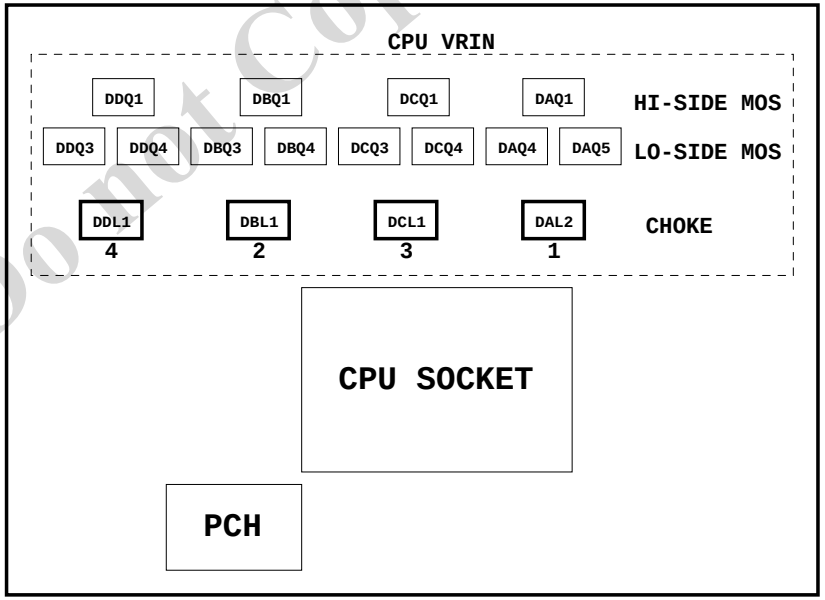
Model Name: GA-B85-D3V 2.0

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
10	PCH_RGB,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCI EXPRESS*16 SLOT
15	PCIEX1*2 , PCIEX4 SLOT
16	ITE8892 PCI BRIDGE
17	PCI SLOT 1&2
18	I/O ITE8728
19	COM, -PROHOT, R_USB
20	Dual BIOS / LPT
21	ALC892 CODEC
22	REAR AUDIO JACK
23	VCORE_ ISL95820_1
24	VCORE_ ISL95820_2
25	DDR15V / M3 POWER
26	NCP3933 OVER VOLTAGE
27	DISCRETE POWER

SHEET	TITLE
28	F_PANEL , F_USB2.0/3.0
29	ATX POWER, CLOCK GEN
30	HWM , KB/MS , FAN CTRL
31	Realtek RTL8111G
32	DVI
33	HDMI
34	TABLE LIST
35	
36	
37	
38	
39	
40	



Gigabyte Confidential
Do not Copy

Gigabyte Technology

Title: Cover Sheet

Size: Custom | Document Number: GA-B85-D3V | Rev: 2.0

Date: Thursday, May 15, 2014 | Sheet 1 of 34

GA-B85-D3V

Component value change history

Data	Change Item	Reason
0.1	E-BOM	
0.2	1. Remove BIOS "WINBOND"	
	2. F_USB ESD change to "3VDUAL" + OP	
0.3	1. PCH 25MHz NX1 layout修改 2. MR17 footprint update "R0603-RH" 3. Add HBD1 for DVI 4. CPU_FAN R676 "R0603-RH"	
1.1	1. UAR2 4.3K/4/1 --> 442/4/1 , UAR3 8.2K/4 --> 1K/4/1	
11C	560u替料移除	
2013/05/13 EBOM:20A	1.FOR B85-D3V-2.0 E-BOM	
2013/05/29 PBOM:20B	1.MA_DR18 12K --->27K	
	2.NR24 6.4K--->6.8K,LBC25 0.01U FOR EMI	

Circuit or PCB layout change

DATE	Change Item	Reason
0.1	1. H81-HD3 Rev1.02 --> B85-D3V Rev0.1	
0.2	1. IT8892右上角的VCC3切割加大 2. VCC和+12切割加大 3. F_USB ESD change to "3VDUAL" + OP 4. 0ohm --> short pad	
0.3		
1.1	1. Update "POLYSWITCH-1206-1" 2. 所有的PPAK footprint改爲Q_TDSON8-GDS-T (增加NXP相容) 3. PE_SRCCLK_3GIO1/PE_-SRCCLK_3GIO1 change to PCH pin W6/W7	
2014/05/12 PCB:2.0	1. LAN to RTL8111G 2. VCORE MOSFET to 1上1下 3. H81 series Cost down rule 4. K/B_MOUSE排阻0402改爲0603 5. DVI remove level shift 6. Remove 短路保護 7. 1206 3.5A fuse to 0805 2.6A 8. Remove 3933	

Gigabyte Confidential
Do not Copy

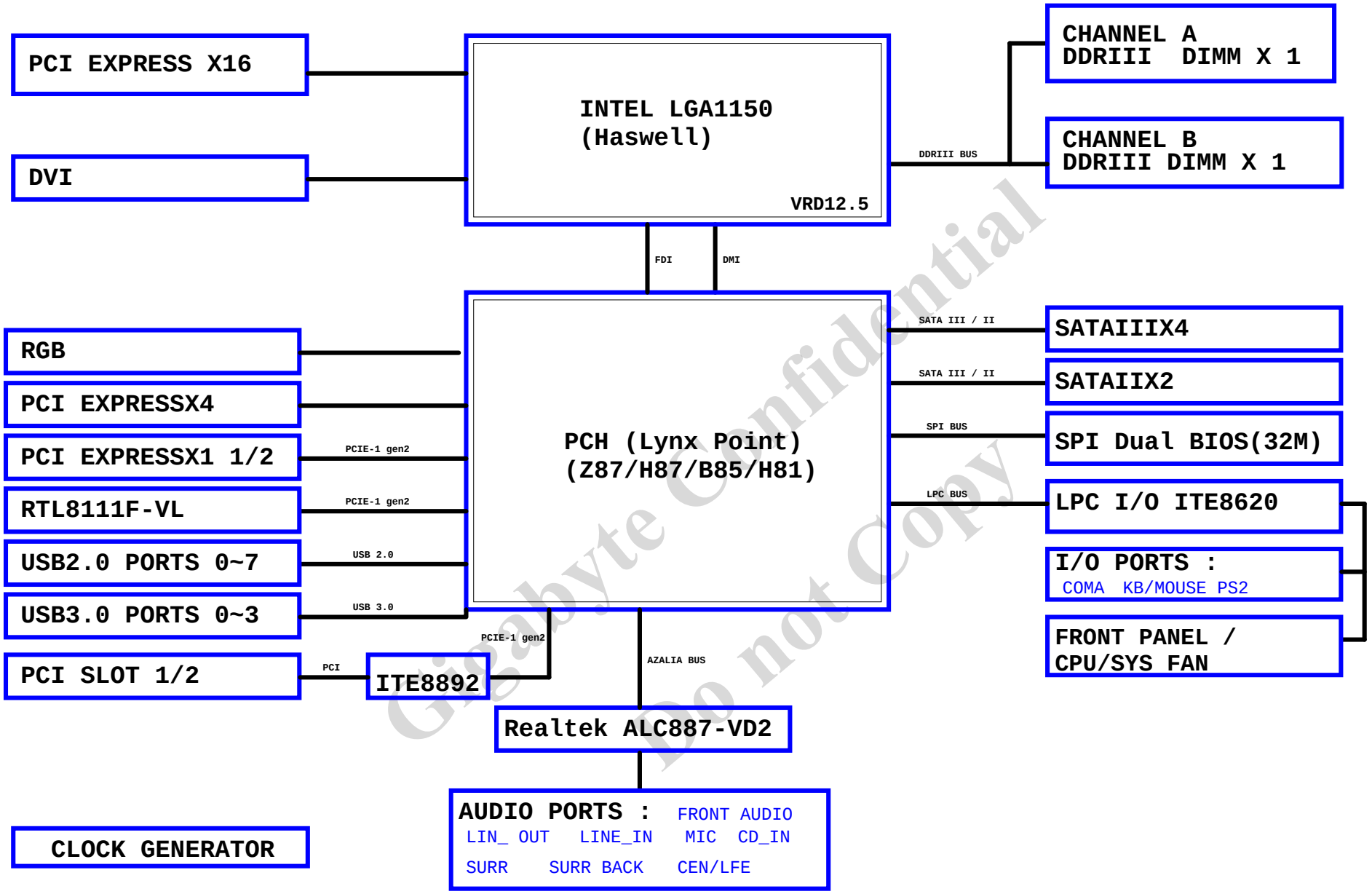
Gigabyte Technology

Title: BOM & PCB MODIFY HISTORY

Size: Custom | Document Number: GA-B85-D3V | Rev: 2.0

Date: Thursday, May 29, 2014 | Sheet 2 of 34

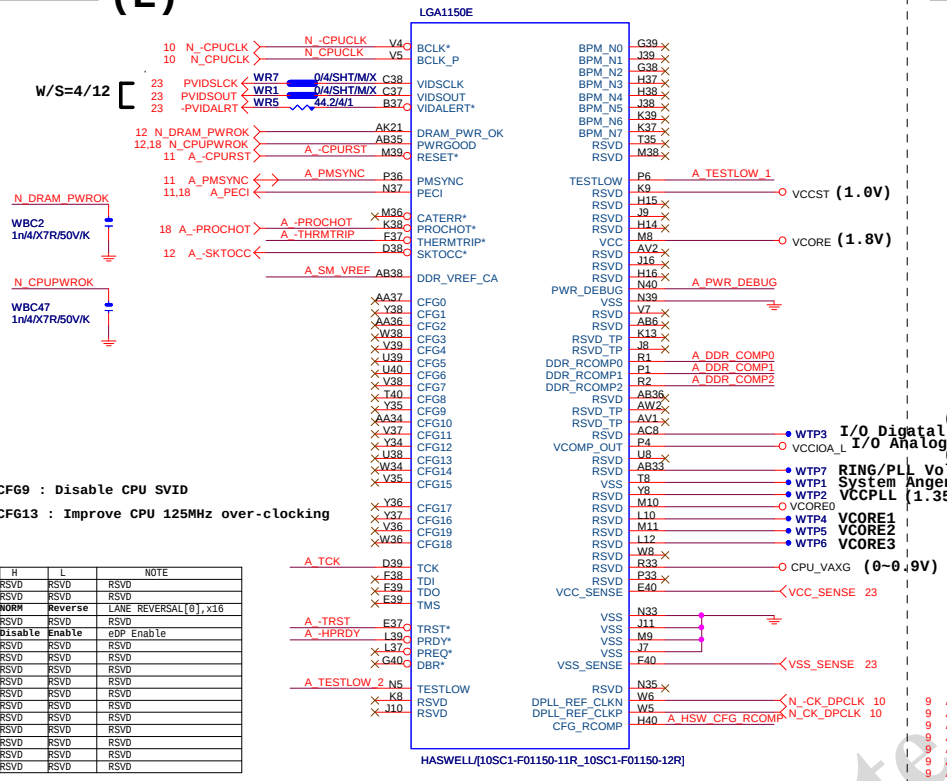
BLOCK DIAGRAM



Gigabyte Confidential
Do not Copy

Gigabyte Technology			
Title: BLOCK DIAGRAM			
Size: C	Document Number: GA-B85-D3V		Rev: 2.0
Date: Thursday, May 15, 2014	Sheet 3 of 34		

LGA1150 (E)



HSW_CFG9 : Disable CPU SVID

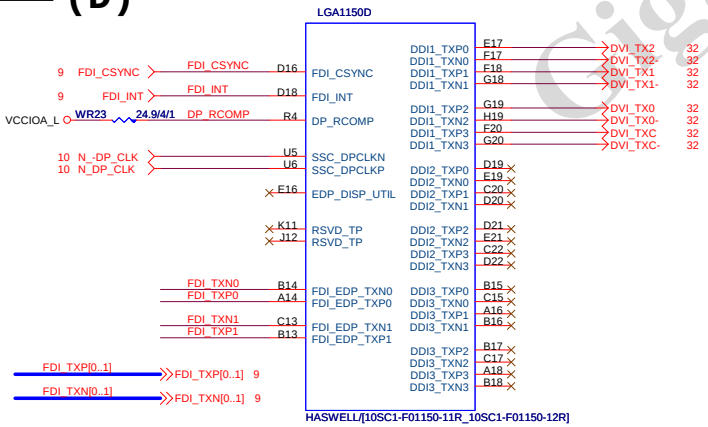
HSW_CFG13 : Improve CPU 125MHz over-clocking

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:15/4/4/4/15(breakout min 4/4/4//8)
Impedance=85 +- 15%

DP/HDMI 15/4/4/4//15 FDI 12/4/4/4/12

Impedance=85 +- 15%

LGA1155 (C)

CPU PEG 20/5/4/5/20 Impedance=80 +- 15%

DMI 12/4/4/4//12 Impedance=85 +- 15%

PA_EXP_TXP[0..15] → PA_EXP_TXP[0..15] 14

PA_EXP_TXN[0..15] → PA_EXP_TXN[0..15] 14

PA_EXP_RXP[0..15] → PA_EXP_RXP[0..15] 14

PA_EXP_RXN[0..15] → PA_EXP_RXN[0..15] 14

-CPURST

1.1V分壓

A_-CPURST → A_-CPURST 11

BC102 1n/4/X7R/50V/K

For IT8620 Ctrl

CPU SVID

CPU_VTT_OR WR2 115/4/1 PVIDSOUT
WR4 75/4/1 -PVIDALRT

CPU PU/PD

WRN20 51/8P4R/4

CPU_VTT_OR A_-HPRDY A_-TRST A_TCK

CPU_VTT_OR WR25 1K/4/1 A_-PROCHOT

A_-THRMTRIP WR70 1K/4/1 VCC1_05_PCH

A_PWR_DEBUG WR34 150/4/1 VCC1_05_PCH

A_DDR_COMP0 WR28 100/4/1
A_DDR_COMP1 WR19 75/4/1
A_DDR_COMP2 WR22 100/4/1
A_TESTLOW_1 WR18 49.9/4/1
A_TESTLOW_2 WR12 49.9/4/1
A_HSW_CFG_RCOMP WR24 49.9/4/1

SM REF

DDR_15V

WR62 100/4/1

WR60 100/4/1

A_SM_VREF

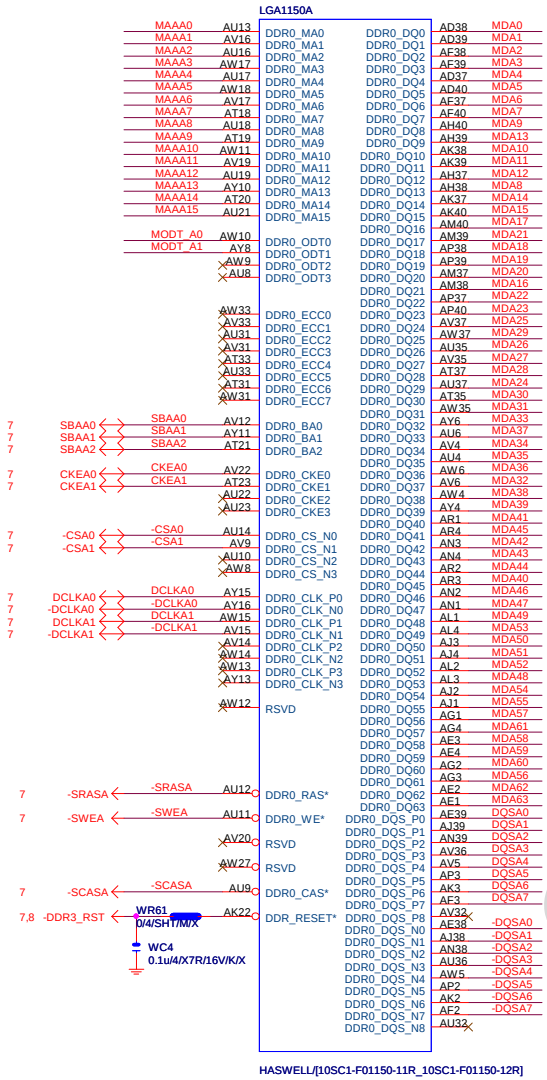
WC3 0.1u/4/X7R/16V/K

A_-THRMTRIP WR68 1K/4/1 N_-THRMTRIP 11,18

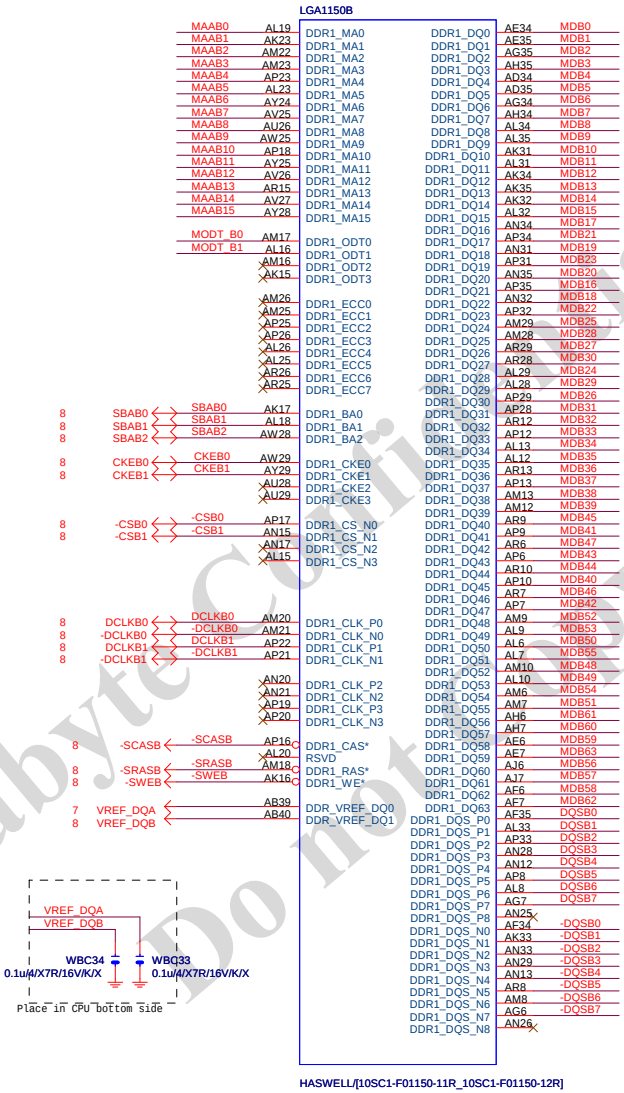
Gigabyte Confidential Do not Copy

Gigabyte Technology			
Title: CPU LGA1150-A			
Size: Custom	Document Number: GA-B85-D3V		Rev: 2.0
Date: Thursday, May 15, 2014	Sheet 4 of 34		

LGA1150 (A)

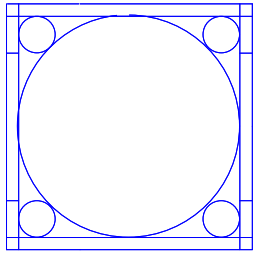


LGA1150 (B)

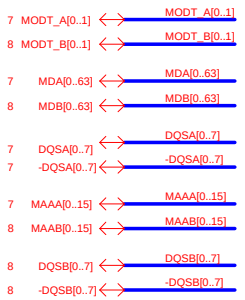


LGA1150 (CR)

LGA1150
ILM_BP/1156/CSP/[12KRC-0F0001-52R_12KRC-0F0001-51R]

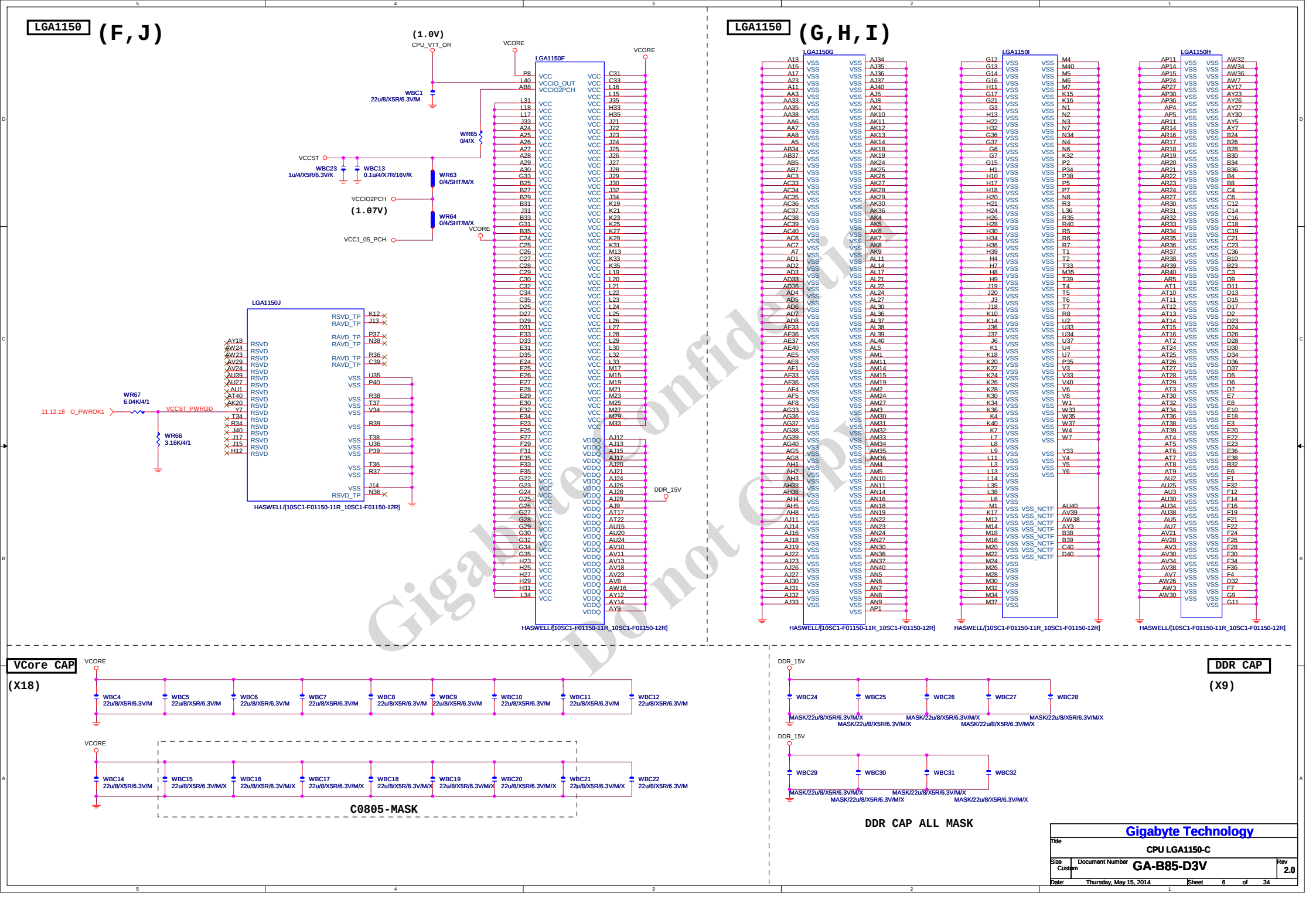


DDR BUS

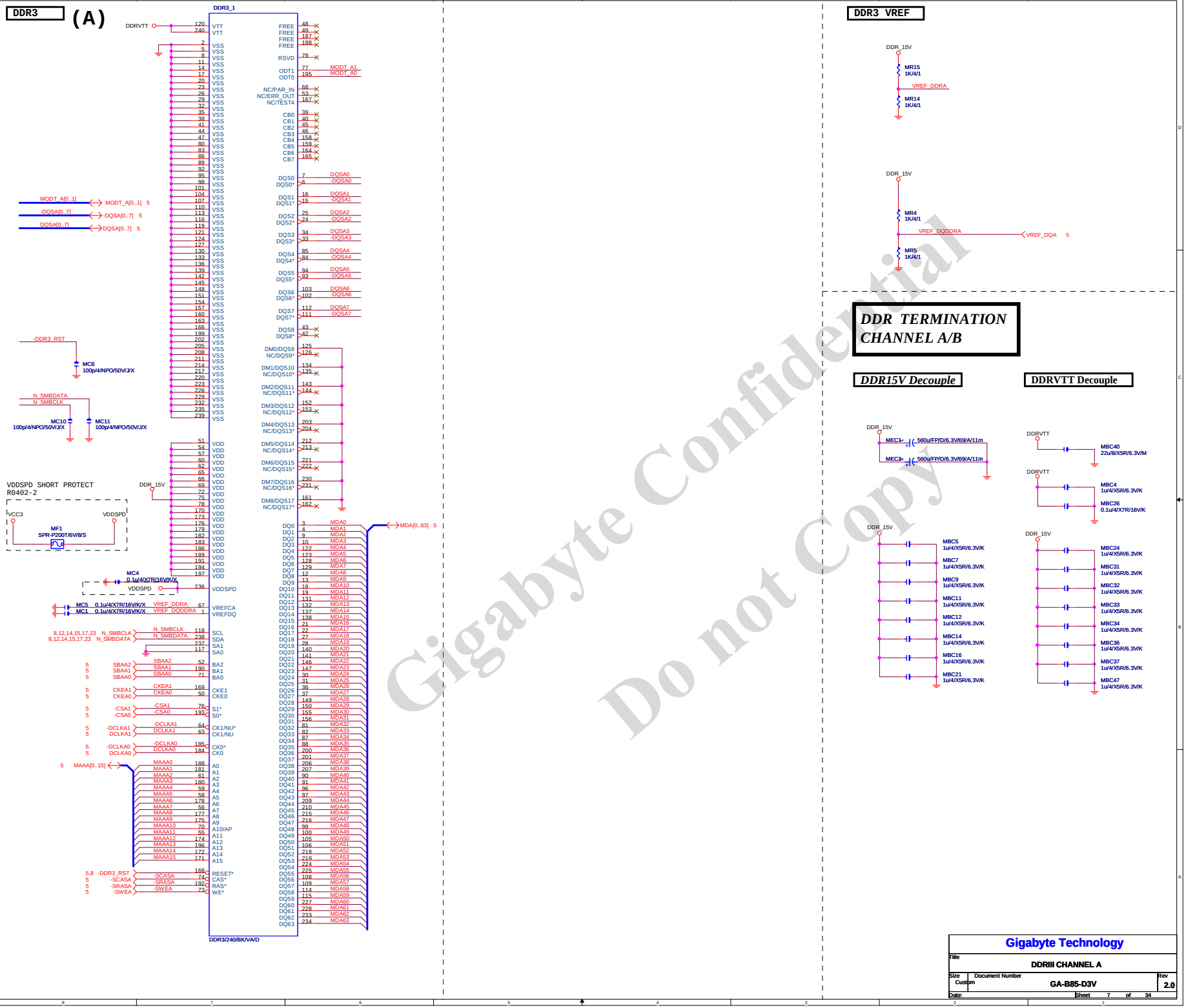


Gigabyte Confidential
Do not copy

Gigabyte Technology			
Title: CPU LGA1150-B			
Size: Custom	Document Number: GA-B85-D3V		Rev: 2.0
Date: Thursday, May 15, 2014	Sheet 5 of 34		

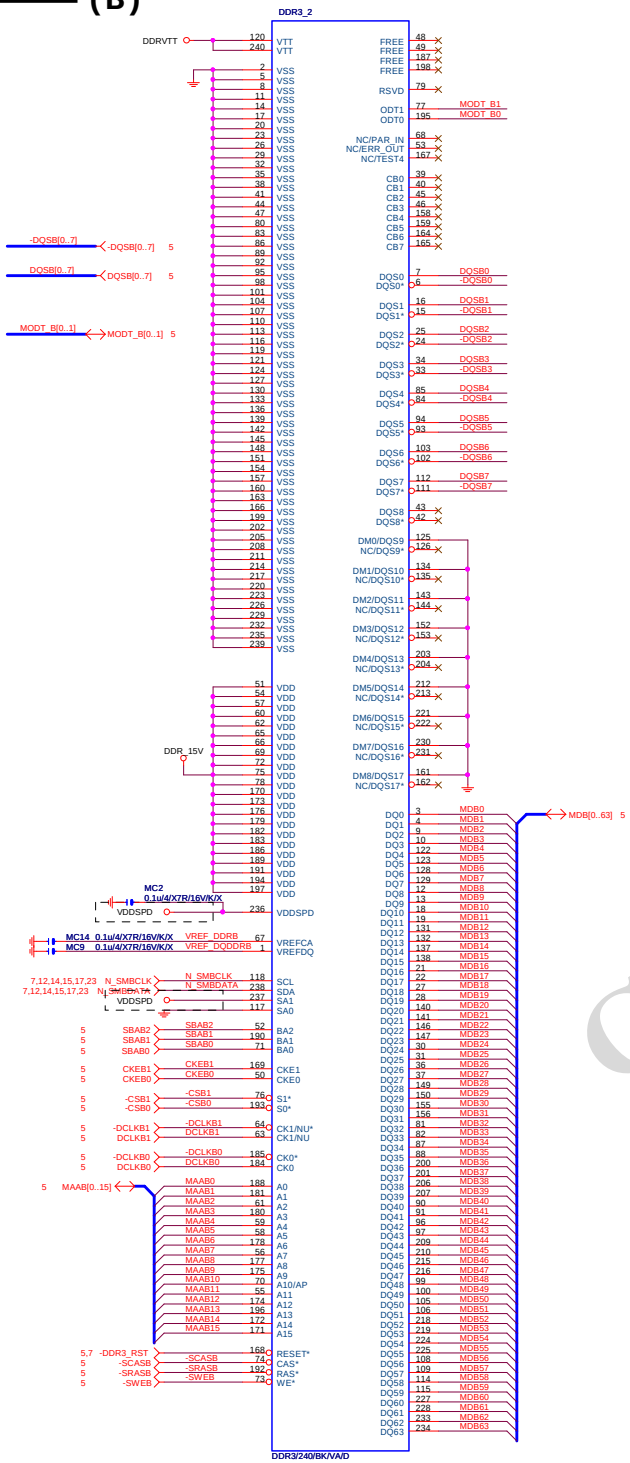


Gigabyte Confidential
Do not Copy

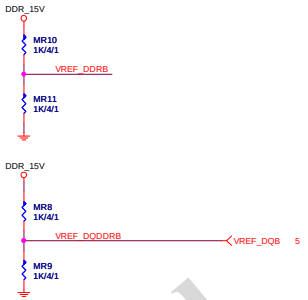


Gigabyte Confidential
Do not Copy

DDR3 (B)



DDR3 VREF



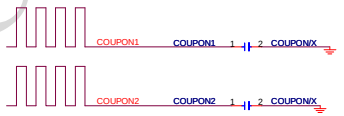
DDR3 1066,1333,1600MHZ BANDWIDTH

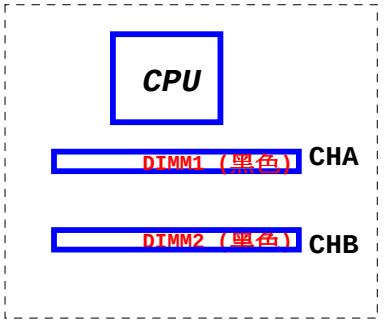
DDR3 1066MHZ
DDR3 clock=533MHZ
DDR3 single channel bandwidth=533x2x8Byte=8.5GB/s
DDR3 dual channel bandwidth=533x2x2x8Byte=17GB/s

DDR3 1333MHZ
DDR3 clock=667MHZ
DDR3 single channel bandwidth=10.6GB/s
DDR3 dual channel bandwidth=21GB/s

DDR3 1600MHZ
DDR3 clock=800MHZ
DDR3 single channel bandwidth=12.8GB/s
DDR3 dual channel bandwidth=25.6GB/s

COUPON





Gigabyte Confidential
Do not Copy

Gigabyte Technology		
Title: DDRIII CHANNEL B		
Size: Custom	Document Number: GA-B85-D3V	Rev: 2.0
Date:	Sheet 8 of 34	

PCH (B)

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

USB2.0 : 12/5/7/5/12 (breakout min 8/4/4/4/8)
Impedance=85 +- 15%

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

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_RCOMP
PCIE_RCOMP
CLKIN_DMI_N
CLKIN_DMI_P

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

OC0B_GP59 OC1B_GP40 OC2B_GP41 OC3B_GP42 OC4B_GP43 OC5B_GP9 OC6B_GP10 OC7B_GP14

USBRBIASB USBRBIAS

CLKIN_DOT96N CLKIN_DOT96P

DH82B85/S/[10HB1-030B85-20R]

Port要對應

B85/H81: 6/7 N\A

H81:12/13 N\A

H81:USB3.0 N\A

N_-USBP0 N_+USBP0 N_-USBP1 N_+USBP1 N_-USBP2 N_+USBP2 N_-USBP3 N_+USBP3 N_-USBP4 N_+USBP4 N_-USBP5 N_+USBP5 N_-USBP8 N_+USBP8 N_-USBP9 N_+USBP9 N_-USBP10 N_+USBP10 N_-USBP11 N_+USBP11 N_-USBP12 N_+USBP12 N_-USBP13 N_+USBP13

N_-USBOC_F N_-USBOC_R N_GPIO14

N_USBRBIAS NR47 22.6/4/1
W=8 mil out of PCH
S=15 mil to other signals

CK_-DOTCLK 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

VCC1_5_PCH NR50 7.5K/4/1 DMI_COMP
NR40 7.5K/4/1 PCIE_COMP
W=8 mil out of PCH
S=15 mil to other signals

CK_-SRCCLK_PCH
CK_SRCCLK_PCH

PCIEX1 port1
PCIEX1 port2
LAN RTL8111F-VL
ITE8892 PCI Bridge
PCIEX4 port1
PCIEX4 port2
PCIEX4 port3
H81:PCIE 7/8 N/A
PCIEX4 port4

PCIE_PERN_1_USB3_RXN_2 PCIE_PERP_1_USB3_RXP_2 PCIE_PETN_1_USB3_TXN_2 PCIE_PETP_1_USB3_TXP_2 PCIE_PERN_2_USB3_RXN_3 PCIE_PERP_2_USB3_RXP_3 PCIE_PETN_2_USB3_TXN_3 PCIE_PETP_2_USB3_TXP_3 PCIE_PERN_3 PCIE_PERP_3 PCIE_PETN_3 PCIE_PETP_3 PCIE_PERN_4 PCIE_PERP_4 PCIE_PETN_4 PCIE_PETP_4 PCIE_PERN_5 PCIE_PERP_5 PCIE_PETN_5 PCIE_PETP_5 PCIE_PERN_6 PCIE_PERP_6 PCIE_PETN_6 PCIE_PETP_6 PCIE_PERN_7 PCIE_PERP_7 PCIE_PETN_7 PCIE_PETP_7 PCIE_PERN_8 PCIE_PERP_8 PCIE_PETN_8 PCIE_PETP_8

放靠近 Device & PCI-E Slot

PCH PCIE ,DMI 15/4/4/4//15 Impedance=85 +- 15%

usb2.0 12/5/7/5/12
usb3.0 20/5/7/5/20 Impedance=85 +- 15%

PCH (F)

PCHF

USB3_RXN_0 USB3_RXP_0 USB3_TXN_0 USB3_TXP_0 USB3_RXN_1 USB3_RXP_1 USB3_TXN_1 USB3_TXP_1 USB3_RXN_4 USB3_RXP_4 USB3_TXN_4 USB3_TXP_4 USB3_RXN_5 USB3_RXP_5 USB3_TXN_5 USB3_TXP_5

FDI_RXN_0 FDI_RXP_0 FDI_RXN_1 FDI_RXP_1 FDI_CSYNC FDI_INT FDI_RCOMP

FDI_TXN0 FDI_TXP0 FDI_TXN1 FDI_TXP1

FDI_CSYNC 4
FDI_INT 4
NR29 7.5K/4/1 VCC1_5_PCH

FDI:12/4/4/4/12
Impedance=85 +- 17.5%

DH82B85/S/[10HB1-030B85-20R]

FDI_TXP[0..1] 4
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

VCC3 NR62 8.2K/4/X NR63 8.2K/4/X

TACH6_GP70 TACH7_GP71

Mount for integrated clock Generation Mode

CK_SRCCLK_PCH NR89 8.2K/4
CK_-SRCCLK_PCH NR88 8.2K/4

[10] N_PCHCLK14 NRN14 8.2K/8P4R/4
CK_-DOTCLK
CK_DOTCLK

NR92 short to GND in non graphic SKU

PCH (J)

PCHJ

VSS_NCTF

DH82B85/S/[10HB1-030B85-20R]

PCH H/S

LOW COST PCH HEATSINK

PCH_HS

NEW H81 MODEL
Footprint: BGAHSINK-75;
3mm孔徑

HEAT SINK/N-BG/GBT MK/Z87/KWOG/[12SP2-S04208-61R_12SP2-S04208-62R_12SP2-S04208-63R]

USB TABLE

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

USB OC#	Configure
OC0#	USB0,1
OC1#	USB2,3
OC2#	USB4,5
OC3#	USB6,7
OC4#	USB8,9
OC5#	USB10,11
OC6#	USB12,13
OC7#	Not Use

Gigabyte Technology

Title: PCH FDI,DMI,USB ,PCIE

Size: Custom | Document Number: GA-B85-D3V | Rev: 2.0

Date: Thursday, May 15, 2014 | Sheet 9 of 34

Gigabyte Confidential
Do not Copy

PCH (E)

PCHE

32 N_DVI_HDP_F

DDPB_HPD AJ2
DDPC_HPD AH5
DDPD_HPD AJ4
DDPB_AUXN AK6
DDPB_AUXP AK8
DDPC_AUXN AG7
DDPC_AUXP AG8
DDPD_AUXN AG11
DDPD_AUXP AG10

VGA_HSYNC AH3 H_SYNC
VGA_VSYNC AH2 V_SYNC
VGA_RED AC2 N_R
VGA_GREEN AE2 N_G
VGA_BLUE AC3 N_B
VGA_IRTN AG4
VGA_DDC_DATA AL3 N_DDCDATA
VGA_DDC_CLK AL2 N_DDCCLK
DAC_IREF AF5 N_VGA_RSET
DDPC_CTRLCLK AN3
DDPC_CTRLDATA AM2
DDPB_CTRLCLK AM1 N_DDPB_CTRLCLK
DDPB_CTRLDATA AJ5 N_DDPB_CTRLDATA
DDPD_CTRLCLK AN4
DDPD_CTRLDATA AN2

H_SYNC NR26 33/4 N_GHSYNC
V_SYNC NR33 33/4 N_GVSYNC
N_VGA_RSET NR34 649/4/1

CLOSE PCH<0.75";4/10;+-1000;GND

VGA 4/20;+-200MILS;GND REF

DDC DIFF 4/5;+-1000

IREF 4/12;<500MILS;GND

DH82B85/S/[10HB1-030B85-20R]

VGA DISABLE
R,G,B NC OR GND
IRTN / IREF GND
VGA_HSYNC, VGA_VSYNC,DDC_CLK, DDC_DATA NC
POWER VCCADAC(AF2), VCCADACBG(AE1) GND

PCH (G)

NRN21 33/8P4R/4

18 N_LPC33 → N_LPC33_F
11 N_PCH33 → N_PCH33_F
18 O_LPCCLK48

PCHG

CLKOUT_33MHZ0 AV5
CLKOUT_33MHZ1 AV7
CLKOUT_33MHZ2 AU2
CLKOUT_33MHZ3 AN9
CLKOUT_33MHZ4 AU5
N_PCH_48M
CLKOUTFLEX0_GP64 AV8
CLKOUTFLEX1_GP65 AT9
CLKOUTFLEX2_GP66 AV9
CLKOUTFLEX3_GP67 AU8

Flex1,2,3,4 : 14/24/33/48MHZ

VCC1_5_PCH NR18 7.5K/4/1 N_CLK_RCOMP
DIFFCLK_BIASREF R11
[9] N_PCHCLK14 → N_PCHCLK14 AR7
REFCLK14IN

CLKIN_GND0_N G16 N_-CLK_GND
CLKIN_GND0_P F16 N_CLK_GND

CLKOUT_DMI_N R2 N_-CPUCLK 4
CLKOUT_DMI_P T2 N_CPUCLK 4
CLKOUT_DP_N T3 N_-DP_CLK 4
CLKOUT_DP_P T5 N_DP_CLK 4
CLKOUT_DPNS_N W2 N_-CK_DPCLK 4
CLKOUT_DPNS_P U2 N_CK_DPCLK 4

CLKOUT_ITPXDP_N U6
CLKOUT_ITPXDP_P U7
CLKOUT_PEG_A_N AA3 PA_-SRCCLK_3GIO 14
CLKOUT_PEG_A_P AA2 PA_SRCCLK_3GIO 14
CLKOUT_PEG_B_N AE6
CLKOUT_PEG_B_P AE7
CLKOUT_PCIE_N_0 AE10 PJ_-PCIE_CLK2 15
CLKOUT_PCIE_P_0 AE11 PJ_PCIE_CLK2 15
CLKOUT_PCIE_N_1 AC6 LB_-SRCCLK_LAN 31
CLKOUT_PCIE_P_1 AC7 LB_SRCCLK_LAN 31
CLKOUT_PCIE_N_2 AC11 G_-PBCLK 16
CLKOUT_PCIE_P_2 AC10 G_PBCLK 16
CLKOUT_PCIE_N_3 W11
CLKOUT_PCIE_P_3 W10
CLKOUT_PCIE_N_4 Y4
CLKOUT_PCIE_P_4 Y2
CLKOUT_PCIE_N_5 W7 PE_-SRCCLK_3GIO1 15
CLKOUT_PCIE_P_5 W6 PE_SRCCLK_3GIO1 15
CLKOUT_PCIE_N_6 AA7 PI_-PCIE_CLK1 15
CLKOUT_PCIE_P_6 AA6 PI_PCIE_CLK1 15
CLKOUT_PCIE_N_7 R6
CLKOUT_PCIE_P_7 R7

N_XTALO_PCH N7 XTAL25_OUT
N_XTALI_PCH N6 XTAL25_IN

PCIXx16
PCIXx1_2
RTL81111F-VL
ITE8892
PCIXx4
PCIXx1_1

DH82B85/S/[10HB1-030B85-20R]

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

N_XTALI_PCH
NR15 1M/4
NX1
N_XTALO_PCH
25M/16p/30ppm/49US/20/D
NC8 20p/4/NPO/50V/J
NC7 20p/4/NPO/50V/J

X'TAL 25MHz須參考GND
避免造成RGB noise
走線遠離其他40mil以上

PCH CLK PD

N_-CLK_GND NR42 8.2K/4
N_CLK_GND NR41 8.2K/4

VGA DDC

VCC3
R146 2.2K/4/1
R147 2.2K/4/1
Q47 2N7002/SOT23/25pF/5
N_DDCDATA
VGADDCDATA
R144 2.2K/4/1
R145 2.2K/4/1
VCC
Q48 2N7002/SOT23/25pF/5
N_DDCCLK
VGADDCCLK
SI3123

N_GVSYNC
N_GHSYNC
C31 100p/4/NPO/50V/J/X
C32 100p/4/NPO/50V/J/X

Close to VGA Connect

VGA CONNECTOR

FUSEVCC_R1
BC63 0.1u/4/X7R/16V/K/X

VGA
VGA_R
VGA_G
VGA_B
VGADDCDATA
N_GHSYNC
N_GVSYNC
VGADDCCLK

VGA/BK/SC-11/RA/D/L

BLACK CONNECTOR

VGA ESD

ESD3
VGADDCCLK
VGADDCDATA
N_GVSYNC
N_GHSYNC
VCC
C33 0.1u/4/X7R/16V/K/X
AZC099-04S.R7G/SOT23-6L/[10DEF-550099-20R_10TA1-0I8902-10R]

SSOP6_ESD

ESD4
VGA_R
VGA_G
VGA_B
VCC3
C40 0.1u/4/X7R/16V/K/X
AZC099-04S.R7G/SOT23-6L/[10DEF-550099-20R_10TA1-0I8902-10R]

Close to VGA

VGA DDC

N_R
N_G
N_B
NR36 150/4/1/X
NR27 150/4/1/X
NR35 150/4/1/X

Close to PCH

FB1 60/4/3A/S
FB2 60/4/3A/S
FB3 60/4/3A/S
VGA_R
VGA_G
VGA_B
R152 75/4/1
R150 75/4/1
R151 75/4/1
C35
C34 10p/4/NPO/50V/J/X
C36 10p/4/NPO/50V/J/X
C37 22p/4/NPO/50V/J/X
C38 22p/4/NPO/50V/J/X
C39 22p/4/NPO/50V/J/X

Close to VGA Connect

Gigabyte Confidential
Do not Copy

Gigabyte Technology			
Title: PCH DISPLAY ,CLK BUFFER			
Size: Custom	Document Number: GA-B85-D3V		Rev: 2.0
Date: Thursday, May 15, 2014	Sheet 10 of 34		

PCH (C)

SATA3 : 20/4/4/4/20 (breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%
SATA2 15/4/4/4/15
SATA3 20/4/4/4/20

PCHC

DH82B85/S/[10HB1-030B85-20R]

PCH (A)

PCHA

DH82B85/S/[10HB1-030B85-20R]

BOOT DEVICE	GP51	GP19
LPC	0	0
SPI	float	float

Default int pull up on GP51,
Default SPI boot devices

PCH CLK PD

Mount for integrated clock Generation Mode

PCH PU/PD

ME PWROK

GPIO37 PU ENABLE SBA
For H87&B85

soft strap	GP16	GP49
0	pcie1	pcie2
1	sata4	sata5

SATA CONNECTOR

White connector for SATA3

[Z87/H87] all SATA3
SATA3(From Z87) - 黑色
SATA3(From Marvell) - 灰色
[B85] SATA2+SATA3
SATA2(From B85) - 黑色
SATA3(From B85) - 白色

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

H81 Port 2/3 N/A

GPIO38 Ctrl

MFG Mode

N_GPIO38 : Lo --> Enable
Hi --> Disable

Gigabyte Confidential
Do not Copy

Gigabyte Technology

Title	PCH HOST , SATA, PCI	
Size: Custom	Document Number: GA-B85-D3V	Rev: 2.0
Date: Thursday, May 15, 2014	Sheet 11 of 34	

PCH (D)

PCHD

DH82B85/S/[10HB1-030B85-20R]

ACZ_SDOUT

C_ACZ_SDOUT : HI --> ME Enable
Lo --> ME Disable

HI:disable ME and override SPI Flash Access Permissions

PCH_DPWROK

For IT8620 Ctrl

PCH PU/PD

HSW_STRAP13

32.768KHZ

CLR_CMOS

BATTERY-DUAL-4

RB 必須放在BAT外

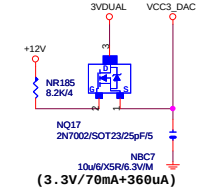
Gigabyte Confidential
Do not Copy

Gigabyte Technology			
Title: PCH GPIO , CTRL , AUDIO			
Size: Custom	Document Number: GA-B85-D3V	Rev: 2.0	
Date: Thursday, May 15, 2014	Sheet 12 of 34		

PCH (H)

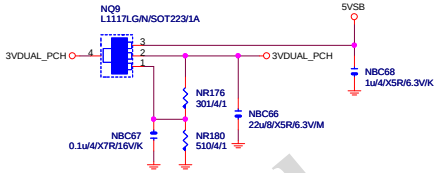
VCC3_DAC

CLOSE北橋(注意震盪水波紋)

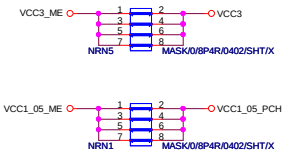


(3.3V/70mA+360uA)

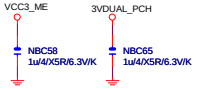
3VDUAL_PCH

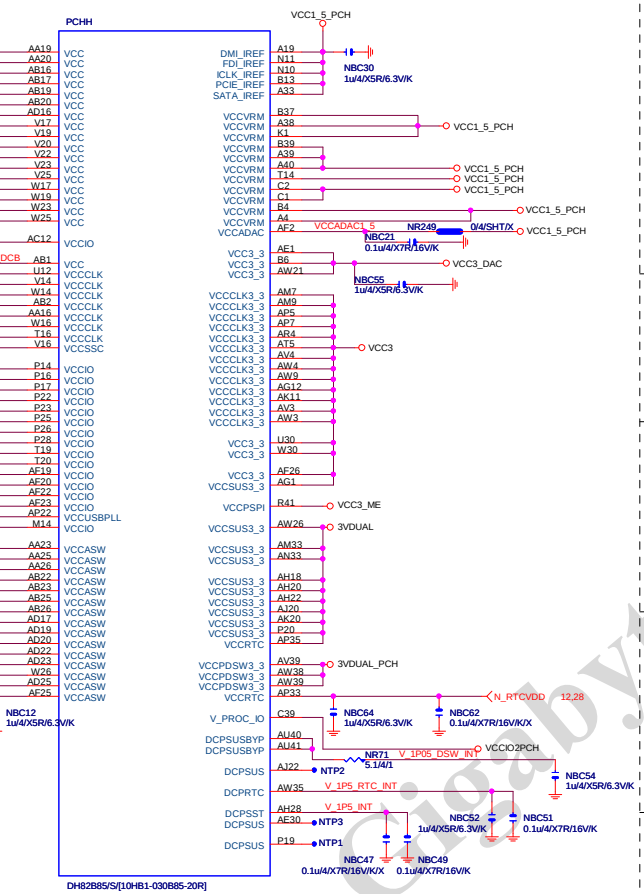


SHT PWR

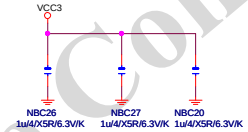


CAP





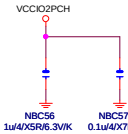
(3.3V)(X6)



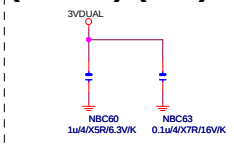
(1.05V)(X5)

(1.05V)(X6)

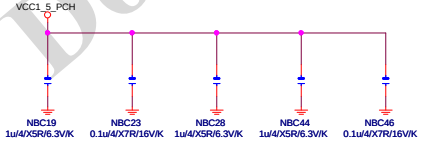
(1.05V)(X2)



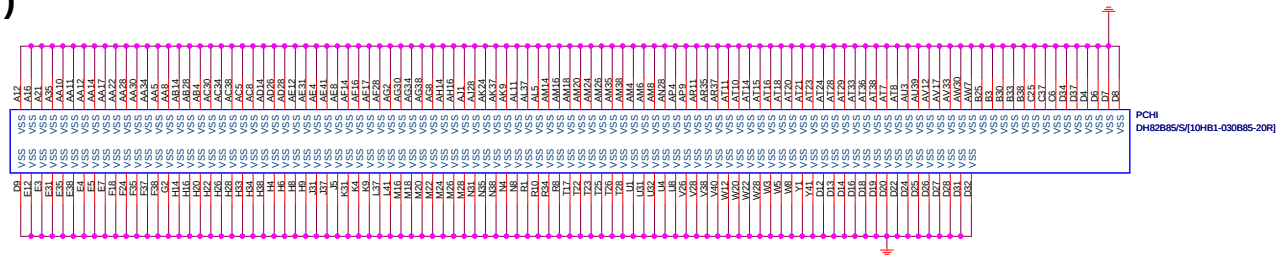
(3.3V)(X2)



(1.5V) (X10)



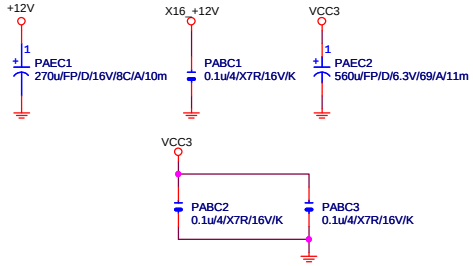
PCH (I)



Gigabyte Confidential
Do not Copy

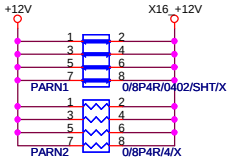
Gigabyte Technology			
Title: PCH PWR ,GND			
Size: Custom	Document Number: GA-B85-D3V		Rev: 2.0
Date: Thursday, May 15, 2014	Sheet 13 of 34		

PCIEX16 CAP



PCIEX16 PROTECT SHT

+12 protect
short-wire test



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

PCI-E REV:1.1--> 2.5GHZ

PCE-E X1(單向) BANDWITH=2.5GHz*(8b/10b)=2Gb/s=250MB/s

PCE-E X1(雙向) BANDWITH=2.5GHz*(8b/10b)X2=4Gb/s=500MB/s

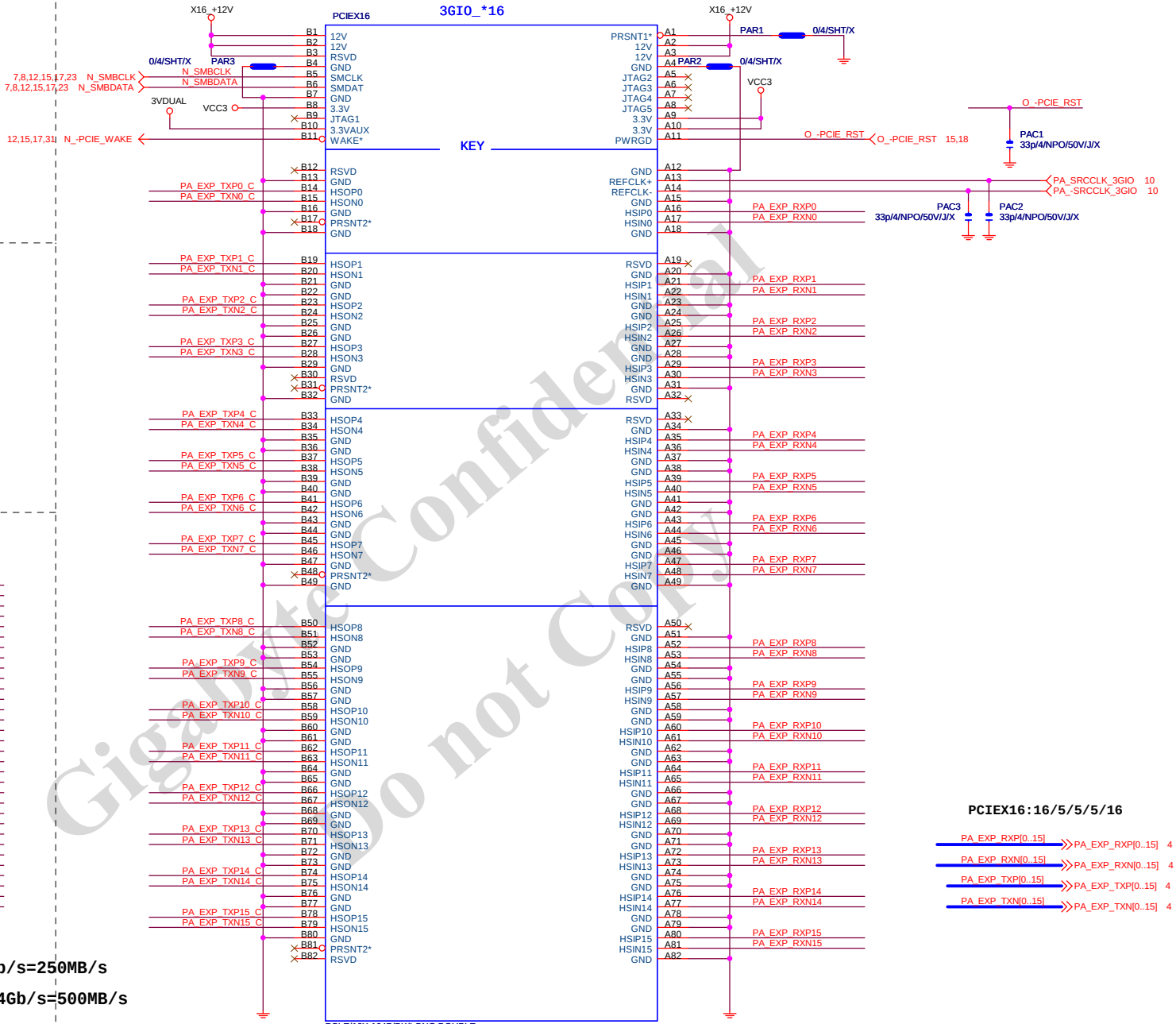
PCE-E X16(單向) BANDWITH=2.5GHz*(8b/10b)X16=32Gb/s=4GB/s

PCE-E X16(雙向) BANDWITH=2.5GHz*(8b/10b)X16X2=64Gb/s=8GB/s

PCI-E REV:2.0--> 5GHZ

PCIEX16 SLOT

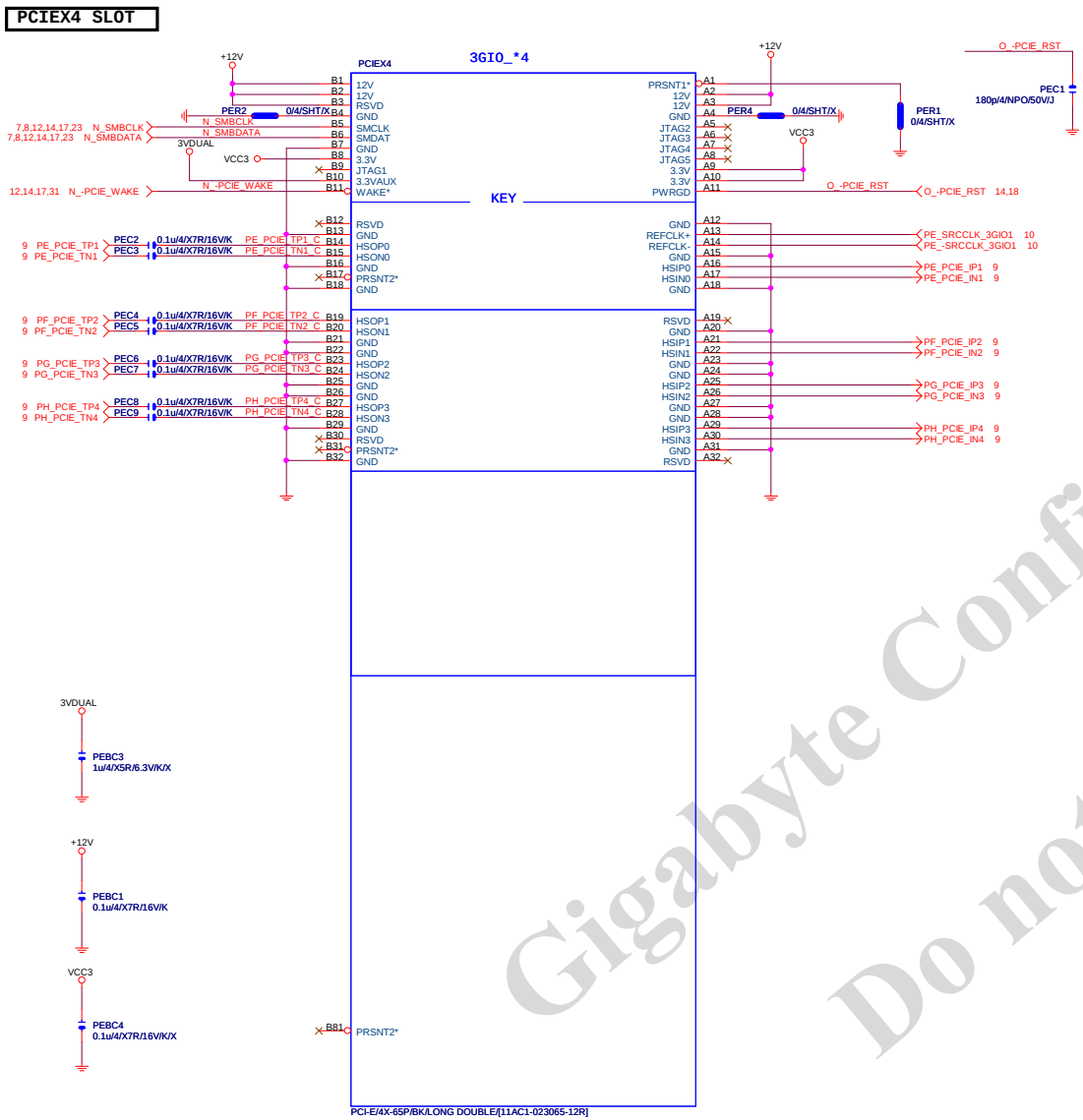
PCIESLOT-164DN-Q

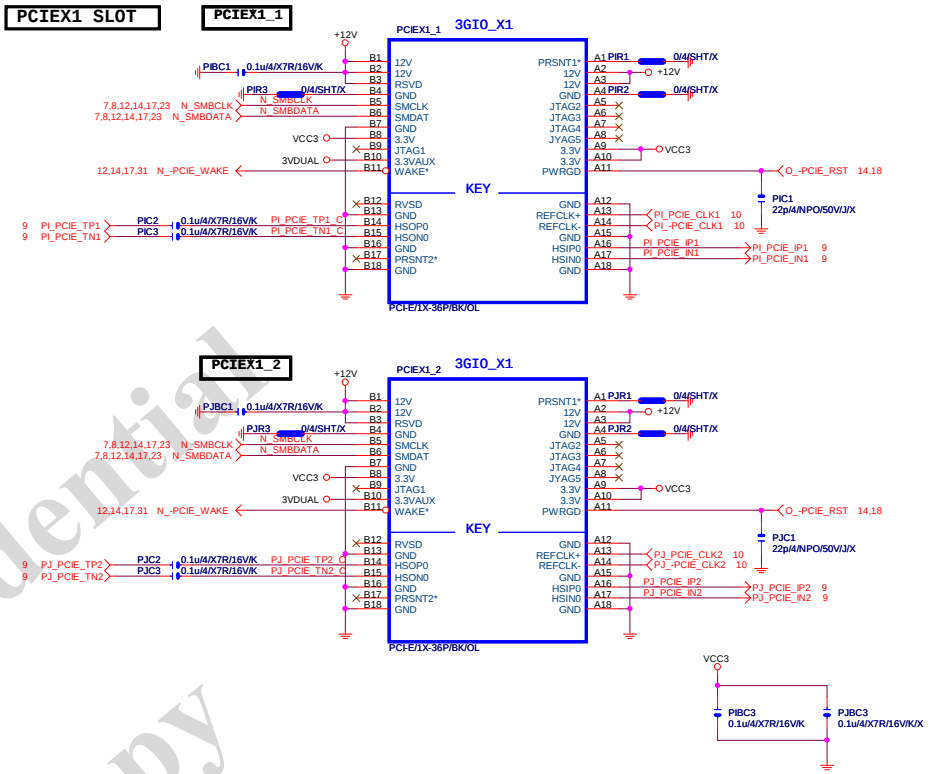


PCIEX16:16/5/5/5/16

Gigabyte Confidential
Do not Copy

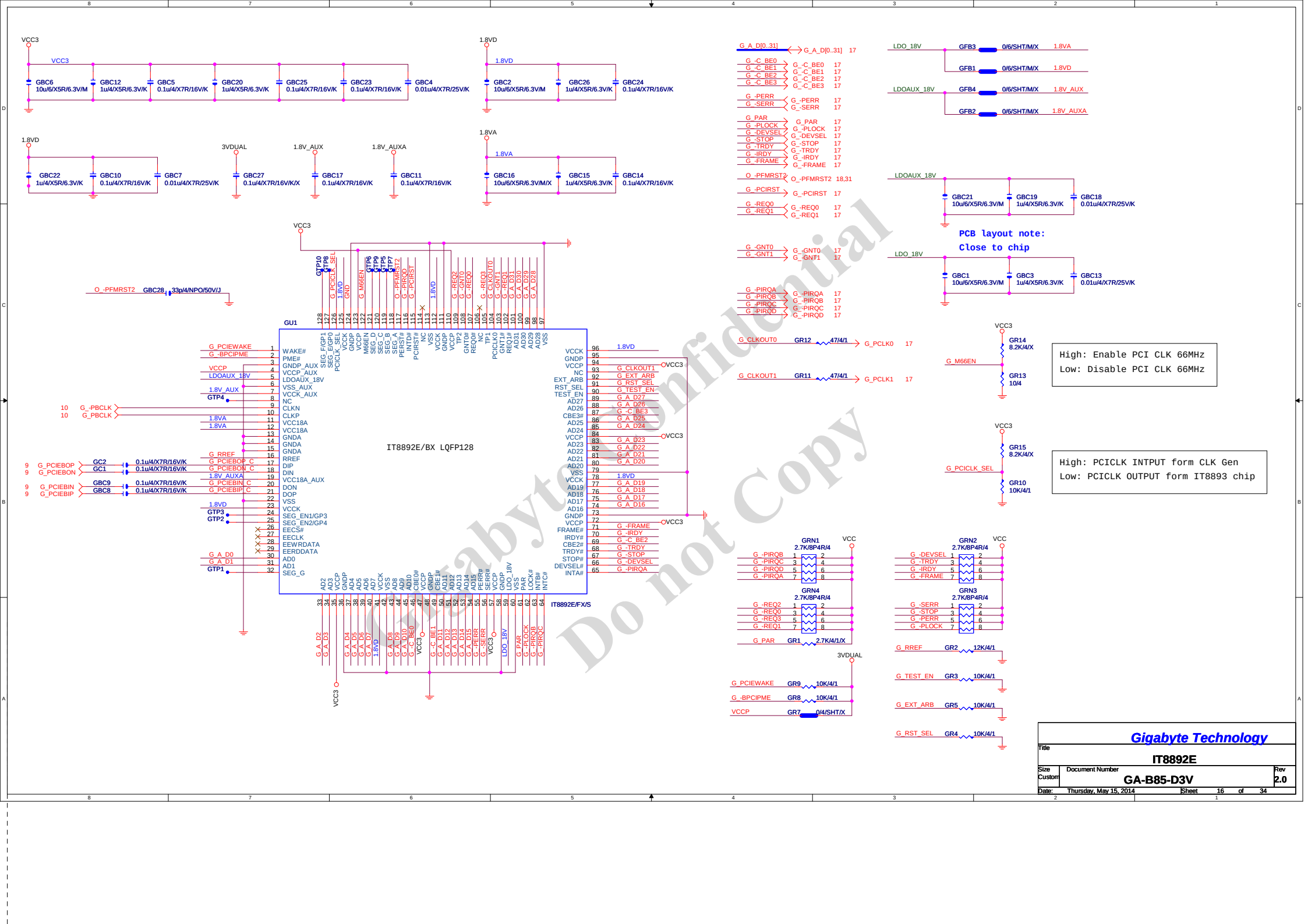
Gigabyte Technology			
Title: PCI EXPRESS * 16			
Size: Custom	Document Number: GA-B85-D3V		Rev: 2.0
Date: Thursday, May 15, 2014		Sheet 14 of 34	

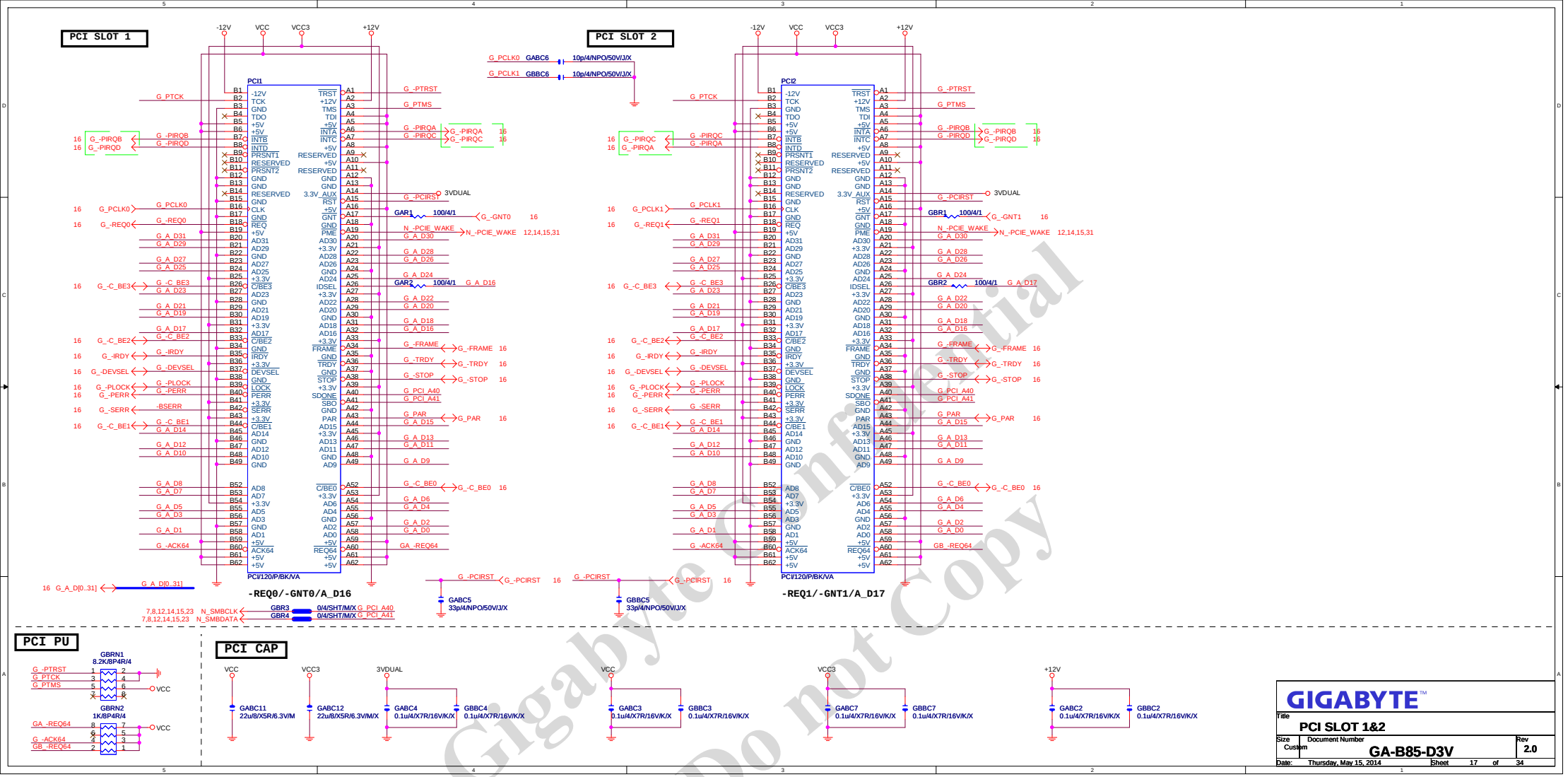


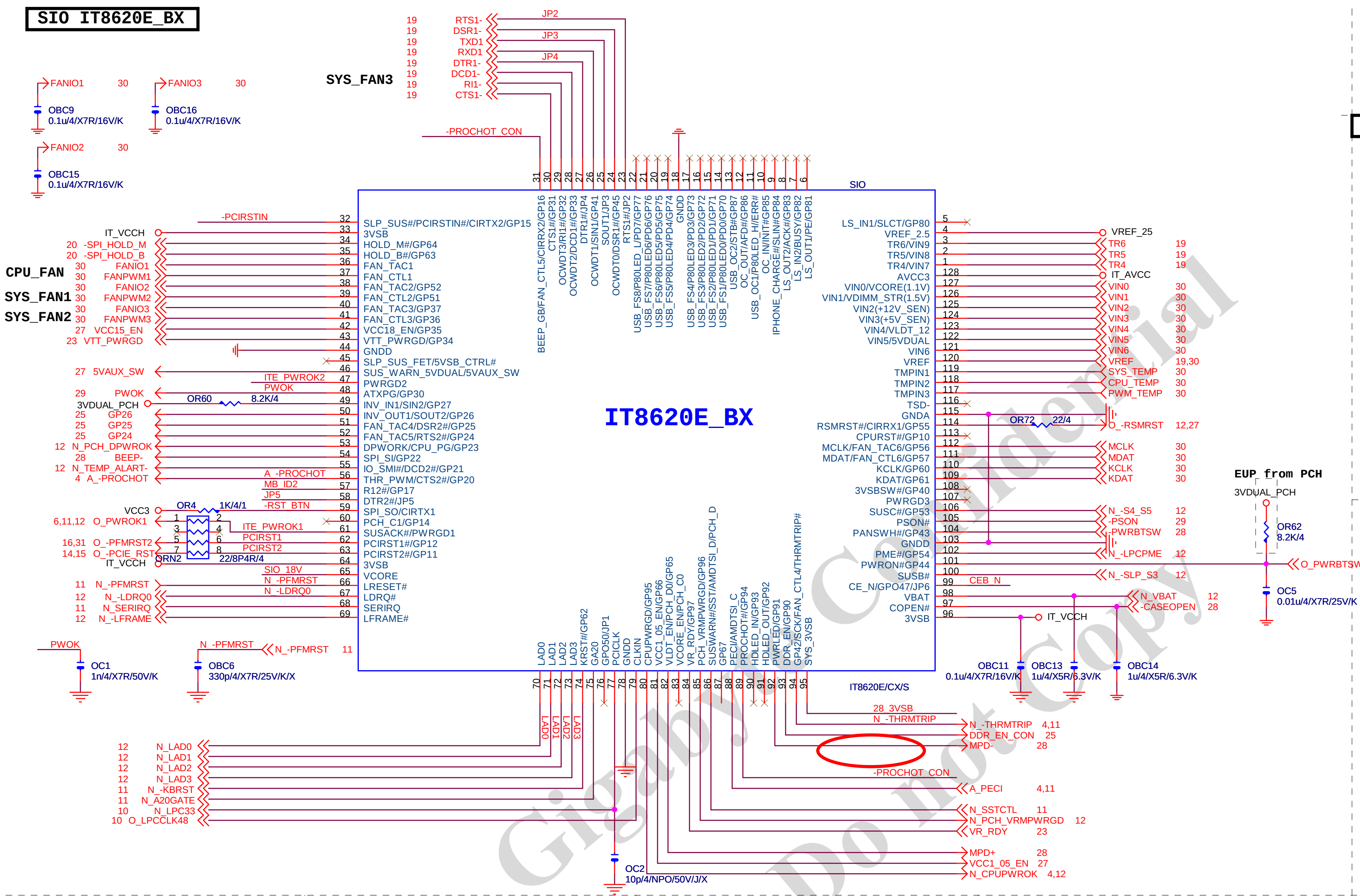


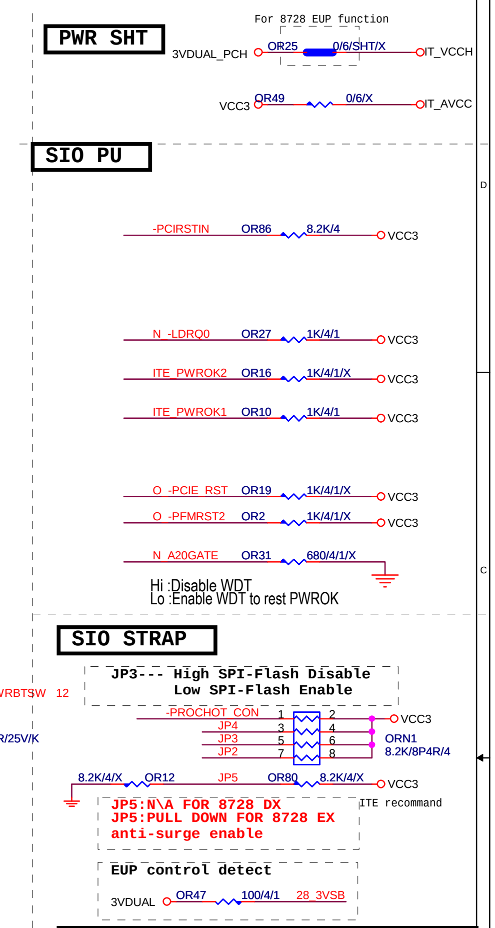
Gigabyte Confidential
Do not Copy

Gigabyte Technology		
Title: PCIE_X1 1,2		
Size: Custom	Document Number: GA-B85-D3V	Rev: 2.0
Date: Thursday, May 15, 2014	Sheet 15 of 34	


VCC3
GBC6 10u/6/X5R/6.3V/M
GBC12 1u/4/X5R/6.3V/K
GBC5 0.1u/4/X7R/16V/K
GBC20 1u/4/X5R/6.3V/K
GBC25 0.1u/4/X7R/16V/K
GBC23 0.1u/4/X7R/16V/K
GBC4 0.01u/4/X7R/25V/K
1.8VD
GBC2 10u/6/X5R/6.3V/M
GBC26 1u/4/X5R/6.3V/K
GBC24 0.1u/4/X7R/16V/K
GBC22 1u/4/X5R/6.3V/K
GBC10 0.1u/4/X7R/16V/K
GBC7 0.01u/4/X7R/25V/K
3VDUAL
GBC27 0.1u/4/X7R/16V/K/X
1.8V_AUX
GBC17 0.1u/4/X7R/16V/K
1.8V_AUXA
GBC11 0.1u/4/X7R/16V/K
1.8VA
GBC16 10u/6/X5R/6.3V/M/X
GBC15 1u/4/X5R/6.3V/K
GBC14 0.1u/4/X7R/16V/K
O_-PFMRST2
GBC28 33p/4/NPO/50V/J
GU1
IT8892E/BX LQFP128
IT8892E/F/X/S
G_PCIEWAKE
G_-BPCIPME
VCCP
LDOAUX_18V
1.8V_AUX
GTP4
10 G_-PBCLK
10 G_PBCLK
1.8VA
G_RREF
9 G_PCIEBOP
9 G_PCIEBON
GC2 0.1u/4/X7R/16V/K
GC1 0.1u/4/X7R/16V/K
1.8V_AUXA
9 G_PCIEBIN
9 G_PCIEBIP
GBC9 0.1u/4/X7R/16V/K
GBC8 0.1u/4/X7R/16V/K
G_A_D0
G_A_D1
GTP1
GTP3
GTP2
G_A_D[0..31]
G_-C_BE0
G_-C_BE1
G_-C_BE2
G_-C_BE3
G_-PERR
G_-SERR
G_PAR
G_-PLOCK
G_-DEVSEL
G_-STOP
G_-TRDY
G_-IRDY
G_-FRAME
O_-PFMRST2 18,31
G_-PCIRST
G_-REQ0
G_-REQ1
G_-GNT0
G_-GNT1
G_-PIRQA
G_-PIRQB
G_-PIRQC
G_-PIRQD
G_CLKOUT0
G_CLKOUT1
LDO_18V
GFB3 0/6/SHT/M/X 1.8VA
GFB1 0/6/SHT/M/X 1.8VD
LDOAUX_18V
GFB4 0/6/SHT/M/X 1.8V_AUX
GFB2 0/6/SHT/M/X 1.8V_AUXA
GBC21 10u/6/X5R/6.3V/M
GBC19 1u/4/X5R/6.3V/K
GBC18 0.01u/4/X7R/25V/K
PCB layout note:
Close to chip
GBC1 10u/6/X5R/6.3V/M
GBC3 1u/4/X5R/6.3V/K
GBC13 0.01u/4/X7R/25V/K
GR12 47/4/1
GR11 47/4/1
G_PCLK0 17
G_PCLK1 17
GR14 8.2K/4/X
GR13 10/4
G_M66EN
High: Enable PCI CLK 66MHz
Low: Disable PCI CLK 66MHz
GR15 8.2K/4/X
GR10 10K/4/1
G_PCICLK_SEL
High: PCICLK INTPUT form CLK Gen
Low: PCICLK OUTPUT form IT8893 chip
GRN1 2.7K/8P4R/4
GRN2 2.7K/8P4R/4
GRN4 2.7K/8P4R/4
GRN3 2.7K/8P4R/4
VCC
G_PAR
GR1 2.7K/4/1/X
3VDUAL
G_PCIEWAKE GR9 10K/4/1
G_-BPCIPME GR8 10K/4/1
VCCP GR7 0/4/SHT/X
G_RREF GR2 12K/4/1
G_TEST_EN GR3 10K/4/1
G_EXT_ARB GR5 10K/4/1
G_RST_SEL GR4 10K/4/1
Gigabyte Technology
Title
IT8892E
Size Custom
Document Number
GA-B85-D3V
Rev 2.0
Date: Thursday, May 15, 2014
Sheet 16 of 34
Gigabyte Confidential
Do not Copy


PCI SLOT 1
PCI SLOT 2
PCI PU
PCI CAP
-REQ0/-GNT0/A_D16
-REQ1/-GNT1/A_D17
PCI120/P/BK/VA
GIGABYTE
PCI SLOT 1&2
GA-B85-D3V
Rev 2.0
Thursday, May 15, 2014
Sheet 17 of 34
Gigabyte Confidential
Do not Copy

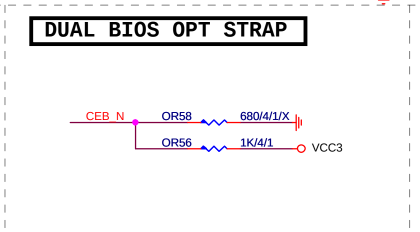


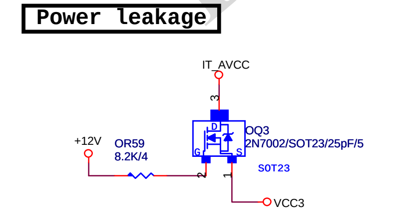


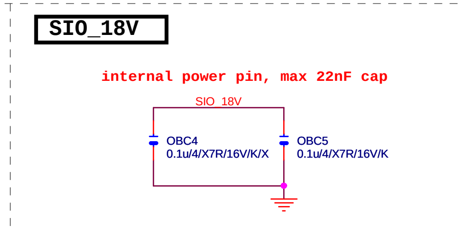
JP4	1	k8 power sequency function is Disable
	0	k8 power sequency function is Enable
JP3	1 1	The default value of EC Index 63h/6Bh/73h is 80h.
JP5	1 0	The default value of EC Index 63h/6Bh/73h is FFh.
	0 1	The default value of EC Index 63h/6Bh/73h is 00h.
	0 0	The default value of EC Index 63h/6Bh/73h is 40h.

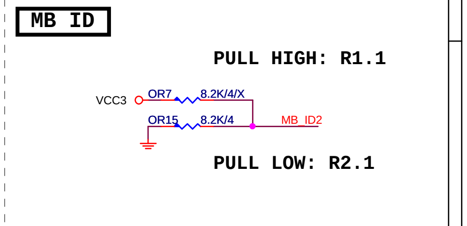
IT8620E GPIO問題匯整

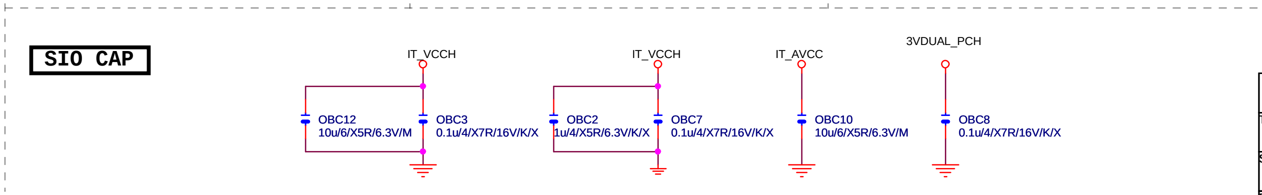
PIN 50	GP26--- 第一次接上POWER時會拉 LO
PIN 90/91	DEFAULT爲HDLED FUNCTION, GP93 BYPASS TO GP92
PIN 108	GP40--- POWER ON 時會拉 LO
PIN 111/112	MOUSE 跟FAN6 FUNCTION 擇一使用,不然會互相干擾







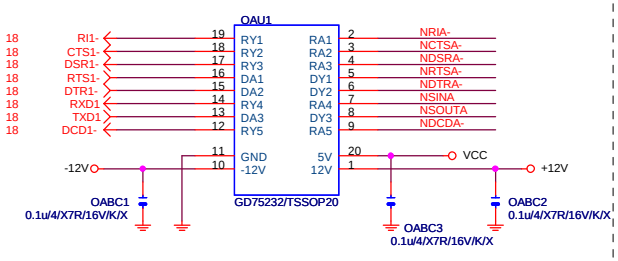




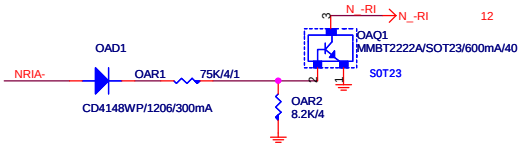
Gigabyte Technology

Title	ITE 8728 LPC IO	
Size Custom	Document Number GA-B85-D3V	Rev 2.0
Date: Thursday, May 15, 2014	Sheet 18 of 34	

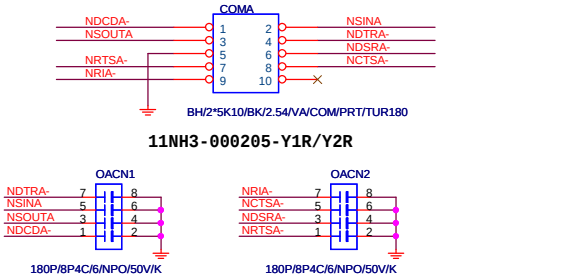
COMA



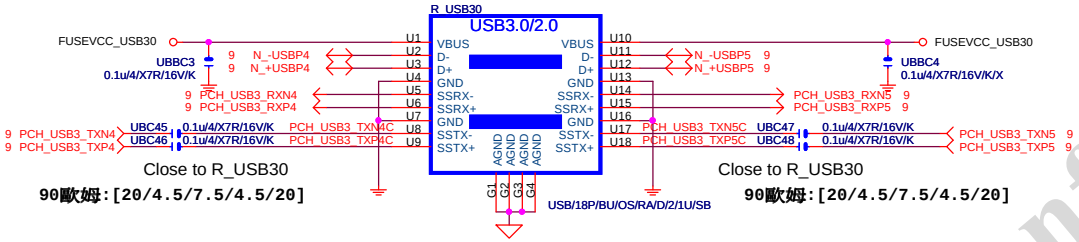
COM RI



COM BUFFER

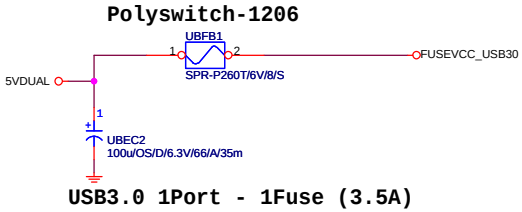


USB30_20 CONNECT

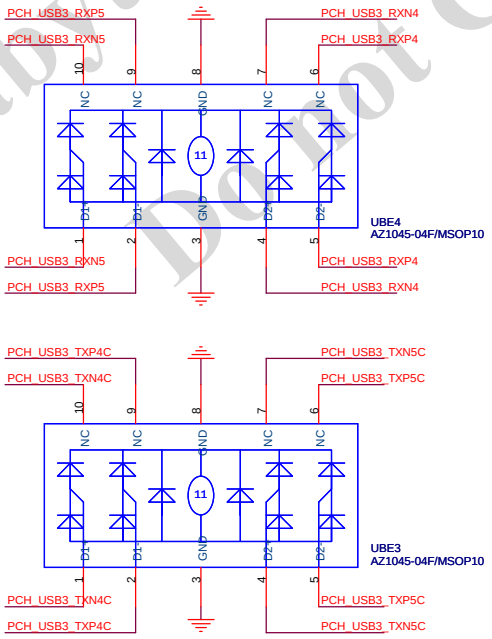


-PROHOT

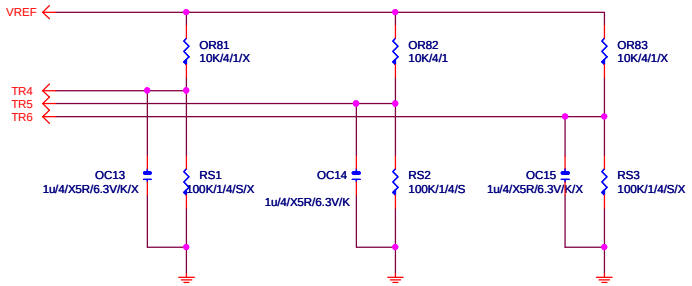
USB30 PWR



USB30 ESD PROCTECT

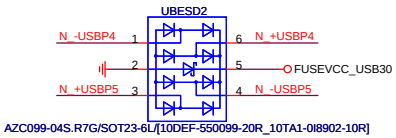


-PROHOT



RS1 close DBQ1、
RS2 close DDQ1、
RS3 close DAQ1、
Others close SIO

USB20 ESD PROCTECT

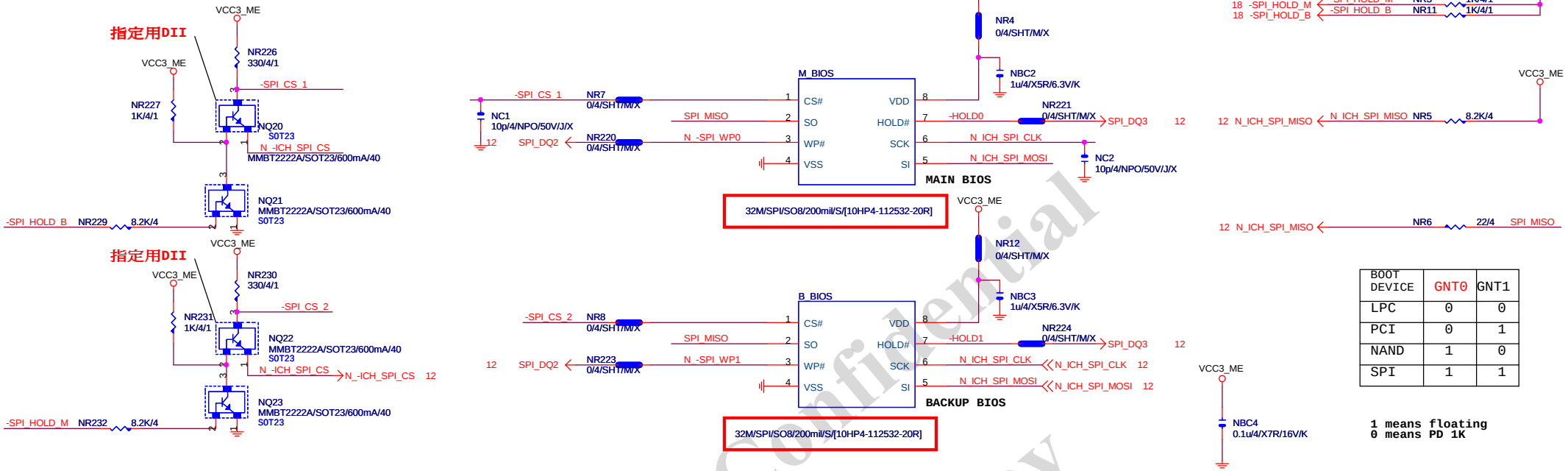


CLOSE R_USB30

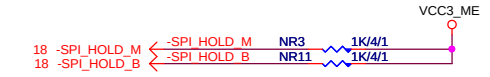
Gigabyte Confidential
Do not Copy

Gigabyte Technology		
Title: COM & PROHOT/Dynamic O.C.		
Size: Custom	Document Number: GA-B85-D3V	Rev: 2.0
Date: Thursday, May 15, 2014	Sheet 19 of 34	

DUAL BIOS



MOSI For DMI RX Termination Voltage



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

1 means floating
0 means PD 1K

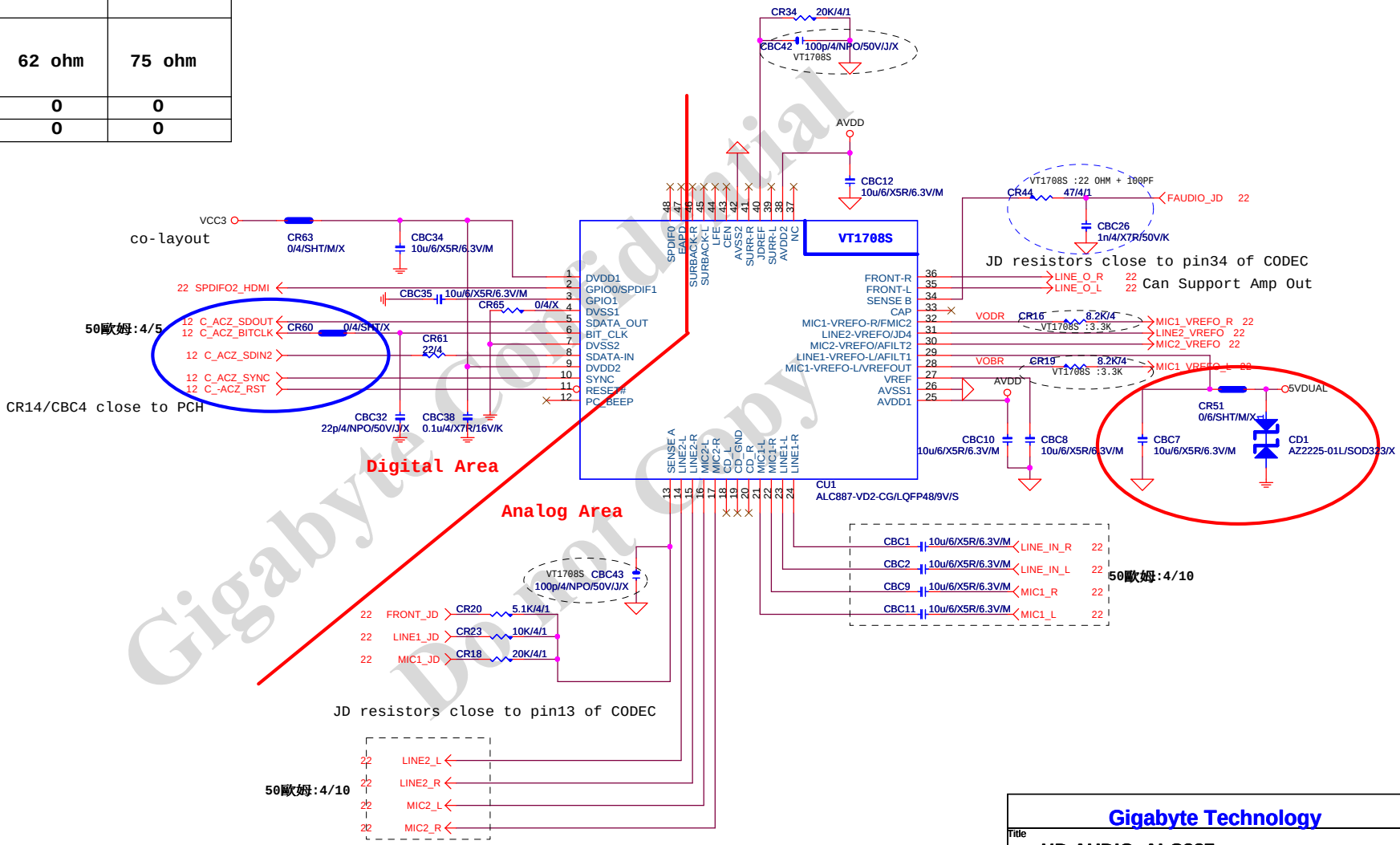
Gigabyte Confidential
Do not Copy

Gigabyte Technology		
Title: BIOS		
Size: Custom	Document Number: GA-B85-D3V	Rev: 2.0
Date: Thursday, May 15, 2014	Sheet 20 of 34	

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
CR16/CR19 CR52/CR56/CR10/CR9	8.2K/4	8.2K/4	3.3K/4/1
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	X	0	0



Gigabyte Confidential Do not Copy

Gigabyte Technology

Title: HD AUDIO ALC887

Size: Custom | Document Number: GA-B85-D3V | Rev: 2.0

Date: Thursday, May 15, 2014 | Sheet 21 of 34

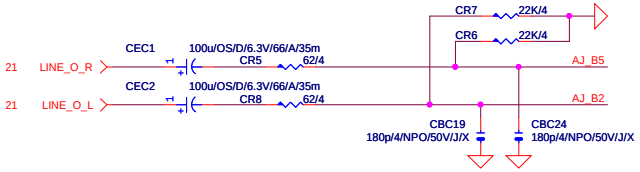
CR49 0/6/SHT/M/X → Close F_AUDIO

CR50 0/6/SHT/M/X → Close Codec

CR21 2.2/6 → Audio jack <--> USB_LAN

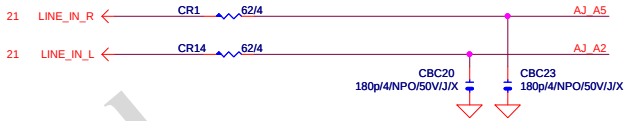
CR24 0/6/X → Under Audio jack

LINE-OUT



Only reserved for ALC888

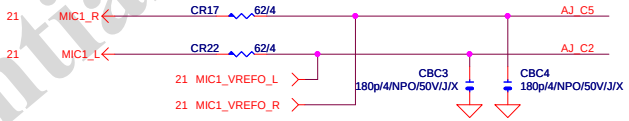
LINE-IN



Verify MIC function in LINE-in

For 889A/888

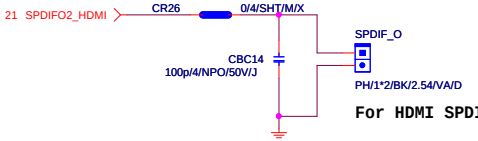
MIC-IN



SURROUND

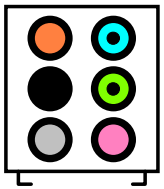
CEN/LFE

SPDIF_OUT

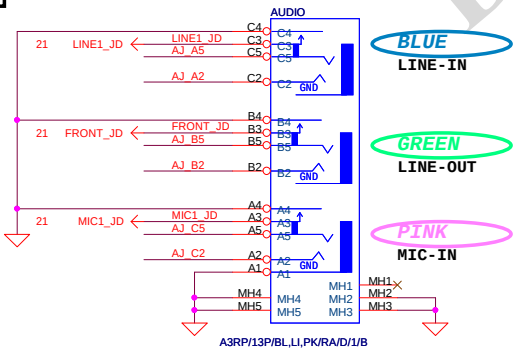


For HDMI SPDIF

AZALIA JACK



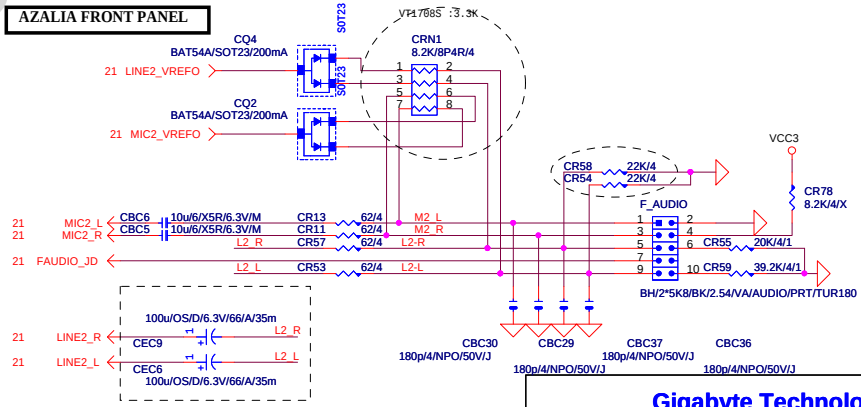
AZALIA JACK



A3RP/13P/BL,LI,PK/RA/D/1/B

SURR BACK

AZALIA FRONT PANEL



Gigabyte Confidential
Do not Copy

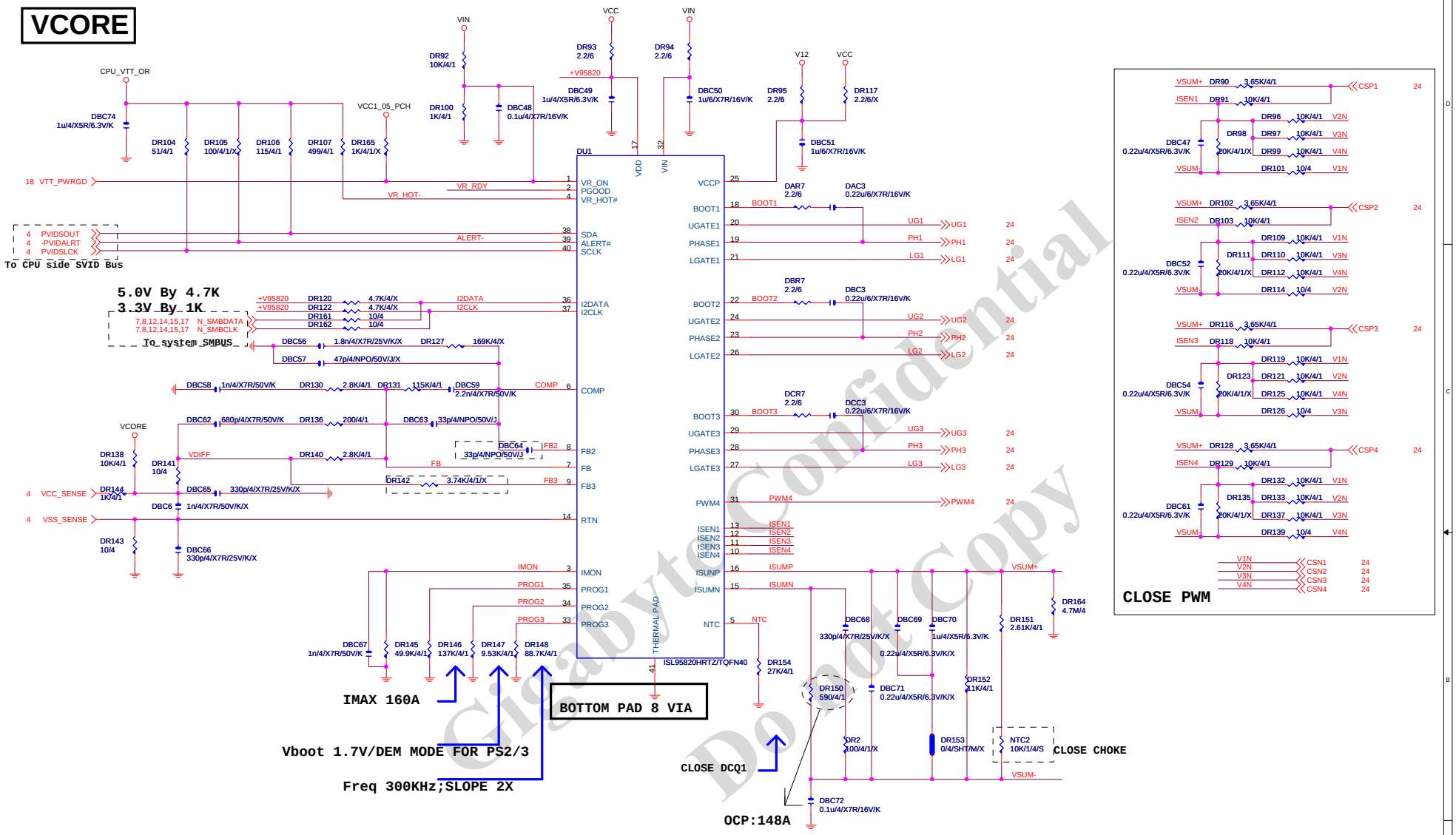
Gigabyte Technology

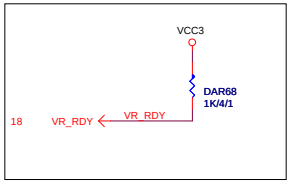
Title: AUDIO JACK

Size: Custom | Document Number: GA-B85-D3V | Rev: 2.0

Date: Thursday, May 15, 2014 | Sheet 22 of 34

VCORE

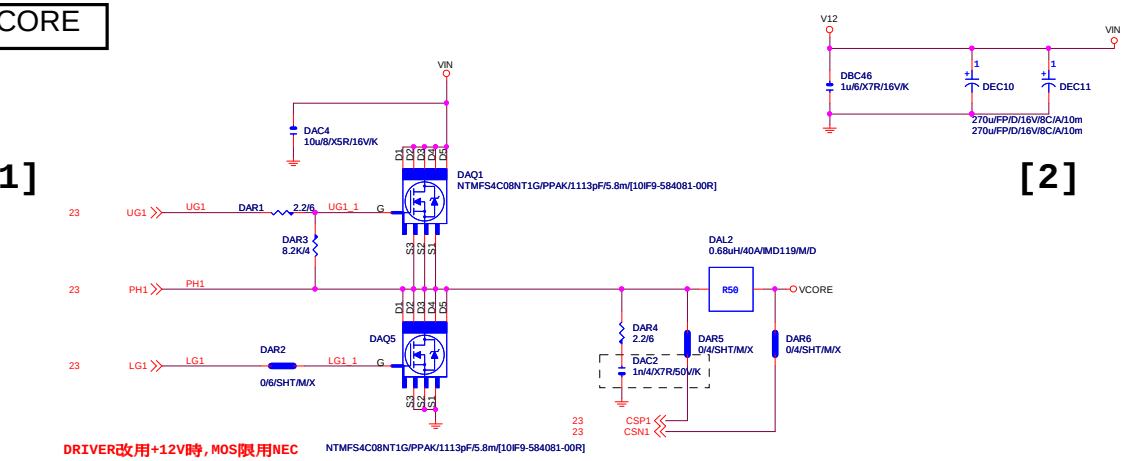


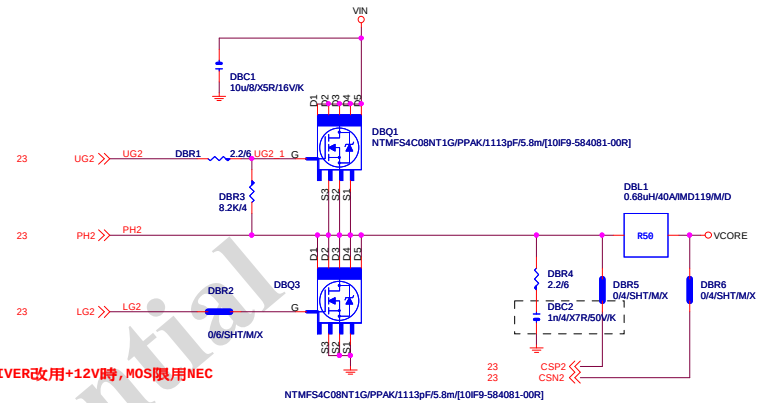


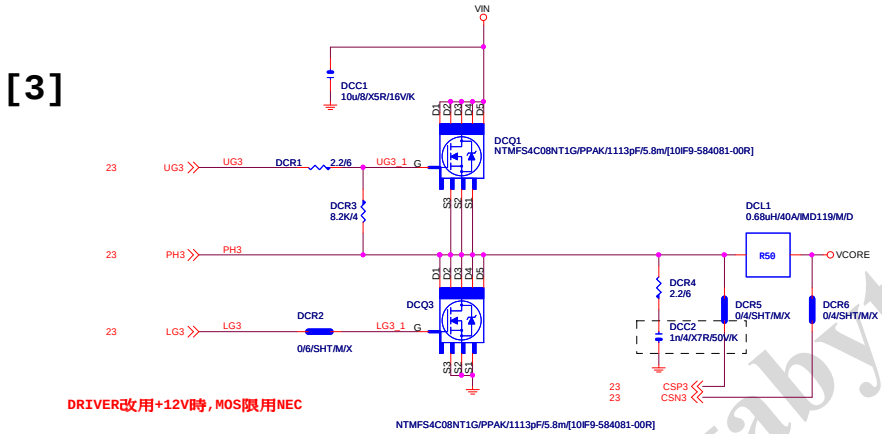
Gigabyte Confidential
Do not Copy

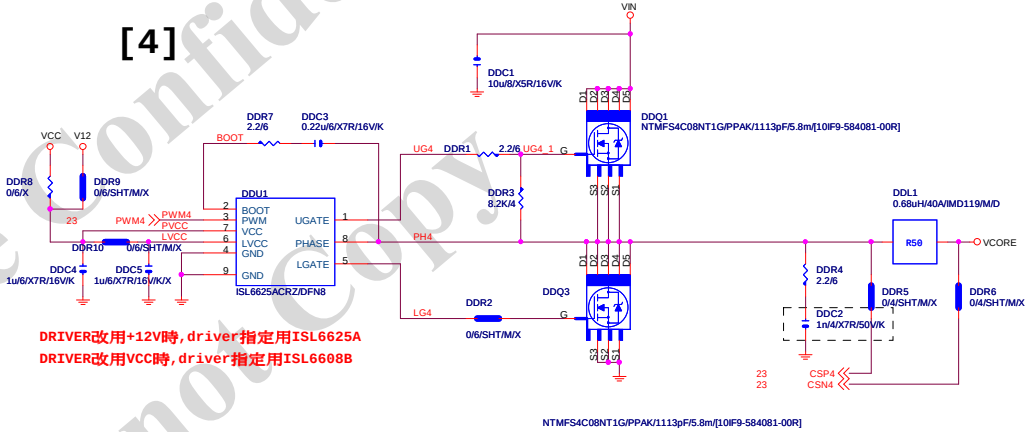
Gigabyte Technology			
Title: VCORE_ ISL95820			
Size: Custom	Document Number: GA-B85-D3V		Rev: 2.0
Date: Thursday, May 15, 2014	Sheet 23 of 34		

VCORE

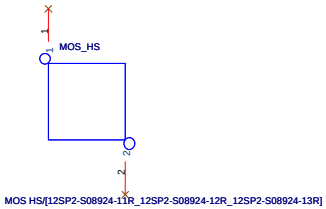


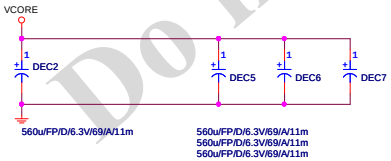






MOSFET HEATSINK





Gigabyte Confidential
Do not Copy

Gigabyte Technology		
Title	ISL95820_2	
Size: Custom	Document Number: GA-B85-D3V	Rev: 2.0
Date: Thursday, May 15, 2014	Sheet 24 of 34	

VCC1_05_ME

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

1A MAX

5VDUAL
3VDUAL
R660 MASK/8.2K/4/X
U8 MASK/RT9018B-18GSP/SO8/3A/X
POK GND EN FB VIN VOUT CNTL REFIN PGD
1_05ME_EN
R664 MASK/2.2/6/X
3VDUAL
BC210 MASK/1u/4/X5R/6.3V/K/X
BC211 MASK/10u/6/X5R/6.3V/M/X
BC212 MASK/10u/6/X5R/6.3V/M/X
VCC1_05_ME
R1
R662 MASK/100K/4/1/X
R665 MASK/300K/4/1/X
R2
BC207 MASK/10u/6/X5R/6.3V/M/X
BC208 MASK/180p/4/NPO/50V/J/X
BC209 MASK/1u/4/X5R/6.3V/K/X
VOUT=0.8*[(R1+R2)/R2]
【技術通報R&D技術通報156】
VCC1_05_ME
BC217 22u/8/X5R/6.3V/M/X
VCC1_05_ME
BC213 MASK/10u/6/X5R/6.3V/M/X

1_05ME_EN
R670 0/4/SHT/M/X
11,12 N_-SLP_A
R671 MASK/22K/4/X
C205 MASK/1u/4/X5R/6.3V/K/X

VCC3_ME

5VDUAL
R661 MASK/8.2K/4/X
ME_G
C202 MASK/1u/4/X5R/6.3V/K/X
S0T23
11,12 N_-SLP_A
R666 MASK/75K/4/1/X
Q81 MASK/2N7002/SOT23/25pF/5/X
C203 MASK/1u/4/X5R/6.3V/K/X
R663 MASK/220/6/X
R667 MASK/220/6/X
VCC3_ME
Q80 MASK/PMBT2907A/SOT23/-600mA/50/X
Q82 MASK/PMBT2907A/SOT23/-600mA/50/X
S0T23
3VDUAL
VCC3_ME
BC214 MASK/10u/6/X5R/6.3V/M/X
VCC3_ME
BC215 MASK/10u/6/X5R/6.3V/M/X

DDR_15V

+12V 5VDUAL
MA_D1 SDM20E40C/0.4A/SOT23
MA_DR8 2.2/6
MA_DRV
MA_D2 BAT54C/SOT23/200mA/X
MA_DC9 0.1u/6/X7R/25V/K
MA_DC10 1u/6/X7R/16V/K
MA_DR16 20K/4/1/X
DDR_EN_CON
MA_DR15 27K/4/1
MA_DC16 3.3n/4/X7R/50V/K
MA_DC15 22p/4/NPO/50V/J
MA_DR17 0/4/X
DA_DR3 0/4/SHT/M/X
MAU2
COMP VCC BOOT UGATE PHASE FB GND PGND LG/OC
RT8120DGS/SOP8
MA_UGATE
MA_PHASE
MA_LGATE
MA_DR18 27K/4/1
放靠近IC pin4
DDR15V_ADJ

5VDUAL
ML2 1uH/36A/IMD109/M/D
MA_DC6 0.1u/4/X7R/16V/K Close Choke
MA_VIN
MA_DC7 1u/6/X7R/16V/K Close MOS
MAEC1 560u/FP/D/6.3V/69/A/11m
MA_UGATE
MA_DR1 2.2/6
MA_DQ1 NTMFS4C10NT1G/PPAK/970pF/7.3m/[10IF9-070410-00R]
MA_DR2 8.2K/4
MA_PHASE
MA_LGATE
MA_DQ2 NTMFS4C10NT1G/PPAK/970pF/7.3m/[10IF9-070410-00R]
ML1 1uH/36A/IMD109/M/D
DDR_15V
25A MAX
MA_DR5 2.2/6
MA_DC5 1n/4/X7R/50V/K
MA_DR14 487/4/1
MA_DC14 3.3n/4/X7R/50V/K
RS
MA_DR13 3.24K/4/1
Remote sense請從最重的負載端點拉回
18 GP26
MA_DR21 16.9K/4/1
18 GP25
MA_DR20 17.4K/4/1
18 GP24
MA_DR19 13.3K/4/1
RO
MA_DR12 4.64K/4/1
0.8*(1+RS/RO) = Vout
0.8*[1+2K/2.2K)] = 1.527V

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
OCP:25A for Rds=8.9~10.8m for on@4.5V
OCP:25A for Rds=5.8~6.95m for on@10V
OCP:46.55~25A=Roset*Iocset / Rds(on)
=27K*10uA / 5.8~10.8

DDR_EN_CON
DDR_EN_CON 18

DDRVTT

DDR_15V
MAC2 1u/4/X5R/6.3V/K
MAR5 1K/4/1
MAC1 1u/4/X5R/6.3V/K
MAR4 1K/4/1
RT9199PSP/SO8/1.8A
MAU1
VIN GND VREF1 VOUT VREF2 ENABLE VCNTL BOOT_SEL
VCC
MAC7 10u/6/X5R/6.3V/M
DDRVTT
1.1A MAX

Gigabyte Confidential
Do not Copy

GIGABYTE™
Title: DDR15V / M3 POWER
Size: Custom
Document Number: GA-B85-D3V
Rev: 2.0
Date: Wednesday, May 28, 2014
Sheet 25 of 34

OVER VOLTAGE

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

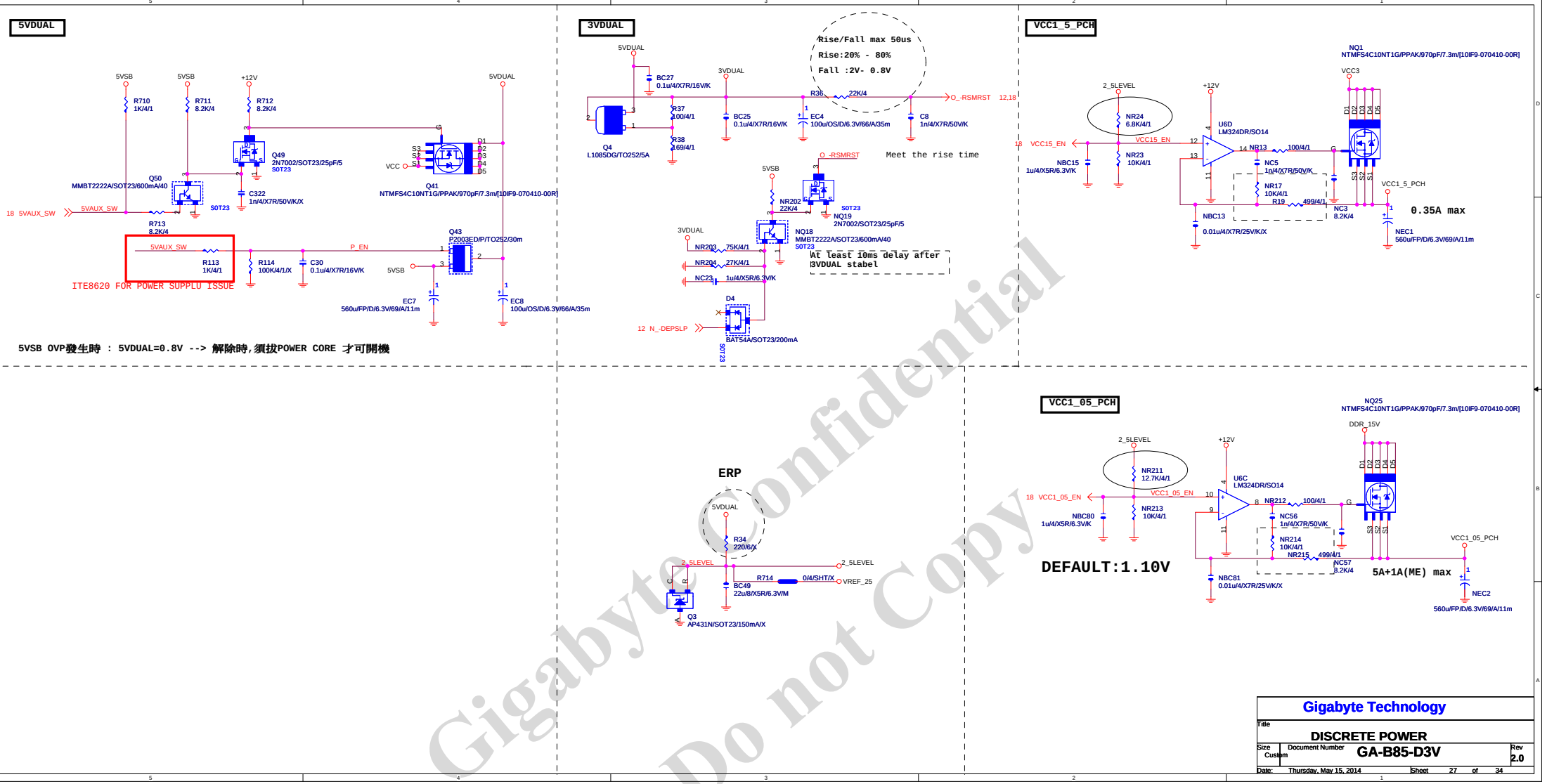
Gigabyte Confidential
Do not Copy

Gigabyte Technology

Title: CPU CORE VR-2

Size: Custom | Document Number: GA-B85-D3V | Rev: 2.0

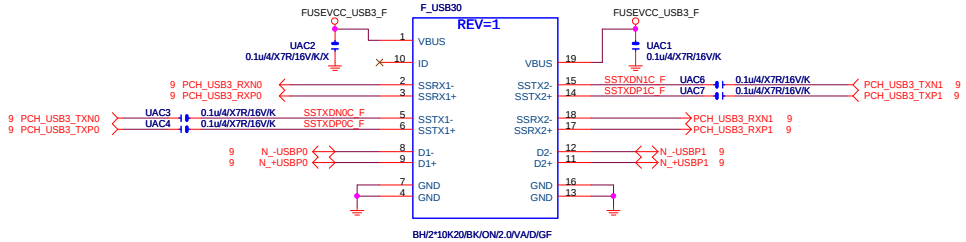
Date: Thursday, May 15, 2014 | Sheet 26 of 34



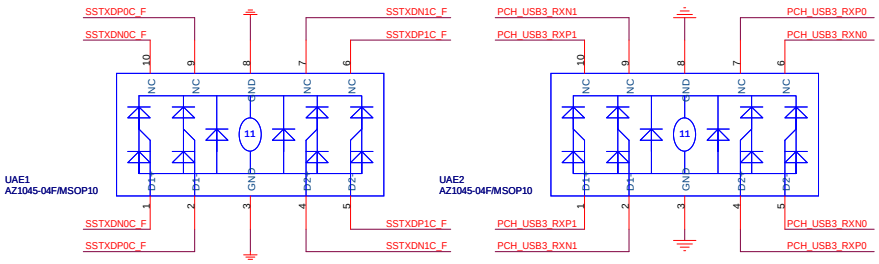
Gigabyte Confidential
Do not Copy

Gigabyte Technology		
Title: DISCRETE POWER		
Size: Custom	Document Number: GA-B85-D3V	Rev: 2.0
Date: Thursday, May 15, 2014	Sheet 27 of 34	

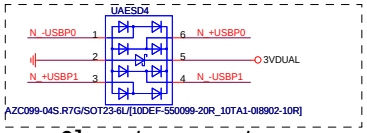
Front USB3.0



F_USB30 ESD PROTECT

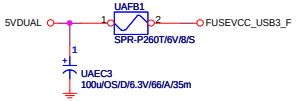


BLUE



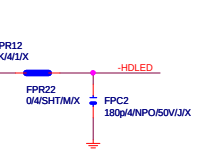
Close to connector

F_USB30 PWR

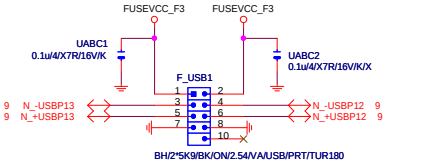


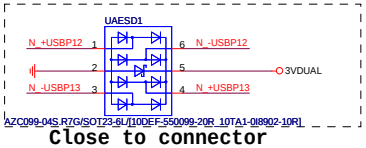
SATA LED

SATALED# signal
open-collector,pull-up
(8.2 kΩ to 10 kΩ) to
Vcc3_3

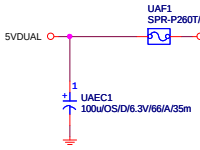


FRONT USB1

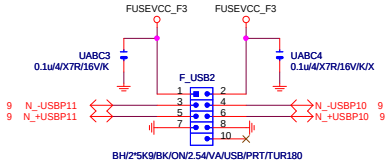


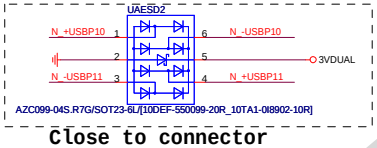


Close to connector



FRONT USB2

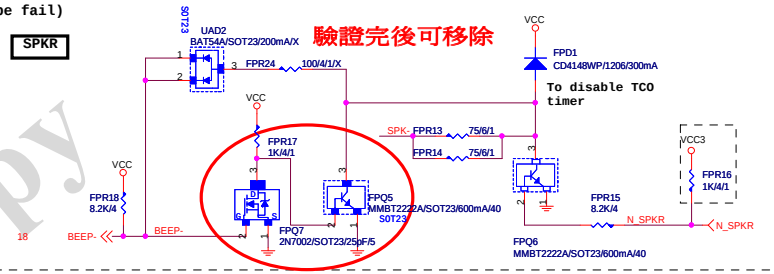




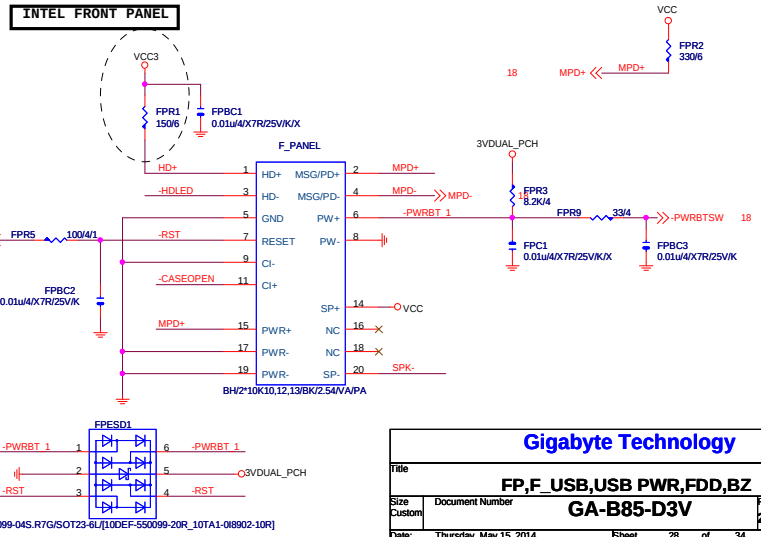
Close to connector

USB2.0 Signal & power short protection
USB2.0 Signal set 4.8V (If bigger than 4.95V , chip maybe fail)
Protection set --> 3VUUAL=3.6V

SPKR

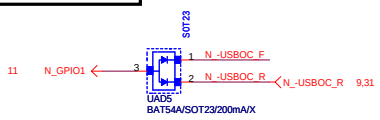


INTEL FRONT PANEL

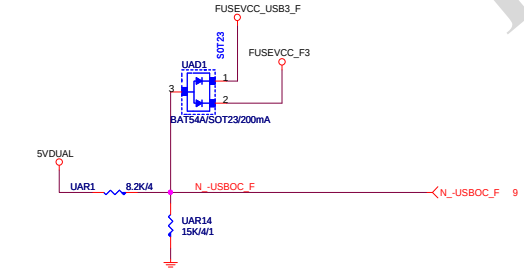


CASE OPEN

F_USB POWER PROTECT



-USBOC_F

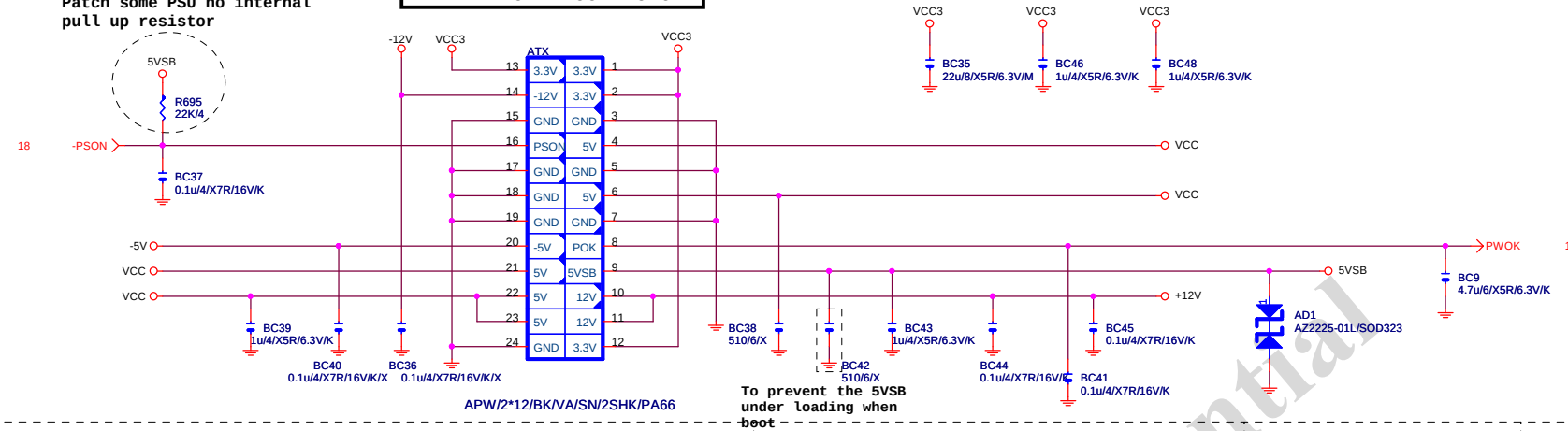


Gigabyte Confidential
Do not Copy

Gigabyte Technology		
Title: FP,F_USB,USB PWR,FDD,BZ		
Size: Custom	Document Number: GA-B85-D3V	Rev: 2.0
Date: Thursday, May 15, 2014	Sheet 28 of 34	

ATXX24 POWER CONNECTOR

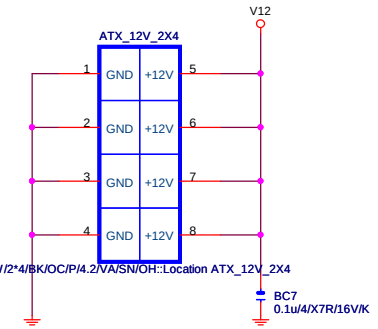
Patch some PSU no internal pull up resistor



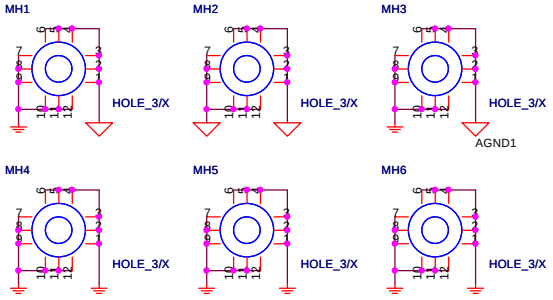
APW/2*12/BK/VA/SN/2SHK/PA66

To prevent the 5VSB under loading when boot

ATXX4 POWER CONNECTOR



APW/2*4/BK/OC/P/4.2/VA/SN/OH::Location ATX_12V_2X4



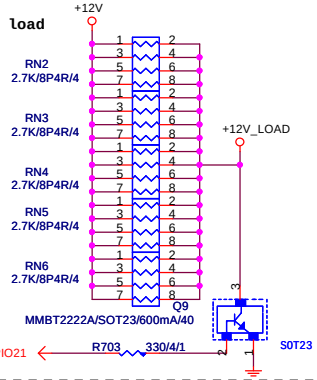
HOLE_4-RH-1

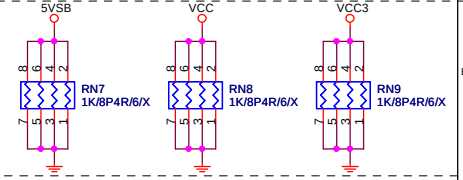
K1-ICT

4MMH

【技術通報R&D技術通報153】

To fix 12V light load abnromal issue



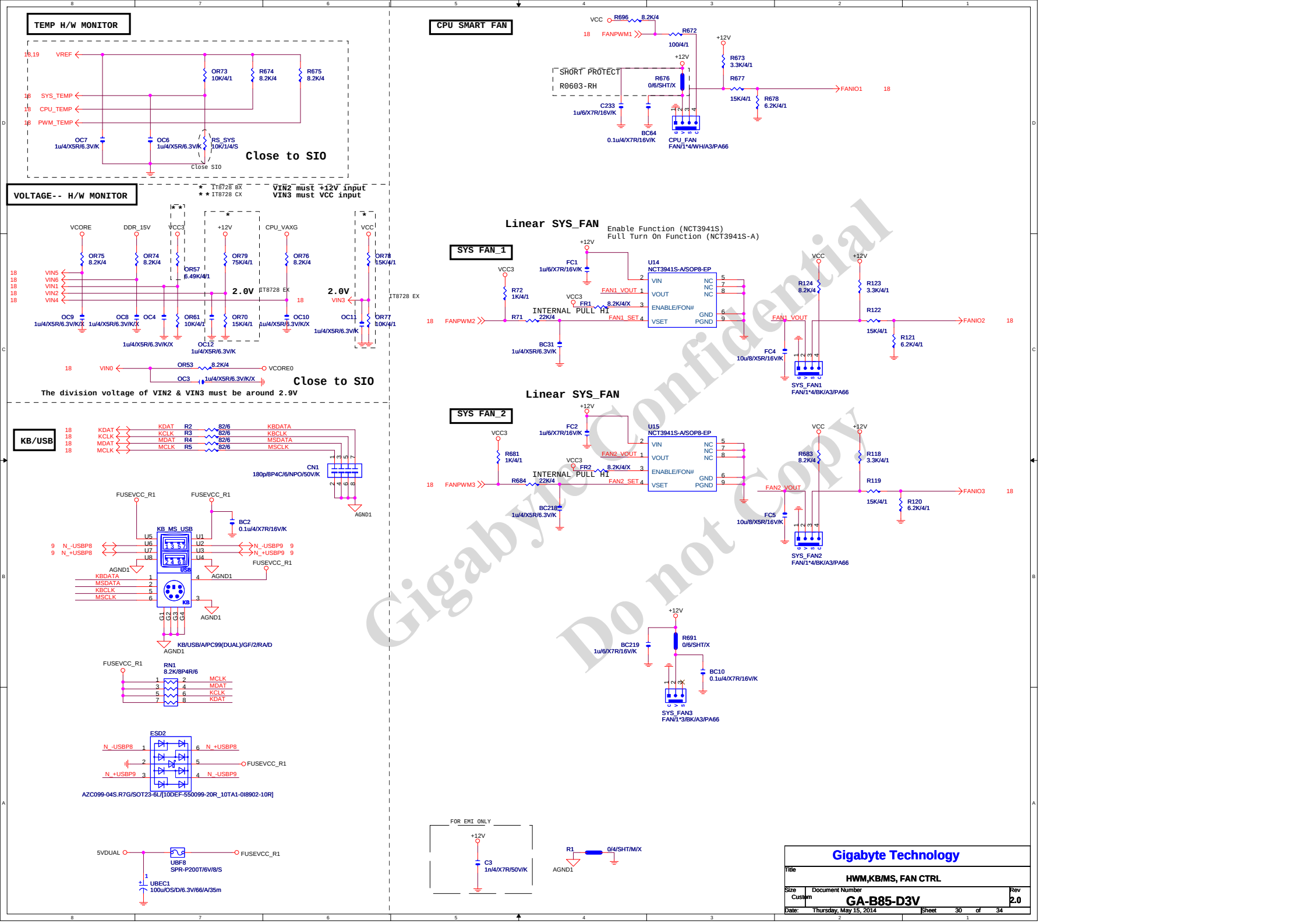


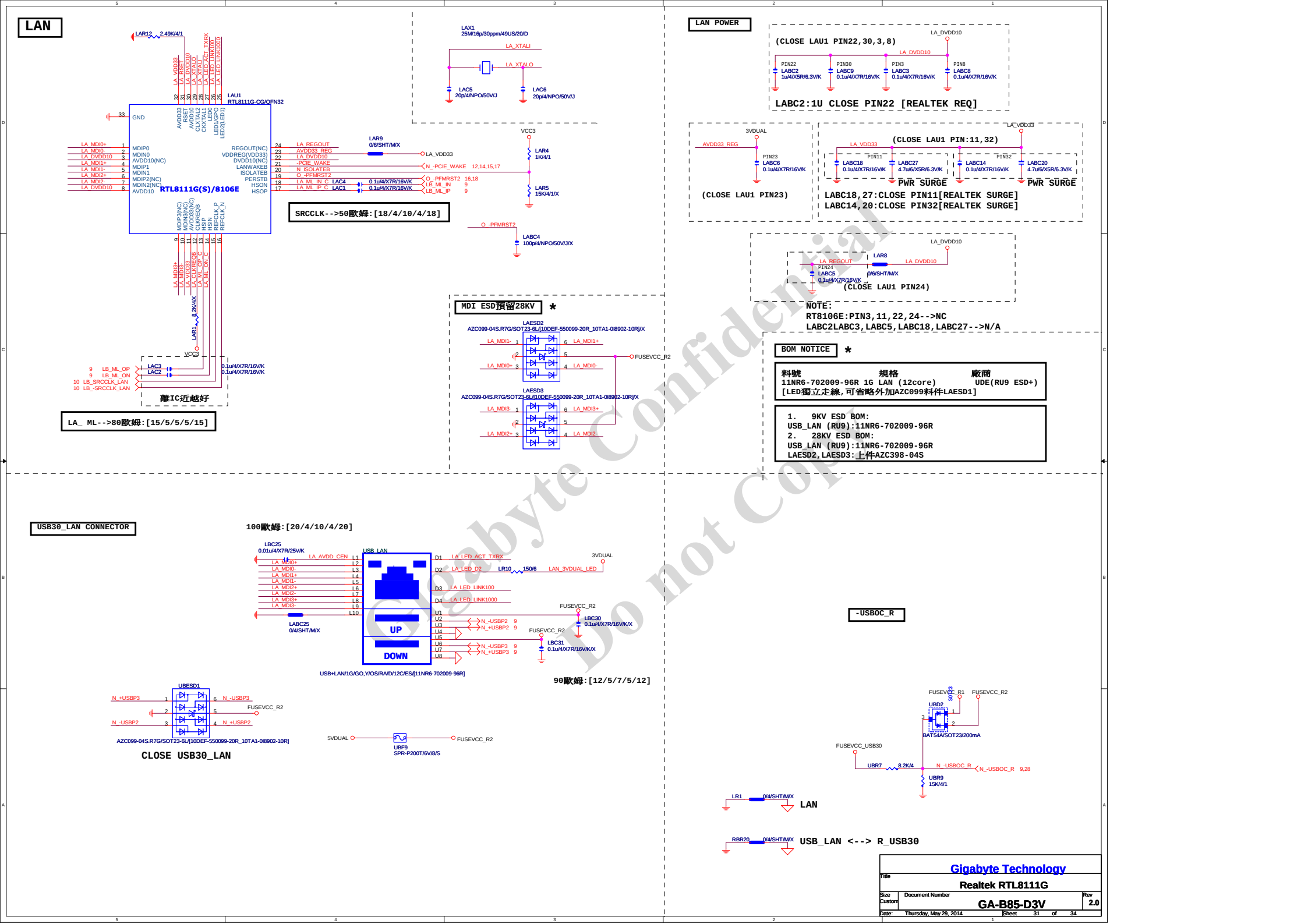
PWOK PATCH

【技術通報R&D技術通報154】

Gigabyte Confidential
Do not Copy

Gigabyte Technology		
Title: ATX POWER CONNECTOR		
Size: Custom	Document Number: GA-B85-D3V	Rev: 2.0
Date: Thursday, May 15, 2014	Sheet 29 of 34	

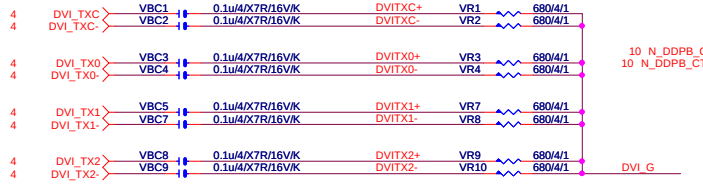

TEMP H/W MONITOR
VREF
SYS_TEMP
CPU_TEMP
PWM_TEMP
OR73 10K/4/1
R674 8.2K/4
R675 8.2K/4
OC7 1u/4/X5R/6.3V/K
OC6 1u/4/X5R/6.3V/K
RS_SYS 10K/1/4/S
Close to SIO
Close SIO
VOLTAGE-- H/W MONITOR
* IT8728 EX
* * IT8728 CX
VIN2 must +12V input
VIN3 must VCC input
VCORE
DDR_15V
VCC3
+12V
CPU_VAXG
VCC
OR75 8.2K/4
OR74 8.2K/4
OR57 6.49K/4/1
OR79 75K/4/1
OR76 8.2K/4
OR78 15K/4/1
VIN5
VIN6
VIN1
VIN2
VIN4
2.0V
IT8728 EX
VIN3
OC9 1u/4/X5R/6.3V/K/X
OC8 1u/4/X5R/6.3V/K/X
OC4
OR61 10K/4/1
OR70 15K/4/1
OC10 1u/4/X5R/6.3V/K/X
OC11 1u/4/X5R/6.3V/K
OR77 10K/4/1
OC12 1u/4/X5R/6.3V/K
VIN0
OR53 8.2K/4
OC3 1u/4/X5R/6.3V/K/X
VCORE0
Close to SIO
The division voltage of VIN2 & VIN3 must be around 2.9V
KB/USB
KDAT
KCLK
MDAT
MCLK
R2 82/6
R3 82/6
R4 82/6
R5 82/6
KBDATA
KBCLK
MSDATA
MSCLK
CN1 180p/8P4C/6/NPO/50V/K
AGND1
FUSEVCC_R1
BC2 0.1u/4/X7R/16V/K
KB_MS_USB
USB
KB
N_-USBP8
N_+USBP8
N_-USBP9
N_+USBP9
KB/USB/A/PC99(DUAL)/GF/2/RA/D
RN1 8.2K/8P4R/6
ESD2
AZC099-04S.R7G/SOT23-6L/[10DEF-550099-20R_10TA1-0I8902-10R]
5VDUAL
UBF8 SPR-P200T/6V/8/S
UBEC1 100u/OS/D/6.3V/66/A/35m
CPU SMART FAN
R696 8.2K/4
R672 100/4/1
SHORT PROTECT
R0603-RH
R676 0/6/SHT/X
R673 3.3K/4/1
R677 15K/4/1
R678 6.2K/4/1
FANIO1
C233 1u/6/X7R/16V/K
BC64 0.1u/4/X7R/16V/K
CPU_FAN FAN/1*4/WH/A3/PA66
Linear SYS_FAN
Enable Function (NCT3941S)
Full Turn On Function (NCT3941S-A)
SYS FAN_1
FC1 1u/6/X7R/16V/K
U14 NCT3941S-A/SOP8-EP
VIN
VOUT
ENABLE/FON#
VSET
NC
GND
PGND
R72 1K/4/1
FR1 8.2K/4/X
INTERNAL PULL HI
R71 22K/4
BC31 1u/4/X5R/6.3V/K
FANPWM2
FAN1_VOUT
FAN1_SET
R124 8.2K/4
R123 3.3K/4/1
R122 15K/4/1
R121 6.2K/4/1
FANIO2
FC4 10u/8/X5R/16V/K
SYS_FAN1 FAN/1*4/BK/A3/PA66
Linear SYS_FAN
SYS FAN_2
FC2 1u/6/X7R/16V/K
U15 NCT3941S-A/SOP8-EP
R681 1K/4/1
FR2 8.2K/4/X
R684 22K/4
BC218 1u/4/X5R/6.3V/K
FANPWM3
FAN2_VOUT
FAN2_SET
R683 8.2K/4
R118 3.3K/4/1
R119 15K/4/1
R120 6.2K/4/1
FANIO3
FC5 10u/8/X5R/16V/K
SYS_FAN2 FAN/1*4/BK/A3/PA66
BC219 1u/6/X7R/16V/K
R691 0/6/SHT/X
BC10 0.1u/4/X7R/16V/K
SYS_FAN3 FAN/1*3/BK/A3/PA66
FOR EMI ONLY
C3 1n/4/X7R/50V/K
R1 0/4/SHT/M/X
Gigabyte Confidential
Do not Copy
Gigabyte Technology
Title
HWM,KB/MS, FAN CTRL
Size Custom
Document Number
GA-B85-D3V
Rev 2.0
Date: Thursday, May 15, 2014
Sheet 30 of 34

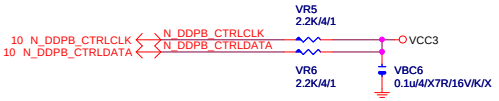


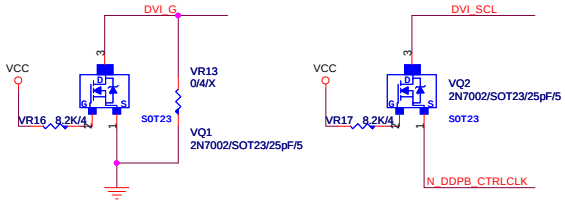
Gigabyte Confidential
Do not Copy

DVI:20/4/6/4/4pedance=85 +- 17.5%

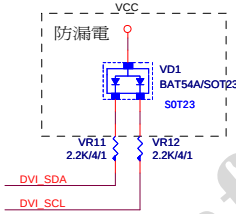
DVI NON LEVEL SHIFT

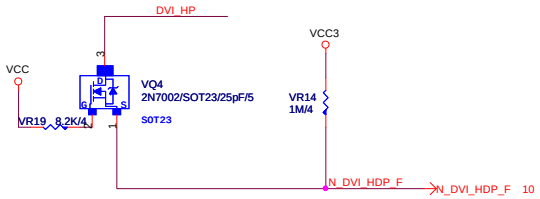






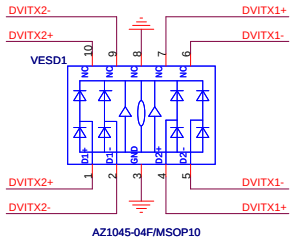
R&D技術通報 162





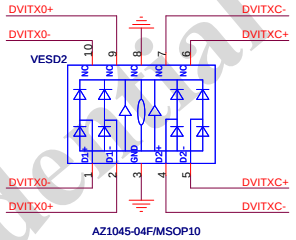
PERICOM 0/0/0/0:Vswing 500mV

ASM1442
DEFAULT 0/1/1 SWING:460mV -4dB



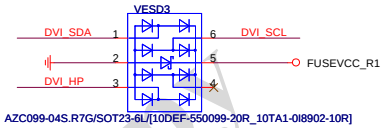
AZ1045-04F/MSOP10

Close to connector

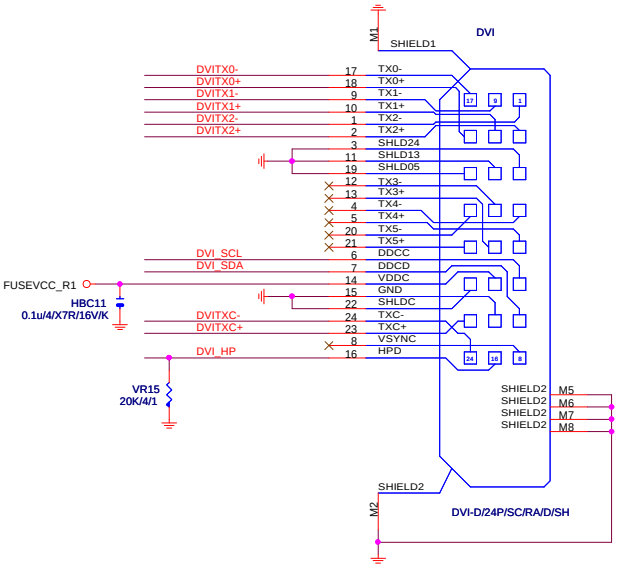


AZ1045-04F/MSOP10

Close to connector



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



Gigabyte Confidential
Do not Copy

Gigabyte Technology		
Title: DVI		
Size: Custom	Document Number: GA-B85-D3V	Rev: 2.0
Date: Thursday, May 15, 2014	Sheet 32 of 34	

Gigabyte Confidential
Do not Copy

	Gigabyte Technology	
Title	VL805 USB3.0	
Size: Custom	Document Number: GA-B85-D3V	Rev: 2.0
Date: Thursday, May 15, 2014	Sheet 33 of 34	

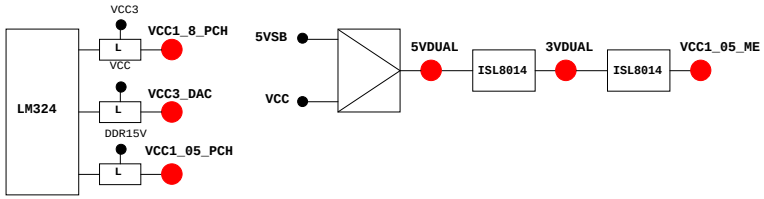
PCH GPIO LIST TABLE

PIN NAME	PWR	AFTER/PLTRST	Default	USAGE	NOTE
GP0	MAIN	H-Z	GPI	GPIO0	N/A
GP1/TACH1	MAIN		GPI	GPIO1	N/A
GP2/PIRQE#	MAIN		GPI	-PIRQE	P/U 8.2K VCC3
GP3/PIRQF#	MAIN		GPI	-PIRQF	P/U 8.2K VCC3
GP4/PIRQG#	MAIN		GPI	-PIRQG	P/U 8.2K VCC3
GP5/PIRQH#	MAIN		GPI	-PIRQH	P/U 8.2K VCC3
GP6/TACH2	MAIN		GPI	PCIEX1 Detect	P/U 8.2K VCC3
GP7/TACH3	MAIN		GPI	GPIO7	P/U 8.2K VCC3
GP8	STBY	H	GPI	GPIO8	N/A
GP9/OC5#	STBY		NATIVE	USB OC5#	N/A
GP10/OC6#	STBY		NATIVE	USB OC6#	N/A
GP11/SMBALERT#	STBY		NATIVE	USB PWR protect	P/U 8.2K 3VDUAL
GP12	STBY	L	GPI	GPIO12	N/A
GP13	STBY	L	GPI	LPCPME#	P/U 8.2K 3VDUAL
GP14/OC7#	STBY		NATIVE	USB OC7#	N/A
GP15	STBY	L	GPI	GPIO15(TLS Enable)	P/U 8.2K 3VDUAL
GP16	MAIN		GPI	GPIO16	P/U 8.2K VCC3
GP17/TACH0	MAIN		GPI	GPIO17	P/U 8.2K VCC3
GP18	MAIN		GPI	Mobile Only	N/A
GP19	MAIN		GPI	GPIO19	P/U 8.2K VCC3
GP20	MAIN		GPI	GPIO20	P/U 8.2K VCC3
GP21	MAIN		GPI	GPIO21	P/U 8.2K VCC3
GP22	MAIN	H-Z	GPI	GPIO22	P/U 8.2K VCC3
GP23	MAIN		GPI	GPIO23	N/A
GP24	STBY	L	GPI	SKTOCC#	N/A
GP25	STBY			Mobile Only	N/A
GP26	STBY			Mobile Only	N/A
GP27	STBY	H	GPO	GPIO27	P/U 8.2K 3VDUAL
GP28	STBY	H	GPO	PWR LED	P/U 8.2K 3VDUAL
GP29	STBY	L	GPI	GPIO29	N/A
GP30	STBY	H-Z	GPI	Mobile Only	N/A
GP31	STBY	H-Z	GPI	Mobile Only	N/A
GP32	MAIN	H	GPO	N/A	N/A
GP33	MAIN	H	GPO	N/A	N/A
GP34	MAIN	H-Z	GPI	-PCI_STOP	P/U 8.2K VCC3
GP35	MAIN	L	GPO	-ACZ_DET	P/U 8.2K VCC3
GP36	MAIN		GPI	N/A	N/A
GP37	MAIN		GPI	N/A	N/A
GP38	MAIN	H-Z	GPI	PCIEX4 Detect	P/U 8.2K VCC3
GP39	MAIN	H-Z	GPI	GPIO39	P/U 8.2K VCC3
GP40	STBY		NATIVE	USB OC1#	N/A
GP41	STBY		NATIVE	USB OC2#	N/A
GP42	STBY		NATIVE	USB OC3#	N/A
GP43	STBY		NATIVE	USB OC4#	N/A
GP44	STBY	L	NATIVE	GPIO44	P/U 8.2K 3VDUAL
GP45	STBY		NATIVE	GPIO45	P/U 8.2K 3VDUAL
GP46	STBY	L	NATIVE	GPIO46	P/U 8.2K 3VDUAL
GP47	STBY			Mobile Only	N/A
GP48	MAIN	H-Z	IN	GPIO48	P/U 8.2K 3VDUAL
GP49	MAIN	H-Z	IN	GPIO49	P/U 8.2K 3VDUAL
GP50	MAIN		NATIVE	-REQ1	P/U 2.2K VCC
GP51	MAIN	H	NATIVE	-GNT1	N/A
GP52	MAIN		NATIVE	-REQ2	P/U 2.2K VCC
GP53	MAIN	H	NATIVE	-GNT2	N/A
GP54	MAIN		NATIVE	-REQ3	P/U 2.2K VCC
GP55	MAIN	H	NATIVE	-GNT3	N/A
GP56	STBY		NATIVE	Mobile Only	N/A
GP57	STBY	H-Z	IN	VCORE_OV1	P/U 8.2K 3VDUAL
GP58	STBY	H-Z	NATIVE	F_USB_OC	P/U 8.2K 3VDUAL
GP59	STBY		NATIVE	USB_OC0#	N/A
GP60	STBY	H-Z	NATIVE	N/A(Reverse)	P/U 8.2K 3VDUAL
GP61	STBY	L	NATIVE	-SUSTAT	N/A
GP62	STBY	L	NATIVE	SUSCLK	N/A
GP63	STBY	L	NATIVE	GPIO63	N/A
GP64	MAIN	L	NATIVE	CLKOUTFLEX0	N/A
GP65	MAIN	L	NATIVE	CLKOUTFLEX1	N/A
GP66	MAIN	L	NATIVE	CLKOUTFLEX2	N/A
GP67	MAIN	L	NATIVE	CLKOUTFLEX3	N/A
GP72	STBY	H-Z	NATIVE	VCORE_OV4	P/U 8.2K 3VDUAL
GP73	STBY			Mobile Only	N/A
GP74	STBY	H-Z	NATIVE	1_05V_OV2	P/U 8.2K 3VDUAL
GP75	STBY	H-Z	NATIVE	N/A(Reverse)	P/U 8.2K 3VDUAL

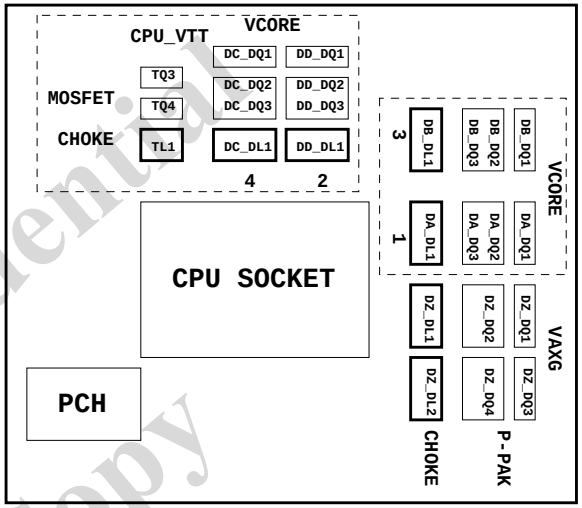
Super I/O ITE8720 GPIO Table

PIN NAME	USAGE	NOTE
SVC/PECI_RQT/GP14	-PECI_REQ	
PWROK1/GP13	PWROK1/ITE_PWROK	
KRST#/GP62	-KBRST	
SO/GP50	-ICH_SPI_CS	
IRTX/GP47/CE2_N/JP7	CEB_N	
GP46/IRRX	-LAN2_DSM	
PSION#/GP42	-PSON	
PWROK2#/GP41	PECI_CTL	
PCIRST3#/GP10/VDIMM_STR_EN	-PCIE_RST	
RSMRST#CIRRX1/GP55	-RSMRST	
PME#/GP54	-LPCPME	
PD5/GP75/BUSSO0	N/A	

PIN NAME	USAGE	NOTE
FAN_TAC2/GP52	FANIO2	
FAN_TAC3/GP37	FANIO3	
VIDO3/FAN_TAC4/GP25/DSR2#	FANIO4	
FAN_CTL2/GP51	FANPWM2	
FAN_CTL3/GP36	FANPWM3	
VID4/GP34	BEEP-	
VID3/GP33	TURBO1	
VID2/GP32	TURBO0	
VCORE_GOOD/VID6/GP63	CPUT_LED1_C	
VID5/GP35	CPUT_LED2_C	
VID1/GP31	CPUT_LED3_C	
VID0/GP30	-LAN1_DSM	NBT_LED1_C
SLCT/GP80	CPU_LED1_C	
PE/GP81	CPU_LED2_C	
BUSY/GP82	CPU_LED3_C	
PD3/GP73/BUSSI1	SB_LED1_C	
PD4/GP74/BUSSI2	SB_LED2_C	
VCORE_EN/VID7/GP64	IT_GP64	SB_LED3_C
PD0/GP70	NB_LED1_C	
PD1/GP71	NB_LED2_C	
PD2/GP72/BUSSI0	NB_LED3_C	
GP22/SCK	LOW_PWR_1	
VIDO5/GP27/SIN2	LOW_PWR_2	
PCIRST2#/GP11	-PFMRST1	
PCIRST1#/GP12	-PFMRST2	
3VSBSW#/GP40	CSI_F0	BSEL166_1
SUSC#/GP53	CSI_F1	BSEL166_2
GP23/SI	BSEL166_3/CSISBSL	
VIDO0/GP20/CTS2#	CPUT_LED1_C	BSEL166_4
GP65/VDDA_EN/GB_01	MB_ID2	
PD6/GP76/BUSSO1	MB_ID3	
PD7/GP77/BUSSO2	MB_ID4	
AFD#/GP86/SMBC_R	空 PIN	FST_2X8
INIT#/GP85/SMBD_M	SEC_2x8	GTLREF_AD2
ACK#/GP83	DDR_LED1_C	
VIDO1/GP21/DCD2#	DDR_LED2_C	
STB#/GP87/SMBC_M	DDR_LED3_C	
PWRON#GP44	VCORE_OV1	
PANSWH#/GP43	PWRBTSW	
KDAT/GP61	-PWRBTSW	
KCLK/GP60	KDAT	
MDAT/GP57	KCLK	
MACL/GP56	MDAT	
GP66/VLDT_EN/GB_02	NBT_LED1_C	MCLK
SVD/PCIRSTIN#/CIRTX/GP15	PWM2_CR	
KDAT/GP61	PWM2_CR	
GP67/CPU_PG/GB_03	EN_LOADLINE	IT_GP67/-EN_PWM2
SLIN#/GP84/SMBD_R	-EN_PWM2	
PSI_L/FAN_CLT5/CIRRX2/GP16	-THERM	
VIDO4/GP26/SOUT2	DDR18V_PH2_EN	
VIDO2/FAN_TAC5/GP24/DSR2#	DDR18V_LED	
VIDO6/GP17/RI2#	1_1V_PH_EN	
VIDO7/JP6/DTR2#	JP6	
PD5/GP75/BUSSO0	SB_LED3_C	



PWM各相位的擺法如下：



BIOS超電壓對應表：

線路圖名稱	BIOS選項
Vcore	CPU Vcore
CPU_VTT	CPU Termination
CPU_VAXG	CPU Graphic Core
VCC1_8_PCH	CPU PLL
VCC1_05_PCH	PCH core
3VDUAL	3VDUAL
DDR15V	DRAM voltage
DDRVTT	DRAM Terminatio
VREF_CA_A/VREF_CA_B	DRAM Address Ref
VREF_DQ_A/VREF_DQ_B	DRAM Data Ref

散熱模組料號：

Z77-D3H :
PCH :
12SP2-S05511-01R/02R/03R
MOSFET :
12SP2-S08924-01R/02R/03R

	3 pin FAN control	4 pin FAN control	FAN speed	Controller
CPU FAN	FANPWM1	FANPWM3	FANIO1	IT8720
	ICH_FAN_PWM2	ICH_FAN_PWM0	ICH_FAN_TACH0	PCH
SYS FAN	FANPWM2	N/A	FANIO2	IT8720
	ICH_FAN_PWM1	N/A	ICH_FAN_TACH1	PCH
PWR FAN	N/A	N/A	FANIO3	IT8720
			ICH_FAN_TACH2	PCH

Gigabyte Confidential
Do not Copy

Gigabyte Technology
Title: TABLE LIST
Size: C | Document Number: GA-B85-D3V | Rev: 2.0
Date: Thursday, May 15, 2014 | Sheet 34 of 34