

Model Name: X48-DQ6 1.11

SHEET TITLE

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03	BLOCK DIAGRAM
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07	P4_LGA775_C
08	P4_LGA775_D
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10	GMCH-BEARLAKE_DDRII
11	GMCH-BEARLAKE_PCI E, DMI
12	GMCH-BEARLAKE_INT VGA
13	GMCH-BEARLAKE_GND
14	DDRII CHANNEL A 1,2
15	DDRII CHANNEL B 1,2
16	DDRII TERMINATION
17	PCI EXPRESS X 16 SLOT1
18	ICH9 PCI, USB, DMI, LAN
19	ICH9 GPIO, CTRL
20	ICH9 SATA, FAN PWM
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27	COM_LPT, -PROHOT,DYNAMIC OC

SHEET TITLE

28	DUAL BIOS
29	ALC889
30	REAR AUDIO JACK
31	VCORE PWM_ISL6327CRZ-1
32	VCORE PWM_ISL6327CRZ-2
33	VCORE PWM_ISL6327CRZ-3
34	DISCRETE POWER I
35	DISCRETE POWER II
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38	REALTEK RTL8111B-2
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40	TI TSB43AB23 1394
41	JMB363
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44	GMCH POWER

<b>Gigabyte Technology</b>			
Title			
Cover Sheet			
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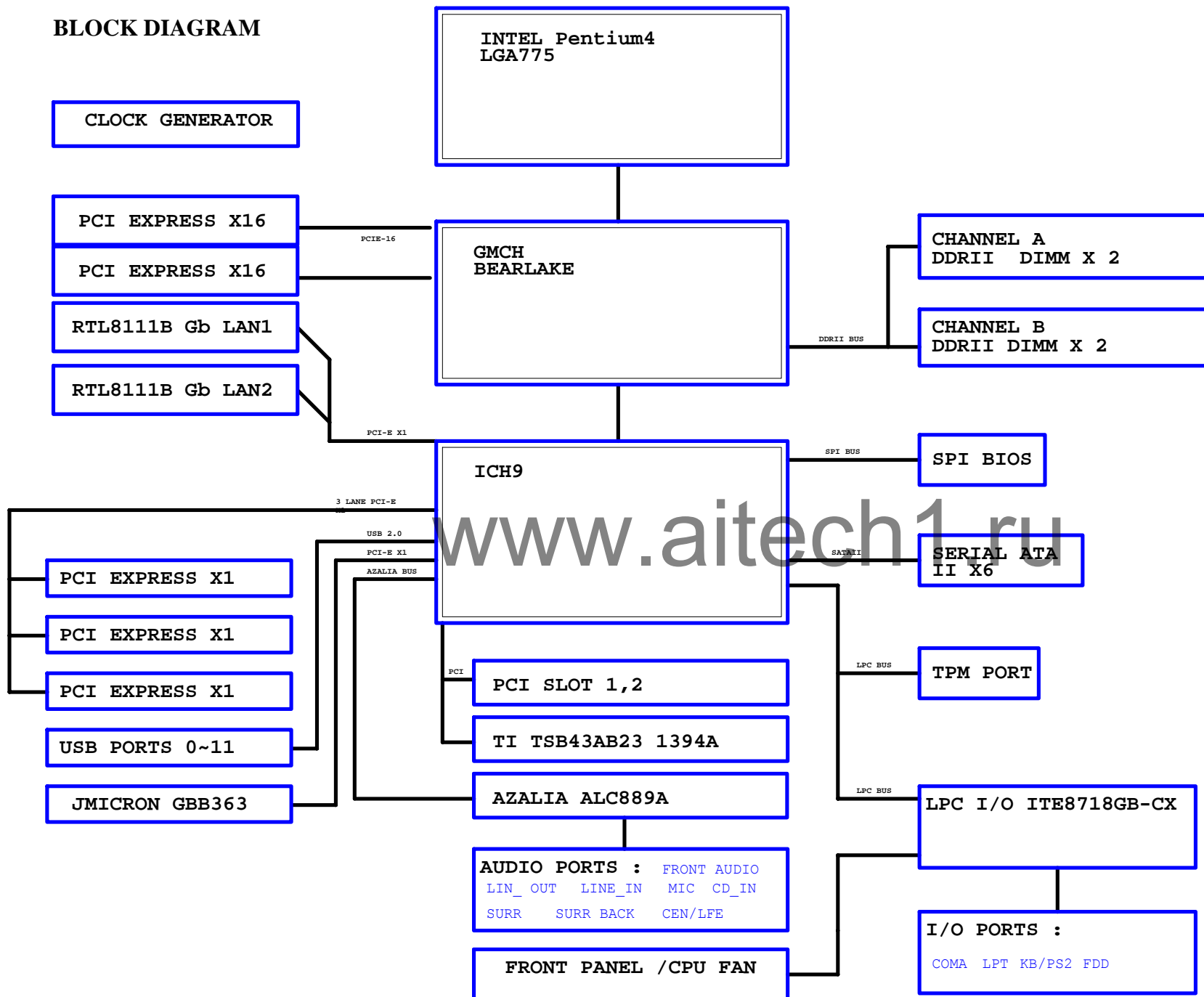
GA-X48-DQ6      Version: 1.11

Circuit or PCB layout change  
for next version

### Component value change history

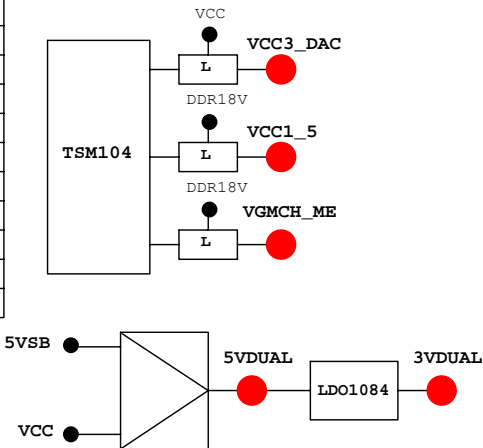
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# BLOCK DIAGRAM



LOW ICH9 GPIO LIST TABLE		5	4	3	2	1
PIN NAME	PWR WELL	AFTER/ ELTRST	USAGE	NOTE		
GP0	MAIN	IN	VTT_GMCH_OV3			
GP1/TACH1	MAIN	IN	ICH_FAN_TACH1	P/U 8.2K VCC3		
GP2/PIRQE#	MAIN	IN	-PIRQE	P/U 8.2K VCC3		
GP3/PIRQF#	MAIN	IN	-PIRQF	P/U 8.2K VCC3		
GP4/PIRQG#	MAIN	IN	-PIRQG	P/U 8.2K VCC3		
GP5/PIRQH#	MAIN	IN	-PIRQH	P/U 8.2K VCC3		
GP6/TACH2	MAIN	IN	ICH_FAN_TACH2	P/U 8.2K VCC3		
GP7/TACH3	MAIN	IN	ICH_FAN_TACH3	P/U 8.2K VCC3		
GP8	STBY	IN	DDR18V_OV4			
GP9	STBY	H-Z	GPIO9(DUALBIOS_INPUT)			
GP10	STBY	H-Z	DDR18V_OV5	P/D 100K GND/X		
GP11/SMBALERT#	STBY	NATIVE	-SMBALRT	P/U 8.2K 3VDUAL		
GP12	STBY	L OUT	AUDIO DETECT	P/U 8.2K VCC3		
GP13	STBY	L IN	-LPCPME	P/U 8.2K 3VDUAL		
GP14	STBY	H-Z	DDR18V_OV2	P/U 8.2K 3VDUAL		
GP15	STBY	H-Z	SPI_WP	STP_PCI#		
GP16	MAIN	L OUT	DUAL BIOS CONTROL	N/A		
GP17/TACH0	MAIN	IN	ICH_FAN_TACH0	P/U 8.2K VCC3		
GP18	MAIN	H OUT	MB_ID1	P/U 8.2K VCC3		
GP19	MAIN	IN	VCC15_OV1	P/U 8.2K VCC3/X		
GP20	MAIN	OUT	-SPI_WP0	P/U 1K 3VCL		
GP21	MAIN	IN	VCC15_OV3	P/U 8.2K VCC3		
GP22	MAIN	IN	VCORE_OV3	P/U 8.2K VCC3		
GP23	MAIN	OUT	-LDRQ1	P/U 8.2K VCC3		
GP24	STBY	OUT	TLS	P/U 8.2K 3VDUAL		
GP25	STBY	IN	MB_ID2(STP_CPU~)	P/U 8.2K 3VDUAL		
GP26/S4_STATE#	STBY	OUT	MB_ID0	P/U 8.2K 3VDUAL		
GP27	STBY	OUT/LOW	GPIO27(EL_STATE0)	P/U 8.2K 3VDUAL		
GP28	STBY	OUT/LOW	DUAL BIOS CONTROL	N/A		
GP29/OC5#	STBY	IN	-USBOC_R	P/U FUSEVCC		
GP30/OC6#	STBY	IN	-USBOC_R	P/U FUSEVCC		
GP31/OC7#	STBY	IN	-USBOC_R	P/U FUSEVCC		
GP32	MAIN	OUT	DUAL BIOS	P/U 100K+1M VCC3		
GP33	MAIN	OUT				
GP34	MAIN	OUT/LOW		N/A		
GP35	MAIN	L OUT	400K FS CONTROL	N/A		
GP36	MAIN	IN	DUAL BIOS CONTROL	P/U 8.2K VCC3		
GP37	MAIN	IN	150K FS CONTROL	P/U 8.2K VCC3		
GP38	MAIN	IN	VCORE_OV2	P/U 8.2K VCC3		
GP39	MAIN	IN	GPIO39	P/D 8.2K GND		
GP48	MAIN	IN	VCORE_OV1	P/U 8.2K VCC3		
GP49	MAIN	IN	STARPPING	P/D 8.2K		

PIN NAME	PWR WELL	AFTER/ ELTRST	USAGE	NOTE
GP50	MAIN	IN	REQ1#	
GP51	MAIN	IN	GNT1#	P/U 8.2K VCC3
GP52	MAIN	IN	REQ2#	P/U 8.2K VCC3
GP53	MAIN	IN	GNT2#	P/U 8.2K VCC3
GP54	MAIN	IN	REQ3#	P/U 8.2K VCC3
GP55	MAIN	IN	GNT3#	P/U 8.2K VCC3
GP56	STBY	IN	VCORE_OV5	
GP57	STBY	IN	VCORE_OV4	
GP58	STBY	IN	SPI_CS1#	
GP59	STBY		-USBOC_R	
GP60	STBY		LINKALRT#	



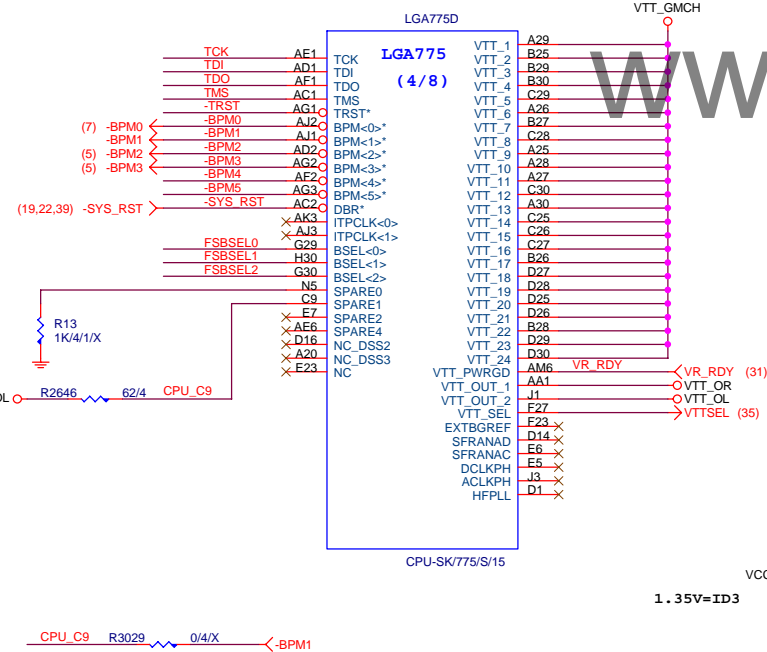
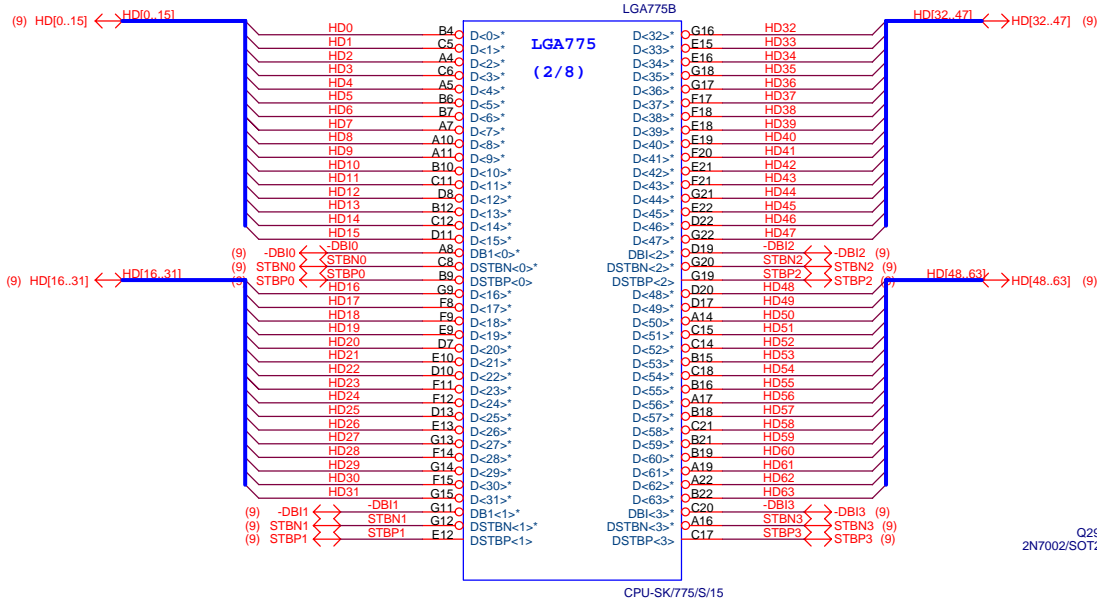
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	3 pin FAN control	4 pin FAN control	FAN speed	Controller
CPU FAN	FANPWM1	FANPWM3	FANIO1	IT8718
	ICH_FAN_PWM2	ICH_FAN_PWM0	ICH_FAN_TACH0	ICH8
SYS FAN	FANPWM2	N/A	FANIO2	IT8718
	ICH_FAN_PWM1	N/A	ICH_FAN_TACH1	ICH8
PWR FAN	N/A	N/A	FANIO3	IT8718
			ICH_FAN_TACH2	ICH8

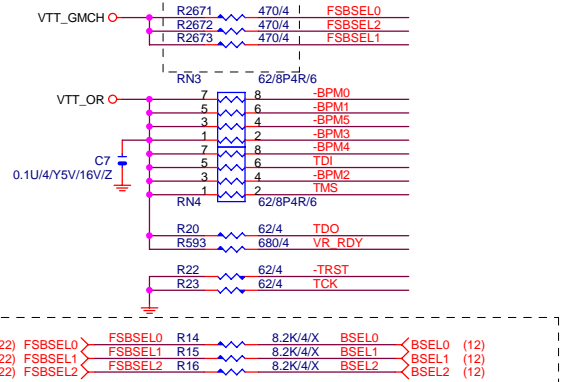
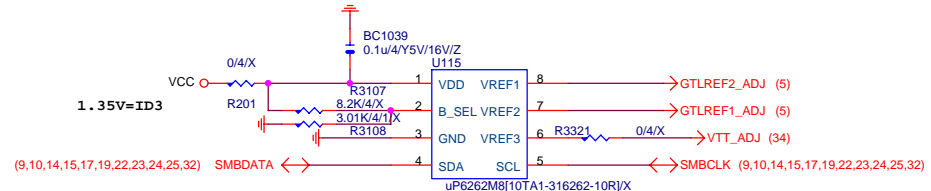
Gigabyte Technology			
TABLE LIST			
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VCORE\_OV5

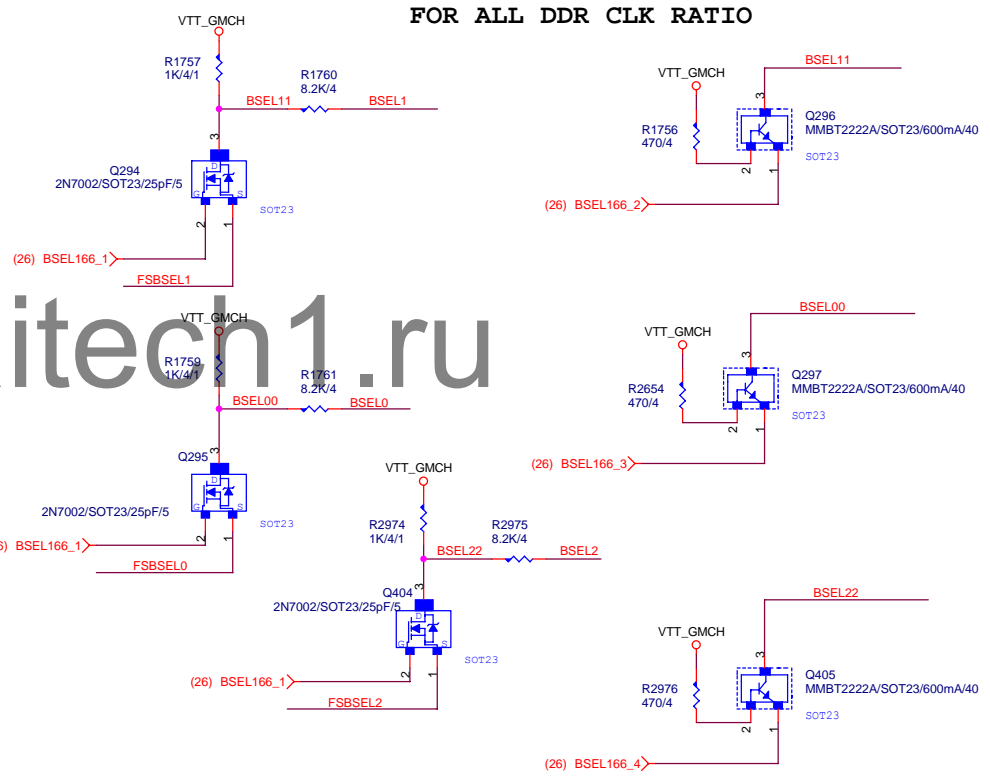




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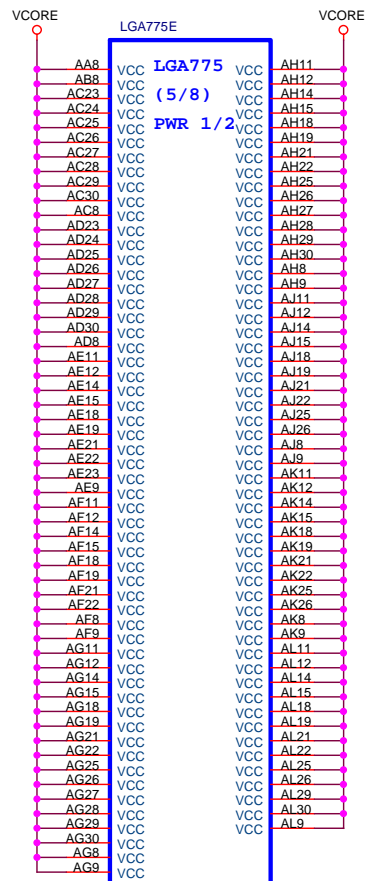


FOR ALL DDR CLK RATIO



Gigabyte Technology		
P4_LGA775-B,D		
X48-DQ6		
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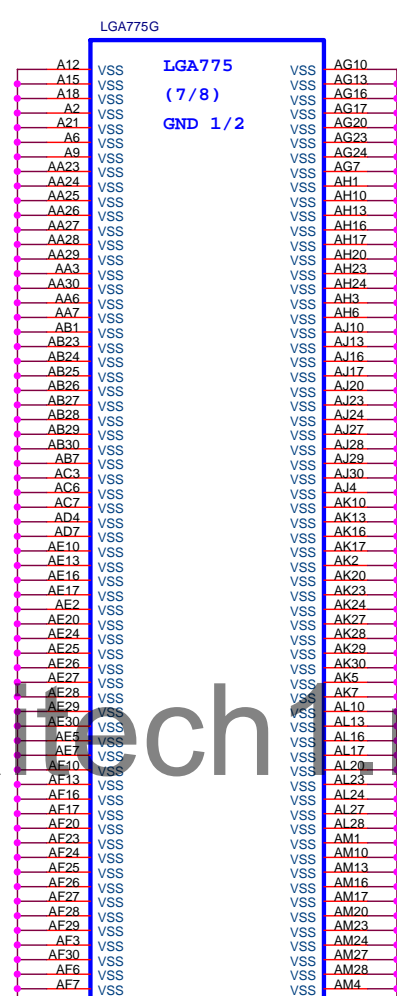




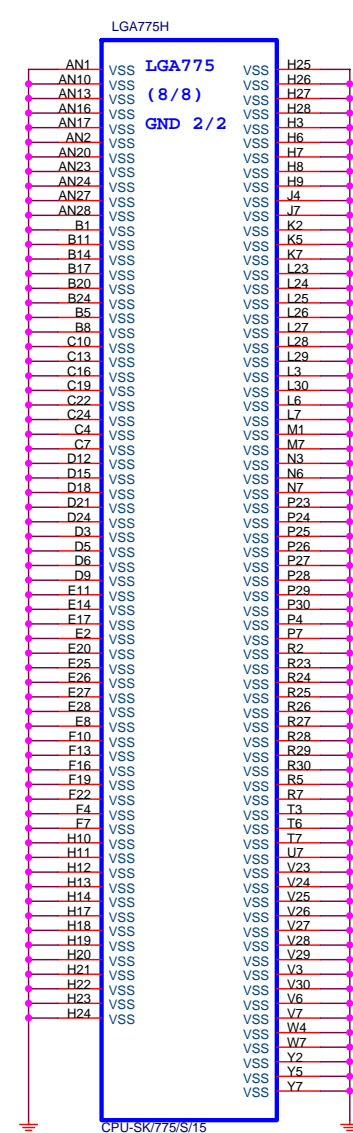
CPU-SK/775/S/15



CPU-SK/775/S/15



CPU-SK/775/S/15



CPU-SK/775/S/15

Gigabyte Technology

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VCC1\_25PCIE< VCC1\_25PCIE< (13)  
R88  
24.9/6/1  
GRCOMP

EXP A TXP[0..15] >> EXP\_A\_TXP[0..15] (17)  
EXP A TXN[0..15] >> EXP\_A\_TXN[0..15] (17)  
EXP A RXP[0..15] >> EXP\_A\_RXP[0..15] (17)  
EXP A RXN[0..15] >> EXP\_A\_RXN[0..15] (17)

VCCR\_REG < VCCR\_REG (13)  
R3149  
24.9/6/1  
GRCOMP2

EXP B TXP[0..15] >> EXP\_B\_TXP[0..15] (23)  
EXP B TXN[0..15] >> EXP\_B\_TXN[0..15] (23)  
EXP B RXP[0..15] >> EXP\_B\_RXP[0..15] (23)  
EXP B RXN[0..15] >> EXP\_B\_RXN[0..15] (23)

U2A

U1MCH

EXP A RXP0 A16  
EXP A RXN0 B15  
EXP A RXP1 B13  
EXP A RXN1 C14  
EXP A RXP2 G13  
EXP A RXN2 G13  
EXP A RXP3 L13  
EXP A RXN3 K13  
EXP A RXP4 N13  
EXP A RXN4 M13  
EXP A RXP5 H12  
EXP A RXN5 G12  
EXP A RXP6 K11  
EXP A RXN6 L12  
EXP A RXP7 G10  
EXP A RXN7 H10  
EXP A RXP8 E6  
EXP A RXN8 D5  
EXP A RXP9 F7  
EXP A RXN9 G6  
EXP A RXP10 D2  
EXP A RXN10 C2  
EXP A RXP11 K7  
EXP A RXN11 K8  
EXP A RXP12 M11  
EXP A RXN12 L10  
EXP A RXP13 M7  
EXP A RXN13 M8  
EXP A RXP14 K3  
EXP A RXN14 J2  
EXP A RXP15 N8  
EXP A RXN15 N10

PEG\_RXP\_0  
PEG\_RXN\_0  
PEG\_RXP\_1  
PEG\_RXN\_1  
PEG\_RXP\_2  
PEG\_RXN\_2  
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PEG\_TXN\_15

D16 EXP A TXP0  
E17 EXP A TXN0  
E15 EXP A TXP1  
D14 EXP A TXN1  
E13 EXP A TXP2  
D12 EXP A TXN2  
B11 EXP A TXP3  
A12 EXP A TXN3  
D10 EXP A TXP4  
E11 EXP A TXN4  
B9 EXP A TXP5  
C10 EXP A TXN5  
D8 EXP A TXP6  
E9 EXP A TXN6  
B7 EXP A TXP7  
A8 EXP A TXN7  
C6 EXP A TXP8  
B3 EXP A TXN8  
C4 EXP A TXP9  
B4 EXP A TXN9  
E3 EXP A TXP10  
D3 EXP A TXN10  
E5 EXP A TXP11  
E4 EXP A TXN11  
H1 EXP A TXP12  
G2 EXP A TXN12  
J5 EXP A TXP13  
H4 EXP A TXN13  
L5 EXP A TXP14  
K4 EXP A TXN14  
M1 EXP A TXP15  
L2 EXP A TXN15

(18) DMI\_0RXP >> DMI\_0RXP  
(18) DMI\_0RXN >> DMI\_0RXN  
(18) DMI\_1RXP >> DMI\_1RXP  
(18) DMI\_1RXN >> DMI\_1RXN  
(18) DMI\_2RXP >> DMI\_2RXP  
(18) DMI\_2RXN >> DMI\_2RXN  
(18) DMI\_3RXP >> DMI\_3RXP  
(18) DMI\_3RXN >> DMI\_3RXN

DMI\_RXP\_0  
DMI\_RXN\_0  
DMI\_RXP\_1  
DMI\_RXN\_1  
DMI\_RXP\_2  
DMI\_RXN\_2  
DMI\_RXP\_3  
DMI\_RXN\_3

DMI\_TXP\_0  
DMI\_TXN\_0  
DMI\_TXP\_1  
DMI\_TXN\_1  
DMI\_TXP\_2  
DMI\_TXN\_2  
DMI\_TXP\_3  
DMI\_TXN\_3

R7 DMI\_0TXP  
R6 DMI\_0TXN  
N2 DMI\_1TXP  
P3 DMI\_1TXN  
R2 DMI\_2TXP  
T1 DMI\_2TXN  
V10 DMI\_3TXP  
V11 DMI\_3TXN

(22) SRCCLK\_MCH >> SRCCLK\_MCH  
(22) -SRCCLK\_MCH >> -SRCCLK\_MCH

EXP\_CLKINP  
EXP\_CLKINN

EXP\_COMPO  
EXP\_COMPI

RSVD\_G15  
RSVD\_H15

NU82BLX-A1/BGA1300/[10HB1-038248-01R]

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U2I

PCIE 2

EXP B RXP0 W12  
EXP B RXN0 AA13  
EXP B RXP1 AA10  
EXP B RXN1 AA11  
EXP B RXP2 AA6  
EXP B RXN2 AA7  
EXP B RXP3 AC13  
EXP B RXN3 AB12  
EXP B RXP4 AC11  
EXP B RXN4 AC10  
EXP B RXP5 AC6  
EXP B RXN5 AC7  
EXP B RXP6 AE13  
EXP B RXP7 AD12  
EXP B RXN7 AE11  
EXP B RXP8 AE7  
EXP B RXN8 AE6  
EXP B RXP9 AG12  
EXP B RXN9 AH13  
EXP B RXP10 AH11  
EXP B RXN10 AH10  
EXP B RXP11 AH7  
EXP B RXN11 AH6  
EXP B RXP12 AK12  
EXP B RXN12 AK13  
EXP B RXP13 AL11  
EXP B RXN13 AL10  
EXP B RXP14 AL6  
EXP B RXN14 AL7  
EXP B RXP15 AP10  
EXP B RXN15 AP11

PEG2\_RXP\_0  
PEG2\_RXN\_0  
PEG2\_RXP\_1  
PEG2\_RXN\_1  
PEG2\_RXP\_2  
PEG2\_RXN\_2  
PEG2\_RXP\_3  
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PEG2\_TXP\_0  
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PEG2\_TXP\_15  
PEG2\_TXN\_15

AB3 EXP B TXP0  
AB1 EXP B TXN0  
AD4 EXP B TXP1  
AC4 EXP B TXN1  
AE2 EXP B TXP2  
AD3 EXP B TXN2  
AF4 EXP B TXP3  
AE5 EXP B TXN3  
AG2 EXP B TXP4  
AF1 EXP B TXN4  
AH4 EXP B TXP5  
AG5 EXP B TXN5  
AJ2 EXP B TXP6  
AH3 EXP B TXN6  
AK4 EXP B TXP7  
AJ5 EXP B TXN7  
AL2 EXP B TXP8  
AK1 EXP B TXN8  
AM4 EXP B TXP9  
AL5 EXP B TXN9  
AN2 EXP B TXP10  
AM3 EXP B TXN10  
AP4 EXP B TXP11  
AN5 EXP B TXN11  
AR2 EXP B TXP12  
AP1 EXP B TXN12  
AT4 EXP B TXP13  
AR5 EXP B TXN13  
AU2 EXP B TXP14  
AT3 EXP B TXN14  
AP7 EXP B TXP15  
AP6 EXP B TXN15

(22) -SRCCLK\_MCH1 >>  
(22) SRCCLK\_MCH1 >>

EXP2\_CLKINN  
EXP2\_CLKINP

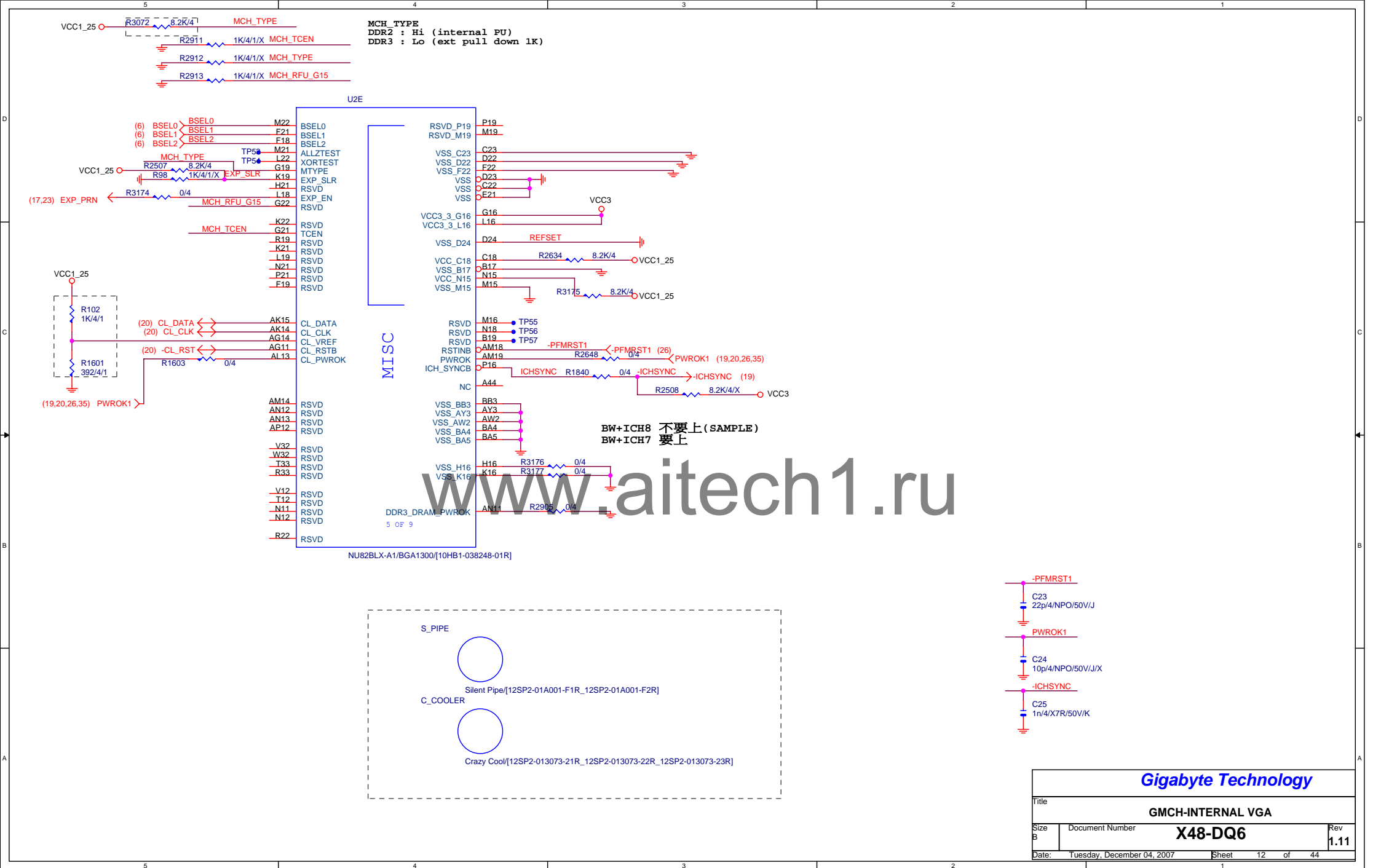
EXP2\_COMPI  
EXP2\_COMPO

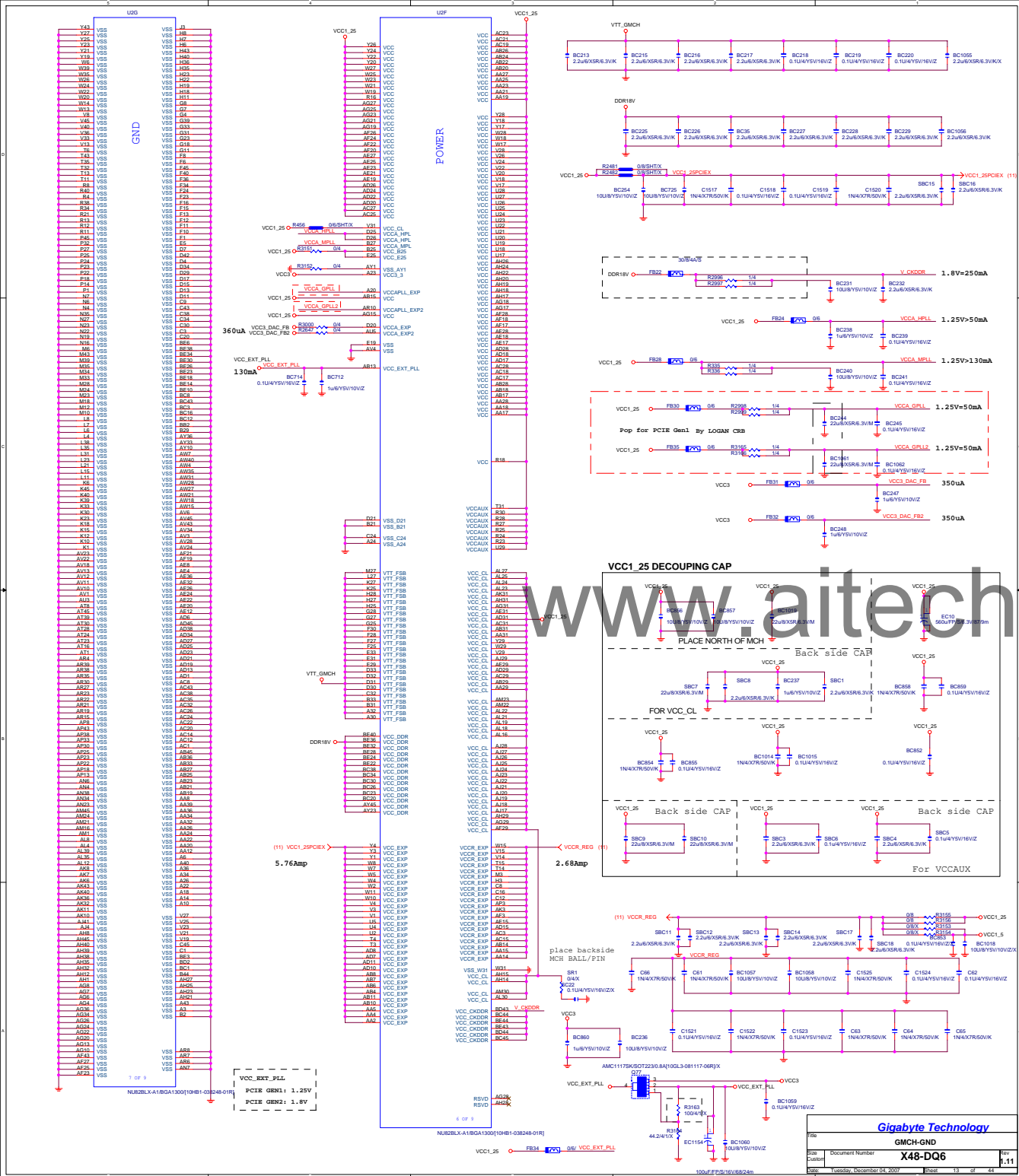
AN10 GRCOMP2  
AN8

NU82BLX-A1/BGA1300/[10HB1-038248-01R]

Gigabyte Technology

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GMCH-PCI E & DMI			
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GPIO27	GPIO9	VOLTAGE
GPO/Low	GPI	Default
GPI	GPI	+10%
GPO/Low	GPO/Low	-10%

ICH

(10) CHA\_ADJ ← R333 → 0.1u/4V/5V/16V/Z

VREF\_DDRA R1611 1K/41

R104 1K/41

0.1u/4V/5V/16V/Z

BC111

0.1u/4V/5V/16V/Z

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0.1u/4V/5V/16V/Z

0.1u/4V/5V/16V/Z

0.1u/4V/5V/16V/Z

0.1u/4V/5V/16V/Z

0.1u/4V/5V/16V/Z

0.1u/4V/5V/16V/Z

0.1u/4V/5V/16V/Z

Sigabyte Technology

Title

DDR2 CHANNEL A

Size

Document Number

X48-DQ6

Rev

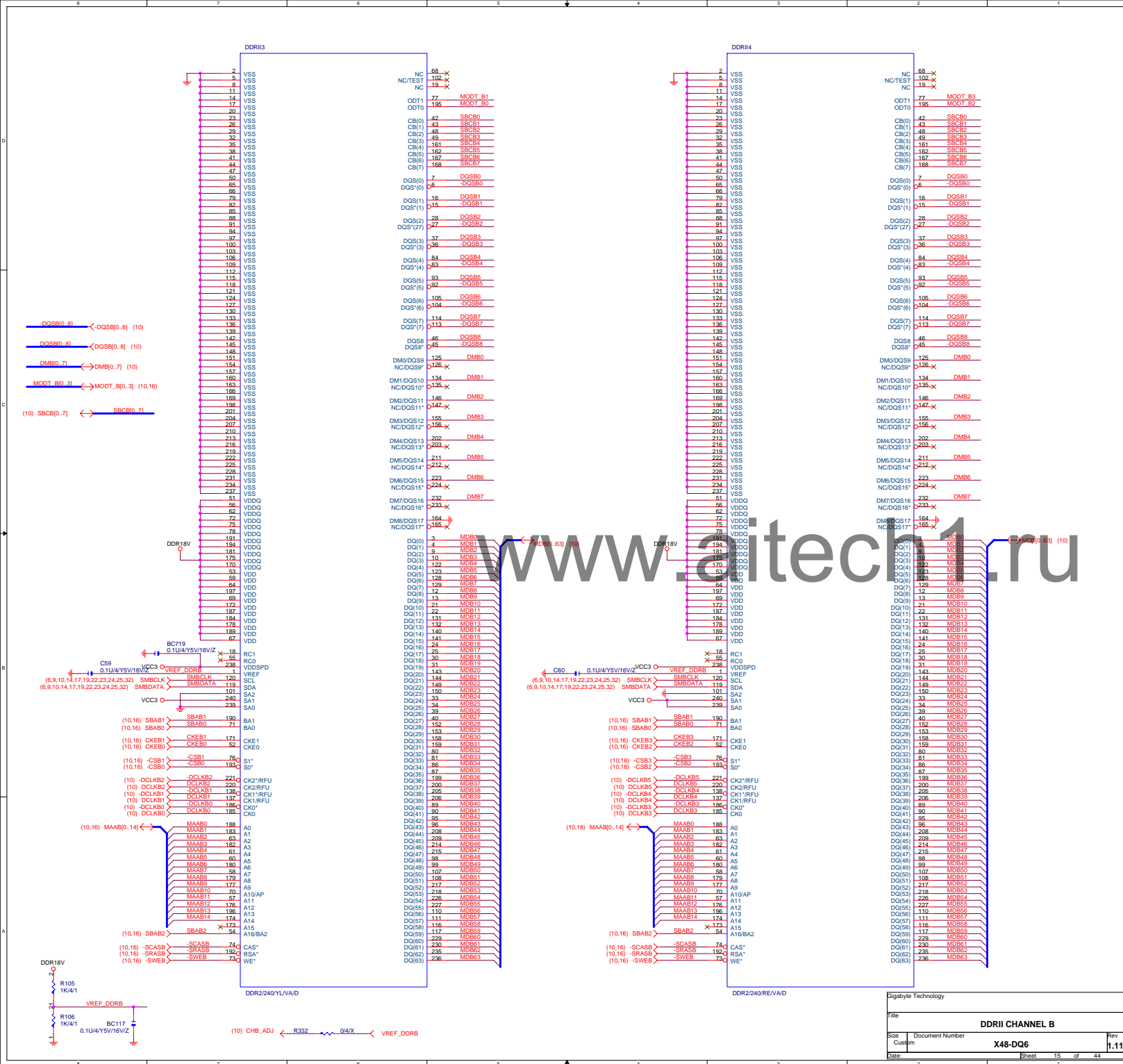
1.1

Date

Sheet

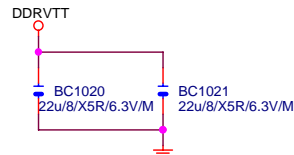
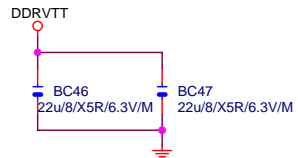
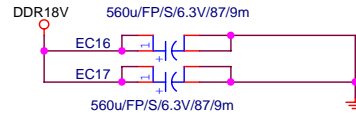
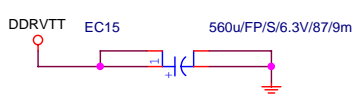
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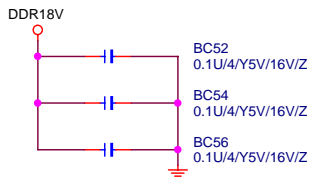


# DDR TERMINATION CHANNEL A

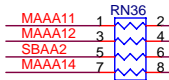
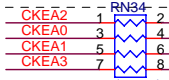
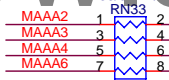
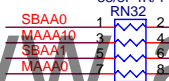
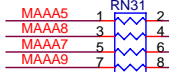
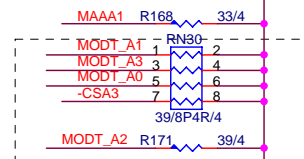
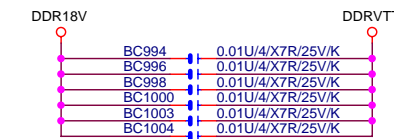
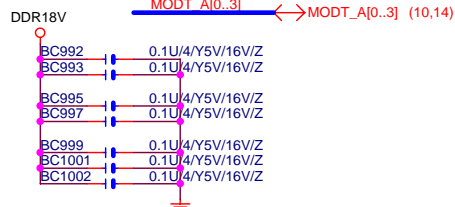
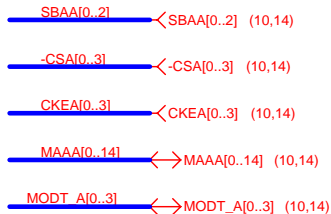
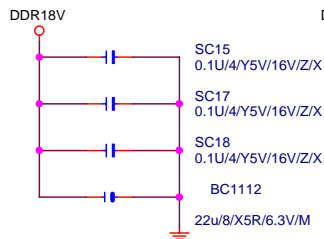
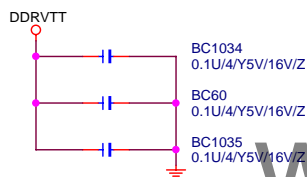
## DDRVTT Decouple



## DDR18V Decouple

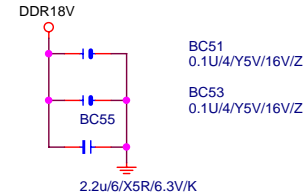


## DDRVTT Decouple

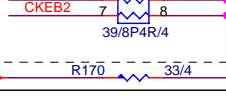
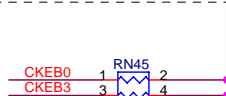
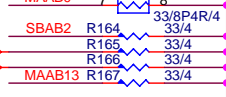
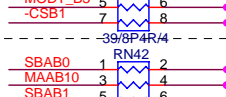
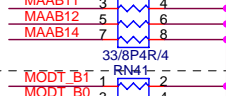
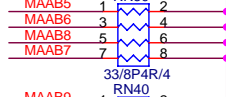
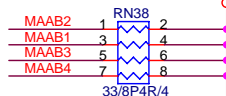
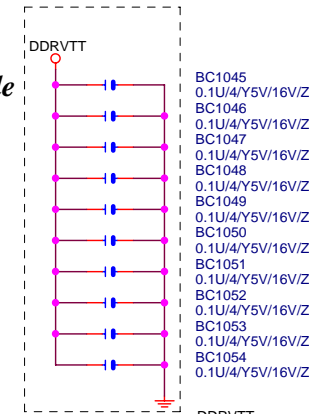
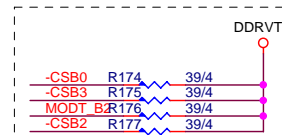
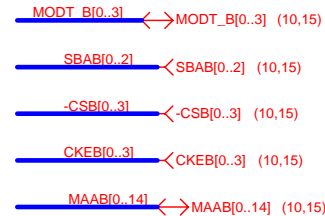
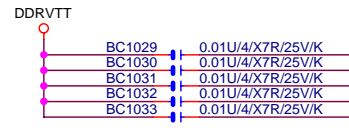
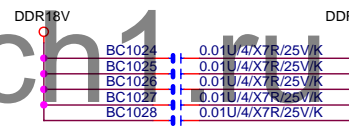
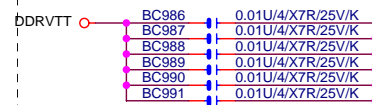
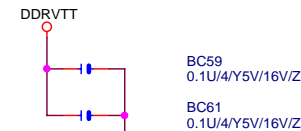


# DDR TERMINATION CHANNEL B

## DDR18V Decouple



## DDRVTT Decouple



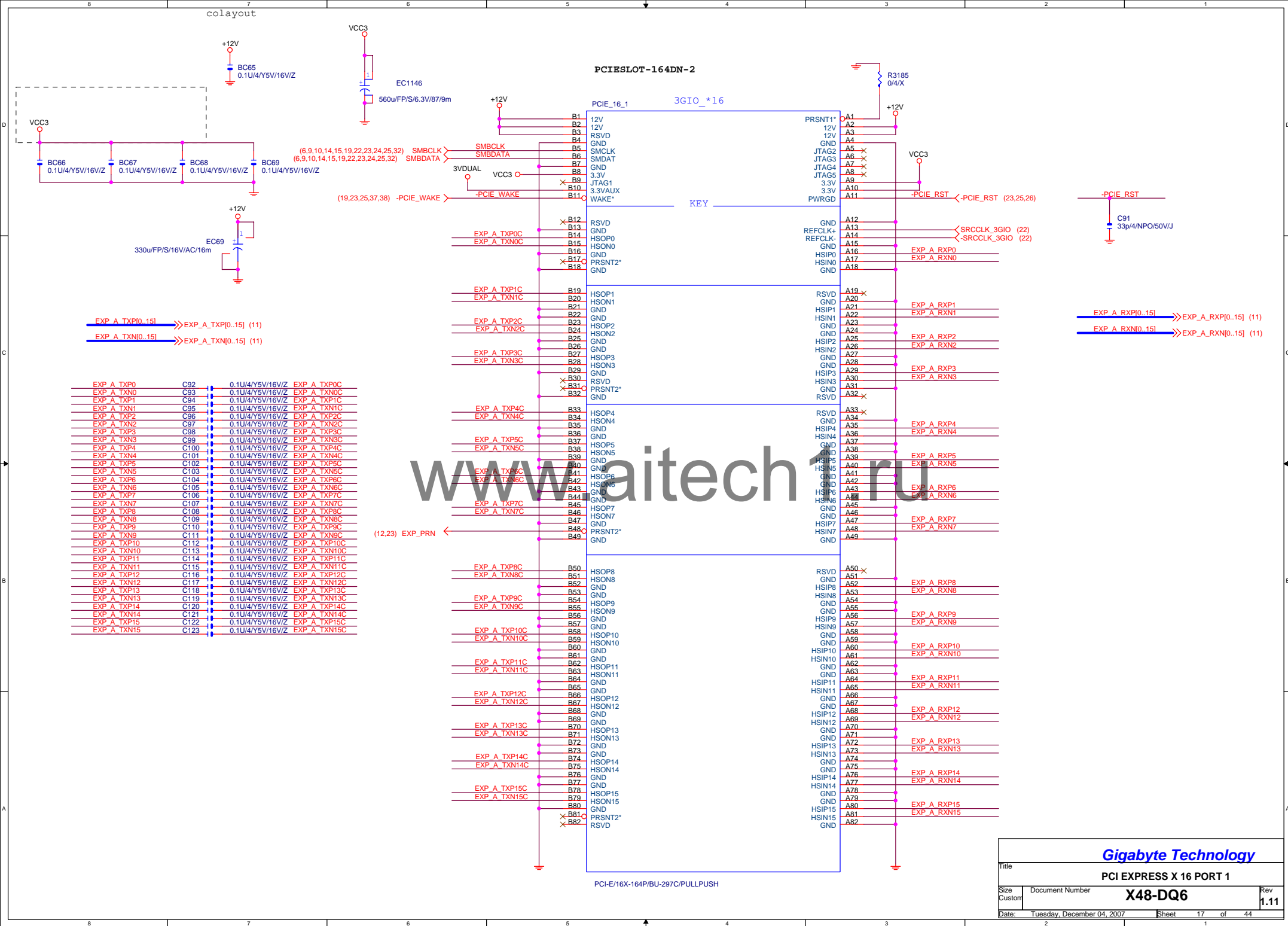
(10,15) -SCASB

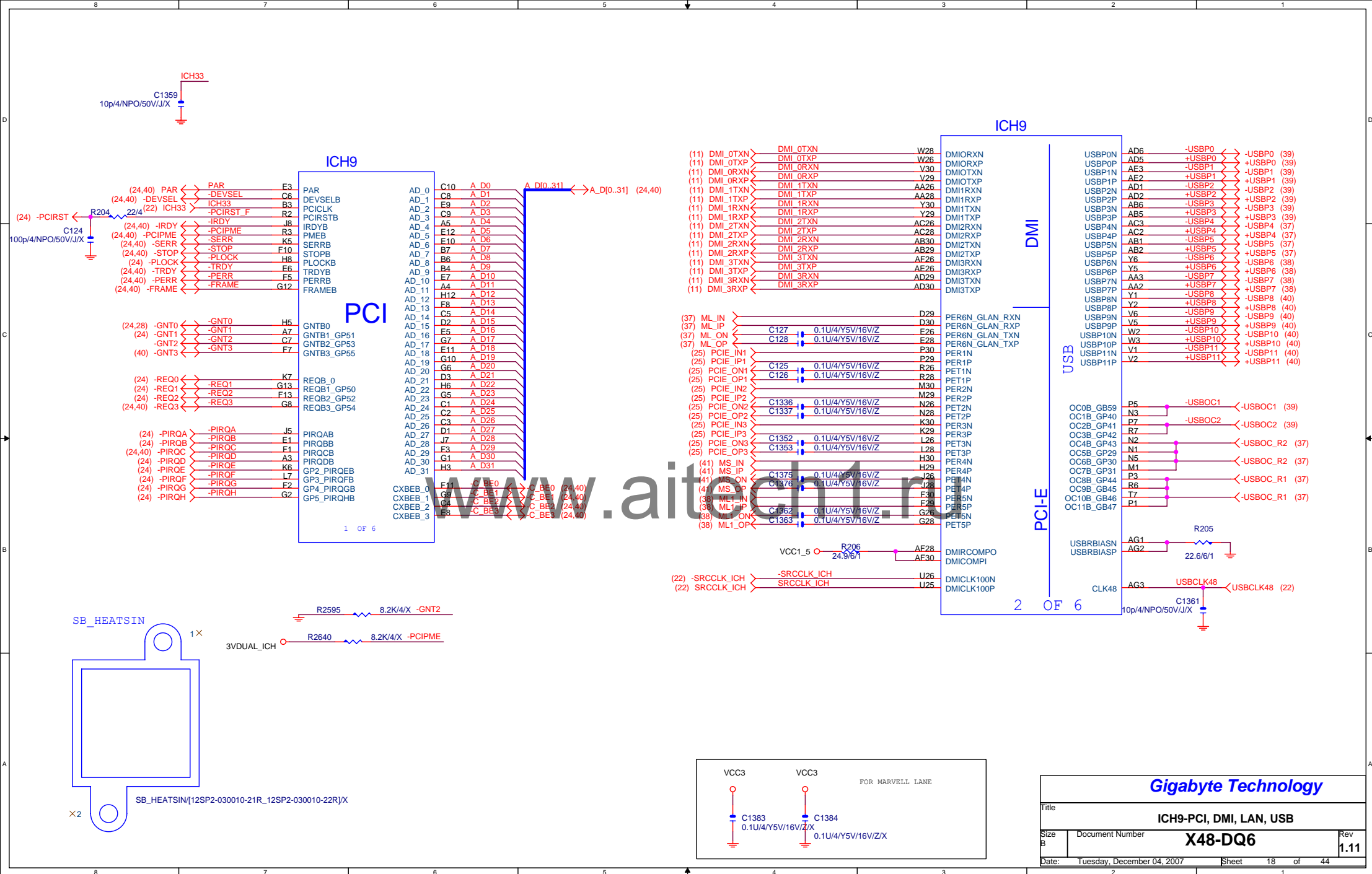
Gigabyte Technology

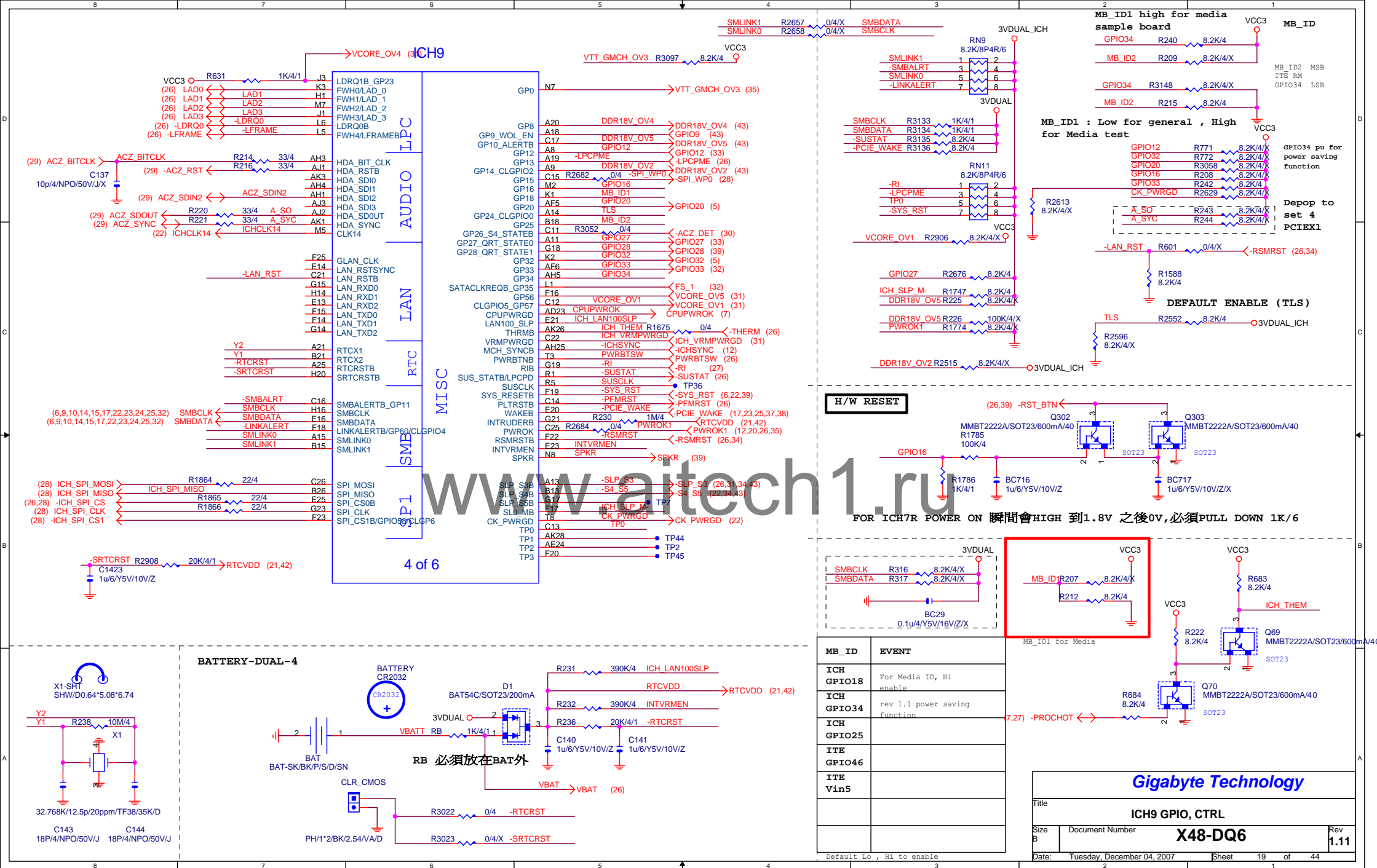
DDRII TERMINATOR

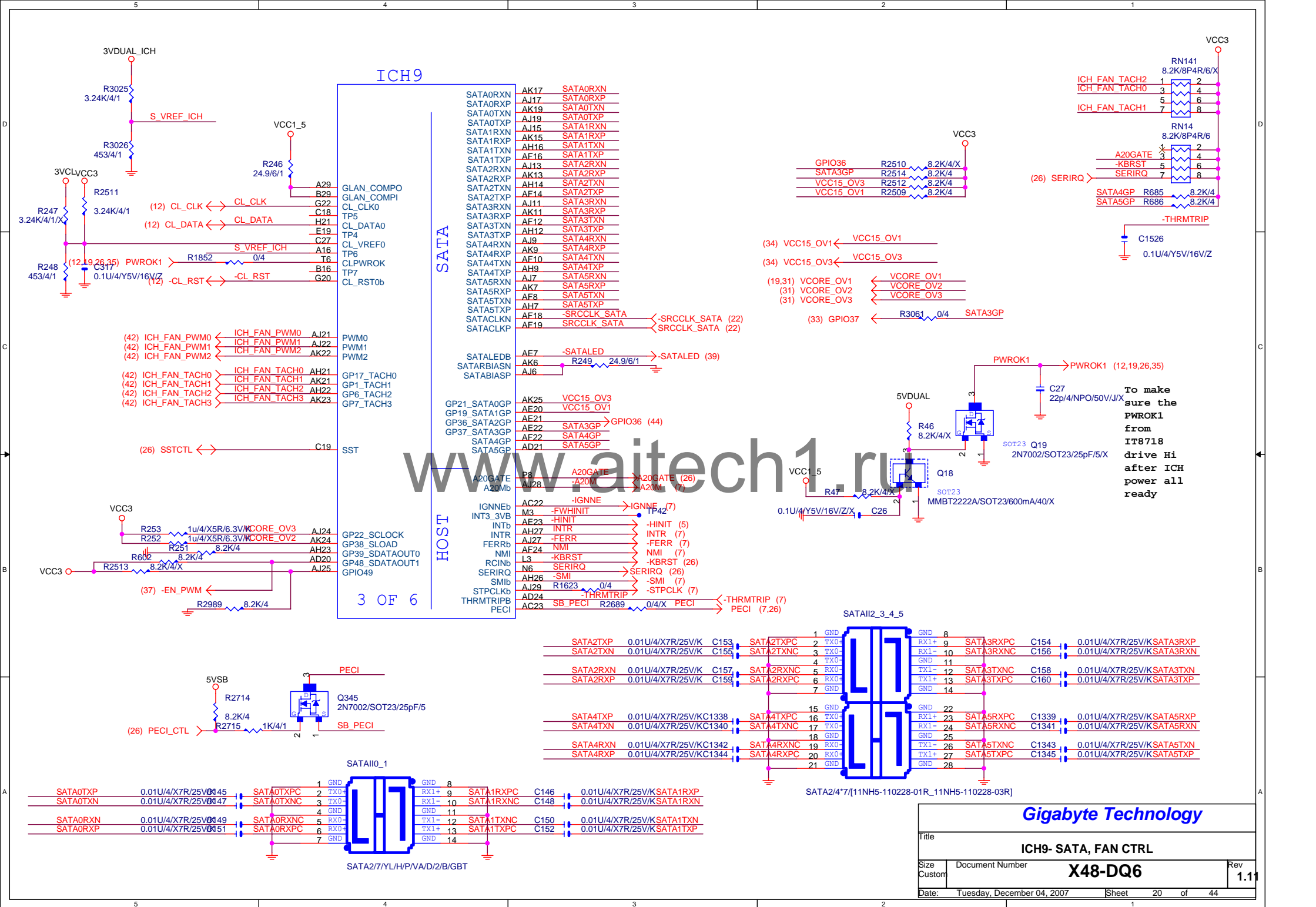
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Size	Document Number	Rev	1.11
Custom			
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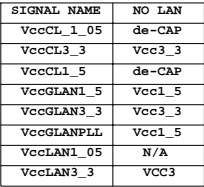
















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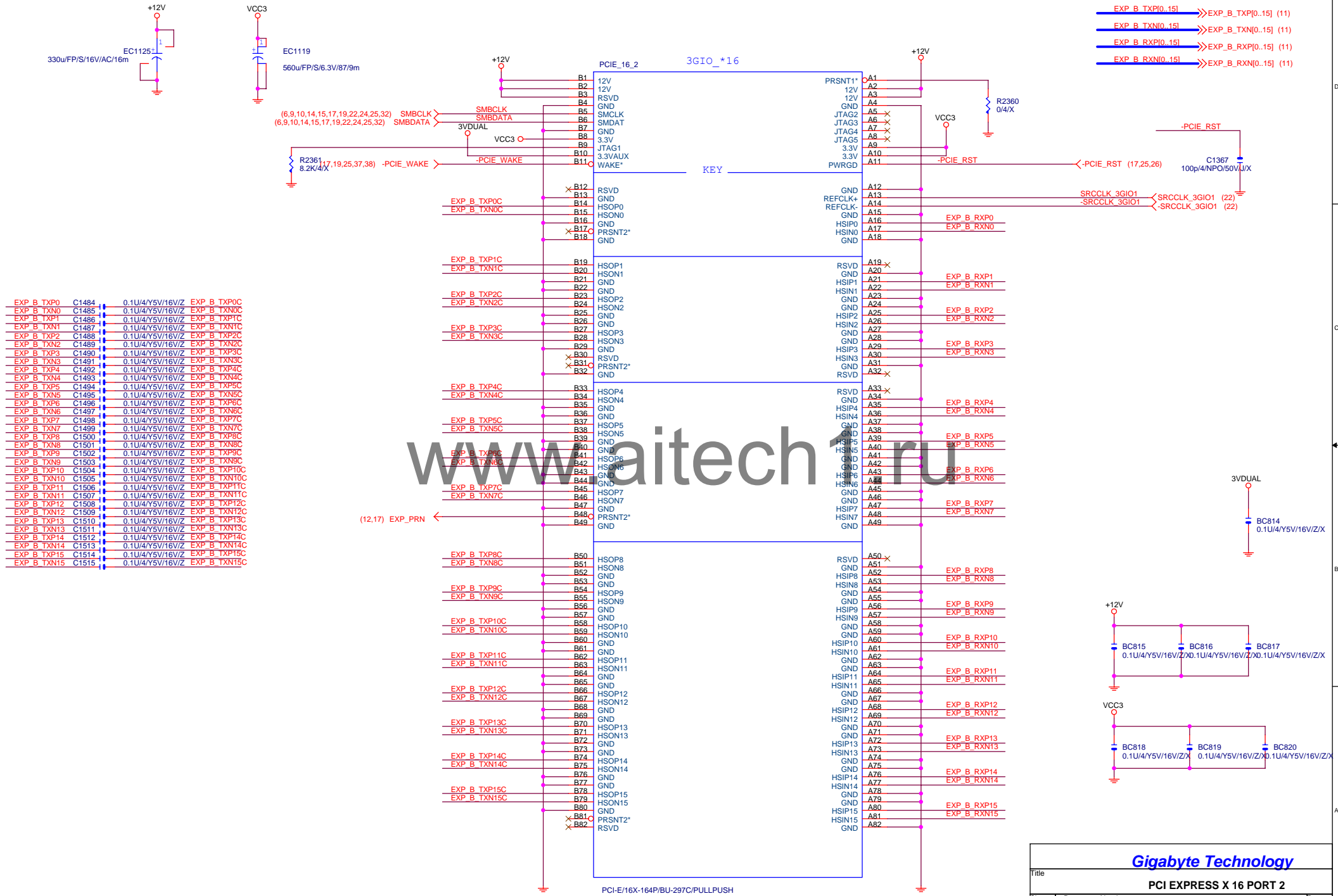
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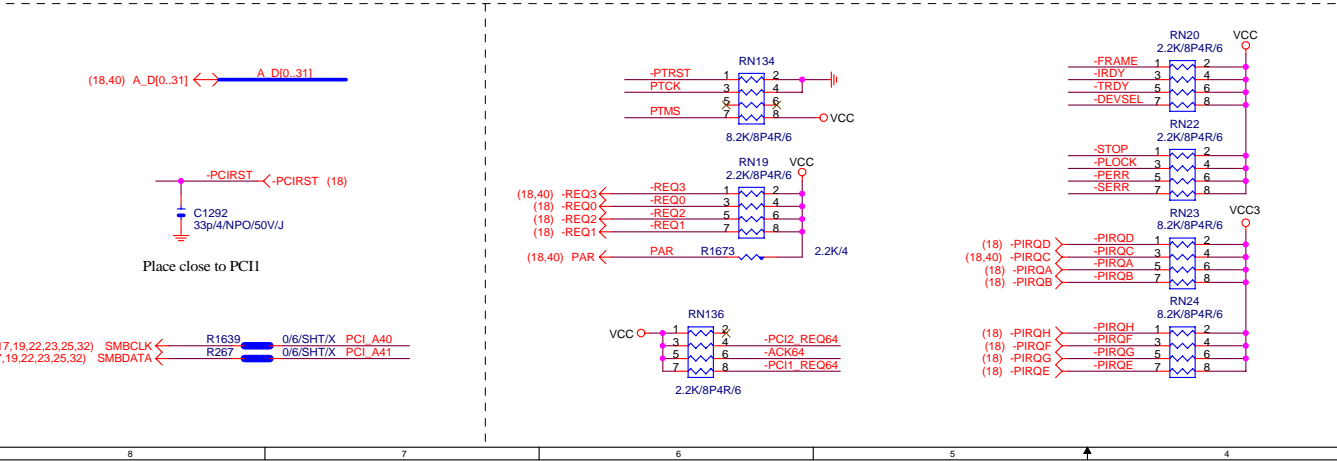
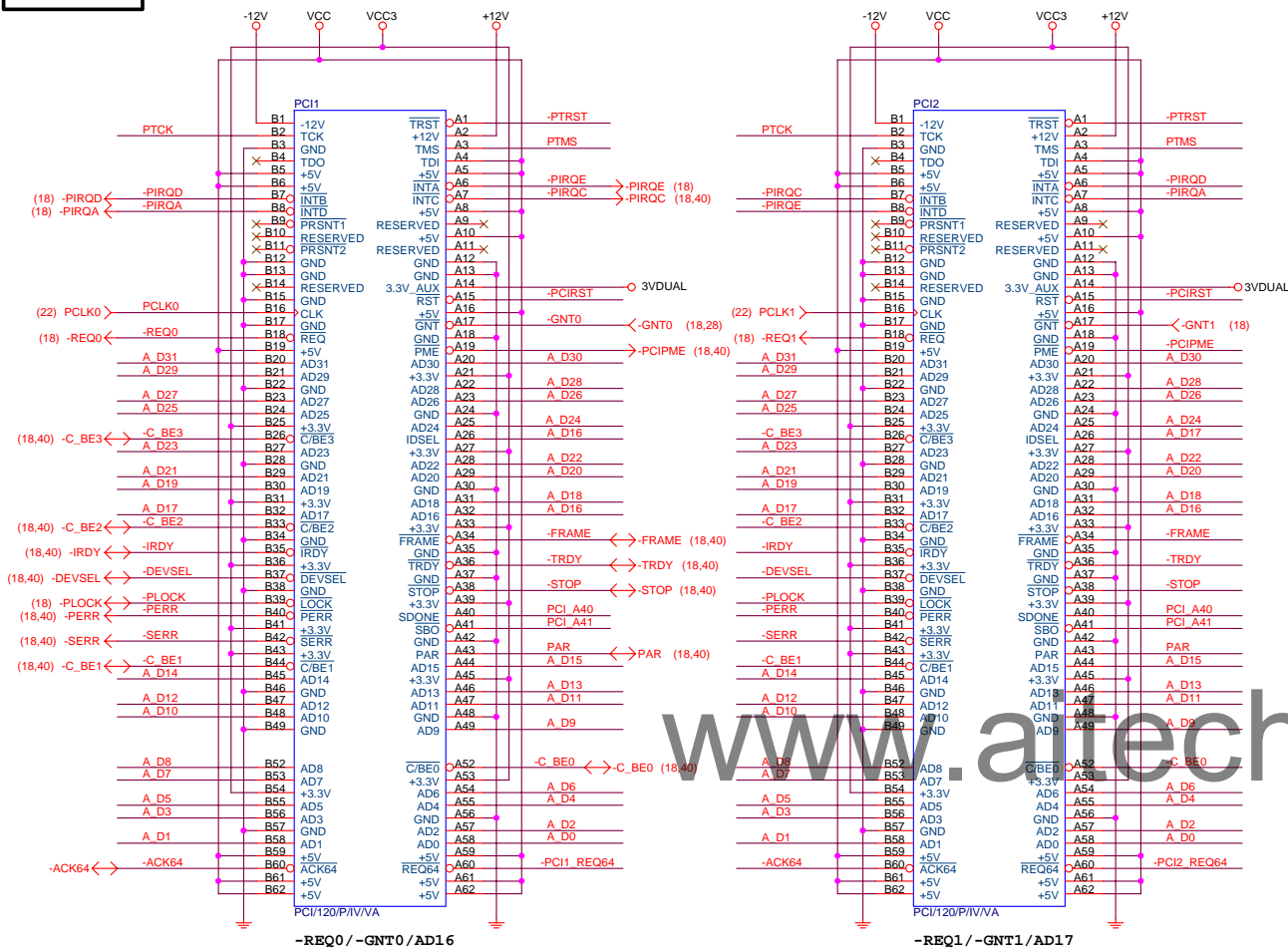
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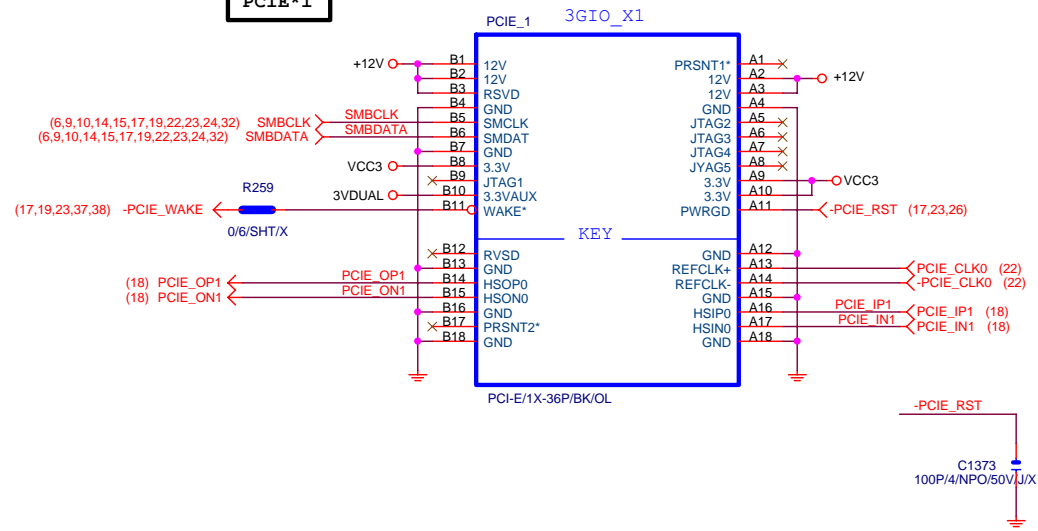
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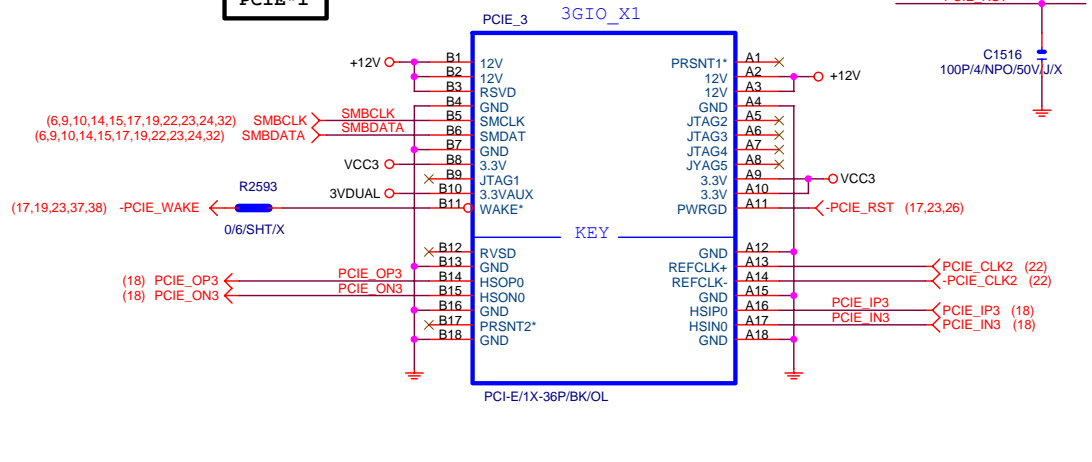
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Rev			
1.11			
Date:			
Tuesday, December 04, 2007			
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24			
of			
44			

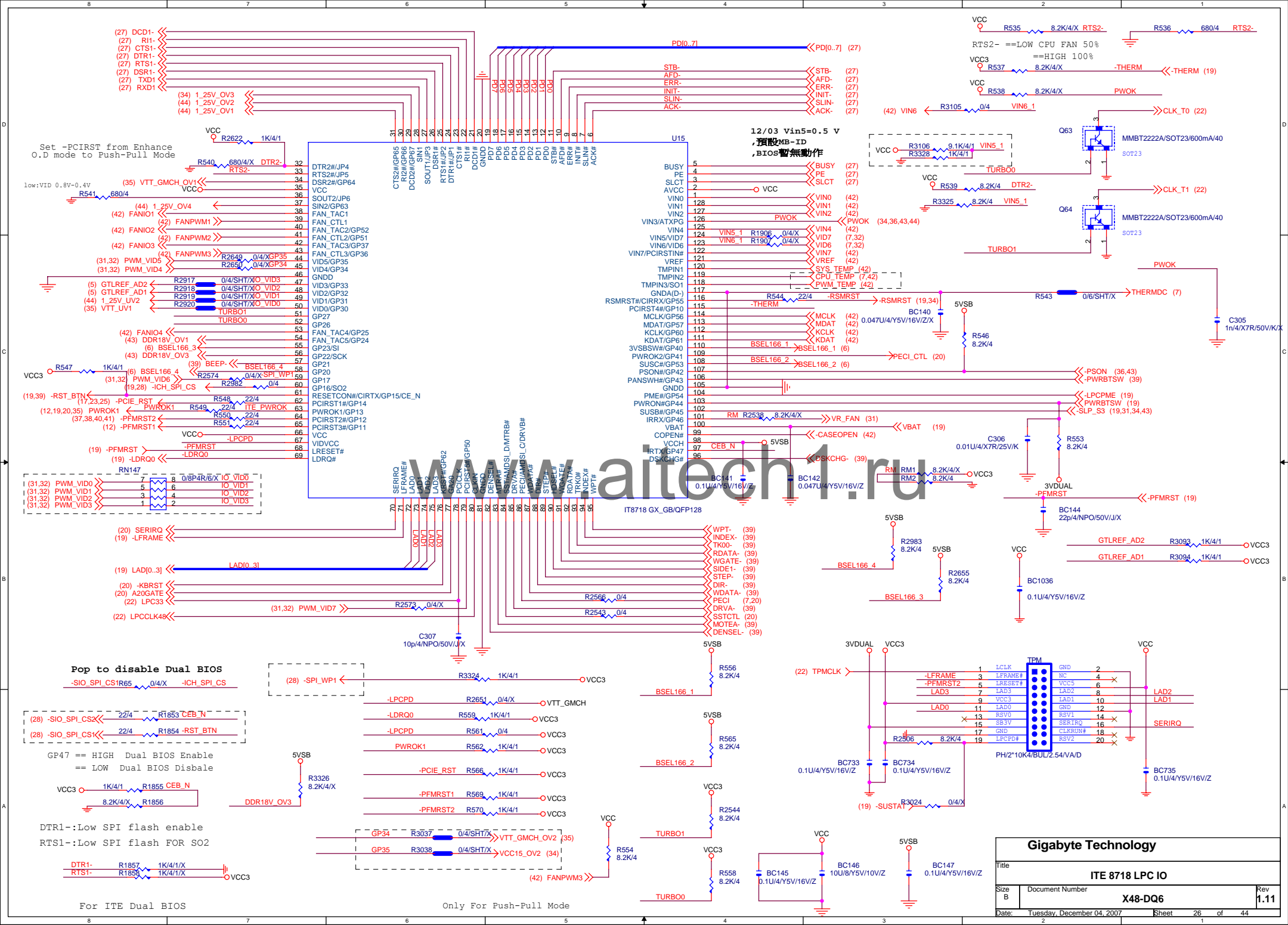


PCIE\*1

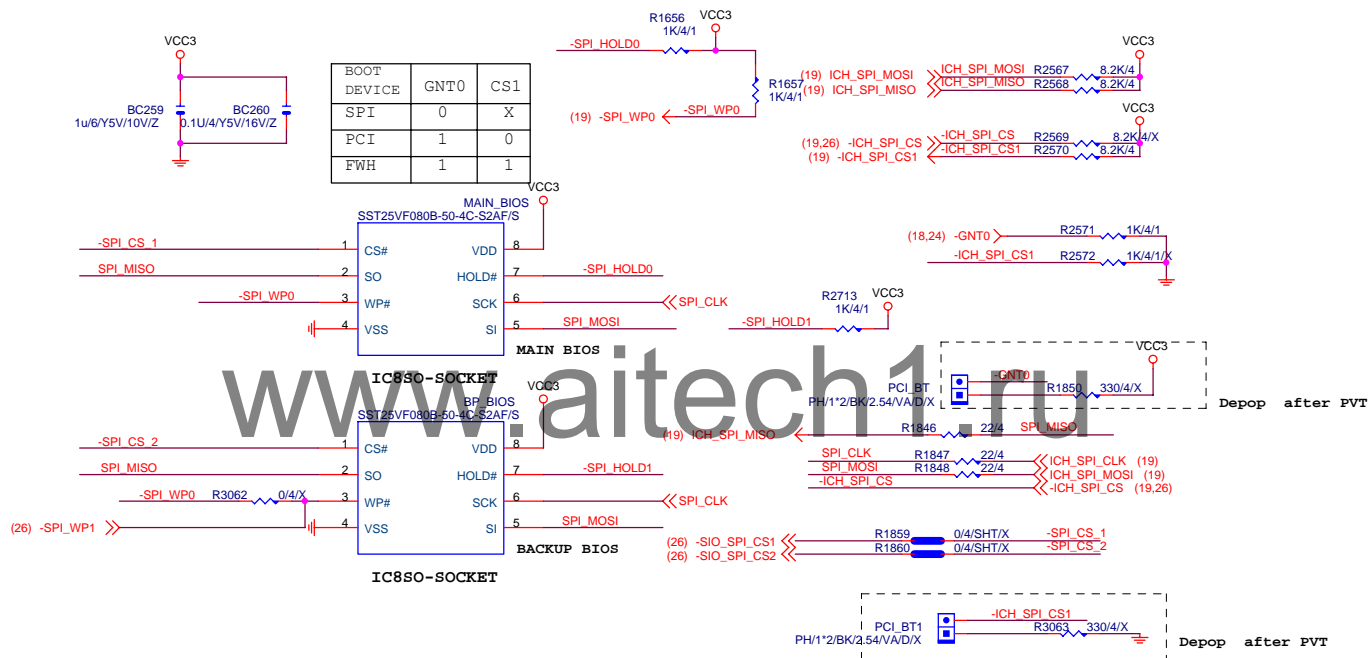
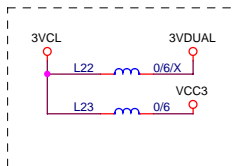


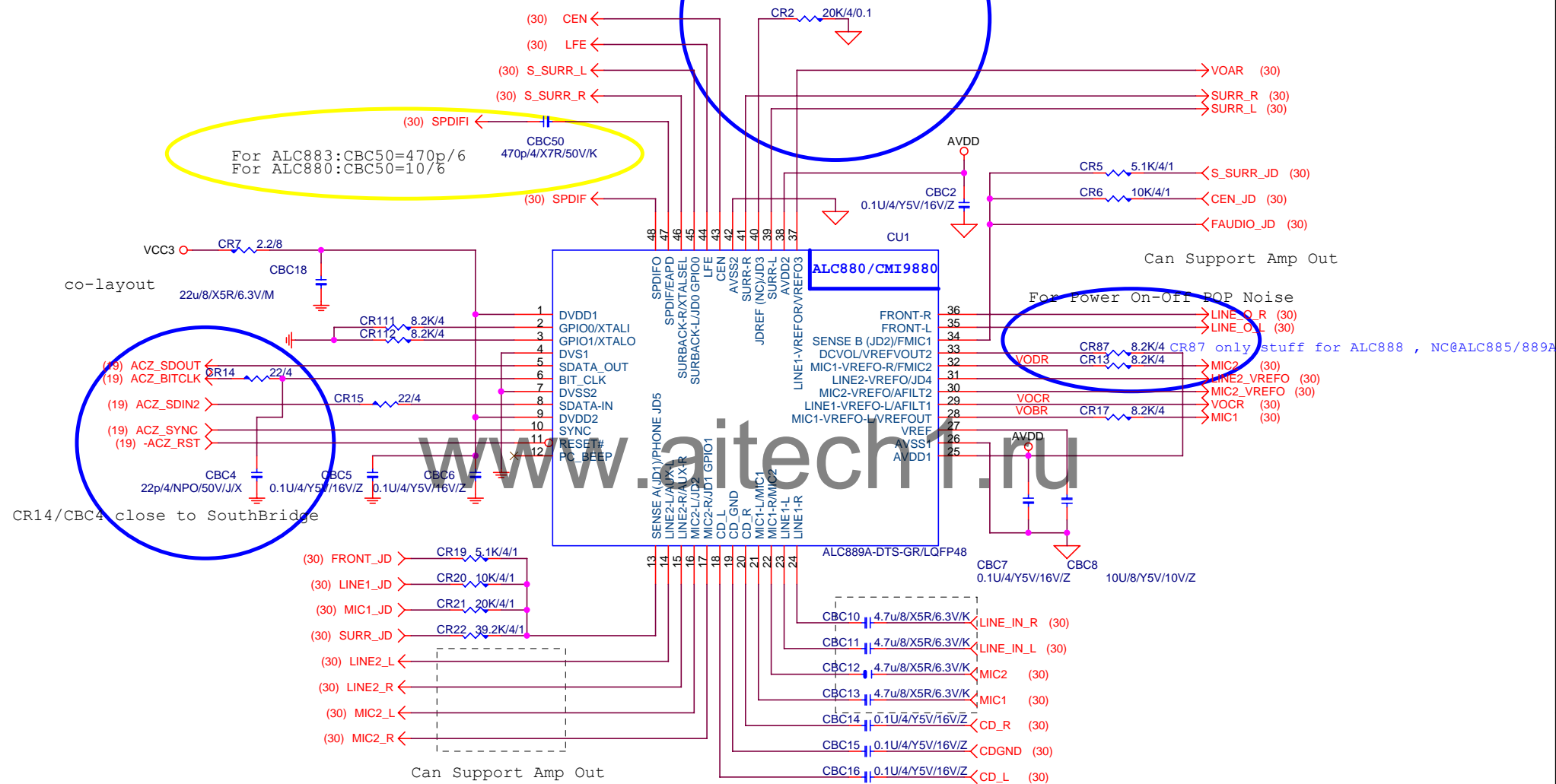
PCIE\*1







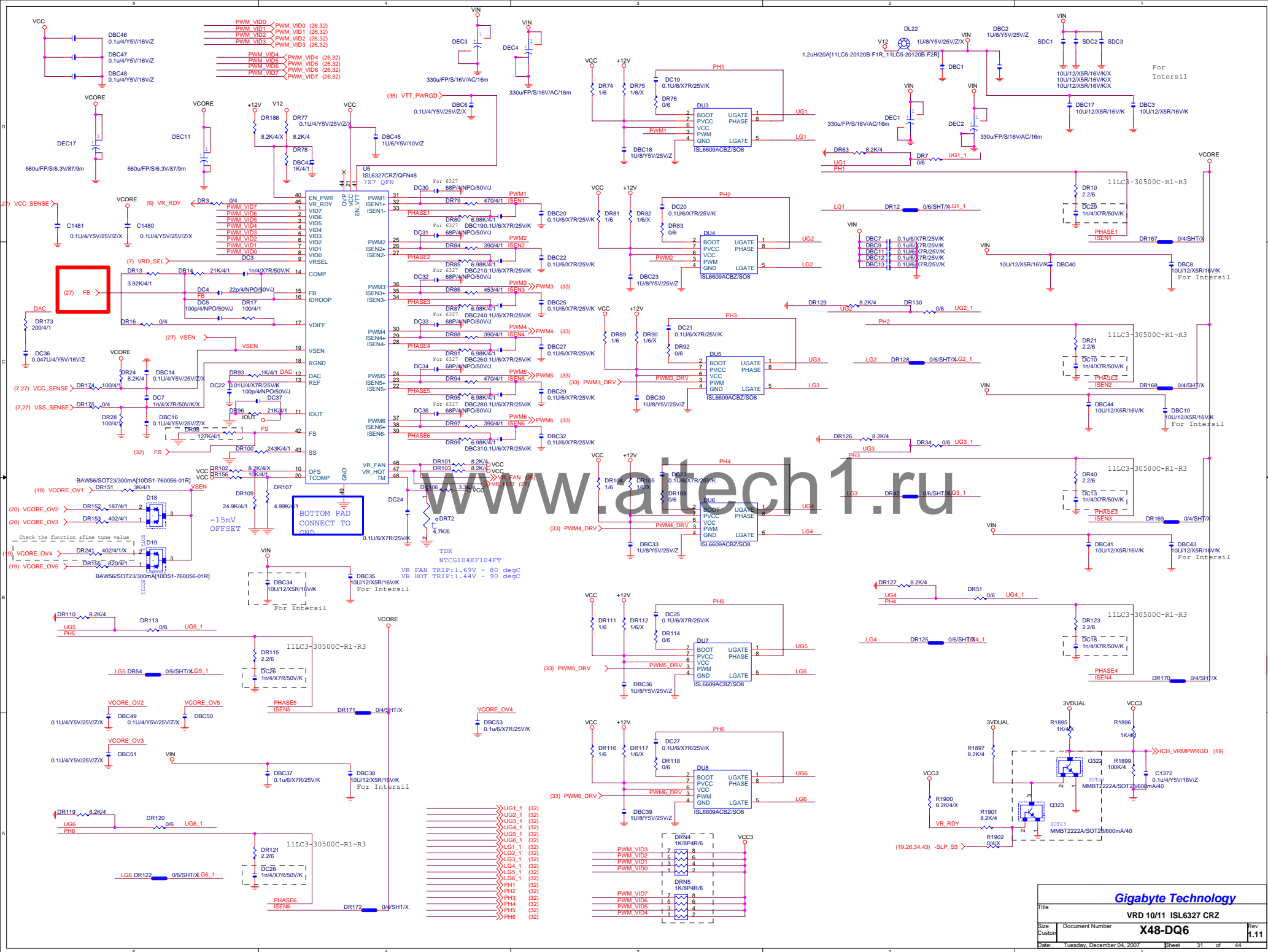




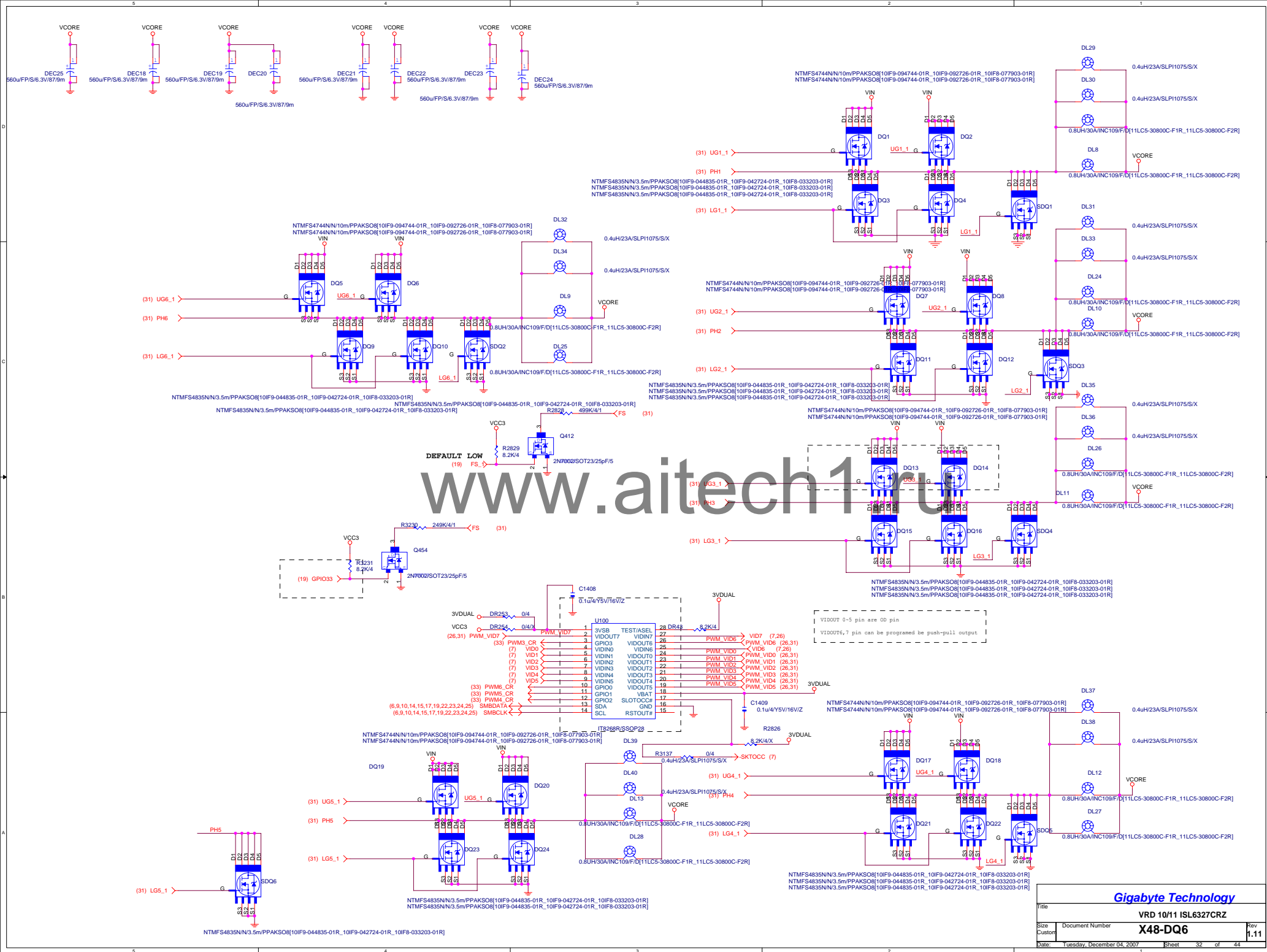
Gigabyte Technology

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Size	Document Number	X48-DQ6		Rev
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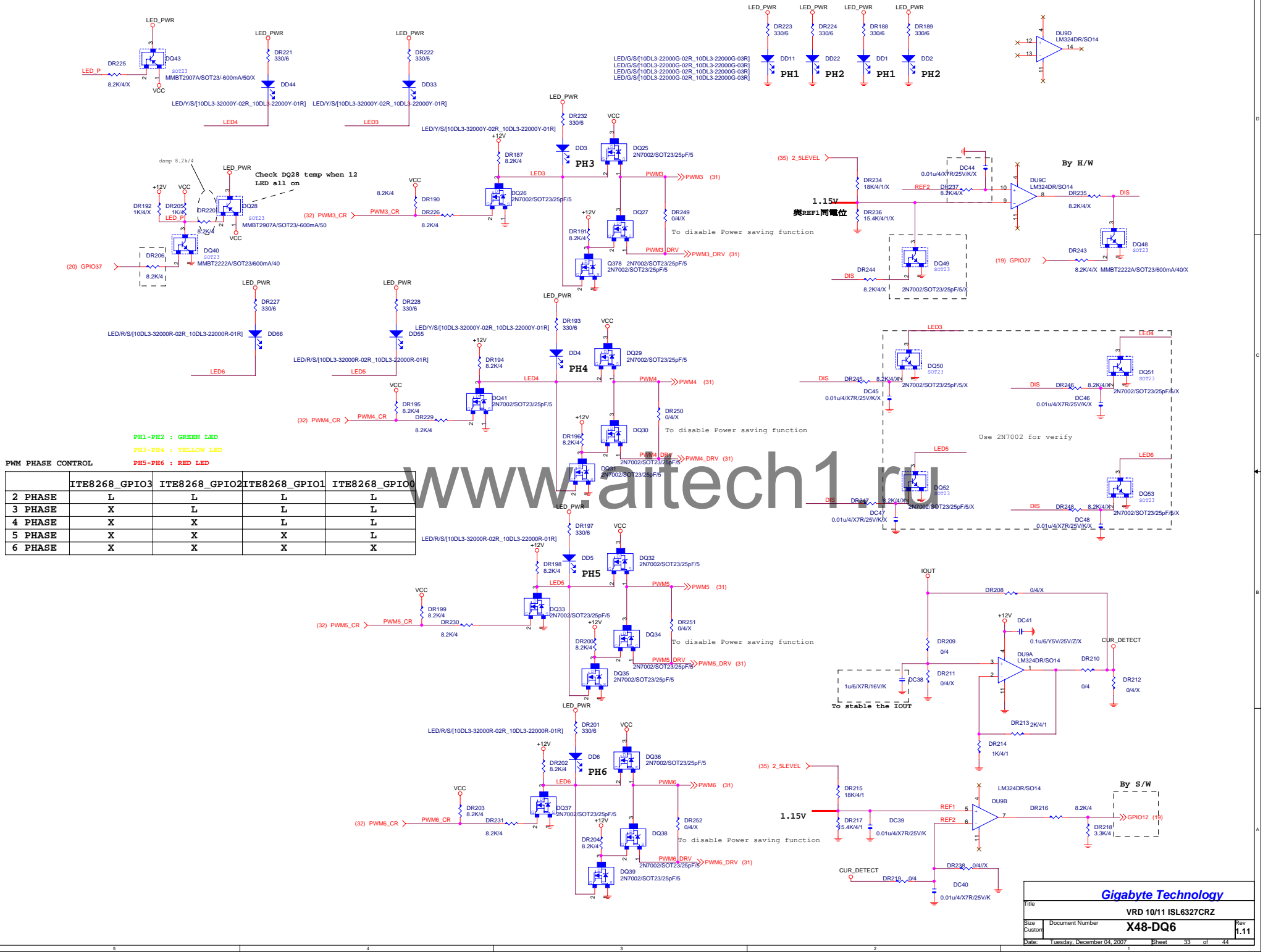












PWM PHASE CONTROL

	ITE8268_GPIO3	ITE8268_GPIO2	ITE8268_GPIO1	ITE8268_GPIO0
2 PHASE	L	L	L	L
3 PHASE	X	L	L	L
4 PHASE	X	X	L	L
5 PHASE	X	X	X	L
6 PHASE	X	X	X	X

PH1-PH2 : GREEN LED  
PH3-PH4 : YELLOW LED  
PH5-PH6 : RED LED

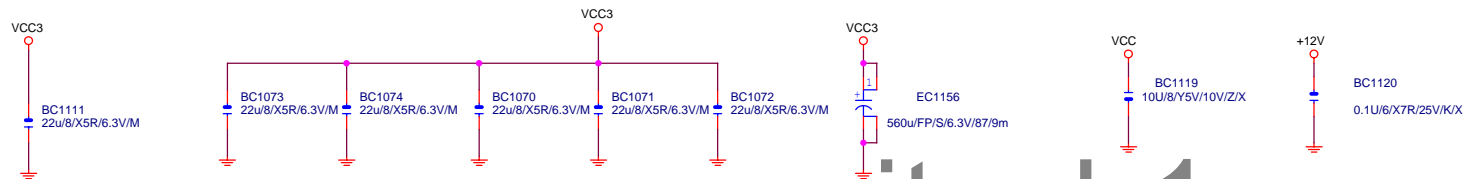
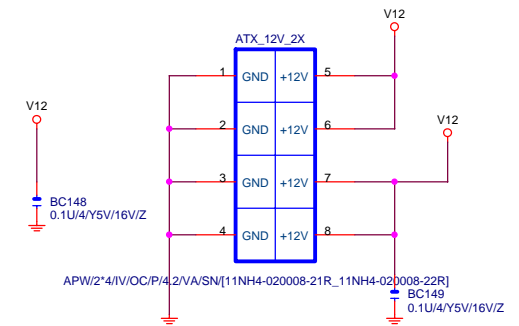
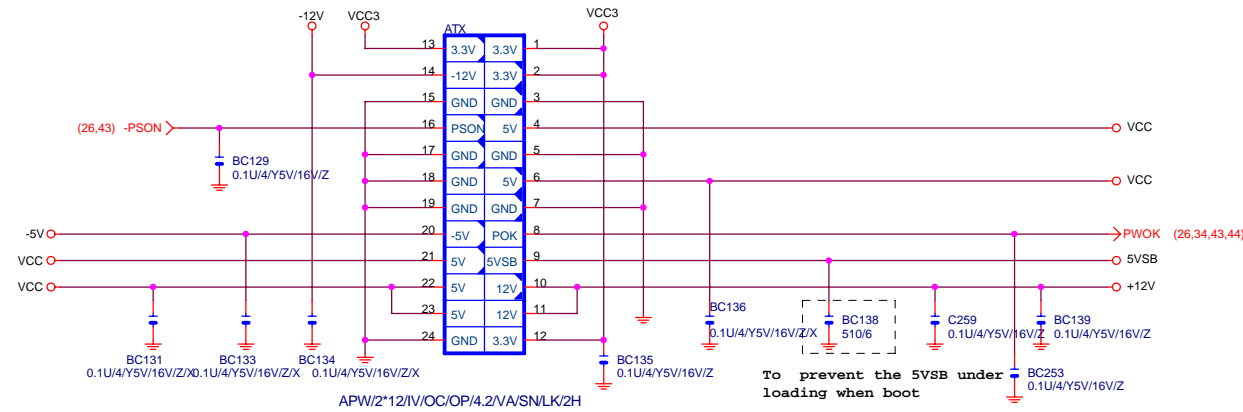


1_25V_UV2	1_25V_UV1	VOLTAGE
LOW	LOW	1.1V
LOW	HIGH	1.15V
HIGH	LOW	1.2V
HIGH	HIGH	1.25V

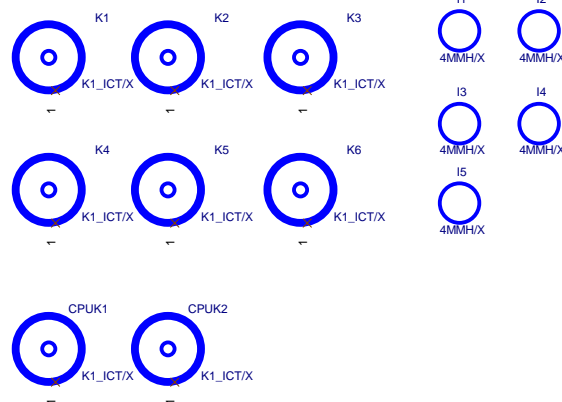
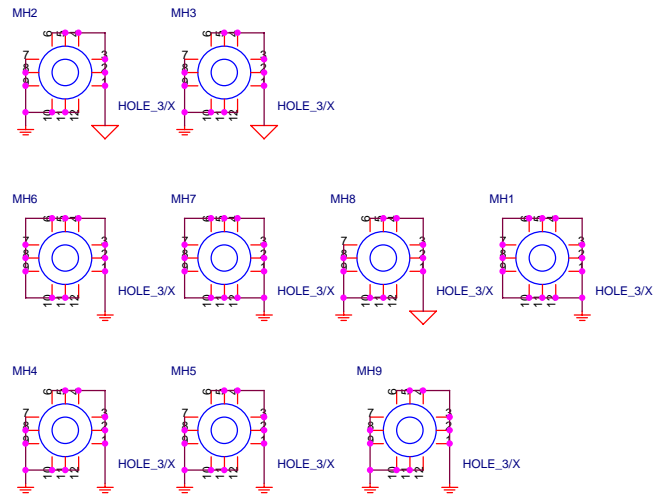
www.aitech1.ru

Need fine tune the value to 1.15V, when enable  
Default Low...

# ATX POWER CONNECTOR



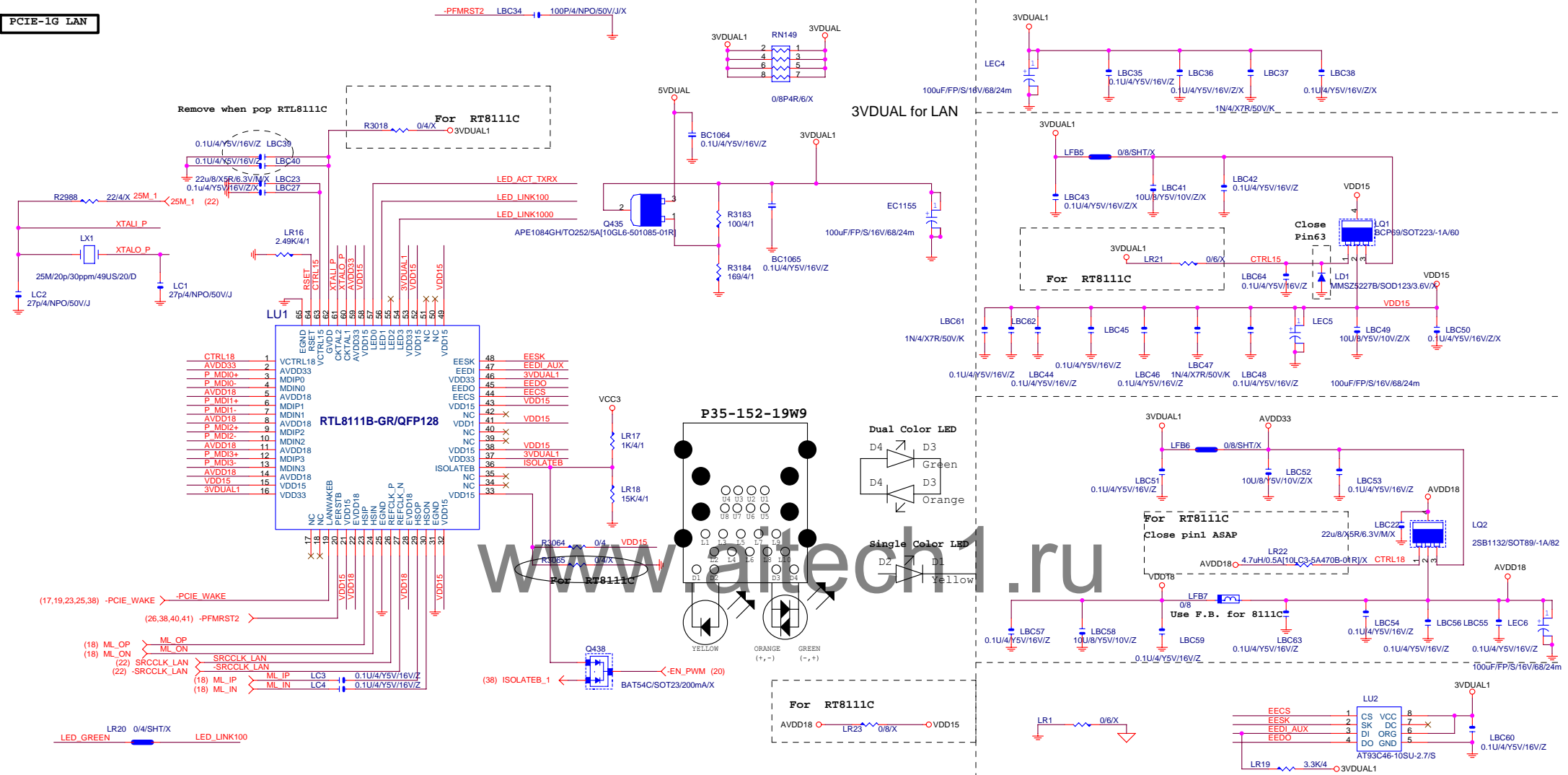
www.aitech1.ru



Gigabyte Technology

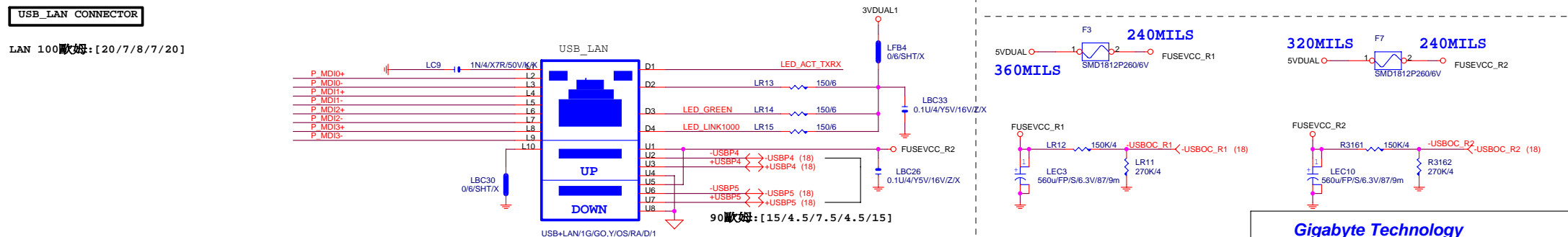
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ATX POWER CONNECTOR			
Size	Document Number	Rev	
B	X48-DQ6	1.11	
Date:	Tuesday, December 04, 2007	Sheet	36 of 44

## PCIE-1G LAN

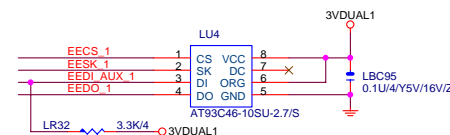
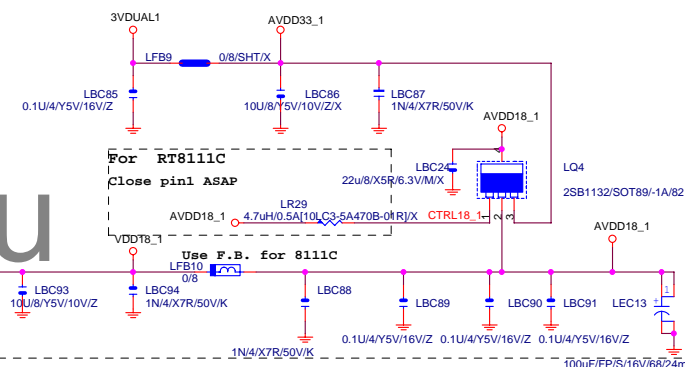
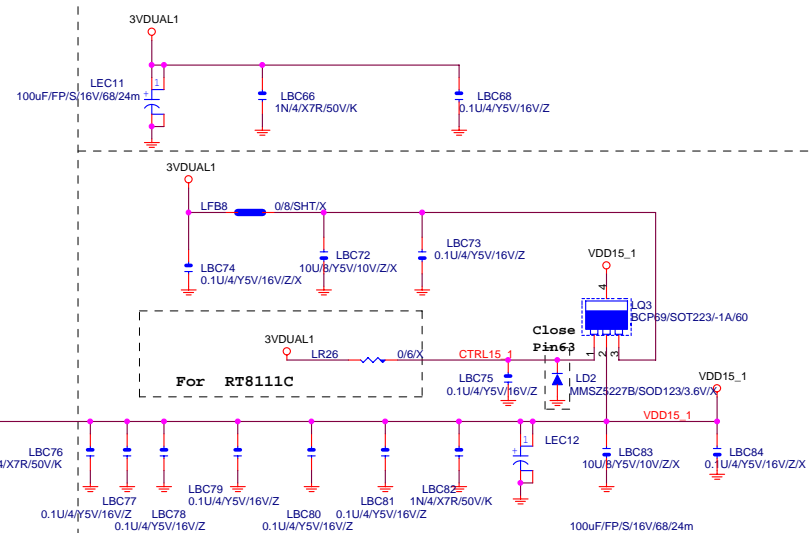
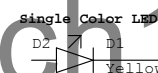
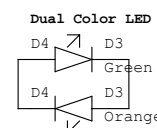
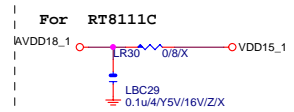
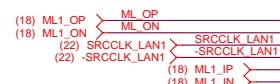
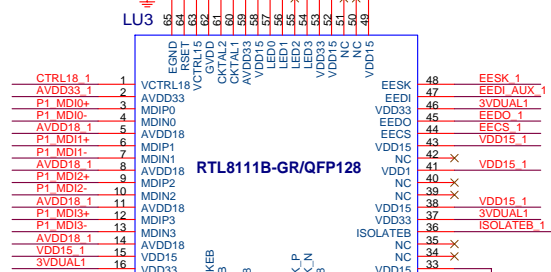
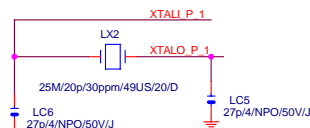
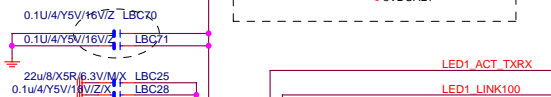
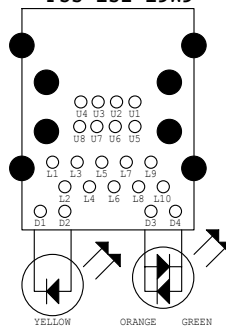
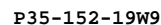
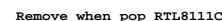


## USB\_LAN CONNECTOR

LAN 100 歐姆:[20/7/8/7/20]

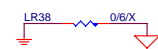
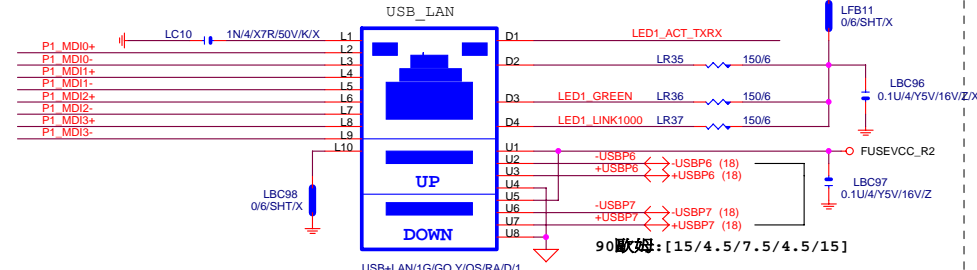


## PCIE-1G LAN

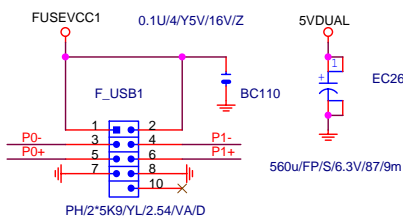
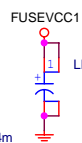
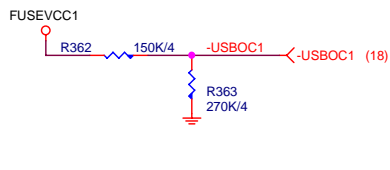


## USB LAN CONNECTOR

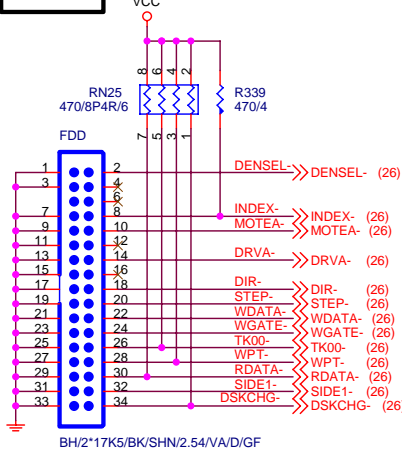
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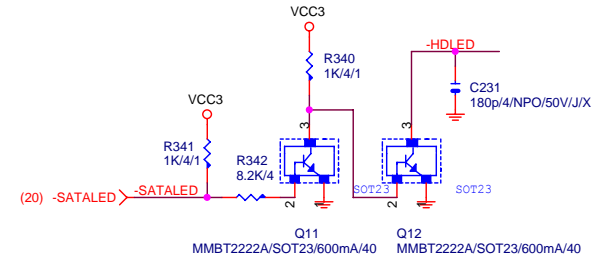
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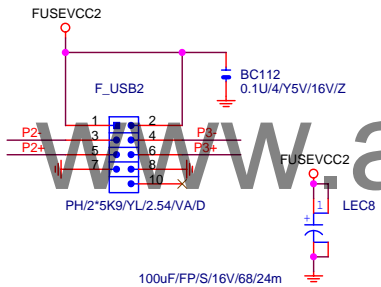
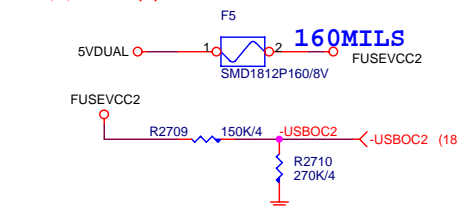
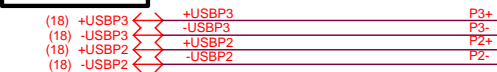
# FLOPPY



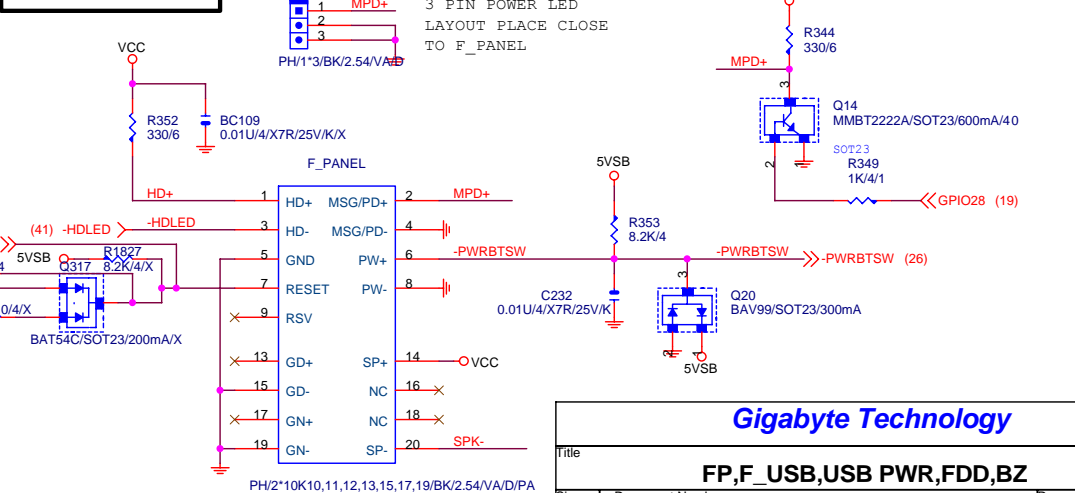
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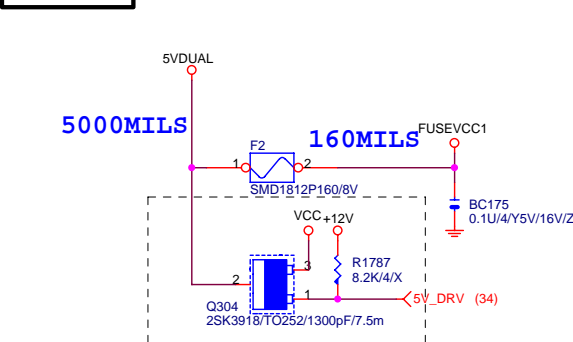
# FRONT USB2



# INTEL FRONT PANEL

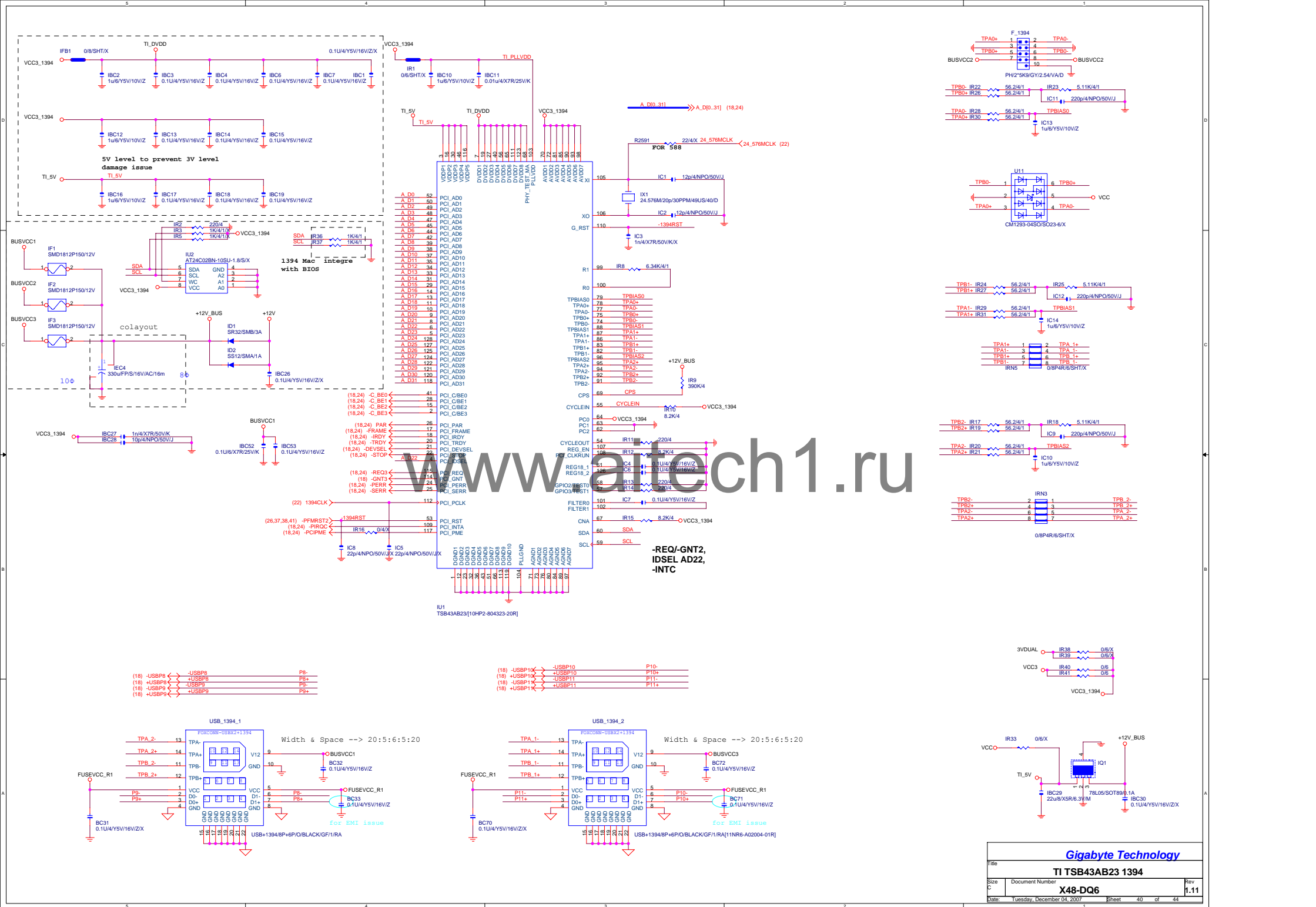


# USB POWER



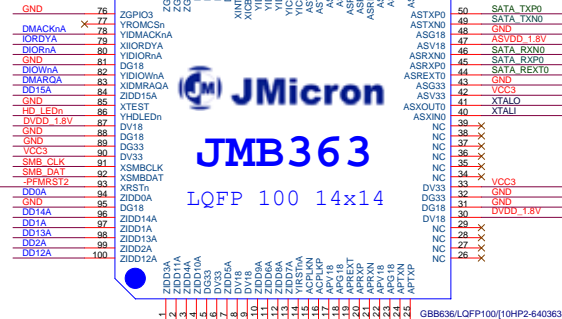
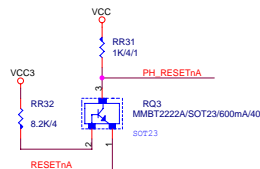
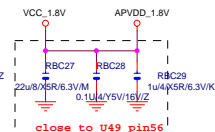
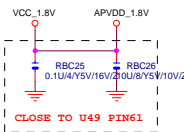
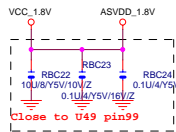
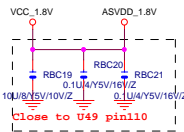
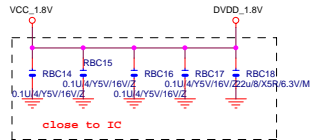
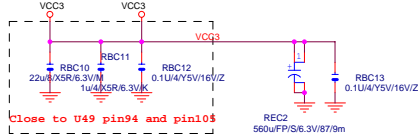
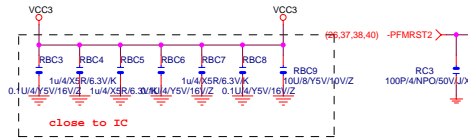
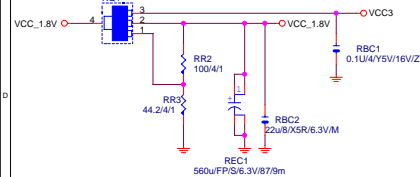
Gigabyte Technology			
FP,F_USB,USB PWR,FDD,BZ			
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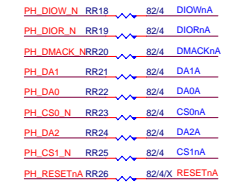
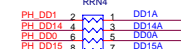
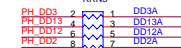
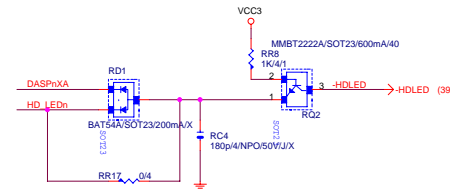
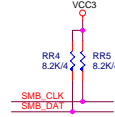
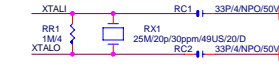


### 3.3V to 1.8V Voltage Regulator

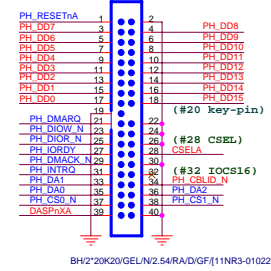
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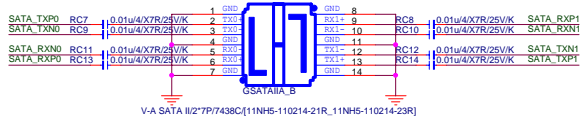
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### IDE Connector



### SATA Connector



Gigabyte Technology

JMB363

X48-DQ6

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(26) VREF ←

(26) SYS\_TEMP ←

(6) PWM\_TEMP ←

(6) CPU\_TEMP ←

C1294  
1u6/Y5V/10V/Z

C1295  
1u6/Y5V/10V/Z

RS1  
10K/1/6/S

R1651  
10K/4/1

R269  
10K/4/1

R270  
30K/4/1/X

R1652  
30K/6/1

C1296  
5.6n4/X7R/25V/K

Case Open Circuits

The schematic diagram illustrates the FUSEVCC\_R3 power plane connections. It includes the following components and their pin configurations:

- KB/MS**: A component with pins 1 through 12. Pins 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12 are connected to the FUSEVCC\_R3 plane. Pins 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12 are connected to the FUSEVCC\_R3 plane.
- RN29**: A component with pins 1 through 8. Pins 1, 2, 3, 4, 5, 6, 7, and 8 are connected to the FUSEVCC\_R3 plane.
- RN30**: A component with pins 1 through 8. Pins 1, 2, 3, 4, 5, 6, 7, and 8 are connected to the FUSEVCC\_R3 plane.
- CN1**: A component with pins 1 through 8. Pins 1, 2, 3, 4, 5, 6, 7, and 8 are connected to the FUSEVCC\_R3 plane.

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<b>Gigabyte Technology</b>				
Title				
<b>HWM,KB/MS, FAN CTRL</b>				
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