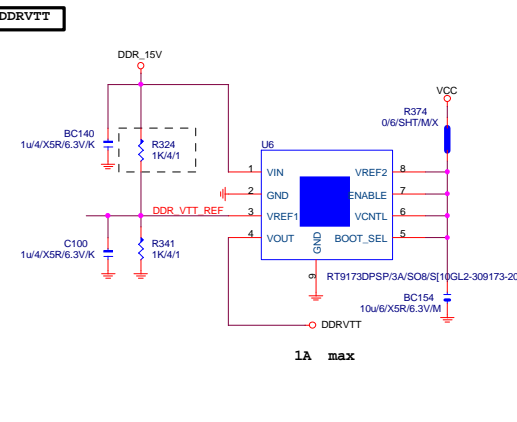
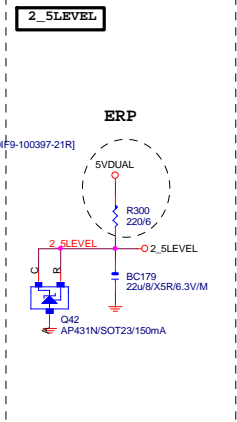
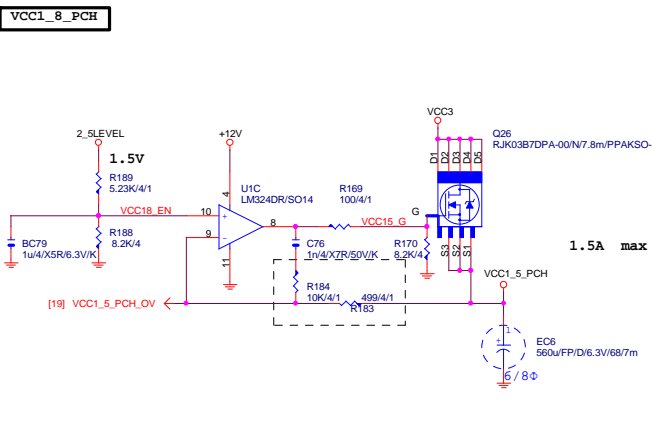
**Gigabyte Technology**

Realtek RTL8111G

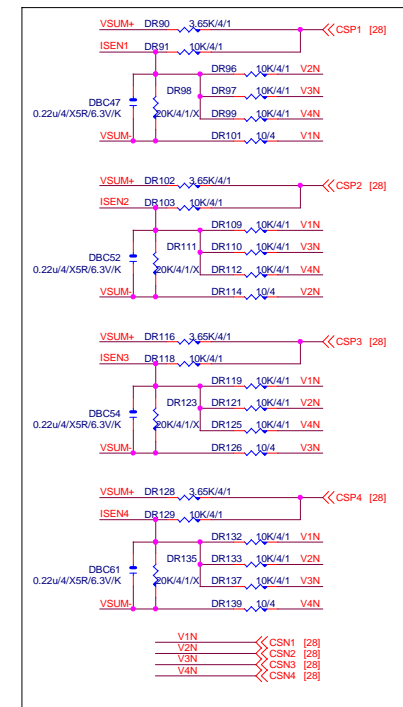
GA-Z87M-D3HP

Rev 1.0

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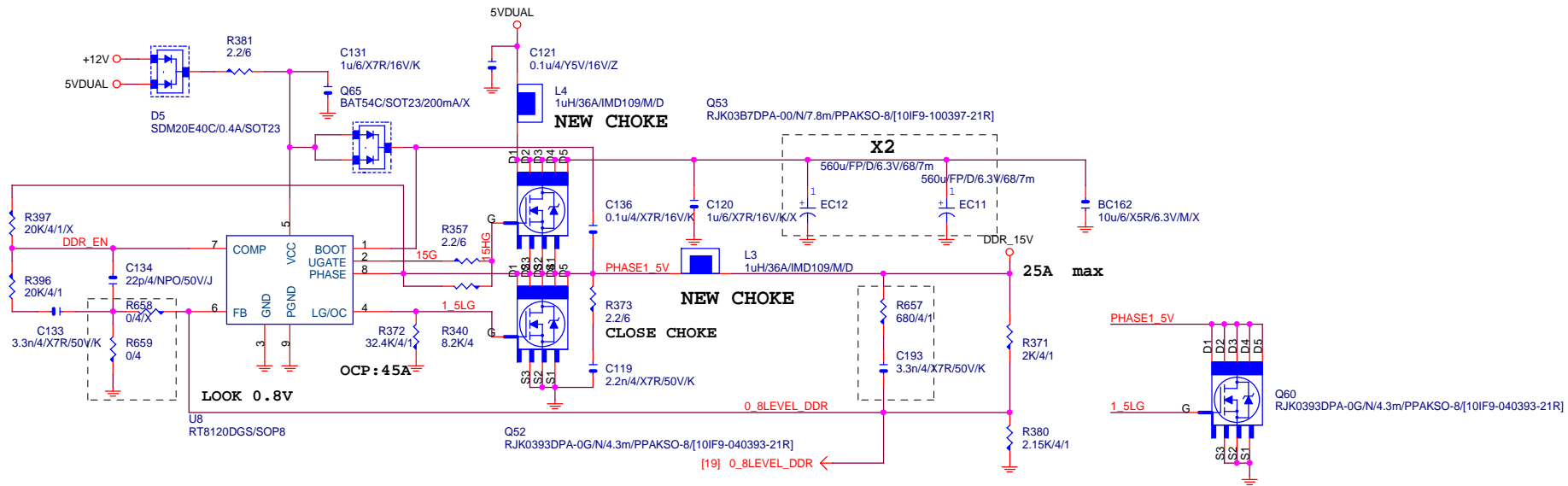




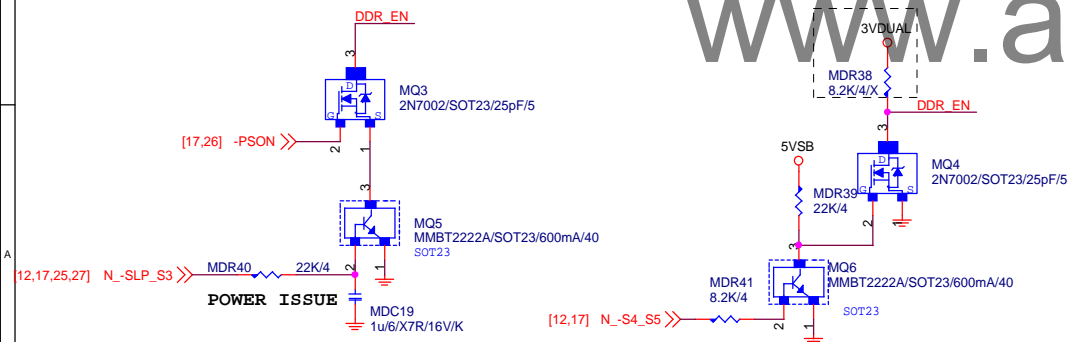
CLOSE PWM



# DDR1.5V



# PWR\_SEQ



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°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

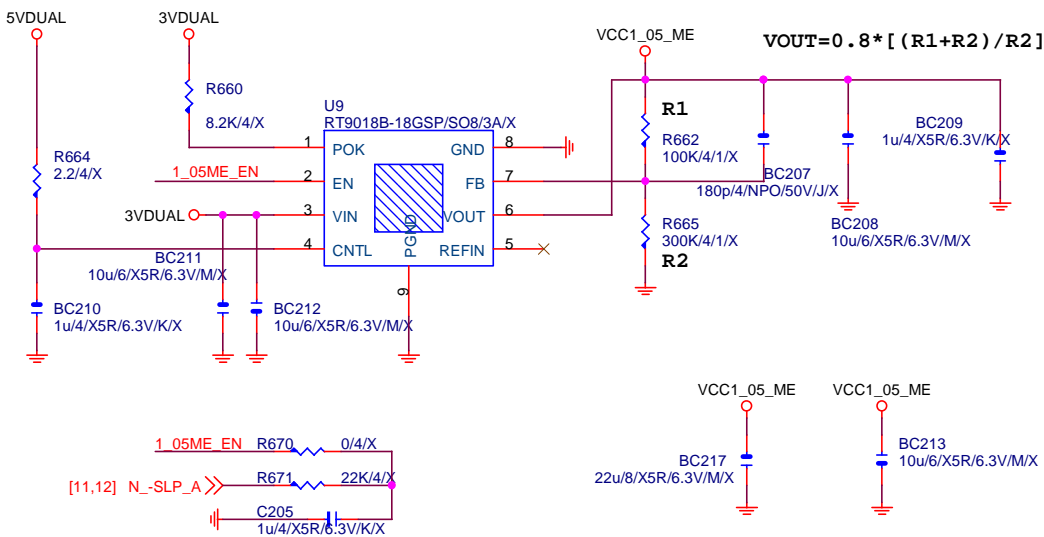
$Rocset = (I_{ocp} * L_{gate, rdson}) / I_{ocset}$   
 $Rocset = (45A * 6.7m\Omega) / 10uA = 30K$   
 $I_{ocset} = 10uA$

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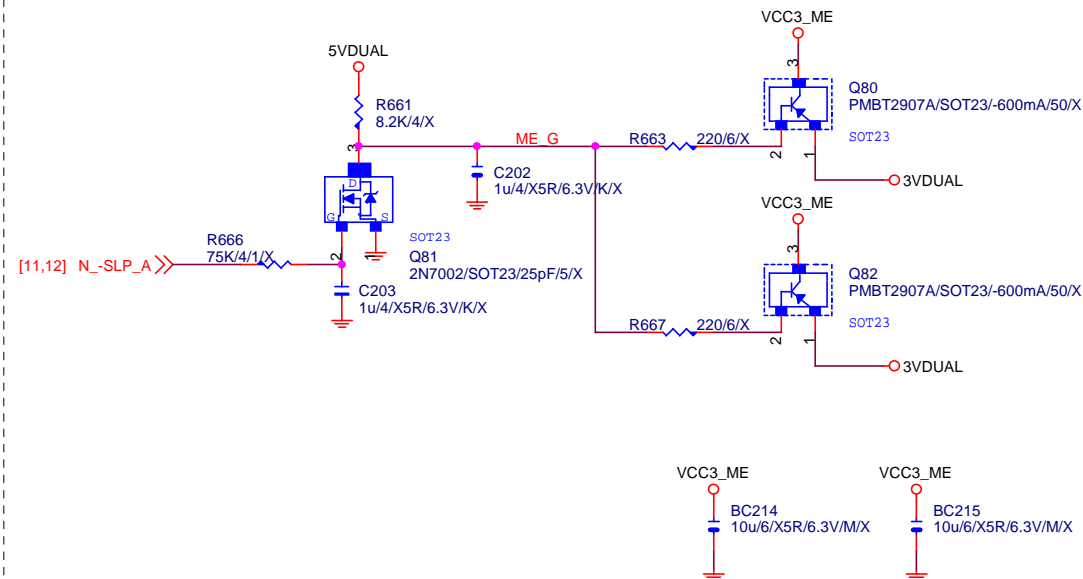
Title		
DDR POWER		
Size	Document Number	Rev
Custom	GA-Z87M-D3HP	1.0
Date: Thursday, May 30, 2013		Sheet 29 of 38



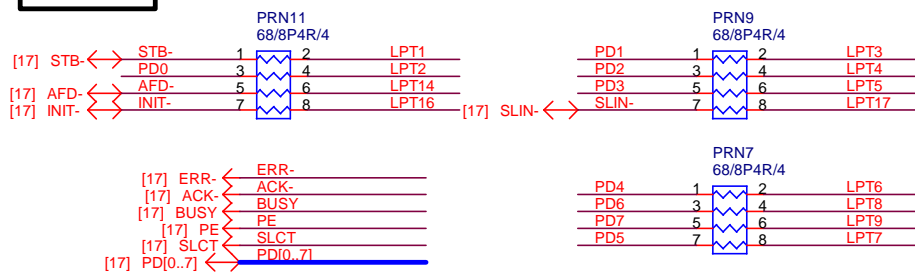
VCC1\_05\_ME



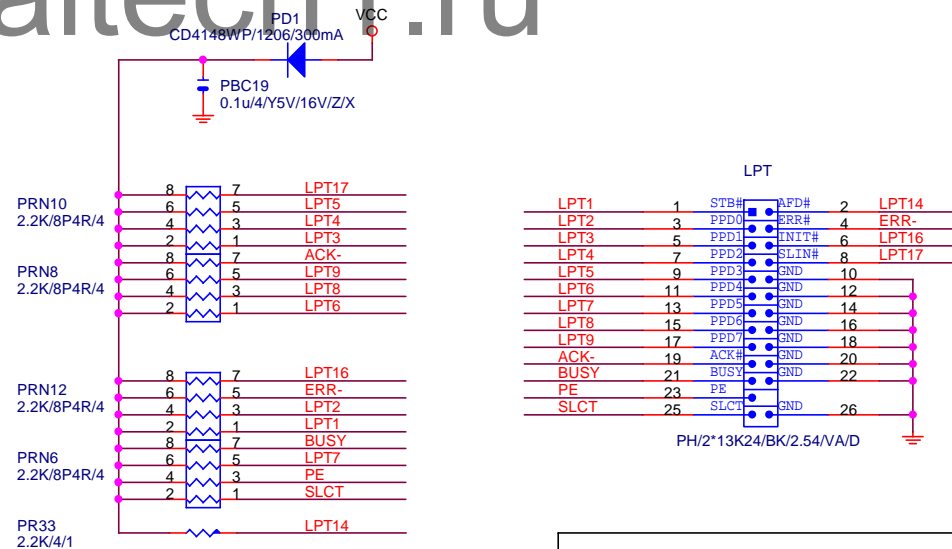
VCC3\_ME



LPT PORT



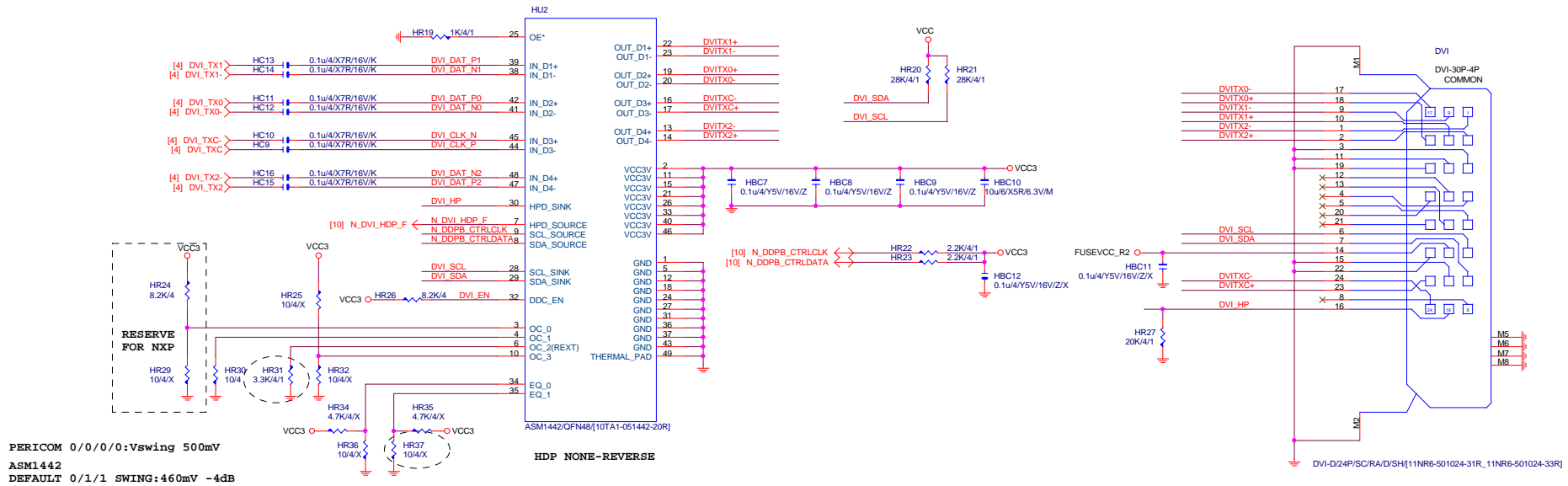
【技術通報R&D技術通報151】  
33ohm Change to 68ohm



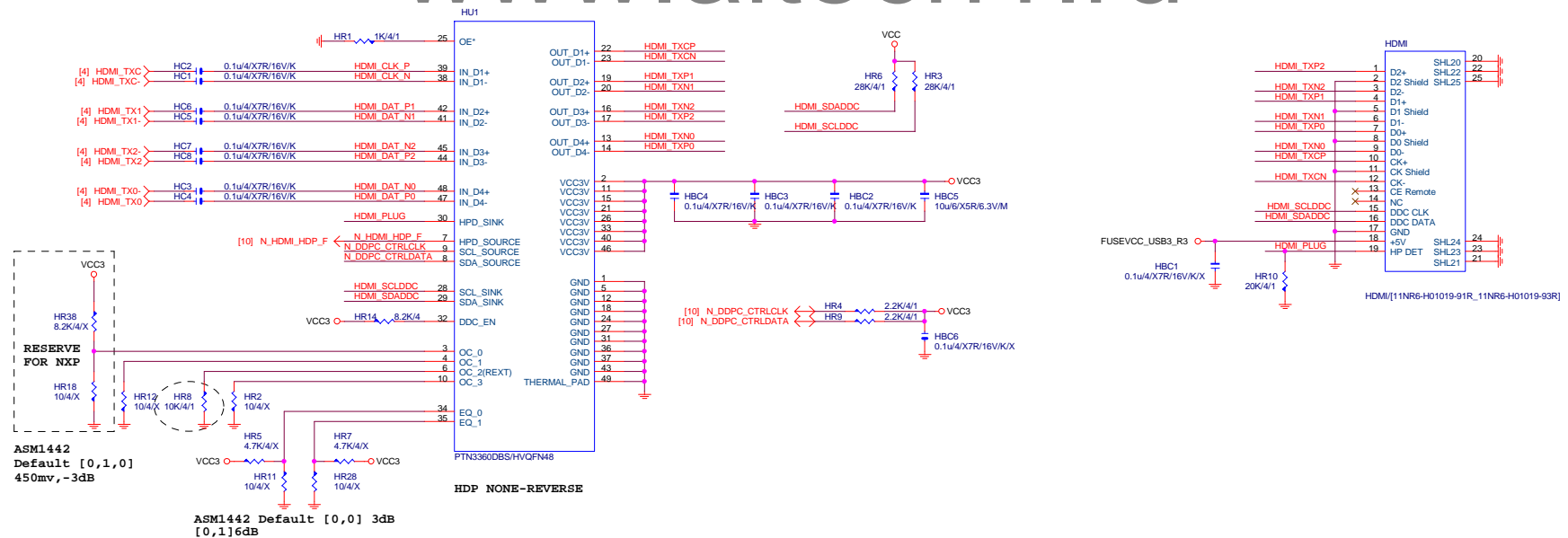
## Gigabyte Technology

Title			
LPT			
Size Custom	Document Number	GA-Z87M-D3HP	Rev 1.0
Date:	Thursday, May 30, 2013	Sheet 30 of 38	

# DVI LEVEL SHIFT



# HDMI LEVEL SHIFT

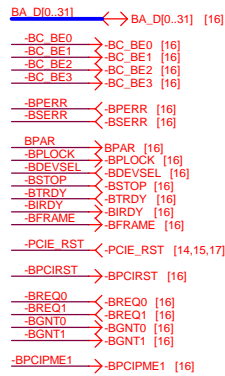


Gigabyte Technology

File			DVI
Size			Document Number
Custom			GA-Z87M-D3HP
Date			Thursday, May 30, 2013
Sheet			31 of 38
Rev			1.0

# PCIE TO PCI

PCI:5/4/5 Impedance=50 +- 15%

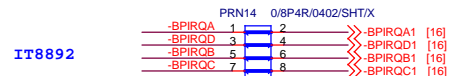
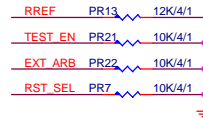
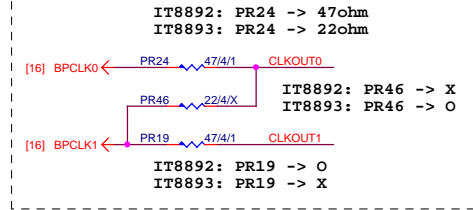


High: Enable PCI CLK 66MHz  
Low: Disable PCI CLK 66MHz

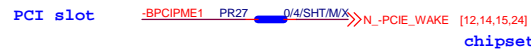


High: PCICLK INPUT form CLK Gen  
Low: PCICLK OUTPUT form IT8893 chip

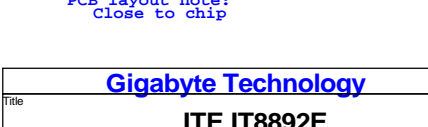
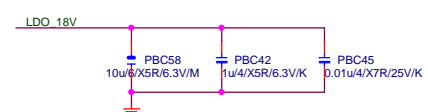
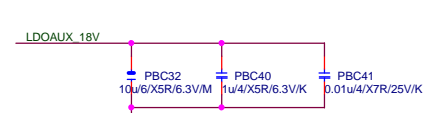
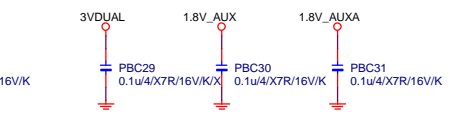
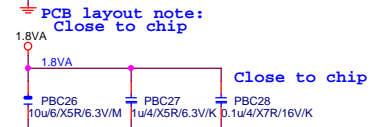
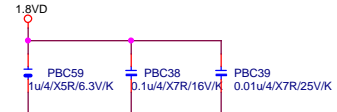
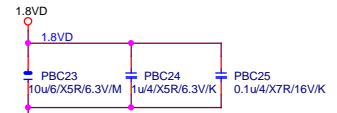
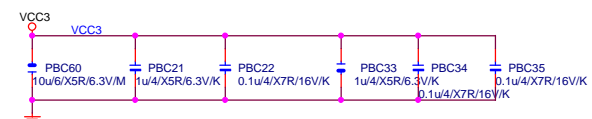
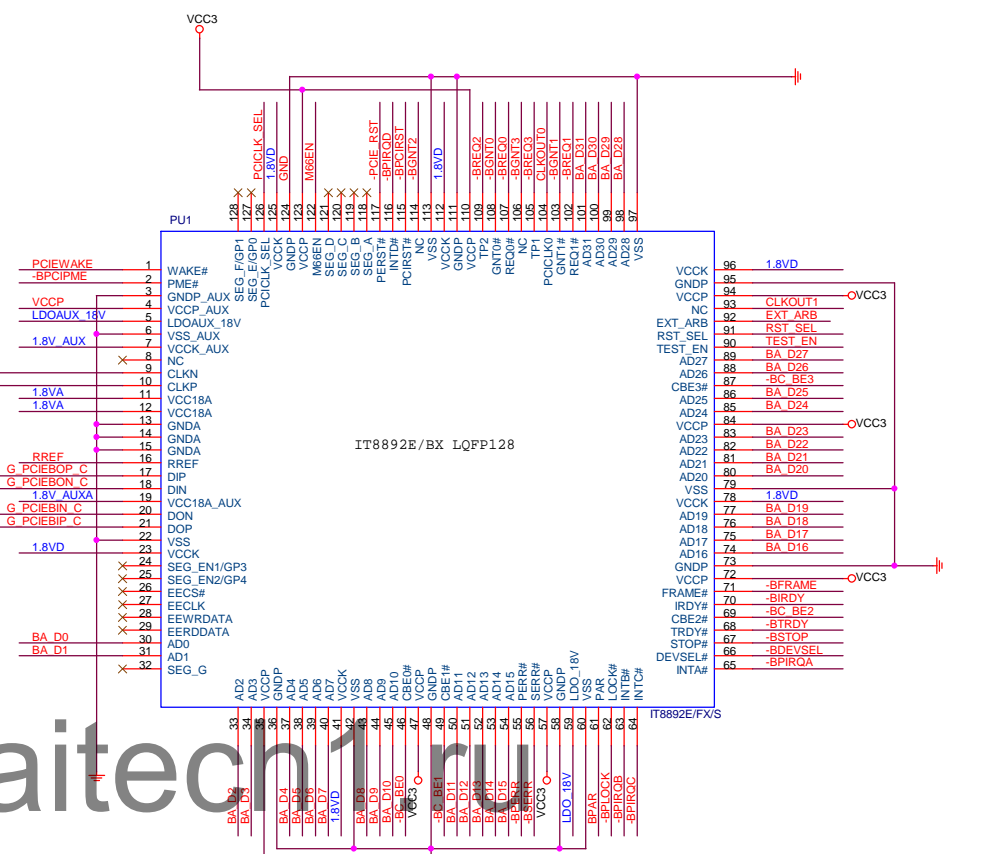
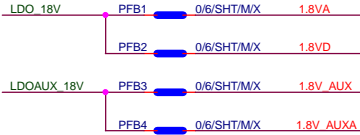
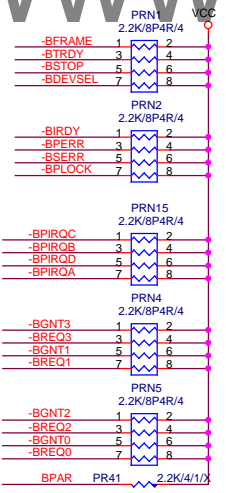
## Co-Lay IT8893 (IT8893 CLKOUT1 N/A)



PCI slot

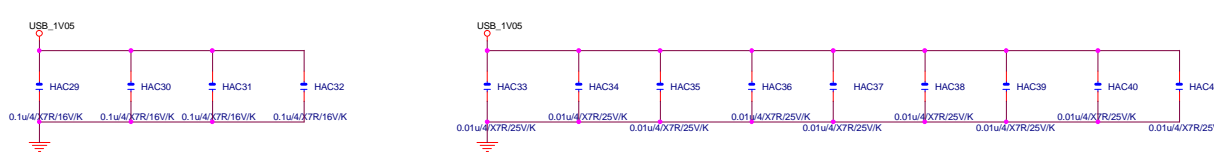
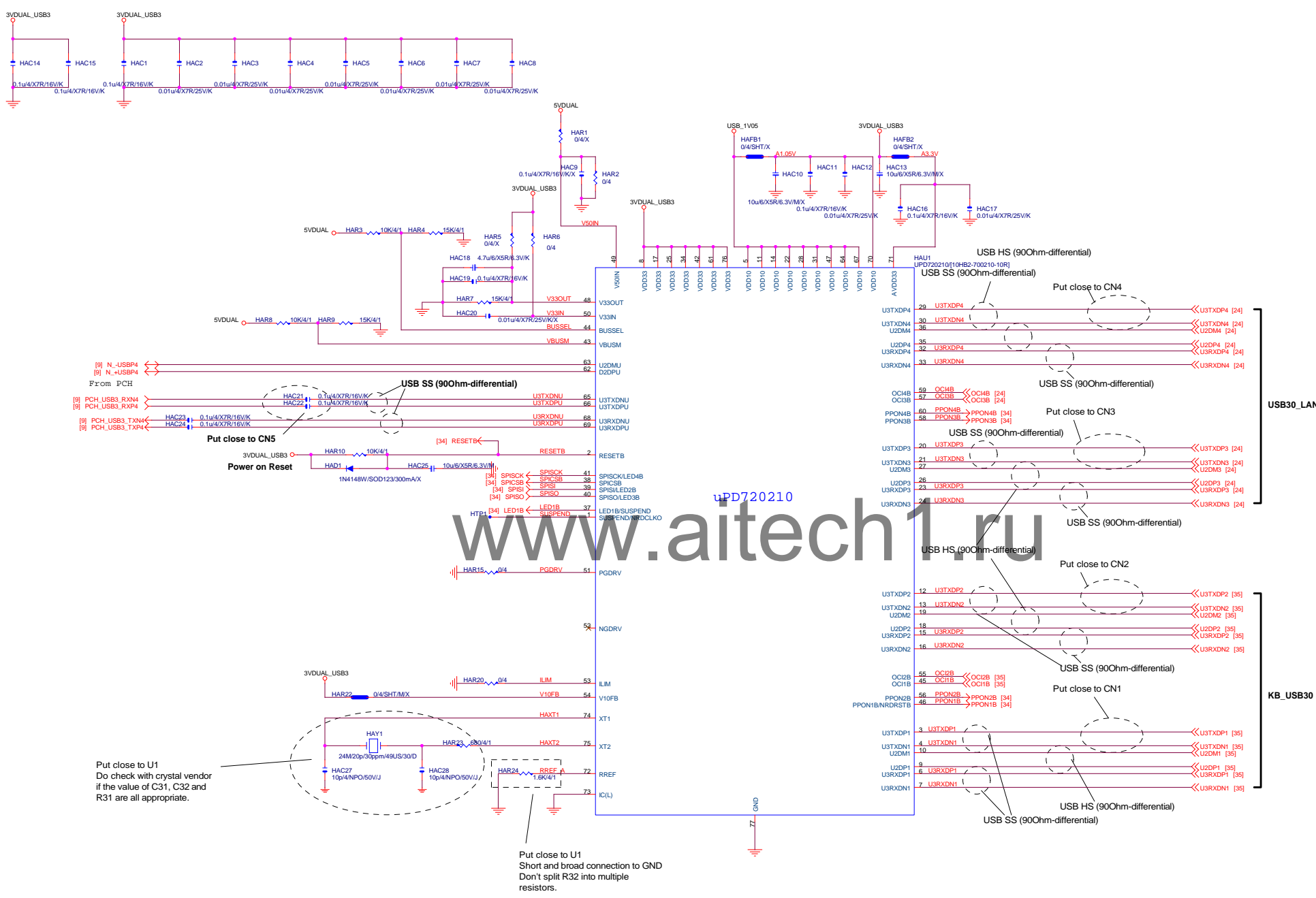


chipset side

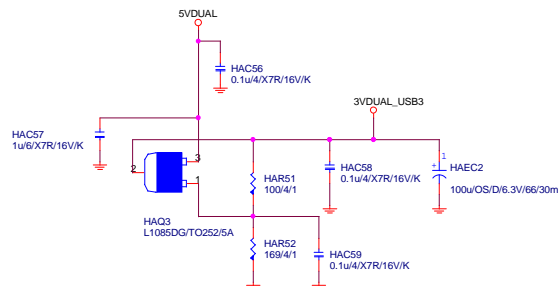


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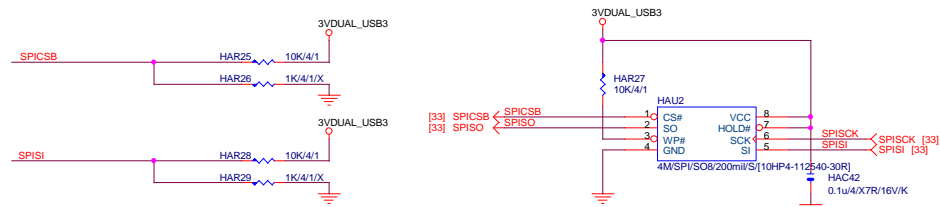
Gigabyte Technology			
Title			
ITE IT8892E			
GA-Z87M-D3HP			
Size	Document Number	Rev	1.0
Custom			
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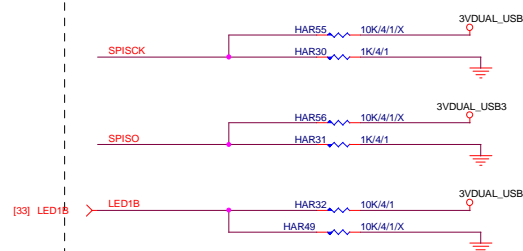
# 3VDUAL\_USB\_1



## # External SPI ROM ; SPI ROM attached mode

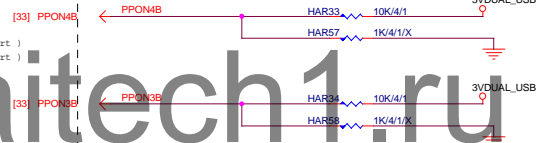


## # Battery Charging

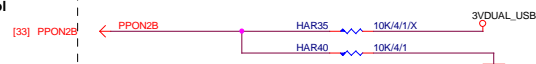


## # Number of Ports ; 4Ports mode

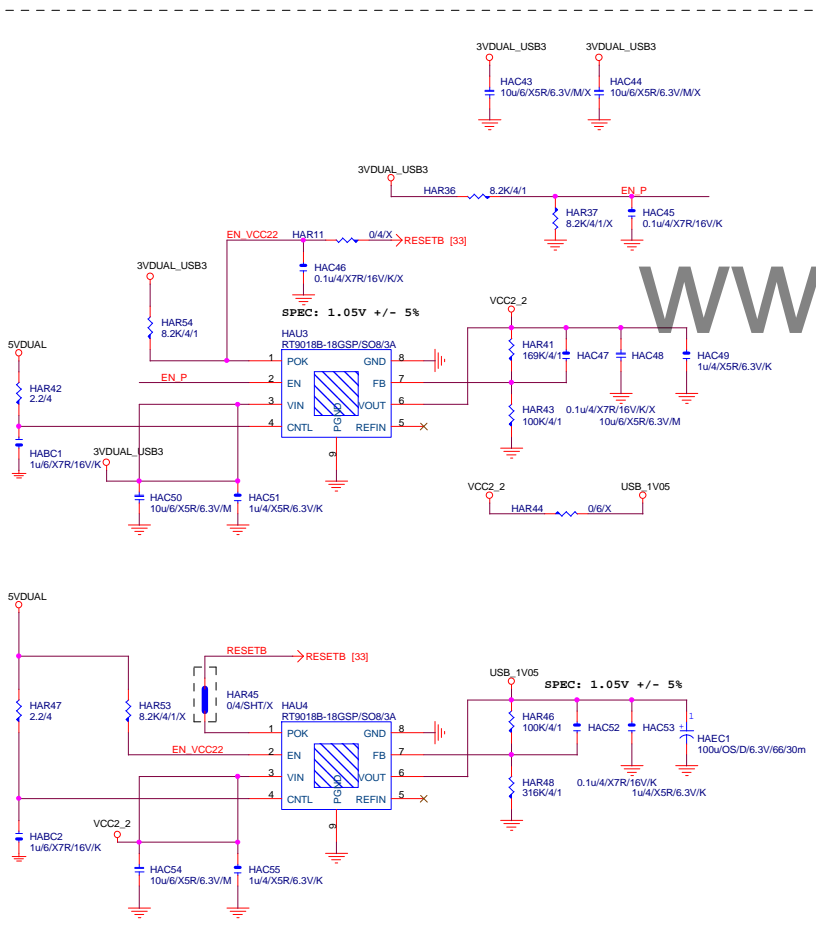
PPON3B / PPON4B : H / H ( 4 port )  
PPON3B / PPON4B : L / L ( 2 port )



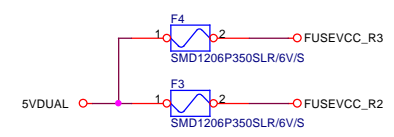
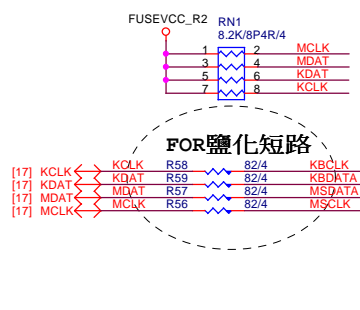
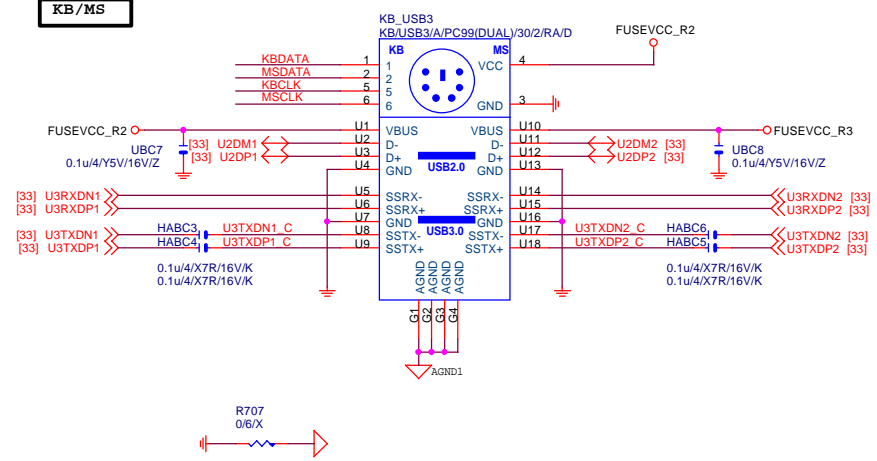
## #5 VBUS Power Control ; Individual mode



## # PPON1B Pin Function ; Port1 PPONB mode

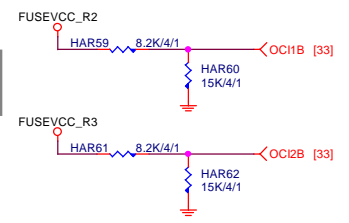
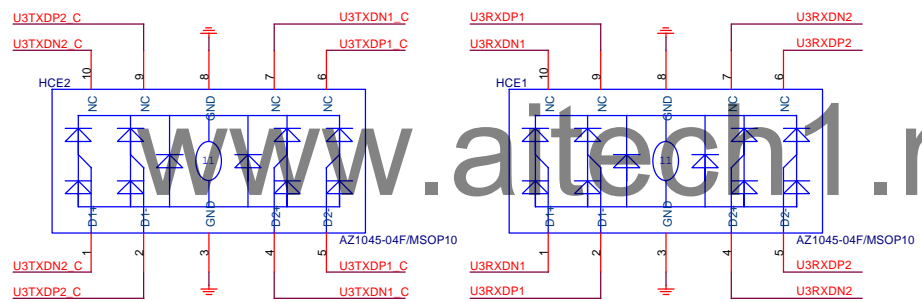
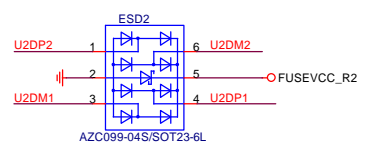


KB/MS

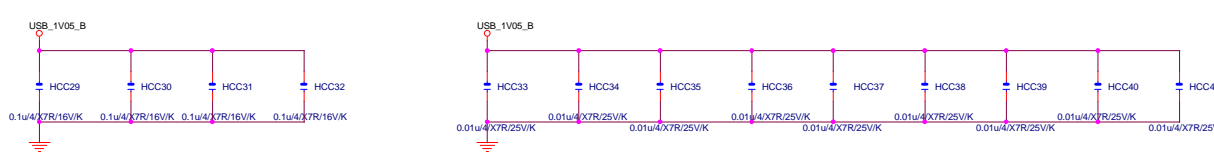
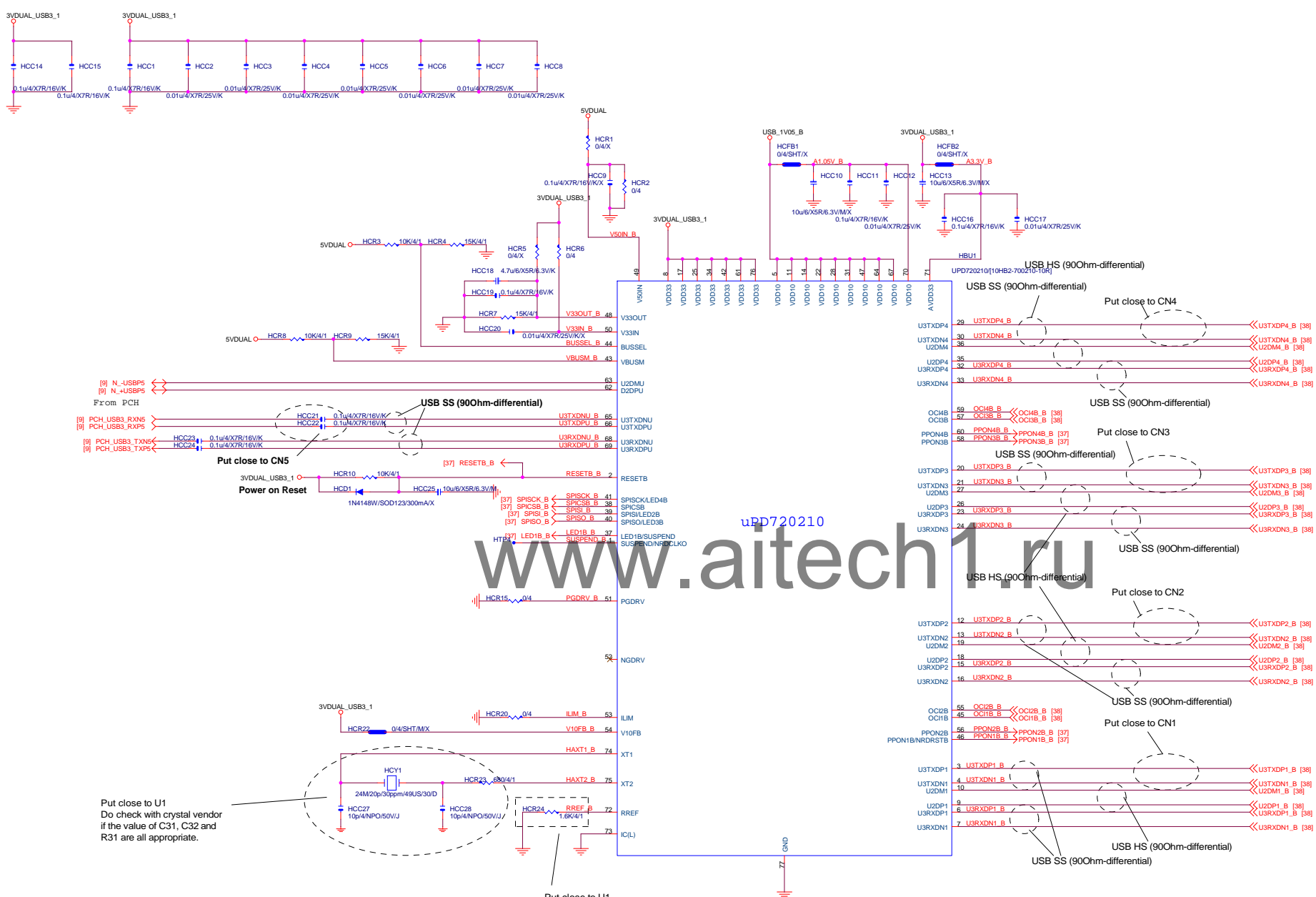


Close to connector  
USB3.0 1Port - 1Fuse (3.5A)  
Polyswitch-1206

USB2.0 ESD

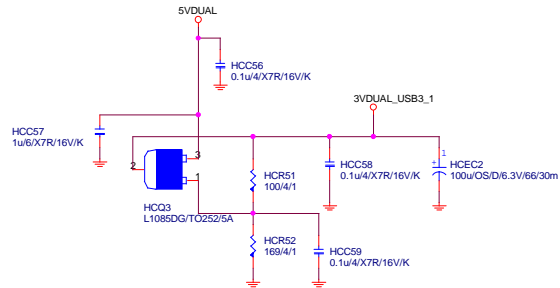


Gigabyte Technology			
Title			
D720210			
Size	Document Number	GA-Z87M-D3HP	
Custom		Rev 1.0	
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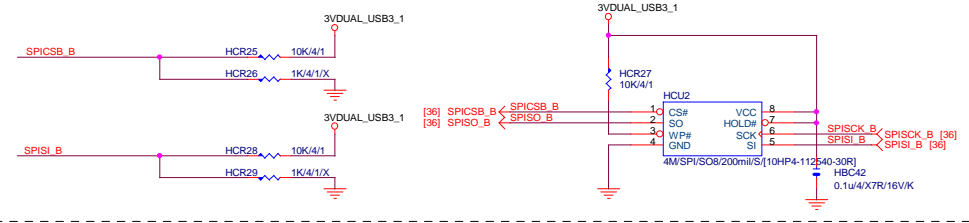




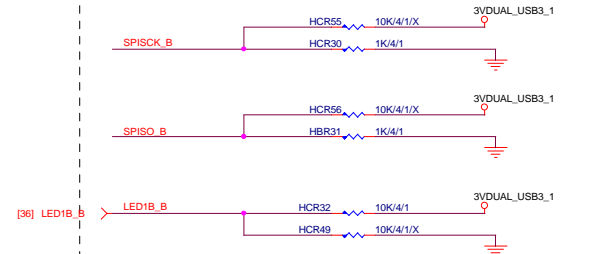
### 3VDUAL\_USB\_2



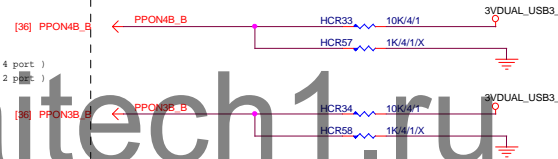
### # External SPI ROM ; SPI ROM attached mode



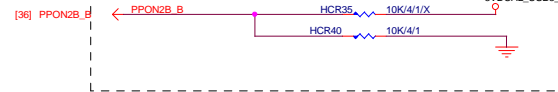
### # Battery Charging



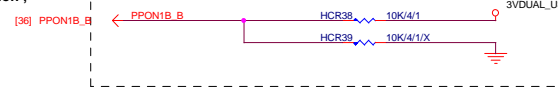
### # Number of Ports ; 4Ports mode



### #5 VBUS Power Control ; Individual mode



### # PPON1B Pin Function ; Port1 PPONB mode



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