

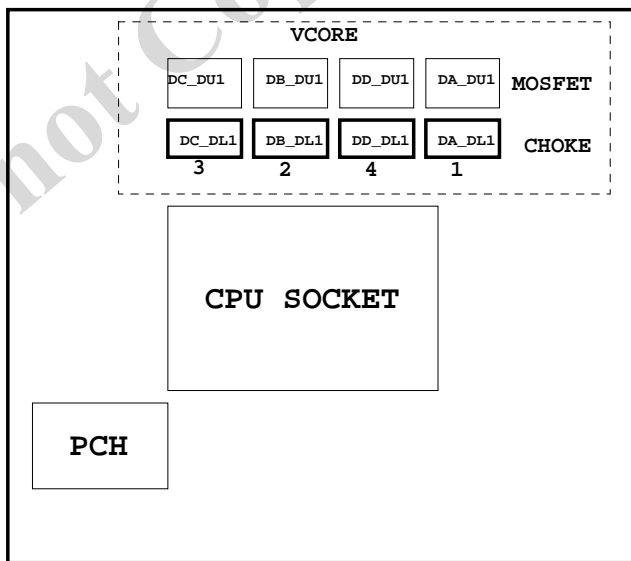
Model Name: GA-Z87P-D3

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	PCIEX4 SLOT
16	ITE8892 PCI BRIDGE
17	PCI SLOT 1~4
18	I/O ITE8728
19	COM, -PROHOT, R_USB
20	Dual BIOS / LPT
21	ALC887 CODEC
22	REAR AUDIO JACK
23	VCORE_ ISL95820_1
24	VCORE_ ISL95820_2
25	DDR15V / M3 POWER
26	NCP3933 OVER VOLTAGE
27	DISCRETE POWER

SHEET TITLE

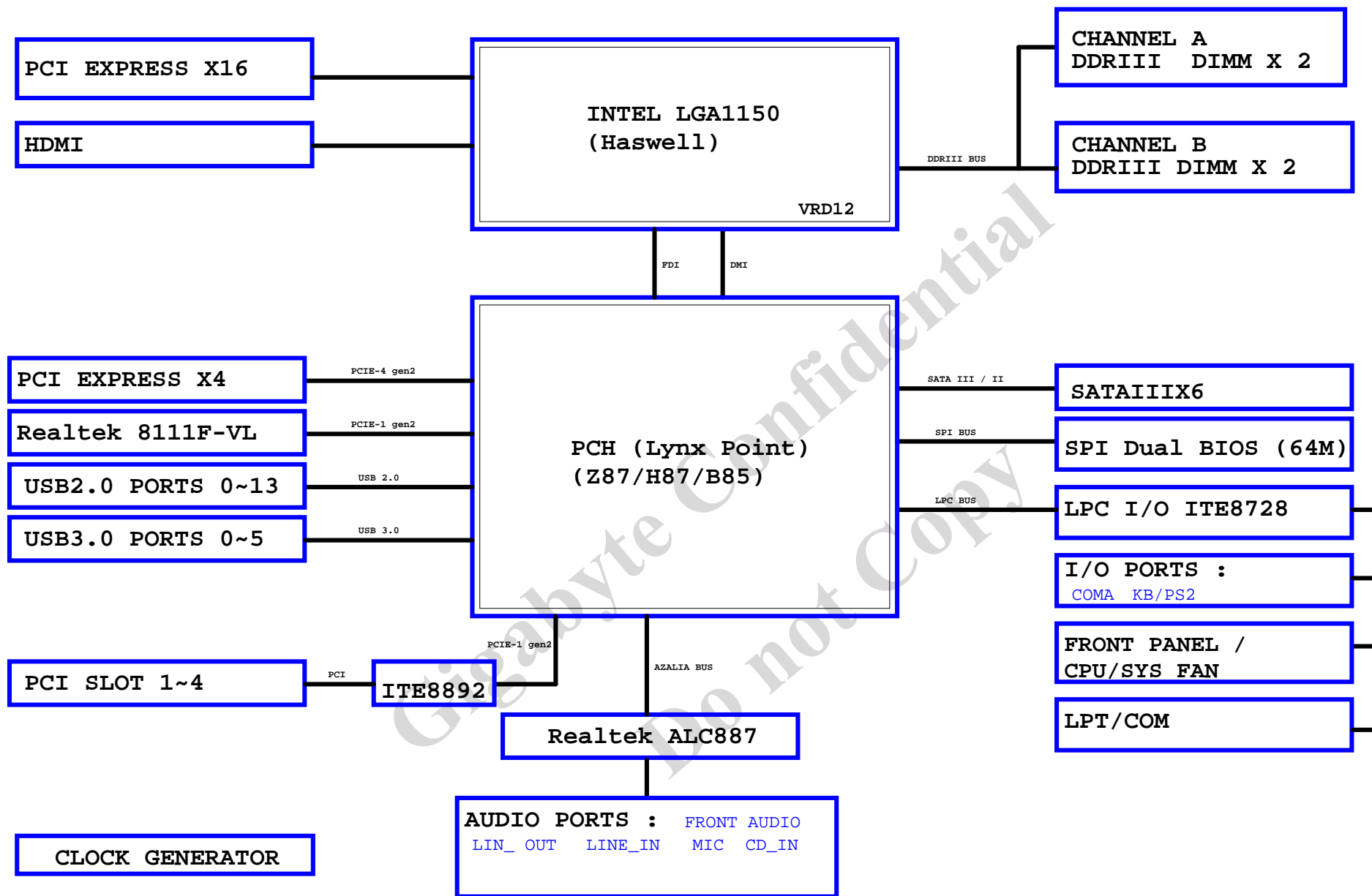
28	F_PANEL , F_USB2.0/3.0
29	ATX POWER, CLOCK GEN
30	HWM , KB/MS , FAN CTRL
31	Realtek 8111F-VL
32	HDMI
33	TABLE LIST
34	
35	
36	
37	
38	
39	
40	



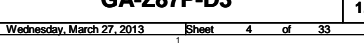


# BLOCK DIAGRAM

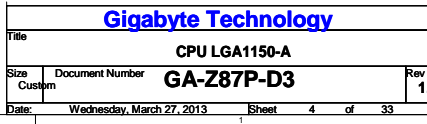
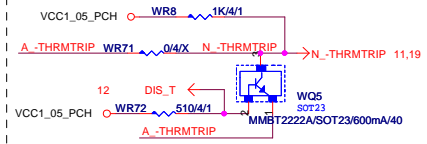
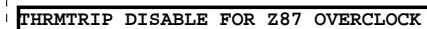
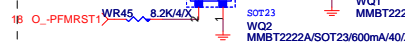
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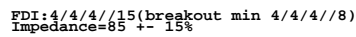
CPU	PU/PD
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LGA1155 (C)



**LGA1150 (D)**



DP/HDMI 4/4/4//20      FDI 4/4/4/12

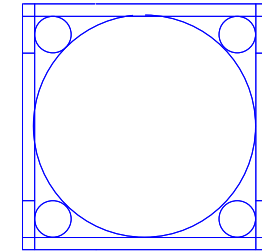
Impedance=85 +- 15%

# LGA1150 (A)

# LGA1150 (B)

# LGA1150 (CR)

LGA1150  
ILM\_BP/1156/CSP/12KRC-0F0001-52R\_12KRC-0F0001-51R

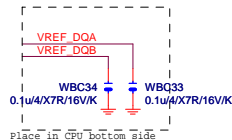


## LGA1150A

## LGA1150B

MAAA0	AU13	DDR0_MA0	DDR0_D00	AD38	MDA0
MAAA1	AV16	DDR0_MA1	DDR0_D01	AD39	MDA1
MAAA2	AU16	DDR0_MA2	DDR0_D02	AF38	MDA2
MAAA3	AW17	DDR0_MA3	DDR0_D03	AF39	MDA3
MAAA4	AU17	DDR0_MA4	DDR0_D04	AD37	MDA4
MAAA5	AW18	DDR0_MA5	DDR0_D05	AD40	MDA5
MAAA6	AV17	DDR0_MA6	DDR0_D06	AE37	MDA6
MAAA7	AT18	DDR0_MA7	DDR0_D07	AF40	MDA7
MAAA8	AU18	DDR0_MA8	DDR0_D08	AH40	MDA9
MAAA9	AT19	DDR0_MA9	DDR0_D09	AH39	MDA10
MAAA10	AW11	DDR0_MA10	DDR0_D10	AK38	MDA10
MAAA11	AV19	DDR0_MA11	DDR0_D11	AK39	MDA11
MAAA12	AU19	DDR0_MA12	DDR0_D12	AH37	MDA12
MAAA13	AT20	DDR0_MA13	DDR0_D13	AH38	MDA14
MAAA14	AW21	DDR0_MA14	DDR0_D14	AK40	MDA15
MAAA15	AU21	DDR0_MA15	DDR0_D15	AK40	MDA17
MODT_A0	AW10	DDR0_ODT0	DDR0_D16	AM40	MDA21
MODT_A1	AY8	DDR0_ODT1	DDR0_D17	AP38	MDA18
MODT_A2	AW9	DDR0_ODT2	DDR0_D18	AP39	MDA19
MODT_A3	AU8	DDR0_ODT3	DDR0_D19	AM37	MDA20
			DDR0_D20	AM38	MDA16
			DDR0_D21	AM38	MDA22
			DDR0_D22	AP37	MDA23
			DDR0_D23	AP40	MDA25
			DDR0_D24	AW37	MDA29
			DDR0_D25	AW37	MDA29
			DDR0_D26	AU35	MDA28
			DDR0_D27	AT37	MDA27
			DDR0_D28	AU37	MDA24
			DDR0_D29	AT35	MDA30
			DDR0_D30	AW35	MDA31
			DDR0_D31	AW6	MDA33
			DDR0_D32	AU6	MDA37
			DDR0_D33	AW6	MDA38
			DDR0_D34	AW4	MDA34
			DDR0_D35	AW4	MDA38
			DDR0_D36	AW4	MDA38
			DDR0_D37	AW4	MDA38
			DDR0_D38	AW4	MDA38
			DDR0_D39	AW4	MDA39
			DDR0_D40	AW4	MDA45
			DDR0_D41	AW4	MDA45
			DDR0_D42	AW4	MDA45
			DDR0_D43	AW4	MDA45
			DDR0_D44	AW4	MDA45
			DDR0_D45	AW4	MDA46
			DDR0_D46	AW4	MDA47
			DDR0_D47	AW4	MDA49
			DDR0_D48	AW4	MDA53
			DDR0_D49	AW4	MDA50
			DDR0_D50	AW4	MDA51
			DDR0_D51	AW4	MDA52
			DDR0_D52	AW4	MDA52
			DDR0_D53	AW4	MDA54
			DDR0_D54	AW4	MDA55
			DDR0_D55	AW4	MDA57
			DDR0_D56	AW4	MDA61
			DDR0_D57	AW4	MDA58
			DDR0_D58	AW4	MDA59
			DDR0_D59	AW4	MDA60
			DDR0_D60	AW4	MDA56
			DDR0_D61	AW4	MDA62
			DDR0_D62	AW4	MDA63
			DDR0_D63	AW4	MDA63
			DDR0_D64	AW4	MDA63
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			DDR0_D66	AW4	MDA63
			DDR0_D67	AW4	MDA63
			DDR0_D68	AW4	MDA63
			DDR0_D69	AW4	MDA63
			DDR0_D70	AW4	MDA63
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			DDR0_D82	AW4	MDA63
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			DDR0_D95	AW4	MDA63
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			DDR0_D97	AW4	MDA63
			DDR0_D98	AW4	MDA63
			DDR0_D99	AW4	MDA63
			DDR0_D100	AW4	MDA63

MAAB0	AL19	DDR1_MA0	AE34	MD80
MAAB1	AK23	DDR1_MA1	AE35	MD81
MAAB2	AM23	DDR1_MA2	AG35	MD82
MAAB3	AM23	DDR1_MA3	AH35	MD83
MAAB4	AP23	DDR1_MA4	AD34	MD84
MAAB5	AL23	DDR1_MA5	AD35	MD85
MAAB6	AY24	DDR1_MA6	AG34	MD86
MAAB7	AV25	DDR1_MA7	AH34	MD87
MAAB8	AU26	DDR1_MA8	AL34	MD88
MAAB9	AW25	DDR1_MA9	AL35	MD89
MAAB10	AE18	DDR1_MA10	AK31	MD810
MAAB11	AY25	DDR1_MA11	AL31	MD811
MAAB12	AV26	DDR1_MA12	AK34	MD812
MAAB13	AR15	DDR1_MA13	AK35	MD813
MAAB14	AV27	DDR1_MA14	AK32	MD814
MAAB15	AY28	DDR1_MA15	AL32	MD815
MODT_B0	AM17	DDR1_ODT0	AP34	MD821
MODT_B1	AL16	DDR1_ODT1	AN31	MD819
MODT_B2	AM16	DDR1_ODT2	AP31	MD823
MODT_B3	AK15	DDR1_ODT3	AP35	MD820
			AP35	MD816
			AN32	MD818
			AP32	MD822
			AM29	MD825
			AM28	MD828
			AR29	MD827
			AR28	MD830
			AL28	MD824
			AL28	MD829
			AP29	MD826
			AP28	MD831
			AP12	MD832
			AL13	MD834
			AL12	MD835
			AP13	MD836
			AM13	MD838
			AM12	MD839
			AR9	MD845
			AP9	MD841
			AR6	MD847
			AP6	MD843
			AR10	MD844
			AP10	MD840
			AR7	MD846
			AP7	MD842
			AM9	MD852
			AL9	MD853
			AL6	MD850
			AM10	MD848
			AL10	MD849
			AM6	MD854
			AM7	MD851
			AH6	MD861
			AH7	MD860
			AE6	MD859
			AE7	MD863
			AJ6	MD856
			AJ7	MD857
			AF6	MD858
			AF7	MD862
			AF35	MD880
			AK33	MD881
			AN28	MD882
			AN12	MD883
			AP8	MD885
			AL8	MD886
			AG7	MD887
			AN25	MD888
			AK33	MD881
			AN33	MD882
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			AN13	MD884
			AR8	MD885
			AM8	MD886
			AG6	MD887
			AN25	MD888



## DDR BUS

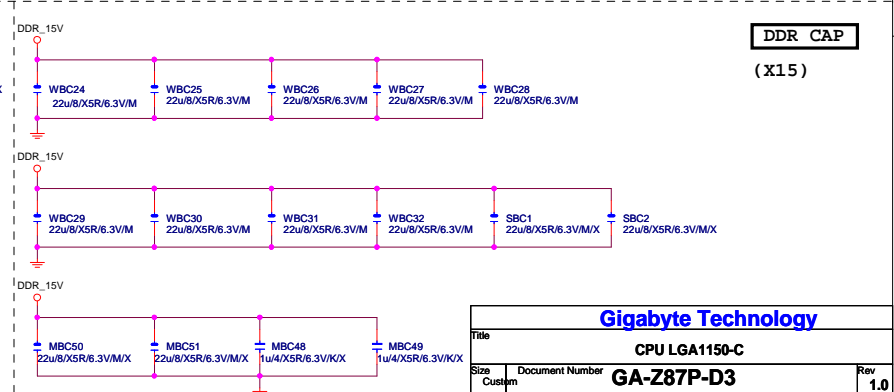
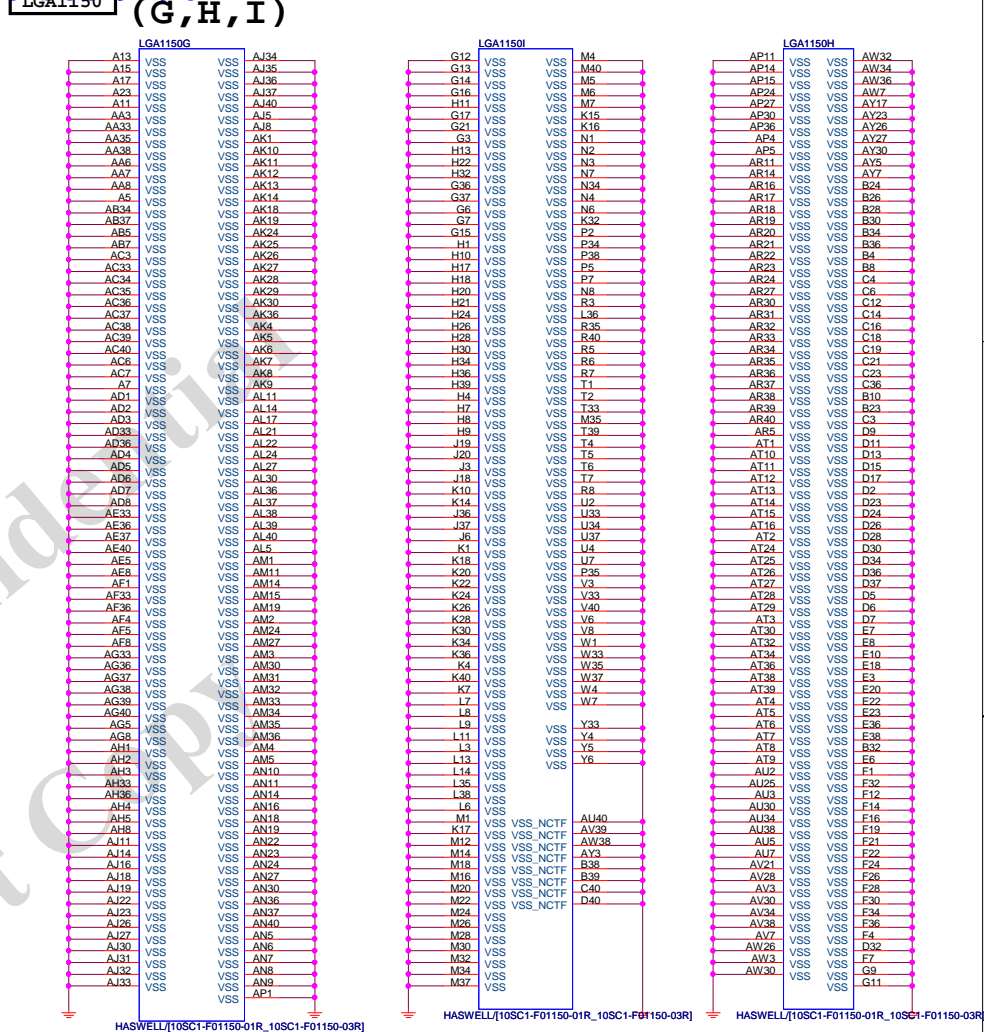
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MODT_B[0..3]	MODT_B[0..3]
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MDB[0..63]	MDB[0..63]
DQSA[0..7]	DQSA[0..7]
-DQSA[0..7]	-DQSA[0..7]
MAAA[0..15]	MAAA[0..15]
MAAB[0..15]	MAAB[0..15]
DQSB[0..7]	DQSB[0..7]
-DQSB[0..7]	-DQSB[0..7]

HASWELL[10SC1-F01150-01R\_10SC1-F01150-03R]

HASWELL[10SC1-F01150-01R\_10SC1-F01150-03R]

## Gigabyte Technology

Title			CPU LGA1150-B
Size			GA-Z87P-D3
Date:			Thursday, March 28, 2013
Sheet			5 of 33

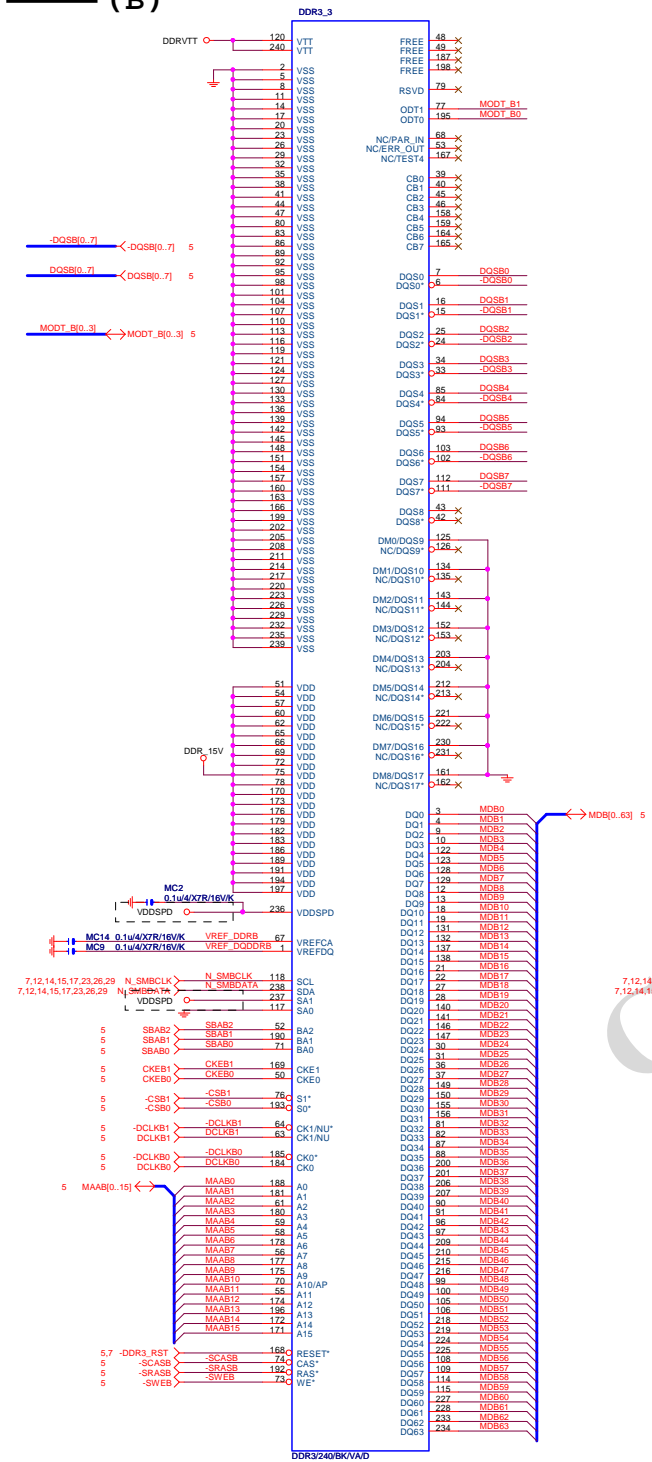






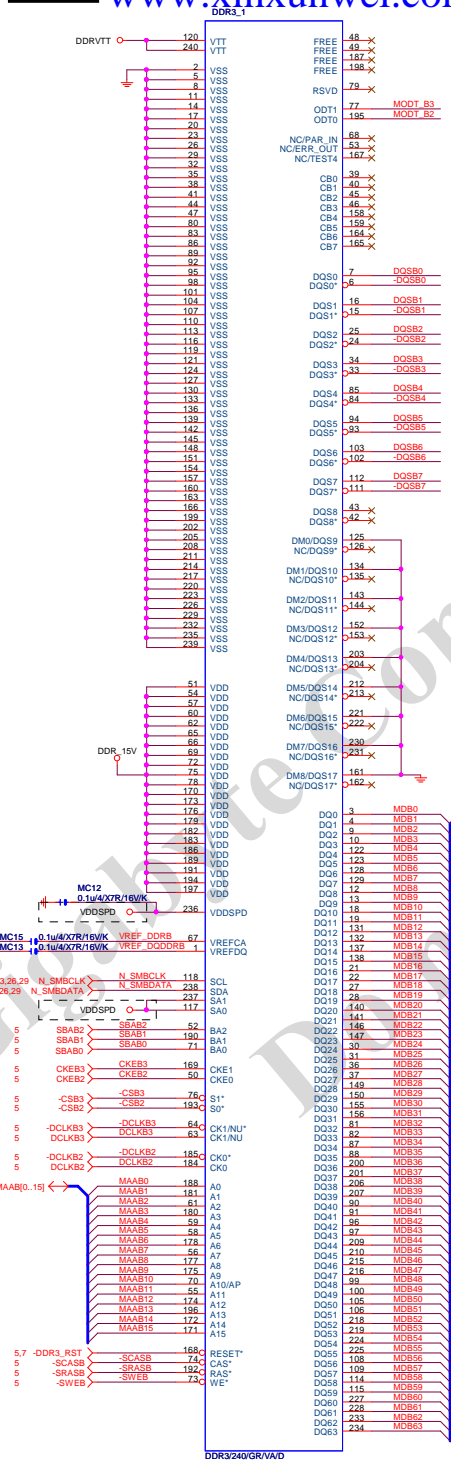
DDR3

(B)



DDR3

www.xinxunwei.com 400-800-9990



DDR3 VREF



DDR3 1066,1333,1600MHZ BANDWIDTH

DDR3 1066MHZ  
DDR3 clock=533MHZ  
DDR3 single channel bandwidth=533x2x8Byte=8.5GB/s  
DDR3 dual channel bandwidth=533x2x2x8Byte=17GB/s

DDR3 1333MHZ  
DDR3 clock=667MHZ  
DDR3 single channel bandwidth=10.6GB/s  
DDR3 dual channel bandwidth=21GB/s

DDR3 1600MHZ  
DDR3 clock=800MHZ  
DDR3 single channel bandwidth=12.8GB/s  
DDR3 dual channel bandwidth=25.6GB/s

COUPON



CPU

DIMM4  
DIMM2  
DIMM3  
DIMM1

CHA

CHB

Gigabyte Technology

File		DDR3 CHANNEL B		Rev	
Size		Document Number		GA-Z87P-D3	
Custom		Date:		Sheet 8 of 33	



Port要對應



Port要對應



PCH H/S



PCH H/S

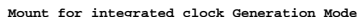
PCH H/S

PCH H/S

(E)



PCH CLK PD

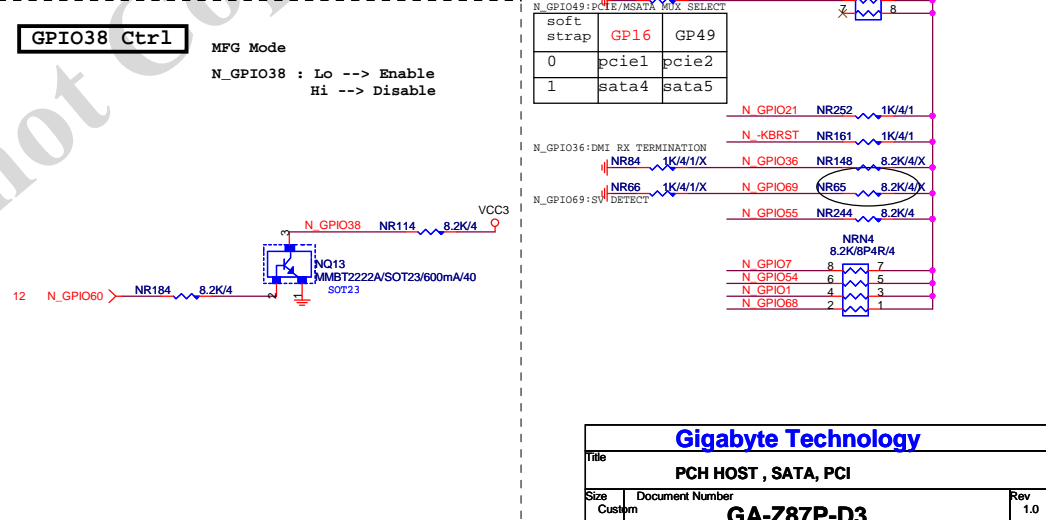
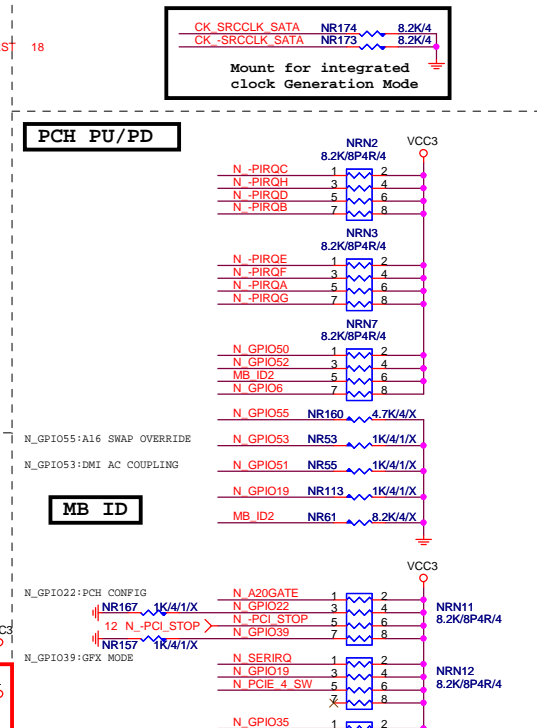
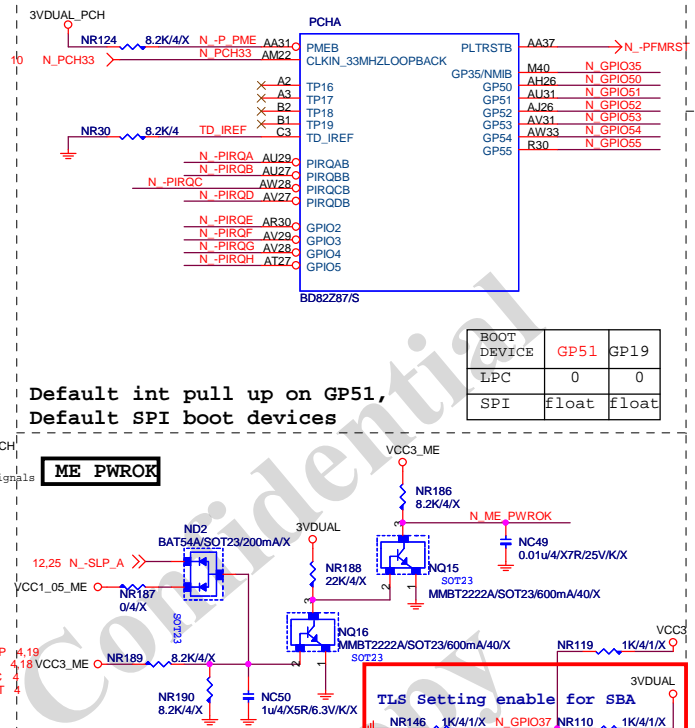


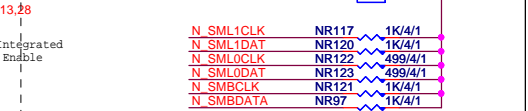
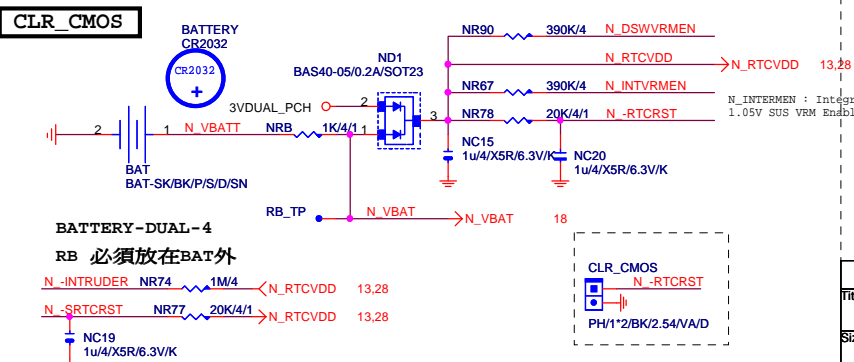
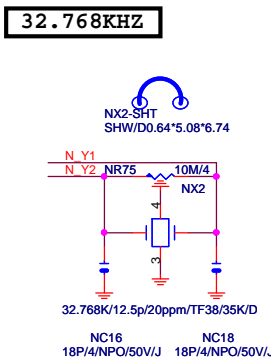
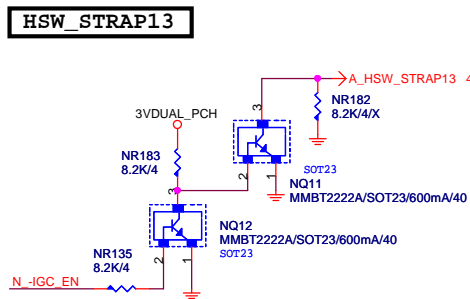
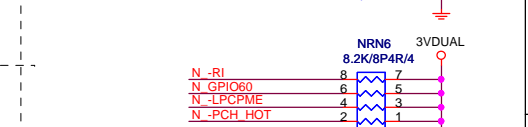
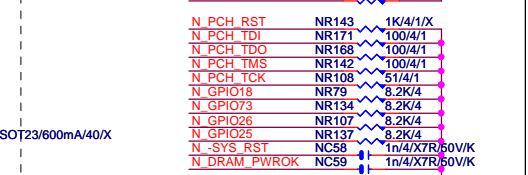
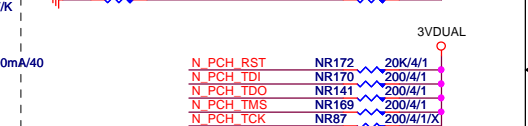
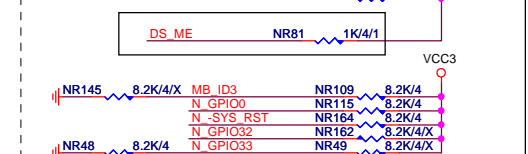
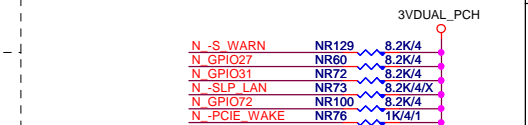
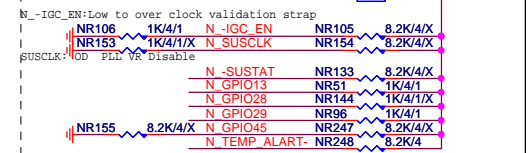
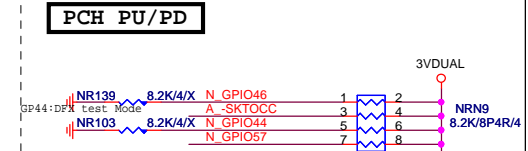
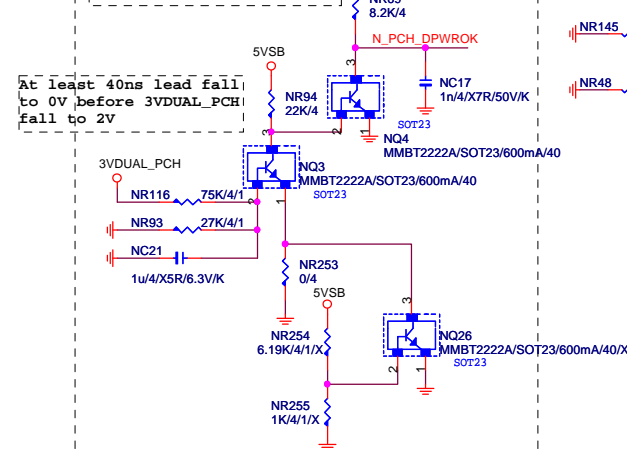
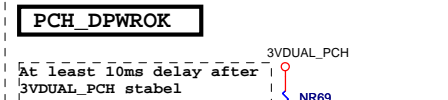
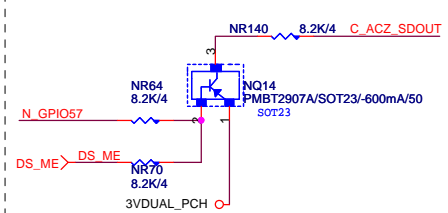
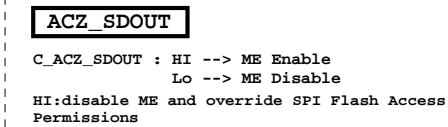
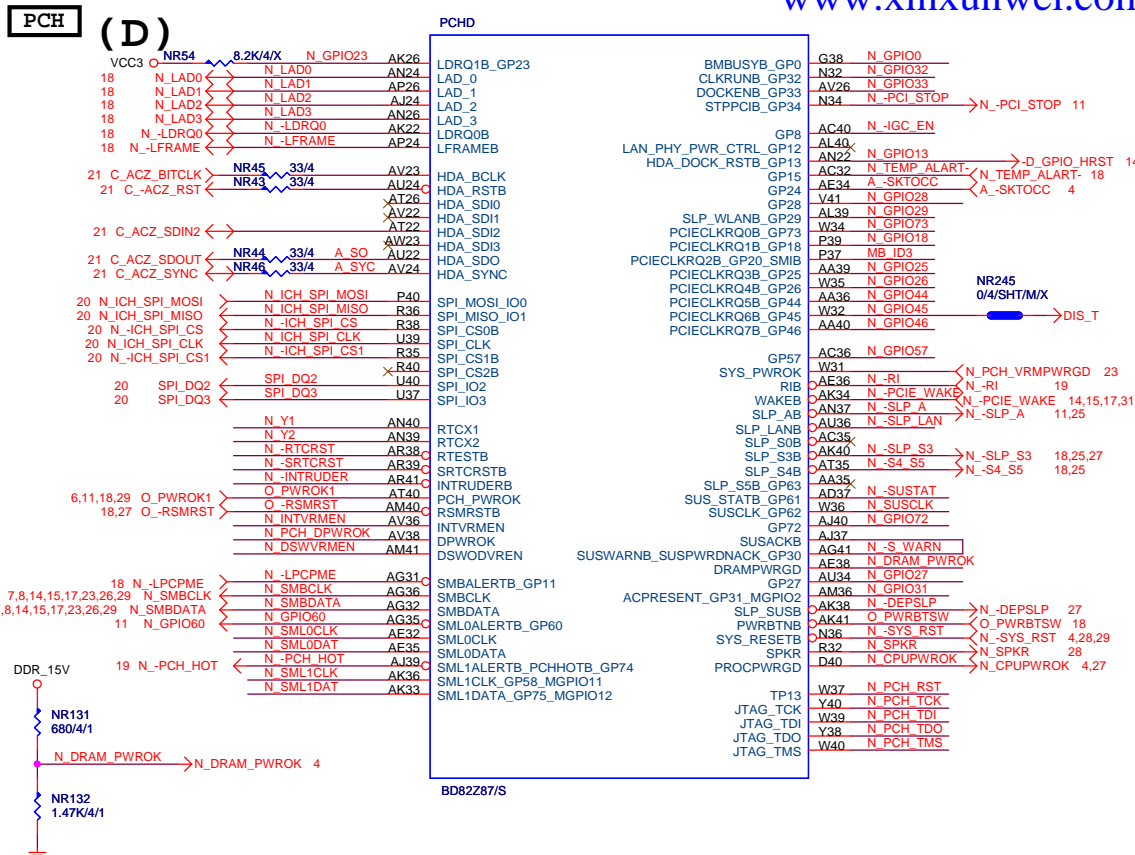
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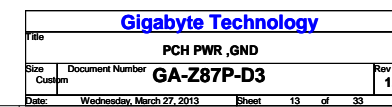


## VGA DDC

## VGA CONNECTOR

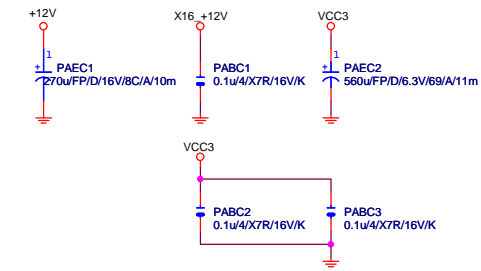






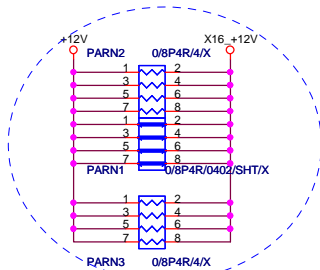


## PCIEX16 CAP



## PCIEX16 PROTECT SHT

+12 protect  
short-wire test



## PCIEX16 AC CAP

PA EXP TXP0 C	PAC5	0.22u4/X5R/6.3V/K	PA EXP TXP0 C
PA EXP TXN0 C	PAC4	0.22u4/X5R/6.3V/K	PA EXP TXN0 C
PA EXP TXP1 C	PAC6	0.22u4/X5R/6.3V/K	PA EXP TXP1 C
PA EXP TXN1 C	PAC7	0.22u4/X5R/6.3V/K	PA EXP TXN1 C
PA EXP TXP2 C	PAC8	0.22u4/X5R/6.3V/K	PA EXP TXP2 C
PA EXP TXN2 C	PAC9	0.22u4/X5R/6.3V/K	PA EXP TXN2 C
PA EXP TXP3 C	PAC10	0.22u4/X5R/6.3V/K	PA EXP TXP3 C
PA EXP TXN3 C	PAC11	0.22u4/X5R/6.3V/K	PA EXP TXN3 C
PA EXP TXP4 C	PAC12	0.22u4/X5R/6.3V/K	PA EXP TXP4 C
PA EXP TXN4 C	PAC13	0.22u4/X5R/6.3V/K	PA EXP TXN4 C
PA EXP TXP5 C	PAC14	0.22u4/X5R/6.3V/K	PA EXP TXP5 C
PA EXP TXN5 C	PAC15	0.22u4/X5R/6.3V/K	PA EXP TXN5 C
PA EXP TXP6 C	PAC16	0.22u4/X5R/6.3V/K	PA EXP TXP6 C
PA EXP TXN6 C	PAC17	0.22u4/X5R/6.3V/K	PA EXP TXN6 C
PA EXP TXP7 C	PAC19	0.22u4/X5R/6.3V/K	PA EXP TXP7 C
PA EXP TXN7 C	PAC18	0.22u4/X5R/6.3V/K	PA EXP TXN7 C
PA EXP TXP8 C	PAC20	0.22u4/X5R/6.3V/K	PA EXP TXP8 C
PA EXP TXN8 C	PAC21	0.22u4/X5R/6.3V/K	PA EXP TXN8 C
PA EXP TXP9 C	PAC22	0.22u4/X5R/6.3V/K	PA EXP TXP9 C
PA EXP TXN9 C	PAC23	0.22u4/X5R/6.3V/K	PA EXP TXN9 C
PA EXP TXP10 C	PAC24	0.22u4/X5R/6.3V/K	PA EXP TXP10 C
PA EXP TXN10 C	PAC25	0.22u4/X5R/6.3V/K	PA EXP TXN10 C
PA EXP TXP11 C	PAC26	0.22u4/X5R/6.3V/K	PA EXP TXP11 C
PA EXP TXN11 C	PAC27	0.22u4/X5R/6.3V/K	PA EXP TXN11 C
PA EXP TXP12 C	PAC28	0.22u4/X5R/6.3V/K	PA EXP TXP12 C
PA EXP TXN12 C	PAC29	0.22u4/X5R/6.3V/K	PA EXP TXN12 C
PA EXP TXP13 C	PAC30	0.22u4/X5R/6.3V/K	PA EXP TXP13 C
PA EXP TXN13 C	PAC31	0.22u4/X5R/6.3V/K	PA EXP TXN13 C
PA EXP TXP14 C	PAC32	0.22u4/X5R/6.3V/K	PA EXP TXP14 C
PA EXP TXN14 C	PAC33	0.22u4/X5R/6.3V/K	PA EXP TXN14 C
PA EXP TXP15 C	PAC34	0.22u4/X5R/6.3V/K	PA EXP TXP15 C
PA EXP TXN15 C	PAC35	0.22u4/X5R/6.3V/K	PA EXP TXN15 C

PCI-E REV:1.1--> 2.5GHZ

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

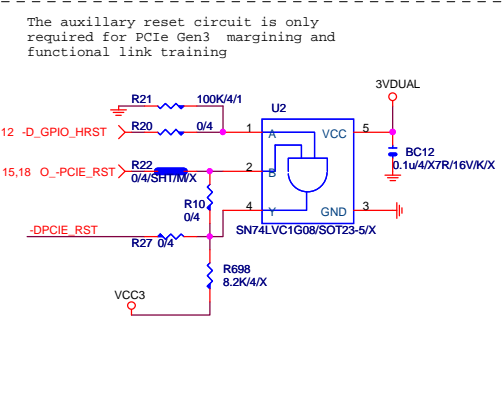
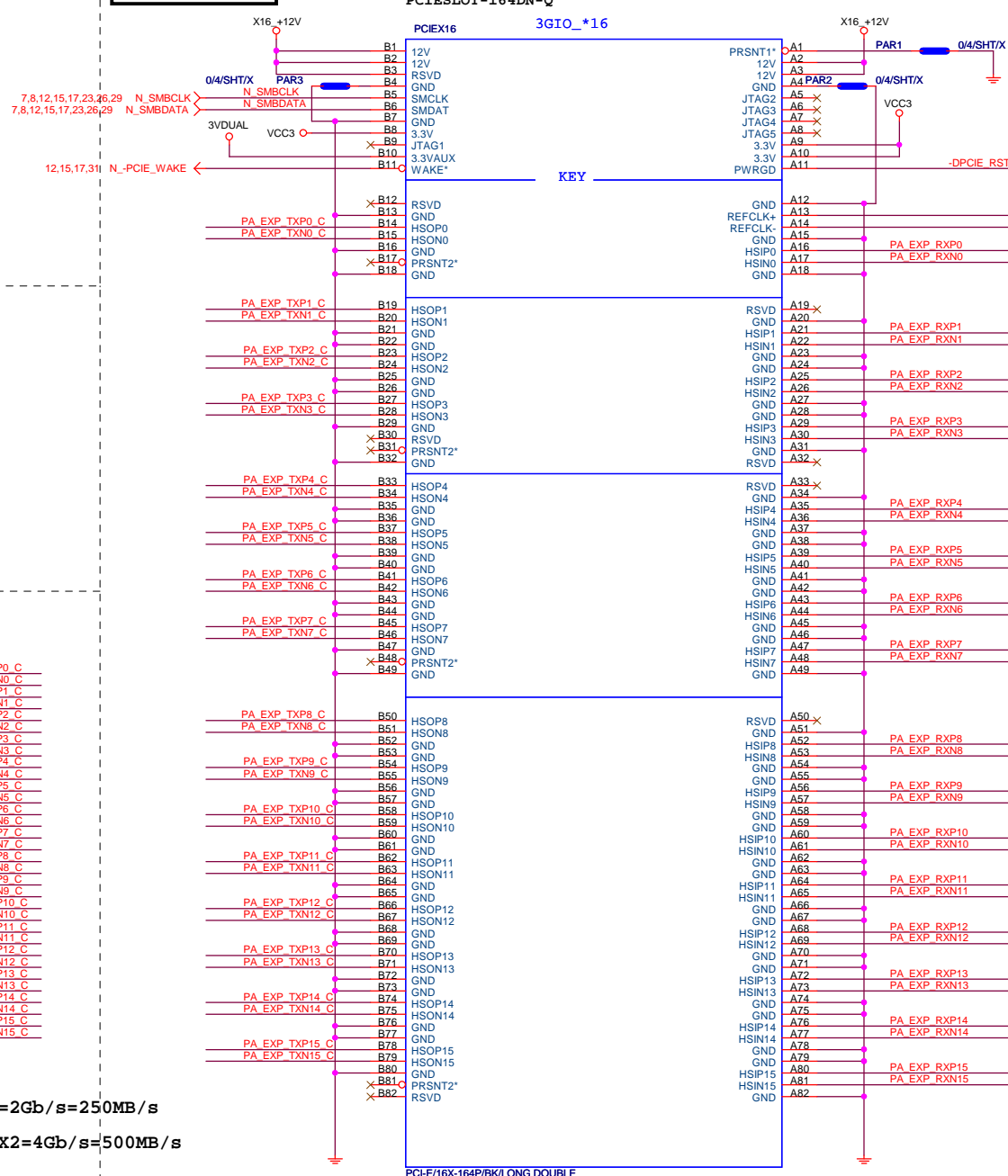
PCE-E X1(雙向) BANDWITH=2.5GHz\*(8b/10b)X2=4Gb/s=500MB/s

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

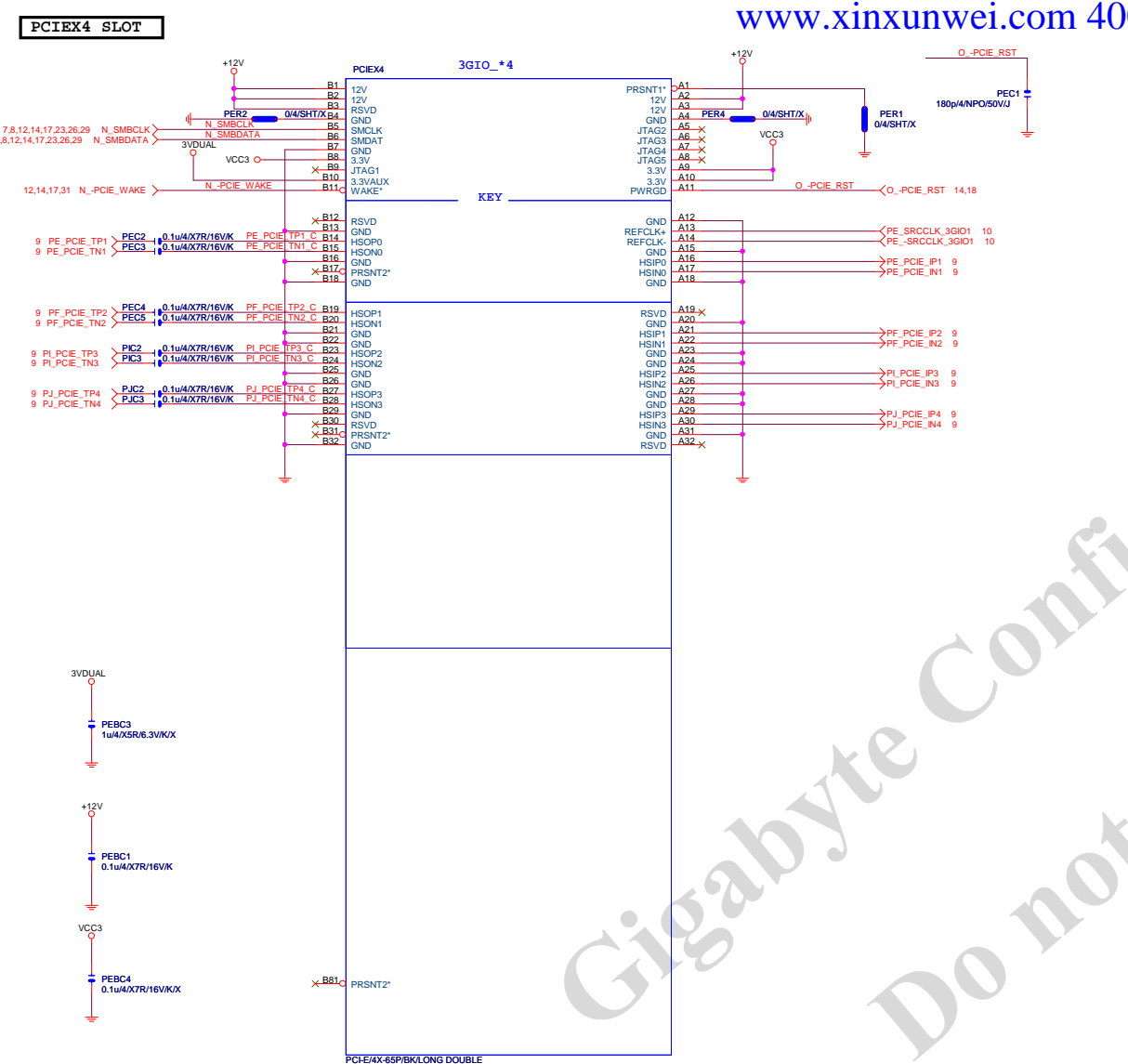


PCIEX16:16/5/5/5/16

PA\_EXP\_RXP[0..15] >>> PA\_EXP\_RXP[0..15] 4  
PA\_EXP\_RXN[0..15] >>> PA\_EXP\_RXN[0..15] 4  
PA\_EXP\_TXP[0..15] >>> PA\_EXP\_TXP[0..15] 4  
PA\_EXP\_TXN[0..15] >>> PA\_EXP\_TXN[0..15] 4

Gigabyte Technology			
PCI EXPRESS * 16			
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PCIEX4/X1 SWITCH

	N_PCIE_4_SW (PCH_GPIO48)	PCIEX4_X1 (SIO_GPIO26)
PCIEX4 No devices	H	H
PCIEX4 -> X1	H	H
PCIEX4 Have devices	L	L
PCIEX4 -> X4	L	L
PCIEX1_1/2 --> N/A		

Function	SEL
xI--> x0a	L;PCIEX4 SLOT-->X1
xI--> x0b	H;PCIEX4 SLOT-->X4

**Gigabyte Technology**

Title

PCIE X1 1,2

Size

Document Number

GA-Z87P-D3

Rev

1.0

Date:

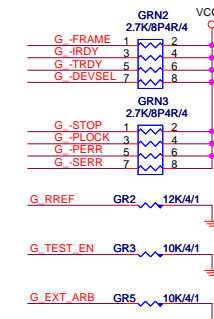
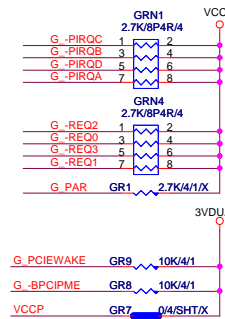
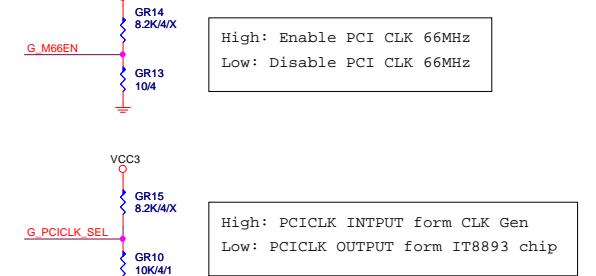
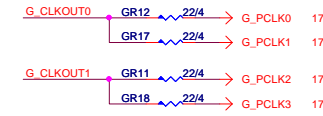
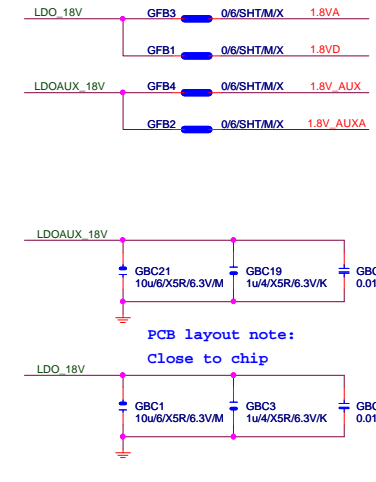
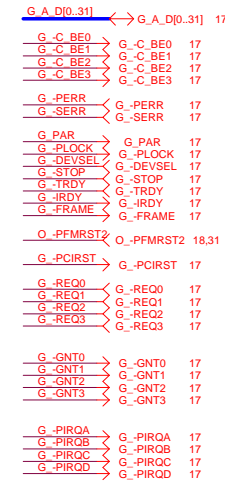
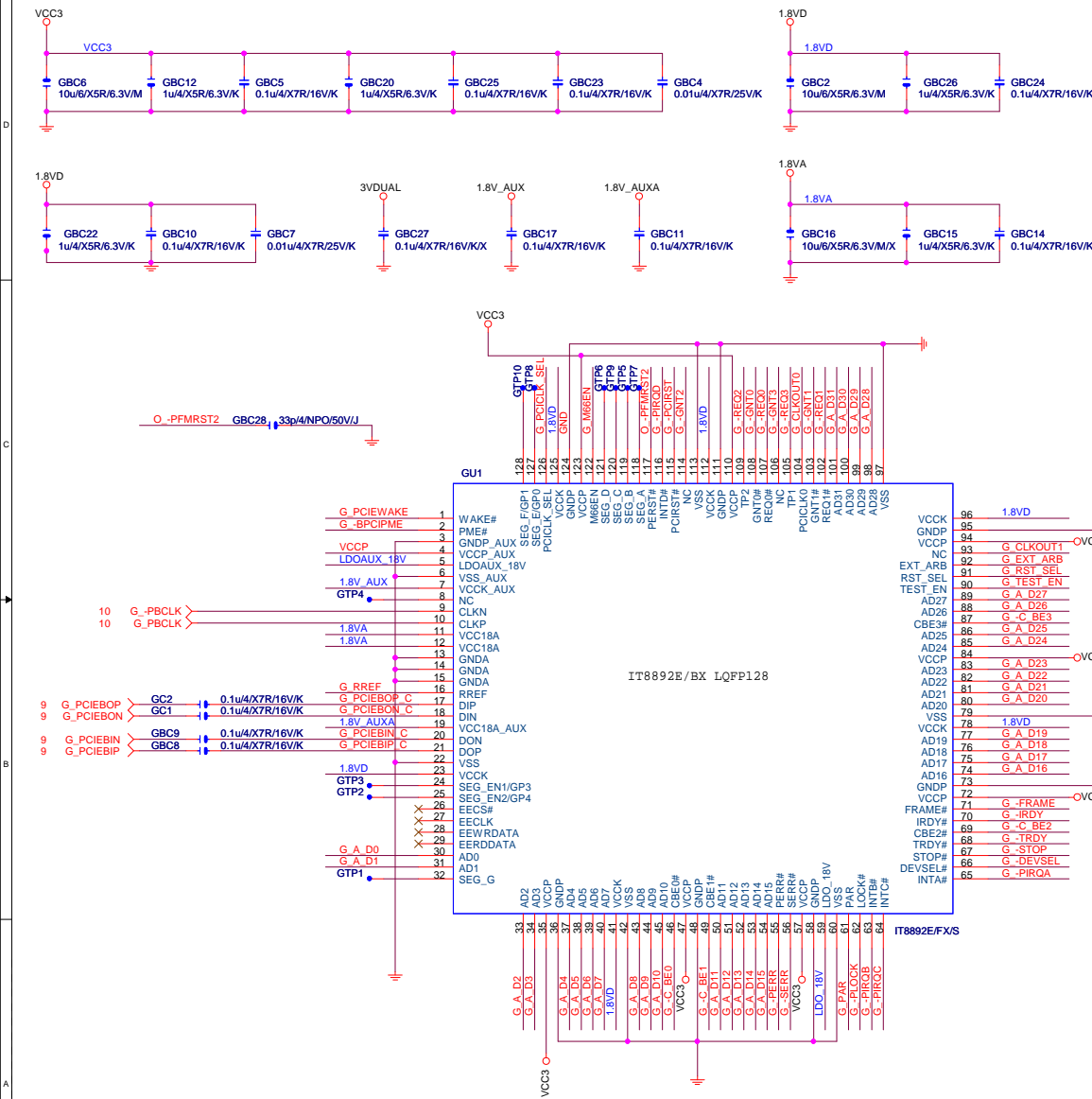
Wednesday, March 27, 2013

Sheet

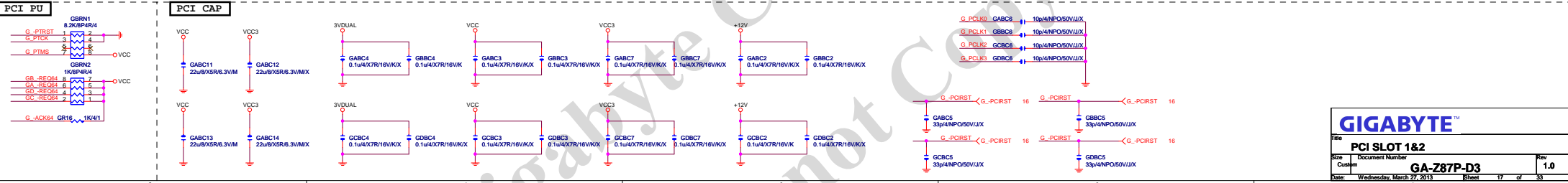
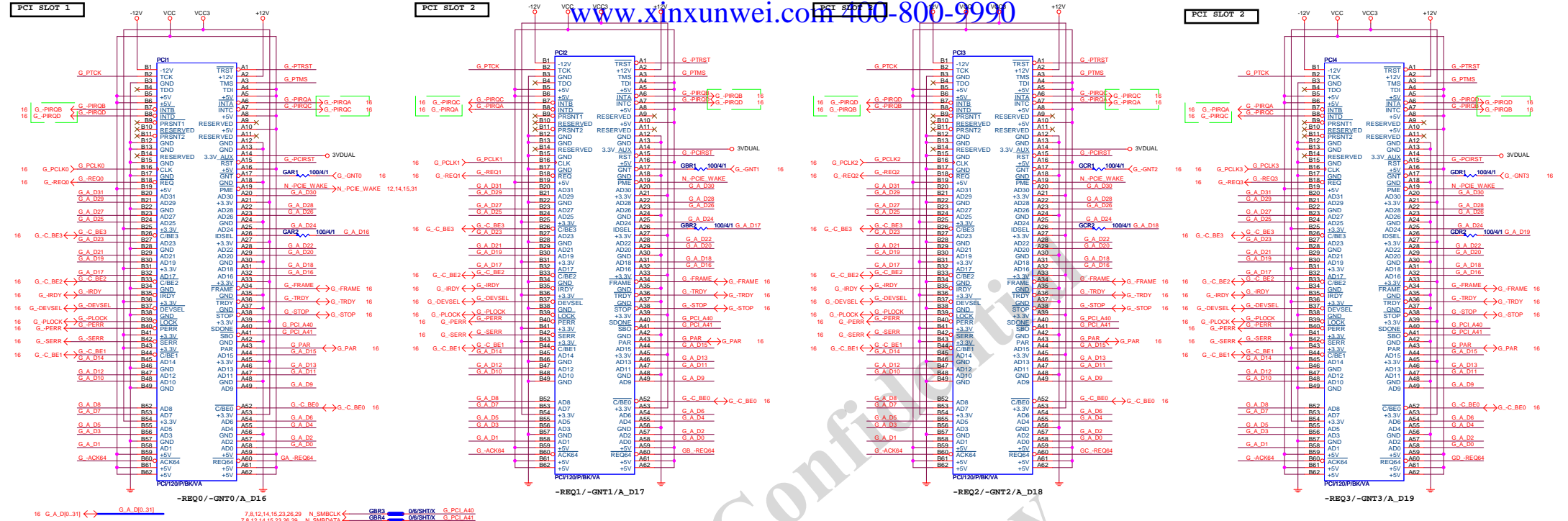
15

of

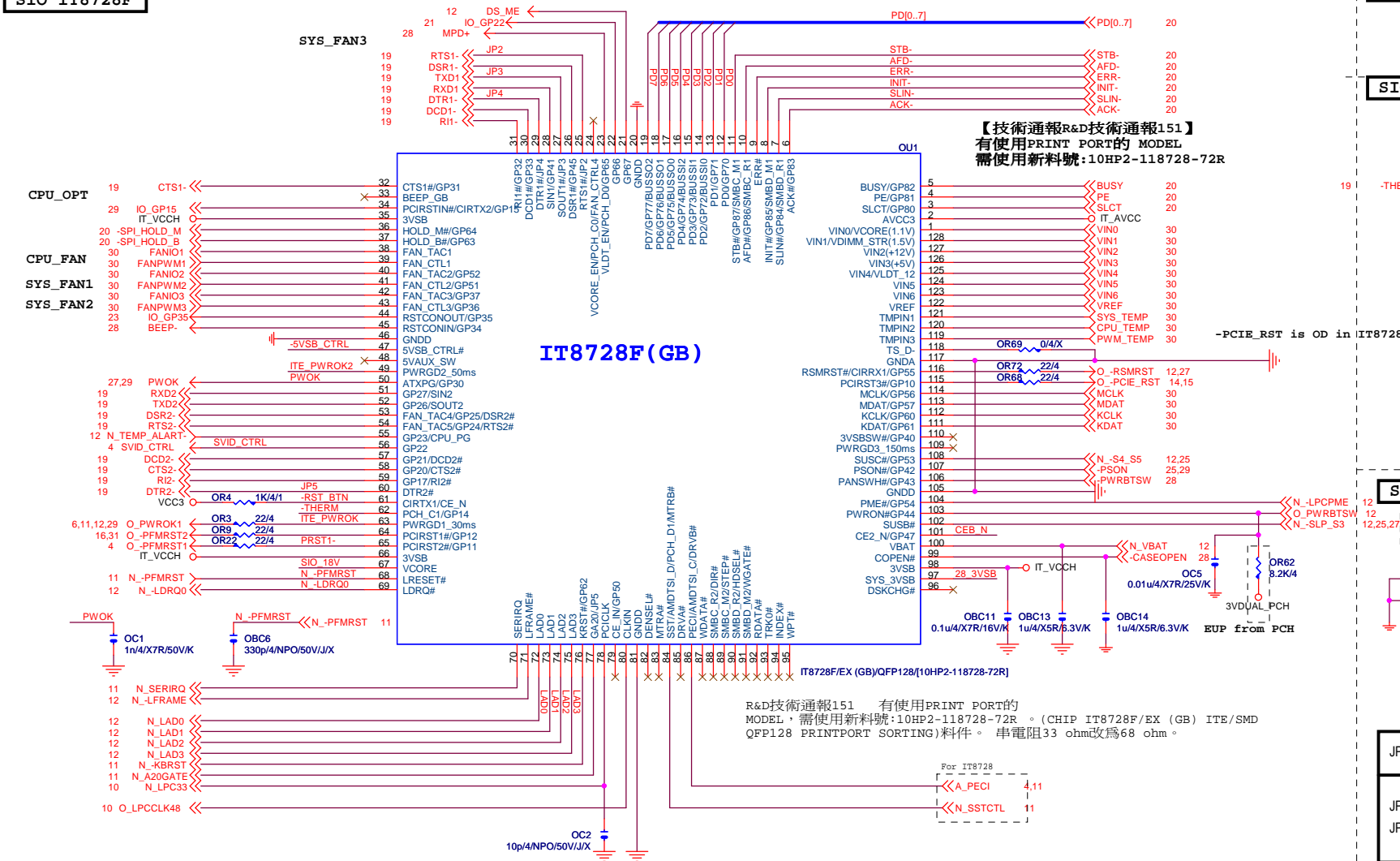
33



Gigabyte Technology		
Title		
IT8892E		
Size		
Custom	Document Number	Rev
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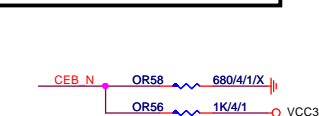
## SIO IT8728F



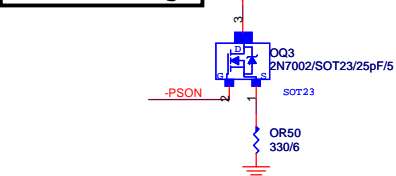
## IT8728F NOTE

	IT8728
PIN121	VCORE_EN/PCH_C0
PIN120	VLDT_EN/PCH_D0
PIN19	ATXPG
PIN31	PCH_C1
PIN53	SST/AMDTSL_D/MTRB#/PCH_D1
PIN55	PECI/AMDTSL_C/DRV#
PIN66	SYS_3VSB
PIN70	GP47
PIN95	VIN2(VCC5)
PIN96	VIN1(VCC12)
PIN97	VIN1/VDIMM_STR(1.5V)
PIN98	VIN0/VCORE(1.1V)/NC

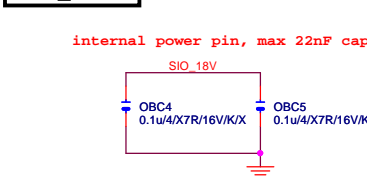
## DUAL BIOS OPT STRAP



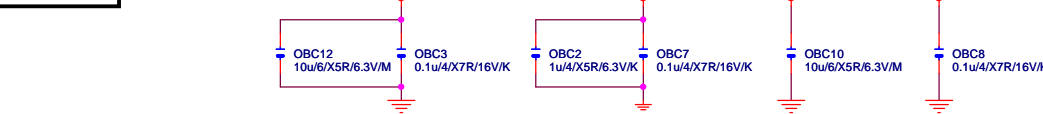
## Power leakage



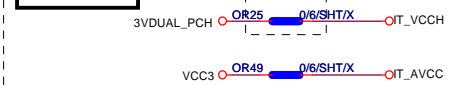
## SIO\_18V



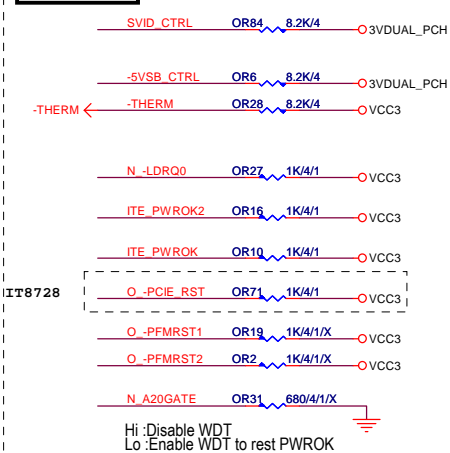
## SIO CAP



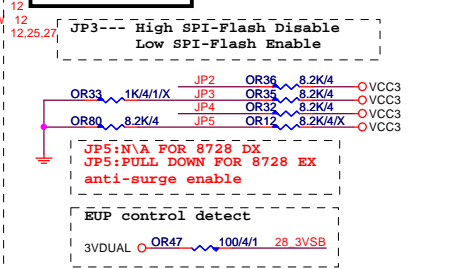
## PWR SHT



## SIO PU



## SIO STRAP

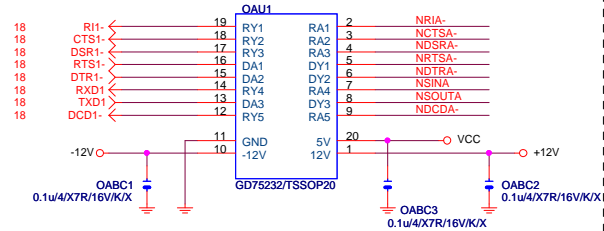


JP4	1	k8 power sequency function is Disable
	0	k8 power sequency function is Enable
JP3	1 1	The default value of EC Index 63h/6Bh/73h is 80h.
	0 1	The default value of EC Index 63h/6Bh/73h is FFh.
JP5	1 1	The default value of EC Index 63h/6Bh/73h is 00h.
	0 0	The default value of EC Index 63h/6Bh/73h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

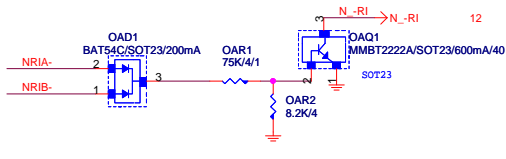
## Gigabyte Technology

Title			ITE 8728 LPC IO
Size B	Document Number	GA-Z87P-D3	
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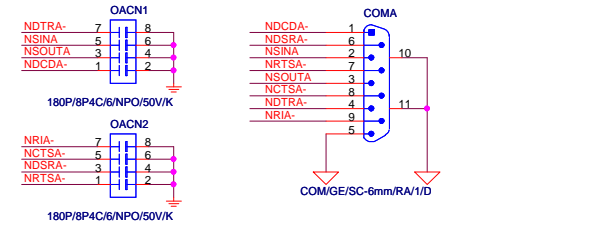
## COMA



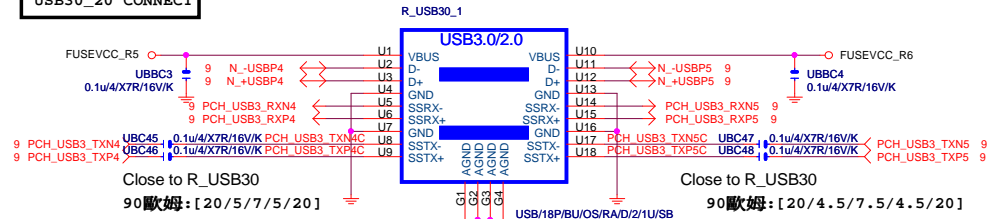
## COM RT



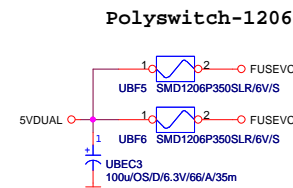
## COM BUFFER



## USB30\_20 CONNECT



## USB30 PWR

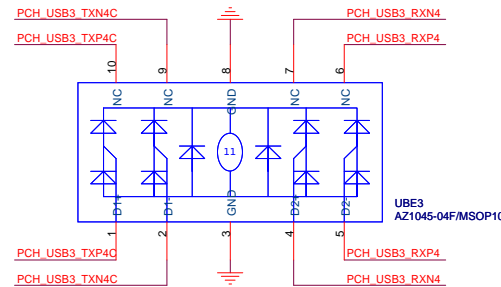
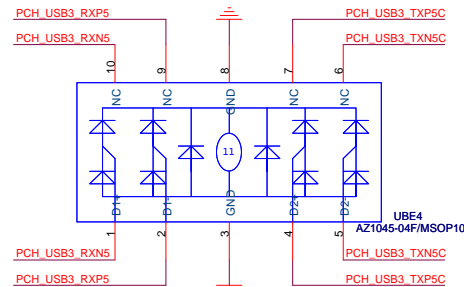
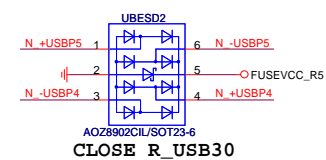


## Polyswitch-1206

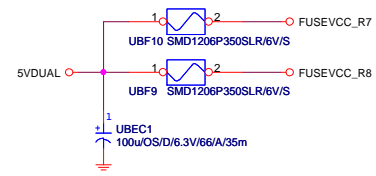
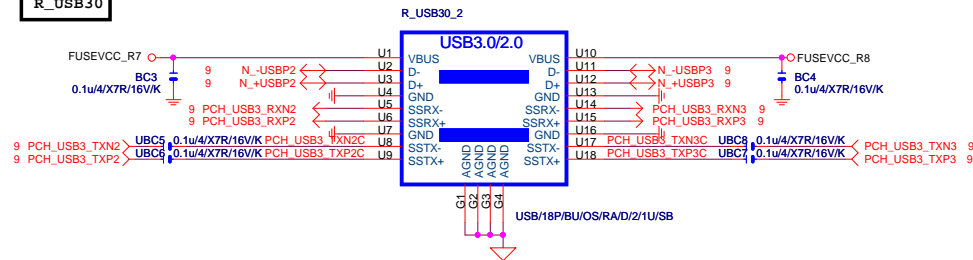
## USB3.0 1Port - 1Fuse (3.5A)

## USB20 ESD PROTECT

## USB30 ESD PROTECT

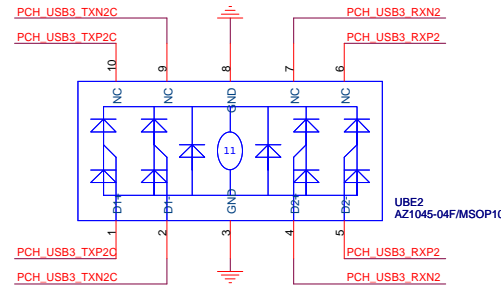
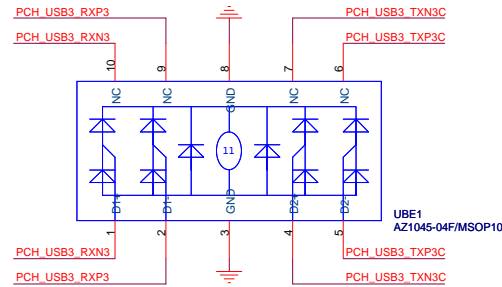
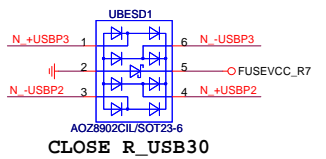


## R\_USB30

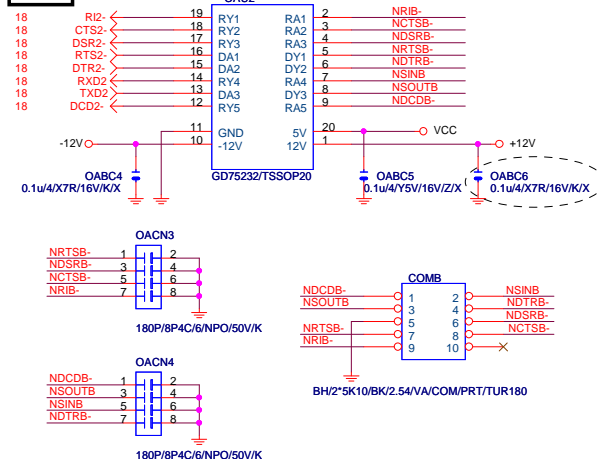


## USB20 ESD PROTECT

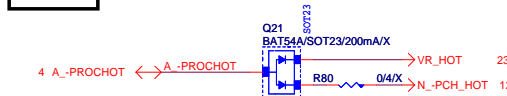
## USB30 ESD PROTECT



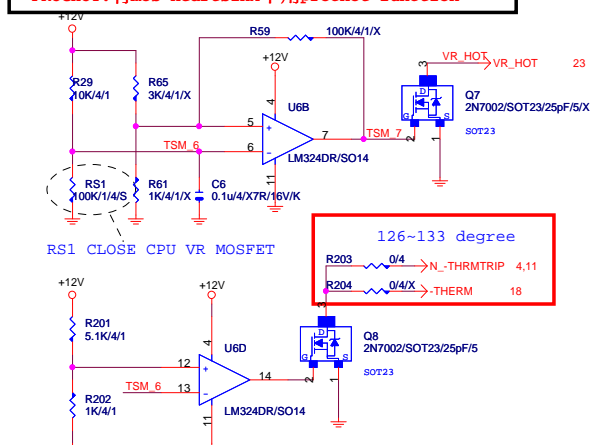
## COMB



## -PROHOT



## -PROCHOT:有mos heatsink不用prochot function



## Gigabyte Technology

COM/PROHOT/R_USB3		
Title	Document Number	Rev
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12 N\_ICH\_SPI\_MOSI < N\_ICH\_SPI\_MOSI NR10 8.2K/4/X  
12 N\_ICH\_SPI\_CS < N\_ICH\_SPI\_CS NR9 8.2K/4/X  
12 N\_ICH\_SPI\_CS1 < N\_ICH\_SPI\_CS1 NR246 8.2K/4/X  
18 -SPL\_HOLD\_M < -SPL\_HOLD\_M NR3 1K/4/1  
18 -SPL\_HOLD\_B < -SPL\_HOLD\_B NR11 1K/4/1

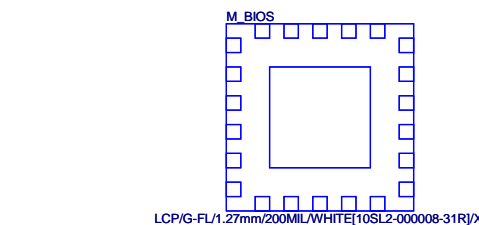
N\_ICH\_SPI\_WP1 NR2 8.2K/4/X  
N\_ICH\_SPI\_WP0 NR1 8.2K/4/X  
N\_ICH\_SPI\_MISO NR5 8.2K/4  
-HOLD0 NR235 1K/4/1/X  
-HOLD1 NR236 1K/4/1/X

18 -SPL\_HOLD\_M < -SPL\_HOLD\_M NR237 1K/4/1/X  
18 -SPL\_HOLD\_B < -SPL\_HOLD\_B NR238 1K/4/1/X  
12 N\_ICH\_SPI\_MISO < NR6 22/4 SPI\_MISO

BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

1 means floating  
0 means PD 1K

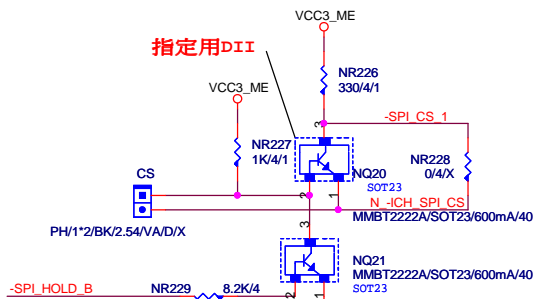
VCC3\_ME  
NBC4  
0.1u/4/X7R/16V/K



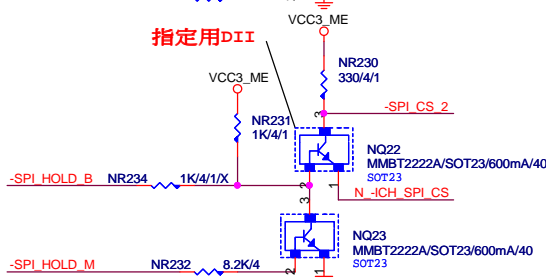
Gigabyte Technology

BIOS			
Title	BIOS		
Size	Document Number	GA-Z87P-D3	
Custom			Rev 1.0
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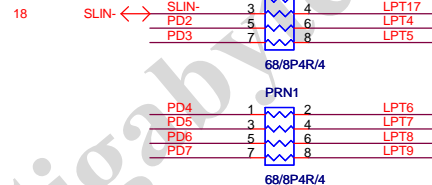
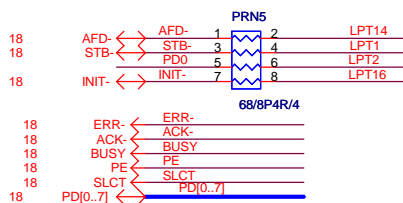
指定用DII



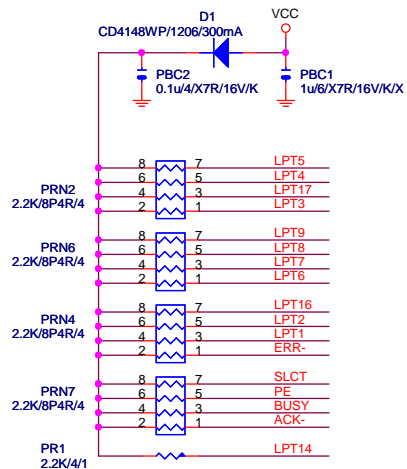
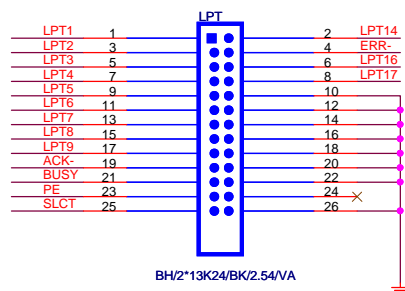
指定用DII



LPT PORT

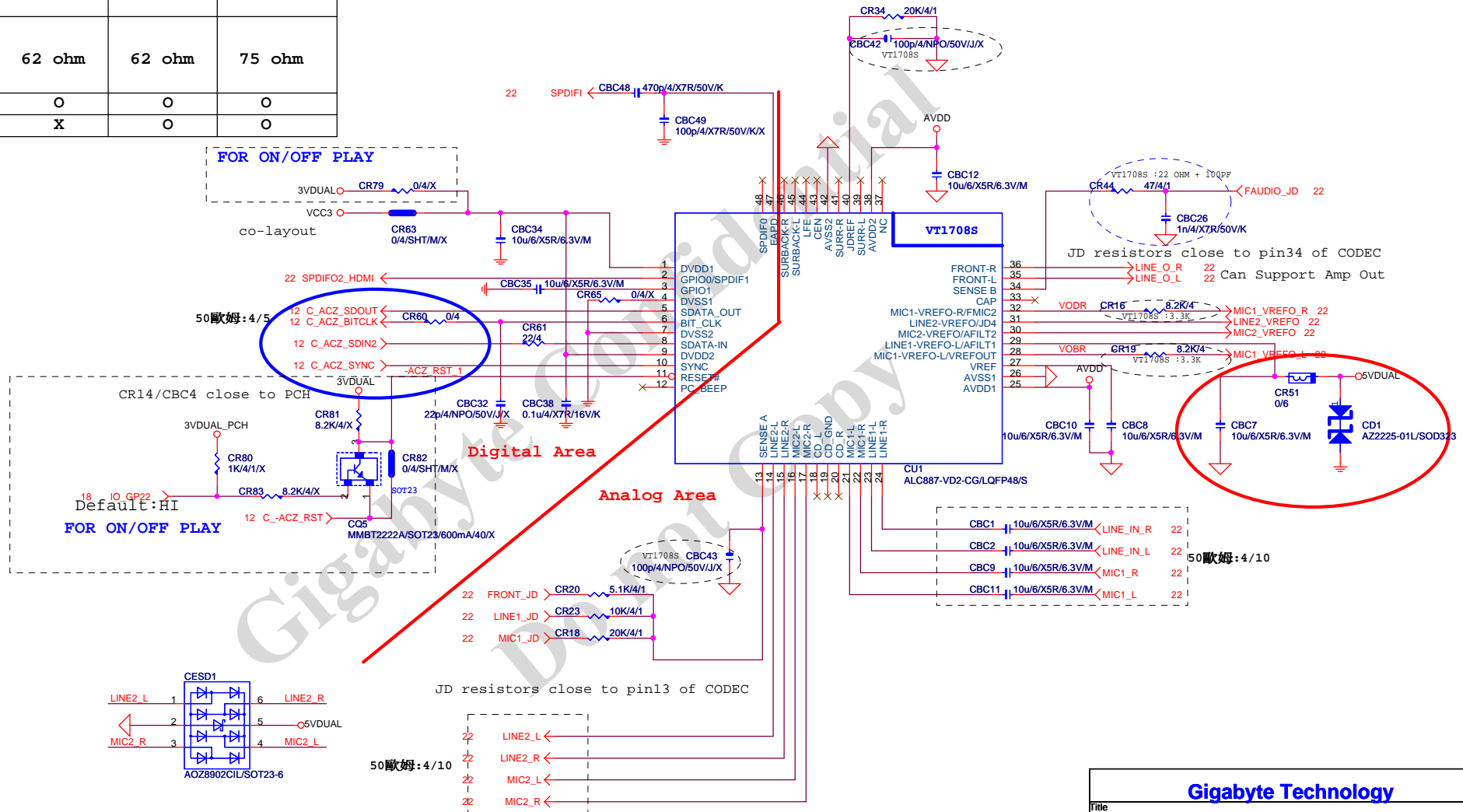


R&D技術通報151 有使用PRINT PORT的  
MODEL・需使用新料號・10HP2-118728-72R。(CHIP IT8728F/EX (GB) ITE/SMD  
QFP128 PRINTPORT SORTING)料件。串電阻33 ohm改為68 ohm。



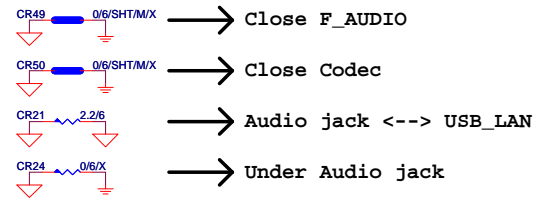


	ALC892	ALC887-VD2	VT1708S-CE
CR44/CBC26	47ohm+1nF	47ohm+1nF	22ohm+100P
CBC42/CBC43	X	X	100P/4
CR16/CR19 CR52/CR56/CR10/CR9	8.2K/4	8.2K/4	3.3K/4/1
CR6/CR7/CR58/CR54/ CR67/CR68/CR69/CR70	22K/4	22K/4	10K/4/1
CR5/CR8/CR1/CR14/ CR17/CR22/CR73/CR74/ CR13/CR11/CR57/CR53/ CR75/CR76	62 ohm	62 ohm	75 ohm
CR51/CD1/CBC7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

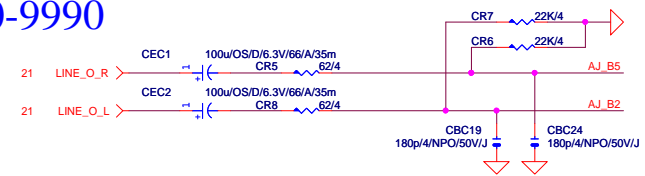


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Title	HD AUDIO ALC887		
Size	Document Number	GA-Z87P-D3	Rev
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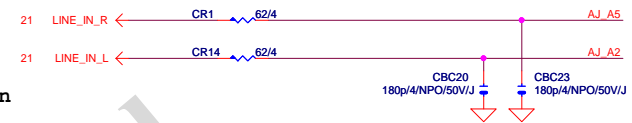
## LINE-OUT



## LINE-IN

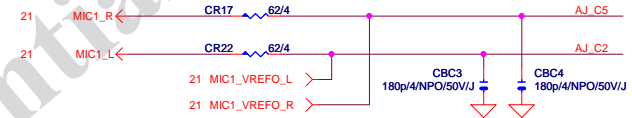
Verify MIC function  
in LINE-in

Only reserved for ALC888



For 889A/888

## MIC-IN

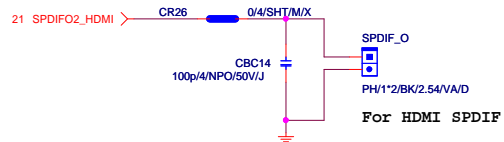


## SURROUND

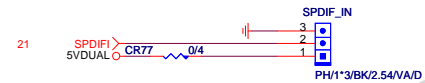
## CEN/LFE

## SURR BACK

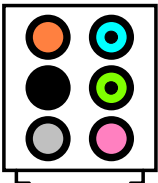
## SPDIF\_OUT



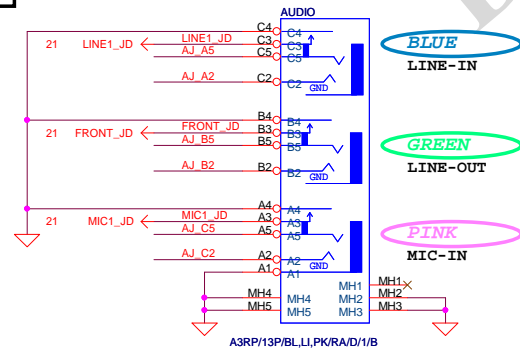
## SPDIF\_IN



## AZALIA JACK



## AZALIA JACK

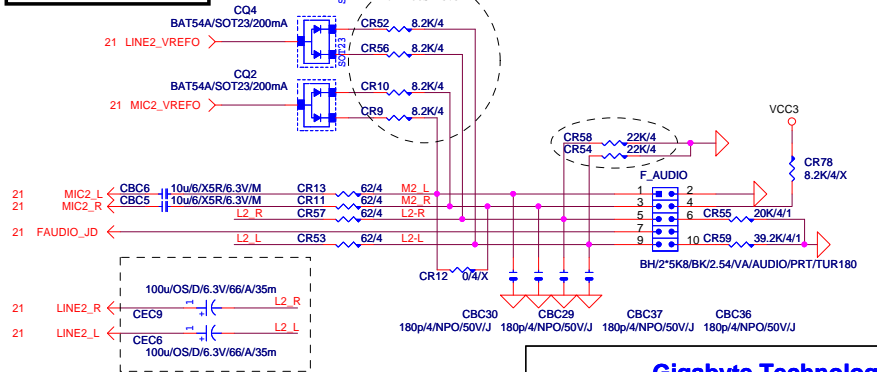


BLUE  
LINE-IN

GREEN  
LINE-OUT

PINK  
MIC-IN

## AZALIA FRONT PANEL

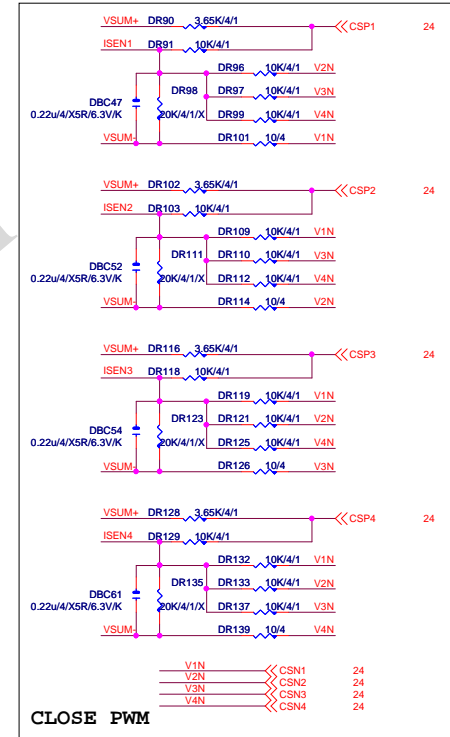
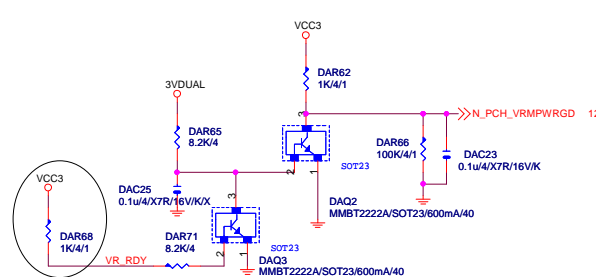
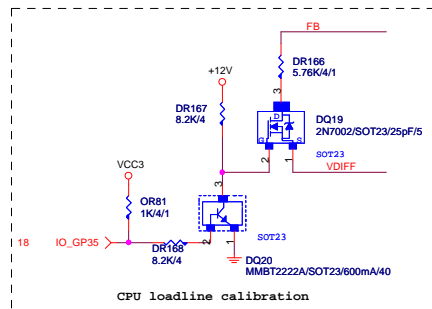
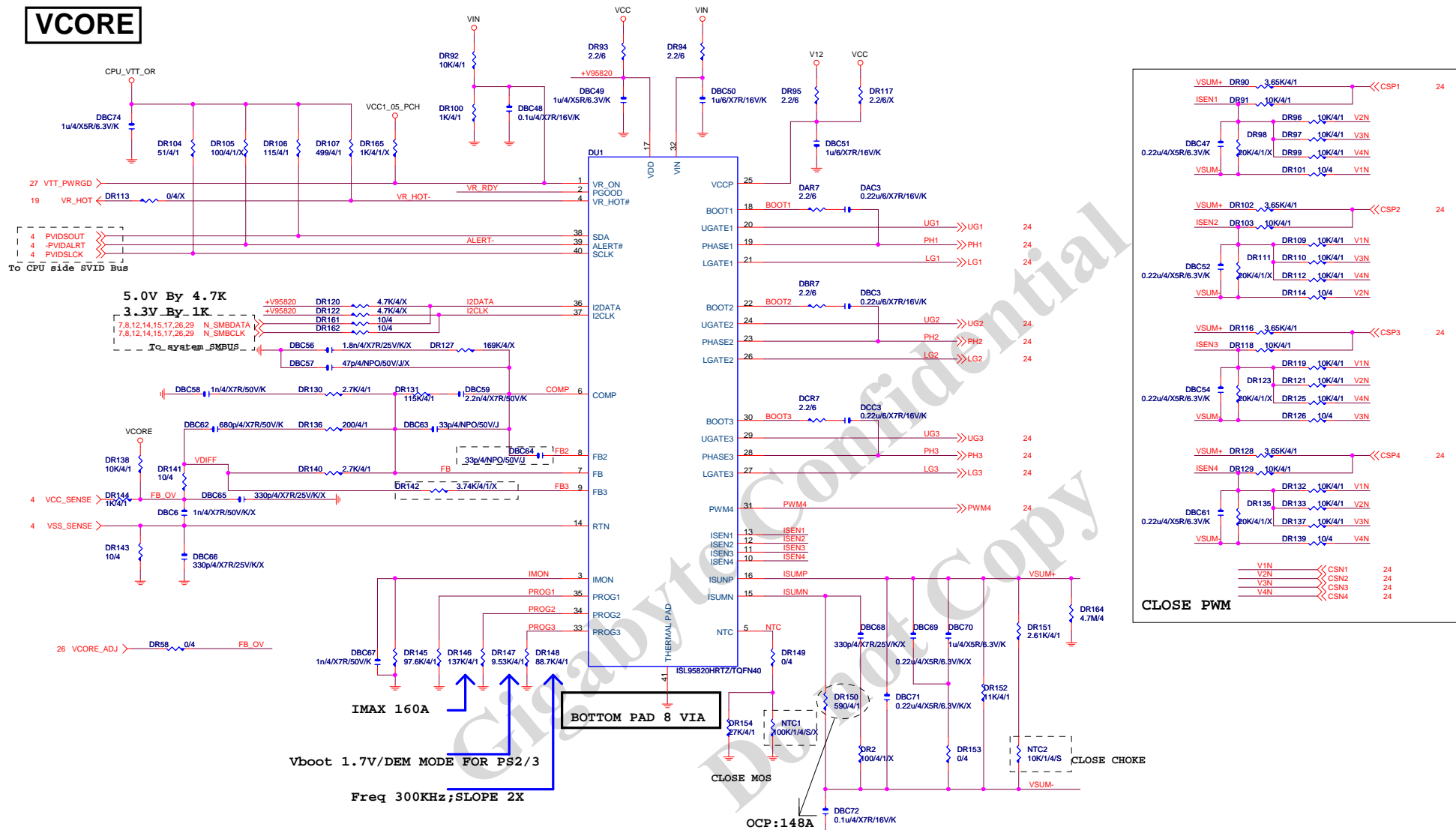


Gigabyte Technology

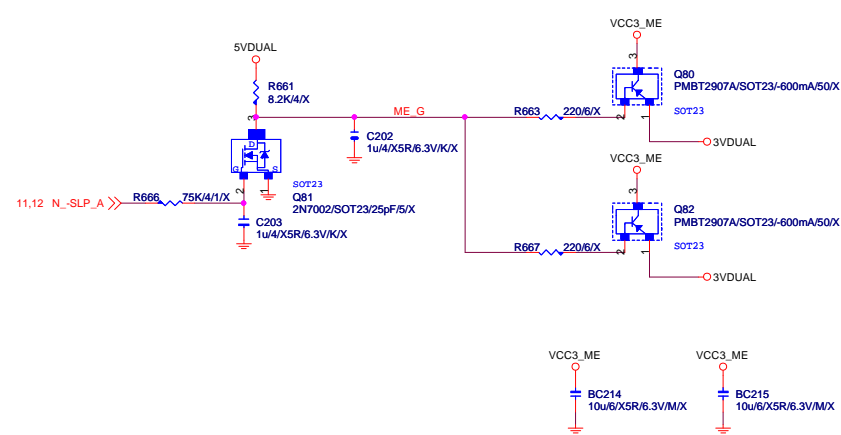
AUDIO JACK

Title	Document Number	Rev
Size Custom	GA-Z87P-D3	1.0
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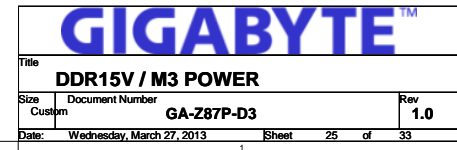
## VCORE



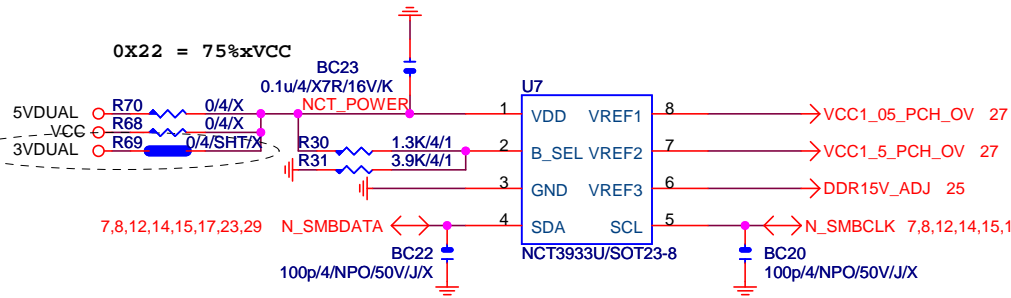
VCORE



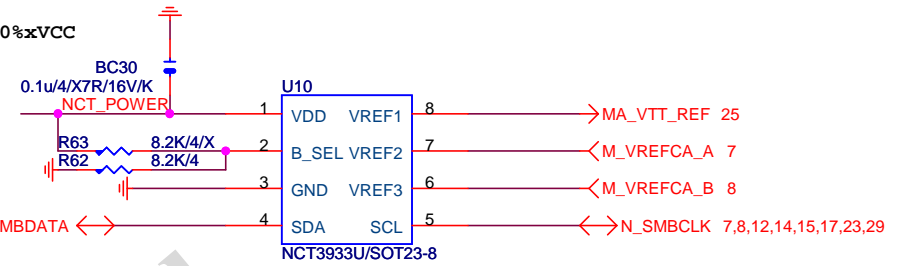
DDRVTT



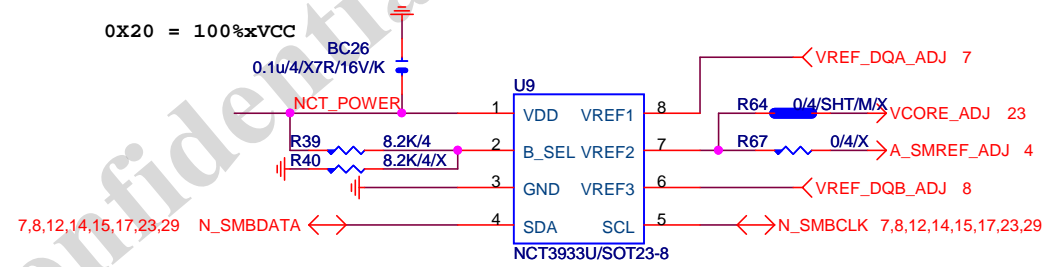
## OVER VOLTAGE



0X2A = 0%xVCC



0X20 = 100%xVCC



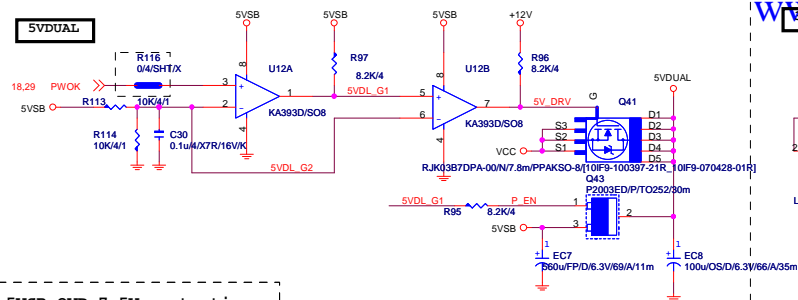
NCT3933	0X2A	0X20	0X22
VREF1	DDRVTT	VREF_DDRA_DQ	PCH Core
VREF2	VREF_DDRA_CA	N/A	VCC1_5_PCH
VREF3	VREF_DDRA_CA	VREF_DDRB_DQ	SMREF

Gigabyte Technology

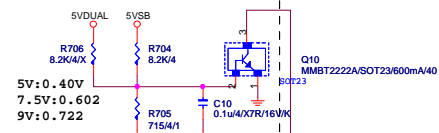
Title			CPU CORE VR-2
Size	Document Number	GA-Z87P-D3	
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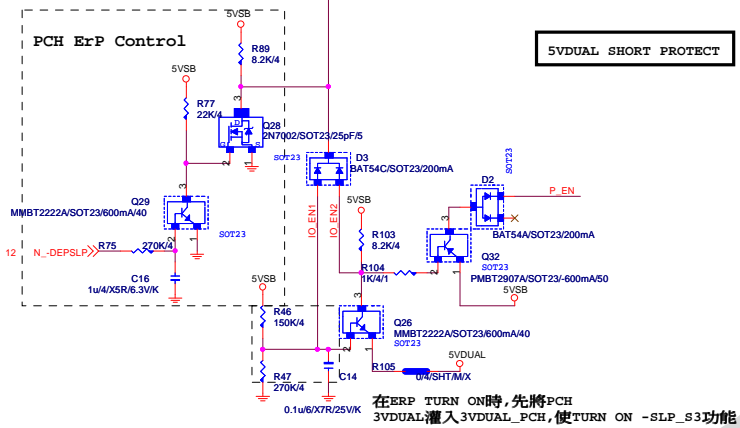
### 5VDUAL



### 5VSB OVP:7.5V protection

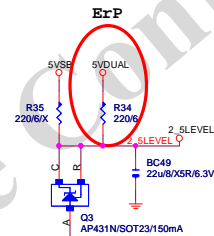


### PCH ErP Control

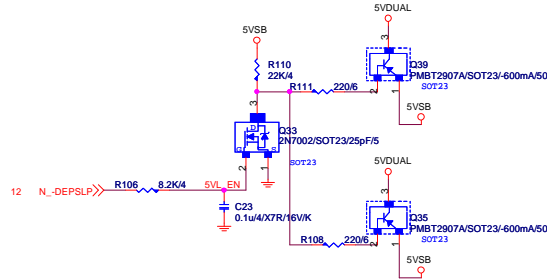
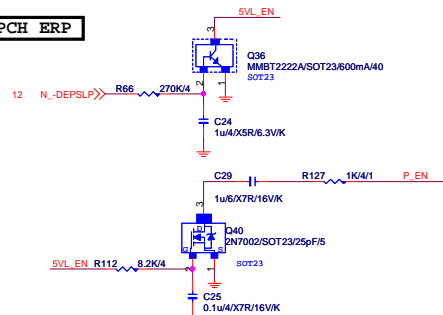


### 5VDUAL SHORT PROTECT

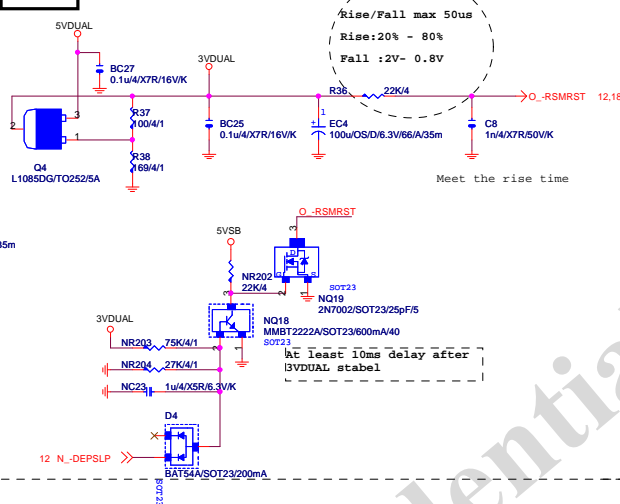
### 2\_5LEVEL



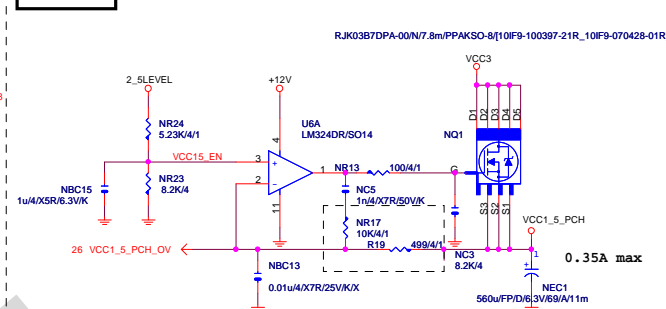
### PCH ERP



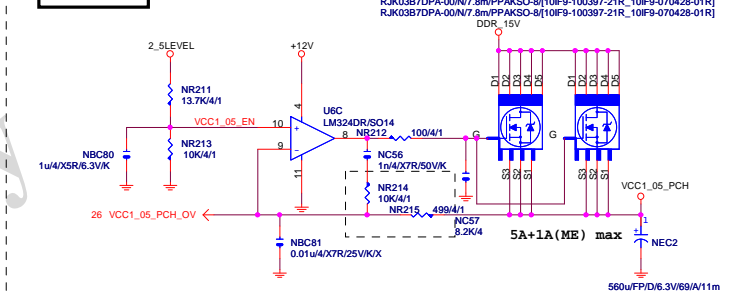
### 5VDUAL



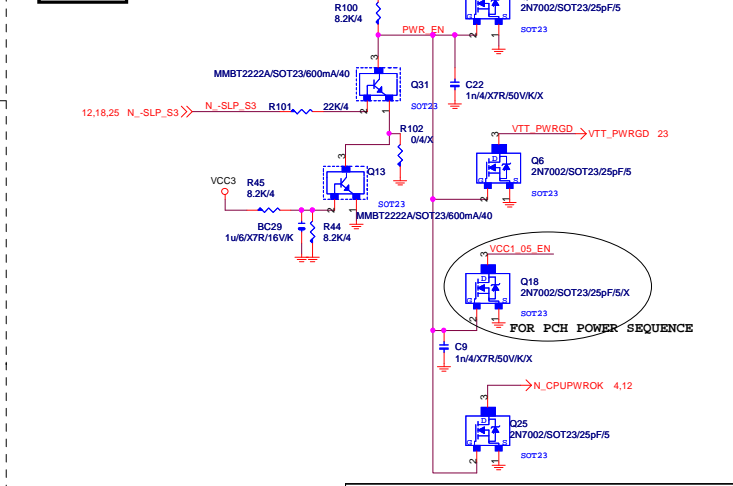
### VCC1\_5\_PCH



### VCC1\_05\_PCH



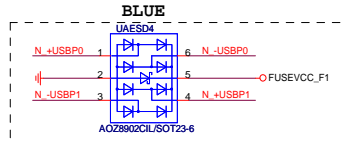
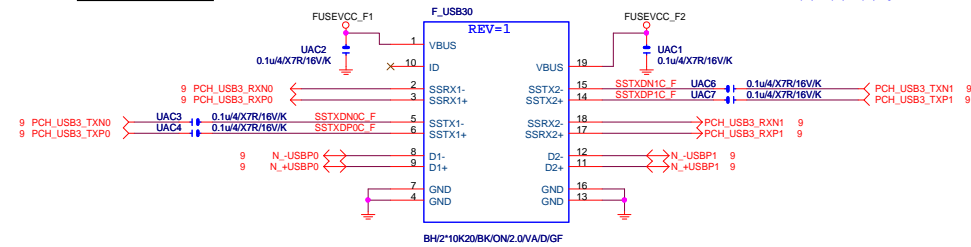
### PWR SEQ



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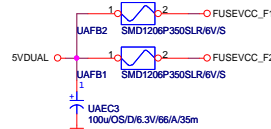
Title			
DISCRETE POWER			
Size	Document Number	Rev	
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## Front USB3.0

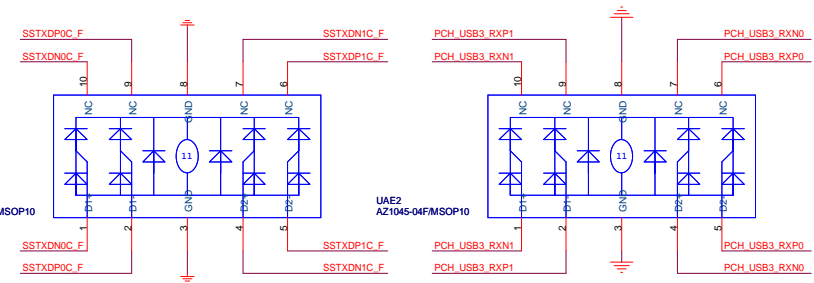


Close to connector

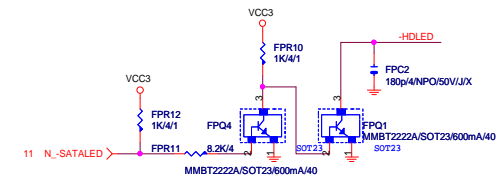
## F\_USB30 PWR



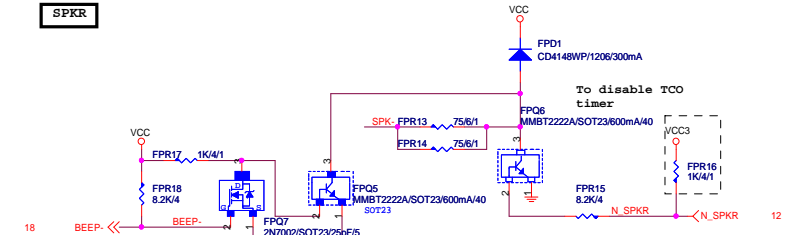
## Front USB1, Front USB2, Front USB3



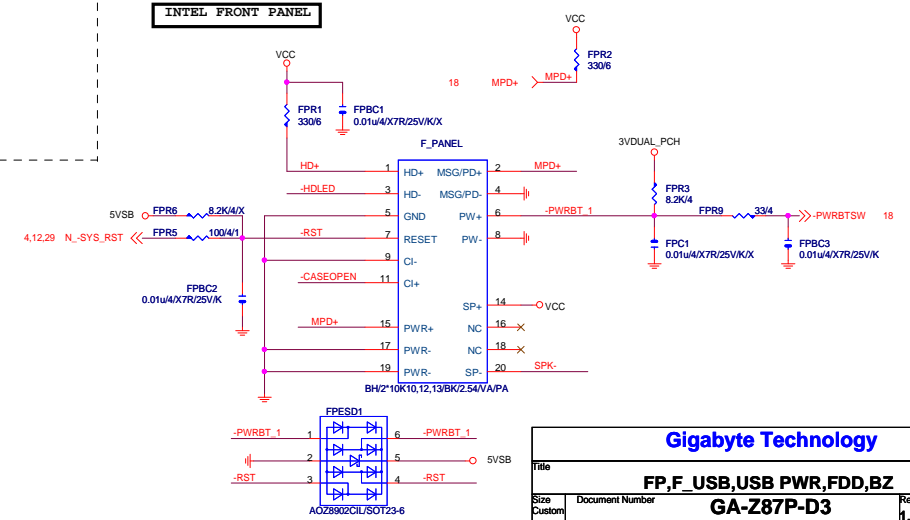
## SATA LED



## SPKR



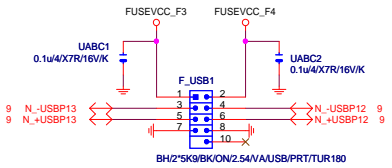
## INTEL FRONT PANEL



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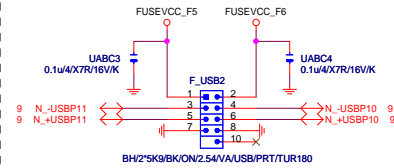
FP,F_USB,USB PWR,FDD,BZ			Rev 1.0
File	Document Number	GA-Z87P-D3	
Size	Custom		
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## FRONT USB1



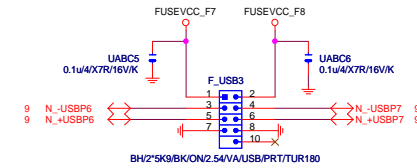
Close to connector

## FRONT USB2

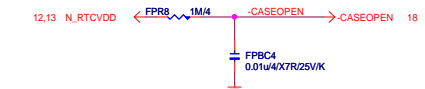


Close to connector

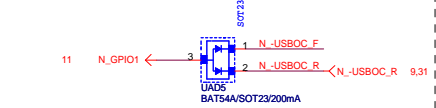
## FRONT USB3



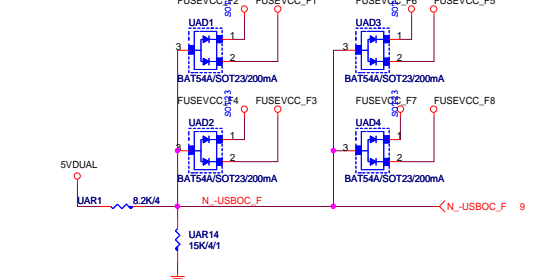
## CASE OPEN

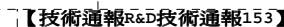
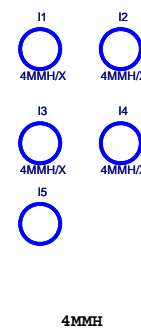
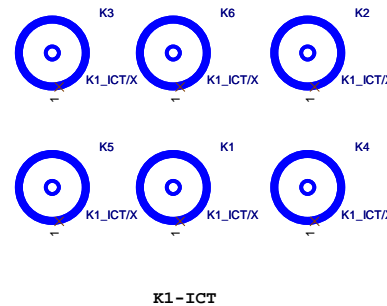
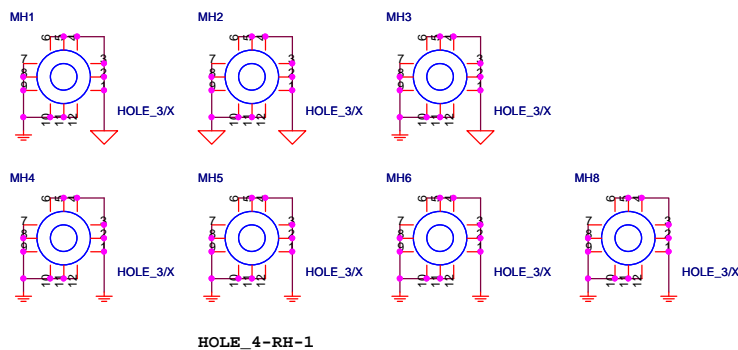
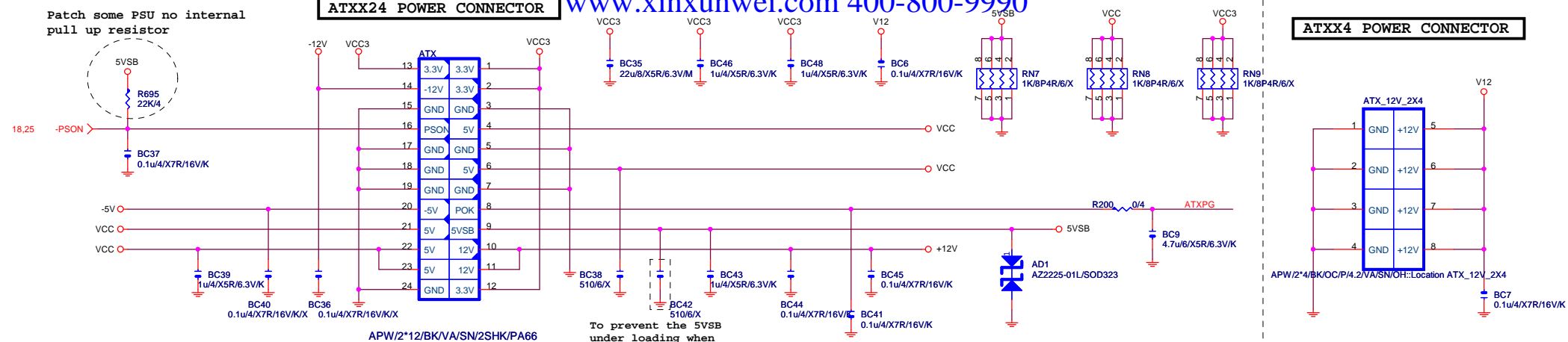


## F\_USB POWER PROTECT

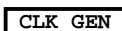
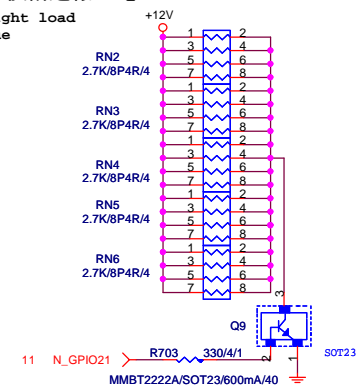


## ~USBOC\_F



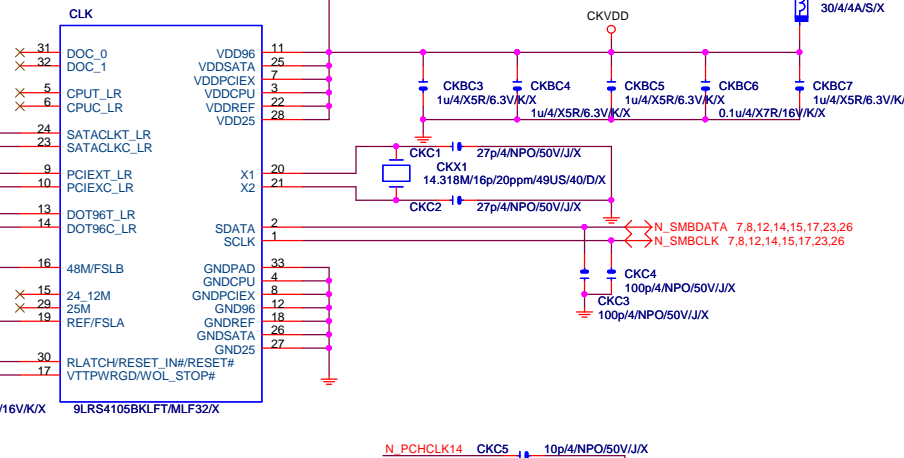
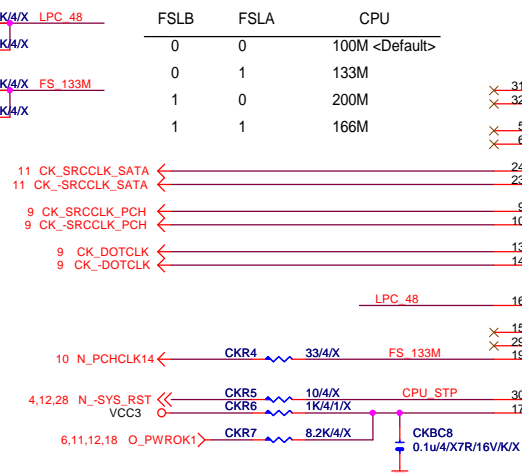


To fix 12V light load  
abnromal issue



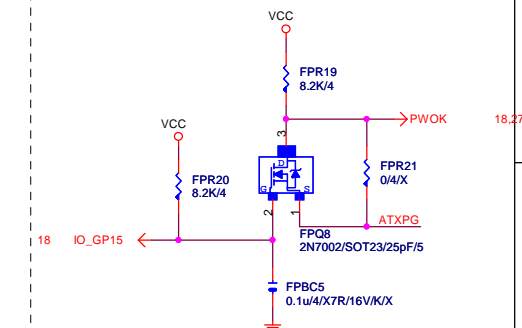
### CPU Frequency Selection

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

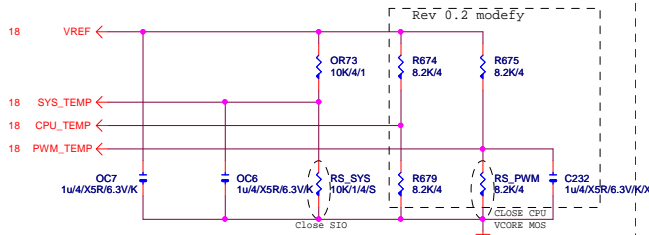


## PWOK PATCH

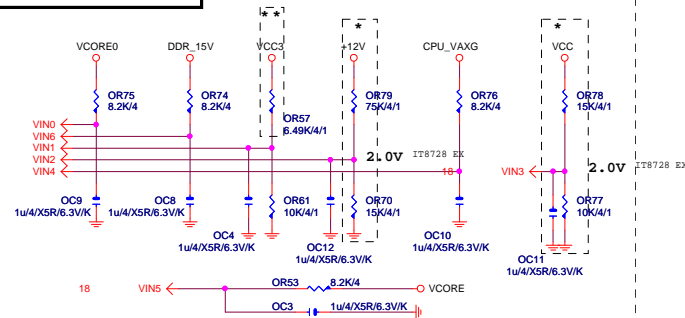
【技術通報R&amp;D技術通報154】



# TEMP H/W MONITOR

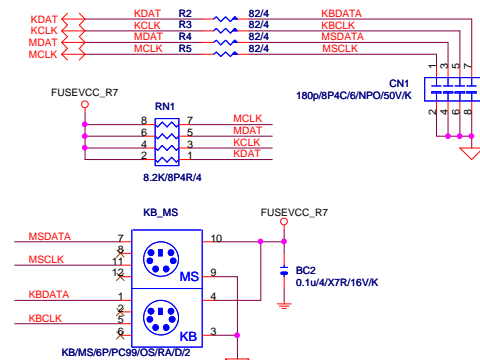


# VOLTAGE-- H/W MONITOR

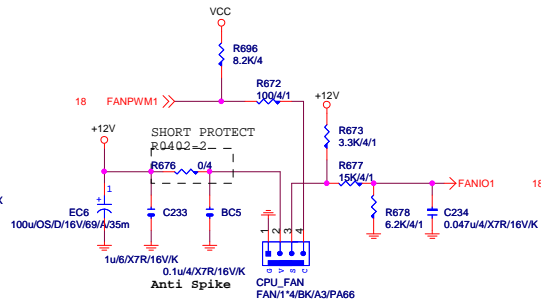


The division voltage of VIN2 & VIN3 must be around 2.9V

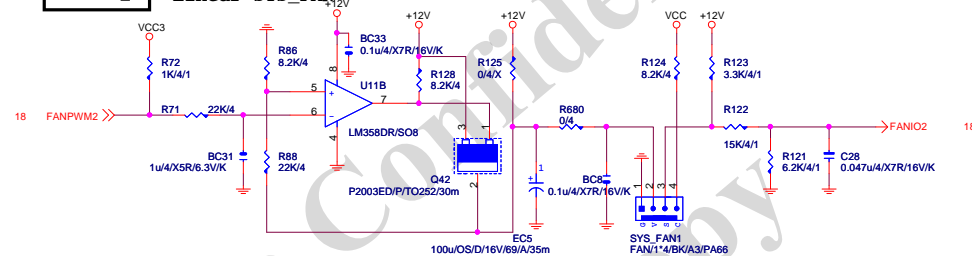
# KB/USB



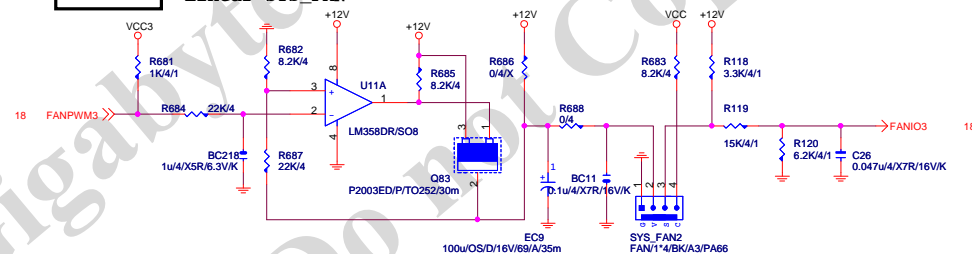
# CPU SMART FAN



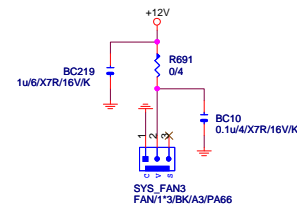
# SYS FAN\_1 Linear SYS\_FAN



# SYS FAN\_2 Linear SYS\_FAN

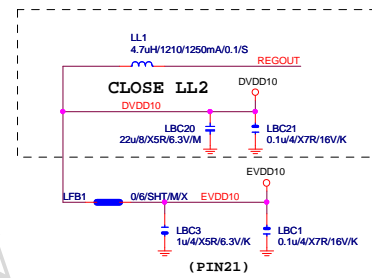
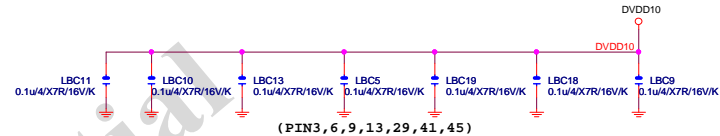
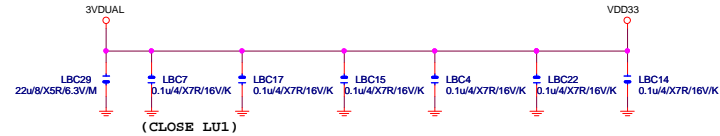
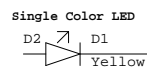
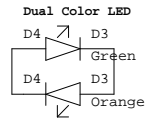
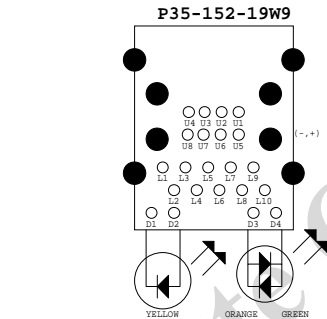
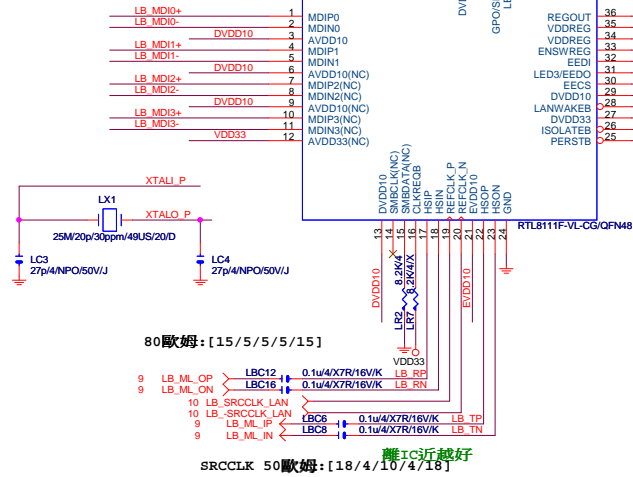


# SYS FAN\_3 Linear SYS\_FAN



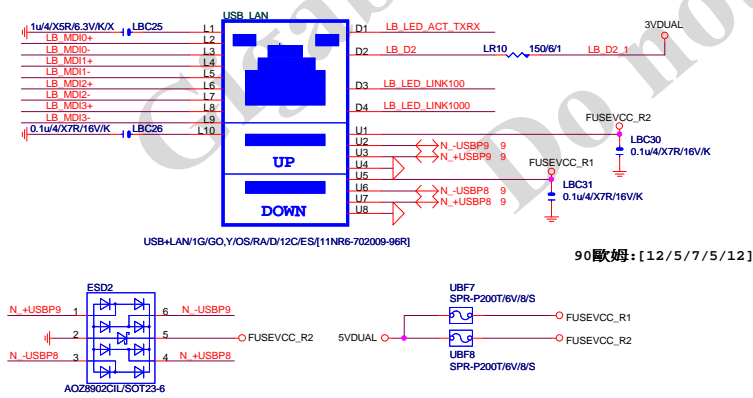
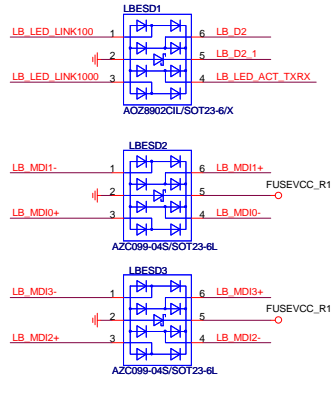
LAN: INTEL I217

100歐姆: [20/4/8/4/20]

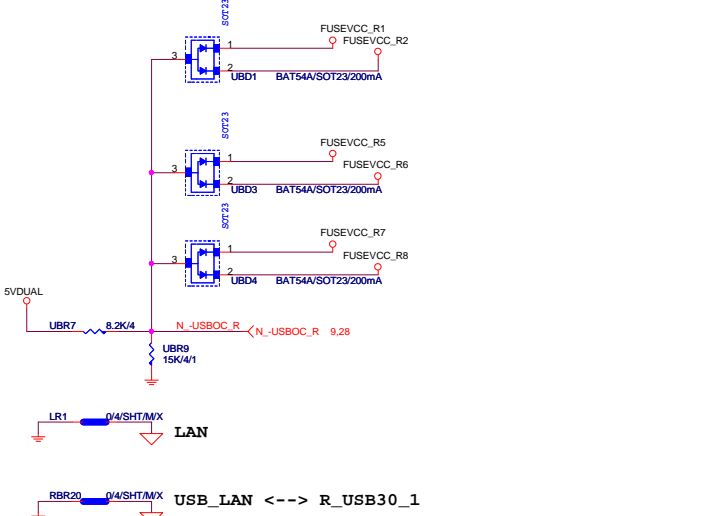


USB30\_LAN CONNECTOR

100歐姆: [20/4/8/4/20]

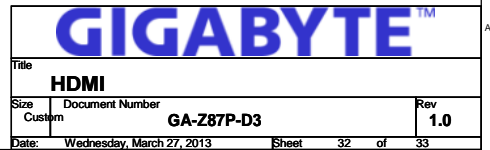


-USB0C\_R



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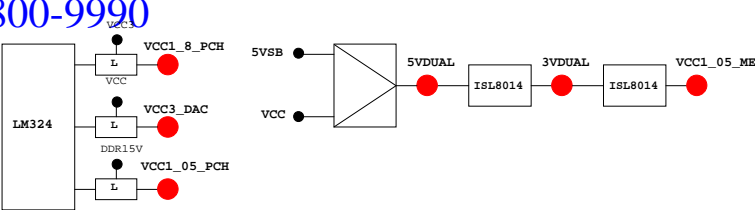
PCB GPIO LIST TABLE

PIN NAME	PWR	Default	USAGE	NOTE
GP0	MAIN	H-Z	GPIO0	N/A
GP1/TACH1	MAIN	GPI	GPIO1	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	PCIEX1 Detect	P/U 8.2K VCC3
GP7/TACH3	MAIN	MAIN	GPIO7	P/U 8.2K VCC3
GP8	STBY	H	GPIO8	N/A
GP9/OC5#	STBY	NATIVE	USB OC5#	N/A
GP10/OC6#	STBY	NATIVE	USB OC6#	N/A
GP11/SMBALERT#	STBY	NATIVE	USB PWR protect	P/U 8.2K 3VDUAL
GP12	STBY	L	GPI	GPIO12
GP13	STBY	L	GPI	LPCPME#
GP14/OC7#	STBY	NATIVE	USB OC7#	N/A
GP15	STBY	L	GPI	GPIO15(TLS Enable)
GP16	MAIN	MAIN	GPIO16	P/U 8.2K VCC3
GP17/TACH0	MAIN	MAIN	GPIO17	P/U 8.2K VCC3
GP18	MAIN	MAIN	GPIO18	Mobile Only
GP19	MAIN	MAIN	GPIO19	P/U 8.2K VCC3
GP20	MAIN	MAIN	GPIO20	P/U 8.2K VCC3
GP21	MAIN	MAIN	GPIO21	P/U 8.2K VCC3
GP22	MAIN	H-Z	GPIO22	P/U 8.2K VCC3
GP23	MAIN	MAIN	GPIO23	N/A
GP24	STBY	L	GPI	SKTOCC#
GP25	STBY		Mobile Only	N/A
GP26	STBY		Mobile Only	N/A
GP27	STBY	H	GPO	GPIO27
GP28	STBY	H	GPO	PWR LED
GP29	STBY	L	GPI	GPIO29
GP30	STBY	H-Z	GPI	Mobile Only
GP31	STBY	H-Z	GPI	Mobile Only
GP32	MAIN	H	GPO	N/A
GP33	MAIN	H	GPO	N/A
GP34	MAIN	H-Z	GPI	~PCI_STOP
GP35	MAIN	L	GPO	~ACZ_DET
GP36	MAIN	MAIN	GPIO	N/A
GP37	MAIN	MAIN	GPIO	N/A
GP38	MAIN	H-Z	GPI	PCIEX4 Detect
GP39	MAIN	H-Z	GPI	GPIO39
GP40	STBY	NATIVE	USB OC1#	N/A
GP41	STBY	NATIVE	USB OC2#	N/A
GP42	STBY	NATIVE	USB OC3#	N/A
GP43	STBY	NATIVE	USB OC4#	N/A
GP44	STBY	L	NATIVE	GPIO44
GP45	STBY	NATIVE	GPIO45	P/U 8.2K 3VDUAL
GP46	STBY	L	NATIVE	GPIO46
GP47	STBY		Mobile Only	N/A
GP48	MAIN	H-Z	IN	GPIO48
GP49	MAIN	H-Z	IN	GPIO49
GP50	MAIN	NATIVE	~REQ1	P/U 2.2K VCC
GP51	MAIN	H	NATIVE	~GNT1
GP52	MAIN	NATIVE	~REQ2	P/U 2.2K VCC
GP53	MAIN	H	NATIVE	~GNT2
GP54	MAIN	NATIVE	~REQ3	P/U 2.2K VCC
GP55	MAIN	H	NATIVE	~GNT3
GP56	STBY	NATIVE	Mobile Only	N/A
GP57	STBY	H-Z	IN	VCORE_OV1
GP58	STBY	H-Z	NATIVE	F_USB_OC
GP59	STBY	NATIVE	USB_OC0#	N/A
GP60	STBY	H-Z	NATIVE	N/A(Reverse)
GP61	STBY	L	NATIVE	~SUSTAT
GP62	STBY	L	NATIVE	SUSCLK
GP63	STBY	L	NATIVE	GPIO63
GP64	MAIN	L	NATIVE	CLKOUTFLEX0
GP65	MAIN	L	NATIVE	CLKOUTFLEX1
GP66	MAIN	L	NATIVE	CLKOUTFLEX2
GP67	MAIN	L	NATIVE	CLKOUTFLEX3
GP72	STBY	H-Z	NATIVE	VCORE_OV4
GP73	STBY		Mobile Only	N/A
GP74	STBY	H-Z	NATIVE	1_05V_OV2
GP75	STBY	H-Z	NATIVE	N/A(Reverse)

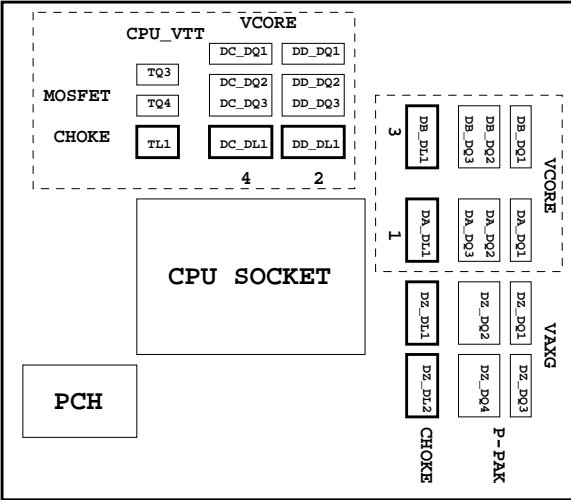
Super I/O ITE8720 GPIO Table

PIN NAME	USAGE	NOTE
SVC/PECI_RQT/GP14	-PECI_REQ	
PWROK1/GP13	PWROK1/ITE_PWROK	
KRST#/GP62	-KBRST	
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	
3VSB5W#/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/SMBC_R	2X PIN	FST_2X8
INIT#/GP85/SMBD_M	SEC_2x8	GTLREF_AD2
ACK#/GP83	DDR_LED1_C	
VIDO1/GP21/DCD2#	DDR_LED2_C	
STB#/GP87/SMBC_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/PCIRSTIN#/CIRTX/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_CLT5/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 Termination
VREF_CA_A/VREF_CA_B	DRAM Address Ref
VREF_DQ_A/VREF_DQ_B	DRAM Data Ref

	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

散熱模組料號：

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

Gigabyte Technology			
Title	TABLE LIST		
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