

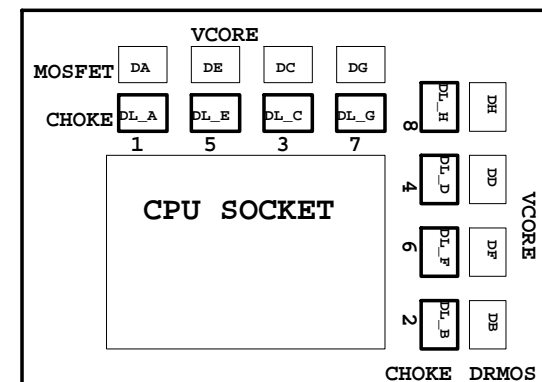
Model Name: GA-Z87X-D3H Rev 1.01

SHEET TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1150-A
05	CPU_LGA1150-B
06	CPU_LGA1150-C
07	DDR III CHANNEL A
08	DDR III CHANNEL B
09	PCH_FDI,DMI,USB,PCIE
10	PCH_RGB,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCI EXPRESS*16 SLOT
15	PCI EXPRESS X8 SLOT
16	PCI EXPRESS X16 SWITCH
17	PCIEX1*3 , PCIEX4 SLOT
18	I/O ITE8728
19	COM, -PROHOT, R_USB
20	Dual BIOS , TPM SLB9635TT
21	ALC892 CODEC
22	REAR AUDIO JACK
23	ITE8892 PCI BRIDGE
24	PCI SLOT
25	FUSB 3.0
26	NCP3933 OVER VOLTAGE
27	DISCRETE POWER

SHEET TITLE

28	F_PANEL , F_USB2.0
29	ATX POWER, CLOCK GEN
30	HWM , KB/MS , FAN CTRL
31	LAN INTEL i217
32	DVI
33	HDMI , R_USB30
34	TABLE LIST
35	IR3563B_PWM
36	IR3550-VCORE
37	IR3570_DDR PWM
38	IR 3598-DDR
39	D720210 4port_Hub
40	D720210 4port_Hub POWER
41	D720210 4port_Hub_B
42	D720210 4port_Hub_B POWER



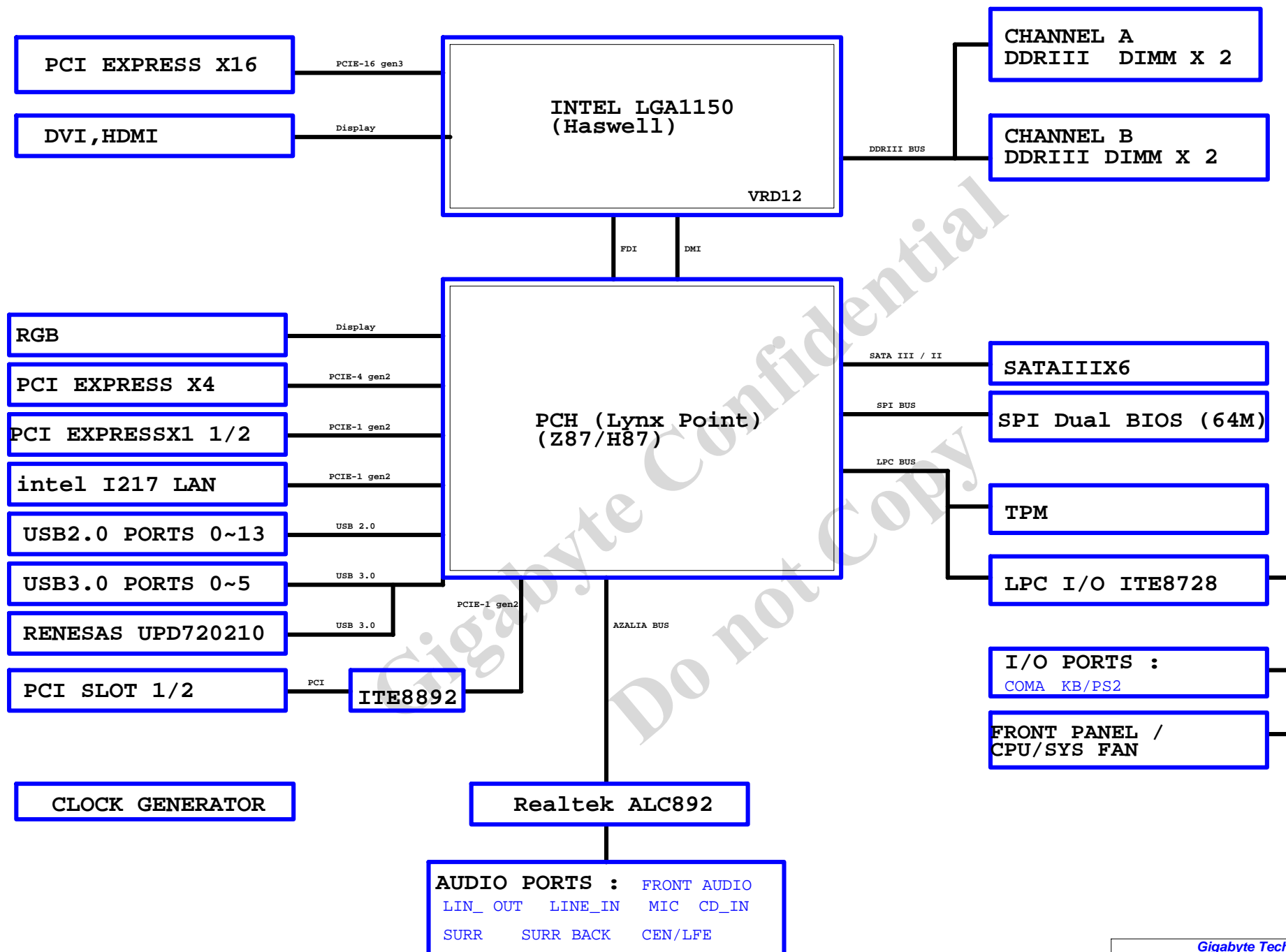
Gigabyte Technology

Title	
Cover Sheet	
Size	Document Number
Custom	GA-Z87X-D3H
Date:	Rev
Friday, April 12, 2013	1.01
Sheet	1 of 43

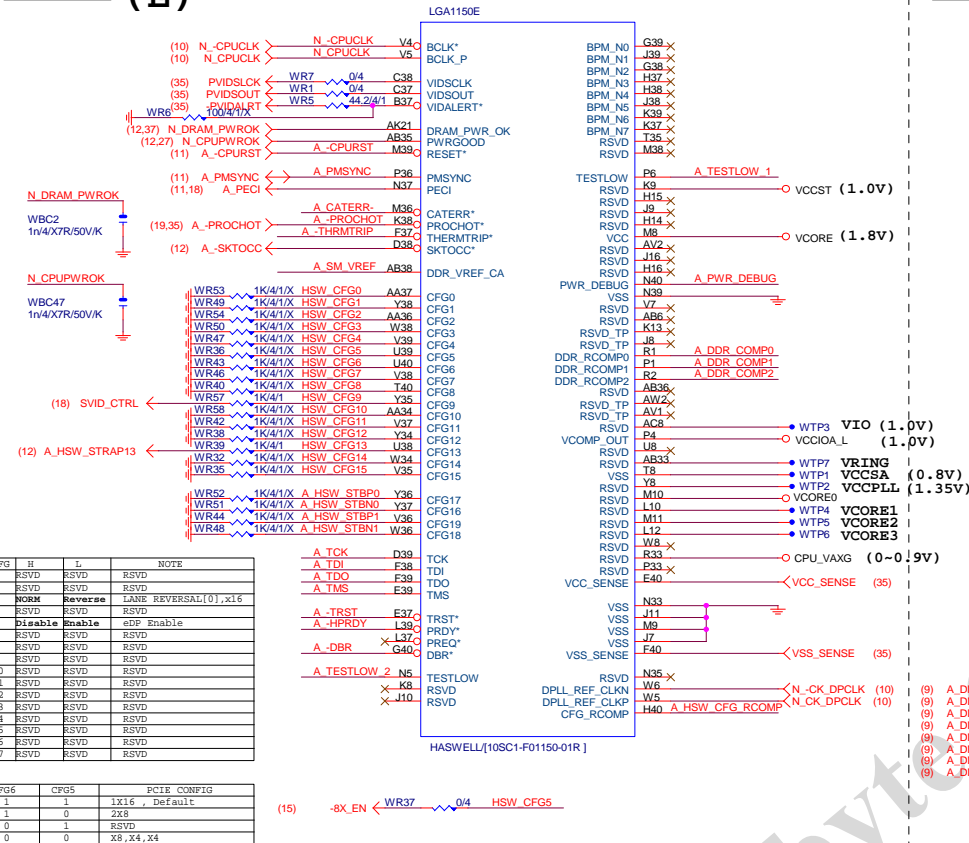


# BLOCK DIAGRAM

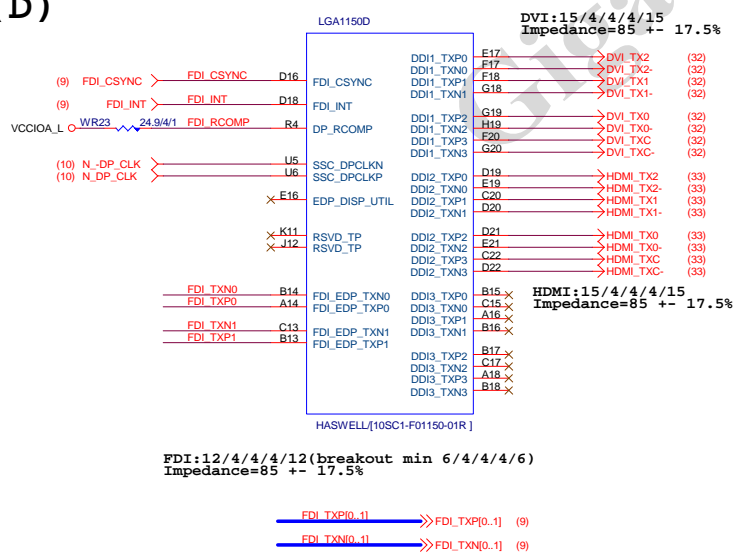
www.xinxunwei.com 400-800-9990



## LGA1150 (E)

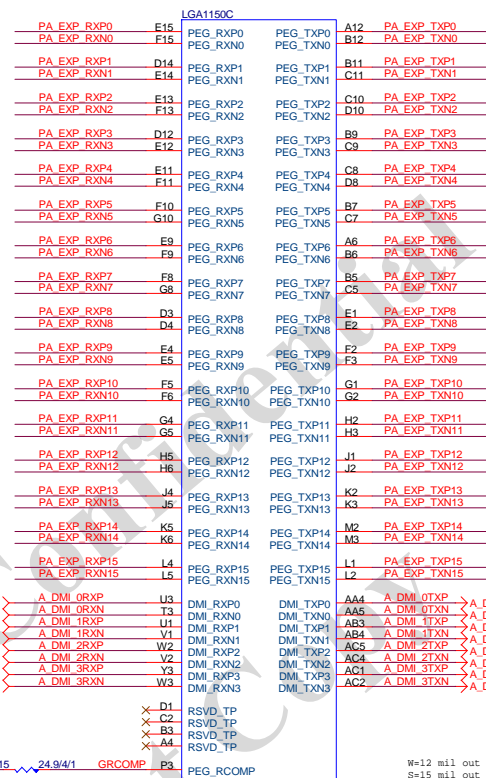


## LGA1150 (D)



## LGA1155 (C)

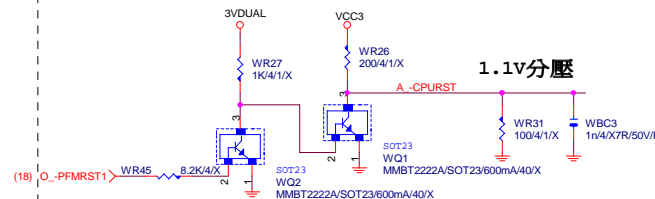
PCIEX16:20/5/4/5/20(breakout min 10/4/4/4/10)  
Impedance=80 +- 17.5%



DMI:12/4/4/12(breakout min 8/4/4/4/8)  
Impedance=85 +- 17.5%



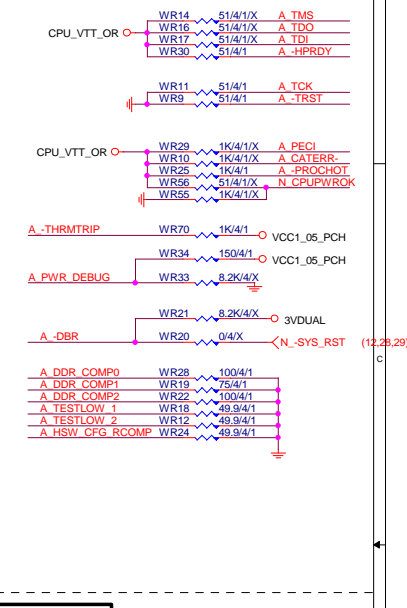
## -CPURST



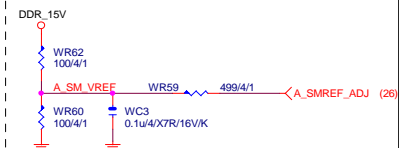
## CPU SVID



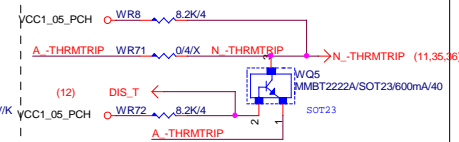
## CPU PU/PD



## SM REF



## THRMTRIP DISABLE



Gigabyte Technology

CPU LGA1150-A

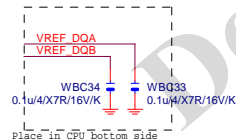
GA-Z87X-D3H

Rev 1.01

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LGA1150A		DDR0_MA0	DDR0_D00	AD38	MDA0
MAAA0	AU13	DDR0_MA1	DDR0_D01	AD39	MDA1
MAAA1	AV16	DDR0_MA2	DDR0_D02	AF38	MDA2
MAAA2	AU16	DDR0_MA3	DDR0_D03	AF39	MDA3
MAAA3	AW17	DDR0_MA4	DDR0_D04	AD37	MDA4
MAAA4	AU17	DDR0_MA5	DDR0_D05	AD40	MDA5
MAAA5	AW18	DDR0_MA6	DDR0_D06	AE37	MDA6
MAAA6	AV17	DDR0_MA7	DDR0_D07	AF40	MDA7
MAAA7	AT18	DDR0_MA8	DDR0_D08	AH40	MDA9
MAAA8	AU18	DDR0_MA9	DDR0_D09	AH39	MDA10
MAAA9	AT19	DDR0_MA10	DDR0_D10	AK38	MDA10
MAAA10	AW11	DDR0_MA11	DDR0_D11	AK39	MDA11
MAAA11	AV19	DDR0_MA12	DDR0_D12	AH37	MDA12
MAAA12	AU19	DDR0_MA13	DDR0_D13	AH38	MDA13
MAAA13	AY10	DDR0_MA14	DDR0_D14	AK37	MDA14
MAAA14	AT20	DDR0_MA15	DDR0_D15	AK40	MDA15
MAAA15	AU21	DDR0_MA16	DDR0_D16	AM40	MDA17
MODT_A0	AW10	DDR0_ODT0	DDR0_D17	AM39	MDA21
MODT_A1	AY8	DDR0_ODT1	DDR0_D18	AP38	MDA18
MODT_A2	AW9	DDR0_ODT2	DDR0_D19	AP39	MDA19
MODT_A3	AU8	DDR0_ODT3	DDR0_D20	AM37	MDA20
			DDR0_D21	AM38	MDA16
			DDR0_D22	AP37	MDA22
			DDR0_D23	AP40	MDA23
			DDR0_D24	AW37	MDA29
			DDR0_D25	AU35	MDA26
			DDR0_D26	AU35	MDA27
			DDR0_D27	AT37	MDA28
			DDR0_D28	AU37	MDA24
			DDR0_D29	AT35	MDA30
			DDR0_D30	AW35	MDA31
			DDR0_D31	AY6	MDA33
			DDR0_D32	AU6	MDA37
			DDR0_D33	AW4	MDA34
			DDR0_D34	AW4	MDA35
			DDR0_D35	AW6	MDA32
			DDR0_D36	AW4	MDA38
			DDR0_D37	AW4	MDA39
			DDR0_D38	AR1	MDA41
			DDR0_D39	AR4	MDA45
			DDR0_D40	AN3	MDA42
			DDR0_D41	AN4	MDA43
			DDR0_D42	AR2	MDA44
			DDR0_D43	AR3	MDA40
			DDR0_D44	AN2	MDA46
			DDR0_D45	AN1	MDA47
			DDR0_D46	AL1	MDA49
			DDR0_D47	AL4	MDA53
			DDR0_D48	AL4	MDA50
			DDR0_D49	AJ4	MDA51
			DDR0_D50	AL2	MDA52
			DDR0_D51	AL3	MDA48
			DDR0_D52	AJ2	MDA54
			DDR0_D53	AJ1	MDA55
			DDR0_D54	AG1	MDA57
			DDR0_D55	AG4	MDA61
			DDR0_D56	AE3	MDA58
			DDR0_D57	AE4	MDA59
			DDR0_D58	AG2	MDA60
			DDR0_D59	AG3	MDA56
			DDR0_D60	AE2	MDA62
			DDR0_D61	AE1	MDA63
			DDR0_D62	AE39	DQSA0
			DDR0_D63	AJ39	DQSA1
			DDR0_D64	AN39	DQSA2
			DDR0_D65	AV36	DQSA3
			DDR0_D66	AV5	DQSA4
			DDR0_D67	AP3	DQSA5
			DDR0_D68	AK3	DQSA6
			DDR0_D69	AF3	DQSA7
			DDR0_D70	AV32	DQSA0
			DDR0_D71	AE38	DQSA1
			DDR0_D72	AJ38	DQSA2
			DDR0_D73	AN38	DQSA3
			DDR0_D74	AJ36	DQSA4
			DDR0_D75	AW5	DQSA4
			DDR0_D76	AP2	DQSA5
			DDR0_D77	AK2	DQSA6
			DDR0_D78	AF2	DQSA7
			DDR0_D79	AU32	

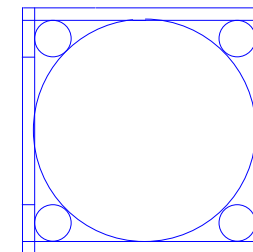
HASWELL[10SC1-F01150-01R]



LGA1150B

MAAB0	AL19	DDR1_MA0	AE34	MDB0
MAAB1	AK23	DDR1_MA1	AE35	MDB1
MAAB2	AM22	DDR1_MA2	AG35	MDB2
MAAB3	AM23	DDR1_MA3	AH35	MDB3
MAAB4	AP23	DDR1_MA4	AD34	MDB4
MAAB5	AL23	DDR1_MA5	AD35	MDB5
MAAB6	AY24	DDR1_MA6	AG34	MDB6
MAAB7	AY25	DDR1_MA7	AH34	MDB7
MAAB8	AU26	DDR1_MA8	AL34	MDB8
MAAB9	AW25	DDR1_MA9	AL35	MDB9
MAAB10	AP18	DDR1_MA10	AK31	MDB10
MAAB11	AL11	DDR1_MA11	AL31	MDB11
MAAB12	AY26	DDR1_MA12	AK34	MDB12
MAAB13	AR15	DDR1_MA13	AK35	MDB13
MAAB14	AV27	DDR1_MA14	AK32	MDB14
MAAB15	AY28	DDR1_MA15	AL32	MDB15
MODT_B0	AM17	DDR1_ODT0	AP34	MDB17
MODT_B1	AL16	DDR1_ODT1	AN31	MDB19
MODT_B2	AM16	DDR1_ODT2	AP31	MDB23
MODT_B3	AK15	DDR1_ODT3	AP35	MDB20
			AP35	MDB16
			AN32	MDB18
			AP32	MDB22
			AM29	MDB25
			AM28	MDB28
			AR29	MDB27
			AR28	MDB30
			AL23	MDB24
			AL28	MDB29
			AP29	MDB26
			AP28	MDB31
			AR12	MDB32
			AL13	MDB33
			AL12	MDB35
			AR13	MDB36
			AP13	MDB37
			AM13	MDB38
			AM12	MDB39
			AR9	MDB45
			AP9	MDB41
			AR6	MDB47
			AP6	MDB43
			AR10	MDB44
			AP10	MDB40
			AR7	MDB46
			AP7	MDB42
			AM9	MDB52
			AL9	MDB53
			AL6	MDB50
			AL7	MDB55
			AM10	MDB48
			AL10	MDB49
			AM6	MDB51
			AH6	MDB61
			AH7	MDB60
			AE6	MDB59
			AE7	MDB63
			AJ6	MDB56
			AJ7	MDB57
			AG6	MDB58
			AF7	MDB62
			AF35	DQSB0
			AL33	DQSB1
			AN28	DQSB2
			AN28	DQSB3
			AN12	DQSB4
			AP8	DQSB5
			AL8	DQSB6
			AG7	DQSB7
			AN25	DQSB0
			AF34	DQSB1
			AK33	DQSB2
			AN33	DQSB3
			AN29	DQSB4
			AN13	DQSB4
			AR8	DQSB5
			AM8	DQSB6
			AG6	DQSB7
			AN26	

HASWELL[10SC1-F01150-01R]

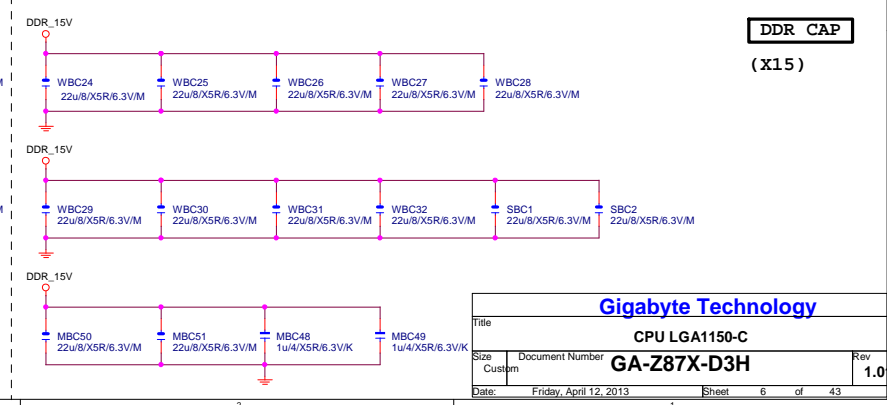
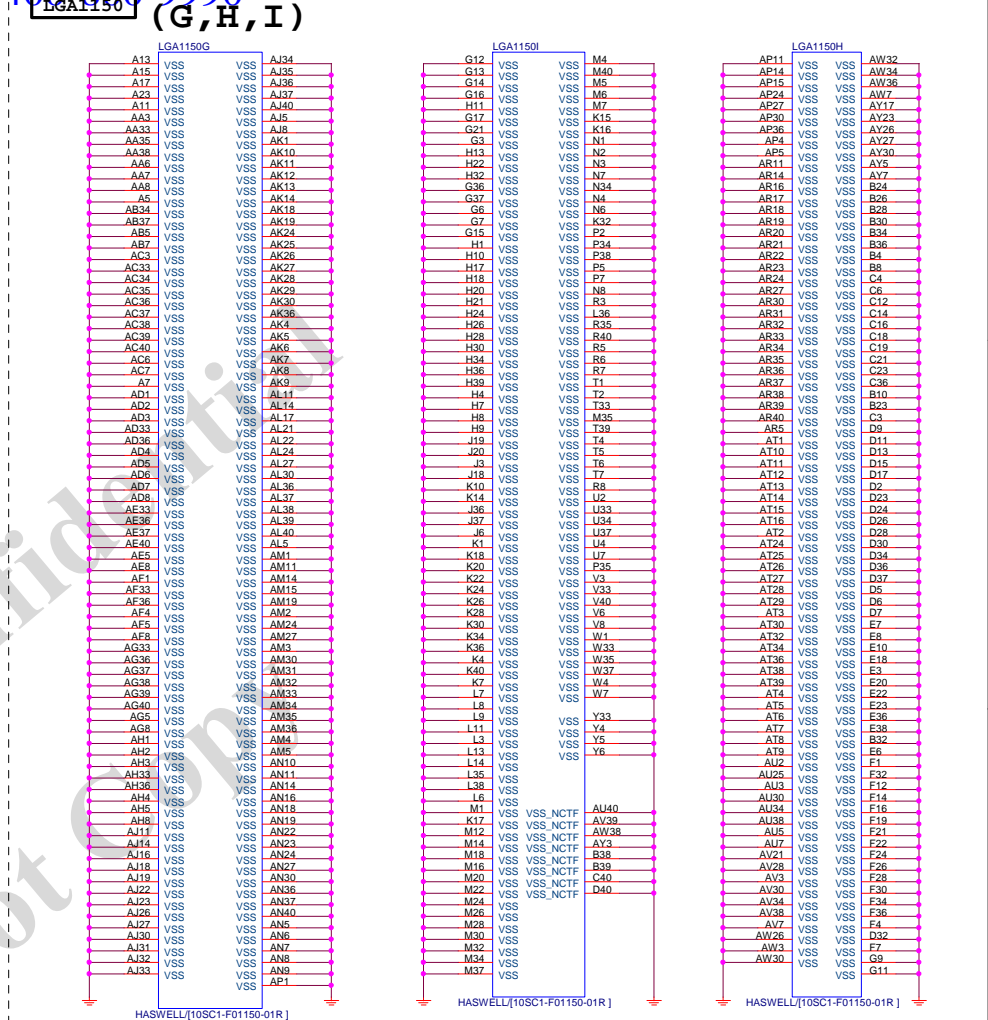
LGA1150  
ILM\_BP/1156/BKN/[12KRC-0F0001-23R]

DDR BUS

(7) MODT_A[0..3]	MODT_A0..3
(8) MODT_B[0..3]	MODT_B0..3
(7) MDA[0..63]	MDA0..63
(8) MDB[0..63]	MDB0..63
(7) DQSA[0..7]	DQSA0..7
(7) DQSA[0..7]	DQSA0..7
(7) MAA[0..15]	MAA0..15
(8) MAB[0..15]	MAB0..15
(8) DQSB[0..7]	DQSB0..7
(8) DQSB[0..7]	DQSB0..7

Gigabyte Technology

Title		CPU LGA1150-B	
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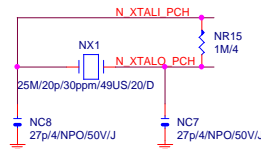
# PCH (E)

www.kinwei.com 400-800-9990

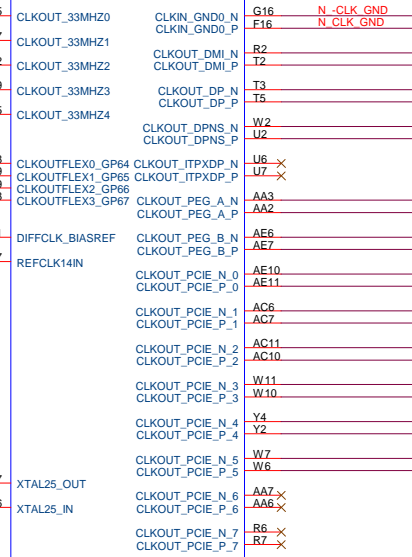
(18) N\_LPC33  
(11) N\_PCH33  
(20) T\_TPMCLK

Flex1,2,3,4 :  
14/24/33/48MHz

VCC1\_5\_PCH  
(29) N\_PCHCLK14



PCHG



Differential Clock:18/4/6/4/18  
Impedance=90 +/- 15%

PCIEx16

PCIEx8 Rev 0.2

PCIEx1\_2

Intel lan I217

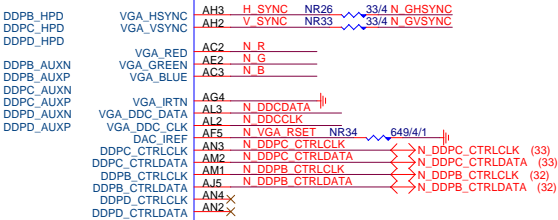
ITE8892

PCIEx1\_1 Rev 0.2

PCIEx1\_3

PCIEx4 Rev 0.2

PCHE



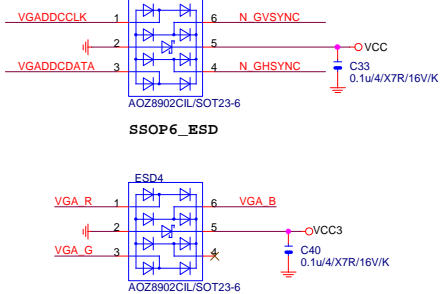
BD82287/S

## PCH CLK PD

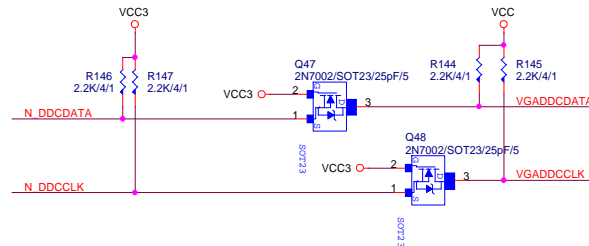


Mount for integrated clock Generation Mode

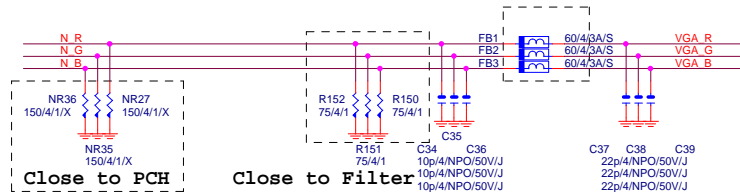
## VGA ESD



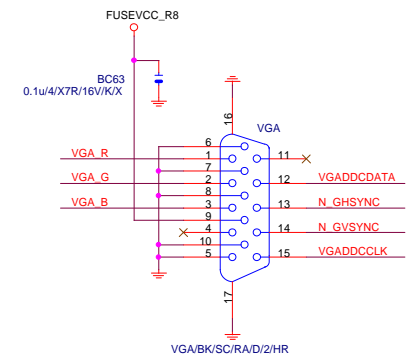
## VGA DDC



## VGA DDC



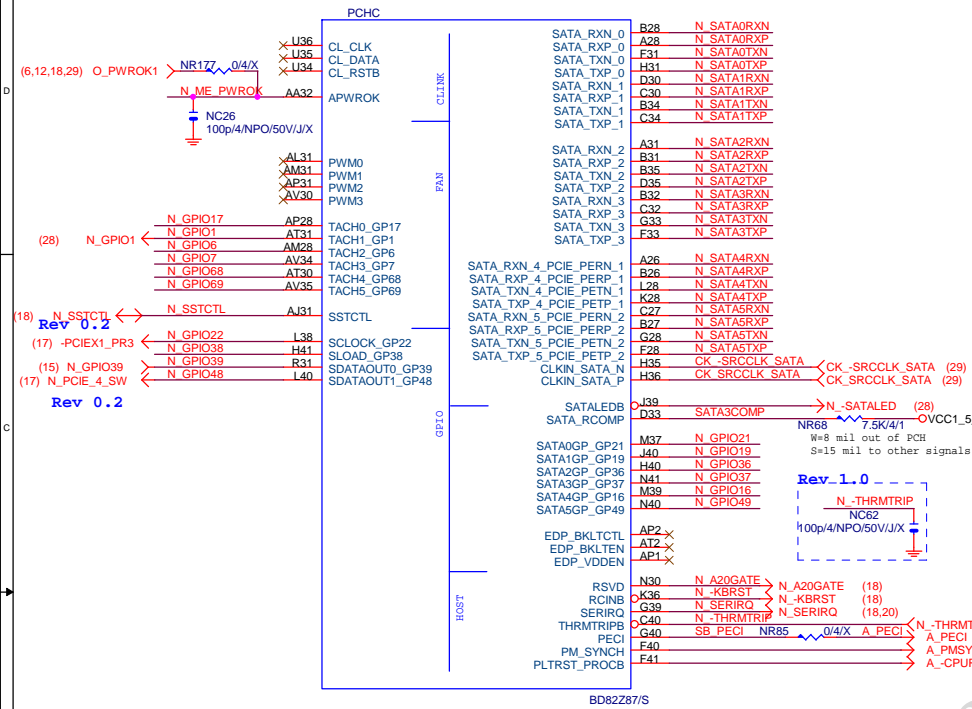
## VGA CONNECTOR



Gigabyte Technology

Title		
PCH DISPLAY ,CLK BUFFER		
Size	Document Number	Rev
Custom	G-AZ87X-D3H	1.01
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PCH (C)

SATA3 : 20/5/4/5/20 (breakout min 8/4/4/4/8)  
Impedance=85 +- 17.5%

## SATA CONNECTOR

SATA3\_0\_1

SATA3\_2\_3

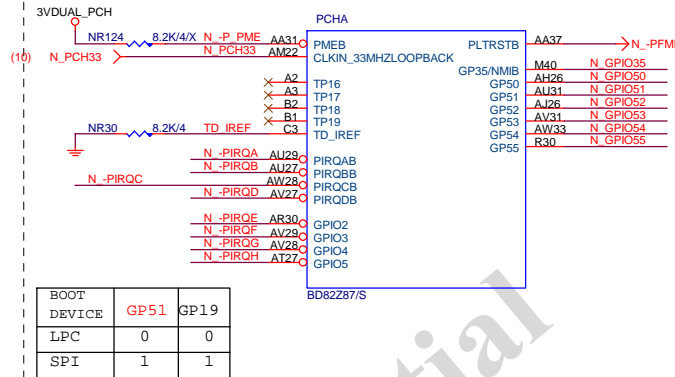
SATA3\_4\_5

SATA14/BK/H/OP/RA/D/2

SATA14/BK/H/OP/RA/D/2

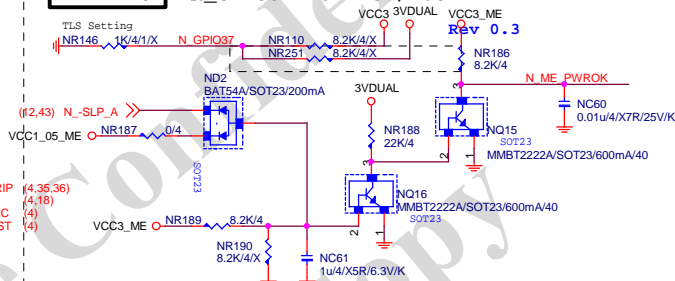
SATA14/BK/H/OP/RA/D/2

PCH (A)

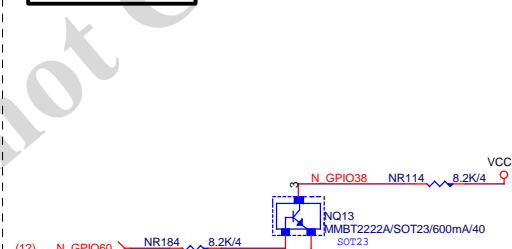


## ME PWROK

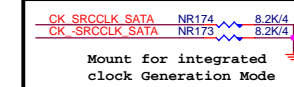
N\_GPIO37 For H87/B85



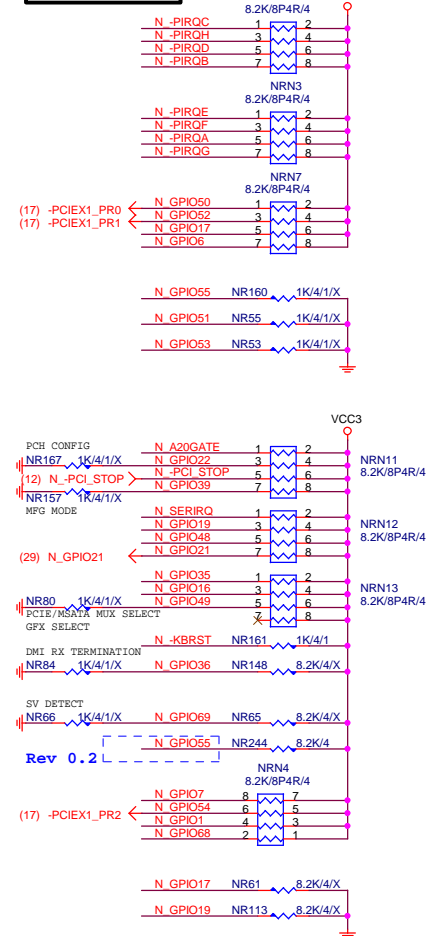
## GPIO38 Ctrl



PCH CLK PD



## PCH PU/PD



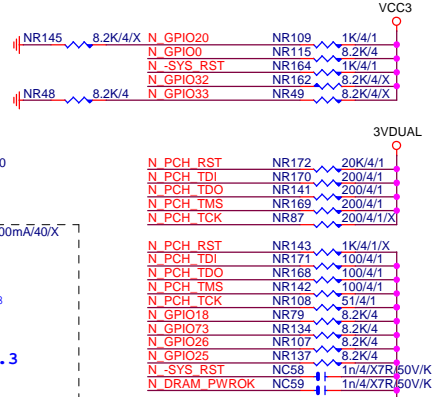
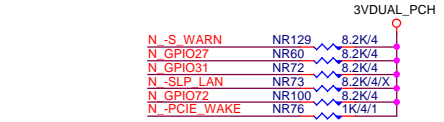
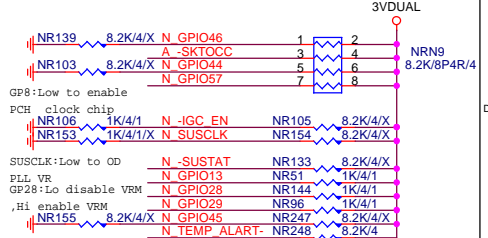
Gigabyte Technology

Title			PCH HOST , SATA, PCI
Size	Document Number	Rev	
Custom	GA-Z87X-D3H	1.01	
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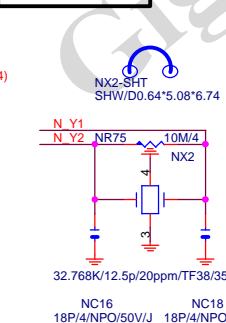
PCHD



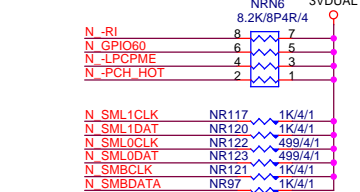
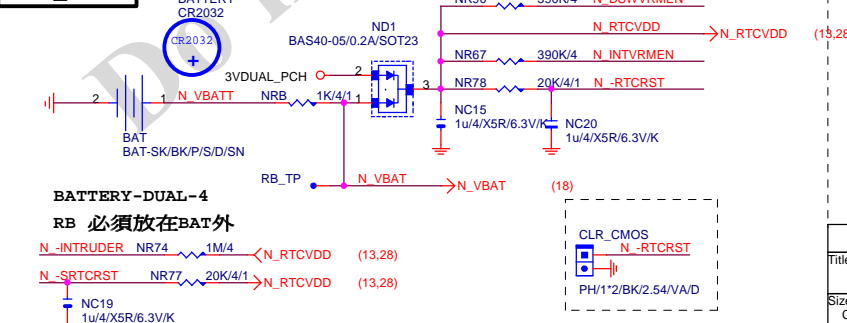
PCH	PU/PD
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32.768KHZ



CLR_CMOS
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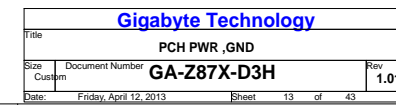


## Gigabyte Technology

## PCH GPIO , CTRL , AUDIO

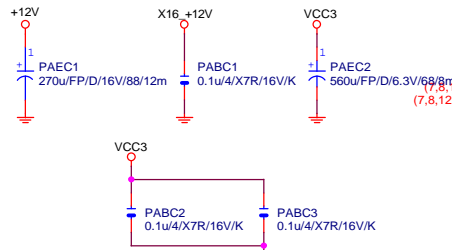
**GA-Z87X-D3H**

Title			
PCH GPIO, CTRL, AUDIO			
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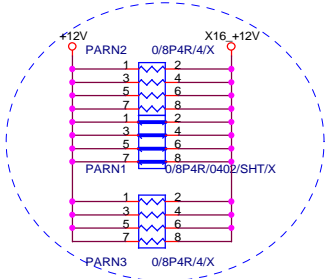


# PCIEX16 CAP



# PCIEX16 PROTECT SHT

+12 protect short-wire test



# PCIEX16 AC CAP

PA EXP TXP0	PAC5	0.22u/4/X5R/6.3V/K	PA EXP TXP0 C
PA EXP TXN0	PAC4	0.22u/4/X5R/6.3V/K	PA EXP TXN0 C
PA EXP TXP1	PAC6	0.22u/4/X5R/6.3V/K	PA EXP TXP1 C
PA EXP TXN1	PAC7	0.22u/4/X5R/6.3V/K	PA EXP TXN1 C
PA EXP TXP2	PAC8	0.22u/4/X5R/6.3V/K	PA EXP TXP2 C
PA EXP TXN2	PAC9	0.22u/4/X5R/6.3V/K	PA EXP TXN2 C
PA EXP TXP3	PAC10	0.22u/4/X5R/6.3V/K	PA EXP TXP3 C
PA EXP TXN3	PAC11	0.22u/4/X5R/6.3V/K	PA EXP TXN3 C
PA EXP TXP4	PAC12	0.22u/4/X5R/6.3V/K	PA EXP TXP4 C
PA EXP TXN4	PAC13	0.22u/4/X5R/6.3V/K	PA EXP TXN4 C
PA EXP TXP5	PAC14	0.22u/4/X5R/6.3V/K	PA EXP TXP5 C
PA EXP TXN5	PAC15	0.22u/4/X5R/6.3V/K	PA EXP TXN5 C
PA EXP TXP6	PAC16	0.22u/4/X5R/6.3V/K	PA EXP TXP6 C
PA EXP TXN6	PAC17	0.22u/4/X5R/6.3V/K	PA EXP TXN6 C
PA EXP TXP7	PAC18	0.22u/4/X5R/6.3V/K	PA EXP TXP7 C
PA EXP TXN7	PAC19	0.22u/4/X5R/6.3V/K	PA EXP TXN7 C
PA EXP SW TXP8	PAC20	0.22u/4/X5R/6.3V/K	PA EXP SW TXP8 C
PA EXP SW TXN8	PAC21	0.22u/4/X5R/6.3V/K	PA EXP SW TXN8 C
PA EXP SW TXP9	PAC22	0.22u/4/X5R/6.3V/K	PA EXP SW TXP9 C
PA EXP SW TXN9	PAC23	0.22u/4/X5R/6.3V/K	PA EXP SW TXN9 C
PA EXP SW TXP10	PAC24	0.22u/4/X5R/6.3V/K	PA EXP SW TXP10 C
PA EXP SW TXN10	PAC25	0.22u/4/X5R/6.3V/K	PA EXP SW TXN10 C
PA EXP SW TXP11	PAC26	0.22u/4/X5R/6.3V/K	PA EXP SW TXP11 C
PA EXP SW TXN11	PAC27	0.22u/4/X5R/6.3V/K	PA EXP SW TXN11 C
PA EXP SW TXP12	PAC28	0.22u/4/X5R/6.3V/K	PA EXP SW TXP12 C
PA EXP SW TXN12	PAC29	0.22u/4/X5R/6.3V/K	PA EXP SW TXN12 C
PA EXP SW TXP13	PAC30	0.22u/4/X5R/6.3V/K	PA EXP SW TXP13 C
PA EXP SW TXN13	PAC31	0.22u/4/X5R/6.3V/K	PA EXP SW TXN13 C
PA EXP SW TXP14	PAC32	0.22u/4/X5R/6.3V/K	PA EXP SW TXP14 C
PA EXP SW TXN14	PAC33	0.22u/4/X5R/6.3V/K	PA EXP SW TXN14 C
PA EXP SW TXP15	PAC34	0.22u/4/X5R/6.3V/K	PA EXP SW TXP15 C
PA EXP SW TXN15	PAC35	0.22u/4/X5R/6.3V/K	PA EXP SW TXN15 C

PCI-E REV:1.1--> 2.5GHZ

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

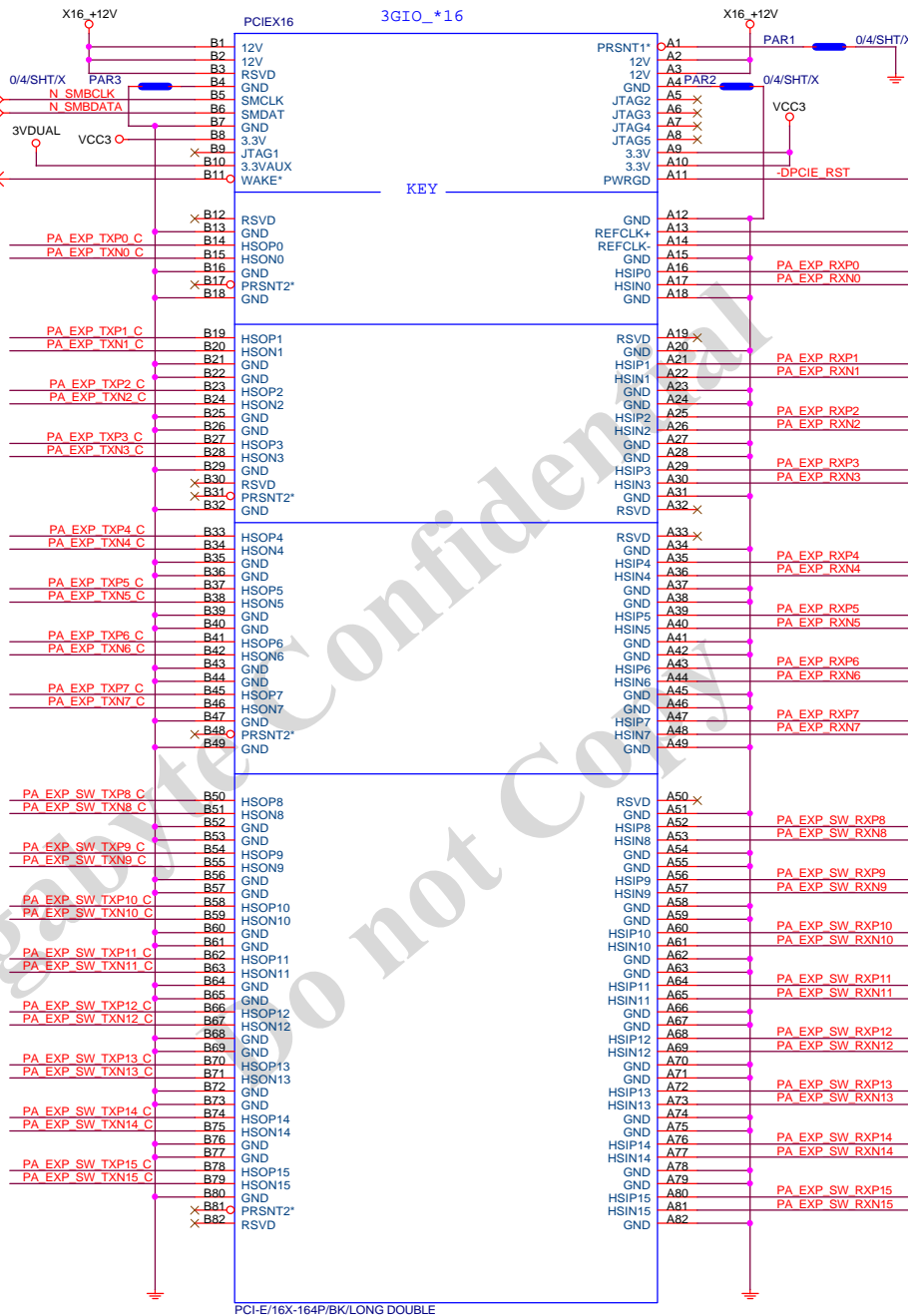
PCE-E X1(雙向) BANDWITH=2.5GHz\*(8b/10b)X2=4Gb/s=500MB/s

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

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

PCI-E REV:2.0--> 5GHZ

# PCIEX16 SLOT

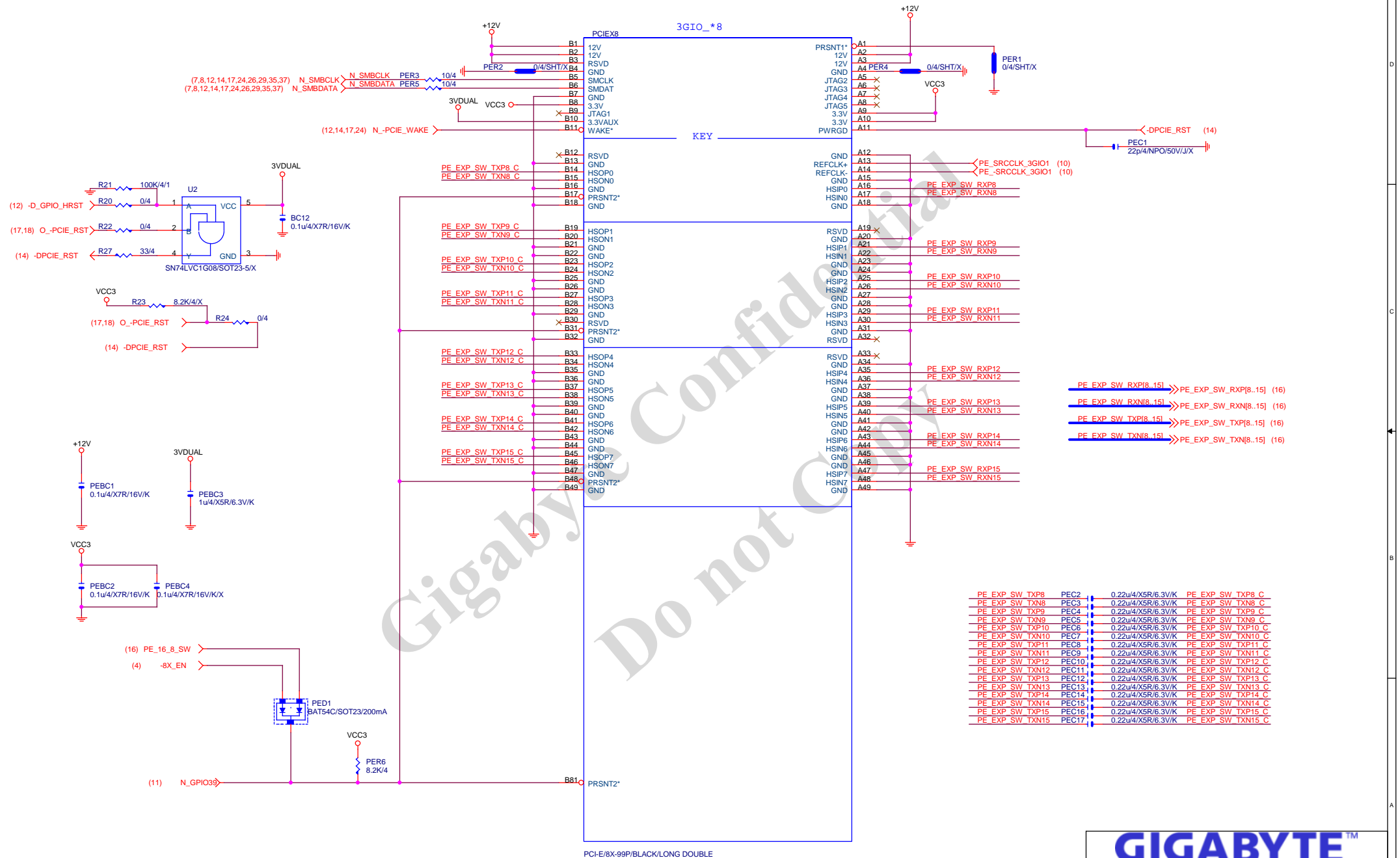


PCI-E/16X-164P/BK/LONG DOUBLE

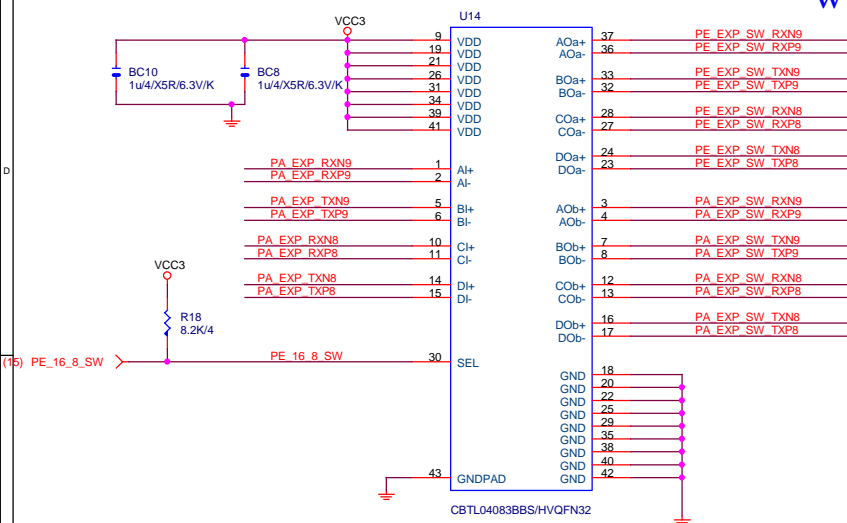
Gigabyte Technology

Title			
PCI EXPRESS * 16			
Size		Document Number	Rev
Custom		GA-Z87X-D3H	1.01
Date:		Friday, April 12, 2013	Sheet 14 of 43

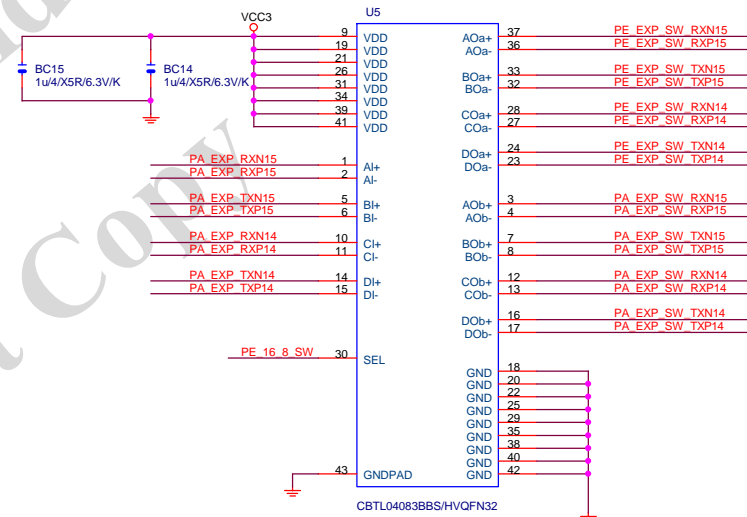
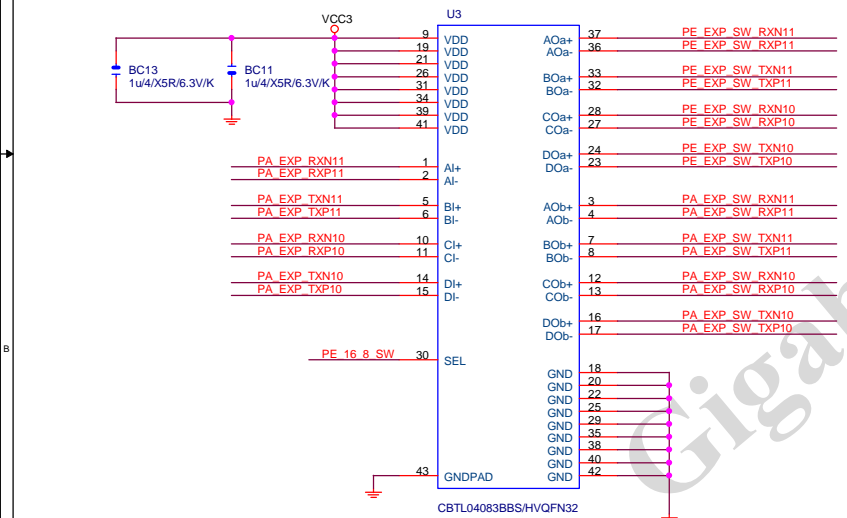
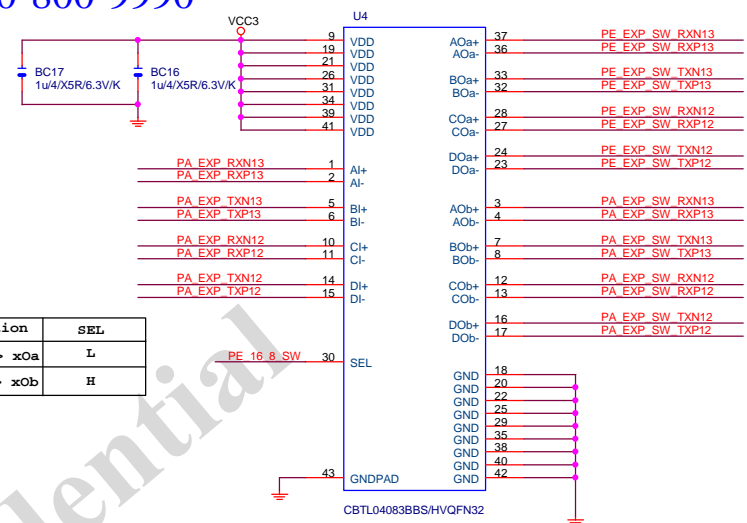




PCI-E/8X-99P/BLACK/LONG DOUBLE



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



PA EXP SW RXP18.15] >> PA\_EXP\_SW\_RXP[8.15] (14)

PA EXP SW RXN18.15] >> PA\_EXP\_SW\_RXN[8.15] (14)

PA EXP SW TXP18.15] >> PA\_EXP\_SW\_TXP[8.15] (14)

PA EXP SW TXN18.15] >> PA\_EXP\_SW\_TXN[8.15] (14)

PE EXP SW RXP18.15] >> PE\_EXP\_SW\_RXP[8.15] (15)

PE EXP SW RXN18.15] >> PE\_EXP\_SW\_RXN[8.15] (15)

PE EXP SW TXP18.15] >> PE\_EXP\_SW\_TXP[8.15] (15)

PE EXP SW TXN18.15] >> PE\_EXP\_SW\_TXN[8.15] (15)

PA EXP RXP10.15] >> PA\_EXP\_RXP[0.15] (4,14)

PA EXP RXN10.15] >> PA\_EXP\_RXN[0.15] (4,14)

PA EXP TXP10.15] >> PA\_EXP\_TXP[0.15] (4,14)

PA EXP TXN10.15] >> PA\_EXP\_TXN[0.15] (4,14)



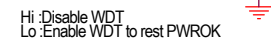
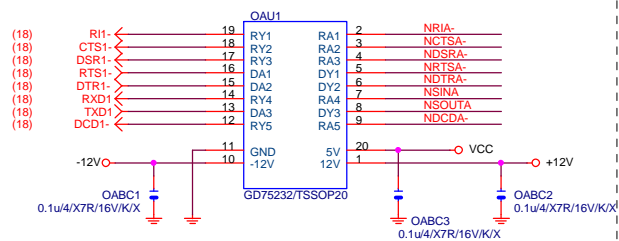


Diagram illustrating the JPS control logic for the 8728 EX anti-surge enable. The circuit includes a 3V3 regulator, a 1K4/1/X resistor, and several JPS pins (JP2, JP4, JP5, JP36, JP35, JP32, JP12) connected to VCC3 and ground. A box labeled "JPS: N/A FOR 8728 DX" and "JPS: PULL DOWN FOR 8728 EX anti-surge enable" is shown. Another box labeled "EUP control detect" shows a 3V3 regulator, a 100/4/1 resistor, and a 3V3S signal.

JP4	1	k8 power sequency function is Disable
	0	k8 power sequency function is Enable
JP3	1 1	The default value of EC Index 63h/6Bh/73h is 80h
	1 0	The default value of EC Index 63h/6Bh/73h is FFh
JP5	0 1	The default value of EC Index 63h/6Bh/73h is 00h
	0 0	The default value of EC Index 63h/6Bh/73h is 40h

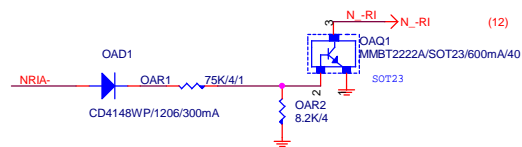
## MB ID

## COMA

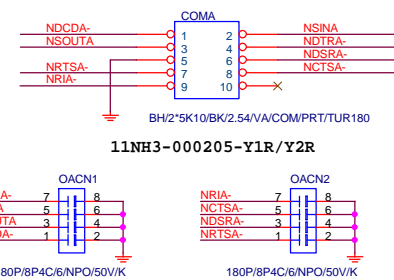


www.xinxunwei.com 400-800-9990

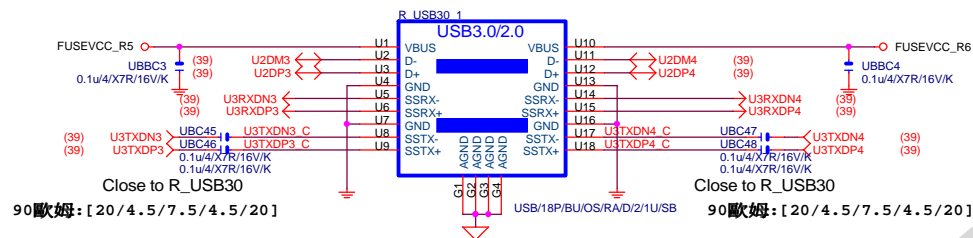
## COM R1



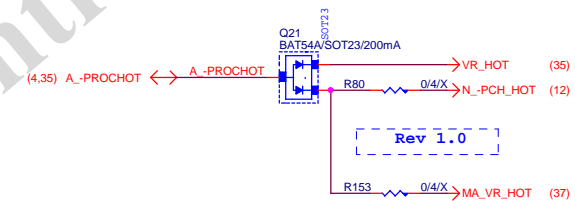
## COM BUFFER



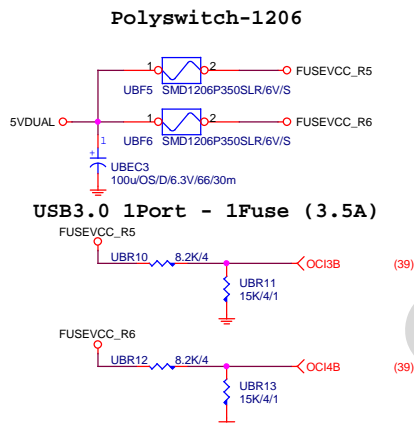
## USB30\_20 CONNECT



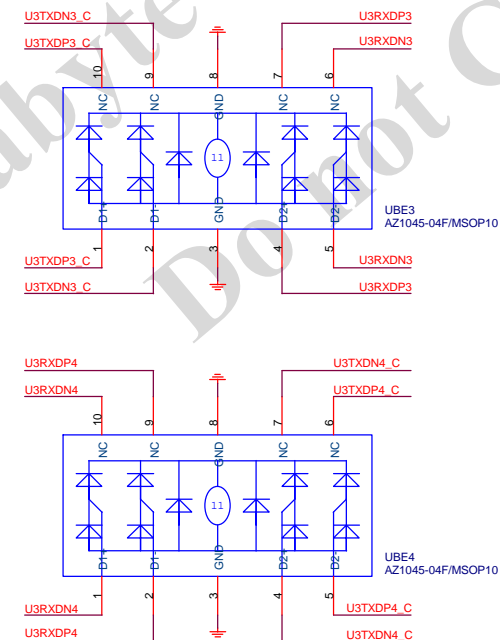
## -PROHOT



## USB30 PWR

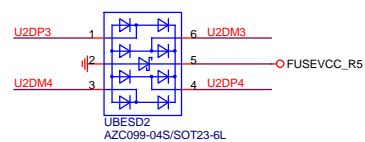


## USB30 ESD PROTECT



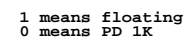
## -PROHOT

## USB20 ESD PROTECT

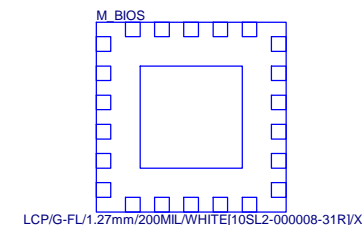


Gigabyte Technology

Title			COM & PROHOT/Dynamic O.C.
Size	Document Number	Rev	
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## BIOS Debug port

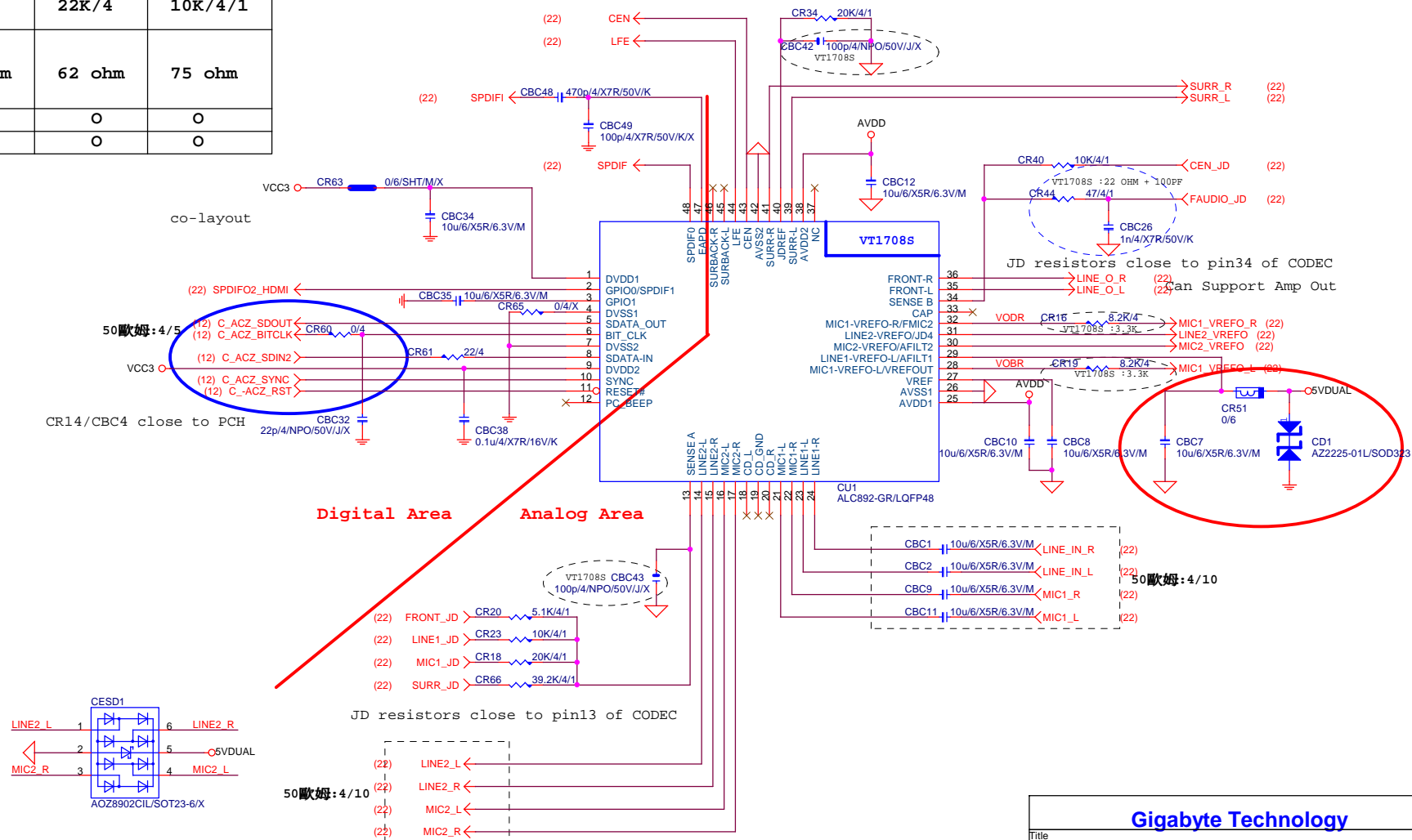


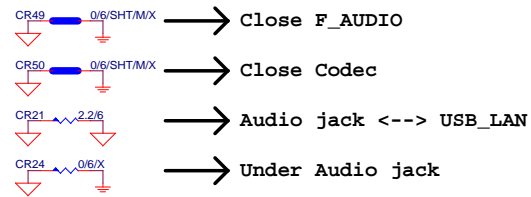
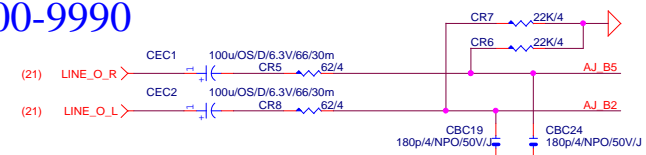
**Gigabyte Technology**

<b><i>Gigabyte Technology</i></b>			
<b>BIOS</b>			
Size Custom	Document Number	<b>GA-Z87X-D3H</b>	<b>Rev 1.01</b>
Date:	Friday, April 12, 2013	Sheet 20 of 43	

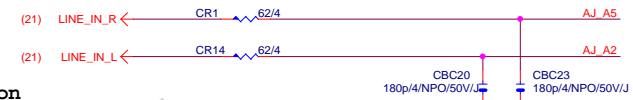


	ALC892	ALC887-VD2	VT1708S-CE
CR44/CBC26	47ohm+1nF	47ohm+1nF	22ohm+100P
CBC42/CBC43	X	X	100P/4
CR16/CR19 CR52/CR56/CR10/CR9	8.2K/4	8.2K/4	3.3K/4/1
CR6/CR7/CR58/CR54/ CR67/CR68/CR69/CR70	22K/4	22K/4	10K/4/1
CR5/CR8/CR1/CR14/ CR17/CR22/CR73/CR74/ CR13/CR11/CR57/CR53/ CR75/CR76	62 ohm	62 ohm	75 ohm
CR51/CD1/CBC7	O	O	O
CESD1	X	O	O

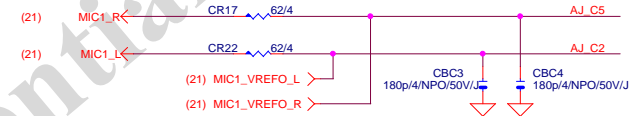
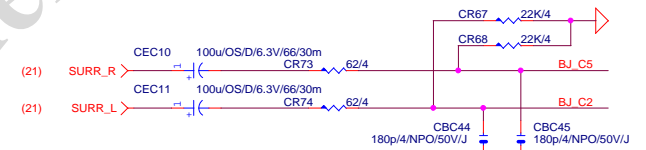
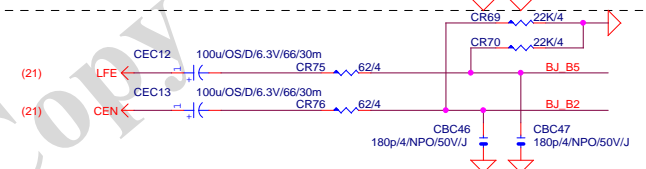
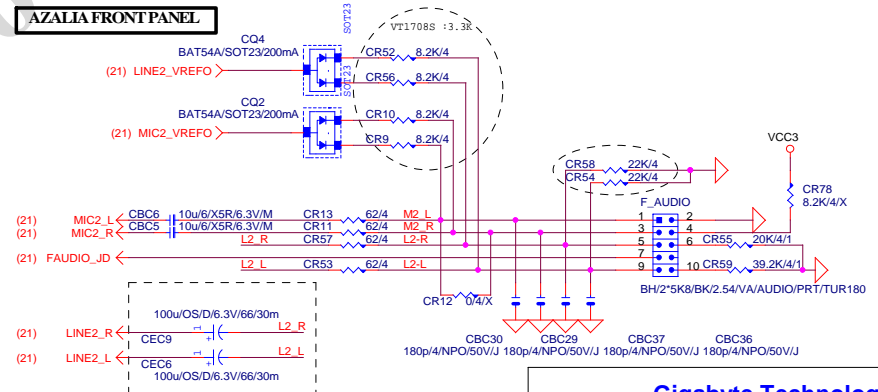


**LINE-OUT****LINE-IN**

Verify MIC function in LINE-in

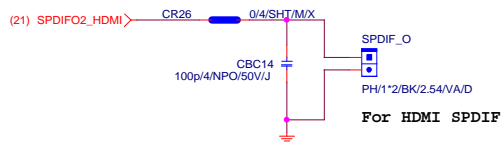
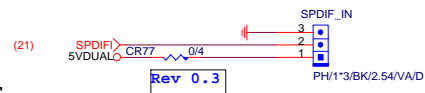
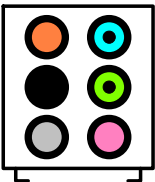
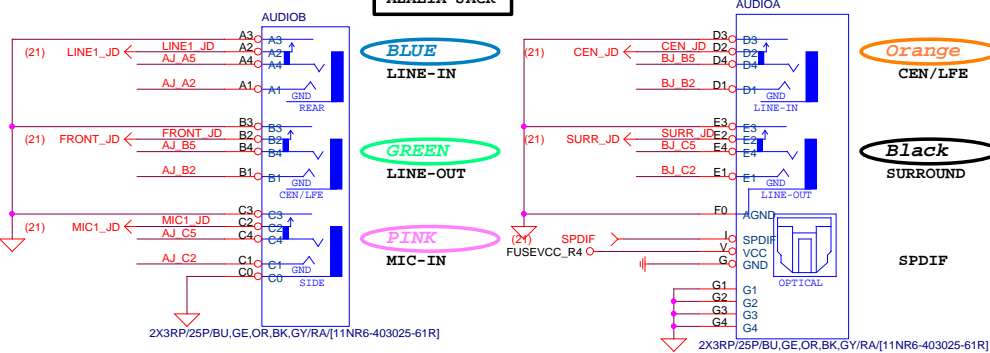


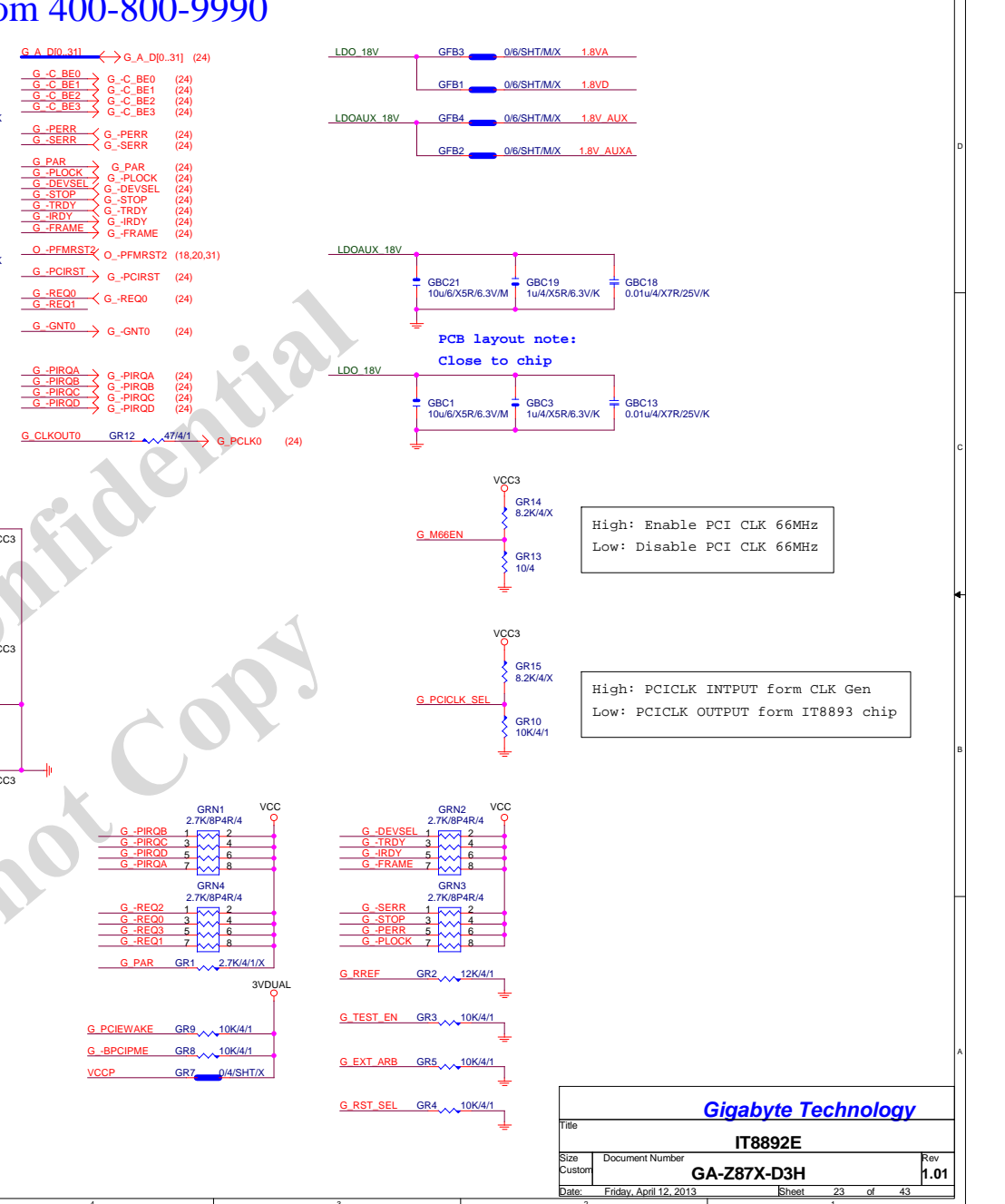
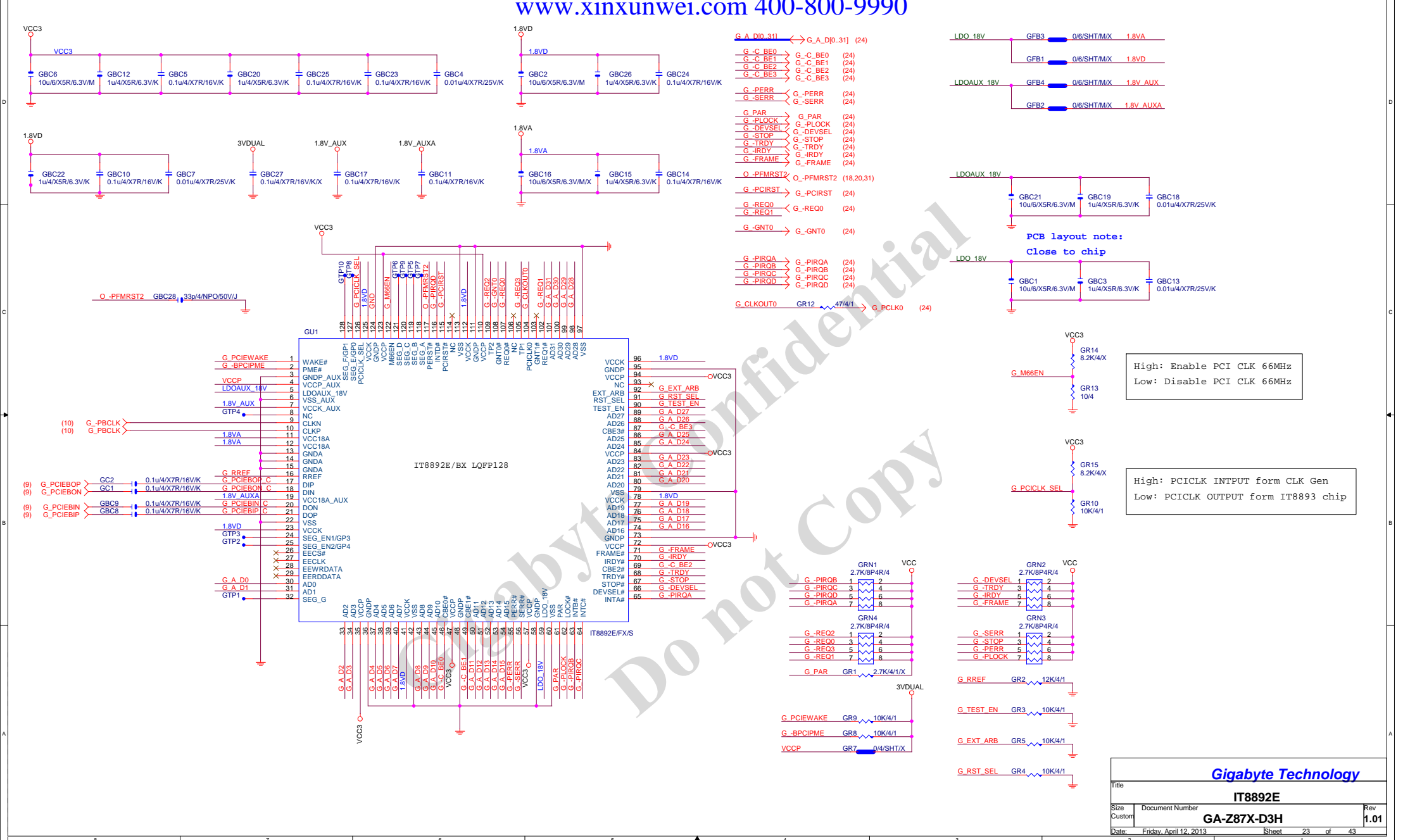
For 889A/888

**MIC-IN****SURROUND****CEN/LFE****SURRBACK****AZALIA FRONT PANEL**

Gigabyte Technology

Title		
AUDIO JACK		
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Custom	GA-Z87X-D3H	1.01
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**SPDIF\_OUT****SPDIF\_IN****AZALIA JACK****AZALIA JACK**

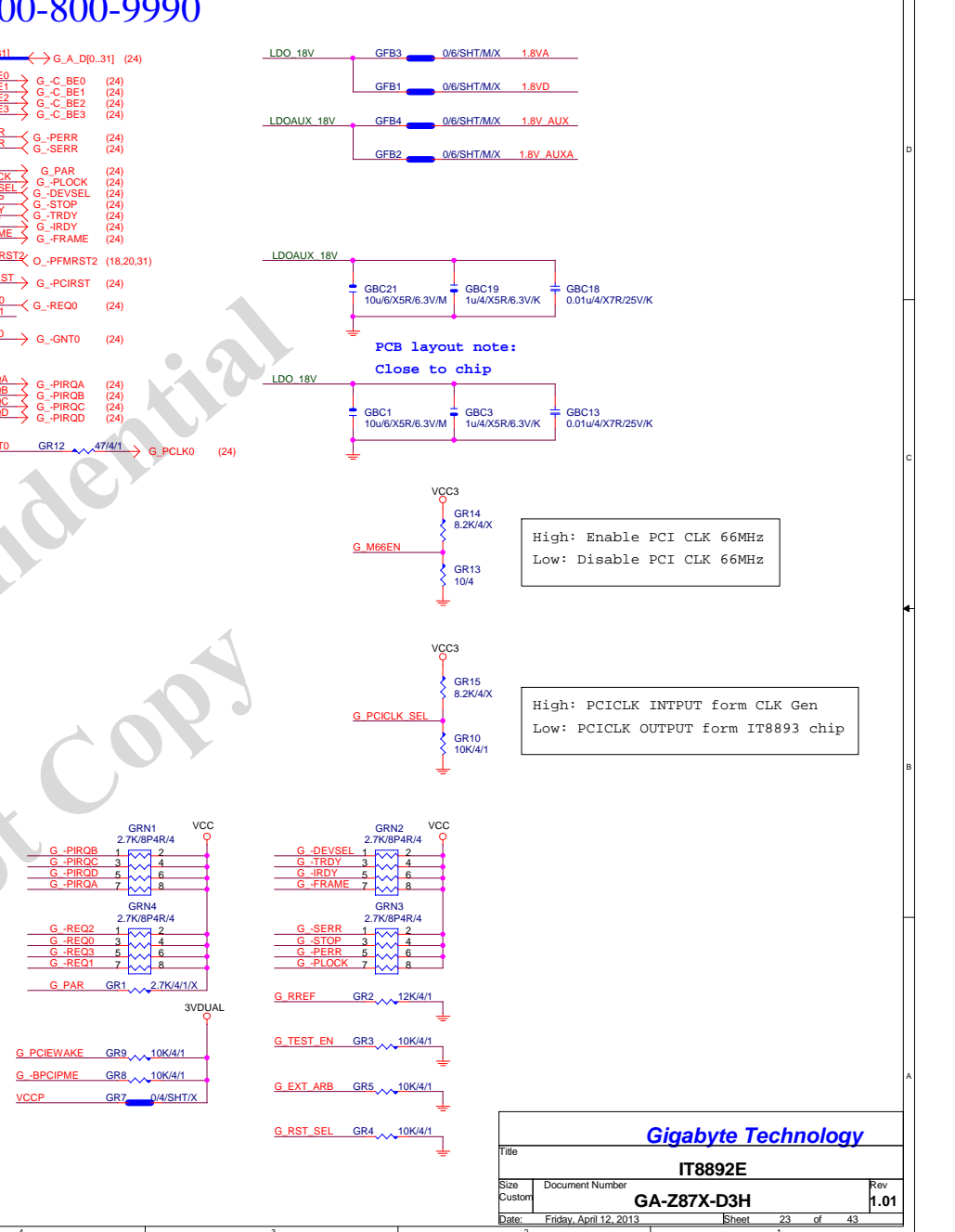


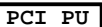
**PCB layout note:**  
Close to chip

Pin	Function
GFB3	0/6/SHT/M/X 1.8VA
GFB1	0/6/SHT/M/X 1.8VD
GFB4	0/6/SHT/M/X 1.8V AUX
GFB2	0/6/SHT/M/X 1.8V AUXA
GBC21	10u/6/X5R/6.3V/M
GBC19	1u/4/X5R/6.3V/K
GBC18	0.01u/4/X7R/25V/K
GBC1	10u/6/X5R/6.3V/M
GBC3	1u/4/X5R/6.3V/K
GBC13	0.01u/4/X7R/25V/K
GR14	8.2K/4/X
GR13	10/4
GR15	8.2K/4/X
GR10	10K/4/1
GRN2	2.7K/8P4R/4
GRN3	2.7K/8P4R/4
GR2	12K/4/1
GR3	10K/4/1
GR5	10K/4/1
GR4	10K/4/1

<b>Gigabyte Technology</b>	
<b>IT8892E</b>	
Document Number	<b>GA-Z87X-D3H</b>
Date: Friday, April 12, 2013	Sheet 23 of 43
Rev	<b>1.01</b>

<b>Gigabyte Technology</b>	
<b>IT8892E</b>	
Document Number	<b>GA-Z87X-D3H</b>
Date: Friday, April 12, 2013	Sheet 23 of 43
Rev	<b>1.01</b>

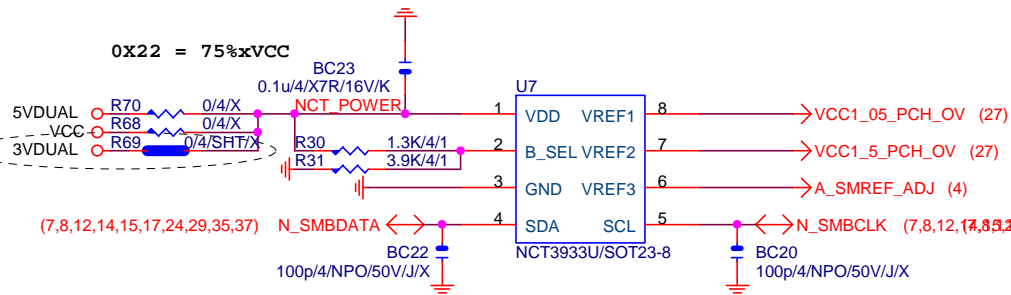




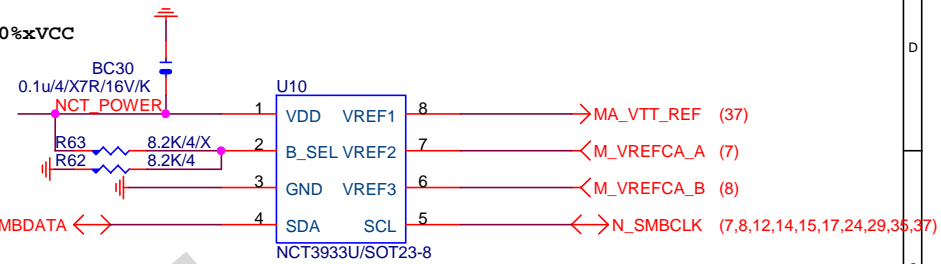
Title			
PCI SLOT 1&2			
Size	Document Number	Rev	
Custom	GA-Z87X-D3H	1.01	
Date:	Friday, April 12, 2013	Sheet	24 of 43



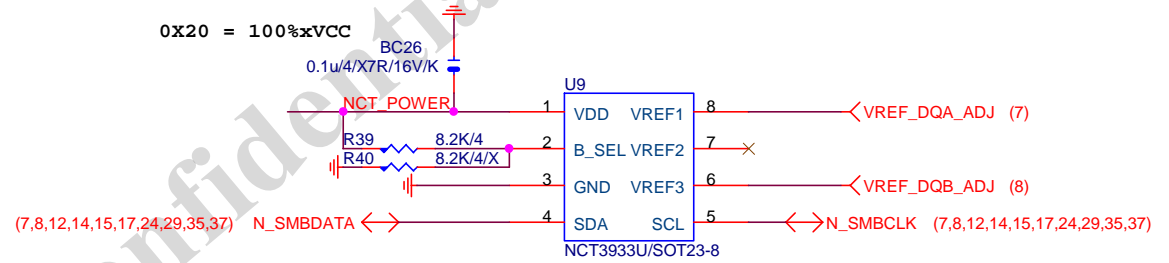
## OVER VOLTAGE



0X2A = 0%xVCC



0X20 = 100%xVCC

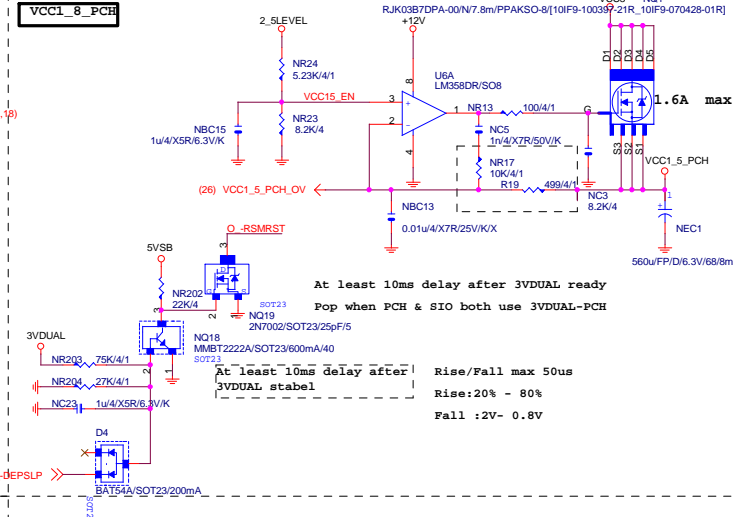
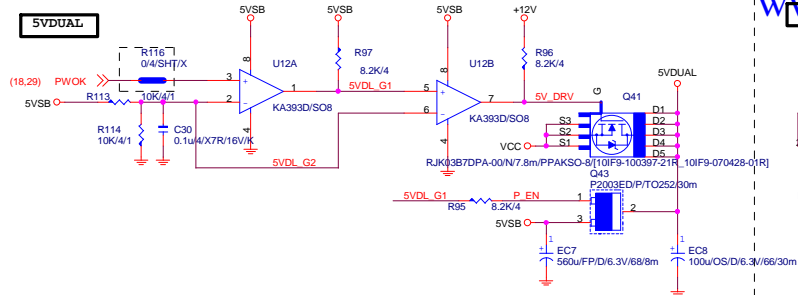


NCT3933	0X2A	0X20	0X22
VREF1	DDRVTT	VREF_DDRA_DQ	PCH Core
VREF2	VREF_DDRA_CA	N/A	VCC1_5_PCH
VREF3	VREF_DDRA_CA	VREF_DDRB_DQ	SMREF

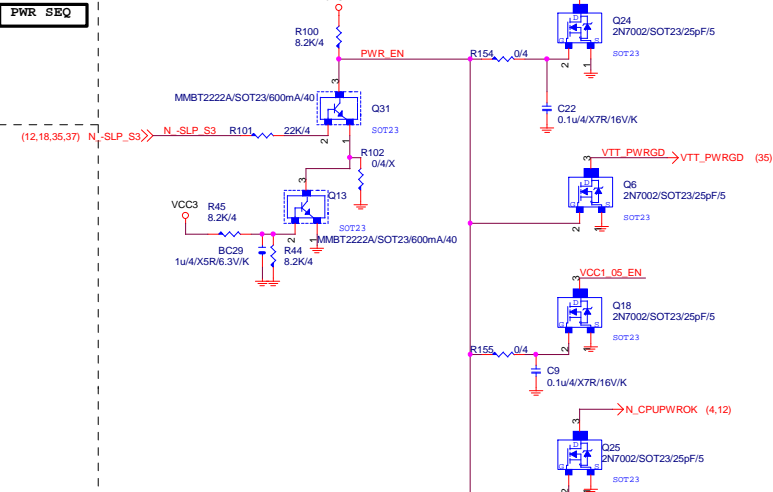
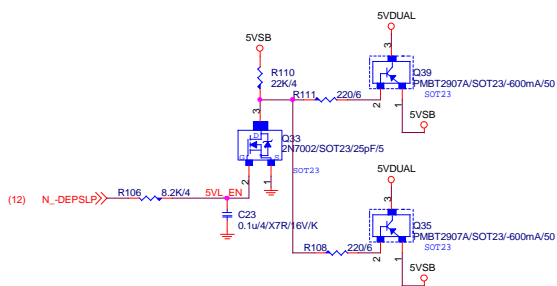
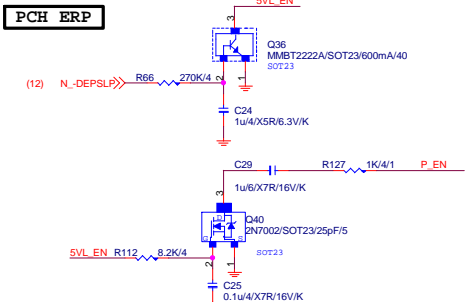
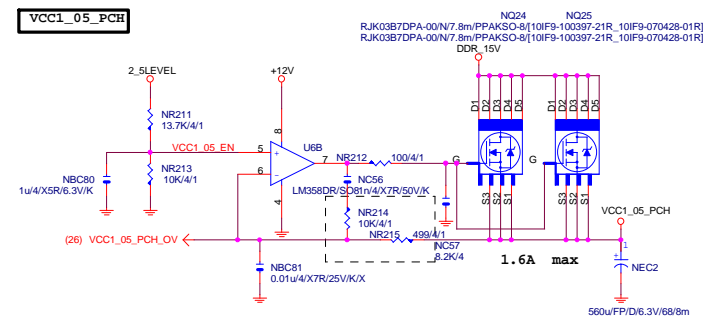
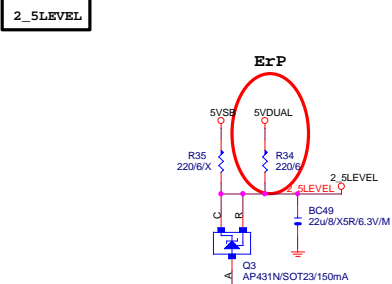
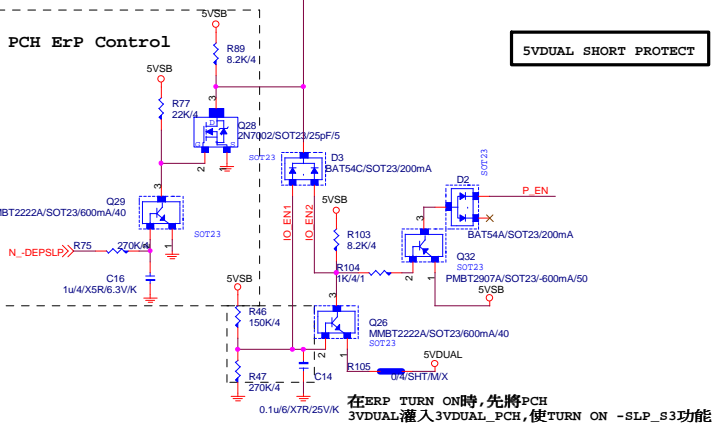
Gigabyte Technology

Title		
CPU CORE VR-2		
Size	Document Number	Rev
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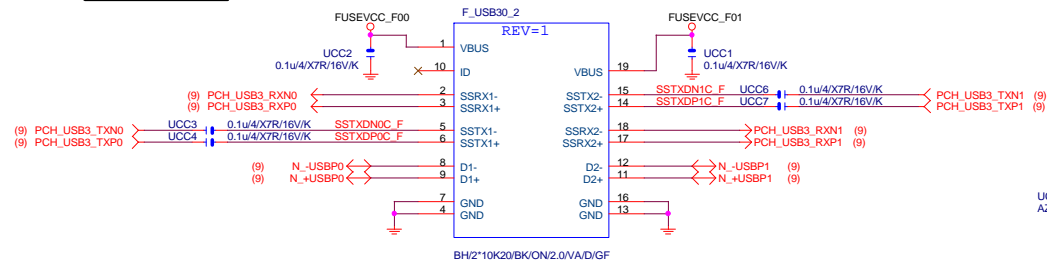
5VSB OVP:7.5V protection



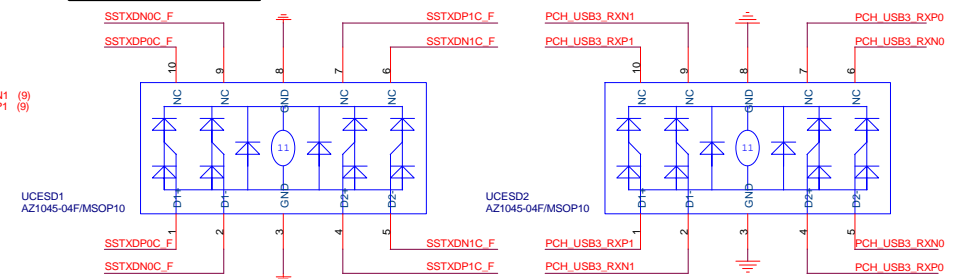
Gigabyte Technology

Title				
DISCRETE POWER				
Size	Document Number	GA-Z87X-D3H		Rev
Custom				1.01
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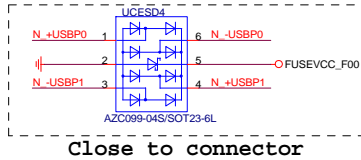
## Front USB3.0



## F\_USB30 ESD PROTECT

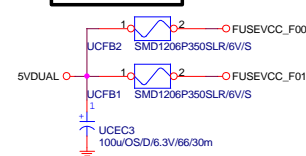


## BLUE

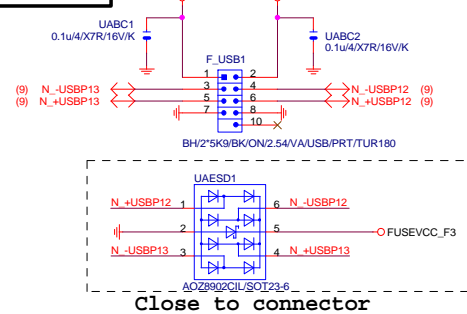


Close to connector

## F\_USB30 PWR

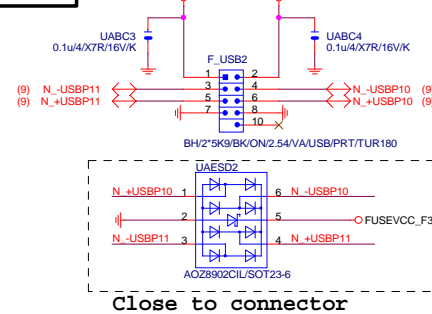


## FRONT USB1



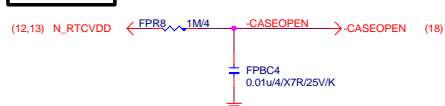
Close to connector

## FRONT USB2

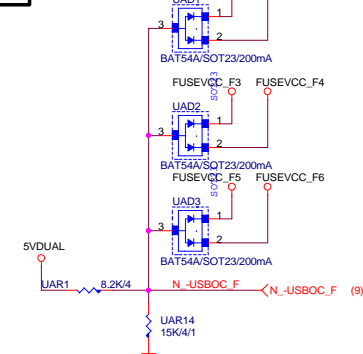


Close to connector

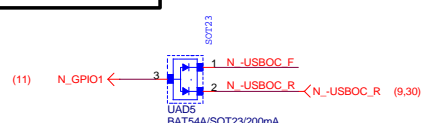
## CASE OPEN



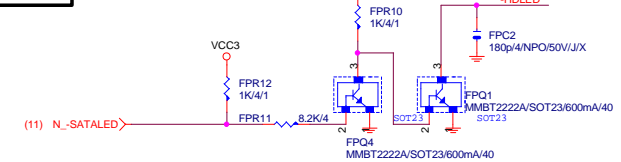
## -USBOC\_F



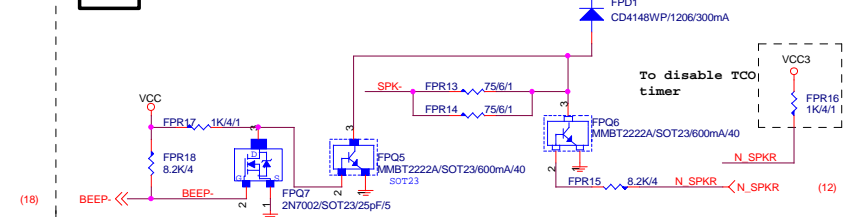
## F\_USB POWER PROTECT



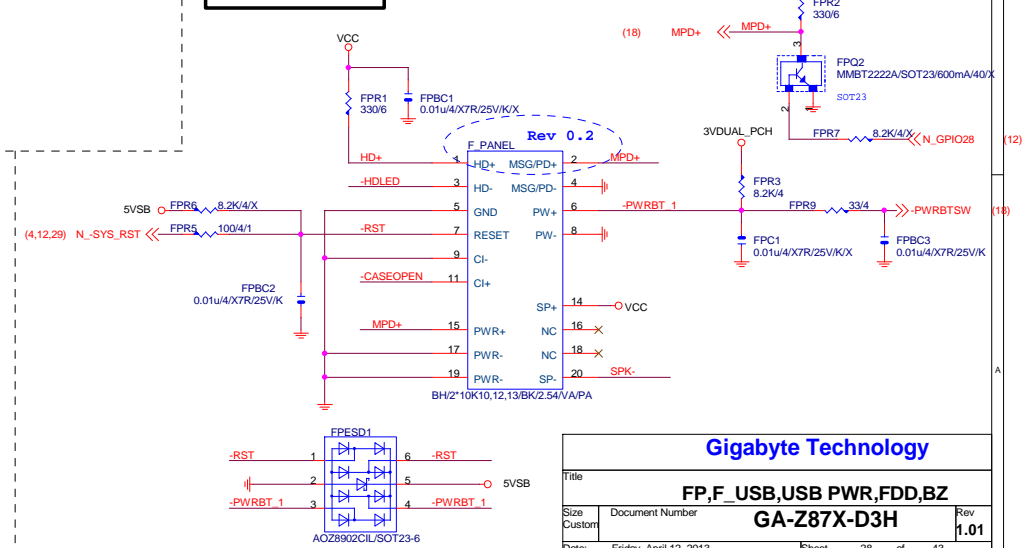
## SATA LED



## SPKR



## INTEL FRONT PANEL

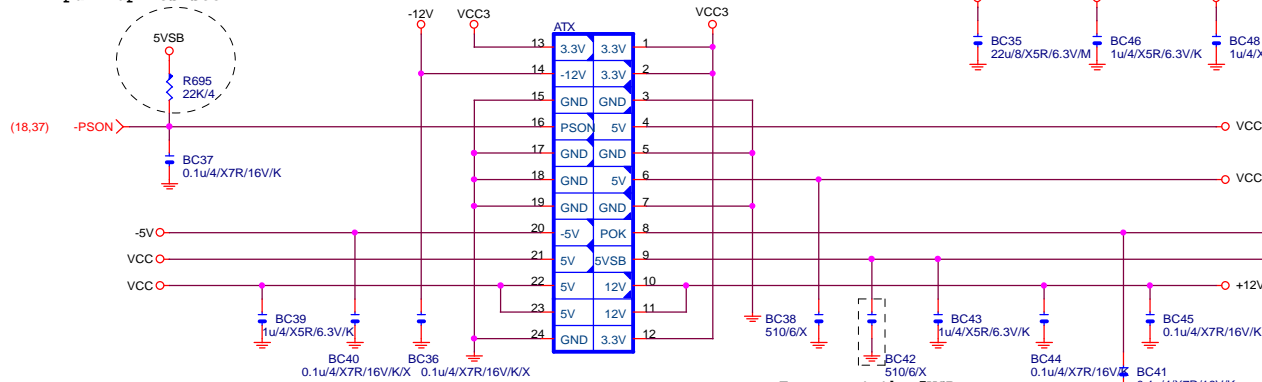


Gigabyte Technology

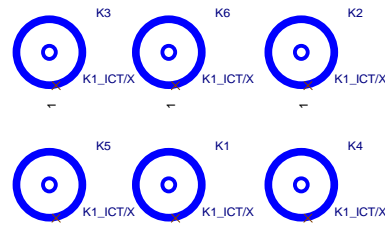
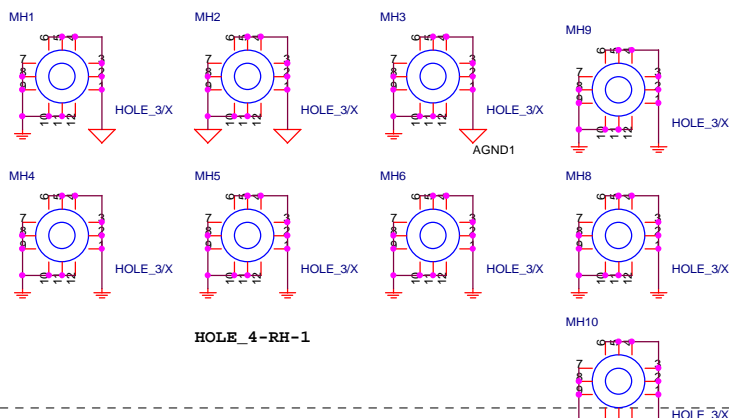
Title		Rev	
Size		1.01	
Document Number		GA-Z87X-D3H	
Date		Friday, April 12, 2013	
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## ATXX24 POWER CONNECTOR

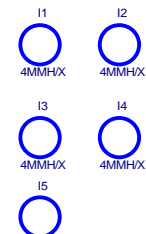
Patch some PSU no internal pull up resistor



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

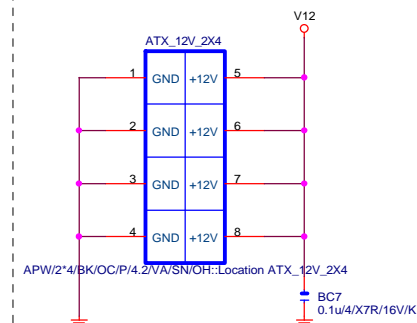
To prevent the 5VSB  
under loading when  
boot

K1-ICT



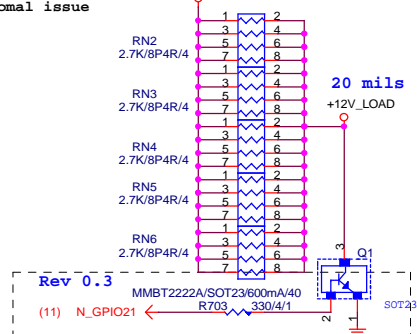
4MMH

## ATXX4 POWER CONNECTOR



APW/2\*4/BK/OC/P/4.2VA/SN/OH:Location ATX\_12V\_2X4

## 【技術通報R&amp;D技術通報153】

To fix 12V light load  
abnormal issue

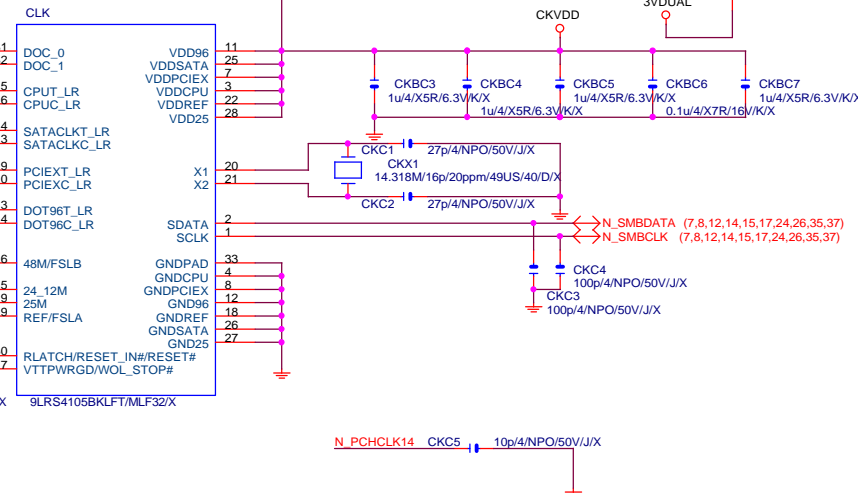
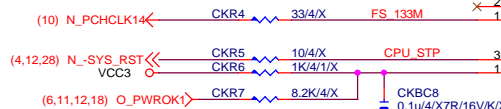
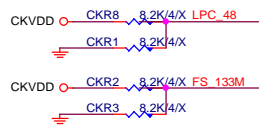
Rev 0.3

(11) N\_GPIO21

## CLK GEN

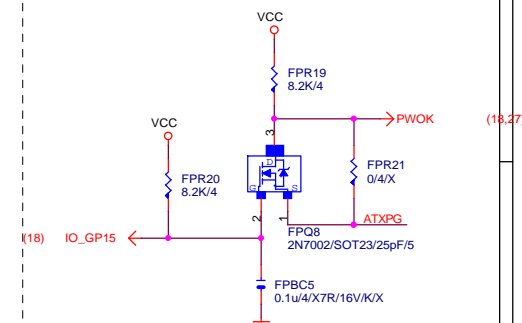
## CPU Frequency Selection

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



## PWOK PATCH

## 【技術通報R&amp;D技術通報154】



Gigabyte Technology

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Custom			
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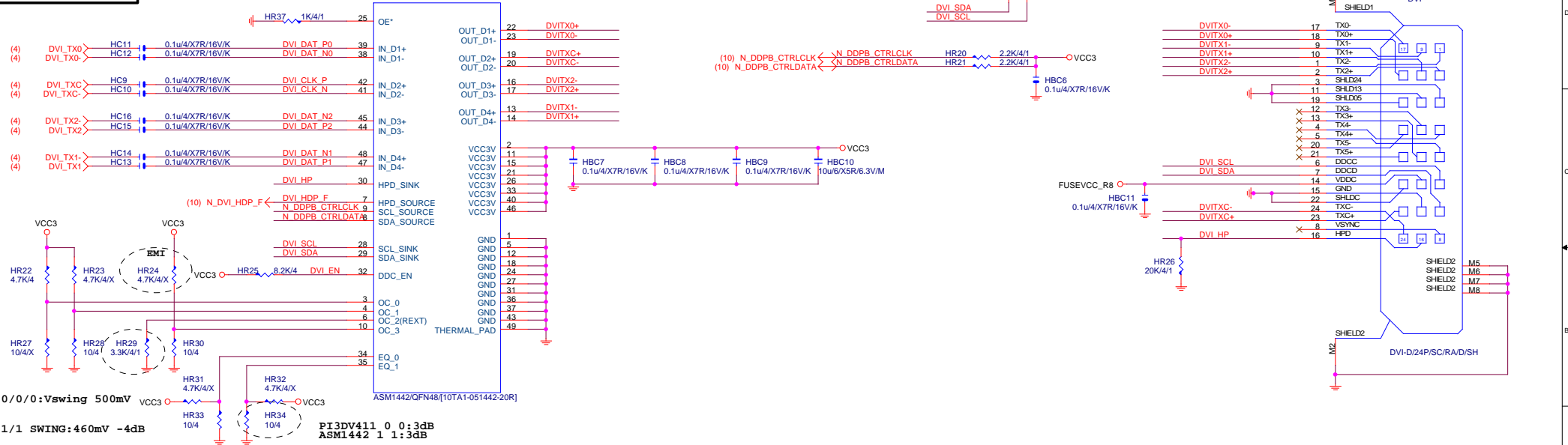




DVI:15/4/4/15

Impedance=85 +- 17.5%

## DVI LEVEL SHIFT



Gigabyte Technology			
Title			
TI TSB43AB23 1394			
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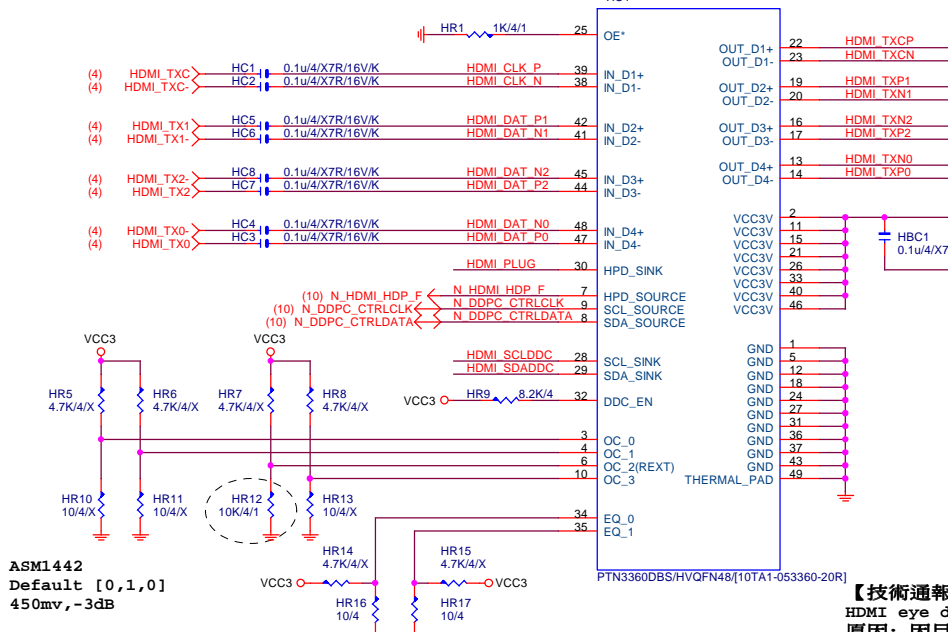


## HDMI LEVEL SHIFT

HDMI:15/4/4/15

Impedance=85 +- 17.5%

HU1



ASM1442  
Default [0,1,0]  
450mv,-3dB

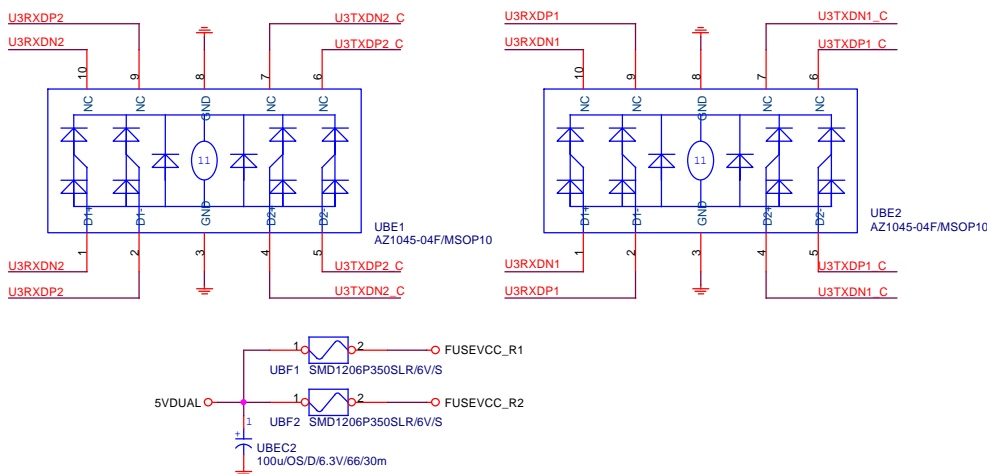
ASM1442 Default [0,0] 3dB  
[0,1]6dB

## 【技術通報R&amp;D技術通報150】

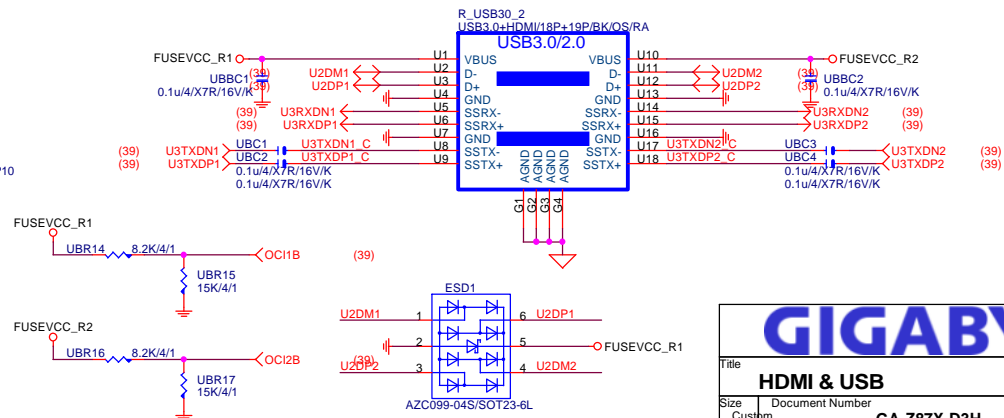
HDMI eye diagram1.4版(deep color)會fail

原因: 因目前的HDMI訊號過長,造成RISING TIME過慢,而會壓到eye diagram

改善: ASMEDIA ASM1442 : 3.16K(PIN6 PULL DOWN電阻) 10ohm(PIN4 PULL DOWN電阻)



## R\_USB30



GIGABYTE™			
HDMI & USB			
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Super I/O ITE8720 GPIO Table

PIN NAME	USAGE	NOTE
SVC/PBCI_RQT/GP14	~PBECI_REQ	
PWRCK1/GP13	PWRCK1/ITE_PWROK	
KRST#/GP62	~KBRST	
SO/GP50	~ICH_SPI_CS	
IRTX/GP47/CE2_N/JF7	CEB_N	
GP46/IRRX	~LAN2_DSM	
PSION#/GP42	~PSON	
PWRCK2#/GP41	PBECI_CTL	
PCIRST3#/GP10/VDIMM_STR_EN	~PCIE_RST	
RSMRST#CIRRX1/GP55	~RSMRST	
PME#/GP54	~LPCPME	
PD5/GP75/BUSSO0	N/A	

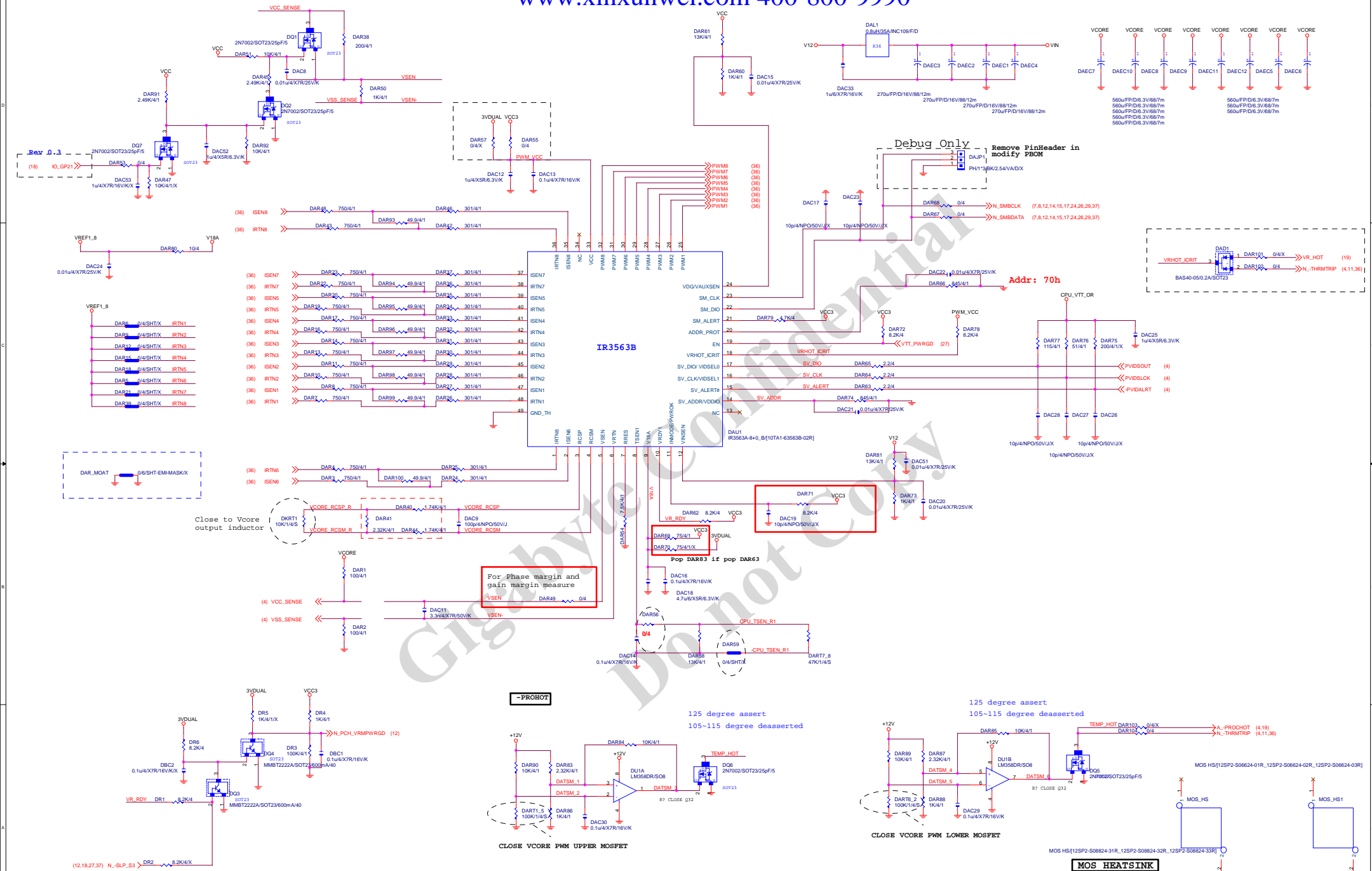
[illegible]

Figure 1: Block diagram of the test board. The diagram shows a central CPU SOCKET connected to various components. On the left, there is a MOSFET and a CHOKE. On the right, there are two rows of components: VCCORE and VAXG. The VCCORE row includes DC and DD components (DC\_DQ1, DD\_DQ1, DC\_DQ2, DD\_DQ2, DC\_DQ3, DD\_DQ3, DC\_DL1, DD\_DL1) and two rows of DB components (DB\_DQ1, DB\_DQ2, DB\_DQ3 and DB\_DL1, DB\_DL2, DB\_DL3). The VAXG row includes DZ components (DZ\_DQ1, DZ\_DQ2, DZ\_DQ4, DZ\_DL1, DZ\_DL2, DZ\_DL3). A P-PAK component is also shown. The diagram is labeled with 1, 2, 3, and 4.

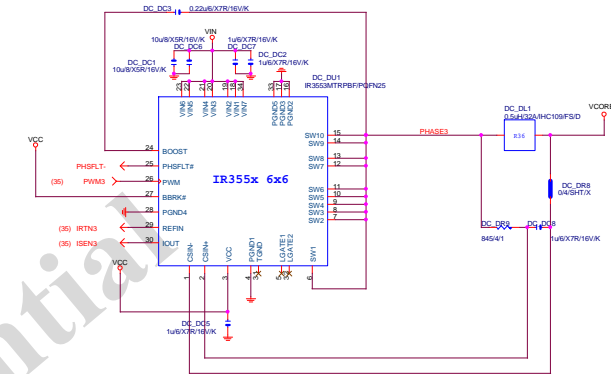
**散熱模組料號：**

Z77-D3H :  
PCH :  
12SP2-S05511-01R/02R/03R  
MOSFET :  
12SP2-S08924-01R/02R/03R

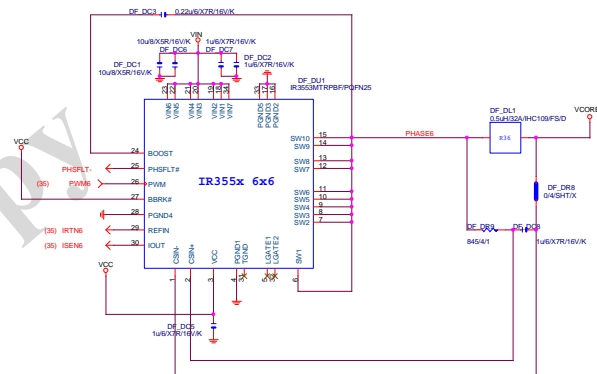
<b>Gigabyte Technology</b>			
Title			
<b>TABLE LIST</b>			
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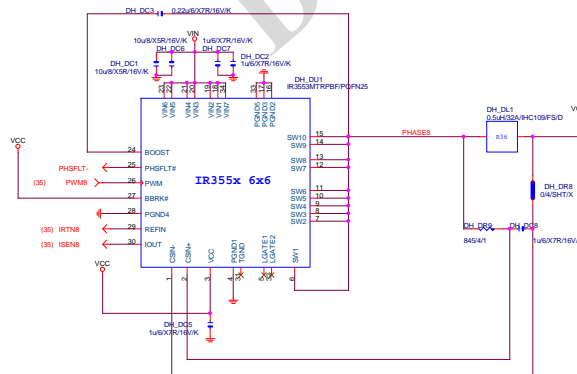
## VCORE-PHASE3

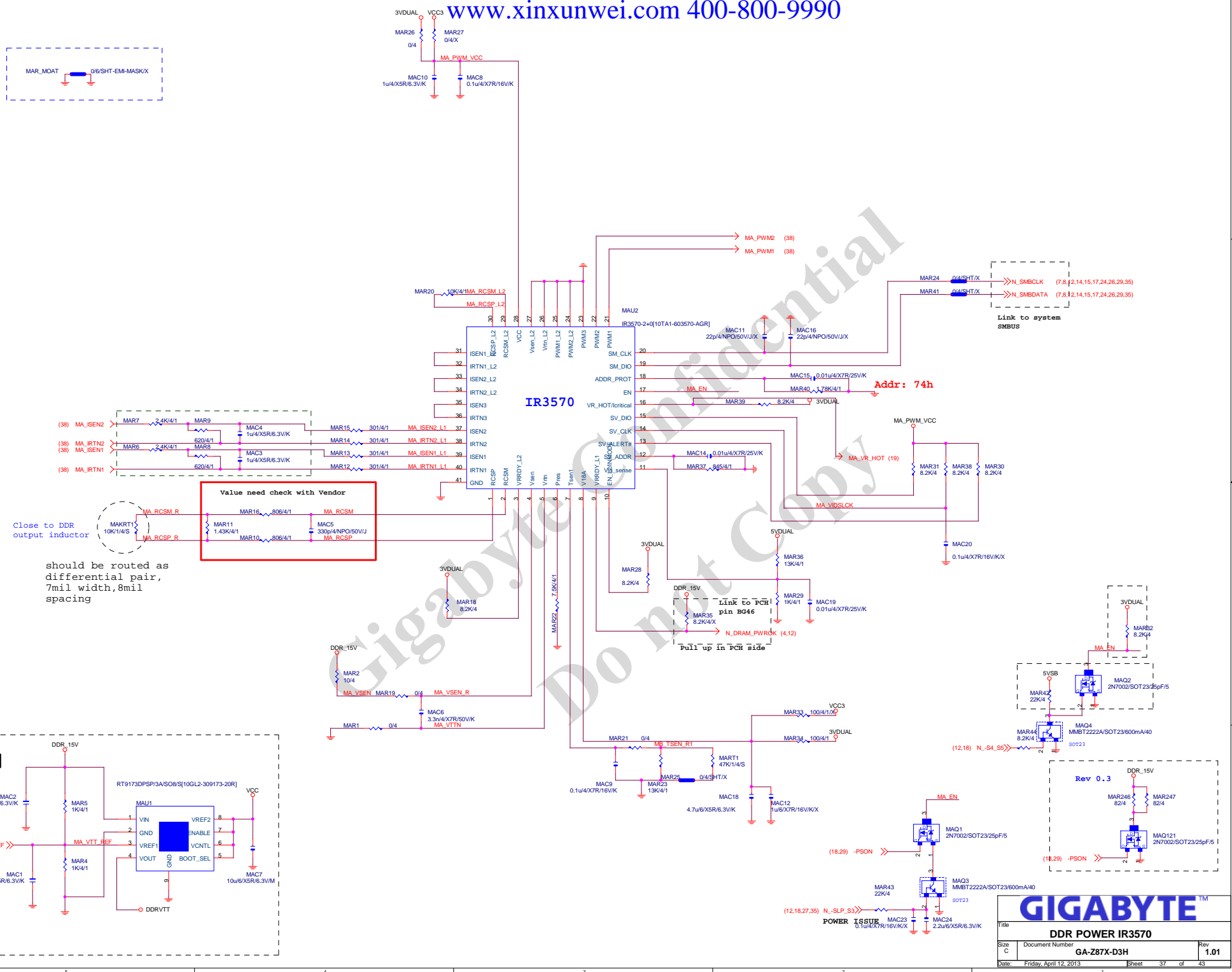


## VCORE-PHASE6

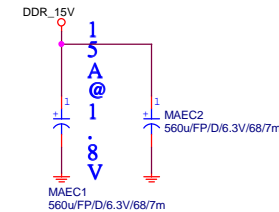
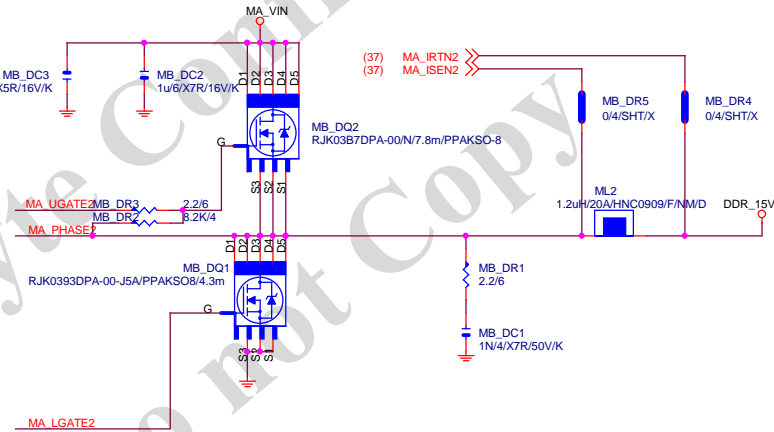
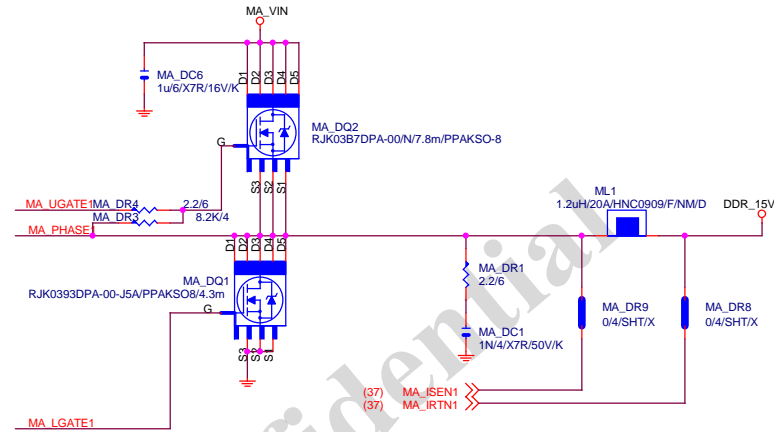
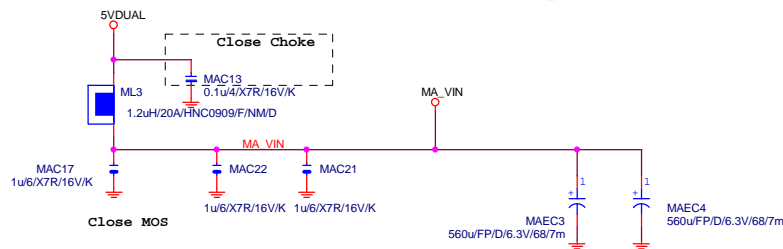
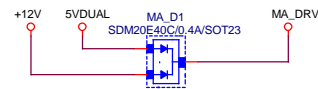
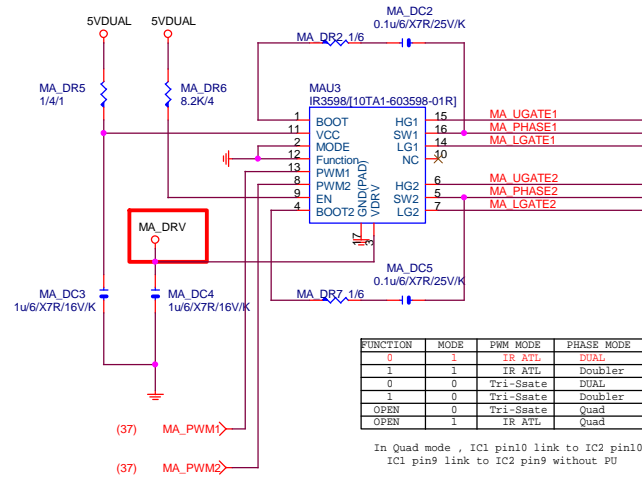


## VCORE-PHASE8





## DDR\_15V





[illegible]

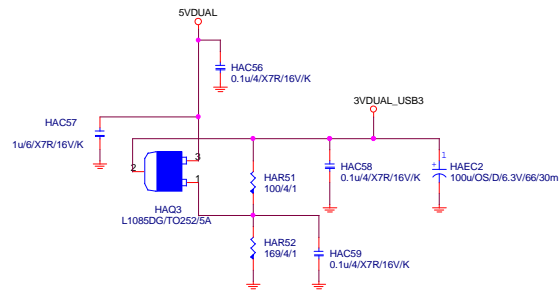
The schematic diagram illustrates the electrical connections for the uPD720210 USB controller. Key components and their connections include:

- Power Supply:** The device is powered by a 3V<sub>DUAL\_USB3</sub> supply. Decoupling capacitors are placed at various points along the power lines, including HAC1 through HAC8, HAC9 through HAC17, HAC29 through HAC41, and HAC1 through HAC4.
- Reset Circuitry:** A reset signal is generated by a network of resistors (HAR1-HAR6) and capacitors connected to the RESETB pin (pin 2).
- Crystal Oscillator:** A crystal oscillator (HAY1) is connected to pins XT1 and XT2 (pins 74 and 75). It includes capacitors HAC27 and HAC28.
- USB Signals:**
  - USB HS (High-Speed):** Differential pairs USTXDPA/B, USTXDPN/A, USTRXDA/B, and USTRXDPA/B are connected to pins 29-36, 65-68, 12-15, and 3-6 respectively.
  - USB SS (SuperSpeed):** Differential pairs USTXDPA/B, USTXDPN/A, USTRXDA/B, and USTRXDPA/B are connected to pins 29-36, 65-68, 20-23, and 3-6 respectively.
- Other Pins:** Various control and status pins like VBUSM, DDMU, LED1B, and PGMV are also shown with their respective pull-up/pull-down resistors and connections.

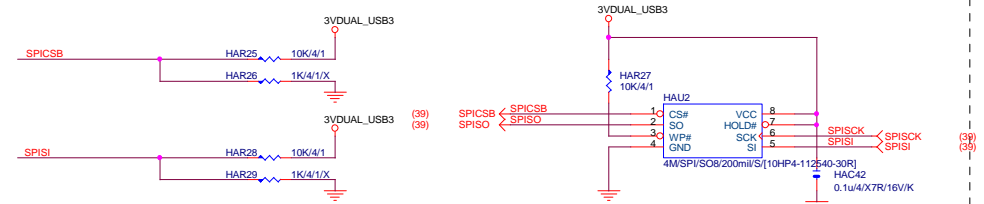
Annotations provide additional guidance: "Put close to CN5" near the reset circuit, "Put close to U1" near the crystal, and "Short and broad connection to GND Don't split R32 into multiple resistors." near the ground connection.

[illegible][illegible][illegible]

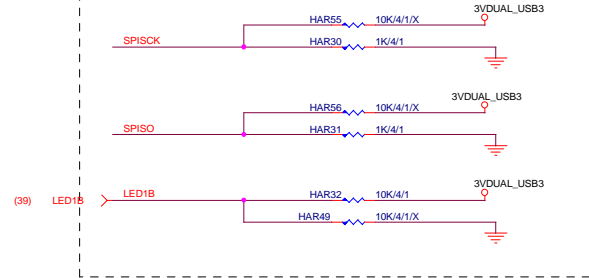
## 3VDUAL\_USB\_1



## # External SPI ROM ; SPI ROM attached mode

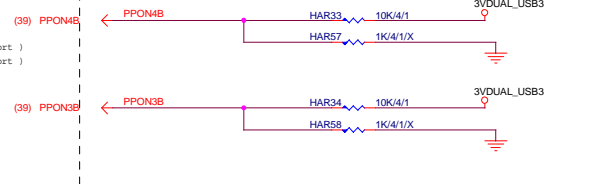


## # Battery Charging

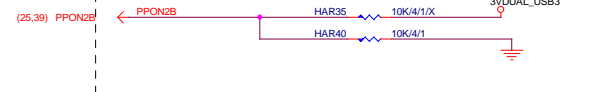


## # Number of Ports ; 4Ports mode

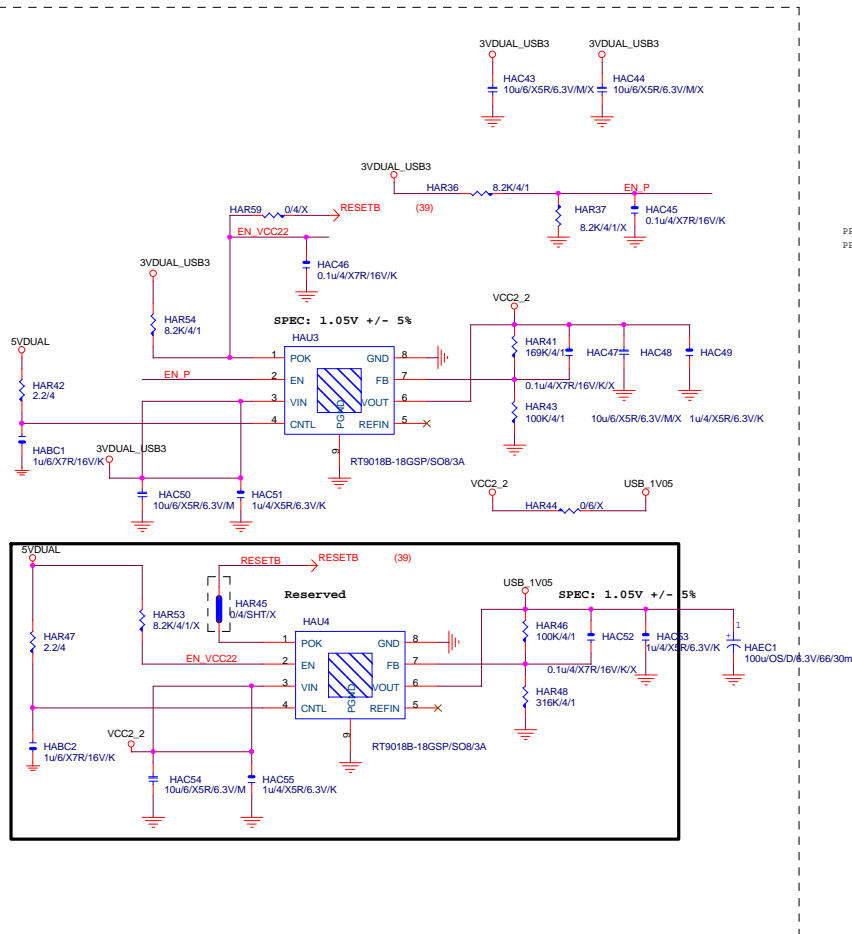
PPON3B / PPON4B : H / H ( 4 port )  
PPON3B / PPON4B : L / L ( 2 port )



## #5 VBUS Power Control ; Individual mode

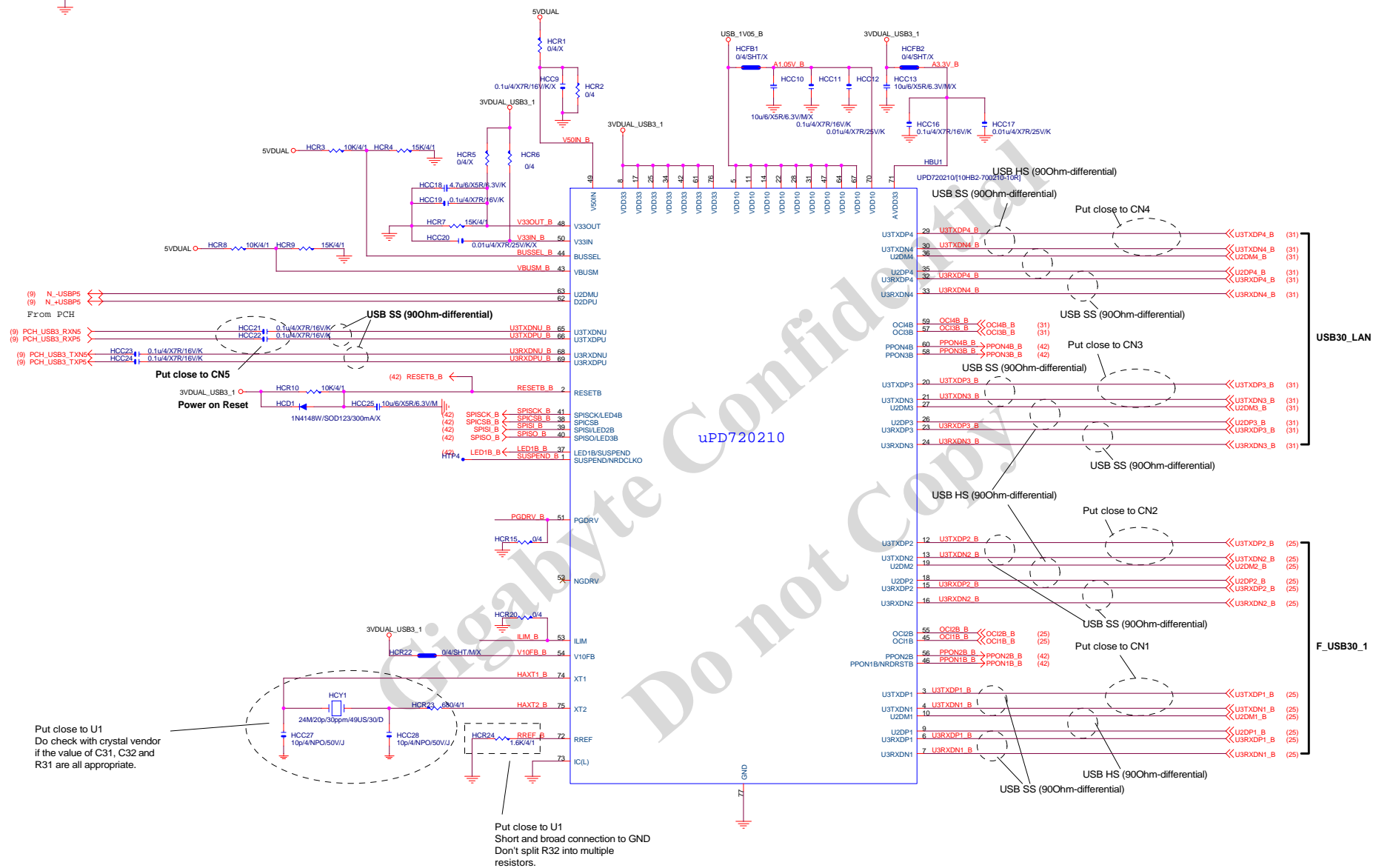


## # PPON1B Pin Function ; Port1 PPONB mode

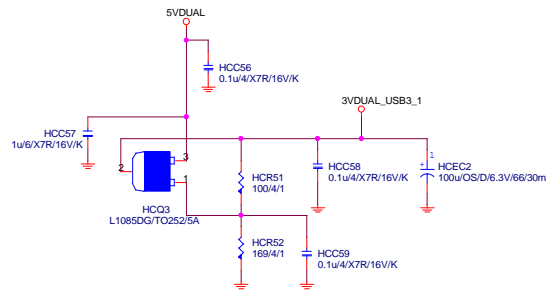


Gigabyte Technology

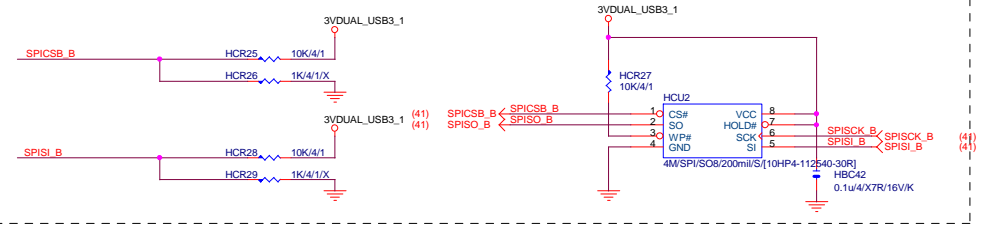
Title			
D720210			
GA-Z87X-D3H			
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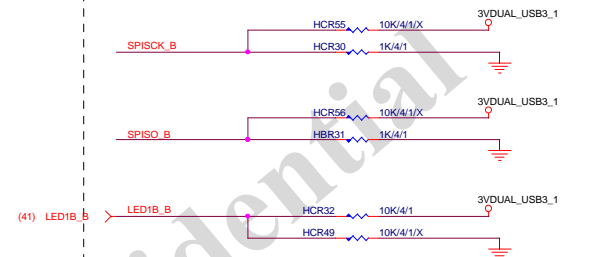
## 3VDUAL\_USB\_2



## # External SPI ROM ; SPI ROM attached mode

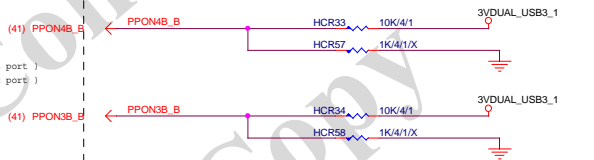


## # Battery Charging

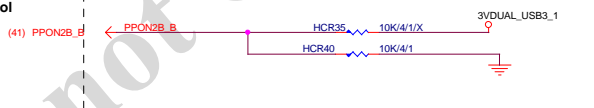


## # Number of Ports ; 4Ports mode

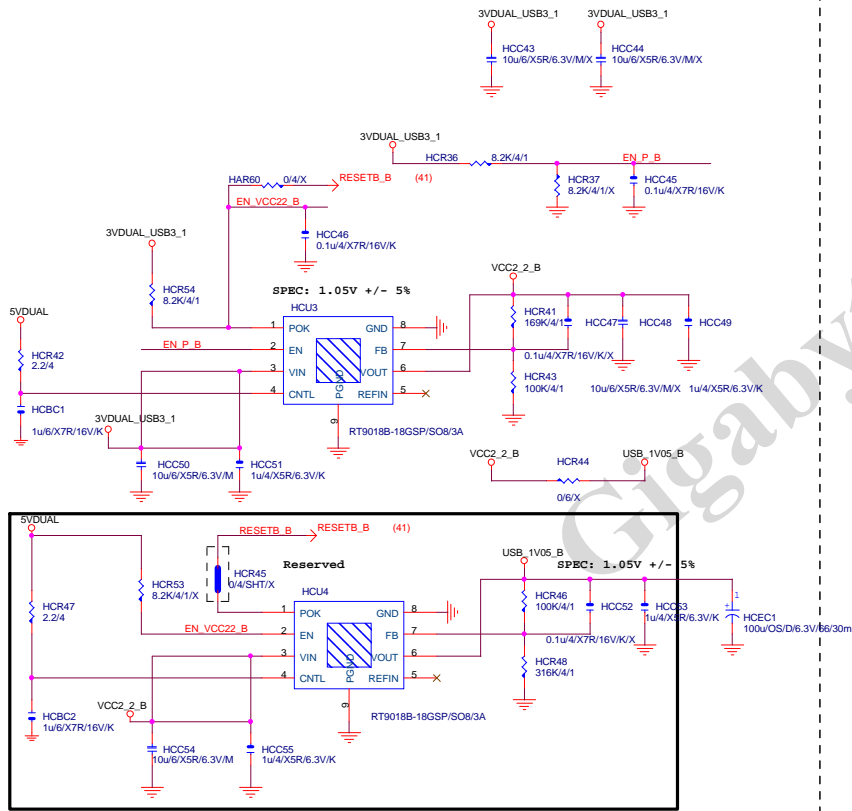
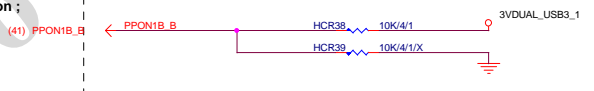
PPON3B / PPON4B : H / H ( 4 port )  
PPON3B / PPON4B : L / L ( 2 port )



## #5 VBUS Power Control ; Individual mode

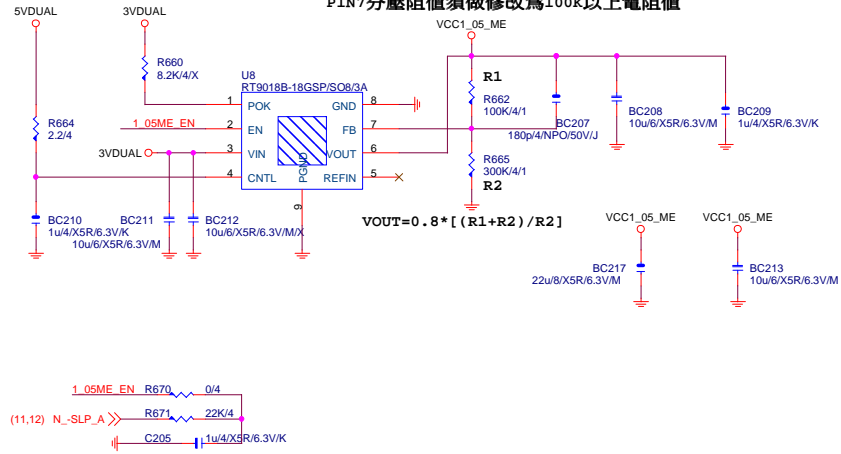


## # PPON1B Pin Function ; Port1 PPONB mode



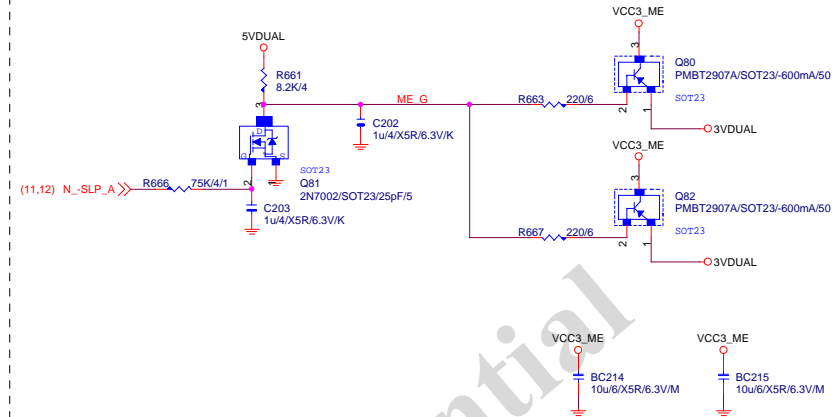
VCC1\_05\_ME

【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



www.xinjunwei.com 400-800-9990

VCC1\_ME



**GIGABYTE™**

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RT8120_DDR_15V		
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