Model Name: GA-X79-UP4 Rev 1.01

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		
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Date: Friday, August 03, 2012	Sheet 1 of 44	

GA-X79-UP4

Component value change history

Data	Change Item	Reason
2012/08/03	Remove PWM I2C Connect	1.0C

Circuit or PCB layout change

DATE	Change Item	Reason
2012-01-30	Build X79-UD4 0.1 from X79-UD3 1.03 for spec request	
2012-03-14	Build X79-UD3R 0.1 from X79-UD4 0.1 for spec request	
2012-04-05	Build X79-UP3 0.1 from X79-UD3R 0.1 for model nam change	
2012-04-xx	Build X79-UP4 0.2 from X79-UP3 0.1 for model nam change	
2012-07-06	1.VCORE power 修改	Rev 1.01
	2.DDR power ok layout 修改	
	3.Add MAC1,MBC7 for DDR power ok ripple	
	4.Remove VIN protect circuit	
	5.Add R1,BC1 for ATX PWOK	
	6.Mask CEC20	
	7.對調VIN0 跟VIN5	
	8.R3933,R189 change to 0 ohm	

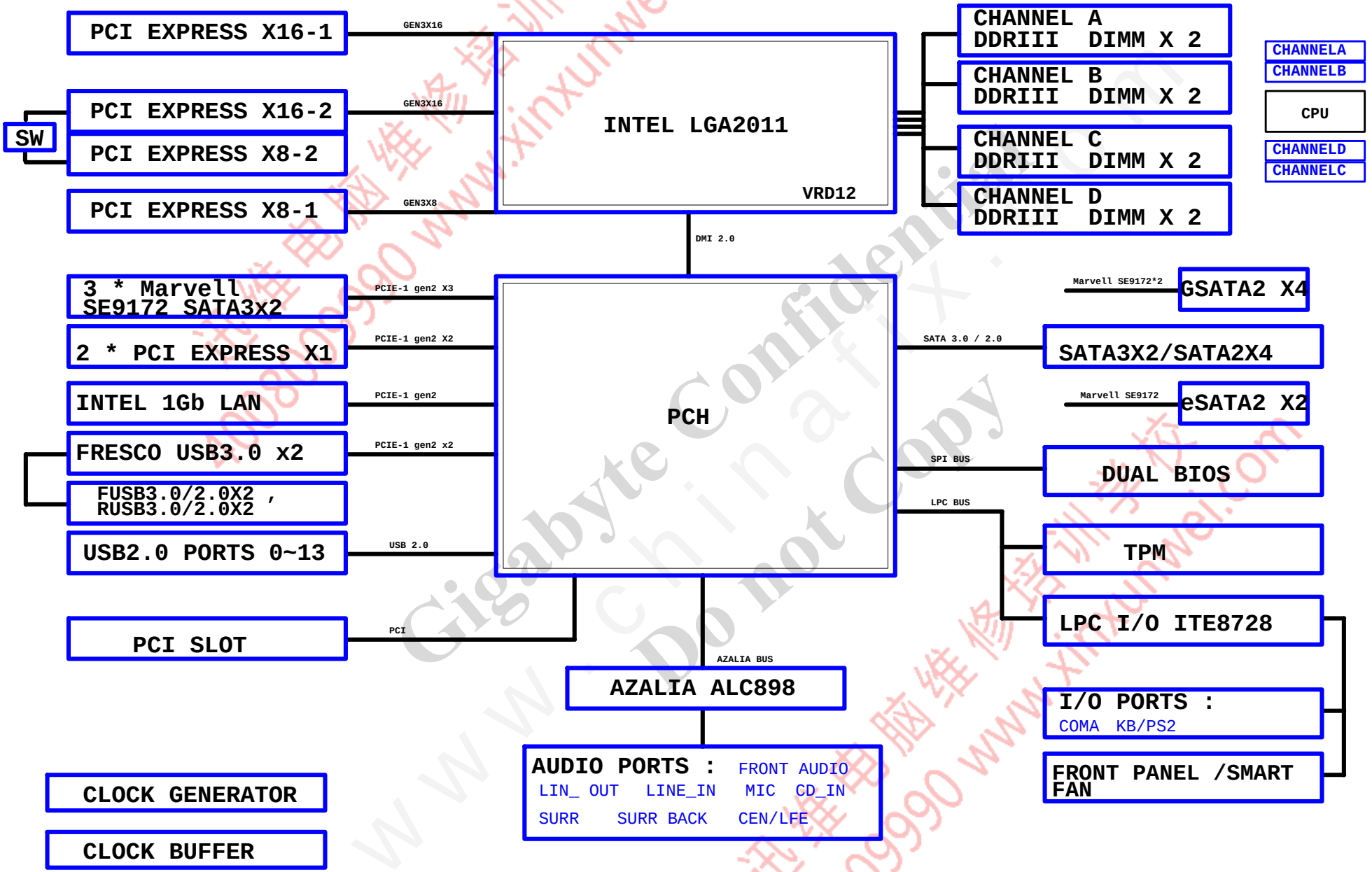
Gigabyte Technology

Title: BOM & PCB MODIFY HISTORY

Size: Custom | Document Number: GA-X79-UP4 | Rev: 1.01

Date: Friday, August 03, 2012 | Sheet 2 of 44

BLOCK DIAGRAM



Gigabyte Technology			
Title: BLOCK DIAGRAM			
Size: C	Document Number: GA-X79-UP4		Rev: 1.01
Date: Friday, August 03, 2012	Sheet 3 of 44		

LGA2011F

LGA2011G

LGA2011H

LGA2011I

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7 OF 15

8 OF 15

9 OF 15

LGA2011[10SC1-J02011-11R_10SC1-J02011-12R]

CHANNEL A

CHANNEL B

CHANNEL C

CHANNEL D

LGA2011
ILM_BP/2011/CSP[12KRC-0F2011-11R_12KRC-0F2011-12R]

COUPON1 COUPON2 1 2 COUPON/X

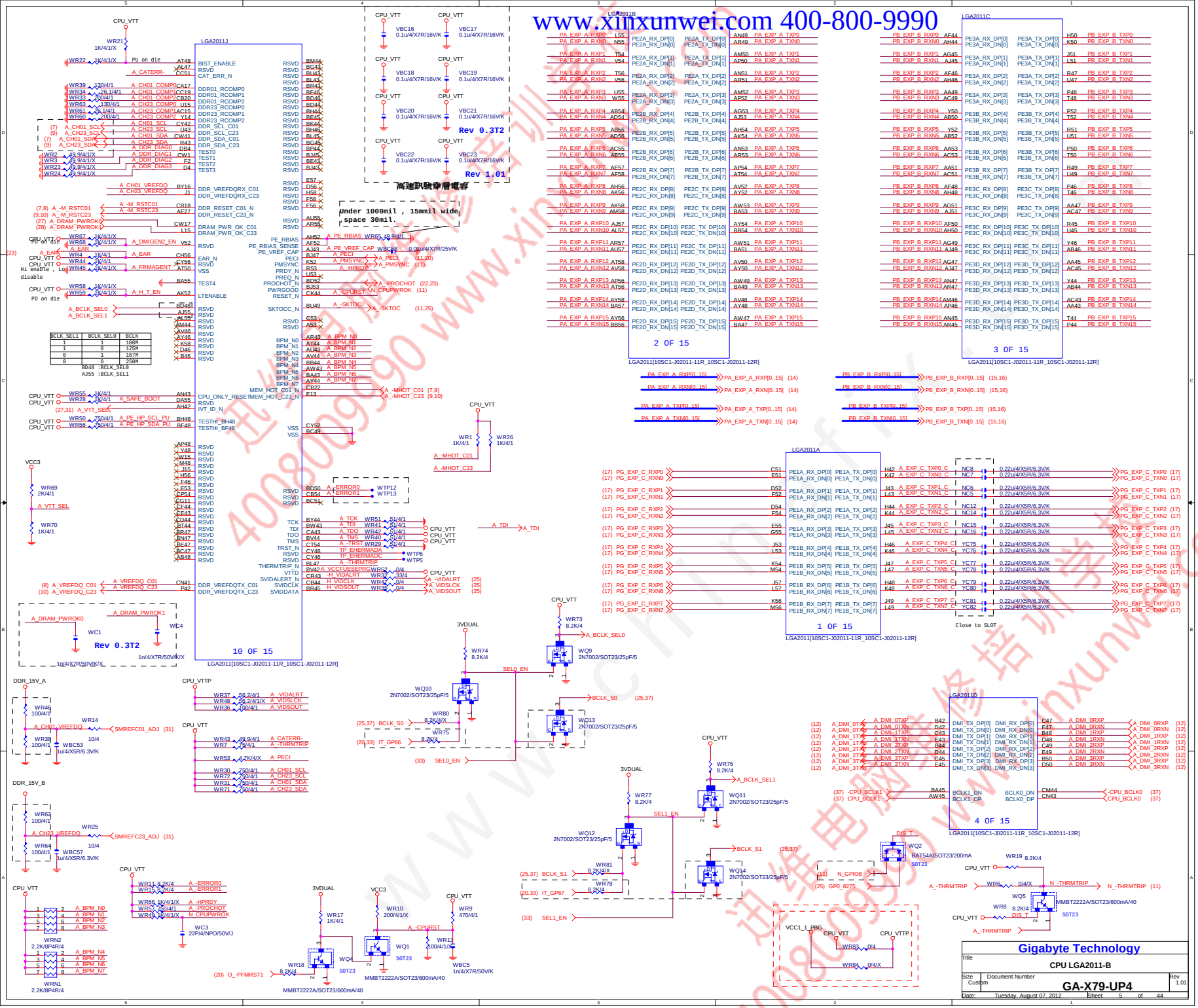
COUPON2 COUPON4 1 2 COUPON/X

COUPON3 COUPON1 1 2 COUPON/X

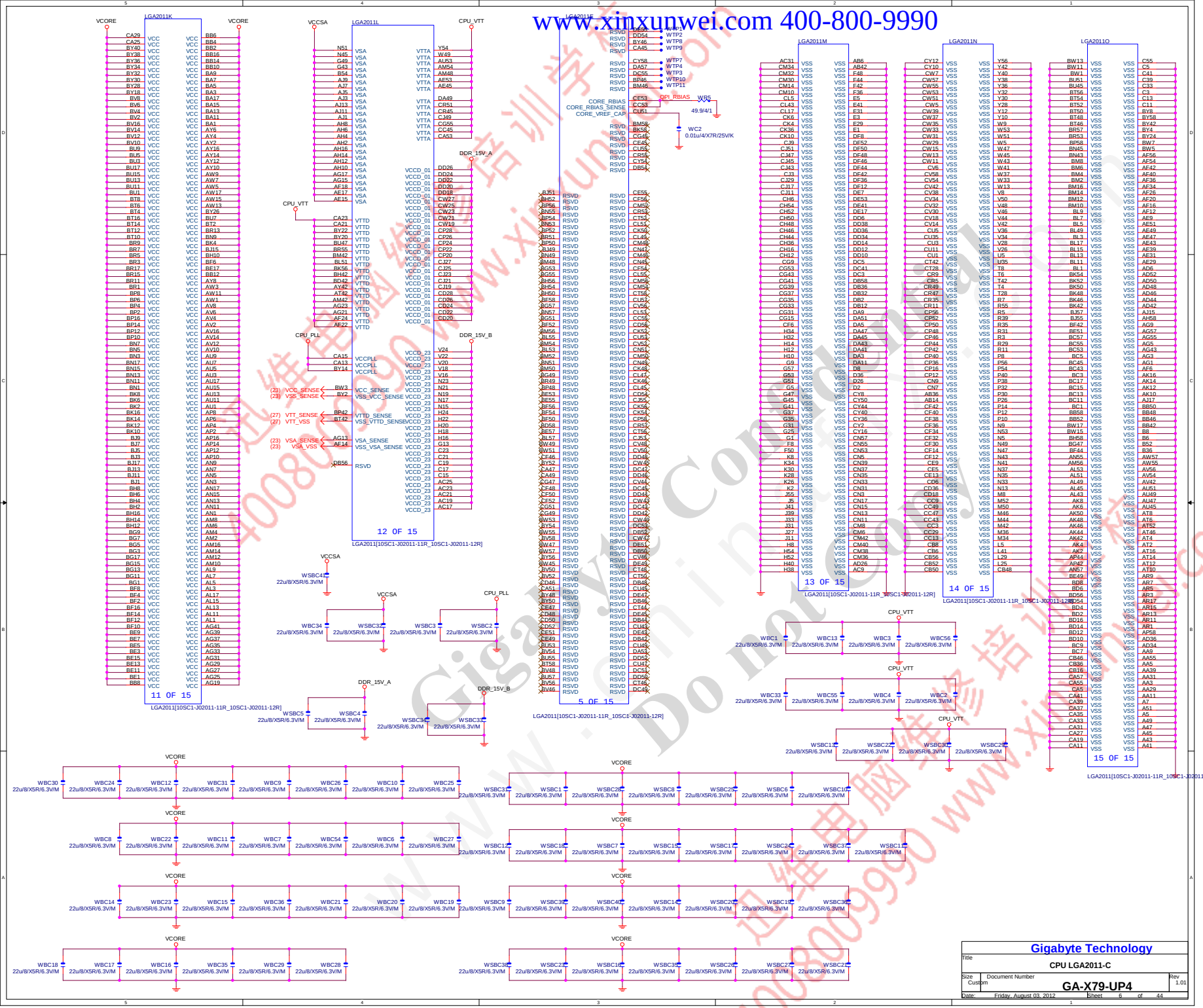
COUPON4 COUPON3 1 2 COUPON/X

The Sandy Bridge-E (HEDT)not support ECC , but Sandy Bridge EX/EP support ECC, Unbuffered , Registered,Load-reduced DIMM.

Gigabyte Technology	
Title	CPU LGA2011-A
Size: Custom	Document Number: GA-X79-UP4
Rev	1.01
Date: Friday, August 03, 2012	Sheet 4 of 44

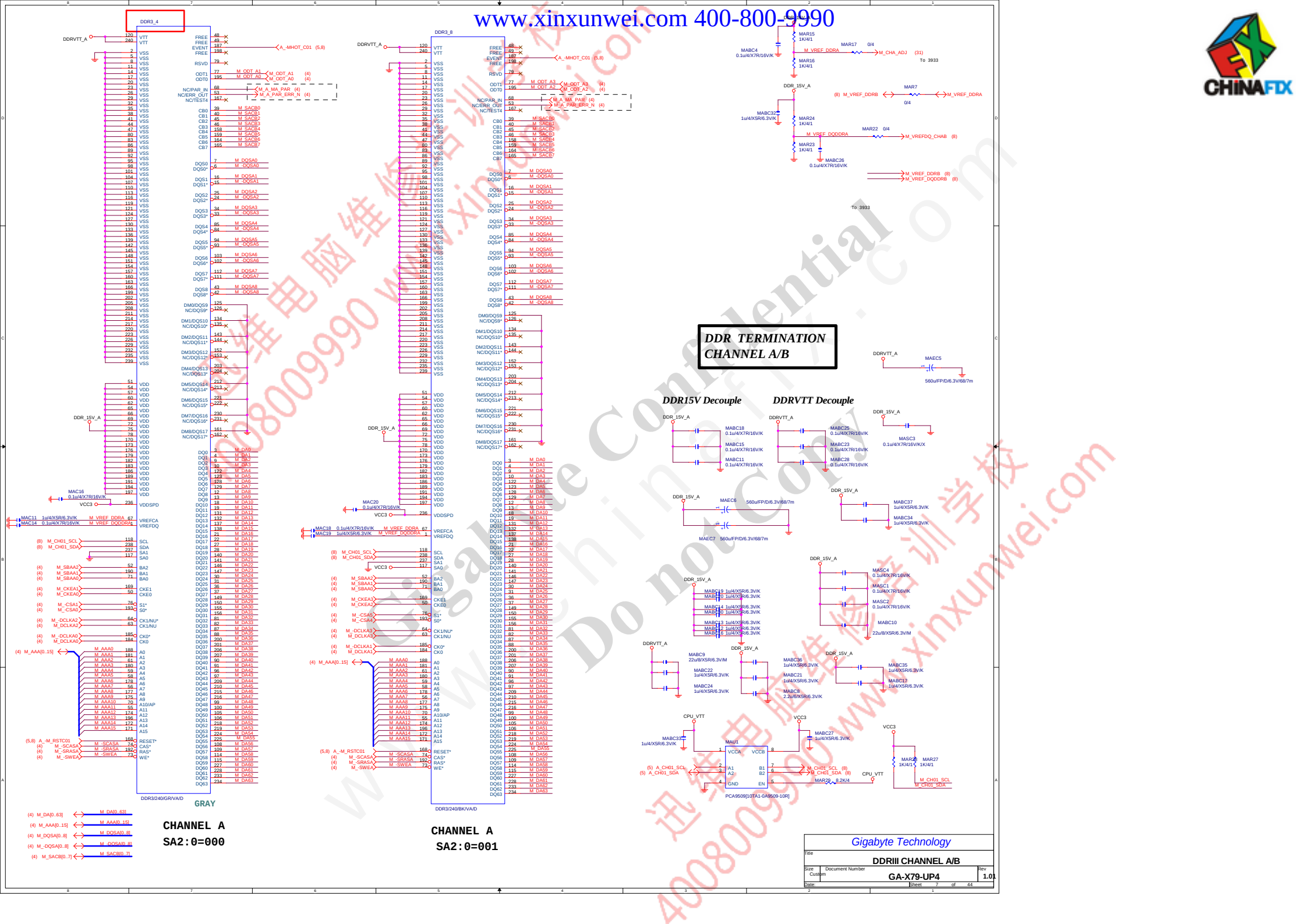


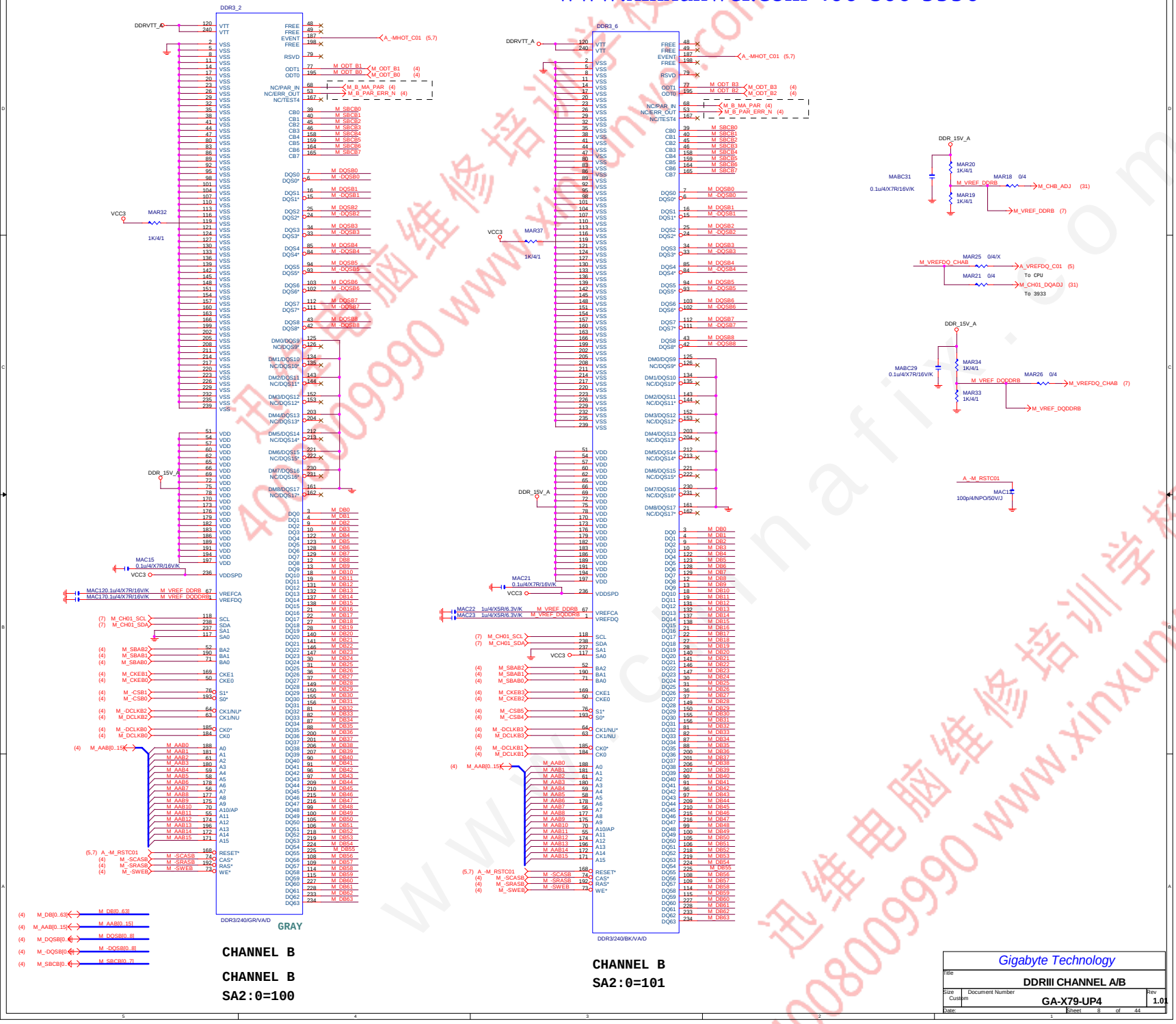
Gigabyte Technology		
Title	CPU LGA2011-B	
Size: Custom	Document Number: GA-X79-UP4	Rev: 1.01
Date: Tuesday, August 07, 2012	Sheet 5 of 44	



Title	CPU LGA2011-C
Size	Custom
Document Number	GA-X79-UP4
Rev	1.01
Date:	Friday, August 03, 2012
Sheet	6 of 44

Gigabyte Technology





Gigabyte Technology	
Title	DDRIII CHANNEL A/B
Size: Custom	Document Number: GA-X79-UP4
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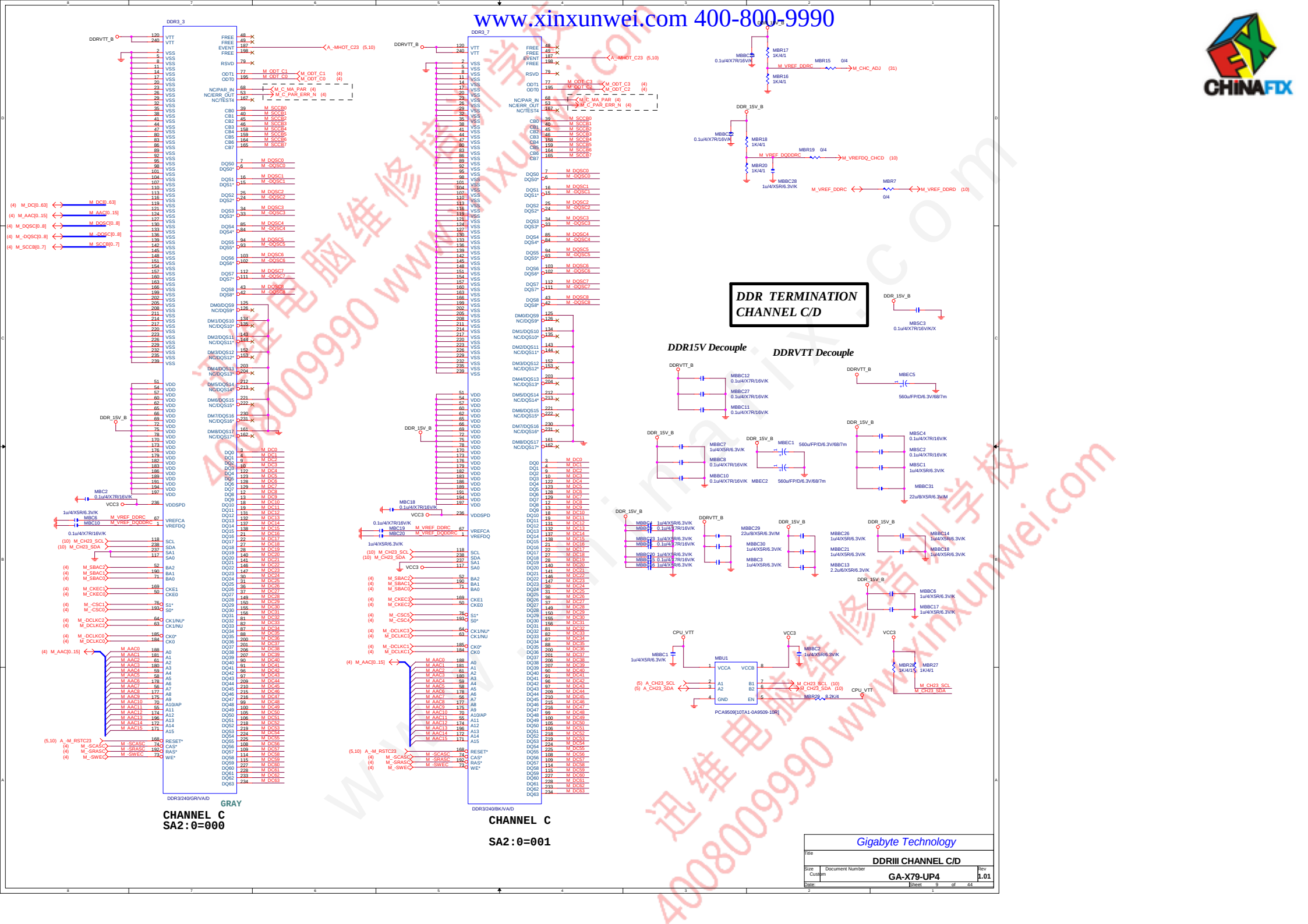
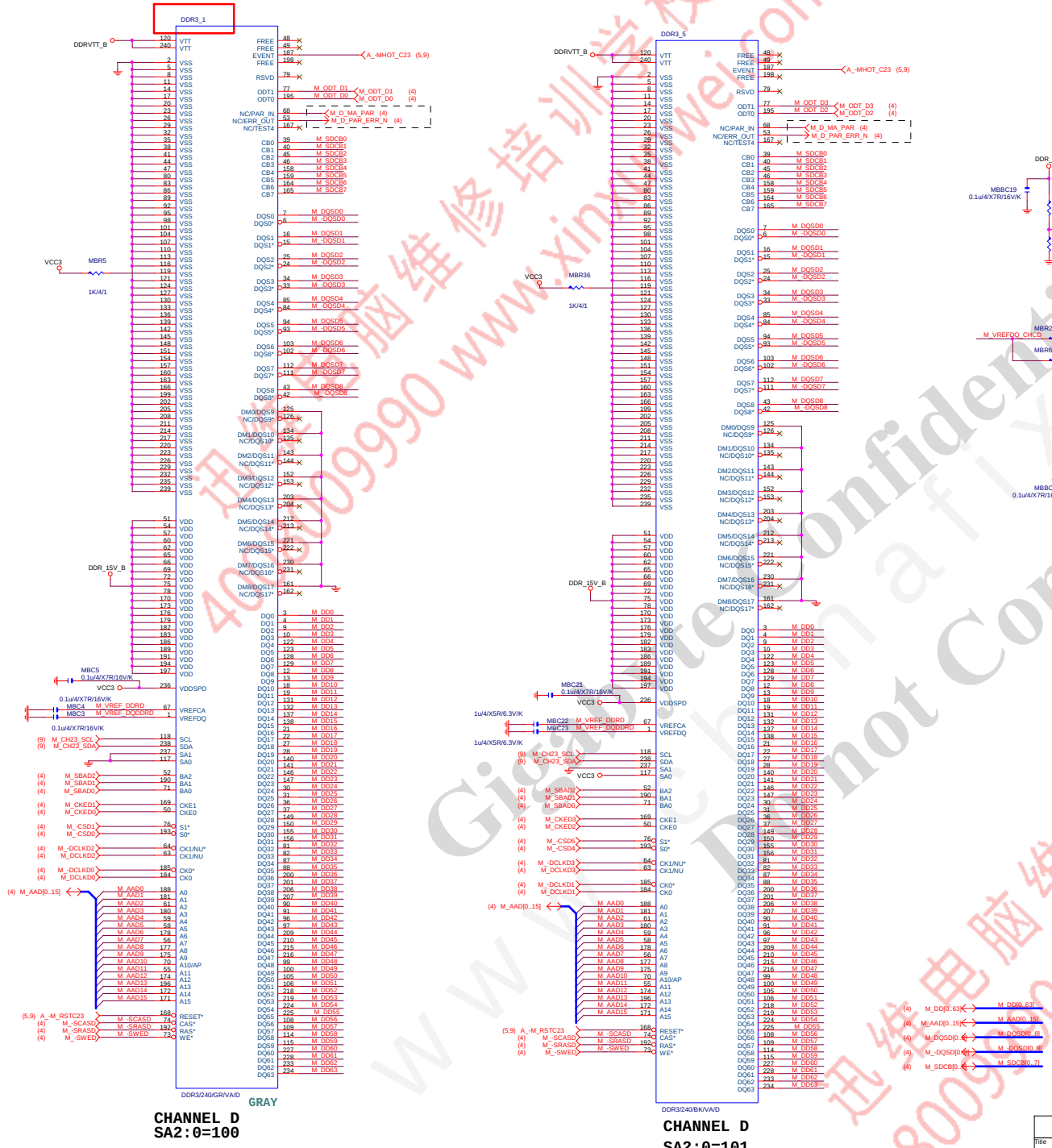
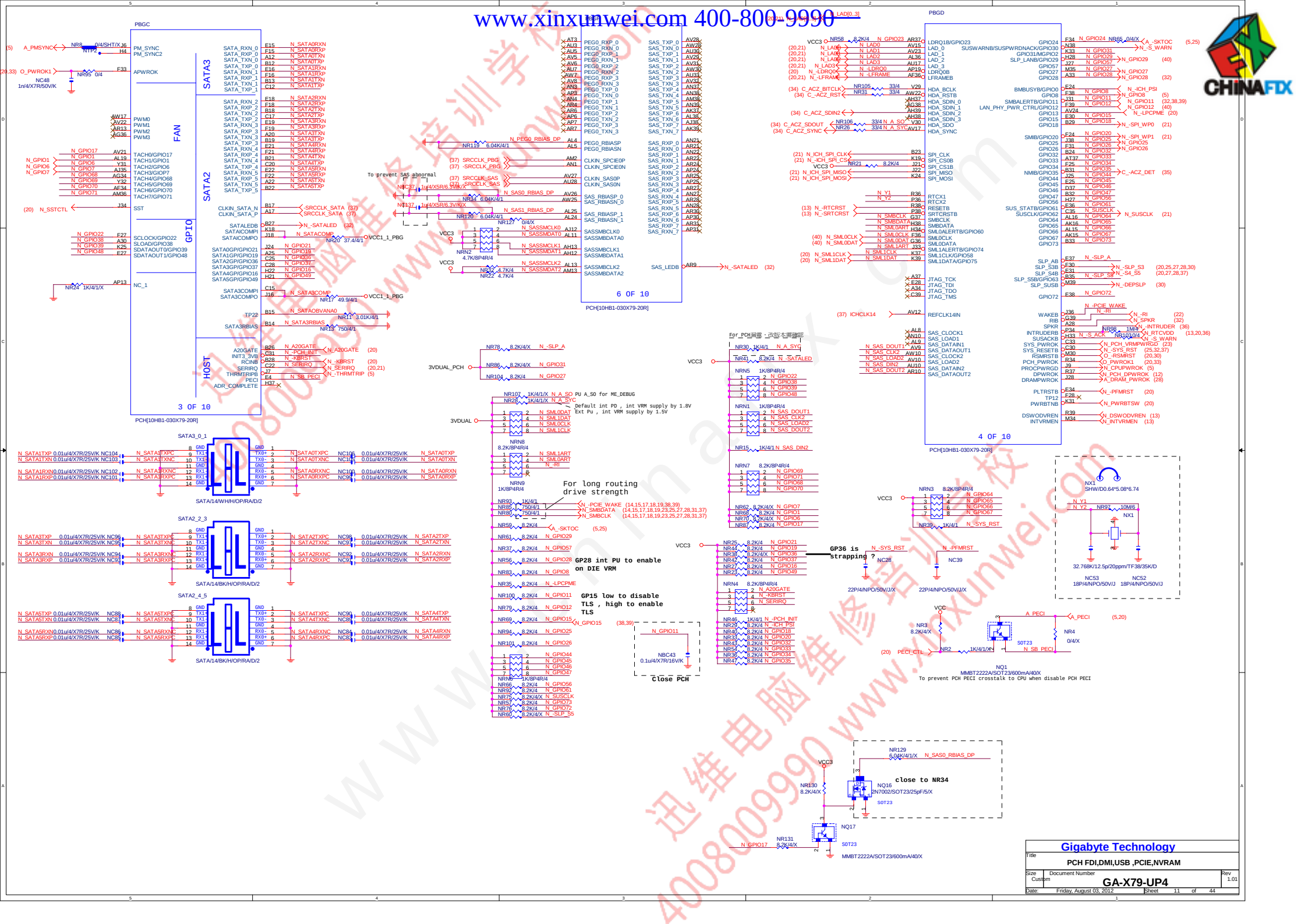
Date:	Sheet 8 of 44





Gigabyte Technology		
Title: DDRIII CHANNEL C/D		
Size: Custom	Document Number: GA-X79-UP4	Rev: 1.01
Date:	Sheet 10 of 44	



Title	PCH FDI,DMI,USB ,PCIE,NVRAM
Size	Custom
Document Number	GA-X79-UP4
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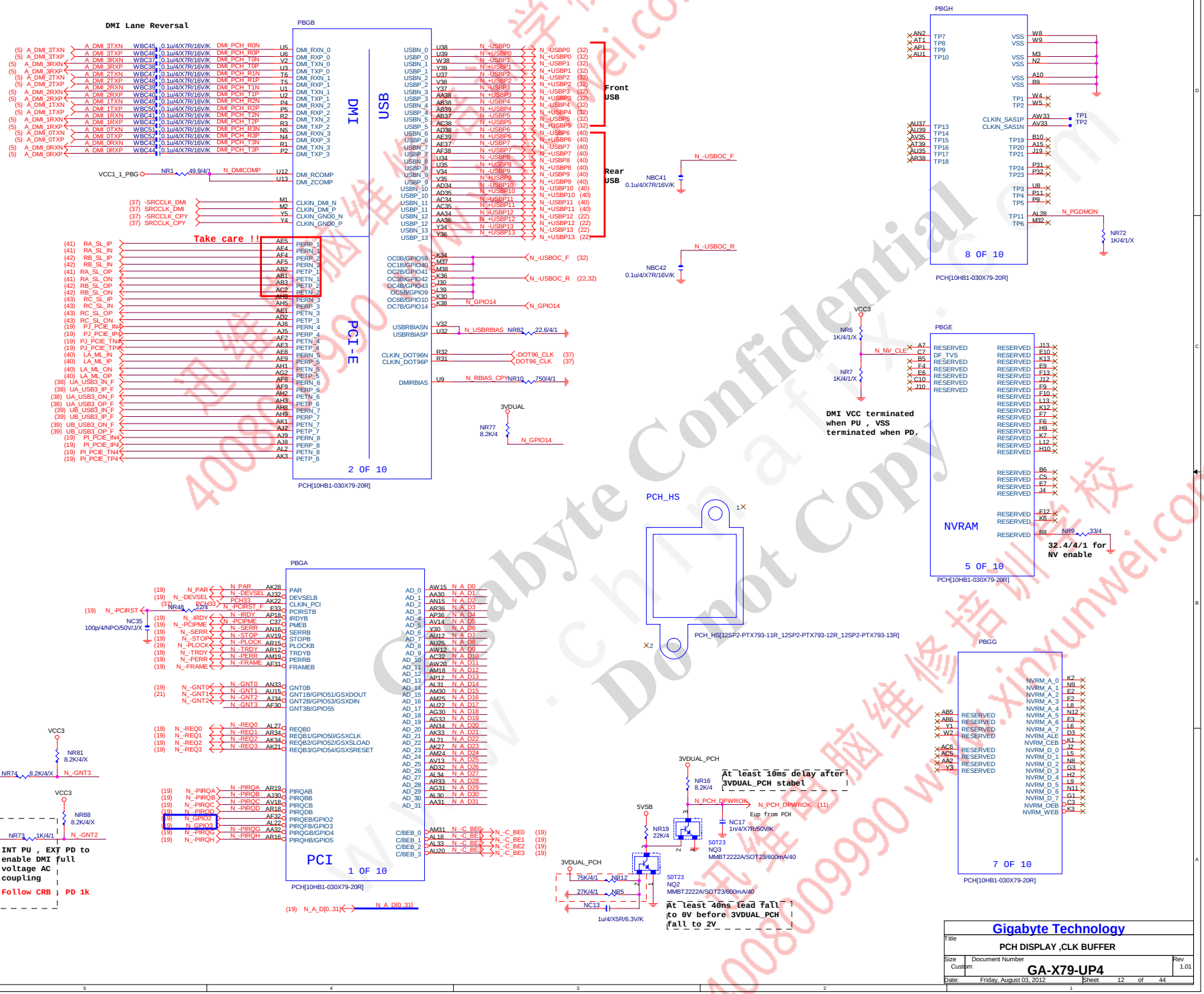
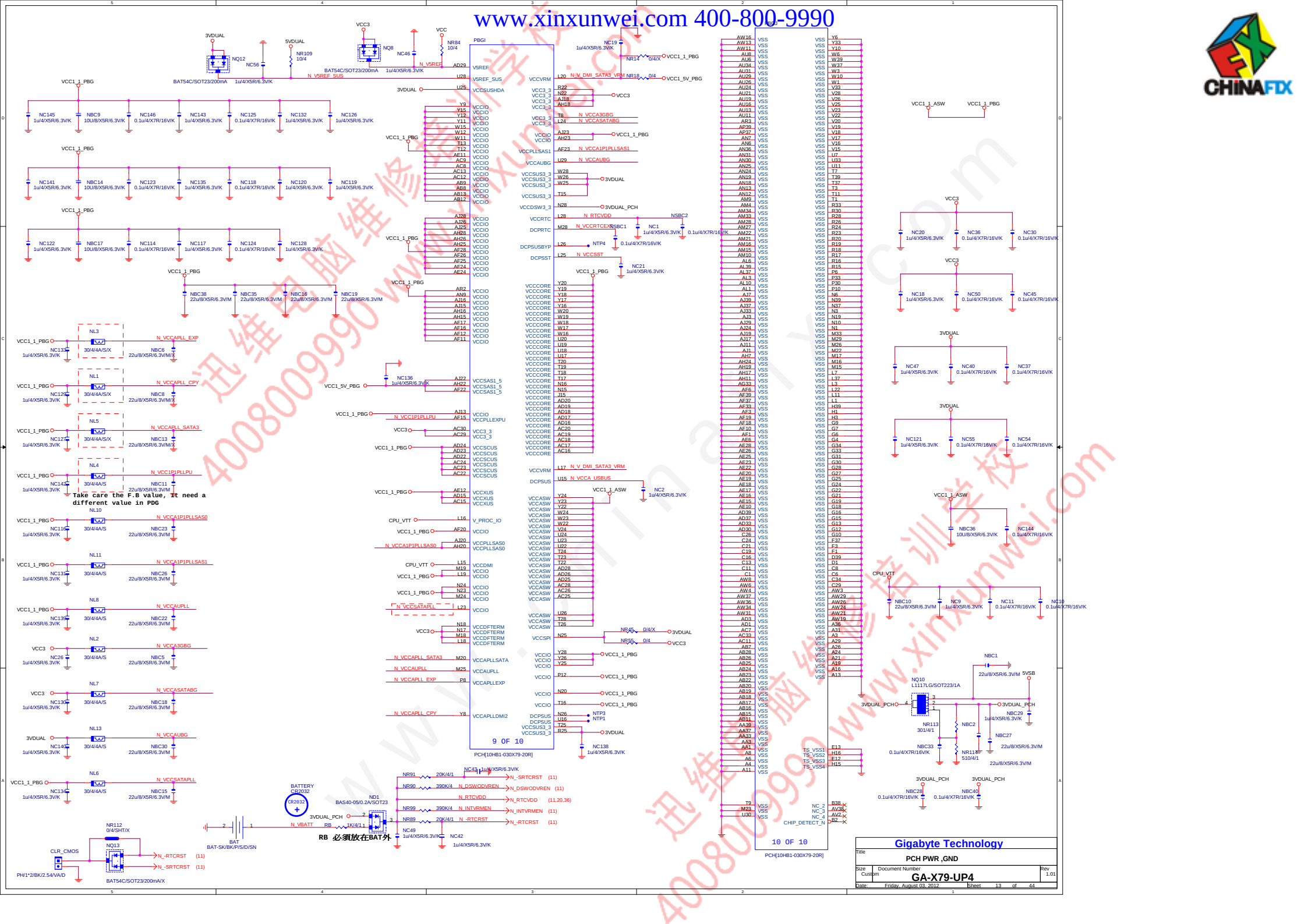
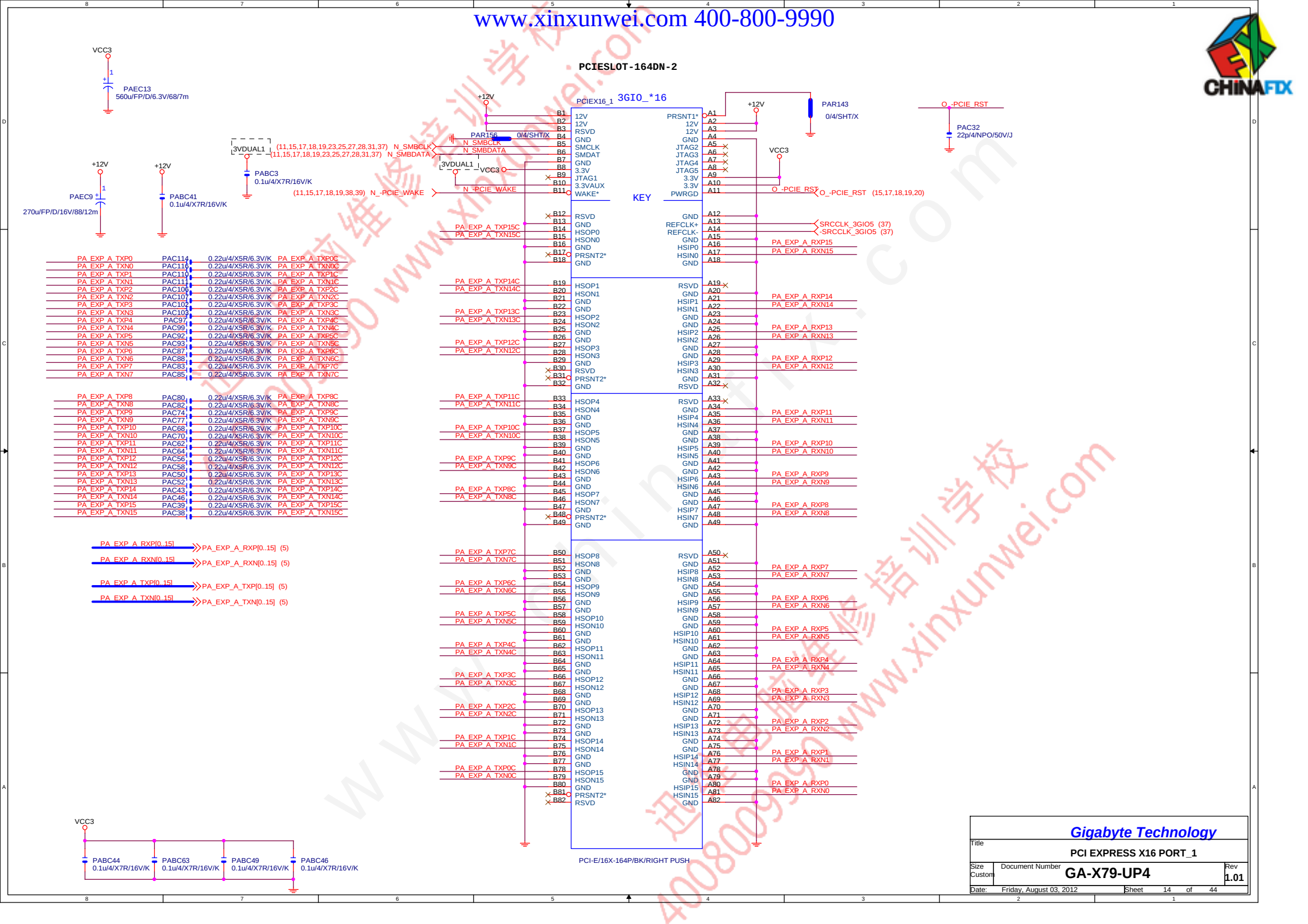
Gigabyte Technology







PCIESLOT-164DN-2

PCIEX16_2 3GIO_*16

B1	12V	PRSNT1*	A1		
B2	12V	12V	A2		
B3	RSVD	12V	A3		
B4	GND	GND	A4		
B5	SMCLK	JTAG2	A5		
B6	SMDAT	JTAG3	A6		
B7	GND	JTAG4	A7		
B8	3.3V	JTAG5	A8		
B9	JTAG1	3.3V	A9		
B10	3.3VAUX	3.3V	A10		
B11	WAKE*	PWRGD	A11	O_-PCIE_RST	O_-PCIE_RST (14,17,18,19,20)
B12	RSVD	GND	A12		
B13	GND	REFCLK+	A13	SRCCLK_3GIO1 (37)	
B14	HSOP0	REFCLK-	A14	-SRCCLK_3GIO1 (37)	
B15	HSON0	GND	A15		
B16	GND	HSIP0	A16	PB_EXP_B_RXP15	
B17	PRSNT2*	HSIN0	A17	PB_EXP_B_RXN15	
B18	GND	GND	A18		
B19	HSOP1	RSVD	A19		
B20	HSON1	GND	A20		
B21	GND	HSIP1	A21	PB_EXP_B_RXP14	
B22	GND	HSIN1	A22	PB_EXP_B_RXN14	
B23	HSOP2	GND	A23		
B24	HSON2	GND	A24		
B25	GND	HSIP2	A25	PB_EXP_B_RXP13	
B26	GND	HSIN2	A26	PB_EXP_B_RXN13	
B27	HSOP3	GND	A27		
B28	HSON3	GND	A28		
B29	GND	HSIP3	A29	PB_EXP_B_RXP12	
B30	RSVD	HSIN3	A30	PB_EXP_B_RXN12	
B31	PRSNT2*	GND	A31		
B32	GND	RSVD	A32		
B33	HSOP4	RSVD	A33		
B34	HSON4	GND	A34		
B35	GND	HSIP4	A35	PB_EXP_B_RXP11	
B36	GND	HSIN4	A36	PB_EXP_B_RXN11	
B37	HSOP5	GND	A37		
B38	HSON5	GND	A38		
B39	GND	HSIP5	A39	PB_EXP_B_RXP10	
B40	GND	HSIN5	A40	PB_EXP_B_RXN10	
B41	HSOP6	GND	A41		
B42	HSON6	GND	A42		
B43	GND	HSIP6	A43	PB_EXP_B_RXP9	
B44	GND	HSIN6	A44	PB_EXP_B_RXN9	
B45	HSOP7	GND	A45		
B46	HSON7	GND	A46		
B47	GND	HSIP7	A47	PB_EXP_B_RXP8	
B48	PRSNT2*	HSIN7	A48	PB_EXP_B_RXN8	
B49	GND	GND	A49		
B50	HSOP8	RSVD	A50		
B51	HSON8	GND	A51		
B52	GND	HSIP8	A52	PB_EXP_B1_RXP7	
B53	GND	HSIN8	A53	PB_EXP_B1_RXN7	
B54	HSOP9	GND	A54		
B55	HSON9	GND	A55		
B56	GND	HSIP9	A56	PB_EXP_B1_RXP6	
B57	GND	HSIN9	A57	PB_EXP_B1_RXN6	
B58	HSOP10	GND	A58		
B59	HSON10	GND	A59		
B60	GND	HSIP10	A60	PB_EXP_B1_RXP5	
B61	GND	HSIN10	A61	PB_EXP_B1_RXN5	
B62	HSOP11	GND	A62		
B63	HSON11	GND	A63		
B64	GND	HSIP11	A64	PB_EXP_B1_RXP4	
B65	GND	HSIN11	A65	PB_EXP_B1_RXN4	
B66	HSOP12	GND	A66		
B67	HSON12	GND	A67		
B68	GND	HSIP12	A68	PB_EXP_B1_RXP3	
B69	GND	HSIN12	A69	PB_EXP_B1_RXN3	
B70	HSOP13	GND	A70		
B71	HSON13	GND	A71		
B72	GND	HSIP13	A72	PB_EXP_B1_RXP2	
B73	GND	HSIN13	A73	PB_EXP_B1_RXN2	
B74	HSOP14	GND	A74		
B75	HSON14	GND	A75		
B76	GND	HSIP14	A76	PB_EXP_B1_RXP1	
B77	GND	HSIN14	A77	PB_EXP_B1_RXN1	
B78	HSOP15	GND	A78		
B79	HSON15	GND	A79		
B80	GND	HSIP15	A80	PB_EXP_B1_RXP0	
B81	PRSNT2*	HSIN15	A81	PB_EXP_B1_RXN0	
B82	RSVD	GND	A82		

KEY

+12V

PBR138 0/4/SHT/X

PBR154 0/4/SHT/X

(11,14,17,18,19,23,25,27,28,31,37) N_SMBCLK
(11,14,17,18,19,23,25,27,28,31,37) N_SMBDATA
N_SMBCLK
N_SMBDATA

3VDUAL

VCC3

(11,14,17,18,19,38,39) N_-PCIE_WAKE
N_-PCIE_WAKE

O_-PCIE_RST

PBC30 22p/4/NPO/50V/J

PAEC8 270u/FP/D/16V/88/12m

PBBC36 0.1u/4/X7R/16V/K

PBEC13 560u/FP/D/6.3V/68/7m

PB_EXP_B1_TXP0	PBC115	0.22u/4/X5R/6.3V/K	PB_EXP_B1_TXP0C	
PB_EXP_B1_TXN0	PBC117	0.22u/4/X5R/6.3V/K	PB_EXP_B1_TXN0C	
PB_EXP_B1_TXP1	PBC112	0.22u/4/X5R/6.3V/K	PB_EXP_B1_TXP1C	
PB_EXP_B1_TXN1	PBC113	0.22u/4/X5R/6.3V/K	PB_EXP_B1_TXN1C	
PB_EXP_B1_TXP2	PBC108	0.22u/4/X5R/6.3V/K	PB_EXP_B1_TXP2C	
PB_EXP_B1_TXN2	PBC109	0.22u/4/X5R/6.3V/K	PB_EXP_B1_TXN2C	
PB_EXP_B1_TXP3	PBC104	0.22u/4/X5R/6.3V/K	PB_EXP_B1_TXP3C	
PB_EXP_B1_TXN3	PBC105	0.22u/4/X5R/6.3V/K	PB_EXP_B1_TXN3C	
PB_EXP_B1_TXP4	PBC100	0.22u/4/X5R/6.3V/K	PB_EXP_B1_TXP4C	
PB_EXP_B1_TXN4	PBC101	0.22u/4/X5R/6.3V/K	PB_EXP_B1_TXN4C	
PB_EXP_B1_TXP5	PBC95	0.22u/4/X5R/6.3V/K	PB_EXP_B1_TXP5C	
PB_EXP_B1_TXN5	PBC96	0.22u/4/X5R/6.3V/K	PB_EXP_B1_TXN5C	
PB_EXP_B1_TXP6	PBC89	0.22u/4/X5R/6.3V/K	PB_EXP_B1_TXP6C	
PB_EXP_B1_TXN6	PBC90	0.22u/4/X5R/6.3V/K	PB_EXP_B1_TXN6C	
PB_EXP_B1_TXP7	PBC84	0.22u/4/X5R/6.3V/K	PB_EXP_B1_TXP7C	
PB_EXP_B1_TXN7	PBC86	0.22u/4/X5R/6.3V/K	PB_EXP_B1_TXN7C	
PB_EXP_B_TXP8	PBC75	0.22u/4/X5R/6.3V/K	PB_EXP_B_TXP8C	
PB_EXP_B_TXN8	PBC78	0.22u/4/X5R/6.3V/K	PB_EXP_B_TXN8C	
PB_EXP_B_TXP9	PBC71	0.22u/4/X5R/6.3V/K	PB_EXP_B_TXP9C	
PB_EXP_B_TXN9	PBC72	0.22u/4/X5R/6.3V/K	PB_EXP_B_TXN9C	
PB_EXP_B_TXP10	PBC65	0.22u/4/X5R/6.3V/K	PB_EXP_B_TXP10C	
PB_EXP_B_TXN10	PBC66	0.22u/4/X5R/6.3V/K	PB_EXP_B_TXN10C	
PB_EXP_B_TXP11	PBC59	0.22u/4/X5R/6.3V/K	PB_EXP_B_TXP11C	
PB_EXP_B_TXN11	PBC60	0.22u/4/X5R/6.3V/K	PB_EXP_B_TXN11C	
PB_EXP_B_TXP12	PBC53	0.22u/4/X5R/6.3V/K	PB_EXP_B_TXP12C	
PB_EXP_B_TXN12	PBC54	0.22u/4/X5R/6.3V/K	PB_EXP_B_TXN12C	
PB_EXP_B_TXP13	PBC47	0.22u/4/X5R/6.3V/K	PB_EXP_B_TXP13C	
PB_EXP_B_TXN13	PBC48	0.22u/4/X5R/6.3V/K	PB_EXP_B_TXN13C	
PB_EXP_B_TXP14	PBC40	0.22u/4/X5R/6.3V/K	PB_EXP_B_TXP14C	
PB_EXP_B_TXN14	PBC41	0.22u/4/X5R/6.3V/K	PB_EXP_B_TXN14C	
PB_EXP_B_TXP15	PBC37	0.22u/4/X5R/6.3V/K	PB_EXP_B_TXP15C	
PB_EXP_B_TXN15	PBC35	0.22u/4/X5R/6.3V/K	PB_EXP_B_TXN15C	

PB_EXP_B_RXP[8..15] PB_EXP_B_RXP[8..15] (5)
PB_EXP_B_RXN[8..15] PB_EXP_B_RXN[8..15] (5)
PB_EXP_B_TXP[8..15] PB_EXP_B_TXP[8..15] (5)
PB_EXP_B_TXN[8..15] PB_EXP_B_TXN[8..15] (5)
PB_EXP_B1_RXP[0..7] PB_EXP_B1_RXP[0..7] (16)
PB_EXP_B1_RXN[0..7] PB_EXP_B1_RXN[0..7] (16)
PB_EXP_B1_TXP[0..7] PB_EXP_B1_TXP[0..7] (16)
PB_EXP_B1_TXN[0..7] PB_EXP_B1_TXN[0..7] (16)

PB_EXP_B_RXP[8..15] PB_EXP_B_RXP[8..15] (5)
PB_EXP_B_RXN[8..15] PB_EXP_B_RXN[8..15] (5)
PB_EXP_B_TXP[8..15] PB_EXP_B_TXP[8..15] (5)
PB_EXP_B_TXN[8..15] PB_EXP_B_TXN[8..15] (5)

VCC3

PBBC46 0.1u/4/X7R/16V/K
PBBC47 0.1u/4/X7R/16V/K
PBBC48 0.1u/4/X7R/16V/K
PBBC43 0.1u/4/X7R/16V/K

3VDUAL

PBBC3 0.1u/4/X7R/16V/K

PCI-E/16X-164P/BK/RIGHT PUSH

Gigabyte Technology

Title: PCI EXPRESS X16 PORT_2

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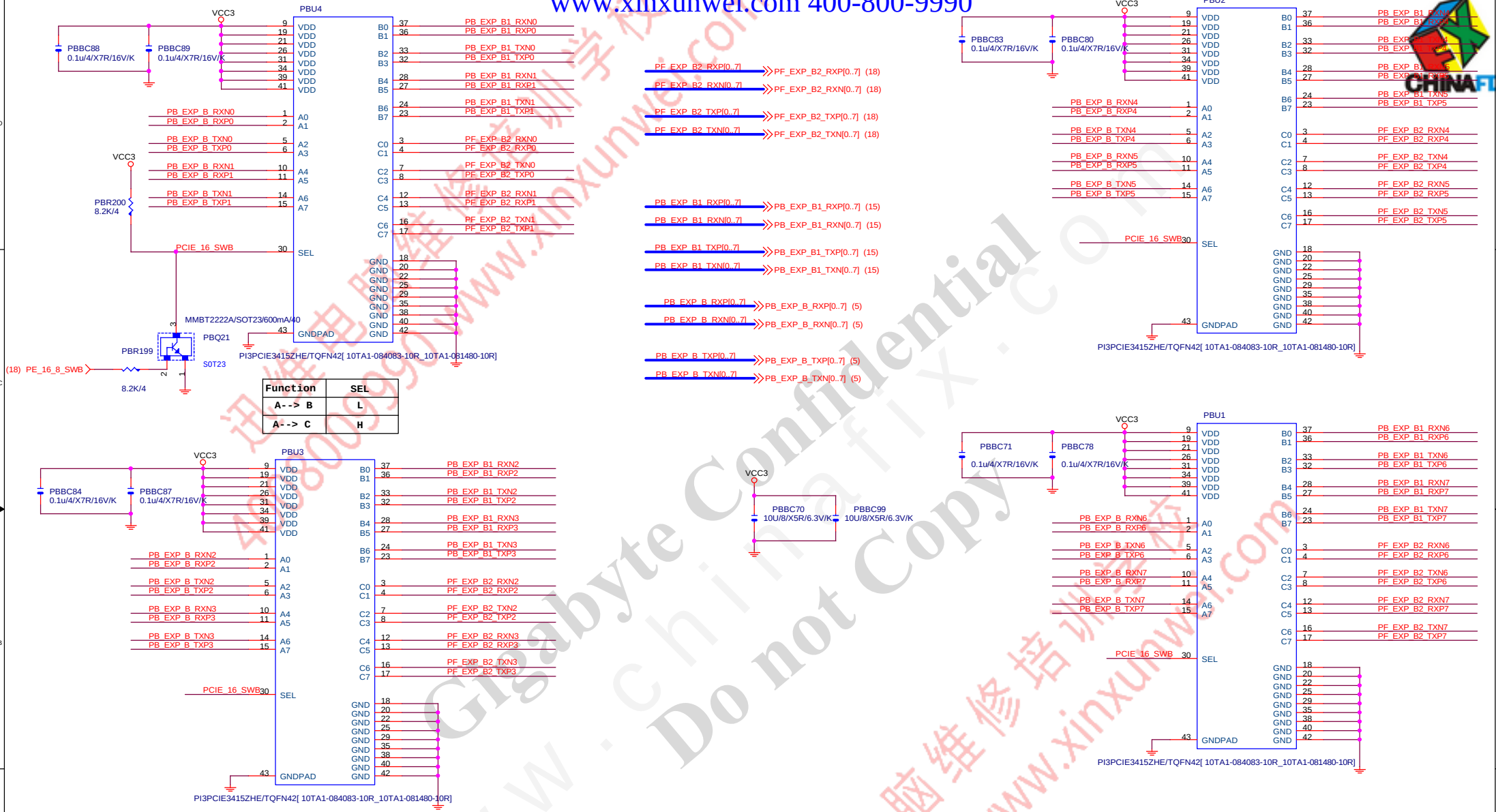
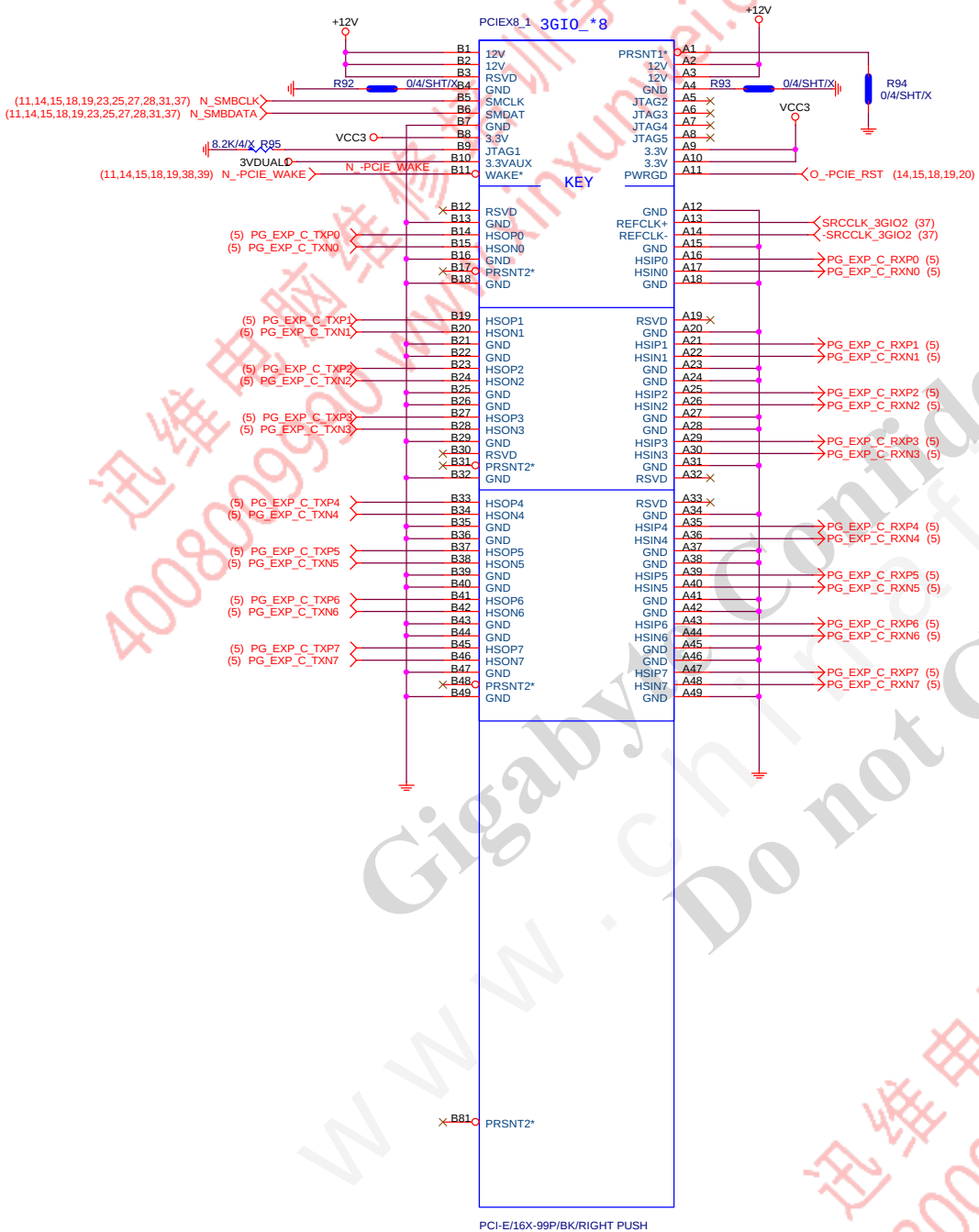
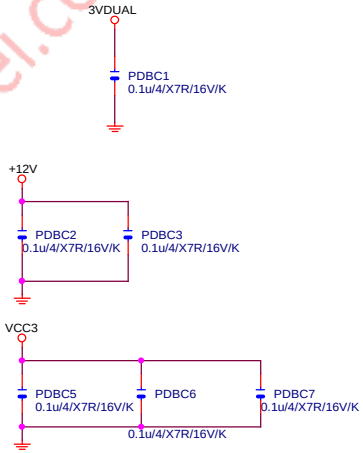


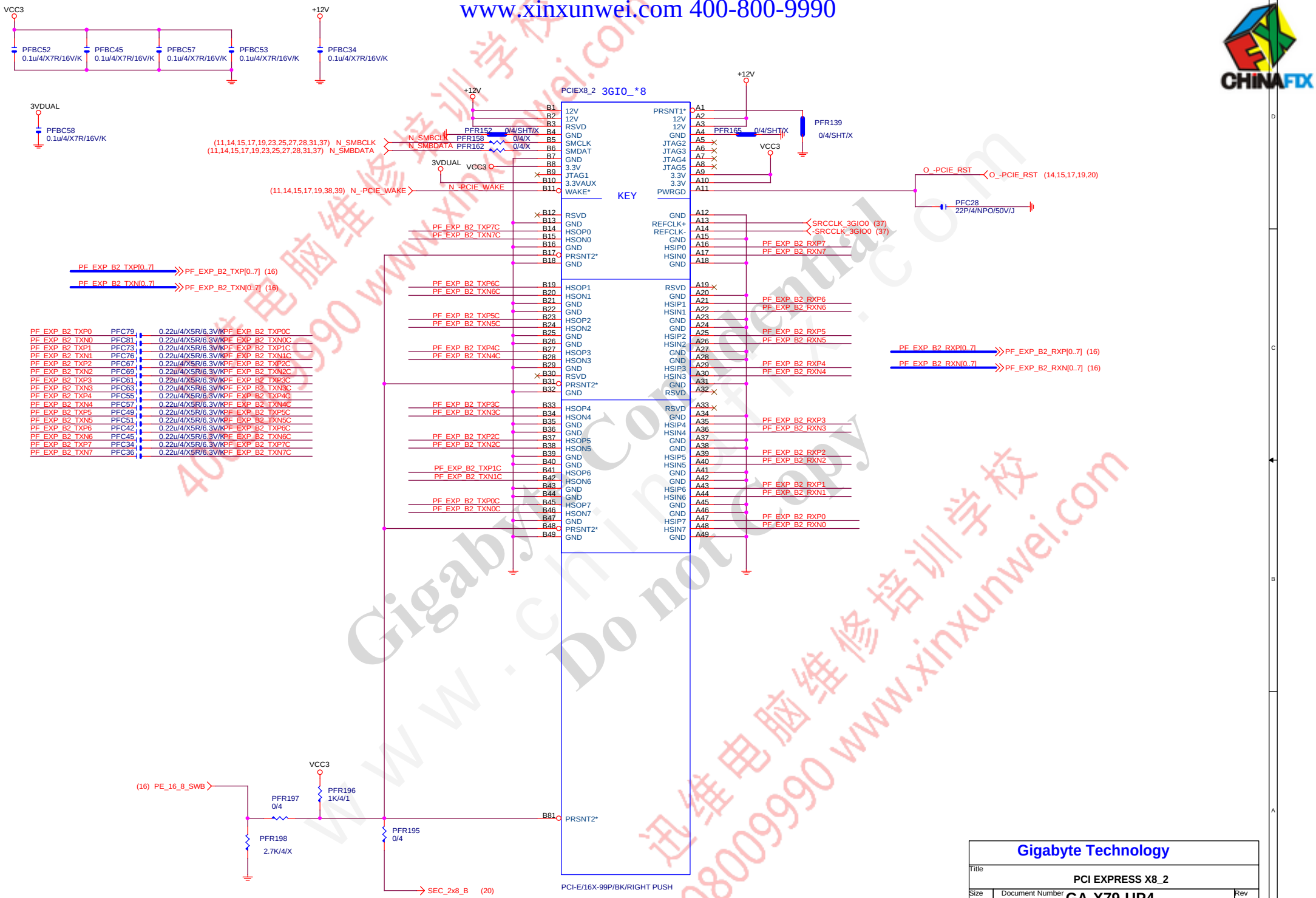
Function	SEL
A--> B	L
A--> C	H

Gigabyte Technology	
Title	PCI EXPRESS X16 SWITCH_2
Size: Custom	Document Number: GA-X79-UP4
Rev	1.01
Date: Friday, August 03, 2012	Sheet 16 of 44





Gigabyte Technology		
Title: PCI EXPRESS X 8 PORT		
Size: Custom	Document Number: GA-X79-UP4	Rev: 1.01
Date: Friday, August 03, 2012	Sheet 17 of 44	



Gigabyte Technology		
Title	PCI EXPRESS X8_2	
Size: Custom	Document Number: GA-X79-UP4	Rev: 1.01
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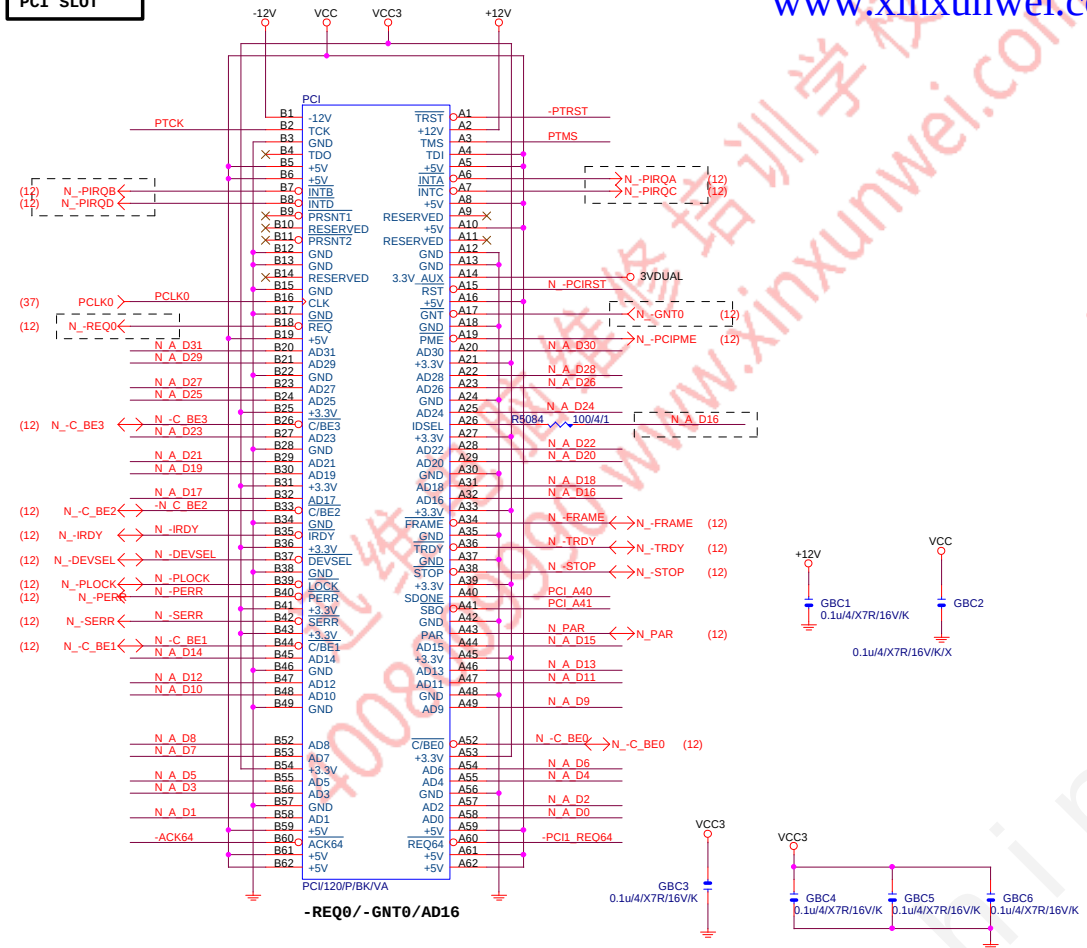
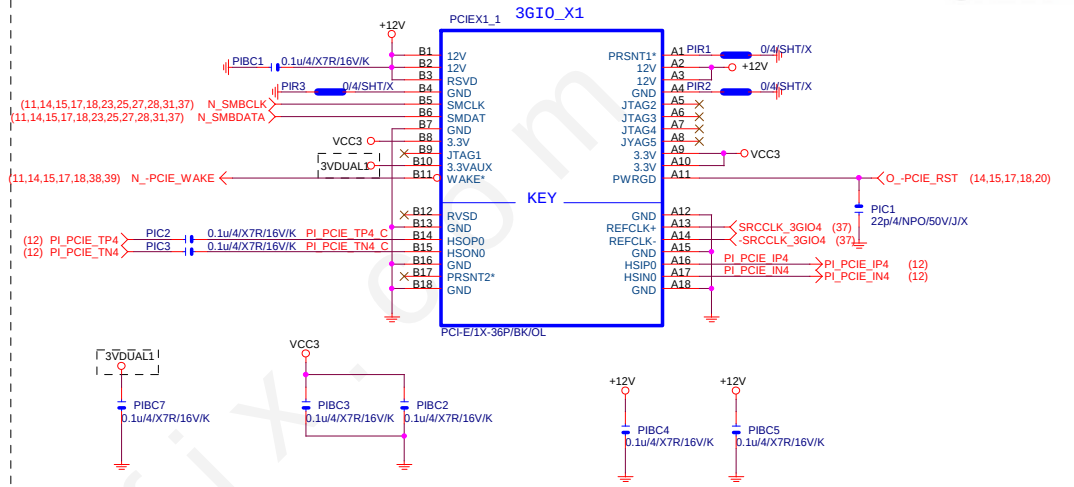
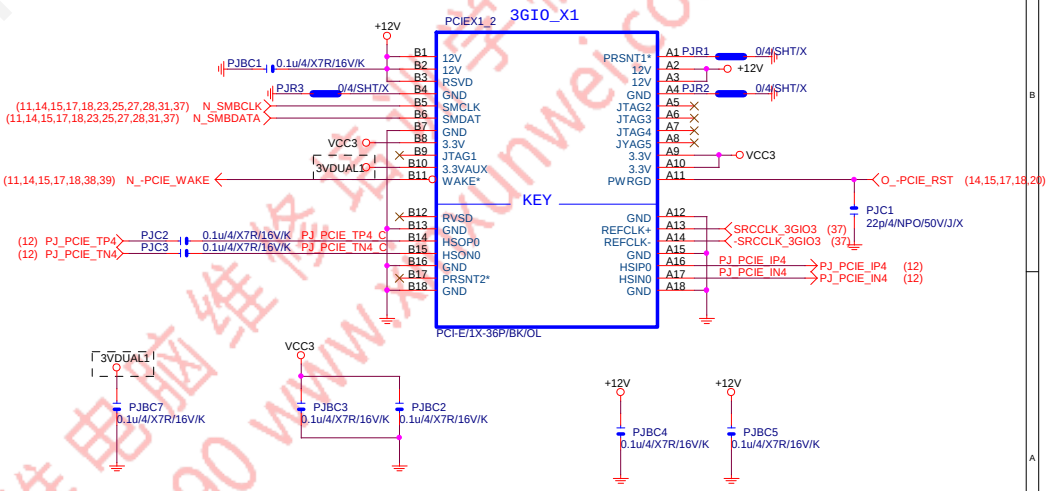
PCI SLOT

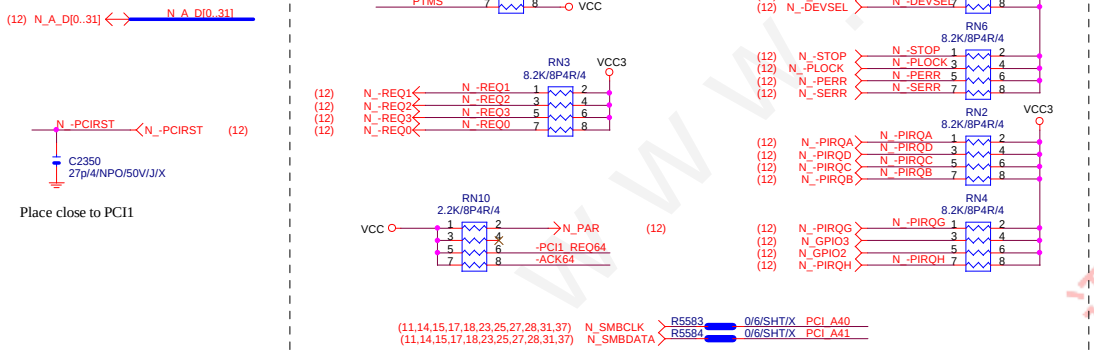


PCIE*1-1



PCIE*1-2





Gigabyte Technology			
Title: PCIEX1,PCI SLOT			
Size: Custom	Document Number: GA-X79-UP4		Rev: 1.01
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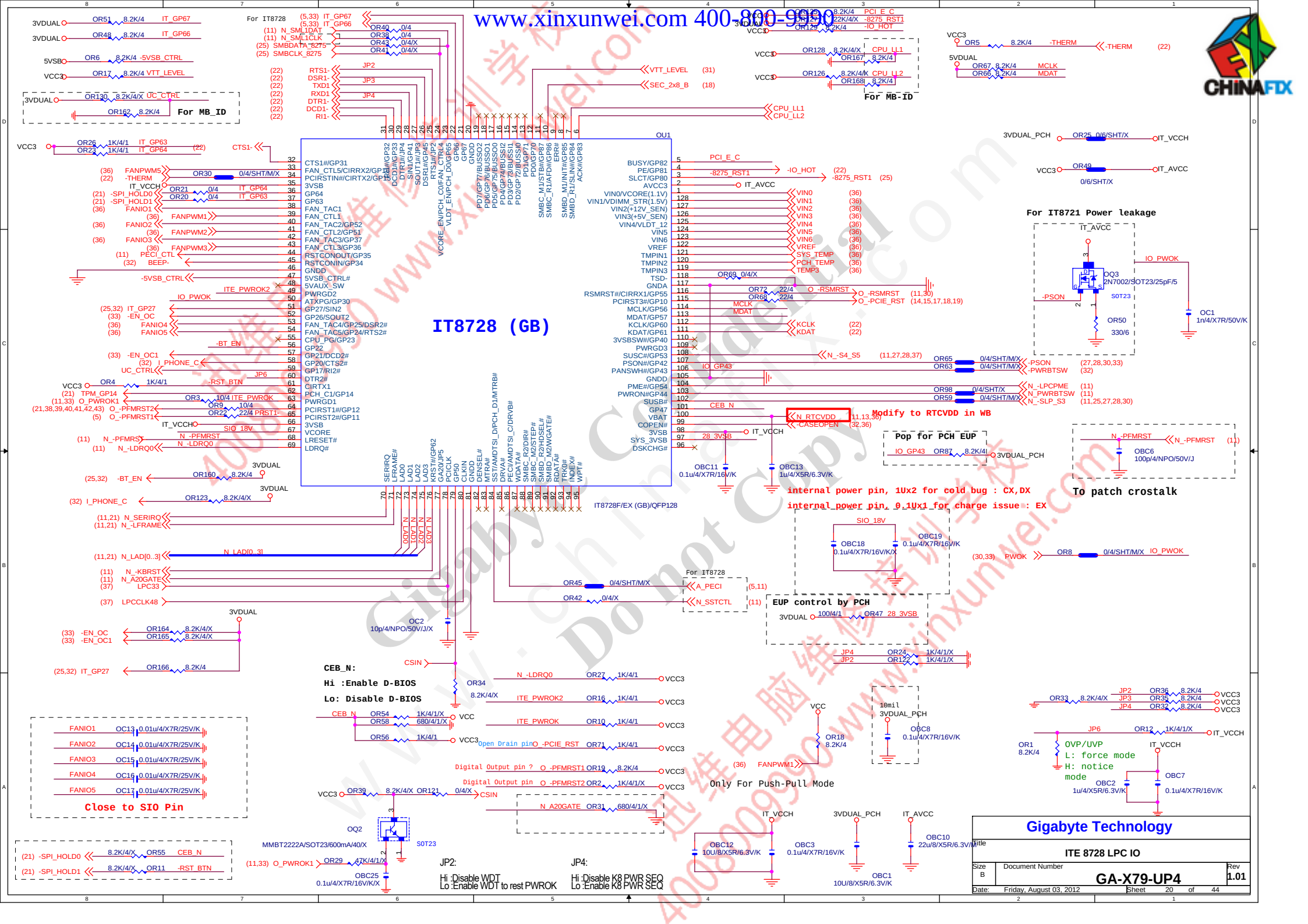
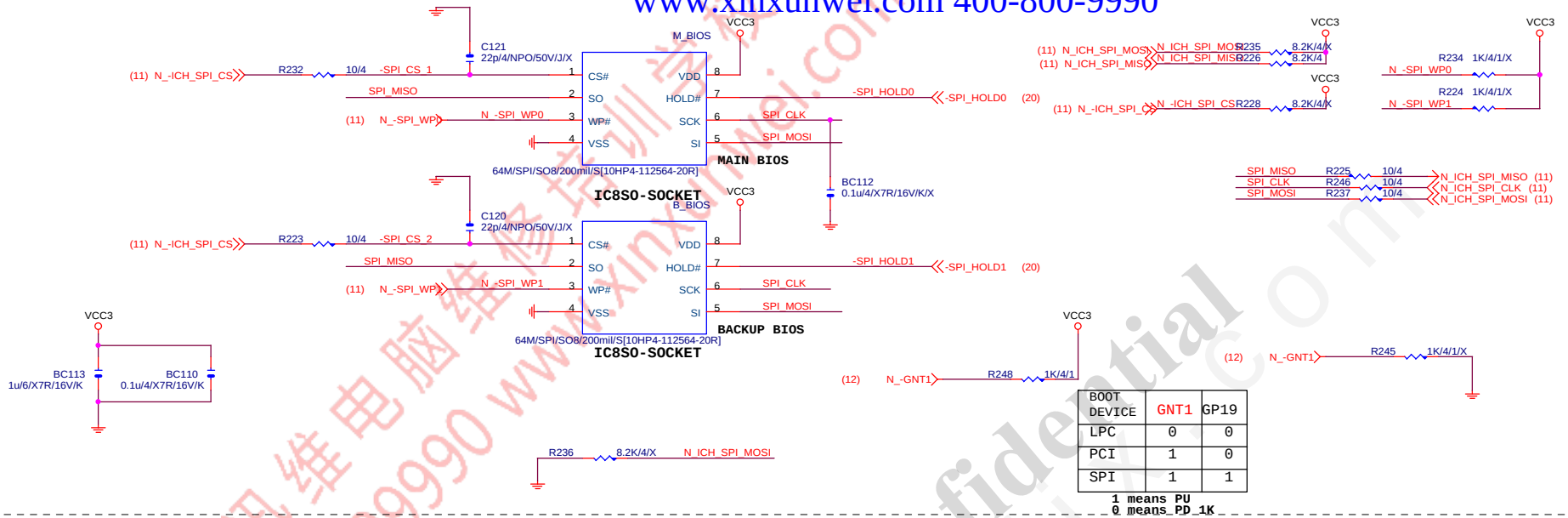
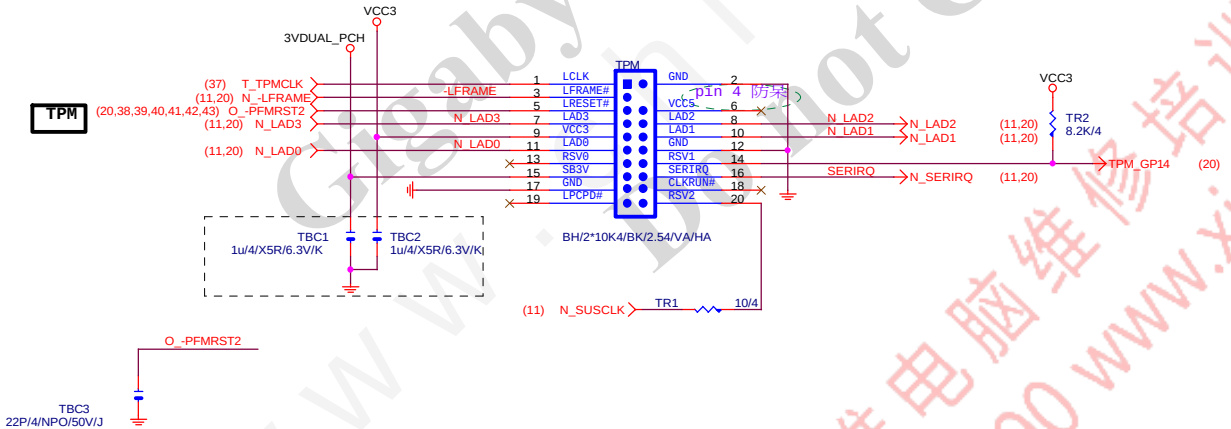




BOOT DEVICE	GNT1	GP19
LPC	0	0
PCI	1	0
SPI	1	1

1 means PU
0 means PD 1K



Title	DUAL BIOS TPM
Size	Custom
Document Number	GA-X79-UP4
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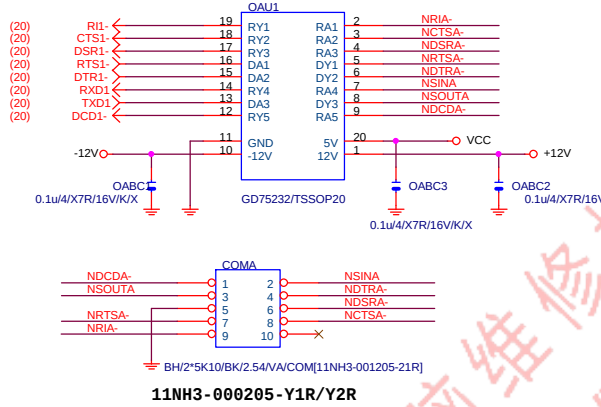
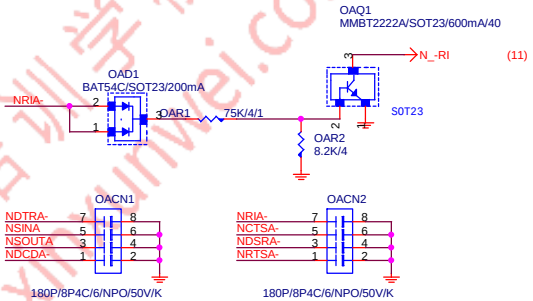
Gigabyte Technology

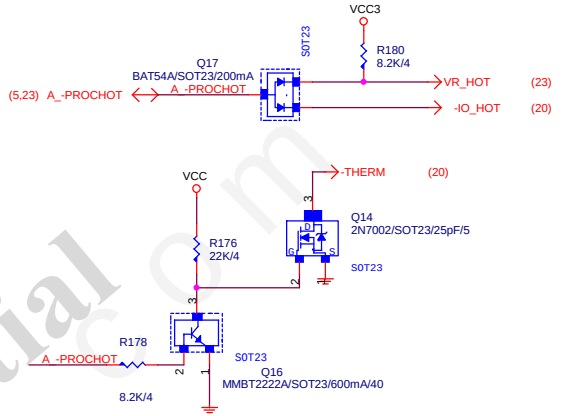
COMA



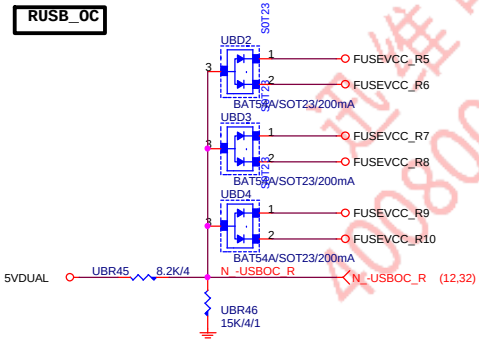
COM_RI



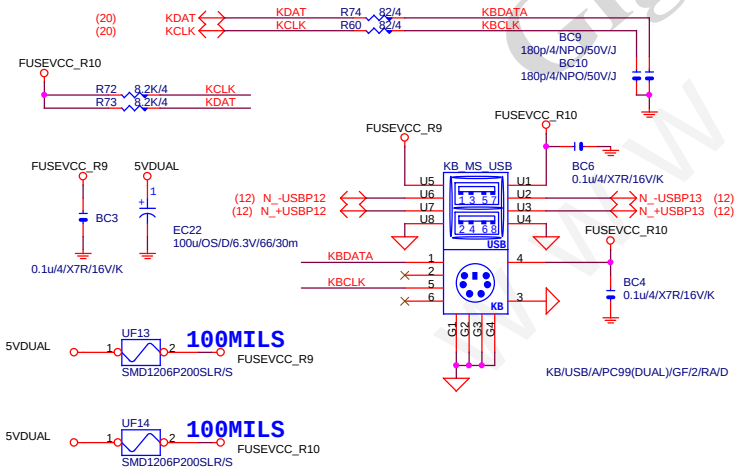
-PROHOT

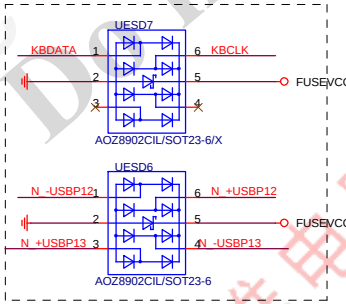


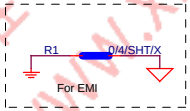
RUSB_OC



KB/MS







Gigabyte Technology		
Title: COM & PROHOT/Dynamic O.C.		
Size: Custom	Document Number: GA-X79-UP4	Rev: 1.01
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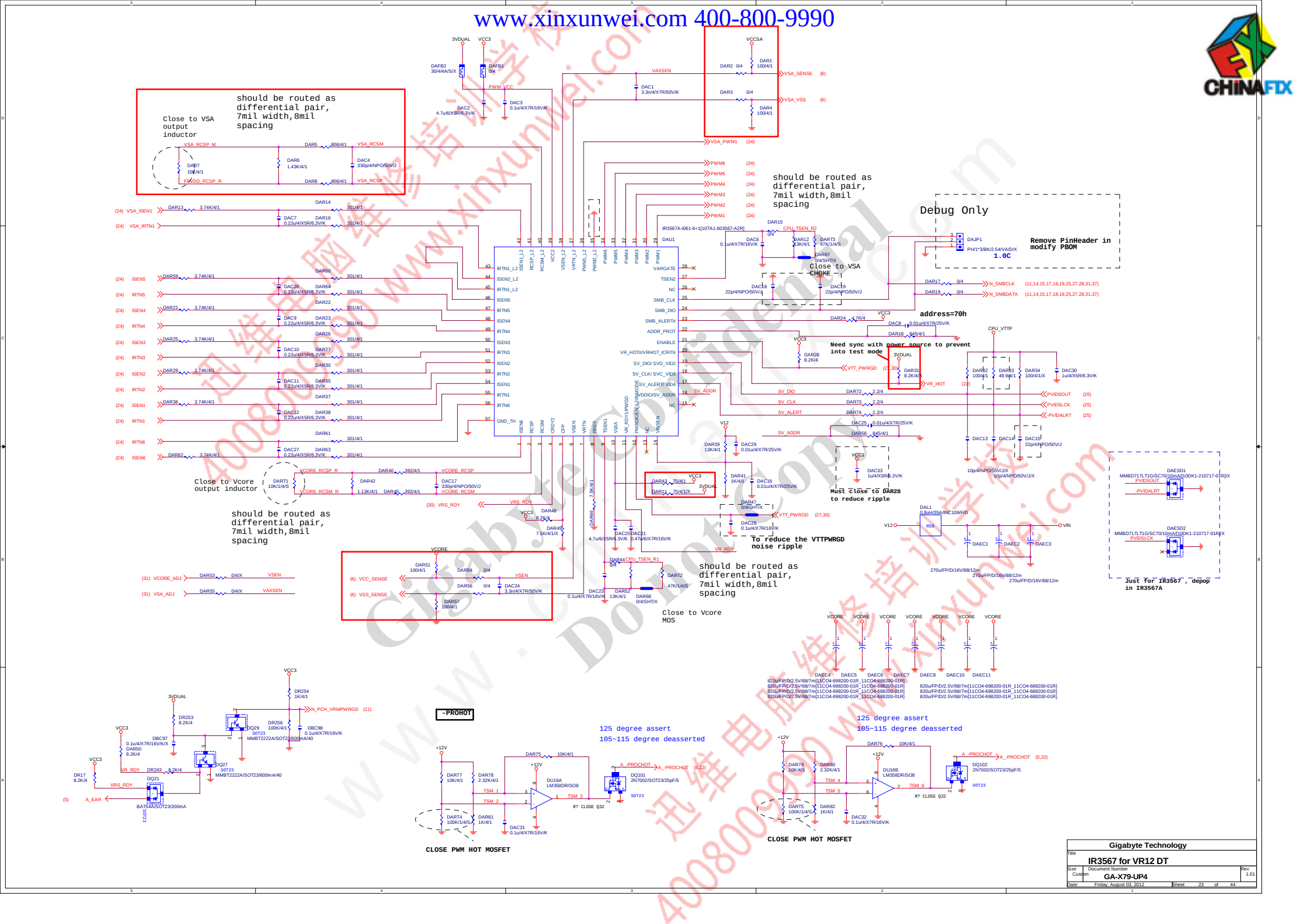
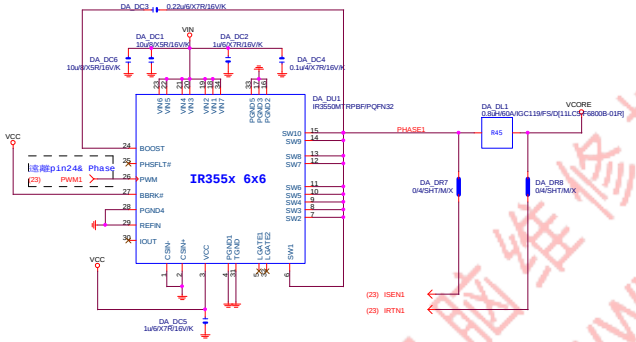
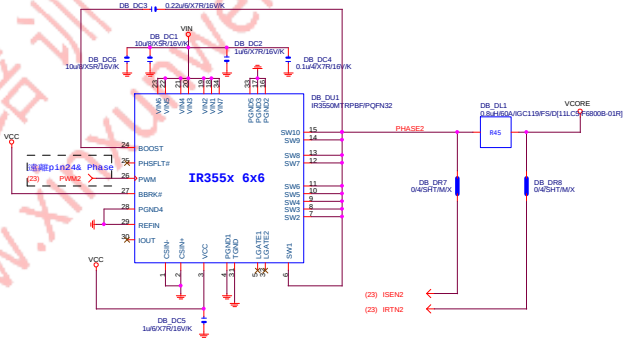


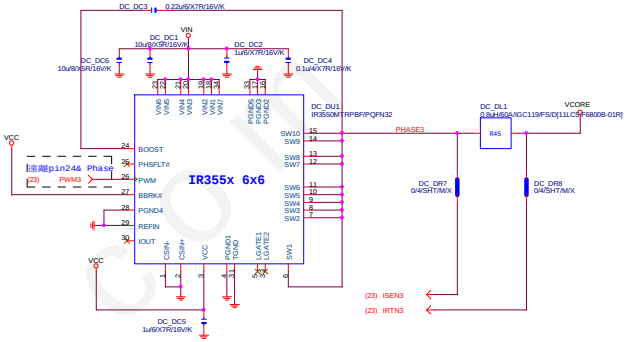
VCORE-PHASE1



VCORE-PHASE2

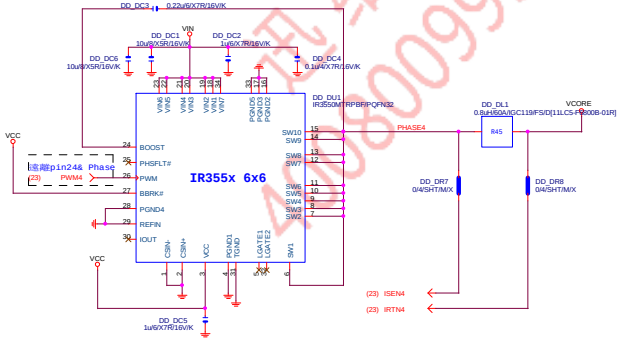


VCORE-PHASE3

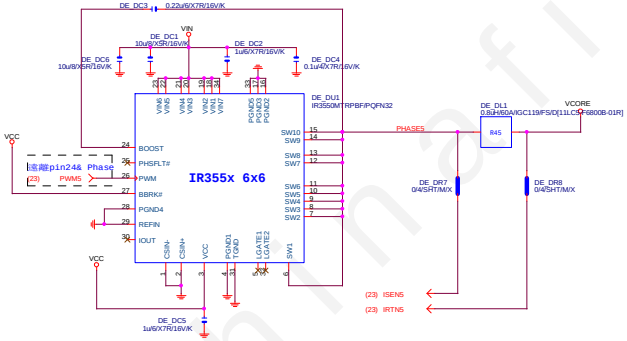


Choke need change to correct parts : 0.8u/60A

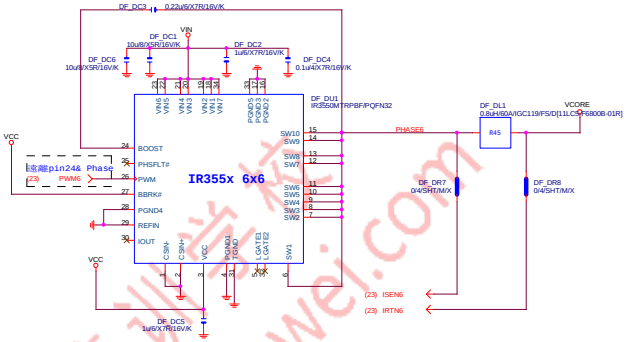
VCORE-PHASE4



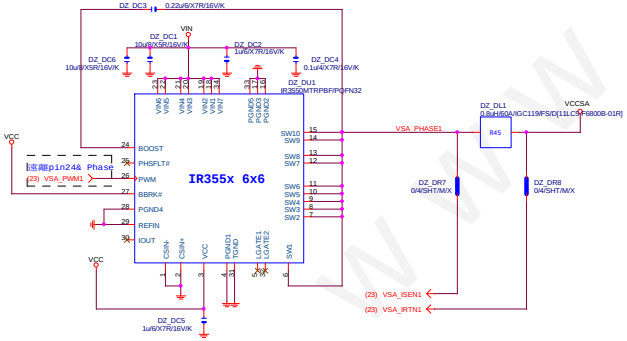
VCORE-PHASE5

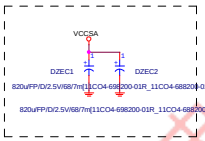


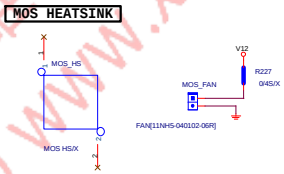
VCORE-PHASE6



VSA-PHASE







Gigabyte Technology		
Title: CPU CORE VR		
Size: Custom	Document Number: GA-X79-UP4	Rev: 1.01
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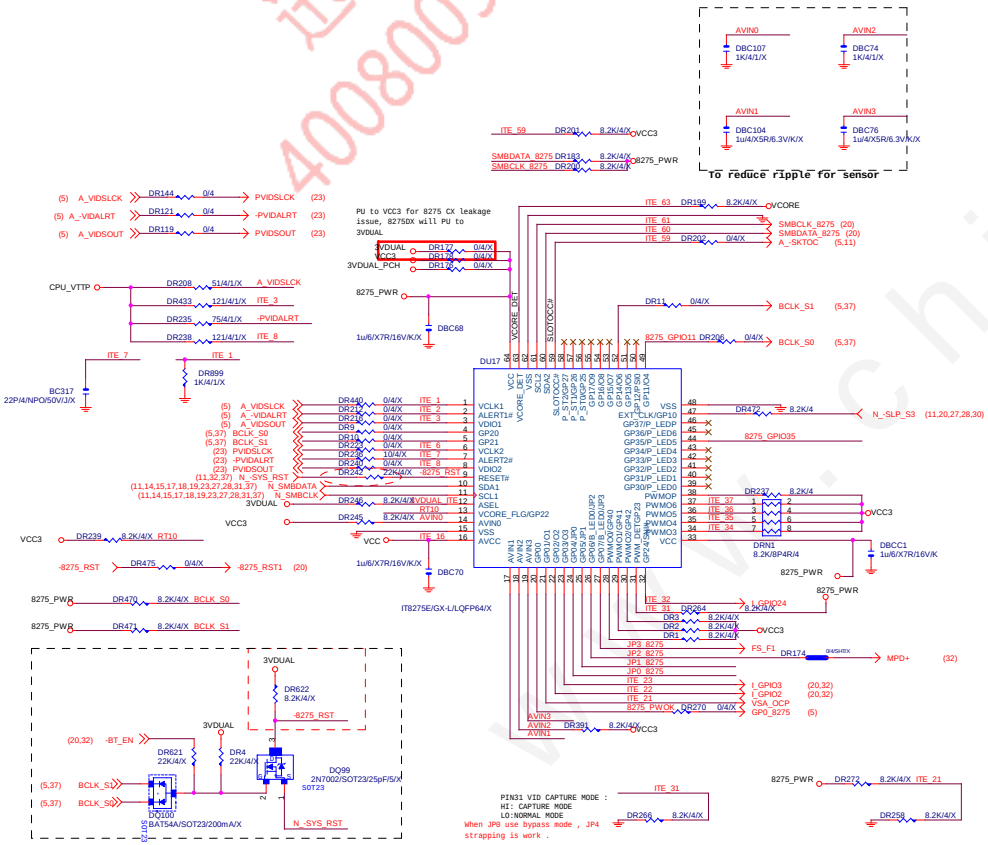

Title	VCORE PHASE GEAR 4
Size	Custom
Document Number	GA-X79-UP4
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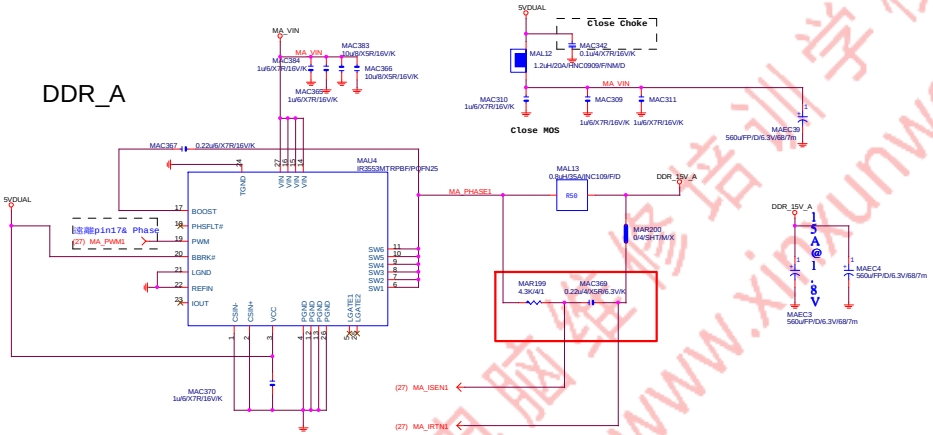
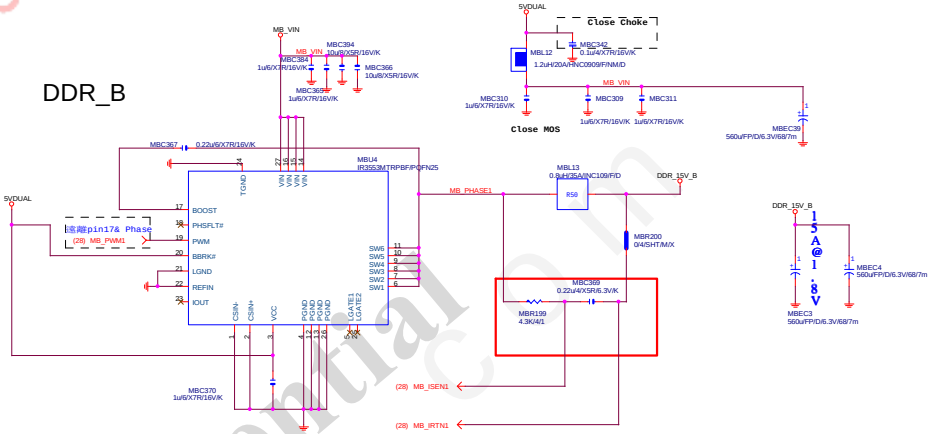
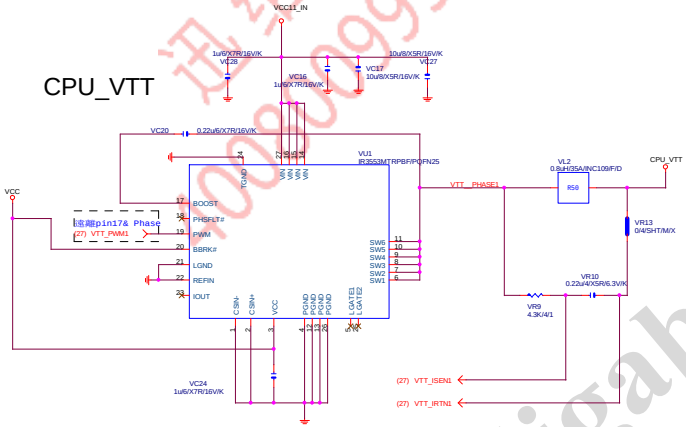
DDR_A

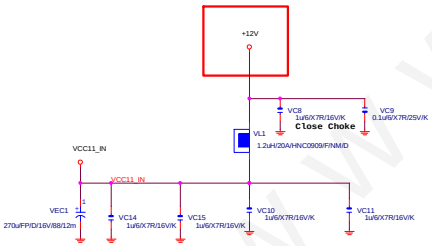


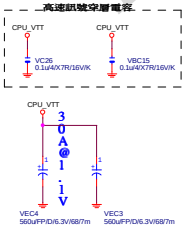
DDR_B



CPU_VTT

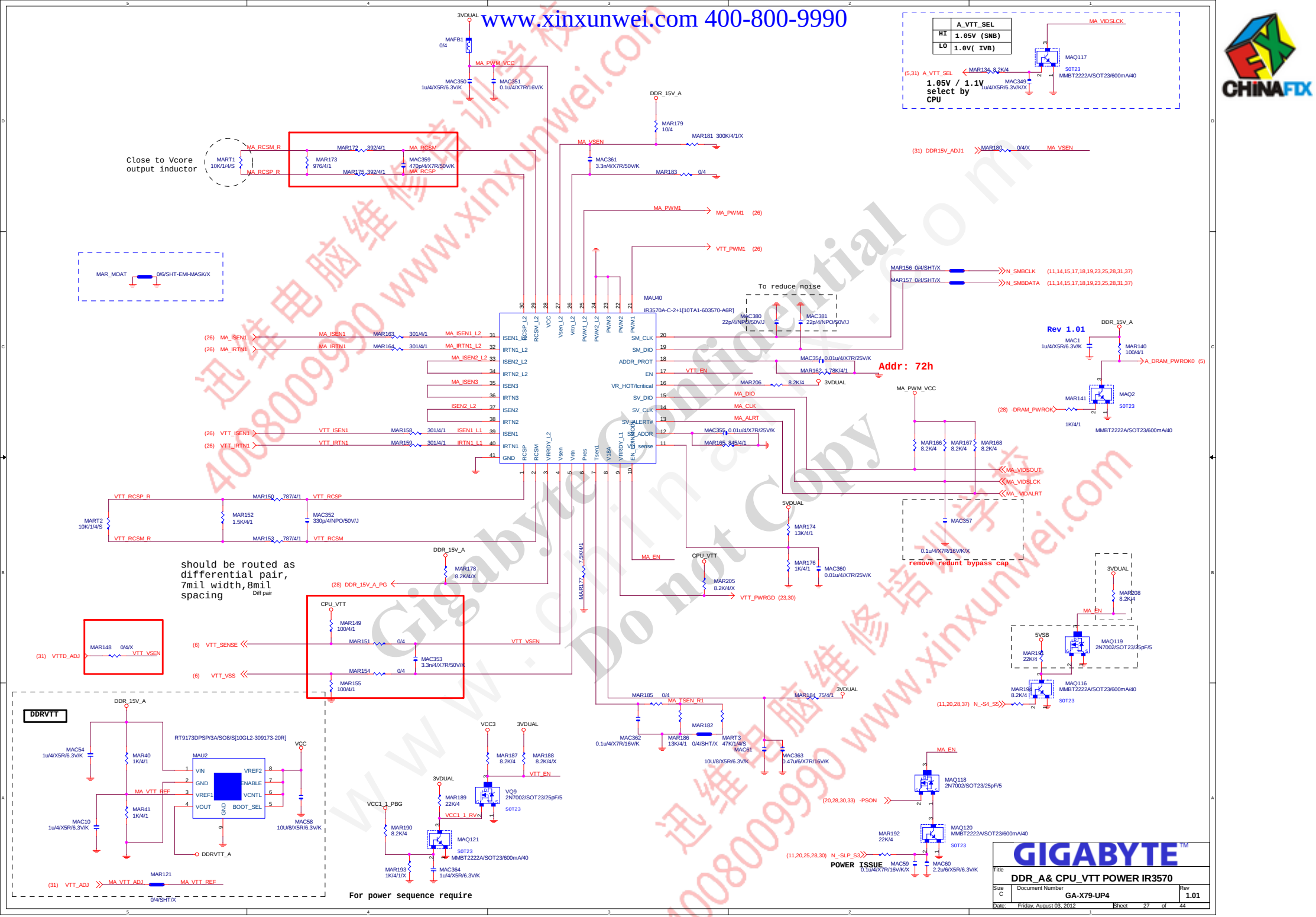


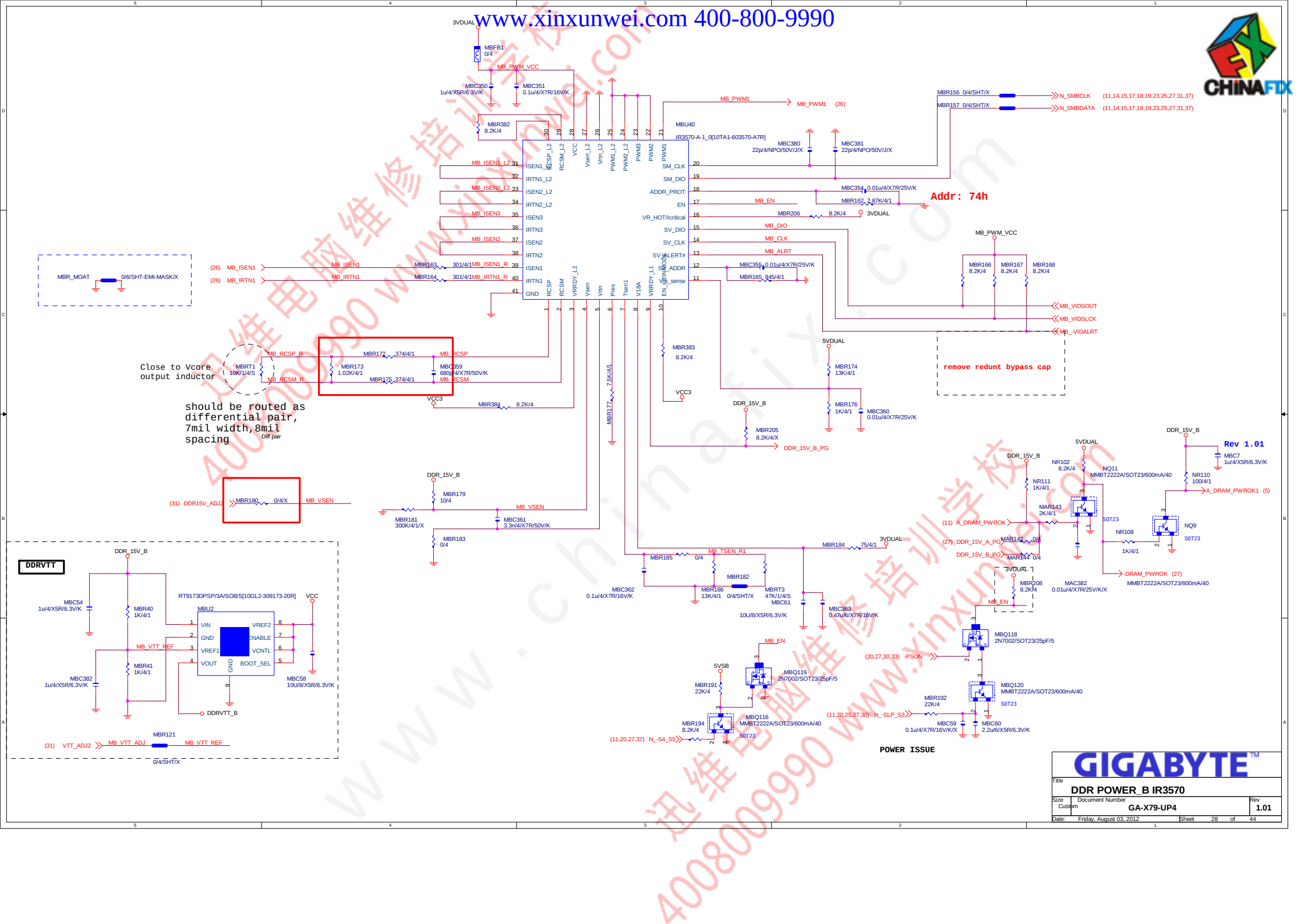




GIGABYTE

Title	ISL6322 CPUVTT	
Size: Custom	Document Number: GA-X79-UP4	Rev: 1.01
Date: Friday, August 03, 2012	Sheet 26 of 44	





PBG_1.1V

VCC3
NEC7 560u/FP/D/6.3V/68/7m
NL12 1.2uH/20A/HNC0909/F/NM/D
NC41 0.1u/4/X7R/16V/K
VCC1_05_IN
NBC21 22u/8/X5R/6.3V/M
NC32 0.1u/4/X7R/16V/K
NEC2 560u/FP/D/6.3V/68/7m

NR115 2.2/6/X
NBC34 1u/6/X7R/16V/K
VCC
NR116 2.2/6
NQ18 BAT54C/SOT23/200mA/X
+12V
(30) V_PCH_EN
PBG_BOOT
VCC1_05PHASE
NR132 20K/4/1/X
NR118 13K/4/1
NC57 22p/4/NPO/50V/J
NR133 0/4/X
NC58 3.3n/4/X7R/50V/K
NR134 0/4
NU1 RT8120DGS/SOP8
COMP VCC BOOT UGATE PHASE FB GND PGND LG/OC
NR64 2.2/6
VCC1_05U_G
VCC1_05L_G
NR96 8.2K/4/1
OCP:26A

OCP :
Rocset=(Iocp*Lgate,rdson)/Iocset
Iocset=10uA

NC51 0.1u/6/X7R/25V/K
VCC1_05PHASE
NL9 1.2uH/20A/HNC0909/F/NM/D
NBC20 0.1u/4/Y5V/16V/Z
NR71 2.2/6
CLOSE CHOKE
NC44 2.2n/4/X7R/50V/K
VCC1_1_PBG
DEF=1.1V
NR135 470/4/1
NBC31 33p/4/NPO/50V/J
NRF_PCH1 499/4/1
NRF_PCH2 1.3K/4/1

VREF IS 0.8V
NR117 0/4S/X
VCC1_05_PCH_ADJ (31)

VCC1_05_IN
NTMFS4921N/N/6.95m/PPAKSO8
NQ5
VCC1_05U_G
NR63
8.2K/4
VCC1_05PHASE
NTMFS4921N/N/6.95m/PPAKSO8
NQ6
VCC1_05L_G

VCC1_1_PBG 20Amp
NEC5 560u/FP/D/6.3V/68/7m
NEC1 560u/FP/D/6.3V/68/7m

Gigabyte Technology
Title: ISL6545 PCH
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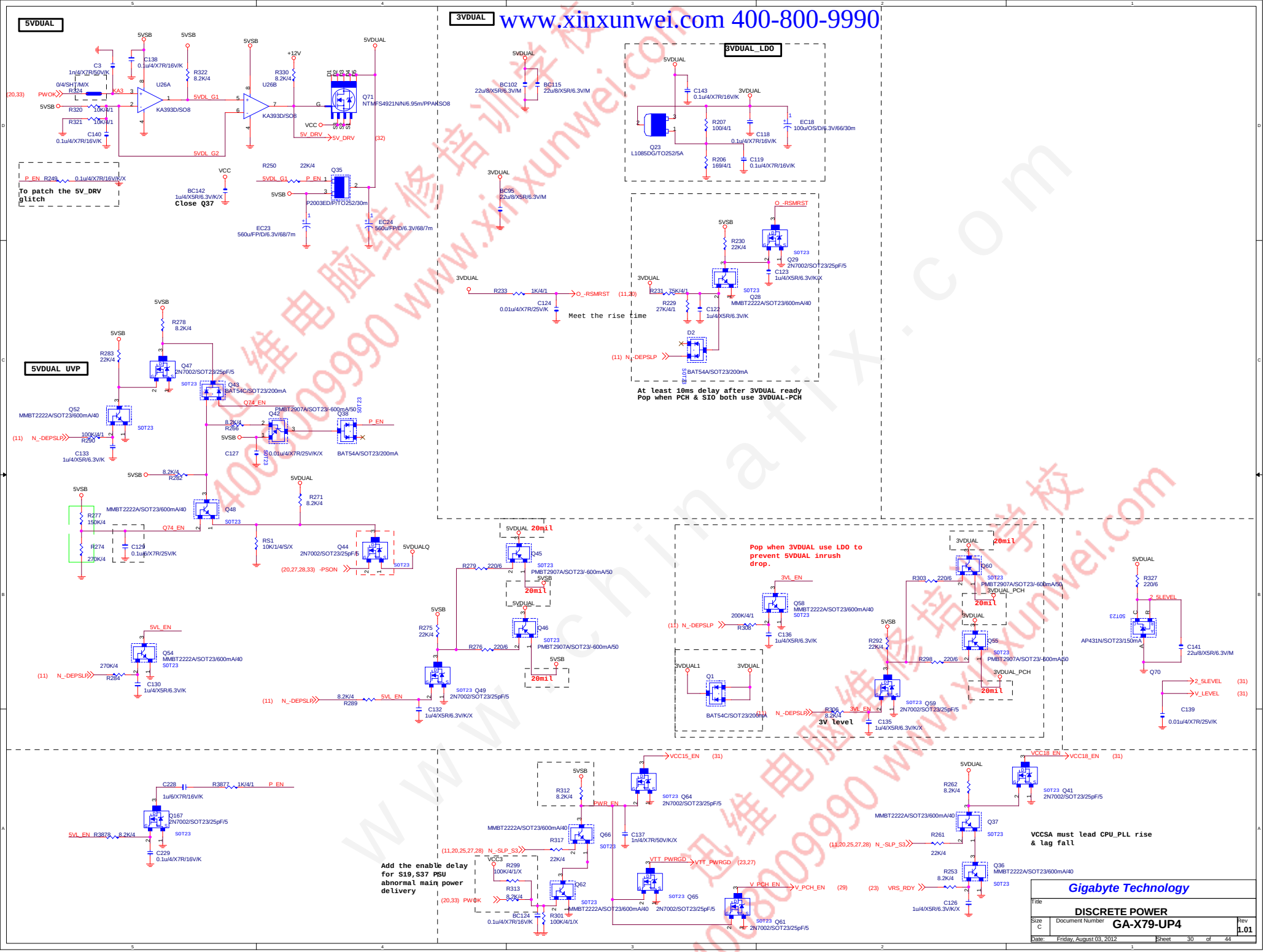
5VDUAL
3VDUAL
www.xinxunwei.com 400-800-9990
3VDUAL_LDO
To patch the 5V_DRV glitch
Close Q37
Meet the rise time
At least 10ms delay after 3VDUAL ready
Pop when PCH & SIO both use 3VDUAL-PCH
5VDUAL_UVP
Pop when 3VDUAL use LDO to prevent 5VDUAL inrush drop.
3V level
Add the enable delay for S19,S37 PSU abnormal main power delivery
VCCSA must lead CPU_PLL rise & lag fall
Gigabyte Technology
DISCRETE POWER
GA-X79-UP4
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CPU_PLL

+12V
VCC25
(30) V_LEVEL
BC877 0.1u/4/X7R/16V/K/X
R267 3.65K/4/1
VCC18_EN
R268 10K/4/1
BC118 1u/6/X7R/16V/K
BC117 0.1u/4/X7R/16V/K/X
DU32B LM358DR/SO8
100/4/1 R270
C128 1n/4/X7R/50V/K
R273 10K/4/1
499/4/1 R269
C91 8.2K/4
BC77 22u/8/X5R/6.3V/M
Q20 NTMFS4921N/N/6.95m/PPAKSO8
Check MOS temp & current
In normal & OV/OC
CPU_PLL
1.83V
(30) VCC18_EN
BC119 0.01u/4/X7R/25V/K/X
CPU_PLL_ADJ
0/4 R272
EC16 820u/FP/D/2.5V/68/7m[11CO4-698200-01R_11CO4-688200-01R]
820u for VCORE電容一致性

PCH_1V5

VCC3
(30) V_LEVEL
+12V
NR53 6.04K/4/1
VCC15_EN
NR67 10K/4/1
NBC25 0.1u/4/X7R/16V/K
DU30B LM358DR/SO8
100/4/1 NR49
NC38 1n/4/X7R/50V/K
NR50 10K/4/1
499/4/1 NR52
NBC24 0.01u/4/X7R/25V/K/X
(30) VCC15_EN
VCC15_PCH_ADJ
0/4 NR51
NQ4 NTMFS4921N/N/6.95m/PPAKSO8
NBC12 22u/8/X5R/6.3V/M
NC22 8.2K/4
VCC1_5V_PBG
1.55V
NBC7 22u/8/X5R/6.3V/M
VCC1_5V_PBG
NBC3 22u/8/X5R/6.3V/M
VCC1_5V_PBG
NBC4 22u/8/X5R/6.3V/M

VCC3
BC72 22u/8/X5R/6.3V/M
(30) V_LEVEL
R116 10K/4/1
VCC25_VREF
R117 10K/4/1/X
BC24 0.1u/4/X7R/16V/K
+12V
DU32A LM358DR/SO8
100/4/1 R132
C25 1n/4/X7R/50V/K
R130 40.2K/4/1
2K/4/1 R128
C26 8.2K/4
Q19 NTMFS4921N/N/6.95m/PPAKSO8
VCC25
Check ripple & Oscillator
BC27 0.01u/4/X7R/25V/K/X
BC76 22u/8/X5R/6.3V/M

Rev 1.01
DU30A
LM358DR/SO8

	A_VTT_SEL
HI	1.8V (SNB)
LO	1.7V(IVB)

VCC18_EN
R265 40.2K/4/1
VCC
R263 8.2K/4
SOT23 Q40 2N7002/SOT23/25pF/5
Q39 SOT23 MMBT2222A/SOT23/600mA/40
(5,27) A_VTT_SEL
R264 8.2K/4
BC116 0.01u/4/X7R/25V/K/X
VTT_LEVEL (20)
By GPI to inform BIOS the default CPU_VTT is 1.05/1.1V
SOT23 VQ1 2N7002/SOT23/25pF/5

0x6A(0x2A)

5VDUAL 3VDUAL VCC3
R163 0/4/X
R159 0/4
R169 0/4/X
BC47 0.1u/4/X7R/16V/K
U12 NCT3933U/SOT23-8
VDD VREF1 B_SEL VREF2 GND VREF3 SDA SCL
R168 8.2K/4/X
8.2K/4
R160
N_SMBDATA N_SMBCLK
VTT_ADJ (27)
M_CHA_ADJ (7)
M_CH01_DQADJ (8)

0x62(0x22)

5VDUAL 3VDUAL VCC3
R316 0/4/X
R314 0/4
R315 0/4/X
BC127 0.1u/4/X7R/16V/K
U25 NCT3933U/SOT23-8
R310 1.3K/4/1
3.9K/4/1
R311
N_SMBDATA N_SMBCLK
VCC1_05_PCH_ADJ (29)
CPU_PLL_ADJ
VCC15_PCH_ADJ

0x68(0x28)

N_SMBCLK (11,14,15,17,18,19,23,25,27,28,37)
N_SMBDATA (11,14,15,17,18,19,23,25,27,28,37)
5VDUAL 3VDUAL VCC3
R254 0/4/X
R256 0/4
R255 0/4/X
BC114 0.1u/4/X7R/16V/K
U21 NCT3933U/SOT23-8
R251 3.9K/4/1
1.3K/4/1
R252
N_SMBDATA N_SMBCLK
SMREFC01_ADJ (5)
SMREFC23_ADJ (5)
M_CHB_ADJ (8)

0x60(0x20)

5VDUAL 3VDUAL VCC3
R295 0/4/X
R300 0/4
R293 0/4/X
BC122 0.1u/4/X7R/16V/K
U23 NCT3933U/SOT23-8
R302 8.2K/4
8.2K/4/X
R294
N_SMBDATA N_SMBCLK
VTT_ADJ2 (28)
M_CHC_ADJ (9)
M_CH23_DQADJ (10)

For CPU OC 200MHz issue

0x66(0x26)

5VDUAL 3VDUAL VCC3
R183 0/4/X
R184 0/4/X
R182 0/4/X
BC67 0.1u/4/X7R/16V/K/X
U13 NCT3931U-2/SOT23-8/X
R188 3K/4/1/X
2.2K/4/1/X
R187
N_SMBDATA N_SMBCLK
VCORE_ADJ (23)
VTTD_ADJ (27)
VSA_ADJ (23)

0x64(0x24)

5VDUAL 3VDUAL VCC3
R166 0/4/X
R164 0/4/X
R170 0/4/X
BC42 0.1u/4/X7R/16V/K/X
U11 NCT3933U/SOT23-8/X
R167 2.2K/4/1/X
3K/4/1/X
R171
N_SMBDATA N_SMBCLK
DDR15V_ADJ1 (27)
DDR15V_ADJ2 (28)
M_CHD_ADJ (10)

Gigabyte Technology
Title: DISCRETE POWER II
Size: C
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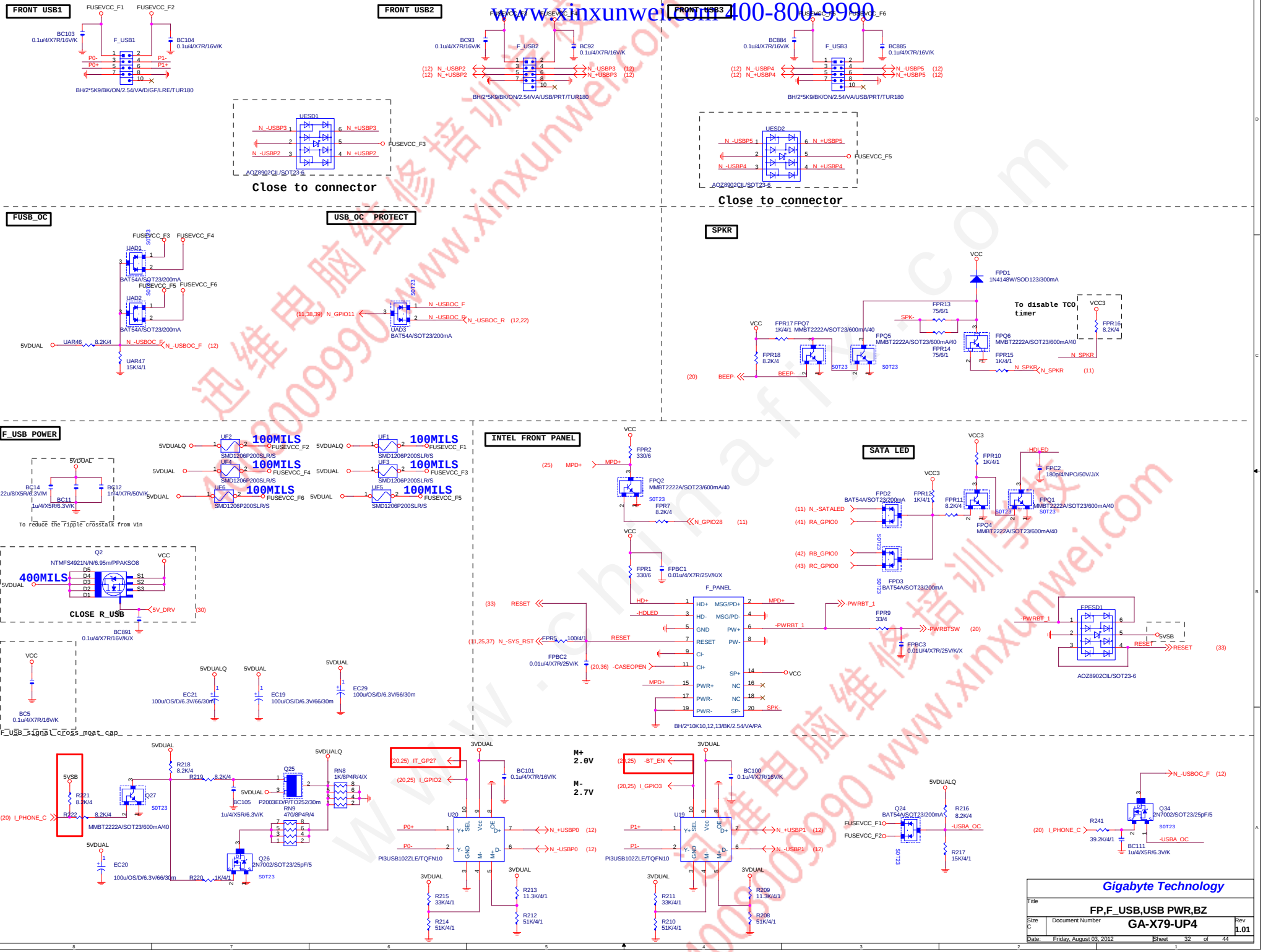

ATX POWER CONNECTOR

APW/2*12/BK/VA/SN/2SHK/PA66

APW/2*4/BK/OC/P/4.2/VA/SN/OH::Location ATX_12V_2X4

To prevent the S28 PSU 5VSB under loading when boot

Rev 1.01

For CPU

OVER CLOCKING

OVER CLOCKING

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	

Close to PCH

Gigabyte Technology			
Title: ATX / CLOCK BUFFER			
Size: C	Document Number: GA-X79-UP4		Rev: 1.01
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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

CR25 20K/4/1

CEC20 100u/OS/D/6.3V/66/30m/X

JD resistors close to pin34 of CODEC

CR69 5.1K/4/1 S_SURR_JD (35)
CR47 10K/4/1 CEN_JD (35)
CR37 47/4/1 FAUDIO_JD (35)

CBC9 0.1u/4/X7R/16V/K

CU1 **ALC889A+**

CEN (35)
LFE (35)
S_SURR_L (35)
S_SURR_R (35)
SPDIF (35)

SURR_R (35)
SURR_L (35)

VCC3 CR61 2.2/6 CBC34 22u/8/X5R/6.3V/M
co-layout

(35) SPDIFO2_HDMI

(11) C_ACZ_SDOUT CR65 22/4
(11) C_ACZ_BITCLK
(11) C_ACZ_SDIN2 CR59 22/4
(11) C_ACZ_SYNC
(11) C_ACZ_RST

CBC35 10U/8/X5R/6.3V/K
CR58 0/4/X

CR14/CBC4 close to SouthBridge

CBC31 22p/4/NPO/50V/J/X
CBC30 0.1u/4/X7R/16V/K
CBC32 0.1u/4/X7R/16V/K

1 DVDD1
2 GPIO0/XTALI
3 GPIO1/XTALO
4 DVS1
5 SDATA_OUT
6 BIT_CLK
7 DVSS2
8 SDATA-IN
9 DVDD2
10 SYNC
11 RESET#
12 PC_BEEP

48 SPDIFO
47 SPDIF/EAPD
46 SURBACK-R/XTALSEL
45 SURBACK-L/JD0 GPIO0
44 LFE
43 CEN
42 AVSS2
41 SURR-R
40 JDREF (NC)/JD3
39 SURR-L
38 AVDD2
37 LINE1-VREFO/VREFO3

36 FRONT-R
35 FRONT-L
34 SENSE B (JD2)/FMIC1
33 DCVOL/VREFVOUT2
32 MIC1-VREFO-R/FMIC2
31 LINE2-VREFO/JD4
30 MIC2-VREFO/AFILT2
29 LINE1-VREFO-L/AFILT1
28 MIC1-VREFO-L/VREFOUT
27 VREF
26 AVSS1
25 AVDD1

LINE_O_R (35)
LINE_O_L (35) Can Support Amp Out

CR12 8.2K/4/X AVDD
VODR CR13 8.2K/4
MIC1_VREFO_R (35)
LINE2_VREFO (35)
MIC2_VREFO (35)
VOBR CR4 8.2K/4
MIC1_VREFO_L (35)

AVDD
CBC6 22u/8/X5R/6.3V/M
CBC4 22u/8/X5R/6.3V/M

CFB1 5VSB 30/4/4A/S
CBC3 22u/8/X5R/6.3V/M
CD1 AZ2225-01L/SOD323
For ALC892 /ALC898

Digital Area Analog Area

ALC892-GR/LQFP48[10HP5-368920-21R]

13 SENSE A(JD1)/PHONE JD1
14 LINE2-L/AUX-L
15 LINE2-R/AUX-R
16 MIC2-L/JD2
17 MIC2-R/JD1 GPIO1
18 CD_L
19 CD_GND
20 CD_R
21 MIC1-L/MIC1
22 MIC1-R/MIC2
23 LINE1-L
24 LINE1-R

LINE1_R CBC8 22u/8/X5R/6.3V/M LINE_IN_R (35)
LINE1_L CBC10 22u/8/X5R/6.3V/M LINE_IN_L (35)
MIC1_RR CBC14 10U/8/X5R/6.3V/K MIC1_R (35)
MIC1_LL CBC18 10U/8/X5R/6.3V/K MIC1_L (35)

(35) FRONT_JD CR7 5.1K/4/1
(35) LINE1_JD CR34 10K/4/1
(35) MIC1_JD CR5 20K/4/1
(35) SURR_JD CR43 39.2K/4/1

JD resistors close to pin13 of CODEC

SMOATR2 0/6/X
0/6/X For AGND/GND moat under Codec Body

CESD1
LINE2_R 1
2
MIC2_L 3
6 LINE2_L
5 AVDD
4 MIC2_R
AOZ8902CIL/SOT23-6/X

(35) LINE2_L
(35) LINE2_R
(35) MIC2_L
(35) MIC2_R
Can Support Amp Out

CESD2
MIC1_RR 1
2
LINE1_L 3
6 MIC1_LL
5 AVDD
4 LINE1_R
AOZ8902CIL/SOT23-6/X

Gigabyte Technology

Title	HD AUDIO ALC889	
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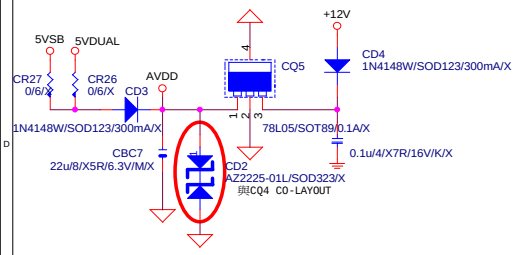
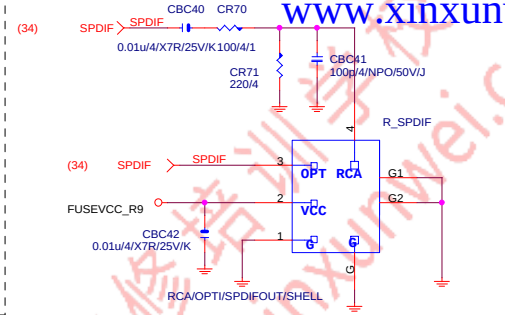
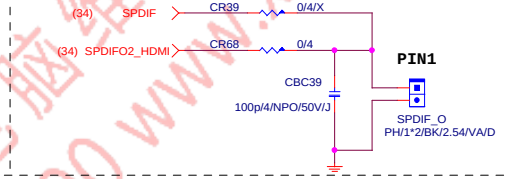
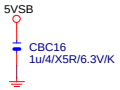
CODEC POWER/EMI PAD



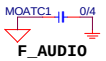


For HDMI SPDIF

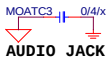




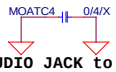
跨MOAT CAP.



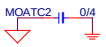
F_AUDIO



AUDIO JACK



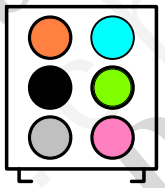
AUDIO JACK to USB



Codec to AUDIO JACK

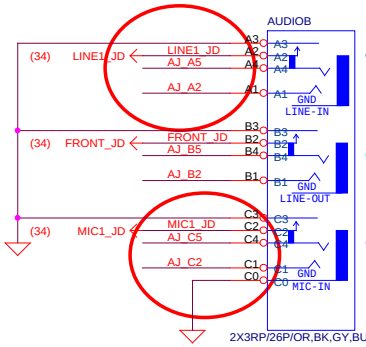
AUDIO JACK to USB

For HDMI SPDIF



11NR6-403007-21R

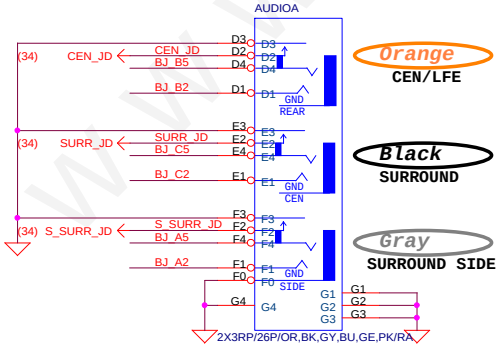
AZAZALIA CONNECTOR



BLUE LINE-IN

GREEN LINE-OUT

PINK MIC-IN

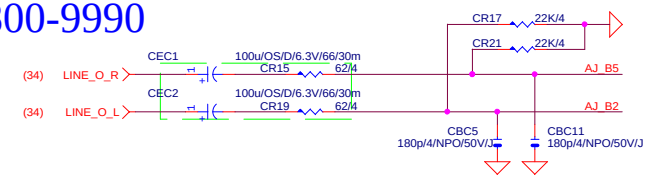


Orange CEN/LFE

Black SURROUND

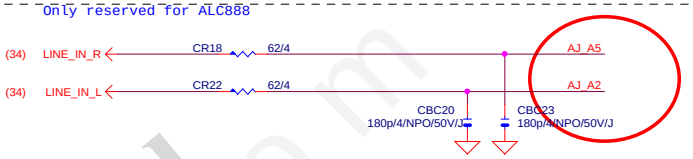
Gray SURROUND SIDE

LINE-OUT



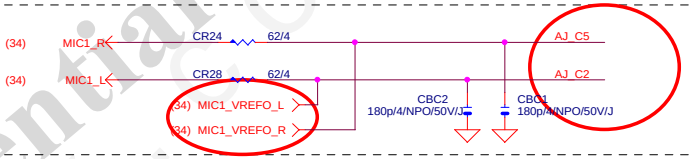
LINE-IN

Only reserved for ALC888

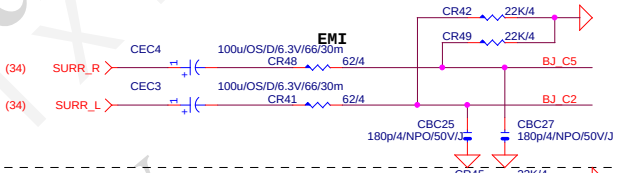


For 889A/888

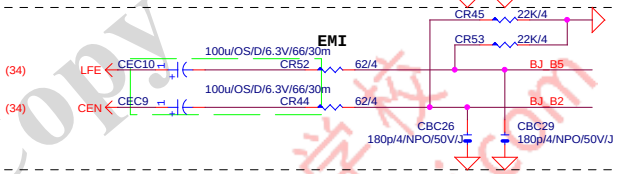
MIC-IN



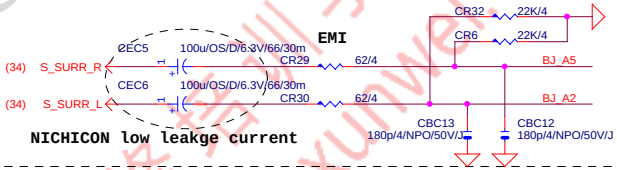
SURROUND



CEN/LFE

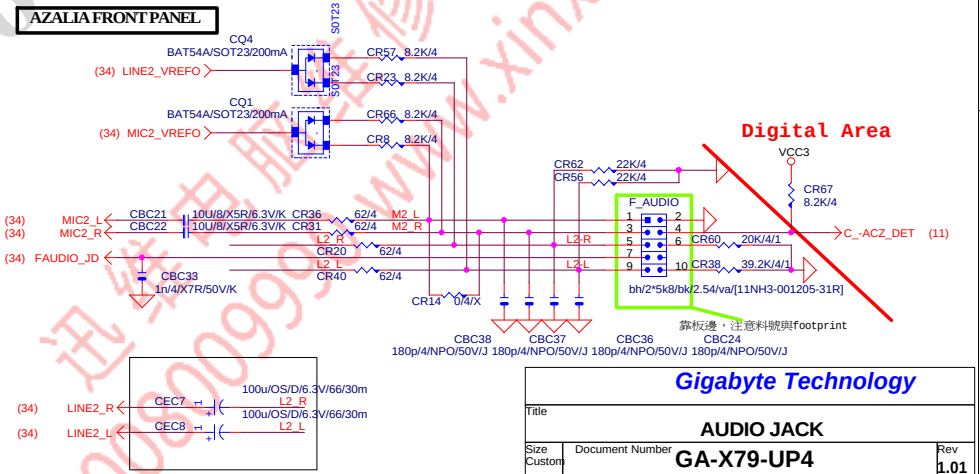


SURR BACK



NICHICON low leakge current

AZALIA FRONT PANEL



Gigabyte Technology		
Title: AUDIO JACK		
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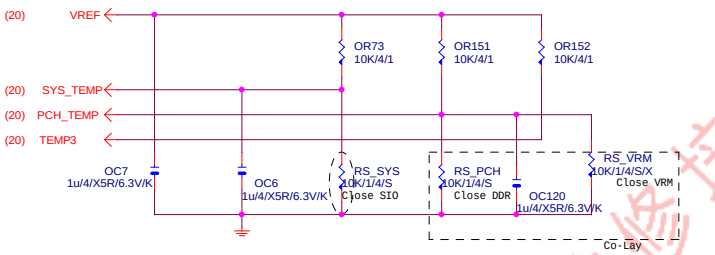
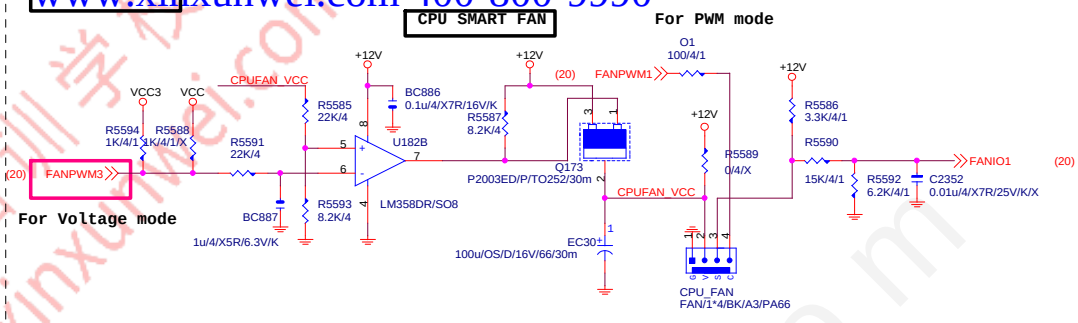
TEMP H/W MONITOR

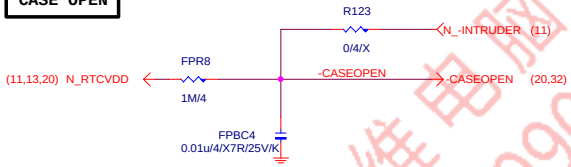


CPU SMART FAN

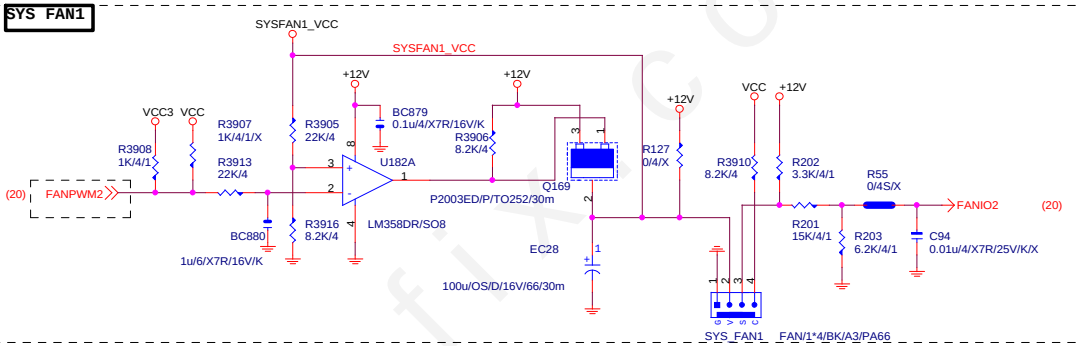
www.xinxunwei.com 400-800-9990



CASE OPEN

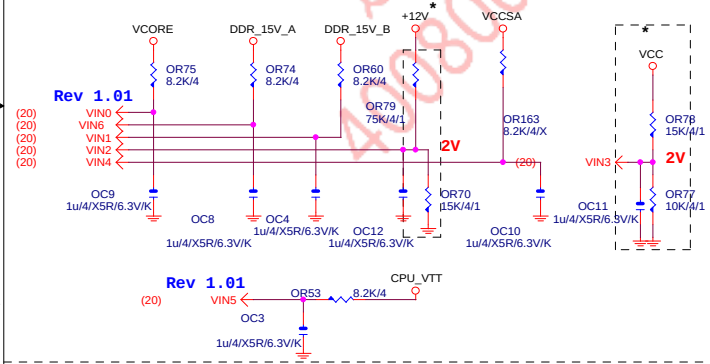


SYS FAN1

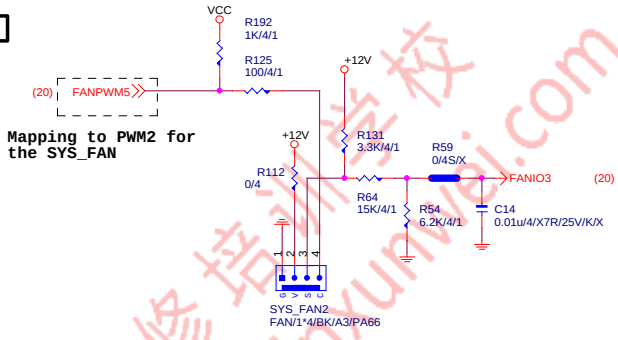


VOLTAGE-- H/W MONITOR

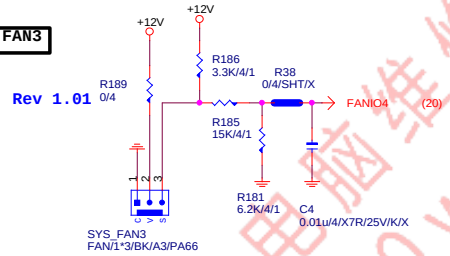
VIN2 must +12V input
VIN3 must VCC input



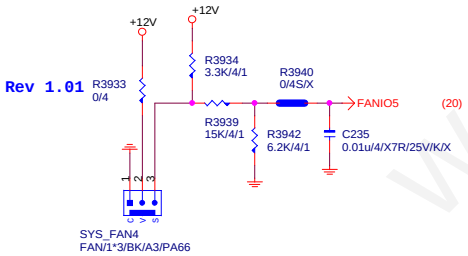
SYS FAN2



SYS FAN3



SYS FAN4



Gigabyte Technology		
Title: HWM,FAN CTRL		
Size: Custom	Document Number: GA-X79-UP4	Rev: 1.01
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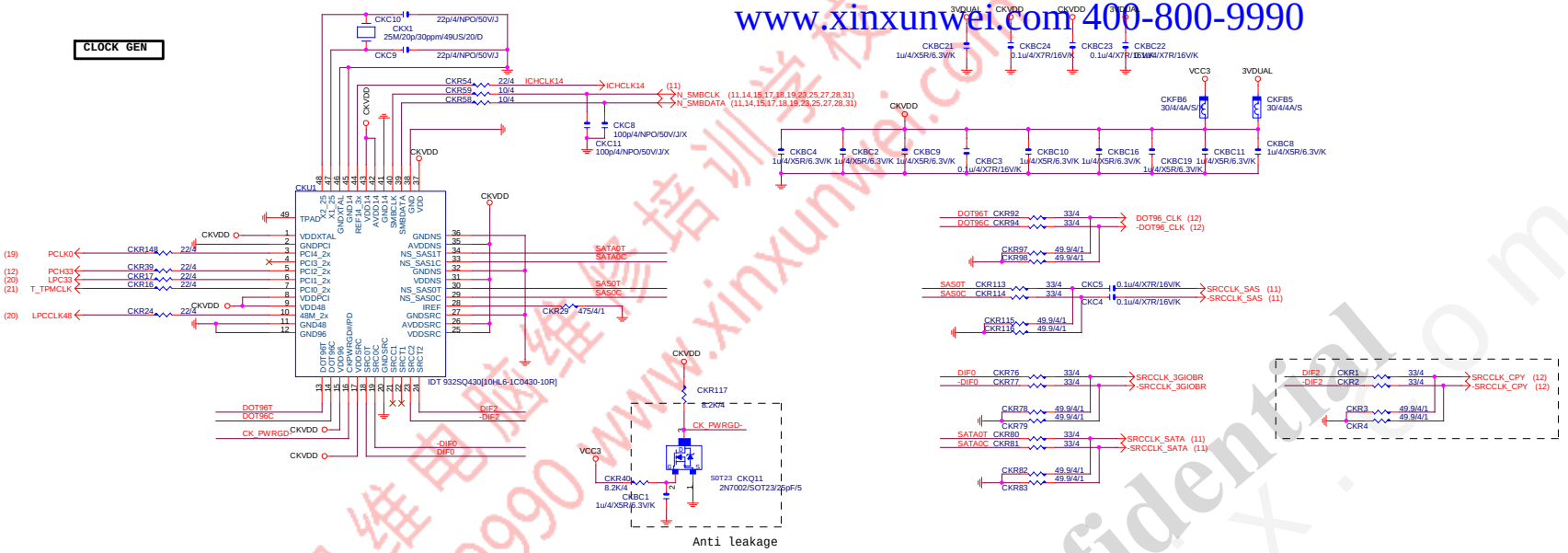
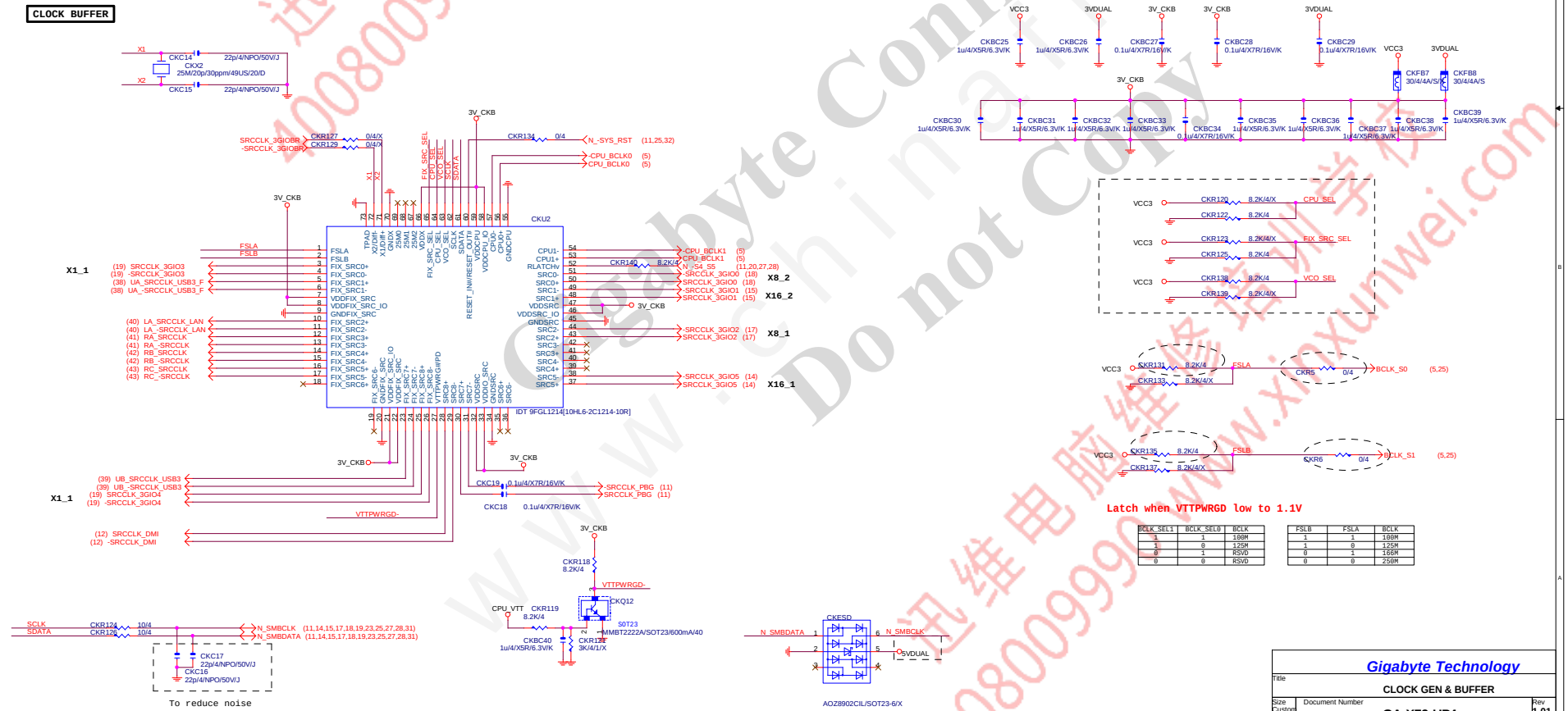
CLOCK GEN



CLOCK BUFFER



Title	CLOCK GEN & BUFFER
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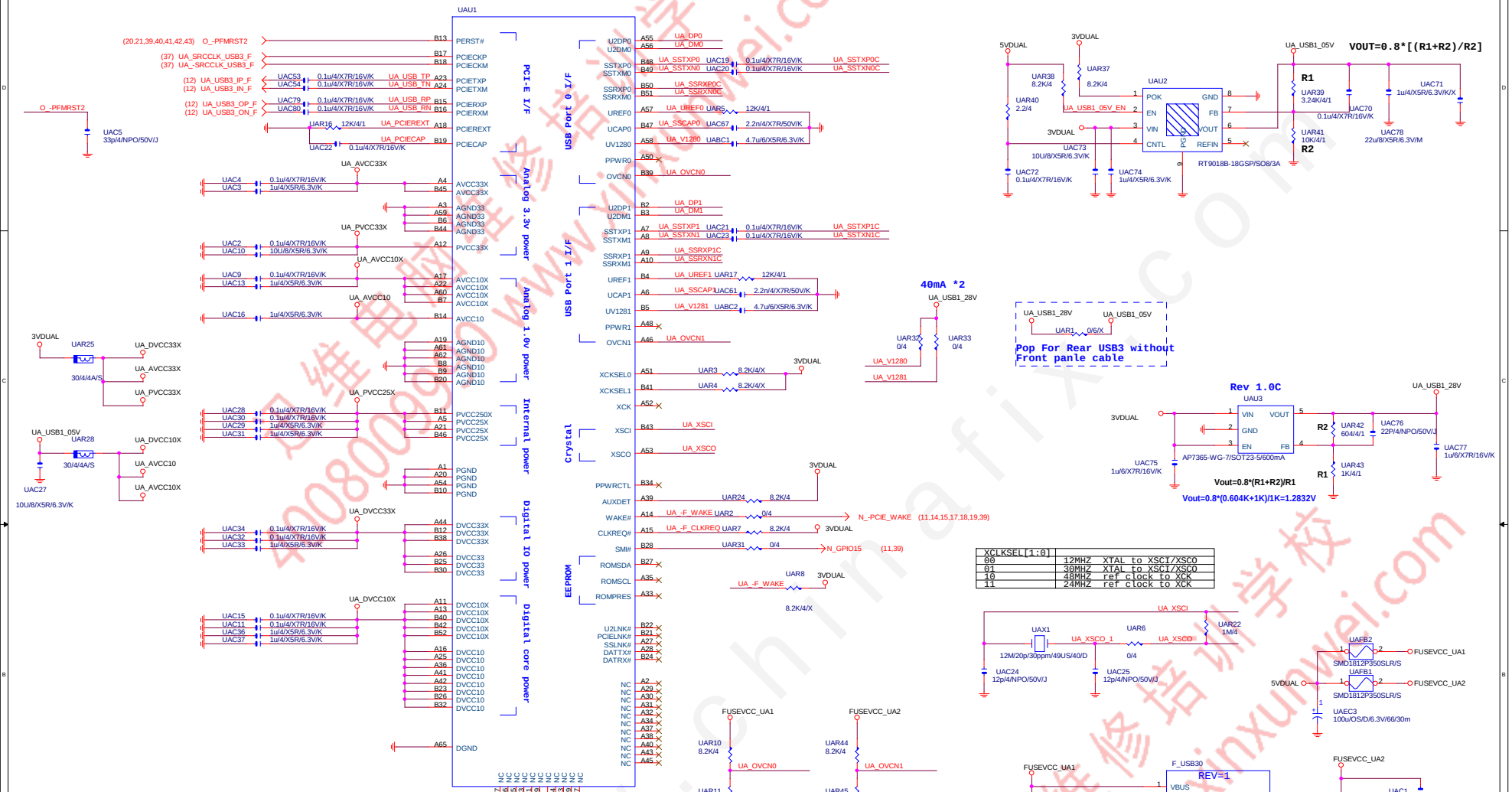
Gigabyte Technology



Gigabyte Technology		
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Size: Custom	Document Number: GA-X79-UP4	Rev: 1.01
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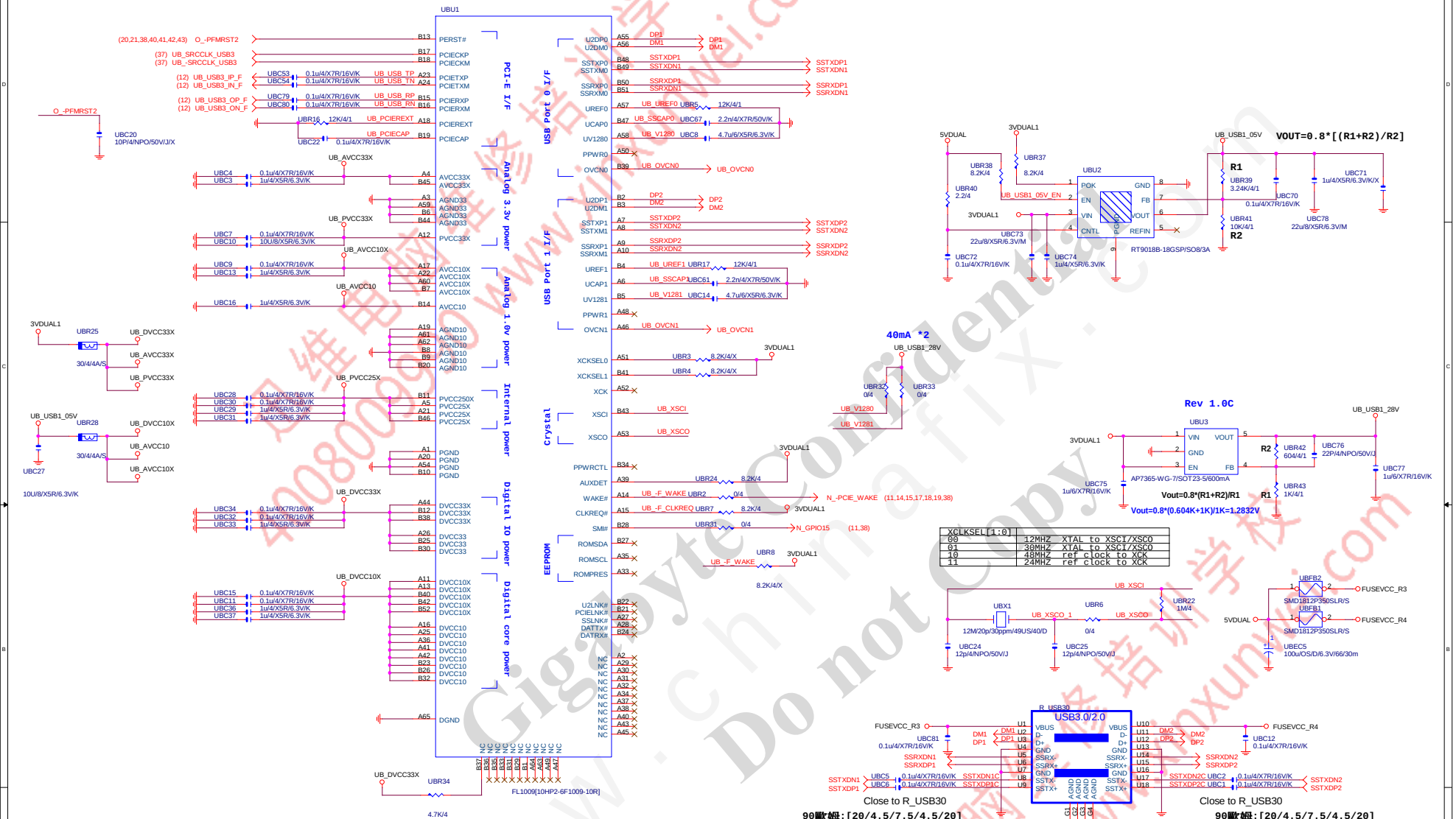
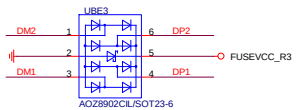
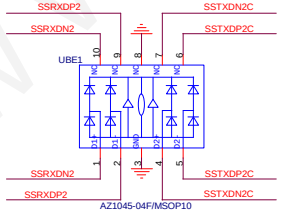
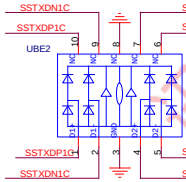
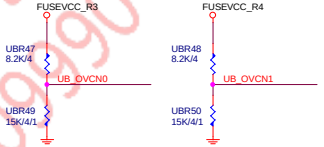


XCLKSEL[1:0]	
00	12MHZ XTAL to XSCI/XSCO
01	30MHZ XTAL to XSCI/XSCO
10	48MHZ ref clock to XCK
11	24MHZ ref clock to XCK









Gigabyte Technology			
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Size: Custom	Document Number: GA-X79-UP4		Rev: 1.01
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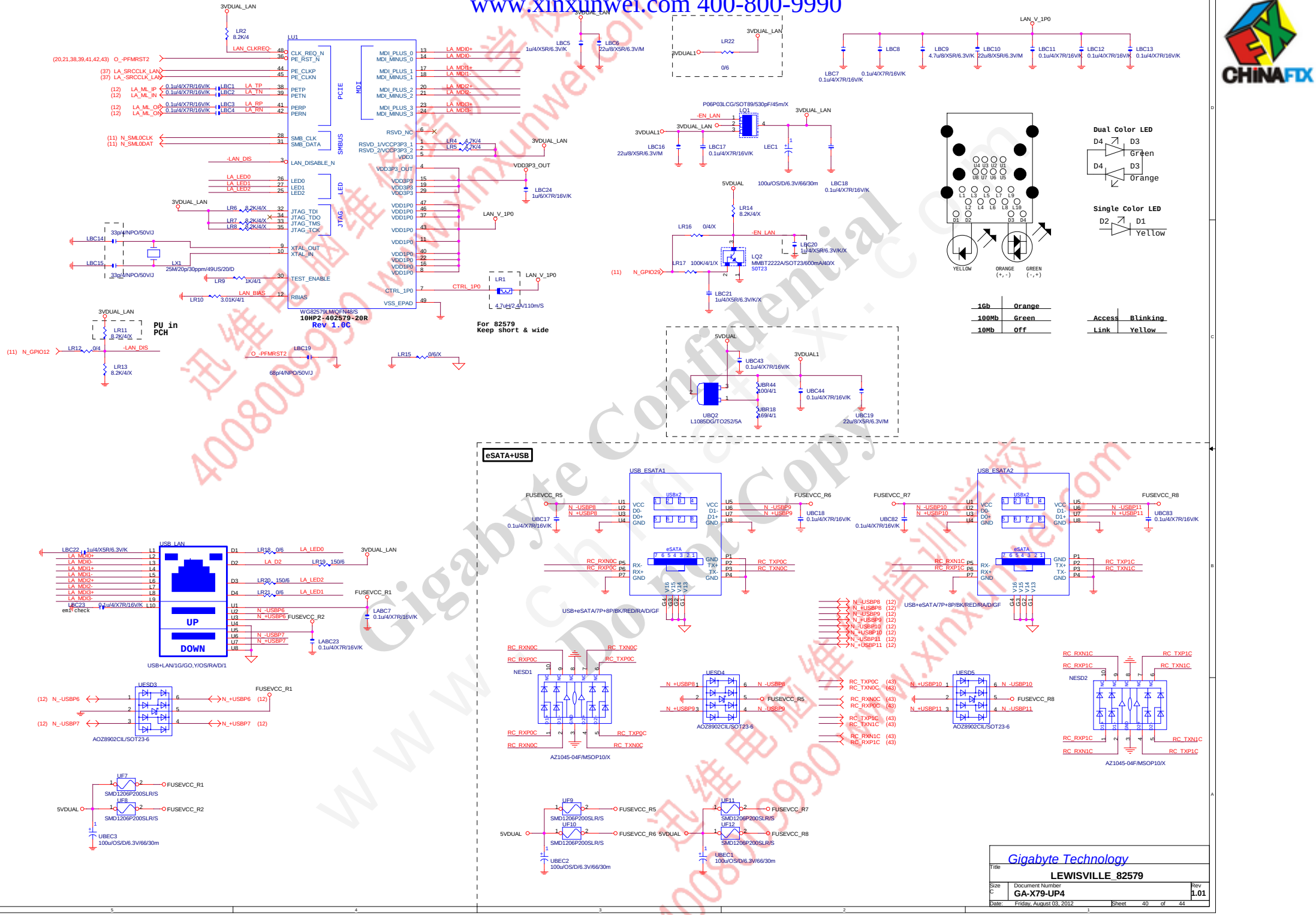

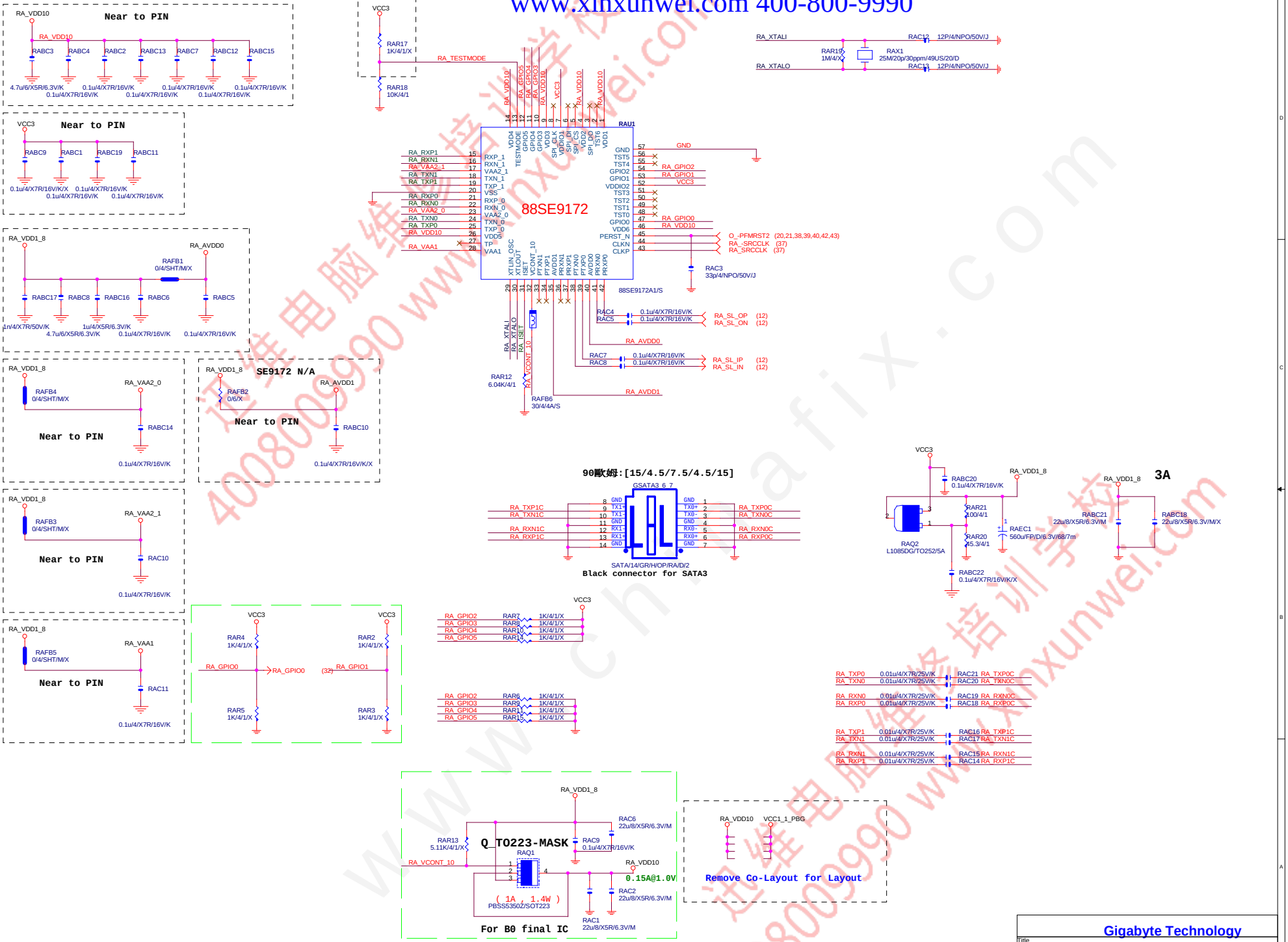

Gigabyte Technology		
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Size: Custom	Document Number: GA-X79-UP4	Rev: 1.01
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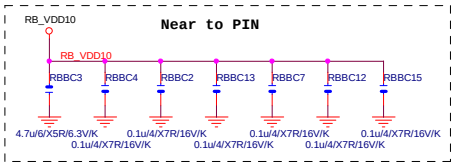

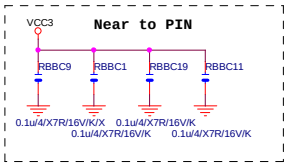

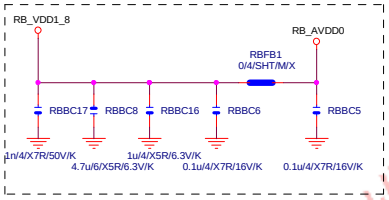

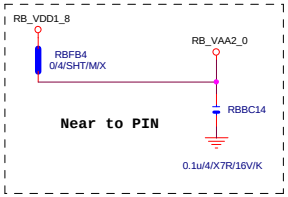

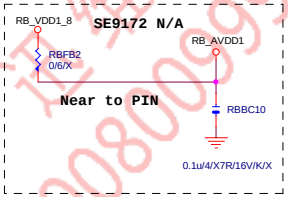

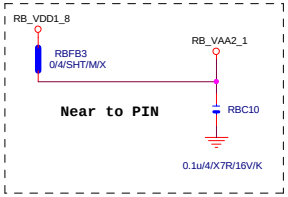

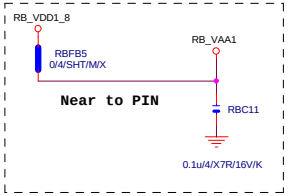

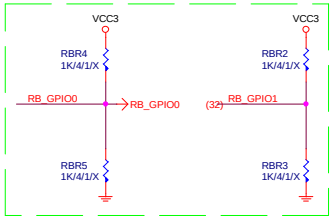

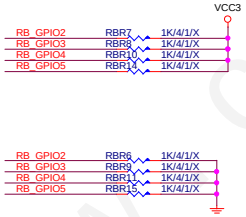

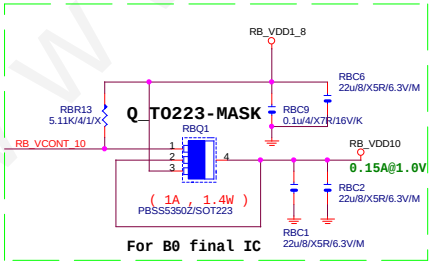

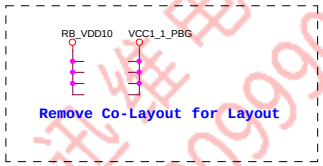

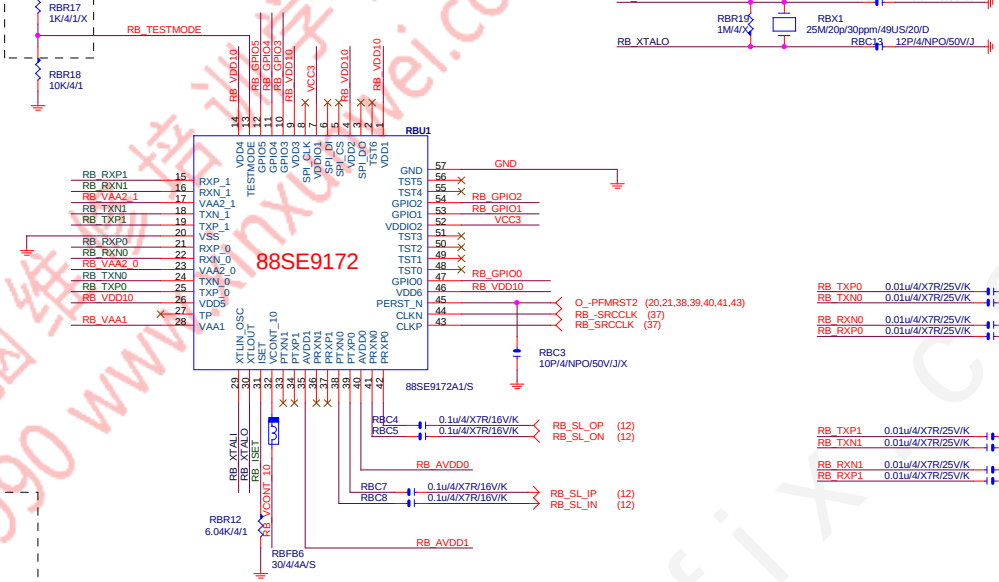

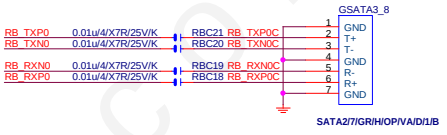

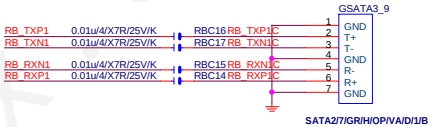

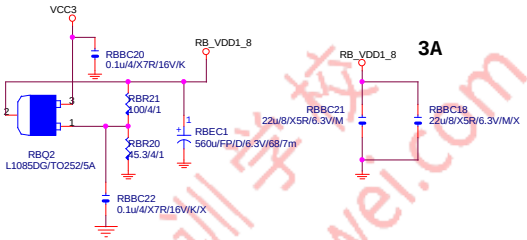

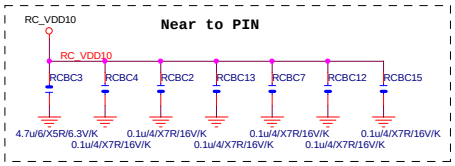

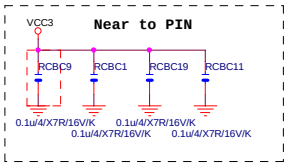

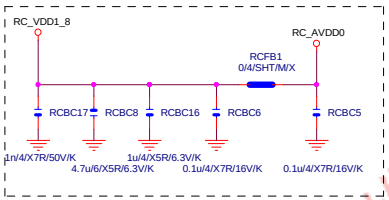

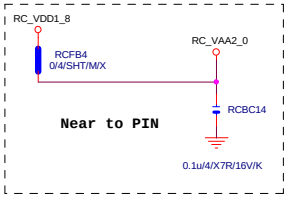

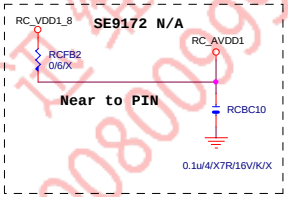

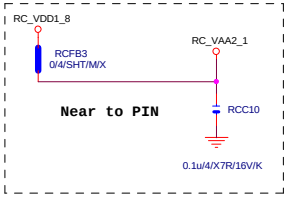

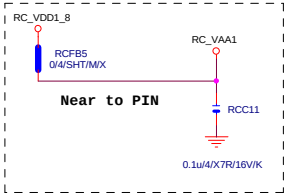

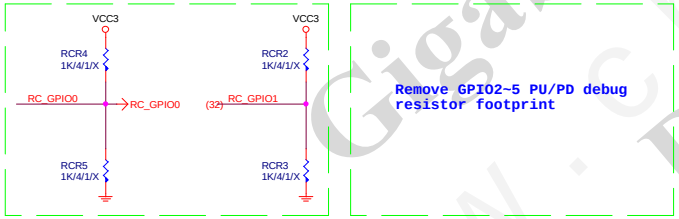

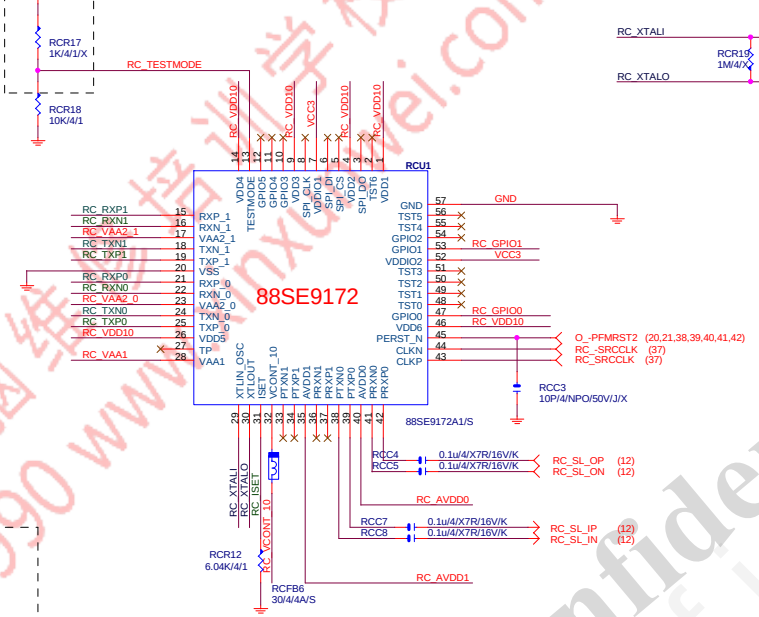

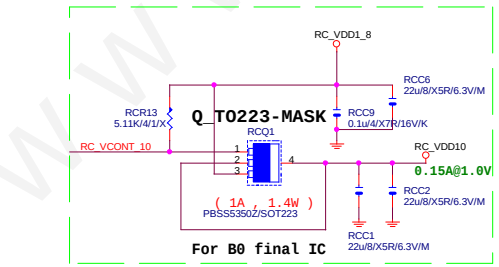

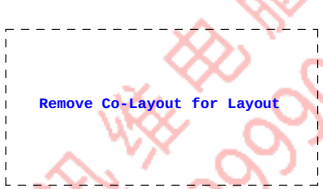

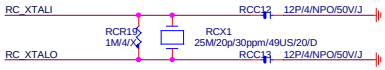

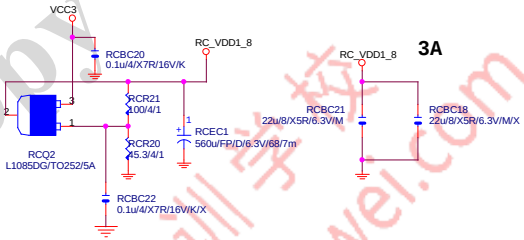

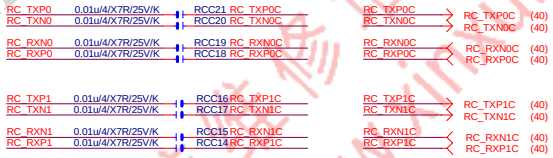

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PCH GPIO

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

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