

Model Name: GA-B85-HD3

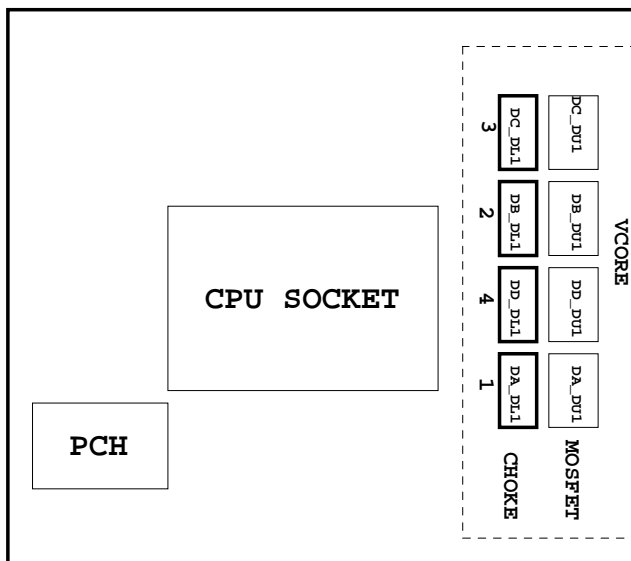
2.1

SHEET TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1150-A
05	CPU_LGA1150-B
06	CPU_LGA1150-C
07	DDR III CHANNEL A
08	DDR III CHANNEL B
09	PCH_FDI,DMI,USB,PCIE
10	PCH_RGB,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCI EXPRESS*16 SLOT
15	PCIEX1*2 , PCIEX4 SLOT
16	ITE8892 PCI BRIDGE
17	PCI SLOT 1&2
18	I/O ITE8620
19	COM, -PROHOT, R_USB
20	Dual BIOS / LPT
21	ALC887-VD2 CODEC
22	REAR AUDIO JACK
23	VCORE_ ISL95820_1
24	VCORE_ ISL95820_2
25	DDR15V / M3 POWER
26	NCP3933 OVER VOLTAGE
27	DISCRETE POWER

SHEET TITLE

28	F_PANEL , F_USB2.0/3.0
29	ATX POWER, CLOCK GEN
30	HWM , KB/MS , FAN CTRL
31	Realtek 8111F-VL
32	DVI
33	HDMI
34	TABLE LIST
35	
36	
37	
38	
39	
40	

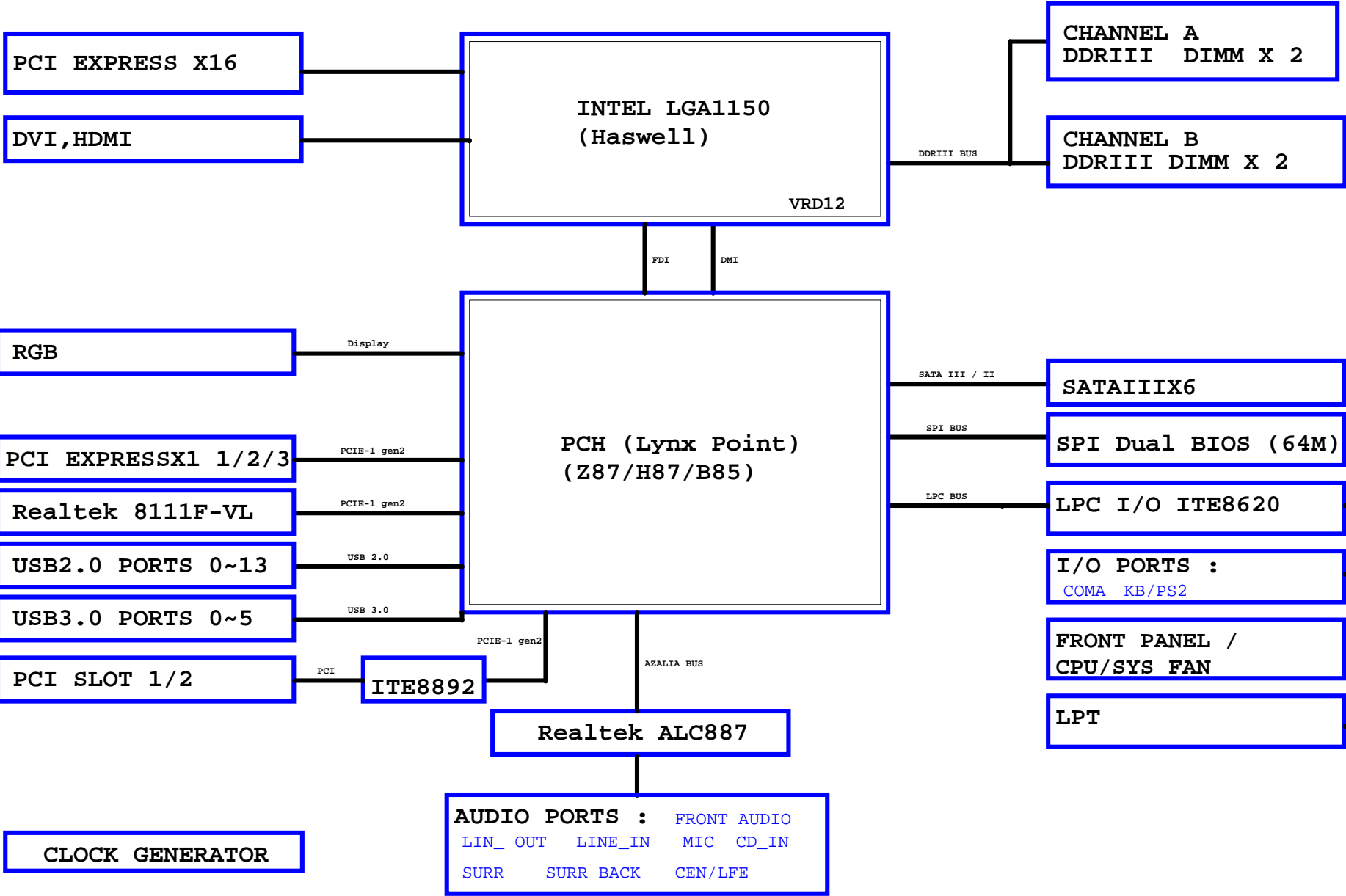


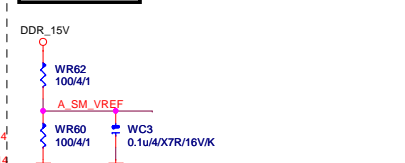
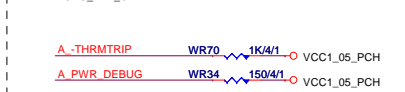
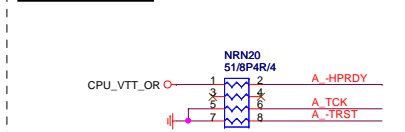
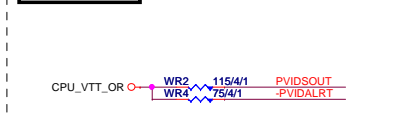
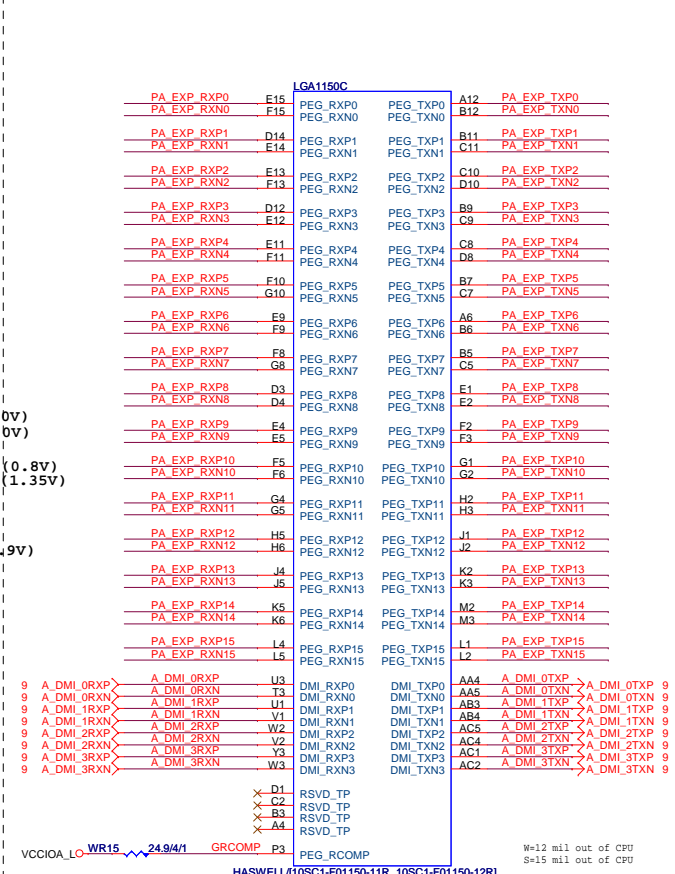
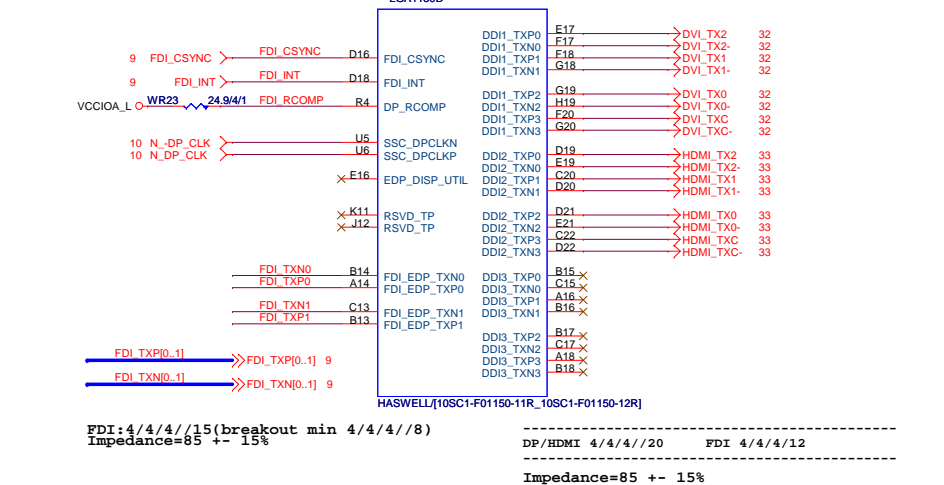
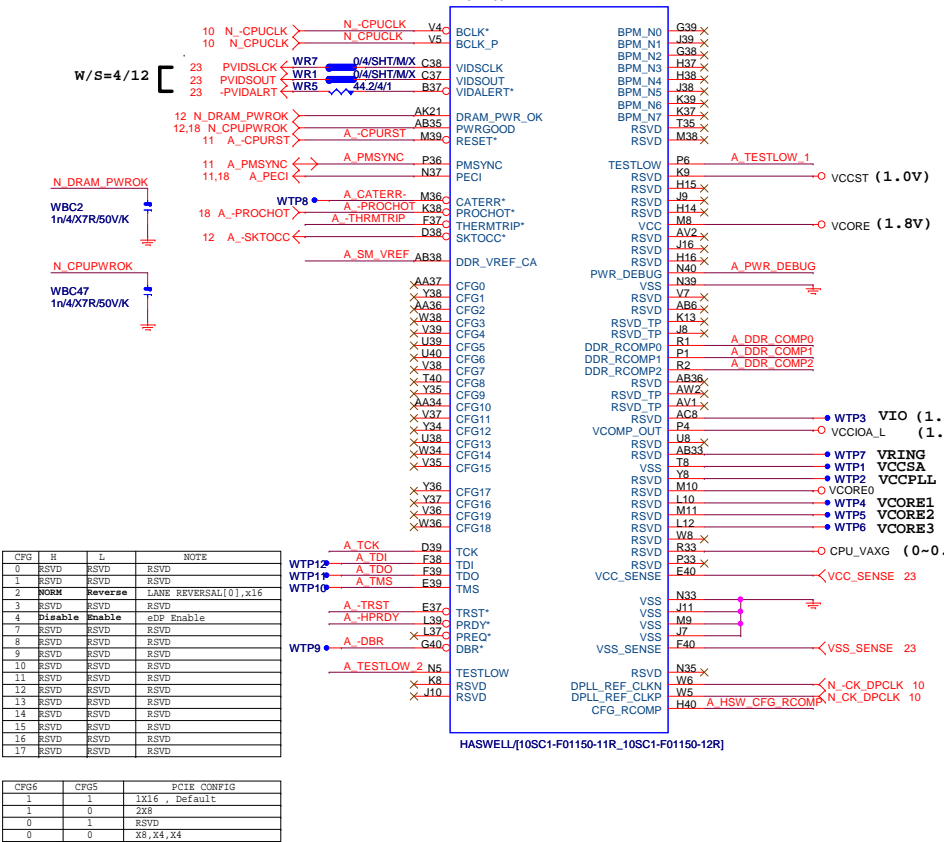
Component value change history

[illegible]

DATE	Change Item	Reason
2013/08/13 PCB:1.5	1. 由Z87-DS3H REV0.1 修改成B85-HD3-1.5 (原B85-HD3-1.1 304.8X225 --> B85-HD3-1.5 304.8X190)	
2013/01/16 PCB:2.0	1. 0ohm SHORT PAD	
	2. PE_SRCCLK_3GIO1/PE_-SRCCLK_3GIO1 change to PCH pin W6/W7	
	3. MR17 footprint update "R0603-RH"	
	4. CPU_FAN R676 update "R0603-RH"	
	5. PCH 25MHz NX1 layout修改 , Trace 4mils	
	6. 32.768KHz will REF "GND" , Trace 4mil	
	7. Update "POLYSWITCH-1206-1"	
	8. 所有的PPAK footprint改爲Q_TDS0N8-GDS-T (增加NXP相容)	
	9. U14-U15 update footprint "SOP8-NCT3941S"	
	1. 工廠反應NBC39有可能被PCH_HS壓壞	
2014/05/09 PCB:2.1	1. LAN to RTL8111G	
	2. VCORE MOSFET to 1上1下	
	3. H81 series Cost down rule	
	4. K/B_MOUSE排阻0402改爲0603	
	5. DVI remove level shift	
	6. Remove 短路保護	
	7. 1206 3.5A fuse to 0805 2.6A	
	8. Remove 3933	
	1.PRN1的FOOTPRINT 改爲SHORT PAD	

BLOCK DIAGRAM

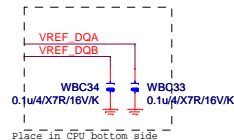




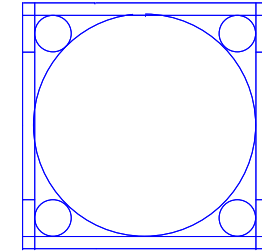
LGA1150A									
MAAA0	AU13	DDR0_MA0	DDR0_D00	AD38	MDA0				
MAAA1	AV16	DDR0_MA1	DDR0_D01	AD39	MDA1				
MAAA2	AU16	DDR0_MA2	DDR0_D02	AF38	MDA2				
MAAA3	AW17	DDR0_MA3	DDR0_D03	AF39	MDA3				
MAAA4	AW17	DDR0_MA4	DDR0_D04	AD37	MDA4				
MAAA5	AW18	DDR0_MA5	DDR0_D05	AD40	MDA5				
MAAA6	AV17	DDR0_MA6	DDR0_D06	AE37	MDA6				
MAAA7	AT18	DDR0_MA7	DDR0_D07	AF40	MDA7				
MAAA8	AU18	DDR0_MA8	DDR0_D08	AH40	MDA9				
MAAA9	AT19	DDR0_MA9	DDR0_D09	AH39	MDA10				
MAAA10	AW11	DDR0_MA10	DDR0_D10	AK38	MDA10				
MAAA11	AV19	DDR0_MA11	DDR0_D11	AK39	MDA11				
MAAA12	AU19	DDR0_MA12	DDR0_D12	AH37	MDA12				
MAAA13	AY10	DDR0_MA13	DDR0_D13	AH38	MDA14				
MAAA14	AT20	DDR0_MA14	DDR0_D14	AK40	MDA15				
MAAA15	AU21	DDR0_MA15	DDR0_D15	AK40	MDA17				
MODT_A0	AW10	DDR0_ODT0	DDR0_D16	AM40	MDA17				
MODT_A1	AY8	DDR0_ODT1	DDR0_D17	AM39	MDA21				
MODT_A2	AW9	DDR0_ODT2	DDR0_D18	AP38	MDA18				
MODT_A3	AU8	DDR0_ODT3	DDR0_D19	AP39	MDA19				
			DDR0_D20	AM37	MDA20				
			DDR0_D21	AM38	MDA16				
			DDR0_D22	AP37	MDA22				
			DDR0_D23	AP40	MDA23				
			DDR0_D24	AV37	MDA25				
			DDR0_D25	AW37	MDA29				
			DDR0_D26	AU35	MDA25				
			DDR0_D27	AV35	MDA27				
			DDR0_D28	AT37	MDA28				
			DDR0_D29	AU37	MDA24				
			DDR0_D30	AT35	MDA30				
			DDR0_D31	AW35	MDA31				
			DDR0_D32	AY6	MDA33				
			DDR0_D33	AU6	MDA37				
			DDR0_D34	AV4	MDA34				
			DDR0_D35	AW6	MDA36				
			DDR0_D36	AV6	MDA32				
			DDR0_D37	AW4	MDA38				
			DDR0_D38	AY4	MDA39				
			DDR0_D39	AR1	MDA41				
			DDR0_D40	AR4	MDA45				
			DDR0_D41	AN3	MDA42				
			DDR0_D42	AN4	MDA43				
			DDR0_D43	AR2	MDA44				
			DDR0_D44	AR3	MDA40				
			DDR0_D45	AN2	MDA46				
			DDR0_D46	AN1	MDA47				
			DDR0_D47	AL1	MDA49				
			DDR0_D48	AL4	MDA53				
			DDR0_D49	AL3	MDA50				
			DDR0_D50	AJ4	MDA51				
			DDR0_D51	AL2	MDA52				
			DDR0_D52	AJ2	MDA48				
			DDR0_D53	AJ2	MDA54				
			DDR0_D54	AJ1	MDA55				
			DDR0_D55	AG1	MDA57				
			DDR0_D56	AG4	MDA61				
			DDR0_D57	AE3	MDA58				
			DDR0_D58	AE4	MDA59				
			DDR0_D59	AG2	MDA60				
			DDR0_D60	AG3	MDA56				
			DDR0_D61	AE2	MDA62				
			DDR0_D62	AE1	MDA63				
			DDR0_D63	AE39	DQSA0				
			DDR0_D64	AJ39	DQSA1				
			DDR0_D65	AN39	DQSA2				
			DDR0_D66	AV36	DQSA3				
			DDR0_D67	AV5	DQSA4				
			DDR0_D68	AP3	DQSA5				
			DDR0_D69	AK3	DQSA6				
			DDR0_D70	AF3	DQSA7				
			DDR0_D71	AV32	DQSA8				
			DDR0_D72	AE38	DQSA9				
			DDR0_D73	AJ38	DQSA1				
			DDR0_D74	AN38	DQSA2				
			DDR0_D75	AJ36	DQSA3				
			DDR0_D76	AW5	DQSA4				
			DDR0_D77	AP2	DQSA5				
			DDR0_D78	AK2	DQSA6				
			DDR0_D79	AF2	DQSA7				
			DDR0_D80	AU32	DQSA8				

HASWELL[10SC1-F01150-11R_10SC1-F01150-12R]

LGA1150B									
MAAB0	AL19	DDR1_MA0	DDR1_D00	AE34	MDB0				
MAAB1	AK23	DDR1_MA1	DDR1_D01	AE35	MDB1				
MAAB2	AM23	DDR1_MA2	DDR1_D02	AG35	MDB2				
MAAB3	AM23	DDR1_MA3	DDR1_D03	AH35	MDB3				
MAAB4	AP23	DDR1_MA4	DDR1_D04	AD34	MDB4				
MAAB5	AY24	DDR1_MA5	DDR1_D05	AG34	MDB5				
MAAB6	AV25	DDR1_MA6	DDR1_D06	AH34	MDB7				
MAAB7	AU26	DDR1_MA7	DDR1_D07	AL34	MDB8				
MAAB8	AV25	DDR1_MA8	DDR1_D08	AL35	MDB9				
MAAB9	AV25	DDR1_MA9	DDR1_D09	AK31	MDB10				
MAAB10	AP18	DDR1_MA10	DDR1_D10	AL31	MDB11				
MAAB11	AY25	DDR1_MA11	DDR1_D11	AK34	MDB12				
MAAB12	AV26	DDR1_MA12	DDR1_D12	AK35	MDB13				
MAAB13	AR15	DDR1_MA13	DDR1_D13	AK32	MDB14				
MAAB14	AV27	DDR1_MA14	DDR1_D14	AL32	MDB15				
MAAB15	AY28	DDR1_MA15	DDR1_D15	AL34	MDB17				
MODT_B0	AM17	DDR1_ODT0	DDR1_D16	AP34	MDB21				
MODT_B1	AL16	DDR1_ODT1	DDR1_D17	AN31	MDB19				
MODT_B2	AM16	DDR1_ODT2	DDR1_D18	AP31	MDB23				
MODT_B3	AK15	DDR1_ODT3	DDR1_D19	AN35	MDB20				
			DDR1_D20	AP35	MDB16				
			DDR1_D21	AN32	MDB18				
			DDR1_D22	AP32	MDB22				
			DDR1_D23	AM29	MDB25				
			DDR1_D24	AM28	MDB28				
			DDR1_D25	AR29	MDB27				
			DDR1_D26	AR28	MDB30				
			DDR1_D27	AL28	MDB24				
			DDR1_D28	AL28	MDB29				
			DDR1_D29	AP29	MDB26				
			DDR1_D30	AP28	MDB31				
			DDR1_D31	AR12	MDB32				
			DDR1_D32	AP12	MDB33				
			DDR1_D33	AL13	MDB34				
			DDR1_D34	AL12	MDB35				
			DDR1_D35	AP13	MDB36				
			DDR1_D36	AM13	MDB38				
			DDR1_D37	AM12	MDB39				
			DDR1_D38	AR9	MDB45				
			DDR1_D39	AP9	MDB41				
			DDR1_D40	AR6	MDB47				
			DDR1_D41	AP6	MDB43				
			DDR1_D42	AR10	MDB44				
			DDR1_D43	AR7	MDB46				
			DDR1_D44	AP7	MDB42				
			DDR1_D45	AM9	MDB52				
			DDR1_D46	AL9	MDB53				
			DDR1_D47	AL6	MDB50				
			DDR1_D48	AL7	MDB55				
			DDR1_D49	AM10	MDB48				
			DDR1_D50	AL10	MDB49				
			DDR1_D51	AM6	MDB54				
			DDR1_D52	AM7	MDB51				
			DDR1_D53	AH6	MDB61				
			DDR1_D54	AH7	MDB60				
			DDR1_D55	AE6	MDB59				
			DDR1_D56	AE7	MDB63				
			DDR1_D57	AJ6	MDB56				
			DDR1_D58	AJ7	MDB57				
			DDR1_D59	AF7	MDB58				
			DDR1_D60	AF6	MDB62				
			DDR1_D61	AF35	DQSB0				
			DDR1_D62	AK33	DQSB1				
			DDR1_D63	AN28	DQSB2				
			DDR1_D64	AN28	DQSB3				
			DDR1_D65	AN12	DQSB4				
			DDR1_D66	AP8	DQSB5				
			DDR1_D67	AL8	DQSB6				
			DDR1_D68	AG7	DQSB7				
			DDR1_D69	AN25	DQSB8				
			DDR1_D70	AK33	DQSB1				
			DDR1_D71	AN29	DQSB2				
			DDR1_D72	AK13	DQSB3				
			DDR1_D73	AR8	DQSB5				
			DDR1_D74	AM8	DQSB6				
			DDR1_D75	AG6	DQSB7				
			DDR1_D76	AN26	DQSB8				



HASWELL[10SC1-F01150-11R_10SC1-F01150-12R]

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

DDR BUS

7	MODT_A[0..3]	MODT_A[0..3]
8	MODT_B[0..3]	MODT_B[0..3]
7	MDA[0..63]	MDA[0..63]
8	MDB[0..63]	MDB[0..63]
7	DQSA[0..7]	DQSA[0..7]
7	DQSA[0..7]	DQSA[0..7]
7	MAAA[0..15]	MAAA[0..15]
8	MAAB[0..15]	MAAB[0..15]
8	DQSB[0..7]	DQSB[0..7]
8	DQSB[0..7]	DQSB[0..7]

Gigabyte Technology

Title				CPU LGA1150-B	
Size				GA-B85-HD3	
Date:				Monday, May 19, 2014	
Sheet				5 of 34	
Rev				2.1	

(F,J)



(G,H,I)

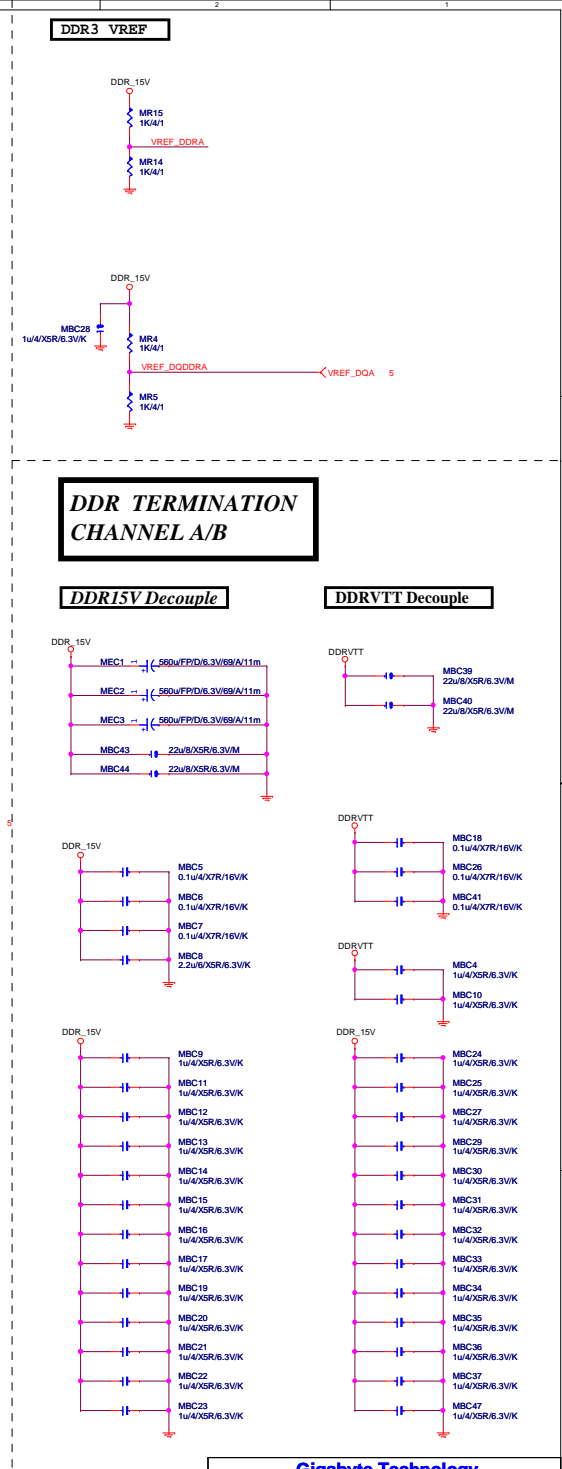


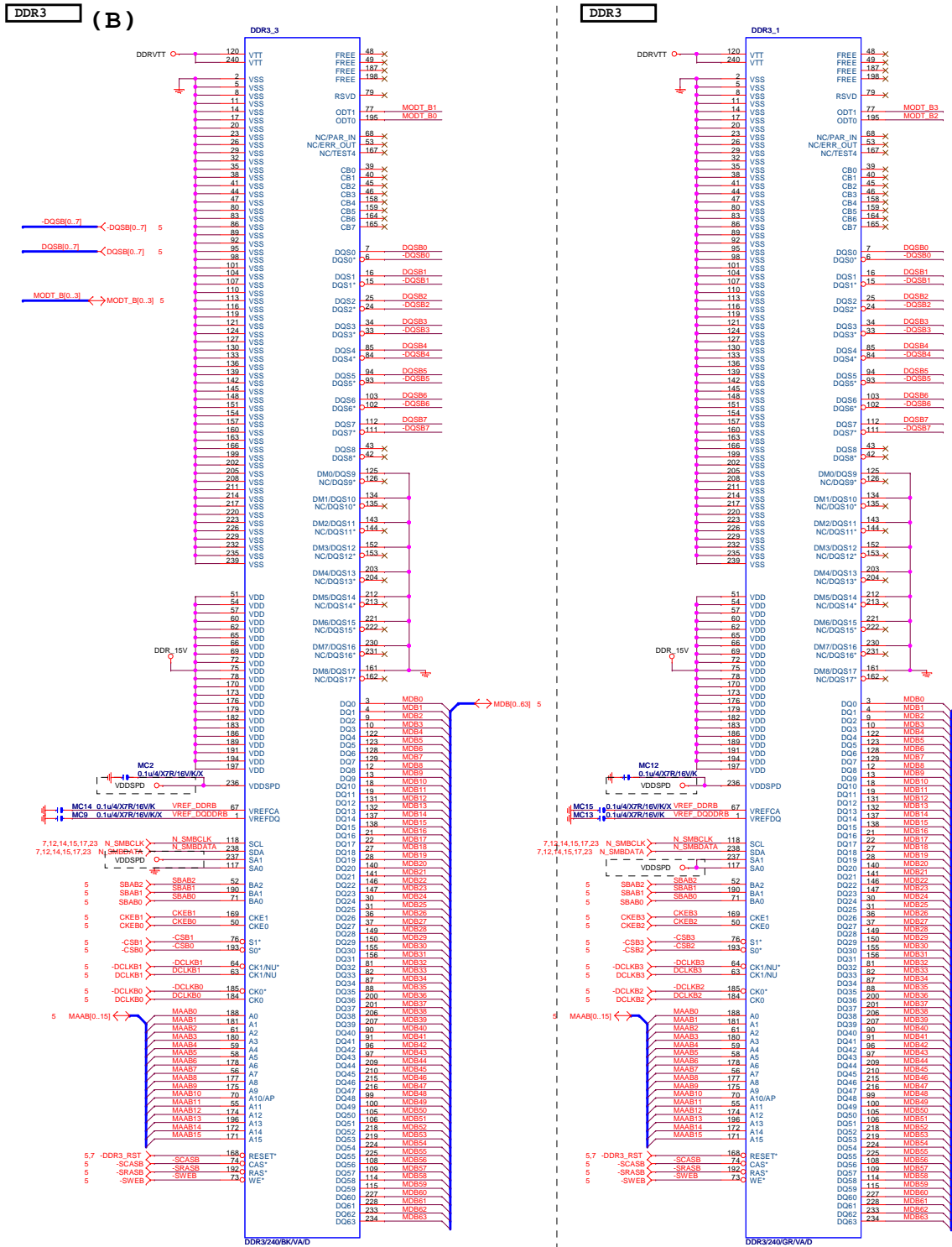
VCORE

C0805-MASK

(x9)







DDR3 1066,1333,1600MHZ BANDWIDTH

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

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

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

COUPON



CPU

DIMM4
DIMM2

DIMM3
DIMM1

CHA

CHB

Gigabyte Technology

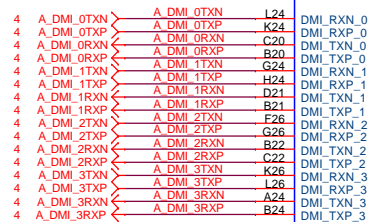
PCH

(B)

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

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

PCHB



VCC1_5_PCH

W=8 mil out of PCH
S=15 mil to other signals

PCIEX1 port1

PCIEX1 port2

LAN RTL8111F-VL

ITE8892 PCI Bridge

PCIEX4 port1

PCIEX4 port2

PCIEX4 port3

H81:PCIE 7/8 N/A

PCIEX4 port4

放靠近 Device & PCI-E Slot

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

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

usb2.0 5/7/5//12

usb3.0 5/7/5//20

Impedance=85 +- 15%

PCH

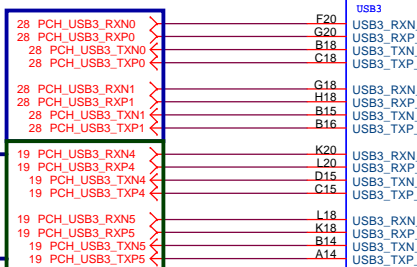
(F)

Port要對應

B85/H81 6/7 N/A

H81:12/13 N/A

H81:USB3.0 N/A



VCC3

NR62

NR63

8.2K/4/X

8.2K/4/X

AK28

AT34

PCHF

FDILINK

USB3

FDI_RXN_0

FDI_RXP_0

FDI_TXN_0

FDI_TXP_0

FDI_RXN_1

FDI_RXP_1

FDI_TXN_1

FDI_TXP_1

FDI_CS

FDI_INT

FDI_RCOMP

USB3_RXN_0

USB3_RXP_0

USB3_TXN_0

USB3_TXP_0

USB3_RXN_1

USB3_RXP_1

USB3_TXN_1

USB3_TXP_1

USB3_RXN_4

USB3_RXP_4

USB3_TXN_4

USB3_TXP_4

USB3_RXN_5

USB3_RXP_5

USB3_TXN_5

USB3_TXP_5

TACH6_GP70

TACH7_GP71

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

FDI_TXP0..1

FDI_TXN0..1

FDI_TXP0..1

FDI_TXN0..1

USB3.0:20/5/7/5/20 (breakout min 8/4/4/4/8) ; ONLY 3 VIAS
Impedance=85 +- 17.5%
Back Panel < 10000 MILS
Front Panel < 6000 MILS

Mount for integrated clock Generation Mode



10 N_PCHCLK14

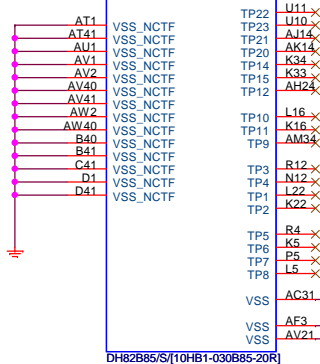
CK_DOTCLK

CK_DOTCLK

PCH

(J)

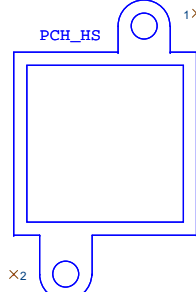
PCHJ



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

PCH H/S

PCH_HS



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

USB TABLE

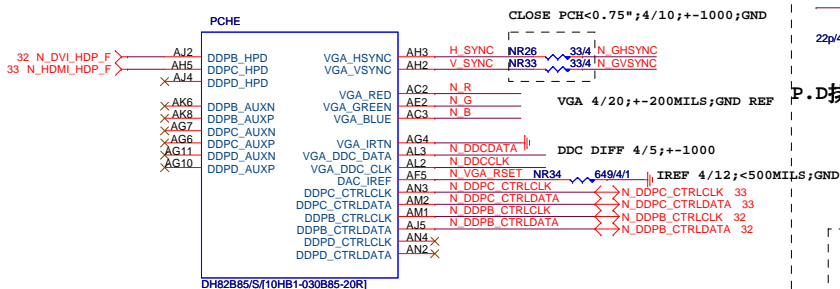
OC[3:0]# for Device 29 (ports 0-7)
OC[7:4]# for Device 26 (ports 8-13)

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

Gigabyte Technology

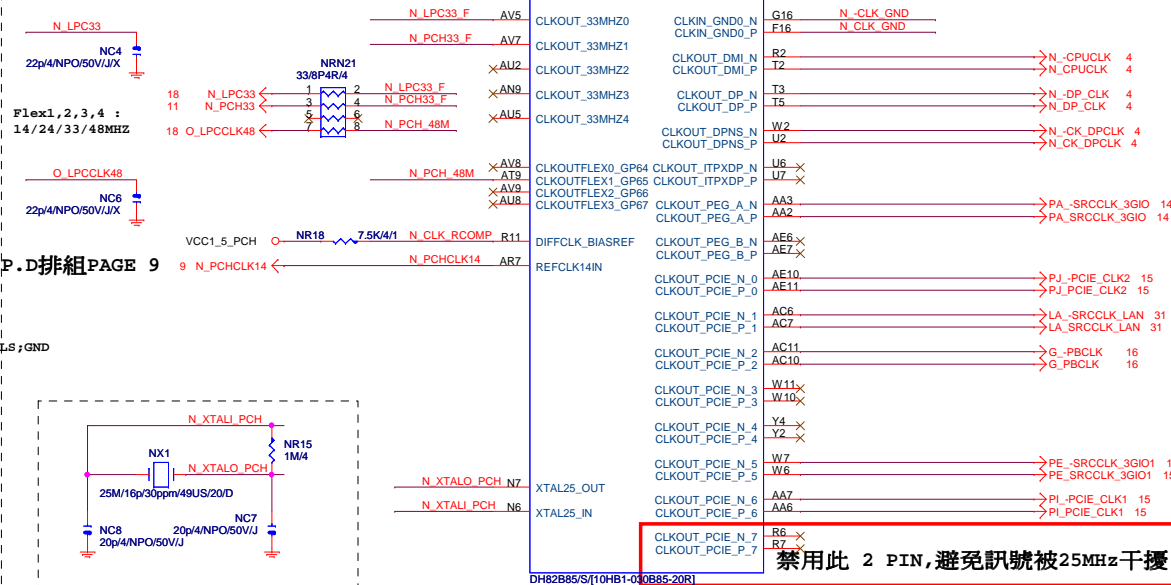
Title				Rev
PCH FDI,DMI,USB ,PCIE				
Size	Document Number			
Custom	GA-B85-HD3			
Date:	Monday, May 19, 2014	Sheet	9 of 34	2

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)



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

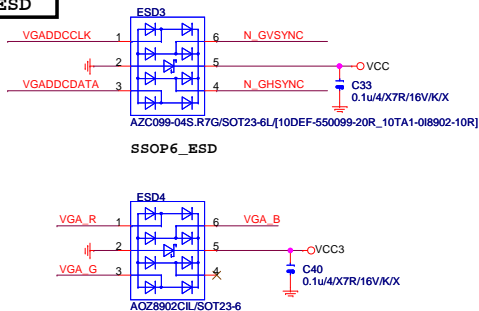
禁用此 2 PIN, 避免訊號被25MHz干擾

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

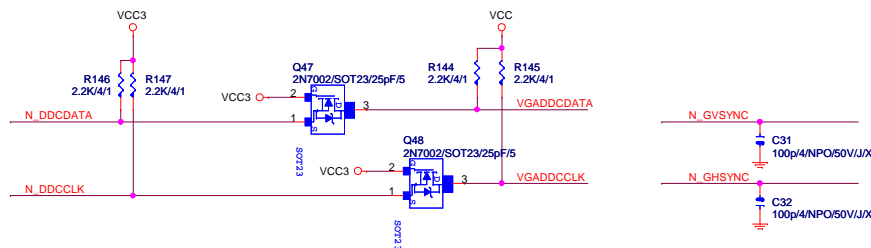
PCH CLK PD



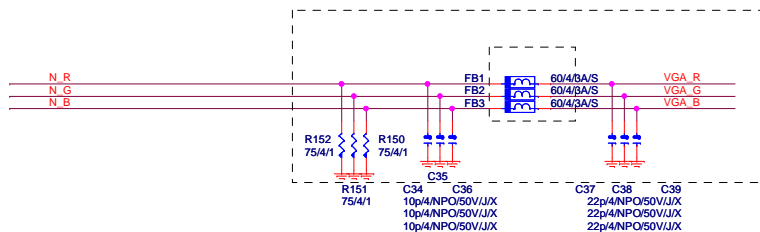
VGA ESD



VGA DDC

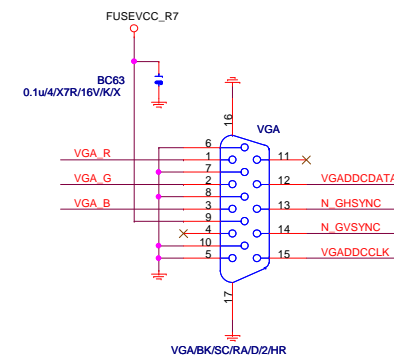


VGA DDC



Close to VGA connector

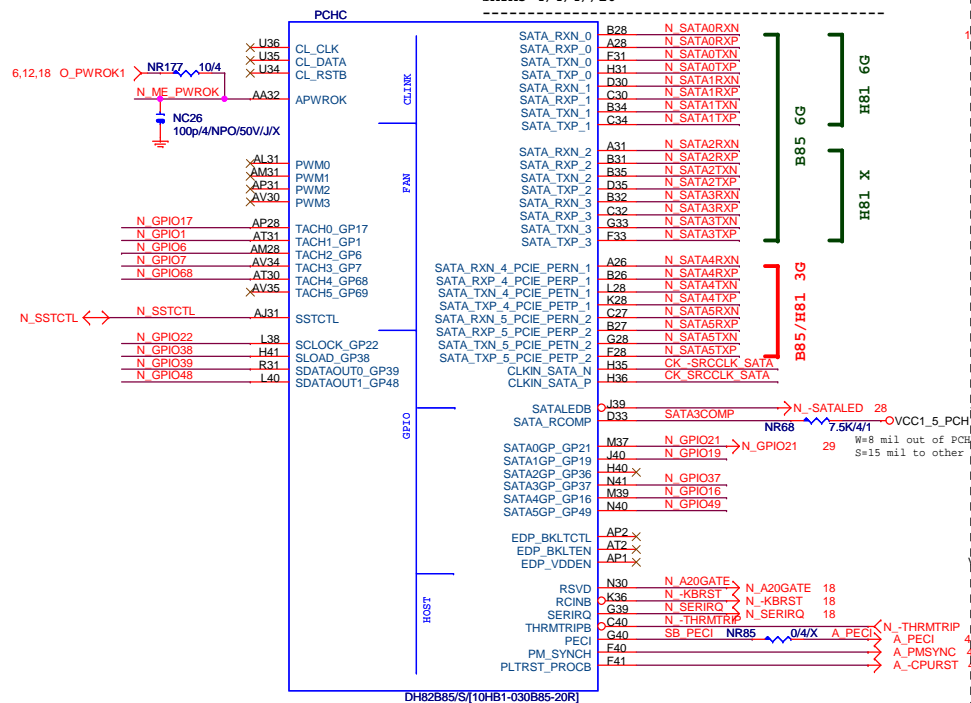
VGA CONNECTOR



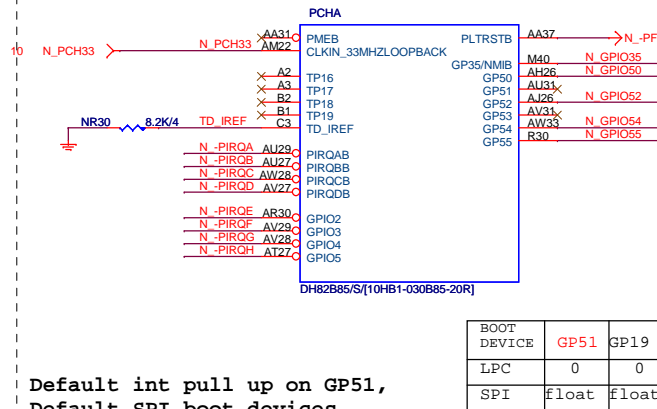
Gigabyte Technology

Title				PCH DISPLAY ,CLK BUFFER			
Size	Document Number						Rev
Custom	GA-B85-HD3						2.
Date:	Monday, May 19, 2014			Sheet	10	of	34

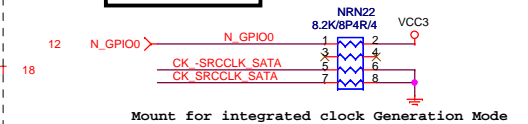
PCH (C)



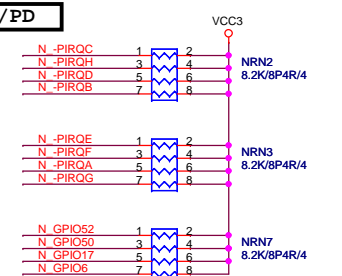
PCH (A)



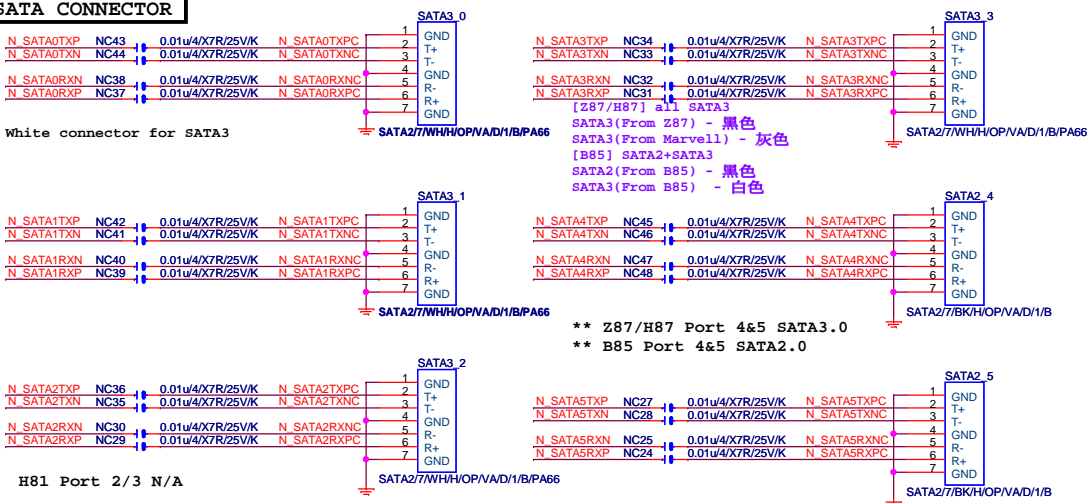
PCH CLK PD



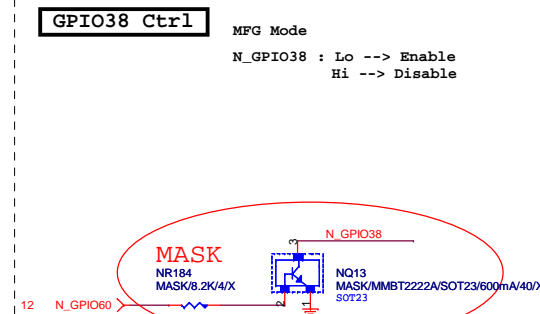
PCH	PU/PD
-----	-------



SATA CONNECTOR



GPIO38 Ctrl



soft strap	GP16	GP49
0	pcie1	pcie2
1	sata4	sata5

Gigabyte Technology

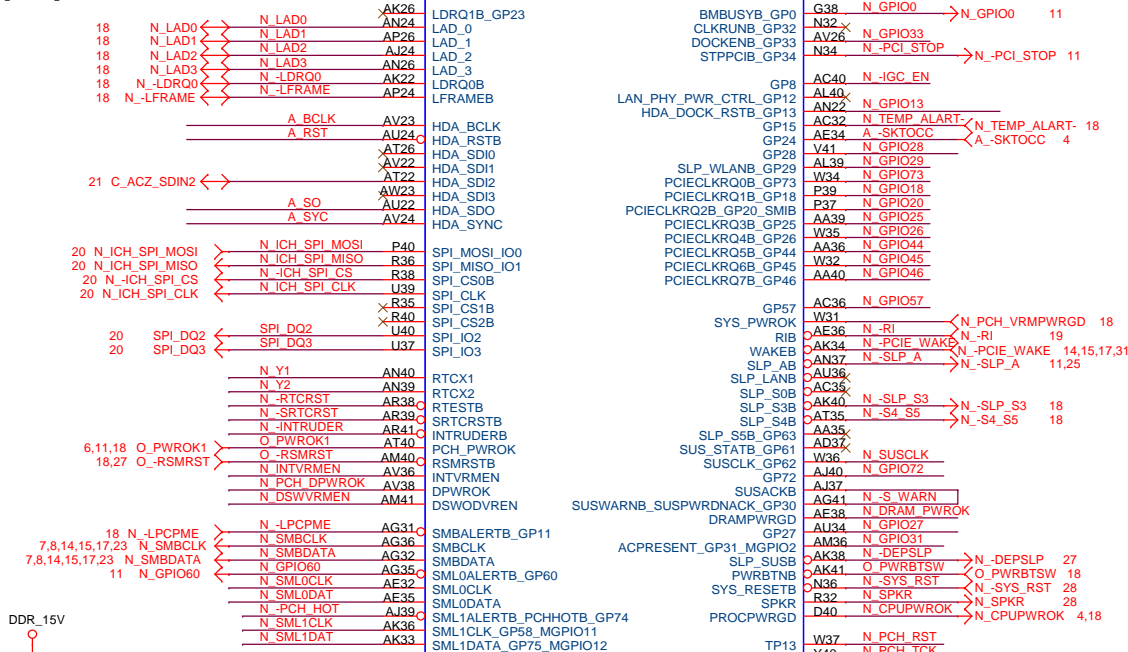
Title			
PCH HOST , SATA, PCI			
Size	Document Number		Rev
Custom	GA-B85-HD3		2.1
Date:	Monday, May 19, 2014	Sheet	11 of 34

PCH

(D)



PCHD



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

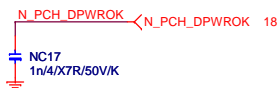


ACZ_SDOUT

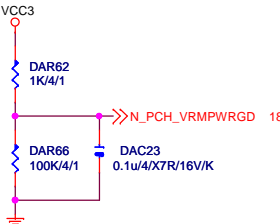
N/A

PCH_DPWROK

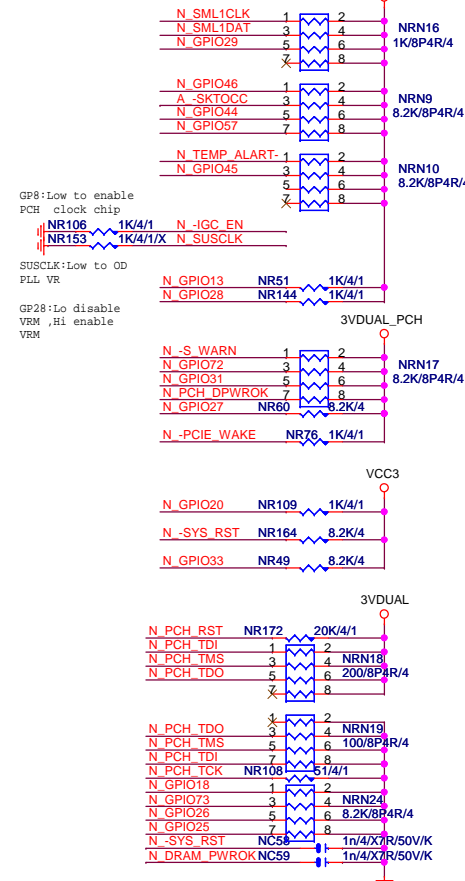
At least 10ms delay after 3VDUAL_PCH stable



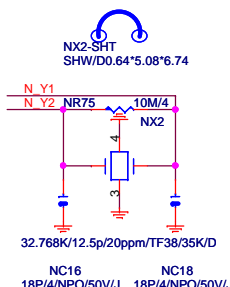
For IT8620 Ctrl



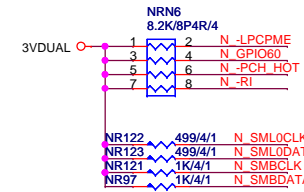
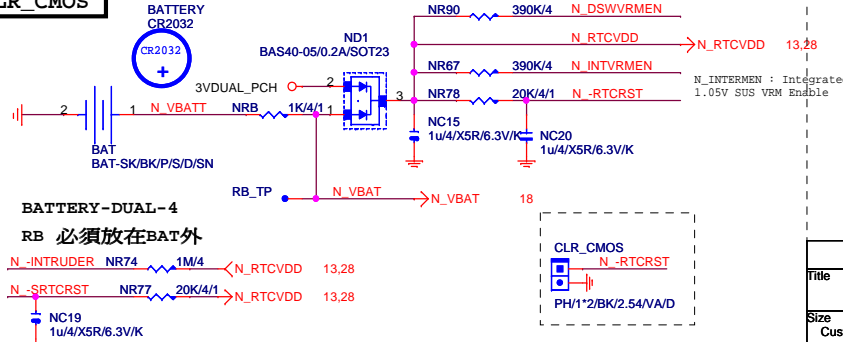
PCH PU/PD



32.768KHZ



CLR_CMOS



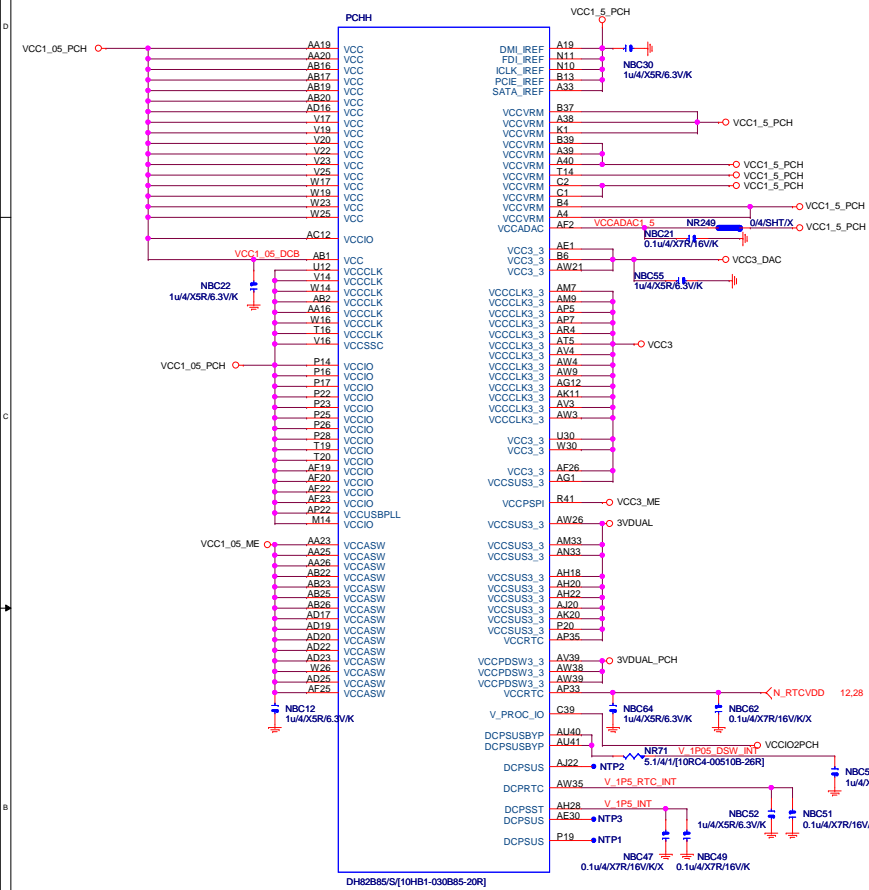
Gigabyte Technology

PCH GPIO , CTRL , AUDIO

Title		Document Number		Rev	
Size		Custom		2.1	
Date:		Monday, May 19, 2014		Sheet 12 of 34	

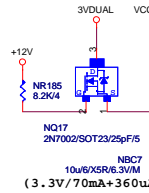
GA-B85-HD3

PCH (H)

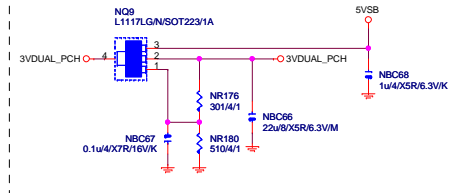


VCC3_DAC

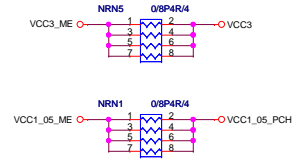
CLOSE北橋(注意質量水波紋)



3VDUAL_PCH

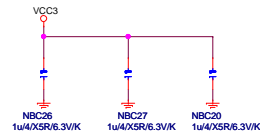


SHT_PWR

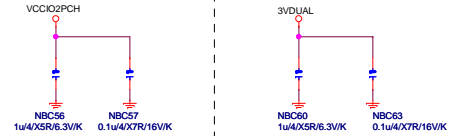


CAP

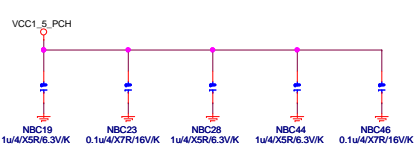
(3.3V) (X3)



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



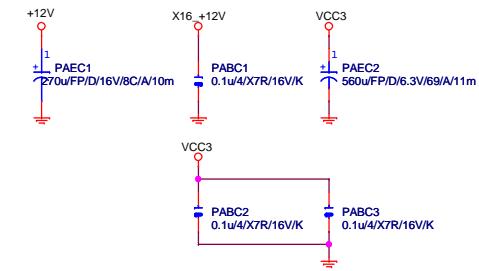
(1.5V) (X5)



PCH (I)

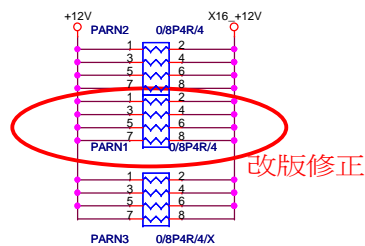


PCIEX16 CAP



PCIEX16 PROTECT SHT

```
+12 protect
short-wire test
```



PCIEX16 AC CAP

PA EXP TX0	PAC5	0.22u4/X5R6/3VK	PA EXP TX0
PA EXP TXN0	PAC4	0.22u4/X5R6/3VK	PA EXP TXN0
PA EXP TXP1	PAC6	0.22u4/X5R6/3VK	PA EXP TXP1
PA EXP TXN1	PAC7	0.22u4/X5R6/3VK	PA EXP TXN1
PA EXP TXF2	PAC8	0.22u4/X5R6/3VK	PA EXP TXP2
PA EXP TXN2	PAC9	0.22u4/X5R6/3VK	PA EXP TXN2
PA EXP TXP3	PAC10	0.22u4/X5R6/3VK	PA EXP TXP3
PA EXP TXN3	PAC11	0.22u4/X5R6/3VK	PA EXP TXN3
PA EXP TXP4	PAC12	0.22u4/X5R6/3VK	PA EXP TXP4
PA EXP TXN4	PAC13	0.22u4/X5R6/3VK	PA EXP TXN4
PA EXP TXP5	PAC14	0.22u4/X5R6/3VK	PA EXP TXP5
PA EXP TXN5	PAC15	0.22u4/X5R6/3VK	PA EXP TXN5
PA EXP TXP6	PAC16	0.22u4/X5R6/3VK	PA EXP TXP6
PA EXP TXN6	PAC17	0.22u4/X5R6/3VK	PA EXP TXN6
PA EXP TXP7	PAC18	0.22u4/X5R6/3VK	PA EXP TXP7
PA EXP TXN7	PAC18	0.22u4/X5R6/3VK	PA EXP TXN7
PA EXP TXP8	PAC20	0.22u4/X5R6/3VK	PA EXP TXP8
PA EXP TXN8	PAC21	0.22u4/X5R6/3VK	PA EXP TXN8
PA EXP TXP9	PAC22	0.22u4/X5R6/3VK	PA EXP TXP9
PA EXP TXN9	PAC23	0.22u4/X5R6/3VK	PA EXP TXN9
PA EXP TXP10	PAC24	0.22u4/X5R6/3VK	PA EXP TXP10
PA EXP TXN10	PAC25	0.22u4/X5R6/3VK	PA EXP TXN10
PA EXP TXP11	PAC26	0.22u4/X5R6/3VK	PA EXP TXP11
PA EXP TXN11	PAC27	0.22u4/X5R6/3VK	PA EXP TXN11
PA EXP TXP12	PAC28	0.22u4/X5R6/3VK	PA EXP TXP12
PA EXP TXN12	PAC29	0.22u4/X5R6/3VK	PA EXP TXN12
PA EXP TXP13	PAC30	0.22u4/X5R6/3VK	PA EXP TXP13
PA EXP TXN13	PAC31	0.22u4/X5R6/3VK	PA EXP TXN13
PA EXP TXP14	PAC32	0.22u4/X5R6/3VK	PA EXP TXP14
PA EXP TXN14	PAC33	0.22u4/X5R6/3VK	PA EXP TXN14
PA EXP TXP15	PAC34	0.22u4/X5R6/3VK	PA EXP TXP15
PA EXP TXN15	PAC35	0.22u4/X5R6/3VK	PA EXP TXN15

PCI-E REV:1.1--> 2.5GHZ

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

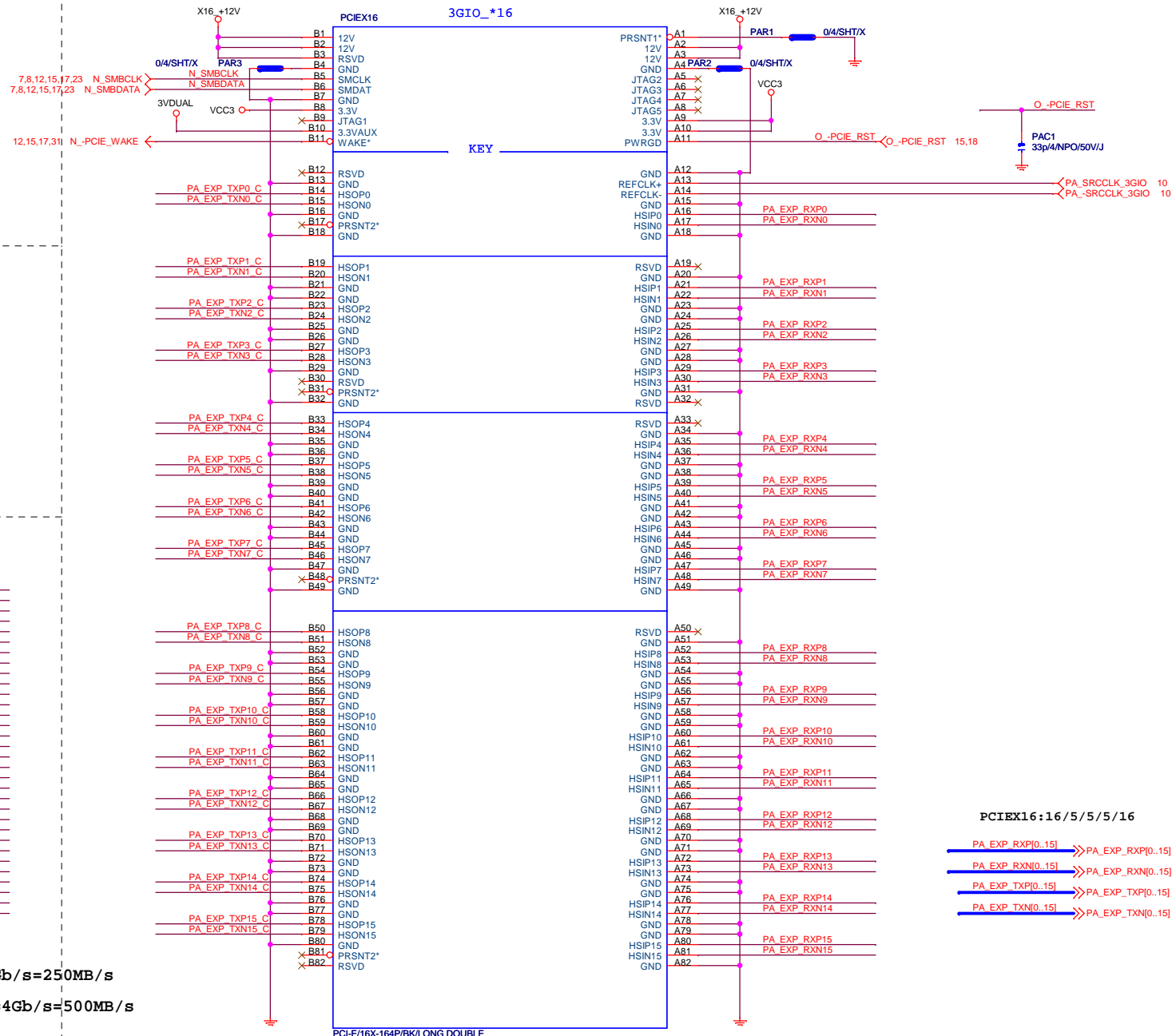
PCE-E X1 (雙向) BANDWIDTH=2.5GHz*(8b/10b)X2=4Gb/s=500MB/s

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

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

PCI-E REV:2.0--> 5GHZ

PCIEX16 SLOT

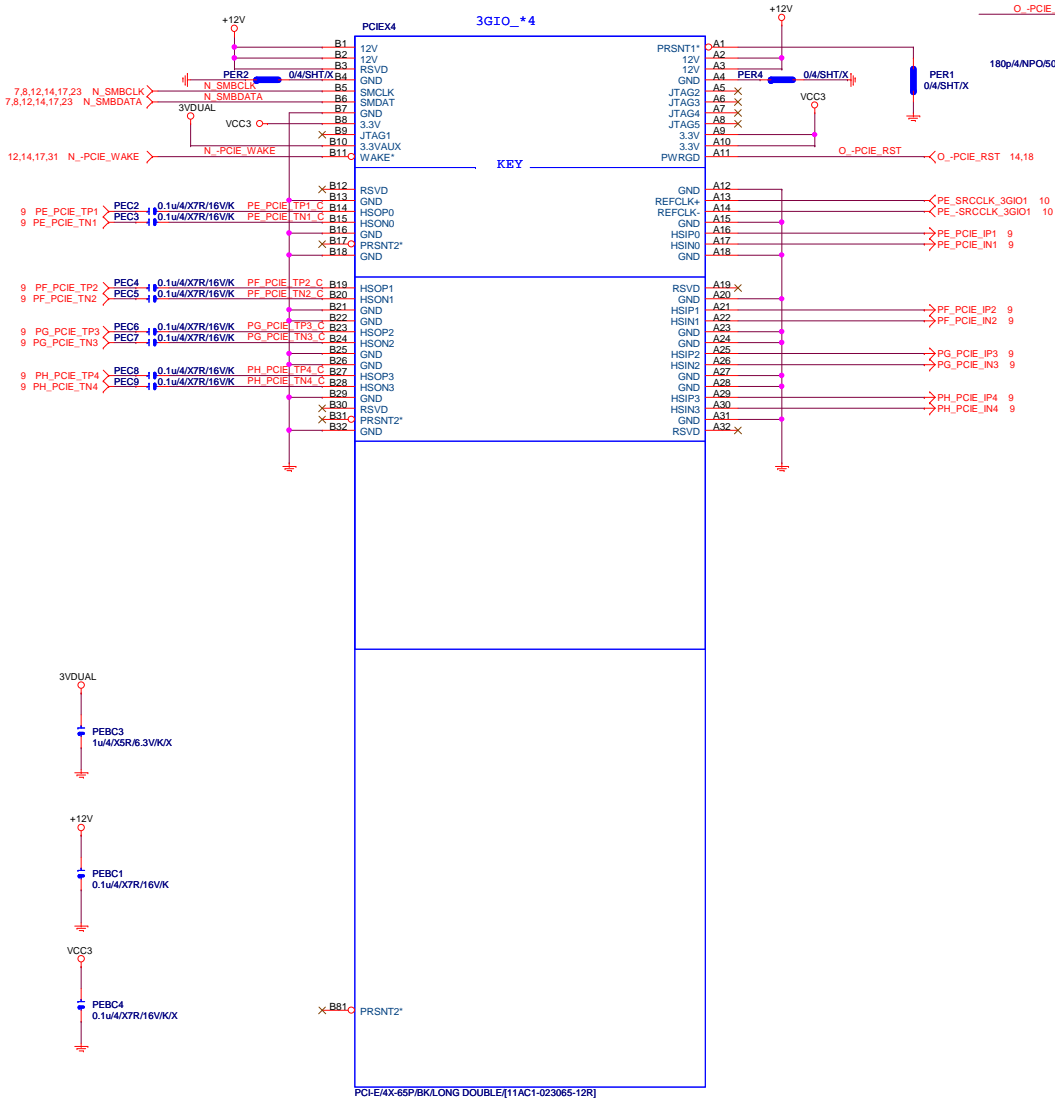


PCIEX16:16/5/5/5/16

PA_EXP_RXP[0..15] >> PA_EXP_RXP[0..15] 4
PA_EXP_RXN[0..15] >> PA_EXP_RXN[0..15] 4
PA_EXP_TXP[0..15] >> PA_EXP_TXP[0..15] 4
PA_EXP_TXN[0..15] >> PA_EXP_TXN[0..15] 4

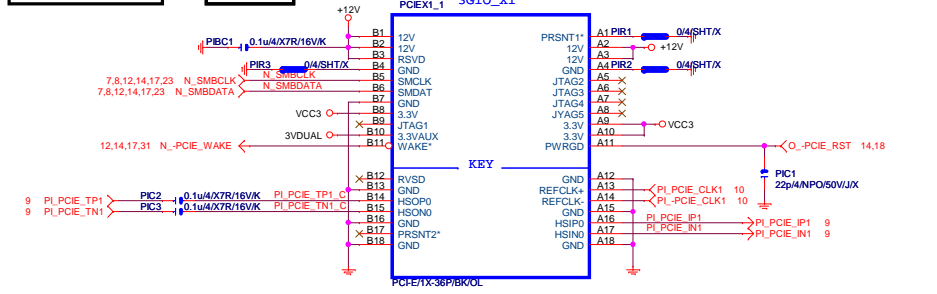
Gigabyte Technology			
Title			
PCI EXPRESS * 16			
Size Custom	Document Number		Rev
	GA-B85-HD3		2.1
Date:	Thursday, May 29, 2014	Sheet	14 of 34

PCIEX4 SLOT

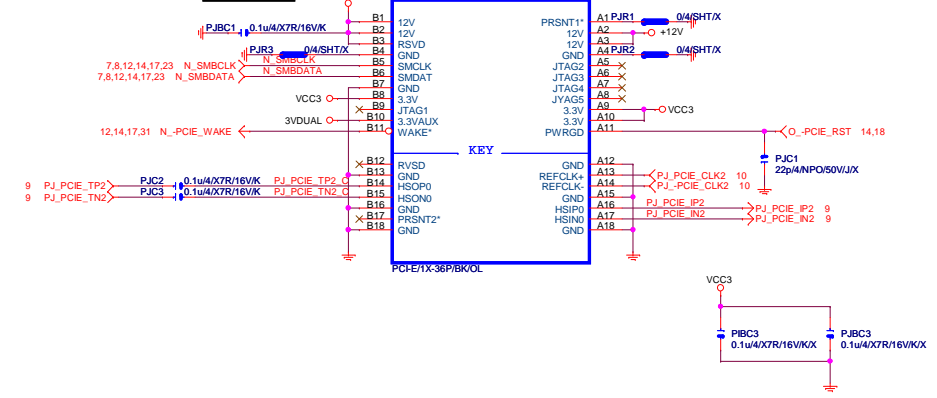


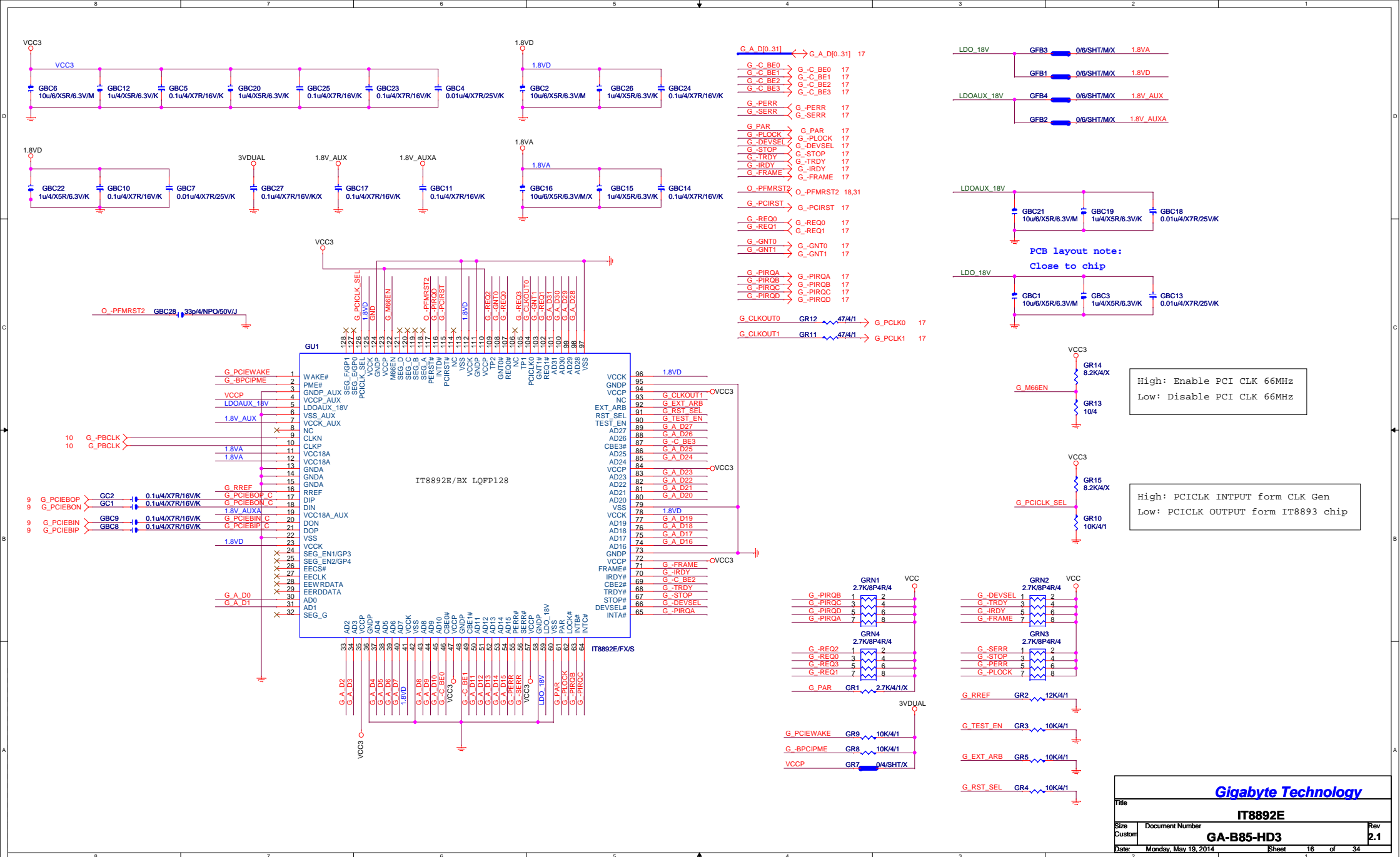
PCIEX1 SLOT

PCIEX1_1

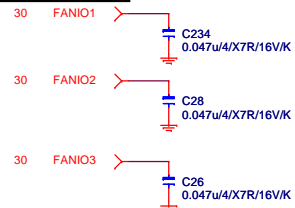


PCIEX1_2





SIO IT8728F



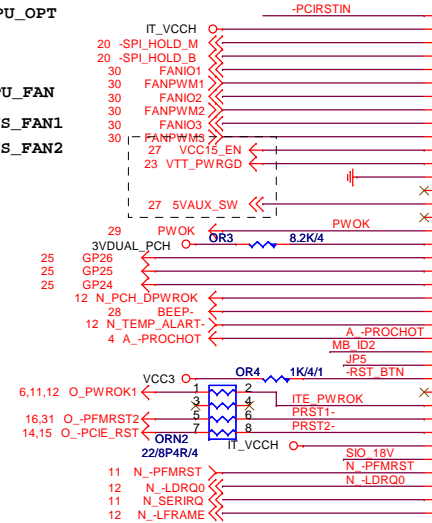
SYS_FAN3

CPU_OPT

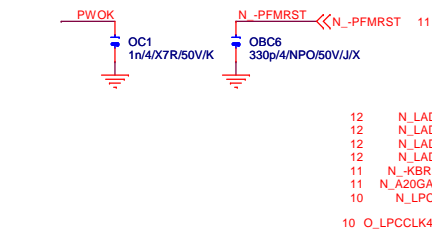
CPU_FAN

SYS_FAN1

SYS_FAN2



IT8620E_BX



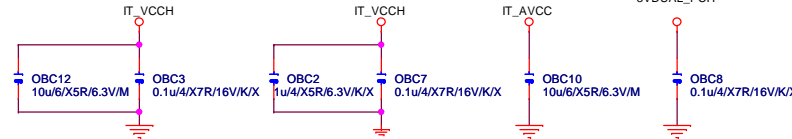
IT8620E GPIO問題匯整

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

DUAL BIOS OPT STRAP

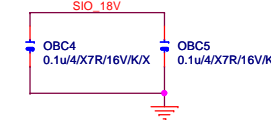


SIO CAP



SIO_18V

internal power pin, max 22nF cap



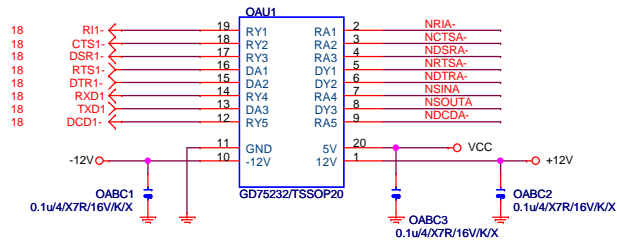
MB ID



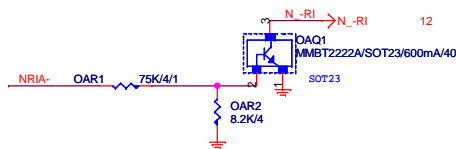
Gigabyte Technology

Title		ITE 8620 LPC IO	
Size B	Document Number	GA-B85-HD3	
Date:	Monday, May 19, 2014	Sheet	18 of 34

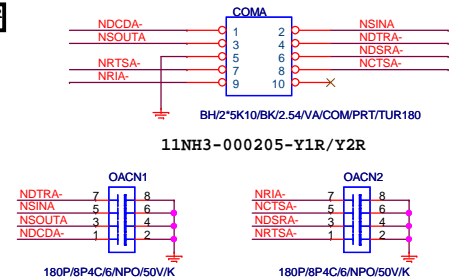
COMA



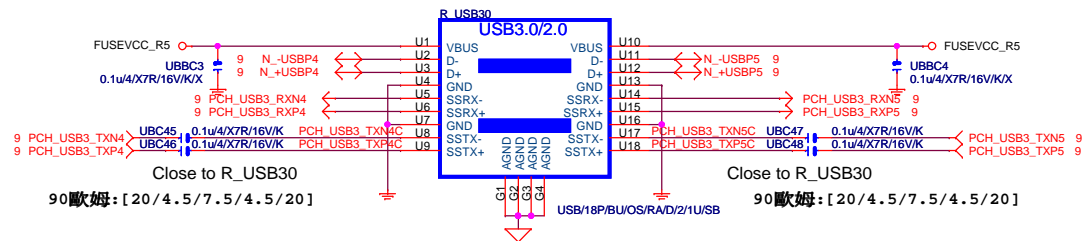
COM RI



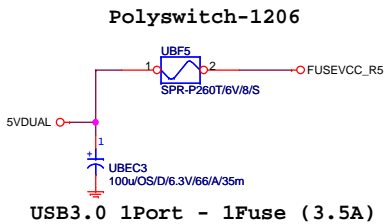
COM BUFFER



USB30_20 CONNECT

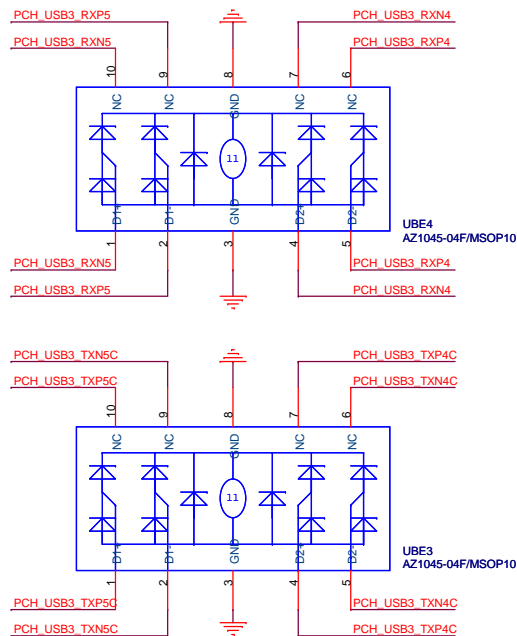


USB30 PWR

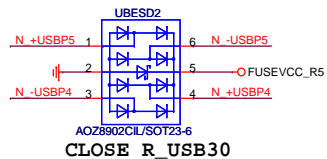


USB3.0 1Port - 1Fuse (3.5A)

USB30 ESD PROTECT



USB20 ESD PROTECT

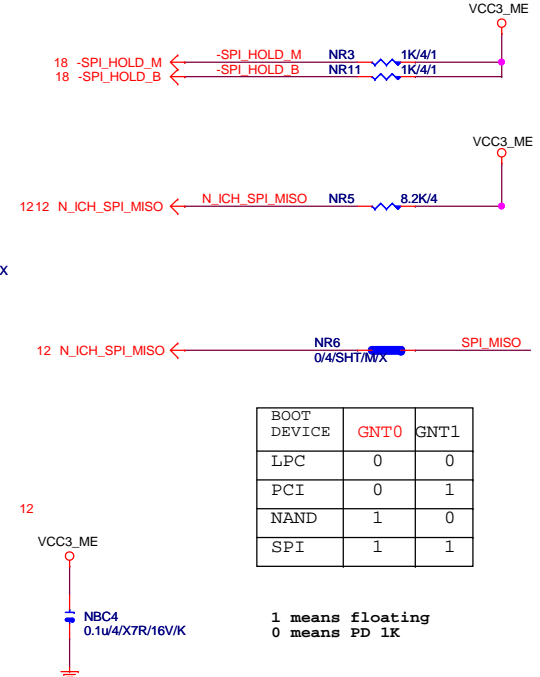
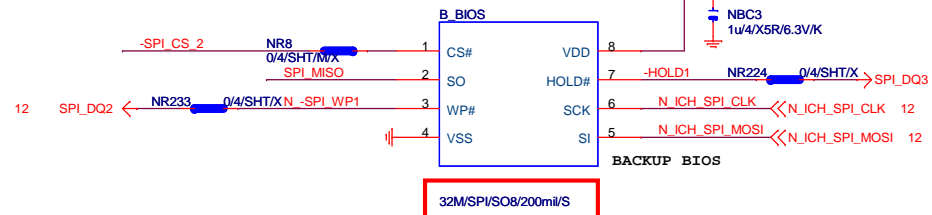
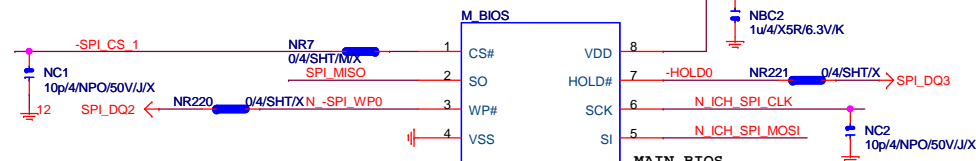
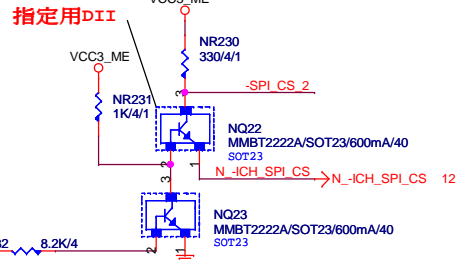
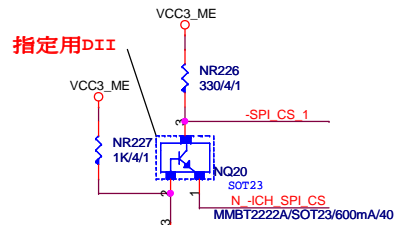
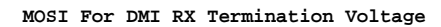


CLOSE R_USB30

Gigabyte Technology

File			
COM/ PROHOT/ R_USB			
Size	Document Number	Rev	
Custom	GA-B85-HD3	2.1	
Date:	Monday, May 19, 2014	Sheet	19 of 34

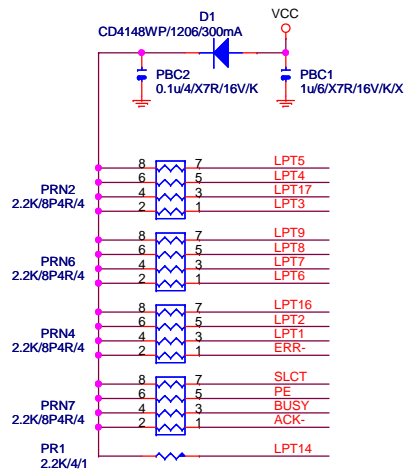
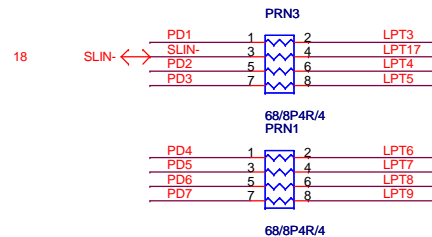
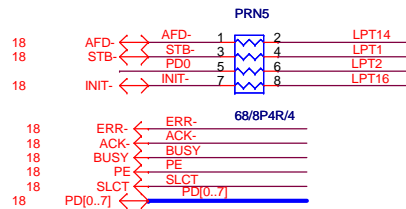
DUAL BIOS



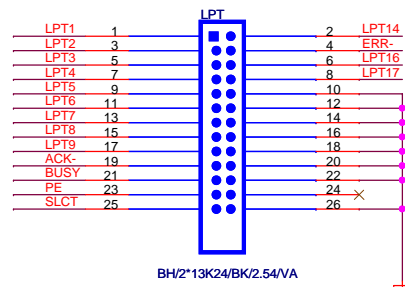
BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

```
1 means floating
0 means PD 1K
```

LPT PORT



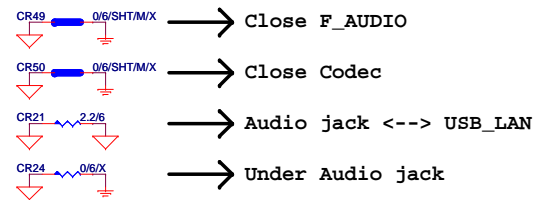
R&D技術通報151 有使用PRINT PORT的
MODEL, 需使用新料號:10HP2-118728-72R。(CHIP IT8728F/EX (GB) ITE/SMD
QFP128 PRINTPORT SORTING)料件。串電阻33 ohm改為68 ohm。



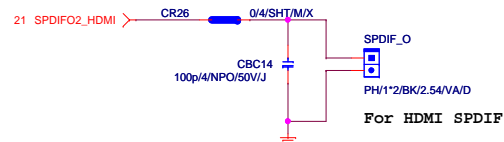
FOR ON/OFF PLAY



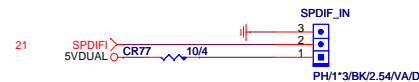
Date: Monday, May 19, 2014 Sheet 21 of 34



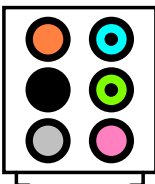
SPDIF_OUT



SPDIF_IN



AZALIA JACK

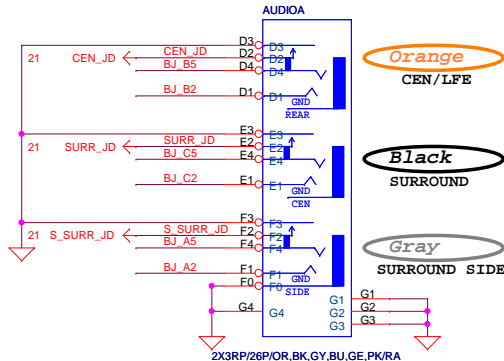
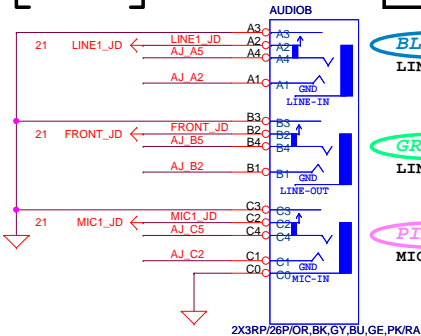


AZALIA JACK

BLUE
LINE-IN

GREEN
LINE-OUT

PINK
MIC-IN

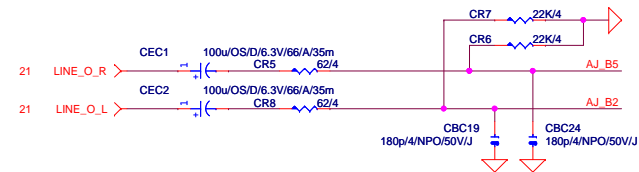


Orange
CEN/LFE

Black
SURROUND

Gray
SURROUND SIDE

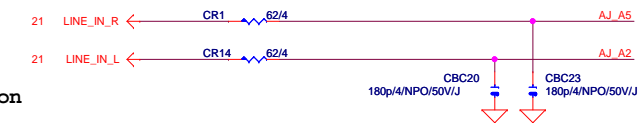
LINE-OUT



LINE-IN

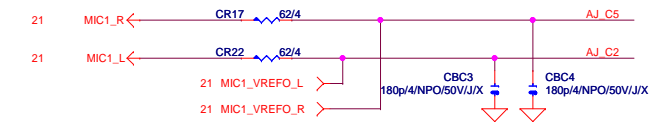
Verify MIC function
in LINE-in

Only reserved for ALC888

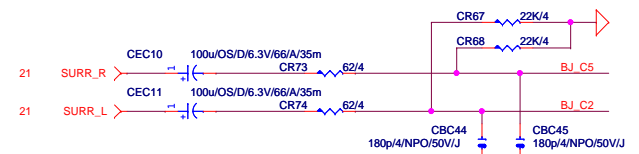


For 889A/888

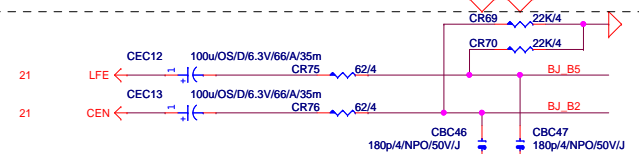
MIC-IN



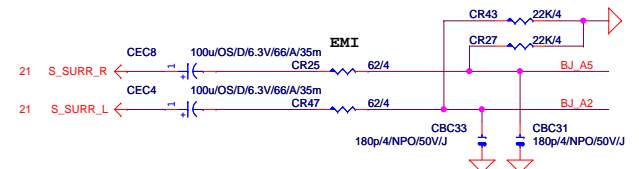
SURROUND



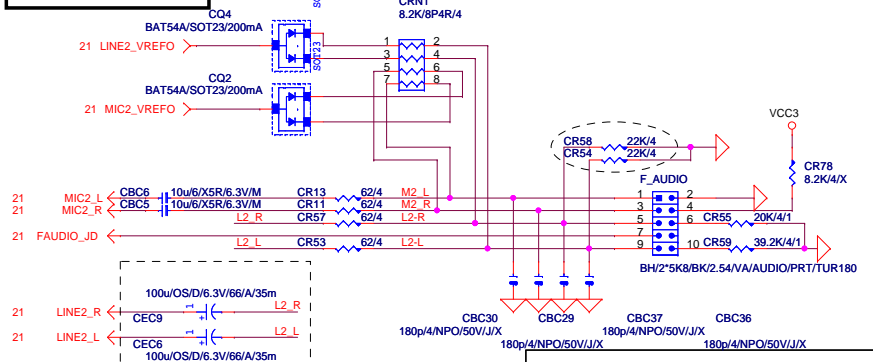
CEN/LFE



SURR BACK



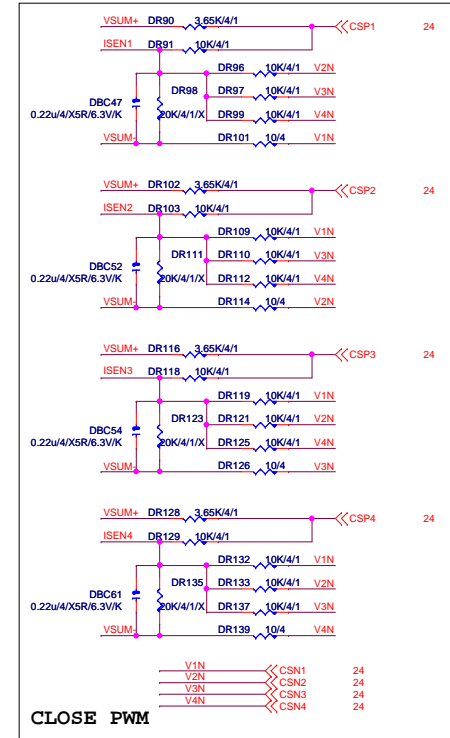
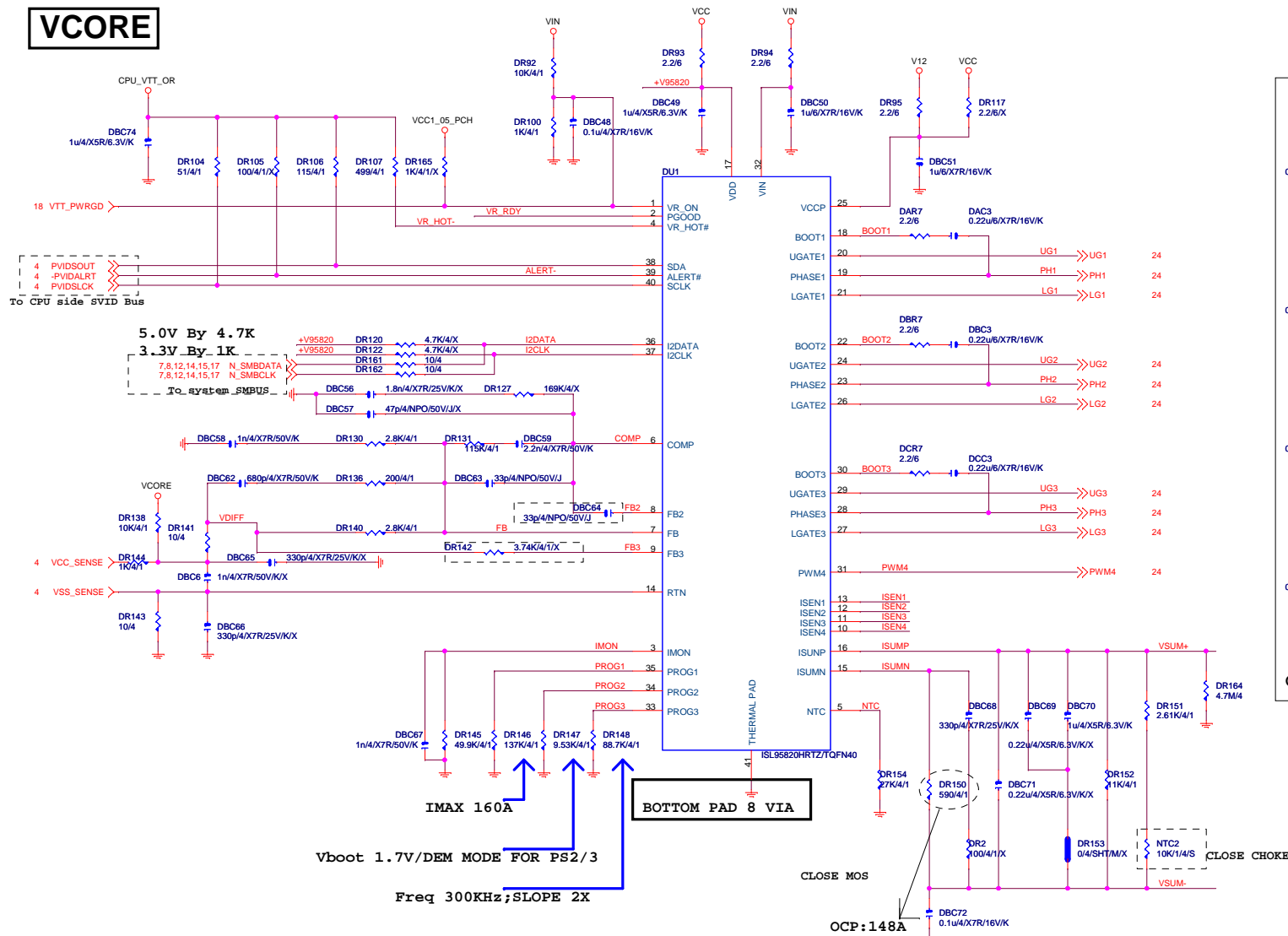
AZALIA FRONT PANEL



Gigabyte Technology

Title		
AUDIO JACK		
Size	Document Number	Rev
Custom	GA-B85-HD3	2.1
Date:	Thursday, May 29, 2014	Sheet 22 of 34

VCORE



CLOSE PWM

Gigabyte Technology

Title VCORE_ISL95820

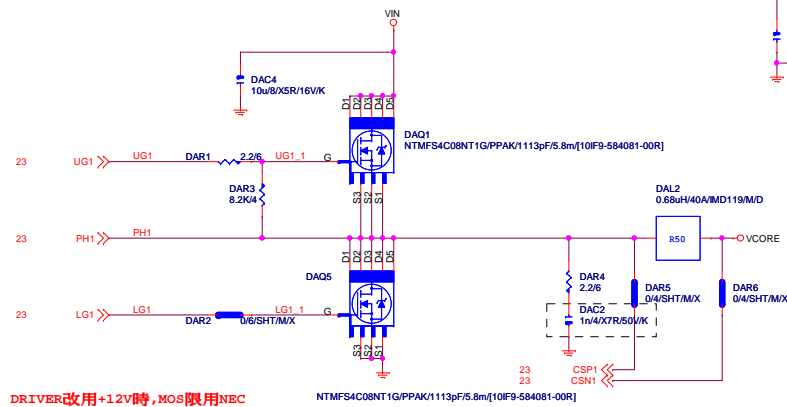
Size Custom Document Number GA-B85-HD3

Date: Monday, May 19, 2014 Sheet 23 of 34

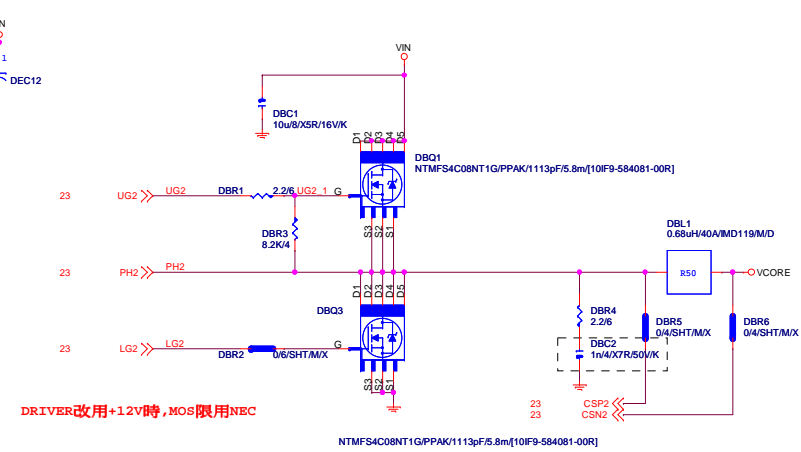
Rev 2.1

VCORE

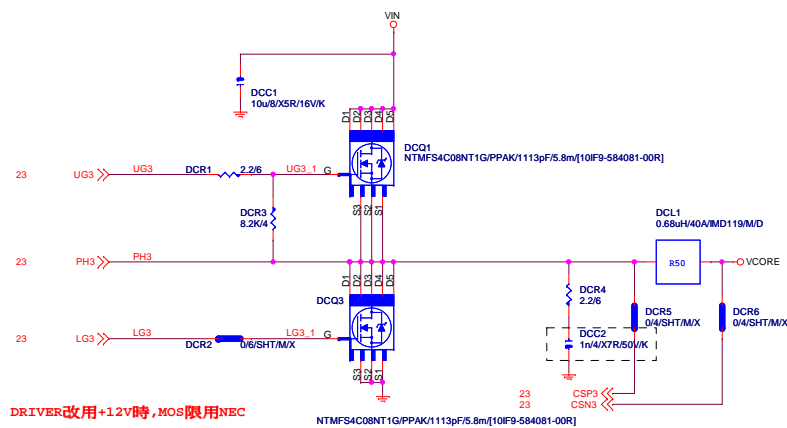
[1]



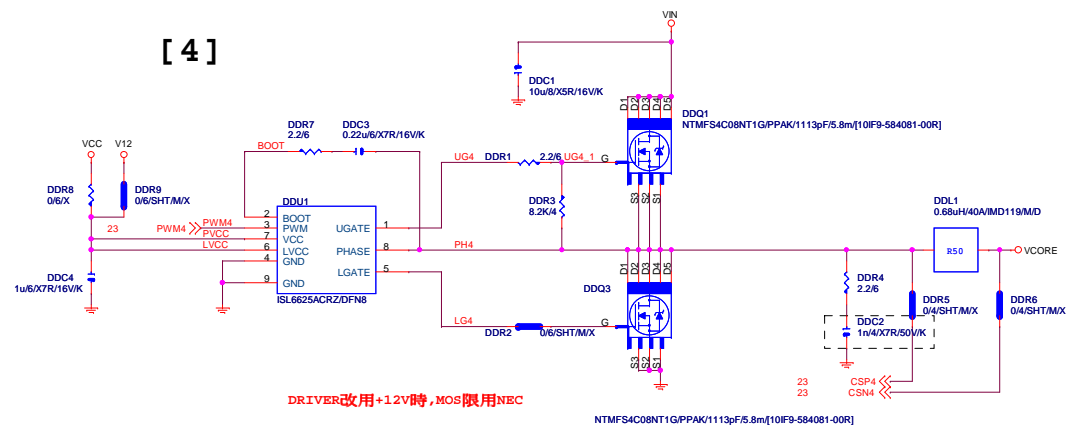
[2]



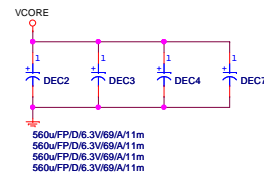
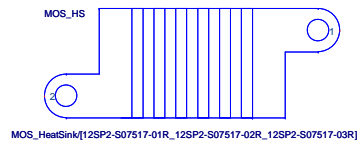
[3]



[4]

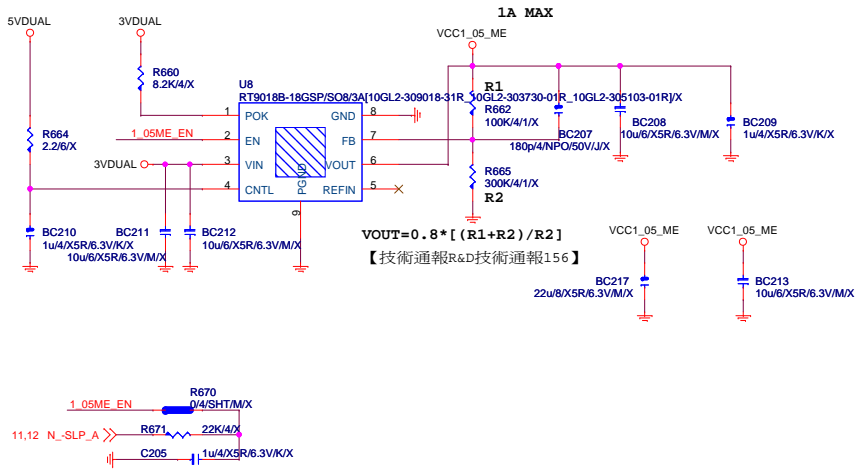


MOSFET HEATSINK

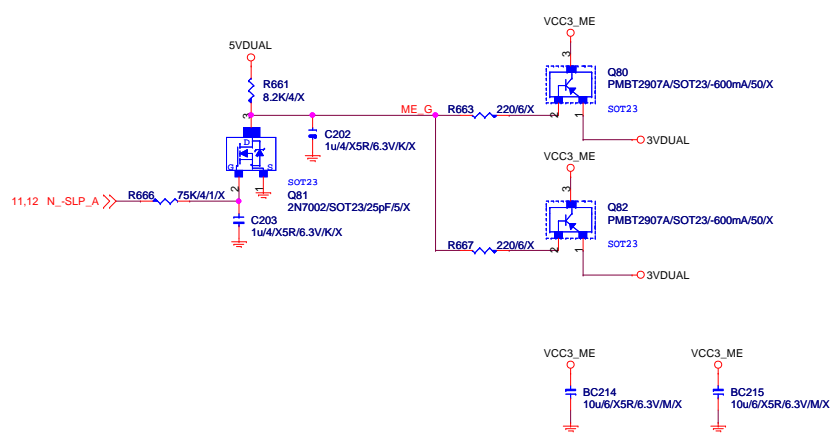


Gigabyte Technology			
Title		ISL95820_2	
Size	Document Number	GA-B85-HD3	
Custom			Rev 2.1
Date	Monday, May 19, 2014	Sheet 24	of 34

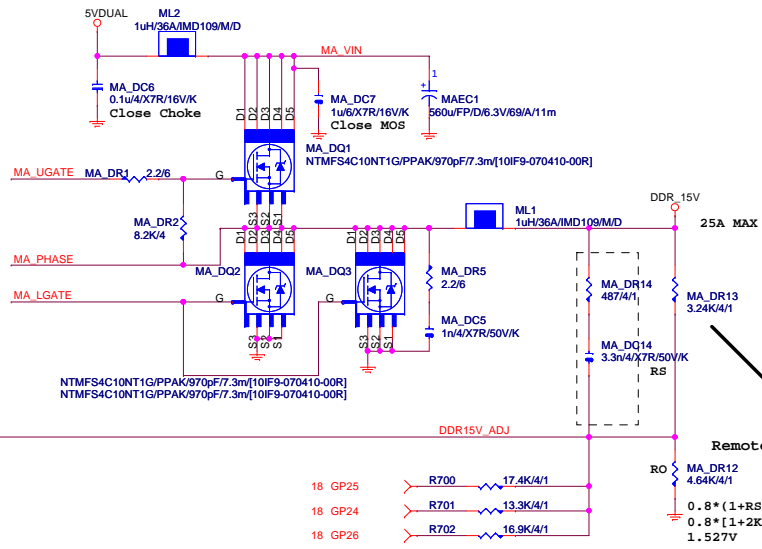
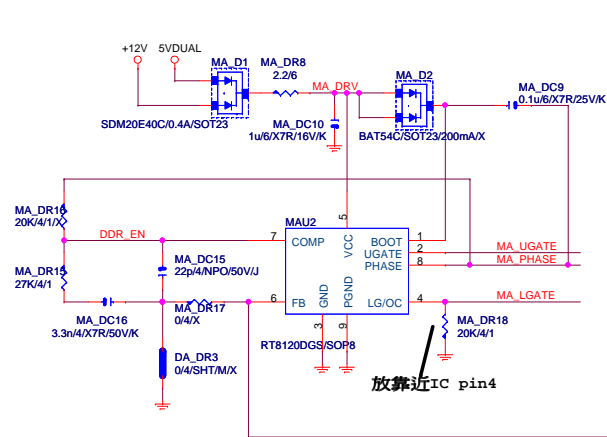
VCC1_05_ME



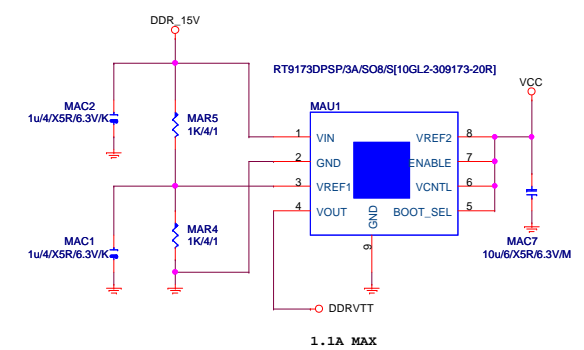
VCC3_ME



DDR_15V



DDRVTT



PWR_SEQ

DDR_EN < DDR_EN_CON 18

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

IRMS=11.45A

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

Coefficient=1.7(85℃), 1(105℃)

VIN Ripple current=4.7X1.7=7.99A(85℃)

-->故固態電容須2X7.99=15.98>11.45A

OCP:40A for Rds=8.9~10.8m for on@4.5V

OCP:40A for Rds=5.8~6.95m for on@10V

OCP:66.67~37.A=Roiset*Iocset / Rds(on)

=20K*10uA / 3~5.4m

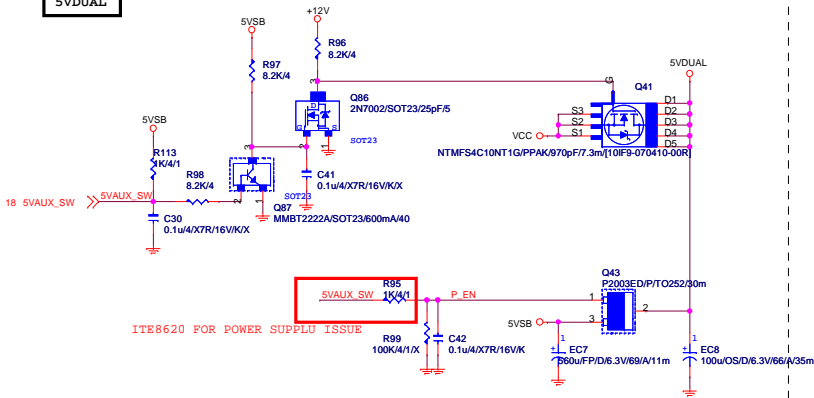
GIGABYTE™			
Title			
DDR15V / M3 POWER			
Size	Document Number	Rev	
Custom	GA-B85-HD3	2.1	
Date:	Wednesday, May 28, 2014	Sheet	25 of 34

5					4					3					2					1				
D																								
C																								
B																								
A																								
5					4					3					2					1				

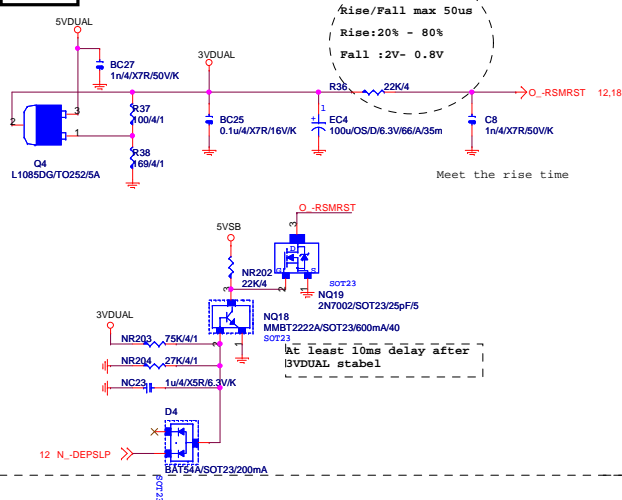
</

<i>Gigabyte Technology</i>		
Title		
CPU CORE VR-2		
Size Custom	Document Number	Rev
	GA-B85-HD3	2.1
Date:	Monday, May 19, 2014	Sheet 26 of 34
2		1

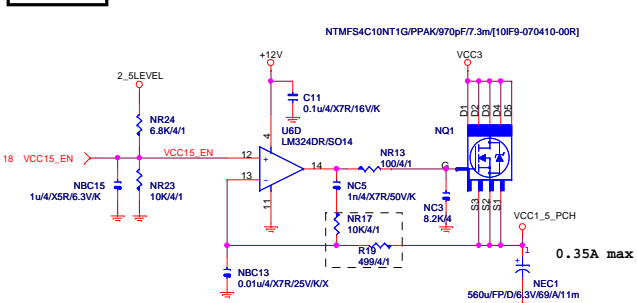
5VDUAL



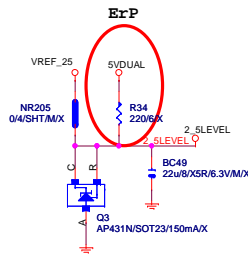
3VDUAL



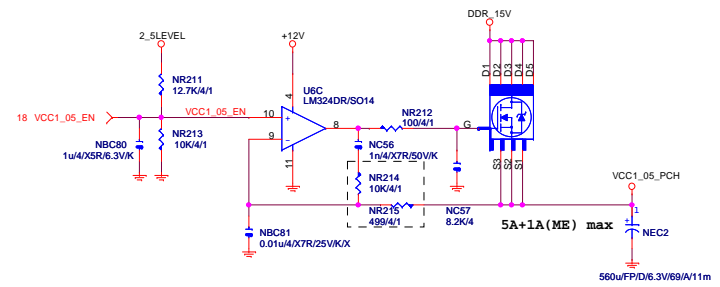
VCC1_5_PCH



2_5LEVEL

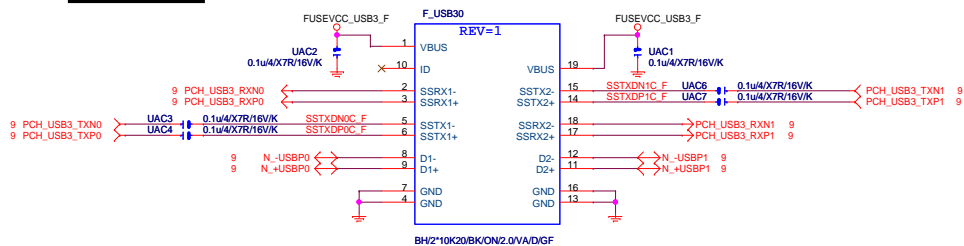


VCC1_05_PCH

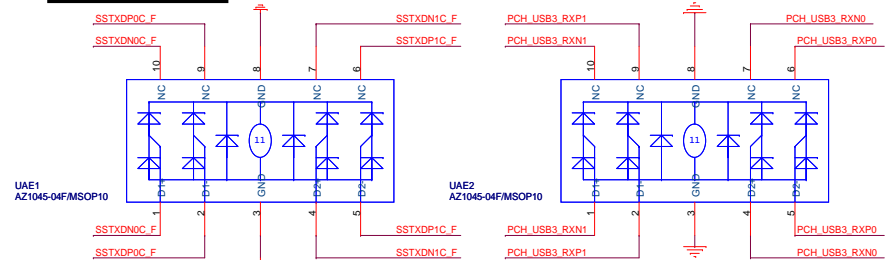


PWR_SEQ

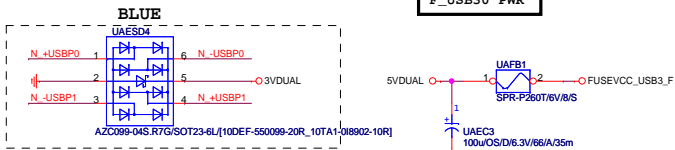
Front USB3.0



F_USB30 ESD PROTECT

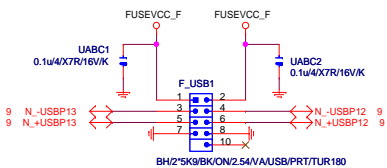


F_USB30 PWR



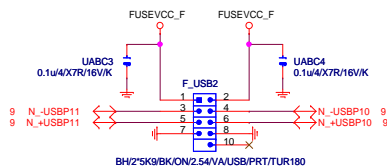
Close to connector

FRONT USB1



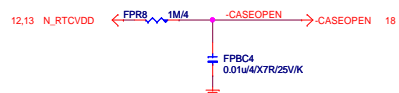
Close to connector

FRONT USB2

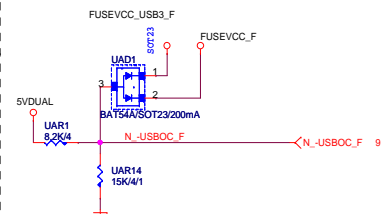


Close to connector

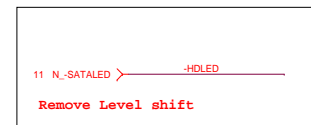
CASE OPEN



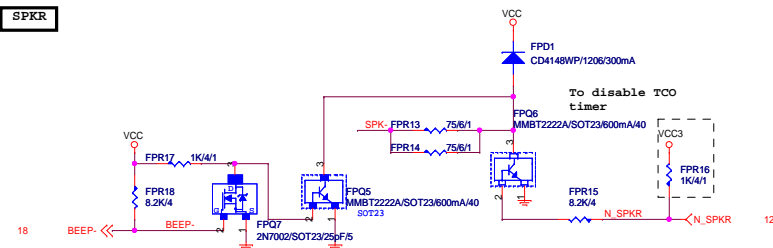
-USB0C_F



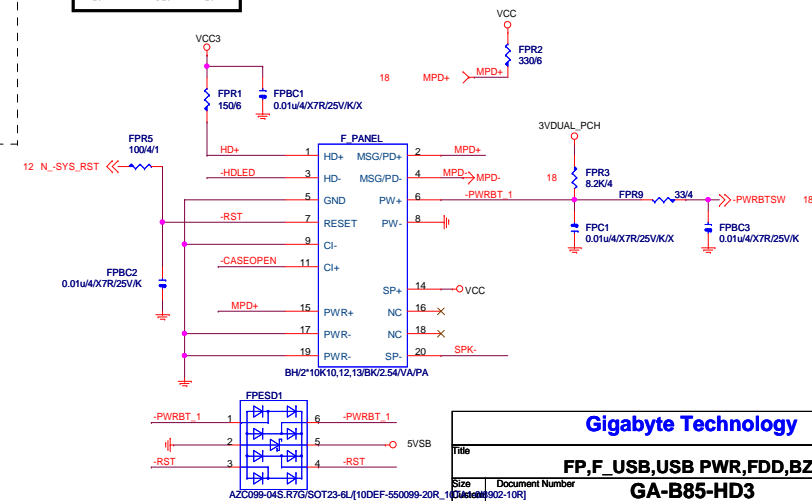
SATA LED



SPKR

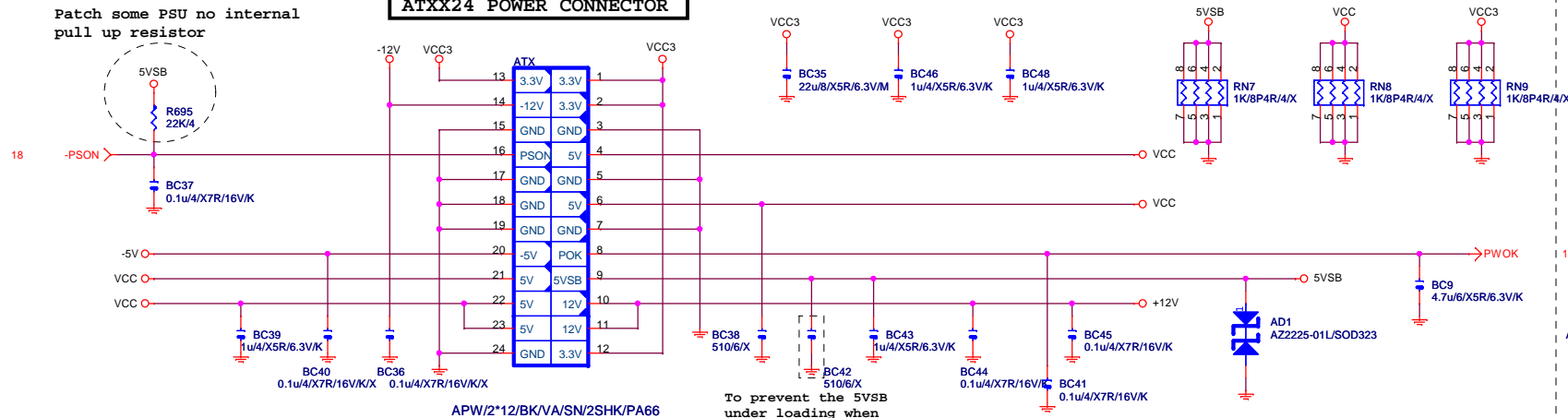


INTEL FRONT PANEL



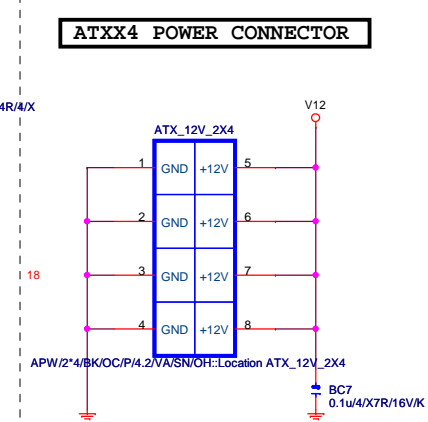
Patch some PSU no internal pull up resistor

ATXX24 POWER CONNECTOR

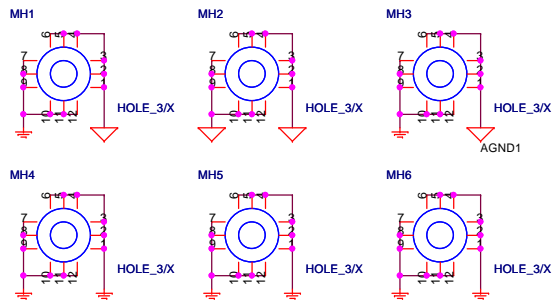


APW/2*12/BK/VA/SN/2SHK/PA66

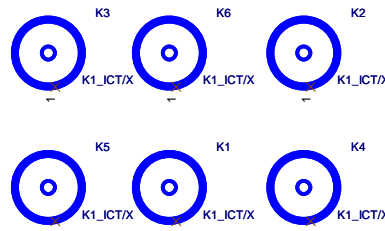
ATXX4 POWER CONNECTOR



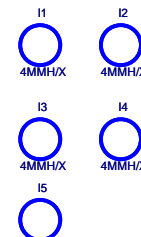
APW/2*4/BK/OC/P/4.2VA/SN/OH:Location ATX_12V_2X4



HOLE_4-RH-1



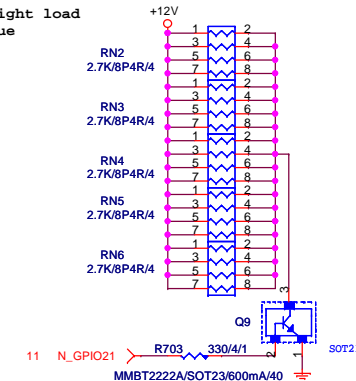
K1-ICT



4MMH

【技術通報R&D技術通報153】

To fix 12V light load abnormal issue



CLK GEN

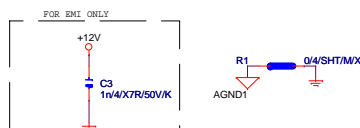
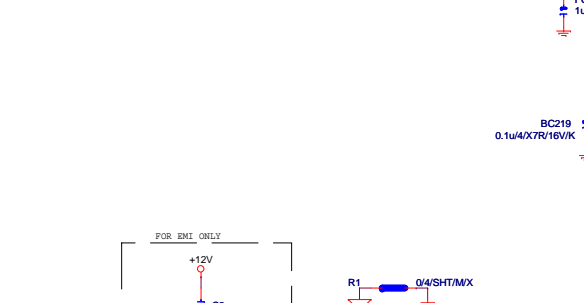
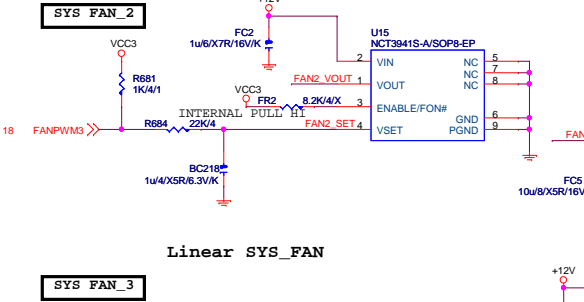
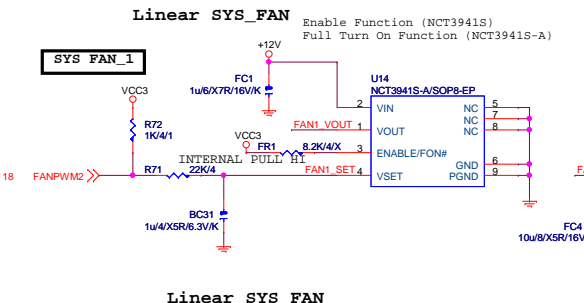
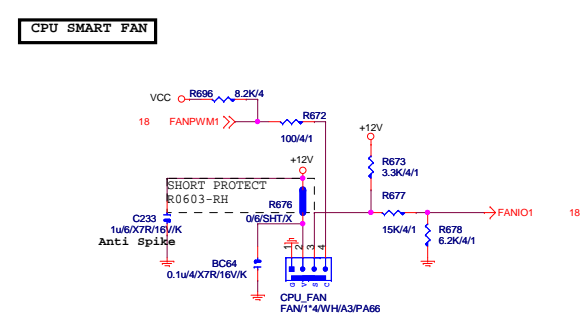
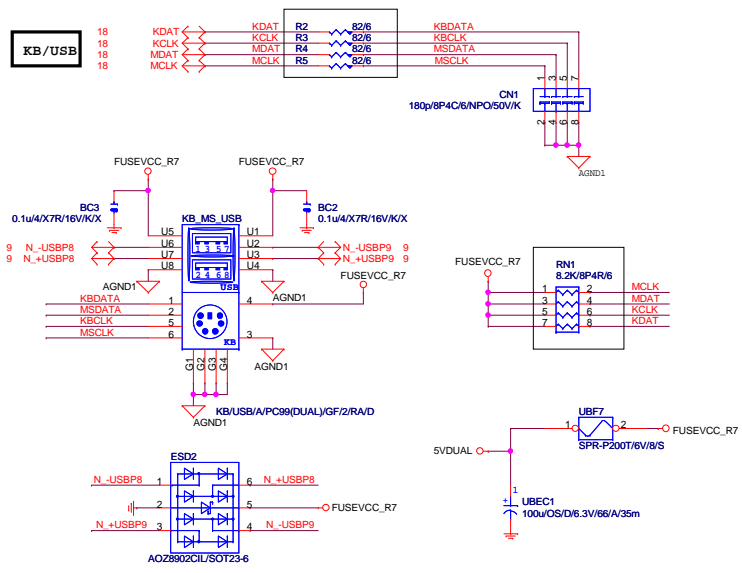
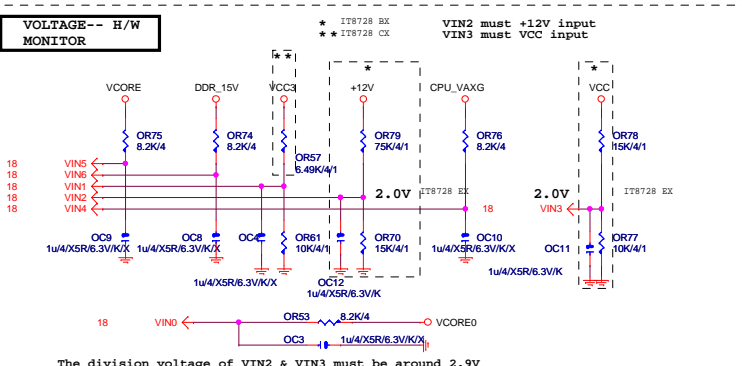
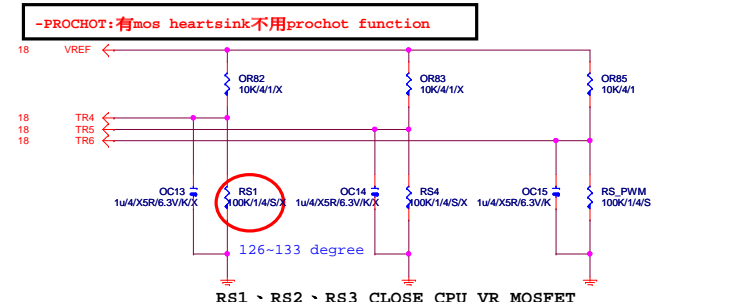
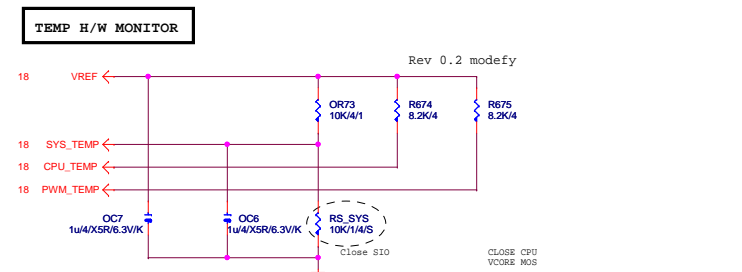
CPU Frequency Selection

FSLB	FSLA	CPU
0	0	100M <Default>
0	1	133M
1	0	200M
1	1	166M

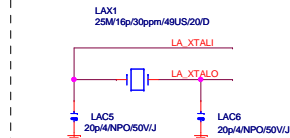
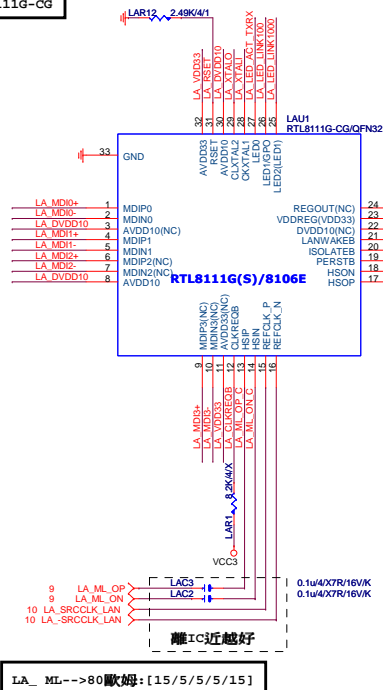
PWOK PATCH

Gigabyte Technology

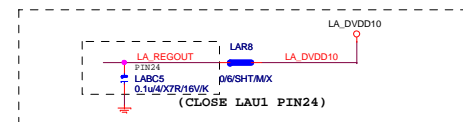
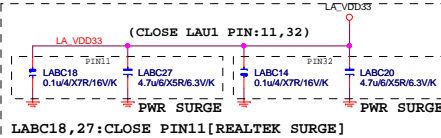
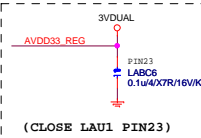
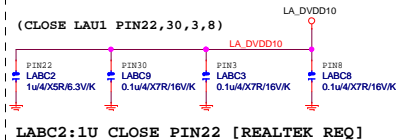
Title		
ATX POWER CONNECTOR		
Size	Document Number	Rev
Custom	GA-B85-HD3	2.1
Date:	Monday, May 19, 2014	Sheet 29 of 34



LAN RTL8111G-CG



LAN POWER



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

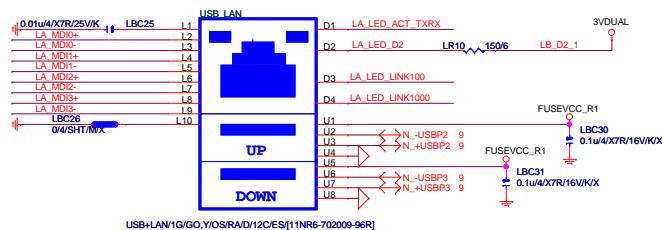
BOM NOTICE

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

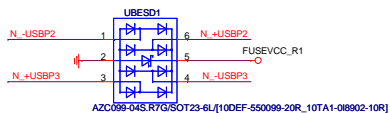
1. 9KV ESD BOM:
USB_LAN (RU9):11NR6-702009-96R
2. 28KV ESD BOM:
USB_LAN (RU9):11NR6-702009-96R
LAESD2,LAESD3:上件AZC398-04S

USB30_LAN CONNECTOR

100歐姆:[20/4/10/4/20]



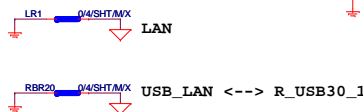
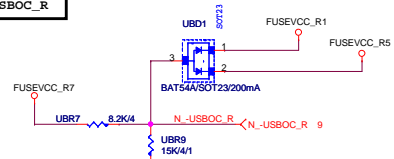
90 歐姆:[12/5/7/5/12]

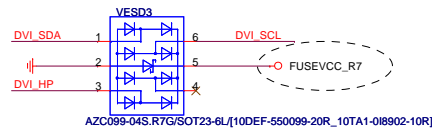
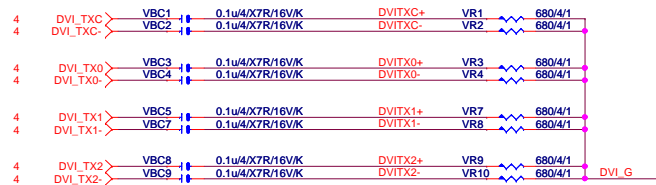


CLOSE USB30 LAN

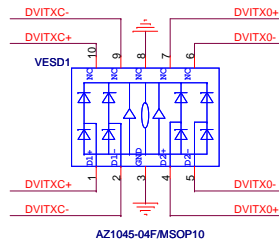
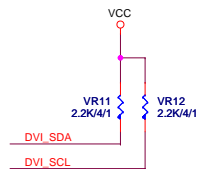
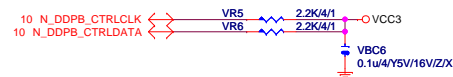


-USB0C_R

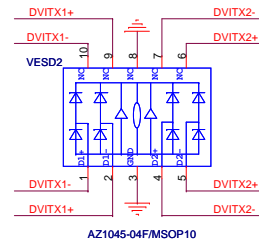
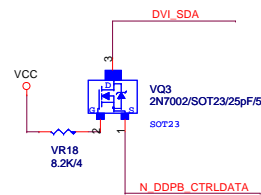
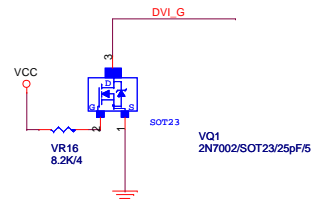




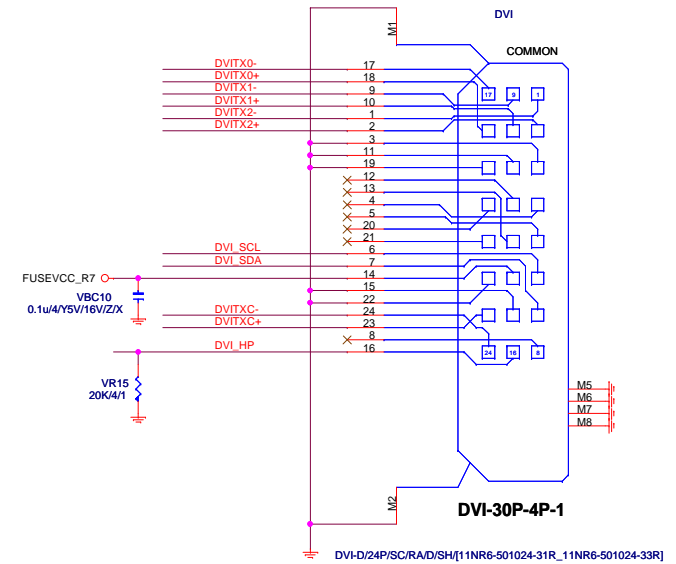
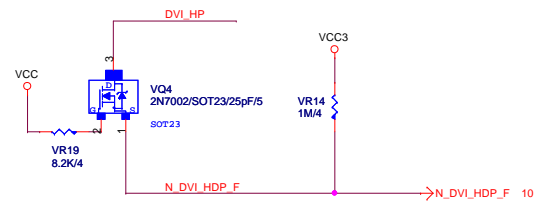
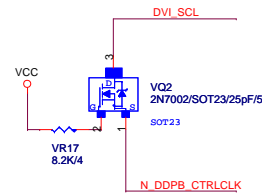
Close to connector



Close to connector



Close to connector

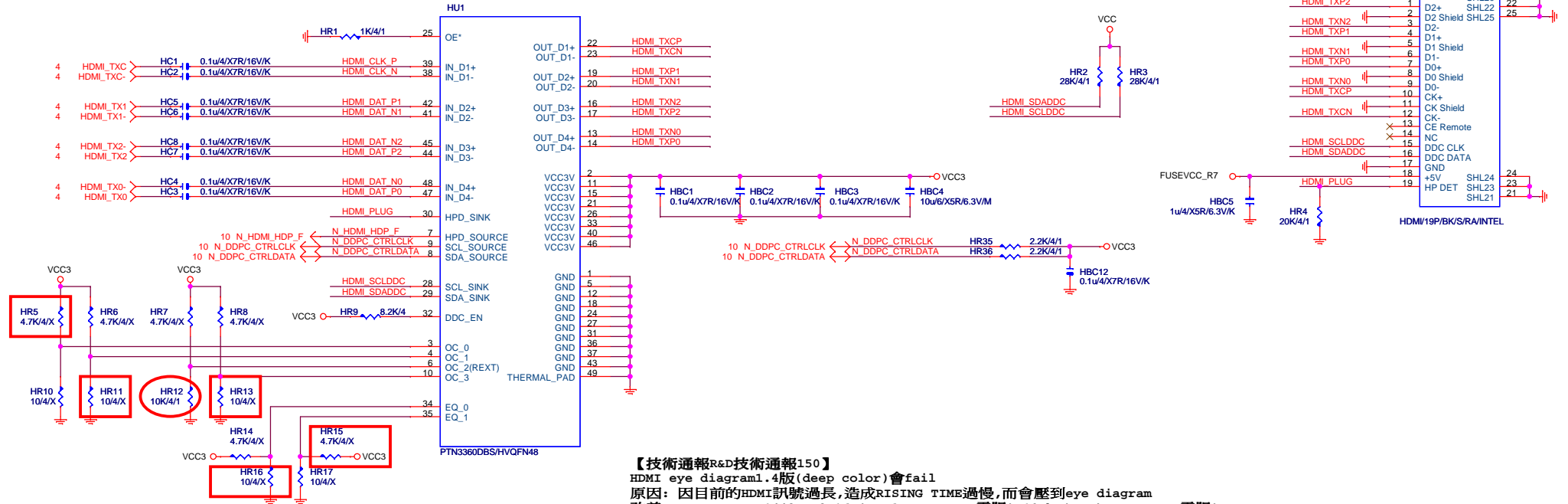


Gigabyte Technology

Title		
DVI		
Size	Document Number	Rev
Custom	GA-B85-HD3	2.1
Date:	Monday, May 19, 2014	Sheet 32 of 34

HDMI LEVEL SHIFT

HDMI:20/4/6/4/20
Impedance=85 +- 17.5%



PTN3360:PIN 4/10/34/35 NC PIN,都不上值;只上HR12:10K
ASM1442:紅色框要上,HR12:3.16K

【技術通報R&D技術通報150】

HDMI eye diagram1.4版(deep color)會fail

原因: 因目前的HDMI訊號過長,造成RISING TIME過慢,而會壓到eye diagram

改善: ASMEDIA ASM1442 : 3.16K(PIN6 PULL DOWN電阻) 10ohm(PIN4 PULL DOWN電阻)

GIGABYTE™

Title		
HDMI		
Size	Document Number	Rev
Custom	GA-B85-HD3	2.1
Date:	Monday, May 19, 2014	Sheet 33 of 34

	NOTE
--	------



1



1

1

8

A

--	--	--	--	--