

# Model Name: GA-B85M-HD3G

SHEET TITLE Revision 1.0

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
17	ITE 8728 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 ALC887-VD2
23	REAR AUDIO JACK
24	INTEL I217
25	DISCRETE POWER
26	ATX
27	VCORE ISL95820_1

SHEET TITLE

28	VCORE ISL95820_2
29	RT8120_DDR POWER
30	LPT, M3 POWER
31	DVI, HDMI
32	IT8892E

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Gigabyte Technology		
Cover Sheet		
Size Custom	Document Number GA-B85M-HD3G	Rev 1.0
Date: Thursday, June 13, 2013	Sheet 1 of 32	

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BLOCK DIAGRAM

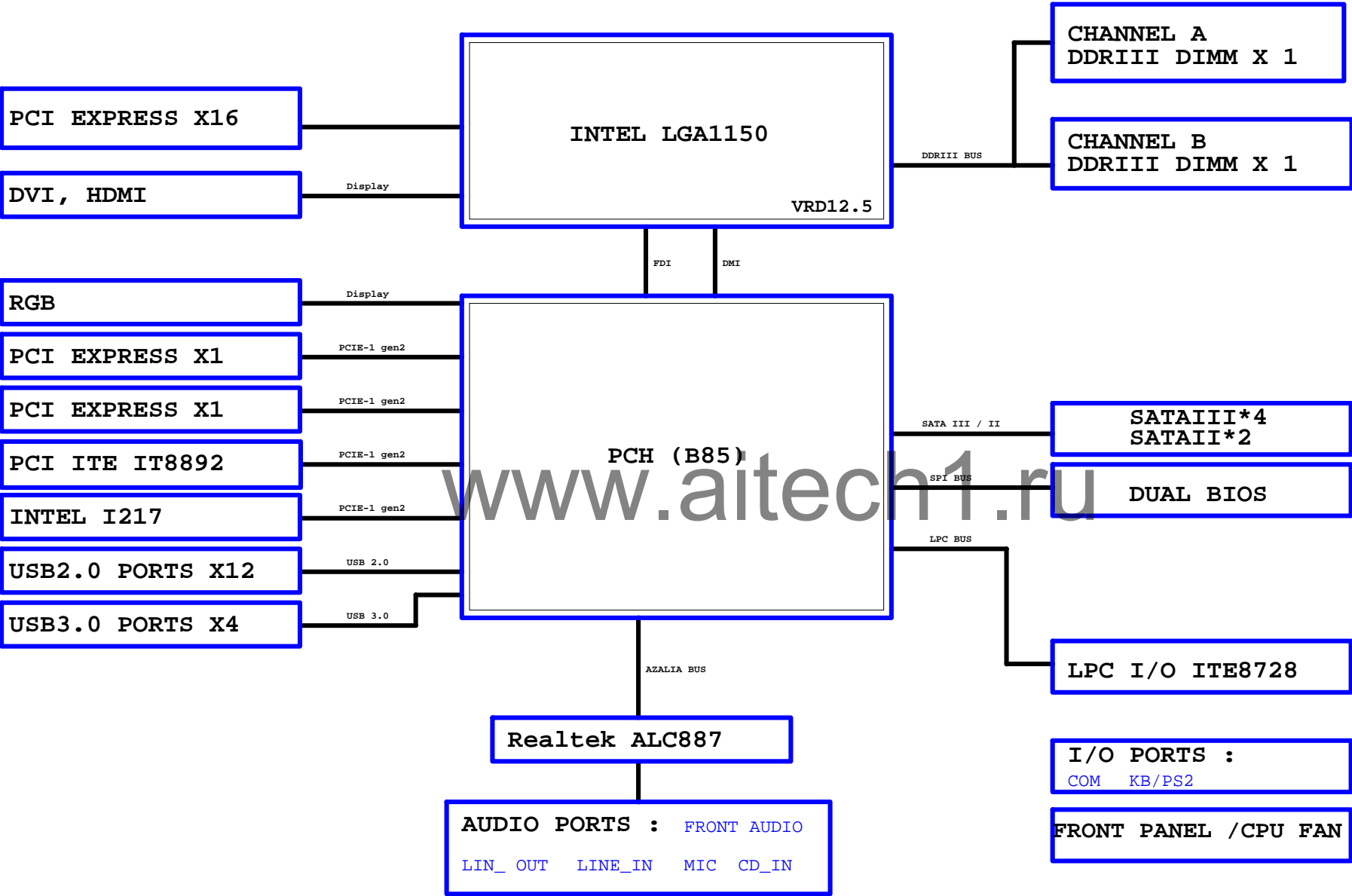


Figure 10-10: Pinmux and peripheral connections for the Haswell PCH (continued)

PCIEX16:16/5/5/16(breakout min 10/4/4/4/10)									
Impedance=80 +- 17.5%									
LGAI1190C									
PA EXP RXP0	E15	PEG_RXP0	PEG_TXP0	A12	PA EXP TXP0				
PA EXP RXN0	F15	PEG_RXN0	PEG_TXN0	B12	PA EXP TXN0				
PA EXP RXP1	D14	PEG_RXP1	PEG_TXP1	B11	PA EXP TXP1				
PA EXP RXN1	E14	PEG_RXN1	PEG_TXN1	C11	PA EXP TXN1				
PA EXP RXP2	E13	PEG_RXP2	PEG_TXP2	C10	PA EXP TXP2				
PA EXP RXN2	F13	PEG_RXN2	PEG_TXN2	D10	PA EXP TXN2				
PA EXP RXP3	D12	PEG_RXP3	PEG_TXP3	B9	PA EXP TXP3				
PA EXP RXN3	E12	PEG_RXN3	PEG_TXN3	C9	PA EXP TXN3				
PA EXP RXP4	F11	PEG_RXP4	PEG_TXP4	C8	PA EXP TXP4				
PA EXP RXN4	E11	PEG_RXN4	PEG_TXN4	D8	PA EXP TXN4				
PA EXP RXP5	F10	PEG_RXP5	PEG_TXP5	B7	PA EXP TXP5				
PA EXP RXN5	G10	PEG_RXN5	PEG_TXN5	C7	PA EXP TXN5				
PA EXP RXP6	E9	PEG_RXP6	PEG_TXP6	A6	PA EXP TXP6				
PA EXP RXN6	F9	PEG_RXN6	PEG_TXN6	B6	PA EXP TXN6				
PA EXP RXP7	F8	PEG_RXP7	PEG_TXP7	B5	PA EXP TXP7				
PA EXP RXN7	G8	PEG_RXN7	PEG_TXN7	C5	PA EXP TXN7				
PA EXP RXP8	D3	PEG_RXP8	PEG_TXP8	E1	PA EXP TXP8				
PA EXP RXN8	D4	PEG_RXN8	PEG_TXN8	F2	PA EXP TXN8				
PA EXP RXP9	E4	PEG_RXP9	PEG_TXP9	F2	PA EXP TXP9				
PA EXP RXN9	E5	PEG_RXN9	PEG_TXN9	F3	PA EXP TXN9				
PA EXP RXP10	F5	PEG_RXP10	PEG_TXP10	G1	PA EXP TXP10				
PA EXP RXN10	F6	PEG_RXN10	PEG_TXN10	G2	PA EXP TXN10				
PA EXP RXP11	G4	PEG_RXP11	PEG_TXP11	H2	PA EXP TXP11				
PA EXP RXN11	G5	PEG_RXN11	PEG_TXN11	J1	PA EXP TXN11				
PA EXP RXP12	H5	PEG_RXP12	PEG_TXP12	J1	PA EXP TXP12				
PA EXP RXN12	H6	PEG_RXN12	PEG_TXN12	J2	PA EXP TXN12				
PA EXP RXP13	J4	PEG_RXP13	PEG_TXP13	K2	PA EXP TXP13				
PA EXP RXN13	J5	PEG_RXN13	PEG_TXN13	K3	PA EXP TXN13				
PA EXP RXP14	K5	PEG_RXP14	PEG_TXP14	M2	PA EXP TXP14				
PA EXP RXN14	K6	PEG_RXN14	PEG_TXN14	M3	PA EXP TXN14				
PA EXP RXP15	L4	PEG_RXP15	PEG_TXP15	L1	PA EXP TXP15				
PA EXP RXN15	L5	PEG_RXN15	PEG_TXN15	L2	PA EXP TXN15				
PA DMI ORXP	U3	DMI_RXP0	DMI_TXP0	AA4	PA DMI OTXP				
PA DMI ORXN	T3	DMI_RXN0	DMI_TXN0	AA5	PA DMI OTXN				
PA DMI IRXP	U1	DMI_RXP1	DMI_TXP1	AB3	PA DMI ITXP				
PA DMI IRXN	U2	DMI_RXN1	DMI_TXN1	AB4	PA DMI ITXN				
PA DMI 2RXP	V2	DMI_RXP2	DMI_TXP2	AC5	PA DMI 2TXP				
PA DMI 2RXN	V2	DMI_RXN2	DMI_TXN2	AC4	PA DMI 2TXN				
PA DMI 3RXP	V3	DMI_RXP3	DMI_TXP3	AC1	PA DMI 3TXP				
PA DMI 3RXN	W3	DMI_RXN3	DMI_TXN3	AC2	PA DMI 3TXN				
<div style="display: flex; justify-content: space-between;"> <div> <p>W=12 mil out of CPU</p> <p>S=15 mil out of CPU</p> </div> <div> <p>X D1 X C2 X B3 X A4</p> </div> <div> <p>RSVD_TP RSVD_TP RSVD_TP RSVD_TP</p> </div> </div>									
VCCIOA_LO WRT15 24.9/4.1 GRCOMP P3 RSVD_RCOMP									

CPU\_VTT\_OR

WR3	90.9/4/1/X	PVIDSLCK
WR2	115/4/1	PVIDSOUT
WR4	75/4/1	-PVIDALRT

CPU\_VTT\_OR

WR14	51/4/1/X	A TMS
WR16	51/4/1/X	A TDO
WR17	51/4/1/X	A TDI

A DDR COMP0	WR28	100/4/1
A DDR COMP1	WR19	75/4/1
A DDR COMP2	WR22	100/4/1

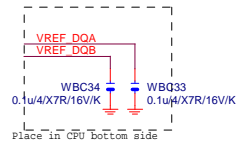
## LGA1150 (A)

LGA1150A		DDR0_MA0	DDR0_D00	AD38	MDA0
MAAA0	AU13	DDR0_MA1	DDR0_D01	AD39	MDA1
MAAA1	AV16	DDR0_MA2	DDR0_D02	AF38	MDA2
MAAA2	AU16	DDR0_MA3	DDR0_D03	AF39	MDA3
MAAA3	AW17	DDR0_MA4	DDR0_D04	AD37	MDA4
MAAA4	AU17	DDR0_MA5	DDR0_D05	AD40	MDA5
MAAA5	AW18	DDR0_MA6	DDR0_D06	AE37	MDA6
MAAA6	AV17	DDR0_MA7	DDR0_D07	AF40	MDA7
MAAA7	AT18	DDR0_MA8	DDR0_D08	AH40	MDA9
MAAA8	AU18	DDR0_MA9	DDR0_D09	AH39	MDA10
MAAA9	AW19	DDR0_MA10	DDR0_D10	AK38	MDA10
MAAA10	AV19	DDR0_MA11	DDR0_D11	AK39	MDA11
MAAA11	AU19	DDR0_MA12	DDR0_D12	AH37	MDA12
MAAA12	AW20	DDR0_MA13	DDR0_D13	AH38	MDA14
MAAA13	AT20	DDR0_MA14	DDR0_D14	AK40	MDA15
MAAA14	AU21	DDR0_MA15	DDR0_D15	AM40	MDA17
MAAA15	AW21	DDR0_ODT0	DDR0_ODT0	AM39	MDA21
MODT_A0	AW10	DDR0_ODT1	DDR0_ODT1	AP38	MDA18
MODT_A1	AW8	DDR0_ODT2	DDR0_ODT2	AP39	MDA19
		DDR0_ODT3	DDR0_ODT3	AM37	MDA20
				AM38	MDA16
				AM26	MDA22
				AM25	MDA23
				AP28	MDA28
				AL26	MDA26
				AL25	MDA27
				AR26	MDA28
				AR25	MDA29
				AR24	MDA30
				AR23	MDA31
				AR22	MDA32
				AR21	MDA33
				AR20	MDA34
				AR19	MDA35
				AR18	MDA36
				AR17	MDA37
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				AR15	MDA39
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				AR13	MDA41
				AR12	MDA42
				AR11	MDA43
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				AR9	MDA45
				AR8	MDA46
				AR7	MDA47
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				AR0	MDA100

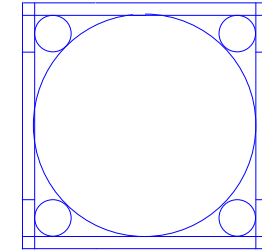
HASWELL[10SC1-F01150-11R\_10SC1-F01150-12R]

## LGA1150 (B)

LGA1150B		DDR1_MA0	DDR1_D00	AE34	MDB0
MAAB0	AL19	DDR1_MA1	DDR1_D01	AE35	MDB1
MAAB1	AK23	DDR1_MA2	DDR1_D02	AG35	MDB2
MAAB2	AM23	DDR1_MA3	DDR1_D03	AH35	MDB3
MAAB3	AP23	DDR1_MA4	DDR1_D04	AD34	MDB4
MAAB4	AL23	DDR1_MA5	DDR1_D05	AD35	MDB5
MAAB5	AY24	DDR1_MA6	DDR1_D06	AG34	MDB6
MAAB6	AY25	DDR1_MA7	DDR1_D07	AH34	MDB7
MAAB7	AU26	DDR1_MA8	DDR1_D08	AL34	MDB8
MAAB8	AW26	DDR1_MA9	DDR1_D09	AL35	MDB9
MAAB9	AY26	DDR1_MA10	DDR1_D10	AL31	MDB10
MAAB10	AY27	DDR1_MA11	DDR1_D11	AL32	MDB11
MAAB11	AY28	DDR1_MA12	DDR1_D12	AK34	MDB12
MAAB12	AY29	DDR1_MA13	DDR1_D13	AK35	MDB13
MAAB13	AY30	DDR1_MA14	DDR1_D14	AK32	MDB14
MAAB14	AY31	DDR1_MA15	DDR1_D15	AL32	MDB15
MAAB15	AY32	DDR1_ODT0	DDR1_ODT0	AP34	MDB17
MODT_B0	AM17	DDR1_ODT1	DDR1_ODT1	AP31	MDB19
MODT_B1	AL16	DDR1_ODT2	DDR1_ODT2	AP35	MDB20
	AL15	DDR1_ODT3	DDR1_ODT3	AP35	MDB16
	AM26	DDR1_ECC0	DDR1_ECC0	AN32	MDB18
	AM25	DDR1_ECC1	DDR1_ECC1	AP32	MDB22
	AP28	DDR1_ECC2	DDR1_ECC2	AM28	MDB28
	AL26	DDR1_ECC3	DDR1_ECC3	AR29	MDB27
	AL25	DDR1_ECC4	DDR1_ECC4	AR28	MDB30
	AR26	DDR1_ECC5	DDR1_ECC5	AL28	MDB24
	AR25	DDR1_ECC6	DDR1_ECC6	AL28	MDB29
	AR24	DDR1_ECC7	DDR1_ECC7	AP29	MDB26
	AK17	DDR1_BA0	DDR1_BA0	AP28	MDB31
	AK16	DDR1_BA1	DDR1_BA1	AP27	MDB32
	AK15	DDR1_BA2	DDR1_BA2	AP26	MDB33
	AK14	DDR1_BA3	DDR1_BA3	AP25	MDB34
	AK13	DDR1_BA4	DDR1_BA4	AP24	MDB35
	AK12	DDR1_BA5	DDR1_BA5	AP23	MDB36
	AK11	DDR1_BA6	DDR1_BA6	AP22	MDB37
	AK10	DDR1_BA7	DDR1_BA7	AP21	MDB38
	AK9	DDR1_BA8	DDR1_BA8	AP20	MDB39
	AK8	DDR1_BA9	DDR1_BA9	AP19	MDB40
	AK7	DDR1_BA10	DDR1_BA10	AP18	MDB41
	AK6	DDR1_BA11	DDR1_BA11	AP17	MDB42
	AK5	DDR1_BA12	DDR1_BA12	AP16	MDB43
	AK4	DDR1_BA13	DDR1_BA13	AP15	MDB44
	AK3	DDR1_BA14	DDR1_BA14	AP14	MDB45
	AK2	DDR1_BA15	DDR1_BA15	AP13	MDB46
	AK1	DDR1_BA16	DDR1_BA16	AP12	MDB47
	AK0	DDR1_BA17	DDR1_BA17	AP11	MDB48
	AK0	DDR1_BA18	DDR1_BA18	AP10	MDB49
	AK0	DDR1_BA19	DDR1_BA19	AP9	MDB50
	AK0	DDR1_BA20	DDR1_BA20	AP8	MDB51
	AK0	DDR1_BA21	DDR1_BA21	AP7	MDB52
	AK0	DDR1_BA22	DDR1_BA22	AP6	MDB53
	AK0	DDR1_BA23	DDR1_BA23	AP5	MDB54
	AK0	DDR1_BA24	DDR1_BA24	AP4	MDB55
	AK0	DDR1_BA25	DDR1_BA25	AP3	MDB56
	AK0	DDR1_BA26	DDR1_BA26	AP2	MDB57
	AK0	DDR1_BA27	DDR1_BA27	AP1	MDB58
	AK0	DDR1_BA28	DDR1_BA28	AP0	MDB59
	AK0	DDR1_BA29	DDR1_BA29	AP0	MDB60
	AK0	DDR1_BA30	DDR1_BA30	AP0	MDB61
	AK0	DDR1_BA31	DDR1_BA31	AP0	MDB62
	AK0	DDR1_BA32	DDR1_BA32	AP0	MDB63
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	AK0	DDR1_BA43	DDR1_BA43	AP0	MDB74
	AK0	DDR1_BA44	DDR1_BA44	AP0	MDB75
	AK0	DDR1_BA45	DDR1_BA45	AP0	MDB76
	AK0	DDR1_BA46	DDR1_BA46	AP0	MDB77
	AK0	DDR1_BA47	DDR1_BA47	AP0	MDB78
	AK0	DDR1_BA48	DDR1_BA48	AP0	MDB79
	AK0	DDR1_BA49	DDR1_BA49	AP0	MDB80
	AK0	DDR1_BA50	DDR1_BA50	AP0	MDB81
	AK0	DDR1_BA51	DDR1_BA51	AP0	MDB82
	AK0	DDR1_BA52	DDR1_BA52	AP0	MDB83
	AK0	DDR1_BA53	DDR1_BA53	AP0	MDB84
	AK0	DDR1_BA54	DDR1_BA54	AP0	MDB85
	AK0	DDR1_BA55	DDR1_BA55	AP0	MDB86
	AK0	DDR1_BA56	DDR1_BA56	AP0	MDB87
	AK0	DDR1_BA57	DDR1_BA57	AP0	MDB88
	AK0	DDR1_BA58	DDR1_BA58	AP0	MDB89
	AK0	DDR1_BA59	DDR1_BA59	AP0	MDB90
	AK0	DDR1_BA60	DDR1_BA60	AP0	MDB91
	AK0	DDR1_BA61	DDR1_BA61	AP0	MDB92
	AK0	DDR1_BA62	DDR1_BA62	AP0	MDB93
	AK0	DDR1_BA63	DDR1_BA63	AP0	MDB94
	AK0	DDR1_BA64	DDR1_BA64	AP0	MDB95
	AK0	DDR1_BA65	DDR1_BA65	AP0	MDB96
	AK0	DDR1_BA66	DDR1_BA66	AP0	MDB97
	AK0	DDR1_BA67	DDR1_BA67	AP0	MDB98
	AK0	DDR1_BA68	DDR1_BA68	AP0	MDB99
	AK0	DDR1_BA69	DDR1_BA69	AP0	MDB100



## LGA1150 (CR)

CR  
CPU RETENTION/X

LGA1150\_P



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DDR BUS

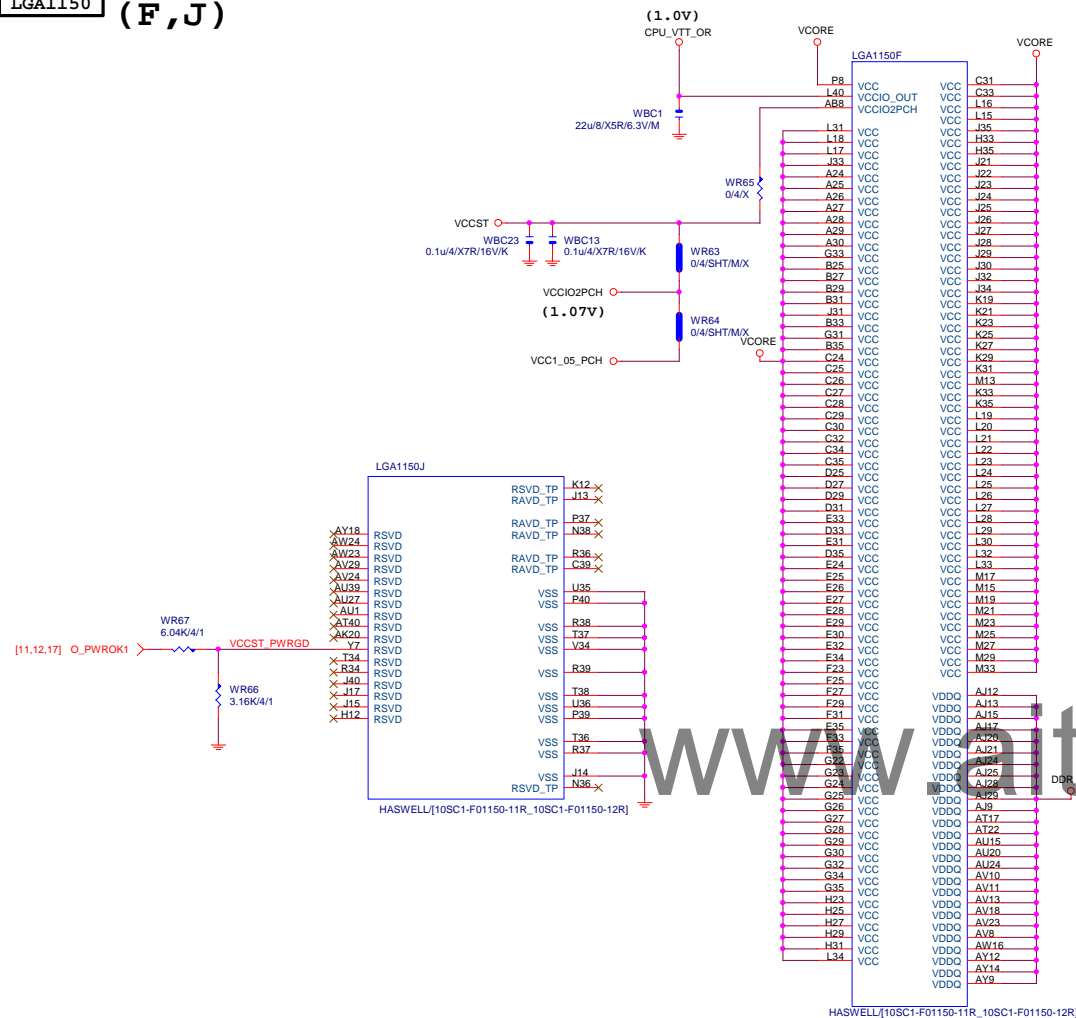
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[8] MDB[0..63]	MDB0..63
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Gigabyte Technology

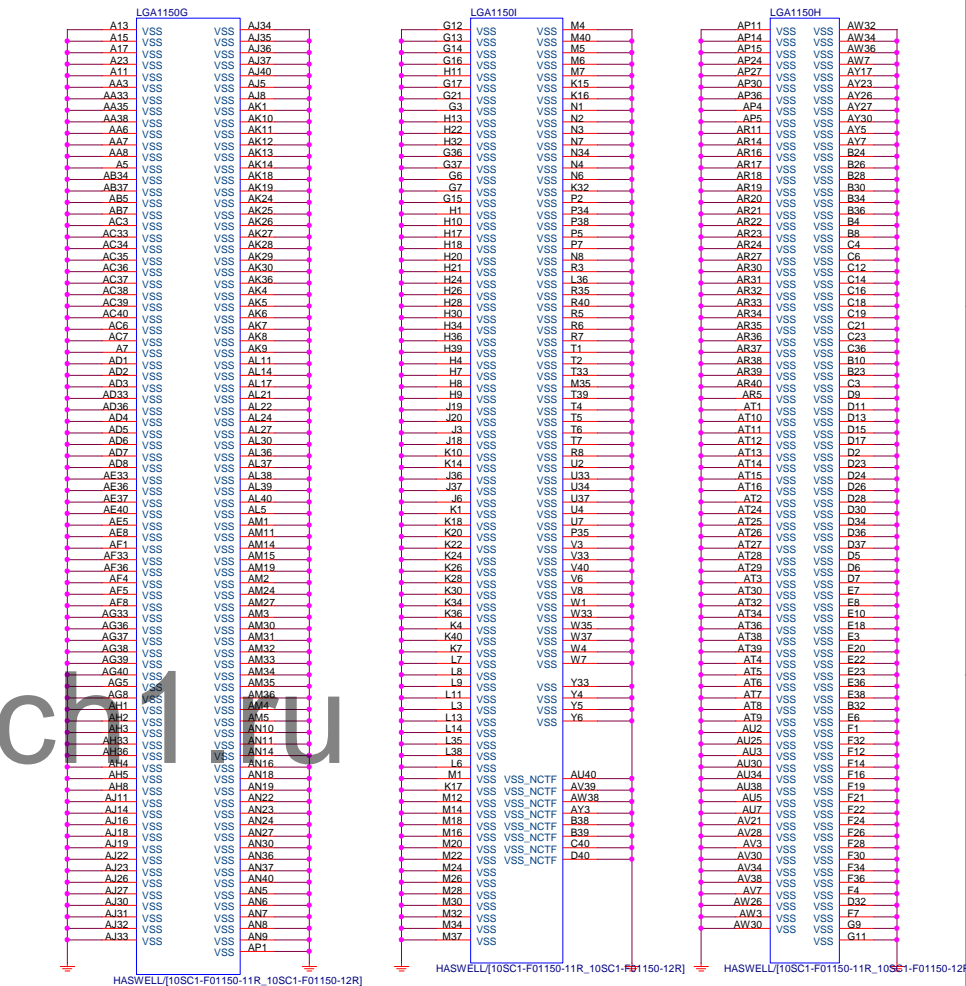
CPU LGA1150-B

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# LGA1150 (F,J)

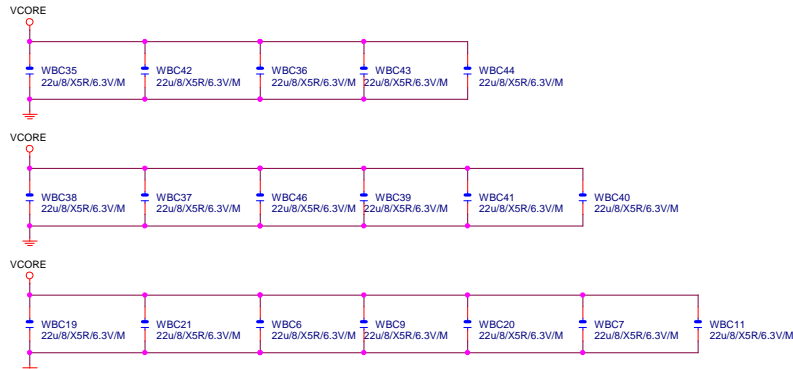


# LGA1155 (G,H,I)



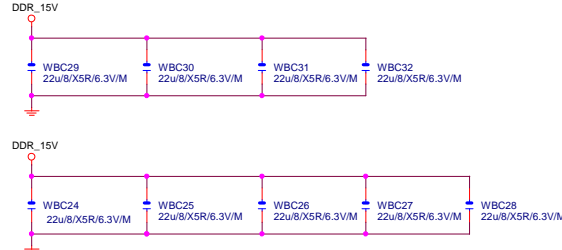
## VCore CAP

(X18)



## DDR CAP

(X9)



Gigabyte Technology

Title		CPU LGA1150-C	
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Rev 1.0







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

VCC1\_5\_PCH

☐ L  
☒ K  
☐ B  
☐ P  
☐ F  
☐ G  
☐ D  
☐ C

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

PCHB

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

DMI_ROMP	USBN_8	AV16	N_USBP8 [21]
PCI_ROMP	USBP_8	AV16	N_USBP8 [21]
	USBN_9	AP16	N_USBP9 [21]
	USBP_9	AP16	N_USBP9 [21]
CLKIN_DMI_N	USBN_10	AP18	N_USBP10 [21]
CLKIN_DMI_P	USBP_10	AP18	N_USBP10 [21]
	USBN_11	AP18	N_USBP11 [21]
PCI_PERN_1_USB3_RXN_2	USBP_11	AP18	N_USBP11 [21]
PCI_PERN_1_USB3_RXP_2	USBN_12	AW18	N_USBP12 [18]
PCI_PETN_1_USB3_TXN_2	USBP_12	AW18	N_USBP12 [18]
PCI_PETP_1_USB3_TXP_2	USBN_13	AP20	N_USBP13 [18]
PCI_PERN_2_USB3_RXN_3	USBP_13	AN20	N_USBP13 [18]
PCI_PERN_2_USB3_RXP_3			
PCI_PETN_2_USB3_TXN_3			
PCI_PETP_2_USB3_TXP_3			
	OCB_GP54	AE40	N_USBOC_F [18]
	OCB_GP59	AE37	

PCIE\_PERN\_7  
PCIE\_PERP\_7  
PCIE\_PETN\_7  
PCIE\_PETP\_7  
PCIE\_PERN\_8  
PCIE\_PERP\_8  
PCIE\_PETN\_8  
PCIE\_PETP\_8

BD82B85/S/[10HB1-030B85-10R]

PCHE  
USB3

[18] PCH_USB3_RXP5	K18	USB3_
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NR03 0.2N4 A134 TACH<sup>+</sup>  
BD82B8  
FD  
FD

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CK SRCCLK PCH

# Book 1

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CP HEATSIN



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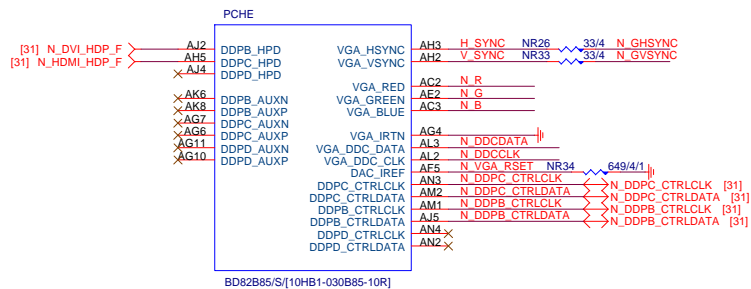
OC[7:4]# for Device 26 (ports 8-13)

# Gigabyte Technology

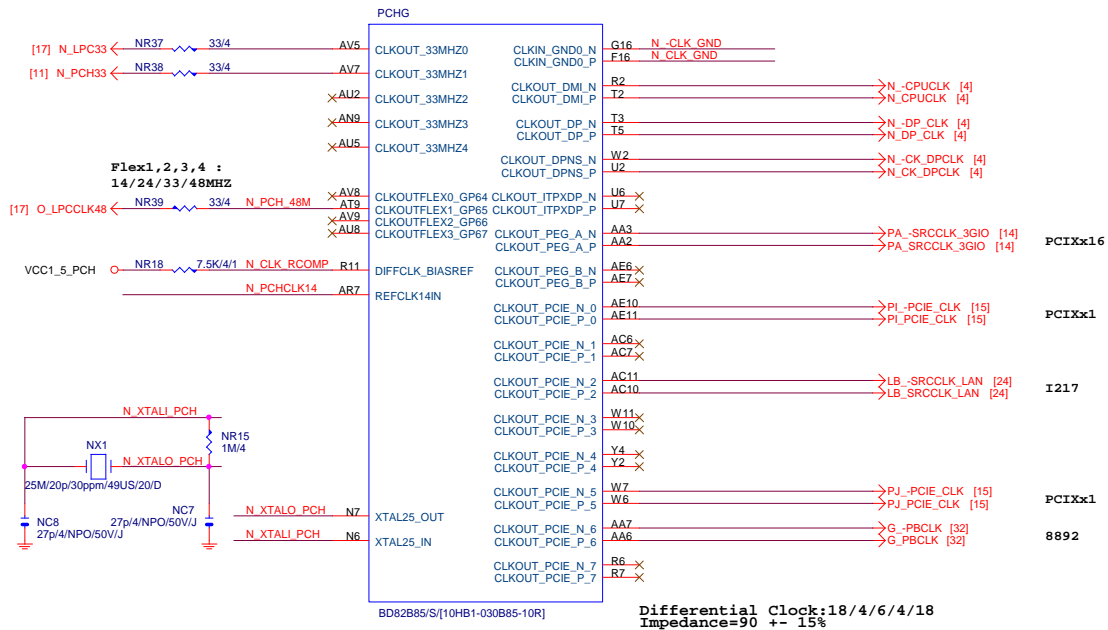
Size	Document Number	<b>GA-B85M-HD3G</b>
Custom		

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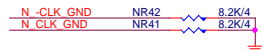
**PCH (E)**



**PCH (G)**



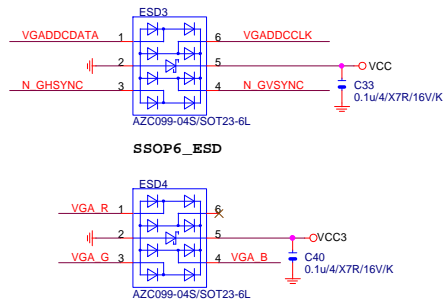
PCH CLK PD
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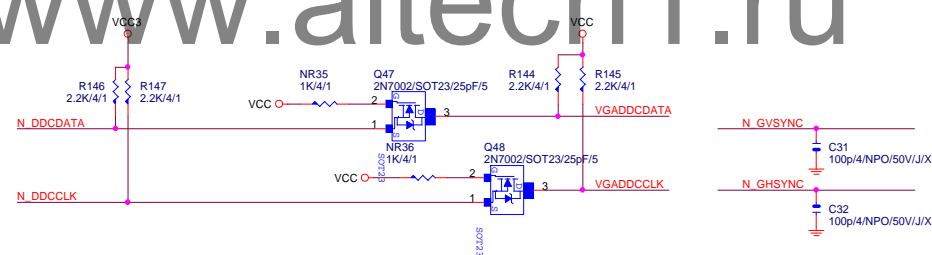
Mount for integrated clock Generation  
Mode



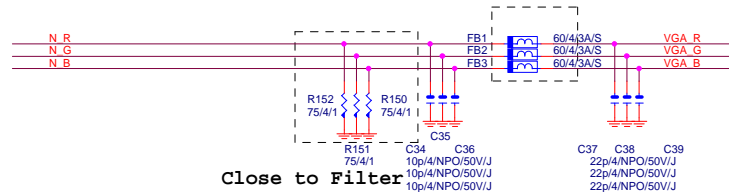
## VGA ESD



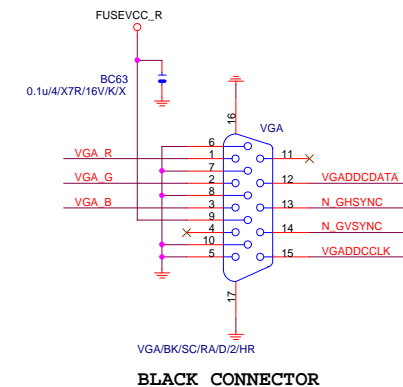
## VGA DDC



## VGA DDC



## VGA CONNECTOR



BLACK CONNECTOR

## Gigabyte Technology

## PCH DISPLAY ,CLK BUFFER

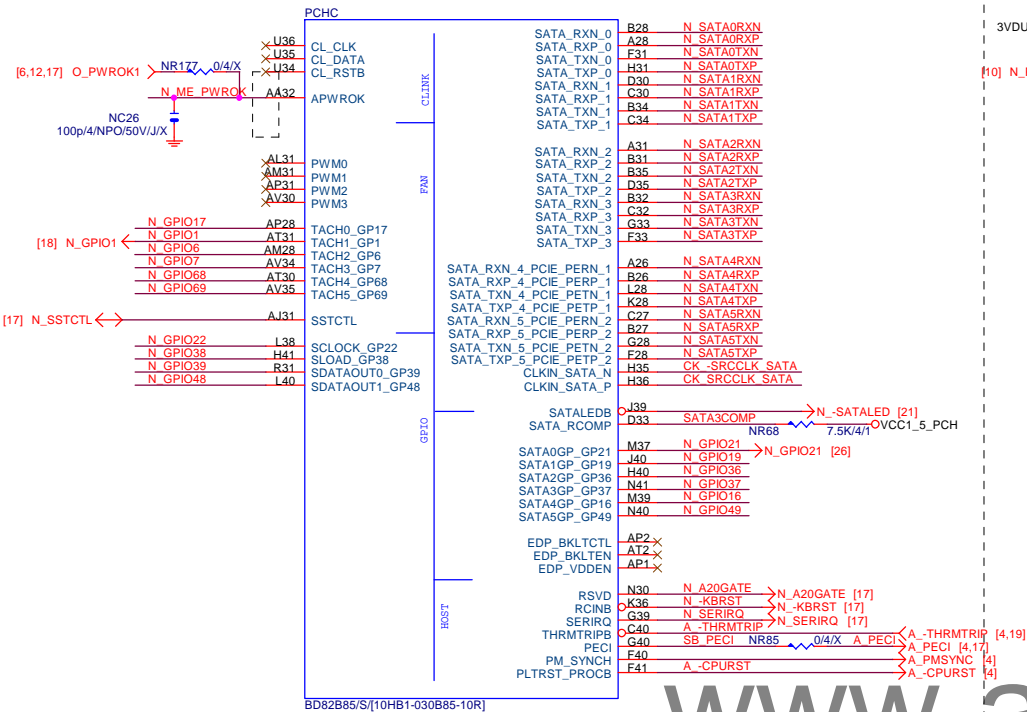
GA-B85M-HD3G

Date: Thursday, June 13, 2013 Sheet 10 of 32

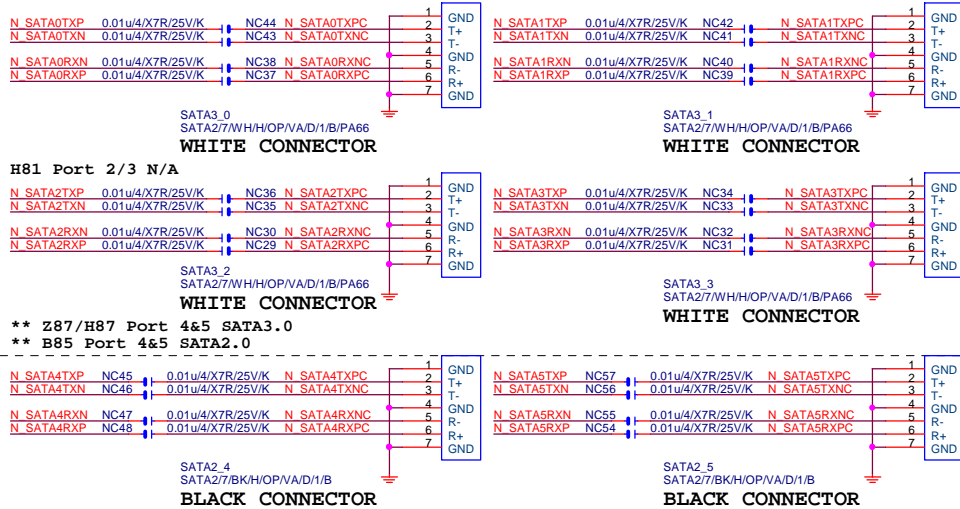
Date:	Thursday, June 10, 2010	Sheet	10	of	52
			1		

(C)

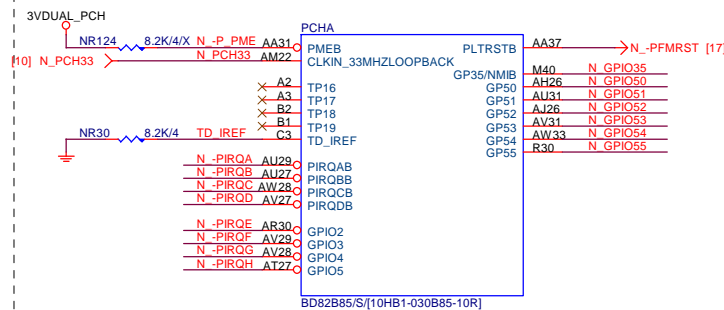
SATA3 : 20/7.5/4.5/7.5/20 (breakout min 8/4/4/4/8)  
Impedance=90 +- 17.5%  
SATA2 : 15/7.5/4.5/7.5/15 (breakout min 8/4/4/4/8)  
Impedance=90 +- 17.5%



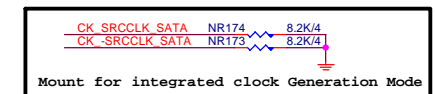
## SATA CONNECTOR



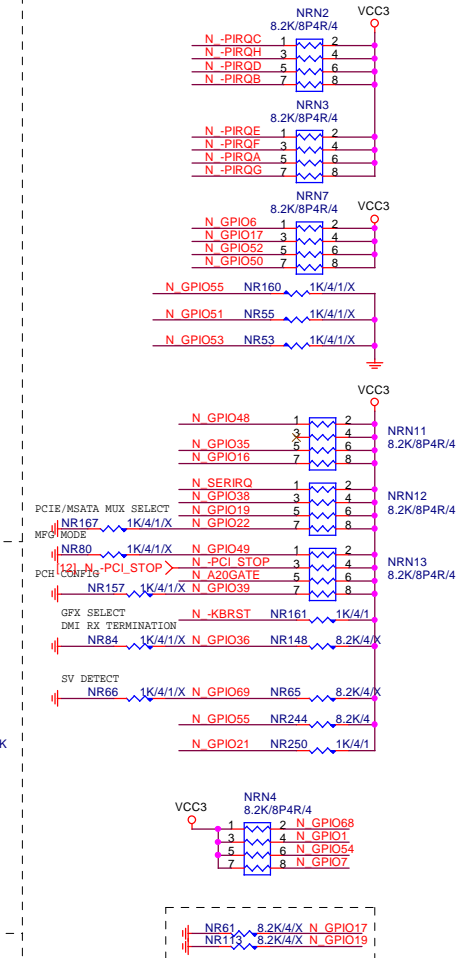
**PCH (A)**



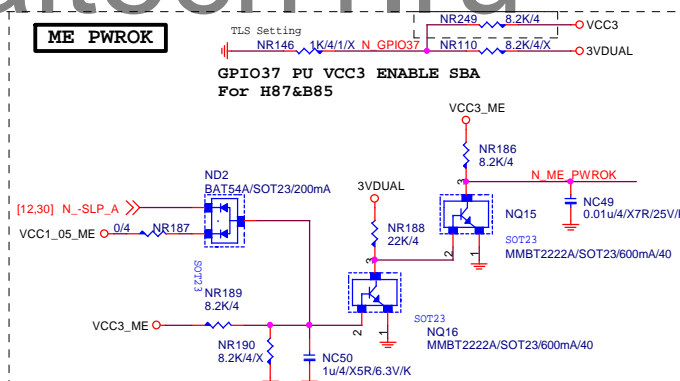
PCH	CLK	PD
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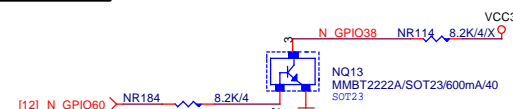
PCH	PU/PD
-----	-------



## ME PWROK



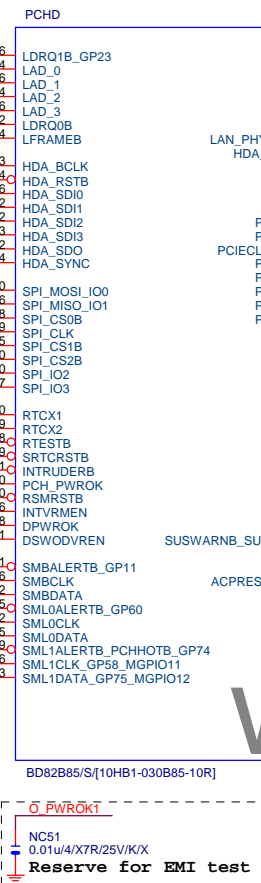
GPIO38 Ctrl



## Gigabyte Technology

Title			
PCH HOST , SATA, PCI			
Size	Document Number		Rev
Custom	GA-B85M-HD3G		1.0
Date:	Thursday, June 13, 2013	Sheet	11 of 32

(D)

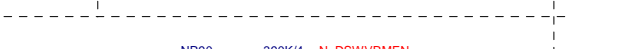


## ACZ\_SDOUT



## PCH\_DPWROK

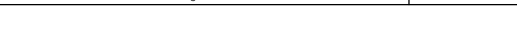
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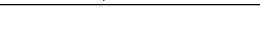
PCH	PU/PD
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## HSW\_STRAP13



32.768KHZ

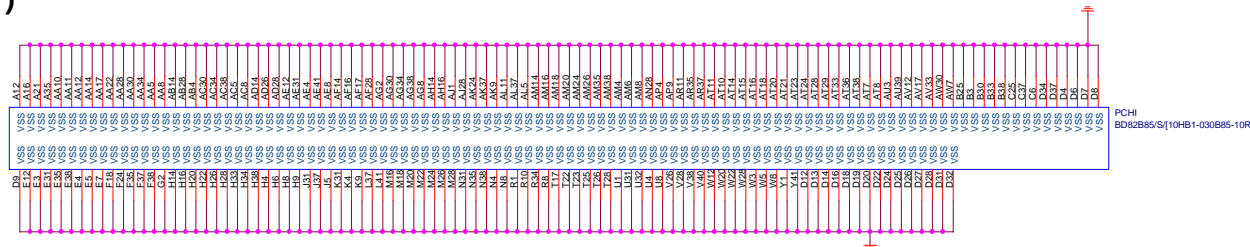


## CLR\_CMOS

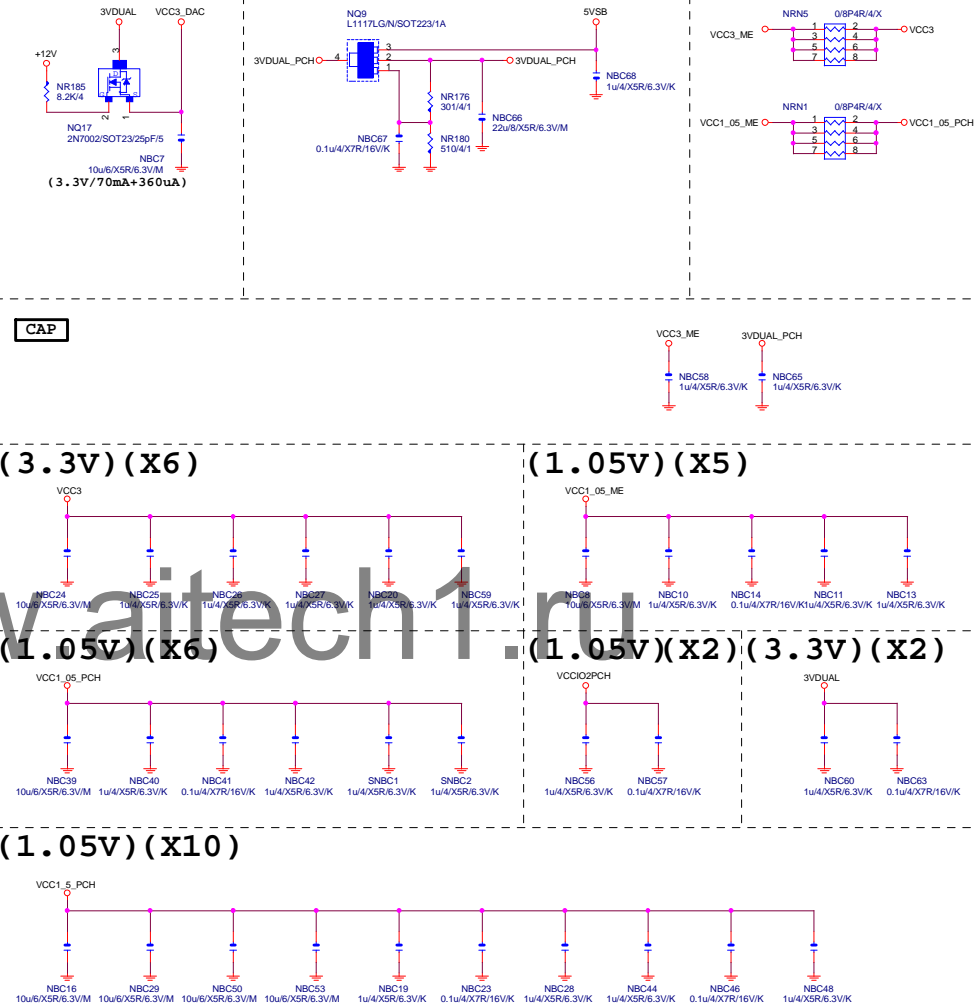
## Gigabyte Technology

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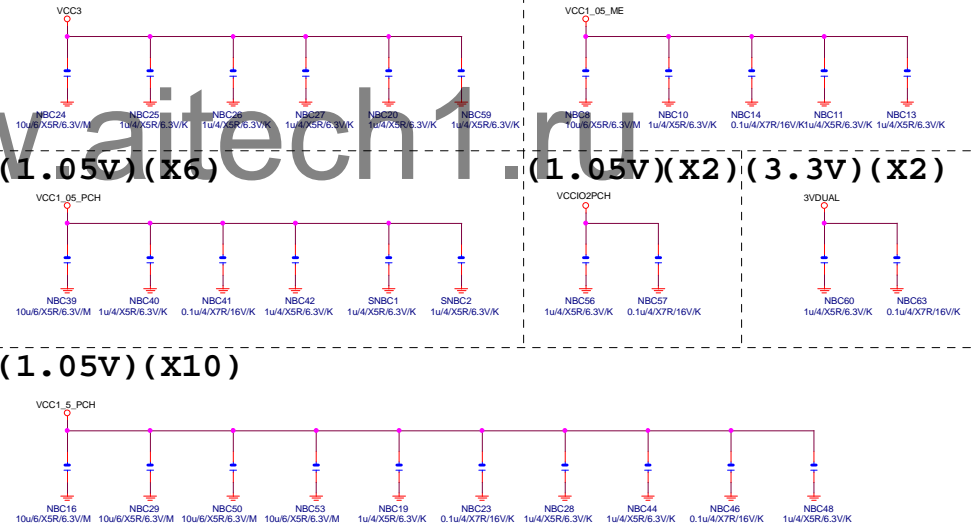
**PCH (I)**



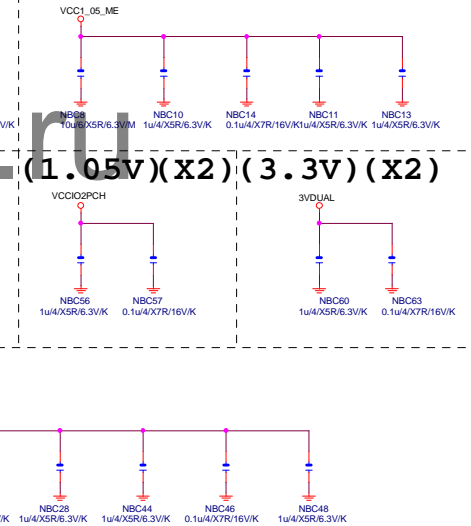
SHT PWR



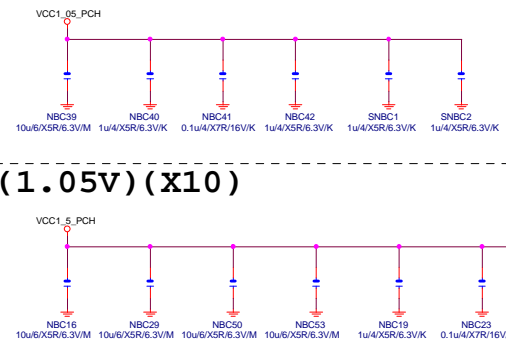
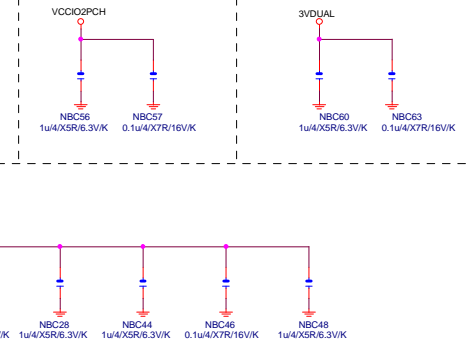
**( 3.3V ) ( X6 )**



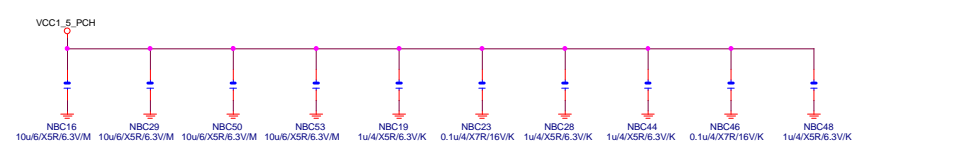
(1.05V) (x5)



**(1.05V)(x6)**

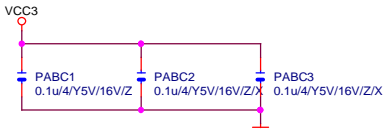

$$(1.05V)(x2)(3.3V)(x2)$$


(1.05V)(x10)

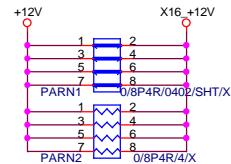




## PCIEX16 CAP



## PCIEX16 PROTECT SHT



## PCIEX16 AC CAP

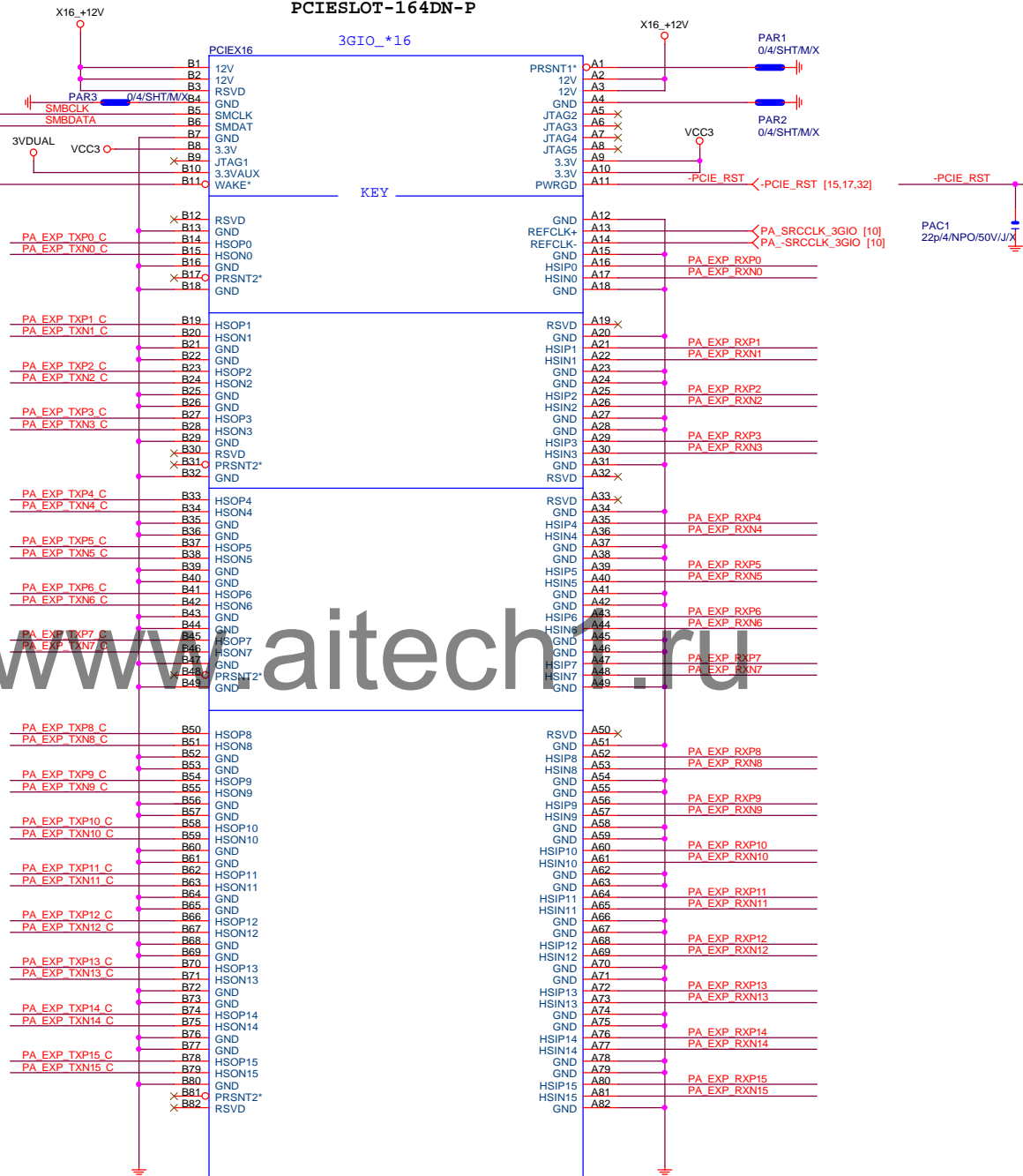
PA EXP TXP0	PAC5	0.22u4/X5R/6.3V/K	PA EXP TXP0 C
PA EXP TXN0	PAC4	0.22u4/X5R/6.3V/K	PA EXP TXN0 C
PA EXP TXP1	PAC6	0.22u4/X5R/6.3V/K	PA EXP TXP1 C
PA EXP TXN1	PAC7	0.22u4/X5R/6.3V/K	PA EXP TXN1 C
PA EXP TXP2	PAC8	0.22u4/X5R/6.3V/K	PA EXP TXP2 C
PA EXP TXN2	PAC9	0.22u4/X5R/6.3V/K	PA EXP TXN2 C
PA EXP 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]

## PCIEX16 SLOT

[7,8,12,15,16,19,27] N\_SMBCLK  
[7,8,12,15,16,19,27] N\_SMBDATA  
[12,15,32] N\_-PCIE\_WAKE

## PCIESLOT-164DN-P

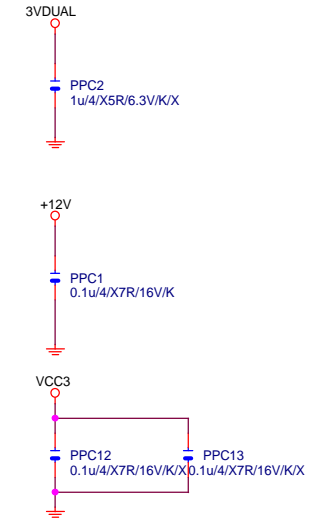
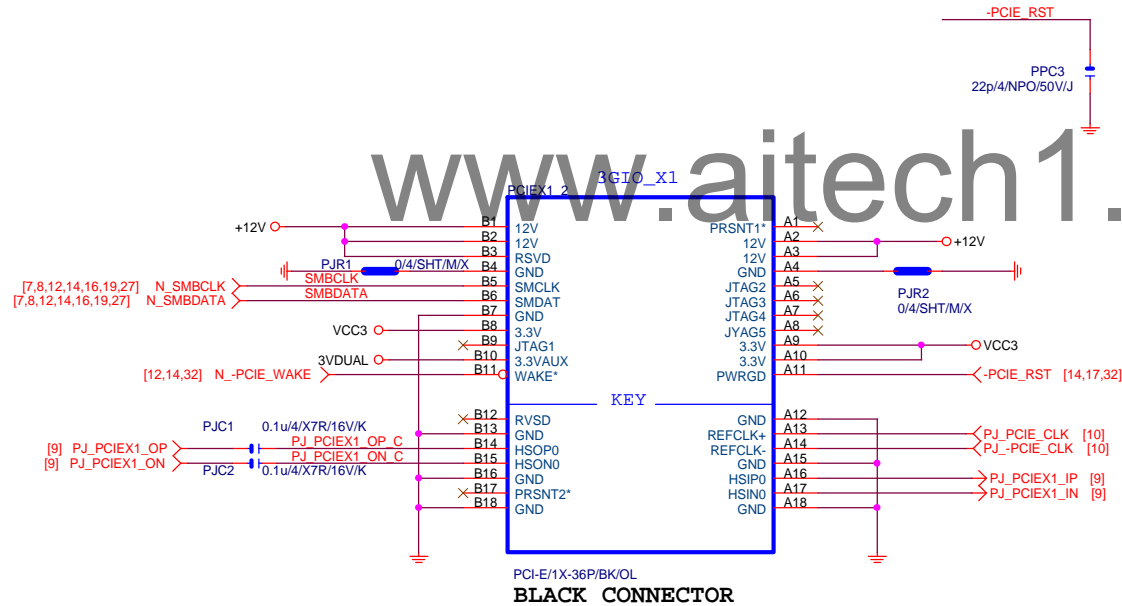
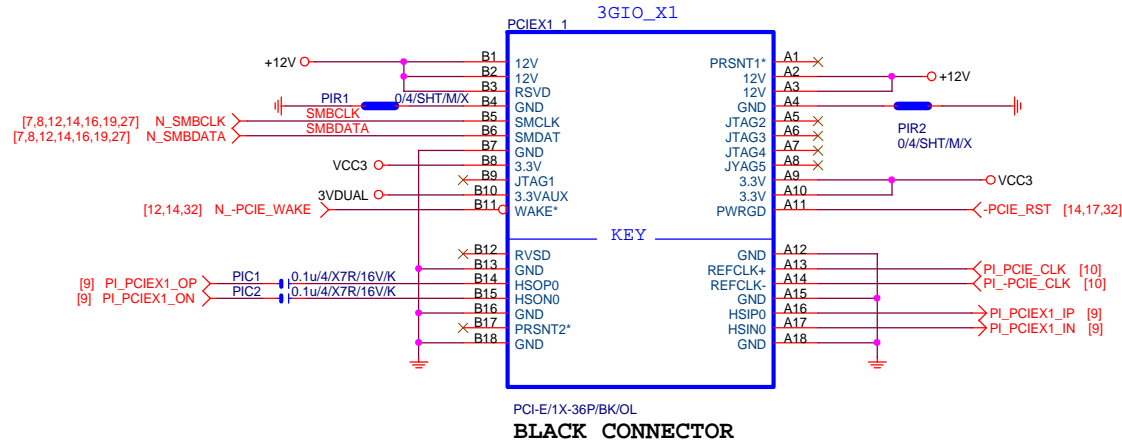


BLACK CONNECTOR

Gigabyte Technology

Title			PCI EXPRESS * 16		
Size			GA-B85M-HD3G		
Custom			Rev 1.0		
Date: Thursday, June 13, 2013			Sheet 14 of 32		

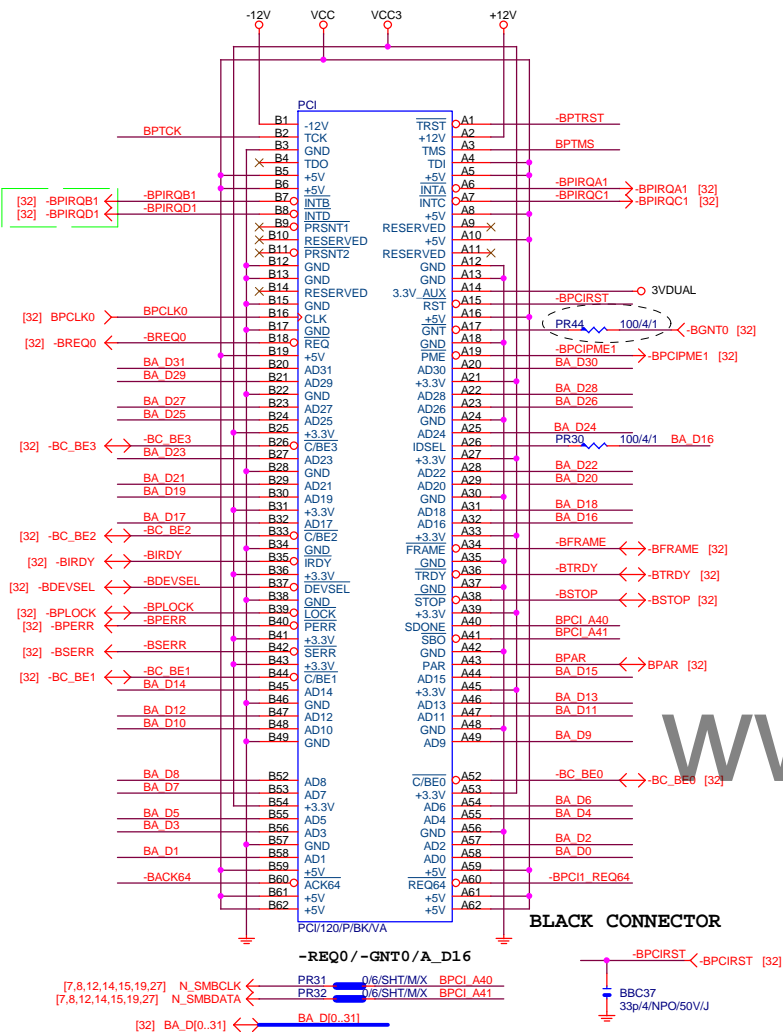
# PCIEX1 SLOT



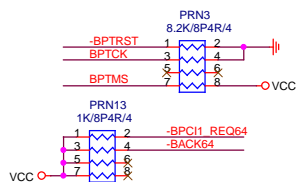
Gigabyte Technology

Title			PCI EXPRESS X 1 PORT
Size	Document Number	GA-B85M-HD3G	
Custom			Rev 1.0
Date:	Thursday, June 13, 2013	Sheet	15 of 32

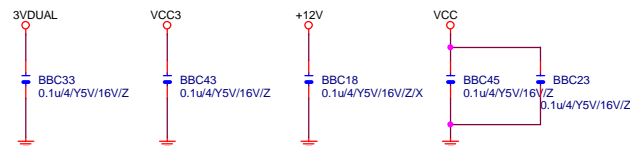
PCI SLOT 1	
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## PCI PU



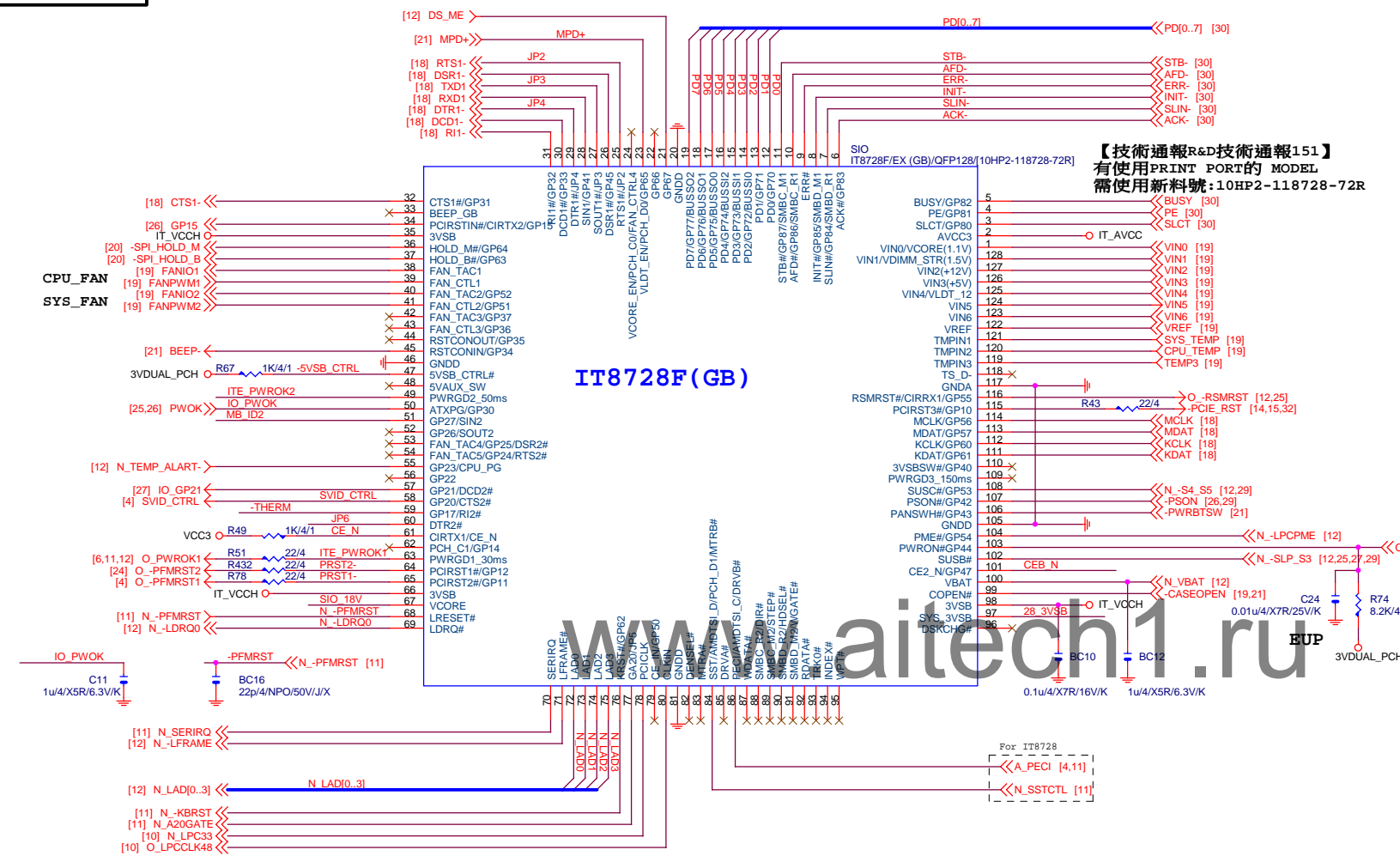
## PCI CAP



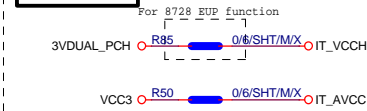
www.aitech1.ru



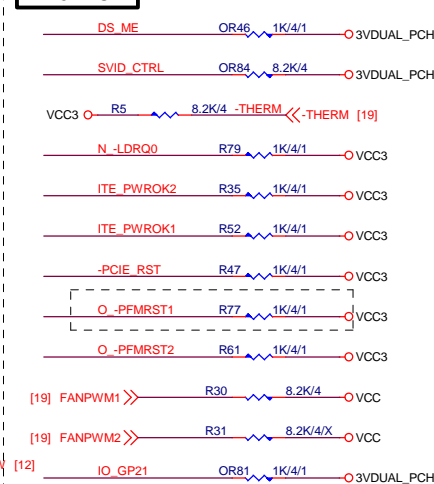
## SIO IT8728F



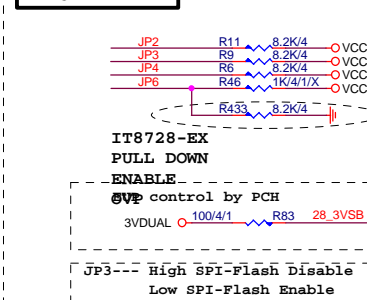
## PWR SHT



## SIO PU



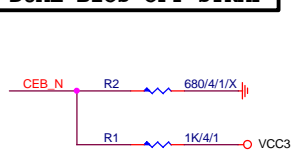
## SIO STRAP



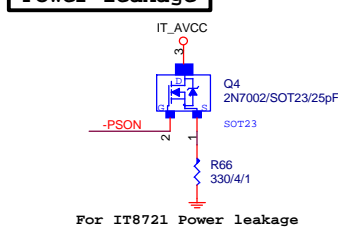
## IT8728F NOTE

	IT8728
PIN121	VCORE_EN/PCH_C0
PIN120	VLDI_EN/PCH_D0
PIN19	ATXPG
PIN31	PCH_C1
PIN53	SST/AMDTSLI_D/MTRB#/PCH_D1
PIN55	PECI/AMDTSLI_C/DRV#
PIN66	SYS_3VSB
PIN70	GP47
PIN95	VIN2 (VCC5)
PIN96	VIN1 (VCC12)
PIN97	VIN1/VDIMM_STR(1.5V)
PIN98	VIN0/VCORE(1.1V)/NC

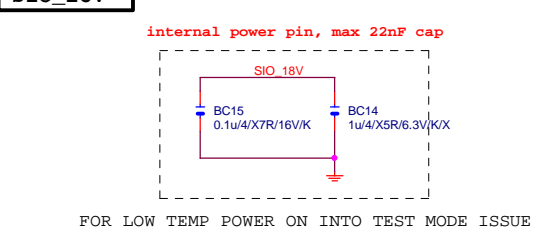
## DUAL BIOS OPT STRAP



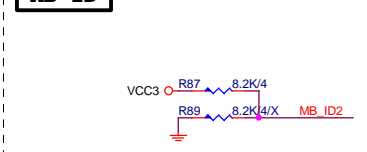
## Power leakage



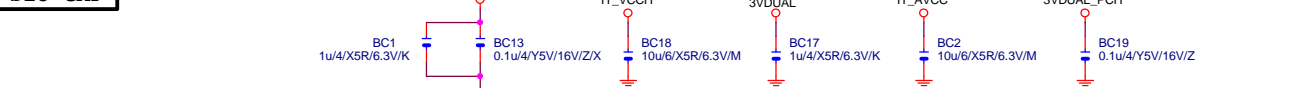
## SIO\_18V



## MB ID



## SIO CAP

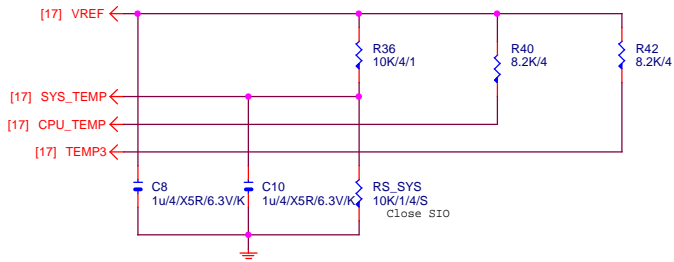


## Gigabyte Technology

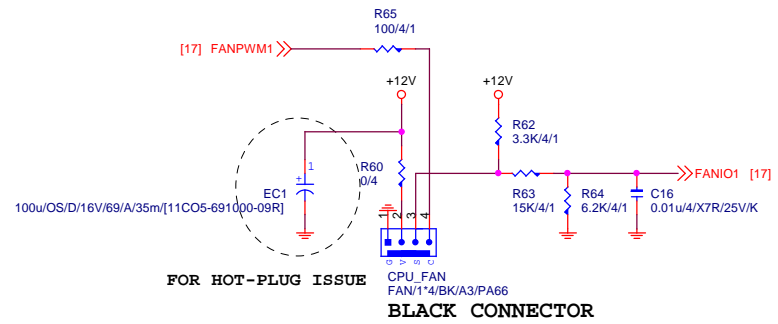
Title			ITE 8728 LPC IO
Size	Document Number	GA-B85M-HD3G	
Custom			Rev 1.0
Date:	Thursday, June 13, 2013	Sheet	17 of 32



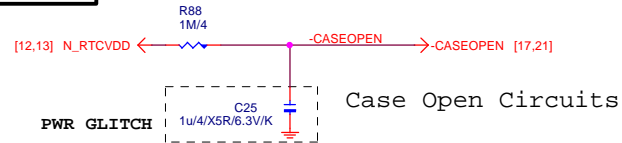
## TEMP H/W MONITOR



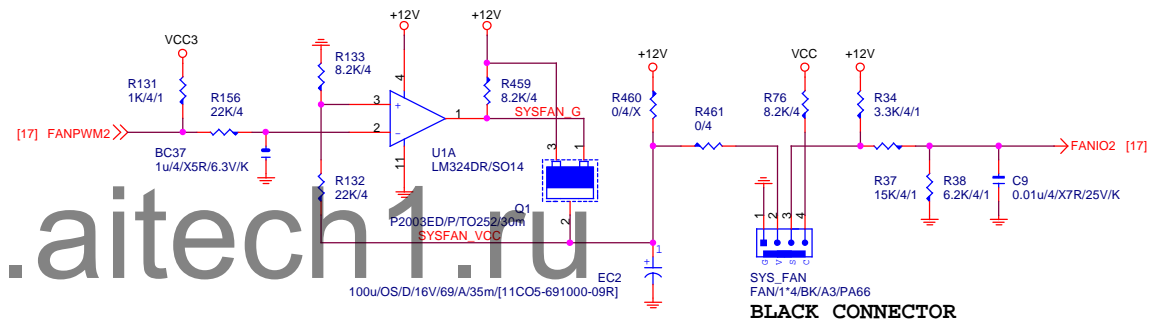
## CPU SMART FAN



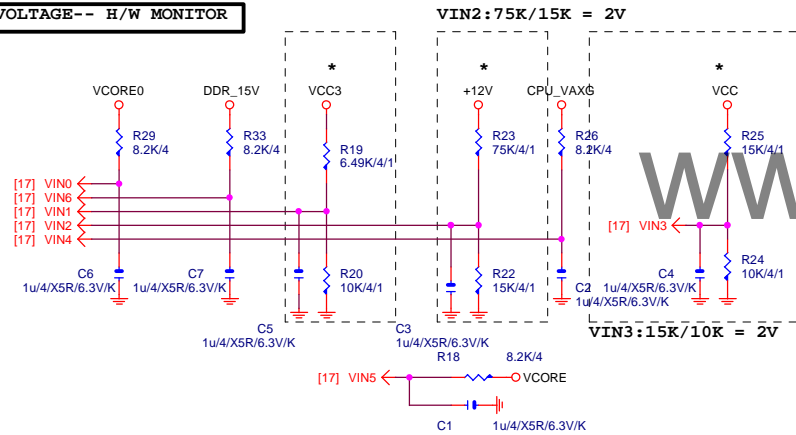
## CASE OPEN



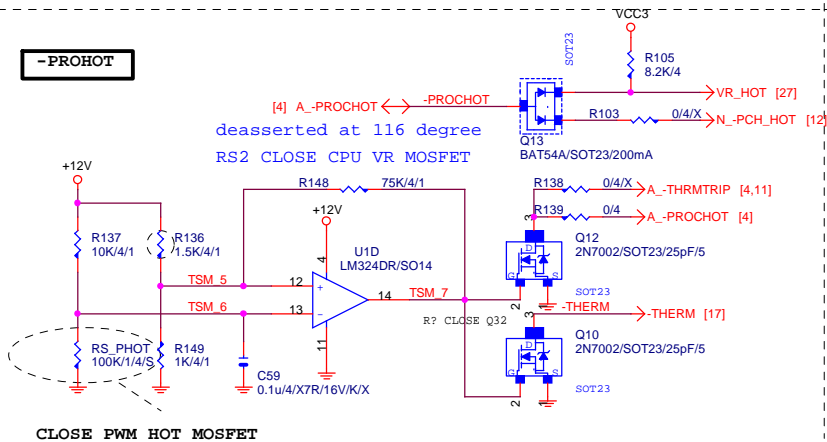
## SYS SMART FAN

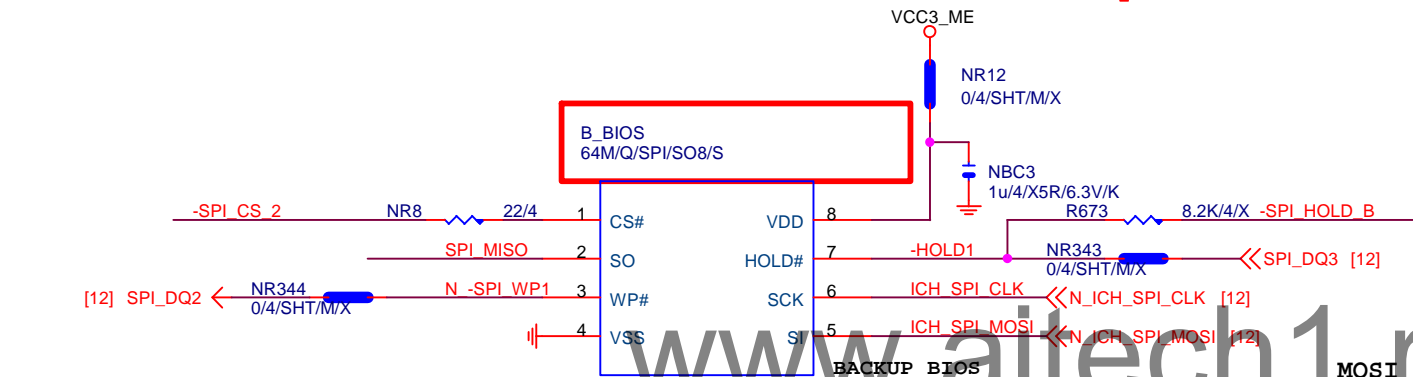
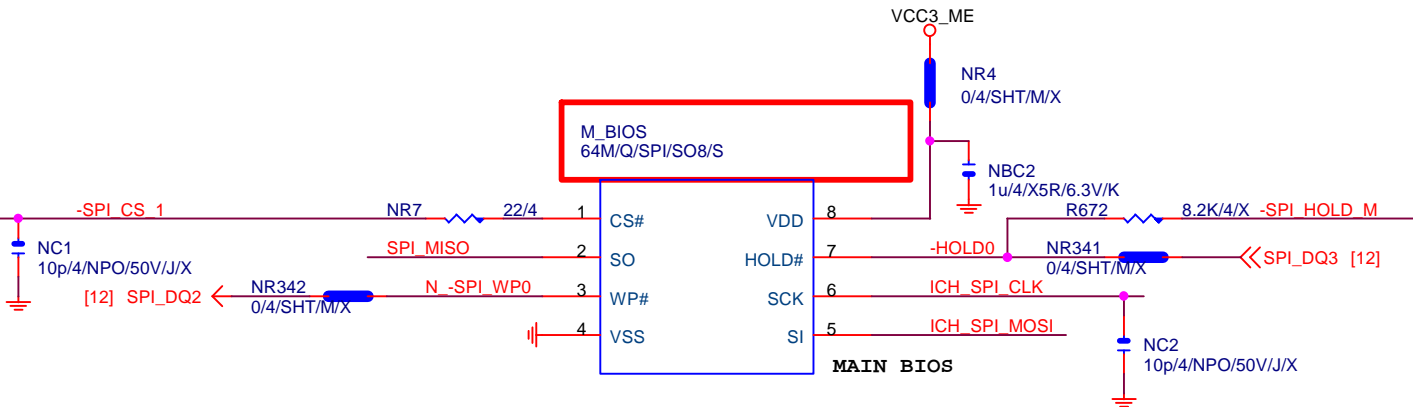


## VOLTAGE-- H/W MONITOR



## -PROHOT

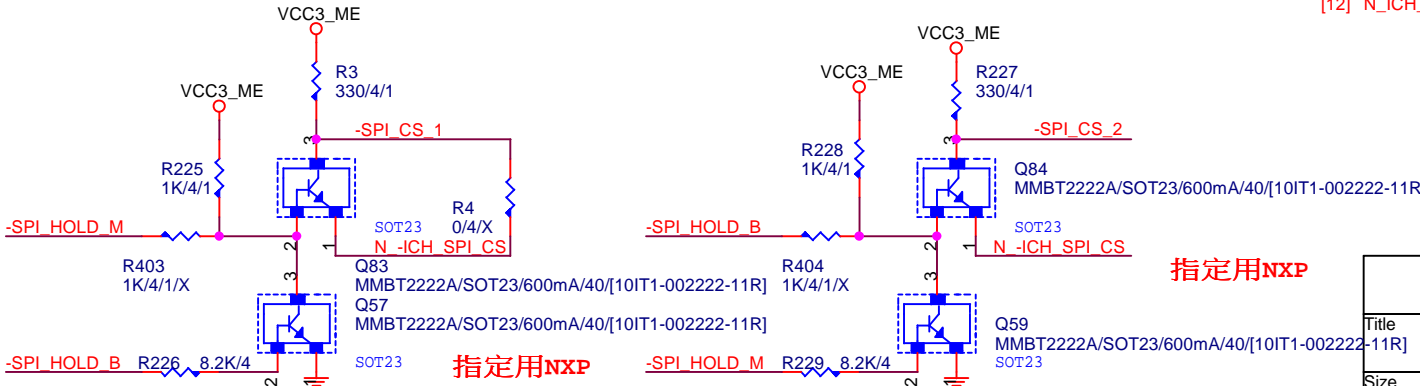
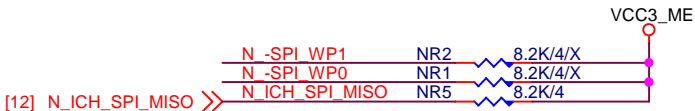
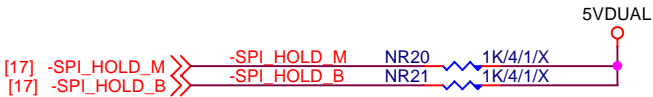
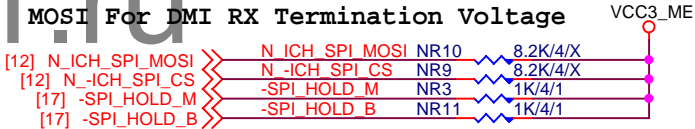




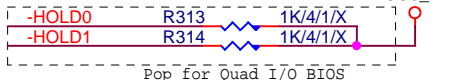
BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

1 means floating  
0 means PD 1K

MOSI For DMI RX Termination Voltage



CHECK



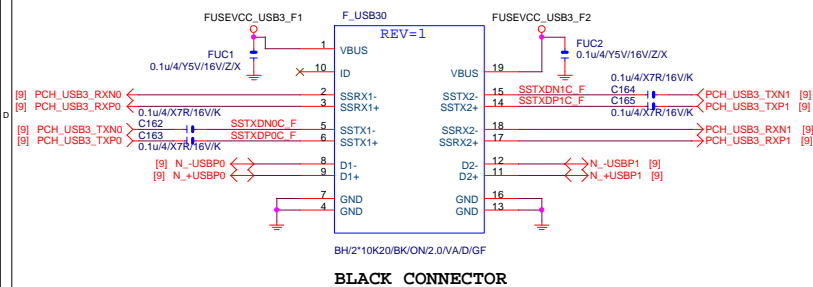
Gigabyte Technology

DUAL BIOS

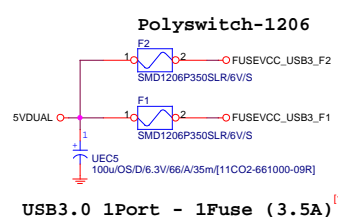
GA-B85M-HD3G

Rev 1.0

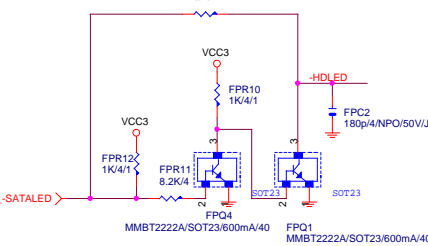
## F\_USB30



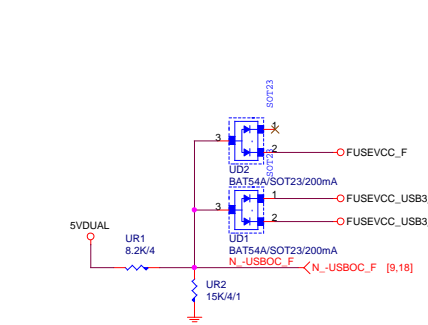
## F\_USB30 PWR



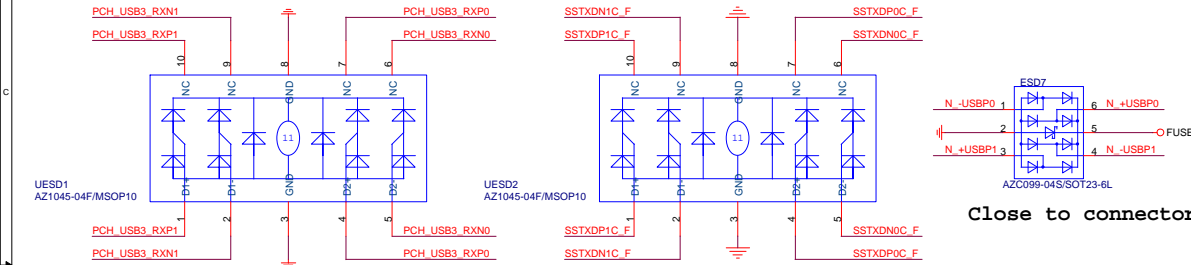
## SATA LED



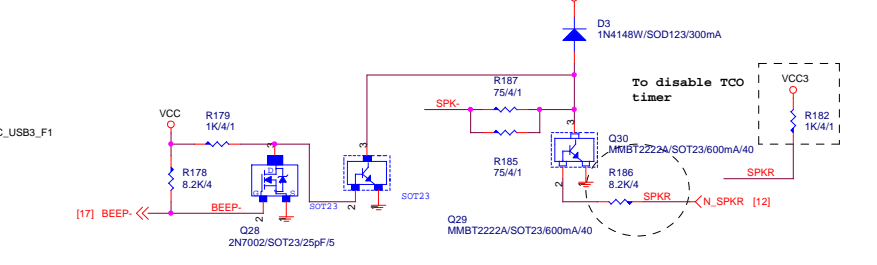
## -USB0C\_F



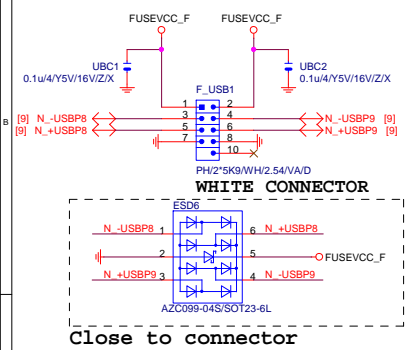
## F\_USB30 ESD PROTECT



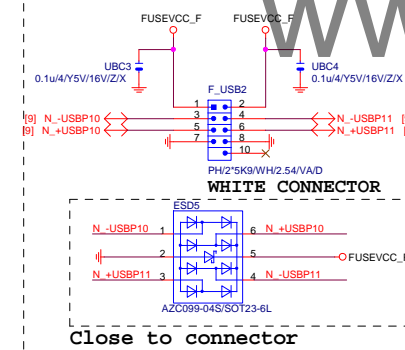
## SPKR



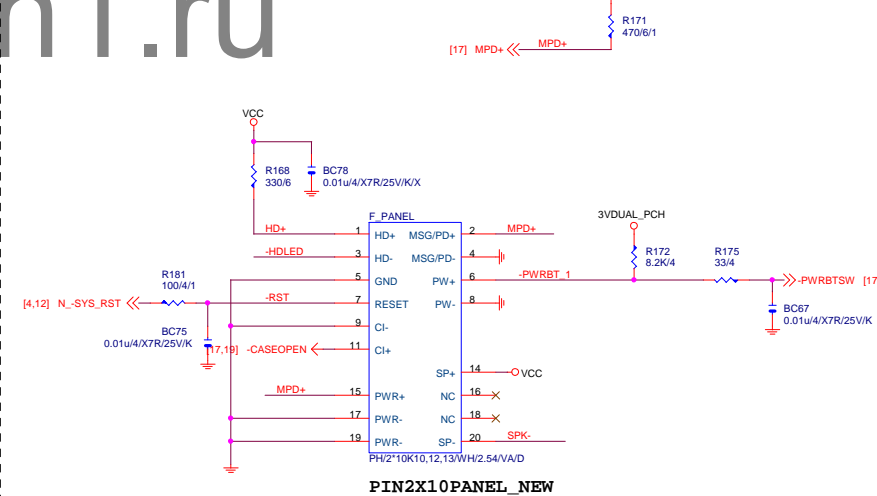
## FRONT USB1



## FRONT USB2



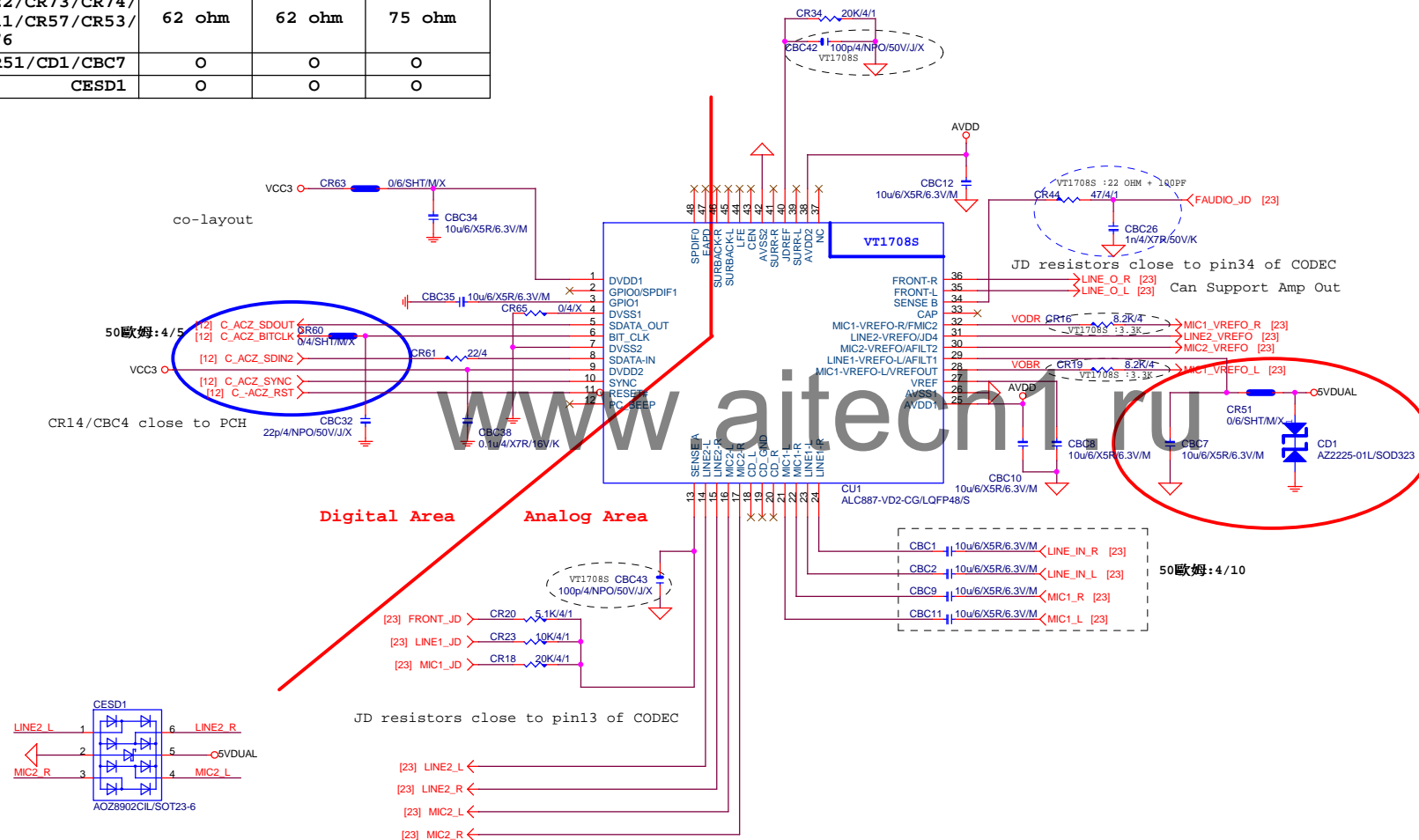
## INTEL FRONT PANEL

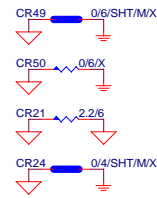


Gigabyte Technology			
FP,F_USB,USB PWR,SPKR,SATA LED			
GA-B85M-HD3G			
Rev	1.0		

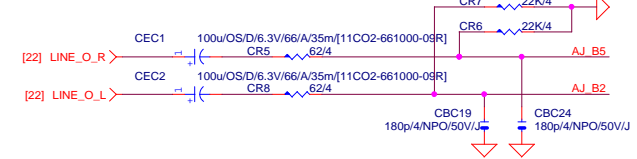
AZALIA CODEC ALC892/ALC887-VD2/VT1708-CE Colay

	ALC892	ALC887-VD2	VT1708S-CE
CR44/CBC26	47ohm+1nF	47ohm+1nF	22ohm+100P
CBC42/CBC43	X	X	100P/4
CR6/CR7/CR58/CR54/ CR67/CR68/CR69/CR70	22K/4	22K/4	10K/4/1
CR5/CR8/CR1/CR14/ CR17/CR22/CR73/CR74/ CR13/CR11/CR57/CR53/ CR75/CR76	62 ohm	62 ohm	75 ohm
CR51/CD1/CBC7	O	O	O
CESD1	O	O	O





## LINE-OUT



## LINE-IN

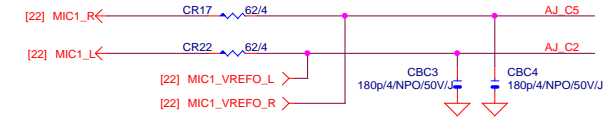
Verify MIC function  
in LINE-in

Only reserved for ALC888



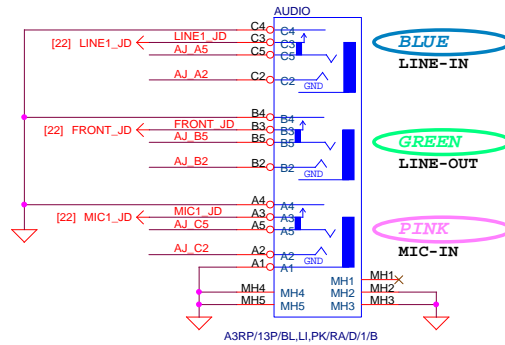
For 889A/888

## MIC-IN

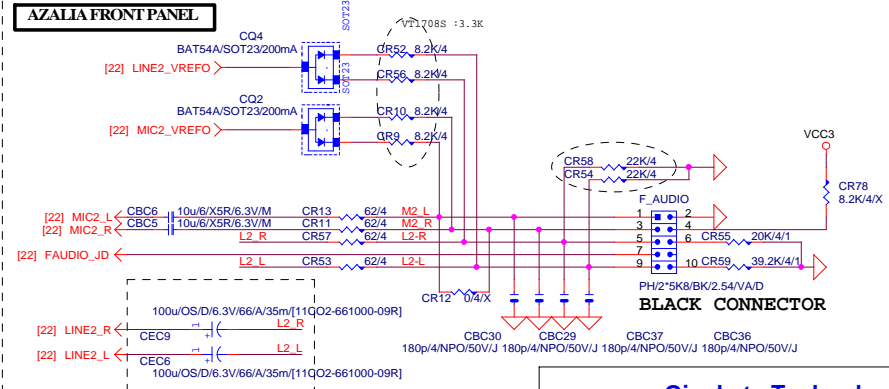


## SPDIF\_OUT

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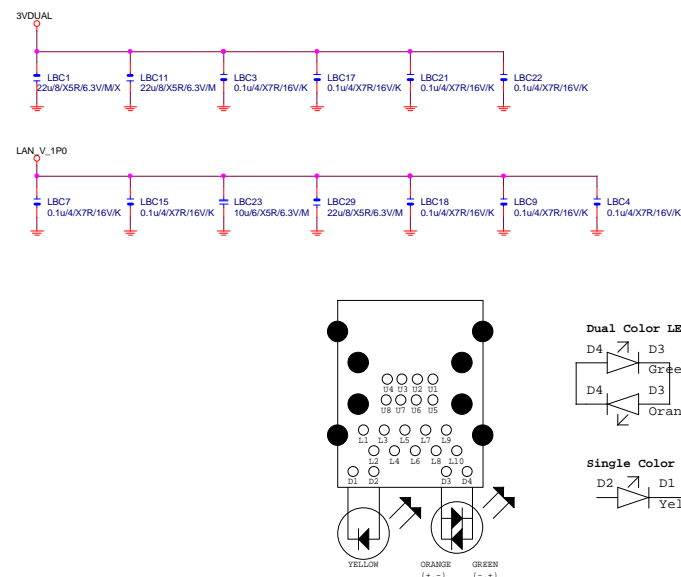
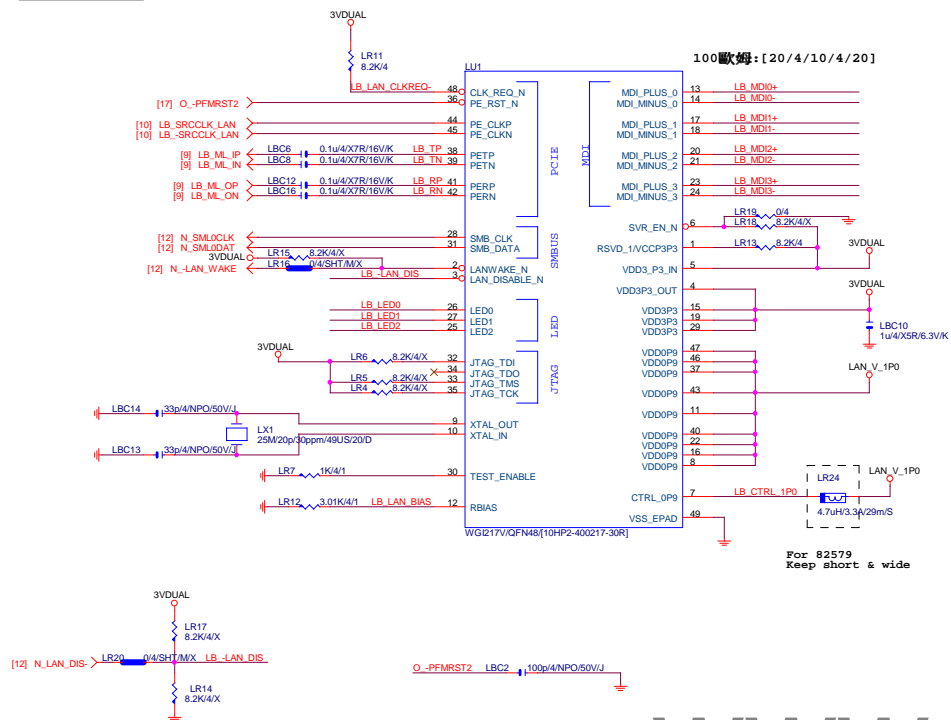
## AZALIA FRONT PANEL



Gigabyte Technology

Title			
AUDIO JACK			
Size	Document Number	GA-B85M-HD3G	
Custom			Rev 1.0
Date:	Thursday, June 13, 2013	Sheet	23 of 32

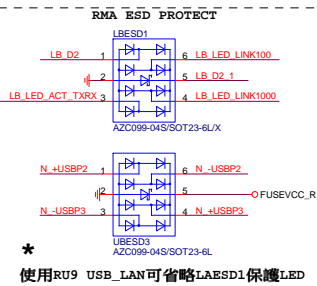
LAN:INTEL I217



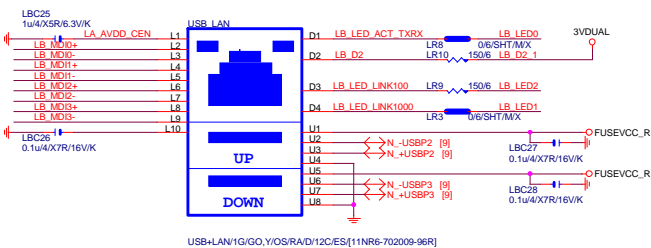
1Gb	Orange
100Mb	Green
10Mb	Off

Access	Blinking
Link	Yellow

## USB\_LAN CONNECTOR



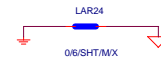
LA\_MDI-->100歐姆:[20/4/8/4/20]



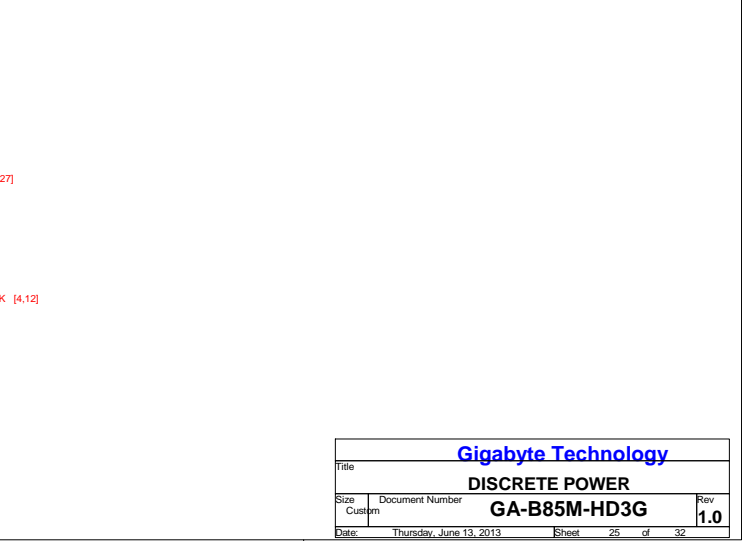
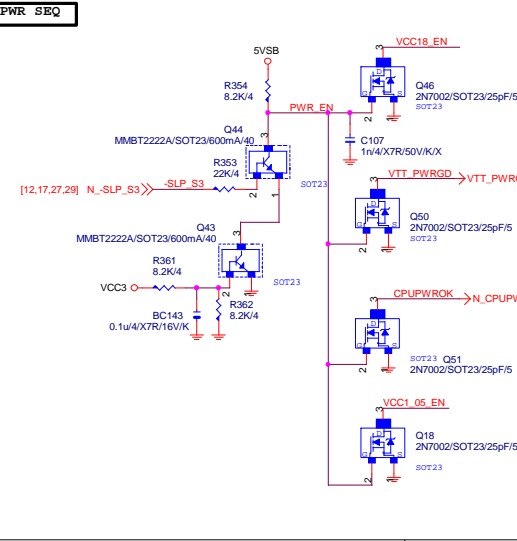
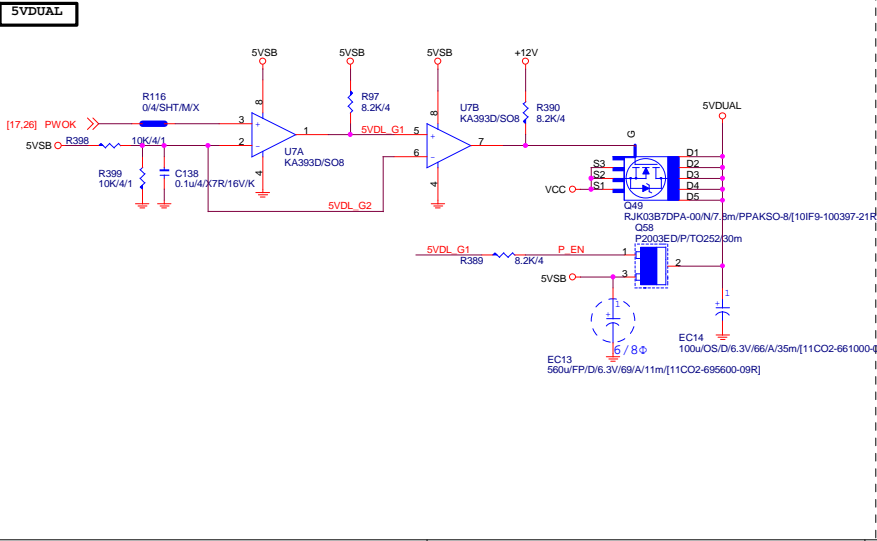
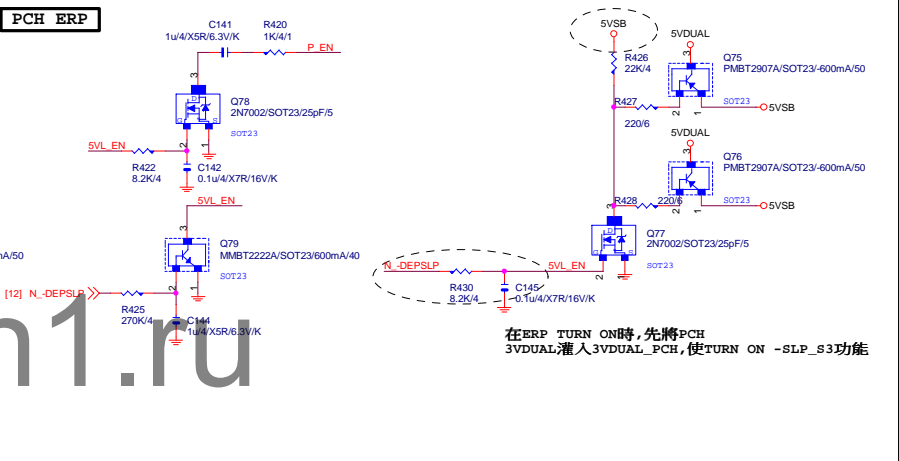
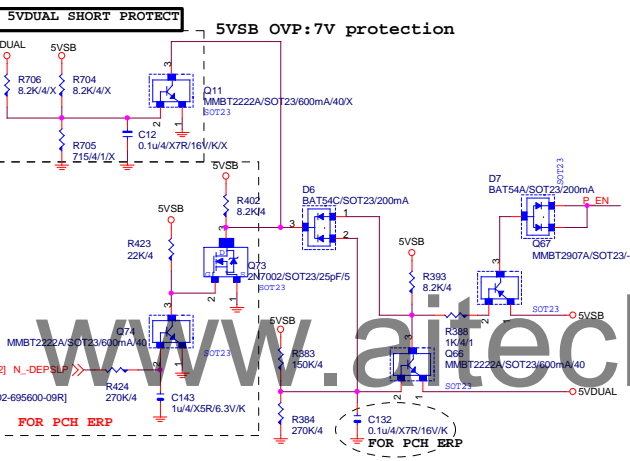
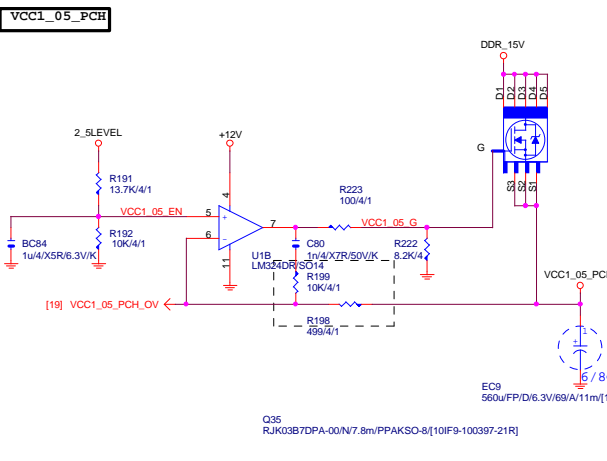
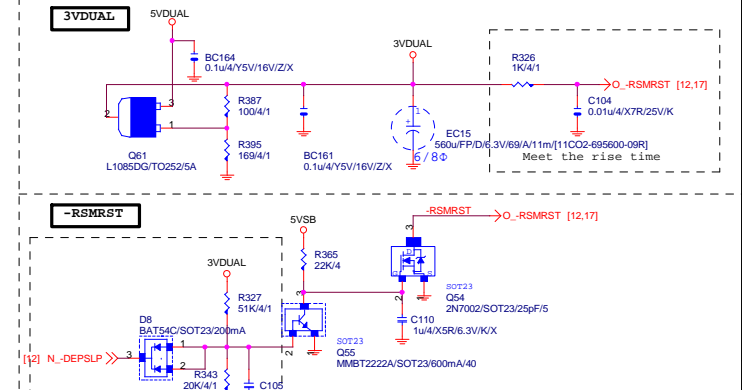
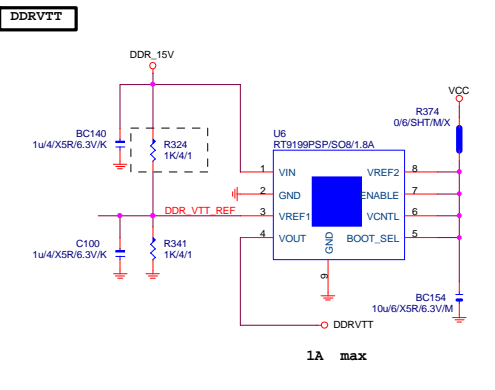
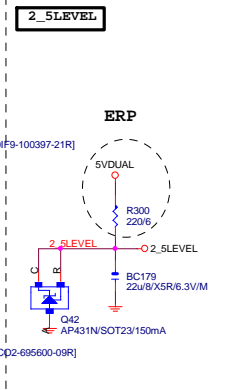
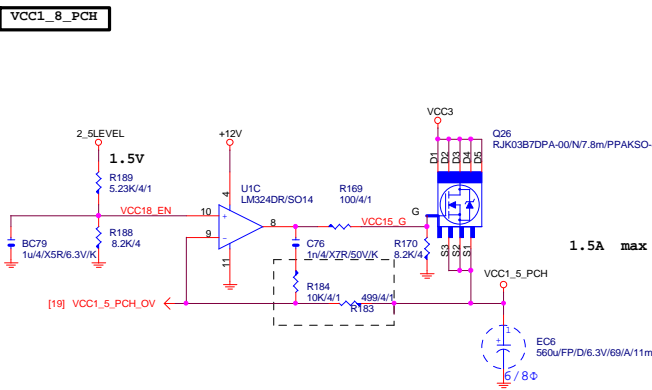
USB X3 POWER

## EMI SHORT PAD

PS:視EMI需求

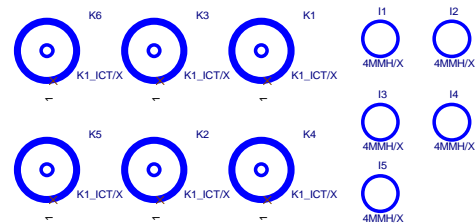
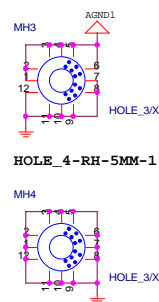
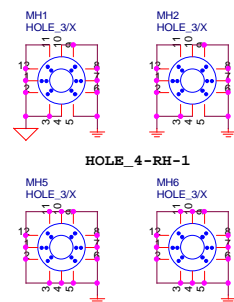






Gigabyte Technology		
DISCRETE POWER		
GA-B85M-HD3G		
Rev	1.0	
Date:	Thursday, June 13, 2013	Sheet 25 of 32

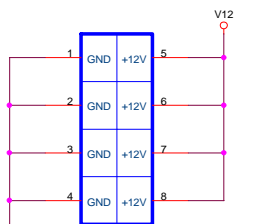
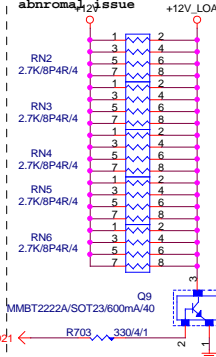
## 【技術通報R&amp;D技術通報155】



To prevent the 5VSB  
under loading when  
boot

TPM

To fix 12V light load  
abnromal issue +12V

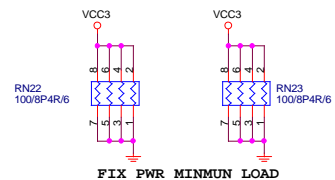
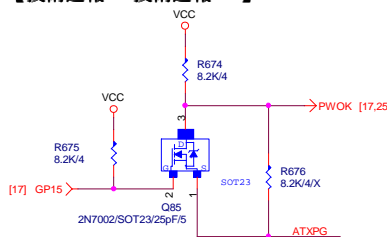


BLACK CONNECTOR

ATX\_12V\_2X4  
APW/2'4/BK/OC/P/4.2/VA/SN/OH::Location ATX\_12V\_2X4

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## 【技術通報R&amp;D技術通報154】

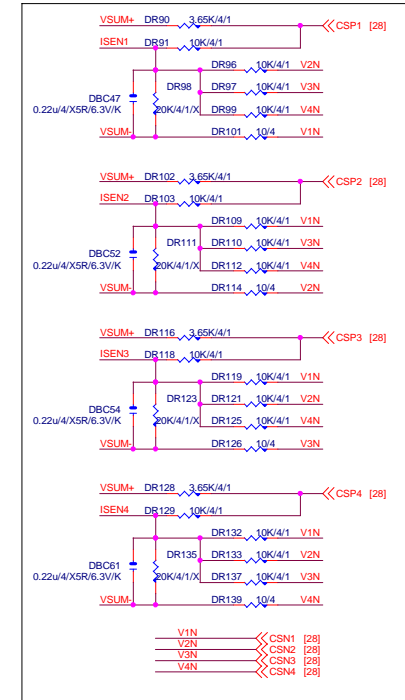
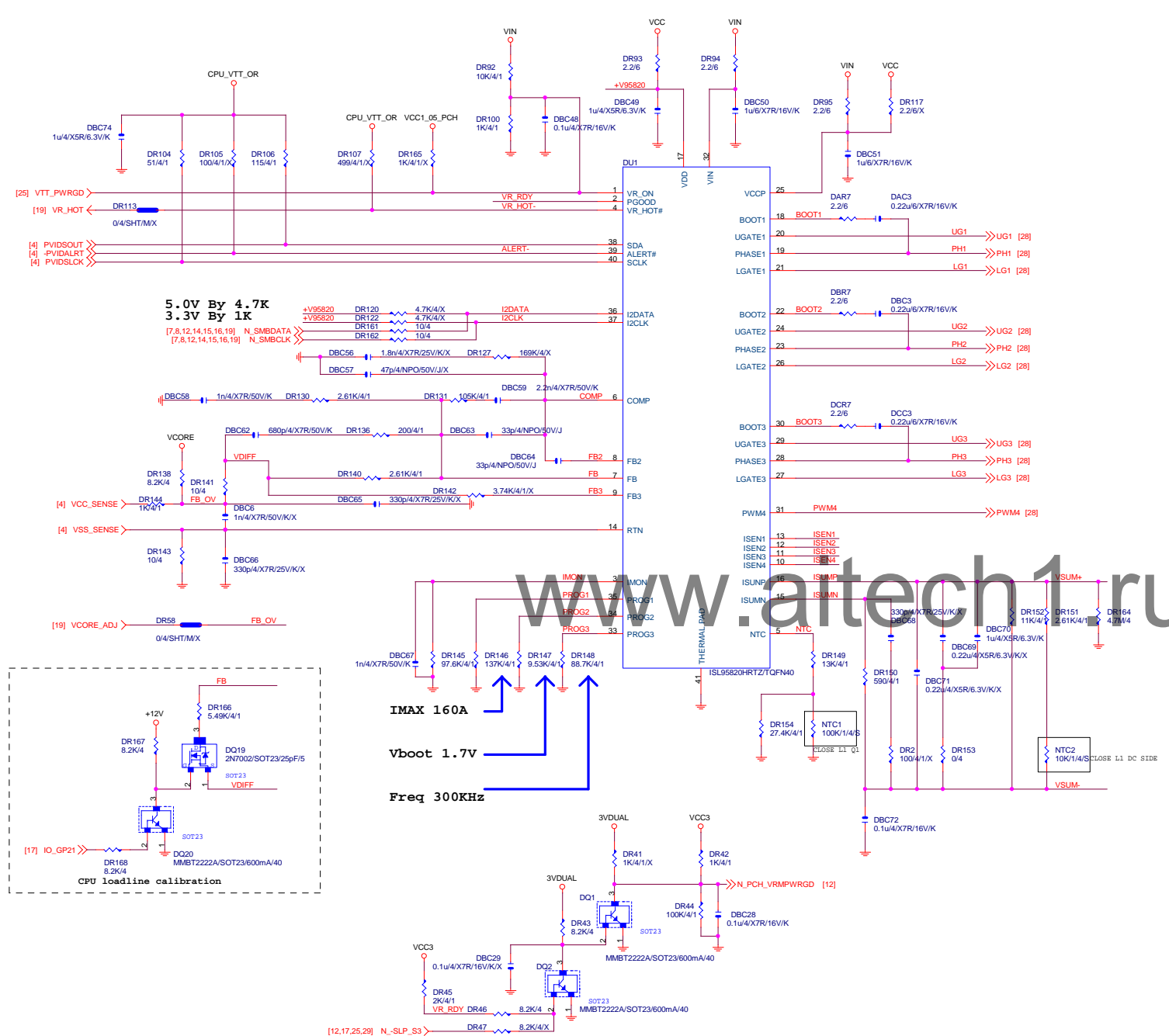


## Gigabyte Technology

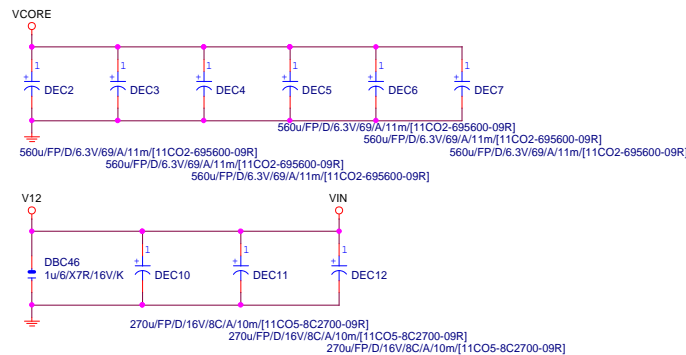
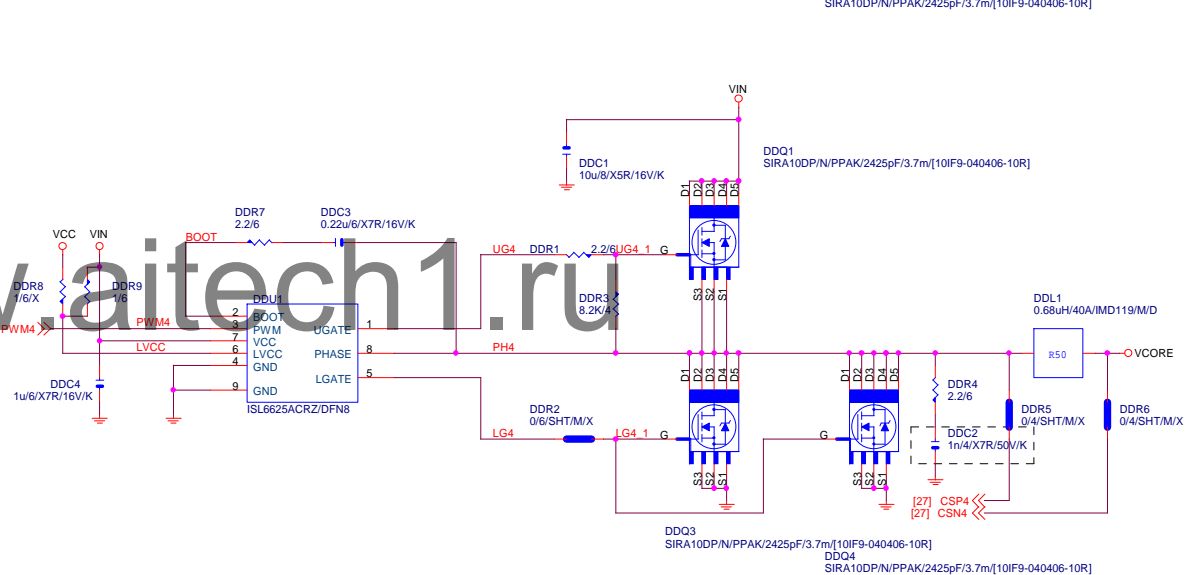
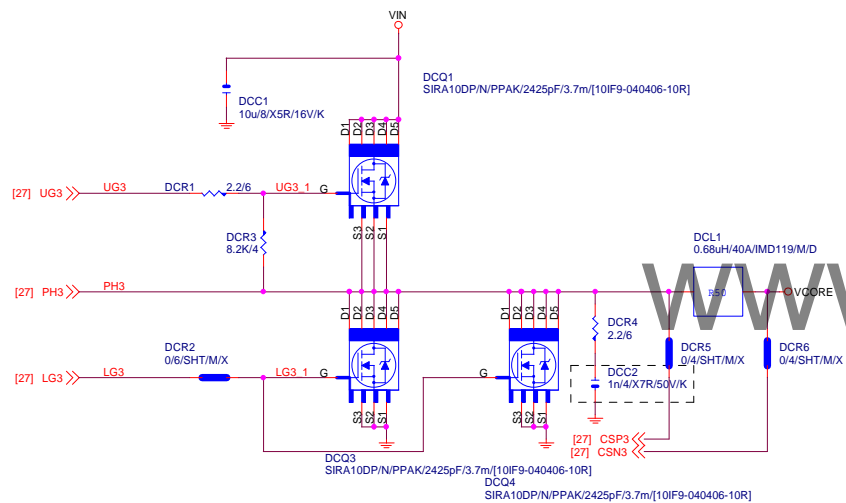
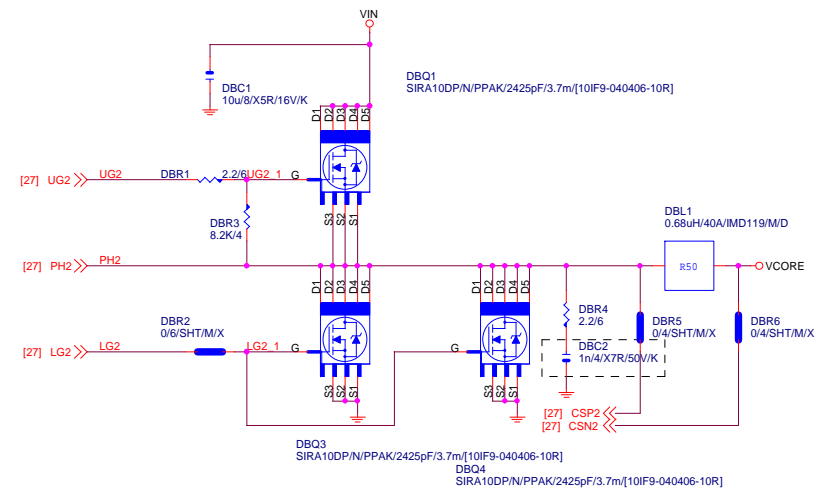
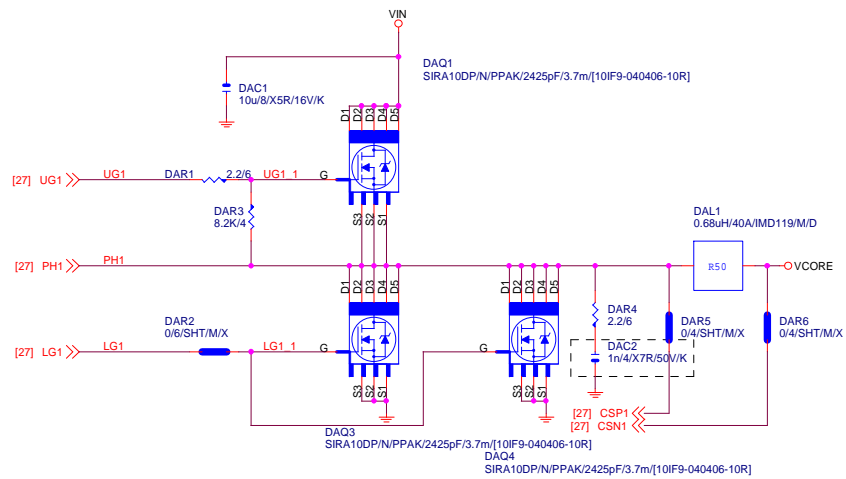
## ATX CONNECTOR

GA-B85M-HD3G

1.0

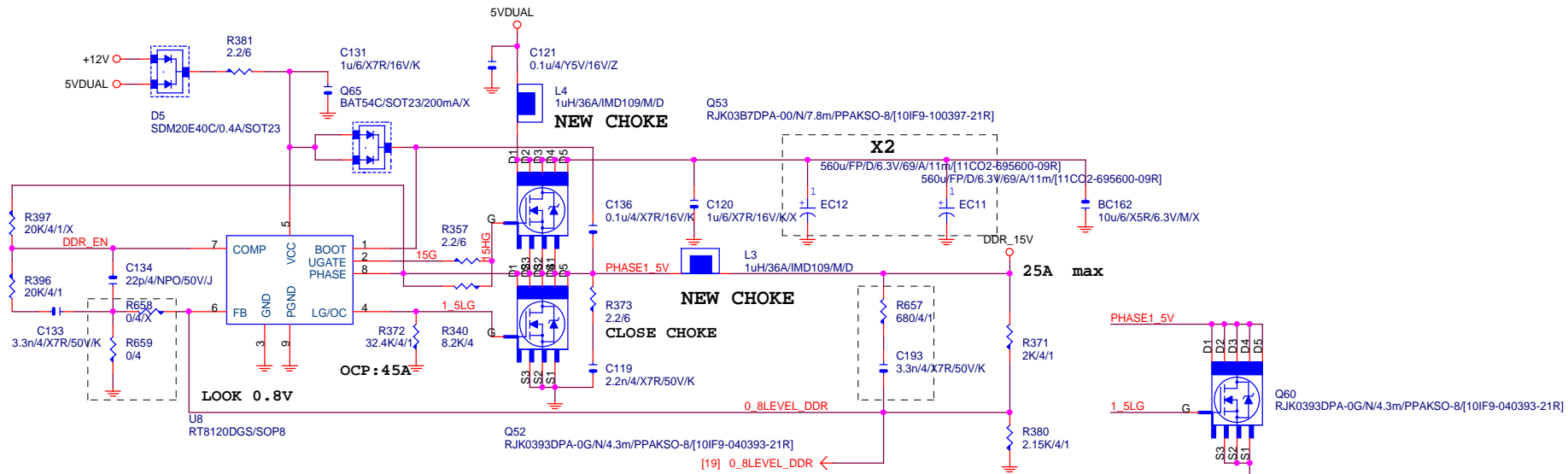


CLOSE PWR

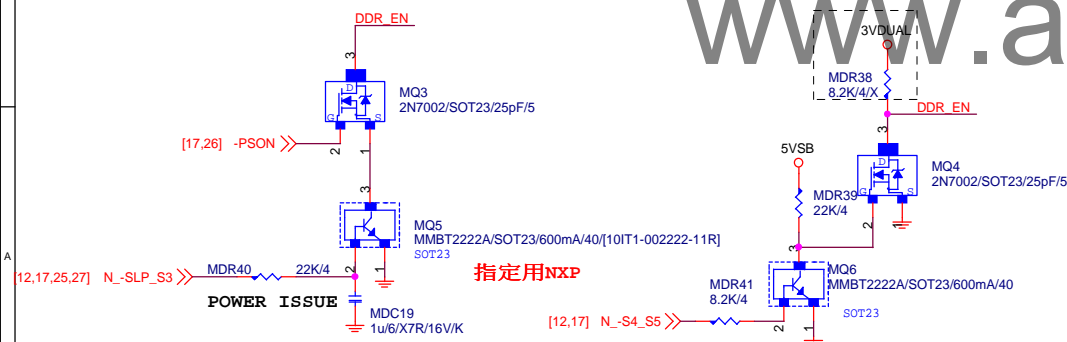


Gigabyte Technology			
Title			
CPU CORE VR-2			
Size	Document Number	GA-B85M-HD3G	
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Date:	Thursday, June 13, 2013	Sheet	28 of 32

# DDR1.5V



# 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

$Rocset = (I_{ocp} * L_{gate, rdson}) / I_{ocset}$   
 $Rocset = (45A * 6.7m\Omega) / 10uA = 30K$   
 $I_{ocset} = 10uA$

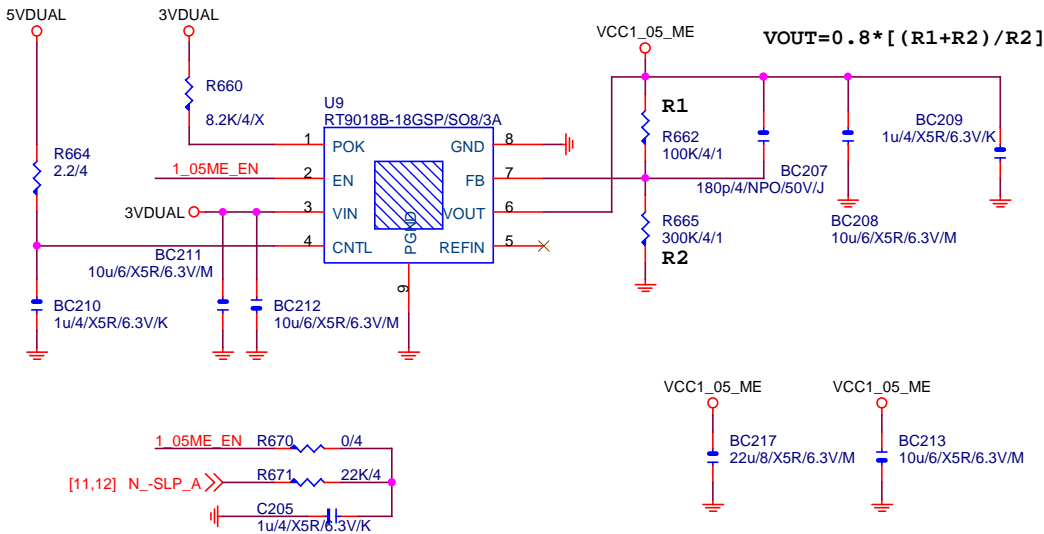
Gigabyte Technology

Title		
DDR POWER		
Size	Document Number	Rev
Custom	GA-B85M-HD3G	1.0
Date: Thursday, June 13, 2013		Sheet 29 of 32

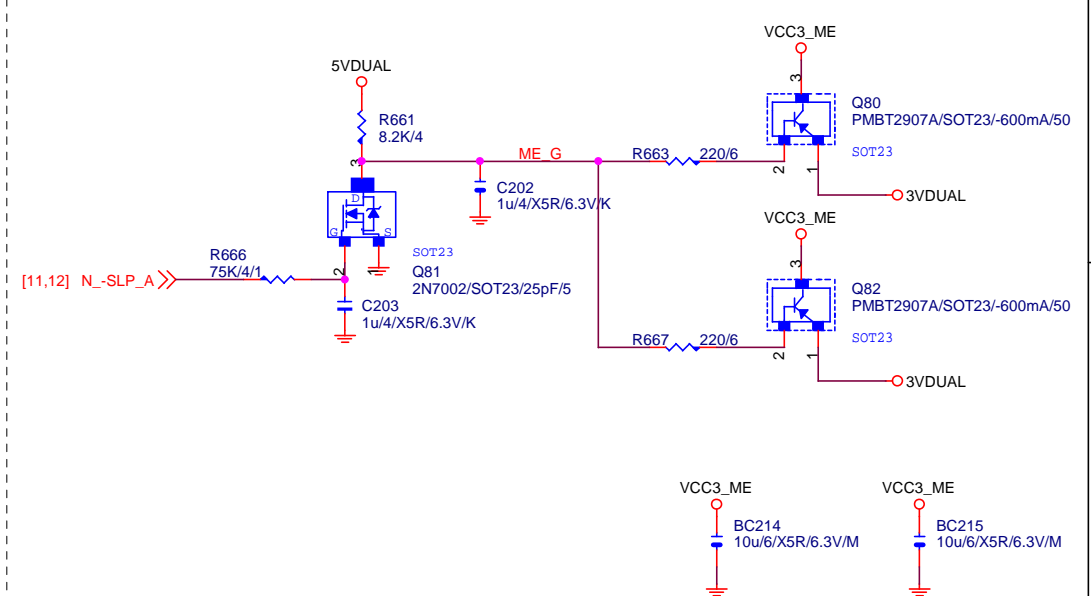
VCC1\_05\_ME

## 【技術通報R&amp;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

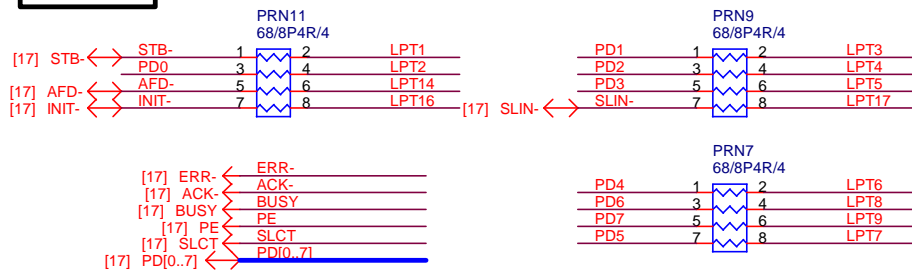


VCC3\_ME



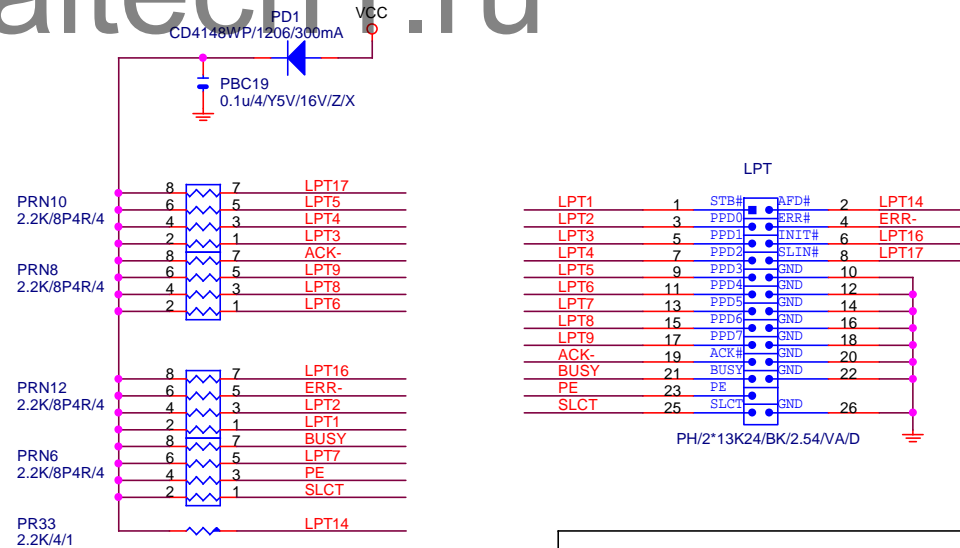
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## LPT PORT



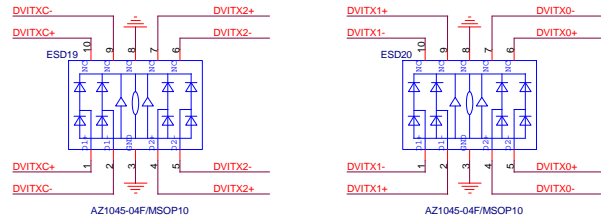
## 【技術通報R&amp;D技術通報151】

33ohm Change to 68ohm

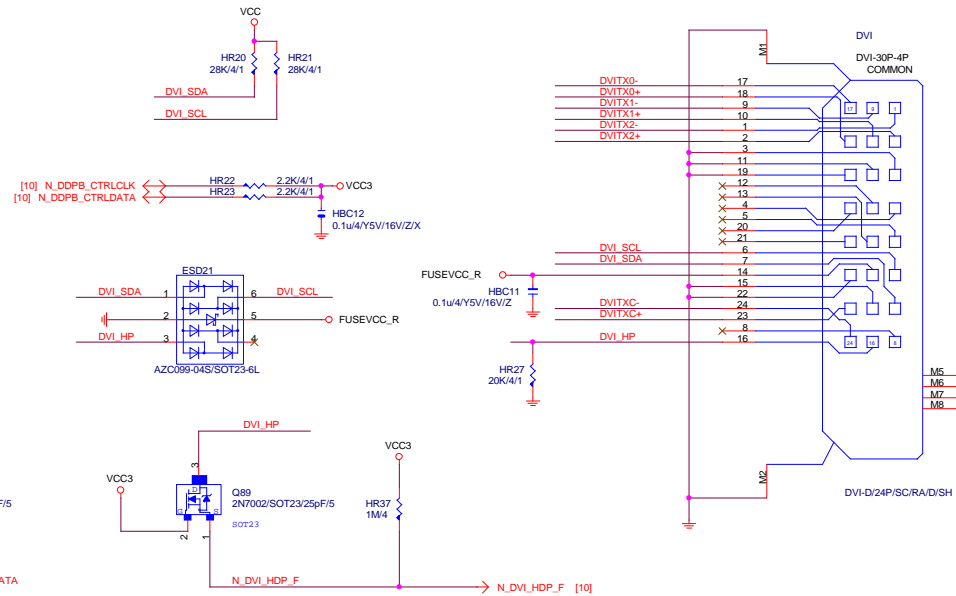


Gigabyte Technology

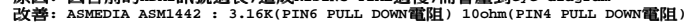
Title			
LPT			
Size Custom	Document Number	GA-B85M-HD3G	
Date:	Thursday, June 13, 2013	Sheet	30 of 32
		Rev	1.0



Close to connector



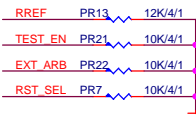
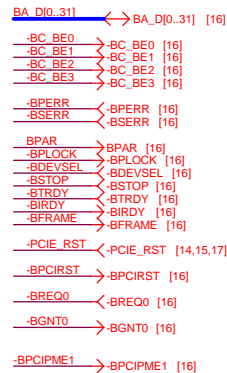
HDMI LEVEL SHIFT



# PCIE TO PCI

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

IT8892: PR24 -> 47ohm  
IT8893: PR24 -> 22ohm



[10] G\_PBCLK<  
[10] G\_PBCLK<



PBC63 10p/4/NPO/50V/J/X  
PBC64 10p/4/NPO/50V/J/X

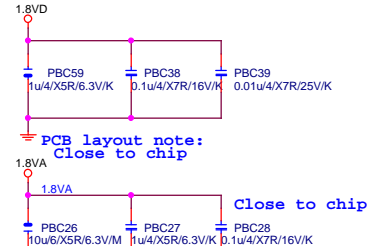
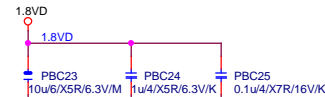
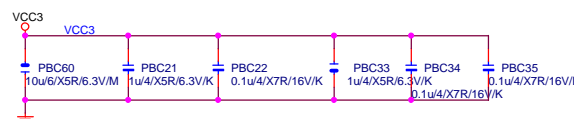
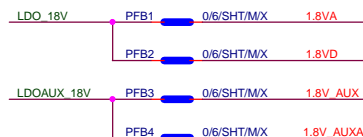
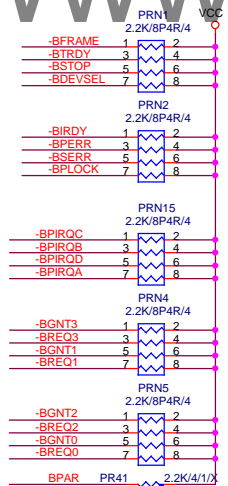
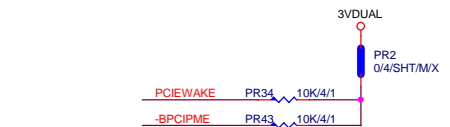
High: Enable PCI CLK 66MHz  
Low: Disable PCI CLK 66MHz

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

IT8892  
-BPIROA 1 2  
-BPIROB 3 4  
-BPIROC 5 6  
-BPIROD 7 8

PCI slot

PCI slot  
-BPCIPME1 PR27 0/4/SHT/M/X N\_PCIE\_WAKE [12,14,15]  
chipset side



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