

Model Name: GA-H81M-DS2V

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 *3 SLOT
16	PCI SLOT (NA)
17	ITE 8620 LPC IO
18	COM,KB_MS_USB,USB30_20
19	HWM,FAN CTRL,OV
20	DUAL BIOS
21	FP,FUSB,SPK,SATALED
22	Realtek ALC887-VD2
23	REAR AUDIO JACK
24	REALTEK RTL8111F
25	DISCRETE POWER
26	ATX
27	VCORE ISL95812_1

SHEET

TITLE

28	VCORE ISL95812_2
29	RT8120_DDR POWER
30	LPT
31	DVI
32	IT8892E (NA)
33	USB3 VL805

www.aitech1.ru

Gigabyte Technology

Cover Sheet

Size Custom	Document Number GA-H81M-DS2V	Rev 1.0
Date: Friday, August 16, 2013	Sheet 1 of 33	

Model Name:
GA-H81M-DS2V

Component value change history

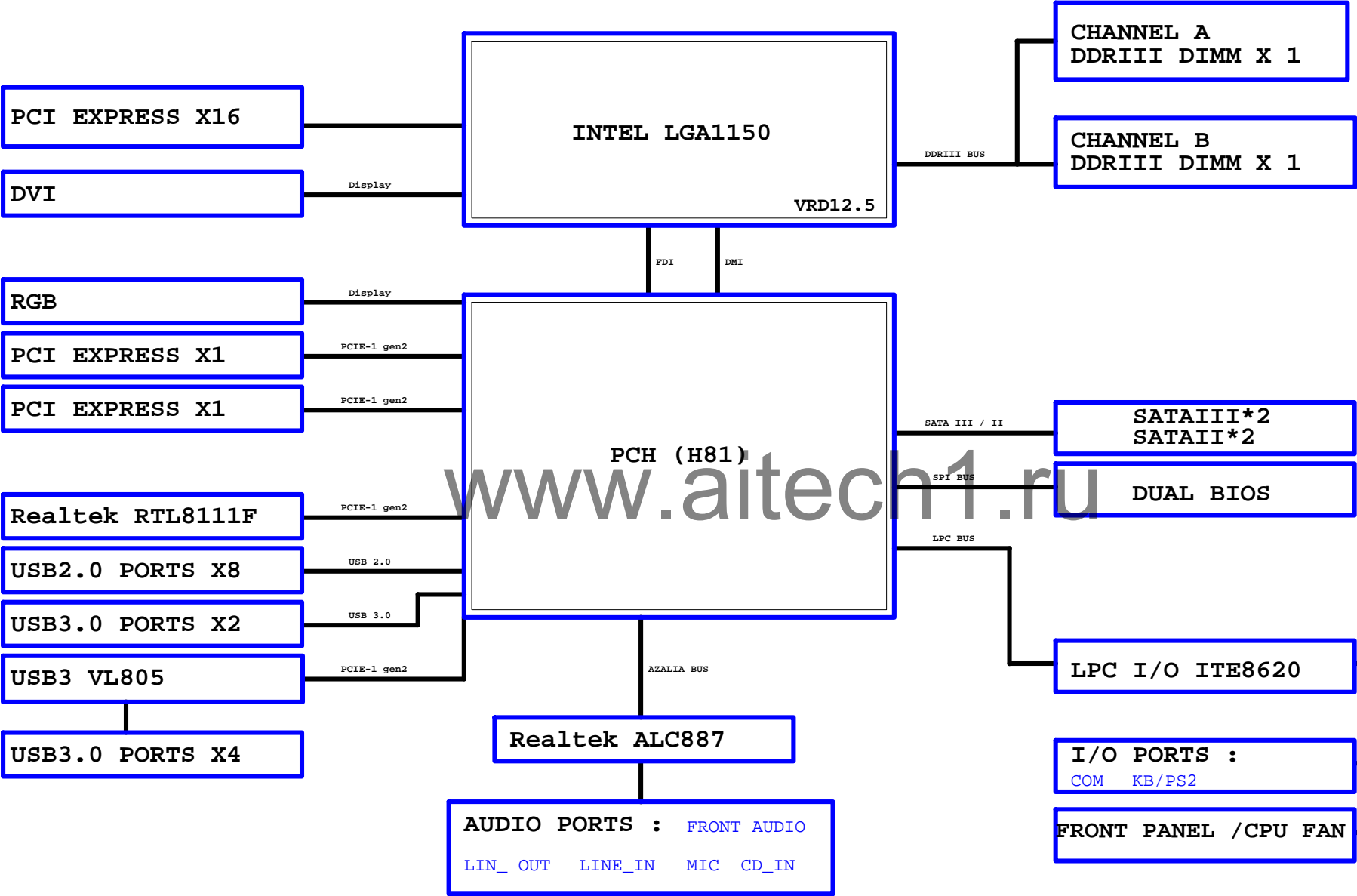
2013/05/17

[illegible]

Circuit or PCB layout change

[illegible]

BLOCK DIAGRAM



[illegible]

Timing diagram for FDI signals. The diagram shows various FDI signals (FDI_CS[0:1], FDI_INT, FDI_RCOMP, FDI_TX[0:1], FDI_TXP[0:1]) and their connections to hardware components (VCCIOA_L, WR23, FDI_CS[0:1], FDI_INT, FDI_RCOMP, FDI_TX[0:1], FDI_TXP[0:1]). It also shows the timing of these signals relative to a clock signal (N_DP_CLK). The diagram is divided into two sections: a top section showing the timing of FDI signals and a bottom section showing the timing of FDI_TX signals. The bottom section includes a table of timing parameters for FDI_TX signals.

Signal	Timing Parameter	Value
FDI_TXP[0..1]	FDI_TXP[0..1]	(9)
FDI_TXN[0..1]	FDI_TXN[0..1]	(9)

PCIEX16:16/5/5/16(breakout min 10/4/4/4/10)									
Impedance=80 +- 17.5%									
					LGAI1500C				
	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	E11			PEG_RXP4		PEG_TXP4	C8	PA EXP TXP4
	PA EXP RXN4	F11			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 EXP RXP16	M4			PEG_RXP16		PEG_TXP16	M1	PA EXP TXP16
	PA EXP RXN16	M5			PEG_RXN16		PEG_TXN16	N1	PA EXP TXN16
	PA EXP RXP17	N4			PEG_RXP17		PEG_TXP17	N1	PA EXP TXP17
	PA EXP RXN17	N5			PEG_RXN17		PEG_TXN17	N2	PA EXP TXN17
	PA EXP RXP18	O4			PEG_RXP18		PEG_TXP18	O1	PA EXP TXP18
	PA EXP RXN18	O5			PEG_RXN18		PEG_TXN18	O2	PA EXP TXN18
	PA EXP RXP19	P4			PEG_RXP19		PEG_TXP19	P1	PA EXP TXP19
	PA EXP RXN19	P5			PEG_RXN19		PEG_TXN19	P2	PA EXP TXN19
	PA EXP RXP20	Q4			PEG_RXP20		PEG_TXP20	Q1	PA EXP TXP20
	PA EXP RXN20	Q5			PEG_RXN20		PEG_TXN20	Q2	PA EXP TXN20
	PA EXP RXP21	R4			PEG_RXP21		PEG_TXP21	R1	PA EXP TXP21
	PA EXP RXN21	R5			PEG_RXN21		PEG_TXN21	R2	PA EXP TXN21
	PA EXP RXP22	S4			PEG_RXP22		PEG_TXP22	S1	PA EXP TXP22
	PA EXP RXN22	S5			PEG_RXN22		PEG_TXN22	S2	PA EXP TXN22
	PA EXP RXP23	T4			PEG_RXP23		PEG_TXP23	T1	PA EXP TXP23
	PA EXP RXN23	T5			PEG_RXN23		PEG_TXN23	T2	PA EXP TXN23
	PA EXP RXP24	U4			PEG_RXP24		PEG_TXP24	U1	PA EXP TXP24
	PA EXP RXN24	U5			PEG_RXN24		PEG_TXN24	U2</	

1.1V分壓

VCC3

WR26
2K4/1X

WR31
1K4/1X

A_CPURST

BC102
1n/407R/50V/K

A_CPURST (11,17)

For IT8620 Ctrl

CPU_VTT_OR

Signal	Value
WR3	90.9/4/1/X
WR2	115/4/1
WR4	75/4/1

PVIDSLCK
PVIDSOUT
-PVIDALRT

Figure 10 illustrates the pinmux configuration for the CPU_VTT_OR pin. The diagram shows the CPU_VTT_OR pin connected to various peripheral signals through multiplexers. The top section shows the CPU_VTT_OR pin connected to WR14, WR16, WR17, and WR30, which are multiplexed to A_TMS, A_TDO, A_TDI, and A_HPRDY respectively. The bottom section shows the CPU_VTT_OR pin connected to WR29, WR10, WR25, WR56, and WR55, which are multiplexed to A_PECI, A_CATERR-, A_PROCHOT, and N_CPUWRCK respectively. The diagram also shows the connection of A_THRMTRIP, A_PWR_DEBUG, A_DBR, and A_DDR_COMP0 to A_DDR_COMP1, A_DDR_COMP2, A_TESTLOW_1, A_TESTLOW_2, and A_HSW_CFG_RCOMP to A_DDR_COMP2.

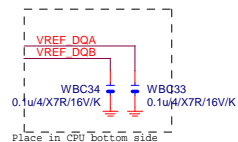
LGA1150 (A)

LGA1150A		DDR0_MA0	DDR0_DQ0	AD38	MDA0
MAAA0	AU13	DDR0_MA1	DDR0_DQ1	AD39	MDA1
MAAA1	AV16	DDR0_MA2	DDR0_DQ2	AF38	MDA2
MAAA2	AU16	DDR0_MA3	DDR0_DQ3	AF39	MDA3
MAAA3	AW17	DDR0_MA4	DDR0_DQ4	AD37	MDA4
MAAA4	AU18	DDR0_MA5	DDR0_DQ5	AD40	MDA5
MAAA5	AW18	DDR0_MA6	DDR0_DQ6	AE37	MDA6
MAAA6	AV17	DDR0_MA7	DDR0_DQ7	AF40	MDA7
MAAA7	AT18	DDR0_MA8	DDR0_DQ8	AH40	MDA9
MAAA8	AU18	DDR0_MA9	DDR0_DQ9	AH39	MDA10
MAAA9	AT19	DDR0_MA10	DDR0_DQ10	AK38	MDA10
MAAA10	AW11	DDR0_MA11	DDR0_DQ11	AK39	MDA11
MAAA11	AV19	DDR0_MA12	DDR0_DQ12	AH37	MDA12
MAAA12	AU19	DDR0_MA13	DDR0_DQ13	AH38	MDA13
MAAA13	AT20	DDR0_MA14	DDR0_DQ14	AK40	MDA15
MAAA14	AT20	DDR0_MA15	DDR0_DQ15	AK40	MDA17
MAAA15	AU21	DDR0_ODT0	DDR0_ODT0	AM39	MDA21
MODT_A0	AW10	DDR0_ODT1	DDR0_ODT1	AP38	MDA18
MODT_A1	AY8	DDR0_ODT2	DDR0_ODT2	AP39	MDA19
	AW9	DDR0_ODT3	DDR0_ODT3	AM37	MDA20
	AW8			AM38	MDA16
	AW33	DDR0_ECC0	DDR0_ECC0	AP37	MDA22
	AW33	DDR0_ECC1	DDR0_ECC1	AP40	MDA23
	AU31	DDR0_ECC2	DDR0_ECC2	AW37	MDA29
	AW31	DDR0_ECC3	DDR0_ECC3	AU35	MDA26
	AU33	DDR0_ECC4	DDR0_ECC4	AW35	MDA27
	AT33	DDR0_ECC5	DDR0_ECC5	AT37	MDA28
	AW31	DDR0_ECC6	DDR0_ECC6	AU37	MDA24
	AW31	DDR0_ECC7	DDR0_ECC7	AT35	MDA30
		DDR0_BA0	DDR0_DQ31	AW35	MDA31
(7) SBAA0	SBAA0	DDR0_BA1	DDR0_DQ32	AY6	MDA33
(7) SBAA1	SBAA1	DDR0_BA2	DDR0_DQ33	AU6	MDA37
(7) SBAA2	SBAA2	DDR0_BA3	DDR0_DQ34	AW4	MDA34
		DDR0_BA4	DDR0_DQ35	AU4	MDA35
(7) CKEA0	CKEA0	DDR0_CKE0	DDR0_DQ36	AW6	MDA32
(7) CKEA1	CKEA1	DDR0_CKE1	DDR0_DQ37	AW6	MDA38
		DDR0_CKE2	DDR0_DQ38	AW4	MDA39
		DDR0_CKE3	DDR0_DQ39	AR1	MDA41
(7) -CSA0	-CSA0	DDR0_CS_N0	DDR0_DQ40	AR4	MDA45
(7) -CSA1	-CSA1	DDR0_CS_N1	DDR0_DQ41	AN3	MDA42
		DDR0_CS_N2	DDR0_DQ42	AN4	MDA43
		DDR0_CS_N3	DDR0_DQ43	AR2	MDA44
(7) DCLKA0	DCLKA0	DDR0_CLK_P0	DDR0_DQ44	AR3	MDA40
(7) DCLKA0	DCLKA0	DDR0_CLK_P1	DDR0_DQ45	AN2	MDA46
(7) DCLKA1	DCLKA1	DDR0_CLK_P2	DDR0_DQ46	AN1	MDA47
(7) DCLKA1	DCLKA1	DDR0_CLK_P3	DDR0_DQ47	AL1	MDA49
		DDR0_CLK_N0	DDR0_DQ48	AL4	MDA53
		DDR0_CLK_N1	DDR0_DQ49	AL4	MDA50
		DDR0_CLK_P2	DDR0_DQ50	AJ4	MDA51
		DDR0_CLK_N2	DDR0_DQ51	AL2	MDA52
		DDR0_CLK_P3	DDR0_DQ52	AJ2	MDA48
		DDR0_CLK_N3	DDR0_DQ53	AJ2	MDA54
		RSVD	DDR0_DQ54	AJ1	MDA55
			DDR0_DQ55	AG1	MDA57
			DDR0_DQ56	AG4	MDA61
			DDR0_DQ57	AE3	MDA58
			DDR0_DQ58	AE4	MDA59
			DDR0_DQ59	AG2	MDA60
			DDR0_DQ60	AG3	MDA56
(7) -SRASA	-SRASA	DDR0_RAS*	DDR0_DQ61	AE2	MDA62
(7) -SWEA	-SWEA	DDR0_WE*	DDR0_DQ62	AE1	MDA63
			DDR0_DQ63	AE39	DQSA0
			DDR0_DQ64	AJ39	DQSA1
			DDR0_DQ65	AN39	DQSA2
			DDR0_DQ66	AV36	DQSA3
			DDR0_DQ67	AV5	DQSA4
			DDR0_DQ68	AP3	DQSA5
			DDR0_DQ69	AK3	DQSA6
			DDR0_DQ70	AF3	DQSA7
			DDR0_DQ71	AV32	DQSA0
			DDR0_DQ72	AE38	DQSA1
			DDR0_DQ73	AJ38	DQSA2
			DDR0_DQ74	AN38	DQSA3
			DDR0_DQ75	AJ36	DQSA4
			DDR0_DQ76	AW5	DQSA5
			DDR0_DQ77	AP2	DQSA6
			DDR0_DQ78	AK2	DQSA7
			DDR0_DQ79	AF2	DQSA7
			DDR0_DQ80	AU32	

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

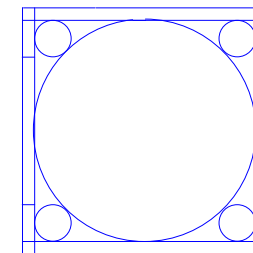
LGA1150 (B)

LGA1150B		DDR1_MA0	DDR1_DQ0	AE34	MDB0
MAAB0	AL19	DDR1_MA1	DDR1_DQ1	AE35	MDB1
MAAB1	AK23	DDR1_MA2	DDR1_DQ2	AG35	MDB2
MAAB2	AM23	DDR1_MA3	DDR1_DQ3	AH35	MDB3
MAAB3	AP23	DDR1_MA4	DDR1_DQ4	AD34	MDB4
MAAB4	AL23	DDR1_MA5	DDR1_DQ5	AD35	MDB5
MAAB5	AY24	DDR1_MA6	DDR1_DQ6	AG34	MDB6
MAAB6	AY25	DDR1_MA7	DDR1_DQ7	AH34	MDB7
MAAB7	AU26	DDR1_MA8	DDR1_DQ8	AL34	MDB8
MAAB8	AW25	DDR1_MA9	DDR1_DQ9	AL35	MDB9
MAAB9	AP18	DDR1_MA10	DDR1_DQ10	AL31	MDB10
MAAB10	AY25	DDR1_MA11	DDR1_DQ11	AK34	MDB11
MAAB11	AY26	DDR1_MA12	DDR1_DQ12	AK35	MDB12
MAAB12	AY26	DDR1_MA13	DDR1_DQ13	AK32	MDB13
MAAB13	AR15	DDR1_MA14	DDR1_DQ14	AL32	MDB14
MAAB14	AV27	DDR1_MA15	DDR1_DQ15	AL34	MDB17
MAAB15	AY28		DDR1_DQ16	AP34	MDB21
MODT_B0	AM17	DDR1_ODT0	DDR1_ODT0	AN31	MDB19
MODT_B1	AL16	DDR1_ODT1	DDR1_ODT1	AP31	MDB23
	AM16	DDR1_ODT2	DDR1_ODT2	AP35	MDB20
	AK15	DDR1_ODT3	DDR1_ODT3	AP35	MDB16
	AM26	DDR1_ECC0	DDR1_ECC0	AN32	MDB18
	AM25	DDR1_ECC1	DDR1_ECC1	AP32	MDB22
	AP25	DDR1_ECC2	DDR1_ECC2	AM29	MDB25
	AP26	DDR1_ECC3	DDR1_ECC3	AM28	MDB28
	AL26	DDR1_ECC4	DDR1_ECC4	AR29	MDB27
	AL25	DDR1_ECC5	DDR1_ECC5	AR28	MDB30
	AR26	DDR1_ECC6	DDR1_ECC6	AL28	MDB24
	AR25	DDR1_ECC7	DDR1_ECC7	AL28	MDB29
		DDR1_BA0	DDR1_DQ31	AP29	MDB26
		DDR1_BA1	DDR1_DQ32	AP28	MDB31
		DDR1_BA2	DDR1_DQ33	AR12	MDB32
(8) SBAB0	SBAB0	DDR1_CKE0	DDR1_DQ34	AL12	MDB35
(8) SBAB1	SBAB1	DDR1_CKE1	DDR1_DQ35	AR13	MDB36
(8) SBAB2	SBAB2	DDR1_CKE2	DDR1_DQ36	AP13	MDB37
(8) CKEB0	CKEB0	DDR1_CKE3	DDR1_DQ37	AM13	MDB38
(8) CKEB1	CKEB1		DDR1_DQ38	AM12	MDB39
		DDR1_CS_N0	DDR1_DQ39	AR9	MDB45
(8) -CSB0	-CSB0	DDR1_CS_N1	DDR1_DQ40	AP9	MDB41
(8) -CSB1	-CSB1	DDR1_CS_N2	DDR1_DQ41	AR6	MDB47
		DDR1_CS_N3	DDR1_DQ42	AP6	MDB43
			DDR1_DQ43	AR10	MDB44
			DDR1_DQ44	AP10	MDB40
			DDR1_DQ45	AR7	MDB46
			DDR1_DQ46	AP7	MDB42
			DDR1_DQ47	AM9	MDB52
(8) DCLKB0	DCLKB0	DDR1_CLK_P0	DDR1_DQ48	AL9	MDB53
(8) DCLKB0	DCLKB0	DDR1_CLK_P1	DDR1_DQ49	AL6	MDB50
(8) DCLKB1	DCLKB1	DDR1_CLK_N0	DDR1_DQ50	AL7	MDB55
(8) DCLKB1	DCLKB1	DDR1_CLK_N1	DDR1_DQ51	AM10	MDB48
		DDR1_CLK_P2	DDR1_DQ52	AL10	MDB49
		DDR1_CLK_N2	DDR1_DQ53	AM6	MDB54
		DDR1_CLK_P3	DDR1_DQ54	AM7	MDB51
		DDR1_CLK_N3	DDR1_DQ55	AH6	MDB61
			DDR1_DQ56	AH7	MDB60
			DDR1_DQ57	AE6	MDB59
(8) -SCASB	-SCASB	DDR1_CAS*	DDR1_DQ58	AE7	MDB63
(8) -SRASB	-SRASB	RSVD	DDR1_DQ59	AJ6	MDB56
(8) -SWEB	-SWEB	DDR1_RAS*	DDR1_DQ60	AJ7	MDB57
		DDR1_WE*	DDR1_DQ61	AF6	MDB58
(7) VREF_DQA	VREF_DQA	DDR1_DQ62	DDR1_DQ62	AF7	MDB62
(8) VREF_DQB	VREF_DQB	DDR1_DQ63	DDR1_DQ63	AF35	DQSB0
		DDR1_DQ64	DDR1_DQ64	AL33	DQSB1
		DDR1_DQ65	DDR1_DQ65	AP33	DQSB2
		DDR1_DQ66	DDR1_DQ66	AN28	DQSB3
		DDR1_DQ67	DDR1_DQ67	AN12	DQSB4
		DDR1_DQ68	DDR1_DQ68	AP8	DQSB5
		DDR1_DQ69	DDR1_DQ69	AL8	DQSB6
		DDR1_DQ70	DDR1_DQ70	AG7	DQSB7
		DDR1_DQ71	DDR1_DQ71	AN25	DQSB0
		DDR1_DQ72	DDR1_DQ72	AE34	DQSB1
		DDR1_DQ73	DDR1_DQ73	AK33	DQSB2
		DDR1_DQ74	DDR1_DQ74	AN33	DQSB3
		DDR1_DQ75	DDR1_DQ75	AN29	DQSB4
		DDR1_DQ76	DDR1_DQ76	AL13	DQSB4
		DDR1_DQ77	DDR1_DQ77	AR8	DQSB5
		DDR1_DQ78	DDR1_DQ78	AM8	DQSB6
		DDR1_DQ79	DDR1_DQ79	AG6	DQSB7
		DDR1_DQ80	DDR1_DQ80	AN26	



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

LGA1150 (CR)

CR
CPU RETENTION/X

LGA1150



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

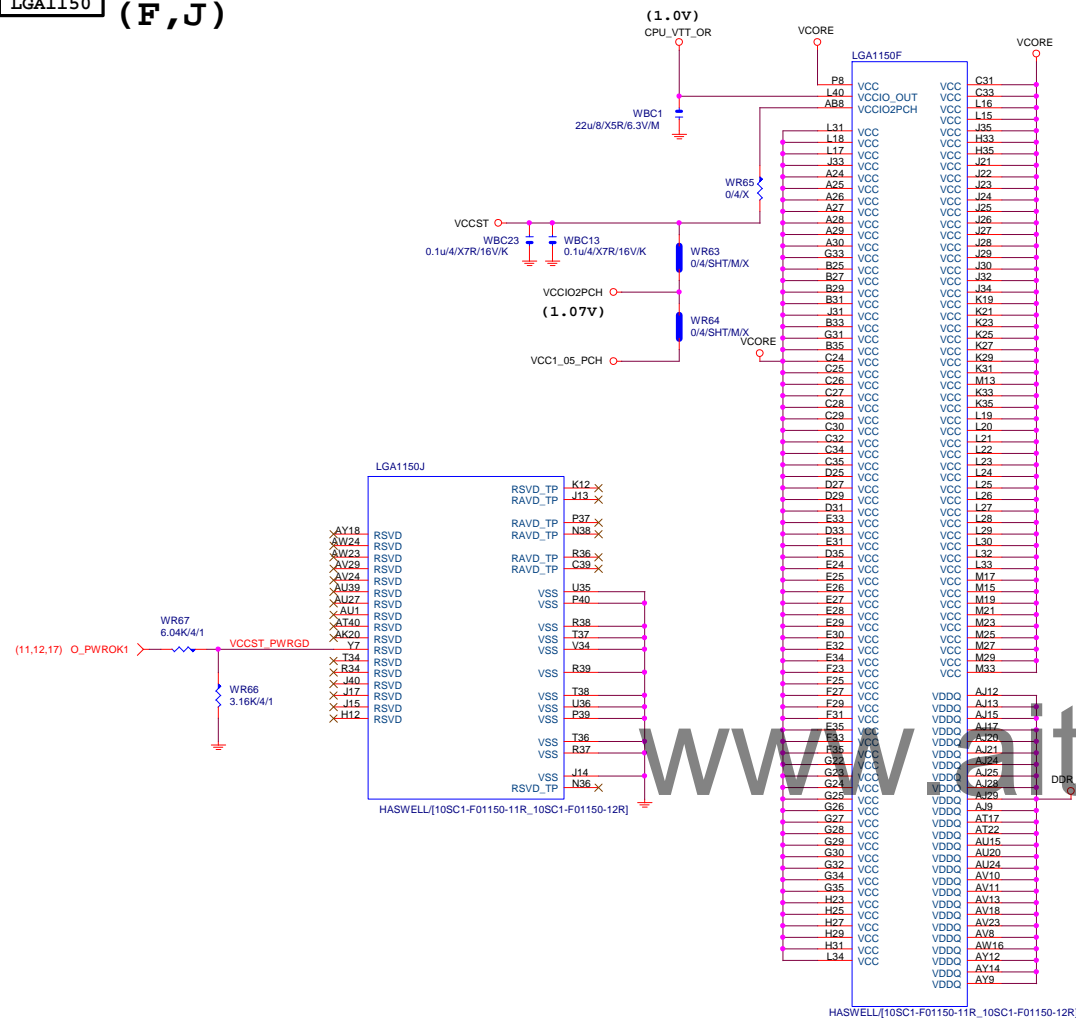
DDR BUS

(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-H81M-DS2V	1.0	
Date:	Friday, August 16, 2013	Sheet	5 of 33

LGA1150 (F,J)

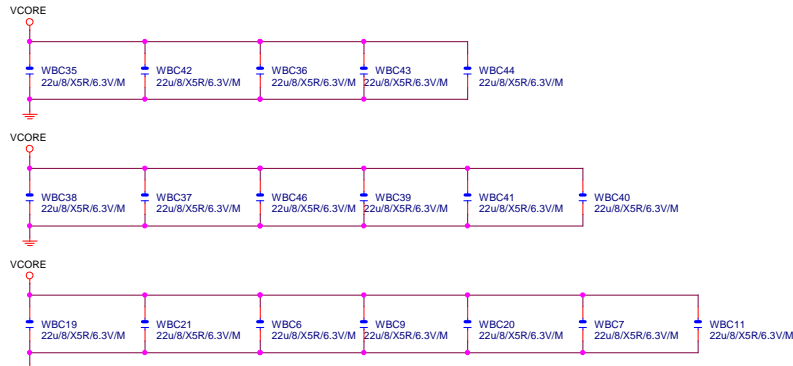


LGA1155 (G,H,I)



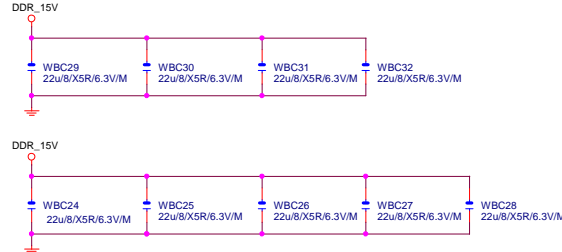
VCore CAP

(X18)



DDR CAP

(X9)

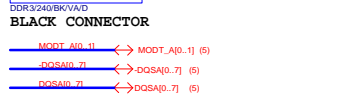
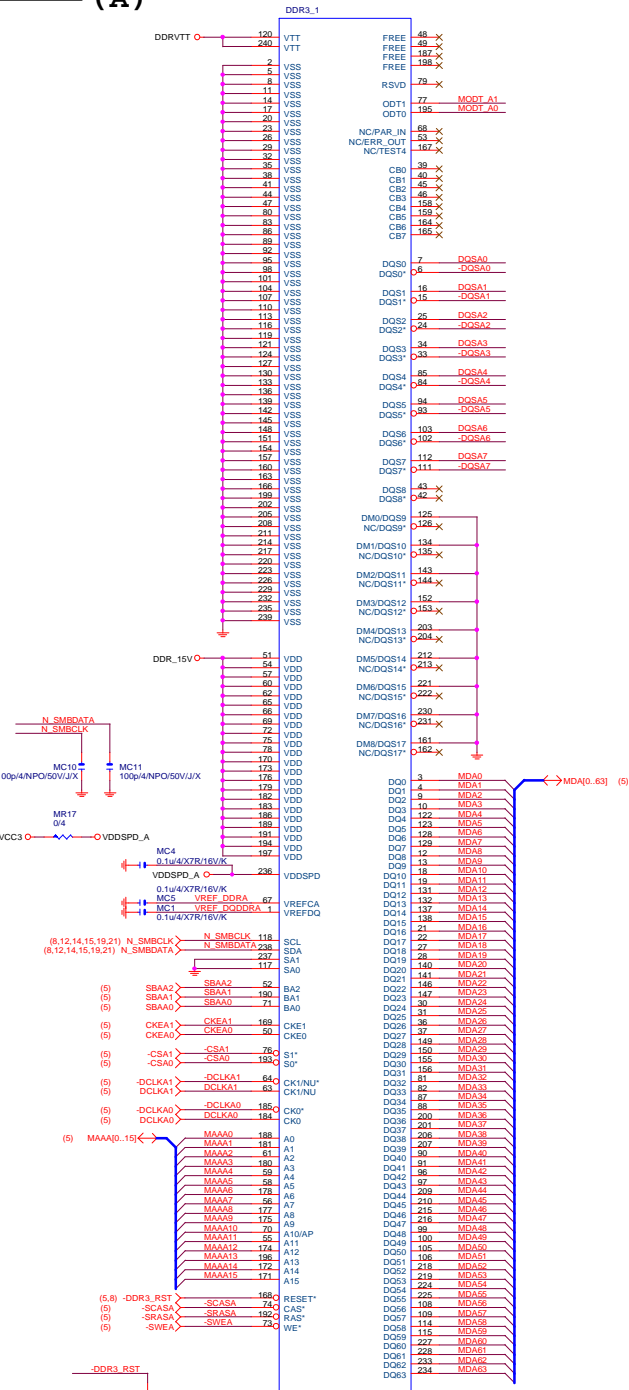


Gigabyte Technology

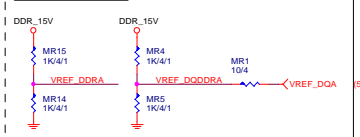
Title		CPU LGA1150-C	
Size	Document Number	GA-H81M-DS2V	
Date:	Friday, August 16, 2013	Sheet	6 of 33
Rev	1.0		

DDR3

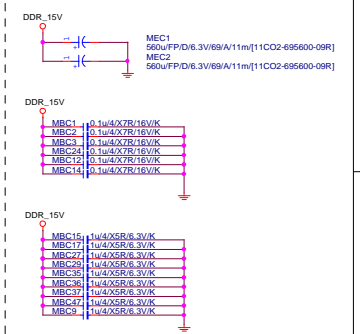
(A)



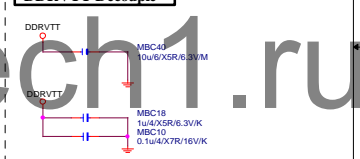
DDR3 VREF



DDR15V Decouple



DDRVTT Decouple



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

VCC1_5_PCH

NR50 7.5K/4/1 DMI_COMP B

NR40 7.5K/4/1 PCIE_COMP C

CK -SRCCLK_PCH G

CK_SRCCLK_PCH F

8111G

(24) LA_ML_IN

(24) LA_ML_IP

(24) LA_ML_ON

(24) LA_ML_OP

VL805 [

PCIEx1 [

(15) PL_PCIE1_IN

(15) PL_PCIE1_IP

(15) PL_PCIE1_ON

(15) PL_PCIE1_OP

(15) PJ_PCIE1_IN

(15) PJ_PCIE1_IP

(15) PJ_PCIE1_ON

(15) PJ_PCIE1_OP

X

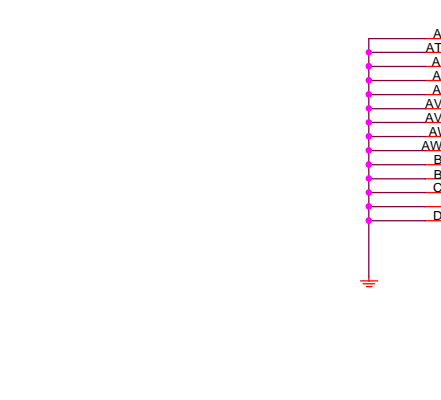
X

X

X

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

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



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

PCB

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

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

DMI_RXN_0

DMI_RXP_0

DMI_TXN_0

DMI_TXP_0

DMI_RXN_1

DMI_RXP_1

DMI_TXN_1

DMI_TXP_1

DMI_RXN_2

DMI_RXP_2

DMI_TXN_2

DMI_TXP_2

DMI_RXN_3

DMI_RXP_3

DMI_TXN_3

DMI_TXP_3

DMI_RCOMP

PCIE_RCOMP

CLKIN_DMI_N

CLKIN_DMI_P

PCIE_PERN_1_USB3_RXN_2

PCIE_PERP_1_USB3_RXP_2

PCIE_PETN_1_USB3_TXN_2

PCIE_PETP_1_USB3_TXP_2

PCIE_PERN_2_USB3_RXN_3

PCIE_PERP_2_USB3_RXP_3

PCIE_PETN_2_USB3_TXN_3

PCIE_PETP_2_USB3_TXP_3

PCIE_PERN_3

PCIE_PERP_3

PCIE_PETN_3

PCIE_PETP_3

PCIE_PERN_4

PCIE_PERP_4

PCIE_PETN_4

PCIE_PETP_4

PCIE_PERN_5

PCIE_PERP_5

PCIE_PETN_5

PCIE_PERP_6

PCIE_PETN_6

PCIE_PETP_6

PCIE_PERN_7

PCIE_PERP_7

PCIE_PETN_7

PCIE_PETP_7

PCIE_PERN_8

PCIE_PERP_8

PCIE_PETN_8

PCIE_PETP_8

USBN_0

USBP_0

USBN_1

USBP_1

USBN_2

USBP_2

USBN_3

USBP_3

USBN_4

USBP_4

USBN_5

USBP_5

USBN_6

USBP_6

USBN_7

USBP_7

USBN_8

USBP_8

USBN_9

USBP_9

USBN_10

USBP_10

USBN_11

USBP_11

USBN_12

USBP_12

USBN_13

USBP_13

OC0B_GP59

OC1B_GP40

OC2B_GP41

OC3B_GP42

OC4B_GP43

OC5B_GP49

OC6B_GP10

OC7B_GP14

USBRBIASB

USBRBIAS

CLKIN_DOT96N

CLKIN_DOT96P

AV10 N -USBP0

AU10 N +USBP0

AV11 N -USBP1

AU11 N +USBP1

AW11 N +USBP1

AN14 N -USBP2

USBP_2 AP14 N +USBP2

AJ16 N -USBP3

AK16 N +USBP3

AU15

AV15

AU12

AT12

AV14

AW14

AU17

AT17

AW16 N -USBP8

AV16 N +USBP8

AN16 N -USBP9

AP16 N +USBP9

AJ18 N -USBP10

AU18 N +USBP10

AK18 N +USBP11

AP18 N -USBP11

AN18 N +USBP11

AW18

AV18

AN20

AE40

AE37

AD39

AD40

AD38

AE39

AC41

AE40

AG40 N GPIO14

AV20 N USBRBIAS

AU20

AP11 CK -DOTCLK

AM11 CK DOTCLK

NR130 8.2K/4

NR130 8.2K/4

N_GPIO14

N_USBOC_F

N_USBOC_R (1)

N_USBOC_F

N_USBOC_R

NBC82 0.1u4/X7R/16V/K

NBC83 0.1u4/X7R/16V/K

3VDDUAL

H81/S

(24)	PCH_USB3_RXN0	>	F20
(24)	PCH_USB3_RXP0	>	G20
(24)	PCH_USB3_TXN0	>	B18
(24)	PCH_USB3_TXP0	>	C18
(24)	PCH_USB3_RXN1	>	G18
(24)	PCH_USB3_RXP1	>	H18
(24)	PCH_USB3_TXN1	>	B15
(24)	PCH_USB3_TXP1	>	B16

N/A

VCC3
NR62
NR62
8.2K/4
AK28

K20
L20
D15
C15
L18
K18
B14
A14

NR03 0.2N4 A134

CK_SRCCLK_P0

tech1.ru

CK_SRCCLK_P

Mount for integrat

CK_DOTCLK
CK_DOTCLK

NR225 short t
marking_SKV

W COST ICH7 HEATSINK

3_HEATSIN

1X

GRAY HS

PH_HS
PH_HS(12SP2-030005-41R)

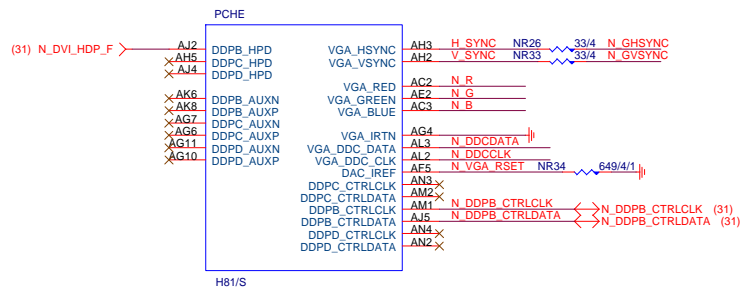
□ □ □ □ □

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

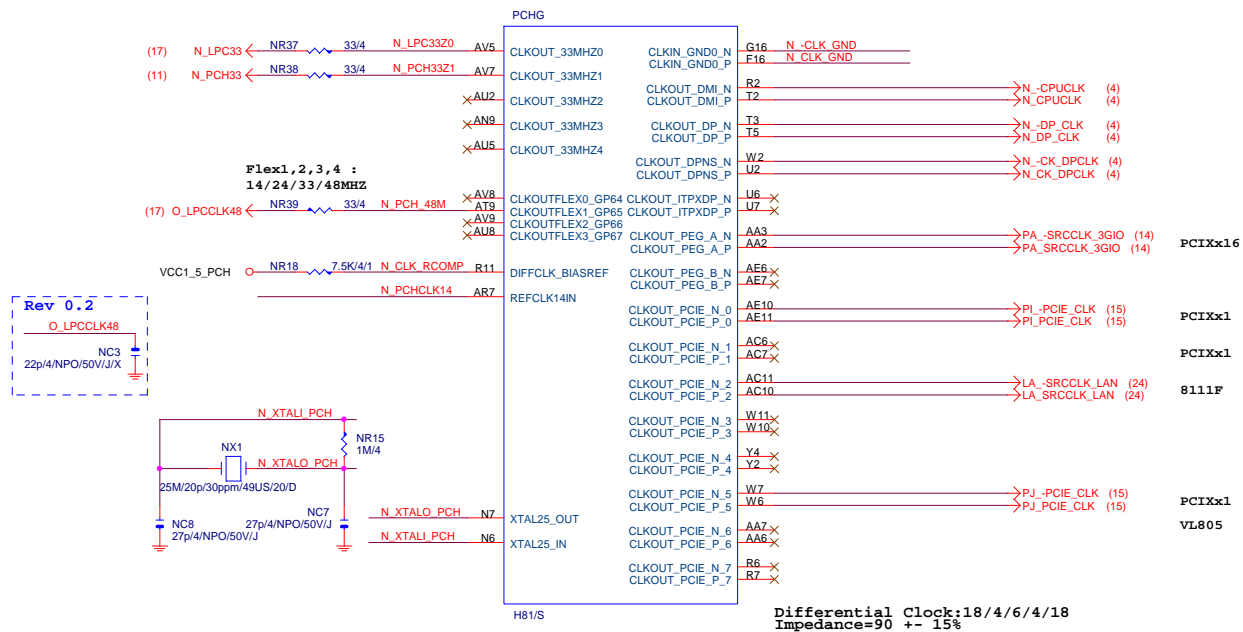
USB OC# Configure	
OC0#	F_USB30
OC1#	USB_LAN
OC2#	R_USB30
OC3#	N/A
OC4#	F_USB1
OC5#	F_USB2
OC6#	KB_MS_USB
OC7#	Not Use

Title		Gigabyte Technology	
PCH FDI,DMI,USB ,PCIE,NVRAM			
Size	Document Number	GA-H81M-DS2V	
Custom			
Date:	Friday, August 16, 2013	Sheet	9 of

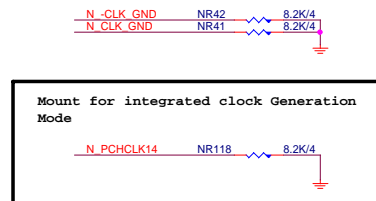
PCH (E)



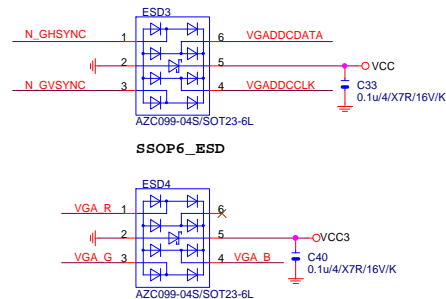
PCH (G)



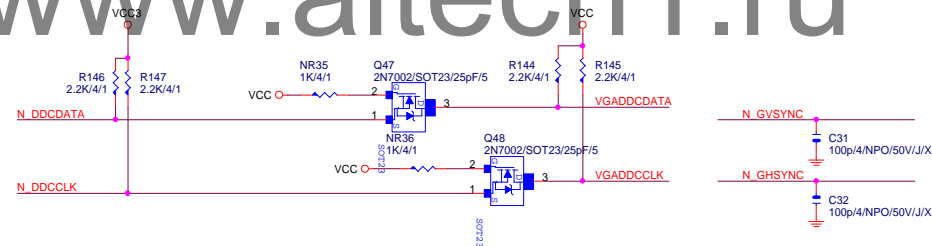
PCH CLK PD



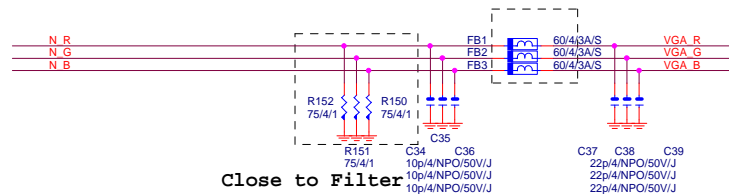
VGA ESD



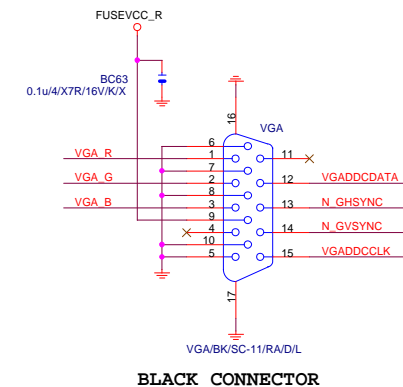
VGA DDC



VGA DDC



VGA CONNECTOR



Gigabyte Technology			
Title PCH DISPLAY ,CLK BUFFER			
Size Custom	Document Number GA-H81M-DS2V		Rev 1.0
Date: Friday, August 16, 2013	Sheet	10 of 33	

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%

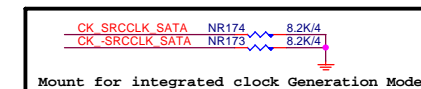


Figure 10 illustrates the pinmux configuration for the i.MX8M Mini. The diagram shows various pinmux configurations for different functions, including NR2, NR3, NR7, NR160, NR55, NR53, NR48, NR35, NR16, NR80, NR157, NR84, NR66, NR65, NR244, NR250, NR4, NR11, NR12, and NR13. Each configuration shows a pin number, a function name, and a pinmux value. The pins are connected to VCC3 or GND.

Function	Pin	Pinmux Value	Connection
NR2 (8.2K/8P4R/4)	N -PIROC	1	2
	N -PIROH	3	4
	N -PIROD	5	6
	N -PIROB	7	8
NR3 (8.2K/8P4R/4)	N -PIROE	1	2
	N -PIROF	3	4
	N -PIROA	5	6
	N -PIROG	7	8
NR7 (8.2K/8P4R/4)	N GPIO6	1	2
	N GPIO17	3	4
	N GPIO52	5	6
	N GPIO50	7	8
NR160 (1K/4/1/X)	N GPIO55	1	2
	N GPIO51	3	4
	N GPIO14	5	6
	N GPIO53	7	8
NR55 (1K/4/1/X)	N GPIO55	1	2
	N GPIO51	3	4
	N GPIO14	5	6
	N GPIO53	7	8
NR53 (1K/4/1/X)	N GPIO55	1	2
	N GPIO51	3	4
	N GPIO14	5	6
	N GPIO53	7	8
NR48 (8.2K/8P4R/4)	N GPIO48	1	2
	N GPIO35	3	4
	N GPIO16	5	6
	N GPIO22	7	8
NR35 (8.2K/8P4R/4)	N SERIRQ	1	2
	N GPIO38	3	4
	N GPIO19	5	6
	N GPIO22	7	8
NR16 (8.2K/8P4R/4)	N GPIO48	1	2
	N PCI_STOP	3	4
	N A20GATE	5	6
	N GPIO39	7	8
NR80 (1K/4/1/X)	N PCI_STOP	1	2
	N PCI_STOP	3	4
	N PCI_STOP	5	6
	N PCI_STOP	7	8
NR157 (1K/4/1/X)	N PCI_STOP	1	2
	N PCI_STOP	3	4
	N PCI_STOP	5	6
	N PCI_STOP	7	8
NR84 (1K/4/1/X)	N -KBRST	1	2
	N GPIO36	3	4
	N GPIO36	5	6
	N GPIO36	7	8
NR66 (1K/4/1/X)	N -KBRST	1	2
	N GPIO36	3	4
	N GPIO36	5	6
	N GPIO36	7	8
NR65 (8.2K/4/X)	N -KBRST	1	2
	N GPIO36	3	4
	N GPIO36	5	6
	N GPIO36	7	8
NR244 (8.2K/4/X)	N -KBRST	1	2
	N GPIO36	3	4
	N GPIO36	5	6
	N GPIO36	7	8
NR250 (1K/4/1/X)	N -KBRST	1	2
	N GPIO36	3	4
	N GPIO36	5	6
	N GPIO36	7	8
NR4 (8.2K/8P4R/4)	N GPIO68	1	2
	N GPIO1	3	4
	N GPIO54	5	6
	N GPIO7	7	8

SATA3_0
SATA2/7/WH/H/OP/VA/D/1/B/PA66
WHITE CONNECTOR

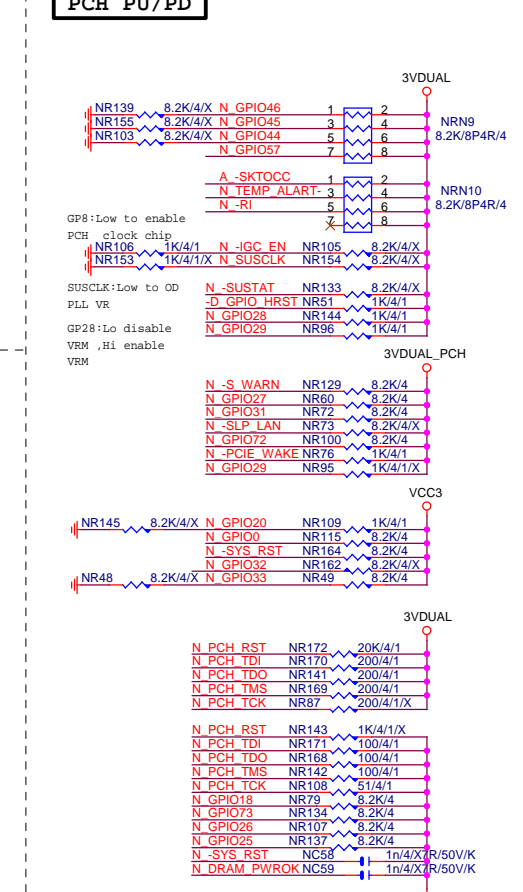
SATA3_1
SATA2/7/WH/H/OP/VA/D/1/B/PA66
WHITE CONNECTOR

GPIO37 PU VCC3 ENABLE SBA
For H87&B85

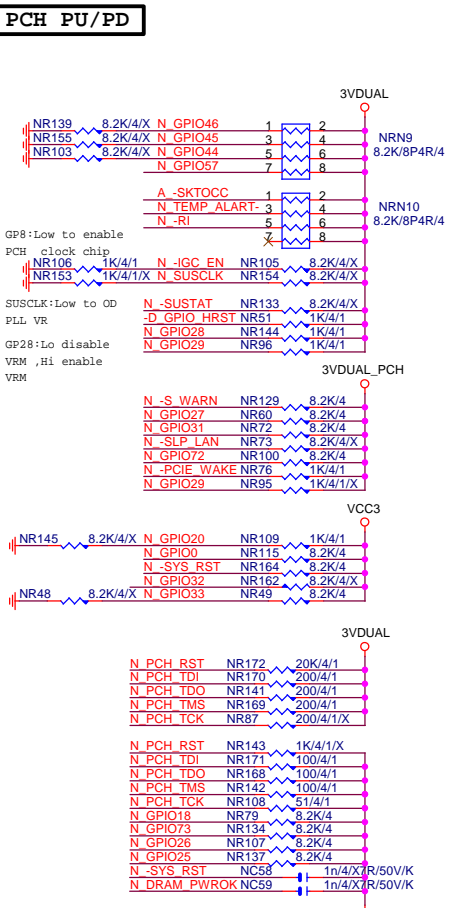
(D)



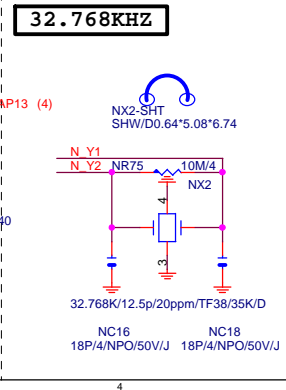
ACZ_SDOUT



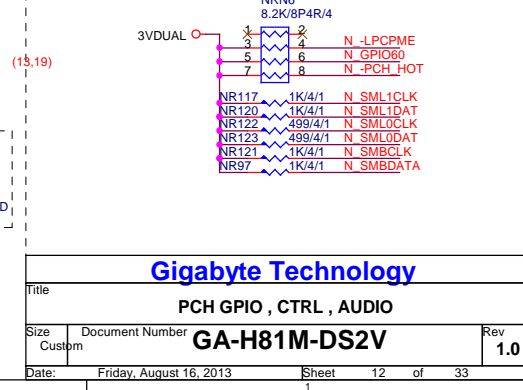
PCH	PU/PD
-----	-------



HSW_STRAP13



CLR_CMOS



Gigabyte Technology

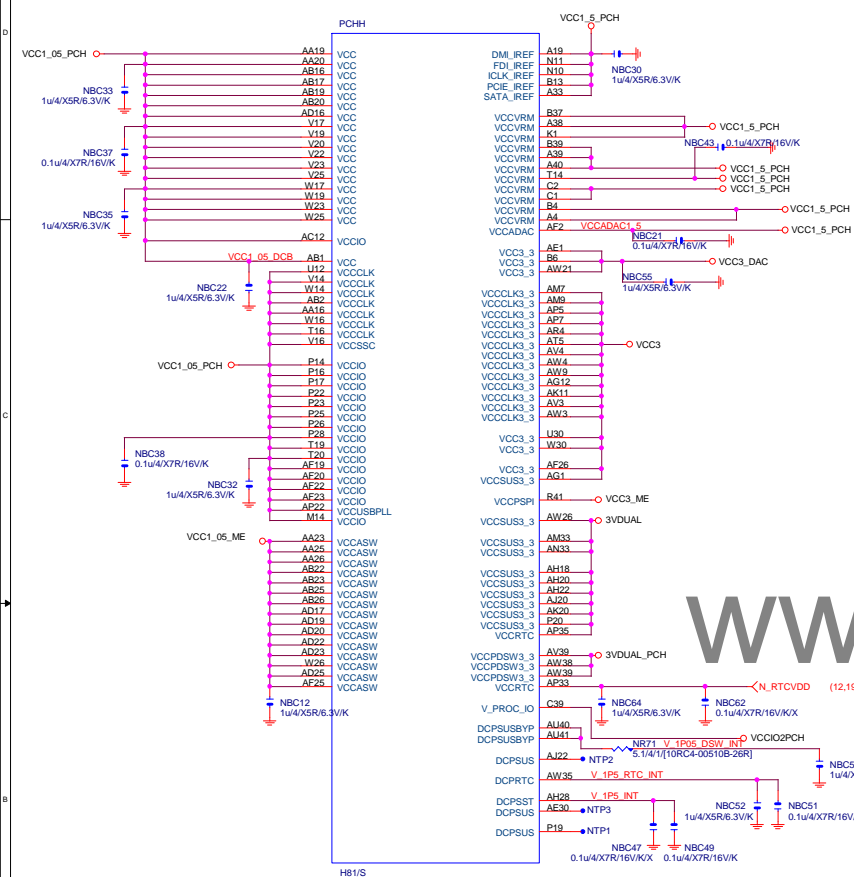
PCH GPIO , CTRL , AUDIO

GA-H81M-DS2V

10

Date:	Friday, August 16, 2013	Sheet	12	of	33
-------	-------------------------	-------	----	----	----

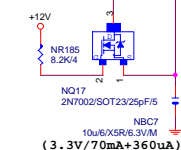
PCH (H)



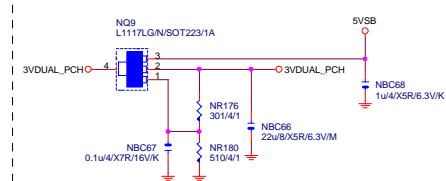
PCH (I)



VCC3_DAC



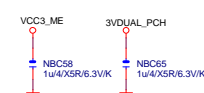
3VDUAL_PCH



SHT PWR

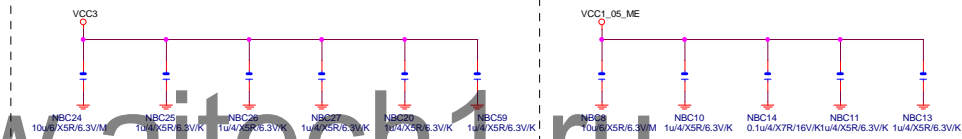


CAP

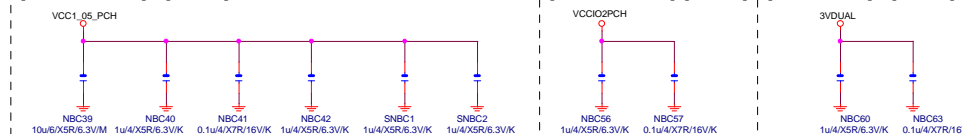


(3.3V) (X6)

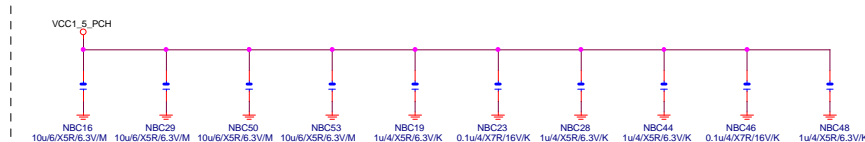
(1.05V) (x5)



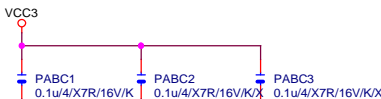
(1.05V) (x6)

$$(1.05V)(x_2) - (3.3V)(x_2)$$


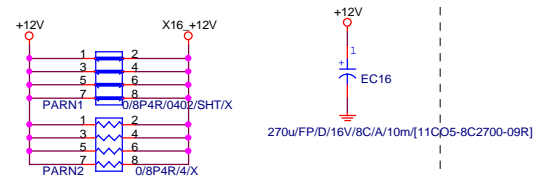
(1.05V) (x10)



PCIEX16 CAP



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



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

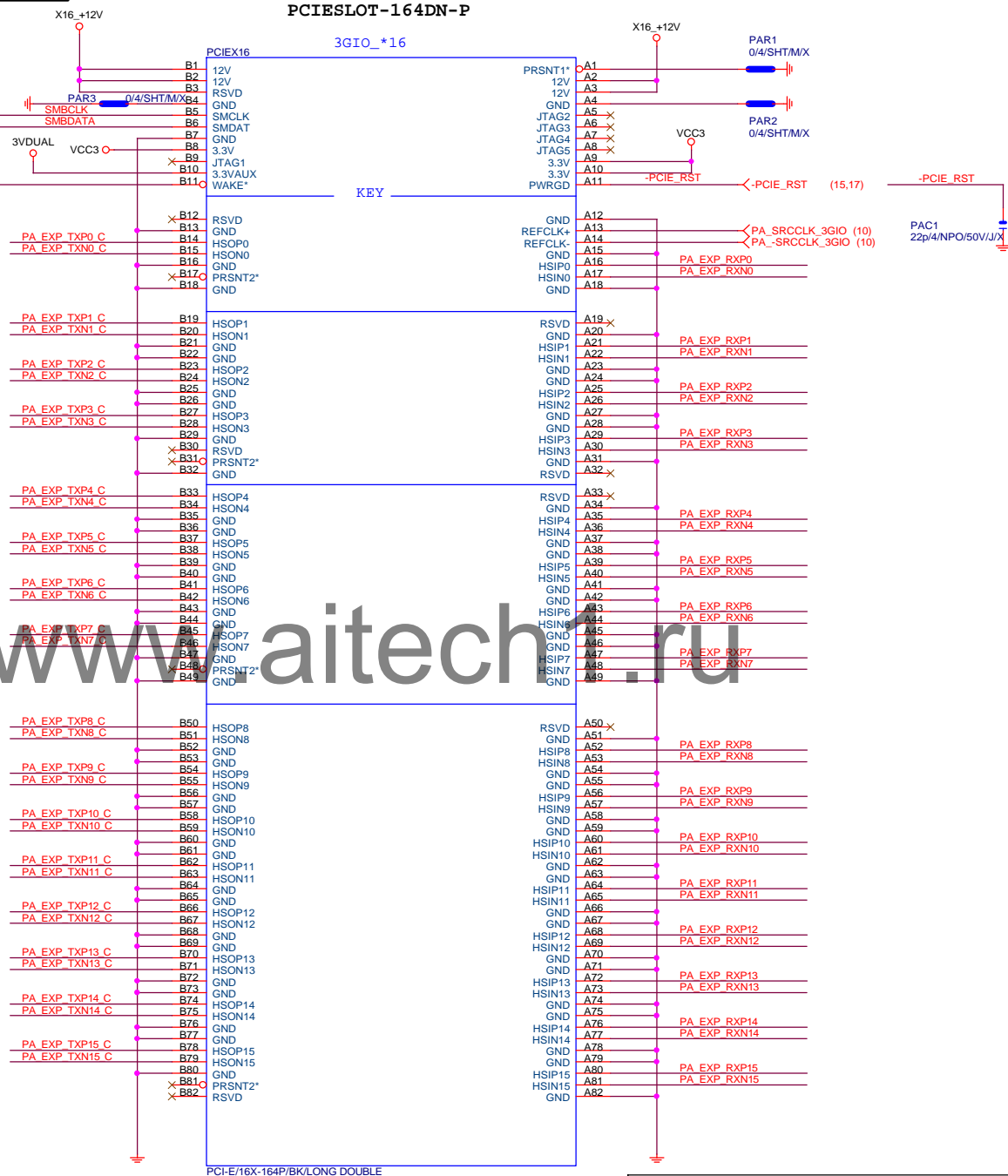
PA EXP TXP0	PAC5	0.22u4/X5R/6.3V/K	PA EXP TXP0 C
PA EXP TXN0	PAC4	0.22u4/X5R/6.3V/K	PA EXP TXN0 C
PA EXP TXP1	PAC6	0.22u4/X5R/6.3V/K	PA EXP TXP1 C
PA EXP TXN1	PAC7	0.22u4/X5R/6.3V/K	PA EXP TXN1 C
PA EXP TXP2	PAC8	0.22u4/X5R/6.3V/K	PA EXP TXP2 C
PA EXP TXN2	PAC9	0.22u4/X5R/6.3V/K	PA EXP TXN2 C
PA EXP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

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

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

PCIEX16 SLOT

PCIESLOT-164DN-P



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

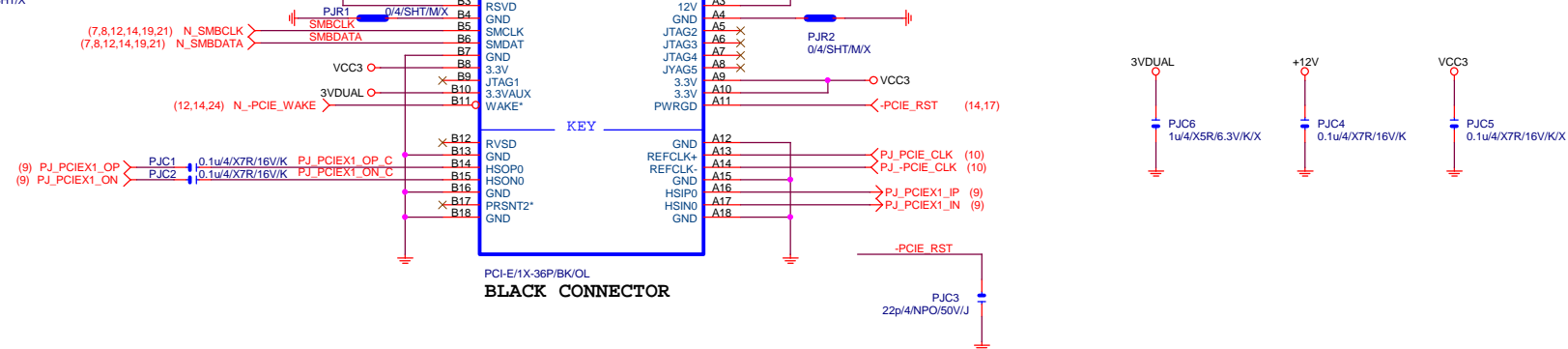
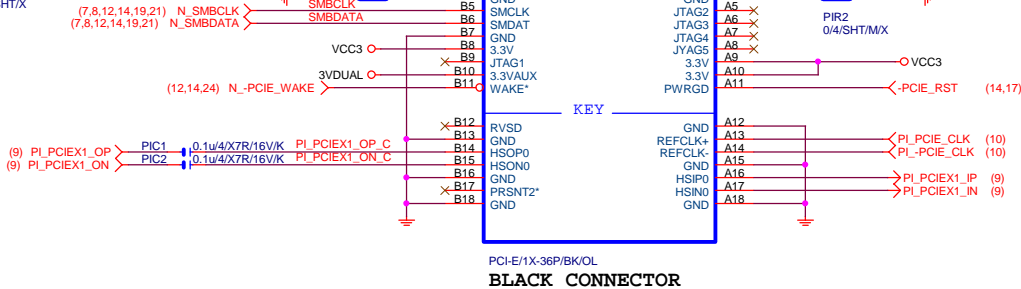
BLACK CONNECTOR

Gigabyte Technology

PCI EXPRESS * 16

Title				PCI EXPRESS * 16			
Size	Document Number	GA-H81M-DS2V				Rev	
Custom						1.0	
Date:	Friday, August 16, 2013	Sheet	14	of	33		

PCIEX1 SLOT



www.aitech1.ru

Gigabyte Technology			
Title			
PCI SLOT 1&2			
Size	Document Number		Rev
Custom	GA-H81M-DS2V		1.0
Date:	Friday, August 16, 2013	Sheet	16 of 33
		2	1

COM

COM RI

USB30_20

USB30_20 PWR

KB/MS



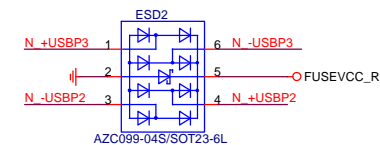
USB3.0 ESD

USB2.0 PWR	
------------	--

KB MS USB 2-Port 2.0A

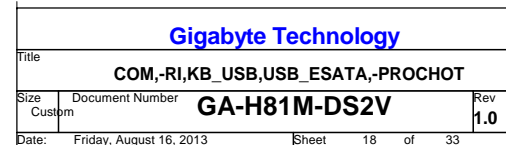


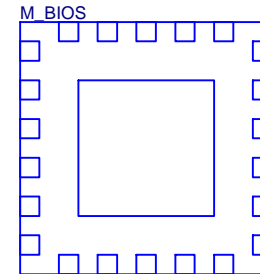
KB/MS ESD	ESD8
-----------	------



USB2.0 ESD

USB POWER PROTECT

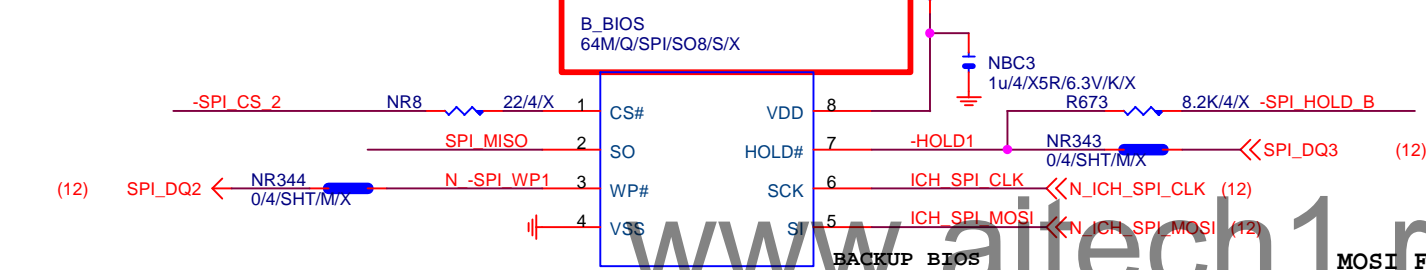




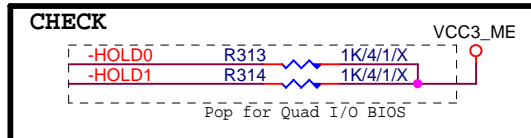
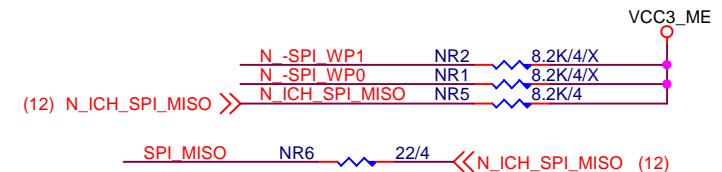
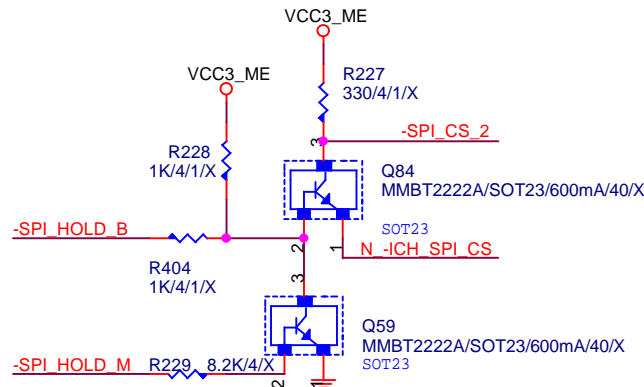
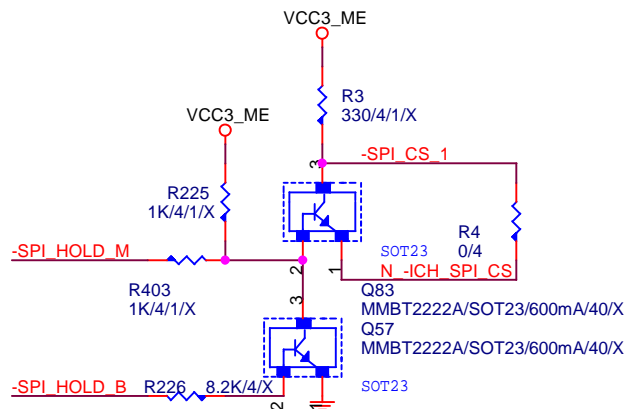
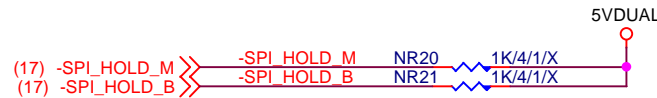
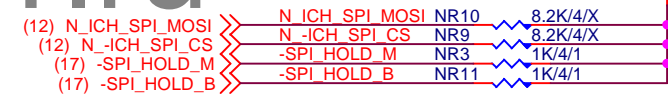
LCP/G-FL/1.27mm/200MIL/WHITE[10SL2-000008-31R]/X

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



Gigabyte Technology

DUAL BIOS

GA-H81M-DS2V

Rev 1.0

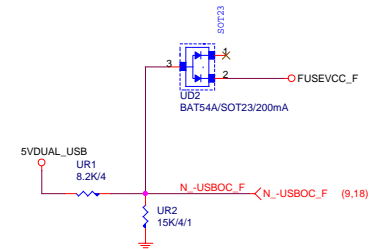
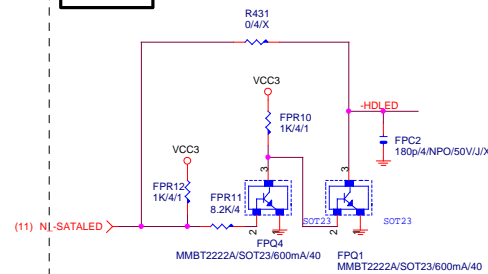
Title		Document Number		Rev
		GA-H81M-DS2V		1.0
Date:	Friday, August 16, 2013	Sheet	20	of 33

F_USB30

F_USB30 PWR

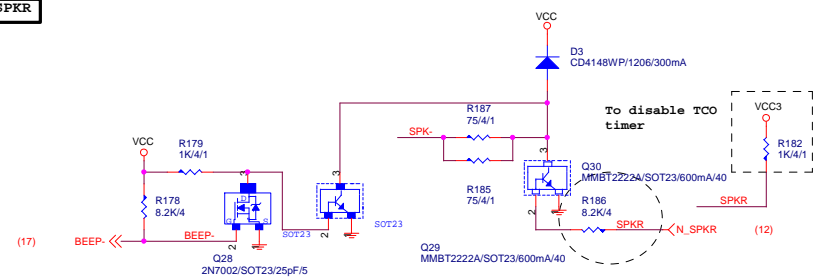
SATA LED

-USB0C_F



F_USB30 ESD PROTECT

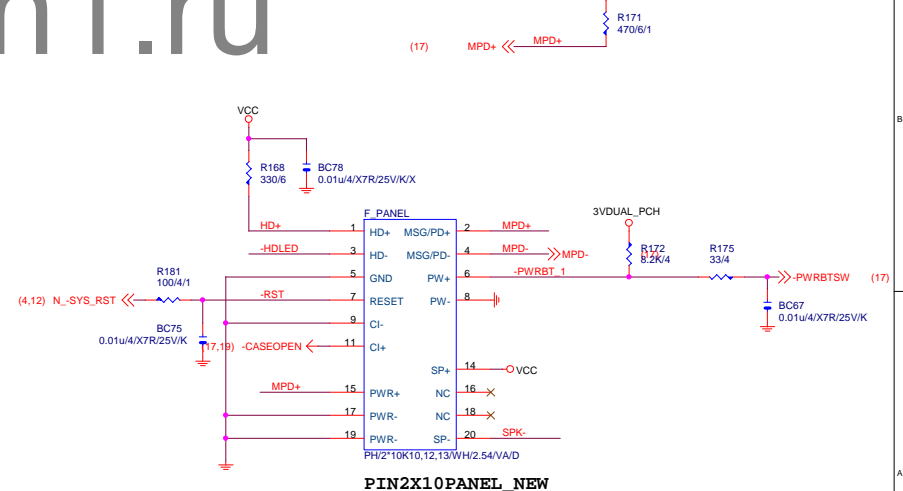
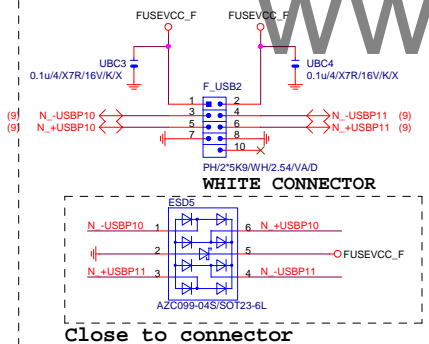
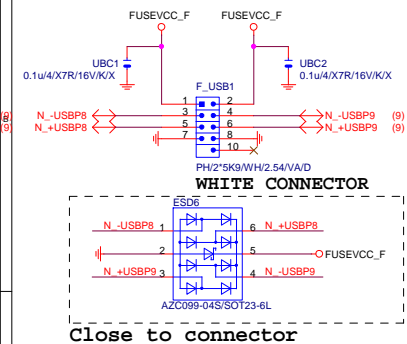
SPKR



FRONT USB1

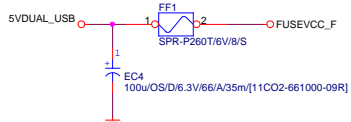
FRONT USB2

INTEL FRONT PANEL



www.aitech1.ru

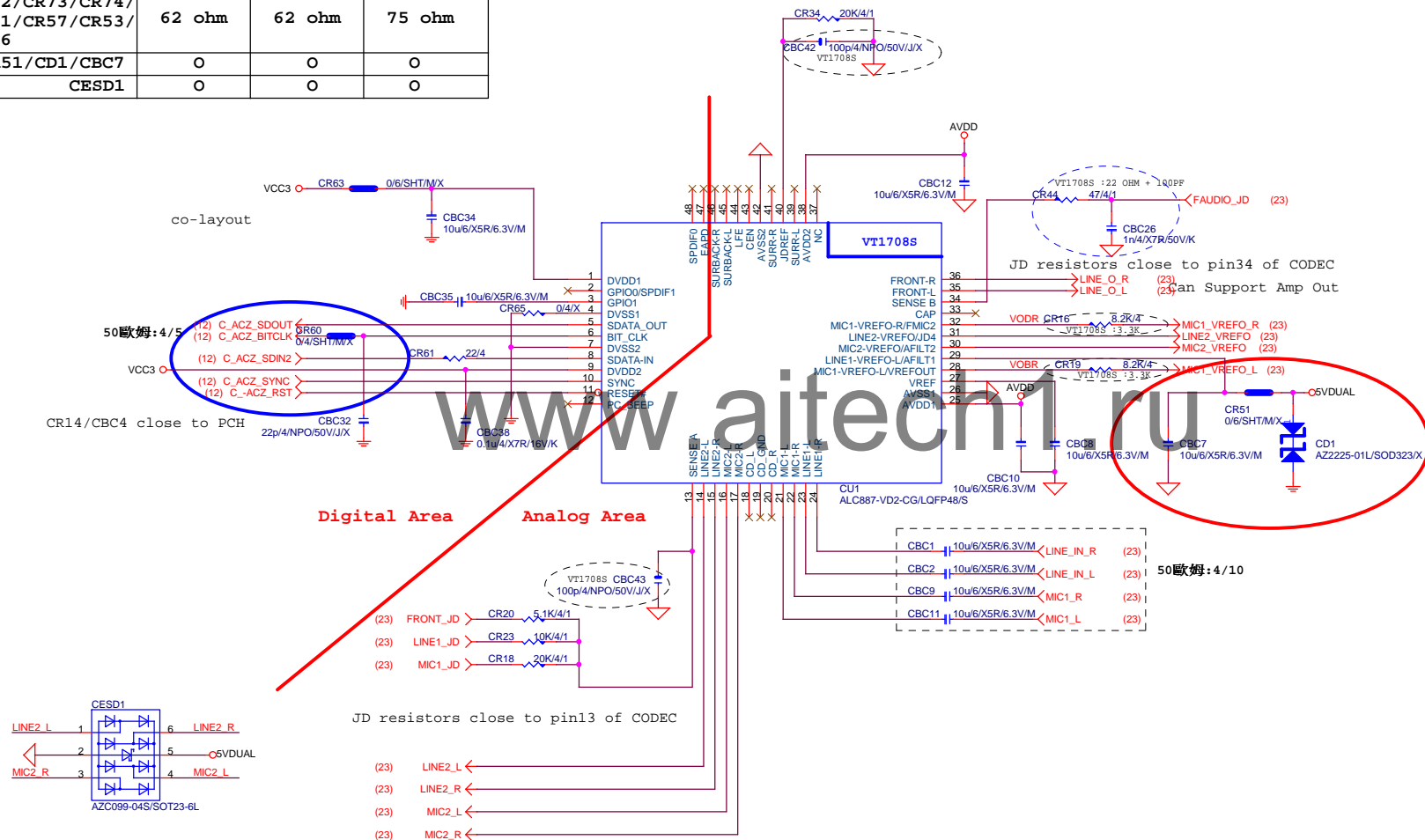
FUSE-0805
F_USB1, F_USB2 4-Port 2.6A

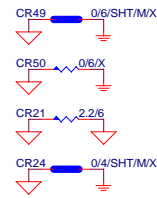


Gigabyte Technology			
FP,F_USB,USB PWR,SPKR,SATA LED			
Size	Document Number	GA-H81M-DS2V	
Date:	Friday, August 16, 2013	Sheet	21 of 33
Rev	1.0		

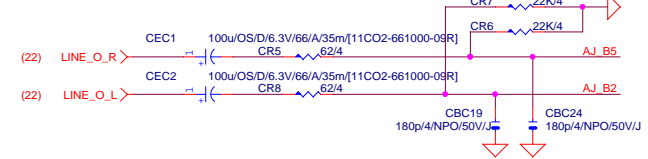
AZALIA CODEC ALC892/ALC887-VD2/VT1708-CE Colay

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





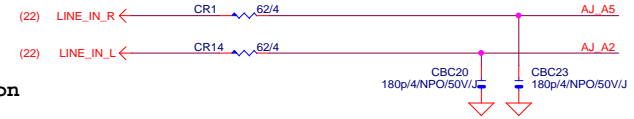
LINE-OUT



LINE-IN

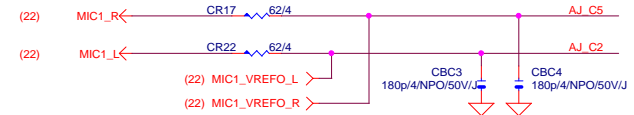
Verify MIC function
in LINE-in

Only reserved for ALC888



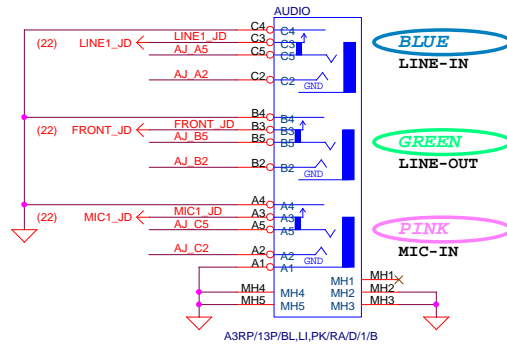
For 889A/888

MIC-IN

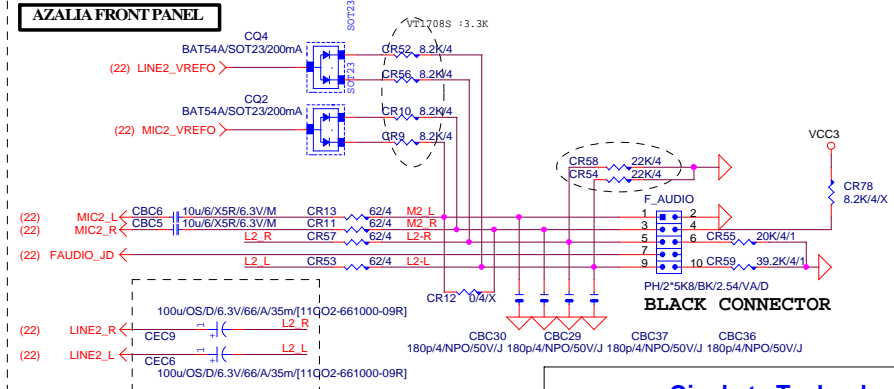


SPDIF_OUT

www.aitech1.ru

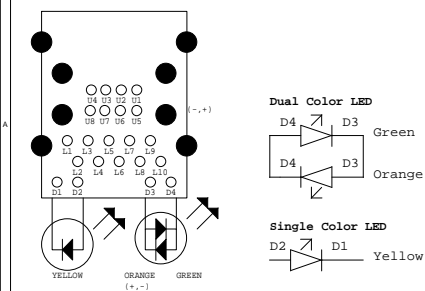
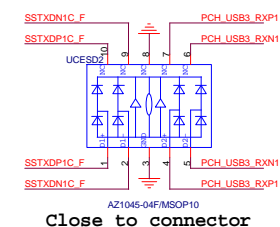
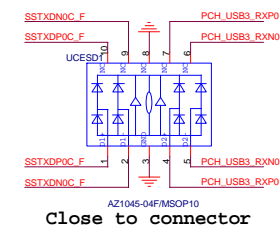
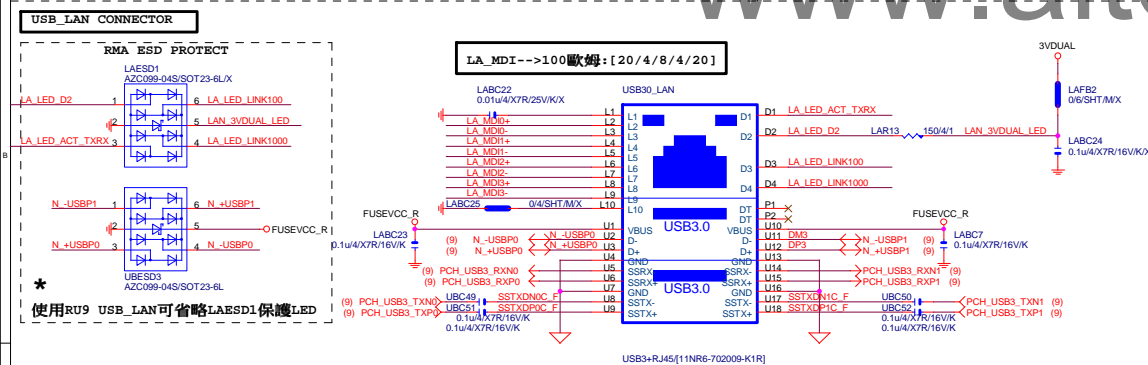
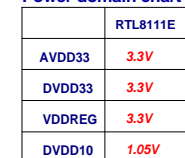
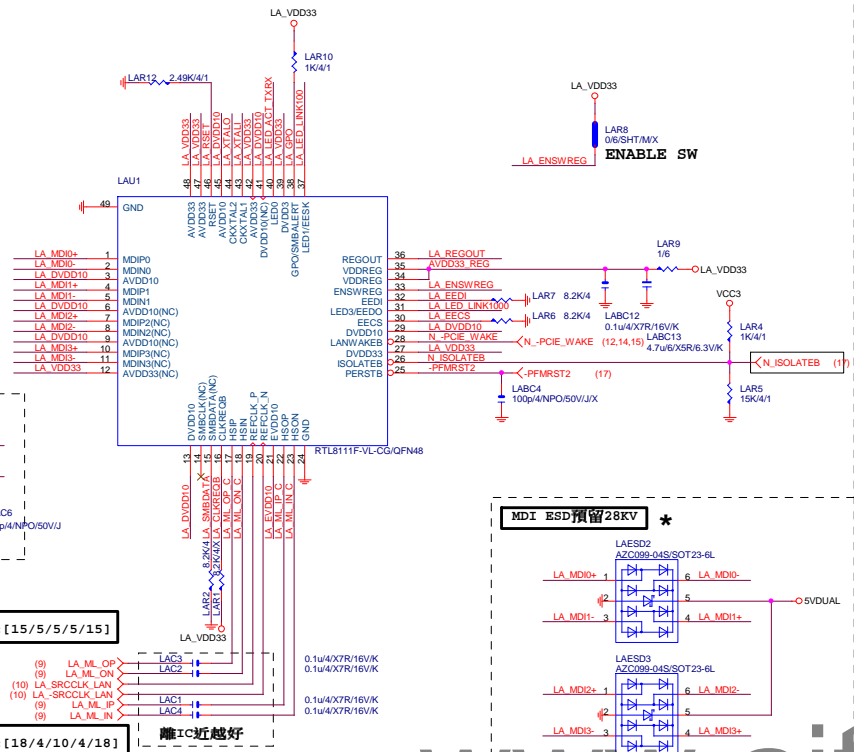


AZALIA FRONT PANEL



Gigabyte Technology

Title			
AUDIO JACK			
Size	Document Number		Rev
Custom	GA-H81M-DS2V		1.0
Date:	Friday, August 16, 2013	Sheet 23 of 33	



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 RTL 8111G
-------	-------------------

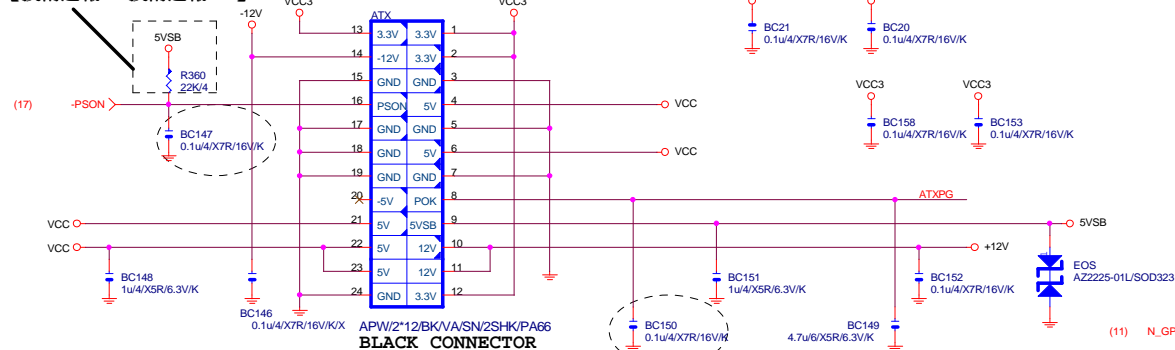
Size	Document Number	GA-H81M-DS2V
------	-----------------	--------------

Custom	GA-H81M-D32V
--------	--------------

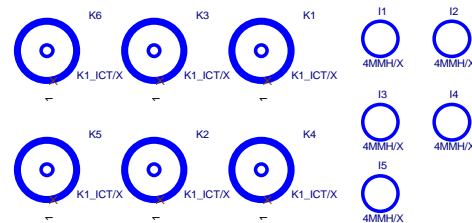
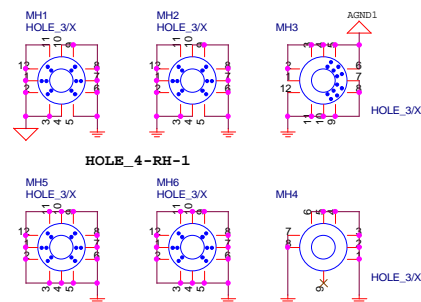
Rev	
1.0	

ATXX24 POWER CONNECTOR

【技術通報R&D技術通報155】



BLACK CONNECTOR

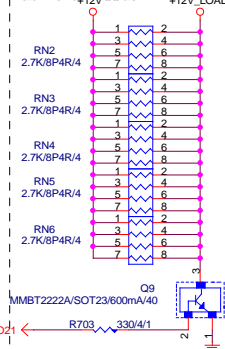


To prevent the 5VSB under loading when boot

TPM

【技術通報R&D技術通報158】

To fix 12V light load abnormal issue



ATXX4 POWER CONNECTOR

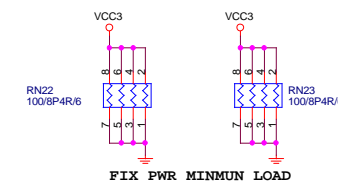
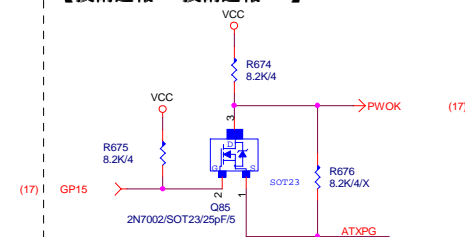
BLACK CONNECTOR

ATX_12V_2X4
APW/2'4BK/OC/P/4.2V/A/SN/OH:Location ATX_12V_2X4

www.aitech1.ru

PWOK PATCH

【技術通報R&D技術通報154】



FIX PWR MINMUN LOAD

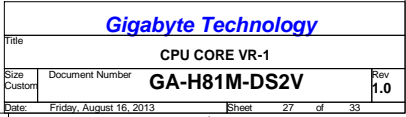
Gigabyte Technology

ATX CONNECTOR

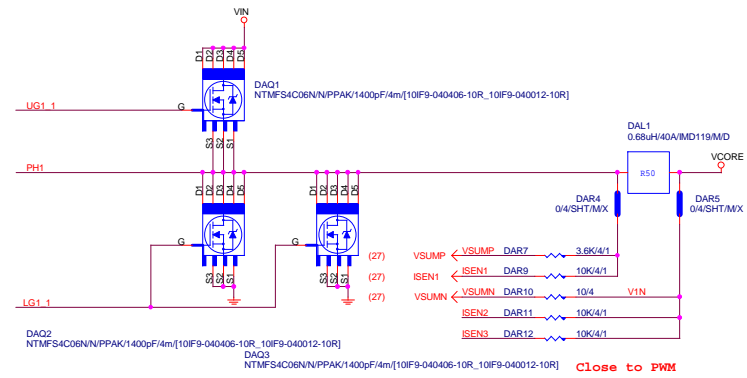
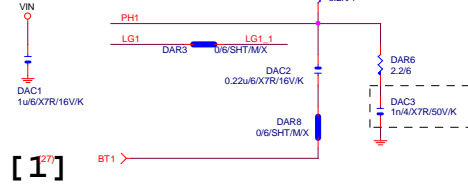
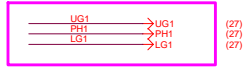
GA-H81M-DS2V

Rev 1.0

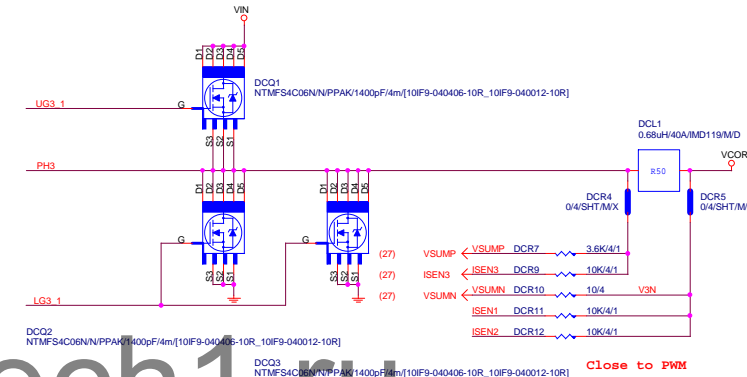
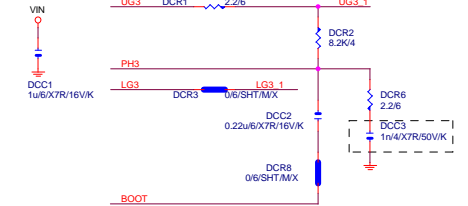
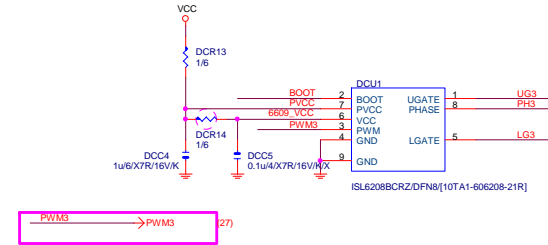
Date: Friday, August 16, 2013 Sheet 26 of 33



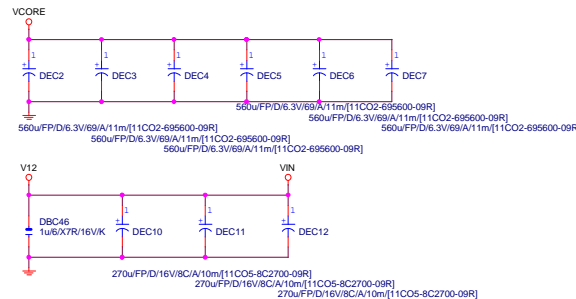
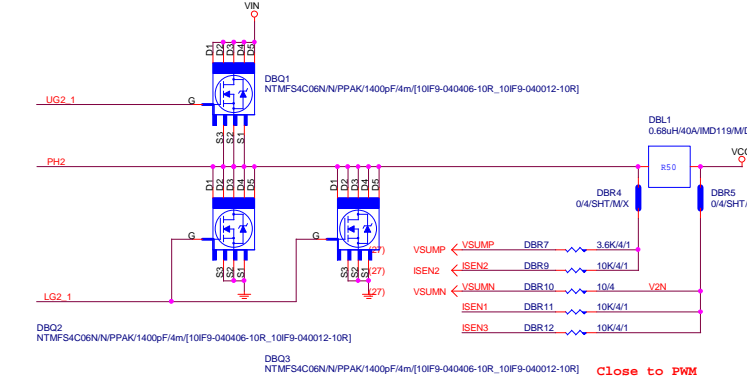
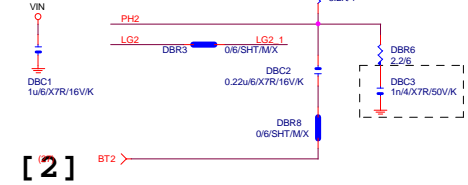
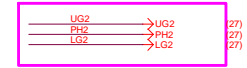
PHASE 1



PHASE 3



PHASE 2



Gigabyte Technology			
Title		CPU CORE VR-2	
Size	Document Number	GA-H81M-DS2V	
Custom		Rev 1.0	
Date	Friday, August 16, 2013	Sheet	28 of 33



Iocset=10uA

15

VCC1_05_ME

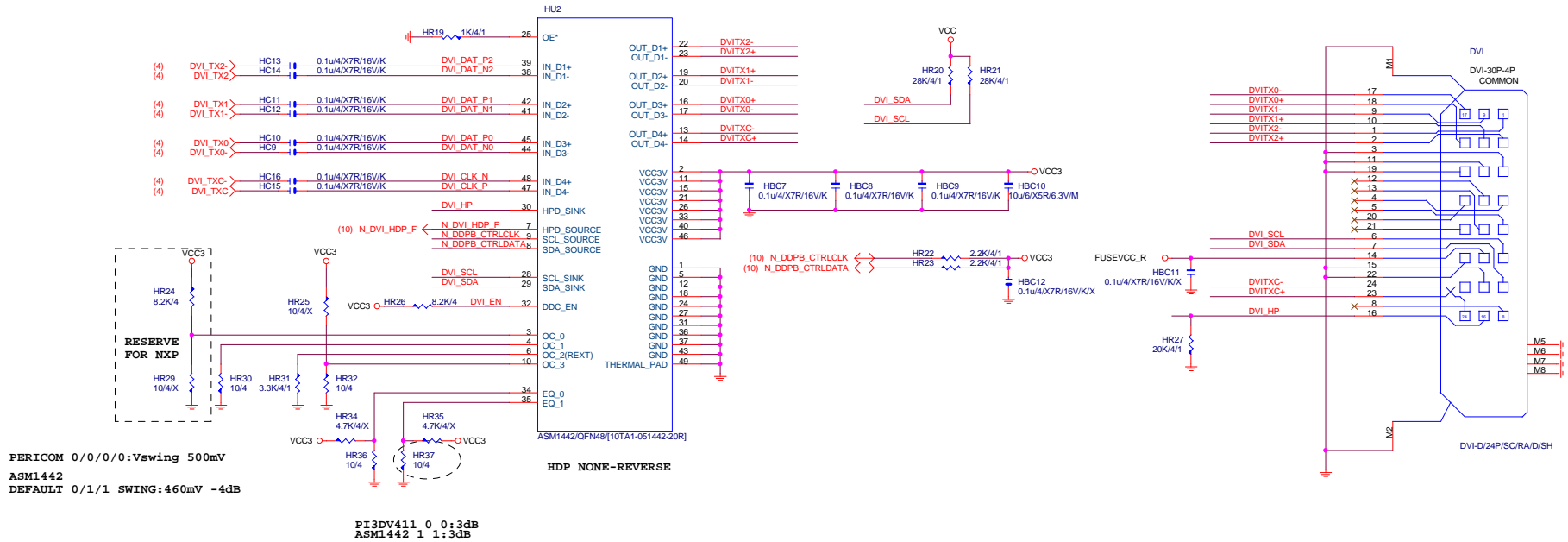
【技術通報R&D技術通報156】
(RICHTEK), (NUVOTON), (EMC)做共用
PIN7分壓阻值須做修改為100K以上電阻值

VCC3_ME

www.aitech1.ru

Gigabyte Technology			
Title LPT			
Size Custom	Document Number GA-H81M-DS2V		Rev 1.0
Date:	Friday, August 16, 2013	Sheet 30 of 33	

DVI LEVEL SHIFT



HDMI LEVEL SHIFT

www.aitech1.ru

Gigabyte Technology

File			DVI
Size			Document Number
Custom			GA-H81M-DS2V
Date			Friday, August 16, 2013
Sheet			31 of 33
Rev			1.0

www.aitech1.ru

Gigabyte Technology			
Title			
ITE IT8892E			
Size	Document Number	Rev	
Custom	GA-H81M-DS2V	1.0	
Date:	Friday, August 16, 2013	Sheet	32 of 33
		1	

www.aitech1.ru

Gigabyte Technology		
Title USB3 EJ188		
Size C	Document Number GA-H81M-DS2V	Rev 1.0
Date: Friday, August 16, 2013 Sheet 33 of 33		