

Model Name: GA-P55-UD3L 2.02

SHEET TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU LGA1156-A
05	CPU LGA1156-B
06	CPU LGA1156-C
07	DDR III CHANNEL A
08	DDR III CHANNEL B
09	DDR III POWER CAP
10	PCH FDI,DMI,USB,PCIE,NVRAM
11	PCH DP,CLK BUFFER
12	PCH HOST,SATA,PCI
13	PCH GPIO,CTRL,AUDIO
14	PCH PWR,GND
15	PCI EXPRESS*16 SLOT
16	PCI EXPRESS*4 SLOT
17	PCI EXPRESS*1 SLOT
18	PCI SLOT X4
19	ITE 8720 LPC IO
20	COM, -PROHOT , DYNAMIC OC , LPT
21	Dual BIOS
22	ALC888
23	REAR AUDIO JACK
24	CLOCK GEN ICS9LPRS914
25	VCORE PWM ISL6334CR
26	CPU VTT PWM ISL6322G
27	DDR 15V & VCC1 05 PCH PWM ISL6545CBZ

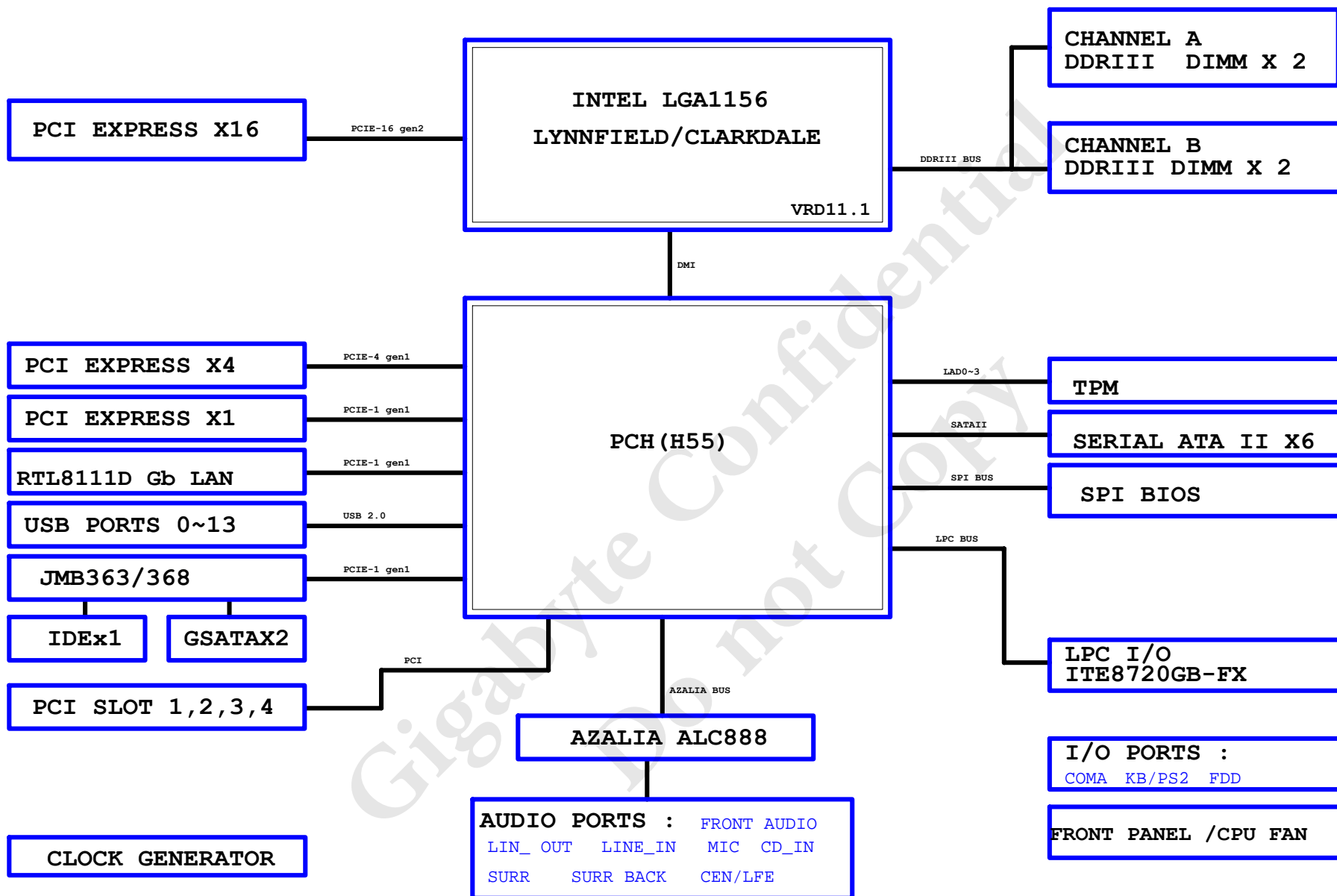
SHEET TITLE

28	DISCRETE POWER
29	F PANEL ,USB , FDD
30	ATX POWER
31	J363
32	REALTEK RTL8111D
33	TPM SLB9635TT
34	HWM,KB/MS , FAN CTRL
35	TABLE LIST
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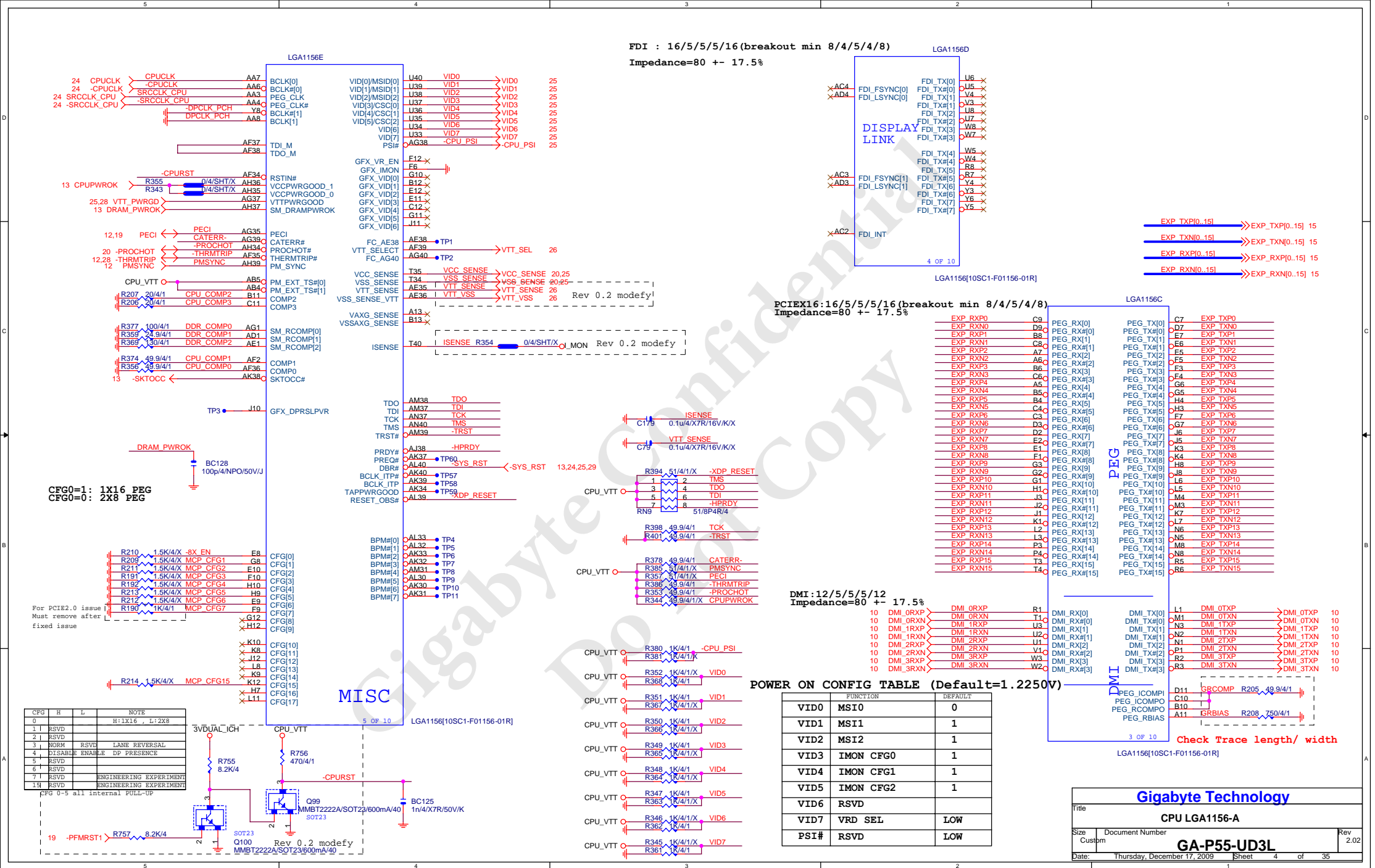
Gigabyte Technology			
Title			
Cover Sheet			
Size	Document Number	GA-P55-UD3L	Rev
Custom			2.02
Date:	Thursday, December 17, 2009	Sheet	1 of 35



# BLOCK DIAGRAM



[www.vinafix.com](http://www.vinafix.com)



LGA1156A

		MAAA0	AV18	SA, MA[0]	SA, DQS[0]	AK3	DQSA0
		MAAA1	AV15	SA, MA[1]	SA, DQS[0]	AJ3	-DQSA0
		MAAA2	AV15	SA, MA[2]	SA, DM[0]	AJ2	DMA0
		MAAA3	AV15	SA, MA[3]			
		MAAA4	AV14	SA, MA[4]	SA, DQ[0]	AH1	MDA0
		MAAA5	AV13	SA, MA[5]	SA, DQ[1]	AJ4	MDA1
		MAAA6	AV14	SA, MA[6]	SA, DQ[2]	AJ2	MDA2
		MAAA7	AV13	SA, MA[7]	SA, DQ[3]	AL1	MDA3
		MAAA8	AV14	SA, MA[8]	SA, DQ[4]	AG2	MDA4
		MAAA9	AV12	SA, MA[9]	SA, DQ[5]	AH2	MDA5
		MAAA10	AV11	SA, MA[10]	SA, DQ[6]	AK1	MDA6
		MAAA11	AV13	SA, MA[11]	SA, DQ[7]	AK2	MDA7
		MAAA12	AV11	SA, MA[12]			
		MAAA13	AV24	SA, MA[13]	SA, DQS[1]	AP2	DQSA1
		MAAA14	AV11	SA, MA[14]	SA, DQS[1]	AP3	-DQSA1
		MAAA15	AR10	SA, MA[15]	SA, DM[1]	AN1	DMA1
		-SWEA	AT22	SA, WE#	SA, DQ[8]	AN3	MDA8
7	-SWEA	-SCASA	AT22	SA, CAS#	SA, DQ[9]	AN2	MDA9
7	-SCASA	-SRASA	AV10	SA, CAS#	SA, DQ[10]	AR3	MDA10
				SA, RS#	SA, DQ[11]	AR2	MDA11
7	SBA0	SBA0	AV20	SA, BS[0]	SA, DQ[12]	AM3	MDA12
7	SBA1	SBA1	AV19	SA, BS[1]	SA, DQ[13]	AP1	MDA13
7	SBA2	SBA2	AV12	SA, BS[2]	SA, DQ[14]	AR4	MDA14
					SA, DQ[15]	AR1	MDA15
7	-CSA0	CSA0	AV21	SA, CS#0		AL4	DQSA2
7	-CSA1	CSA1	AV22	SA, CS#1	SA, DQS[2]	AL3	-DQSA2
7	-CSA2	CSA2	AV10	SA, CS#2	SA, DQS[2]	AL1	DMA2
7	-CSA3	CSA3	AV23	SA, CS#3	SA, DM[2]		
7	CKEA0	CKEA0	AV10	SA, CKE[0]	SA, DQ[16]	AT4	MDA16
7	CKEA1	CKEA1	AV10	SA, CKE[1]	SA, DQ[17]	AJ3	MDA17
7	CKEA2	CKEA2	AV10	SA, CKE[2]	SA, DQ[18]	AW3	MDA18
7	CKEA3	CKEA3	AV10	SA, CKE[3]	SA, DQ[19]	AW4	MDA19
					SA, DQ[20]	AT3	MDA20
		MODT A0	AV23	SA, ODT[0]	SA, DQ[21]	AV2	MDA22
		MODT A1	AV24	SA, ODT[1]	SA, DQ[22]	AV4	MDA23
		MODT A2	AV23	SA, ODT[2]	SA, DQ[23]	AV1	MDA24
		MODT A3	AV24	SA, ODT[3]			
					SA, DQS[3]	AV6	DQSA3
					SA, DQS[3]	AW6	-DQSA3
					SA, DM[3]	AV6	DMA3
7	DCLKA0	DCLKA0	AR22	SA, CK[0]			
7	-DCLKA0	-DCLKA0	AR21	SA, CK[0]			
7	DCLKA1	-DCLKA1	AR18	SA, CK[1]	SA, DQ[24]	AV5	MDA24
7	-DCLKA1	-DCLKA1	AN18	SA, CK[1]	SA, DQ[25]	AV8	MDA25
7	DCLKA2	-DCLKA2	AN21	SA, CK[2]	SA, DQ[26]	AJ8	MDA26
7	-DCLKA2	-DCLKA2	AP21	SA, CK[2]	SA, DQ[27]	AV8	MDA27
7	DCLKA3	DCLKA3	AR19	SA, CK[3]	SA, DQ[28]	AV5	MDA28
7	-DCLKA3	-DCLKA3	AN19	SA, CK[3]	SA, DQ[29]	AV7	MDA30
					SA, DQ[30]	AW7	MDA31
					SA, DQ[31]		
7,8	-DDR3_RST	-DDR3_RST	AV8	SM_DRAMRST#			
		TP1	AK22	SA, CS#4	SA, DQS[4]	AR28	DQSA4
		TP18	AM22	SA, CS#5	SA, DQS[4]	AT29	-DQSA4
		TP19	AL23	SA, CS#6	SA, DM[4]	AN29	DMA4
		TP1	AK23	SA, CS#7			
		DQSA8	AL10	SA, DQS[8]	SA, DQ[32]	AN27	MDA32
		-DQSA8	AM10	SA, DQS#8	SA, DQ[33]	AT28	MDA33
					SA, DQ[34]	AP28	MDA34
					SA, DQ[35]	AN29	MDA35
		SACB0	AP10	SA, ECC, CB[0]	SA, DQ[36]	AP26	MDA36
		SACB1	AN10	SA, ECC, CB[1]	SA, DQ[37]	AR27	MDA37
		SACB2	AR11	SA, ECC, CB[2]	SA, DQ[38]	AN29	MDA38
		SACB3	AP11	SA, ECC, CB[3]		AR30	MDA39
		SACB4	AP11	SA, ECC, CB[3]			
		SACB5	AL9	SA, ECC, CB[4]	SA, DQS[5]	AV32	DQSA5
		SACB6	AK11	SA, ECC, CB[5]	SA, DQS#5	AW32	-DQSA5
		SACB7	AM11	SA, ECC, CB[7]	SA, DM[5]	AV31	DMA5
					SA, DQ[40]	AL30	MDA40
					SA, DQ[41]	AL31	MDA41
					SA, DQ[42]	AV33	MDA42
					SA, DQ[43]	AL34	MDA43
					SA, DQ[44]	AV30	MDA44
					SA, DQ[45]	AV32	MDA45
					SA, DQ[46]	AL33	MDA46
					SA, DQ[47]	AW33	MDA47
					SA, DQS[6]	AW36	DQSA6
					SA, DQS#6	AV35	-DQSA6
					SA, DM[6]	AL35	DMA6
					SA, DQ[48]	AV35	MDA48
					SA, DQ[49]	AV37	MDA49
					SA, DQ[50]	AL37	MDA50
					SA, DQ[51]	AL37	MDA51
					SA, DQ[52]	AV34	MDA52
					SA, DQ[53]	AV36	MDA54
					SA, DQ[54]	AV37	MDA55
					SA, DQ[55]		
					SA, DQS[7]	AR39	DQSA7
					SA, DQS#7	AR38	-DQSA7
					SA, DM[7]	AT38	DMA7
					SA, DQ[56]	AT39	MDA56
					SA, DQ[57]	AT40	MDA57
					AN38	MDA58	
					AN39	MDA59	
					AN38	MDA60	
					SA, DQ[60]	AL39	MDA61
					SA, DQ[61]	AP39	MDA62
					SA, DQ[62]	AL39	MDA63
					SA, DQ[63]		

DDR\_A

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DDR A

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LGA1156[10SC1-F01156-01R]

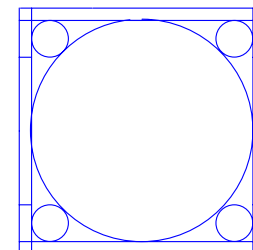
LGA1156B

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MAAB2	AV18	SB_MAJ[2]	SB_DMJ[0]	AE4	DMB0
MAAB3	AU17	SB_MAJ[3]			
MAAB4	AV16	SB_MAJ[4]	SB_DMJ[0]	AD7	MD90
MAAB5	AW17	SB_MAJ[5]	SB_DQ[1]	AD6	MD81
MAAB6	AW18	SB_MAJ[6]	SB_DQ[1]	AH8	MD82
MAAB7	AU16	SB_MAJ[7]	SB_DQ[3]	AJR	MD83
MAAB8	AV17	SB_MAJ[8]	SB_DQ[4]	AC7	MD84
MAAB9	AT17	SB_MAJ[8]	SB_DQ[5]	AC6	MD85
MAABA0	AY25	SB_MAJ[9]	SB_DQ[5]	AF5	MD86
MAAB11	AW16	SB_MAJ[11]	SB_DQ[7]	AE6	MD87
MAAB12	AW15	SB_MAJ[12]			
MAAB13	AX28	SB_MAJ[13]	SB_DSQ[51]	AH6	DQS81
MAAB14	AY12	SB_MAJ[14]	SB_DSQ[51]	AA5	DQS81
MAAB15	AV11	SB_MAJ[15]	SB_DMJ[1]	AH4	DMB1
-SWEB	AU26	SB_WE#	SB_DQ[8]	AG5	MD88
-SCASB	AW26	SB_CAS#	SB_DQ[8]	AH7	MD89
-SRASB	AW26	SB_RAS#	SB_DQ[10]	AK6	MD810
SBA80	AU25	SB_BS[0]	SB_DQ[11]	AL4	MD811
SBA81	AV25	SB_BS[1]	SB_DQ[12]	AG6	MD812
SBA82	AV12	SB_BS[2]	SB_DQ[13]	AC4	MD821
			SB_DQ[14]	AJ7	MD814
			SB_DQ[15]	AK7	MD815
CS80	AY27	SB_CS#0[0]		AN6	DQS82
CSB1	AX29	SB_CS#1	SB_DSQ[52]	AM6	DQS82
CSB2	AV26	SB_CS#2	SB_DSQ[52]	AM7	DMB2
CSB3	AV29	SB_CS#3	SB_DMJ[2]		
CKEB0	AW8	SB_CKE[0]	SB_DQ[16]	AL6	MD816
CKEB1	AU9	SB_CKE[1]	SB_DQ[17]	AN6	MD817
CKEB2	AV9	SB_CKE[2]	SB_DQ[18]	AP6	MD818
CKEB3	AV9	SB_CKE[3]	SB_DQ[19]	AR5	MD819
			SB_DQ[20]	AL5	MD820
MODT_B0	AU29	SB_ODT[0]	SB_DQ[21]	AM6	MD821
MODT_B1	AU29	SB_ODT[1]	SB_DQ[21]	AN7	MD822
MODT_B2	AU29	SB_ODT[2]	SB_DQ[22]	AP5	MD823
MODT_B3	AU28	SB_ODT[3]	SB_DQ[23]		
			SB_DSQ[3]	AR8	DQS83
			SB_DSQ[3]	AP8	DQS83
			SB_DMJ[3]	AT7	DMB3
DCLKB0	AR17	SB_CK[0]		AT6	MD824
DCLKB1	AR16	SB_CK#0[0]	SB_DQ[24]	AR7	MD825
DCLKB1	AR15	SB_CK[1]	SB_DQ[25]	AR9	MD826
DCLKB2	AR15	SB_CK#1[0]	SB_DQ[26]	AM8	MD827
DCLKB2	AN17	SB_CK[2]	SB_DQ[27]	AN8	MD828
DCLKB2	AN16	SB_CK#2[0]	SB_DQ[28]	AR4	MD829
DCLKB3	AR19	SB_CK[3]	SB_DQ[29]	AL8	MD830
-DCLKB3	AR18	SB_CK#3[0]	SB_DQ[30]	AT9	MD831
			SB_DQ[31]		
TP12	AM23	SB_CS#4[0]		AT25	DQS84
TP13	AM24	SB_CS#5	SB_DSQ[54]	AR24	DQS84
TP15	AK24	SB_CS#6	SB_DSQ[54]	AN24	DMB4
TP17	AK24	SB_CS#7	SB_DMJ[4]		
			SB_DQ[32]	AN23	MD832
			SB_DQ[33]	AT23	MD833
			SB_DQ[34]	AR25	MD834
			SB_DQ[35]	AR26	MD835
			SB_DQ[36]	AT23	MD836
			SB_DQ[37]	AP22	MD837
			SB_DQ[38]	AT25	MD838
			SB_DQ[39]	AT26	MD839
DQS88	AR14	SB_DSQ[8]		AP32	DQS85
-DQS88	AR13	SB_DSQ#8[0]	SB_DSQ[55]	AR32	DQS85
			SB_DMJ[5]	AN32	DMB5
SBCB0	AR12	SB_ECC_CB[0]		AT32	MD840
SBCB1	AT13	SB_ECC_CB[1]	SB_DQ[40]	AR33	MD841
SBCB2	AN15	SB_ECC_CB[2]	SB_DQ[41]	AM32	MD843
SBCB3	AP14	SB_ECC_CB[3]	SB_DQ[42]	AT31	MD844
SBCB4	AM12	SB_ECC_CB[4]	SB_DQ[43]	AR34	MD845
SBCB5	AM12	SB_ECC_CB[4]	SB_DQ[44]	AT31	MD846
SBCB6	AN13	SB_ECC_CB[5]	SB_DQ[45]	AT31	MD847
SBCB7	AP14	SB_ECC_CB[7]	SB_DQ[46]	AR34	MD847
			SB_DQ[47]		
			SB_DSQ[6]	AP36	DQS86
			SB_DSQ[6]	AR37	DQS86
			SB_DMJ[6]	AM33	DMB6
			SB_DQ[48]	AR35	MD848
			SB_DQ[49]	AT36	MD849
			SB_DQ[48]	AN33	MD850
			SB_DQ[50]	AP36	MD851
			SB_DQ[51]	AP34	MD852
			SB_DQ[52]	AT35	MD853
			SB_DQ[53]	AN34	MD854
			SB_DQ[54]	AP37	MD855
			SB_DQ[55]		
			SB_DSQ[7]	AL37	DQS87
			SB_DSQ[7]	AM36	DQS87
			SB_DMJ[7]	AK35	DMB7
			SB_DSQ[56]	AL35	MD856
			SB_DSQ[57]	AM35	MD857
			SB_DSQ[58]	AJ36	MD858
			SB_DSQ[59]	AJ37	MD859
			SB_DSQ[60]	AN35	MD860
			SB_DSQ[61]	AM34	MD861
			SB_DSQ[62]	AJ38	MD862
			SB_DSQ[63]	AL36	MD863

DDR B

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LGA1156[10SC1-F01156-01R]

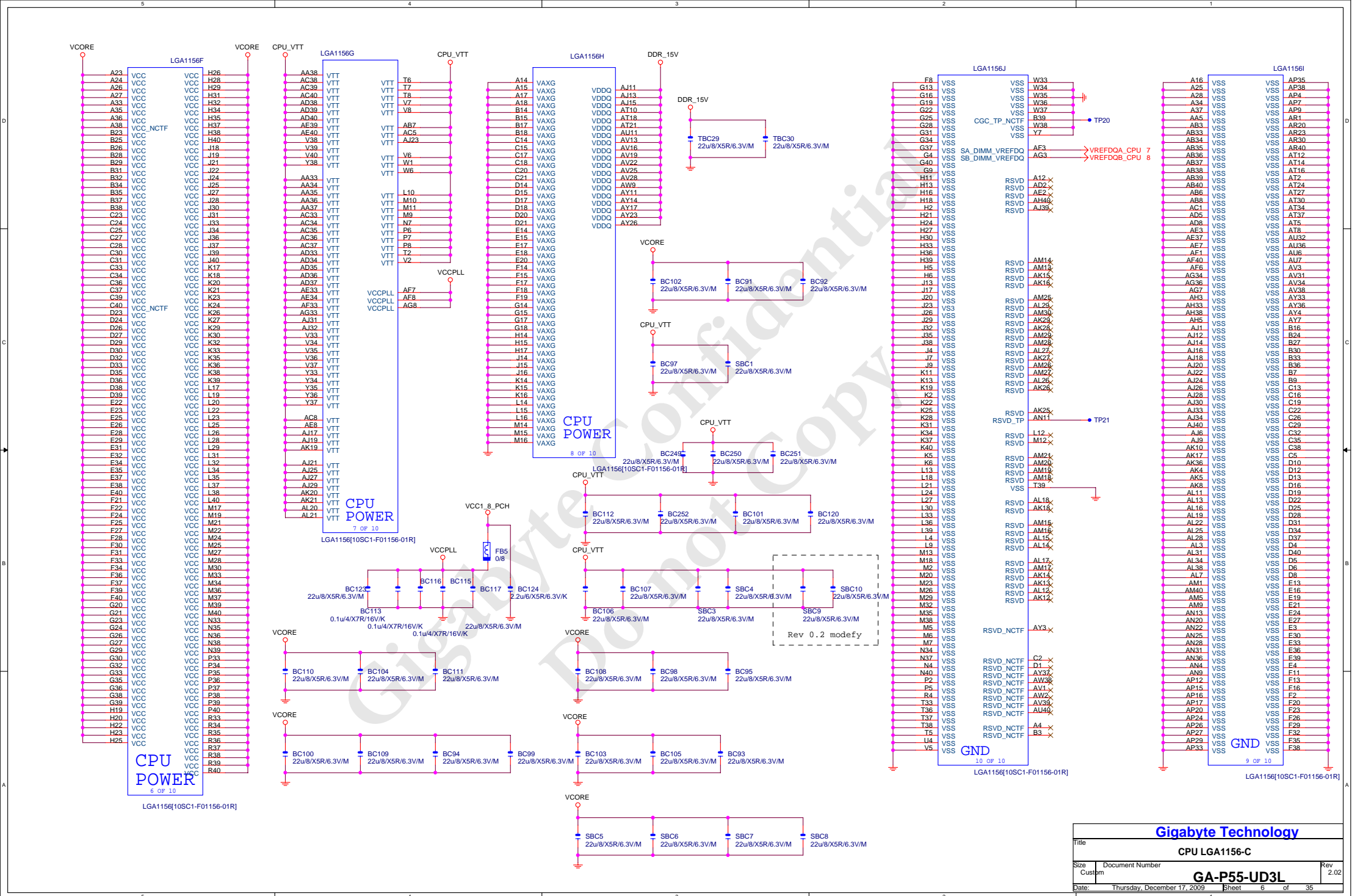
CR  
CPU RETAINTION/X

Need check the new CPU ME

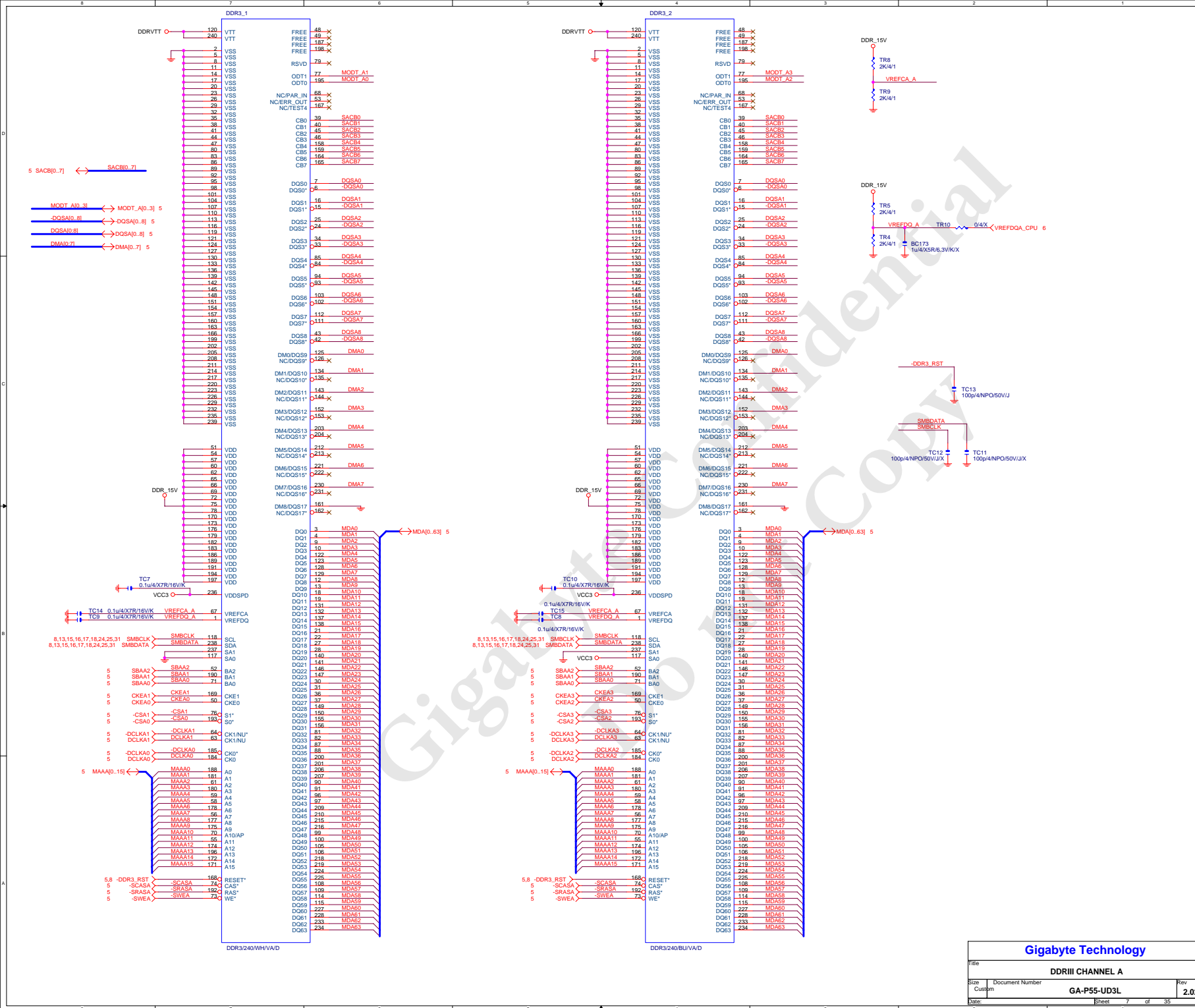
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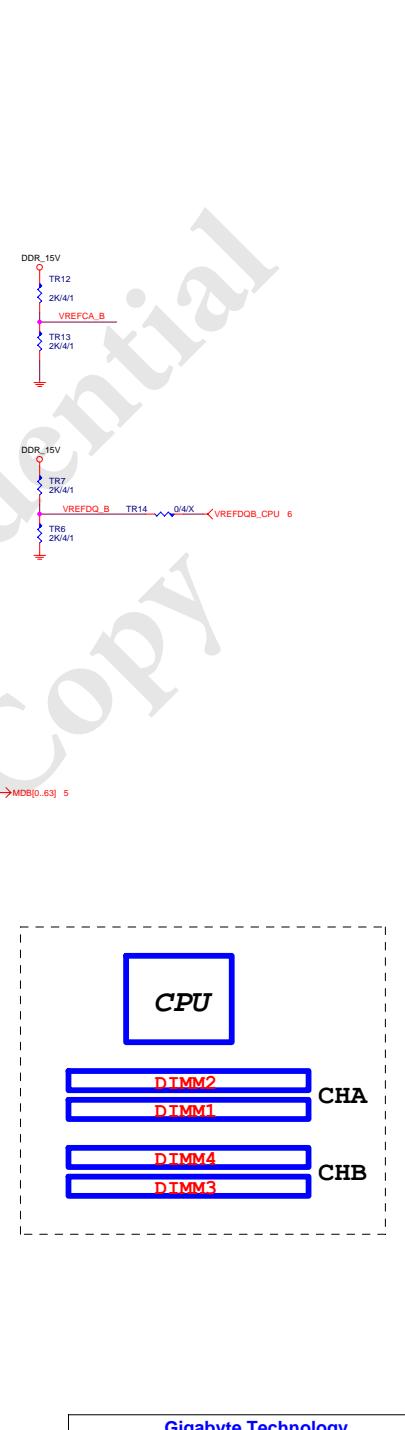


PLATE+ILM/12KRC-0F0001-01R]





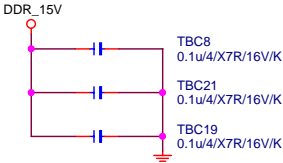




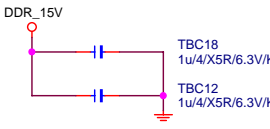
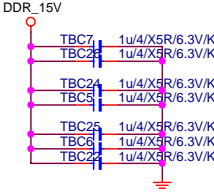
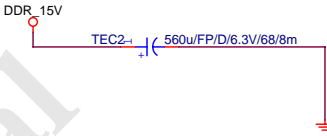
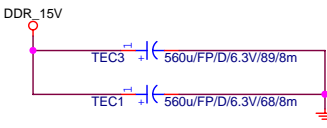
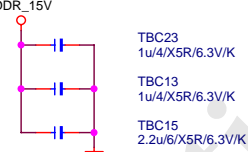
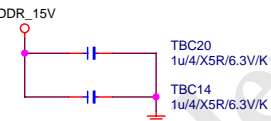
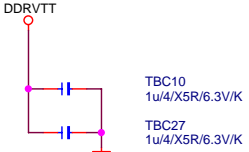
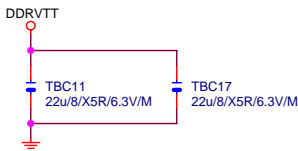
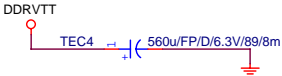
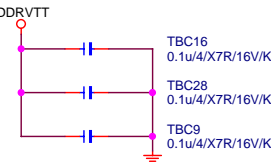


DDR TERMINATION  
CHANNEL A/B

DDR15V Decouple



DDRVTT Decouple



Gigabyte Technology			
Title			
DDRIII POWER CAP			
Size	Document Number	GA-P55-UD3L	Rev
B			2.02
Date:	Thursday, December 17, 2009	Sheet	9 of 35

DMI:12/5/5/5/12  
Impedance=80 +- 17.5%

USB:15/4.5/7.5/4.5/15  
Impedance=90+- 15%

PCHE

VCC1\_05\_PCH R451 49.9/4/1

PCIE X1 :15/5/5/5/15  
Impedance=80 +- 17.5%

電容要靠近 slot 端

PCH\_HS

1X

P55-UD3L/US3L料號都一樣

PCH\_HS[12SP2-030030-C1R]

USB OC#	Configure
OC0#	USB0,1
OC1#	USB2,3
OC2#	USB4,5
OC3#	USB6,7
OC4#	USB8,9
OC5_6#	USB10~13
OC7#	

PCHB

USB

PCI-E

BD82H55/BGA951

H55-->PORT6,7:N/A

Rev 0.2 modify

Intel anti theft technolgy

Impedance=50+- 15%  
ONFI: NV\_DQ 4/5

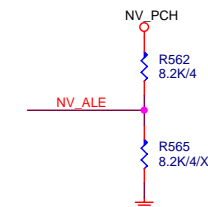
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NV\_CTRL 4/10

NV\_CK 4/15

NVRAM

5 OF 11  
BD82H55/BGA951

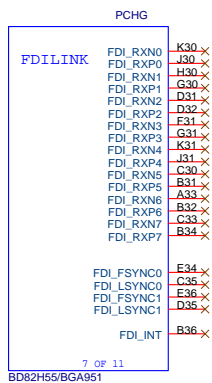
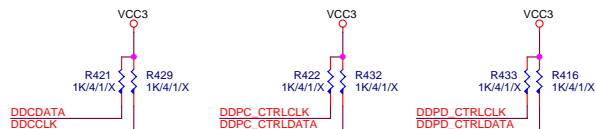
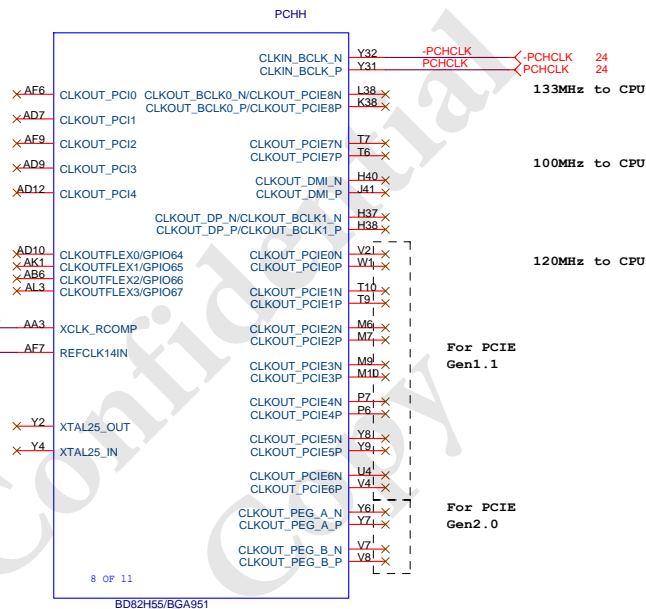
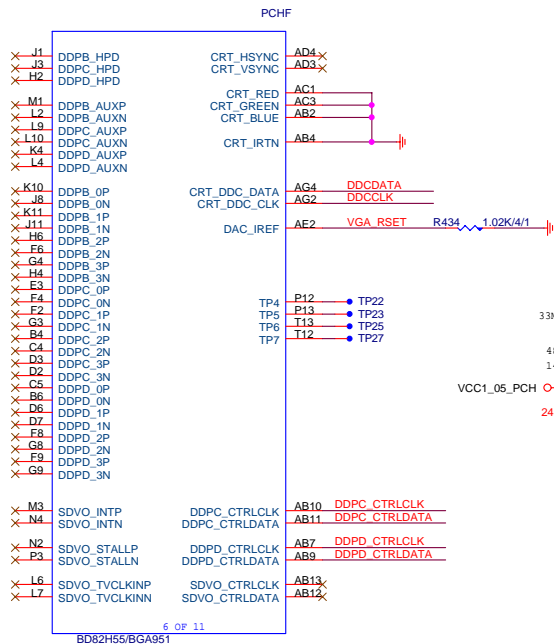


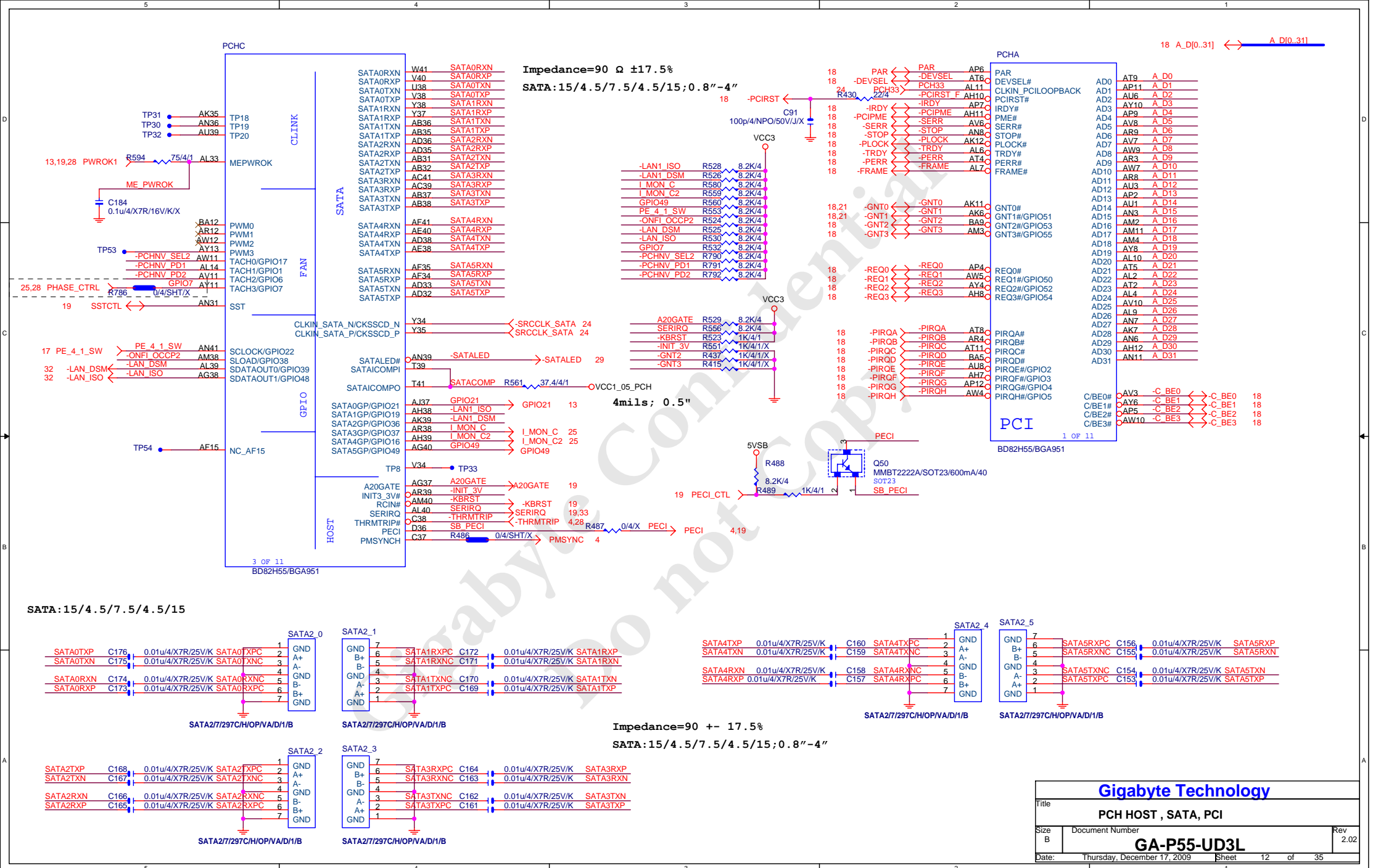
NV_ALE	
Hi	Enable Danbury
Lo	Disable Danbury

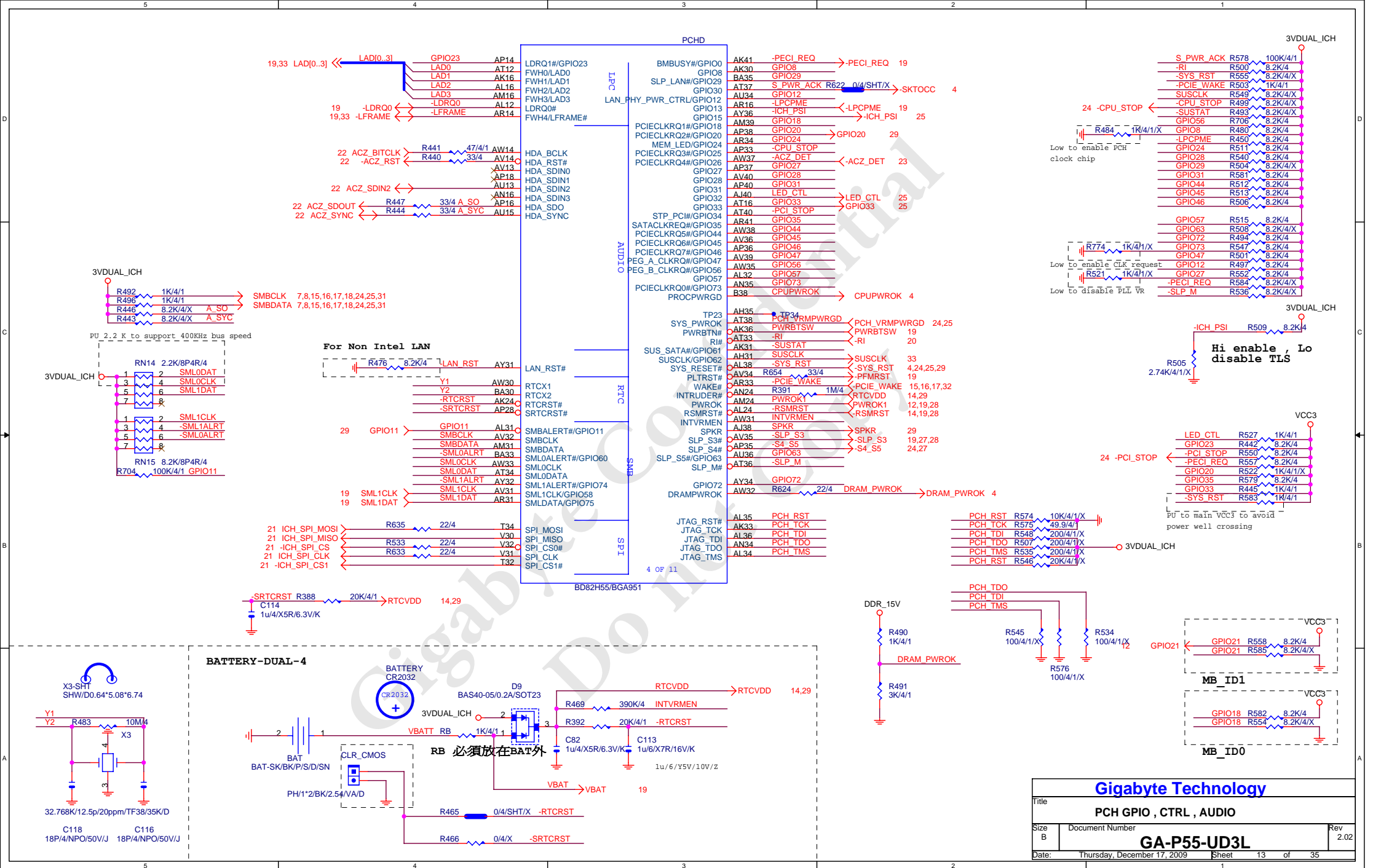
DMI Terminator voltage  
HI : AC COUP : TX/RX TO VCC  
LO : DC COUP : HALF SWING

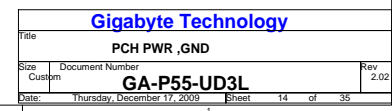
Gigabyte Technology

Title		
PCH FDI,DMI,USB ,PCIE,NVRAM		
Size	Document Number	Rev
B		2.02
GA-P55-UD3L		
Date:	Thursday, December 17, 2009	Sheet 10 of 35

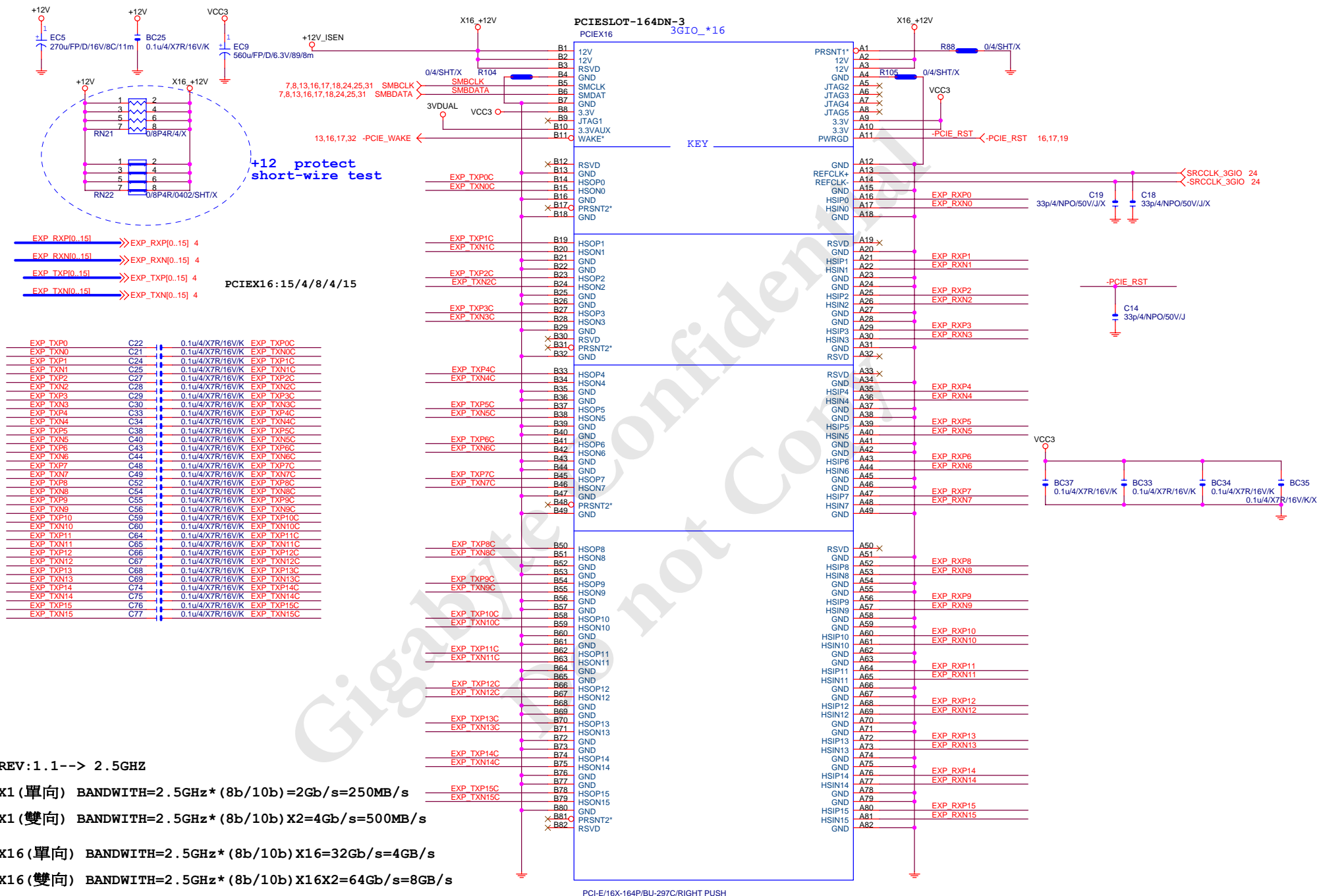












PCI-E REV:1.1--> 2.5GHZ

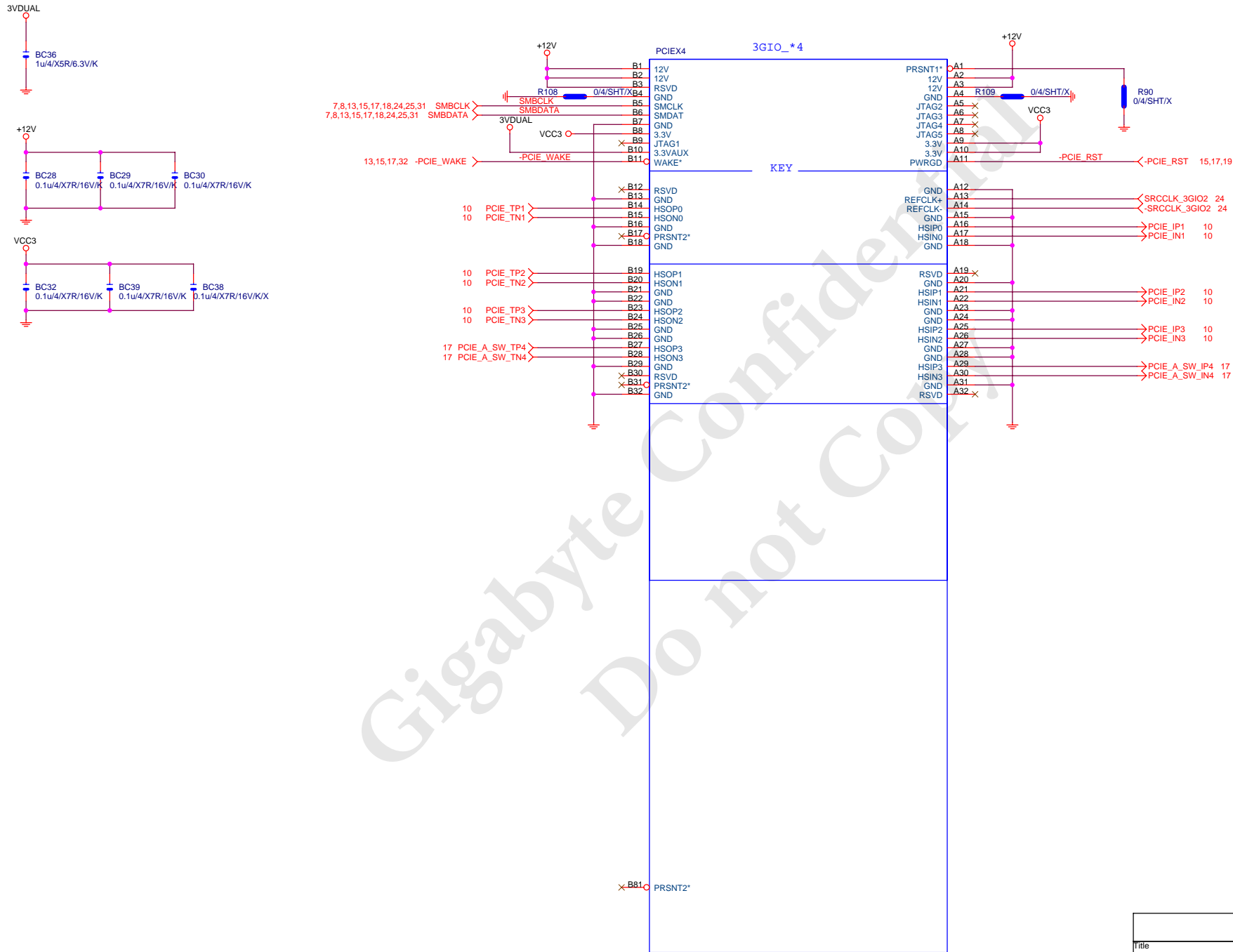
PCE-E X1(單向) BANDWITH=2.5GHz\*(8b/10b)=2Gb/s=250MB/s

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



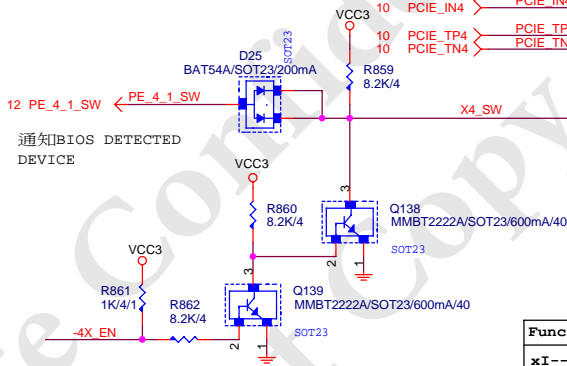
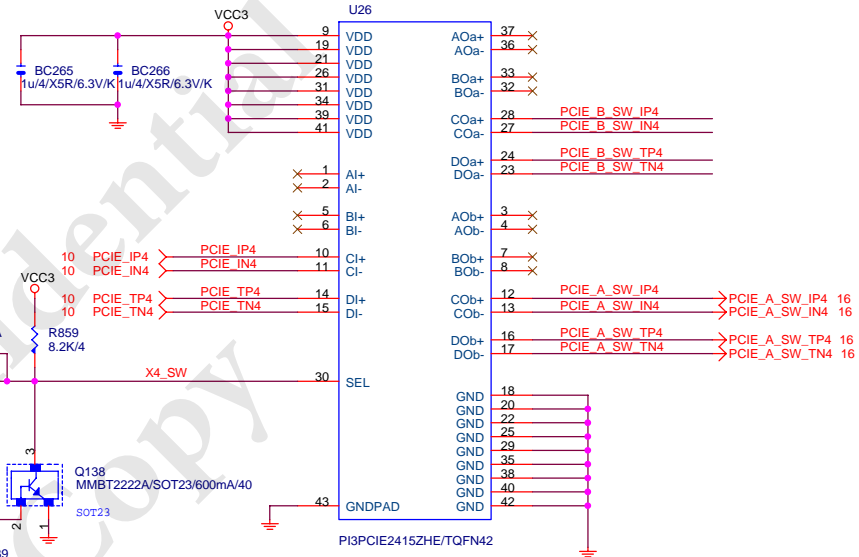
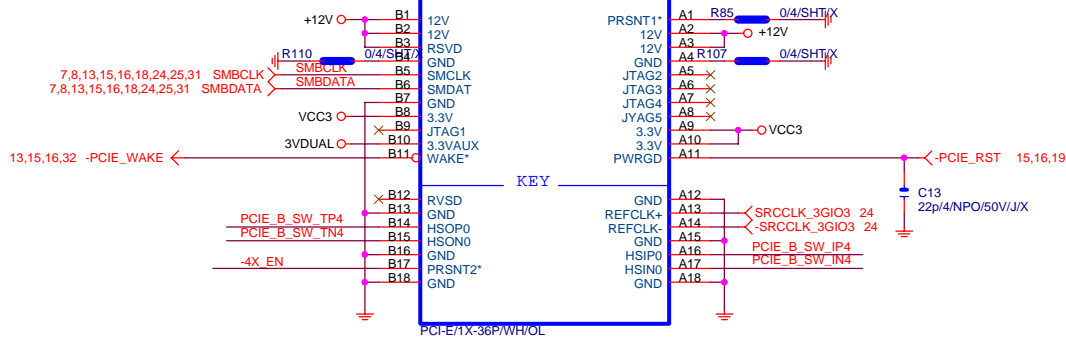
PCI-E/16X-65P/BU/RIGHT PUSH

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Title			
PCI EXPRESS X 4 PORT			
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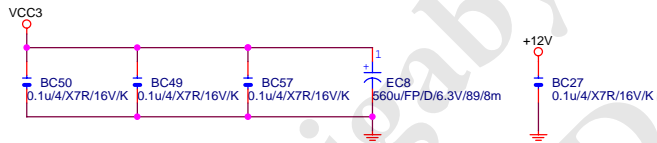
# PCIE\*1

3GIO\_X1

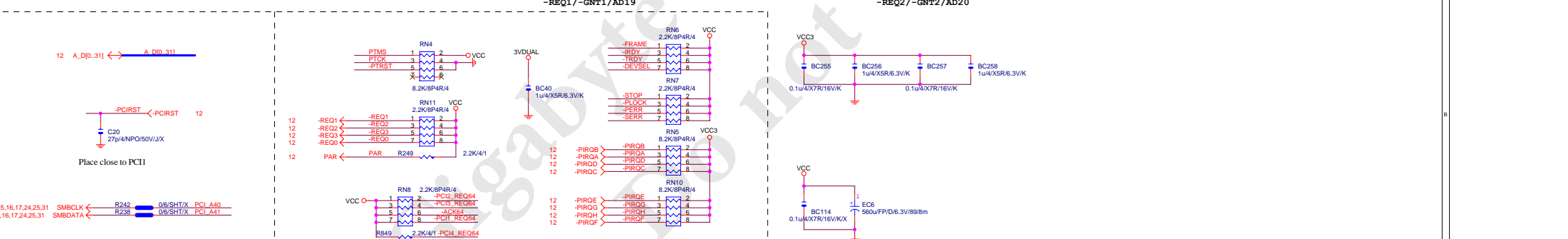
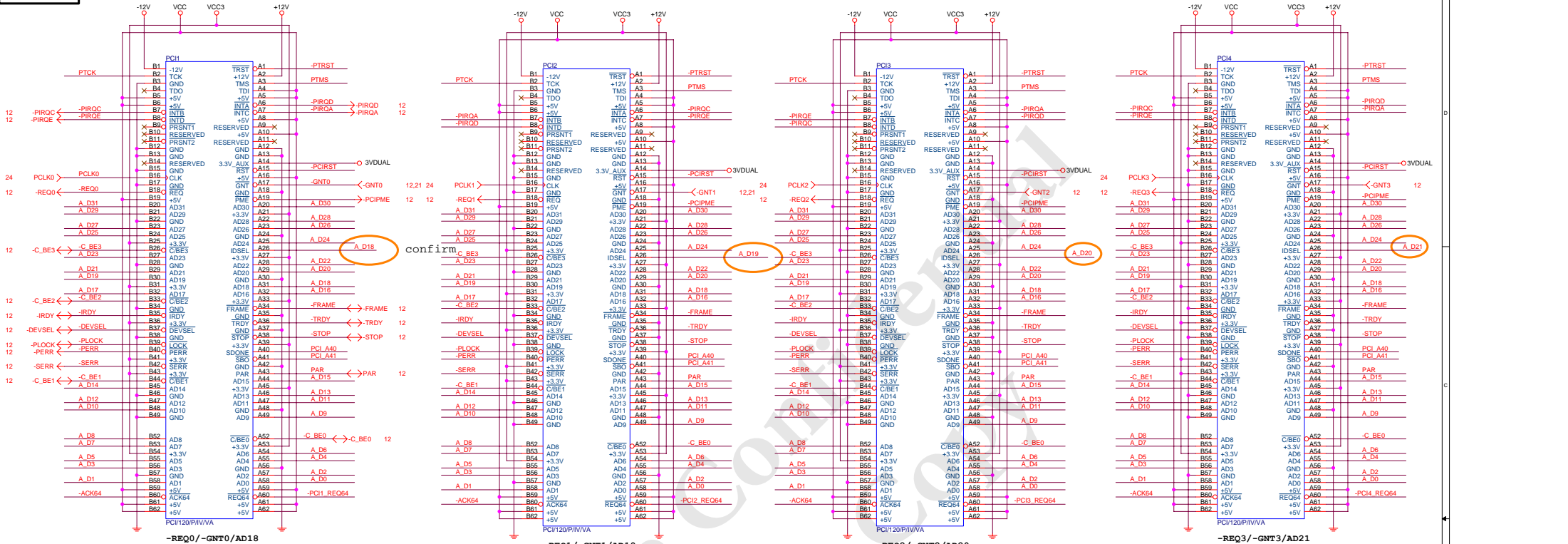
PCIE1

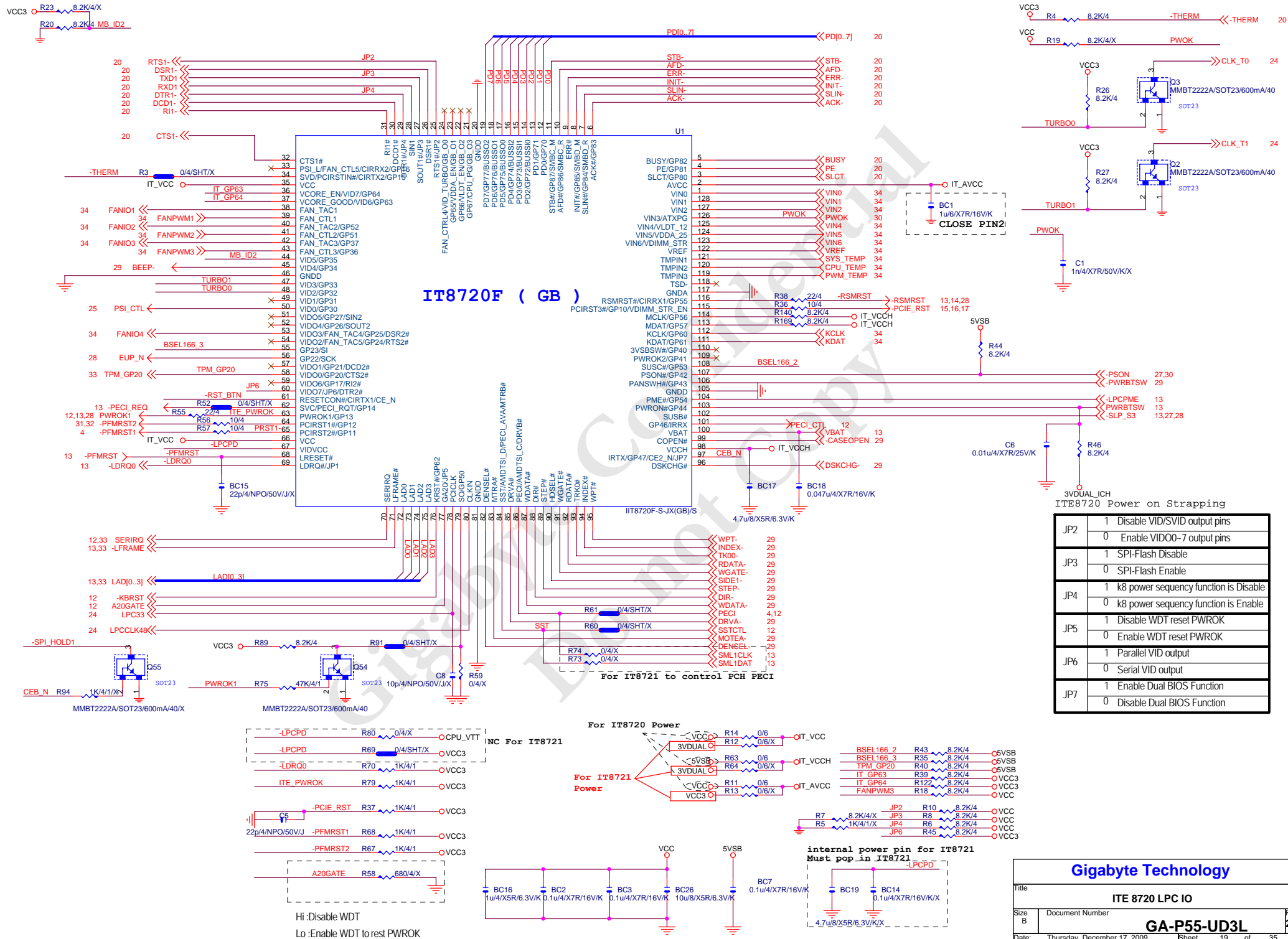


Function	SEL
xI--> xOa	L;PCIE4 SLOT-->X1
xI--> xOb	H;PCIE4 SLOT-->X4



# PCI1,2 SLOT





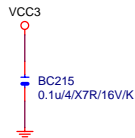
JP2	1	Disable VID/SVID output pins
	0	Enable VID00-7 output pins
JP3	1	SPI-Flash Disable
	0	SPI-Flash Enable
JP4	1	k8 power sequency function is Disable
	0	k8 power sequency function is Enable
JP5	1	Disable WDT reset PWROK
	0	Enable WDT reset PWROK
JP6	1	Parallel VID output
	0	Serial VID output
JP7	1	Enable Dual BIOS Function
	0	Disable Dual BIOS Function

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r1.0 DG;0.7 CRB

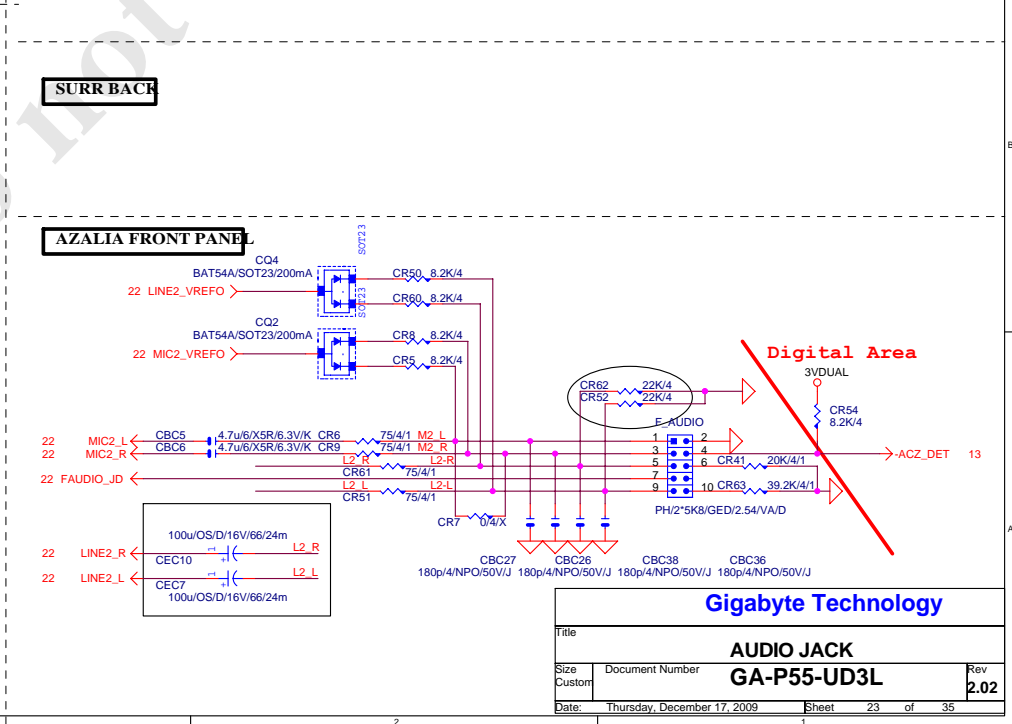
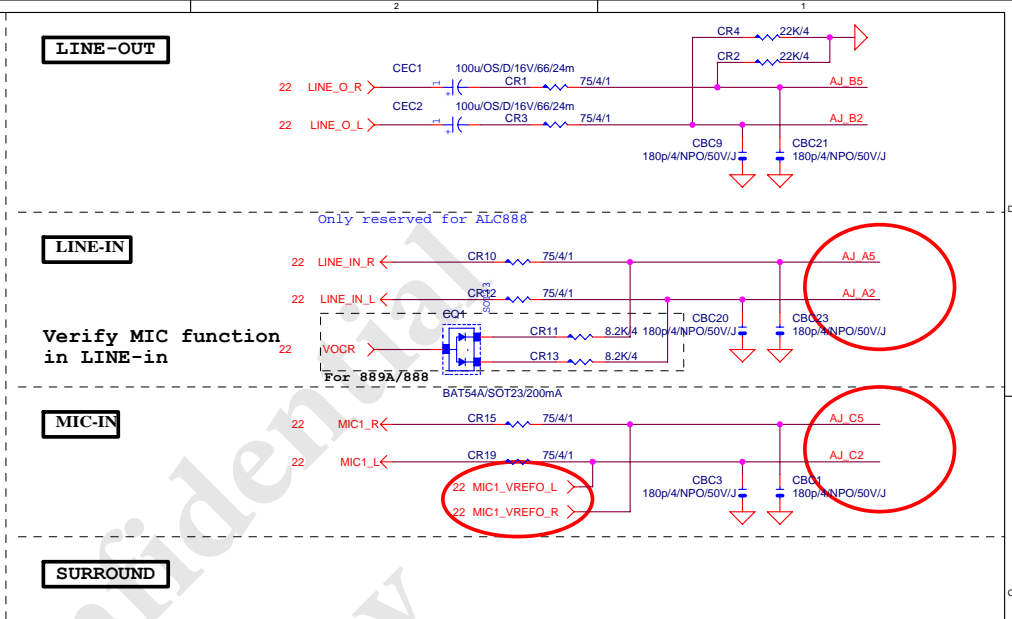
BOOT DEVICE	GNT1	GNT0
LPC	0	0
PCI	0	1
SPI	1	1

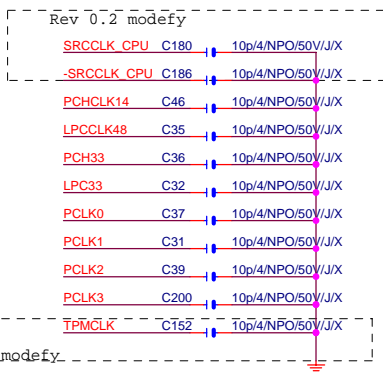
1 means floating  
0 means PD 1K

IC8SO-SOCKET

Gigabyte Confidential  
Do not Copy

[illegible]





CKVDD ○ R223 8.2K/4 GSEL

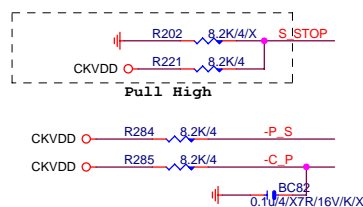
R204 8.2K/4/X

GSEL=1,96Mhz from 12/13  
GSEL=0,100Mhz from12/13

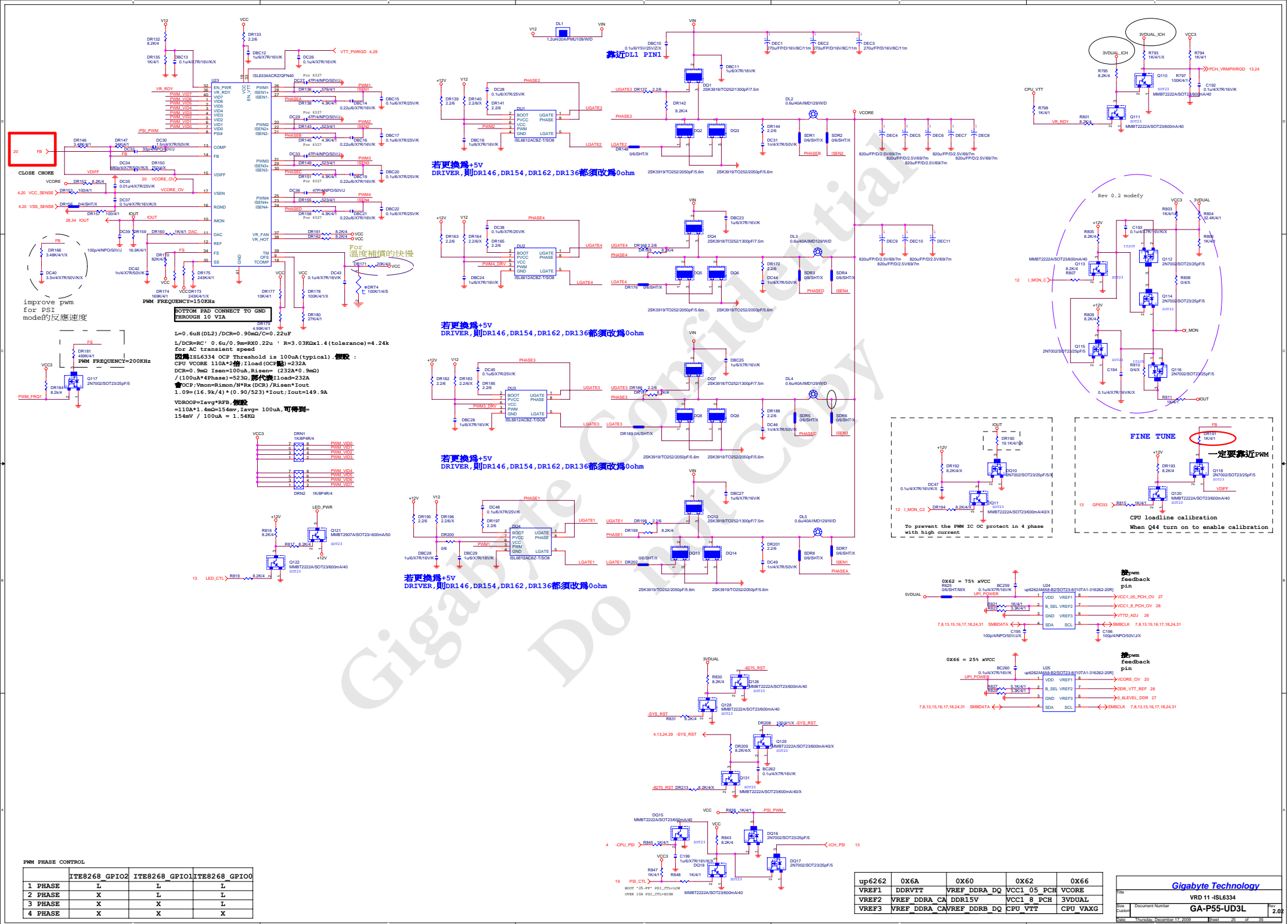
CKVDD ○ R217 8.2K/4/X SEL\_48

R216 8.2K/4

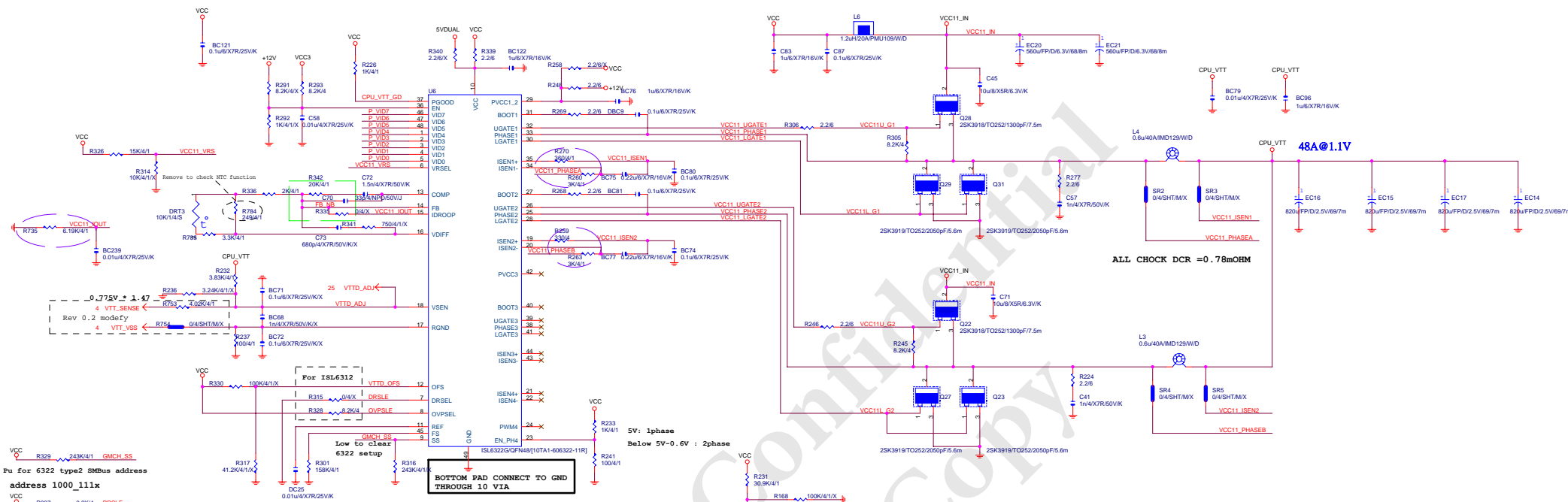
SEL\_48=1, 24Mhz from pin10  
SEL\_48=0, 48Mhz from pin10



```
SEL_STOP: latched input to select pin functionality
1 = Selects pin 44/45 to be PCI_STOP#/CPU_STOP#
0 = Selects pin 44/45 to be PCIEX outputs ;
3.3V PCICLK output
```

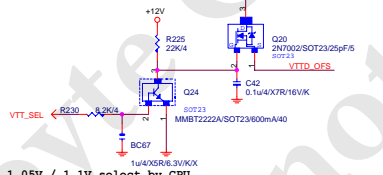


5V : AMD mode  
0.6V~3V : VRD11 mode  
0V : VRD10 mode

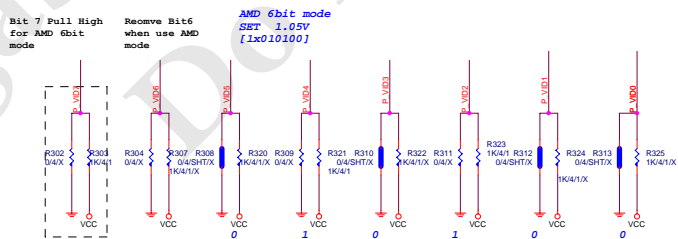


OC:點放在96A  
 $I_{ocp} = (I_{sens} \times R_{isen} \times Phase) / DCR$   
 $= [(120\mu A \times R_{X2}) / 0.9m] = 96A / R_{isen} (R_{270}) = 360\Omega$   
 $I / DCR = R \times C$   
 $I = 0.6\mu H \times DCR = 0.90 \text{ mohm} , 0.6\mu H / 0.90\text{mohm} = R_{X2} = 0.22\mu F$   
 $R_{isen} R_{260} \text{ 阻值} = 3.03k \text{ ohm} , C_{isen} BC75 = 0.22\mu$   
 $R_t = 10^4 \{ (10.61 - [1.035 \times \log(PS)]) \} \quad R_t = R_{301} = 158 \text{ kohm} , F_S = 170KHz$   
 $OVP = V_{DAC} + 225mV$

BOTTOM PAD CONNECT TO GND THROUGH 10 VIA



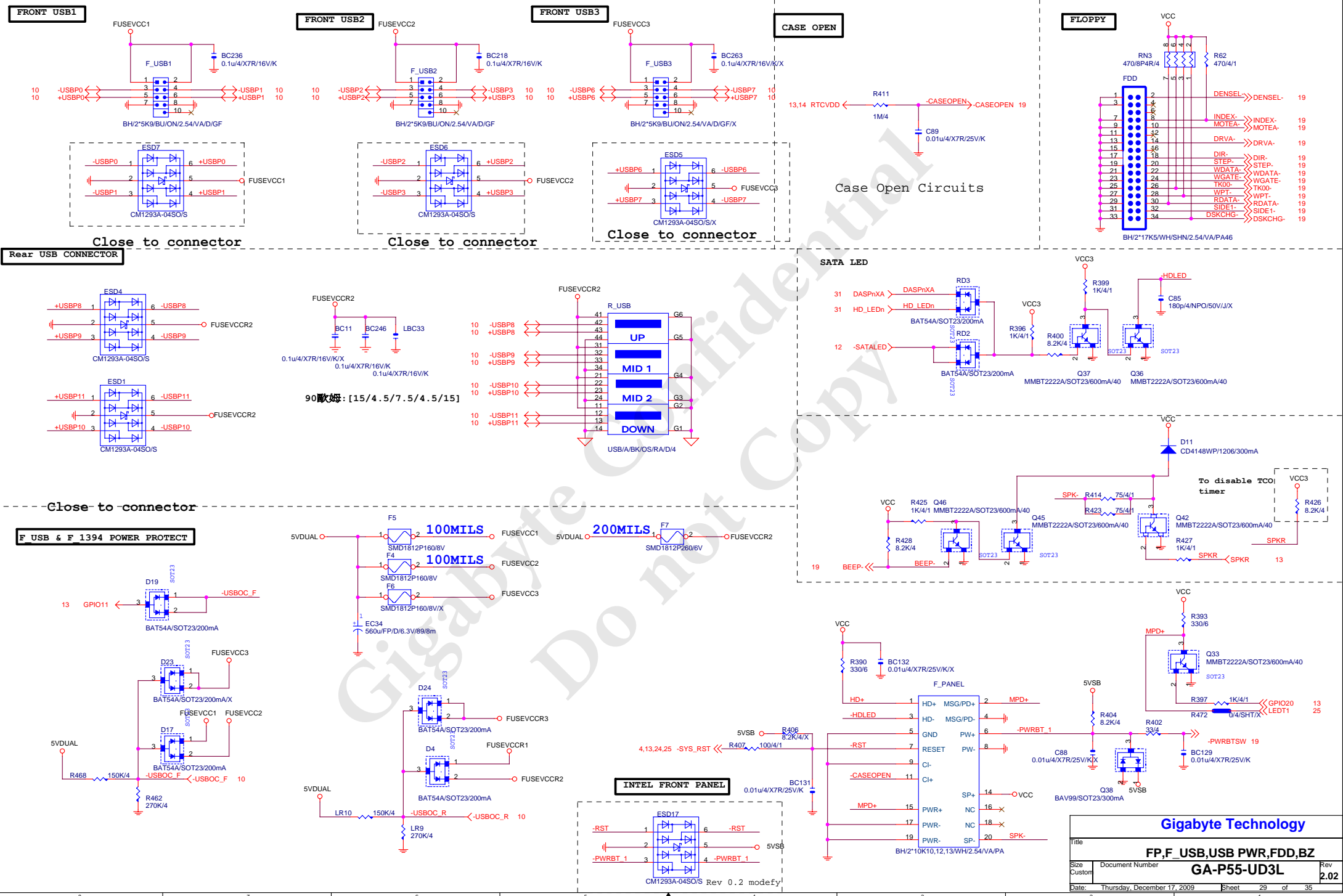
1.05V / 1.1V select by CPU



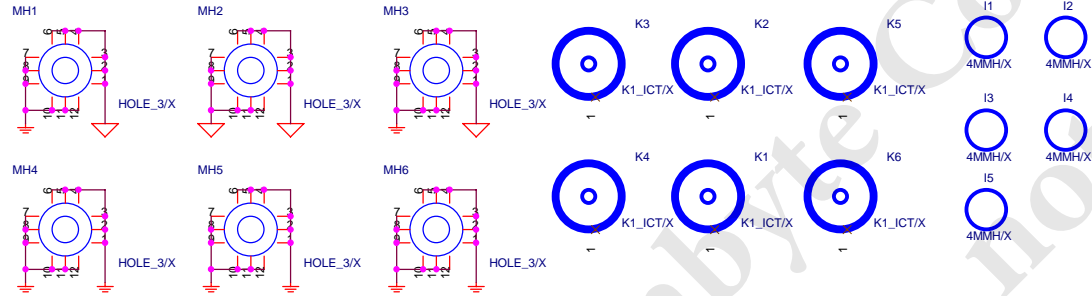
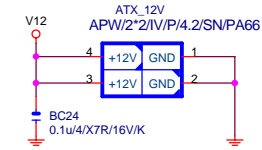
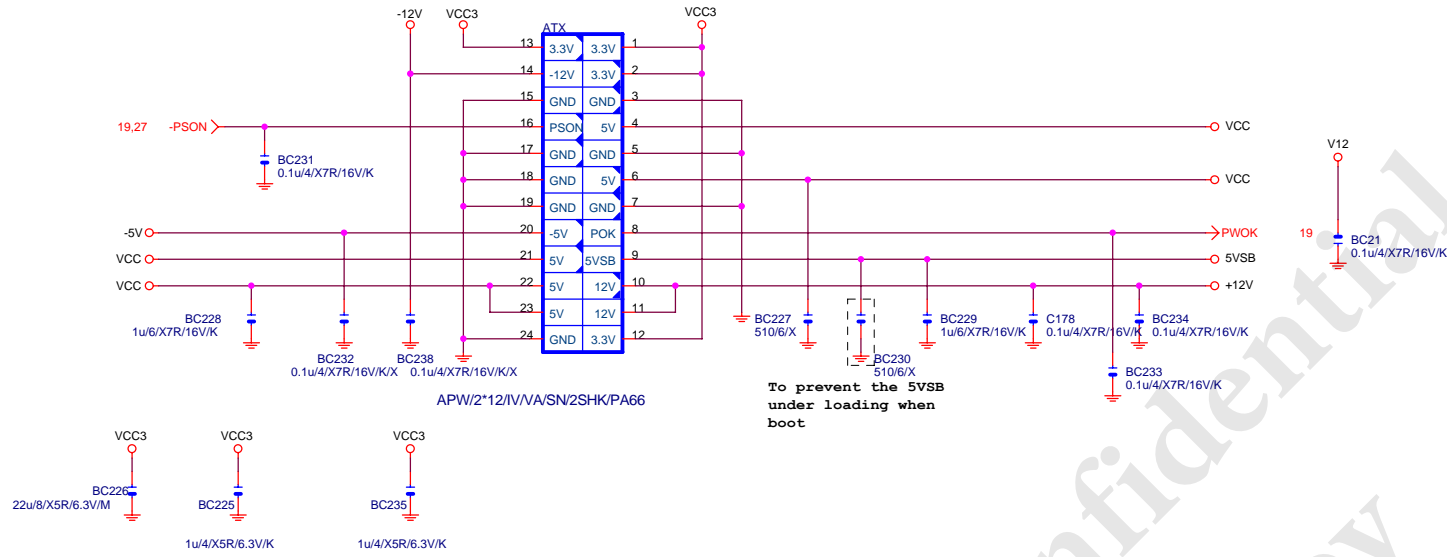


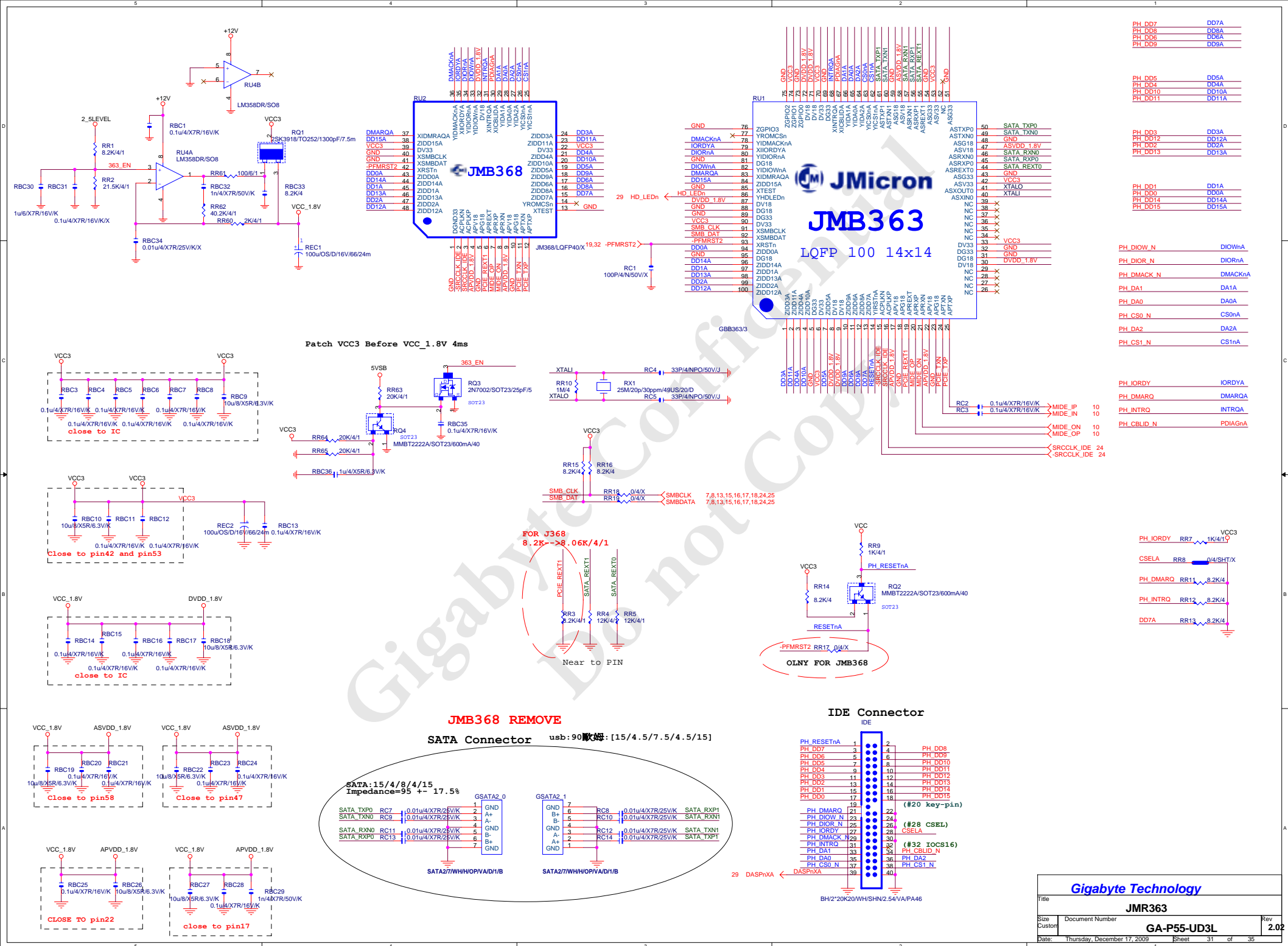






# ATX POWER CONNECTOR

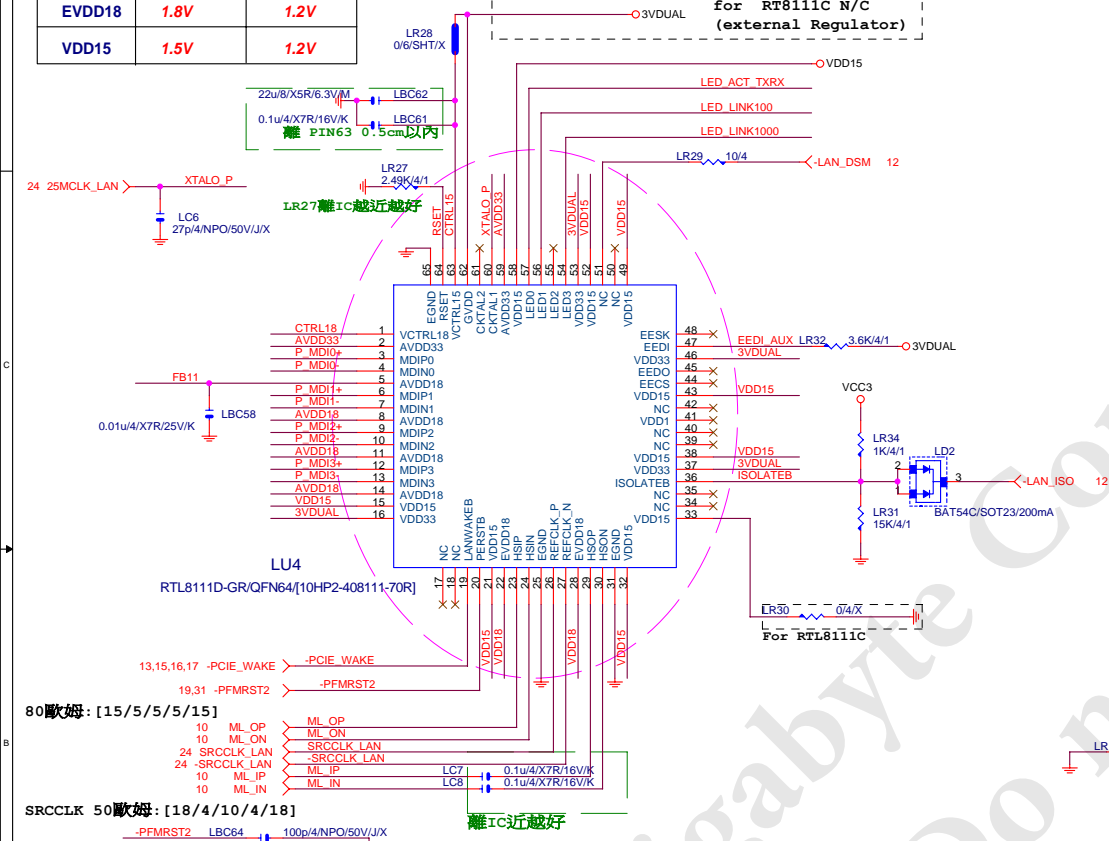




### Power domain chart

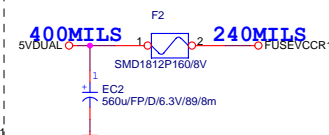
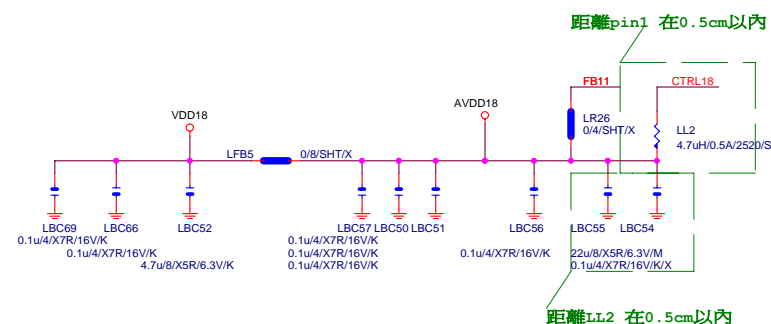
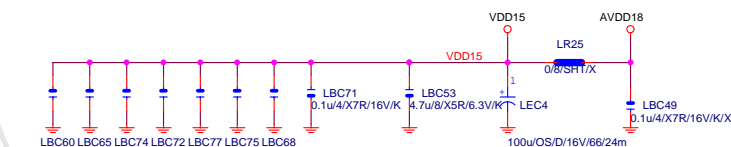
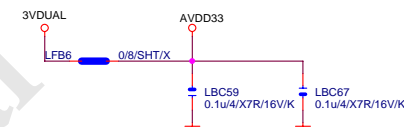
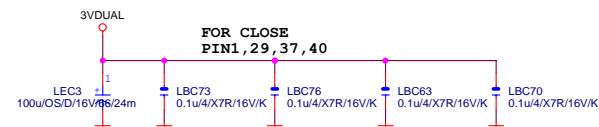
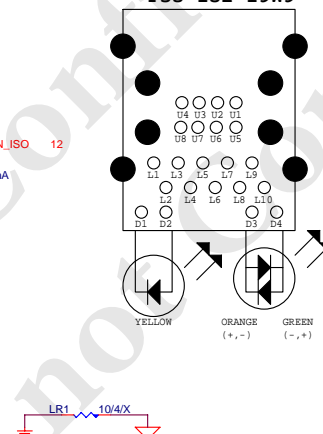
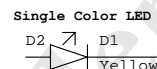
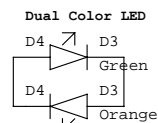
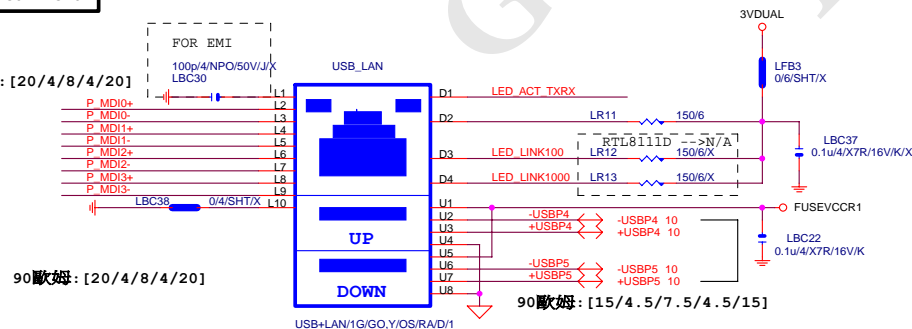
	RTL8111B / RTL8010E	RTL8111C
AVDD33	3.3V	3.3V
AVDD18	1.8V	1.2V
EVDD18	1.8V	1.2V
VDD15	1.5V	1.2V

```
for RT8111B N/C
for RT8111C 0 ohm
(Internal Regulator)
for RT8111C N/C
(external Regulator)
```

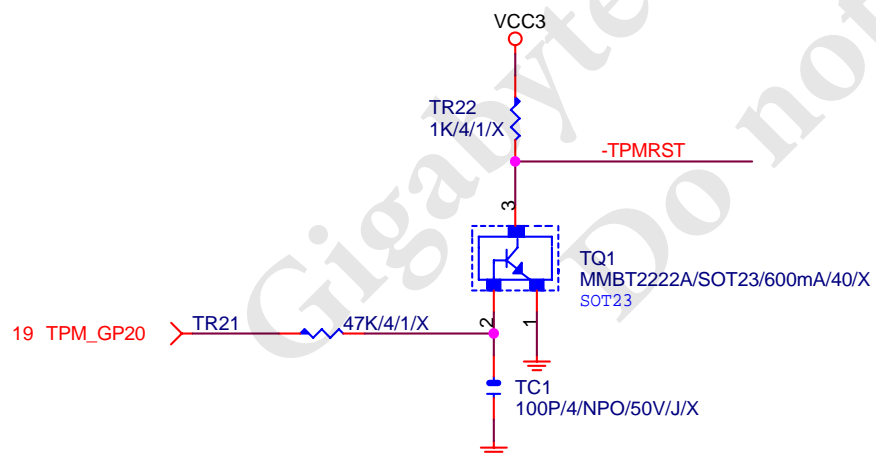
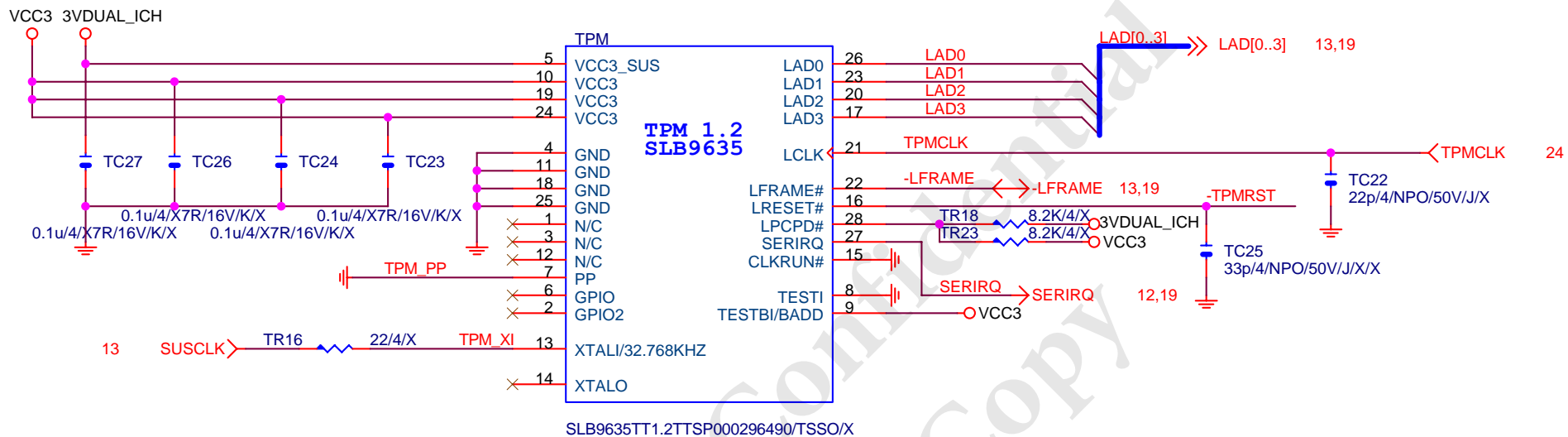


90 歐姆: [20/4/8/4/20]

90 歐姆: [20/4/8/4/20]

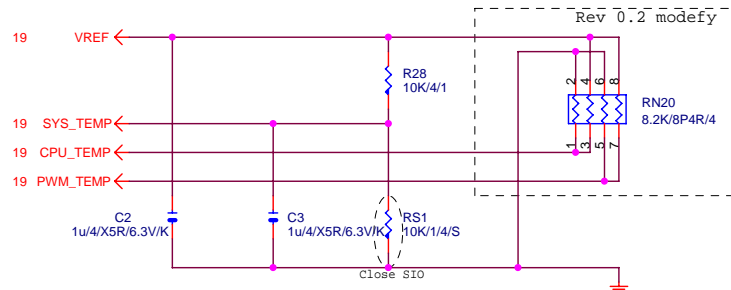




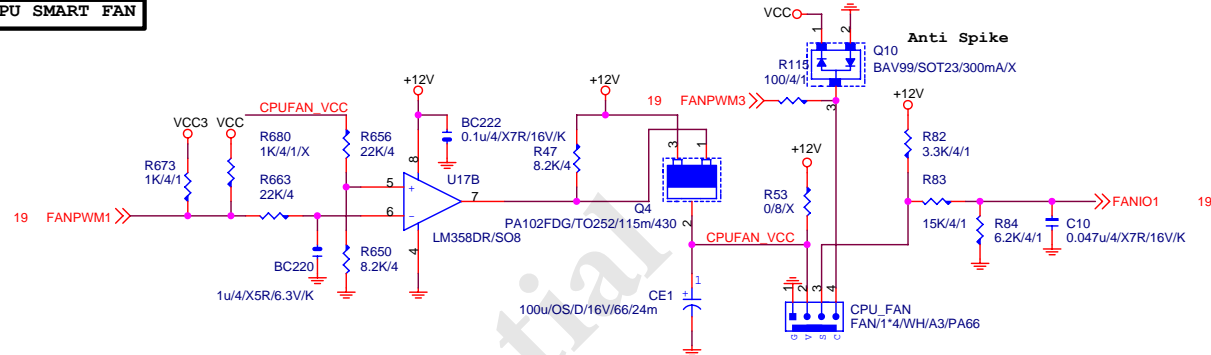


<b>Gigabyte Technology</b>		
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TPM I/F-SLB 9635 TT 1.2		
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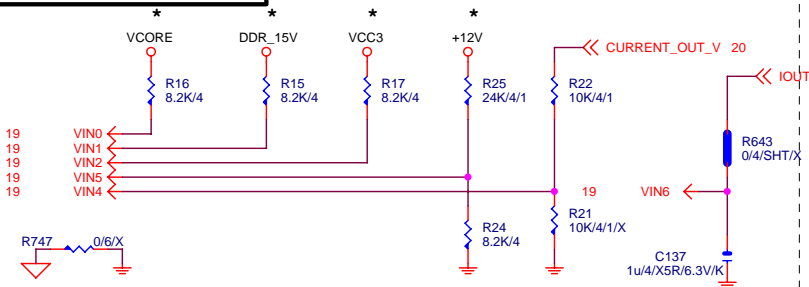
# TEMP H/W MONITOR



# CPU SMART FAN

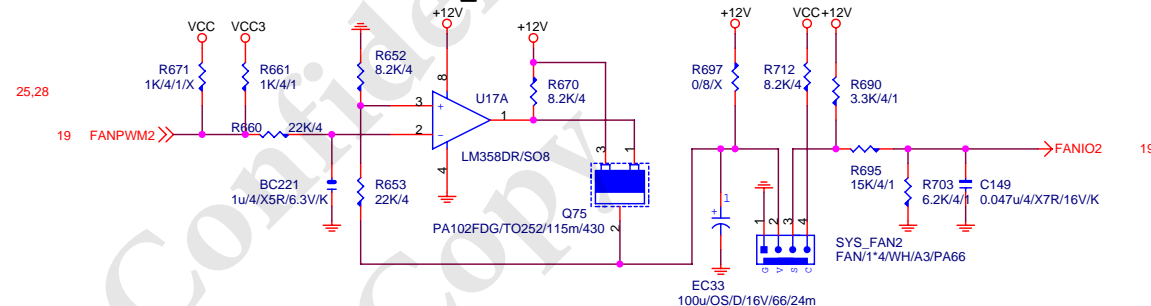


# VOLTAGE-- H/W MONITOR



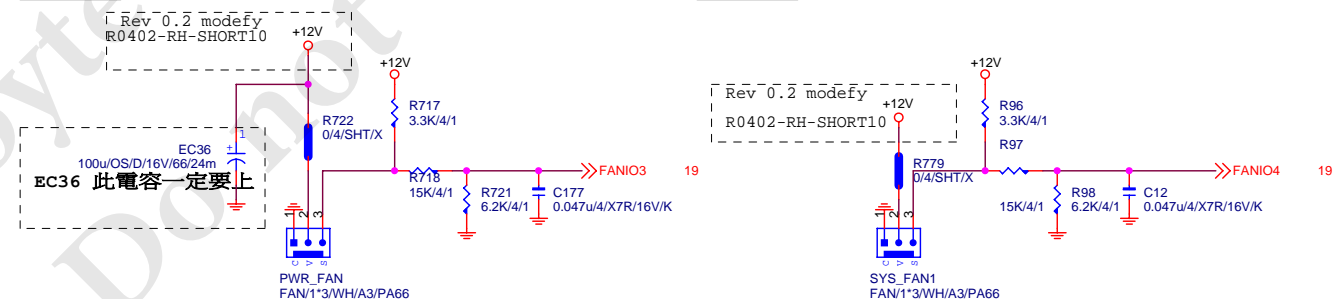
# SYS FAN2

## Linear SYS\_FAN

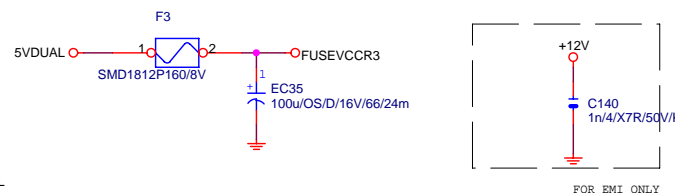
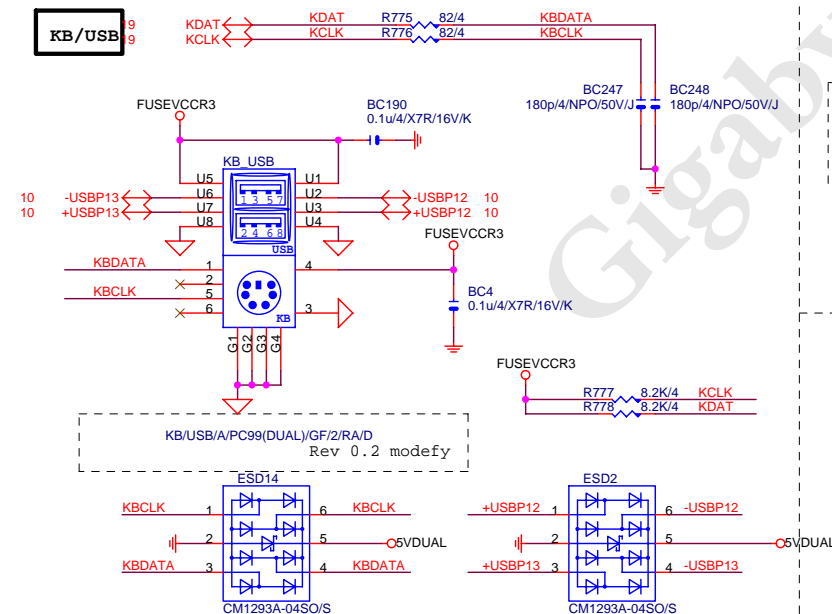


# PWR\_FAN

# SYS\_FAN1



# KB/USB



Gigabyte Technology

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