

Model Name: GA-B85M-HD3-A 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 8620 LPC IO
18	COM,KB_MS_USB,USB30_20
19	HWM,FAN CTRL,OV,-PROCHOT
20	DUAL BIOS
21	FP,FUSB,SPK,SATALED
22	Realtek ALC887-VD2
23	REAR AUDIO JACK
24	REALTEK RTL8111G
25	DISCRETE POWER
26	ATX , CLOCK GEN
27	VCORE ISL95812_1

SHEET TITLE

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

www.aitech1.ru

Gigabyte Technology		
Cover Sheet		
Size Custom	Document Number	Rev 1.0
Date: Tuesday, December 30, 2014	Sheet 1 of 32	

Component value change history

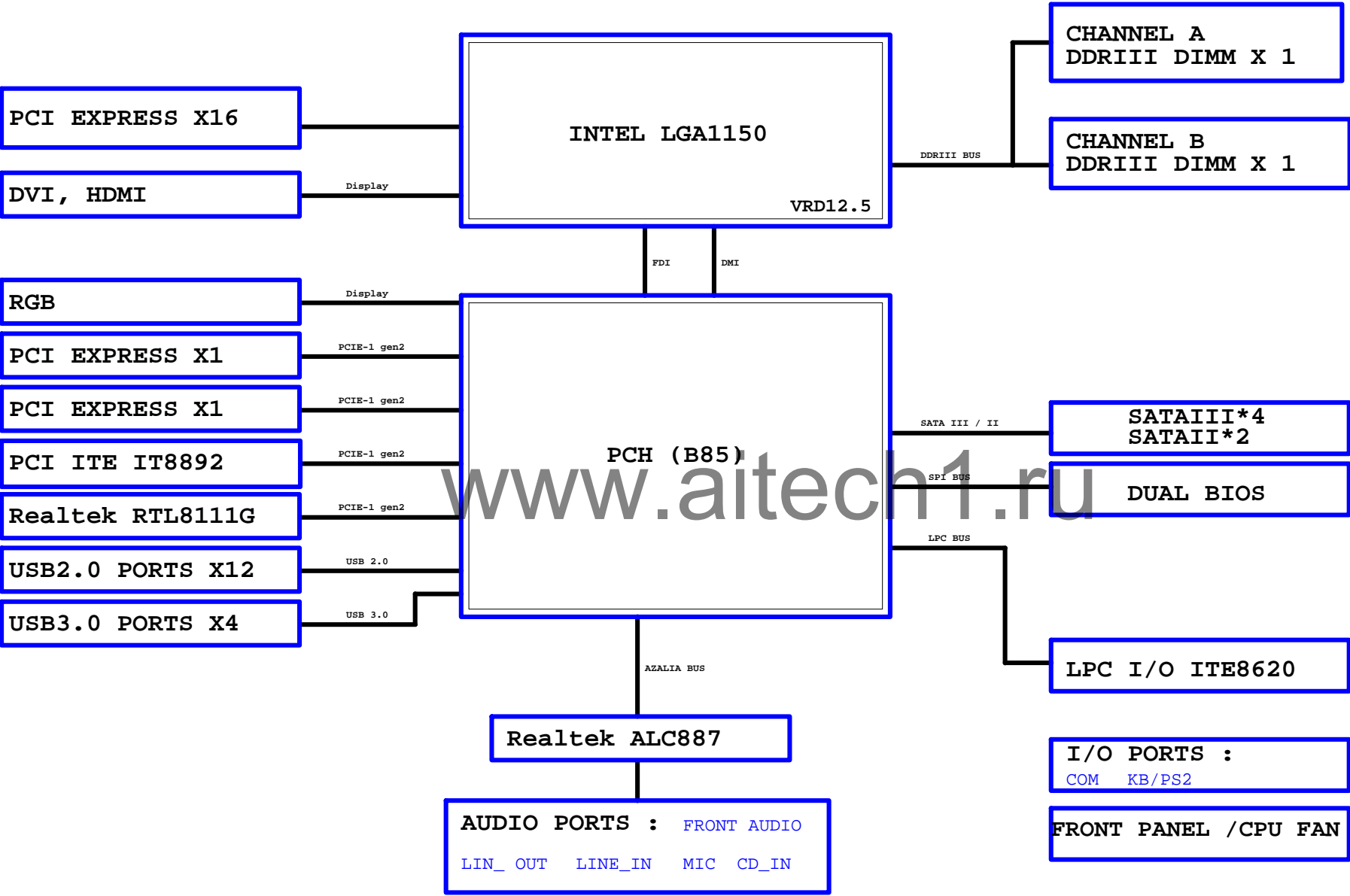
2014/12/31

Data	Change Item	Reason
2013/01/30	Modify to R0.2	
	PCIEX1_2 CLK Change Port	
	ADD Disable SVID [SVID_CTRL]	
	ADD Disable ME [DS_ME]	
	ADD -PCIE_RST Patch	
2013/02/05	O_PWROK1 reserve 0.01u Cap (For EMI)	
2013/03/11	Update 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	
2013/03/19	ADD EMI 0ohm (R707)	
2013/04/02		PBOM: 9MB85MHD3-00-10A
2013/04/08	Update PROCHOT	PBOM: 9MB85MHD3-00-10B
	R148: 35.7K -> 75K	
	R136: 1.4K -> 1.5K	
	DR149: 3.83K -> 13K	
2013/06/25	Update to R1.1	PBOM: 9MB85MHD3-00-11A
	Chipset change REV: C2	
2013/07/04	ADD 5VSB Protection	PBOM: 9MB85MHD3-00-11B
	Remove Super I/O OVP/UVF Function	
2013/07/11	Modify 5VSB Protection	PBOM: 9MB85MHD3-00-11C
	DEL R704: 8.2K/4	
	ADD R706: 8.2K/4	
	R705: 715/4/1 -> 825/4/1	
	DEL AUDIO AZ2225-01L CD1	

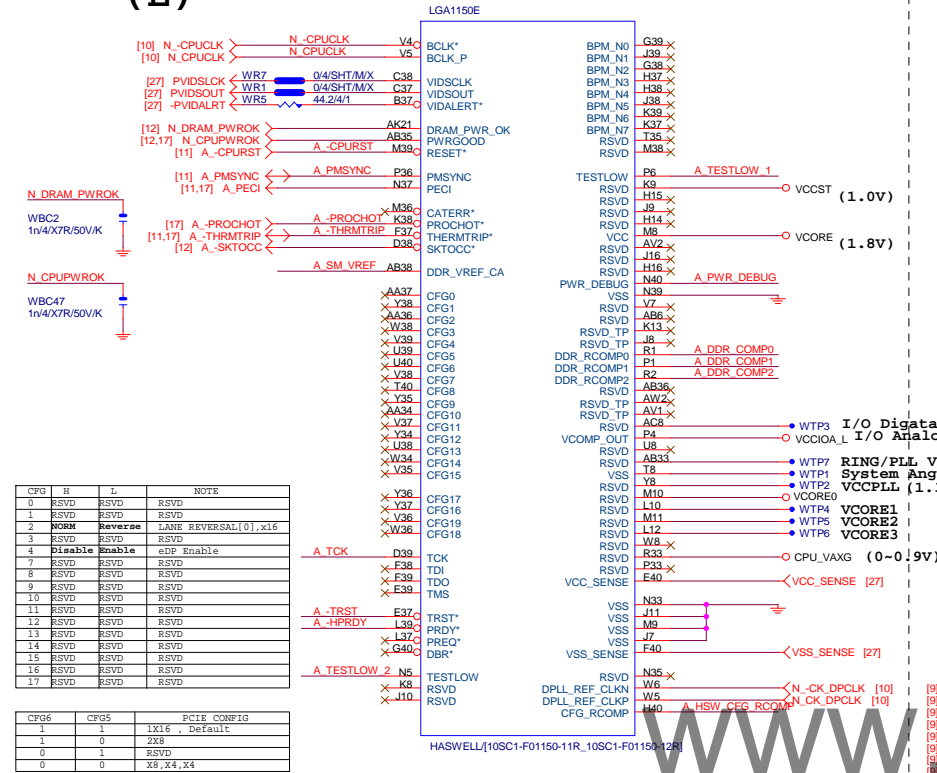
Circuit or PCB layout change

DATE	Change Item	Reason
2013/09/12	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_TDS0N8-GDS-T"	
2013/10/22	NX1: 25M/20p -> 12p	PBOM: 9MB85MHD3-00-11D
	NC7, NX8: 27p -> 10p	
2013/11/04	NC7, NX8: 10p -> 15p	PBOM: 9MB85MHD3-00-11E
2013/11/27	MR17 0ohm -> 0603 FUSE(10FF5-06100B-00R)	PBOM: 9MB85MHD3-00-11F
	ALC887 強壯版 (10HP5-368870-32R)	
2014/02/17	Sales Costdown Rev 2.0	
	CPU Power ISL95820 1U2D -> ISL95812 1U1D	
	SIO IT8728 -> IT8620	
	DVI Non-Level Shift	
	BIOS Size 64M -> 32M	
2014/02/20	SBA線路OPTION,整合電阻成排阻,精簡線路	
2014/02/24	整合電阻成排阻	
2014/02/27	MASK/DEL CAP	
2014/03/07	DEL DR65,DR70	
2014/03/10	F11改1206,NR6改SHT PAD	
2014/03/20	Final BOM	9MB85MHD3-00-20B
2014/03/27	ADD EMI CAP, NC60 & NC61 (100p)	9MB85MHD3-00-20C
	Modify DR61 (41.2K)	
2014/06/18	Update to R2.01	9MB85MHD3-00-20D
	Remove SATA MLCC	
2014/07/15	Update to R3.0	9MB85MHD3-00-30A
	LAN RTL8111F -> 8111G	
	8P4R-0402 -> 0603 (KB&MS)	
	Remove 5VDUAL SHORT PROTECT	
	Remove NCT3933, use GPIO(GP24, GP25)	
	Heatsink Gray -> Black	
	NRN1 & NRN5 MASK	

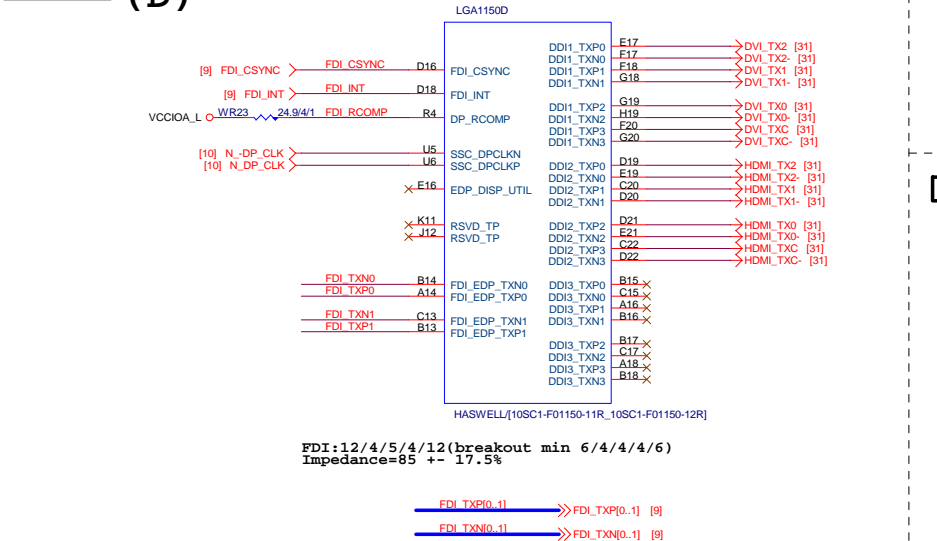
BLOCK DIAGRAM



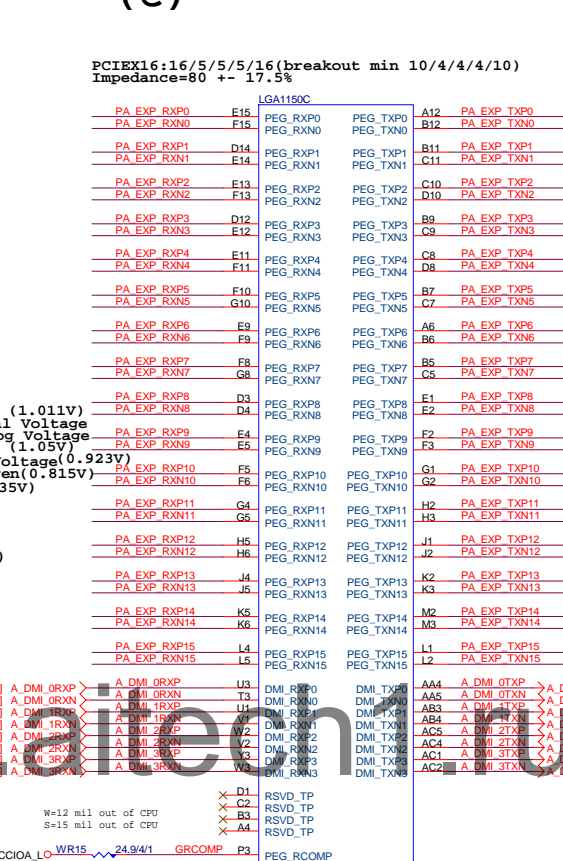
LGA1150 (E)



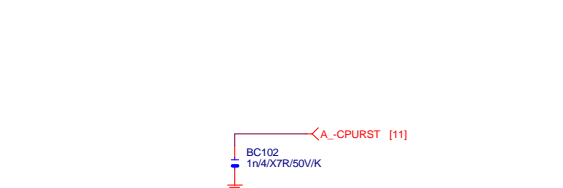
LGA1150 (D)



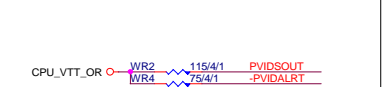
LGA1155 (C)



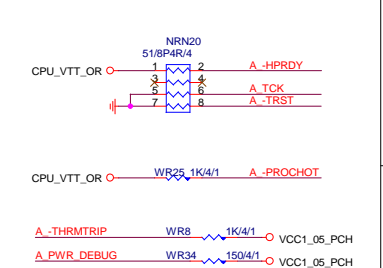
-CPURST



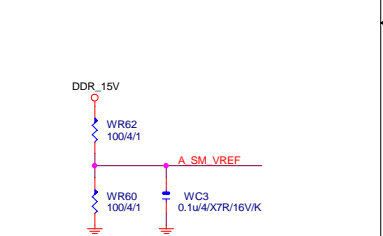
CPU SVID



CPU PU/PD



SM REF



Gigabyte Technology

CPU LGA1150-A		
Size	Document Number	Rev
Custom	GA-B85M-HD3-A	1.0
Date:	Tuesday, December 30, 2014	Sheet 4 of 32

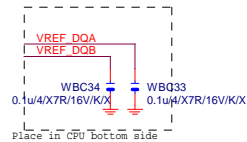
LGA1150 (A)

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	AW19	DDR0_MA12	DDR0_D12	AH37	MDA12
MAAA12	AU19	DDR0_MA13	DDR0_D13	AH38	MDA13
MAAA13	AT20	DDR0_MA14	DDR0_D14	AK37	MDA14
MAAA14	AT20	DDR0_MA15	DDR0_D15	AK40	MDA15
MAAA15	AU21	DDR0_MA16	DDR0_D16	AM40	MDA17
MODT_A0	AW10	DDR0_ODT0	DDR0_ODT0	AM39	MDA21
MODT_A1	AW8	DDR0_ODT1	DDR0_ODT1	AP38	MDA18
AW9		DDR0_ODT2	DDR0_ODT2	AP39	MDA19
AW8		DDR0_ODT3	DDR0_ODT3	AM37	MDA20
AW33		DDR0_ECC0	DDR0_ECC0	AM38	MDA16
AW33		DDR0_ECC1	DDR0_ECC1	AP37	MDA22
AU31		DDR0_ECC2	DDR0_ECC2	AP40	MDA23
AU31		DDR0_ECC3	DDR0_ECC3	AV37	MDA25
AU33		DDR0_ECC4	DDR0_ECC4	AW37	MDA29
AT31		DDR0_ECC5	DDR0_ECC5	AU35	MDA26
AW31		DDR0_ECC6	DDR0_ECC6	AV35	MDA27
AW31		DDR0_ECC7	DDR0_ECC7	T137	MDA28
AW31		DDR0_ECC8	DDR0_ECC8	AU37	MDA24
AW31		DDR0_ECC9	DDR0_ECC9	AT35	MDA30
AW31		DDR0_ECC10	DDR0_ECC10	AW35	MDA31
AW31		DDR0_ECC11	DDR0_ECC11	AV6	MDA33
AW31		DDR0_ECC12	DDR0_ECC12	AU6	MDA37
AW31		DDR0_ECC13	DDR0_ECC13	AV4	MDA34
AW31		DDR0_ECC14	DDR0_ECC14	AU4	MDA35
AW31		DDR0_ECC15	DDR0_ECC15	AW6	MDA36
AW31		DDR0_ECC16	DDR0_ECC16	AV6	MDA32
AW31		DDR0_ECC17	DDR0_ECC17	AW4	MDA38
AW31		DDR0_ECC18	DDR0_ECC18	AV4	MDA39
AW31		DDR0_ECC19	DDR0_ECC19	AR1	MDA41
AW31		DDR0_ECC20	DDR0_ECC20	AR4	MDA45
AW31		DDR0_ECC21	DDR0_ECC21	AN3	MDA42
AW31		DDR0_ECC22	DDR0_ECC22	AN4	MDA43
AW31		DDR0_ECC23	DDR0_ECC23	MDA44	
AW31		DDR0_ECC24	DDR0_ECC24	AR2	MDA44
AW31		DDR0_ECC25	DDR0_ECC25	AR3	MDA40
AW31		DDR0_ECC26	DDR0_ECC26	AN2	MDA46
AW31		DDR0_ECC27	DDR0_ECC27	AN1	MDA47
AW31		DDR0_ECC28	DDR0_ECC28	AL1	MDA49
AW31		DDR0_ECC29	DDR0_ECC29	AL4	MDA53
AW31		DDR0_ECC30	DDR0_ECC30	AL4	MDA50
AW31		DDR0_ECC31	DDR0_ECC31	AJ4	MDA51
AW31		DDR0_ECC32	DDR0_ECC32	AL2	MDA52
AW31		DDR0_ECC33	DDR0_ECC33	AJ2	MDA48
AW31		DDR0_ECC34	DDR0_ECC34	AJ2	MDA54
AW31		DDR0_ECC35	DDR0_ECC35	AJ1	MDA55
AW31		DDR0_ECC36	DDR0_ECC36	AG1	MDA57
AW31		DDR0_ECC37	DDR0_ECC37	AG4	MDA61
AW31		DDR0_ECC38	DDR0_ECC38	AE3	MDA58
AW31		DDR0_ECC39	DDR0_ECC39	E4	MDA59
AW31		DDR0_ECC40	DDR0_ECC40	AG2	MDA60
AW31		DDR0_ECC41	DDR0_ECC41	AG3	MDA56
AW31		DDR0_ECC42	DDR0_ECC42	MDA62	
AW31		DDR0_ECC43	DDR0_ECC43	AE2	MDA63
AW31		DDR0_ECC44	DDR0_ECC44	AE1	MDA63
AW31		DDR0_ECC45	DDR0_ECC45	AE39	DQSA0
AW31		DDR0_ECC46	DDR0_ECC46	AJ39	DQSA1
AW31		DDR0_ECC47	DDR0_ECC47	AN39	DQSA2
AW31		DDR0_ECC48	DDR0_ECC48	AV36	DQSA3
AW31		DDR0_ECC49	DDR0_ECC49	AV5	DQSA4
AW31		DDR0_ECC50	DDR0_ECC50	AP3	DQSA5
AW31		DDR0_ECC51	DDR0_ECC51	AK3	DQSA6
AW31		DDR0_ECC52	DDR0_ECC52	AF3	DQSA7
AW31		DDR0_ECC53	DDR0_ECC53	AV32	
AW31		DDR0_ECC54	DDR0_ECC54	AE38	DQSA0
AW31		DDR0_ECC55	DDR0_ECC55	AJ38	DQSA1
AW31		DDR0_ECC56	DDR0_ECC56	AN38	DQSA2
AW31		DDR0_ECC57	DDR0_ECC57	AJ36	DQSA3
AW31		DDR0_ECC58	DDR0_ECC58	AW5	DQSA4
AW31		DDR0_ECC59	DDR0_ECC59	AP2	DQSA5
AW31		DDR0_ECC60	DDR0_ECC60	AK2	DQSA6
AW31		DDR0_ECC61	DDR0_ECC61	AF2	DQSA7
AW31		DDR0_ECC62	DDR0_ECC62	AU32	

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

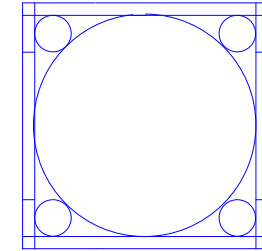
LGA1150 (B)

LGA1150B		DDR1_MA0	DDR1_D00	AE34	MDB0
MAAB0	AL19	DDR1_MA1	DDR1_D01	AE35	MDB1
MAAB1	AK23	DDR1_MA2	DDR1_D02	AG35	MDB2
MAAB2	AM23	DDR1_MA3	DDR1_D03	AH35	MDB3
MAAB3	AP23	DDR1_MA4	DDR1_D04	AD34	MDB4
MAAB4	AL23	DDR1_MA5	DDR1_D05	AD35	MDB5
MAAB5	AY24	DDR1_MA6	DDR1_D06	AG34	MDB6
MAAB6	AY25	DDR1_MA7	DDR1_D07	AH34	MDB7
MAAB7	AU26	DDR1_MA8	DDR1_D08	AL34	MDB8
MAAB8	AW26	DDR1_MA9	DDR1_D09	AL35	MDB9
MAAB9	AY28	DDR1_MA10	DDR1_D10	AL31	MDB10
MAAB10	AY28	DDR1_MA11	DDR1_D11	AL31	MDB11
MAAB11	AY28	DDR1_MA12	DDR1_D12	AK34	MDB12
MAAB12	AY28	DDR1_MA13	DDR1_D13	AK35	MDB13
MAAB13	AY28	DDR1_MA14	DDR1_D14	AK32	MDB14
MAAB14	AY28	DDR1_MA15	DDR1_D15	AL32	MDB15
MODT_B0	AM17	DDR1_ODT0	DDR1_ODT0	AP34	MDB17
MODT_B1	AL16	DDR1_ODT1	DDR1_ODT1	AN31	MDB19
AM16		DDR1_ODT2	DDR1_ODT2	AP31	MDB23
AK15		DDR1_ODT3	DDR1_ODT3	AP35	MDB20
AM26		DDR1_ECC0	DDR1_ECC0	AP35	MDB16
AM25		DDR1_ECC1	DDR1_ECC1	AN32	MDB18
AP25		DDR1_ECC2	DDR1_ECC2	AP32	MDB22
AP26		DDR1_ECC3	DDR1_ECC3	AM29	MDB25
AL26		DDR1_ECC4	DDR1_ECC4	AM28	MDB28
AL25		DDR1_ECC5	DDR1_ECC5	AR29	MDB27
AR26		DDR1_ECC6	DDR1_ECC6	AR28	MDB30
AR25		DDR1_ECC7	DDR1_ECC7	AL28	MDB24
AR25		DDR1_ECC8	DDR1_ECC8	AL28	MDB29
AR25		DDR1_ECC9	DDR1_ECC9	AP29	MDB26
AR25		DDR1_ECC10	DDR1_ECC10	AP28	MDB31
AR25		DDR1_ECC11	DDR1_ECC11	AR12	MDB32
AR25		DDR1_ECC12	DDR1_ECC12	AL12	MDB35
AR25		DDR1_ECC13	DDR1_ECC13	AR13	MDB36
AR25		DDR1_ECC14	DDR1_ECC14	AP13	MDB37
AR25		DDR1_ECC15	DDR1_ECC15	AM13	MDB38
AR25		DDR1_ECC16	DDR1_ECC16	AM12	MDB39
AR25		DDR1_ECC17	DDR1_ECC17	AR9	MDB45
AR25		DDR1_ECC18	DDR1_ECC18	AP9	MDB41
AR25		DDR1_ECC19	DDR1_ECC19	AR6	MDB47
AR25		DDR1_ECC20	DDR1_ECC20	AP6	MDB43
AR25		DDR1_ECC21	DDR1_ECC21	AR10	MDB44
AR25		DDR1_ECC22	DDR1_ECC22	AP10	MDB40
AR25		DDR1_ECC23	DDR1_ECC23	AR7	MDB46
AR25		DDR1_ECC24	DDR1_ECC24	AP7	MDB42
AR25		DDR1_ECC25	DDR1_ECC25	AM9	MDB52
AR25		DDR1_ECC26	DDR1_ECC26	AL9	MDB53
AR25		DDR1_ECC27	DDR1_ECC27	AL6	MDB50
AR25		DDR1_ECC28	DDR1_ECC28	AL7	MDB55
AR25		DDR1_ECC29	DDR1_ECC29	AM10	MDB48
AR25		DDR1_ECC30	DDR1_ECC30	AL10	MDB49
AR25		DDR1_ECC31	DDR1_ECC31	AM6	MDB54
AR25		DDR1_ECC32	DDR1_ECC32	AM7	MDB51
AR25		DDR1_ECC33	DDR1_ECC33	AH6	MDB61
AR25		DDR1_ECC34	DDR1_ECC34	AH7	MDB60
AR25		DDR1_ECC35	DDR1_ECC35	AE6	MDB59
AR25		DDR1_ECC36	DDR1_ECC36	AE7	MDB63
AR25		DDR1_ECC37	DDR1_ECC37	AJ6	MDB56
AR25		DDR1_ECC38	DDR1_ECC38	AJ7	MDB57
AR25		DDR1_ECC39	DDR1_ECC39	MDB58	
AR25		DDR1_ECC40	DDR1_ECC40	MDB62	
AR25		DDR1_ECC41	DDR1_ECC41	AF7	DQSB0
AR25		DDR1_ECC42	DDR1_ECC42	AF35	DQSB1
AR25		DDR1_ECC43	DDR1_ECC43	AL33	DQSB1
AR25		DDR1_ECC44	DDR1_ECC44	AP33	DQSB2
AR25		DDR1_ECC45	DDR1_ECC45	AN28	DQSB3
AR25		DDR1_ECC46	DDR1_ECC46	AN12	DQSB4
AR25		DDR1_ECC47	DDR1_ECC47	AP8	DQSB5
AR25		DDR1_ECC48	DDR1_ECC48	AL8	DQSB6
AR25		DDR1_ECC49	DDR1_ECC49	AG7	DQSB7
AR25		DDR1_ECC50	DDR1_ECC50	AN25	
AR25		DDR1_ECC51	DDR1_ECC51	AE34	DQSB0
AR25		DDR1_ECC52	DDR1_ECC52	AK33	DQSB1
AR25		DDR1_ECC53	DDR1_ECC53	AK33	DQSB2
AR25		DDR1_ECC54	DDR1_ECC54	AN29	DQSB3
AR25		DDR1_ECC55	DDR1_ECC55	AL13	DQSB4
AR25		DDR1_ECC56	DDR1_ECC56	AR8	DQSB5
AR25		DDR1_ECC57	DDR1_ECC57	AM8	DQSB6
AR25		DDR1_ECC58	DDR1_ECC58	AG6	DQSB7
AR25		DDR1_ECC59	DDR1_ECC59	AN26	



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

LGA1150 (CR)

CR
CPU RETENTION/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

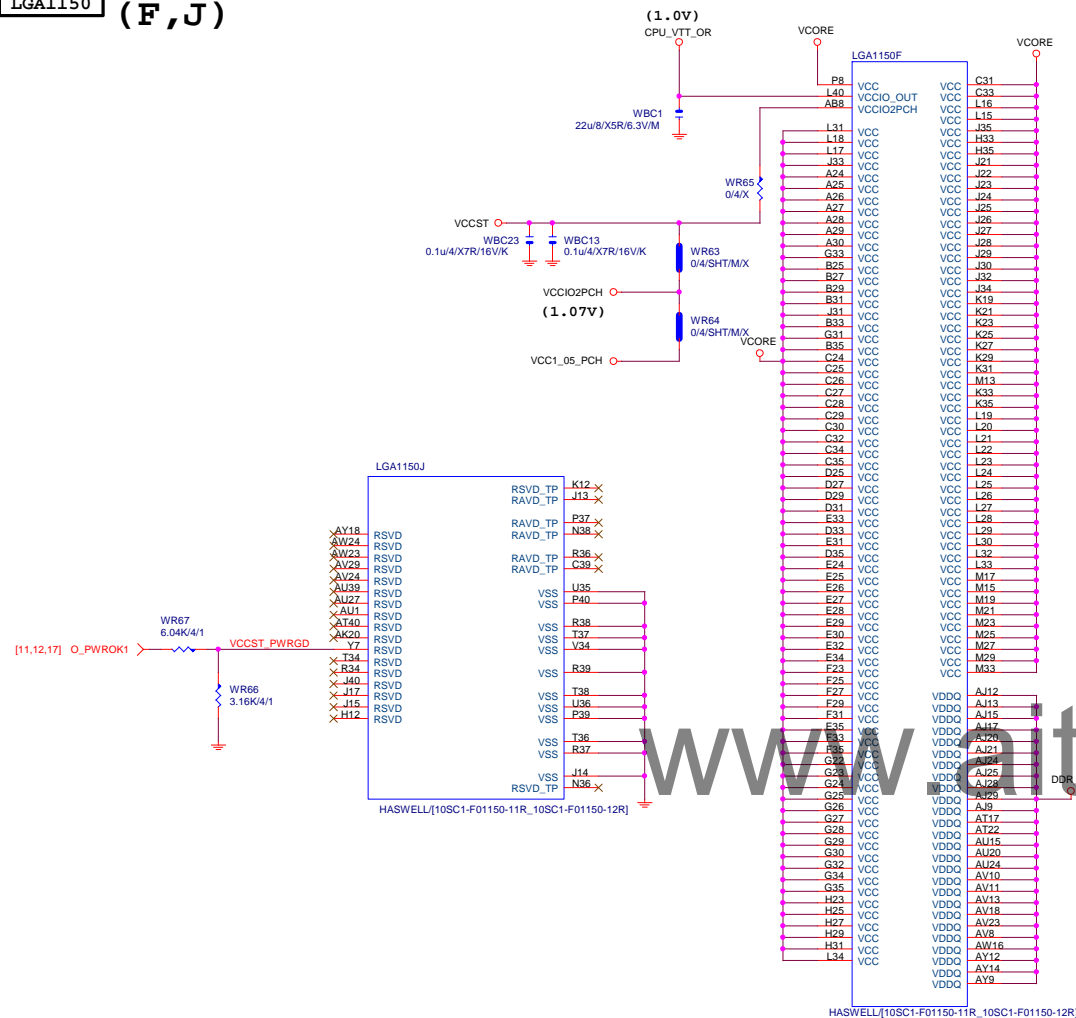
Gigabyte Technology

CPU LGA1150-B

Title	Document Number	Rev
GA-B85M-HD3-A	1.0	

Date: Tuesday, December 30, 2014 Sheet 5 of 32

LGA1150 (F,J)

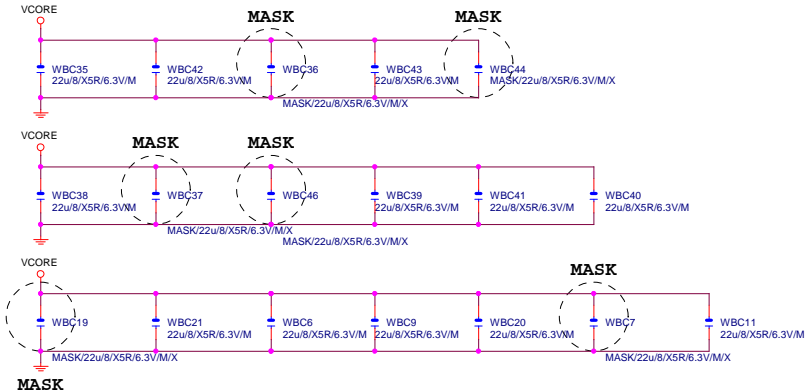


LGA1155 (G,H,I)



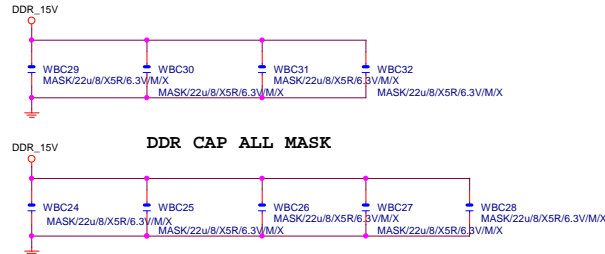
VCore CAP

(x12)



DDR CAP

(X0)

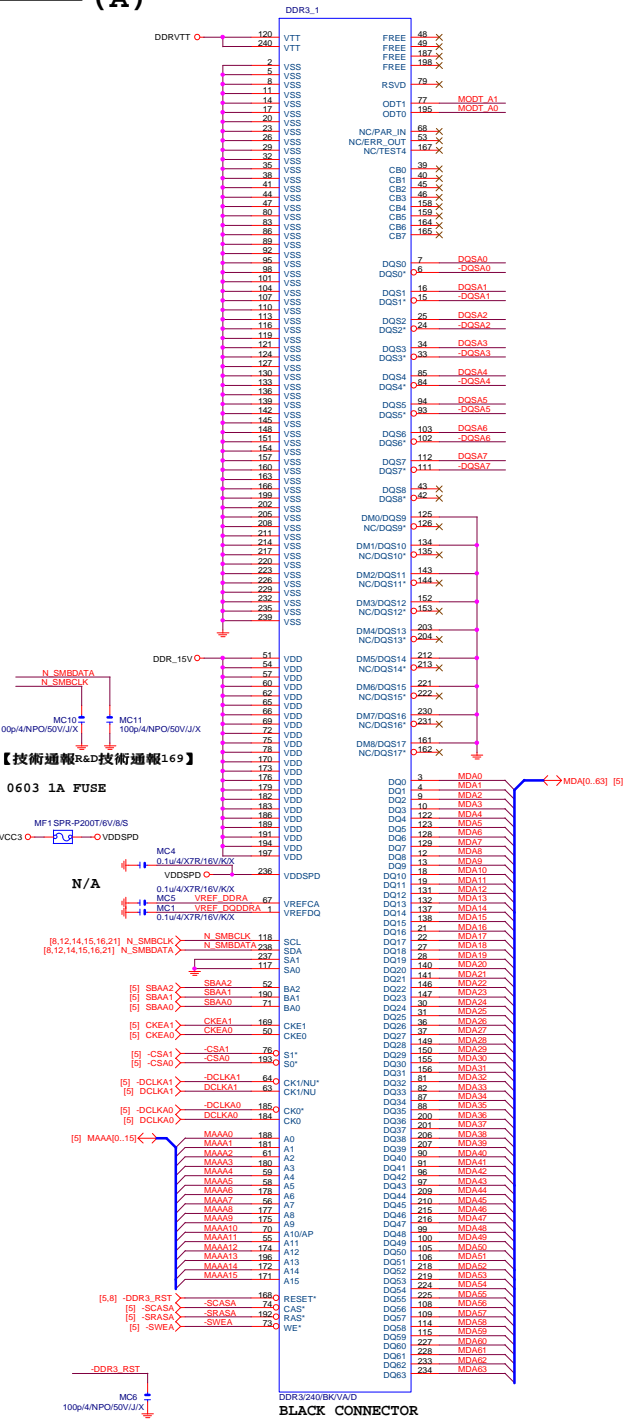


Gigabyte Technology

Title			
CPU LGA1150-C			
Size	Document Number		Rev
Custom	GA-B85M-HD3-A		1.0
Date:	Tuesday, December 30, 2014	Sheet	6 of 32

DDR3

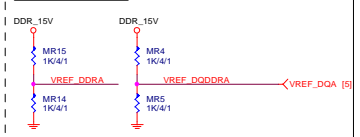
(A)



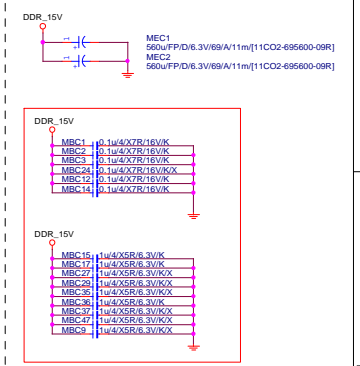
BLACK CONNECTOR

DDR3 240 (B/K/V/D)
MODT_A0_11 <-> MODT_A0_11 [5]
DQSA0_71 <-> DQSA0_71 [5]
DQSA0_71 <-> DQSA0_71 [5]

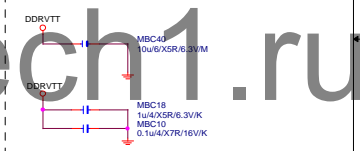
DDR3 VREF



DDR15V Decouple



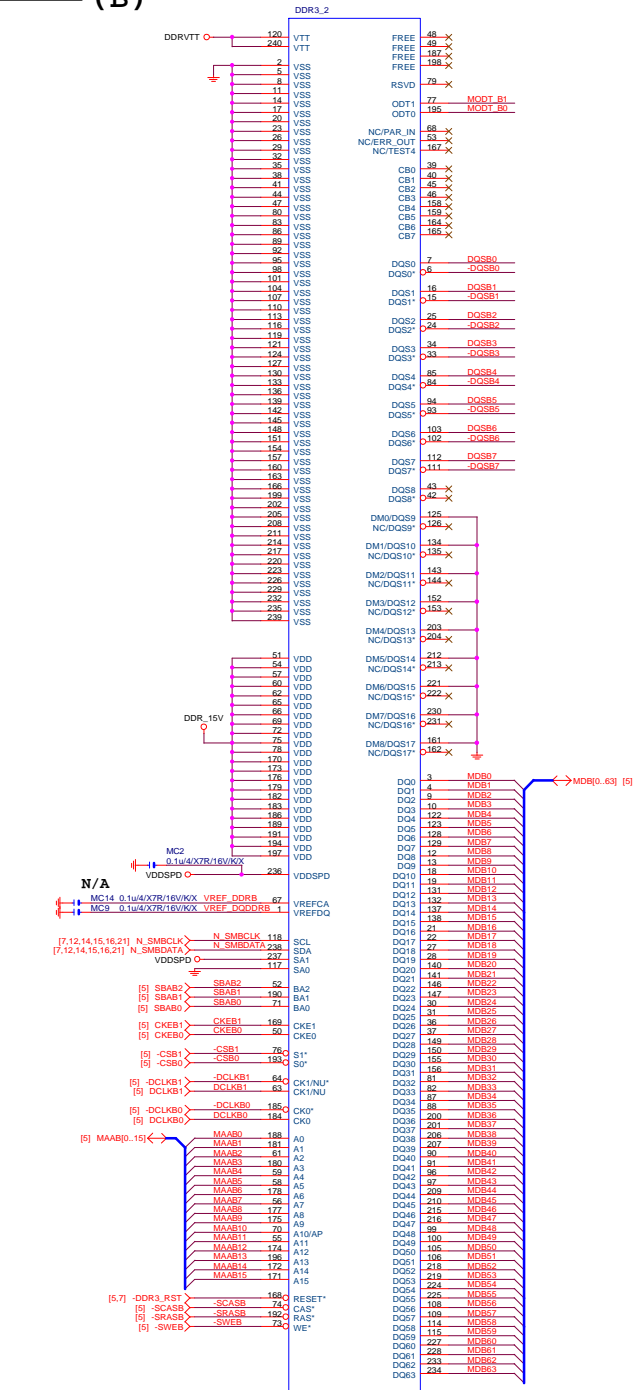
DDRVTT Decouple



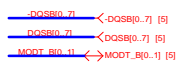
www.aitech1.ru

DDR3

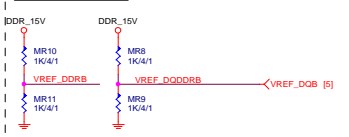
(B)



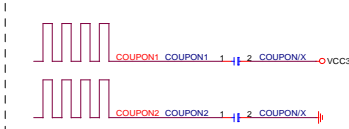
DDR3/240/BK/VA/D
BLACK CONNECTOR



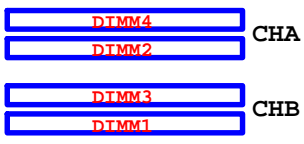
DDR3 VREF



COUPON



CPU



Gigabyte Technology	
Title DDRIII CHANNEL B	
Size Document Number	Rev 1.0
GA-B85M-HD3-A	
Date	Sheet 8 of 32

PCH

(B)

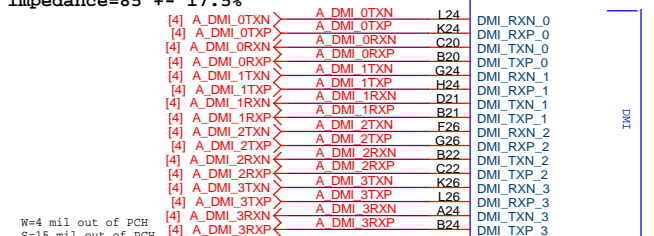
DMI:12/4/4/4/12(breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%

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

NR40

CK_SRCCLK_PCH

CK_SRCCLK_PCH

G22

F22

L14

K14

B12

B11

F14

G14

D11

C11

H11

B9

A9

J11

L11

B8

C8

G9

E9

B7

A7

F7

H7

E1

D2

K6

K8

G3

G5

J3

H2

H1

PCIE_PERN_1

PCIE_PERN_2

PCIE_PERN_3

PCIE_PERN_4

PCIE_PERN_5

PCIE_PERN_6

PCIE_PERN_7

PCIE_PERN_8

PCIE_PERN_9

PCIE_PERN_10

PCIE_PERN_11

PCIE_PERN_12

PCIE_PERN_13

PCIE_PERN_14

PCIE_PERN_15

PCIE_PERN_16

PCIE_PERN_17

PCIE_PERN_18

PCIE_PERN_19

PCIE_PERN_20

PCIE_PERN_21

PCIE_PERN_22

PCIE_PERN_23

PCIE_PERN_24

PCIE_PERN_25

PCIE_PERN_26

PCIE_PERN_27

PCIE_PERN_28

PCIE_PERN_29

PCIE_PERN_30

PCIE_PERN_31

PCIE_PERN_32

PCIE_PERN_33

PCIE_PERN_34

PCIE_PERN_35

PCIE_PERN_36

PCIE_PERN_37

PCIE_PERN_38

PCIE_PERN_39

PCIE_PERN_40

PCIE_PERN_41

PCIE_PERN_42

PCIE_PERN_43

PCIE_PERN_44

PCIE_PERN_45

PCIE_PERN_46

PCIE_PERN_47

PCIE_PERN_48

PCIE_PERN_49

PCIE_PERN_50

PCIE_PERN_51

PCIE_PERN_52

PCIE_PERN_53

PCIE_PERN_54

PCIE_PERN_55

PCIE_PERN_56

PCIE_PERN_57

PCIE_PERN_58

PCIE_PERN_59

PCIE_PERN_60

PCIE_PERN_61

PCIE_PERN_62

PCIE_PERN_63

PCIE_PERN_64

PCIE_PERN_65

PCIE_PERN_66

PCIE_PERN_67

PCIE_PERN_68

PCIE_PERN_69

PCIE_PERN_70

PCIE_PERN_71

PCIE_PERN_72

PCIE_PERN_73

PCIE_PERN_74

PCIE_PERN_75

PCIE_PERN_76

PCIE_PERN_77

PCIE_PERN_78

PCIE_PERN_79

PCIE_PERN_80

PCIE_PERN_81

PCIE_PERN_82

PCIE_PERN_83

PCIE_PERN_84

PCIE_PERN_85

PCIE_PERN_86

PCIE_PERN_87

PCIE_PERN_88

PCIE_PERN_89

PCIE_PERN_90

PCIE_PERN_91

PCIE_PERN_92

PCIE_PERN_93

PCIE_PERN_94

PCIE_PERN_95

PCIE_PERN_96

PCIE_PERN_97

PCIE_PERN_98

PCIE_PERN_99

PCIE_PERN_100

PCIE_PERN_101

PCIE_PERN_102

PCIE_PERN_103

PCIE_PERN_104

PCIE_PERN_105

PCIE_PERN_106

PCIE_PERN_107

PCIE_PERN_108

PCIE_PERN_109

PCIE_PERN_110

PCIE_PERN_111

PCIE_PERN_112

PCIE_PERN_113

PCIE_PERN_114

PCIE_PERN_115

PCIE_PERN_116

PCIE_PERN_117

PCIE_PERN_118

PCIE_PERN_119

PCIE_PERN_120

PCIE_PERN_121

PCIE_PERN_122

PCIE_PERN_123

PCIE_PERN_124

PCIE_PERN_125

PCIE_PERN_126

PCIE_PERN_127

PCIE_PERN_128

PCIE_PERN_129

PCIE_PERN_130

PCIE_PERN_131

PCIE_PERN_132

PCIE_PERN_133

PCIE_PERN_134

PCIE_PERN_135

PCIE_PERN_136

PCIE_PERN_137

PCIE_PERN_138

PCIE_PERN_139

PCIE_PERN_140

PCIE_PERN_141

PCIE_PERN_142

PCIE_PERN_143

PCIE_PERN_144

PCIE_PERN_145

PCIE_PERN_146

PCIE_PERN_147

PCIE_PERN_148

PCIE_PERN_149

PCIE_PERN_150

PCIE_PERN_151

PCIE_PERN_152

PCIE_PERN_153

PCIE_PERN_154

PCIE_PERN_155

PCIE_PERN_156

PCIE_PERN_157

PCIE_PERN_158

PCIE_PERN_159

PCIE_PERN_160

PCIE_PERN_161

PCIE_PERN_162

PCIE_PERN_163

PCIE_PERN_164

PCIE_PERN_165

PCIE_PERN_166

PCIE_PERN_167

PCIE_PERN_168

PCIE_PERN_169

PCIE_PERN_170

PCIE_PERN_171

PCIE_PERN_172

PCIE_PERN_173

PCIE_PERN_174

PCIE_PERN_175

PCIE_PERN_176

PCIE_PERN_177

PCIE_PERN_178

PCIE_PERN_179

PCIE_PERN_180

PCIE_PERN_181

PCIE_PERN_182

PCIE_PERN_183

PCIE_PERN_184

PCIE_PERN_185

PCIE_PERN_186

PCIE_PERN_187

PCIE_PERN_188

PCIE_PERN_189

PCIE_PERN_190

PCIE_PERN_191

PCIE_PERN_192

PCIE_PERN_193

PCIE_PERN_194

PCIE_PERN_195

PCIE_PERN_196

PCIE_PERN_197

PCIE_PERN_198

PCIE_PERN_199

PCIE_PERN_200

PCIE_PERN_201

PCIE_PERN_202

PCIE_PERN_203

PCIE_PERN_204

PCIE_PERN_205

PCIE_PERN_206

PCIE_PERN_207

PCIE_PERN_208

PCIE_PERN_209

PCIE_PERN_210

PCIE_PERN_211

PCIE_PERN_212

PCIE_PERN_213

PCIE_PERN_214

PCIE_PERN_215

PCIE_PERN_216

PCIE_PERN_217

PCIE_PERN_218

PCIE_PERN_219

PCIE_PERN_220

PCIE_PERN_221

PCIE_PERN_222

PCIE_PERN_223

PCIE_PERN_224

PCIE_PERN_225

PCIE_PERN_226

PCIE_PERN_227

PCIE_PERN_228

PCIE_PERN_229

PCIE_PERN_230

PCIE_PERN_231

PCIE_PERN_232

PCIE_PERN_233

PCIE_PERN_234

PCIE_PERN_235

PCIE_PERN_236

PCIE_PERN_237

PCIE_PERN_238

PCIE_PERN_239

PCIE_PERN_240

PCIE_PERN_241

PCIE_PERN_242

PCIE_PERN_243

PCIE_PERN_244

PCIE_PERN_245

PCIE_PERN_246

PCIE_PERN_247

PCIE_PERN_248

PCIE_PERN_249

PCIE_PERN_250

PCIE_PERN_251

PCIE_PERN_252

PCIE_PERN_253

PCIE_PERN_254

PCIE_PERN_255

PCIE_PERN_256

PCIE_PERN_257

PCIE_PERN_258

PCIE_PERN_259

PCIE_PERN_260

PCIE_PERN_261

PCIE_PERN_262

PCIE_PERN_263

PCIE_PERN_264

PCIE_PERN_265

PCIE_PERN_266

PCIE_PERN_267

PCIE_PERN_268

PCIE_PERN_269

PCIE_PERN_270

PCIE_PERN_271

PCIE_PERN_272

PCIE_PERN_273

PCIE_PERN_274

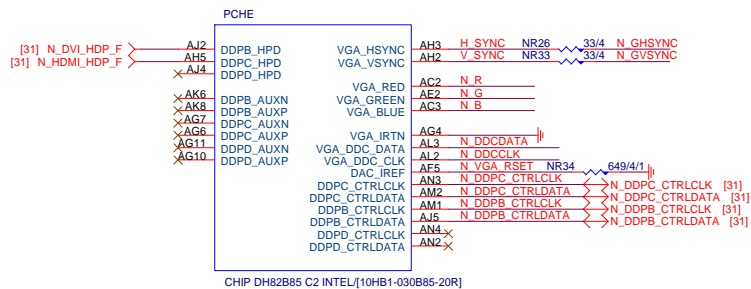
PCIE_PERN_275

PCIE_PERN_276

PCIE_PERN_277

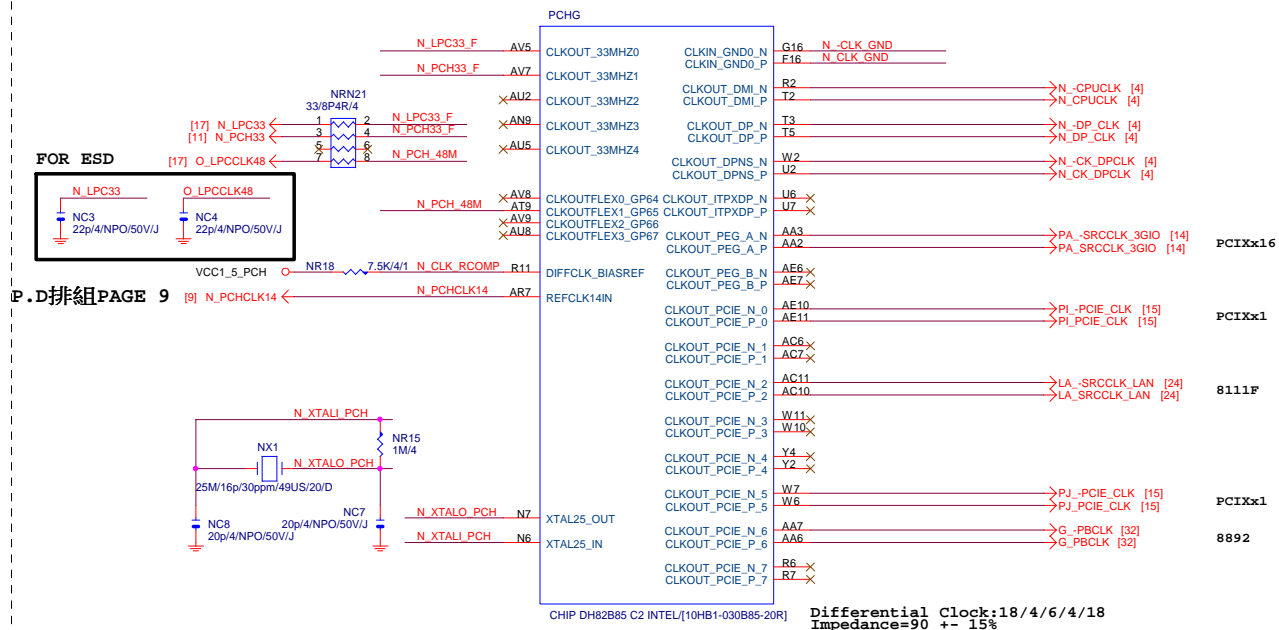
PCIE_PERN_278

PCH (E)



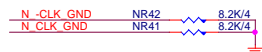
CHIP DH82B85 C2 INTEL/I10HB1-030B85-20R1

PCH (G)

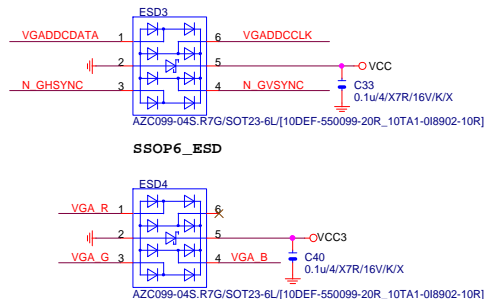


Differential Clock:18/4/6/4/18
Impedance=90 +- 15%

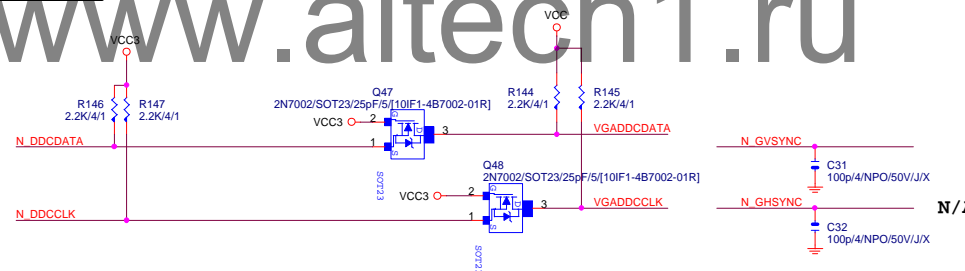
PCH CLK PD



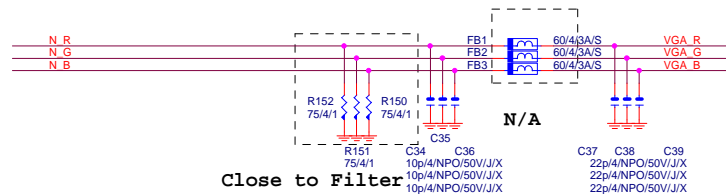
VGA ESD



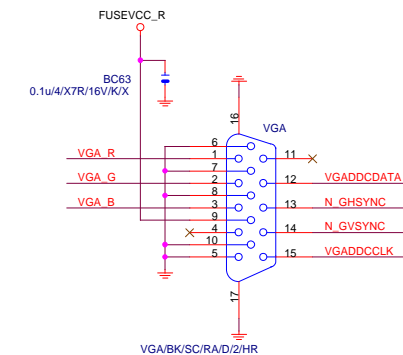
VGA DDC



VGA DDC



VGA CONNECTOR



BLACK CONNECTOR

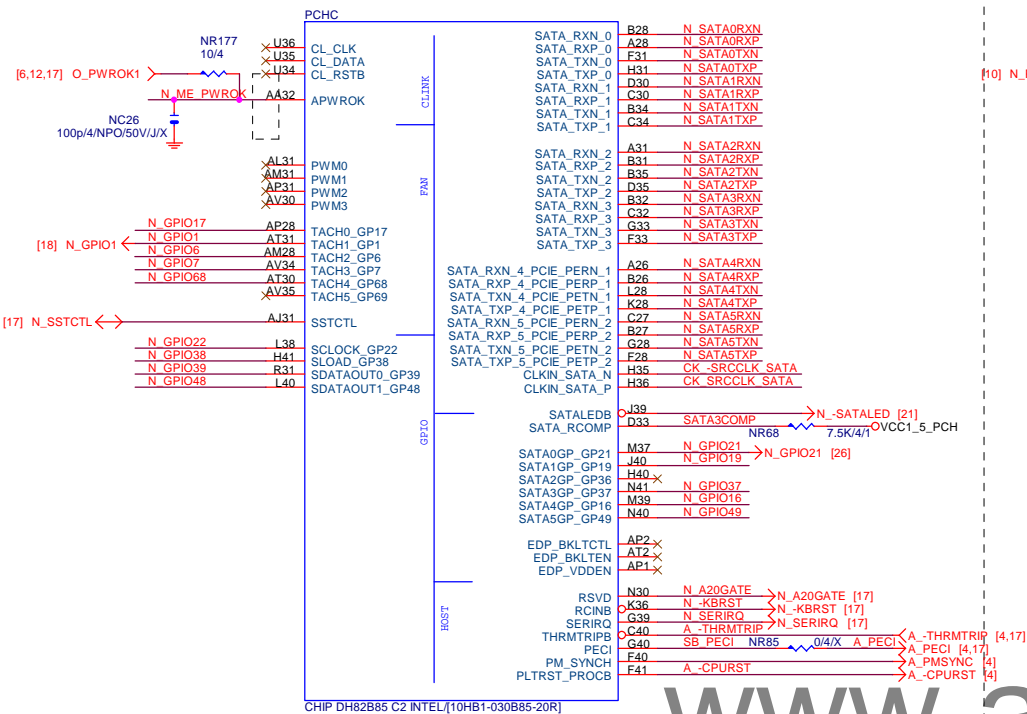
Gigabyte Technology

PCH DISPLAY ,CLK BUFFER

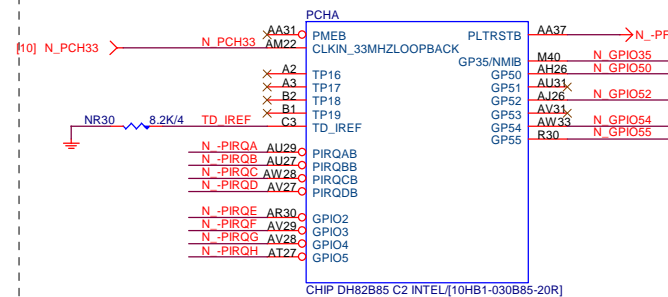
Size Custom	Document Number GA-B85M-HD3-A	Rev 1.0
Date: Tuesday, December 30, 2014	Sheet 10 of 32	

(C)

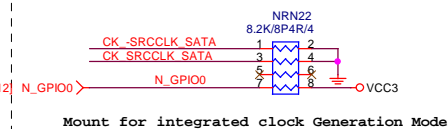
SATA3 : 20/7.5/4.5/7.5/20 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%
SATA2 : 15/7.5/4.5/7.5/15 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%



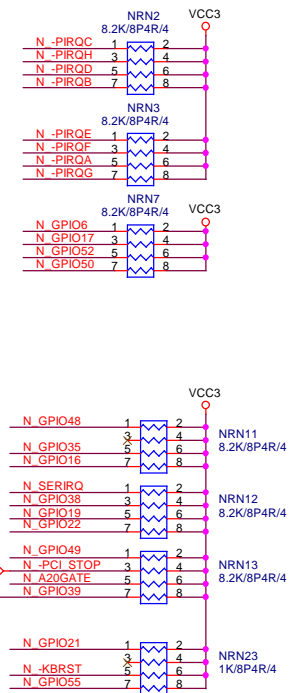
PCH (A)



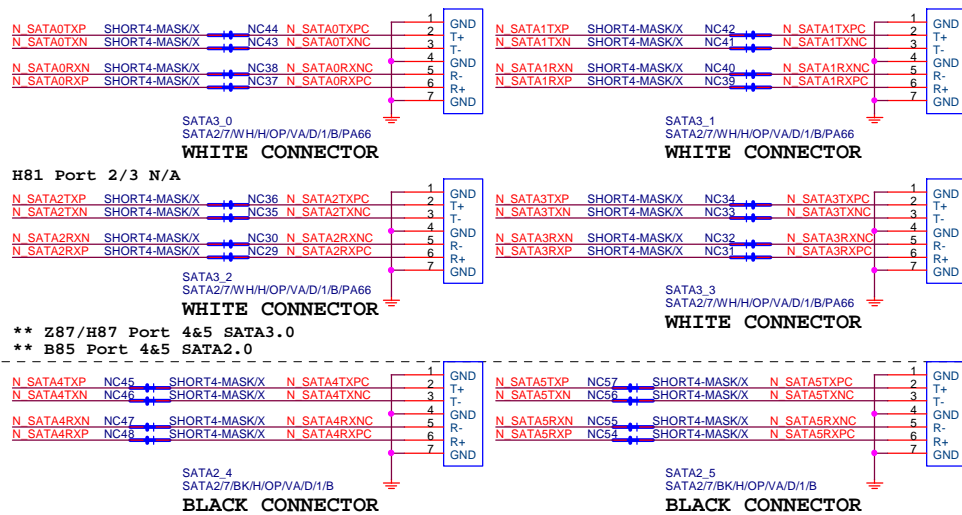
PCH CLK PD



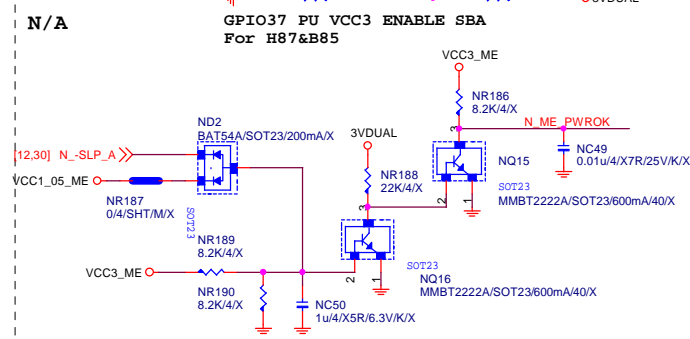
PCH	PU/PD
-----	-------



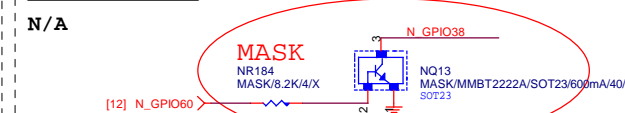
SATA CONNECTOR Remove SATA MLCC [Footprint: C0402-SHORT4-MASK]



ME PWROK



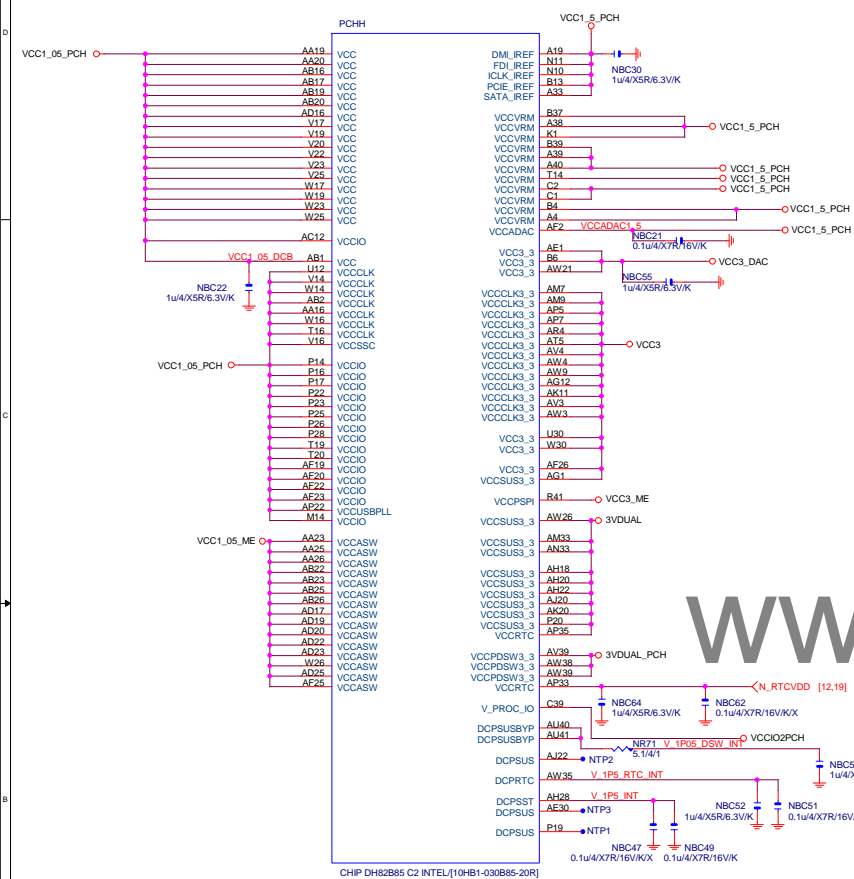
GPI038 Ctrl



Gigabyte Technology

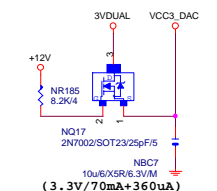
Title			
PCH HOST , SATA, PCI			
Size	Document Number		Rev
Custom	GA-B85M-HD3-A		1.0
Date:	Tuesday, December 30, 2014	Sheet	11 of 32

PCH (H)

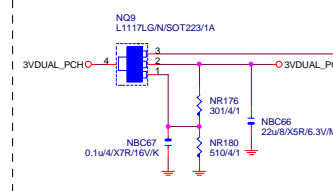


VCC3_DAC

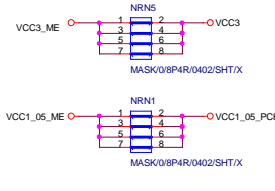
CLOSE北橋(注意震盪水波紋)



3VDUAL_PCH

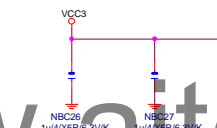


SHT_PWR



CAP

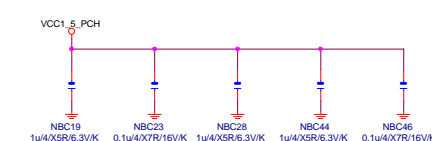
(3.3V)(X3)



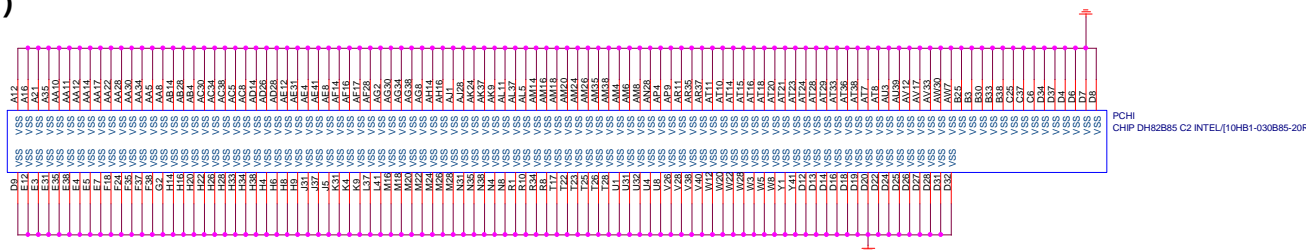
(1.05V)(X2)(3.3V)(X2)



(1.5V)(X5)

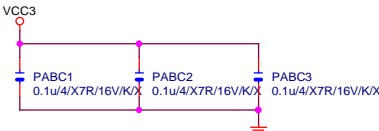


PCH (I)

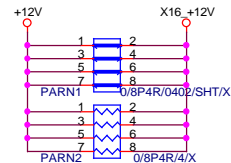


PCIEX16 CAP

N/A



PCIEX16 PROTECT SHT



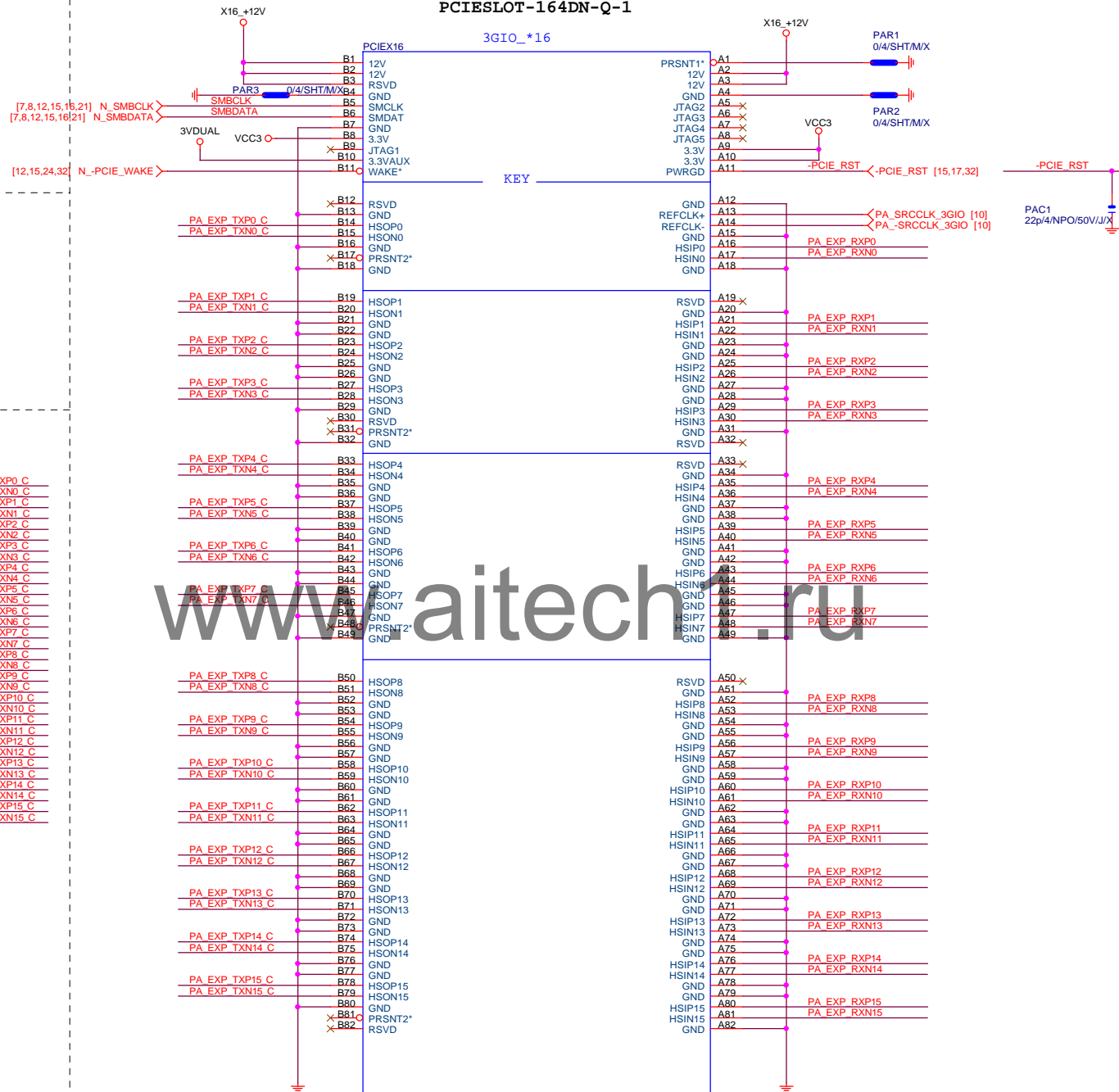
PCIEX16 AC CAP

PA EXP TXP0	PAC5	0.22u4/X5R/6.3V/K	PA EXP TXP0 C
PA EXP TXN0	PAC4	0.22u4/X5R/6.3V/K	PA EXP TXN0 C
PA EXP TXP1	PAC6	0.22u4/X5R/6.3V/K	PA EXP TXP1 C
PA EXP TXN1	PAC7	0.22u4/X5R/6.3V/K	PA EXP TXN1 C
PA EXP TXP2	PAC8	0.22u4/X5R/6.3V/K	PA EXP TXP2 C
PA EXP TXN2	PAC9	0.22u4/X5R/6.3V/K	PA EXP TXN2 C
PA EXP TXP3	PAC10	0.22u4/X5R/6.3V/K	PA EXP TXP3 C
PA EXP TXN3	PAC11	0.22u4/X5R/6.3V/K	PA EXP TXN3 C
PA EXP TXP4	PAC12	0.22u4/X5R/6.3V/K	PA EXP TXP4 C
PA EXP TXN4	PAC13	0.22u4/X5R/6.3V/K	PA EXP TXN4 C
PA EXP TXP5	PAC14	0.22u4/X5R/6.3V/K	PA EXP TXP5 C
PA EXP TXN5	PAC15	0.22u4/X5R/6.3V/K	PA EXP TXN5 C
PA EXP TXP6	PAC16	0.22u4/X5R/6.3V/K	PA EXP TXP6 C
PA EXP TXN6	PAC17	0.22u4/X5R/6.3V/K	PA EXP TXN6 C
PA EXP TXP7	PAC18	0.22u4/X5R/6.3V/K	PA EXP TXP7 C
PA EXP TXN7	PAC19	0.22u4/X5R/6.3V/K	PA EXP TXN7 C
PA EXP TXP8	PAC20	0.22u4/X5R/6.3V/K	PA EXP TXP8 C
PA EXP TXN8	PAC21	0.22u4/X5R/6.3V/K	PA EXP TXN8 C
PA EXP TXP9	PAC22	0.22u4/X5R/6.3V/K	PA EXP TXP9 C
PA EXP TXN9	PAC23	0.22u4/X5R/6.3V/K	PA EXP TXN9 C
PA EXP TXP10	PAC24	0.22u4/X5R/6.3V/K	PA EXP TXP10 C
PA EXP TXN10	PAC25	0.22u4/X5R/6.3V/K	PA EXP TXN10 C
PA EXP TXP11	PAC26	0.22u4/X5R/6.3V/K	PA EXP TXP11 C
PA EXP TXN11	PAC27	0.22u4/X5R/6.3V/K	PA EXP TXN11 C
PA EXP TXP12	PAC28	0.22u4/X5R/6.3V/K	PA EXP TXP12 C
PA EXP TXN12	PAC29	0.22u4/X5R/6.3V/K	PA EXP TXN12 C
PA EXP TXP13	PAC30	0.22u4/X5R/6.3V/K	PA EXP TXP13 C
PA EXP TXN13	PAC31	0.22u4/X5R/6.3V/K	PA EXP TXN13 C
PA EXP TXP14	PAC32	0.22u4/X5R/6.3V/K	PA EXP TXP14 C
PA EXP TXN14	PAC33	0.22u4/X5R/6.3V/K	PA EXP TXN14 C
PA EXP TXP15	PAC34	0.22u4/X5R/6.3V/K	PA EXP TXP15 C
PA EXP TXN15	PAC35	0.22u4/X5R/6.3V/K	PA EXP TXN15 C

PA EXP RXP0.[15] >>> PA_EXP_RXP[0..15] [4]
 PA EXP RXN0.[15] >>> PA_EXP_RXN[0..15] [4]
 PA EXP TXP0.[15] >>> PA_EXP_TXP[0..15] [4]
 PA EXP TXN0.[15] >>> PA_EXP_TXN[0..15] [4]

PCIEX16 SLOT

PCIESLOT-164DN-Q-1



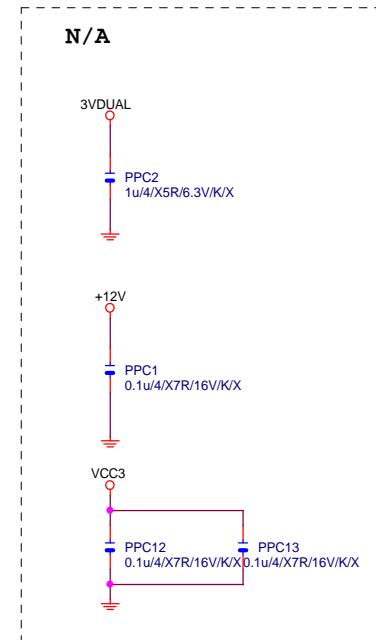
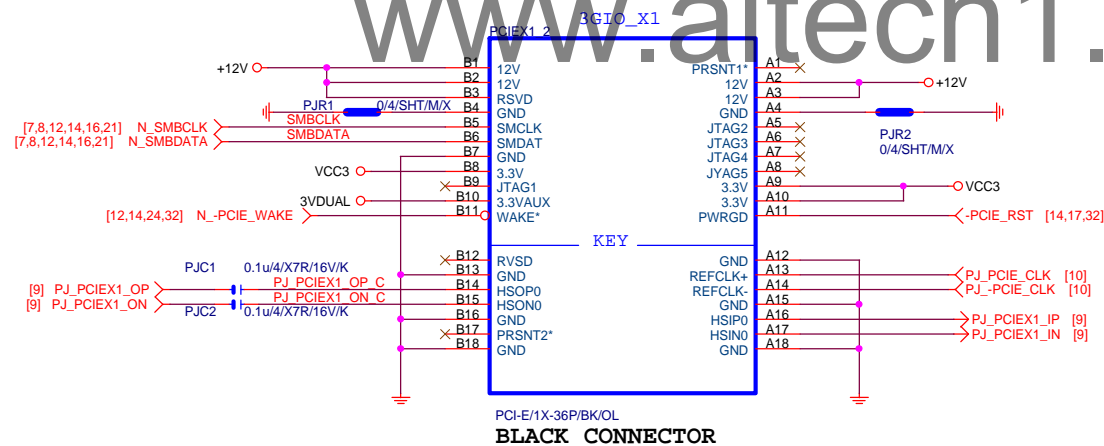
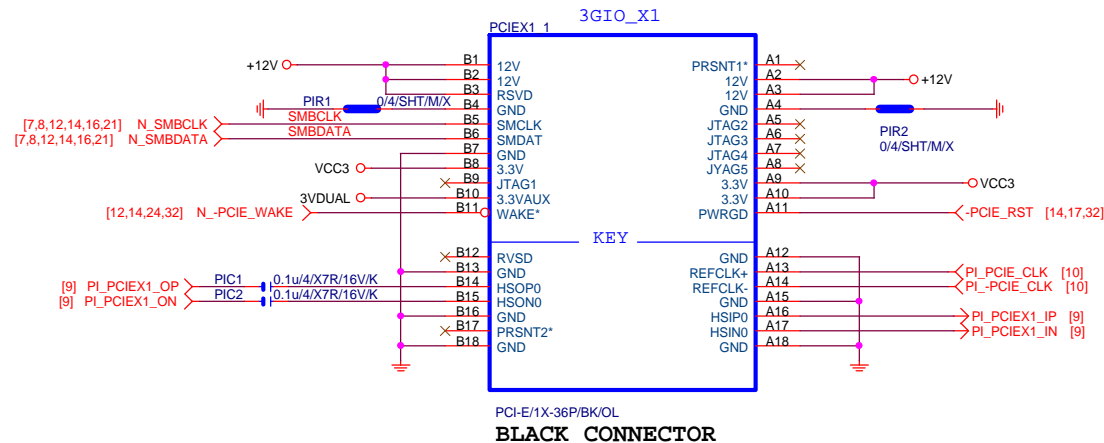
PCI-E/16X-164P/BK/LONG DOUBLE

BLACK CONNECTOR

Gigabyte Technology

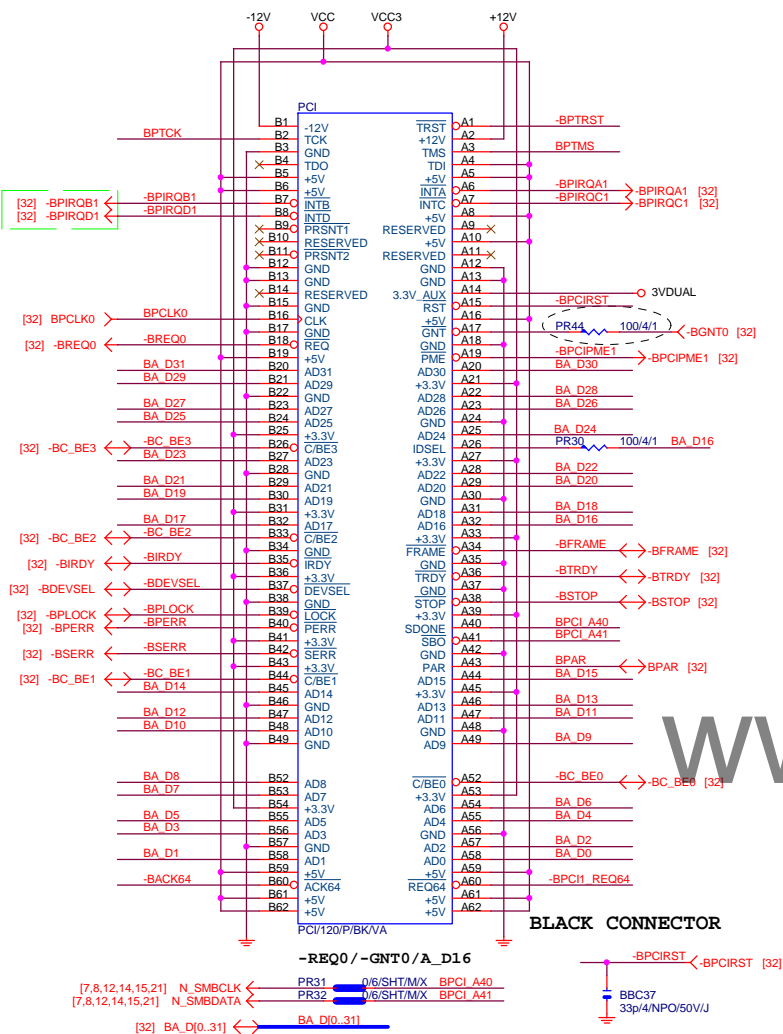
Title		
PCI EXPRESS * 16		
Size	Document Number	Rev
Custom	GA-B85M-HD3-A	1.0
Date:	Tuesday, December 30, 2014	Sheet 14 of 32

PCIEX1 SLOT

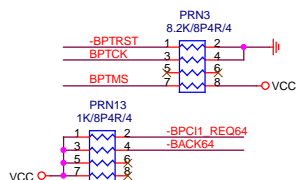


Gigabyte Technology			
PCI EXPRESS X 1 PORT			
Title	Document Number		
Size	GA-B85M-HD3-A		
Custom	Rev 1.0		
Date:	Tuesday, December 30, 2014	Sheet	15 of 32

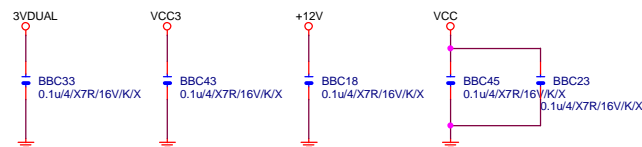
PCI SLOT 1



PCI	PU
-----	----

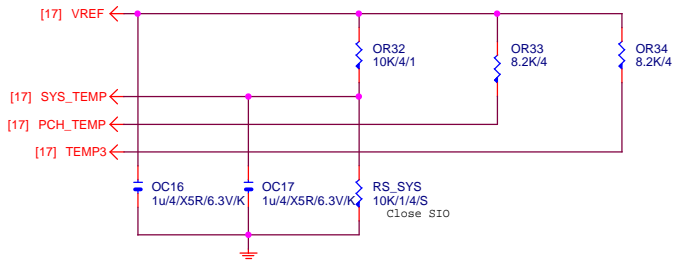


PCI CAP	N/A
---------	-----

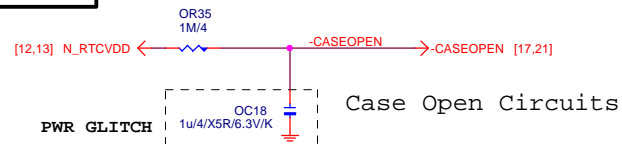


www.aitech1.ru

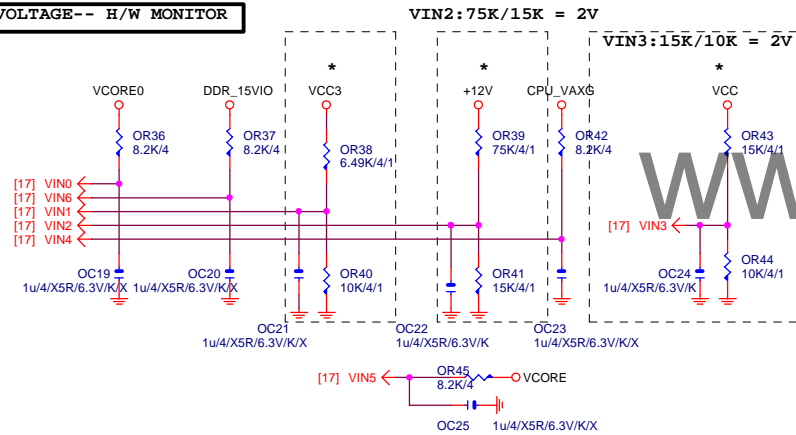
TEMP H/W MONITOR



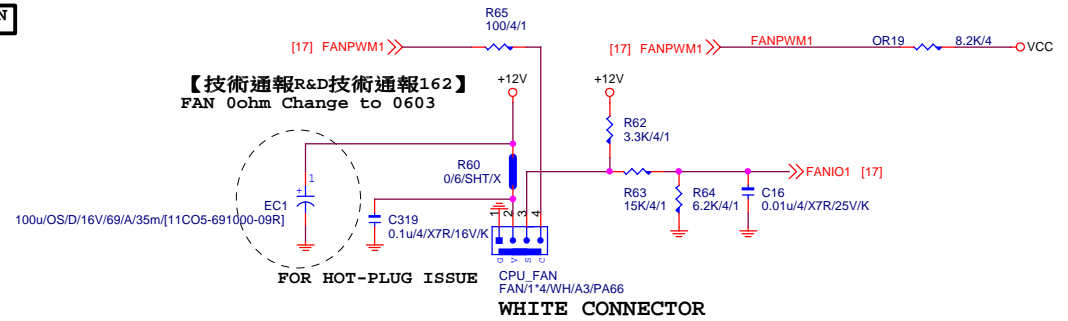
CASE OPEN



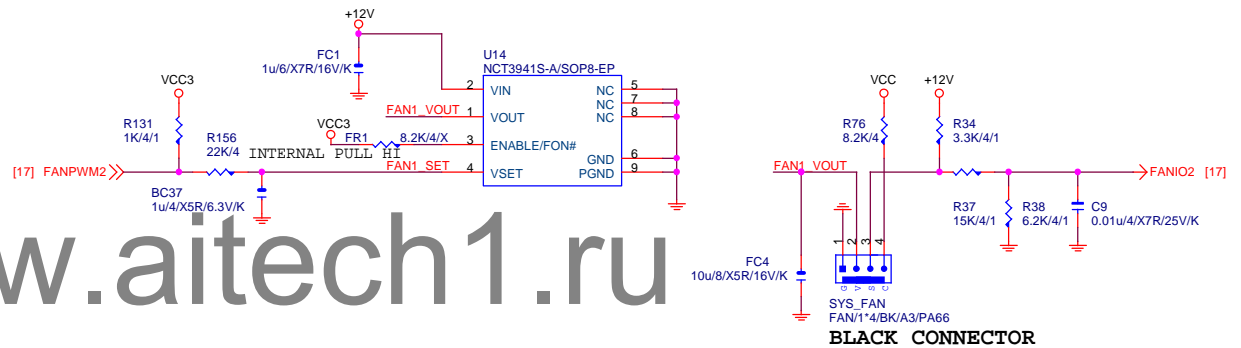
VOLTAGE-- H/W MONITOR



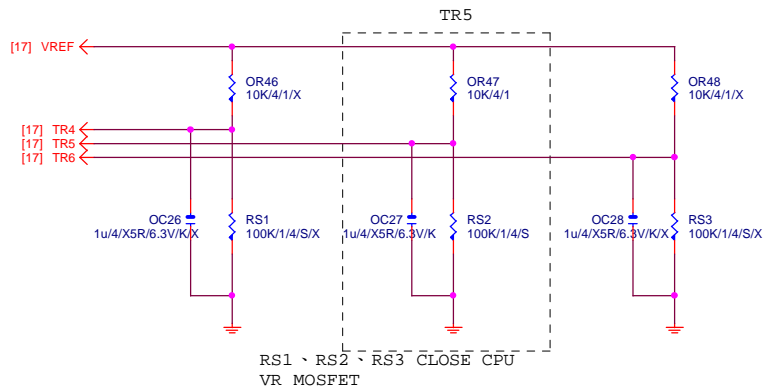
CPU SMART FAN



SYS SMART FAN



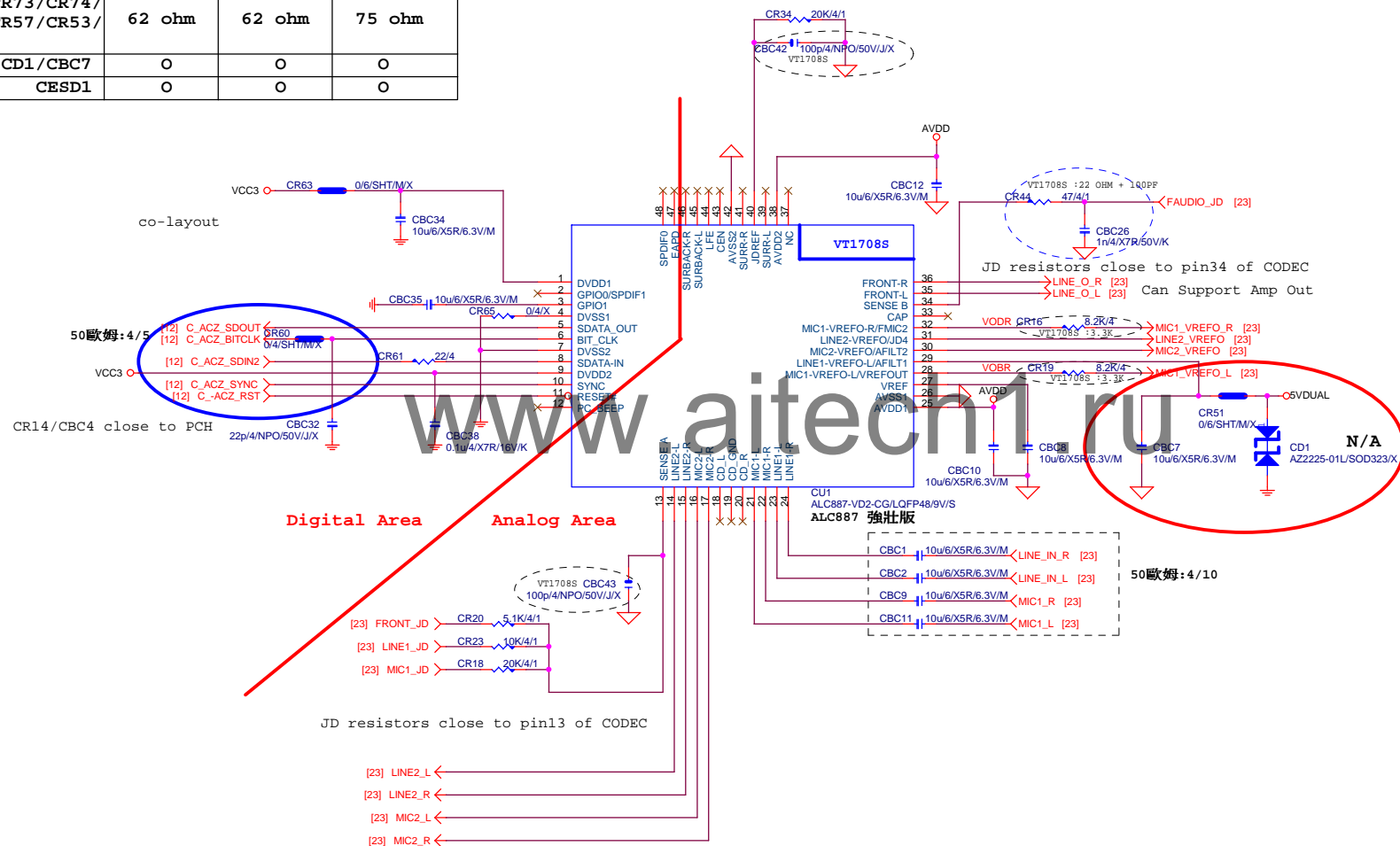
www.aitech1.ru

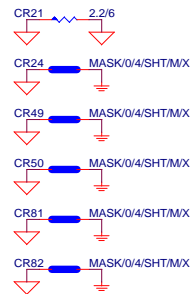


Gigabyte Technology

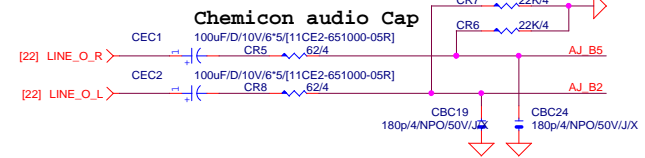
Title			HWM,FAN CTRL,OV
Size	Document Number	GA-B85M-HD3-A	
Custom		Rev 1.0	
Date:	Tuesday, December 30, 2014	Sheet	19 of 32

	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





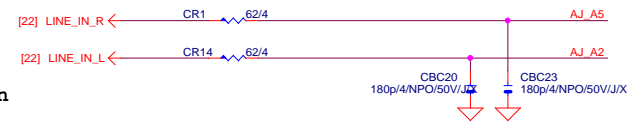
LINE-OUT



LINE-IN

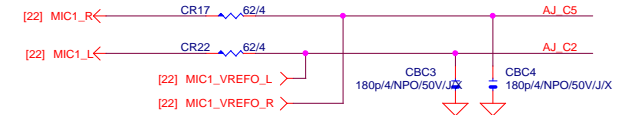
Verify MIC function
in LINE-in

Only reserved for ALC888



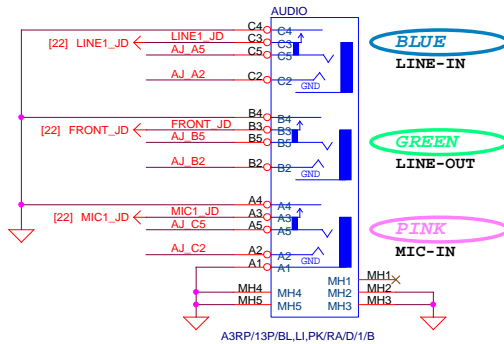
For 889A/888

MIC-IN

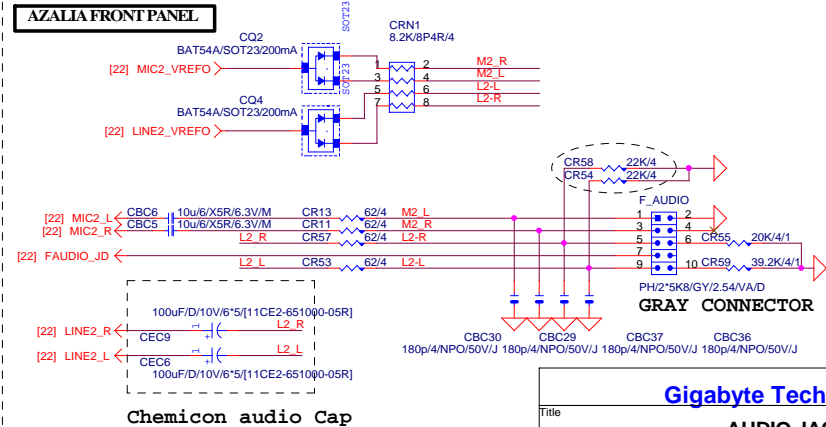


SPDIF_OUT

www.aitech1.ru



AZALIA FRONT PANEL



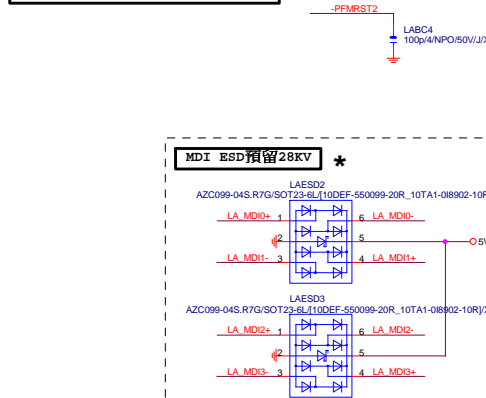
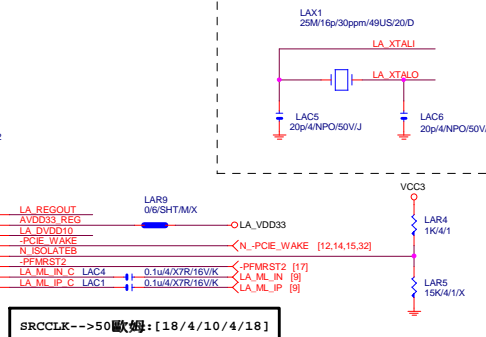
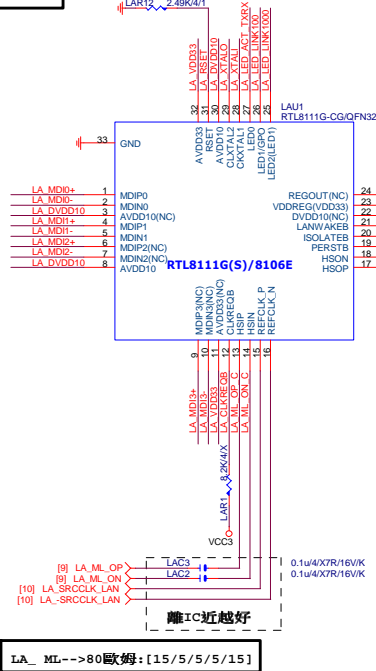
Gigabyte Technology

AUDIO JACK

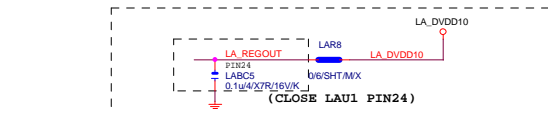
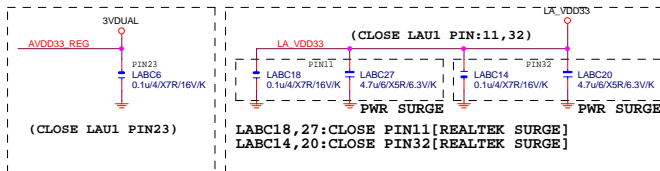
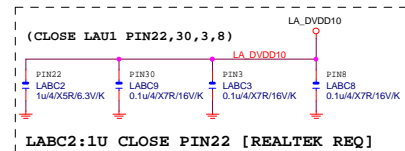
GA-B85M-HD3-A

Title	Document Number	Rev
Size	Custom	1.0
Date:	Tuesday, December 30, 2014	Sheet 23 of 32

LAN RTL8111G-CG



LAN POWER



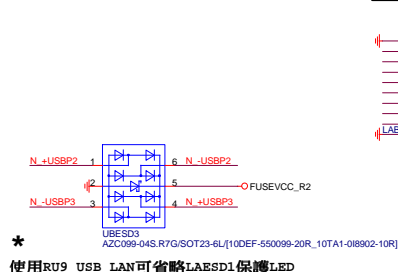
NOTE:
RT8106E: PIN3, 11, 22, 24-->NC
LABC2LABC3, LABC5, LABC18, LABC27-->N/A

BOM NOTICE

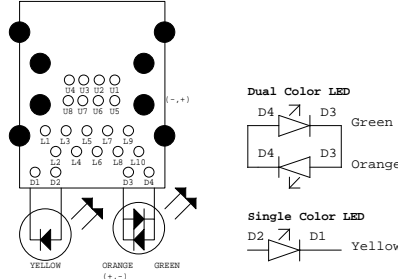
料號 規格 廠商
11NR6-702009-96R 1G LAN (12core) UDE(RU9 ESD+)
[LED獨立走線, 可省略外加AZC099料件LAESD1]

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

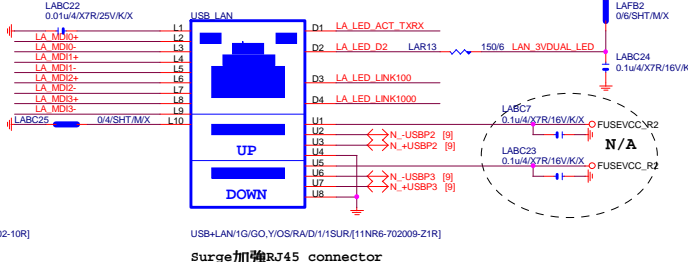
USB_LAN CONNECTOR



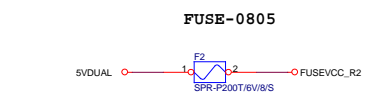
使用RU9 USB_LAN可省略LAESD1保護LED



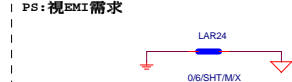
LA_MDI-->100歐姆:[20/4/8/20]



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]

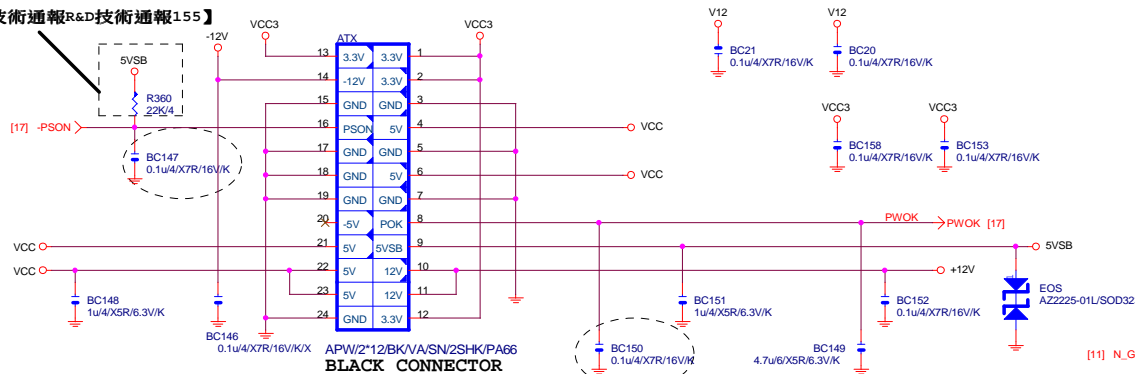
1. 9KV ESD BOM:
USB_LAN (RU9): 11NR6-702009-96R
2. 28KV ESD BOM:
USB_LAN (RU9): 11NR6-702009-96R
LAESD2, LAESD3: 上件AZC398-04S

Gigabyte Technology

Title		Realtek RTL8111G	
Size		GA-B85M-HD3-A	
Date		Tuesday, December 30, 2014	
Sheet		24 of 32	

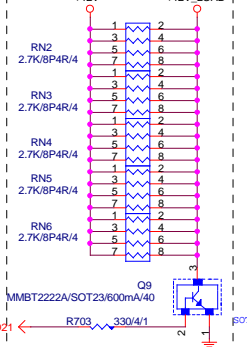
ATXX24 POWER CONNECTOR

【技術通報R&D技術通報155】



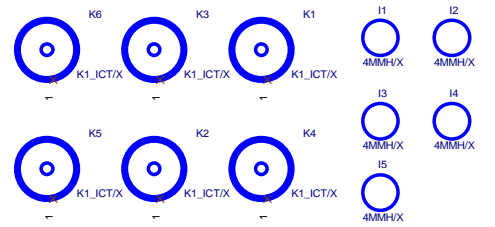
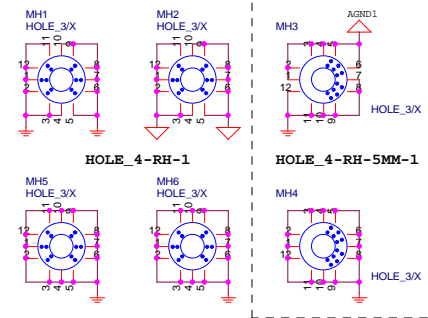
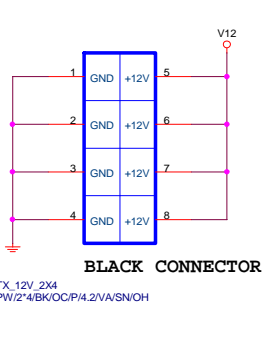
【技術通報R&D技術通報153】

To fix 12V light load abnormal issue



ATXX4 POWER CONNECTOR

BLACK CONNECTOR



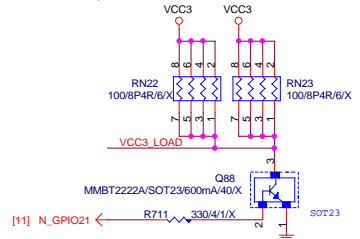
To prevent the 5VSB under loading when boot

TPM

www.aitech1.ru

FIX PWR MINMUN LOAD

N/A



PWOK PATCH

【技術通報R&D技術通報154】

Gigabyte Technology

ATX CONNECTOR

GA-B85M-HD3-A

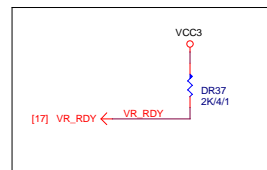
Rev 1.0

Date: Tuesday, December 30, 2014 Sheet 26 of 32

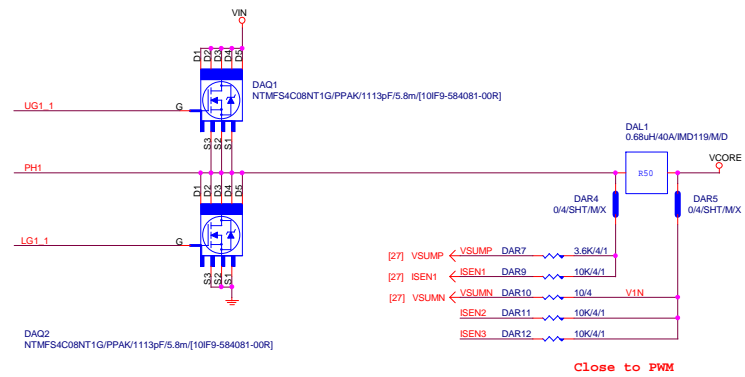
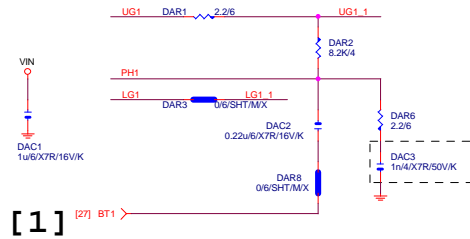
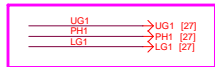
R_PROG1 (Kohm)	3-Phase Iccmax (A)
24.9	105
28.7	114
34.0	129
42.2	144

R_PROG2 (Kohm)	Fsw (KHz)	VBOOT
64.9	315	1.75
73.2	315	1.70
80.6	315	1.65
90.9	315	0

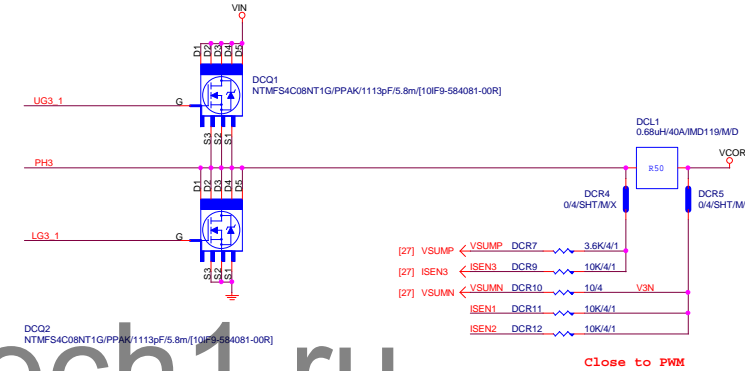
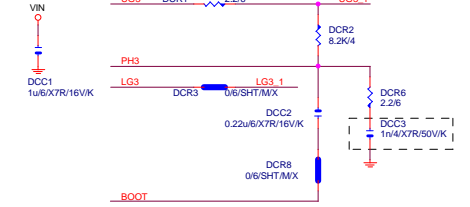
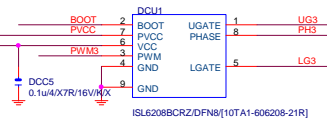
R_PROG3 (Kohm)	Fast Slew Rate (mV/us)
3.24	12
5.76	24
9.31	40
13.3	45



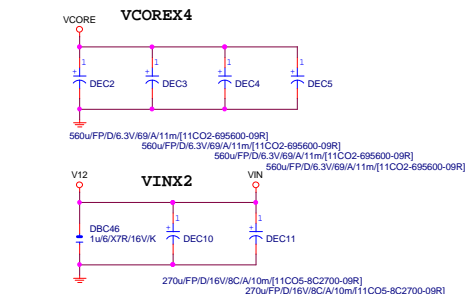
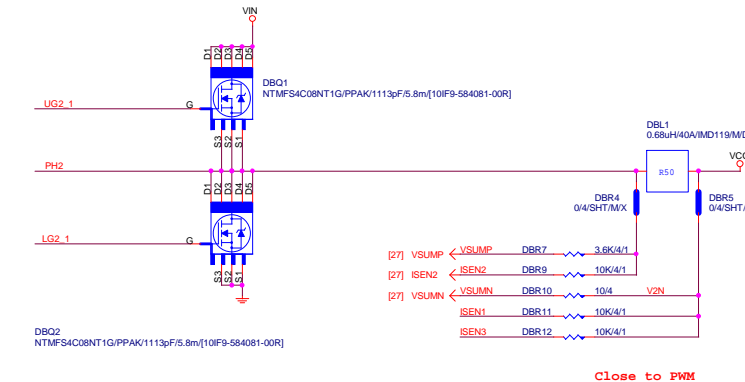
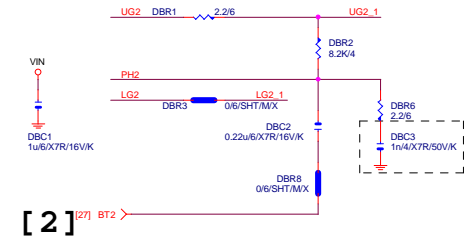
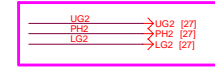
PHASE 1



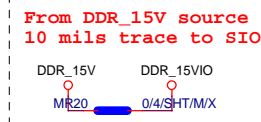
PHASE 3



PHASE 2



Gigabyte Technology			
Title		CPU CORE VR-2	
Size		Document Number	
Custom		GA-B85M-HD3-A	
Date		Rev	
Tuesday, December 30, 2014		1.0	
Sheet		28 of 32	



VIN=5V, VOUT=1.5V, IOUT=25A, PHASE=1
IRMS=11.45A
560uF/P/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

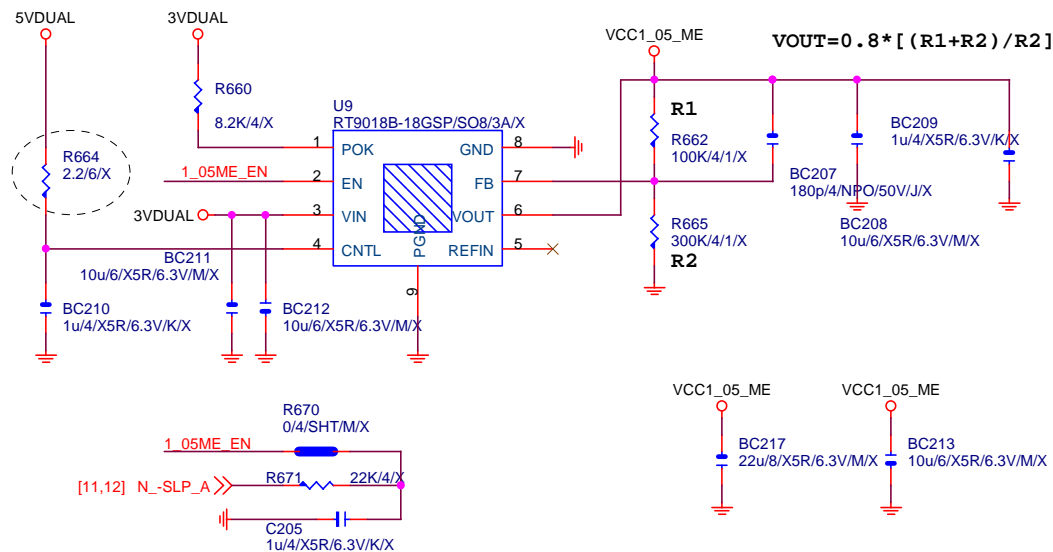
```
Rocset=(Iocp*Lgate,rdson)/Iocset
Rocset=(45A*6.7mOhm)/10uA = 30K
Iocset=10uA
```


VCC1_05_ME

【技術通報R&D技術通報156】

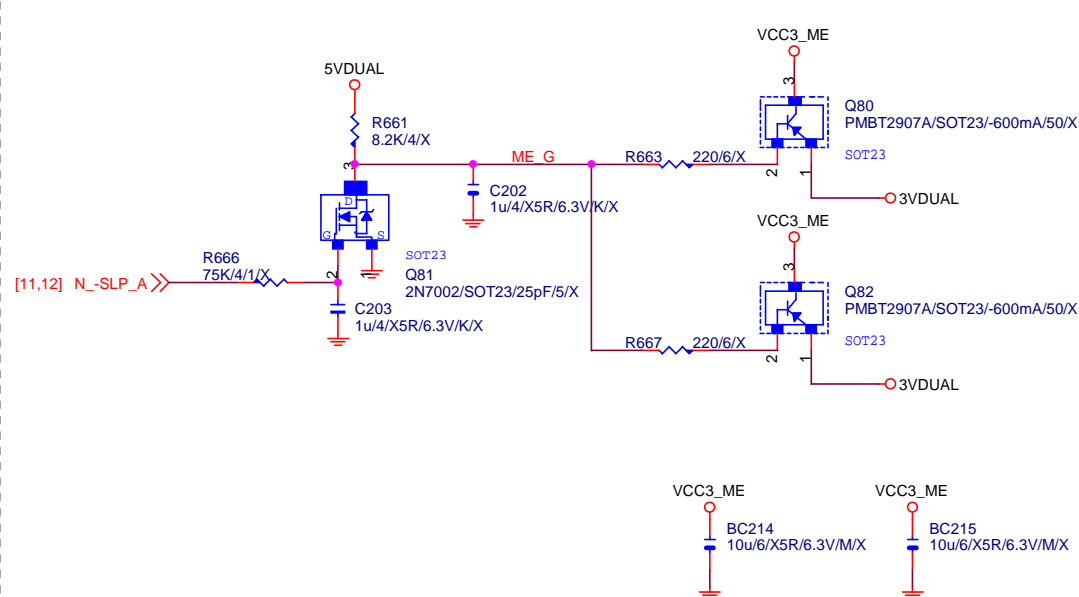
(RICHTER), (NUVOTON), (EMC)做共用
PIN7分壓阻值須做修改為100K以上電阻值

N/A



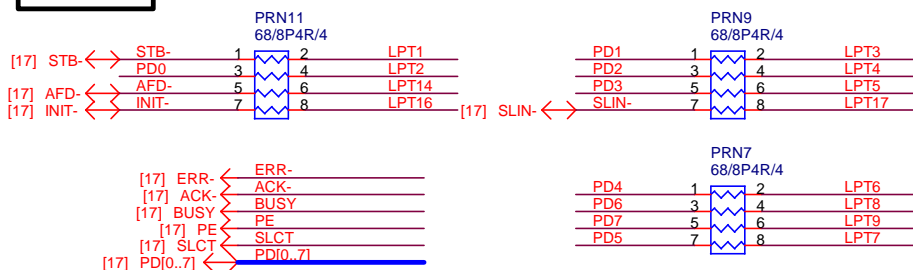
VCC3_ME

N/A



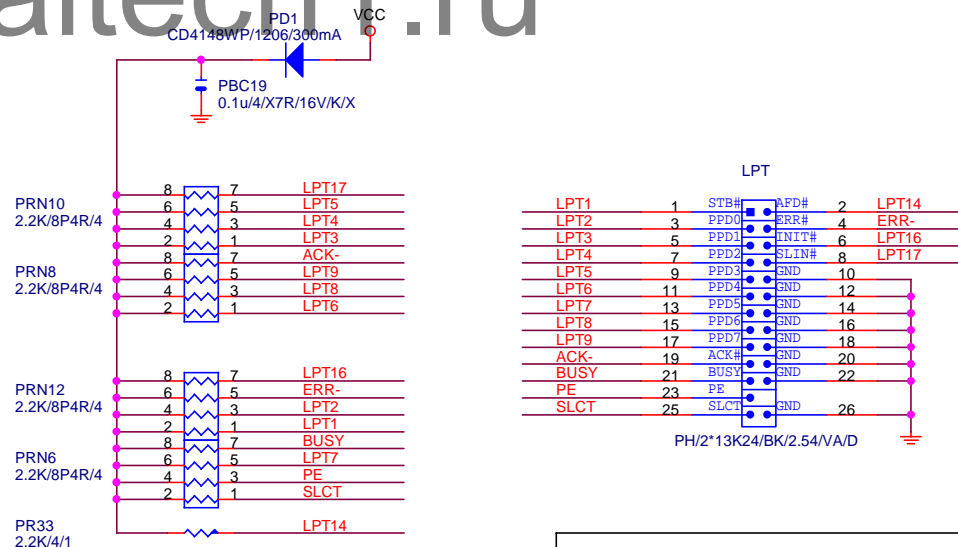
www.aitech1.ru

LPT PORT



【技術通報R&D技術通報151】

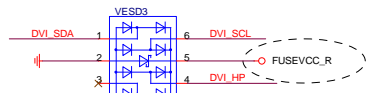
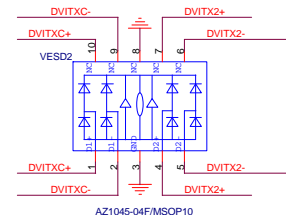
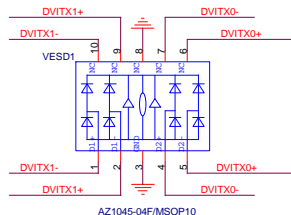
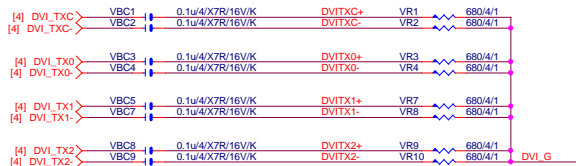
33ohm Change to 68ohm



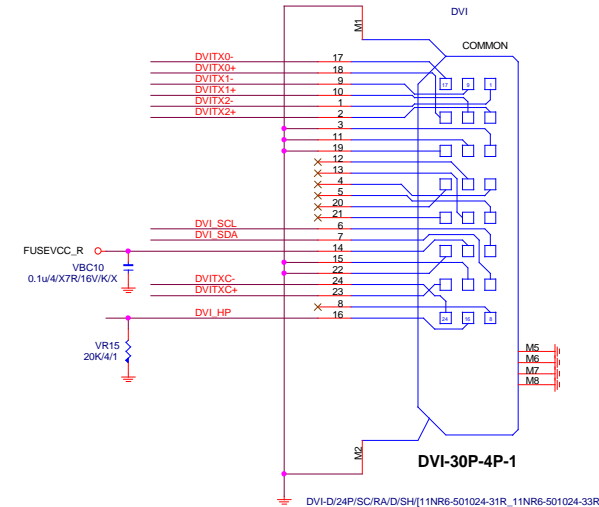
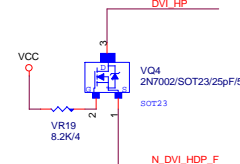
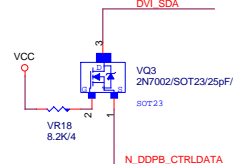
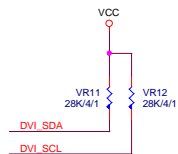
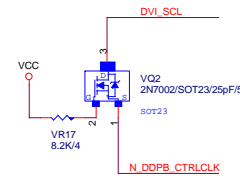
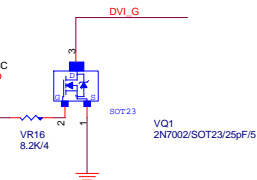
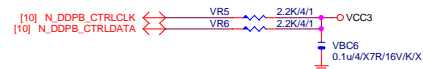
Gigabyte Technology

Title			
LPT			
Size	Document Number	Rev	
Custom	GA-B85M-HD3-A	1.0	
Date:	Tuesday, December 30, 2014	Sheet	30 of 32

DVI

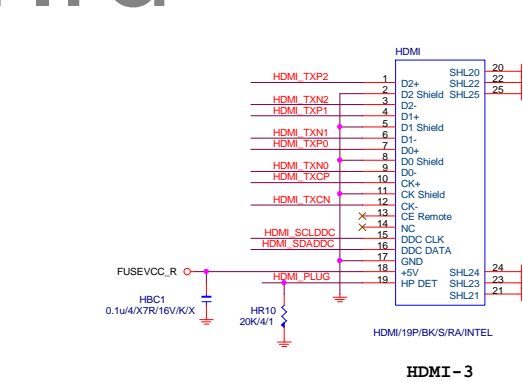
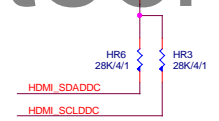
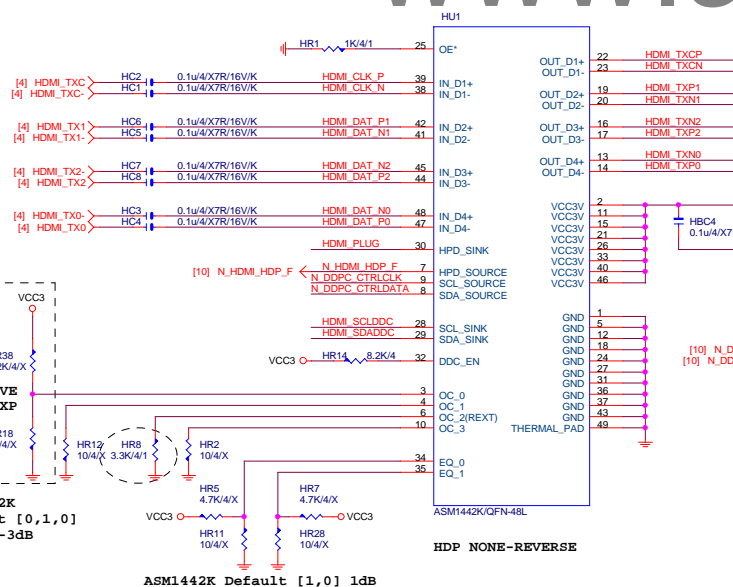


Close to connector



HDMI LEVEL SHIFT

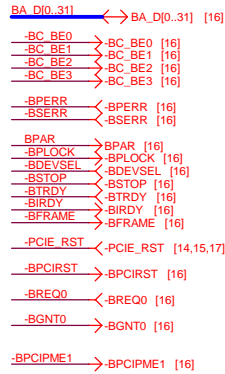
www.aitech1.ru



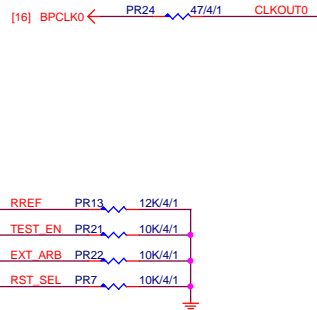
Gigabyte Technology		
DVI		
Size	Document Number	GA-B85M-HD3-A
Custom		Rev 1.0
Date	Tuesday, December 30, 2014	Sheet 31 of 32

PCIE TO PCI

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



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



[10] G_-PBCLK
[10] G_-PBCLK



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

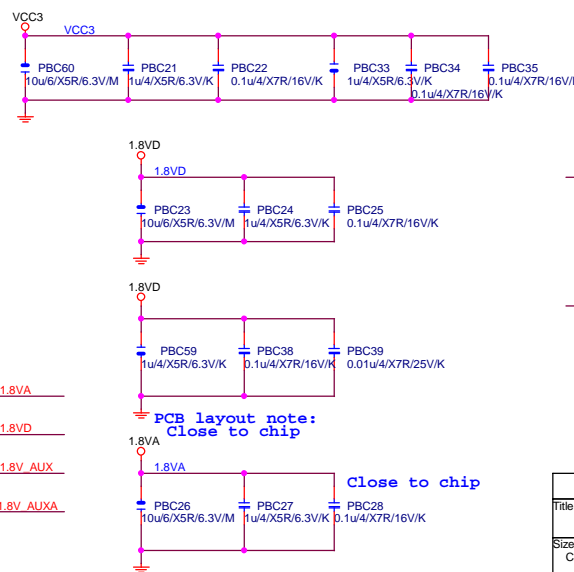
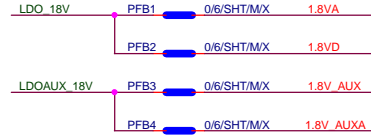
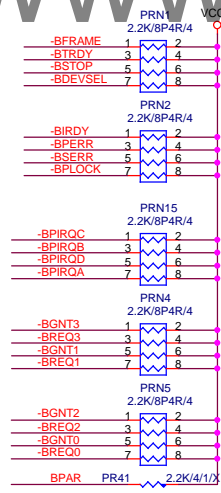
High: PCICLK INPUT form CLK Gen
Low: PCICLK OUTPUT form IT8893 chip

IT8892

PCI slot

PCI slot

chipset side



PCB layout note:
Close to chip

PCB layout note:
Close to chip

Gigabyte Technology

ITE IT8892E
GA-B85M-HD3-A

Title	Document Number	Rev
Size	Custom	1.0
Date:	Tuesday, December 30, 2014	Sheet 32 of 32