

Model Name: GA-H87M-HD3

Revision 1.11

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

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Cover Sheet

Size Custom	Document Number <b>GA-H87M-HD3</b>	Rev <b>1.11</b>
Date:	Wednesday, November 27, 2013	Sheet 1 of 32

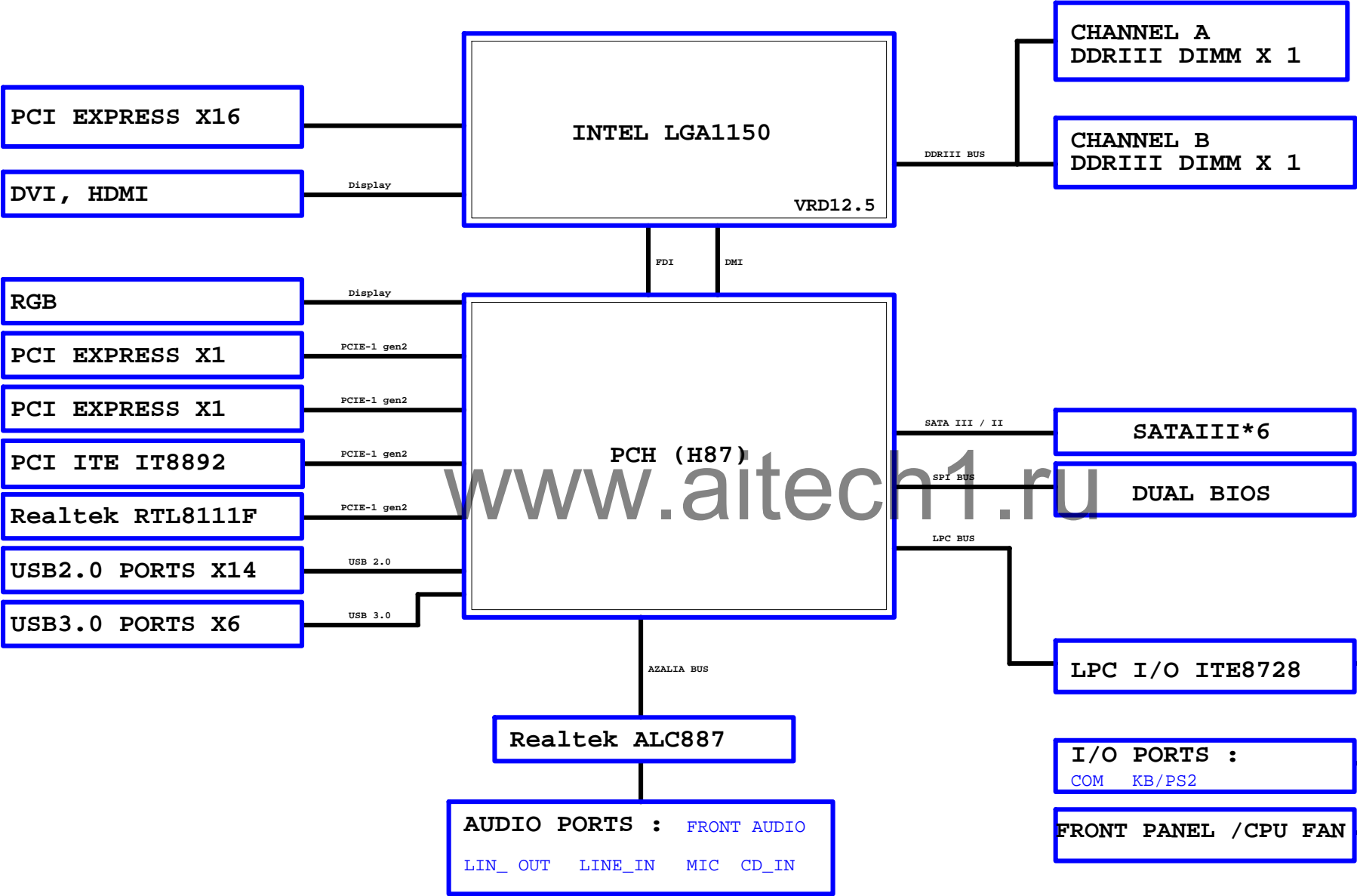
Revision 1.11

## Component value change history

Data	Change Item	Reason
2013/01/08	Modify to R0.2	
	PCIE1_2 CLK Change Port	
2013/01/14	ADD Disable SVID [SVID_CTRL]	
	ADD Disable ME [DS_ME]	
	ADD -PCIE_RST Patch	
2013/03/13	Modify to R1.0	
	Modify F_PANEL MPD+ (Super I/O GP65)	
	ADD SYS_FAN 防燒	
	ADD N_-THRMTRIP / A_-PROCHOT Protection Option	
	ADD 5VSB OVP Protection	
	ADD +12V Dummy Control	
	Reserve N_PCH_DPWROK Control	
2013/04/08	Update PROCHOT	PBOM: 9MH87MHD3-00-10B
	R148: 35.7K -> 75K	
	R136: 1.4K -> 1.5K	
	DR149: 3.83K -> 13K	
2013/07/12	Update to Rev: 1.1	PBOM: 9MH87MHD3-00-11B
	Chipset change REV: C2	
	Update HDMI Footprint "HDMI-3"	
2013/09/13	Update to R1.11	
	Follow Crystal Trace Rule	
	SYS_FAN, DDR 0ohm 0402 -> 0603	
	Update Fuse 1206 Footprint "POLYSWITCH-1206-1"	
	Update PPAK Footprint "Q_TDSON8-GDS-T"	
2013/10/22	NX1: 25M/20p -> 12p	PBOM: 9MH87MHD3-00-11C
	NC7, NX8: 27p -> 10p	
2013/11/04	NC7, NX8: 10p -> 15p	PBOM: 9MH87MHD3-00-11D
2013/11/27	MR17 0ohm -> 0603 FUSE(10FP5-06100B-00R)	PBOM: 9MH87MHD3-00-11E
	ALC887 強壯版 (10HP5-368870-32R)	

[illegible]

BLOCK DIAGRAM



[illegible][illegible]

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									

Signal	Frequency	Load	Power
WR3	90.9/4/1/X		PVIDSLCK
WR2	115/4/1		PVIDSOUT
WR4	75/4/1		-PVIDALRT

**CPU\_VTT\_OR\_0**

WR14	514/1/X	A TMS
WR16	514/1/X	A TDO
WR17	514/1/X	A TDI
WR30	514/1	A -HPRDY
WR11	514/1	A TCK
WR9	514/1	A -TRST

**CPU\_VTT\_OR\_1**

WR29	1K4/1/X	A PEGI
WR10	1K4/1/X	A CATERR
WR25	1K4/1	A -PROCHOT
WR56	514/1/X	N_CPUWPWROK
WR55	1K4/1/X	

**A -THRMTRIP**

WR8	1K4/1	VCC1_05_PCH1
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**A\_PWR\_DEBUG**

WR34	150/4/1	VCC1_05_PCH
WR33	10K4/1/X	

**A\_DBR**

WR21	8.2K/4/X	3VDUAL
WR20	0/4/X	

**N -SYS\_RST**

WR28	100/4/1	
WR19	75/4/1	
WR18	100/4/1	
WR17	49.9/4/1	
WR12	49.9/4/1	
WR4	49.9/4/1	

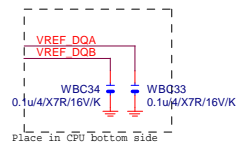
## LGA1150 (A)

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	AT19	DDR0_MA10	DDR0_D10	AK38	MDA11
MAAA10	AW11	DDR0_MA11	DDR0_D11	AK39	MDA12
MAAA11	AV19	DDR0_MA12	DDR0_D12	AH37	MDA12
MAAA12	AU19	DDR0_MA13	DDR0_D13	AH38	MDA14
MAAA13	AT20	DDR0_MA14	DDR0_D14	AK40	MDA15
MAAA14	AW21	DDR0_MA15	DDR0_D15	AM40	MDA17
MODT_A0	AW10	DDR0_ODT0	DDR0_ODT0	AM39	MDA21
MODT_A1	AV8	DDR0_ODT1	DDR0_ODT1	AP38	MDA18
AW9	AW9	DDR0_ODT2	DDR0_ODT2	AP39	MDA19
AW8	AW8	DDR0_ODT3	DDR0_ODT3	AM37	MDA20
AW33	AW33	DDR0_ECC0	DDR0_ECC0	AM38	MDA16
AW33	AW33	DDR0_ECC1	DDR0_ECC1	AP37	MDA22
AU31	AU31	DDR0_ECC2	DDR0_ECC2	AP40	MDA23
AU31	AU31	DDR0_ECC3	DDR0_ECC3	AW37	MDA29
AU33	AU33	DDR0_ECC4	DDR0_ECC4	AU35	MDA26
AT31	AT31	DDR0_ECC5	DDR0_ECC5	AW35	MDA27
AW31	AW31	DDR0_ECC6	DDR0_ECC6	AT37	MDA28
AW31	AW31	DDR0_ECC7	DDR0_ECC7	AU37	MDA24
SBAA0	SBAA0	DDR0_BA0	DDR0_BA0	AT35	MDA30
SBAA1	SBAA1	DDR0_BA1	DDR0_BA1	AW35	MDA31
SBAA2	SBAA2	DDR0_BA2	DDR0_BA2	AW6	MDA33
CKEA0	CKEA0	DDR0_CKE0	DDR0_CKE0	AU6	MDA37
CKEA1	CKEA1	DDR0_CKE1	DDR0_CKE1	AW6	MDA38
CSA0	CSA0	DDR0_CS_N0	DDR0_CS_N0	AW4	MDA38
CSA1	CSA1	DDR0_CS_N1	DDR0_CS_N1	AW4	MDA39
DCLKA0	DCLKA0	DDR0_CLK_P0	DDR0_CLK_P0	AR1	MDA41
DCLKA1	DCLKA1	DDR0_CLK_P1	DDR0_CLK_P1	AR4	MDA45
DCLKA2	DCLKA2	DDR0_CLK_P2	DDR0_CLK_P2	AN3	MDA42
DCLKA3	DCLKA3	DDR0_CLK_P3	DDR0_CLK_P3	AN4	MDA43
DCLKA4	DCLKA4	DDR0_CLK_P4	DDR0_CLK_P4	AR2	MDA44
DCLKA5	DCLKA5	DDR0_CLK_P5	DDR0_CLK_P5	AR3	MDA40
DCLKA6	DCLKA6	DDR0_CLK_P6	DDR0_CLK_P6	AN2	MDA46
DCLKA7	DCLKA7	DDR0_CLK_P7	DDR0_CLK_P7	AN1	MDA47
DCLKA8	DCLKA8	DDR0_CLK_P8	DDR0_CLK_P8	AL1	MDA49
DCLKA9	DCLKA9	DDR0_CLK_P9	DDR0_CLK_P9	AL4	MDA53
DCLKA10	DCLKA10	DDR0_CLK_P10	DDR0_CLK_P10	AL4	MDA50
DCLKA11	DCLKA11	DDR0_CLK_P11	DDR0_CLK_P11	AJ4	MDA51
DCLKA12	DCLKA12	DDR0_CLK_P12	DDR0_CLK_P12	AL2	MDA52
DCLKA13	DCLKA13	DDR0_CLK_P13	DDR0_CLK_P13	AJ2	MDA54
DCLKA14	DCLKA14	DDR0_CLK_P14	DDR0_CLK_P14	AJ1	MDA55
DCLKA15	DCLKA15	DDR0_CLK_P15	DDR0_CLK_P15	AG1	MDA57
DCLKA16	DCLKA16	DDR0_CLK_P16	DDR0_CLK_P16	AG4	MDA61
DCLKA17	DCLKA17	DDR0_CLK_P17	DDR0_CLK_P17	AE3	MDA58
DCLKA18	DCLKA18	DDR0_CLK_P18	DDR0_CLK_P18	E4	MDA59
DCLKA19	DCLKA19	DDR0_CLK_P19	DDR0_CLK_P19	AG2	MDA60
DCLKA20	DCLKA20	DDR0_CLK_P20	DDR0_CLK_P20	AG3	MDA56
DCLKA21	DCLKA21	DDR0_CLK_P21	DDR0_CLK_P21	AE2	MDA63
DCLKA22	DCLKA22	DDR0_CLK_P22	DDR0_CLK_P22	AE1	MDA62
DCLKA23	DCLKA23	DDR0_CLK_P23	DDR0_CLK_P23	AE39	DQSA0
DCLKA24	DCLKA24	DDR0_CLK_P24	DDR0_CLK_P24	AJ39	DQSA1
DCLKA25	DCLKA25	DDR0_CLK_P25	DDR0_CLK_P25	AN39	DQSA2
DCLKA26	DCLKA26	DDR0_CLK_P26	DDR0_CLK_P26	AV36	DQSA3
DCLKA27	DCLKA27	DDR0_CLK_P27	DDR0_CLK_P27	AV5	DQSA4
DCLKA28	DCLKA28	DDR0_CLK_P28	DDR0_CLK_P28	AP3	DQSA5
DCLKA29	DCLKA29	DDR0_CLK_P29	DDR0_CLK_P29	AK3	DQSA6
DCLKA30	DCLKA30	DDR0_CLK_P30	DDR0_CLK_P30	AF3	DQSA7
DCLKA31	DCLKA31	DDR0_CLK_P31	DDR0_CLK_P31	AV32	DQSA7
DCLKA32	DCLKA32	DDR0_CLK_P32	DDR0_CLK_P32	AE38	DQSA0
DCLKA33	DCLKA33	DDR0_CLK_P33	DDR0_CLK_P33	AJ38	DQSA1
DCLKA34	DCLKA34	DDR0_CLK_P34	DDR0_CLK_P34	AN38	DQSA2
DCLKA35	DCLKA35	DDR0_CLK_P35	DDR0_CLK_P35	AJ36	DQSA3
DCLKA36	DCLKA36	DDR0_CLK_P36	DDR0_CLK_P36	AW5	DQSA4
DCLKA37	DCLKA37	DDR0_CLK_P37	DDR0_CLK_P37	AP2	DQSA5
DCLKA38	DCLKA38	DDR0_CLK_P38	DDR0_CLK_P38	AK2	DQSA6
DCLKA39	DCLKA39	DDR0_CLK_P39	DDR0_CLK_P39	AF2	DQSA7
DCLKA40	DCLKA40	DDR0_CLK_P40	DDR0_CLK_P40	AJ32	DQSA7

HASWELL[10SC1-F01150-01R\_10SC1-F01150-03R]

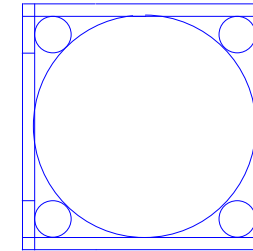
## LGA1150 (B)

LGA1150B		DDR1_MA0	DDR1_D00	AE34	MDB0
MAAB0	AL19	DDR1_MA1	DDR1_D01	AE35	MDB1
MAAB1	AK23	DDR1_MA2	DDR1_D02	AG35	MDB2
MAAB2	AM22	DDR1_MA3	DDR1_D03	AH35	MDB3
MAAB3	AM23	DDR1_MA4	DDR1_D04	AD34	MDB4
MAAB4	AP23	DDR1_MA5	DDR1_D05	AD35	MDB5
MAAB5	AL23	DDR1_MA6	DDR1_D06	AG34	MDB6
MAAB6	AY24	DDR1_MA7	DDR1_D07	AH34	MDB7
MAAB7	AY25	DDR1_MA8	DDR1_D08	AL34	MDB8
MAAB8	AU26	DDR1_MA9	DDR1_D09	AL35	MDB9
MAAB9	AW25	DDR1_MA10	DDR1_D10	AL31	MDB11
MAAB10	AP18	DDR1_MA11	DDR1_D11	AK34	MDB12
MAAB11	AY25	DDR1_MA12	DDR1_D12	AK35	MDB13
MAAB12	AY26	DDR1_MA13	DDR1_D13	AK32	MDB14
MAAB13	AR15	DDR1_MA14	DDR1_D14	AL32	MDB15
MAAB14	AV27	DDR1_MA15	DDR1_D15	AL34	MDB17
MAAB15	AY28	DDR1_MA16	DDR1_D16	AP34	MDB21
MODT_B0	AM17	DDR1_ODT0	DDR1_ODT0	AN31	MDB19
MODT_B1	AL16	DDR1_ODT1	DDR1_ODT1	AP31	MDB23
AM16	AM16	DDR1_ODT2	DDR1_ODT2	AP35	MDB20
AK15	AK15	DDR1_ODT3	DDR1_ODT3	AP35	MDB16
AM26	AM26	DDR1_ECC0	DDR1_ECC0	AN32	MDB18
AM25	AM25	DDR1_ECC1	DDR1_ECC1	AP32	MDB22
AP25	AP25	DDR1_ECC2	DDR1_ECC2	AM29	MDB25
AP26	AP26	DDR1_ECC3	DDR1_ECC3	AM28	MDB28
AL26	AL26	DDR1_ECC4	DDR1_ECC4	AR29	MDB27
AL25	AL25	DDR1_ECC5	DDR1_ECC5	AR28	MDB30
AR26	AR26	DDR1_ECC6	DDR1_ECC6	AL28	MDB24
AR25	AR25	DDR1_ECC7	DDR1_ECC7	AL28	MDB29
BA0	BA0	DDR1_BA0	DDR1_BA0	AP29	MDB26
BA1	BA1	DDR1_BA1	DDR1_BA1	AP28	MDB31
BA2	BA2	DDR1_BA2	DDR1_BA2	AR12	MDB32
CKE0	CKE0	DDR1_CKE0	DDR1_CKE0	AL12	MDB35
CKE1	CKE1	DDR1_CKE1	DDR1_CKE1	AR13	MDB36
CKE2	CKE2	DDR1_CKE2	DDR1_CKE2	AP13	MDB37
CKE3	CKE3	DDR1_CKE3	DDR1_CKE3	AM13	MDB38
CSB0	CSB0	DDR1_CS_N0	DDR1_CS_N0	AM12	MDB39
CSB1	CSB1	DDR1_CS_N1	DDR1_CS_N1	AR9	MDB45
CSB2	CSB2	DDR1_CS_N2	DDR1_CS_N2	AP9	MDB41
CSB3	CSB3	DDR1_CS_N3	DDR1_CS_N3	AR6	MDB47
DCLKB0	DCLKB0	DDR1_CLK_P0	DDR1_CLK_P0	AP6	MDB43
DCLKB1	DCLKB1	DDR1_CLK_P1	DDR1_CLK_P1	AR10	MDB44
DCLKB2	DCLKB2	DDR1_CLK_P2	DDR1_CLK_P2	AP10	MDB40
DCLKB3	DCLKB3	DDR1_CLK_P3	DDR1_CLK_P3	AR7	MDB46
DCLKB4	DCLKB4	DDR1_CLK_P4	DDR1_CLK_P4	AP7	MDB42
DCLKB5	DCLKB5	DDR1_CLK_P5	DDR1_CLK_P5	AM9	MDB52
DCLKB6	DCLKB6	DDR1_CLK_P6	DDR1_CLK_P6	AL9	MDB53
DCLKB7	DCLKB7	DDR1_CLK_P7	DDR1_CLK_P7	AL6	MDB50
DCLKB8	DCLKB8	DDR1_CLK_P8	DDR1_CLK_P8	AL7	MDB55
DCLKB9	DCLKB9	DDR1_CLK_P9	DDR1_CLK_P9	AM10	MDB48
DCLKB10	DCLKB10	DDR1_CLK_P10	DDR1_CLK_P10	AL10	MDB49
DCLKB11	DCLKB11	DDR1_CLK_P11	DDR1_CLK_P11	AM6	MDB54
DCLKB12	DCLKB12	DDR1_CLK_P12	DDR1_CLK_P12	AM7	MDB51
DCLKB13	DCLKB13	DDR1_CLK_P13	DDR1_CLK_P13	AH6	MDB61
DCLKB14	DCLKB14	DDR1_CLK_P14	DDR1_CLK_P14	AH7	MDB60
DCLKB15	DCLKB15	DDR1_CLK_P15	DDR1_CLK_P15	AE6	MDB59
DCLKB16	DCLKB16	DDR1_CLK_P16	DDR1_CLK_P16	AE7	MDB63
DCLKB17	DCLKB17	DDR1_CLK_P17	DDR1_CLK_P17	AJ6	MDB56
DCLKB18	DCLKB18	DDR1_CLK_P18	DDR1_CLK_P18	AJ7	MDB57
DCLKB19	DCLKB19	DDR1_CLK_P19	DDR1_CLK_P19	AG6	MDB58
DCLKB20	DCLKB20	DDR1_CLK_P20	DDR1_CLK_P20	AF7	MDB62
DCLKB21	DCLKB21	DDR1_CLK_P21	DDR1_CLK_P21	AF35	DQSB0
DCLKB22	DCLKB22	DDR1_CLK_P22	DDR1_CLK_P22	AL33	DQSB1
DCLKB23	DCLKB23	DDR1_CLK_P23	DDR1_CLK_P23	AP33	DQSB2
DCLKB24	DCLKB24	DDR1_CLK_P24	DDR1_CLK_P24	AN28	DQSB3
DCLKB25	DCLKB25	DDR1_CLK_P25	DDR1_CLK_P25	AN12	DQSB4
DCLKB26	DCLKB26	DDR1_CLK_P26	DDR1_CLK_P26	AP8	DQSB5
DCLKB27	DCLKB27	DDR1_CLK_P27	DDR1_CLK_P27	AL8	DQSB6
DCLKB28	DCLKB28	DDR1_CLK_P28	DDR1_CLK_P28	AG7	DQSB7
DCLKB29	DCLKB29	DDR1_CLK_P29	DDR1_CLK_P29	AN25	DQSB0
DCLKB30	DCLKB30	DDR1_CLK_P30	DDR1_CLK_P30	AK33	DQSB1
DCLKB31	DCLKB31	DDR1_CLK_P31	DDR1_CLK_P31	AN33	DQSB2
DCLKB32	DCLKB32	DDR1_CLK_P32	DDR1_CLK_P32	AN29	DQSB3
DCLKB33	DCLKB33	DDR1_CLK_P33	DDR1_CLK_P33	AL13	DQSB4
DCLKB34	DCLKB34	DDR1_CLK_P34	DDR1_CLK_P34	AR8	DQSB5
DCLKB35	DCLKB35	DDR1_CLK_P35	DDR1_CLK_P35	AM8	DQSB6
DCLKB36	DCLKB36	DDR1_CLK_P36	DDR1_CLK_P36	AG6	DQSB7
DCLKB37	DCLKB37	DDR1_CLK_P37	DDR1_CLK_P37	AN26	DQSB0
DCLKB38	DCLKB38	DDR1_CLK_P38	DDR1_CLK_P38	AN26	DQSB0



HASWELL[10SC1-F01150-01R\_10SC1-F01150-03R]

## LGA1150 (CR)

CR  
CPU RETAINION/X

LGA1150\_P



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

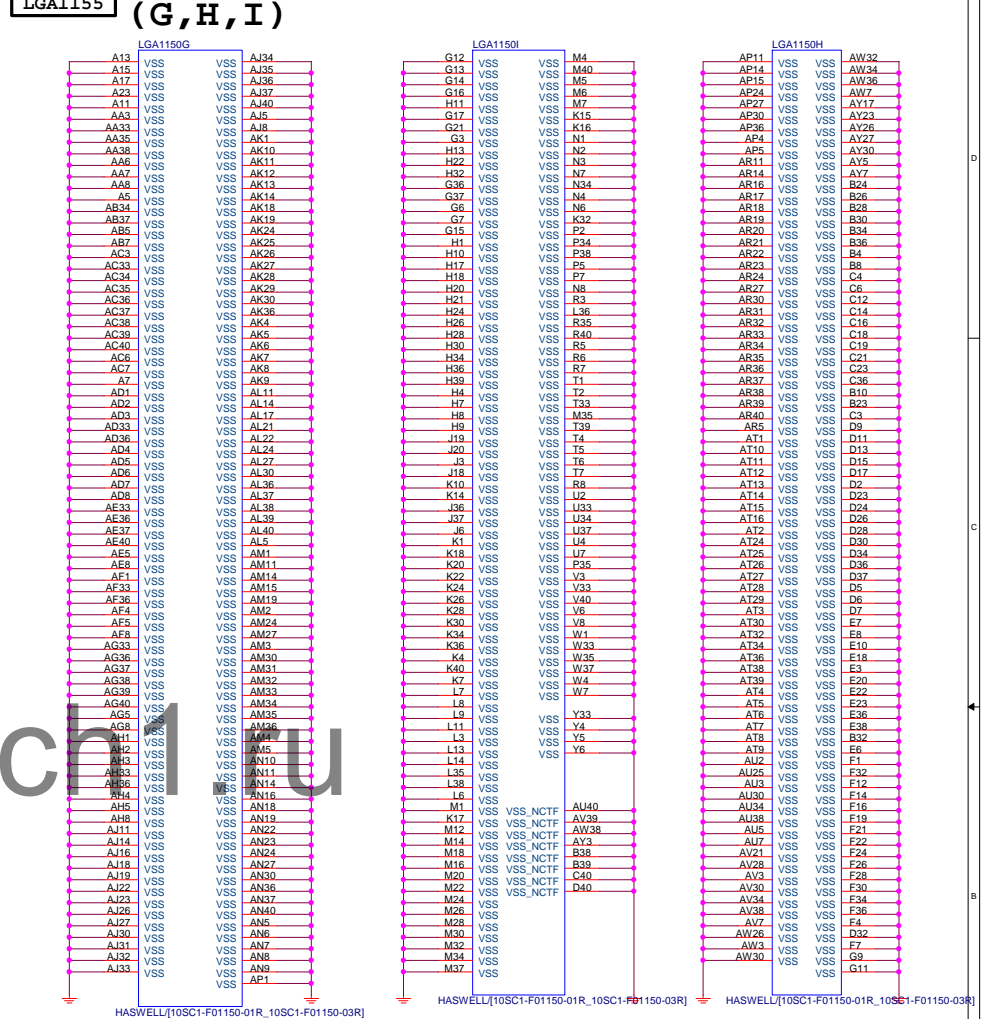
DDR BUS

[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

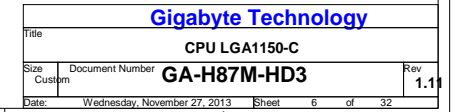
Title				
CPU LGA1150-B				
Size	Document Number			Rev
Custom	GA-H87M-HD3			1.1
Date:	Wednesday, November 27, 2013		Sheet	5 of 32

**LGA1155 (G,H,I)**

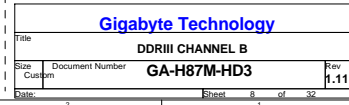


## DDR CAP

(x9)







PCH

(B)

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

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

PCHB

B85: Port 6/7 N/A

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

W=4 mil out of PCH

S=15 mil out of PCH

VCC1\_5\_PCH

NR50 7.5K/4/1 DMI\_COMP B19

NR40 7.5K/4/1 PCIE\_COMP C13

G22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

F22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

G22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

F22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

G22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

F22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

G22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

F22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

G22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

F22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

G22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

F22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

G22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

F22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

G22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

F22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

G22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

F22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

G22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

F22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

G22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

F22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

G22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

F22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

G22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

F22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

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G22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

F22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

G22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

F22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

G22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

F22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

G22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

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G22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

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G22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

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G22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

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G22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

F22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

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G22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

F22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

G22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

F22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

G22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

F22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

G22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

F22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

G22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

F22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

G22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

F22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

G22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

F22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

G22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

F22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

G22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

F22 CK\_SRCCLK\_PCH CK\_SRCCLK\_PCH

放靠近 Device &amp; PCI-E Slot

Impedance=80 +- 17.5%

PCIE1:16/5/5/5/16 (breakout min 8/4/4/4/8)

PCH

(J)

PCHJ

AT1 VSS\_NCTF TP22 U11  
AT41 VSS\_NCTF TP23 U10  
AU1 VSS\_NCTF TP21 A14  
AV1 VSS\_NCTF TP20 K34  
AV2 VSS\_NCTF TP14 K33  
AV40 VSS\_NCTF TP15 K22  
AV41 VSS\_NCTF TP12  
AW2 VSS\_NCTF TP10 L16  
AW40 VSS\_NCTF TP11 K16  
B40 VSS\_NCTF TP9 AM34  
B41 VSS\_NCTF TP3 R12  
C41 VSS\_NCTF TP4 N12  
D1 VSS\_NCTF TP1 L22  
D41 VSS\_NCTF TP2 K22

TP5 R4  
TP6 K5  
TP7 P5  
TP8 L5

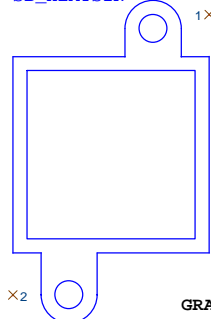
VSS AC31  
VSS AF3  
VSS AV21

CHIP DH82H87 C2 INTEL(10HB1-030H87-20R)

PCH H/S

LOW COST ICH7 HEATSINK

SB\_HEATSINK



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

PCH

(F)

[21] PCH\_USB3\_RXN0 > F20  
[21] PCH\_USB3\_RXP0 > G20  
[21] PCH\_USB3\_TXN0 > B18  
[21] PCH\_USB3\_TXP0 > C18

[21] PCH\_USB3\_RXN1 > G18  
[21] PCH\_USB3\_RXP1 > H18  
[21] PCH\_USB3\_TXN1 > B16  
[21] PCH\_USB3\_TXP1 > C16

[18] PCH\_USB3\_RXN4 > K20  
[18] PCH\_USB3\_RXP4 > L20  
[18] PCH\_USB3\_TXN4 > D15  
[18] PCH\_USB3\_TXP4 > C15

[18] PCH\_USB3\_RXN5 > L18  
[18] PCH\_USB3\_RXP5 > K18  
[18] PCH\_USB3\_TXN5 > B14  
[18] PCH\_USB3\_TXP5 > A14

VCC3

NR62 8.2K/4 NR63 8.2K/4 AK28 AT34

PCHF

USB3 FDI LINK

USB3\_RXN\_0 FDI\_RXN\_0 N1 FDI\_TXN0  
USB3\_RXP\_0 FDI\_RXP\_0 N2 FDI\_TXP0  
USB3\_TXN\_0 FDI\_RXN\_1 P2 FDI\_TXN1  
USB3\_TXP\_0 FDI\_RXP\_1 P3 FDI\_TXP1

USB3\_RXN\_1 FDI\_CSXNC L2 FDI\_CSXNC [4]  
USB3\_RXP\_1 FDI\_CSXNC L2 FDI\_CSXNC [4]  
USB3\_TXN\_1 FDI\_INT L3 FDI\_INT [4]  
USB3\_TXP\_1 FDI\_INT L3 FDI\_INT [4]

USB3\_RXN\_4 FDI\_RCOMP K2 NR29 7.5K/4/1 VCC1\_5\_PCH  
USB3\_RXP\_4 FDI\_RCOMP K2 NR29 7.5K/4/1 VCC1\_5\_PCH  
USB3\_TXN\_4 FDI\_RCOMP K2 NR29 7.5K/4/1 VCC1\_5\_PCH  
USB3\_TXP\_4 FDI\_RCOMP K2 NR29 7.5K/4/1 VCC1\_5\_PCH

USB3\_RXN\_5 FDI\_RCOMP L18  
USB3\_RXP\_5 FDI\_RCOMP K18  
USB3\_TXN\_5 FDI\_RCOMP B14  
USB3\_TXP\_5 FDI\_RCOMP A14

CHIP DH82H87 C2 INTEL(10HB1-030H87-20R)

FDI\_TXP0\_11 &gt;&gt; FDI\_TXP0[0..1] [4]

FDI\_TXN0\_11 &gt;&gt; FDI\_TXN0[0..1] [4]

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

PCH CLK PD

CK\_SRCCLK\_PCH NR89 8.2K/4  
CK\_SRCCLK\_PCH NR88 8.2K/4

Mount for integrated clock Generation Mode

CK\_DOTCLK NR92 8.2K/4  
CK\_DOTCLK NR91 8.2K/4

NR225 short to GND in non graphic SKU

USB TABLE

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

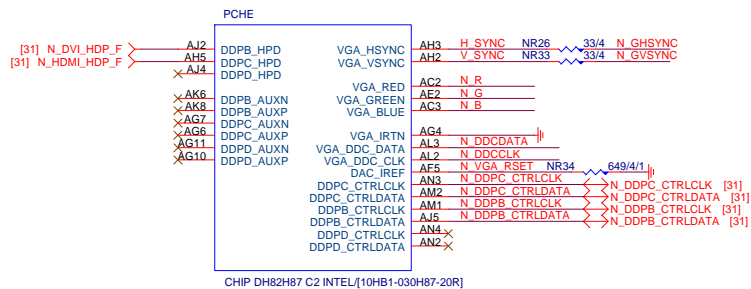
OC[7:4]# for Device 26 (ports 8-13)

USB OC#	Configure
OC0#	F_USB30
OC1#	USB30_LAN
OC2#	R_USB30
OC3#	N/A
OC4#	F_USB1
OC5#	F_USB2
OC6#	KB_MS_USB
OC7#	Not Use

Gigabyte Technology

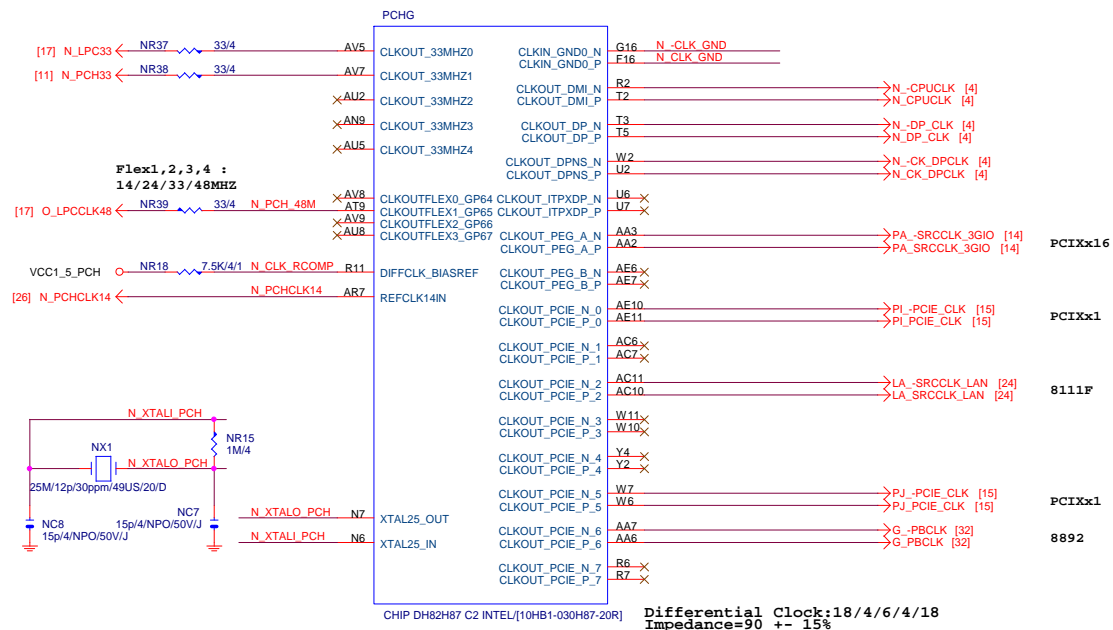
Title	PCH FDI,DMI,USB,PCIE,NVRAM		
Size	Document Number	GA-H87M-HD3	
Custom			
Date:	Wednesday, November 27, 2013	Sheet	9 of 32
			1

PCH



CHIP DH82H87 C2 INTEL/I10HB1-030H87-20R1

PCH



CHIP DH82H87 C2 INTEL/I10HB1-030H87-20R1

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

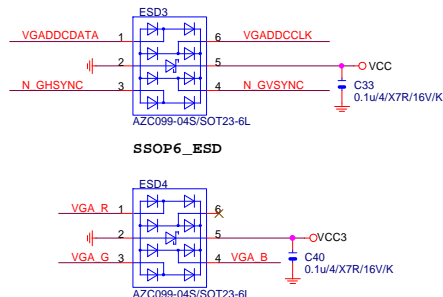
PCH CLK PD
------------



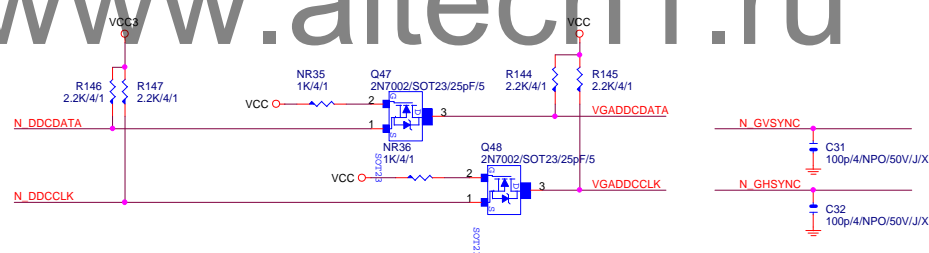
Mount for integrated clock Generation  
Mode



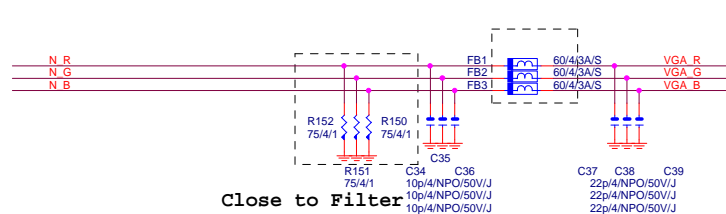
## VGA ESD



## VGA DDC

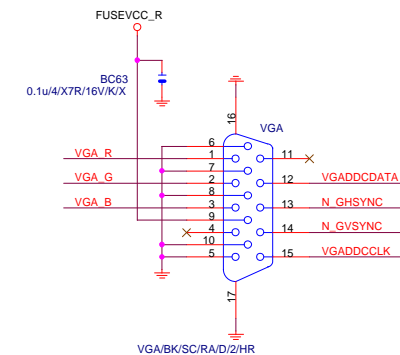


## VGA DDC



Close to Filter

## VGA CONNECTOR



BLACK CONNECTOR

## Gigabyte Technology

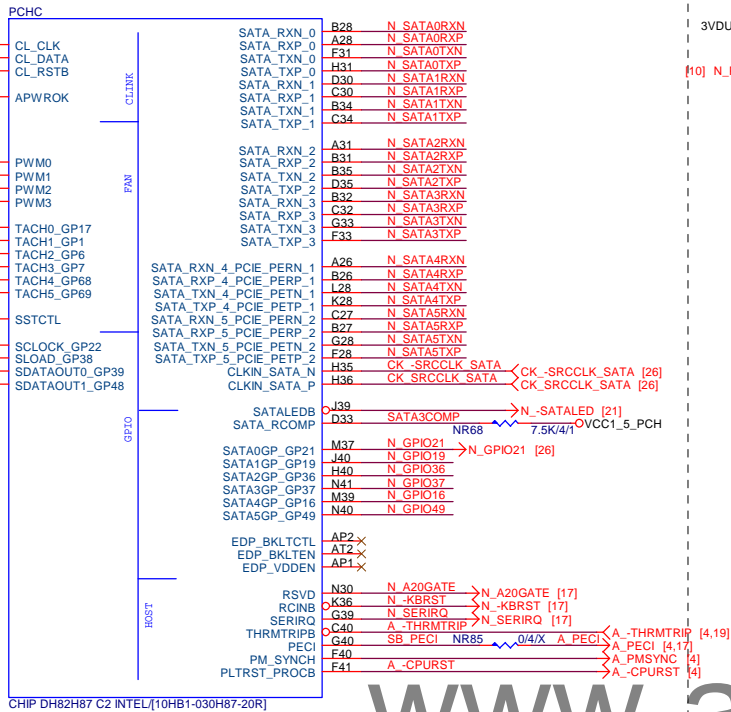
PCH DISPLAY ,CLK BUFFER

GA-H87M-HD3

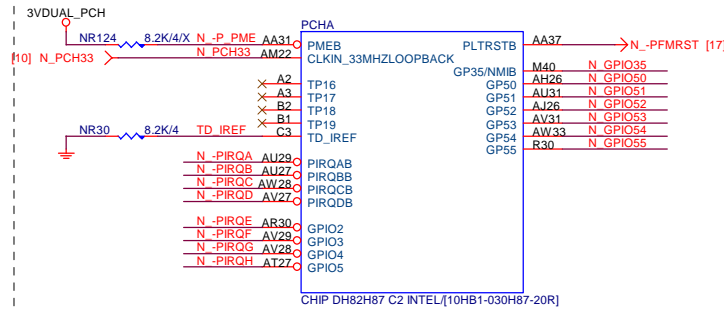
Rev  
1.14

# PCH (C)

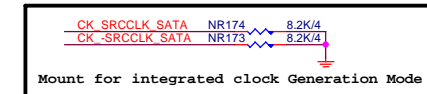
SATA3 : 20/7.5/4.5/7.5/20 (breakout min 8/4/4/4/8)  
Impedance=90 +- 17.5%  
SATA2 : 15/7.5/4.5/7.5/15 (breakout min 8/4/4/4/8)  
Impedance=90 +- 17.5%



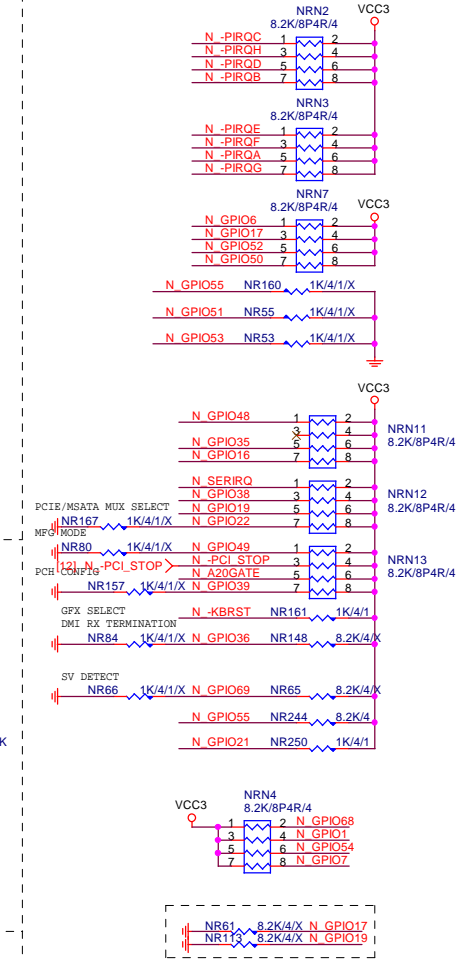
# PCH (A)



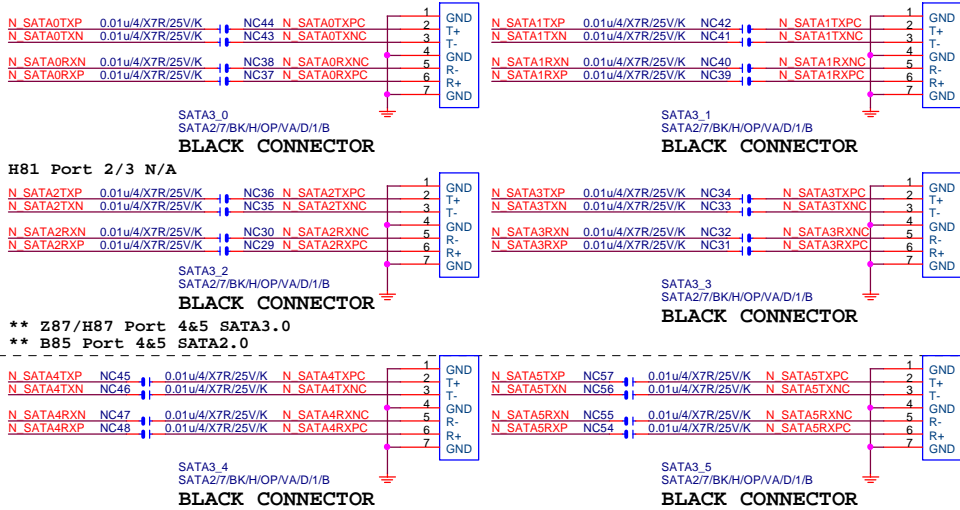
# PCH CLK PD



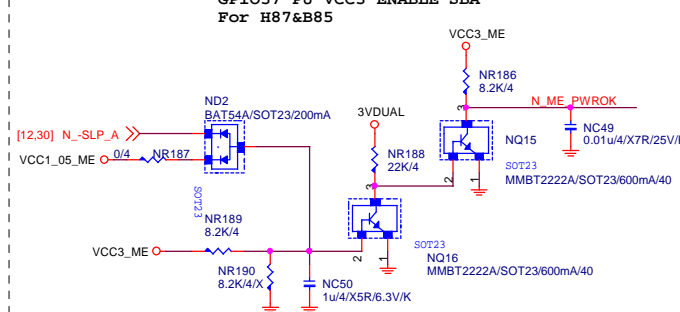
# PCH PU/PD



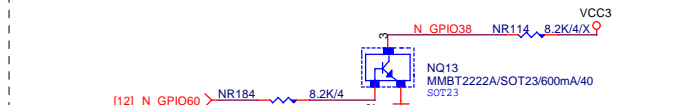
# SATA CONNECTOR



# ME PWROK



# GPIO38 Ctrl



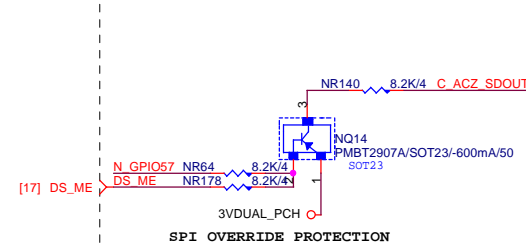
# Gigabyte Technology

Title	PCH HOST , SATA, PCI		Rev
Size	Document Number	GA-H87M-HD3	1.11
Custpm			
Date:	Wednesday, November 27, 2013	Sheet	11 of 32

**(D)**

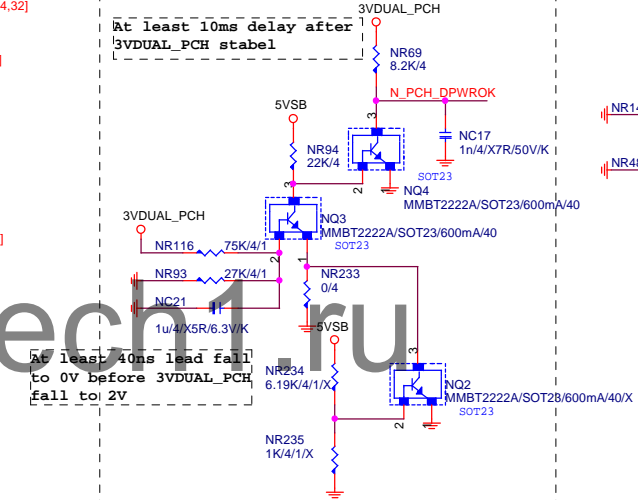


## ACZ\_SDOUT

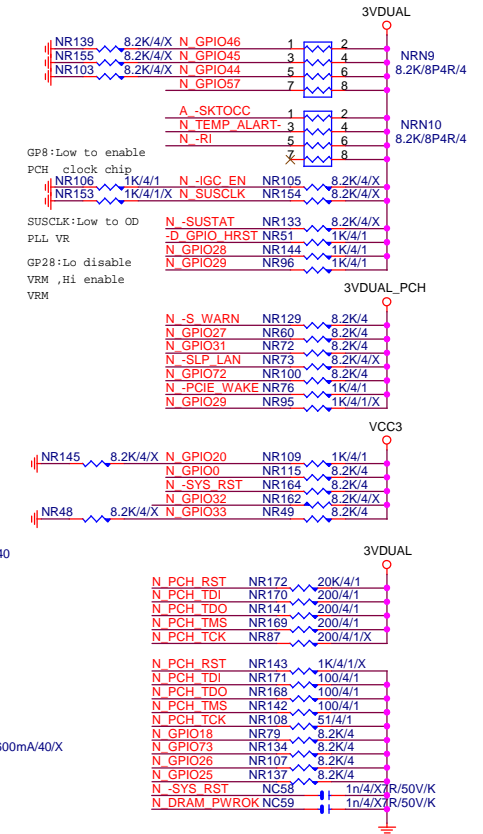


## PCH\_DPWROK

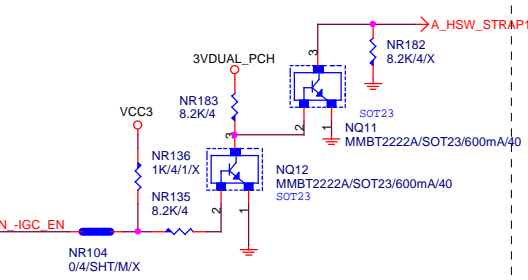
```
| At least 10ms delay after
| 3VDUAL_PCH stabel
```



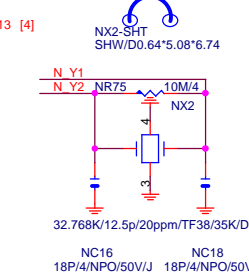
PCH	PU/PD
-----	-------



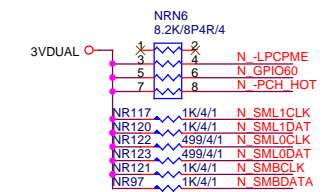
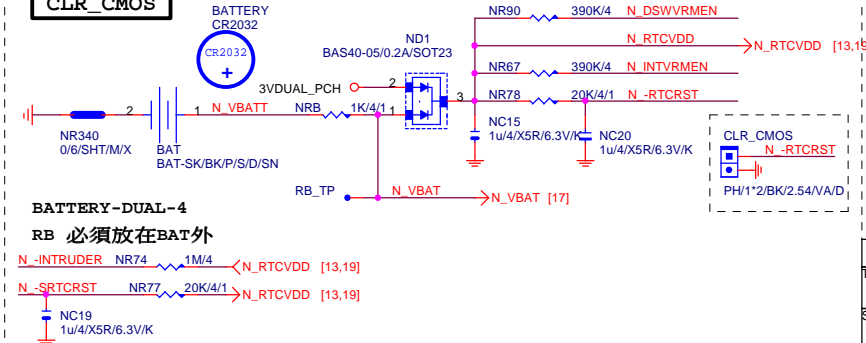
## HSW STRAP13



32.768KHZ



CLR	CMOS
-----	------

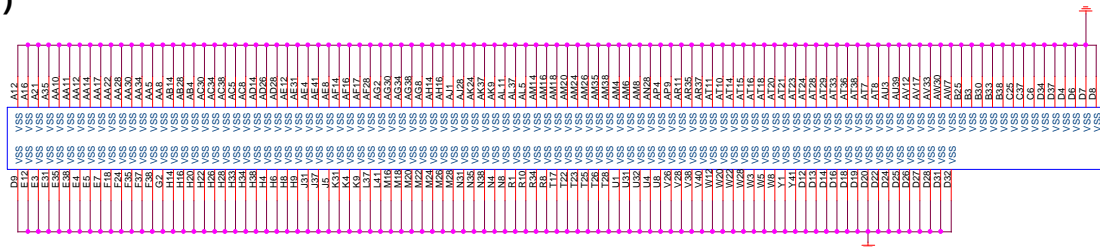


## Gigabyte Technology

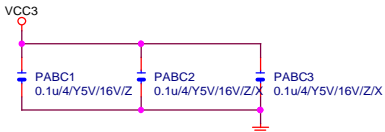
## PCH GPIO , CTRL , AUDIO

Size Custom	Document Number <b>GA-H87M-HD3</b>	Rev <b>1.1</b>
Date:	Wednesday, November 27, 2013	Sheet 12 of 32

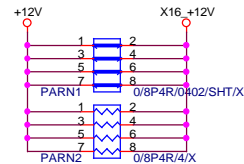
**PCH (I)**



## PCIEX16 CAP



## PCIEX16 PROTECT SHT

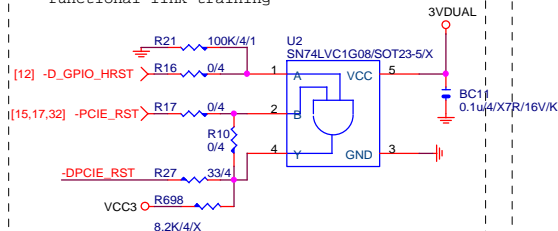


## PCIEX16 AC CAP

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

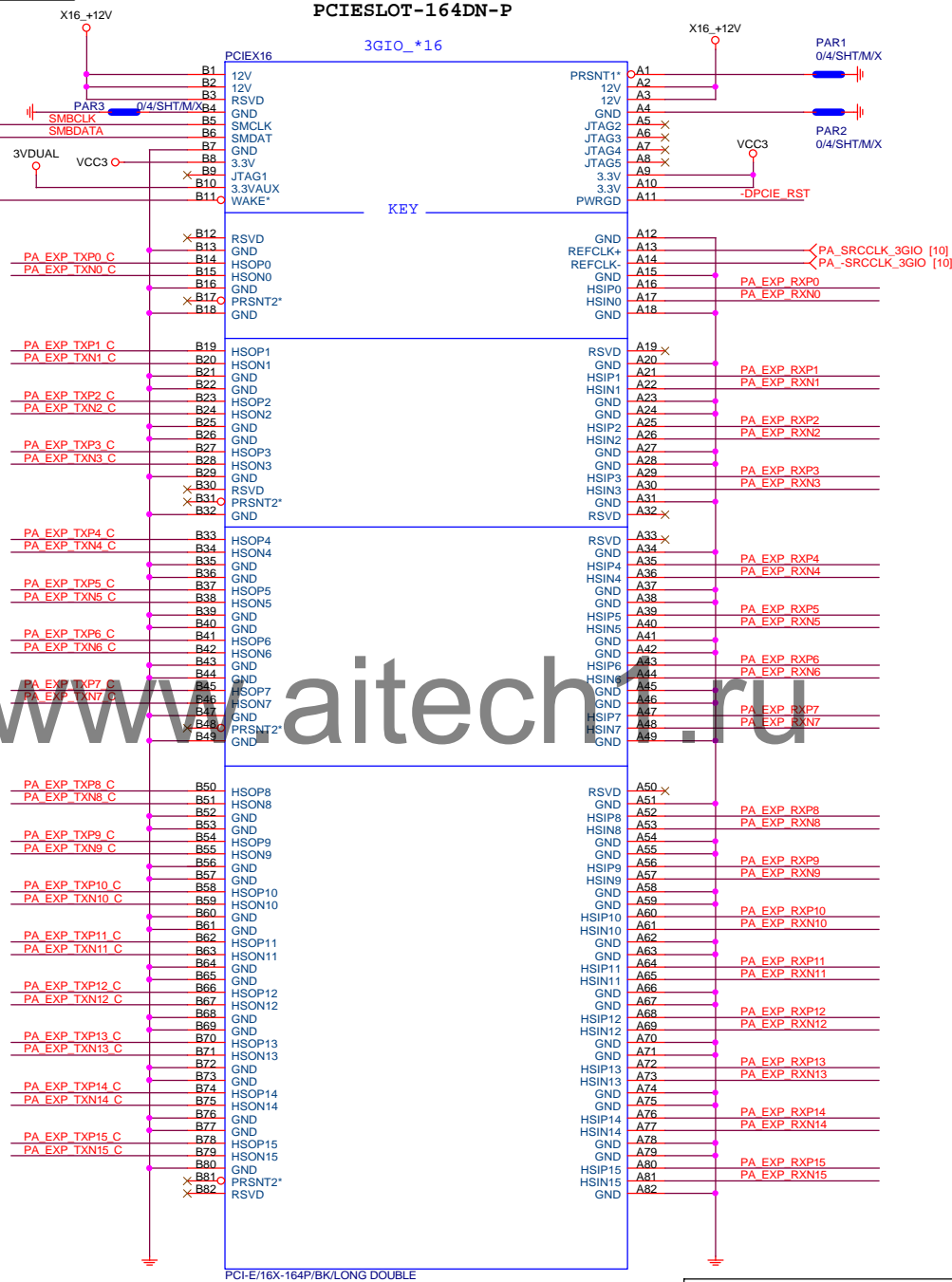
PA EXP RXIP0.15] >> PA\_EXP\_RXIP[0.15] [4]  
PA EXP RXN0.15] >> PA\_EXP\_RXN[0.15] [4]  
PA EXP TXIP0.15] >> PA\_EXP\_TXIP[0.15] [4]  
PA EXP TXN0.15] >> PA\_EXP\_TXN[0.15] [4]

The auxiliary reset circuit is only required for PCIe Gen3 margining and functional link training

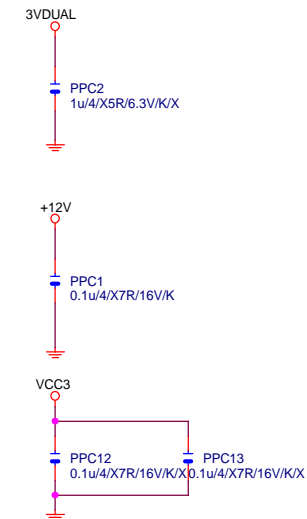
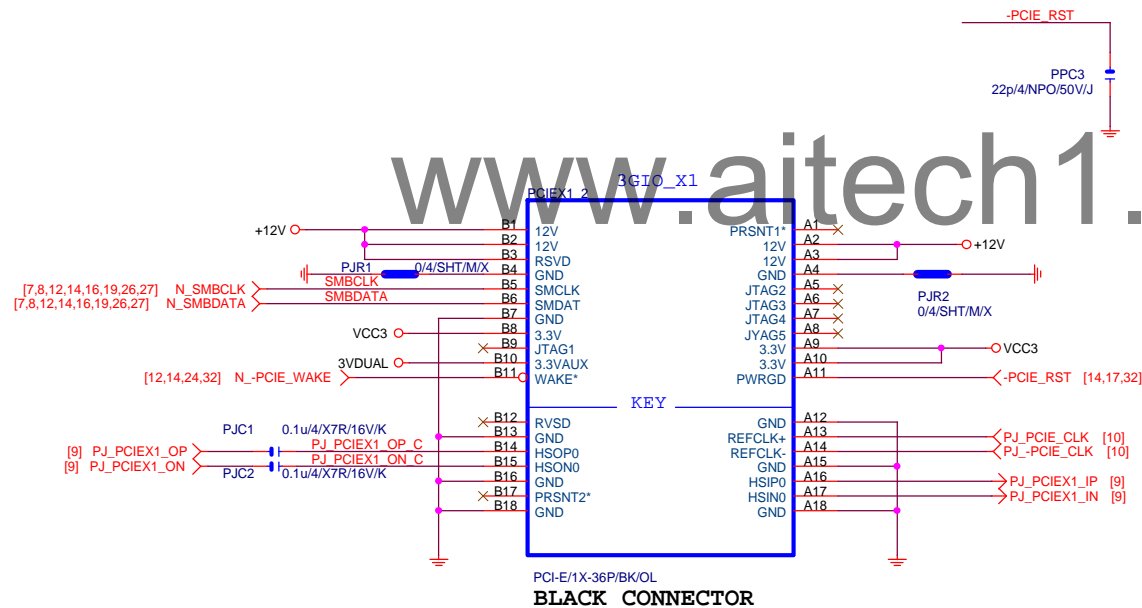
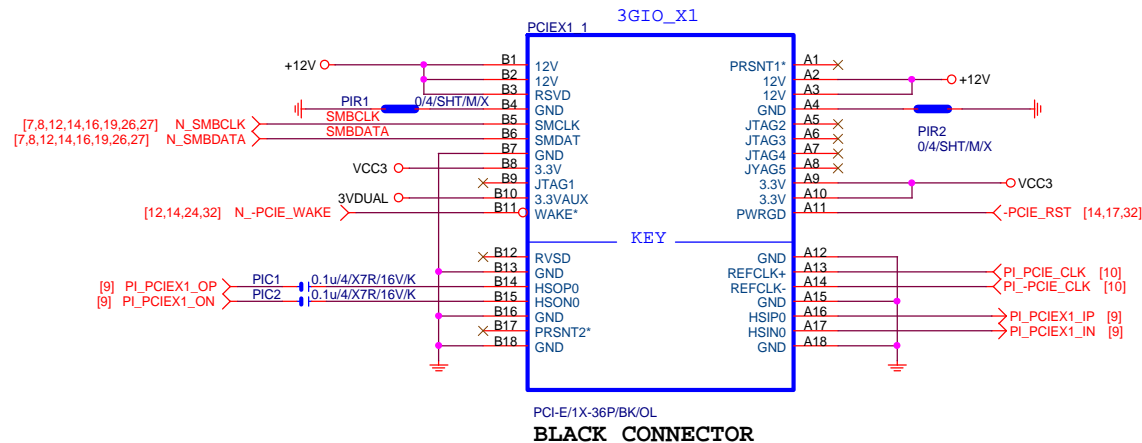


## PCIEX16 SLOT

## PCIESLOT-164DN-P



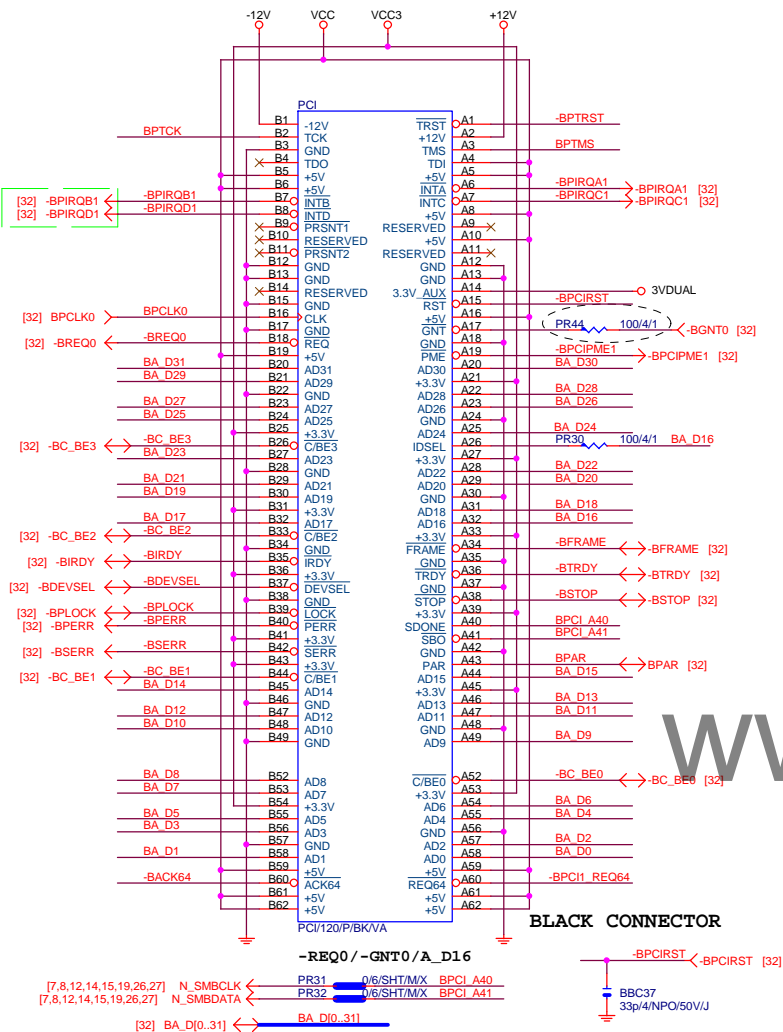
# PCIEX1 SLOT



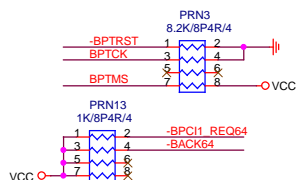
**Gigabyte Technology**

Title			PCI EXPRESS X 1 PORT
Size	Document Number	Rev	
Custom		GA-H87M-HD3	
Date:	Wednesday, November 27, 2013	Sheet	15 of 32

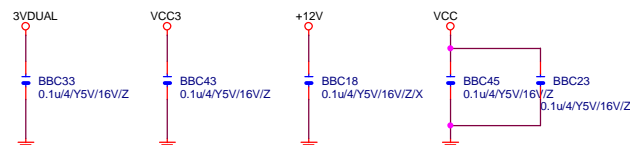
## PCI SLOT 1



## PCI PU

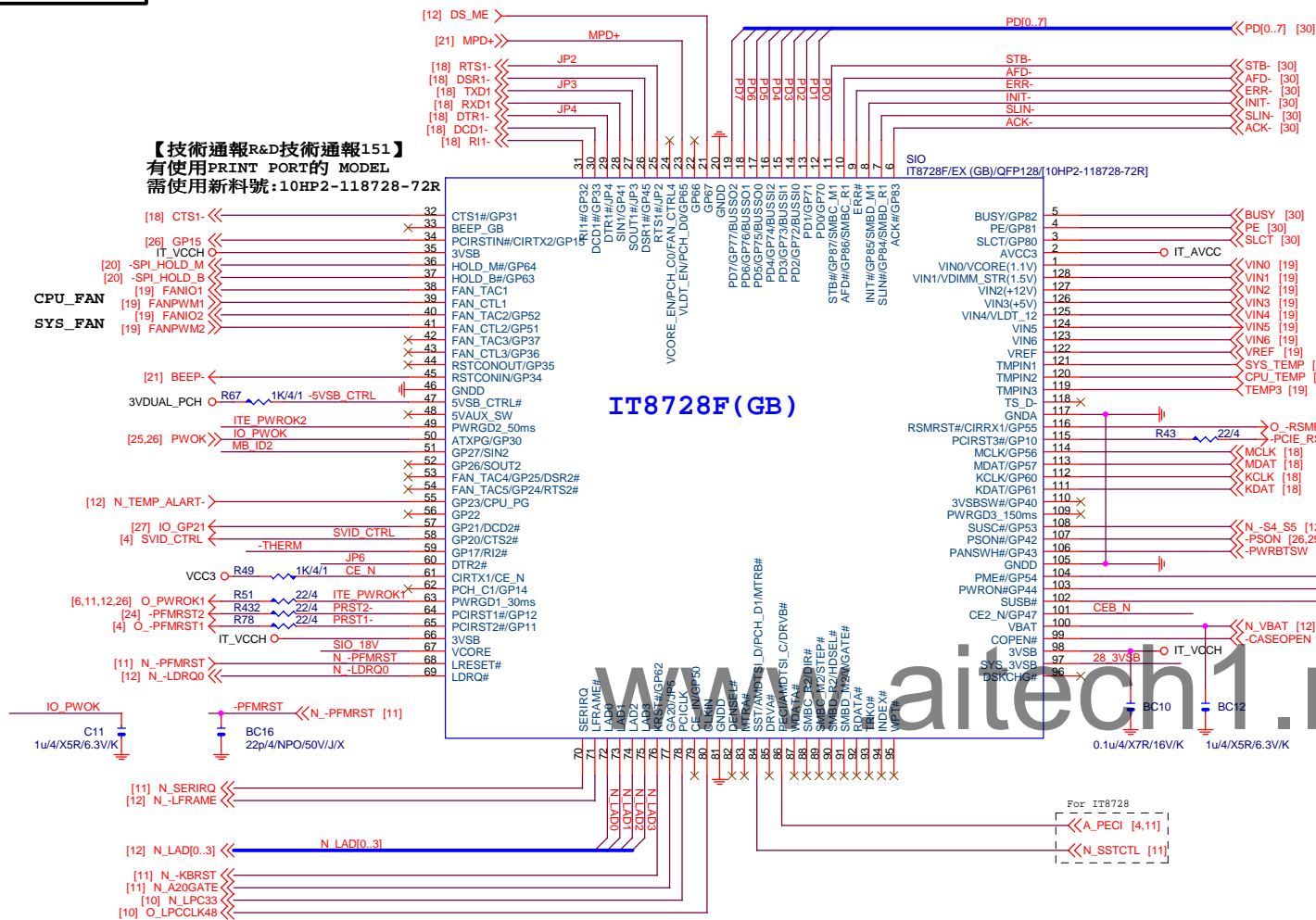


## PCI CAP

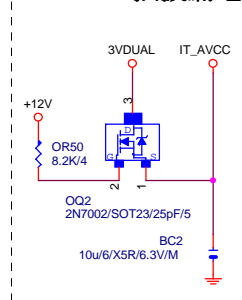


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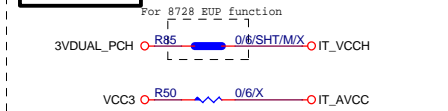
## SIO IT8728F

【技術通報R&D技術通報151】  
需使用PRINT PORT的 MODEL  
需使用新料號:10HP2-118728-72R

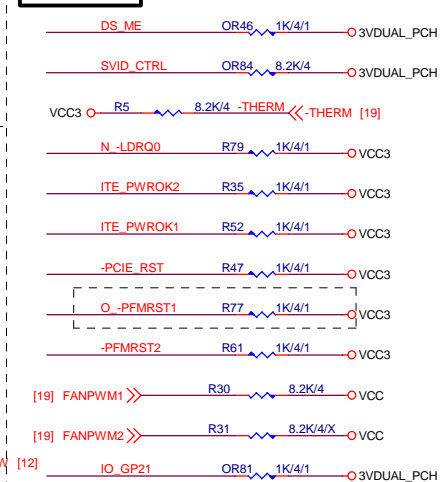
## FIX ATX 插拔漏電



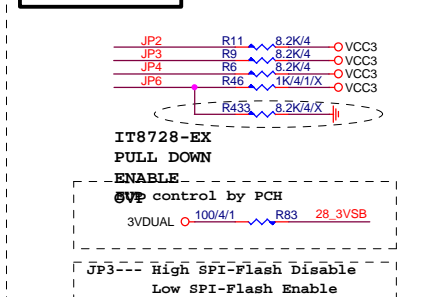
## PWR SHT



## SIO PU



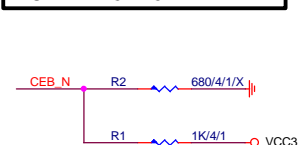
## SIO STRAP



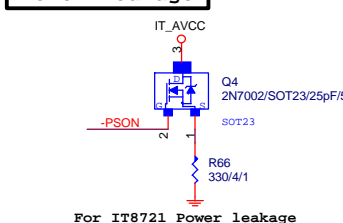
## IT8728F NOTE

IT8728	
PIN121	VCORE_EN/PCH_C0
PIN120	VLDI_EN/PCH_D0
PIN19	ATXPG
PIN31	PCH_C1
PIN53	SST/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

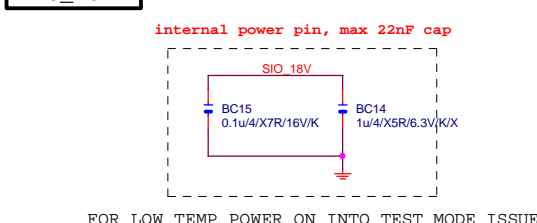
## DUAL BIOS OPT STRAP



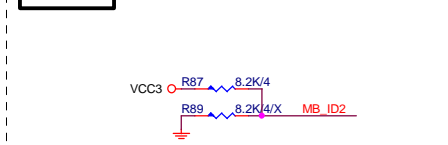
## Power leakage



## SIO\_18V



## MB ID



## SIO CAP

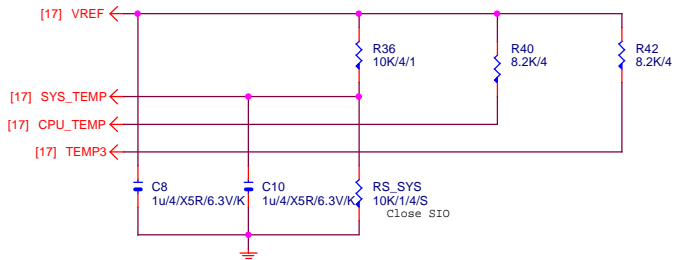


## Gigabyte Technology

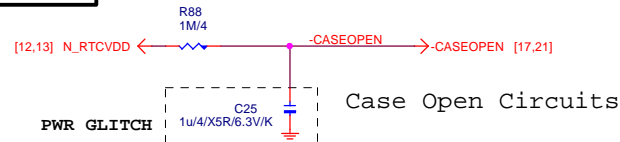
Title		ITE 8728 LPC IO	
Size	Document Number	GA-H87M-HD3	
Custom			Rev 1.11
Date:	Wednesday, November 27, 2013	Sheet	17 of 32



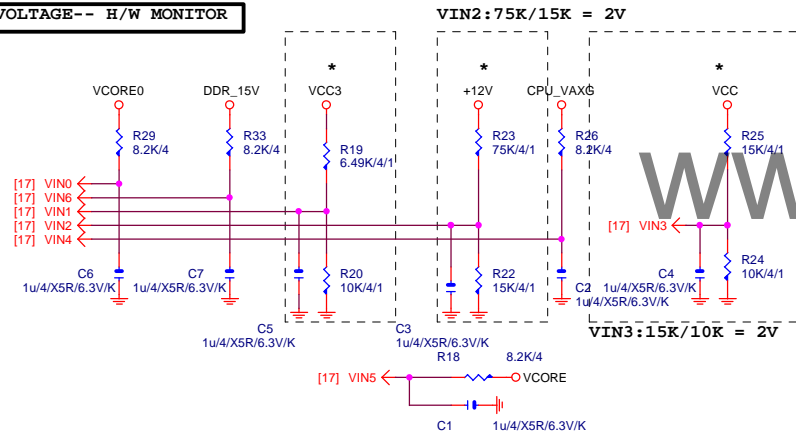
## TEMP H/W MONITOR



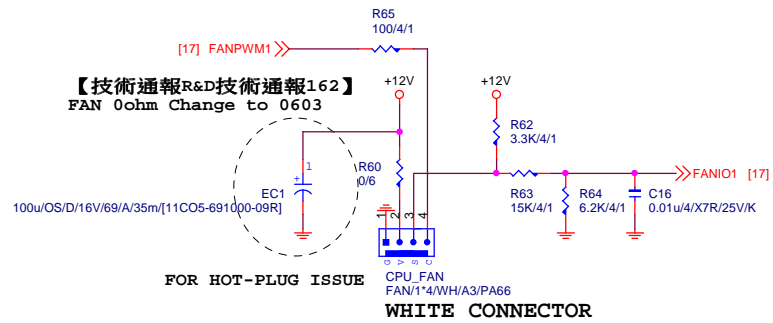
## CASE OPEN



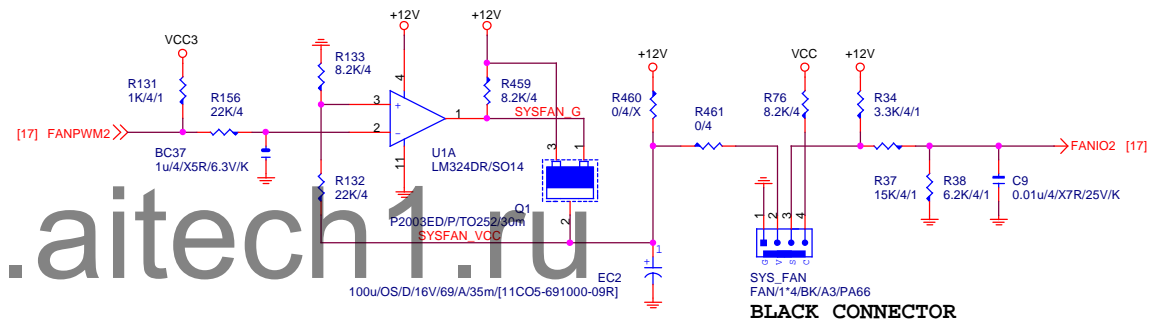
## VOLTAGE-- H/W MONITOR



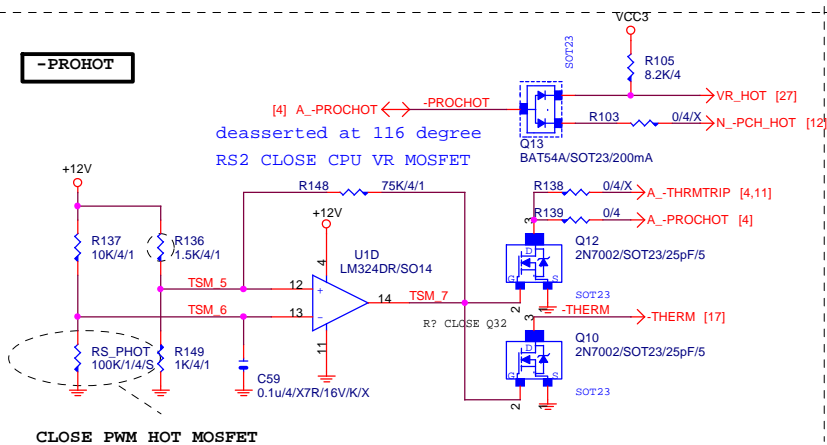
## CPU SMART FAN



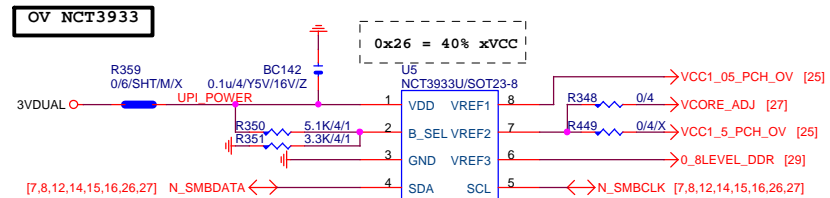
## SYS SMART FAN



## -PROHOT

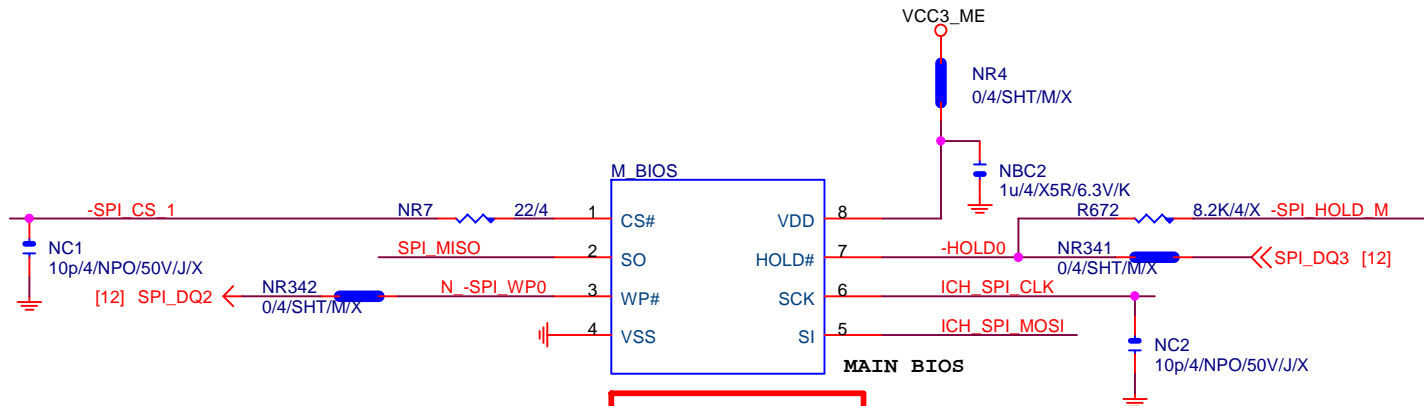


## 接pwm feedback pin

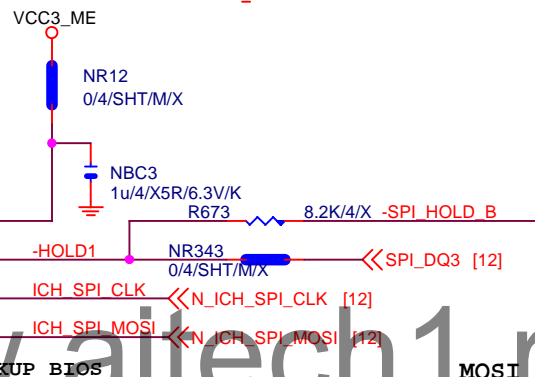


Gigabyte Technology

Title			HWM,FAN CTRL,OV
Size	Document Number	GA-H87M-HD3	
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64M/Q/SPI/SO8/S

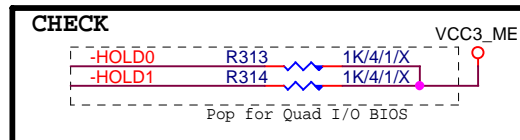
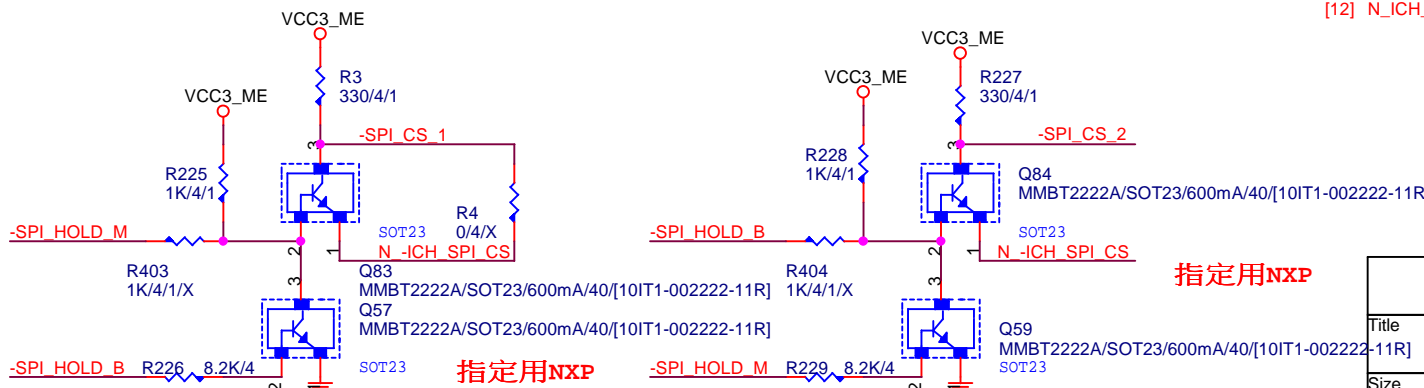
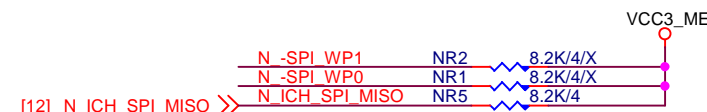
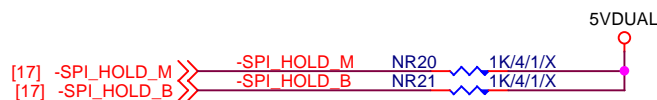
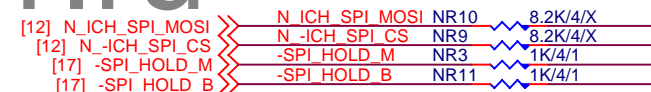


64M/Q/SPI/SO8/S

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



指定用NXP

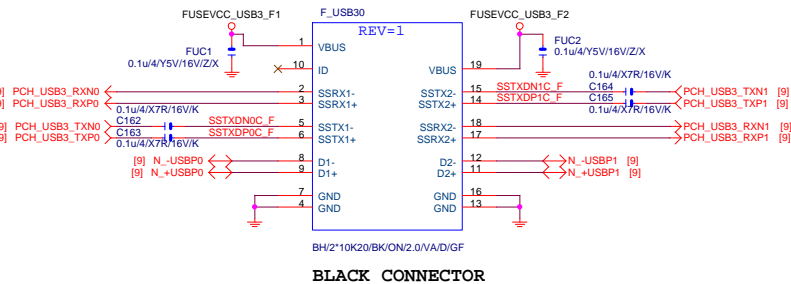
Gigabyte Technology

DUAL BIOS

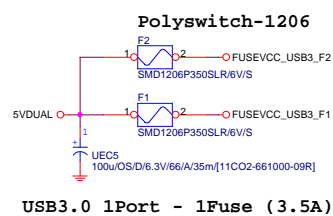
GA-H87M-HD3

Title	Document Number	Rev
Size Custom	Wednesday, November 27, 2013	1.11
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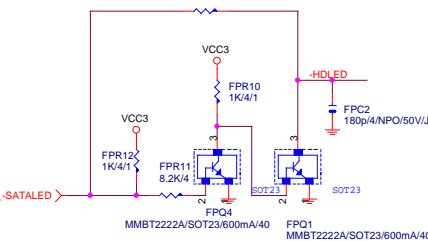
# F\_USB30



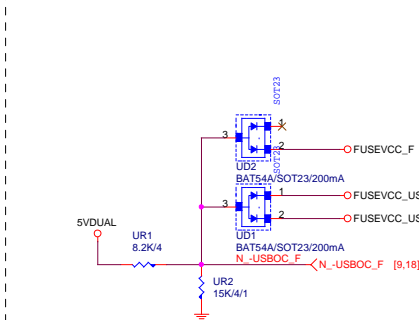
# F\_USB30 PWR



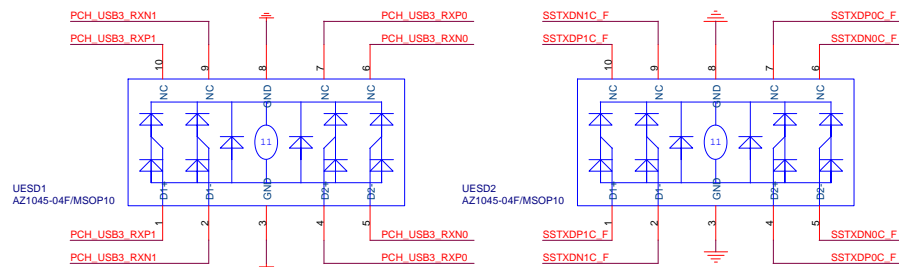
# SATA LED



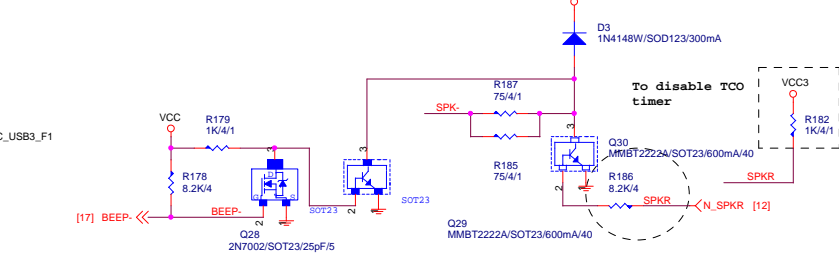
# -USB0C\_F



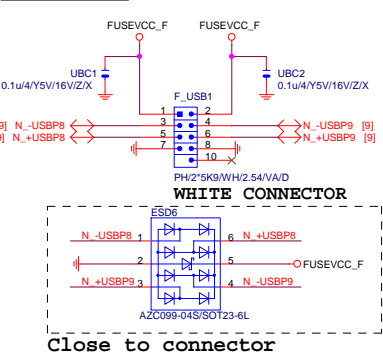
# F\_USB30 ESD PROTECT



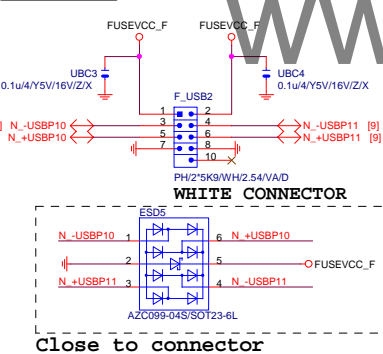
# SPKR



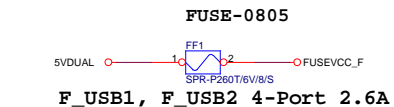
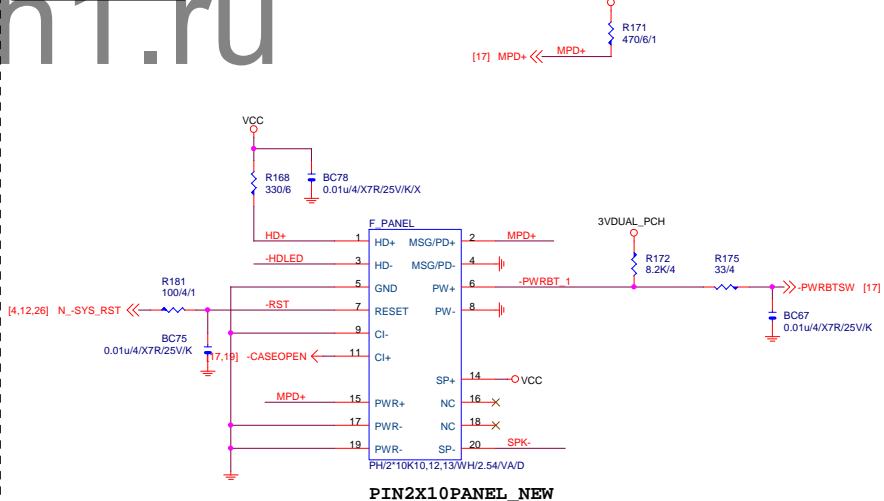
# FRONT USB1



# FRONT USB2

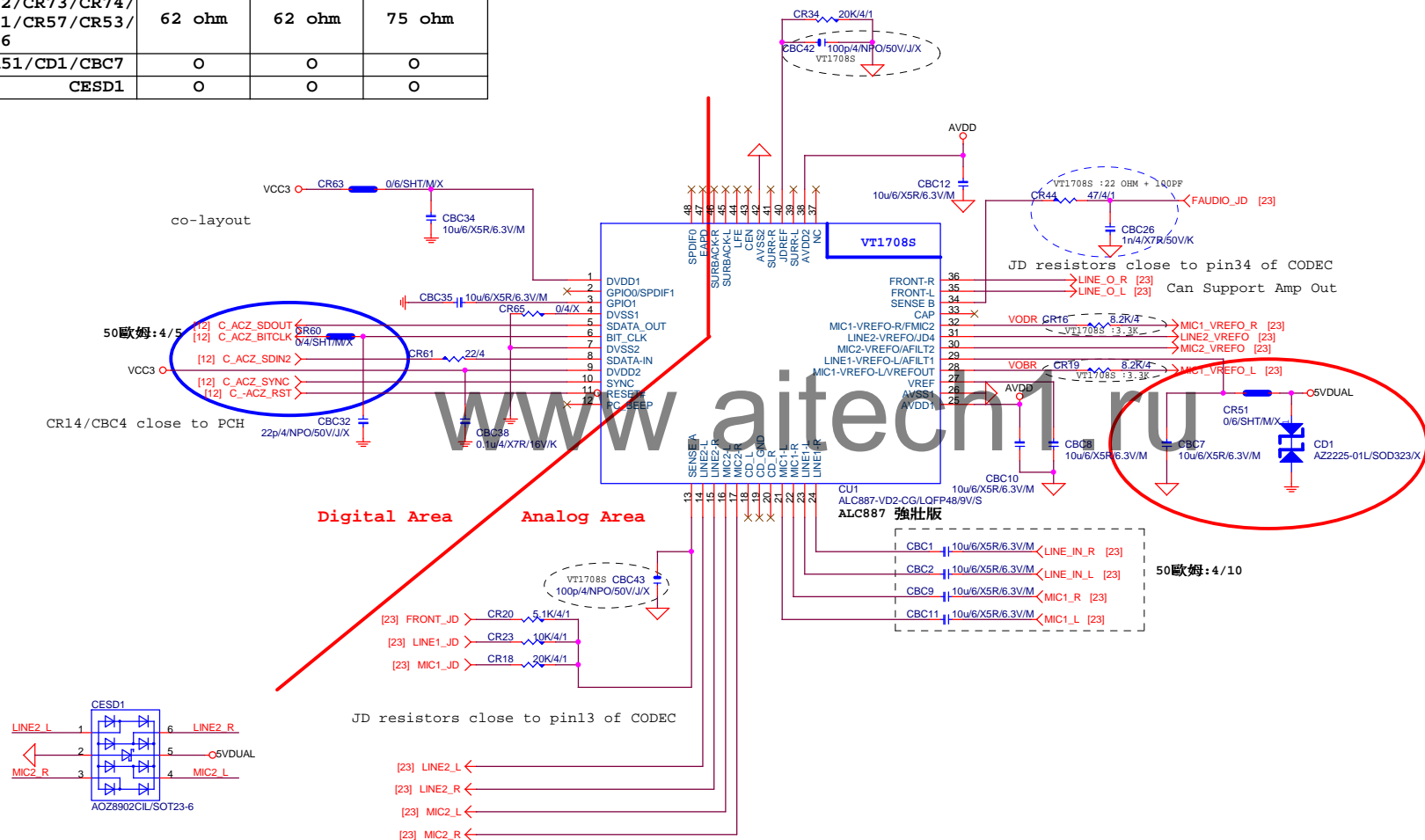


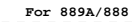
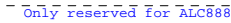
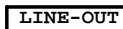
# INTEL FRONT PANEL



Gigabyte Technology			
Title	FP,F_USB,USB PWR,SPKR,SATA LED		
Size	Custom	Document Number	GA-H87M-HD3
Date:	Wednesday, November 27, 2013	Sheet	21 of 32

	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

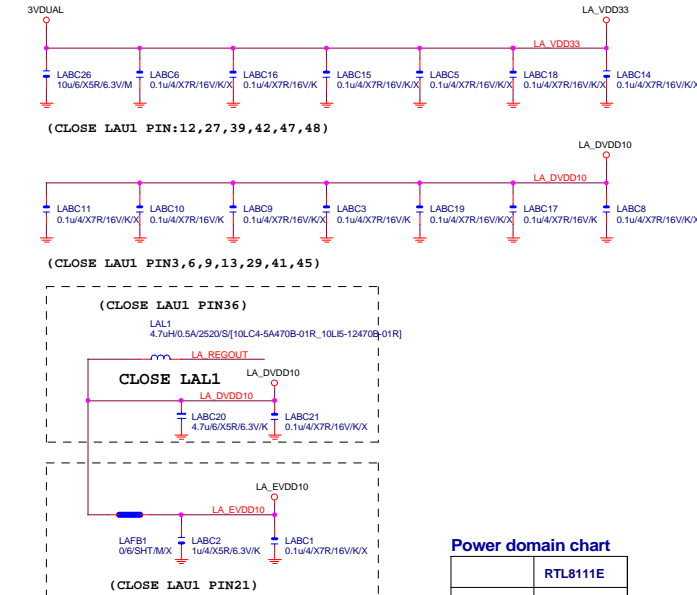
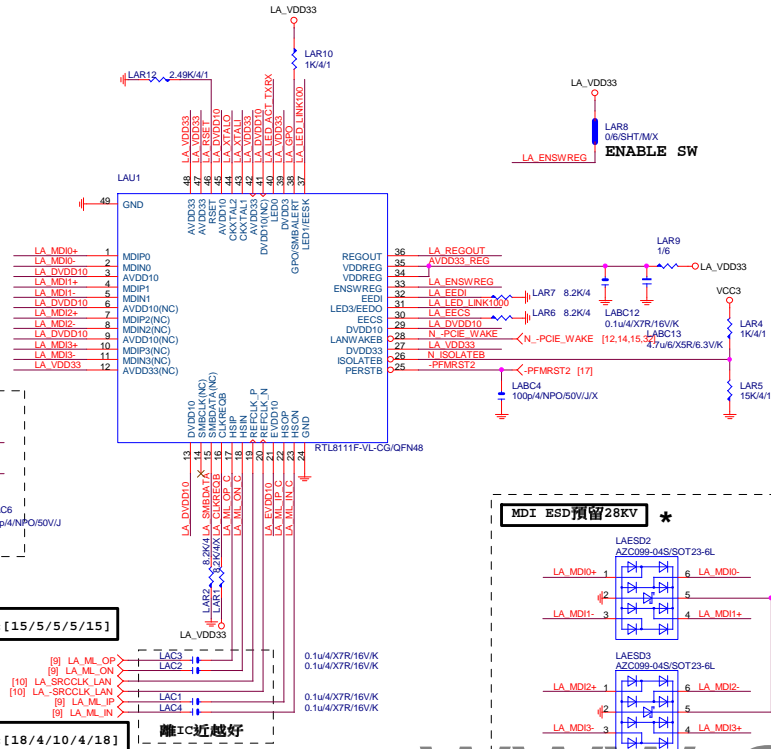
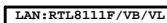




## AZALIA FRONT PANEL

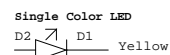
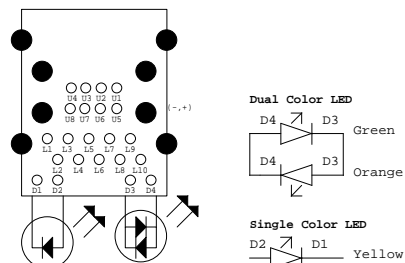
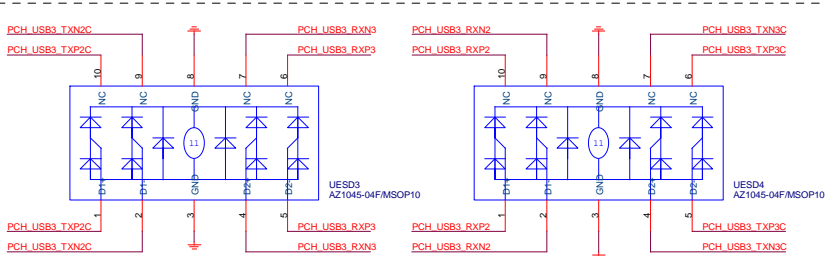
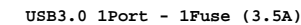
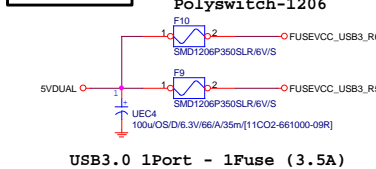
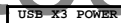
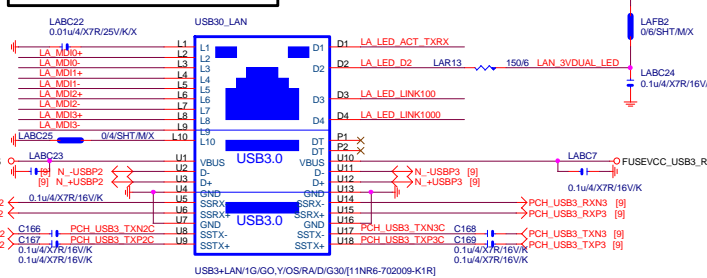
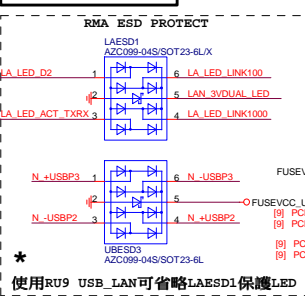


Title			
AUDIO JACK			
Size	Document Number		Rev
Custom	GA-H87M-HD3		1.11
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### Power domain chart

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



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

USB--&gt;90歐姆:[15/4.5/7.5/4.5/15]

BOM NOTICE \*

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

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

## Gigabyte Technology

Realtek RTL8111G

GA-H87M-HD3

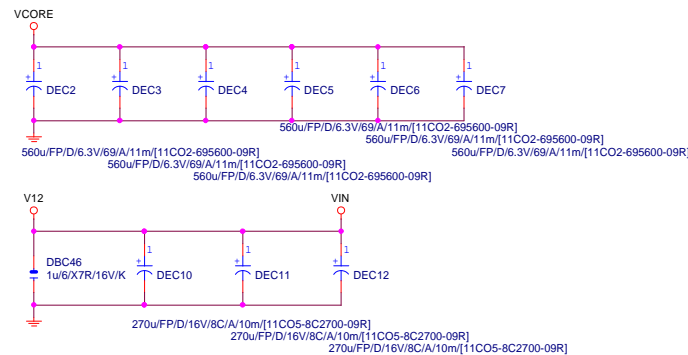
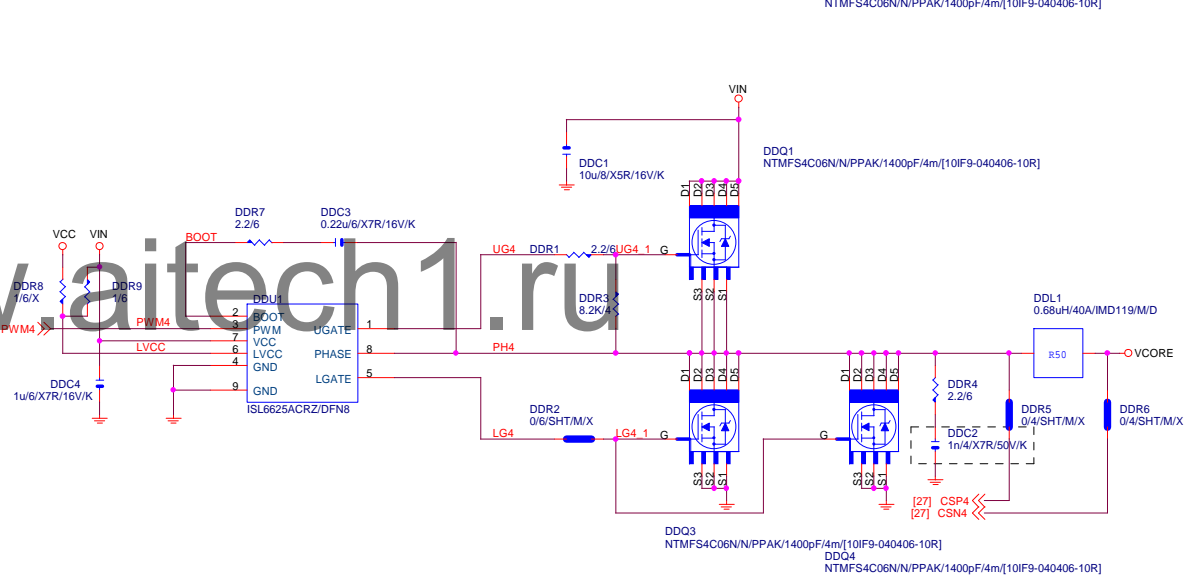
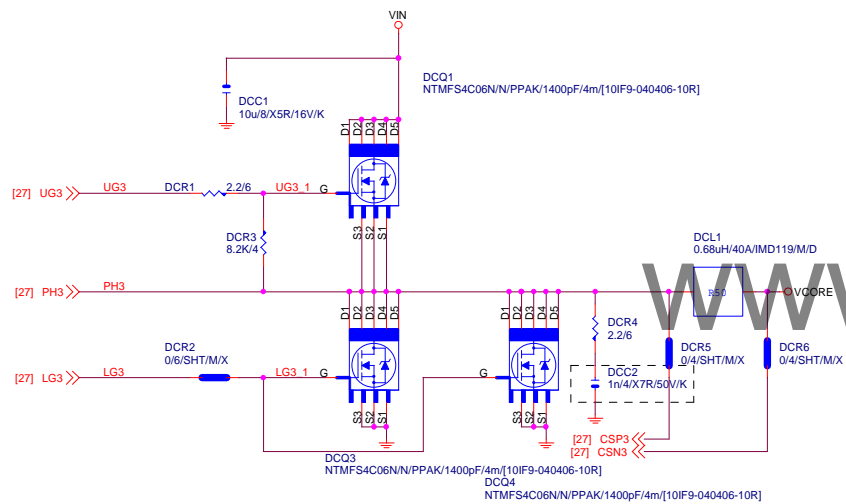
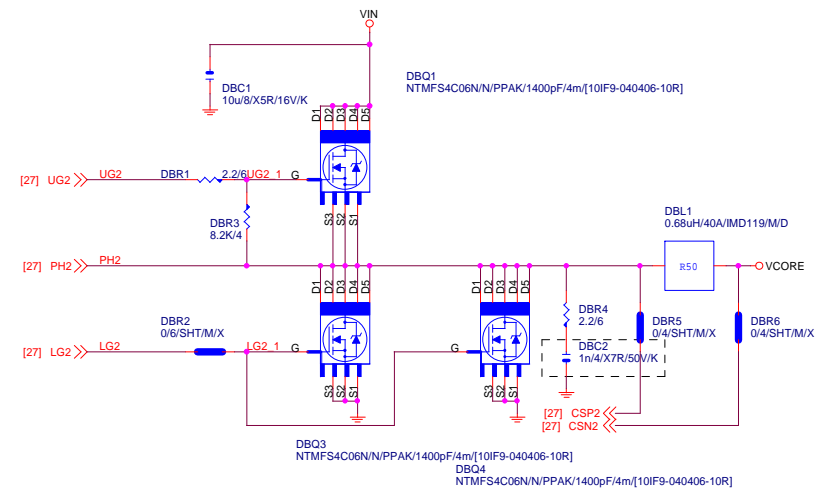
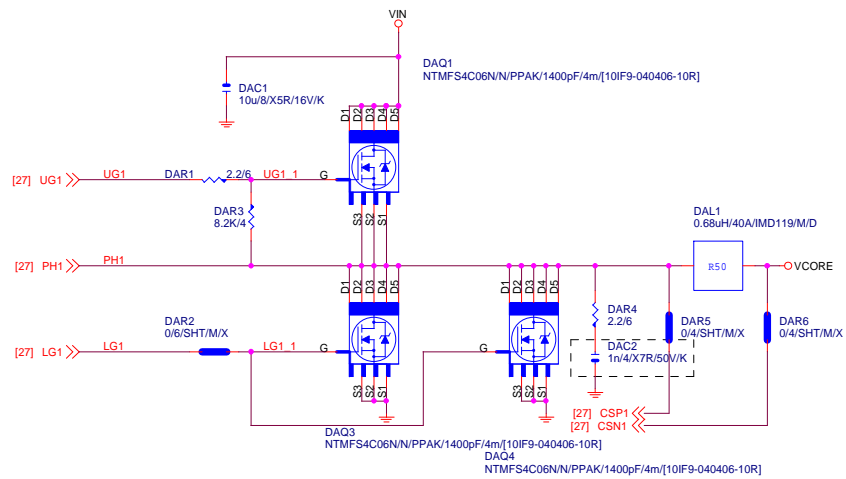
Rev	
1.11	

Date: Wednesday, November 27, 2013 Sheet 24 of 32

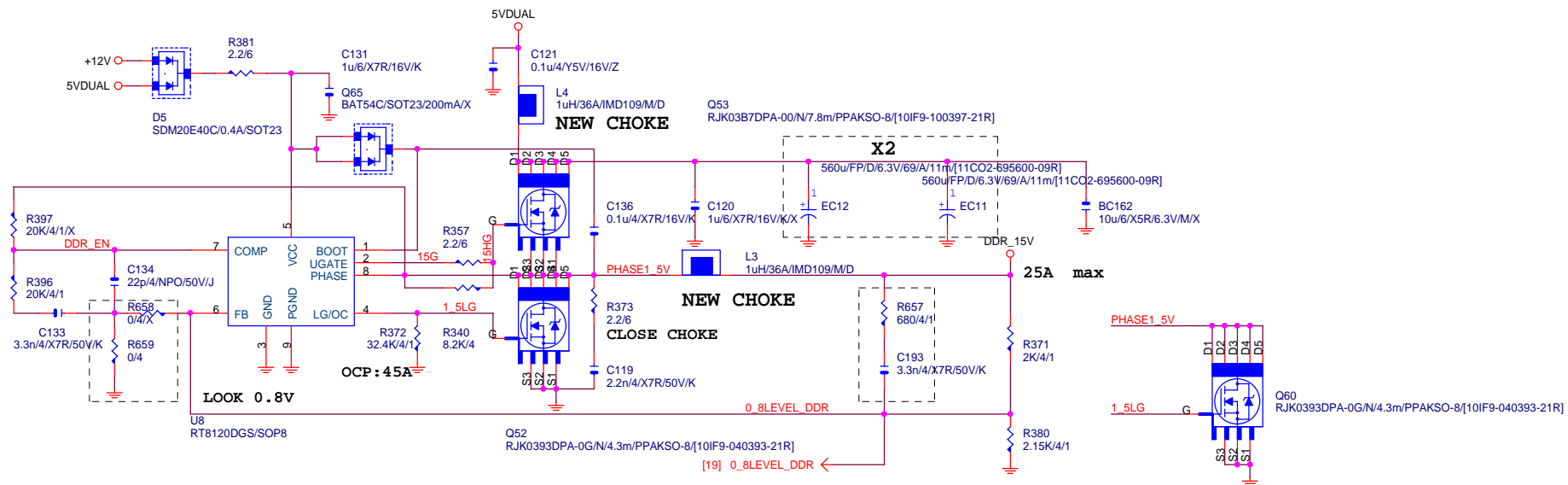




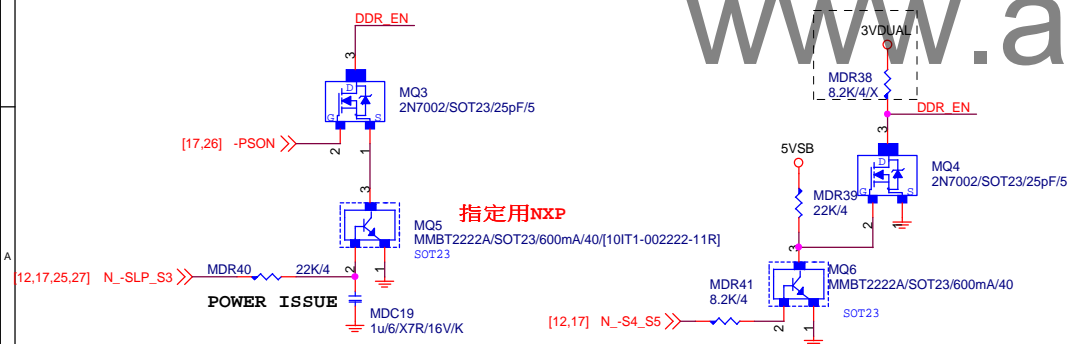




DDR15V



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 $2 \times 7.99 = 15.98 > 11.45A$

$$\text{Rocset} = (\text{Iocp} * \text{Lgate}, \text{rdson}) / \text{Iocset}$$

$$R_{ocset} = (45A * 6.7mOhm) / 10uA = 30K$$

Iocset=10uA

## Gigabyte Technology

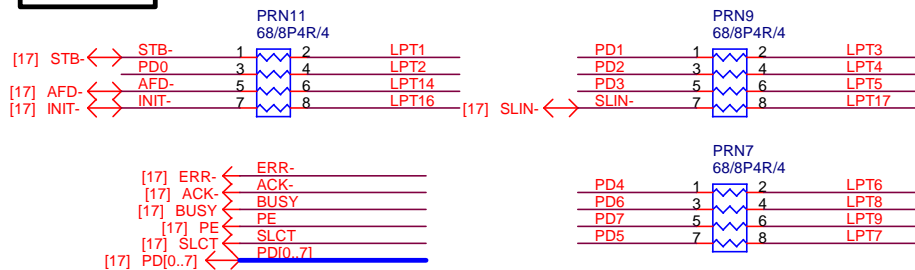
Title			
DDR POWER			
Size Custom	Document Number	GA-H87M-HD3	Rev 1.11
Date:	Wednesday, November 27, 2013	Sheet 29 of 32	

**【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

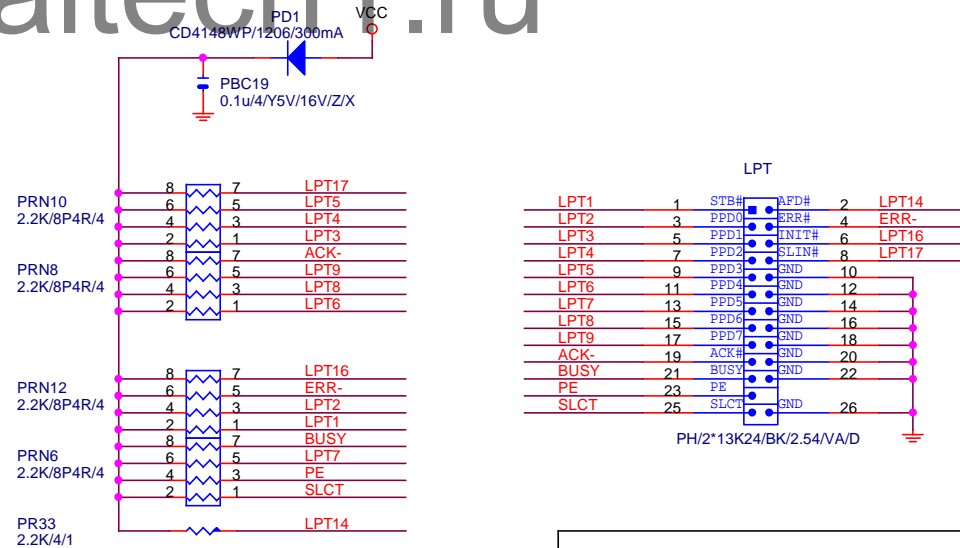
## VCC3\_ME

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## LPT PORT



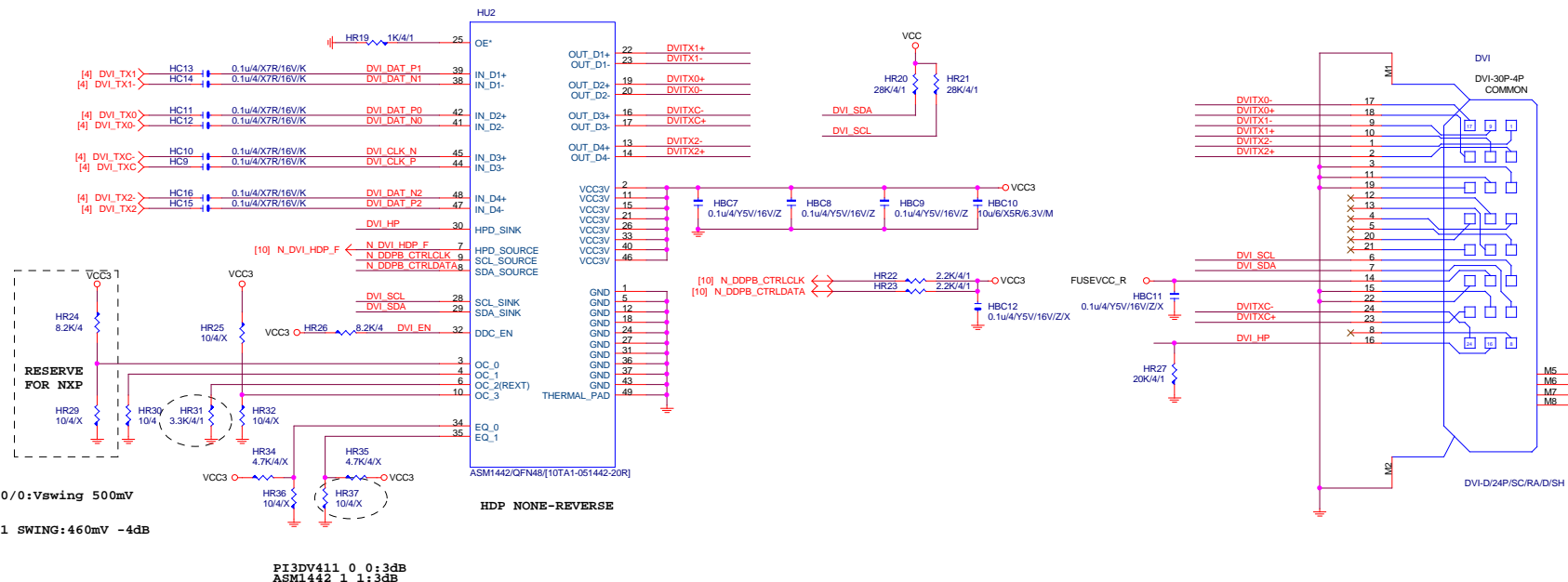
**【技術通報R&D技術通報151】**  
33ohm Change to 68ohm



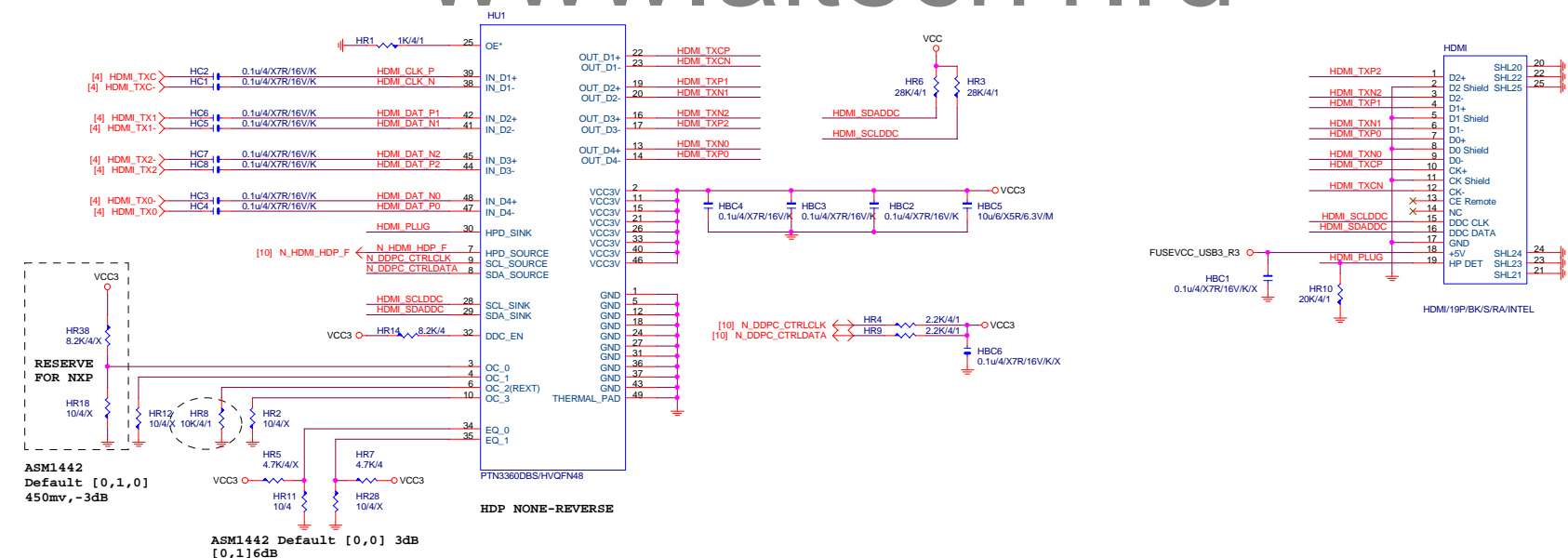
## Gigabyte Technology

Title			
<b>LPT</b>			
Size Custom	Document Number	<b>GA-H87M-HD3</b>	Rev <b>1.11</b>
Date:	Wednesday, November 27, 2013	Sheet 30 of 32	

# DVI LEVEL SHIFT



# HDMI LEVEL SHIFT



【技術通報R&D技術通報150】

HDMI eye diagram 1.4版(deep color)會fail

原因: 因目前的HDMI訊號過長,造成RIISING 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)

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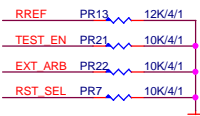
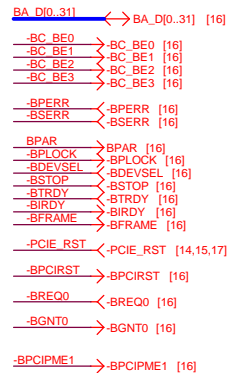
Gigabyte Technology

Title			DVI
Size			GA-H87M-HD3
Date			Wednesday, November 27, 2013
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Rev			1.11

# PCIE TO PCI

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

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



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

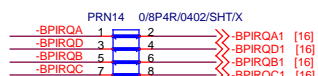


High: Enable PCI CLK 66MHz  
Low: Disable PCI CLK 66MHz



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

IT8892



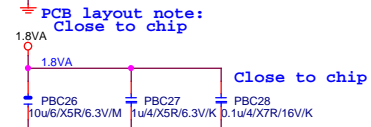
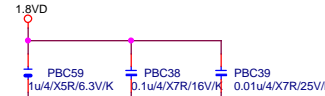
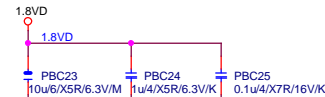
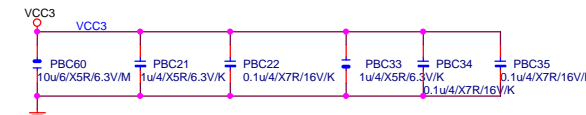
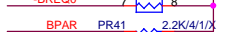
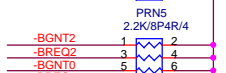
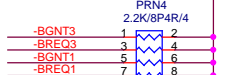
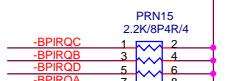
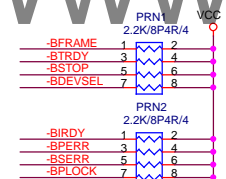
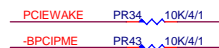
PCI slot



PCI slot

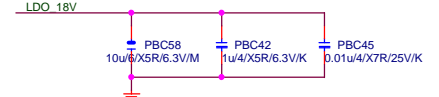
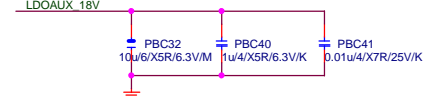
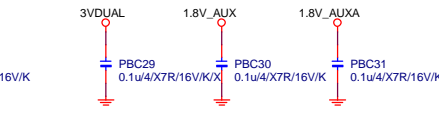
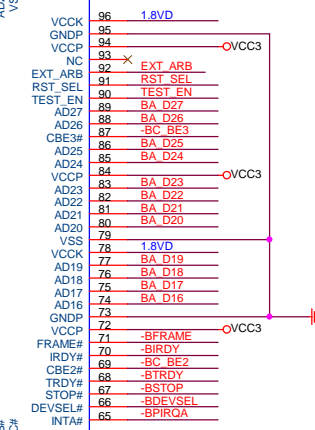
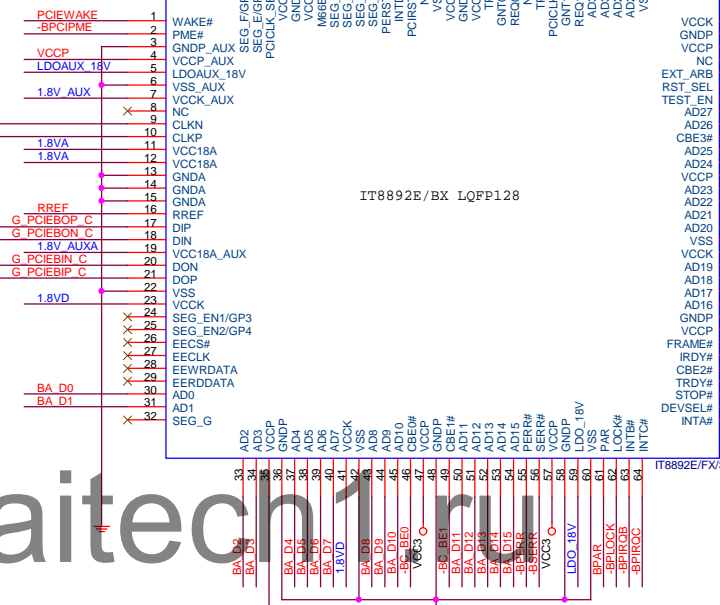


chipset side



PCB layout note:  
Close to chip

Close to chip



PCB layout note:  
Close to chip

Gigabyte Technology

ITE IT8892E  
GA-H87M-HD3

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Size	Custom	1.11
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