

Model Name: GA-B85M-D2V

Revision 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,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 )

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Cover Sheet


Size Custom	Document Number <b>GA-B85M-D2V</b>	Rev <b>2.0</b>
Date: Monday, April 07, 2014	Sheet 1 of 33	



## Component value change history

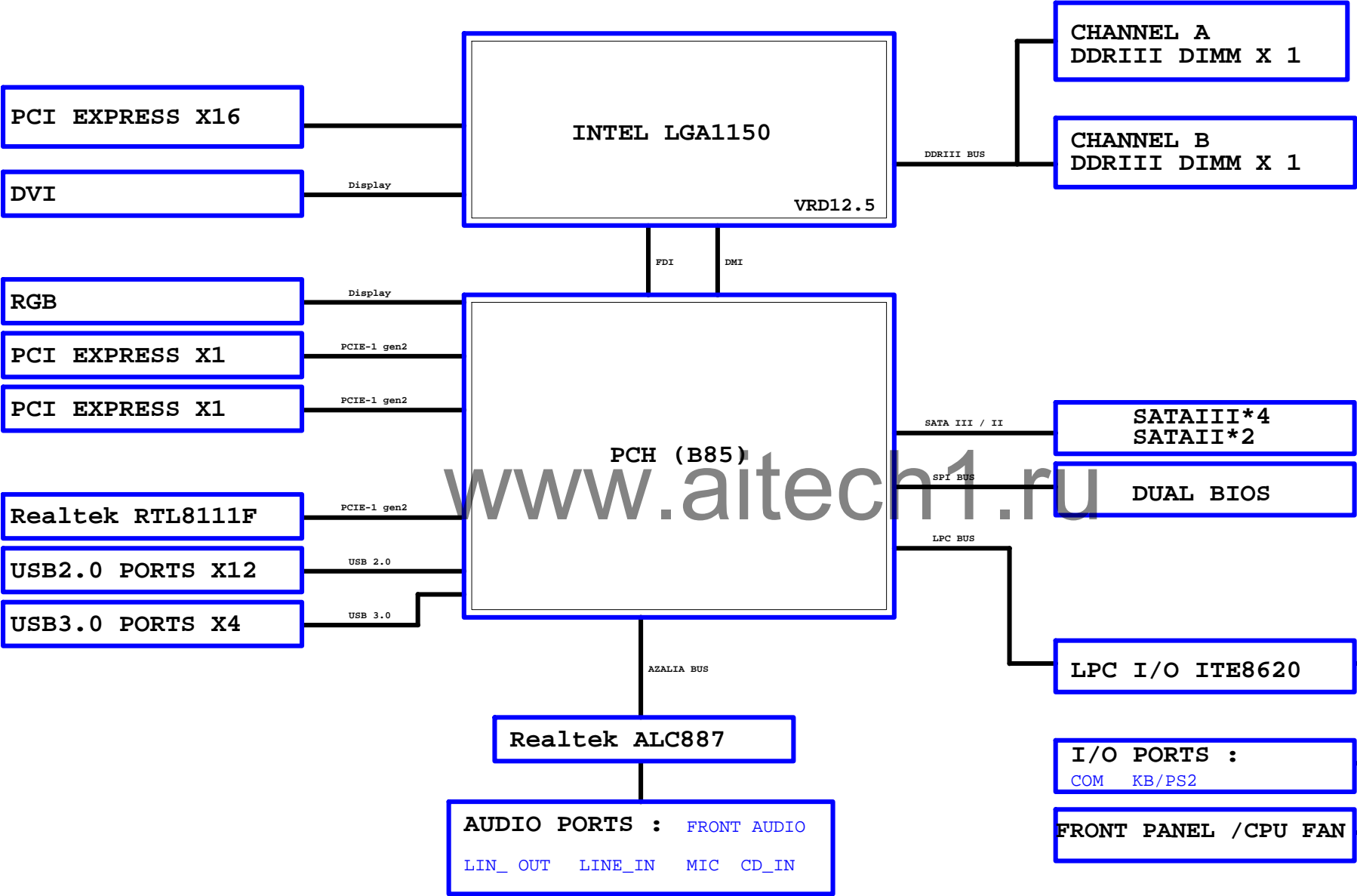
[illegible][illegible]

S:單文  
4:四層板  
V:第二層是VCC  
N:咖啡色  
B:製程

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Title			
BOM & PCB MODIFY HISTORY			
Size Custom	Document Number	Rev	
	GA-B85M-D2V	2.0	
Date:	Monday, April 07, 2014	Sheet	2 of 33

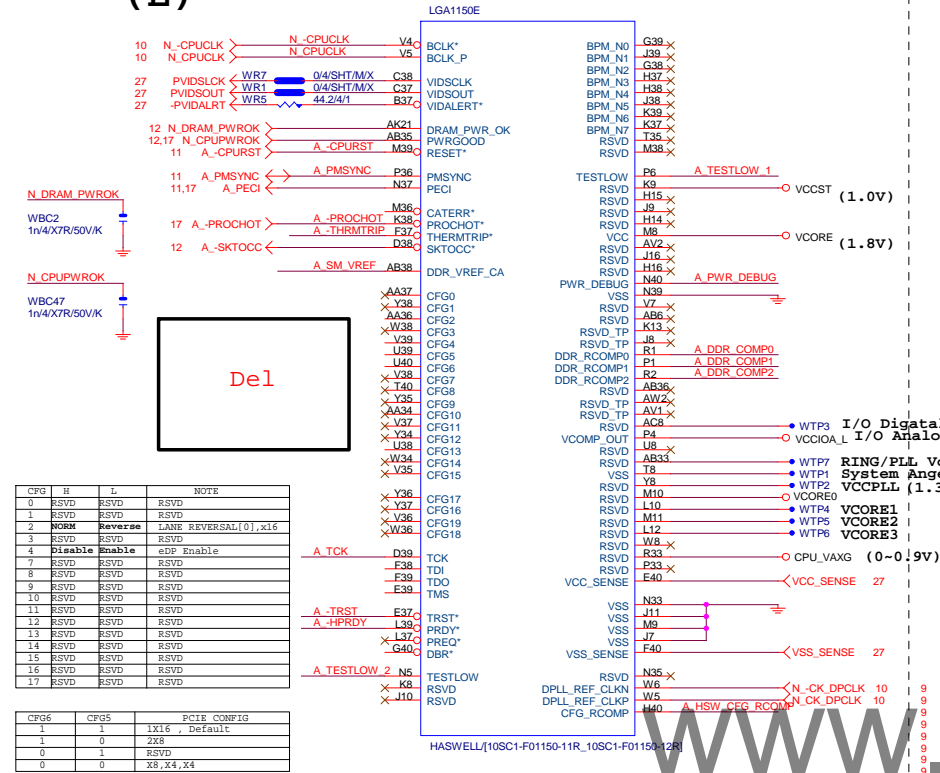


BLOCK DIAGRAM

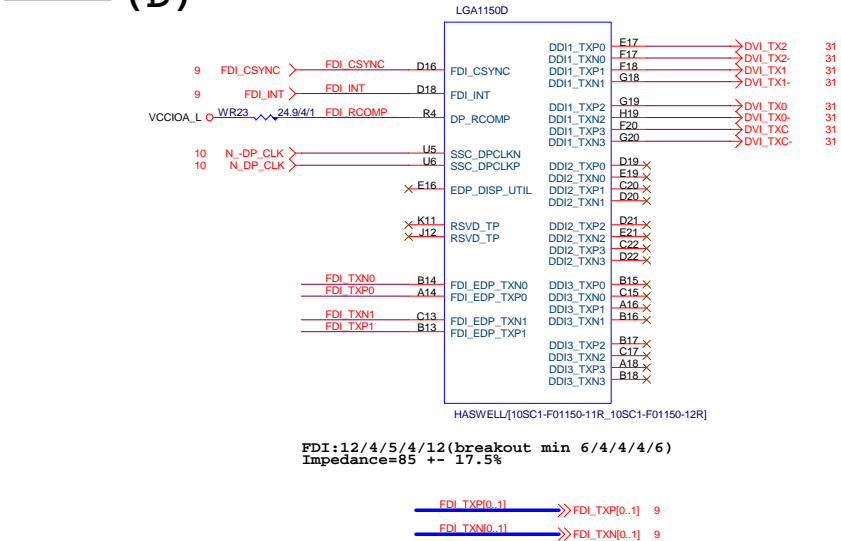




## LGA1150 (E)



## LGA1150 (D)

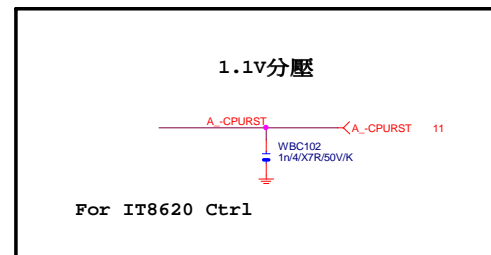


## LGA1155 (C)

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



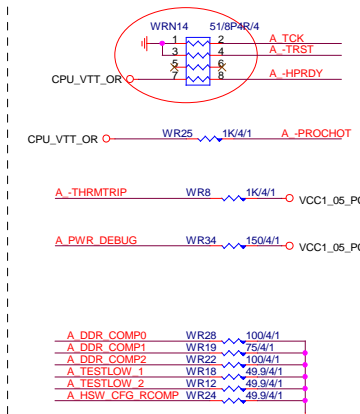
## -CPURST



## CPU SVID



## CPU PU/PD

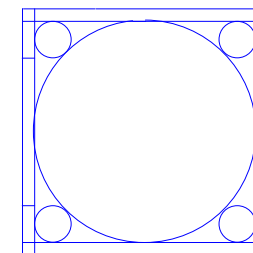




## LGA1150A

HASWELL/I10SC1-F01150-11R 10SC1-F01150-12R1

## LGA1150B

HASWELL/I10SC1-F01150-11R I10SC1-F01150-12RCR  
CPU RETAINTION/X**LGA1150**

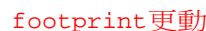
ILM\_BP/1156/CSP/ILM\_BP/1156/CSP/[12KRC-0F0001-52R\_12KRC-0F0001-51R]

## DDR BUS

7	MODT_A[0..1]	↔	MODT_A0_1
8	MODT_B[0..1]	↔	MODT_B0_1
7	MDA[0..63]	↔	MDA0_63
8	MDB[0..63]	↔	MDB0_63
7	DQSA[0..7]	↔	DQSA0_7
7	-DQSA[0..7]	↔	-DQSA0_7
7	MAAA[0..15]	↔	MAAA0_15
8	MAAB[0..15]	↔	MAAB0_15
8	DQSB[0..7]	↔	DQSB0_7
8	-DQSB[0..7]	↔	-DQSB0_7



(F, J)



**(G,H,I)**



(X18)



(x9)



Title			
CPU LGA1150-C			
Size	Document Number	Rev	
Custom	GA-B85M-D2V	2.0	
Date:	Monday, April 07, 2014	Sheet	6 of 33

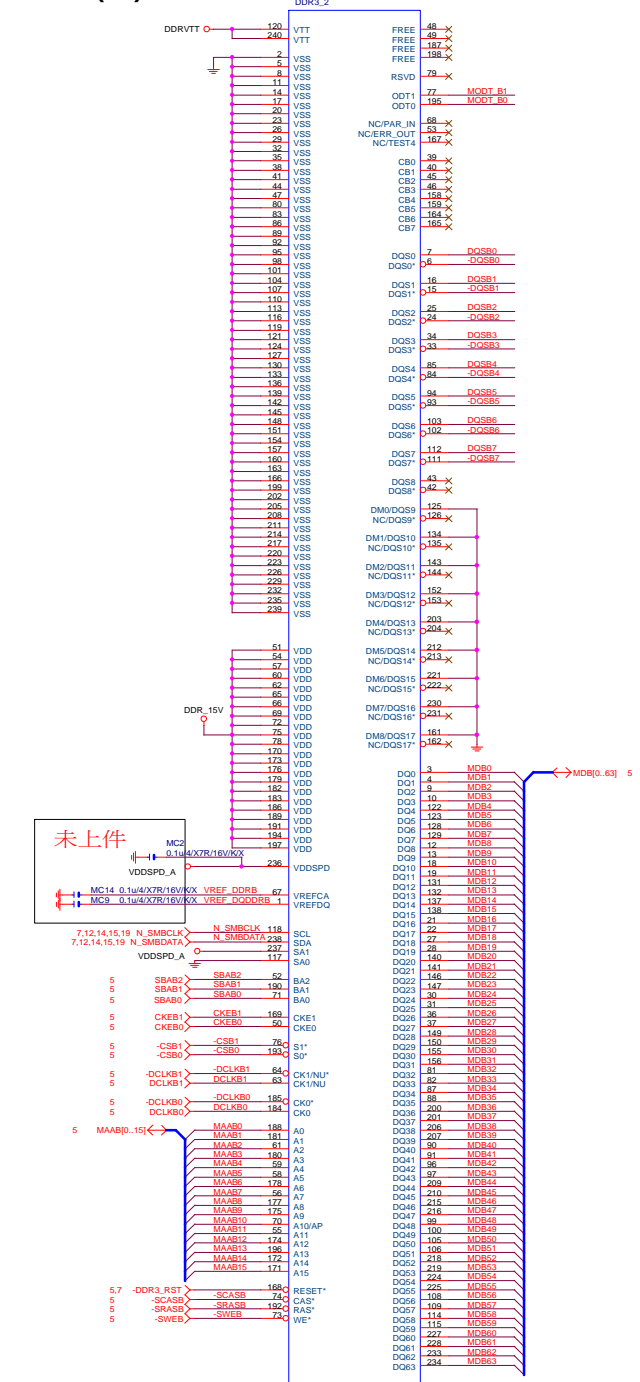






DDR3

(B)





PCH

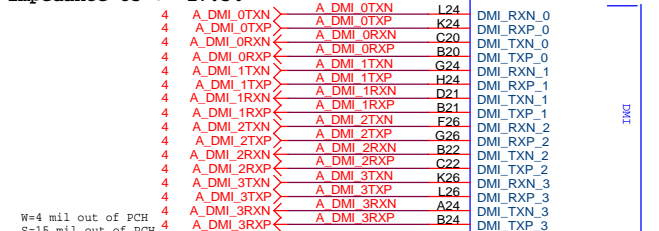
(B)

DMI:12/4/4/4/12(breakout min 8/4/4/4/8)  
Impedance=85 +- 17.5%USB2.0 : 12/4.5/7.5/4.5/12 (breakout min 8/4/4/4/8)  
Impedance=90 +- 17.5%

PCHB

B85: Port 6/7 N/A

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



PCIE Only

8111G

PCIEEx1

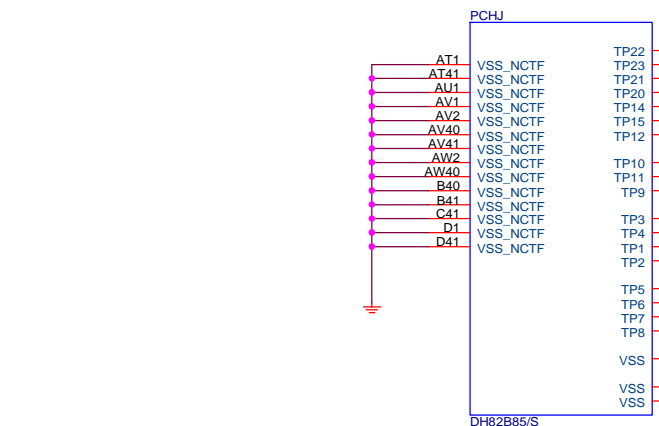
N/A

放靠近 Device & PCI-E Slot  
Impedance=80 +- 17.5%

PCIEX1:16/5/5/5/16 (breakout min 8/4/4/4/8)

PCH

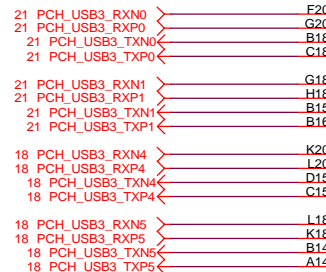
(J)



PCHJ

PCH

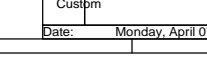
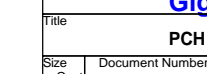
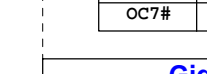
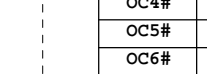
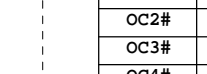
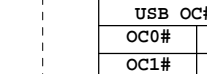
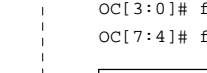
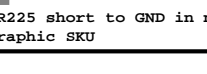
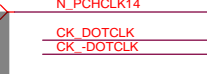
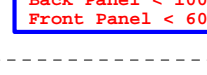
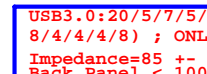
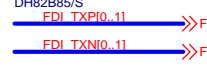
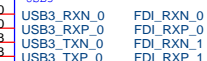
(F)



PCHF

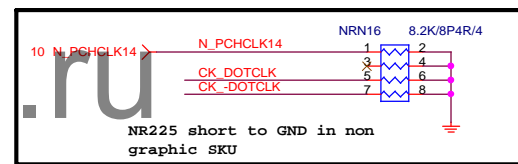
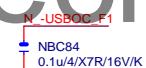
USB3

FDILINK



PCH CLK PD

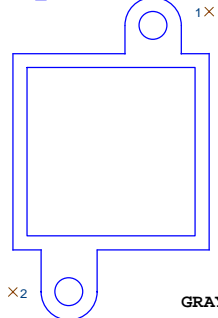
新增



PCH H/S

LOW COST ICH7 HEATSINK

SB\_HEATSINK

PCH\_HS  
PCH\_HS[12SP2-030005-41R]

USB TABLE

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

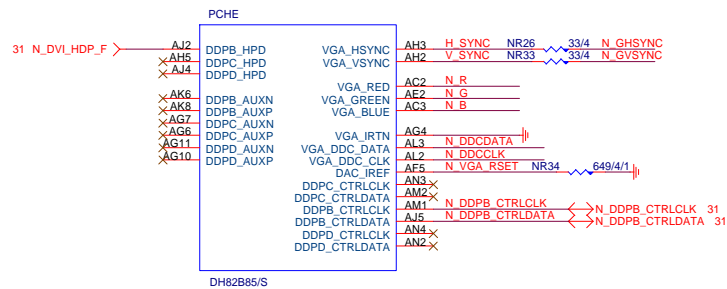
USB OC#	Configure
OC0#	F_USB30
OC1#	USB_LAN
OC2#	R_USB30
OC3#	N/A
OC4#	F_USB1
OC5#	F_USB2
OC6#	R_USB
OC7#	Not Use

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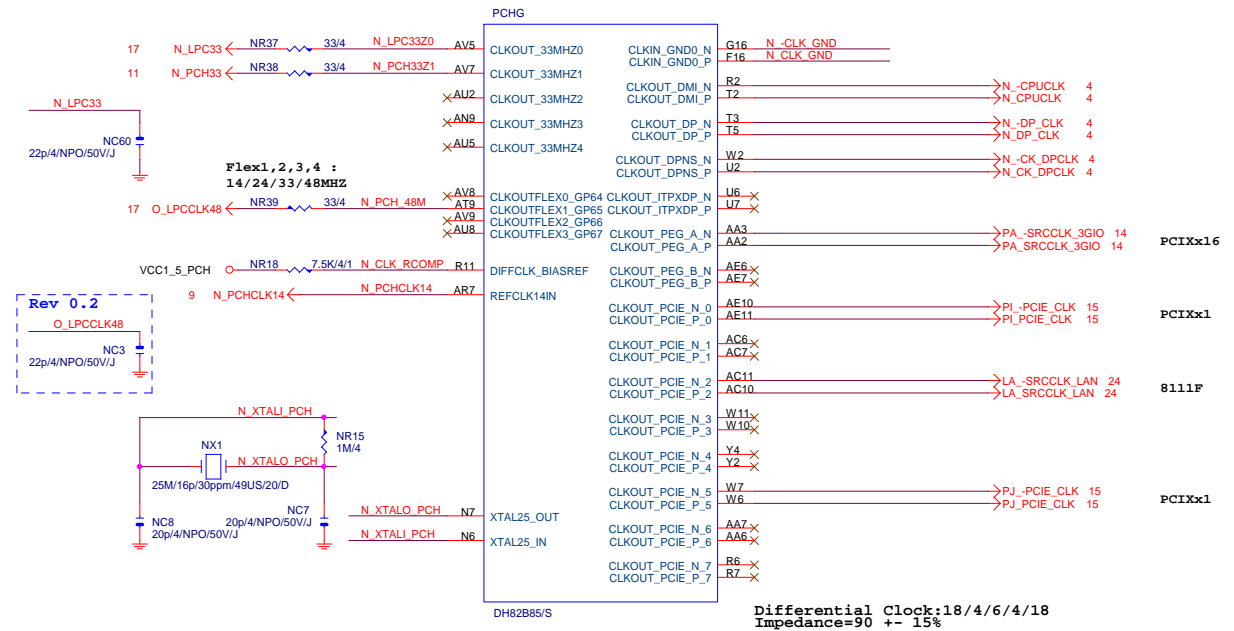
Title		
PCH FDI,DMI,USB ,PCIE,NVRAM		
Size	Document Number	Rev
Custom	GA-B85M-D2V	2.0
Date:	Monday, April 07, 2014	Sheet 9 of 33



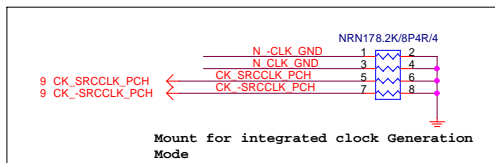
**PCH (E)**



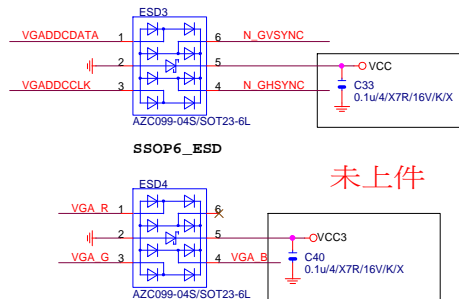
**PCH (G)**



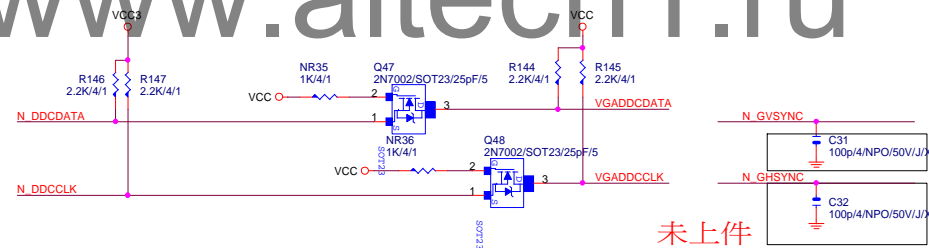
PCH CLK PD
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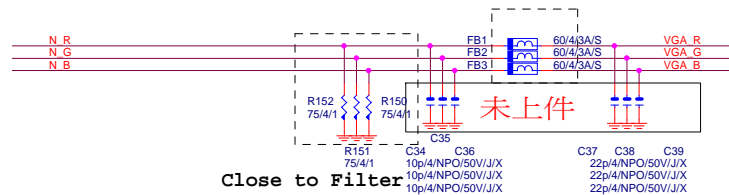
## VGA ESD



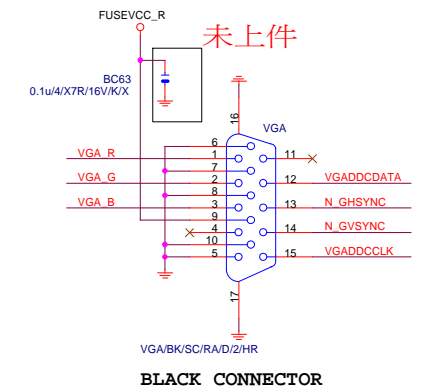
## VGA DDC



## VGA DDC



## VGA CONNECTOR

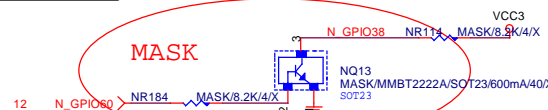




SATA3 : 20/7.5/4.5/7.5/20 (breakout min 8/4/4/4/8)  
Impedance=90 +- 17.5%  
SATA2 : 15/7.5/4.5/7.5/15 (breakout min 8/4/4/4/8)  
Impedance=90 +- 17.5%



GPI038 Ctrl



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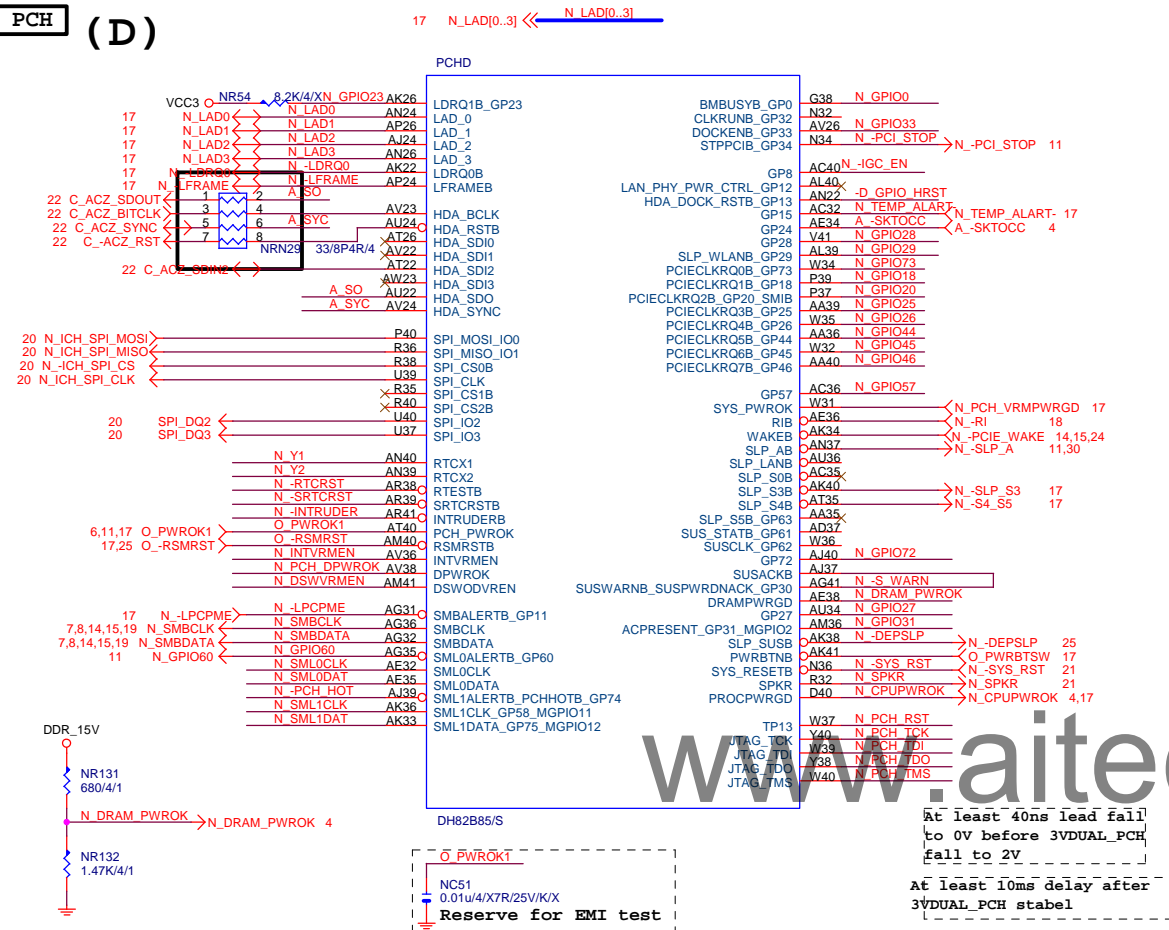
**PCH HOST , SATA, PCI**  
**GA-B85M-D2V**

Rev	3.0
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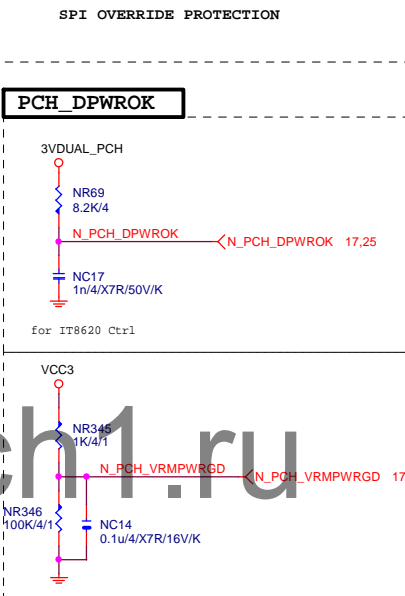
Date: Monday, April 07, 2014 Sheet 11 of 33



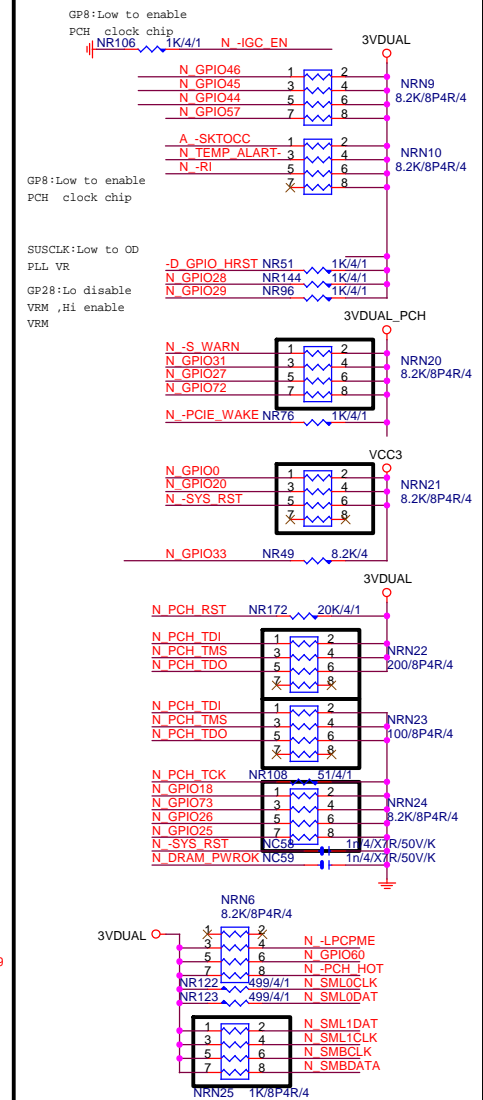
(D)



## ACZ\_SDOUT



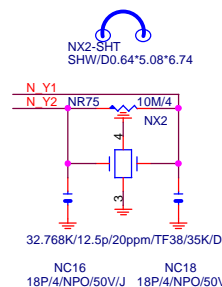
PCH	PU/PD
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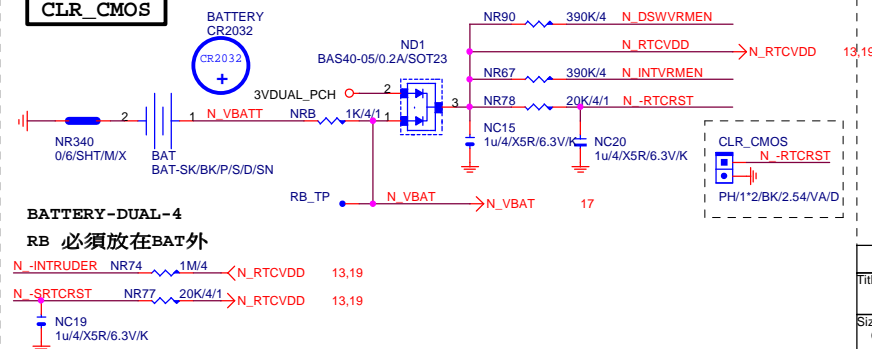
## HSW\_STRAP13



32.768KHZ



CLR_CMOS
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## PCH GPIO , CTRL , AUDIO

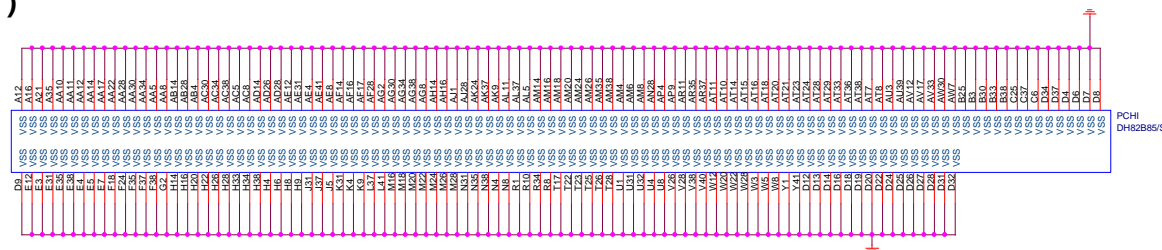
er **GA-B85M-D2V**

Rev	2.0
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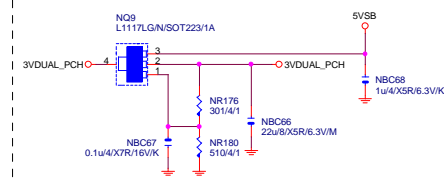
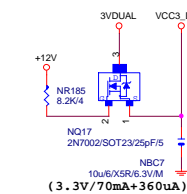
Date:	Monday, April 07, 2014	Sheet	12	of	33
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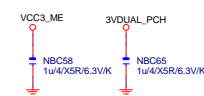
**PCH (I)**



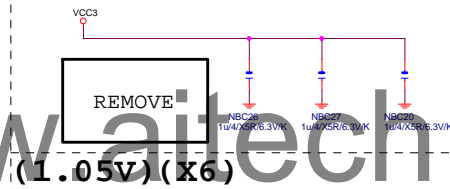
## 3VDUAL\_PCH



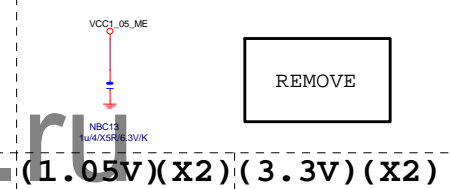
The diagram shows two component pin connections. The top component, labeled NRN5, has a pin 1 connected to VCC3\_ME and a pin 2 connected to VCC3. The bottom component, labeled NRN1, has a pin 1 connected to VCC1\_05\_ME and a pin 2 connected to VCC1\_05\_PCH. Both components have pins 3 through 8 connected to ground.



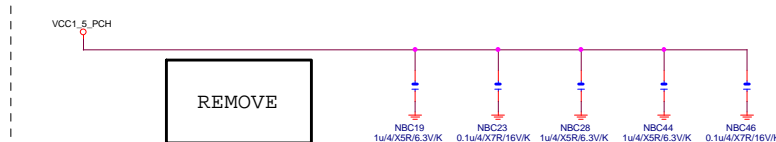
**( 3.3V ) ( X6 )**



(1.05V) (x5)

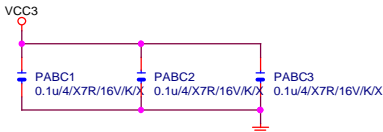


**(1.05V) (x10)**

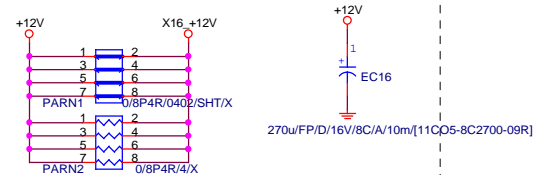




## PCIEX16 CAP



## PCIEX16 PROTECT SHT



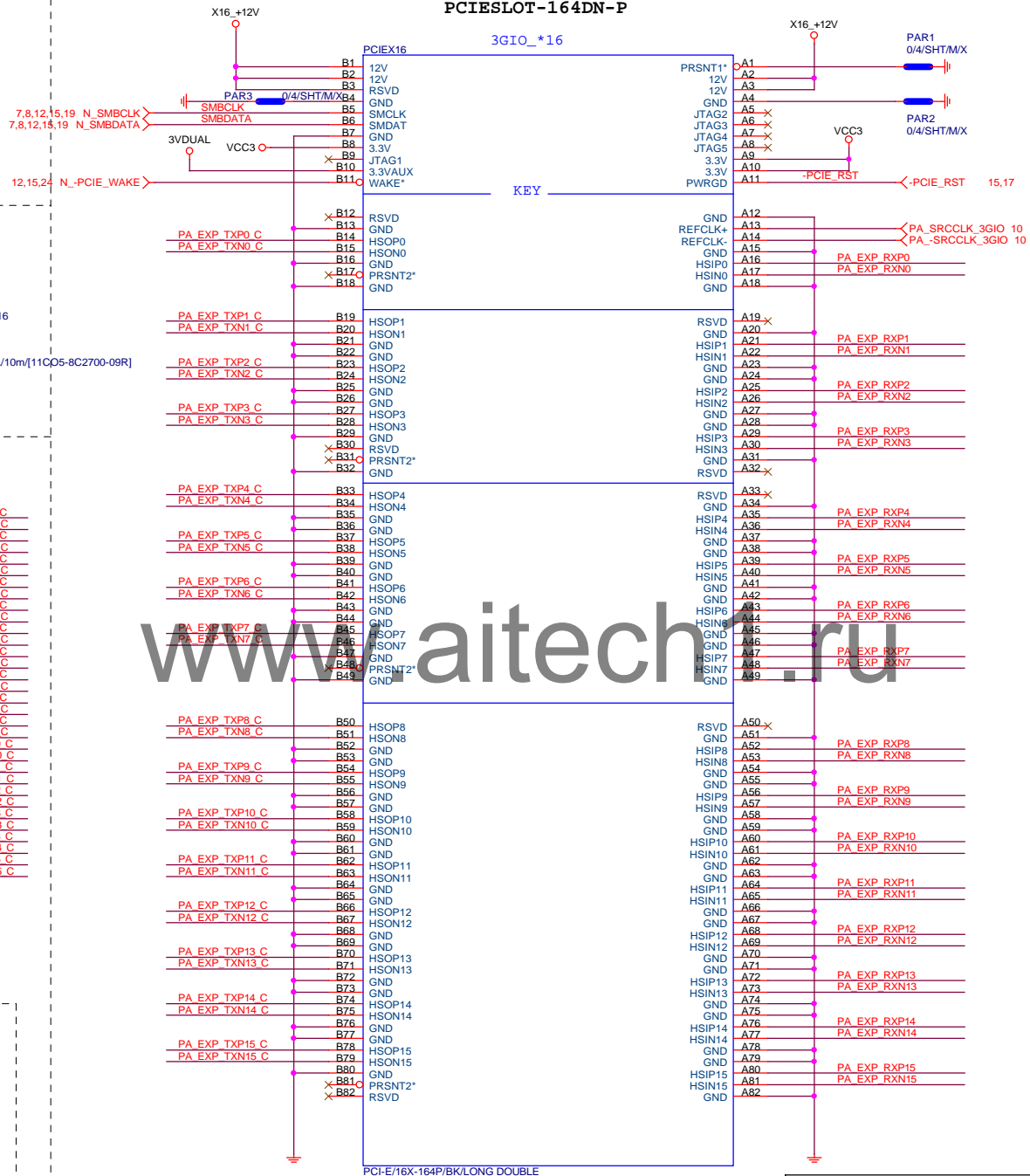
## PCIEX16 AC CAP

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	PAC18	0.22u4/X5R/6.3V/K	PA EXP TXP7 C
PA EXP TXN7	PAC19	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 RXP0.[15] >>> PA\_EXP\_RXP[0..15] 4  
PA EXP RXN0.[15] >>> PA\_EXP\_RXN[0..15] 4  
PA EXP TXP0.[15] >>> PA\_EXP\_TXP[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



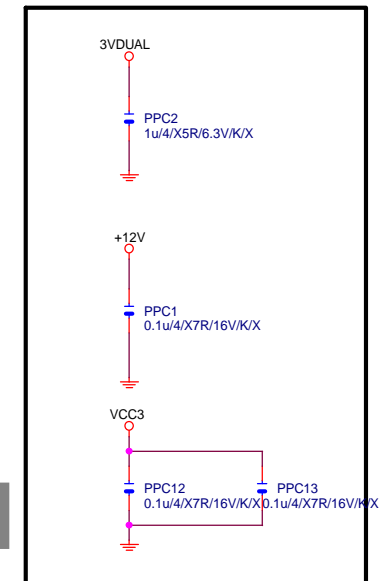
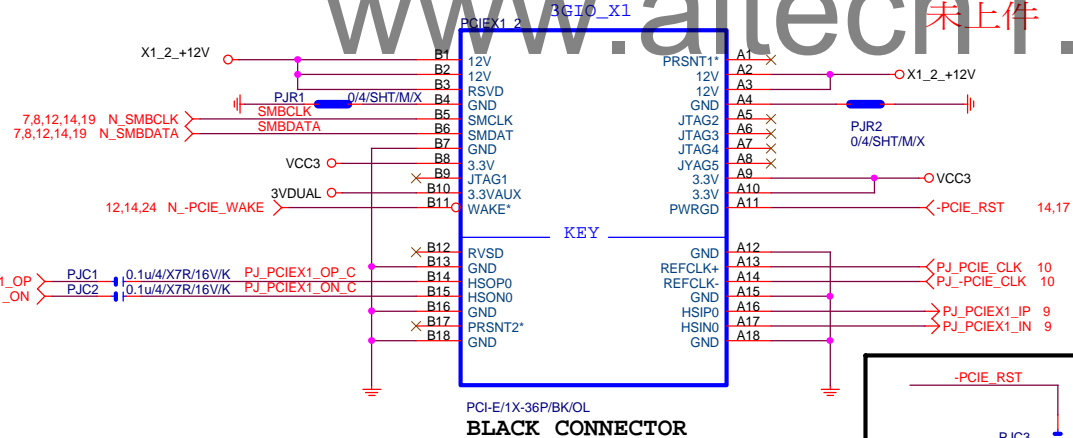
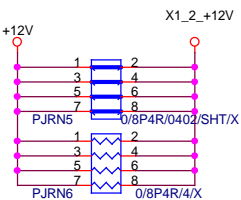
BLACK CONNECTOR

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Title			PCI EXPRESS * 16	
Size			GA-B85M-D2V	
Custom			Rev 2.0	
Date: Monday, April 07, 2014			Sheet 14 of 33	



PCIEX1 SLOT



未上件

未上件



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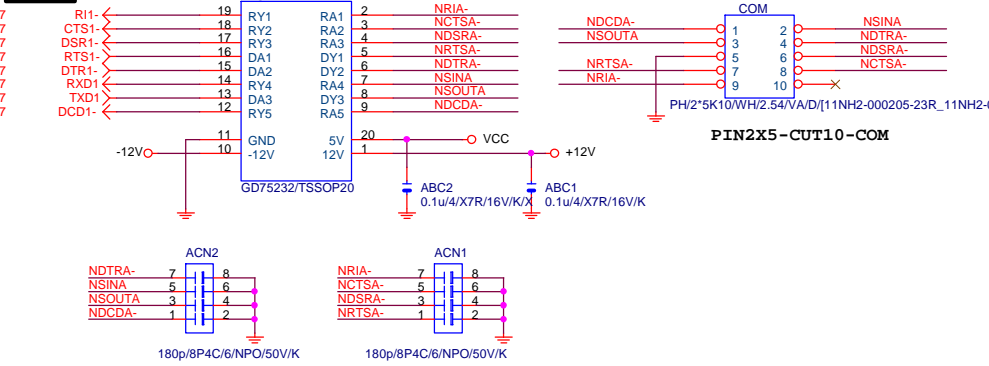
Gigabyte Technology			
Title			
PCI SLOT 1&2			
Size	Document Number		Rev
Custom	GA-B85M-D2V		2.0
Date:	Monday, April 07, 2014	Sheet	16 of 33



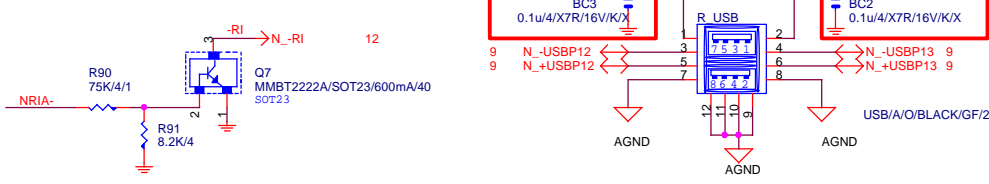




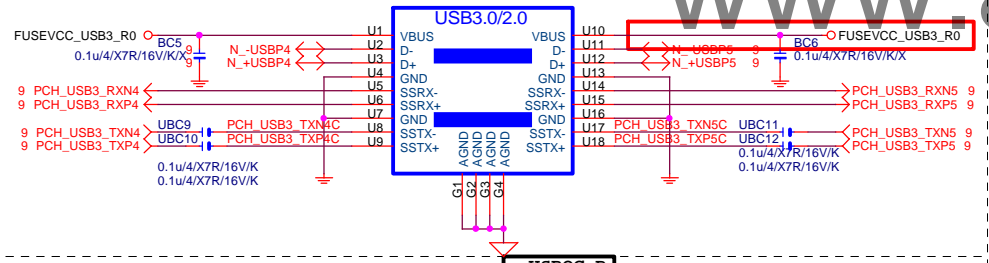
COM



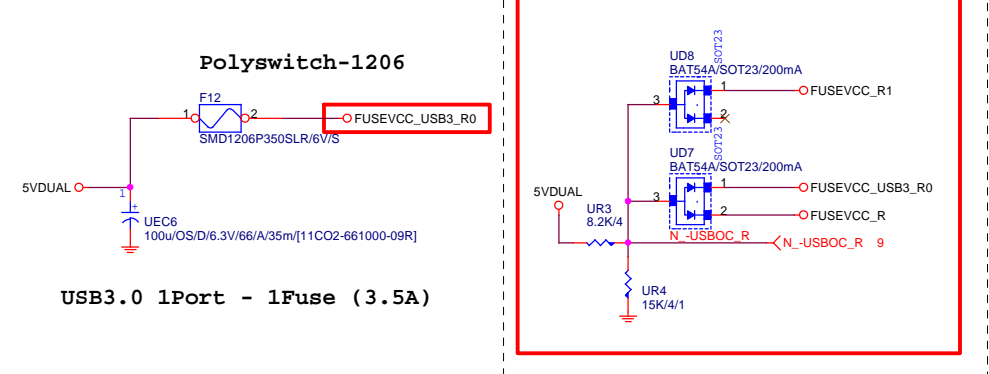
COM RI



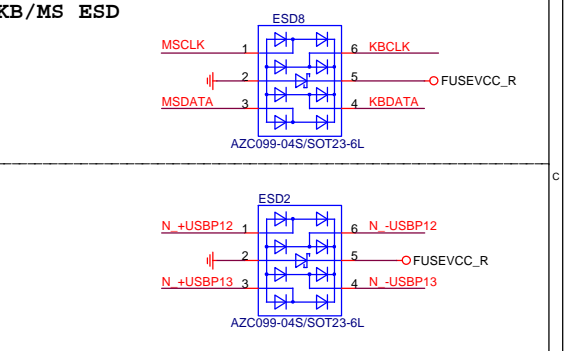
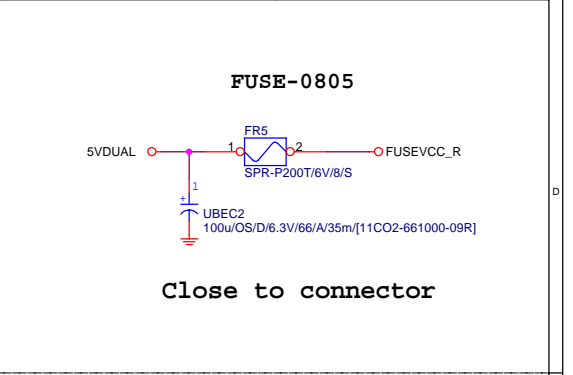
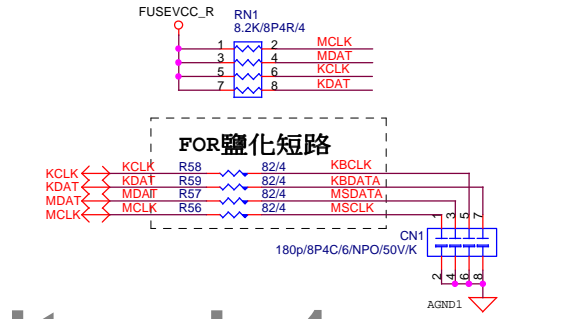
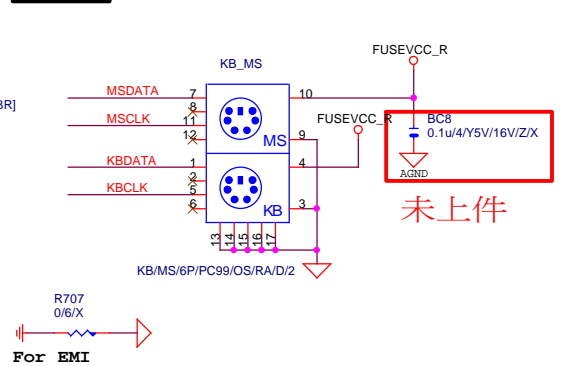
USB30\_20



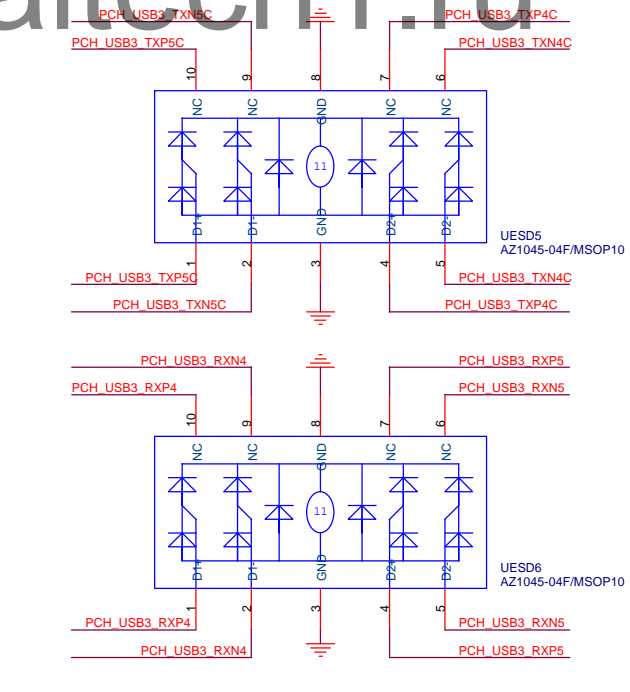
USB30\_20 PWR



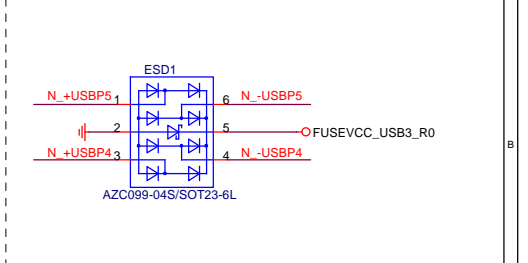
KB/MS



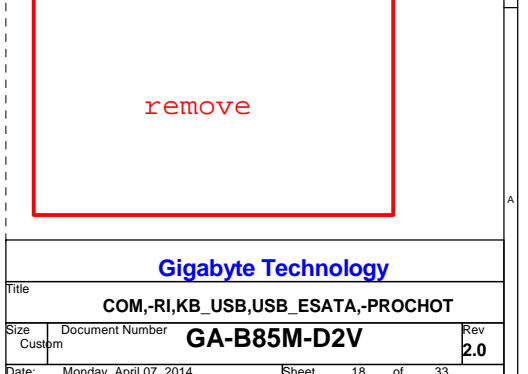
USB3.0 ESD PROTECT



USB2.0 ESD

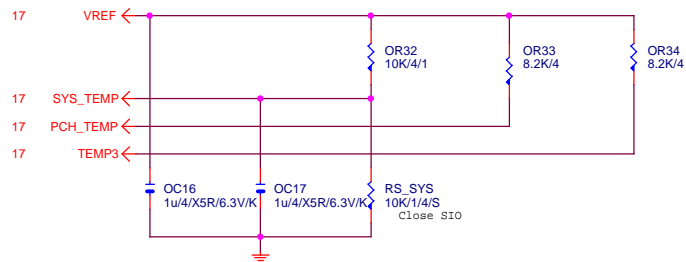


USB POWER PROTECT

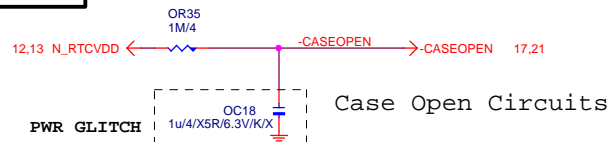




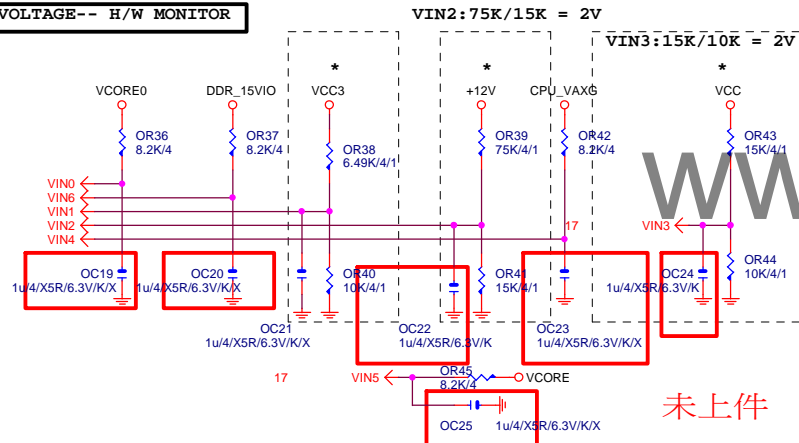
# TEMP H/W MONITOR



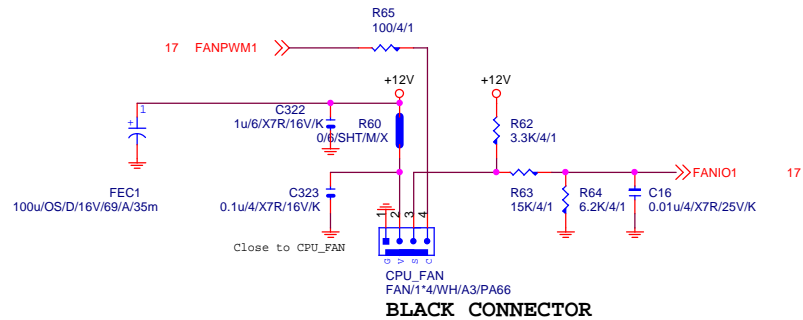
# CASE OPEN



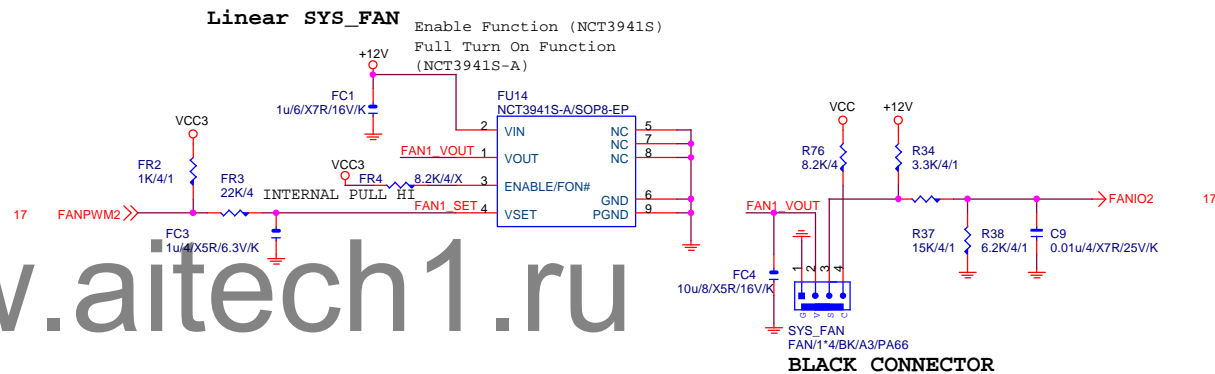
# VOLTAGE-- H/W MONITOR



# CPU SMART FAN



# SYS SMART FAN

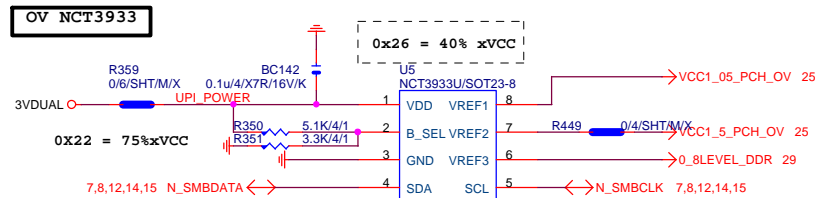


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-PROHOT

未上件

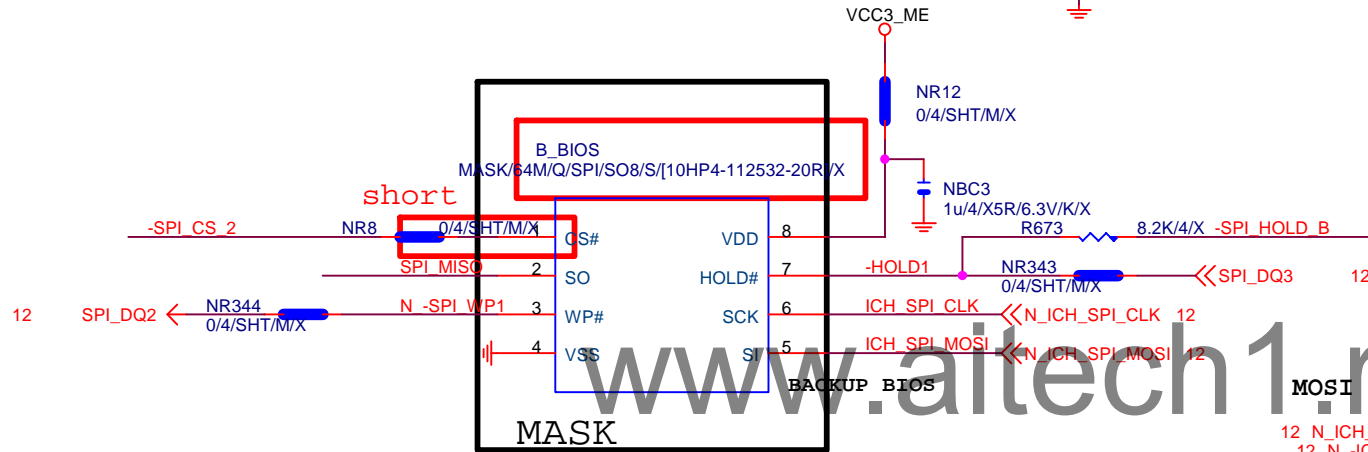
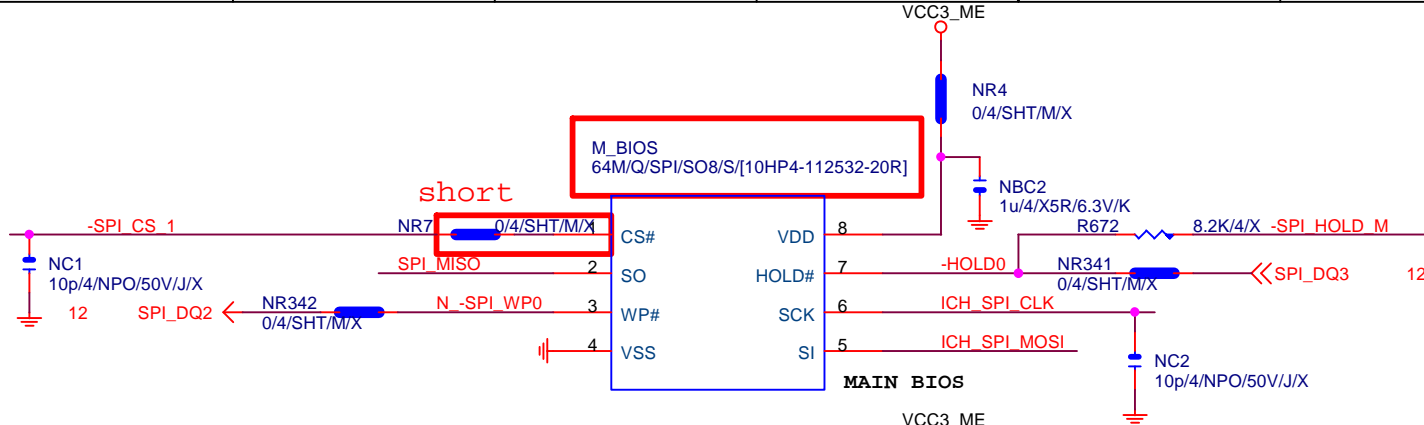
接pwm feedback pin



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 Technology			
Title HWM,FAN CTRL,OV			
Size Custom	Document Number	GA-B85M-D2V	
Date: Monday, April 07, 2014	Sheet	19	of 33

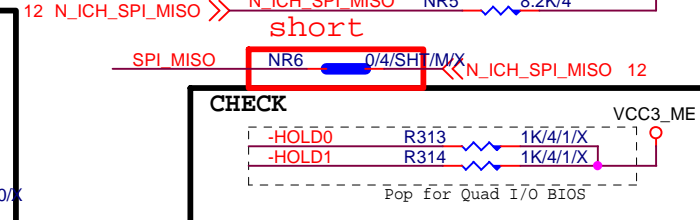
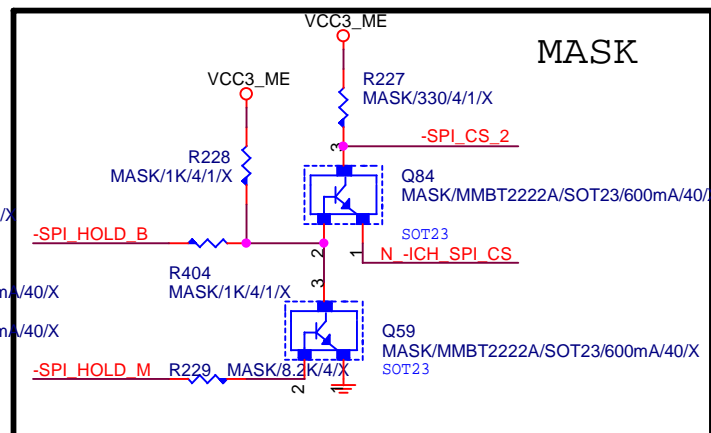
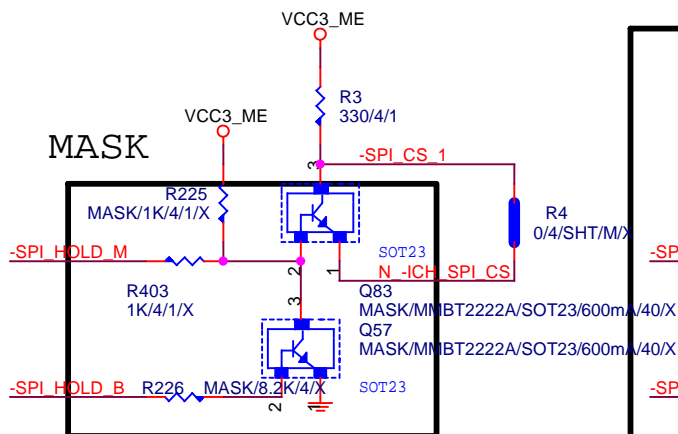
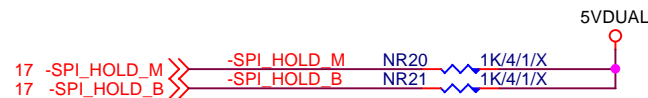
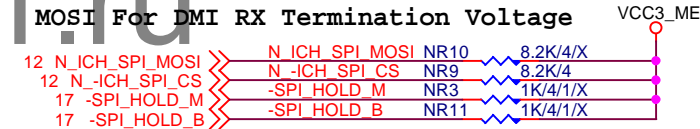




BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

1 means floating  
0 means PD 1K

#### MOSI For DMI RX Termination Voltage



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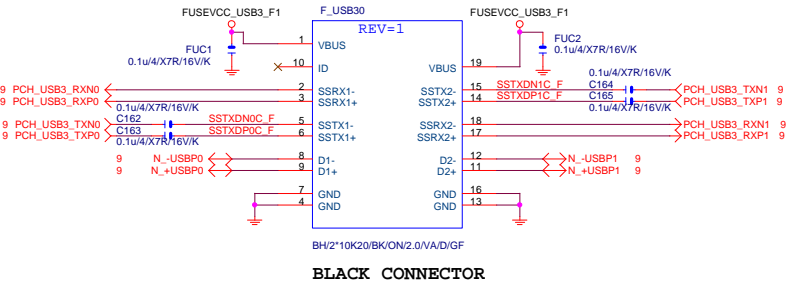
**DUAL BIOS**

**GA-B85M-D2V**

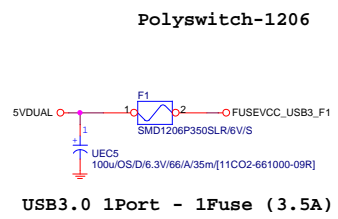
Title		Rev
Size	Document Number	2.0
Custom		
Date:	Monday, April 07, 2014	Sheet 20 of 33



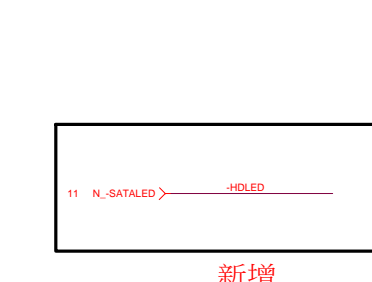
# F\_USB30



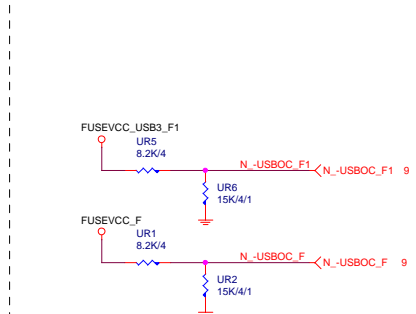
# F\_USB30 PWR



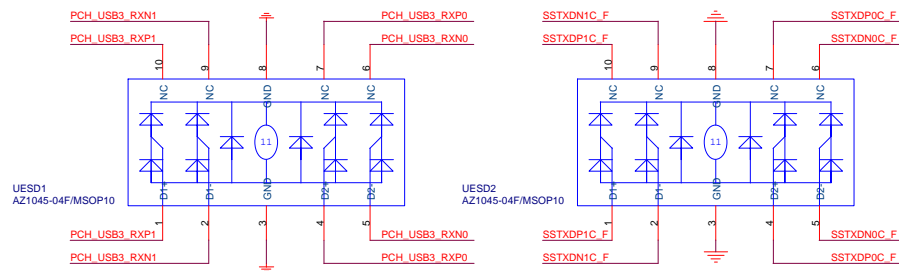
# SATA LED



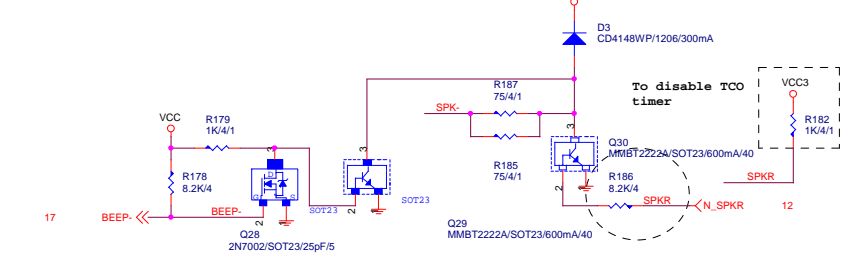
# -USB0C\_F



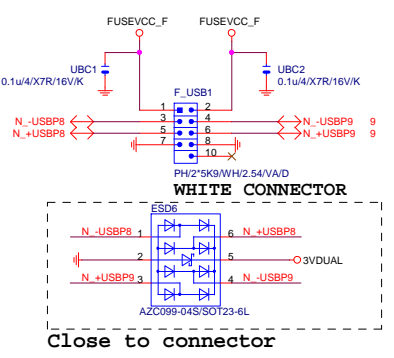
# F\_USB30 ESD PROTECT



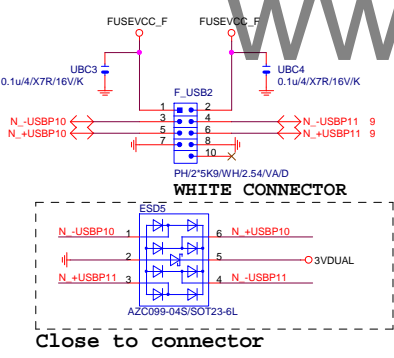
# SPKR



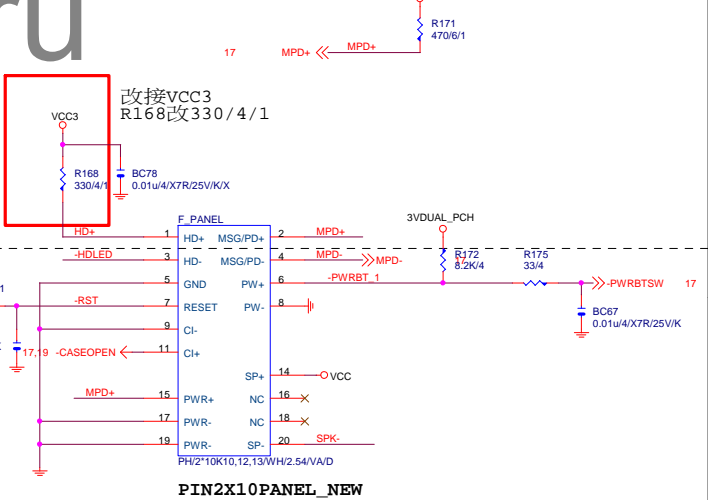
# FRONT USB1



# FRONT USB2



# INTEL FRONT PANEL

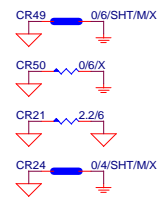


Gigabyte Technology			
FP,F_USB,USB PWR,SPKR,SATA LED			
GA-B85M-D2V			
Rev	2.0		
Date:	Monday, April 07, 2014		
Sheet	21	of	33

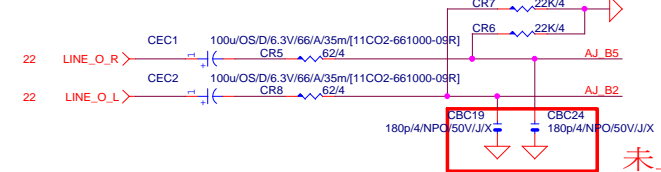








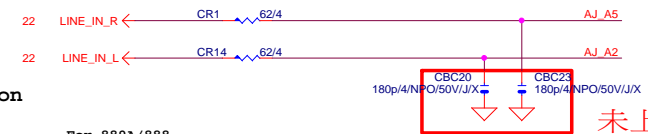
## LINE-OUT



## LINE-IN

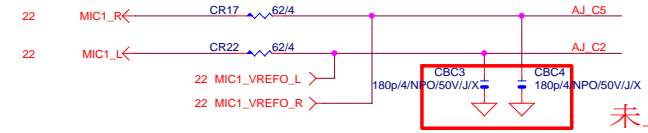
Verify MIC function  
in LINE-in

Only reserved for ALC888



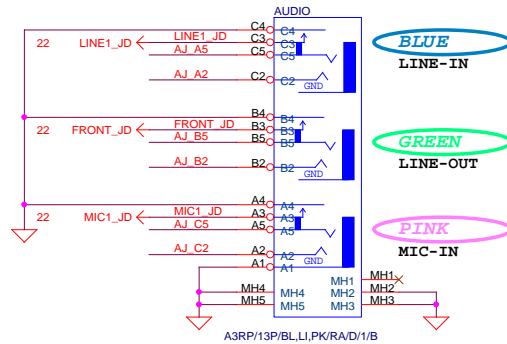
For 889A/888

## MIC-IN

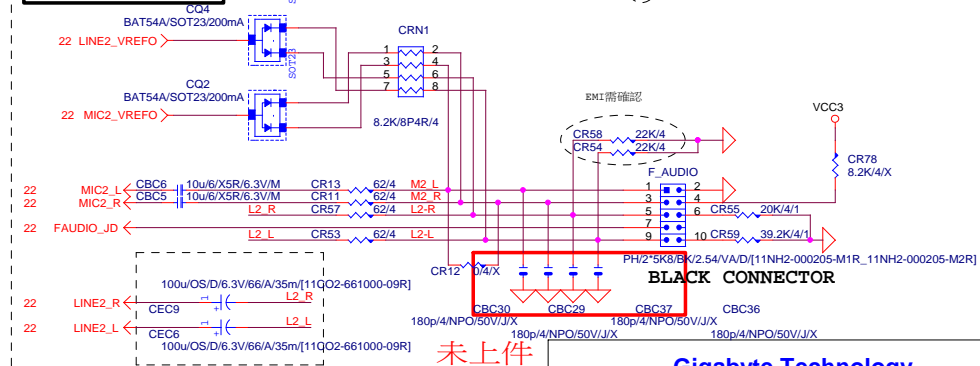


## SPDIF\_OUT

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## AZALIA FRONT PANEL

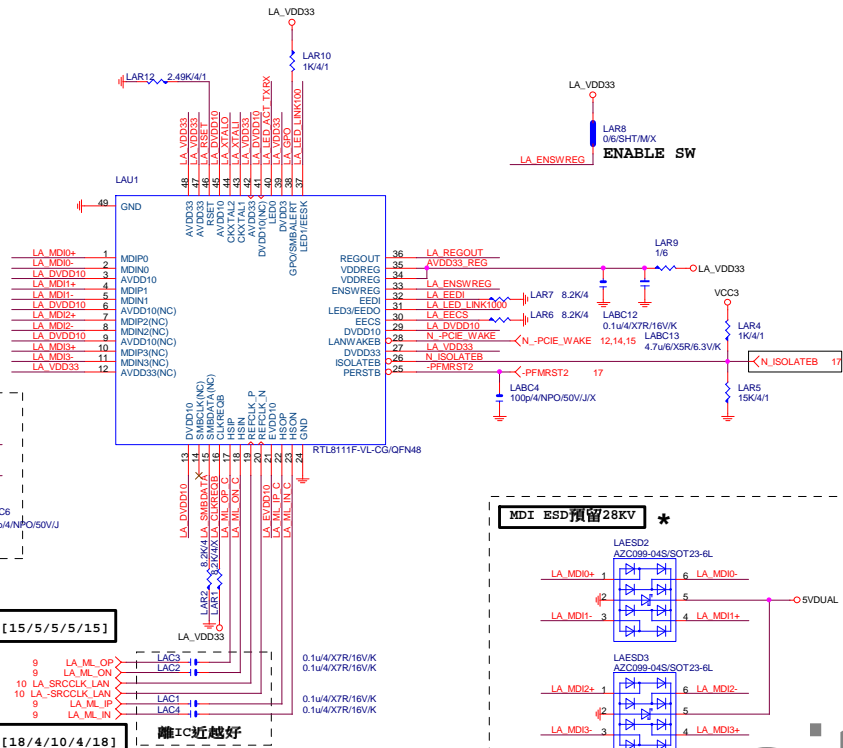


Gigabyte Technology

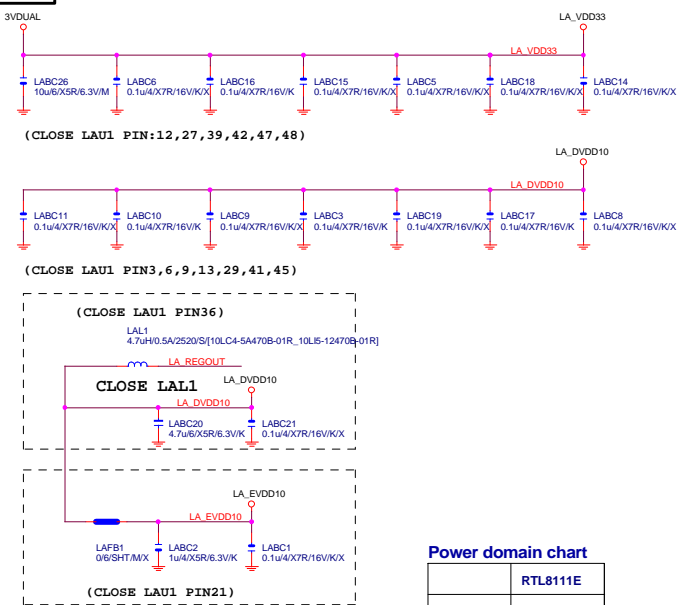
Title		
AUDIO JACK		
Size	Document Number	Rev
Custom	GA-B85M-D2V	2.0
Date:	Monday, April 07, 2014	Sheet 23 of 33



LAN:RTL8111F/VB/VL



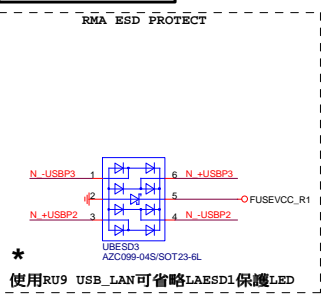
LAN POWER



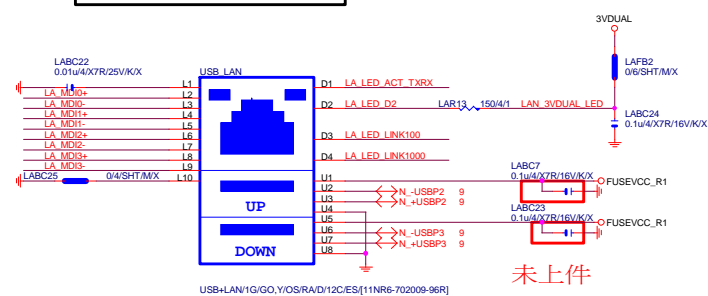
Power domain chart

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

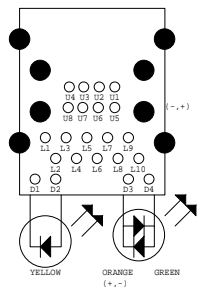
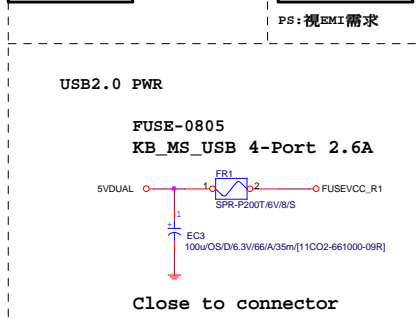
USB LAN CONNECTOR



LA\_MDI-->100歐姆:[20/4/8/4/20]



USB X3 POWER



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

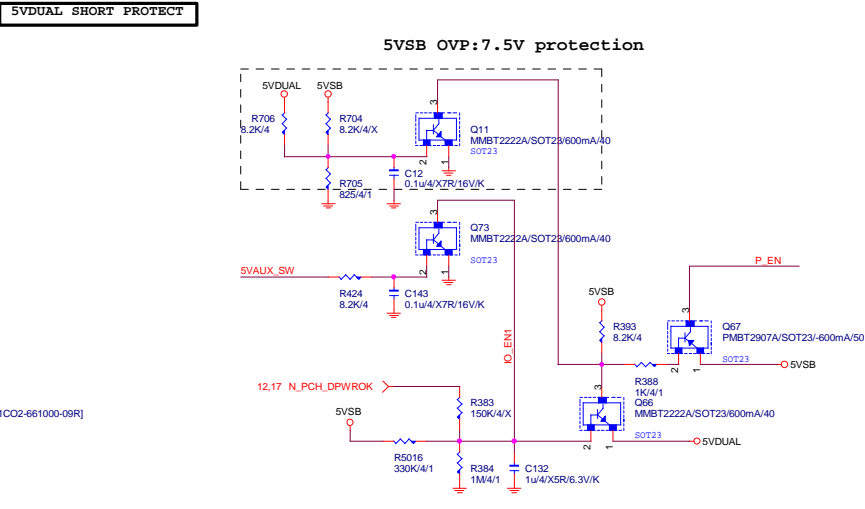
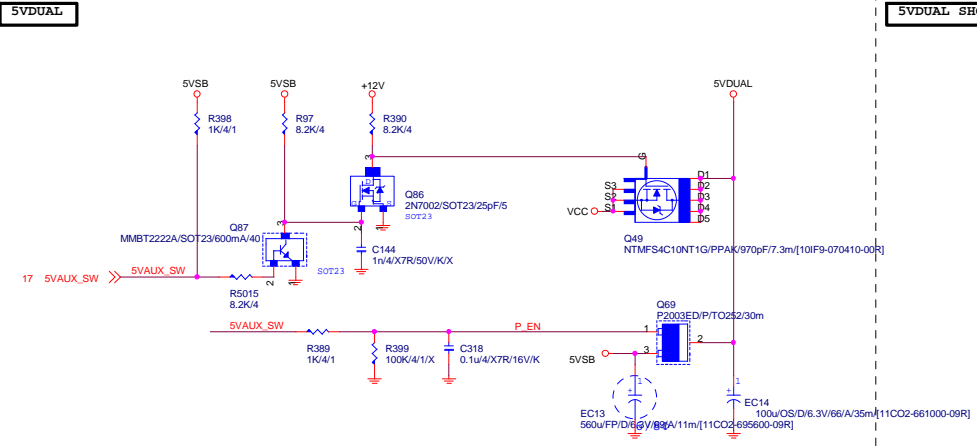
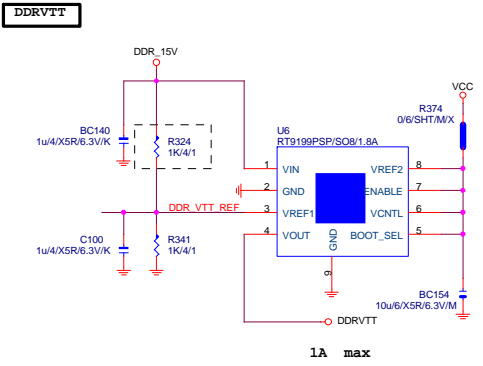
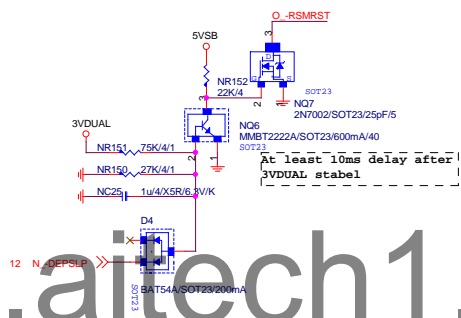
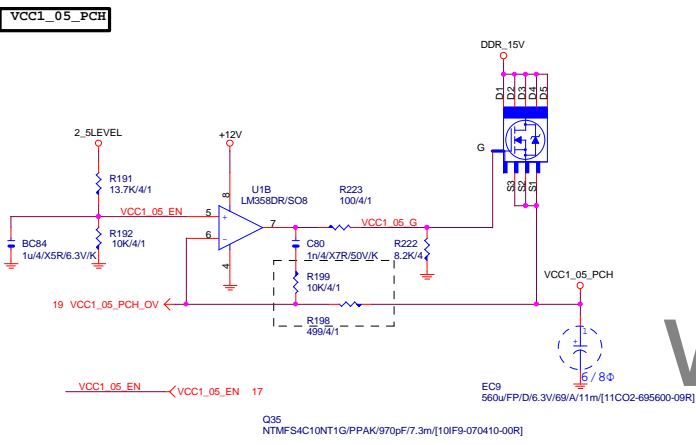
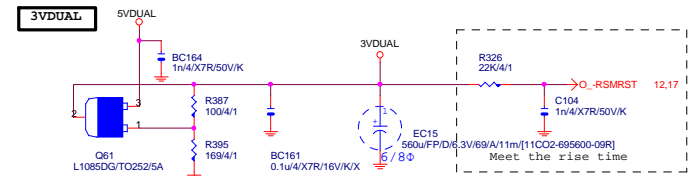
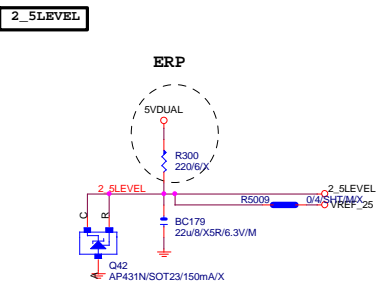
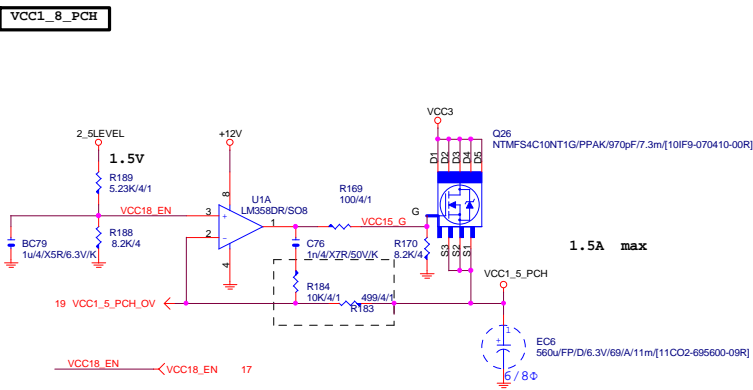
BOM NOTICE \*

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

Gigabyte Technology

Title	Realtek RTL8111G	Rev	2.0
Size	Document Number	GA-B85M-D2V	
Date	Monday, April 07, 2014	Sheet	24 of 33

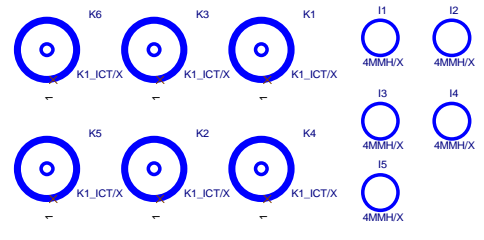
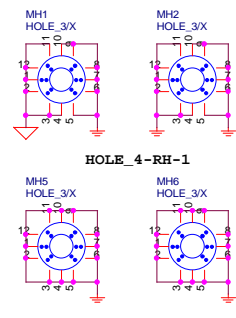
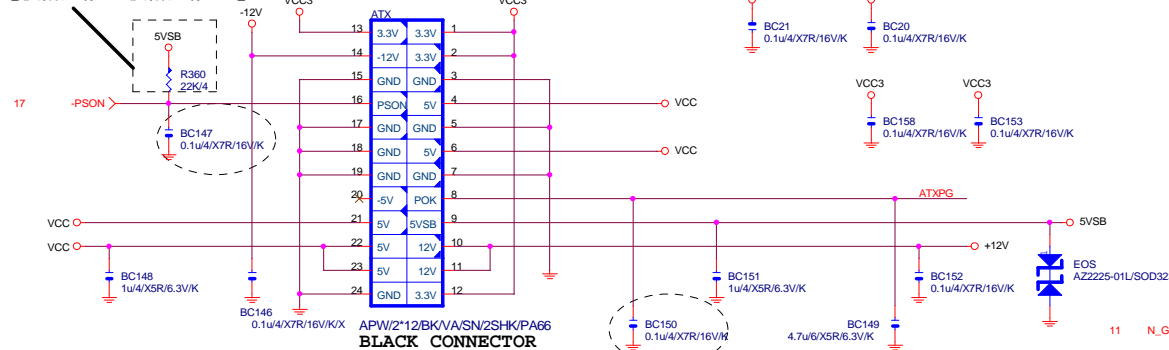






# ATXX24 POWER CONNECTOR

【技術通報R&D技術通報155】

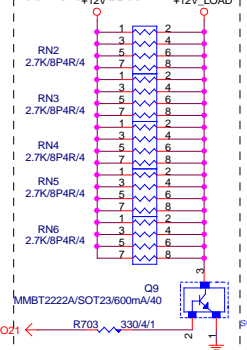


To prevent the 5VSB under loading when boot

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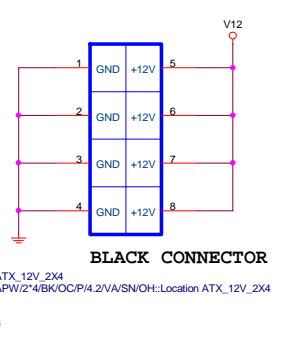
# 【技術通報R&D技術通報158】

To fix 12V light load abnormal issue



# ATXX4 POWER CONNECTOR

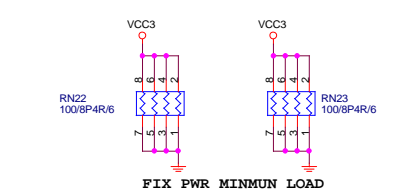
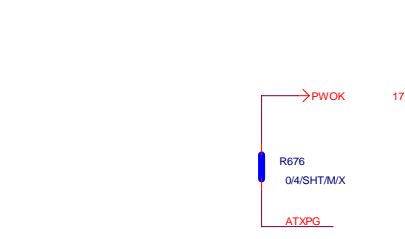
To fix 12V light load abnormal issue



To prevent the 5VSB under loading when boot

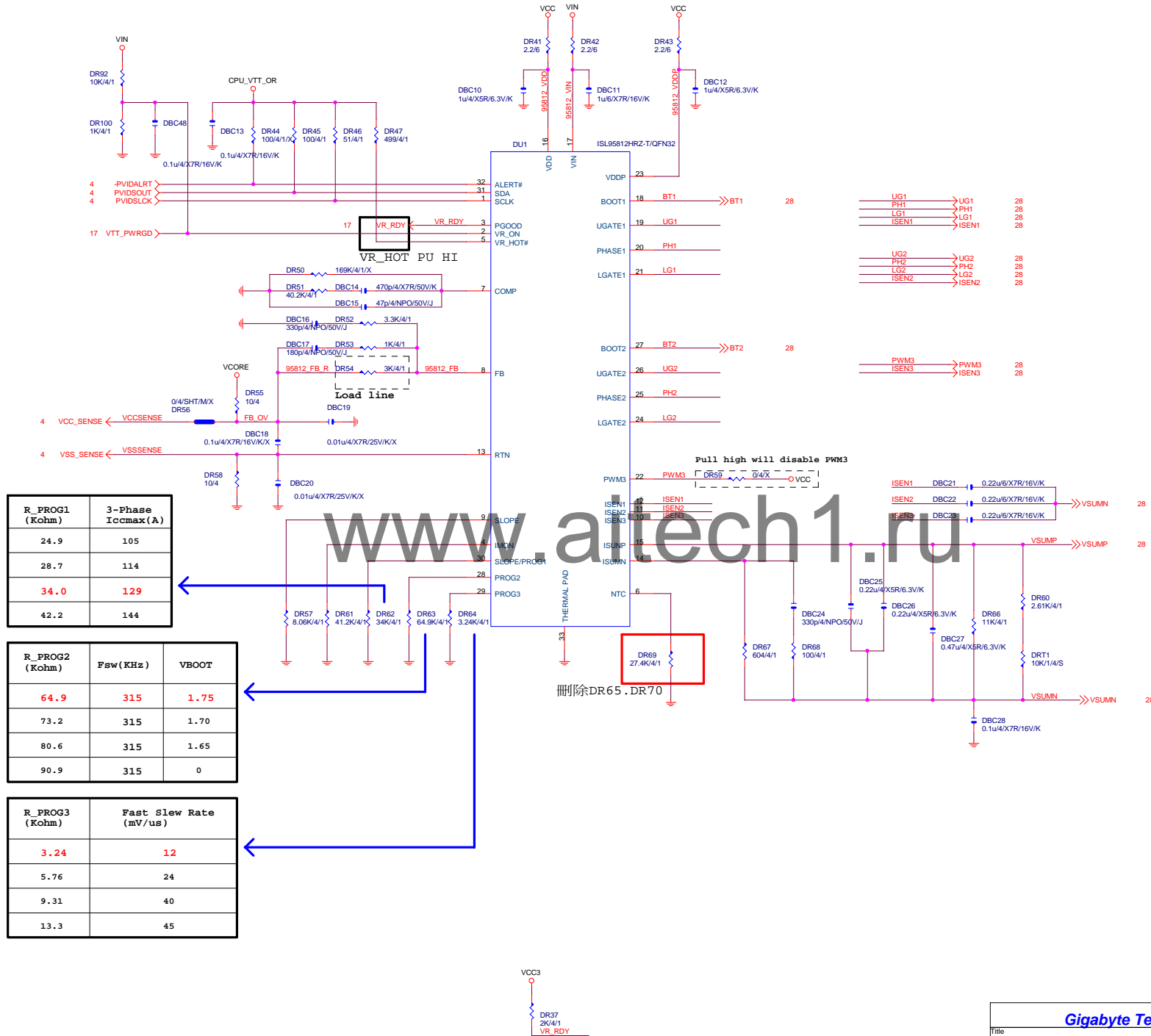
# PWOK PATCH

【技術通報R&D技術通報154】



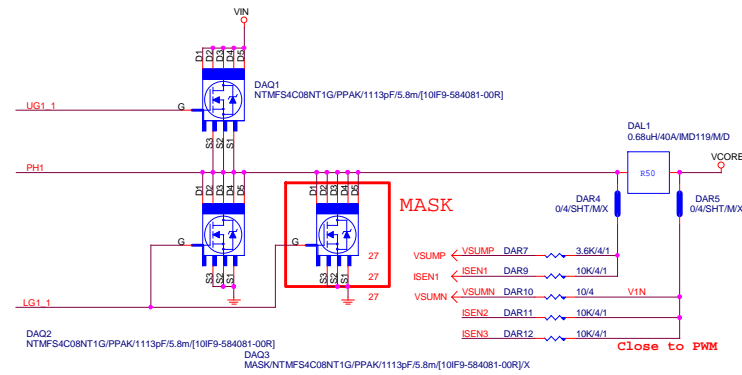
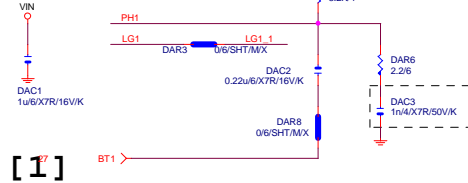
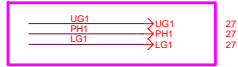
Gigabyte Technology		
ATX CONNECTOR		
GA-B85M-D2V		Rev 2.0
Date: Monday, April 07, 2014	Sheet 26	of 33



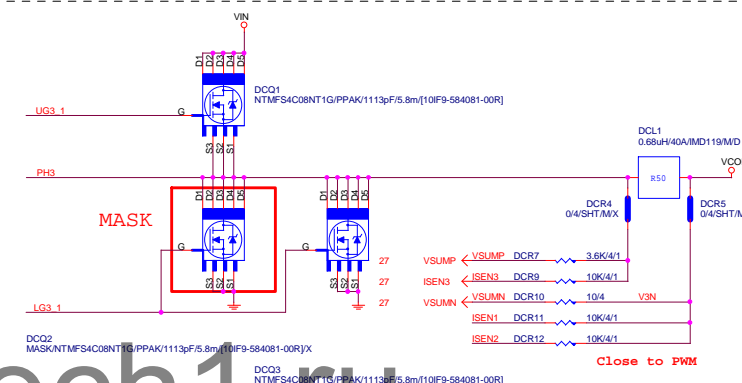
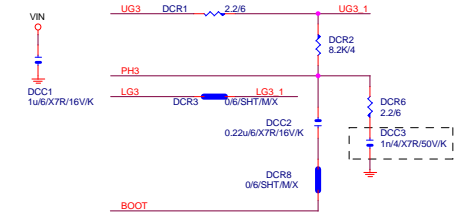
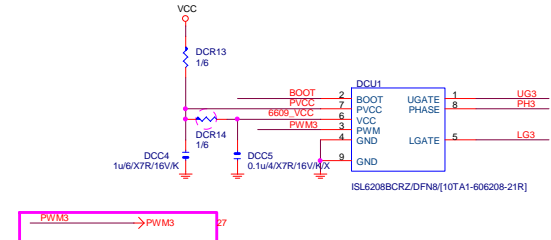




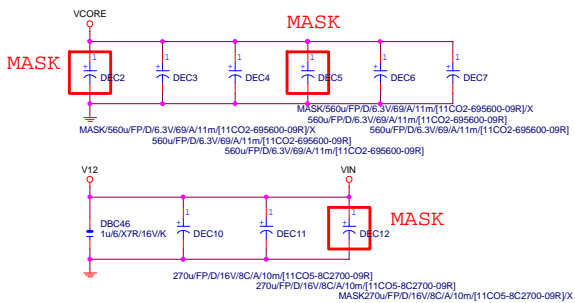
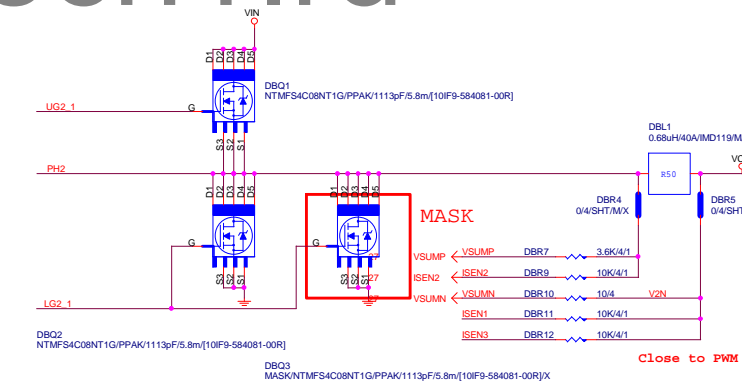
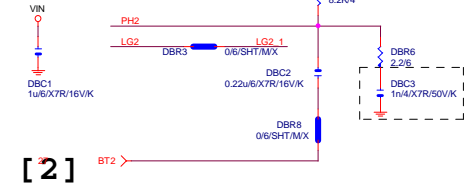
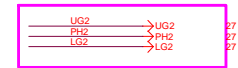
# PHASE 1



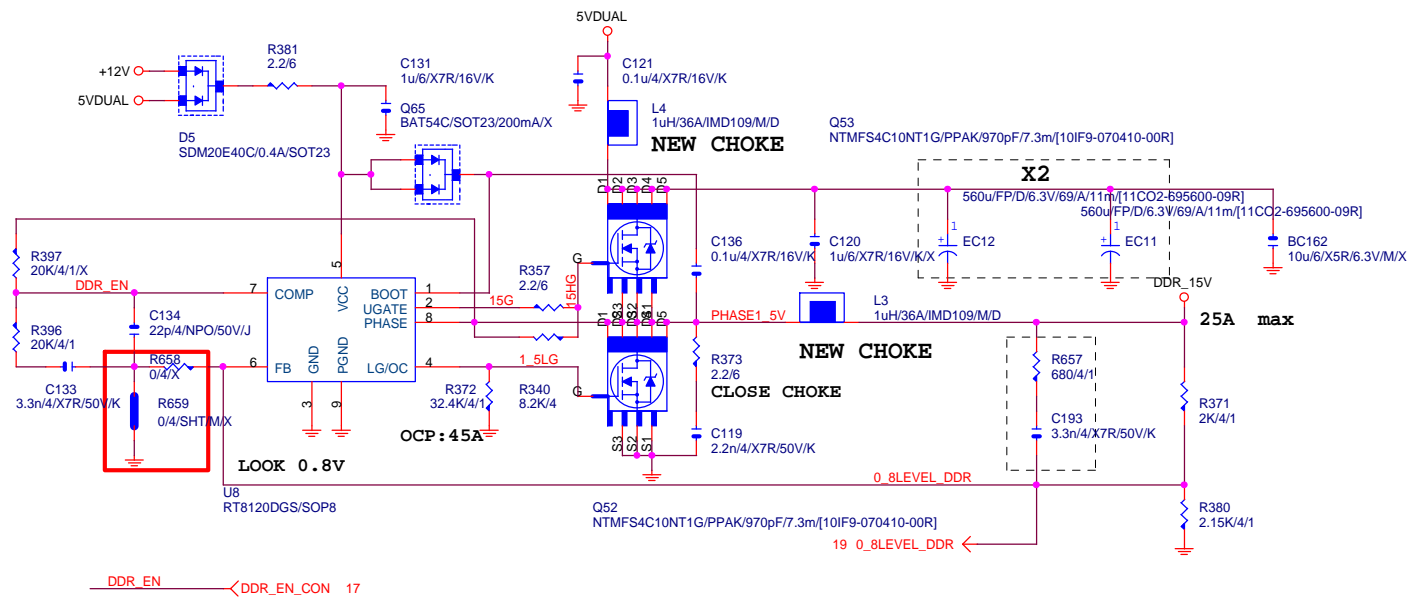
# PHASE 3



# PHASE 2



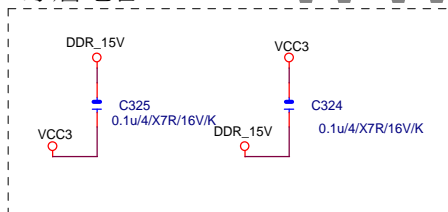




From DDR\_15V source  
10 mils trace to SIO

DDR\_15V DDR\_15VIO  
MR20 0/4/SHT/M/X

穿層電容



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

IRMS=11.45A

560u/FP/D/6.3V/68/8m RIPLE 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=(Iocp\*Lgate, rdson)/Iocset

Rocset=(45A\*6.7mOhm)/10uA = 30K

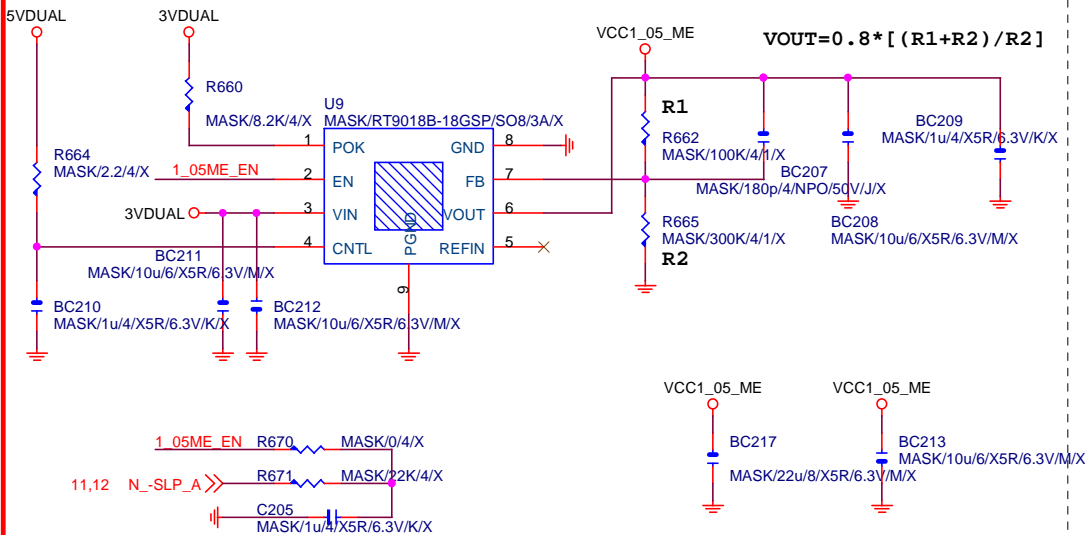
Iocset=10uA

Gigabyte Technology

Title			
DDR POWER			
Size	Document Number	GA-B85M-D2V	
Custom			Rev 2.0
Date:	Monday, April 07, 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

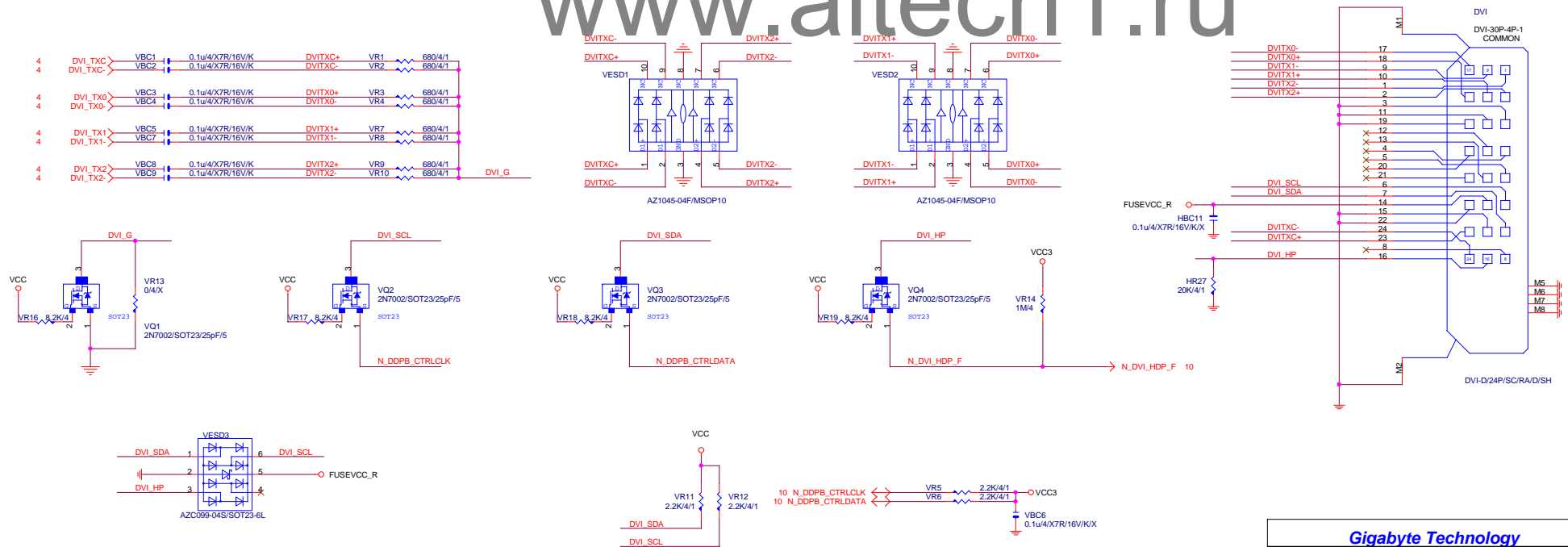
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Gigabyte Technology			
Title LPT			
Size Custom	Document Number	GA-B85M-D2V	Rev 2.0
Date:	Monday, April 07, 2014	Sheet 30	of 33



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DVI



**Gigabyte Technology**

Title				DVI				Rev	
Size Custom		Document Number				GA-B85M-D2V		2.0	
Date: Monday, April 07, 2014				Sheet		31		of 33	



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Gigabyte Technology			
Title			
ITE IT8892E			
Size	Document Number		Rev
Custom	GA-B85M-D2V		2.0
Date:	Monday, April 07, 2014		Sheet 32 of 33
		1	



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Gigabyte Technology		
Title USB3 EJ188		
Size C	Document Number GA-B85M-D2V	Rev 2.0
Date: Monday, April 07, 2014 Sheet 33 of 33		