

Model Name: GA-B85M-D3H

SHEET

TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1150-A
05	CPU_LGA1150-B
06	CPU_LGA1150-C
07	DDR III CHANNEL A 1,2
08	DDR III CHANNEL B 1,2
09	PCH_FDI,DMI,USB,PCIE,NVRAM
10	PCH_DP,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCI EXPRESS*16 SLOT
15	PCI EXPRESS*4 SLOT
16	PCI SLOT1,2
17	ITE 8620 LPC IO
18	COM,KB_MS_USB,USB30_20
19	HWM,FAN CTRL,OV,-PROCHOT
20	DUAL BIOS
21	FP,FUSB,SPK,SATALED
22	Realtek ALC892-GR
23	REAR AUDIO JACK
24	REALTEK RTL8111F
25	DISCRETE POWER
26	ATX ,TPM
27	VCORE ISL95812_1

www.xinxunwei.com 400-800-9990

Revision 2.02

SHEET

TITLE

28	VCORE ISL95812_2
29	RT8120_DDR POWER
30	LPT, M3 POWER
31	DVI, HDMI
32	IT8892E

Gigabyte Technology			
Title			
Cover Sheet			
Size	Document Number	GA-B85M-D3H	Rev
Custom			2.02
Date:	Wednesday, June 18, 2014	Sheet	1 of 32

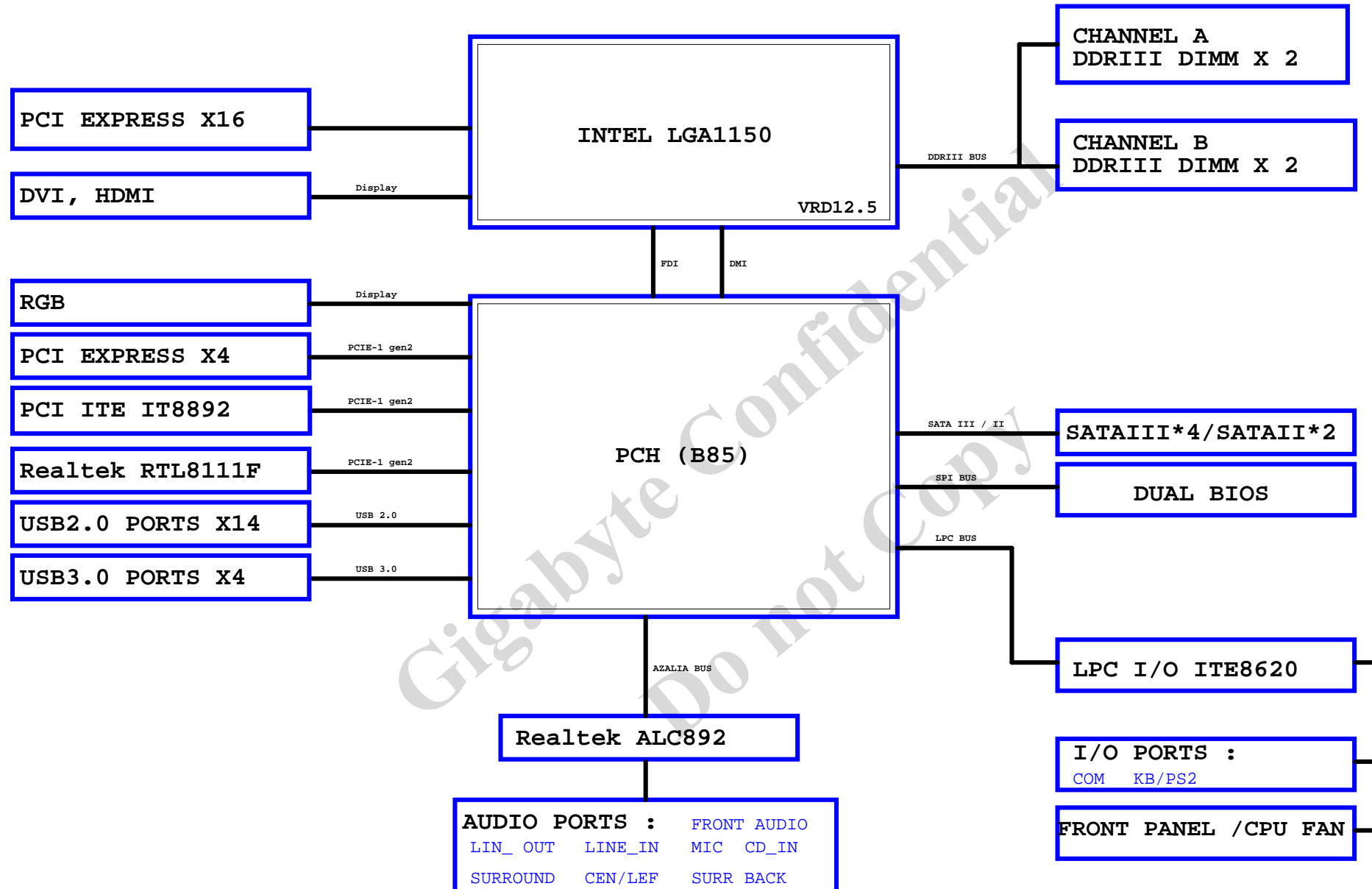
Circuit or PCB layout change

Component value change history

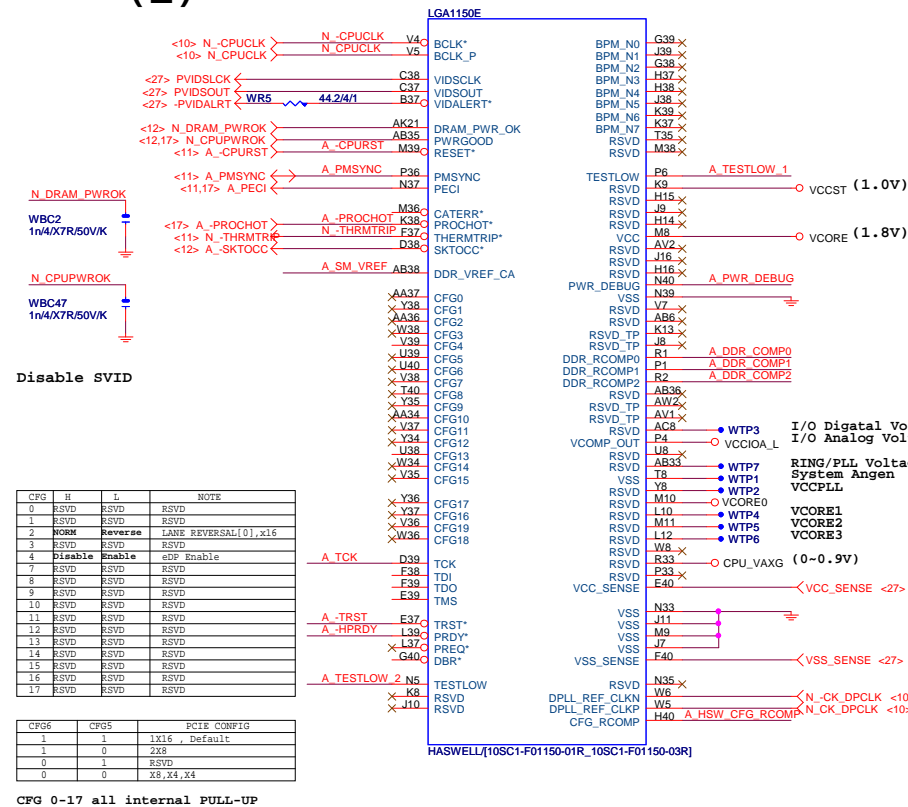
2014/2/20

[illegible][illegible]

BLOCK DIAGRAM

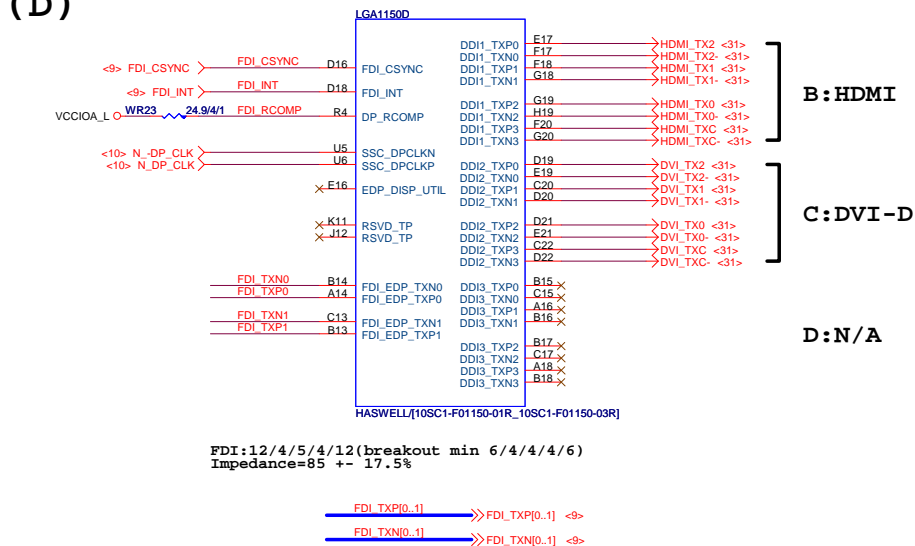


LGA1150 (E)

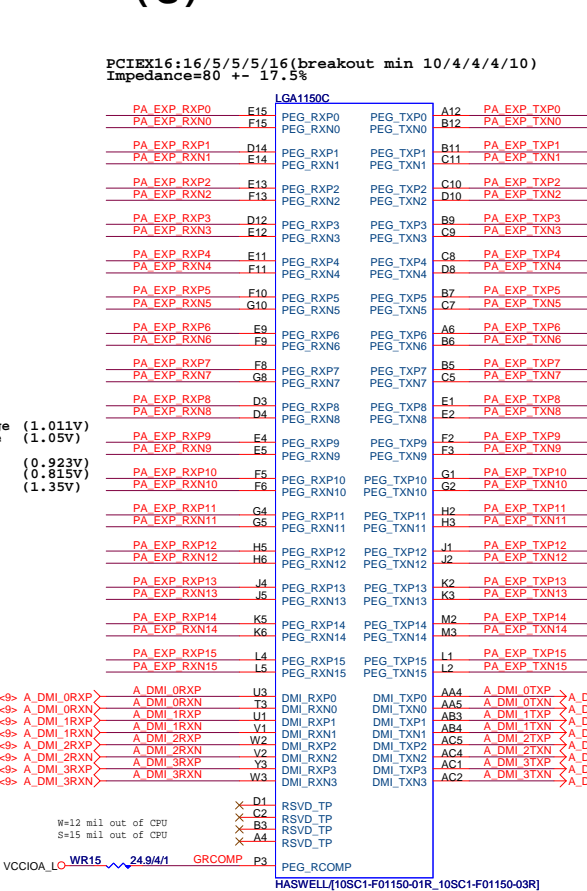


LGA1150

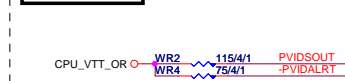
(D)



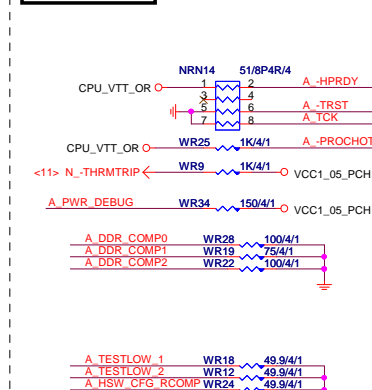
LGA1155 (C)



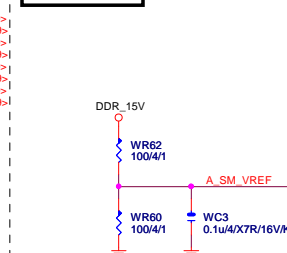
CPU SVID



CPU PU/PD



SM REF



THRMTRIP DISABLE



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LGA1150 (B)

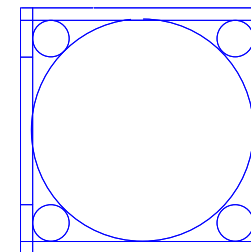
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HASWELL/[10SC1-F01150-01R_10SC1-F01150-03R]

LGA1150B

CG1500			
	MAA80	AL19	DDR1_MA0
	MAA81	AK3	DDR1_MA1
	MAA82	AM22	DDR1_MA2
	MAA83	AM23	DDR1_MA3
	MAA84	AP23	DDR1_MA4
	MAA85	AL23	DDR1_MA5
	MAA86	AL24	DDR1_MA6
	MAA87	AV25	DDR1_MA7
	MAA88	AU26	DDR1_MA8
	MAA89	AW25	DDR1_MA9
	MAA810	AP18	DDR1_MA10
	MAA811	AY25	DDR1_MA11
	MAA812	AV26	DDR1_MA12
	MAA813	AR15	DDR1_MA13
	MAA814	AV27	DDR1_MA14
	MAA815	AY28	DDR1_MA15
	MODT_B0	AM17	DDR1_ODT0
	MODT_B1	AL16	DDR1_ODT1
	MODT_B2	AM16	DDR1_ODT2
	MODT_B3	AK15	DDR1_ODT3
	AM26		DDR1_ECC0
	AM25		DDR1_ECC1
	AP25		DDR1_ECC2
	AP26		DDR1_ECC3
	AL26		DDR1_ECC4
	AL25		DDR1_ECC5
	AR26		DDR1_ECC6
	AR25		DDR1_ECC7
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<>	SBA81	AL18	DDR1_BA1
<>	SBA82	AW28	DDR1_BA2
<>	CKE80	AW29	DDR1_CKE0
<>	CKE81	AU28	DDR1_CKE1
<>	CKE82	AU29	DDR1_CKE2
<>	CKE83	AU29	DDR1_CKE3
<>	CSB0	AP17	DDR1_CS_N0
<>	CSB1	AN15	DDR1_CS_N1
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<>	DCLKB3	AP20	DDR1_CLK_N3
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			DDR1_DQS_P2
			DDR1_DQS_P3
			DDR1_DQS_P4
			DDR1_DQS_P5
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			DDR1_DQS_P7
			DDR1_DQS_P8
			DDR1_DQS_N0
			DDR1_DQS_N1
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			DDR1_DQS_N1
			DDR1_DQS_N2
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			DDR1_DQS_N4
			DDR1_DQS_N5
			DDR1_DQS_N6
			DDR1_DQS_N7
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			DDR1_DQS_N4
			DDR1_DQS_N5
			DDR1_DQS_N6
			DDR1_DQS_N7
			DDR1_DQS_N8
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			DDR1_DQS_P1
			DDR1_DQS_P2
			DDR1_DQS_P3

HASWELL/10SC1-F01150-01R_10SC1-F01150-03R

CR
CPU RETENTION/X**LGA1150**

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

DDR BUS

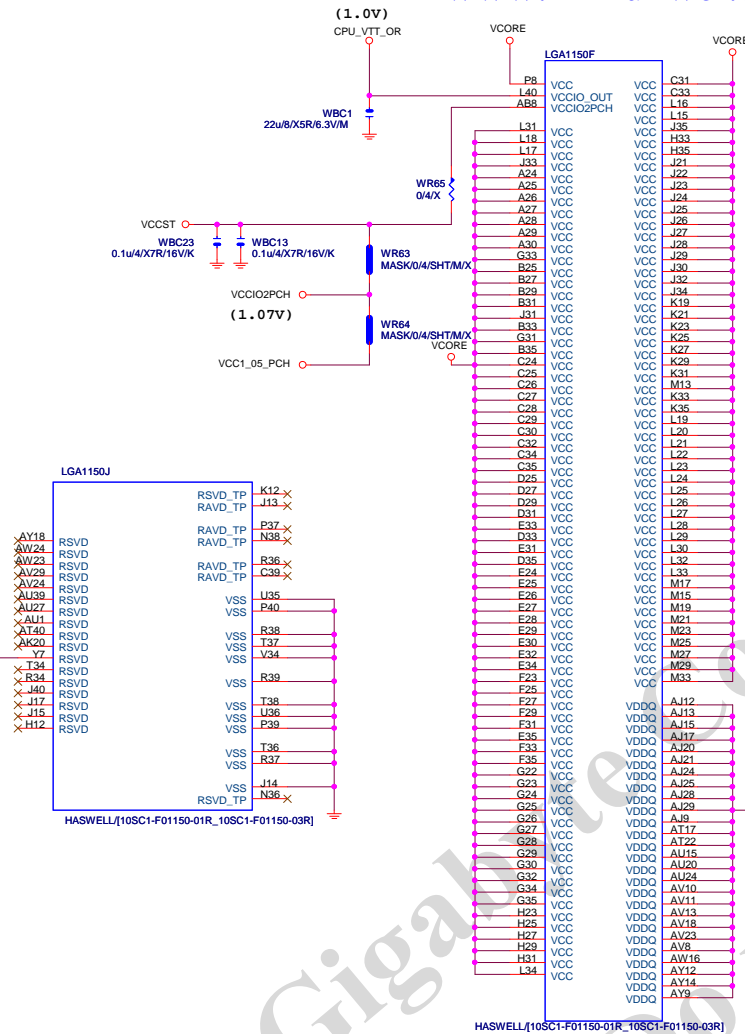
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<7>	DQSA[0..7]	DQSA[0..7]
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<7>	MAAA[0..15]	MAAA[0..15]
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LGA1150

(F, J)

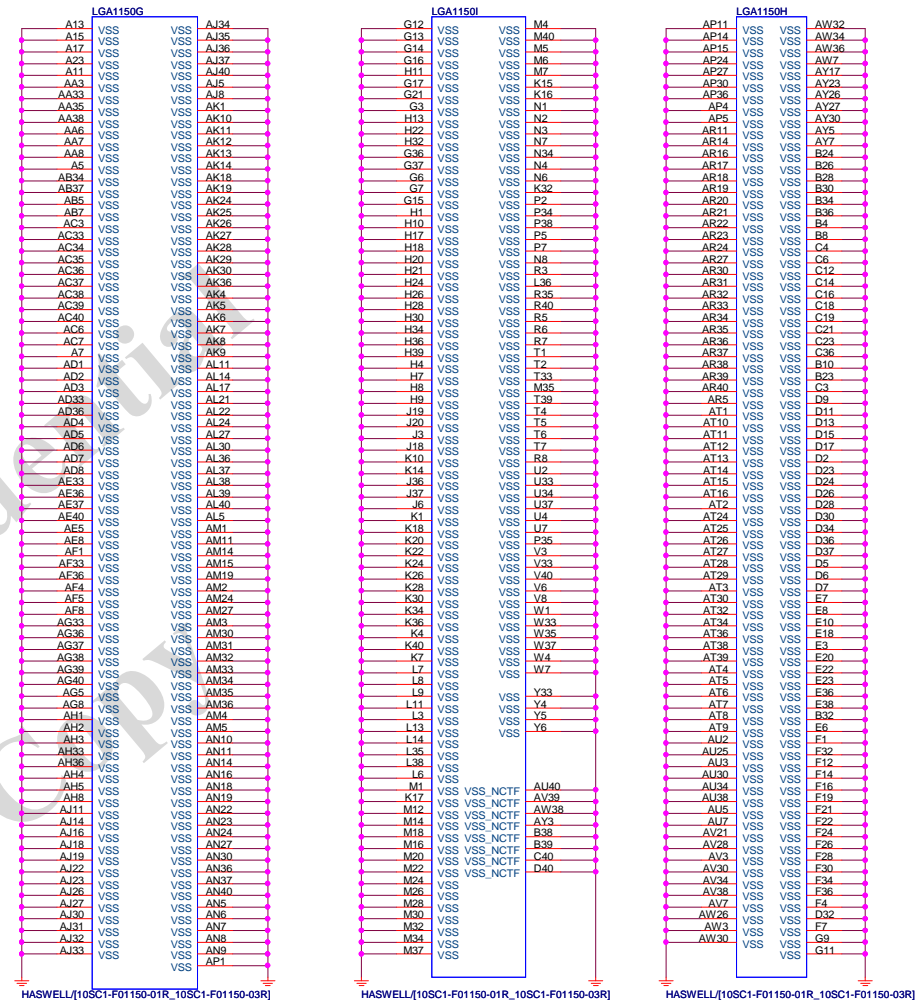
LGA1155

(G, H, I)



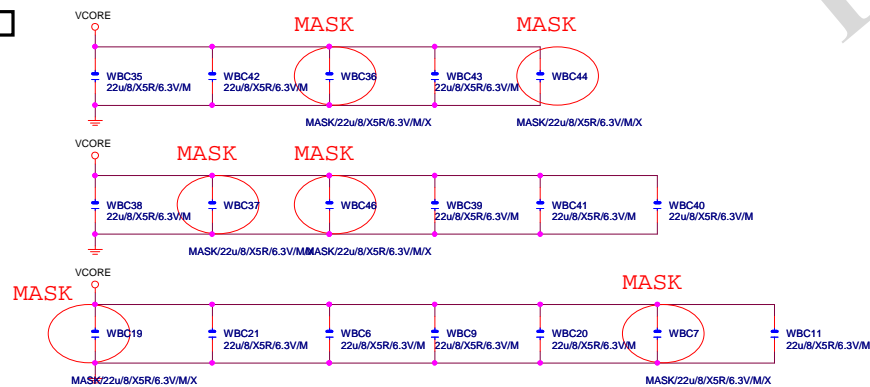
LGA1155

(G, H, I)



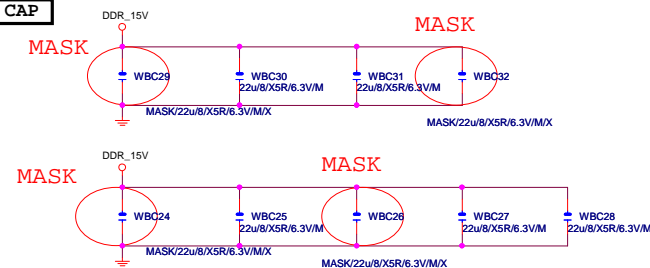
VCore CAP

(X18)



DDR CAP

(X9)



Gigabyte Technology

Title	CPU LGA1150-C		
Size	Document Number	GA-B85M-D3H	
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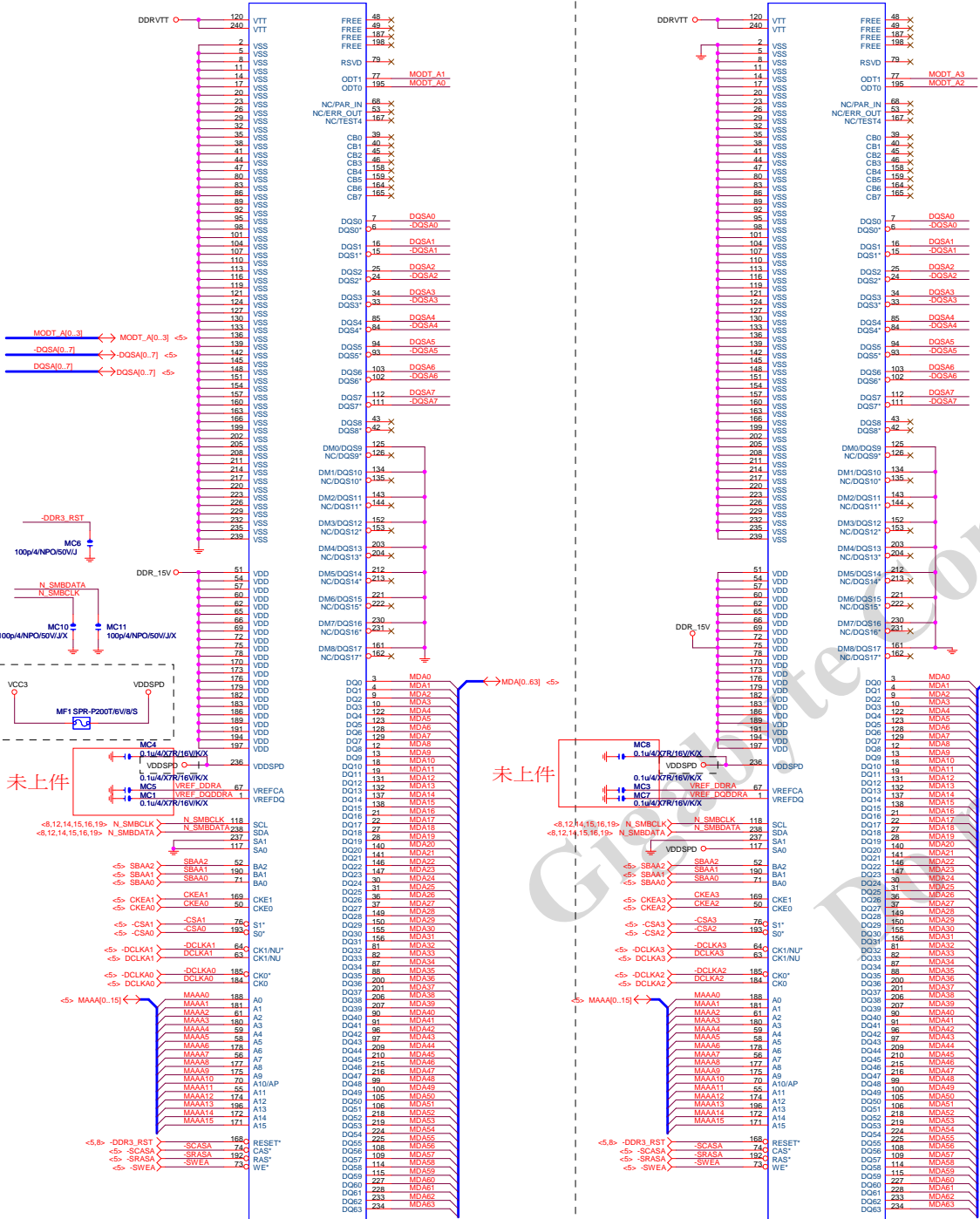
DDR3

(A)

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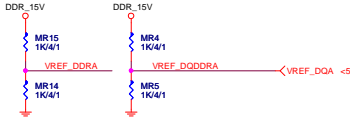
DDR3

DDR3_VREF

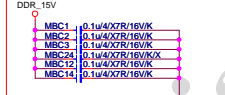
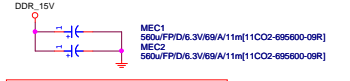


DDR3/240BK/VA/D
BLACK CONNECTOR

DDR3/240GR/VA/D
GRAY CONNECTOR



DDR15V Decouple



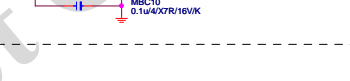
DDR15V Decouple



DDR15V Decouple



DDR15V Decouple



DDR15V Decouple



DDR15V Decouple



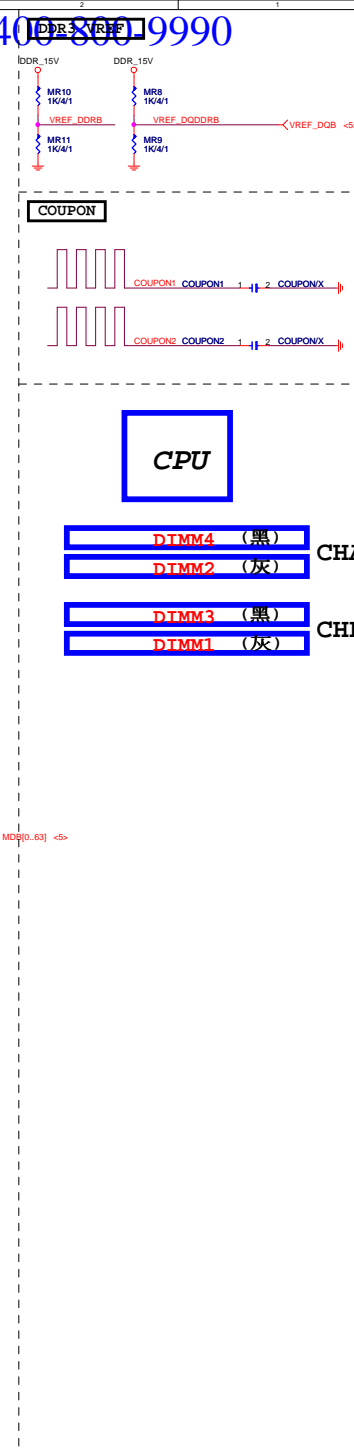
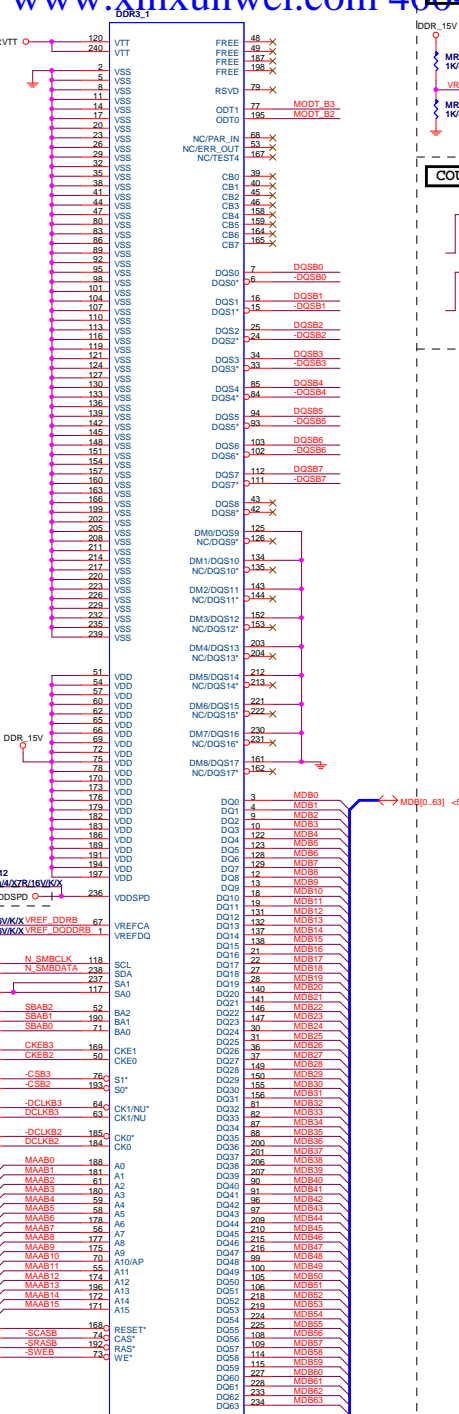
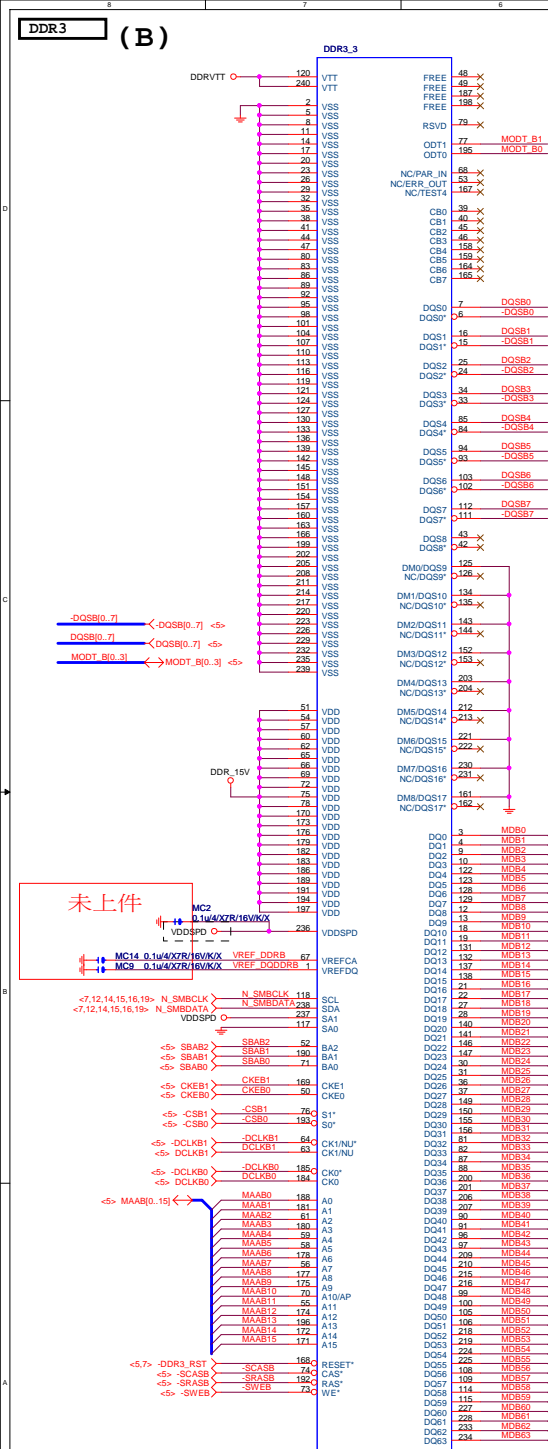
DDR15V Decouple



DDR15V Decouple

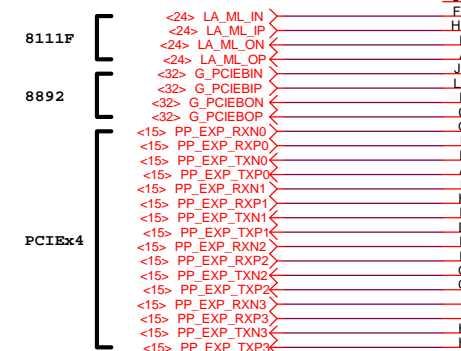
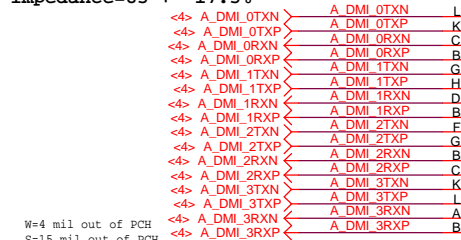


DDR15V Decouple



PCH (B)

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



電容放靠近 Device & PCI-E Slot

PCIEX1:15/4/4/4/15 (breakout min 8/4/4/4/8)
Impedance=85 +/- 17.5%

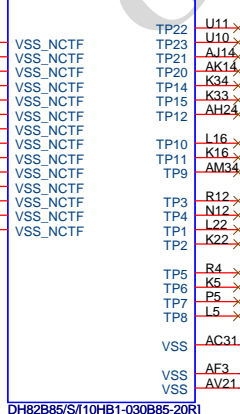
PCH (J)

PCH PCIE ,DMI 15/4/4/4//15

```
usb2.0 12/5/7/5/7/12
usb3.0 20/5/7/5//20
```

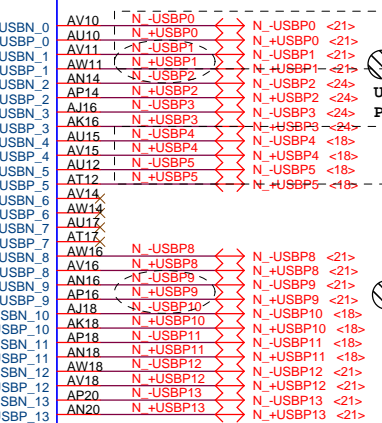


PCHJ

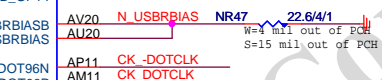
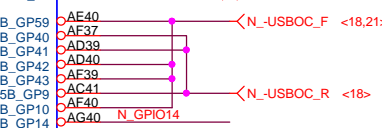


DH82B85/S/10HB1-030B85-20R1

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



USB2.0/3.0
PORT要對應



NR130
8.2K/4

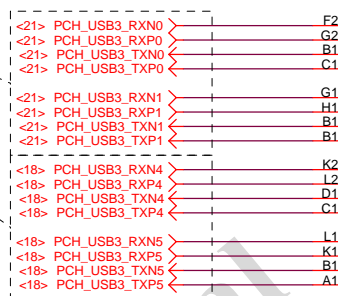
N_USBOC_F

NBC82
0.1u/4/X7R/16V/K

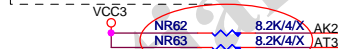
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NBC83
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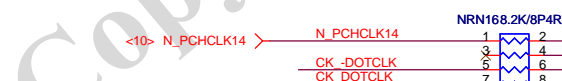
PCH (F)



未上件

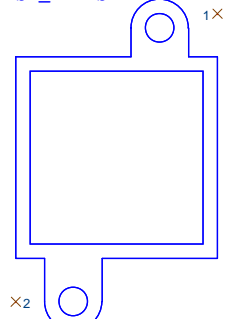


PCH CLK PD



PCH H/S

SB HEATSIN



PCH_HS
PCH_HS|12SP2-S04208-61R 12SP2-S04208-62R 12SP2-S04208-63R

USB TABLE

OC[3:0]# for Device 29 (ports 0-7)

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

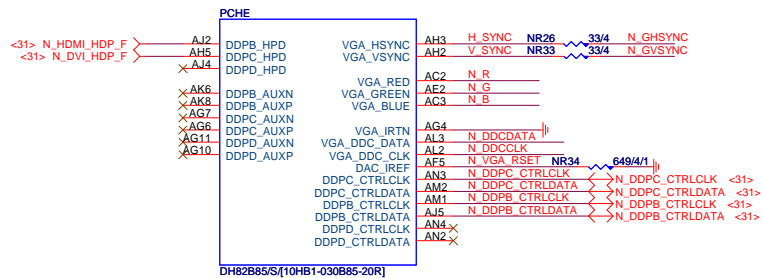
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OC1#	R_USB30
OC2#	USB30_LAN
OC3#	F_USB3
OC4#	F_USB2
OC5#	KB_MS_USB
OC6#	F_USB1
OC7#	Not Use

Gigabyte Technology

PCH FDI,DMI,USB ,PCIE,NVRAM

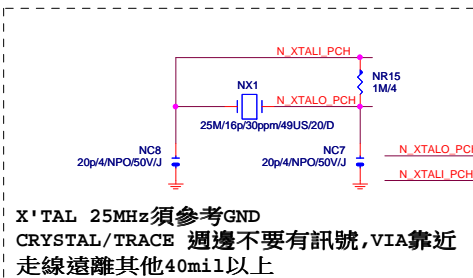
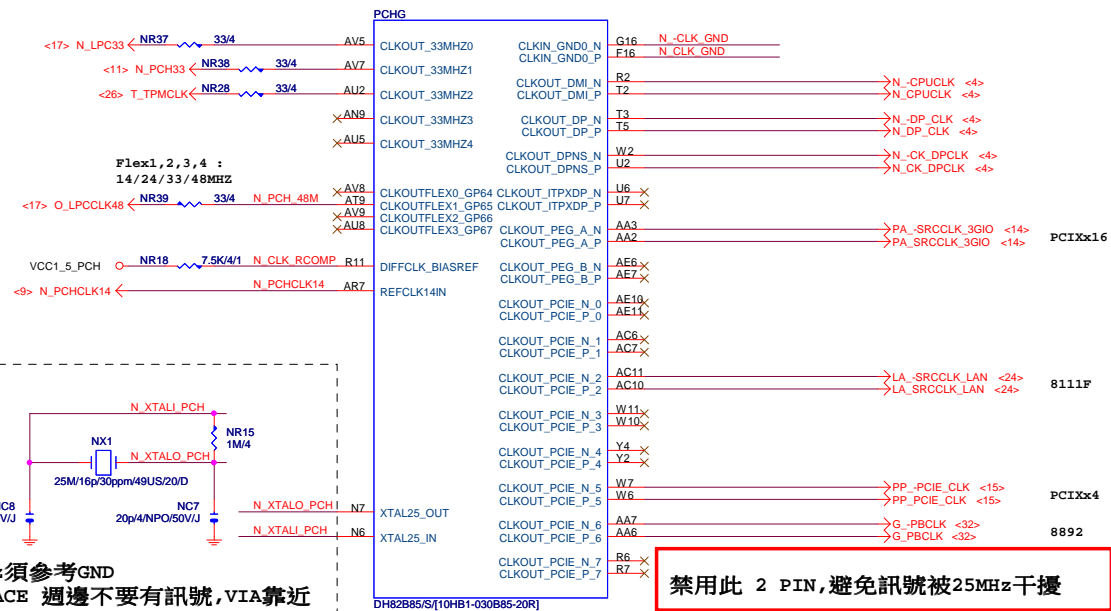
Title				PCH FDI,DMI,USB ,PCIE,NVRAM			
Size	Document Number	GA-B85M-D3H				Rev	2.02
Custom							
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PCH (E)



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

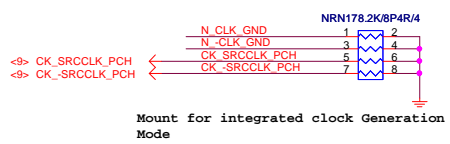
PCH (G)



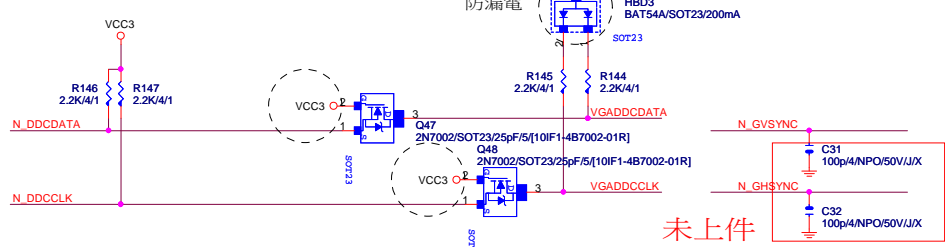
禁用此 2 PIN, 避免訊號被 25MHz 干擾

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

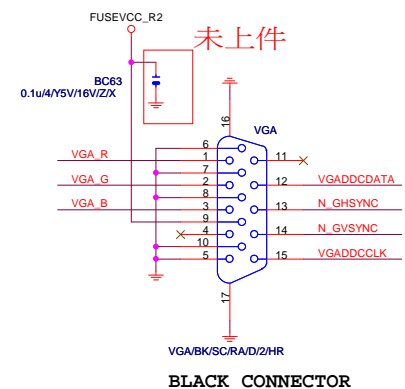
PCH CLK PD



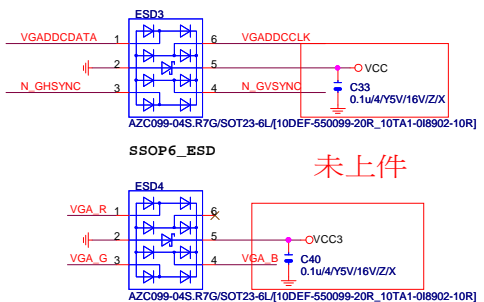
VGA DDC



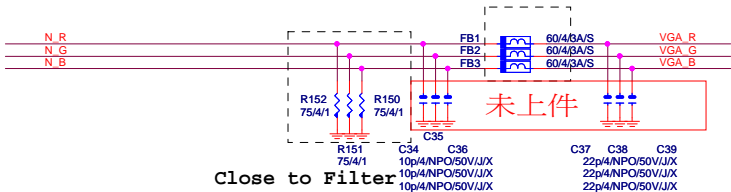
VGA CONNECTOR



VGA ESD



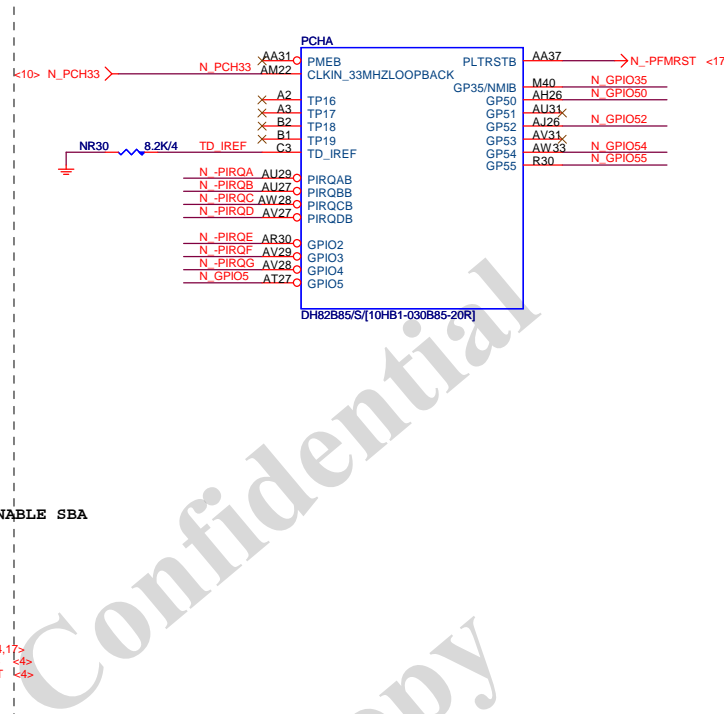
VGA DDC



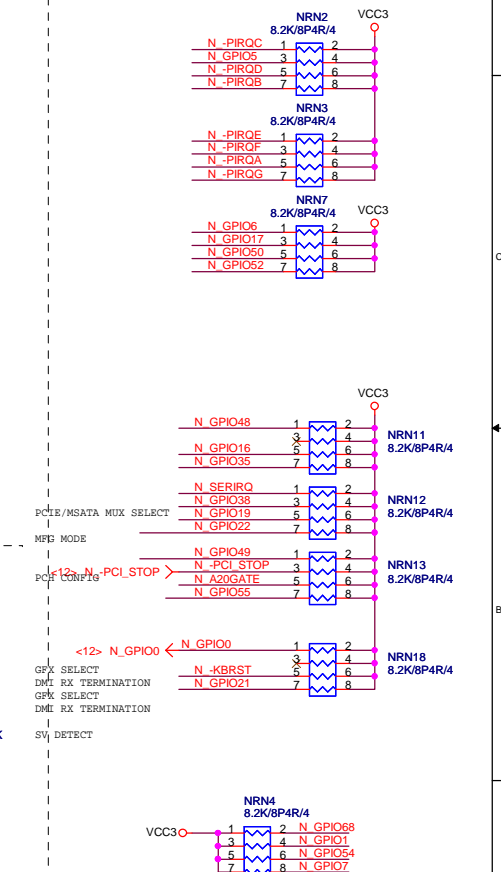
Gigabyte Technology

Title		
PCH DISPLAY ,CLK BUFFER		
Size	Document Number	Rev
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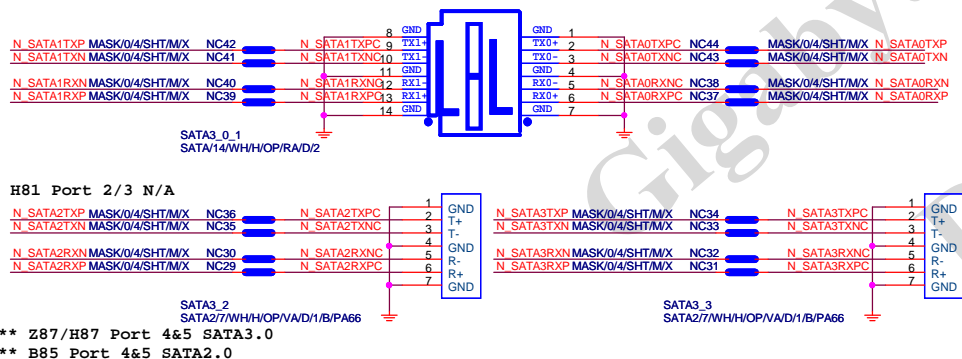
PCHC



PCH	PU/PD
-----	-------



SATA CONNECTOR



ME PWROK

The schematic shows the power supply circuitry for the TMS320C6701. It includes two DC-DC converters:

- NR187 MASK0/4/SHT/MX**: A buck converter converting VCC1_05_ME to VCC3_ME. It features an ND2 BAT54A/SOT23/200mA diode, an NR189 8.2K/4 resistor, and an NC50 1u4/X5R/6.3V/K capacitor.
- NQ15 SOT23 MMBT2222A/SOT23/600mA/40**: A PNP emitter-follower buffer converting VCC3_ME to N_ME_PWROK. It includes an NR186 8.2K/4 resistor and an NC49 0.01u4/X7R/25V/K capacitor.

Other components include resistors NR188 22K/4 and NR190 8.2K/4/X, and capacitors NC50 1u4/X5R/6.3V/K and NC49 0.01u4/X7R/25V/K.

GPI038 Ctrl

PCH (H)

VCC3_DAC

3VDUAL_PCH

SHT PWR

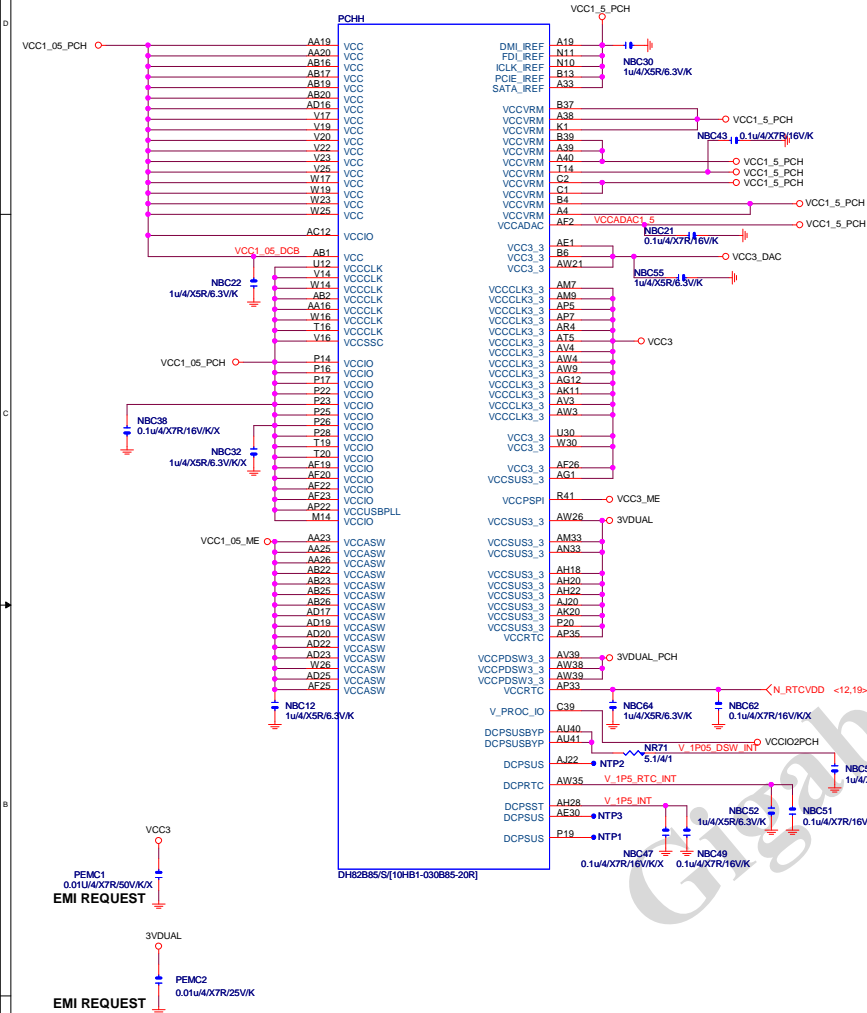
H97 N/A

MASK

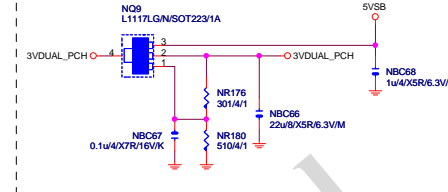
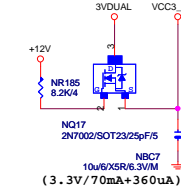
R1.0

SHORT WIRE

[Z97]

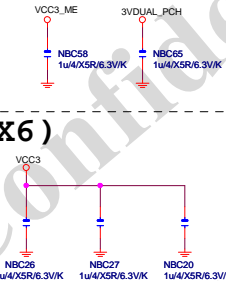


CLOSE北橋(注意震盪水波紋)

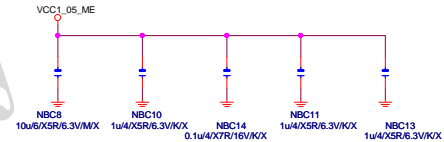


CAP

(3.3V) (X6)



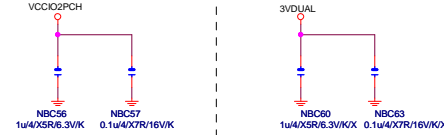
(1.05V) (X5)



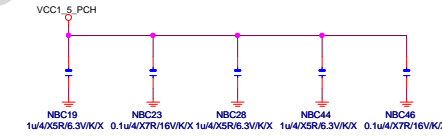
(1.05V) (X6)



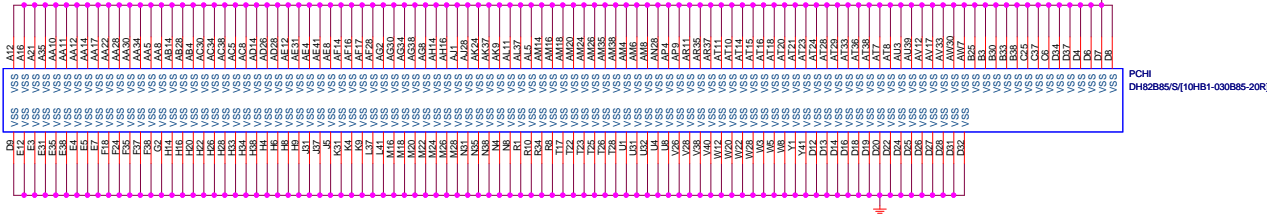
(1.05V)(X2) (3.3V) (X2)



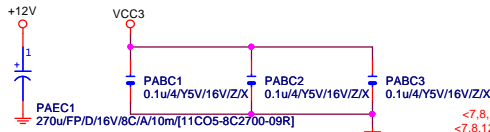
(1.05V) (X10)



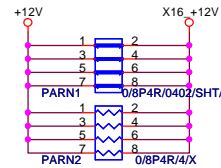
PCH (I)



PCIEX16 CAP



PCIEX16 PROTECT SHT



PCIEX16 AC CAP

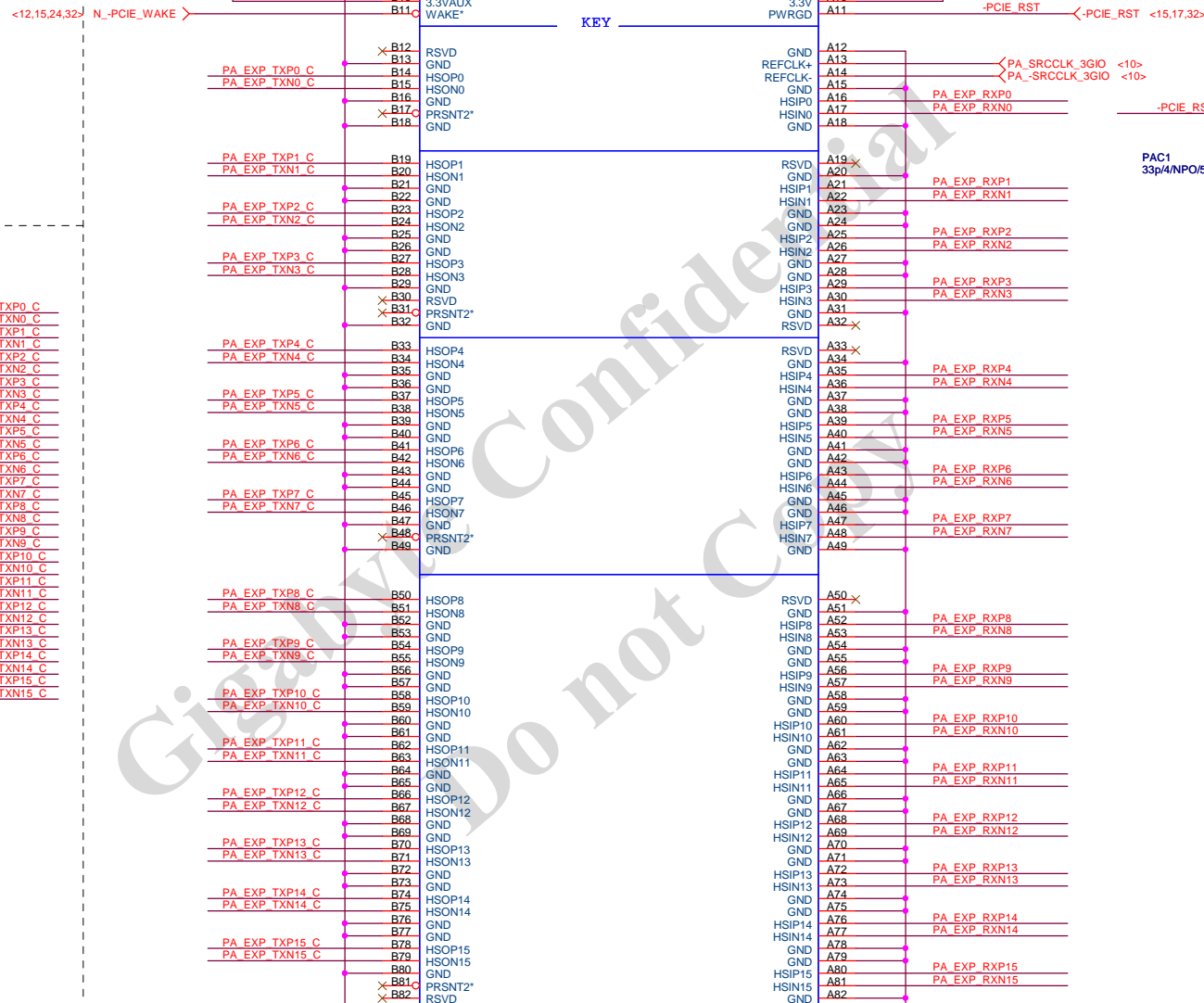
PA EXP TXP0 C	PAC5	0.22u/4/X5R6.3V/K	PA EXP TXP0 C
PA EXP TXN0 C	PAC4	0.22u/4/X5R6.3V/K	PA EXP TXN0 C
PA EXP TXP1 C	PAC6	0.22u/4/X5R6.3V/K	PA EXP TXP1 C
PA EXP TXN1 C	PAC7	0.22u/4/X5R6.3V/K	PA EXP TXN1 C
PA EXP TXP2 C	PAC8	0.22u/4/X5R6.3V/K	PA EXP TXP2 C
PA EXP TXN2 C	PAC9	0.22u/4/X5R6.3V/K	PA EXP TXN2 C
PA EXP TXP3 C	PAC10	0.22u/4/X5R6.3V/K	PA EXP TXP3 C
PA EXP TXN3 C	PAC11	0.22u/4/X5R6.3V/K	PA EXP TXN3 C
PA EXP TXP4 C	PAC12	0.22u/4/X5R6.3V/K	PA EXP TXP4 C
PA EXP TXN4 C	PAC13	0.22u/4/X5R6.3V/K	PA EXP TXN4 C
PA EXP TXP5 C	PAC14	0.22u/4/X5R6.3V/K	PA EXP TXP5 C
PA EXP TXN5 C	PAC15	0.22u/4/X5R6.3V/K	PA EXP TXN5 C
PA EXP TXP6 C	PAC16	0.22u/4/X5R6.3V/K	PA EXP TXP6 C
PA EXP TXN6 C	PAC17	0.22u/4/X5R6.3V/K	PA EXP TXN6 C
PA EXP TXP7 C	PAC18	0.22u/4/X5R6.3V/K	PA EXP TXP7 C
PA EXP TXN7 C	PAC19	0.22u/4/X5R6.3V/K	PA EXP TXN7 C
PA EXP TXP8 C	PAC20	0.22u/4/X5R6.3V/K	PA EXP TXP8 C
PA EXP TXN8 C	PAC21	0.22u/4/X5R6.3V/K	PA EXP TXN8 C
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PA EXP TXN11 C	PAC27	0.22u/4/X5R6.3V/K	PA EXP TXN11 C
PA EXP TXP12 C	PAC28	0.22u/4/X5R6.3V/K	PA EXP TXP12 C
PA EXP TXN12 C	PAC29	0.22u/4/X5R6.3V/K	PA EXP TXN12 C
PA EXP TXP13 C	PAC30	0.22u/4/X5R6.3V/K	PA EXP TXP13 C
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PA EXP TXP14 C	PAC32	0.22u/4/X5R6.3V/K	PA EXP TXP14 C
PA EXP TXN14 C	PAC33	0.22u/4/X5R6.3V/K	PA EXP TXN14 C
PA EXP TXP15 C	PAC34	0.22u/4/X5R6.3V/K	PA EXP TXP15 C
PA EXP TXN15 C	PAC35	0.22u/4/X5R6.3V/K	PA EXP TXN15 C

PA EXP RXP[0..15] >> PA_EXP_RXP[0..15] <4>
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 PA EXP TXP[0..15] >> PA_EXP_TXP[0..15] <4>
 PA EXP TXN[0..15] >> PA_EXP_TXN[0..15] <4>

PCIEX16 SLOT

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PCIESLOT-164DN-Q-1

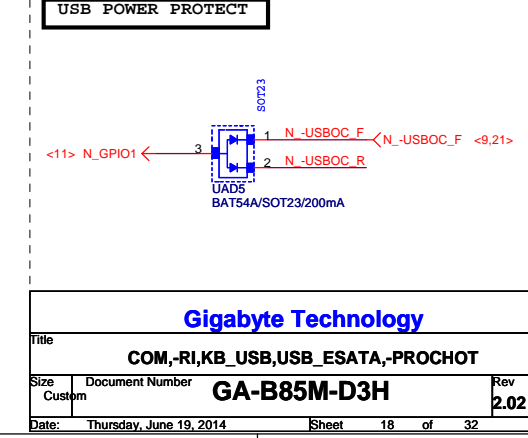
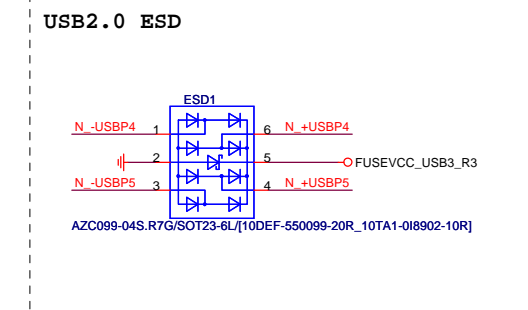
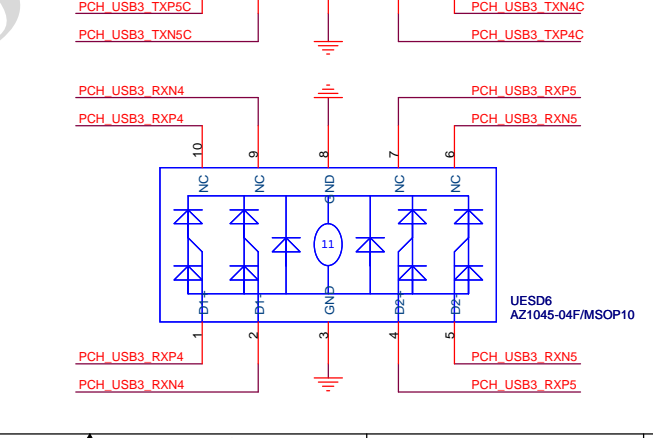
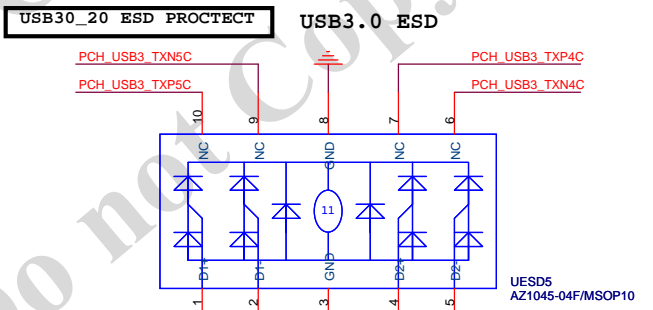
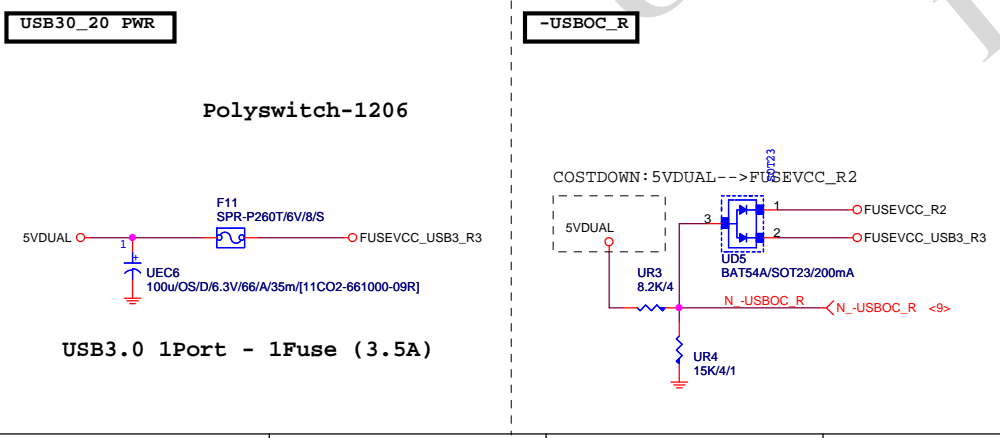
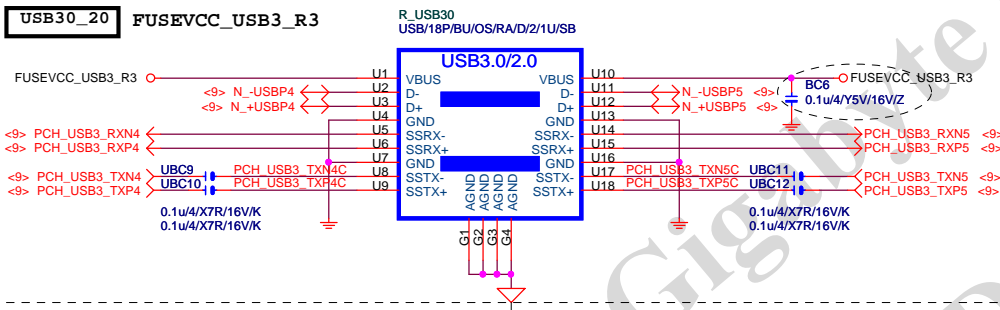
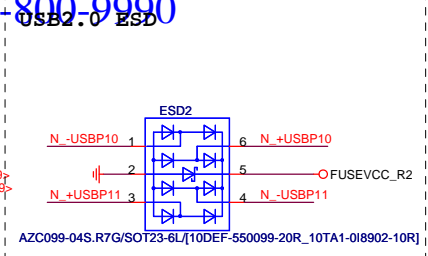
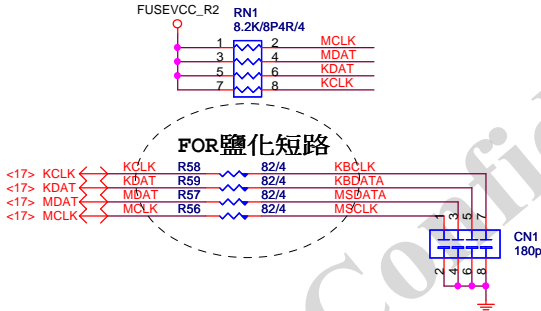
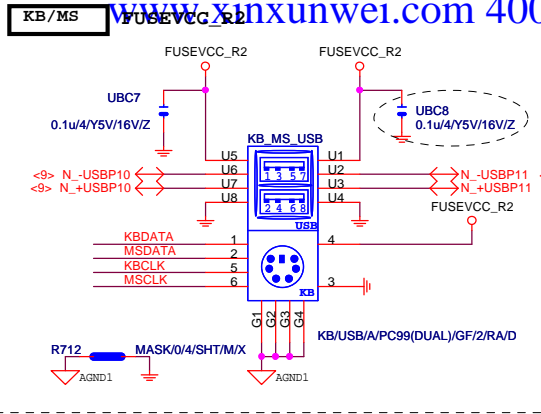
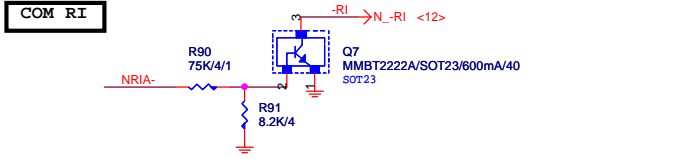
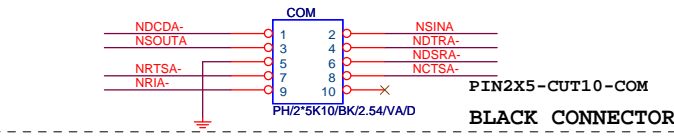
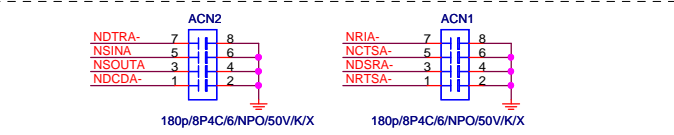
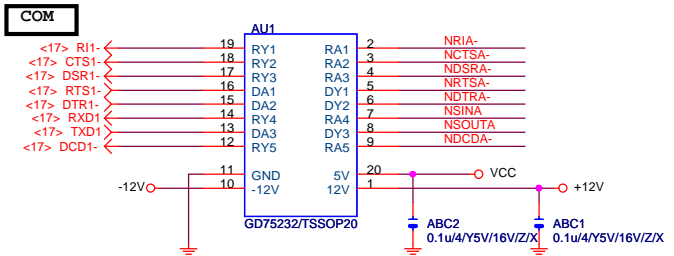


PCIEX16X-164P/BK/LONG DOUBLE

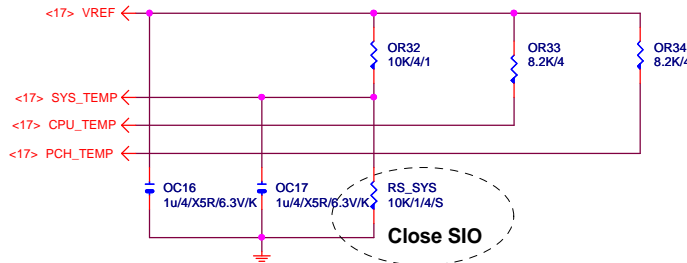
BLACK CONNECTOR

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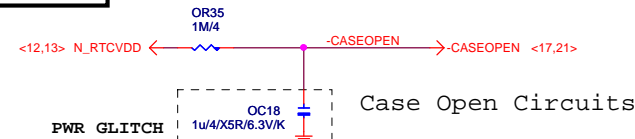
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PCI EXPRESS * 16			
Size	Document Number	Rev	
Custom	GA-B85M-D3H	2.02	
Date:	Thursday, June 19, 2014	Sheet	14 of 32



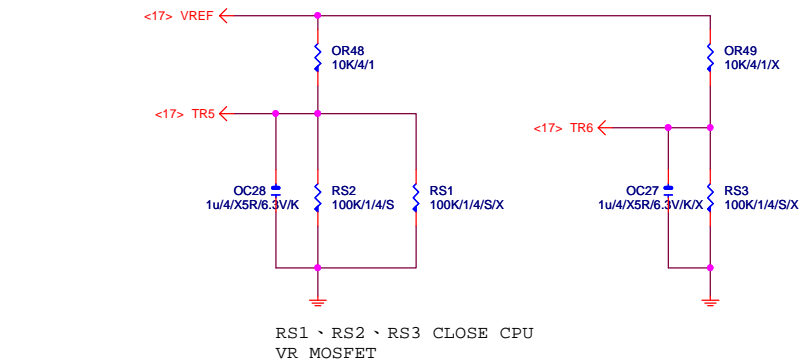
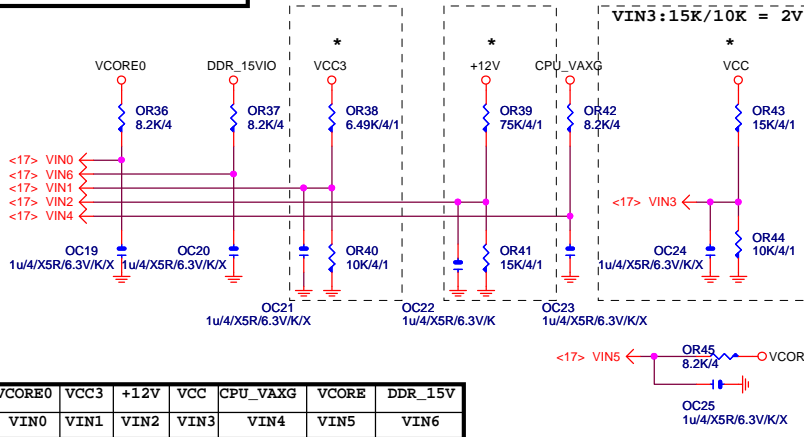
TEMP H/W MONITOR



CASE OPEN

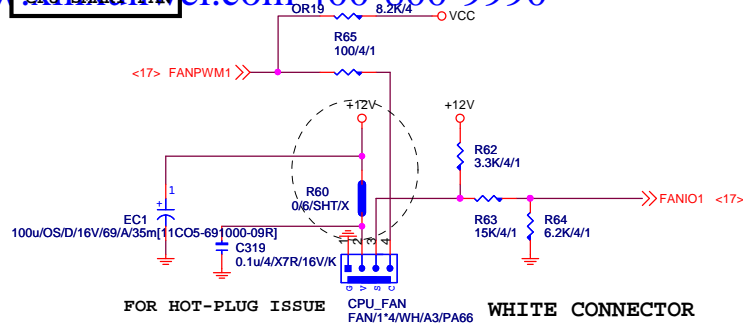


VOLTAGE-- H/W MONITOR

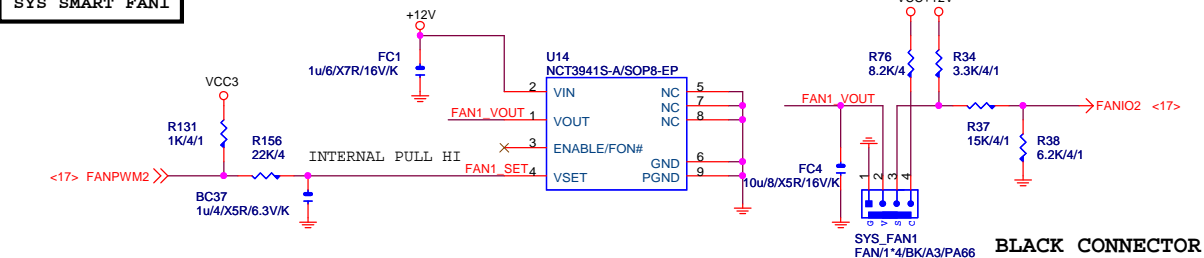


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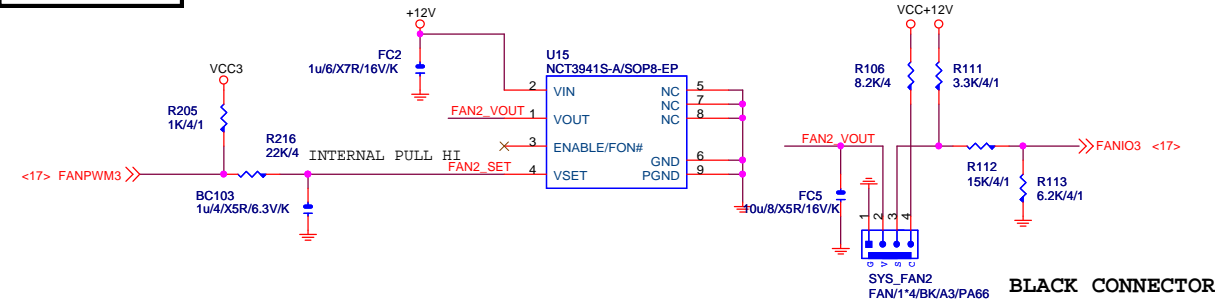
CPU SMART FAN



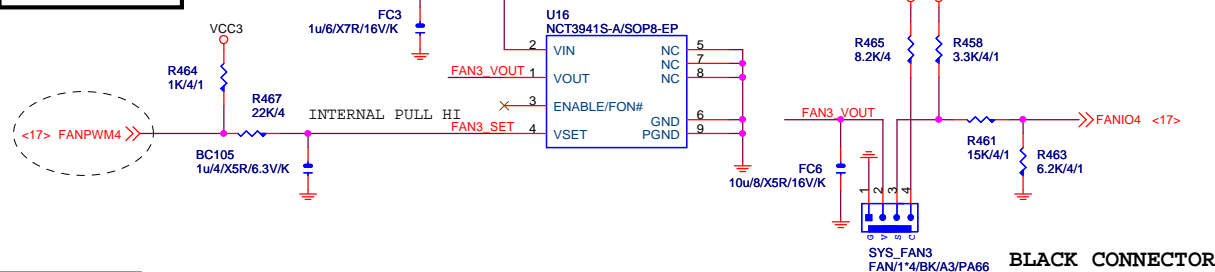
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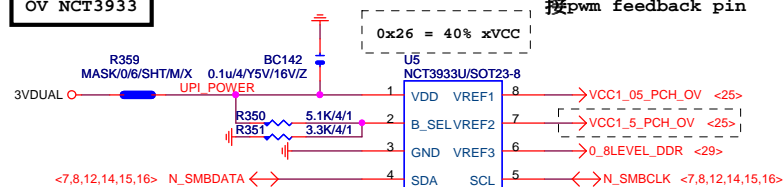
SYS SMART FAN2



SYS SMART FAN3

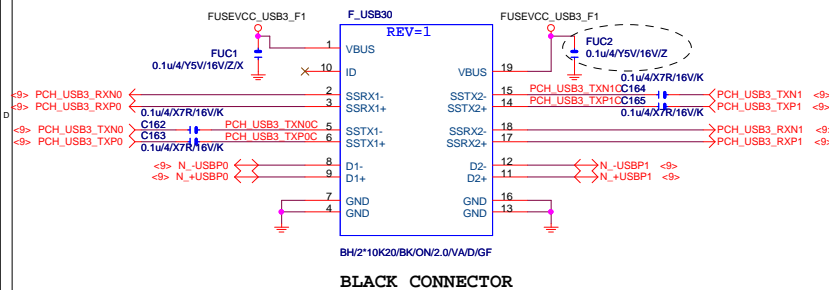


OV NCT3933

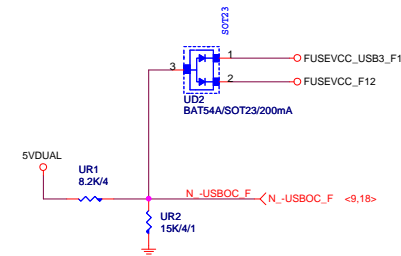
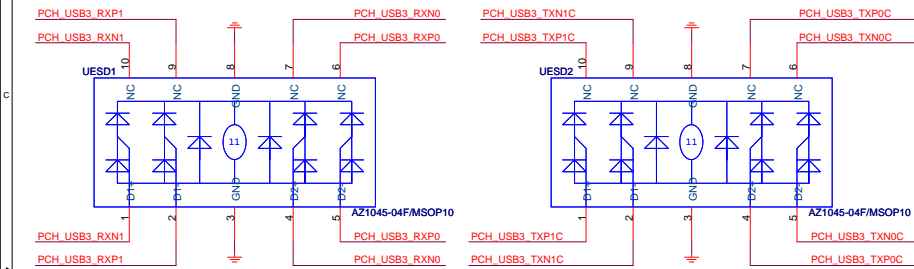
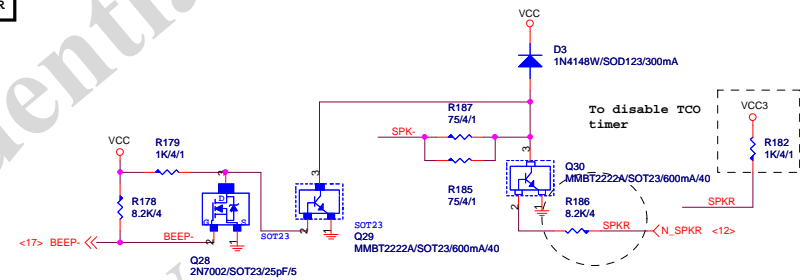
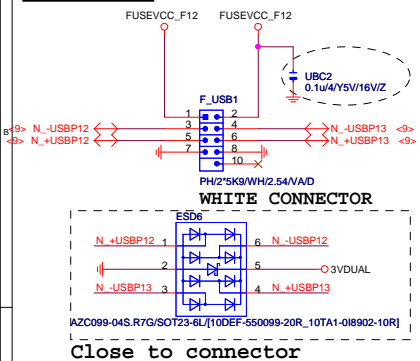
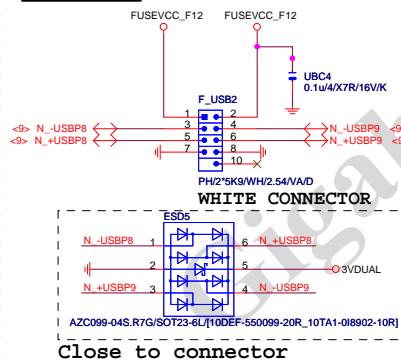
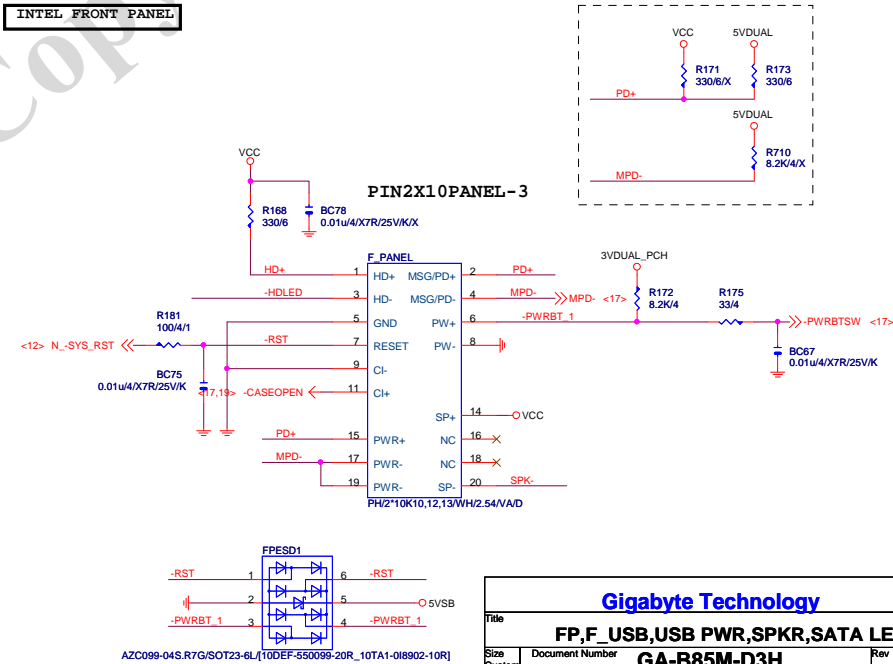


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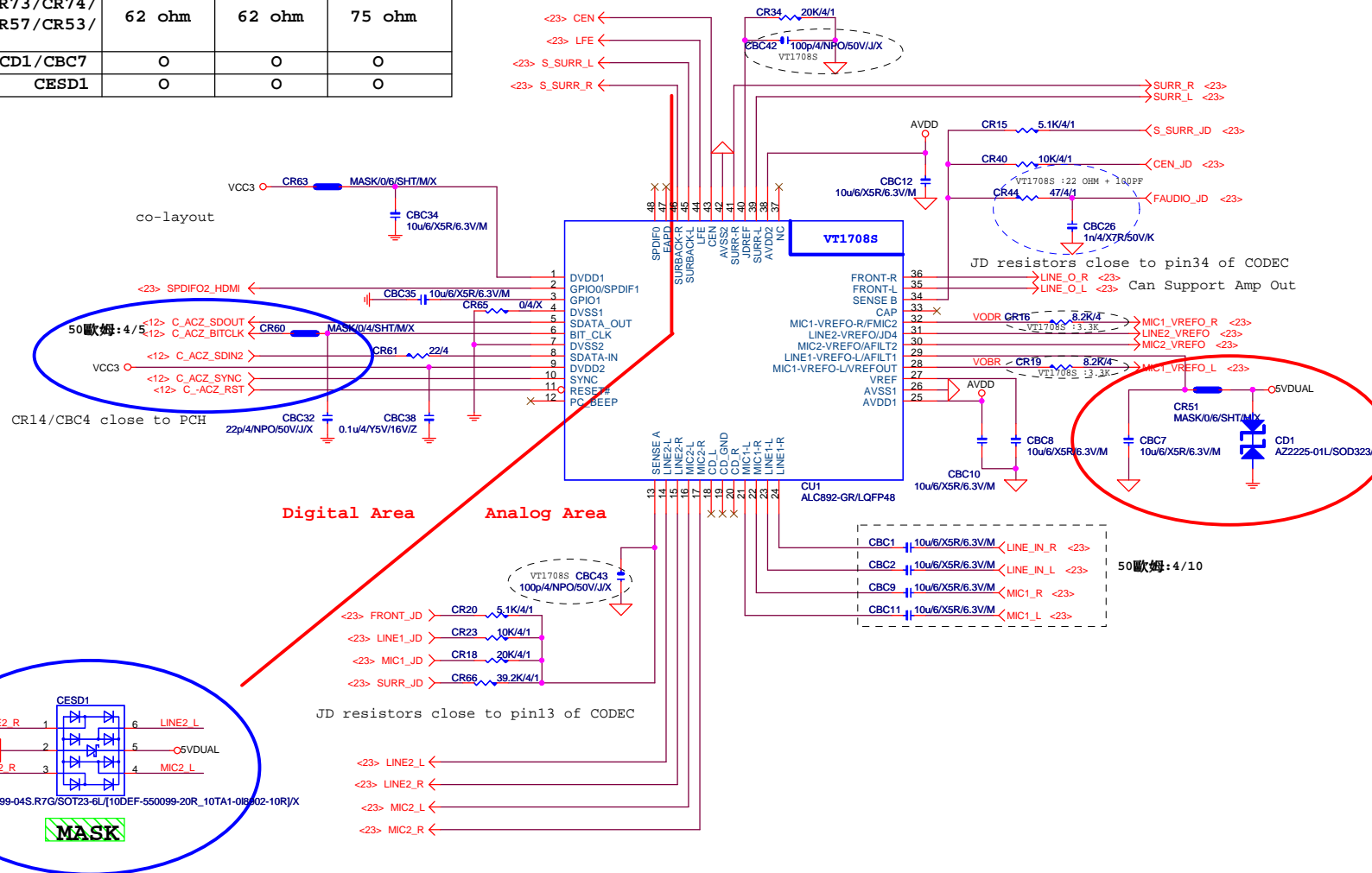
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Size	Document Number	GA-B85M-D3H	
Custom		Rev	2.02
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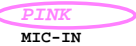
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<11> N_-SATALED >-HDLED

-USB0C_F**F_USB30 ESD PROTECT****SPKR****FRONT USB1****FUSEVCC_F12****FRONT USB2****FUSEVCC_F4****INTEL FRONT PANEL**

	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





LINE-IN

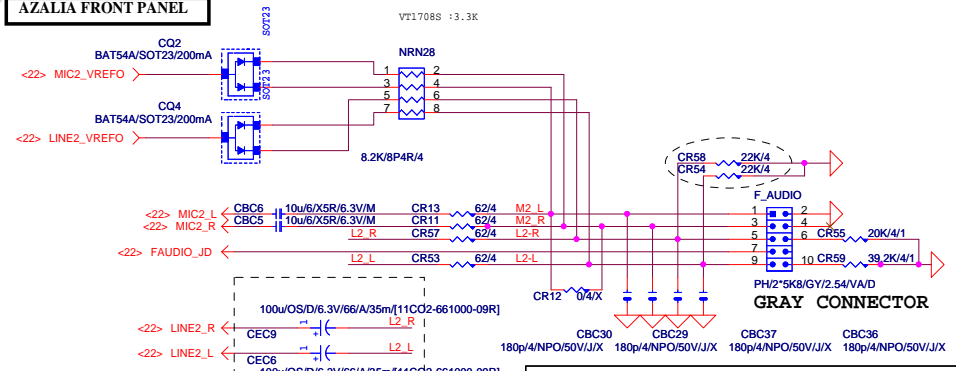
MIC-IN

SURROUND

CEN/LFE

SURR BACK

AZALIA FRONT PANEL

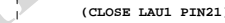
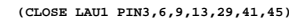
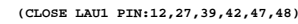


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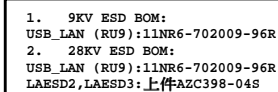
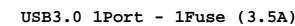
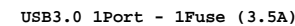
AUDIO JACK

GA-B85M-D3H

Rev	
2.02	

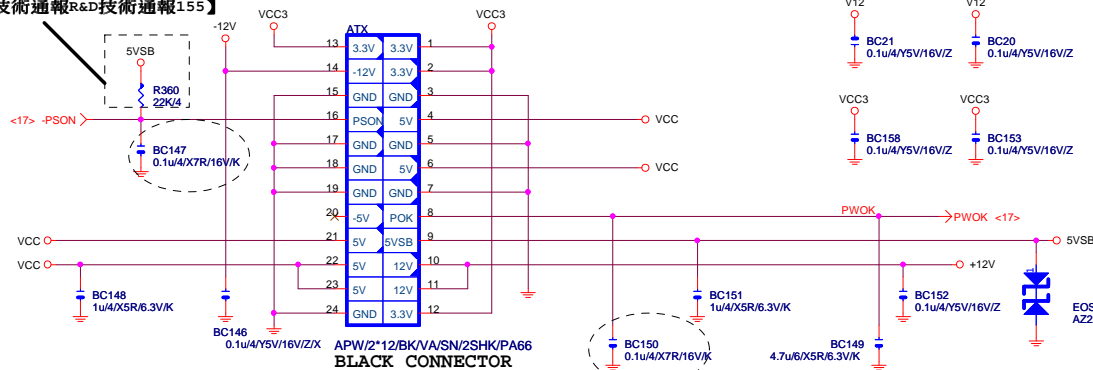


	RTL8111E
AVDD33	3.3V
DVDD33	3.3V
VDDREG	3.3V
DVDD10	1.05V



ATXX24 POWER CONNECTOR

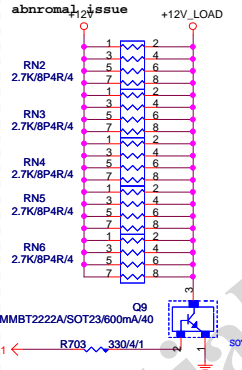
【技術通報R&D技術通報155】



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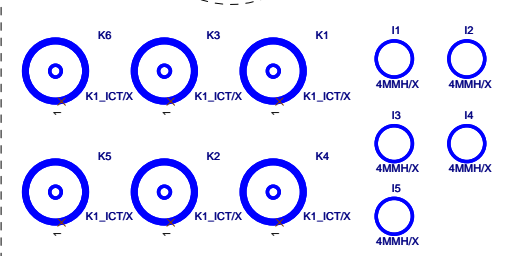
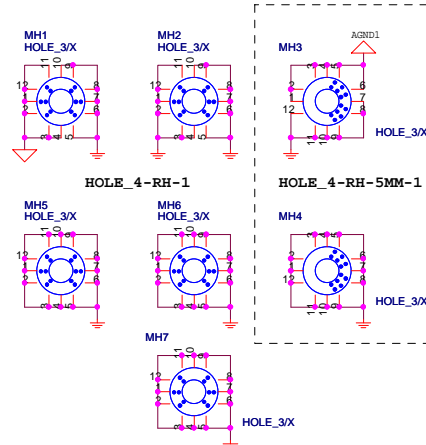
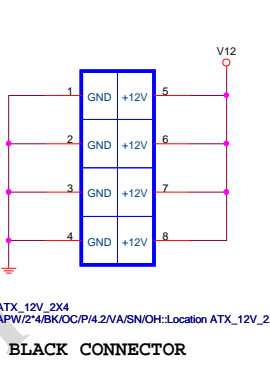
ATXX4 POWER CONNECTOR

【技術通報R&D技術通報153】



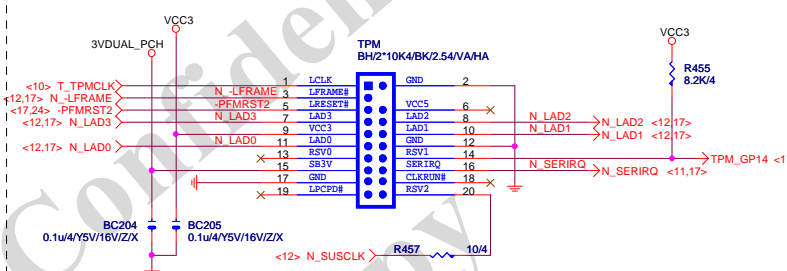
ATXX4 POWER CONNECTOR

【技術通報R&D技術通報154】

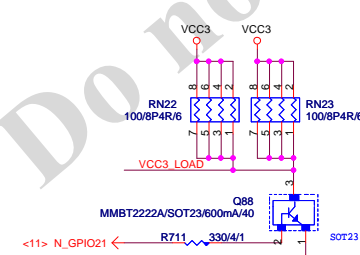


To prevent the 5VSB under loading when boot

TPM

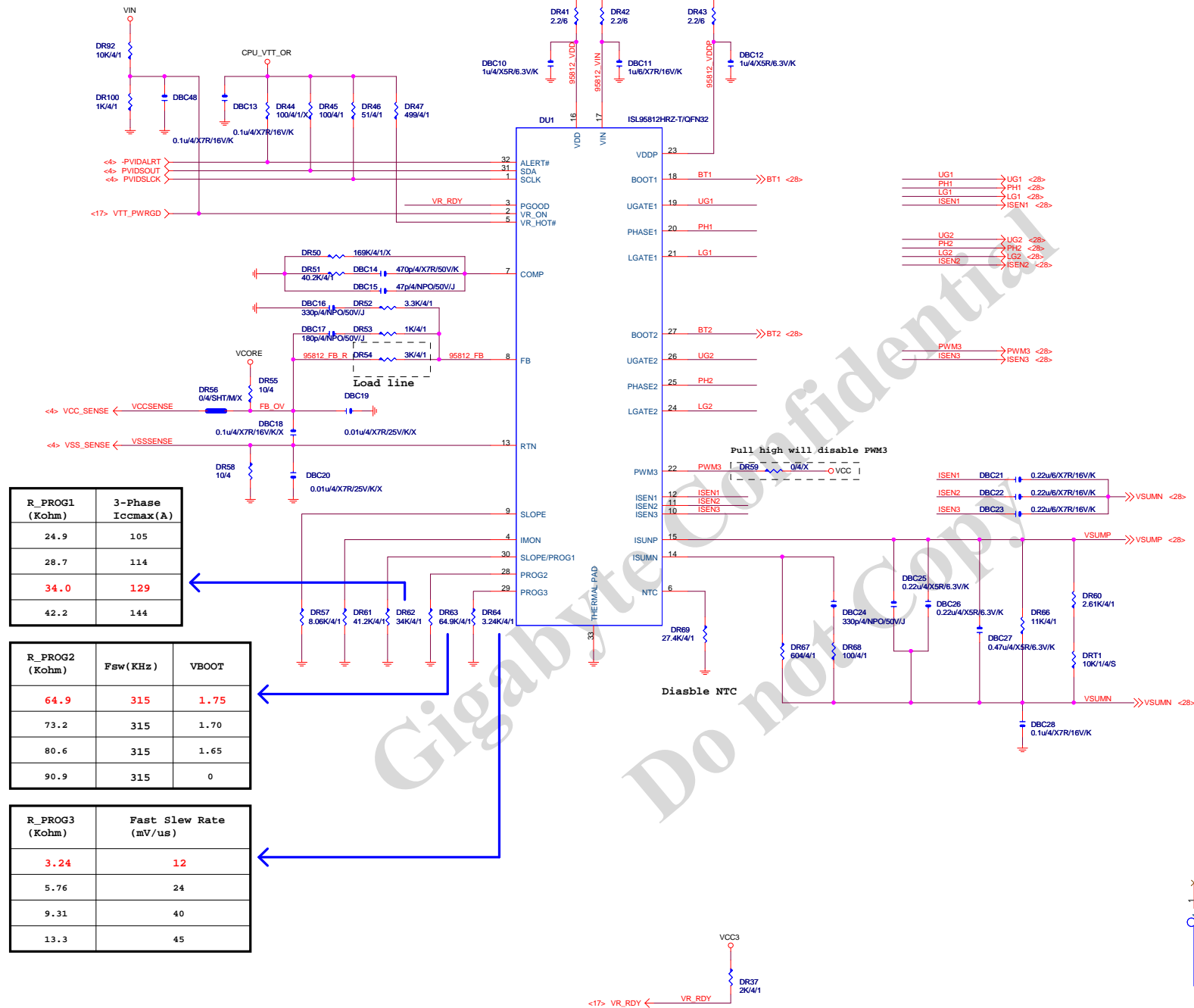


FIX PWR MINMUN LOAD



PWOK PATCH

【技術通報R&D技術通報154】

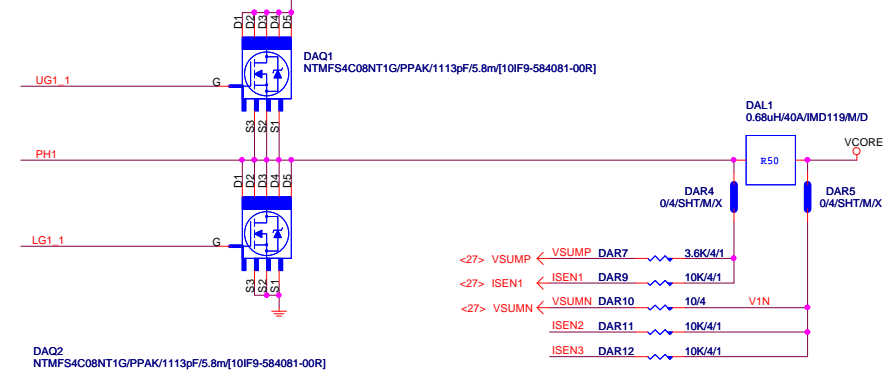
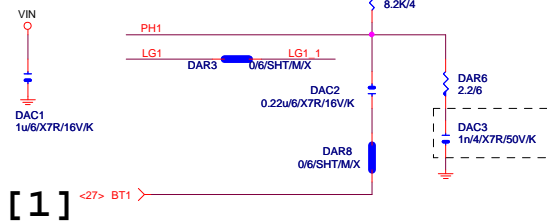


MOS HS[12SP2-S08924-11R_12SP2-S08924-12R_12SP2-S08924-13R]

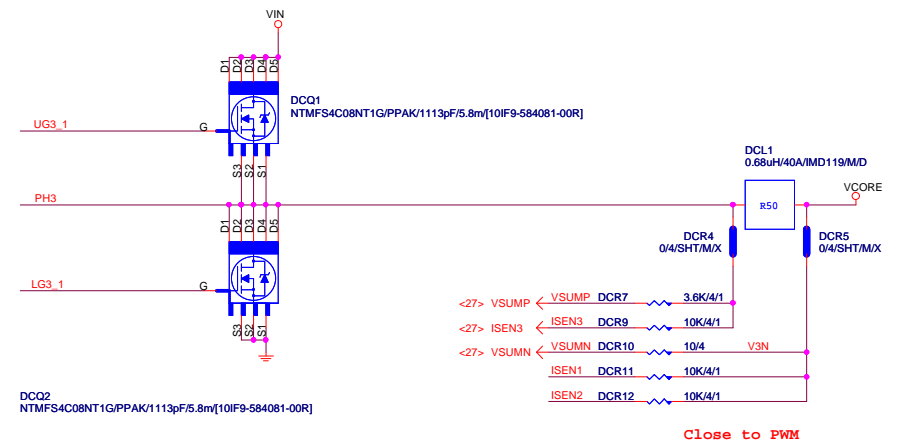
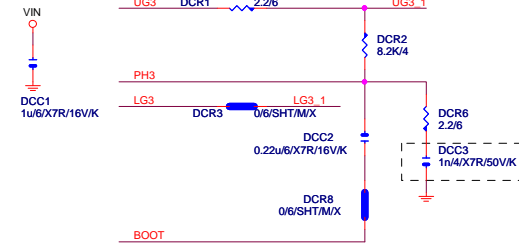
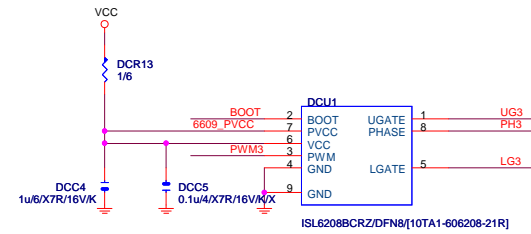
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Size	Document Number	GA-B85M-D3H	
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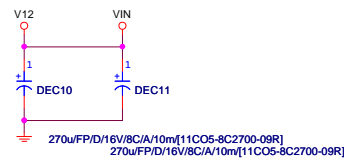
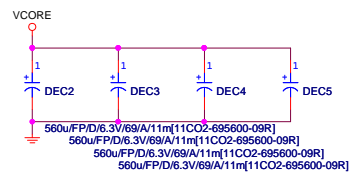
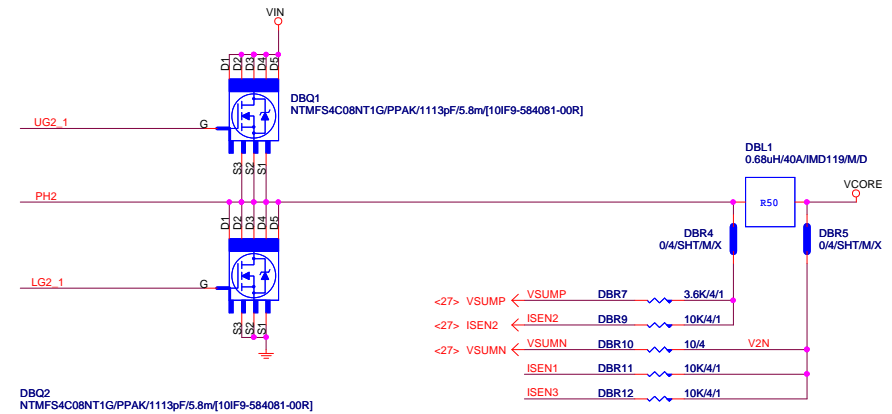
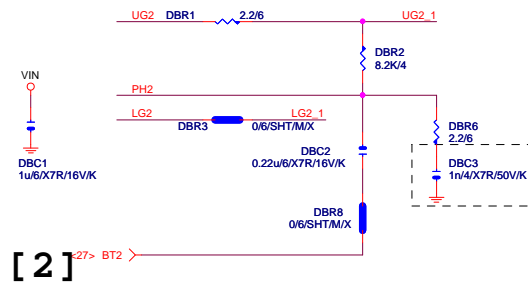
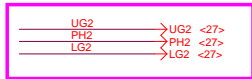
PHASE 1



PHASE 3

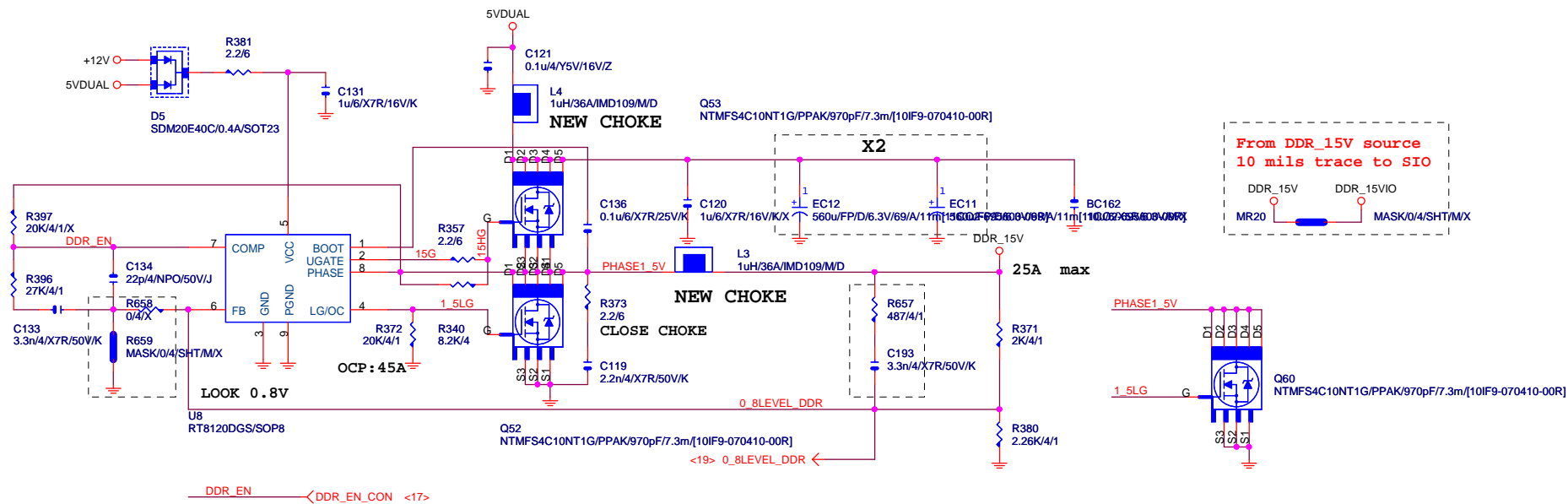


PHASE 2



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Title		
CPU CORE VR-2		
GA-B85M-D3H		
Size Custom	Document Number	Rev 2.02
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PWR SEQ

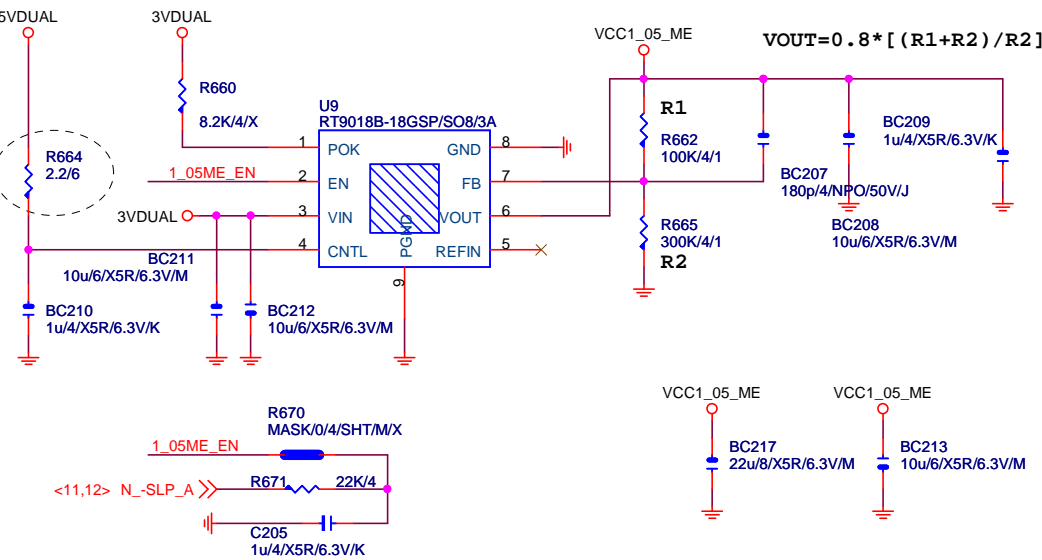
VIN=5V,VOUT=1.5V,IOUT=25A,PHASE=1
IRMS=11.45A
560u/FP/D/6.3V/68/8m RIPPLE CURRENT=4.7A
Coefficient=1.7(85°C),1(105°C)
VIN Ripple current=4.7X1.7=7.99A(85°C)
-->故固態電容須2X7.99=15.98>11.45A

```
Rocset=(Iocp*Lgate,rdson)/Iocset
Rocset=(45A*6.7mOhm)/10uA = 30K
Iocset=10uA
```

<div style="text-align: center;">  </div>			
Title			
DDR POWER			
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VCC1_05_ME FOOT MASK

Z97 N/A



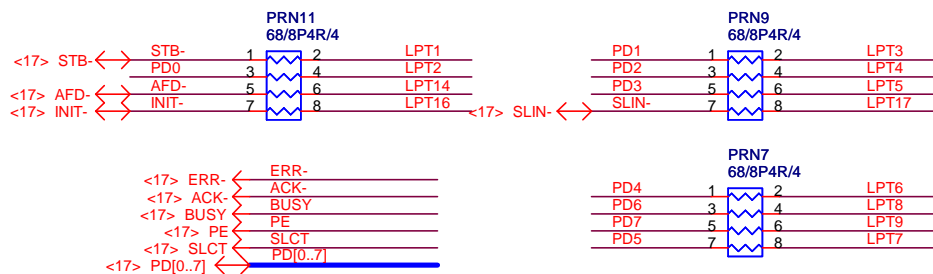
Second source

EM5103 - 10GL2-305103-01R

NCT3730S -

10GL2-303730-01R

LPT PORT

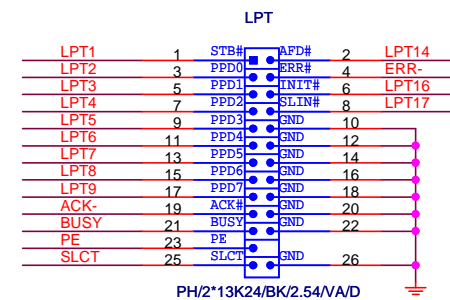
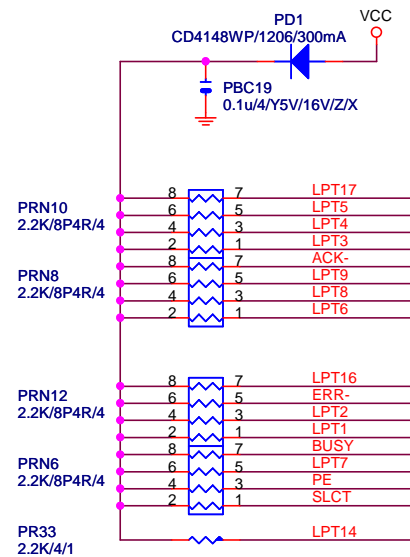
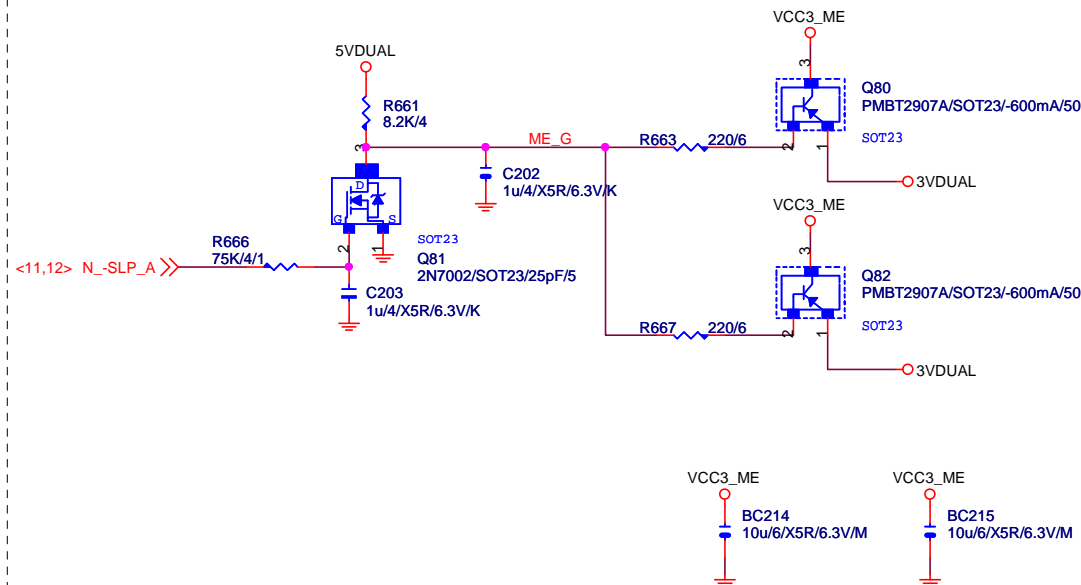


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33ohm Change to 68ohm

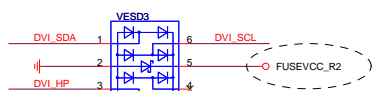
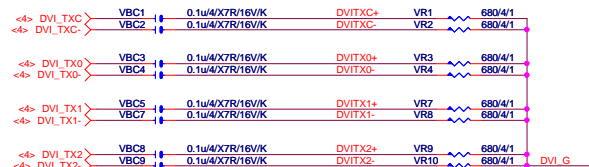
VCC3_ME FOOT MASK

Z97 N/A



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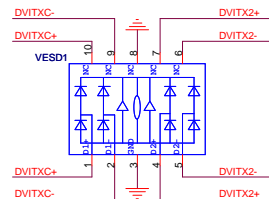
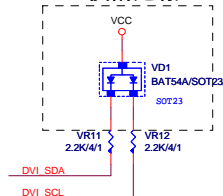
Title			
LPT			
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DVI LEVEL SHIFT

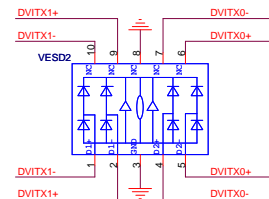
Close to connector



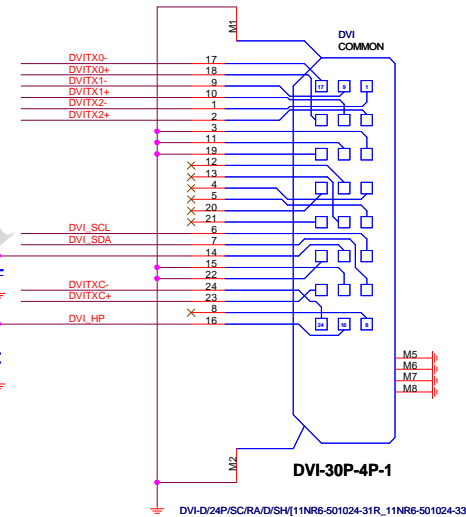
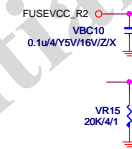
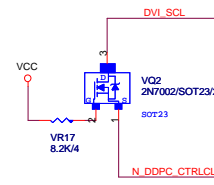
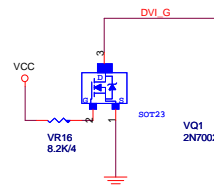
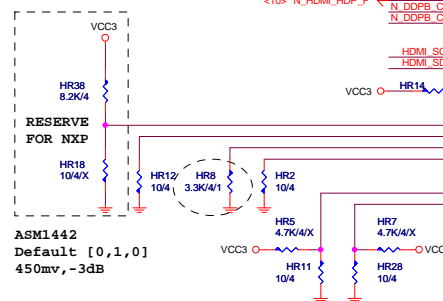
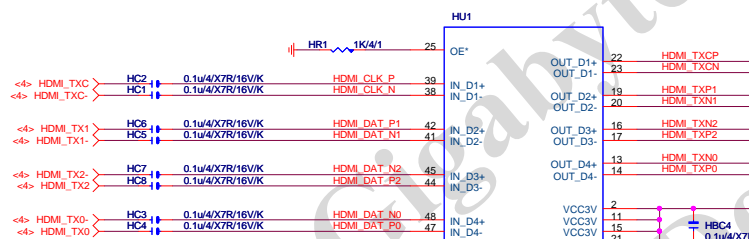
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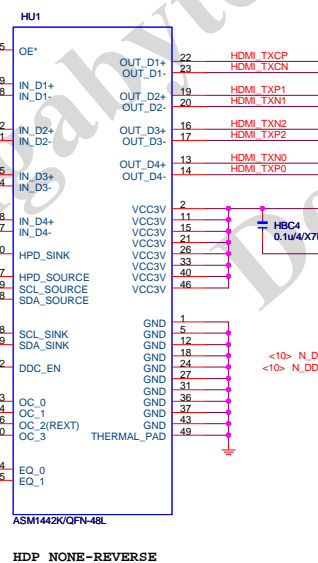
Close to connector



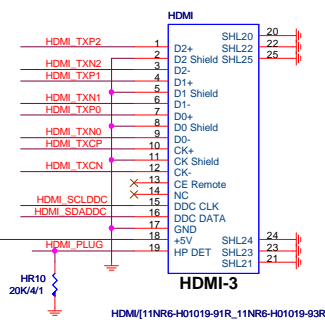
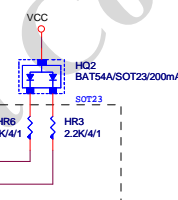
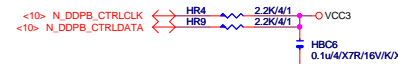
Close to connector

**HDMI LEVEL SHIFT**

ASMI442 Default [0,0] 3dB [0,1]6dB



HDP NONE-REVERSE



PCI:5/4/5 Impedance=50 +- 15%

BA_D0_31] <-> BA_D0_31] <16>
-BC_BE0 > BC_BE0 <16>
-BC_BE1 > BC_BE1 <16>
-BC_BE2 > BC_BE2 <16>
-BC_BE3 > BC_BE3 <16>
-BPERR > BPERR <16>
-BSERR > BSERR <16>
BPAR > BPAR <16>
-BPLOCK > BPLOCK <16>
-BDEVSEL > BDEVSEL <16>
-BSTOP > BSTOP <16>
-BTRDY > BTRDY <16>
-BIRDY > BIRDY <16>
-BFRAME > BFRAME <16>
-PCIE_RST > PCIE_RST <14,15,17>
-BPCIRST > BPCIRST <16>
-BREQ0 > BREQ0 <16>
-BREQ1 > BREQ1 <16>
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-BPCIPME1 > BPCIPME1 <16>

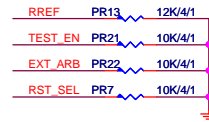


High: Enable PCI CLK 66MHz
Low: Disable PCI CLK 66MHz

High: PCICLK INPUT form CLK Gen
Low: PCICLK OUTPUT form IT8893 chip

Co-Lay IT8893 (IT8893 CLKOUT1 N/A)

IT8892: PR24 -> 47ohm
IT8893: PR24 -> 22ohm
IT8892: PR46 -> X
IT8893: PR46 -> O
IT8892: PR19 -> O
IT8893: PR19 -> X

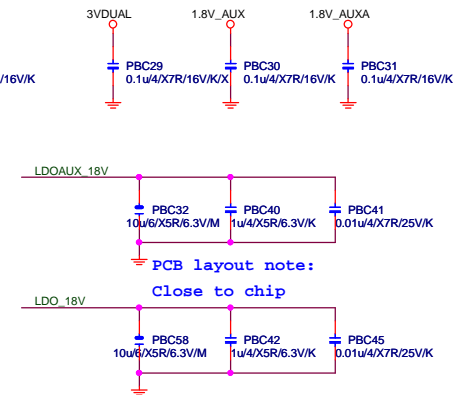
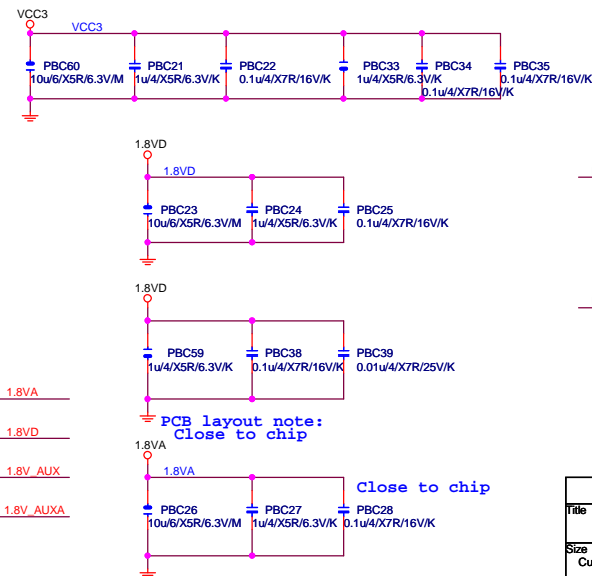
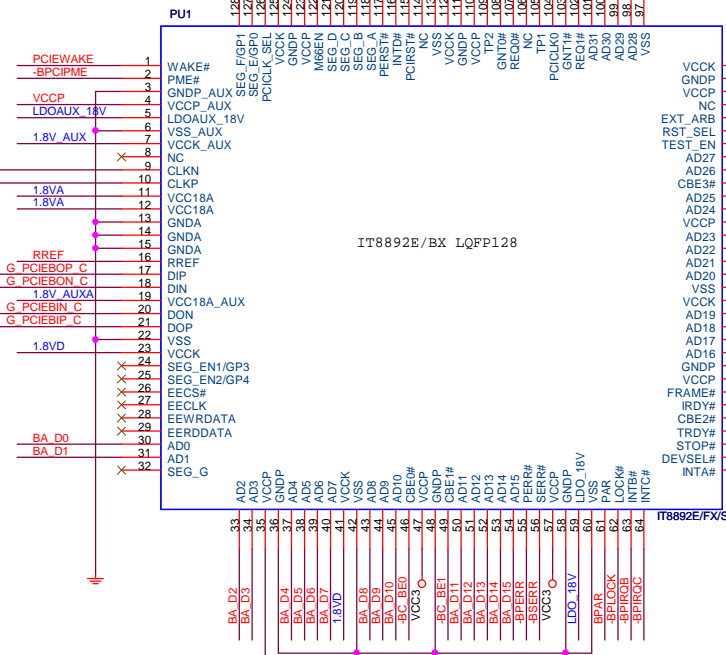
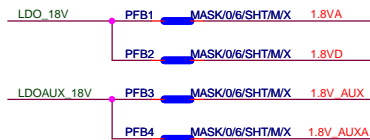
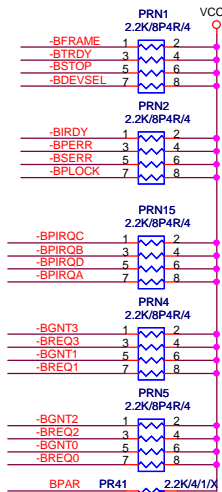
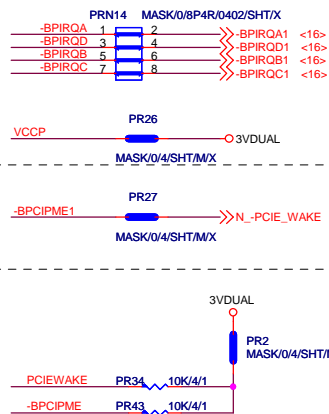


IT8892

PCI slot

PCI slot

chipset side



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