

Model Name: GA-X79-UP4

Rev 1.1

SHEET

TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA2011-DDR
05	CPU_LGA2011-CTRL_PCIE_DMI
06	CPU_LGA2011-PWR
07-08	DDR III CHANNEL A/B
09-10	DDR III CHANNEL C/D
11	PCH_SATA_GPIO_AUDIO
12	PCH_DMI_USB_PCIE_PCI
13	PCH_PWR_GND
14	PCI EXPRESS X16 SLOT_1
15	PCI EXPRESS X16 SLOT 2
16-18	PCI EXPRESS X8 SLOT 1/2
19	PCI EXPRESS X1 & PCI SLOT
20	ITE 8728 SIO
21	DUAL BIOS , TPM
22	-PROHOT,KB/MS,RUSB,COMA
23-25	VCORE IR3567
26-28	DDR CH A/B & CPUVTT IR3570*2
29	PBG CORE POWER RT8120
30-31	DISCRETE POWER
32	FP ,FUSB
33	ATX , OC
34-35	ALC898 & AUDIO JACK
36	HWM ,FAN CTRL
37	CLOCK GEN & BUFFER

SHEET

TITLE

38	F_USB3_FL1009
39	R_USB3_FL1009
40	Gb LAN-INTEL 82579V
41-42	Marvell 9172 SATA 3.0-A/B
43	Marvell 9172 eSATA
44	PCH GPIO LIST

Gigabyte Technology

Title		
Cover Sheet		
Size	Document Number	Rev
Custom	GA-X79-UP4	1.1
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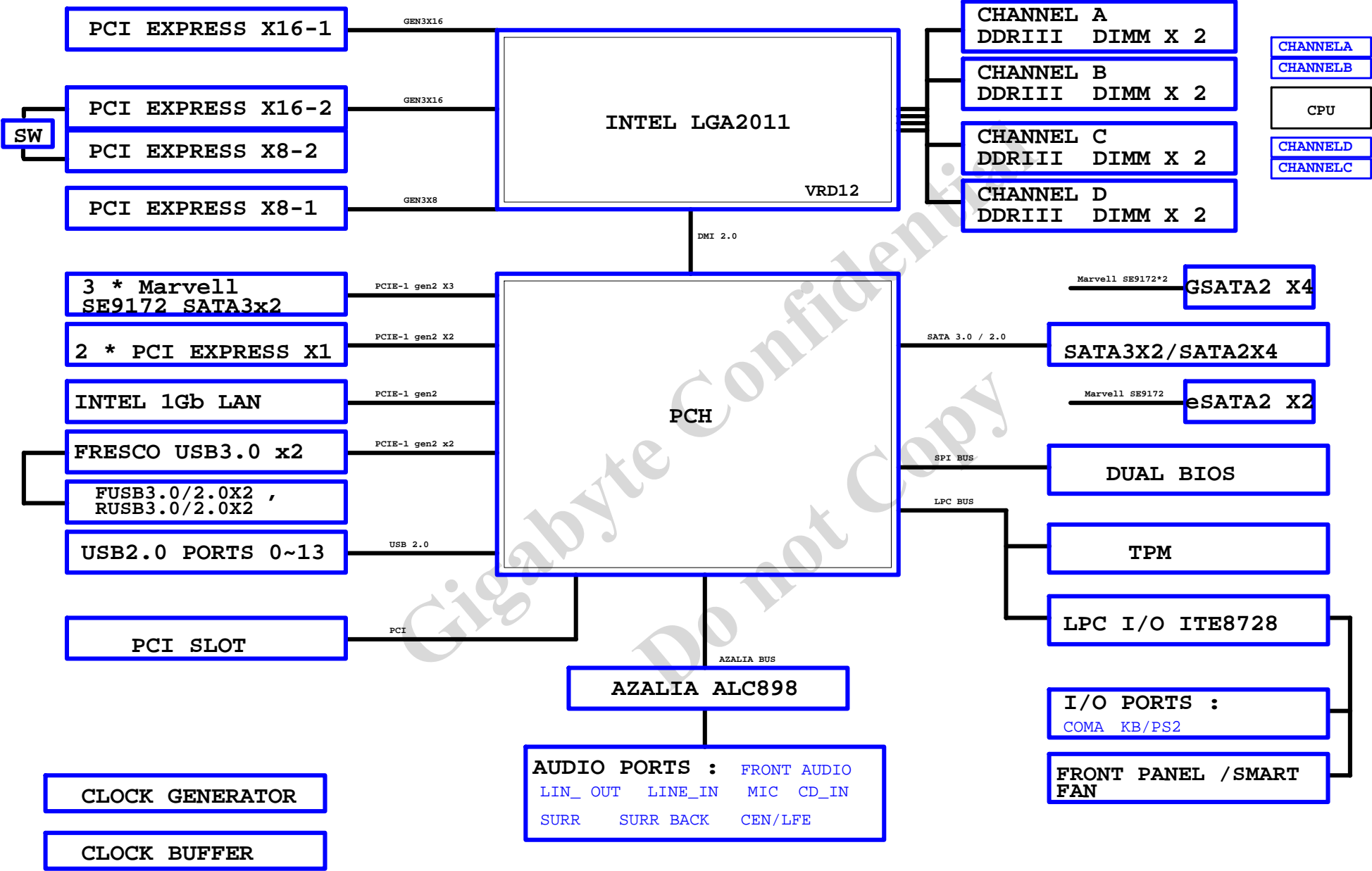
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2013-04-05	Build X79-UP3 0.1 from X79-UD3R 0.1 for	
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DATE	Change Item	Reason
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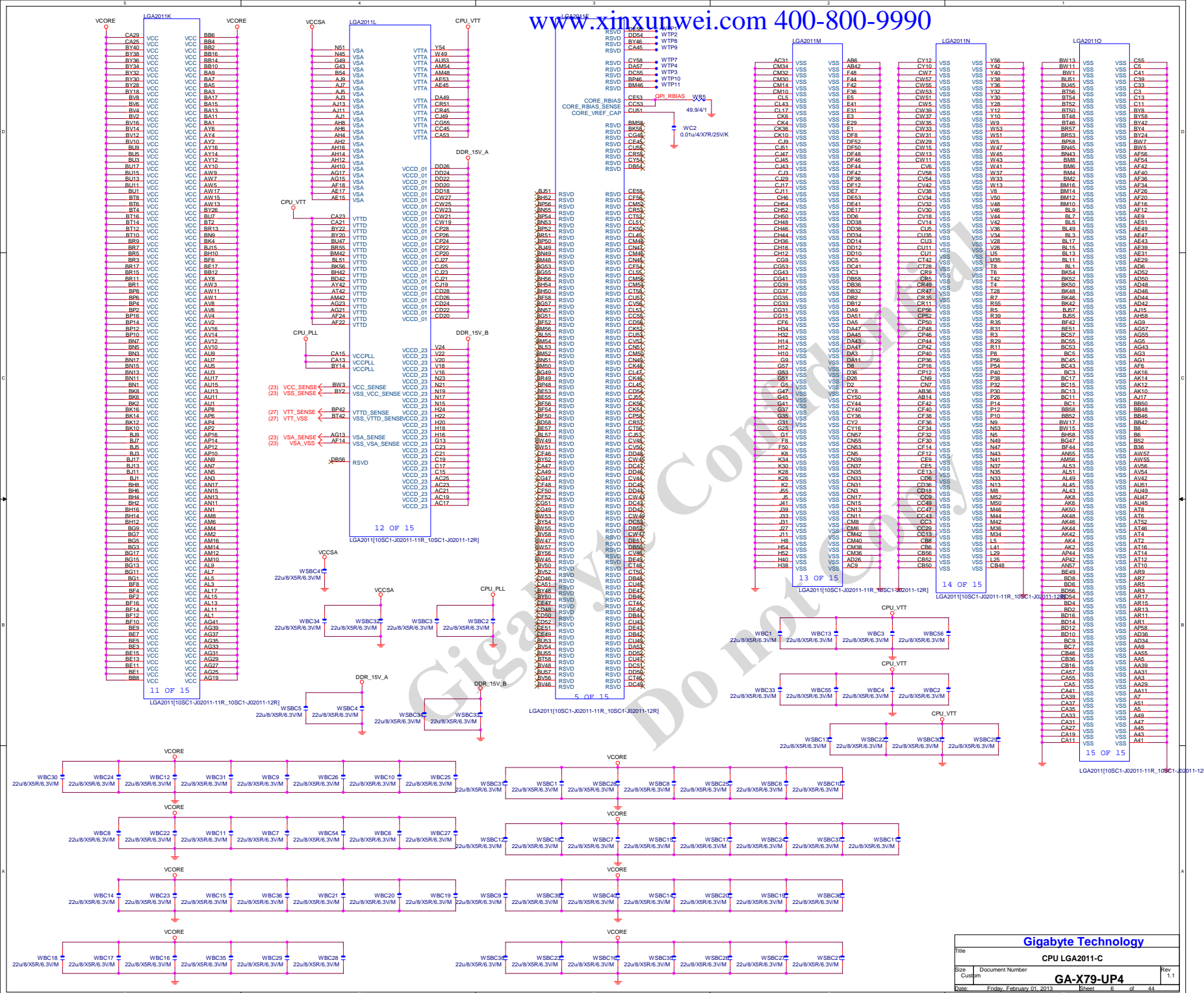
BLOCK DIAGRAM

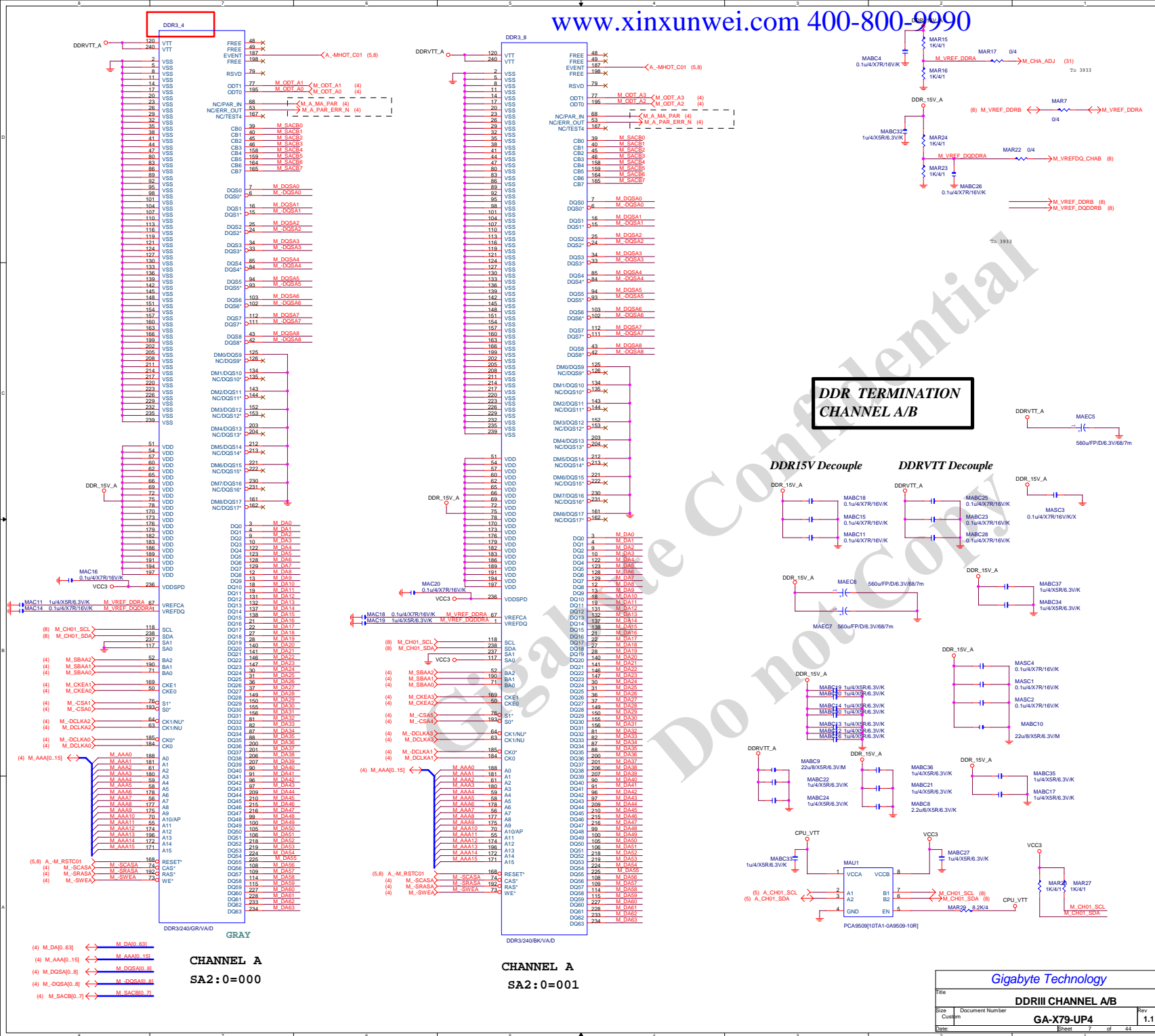


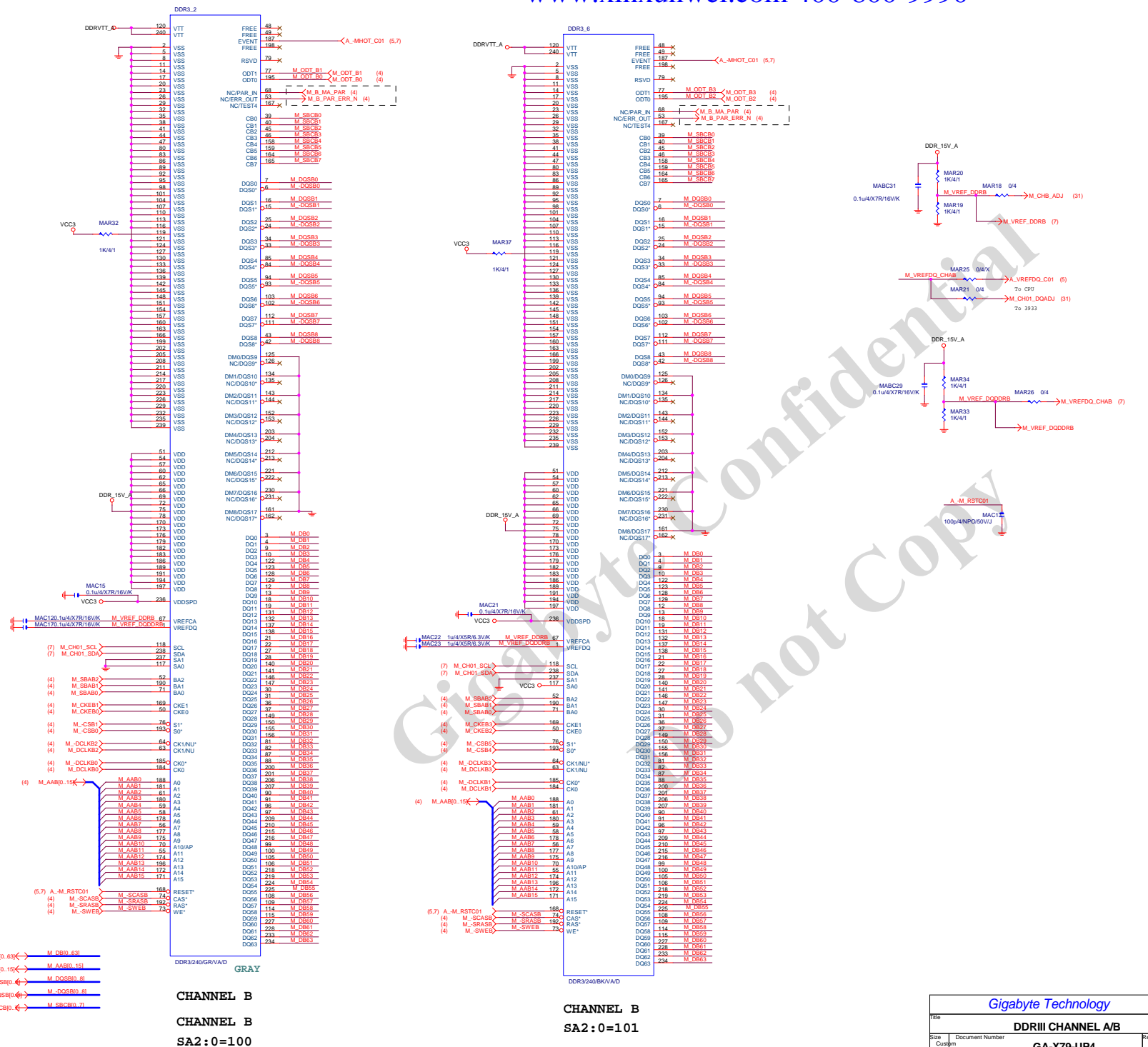
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M_AA03	CL28	DDR0_MA03	DDR0_D003	CC10	M_DA3				
M_AA04	CL29	DDR0_MA04	DDR0_D004	CC11	M_DA4				
M_AA05	CL30	DDR0_MA05	DDR0_D005	CC12	M_DA5				
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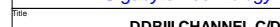


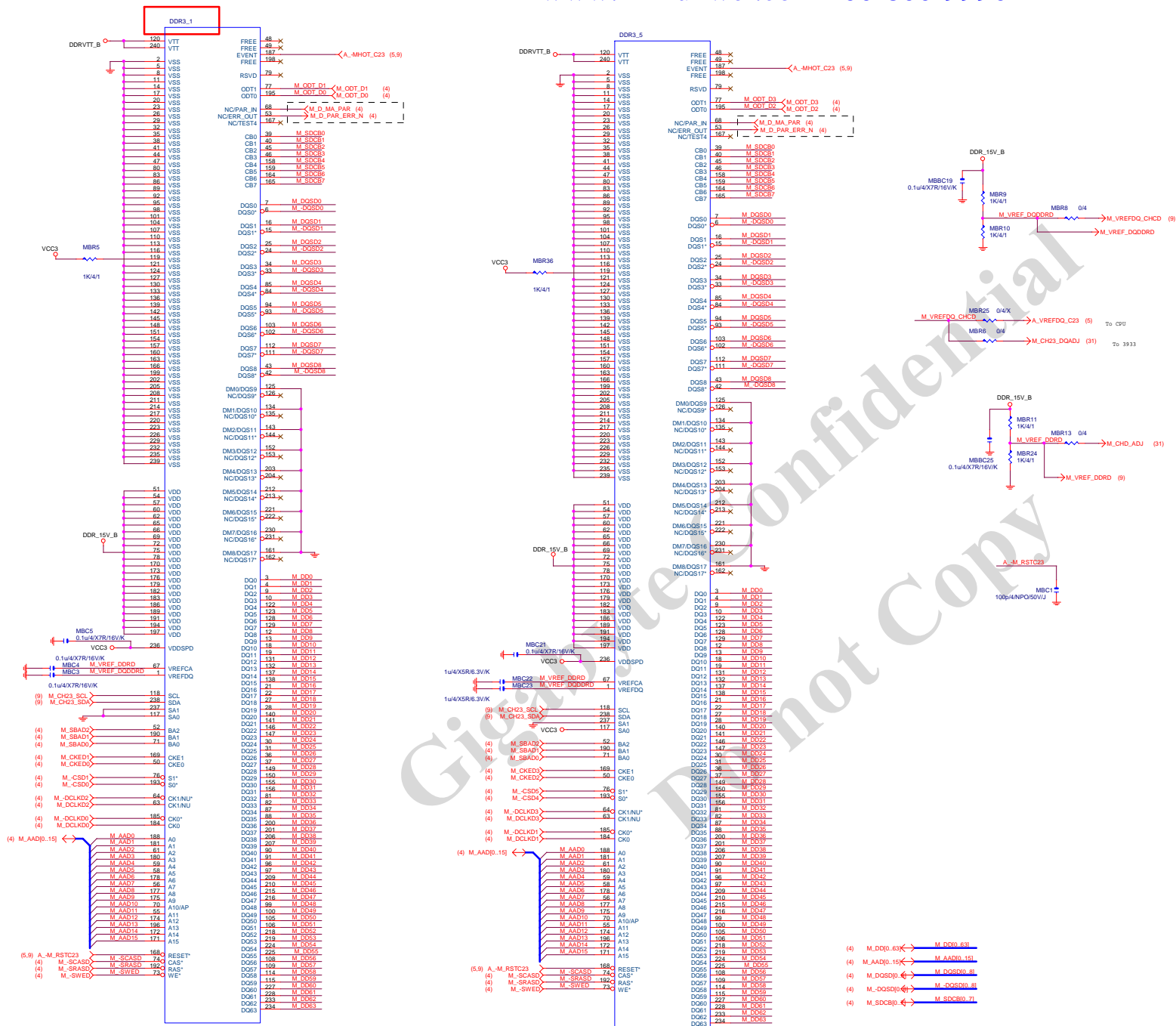








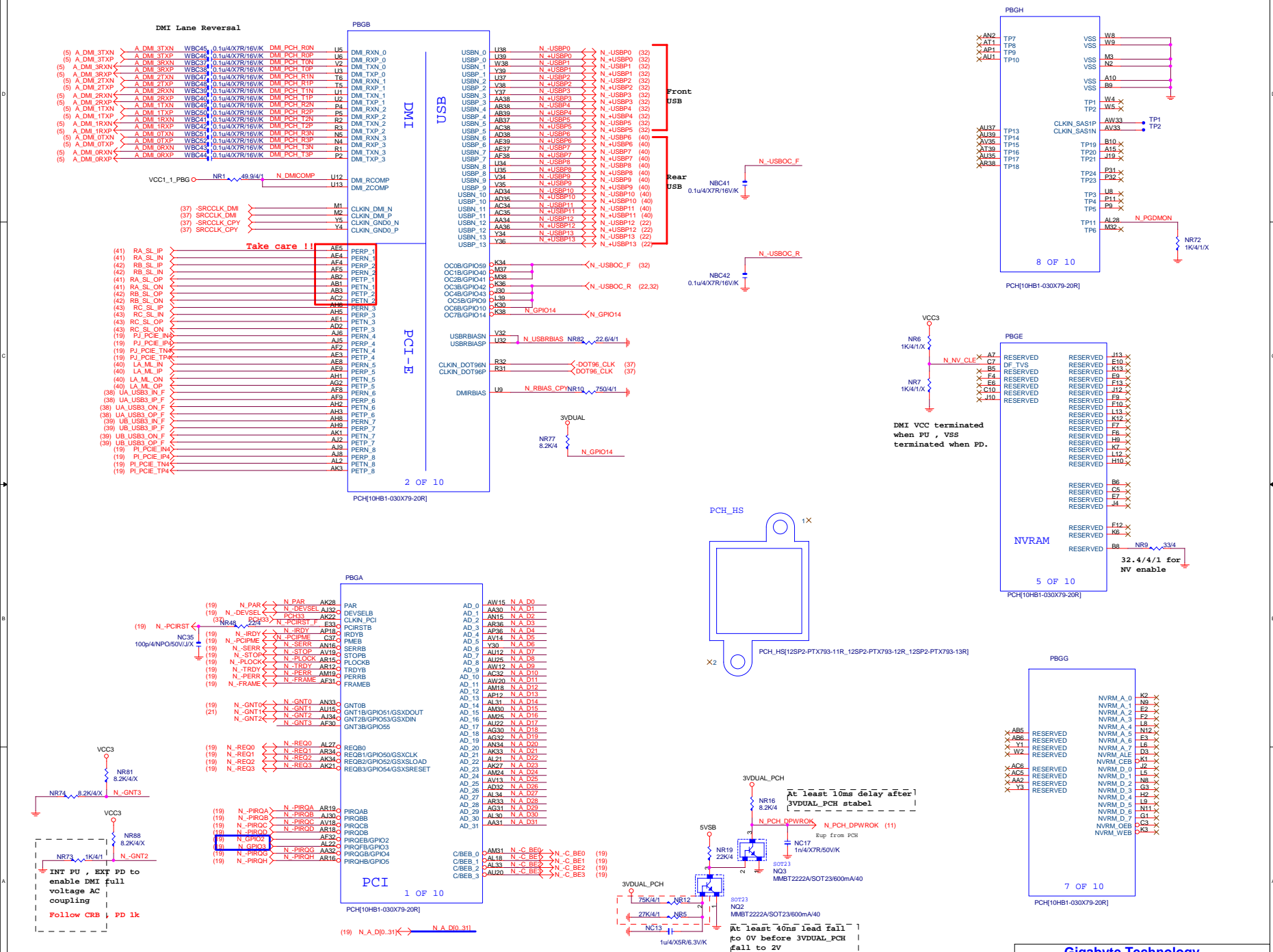


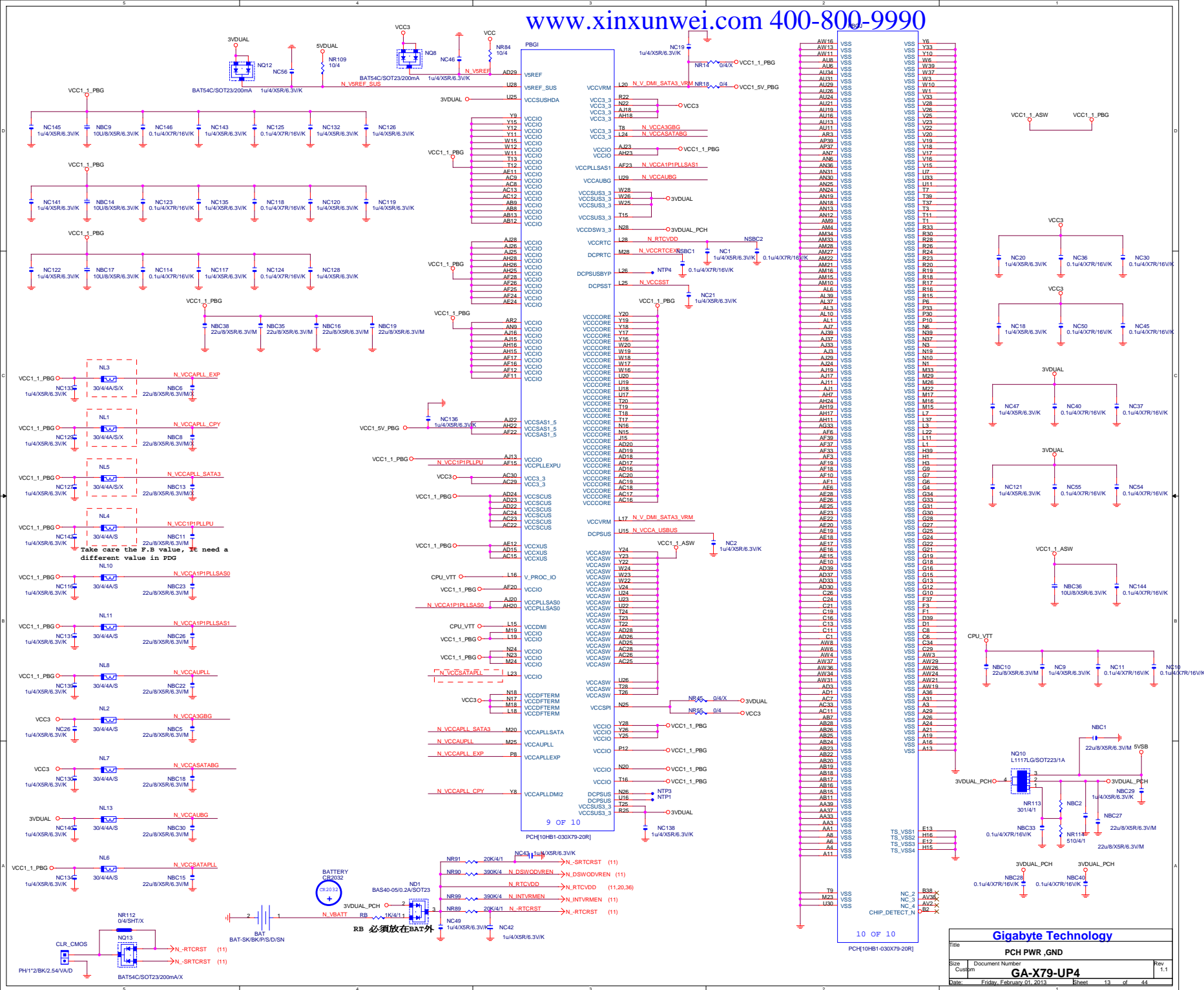
CHANNEL D  
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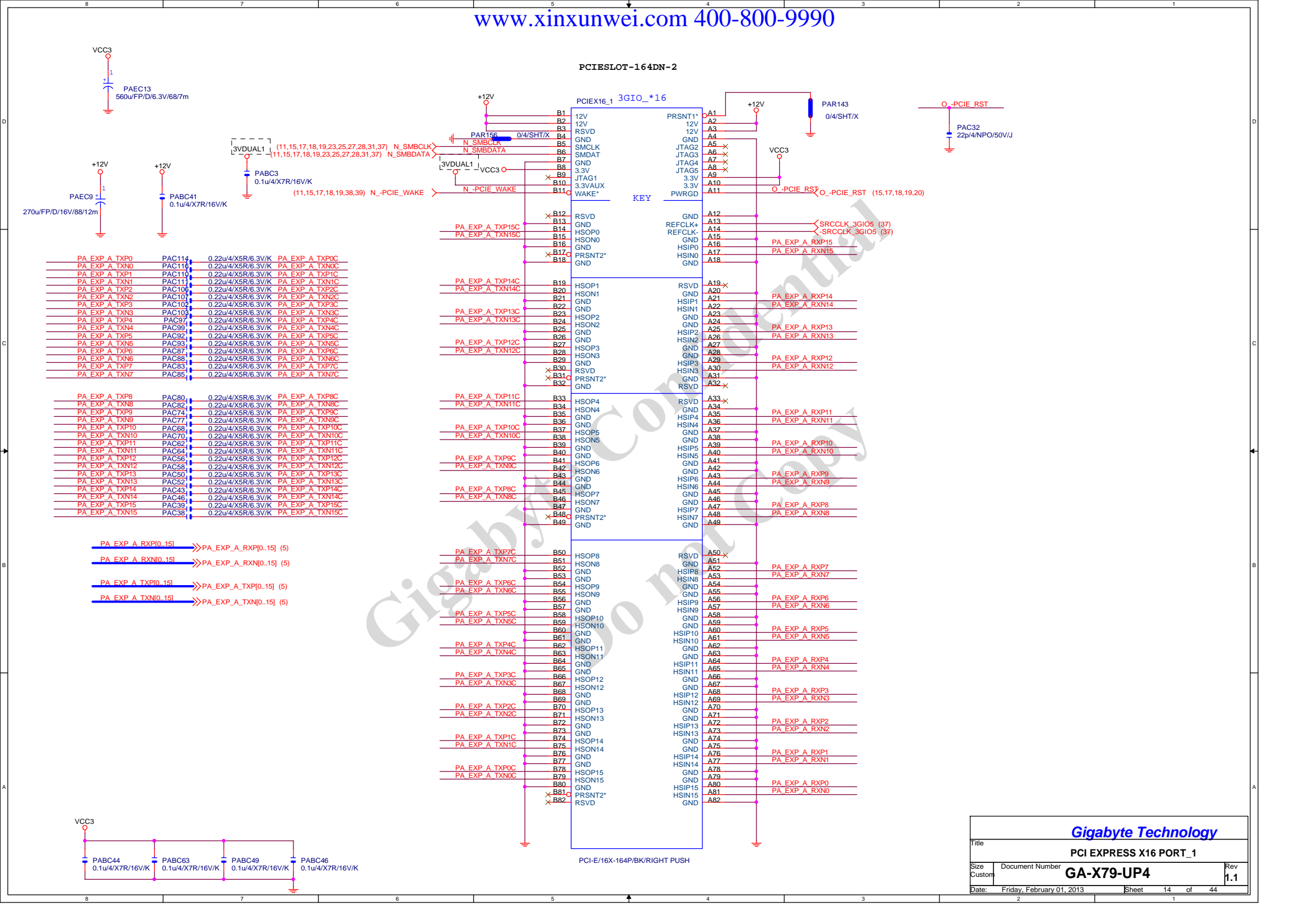
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Custom	GA-X79-UP4	
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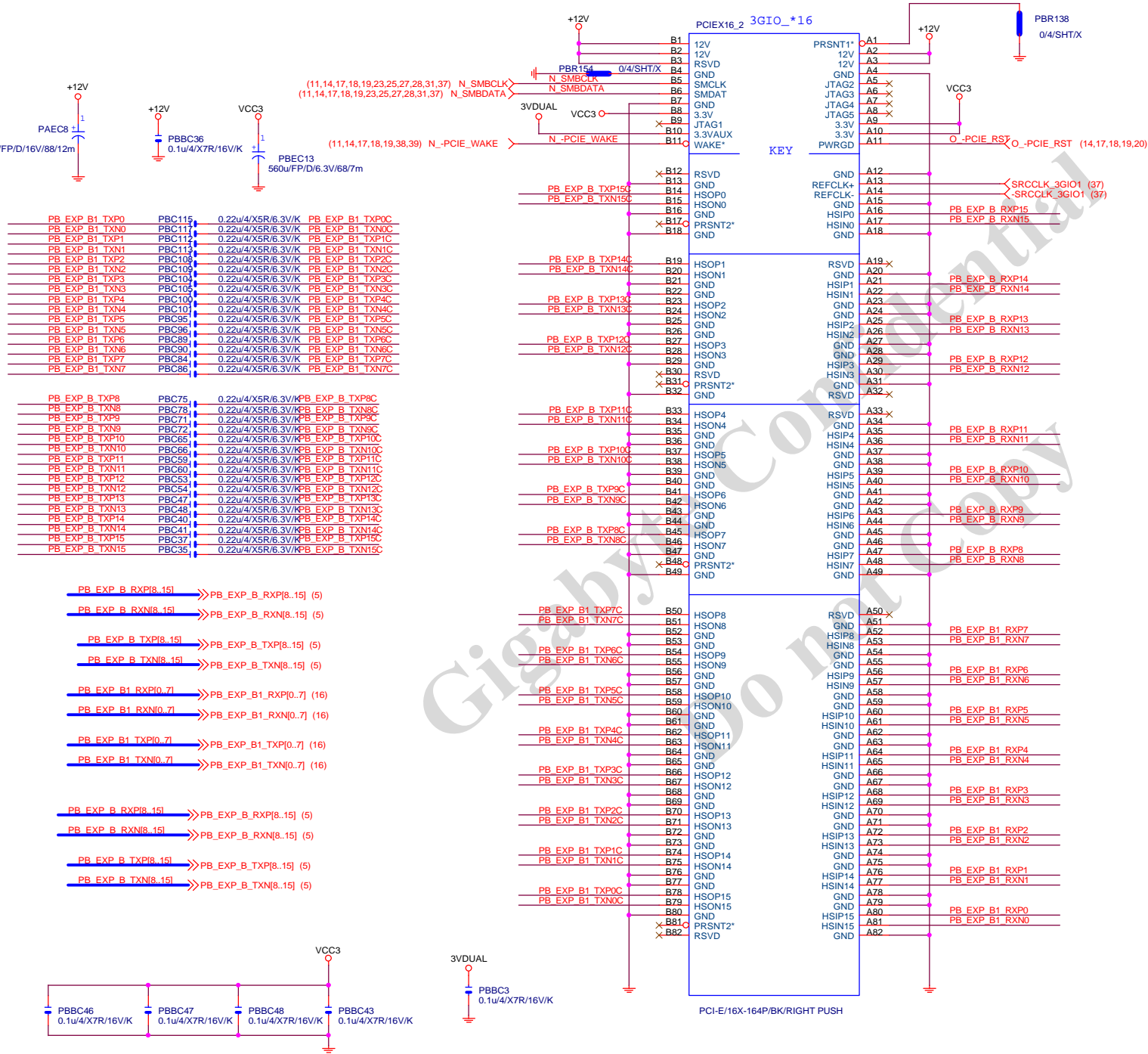








## PCIESLOT-164DN-2



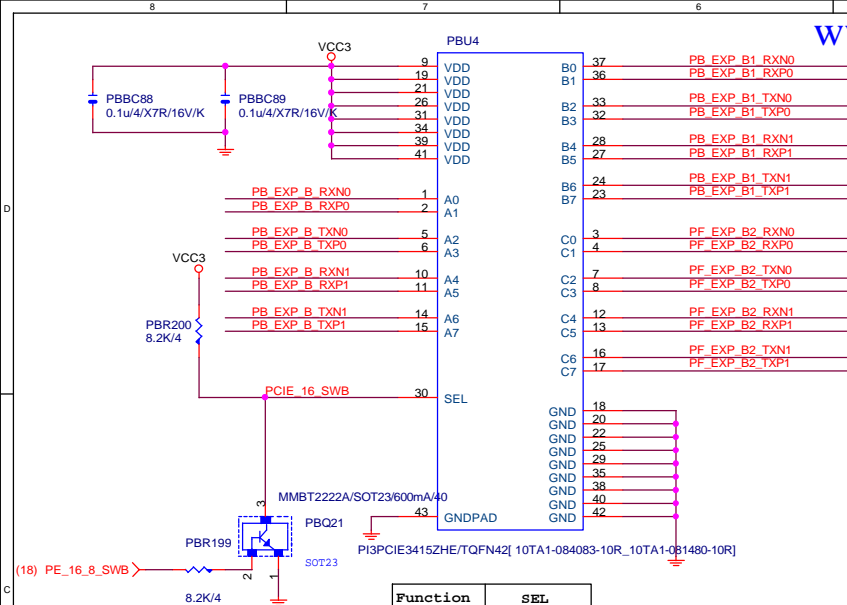
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C

B

A

A



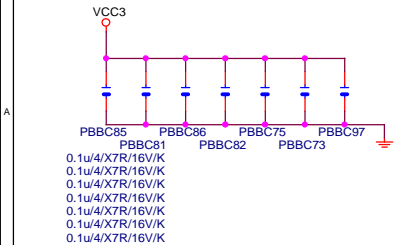
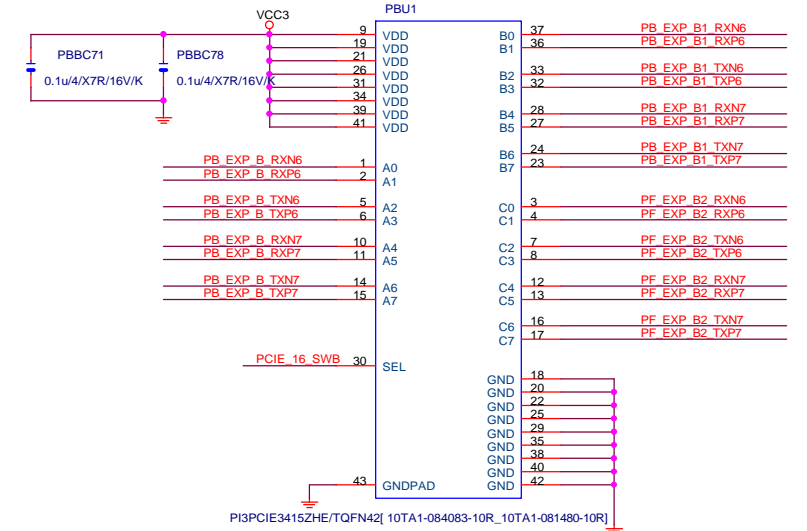
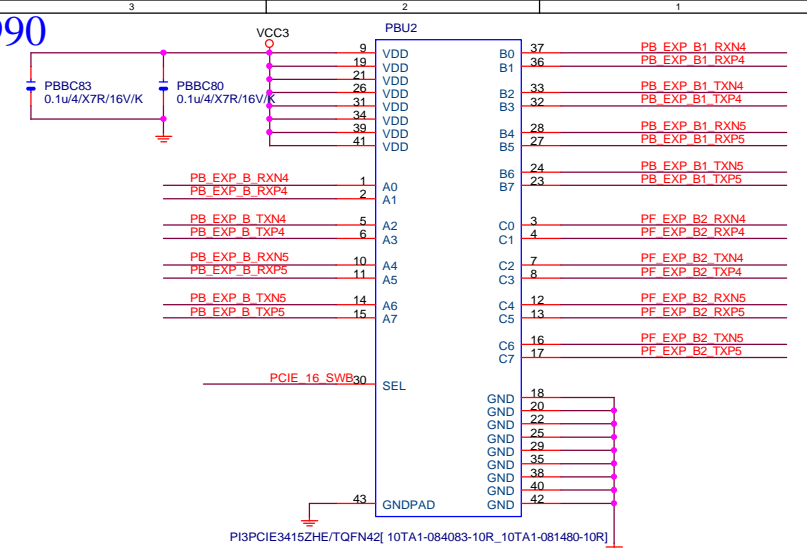
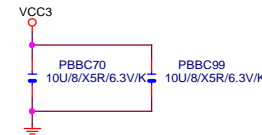
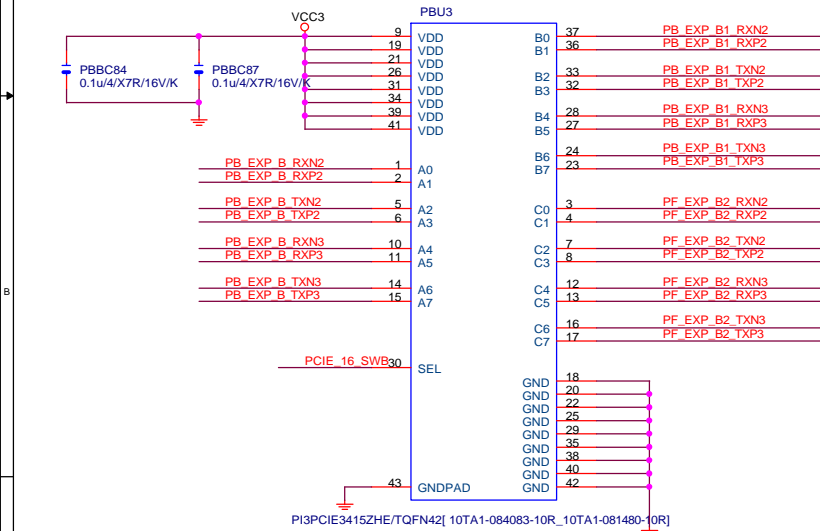
PF\_EXP\_B2\_RXP[0..7] >>> PF\_EXP\_B2\_RXP[0..7] (18)  
 PF\_EXP\_B2\_RXN[0..7] >>> PF\_EXP\_B2\_RXN[0..7] (18)

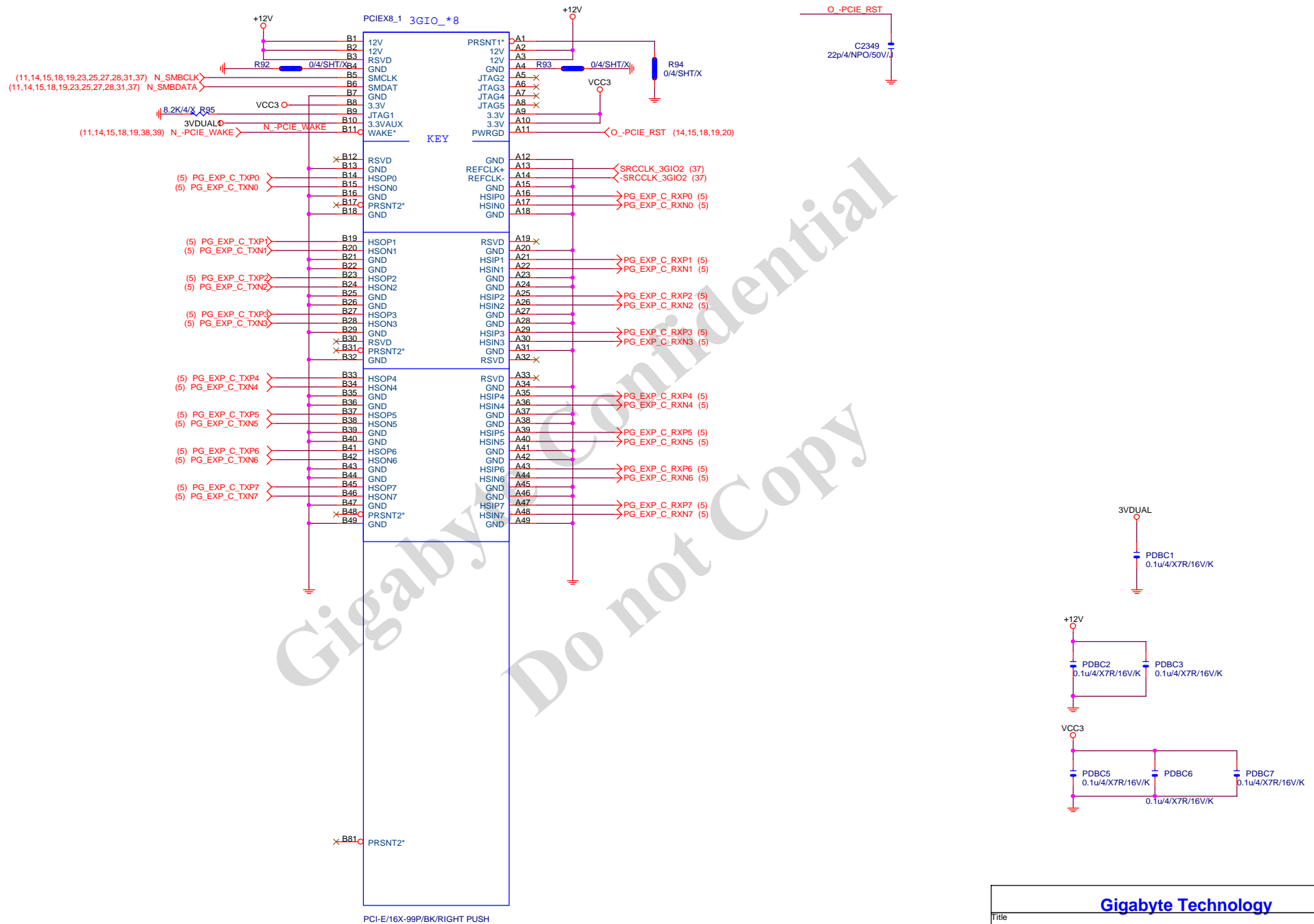
PF\_EXP\_B2\_TXP[0..7] >>> PF\_EXP\_B2\_TXP[0..7] (18)  
 PF\_EXP\_B2\_TXN[0..7] >>> PF\_EXP\_B2\_TXN[0..7] (18)

PB\_EXP\_B1\_RXP[0..7] >>> PB\_EXP\_B1\_RXP[0..7] (15)  
 PB\_EXP\_B1\_RXN[0..7] >>> PB\_EXP\_B1\_RXN[0..7] (15)  
 PB\_EXP\_B1\_TXP[0..7] >>> PB\_EXP\_B1\_TXP[0..7] (15)  
 PB\_EXP\_B1\_TXN[0..7] >>> PB\_EXP\_B1\_TXN[0..7] (15)

PB\_EXP\_B\_RXP[0..7] >>> PB\_EXP\_B\_RXP[0..7] (5)  
 PB\_EXP\_B\_RXN[0..7] >>> PB\_EXP\_B\_RXN[0..7] (5)

PB\_EXP\_B\_TXP[0..7] >>> PB\_EXP\_B\_TXP[0..7] (5)  
 PB\_EXP\_B\_TXN[0..7] >>> PB\_EXP\_B\_TXN[0..7] (5)





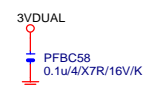
Gigabyte Technology

PCI EXPRESS X 8 PORT

GA-X79-UP4

Rev 1.1

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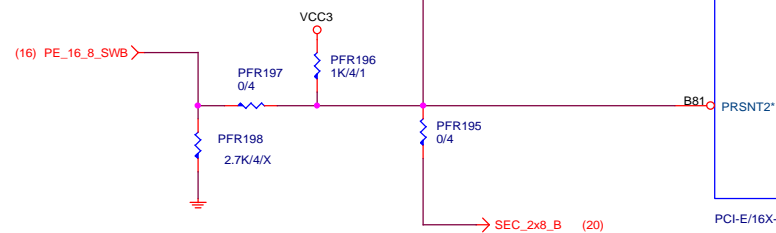
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(11,14,15,17,19,23,25,27,28,31,37) N_SMBCLK >
(11,14,15,17,19,23,25,27,28,31,37) N_SMBDATA >
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(11,14,15,17,19,38,39) N\_-PCIE\_V

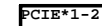
PF\_EXP\_B2\_TXP[0..7]  $\gg$  PF\_EXP\_B2\_TXP[0..7] (16)

PF\_EXP\_B2\_TXN[0..7] >> PF\_EXP\_B2\_TXN[0..7] (16)

PF EXP B2 TXPO	PFCT79	0.22u4/X5R6/3V/KPF	EXP B2 TXPOC
PF EXP B2 TXNO	PFCE81	0.22u4/X5R6/3V/KPF	EXP B2 TXNOC
PF EXP B2 TXP1	PFCT73	0.22u4/X5R6/3V/KPF	EXP B2 TXPIC
PF EXP B2 TXN1	PFCT76	0.22u4/X5R6/3V/KPF	EXP B2 TXNIC
PF EXP B2 DXP2	PFCE67	0.22u4/X5R6/3V/KPF	EXP B2 TXPC2
PF EXP B2 TXN2	PFCE89	0.22u4/X5R6/3V/KPF	EXP B2 TXN2C
PF EXP B2 TXN3	PFCE82	0.22u4/X5R6/3V/KPF	EXP B2 TXN3C
PF EXP B2 TXN3	PFCE83	0.22u4/X5R6/3V/KPF	EXP B2 TXN3C
PF EXP B2 TXP4	PFCE55	0.22u4/X5R6/3V/KPF	EXP B2 TXP4C
PF EXP B2 TXN4	PFCE57	0.22u4/X5R6/3V/KPF	EXP B2 TXN4C
PF EXP B2 TXP5	PFCE49	0.22u4/X5R6/3V/KPF	EXP B2 TXP5C
PF EXP B2 TXN5	PFCE51	0.22u4/X5R6/3V/KPF	EXP B2 TXN5C
PF EXP B2 TXN6	PFCE42	0.22u4/X5R6/3V/KPF	EXP B2 TXN6C
PF EXP B2 TXN6	PFCE45	0.22u4/X5R6/3V/KPF	EXP B2 TXN6C
PF EXP B2 TXP7	PFCE34	0.22u4/X5R6/3V/KPF	EXP B2 TXP7C
PF EXP B2 TXN7	PFCE36	0.22u4/X5R6/3V/KPF	EXP B2 TXN7C



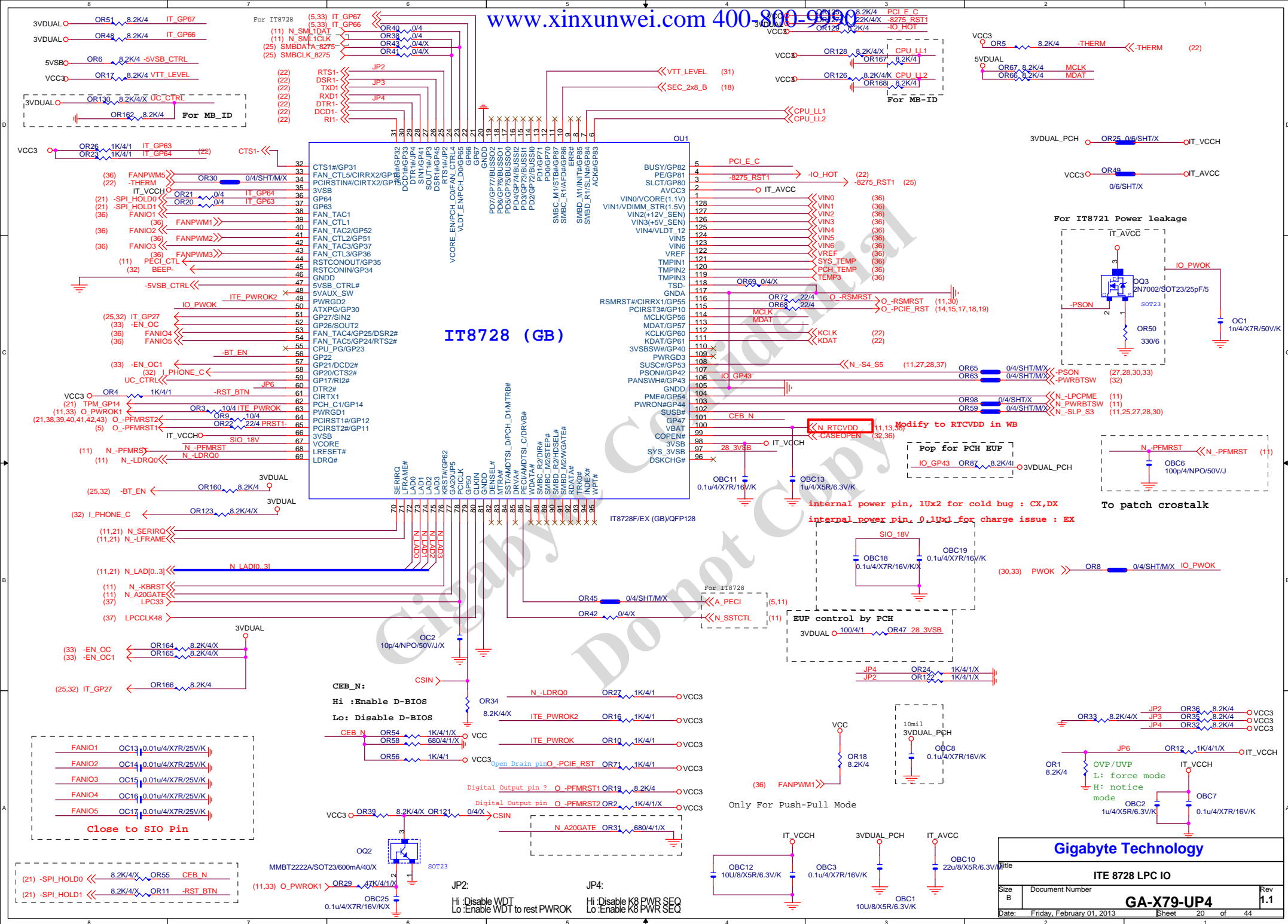




(12) N\_A\_D[0..31]  $\longleftrightarrow$  N A D[0..31]

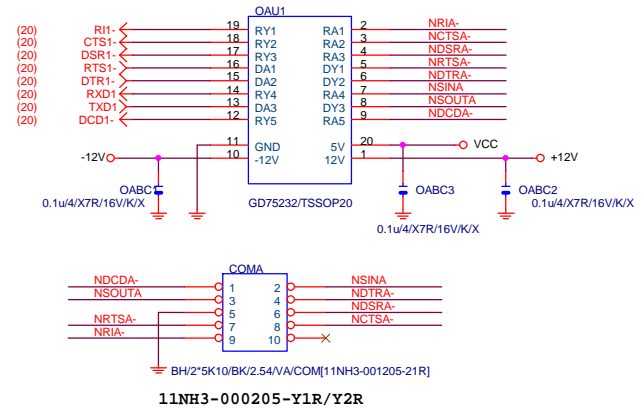


Place close to PCI1

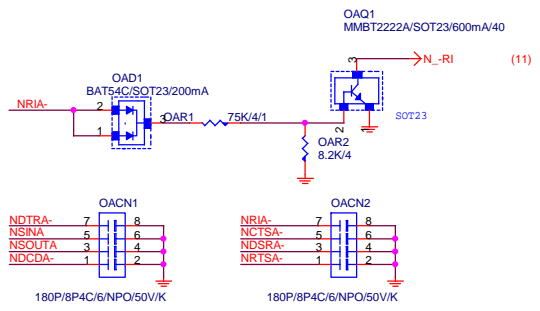




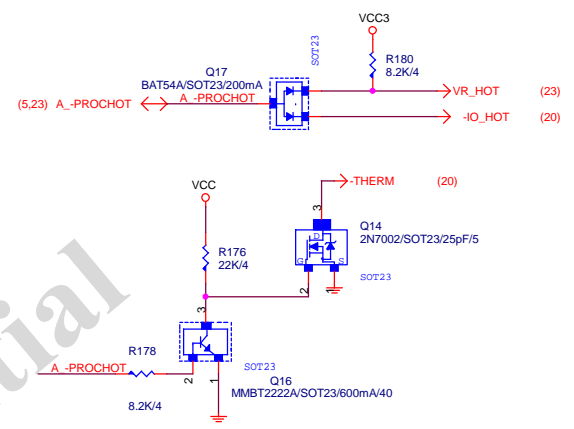
COMA



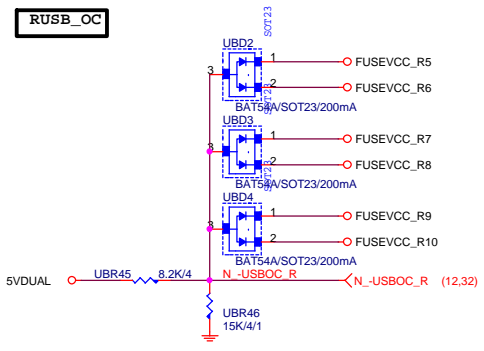
COM R1



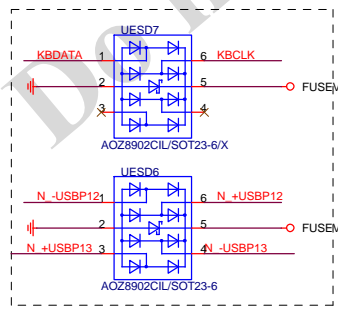
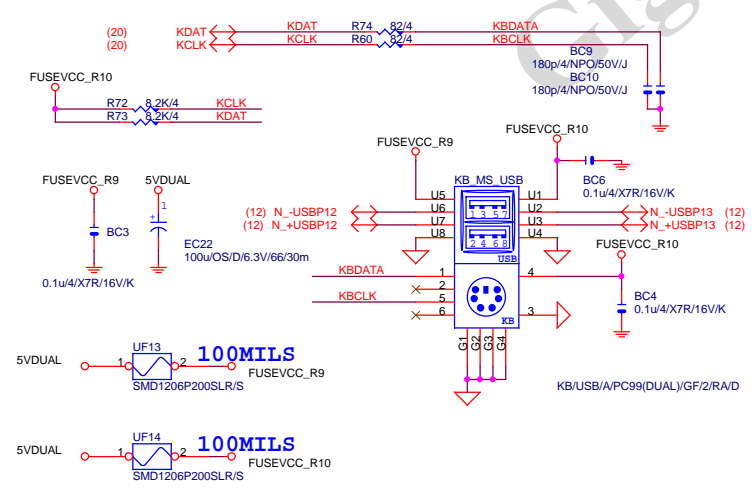
PROHOT



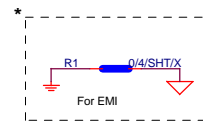
RUSB\_OC



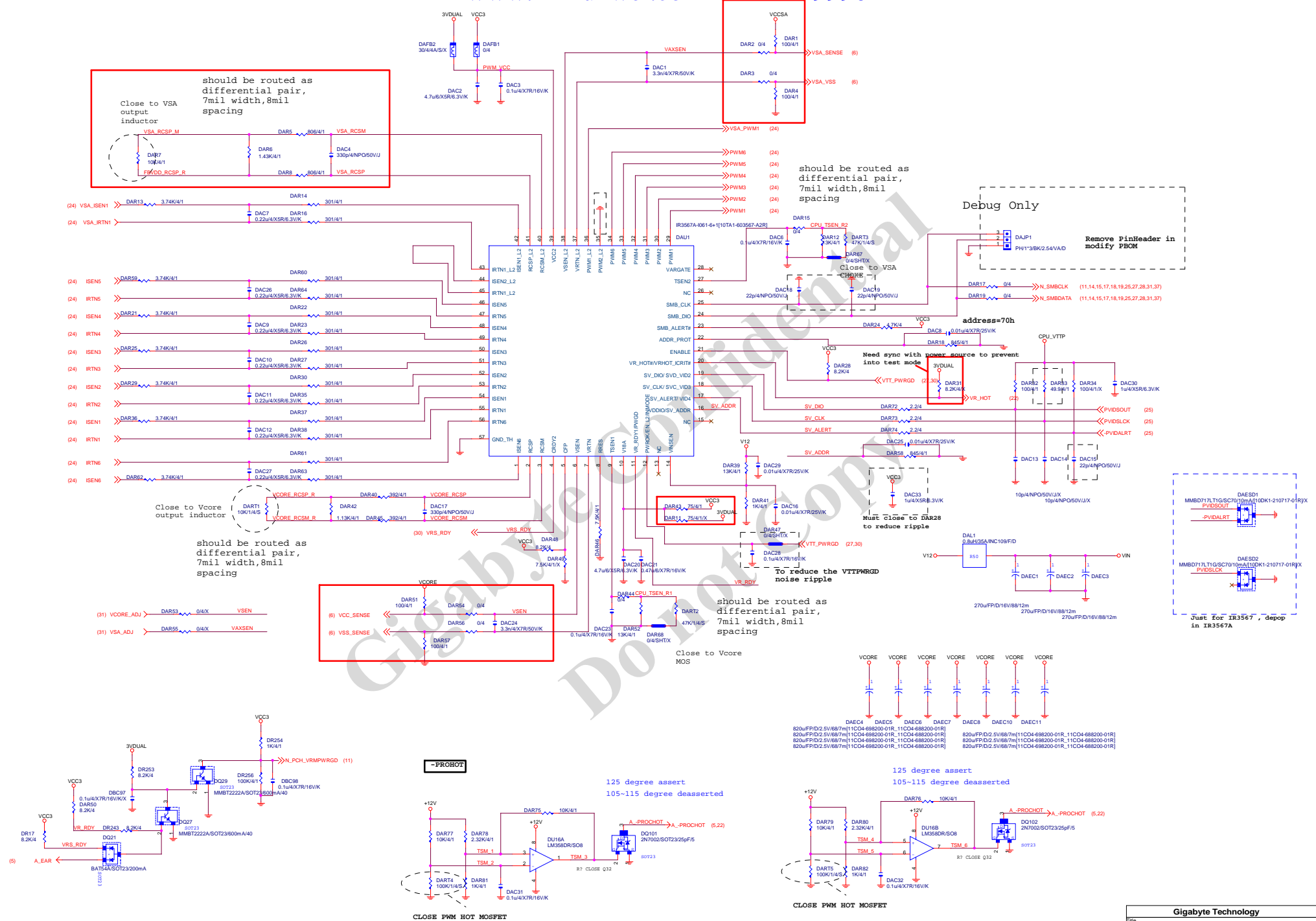
KB/MS



Close to connector

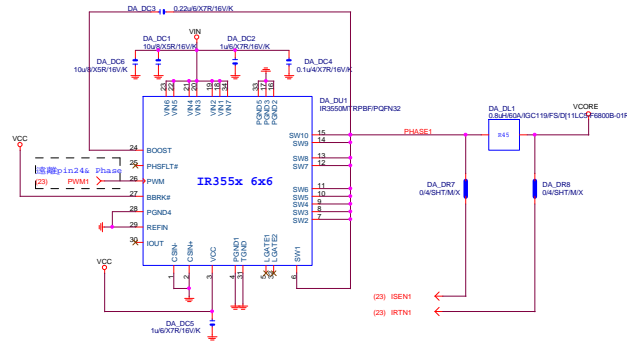


Gigabyte Technology			
Title			
COM & PROHOT/Dynamic O.C.			
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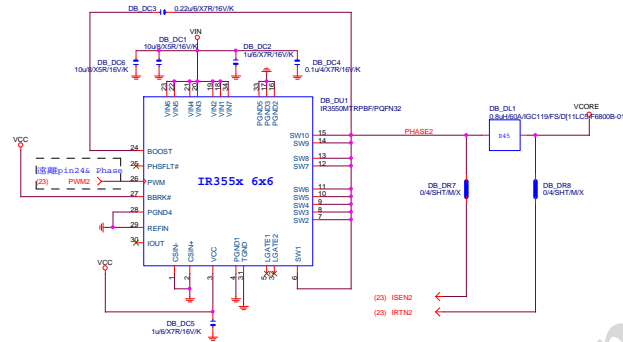




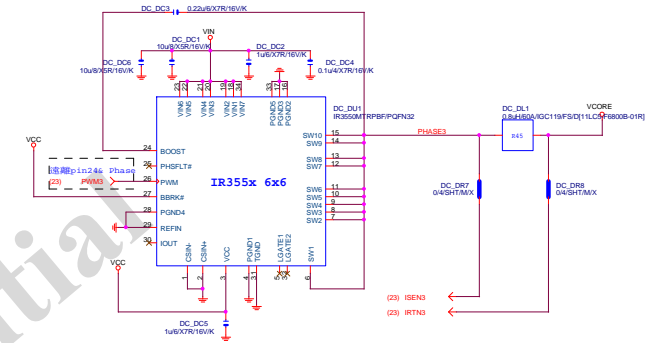
## VCORE-PHASE1



## VCORE-PHASE2

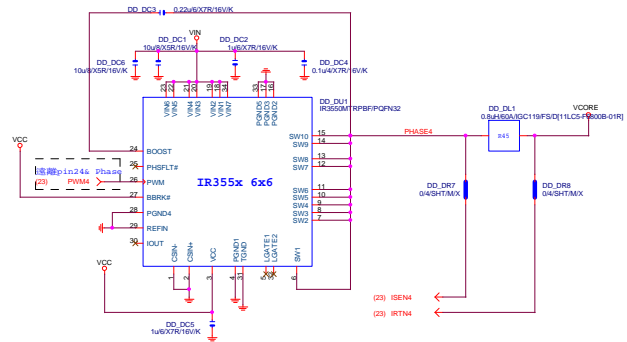


## VCORE-PHASE3

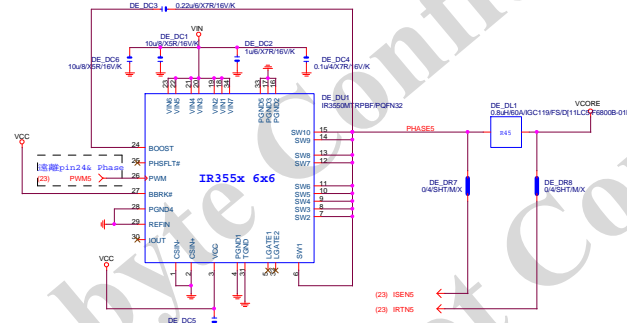


Choke need change to correct parts : 0.8u/60A

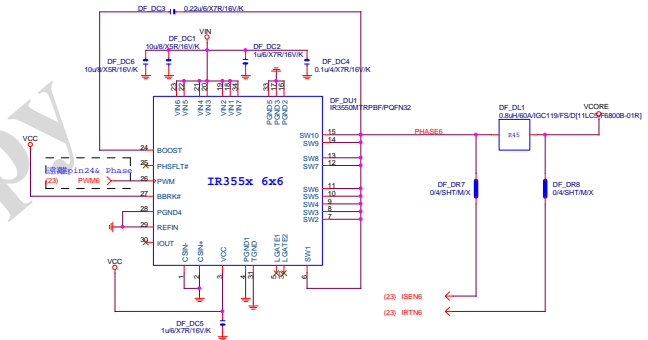
## VCORE-PHASE4



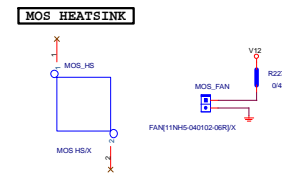
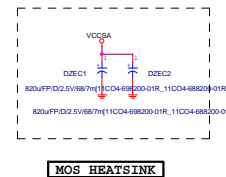
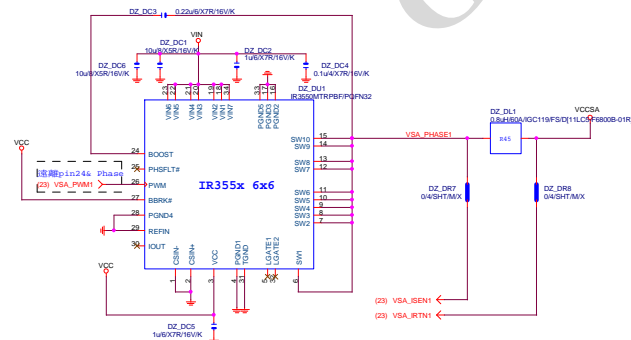
## VCORE-PHASE5

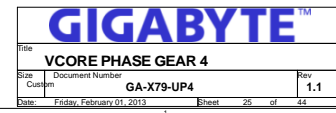


## VCORE-PHASE6

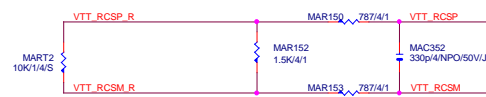
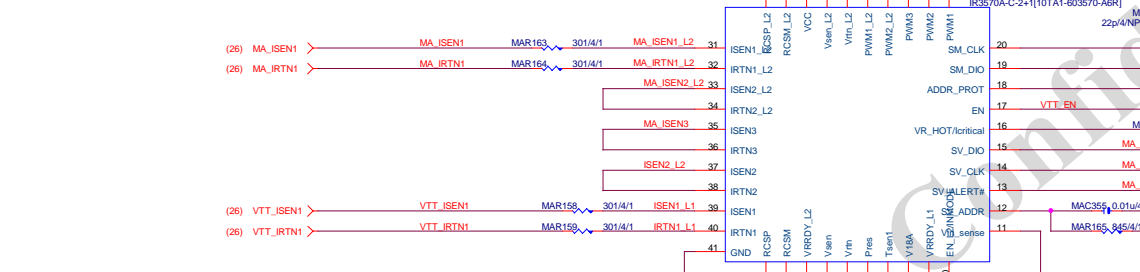
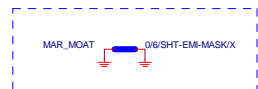


## VSA-PHASE

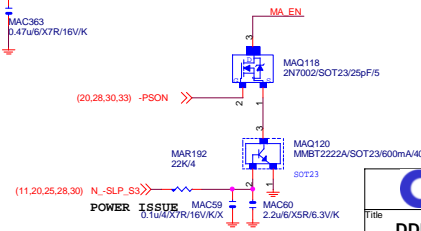
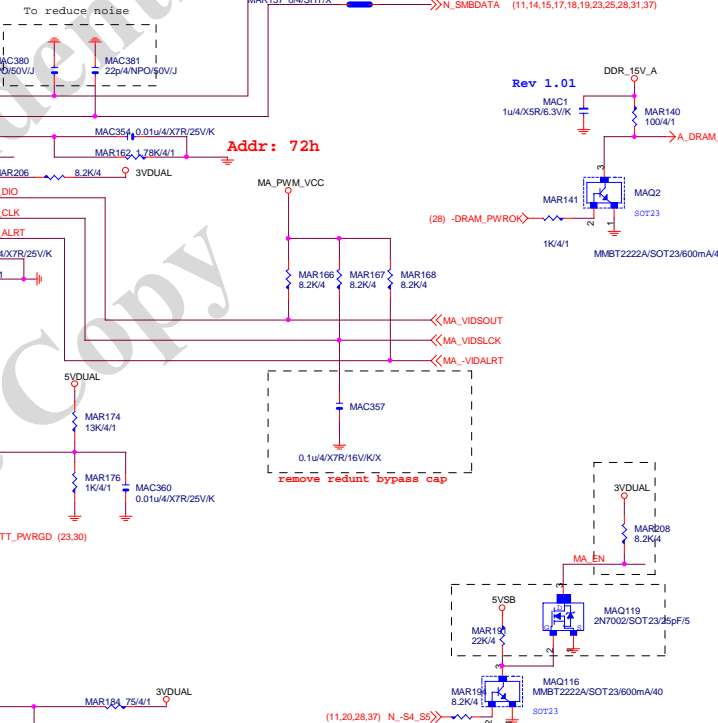
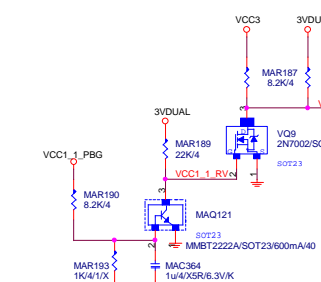
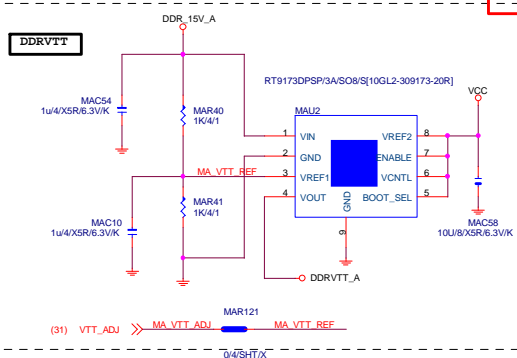
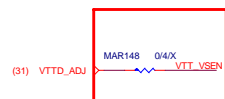








should be routed as  
differential pair,  
7mil width,8mil  
spacing







PBG\_1.1V

(30) V\_PCH\_EN

VCC1\_05PHASE

NR132  
20K/4/1/XNR118  
13K/4/1NC58  
3.3n/4/X7R/50V/KNR134  
0/4NR133  
0/4/XNC57  
22p/4/NPO/50V/JNR115  
2.2/6/XNR116  
2.2/6NBC34  
1u/6/X7R/16V/KNQ18  
BAT54C/SOT23/200mA/X

VCC

+12VO

PBG\_BOOT

VCC1\_05U\_G

VCC1\_05L\_G

VCC1\_05PHASE

VCC1\_1\_PBG

DEF=1.1V

VREF IS 0.8V

NR117  
0/4S/X

VCC1\_05\_PCH\_ADJ (31)

OCP: 26A

RT8120DGS/SOP8

NU1

COMP

BOOT

UGATE

PHASE

LG/OC

GND

PGND

VCC

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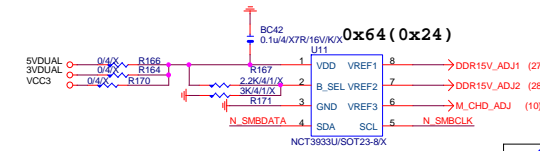
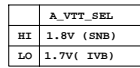
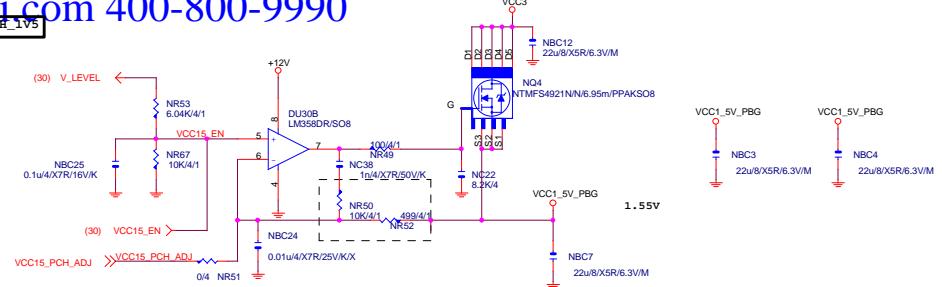
334

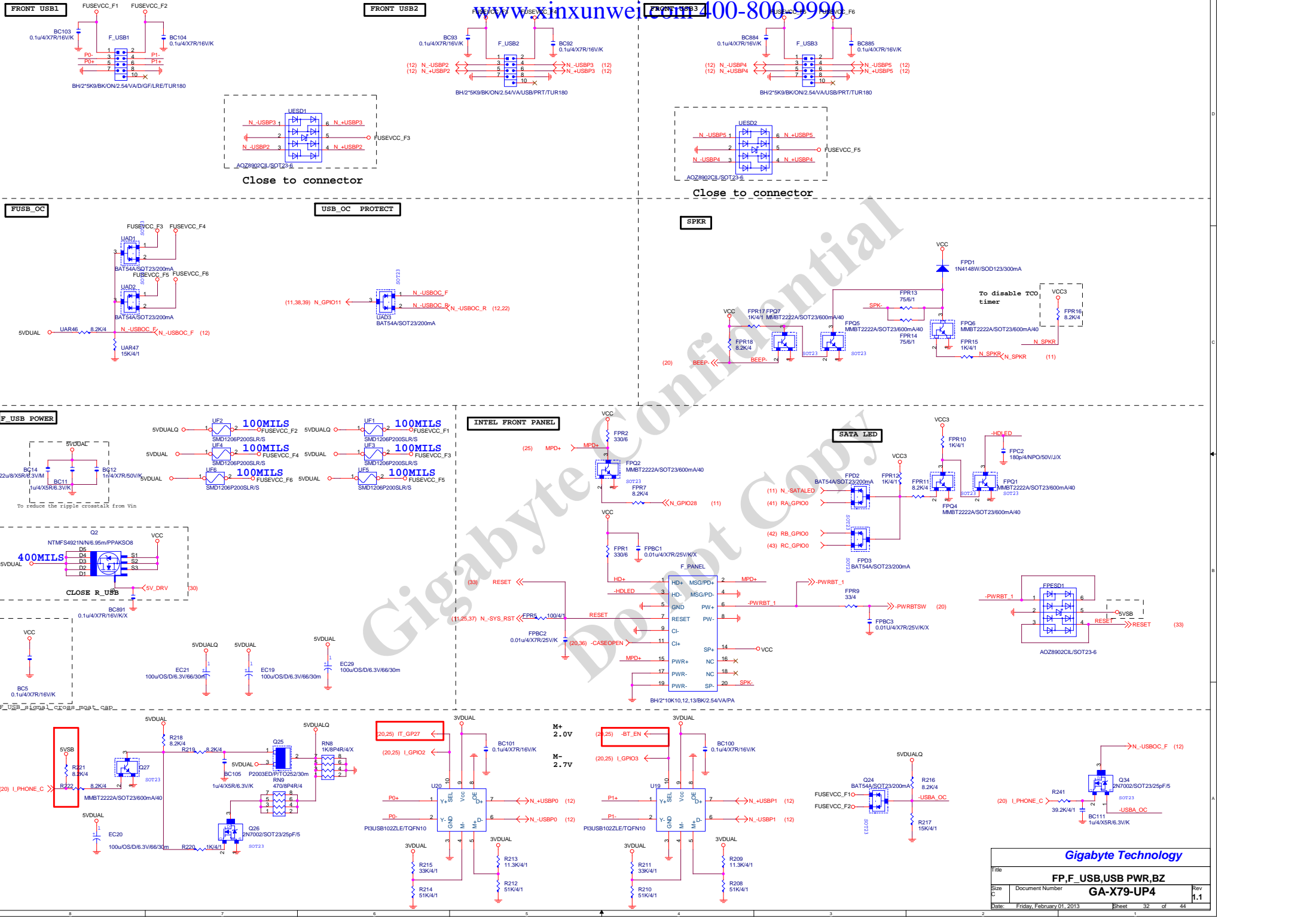
335

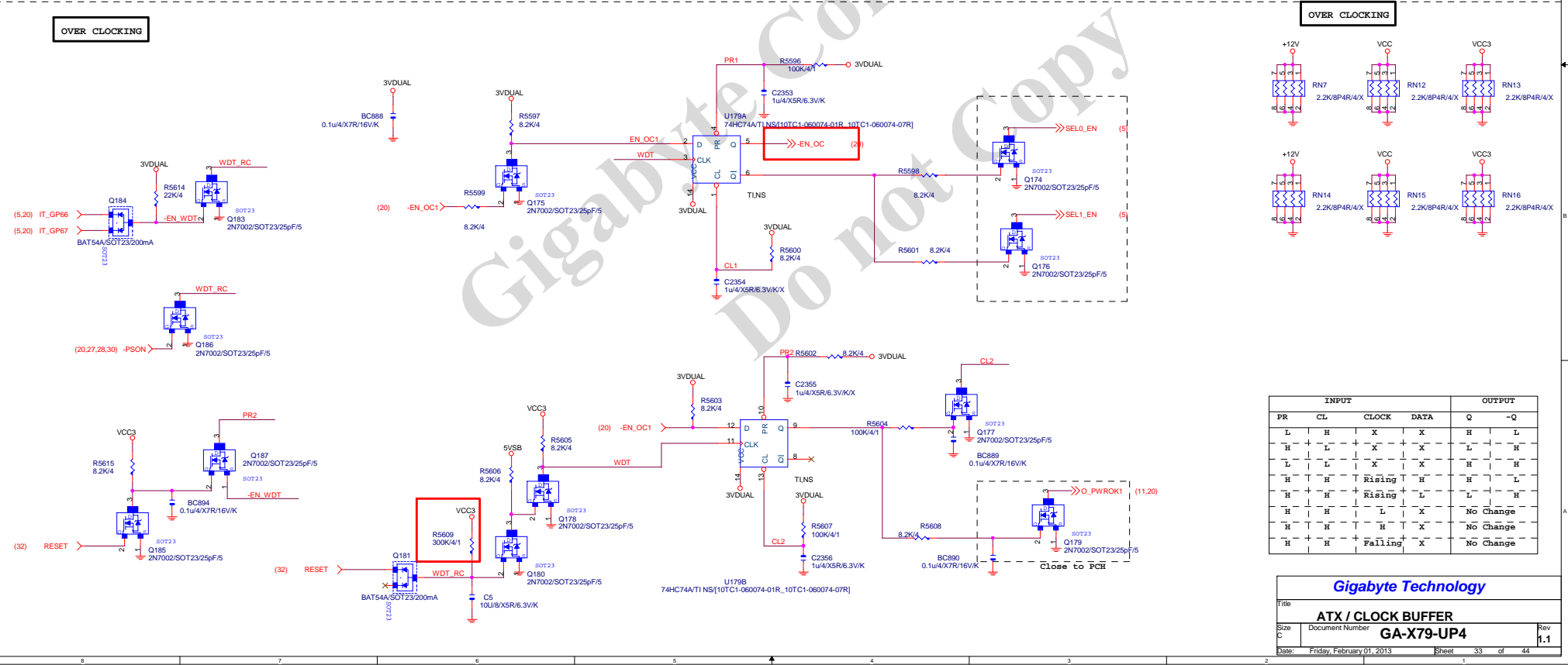
336

337









INPUT				OUTPUT	
PR	CL	CLOCK	DATA	Q	-Q
L	H	X	X	H	L
H	L	X	X	L	H
L	L	X	X	H	H
H	H	Rising	H	H	L
H	H	Rising	L	L	H
H	H	L	X	No Change	
H	H	H	X	No Change	
H	H	Falling	X	No Change	

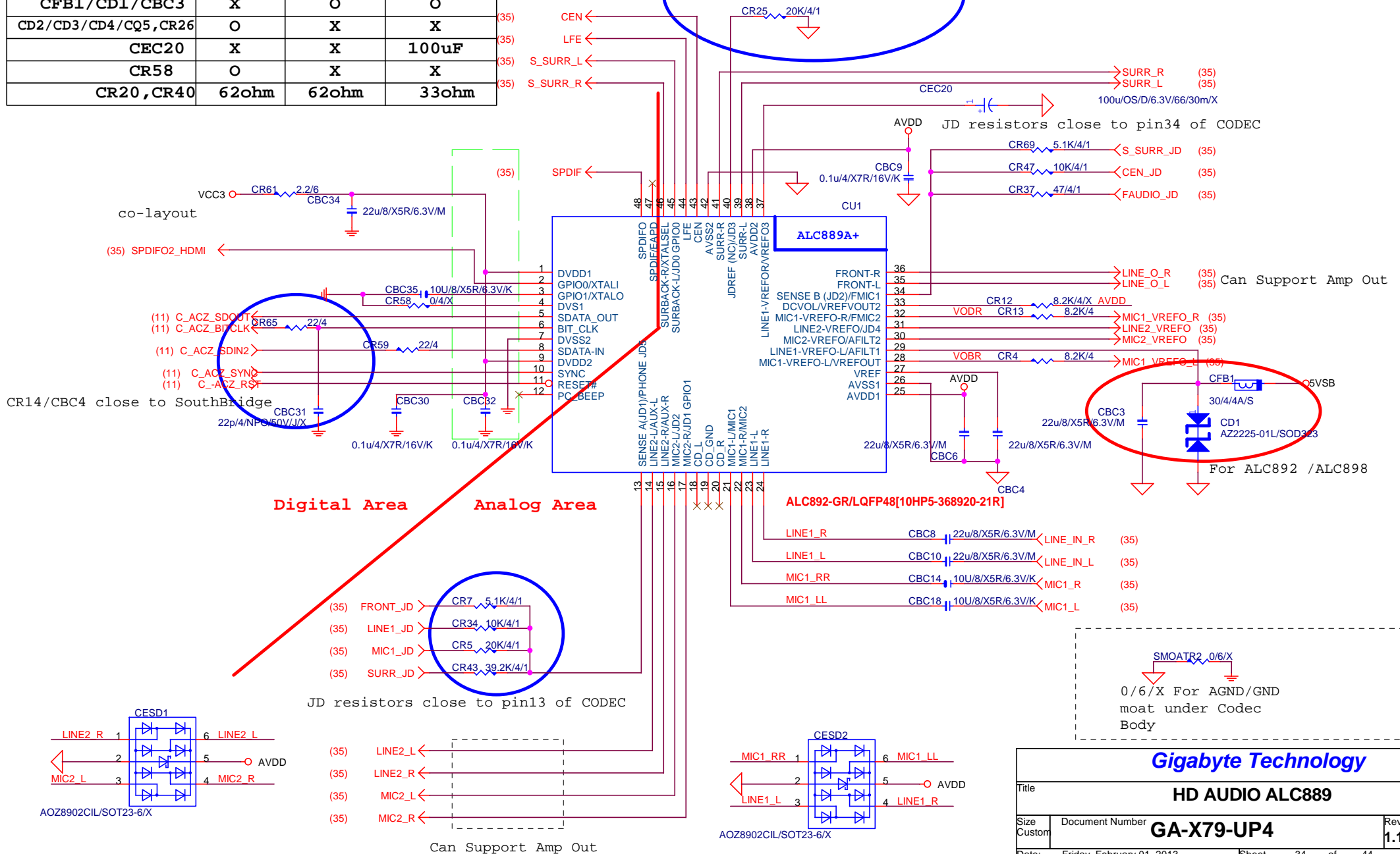
## AZALIA CODEC

## ALC889/ALC892/ALC898 Colay

	ALC889	ALC892	ALC898
CBC35	X	10uF/X5R	10uF/X5R
CFB1/CD1/CBC3	X	O	O
CD2/CD3/CD4/CQ5,CR26	O	X	X
CEC20	X	X	100uF
CR58	O	X	X
CR20,CR40	62ohm	62ohm	33ohm

CR2: 20K/4/0.1% @ALC889A

CR2: 20K/4/1% @ALC889A+/ALC888Vx

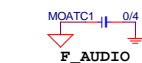


Gigabyte Technology

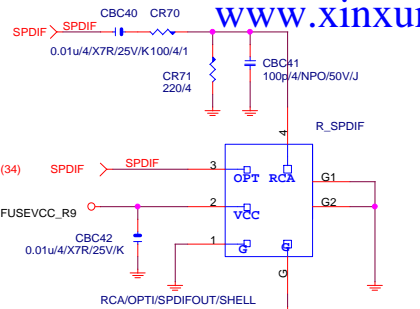
HD AUDIO ALC889

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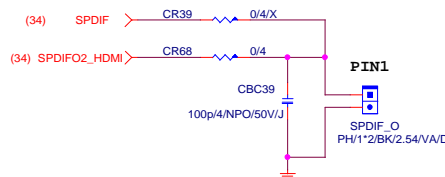




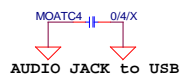
Codec to AUDIO JACK



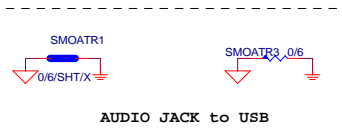
For HDMI SPDIF



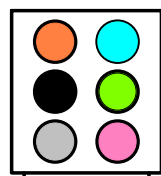
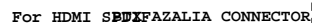
**AUDIO JACK**



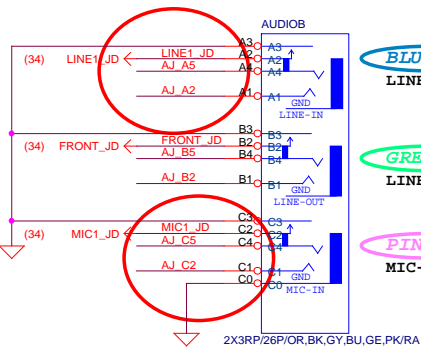
AUDIO JACK to USB



AUDIO JACK to USB



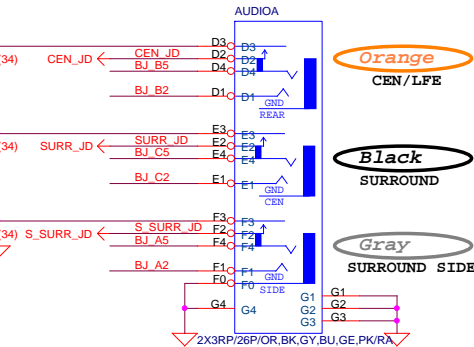
11NR6-403007-21R



**BLUE**  
LINE-IN

LINE-OUT

**PINK**  
**MIC-IN**

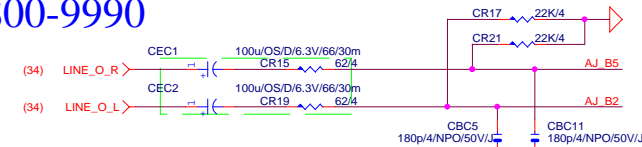


Orange  
CEN/LFE

**Black**  
SURROUND

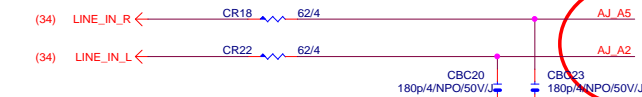
*Gray*  
SURROUND SIDE

## LINE-OUT

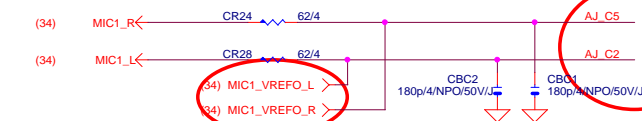


**LINE-IN**

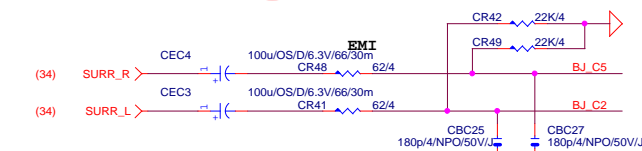
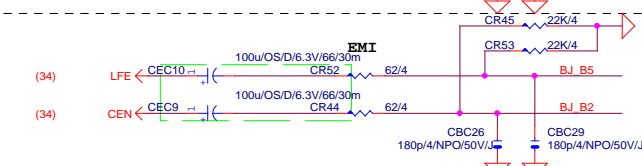
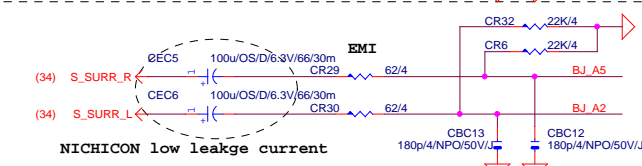
Only reserved for ALC888

**MIC-IN**

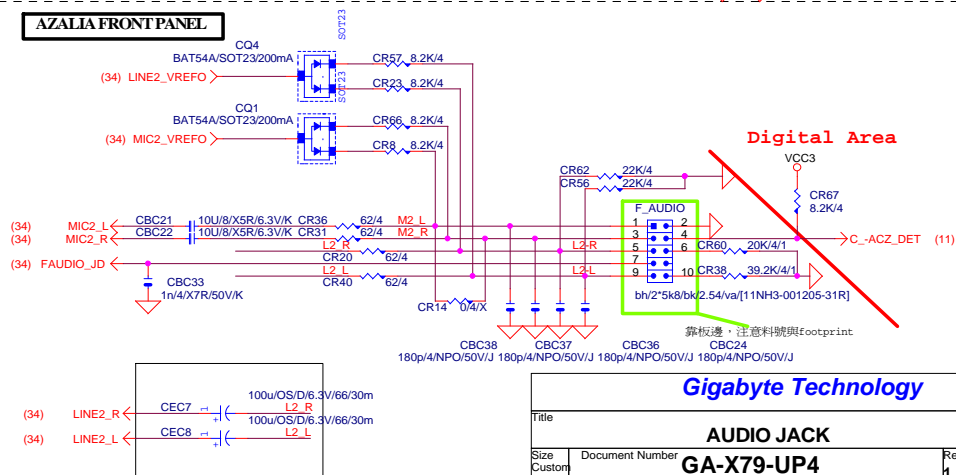
For 889A/888



**SURROUND**

**CEN/LFE****SURR BACK**

## AZALIA FRONT PANEL



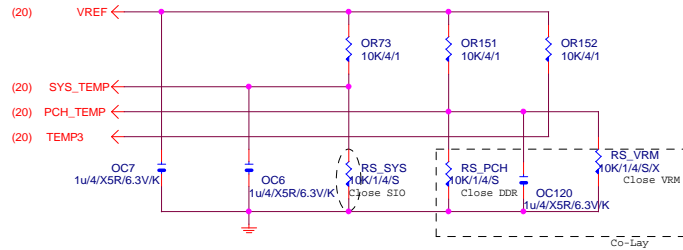
## Digital Area

**Gigabyte Technology**

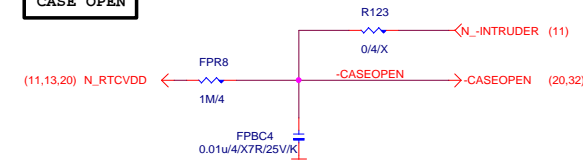
## AUDIO JACK

Title			
<b>AUDIO JACK</b>			
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# TEMP H/W MONITOR

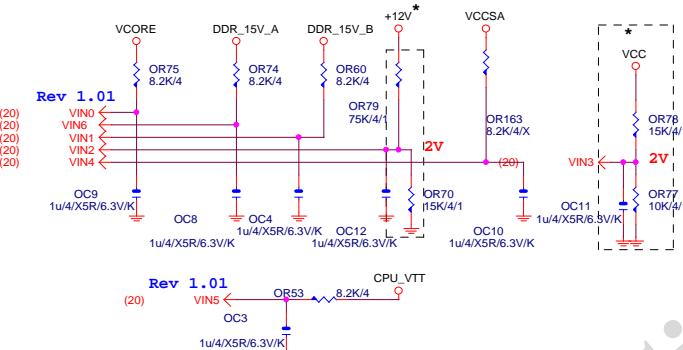


# CASE OPEN

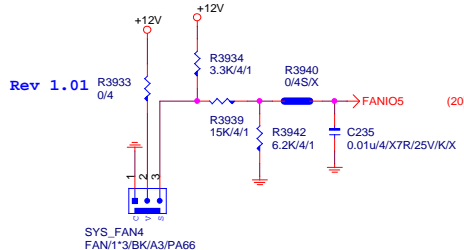


# VOLTAGE-- H/W MONITOR

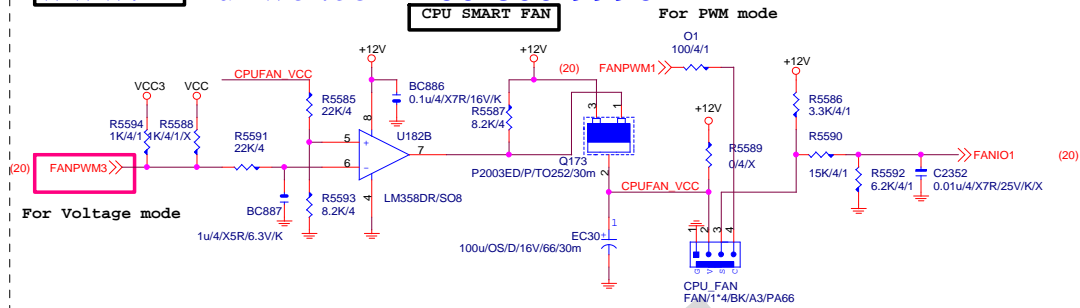
VIN2 must +12V input  
VIN3 must VCC input



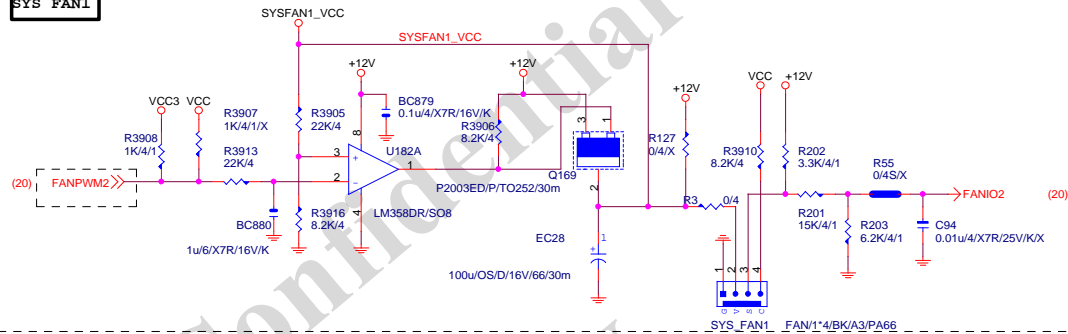
# SYS FAN4



# CPU SMART FAN

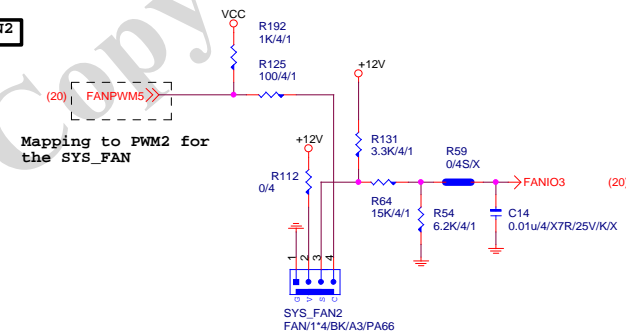


# SYS FAN1

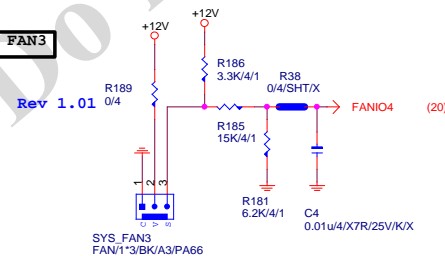


# SYS FAN2

Mapping to PWM2 for the SYS\_FAN



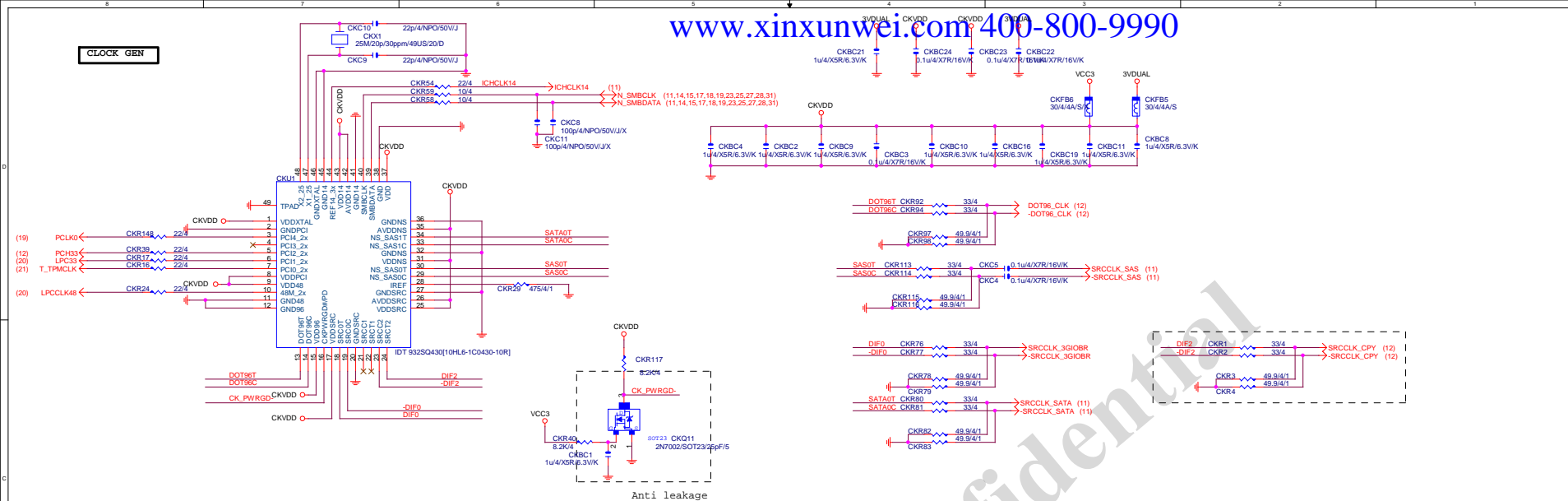
# SYS FAN3



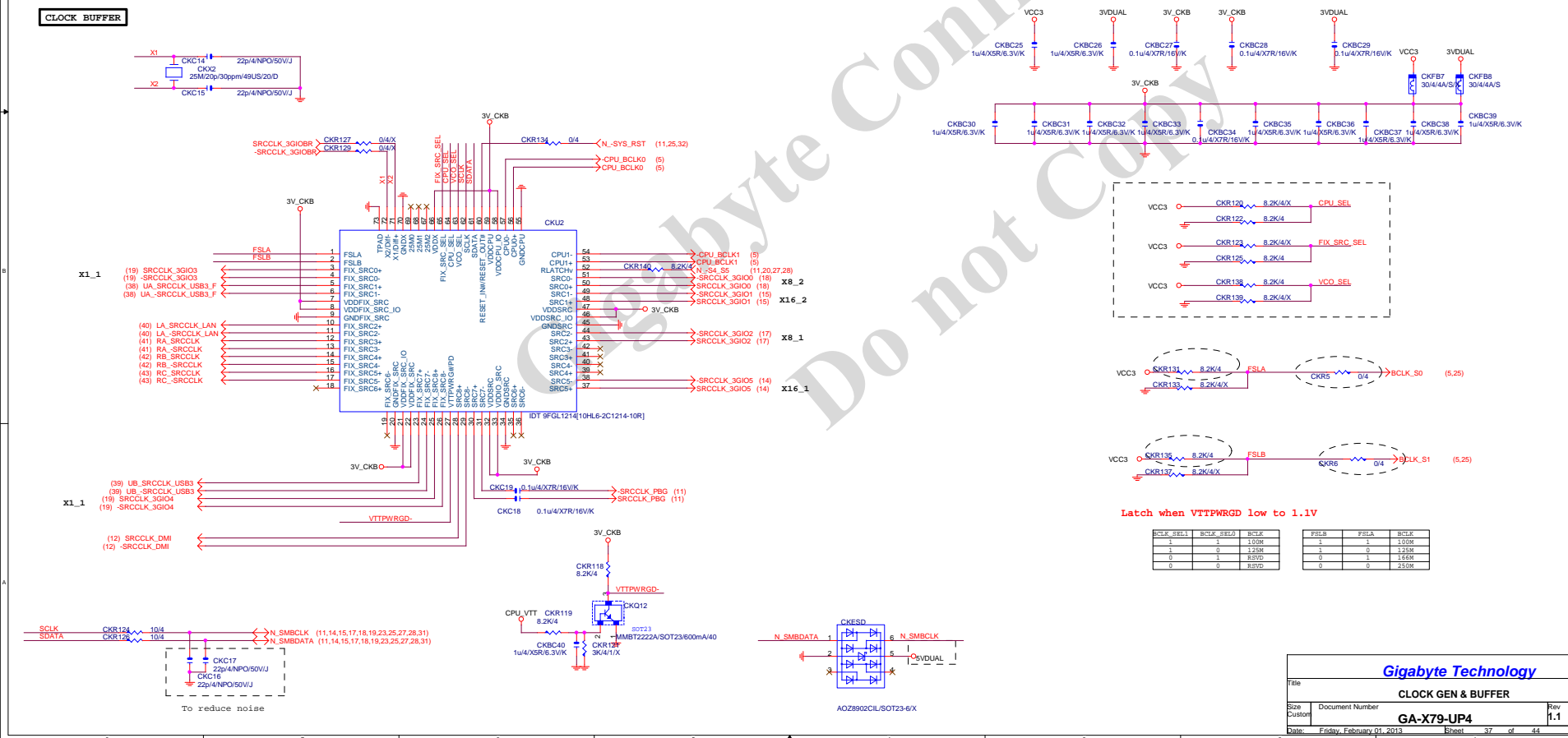
Gigabyte Technology

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## CLOCK GEN

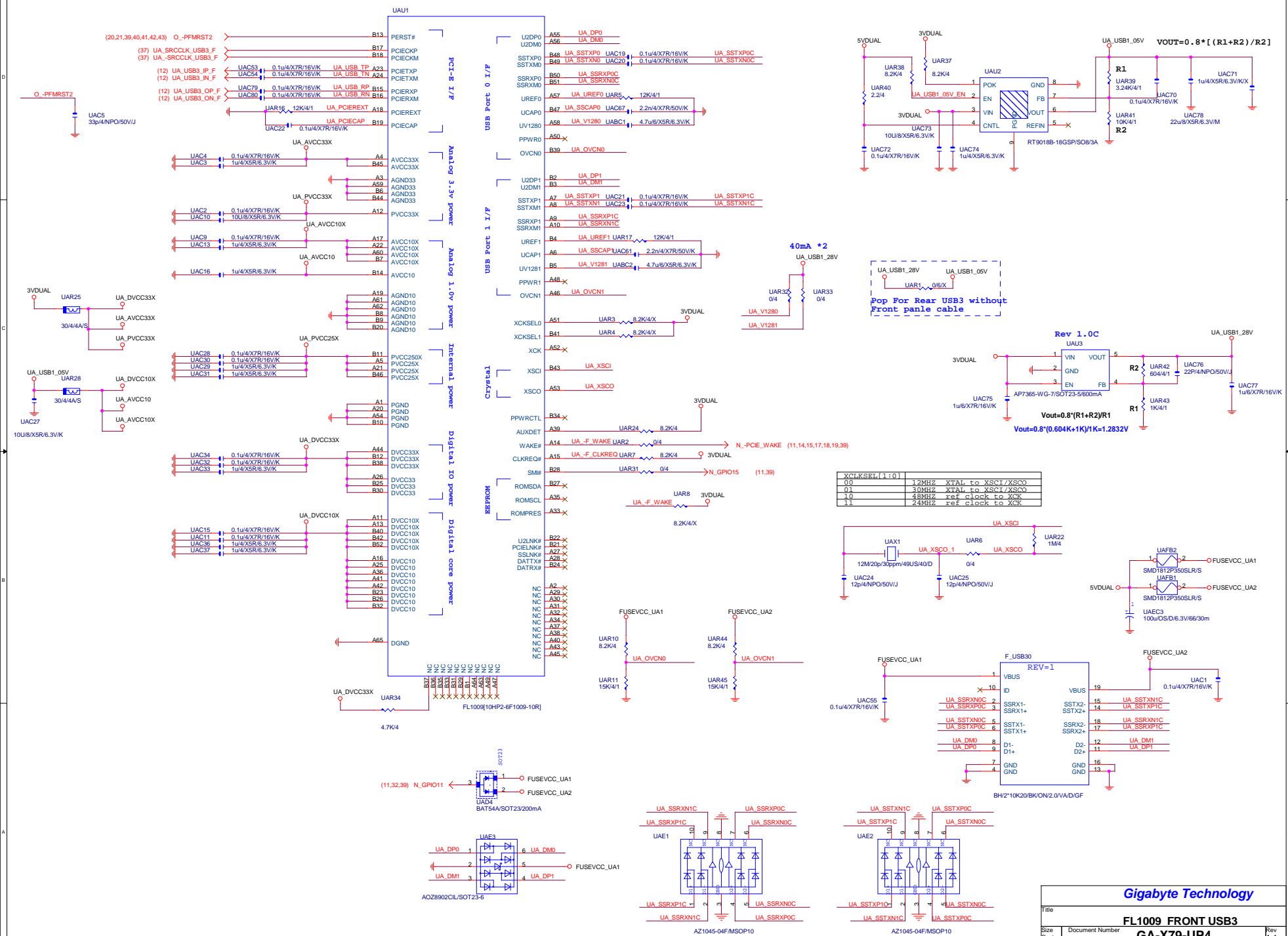


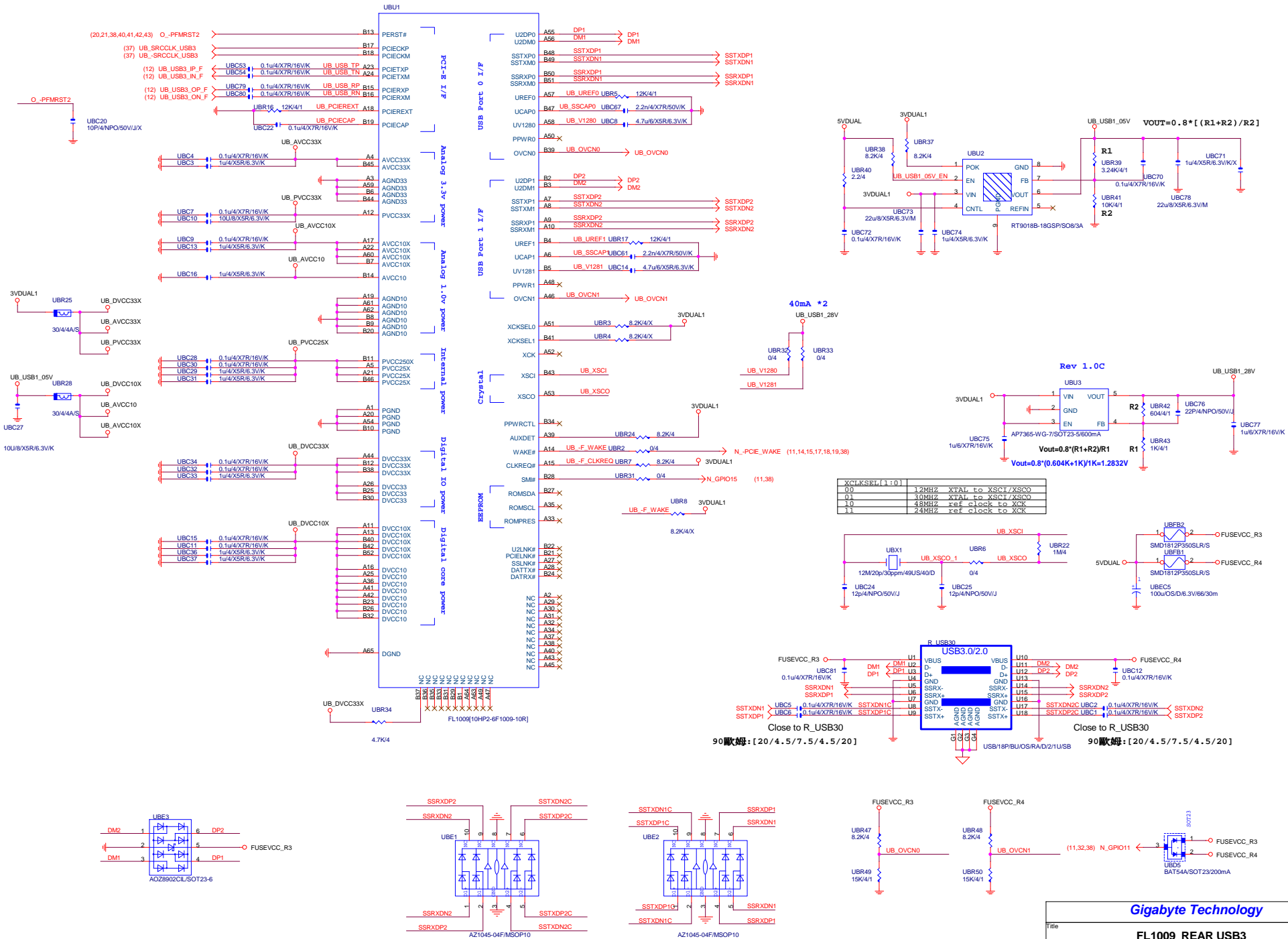
## CLOCK BUFFER

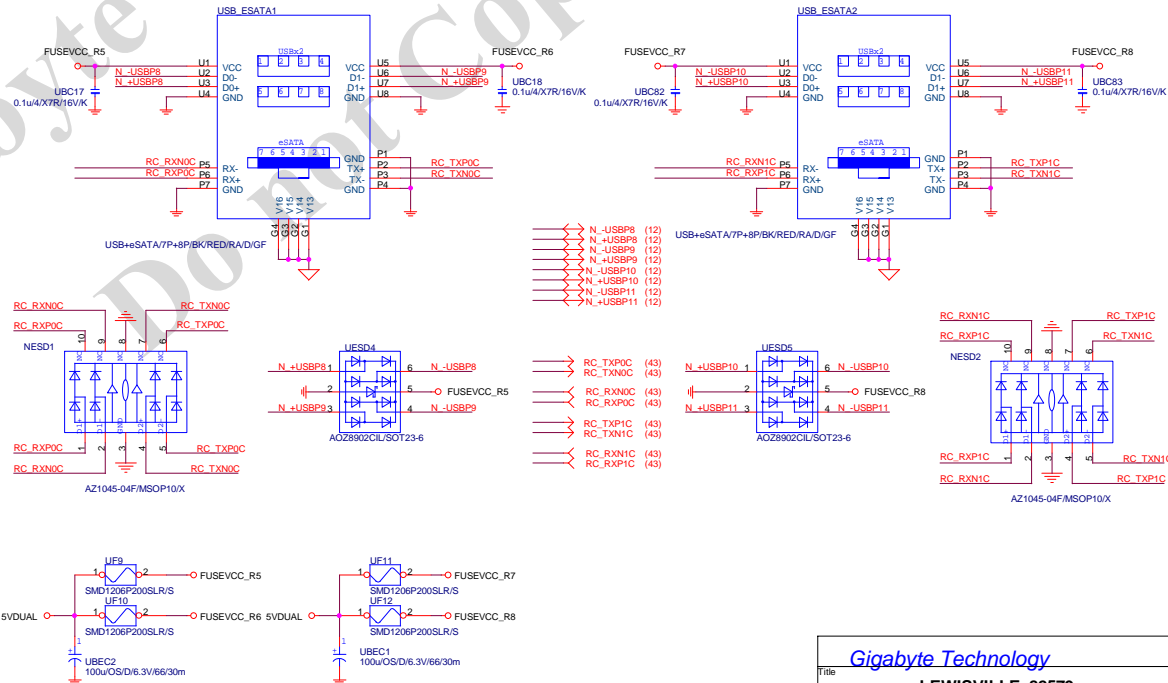
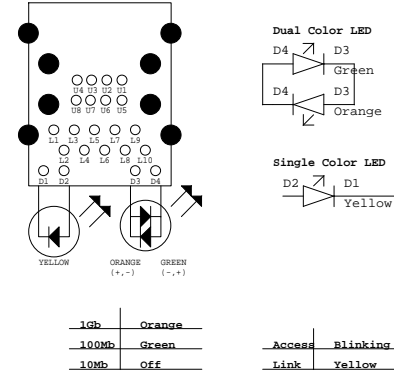


Gigabyte Technology

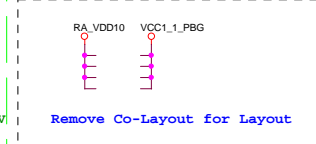
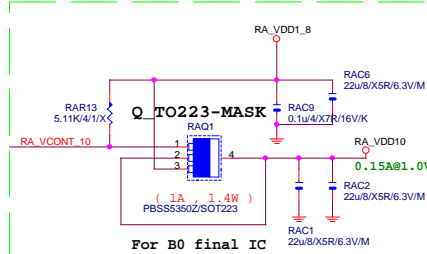
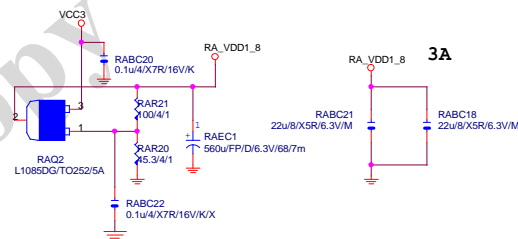
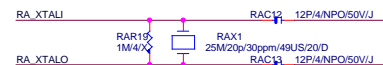
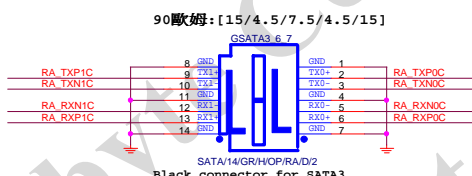
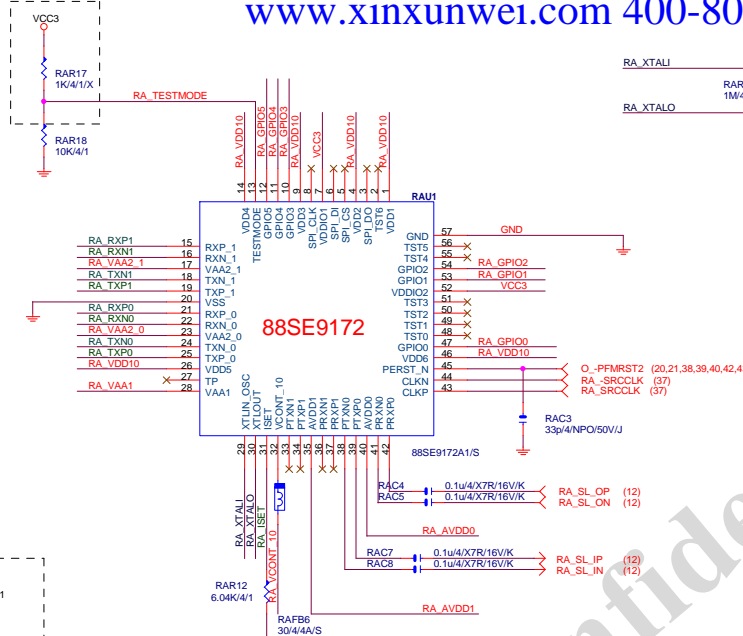
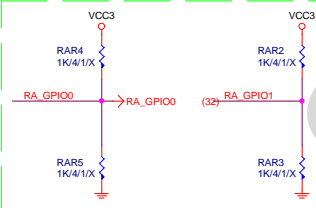
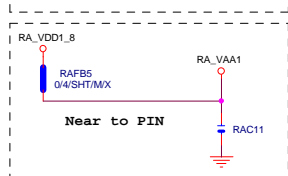
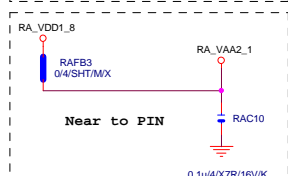
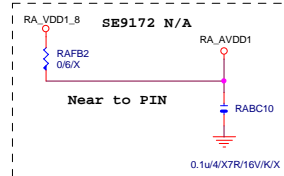
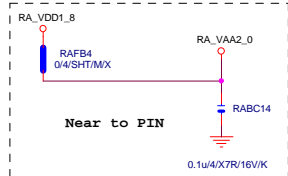
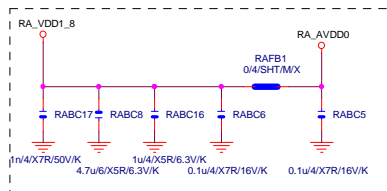
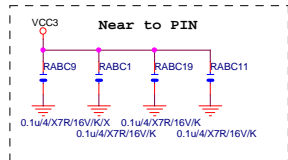
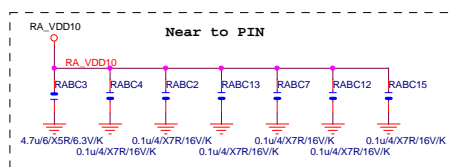
CLOCK GEN & BUFFER		
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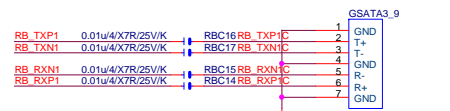
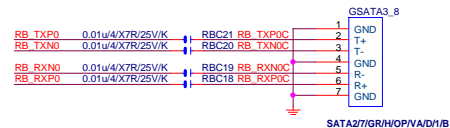
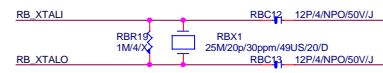
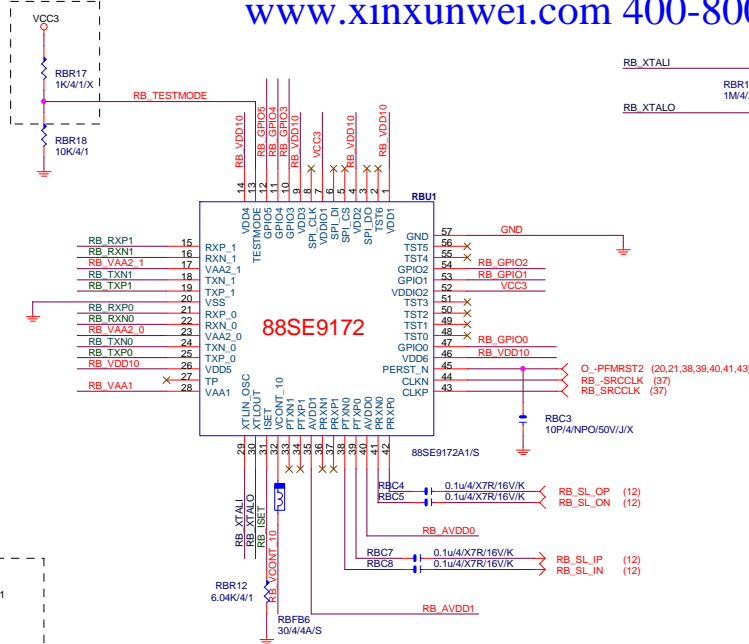
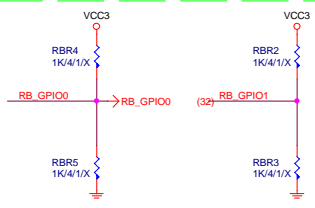
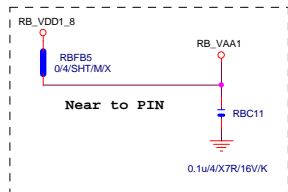
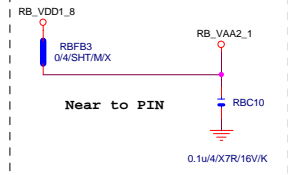
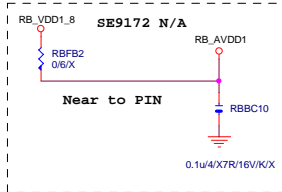
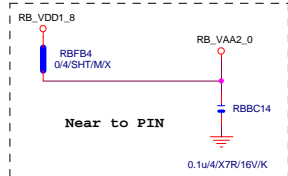
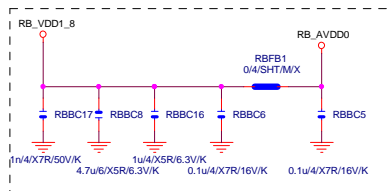
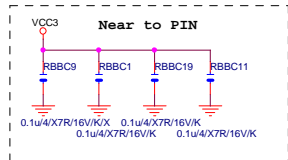
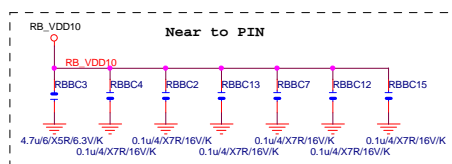




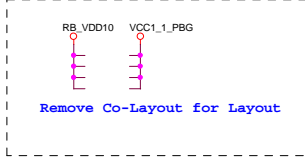
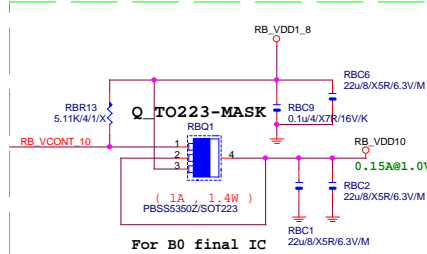
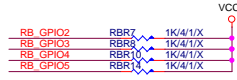
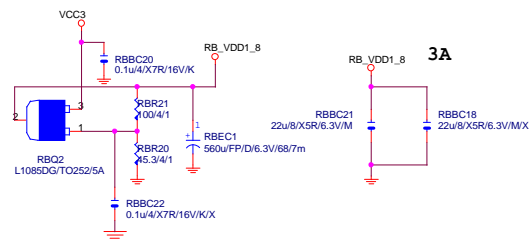


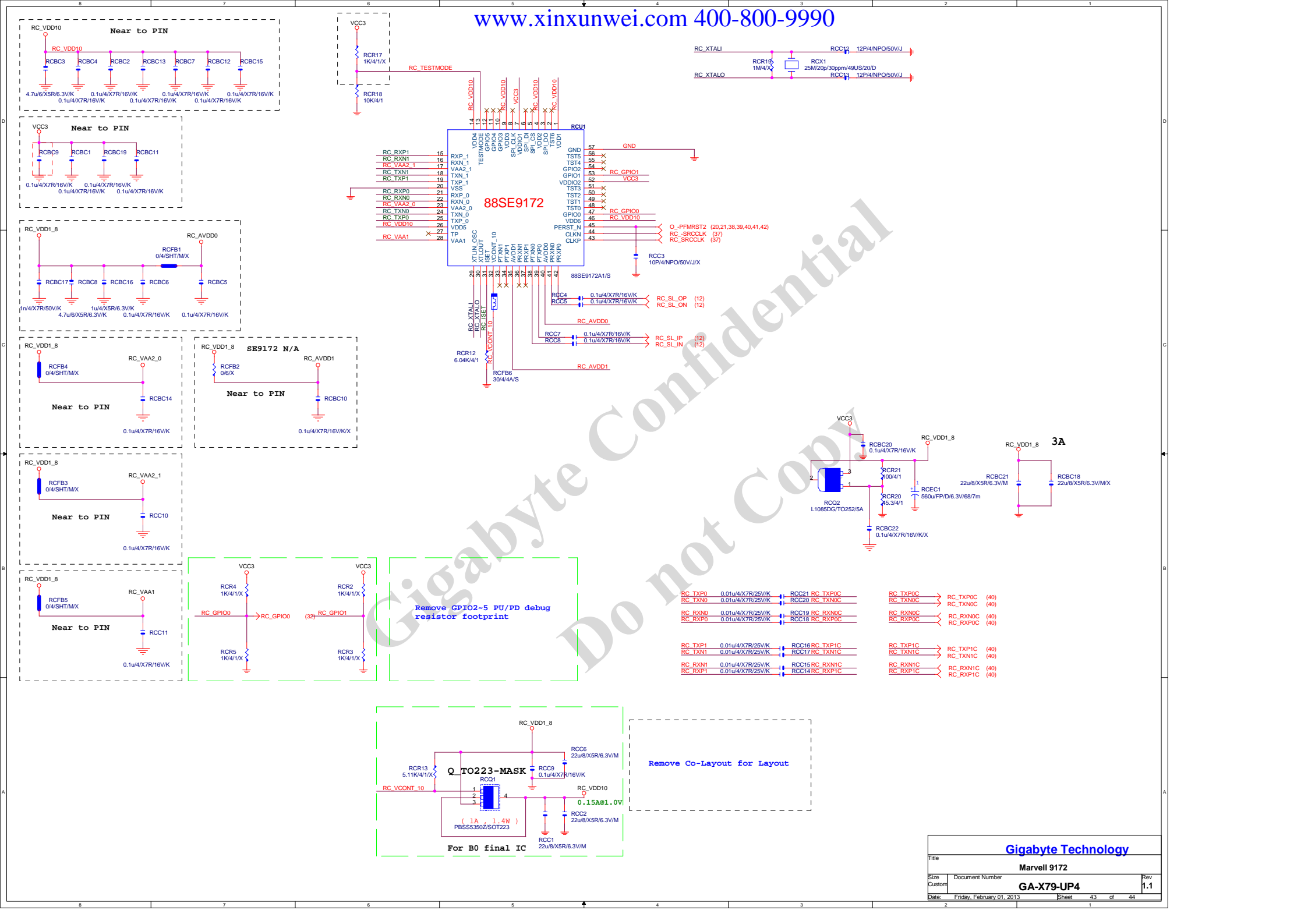






Black connector for SATA3 ?





## PCH GPIO

PIN NAME	POWER WELL	USAGE	AFTER PLTRST	S3/S5	NOTES
GP[0]	VCC3	-ICH_PSI	IN		8.2K P/U TO VCC3
GP[1]	VCC3	SPARE	IN		8.2K P/U TO VCC3
GP[2]	VCC3	-PIRQE	IN		8.2K P/U TO VCC3
GP[3]	VCC3	-PIRQF	IN		8.2K P/U TO VCC3
GP[4]	VCC3	-PIRQG	IN		8.2K P/U TO VCC3
GP[5]	VCC3	-PIRQH	IN		8.2K P/U TO VCC3
GP[6]	VCC3	GPIO6	IN		8.2K P/U TO VCC3
GP[7]	VCC3	GPIO7	IN		8.2K P/U TO VCC3
GP[8]	3VDUAL	GPIO8	OUT		8.2K P/U TO 3VDUAL
GP[9]	3VDUAL	-USBOC5	IN		USB OVER-CURRENT
GP[10]	3VDUAL	-USBOC6	IN		USB OVER-CURRENT
GP[11]	3VDUAL	GPIO11	IN		8.2K P/U TO 3VDUAL
GP[12]	3VDUAL	GPIO12	OUT		8.2K P/U TO 3VDUAL
GP[13]	3VDUAL	-LPCPME	IN		8.2K P/U TO 3VDUAL
GP[14]	3VDUAL	GPIO14	IN		8.2K P/U TO 3VDUAL
GP[15]	3VDUAL	SPARE	OUT		8.2K P/U TO 3VDUAL (N/A)
GP[16]	VCC3	SPARE	IN		8.2K P/U TO VCC3
GP[17]	VCC3	SPARE	IN		8.2K P/U TO VCC3
GP[18]	VCC3	-SPI_WP0	OUT		8.2K P/U TO VCC3
GP[19]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[20]	VCC3	-SPI_WP1	OUT		8.2K P/U TO VCC3
GP[21]	VCC3	SPARE	IN		8.2K P/U TO VCC3
GP[22]	VCC3	SPARE	IN		1K P/U TO VCC3
GP[23]	VCC3	SPARE	IN		8.2K P/U TO VCC3
GP[24]	3VDUAL	-SKTOC	IN		8.2K P/U TO 3VDUAL (N/A)
GP[25]	3VDUAL	GPIO25	OUT		8.2K P/U TO 3VDUAL
GP[26]	3VDUAL	SPARE	OUT		8.2K P/U TO 3VDUAL
GP[27]	3VDUAL_PCH	SPARE	OUT		8.2K P/U TO 3VDUAL_PCH
GP[28]	3VDUAL	GPIO28	OUT		8.2K P/U TO 3VDUAL
GP[29]	3VDUAL	SPARE	OUT		8.2K P/U TO 3VDUAL (N/A)
GP[30]	3VDUAL	-S_WARN	OUT		CONNECT TO -S_ACK
GP[31]	3VDUAL_PCH	SPARE	IN		8.2K P/U TO 3VDUAL_PCH(N/A)
GP[32]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[33]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[34]	VCC3	SPARE	IN		8.2K P/U TO VCC3
GP[35]	VCC3	-ACZ_DET	OUT		8.2K P/U TO VCC3
GP[36]	VCC3	SPARE	IN		8.2K P/U TO VCC3(N/A)
GP[37]	VCC3	SPARE	IN		8.2K P/U TO VCC3
GP[38]	VCC3	SPARE	IN		1K P/U TO VCC3

PIN NAME	POWER WELL	USAGE	AFTER PLTRST	S3/S5	NOTES
GP[39]	VCC3	SPARE	IN		1K P/U TO VCC3
GP[40]	3VDUAL	-USBOC1	IN		USB OVER-CURRENT
GP[41]	3VDUAL	-USBOC2	IN		USB OVER-CURRENT
GP[42]	3VDUAL	-USBOC3	IN		USB OVER-CURRENT
GP[43]	3VDUAL	-USBOC4	IN		USB OVER-CURRENT
GP[44]	3VDUAL	SPARE	IN		1K P/U TO 3VDUAL
GP[45]	3VDUAL	SPARE	IN		1K P/U TO 3VDUAL
GP[46]	3VDUAL	SPARE	IN		1K P/U TO 3VDUAL
GP[47]	3VDUAL	SPARE	IN		1K P/U TO 3VDUAL
GP[48]	VCC3	SPARE	IN		1K P/U TO VCC3
GP[49]	VCC3	SPARE	IN		8.2K P/U TO VCC3
GP[50]	VCC3	-REQ1	OUT		8.2K P/U TO VCC3
GP[51]	VCC3	-GNT1	OUT		1K P/U TO VCC3
GP[52]	VCC3	-REQ2	OUT		8.2K P/U TO VCC3
GP[53]	VCC3	-GNT2	IN		8.2K P/U TO VCC3(N/A)
GP[54]	VCC3	-REQ3	IN		8.2K P/U TO VCC3
GP[55]	VCC3	-GNT3	IN		8.2K P/U TO VCC3(N/A)
GP[56]	3VDUAL	SPARE	IN		8.2K P/U TO 3VDUAL
GP[57]	3VDUAL	SPARE	IN		8.2K P/U TO 3VDUAL
GP[58]	3VDUAL	SML1CLK	OUT		8.2K P/U TO 3VDUAL
GP[59]	3VDUAL	-USBOC0	IN		USB OVER-CURRENT
GP[60]	3VDUAL	SML0ART	OUT		1K P/U TO 3VDUAL
GP[61]	3VDUAL	SPARE	OUT		8.2K P/U TO 3VDUAL
GP[62]	3VDUAL	SUSCLK	OUT		8.2K P/U TO 3VDUAL(N/A)
GP[63]	3VDUAL	-SLP_S5	OUT		8.2K P/U TO 3VDUAL(N/A)
GP[64]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[65]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[66]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[67]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[68]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[69]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[70]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[71]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[72]	3VDUAL	SPARE	OUT		8.2K P/U TO 3VDUAL
GP[73]	3VDUAL	SPARE	OUT		8.2K P/U TO 3VDUAL
GP[74]	3VDUAL	SML1ART	OUT		1K P/U TO 3VDUAL
GP[75]	3VDUAL	SML1DAT	IN/OUT		8.2K P/U TO 3VDUAL

Gigabyte Technology

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PCH GPIO LIST			
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