Model Name: GA-Z87M-HD3

Revision 1.0

SHEET	TITLE
01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1150-A
05	CPU_LGA1150-B
06	CPU_LGA1150-C
07	DDR III CHANNEL A
08	DDR III CHANNEL B
09	PCH_FDI,DMI,USB,PCIE,NVRAM
10	PCH_DP,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
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15	PCI EXPRESS X1 *2 SLOT
16	PCI SLOT
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 ALC887-VD2
23	REAR AUDIO JACK
24	REALTEK RTL8111F
25	DISCRETE POWER
26	ATX , CLOCK GEN
27	VCORE ISL95820_1

SHEET	TITLE
28	VCORE ISL95820_2
29	RT8120_DDR POWER
30	LPT, M3 POWER
31	DVI, HDMI
32	IT8892E

Gigabyte Technology

Title: Cover Sheet

Size: Custom | Document Number: GA-Z87M-HD3 | Rev: 1.0

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Model Name: GA-Z87M-HD3

Revision 1.0

Component value change history

2013/03/28

Data	Change Item	Reason
2013/01/08	Modify to R0.2	
	PCIEX1_2 CLK Change Port	
2013/01/14	ADD Disable SVID [SVID_CTRL]	
	ADD Disable ME [DS_ME]	
	ADD -PCIE_RST Patch	
2013/03/13	Modify to R1.0	
	Modify F_PANEL MPD+ (Super I/O GP65)	
	ADD SYS_FAN 防燒	
	ADD N_-THRMTRIP / A_-PROCHOT Protection Option	
	ADD 5VSB OVP Protection	
	ADD +12V Dummy Control	
	Reserve N_PCH_DPWROK Control	

Circuit or PCB layout change

DATE	Change Item	Reason

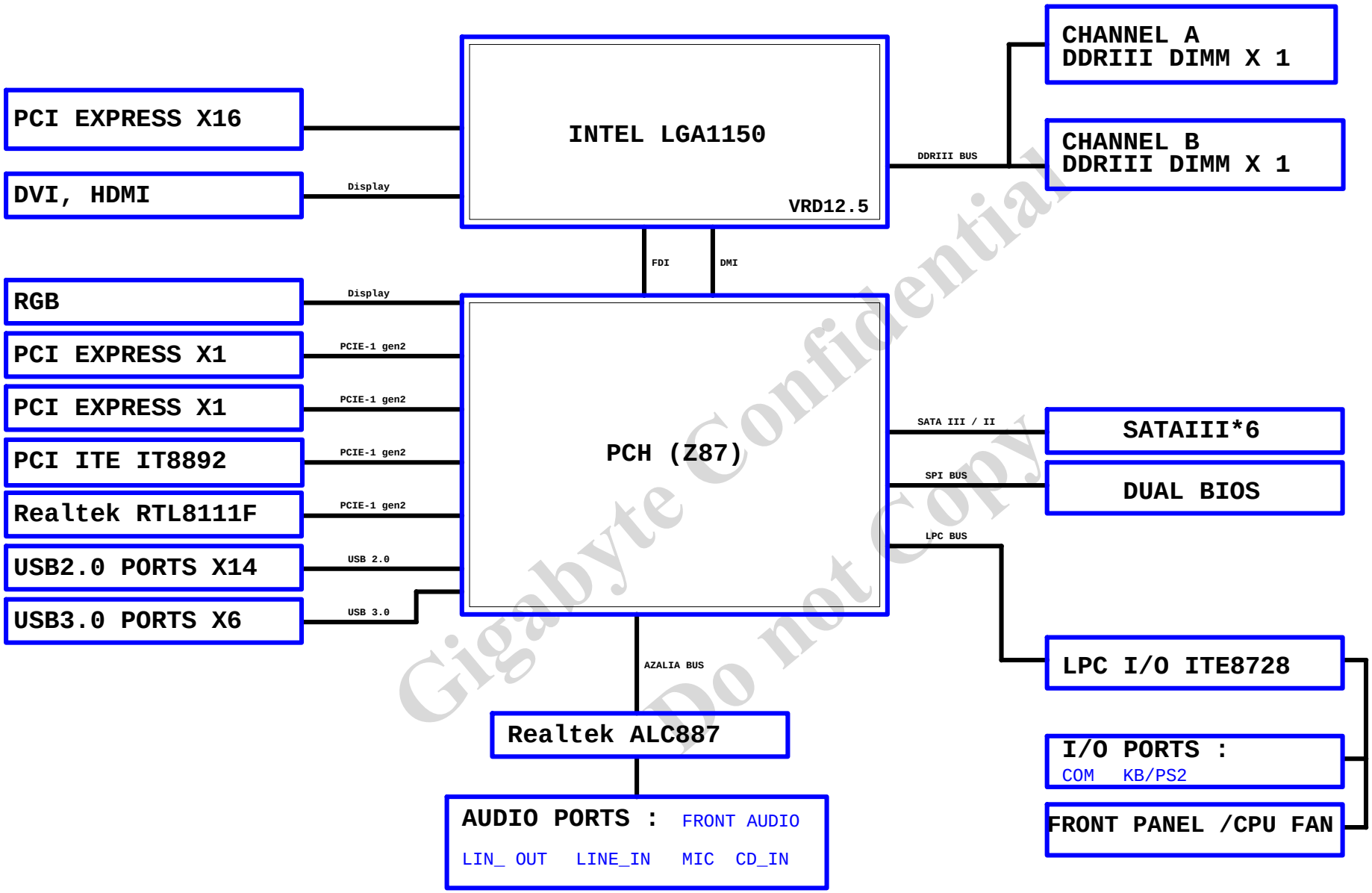
Gigabyte Technology

Title: BOM & PCB MODIFY HISTORY

Size: Custom | Document Number: GA-Z87M-HD3 | Rev: 1.0

Date: Friday, March 29, 2013 | Sheet 2 of 32

BLOCK DIAGRAM



Gigabyte Technology		
Title: BLOCK DIAGRAM		
Size: C	Document Number: GA-Z87M-HD3	Rev: 1.0
Date: Friday, March 29, 2013	Sheet 3 of 32	

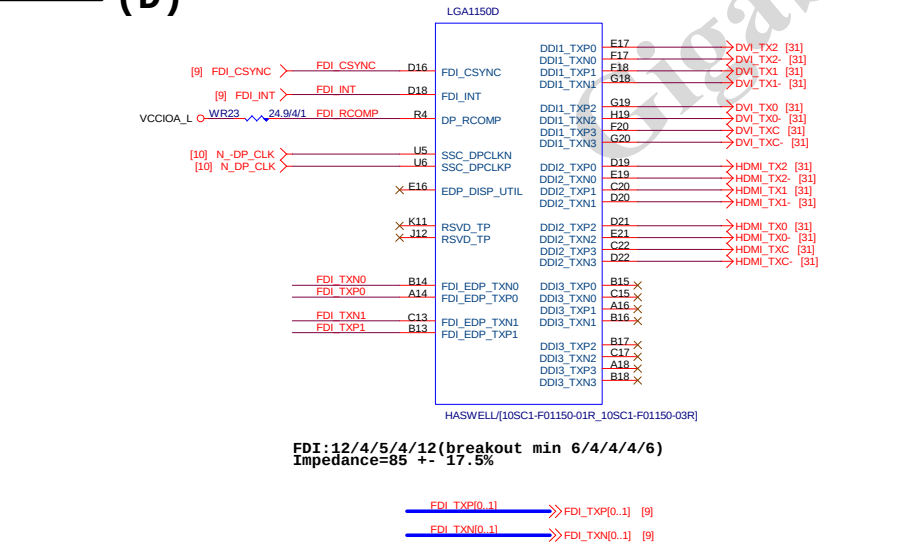
LGA1150 (E)

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

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

CFG 0-17 all internal PULL-UP

LGA1150 (D)



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

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

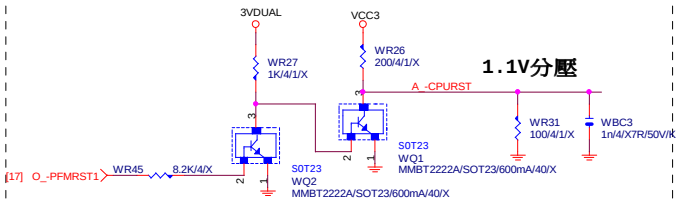
LGA1155 (C)

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

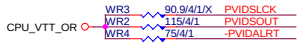
DMI:12/4/4/4/12(breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%

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

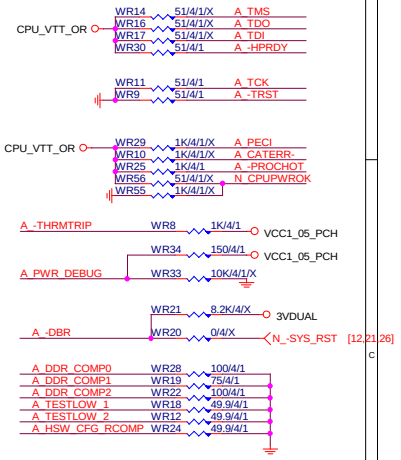
-CPURST



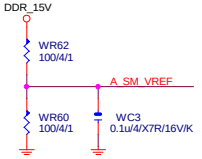
CPU SVID



CPU PU/PD



SM REF



Gigabyte Technology			
Title: CPU LGA1150-A			
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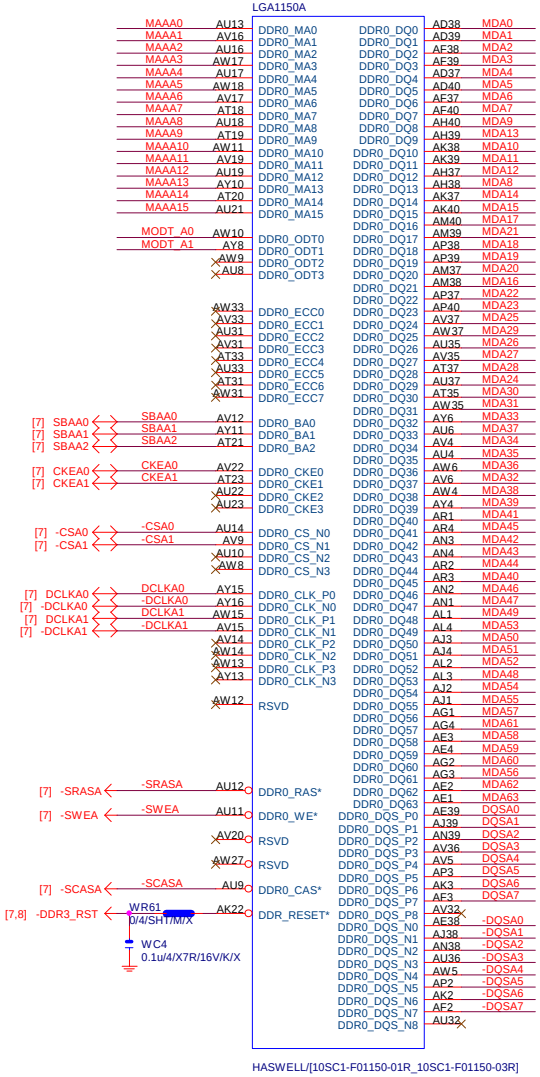
LGA1150 (A)

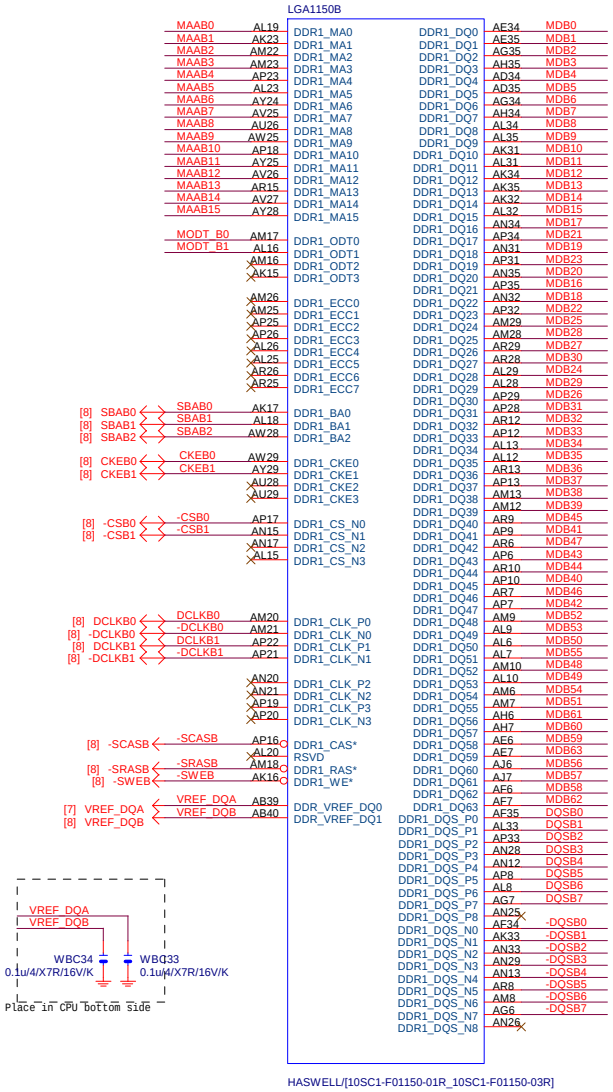
LGA1150A



HASWELL/[10SC1-F01150-01R_10SC1-F01150-03R]

LGA1150 (B)

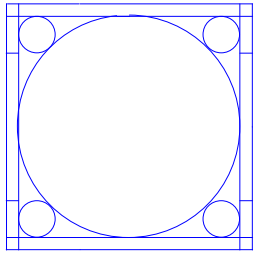
LGA1150B



HASWELL/[10SC1-F01150-01R_10SC1-F01150-03R]

LGA1150 (CR)

CR
CPU RETAINTION/X



LGA1150_P

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

DDR BUS

[7] MODT_A[0..1] MODT_A[0..1]
[8] MODT_B[0..1] MODT_B[0..1]
[7] MDA[0..63] MDA[0..63]
[8] MDB[0..63] MDB[0..63]
[7] DQSA[0..7] DQSA[0..7]
[7] -DQSA[0..7] -DQSA[0..7]
[7] MAAA[0..15] MAAA[0..15]
[8] MAAB[0..15] MAAB[0..15]
[8] DQSB[0..7] DQSB[0..7]
[8] -DQSB[0..7] -DQSB[0..7]

Gigabyte Technology			
Title: CPU LGA1150-B			
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LGA1150 (F,J)

(1.0V)
CPU_VTT_OR
WBC1
22u/8/X5R/6.3V/M
VCORE
LGA1150F
WR65
0/4/X
VCCST
WBC23
0.1u/4/X7R/16V/K
WBC13
0.1u/4/X7R/16V/K
WR63
0/4/SHT/M/X
VCCIO2PCH
(1.07V)
WR64
0/4/SHT/M/X
VCC1_05_PCH
VCORE
VCORE
DDR_15V
LGA1150J
WR67
6.04K/4/1
[11,12,17,26] O_PWROK1
VCCST_PWRGD
WR66
3.16K/4/1
HASWELL/[10SC1-F01150-01R_10SC1-F01150-03R]
HASWELL/[10SC1-F01150-01R_10SC1-F01150-03R]

LGA1155 (G,H,I)

LGA1150G
LGA1150I
LGA1150H
HASWELL/[10SC1-F01150-01R_10SC1-F01150-03R]
HASWELL/[10SC1-F01150-01R_10SC1-F01150-03R]
HASWELL/[10SC1-F01150-01R_10SC1-F01150-03R]
HASWELL/[10SC1-F01150-01R_10SC1-F01150-03R]

VCore CAP (X18)

VCORE
WBC35 22u/8/X5R/6.3V/M
WBC42 22u/8/X5R/6.3V/M
WBC36 22u/8/X5R/6.3V/M
WBC43 22u/8/X5R/6.3V/M
WBC44 22u/8/X5R/6.3V/M
VCORE
WBC38 22u/8/X5R/6.3V/M
WBC37 22u/8/X5R/6.3V/M
WBC46 22u/8/X5R/6.3V/M
WBC39 22u/8/X5R/6.3V/M
WBC41 22u/8/X5R/6.3V/M
WBC40 22u/8/X5R/6.3V/M
VCORE
WBC19 22u/8/X5R/6.3V/M
WBC21 22u/8/X5R/6.3V/M
WBC6 22u/8/X5R/6.3V/M
WBC9 22u/8/X5R/6.3V/M
WBC20 22u/8/X5R/6.3V/M
WBC7 22u/8/X5R/6.3V/M
WBC11 22u/8/X5R/6.3V/M

DDR CAP (X9)

DDR_15V
WBC29 22u/8/X5R/6.3V/M
WBC30 22u/8/X5R/6.3V/M
WBC31 22u/8/X5R/6.3V/M
WBC32 22u/8/X5R/6.3V/M
DDR_15V
WBC24 22u/8/X5R/6.3V/M
WBC25 22u/8/X5R/6.3V/M
WBC26 22u/8/X5R/6.3V/M
WBC27 22u/8/X5R/6.3V/M
WBC28 22u/8/X5R/6.3V/M

Gigabyte Technology		
Title: CPU LGA1150-C		
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DDR3 (A)

DDR3_1

DDRVTT
DDR_15V
VDDSPD
VCC3
N_SMBDATA
N_SMBCLK
MC10 100p/4/NPO/50V/J/X
MC11 100p/4/NPO/50V/J/X
MR17 0/4
MC4 0.1u/4/X7R/16V/K
MC5 VREF_DDRA
MC1 VREF_DDDRA
0.1u/4/X7R/16V/K
MC6 100p/4/NPO/50V/J
-DDR3_RST

DDR3/240/BK/VA/D

BLACK CONNECTOR

MODT_A[0..1] MODT_A[0..1] [5]
-DQSA[0..7] -DQSA[0..7] [5]
DQSA[0..7] DQSA[0..7] [5]
MDA[0..63] [5]

DDR3 VREF

DDR_15V
MR15 1K/4/1
MR14 1K/4/1
MR4 1K/4/1
MR5 1K/4/1
MR1 10/4
VREF_DDRA
VREF_DDDRA
VREF_DQA [5]

DDR15V Decouple

MEC1 560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]
MEC2 560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]
MBC1 MBC2 MBC3 MBC24 MBC12 MBC14 0.1u/4/X7R/16V/K
MBC15 MBC17 MBC27 MBC29 MBC35 MBC36 MBC37 MBC47 MBC9 1u/4/X5R/6.3V/K

DDRVTT Decouple

MBC40 10u/6/X5R/6.3V/M
MBC18 1u/4/X5R/6.3V/K
MBC10 0.1u/4/Y5V/16V/Z

Gigabyte Technology

Title: DDRIII CHANNEL A

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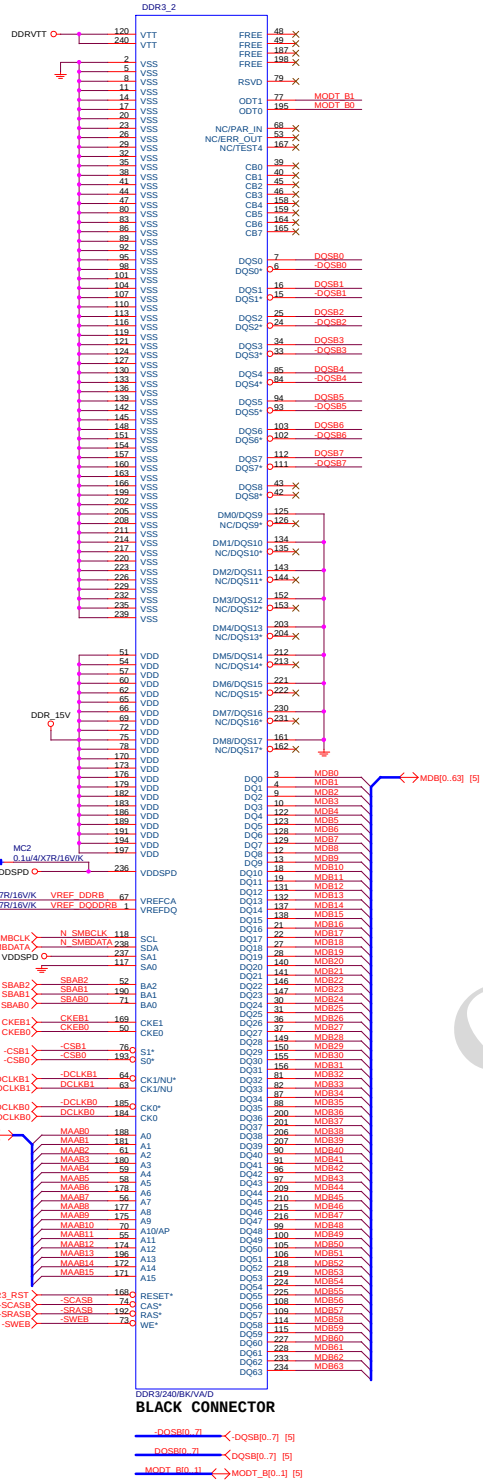
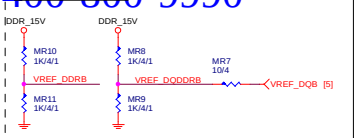
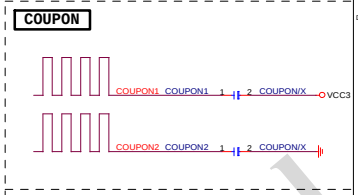
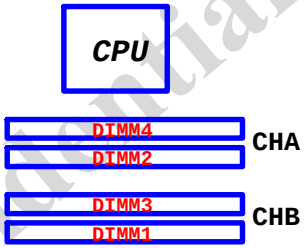
DDR3 (B)









Gigabyte Technology

Title	DDRIII CHANNEL B		
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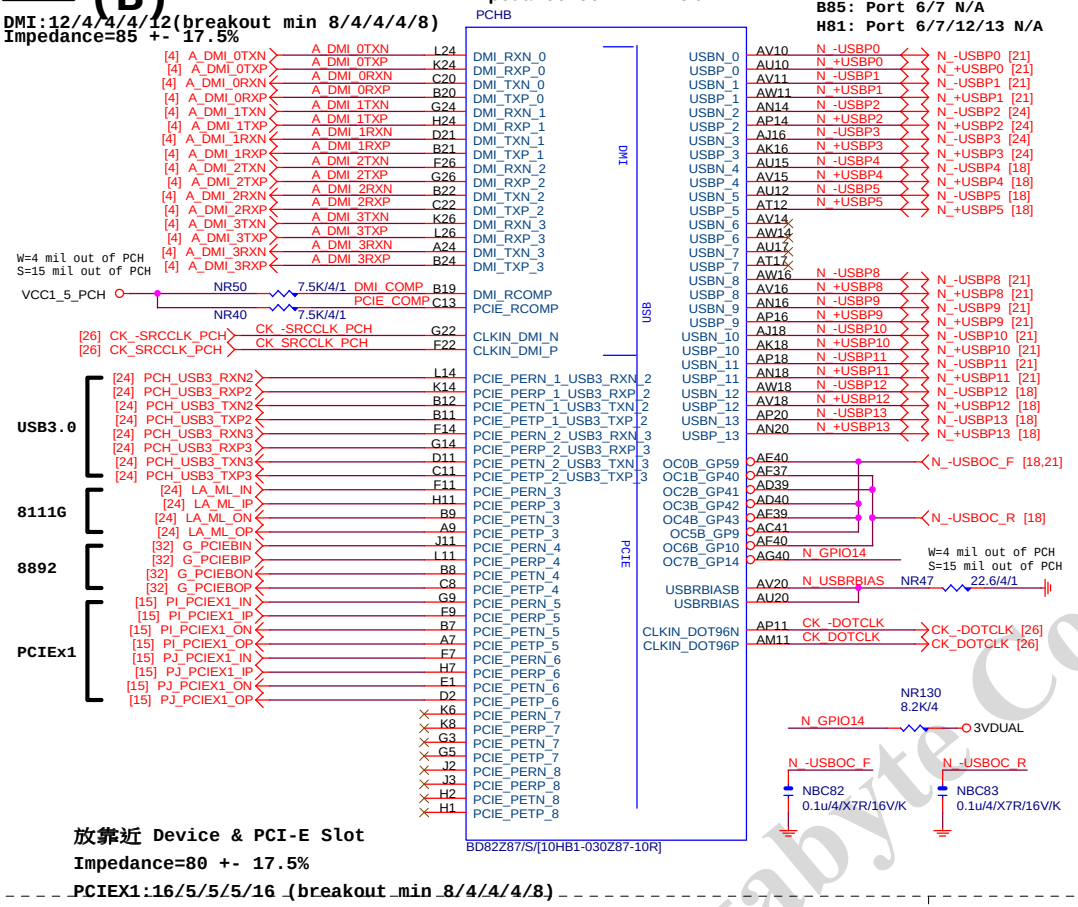
PCH (B)

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

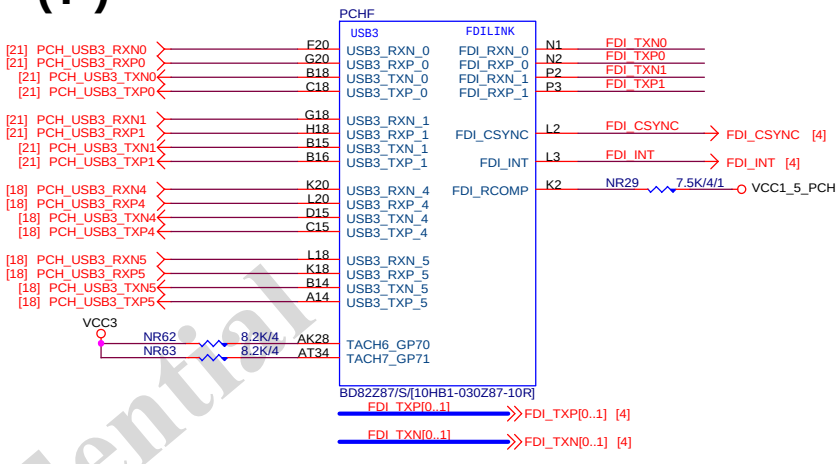
USB2.0 : 12/4.5/7.5/4.5/12 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%

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



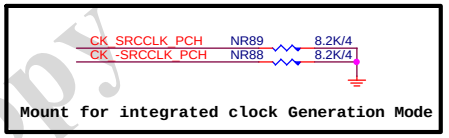
放靠近 Device & PCI-E Slot
Impedance=80 +- 17.5%
PCIEX1:16/5/5/5/16 (breakout min 8/4/4/4/8)

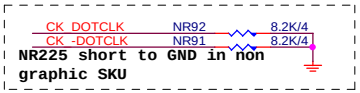
PCH (F)



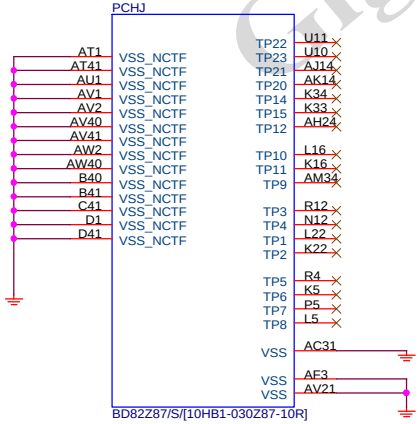
USB3.0:20/5/7/5/20 (breakout min 8/4/4/4/8) ; ONLY 3 VIAS
Impedance=85 +- 17.5%
Back Panel < 10000 MILS
Front Panel < 6000 MILS

PCH CLK PD



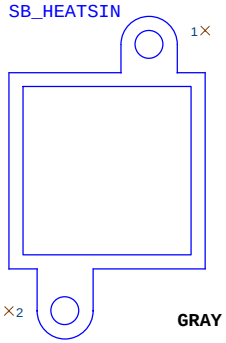


PCH (J)



PCH H/S

LOW COST ICH7 HEATSINK



PCH_HS
PCH_HS/[12SP2-030005-43R_12SP2-030005-41R_12SP2-030005-42R]

USB TABLE

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

USB OC#	Configure
OC0#	F_USB30
OC1#	USB30_LAN
OC2#	R_USB30
OC3#	N/A
OC4#	F_USB1
OC5#	F_USB2
OC6#	KB_MS_USB
OC7#	Not Use

Gigabyte Technology

Title: PCH FDI,DMI,USB ,PCIE,NVRAM

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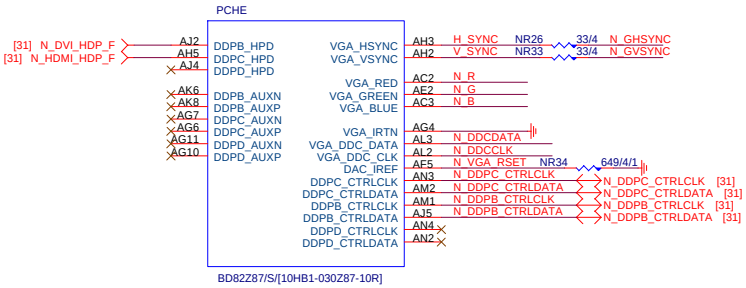
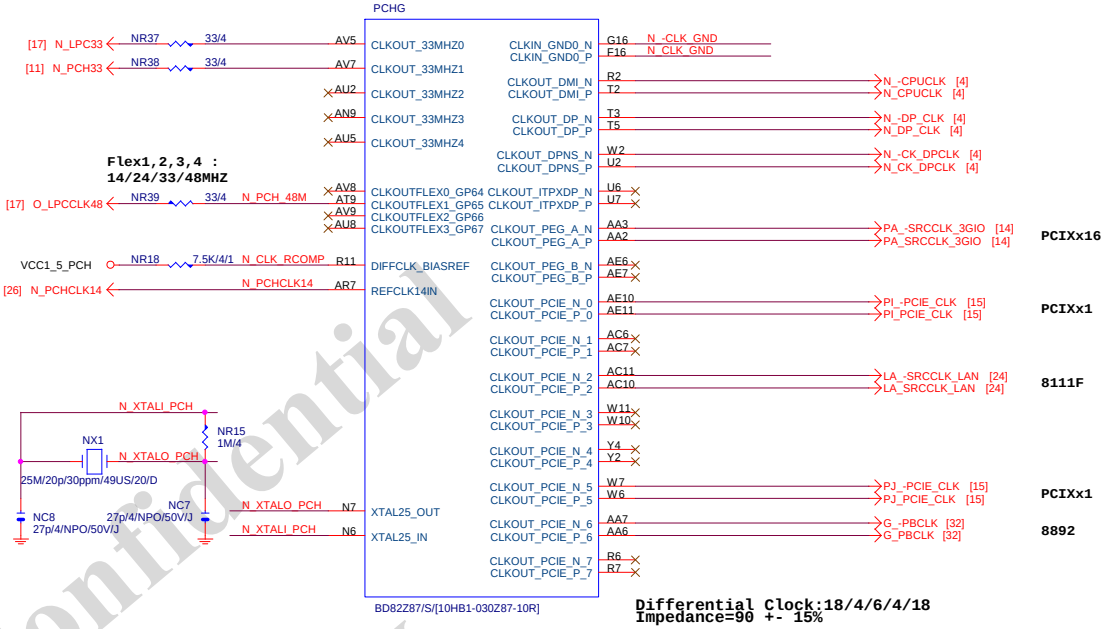
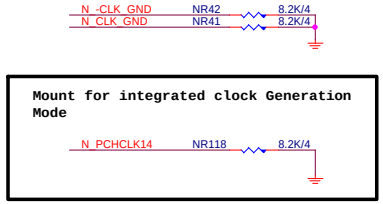
PCH (E)



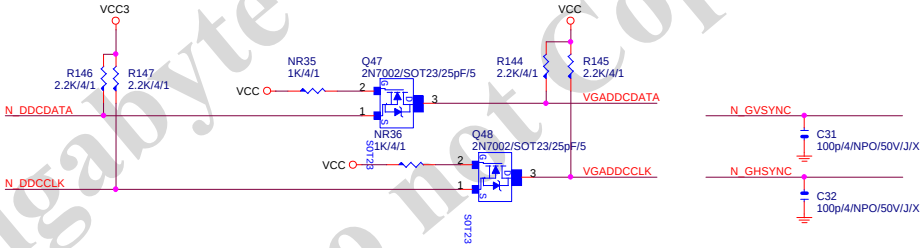
PCH (G)



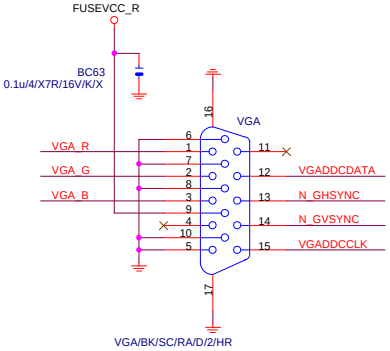
PCH CLK PD



VGA DDC

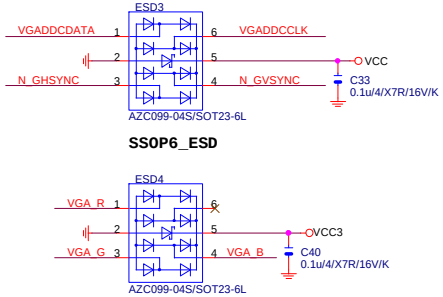


VGA CONNECTOR

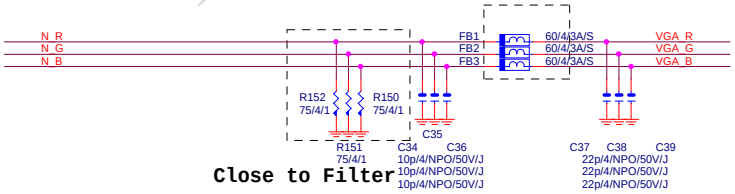


BLACK CONNECTOR

VGA ESD



VGA DDC



Gigabyte Technology	
Title	PCH DISPLAY ,CLK BUFFER
Size: Custom	Document Number: GA-Z87M-HD3
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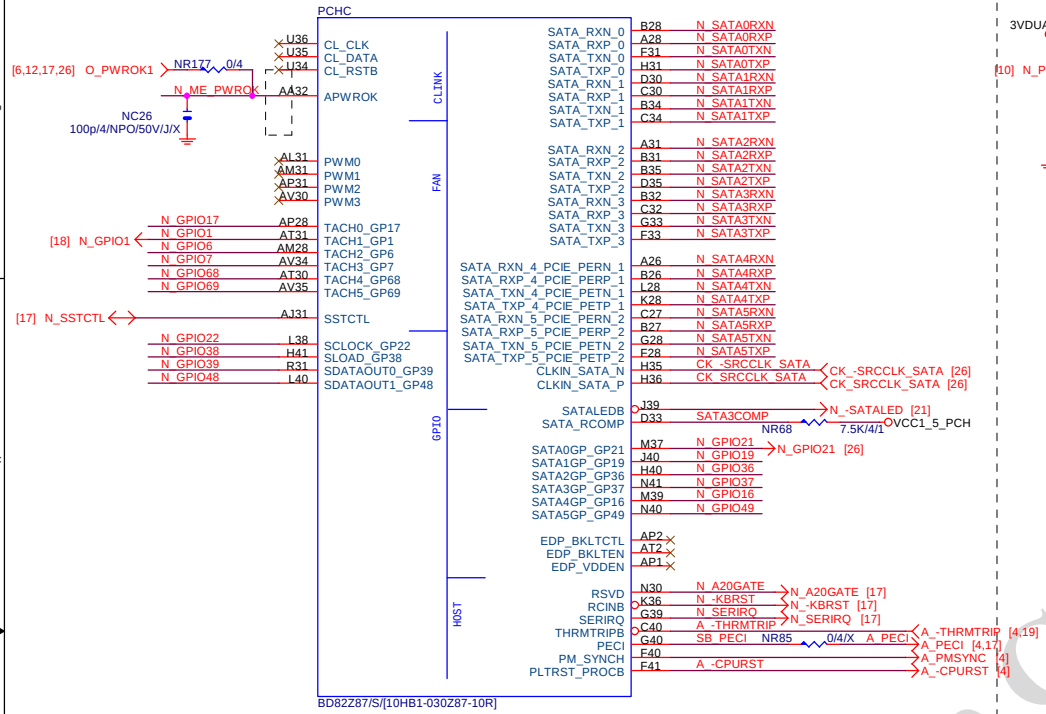
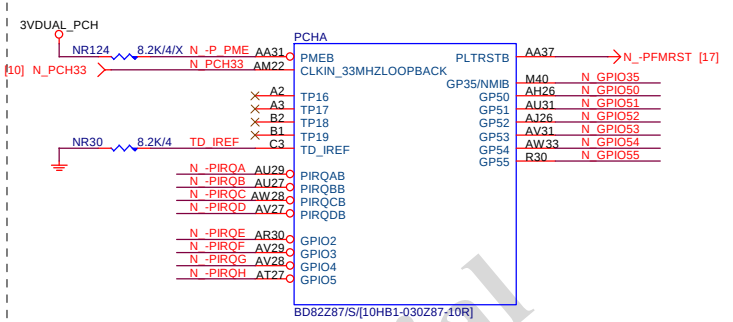
PCH (C)

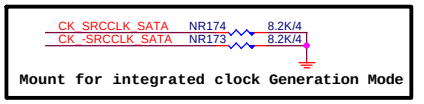
SATA3 : 20/7.5/4.5/7.5/20 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%
SATA2 : 15/7.5/4.5/7.5/15 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%



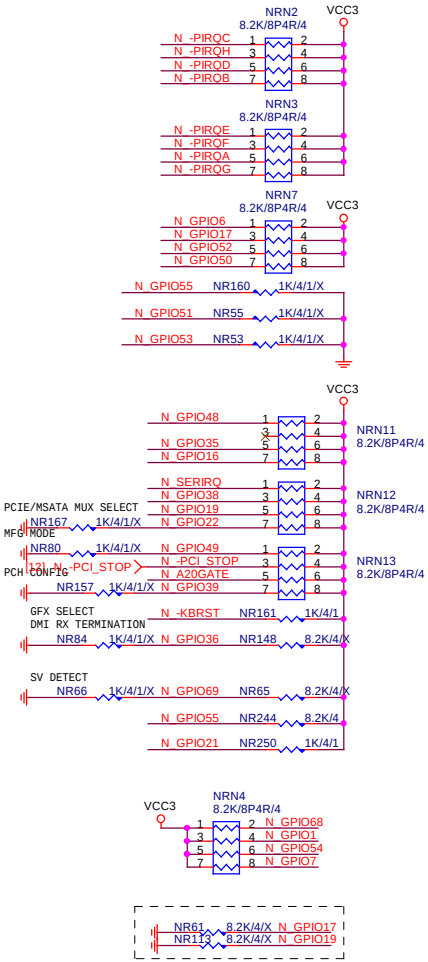
PCH (A)



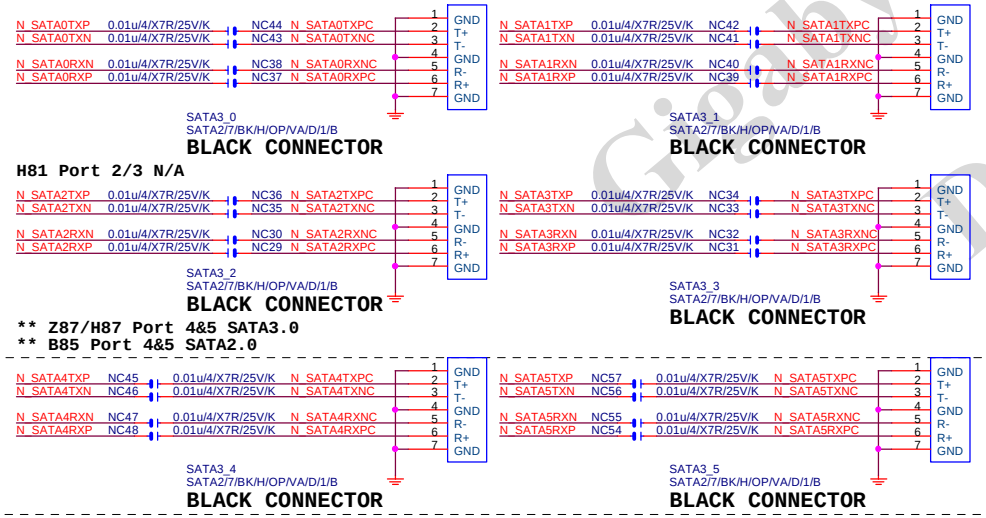
PCH CLK PD



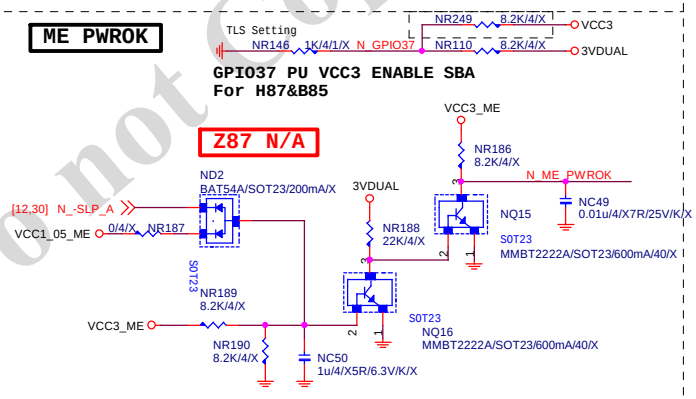
PCH PU/PD



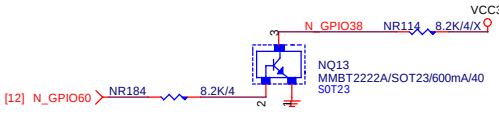
SATA CONNECTOR



ME PWROK



GPIO38 Ctrl



Title	PCH HOST , SATA, PCI
Size	Custom
Document Number	GA-Z87M-HD3
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Gigabyte Technology

PCH (D)

[17] N_LAD[0..3] ← N_LAD[0..3]

PCHD

VCC3 NR54 8.2K/4/X N_GPIO23 AK26
[17] N_LAD0 N_LAD0 AN24
[17] N_LAD1 N_LAD1 AP26
[17] N_LAD2 N_LAD2 AJ24
[17] N_LAD3 N_LAD3 AN26
[17] N_-LDRQ0 N_-LDRQ0 AK22
[17] N_-LFRAME N_-LFRAME AP24

[22] C_ACZ_BITCLK NR45 33/4 AV23
[22] C_-ACZ_RST NR43 33/4 AU24
AT26
AV22
[22] C_ACZ_SDIN2 AT22
AW23
[22] C_ACZ_SDOUT NR44 33/4 A_SO AU22
[22] C_ACZ_SYNC NR46 33/4 A_SYC AV24

[20] N_ICH_SPI_MOSI P40
[20] N_ICH_SPI_MISO R36
[20] N_-ICH_SPI_CS R38
[20] N_ICH_SPI_CLK U39
R35
R40
[20] SPI_DQ2 U40
[20] SPI_DQ3 U37

N_Y1 AN40
N_Y2 AN39
N_-RTCRST AR38
N_-SRTCRST AR39
N_-INTRUDER AR41
[6,11,17,26] O_PWROK1 AT40
[17,25] O_-RSMRST AM40
N_INTVRMEN AV36
N_PCH_DPWROK AV38
N_DSWVRMEN AM41

[17] N_-LPCPME N_-LPCPME AG31
[7,8,14,15,16,19,26,27] N_SMBCLK N_SMBCLK AG36
[7,8,14,15,16,19,26,27] N_SMBDATA N_SMBDATA AG32
[11] N_GPIO60 N_GPIO60 AG35
N_SML0CLK AE32
N_SML0DAT AE35
[19] N_-PCH_HOT N_-PCH_HOT AJ39
N_SML1CLK AK36
N_SML1DAT AK33

LDRQ1B_GP23
LAD_0
LAD_1
LAD_2
LAD_3
LDRQB
LFRAMEB
HDA_BCLK
HDA_RSTB
HDA_SDI0
HDA_SDI1
HDA_SDI2
HDA_SDI3
HDA_SDO
HDA_SYNC
SPI_MOSI_IO0
SPI_MISO_IO1
SPI_CS0B
SPI_CLK
SPI_CS1B
SPI_CS2B
SPI_IO2
SPI_IO3
RTCX1
RTCX2
RTESTB
SRTCRSTB
INTRUDERB
PCH_PWROK
RSMRSTB
INTVRMEN
DPWROK
DSWODVREN
SMBALERTB_GP11
SMBCLK
SMBDATA
SML0ALERTB_GP60
SML0CLK
SML0DATA
SML1ALERTB_PCHHOTB_GP74
SML1CLK_GP58_MGPIO11
SML1DATA_GP75_MGPIO12

BMBUSYB_GP0 G38 N_GPIO0
CLKRUNB_GP32 N32 N_GPIO32
DOCKENB_GP33 AV26 N_GPIO33
STPPCIB_GP34 N34 N_-PCI_STOP → N_-PCI_STOP [11]
GP8 AC40 N_-IGC_EN
LAN_PHY_PWR_CTRL_GP12 AL40
HDA_DOCK_RSTB_GP13 AN22 -D_GPIO_HRST → -D_GPIO_HRST [14]
GP15 AC32 N_TEMP_ALART → N_TEMP_ALART- [17]
GP24 AE34 A_-SKTOCC → A_-SKTOCC [4]
GP28 V41 N_GPIO28
SLP_WLANB_GP29 AL39 N_GPIO29
PCIECLKRQ0B_GP73 W34 N_GPIO73
PCIECLKRQ1B_GP18 P39 N_GPIO18
PCIECLKRQ2B_GP20_SMIB P37 N_GPIO20
PCIECLKRQ3B_GP25 AA39 N_GPIO25
PCIECLKRQ4B_GP26 W35 N_GPIO26
PCIECLKRQ5B_GP44 AA36 N_GPIO44
PCIECLKRQ6B_GP45 W32 N_GPIO45
PCIECLKRQ7B_GP46 AA40 N_GPIO46
GP57 AC36 N_GPIO57
SYS_PWROK W31 → N_PCH_VRMPWRGD [27]
RIB AE36 → N_-RI [18]
WAKEB AK34 → N_-PCIE_WAKE [14,15,24,32]
SLP_AB AN37 → N_-SLP_A [11,30]
SLP_LANB AU36 N_-SLP_LAN
SLP_S0B AC35
SLP_S3B AK40 → N_-SLP_S3 [17,25,27,29]
SLP_S4B AT35 → N_-S4_S5 [17,29]
SLP_S5B_GP63 AA35
SUS_STATB_GP61 AD37 N_-SUSTAT
SUSCLK_GP62 W36 N_SUSCLK
GP72 AJ40 N_GPIO72
SUSACKB AJ37
SUSWARNB_SUSPWRDNACK_GP30 AG41 N_-S_WARN
DRAMPWRGD AE38 N_DRAM_PWROK
GP27 AU34 N_GPIO27
ACPRESENT_GP31_MGPIO2 AM36 N_GPIO31
SLP_SUSB AK38 → N_-DEPSLP [25]
PWRBTNB AK41 → O_PWRBTSW [17]
SYS_RESETB N36 N_-SYS_RST → N_-SYS_RST [4,21,26]
SPKR R32 N_SPKR → N_SPKR [21]
PROCPWRGD D40 N_CPUPWROK → N_CPUPWROK [4,25]
TP13 W37 N_PCH_RST
JTAG_TCK Y40 N_PCH_TCK
JTAG_TDI W39 N_PCH_TDI
JTAG_TDO Y38 N_PCH_TDO
JTAG_TMS W40 N_PCH_TMS

BD82Z87/S/[10HB1-030Z87-10R]

DDR_15V
NR131 680/4/1
N_DRAM_PWROK → N_DRAM_PWROK [4]
NR132 1.47K/4/1

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

ACZ_SDOUT

NR140 8.2K/4 C_ACZ_SDOUT
NQ14 PMBT2907A/SOT23/-600mA/50 S0T23
N_GPIO57 NR64 8.2K/4
DS_ME NR178 8.2K/4
[17] DS_ME
3VDUAL_PCH
SPI OVERRIDE PROTECTION

PCH_DPWROK

At least 10ms delay after 3VDUAL_PCH stabel
3VDUAL_PCH
NR69 8.2K/4
N_PCH_DPWROK
5VSB
NR94 22K/4
NC17 1n/4/X7R/50V/K
S0T23
NQ4 MMBT2222A/SOT23/600mA/40
3VDUAL_PCH
NR116 75K/4/1
NR93 27K/4/1
NC21 1u/4/X5R/6.3V/K
NQ3 MMBT2222A/SOT23/600mA/40 S0T23
NR233 0/4
5VSB
At least 40ns lead fall to 0V before 3VDUAL_PCH fall to 2V
NR234 6.19K/4/1/X
NR235 1K/4/1/X
NQ2 MMBT2222A/SOT28/600mA/40/X S0T23

PCH PU/PD

3VDUAL
NR139 8.2K/4/X N_GPIO46
NR155 8.2K/4/X N_GPIO45
NR103 8.2K/4/X N_GPIO44
N_GPIO57
NRN9 8.2K/8P4R/4
A_-SKTOCC
N_TEMP_ALART-
N_-RI
NRN10 8.2K/8P4R/4
GP8:Low to enable PCH clock chip
NR106 1K/4/1 N_-IGC_EN NR105 8.2K/4/X
NR153 1K/4/1/X N_SUSCLK NR154 8.2K/4/X
SUSCLK:Low to OD PLL VR
N_-SUSTAT NR133 8.2K/4/X
-D_GPIO_HRST NR51 1K/4/1
N_GPIO28 NR144 1K/4/1
GP28:Lo disable VRM ,Hi enable VRM
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/X
NR48 8.2K/4/X N_GPIO33 NR49 8.2K/4

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/X7R/50V/K
N_DRAM_PWROK NC59 1n/4/X7R/50V/K

3VDUAL
NRN6 8.2K/8P4R/4
N_-LPCPME
N_GPIO60
N_-PCH_HOT
NR117 1K/4/1 N_SML1CLK
NR120 1K/4/1 N_SML1DAT
NR122 499/4/1 N_SML0CLK
NR123 499/4/1 N_SML0DAT
NR121 1K/4/1 N_SMBCLK
NR97 1K/4/1 N_SMBDATA

HSW_STRAP13

3VDUAL_PCH
NR182 8.2K/4/X → A_HSW_STRAP13 [4]
NR183 8.2K/4
NQ11 MMBT2222A/SOT23/600mA/40 S0T23
VCC3
NR136 1K/4/1/X
NR135 8.2K/4
NQ12 MMBT2222A/SOT23/600mA/40 S0T23
N_-IGC_EN
NR104 0/4/SHT/M/X

32.768KHZ

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

CLR_CMOS

BATTERY CR2032
CR2032
NR340 0/6/SHT/M/X
BAT BAT-SK/BK/P/S/D/SN
N_VBATT
NRB 1K/4/1
3VDUAL_PCH
ND1 BAS40-05/0.2A/SOT23
NR90 390K/4 N_DSWVRMEN
N_RTCVDD → N_RTCVDD [13,19]
NR67 390K/4 N_INTVRMEN
NR78 20K/4/1 N_-RTCRST
NC15 1u/4/X5R/6.3V/K
NC20 1u/4/X5R/6.3V/K
RB_TP
N_VBAT → N_VBAT [17]
BATTERY-DUAL-4
RB 必須放在BAT外
CLR_CMOS
N_-RTCRST
PH/1*2/BK/2.54/VA/D
N_-INTRUDER NR74 1M/4 → N_RTCVDD [13,19]
N_-SRTCRST NR77 20K/4/1 → N_RTCVDD [13,19]
NC19 1u/4/X5R/6.3V/K

Gigabyte Technology

Title	PCH GPIO , CTRL , AUDIO	
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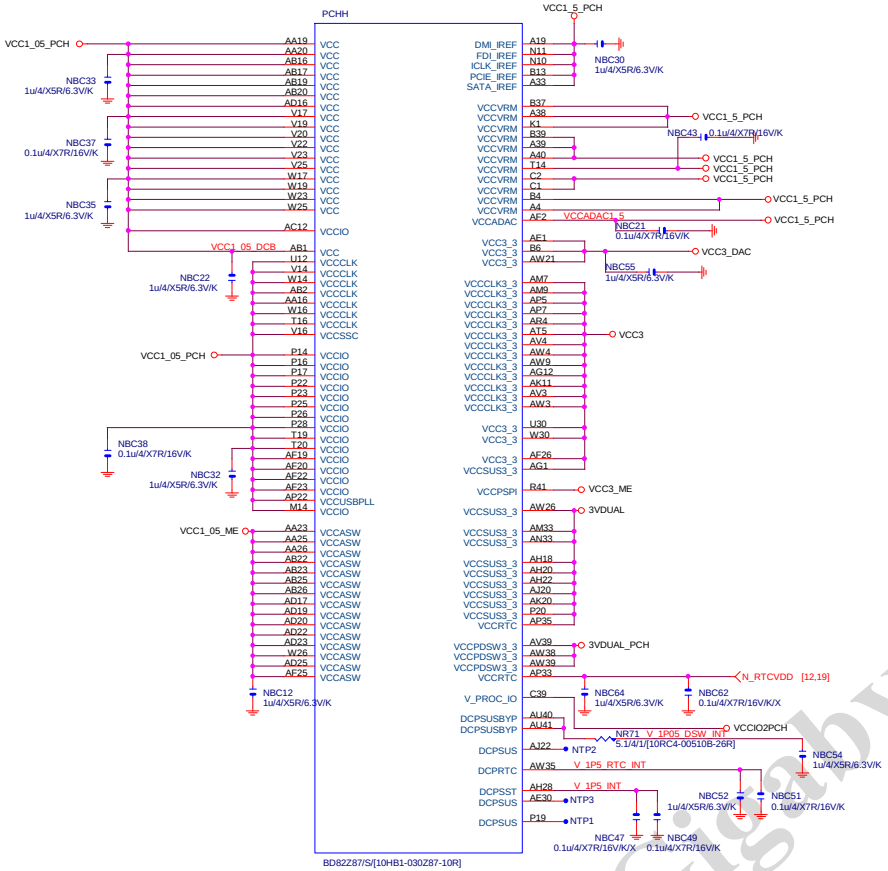
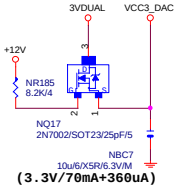
Date: Friday, March 29, 2013	Sheet 12 of 32	

PCH (H)

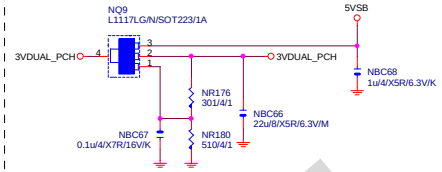


VCC3_DAC

CLOSE北橋(注意震盪水波紋)

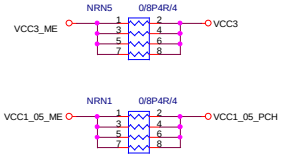


3VDUAL_PCH

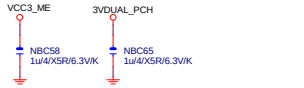


SHT PWR

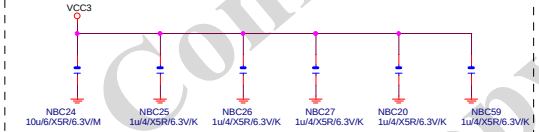
H87 N/A



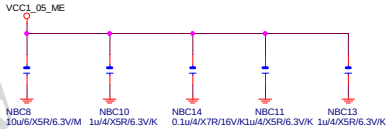
CAP



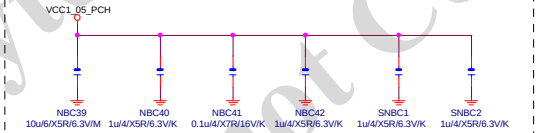
(3.3V)(X6)



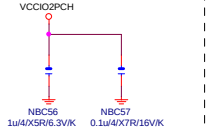
(1.05V)(X5)



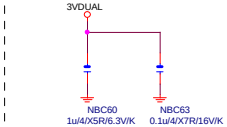
(1.05V)(X6)



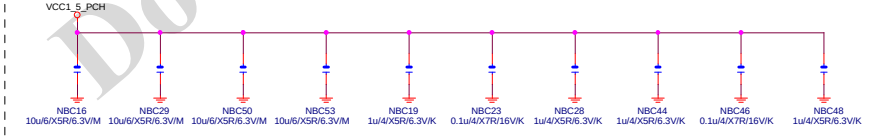
(1.05V)(X2)



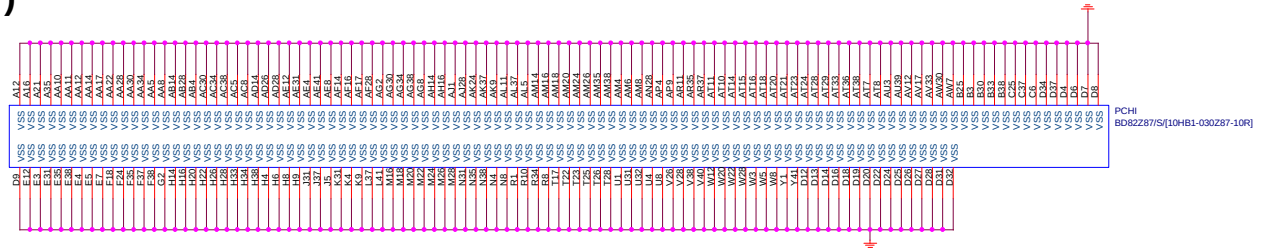
(3.3V)(X2)



(1.05V)(X10)



PCH (I)



Gigabyte Technology			
Title: PCH PWR ,GND			
Size: Custom	Document Number: GA-Z87M-HD3		Rev: 1.0
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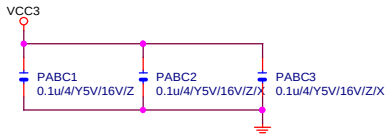
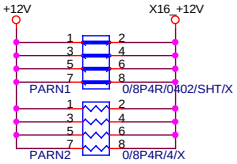
PCIEX16 CAP



PCIEX16 PROTECT SHT

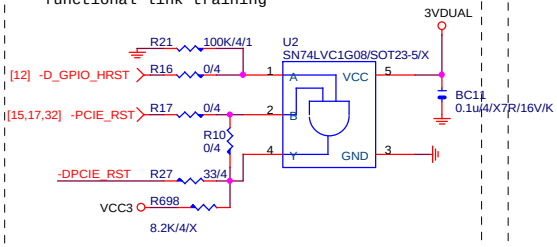


PCIEX16 AC CAP

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

PA_EXP_RXP[0..15] PA_EXP_RXP[0..15] [4]
PA_EXP_RXN[0..15] PA_EXP_RXN[0..15] [4]
PA_EXP_TXP[0..15] PA_EXP_TXP[0..15] [4]
PA_EXP_TXN[0..15] PA_EXP_TXN[0..15] [4]

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



PCIEX16 SLOT

PCIESLOT-164DN-P

3GIO_*16

PCIEX16

X16_+12V	B1	12V	
	B2	12V	
	B3	RSVD	
PAR3 0/4/SHT/M/X	B4	GND	
[7,8,12,15,16,19,26,27] N_SMBCLK	B5	SMCLK	SMBCLK
[7,8,12,15,16,19,26,27] N_SMBDATA	B6	SMDAT	SMBDATA
	B7	GND	
3VDUAL VCC3	B8	3.3V	
	B9	JTAG1	
[12,15,24,32] N_-PCIE_WAKE	B10	3.3VAUX	
	B11	WAKE*	
KEY			
	B12	RSVD	
	B13	GND	
PA_EXP_TXP0_C	B14	HSOP0	
PA_EXP_TXN0_C	B15	HSON0	
	B16	GND	
	B17	PRSNT2*	
	B18	GND	
PA_EXP_TXP1_C	B19	HSOP1	
PA_EXP_TXN1_C	B20	HSON1	
	B21	GND	
	B22	GND	
PA_EXP_TXP2_C	B23	HSOP2	
PA_EXP_TXN2_C	B24	HSON2	
	B25	GND	
	B26	GND	
PA_EXP_TXP3_C	B27	HSOP3	
PA_EXP_TXN3_C	B28	HSON3	
	B29	GND	
	B30	RSVD	
	B31	PRSNT2*	
	B32	GND	
PA_EXP_TXP4_C	B33	HSOP4	
PA_EXP_TXN4_C	B34	HSON4	
	B35	GND	
	B36	GND	
PA_EXP_TXP5_C	B37	HSOP5	
PA_EXP_TXN5_C	B38	HSON5	
	B39	GND	
	B40	GND	
PA_EXP_TXP6_C	B41	HSOP6	
PA_EXP_TXN6_C	B42	HSON6	
	B43	GND	
	B44	GND	
PA_EXP_TXP7_C	B45	HSOP7	
PA_EXP_TXN7_C	B46	HSON7	
	B47	GND	
	B48	PRSNT2*	
	B49	GND	
PA_EXP_TXP8_C	B50	HSOP8	
PA_EXP_TXN8_C	B51	HSON8	
	B52	GND	
	B53	GND	
PA_EXP_TXP9_C	B54	HSOP9	
PA_EXP_TXN9_C	B55	HSON9	
	B56	GND	
	B57	GND	
PA_EXP_TXP10_C	B58	HSOP10	
PA_EXP_TXN10_C	B59	HSON10	
	B60	GND	
	B61	GND	
PA_EXP_TXP11_C	B62	HSOP11	
PA_EXP_TXN11_C	B63	HSON11	
	B64	GND	
	B65	GND	
PA_EXP_TXP12_C	B66	HSOP12	
PA_EXP_TXN12_C	B67	HSON12	
	B68	GND	
	B69	GND	
PA_EXP_TXP13_C	B70	HSOP13	
PA_EXP_TXN13_C	B71	HSON13	
	B72	GND	
	B73	GND	
PA_EXP_TXP14_C	B74	HSOP14	
PA_EXP_TXN14_C	B75	HSON14	
	B76	GND	
	B77	GND	
PA_EXP_TXP15_C	B78	HSOP15	
PA_EXP_TXN15_C	B79	HSON15	
	B80	GND	
	B81	PRSNT2*	
	B82	RSVD	

X16_+12V	A1	PRSNT1*	
	A2	12V	
	A3	12V	
	A4	GND	
	A5	JTAG2	
	A6	JTAG3	
	A7	JTAG4	
	A8	JTAG5	
VCC3	A9	3.3V	
	A10	3.3V	
-DPCIE_RST	A11	PWRGD	
	A12	GND	
PA_SRCCLK_3GIO [10]	A13	REFCLK+	
PA_-SRCCLK_3GIO [10]	A14	REFCLK-	
	A15	GND	
PA_EXP_RXP0	A16	HSIP0	
PA_EXP_RXN0	A17	HSIN0	
	A18	GND	
	A19	RSVD	
	A20	GND	
PA_EXP_RXP1	A21	HSIP1	
PA_EXP_RXN1	A22	HSIN1	
	A23	GND	
	A24	GND	
PA_EXP_RXP2	A25	HSIP2	
PA_EXP_RXN2	A26	HSIN2	
	A27	GND	
	A28	GND	
PA_EXP_RXP3	A29	HSIP3	
PA_EXP_RXN3	A30	HSIN3	
	A31	GND	
	A32	RSVD	
	A33	RSVD	
	A34	GND	
PA_EXP_RXP4	A35	HSIP4	
PA_EXP_RXN4	A36	HSIN4	
	A37	GND	
	A38	GND	
PA_EXP_RXP5	A39	HSIP5	
PA_EXP_RXN5	A40	HSIN5	
	A41	GND	
	A42	GND	
PA_EXP_RXP6	A43	HSIP6	
PA_EXP_RXN6	A44	HSIN6	
	A45	GND	
	A46	GND	
PA_EXP_RXP7	A47	HSIP7	
PA_EXP_RXN7	A48	HSIN7	
	A49	GND	
	A50	RSVD	
	A51	GND	
PA_EXP_RXP8	A52	HSIP8	
PA_EXP_RXN8	A53	HSIN8	
	A54	GND	
	A55	GND	
PA_EXP_RXP9	A56	HSIP9	
PA_EXP_RXN9	A57	HSIN9	
	A58	GND	
	A59	GND	
PA_EXP_RXP10	A60	HSIP10	
PA_EXP_RXN10	A61	HSIN10	
	A62	GND	
	A63	GND	
PA_EXP_RXP11	A64	HSIP11	
PA_EXP_RXN11	A65	HSIN11	
	A66	GND	
	A67	GND	
PA_EXP_RXP12	A68	HSIP12	
PA_EXP_RXN12	A69	HSIN12	
	A70	GND	
	A71	GND	
PA_EXP_RXP13	A72	HSIP13	
PA_EXP_RXN13	A73	HSIN13	
	A74	GND	
	A75	GND	
PA_EXP_RXP14	A76	HSIP14	
PA_EXP_RXN14	A77	HSIN14	
	A78	GND	
	A79	GND	
PA_EXP_RXP15	A80	HSIP15	
PA_EXP_RXN15	A81	HSIN15	
	A82	GND	

PAR1 0/4/SHT/M/X
PAR2 0/4/SHT/M/X
-DPCIE_RST
PAC1 22p/4/NPO/50V/J/X

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

BLACK CONNECTOR

Gigabyte Technology		
Title: PCI EXPRESS * 16		
Size: Custom	Document Number: GA-Z87M-HD3	Rev: 1.0
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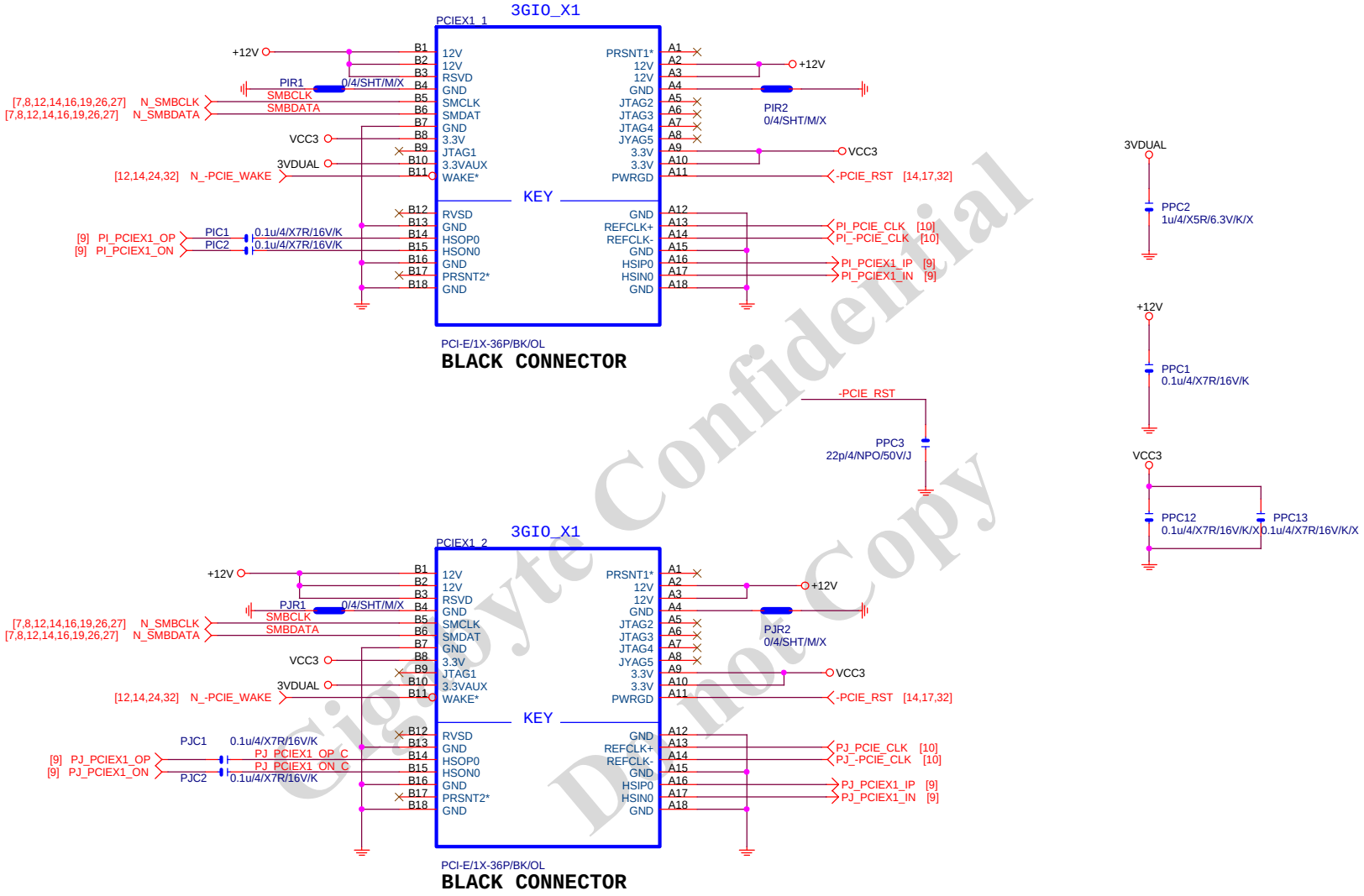
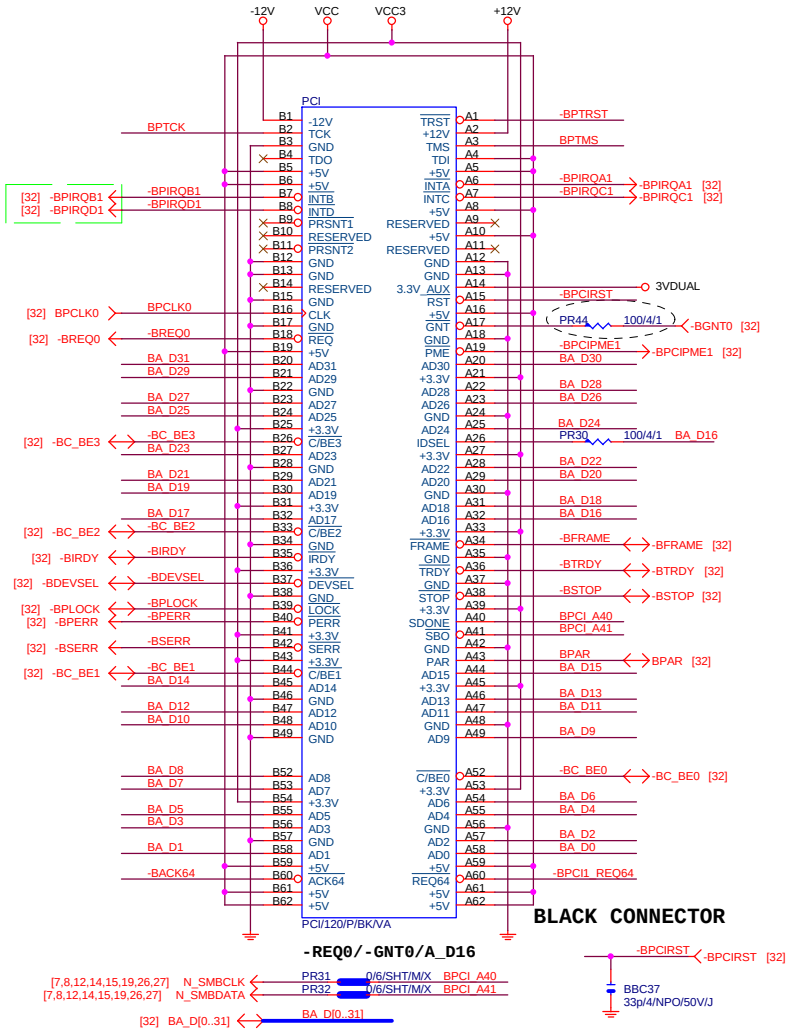
PCIEX1 SLOT

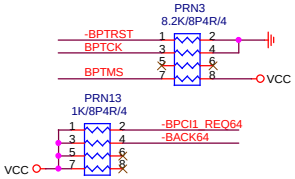


Gigabyte Technology		
Title: PCI EXPRESS X 1 PORT		
Size: Custom	Document Number: GA-Z87M-HD3	Rev: 1.0
Date: Friday, March 29, 2013	Sheet 15 of 32	

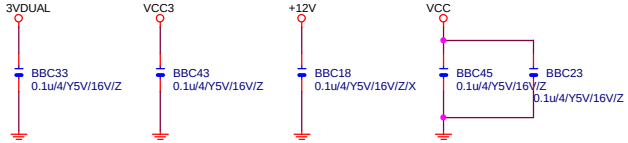
PCI SLOT 1



PCI PU



PCI CAP



Gigabyte Technology		
Title: PCI SLOT 1&2		
Size: Custom	Document Number: GA-Z87M-HD3	Rev: 1.0
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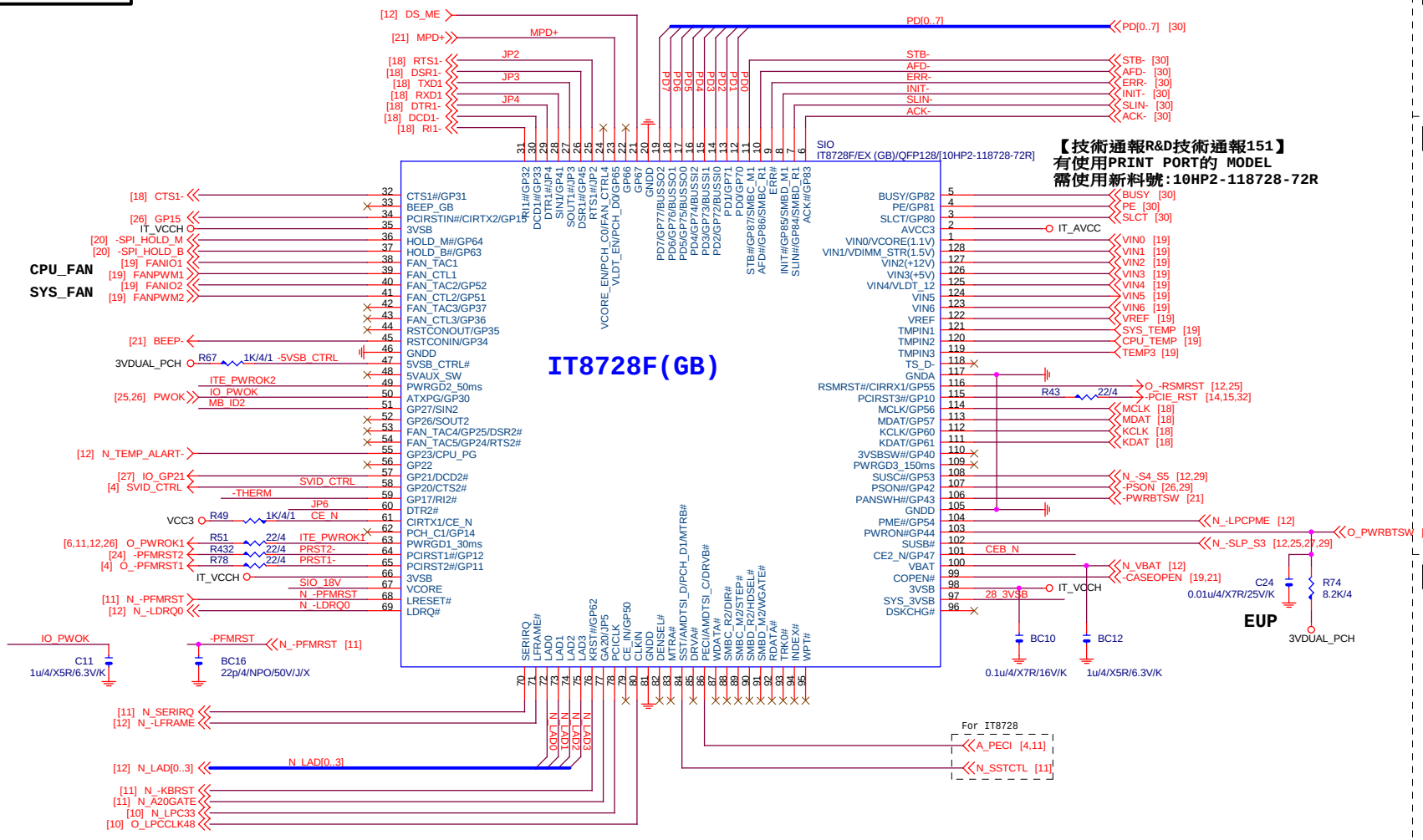
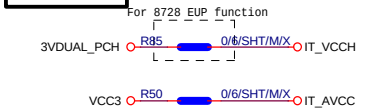
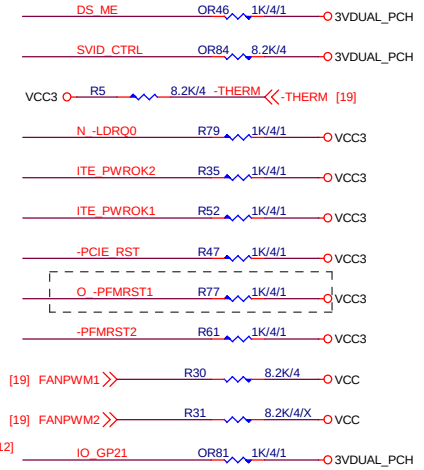
SIO IT8728F



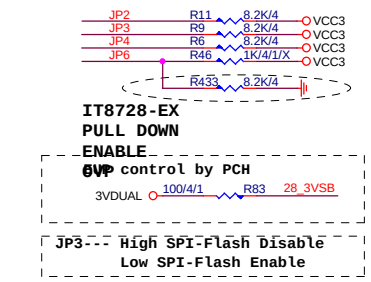
PWR SHT



SIO PU



SIO STRAP

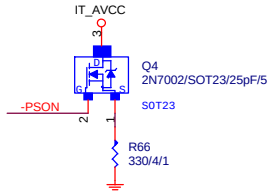


IT8728F NOTE

	IT8728
PIN121	VCORE_EN/PCH_C0
PIN120	VLDT_EN/PCH_D0
PIN19	ATXPG
PIN31	PCH_C1
PIN53	SST/AMDTSI_D/MTRB#/PCH_D1
PIN55	PECI/AMDTSI_C/DRVB#
PIN66	SYS_3VSB
PIN70	GP47
PIN95	VIN2(VCC5)
PIN96	VIN1(VCC12)
PIN97	VIN1/VDIMM_STR(1.5V)
PIN98	VIN0/VCORE(1.1V)/NC

DUAL BIOS OPT STRAP

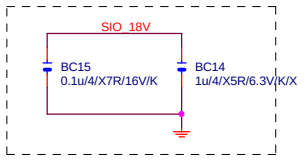
Power leakage



For IT8721 Power leakage

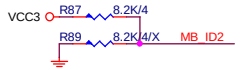
SIO_18V

internal power pin, max 22nF cap

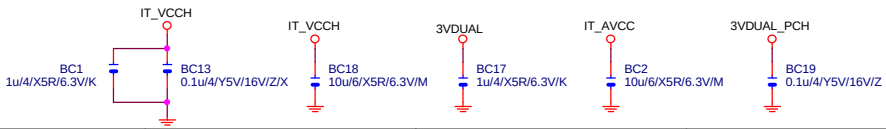


FOR LOW TEMP POWER ON INTO TEST MODE ISSUE

MB ID



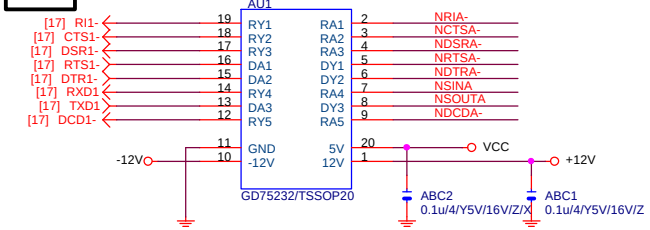
SIO CAP

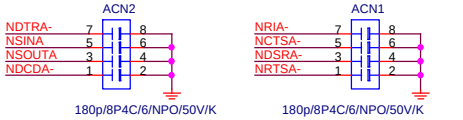


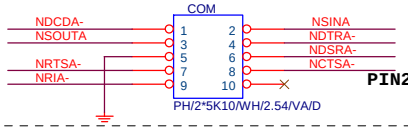
Gigabyte Technology

Title	ITE 8728 LPC IO	
Size: Custom	Document Number: GA-Z87M-HD3	Rev: 1.0
Date: Friday, March 29, 2013	Sheet 17 of 32	

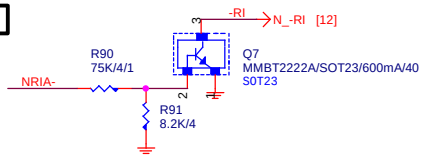
COM



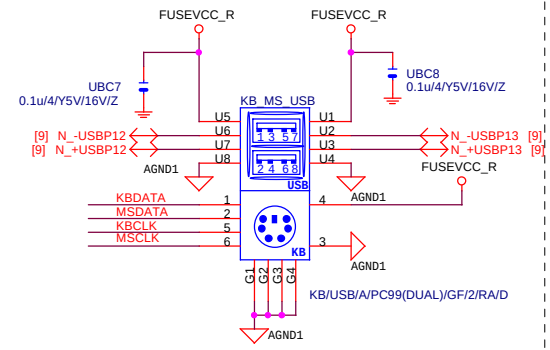


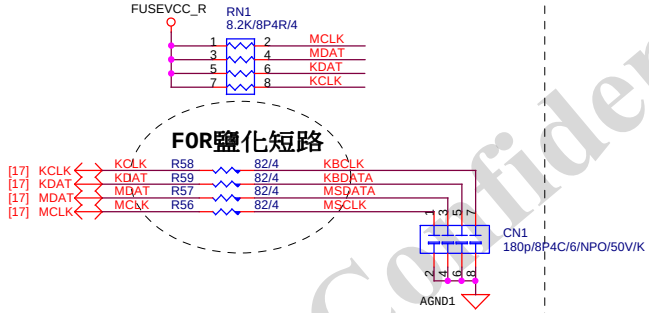


COM RI

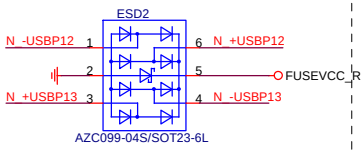


KB/MS





USB2.0 ESD



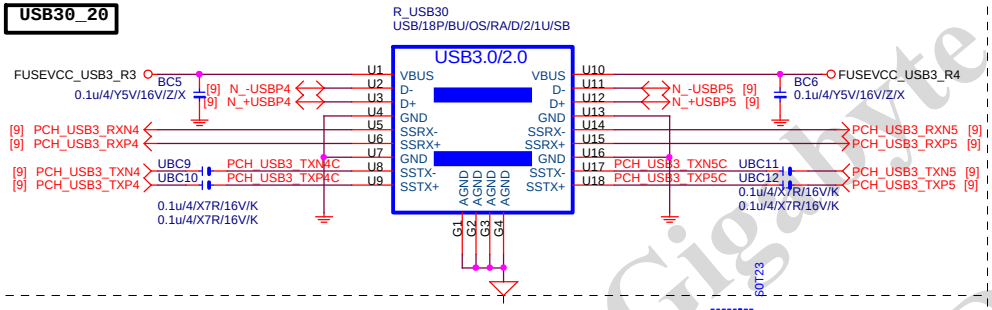
USB2.0 PWR

FUSE-0805

Close to connector

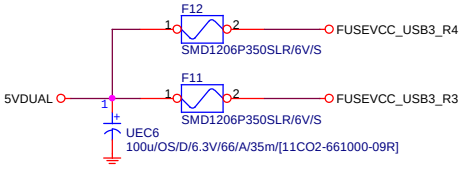
KB_MS_USB 2-Port 2.0A

USB30_20



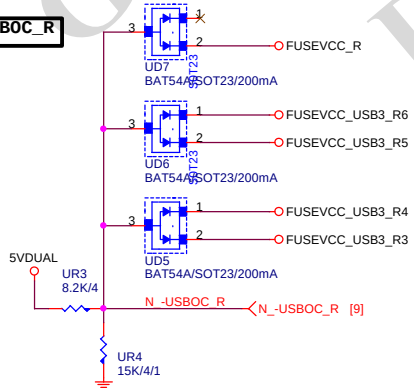
USB30_20 PWR

Polyswitch-1206



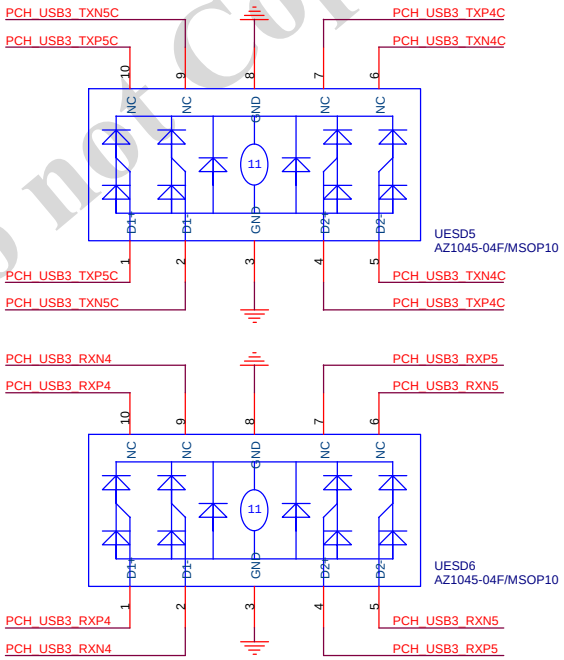
USB3.0 1Port - 1Fuse (3.5A)

-USBOC_R

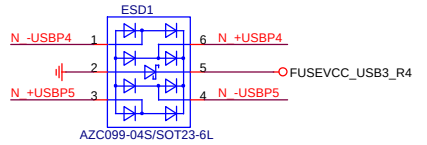


USB30_20 ESD PROCTECT

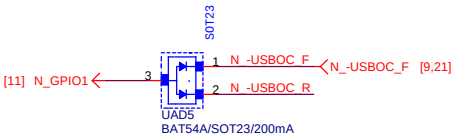
USB3.0 ESD



USB2.0 ESD



USB POWER PROTECT



Company	Gigabyte Technology
Title	COM,-RI,KB_USB,USB_ESATA,-PROCHOT
Size	Custom
Document Number	GA-Z87M-HD3
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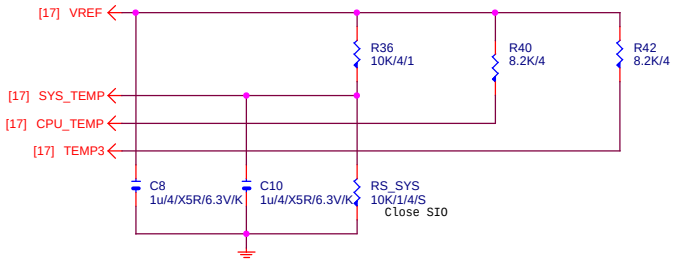
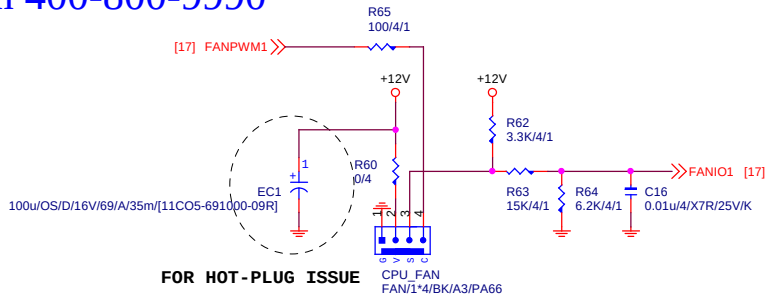
TEMP H/W MONITOR



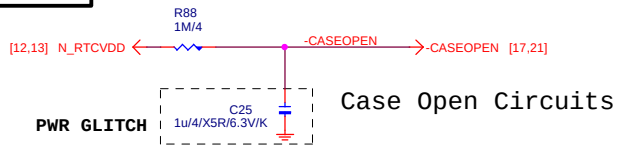
CPU SMART FAN



FOR HOT-PLUG ISSUE

BLACK CONNECTOR

CASE OPEN

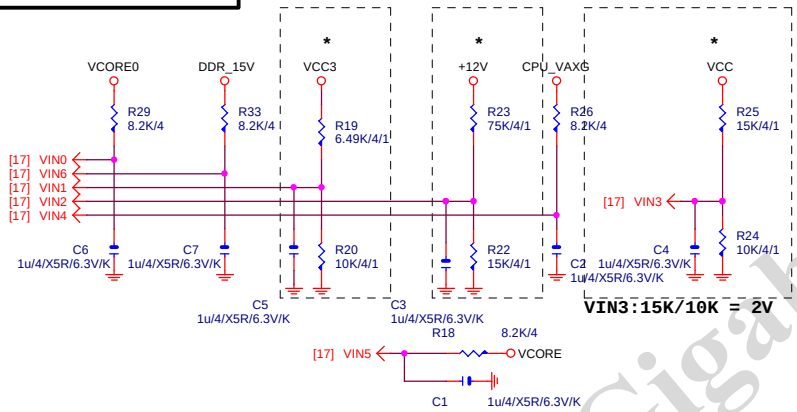


PWR GLITCH

Case Open Circuits

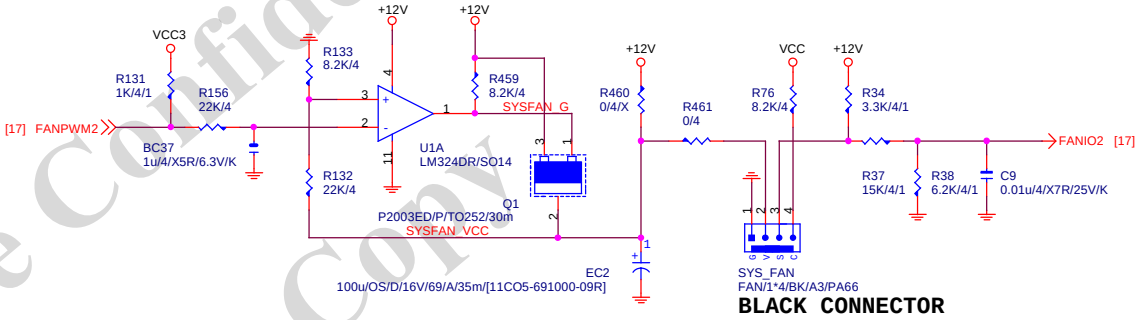
VOLTAGE-- H/W MONITOR

VIN2:75K/15K = 2V



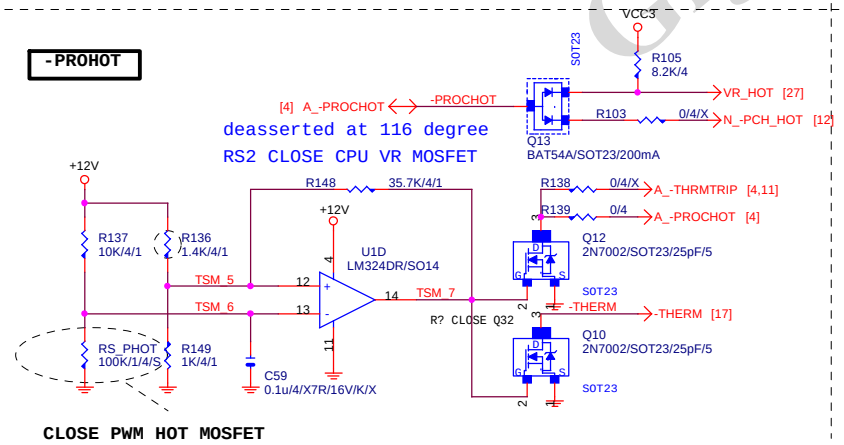
VIN3:15K/10K = 2V

SYS SMART FAN



BLACK CONNECTOR

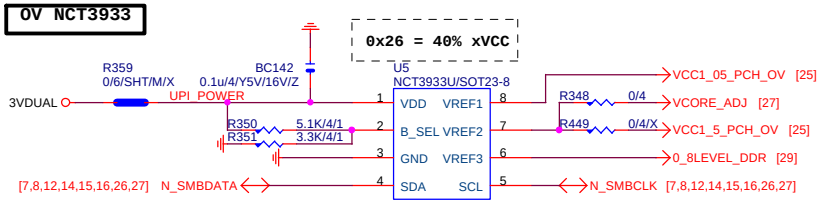
-PROHOT



CLOSE PWM HOT MOSFET

接pwm feedback pin

OV NCT3933



Gigabyte Technology		
Title: HWM,FAN CTRL,OV		
Size: Custom	Document Number: GA-Z87M-HD3	Rev: 1.0
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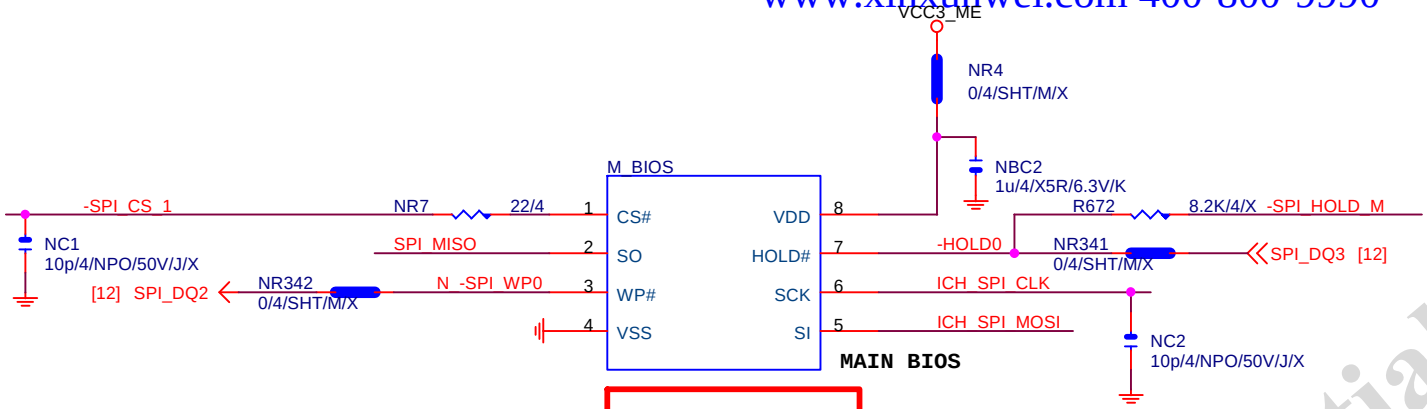
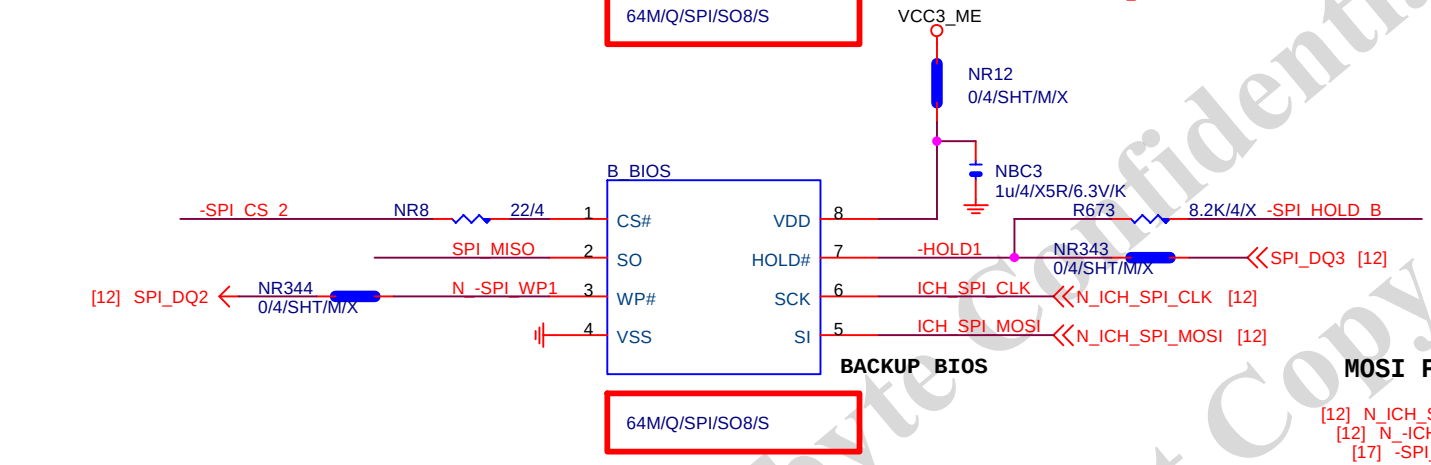
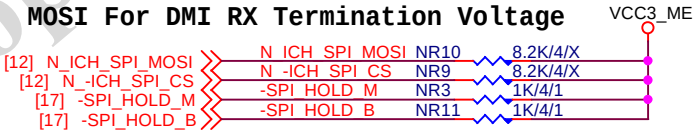


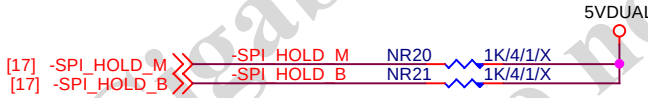


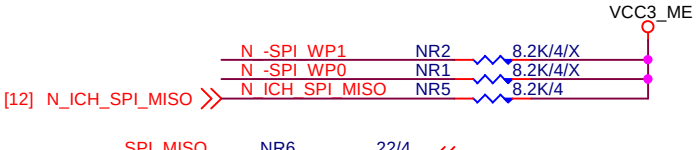
BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

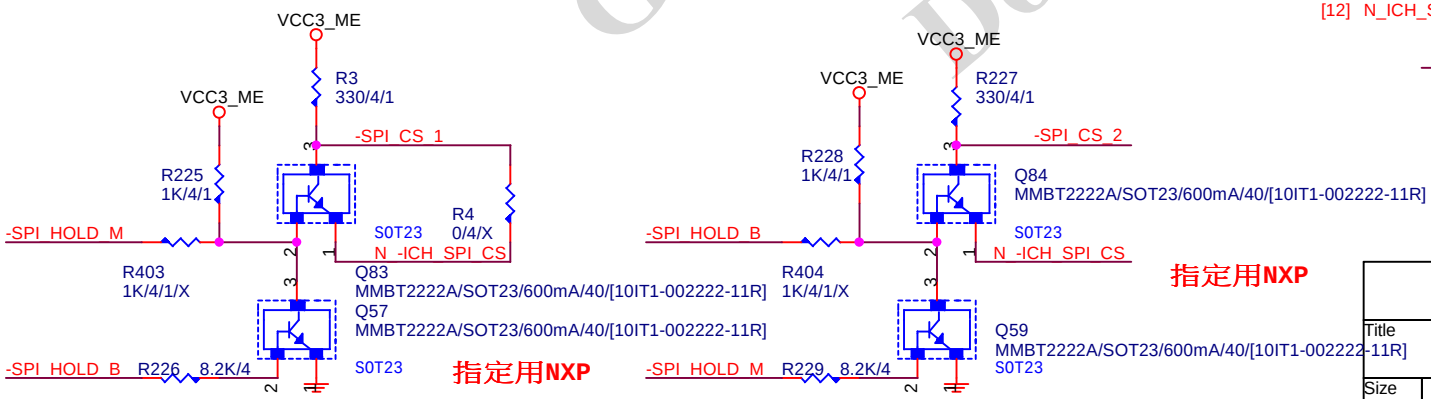
1 means floating
0 means PD 1K

MOSI For DMI RX Termination Voltage

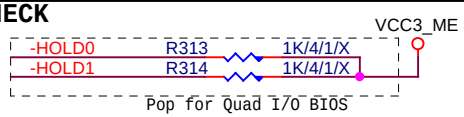






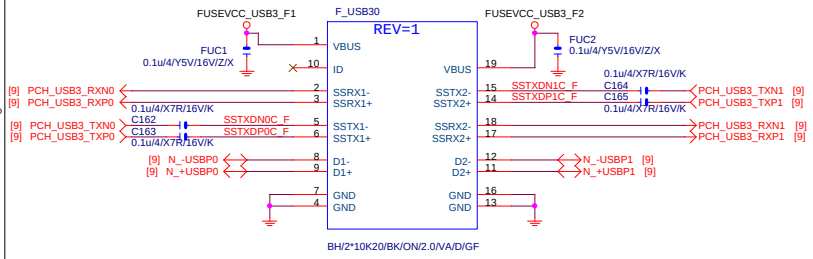


CHECK



Gigabyte Technology		
Title: DUAL BIOS		
Size: Custom	Document Number: GA-Z87M-HD3	Rev: 1.0
Date: Friday, March 29, 2013	Sheet 20 of 32	

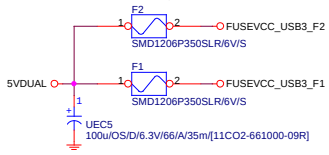
F_USB30



BLACK CONNECTOR

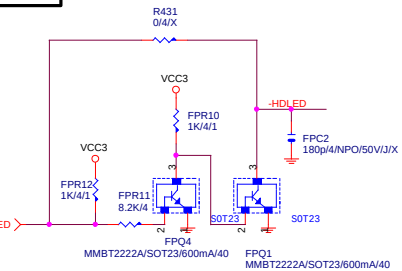
F_USB30 PWR

Polyswitch-1206

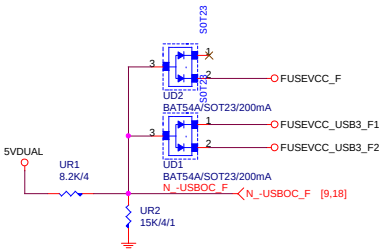


USB3.0 1Port - 1Fuse (3.5A)

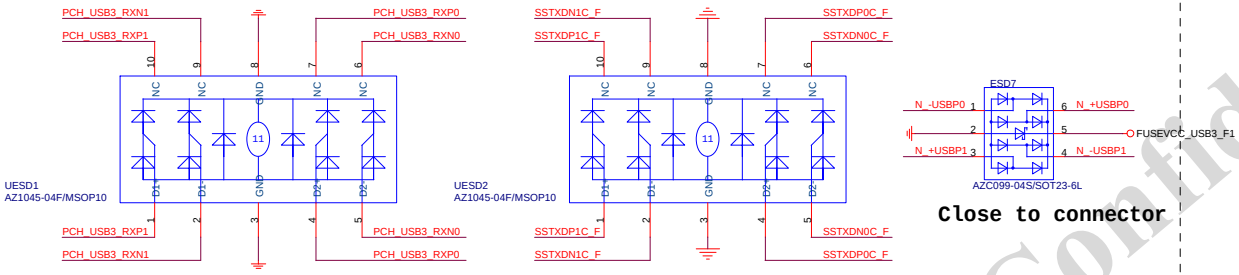
SATA LED



-USBOC_F

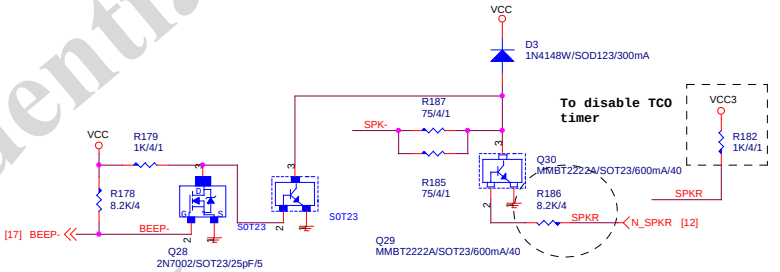


F_USB30 ESD PROTECT

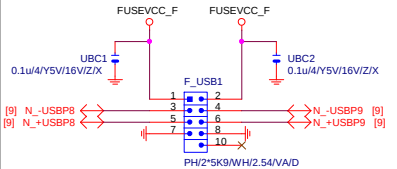


Close to connector

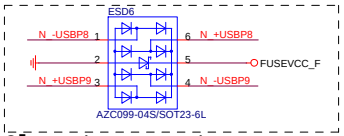
SPKR



FRONT USB1

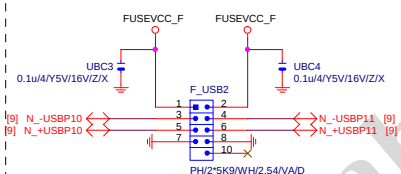


WHITE CONNECTOR

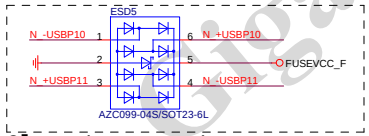


Close to connector

FRONT USB2



WHITE CONNECTOR

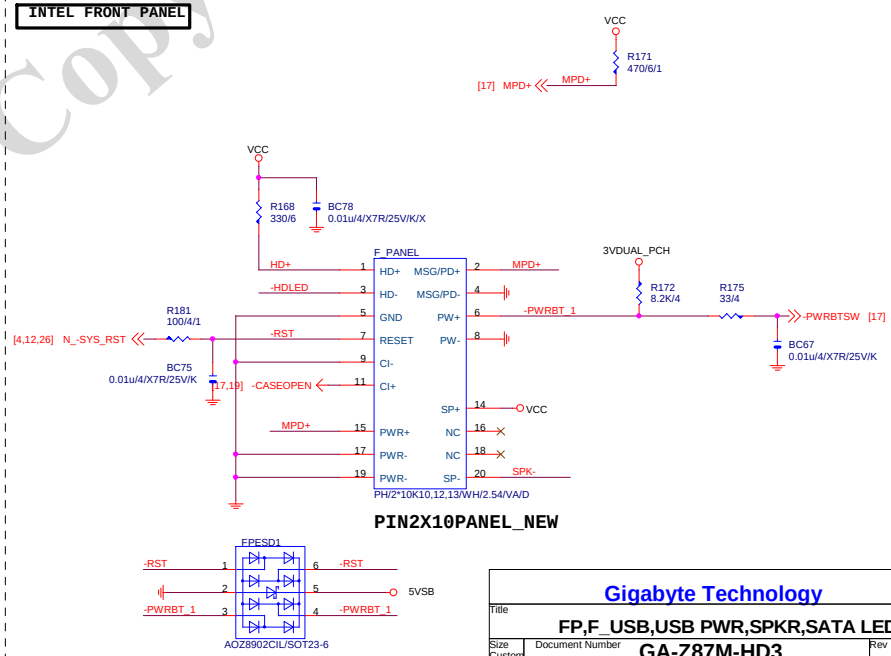


Close to connector

FUSE-0805

F_USB1, F_USB2 4-Port 2.6A

INTEL FRONT PANEL

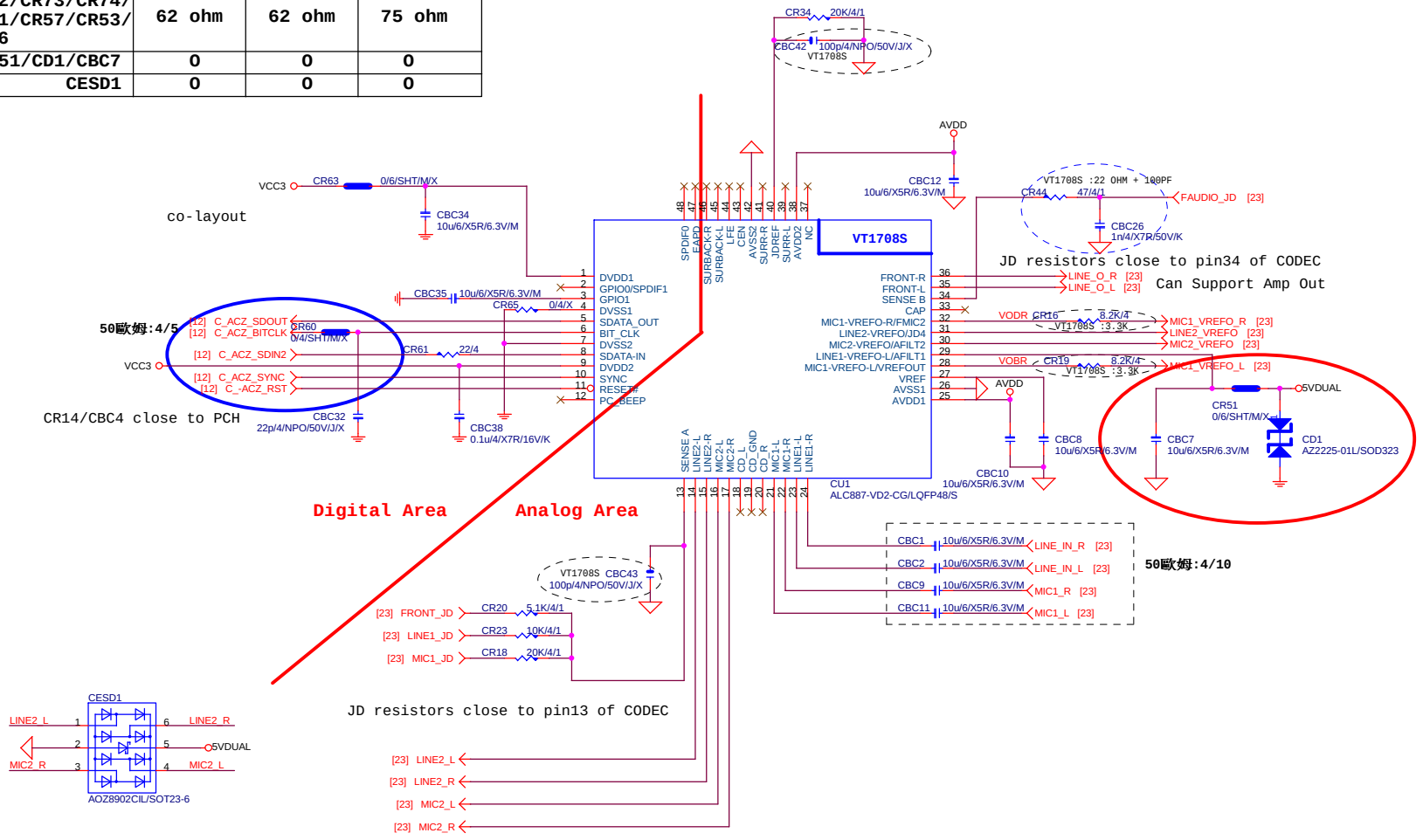


PIN2X10PANEL_NEW

Gigabyte Technology		
Title: FP,F_USB,USB PWR,SPKR,SATA LED		
Size: Custom	Document Number: GA-Z87M-HD3	Rev: 1.0
Date: Friday, March 29, 2013	Sheet 21 of 32	

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

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



Gigabyte Technology

Title	HD AUDIO ALC887B-VD2/VT1708S/VT2021	
Size: Custom	Document Number: GA-Z87M-HD3	Rev: 1.0
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CR49 0/6/X
CR50 0/6/X
CR21 2.2/6
CR24 0/4/SHT/M/X

LINE_OUT

CR7 22K/4
CR6 22K/4
CEC1 100u/OS/D/6.3V/66/A/35m/[11CO2-661000-09R]
[22] LINE_O_R CR5 62/4 AJ_B5
CEC2 100u/OS/D/6.3V/66/A/35m/[11CO2-661000-09R]
[22] LINE_O_L CR8 62/4 AJ_B2
CBC19 180p/4/NPO/50V/J
CBC24 180p/4/NPO/50V/J

Only reserved for ALC888

LINE-IN

[22] LINE_IN_R CR1 62/4 AJ_A5
[22] LINE_IN_L CR14 62/4 AJ_A2
CBC20 180p/4/NPO/50V/J
CBC23 180p/4/NPO/50V/J

Verify MIC function in LINE-in

For 889A/888

MIC-IN

[22] MIC1_R CR17 62/4 AJ_C5
[22] MIC1_L CR22 62/4 AJ_C2
[22] MIC1_VREFO_L
[22] MIC1_VREFO_R
CBC3 180p/4/NPO/50V/J
CBC4 180p/4/NPO/50V/J

SPDIF_OUT

AUDIO
[22] LINE1_JD LINE1_JD AJ_A5 AJ_A2 — BLUE LINE-IN
[22] FRONT_JD FRONT_JD AJ_B5 AJ_B2 — GREEN LINE-OUT
[22] MIC1_JD MIC1_JD AJ_C5 AJ_C2 — PINK MIC-IN
GND
MH1 MH2 MH3 MH4 MH5
A3RP/13P/BL,LI,PK/RA/D/1/B

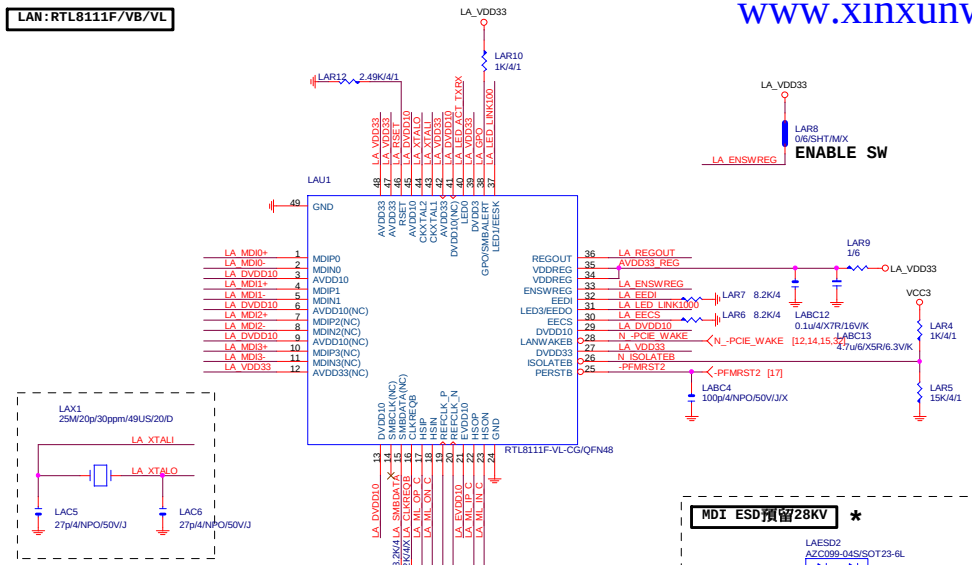
AZALIA FRONT PANEL

CQ4 BAT54A/SOT23/200mA SOT23
[22] LINE2_VREFO
CQ2 BAT54A/SOT23/200mA SOT23
[22] MIC2_VREFO
VT1708S :3.3K
CR52 8.2K/4
CR56 8.2K/4
CR10 8.2K/4
CR9 8.2K/4
CR58 22K/4
CR54 22K/4
VCC3
CR78 8.2K/4/X
F_AUDIO
[22] MIC2_L CBC6 10u/6/X5R/6.3V/M CR13 62/4 M2_L
[22] MIC2_R CBC5 10u/6/X5R/6.3V/M CR11 62/4 M2_R
L2_R CR57 62/4 L2-R
[22] FAUDIO_JD
L2_L CR53 62/4 L2-L
CR55 20K/4/1
CR59 39.2K/4/1
CR12 0/4/X
PH/2*5K8/BK/2.54/VA/D
BLACK CONNECTOR
100u/OS/D/6.3V/66/A/35m/[11CO2-661000-09R]
[22] LINE2_R CEC9 L2_R
[22] LINE2_L CEC6 L2_L
100u/OS/D/6.3V/66/A/35m/[11CO2-661000-09R]
CBC30 CBC29 CBC37 CBC36
180p/4/NPO/50V/J 180p/4/NPO/50V/J 180p/4/NPO/50V/J 180p/4/NPO/50V/J

Gigabyte Technology

Title	AUDIO JACK	
Size: Custom	Document Number: GA-Z87M-HD3	Rev: 1.0
Date: Friday, March 29, 2013	Sheet 23 of 32	

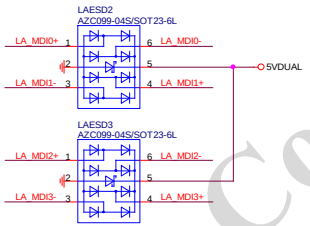
LAN:RTL8111F/VB/VL



LA_ ML-->80歐姆:[15/5/5/5/15]

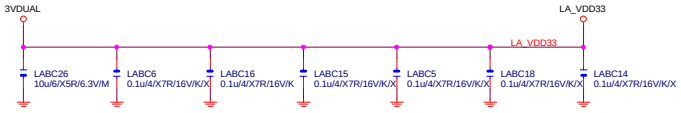
SRCCLK-->50歐姆:[18/4/10/4/18]

離IC近越好

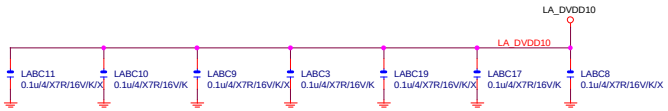


MDI ESD預留28KV *

LAN POWER

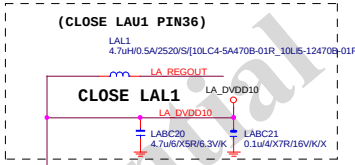


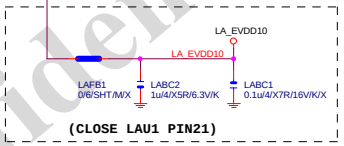
(CLOSE LAU1 PIN:12,27,39,42,47,48)



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

(CLOSE LAU1 PIN36)





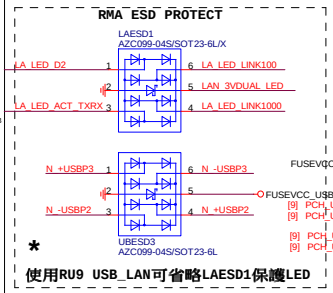
(CLOSE LAU1 PIN21)

Power domain chart

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

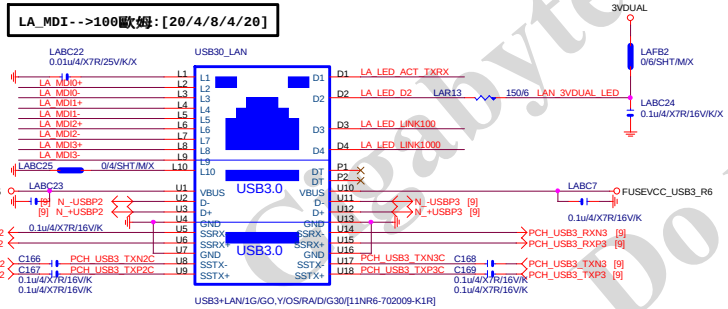
USB_LAN CONNECTOR

RMA ESD PROTECT



* 使用RU9 USB_LAN可省略LAESD1保護LED

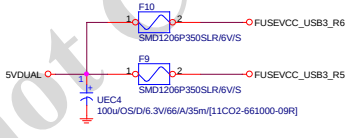
LA_MDI-->100歐姆:[20/4/8/4/20]



USB3+LAN/1G/GO,Y/OS/RA/D/G30/[11NR6-702009-K1R]

USB X3 POWER

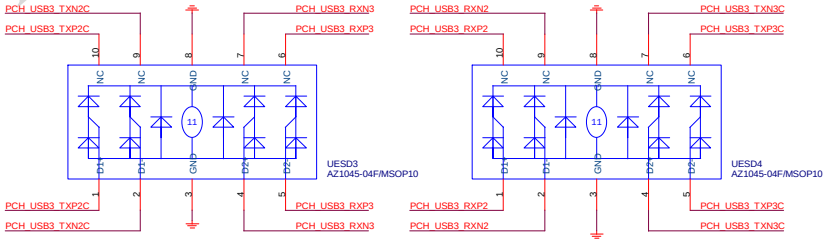
Polyswitch-1206



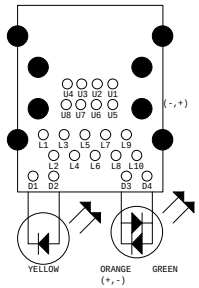
USB3.0 1Port - 1Fuse (3.5A)

EMI SHORT PAD

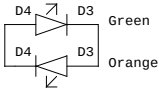
PS:視EMI需求



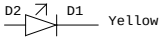
注意:USB PORT(目前:暫代6,7PORT)
USB-->90歐姆:[15/4.5/7.5/4.5/15]



Dual Color LED



Single Color LED



BOM NOTICE *

料號	規格	廠商
11NR6-702009-96R	1G LAN (12core)	UDE(RU9 ESD+)

[LED獨立走線,可省略外加AZC099料件LAESD1]

1. 9KV ESD BOM:
   USB_LAN (RU9):11NR6-702009-96R
2. 28KV ESD BOM:
   USB_LAN (RU9):11NR6-702009-96R
   LAESD2,LAESD3:上件AZC398-04S

Gigabyte Technology			
Title: Realtek RTL8111G			
Size: Custom	Document Number: GA-Z87M-HD3		Rev: 1.0
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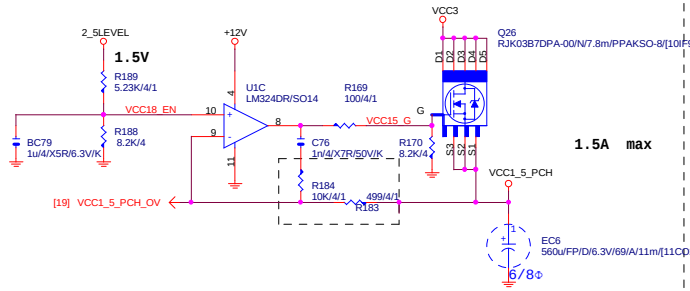
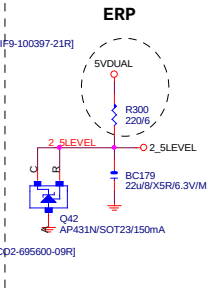
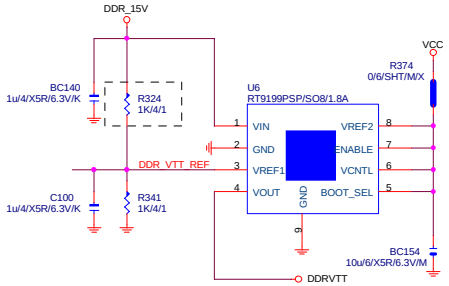
VCC1_8_PCH



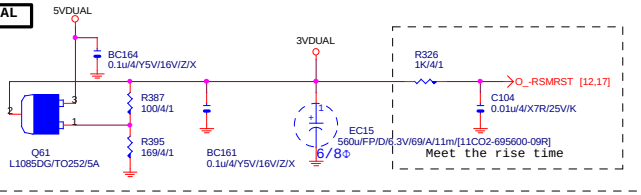
2_5LEVEL



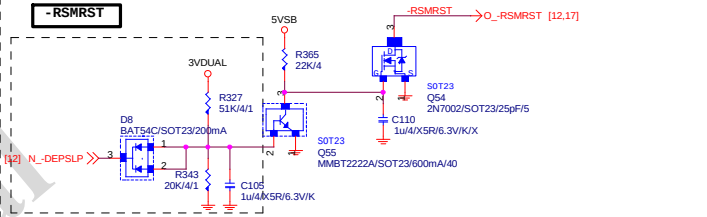
DDRVTT



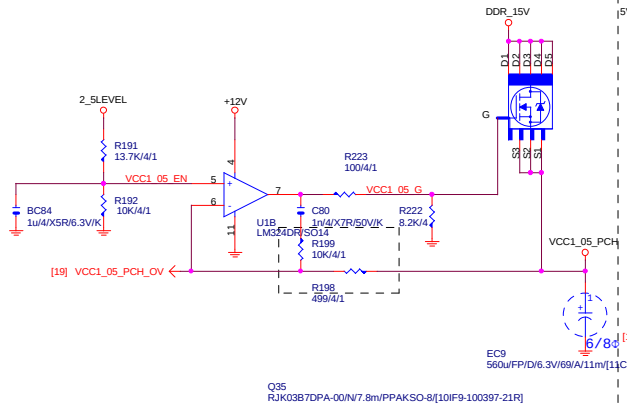
3VDUAL



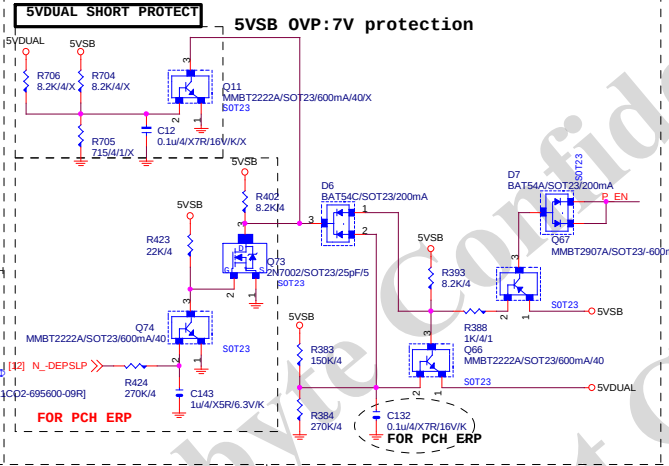
-RSMRST



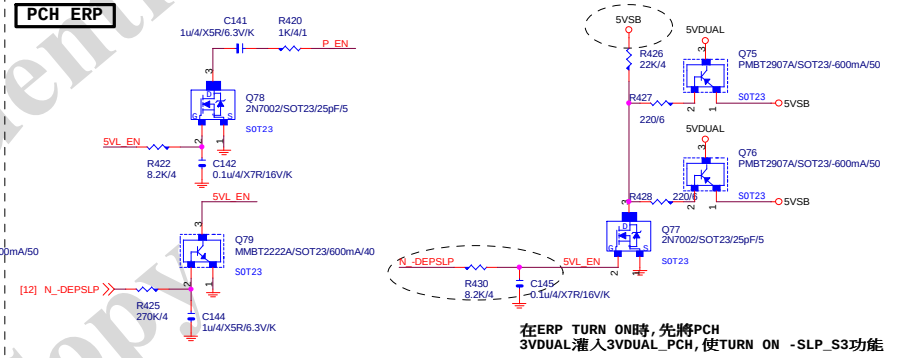
VCC1_05_PCH



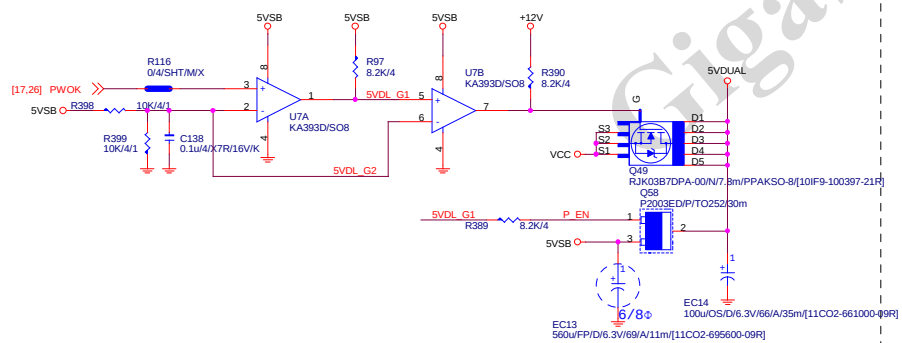
5VDUAL SHORT PROTECT



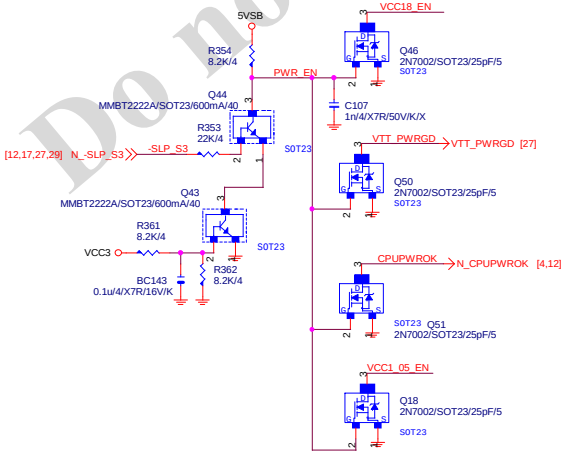
PCH_ERP



5VDUAL



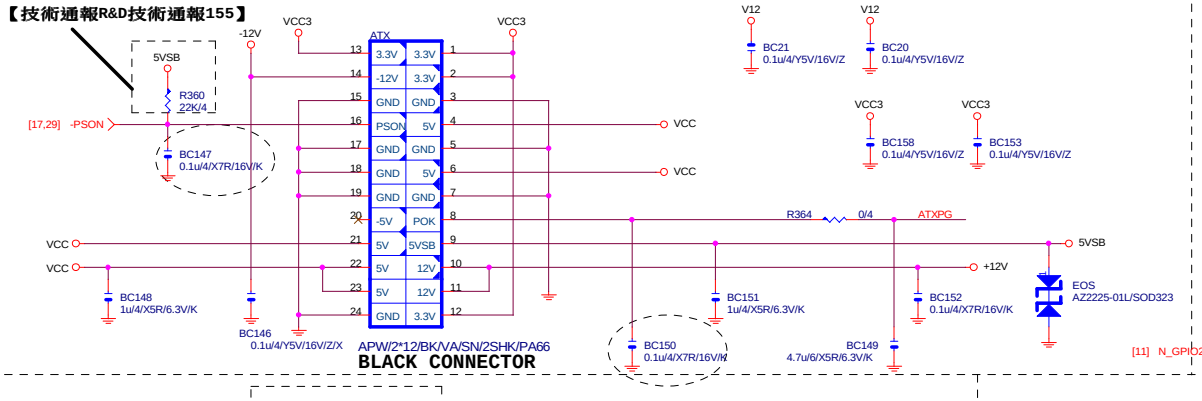
PWR SEQ



Gigabyte Technology		
Title: DISCRETE POWER		
Size: Custom	Document Number: GA-Z87M-HD3	Rev: 1.0
Date: Friday, March 29, 2013	Sheet 25 of 32	

ATXX24 POWER CONNECTOR

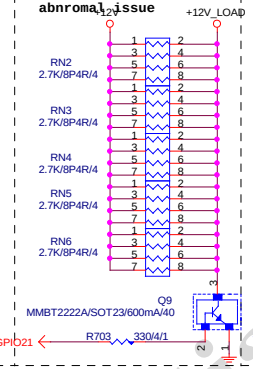
【技術通報R&D技術通報155】



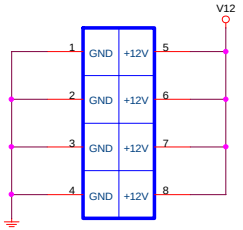
BLACK CONNECTOR

【技術通報R&D技術通報153】

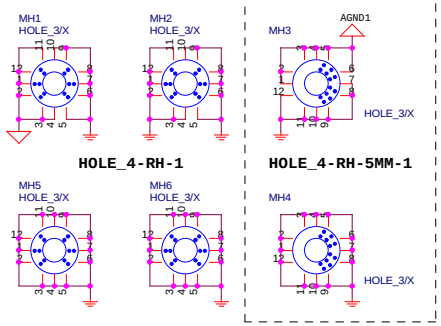
To fix 12V light load abnromal issue

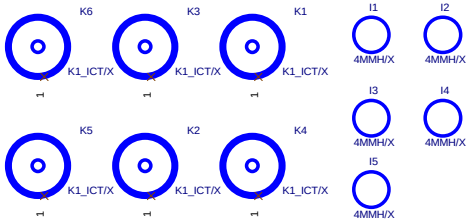


ATXX4 POWER CONNECTOR



BLACK CONNECTOR



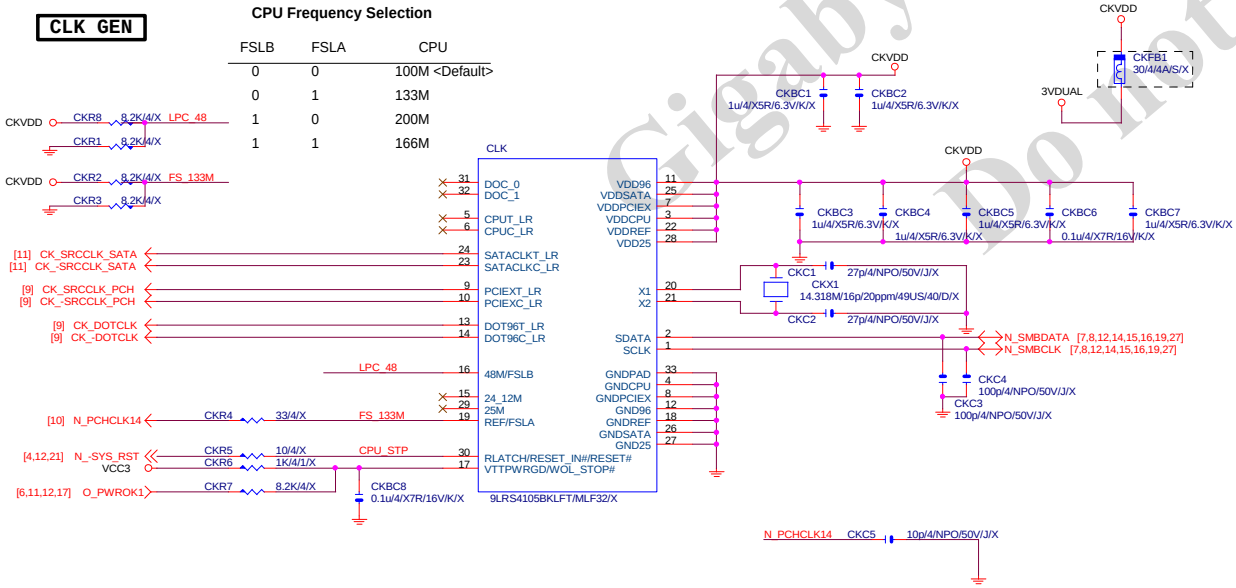


To prevent the 5VSB under loading when boot

CLK GEN

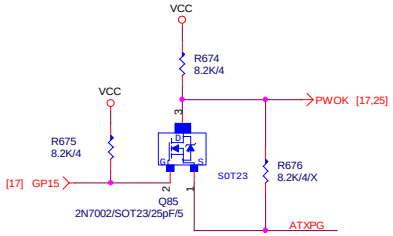
CPU Frequency Selection

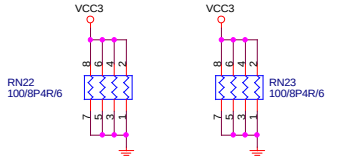
FSLB	FSLA	CPU
0	0	100M <Default>
0	1	133M
1	0	200M
1	1	166M



PWOK PATCH

【技術通報R&D技術通報154】





FIX PWR MINMUN LOAD

Gigabyte Technology

Title: **ATX CONNECTOR**

Size: Custom | Document Number: **GA-Z87M-HD3** | Rev: **1.0**

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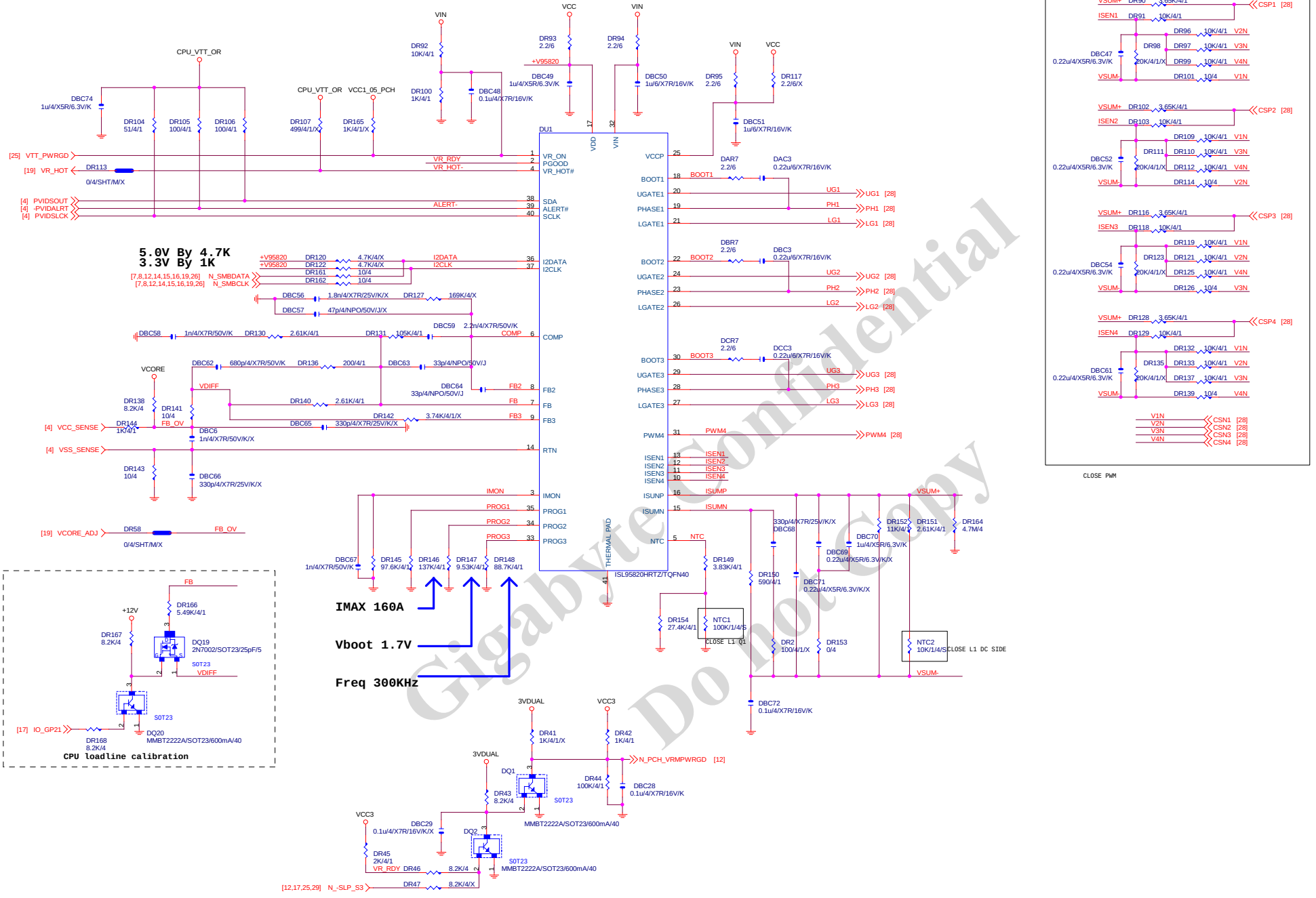

Gigabyte Technology			
Title	CPU CORE VR-1		
Size: Custom	Document Number: GA-Z87M-HD3		Rev: 1.0
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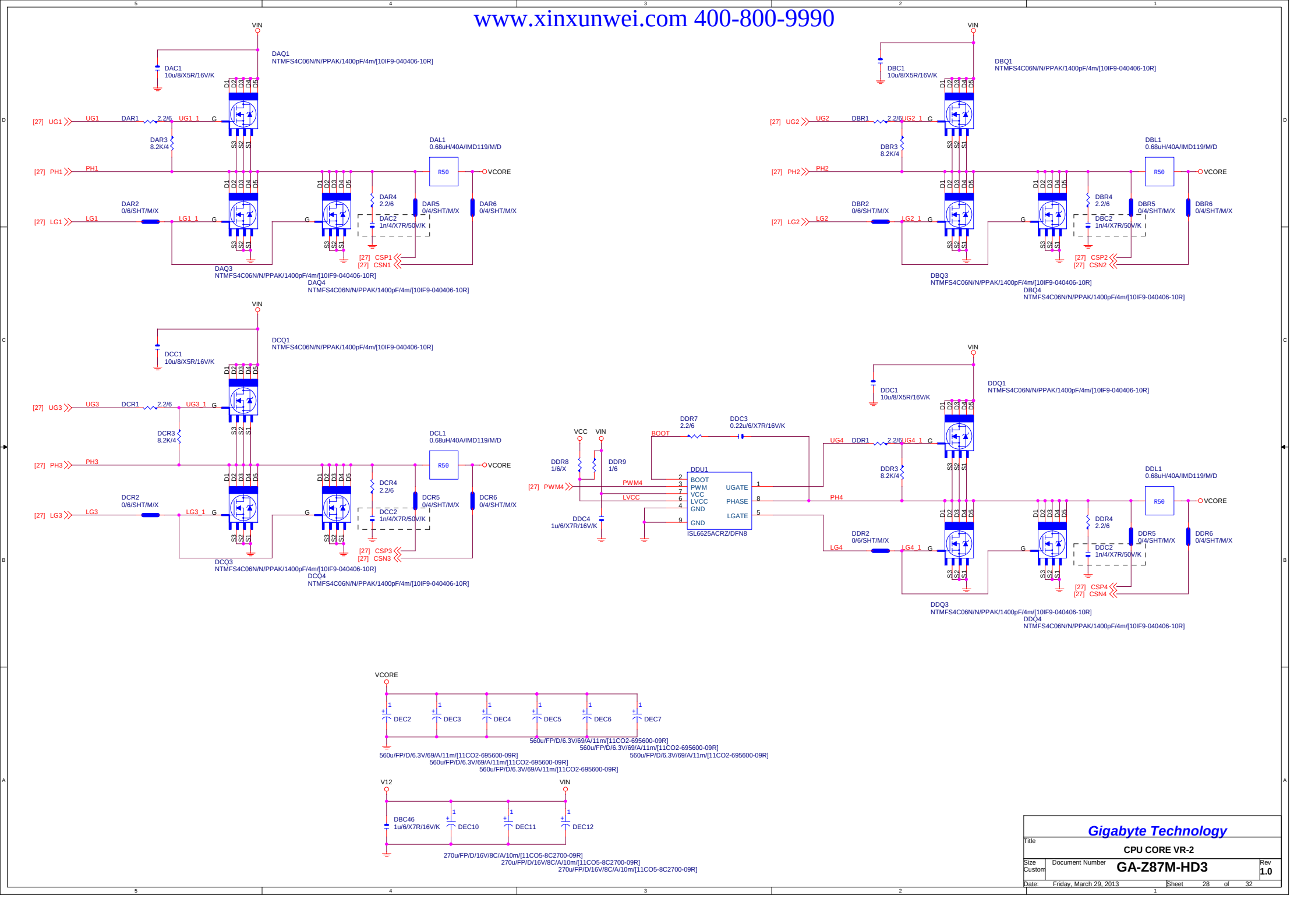
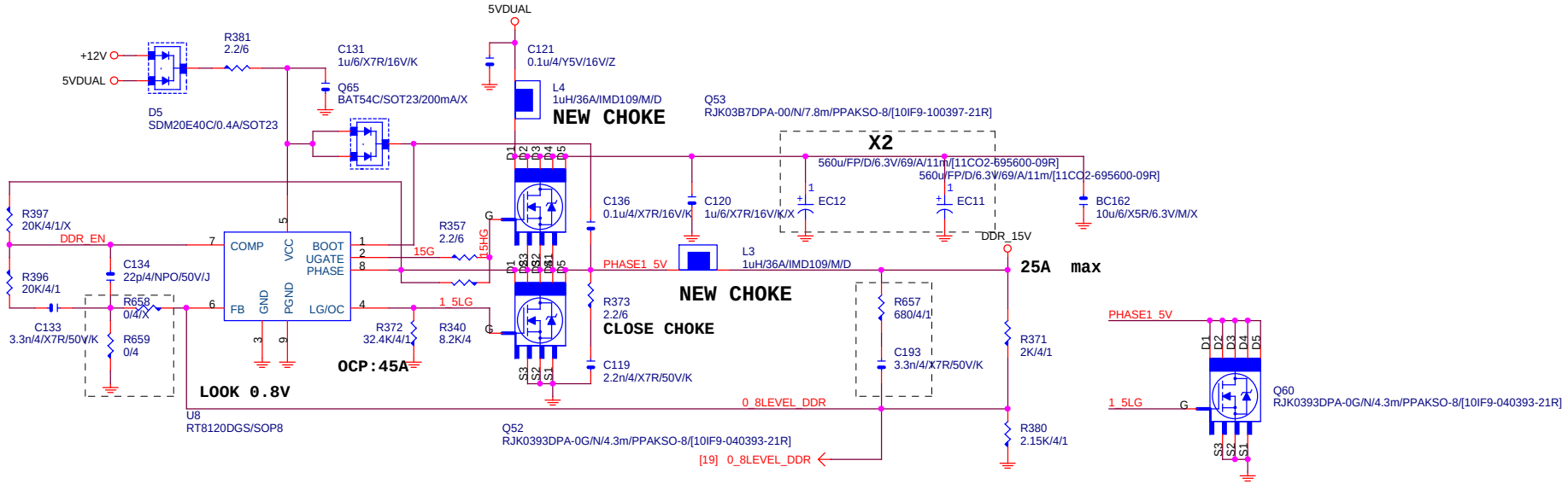


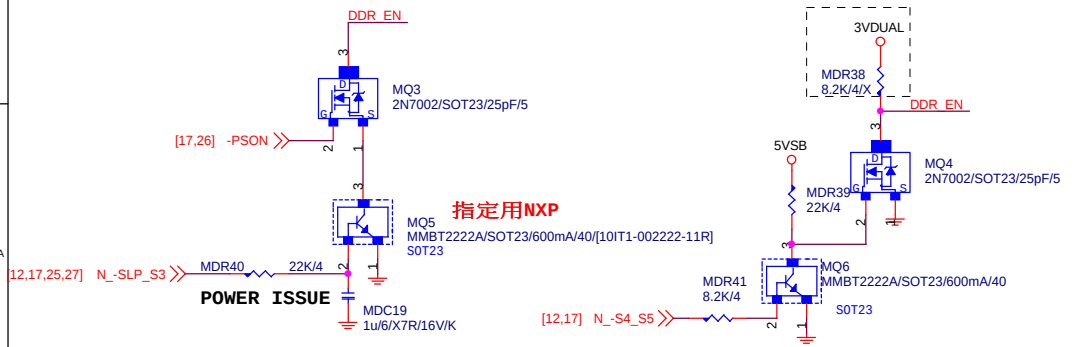
Gigabyte Technology

Title	CPU CORE VR-2		
Size: Custom	Document Number: GA-Z87M-HD3		Rev: 1.0
Date: Friday, March 29, 2013	Sheet 28 of 32		

DDR15V



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℃),1(105℃)

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

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

Gigabyte Technology			
Title: DDR POWER			
Size: Custom	Document Number: GA-Z87M-HD3		Rev: 1.0
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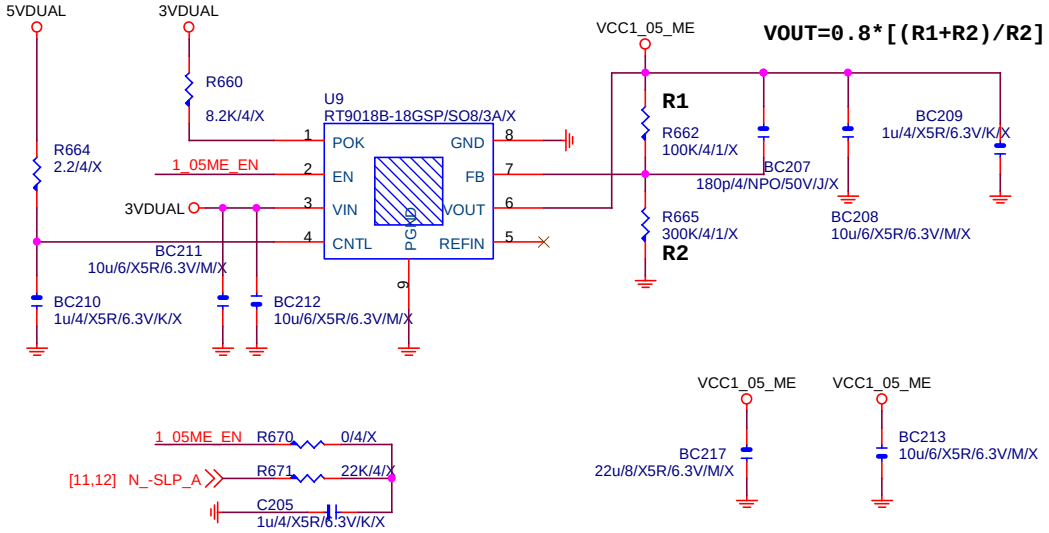
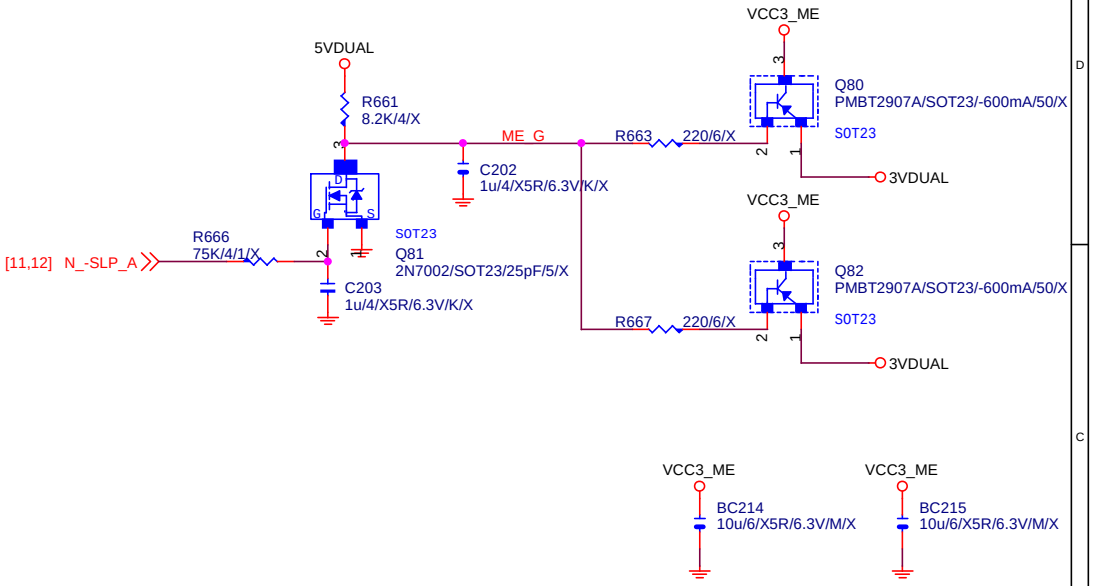
VCC1_05_ME

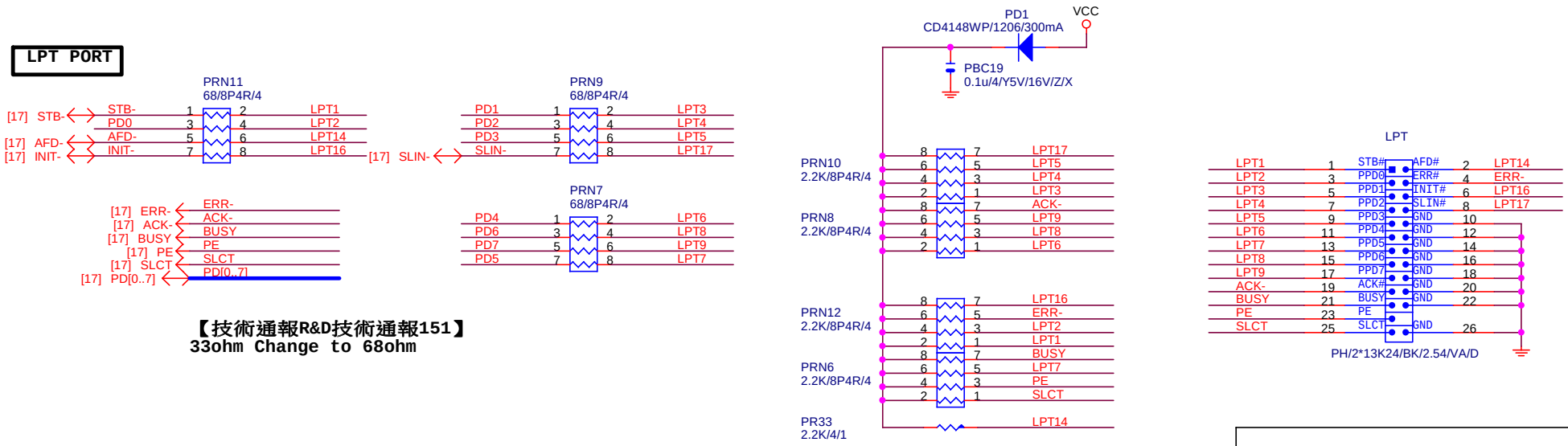
【技術通報R&D技術通報156】
(RICHTEK), (NUVOTON), (EMC)做共用
PIN7分壓阻值須做修改為100K以上電阻值



VCC3_ME



LPT PORT



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

Gigabyte Technology		
Title: LPT		
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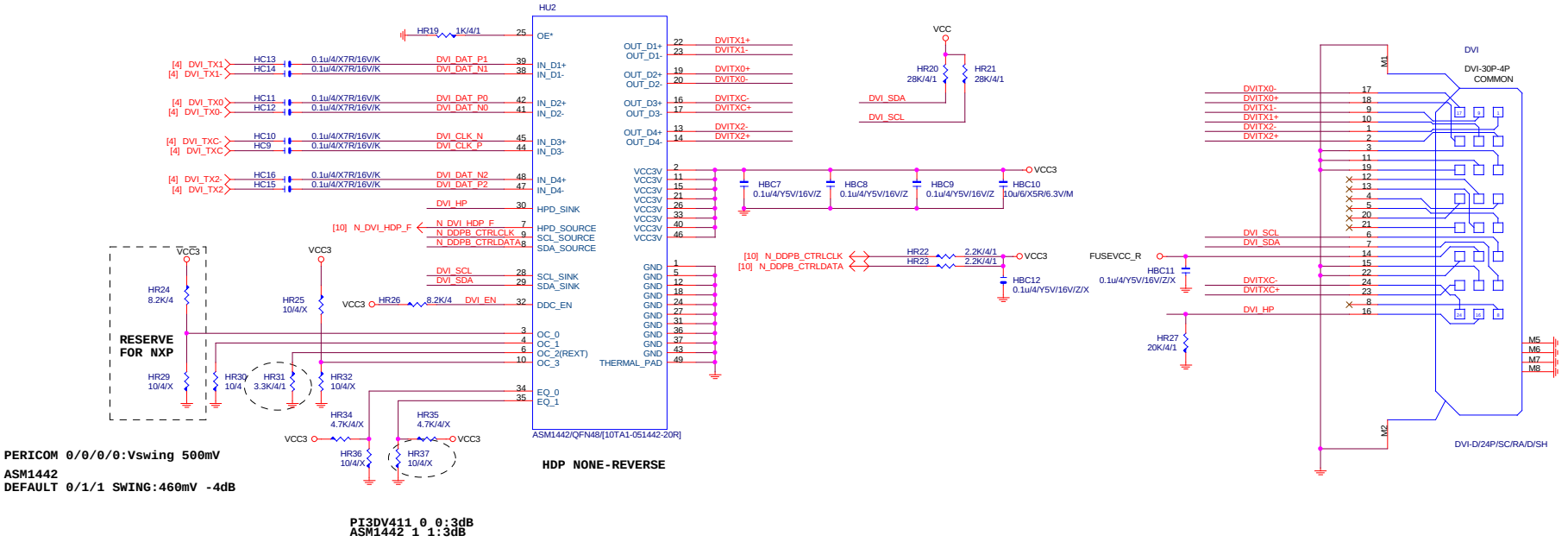
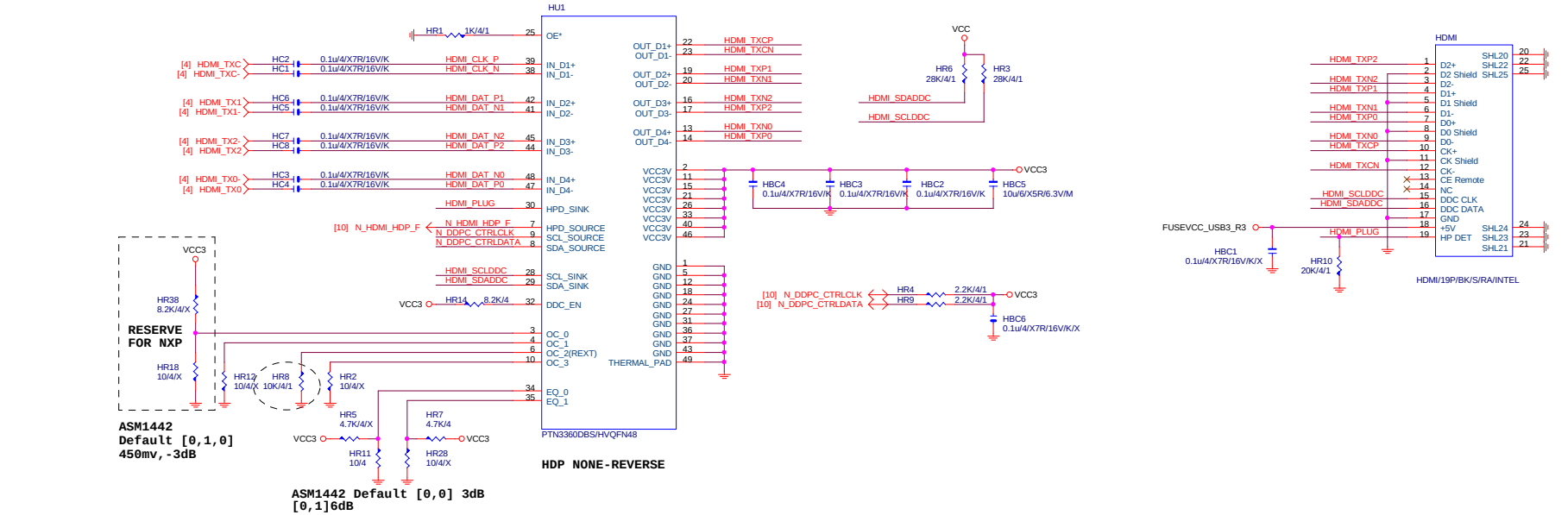
DVI LEVEL SHIFT



HDMI LEVEL SHIFT



【技術通報R&D技術通報150】
HDMI eye diagram1.4版(deep color)會fail
原因: 因目前的HDMI訊號過長,造成RISING TIME過慢,而會壓到eye diagram
改善: ASMEDIA ASM1442 : 3.16K(PIN6 PULL DOWN電阻) 10ohm(PIN4 PULL DOWN電阻)

Gigabyte Technology			
Title: DVI			
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PCIE TO PCI

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

IT8892: PR24 -> 47ohm
IT8893: PR24 -> 22ohm

BA_D[0..31] BA_D[0..31] [16]

-BC_BE0 -BC_BE0 [16]
-BC_BE1 -BC_BE1 [16]
-BC_BE2 -BC_BE2 [16]
-BC_BE3 -BC_BE3 [16]

-BPERR -BPERR [16]
-BSERR -BSERR [16]

BPAR BPAR [16]
-BPLOCK -BPLOCK [16]
-BDEVSEL -BDEVSEL [16]
-BSTOP -BSTOP [16]
-BTRDY -BTRDY [16]
-BIRDY -BIRDY [16]
-BFRAME -BFRAME [16]

-PCIE_RST -PCIE_RST [14,15,17]

-BPCIRST -BPCIRST [16]

-BREQ0 -BREQ0 [16]

-BGNT0 -BGNT0 [16]

-BPCIPME1 -BPCIPME1 [16]

[16] BPCLK0 PR24 47/4/1 CLKOUT0

RREF PR13 12K/4/1
TEST_EN PR21 10K/4/1
EXT_ARB PR22 10K/4/1
RST_SEL PR7 10K/4/1

VCC3
PR14 1K/4/1/X M66EN
PR42 1K/4/1

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

VCC3
PR35 8.2K/4/X PCICLK_SEL
PR37 10K/4/1

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

PU1

IT8892E/BX LQFP128

IT8892E/FX/S

[10] G_-PBCLK
[10] G_PBCLK

[9] G_PCIEBOP
[9] G_PCIEBON
PBC61 0.1u/4/X7R/16V/K G_PCIEBOP_C
PBC62 0.1u/4/X7R/16V/K G_PCIEBON_C

[9] G_PCIEBIN
[9] G_PCIEBIP
PBC43 0.1u/4/X7R/16V/K G_PCIEBIN_C
PBC44 0.1u/4/X7R/16V/K G_PCIEBIP_C

PBC63 10p/4/NPO/50V/J/X
PBC64 10p/4/NPO/50V/J/X

IT8892

PRN14 0/8P4R/0402/SHT/X
-BPIRQA -BPIRQA1 [16]
-BPIRQD -BPIRQD1 [16]
-BPIRQB -BPIRQB1 [16]
-BPIRQC -BPIRQC1 [16]

PCI slot

VCCP PR26 0/4/SHT/M/X 3VDUAL

PCI slot

-BPCIPME1 PR27 0/4/SHT/M/X N_-PCIE_WAKE [12,14,15,24]

chipset side

3VDUAL
PR2 0/4/SHT/M/X
PCIEWAKE PR34 10K/4/1
-BPCIPME PR43 10K/4/1

PRN1 2.2K/8P4R/4 -BFRAME -BTRDY -BSTOP -BDEVSEL
PRN2 2.2K/8P4R/4 -BIRDY -BPERR -BSERR -BPLOCK
PRN15 2.2K/8P4R/4 -BPIRQC -BPIRQB -BPIRQD -BPIRQA
PRN4 2.2K/8P4R/4 -BGNT3 -BREQ3 -BGNT1 -BREQ1
PRN5 2.2K/8P4R/4 -BGNT2 -BREQ2 -BGNT0 -BREQ0
BPAR PR41 2.2K/4/1/X

LDO_18V PFB1 0/6/SHT/M/X 1.8VA
PFB2 0/6/SHT/M/X 1.8VD
LDOAUX_18V PFB3 0/6/SHT/M/X 1.8V_AUX
PFB4 0/6/SHT/M/X 1.8V_AUXA

VCC3
PBC60 10u/6/X5R/6.3V/M
PBC21 1u/4/X5R/6.3V/K
PBC22 0.1u/4/X7R/16V/K
PBC33 1u/4/X5R/6.3V/K
PBC34 0.1u/4/X7R/16V/K
PBC35 0.1u/4/X7R/16V/K

3VDUAL PBC29 0.1u/4/X7R/16V/K/X
1.8V_AUX PBC30 0.1u/4/X7R/16V/K
1.8V_AUXA PBC31 0.1u/4/X7R/16V/K

1.8VD
PBC23 10u/6/X5R/6.3V/M
PBC24 1u/4/X5R/6.3V/K
PBC25 0.1u/4/X7R/16V/K

LDOAUX_18V
PBC32 10u/6/X5R/6.3V/M
PBC40 1u/4/X5R/6.3V/K
PBC41 0.01u/4/X7R/25V/K

1.8VD
PBC59 1u/4/X5R/6.3V/K
PBC38 0.1u/4/X7R/16V/K
PBC39 0.01u/4/X7R/25V/K

PCB layout note:
Close to chip

LDO_18V
PBC58 10u/6/X5R/6.3V/M
PBC42 1u/4/X5R/6.3V/K
PBC45 0.01u/4/X7R/25V/K

PCB layout note:
Close to chip

1.8VA
PBC26 10u/6/X5R/6.3V/M
PBC27 1u/4/X5R/6.3V/K
PBC28 0.1u/4/X7R/16V/K

Close to chip

Gigabyte Technology

Title: **ITE IT8892E**

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