

## SHEET

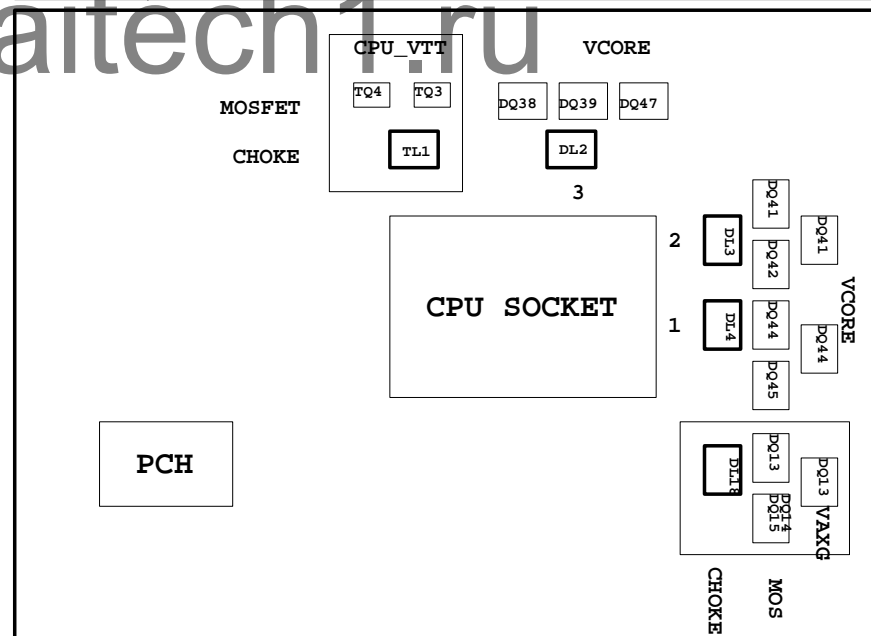
## TITLE

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06	CPU_LGA1155-C
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08	DDR III CHANNEL B
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11	PCH_HOST,SATA,PCI
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## SHEET

## TITLE

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32	mSATA
33	RT8120_DDR POWER
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35	ITE8892
36	
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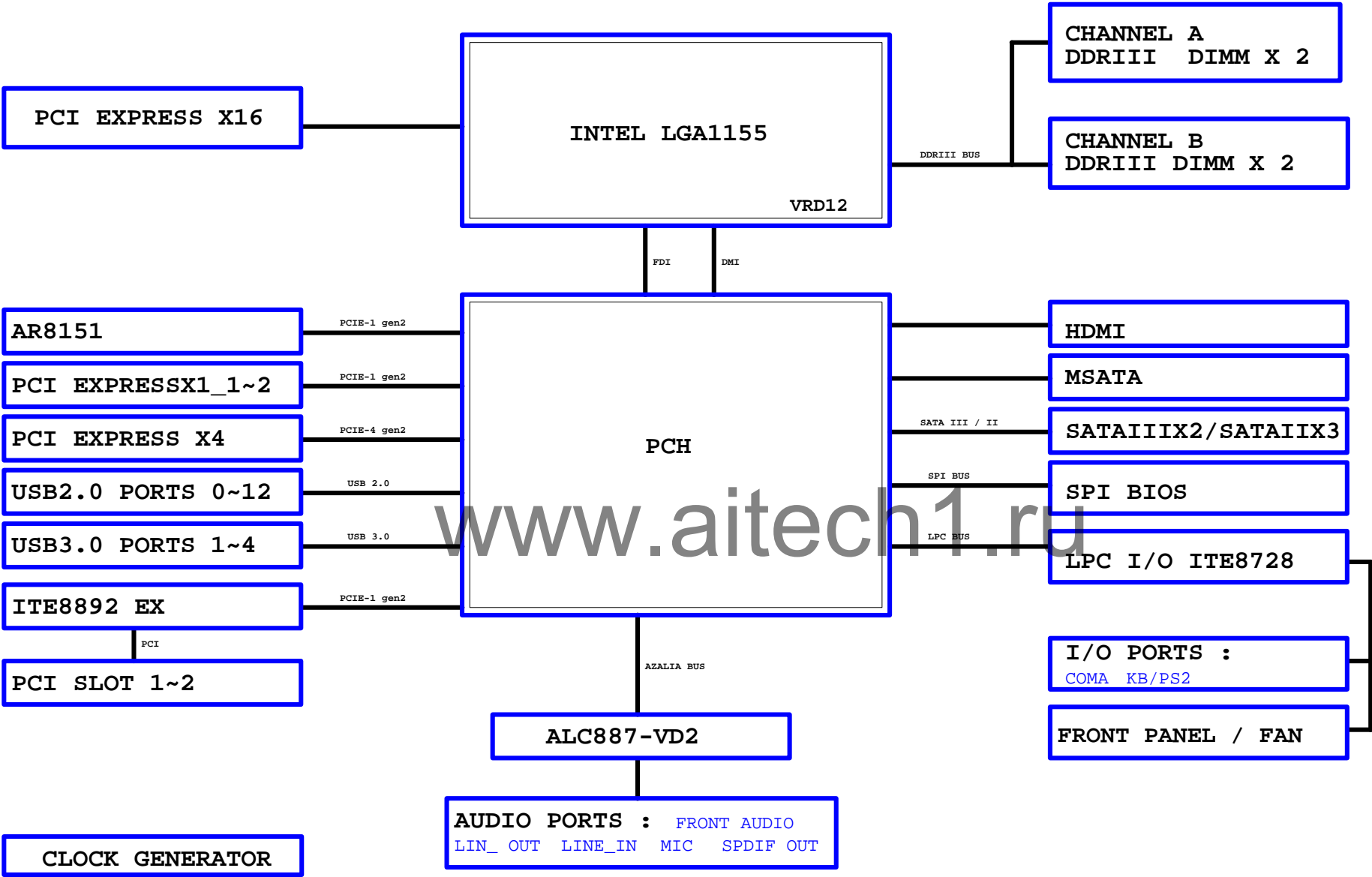
Gigabyte Technology

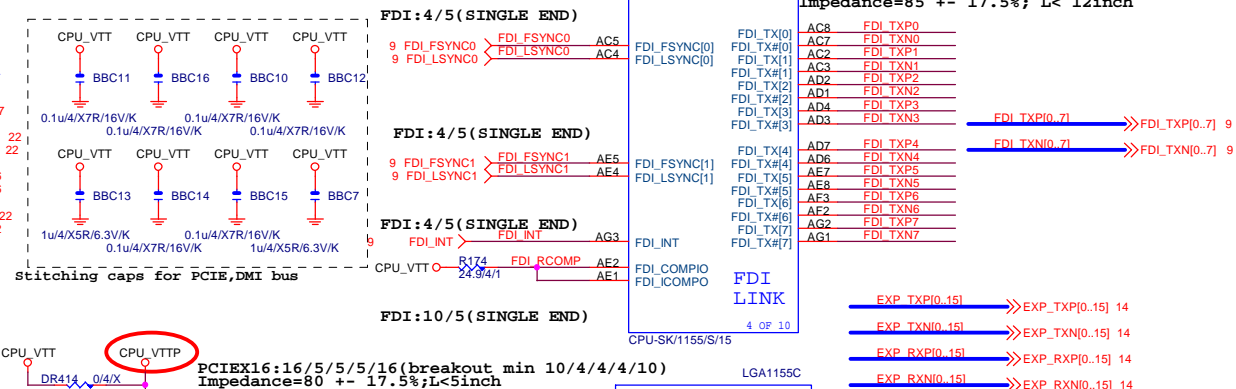
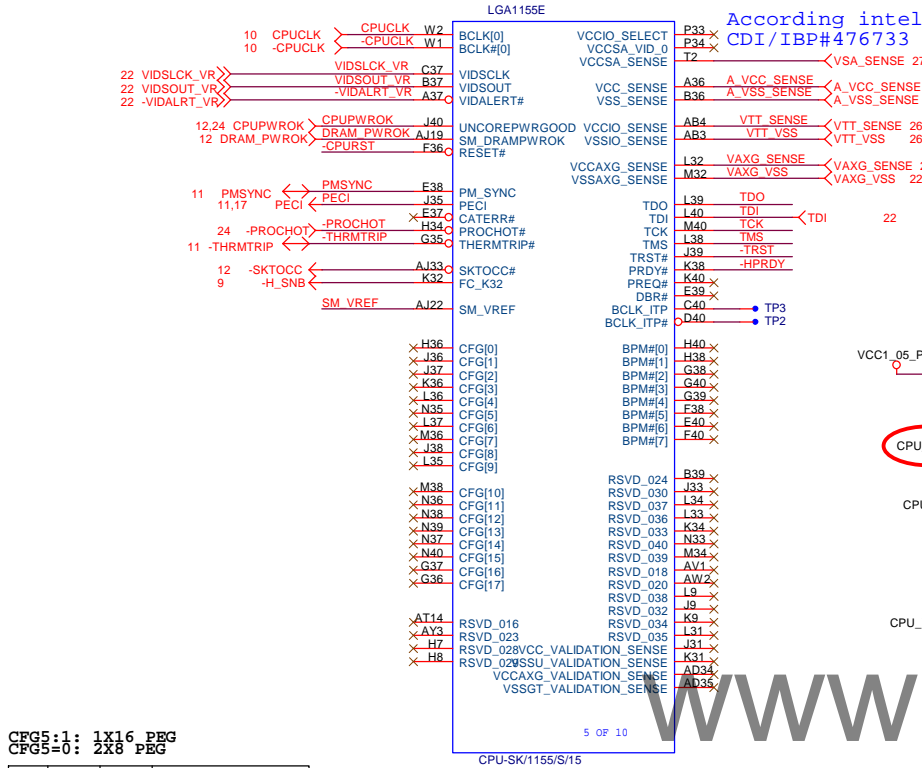
Cover Sheet		
Title	GA-Z77P-D3	
Size	Document Number	Rev
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### Component value change history

[illegible][illegible]

BLOCK DIAGRAM

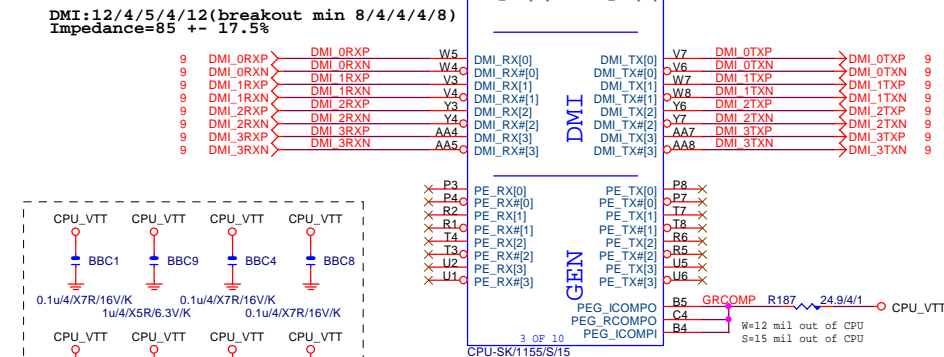
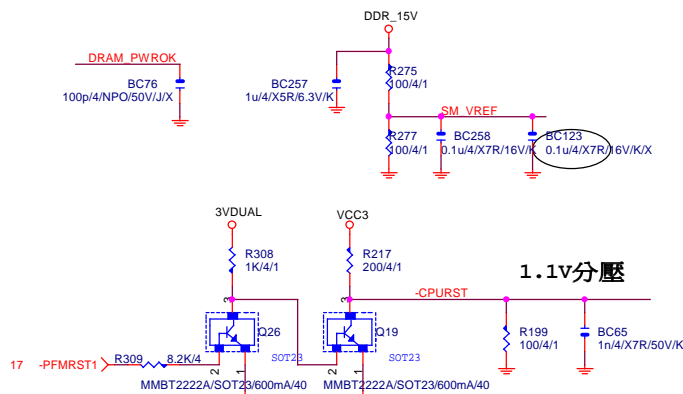




CFG	H	L	NOTE
0	RSVD	RSVD	RSVD
1	RSVD	RSVD	RSVD
2	NORM	Reverse	LANE REVERSAL[0], x16
3	RSVD	RSVD	RSVD
4	RSVD	RSVD	RSVD
7	RSVD	RSVD	RSVD
8	RSVD	RSVD	RSVD
9	RSVD	RSVD	RSVD
10	RSVD	RSVD	RSVD
11	RSVD	RSVD	RSVD
12	RSVD	RSVD	RSVD
13	RSVD	RSVD	RSVD
14	RSVD	RSVD	RSVD
15	RSVD	RSVD	RSVD
16	RSVD	RSVD	RSVD
17	RSVD	RSVD	RSVD

CFG6	CFG5	PCIE CONFIG
1	1	1x16, Default
1	0	2x8
0	1	RSVD
0	0	X8, X4, X4

CFG 0-17 all internal PULL-UP



Gigabyte Technology		
Title		
CPU LGA1155-A		
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LGA1155A

MAAA0	AV27	SA_MA[0]	SA_DQS[0]	AK3	DQSA0
MAAA1	AY24	SA_MA[1]	SA_DQS[0]	AK2	-DQSA0
MAAA2	AW24	SA_MA[2]			
MAAA3	AV23	SA_MA[3]			
MAAA4	AV23	SA_MA[4]	SA_DQ[0]	AJ3	MDA0
MAAA5	AT24	SA_MA[5]	SA_DQ[1]	AJ4	MDA1
MAAA6	AT23	SA_MA[6]	SA_DQ[2]	AL3	MDA2
MAAA7	AU22	SA_MA[7]	SA_DQ[3]	AL4	MDA3
MAAA8	AV22	SA_MA[8]	SA_DQ[4]	AJ2	MDA4
MAAA9	AT22	SA_MA[9]	SA_DQ[5]	AJ1	MDA5
MAAA10	AV28	SA_MA[10]	SA_DQ[6]	AL2	MDA6
MAAA11	AU21	SA_MA[11]	SA_DQ[7]	AL1	MDA7
MAAA12	AT21	SA_MA[12]			
MAAA13	AW32	SA_MA[13]	SA_DQS[1]	AP3	DQSA1
MAAA14	AU20	SA_MA[14]	SA_DQS[1]	AP2	-DQSA1
MAAA15	AT20	SA_MA[15]			

7 -SWEA <- -SWEA AW29  
7 -SCASA <- -SCASA AV30  
7 -SRASA <- -SRASA AU28

7 SBAA0 <- SBAA0 AY29  
7 SBAA1 <- SBAA1 AW28  
7 SBAA2 <- SBAA2 AV20

7 -CSA0 <- -CSA0 AU29  
7 -CSA1 <- -CSA1 AV32  
7 -CSA2 <- -CSA2 AW30  
7 -CSA3 <- -CSA3 AU33

7 CKEA0 <- CKEA0 AV19  
7 CKEA1 <- CKEA1 AT19  
7 CKEA2 <- CKEA2 AU18  
7 CKEA3 <- CKEA3 AV18

MODT\_A0 AV31  
MODT\_A1 AU32  
MODT\_A2 AU30  
MODT\_A3 AW33

7 DCLKA0 <- DCLKA0 AY25  
7 -DCLKA0 <- -DCLKA0 AW25  
7 DCLKA1 <- DCLKA1 AU24  
7 -DCLKA1 <- -DCLKA1 AU25  
7 DCLKA2 <- DCLKA2 AW27  
7 -DCLKA2 <- -DCLKA2 AY27  
7 DCLKA3 <- DCLKA3 AV26  
7 -DCLKA3 <- -DCLKA3 AW26

7,8 -DDR3\_RST <- TR1 0.1u4/X7R/16V/K/X  
TBC9 0.1u4/X7R/16V/K/X

AV13 SA\_DQS[8]  
AV12 SA\_DQS[8]  
AU12 SA\_ECC\_CB[0]  
AU14 SA\_ECC\_CB[1]  
AW13 SA\_ECC\_CB[2]  
AY13 SA\_ECC\_CB[3]  
AU13 SA\_ECC\_CB[4]  
AU11 SA\_ECC\_CB[5]  
AY12 SA\_ECC\_CB[6]  
AW12 SA\_ECC\_CB[7]

DDR\_0

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CPU-SK/1155/S/15

www.aitech1.ru

AN1 MDA8  
AN4 MDA9  
AR3 MDA10  
AN2 MDA11  
AN3 MDA12  
AR2 MDA13  
AR1 MDA15

AW4 DQSA2  
AW4 -DQSA2

AV2 MDA16  
AW3 MDA17  
AU5 MDA18  
AU5 MDA19  
AU2 MDA20

AU3 MDA21  
AU5 MDA22  
AY5 MDA23

AV8 DQSA3  
AW8 -DQSA3

AY7 MDA24  
AU7 MDA25  
AV9 MDA26  
AU9 MDA27  
AV7 MDA28  
AW7 MDA29  
AU9 MDA30  
AY9 MDA31

AV37 DQSA4  
AV36 -DQSA4

AU35 MDA32  
AW37 MDA33  
AU39 MDA34  
AU36 MDA35  
AW35 MDA36  
AY36 MDA37  
AU38 MDA38  
AU37 MDA39

AP38 DQSA5  
AP39 -DQSA5

AR40 MDA40  
AR37 MDA41  
AN38 MDA42  
AN37 MDA43  
AR39 MDA44  
AR38 MDA45  
AN39 MDA46  
AN40 MDA47

AK38 DQSA6  
AK39 -DQSA6

AL40 MDA48  
AL37 MDA49  
AJ38 MDA50  
AJ37 MDA51  
AL39 MDA52  
AL38 MDA53  
AJ39 MDA54  
AJ40 MDA55

AF38 DQSA7  
AF39 -DQSA7

AG40 MDA56  
AG37 MDA57  
AE38 MDA58  
AE37 MDA59  
AG39 MDA60  
AG38 MDA61  
AE39 MDA62  
AE40 MDA63

7 MODT\_A[0..3] &lt;- MODT\_A[0..3]

8 MODT\_B[0..3] &lt;- MODT\_B[0..3]

7 MDA[0..63] &lt;- MDA[0..63]

8 MDB[0..63] &lt;- MDB[0..63]

7 DQSA[0..7] &lt;- DQSA[0..7]

7 -DQSA[0..7] &lt;- -DQSA[0..7]

7 MAAA[0..15] &lt;- MAAA[0..15]

8 MAAB[0..15] &lt;- MAAB[0..15]

8 DQSB[0..7] &lt;- DQSB[0..7]

8 -DQSB[0..7] &lt;- -DQSB[0..7]

LGA1155B

MAAB0	AK24	SB_MA[0]	SB_DQS[0]	AH7	DQSB0
MAAB1	AM20	SB_MA[1]	SB_DQS[0]	AH6	-DQSB0
MAAB2	AM19	SB_MA[2]			
MAAB3	AK18	SB_MA[3]			
MAAB4	AP19	SB_MA[4]	SB_DQ[0]	AG7	MDB0
MAAB5	AP18	SB_MA[5]	SB_DQ[1]	AG8	MDB1
MAAB6	AM18	SB_MA[6]	SB_DQ[2]	AJ9	MDB2
MAAB7	AL18	SB_MA[7]	SB_DQ[3]	AJ8	MDB3
MAAB8	AL17	SB_MA[8]	SB_DQ[4]	AG5	MDB4
MAAB9	AY17	SB_MA[9]	SB_DQ[5]	AG6	MDB5
MAAB10	AN23	SB_MA[10]	SB_DQ[6]	AJ6	MDB6
MAAB11	AU17	SB_MA[11]	SB_DQ[7]	AJ7	MDB7
MAAB12	AT18	SB_MA[12]			
MAAB13	AR26	SB_MA[13]	SB_DQS[1]	AM8	DQSB1
MAAB14	AY16	SB_MA[14]	SB_DQS[1]	AL8	-DQSB1
MAAB15	AV16	SB_MA[15]			

8 -SWEB <- -SWEB AR25  
8 -SCASB <- -SCASB AK25  
8 -SRASB <- -SRASB AP24

8 SBAB0 <- SBAB0 AP23  
8 SBAB1 <- SBAB1 AM24  
8 SBAB2 <- SBAB2 AW17

8 -CSB0 <- -CSB0 AN25  
8 -CSB1 <- -CSB1 AN26  
8 -CSB2 <- -CSB2 AL25  
8 -CSB3 <- -CSB3 AT26

8 CKEB0 <- CKEB0 AU16  
8 CKEB1 <- CKEB1 AY15  
8 CKEB2 <- CKEB2 AW15  
8 CKEB3 <- CKEB3 AV15

MODT\_B0 AL26  
MODT\_B1 AP26  
MODT\_B2 AM26  
MODT\_B3 AK26

8 DCLKB0 <- DCLKB0 AL21  
8 -DCLKB0 <- -DCLKB0 AL22  
8 DCLKB1 <- DCLKB1 AK20  
8 -DCLKB1 <- -DCLKB1 AK21  
8 DCLKB2 <- DCLKB2 AM22  
8 -DCLKB2 <- -DCLKB2 AP21  
8 DCLKB3 <- DCLKB3 AN21

8 VREF\_DQB <- VREF\_DQB AH1  
7 VREF\_DQA <- VREF\_DQA AH4

AN16  
AN15  
AL16  
AL15  
AP16  
AP15

SB\_DQS[8]  
SB\_DQS[8]

SB\_ECC\_CB[0]  
SB\_ECC\_CB[1]  
SB\_ECC\_CB[2]  
SB\_ECC\_CB[3]  
SB\_ECC\_CB[4]  
SB\_ECC\_CB[5]  
SB\_ECC\_CB[6]  
SB\_ECC\_CB[7]

AP32 MDB40  
AP21 MDB41  
AP35 MDB42  
AP34 MDB43  
AR32 MDB44  
AR31 MDB45  
AR35 MDB46  
AR34 MDB47

AL33 DQSB6  
AM33 -DQSB6

AM32 MDB48  
AM31 MDB49  
AL35 MDB50  
AL32 MDB51  
AM34 MDB52  
AL31 MDB53  
AM35 MDB54  
AL34 MDB55

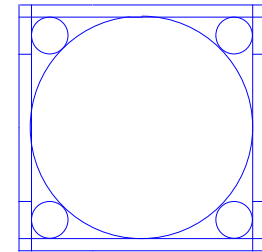
AG35 DQSB7  
AG34 -DQSB7

AH35 MDB56  
AH34 MDB57  
AE34 MDB58  
AE35 MDB59  
AJ35 MDB60  
AJ34 MDB61  
AF33 MDB62  
AF35 MDB63

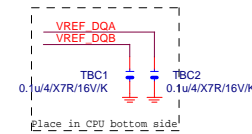
DDR\_1

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CPU-SK/1155/S/15

LGA1155  
ILM\_BP/1156/CSP

Need check the new CPU ME

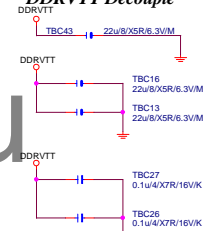


Intel CRB

Title			CPU LGA1155-B		
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Rev			1.0		







<b>Intel CRB</b>			
Title <b>DDRIII CHANNEL A</b>			
Size Custom	Document Number <b>GA-Z77P-D3</b>		Revision
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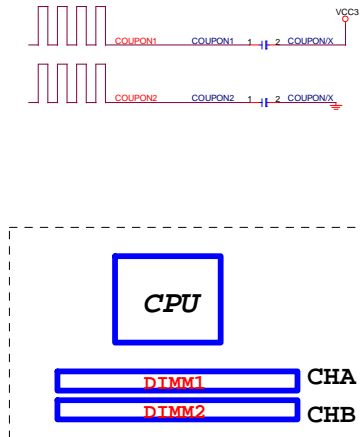


DDR3 1066,1333,1600MHZ BANDWIDTH

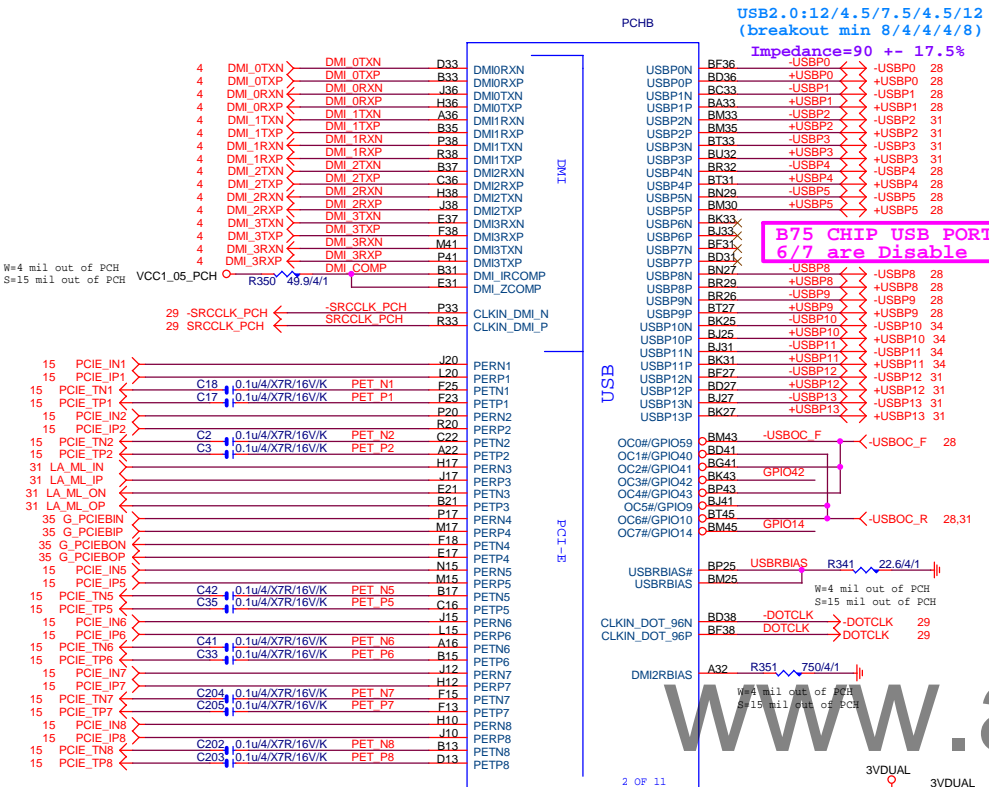
DDR3 1066MHZ  
DDR3 clock=533MHZ  
DDR3 single channel bandwidth=533x2x8Byte=8.5GB/s  
DDR3 dual channel bandwidth=533x2x2x8Byte=17GB/s

DDR3 1333MHZ  
DDR3 clock=667MHZ  
DDR3 single channel bandwidth=10.6GB/s  
DDR3 dual channel bandwidth=21GB/s

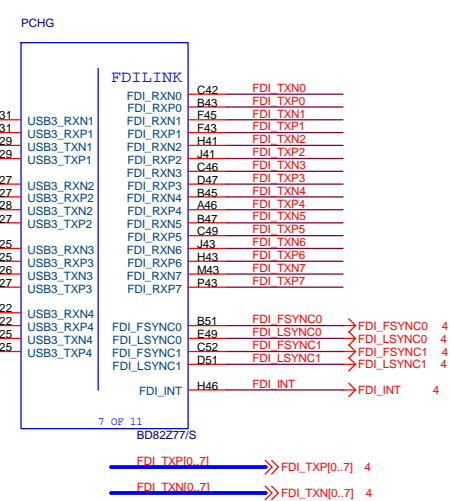
DDR3 1600MHZ  
DDR3 clock=800MHZ  
DDR3 single channel bandwidth=12.8GB/s  
DDR3 dual channel bandwidth=25.6GB/s







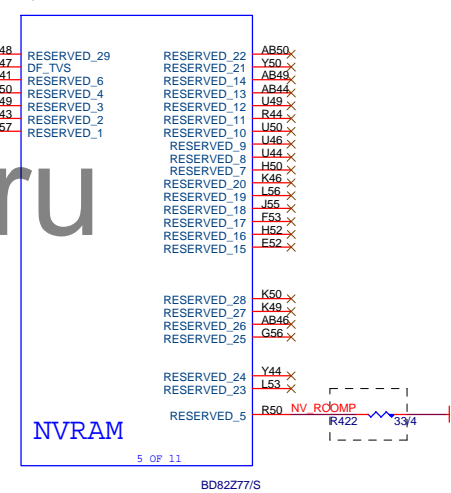
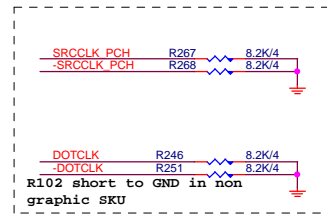
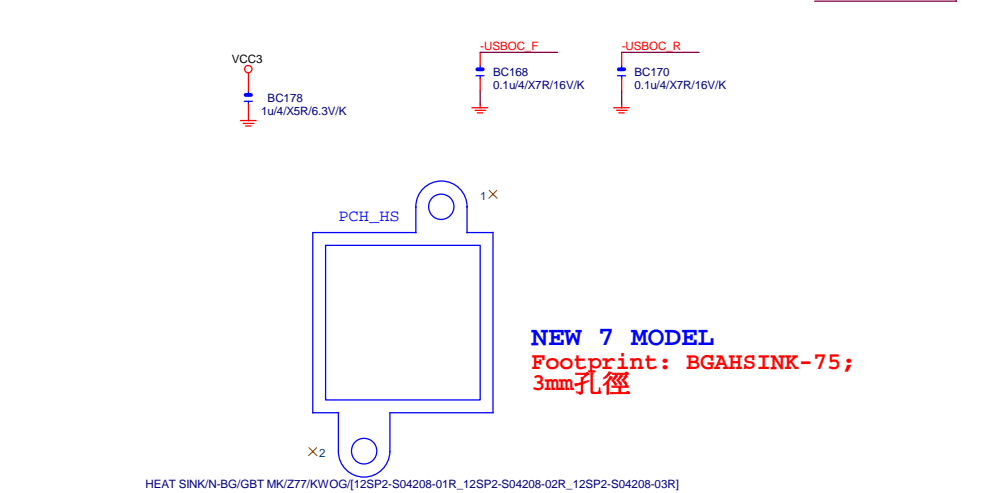
USB3.0:20/5/7/5/20 (breakout min 8/4/4/4/8) ; ONLY 3 VIAS  
Impedance=85 +/- 17.5%  
Back Panel < 10000 MILS  
Front Panel < 6000 MILS



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

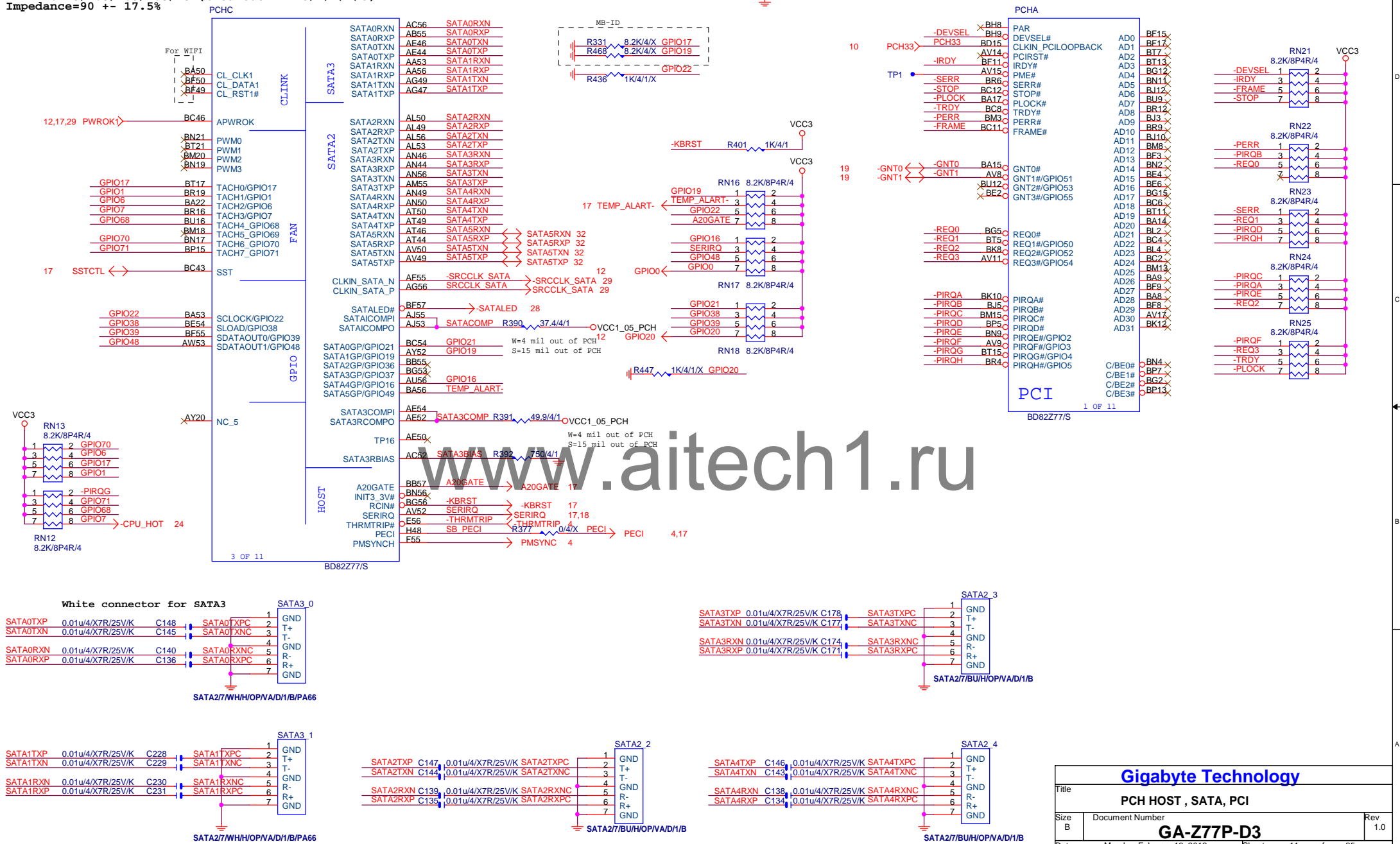
USB OC# Configure	
OC0#	USB0,1
OC1#	USB2,3
OC2#	USB4,5
OC3#	USB6,7
OC4#	USB8,9
OC5#	USB10,11
OC6#	USB12,13
OC7#	Not Use

PCIEX1:16/5/5/16 (breakout min 8/4/4/4/8)  
Impedance=80 +/- 17.5%

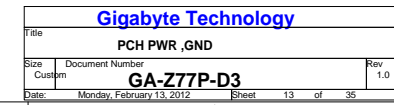




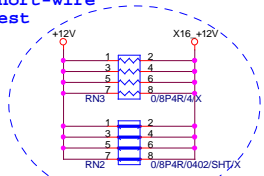
SATA2 : 15/7.5/4.5/7.5/15 (breakout min 8/4/4/4/8)  
Impedance=90 +- 17.5% PCHC







+12 protect  
short-wire  
test



PCIE16:16/5/5/16

EXP\_RXP0..15] >> EXP\_RXP[0..15] 4  
EXP\_RXN0..15] >> EXP\_RXN[0..15] 4  
EXP\_TXP0..15] >> EXP\_TXP[0..15] 4  
EXP\_TXN0..15] >> EXP\_TXN[0..15] 4

EXP_TXP0	C43	0.22u/4X5R6.3V/K/EXP_TXP0C
EXP_TXN0	C36	0.22u/4X5R6.3V/K/EXP_TXN0C
EXP_TXP1	C47	0.22u/4X5R6.3V/K/EXP_TXP1C
EXP_TXN1	C49	0.22u/4X5R6.3V/K/EXP_TXN1C
EXP_TXP2	C52	0.22u/4X5R6.3V/K/EXP_TXP2C
EXP_TXN2	C54	0.22u/4X5R6.3V/K/EXP_TXN2C
EXP_TXP3	C57	0.22u/4X5R6.3V/K/EXP_TXP3C
EXP_TXN3	C59	0.22u/4X5R6.3V/K/EXP_TXN3C
EXP_TXP4	C62	0.22u/4X5R6.3V/K/EXP_TXP4C
EXP_TXN4	C64	0.22u/4X5R6.3V/K/EXP_TXN4C
EXP_TXP5	C65	0.22u/4X5R6.3V/K/EXP_TXP5C
EXP_TXN5	C67	0.22u/4X5R6.3V/K/EXP_TXN5C
EXP_TXP6	C69	0.22u/4X5R6.3V/K/EXP_TXP6C
EXP_TXN6	C71	0.22u/4X5R6.3V/K/EXP_TXN6C
EXP_TXP7	C76	0.22u/4X5R6.3V/K/EXP_TXP7C
EXP_TXN7	C75	0.22u/4X5R6.3V/K/EXP_TXN7C
EXP_TXP8	C79	0.22u/4X5R6.3V/K/EXP_TXP8C
EXP_TXN8	C80	0.22u/4X5R6.3V/K/EXP_TXN8C
EXP_TXP9	C81	0.22u/4X5R6.3V/K/EXP_TXP9C
EXP_TXN9	C82	0.22u/4X5R6.3V/K/EXP_TXN9C
EXP_TXP10	C86	0.22u/4X5R6.3V/K/EXP_TXP10C
EXP_TXN10	C87	0.22u/4X5R6.3V/K/EXP_TXN10C
EXP_TXP11	C90	0.22u/4X5R6.3V/K/EXP_TXP11C
EXP_TXN11	C91	0.22u/4X5R6.3V/K/EXP_TXN11C
EXP_TXP12	C92	0.22u/4X5R6.3V/K/EXP_TXP12C
EXP_TXN12	C93	0.22u/4X5R6.3V/K/EXP_TXN12C
EXP_TXP13	C95	0.22u/4X5R6.3V/K/EXP_TXP13C
EXP_TXN13	C96	0.22u/4X5R6.3V/K/EXP_TXN13C
EXP_TXP14	C97	0.22u/4X5R6.3V/K/EXP_TXP14C
EXP_TXN14	C98	0.22u/4X5R6.3V/K/EXP_TXN14C
EXP_TXP15	C99	0.22u/4X5R6.3V/K/EXP_TXP15C
EXP_TXN15	C100	0.22u/4X5R6.3V/K/EXP_TXN15C

PCI-E REV:1.1--> 2.5GHZ

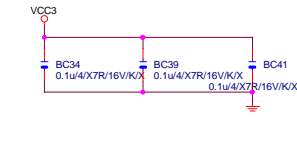
PCE-E X1(單向) BANDWITH=2.5GHZ\*(8b/10b)=2Gb/s=250MB/s

PCE-E X1(雙向) BANDWITH=2.5GHZ\*(8b/10b)X2=4Gb/s=500MB/s

PCE-E X16(單向) BANDWITH=2.5GHZ\*(8b/10b)X16=32Gb/s=4GB/s

PCE-E X16(雙向) BANDWITH=2.5GHZ\*(8b/10b)X16X2=64Gb/s=8GB/s

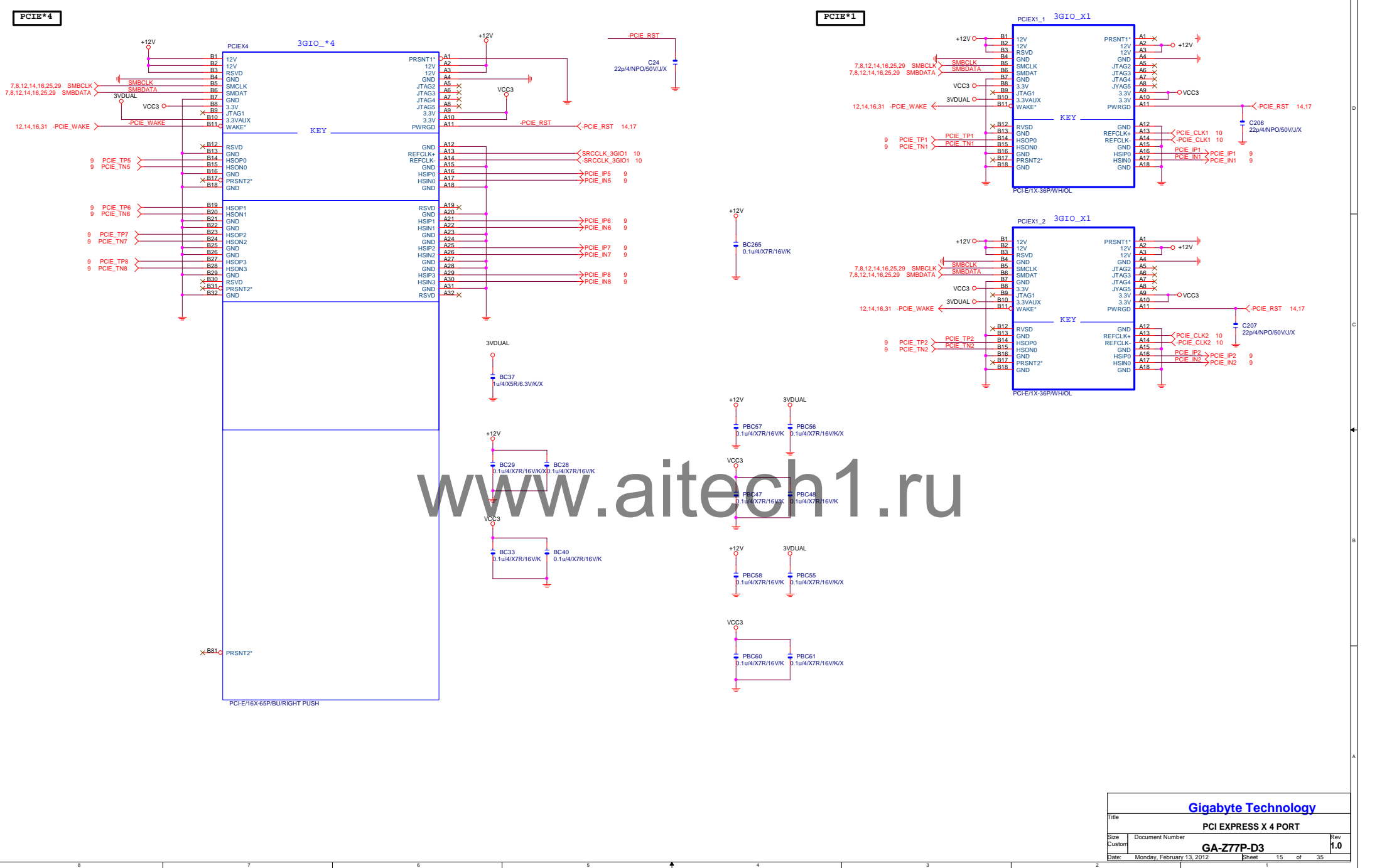
PCI-E REV:2.0--> 5GHZ

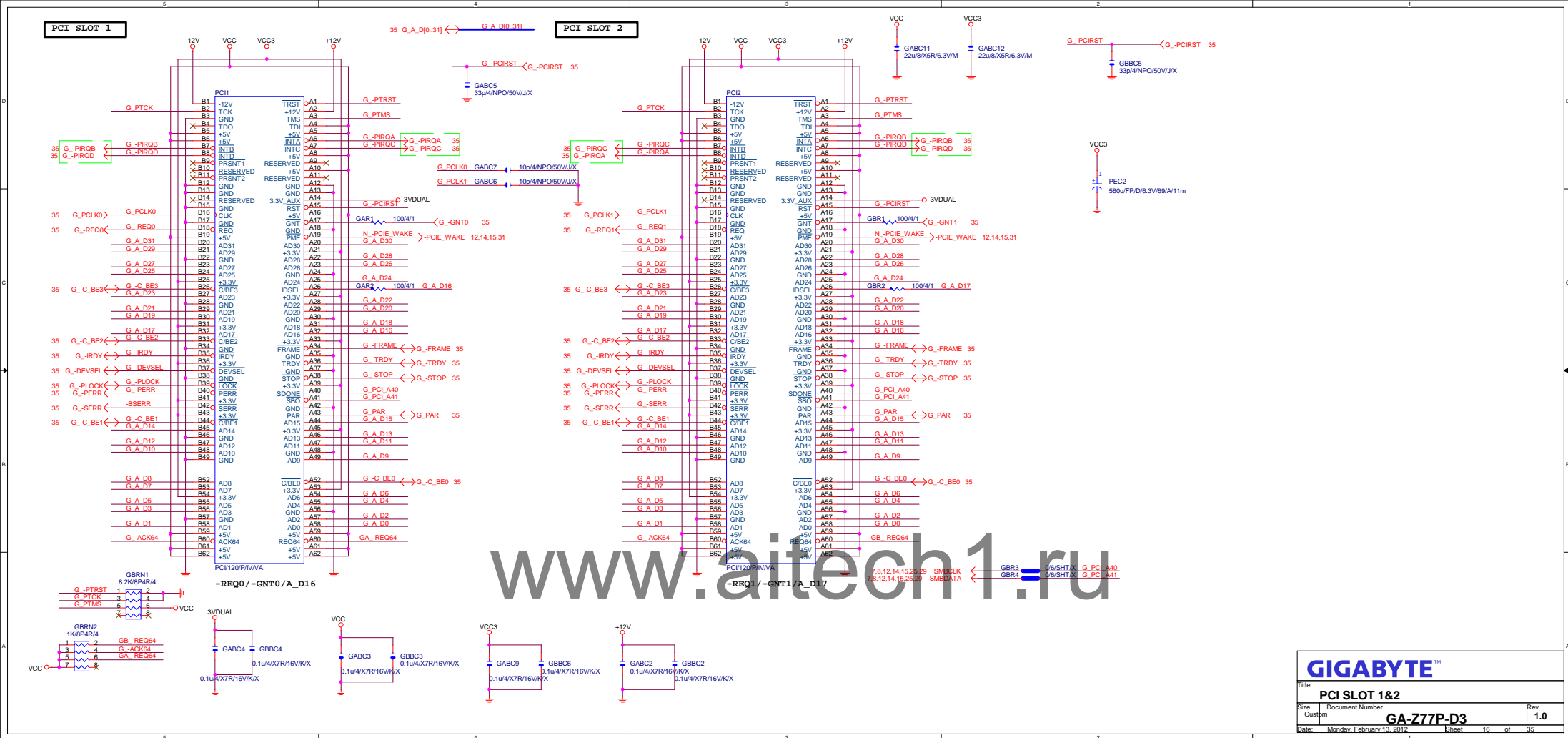


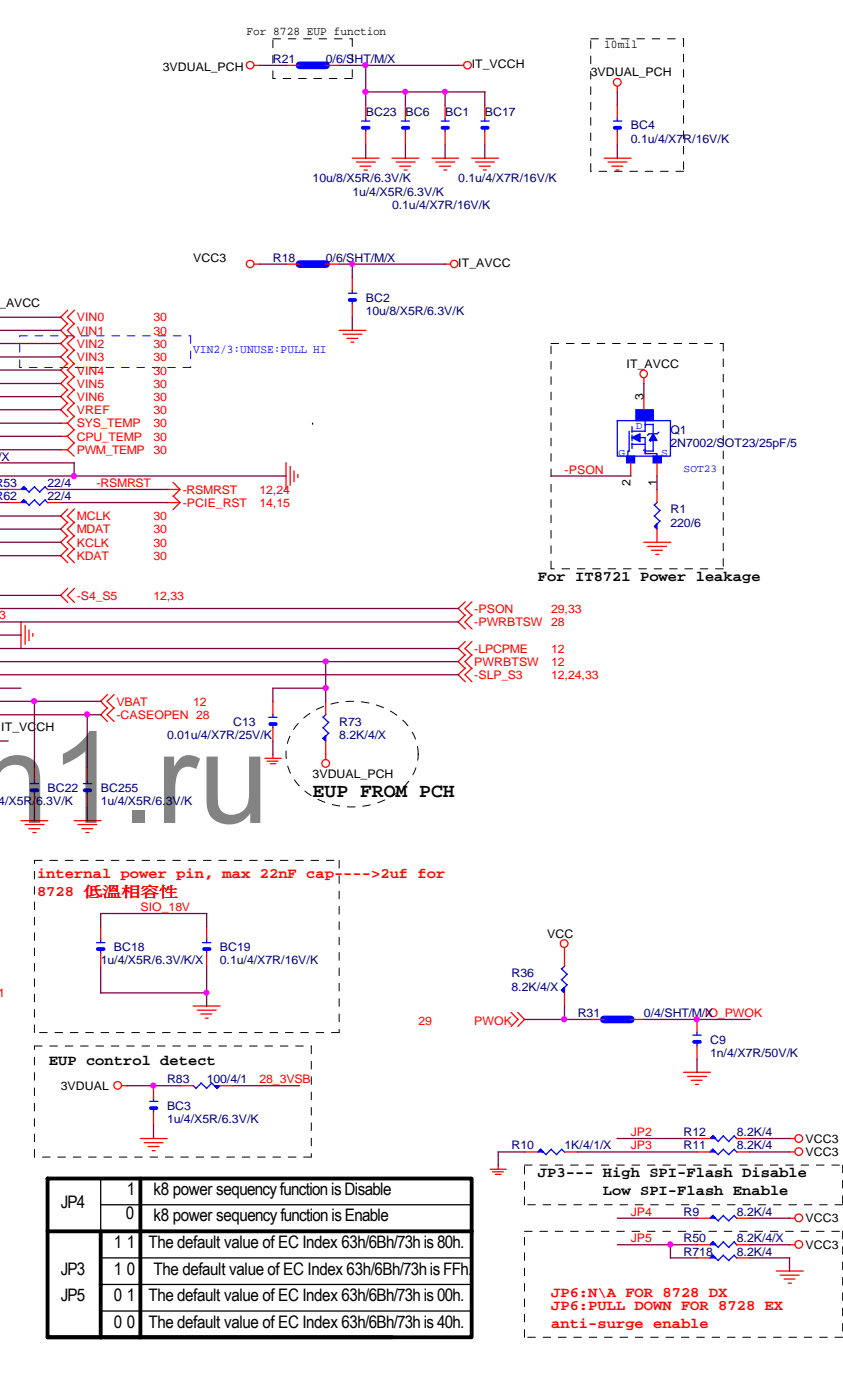
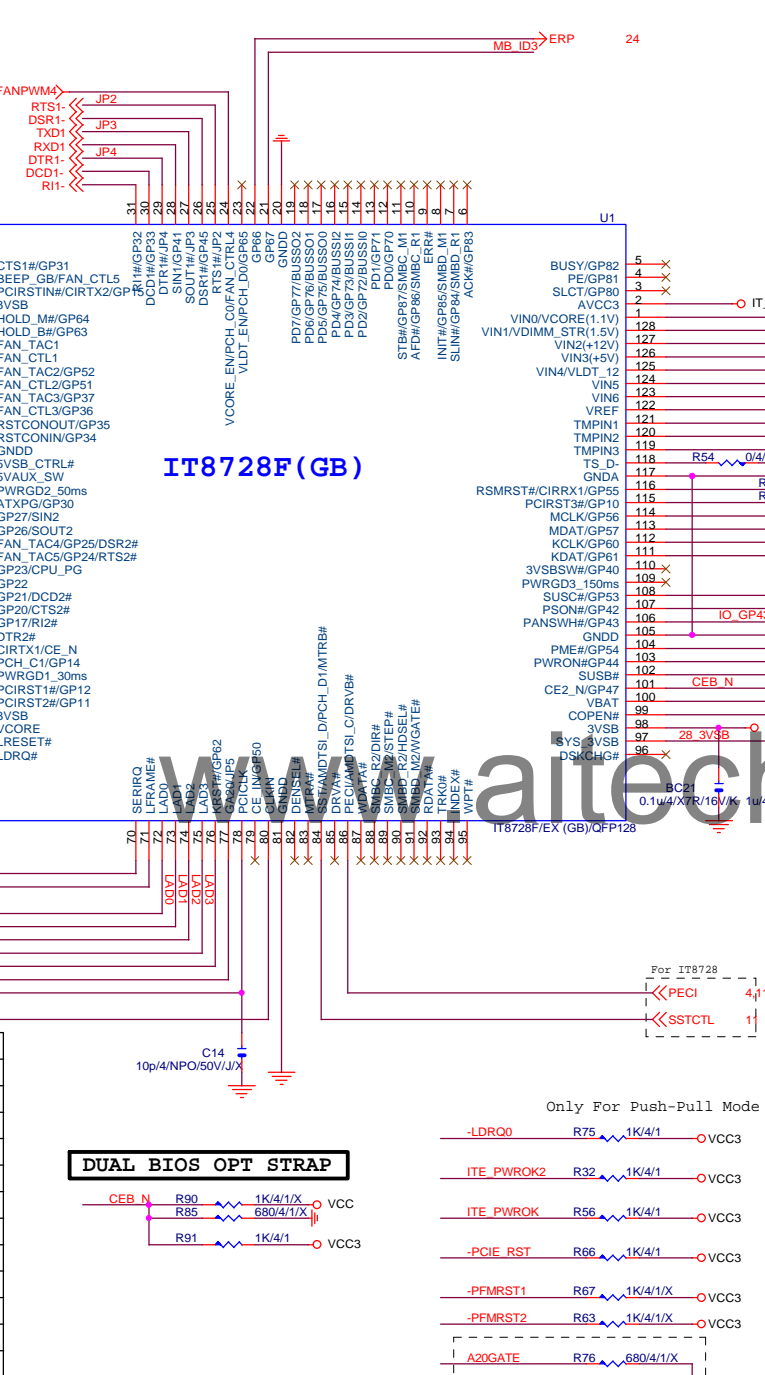
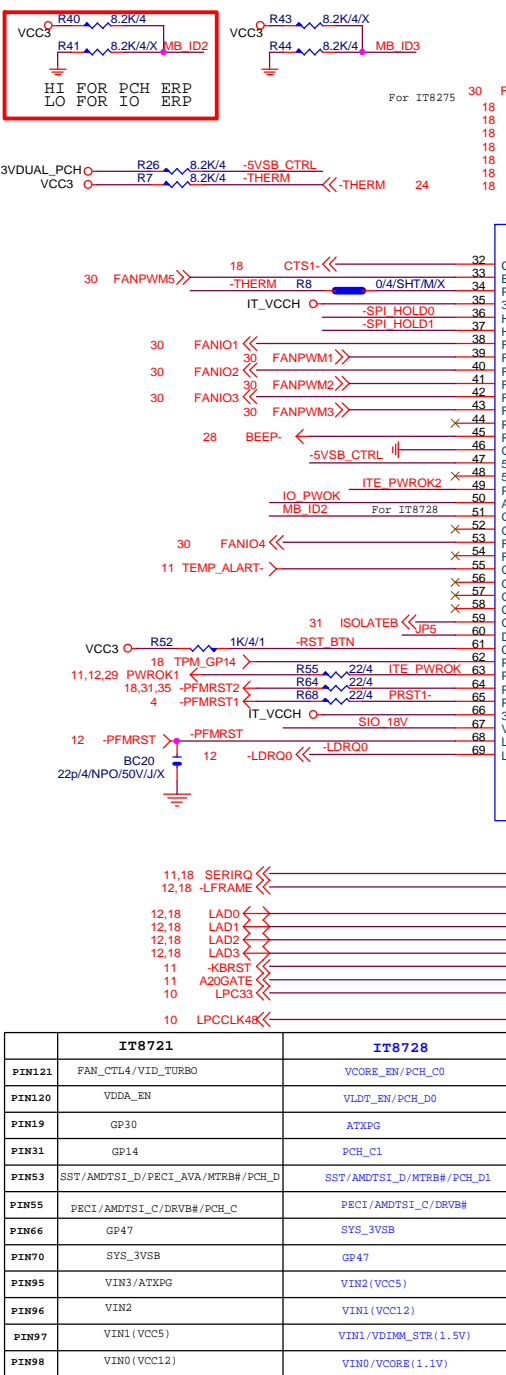
Gigabyte Technology

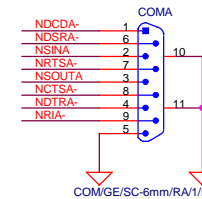
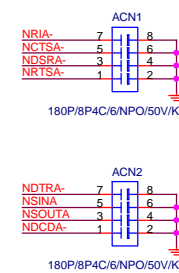
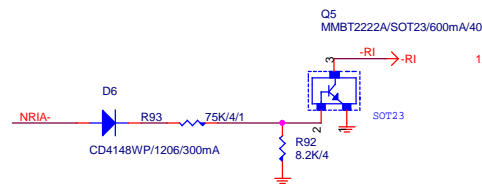
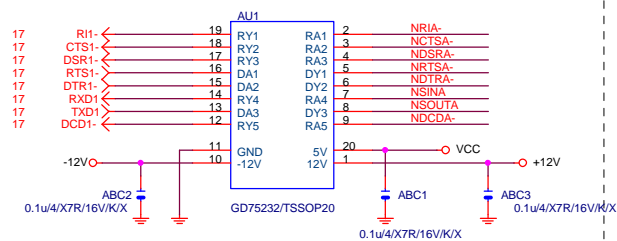
Title			PCI EXPRESS * 16
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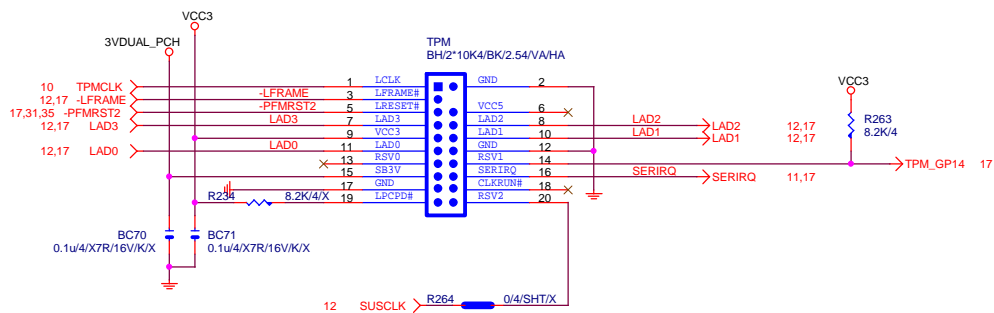


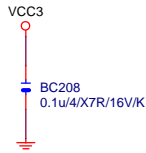






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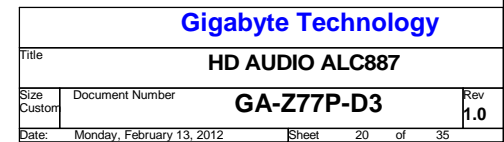
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Gigabyte Technology			
Title		BIOS	
Size	Document Number	GA-Z77P-D3	Rev
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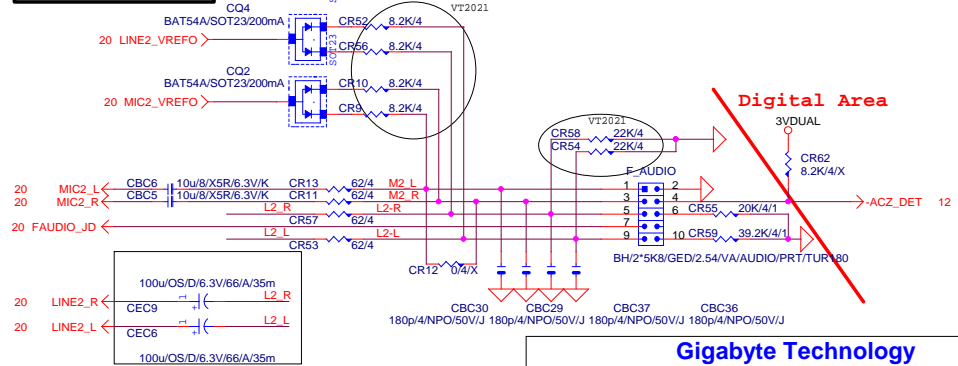
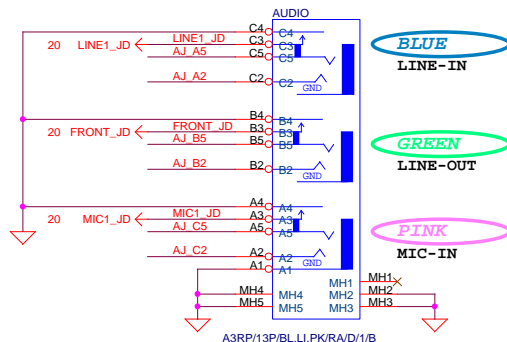
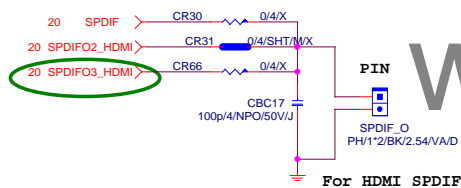
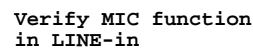
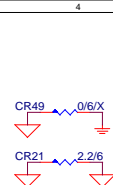
CR26: 20K/4/0.1% @ALC889A  
CR26: 20K/4/1% @others



The diagram shows a circuit for CR26. It includes a 20K/4/1% resistor connected to a 5.1K resistor and a 100PF capacitor. The capacitor is labeled 100p/4/NH0/50V/J/X. The circuit is connected to a 50V supply.





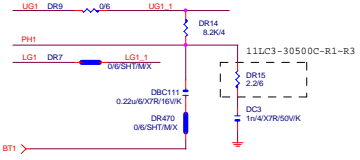


<b>Gigabyte Technology</b>			
Title			
<b>AUDIO JACK</b>			
Size Custom	Document Number	<b>GA-Z77P-D3</b>	Rev <b>1.0</b>
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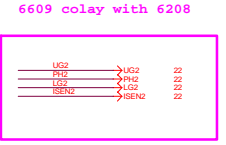
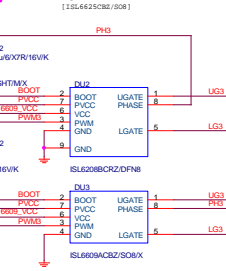




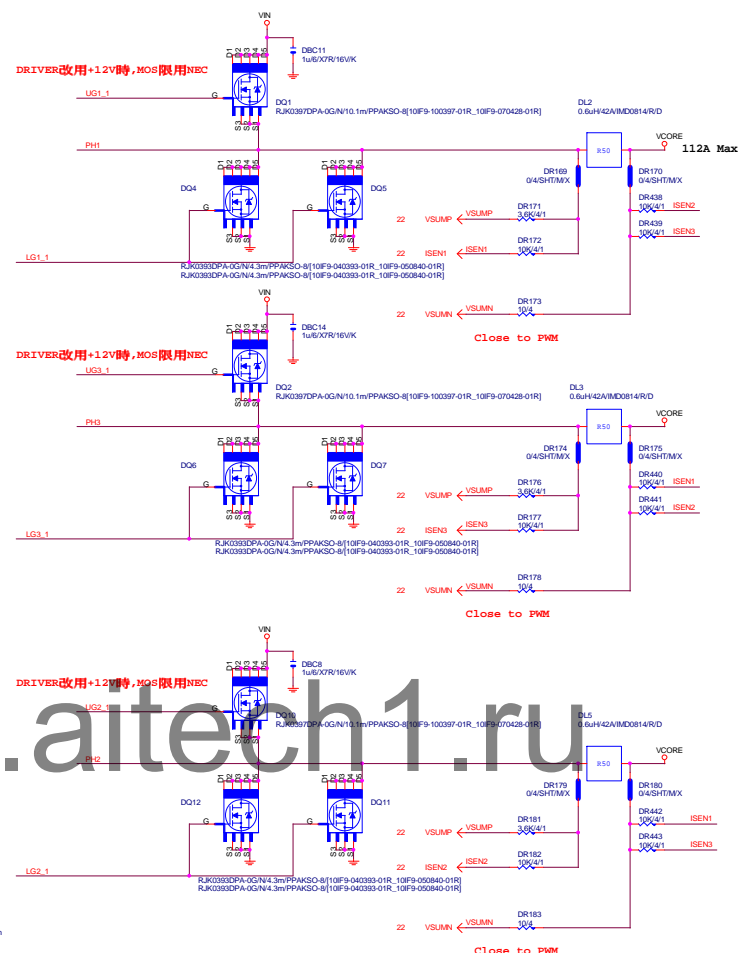
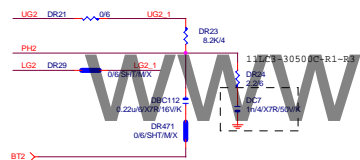
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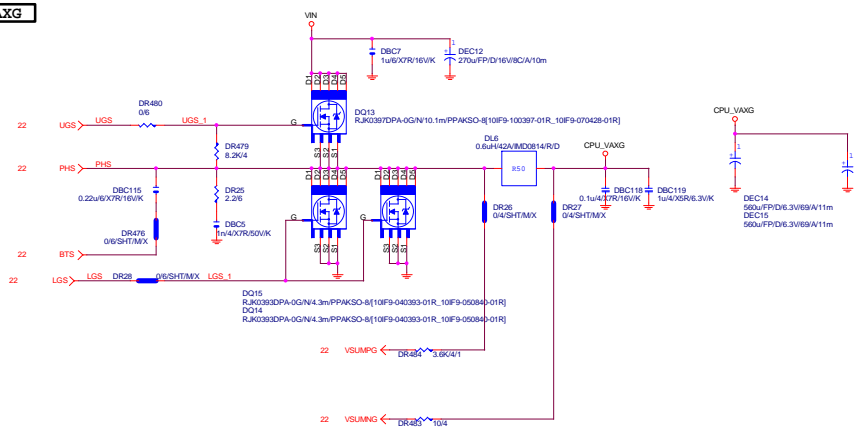
[3]



[2]

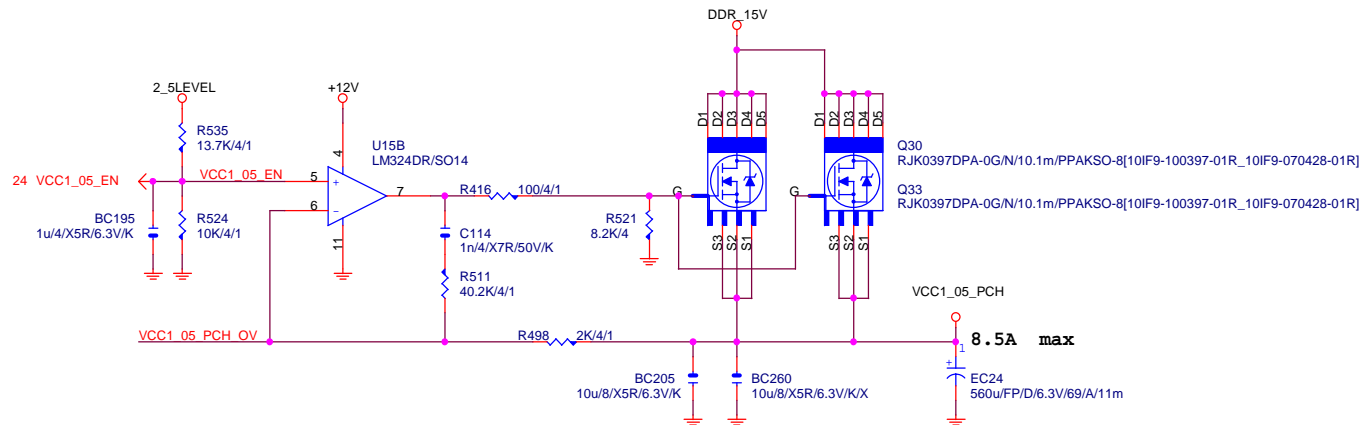


VAXG



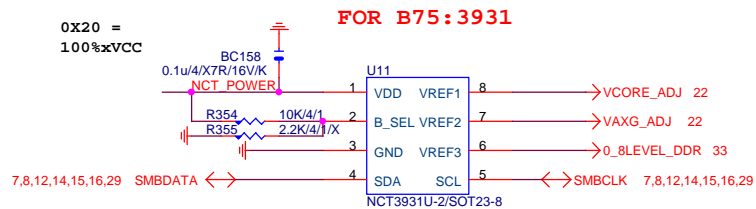
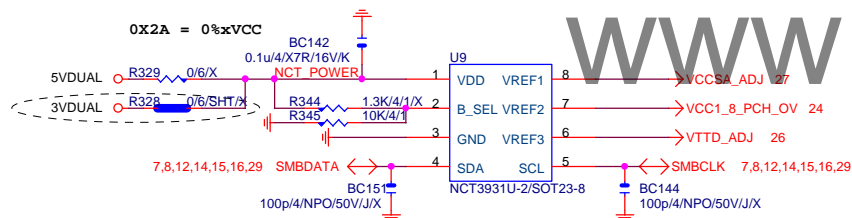


# VCC1\_05\_PCH



## Voltage console

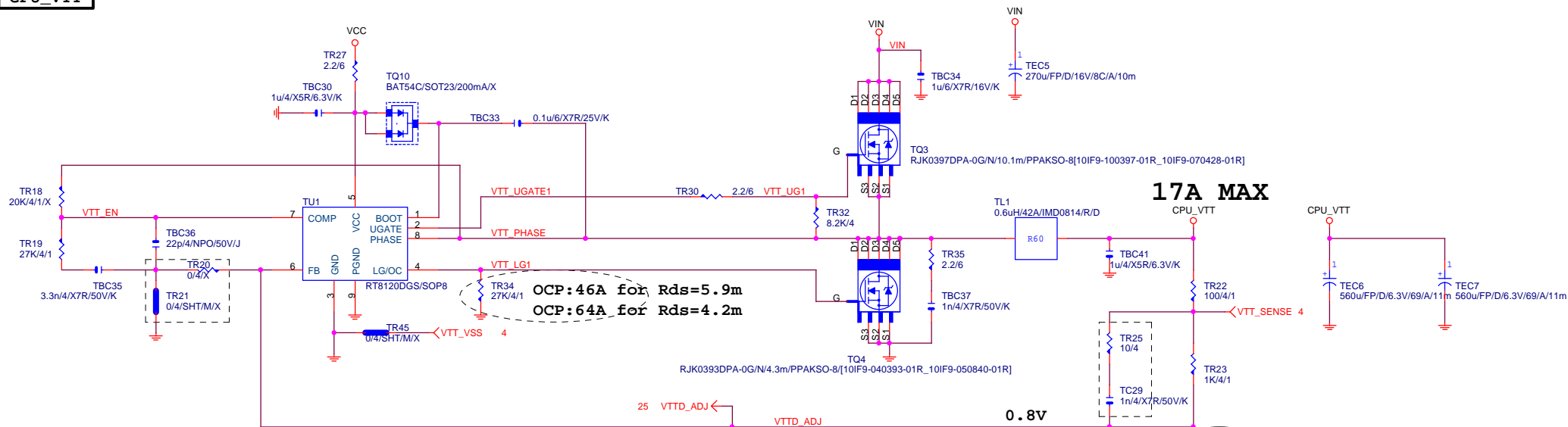
ADDRESS	0X2A	0X20	0X22	0X26
R1 (K)	OPEN	10	1.3	3
R2 (K)	10	OPEN	3.9	2.2
%VCC	0	100	75	42



up6262	0X2A	0X20
VREF1	VCC1_05_PCH	VCORE
VREF2	VCC1_8_PCH	VCCSA
VREF3	CPU_VTT	DDR

Gigabyte Technology		
PCH CORE / VOLTAGE CONSOLE		
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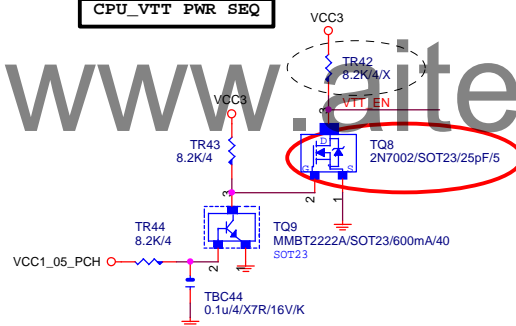
# CPU\_VTT



$$OCP: 46A = \frac{R_{oset} \cdot I_{ocset}}{R_{ds(on)}}$$

$$= \frac{27K \cdot 10\mu A}{5.9m}$$

## CPU\_VTT PWR SEQ



VTT_SEL	
HI	1.05V
LO	1.0V

According intel  
CDI/IBP#476733, 固定1.05v

**GIGABYTE**

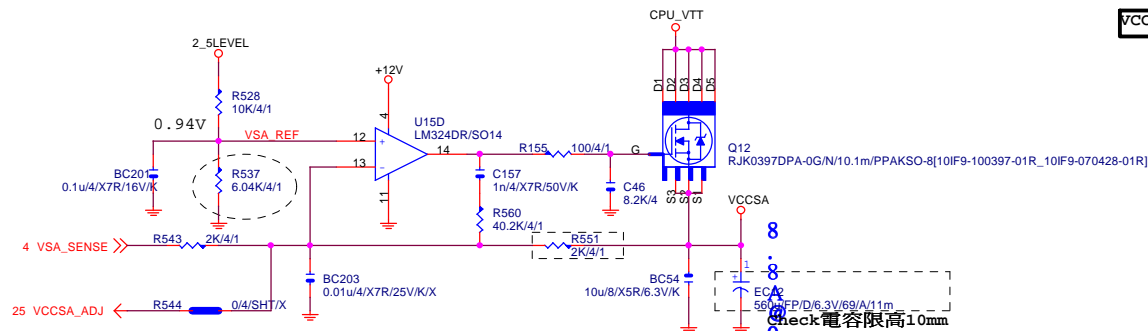
Title <b>RT8120 CPU_VTT</b>		
Size Custom	Document Number <b>GA-Z77P-D3</b>	Rev <b>1.0</b>
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VCC\_SA

Check電容限高10mm

VCCSA PWR SEQ

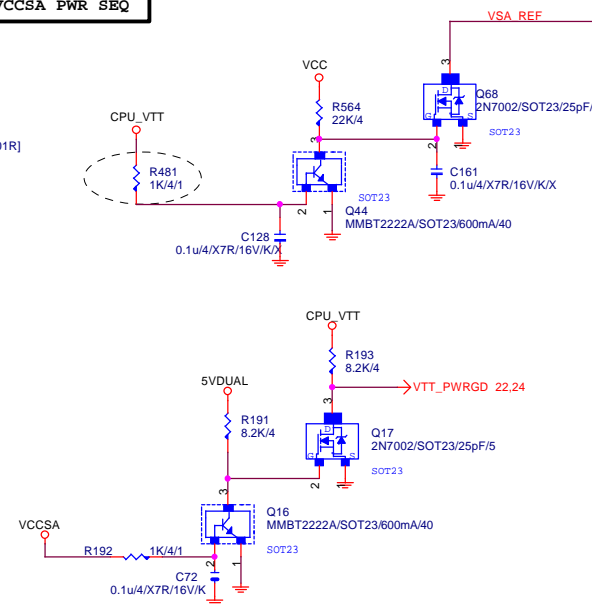


PDG 1.01

VSA_SEL	0.85V
HI	0.925V
LO	0.925V

According intel  
CDI/IBP#476733, 固定0.925v

8  
8  
0  
8  
5  
/ 0  
9  
2  
5  
V

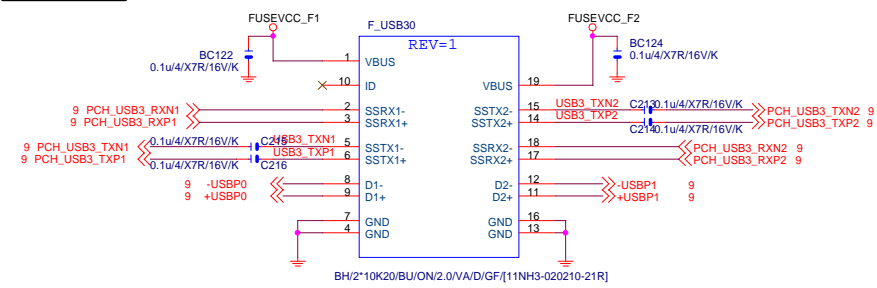


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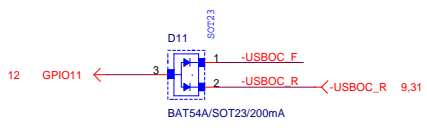
Gigabyte Technology

Title		
VCCSA POWER		
Size	Document Number	Rev
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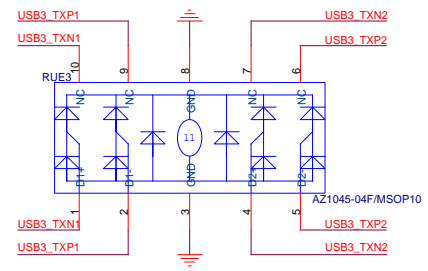
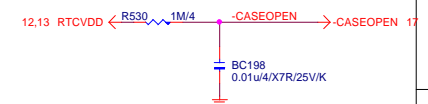
# FRONT USB1



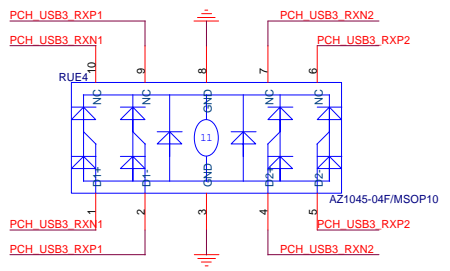
# F\_USB POWER PROTECT



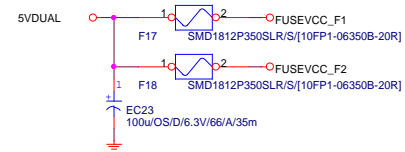
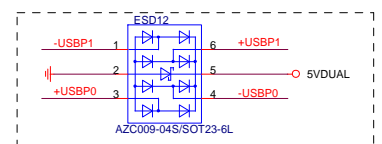
# CASE OPEN



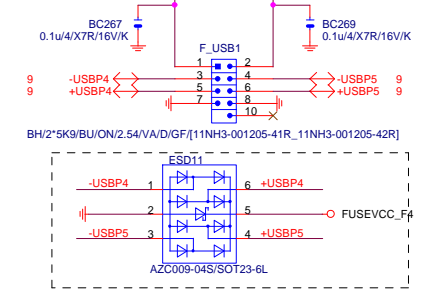
ESD Close to connector



ESD Close to connector

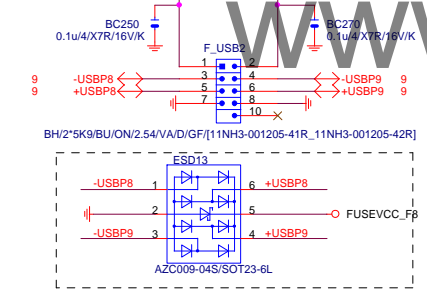


# FRONT USB1

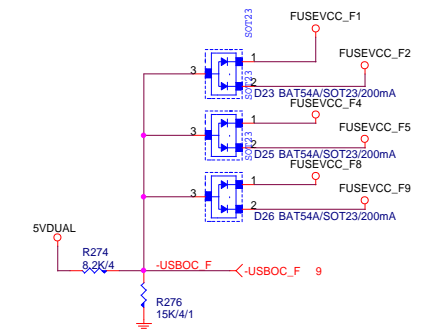
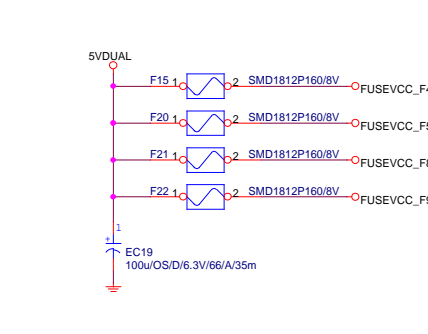


ESD Close to connector

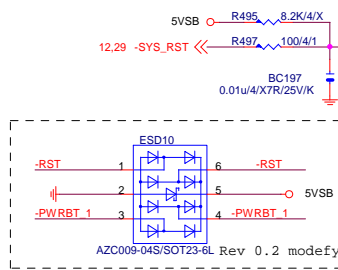
# FRONT USB2



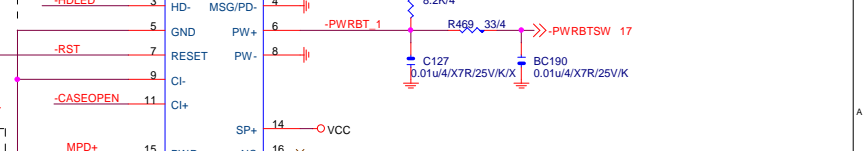
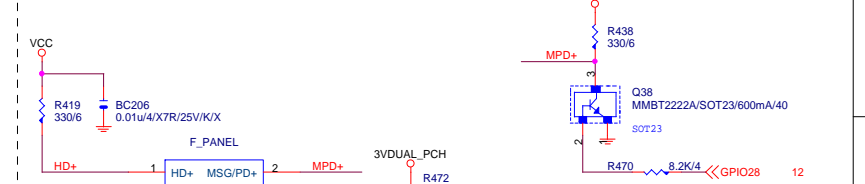
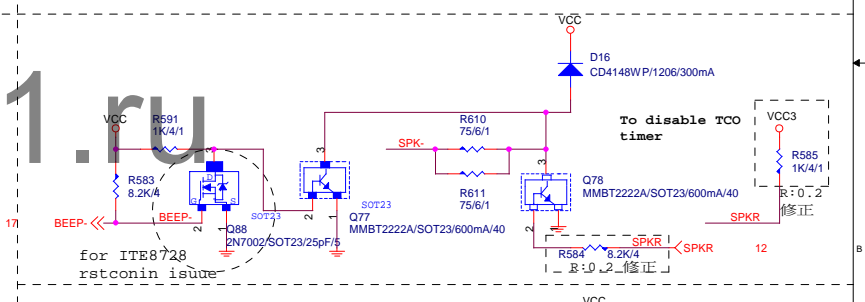
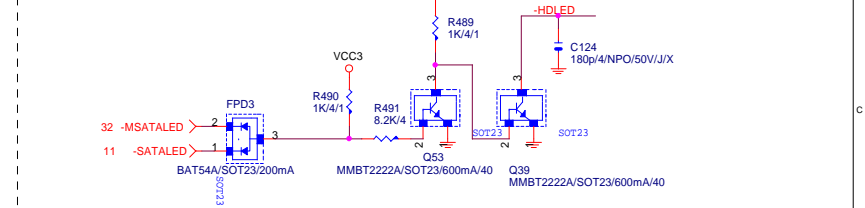
ESD Close to connector



# INTEL FRONT PANEL

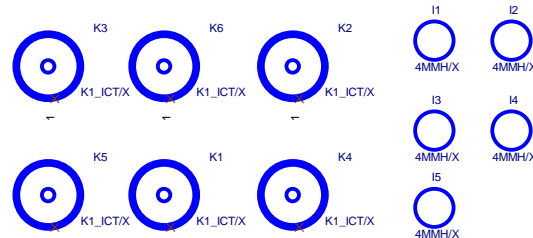
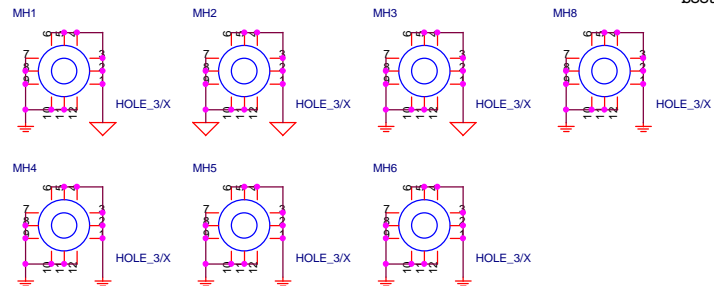
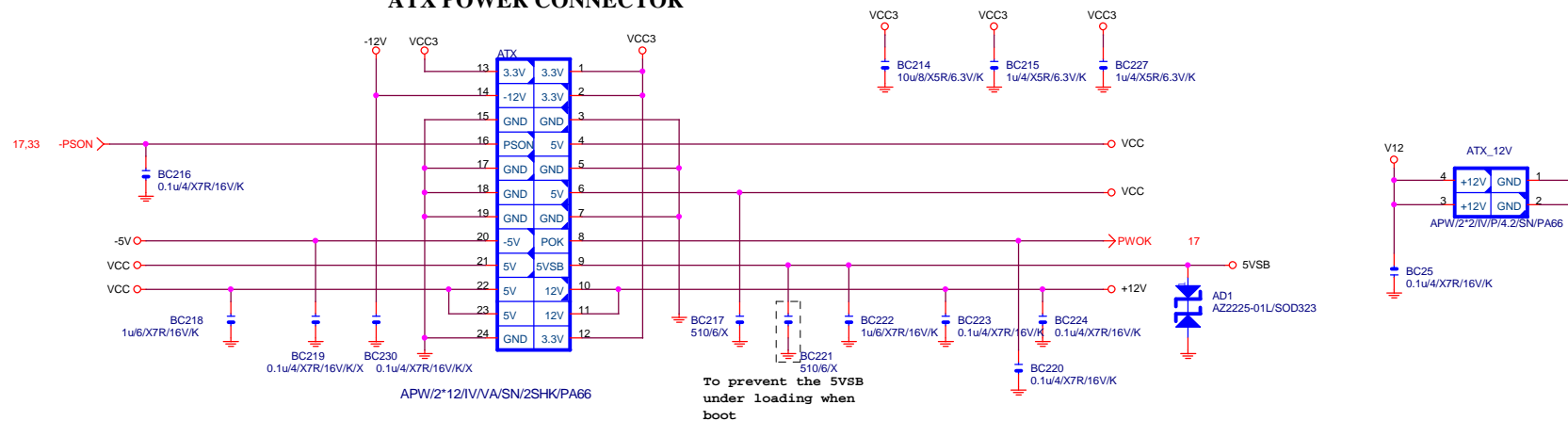


# SATA LED

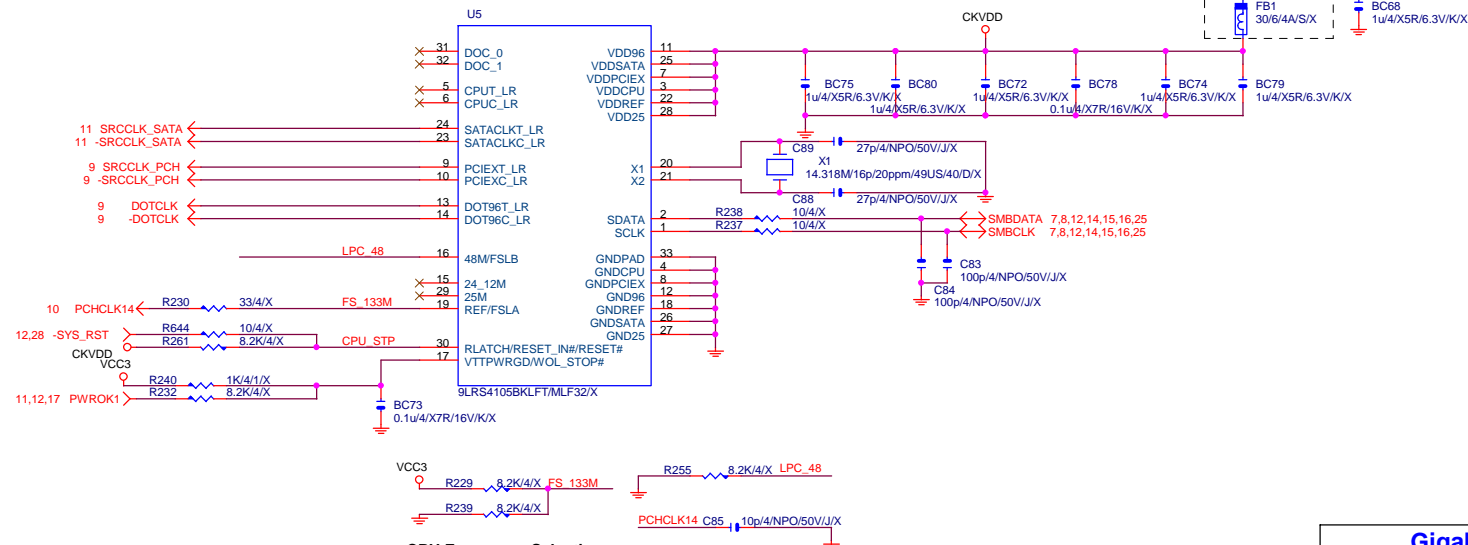


Gigabyte Technology			
Title			
FP,F_USB,USB PWR,FDD,BZ			
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# ATX POWER CONNECTOR



CLK GEN CK505



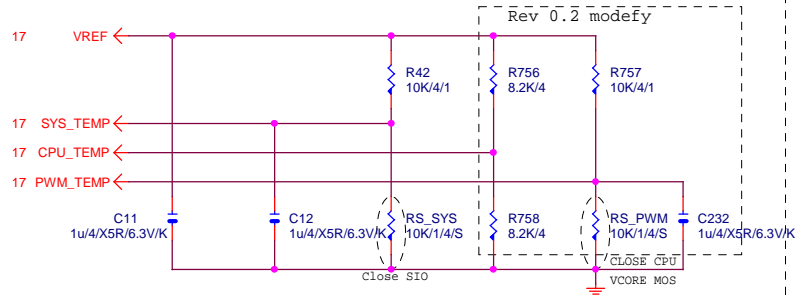
## CPU Frequency Selection

FS	CPU
0	100M <Default>
1	133M

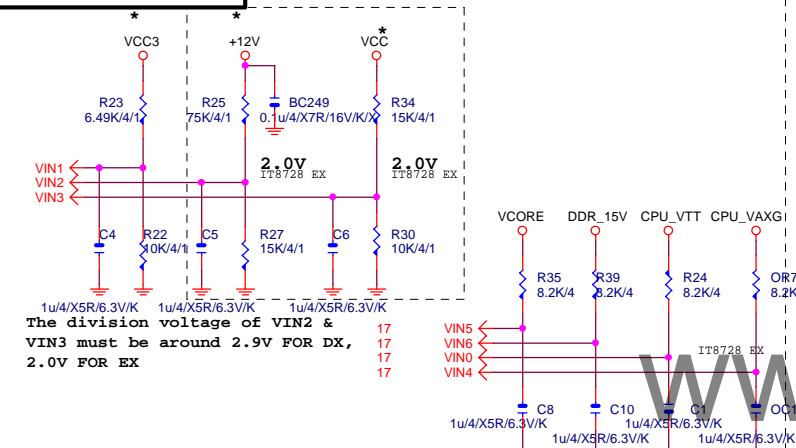
Gigabyte Technology

Title		
ATX POWER CONNECTOR		
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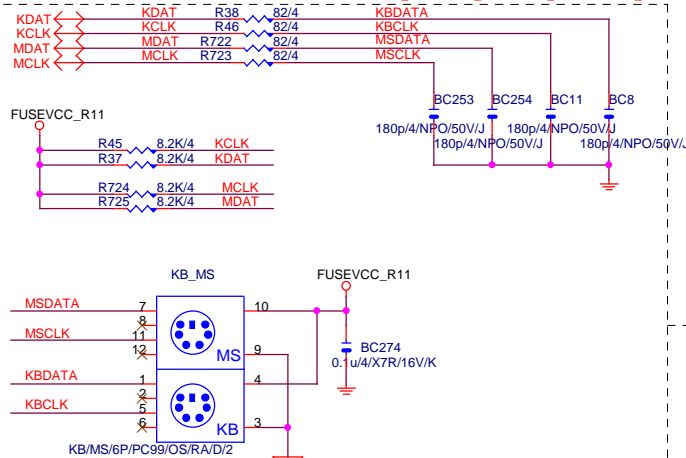
# TEMP H/W MONITOR



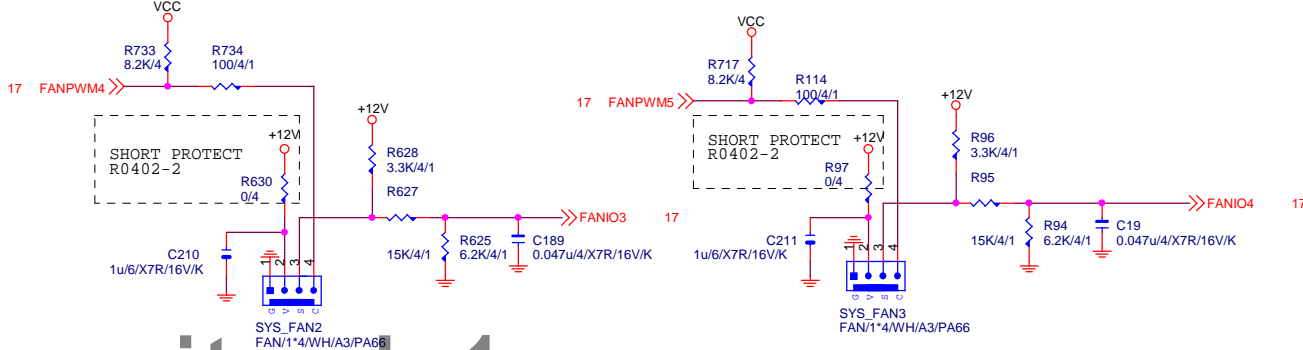
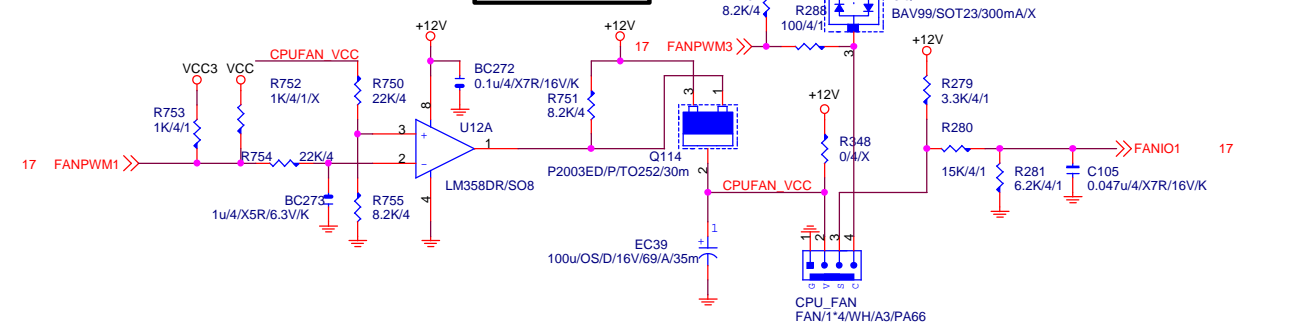
# VOLTAGE-- H/W MONITOR



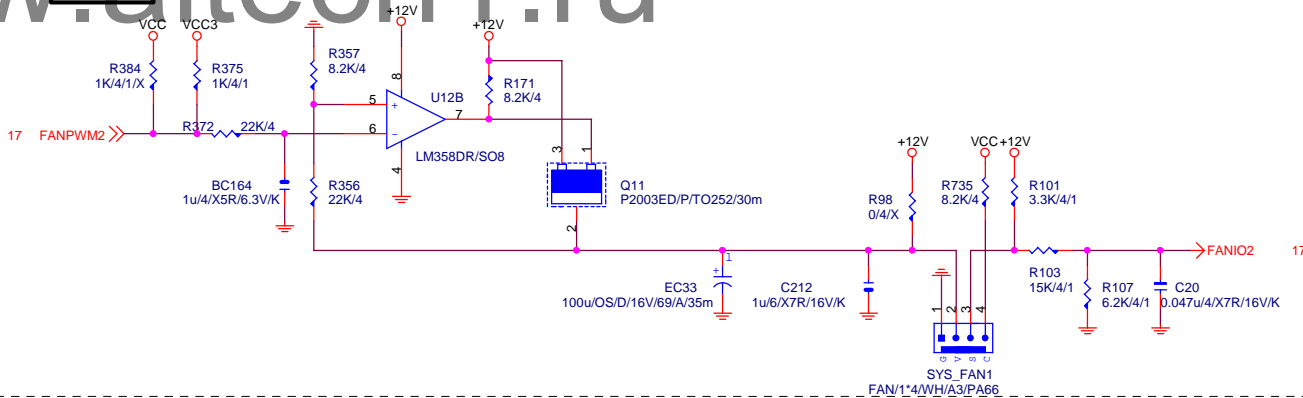
# KB/USB



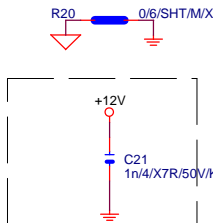
# CPU SMART FAN



# SYS FAN



# FOR EMI ONLY

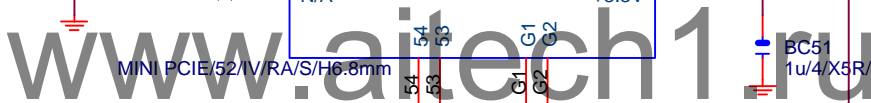


# Gigabyte Technology

Title					HWM,KB/MS, FAN CTRL				
Size	Custom	Document Number				Rev			
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**MSATA**



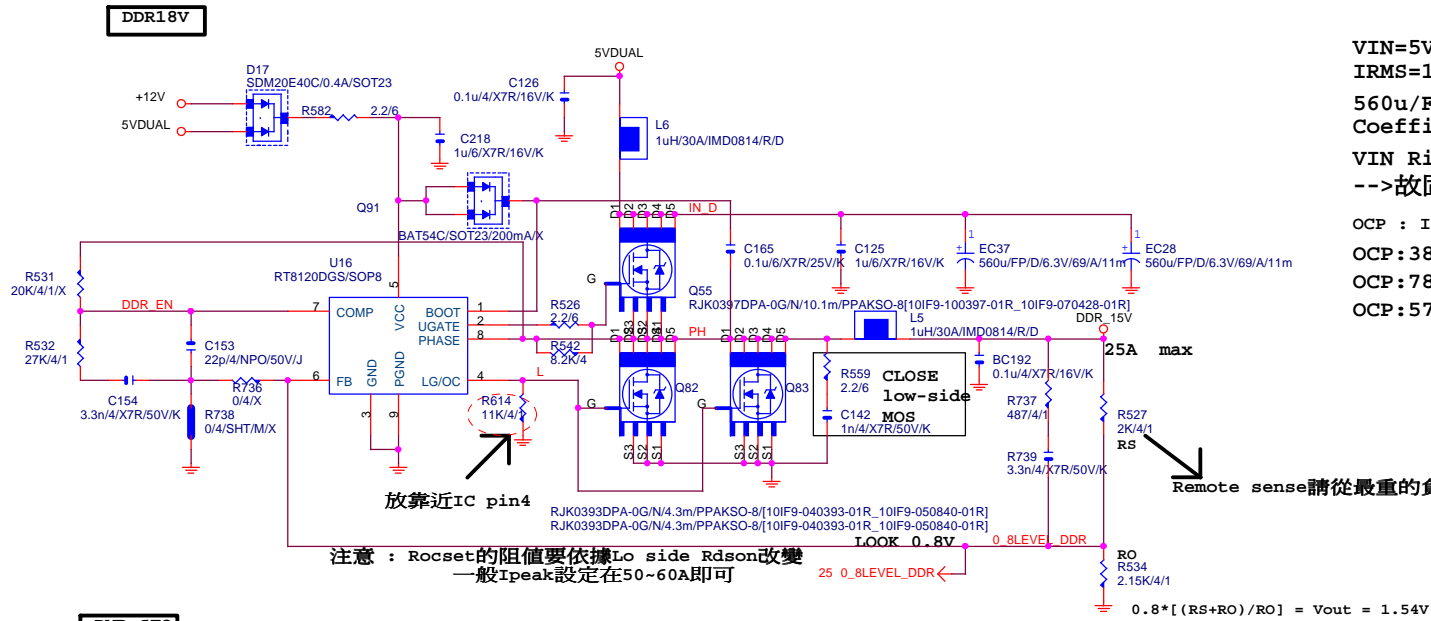
Title			
<b>MSATA</b>			
Size A	Document Number <b>GA-Z77P-D3</b>		Rev <b>1.0</b>
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## MSATA

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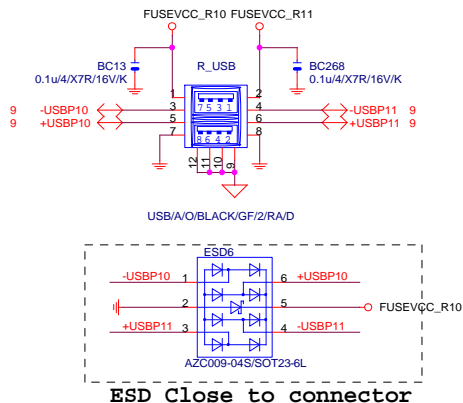


**PWR SEQ**



GIGABYTE™			
Title			
RT8120			
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R\_USB

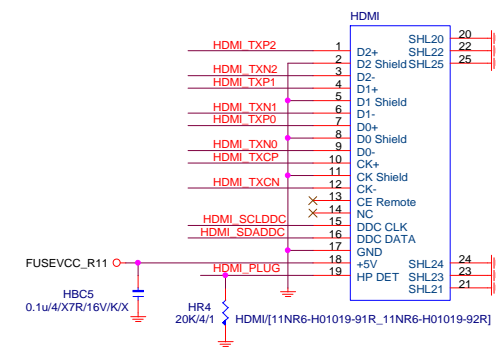
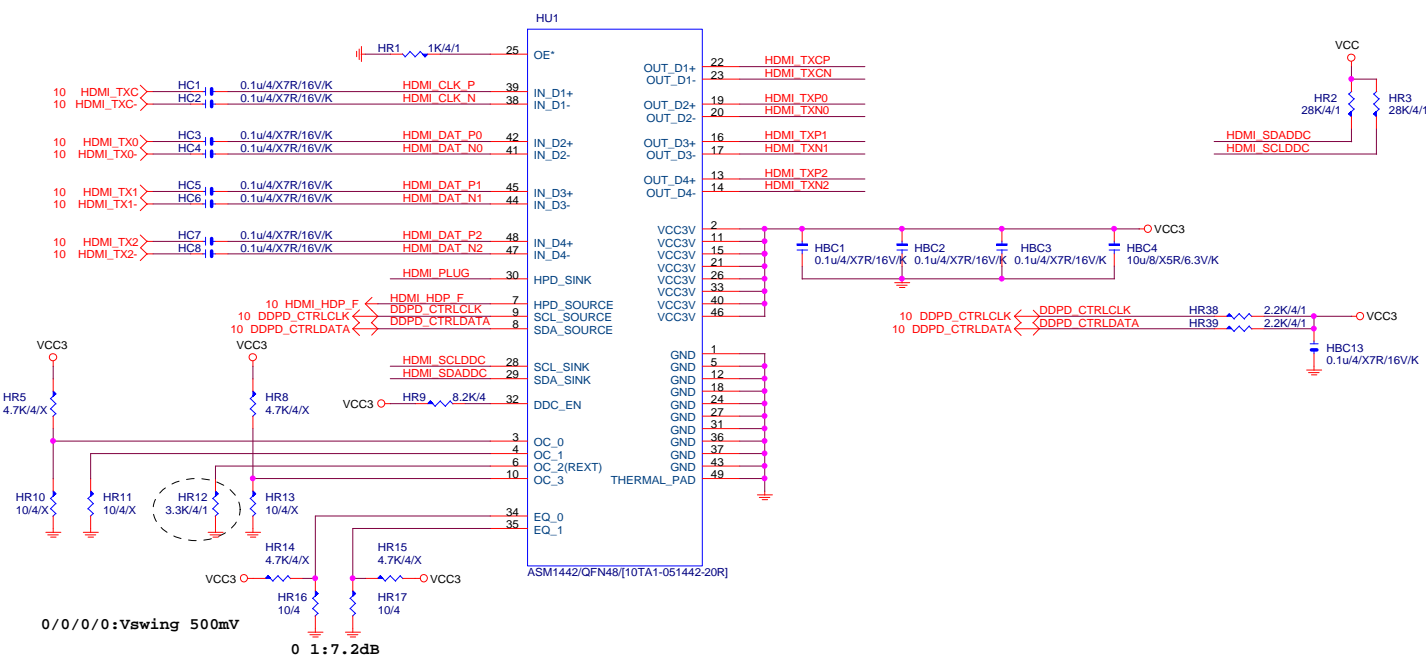


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HDMI LEVEL SHIFT
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HDMI: 20/4/6/4/20

Impedance=85 +- 17.5%



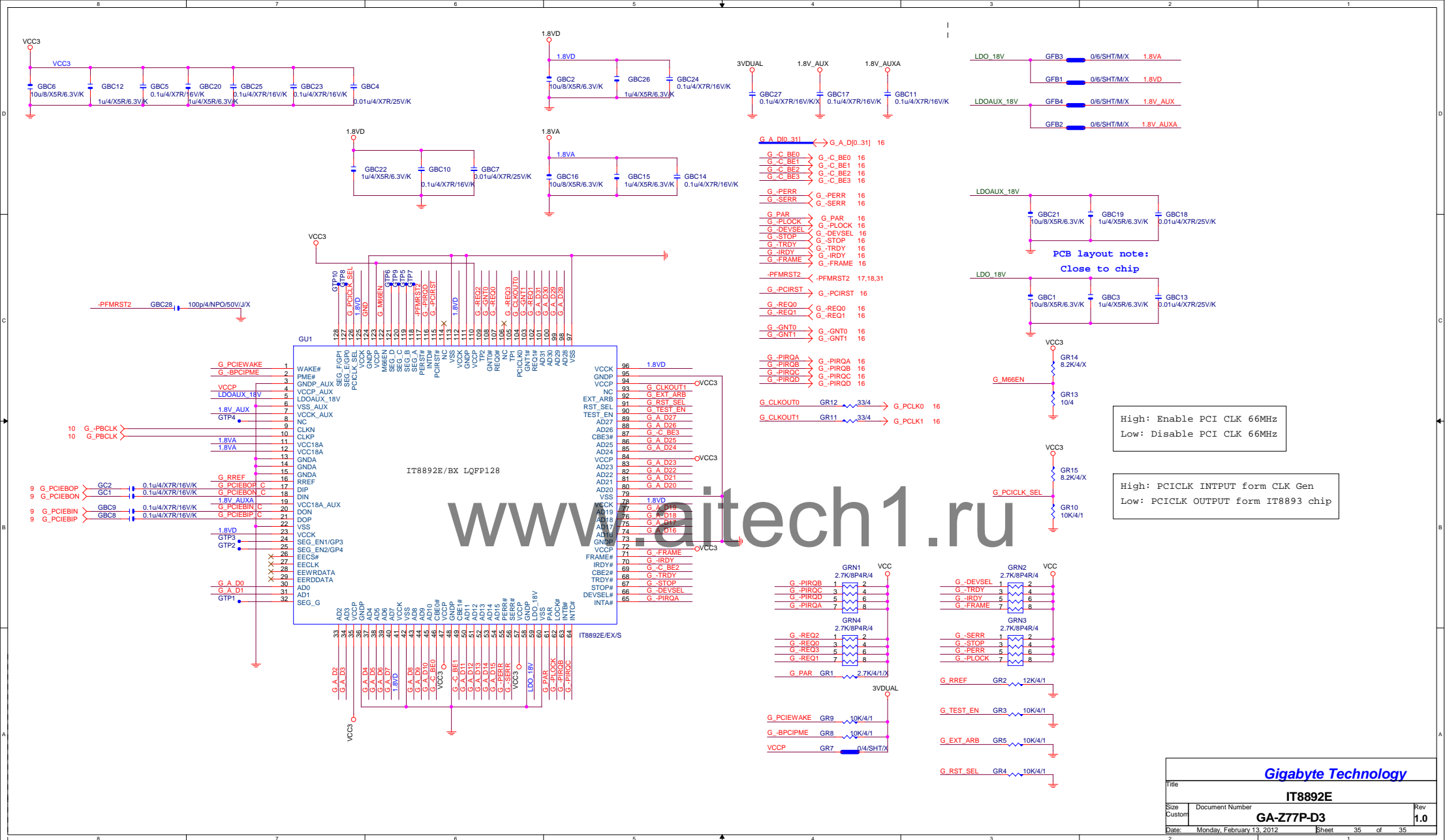
**Gigabyte Technology**

## DVI

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IT8892E			
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