

Model Name: GA-B85M-HD3

Revision 1.0

SHEET

TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1150-A
05	CPU_LGA1150-B
06	CPU_LGA1150-C
07	DDR III CHANNEL A
08	DDR III CHANNEL B
09	PCH_FDI,DMI,USB,PCIE,NVRAM
10	PCH_DP,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCI EXPRESS*16 SLOT
15	PCI EXPRESS X1 *2 SLOT
16	PCI SLOT
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	REALTEK RTL8111F
25	DISCRETE POWER
26	ATX , CLOCK GEN
27	VCORE ISL95820_1

SHEET

TITLE

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

**Gigabyte Technology**

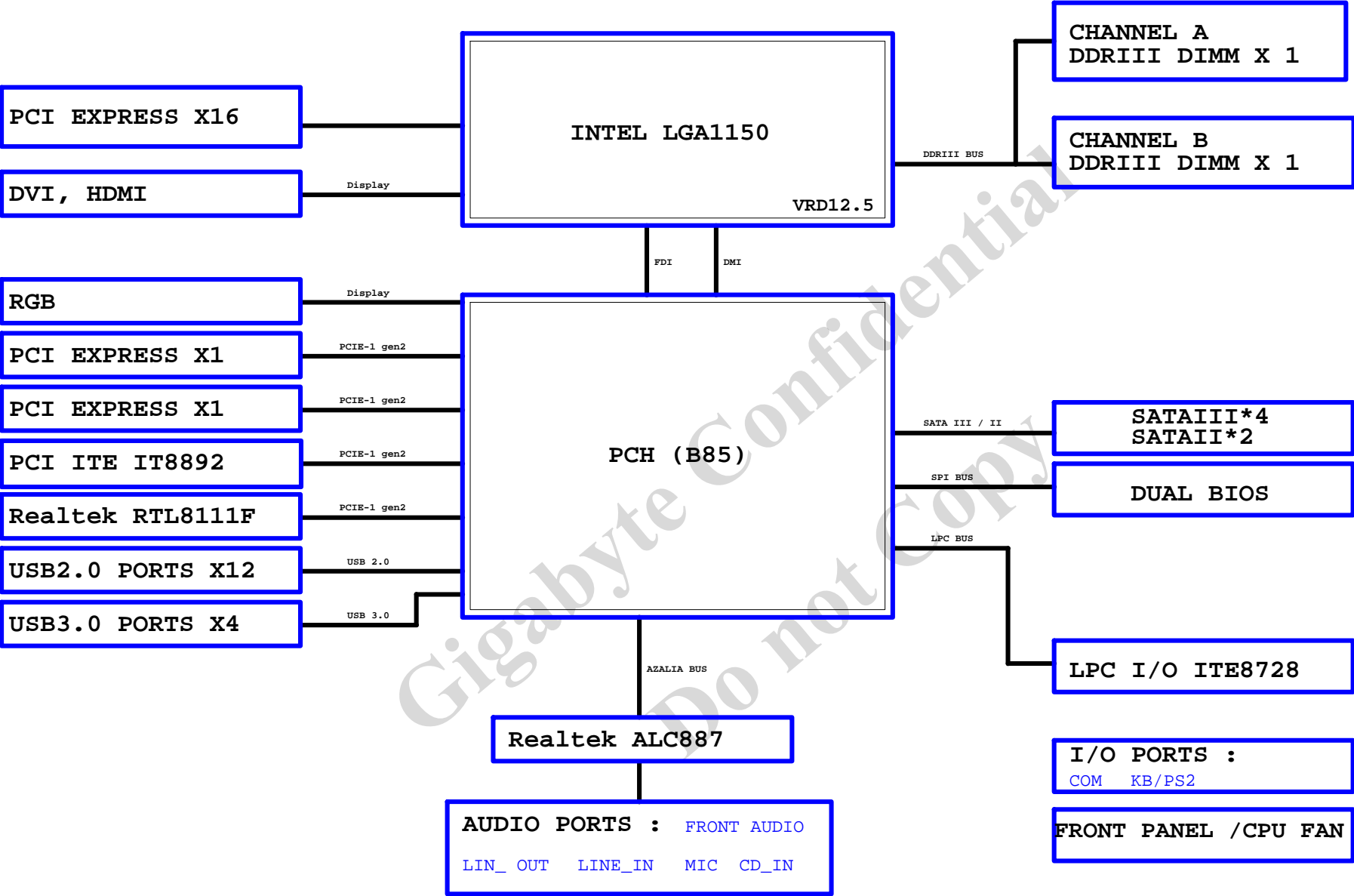
Title Cover Sheet		
Size Custom	Document Number <b>GA-B85M-HD3</b>	Rev <b>1.0</b>
Date: Monday, April 08, 2013	Sheet 1	of 32

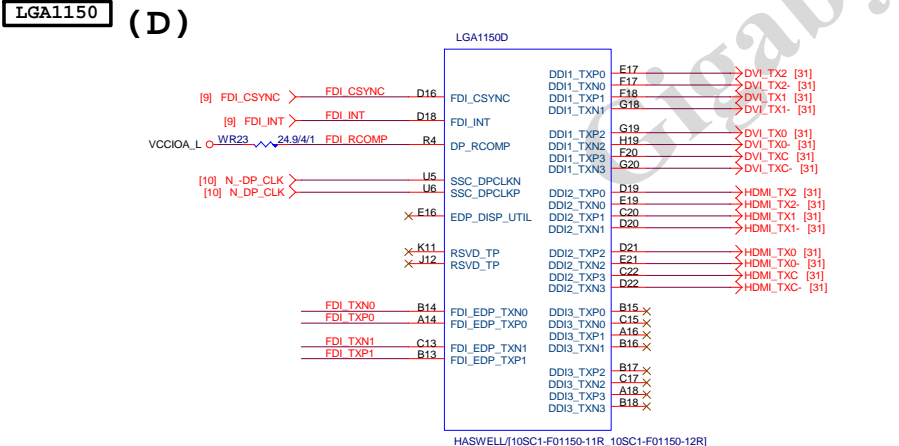
Revision 1.0

## Component value change history

[illegible][illegible]

BLOCK DIAGRAM

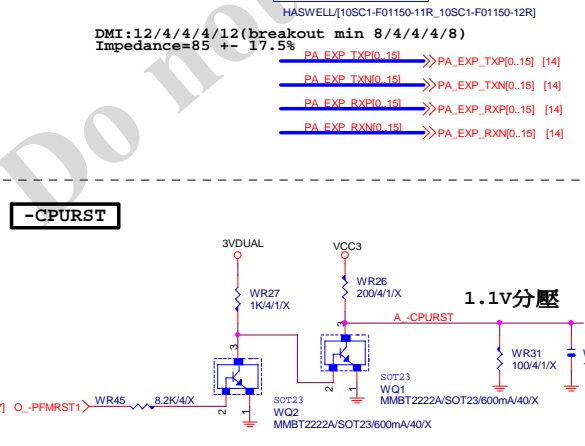




```

FDI_TXP[0..1]  >> FDI_TXP[0..1] [9]
FDI_TXN[0..1]  >> FDI_TXN[0..1] [9]

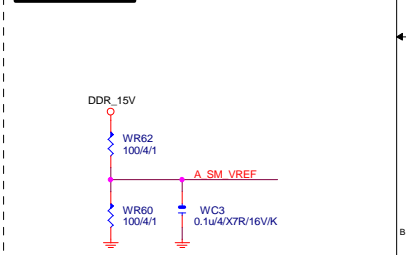
```



5%

PA_EXP_TXP[0..15]	>>PA_EXP_TXP[0..15]	[14]
PA_EXP_TXN[0..15]	>>PA_EXP_TXN[0..15]	[14]
PA_EXP_RXP[0..15]	>>PA_EXP_RXP[0..15]	[14]
PA_EXP_RXN[0..15]	>>PA_EXP_RXN[0..15]	[14]

## SM REF



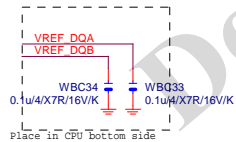
## LGA1150 (A)

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	AW18	DDR0_MA5	DDR0_D05	AD40	MDA5
MAAA5	AW17	DDR0_MA6	DDR0_D06	AE37	MDA6
MAAA6	AT18	DDR0_MA7	DDR0_D07	AF40	MDA7
MAAA7	AU18	DDR0_MA8	DDR0_D08	AH40	MDA9
MAAA8	AT19	DDR0_MA9	DDR0_D09	AH39	MDA10
MAAA9	AW11	DDR0_MA10	DDR0_D10	AK38	MDA10
MAAA10	AW19	DDR0_MA11	DDR0_D11	AK39	MDA11
MAAA11	AU19	DDR0_MA12	DDR0_D12	AH37	MDA12
MAAA12	AY10	DDR0_MA13	DDR0_D13	AH38	MDA12
MAAA13	AT20	DDR0_MA14	DDR0_D14	AK37	MDA14
MAAA14	AU21	DDR0_MA15	DDR0_D15	AK40	MDA15
MAAA15		DDR0_MA16	DDR0_D16	AM40	MDA17
MODT_A0	AW10	DDR0_ODT0	DDR0_D17	AM39	MDA21
MODT_A1	AY8	DDR0_ODT1	DDR0_D18	AP38	MDA18
AW9		DDR0_ODT2	DDR0_D19	AP39	MDA19
AW8		DDR0_ODT3	DDR0_D20	AM37	MDA20
			DDR0_D21	AM38	MDA16
			DDR0_D22	AP37	MDA22
			DDR0_D23	AP40	MDA23
AW33		DDR0_ECC0	DDR0_D24	AW37	MDA28
AW33		DDR0_ECC1	DDR0_D25	AU35	MDA26
AU31		DDR0_ECC2	DDR0_D26	AU35	MDA27
AU31		DDR0_ECC3	DDR0_D27	AT37	MDA28
AU33		DDR0_ECC4	DDR0_D28	AU37	MDA24
AT33		DDR0_ECC5	DDR0_D29	AT35	MDA30
AW31		DDR0_ECC6	DDR0_D30	AW35	MDA31
AW31		DDR0_ECC7	DDR0_D31	AY6	MDA33
			DDR0_D32	AU6	MDA37
[7] SBAA0	SBAA0	DDR0_BA0	DDR0_D33	AW4	MDA34
[7] SBAA1	SBAA1	DDR0_BA1	DDR0_D34	AW6	MDA35
[7] SBAA2	SBAA2	DDR0_BA2	DDR0_D35	AW6	MDA32
			DDR0_D36	AW4	MDA38
[7] CKEA0	CKEA0	DDR0_CKE0	DDR0_D37	AW4	MDA39
[7] CKEA1	CKEA1	DDR0_CKE1	DDR0_D38	AR1	MDA41
			DDR0_D39	AR4	MDA45
[7] -CSA0	-CSA0	DDR0_CS_N0	DDR0_D40	AN3	MDA42
[7] -CSA1	-CSA1	DDR0_CS_N1	DDR0_D41	AN4	MDA43
			DDR0_D42	AR2	MDA44
			DDR0_D43	AR3	MDA40
[7] DCLKA0	DCLKA0	DDR0_CLK_P0	DDR0_D44	AN2	MDA46
[7] -DCLKA0	-DCLKA0	DDR0_CLK_N0	DDR0_D45	AN1	MDA47
[7] DCLKA1	DCLKA1	DDR0_CLK_P1	DDR0_D46	AL1	MDA49
[7] -DCLKA1	-DCLKA1	DDR0_CLK_N1	DDR0_D47	AL4	MDA53
			DDR0_D48	AJ3	MDA50
			DDR0_D49	AJ4	MDA51
			DDR0_D50	AL2	MDA52
			DDR0_D51	AJ2	MDA48
			DDR0_D52	AJ2	MDA54
			DDR0_D53	AJ1	MDA55
			DDR0_D54	AG1	MDA57
			DDR0_D55	AG4	MDA61
			DDR0_D56	AE3	MDA58
			DDR0_D57	AE4	MDA59
			DDR0_D58	AG2	MDA60
			DDR0_D59	AG3	MDA56
			DDR0_D60	AE2	MDA62
			DDR0_D61	AE1	MDA63
[7] -SRASA	-SRASA	DDR0_RAS*	DDR0_D62	AE39	DQSA0
[7] -SWEA	-SWEA	DDR0_WE*	DDR0_D63	AJ39	DQSA1
			DDR0_D64	AN39	DQSA2
			DDR0_D65	AV36	DQSA3
			DDR0_D66	AV5	DQSA4
			DDR0_D67	AP3	DQSA5
			DDR0_D68	AK3	DQSA6
			DDR0_D69	AF3	DQSA7
			DDR0_D70	AV32	DQSA7
			DDR0_D71	AE38	DQSA0
			DDR0_D72	AJ38	DQSA1
			DDR0_D73	AN38	DQSA2
			DDR0_D74	AJ36	DQSA3
			DDR0_D75	AW5	DQSA4
			DDR0_D76	AP2	DQSA5
			DDR0_D77	AK2	DQSA6
			DDR0_D78	AF2	DQSA7
			DDR0_D79	AJ32	

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

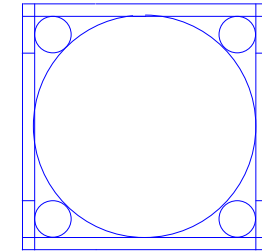
## LGA1150 (B)

LGA1150B		DDR1_MA0	AE34	MD80
MAAB0	AL19	DDR1_MA1	AE35	MD81
MAAB1	AK23	DDR1_MA2	AG35	MD82
MAAB2	AM22	DDR1_MA3	AH35	MD83
MAAB3	AM23	DDR1_MA4	AD34	MD84
MAAB4	AP23	DDR1_MA5	AD35	MD85
MAAB5	AL23	DDR1_MA6	AG34	MD86
MAAB6	AY24	DDR1_MA7	AH34	MD87
MAAB7	AY25	DDR1_MA8	AL34	MD88
MAAB8	AU26	DDR1_MA9	AL35	MD89
MAAB9	AW25	DDR1_MA10	AK31	MD810
MAAB10	AP18	DDR1_MA11	AL31	MD811
MAAB11	AY25	DDR1_MA12	AK34	MD812
MAAB12	AY26	DDR1_MA13	AK35	MD813
MAAB13	AR15	DDR1_MA14	AK32	MD814
MAAB14	AV27	DDR1_MA15	AL32	MD815
MAAB15	AY28	DDR1_MA16	AL34	MD817
MODT_B0	AM17	DDR1_ODT0	AP34	MD821
MODT_B1	AL16	DDR1_ODT1	AN31	MD819
AM16		DDR1_ODT2	AP31	MD823
AK15		DDR1_ODT3	AP35	MD820
			AP35	MD816
			AN32	MD818
AM26	DDR1_ECC0		AP32	MD822
AM25	DDR1_ECC1		AM29	MD825
AP25	DDR1_ECC2		AM28	MD828
AL26	DDR1_ECC3		AR29	MD827
AL25	DDR1_ECC4		AR28	MD830
AR26	DDR1_ECC5		AL23	MD824
AR26	DDR1_ECC6		AL28	MD829
AR26	DDR1_ECC7		AP29	MD826
			AP28	MD831
[8] SBAB0	SBAB0	DDR1_BA0	AR12	MD832
[8] SBAB1	SBAB1	DDR1_BA1	DR12	MD833
[8] SBAB2	SBAB2	DDR1_BA2	AL13	MD834
			AL12	MD835
[8] CKEB0	CKEB0	DDR1_CKE0	AR13	MD836
[8] CKEB1	CKEB1	DDR1_CKE1	AP13	MD837
			AM13	MD838
			AM12	MD839
			AR9	MD845
[8] -CSB0	-CSB0	DDR1_CS_N0	AP9	MD841
[8] -CSB1	-CSB1	DDR1_CS_N1	AR6	MD847
		DDR1_CS_N2	AP6	MD843
		DDR1_CS_N3	AR10	MD844
			AR7	MD846
			AP7	MD842
			AM9	MD852
[8] DCLKB0	DCLKB0	DDR1_CLK_P0	AL9	MD853
[8] -DCLKB0	-DCLKB0	DDR1_CLK_N0	AL6	MD850
[8] DCLKB1	DCLKB1	DDR1_CLK_P1	AL7	MD855
[8] -DCLKB1	-DCLKB1	DDR1_CLK_N1	AM10	MD848
			AL10	MD849
			AM6	MD854
			AM7	MD851
			AH6	MD861
			AH7	MD860
			AE6	MD859
[8] -SCASB	-SCASB	DDR1_CAS*	AE7	MD863
			AJ6	MD856
[8] -SRASB	-SRASB	DDR1_RAS*	AJ7	MD857
[8] -SWEB	-SWEB	DDR1_WE*	AG6	MD858
			AF7	MD862
[7] VREF_DOA	VREF DOA	DDR_VREF_DO0	AF35	DQSB0
[8] VREF_DOB	VREF DOB	DDR_VREF_DO1	AL33	DQSB1
			AP33	DQSB2
			AN28	DQSB3
			AN12	DQSB4
			AP8	DQSB5
			AL8	DQSB6
			AG7	DQSB7
			AN25	
			AF34	-DQSB0
			AK33	-DQSB1
			AN33	-DQSB2
			AN29	-DQSB3
			AL13	-DQSB4
			AR8	-DQSB5
			AM8	-DQSB6
			AG6	-DQSB7
			AN26	



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

## LGA1150 (CR)

CR  
CPU RETAINTION/X

LGA1150\_P



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

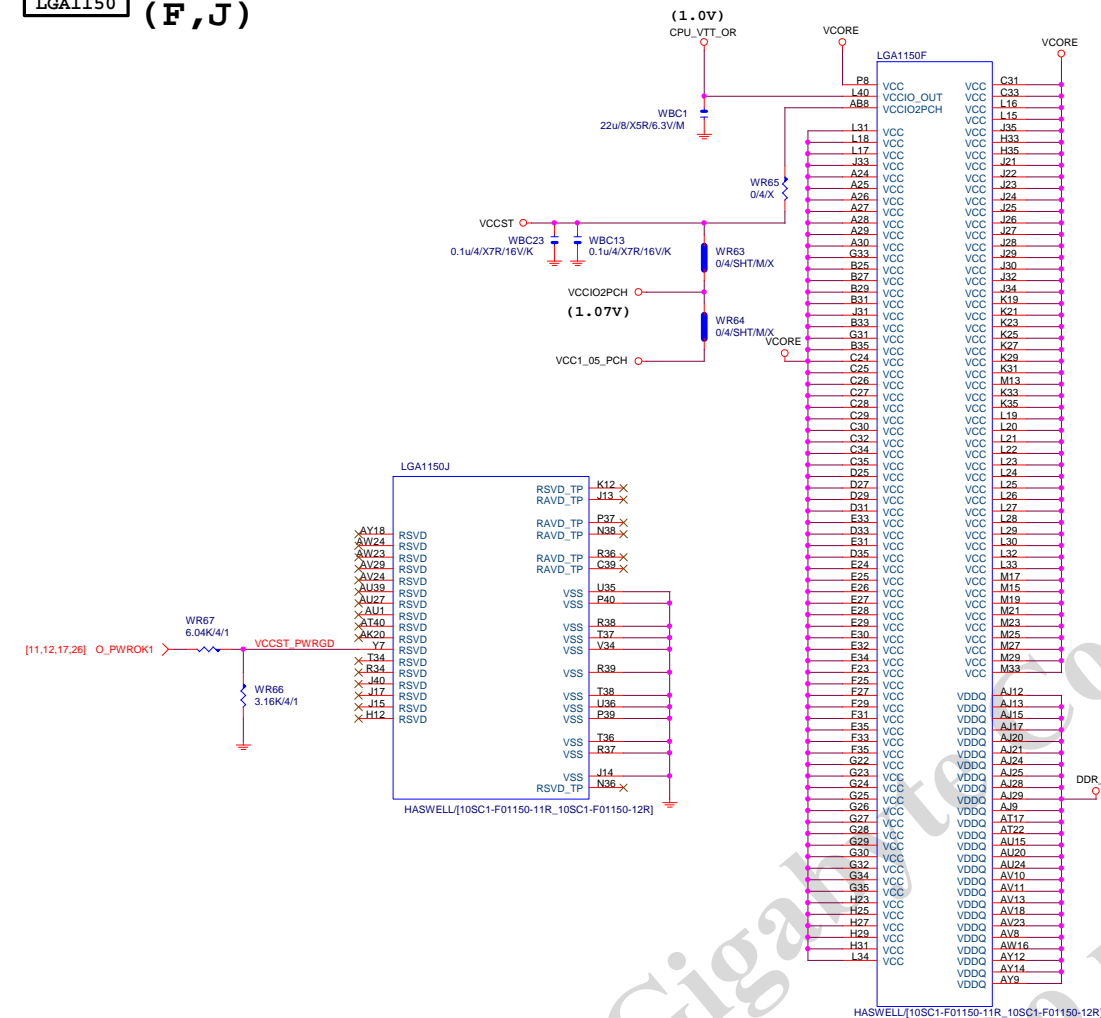
DDR BUS

[7] MODT_A[0..1]	MODT_A0..1
[8] MODT_B[0..1]	MODT_B0..1
[7] MDA[0..63]	MDA0..63
[8] MDB[0..63]	MDB0..63
[7] DQSA[0..7]	DQSA0..7
[7] -DQSA[0..7]	-DQSA0..7
[7] MAA[0..15]	MAA0..15
[8] MAB[0..15]	MAB0..15
[8] DQSB[0..7]	DQSB0..7
[8] -DQSB[0..7]	-DQSB0..7

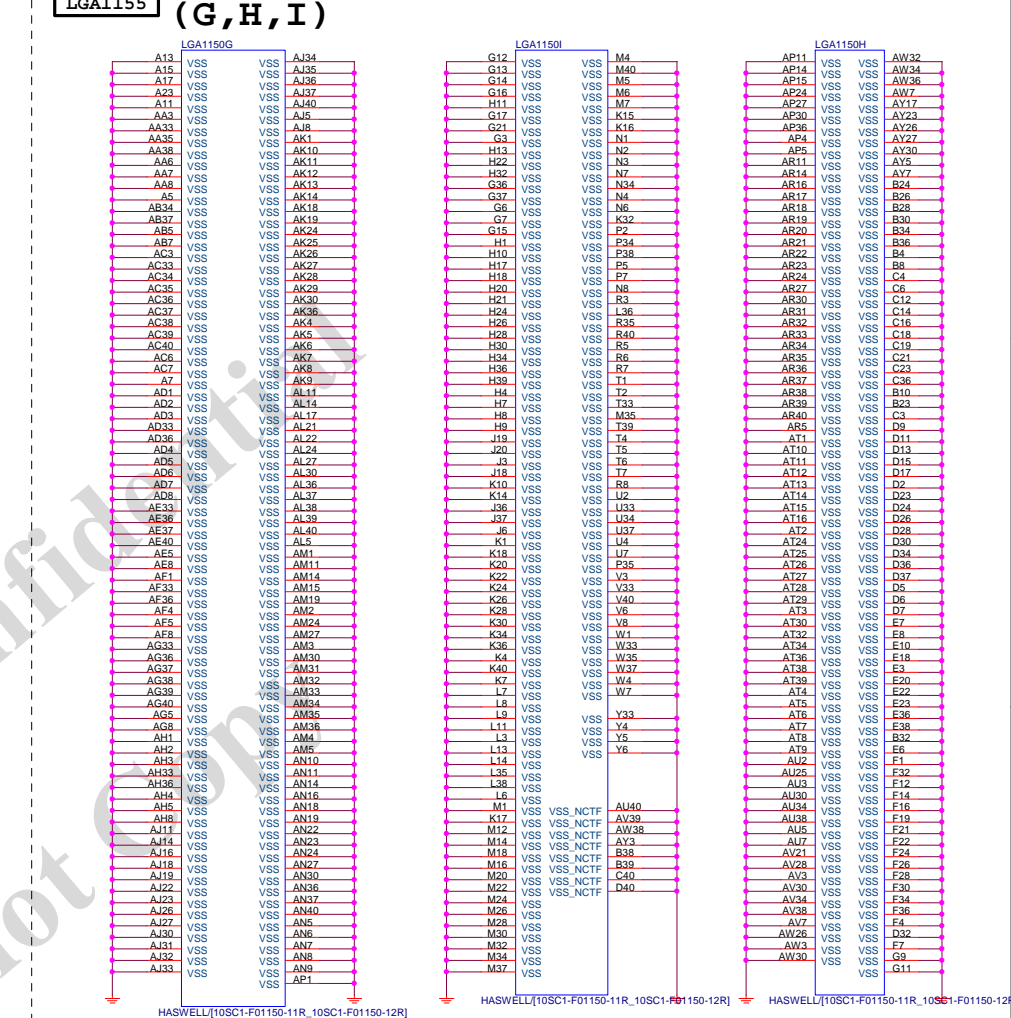
Gigabyte Technology

Title			
CPU LGA1150-B			
Size			
Custom			
Document Number			
GA-B85M-HD3			
Date:			
Monday, April 08, 2013			
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Rev			
1.0			

# LGA1150 (F,J)

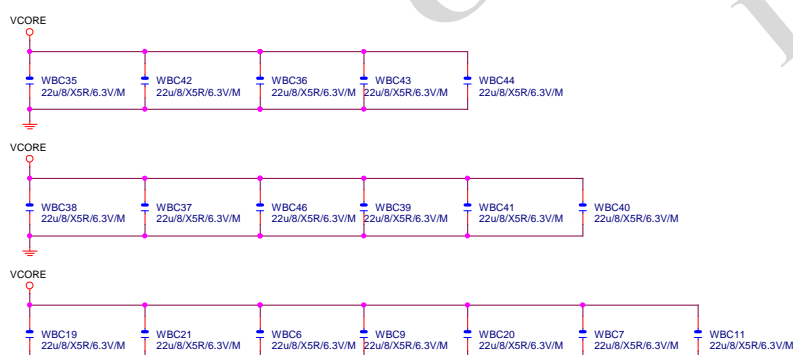


# LGA1155 (G,H,I)



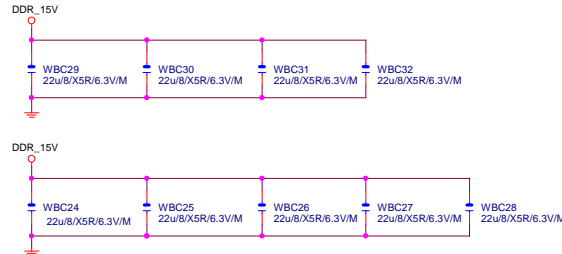
## VCore CAP

(X18)



## DDR CAP

(X9)



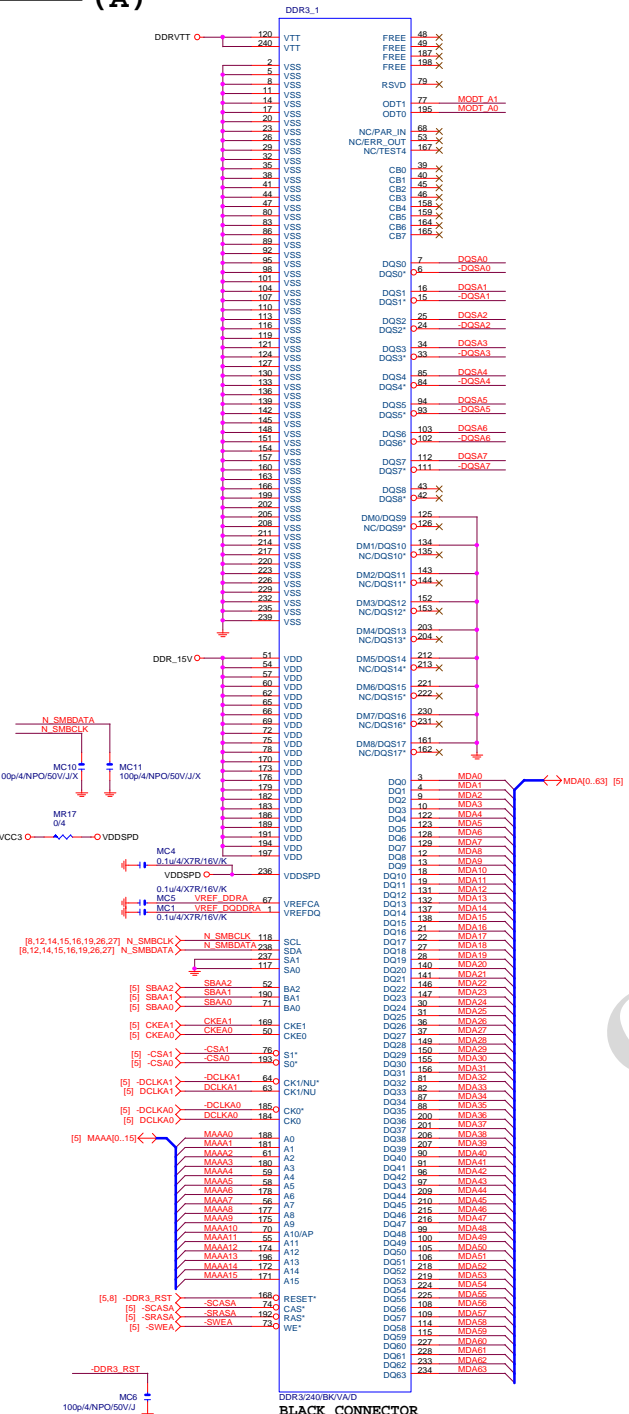
Gigabyte Technology

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Size	Document Number	GA-B85M-HD3	
Date:	Monday, April 08, 2013	Sheet	6 of 32

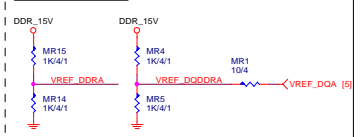
Rev 1.0

DDR3

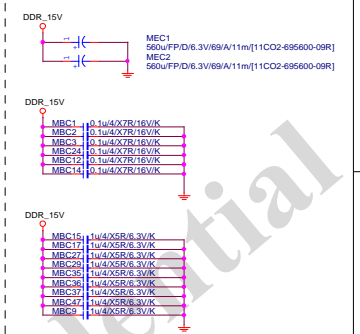
(A)



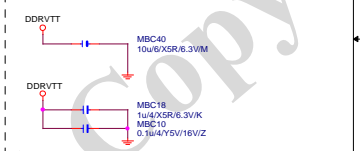
DDR3 VREF



DDR15V Decouple



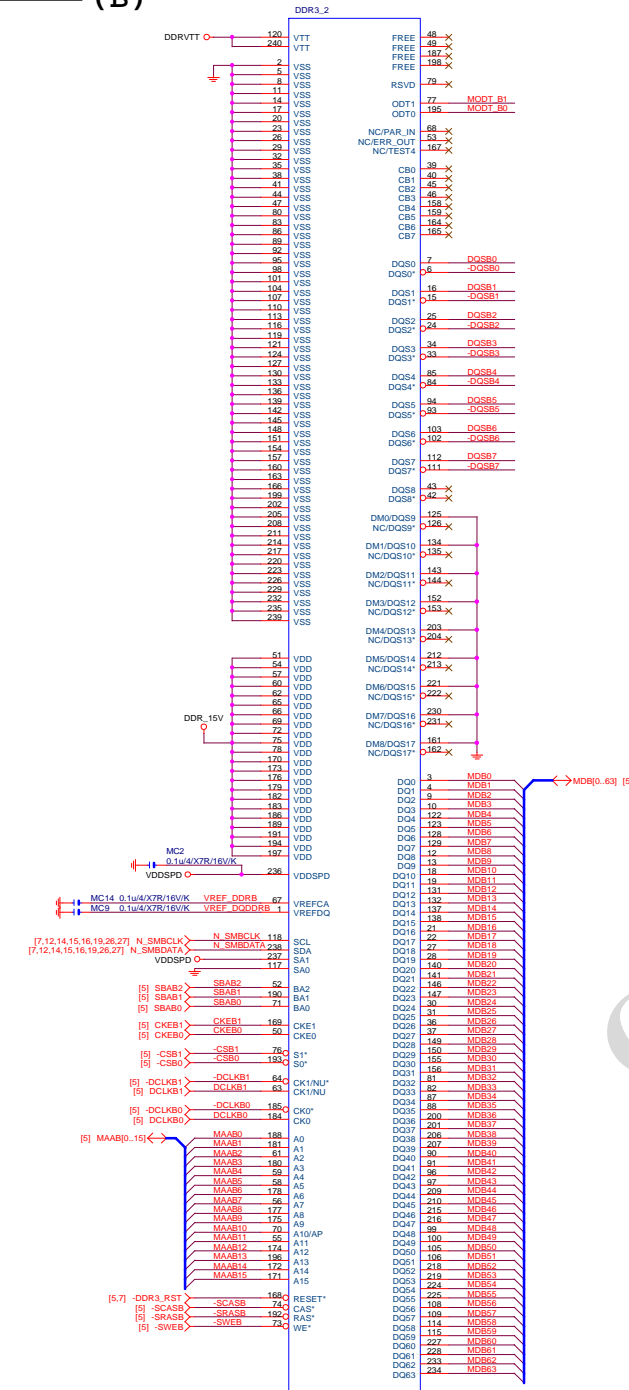
DDRVTT Decouple



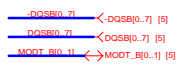


DDR3

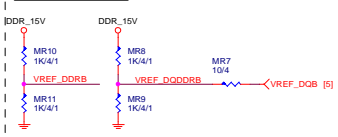
(B)



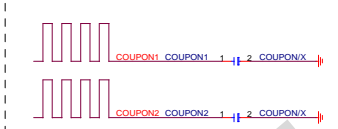
DDR3/240/BK/VA/D  
BLACK CONNECTOR



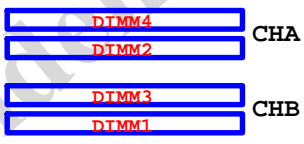
DDR3 VREF



COUPON



CPU





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

VCC1\_5\_PCH  NR50  7.5K/4/1 DMI\_COMP\_B  
PCIE\_COMP\_B

```

8111G [ [24] LA_ML_IN [
        [24] LA_ML_IP [
        [24] LA_ML_ON [
        [24] LA_ML_OP [
        [32] G_PCIEBIN [
        [32] G_PCIEBP [
        [32] G_PCIEBON [
        [32] G_PCIEBOP [
        [15] PI_PCIEX1_IN [
        [15] PI_PCIEX1_IP [
        [15] PI_PCIEX1_ON [
        [15] PI_PCIEX1_OP [
        [15] PJ_PCIEX1_IN [
        [15] PJ_PCIEX1_IP [
        [15] PJ_PCIEX1_ON [
        [15] PJ_PCIEX1_OP [
PCIEx1 [

```

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

```

- - - - PCIEX1:16/5/5/5/16 (breakout min)

```

PCHB

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

USBN_8	AW16	N -USBP8	N_-USBP8 [21]
USBP_8	AV16	N +USBP8	N_+USBP8 [21]
	AN16	N -ISBP9	

PCIE

PCIE	OC2B	OC3B	OC4B	OC5B	OC6B	OC7B	AD39	AD40	AF39	AC41	AG40
PERN_3	GP41	GP42	GP43	GP9	GP10	GP14					
PERP_3											
PETN_3											
PETP_3											
PERN_4											
PERP_4											

W=4 mil out of PC  
S=15 mil out of I

PCIE\_PERN\_6  
PCIE\_PERP\_6  
PCIE\_PETN\_6  
PCIE\_PETP\_6  
PCIE\_PERN\_7  
PCIE\_PERP\_7  
PCIE\_PETN\_7  
PCIE\_PETP\_7  
PCIE\_PERN\_8  
PCIE\_PERP\_8  
PCIE\_PETN\_8  
PCIE\_PETP\_8

N GPIO14 NR130 8.2K $\Omega$  3VDUAL

N-USBOC\_F NBC82 0.1u/4X7R/16V/K

N-USBOC\_R NBC83 0.1u/4X7R/16V/K

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

/4/4/4/8) -----

PCHF	
USB3	FDILINK

VCC3 NR62 8.2K/4 AK28 TACH6 GR70

USB3.0:20/5/7/5/  
8/4/4/4/8) : ONL

Impedance=85 +/-  
Back Panel < 100  
Front Panel < 60

CK SRCCIK PCH NR89 8.2K/4

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## LOW COST ICH7 HEATSINK




Diagram illustrating a T-junction configuration. A blue line labeled "PCH HS" is connected to a brown line labeled "GRAY HS". A brown "X2" label is positioned near the junction.

PCH\_HS[12SP2-030005-43R\_12SP2-030005-41R\_12SP2-030005-42R]

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

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

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

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# Gigabyte Technology

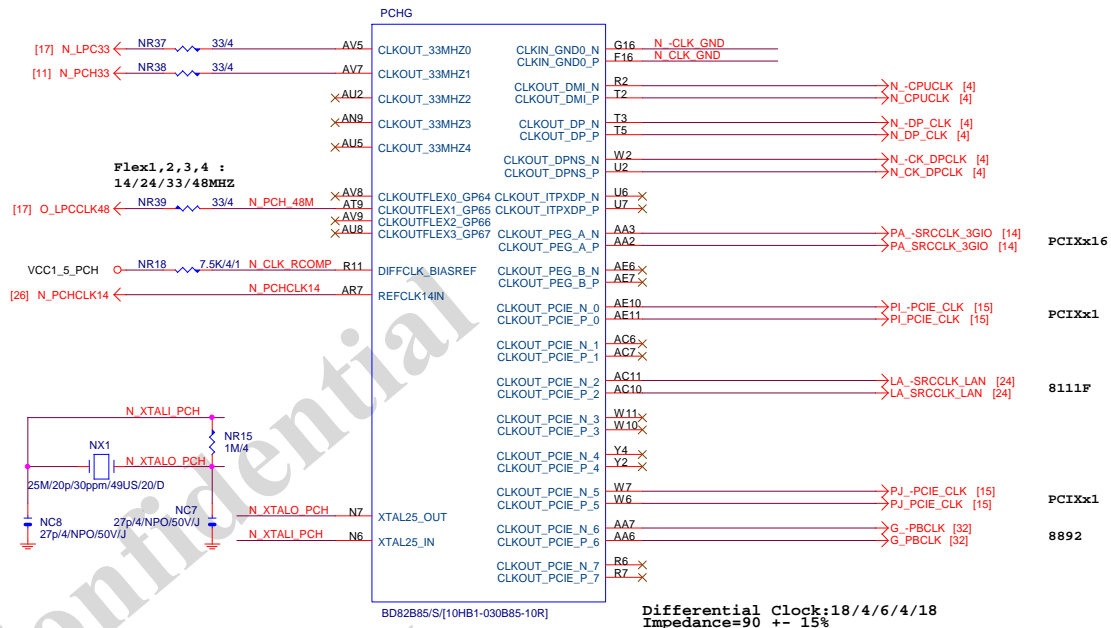
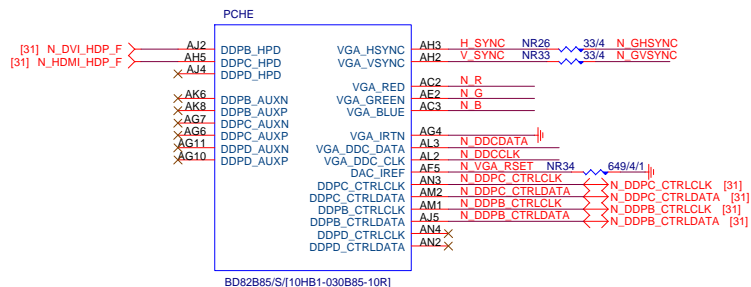
File	PCH FDI,DMI,USB ,PCIE,NVRAM
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Size	Document Number	Rev
Custom	<b>GA-B85M-HD3</b>	1.0

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# PCH (E)

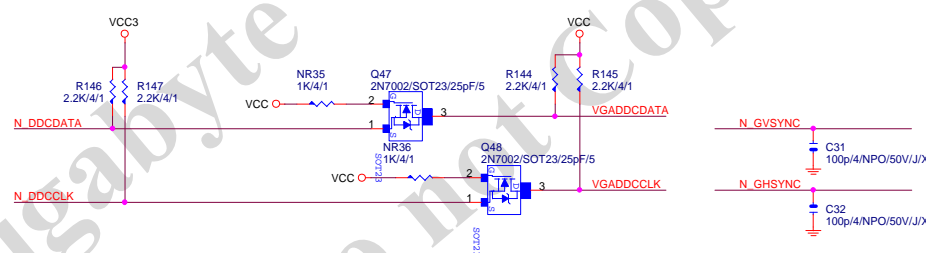
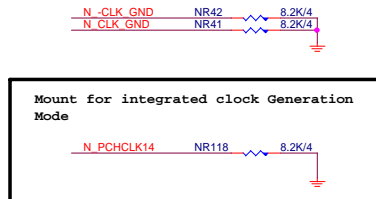
# PCH (G)



## PCH CLK PD

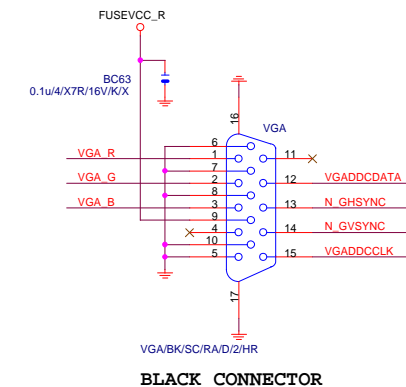
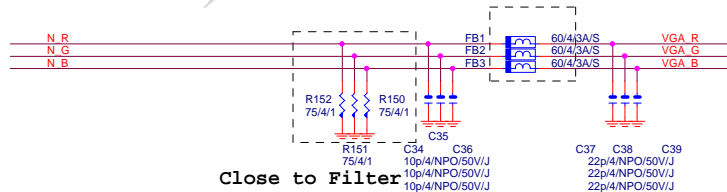
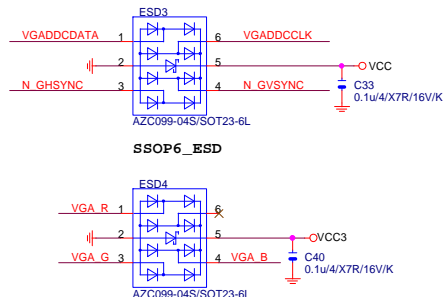
## VGA DDC

## VGA CONNECTOR



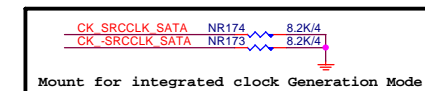
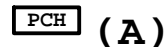
## VGA ESD

## VGA DDC

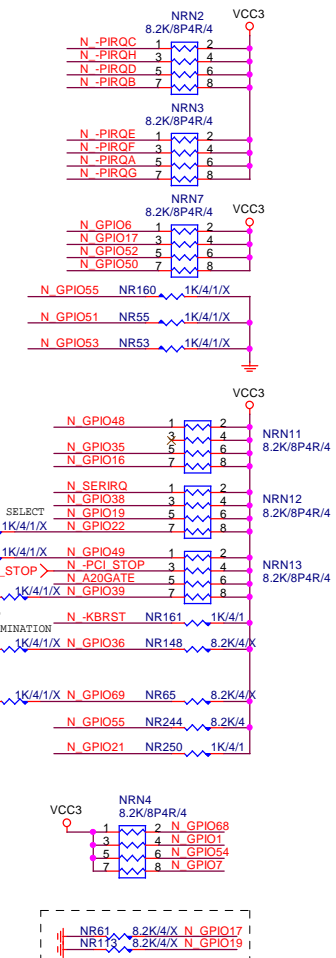


Gigabyte Technology			
PCH DISPLAY_CLK BUFFER			
GA-B85M-HD3			
Size	Document Number	Rev	
Custom		1.0	
Date:	Monday, April 08, 2013	Sheet	10 of 32

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



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



**SATA3\_0**  
SATA2/7/WH/HOP/VA/D/1/B/PA66  
**WHITE CONNECTOR**

N SATA0TXP	0.01u4/X7R/25V/K	NC24	N SATA0TXPC
N SATA0TXN	0.01u4/X7R/25V/K	NC43	N SATA0TXNC
N SATA0RXN	0.01u4/X7R/25V/K	NC38	N SATA0RXNC
N SATA0RXP	0.01u4/X7R/25V/K	NC37	N SATA0RXP

**SATA3\_1**  
SATA2/7/WH/HOP/VA/D/1/B/PA66  
**WHITE CONNECTOR**

N SATA1TXP	0.01u4/X7R/25V/K	NC42	N SATA1TXPC
N SATA1TXN	0.01u4/X7R/25V/K	NC41	N SATA1TXNC
N SATA1RXN	0.01u4/X7R/25V/K	NC40	N SATA1RXNC
N SATA1RXP	0.01u4/X7R/25V/K	NC39	N SATA1RXP

**SATA3\_2**  
SATA2/7/WH/HOP/VA/D/1/B/PA66  
**WHITE CONNECTOR**

N SATA2TXP	0.01u4/X7R/25V/K	NC36	N SATA2TXPC
N SATA2TXN	0.01u4/X7R/25V/K	NC35	N SATA2TXNC
N SATA2RXN	0.01u4/X7R/25V/K	NC30	N SATA2RXNC
N SATA2RXP	0.01u4/X7R/25V/K	NC29	N SATA2RXP

**SATA3\_3**  
SATA2/7/WH/HOP/VA/D/1/B/PA66  
**WHITE CONNECTOR**

N SATA3TXP	0.01u4/X7R/25V/K	NC34	N SATA3TXPC
N SATA3TXN	0.01u4/X7R/25V/K	NC33	N SATA3TXNC
N SATA3RXN	0.01u4/X7R/25V/K	NC32	N SATA3RXNC
N SATA3RXP	0.01u4/X7R/25V/K	NC31	N SATA3RXP

**SATA2\_4**  
SATA2/7/BK/H/OP/VA/D/1/B  
**BLACK CONNECTOR**

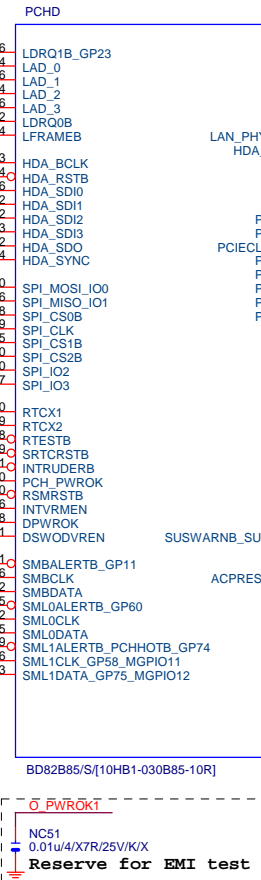
N SATA4TXP	0.01u4/X7R/25V/K	NC45	N SATA4TXPC
N SATA4TXN	0.01u4/X7R/25V/K	NC46	N SATA4TXNC
N SATA4RXN	0.01u4/X7R/25V/K	NC47	N SATA4RXNC
N SATA4RXP	0.01u4/X7R/25V/K	NC48	N SATA4RXP

**SATA2\_5**  
SATA2/7/BK/H/OP/VA/D/1/B  
**BLACK CONNECTOR**

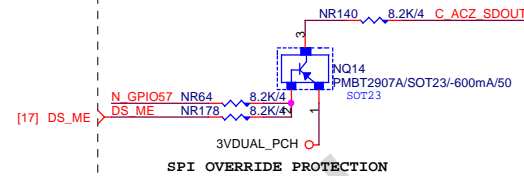
N SATA5TXP	0.01u4/X7R/25V/K	NC57	N SATA5TXPC
N SATA5TXN	0.01u4/X7R/25V/K	NC56	N SATA5TXNC
N SATA5RXN	0.01u4/X7R/25V/K	NC55	N SATA5RXNC
N SATA5RXP	0.01u4/X7R/25V/K	NC54	N SATA5RXP

[illegible]

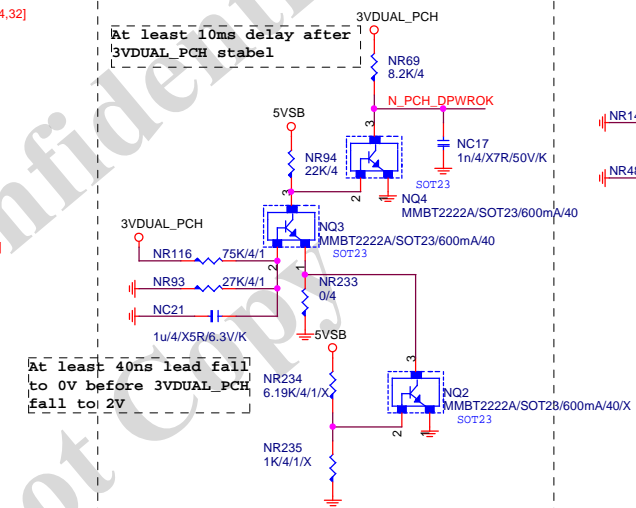
(D)



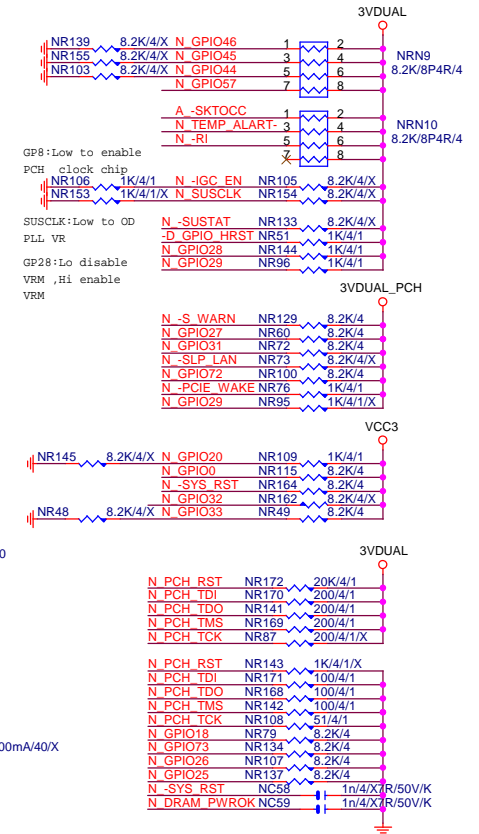
## ACZ\_SDOUT



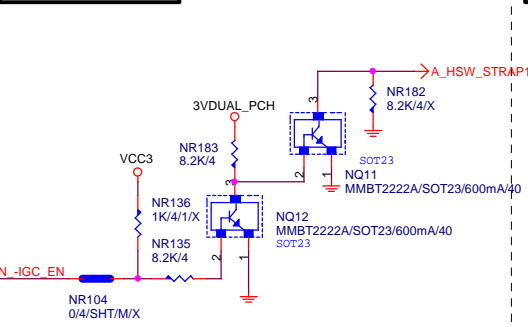
## PCH\_DPWROK



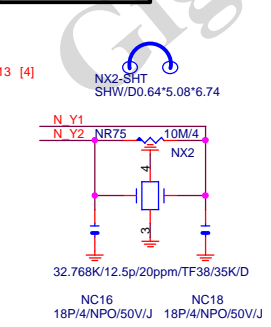
PCH	PU/PD
-----	-------



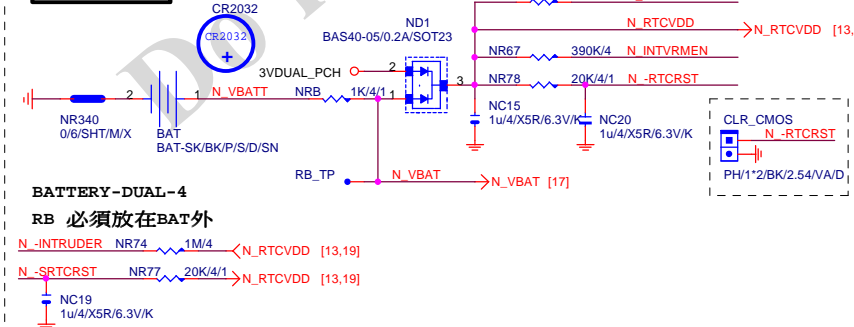
## HSW\_STRAP13



32.768KHZ



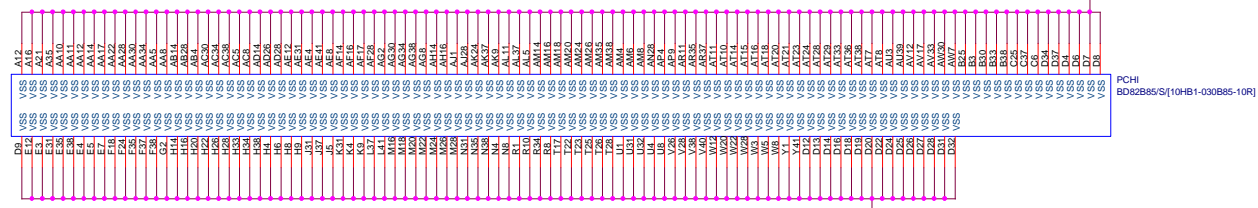
## CLR\_CMOS



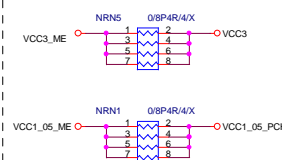
## Gigabyte Technology

Title				PCH GPIO , CTRL , AUDIO			
Size	Document Number	GA-B85M-HD3				Rev	
Custom						1.0	
Date:	Monday, April 08, 2013			Sheet	12	of	32

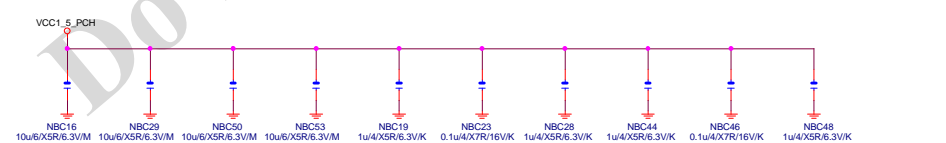
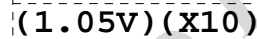
**PCH (I)**



SHT PWR

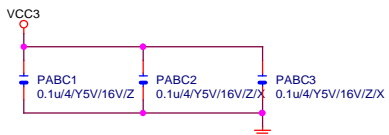


(1.05V) (x5)

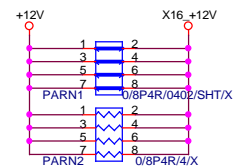




## PCIEX16 CAP



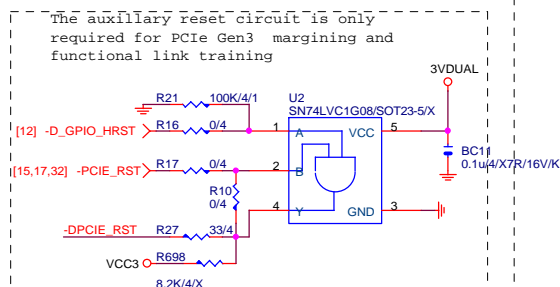
PCIEX16 PROTECT SHT
---------------------



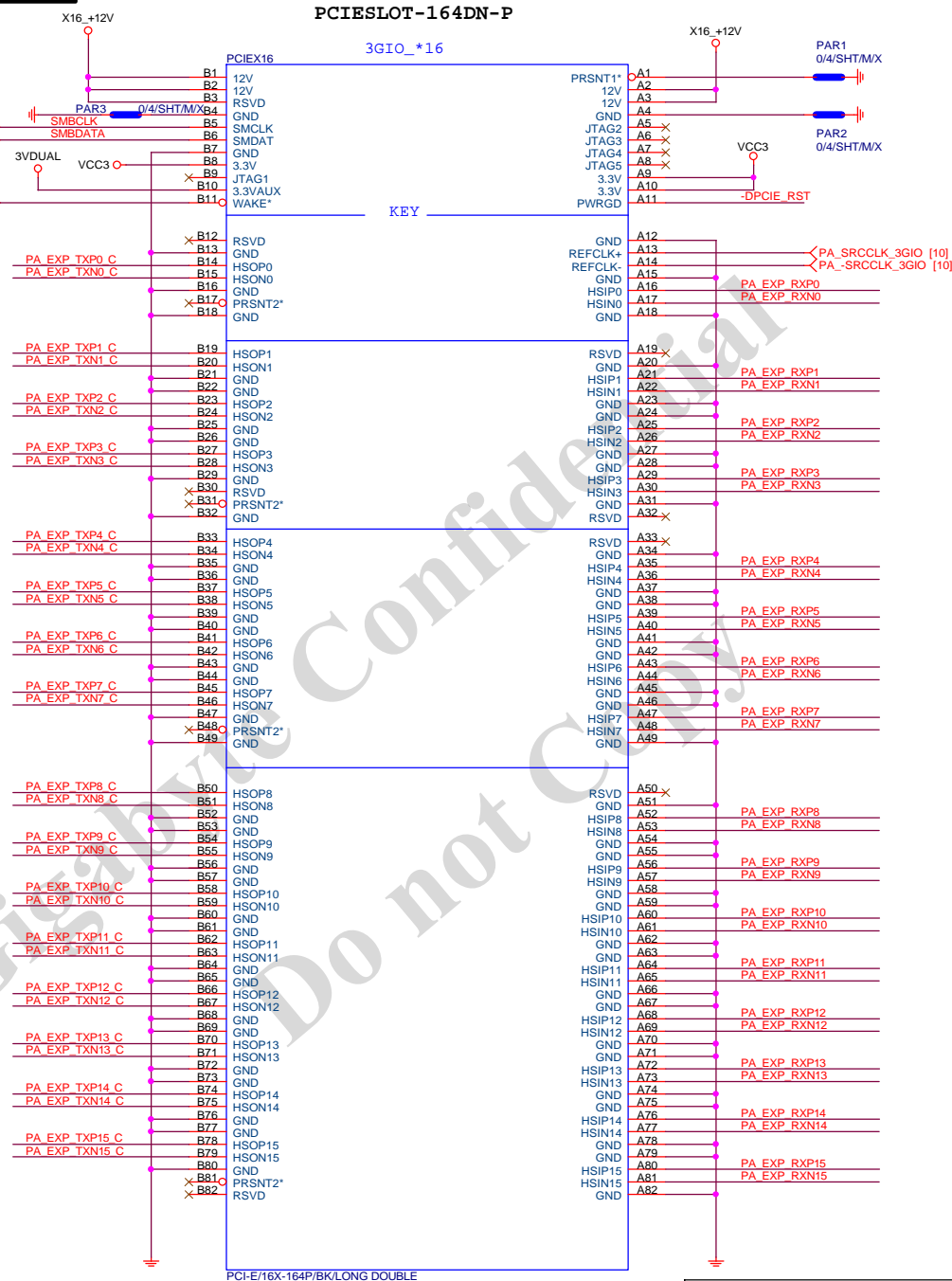
PCIEX16	AC	CAP
---------	----	-----

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\_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]



PCIEX16 SLOT



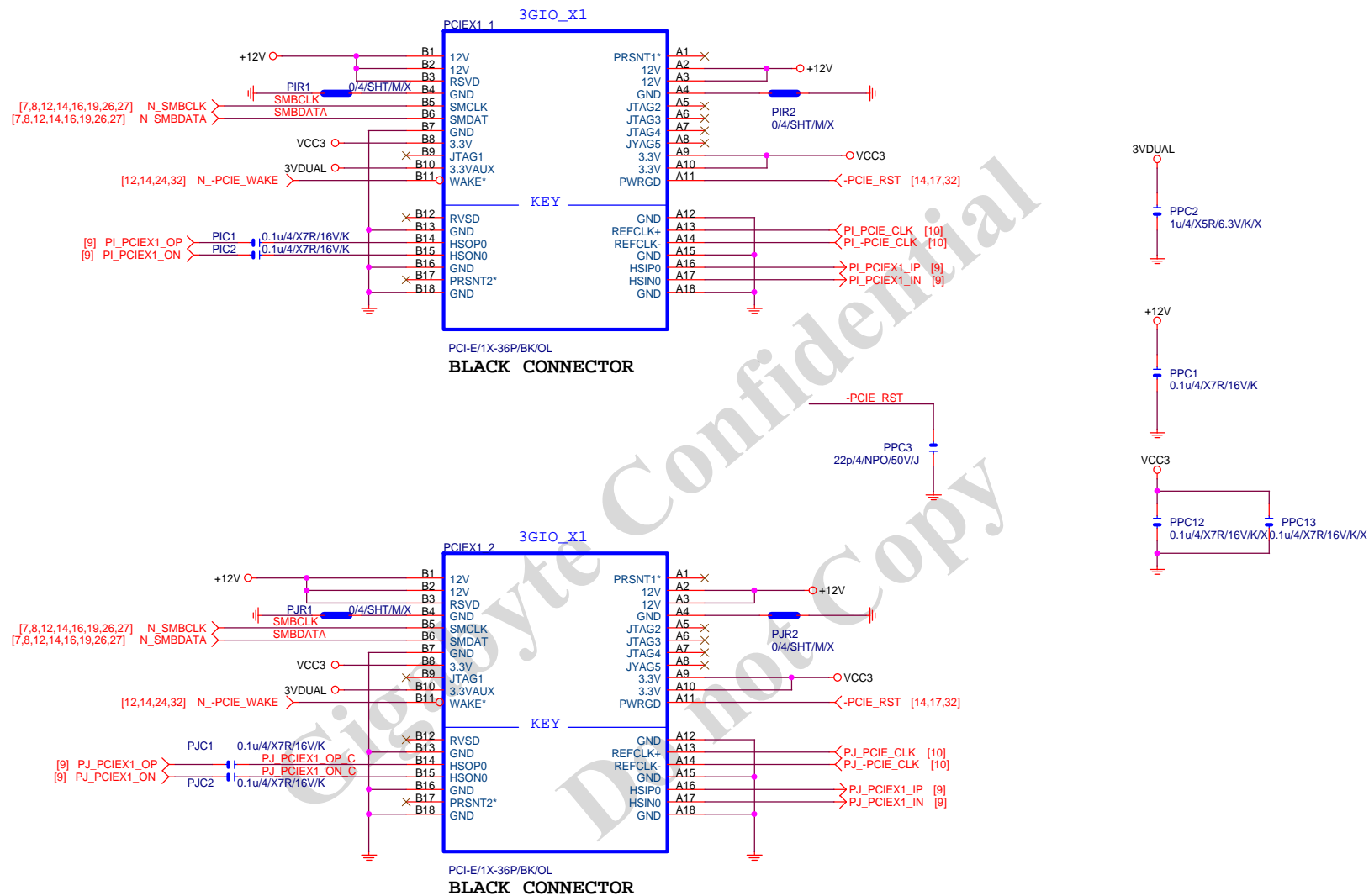
BLACK CONNECTOR

## Gigabyte Technology

PCI EXPRESS \* 16

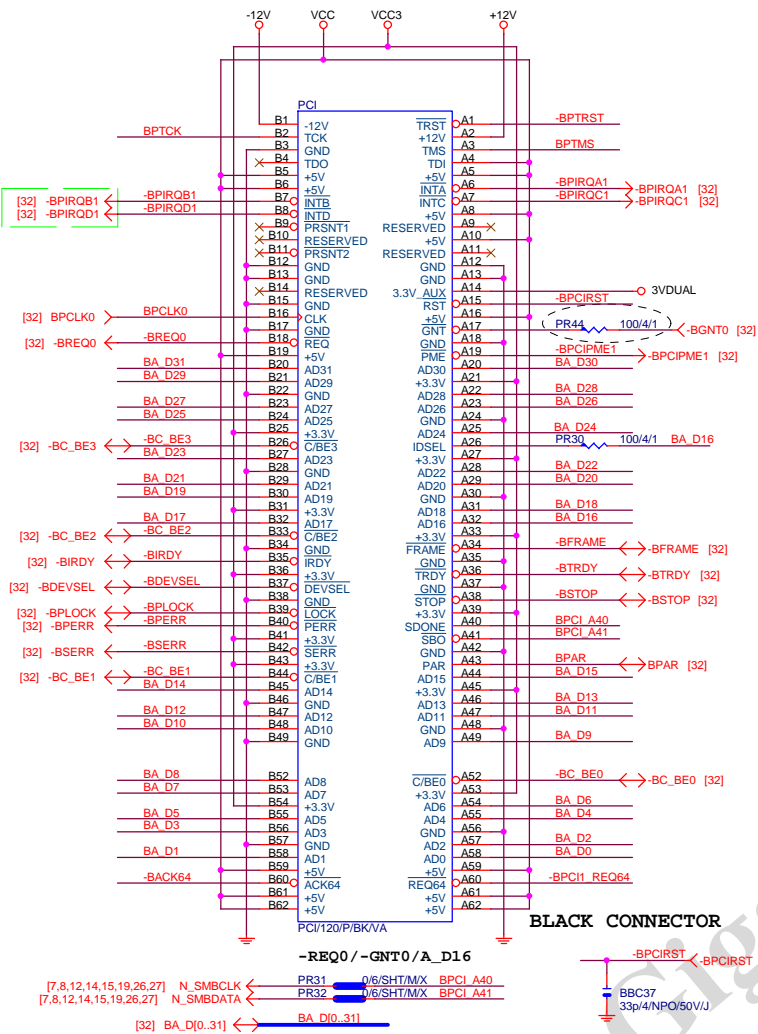
Title			
PCI EXPRESS * 16			
Size Custom	Document Number	GA-B85M-HD3	Rev 1.0
Date:	Monday, April 08, 2013	Sheet 14 of 32	

# PCIEX1 SLOT

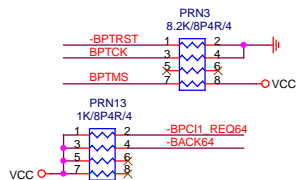




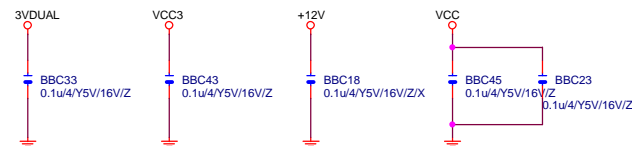
PCI SLOT 1
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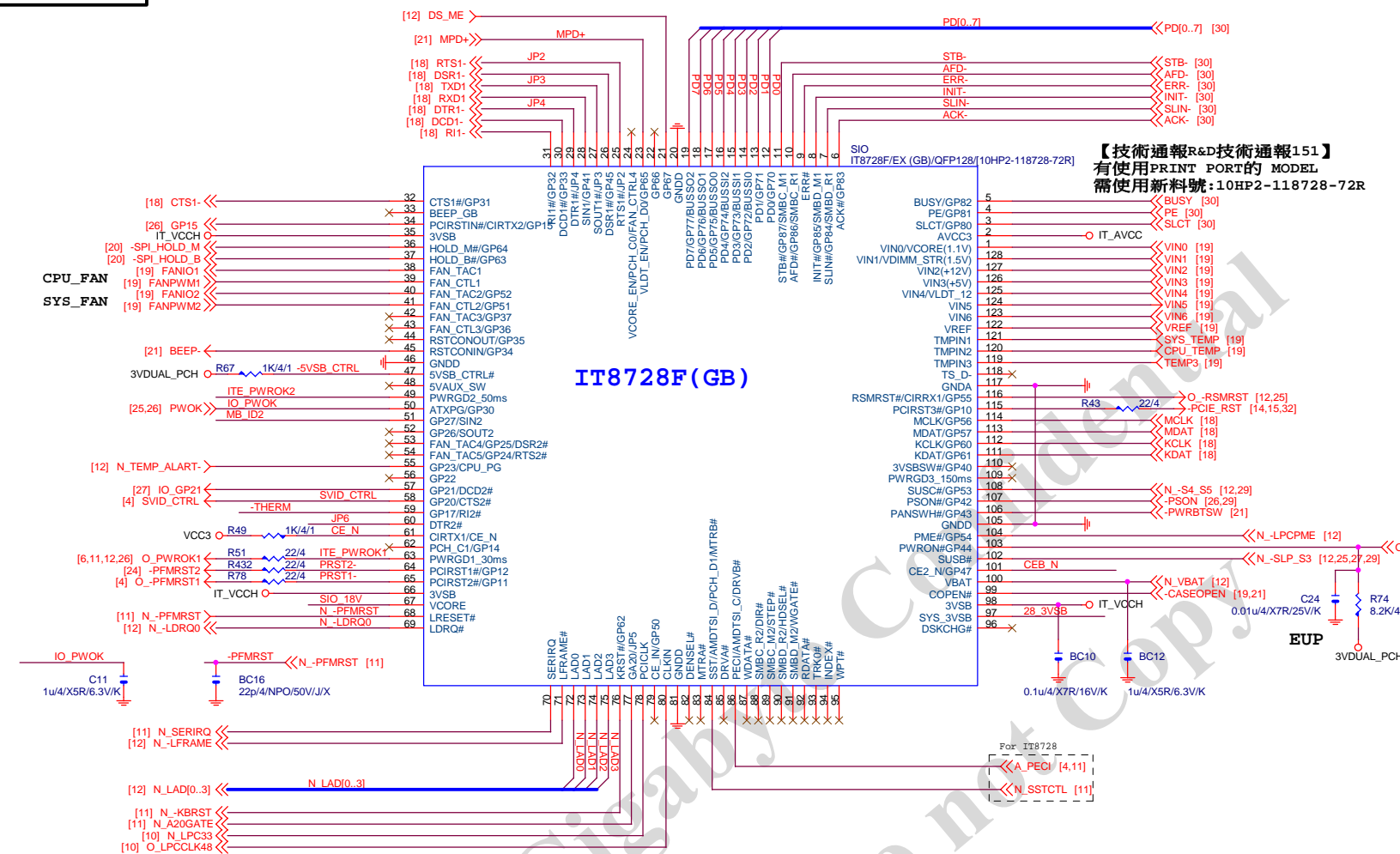
## PCI PU



PCI CAP



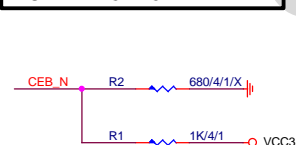
## SIO IT8728F



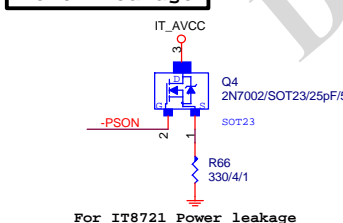
## IT8728F NOTE

IT8728	
PIN121	VCORE_EN / PCH_C0
PIN120	VLD1_EN / PCH_D0
PIN19	ATXPG
PIN31	PCH_C1
PIN53	SST / AMDTSI_D / MTRB# / PCH_D1
PIN55	PECI / AMDTSI_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

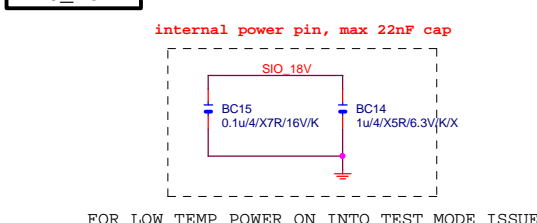


## Power leakage

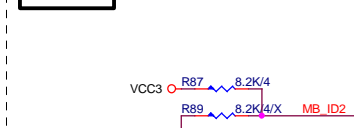


For IT8721 Power leakage

## SIO\_18V

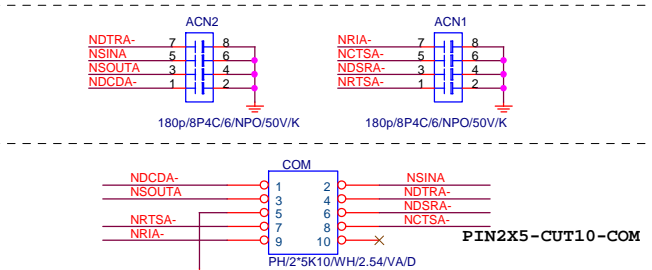
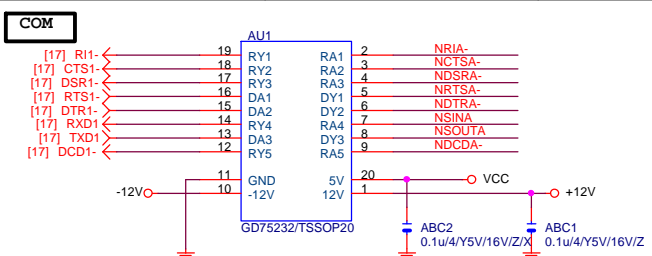


## MB ID

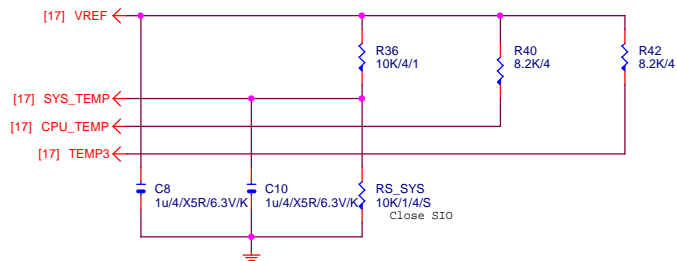


## Gigabyte Technology

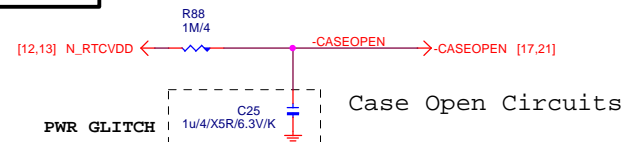
Title		ITE 8728 LPC IO	
Size	Document Number	GA-B85M-HD3	
Custom			Rev 1.0
Date:	Monday, April 08, 2013	Sheet	17 of 32



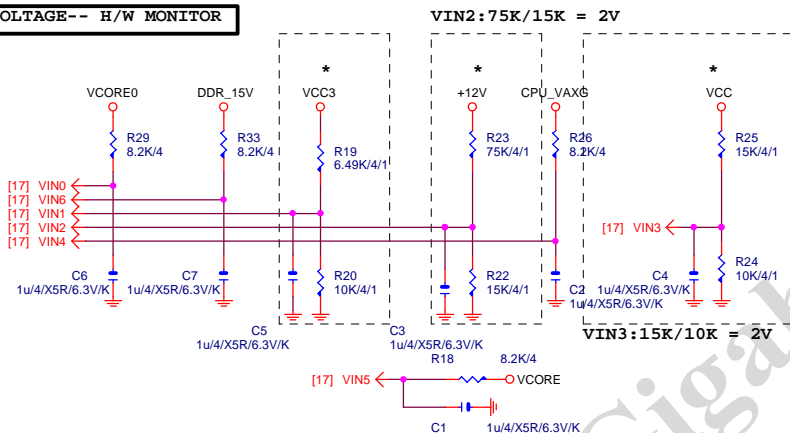
## TEMP H/W MONITOR



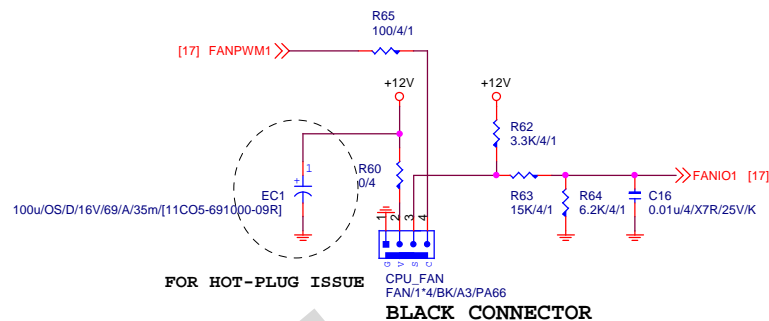
## CASE OPEN



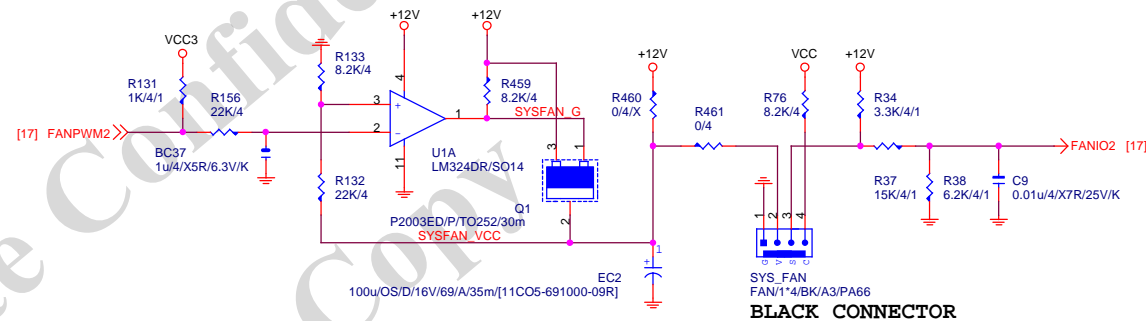
## VOLTAGE-- H/W MONITOR



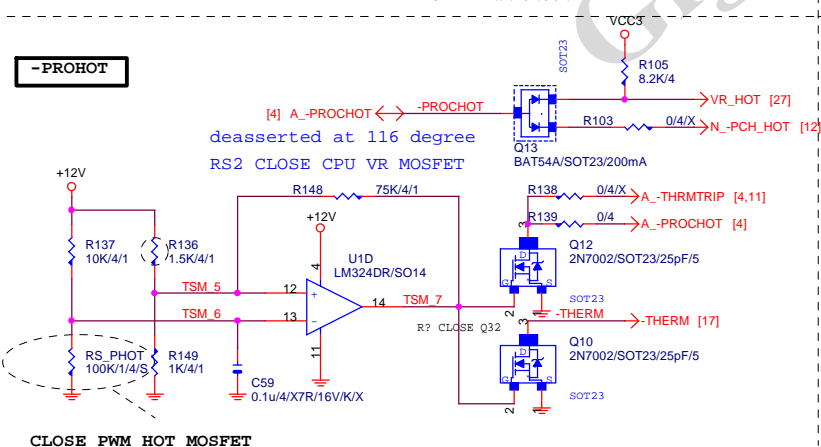
## CPU SMART FAN



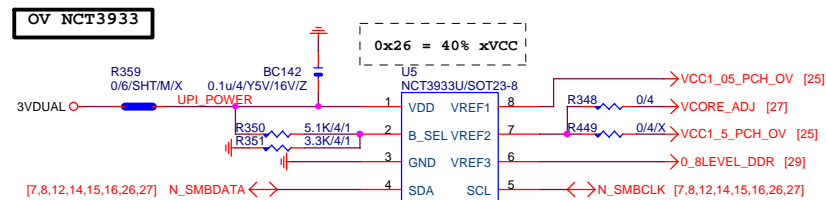
## SYS SMART FAN



## -PROHOT

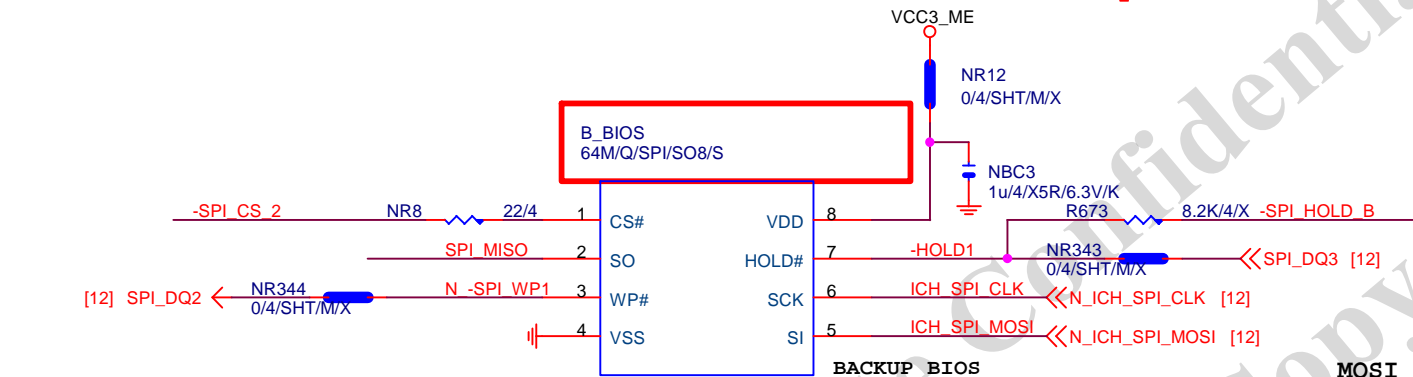
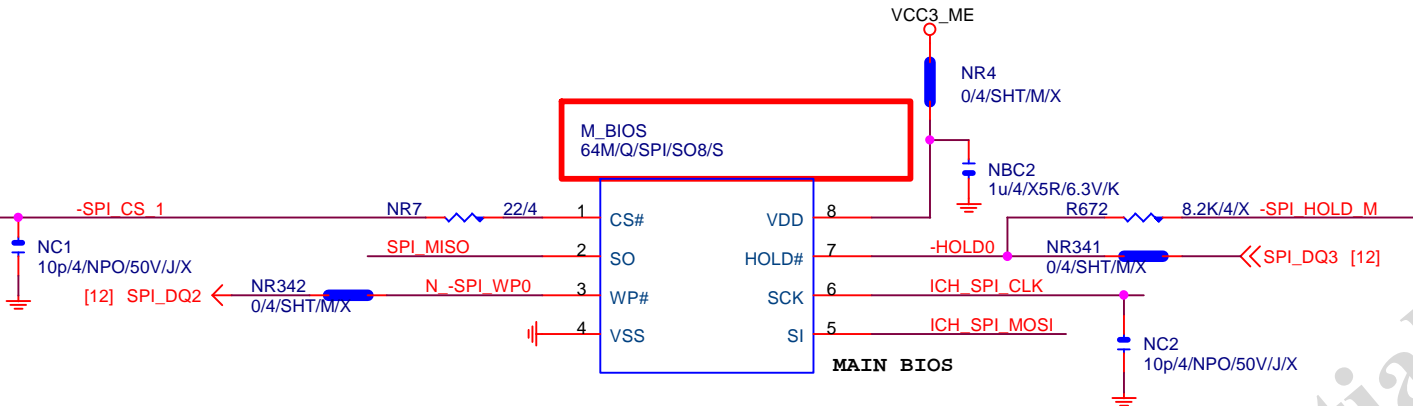


## 接pwm feedback pin



Gigabyte Technology

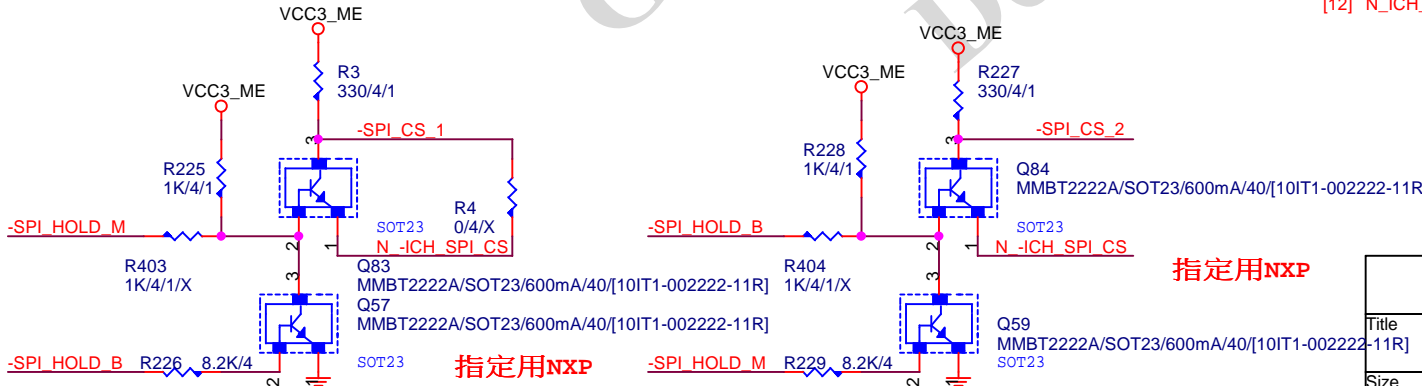
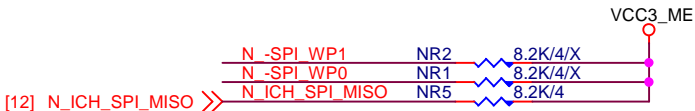
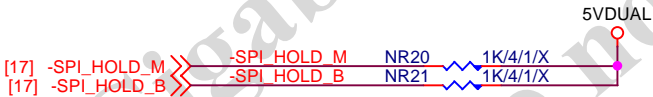
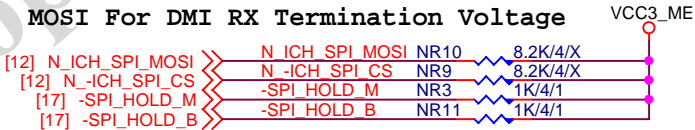
Title			HWM,FAN CTRL,OV	
Size			Document Number	
Custom			GA-B85M-HD3	
Date:			Monday, April 08, 2013	Sheet 19 of 32
				Rev 1.0



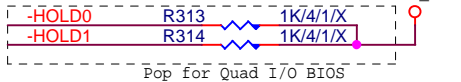
BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

1 means floating  
0 means PD 1K

MOSI For DMI RX Termination Voltage



CHECK



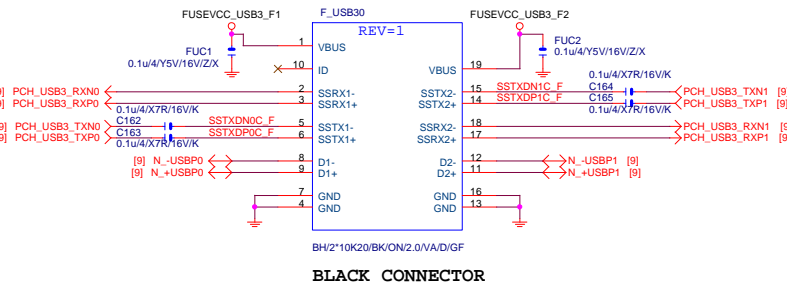
Gigabyte Technology

DUAL BIOS

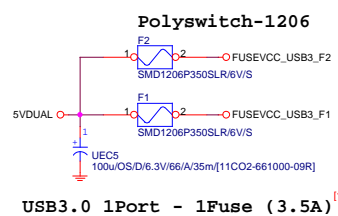
GA-B85M-HD3

Rev 1.0

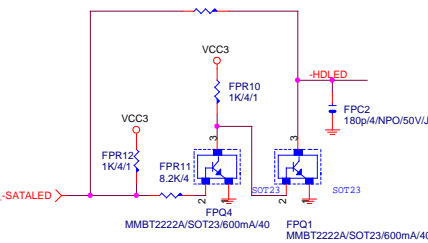
# F\_USB30



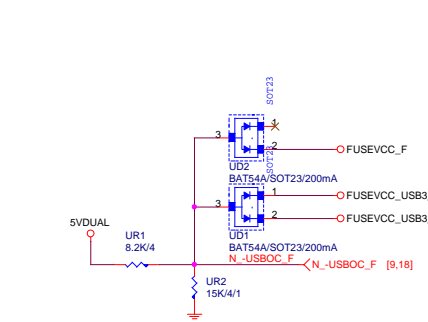
# F\_USB30 PWR



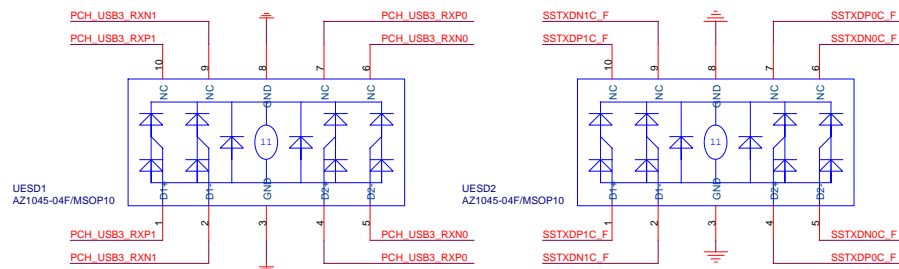
# SATA LED



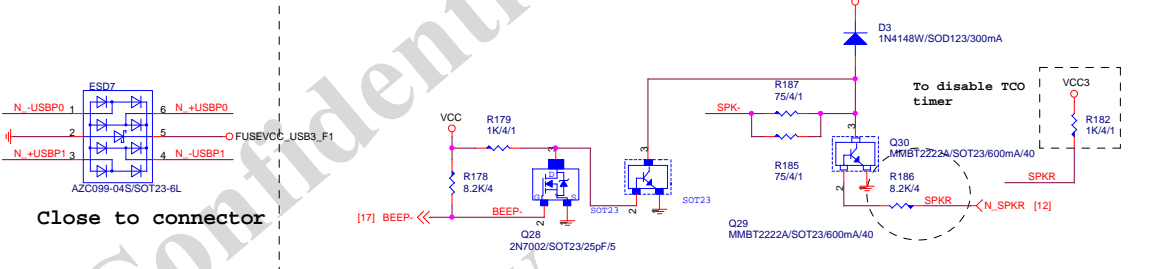
# -USB0C\_F



# F\_USB30 ESD PROTECT

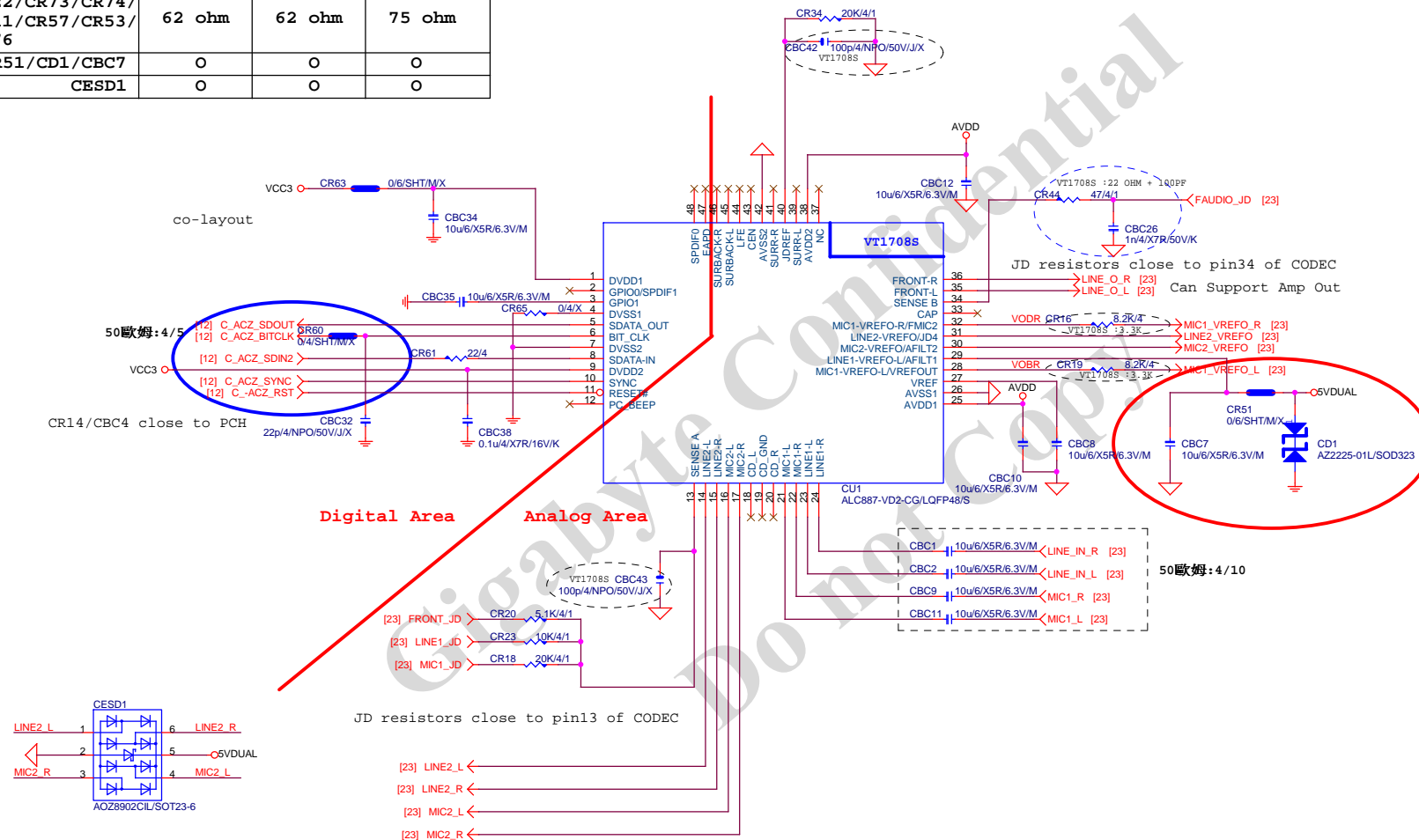


# SPKR



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

2

1

CEC1 100uF/OS/D/6.3V/66A/35mF[11CO2-661000-05R] 22K/4

CR5 62/4

CR7 22K/4

[22] LINE\_O\_R

CEC2 100uF/OS/D/6.3V/66A/35mF[11CO2-661000-05R] 22K/4

CR8 62/4

CR6 22K/4

[22] LINE\_O\_L

AJ\_B5

AJ\_B2

CBC19 180pF/4NPO/50V/J

CBC24 180pF/4NPO/50V/J

```

- - - - - Only reserved for ALC888

```

[22] LINE\_IN\_R ← CR1 62/4 AJ\_A5  
 [22] LINE\_IN\_L ← CR14 62/4 AJ\_A2  
 CBC20 180p/4/NPO/50V/J  
 CBC23 180p/4/NPO/50V/J

For 889A/888

[22] MIC1\_R  $\leftarrow$  CR17 62/4  
 [22] MIC1\_L  $\leftarrow$  CR22 62/4  
 [22] MIC1\_VREF0\_L  
 [22] MIC1\_VREF0\_R  
 CBC3 180p/4/NPO/50V/J  
 CBC4 180p/4/NPO/50V/J  
 AJ\_C5  
 AJ\_C2

## SPDIF\_OUT

The schematic diagram illustrates the pin configuration for the A3RP/13P/BL I.P.K/RA/D/1/B module. It features three distinct audio channels, each with a 22kΩ pull-up resistor to ground:

- BLUE LINE-IN:** Utilizes pins C4, C3, C5, C1, and C2. The input signal is connected to C4, and the ground connection is at C2.
- GREEN LINE-OUT:** Utilizes pins B4, B3, B5, B1, and B2. The output signal is connected to B4, and the ground connection is at B2.
- PINK MIC-IN:** Utilizes pins A4, A3, A5, A2, and A1. The input signal is connected to A4, and the ground connection is at A2.

Additionally, the module includes a 5V supply section with pins MH1, MH2, MH3, MH4, and MH5. The 5V supply is connected to MH1, MH2, and MH3, while MH4 and MH5 are connected to ground.

## AZALIA FRONT PANEL

**AZALIA FRONT PANEL**

Q04 BAT54A/SOT23/200mA  
Q02 BAT54A/SOT23/200mA

[22] LINE2\_VREFO >  
[22] MIC2\_VREFO >

CR52 8.2K/4  
CR56 8.2K/4  
CR10 8.2K/4  
QR9 8.2K/4

CR58 22K/4  
CR54 22K/4

F\_AUDIO

1 2  
3 4  
5 6 CR55 20K/4/1  
7 8  
9 10 CR59 39.2K/4/1

VCC3  
CR78 8.2K/4/X

[22] MIC2\_L < CB6C 10uF/5X5R/6.3V/M  
[22] MIC2\_R < CB5C 10uF/5X5R/6.3V/M  
[22] FAUDIO\_JD <

CR13 62/4 M2 L  
CR11 62/4 M2 R  
CR57 62/4 L2 R  
CR53 62/4 L2-L  
CR12 0/4/X

100u/OS/D/6.3V/66A/35mF [11QO2-661000-09R]  
CEC9 < L2 R  
CEC6 < L2 L  
100u/OS/D/6.3V/66A/35mF [11QO2-661000-09R]

CBC30 180p/4/NPO/50V/J  
CBC29 180p/4/NPO/50V/J  
CBC37 180p/4/NPO/50V/J  
CBC36 180p/4/NPO/50V/J

PHI2\*5K8/BK/2.54/V/A/D

**BLACK CONNECTOR**

## Gigabyte Technology

## AUDIO JACK

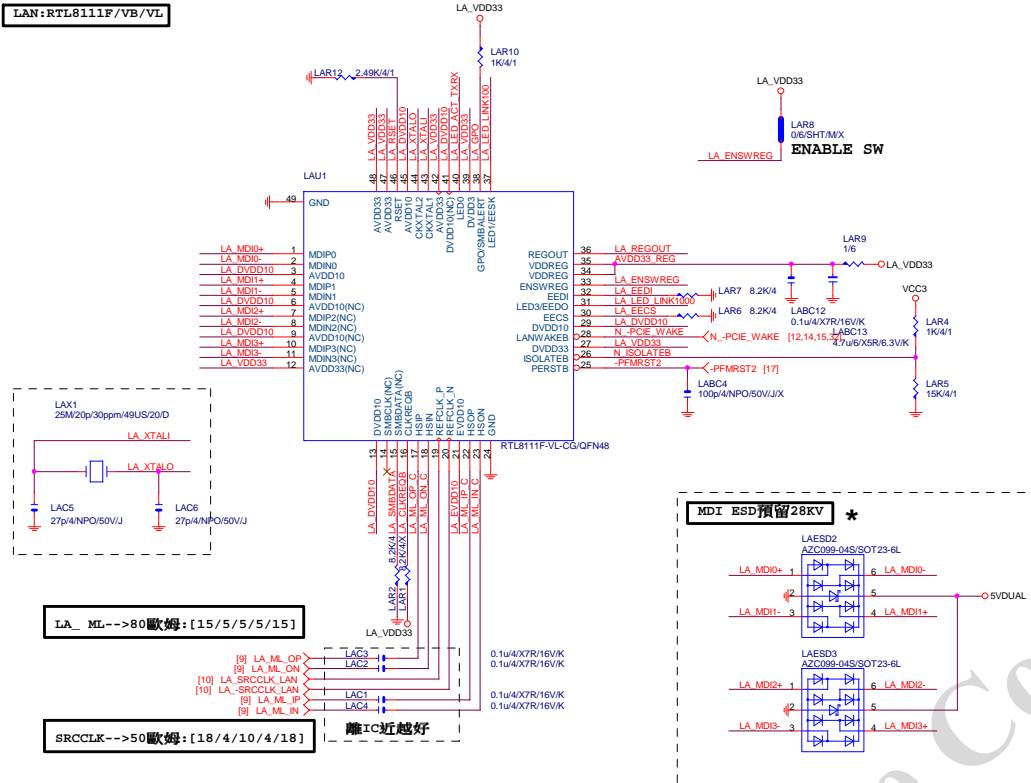
GA-B85M-HD3

Rev
1.0

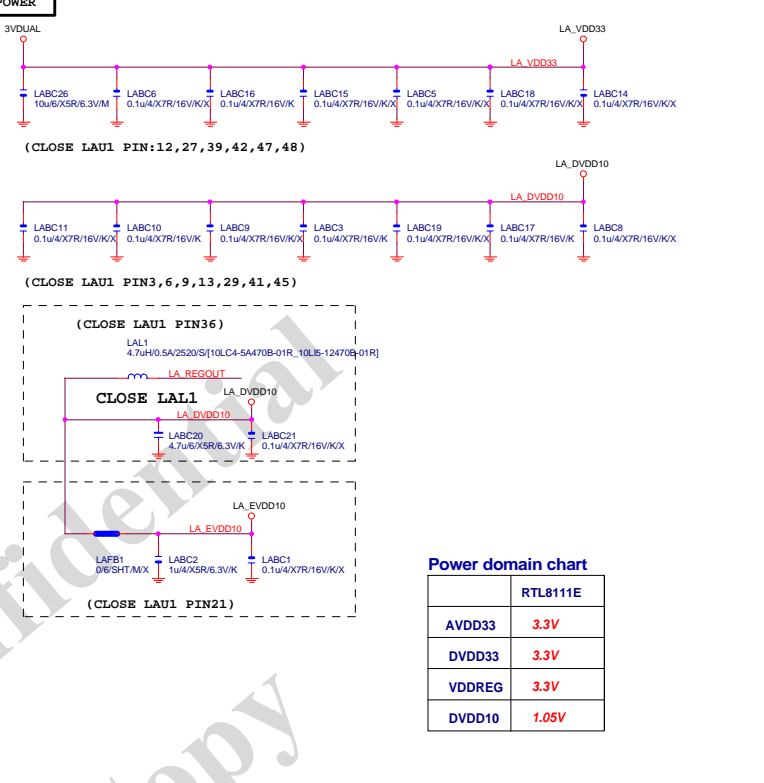
Date: Monday, April 08, 2013

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# LAN:RTL8111F/VB/VL



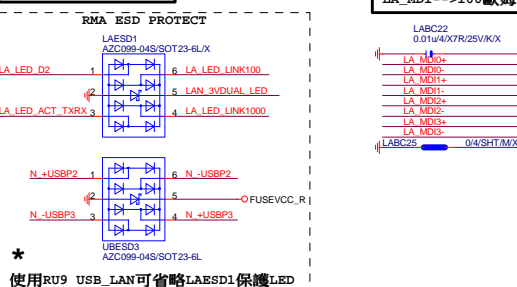
# LAN POWER



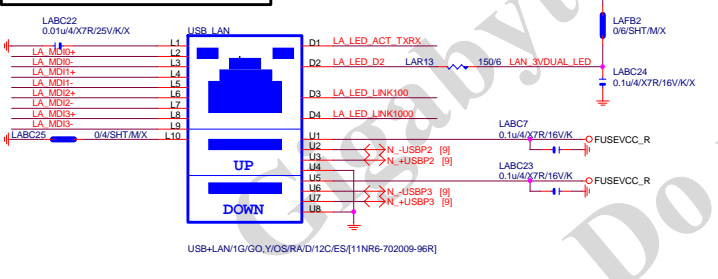
Power domain chart

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

# USB LAN CONNECTOR



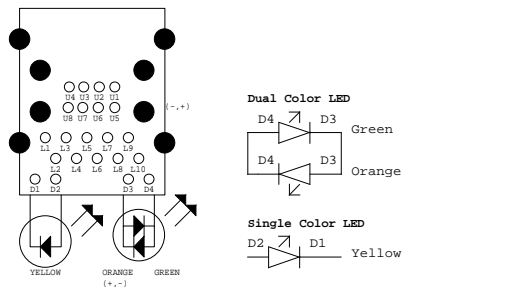
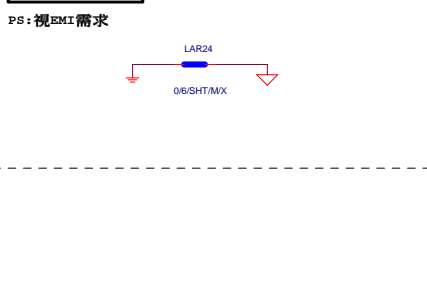
# LA\_MDI-->100歐姆:[20/4/8/4/20]



# USB X3 POWER



# EMI SHORT PAD



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

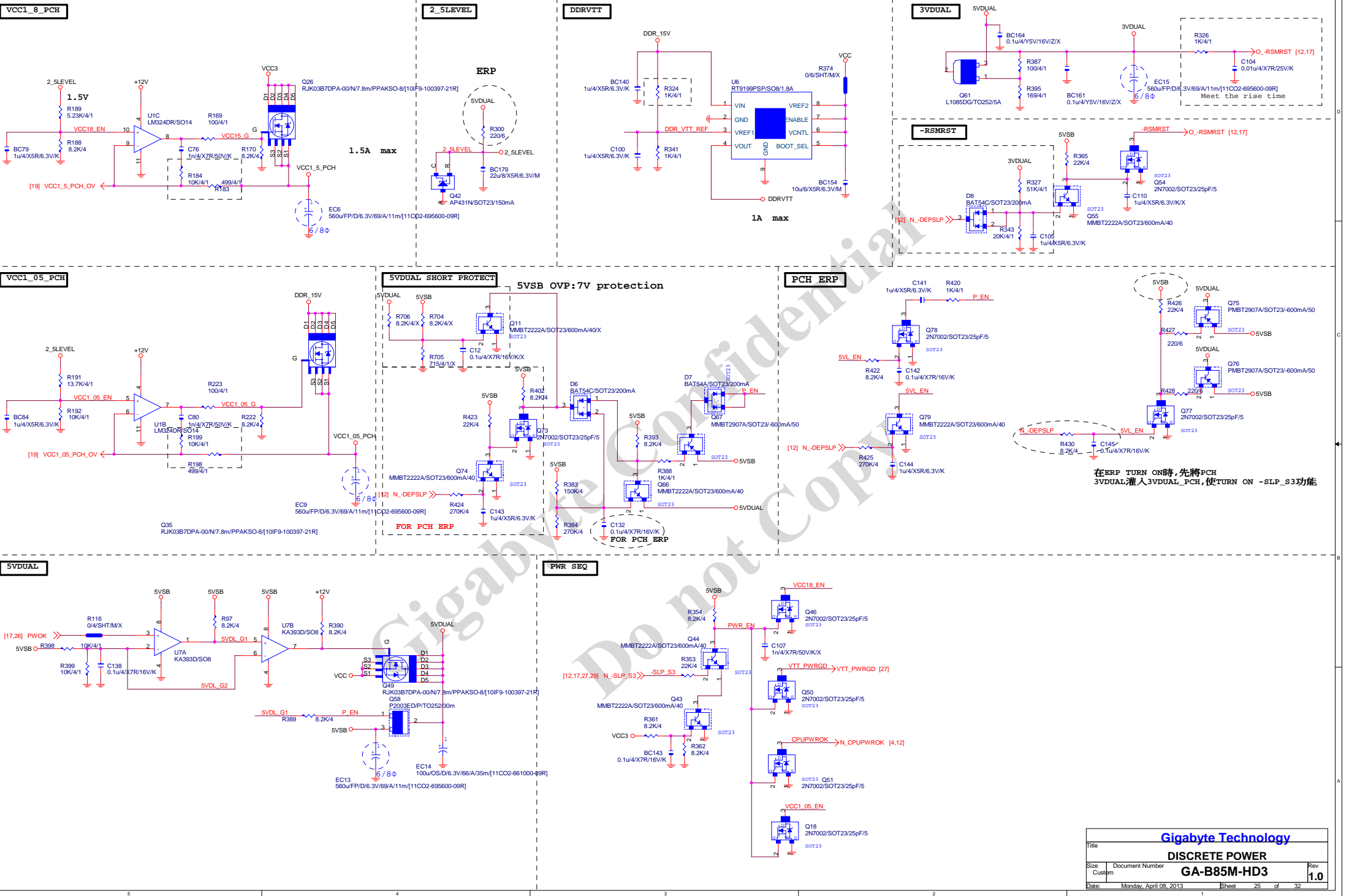
**BOM NOTICE**

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

1. 9KV ESD BOM:  
USB LAN (RU9):11NR6-702009-96R

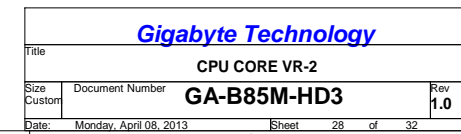
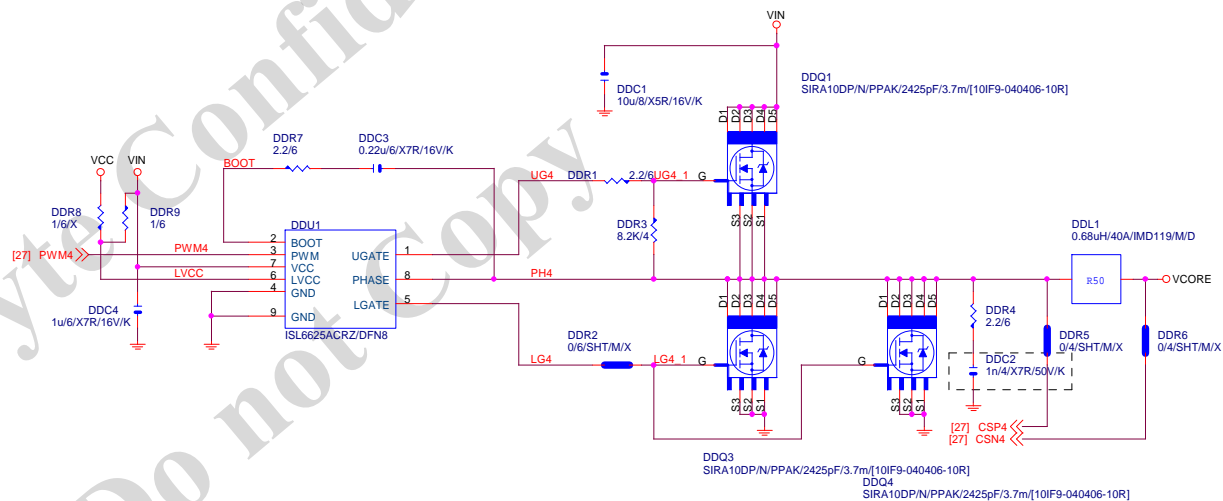
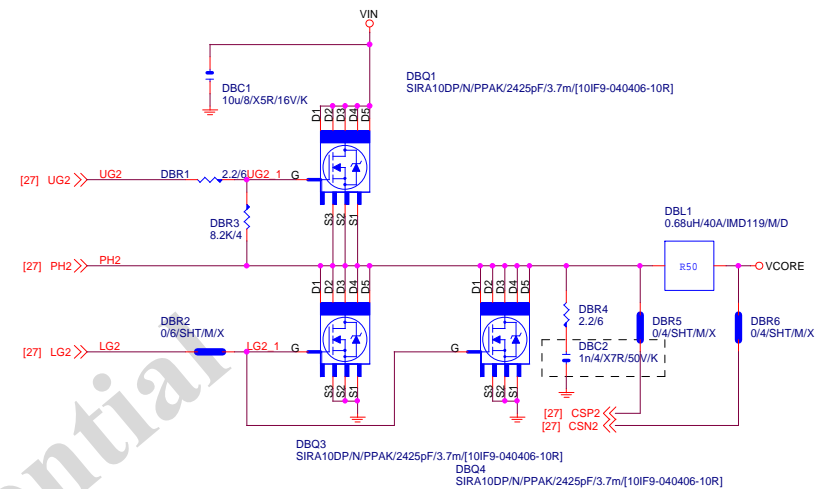
2. 28KV ESD BOM:  
USB LAN (RU9):11NR6-702009-96R

LAESD2,LAESD3:上件AZC398-04S

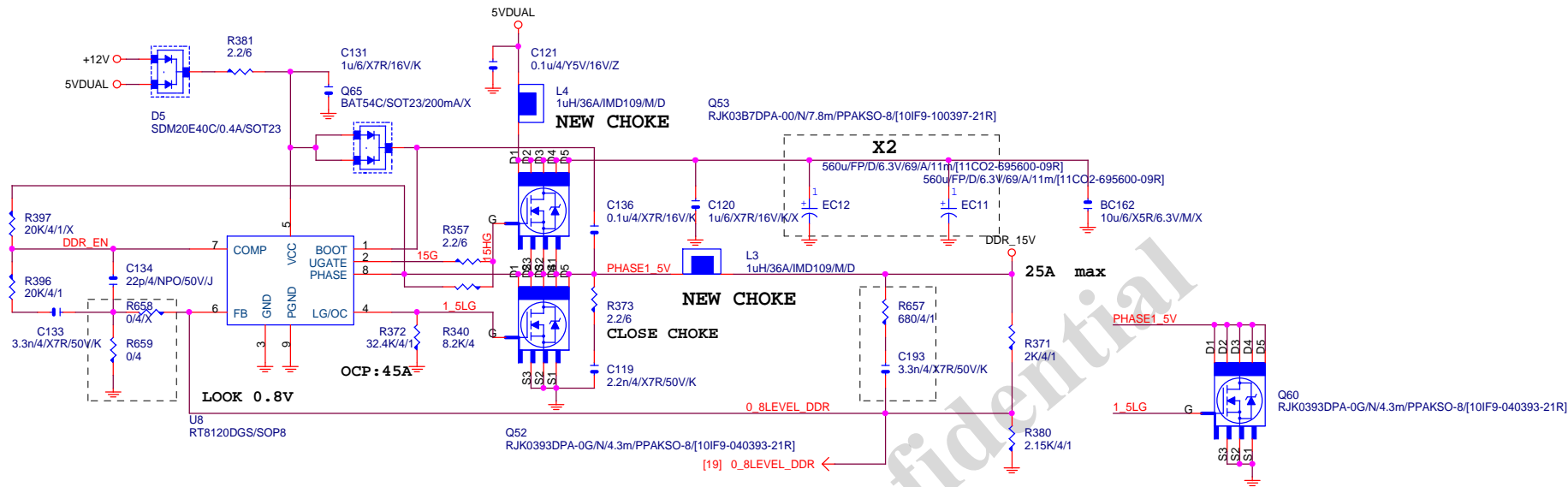




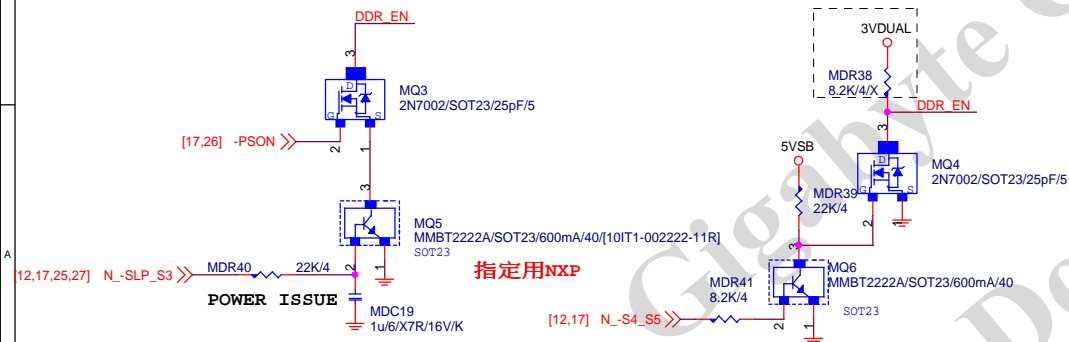




# DDR1.5V



# PWR\_SEQ



VIN=5V, VOUT=1.5V, IOU=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  

$$Rocset = (Iocp * Lgate, rdson) / Iocset$$

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

$$Iocset = 10uA$$

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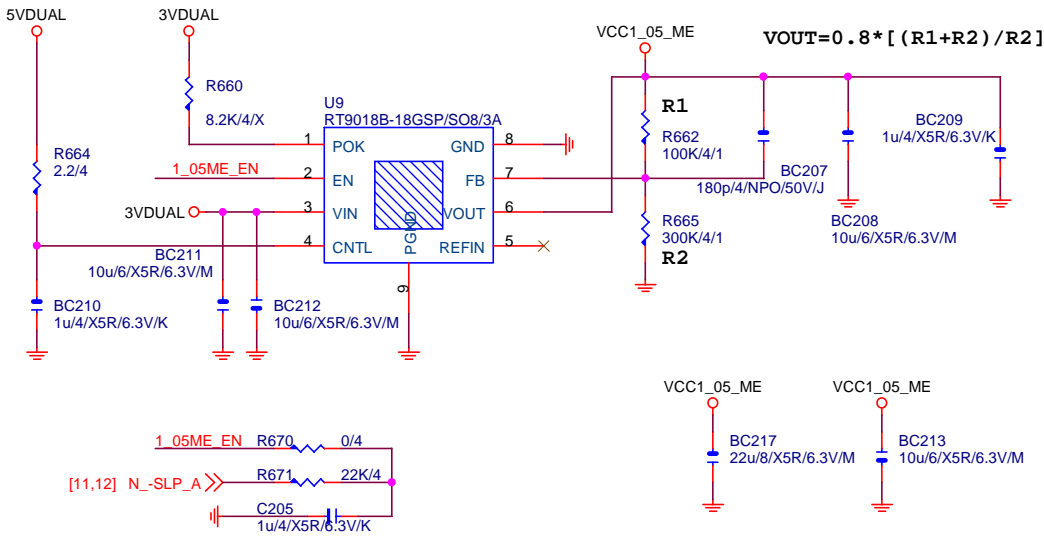
Title		
DDR POWER		
Size	Document Number	Rev
Custom	GA-B85M-HD3	1.0
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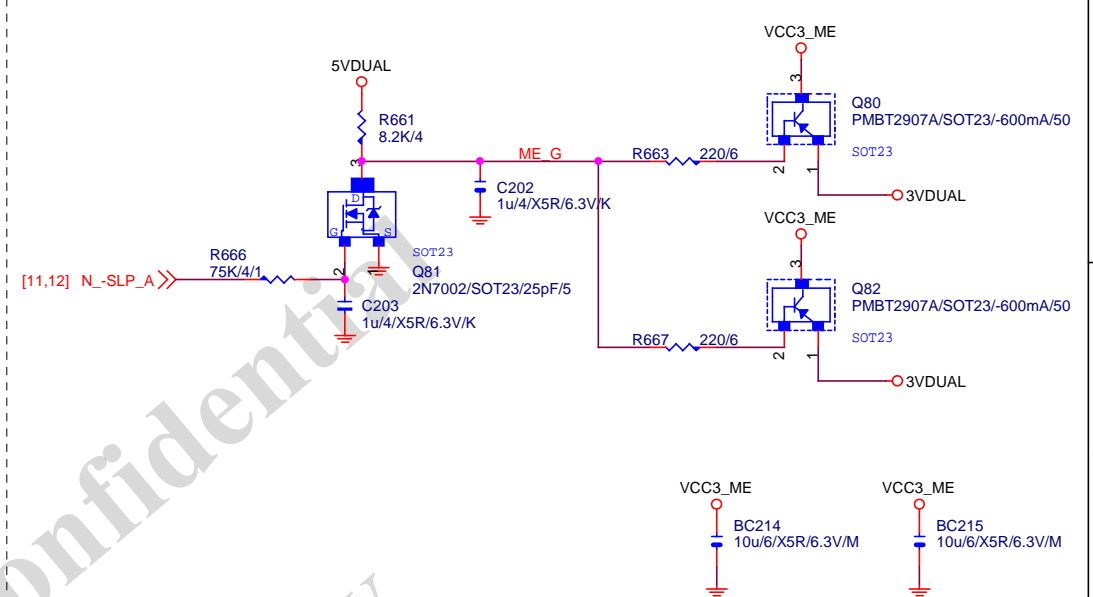
# VCC1\_05\_ME

## 【技術通報R&D技術通報156】

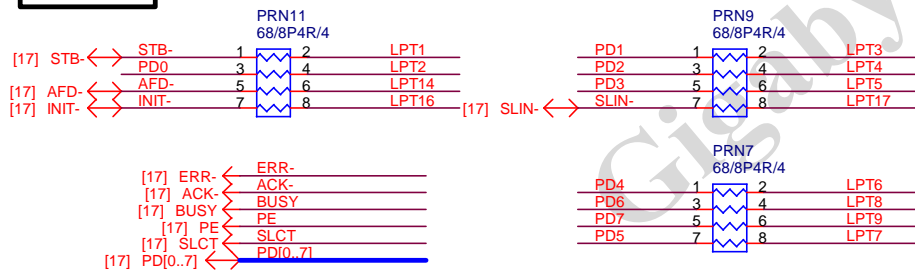
(RICHTEK), (NUVOTON), (EMC)做共用  
PIN7分壓阻值須做修改為100K以上電阻值



# VCC3\_ME

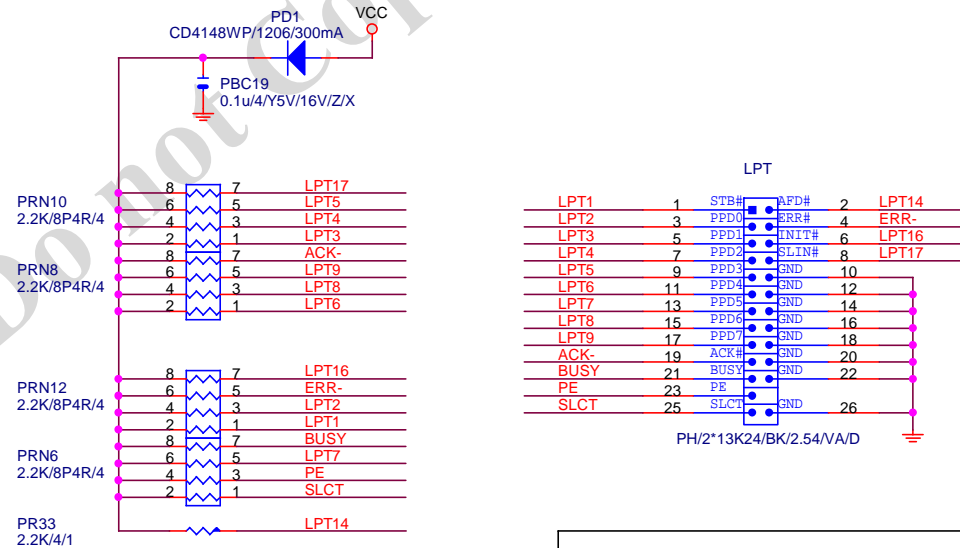


# LPT PORT



## 【技術通報R&D技術通報151】

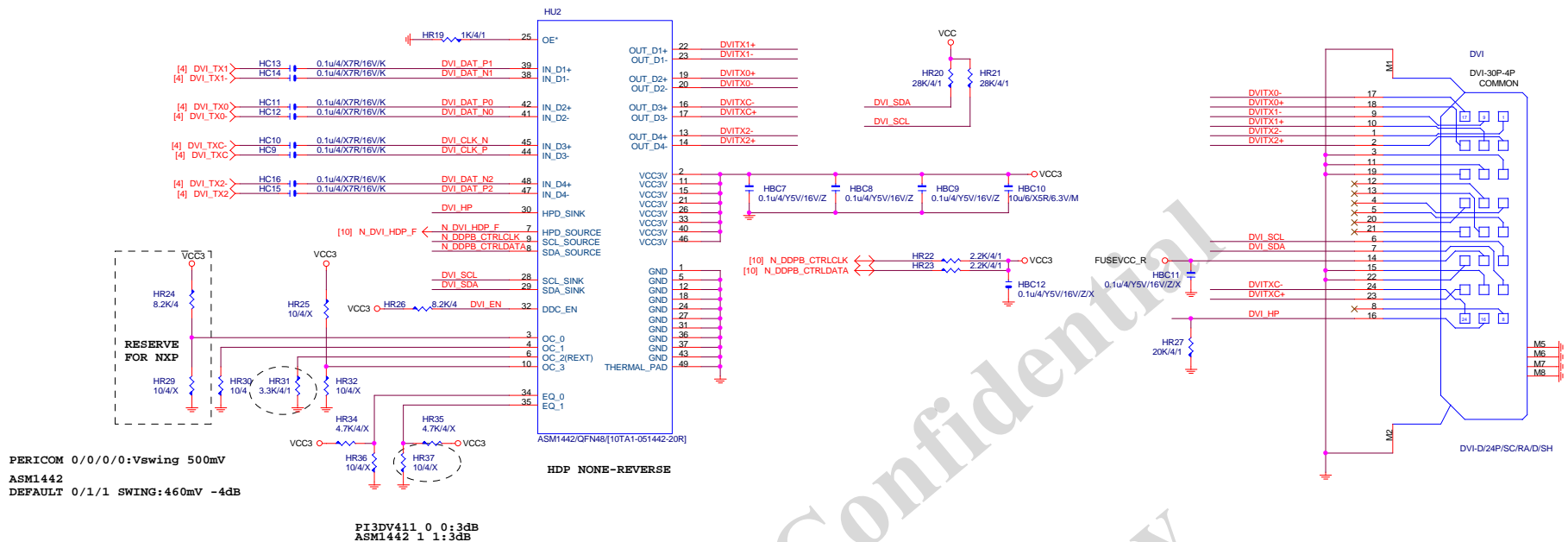
33ohm Change to 68ohm



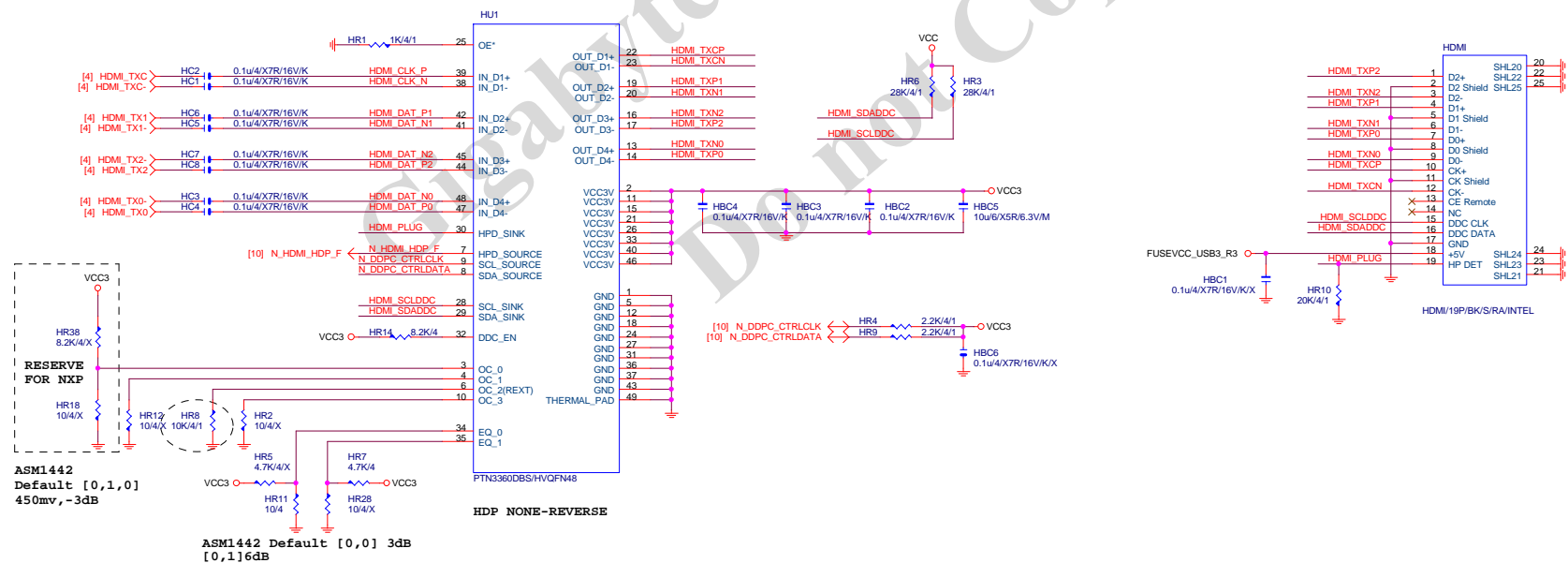
Gigabyte Technology

Title			
LPT			
Size	Document Number	Rev	
Custom	GA-B85M-HD3	1.0	
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## DVI LEVEL SHIFT



## HDMI LEVEL SHIFT



【技術通報R&amp;D技術通報150】

HDMI eye diagram1.4版(deep color)會fail

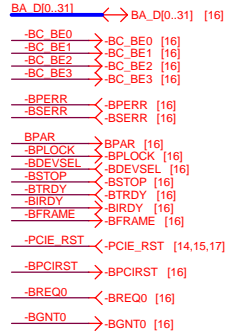
原因：因目前的HDMI訊號過長，造成RISING TIME過慢，而會壓到eye diagram

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

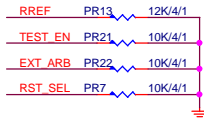
Title			
DVI			
Size	Document Number	Rev	
Customr	GA-B85M-HD3	1.0	
Date:	Monday, April 08, 2013	Sheet	31 of 32

# PCIE TO PCI

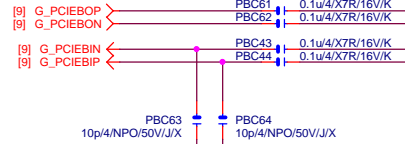
PCI:5/4/5 Impedance=50 +- 15%



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



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

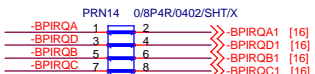


BA D0  
BA D1

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

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

IT8892



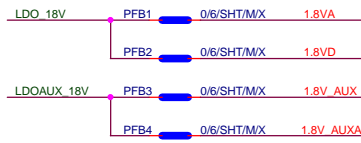
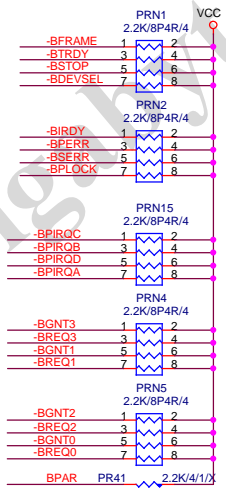
PCI slot

PCI slot

-BPCIPME1 PR27 0/4/SHT/M/X >>> N\_PCIE\_WAKE [12,14,15,24]

chipset side

3VDUAL



PCB layout note:  
Close to chip



PCB layout note:  
Close to chip



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ITE IT8892E			
GA-B85M-HD3			
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Custom			
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