Model Name: GA-H97M-DS3P

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 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, PCI EXPRESS X1 *2 SLOT
16	ITE 8620 LPC IO
17	COM,KB_MS_USB,USB30_20
18	HWM,FAN CTRL,OV,-PROCHOT
19	DUAL BIOS
20	FP,FUSB,SPK,SATALED
21	Realtek ALC887-VD2
22	REAR AUDIO JACK
23	INTEL I217V
24	DISCRETE POWER
25	ATX
26	VCORE ISL95820_1
27	VCORE ISL95820_2

SHEET	TITLE
28	RT8120_DDR POWER
29	LPT, M3 POWER
30	DVI, HDMI
31	IT8892 PCI BRIDGE

Gigabyte Technology

Title: Cover Sheet

Size: Custom | Document Number: GA-H97M-DS3P | Rev: 1.0

Date: Tuesday, April 22, 2014 | Sheet 1 of 31

Model Name: GA-H97M-DS3P

Component value change history

Revision 1.0

2014/02/11--B.L

Date	Change Item	Reason
2014.02.??	BOM: PCB:1.0	New BOM release. EVT: 2014.03.12
2014.03.05	10A E-BOM release. PCB:1.0	NEW BOM
2014.04.22	10B P-BOM release. PCB:1.0	1. NR190 不上件 2.MOS使用Rule (Vcore / non-vcore) 3.EMI Solution(PEMC0 / PEMC3 / PEMC1 / PEMC2 / BC78 / BC164上件) 4. R380 2.15K/4/1 change to 2.26K/4/1 5.H97 MP CHIP P/N: 10HB1-030H97-20R 6.OR48/OC28/RS3/OR46/OC26/RS4不上件

Circuit or PCB layout change

DATE	Change Item	Reason
2014.02.27	Modify from Z97M-DS3H 0.2, add IT8892 PCI bridge.	

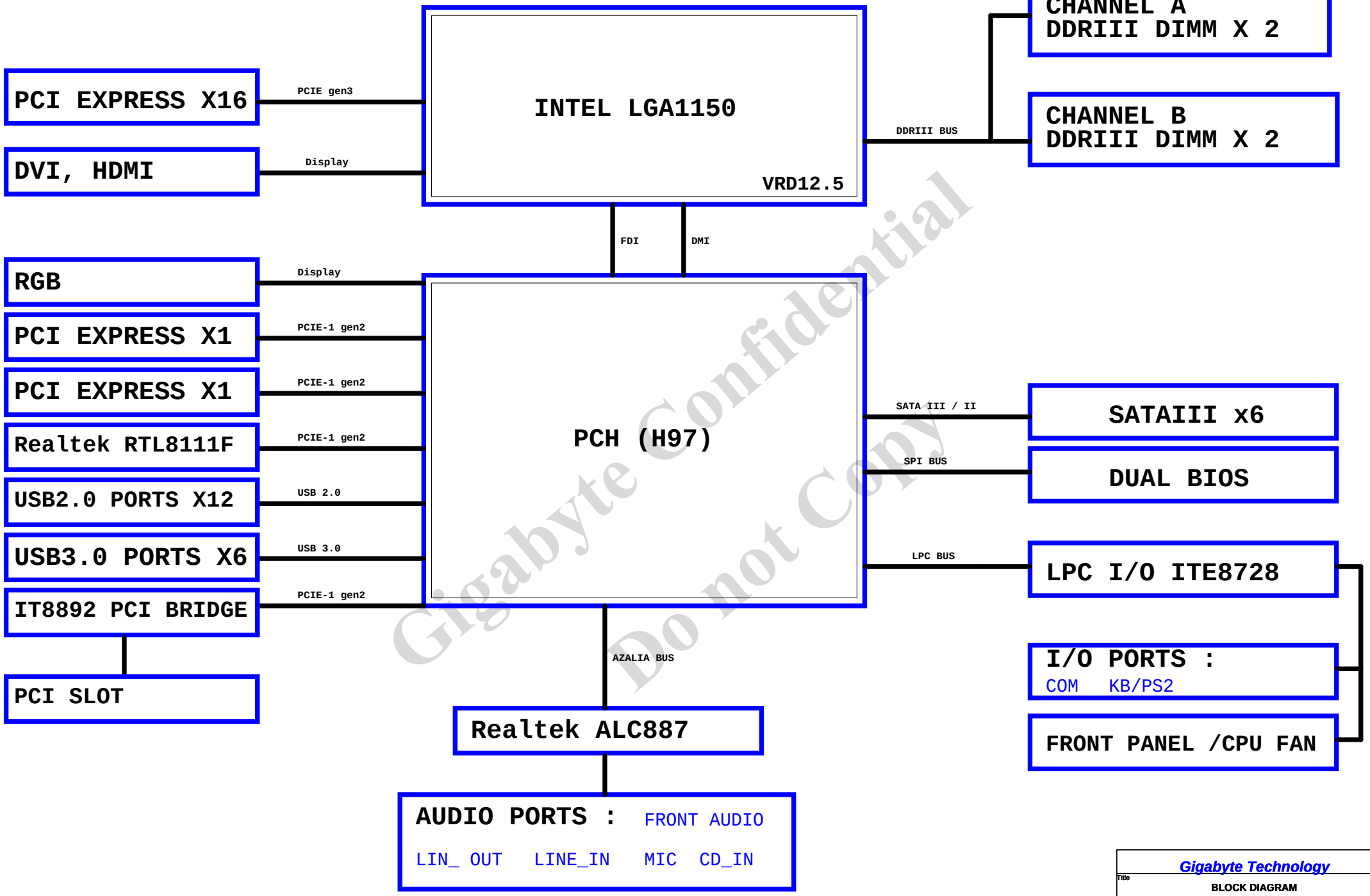
Gigabyte Technology

Title: BOM & PCB MODIFY HISTORY

Size: Custom | Document Number: GA-H97M-DS3P | Rev: 1.0

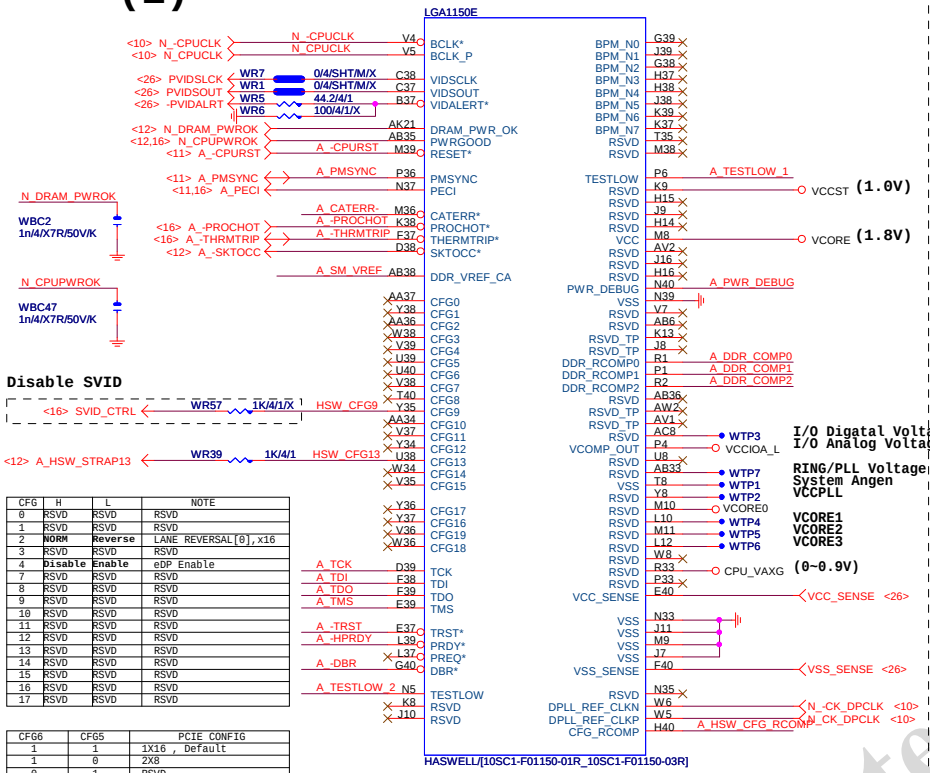
Date: Tuesday, April 22, 2014 | Sheet 2 of 31

BLOCK DIAGRAM



Gigabyte Technology		
Title: BLOCK DIAGRAM		
Size: Custom	Document Number: GA-H97M-DS3P	Rev: 1.0
Date: Tuesday, April 22, 2014	Sheet 3 of 31	

LGA1150 (E)



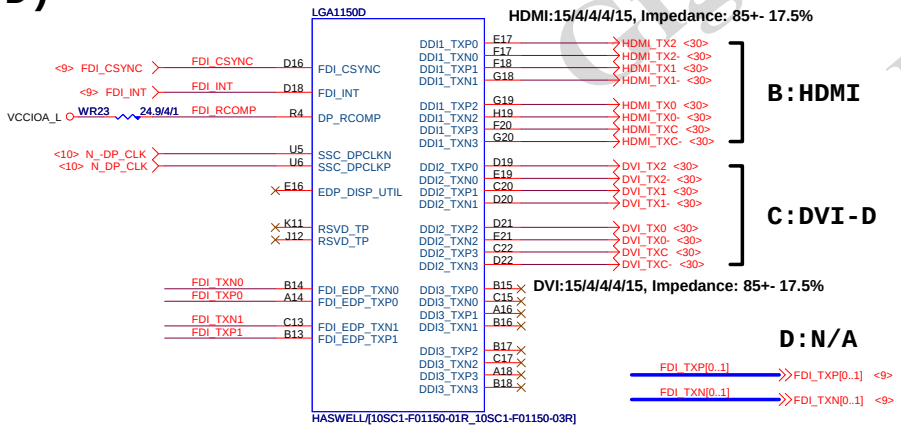
CFG	H	L	NOTE
0	RSVD	RSVD	RSVD
1	RSVD	RSVD	RSVD
2	**NORM**	**Reverse**	LANE REVERSAL[0],x16
3	RSVD	RSVD	RSVD
4	**Disable**	**Enable**	eDP Enable
7	RSVD	RSVD	RSVD
8	RSVD	RSVD	RSVD
9	RSVD	RSVD	RSVD
10	RSVD	RSVD	RSVD
11	RSVD	RSVD	RSVD
12	RSVD	RSVD	RSVD
13	RSVD	RSVD	RSVD
14	RSVD	RSVD	RSVD
15	RSVD	RSVD	RSVD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

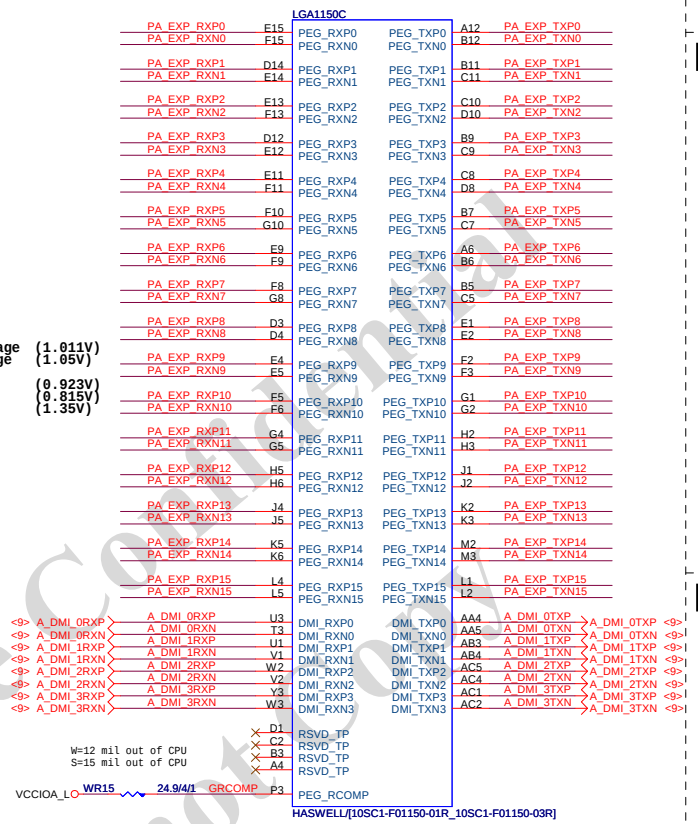
DVI-I + HDMI組態就是: DVI-I port B, HDMI port C
DVI-D + HDMI組態就是: DVI-D port C, HDMI port B



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

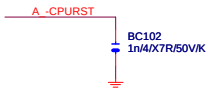
LGA1155 (C)

PCIEX16:20/5/4/5/20(breakout min 10/4/4/4/10)
Impedance=80 +- 17.5%

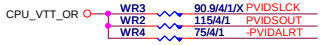


DMI:12/4/4/4/12(breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%

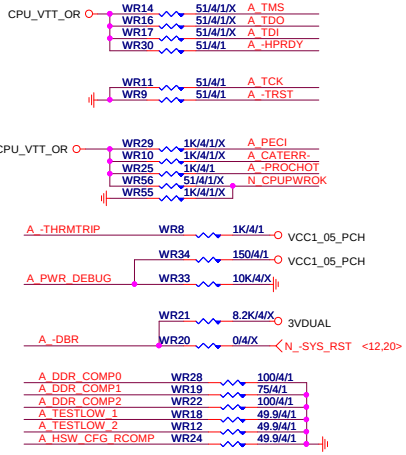
-CPURST



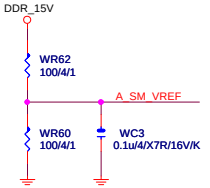
CPU SVID



CPU PU/PD

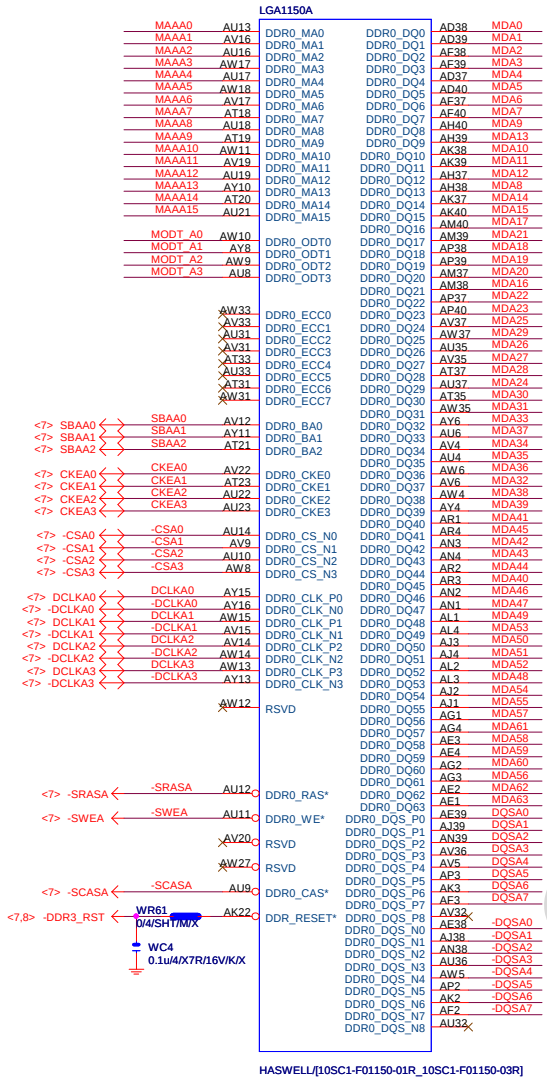


SM REF

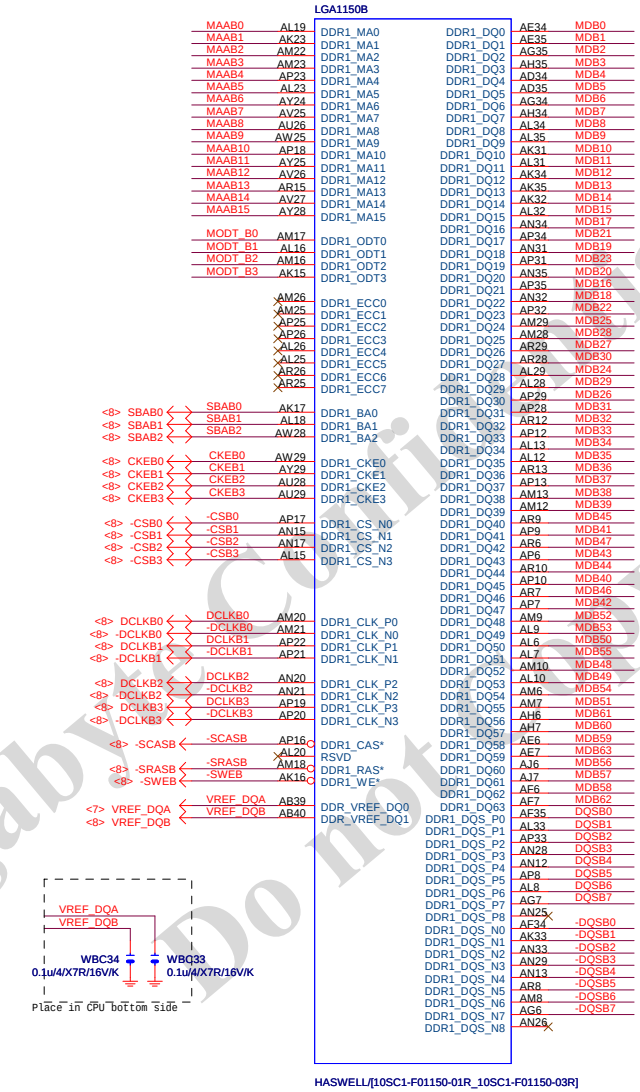


Gigabyte Technology		
Title	CPU LGA1150-A	
Size: Custom	Document Number: GA-H97M-DS3P	Rev: 1.0
Date: Tuesday, April 22, 2014	Sheet 4 of 31	

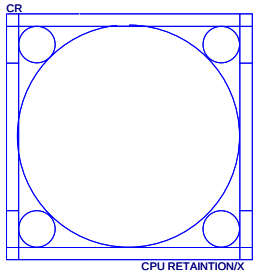
LGA1150 (A)



LGA1150 (B)



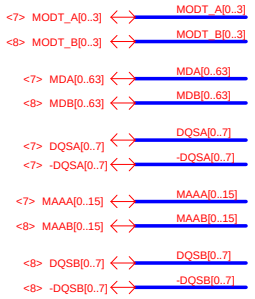
LGA1150 (CR)



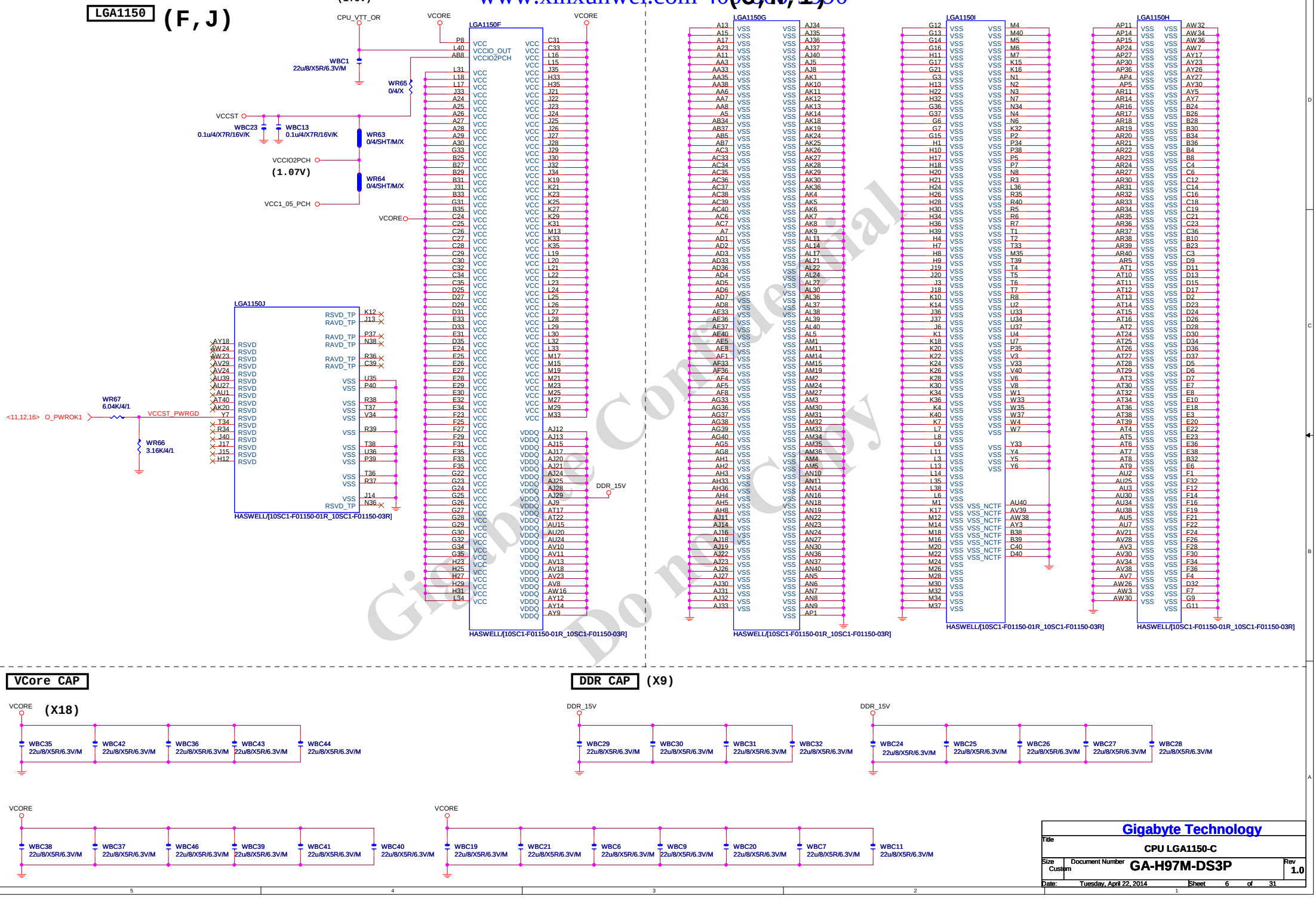
LGA1150

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

DDR BUS



Gigabyte Technology			
Title: CPU LGA1150-B			
Size: Custom	Document Number: GA-H97M-DS3P		Rev: 1.0
Date: Tuesday, April 22, 2014	Sheet 5 of 31		



Gigabyte Technology		
Title	CPU LGA1150-C	
Size: Custom	Document Number: GA-H97M-DS3P	Rev: 1.0
Date: Tuesday, April 22, 2014	Sheet 6 of 31	

DDR3 (A)

DDR3_4

DDR3_2

DDR3_VREF

DDR15V Decouple

DDRVTT Decouple

【技術通報R&D技術通報162】
VDDSPD SHORT PROTECT
R0603-RH

BLACK CONNECTOR

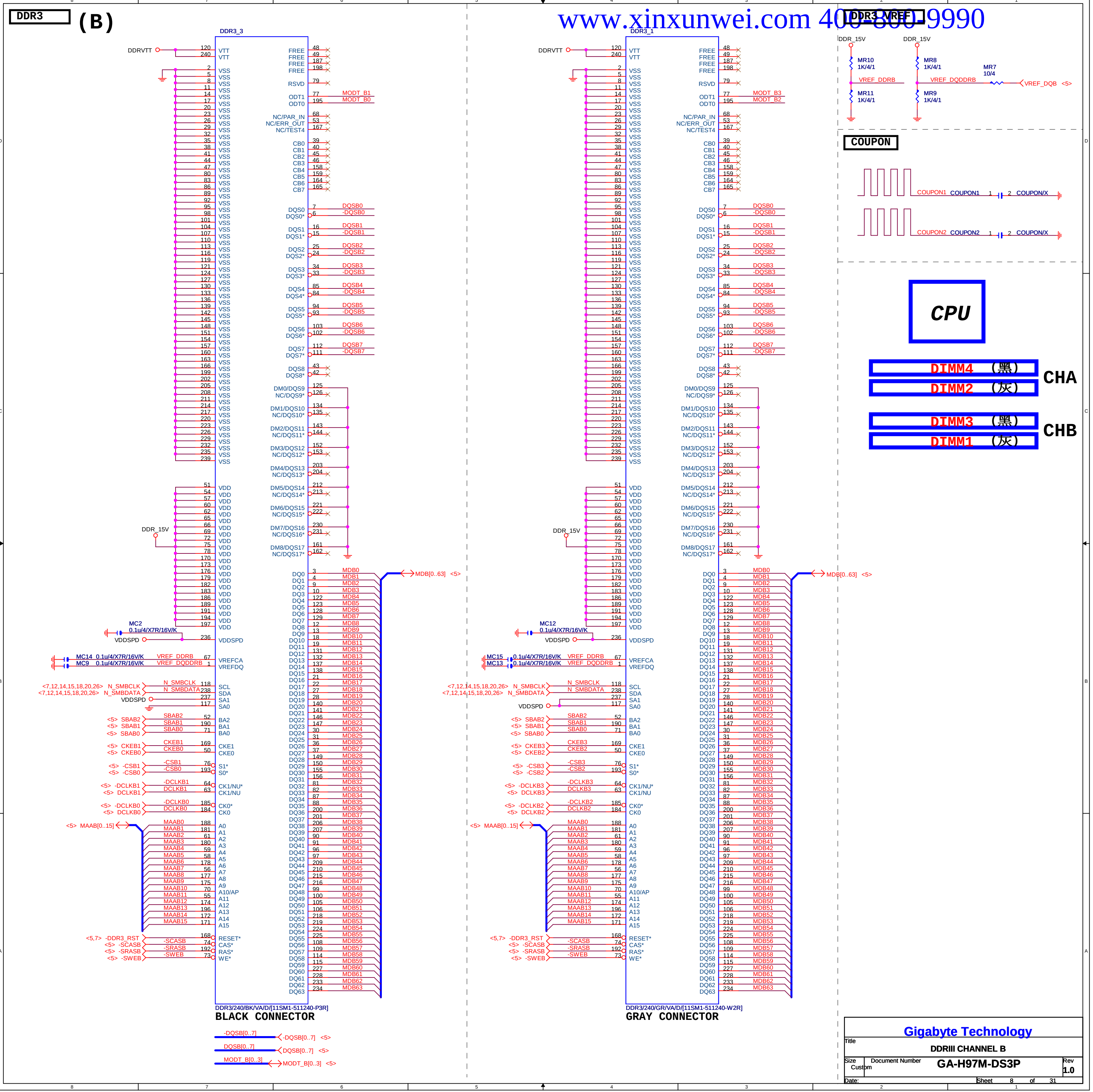
GRAY CONNECTOR

Gigabyte Technology

Title: DDRIII CHANNEL A

Size: Custom | Document Number: GA-H97M-DS3P | Rev: 1.0

Date: | Sheet 7 of 31


DDR3 (B)
www.xinxunwei.com 400-800-9990
DDR3_VREF
DDR3_3
DDR3_1
DDRVTT
DDR_15V
VDDSPD
MC2 0.1u/4/X7R/16V/K
MC12 0.1u/4/X7R/16V/K
MC14 0.1u/4/X7R/16V/K VREF_DDRB
MC9 0.1u/4/X7R/16V/K VREF_DQDDRB
MC15 0.1u/4/X7R/16V/K VREF_DDRB
MC13 0.1u/4/X7R/16V/K VREF_DQDDRB
<7,12,14,15,18,20,26> N_SMBCLK
<7,12,14,15,18,20,26> N_SMBDATA
<5> SBAB2
<5> SBAB1
<5> SBAB0
<5> CKEB1
<5> CKEB0
<5> -CSB1
<5> -CSB0
<5> -DCLKB1
<5> DCLKB1
<5> -DCLKB0
<5> DCLKB0
<5> MAAB[0..15]
<5,7> -DDR3_RST
<5> -SCASB
<5> -SRASB
<5> -SWEB
<5> CKEB3
<5> CKEB2
<5> -CSB3
<5> -CSB2
<5> -DCLKB3
<5> DCLKB3
<5> -DCLKB2
<5> DCLKB2
MDB[0..63] <5>
MODT_B1
MODT_B0
MODT_B3
MODT_B2
DDR3/240/BK/VA/D/[11SM1-511240-P3R]
BLACK CONNECTOR
DDR3/240/GR/VA/D/[11SM1-511240-W2R]
GRAY CONNECTOR
-DQSB[0..7] <5>
DQSB[0..7] <5>
MODT_B[0..3] <5>
MR10 1K/4/1
MR11 1K/4/1
MR8 1K/4/1
MR9 1K/4/1
MR7 10/4
VREF_DDRB
VREF_DQDDRB
VREF_DQB <5>
COUPON
COUPON1
COUPON2
COUPON/X
CPU
DIMM4 (黑)
DIMM2 (灰)
CHA
DIMM3 (黑)
DIMM1 (灰)
CHB
Gigabyte Technology
Title
DDRIII CHANNEL B
Size Custom
Document Number
GA-H97M-DS3P
Rev 1.0
Date:
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PCH (B)

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

PCHB

DMI_RXN_0 DMI_RXP_0 DMI_TXN_0 DMI_TXP_0 DMI_RXN_1 DMI_RXP_1 DMI_TXN_1 DMI_TXP_1 DMI_RXN_2 DMI_RXP_2 DMI_TXN_2 DMI_TXP_2 DMI_RXN_3 DMI_RXP_3 DMI_TXN_3 DMI_TXP_3 — DMI

A_DMI_0TXN L24, A_DMI_0TXP K24, A_DMI_0RXN C20, A_DMI_0RXP B20, A_DMI_1TXN G24, A_DMI_1TXP H24, A_DMI_1RXN D21, A_DMI_1RXP B21, A_DMI_2TXN F26, A_DMI_2TXP G26, A_DMI_2RXN B22, A_DMI_2RXP C22, A_DMI_3TXN L26, A_DMI_3TXP A24, A_DMI_3RXN B24, A_DMI_3RXP

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

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

DMI_RCOMP
PCIE_RCOMP

CK_-SRCCLK_PCH G22
CK_SRCCLK_PCH F22
CLKIN_DMI_N
CLKIN_DMI_P

USB

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

AV10 N_-USBP0 — N_-USBP0 <20>
AU10 N_+USBP0 — N_+USBP0 <20>
AV11 N_-USBP1 — N_-USBP1 <20>
AW11 N_+USBP1 — N_+USBP1 <20>
AN14 N_-USBP2 — N_-USBP2 <23>
AP14 N_+USBP2 — N_+USBP2 <23>
AJ16 N_-USBP3 — N_-USBP3 <23>
AK16 N_+USBP3 — N_+USBP3 <23>
AU15 N_-USBP4 — N_-USBP4 <17>
AV15 N_+USBP4 — N_+USBP4 <17>
AU12 N_-USBP5 — N_-USBP5 <17>
AT12 N_+USBP5 — N_+USBP5 <17>
AV14
AW14
AU13
AT13
AW16 N_-USBP8 — N_-USBP8 <20>
AV16 N_+USBP8 — N_+USBP8 <20>
AN16 N_-USBP9 — N_-USBP9 <20>
AP16 N_+USBP9 — N_+USBP9 <20>
AJ18 N_-USBP10 — N_-USBP10 <20>
AK18 N_+USBP10 — N_+USBP10 <20>
AP18 N_-USBP11 — N_-USBP11 <20>
AN18 N_+USBP11 — N_+USBP11 <20>
AW18 N_-USBP12 — N_-USBP12 <17>
AV18 N_+USBP12 — N_+USBP12 <17>
AP20 N_-USBP13 — N_-USBP13 <17>
AN20 N_+USBP13 — N_+USBP13 <17>

USB2.0/3.0 PORT要對應

USB3.0
<23> PCH_USB3_RXN2 L14, <23> PCH_USB3_RXP2 K14, <23> PCH_USB3_TXN2 B12, <23> PCH_USB3_TXP2 B11, <23> PCH_USB3_RXN3 F14, <23> PCH_USB3_RXP3 G14, <23> PCH_USB3_TXN3 D11, <23> PCH_USB3_TXP3 C11

8111G
<23> LA_ML_IN F11, <23> LA_ML_IP H11, <23> LA_ML_ON B9, <23> LA_ML_OP A9

ITE8892 PCI Bridge
<31> G_PCIEBIN J11, <31> G_PCIEBIP L11, <31> G_PCIEBON B8, <31> G_PCIEBOP C8

PCIEx1
<15> PI_PCIEX1_IN G9, <15> PI_PCIEX1_IP F9, <15> PI_PCIEX1_ON B7, <15> PI_PCIEX1_OP A7

PCIEx1
<15> PJ_PCIEX1_IN F7, <15> PJ_PCIEX1_IP H7, <15> PJ_PCIEX1_ON E1, <15> PJ_PCIEX1_OP D2

PCIE

PCIE_PERN_1_USB3_RXN_2 L14, PCIE_PERP_1_USB3_RXP_2 K14, PCIE_PETN_1_USB3_TXN_2 B12, PCIE_PETP_1_USB3_TXP_2 B11, PCIE_PERN_2_USB3_RXN_3 F14, PCIE_PERP_2_USB3_RXP_3 G14, PCIE_PETN_2_USB3_TXN_3 D11, PCIE_PETP_2_USB3_TXP_3 C11
PCIE_PERN_3 F11, PCIE_PERP_3 H11, PCIE_PETN_3 B9, PCIE_PETP_3 A9, PCIE_PERN_4 J11, PCIE_PERP_4 L11, PCIE_PETN_4 B8, PCIE_PETP_4 C8, PCIE_PERN_5 G9, PCIE_PERP_5 F9, PCIE_PETN_5 B7, PCIE_PETP_5 A7, PCIE_PERN_6 F7, PCIE_PERP_6 H7, PCIE_PETN_6 E1, PCIE_PETP_6 D2, PCIE_PERN_7 K8, PCIE_PERP_7 K8, PCIE_PETN_7 G3, PCIE_PETP_7 G5, PCIE_PERN_8 J2, PCIE_PERP_8 J3, PCIE_PETN_8 H2, PCIE_PETP_8 H1

OC0B_GP59 AE40, OC1B_GP40 AF37, OC2B_GP41 AD39, OC3B_GP42 AD40, OC4B_GP43 AF39, OC5B_GP9 AC41, OC6B_GP10 AF40, OC7B_GP14 AG40 N_GPIO14

N_-USBOC_F <17,20>
N_-USBOC_R <17>

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

USBRBIASB AV20 N_USBRBIAS NR47 22.6/4/1
USBRBIAS AU20

CLKIN_DOT96N AP11 CK_-DOTCLK
CLKIN_DOT96P AM11 CK_DOTCLK

N_GPIO14 NR130 8.2K/4 3VDUAL

N_-USBOC_F — NBC82 0.1u/4/X7R/16V/K
N_-USBOC_R — NBC83 0.1u/4/X7R/16V/K

CHIP DH82H97 A0 INTEL/[10HB1-030H97-20R]

放靠近 Device & PCI-E Slot
Impedance=80 +- 17.5%
PCIEX1:15/4/4/4/15 (breakout min 8/4/4/4/8)

USB2.0 : 12/5/7/4/12 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%

PCH (F)

PCHF

USB3 FDILINK

USB3_RXN_0 F20, USB3_RXP_0 G20, USB3_TXN_0 B18, USB3_TXP_0 C18 — FDI_RXN_0 N1 FDI_TXN0, FDI_RXP_0 N2 FDI_TXP0, FDI_RXN_1 P2 FDI_TXN1, FDI_TXP_1 P3 FDI_TXP1
USB3_RXN_1 G18, USB3_RXP_1 H18, USB3_TXN_1 B15, USB3_TXP_1 B16 — FDI_CSYNC L2 FDI_CSYNC <4>, FDI_INT L3 FDI_INT <4>
USB3_RXN_4 K20, USB3_RXP_4 L20, USB3_TXN_4 D15, USB3_TXP_4 C15 — FDI_RCOMP K2 NR29 7.5K/4/1 VCC1_5_PCH
USB3_RXN_5 L18, USB3_RXP_5 K18, USB3_TXN_5 B14, USB3_TXP_5 A14

<20> PCH_USB3_RXN0 <20> PCH_USB3_RXP0 <20> PCH_USB3_TXN0 <20> PCH_USB3_TXP0
<20> PCH_USB3_RXN1 <20> PCH_USB3_RXP1 <20> PCH_USB3_TXN1 <20> PCH_USB3_TXP1
<17> PCH_USB3_RXN4 <17> PCH_USB3_RXP4 <17> PCH_USB3_TXN4 <17> PCH_USB3_TXP4
<17> PCH_USB3_RXN5 <17> PCH_USB3_RXP5 <17> PCH_USB3_TXN5 <17> PCH_USB3_TXP5

VCC3
NR62 8.2K/4 AK28
NR63 8.2K/4 AT34

TACH6_GP70
TACH7_GP71

CHIP DH82H97 A0 INTEL/[10HB1-030H97-20R]

FDI_TXP[0..1] — FDI_TXP[0..1] <4>
FDI_TXN[0..1] — FDI_TXN[0..1] <4>

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

PCH CLK PD

CK_SRCCLK_PCH NR89 8.2K/4
CK_-SRCCLK_PCH NR88 8.2K/4
Mount for integrated clock Generation Mode

CK_DOTCLK NR92 8.2K/4
CK_-DOTCLK NR91 8.2K/4
NR225 short to GND in non graphic SKU

PCH (J)

PCHJ

VSS_NCTF: AT1, AT41, AU1, AV1, AV2, AV40, AV41, AW2, AW40, B40, B41, C41, D1, D41

TP22 U11, TP23 U10, TP21 AJ14, TP20 AK14, TP14 K34, TP15 K33, TP12 AH24
TP10 L16, TP11 K16, TP9 AM34
TP3 R12, TP4 N12, TP1 L22, TP2 K22
TP5 R4, TP6 K5, TP7 P5, TP8 L5
VSS AC31
VSS AF3, VSS AV21

CHIP DH82H97 A0 INTEL/[10HB1-030H97-20R]

USB3.0 : 20/5/7/4/20 (breakout min 8/4/4/4/8)

PCH H/S

LOW COST ICH7 HEATSINK
SB_HEATSIN
PCH_HS
GRAY 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)

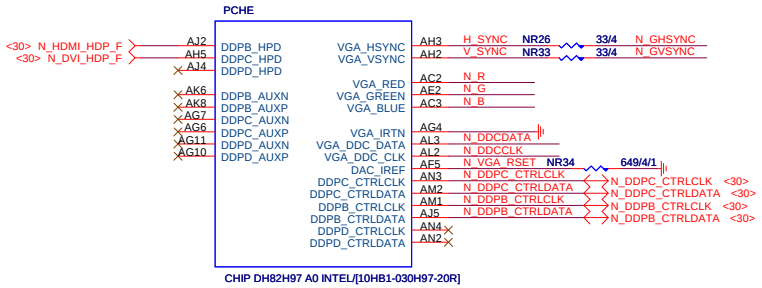
USB OC#	Configure
OC0#	F_USB30
OC1#	USB_LAN
OC2#	R_USB30
OC3#	Not Use
OC4#	F_USB1
OC5#	F_USB2
OC6#	KB_MS_USB
OC7#	Not Use

Gigabyte Technology

Title: PCH FDI,DMI,USB ,PCIE,NVRAM
Size: Custom | Document Number: GA-H97M-DS3P | Rev: 1.0
Date: Tuesday, April 22, 2014 | Sheet 9 of 31

PCH (E)

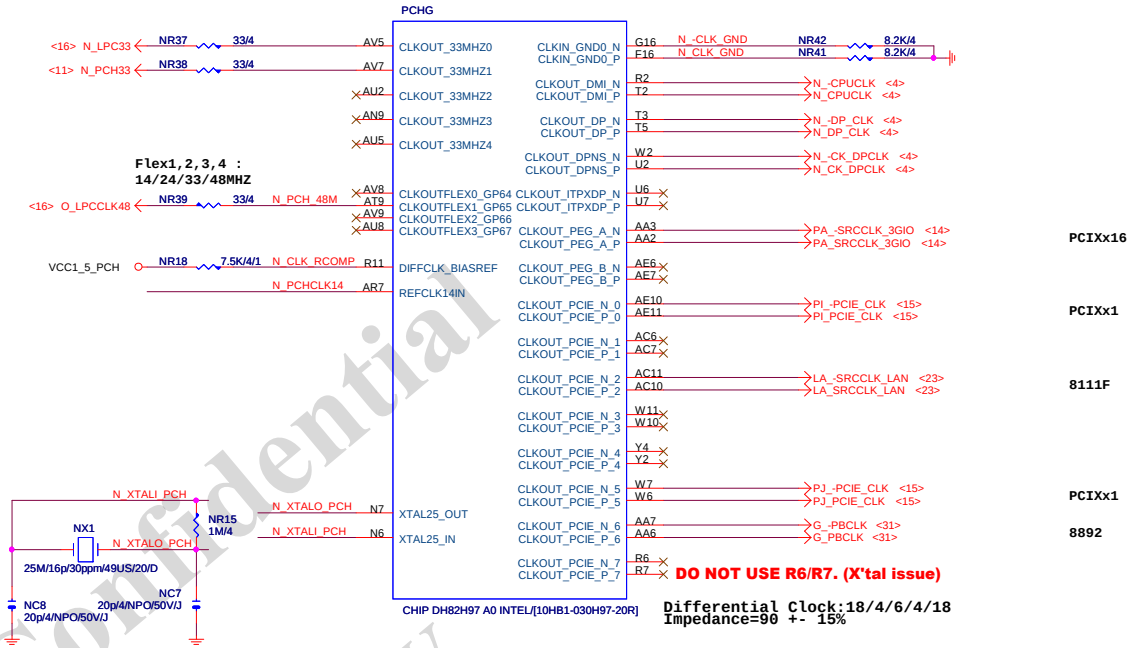
PCHE



CHIP DH82H97 A0 INTEL/[10HB1-030H97-20R]

PCH (G)

PCHG

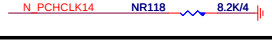


CHIP DH82H97 A0 INTEL/[10HB1-030H97-20R]

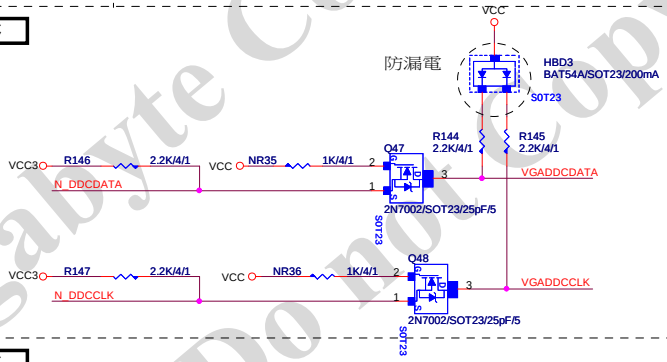
Differential Clock:18/4/6/4/18
Impedance=90 +- 15%

PCH CLK PD

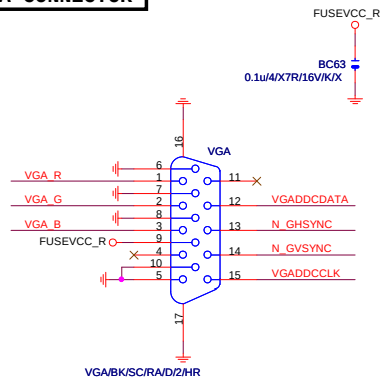
Mount for integrated clock Generation Mode



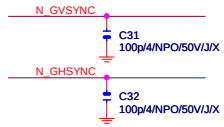
VGA DDC



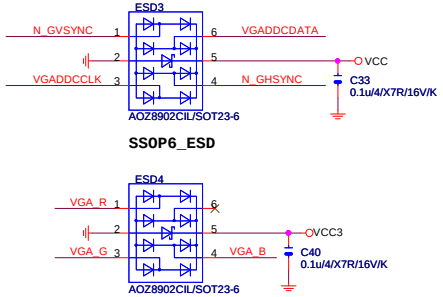
VGA CONNECTOR



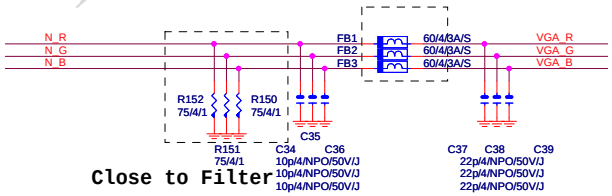
BLACK CONNECTOR



VGA ESD



VGA DDC



Close to Filter

Gigabyte Technology		
Title: PCH DISPLAY ,CLK BUFFER		
Size: Custom	Document Number: GA-H97M-DS3P	Rev: 1.0
Date: Tuesday, April 22, 2014	Sheet 10 of 31	

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

CHIP DH82H97 A0 INTEL/[10HB1-030H97-20R]

PCH (A)

PCHA

CHIP DH82H97 A0 INTEL/[10HB1-030H97-20R]

PCH CLK PD

Mount for integrated clock Generation Mode

PCH PU/PD

SATA CONNECTOR

BLACK CONNECTOR

H81 Port 2/3 N/A

** Z87/H87 Port 4&5 SATA3.0
** B85 Port 4&5 SATA2.0

ME PWROK

GPIO37 PU VCC3 ENABLE SBA For H87&B85

Z87 N/A

GPIO38 Ctrl

Gigabyte Technology

Title: PCH HOST , SATA, PCI

Size: Custom | Document Number: GA-H97M-DS3P | Rev: 1.0

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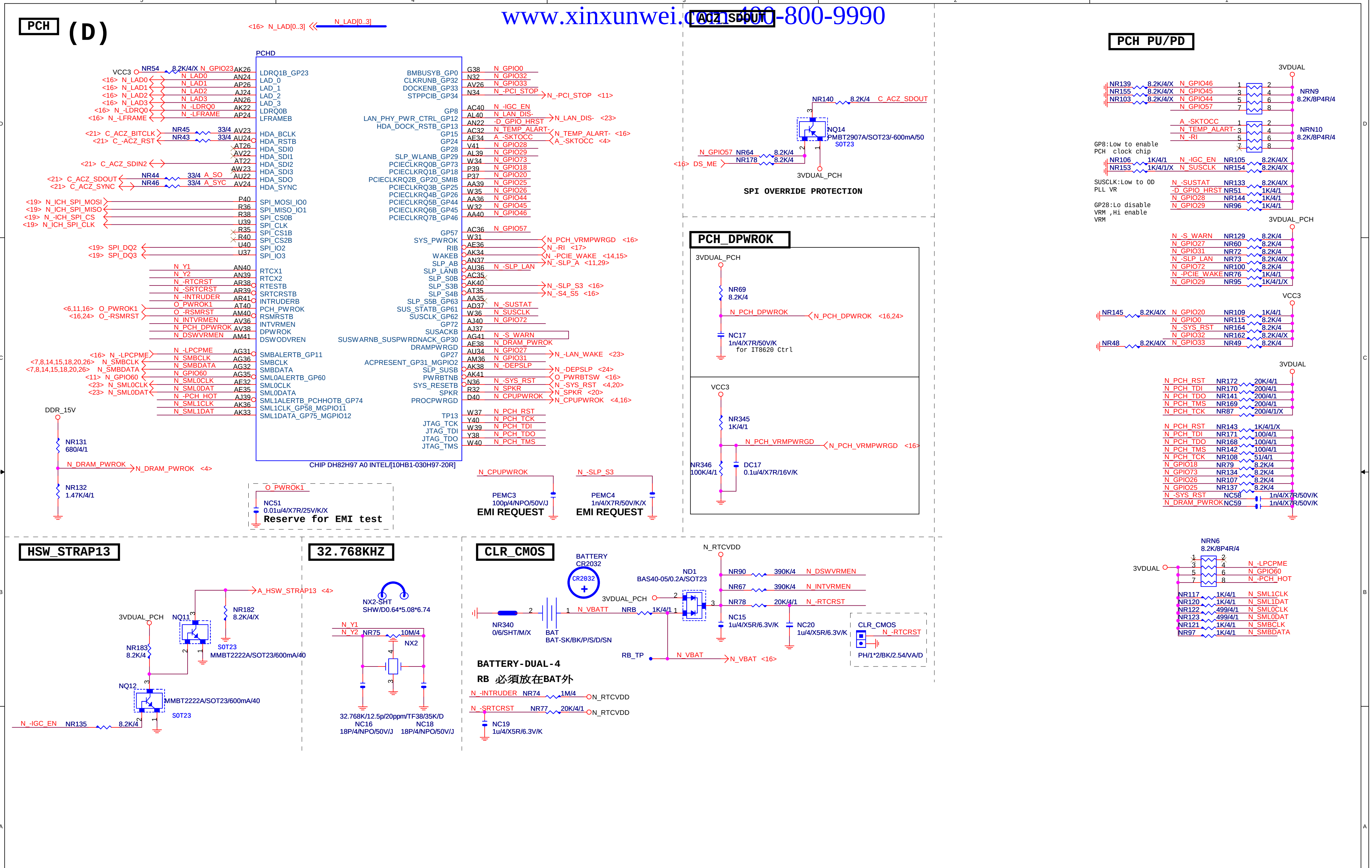

Gigabyte Technology

Title	PCH GPIO , CTRL , AUDIO
Size: Custom	Document Number: GA-H97M-DS3P
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PCH (H)

PCHH

CHIP DH82H97 A0 INTEL/[10HB1-030H97-20R]

VCC1_5_PCH
VCC1_05_PCH
VCC1_05_DCB
VCC1_05_ME
VCC3
3VDUAL
VCC3_ME
3VDUAL_PCH
N_RTCVDD
VCCIO2PCH
VCCADAC1_5
V_1P05_DSW_INT
V_1P5_RTC_INT
V_1P5_INT
NTP2
NTP3
NTP1

NBC33 1u/4/X5R/6.3V/K
NBC37 0.1u/4/X7R/16V/K
NBC35 1u/4/X5R/6.3V/K
NBC22 1u/4/X5R/6.3V/K
NBC38 0.1u/4/X7R/16V/K
NBC32 1u/4/X5R/6.3V/K
NBC12 1u/4/X5R/6.3V/K
NBC30 1u/4/X5R/6.3V/K
NBC43 0.1u/4/X7R/16V/K
NBC21 0.1u/4/X7R/16V/K
NBC55 1u/4/X5R/6.3V/K
NBC58 1u/4/X5R/6.3V/K
NBC65 1u/4/X5R/6.3V/K
NBC64 1u/4/X5R/6.3V/K
NBC62 0.1u/4/X7R/16V/K/X
NR71 5.1/4/1
NBC54 1u/4/X5R/6.3V/K
NBC52 1u/4/X5R/6.3V/K
NBC51 0.1u/4/X7R/16V/K
NBC47 0.1u/4/X7R/16V/K/X
NBC49 0.1u/4/X7R/16V/K
PEMC1 0.01U/4/X7R/25V/K EMI REQUEST
PEMC2 0.01U/4/X7R/25V/K EMI REQUEST

VCC3_DAC

CLOSE北橋(注意震盪水波紋)

3VDUAL
+12V
NQ17
NR185 8.2K/4
2N7002/SOT23/25pF/5
VCC3_DAC
NBC7 10u/6/X5R/6.3V/M
(3.3V/70mA+360uA)

3VDUAL_PCH

NQ9 L1117LG/N/SOT223/1A
3VDUAL_PCH
5VSB
NBC68 1u/4/X5R/6.3V/K
NR176 301/4/1
NBC66 22u/8/X5R/6.3V/M
NBC67 0.1u/4/X7R/16V/K
NR180 510/4/1

SHT PWR

NRN5 MASK/0/8P4R/4/X
VCC3_ME
VCC3
NRN1 MASK/0/8P4R/4/X
VCC1_05_ME
VCC1_05_PCH

(3.3V)(X6)

VCC3
NBC24 10u/6/X5R/6.3V/M
NBC25 1u/4/X5R/6.3V/K
NBC26 1u/4/X5R/6.3V/K
NBC27 1u/4/X5R/6.3V/K
NBC20 1u/4/X5R/6.3V/K
NBC59 1u/4/X5R/6.3V/K

(1.05V)(X5)

VCC1_05_ME
NBC8 10u/6/X5R/6.3V/M
NBC10 1u/4/X5R/6.3V/K
NBC14 0.1u/4/X7R/16V/K
NBC11 1u/4/X5R/6.3V/K
NBC13 1u/4/X5R/6.3V/K

(1.05V)(X6)

VCC1_05_PCH
NBC39 10u/6/X5R/6.3V/M
NBC40 1u/4/X5R/6.3V/K
NBC41 0.1u/4/X7R/16V/K
NBC42 1u/4/X5R/6.3V/K
SNBC1 1u/4/X5R/6.3V/K
SNBC2 1u/4/X5R/6.3V/K

(1.05V)(X2)

VCCIO2PCH
NBC56 1u/4/X5R/6.3V/K
NBC57 0.1u/4/X7R/16V/K

(3.3V)(X2)

3VDUAL
NBC60 1u/4/X5R/6.3V/K
NBC63 0.1u/4/X7R/16V/K

(1.05V)(X10)

VCC1_5_PCH
NBC16 10u/6/X5R/6.3V/M
NBC29 10u/6/X5R/6.3V/M
NBC50 10u/6/X5R/6.3V/M
NBC53 10u/6/X5R/6.3V/M
NBC19 1u/4/X5R/6.3V/K
NBC23 0.1u/4/X7R/16V/K
NBC28 1u/4/X5R/6.3V/K
NBC44 1u/4/X5R/6.3V/K
NBC46 0.1u/4/X7R/16V/K
NBC48 1u/4/X5R/6.3V/K

PCH (I)

PCHI
CHIP DH82H97 A0 INTEL/[10HB1-030H97-20R]

Gigabyte Technology	
Title	PCH PWR ,GND
Size / Custom	Document Number: GA-H97M-DS3P
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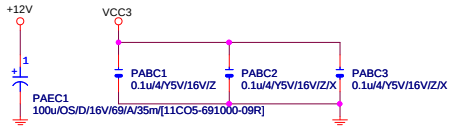
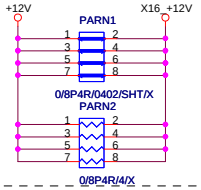
PCIEX16 CAP



PCIEX16 PROTECT SHT



PCIEX16 AC CAP

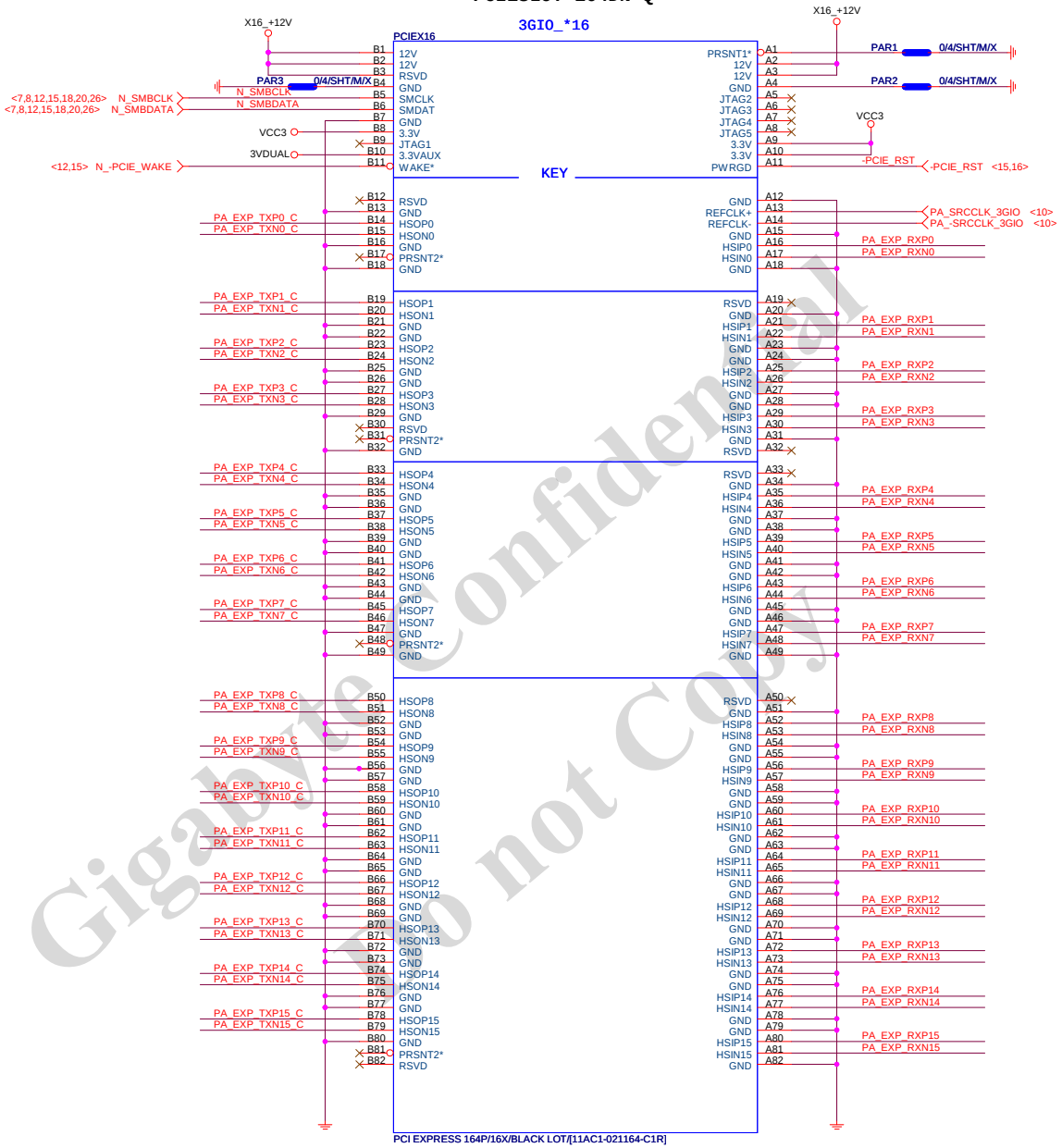
PA_EXP_TXP0	PAC5	0.22u/4/X5R/6.3V/K	PA_EXP_TXP0_C
PA_EXP_TXN0	PAC4	0.22u/4/X5R/6.3V/K	PA_EXP_TXN0_C
PA_EXP_TXP1	PAC6	0.22u/4/X5R/6.3V/K	PA_EXP_TXP1_C
PA_EXP_TXN1	PAC7	0.22u/4/X5R/6.3V/K	PA_EXP_TXN1_C
PA_EXP_TXP2	PAC8	0.22u/4/X5R/6.3V/K	PA_EXP_TXP2_C
PA_EXP_TXN2	PAC9	0.22u/4/X5R/6.3V/K	PA_EXP_TXN2_C
PA_EXP_TXP3	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>

PCIEX16 SLOT

PCIESLOT-164DN-Q

3GIO_*16



PCI EXPRESS 164P/16X/BLACK LOT/[11AC1-021164-C1R]

BLACK CONNECTOR

-PCIE_RST
PAC1
33p/4/NPO/50V/J

Gigabyte Technology		
Title: PCI EXPRESS * 16		
Size: Custom	Document Number: GA-H97M-DS3P	Rev: 1.0
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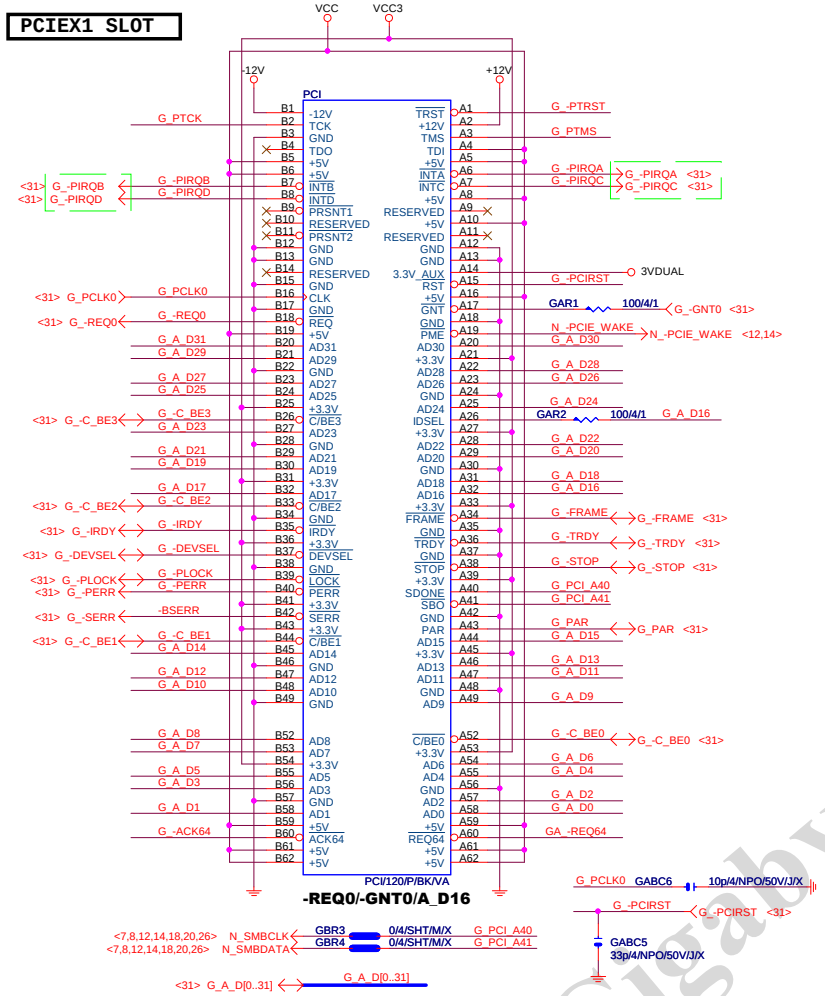
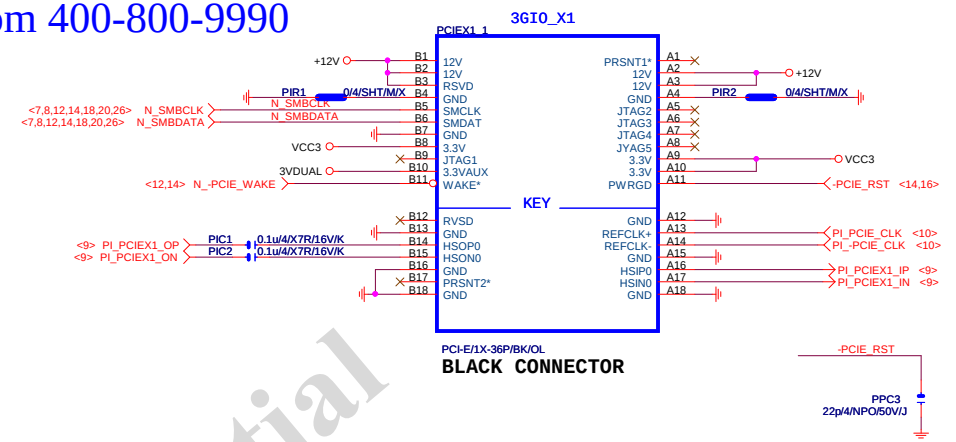
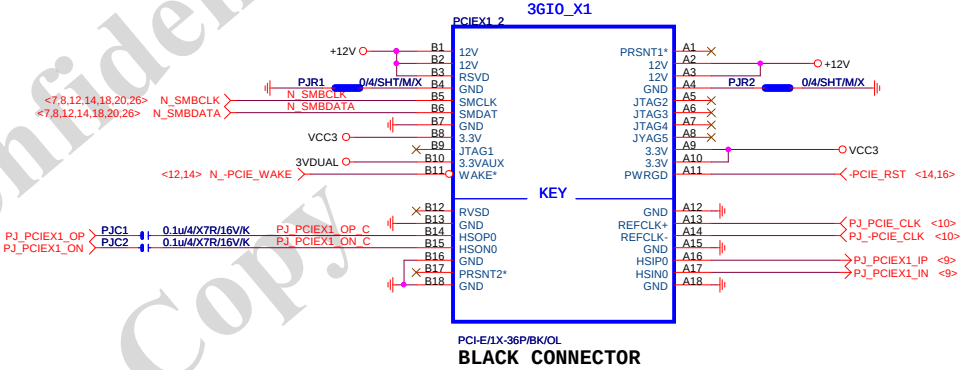
PCIEX1 SLOT



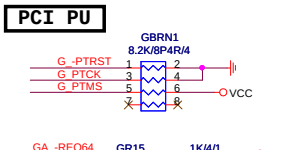
3GIO_X1



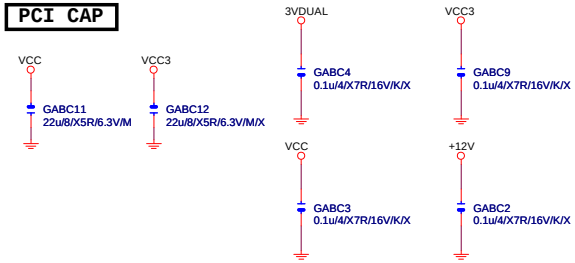
3GIO_X1

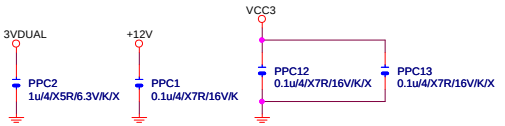


PCI PU



PCI CAP





Gigabyte Technology		
Title: PCI EXPRESS X 1 PORT		
Size: Custom	Document Number: GA-H97M-DS3P	Rev: 1.0
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SIO IT8620

FANIO CAP 1~2

<18> FANIO1 — C16 0.047u/4/X7R/16V/K
<18> FANIO2 — C9 0.047u/4/X7R/16V/K

FIX ATX 插拔漏電 Power leakage

IT_AVCC, +12V, OR50 8.2K/4, OQ2 2N7002/SOT23/25pF/5, VCC3, IT_AVCC, OC13 10u/6/X5R/6.3V/M

PWR SHT

For 8728 EUP function

3VDUAL_PCH — OR8 0/6/SHT/M/X — IT_VCCH
VCC3 — OR9 0/6/X — IT_AVCC

SIO PU

IO_GP25	OR10	1K/4/1/X	3VDUAL_PCH
DS_ME	OR11	1K/4/1	3VDUAL_PCH
SVID_CTRL	OR12	8.2K/4	3VDUAL_PCH
-PROCHOT_CON	OR13	8.2K/4	VCC3
N_-LDRQ0	OR14	1K/4/1	VCC3
ITE_PWROK2	OR15	1K/4/1	VCC3
ITE_PWROK1	OR16	1K/4/1	VCC3
-PCIE_RST	OR17	1K/4/1	VCC3
-PFMRST2	OR18	1K/4/1	VCC3
<18> FANPWM1	FANPWM1	OR19 8.2K/4	VCC

SIO STRAP

H61M-S2 1.1 JP6 stuff pull down

JP2 OR21 8.2K/4 VCC3
JP3 OR22 8.2K/4 VCC3
JP4 OR23 8.2K/4 VCC3
JP5 OR24 8.2K/4/X VCC3
OR25 8.2K/4/X
ITE recommand

EUP control by PCH
3VDUAL — OR26 — 100/4/1 28_3VSB

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

SIO

IT8620E_BX

SLP_SUS#/PCIRSTIN#/CIRTX2/GP15
3VSB
HOLD_M#/GP64
HOLD_B#/GP63
FAN_TAC1
FAN_CTL1
FAN_TAC2/GP52
FAN_CTL2/GP51
FAN_TAC3/GP37
FAN_CTL3/GP36
VCC18_EN/GP35
VTT_PWRGD/GP34
GNDD
SLP_SUS_FET/5VSB_CTRL#
SUS_WARN_5VDUAL/5VAUX_SW
PWRGD2
ATXPG/GP30
INV_IN1/SIN2/GP27
INV_OUT1/SOUT2/GP26
FAN_TAC4/DSR2#/GP25
FAN_TAC5/RTS2#/GP24
DPWORK/CPU_PG/GP23
SPI_SI/GP22
IO_SMI#/DCD2#/GP21
THR_PWM/CTS2#/GP20
R12#/GP17
DTR2#/JP5
SPI_SO/CIRTX1
PCH_C1/GP14
SUSACK#/PWRGD1
PCIRST1#/GP12
PCIRST2#/GP11
3VSB
VCORE
LRESET#
LDRQ#
SERIRQ
LFRAME#

<25> GP15
IT_VCCH — -SPI_HOLD_M
<19> -SPI_HOLD_M
<19> -SPI_HOLD_B
<18> FANIO1
<18> FANPWM1
<18> FANIO2
<18> FANPWM2
<24> VCC15_EN
<26> VTT_PWRGD
<24> 5VAUX_SW
<25> PWOK
<4> A_-PROCHOT
<12> N_TEMP_ALART-
<12,24> N_PCH_DPWROK
<20> BEEP-
<11> N_-PFMRST
<12> N_-LDRQ0
<11> N_SERIRQ
<12> N_-LFRAME

-SPI_HOLD_M
-SPI_HOLD_B
ITE_PWROK2
PWOK
MB_ID2
IO_GP25
THR_PWM
JP5
VCC3 — OR1 1K/4/1 -RST_BTN
OR2 22/4 ITE_PWROK1
OR3 22/4 PCIRST1
OR4 22/4 PCIRST2
IT_VCCH — SIO_18V
N_-PFMRST

-PROCHOT_CON
PD[0..7] — PD[0..7] <29>
<17> RTS1-
<17> DSR1-
<17> TXD1
<17> RXD1
<17> DTR1-
<17> DCD1-
<17> RI1-
<17> CTS1-
JP2
JP3
JP4

STB- <29>
AFD- <29>
ERR- <29>
INIT- <29>
SLIN- <29>
ACK- <29>
BUSY <29>
PE <29>

LS_IN1/SLCT/GP80
VREF_2.5
TR6/VIN9
TR5/VIN8
TR4/VIN7
AVCC3
VIN0/VCORE(1.1V)
VIN1/VDIMM_STR(1.5V)
VIN2(+12V_SEN)
VIN3(+5V_SEN)
VIN4/VLDT_12
VIN5/5VDUAL
VIN6
VREF
TMPIN1
TMPIN2
TMPIN3
TSD-
GNDA
RSMRST#/CIRRX1/GP55
CPURST#/GP10
MCLK/FAN_TAC6/GP56
MDAT/FAN_CTL6/GP57
KCLK/GP60
KDAT/GP61
3VSBSW#/GP40
PWRGD3
SUSC#/GP53
PSON#
PANSWH#/GP43
GNDD
PME#/GP54
PWRON#GP44
SUSB#
CE_N/GPO47/JP6
VBAT
COPEN#
3VSB

SLCT <29>
VREF_25
OBC15 22u/8/X5R/6.3V/M/X
TR6 <18>
TR5 <18>
TR4 <18>
IT_AVCC
VIN0 <18>
VIN1 <18>
VIN2 <18>
VIN3 <18>
VIN4 <18>
VIN5 <18>
VIN6 <18>
VREF <18>
SYS_TEMP <18>
PCH_TEMP <18>
CPU_TEMP <18>
RSMRST- OR7 22/4 O_-RSMRST
O_-RSMRST <12,24>
MCLK <17>
MDAT <17>
KCLK <17>
KDAT <17>
N_-S4_S5 <12>
-PSON <25>
-PWRBTSW <20>
N_-LPCPME <12>
O_PWRBTSW <12>
N_-SLP_S3 <12>
CEB_N
N_VBAT <12>
-CASEOPEN <18,20>
IT_VCCH
OC3 0.1u/4/X7R/16V/K
OC4 1u/4/X5R/6.3V/K
OR5 8.2K/4
OC5 0.01u/4/X7R/25V/K
3VDUAL_PCH

IT8620E/CX/S

PWOK
N_-PFMRST
OC1 1n/4/X7R/50V/K
OC2 22p/4/NPO/50V/J/X

LAD0
LAD1
LAD2
LAD3
KRST#/GP62
GA20
GPO50/JP1
PCICLK
GNDD
CLKIN
CPUPWRGD/GP95
VCC1_05_EN/GP66
VCC1_15_EN/GP65
VCORE_ENPCH_CO
VR_RDY/GP97
PCH_VRMPWRGD/GP96
SUSWARN#/SST/AMDTSI_D/PCH_D
GP67
PECI/AMDTSI_C
PROCHOT#/GP94
PCH_BEEP/GP93
HDLED_OUT/GP92
PWRLED/GP91
DDR_EN/GP90
GP42/SCK/FAN_CTL4/THRMTRIP#
SYS_3VSB
28_3VSB
N_-THRMTRIP
DDR_EN <28>
MPD- <20>
SVID_CTRL <4>
LAD[0..3]
<12> N_LAD[0..3]
<11> N_-KBRST
<11> N_A20GATE
<10> N_LPC33
<10> O_LPCCLK48
-PROCHOT_CON
For IT8728
A_PECI <4,11>
DS_ME <12>
N_SSTCTL <11>
N_PCH_VRMPWRGD <12>
VR_RDY <26>
-CASEOPEN
OC6 1u/4/X5R/6.3V/K/X
OR88 0/4/SHT/M/X
VCC1_05_EN <24>
N_CPUPWROK <4,12>

-PRCOHOT

-THRMTRIP

N_-THRMTRIP — OR51 1K/4/1 — A_-THRMTRIP <4>

PC Health Code: C003

EMI REQUEST

VCC3 — PEMC0 0.01U/4/X7R/25V/K

SIO CAP

IT_VCCH — OC9 1u/4/X5R/6.3V/K — OC10 0.1u/4/Y5V/16V/Z/X
IT_VCCH — OC11 10u/6/X5R/6.3V/M
3VDUAL — OC12 1u/4/X5R/6.3V/K

DUAL BIOS OPT STRAP

CEB_N — OR30 680/4/1/X
OR31 1K/4/1 — VCC3

SIO_18V

internal power pin, max 22nF cap

SIO_18V — OC7 0.1u/4/X7R/16V/K — OC8 0.1u/4/X7R/16V/K/X

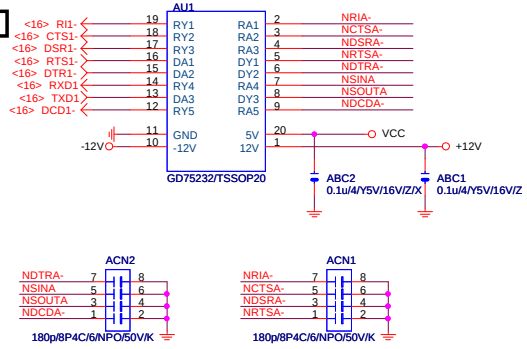
3VDUAL_PCH — OC14 0.1u/4/Y5V/16V/Z
VREF_25 — OC15 0.1u/4/X7R/16V/K

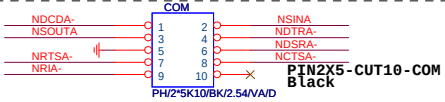
MB ID

VCC3 — OR28 8.2K/4
OR29 8.2K/4/X — MB_ID2

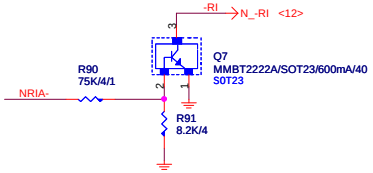
Gigabyte Technology	
Title	ITE 8728 LPC IO
Size: Custom	Document Number: GA-H97M-DS3P
Rev	1.0
Date: Tuesday, April 22, 2014	Sheet 16 of 31

COM

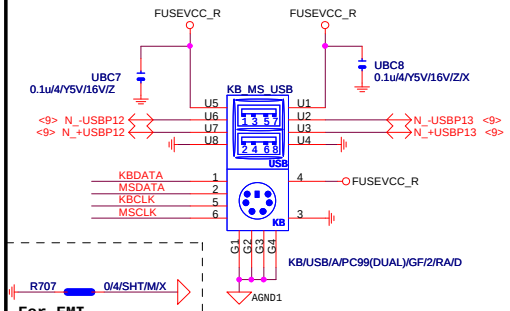


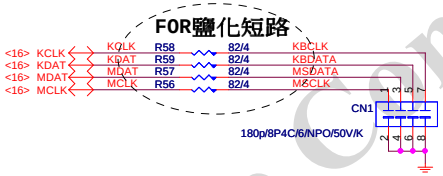


COM RI

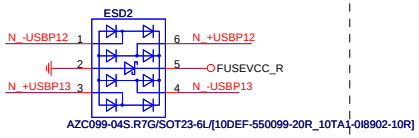


KB/MS





USB2.0 ESD



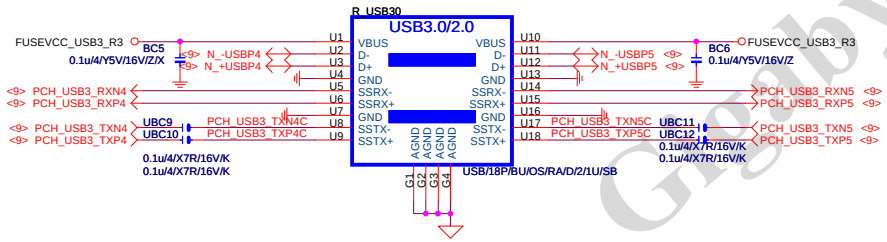
USB2.0 PWR

FUSE-0805

Close to connector

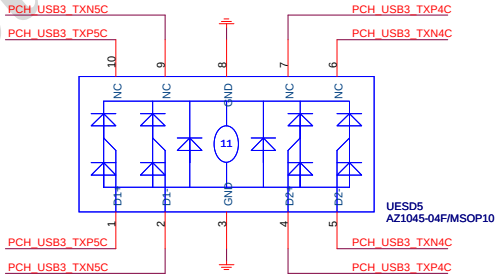
KB_MS_USB 2-Port 2.0A

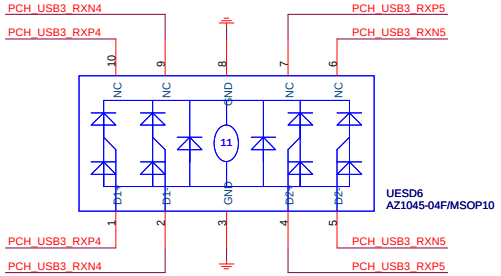
USB30_20



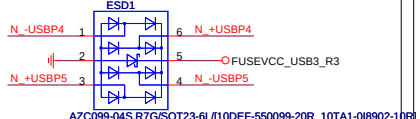
USB30_20 ESD PROCTECT

USB3.0 ESD



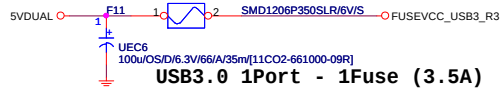


USB2.0 ESD



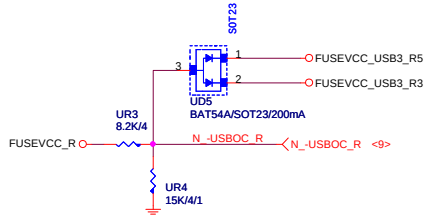
USB30_20 PWR

Polyswitch-1206

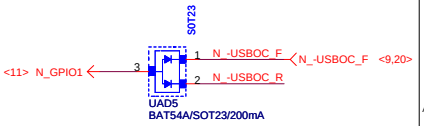


USB3.0 1Port - 1Fuse (3.5A)

-USBOC_R

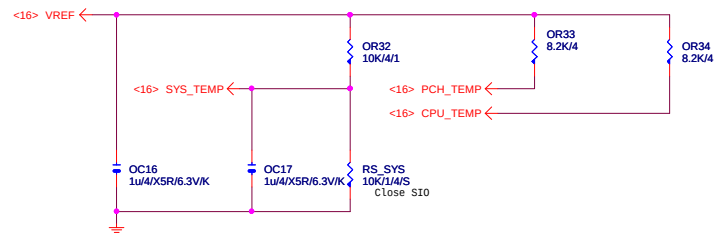


USB POWER PROTECT

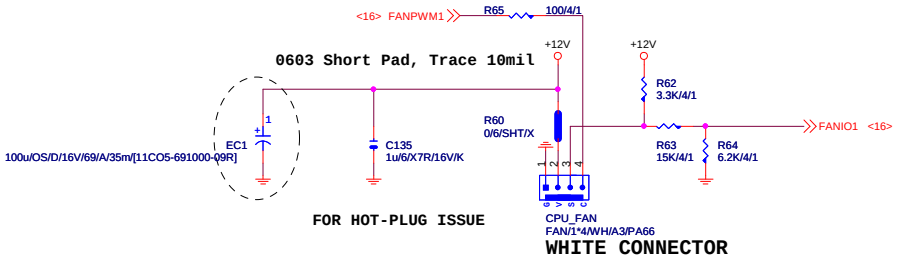


Gigabyte Technology		
Title	COM,-RI,KB_USB,USB_ESATA,-PROCHOT	
Size: Custom	Document Number: GA-H97M-DS3P	Rev: 1.0
Date: Tuesday, April 22, 2014	Sheet 17 of 31	

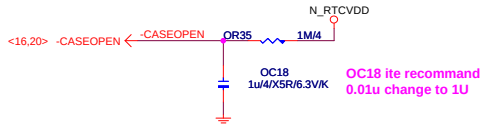
TEMP H/W MONITOR



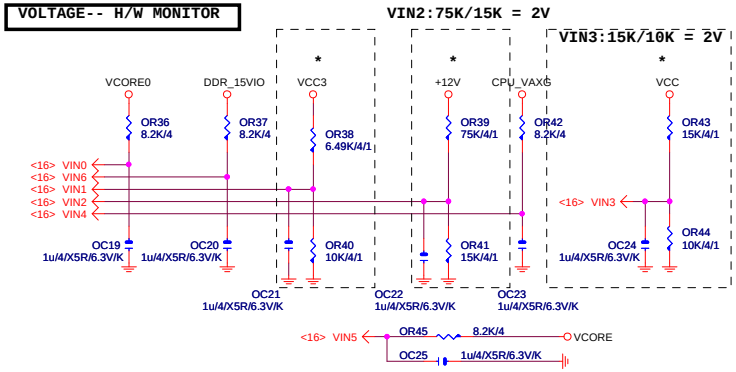
CPU SMART FAN



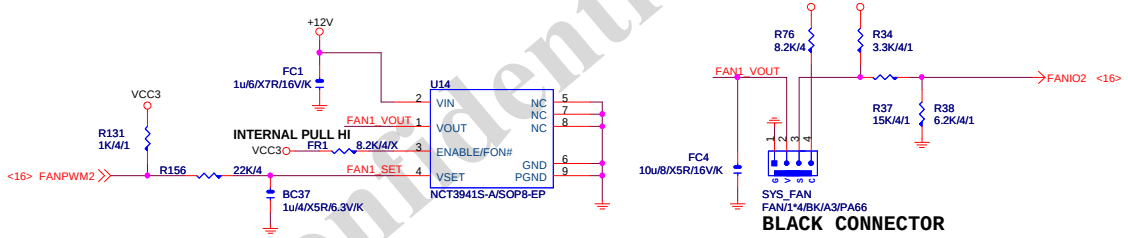
CASE OPEN

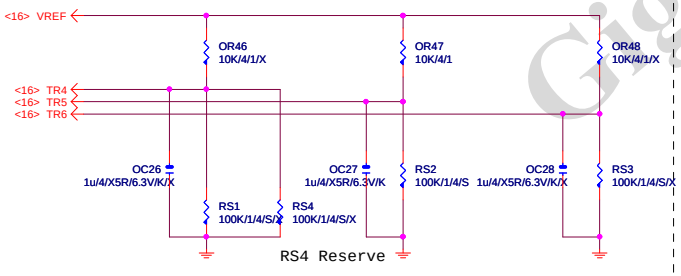


VOLTAGE-- H/W MONITOR



SYS SMART FAN



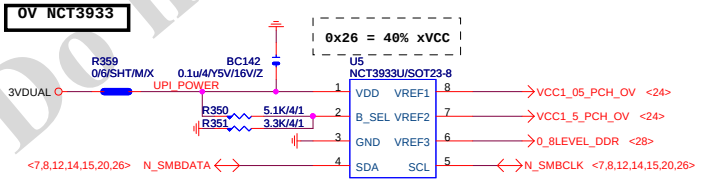


RS4 Reserve

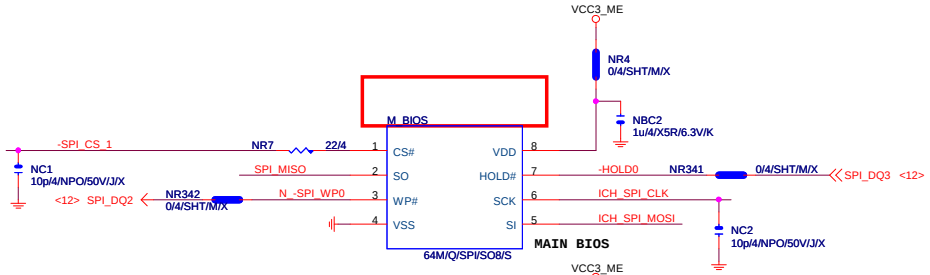
RS1、RS2、RS3 CLOSE CPU
VR MOSFET

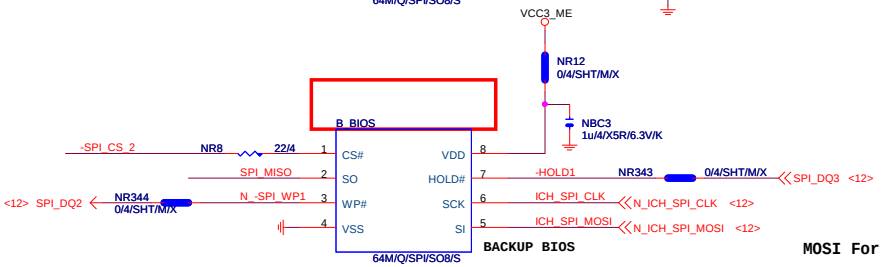
接pwm feedback pin

OV NCT3933



Gigabyte Technology			
Title: HWM,FAN CTRL,OV			
Size: Custom	Document Number: GA-H97M-DS3P		Rev: 1.0
Date: Tuesday, April 22, 2014		Sheet 18 of 31	

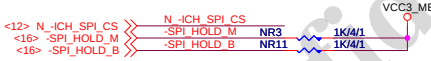


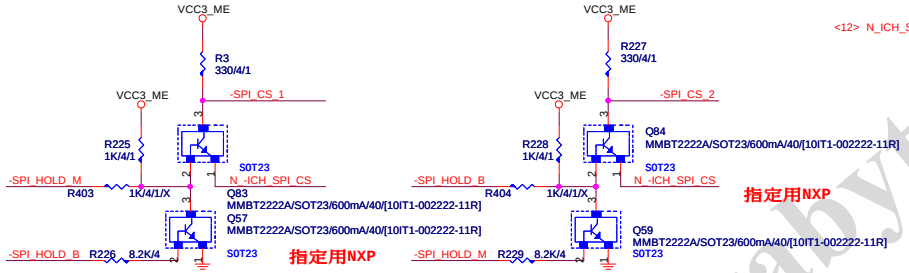


BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

1 means floating,
0 means PD 1K

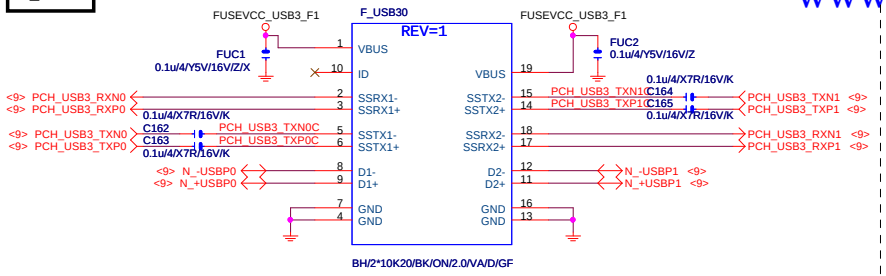
MOSI For DMI RX Termination Voltage





Gigabyte Technology			
Title: DUAL BIOS			
Size: Custom	Document Number: GA-H97M-DS3P		Rev: 1.0
Date: Tuesday, April 22, 2014		Sheet 19 of 31	

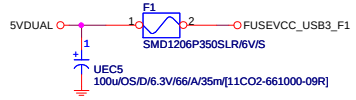
F_USB30



BLACK CONNECTOR

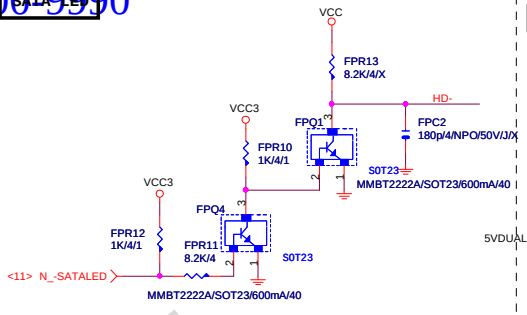
F_USB30 PWR

Polyswitch-1206

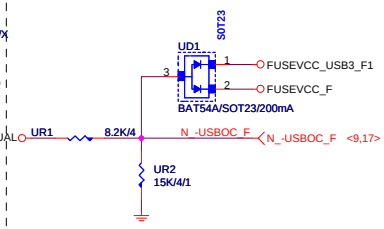


USB3.0 1Port - 1Fuse (3.5A)

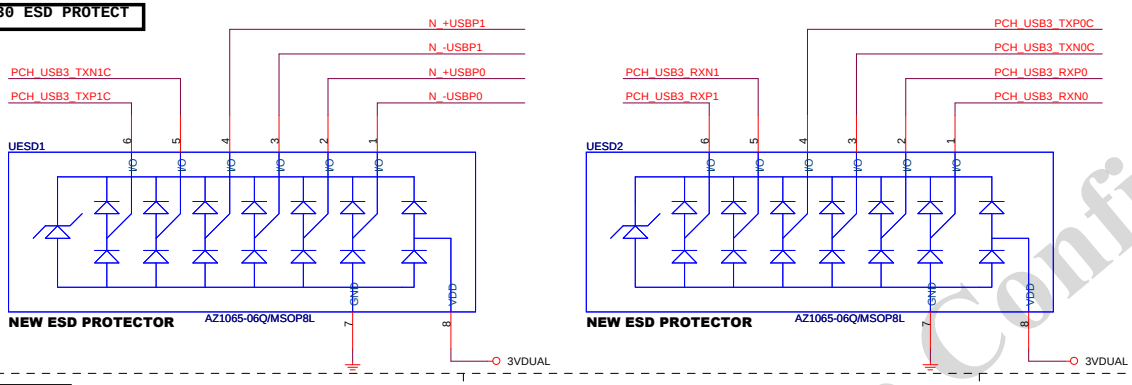
SATA LED



-USBOC_F



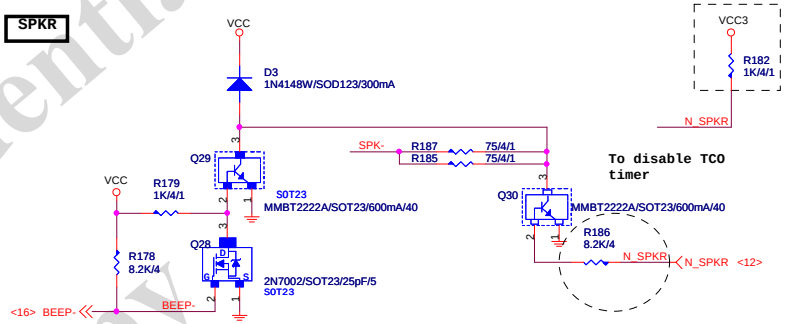
F_USB30 ESD PROTECT



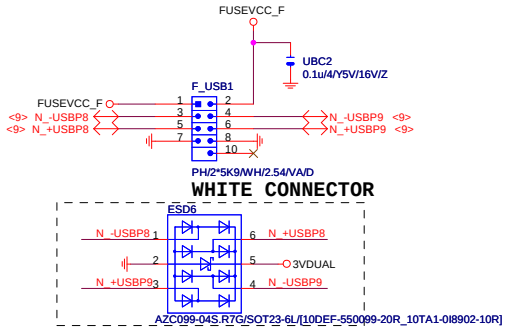
NEW ESD PROTECTOR AZ1065-06Q/MSOP8L

NEW ESD PROTECTOR AZ1065-06Q/MSOP8L

SPKR



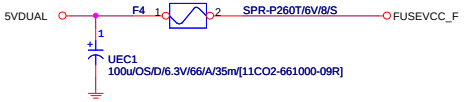
FRONT USB1



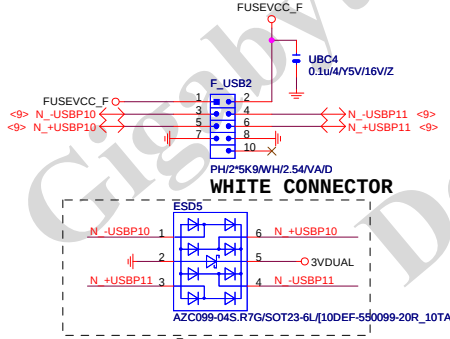
WHITE CONNECTOR

Close to connector

FUSE-0805
F_USB1, F_USB2, 4-Port 2.6A



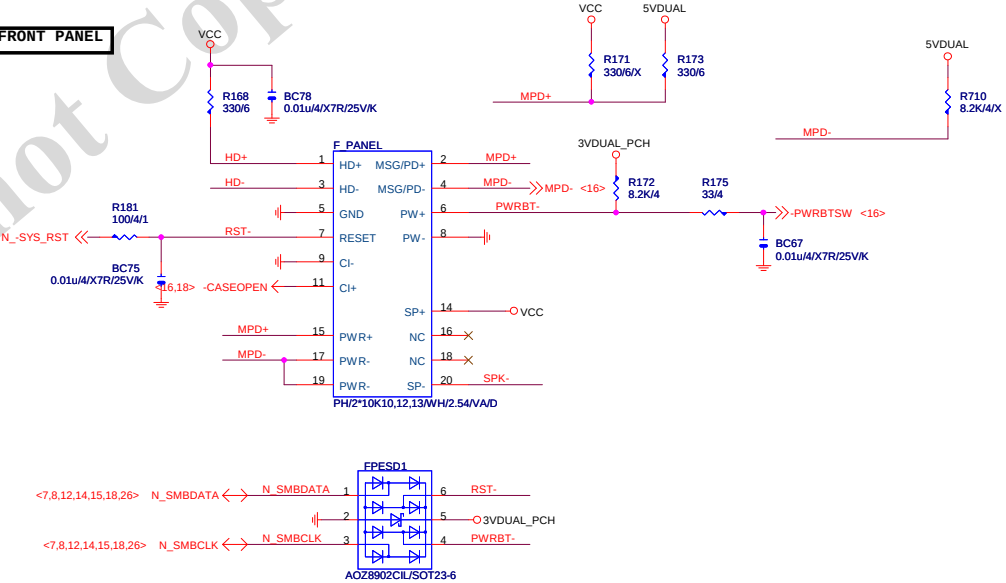
FRONT USB2



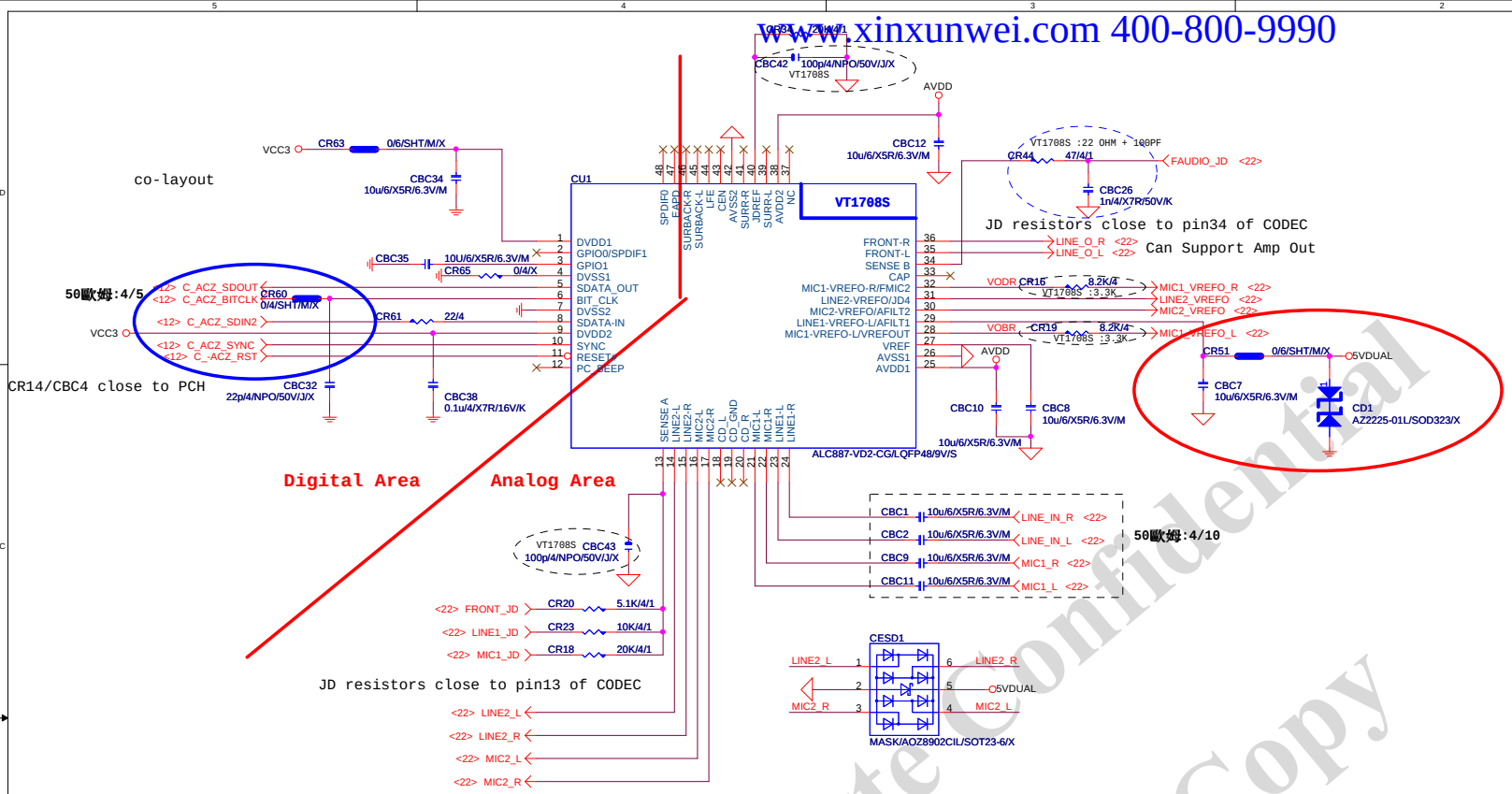
WHITE CONNECTOR

Close to connector

INTEL FRONT PANEL



Gigabyte Technology		
Title: FP,F_USB,USB PWR,SPKR,SATA LED		
Size: Custom	Document Number: GA-H97M-DS3P	Rev: 1.0
Date: Tuesday, April 22, 2014	Sheet 20 of 31	



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

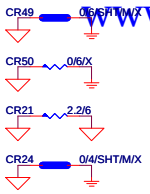
	ALC892	ALC887-VD2	VT1708S-CE
CR44/CBC26	47ohm+1nF	47ohm+1nF	22ohm+100P
CBC42/CBC43	X	X	100P/4
CR6/CR7/CR58/CR54/ CR67/CR68/CR69/CR70	22K/4	22K/4	10K/4/1
CR5/CR8/CR1/CR14/ CR17/CR22/CR73/CR74/ CR13/CR11/CR57/CR53/ CR75/CR76	62 ohm	62 ohm	75 ohm
CR51/CD1/CBC7	0	0	0
CESD1	0	0	0

Gigabyte Technology

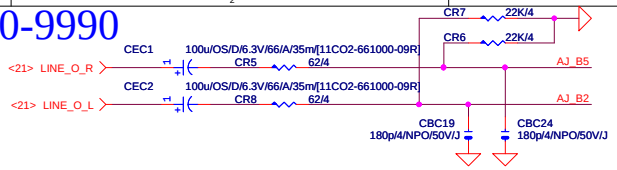
Title: HD AUDIO ALC887B-VD2/VT1708S/VT2021

Size: Custom | Document Number: GA-H97M-DS3P | Rev: 1.0

Date: Tuesday, April 22, 2014 | Sheet 21 of 31

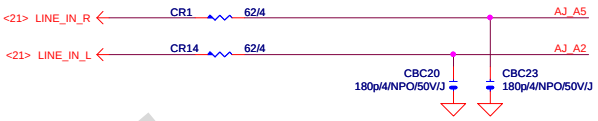


LINE-OUT



Only reserved for ALC888

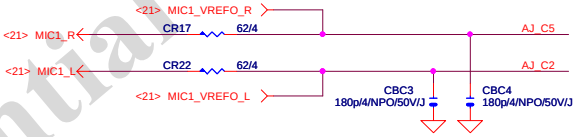
LINE-IN



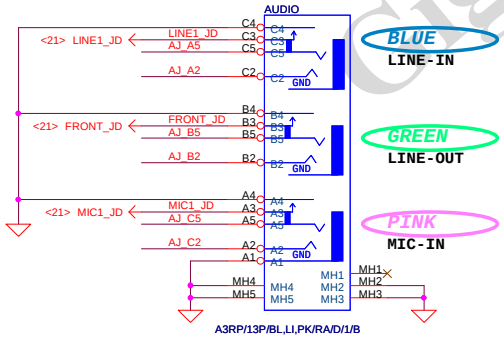
Verify MIC function in LINE-in

For 889A/888

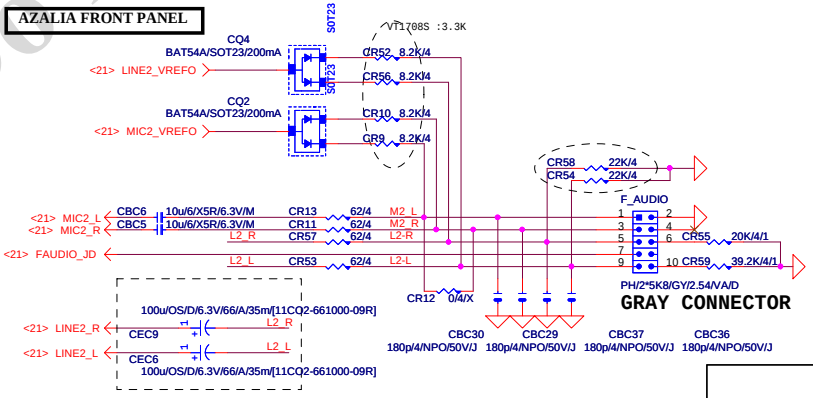
MIC-IN



SPDIF_OUT



AZALIA FRONT PANEL



Gigabyte Technology		
Title: AUDIO JACK		
Size: Custom	Document Number: GA-H97M-DS3P	Rev: 1.0
Date: Tuesday, April 22, 2014	Sheet 22 of 31	

LAN:INTEL I217

LA_MDI-->100 ohm:[20/4/10/4/20]

SVR_EN=Low, internal SVR use.

For 82579
Keep short & wide

WGI217V/A3/QFN48/[10HP2-400217-30R]

1Gb	Orange
100Mb	Green
10Mb	Off

Access	Blinking
Link	Yellow

Dual Color LED

Single Color LED

USB_LAN CONNECTOR

LA_MDI-->100歐姆:[20/4/8/4/20]

USB30_LAN

USB3+LAN/1G/GO,Y/OS/RA/D/G30

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

UBESD3

AZC099-04S.R7G/SOT23-6L/[10DEF-550099-20R_10TA1-0I8902-10R]

*
使用RU9 USB_LAN可省略LAESD1保護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

USB X3 POWER

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

EMI SHORT PAD

PS:視EMI需求

UESD3
AZ1045-04F/MSOP10

UESD4
AZ1045-04F/MSOP10

MDI ESD預留28KV *

AZC099-04S/SOT23-6L/X

AZC099-04S/SOT23-6L/X

Gigabyte Technology			
Title: Realtek RTL8111G			
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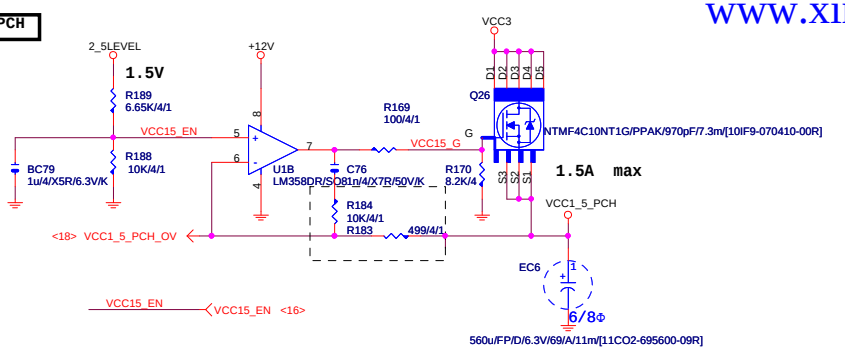
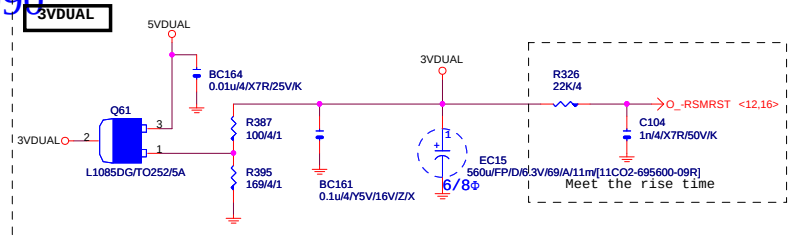
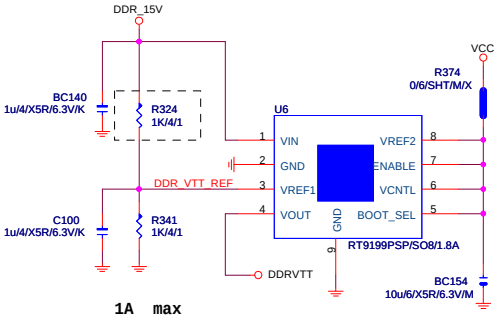
VCC1_5_PCH



3VDUAL



DDRVTT



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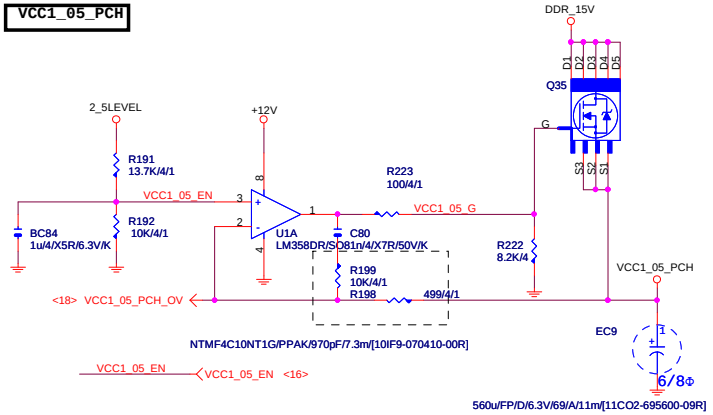
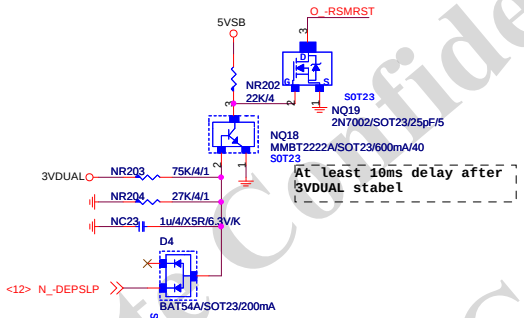
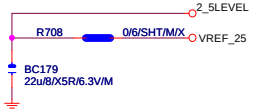


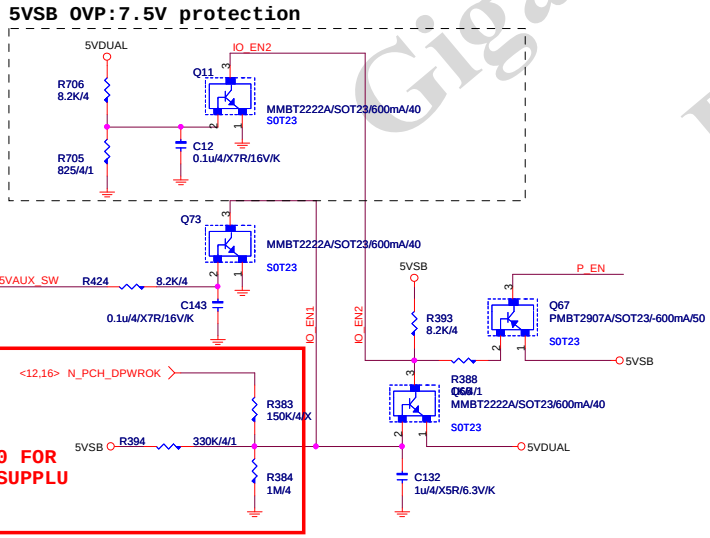


2_5LEVEL

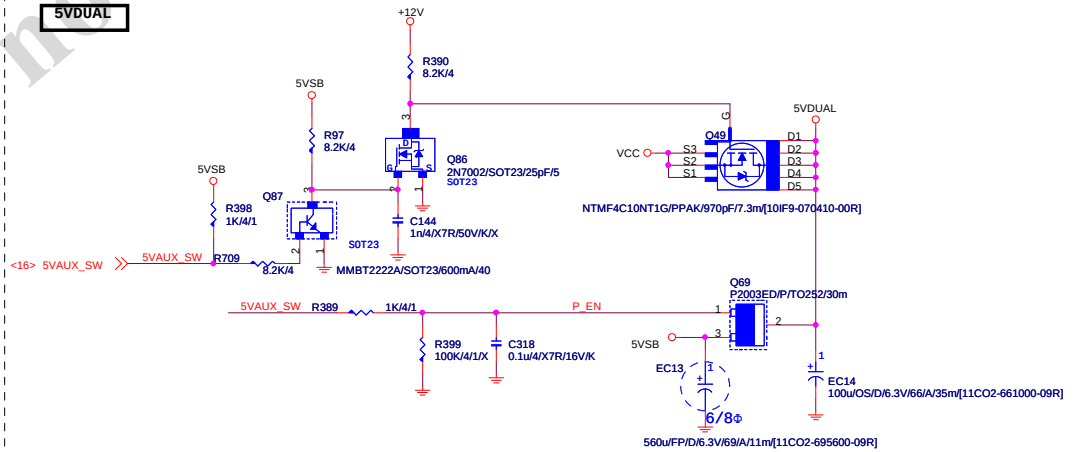


5VDUAL SHORT PROTECT

5V:0.40V
7.5V:0.602V
9V:0.722V



5VDUAL



Gigabyte Technology		
Title: DISCRETE POWER		
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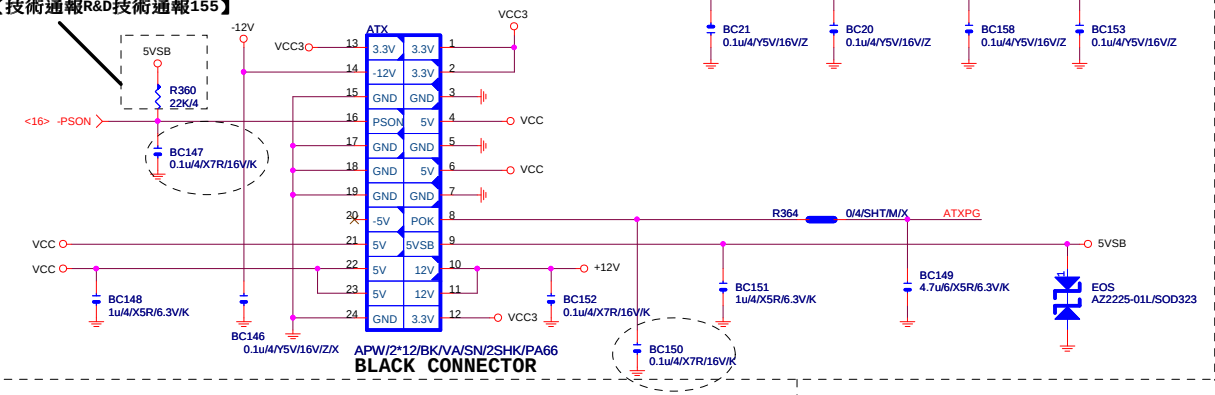
ATXX24 POWER CONNECTOR

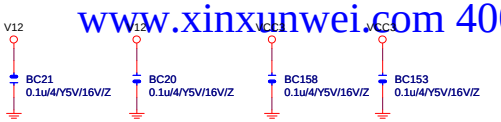
【技術通報R&D技術通報155】

ATXPWR_24-6



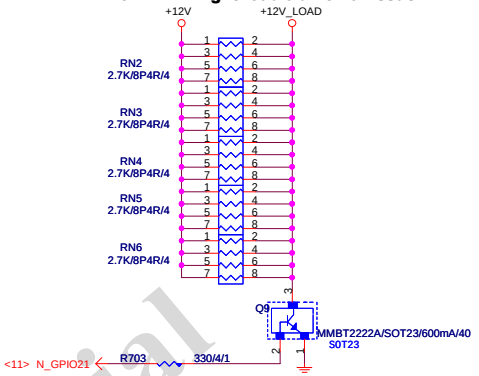
APW/2*12/BK/VA/SN/2SHK/PA66

BLACK CONNECTOR

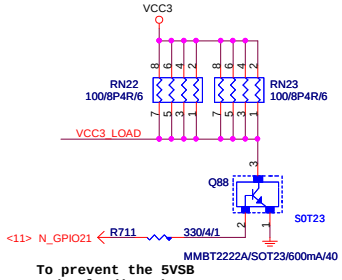


【技術通報R&D技術通報153】

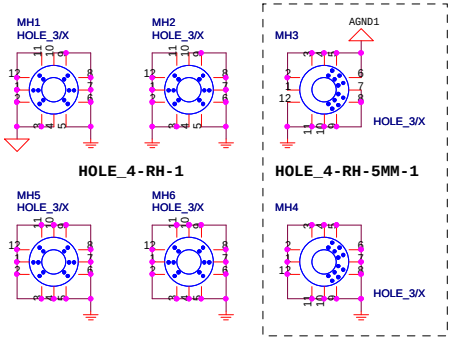
To fix 12V light load abnromal issue



Fix PSU Minimum Load.

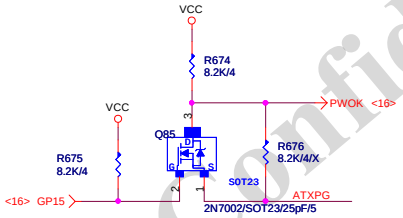


To prevent the 5VSB under loading when boot



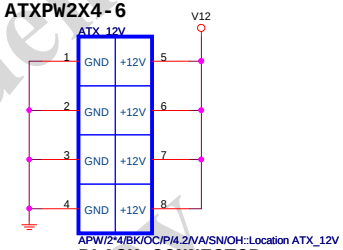
PWOK PATCH

【技術通報R&D技術通報154】



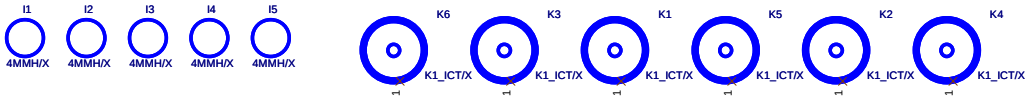
ATXX4 POWER CONNECTOR

ATXPW2X4-6



APW/2*4/BK/OC/P/4.2/VA/SN/OH::Location ATX_12V

BLACK CONNECTOR



Gigabyte Technology			
Title: ATX CONNECTOR			
Size: Custom	Document Number: GA-H97M-DS3P		Rev: 1.0
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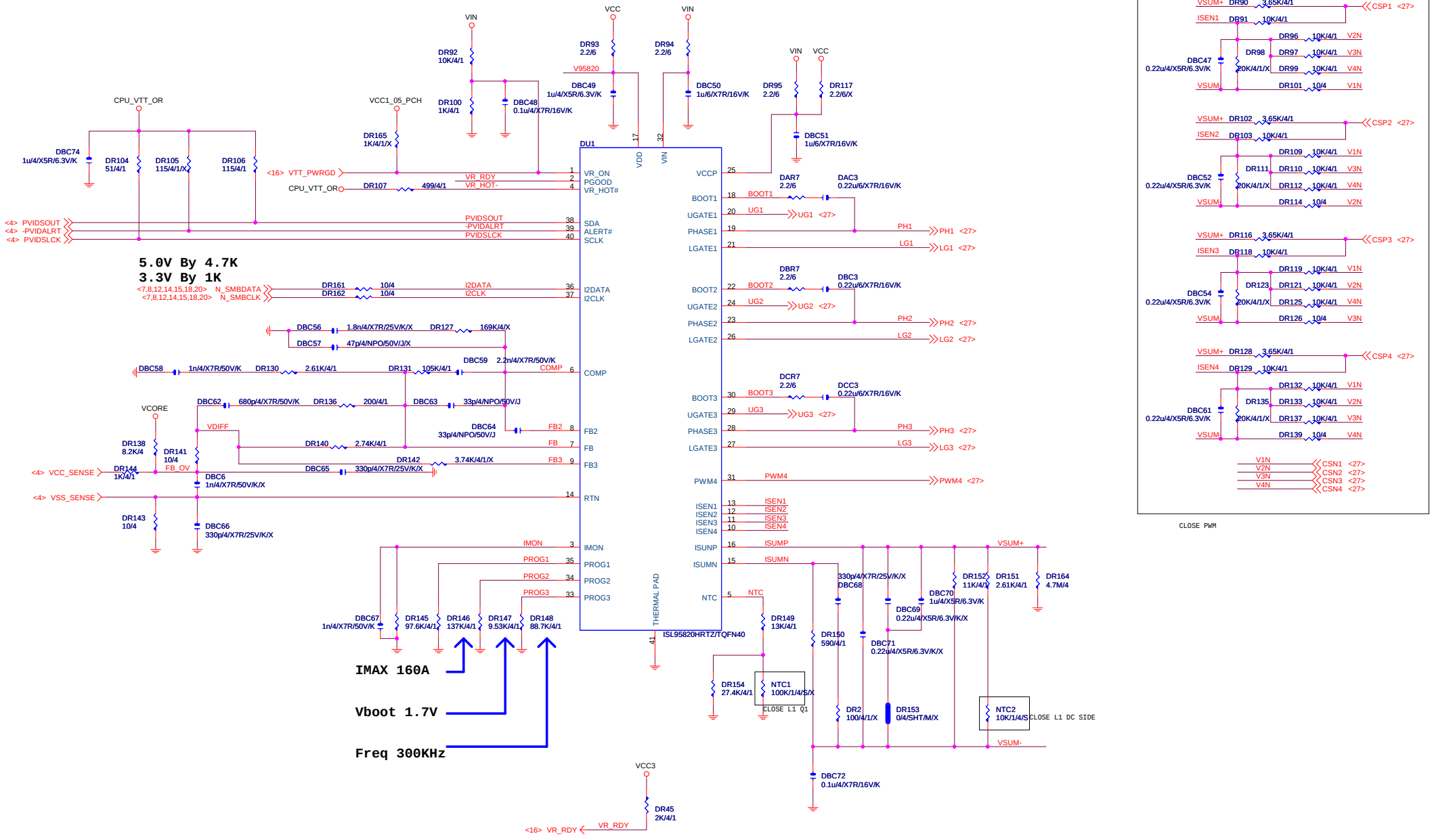

Title	CPU CORE VR-1
Size	Custom
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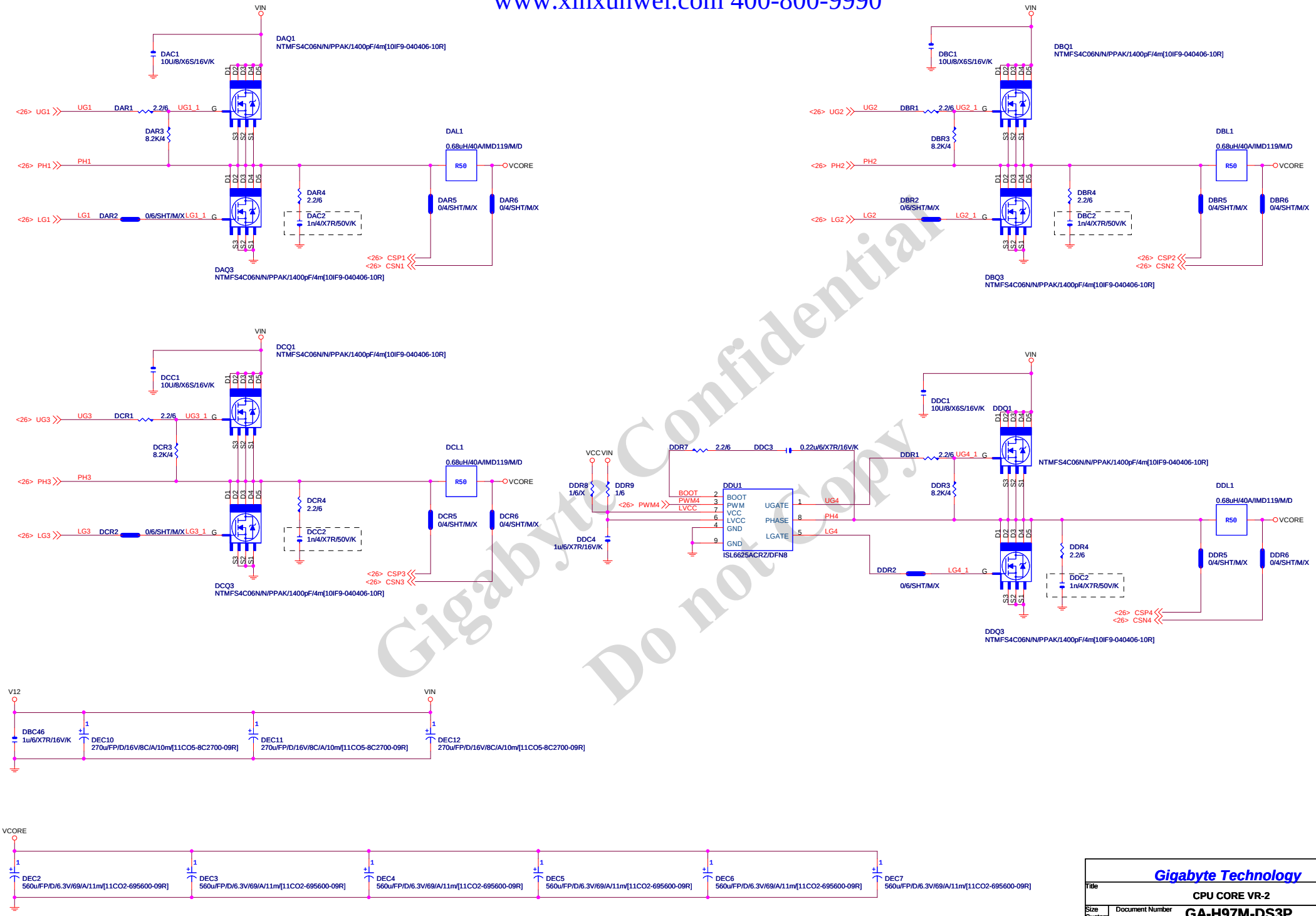
Gigabyte Technology



Gigabyte Technology		
Title	CPU CORE VR-2	
Size: Custom	Document Number: GA-H97M-DS3P	Rev: 1.0
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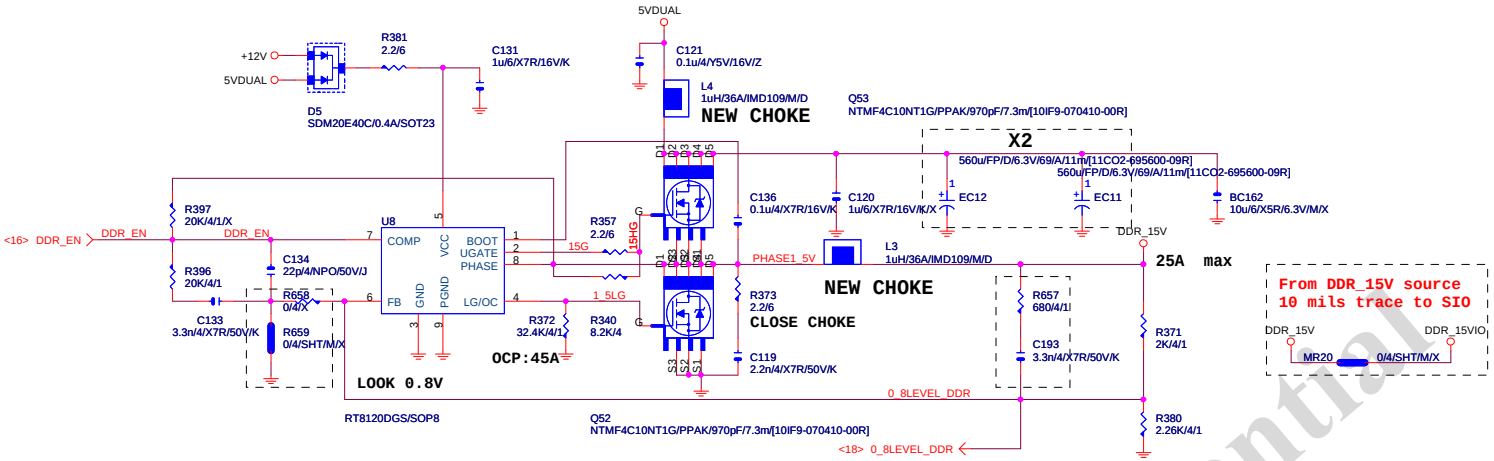
DDR15V



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			
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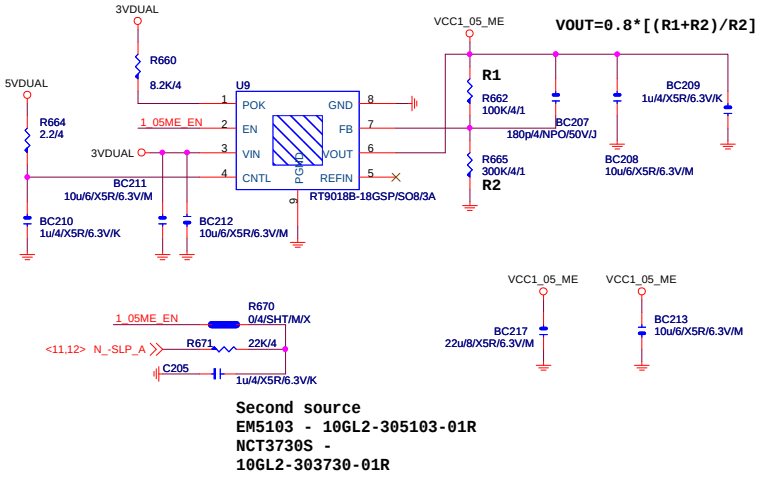
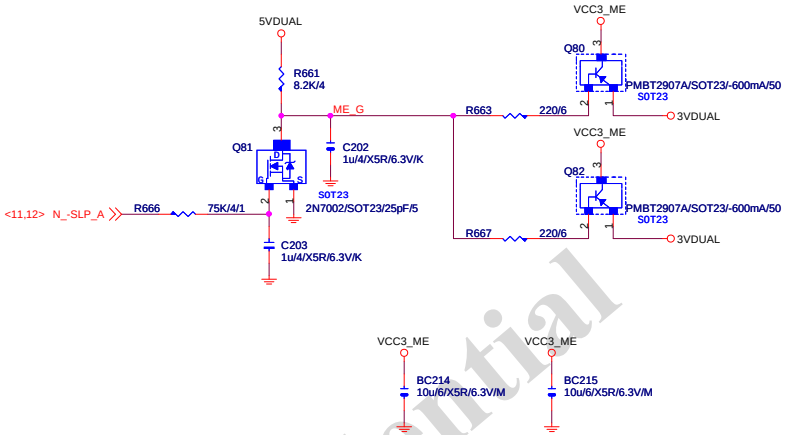
VCC1_05_ME

【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



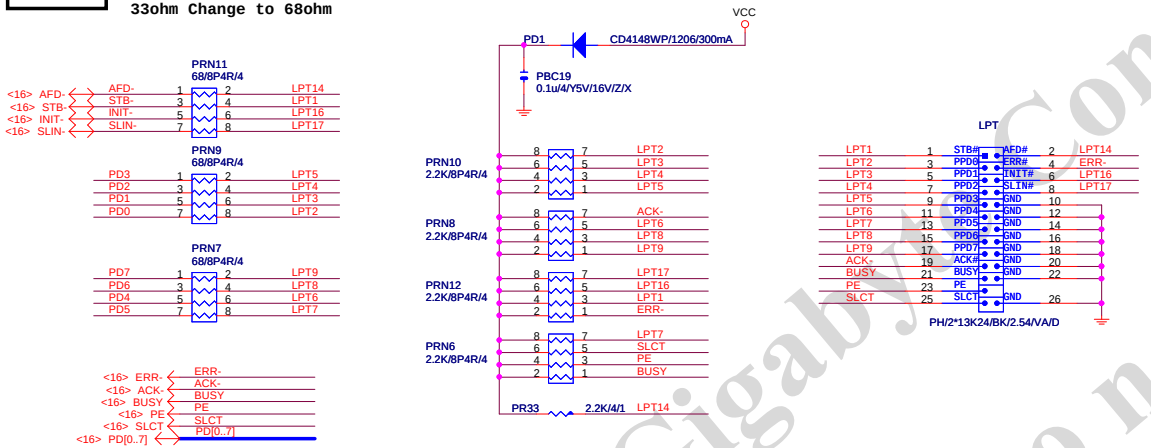
Second source
EM5103 - 10GL2-305103-01R
NCT3730S -
10GL2-303730-01R

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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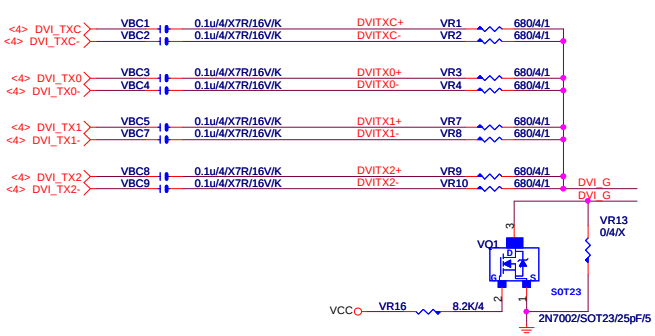
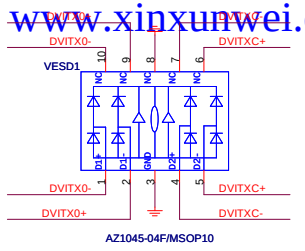
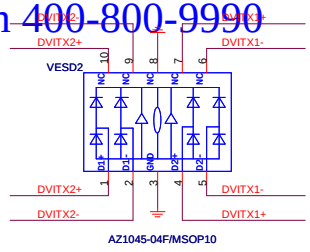
DVI

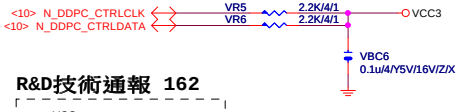




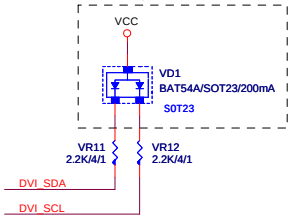
Close to connector

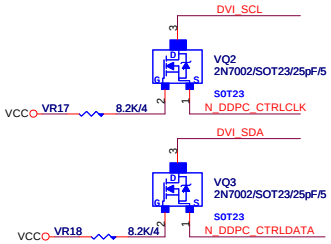


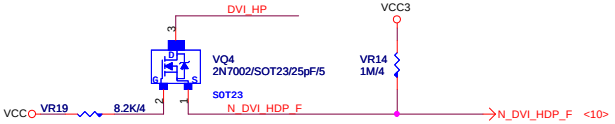
Close to connector

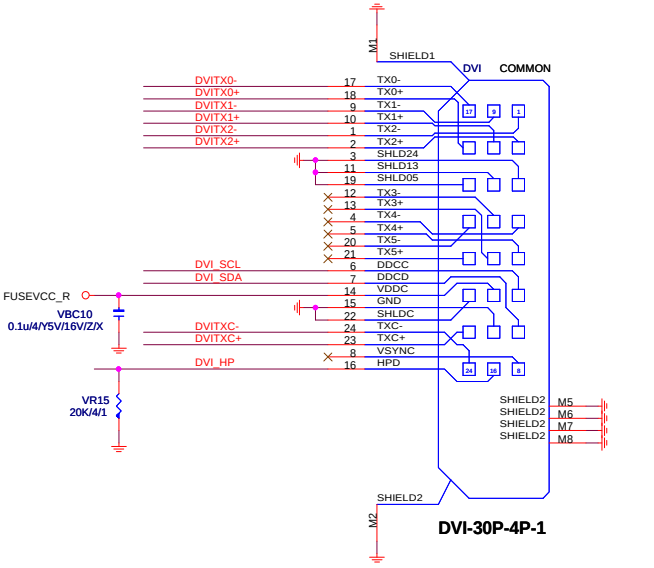


R&D技術通報 162



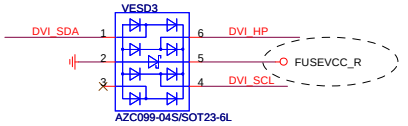






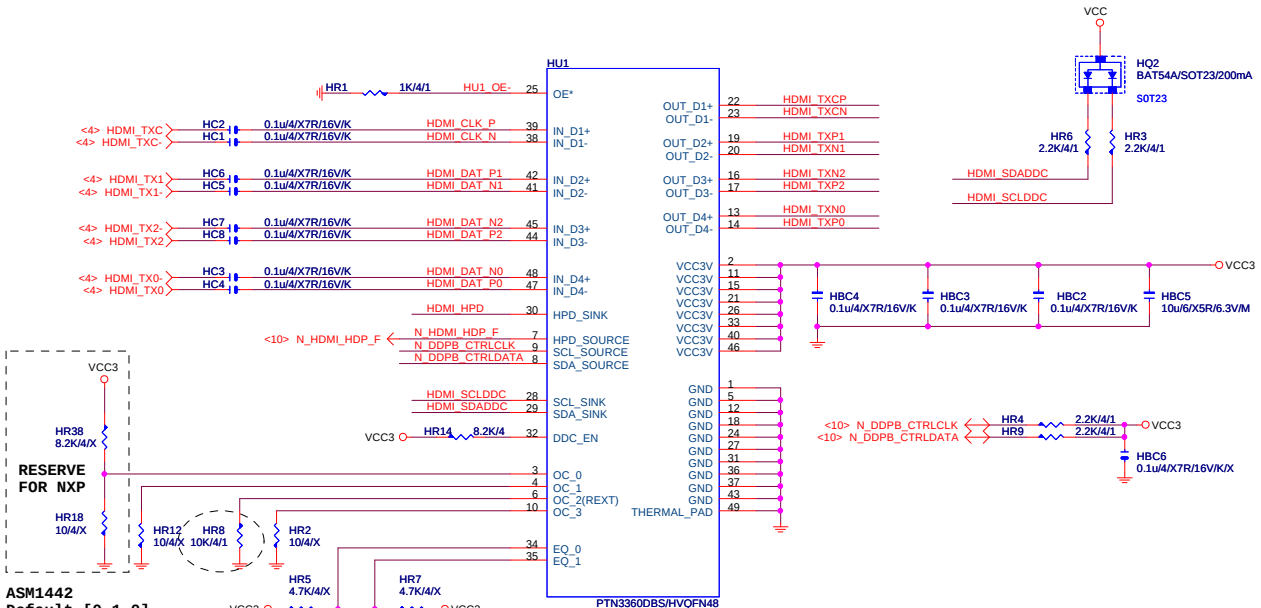
DVI-30P-4P-1

DVI-D/24P/SC/RA/D/SH/[11NR6-501024-31R_11NR6-501024-33R]



Close to connector

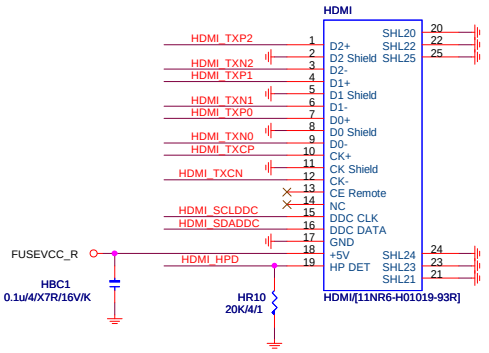
HDMI LEVEL SHIFT



ASM1442
Default [0,1,0]
450mv,-3dB

ASM1442 Default [0,0] 3dB
[0,1]6dB

HDP NONE-REVERSE



Gigabyte Technology		
Title: DVI		
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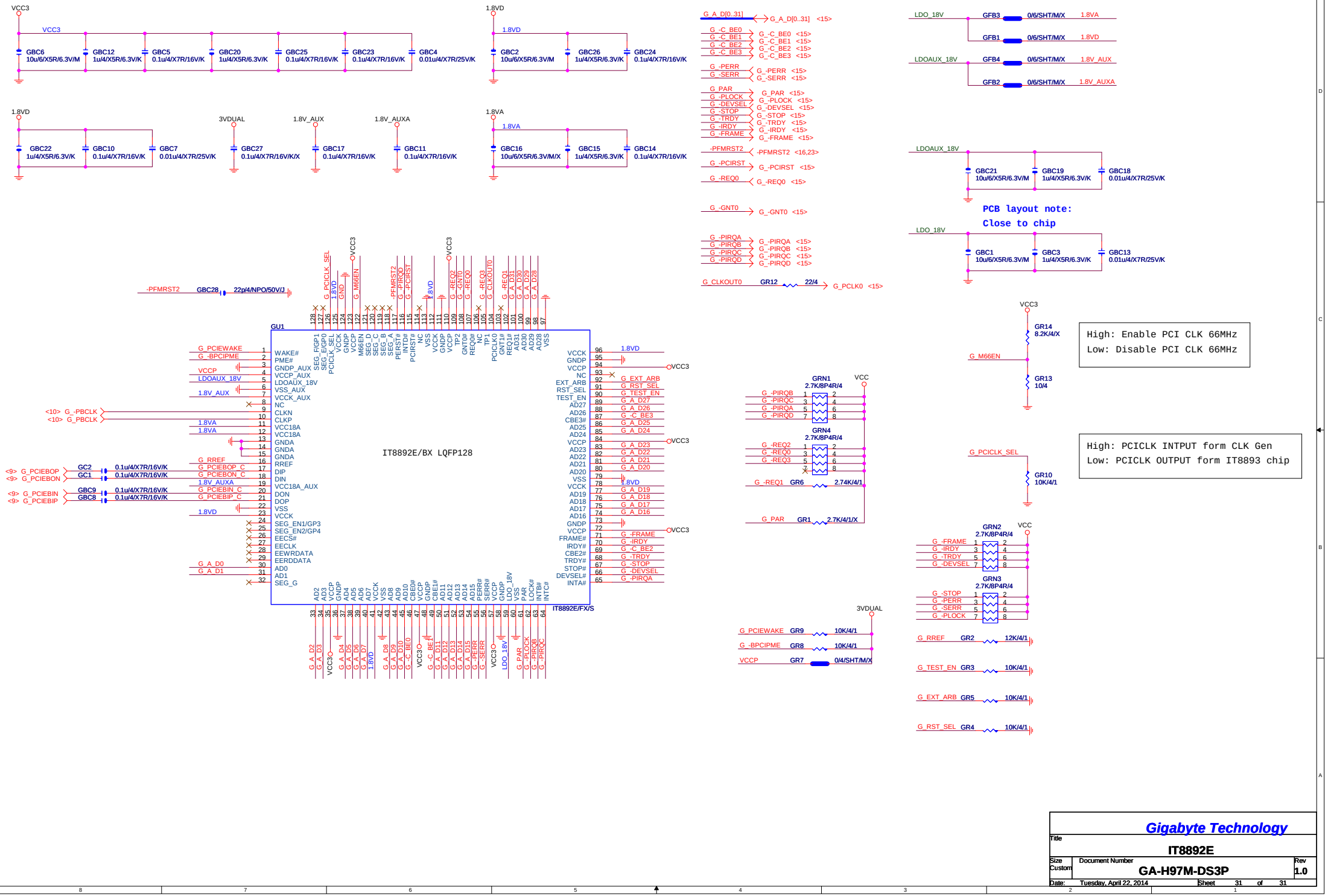

Gigabyte Technology	
Title	IT8892E
Size: Custom	Document Number: GA-H97M-DS3P
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