

Model Name: GA-B85M-D2V

Revision 2.01

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

Size Custom	Document Number	GA-B85M-D2V	Rev 2.01
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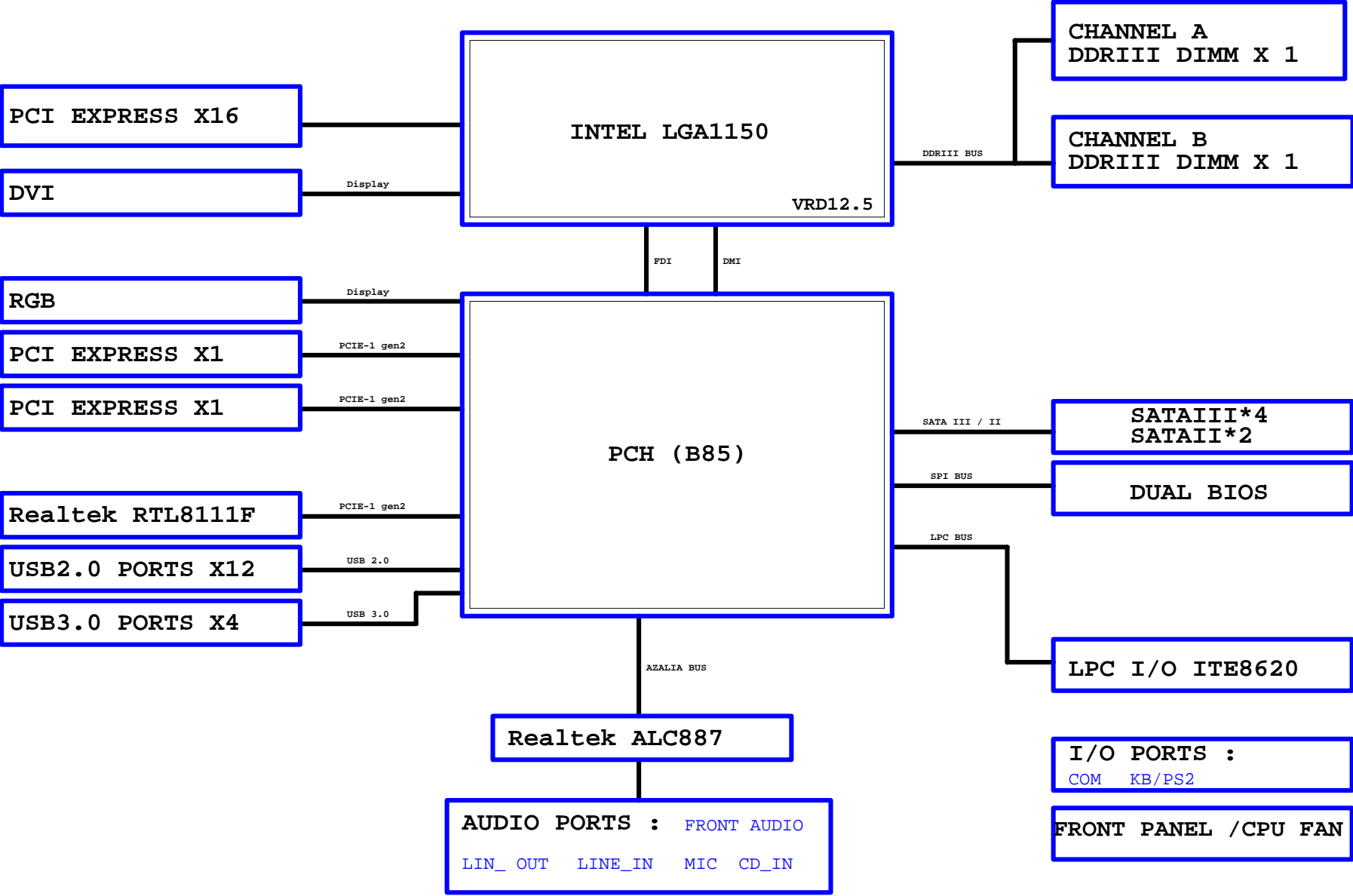
## Component value change history

## Circuit or PCB layout change

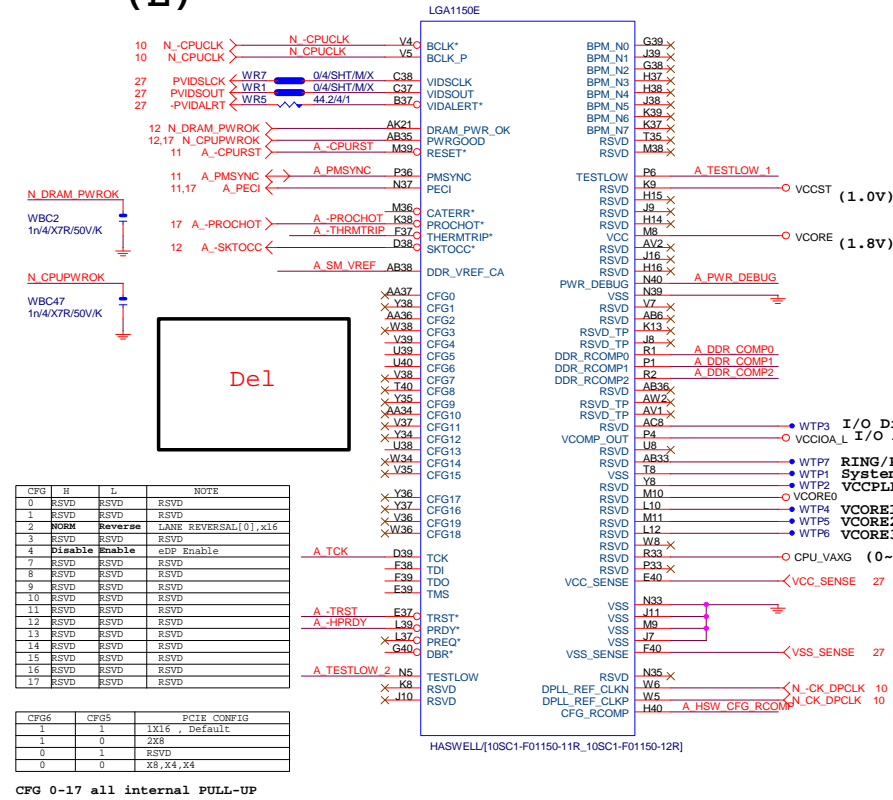
PCB : S4VNB ( 精成,全成信,伊利安達 )

			
Title			
BOM & PCB MODIFY HISTORY			
Size Custom	Document Number	GA-B85M-D2V	Rev 2.01
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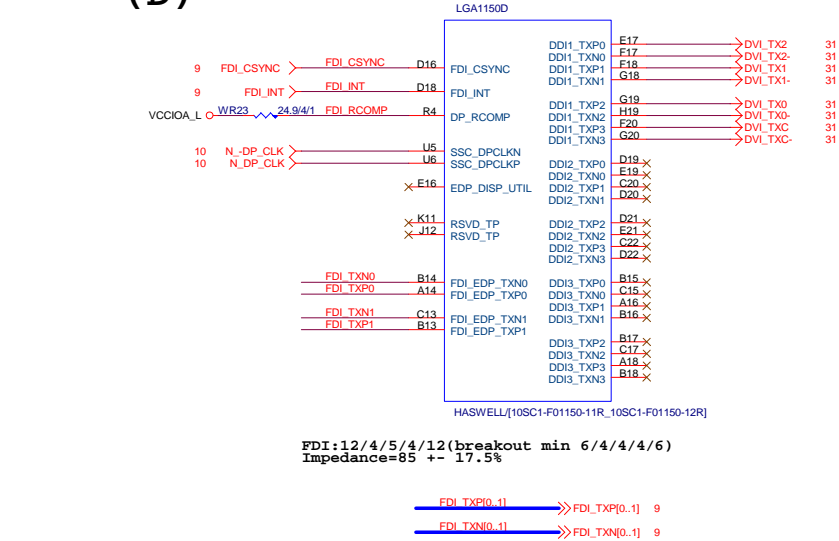
BLOCK DIAGRAM



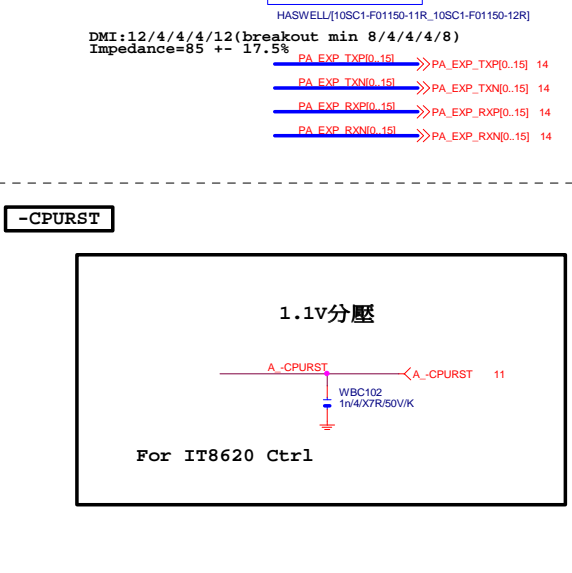
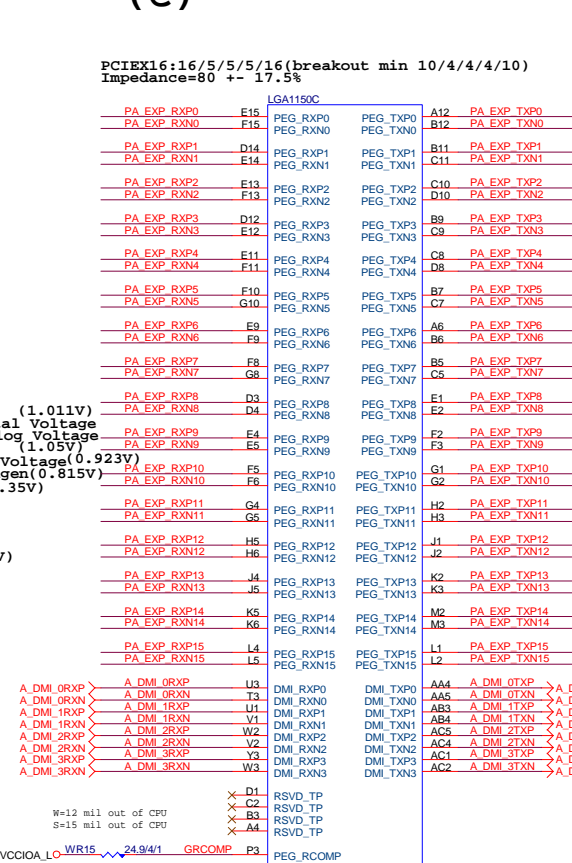
# LGA1150 (E)



# LGA1150 (D)



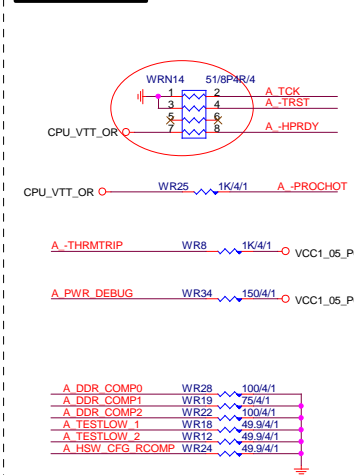
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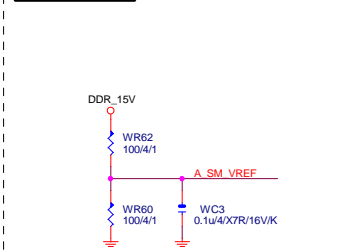
# CPU SVID



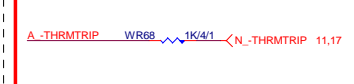
# CPU PU/PD



# SM REF



# 新增



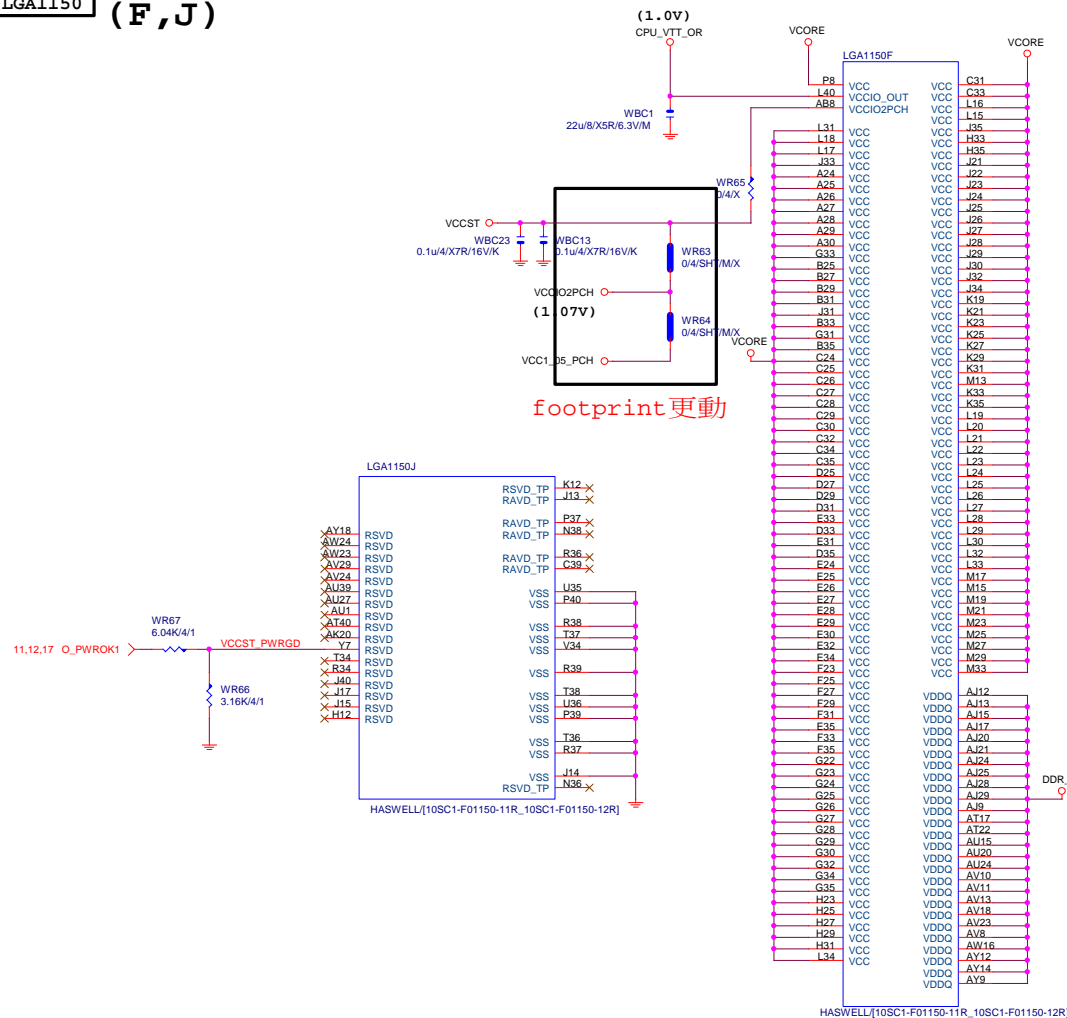
# Gigabyte Technology

CPU LGA1150-A			
Size	Document Number	GA-B85M-D2V	
Custom			Rev 2.0
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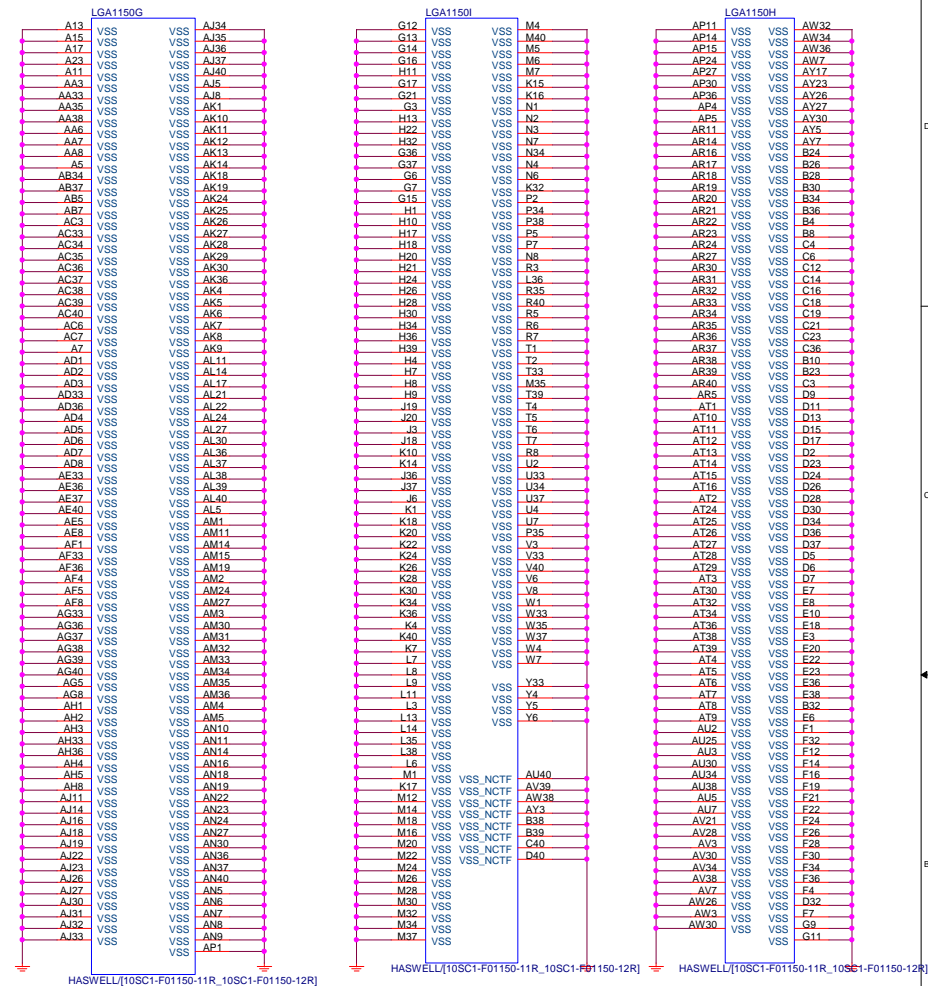
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MAAA1	AV16	DDR0_MA2	DDR0_D02	AF38	MDA2
MAAA2	AU16	DDR0_MA3	DDR0_D03	AF39	MDA3
MAAA3	AW17	DDR0_MA4	DDR0_D04	AD37	MDA4
MAAA4	AU17	DDR0_MA5	DDR0_D05	AD40	MDA5
MAAA5	AW18	DDR0_MA6	DDR0_D06	AE37	MDA6
MAAA6	AV17	DDR0_MA7	DDR0_D07	AF40	MDA7
MAAA7	AT18	DDR0_MA8	DDR0_D08	AH40	MDA9
MAAA8	AU18	DDR0_MA9	DDR0_D09	AH39	MDA10
MAAA9	AT19	DDR0_MA10	DDR0_D10	AK38	MDA11
MAAA10	AW11	DDR0_MA11	DDR0_D11	AK39	MDA12
MAAA11	AV19	DDR0_MA12	DDR0_D12	AH37	MDA13
MAAA12	AU19	DDR0_MA13	DDR0_D13	AH38	MDA14
MAAA13	AT20	DDR0_MA14	DDR0_D14	AK40	MDA15
MAAA14	AW21	DDR0_MA15	DDR0_D15	AM40	MDA17
MAAA15	AU21	DDR0_ODT0	DDR0_ODT0	AM39	MDA21
MODT_A0	AW10	DDR0_ODT1	DDR0_ODT1	AP38	MDA18
MODT_A1	AY8	DDR0_ODT2	DDR0_ODT2	AP39	MDA19
	AW9	DDR0_ODT3	DDR0_ODT3	AM37	MDA20
	AW8			AM38	MDA16
	AW33	DDR0_ECC0	DDR0_ECC0	AM26	MDA22
	AW33	DDR0_ECC1	DDR0_ECC1	AM25	MDA23
	AU31	DDR0_ECC2	DDR0_ECC2	AP25	MDA24
	AW31	DDR0_ECC3	DDR0_ECC3	AP28	MDA25
	AU33	DDR0_ECC4	DDR0_ECC4	AL26	MDA26
	AT33	DDR0_ECC5	DDR0_ECC5	AL25	MDA27
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	AW31	DDR0_ECC7	DDR0_ECC7	AR25	MDA29
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		DDR0_CS_N1	DDR0_CS_N1	AK18	MDA31
		DDR0_CS_N2	DDR0_CS_N2	AK19	MDA32
		DDR0_CS_N3	DDR0_CS_N3	AK20	MDA33
		DDR0_CLK_P0	DDR0_CLK_P0	AK21	MDA34
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		DDR0_CLK_P2	DDR0_CLK_P2	AK23	MDA36
		DDR0_CLK_P3	DDR0_CLK_P3	AK24	MDA37
		DDR0_CLK_N0	DDR0_CLK_N0	AK25	MDA38
		DDR0_CLK_N1	DDR0_CLK_N1	AK26	MDA39
		DDR0_CLK_N2	DDR0_CLK_N2	AK27	MDA40
		DDR0_CLK_N3	DDR0_CLK_N3	AK28	MDA41
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		DDR0_DQ1	DDR0_DQ1	AK30	MDA43
		DDR0_DQ2	DDR0_DQ2	AK31	MDA44
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**LGA1150 (F,J)**

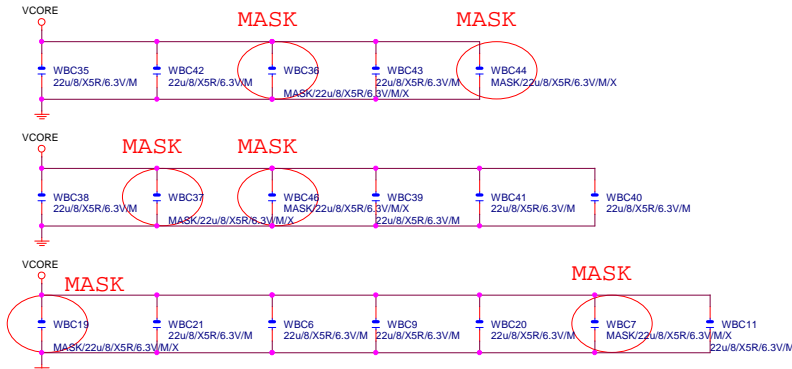


LGA1155 (G,H,I)



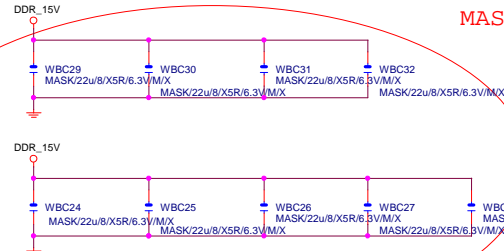
VCore CAP

(x18)



DDR CAP

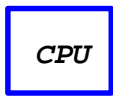
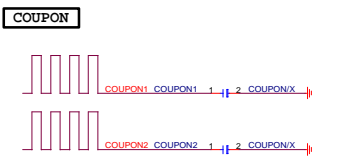
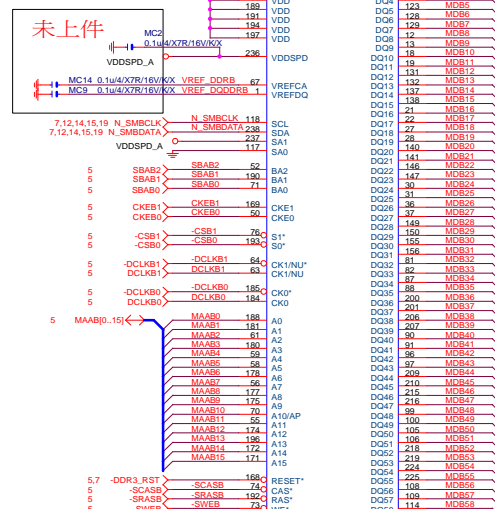
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## Gigabyte Technology

Title			
CPU LGA1150-C			
Size	Document Number		Rev
Custom	GA-B85M-D2V		2.01
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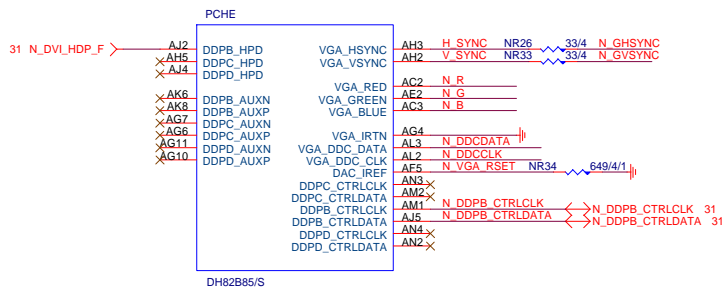


<b>Gigabyte Technology</b>			
Title			
<b>DDRIII CHANNEL B</b>			
Size	Document Number	<b>GA-B85M-D2V</b>	Rev
Custom			<b>2.01</b>
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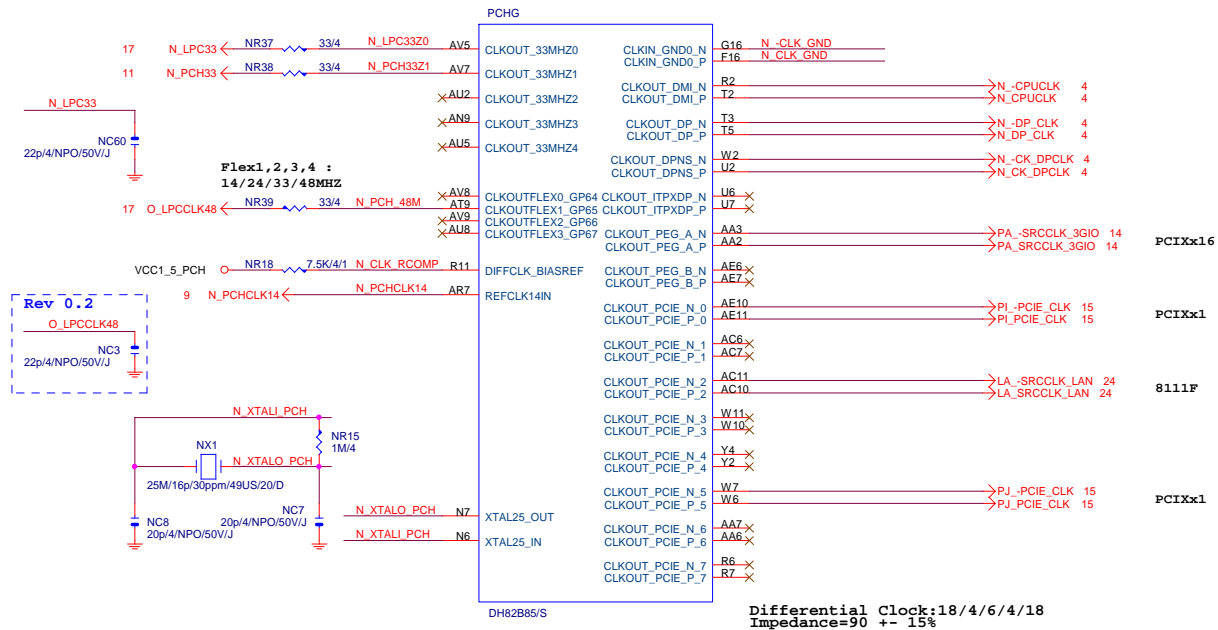




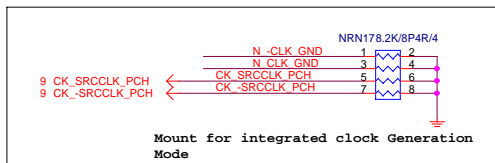
# PCH (E)



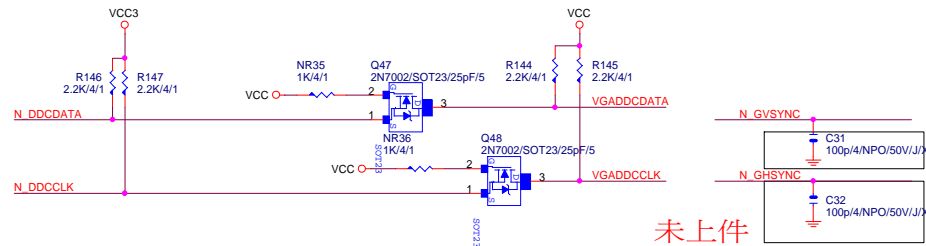
# PCH (G)



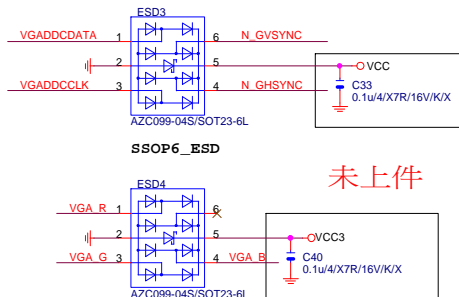
## PCH CLK PD



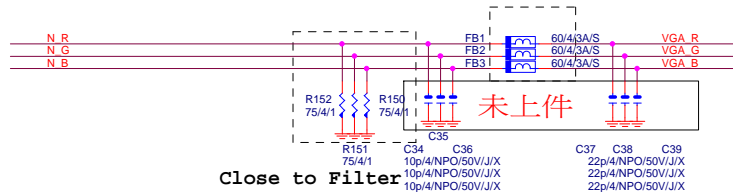
## VGA DDC



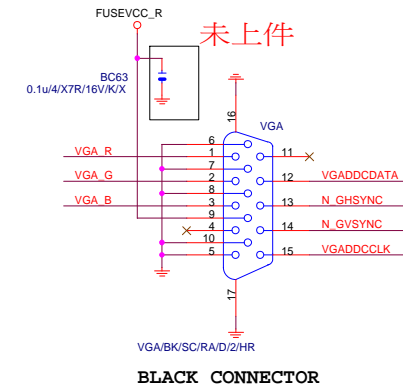
## VGA ESD



## VGA DDC



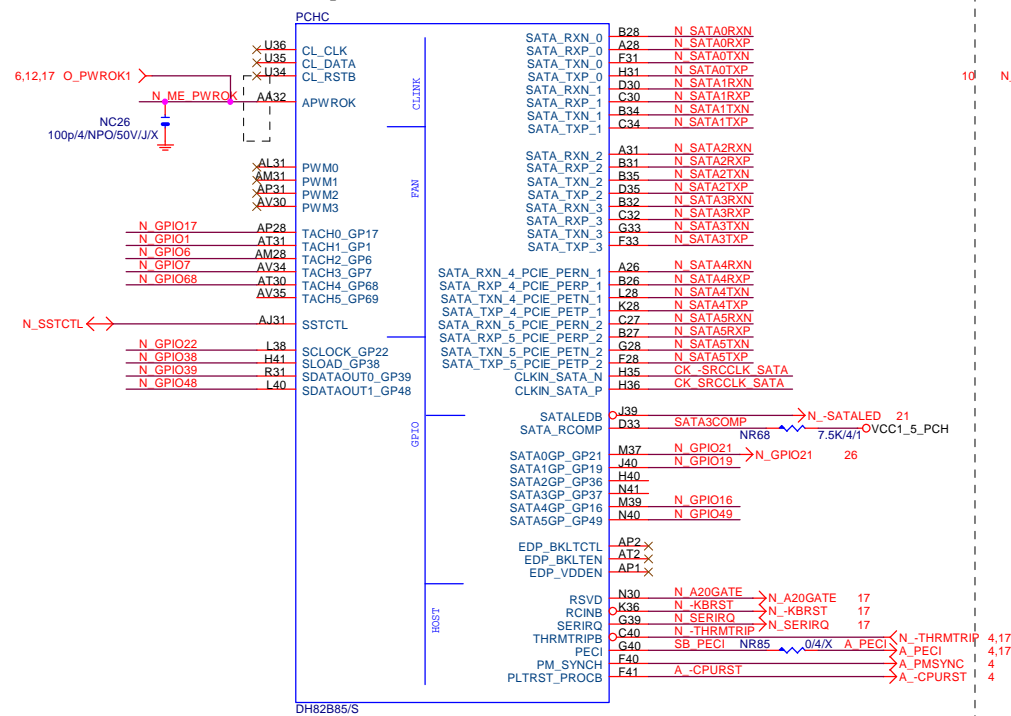
## VGA CONNECTOR



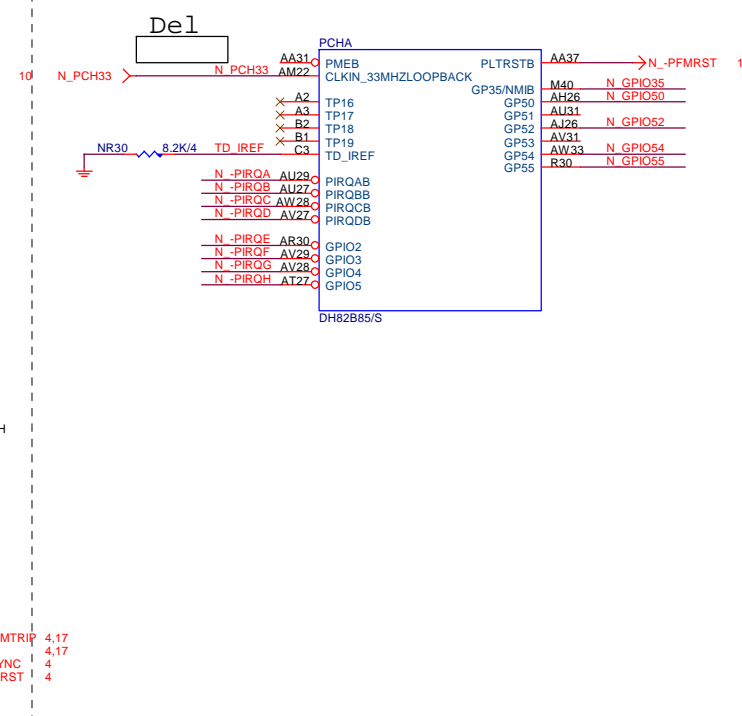
Gigabyte Technology			
PCH DISPLAY_CLK BUFFER			
GA-B85M-D2V			
Title	Document Number	Rev	2.01
Size	Custom		
Date:	Monday, June 23, 2014	Sheet	10 of 33

PCH (C)

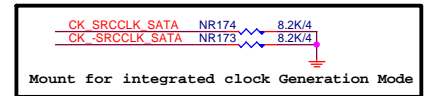
SATA3 : 20/7.5/4.5/7.5/20 (breakout min 8/4/4/4/8)  
Impedance=90 +- 17.5%  
SATA2 : 15/7.5/4.5/7.5/15 (breakout min 8/4/4/4/8)  
Impedance=90 +- 17.5%



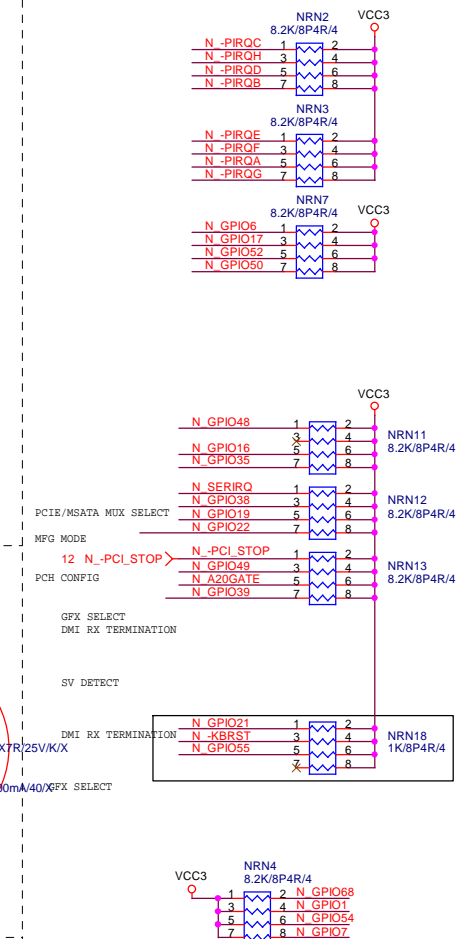
PCH (A)



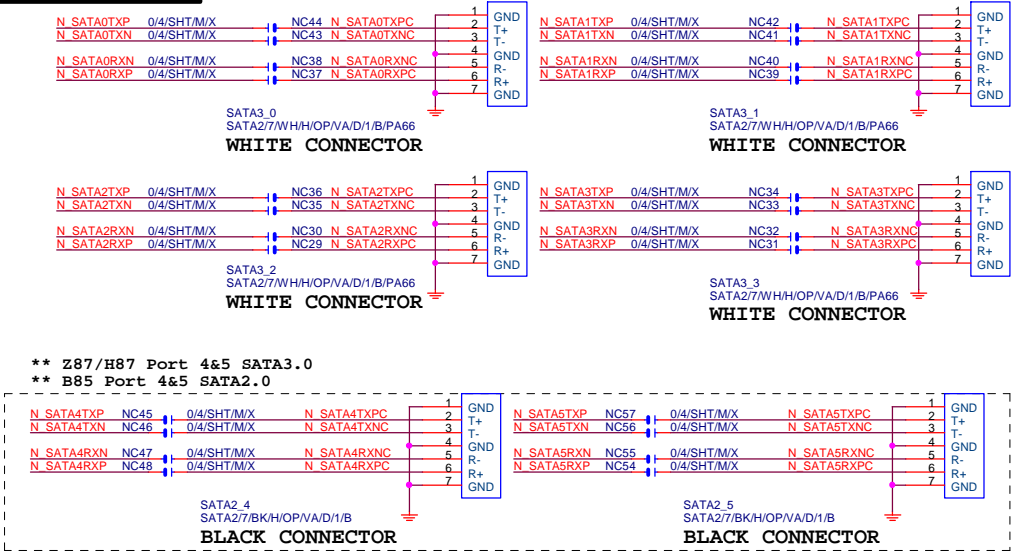
PCH CLK PD



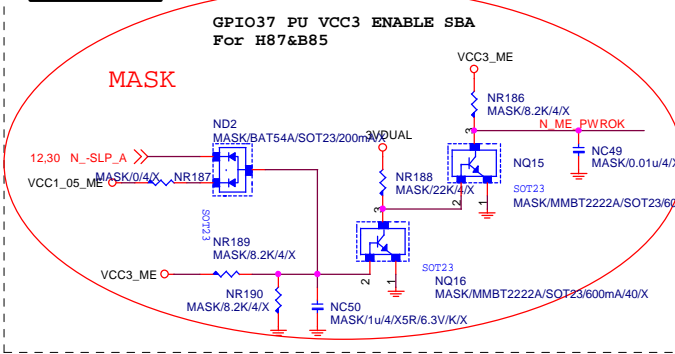
PCH PU/PD



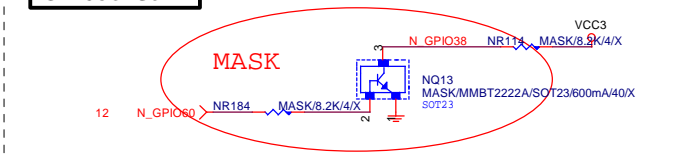
SATA CONNECTOR



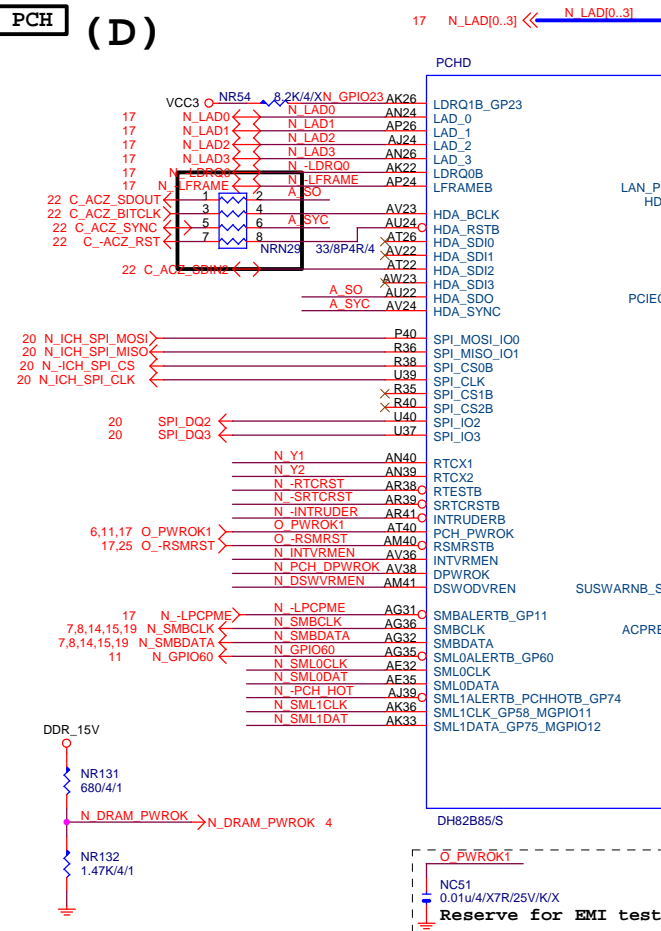
ME PWROK



GPIO38 Ctrl



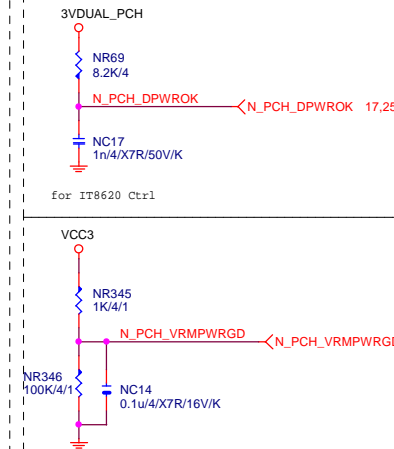
# PCH (D)



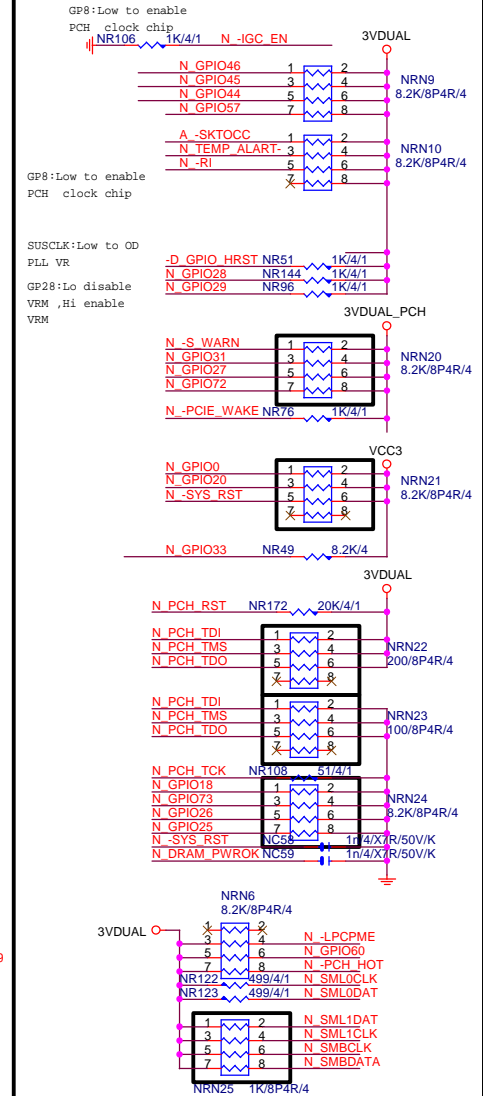
## ACZ\_SDOUT

SPI OVERRIDE PROTECTION

## PCH\_DPWROK



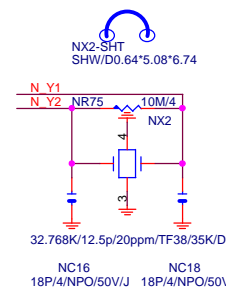
## PCH PU/PD



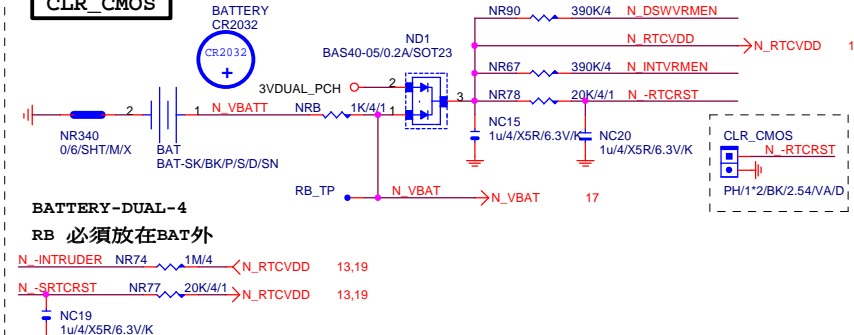
## HSW\_STRAP13

REMOVE

## 32.768KHZ



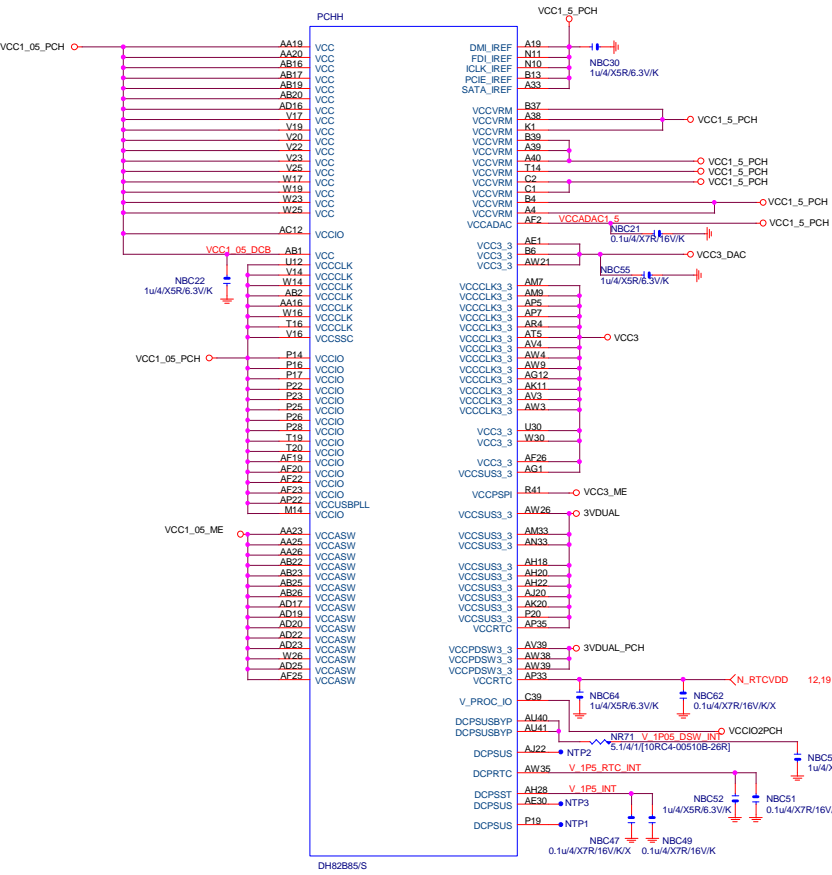
## CLR\_CMOS



## Gigabyte Technology

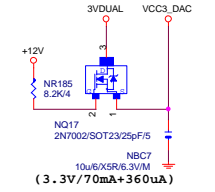
Title			
PCH GPIO , CTRL , AUDIO			
Size	Document Number	Rev	
Custom	GA-B85M-D2V	2.01	
Date:	Monday, June 23, 2014	Sheet	12 of 33

PCH (H)

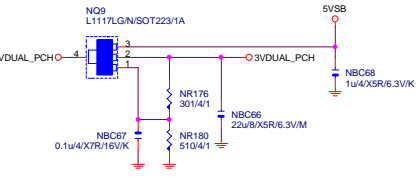


VCC3\_DAC

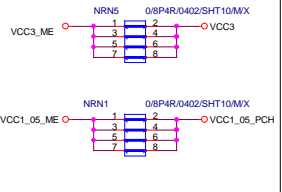
CLOSE北橋(注意震盪水波紋)



3VDUAL\_PCH

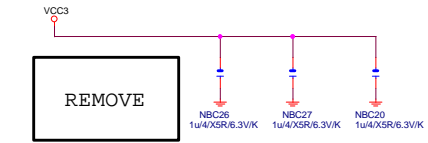


SHT\_PWR



CAP

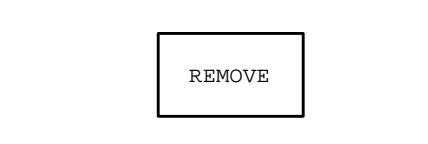
(3.3V) (X6)



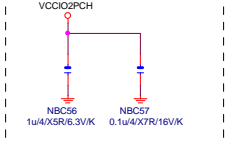
(1.05V) (X5)



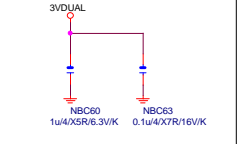
(1.05V) (X6)



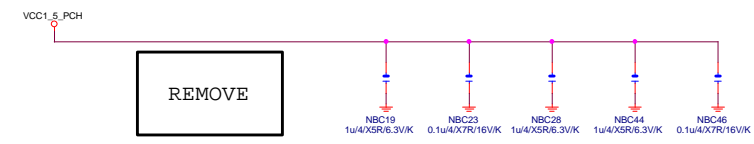
(1.05V) (X2)



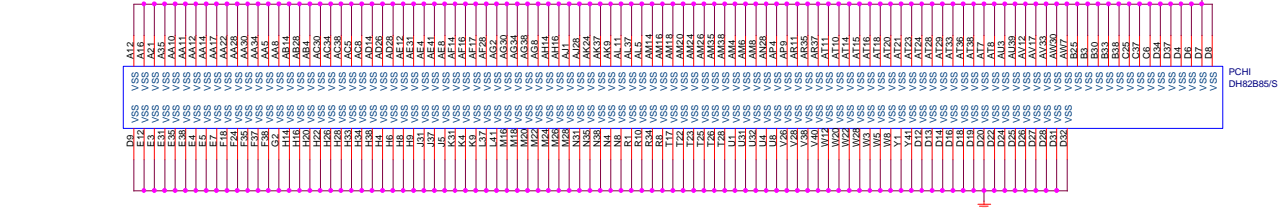
(3.3V) (X2)



(1.05V) (X10)



PCH (I)



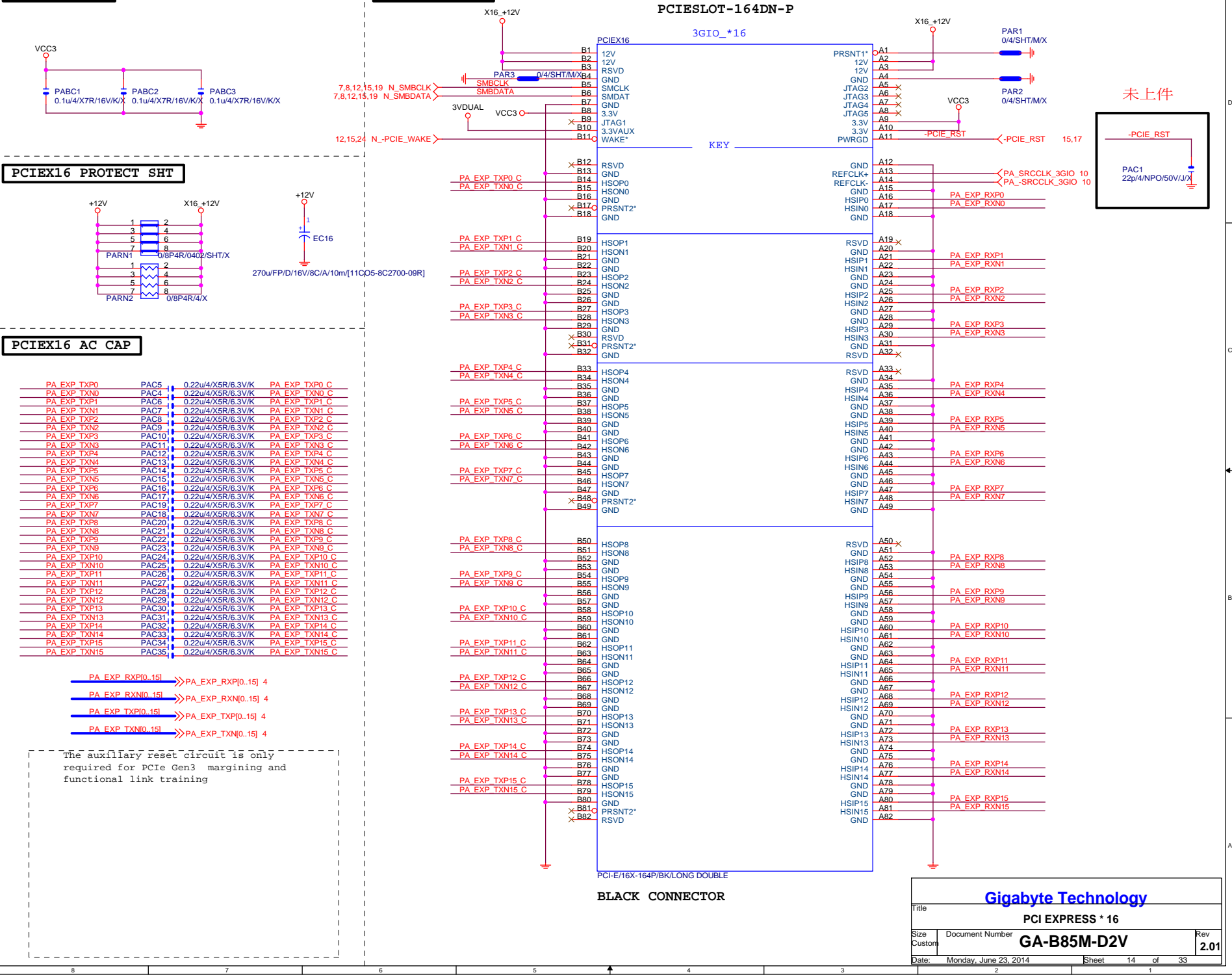
# PCIEX16 CAP

# PCIEX16 PROTECT SHT

# PCIEX16 AC CAP

# PCIEX16 SLOT

# PCIESLOT-164DN-P

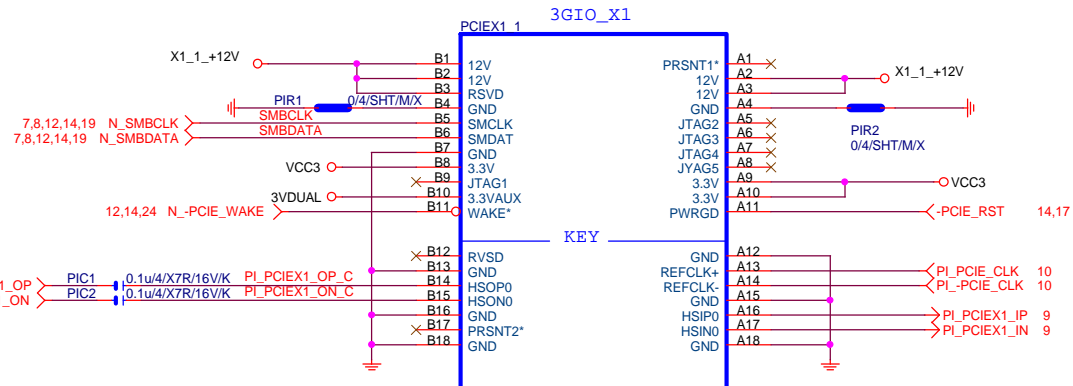
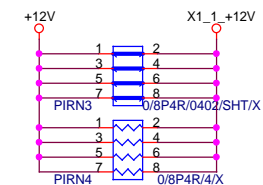


Gigabyte Technology

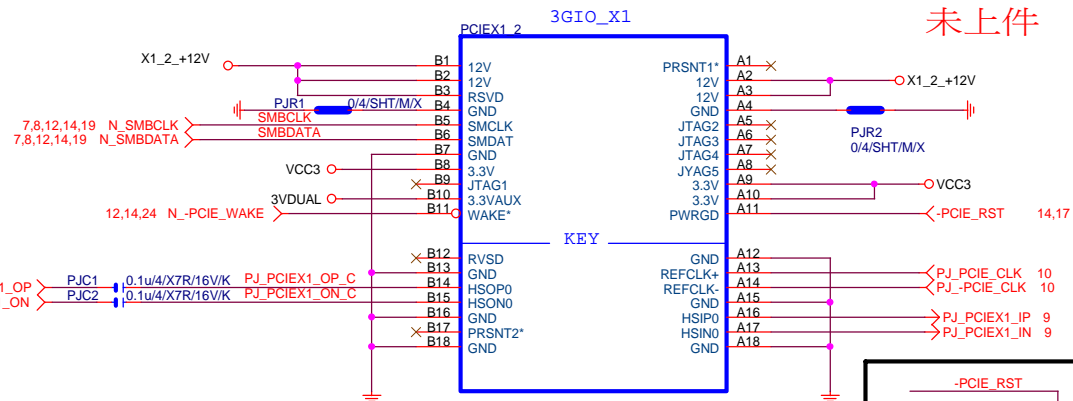
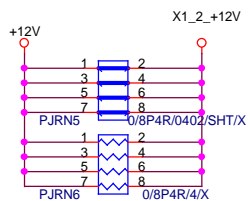
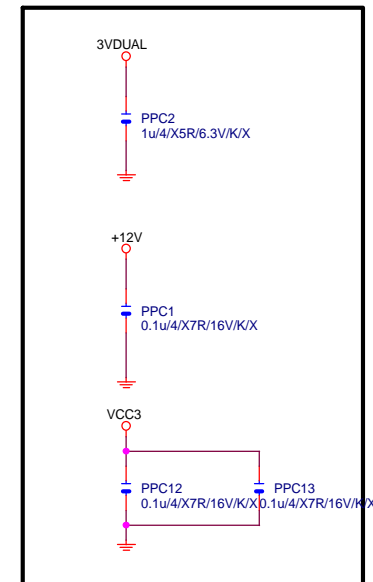
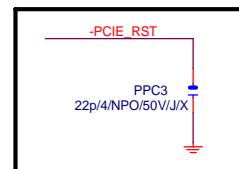
Title			PCI EXPRESS * 16		
Size			Document Number		
Custom			GA-B85M-D2V		
Date:			Monday, June 23, 2014		
Sheet			14 of 33		
Rev			2.01		



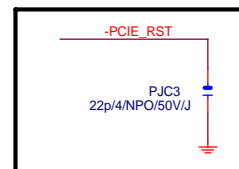
# PCIEX1 SLOT



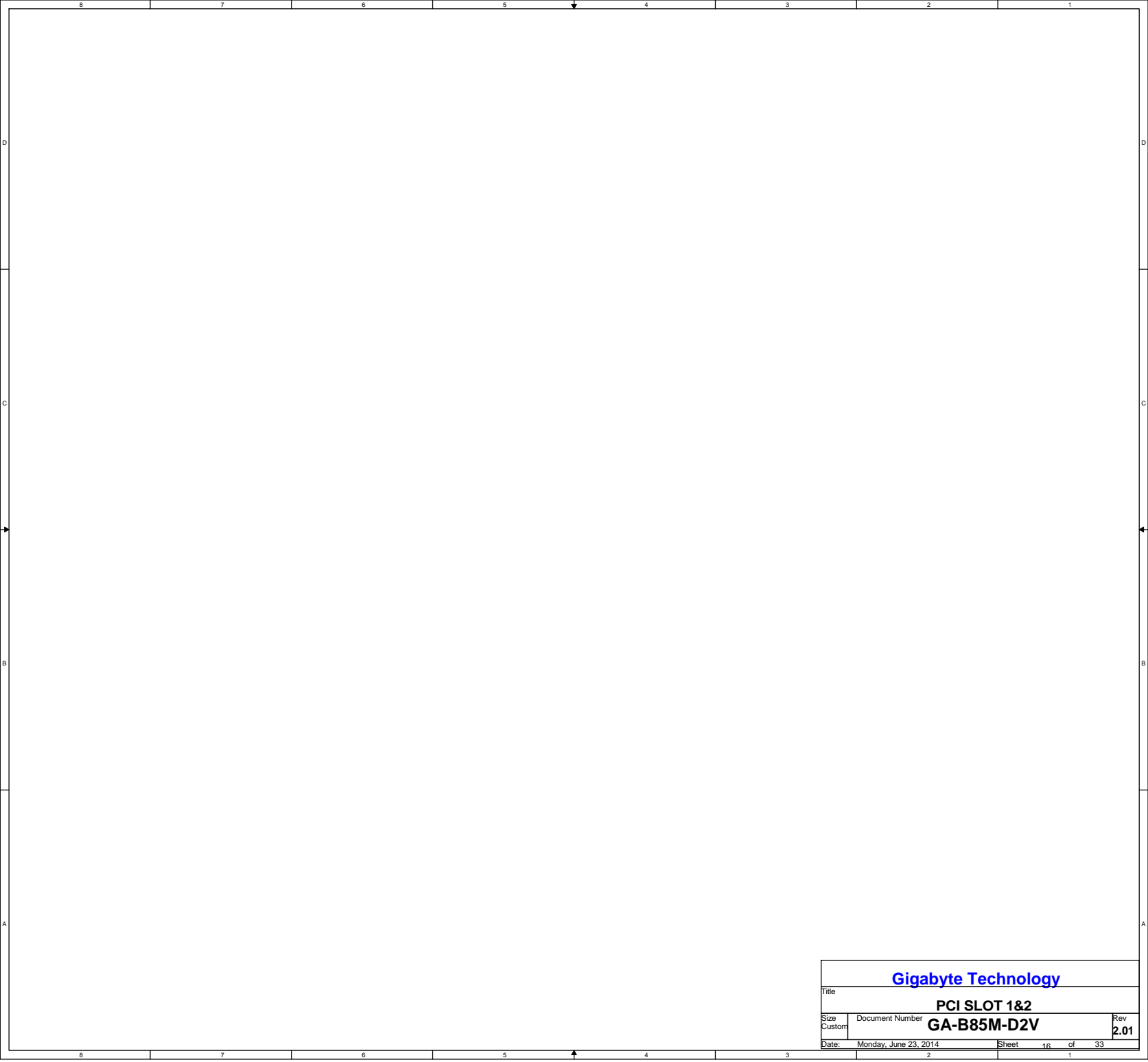
PCI-E1X-36P/BK/OL  
BLACK CONNECTOR



PCI-E1X-36P/BK/OL  
BLACK CONNECTOR



Gigabyte Technology			
PCI EXPRESS X 1 PORT			
Title	Document Number	Rev	
Size Custom	GA-B85M-D2V	2.01	
Date:	Monday, June 23, 2014	Sheet	15 of 33

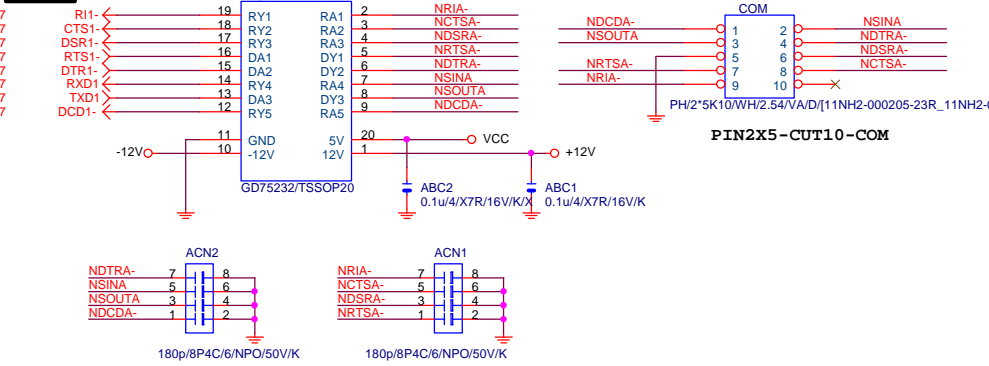


Gigabyte Technology			
Title			
PCI SLOT 1&2			
Size	Document Number		Rev
Custom	GA-B85M-D2V		2.01
Date:	Monday, June 23, 2014	Sheet	16 of 33
			1

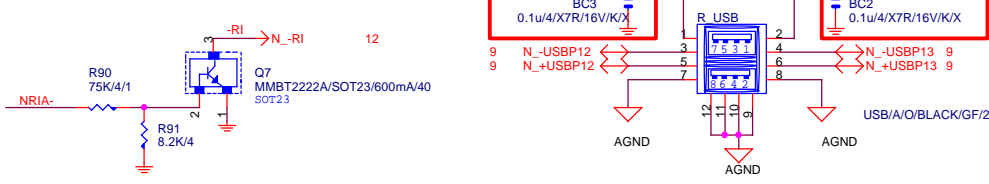




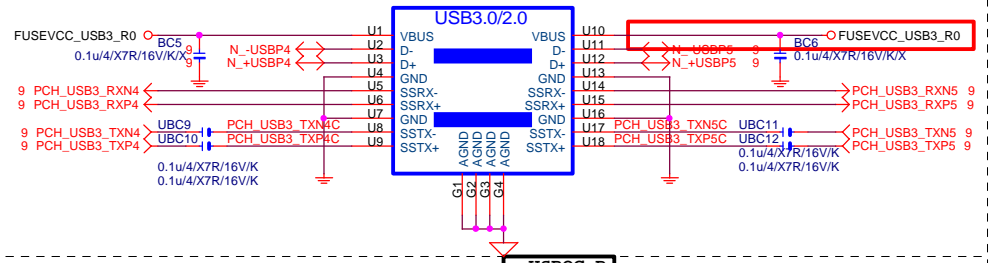
COM



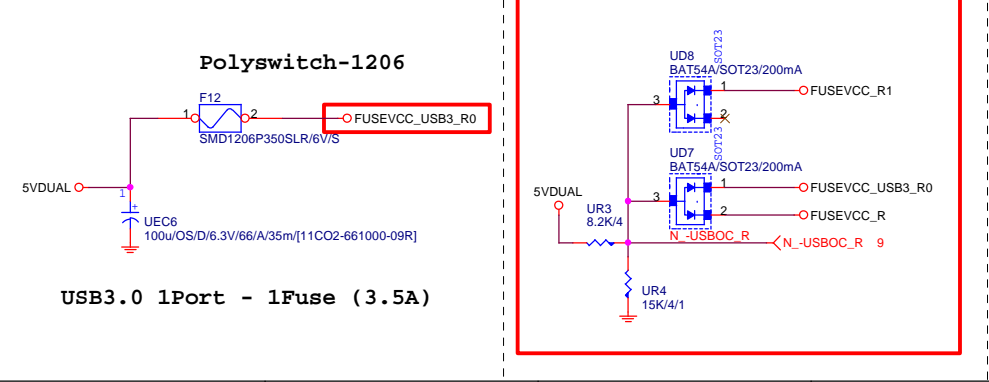
COM RI



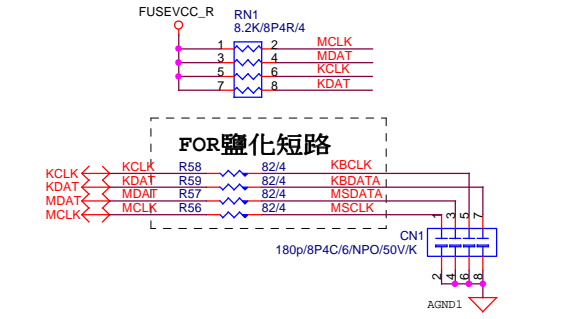
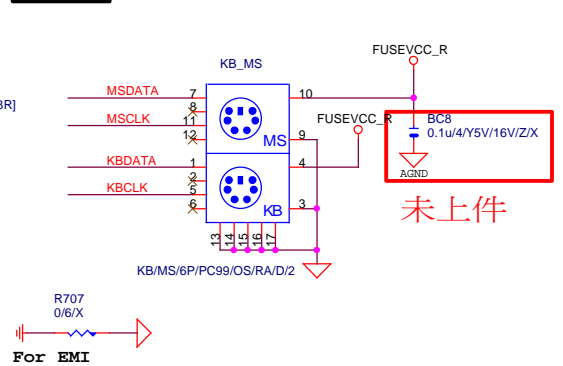
USB30\_20



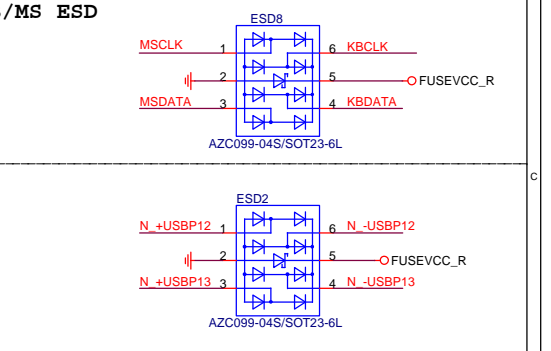
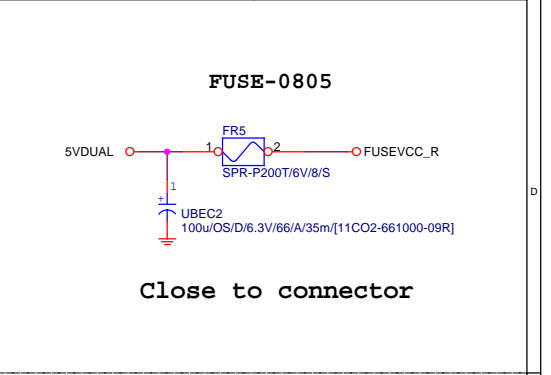
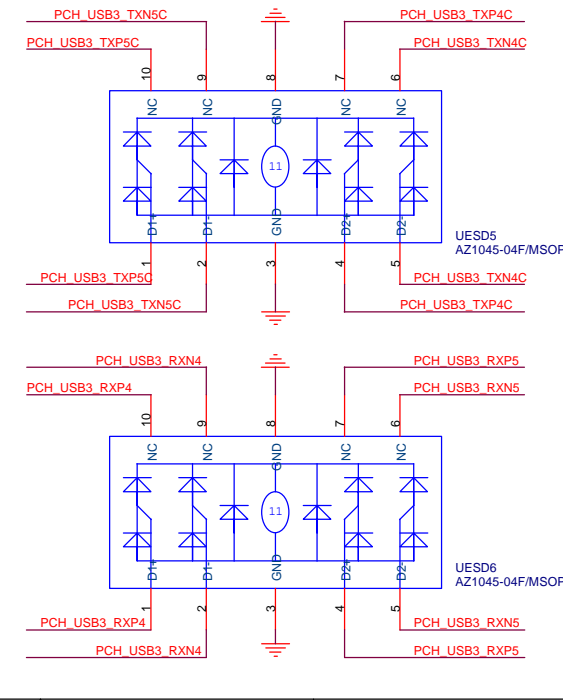
USB30\_20 PWR



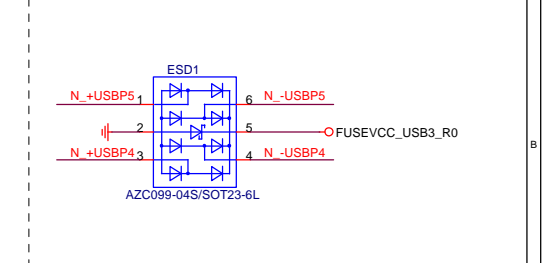
KB/MS



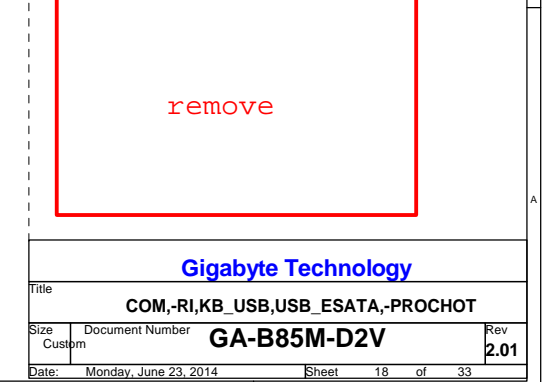
USB30\_20 ESD PROTECT



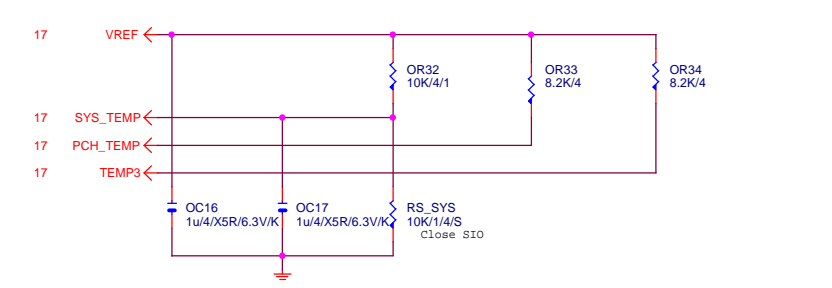
USB2.0 ESD



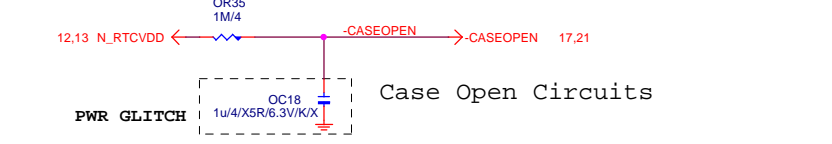
USB POWER PROTECT



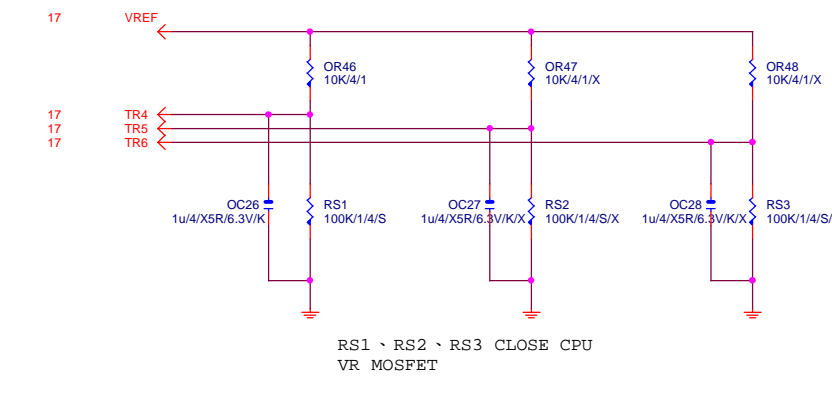
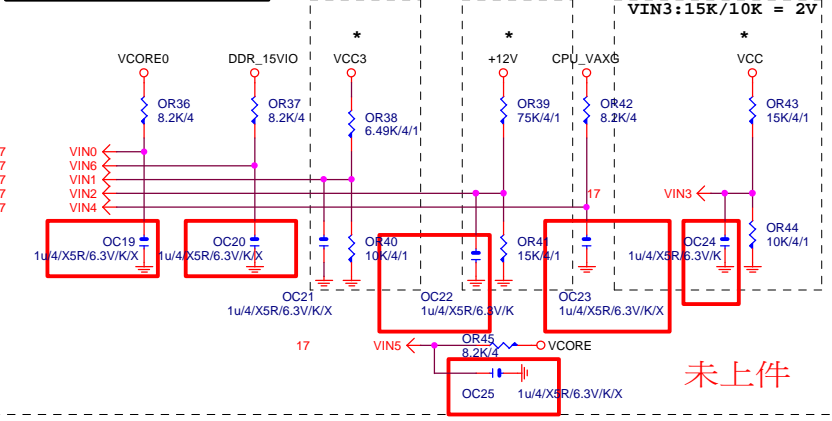
TEMP H/W MONITOR



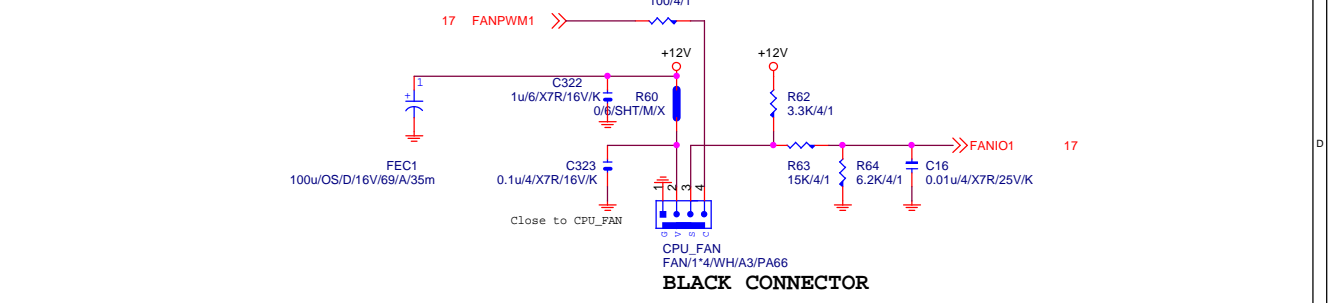
CASE OPEN



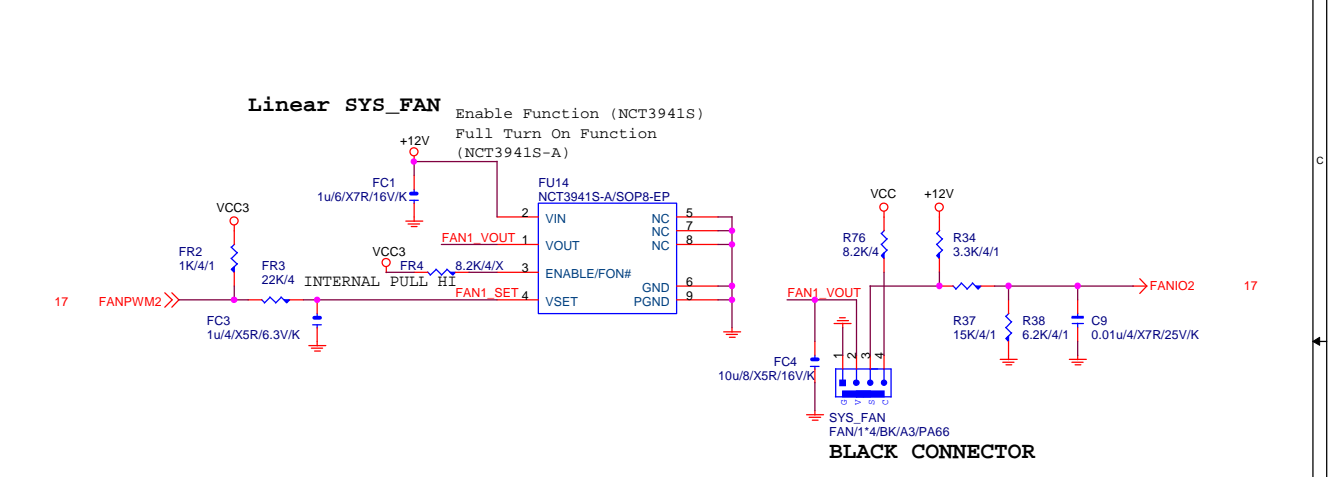
VOLTAGE-- H/W MONITOR



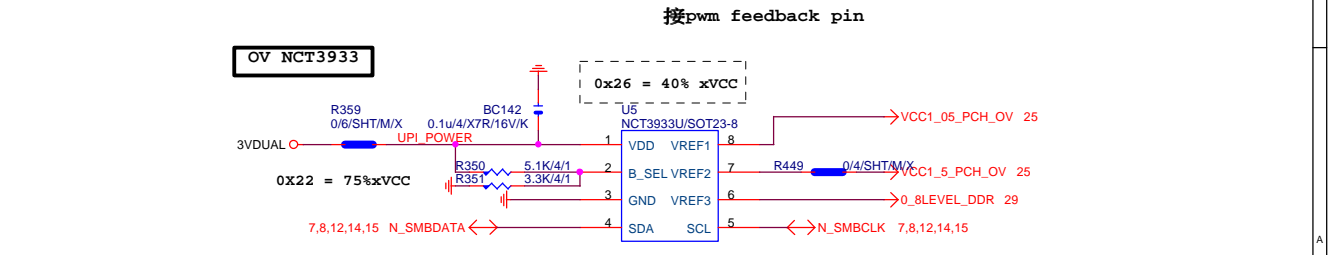
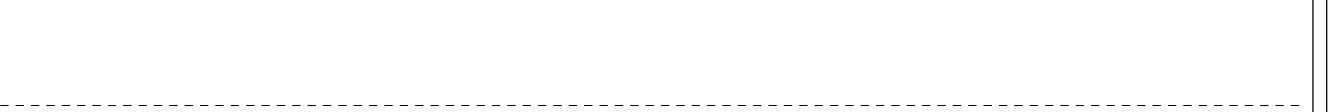
CPU SMART FAN



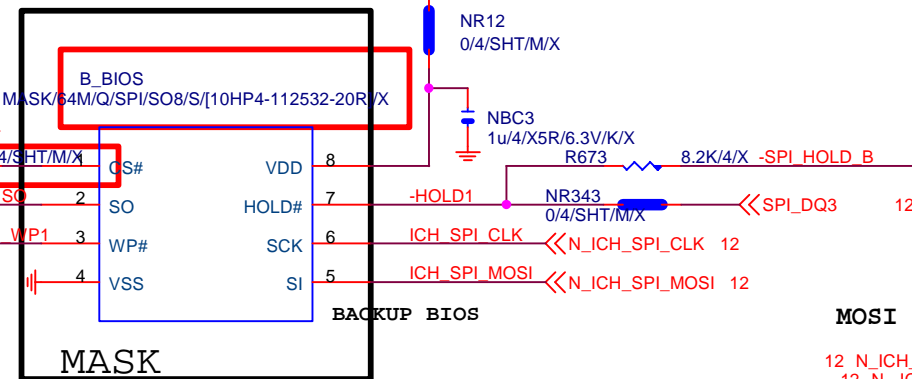
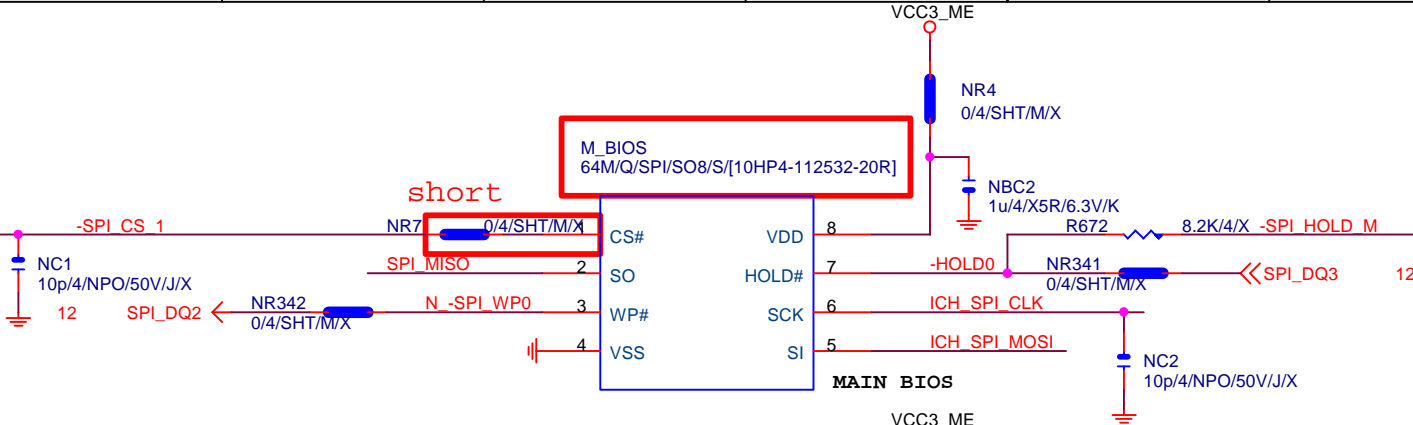
SYS SMART FAN



-PROHOT



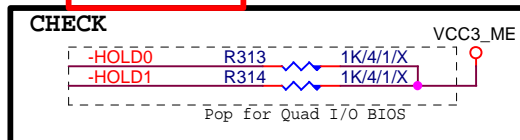
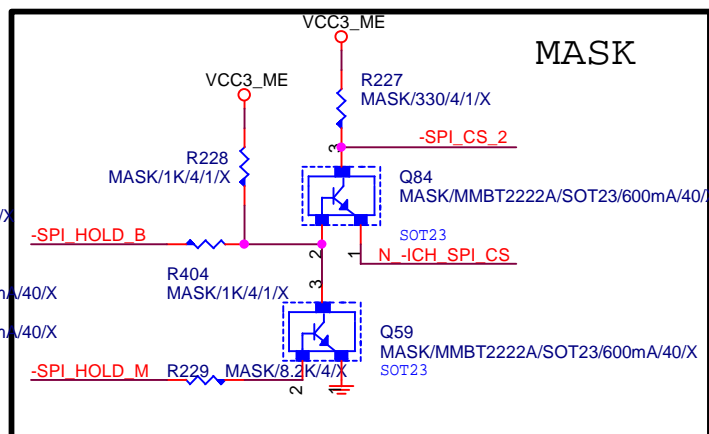
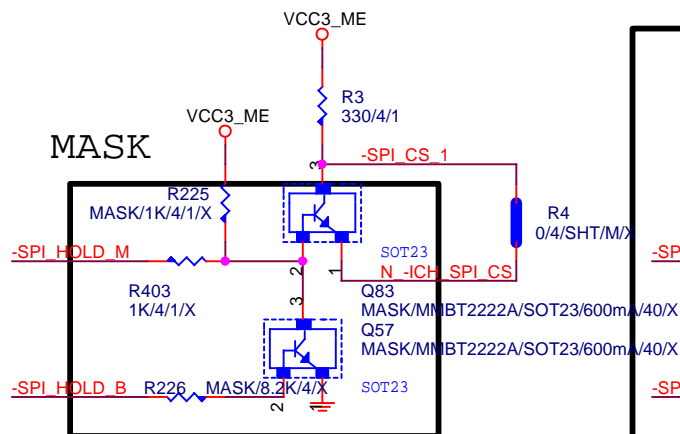
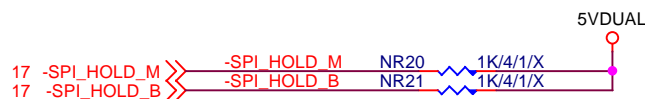
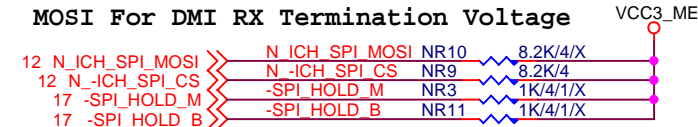
Gigabyte Technology			
Title HWM,FAN CTRL,OV			
Size Custom			
Document Number GA-B85M-D2V			
Date: Monday, June 23, 2014			
Sheet 19 of 33			
Rev 2.01			



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



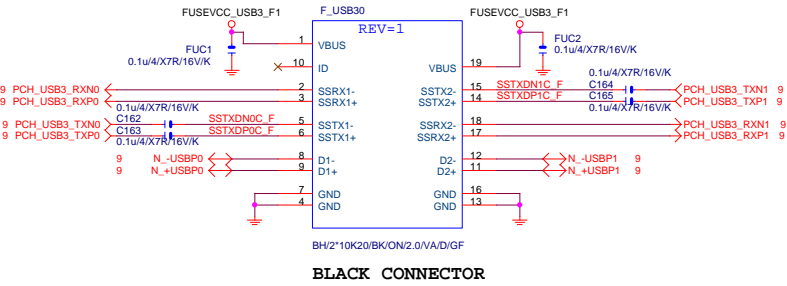
Gigabyte Technology

#### DUAL BIOS

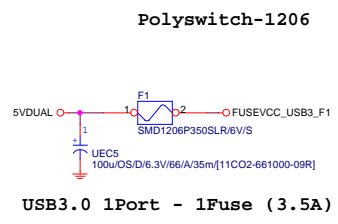
GA-B85M-D2V

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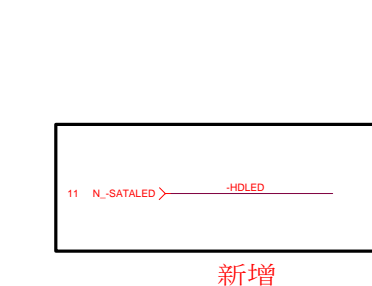
# F\_USB30



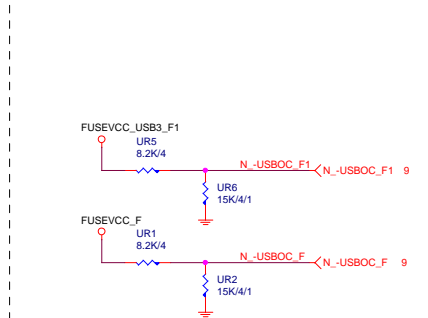
# F\_USB30 PWR



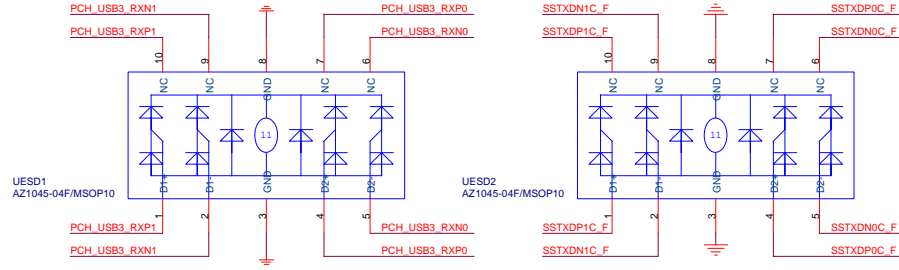
# SATA LED



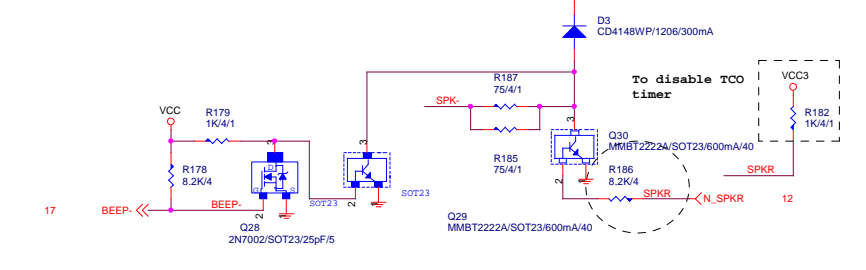
# -USB0C\_F



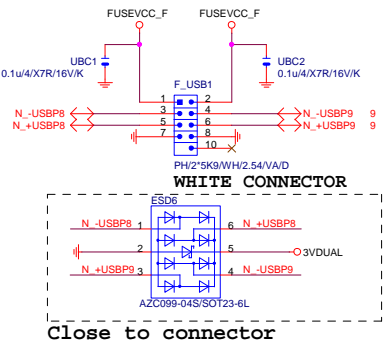
# F\_USB30 ESD PROTECT



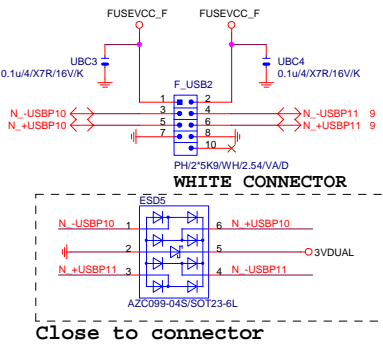
# SPKR



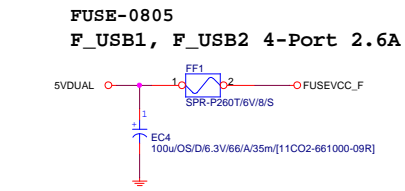
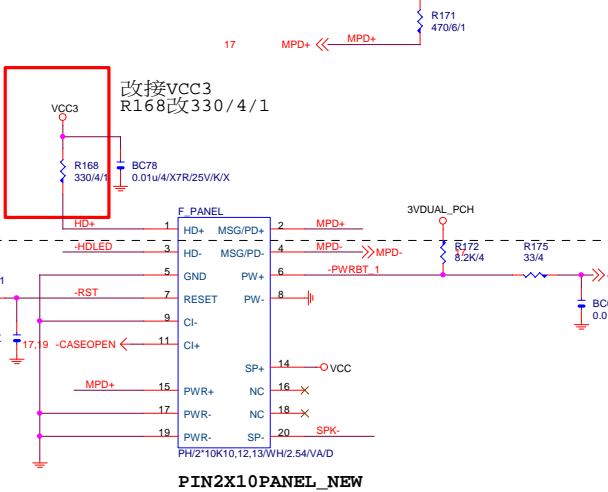
# FRONT USB1



# FRONT USB2

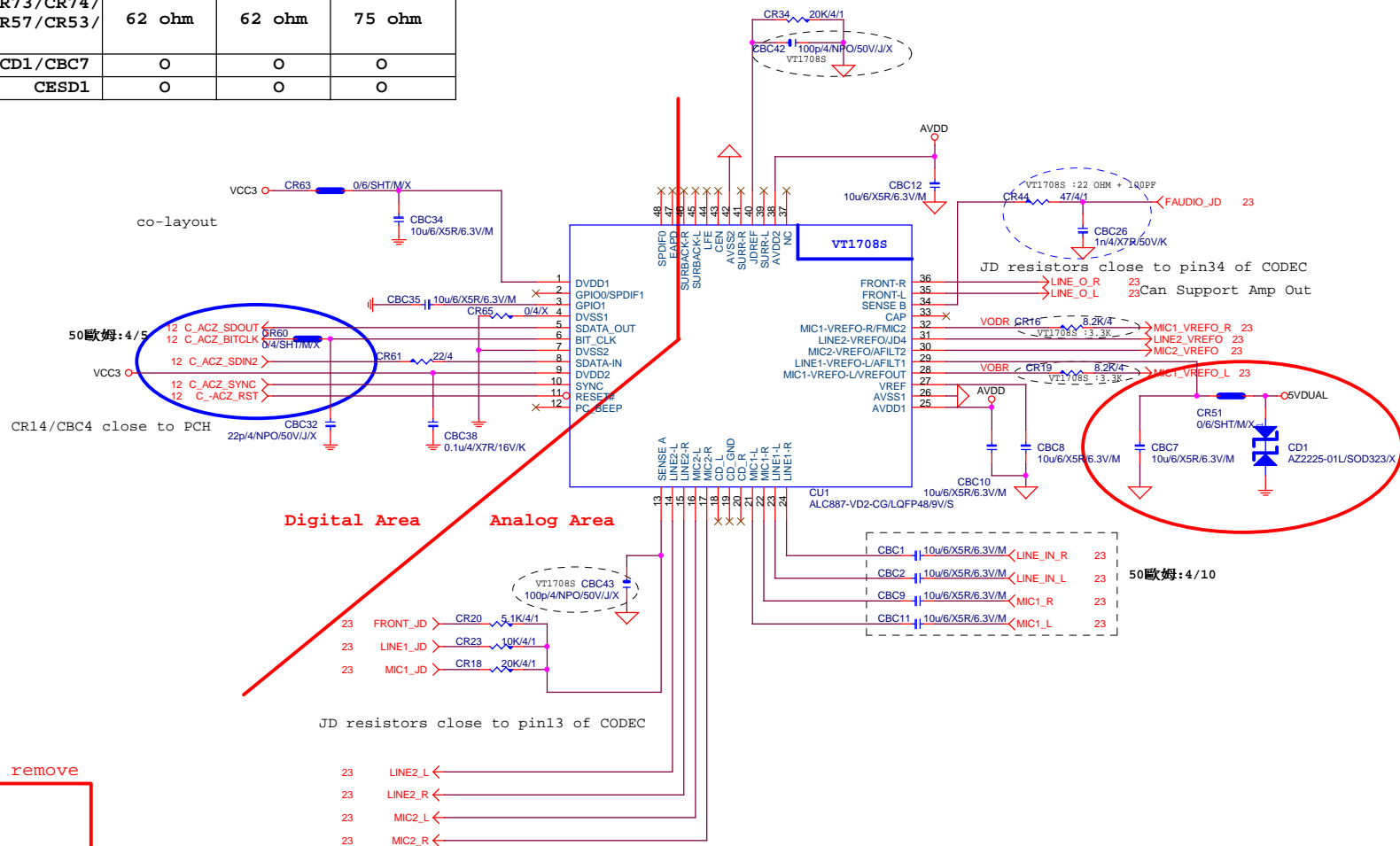


# INTEL FRONT PANEL

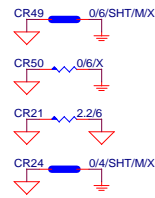


Gigabyte Technology			
FP,F_USB,USB PWR,SPKR,SATA LED			
GA-B85M-D2V			
Rev	2.01		
Date:	Monday, June 23, 2014		
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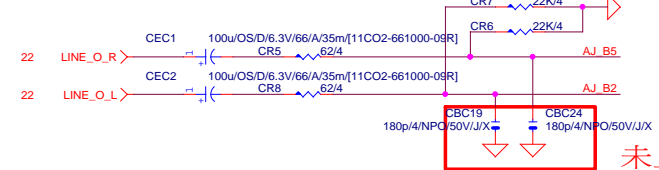
	ALC892	ALC887-VD2	VT1708S-CE
CR44/CBC26	47ohm+1nF	47ohm+1nF	22ohm+100P
CBC42/CBC43	X	X	100P/4
CR6/CR7/CR58/CR54/ CR67/CR68/CR69/CR70	22K/4	22K/4	10K/4/1
CR5/CR8/CR1/CR14/ CR17/CR22/CR73/CR74/ CR13/CR11/CR57/CR53/ CR75/CR76	62 ohm	62 ohm	75 ohm
CR51/CD1/CBC7	O	O	O
CESD1	O	O	O



ESD remove



### LINE-OUT

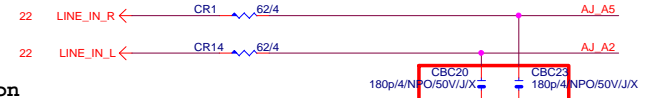


未上件

### LINE-IN

Verify MIC function  
in LINE-in

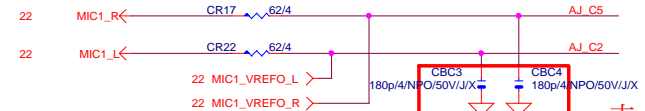
Only reserved for ALC888



未上件

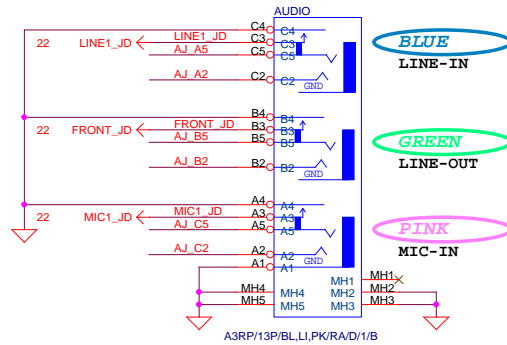
For 889A/888

### MIC-IN

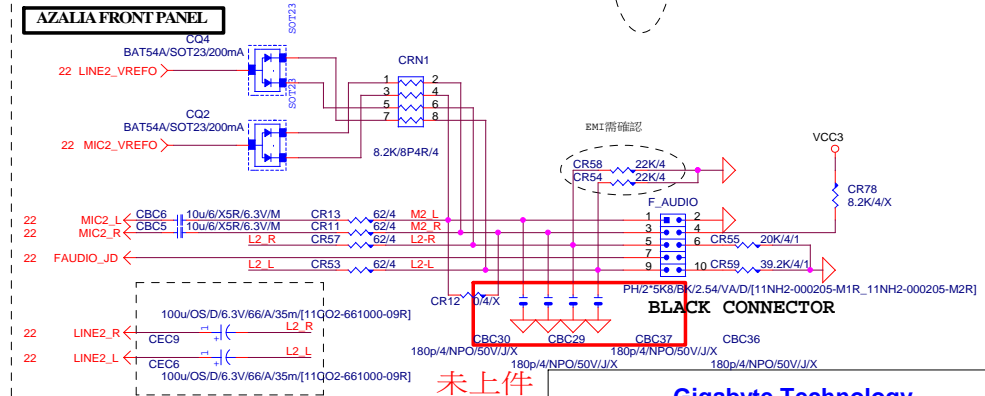


未上件

### SPDIF\_OUT



### AZALIA FRONT PANEL

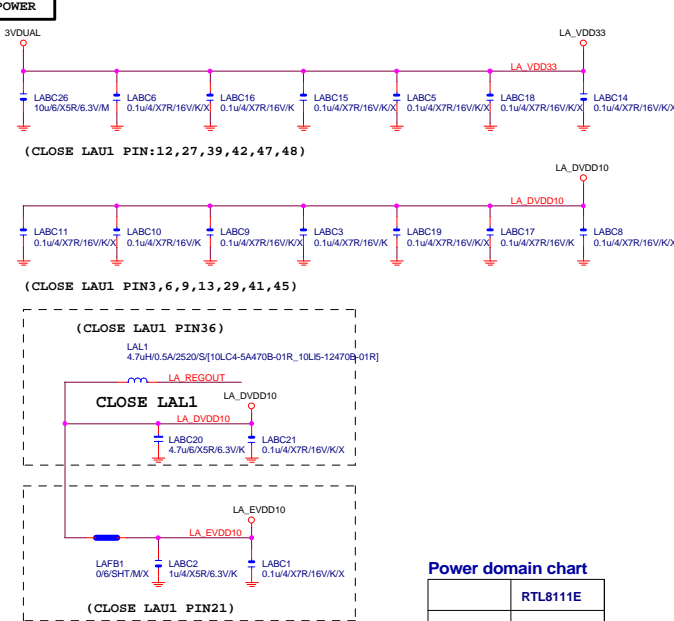
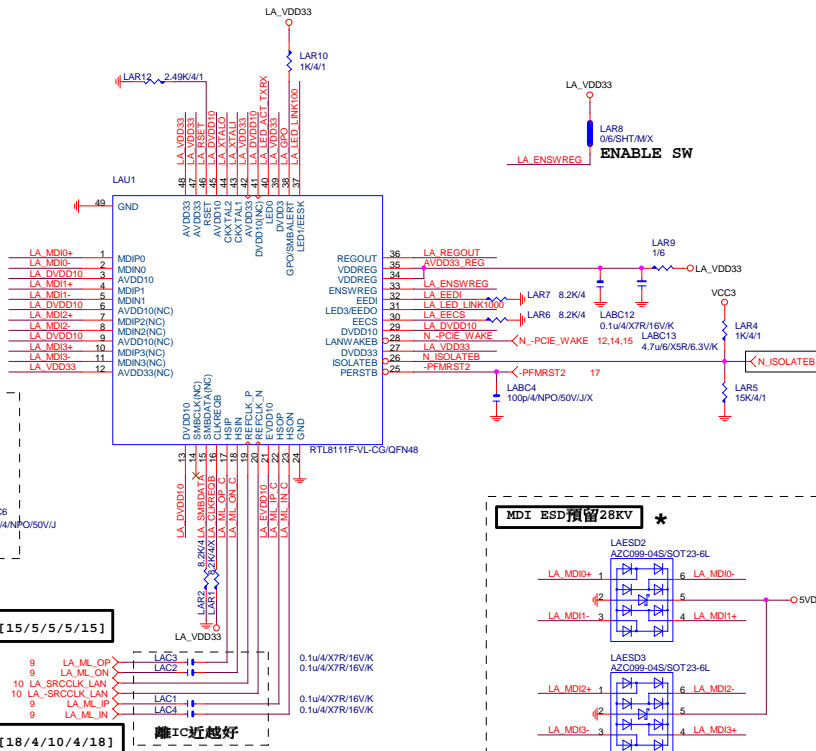


未上件

Gigabyte Technology

Title		
AUDIO JACK		
Size	Document Number	Rev
Custom	GA-B85M-D2V	2.01
Date:	Monday, June 23, 2014	Sheet 23 of 33

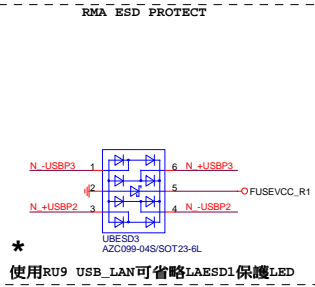
LAN:RTL8111F/VB/VL



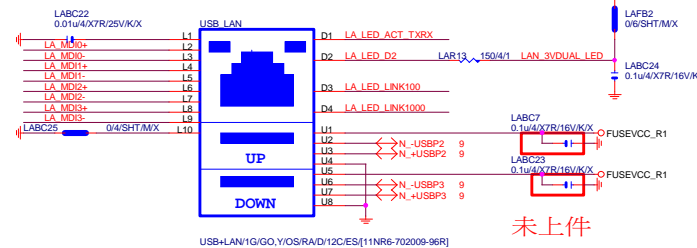
Power domain chart

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

USB LAN CONNECTOR



LA\_MDI-->100歐姆:[20/4/8/4/20]



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

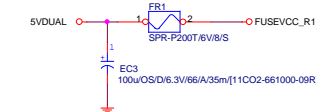
USB X3 POWER

EMI SHORT PAD

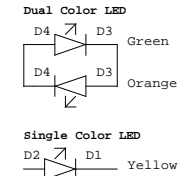
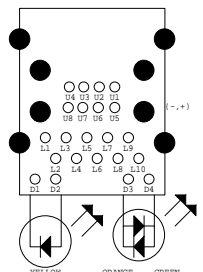
USB2.0 PWR

FUSE-0805

KB\_MS\_USB 4-Port 2.6A

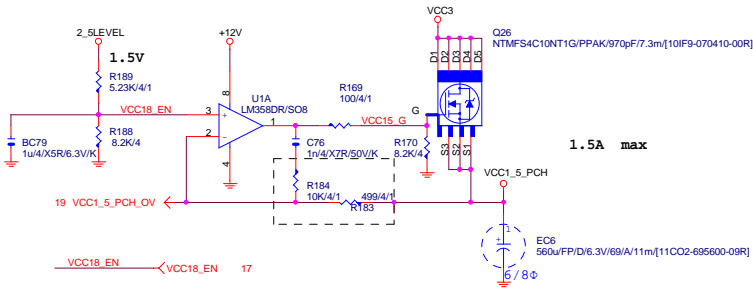


Close to connector

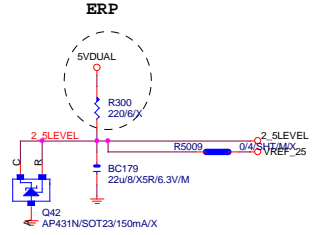




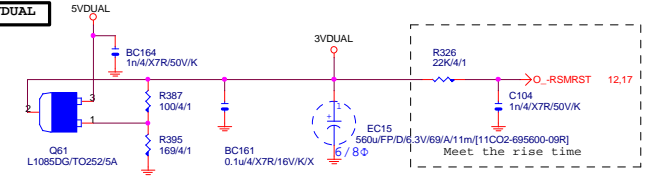
VCC1\_8\_PCH



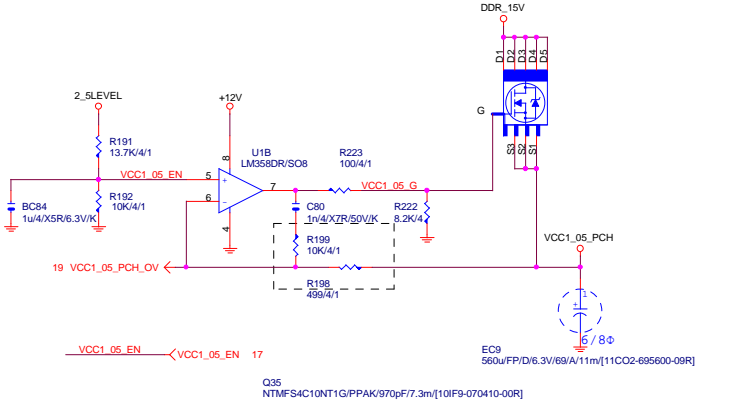
2\_5LEVEL



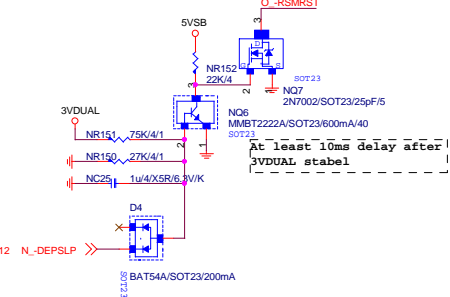
3VDUAL



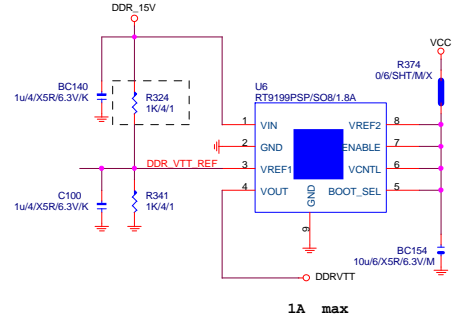
VCC1\_05\_PCH



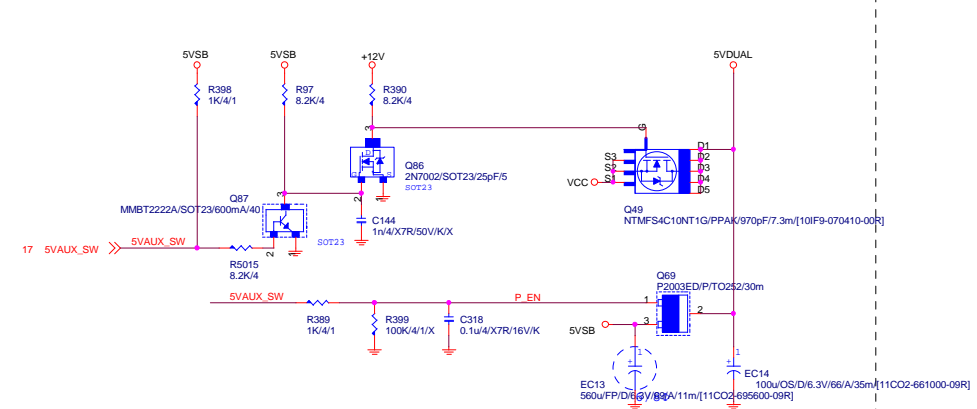
5VSB



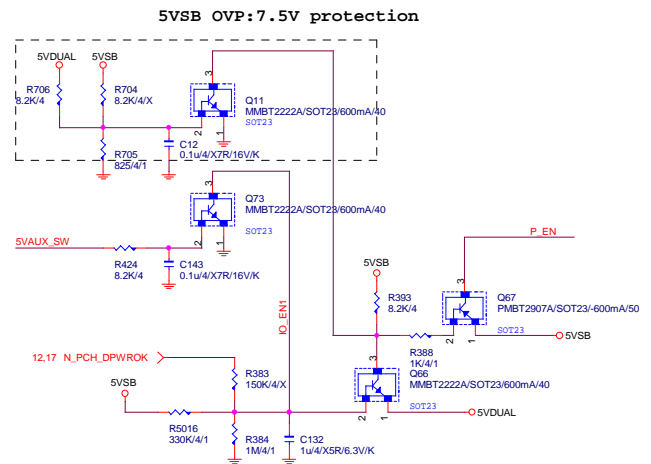
DDR\_VTT



5VDUAL

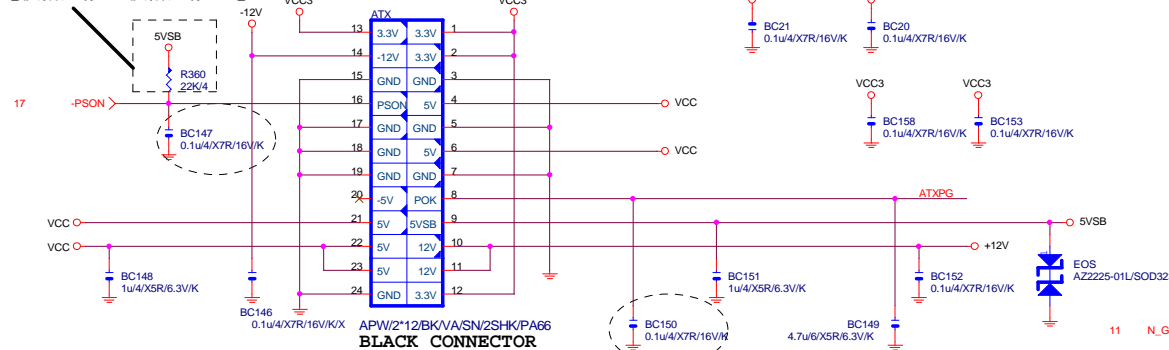


5VDUAL SHORT PROTECT

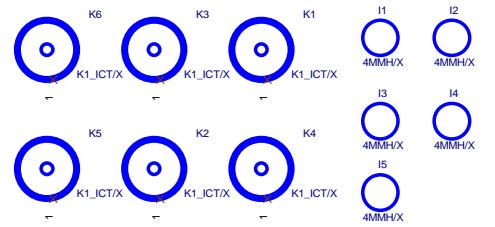
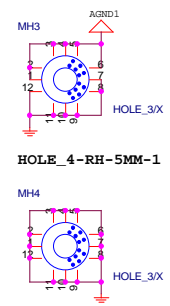
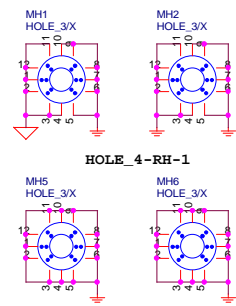


# ATXX24 POWER CONNECTOR

【技術通報R&D技術通報155】



BLACK CONNECTOR

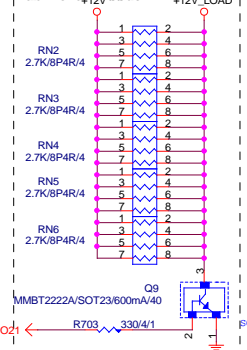


To prevent the 5VSB under loading when boot

TPM

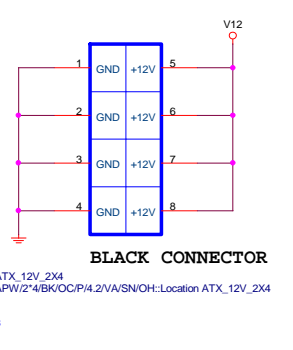
# 【技術通報R&D技術通報158】

To fix 12V light load abnormality issue



# ATXX4 POWER CONNECTOR

To fix 12V light load abnormality issue

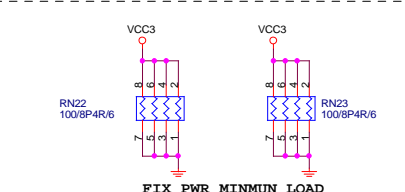
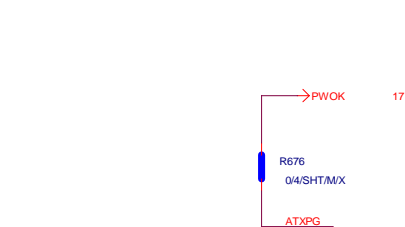


BLACK CONNECTOR

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】

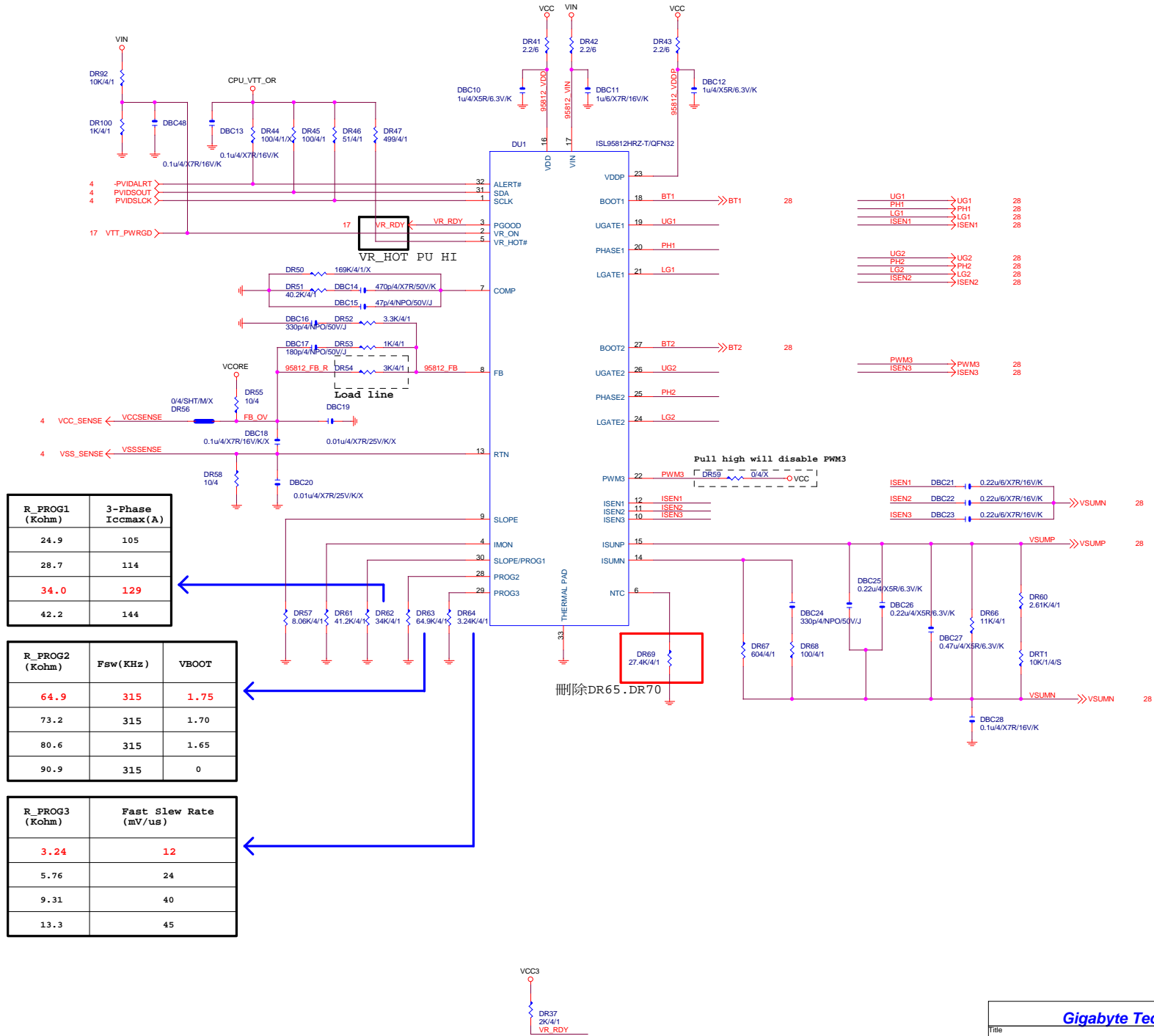


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ATX CONNECTOR

GA-B85M-D2V

Rev 2.01

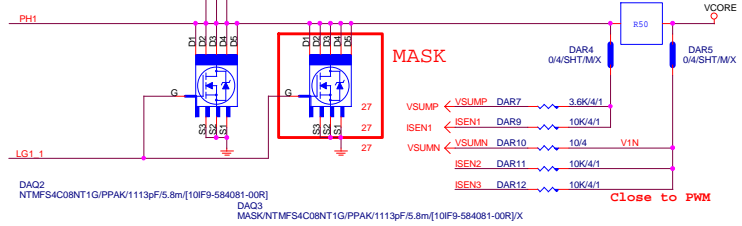
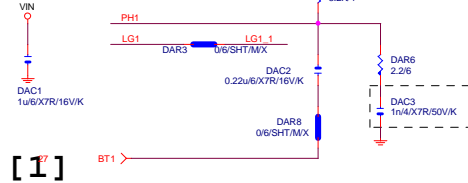
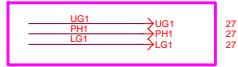


R_PROG1 (Kohm)	3-Phase Iccmax(A)
24.9	105
28.7	114
34.0	129
42.2	144

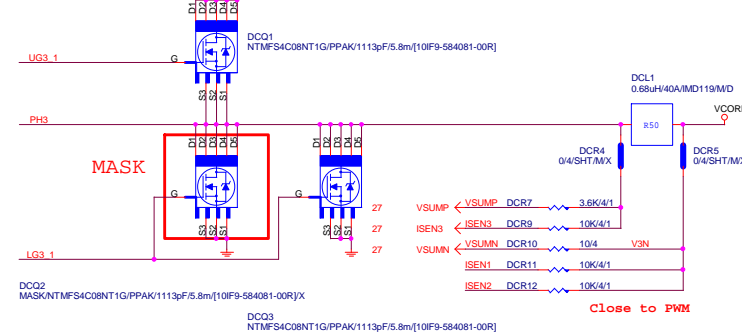
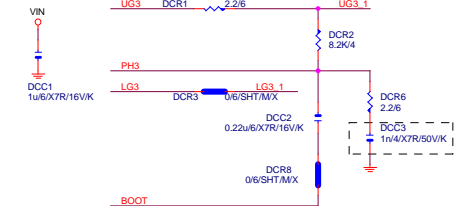
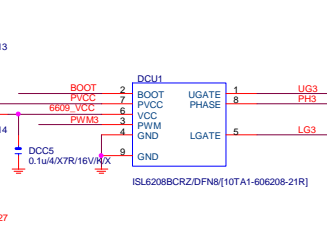
R_PROG2 (Kohm)	Fsw(KHz)	VBOOT
64.9	315	1.75
73.2	315	1.70
80.6	315	1.65
90.9	315	0

R_PROG3 (Kohm)	Fast Slew Rate (mV/us)
3.24	12
5.76	24
9.31	40
13.3	45

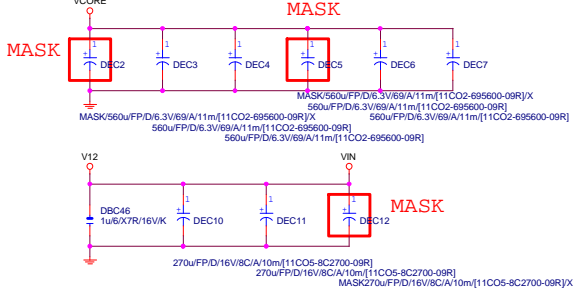
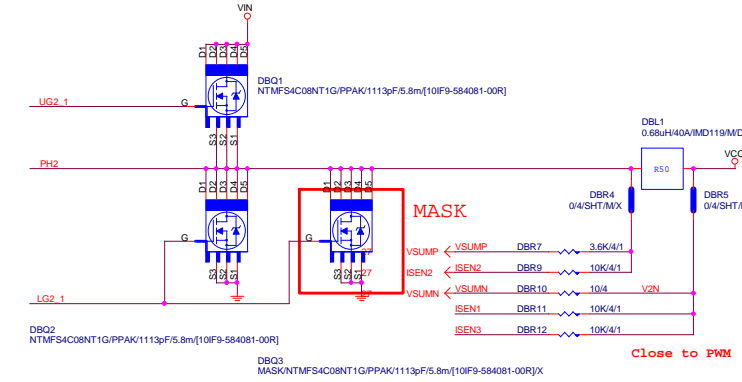
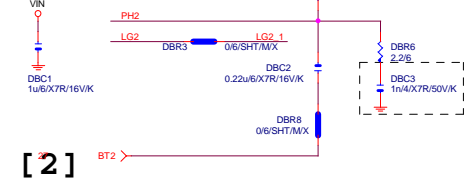
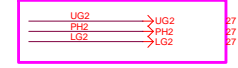
# PHASE 1

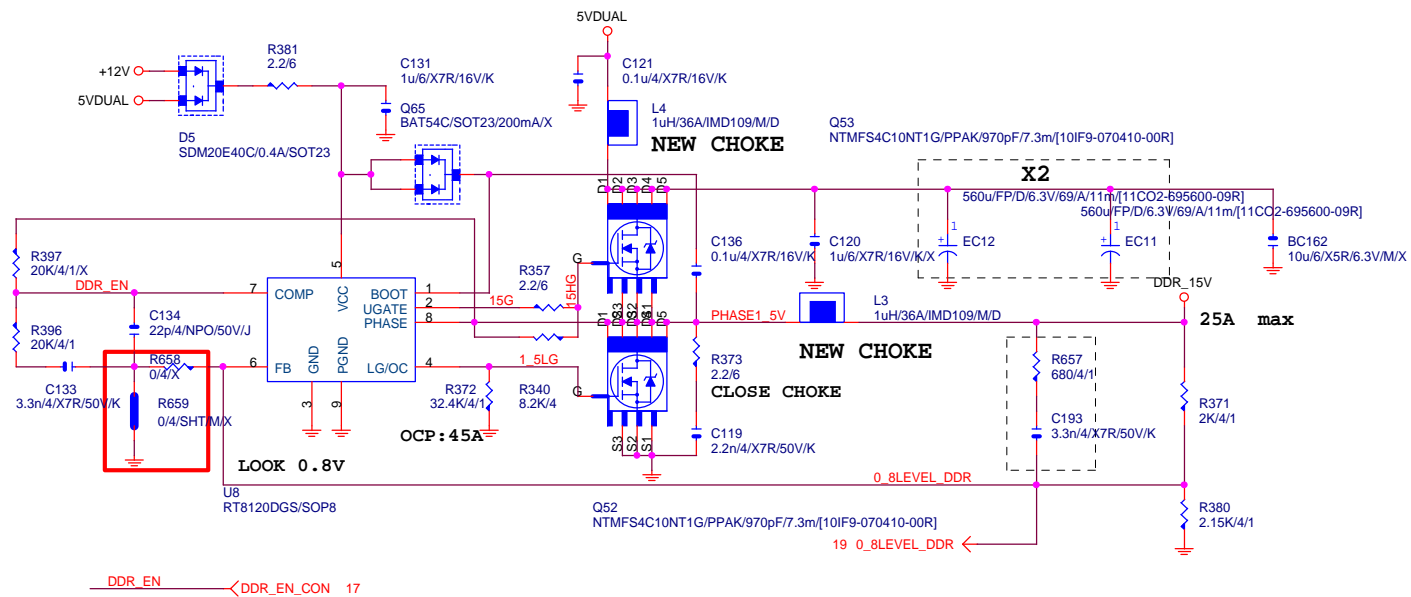


# PHASE 3



# PHASE 2



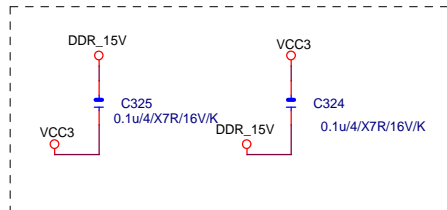


From DDR\_15V source  
10 mils trace to SIO

DDR\_15V  
MR20

DDR\_15VIO  
Q/4/SHT/M/X

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2X7.99=15.98>11.45A

$Rocset = (I_{ocp} * L_{gate, rdson}) / I_{ocset}$

$Rocset = (45A * 6.7m\Omega) / 10uA = 30K$

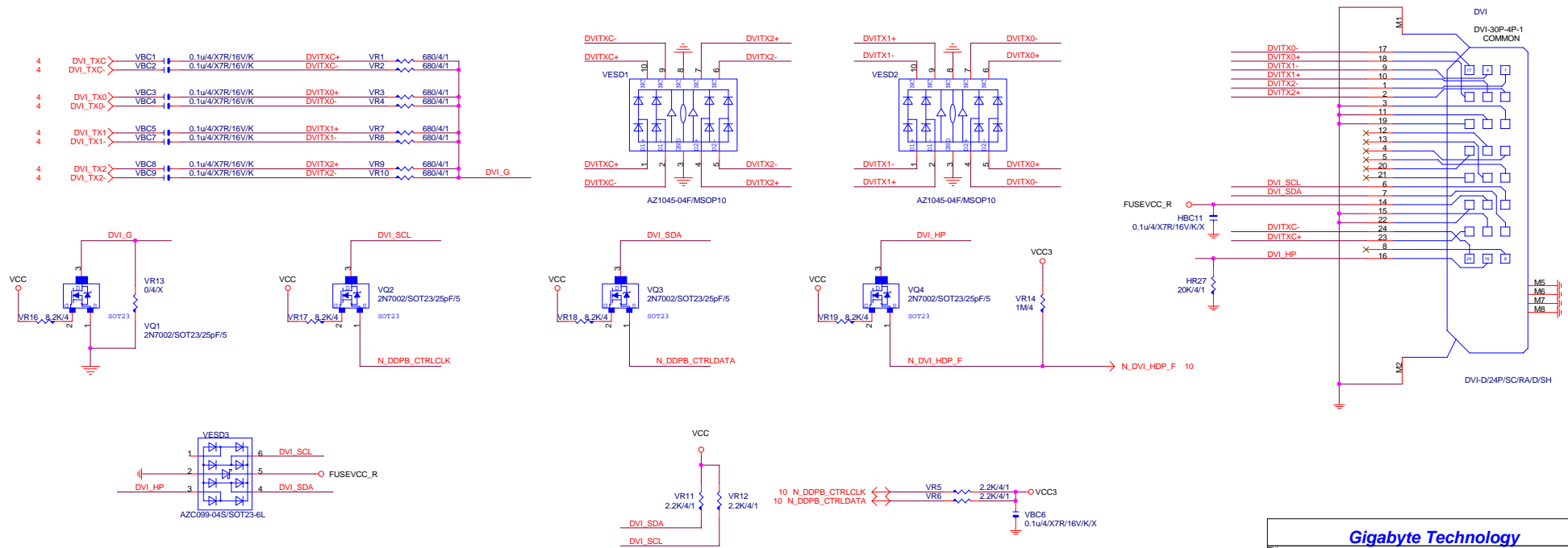
$I_{ocset} = 10uA$

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# DVI



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Monday, June 23, 2014

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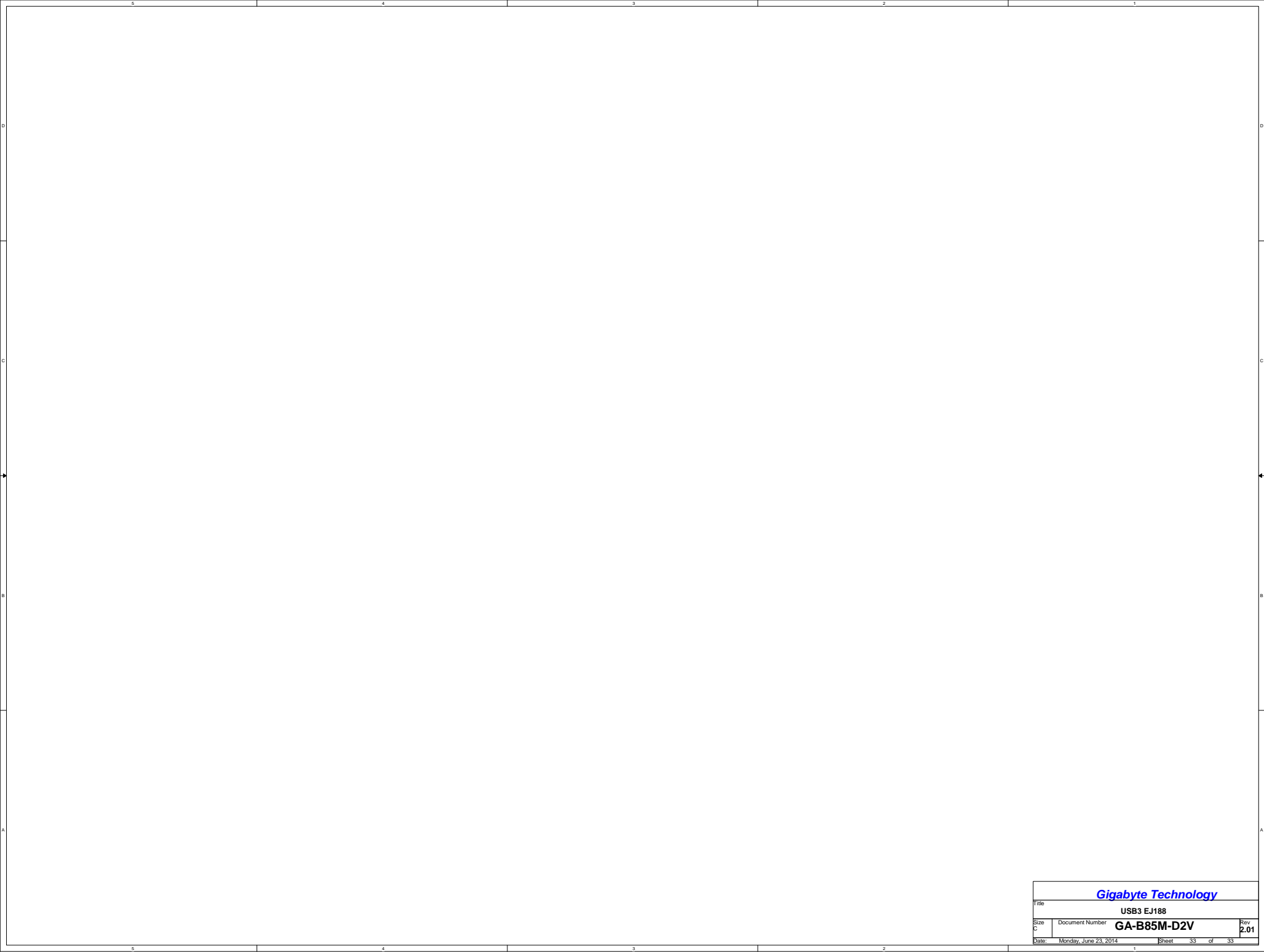
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