

Model Name: GA-H87M-D3H

Revision 1.01

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 1,2
08	DDR III CHANNEL B 1,2
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*4 SLOT
16	PCI SLOT1,2
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 ALC892-GR
23	REAR AUDIO JACK
24	REALTEK RTL8111F
25	DISCRETE POWER
26	ATX , CLOCK GEN, TPM
27	VCORE ISL95820_1

SHEET

TITLE

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

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Gigabyte Technology

Title			Cover Sheet
Size	Document Number	GA-H87M-D3H	
Custom		Rev	1.01
Date:	Tuesday, March 26, 2013	Sheet	1 of 32

D

CD

C

B

A

Size

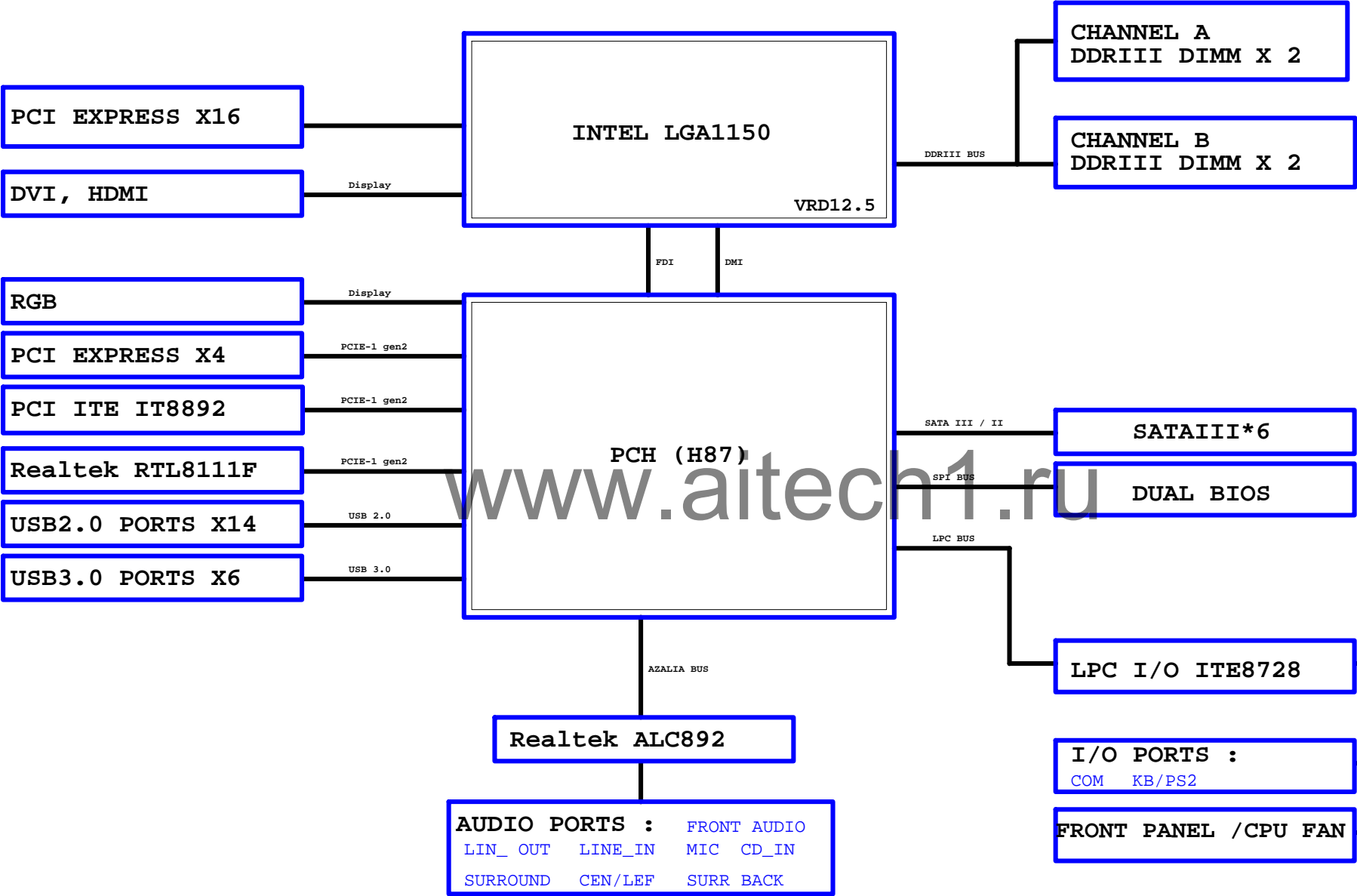
GA-H87M-D3H

Custo

57 MI-

1

BLOCK DIAGRAM



PCIEX16:16/5/5/16(breakout min 10/4/4/4/10)					
Impedance=80 +- 1.5%					
		LGAI1500C			
	PA EXP RXP0	E15	PEG_RXP0	A12	PA EXP TXP0
	PA EXP RXN0	F15	PEG_RXN0	B12	PA EXP TXN0
	PA EXP RXP1	D14	PEG_RXP1	B11	PA EXP TXP1
	PA EXP RXN1	E14	PEG_RXN1	C11	PA EXP TXN1
	PA EXP RXP2	E13	PEG_RXP2	C10	PA EXP TXP2
	PA EXP RXN2	F13	PEG_RXN2	D10	PA EXP TXN2
	PA EXP RXP3	D12	PEG_RXP3	B9	PA EXP TXP3
	PA EXP RXN3	E12	PEG_RXN3	C9	PA EXP TXN3
	PA EXP RXP4	E11	PEG_RXP4	C8	PA EXP TXP4
	PA EXP RXN4	F11	PEG_RXN4	D8	PA EXP TXN4
	PA EXP RXP5	G10	PEG_RXP5	B7	PA EXP TXP5
	PA EXP RXN5	G10	PEG_RXN5	C7	PA EXP TXN5
	PA EXP RXP6	E9	PEG_RXP6	A6	PA EXP TXP6
	PA EXP RXN6	F9	PEG_RXN6	B6	PA EXP TXN6
	PA EXP RXP7	F8	PEG_RXP7	B5	PA EXP TXP7
	PA EXP RXN7	G8	PEG_RXN7	C5	PA EXP TXN7
	PA EXP RXP8	D3	PEG_RXP8	E1	PA EXP TXP8
	PA EXP RXN8	D4	PEG_RXN8	F2	PA EXP TXN8
	PA EXP RXP9	E4	PEG_RXP9	F3	PA EXP TXP9
	PA EXP RXN9	E5	PEG_RXN9	F2	PA EXP TXN9
	PA EXP RXP10	F5	PEG_RXP10	G1	PA EXP TXP10
	PA EXP RXN10	F6	PEG_RXN10	G2	PA EXP TXN10
	PA EXP RXP11	G4	PEG_RXP11	H2	PA EXP TXP11
	PA EXP RXN11	G5	PEG_RXN11	H3	PA EXP TXN11
	PA EXP RXP12	H5	PEG_RXP12	J1	PA EXP TXP12
	PA EXP RXN12	H6	PEG_RXN12	J2	PA EXP TXN12
	PA EXP RXP13	J4	PEG_RXP13	K2	PA EXP TXP13
	PA EXP RXN13	J5	PEG_RXN13	M3	PA EXP TXN13
	PA EXP RXP14	K5	PEG_RXP14	M2	PA EXP TXP14
	PA EXP RXN14	L6	PEG_RXN14	L3	PA EXP TXN14
	PA EXP RXP15	L4	PEG_RXP15	L1	PA EXP TXP15
	PA EXP RXN15	L5	PEG_RXN15	L2	PA EXP TXN15
[9]	A DMI ORXP	U3	DMI_TXP0	A44	A DMI OTXP
[9]	A DMI ORXN	T3	DMI_TXN0	A45	A DMI OTXN
[9]	A DMI IRXP	U1	DMI_TXP1	A43	A DMI ITXP
[9]	A DMI IRXN	V1	DMI_TXN1	A44	A DMI ITXN
[9]	A DMI DRXP	W2	DMI_TXP2	ACG	A DMI DTXP
[9]	A DMI DRXN	X2	DMI_TXN2	AC4	A DMI DTXN
[9]	A DMI 3RXP	Y3	DMI_TXP3	AC1	A DMI 3TXP
[9]	A DMI 3RXN	W5	DMI_TXN3	AC2	A DMI 3TXN
		X1	RSVD_TP		
		C2	RSVD_TP		
		B3	RSVD_TP		
		A4	RSVD_TP		
		P3	RSCOMP		

W=12 mil out of CPU
S=15 mil out of CPU

WCIOA LO WRTIS 24.94/1 GRCOMP

HASWELL|TOSC1-F01150-01R 10SC1-F01150-03R|

3VDUAL

WR27 1K/4/1/X

VCC3

WR26 100/4/1/X

1.1V分壓

A-CPU_RST

WR31 100/4/1/X

WBC3 1n4/7R/1/X

WR45 8.2K/4/X

O_PFM_RST1

SOT23

MMBT2222A/SOT23 600mA/40X

CPU PU/PD

Signal	Width/Depth	Destination
CPU_VTT_OR	90.9/4/1/X	PVIDSLCK
CPU_VTT_OR	115/4/1	PVIDSOUT
CPU_VTT_OR	75/4/1	PVIDALRT

CPU VTT OR

Signal	Width/Depth	Destination
CPU_VTT_OR	51/4/1/X	A_TMS
CPU_VTT_OR	51/4/1/X	A_TDO
CPU_VTT_OR	51/4/1/X	A_TDI
CPU_VTT_OR	51/4/1	A_HPRDY
CPU_VTT_OR	51/4/1	A_TCK
CPU_VTT_OR	51/4/1	A_TRST
CPU_VTT_OR	1K/4/1/X	A_PECI
CPU_VTT_OR	1K/4/1	A_CATERR
CPU_VTT_OR	1K/4/1	A_PROCHOT
CPU_VTT_OR	51/4/1/X	N_CPUPWROK
CPU_VTT_OR	1K/4/1/X	A_THRMTRIP
CPU_VTT_OR	1K/4/1	VCC1_05_PCH
CPU_VTT_OR	150/4/1	VCC1_05_PCH
CPU_VTT_OR	10K/4/1/X	A_PWR_DEBUG
CPU_VTT_OR	8.2K/4/X	3VDUAL
CPU_VTT_OR	0/4/X	N_SYS_RST
CPU_VTT_OR	100/4/1	A_DDR_COMP1
CPU_VTT_OR	75/4/1	A_DDR_COMP2
CPU_VTT_OR	100/4/1	A_TESTLOW_1
CPU_VTT_OR	49.9/4/1	A_TESTLOW_2
CPU_VTT_OR	49.9/4/1	A_HSW_CFG_RCOMP

Diagram illustrating the SMV regulator circuit (Figure 10-10). The circuit includes a 1.5V supply, a 100µA/1 resistor (WR62), a 100µA/1 resistor (WR60), and a 0.1µA/4/X7R/16V/K capacitor (WC3). The output is labeled A SM VREF.

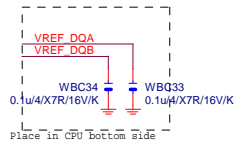
LGA1150 (A)

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	AV19	DDR0_MA11	DDR0_D11	AK39	MDA11
MAAA11	AU19	DDR0_MA12	DDR0_D12	AH37	MDA12
MAAA12	AY10	DDR0_MA13	DDR0_D13	AH38	MDA13
MAAA13	AT20	DDR0_MA14	DDR0_D14	AK37	MDA14
MAAA14	AU21	DDR0_MA15	DDR0_D15	AK40	MDA15
MAAA15			DDR0_D16	AM40	MDA17
MODT_A0	AW10	DDR0_ODT0	DDR0_D17	AM39	MDA21
MODT_A1	AY8	DDR0_ODT1	DDR0_D18	AP38	MDA18
MODT_A2	AW9	DDR0_ODT2	DDR0_D19	AP39	MDA19
MODT_A3	AU8	DDR0_ODT3	DDR0_D20	AM37	MDA20
			DDR0_D21	AM38	MDA16
			DDR0_D22	AP37	MDA22
			DDR0_D23	AP40	MDA23
			DDR0_D24	AV37	MDA25
			DDR0_D25	AW37	MDA29
			DDR0_D26	AU35	MDA26
			DDR0_D27	AV35	MDA27
			DDR0_D28	AT37	MDA28
			DDR0_D29	AU37	MDA24
			DDR0_D30	AT35	MDA30
			DDR0_D31	AW35	MDA31
			DDR0_D32	AY6	MDA33
			DDR0_D33	AU6	MDA37
			DDR0_D34	AV4	MDA34
			DDR0_D35	AW6	MDA35
			DDR0_D36	AW6	MDA32
			DDR0_D37	AW4	MDA38
			DDR0_D38	AY4	MDA39
			DDR0_D39	AR1	MDA41
			DDR0_D40	AR4	MDA45
			DDR0_D41	AN3	MDA42
			DDR0_D42	AN4	MDA43
			DDR0_D43	AR2	MDA44
			DDR0_D44	AR3	MDA40
			DDR0_D45	AN2	MDA46
			DDR0_D46	AN1	MDA47
			DDR0_D47	AL1	MDA49
			DDR0_D48	AL4	MDA53
			DDR0_D49	AL4	MDA50
			DDR0_D50	AJ4	MDA51
			DDR0_D51	AL2	MDA52
			DDR0_D52	AL3	MDA48
			DDR0_D53	AJ2	MDA54
			DDR0_D54	AJ1	MDA55
			DDR0_D55	AG1	MDA57
			DDR0_D56	AG4	MDA61
			DDR0_D57	AE3	MDA58
			DDR0_D58	AE4	MDA59
			DDR0_D59	AG2	MDA60
			DDR0_D60	AG3	MDA56
			DDR0_D61	AE2	MDA62
			DDR0_D62	AE1	MDA63
			DDR0_D63	AE39	DQSA0
			DDR0_D64	AJ39	DQSA1
			DDR0_D65	AN39	DQSA2
			DDR0_D66	AV36	DQSA3
			DDR0_D67	AV5	DQSA4
			DDR0_D68	AP3	DQSA5
			DDR0_D69	AK3	DQSA6
			DDR0_D70	AF3	DQSA7
			DDR0_D71	AV32	
			DDR0_D72	AE38	DQSA0
			DDR0_D73	AJ38	DQSA1
			DDR0_D74	AN38	DQSA2
			DDR0_D75	AJ36	DQSA3
			DDR0_D76	AW5	DQSA4
			DDR0_D77	AP2	DQSA5
			DDR0_D78	AK2	DQSA6
			DDR0_D79	AF2	DQSA7
			DDR0_D80	AU32	

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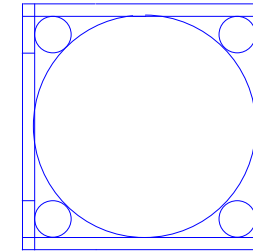
LGA1150 (B)

LGA1150B		DDR1_MA0	AE34	MD80
MAAB0	AL19	DDR1_MA1	AE35	MD81
MAAB1	AK23	DDR1_MA2	AG35	MD82
MAAB2	AM23	DDR1_MA3	AH35	MD83
MAAB3	AM23	DDR1_MA4	AD34	MD84
MAAB4	AP23	DDR1_MA5	AD35	MD85
MAAB5	AL23	DDR1_MA6	AG34	MD86
MAAB6	AY24	DDR1_MA7	AH34	MD87
MAAB7	AV25	DDR1_MA8	AL34	MD88
MAAB8	AU26	DDR1_MA9	AL35	MD89
MAAB9	AW25	DDR1_MA10	AL31	MD810
MAAB10	AP18	DDR1_MA11	AL31	MD811
MAAB11	AY25	DDR1_MA12	AK34	MD812
MAAB12	AV26	DDR1_MA13	AK35	MD813
MAAB13	AR15	DDR1_MA14	AK32	MD814
MAAB14	AV27	DDR1_MA15	AL32	MD815
MAAB15	AY28		AL34	MD817
MODT_B0	AM17	DDR1_ODT0	AP34	MD821
MODT_B1	AL16	DDR1_ODT1	AN31	MD819
MODT_B2	AM16	DDR1_ODT2	AP31	MD823
MODT_B3	AK15	DDR1_ODT3	AP35	MD820
			AP35	MD816
			AN32	MD818
			AP32	MD822
			AM29	MD825
			AM28	MD828
			AR29	MD827
			AR28	MD830
			AL28	MD824
			AL28	MD829
			AP29	MD826
			AP28	MD831
			AP12	MD832
			AL12	MD835
			AR13	MD836
			AP13	MD837
			AM13	MD838
			AM12	MD839
			AR9	MD845
			AP9	MD841
			AR6	MD847
			AP6	MD843
			AR10	MD844
			AP10	MD840
			AR7	MD846
			AP7	MD842
			AM9	MD852
			AL9	MD853
			AL6	MD850
			AL7	MD855
			AM10	MD848
			AL10	MD849
			AM6	MD854
			AM7	MD851
			AH6	MD861
			AH7	MD860
			AE6	MD859
			AE7	MD863
			AJ6	MD856
			AJ7	MD857
			AG6	MD858
			AF7	MD862
			AF35	DQSB0
			AL33	DQSB1
			AP33	DQSB2
			AN28	DQSB3
			AN12	DQSB4
			AP8	DQSB5
			AL8	DQSB6
			AG7	DQSB7
			AN25	
			AF34	DQSB0
			AK33	DQSB1
			AN33	DQSB2
			AN29	DQSB3
			AN13	DQSB4
			AR8	DQSB5
			AM8	DQSB6
			AG6	DQSB7
			AN26	



HASWELL[10SC1-F01150-01R_10SC1-F01150-03R]

LGA1150 (CR)

CR
CPU RETAINTION/X

LGA1150_P



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

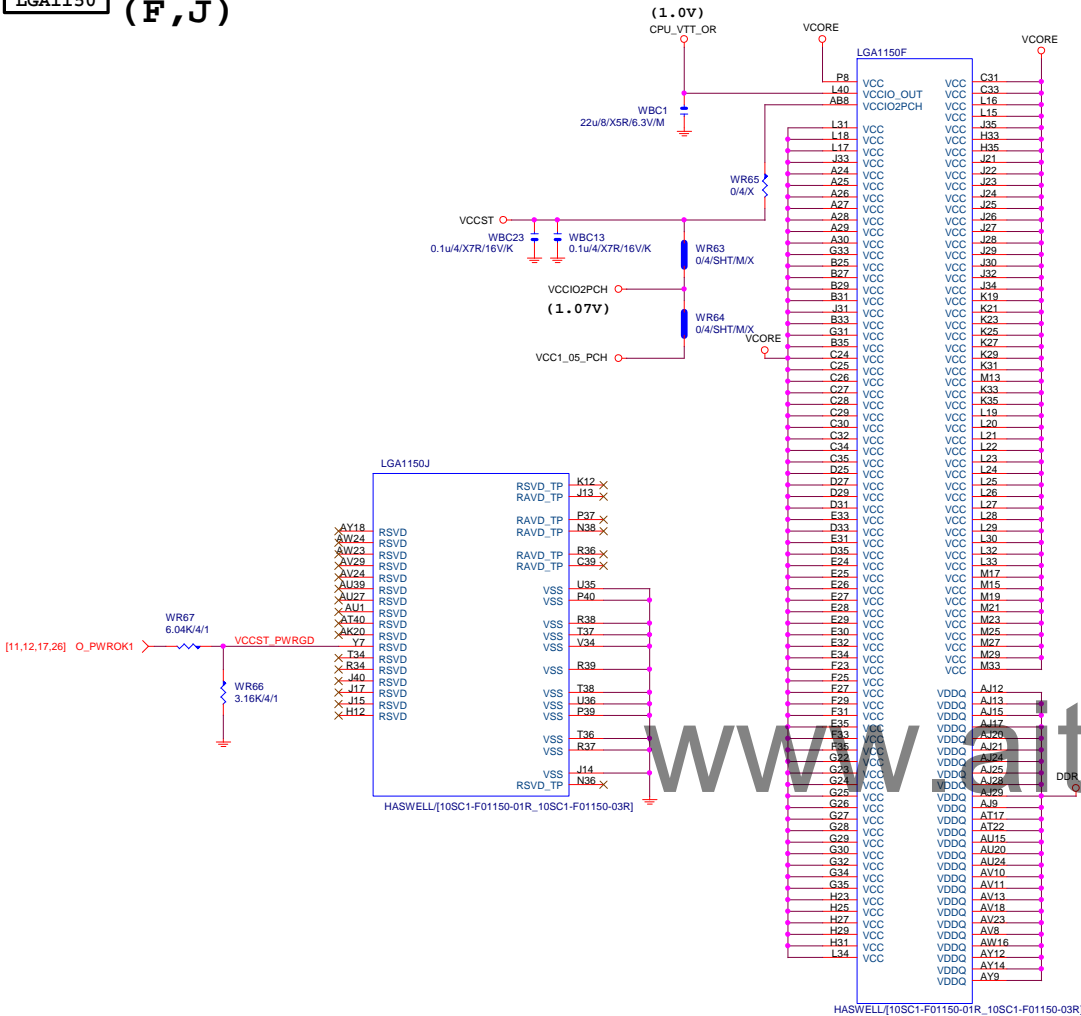
DDR BUS

[7] MODT_A[0..3]	MODT_A0..3
[8] MODT_B[0..3]	MODT_B0..3
[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

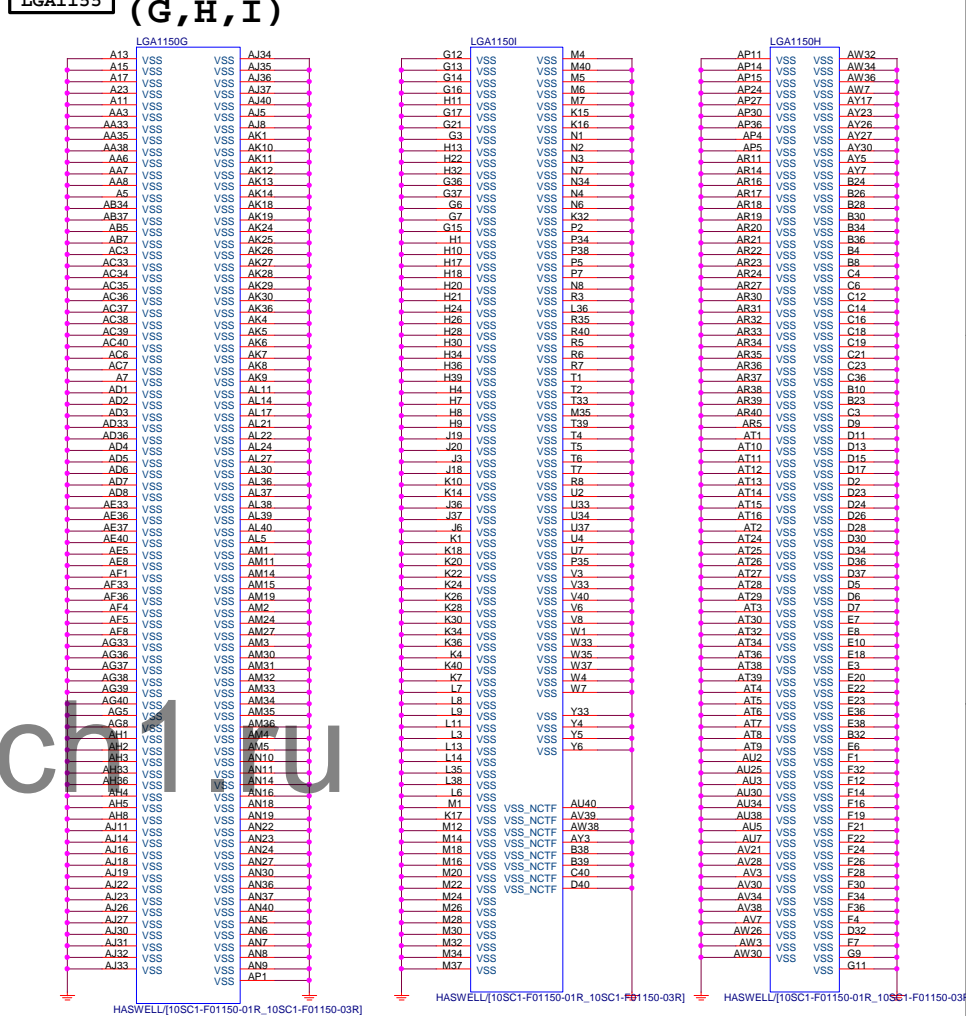
Gigabyte Technology

Title			
CPU LGA1150-B			
Size	Document Number	Rev	
Custom	GA-H87M-D3H	1.01	
Date:	Tuesday, March 26, 2013	Sheet	5 of 32

LGA1150 (F,J)

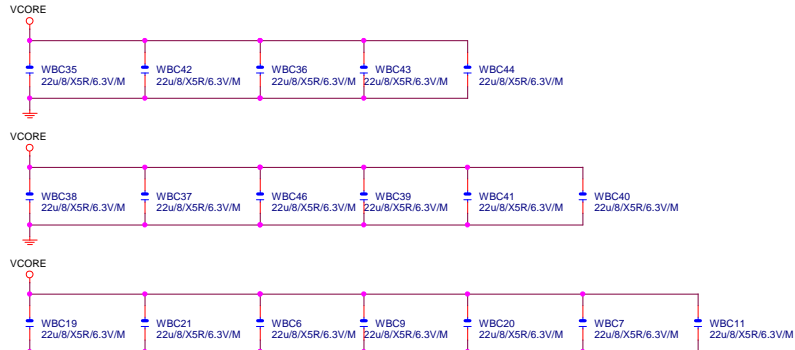


LGA1155 (G,H,I)



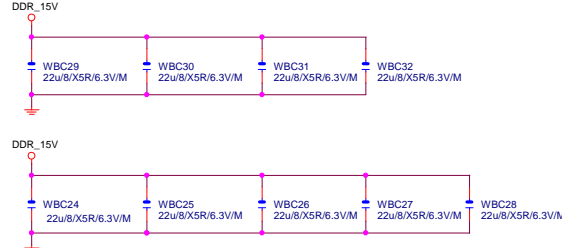
VCore CAP

(X18)



DDR CAP

(X9)



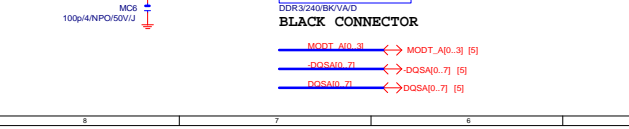
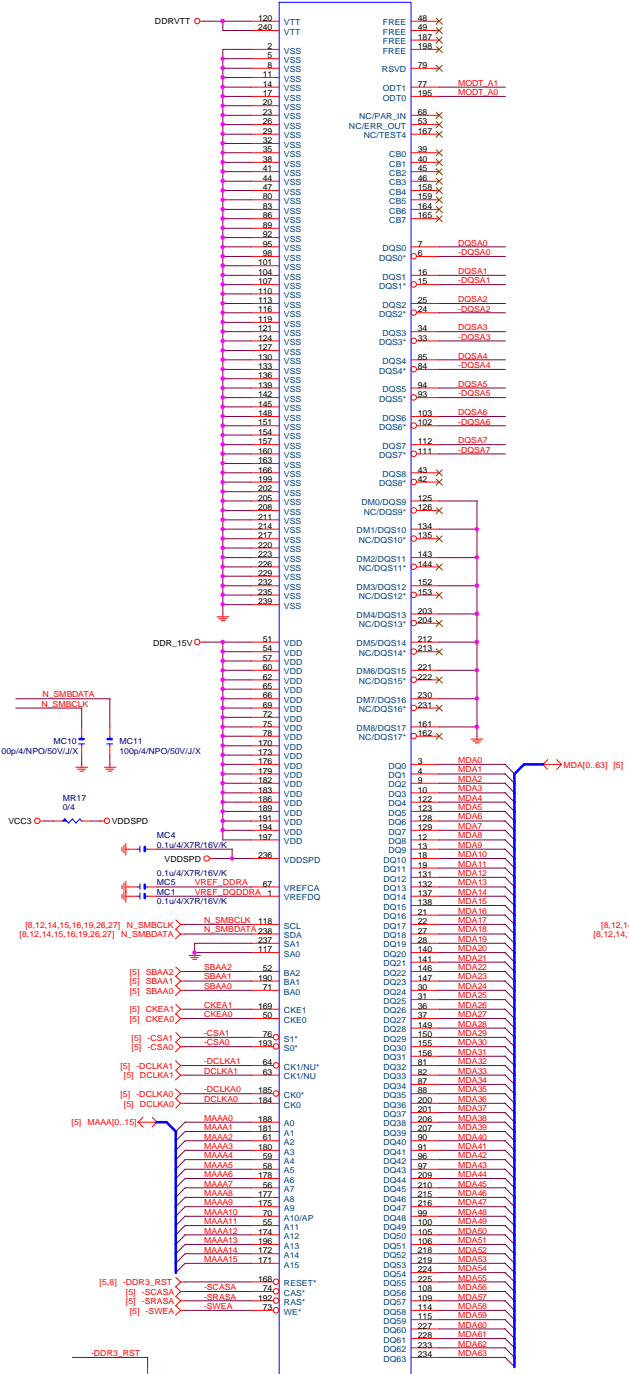
Gigabyte Technology

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Size	Custom	Document Number	GA-H87M-D3H
Date:	Tuesday, March 26, 2013	Sheet	6 of 32

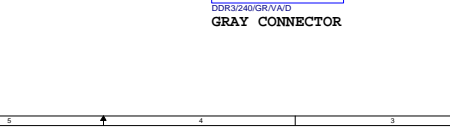
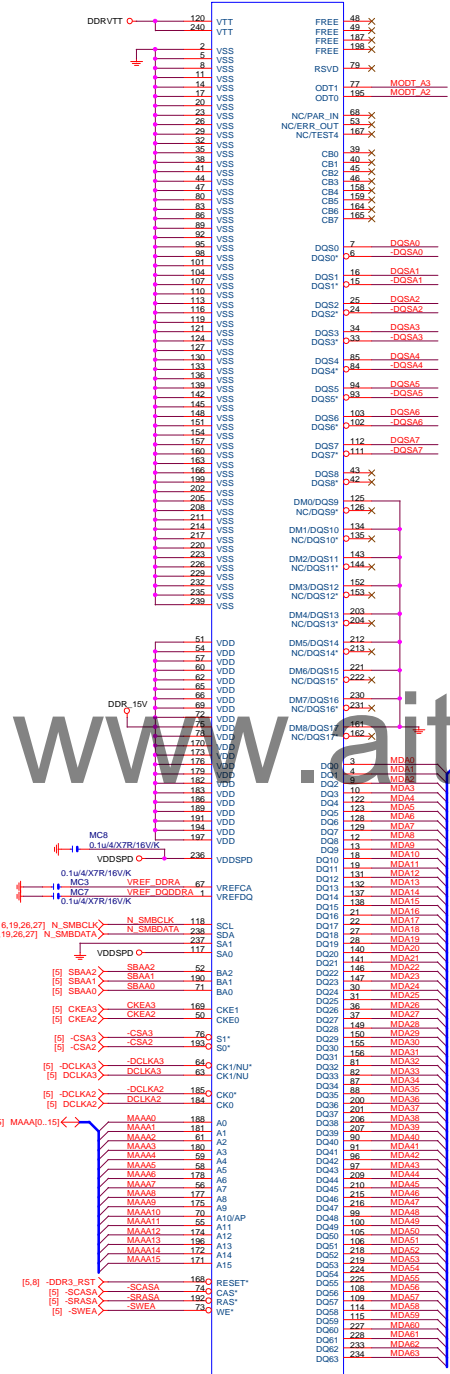
Rev 1.01

DDR3

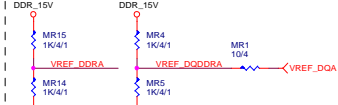
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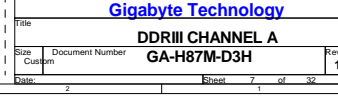
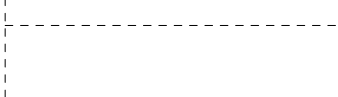
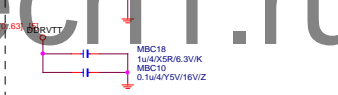
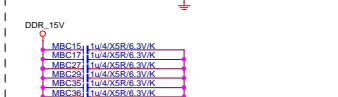
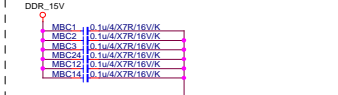
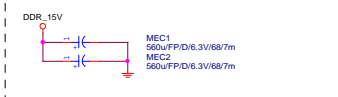
DDR3



DDR3 VREF

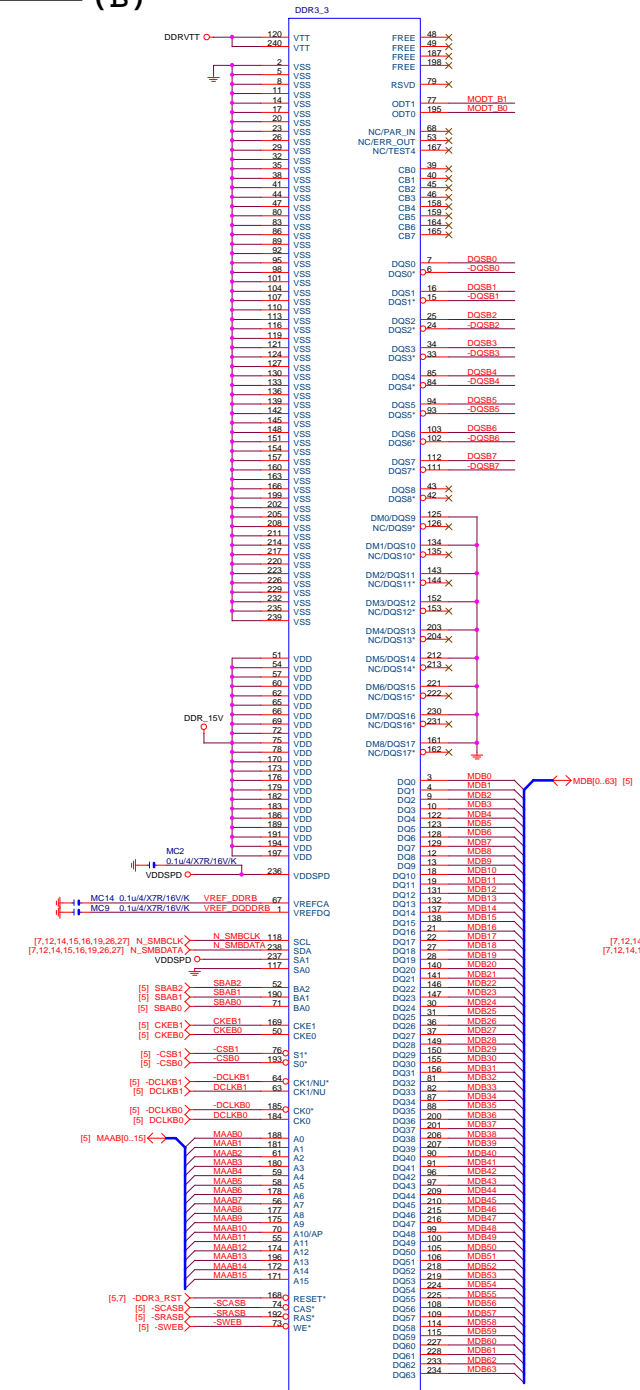


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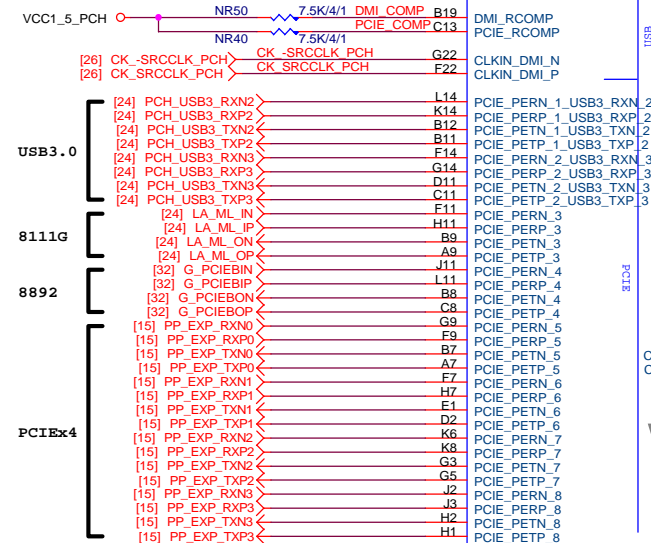
DDR3

(B)



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

PCB#		H81: Port 6/7/12/13 N/A	
DML_RXN_0	USBN_0	AV10 - N-USBP0	N-USBP0 [21]
DML_RXP_0	USBP_0	AU10 - N-USBP0	N-USBP0 [21]
DML_TXN_0	USBN_1	AV11 - N-USBP1	N-USBP1 [21]
DML_TXP_0	USBP_1	AW11 - N-USBP1	N-USBP1 [21]
DML_RXN_1	USBN_2	AN14 - N-USBP2	N-USBP2 [24]
DML_RXP_1	USBP_2	AP14 - N-USBP2	N-USBP2 [24]
DML_TXN_1	USBN_3	AJ16 - N-USBP3	N-USBP3 [24]
DML_TXP_1	USBP_3	AK16 - N-USBP3	N-USBP3 [24]
DML_RXN_2	USBN_4	AU15 - N-USBP4	N-USBP4 [18]
DML_RXP_2	USBP_4	AV15 - N-USBP4	N-USBP4 [18]
DML_TXN_2	USBN_5	AU12 - N-USBP5	N-USBP5 [18]
DML_TXP_2	USBP_5	AT12 - N-USBP5	N-USBP5 [18]
DML_RXN_3	USBN_6	AV14 - N-USBP6	N-USBP6 [21]
DML_RXP_3	USBP_6	AW14 - N-USBP6	N-USBP6 [21]
DML_TXN_3	USBN_7	AT17 - N-USBP7	N-USBP7 [21]
DML_TXP_3	USBP_7	AW16 - N-USBP7	N-USBP7 [21]

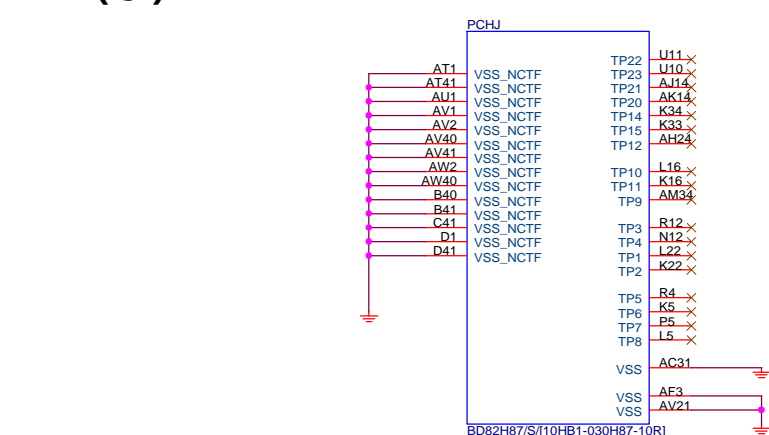


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_PCIEX1:16/5/5/5/16 (breakout min 8/4/4/4/8)

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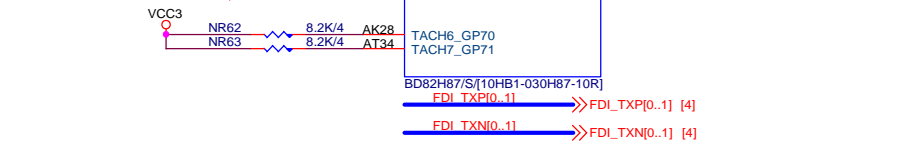
PCHJ



```

[21] PCH_USB3_RXN0 > F20
[21] PCH_USB3_RXP0 > G20
[21] PCH_USB3_TXN0 < B1A
[21] PCH_USB3_TXP0 < C1B
[21] PCH_USB3_RXN1 > G1B
[21] PCH_USB3_RXP1 > H1B
[21] PCH_USB3_TXN1 < B1A
[21] PCH_USB3_TXP1 < B1B
[18] PCH_USB3_RXN4 > K20
[18] PCH_USB3_RXP4 > L20
[18] PCH_USB3_TXN4 < D1A
[18] PCH_USB3_TXP4 < C1B
[18] PCH_USB3_RXN5 > L1B
[18] PCH_USB3_RXP5 > K1B
[18] PCH_USB3_TXN5 < B1A
[18] PCH_USB3_TXP5 < A1A

```



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

tech1.ru

Mount for integrated clock Generation Mode

CK_SRCCLK_PCH NR89 8.2K/4
CK_SRCCLK_PCH NR88 8.2K/4

NR225 short to GND in non graphic SKU

CK_DOTCLK NR92 8.2K/4
CK_DOTCLK NR91 8.2K/4

SB_HEATSIN

1X

X2

PCH_HS
PCH_HS112SP2-S04209-01R 12SP2-S04209-02R 12SP2-S04209-03R

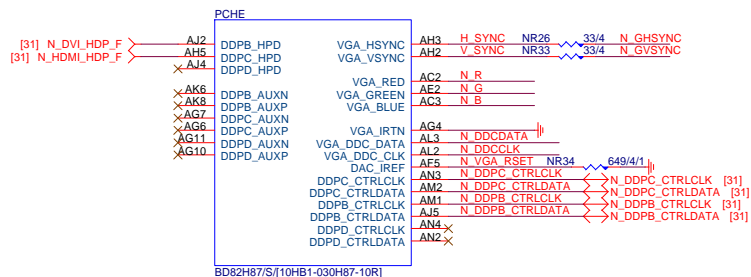
```
OC[3:0]# for Device 29 (ports 0-7)
OC[7:4]# for Device 26 (ports 8-13)
```

USB OC# Configure	
OC0#	F_USB30
OC1#	R_USB30
OC2#	USB30_LAN
OC3#	F_USB3
OC4#	F_USB2
OC5#	KB_MS_USB
OC6#	F_USB1
OC7#	Not Use

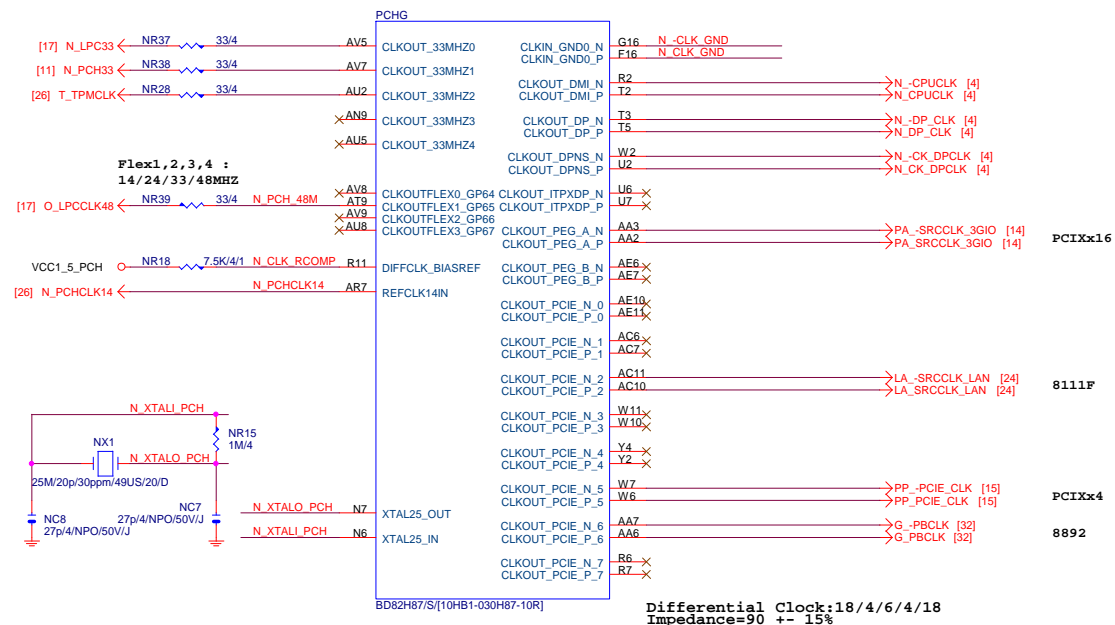
Gigabyte Technology

Title			
PCH FDI,DMI,USB ,PCIE,NVRAM			
Size	Document Number		Rev
Custom	GA-H87M-D3H		1.01
Date:	Tuesday, March 26, 2013	Sheet	9 of 32

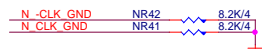
PCH (E)



PCH (G)



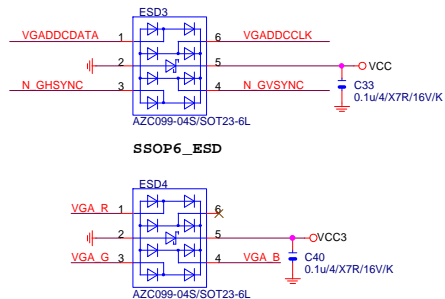
PCH CLK PD



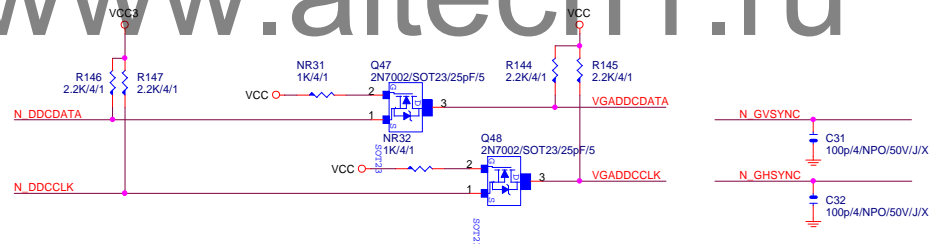
Mount for integrated clock Generation
Mode



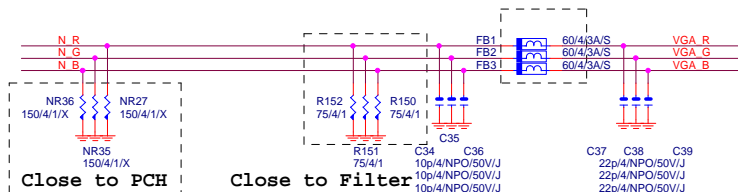
VGA ESD



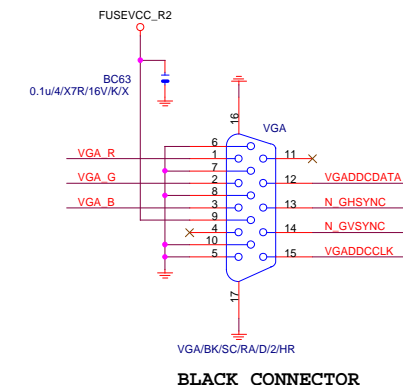
VGA DDC



VGA DDC



VGA CONNECTOR



Gigabyte Technology

PCH DISPLAY ,CLK BUFFER

GA-H87M-D3H

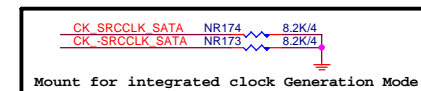
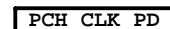
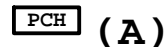
Date: Tuesday, March 26, 2013 Sheet 10 of 32

Date: Tuesday, March 26, 2013 Sheet 10 of 32

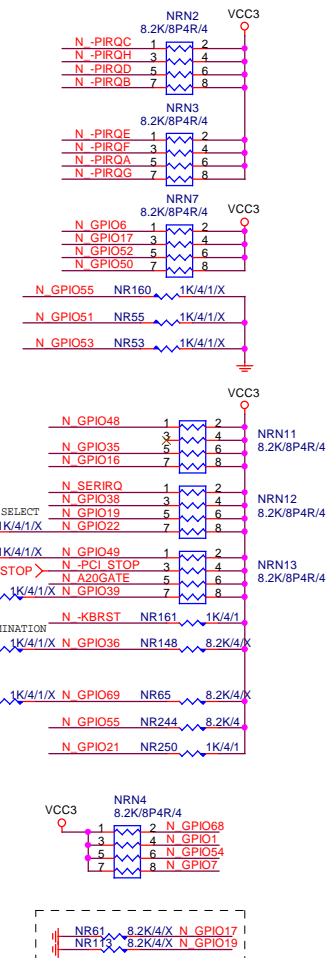
Date: Tuesday, March 26, 2013 Sheet 10 of 32

Date: Tuesday, March 26, 2013 Sheet 10 of 32

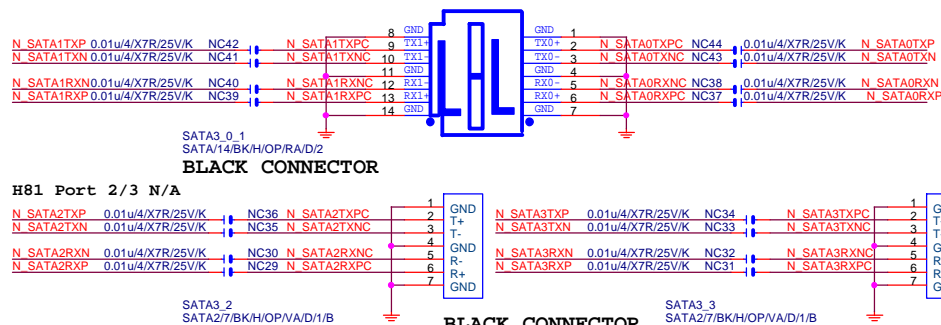
SATA3 : 20/7.5/4.5/7.5/20 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%
SATA2 : 15/7.5/4.5/7.5/15 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%



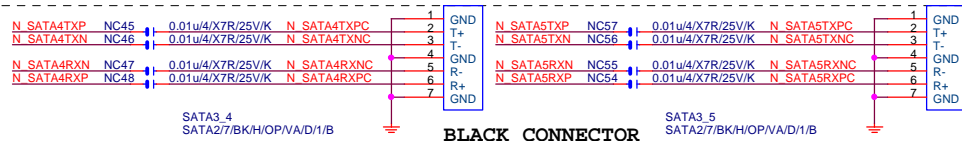
PCH	PU/PD
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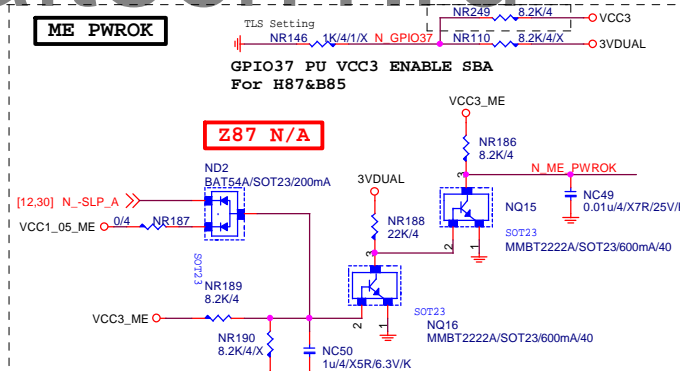
SATA CONNECTOR



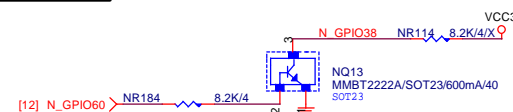
```
** Z87/H87 Port 4&5 SATA3.0
** B85 Port 4&5 SATA2.0
```



ME PWROK



GPIO38 Ctrl



Gigabyte Technology

Title			
PCH HOST , SATA, PCI			
Size	Document Number		Rev
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(D)

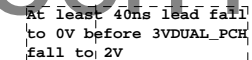


ACZ_SDOUT

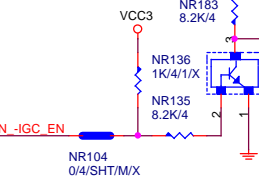


PCH_DPWROK

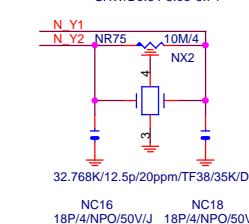
```
At least 10ms delay after
3VDUAL_PCH stabel
```



HSW_STRAP13



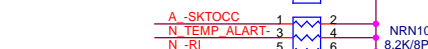
32.768KHZ



CLR_CMOS



PCH	PU/PD
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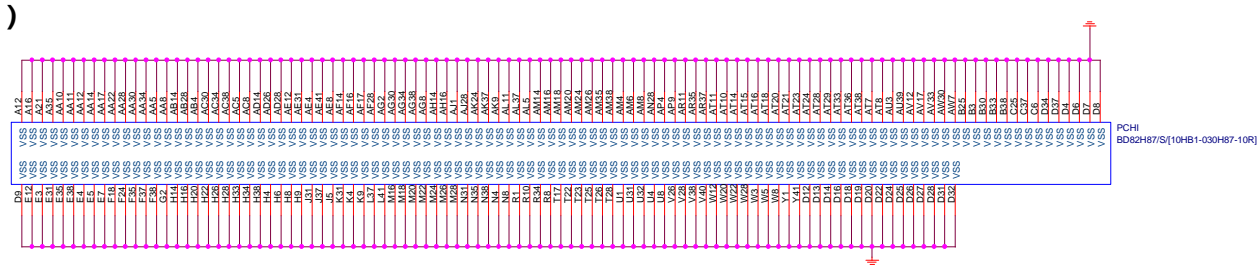


Gigabyte Technology

PCH GPIO , CTRL , AUDIO

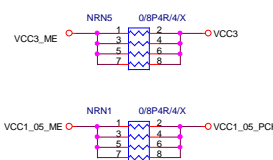
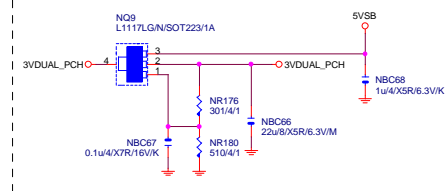
Size Custom	Document Number GA-H87M-D3H	Rev 1.0
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PCH (I)

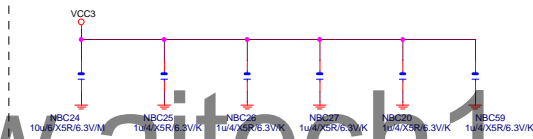


SHT PWR

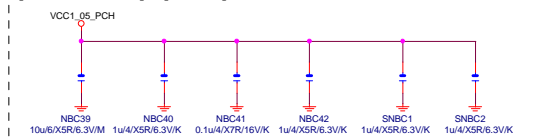
CLOSE北橋(注意震盪水波紋)



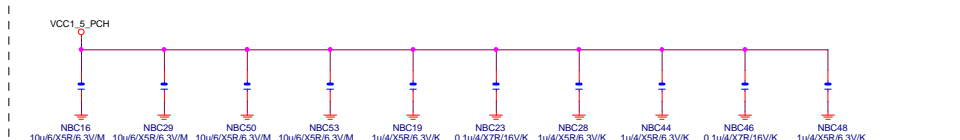
(3.3V) (X6)



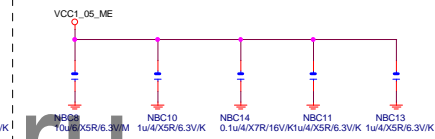
(1.05V) (X6)



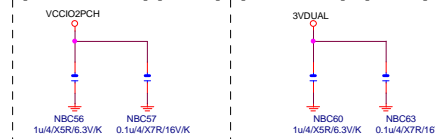
(1.05V) (x10)



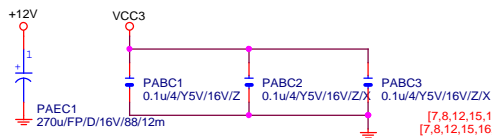
(1.05V) (x5)



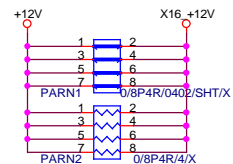
(1.05V)(x2) (3.3V) (x2)



PCIEX16 CAP



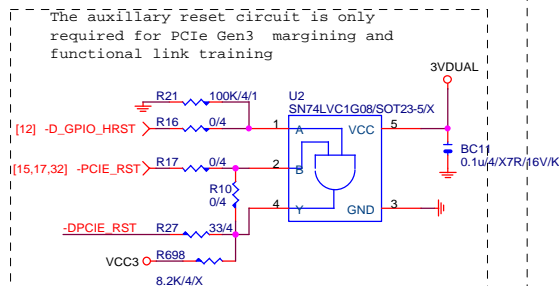
PCIEX16 PROTECT SHT



PCIEEX16	AC	CAP
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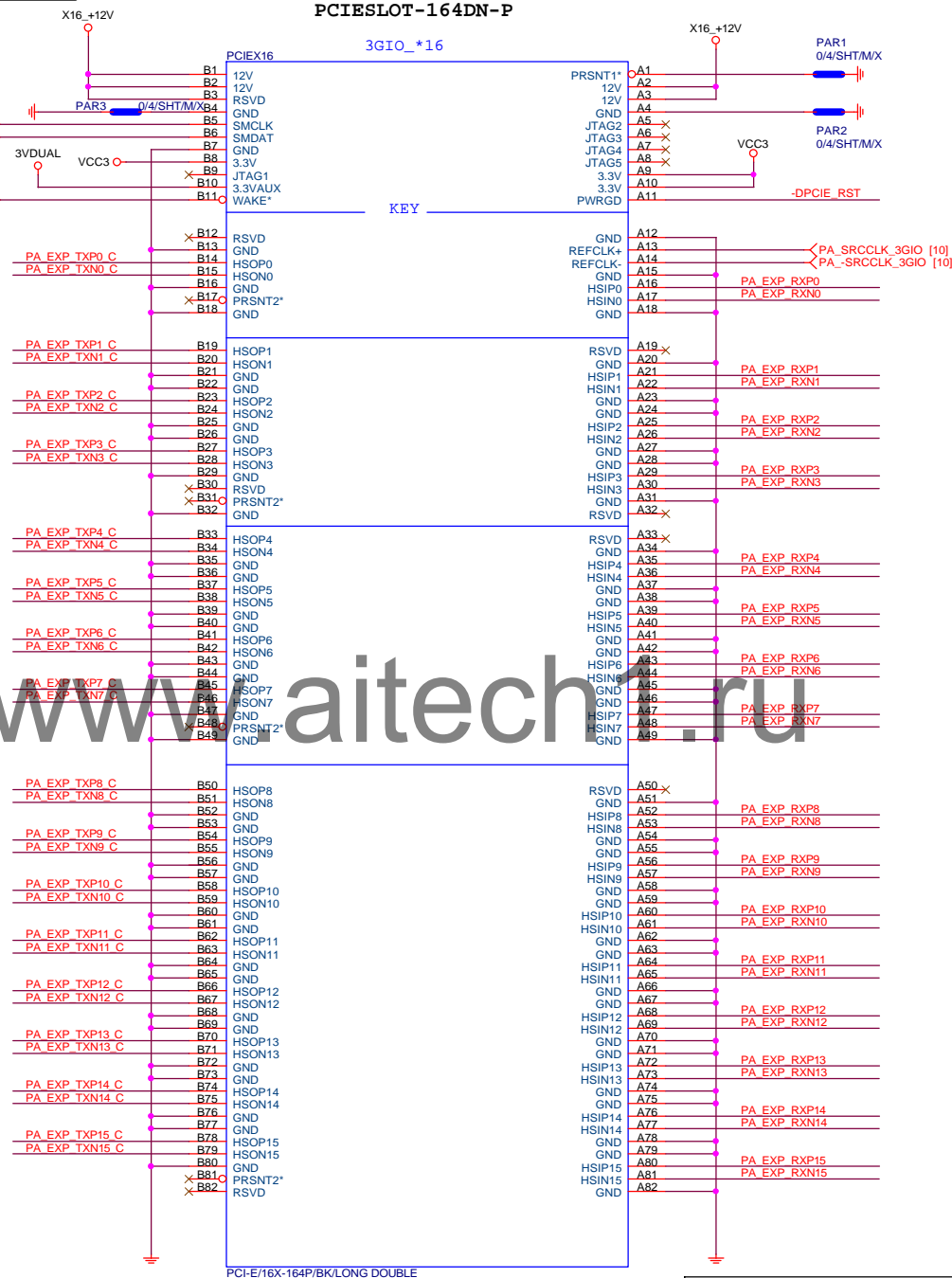
PA EXP TXP0	PAC5	0.22u4/X5R/6.3V/K	PA EXP TXP0 C
PA EXP TXN0	PAC4	0.22u4/X5R/6.3V/K	PA EXP TXN0 C
PA EXP TXP1	PAC6	0.22u4/X5R/6.3V/K	PA EXP TXP1 C
PA EXP TXN1	PAC7	0.22u4/X5R/6.3V/K	PA EXP TXN1 C
PA EXP TXP2	PAC8	0.22u4/X5R/6.3V/K	PA EXP TXP2 C
PA EXP TXN2	PAC9	0.22u4/X5R/6.3V/K	PA EXP TXN2 C
PA EXP 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	PAC18	0.22u4/X5R/6.3V/K	PA EXP TXN7 C
PA EXP TXP8	PAC20	0.22u4/X5R/6.3V/K	PA EXP TXP8 C
PA EXP TXN8	PAC21	0.22u4/X5R/6.3V/K	PA EXP TXN8 C
PA EXP TXP9	PAC22	0.22u4/X5R/6.3V/K	PA EXP TXP9 C
PA EXP TXN9	PAC23	0.22u4/X5R/6.3V/K	PA EXP TXN9 C
PA EXP TXP10	PAC24	0.22u4/X5R/6.3V/K	PA EXP TXP10 C
PA EXP TXN10	PAC25	0.22u4/X5R/6.3V/K	PA EXP TXN10 C
PA EXP TXP11	PAC26	0.22u4/X5R/6.3V/K	PA EXP TXP11 C
PA EXP TXN11	PAC27	0.22u4/X5R/6.3V/K	PA EXP TXN11 C
PA EXP TXP12	PAC28	0.22u4/X5R/6.3V/K	PA EXP TXP12 C
PA EXP TXN12	PAC29	0.22u4/X5R/6.3V/K	PA EXP TXN12 C
PA EXP TXP13	PAC30	0.22u4/X5R/6.3V/K	PA EXP TXP13 C
PA EXP TXN13	PAC31	0.22u4/X5R/6.3V/K	PA EXP TXN13 C
PA EXP TXP14	PAC32	0.22u4/X5R/6.3V/K	PA EXP TXP14 C
PA EXP TXN14	PAC33	0.22u4/X5R/6.3V/K	PA EXP TXN14 C
PA EXP TXP15	PAC34	0.22u4/X5R/6.3V/K	PA EXP TXP15 C
PA EXP TXN15	PAC35	0.22u4/X5R/6.3V/K	PA EXP TXN15 C

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



PCIEX16 SLOT

PCIESLOT-164DN-P



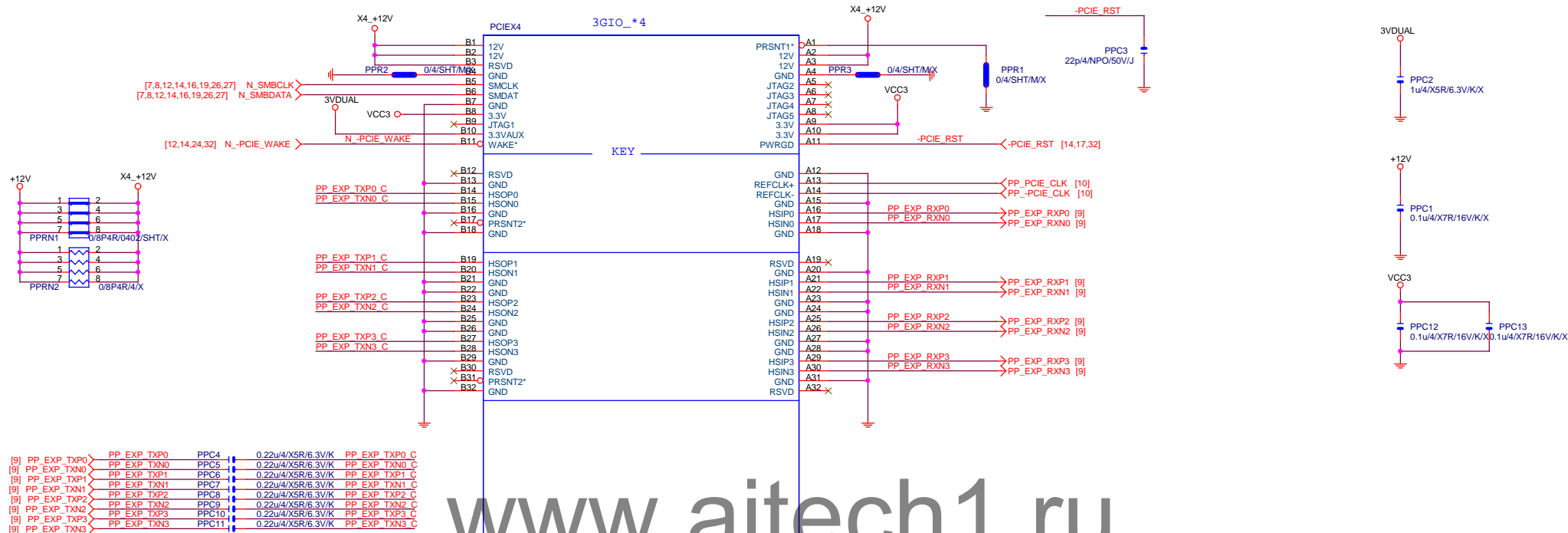
BLACK CONNECTOR

Gigabyte Technology

PCI EXPRESS * 16

Title			
PCI EXPRESS * 16			
Size Custom	Document Number	GA-H87M-D3H	Rev 1.0
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PCIEX4 SLOT

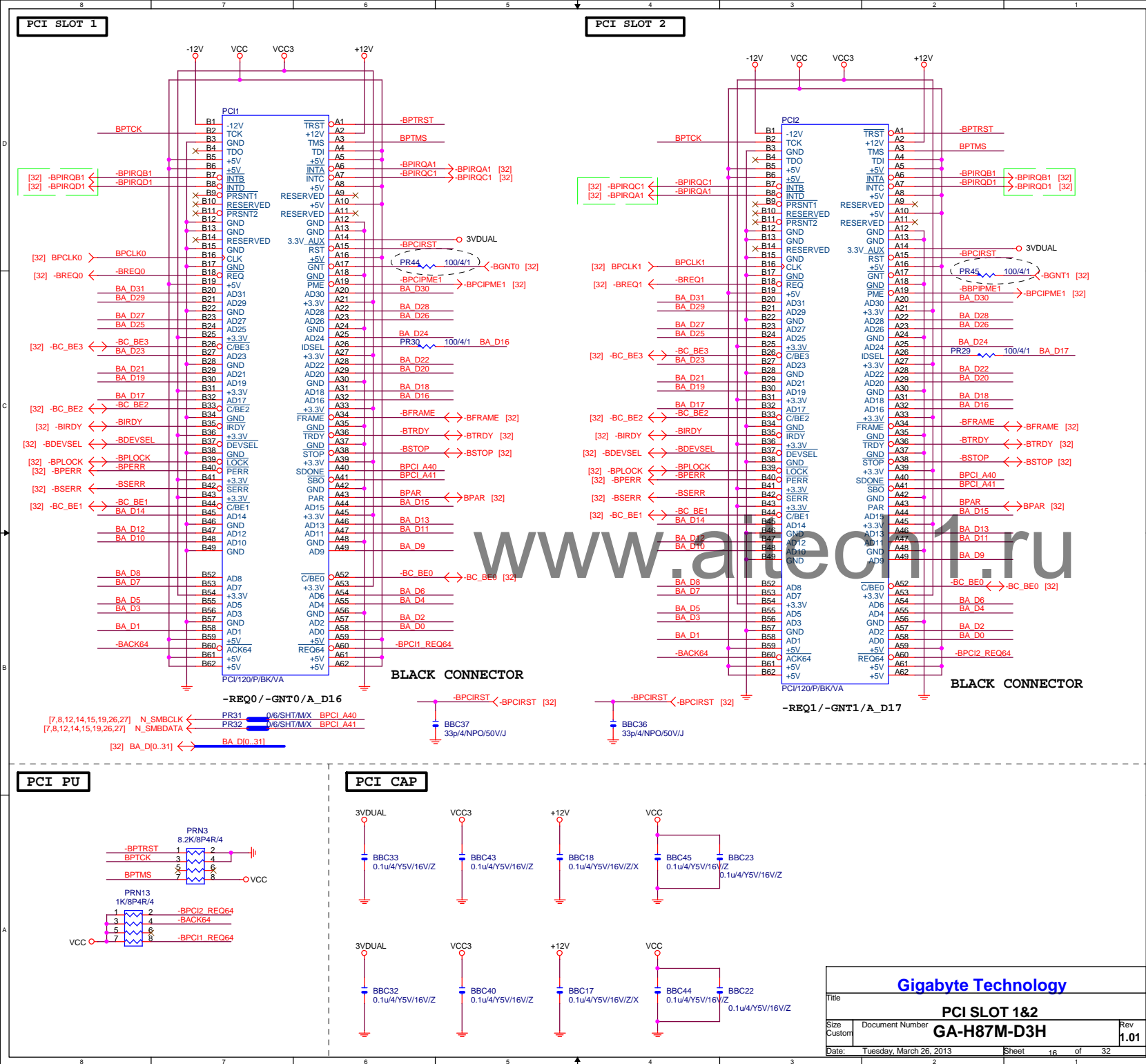


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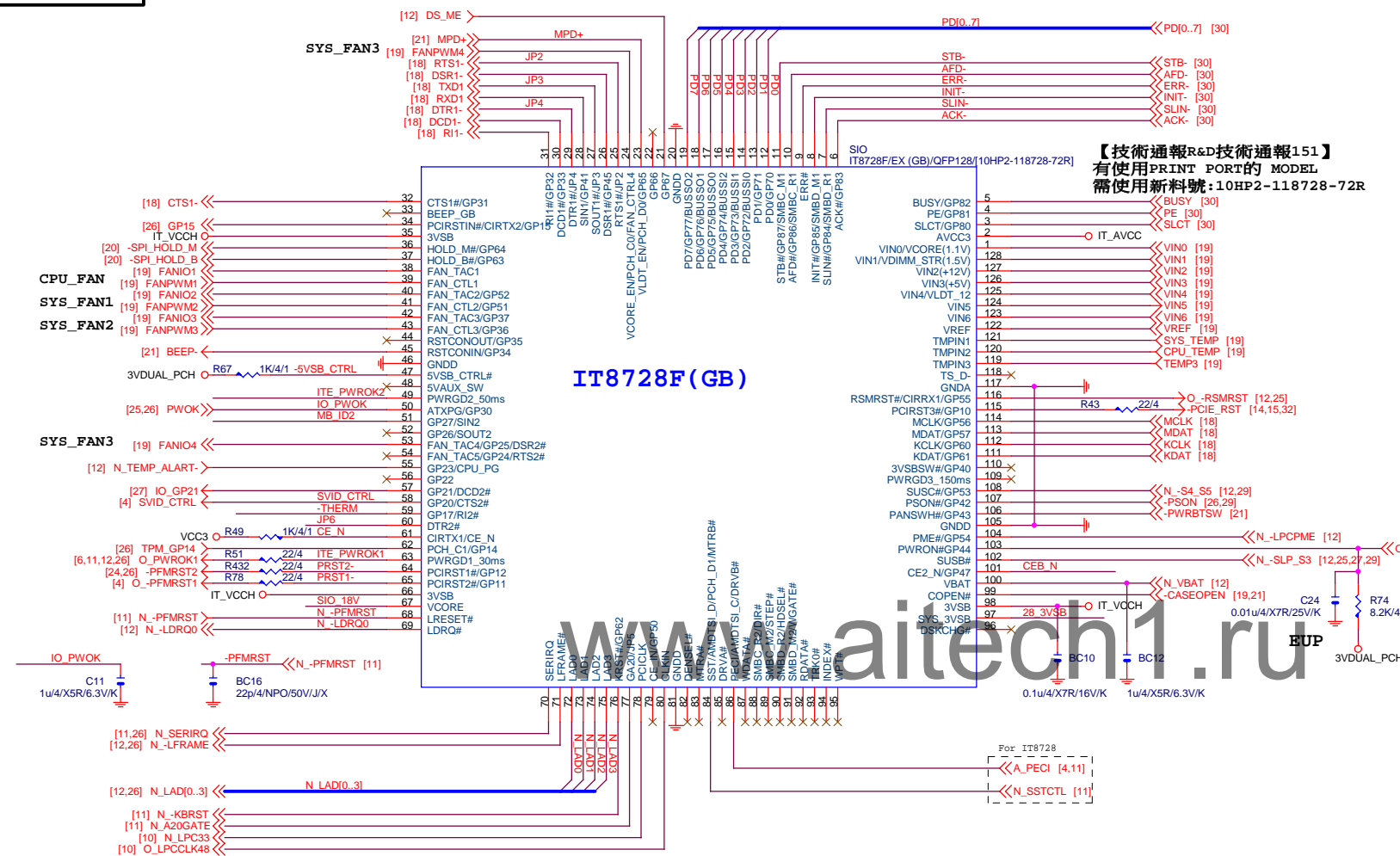
PCI-E/4X-65P/BK/LONG DOUBLE

BLACK CONNECTOR

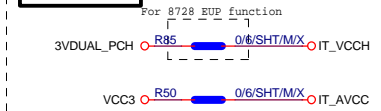
Gigabyte Technology			
Title			
PCI EXPRESS X 1 PORT			
Size	Document Number	Rev	
Custom	GA-H87M-D3H	1.01	
Date:	Tuesday, March 26, 2013	Sheet	15 of 32



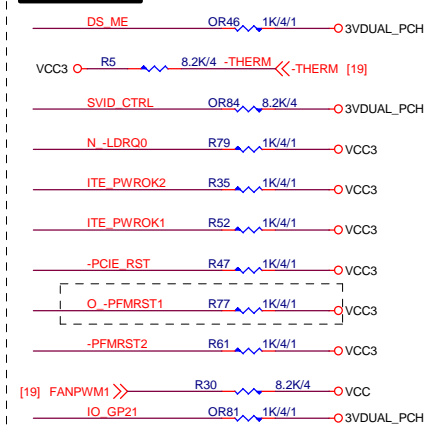
SIO IT8728F



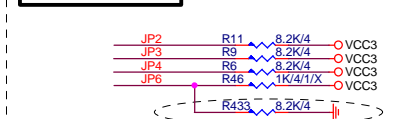
PWR	SHT
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SIO	PU
-----	----




SIO STRAP



IT8728-EX
PULL DOWN

— —ENABLE

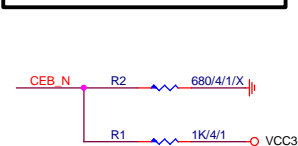
QVP control by PCH

3VDUAL  28_3VSB

IT8728F NOTE

	IT8728
PIN121	VCORE_EN/PCF_C0
PIN120	VLED_EN/PCF_D0
PIN19	ATKPG
PIN31	PCF_C1
PIN53	SST/AMDTSI_D_MTRB#/PCF_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

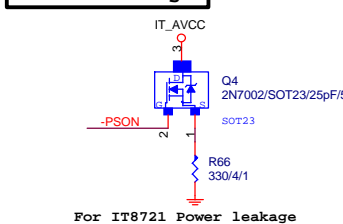
DUAL BIOS OPT STRAP



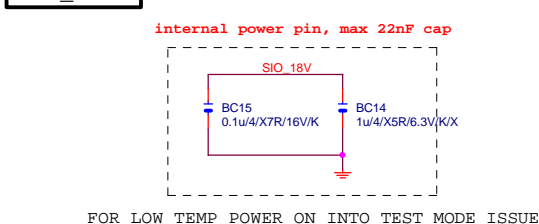
SIO CAP



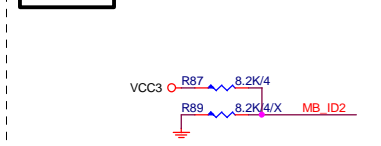
Power leakage



SIO_18V



MB ID

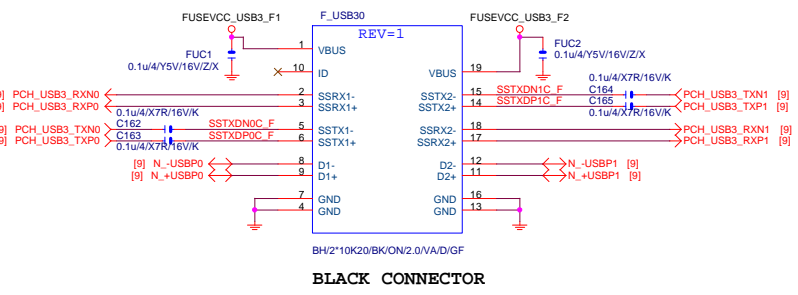


Gigabyte Technology

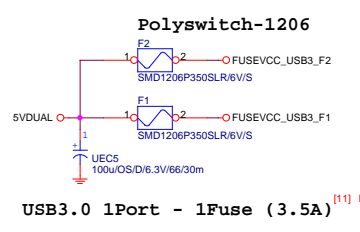
Title			
ITE 8728 LPC IO			
Size	Document Number	Rev	
Custom	GA-H87M-D3H	1.01	
Date:	Tuesday, March 26, 2013	Sheet	17 of 32

Date:	Tuesday, March 26, 2013	Sheet	20	of	32
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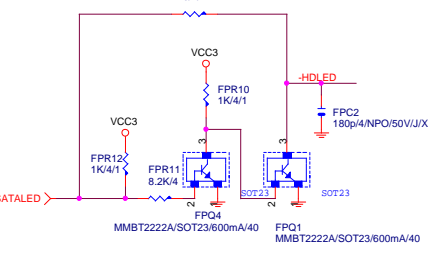
F_USB30



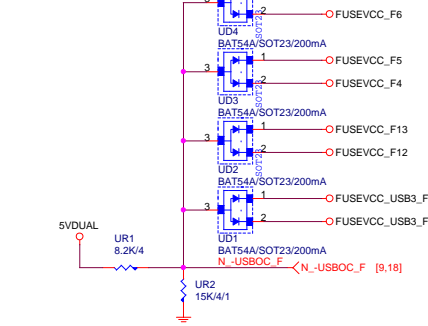
F_USB30 PWR



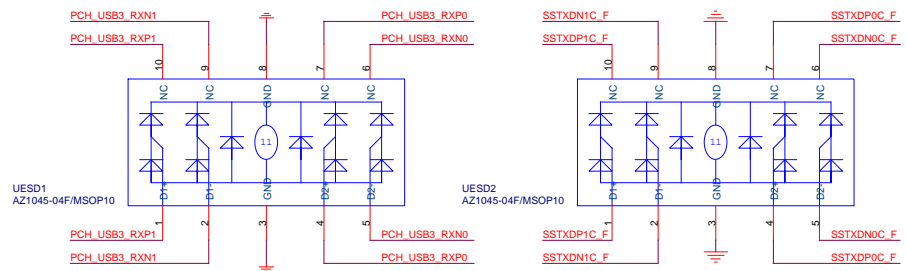
SATA LED



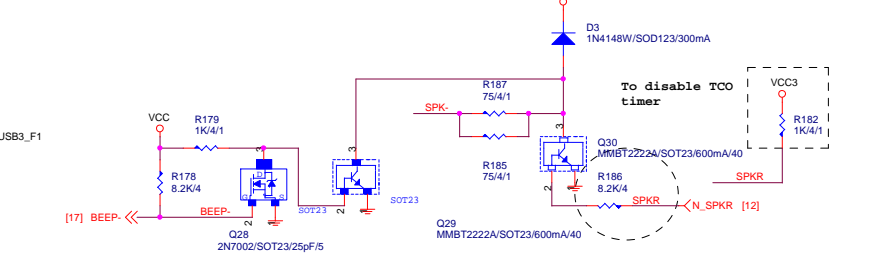
-USB0C_F



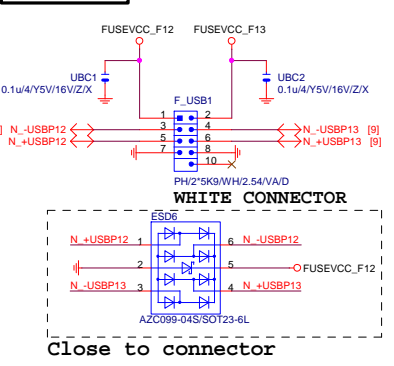
F_USB30 ESD PROTECT



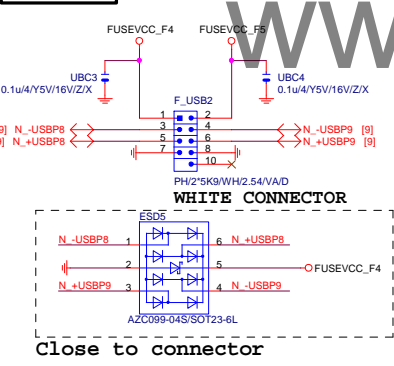
SPKR



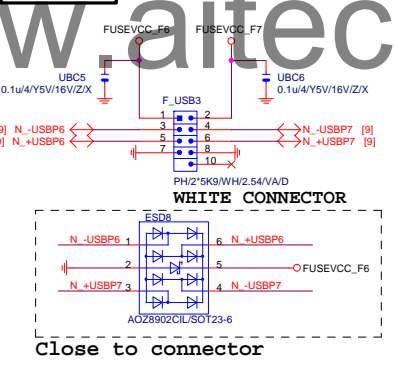
FRONT USB1



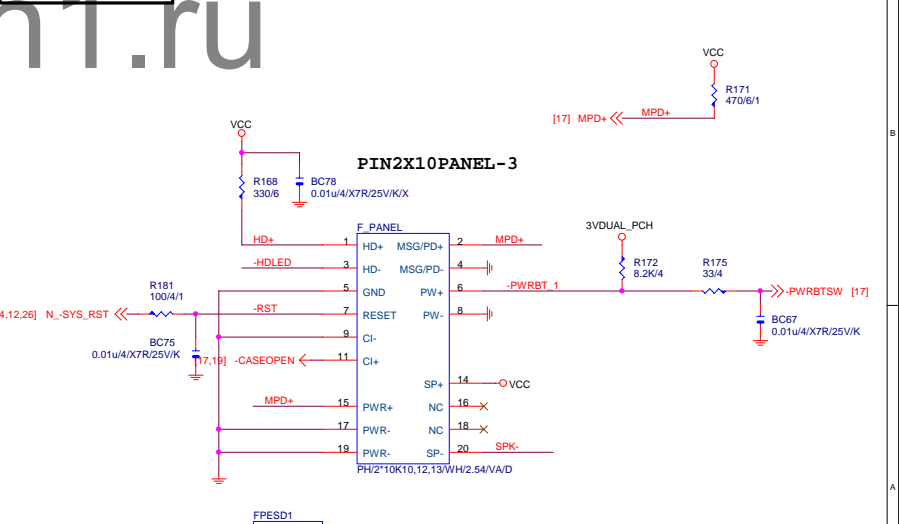
FRONT USB2



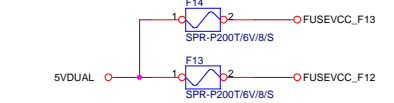
FRONT USB3



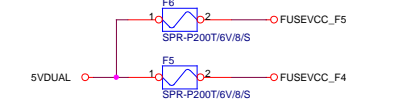
INTEL FRONT PANEL



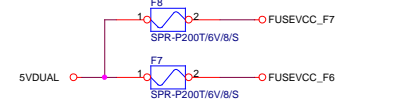
FUSE-0805



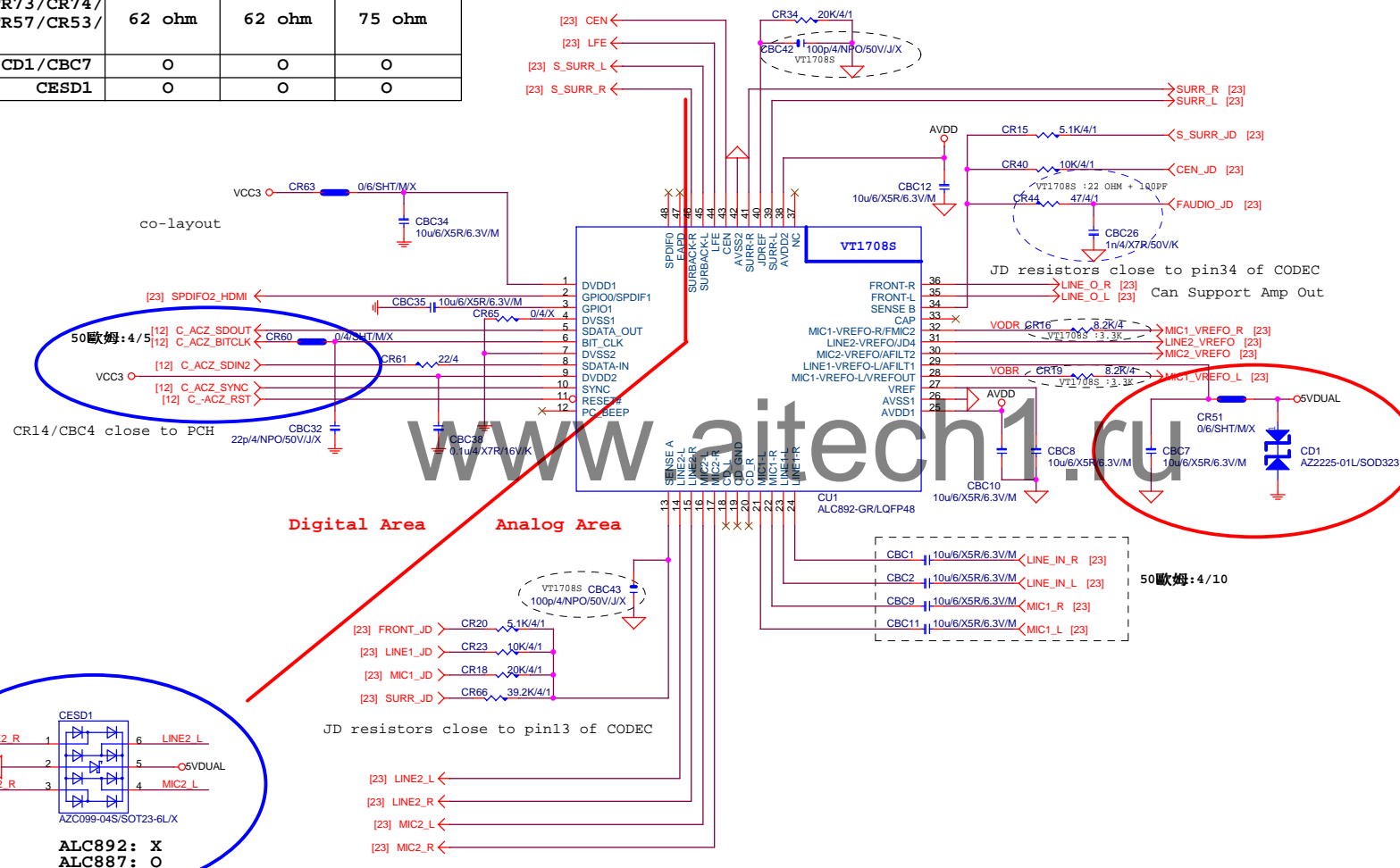
FUSE-0805

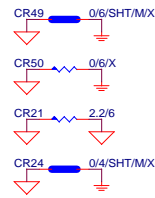


FUSE-0805

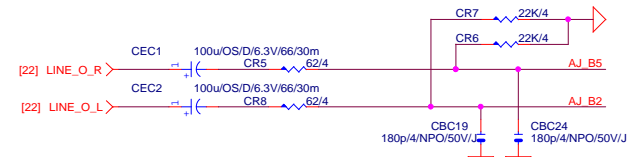


	ALC892	ALC887-VD2	VT1708S-CE
CR44/CBC26	47ohm+1nF	47ohm+1nF	22ohm+100P
CBC42/CBC43	X	X	100P/4
CR6/CR7/CR58/CR54/ CR67/CR68/CR69/CR70	22K/4	22K/4	10K/4/1
CR5/CR8/CR1/CR14/ CR17/CR22/CR73/CR74/ CR13/CR11/CR57/CR53/ CR75/CR76	62 ohm	62 ohm	75 ohm
CR51/CD1/CBC7	O	O	O
CESD1	O	O	O



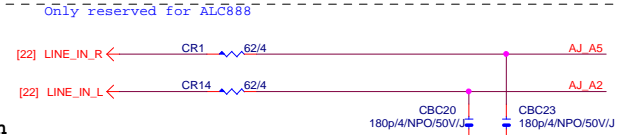


LINE-OUT



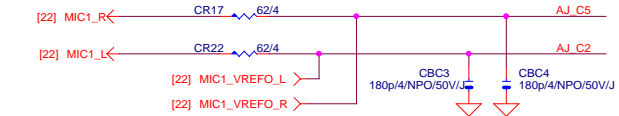
LINE-IN

Verify MIC function
in LINE-in

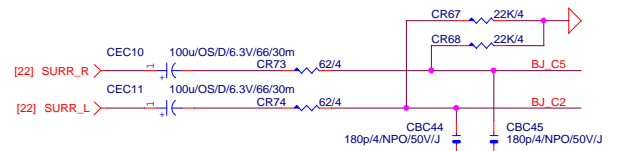


For 889A/888

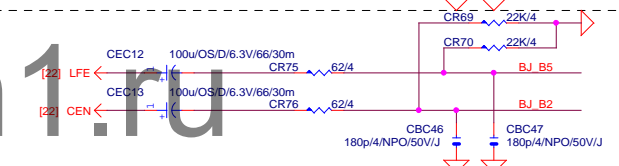
MIC-IN



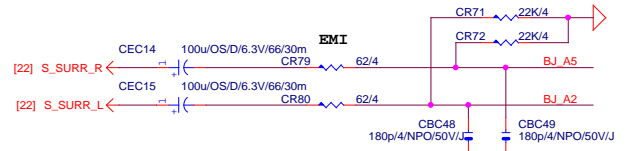
SURROUND



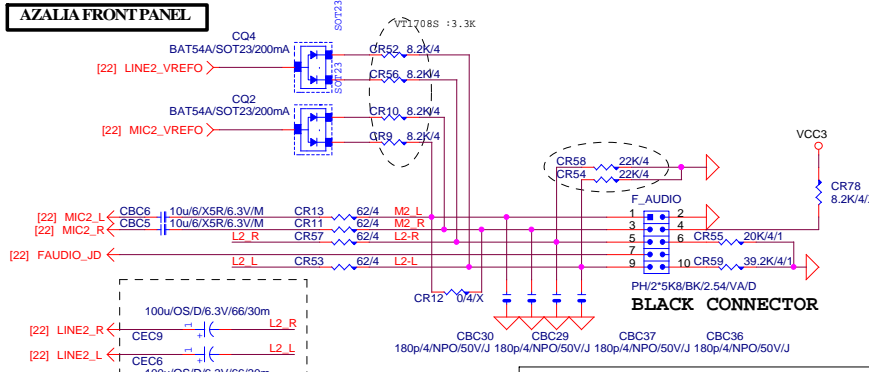
CEN/LFE



SURRBACK



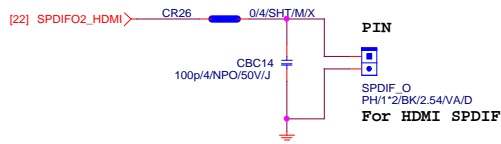
AZALIA FRONT PANEL



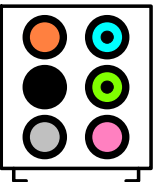
Gigabyte Technology

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AUDIO JACK		
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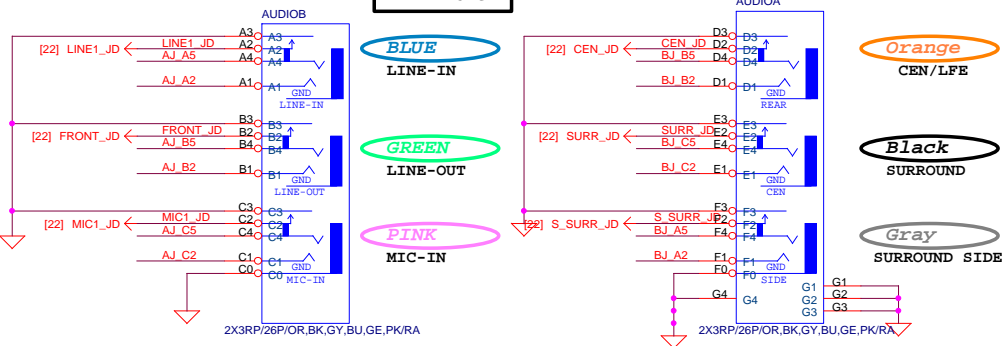
SPDIF_OUT

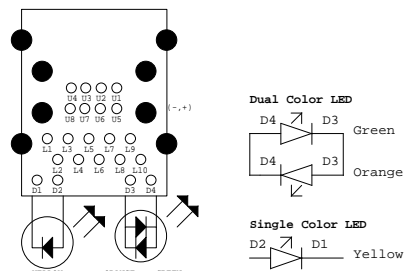
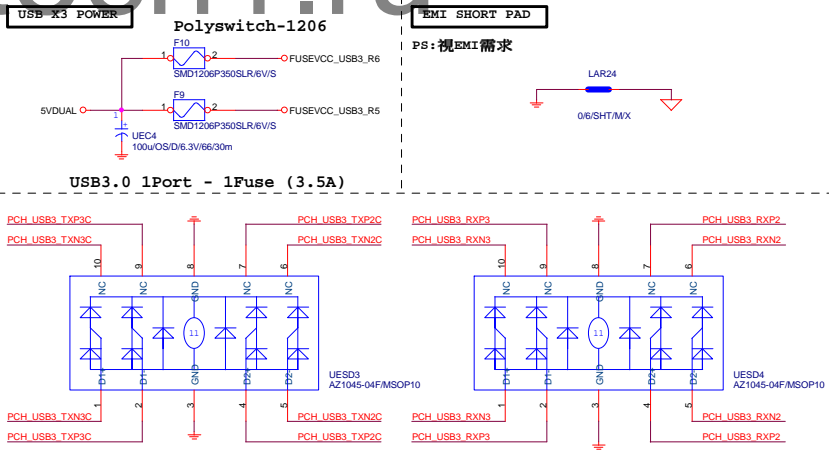
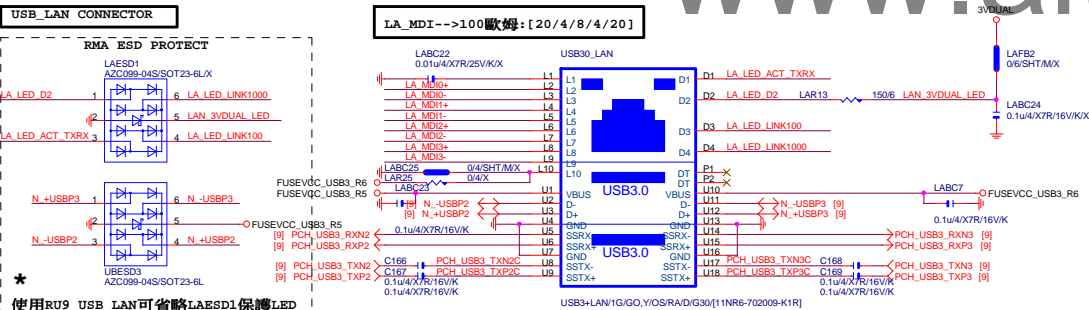
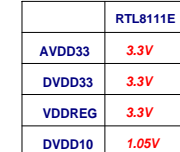
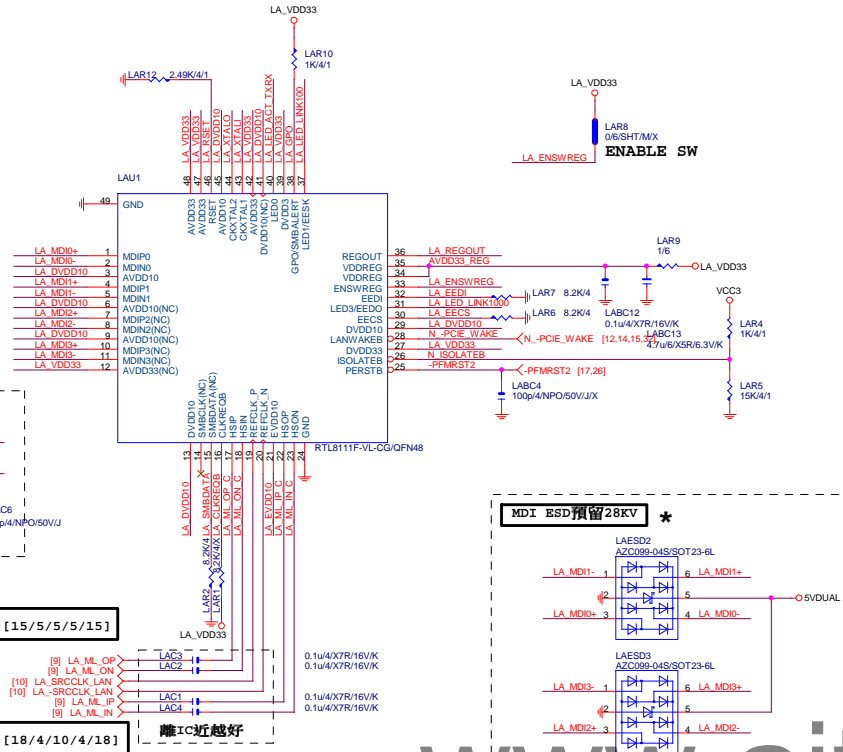


AZALIA JACK



AZALIA JACK





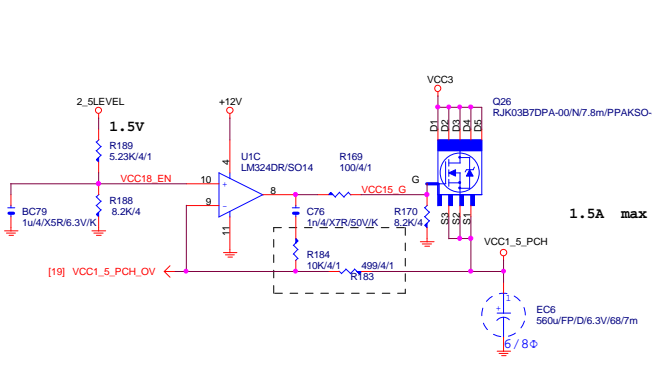
注意:USB PORT(目前:暫代6,7PORT)
USB-->90歐姆:[15/4.5/7.5/4.5/15]

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]					

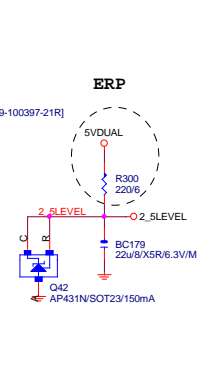
1. 9KV ESD BOM: USB_LAN (RU9):11NR6-702009-96R	
2. 28KV ESD BOM: USB_LAN (RU9):11NR6-702009-96R LAESD2, LAESD3: <u>上件</u> AZC398-04S	

				Gigabyte Technology			
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Realtek RTL8111G							
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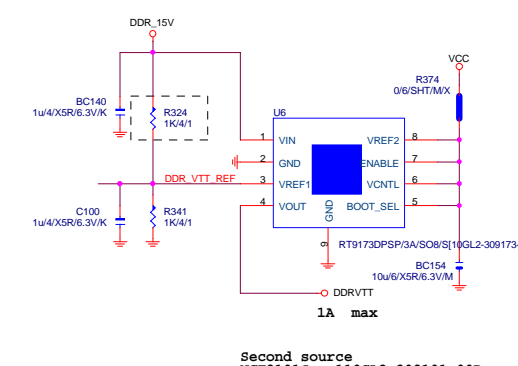
VCC1_8_PCH



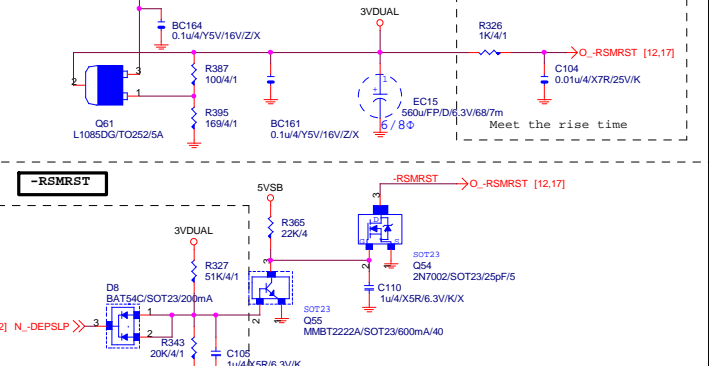
2_5LEVEL



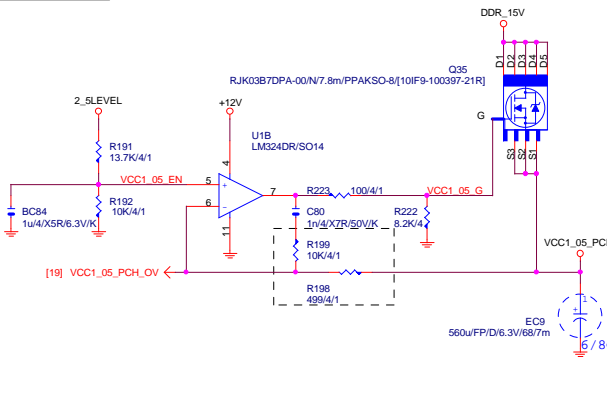
DDRVTT



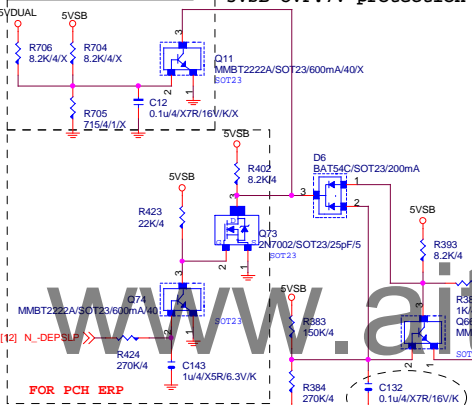
3VDUAL



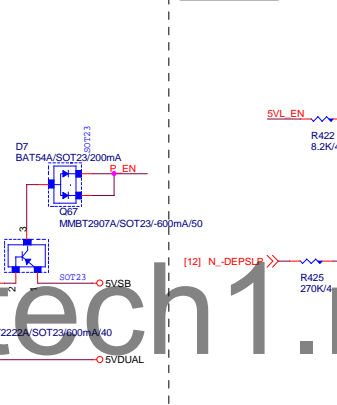
VCC1_05_PCH



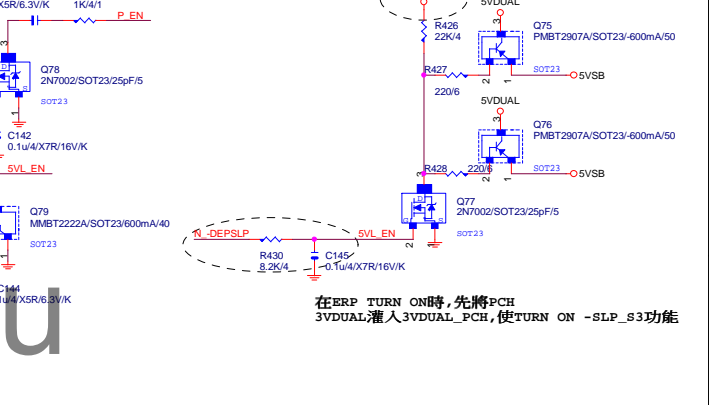
5VDUAL SHORT PROTECT



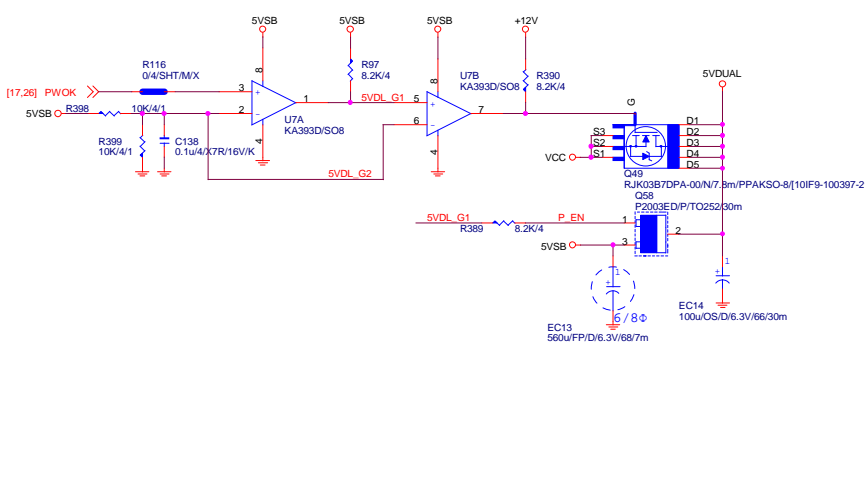
5VSB OVP:7V protection



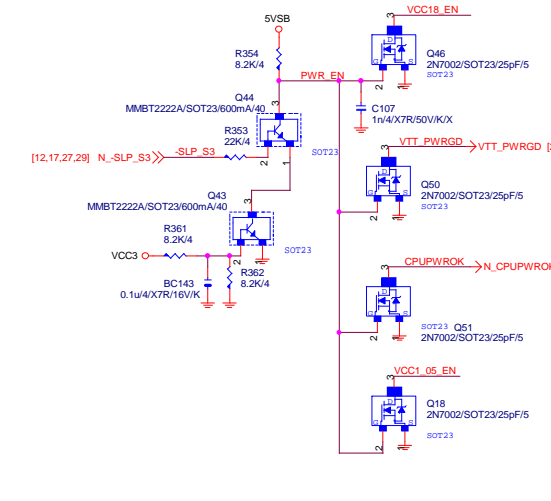
PCH ERP



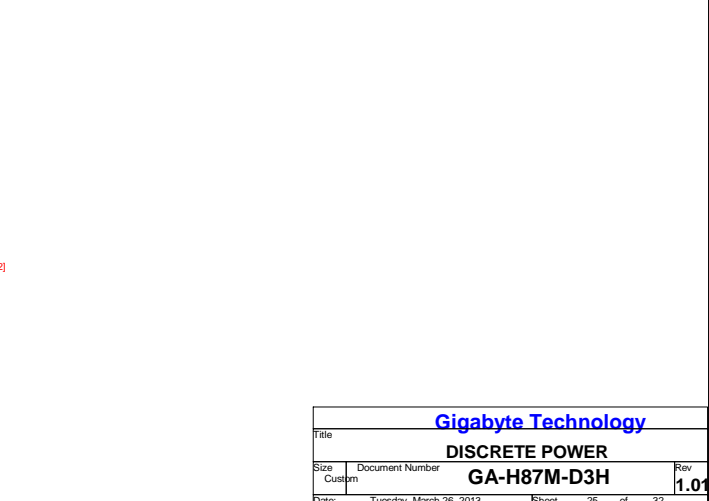
5VDUAL

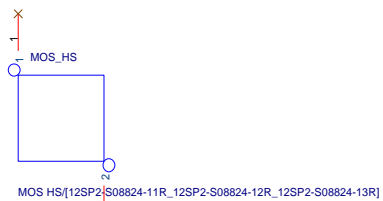
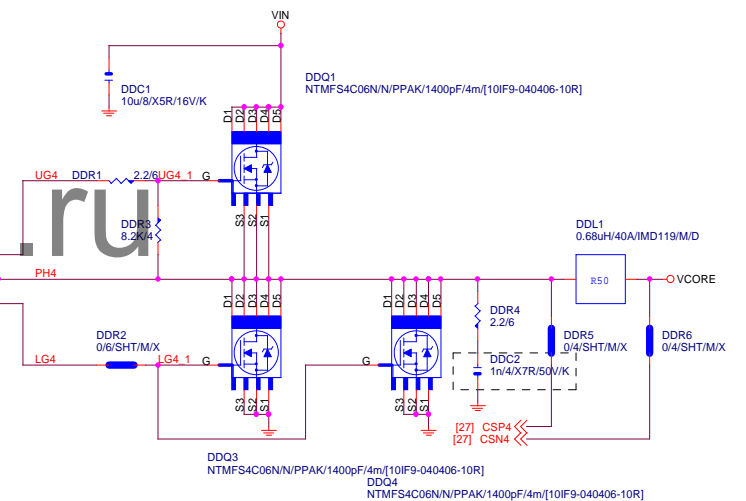
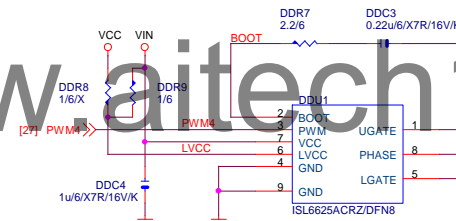
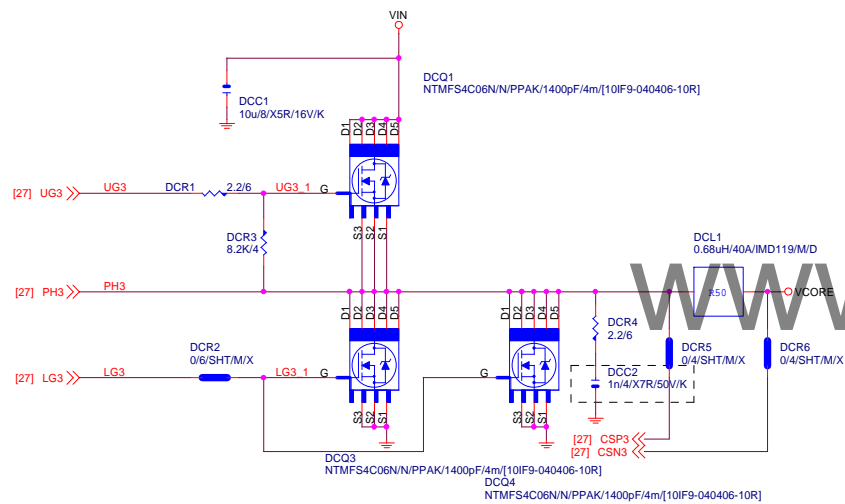
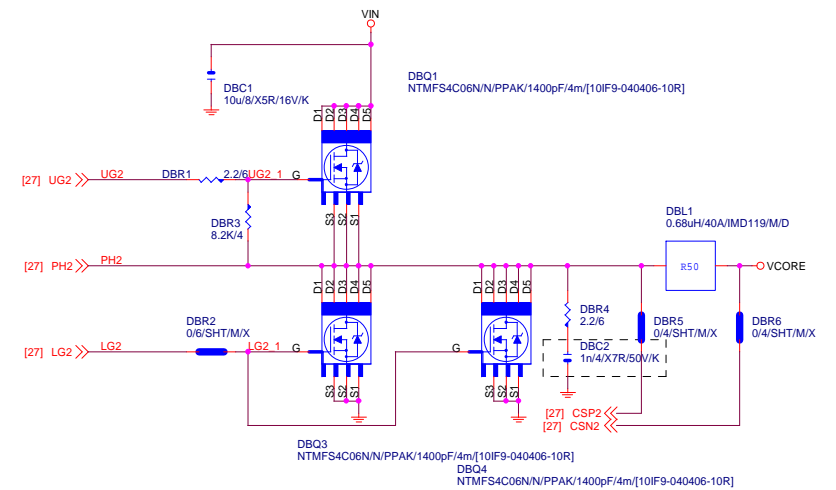
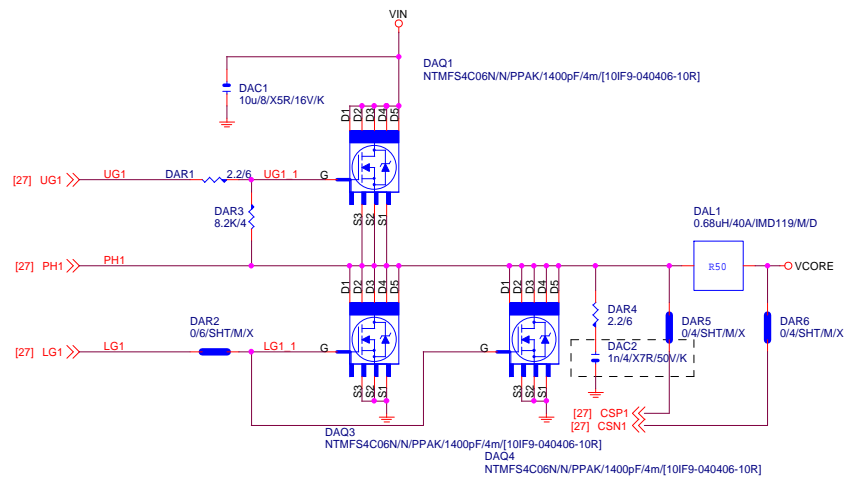


PWR SEQ

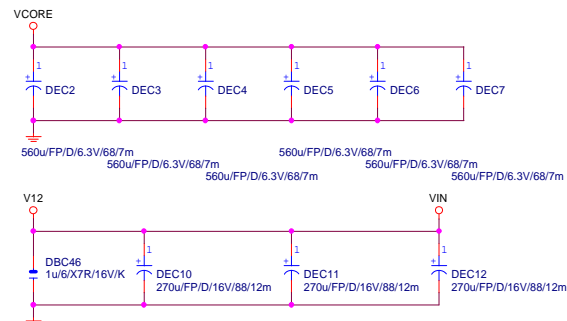


3VDUAL



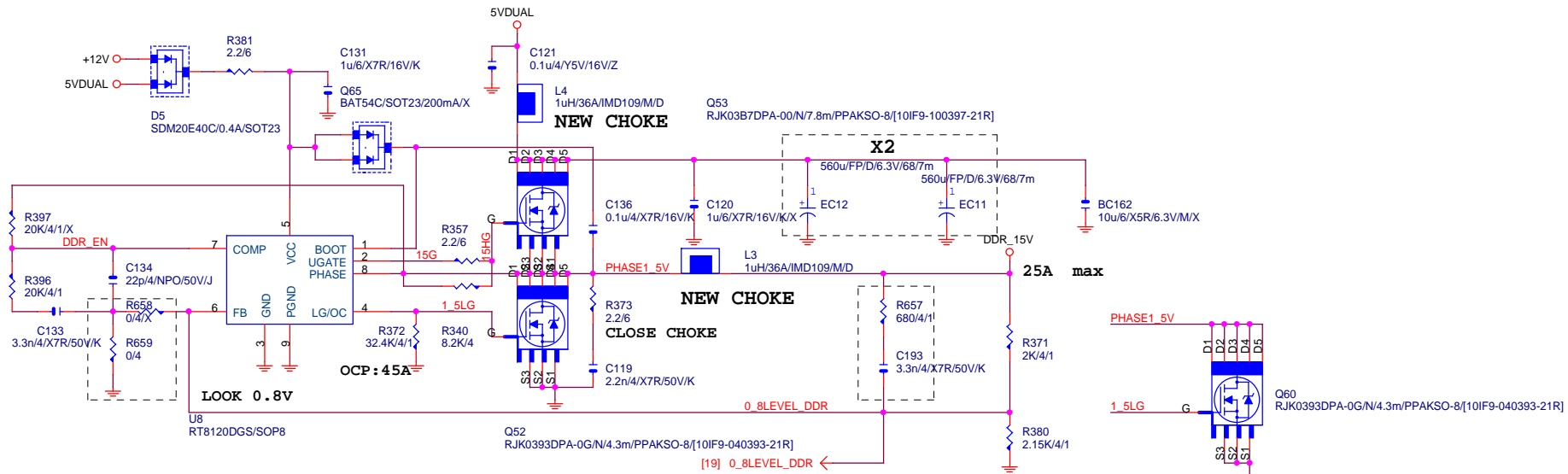


8 Series MOS Heatsink (Screw fix)

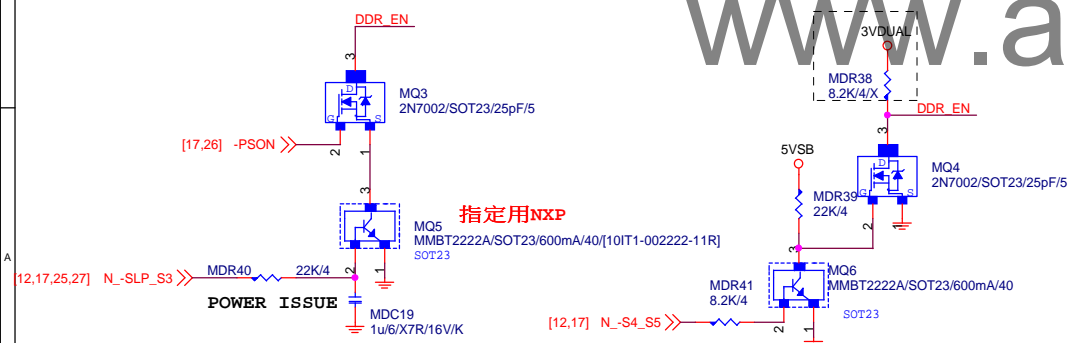


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DDR1.5V



PWR_SEQ



VIN=5V, VOUT=1.5V, IOU=25A, PHASE=1
IRMS=11.45A
560u/FP/D/6.3V/68/8m RIPPLE CURRENT=4.7A
Coefficient=1.7(85°C), 1(105°C)

VIN Ripple current=4.7X1.7=7.99A(85°C)
-->故固態電容須2X7.99=15.98>11.45A

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

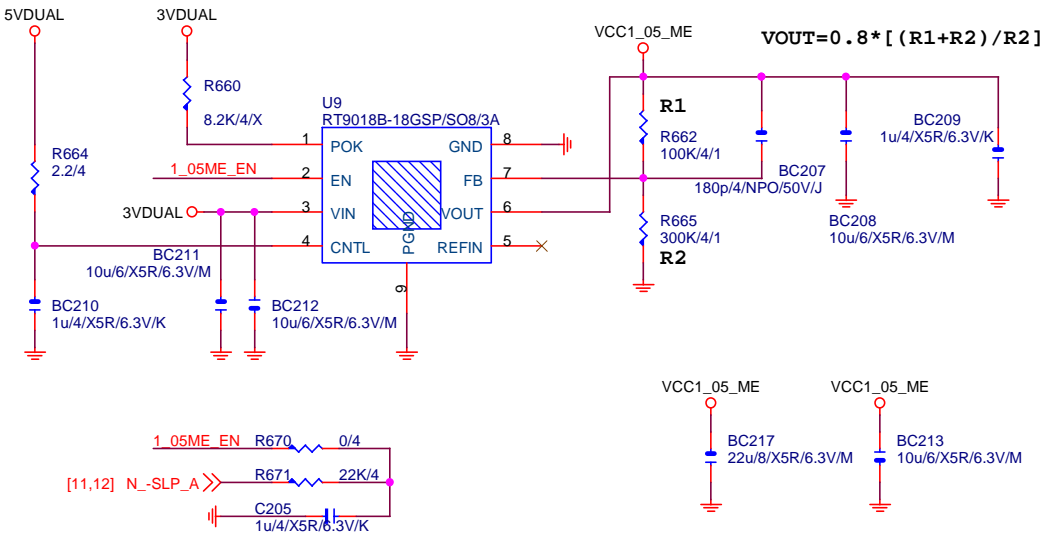
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VCC1_05_ME

【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

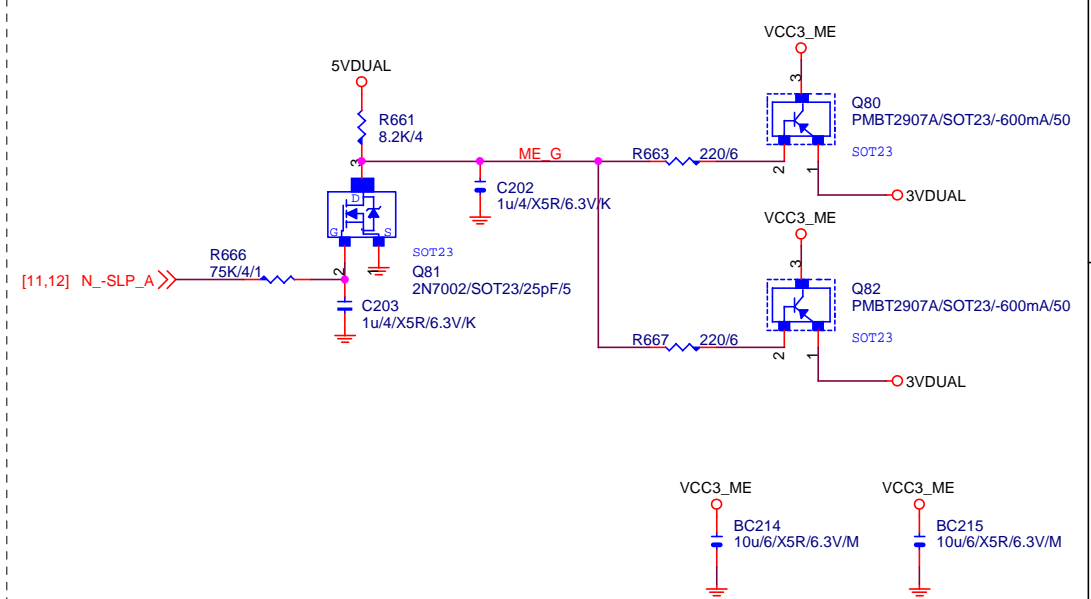


Second source

EM5103 - 10GL2-305103-01R

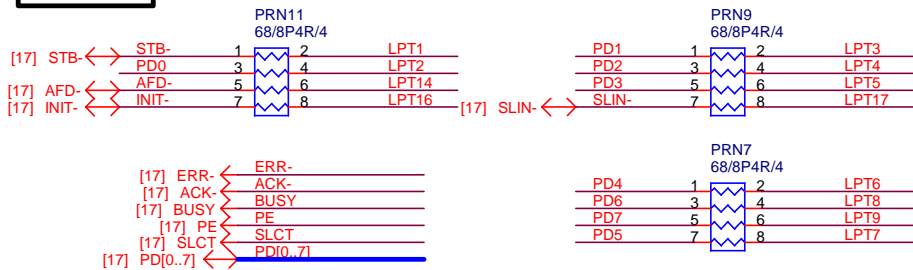
NCT3730S - 10GL2-303730-01R

VCC3_ME



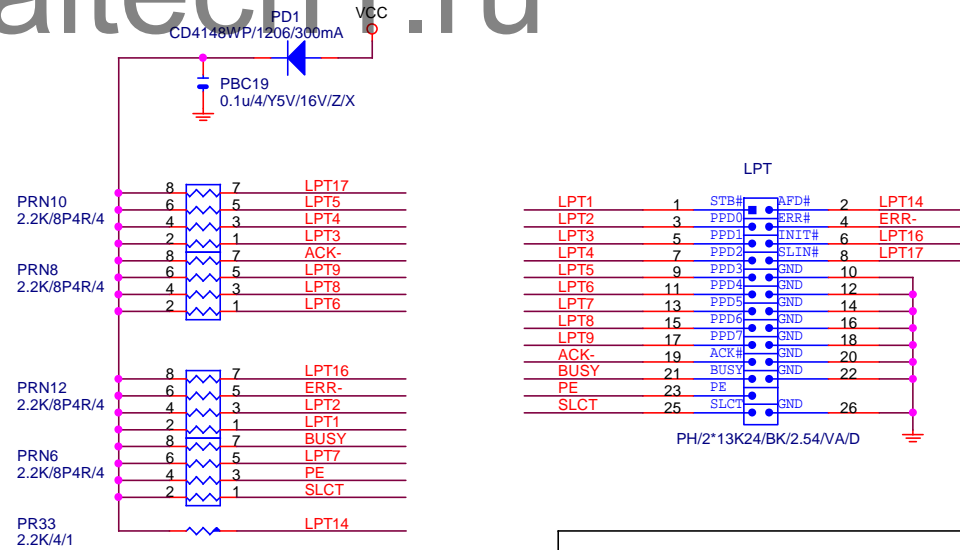
www.aitech1.ru

LPT PORT



【技術通報R&D技術通報151】

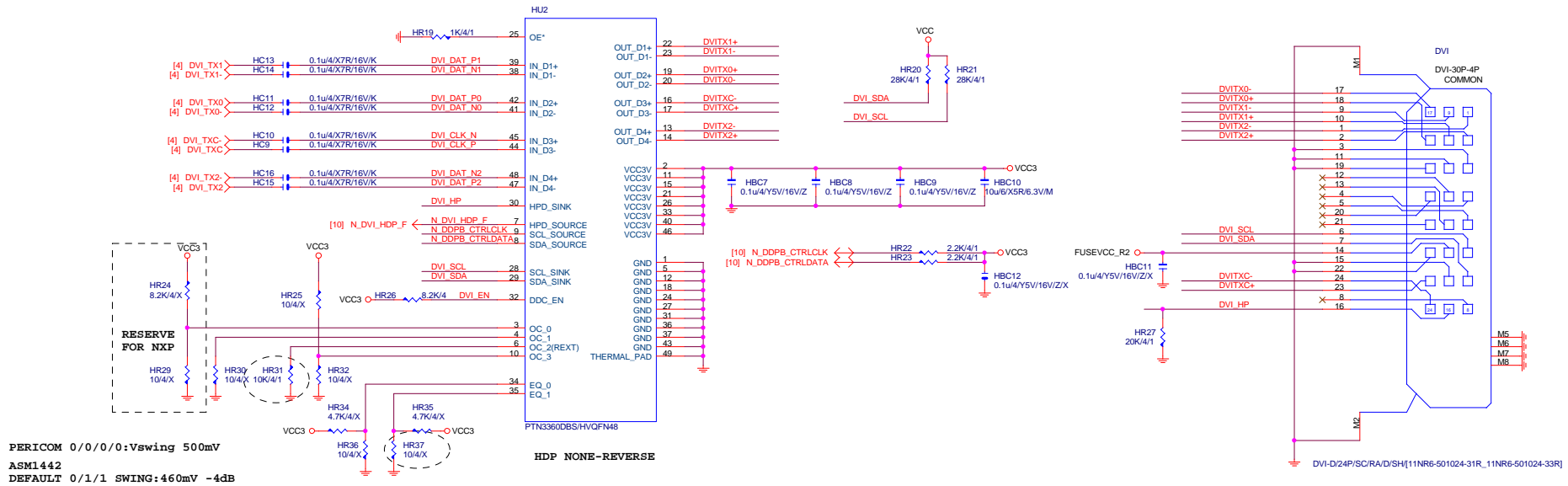
33ohm Change to 68ohm



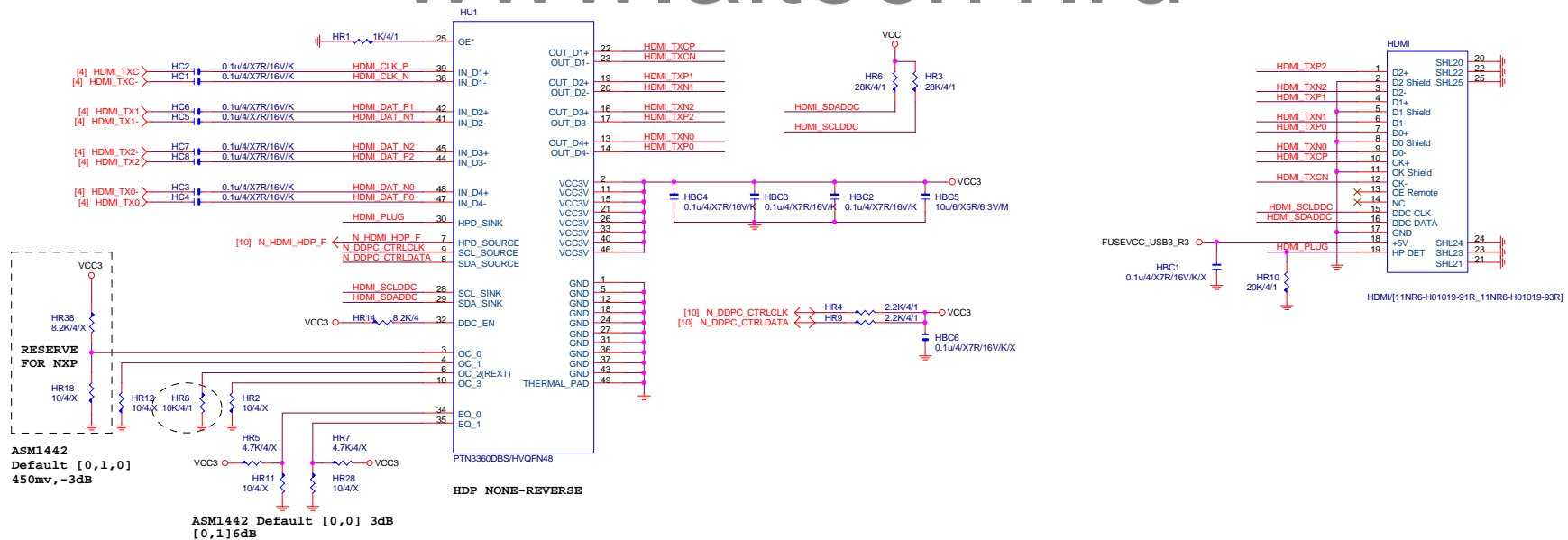
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DVI LEVEL SHIFT



HDMI LEVEL SHIFT



Gigabyte Technology

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