

Model Name: GA-B85M-D2V

SHEET

TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1150-A
05	CPU_LGA1150-B
06	CPU_LGA1150-C
07	DDR III CHANNEL A
08	DDR III CHANNEL B
09	PCH_FDI,DMI,USB,PCIE,NVRAM
10	PCH_DP,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCI EXPRESS*16 SLOT
15	PCI EXPRESS X1 *2 SLOT
16	PCI SLOT (NA)
17	ITE 8620 LPC IO
18	COM,KB_MS_USB,USB30_20
19	HWM,FAN CTRL,OV
20	DUAL BIOS
21	FP,FUSB,SPK,SATALED
22	Realtek ALC887-VD2
23	REAR AUDIO JACK
24	REALTEK RTL8111F
25	DISCRETE POWER
26	ATX
27	VCORE ISL95812_1

SHEET

TITLE

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

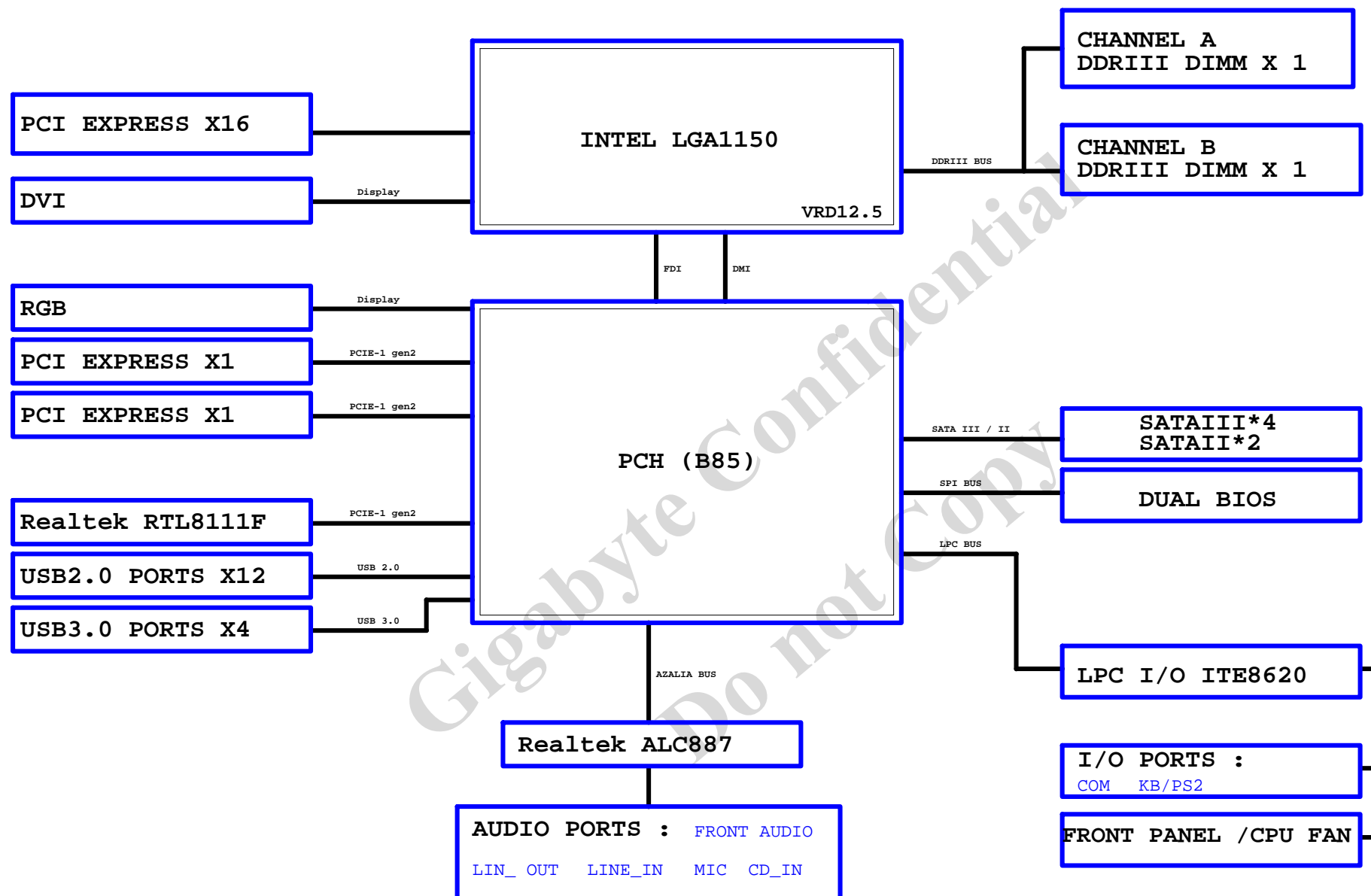
Gigabyte Technology

Cover Sheet

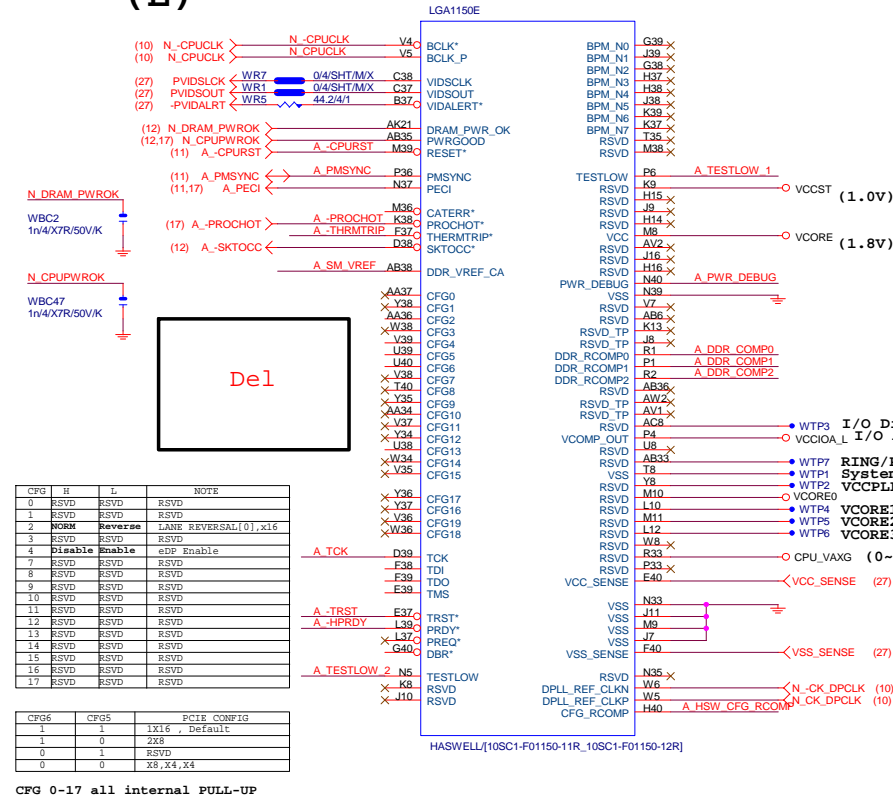
Title	Document Number		Rev
Size	GA-B85M-D2V		3.0
Custom			
Date:	Monday, August 25, 2014	Sheet	1 of 33

<i>Gigabyte Technology</i>			
Title			
BOM & PCB MODIFY HISTORY			
Size Custom	Document Number	GA-B85M-D2V	Rev 3.0
Date:	Monday, August 25, 2014	Sheet	2 of 33

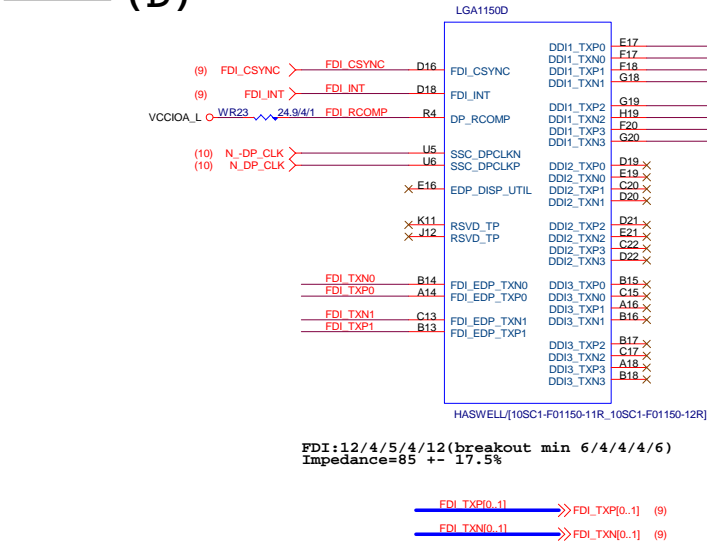
BLOCK DIAGRAM



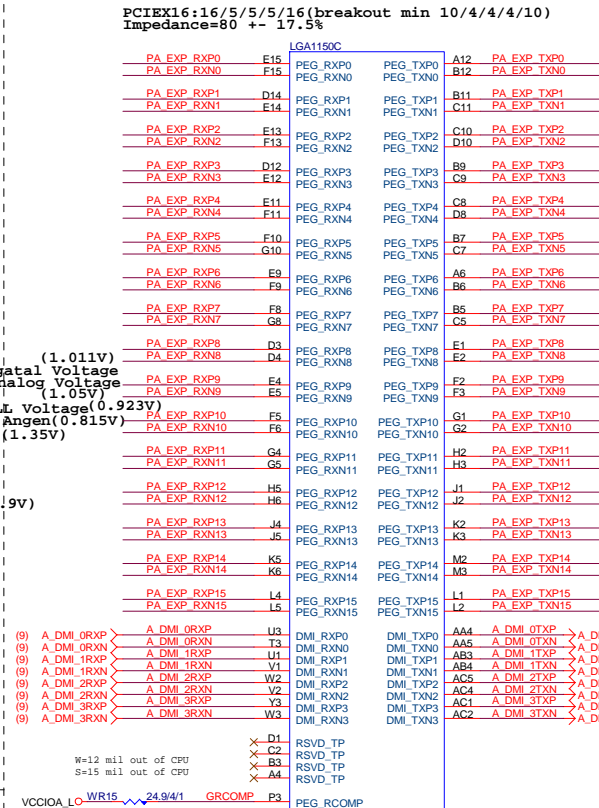
LGA1150 (E)



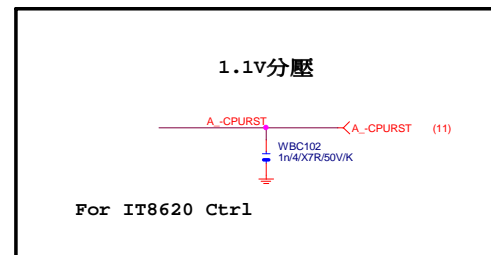
LGA1150 (D)



LGA1155 (C)



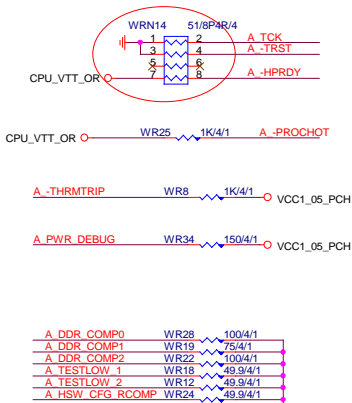
-CPURST



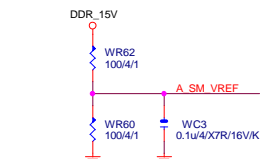
CPU SVID



CPU PU/PD

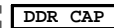
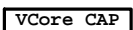
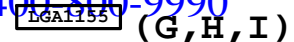


SM REF

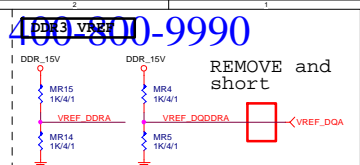
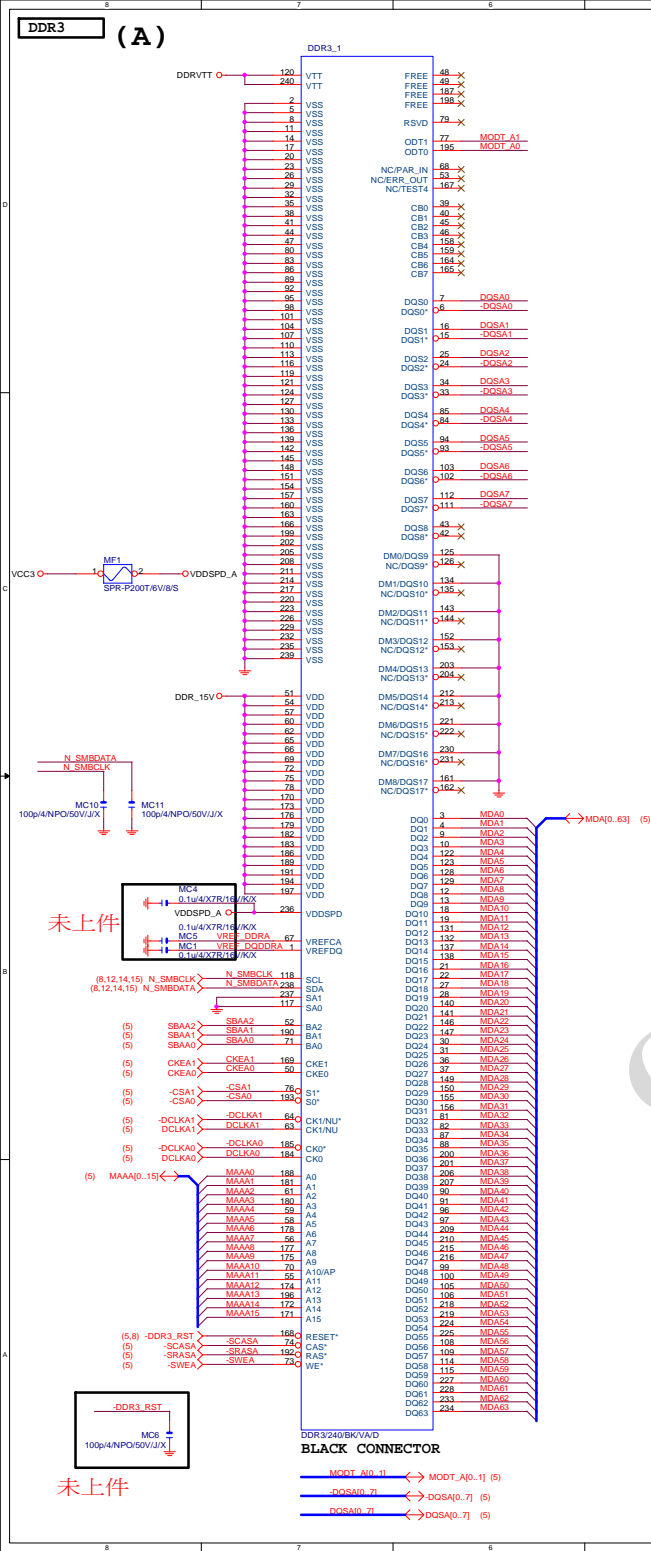


新增

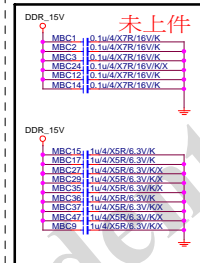
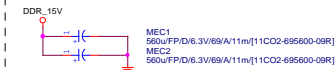




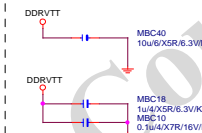
Title			
CPU LGA1150-C			
Size	Document Number		Rev
Custom	GA-B85M-D2V		3.0
Date:	Monday, August 25, 2014	Sheet	6 of 33

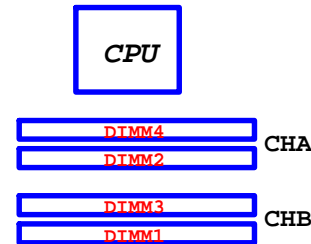
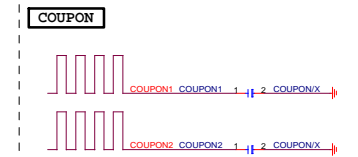
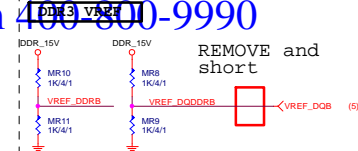
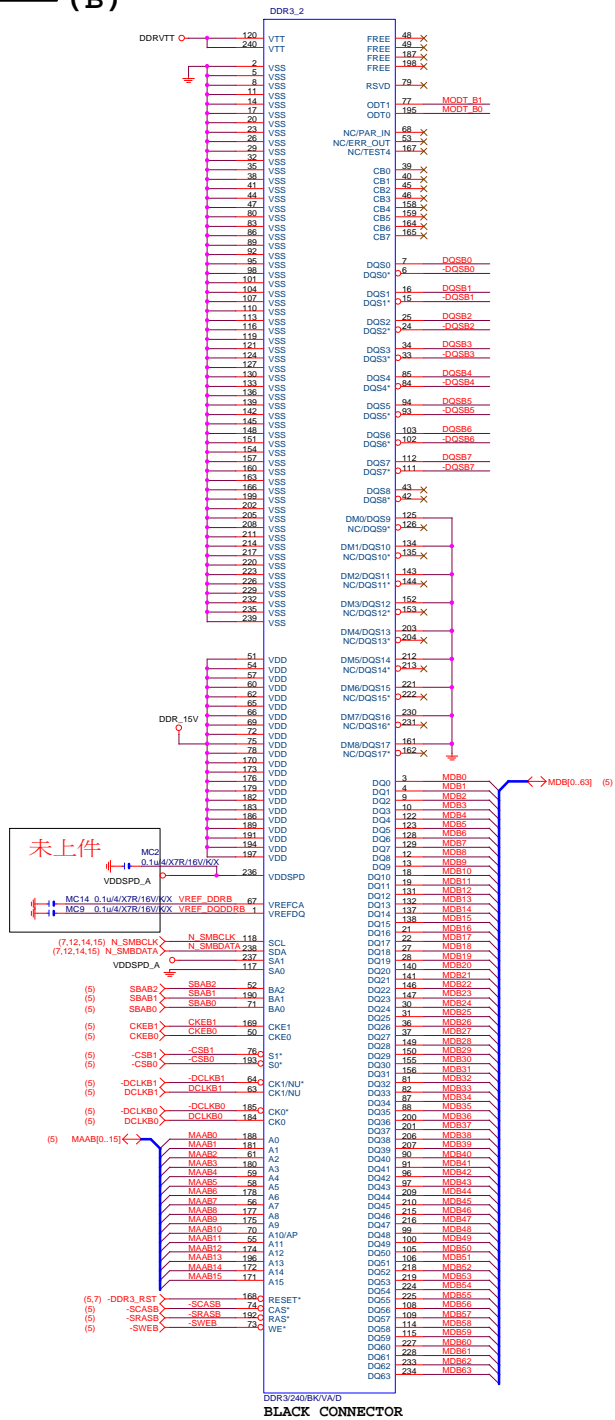


DDR15V Decouple

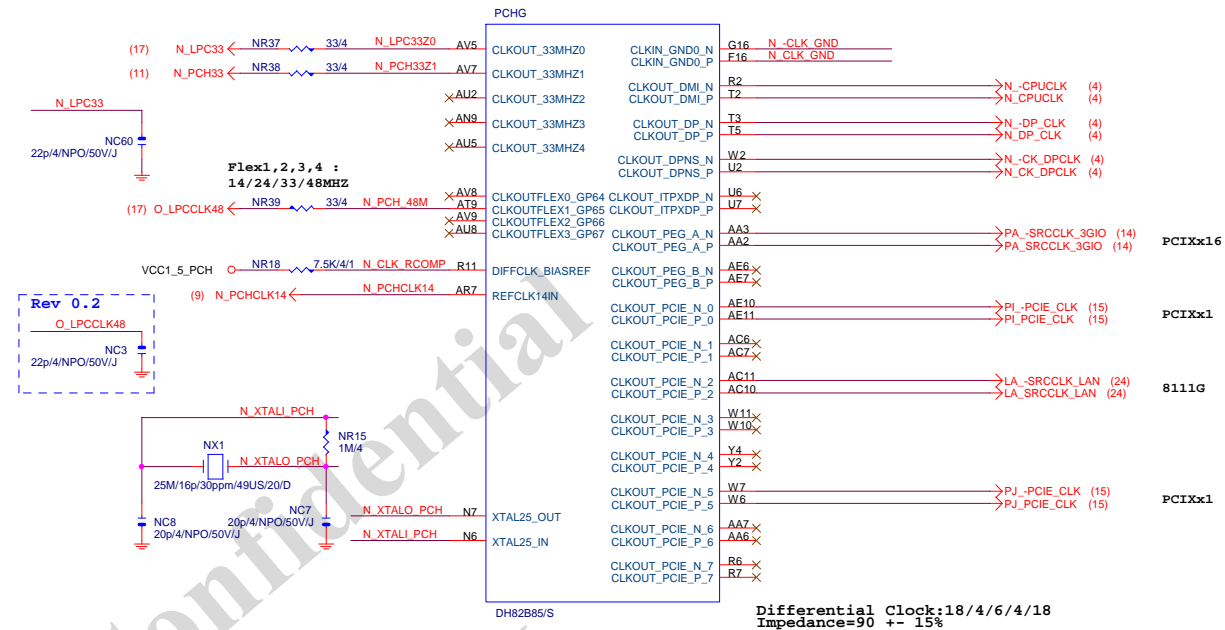
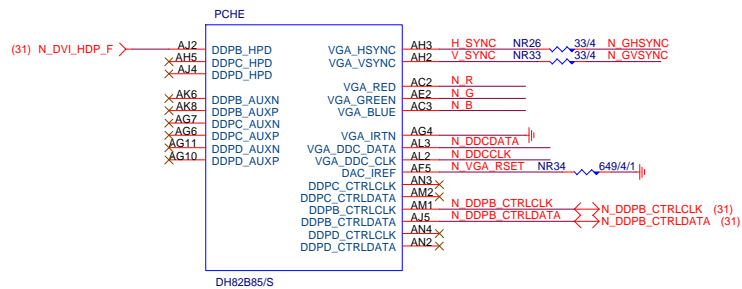


DDRVTT Decouple

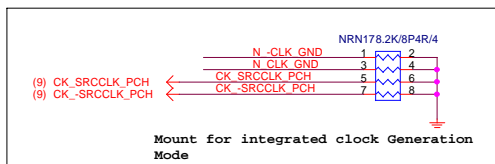




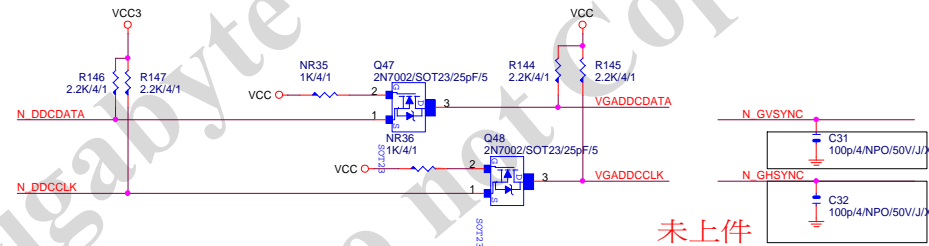
PCH (E)



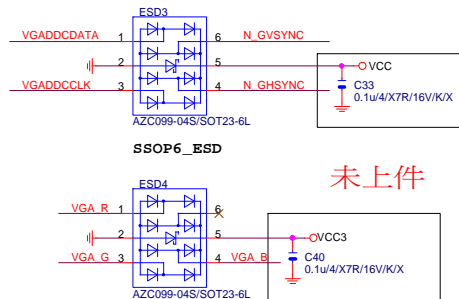
PCH CLK PD



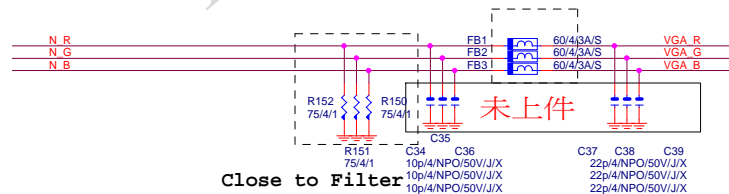
VGA DDC



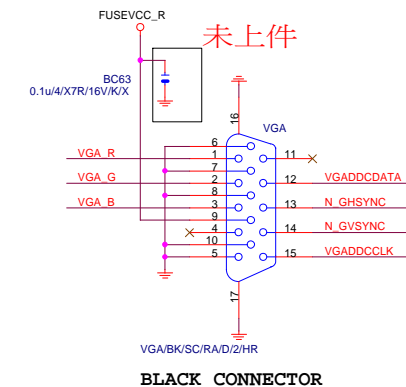
VGA ESD



VGA DDC



VGA CONNECTOR

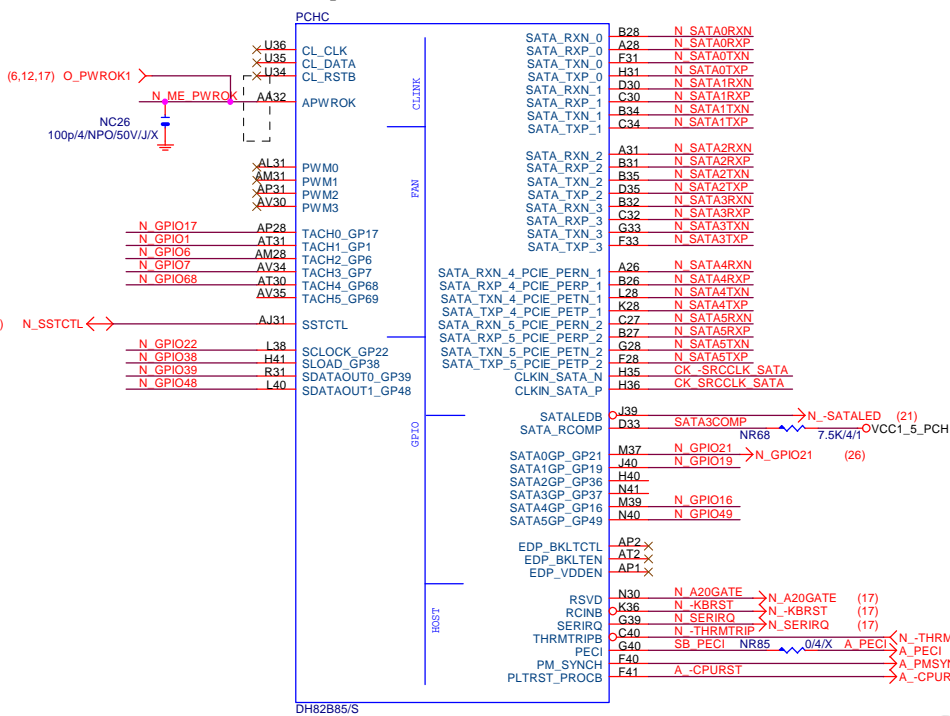


Gigabyte Technology

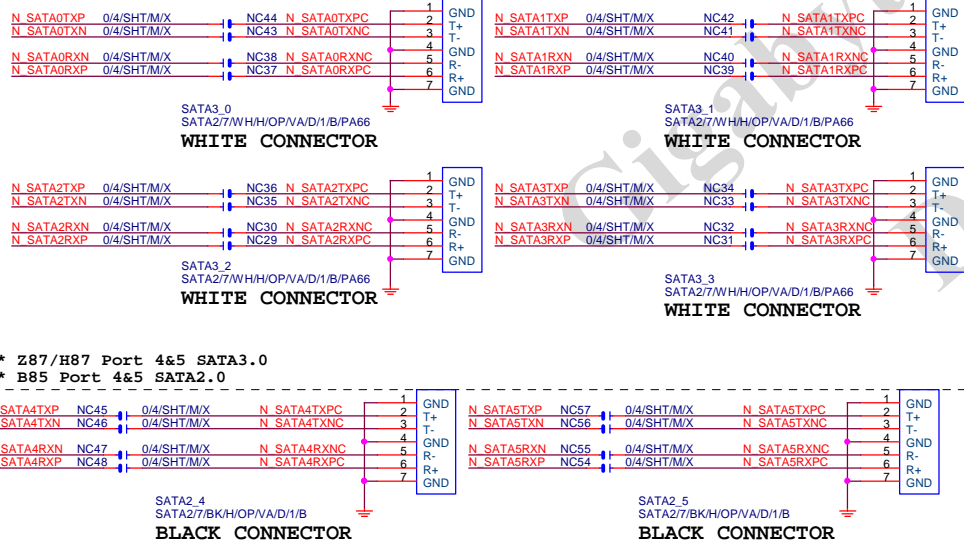
Title		
PCH DISPLAY_CLK BUFFER		
GA-B85M-D2V		
Size	Document Number	Rev
Custom		3.0
Date:	Monday, August 25, 2014	Sheet 10 of 33

PCH (C)

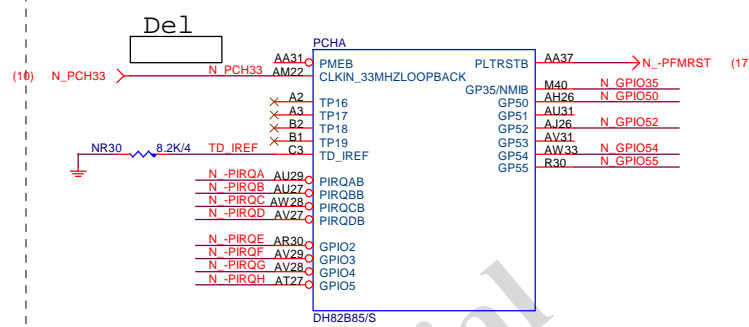
SATA3 : 20/7.5/4.5/7.5/20 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%
SATA2 : 15/7.5/4.5/7.5/15 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%



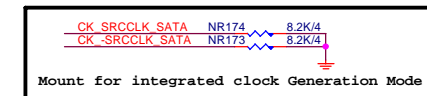
SATA CONNECTOR



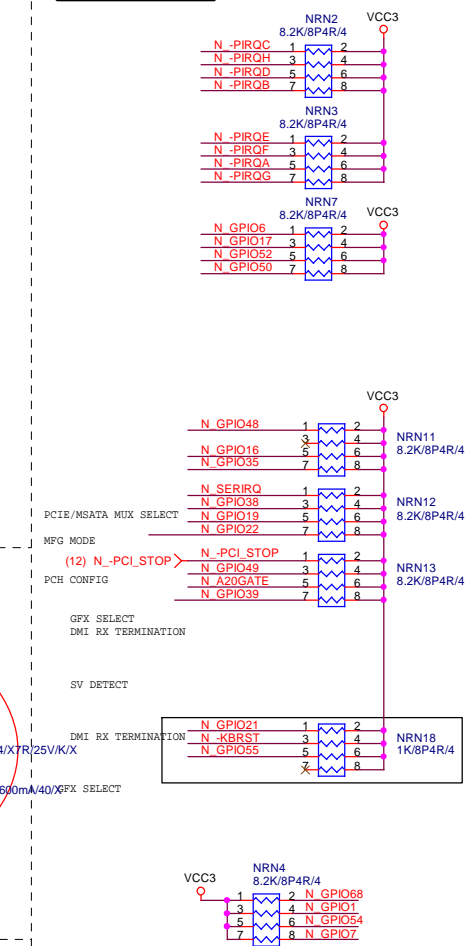
PCH (A)



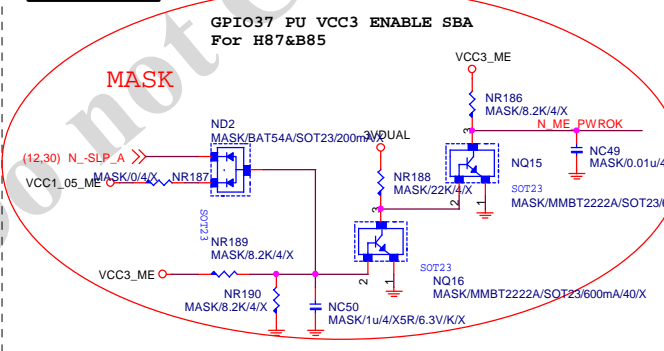
PCH CLK PD



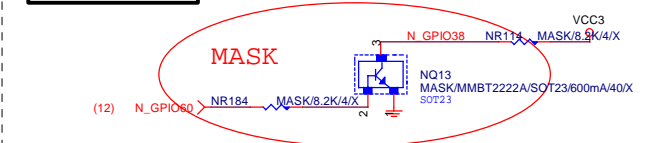
PCH PU/PD



ME PWROK



GPIO38 Ctrl



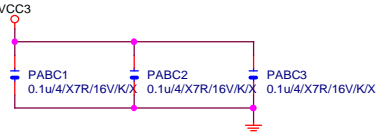
Gigabyte Technology



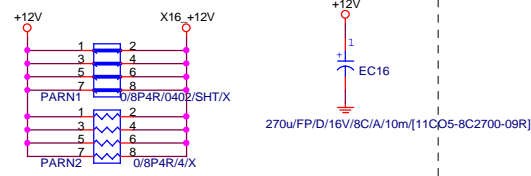
PCH GPIO , CTRL , AUDIO

Title			
PCH GPIO , CTRL , AUDIO			
Size	Document Number	Rev	
Custom	GA-B85M-D2V	3.0	
Date:	Monday, August 25, 2014	Sheet	12 of 33

PCIEX16 CAP



PCIEX16 PROTECT SHT



PCIEX16 AC CAP

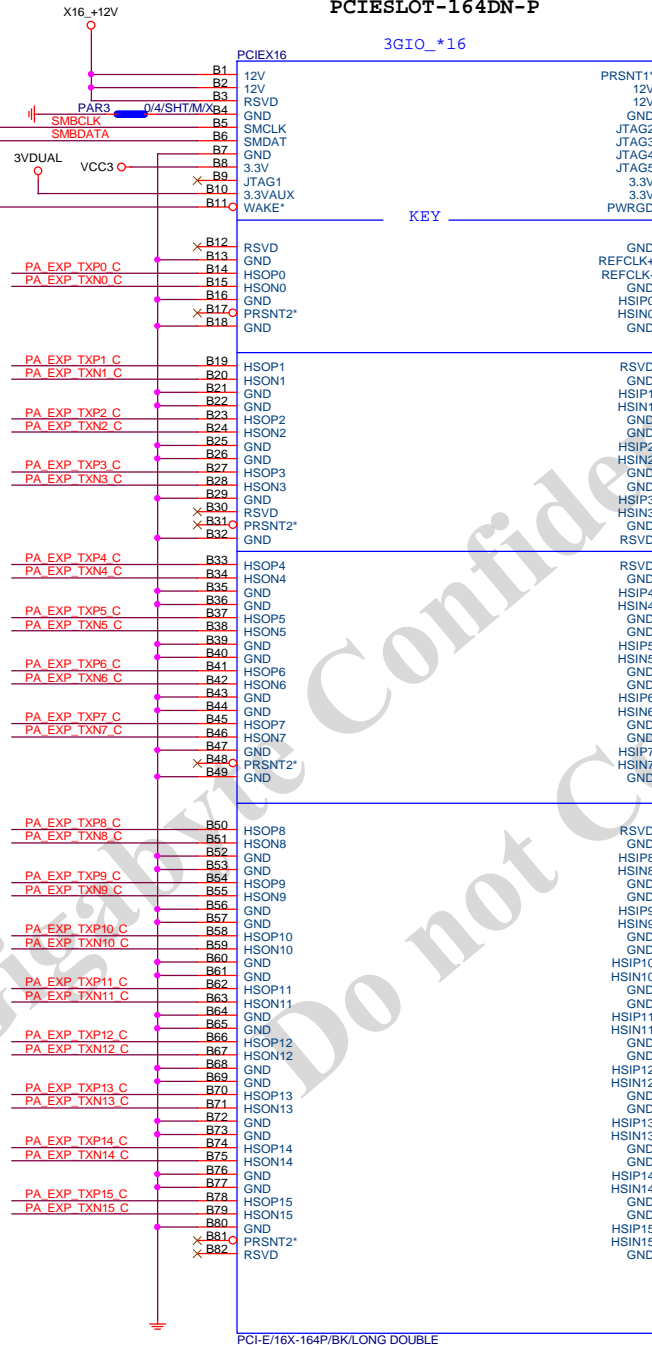
PA EXP TXP0	PAC5	0.22u4/X5R/6.3V/K	PA EXP TXP0 C
PA EXP TXN0	PAC4	0.22u4/X5R/6.3V/K	PA EXP TXN0 C
PA EXP TXP1	PAC6	0.22u4/X5R/6.3V/K	PA EXP TXP1 C
PA EXP TXN1	PAC7	0.22u4/X5R/6.3V/K	PA EXP TXN1 C
PA EXP TXP2	PAC8	0.22u4/X5R/6.3V/K	PA EXP TXP2 C
PA EXP TXN2	PAC9	0.22u4/X5R/6.3V/K	PA EXP TXN2 C
PA EXP TXP3	PAC10	0.22u4/X5R/6.3V/K	PA EXP TXP3 C
PA EXP TXN3	PAC11	0.22u4/X5R/6.3V/K	PA EXP TXN3 C
PA EXP TXP4	PAC12	0.22u4/X5R/6.3V/K	PA EXP TXP4 C
PA EXP TXN4	PAC13	0.22u4/X5R/6.3V/K	PA EXP TXN4 C
PA EXP TXP5	PAC14	0.22u4/X5R/6.3V/K	PA EXP TXP5 C
PA EXP TXN5	PAC15	0.22u4/X5R/6.3V/K	PA EXP TXN5 C
PA EXP TXP6	PAC16	0.22u4/X5R/6.3V/K	PA EXP TXP6 C
PA EXP TXN6	PAC17	0.22u4/X5R/6.3V/K	PA EXP TXN6 C
PA EXP TXP7	PAC19	0.22u4/X5R/6.3V/K	PA EXP TXP7 C
PA EXP TXN7	PAC18	0.22u4/X5R/6.3V/K	PA EXP TXN7 C
PA EXP TXP8	PAC20	0.22u4/X5R/6.3V/K	PA EXP TXP8 C
PA EXP TXN8	PAC21	0.22u4/X5R/6.3V/K	PA EXP TXN8 C
PA EXP TXP9	PAC22	0.22u4/X5R/6.3V/K	PA EXP TXP9 C
PA EXP TXN9	PAC23	0.22u4/X5R/6.3V/K	PA EXP TXN9 C
PA EXP TXP10	PAC24	0.22u4/X5R/6.3V/K	PA EXP TXP10 C
PA EXP TXN10	PAC25	0.22u4/X5R/6.3V/K	PA EXP TXN10 C
PA EXP TXP11	PAC26	0.22u4/X5R/6.3V/K	PA EXP TXP11 C
PA EXP TXN11	PAC27	0.22u4/X5R/6.3V/K	PA EXP TXN11 C
PA EXP TXP12	PAC28	0.22u4/X5R/6.3V/K	PA EXP TXP12 C
PA EXP TXN12	PAC29	0.22u4/X5R/6.3V/K	PA EXP TXN12 C
PA EXP TXP13	PAC30	0.22u4/X5R/6.3V/K	PA EXP TXP13 C
PA EXP TXN13	PAC31	0.22u4/X5R/6.3V/K	PA EXP TXN13 C
PA EXP TXP14	PAC32	0.22u4/X5R/6.3V/K	PA EXP TXP14 C
PA EXP TXN14	PAC33	0.22u4/X5R/6.3V/K	PA EXP TXN14 C
PA EXP TXP15	PAC34	0.22u4/X5R/6.3V/K	PA EXP TXP15 C
PA EXP TXN15	PAC35	0.22u4/X5R/6.3V/K	PA EXP TXN15 C

PA EXP RXIP0.15] >>> PA_EXP_RXIP[0.15] (4)
 PA EXP RXN0.15] >>> PA_EXP_RXN[0.15] (4)
 PA EXP TXIP0.15] >>> PA_EXP_TXIP[0.15] (4)
 PA EXP TXN0.15] >>> PA_EXP_TXN[0.15] (4)

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

PCIEX16 SLOT

(7,8,12,15) N_SMBCLK
 (7,8,12,15) N_SMBDATA
 (12,15,24) N_-PCIE_WAKE

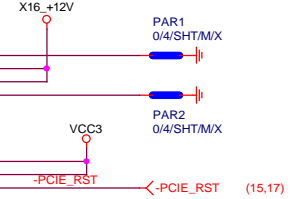


PCI-E/16X-164P/BK/LONG DOUBLE

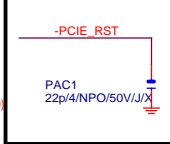
BLACK CONNECTOR

www.xinxunwei.com 400-800-9990

PCIESLOT-164DN-P



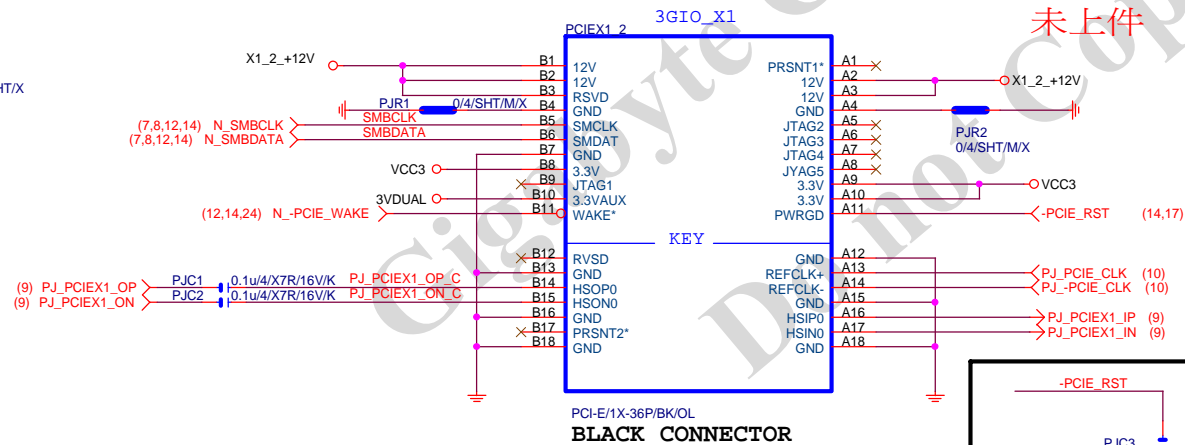
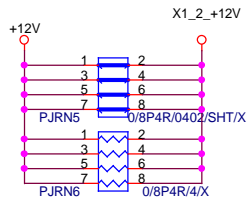
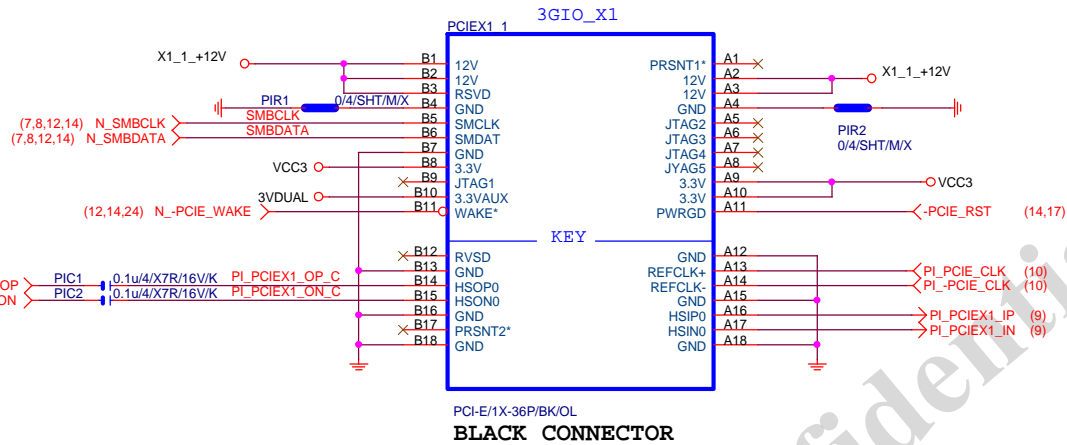
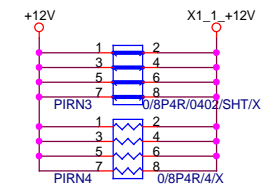
未上件



Gigabyte Technology

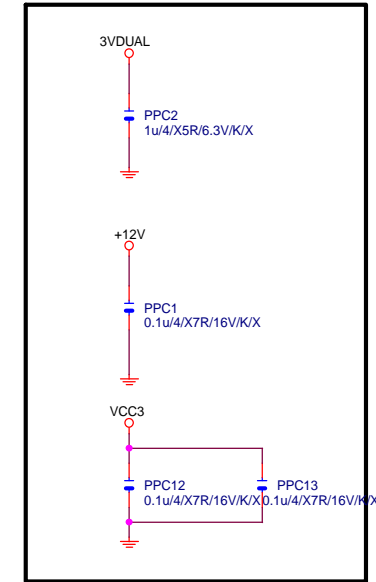
Title			PCI EXPRESS * 16		
Size			GA-B85M-D2V		
Custom			Rev 3.0		
Date:			Monday, August 25, 2014		
Sheet			14 of 33		

PCIEX1 SLOT



未上件

未上件

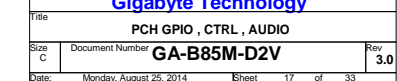


未上件

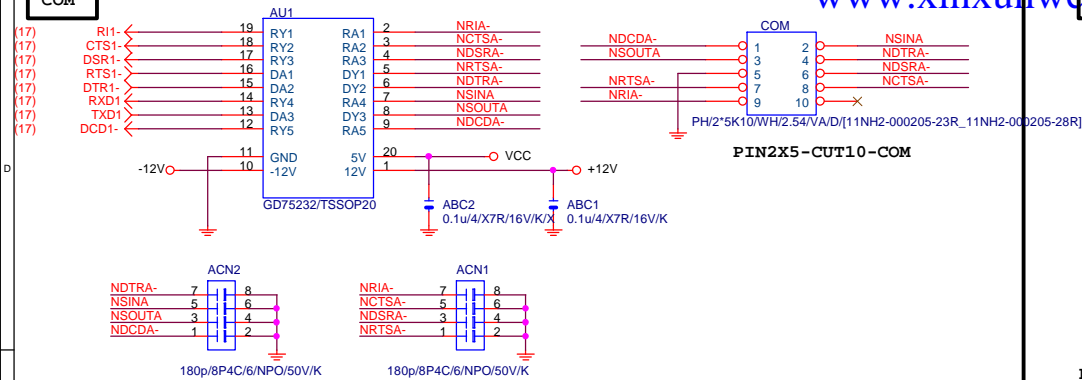
Gigabyte Technology			
PCI EXPRESS X 1 PORT			
Title	Document Number	Rev	
Size	Custom	GA-B85M-D2V	
Date:	Monday, August 25, 2014	Sheet	15 of 33

Gigabyte Confidential
Do not Copy

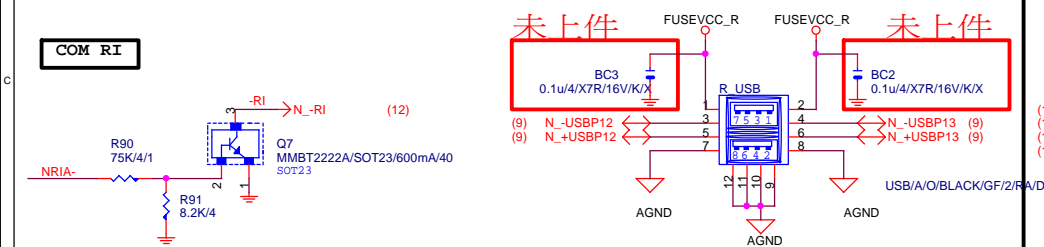
Gigabyte Technology		
Title		
PCI SLOT 1&2		
Size	Document Number	Rev
Custom	GA-B85M-D2V	3.0
Date:	Monday, August 25, 2014	Sheet 16 of 33



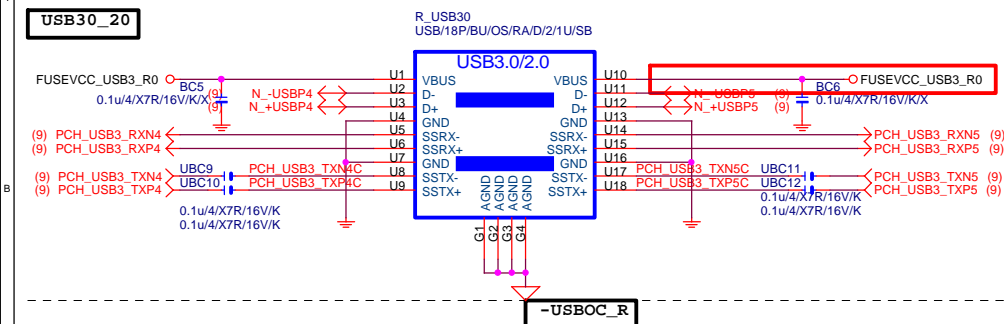
COM



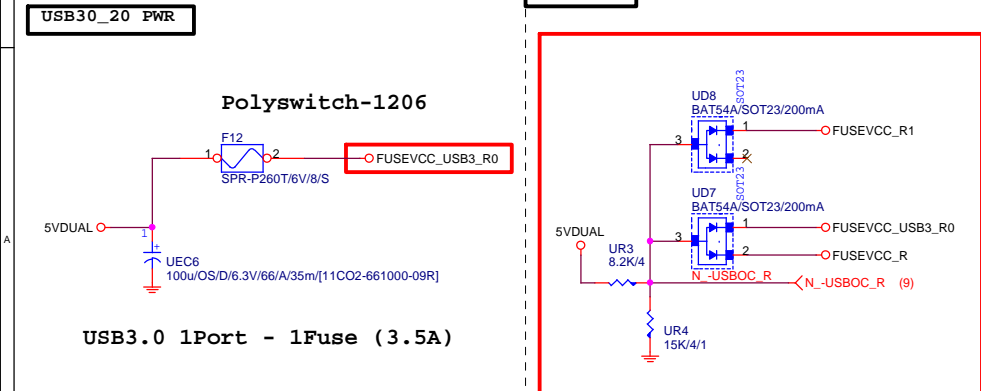
COM RI



USB30_20

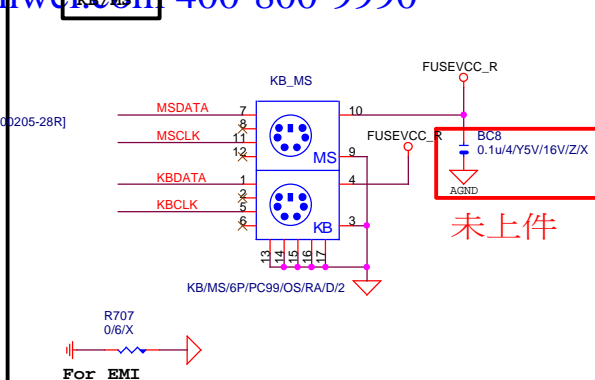


USB30_20 PWR

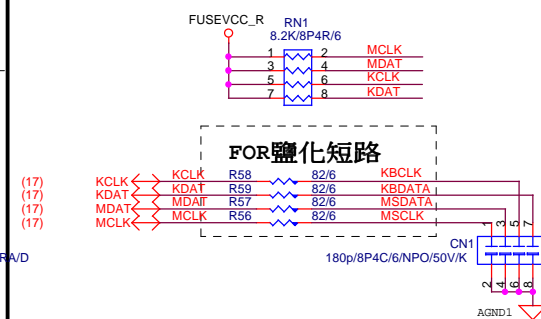


USB3.0 1Port - 1Fuse (3.5A)

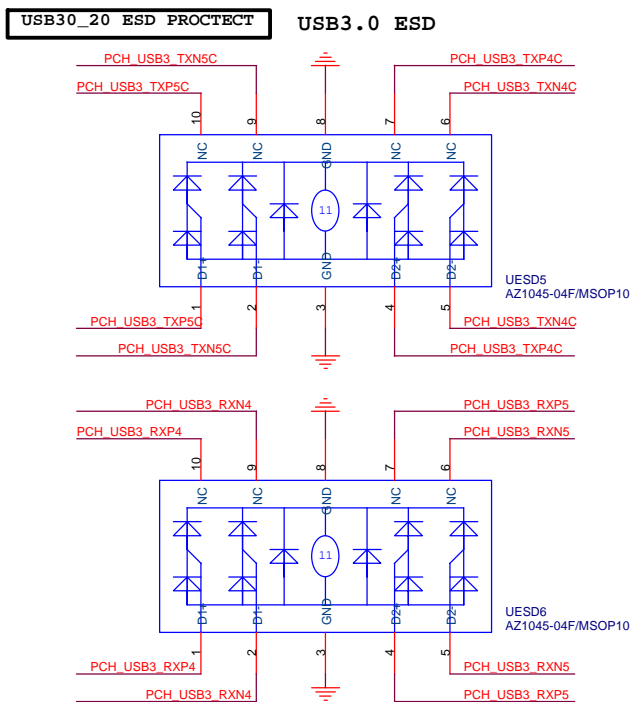
KB/MS



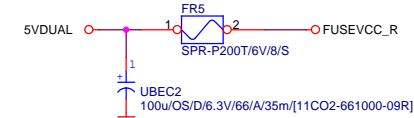
For EMI



USB30_20 ESD PROTECT

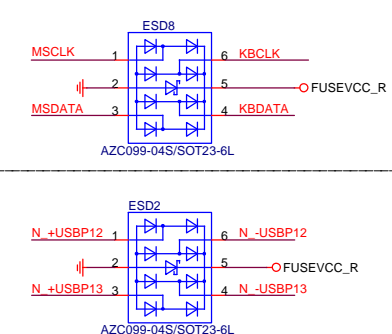


FUSE-0805

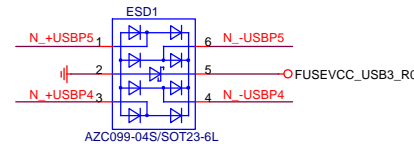


Close to connector

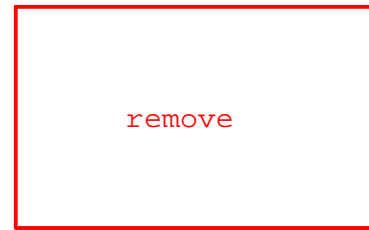
KB/MS ESD



USB2.0 ESD



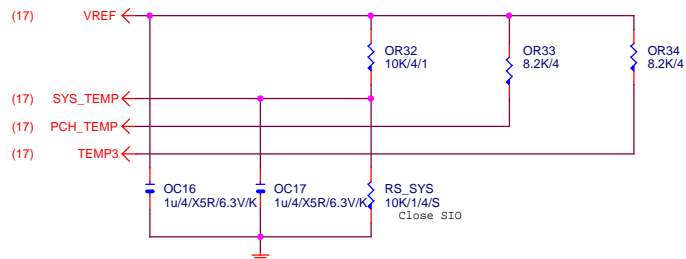
USB POWER PROTECT



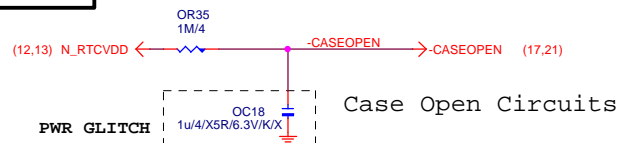
Gigabyte Technology

Title				COM,-RI,KB_USB,USB_ESATA,-PROCHOT
Size	Document Number	GA-B85M-D2V		Rev
Custom				3.0
Date:	Monday, August 25, 2014	Sheet	18	of 33

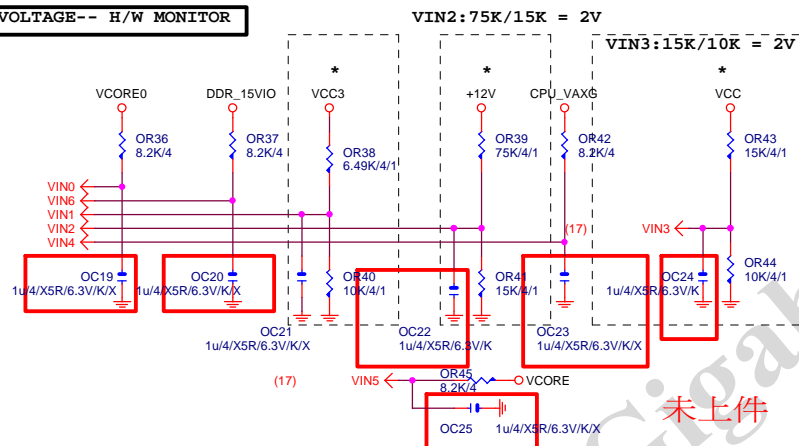
TEMP H/W MONITOR



CASE OPEN



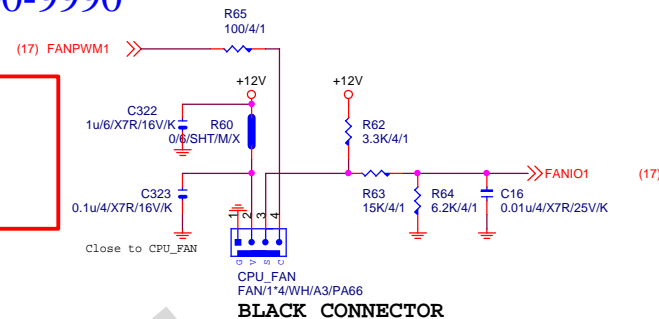
VOLTAGE-- H/W MONITOR



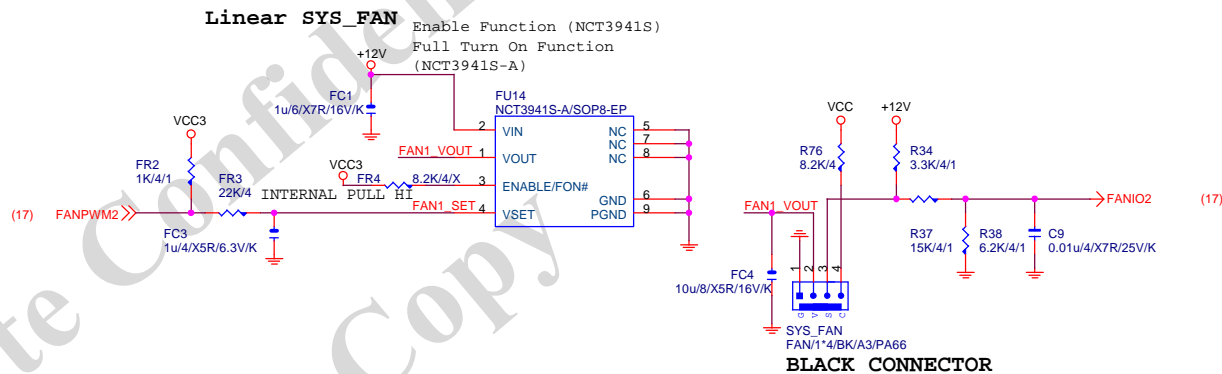
RS1、RS2、RS3 CLOSE CPU
VR MOSFET

CPA SMART FAN

REMOVE



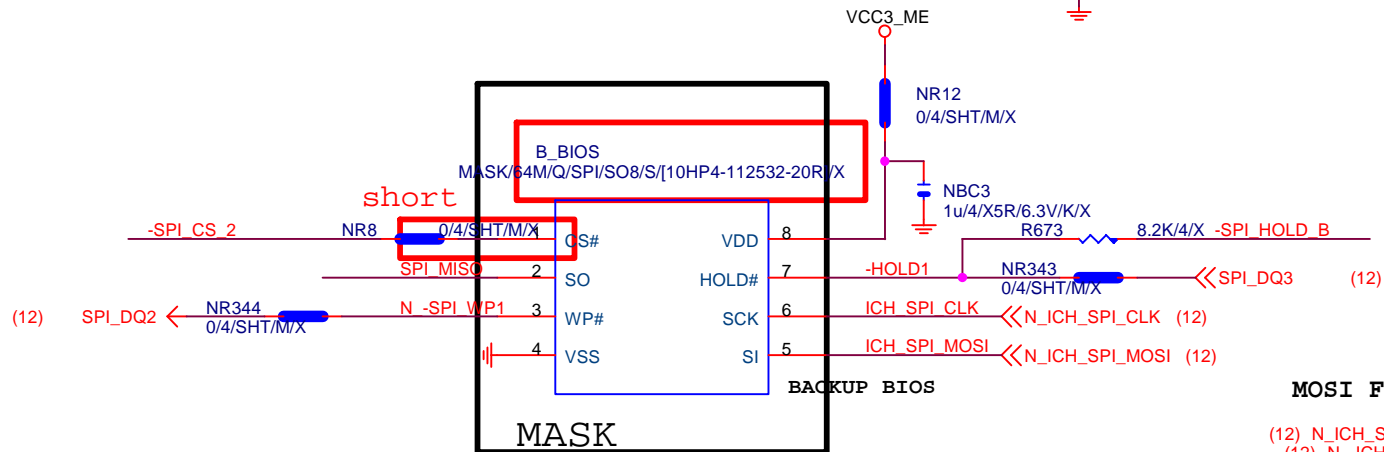
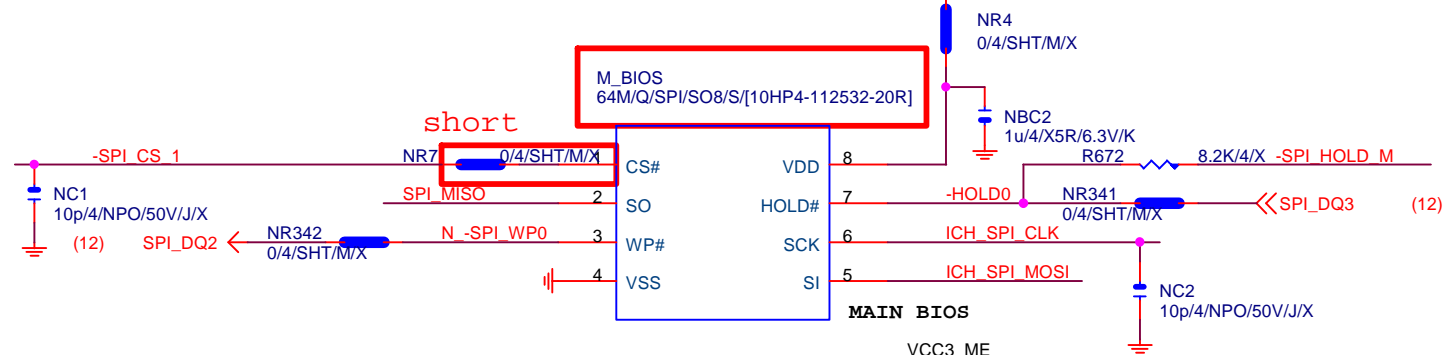
Linear SYS_FAN



-PROHOT

Gigabyte Technology

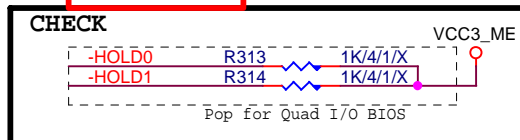
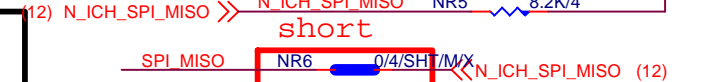
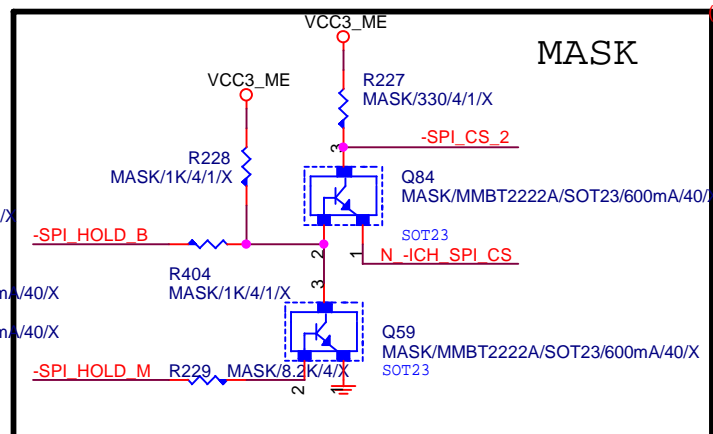
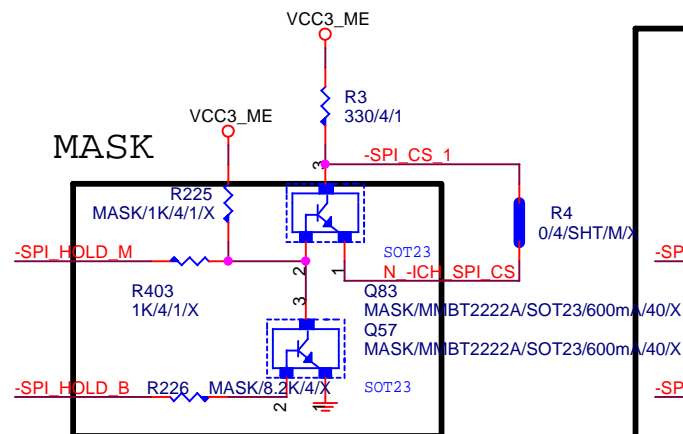
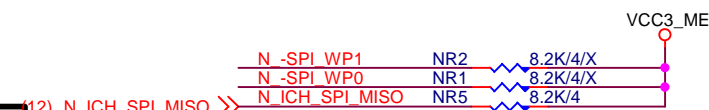
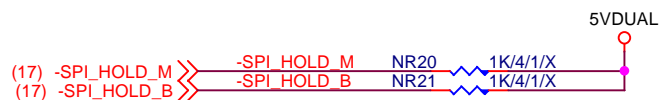
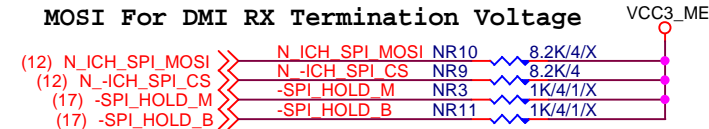
Title			HWM,FAN CTRL,OV
Size	Document Number	GA-B85M-D2V	
Custom			Rev 3.0
Date:	Monday, August 25, 2014	Sheet	19 of 33



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

1 means floating
0 means PD 1K

MOSI For DMI RX Termination Voltage



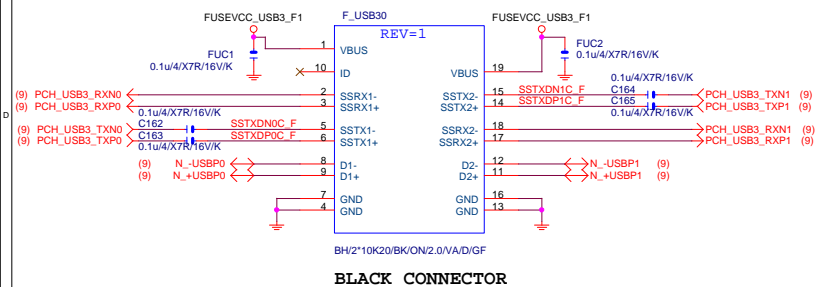
Gigabyte Technology

DUAL BIOS

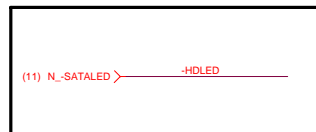
GA-B85M-D2V

Rev 3.0

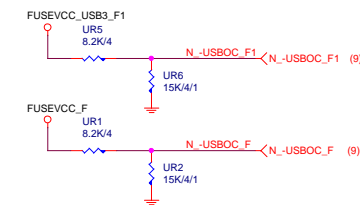
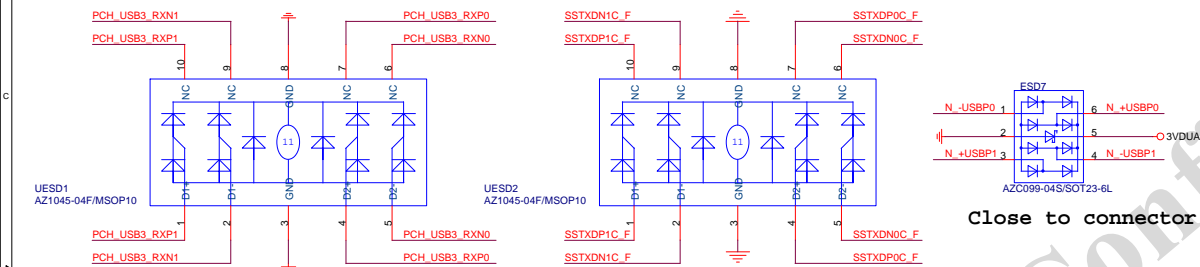
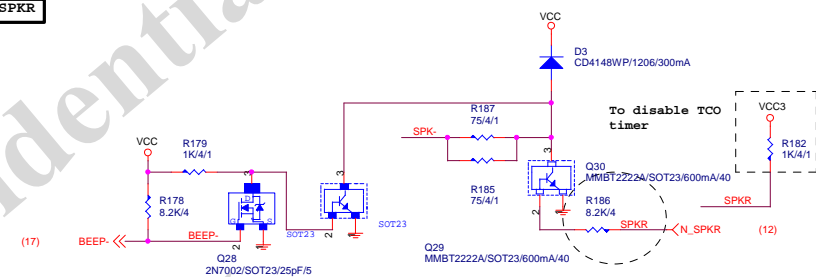
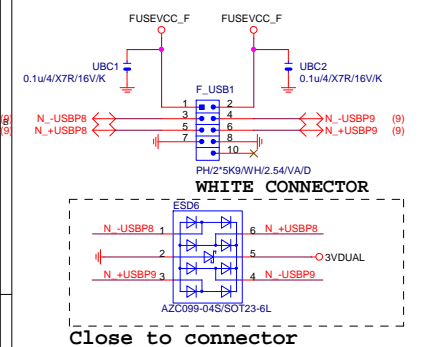
Title	Document Number	Rev
	GA-B85M-D2V	3.0
Date	Monday, August 25, 2014	Sheet 20 of 33

F_USB30

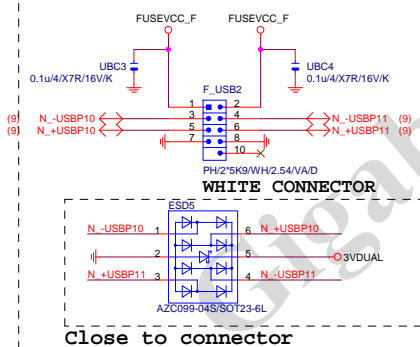
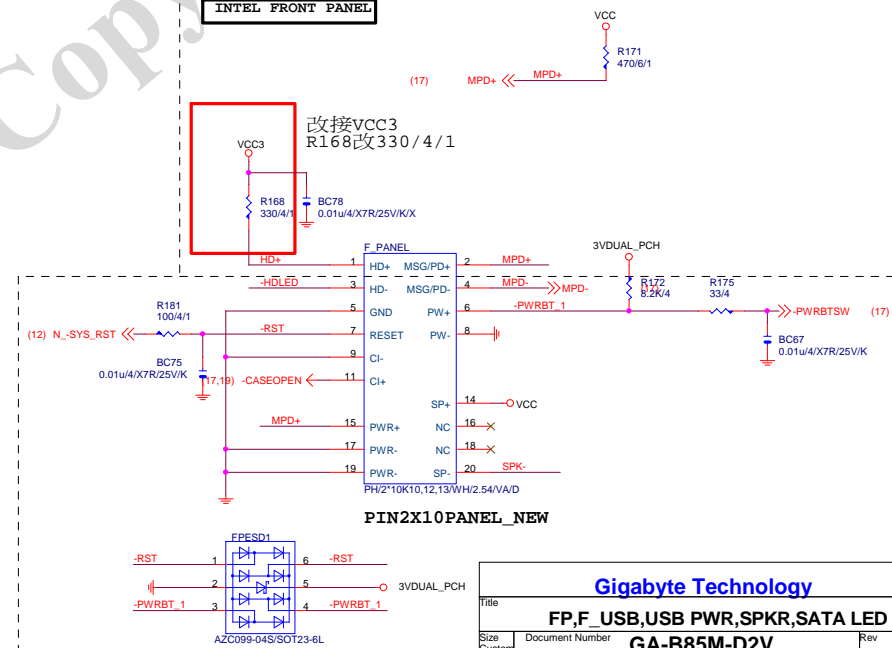
USB3.0 1Port - 1Fuse (3.5A)

SATA_LED

新增

-USB0C_F**F_USB30 ESD PROTECT****SPKR****FRONT USB1**

FUSE-0805
F_USB1, F_USB2 4-Port 2.6A

FRONT USB2**INTEL FRONT PANEL**

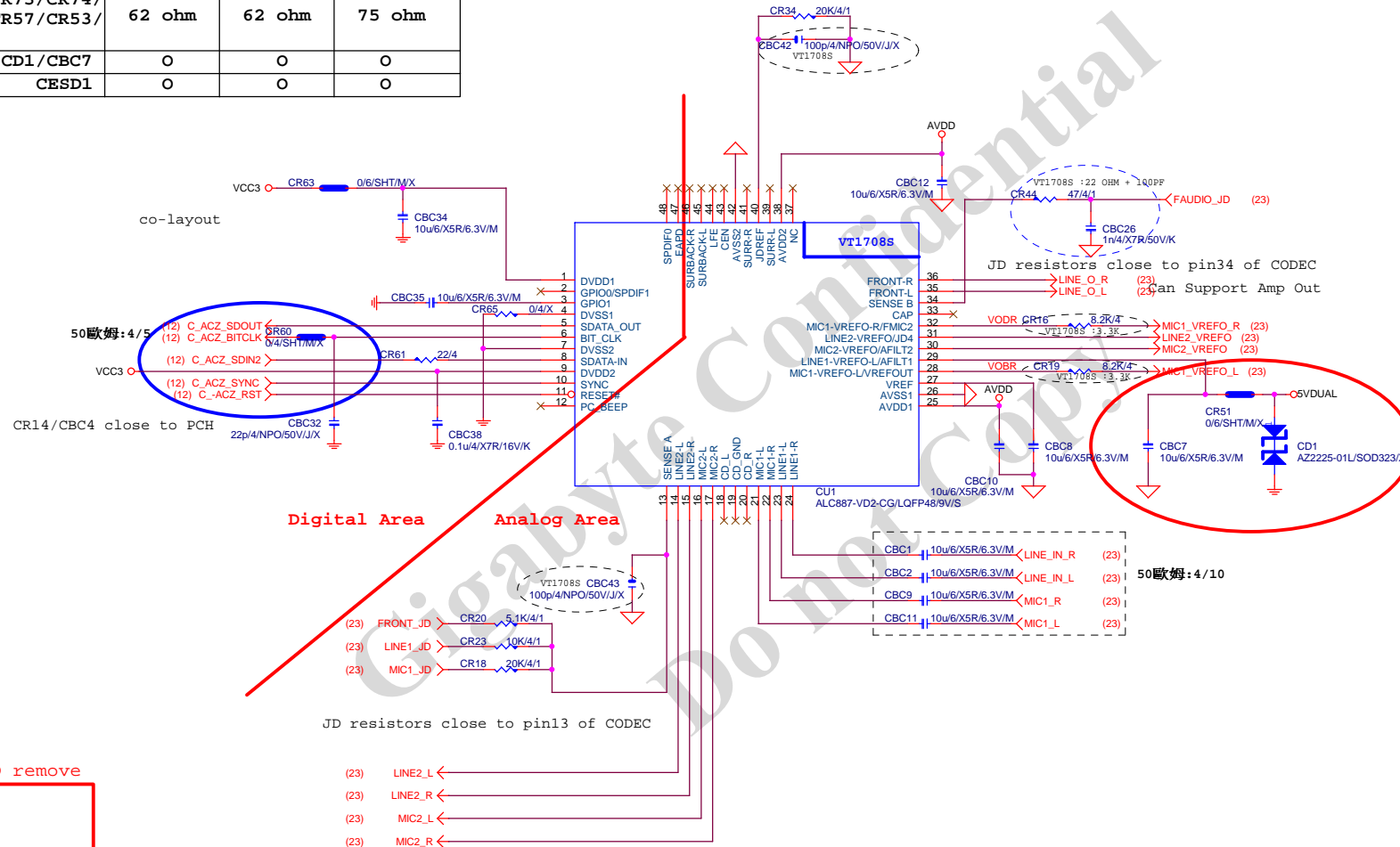
PIN2X10PANEL_NEW

Gigabyte Technology

FP,F_USB,USB PWR,SPKR,SATA LED			
Size	Document Number	GA-B85M-D2V	
Date:	Monday, August 25, 2014	Sheet	21 of 33

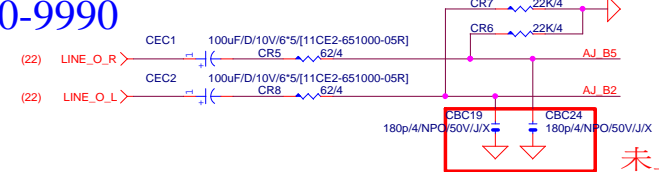
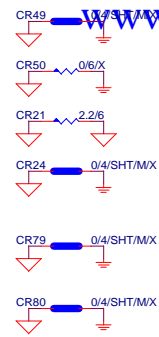
AZALIA CODEC ALC892/ALC887-VD2/VT1708-CE Colay

	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	O	O	O
CESD1	O	O	O



Gigabyte Technology

Title	HD AUDIO ALC887B-VD2/VT1708S/VT2021		
Size	Document Number	GA-B85M-D2V	Rev 3.0
Custom			
Date:	Monday, August 25, 2014	Sheet 22	of 33

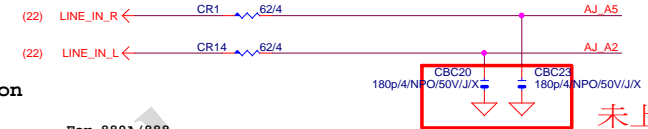


未上件

LINE-IN

Verify MIC function
in LINE-in

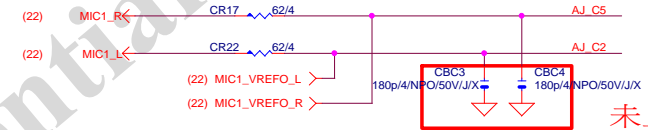
Only reserved for ALC888



未上件

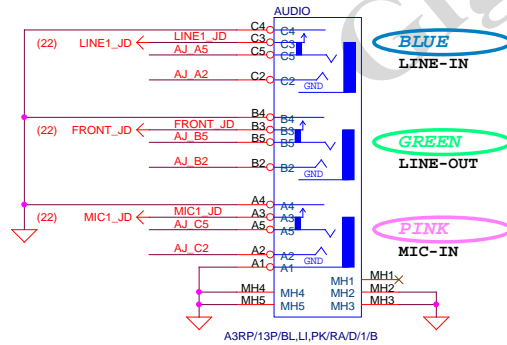
For 889A/888

MIC-IN



未上件

SPDIF_OUT

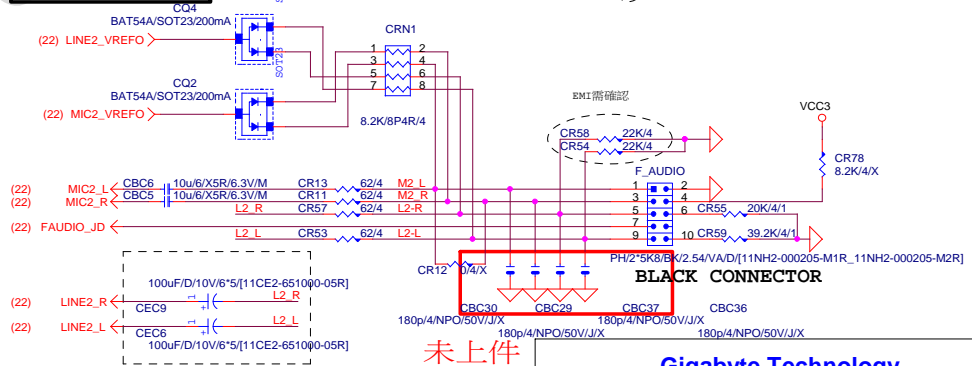


BLUE
LINE-IN

GREEN
LINE-OUT

PINK
MIC-IN

AZALIA FRONT PANEL

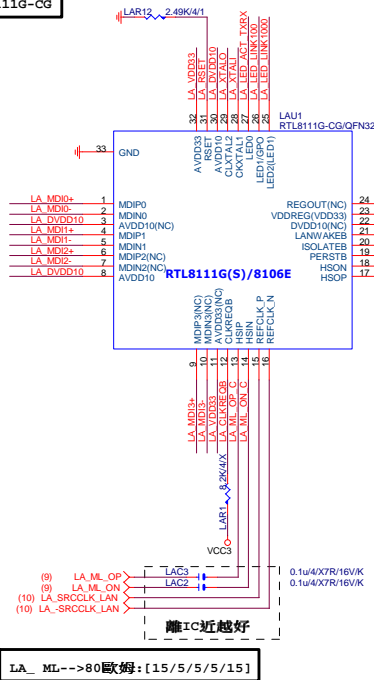


未上件

Gigabyte Technology

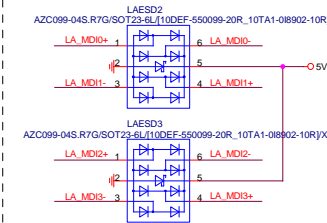
Title		
AUDIO JACK		
Size	Document Number	Rev
Custom	GA-B85M-D2V	3.0
Date:	Monday, August 25, 2014	Sheet 23 of 33

LAN RTL8111G-CG

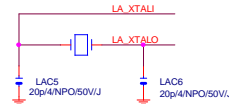


SRCLK-->50歐姆:[18/4/10/4/18]

MDI ESD預留28KV *



LAN POWER



(CLOSE LAU1 PIN22,30,3,8)

LABC2:1U CLOSE PIN22 [REALTEK REQ]

(CLOSE LAU1 PIN23)

(CLOSE LAU1 PIN:11,32)

LABC18,27:CLOSE PIN11[REALTEK SURGE]

LABC14,20:CLOSE PIN32[REALTEK SURGE]

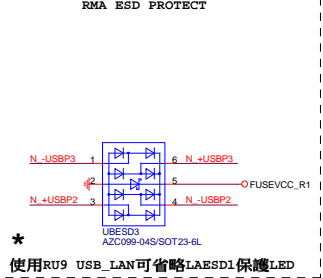
NOTE:
RT8106E:PIN3,11,22,24-->NC
LABC2LABC3,LABC5,LABC18,LABC27-->N/A

BOM NOTICE *

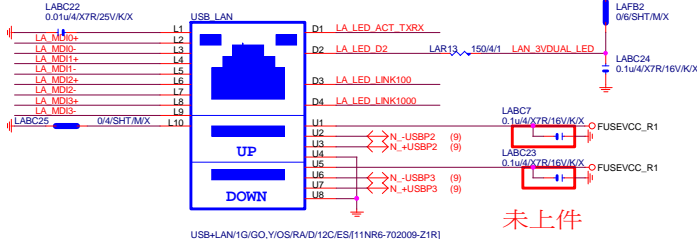
料號 規格 廠商
11NR6-702009-96R 1G LAN (12core) UDE(RU9 ESD+)
[LED獨立走線,可省略外加AZC099料件LAESD1]

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

USB LAN CONNECTOR



LA_MDI-->100歐姆:[20/4/8/4/20]



未上件

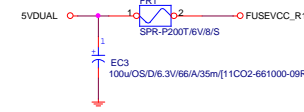
USB X3 POWER

EMI SHORT PAD

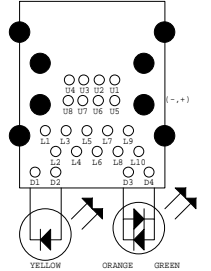
PS:視EMI需求

USB2.0 PWR

FUSE-0805
KB_MS_USB 4-Port 2.6A



Close to connector



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

BOM NOTICE *

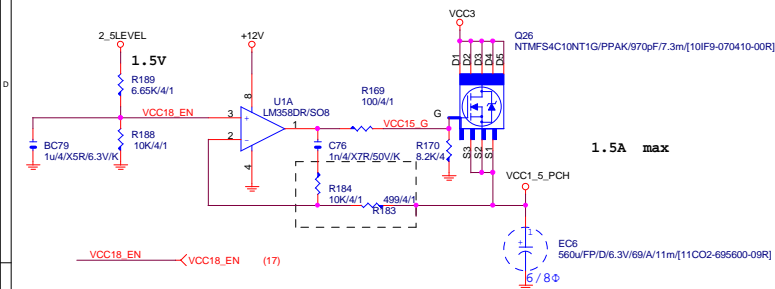
料號 規格 廠商
11NR6-702009-96R 1G LAN (12core) UDE(RU9 ESD+)
[LED獨立走線,可省略外加AZC099料件LAESD1]

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

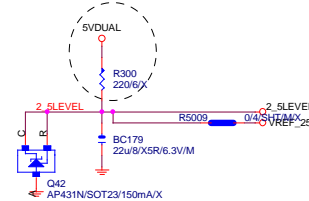
Gigabyte Technology

Title		Realtek RTL8111G	
Size	Document Number	GA-B85M-D2V	
Custom		Rev 3.0	
Date	Monday, August 25, 2014	Sheet	24 of 33

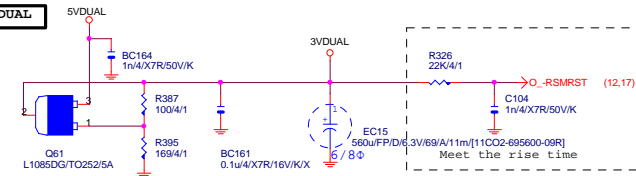
VCC1_5_PCH



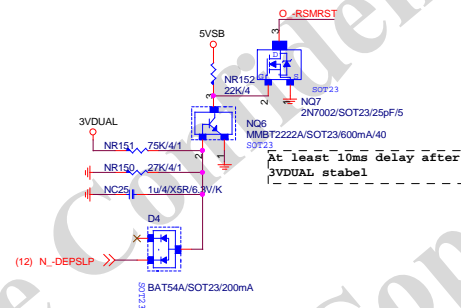
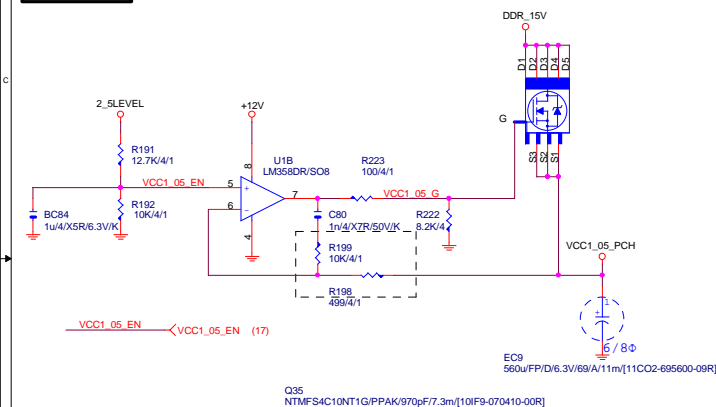
ERP



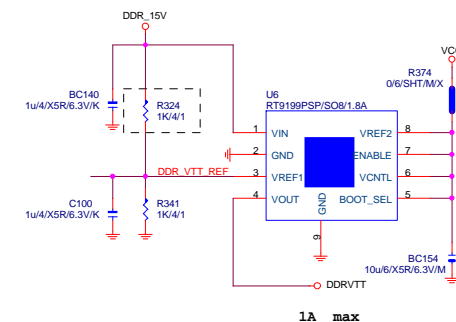
3VDUAL



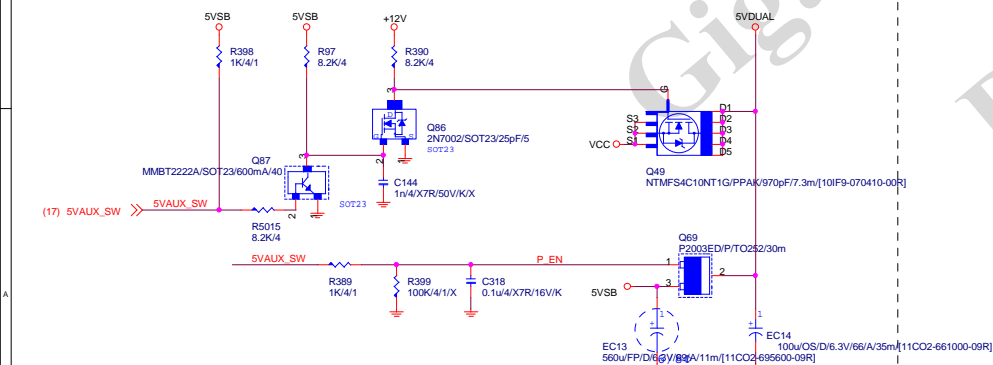
VCC1_05_PCH



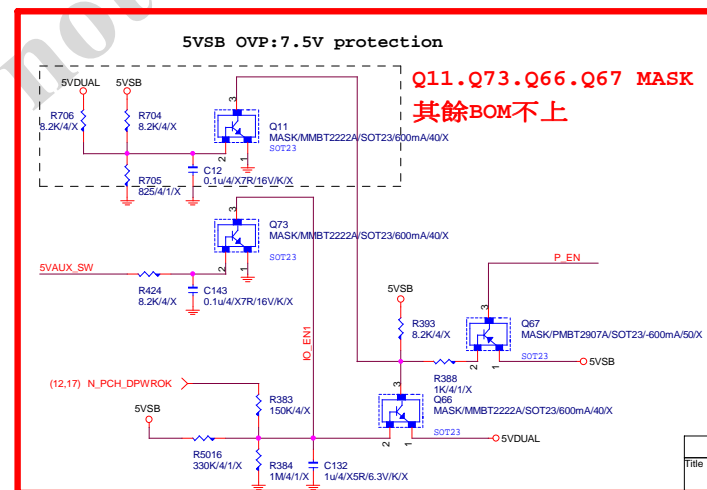
DDRVT



5VDUAL

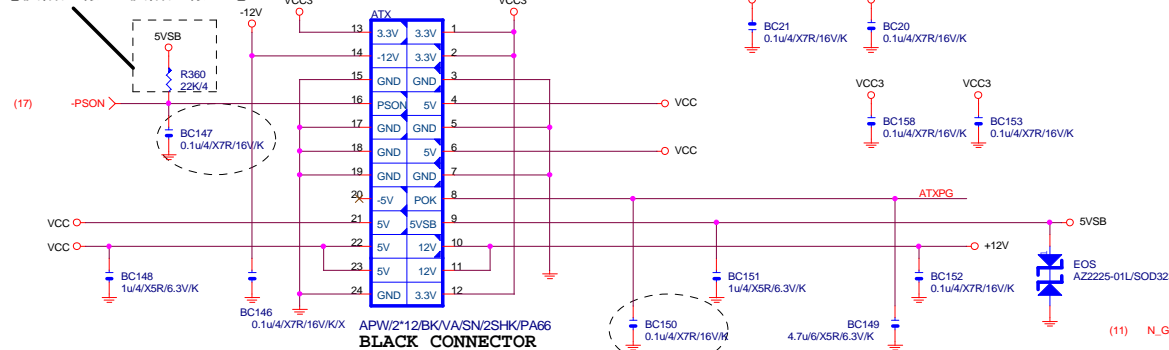


5VDUAL SHORT PROTECT

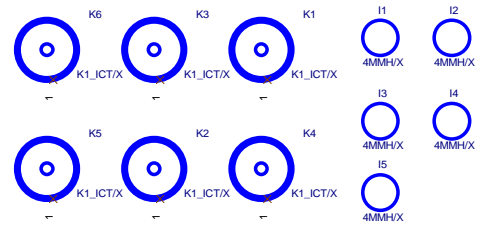
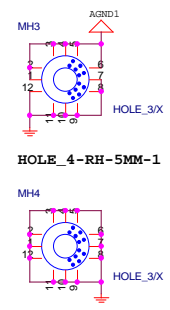
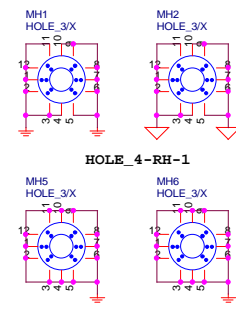


ATXX24 POWER CONNECTOR

【技術通報R&D技術通報155】



BLACK CONNECTOR



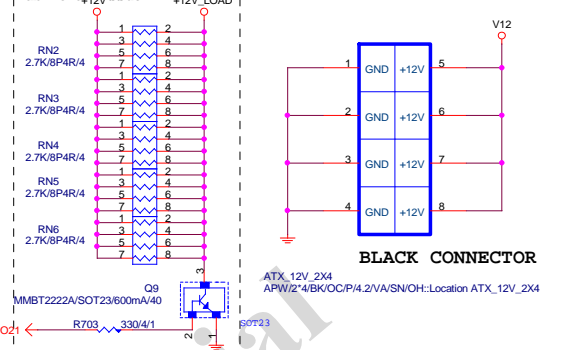
To prevent the 5VSB under loading when boot

TPM

www.xinxunwei.com 400-800-0900

ATXX4 POWER CONNECTOR

【技術通報R&D技術通報158】

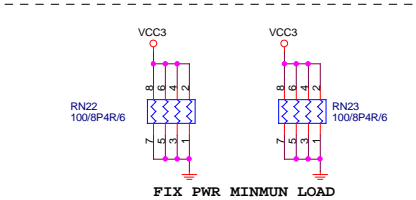
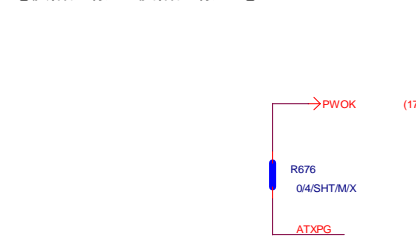


BLACK CONNECTOR

ATX 12V 2X4 APW/2 4BK/OC/P/4.2V/A/SN/OH: Location ATX_12V_2X4

PWOK PATCH

【技術通報R&D技術通報154】

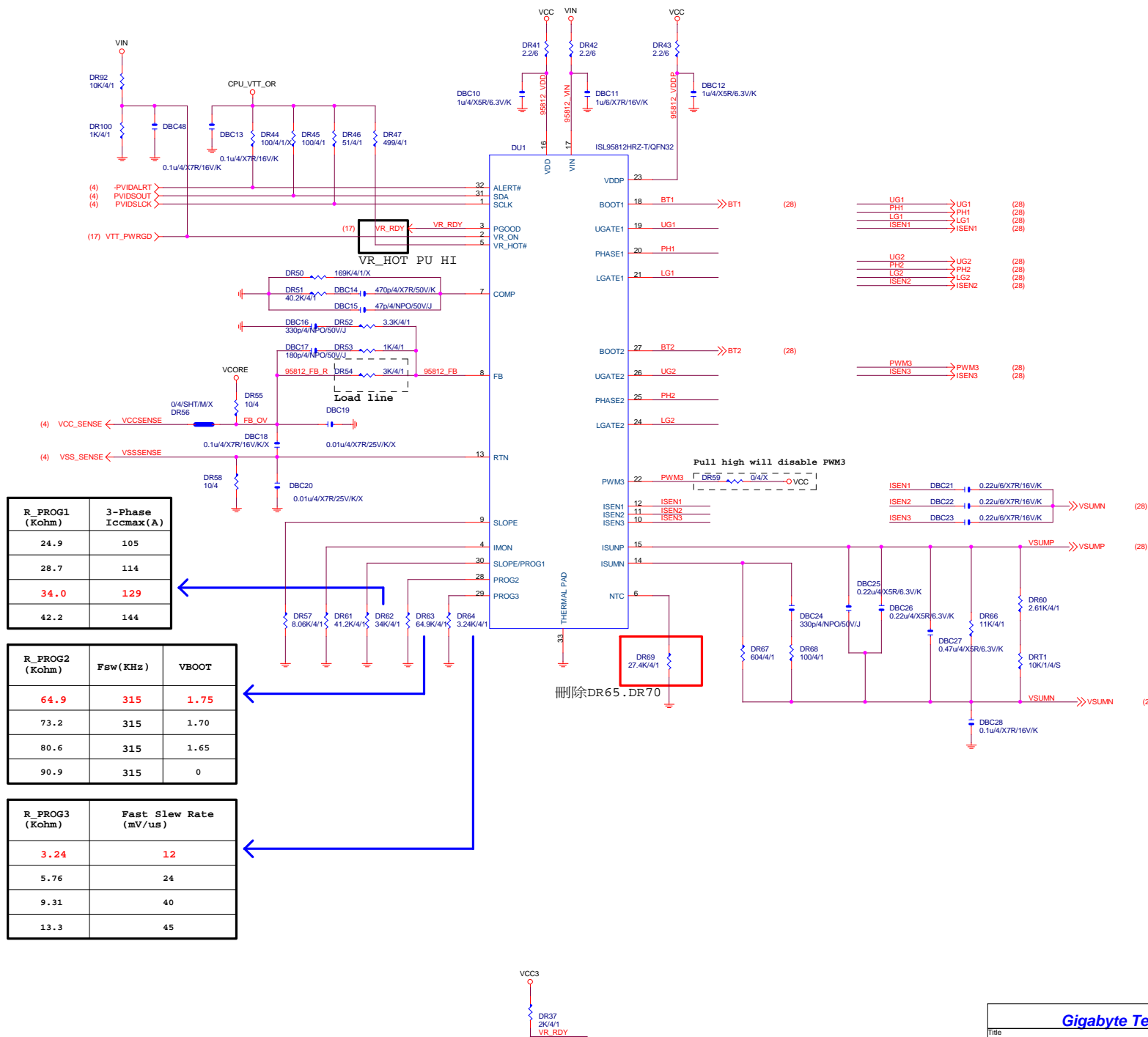


Gigabyte Technology

ATX CONNECTOR

GA-B85M-D2V

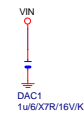
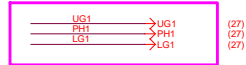
Title	Document Number	Rev
Size	GA-B85M-D2V	3.0
Custom		
Date: Monday, August 25, 2014	Sheet 26 of 33	



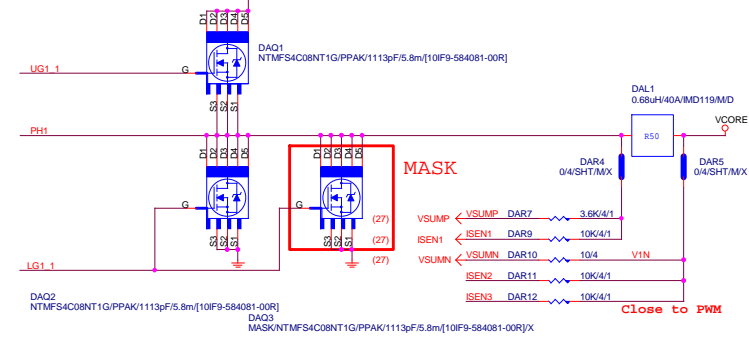
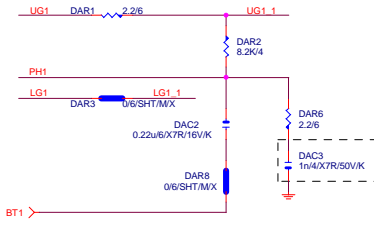
Gigabyte Technology

File		
CPU CORE VR-1		
Size	Document Number	GA-B85M-D2V
Custom		Rev 3.0
Date	Monday, August 25, 2014	Sheet 27 of 33

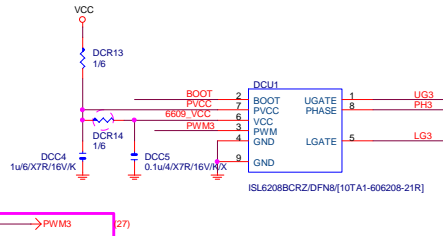
PHASE 1



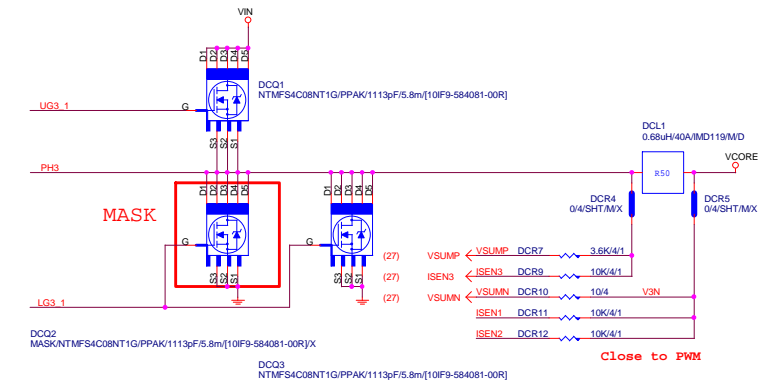
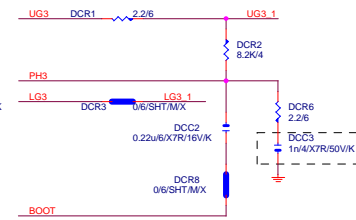
[1]



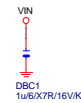
PHASE 3



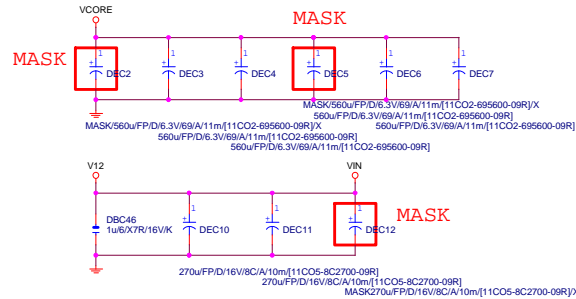
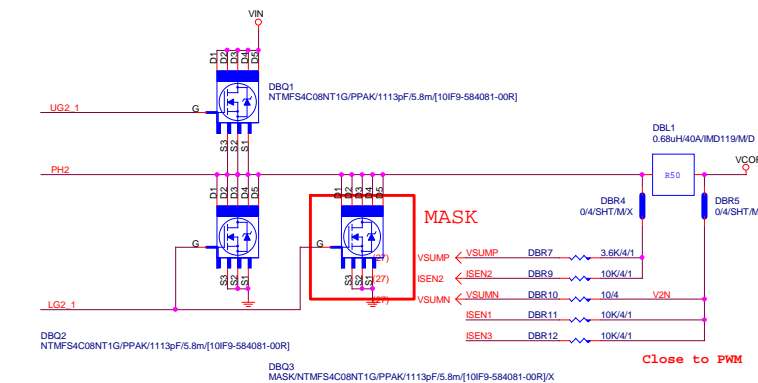
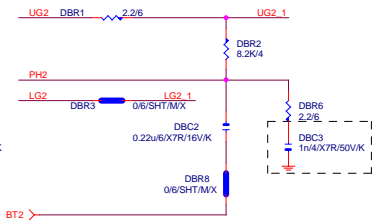
[3]



PHASE 2

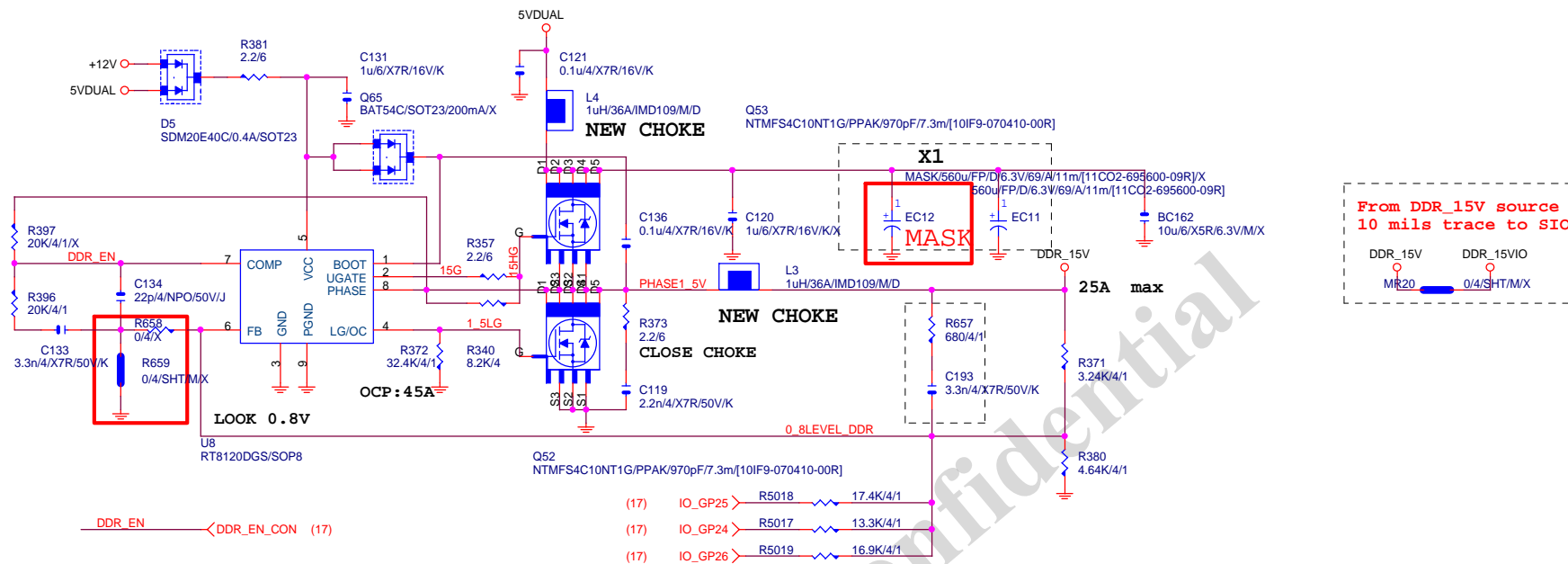


[2]

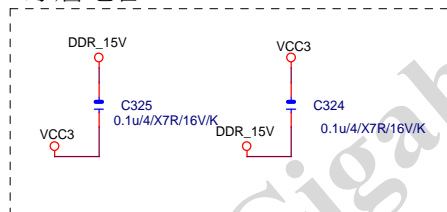


Gigabyte Technology

Title		CPU CORE VR-2	
Size	Document Number	GA-B85M-D2V	
Custom		Rev 3.0	
Date	Monday, August 25, 2014	Sheet	28 of 33



穿層電容



VIN=5V,VOUT=1.5V,IOUT=25A,PHASE=1

IRMS=11.45A

560u/FP/D/6.3V/68/8m RIPPLE CURRENT=4.7A

Coefficient=1.7(85°C), 1(105°C)

VIN Ripple current=4.7X1.7=7.99A(85°C)

-->故固態電容須 $2 \times 7.99 = 15.98 > 11.45A$

$$\text{Rocset} = (\text{Iocp} * \text{Lgate}, \text{rdson}) / \text{Iocset}$$

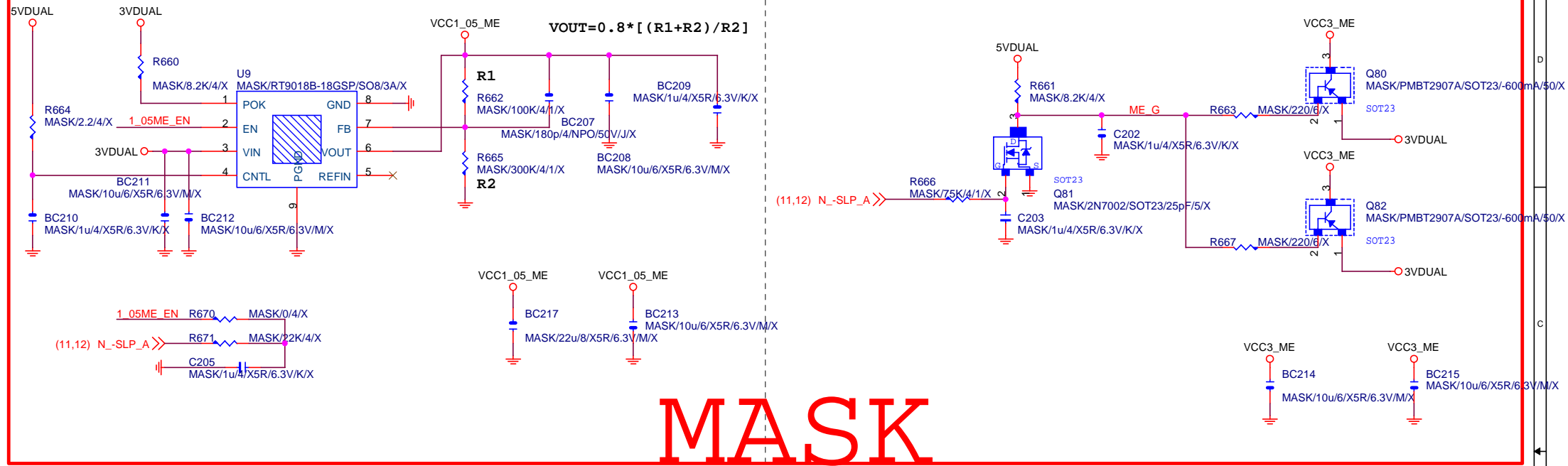
$$R_{ocset} = (45A * 6.7mOhm) / 10uA = 30K$$

Iocset=10uA

Gigabyte Technology

Title			
DDR POWER			
Size Custom	Document Number		Rev
	GA-B85M-D2V		3.0
Date:	Monday, August 25, 2014	Sheet	29 of 33

【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

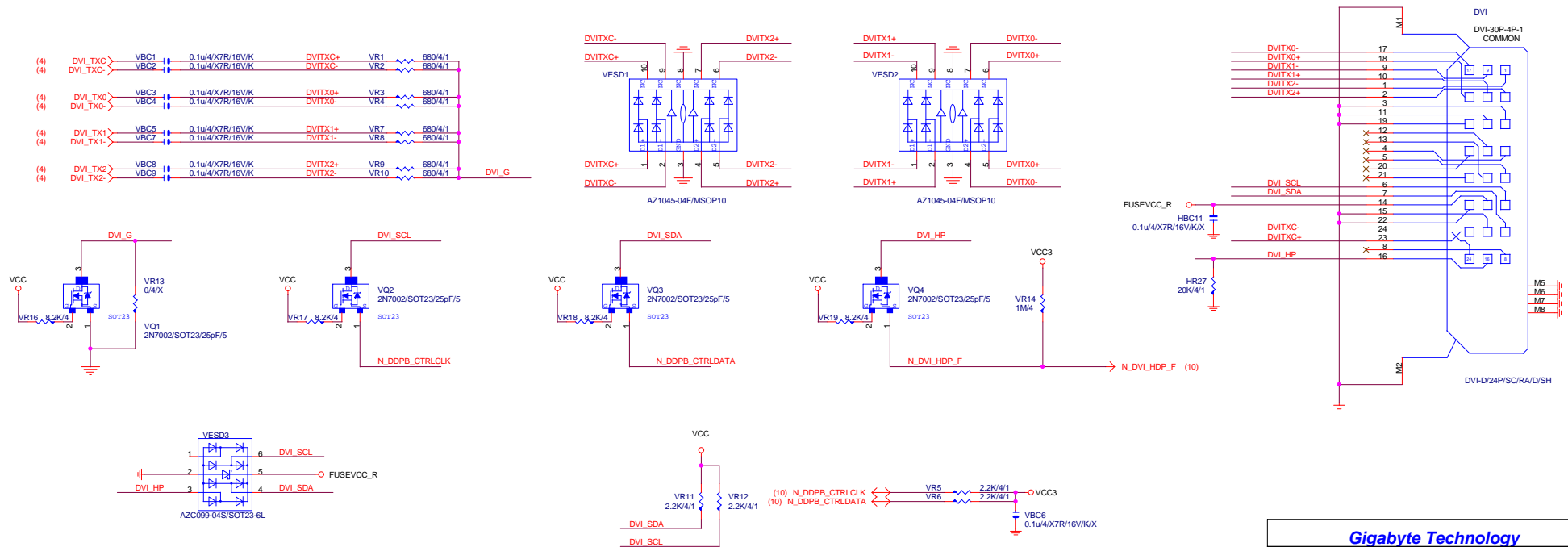


MASK

Gigabyte Technology

Title			LPT	
Size	Document Number	GA-B85M-D2V		Rev
Custom				3.0
Date:	Monday, August 25, 2014	Sheet	30	of 33

DVI



Gigabyte Technology

File		
DVI		
Size	Document Number	GA-B85M-D2V
Custom		Rev 3.0
Date	Monday, August 25, 2014	Sheet 31 of 33

Gigabyte Confidential
Do not Copy

Gigabyte Technology			
Title			
ITE IT8892E			
Size	Document Number	Rev	
Custom	GA-B85M-D2V	3.0	
Date:	Monday, August 25, 2014	Sheet	32 of 33
		1	

