

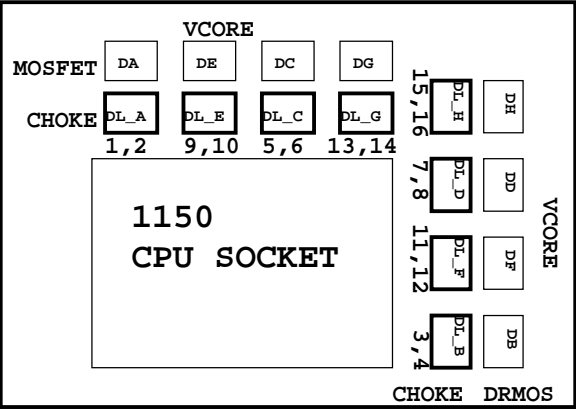
Model Name: GA-Z87X-UD5 TH

SHEET TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04-06	CPU_LGA1150
07	DDR III CHANNEL A
08	DDR III CHANNEL B
09	PCH_FDI,DMI,USB,PCIE,NVRAM
10	PCH_DP,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	HDMI / DVI (Switch) / TPM
15	PCI EXPRESS*16 SLOT
16	PCI EXPRESS*8 SLOT
17	PCI EXPRESS SWITCH X16/X8/X4
18	PCI EXPRESS*1 SLOTS X2
19	PCI EXPRESS*4 SLOT
20	ITE 8892
21	PCI SLOT 1
22	Dual BIOS
23	ALC898
24	REAR AUDIO JACK
25	AMPLIFIER
26	IR3563B PWM
27-28	IR3550 VCORE 16 Phase
29	IR3570 PWM
30	IR3598 DDR 2 Phase

SHEET TITLE

31	5VDUAL, 3VDAUL, ERP
32	PCH1.05V, PCH1.5V, VCC3_DAC
33	I/O ITE8728
34	USB3 , KB/USB3
35	F_PANEL , F_USB , PHOT
36	F_USB 2.0
37	F_USB 3.0
38	ATX POWER, CLOCK GEN
39	HWM, FAN CTRL
40	INTEL I217 Lan
41	Marvell 9172
42	RST, PWR, CLR_CMOS
43-44	USB3.0 HUB uPD720210
45-46	USB3.0 HUB_B uPD720210
47	PLX8605
48	mini PCIE Slot
49	EC ITE 8790
50	DVI / mDP Switch 412
51-54	Thunderbolt RR 4C



GA-Z87X-UD5 TH

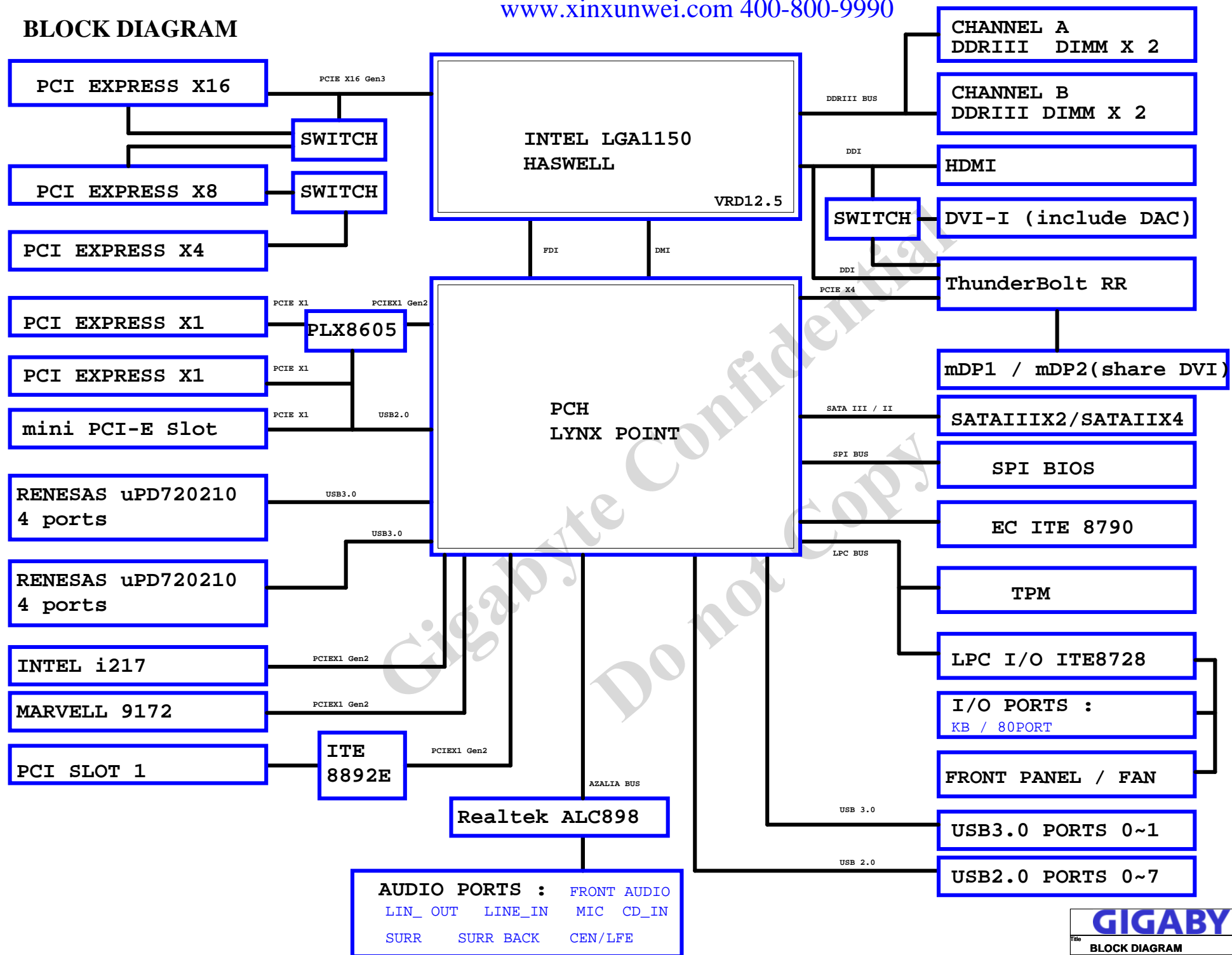
Component value change history

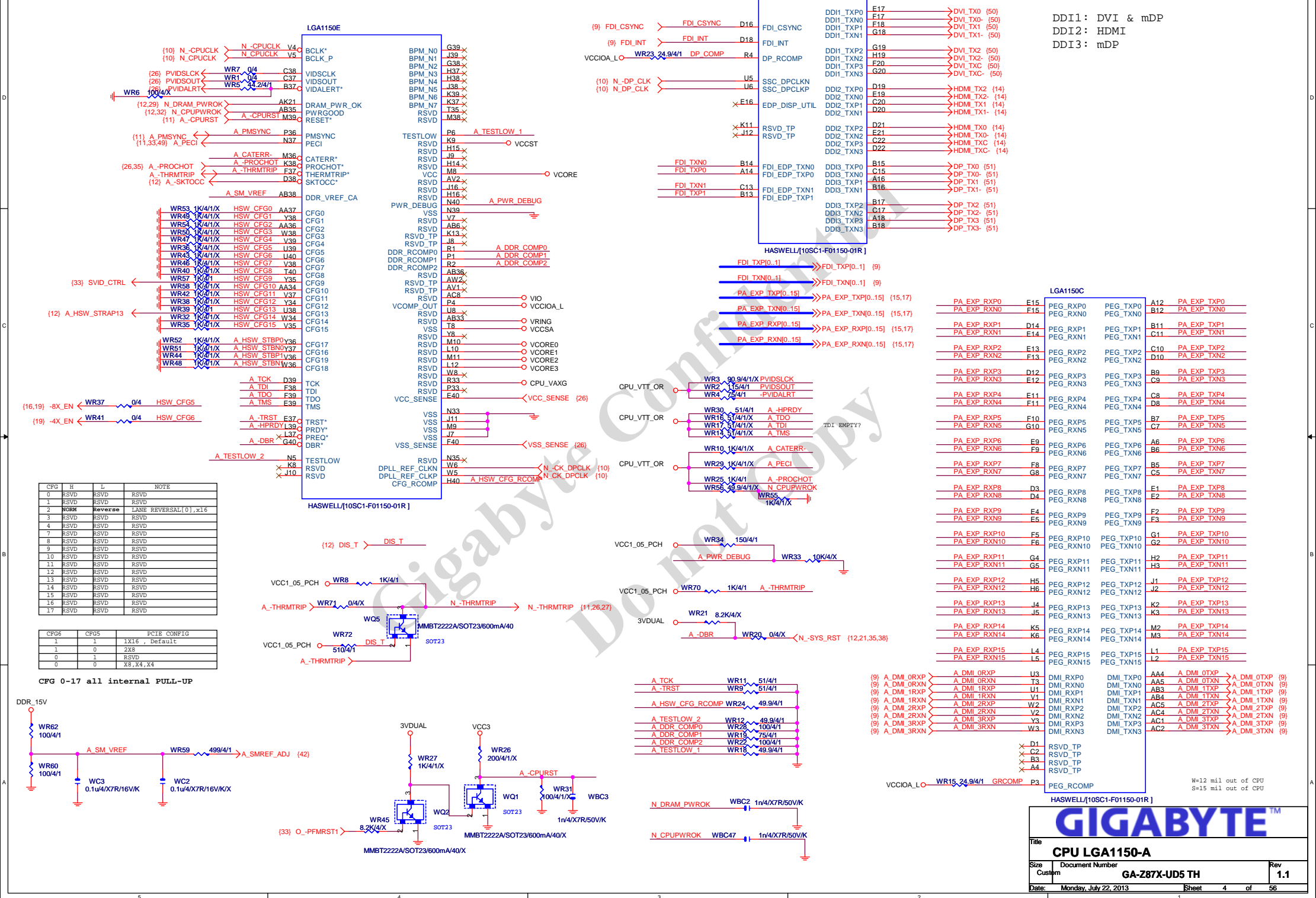
[illegible]

Circuit or PCB layout change

DATE	Change Item	Reason
2013/01/	REV0.1 Z87X-UD4 TH 0.1 gerber out	
2013/07/17	1.1 SCH PVT	

BLOCK DIAGRAM





LGA1150A

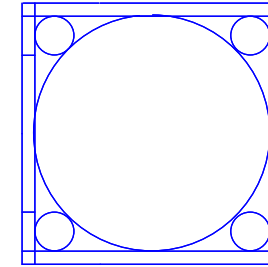
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MAAA4	AU17	DDR0_MA4	DDR0_DQ4	AD37	MDA4
MAAA5	AW18	DDR0_MA5	DDR0_DQ5	AD40	MDA5
MAAA6	AV17	DDR0_MA6	DDR0_DQ6	AF37	MDA6
MAAA7	AT18	DDR0_MA7	DDR0_DQ7	AF40	MDA7
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MAAA10	AW11	DDR0_MA10	DDR0_DQ10	AK38	MDA10
MAAA11	AV19	DDR0_MA11	DDR0_DQ11	AK39	MDA11
MAAA12	AU19	DDR0_MA12	DDR0_DQ12	AH37	MDA12
MAAA13	AY10	DDR0_MA13	DDR0_DQ13	AH38	MDA8
MAAA14	AT20	DDR0_MA14	DDR0_DQ14	AK37	MDA14
MAAA15	AU21	DDR0_MA15	DDR0_DQ15	AK40	MDA15
MODT_A0	AW10	DDR0_ODT0	DDR0_DQ16	AM40	MDA17
MODT_A1	AY8	DDR0_ODT1	DDR0_DQ17	AM39	MDA21
MODT_A2	AW9	DDR0_ODT2	DDR0_DQ18	AP38	MDA18
MODT_A3	AU8	DDR0_ODT3	DDR0_DQ19	AP39	MDA19
			DDR0_DQ20	AM37	MDA20
			DDR0_DQ21	AM38	MDA16
			DDR0_DQ22	AP37	MDA23
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			DDR0_DQ26	AU35	MDA26
			DDR0_DQ27	AV35	MDA27
			DDR0_DQ28	AT37	MDA28
			DDR0_DQ29	AU37	MDA24
			DDR0_DQ30	AT35	MDA30
			DDR0_DQ31	AW35	MDA31
			DDR0_DQ32	AY6	MDA33
			DDR0_DQ33	AU6	MDA37
			DDR0_DQ34	AU4	MDA34
			DDR0_DQ35	AW6	MDA36
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			DDR0_DQ38	AY4	MDA39
			DDR0_DQ39	AR1	MDA41
			DDR0_DQ40	AR4	MDA45
			DDR0_DQ41	AN3	MDA42
			DDR0_DQ42	AN4	MDA43
			DDR0_DQ43	AR2	MDA44
			DDR0_DQ44	AR3	MDA40
			DDR0_DQ45	AN2	MDA46
			DDR0_DQ46	AN1	MDA47
			DDR0_DQ47	AL1	MDA49
			DDR0_DQ48	AL4	MDA53
			DDR0_DQ49	AJ3	MDA50
			DDR0_DQ50	AJ4	MDA51
			DDR0_DQ51	AL2	MDA52
			DDR0_DQ52	AL3	MDA48
			DDR0_DQ53	AJ2	MDA54
			DDR0_DQ54	AJ1	MDA55
			DDR0_DQ55	AG4	MDA57
			DDR0_DQ56	AG4	MDA61
			DDR0_DQ57	AE3	MDA58
			DDR0_DQ58	AE4	MDA59
			DDR0_DQ59	AG2	MDA60
			DDR0_DQ60	AG3	MDA56
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			DDR0_DQ65	AN39	DQSA2
			DDR0_DQ66	AV36	DQSA3
			DDR0_DQ67	AV5	DQSA4
			DDR0_DQ68	AP3	DQSA5
			DDR0_DQ69	AK3	DQSA6
			DDR0_DQ70	AF3	DQSA7
			DDR0_DQ71	AV32	-DQSA0
			DDR0_DQ72	AE38	-DQSA1
			DDR0_DQ73	AJ38	-DQSA2
			DDR0_DQ74	AN38	-DQSA3
			DDR0_DQ75	AU36	-DQSA4
			DDR0_DQ76	AW5	-DQSA5
			DDR0_DQ77	AP2	-DQSA6
			DDR0_DQ78	AK2	-DQSA7
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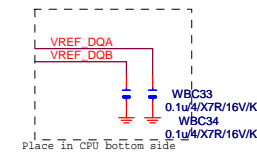
LGA1150B

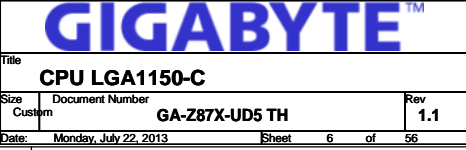
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MAAB3	AM23	DDR1_MA3	DDR1_DQ3	AH35	MDB3
MAAB4	AP23	DDR1_MA4	DDR1_DQ4	AD34	MDB4
MAAB5	AL23	DDR1_MA5	DDR1_DQ5	AD35	MDB5
MAAB6	AY24	DDR1_MA6	DDR1_DQ6	AG34	MDB6
MAAB7	AV25	DDR1_MA7	DDR1_DQ7	AL34	MDB7
MAAB8	AU26	DDR1_MA8	DDR1_DQ8	AL35	MDB8
MAAB9	AW25	DDR1_MA9	DDR1_DQ9	AL35	MDB9
MAAB10	AP18	DDR1_MA10	DDR1_DQ10	AK31	MDB10
MAAB11	AY25	DDR1_MA11	DDR1_DQ11	AL31	MDB11
MAAB12	AV26	DDR1_MA12	DDR1_DQ12	AK34	MDB12
MAAB13	AV27	DDR1_MA13	DDR1_DQ13	AK35	MDB13
MAAB14	AY27	DDR1_MA14	DDR1_DQ14	AK32	MDB14
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			DDR1_DQ17	AP34	MDB21
			DDR1_DQ18	AN31	MDB19
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			DDR1_DQ20	AN35	MDB20
			DDR1_DQ21	AP35	MDB16
			DDR1_DQ22	AN32	MDB18
			DDR1_DQ23	AP32	MDB22
			DDR1_DQ24	AM29	MDB25
			DDR1_DQ25	AM28	MDB28
			DDR1_DQ26	AR29	MDB27
			DDR1_DQ27	AR28	MDB30
			DDR1_DQ28	AL29	MDB24
			DDR1_DQ29	AL28	MDB29
			DDR1_DQ30	AP29	MDB26
			DDR1_DQ31	AP28	MDB31
			DDR1_DQ32	AR12	MDB32
			DDR1_DQ33	AP12	MDB33
			DDR1_DQ34	AL13	MDB34
			DDR1_DQ35	AL12	MDB35
			DDR1_DQ36	AR13	MDB36
			DDR1_DQ37	AP13	MDB37
			DDR1_DQ38	AM13	MDB38
			DDR1_DQ39	AM12	MDB39
			DDR1_DQ40	AR9	MDB45
			DDR1_DQ41	AR6	MDB47
			DDR1_DQ42	AP6	MDB43
			DDR1_DQ43	AR10	MDB44
			DDR1_DQ44	AP10	MDB40
			DDR1_DQ45	AR7	MDB46
			DDR1_DQ46	AP7	MDB42
			DDR1_DQ47	AM9	MDB52
			DDR1_DQ48	AL9	MDB53
			DDR1_DQ49	AL6	MDB50
			DDR1_DQ50	AL7	MDB55
			DDR1_DQ51	AM10	MDB48
			DDR1_DQ52	AL10	MDB49
			DDR1_DQ53	AM6	MDB54
			DDR1_DQ54	AM7	MDB51
			DDR1_DQ55	AH6	MDB61
			DDR1_DQ56	AH7	MDB60
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			DDR1_DQ59	AJ6	MDB56
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			DDR1_DQ61	AE6	MDB58
			DDR1_DQ62	AE7	MDB62
			DDR1_DQ63	AE7	MDB63
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			DDR1_DQ65	AP33	DQSB2
			DDR1_DQ66	AN28	DQSB3
			DDR1_DQ67	AN12	DQSB4
			DDR1_DQ68	AP2	DQSB5
			DDR1_DQ69	AL8	DQSB6
			DDR1_DQ70	AG7	DQSB7
			DDR1_DQ71	AN25	-DQSB0
			DDR1_DQ72	AE34	-DQSB1
			DDR1_DQ73	AK33	-DQSB2
			DDR1_DQ74	AN33	-DQSB3
			DDR1_DQ75	AN29	-DQSB4
			DDR1_DQ76	AN13	-DQSB5
			DDR1_DQ77	AR8	-DQSB6
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			DDR1_DQ79	AG6	-DQSB7
			DDR1_DQ80	AN29	-DQSB7

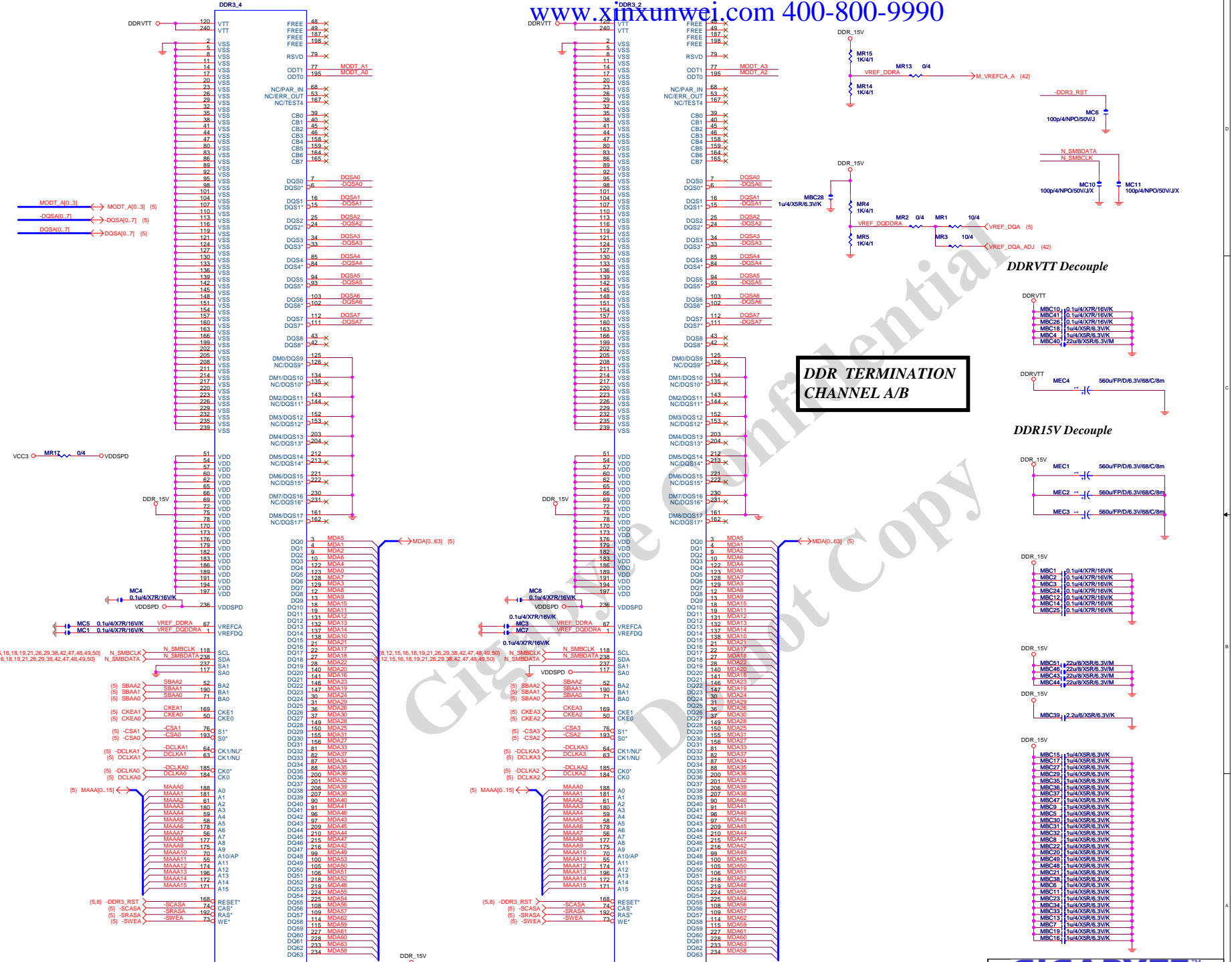
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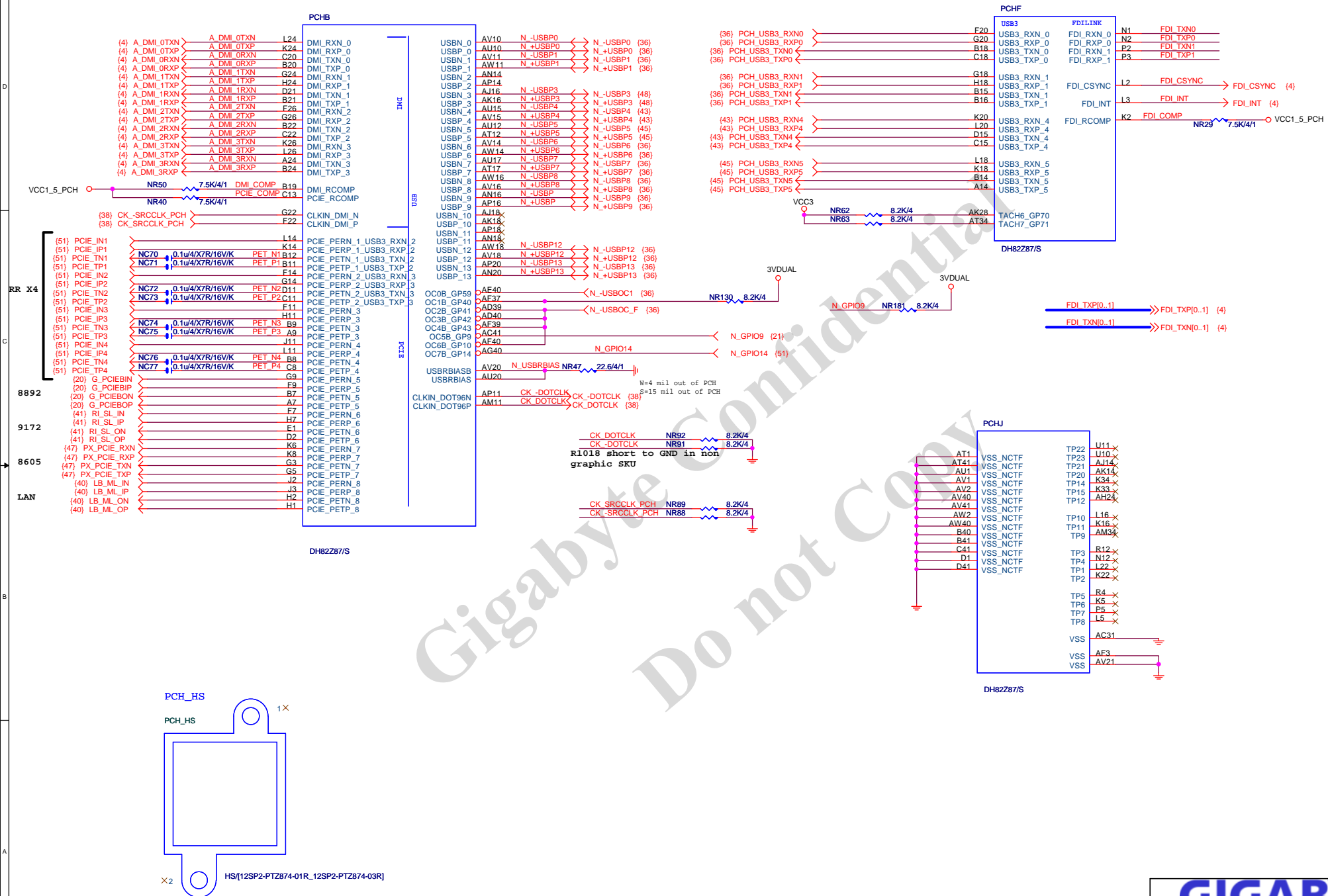
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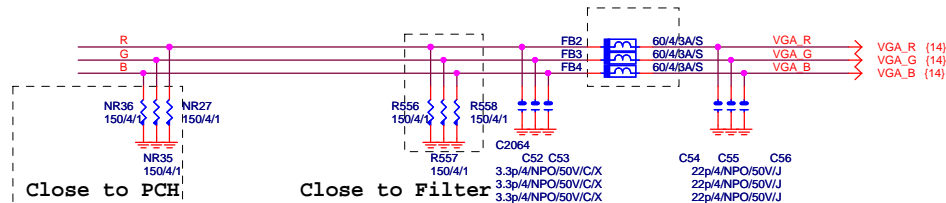
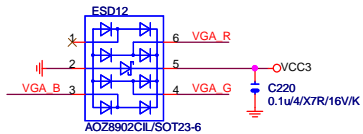
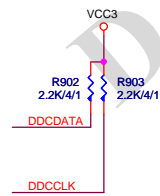
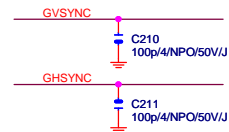
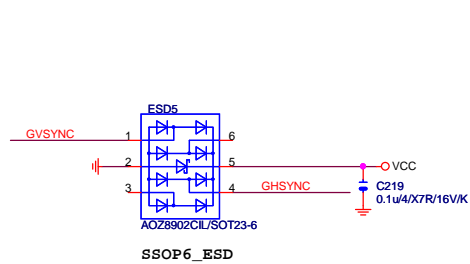
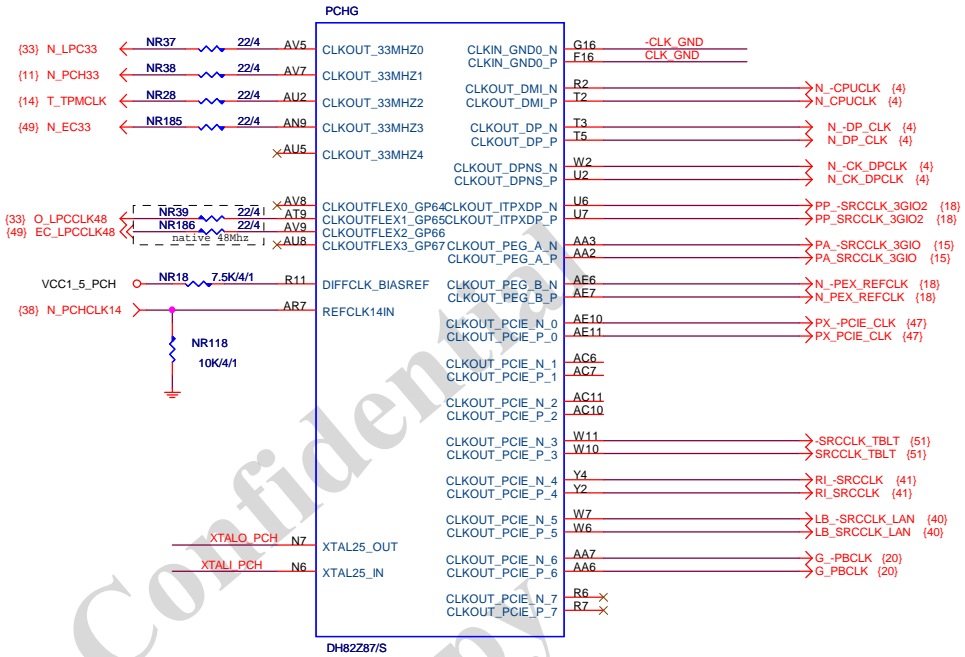
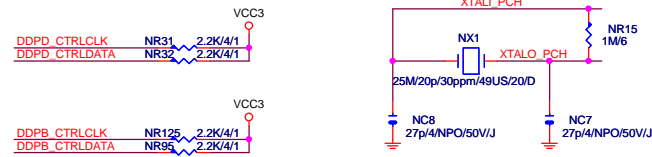
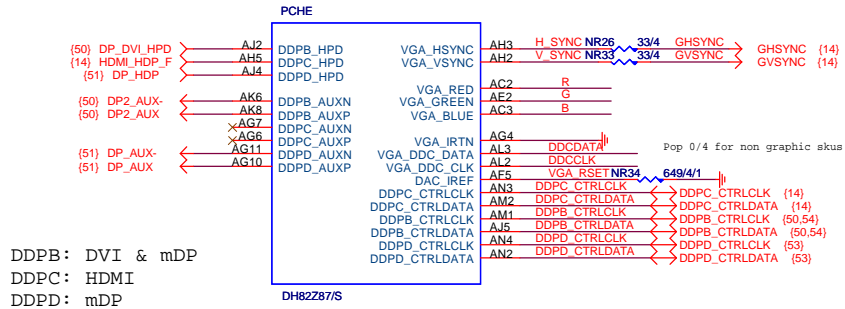
Need check the new CPU MB

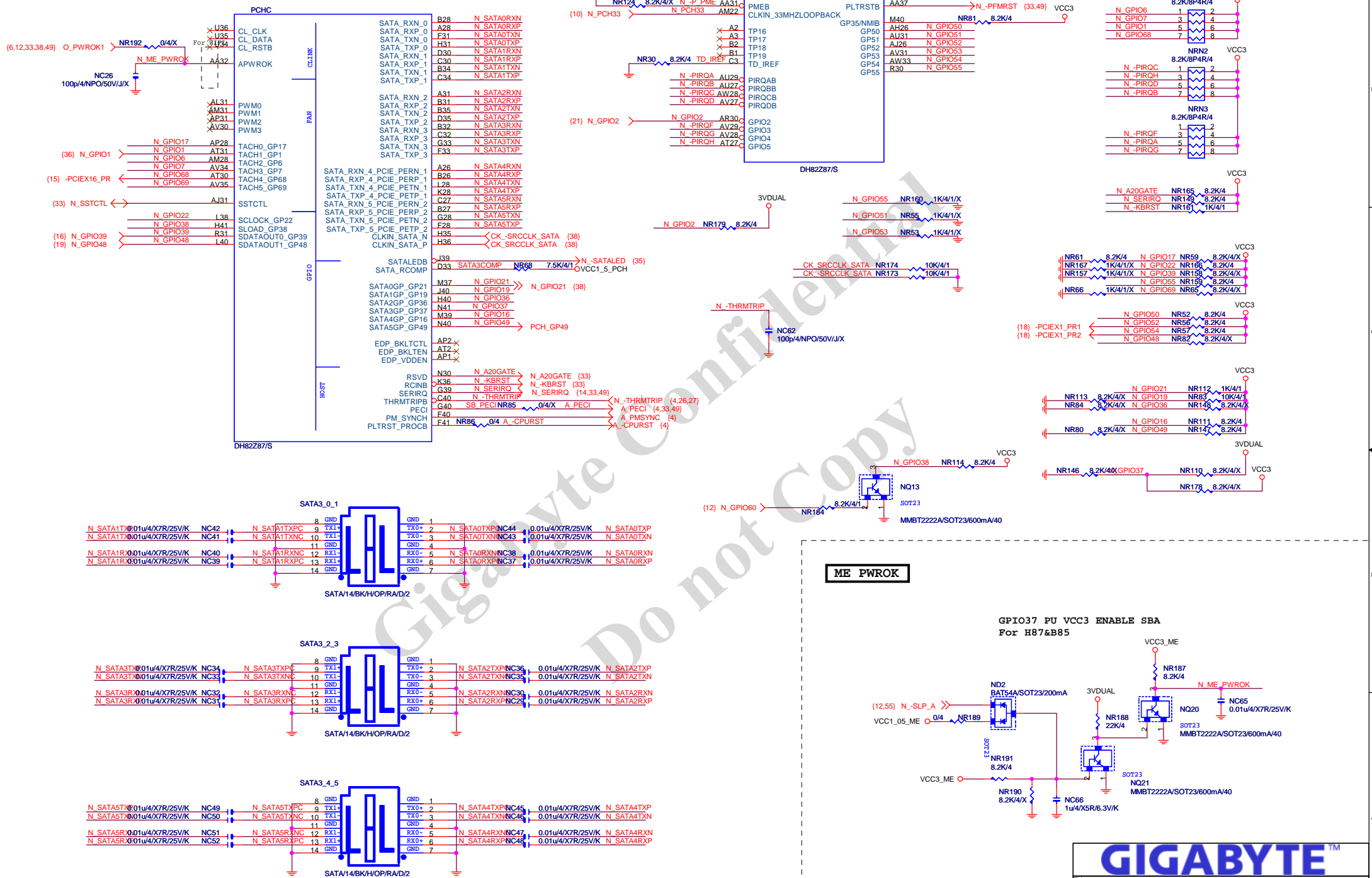


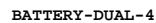
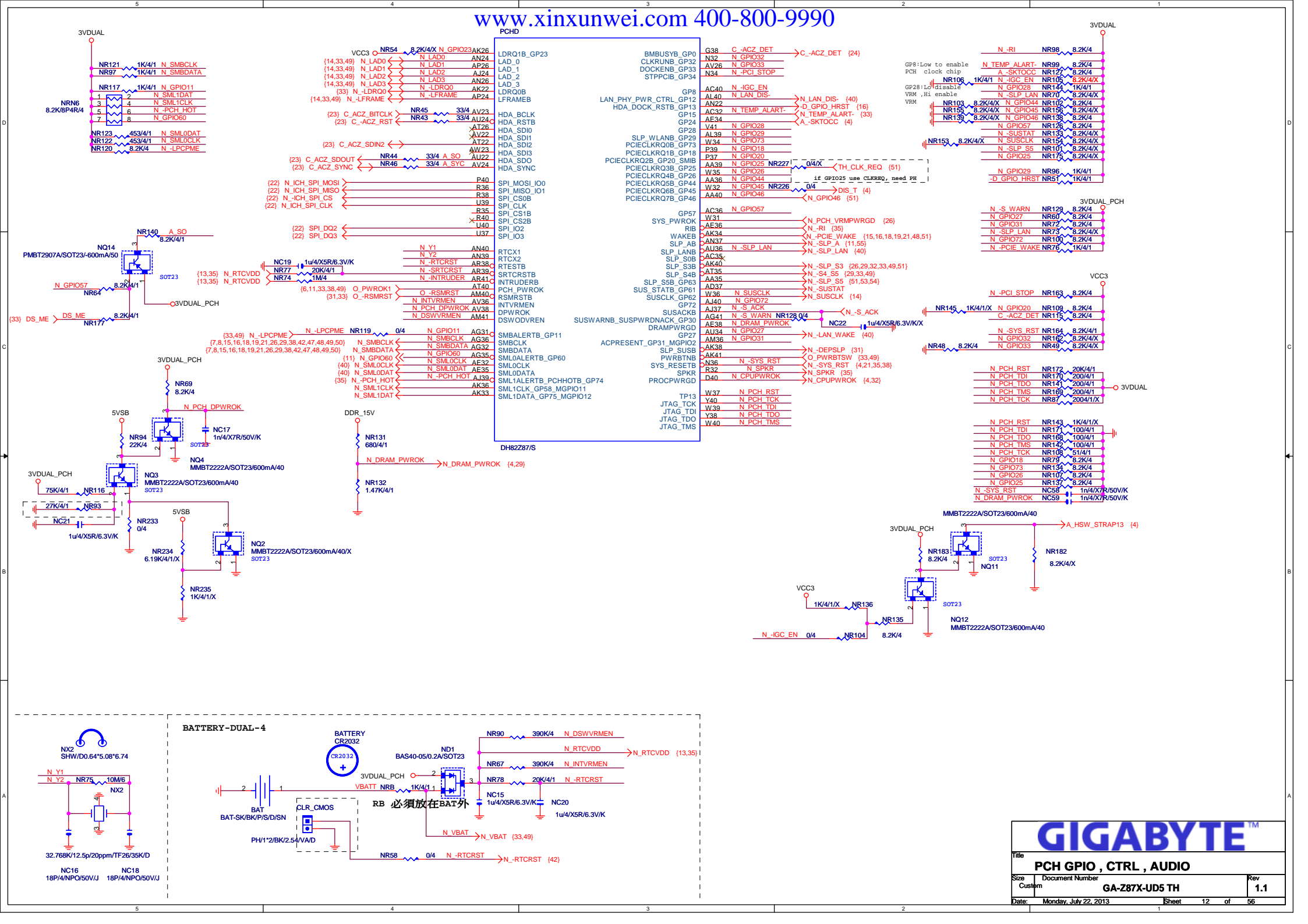




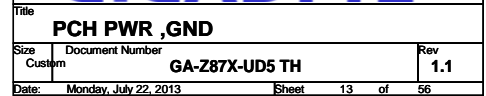
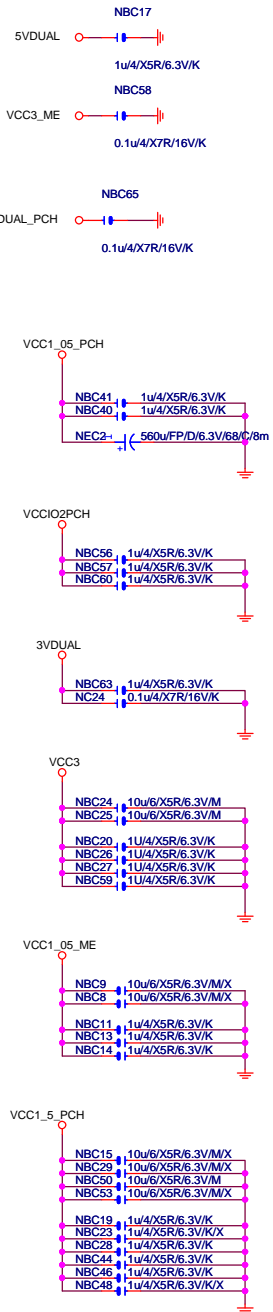


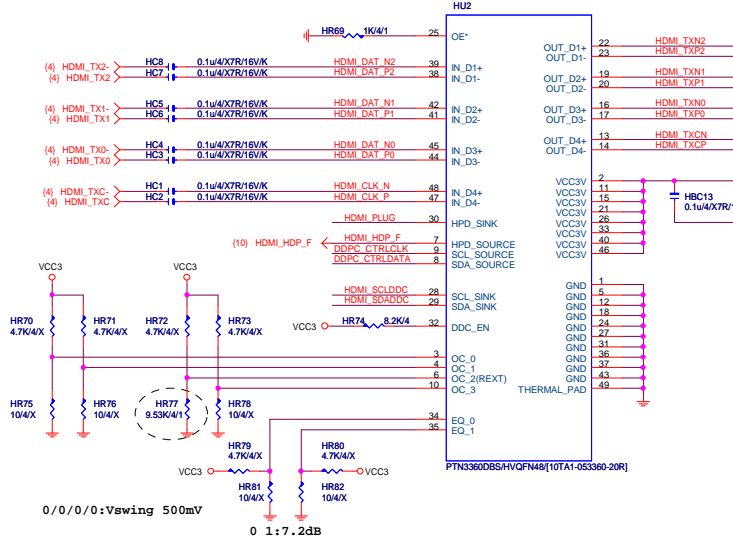




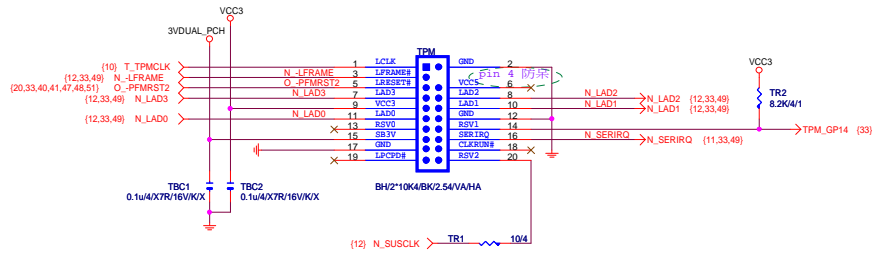
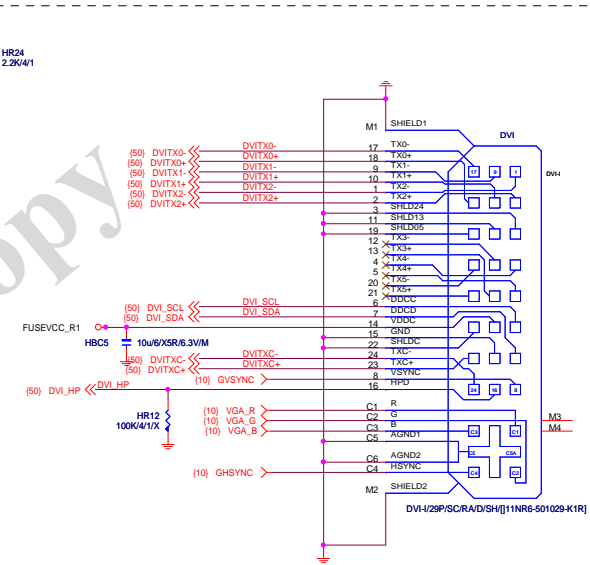
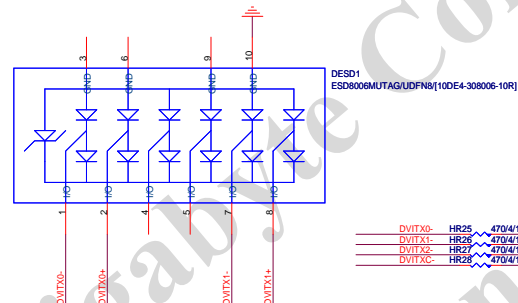
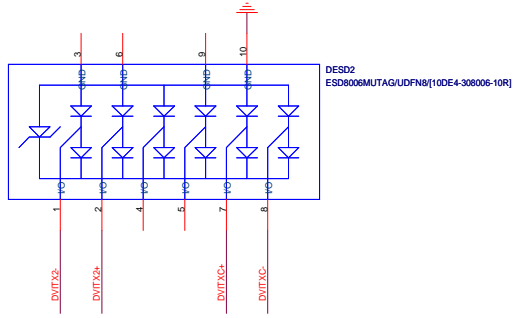
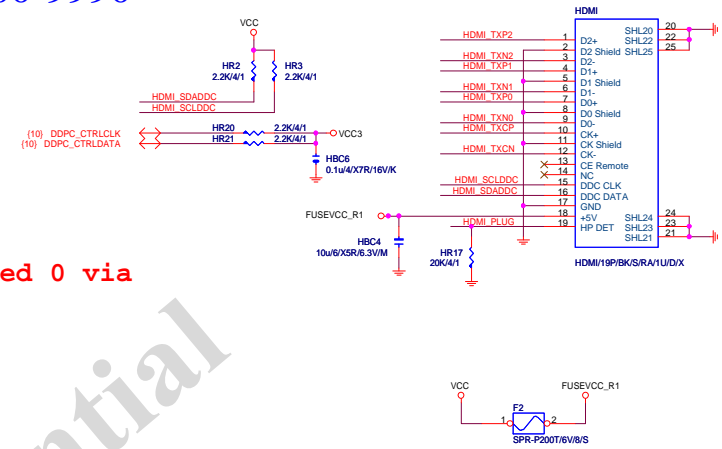


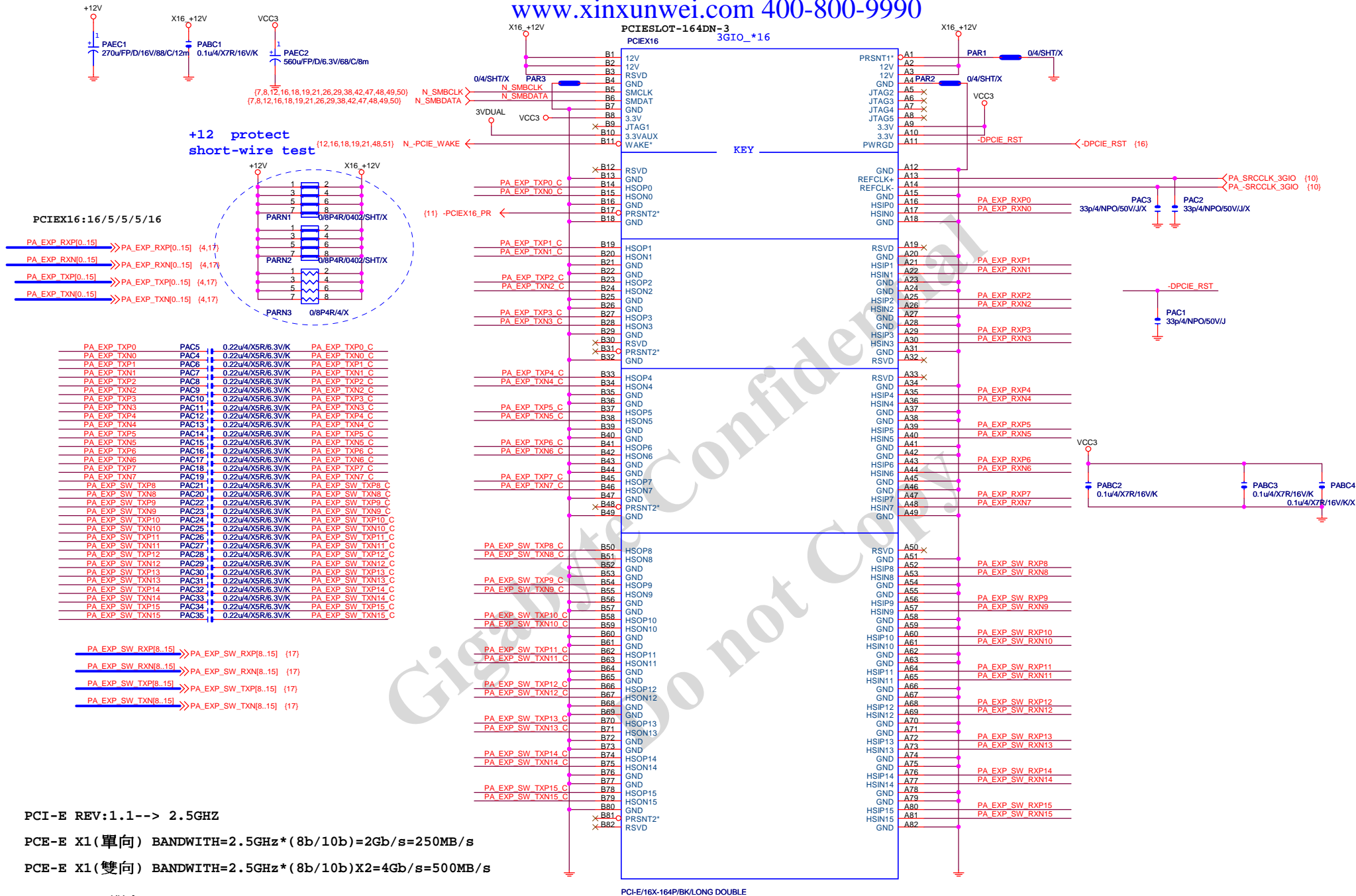
Title			
PCH GPIO , CTRL , AUDIO			
Size	Document Number	Rev	
Custom	GA-Z87X-UD5 TH	1.1	
Date:	Monday, July 22, 2013	Sheet	12 of 56





HU2 to HDMI Conn need 0 via





PCI-E REV:1.1--> 2.5GHZ

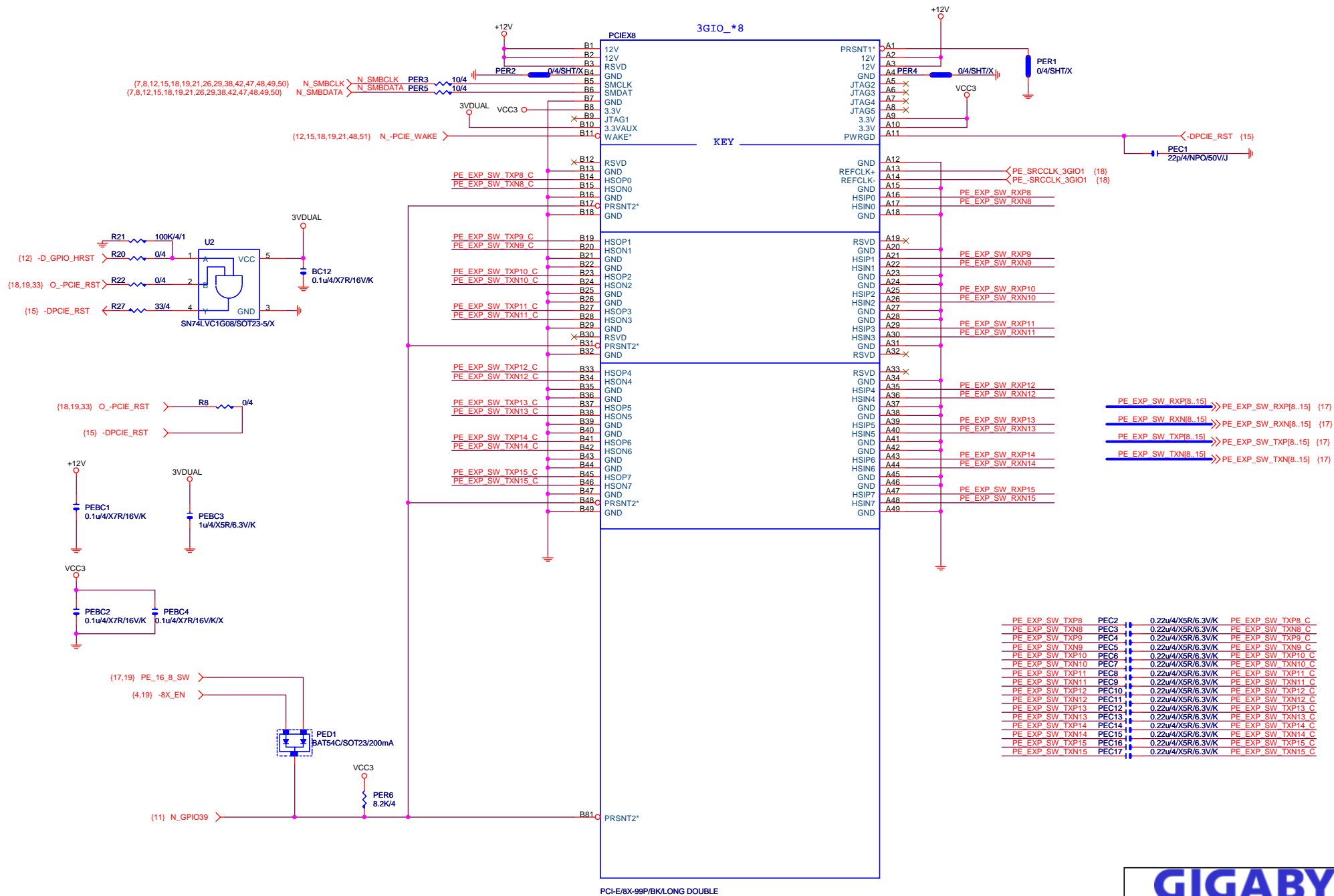
PCE-E X1(單向) BANDWIDTH=2.5GHz*(8b/10b)=2Gb/s=250MB/s

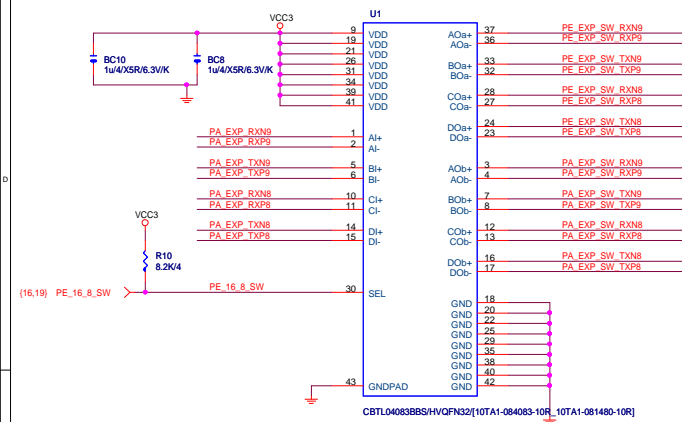
PCE-E X1(雙向) BANDWIDTH=2.5GHz*(8b/10b)X2=4Gb/s=500MB/s

PCE-E X16(單向) BANDWIDTH=2.5GHz*(8b/10b)X16=32Gb/s=4GB/s

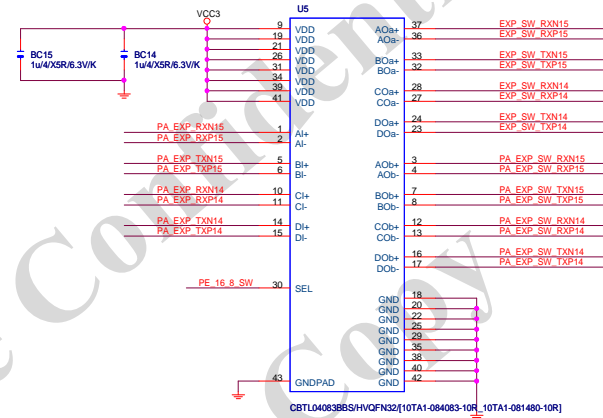
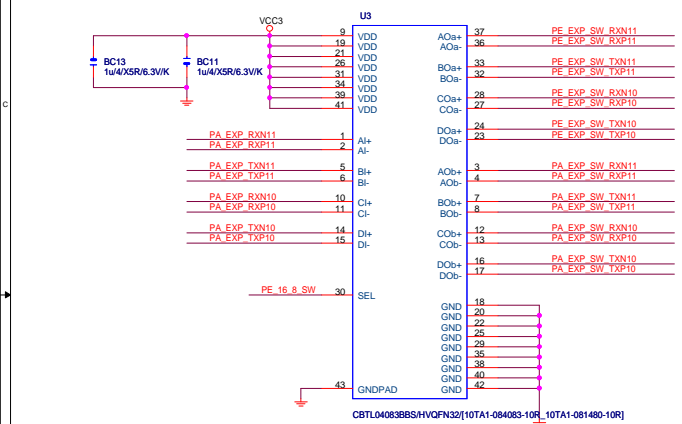
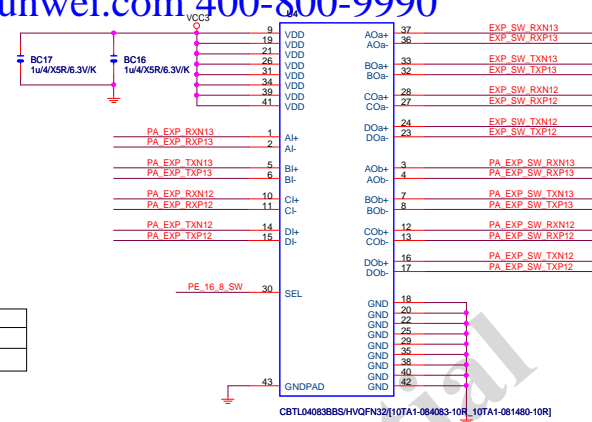
PCE-E X16(雙向) BANDWIDTH=2.5GHz*(8b/10b)X16X2=64Gb/s=8GB/s

PCI-E REV:2.0--> 5GHZ





Function	SEL
xI--> x0a	L
xI--> x0b	H



PA_EXP_RXP0..15 >>> PA_EXP_RXP0..15 (4,15)

PA_EXP_RXN0..15 >>> PA_EXP_RXN0..15 (4,15)

PA_EXP_TXP0..15 >>> PA_EXP_TXP0..15 (4,15)

PA_EXP_TXN0..15 >>> PA_EXP_TXN0..15 (4,15)

PA_EXP_SW_RXP8..15 >>> PA_EXP_SW_RXP8..15 (15)

PA_EXP_SW_RXN8..15 >>> PA_EXP_SW_RXN8..15 (15)

PA_EXP_SW_TXP8..15 >>> PA_EXP_SW_TXP8..15 (15)

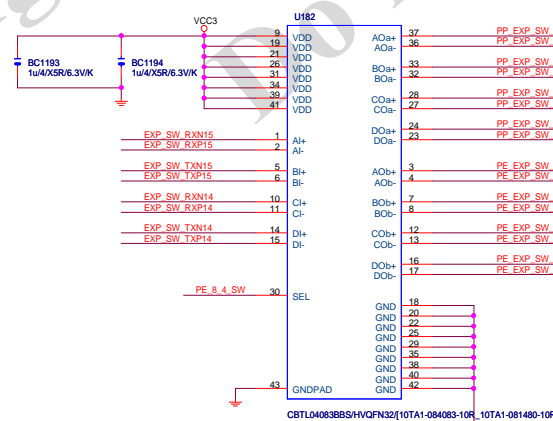
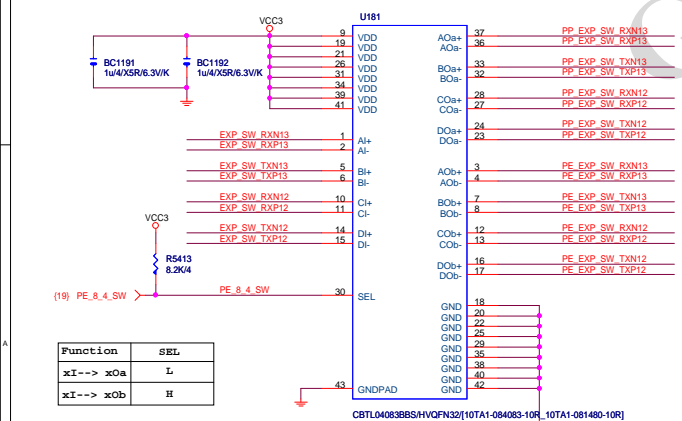
PA_EXP_SW_TXN8..15 >>> PA_EXP_SW_TXN8..15 (15)

PE_EXP_SW_RXP8..15 >>> PE_EXP_SW_RXP8..15 (16)

PE_EXP_SW_RXN8..15 >>> PE_EXP_SW_RXN8..15 (16)

PE_EXP_SW_TXP8..15 >>> PE_EXP_SW_TXP8..15 (16)

PE_EXP_SW_TXN8..15 >>> PE_EXP_SW_TXN8..15 (16)



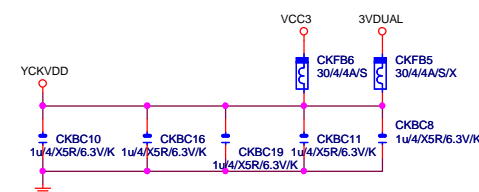
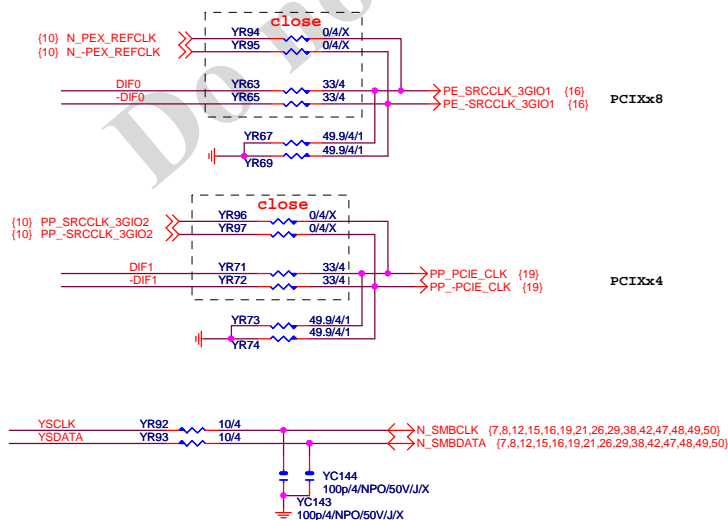
PP_EXP_SW_RXP12..15 >>> PP_EXP_SW_RXP12..15 (19)

PP_EXP_SW_RXN12..15 >>> PP_EXP_SW_RXN12..15 (19)

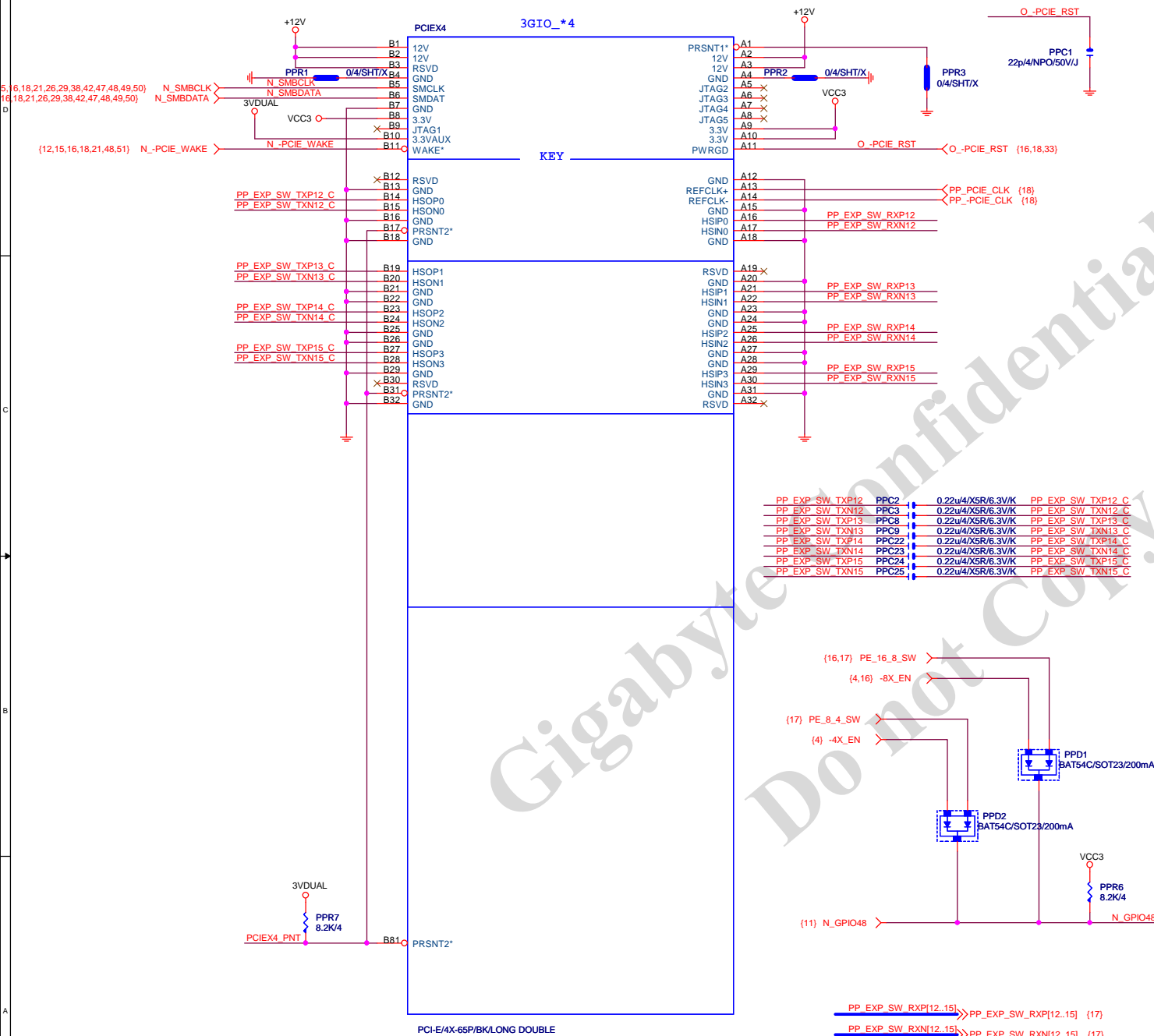
PP_EXP_SW_TXP12..15 >>> PP_EXP_SW_TXP12..15 (19)

PP_EXP_SW_TXN12..15 >>> PP_EXP_SW_TXN12..15 (19)

Function	SEL
xI--> x0a	L
xI--> x0b	H

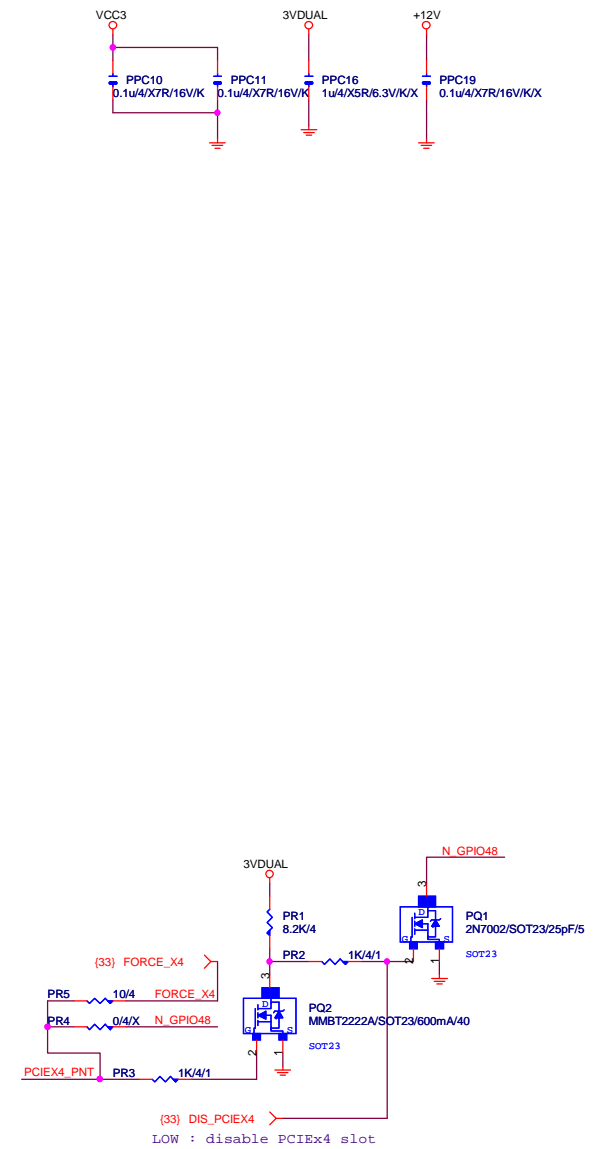


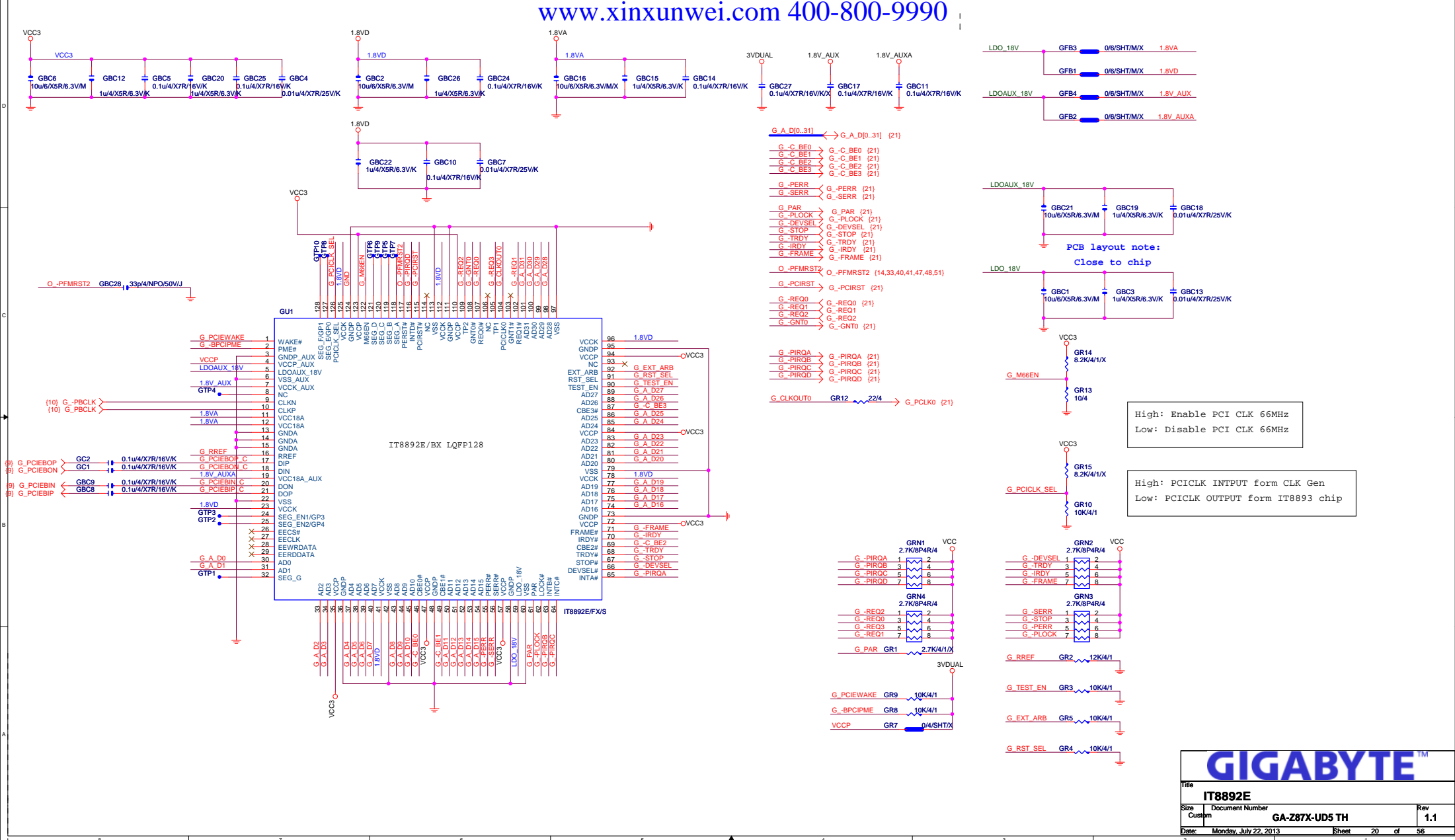
PCIE*4

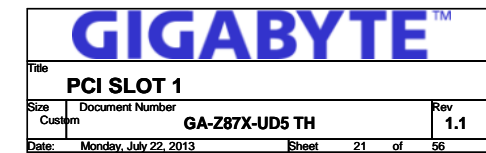


PCI-E/4X-65P/BK/LONG DOUBLE

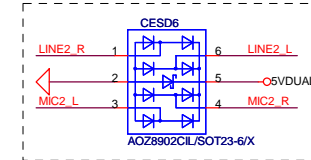
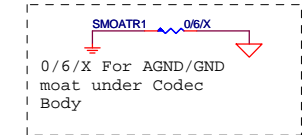
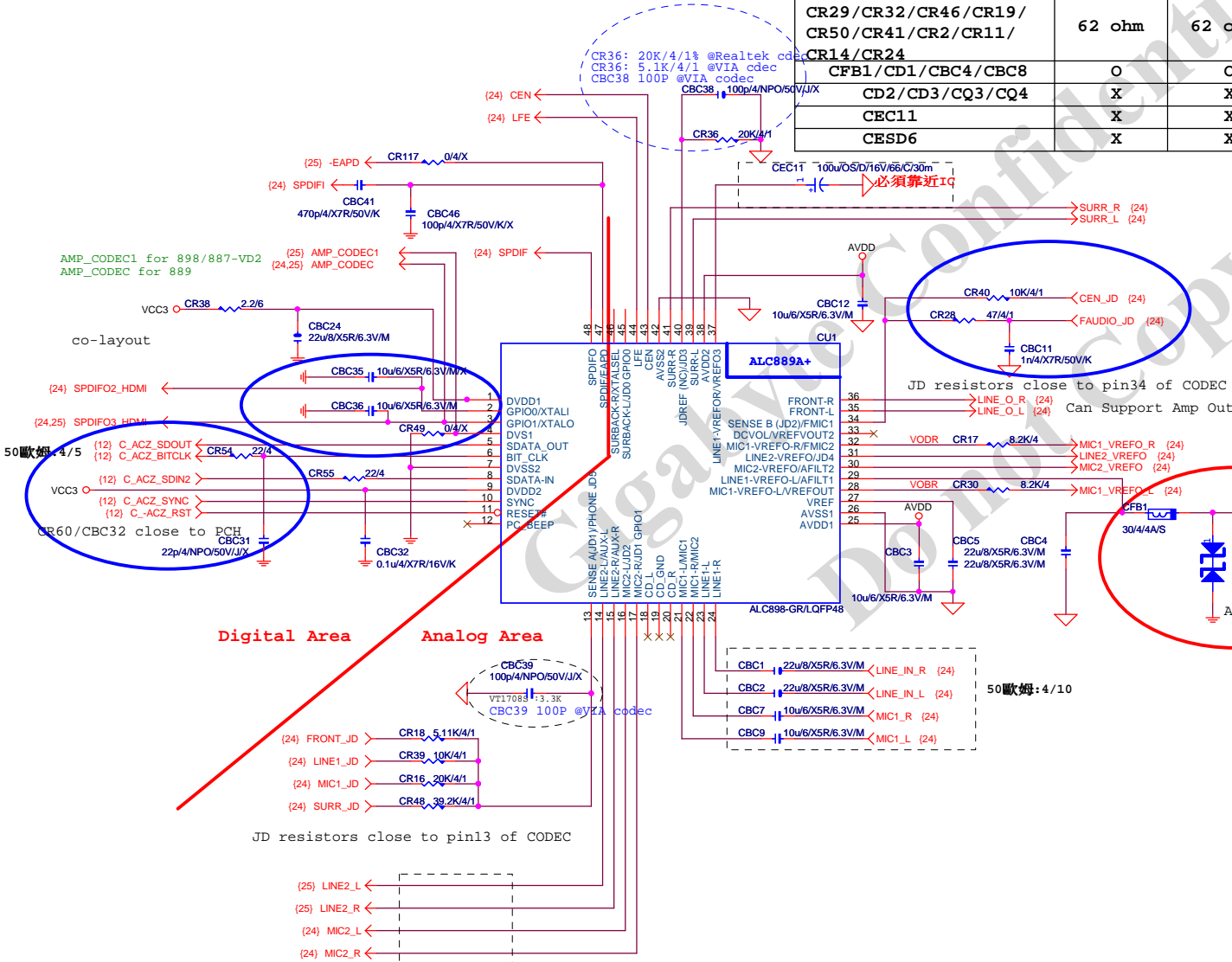
PP_EXP_SW_RXP[12..15]>>PP_EXP_SW_RXP[12..15] (17)
 PP_EXP_SW_RXN[12..15]>>PP_EXP_SW_RXN[12..15] (17)
 PP_EXP_SW_TXP[12..15]>>PP_EXP_SW_TXP[12..15] (17)
 PP_EXP_SW_TXN[12..15]>>PP_EXP_SW_TXN[12..15] (17)



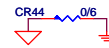




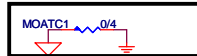
	ALC662	ALC887-VD2	ALC889	VT1708S-CD	VT1708S-CE	VT2021	ALC898/ALC892
CR49	X	X	O	O	X	O	X
CBC36	O	O	X	X	O	X	O
CR28/CBC11	47ohm+1nF	47ohm+1nF	47ohm+1nF	22ohm+100P	22ohm+100P	47ohm+1nF	47ohm+1nF
CR52	X	O	O	O	O	O	O
CR57	O	X	X	X	X	X	X
CBC1/CBC2	10uF/X5R	10uF/X5R	22uF/X5R	10uF/X5R	10uF/X5R	10uF/X5R	22uF/X5R
CR36	20K/4/1	20K/4/1	20K/4/1	5.1K/4/1	20K/4/1	5.1K/4/1	20K/4/1
CR17/CR30/ CR25/CR15/CR12/CR3/	8.2K/4	8.2K/4	8.2K/4	3.3K/4/1	3.3K/4/1	3.3K/4/1	8.2K/4
CBC38/CBC39	X	X	X	100P/4	100P/4	X	X
CR10/CR8/CR20/CR45/ CR42/CR51/CR27/CR26	22K/4	22K/4	22K/4	10K/4/1	10K/4/1	10K/4/1	22K/4
CR7/CR9/CR5/CR13/ CR29/CR32/CR46/CR19/ CR50/CR41/CR2/CR11/ CR14/CR24	62 ohm	62 ohm	62 ohm	75 ohm	75 ohm	75 ohm	62 ohm
CFB1/CD1/CBC4/CBC8	O	O	X	X	O	X	O
CD2/CD3/CQ3/CQ4	X	X	O	O	X	O	X
CEC11	X	X	X	X	X	X	O
CESD6	X	X	X	O	O	O	X



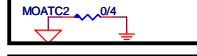
LINE-OUT



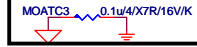
Audio jack --> USB



Near Audio jack left

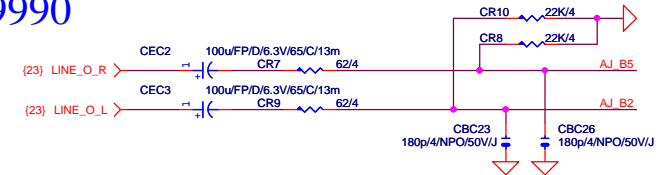


Codec --> Audio jack

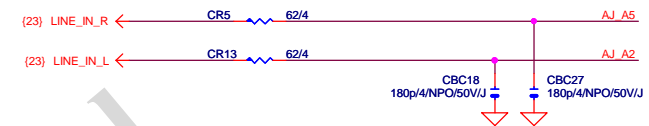


F_AUDIO

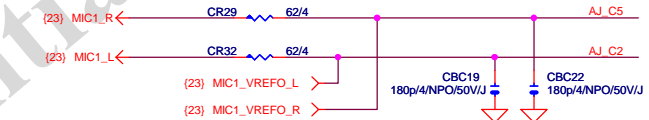
LINE-IN



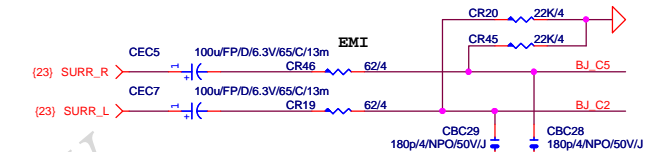
MIC-IN



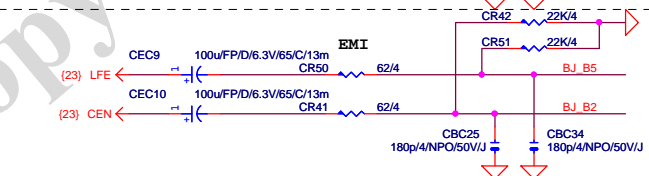
SURROUND



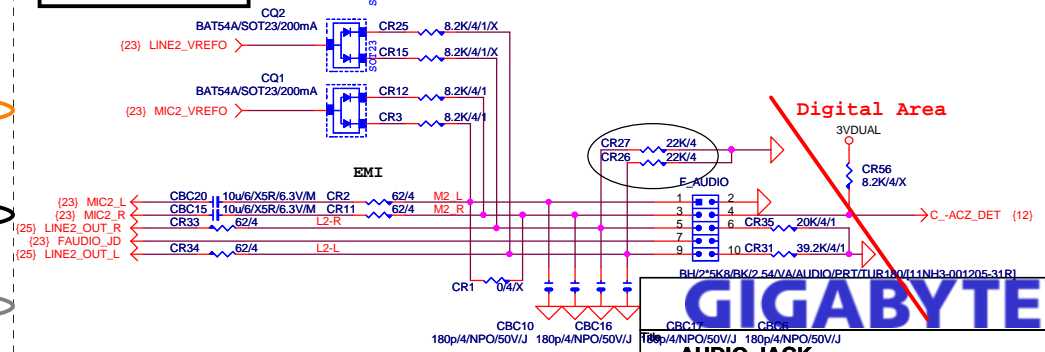
CEN/LFE



SURR BACK



AZALIA FRONT PANEL

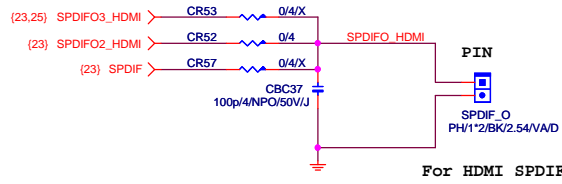
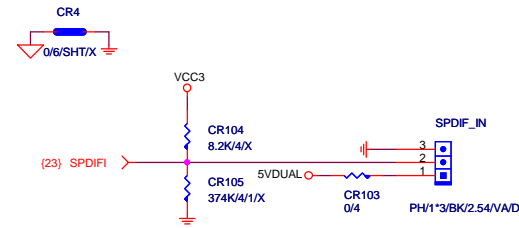


GIGABYTE

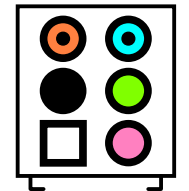
AUDIO JACK

Size: Custom Document Number: GA-Z87X-UD5 TH Rev: 1.1

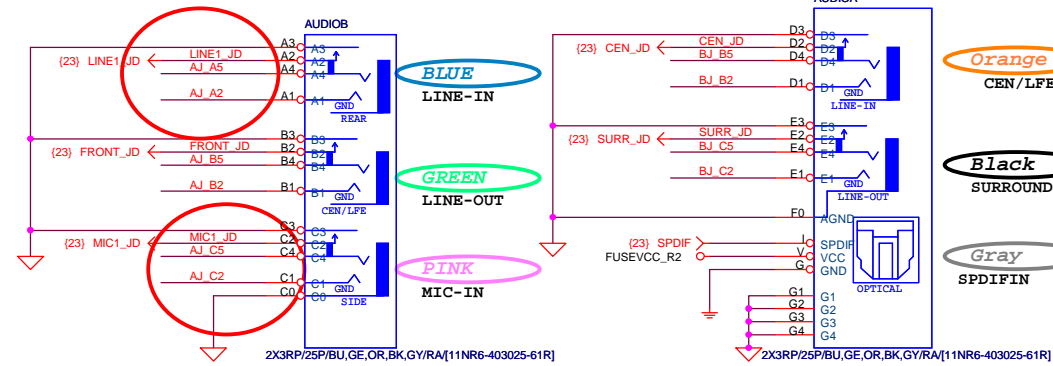
Date: Monday, July 22, 2013 Sheet: 24 of 56



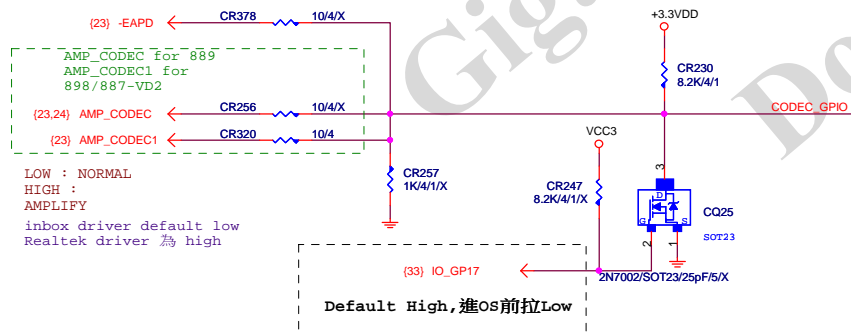
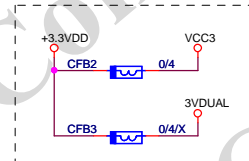
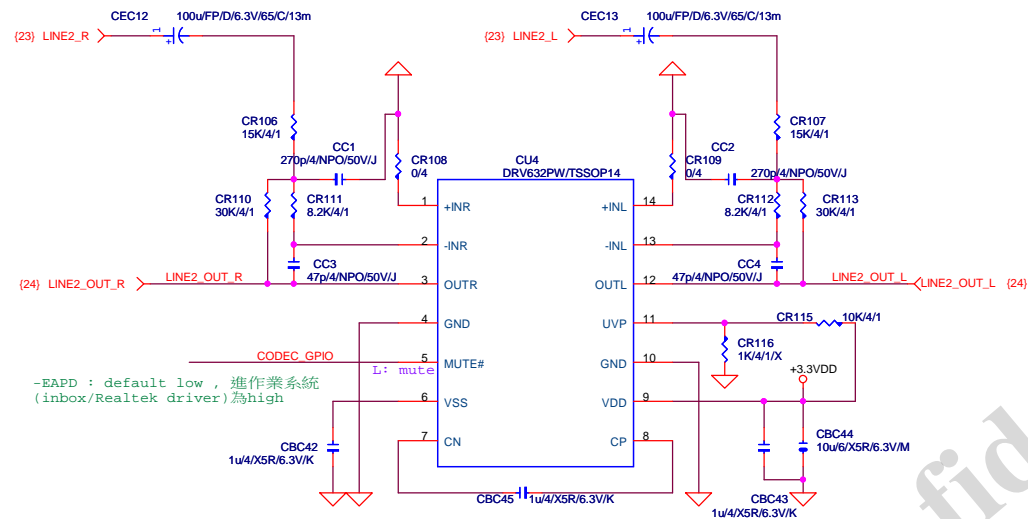
AZALIA JACK



11NR6-403025-61R

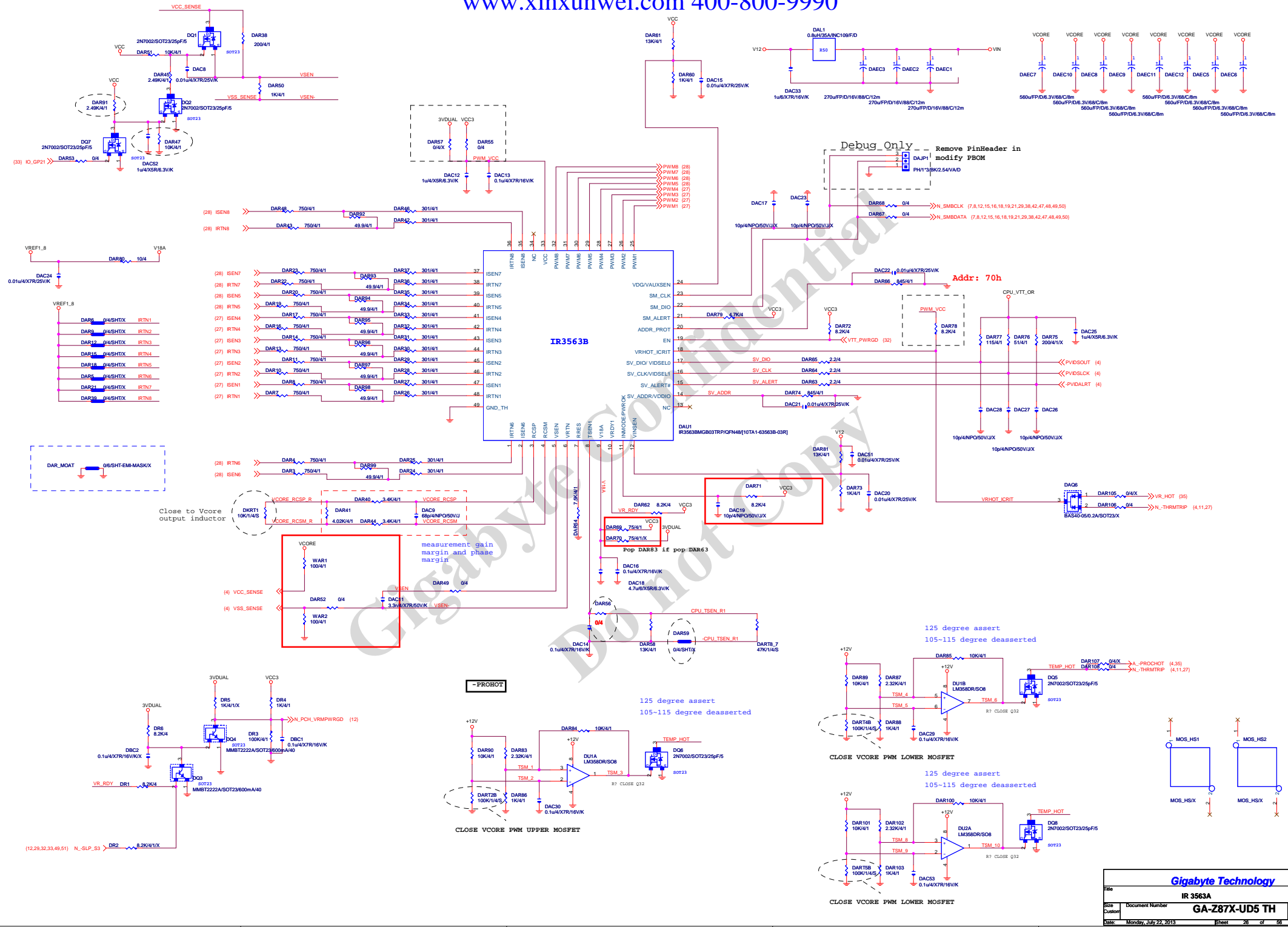


HEADPHONE

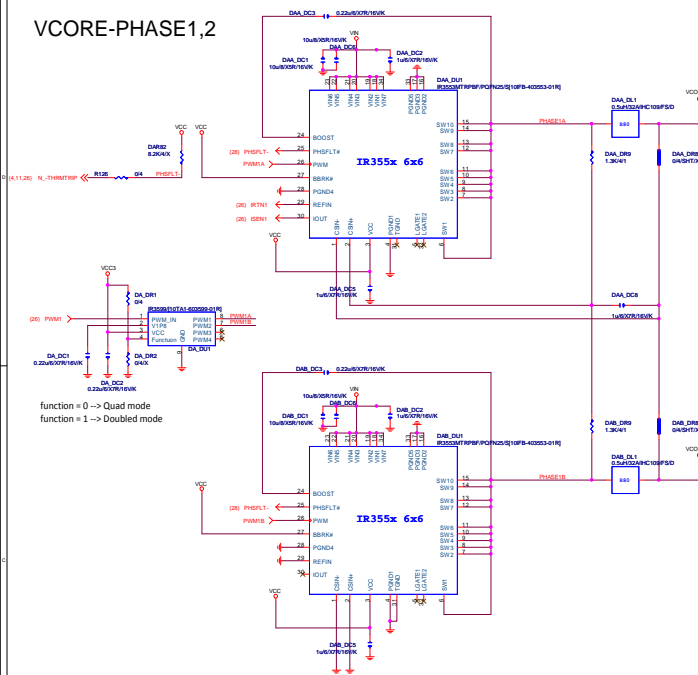


GIGABYTE™

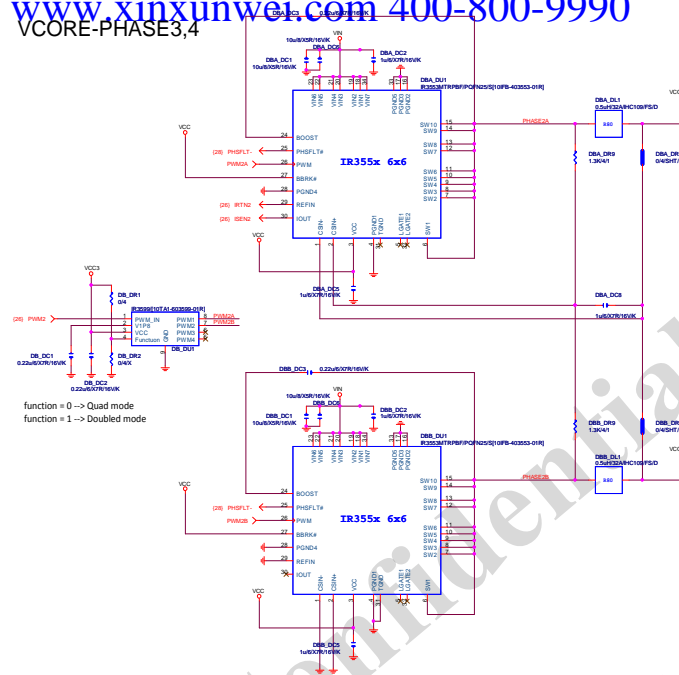
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Audio Amplifier		
Size	Document Number	Rev
Custom	GA-Z87X-UD5 TH	1.1
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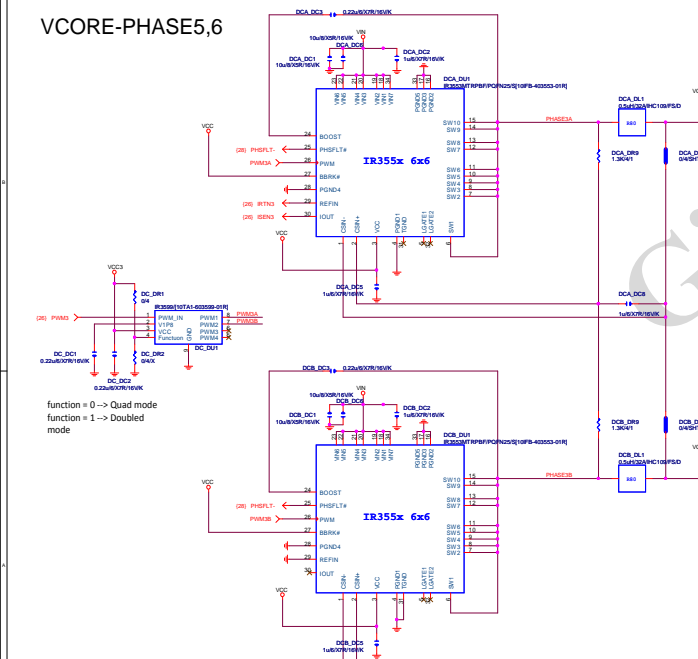
VCORE-PHASE1,2



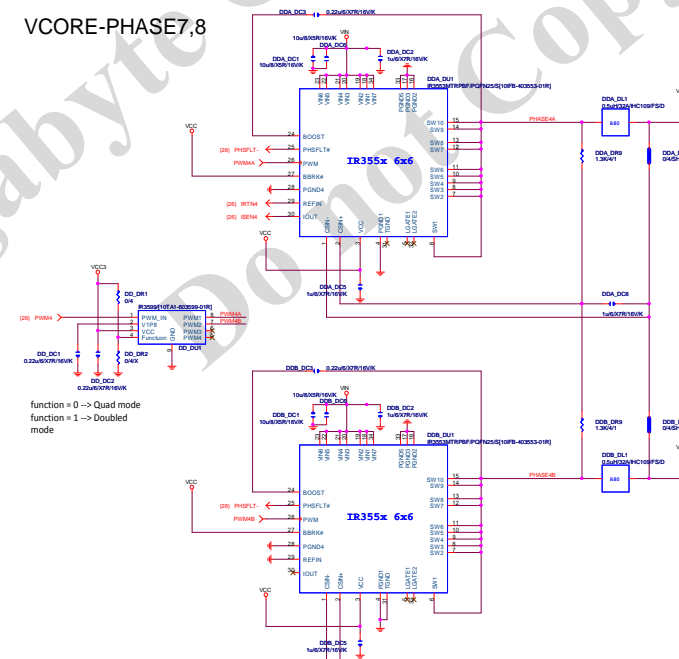
VCORE-PHASE3,4



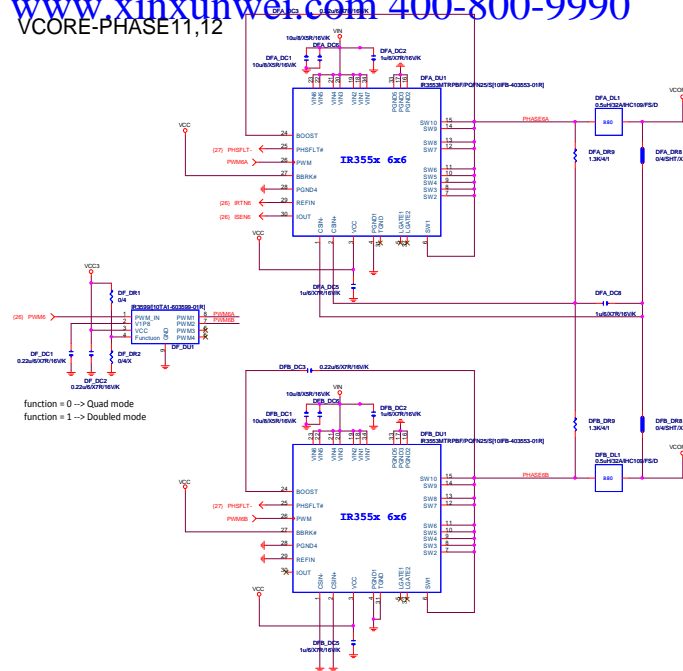
VCORE-PHASE5,6



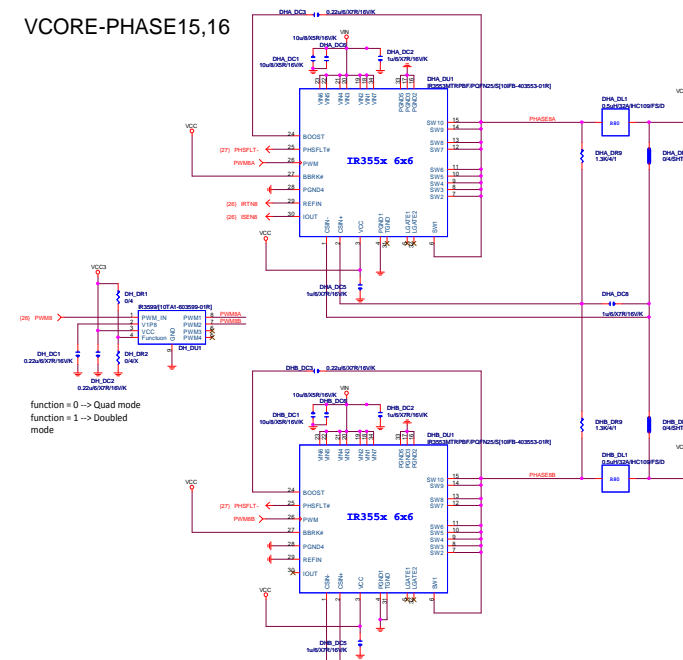
VCORE-PHASE7,8

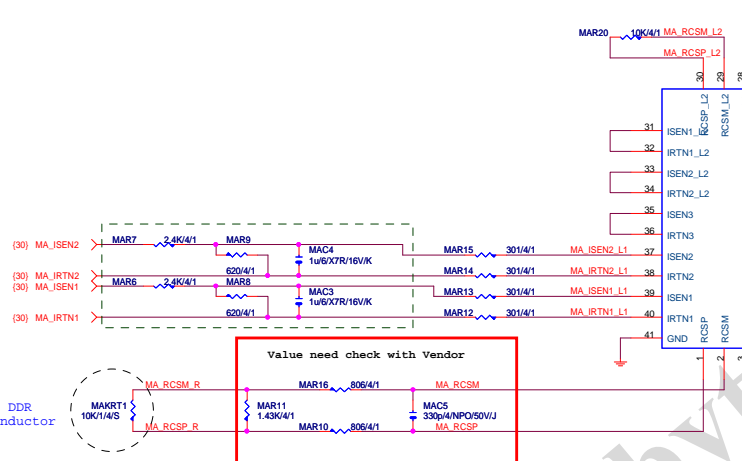
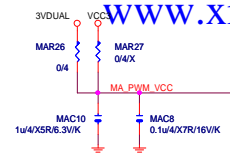


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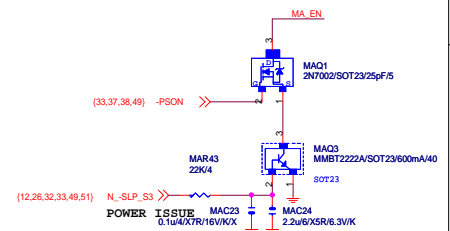
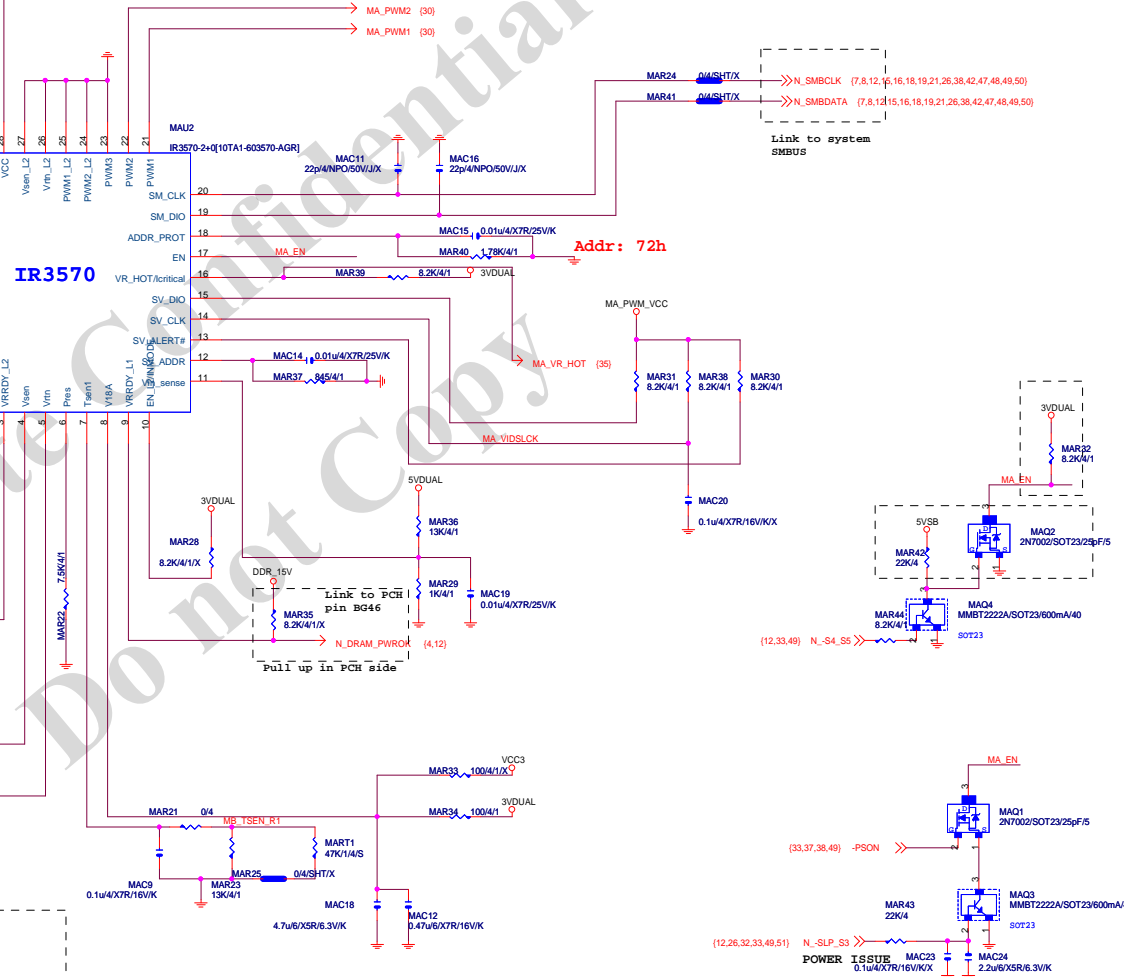
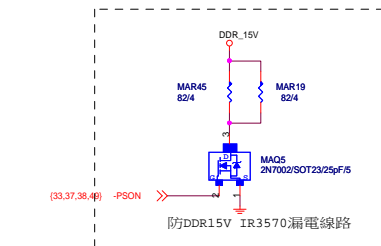
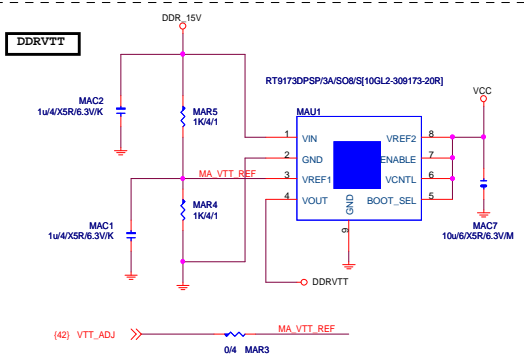
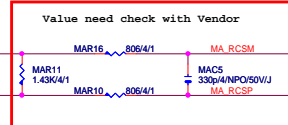


VCORE-PHASE15,16

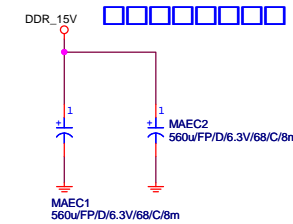
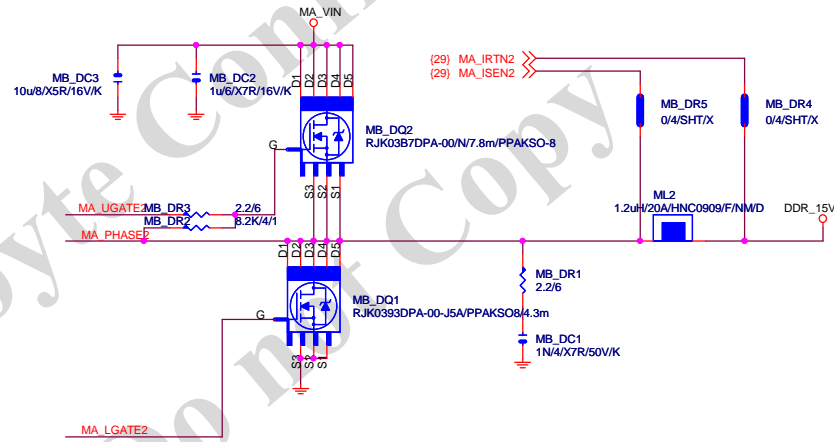
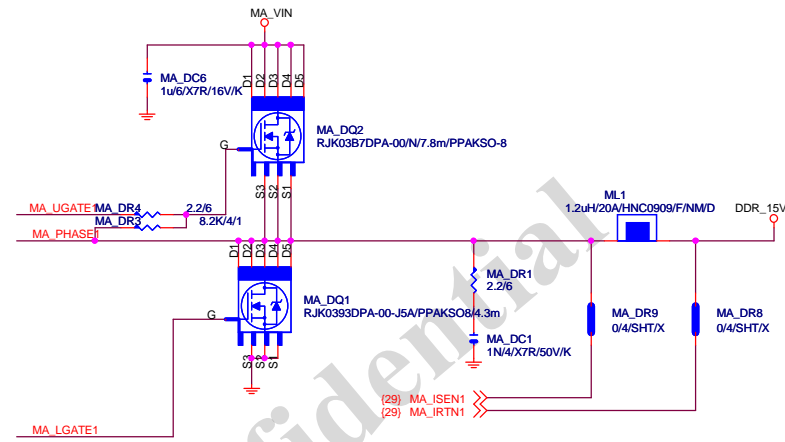
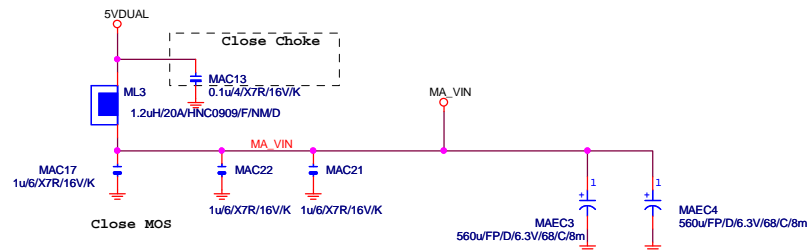
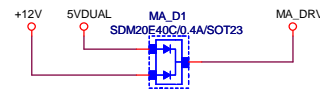
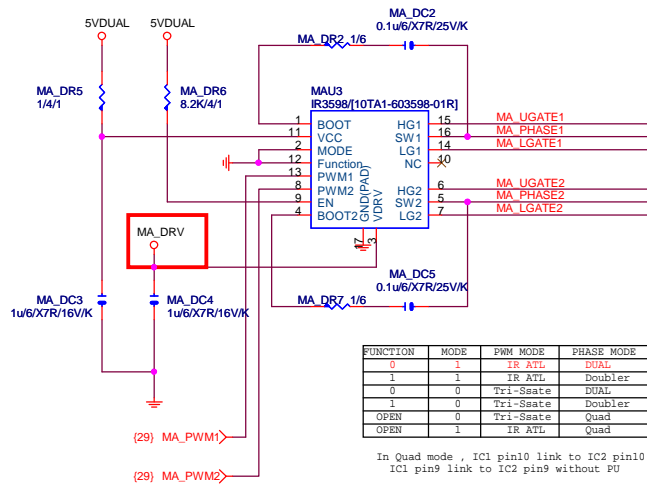




should be routed as
differential pair,
7mil width, 8mil
spacing

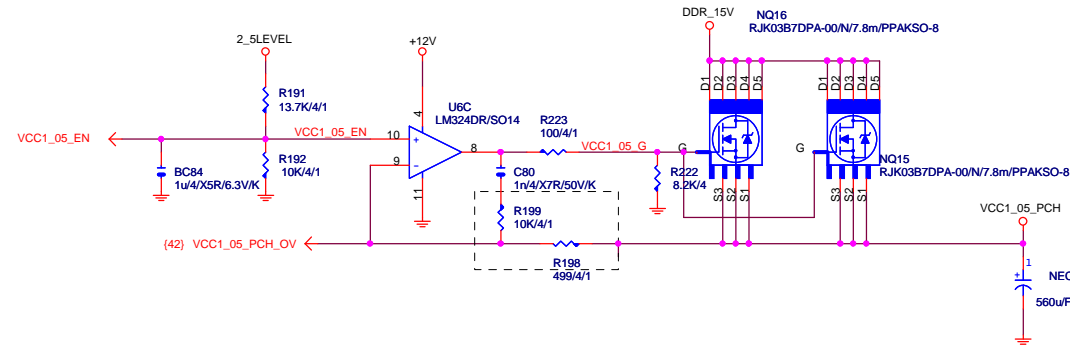


DDR_15V

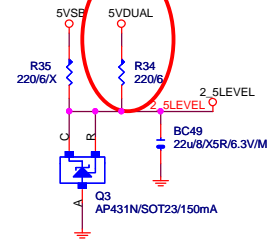




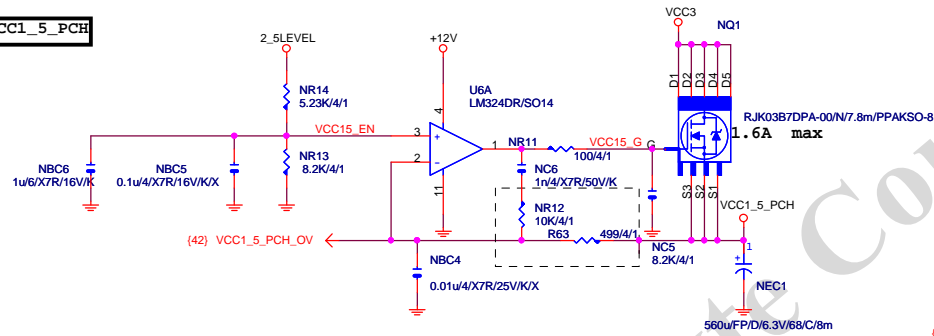
VCC1_05_PCH



ErP



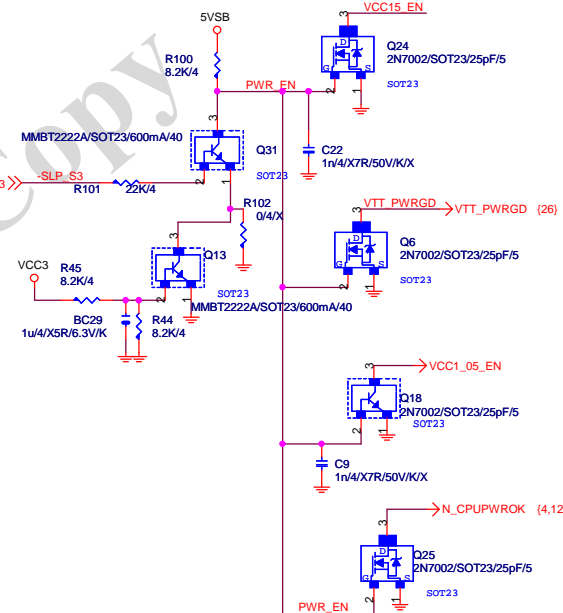
VCC1_5_PCH



Rise/Fall max 50us
Rise:20% - 80%
Fall :2V- 0.8V

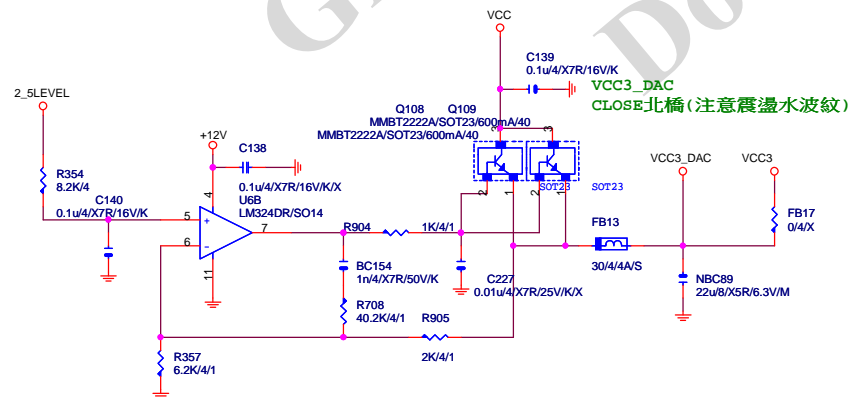
At least 10ms delay after 3VDUAL ready
Pop when PCH & SIO both use 3VDUAL-PCH

(12,26,29,33,49,51)



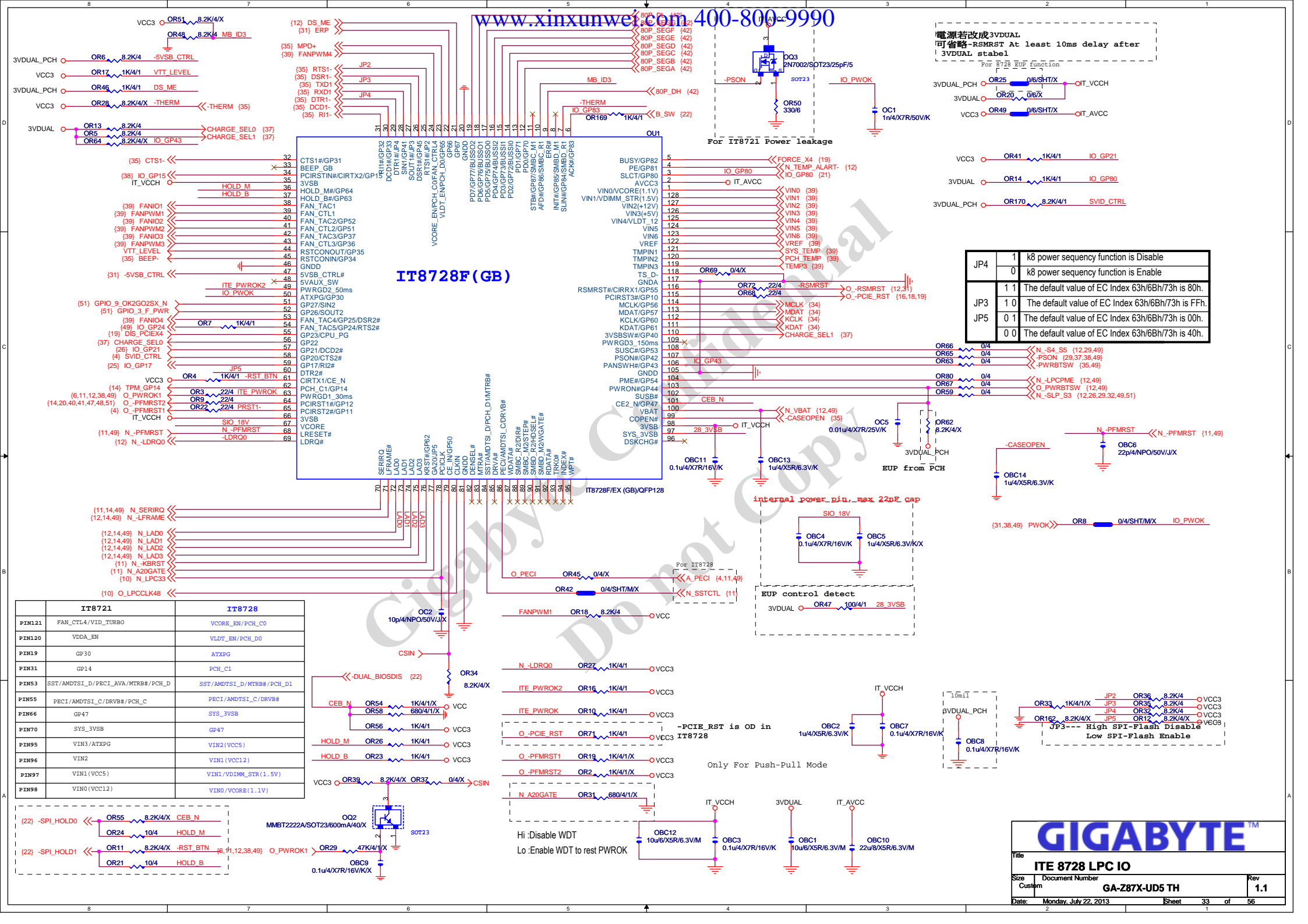
VCC3_DAC

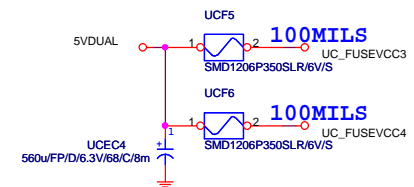
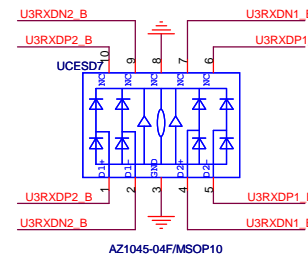
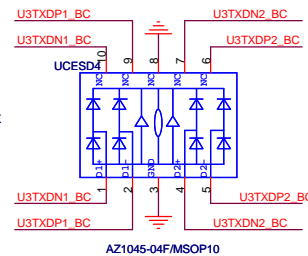
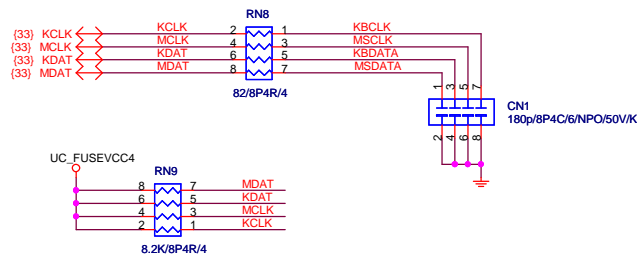
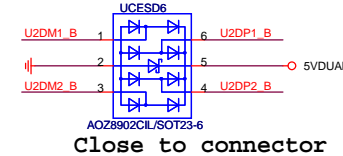
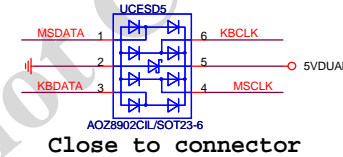
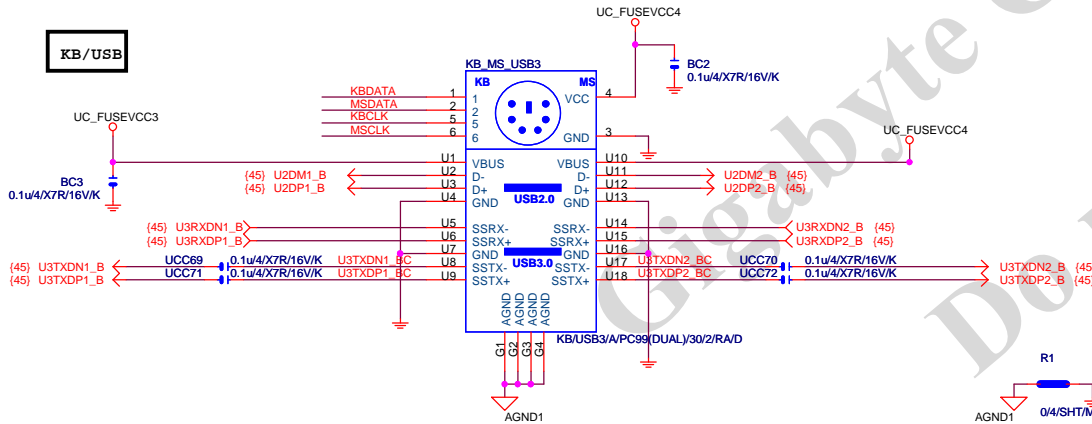
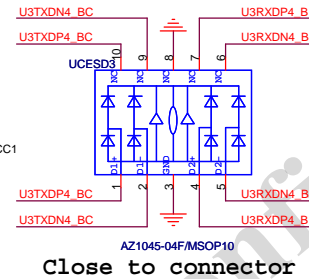
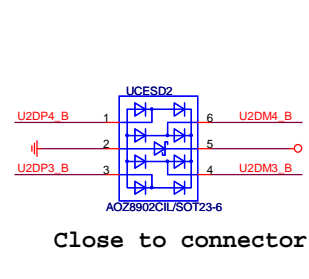
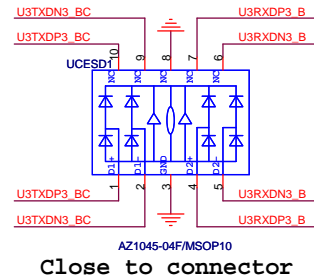
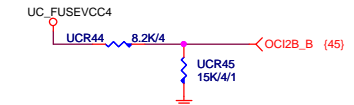
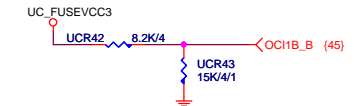
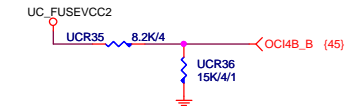
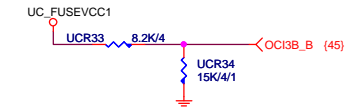
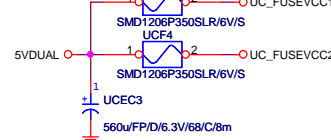
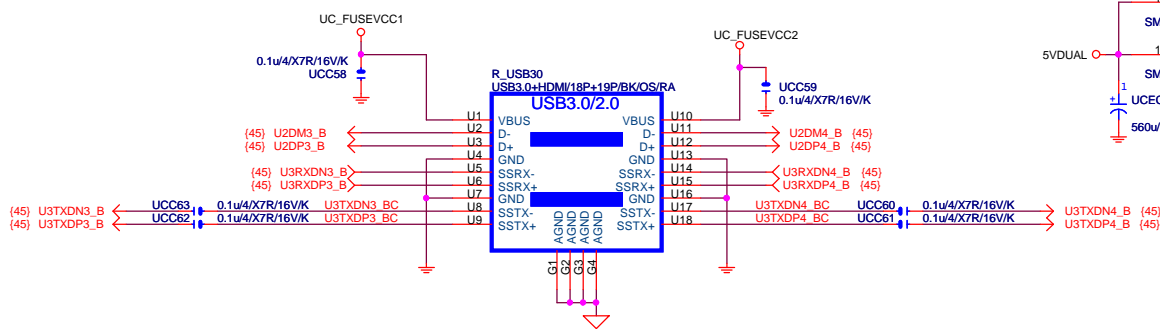
(3.3V/70mA+360uA)

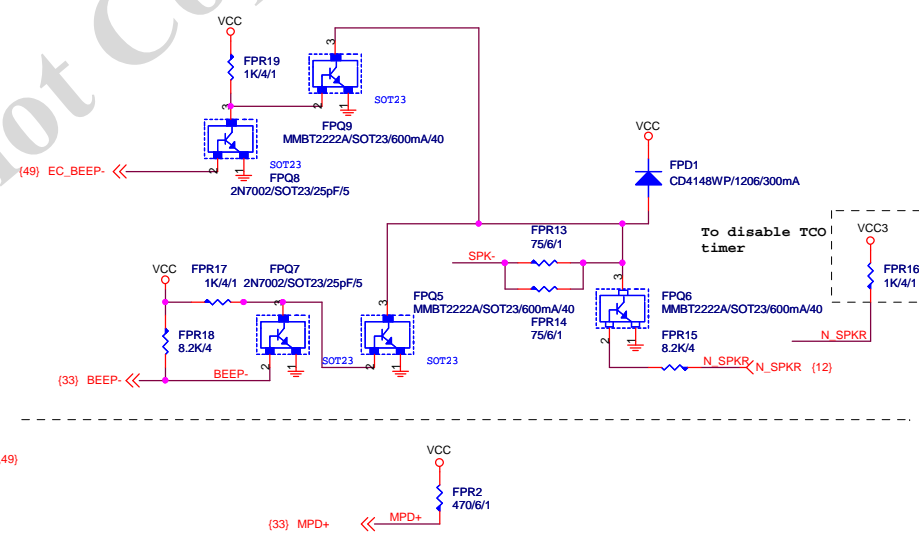
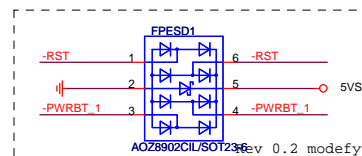
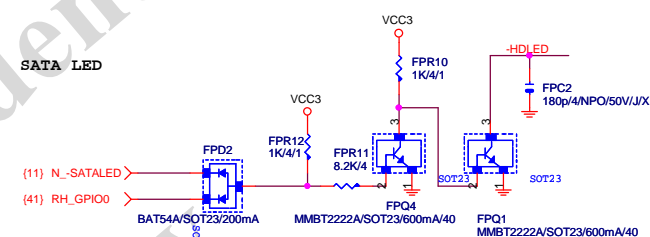
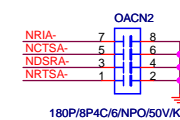


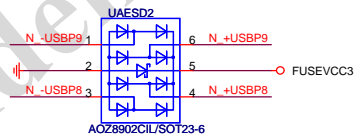
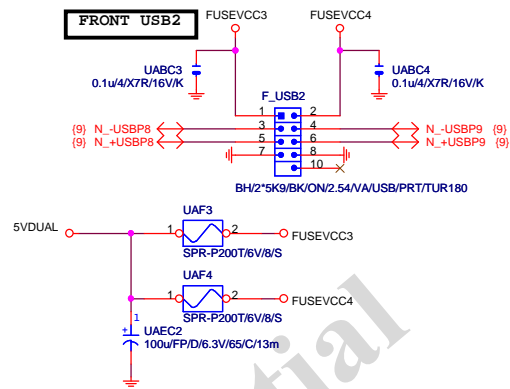
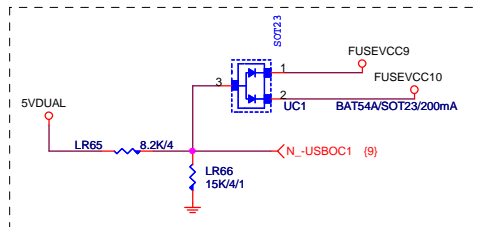
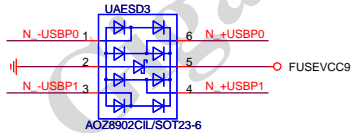
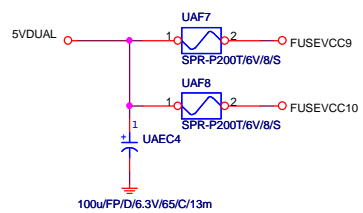
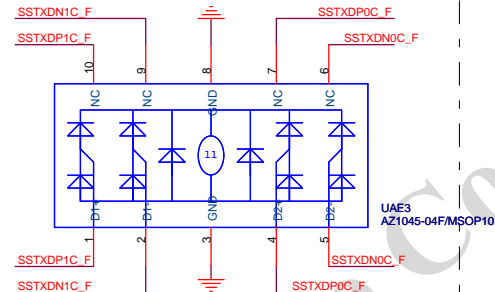
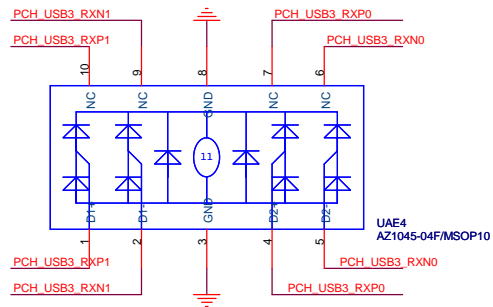
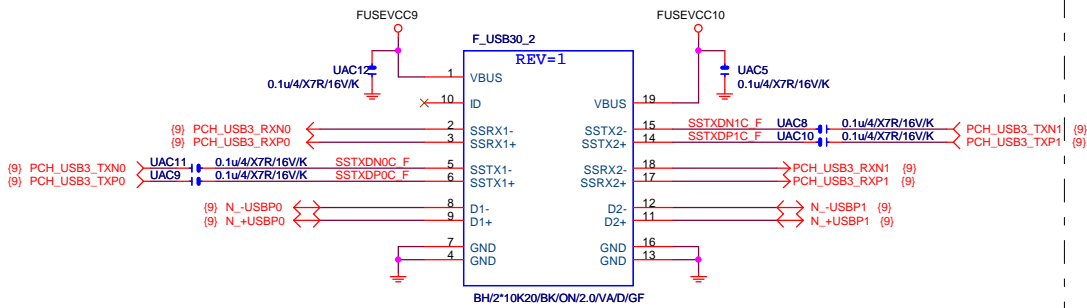
GIGABYTE™

Title			
VCC 1.05 PCH, VCC1.5 PCH, CC3 DAC			
Size	Document Number	Rev	
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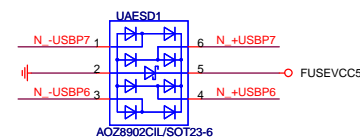
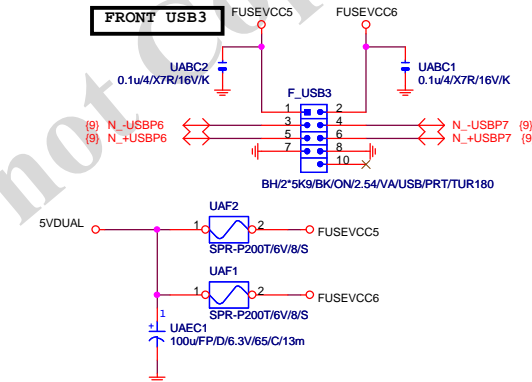




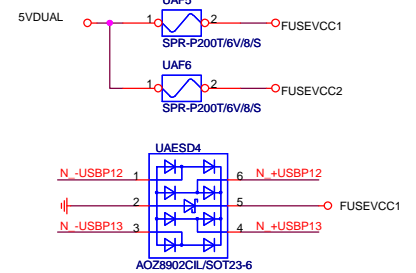
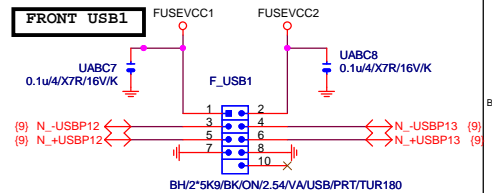
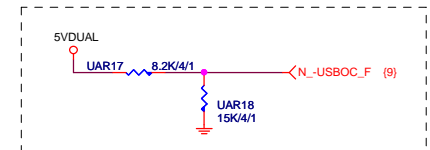
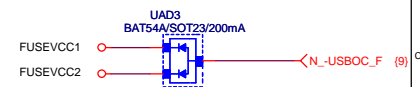
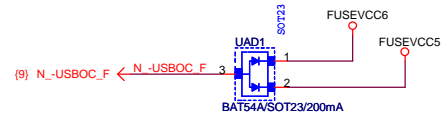
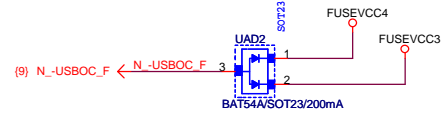
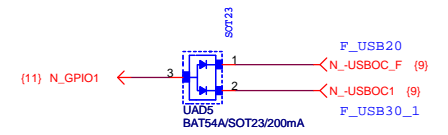


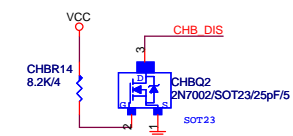
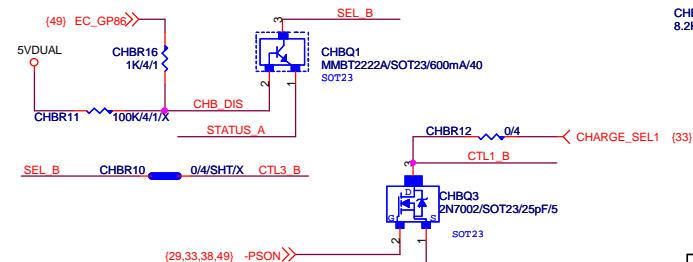
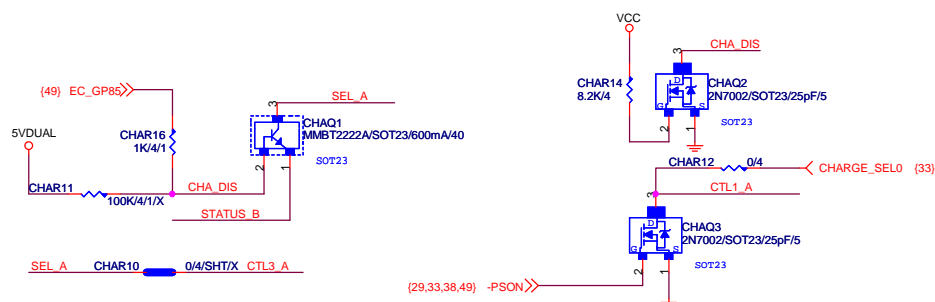
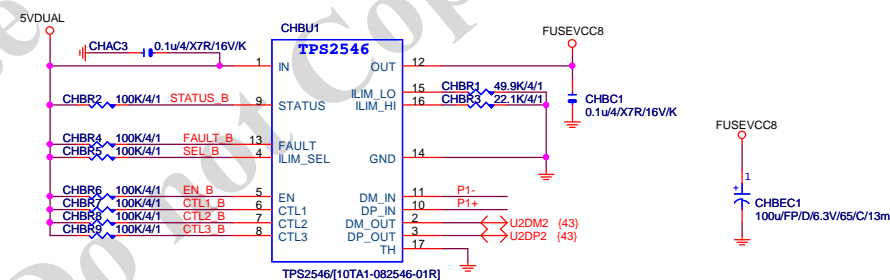
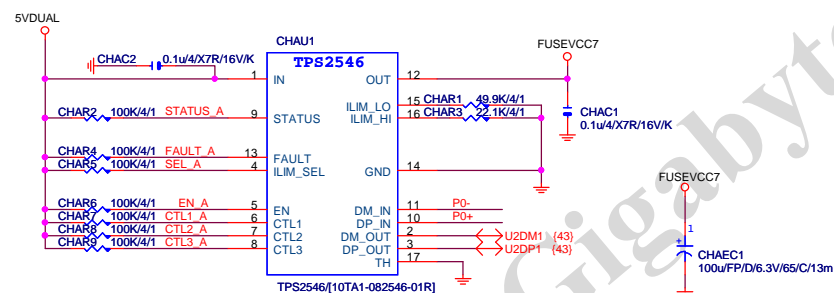
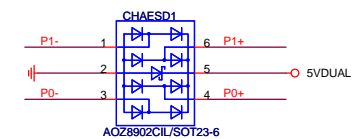
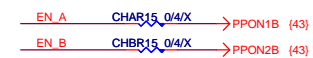
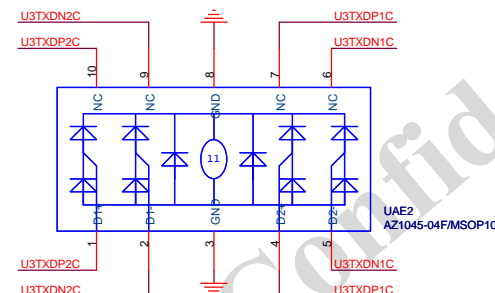
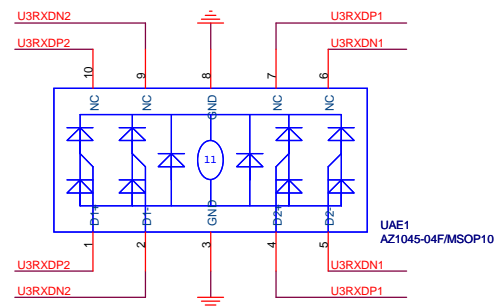
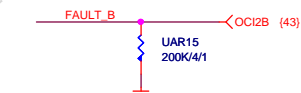
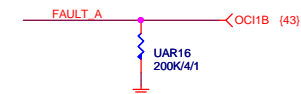
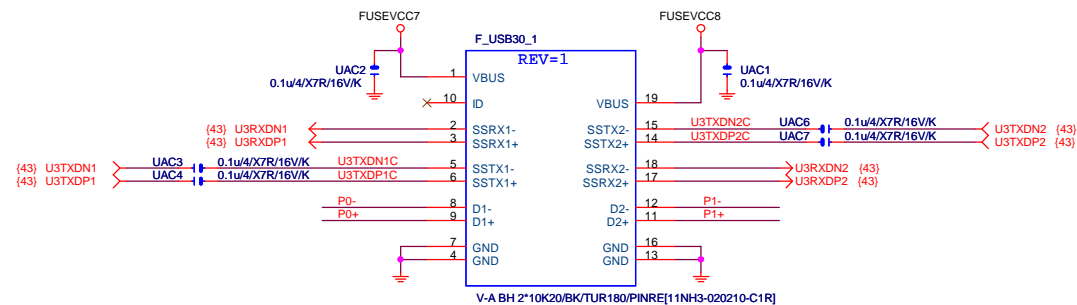


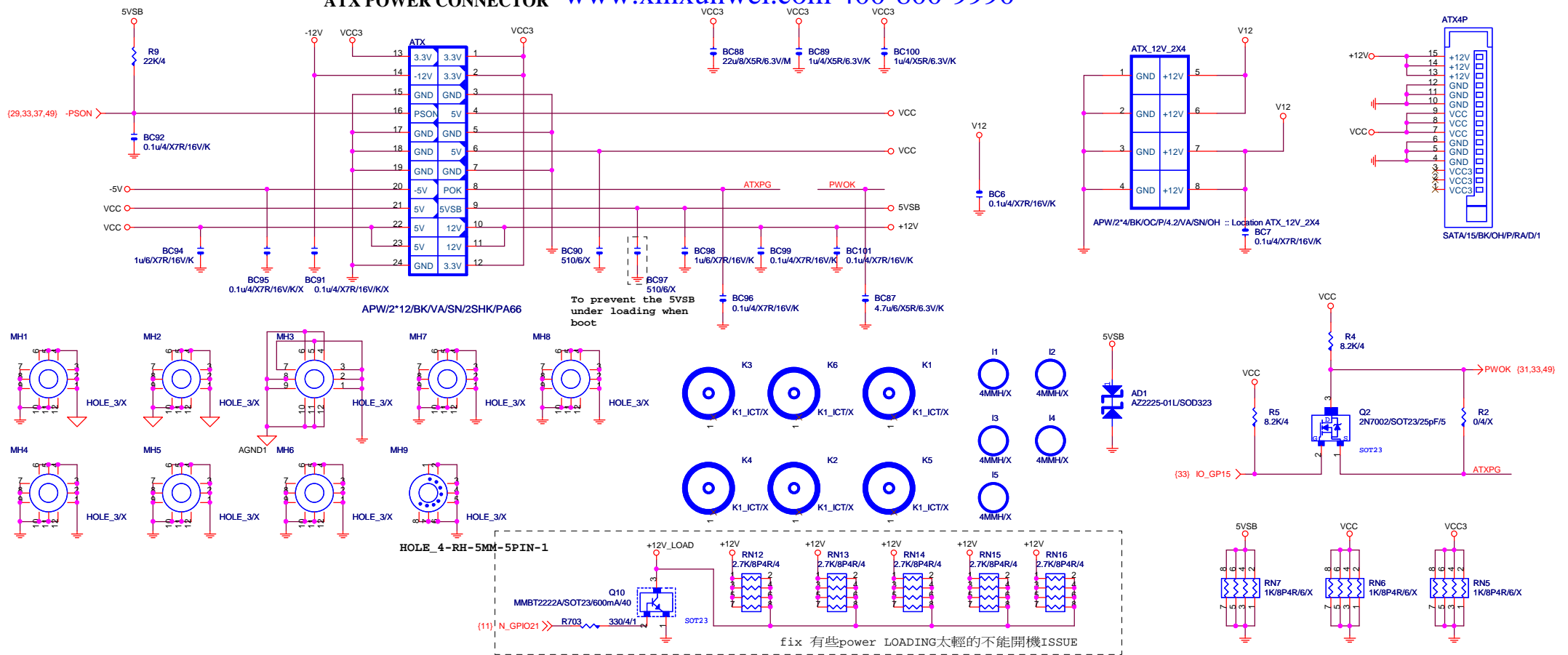
Close to connector



Close to connector



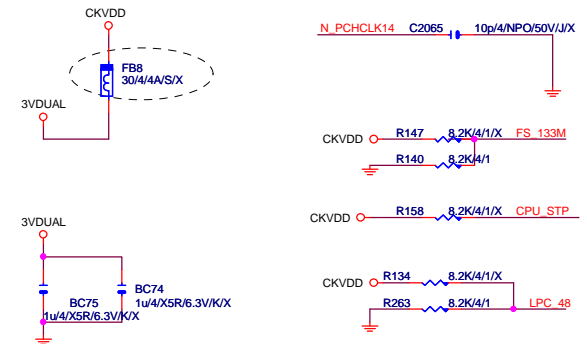
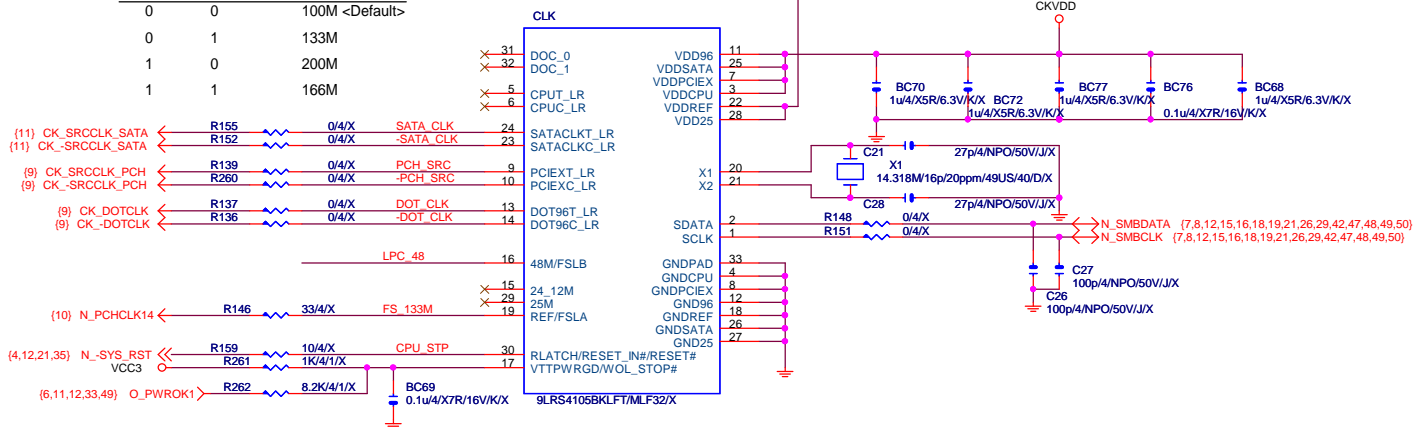




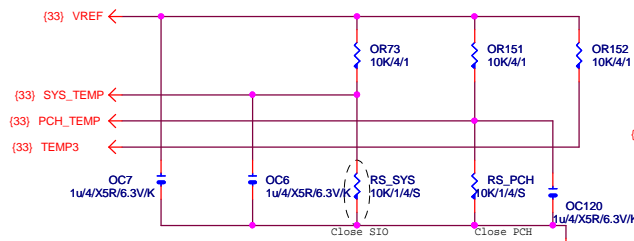
CLK GEN CK505

CPU Frequency Selection

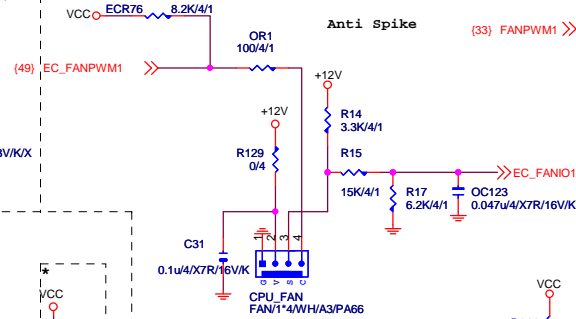
FSLB	FSLA	CPU
0	0	100M <Default>
0	1	133M
1	0	200M
1	1	166M



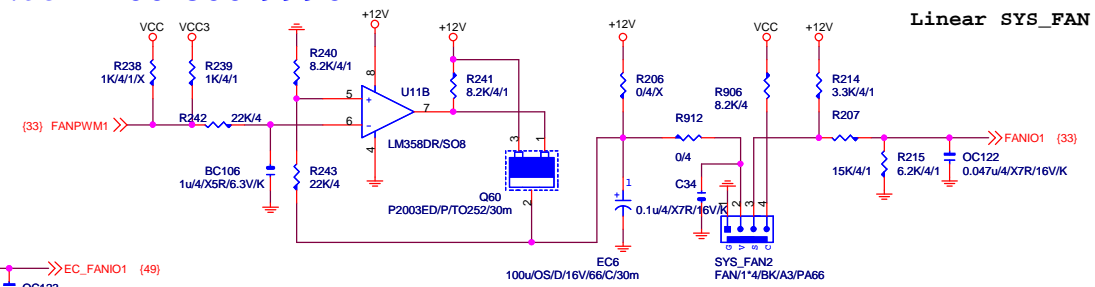
TEMP H/W MONITOR



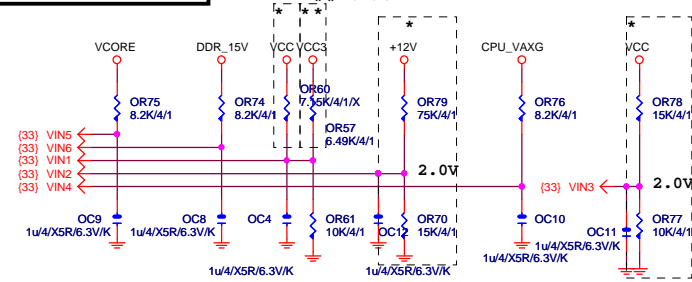
CPU SMART FAN



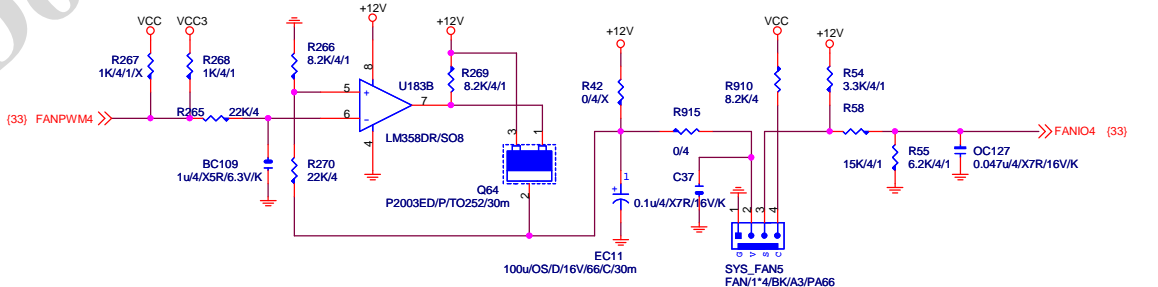
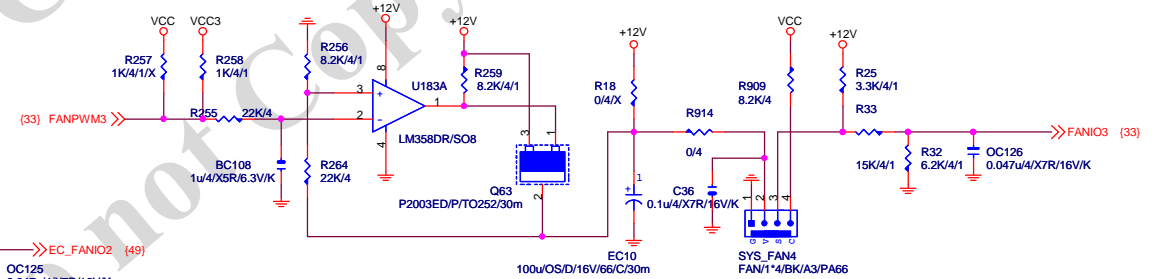
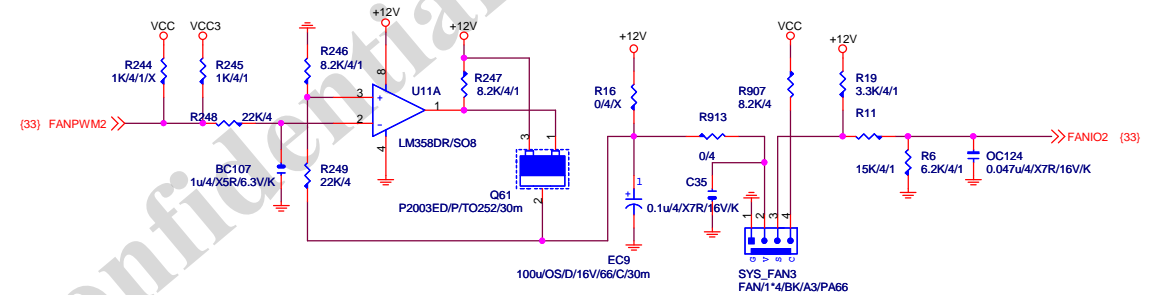
Linear SYS_FAN



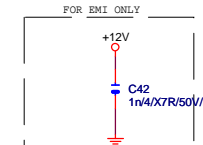
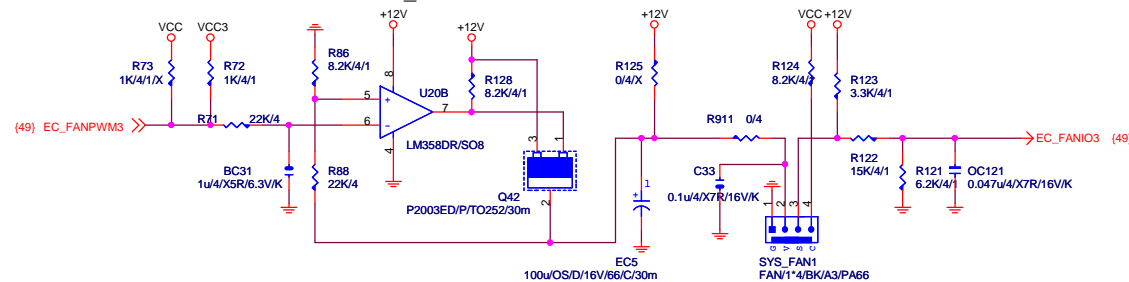
VOLTAGE-- H/W MONITOR

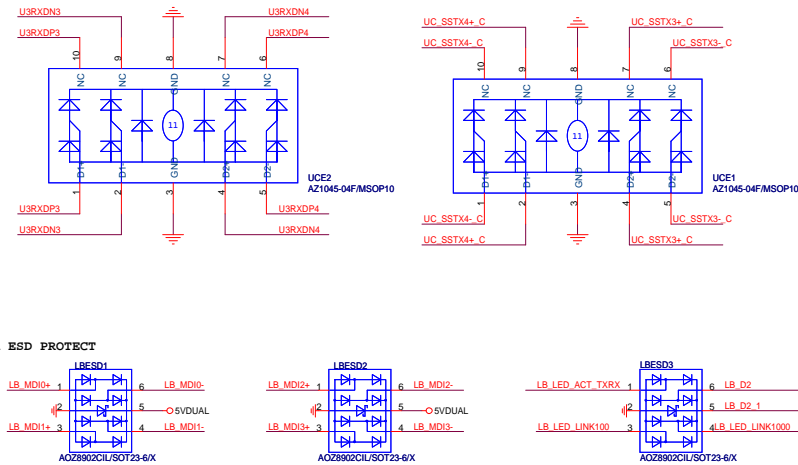
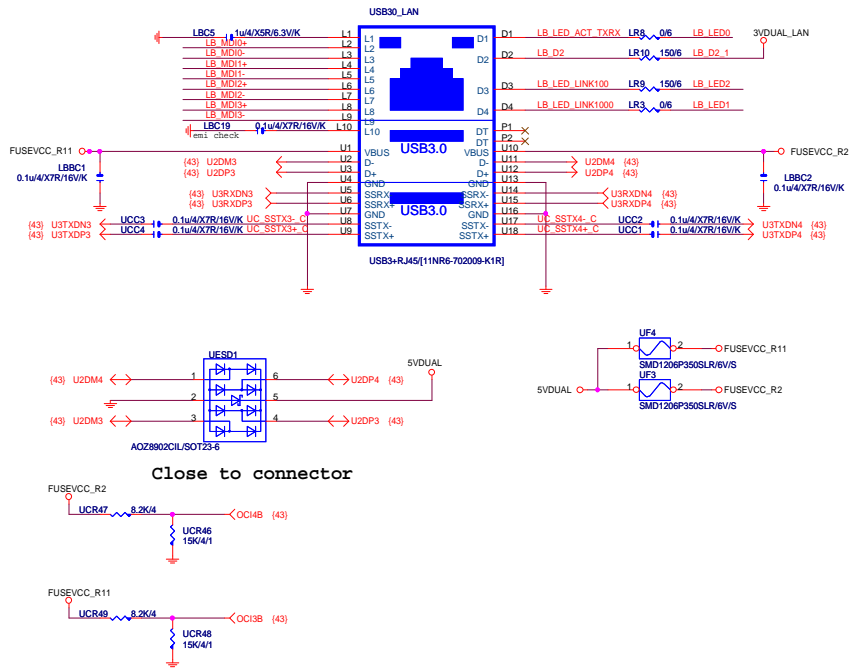
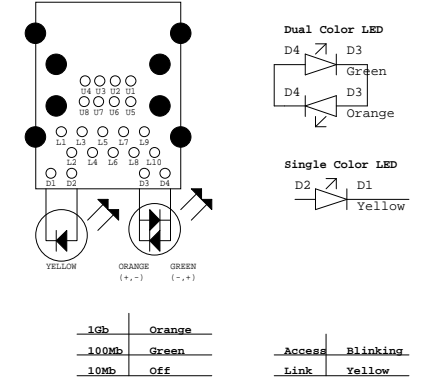
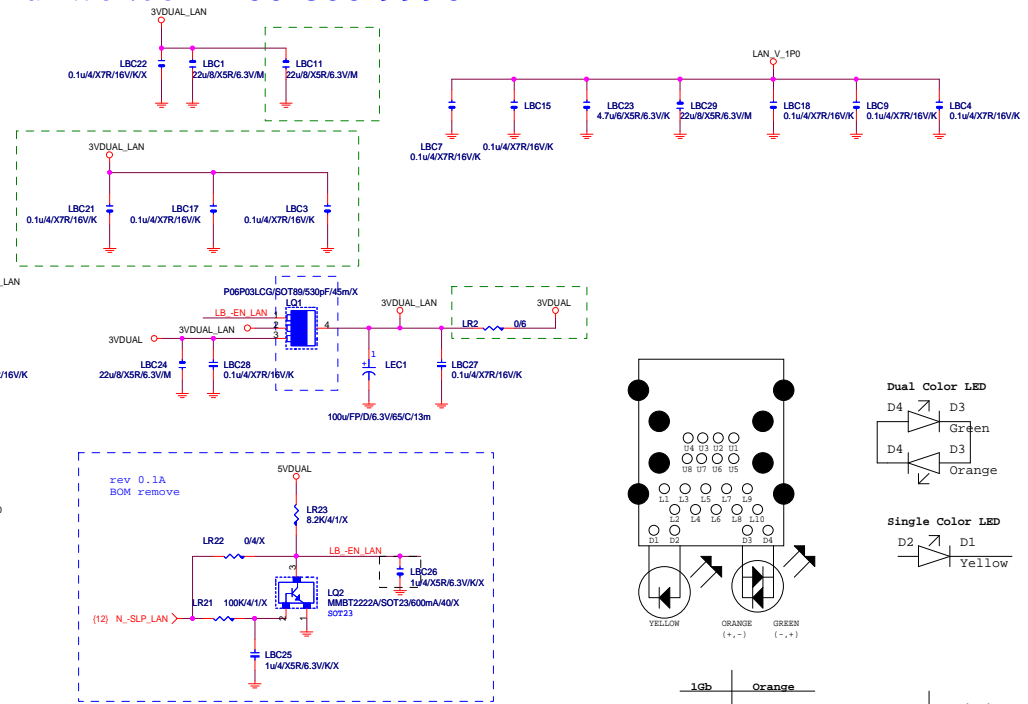
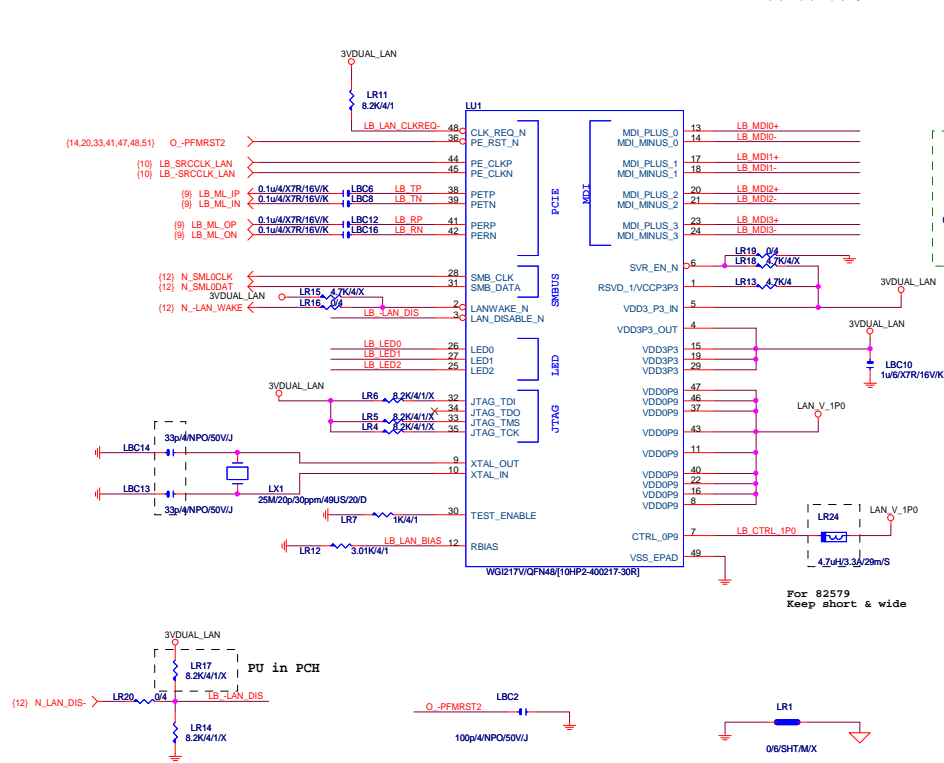


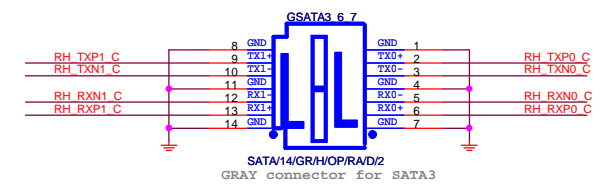
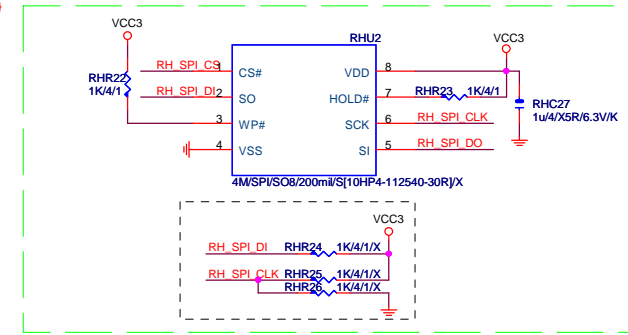
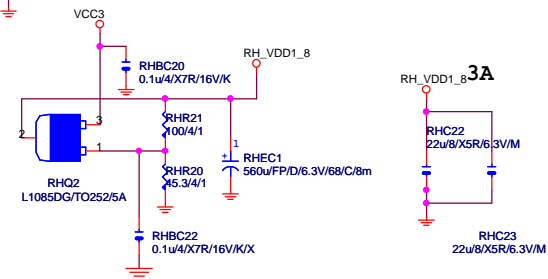
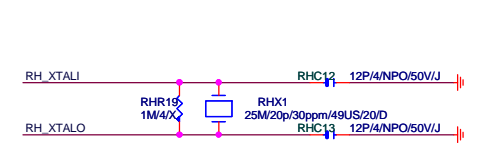
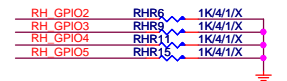
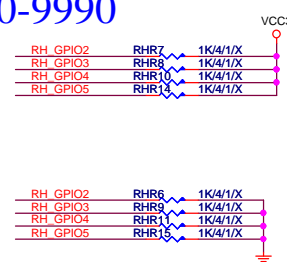
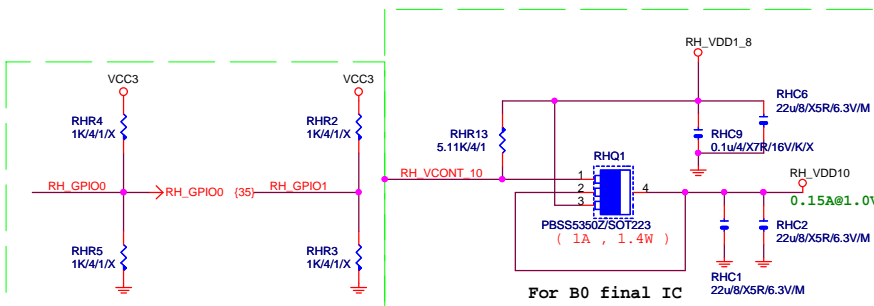
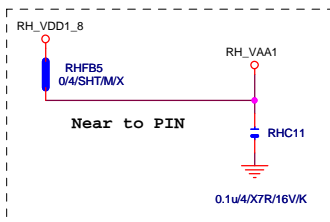
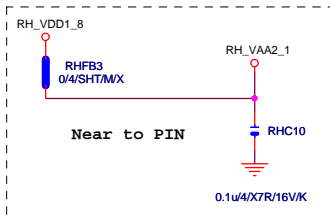
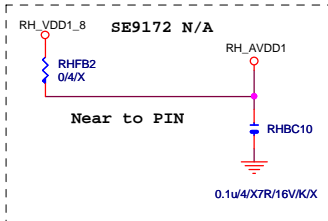
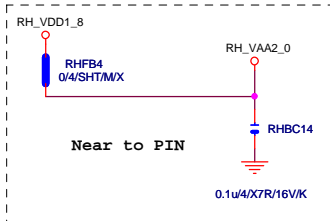
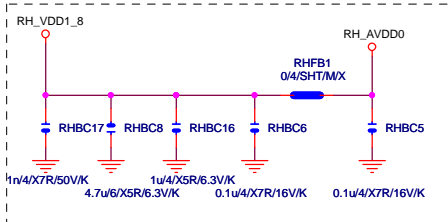
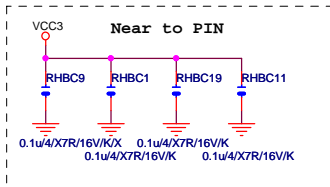
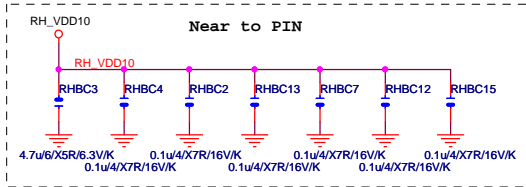
The division voltage of VIN2 & VIN3 must be around 2.9V



Linear SYS_FAN

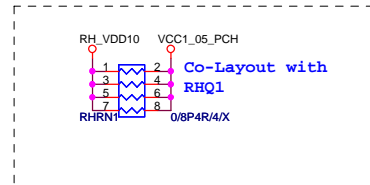


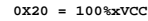




90歐姆:[15/4.5/7.5/4.5/15]

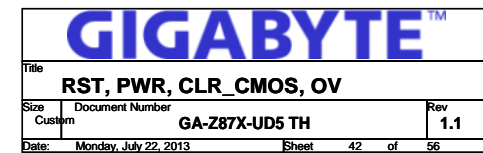
Marvell 9172 Power Requirements
Analog 1.8V 230mA
Core 1.0V 900mA
I/O 3.3V 50mA

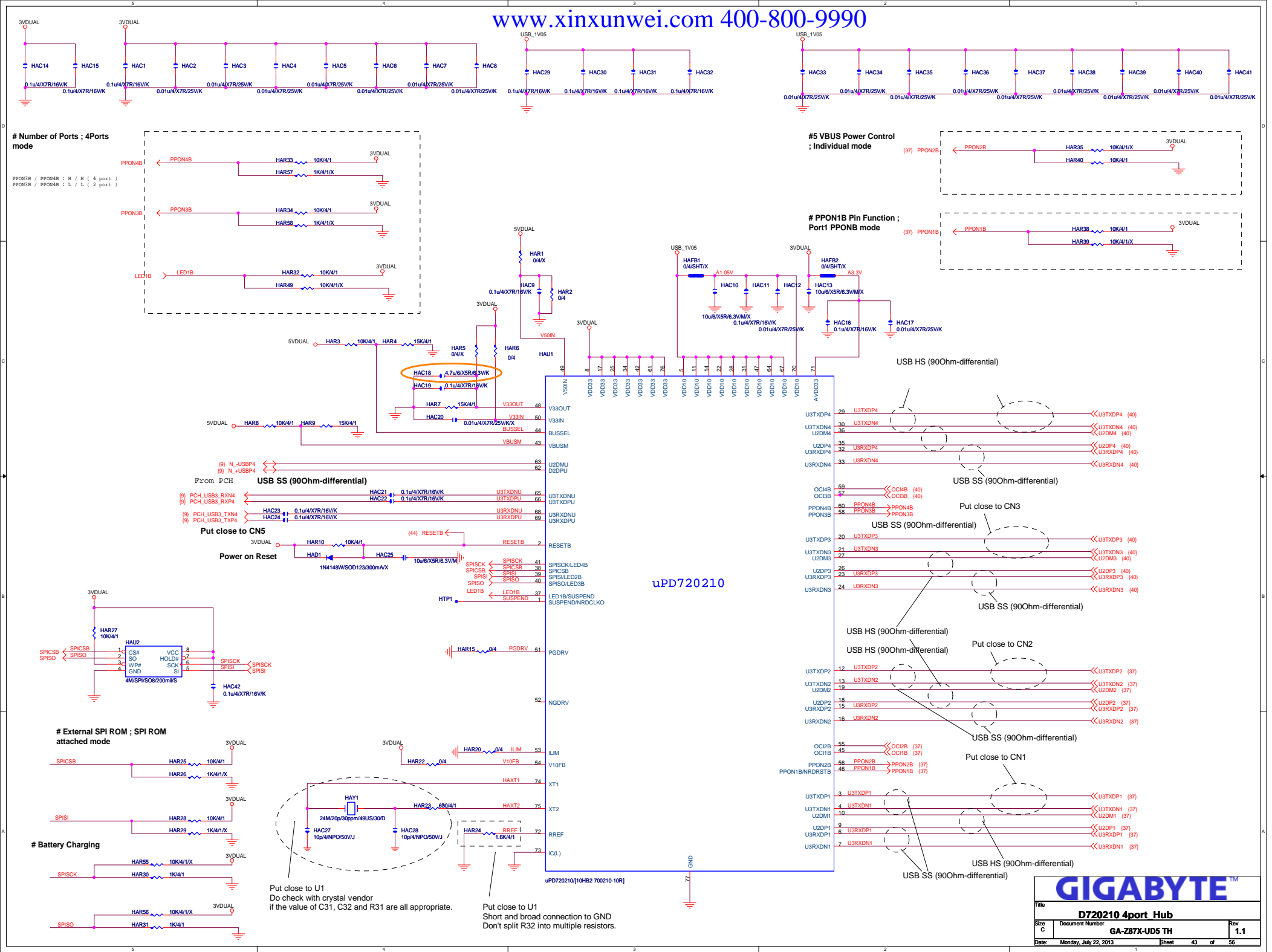




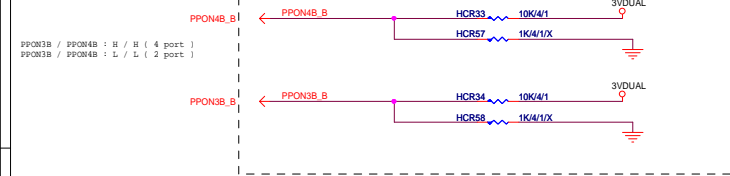
		U180			
(33)	80P_DL >>	6	CATH2	5	X
(33)	80P_SEGA >>	7	A	4	<< 80P_SEGG (33)
(33)	80P_SEGB >>	8	B	3	<< 80P_SEGC (33)
(33)	80P_DH >>	9	CATH1	2	<< 80P_SEGD (33)
(33)	80P_SEGF >>	10	F	1	<< 80P_SEGE (33)

Physical Package
(TOP VIEW)

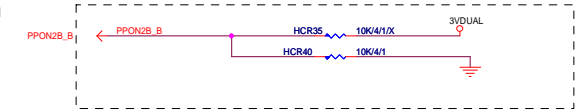




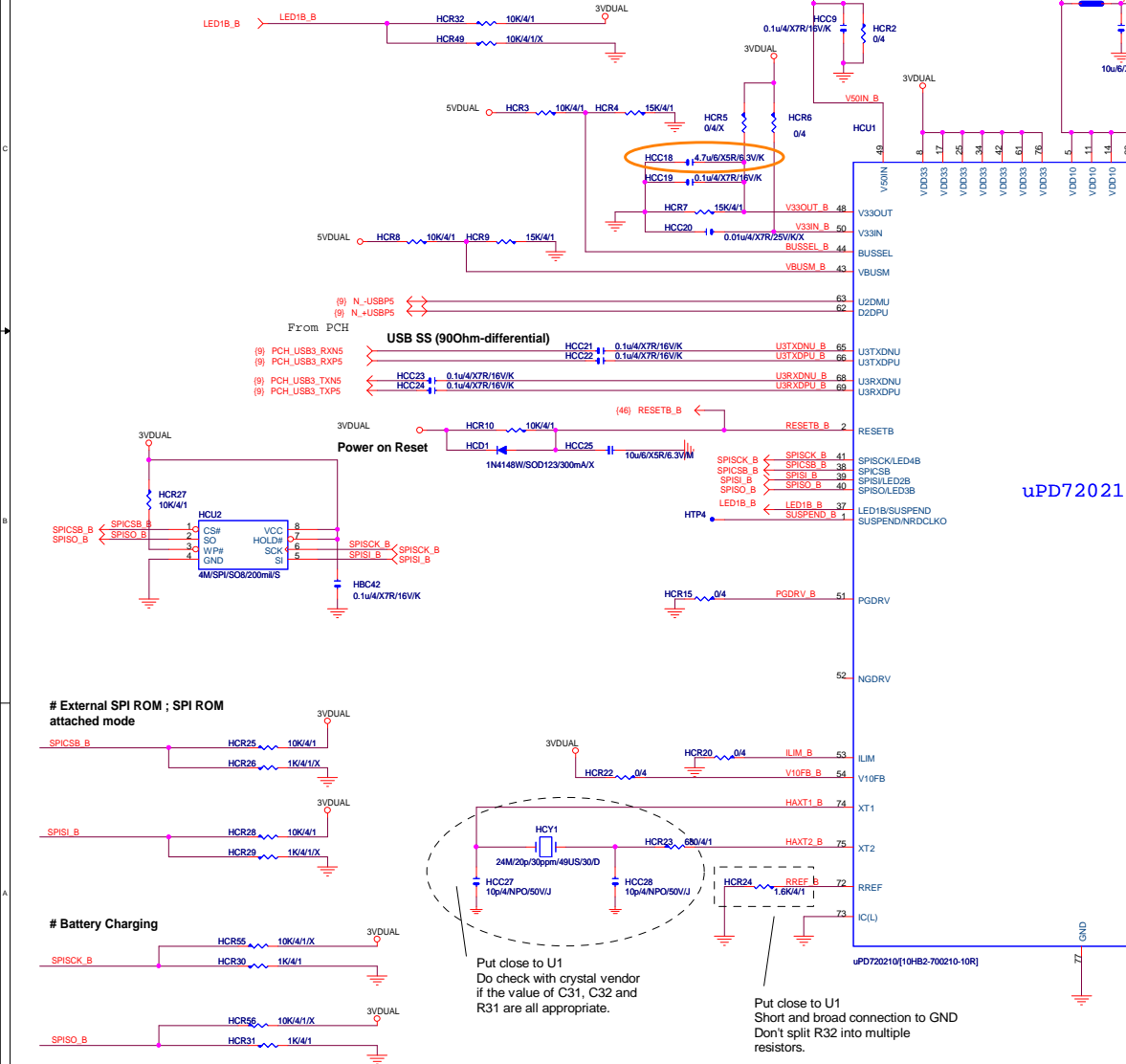
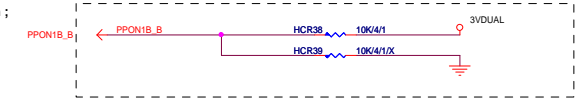
Number of Ports ; 4Ports mode



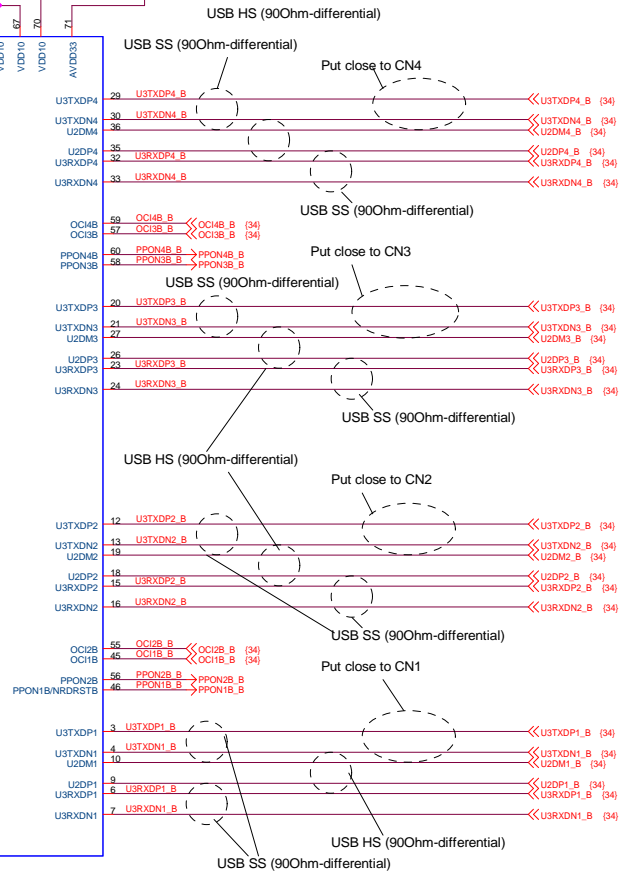
#5 VBUS Power Control ; Individual mode



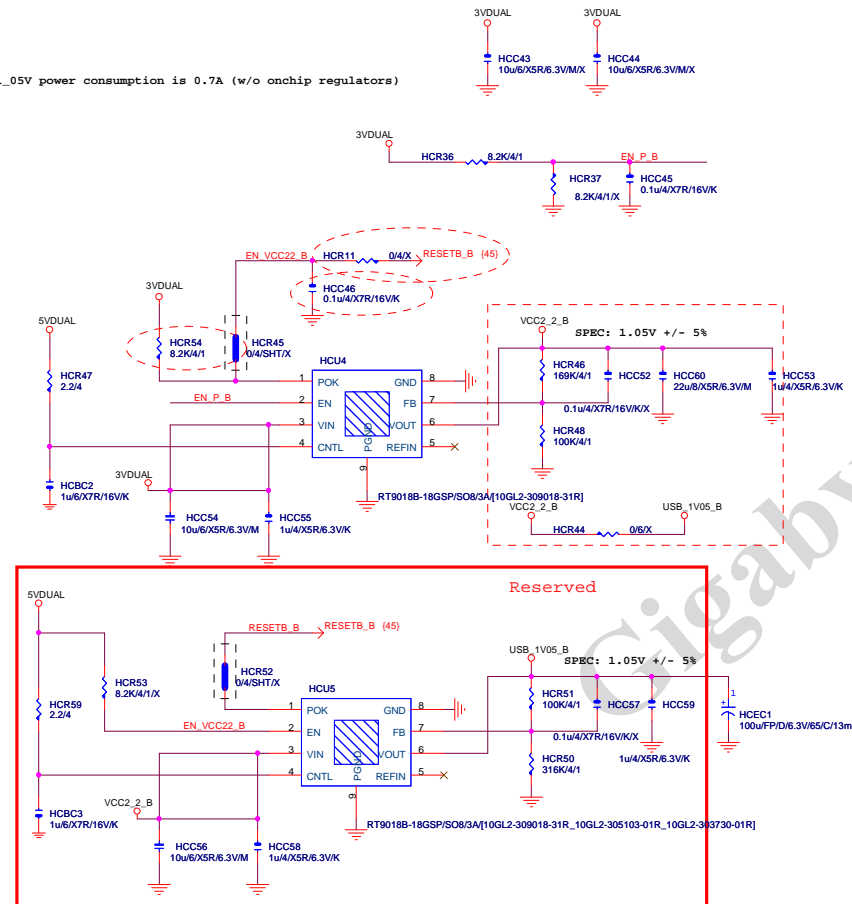
PPON1B Pin Function ; Port1 PPONB mode



uPD720210

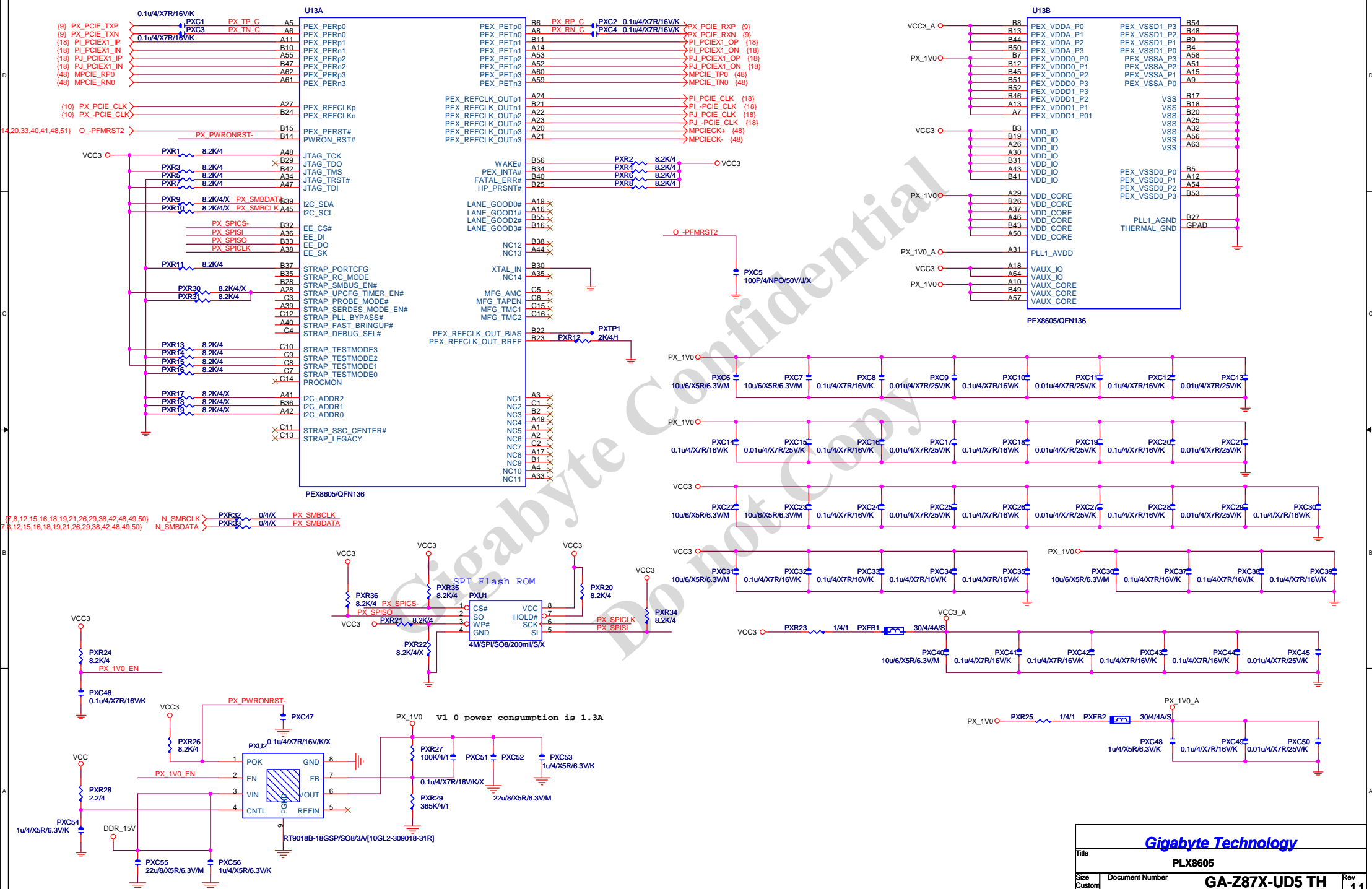


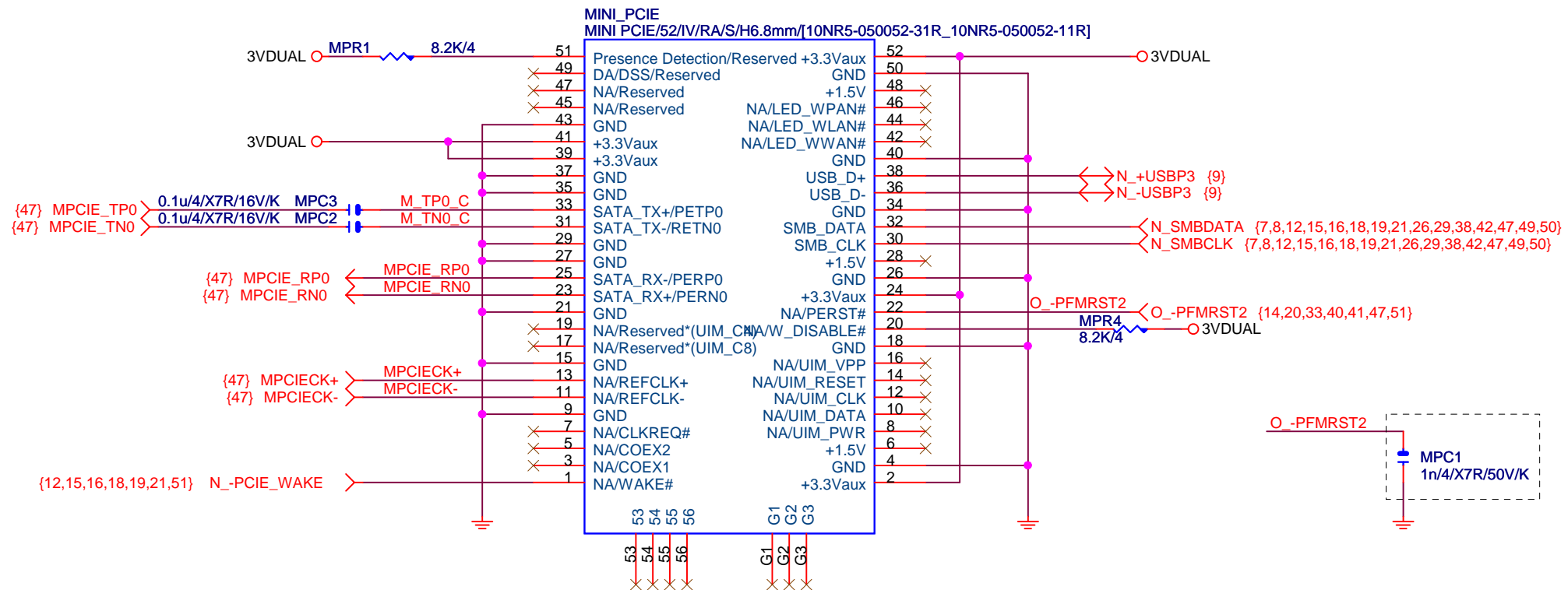
USB1_05V power consumption is 0.7A (w/o onchip regulators)



GIGABYTE™

Title			D720210 4port Hub_B		
Size			Document Number		
Custom			GA-Z87X-UD5 TH		
Date			Monday, July 22, 2013		
Sheet			46 of 56		
Rev			1.1		





HS_1
SCREW M2*4mm/[12KS2-010204-01R]

ANT1
SMA/[11NH6-010001-21R]

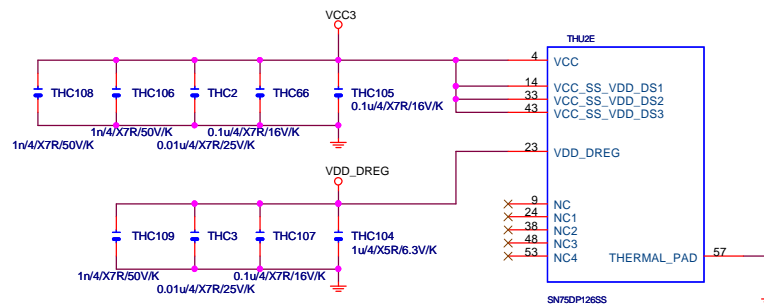
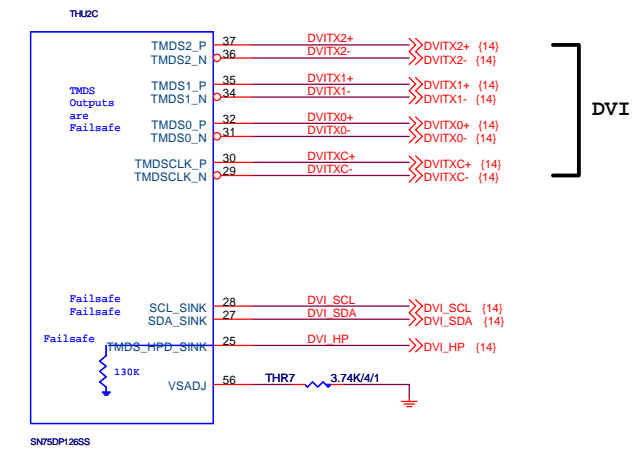
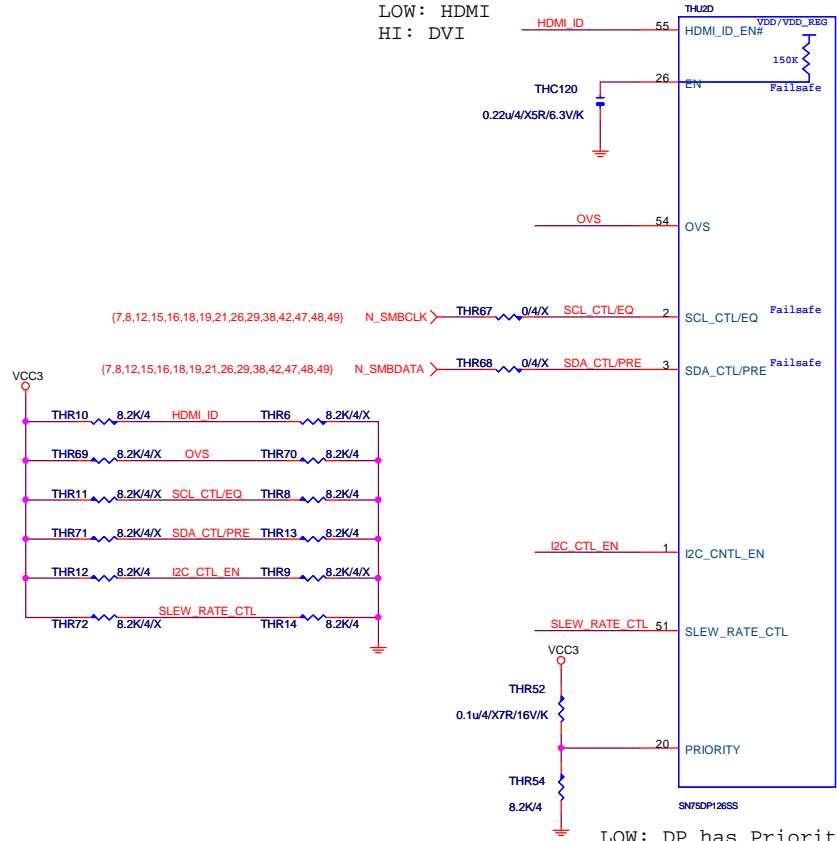
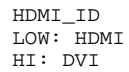
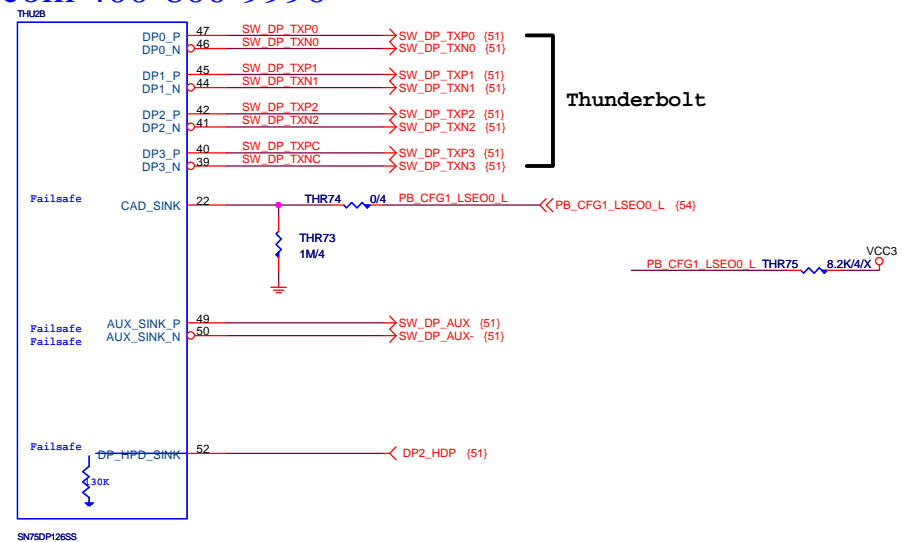
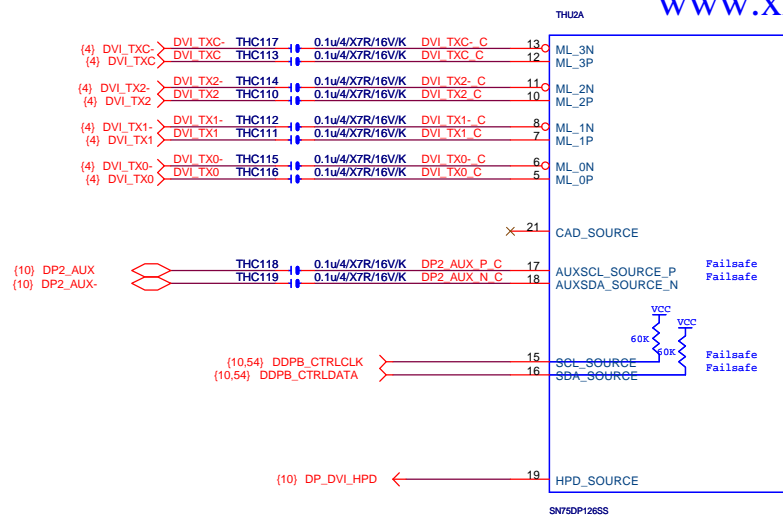
ANTENNA_BRACKET
BRACKET/[12AC2-000001-01R]

M_PCIE_H
WIFI_MODULE
WI-FI WITH BT MINI CARD AZURWAVE/[20CB1-020123-00R]

HS_1
HEADER 5/[10KS2-040031-12R]

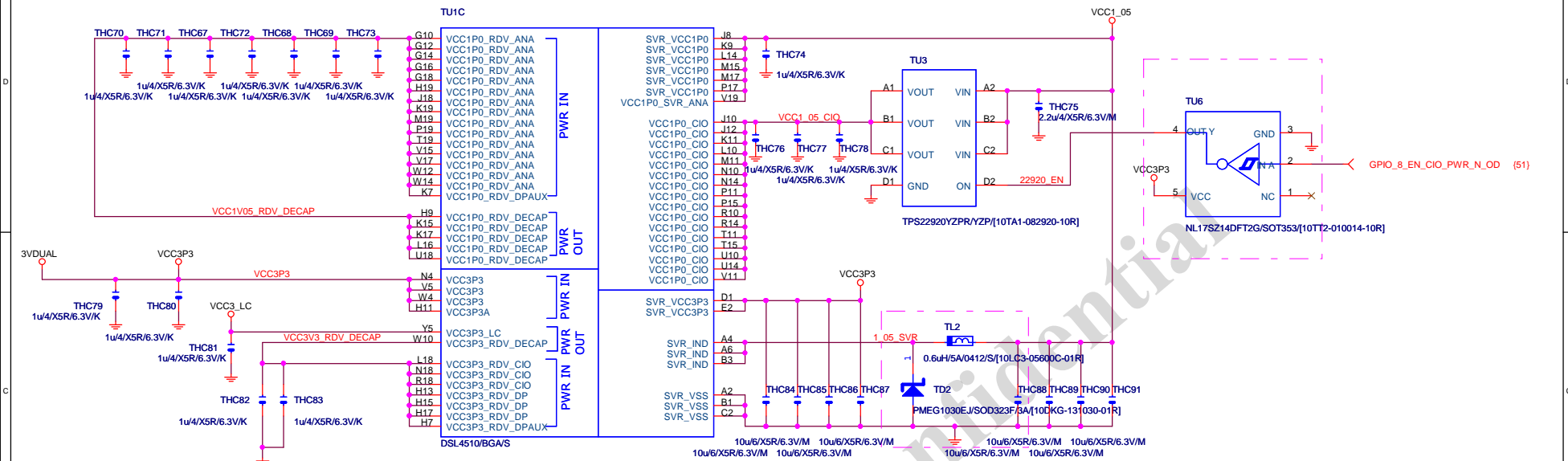
ANT2
SMA/[11NH6-010001-21R]

GIGABYTE™		
Title		
mini PCIE slot		
Size A	Document Number	Rev
	GA-Z87X-UD5 TH	1.1
Date:	Monday, July 22, 2013	Sheet 48 of 56



CIO0/1 ,TX/RX all swap ,firmware
need modify





Power Consumption Table

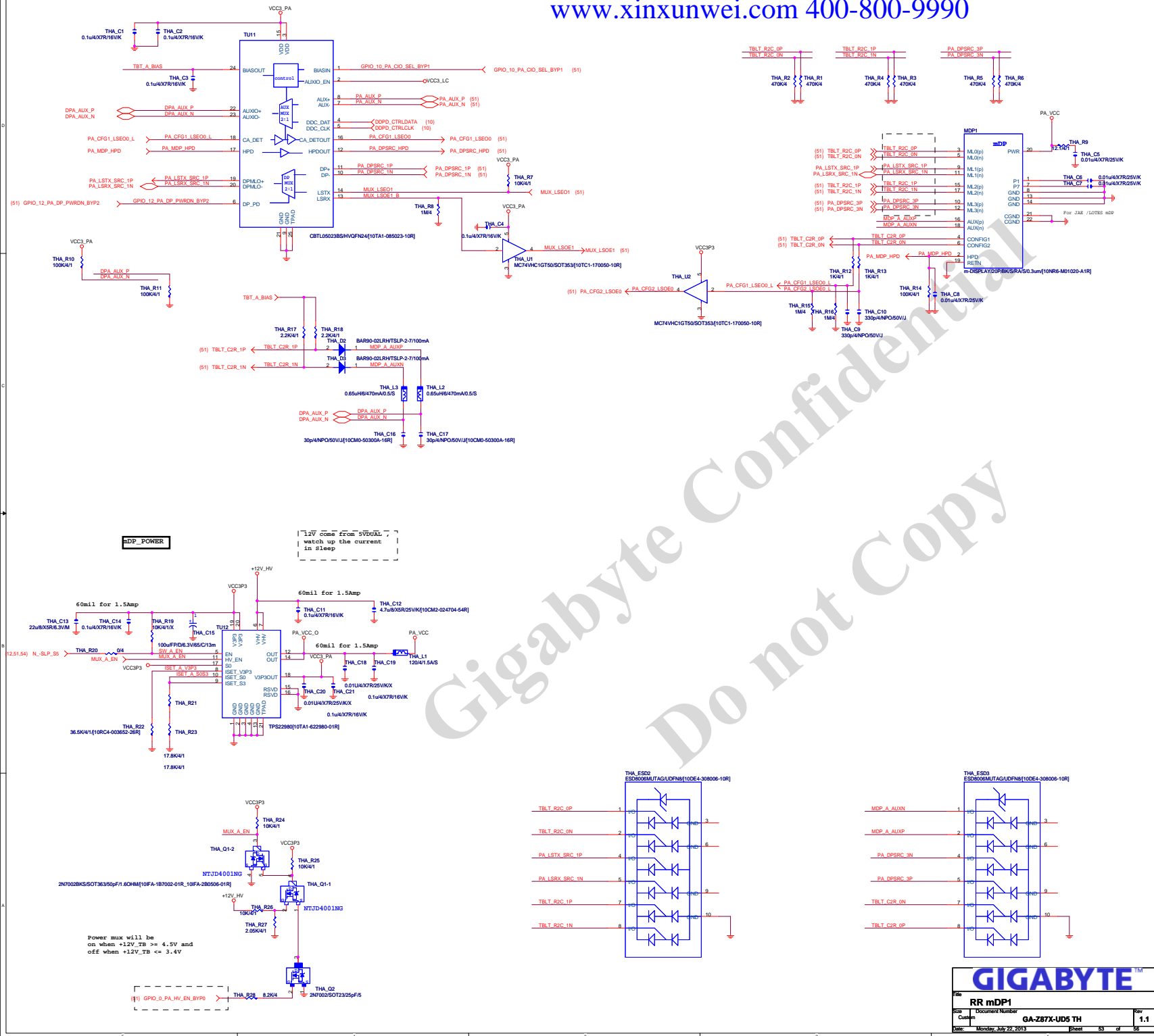
	3VDAUL	VCC3V3_RDV_DECAP	VCC1_05	VCC1V05_RDV_DECAP	VCC1_05_CIO
Max Current(A)	1.0 A	0.07 A	2.9 A	1.6 A	1.3 A

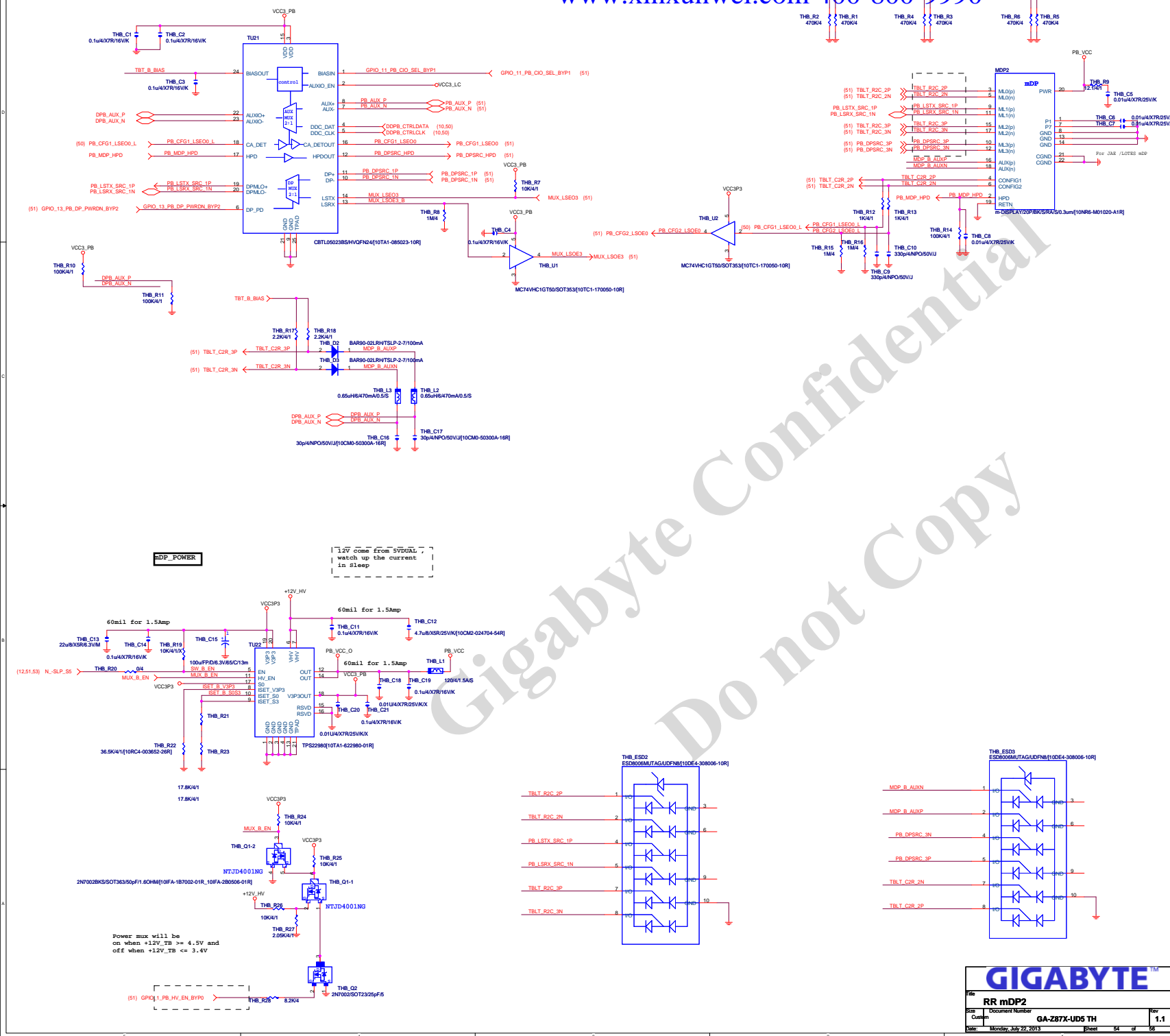
Sx Support Table

	3VDAUL	PWR_ON_POC_RSTN (TU9.4)	Power Mux (TU12/22 .5)
S5	Off (optional)	Asserted	Off (EN=0)
Sx with wake support	On	Deasserted	On (EN=1)
Sx w/o wake support	Off (optional)*	Asserted*	Off (EN=0)*

GIGABYTE™

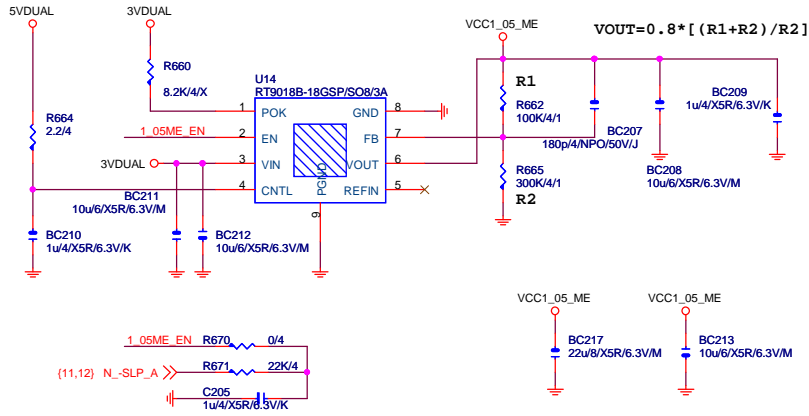
Title			
RR CIO PWR			
Size	Document Number	Rev	
Custom	GA-Z87X-UD5 TH	1.1	
Date:	Monday, July 22, 2013	Sheet	52 of 56



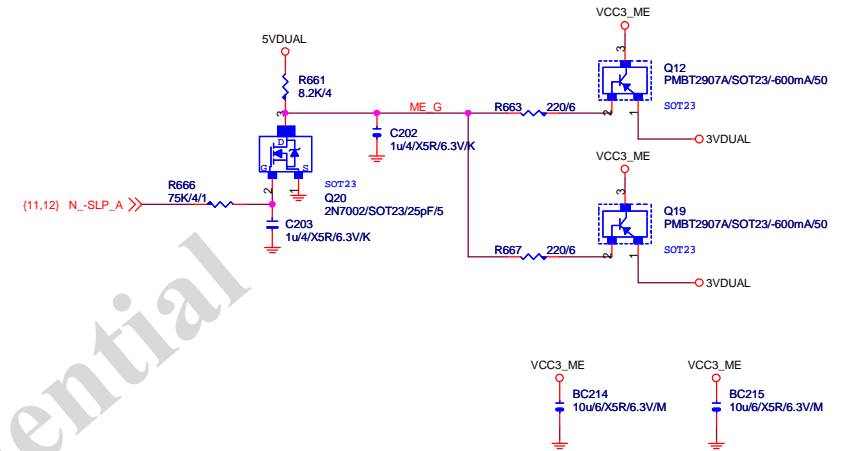


VCC1_05_ME

【技術通報R&D技術通報156】

(RICHTER), (NUVOTON), (EMC)做共用
PIN7分壓阻值須做修改為100K以上電阻值

VCC3_ME

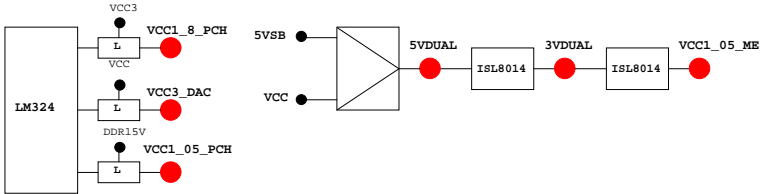


PCH GPIO LIST TABLE					
PIN NAME	PWR	Default	USAGE	NOTE	
GP0	MAIN	H-Z	GPI	-PECI_REQ	N/A
GP1/TACH1	MAIN		GPI	ICH_FAN_TACH1	N/A
GP2/PIRQE#	MAIN		GPI	-PIRQE	P/U 8.2K VCC3
GP3/PIRQF#	MAIN		GPI	-PIRQF	P/U 8.2K VCC3
GP4/PIRQG#	MAIN		GPI	-PIRQG	P/U 8.2K VCC3
GP5/PIRQH#	MAIN		GPI	-PIRQH	P/U 8.2K VCC3
GP6/TACH2	MAIN		GPI	ICH_FAN_TACH2	N/A
GP7/TACH3	MAIN		GPI	ICH_FAN_TACH3	N/A
GP8	STBY	H	GPO	GPIO8	P/U 8.2K 3VDUAL
GP9/OC5#	STBY		NATIVE	OC5#	N/A
GP10/OC6#	STBY		NATIVE	OC6#	N/A
GP11/SMBALERT#	STBY		NATIVE	-SMBALERT	P/U 8.2K 3VDUAL
GP12	STBY	L	GPI	LAN_PHY_PWR_CTRL	P/U 8.2K 3VDUAL
GP13	STBY	L	GPI	GPIO13	P/U 8.2K 3VDUAL
GP14/OC7#	STBY		NATIVE	OC7#	N/A
GP15	STBY	L	GPO	GPIO15	N/A
GP16	MAIN		GPI	-SKTOCC	P/U 8.2K VCC3
GP17/TACH0	MAIN		GPI	ICH_FAN_TACH0	N/A
GP18	MAIN		NATIVE	MB_ID0	P/D 8.2K GND
GP19	MAIN		GPI	-LAN1_ISO	P/U 8.2K VCC3
GP20	MAIN		NATIVE	LED_CTL	P/U 1K VCC3
GP21	MAIN		GPI	VCC18_PCH_OV2	P/U 8.2K VCC3
GP22	MAIN	H-Z	GPI	VCORE_OV3	P/U 8.2K VCC3
GP23	MAIN		NATIVE	-LDRQ1	P/U 8.2K VCC3
GP24	STBY	L	GPO	TLS	P/U 8.2K 3VDUAL
GP25	STBY		NATIVE	-CPU_STOP	P/U 8.2K 3VDUAL
GP26	STBY		NATIVE	-AC2_DET	P/U 8.2K 3VDUAL
GP27	STBY	H	GPO	GPIO27	P/U 8.2K 3VDUAL
GP28	STBY	H	GPO	GPIO28	P/U 8.2K 3VDUAL
GP29	STBY	L	GPI	GPIO29	N/A
GP30	STBY	H-Z	GPI	S_PWR_ACK	P/U 100K 3VDUAL
GP31	STBY	H-Z	GPI	N/A(Reverse)	P/U 8.2K VCC3
GP32	MAIN	H	GPO	MB_ID1	P/D 8.2K GND
GP33	MAIN	H	GPO	LOAD-LINE	P/U 1K VCC3
GP34	MAIN	H-Z	GPI	-PCI_STOP	P/U 8.2K VCC3
GP35	MAIN	L	GPO	GPIO35	P/U 8.2K VCC3
GP36	MAIN		GPI	-LAN1_DSM	P/U 8.2K VCC3
GP37	MAIN		GPI	N/A	P/U 8.2K VCC3
GP38	MAIN	H-Z	GPI	VCORE_OV2	P/U 8.2K VCC3
GP39	MAIN	H-Z	GPI	-LAN_DSM	P/U 8.2K VCC3
GP40	STBY		NATIVE	OC1#	N/A
GP41	STBY		NATIVE	OC2#	N/A
GP42	STBY		NATIVE	OC3#	N/A
GP43	STBY		NATIVE	OC4#	N/A
GP44	STBY	L	NATIVE	N/A	P/U 8.2K 3VDUAL
GP45	STBY		NATIVE	-LPCPME	P/U 8.2K 3VDUAL
GP46	STBY	L	NATIVE	PWR_LED	P/U 8.2K 3VDUAL
GP47	STBY		NATIVE	PSI_LED	P/U 8.2K 3VDUAL
GP48	MAIN	H-Z	IN	EN_PWM	P/U 8.2K VCC3
GP49	MAIN	H-Z	IN	VCC18_OV1	P/U 8.2K VCC3
GP50	MAIN		NATIVE	-REQ1	P/U 2.2K VCC
GP51	MAIN	H	NATIVE	-GNT1	N/A
GP52	MAIN		NATIVE	-REQ2	P/U 2.2K VCC
GP53	MAIN	H	NATIVE	-GNT2	N/A
GP54	MAIN		NATIVE	-REQ3	P/U 2.2K VCC
GP55	MAIN	H	NATIVE	-GNT3	N/A
GP56	STBY		NATIVE	N/A(Reverse)	P/U 8.2K 3VDUAL
GP57	STBY	H-Z	IN	VCORE_OV1	P/U 8.2K 3VDUAL
GP58	STBY	H-Z	NATIVE	F_USB_OC	P/U 8.2K 3VDUAL
GP59	STBY		NATIVE	USB_OC0#	N/A
GP60	STBY	H-Z	NATIVE	N/A(Reverse)	P/U 8.2K 3VDUAL
GP61	STBY	L	NATIVE	-SUSTAT	N/A
GP62	STBY	L	NATIVE	SUSCLK	N/A
GP63	STBY	L	NATIVE	GPIO63	N/A
GP64	MAIN	L	NATIVE	CLKOUTFLEX0	N/A
GP65	MAIN	L	NATIVE	CLKOUTFLEX1	N/A
GP66	MAIN	L	NATIVE	CLKOUTFLEX2	N/A
GP67	MAIN	L	NATIVE	CLKOUTFLEX3	N/A
GP72	STBY	H-Z	NATIVE	VCORE_OV4	P/U 8.2K 3VDUAL
GP73	STBY		NATIVE	1_05V_OV1	P/U 8.2K 3VDUAL
GP74	STBY	H-Z	NATIVE	1_05V_OV2	P/U 8.2K 3VDUAL
GP75	STBY	H-Z	NATIVE	N/A(Reverse)	P/U 8.2K 3VDUAL

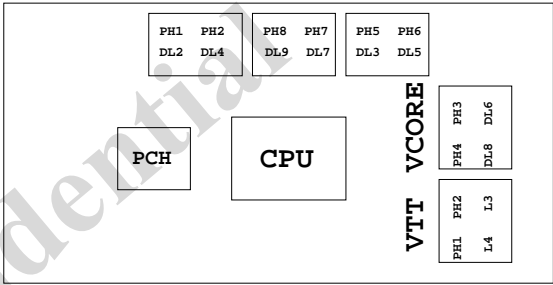
Super I/O ITE8720 GPIO Table

PIN NAME	USAGE	NOTE
SVC/PECI_RQT/GP14	-PECI_REQ	
PWROK1/GP13	PWROK1/ITE_PWROK	
KRST#/GP62	-KRST	
SO/GP50	-ICH_SPI_CS	
IRTX/GP47/CE2_N/JP7	CEB_N	
GP46/IRRX	-LAN2_DSM	
PSION#/GP42	-PSON	
PWROK2#/GP41	PECI_CTL	
PCIRST3#/GP10/VDIMM_STR_EN	-PCIE_RST	
RSMRST#CIRRX1/GP55	-RSMRST	
PME#/GP54	-LPCPME	
PD5/GP75/BUSS00	N/A	

PIN NAME	USAGE	NOTE
FAN_TAC2/GP52	FANIO2	
FAN_TAC3/GP37	FANIO3	
VIDO3/FAN_TAC4/GP25/DSR2#	FANIO4	
FAN_CTL2/GP51	FANPWM2	
FAN_CTL3/GP36	FANPWM3	
VID4/GP34	BEEP-	
VID3/GP33	TURBO1	
VID2/GP32	TURBO0	
VCORE_GOOD/VID6/GP63	CPUT_LED1_C	
VID5/GP35	CPUT_LED2_C	
VID1/GP31	CPUT_LED3_C	
VID0/GP30	-LAN1_DSM	NBT_LED1_C
SLCT/GP80	CPU_LED1_C	
PE/GP81	CPU_LED2_C	
BUSY/GP82	CPU_LED3_C	
PD3/GP73/BUSS11	SB_LED1_C	
PD4/GP74/BUSS12	SB_LED2_C	
VCORE_EN/VID7/GP64	IT_GP64	SB_LED3_C
PD0/GP70	NB_LED1_C	
PD1/GP71	NB_LED2_C	
PD2/GP72/BUSS10	NB_LED3_C	
GP22/SCK	LOW_PWR_1	
VIDO5/GP27/SIN2	LOW_PWR_2	
PCIRST2#/GP11	-PFMRST1	
PCIRST1#/GP12	-PFMRST2	
3VBSBW#/GP40	CSI_F0	BSEL166_1
SUSCH#/GP53	CSI_F1	BSEL166_2
GP23/SI	BSEL166_3/CsisBSL	
VIDO0/GP20/CTS2#	CPUT_LED1_C	BSEL166_4
GP65/VDDA_EN/GB_01	MB_ID2	
PD6/GP76/BUSS01	MB_ID3	
PD7/GP77/BUSS02	MB_ID4	
AFD#/GP86/SMB_C_R	W_PIN	FST_2X8
INIT#/GP85/SMBD_M	SEC_2x8	GTLREF_AD2
ACK#/GP83	DDR_LED1_C	
VIDO1/GP21/DCD2#	DDR_LED2_C	
STB#/GP87/SMB_C_M	DDR_LED3_C	
PWRON#GP44	VCORE_OV1	
PANSWH#/GP43	PWRBTSW	
KDAT/GP61	-PWRBTSW	
KCLK/GP60	KDAT	
MDAT/GP57	KCLK	
MACL/GP56	MDAT	
GP66/VLDT_EN/GB_02	NBT_LED1_C	MCLK
SVD/PCIRST1N#/CIRT2X/GP15	PWM2_CR	
KDAT/GP61	PWM2_CR	
GP67/CPU_PG/GB_03	EN_LOADLINE	IT_GP67/-EN_PWM2
SLIN#/GP84/SMBD_R	-EN_PWM2	
PSI_L/FAN_CLT1S/CIRRX2/GP16	-THERM	
VIDO4/GP26/SOUT2	DDR18V_PH2_EN	
VIDO2/FAN_TAC5/GP24/DSR2#	DDR18V_LED	
VIDO6/GP17/RI2#	1_1V_PH_EN	
VIDO7/JP6/DTR2#	JP6	
PD5/GP75/BUSS00	SB_LED3_C	



PWM各相位的擺法如下：



BIOS超電壓對應表：

線路圖名稱	BIOS選項
Vcore	CPU Vcore
CPU_VTT	CPU Termination
CPU_VAXG	CPU Graphic Core
VCC1_8_PCH	CPU PLL
VCC1_05_PCH	PCH core
3VDUAL	3VDUAL
DDR15V	DRAM voltage
DDRVTT	DRAM Terminatio
VREF_CA_AVREF_CA_B	DRAM Address Ref
VREF_DQ_AVREF_DQ_B	DRAM Data Ref

散熱模組料號：

8IBP：
1.12SP2-01A001-Y1R/Y2R
2.12SP2-01A001-Z1R/Z2R
(HIBRID模組)包材階

	3 pin FAN control	4 pin FAN control	FAN speed	Controller
CPU FAN	FANPWM1	FANPWM3	FANIO1	IT8720
	ICH_FAN_PWM2	ICH_FAN_PWM0	ICH_FAN_TACH0	PCH
SYS FAN	FANPWM2	N/A	FANIO2	IT8720
	ICH_FAN_PWM1	N/A	ICH_FAN_TACH1	PCH
PWR FAN	N/A	N/A	FANIO3	IT8720
			ICH_FAN_TACH2	PCH

GIGABYTE™			
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