

Model Name: GA-H61M-DS2

Revision 2.01

SHEET

TITLE

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01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1155-A
05	CPU_LGA1155-B
06	CPU_LGA1155-C
07	DDR III CHANNEL A
08	DDR III CHANNEL B
09	PCH_FDI,DMI,USB,PCIE,NVRAM
10	PCH_DP,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCI EXPRESS*16 SLOT
15	PCI EXPRESS*1x2 SLOT
16	ITE 8728 LPC IO
17	COMA,KB_MS,R_USB,-PROCHOT
18	HWM,FAN CTRL,OV
19	DUAL BIOS
20	FP,FUSB,SPK,SATALED
21	ALC887
22	REAR AUDIO JACK
23	REALTEK 8111E/USB_LAN
24	DISCRETE POWER
25	ATX,-S_WARN,-S_ACK,5VDUAL
26	Richtek_RT8120_CPU_VTT
27	VCORE INTERSIL_95836_1

28	VCORE INTERSIL_95836_2
29	VCORE INTERSIL_95836_3
30	LPT

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<b>Gigabyte Technology</b>			
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Date:	Wednesday, November 30, 2011	Sheet	1 of 30

# Model Name: GA-H61M-DS2

Revision 2.01

## Component value change history

2011/11/30

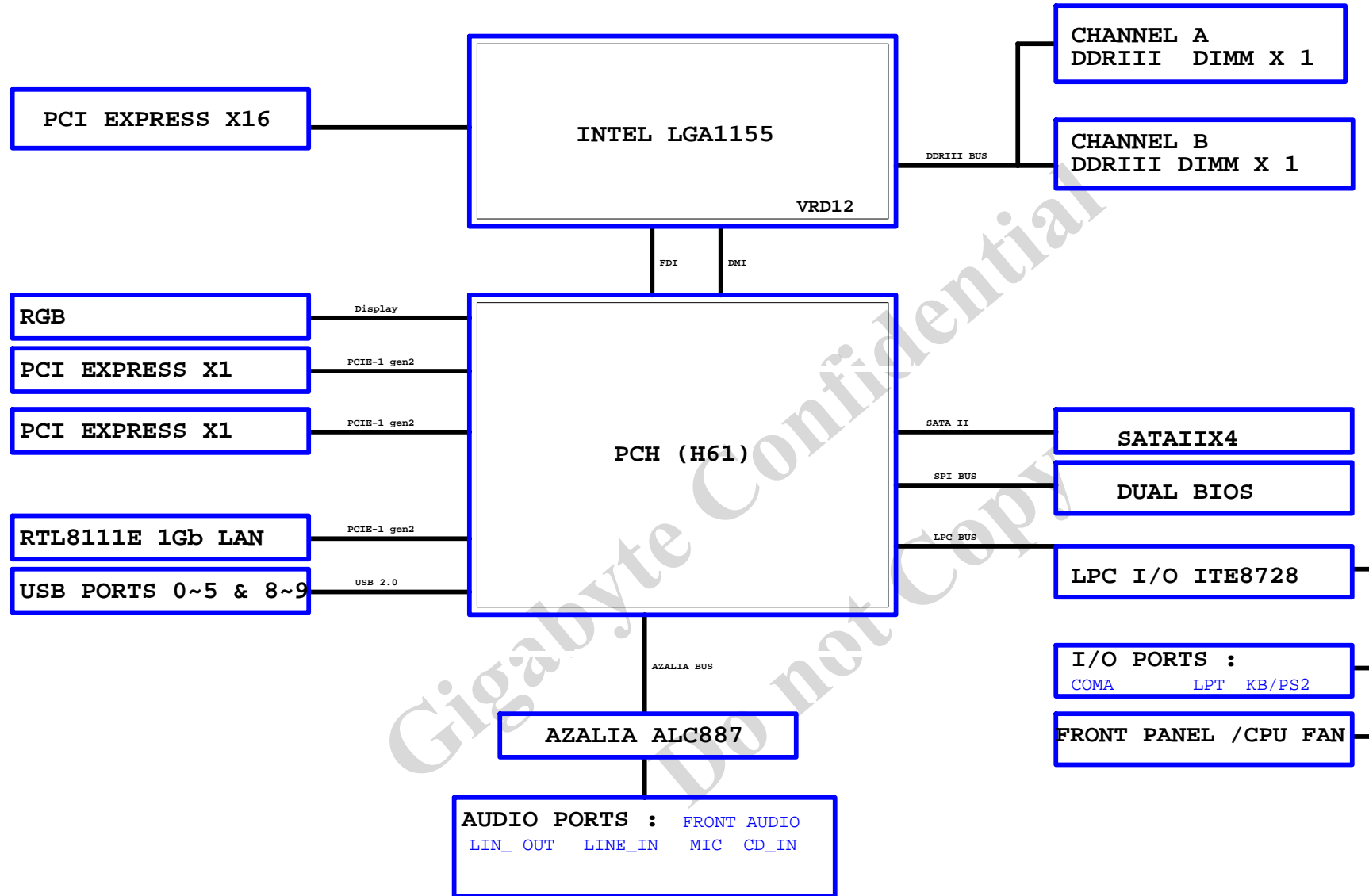
Data	Change Item	Reason
2011.08.22	9MH61MDS2-00-12A	H61M-DS2 R1.2 BOM first release
	remove BC35 & BC34 change to 0.lu fix SIO 8728 factory issue	
	some CAP change to Japan's os-con & adjust loadline	
	add second source ON-MOSFET for VRM	
2011.09.08	9MH61MDS2-00-12B	
	costdown BOM	
2011.10.31	9MH61MDS2-00-12C	
	MOSFET change to 9+6 solution	
2011.11.16	9MH61MDS2-00-12D	
	PWM change to ISL95836	
	DDR & CPU_VTT PWM change to RT8120DGSP	
2011.11.16	9MH61MDS2-00-20A	
	costdown sequence , VTT_SEL & VSA_SEL circuit	
	9MH61MDS2-00-20B	
	LAN change to RTL8111F-VL	
	remove R37 to fix CPU_VTT no Voltage ready	
	9MH61MDS2-00-20C	
	TR68 & R416 changet to 3.3K fix Voltage level	
	add BC165 fix STR issue	
	9MH61MDS2-00-20D	
	fix frequency down issue & change to PBOM	
	9MH61MDS2-00-20E	
	TR68 change to 3K adjust CPU_VTT Voltage level	
	9MH61MDS2-00-20F	

## Circuit or PCB layout change

DATE	Change Item	Reason
2011.08.16	H61M-DS2 R1.2 gerber out	
	add LAR14 shortpin short R_USB AGND & DGND	
2011.09.07	H61M-DS2 R1.21 gerber out	
	PWM change to ISL95836	
	DDR & CPU_VTT PWM change to RT8120DGSP	
2011.11.01	H61M-DS2 R2.0 gerber out	
	VBOOT circuit change	
	ISOLAT change from SIO GP40 to SIO GP17	
2011.11.24	H61M-DS2 R2.01 gerber out	

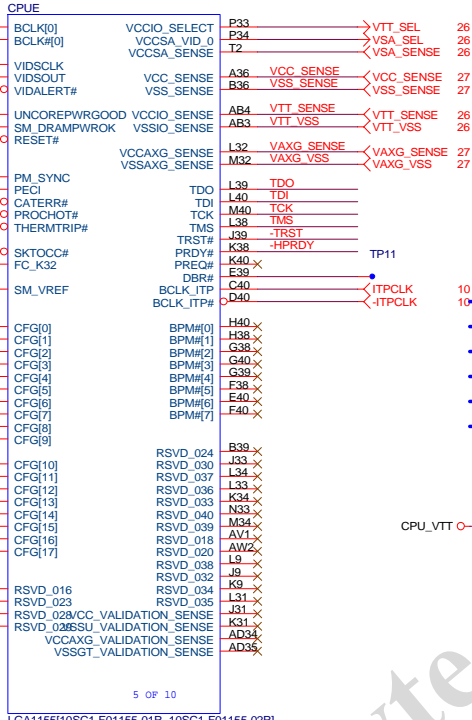
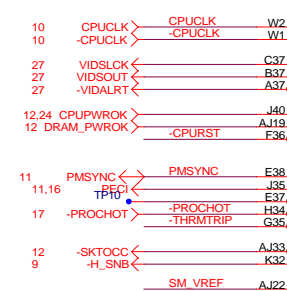
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<b>BOM &amp; PCB MODIFY HISTORY</b>			
Title	Document Number		Rev
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# BLOCK DIAGRAM



<b>Gigabyte Technology</b>			
Title <b>BLOCK DIAGRAM</b>			
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CPUPWRK  
R132 1K/4/1

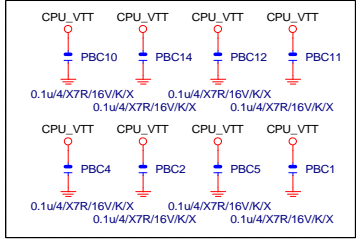
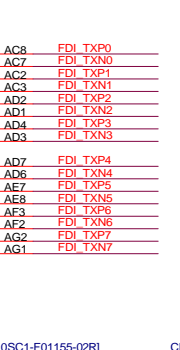
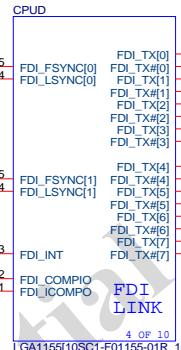
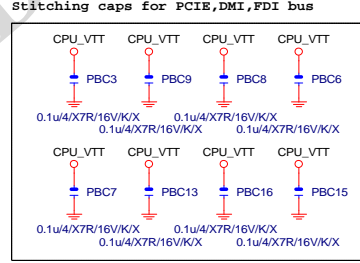
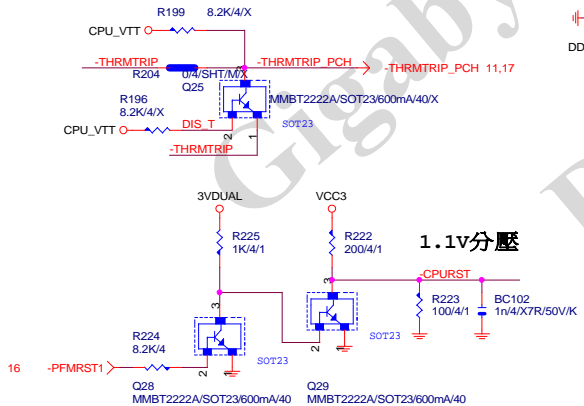
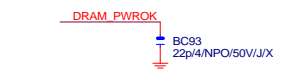


H61M-S2C-B3 remove

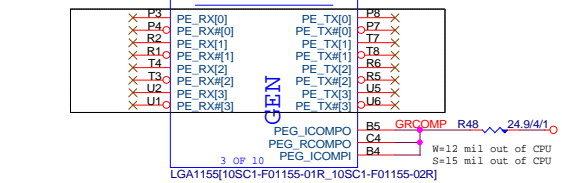
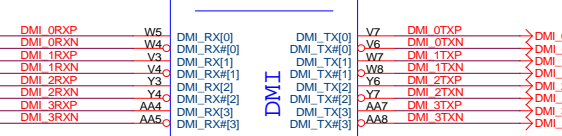
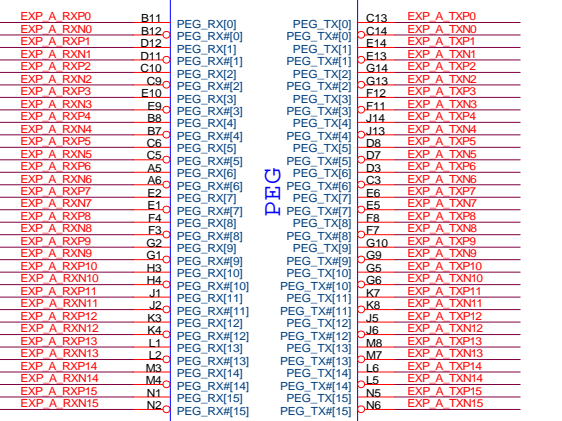
CFG	H	L	NOTE
0	RSVD	RSVD	RSVD
1	RSVD	RSVD	RSVD
2	NORM	Reverse	LANE REVERSAL[0]_x16
3	RSVD	RSVD	RSVD
4	RSVD	RSVD	RSVD
7	RSVD	RSVD	RSVD
8	RSVD	RSVD	RSVD
9	RSVD	RSVD	RSVD
10	RSVD	RSVD	RSVD
11	RSVD	RSVD	RSVD
12	RSVD	RSVD	RSVD
13	RSVD	RSVD	RSVD
14	RSVD	RSVD	RSVD
15	RSVD	RSVD	RSVD
16	RSVD	RSVD	RSVD
17	RSVD	RSVD	RSVD

CFG6	CFG5	PCIe CONFIG
1	1	1x16, DeDefault
1	0	2x8
0	1	RSVD
0	0	X8, X4, X4

CFG 0-17 all internal PULL-UP

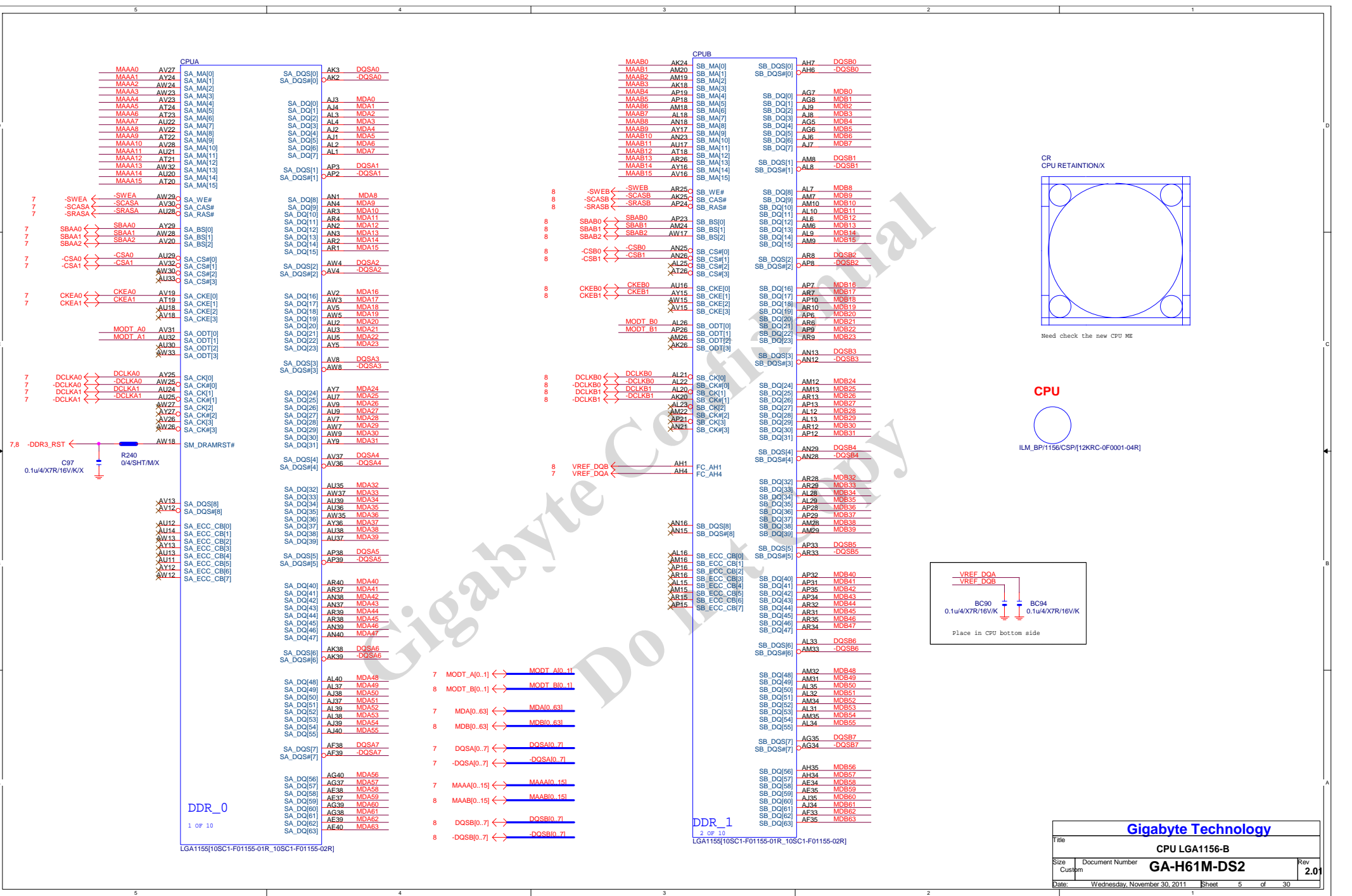


Stitching caps for PCIe, DMI, FDI bus



3 OF 10 LGA1155[10SC1-F01155-01R\_10SC1-F01155-02R]

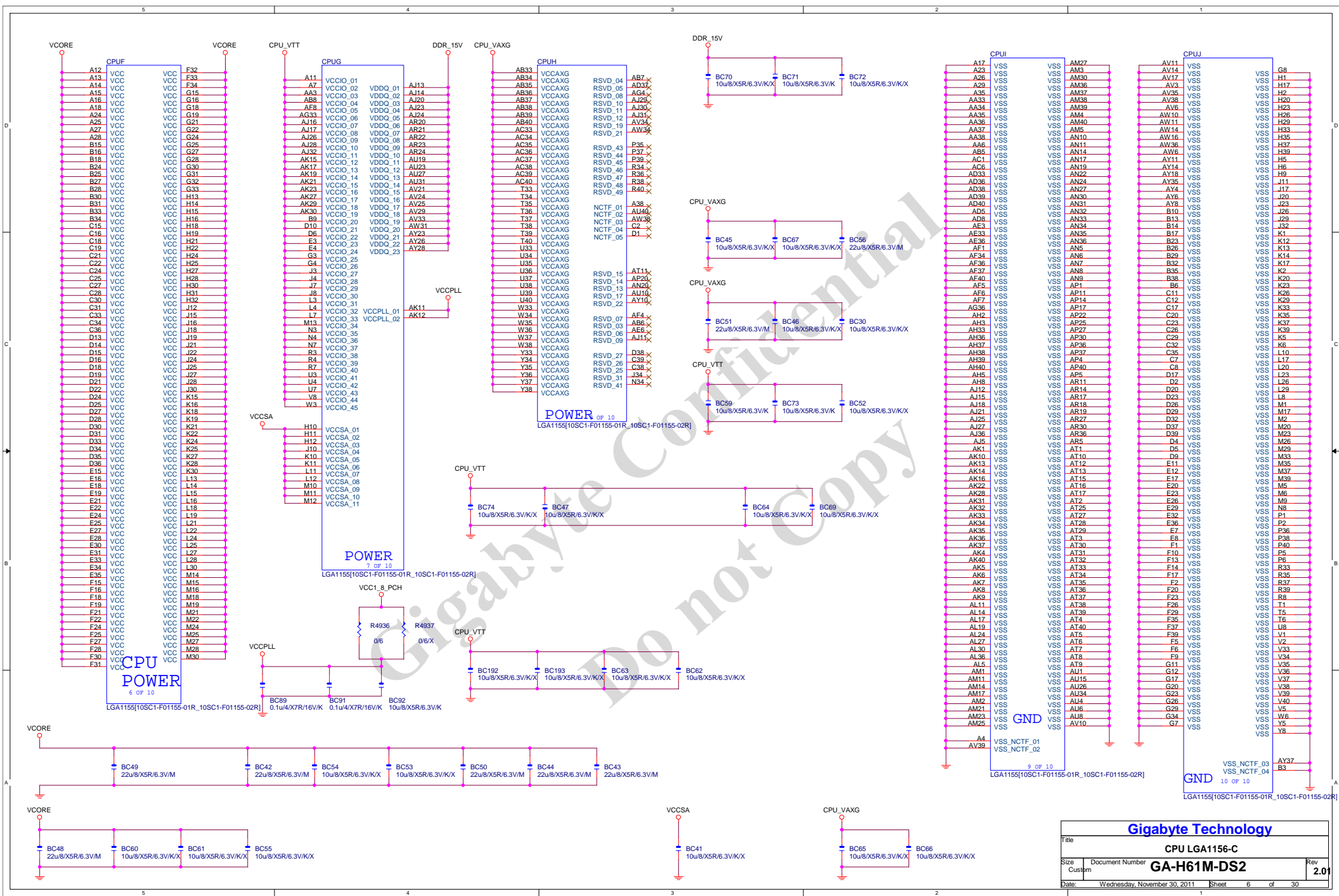
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Title: CPU LGA1155-A  
Size: Custom Document Number: GA-H61M-DS2 Rev: 2.01  
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LGA1155[10SC1-F01155-01R\_10SC1-F01155-02R]

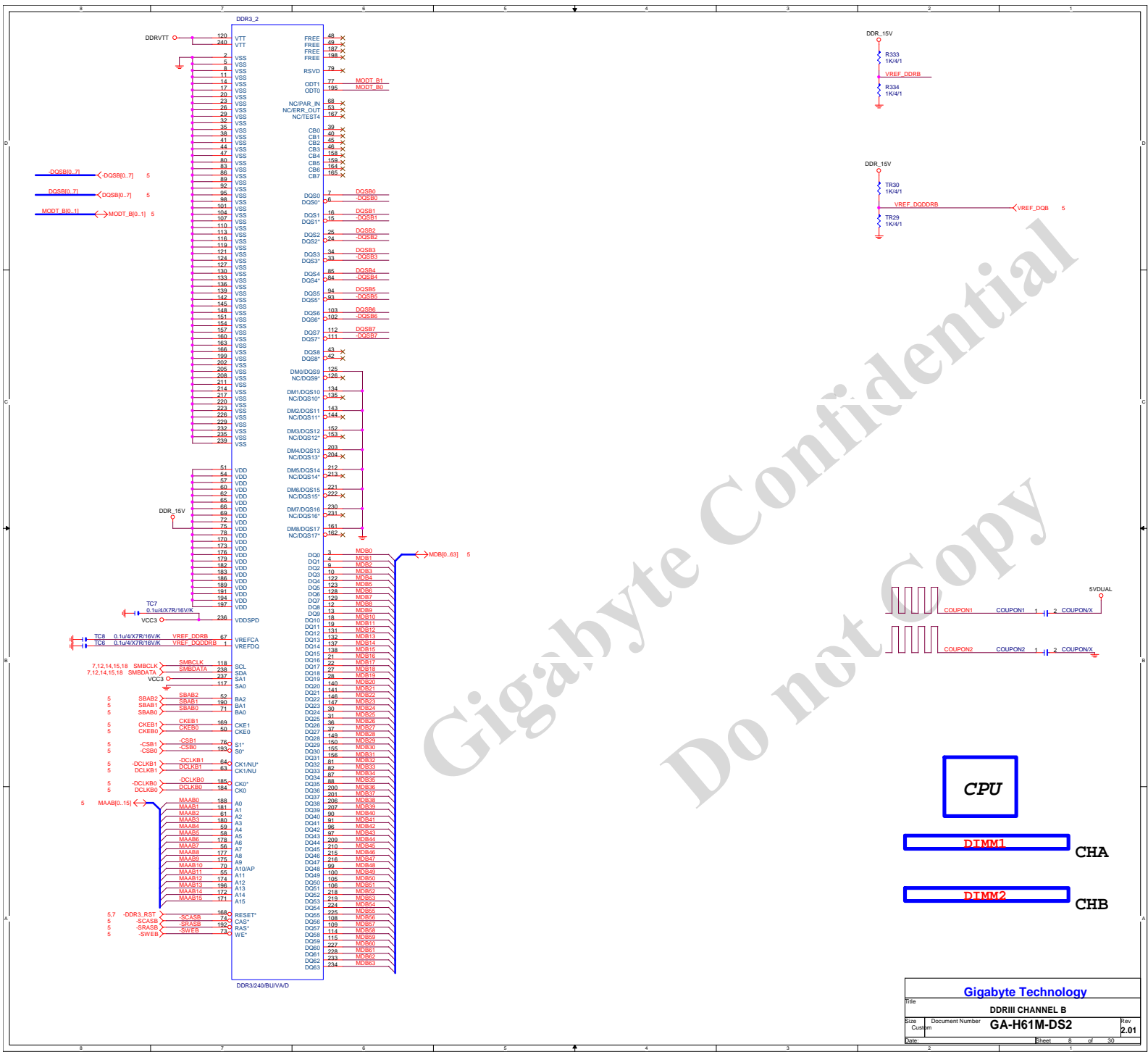
LGA1155[10SC1-F01155-01R\_10SC1-F01155-02R]

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<b>CPU LGA1156-B</b>		
Size	Document Number	Rev
Custom	<b>GA-H61M-DS2</b>	<b>2.01</b>
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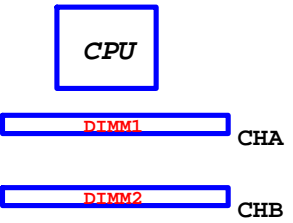


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<b>CPU LGA1156-C</b>			
Size	Custom	Document Number	<b>GA-H61M-DS2</b>
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			Rev <b>2.01</b>



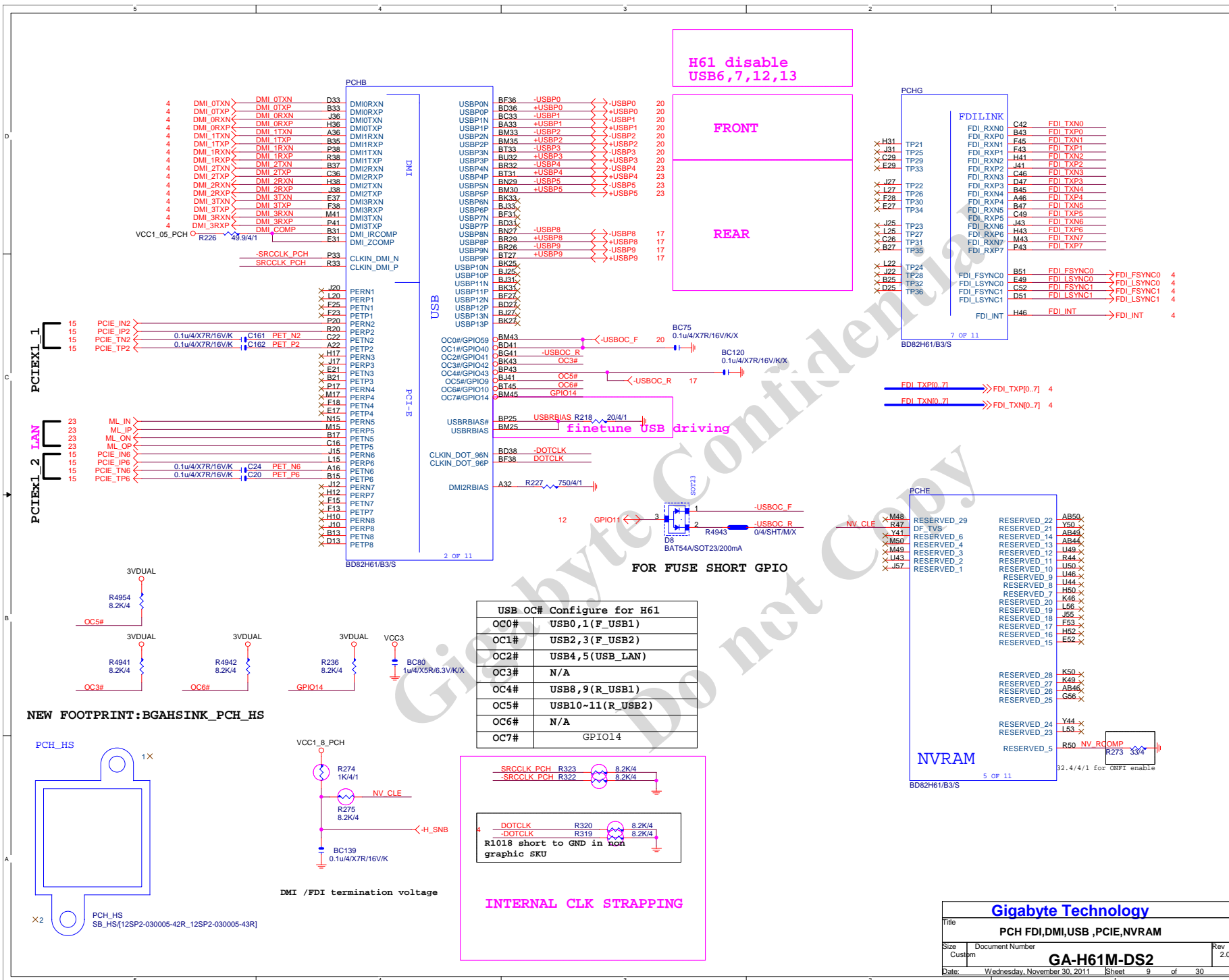


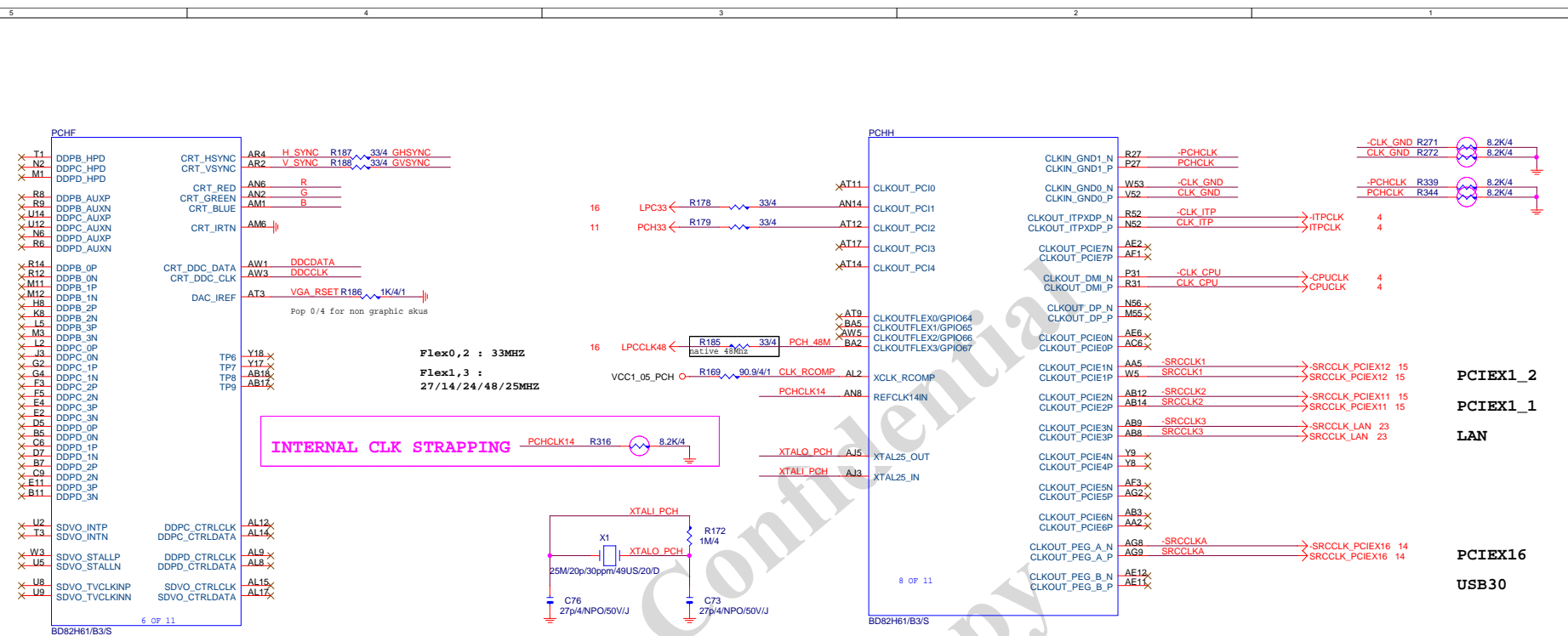
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Title <b>DDRIII CHANNEL B</b>		
Size	Document Number	Rev
Count	<b>GA-H61M-DS2</b>	<b>2.01</b>
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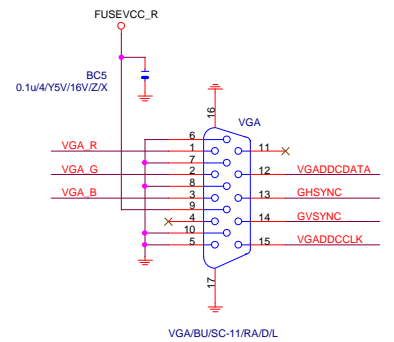
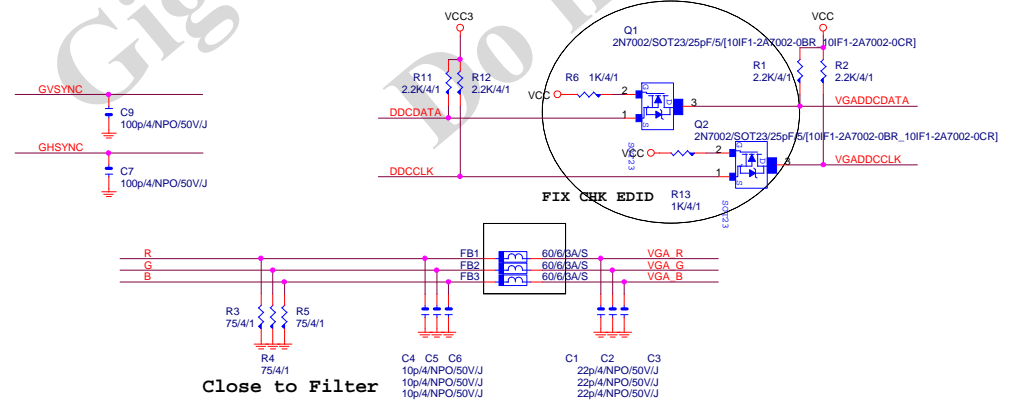
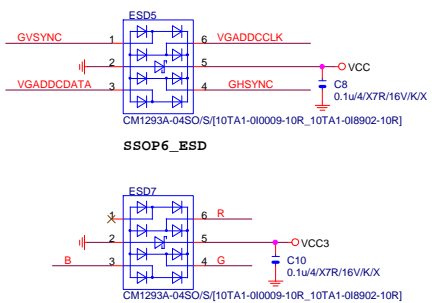




**INTERNAL CLK STRAPPING** PCHCLK14 R316 8.2K/4

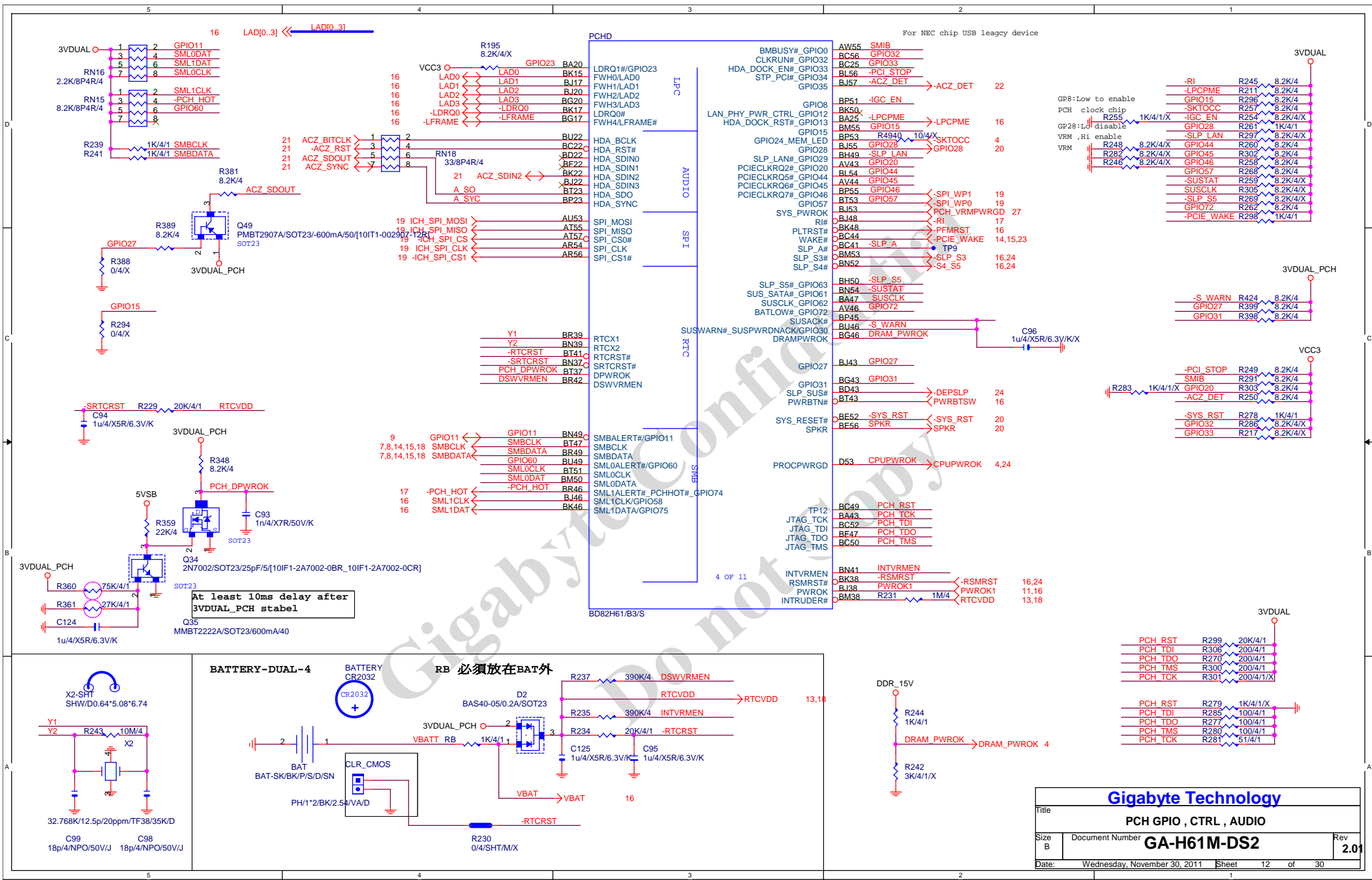
Flex0,2 : 33MHZ  
 Flex1,3 : 27/14/24/48/25MHZ

- PCIEX1\_2
- PCIEX1\_1
- LAN
- PCIEX16
- USB30

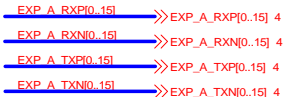
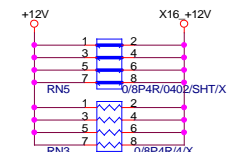
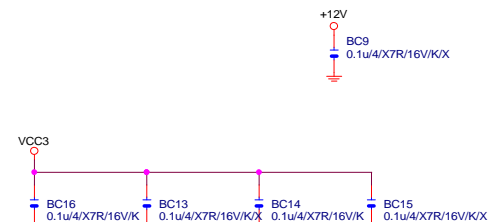


<b>Gigabyte Technology</b>			
<b>PCH DISPLAY, CLK BUFFER</b>			
Title	Document Number	Rev	
Size	Custom	<b>GA-H61M-DS2</b>	
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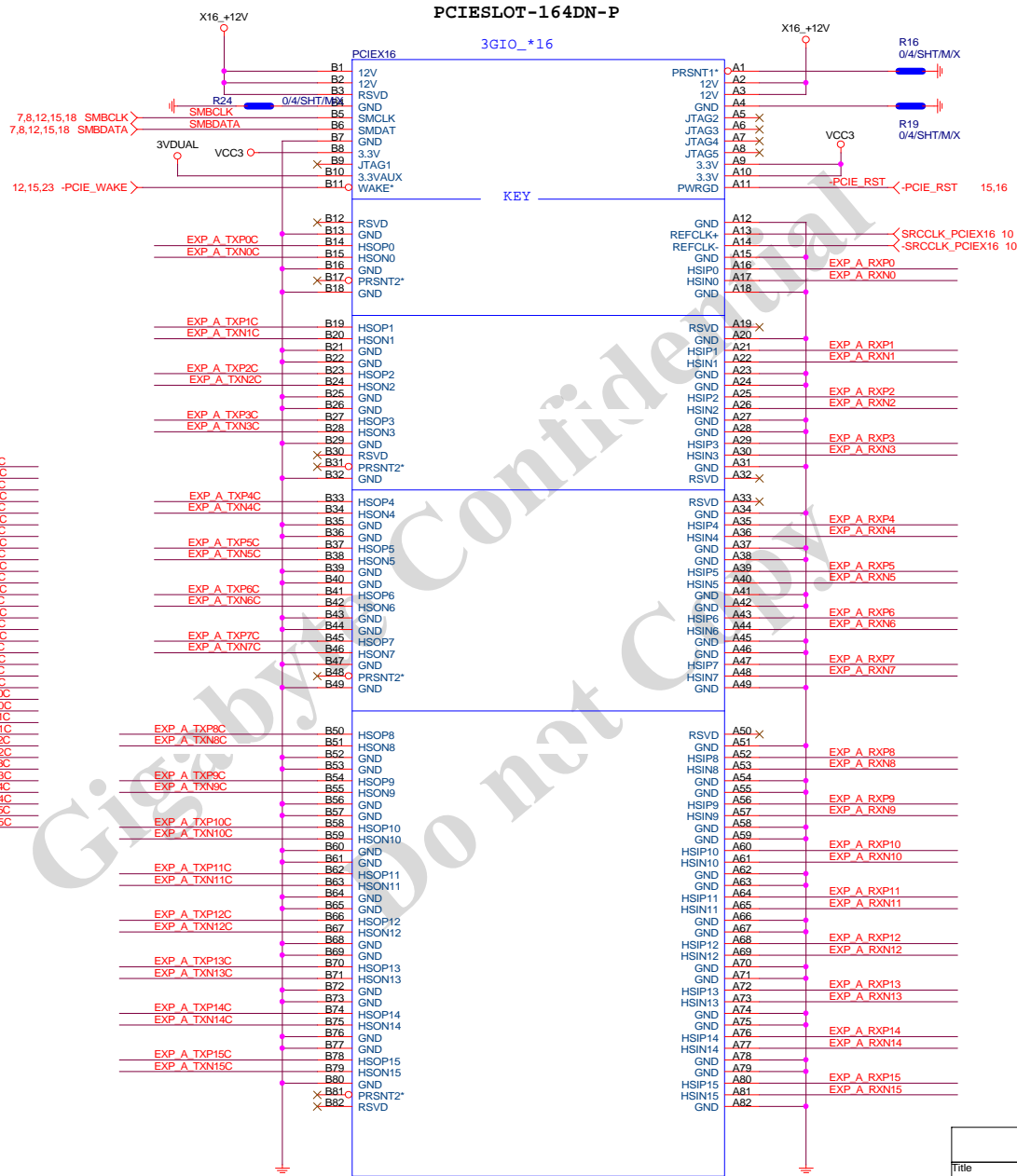








EXP_A_TXP0	C22	0.22u/4X5R/6.3V/K	EXP_A_TXP0C
EXP_A_TXN0	C26	0.22u/4X5R/6.3V/K	EXP_A_TXN0C
EXP_A_TXP1	C29	0.22u/4X5R/6.3V/K	EXP_A_TXP1C
EXP_A_TXN1	C31	0.22u/4X5R/6.3V/K	EXP_A_TXN1C
EXP_A_TXP2	C33	0.22u/4X5R/6.3V/K	EXP_A_TXP2C
EXP_A_TXN2	C35	0.22u/4X5R/6.3V/K	EXP_A_TXN2C
EXP_A_TXP3	C37	0.22u/4X5R/6.3V/K	EXP_A_TXP3C
EXP_A_TXN3	C40	0.22u/4X5R/6.3V/K	EXP_A_TXN3C
EXP_A_TXP4	C48	0.22u/4X5R/6.3V/K	EXP_A_TXP4C
EXP_A_TXN4	C49	0.22u/4X5R/6.3V/K	EXP_A_TXN4C
EXP_A_TXP5	C52	0.22u/4X5R/6.3V/K	EXP_A_TXP5C
EXP_A_TXN5	C54	0.22u/4X5R/6.3V/K	EXP_A_TXN5C
EXP_A_TXP6	C56	0.22u/4X5R/6.3V/K	EXP_A_TXP6C
EXP_A_TXN6	C58	0.22u/4X5R/6.3V/K	EXP_A_TXN6C
EXP_A_TXP7	C60	0.22u/4X5R/6.3V/K	EXP_A_TXP7C
EXP_A_TXN7	C61	0.22u/4X5R/6.3V/K	EXP_A_TXN7C
EXP_A_TXP8	C63	0.22u/4X5R/6.3V/K	EXP_A_TXP8C
EXP_A_TXN8	C64	0.22u/4X5R/6.3V/K	EXP_A_TXN8C
EXP_A_TXP9	C66	0.22u/4X5R/6.3V/K	EXP_A_TXP9C
EXP_A_TXN9	C67	0.22u/4X5R/6.3V/K	EXP_A_TXN9C
EXP_A_TXP10	C69	0.22u/4X5R/6.3V/K	EXP_A_TXP10C
EXP_A_TXN10	C70	0.22u/4X5R/6.3V/K	EXP_A_TXN10C
EXP_A_TXP11	C71	0.22u/4X5R/6.3V/K	EXP_A_TXP11C
EXP_A_TXN11	C72	0.22u/4X5R/6.3V/K	EXP_A_TXN11C
EXP_A_TXP12	C74	0.22u/4X5R/6.3V/K	EXP_A_TXP12C
EXP_A_TXN12	C75	0.22u/4X5R/6.3V/K	EXP_A_TXN12C
EXP_A_TXP13	C77	0.22u/4X5R/6.3V/K	EXP_A_TXP13C
EXP_A_TXN13	C78	0.22u/4X5R/6.3V/K	EXP_A_TXN13C
EXP_A_TXP14	C79	0.22u/4X5R/6.3V/K	EXP_A_TXP14C
EXP_A_TXN14	C80	0.22u/4X5R/6.3V/K	EXP_A_TXN14C
EXP_A_TXP15	C82	0.22u/4X5R/6.3V/K	EXP_A_TXP15C
EXP_A_TXN15	C83	0.22u/4X5R/6.3V/K	EXP_A_TXN15C

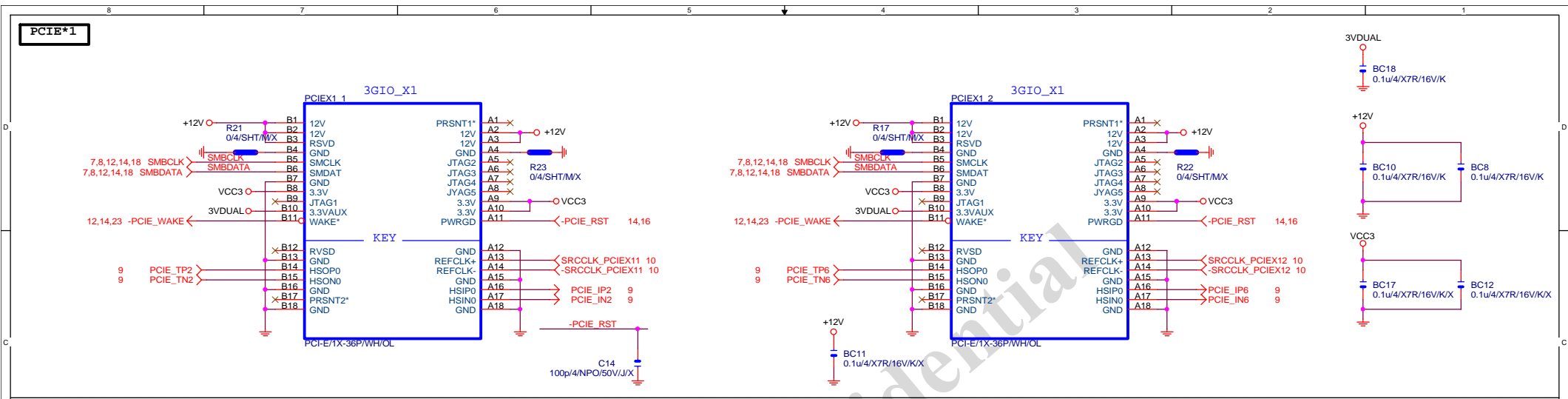


**Gigabyte Technology**

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Size: Custom    Document Number: **GA-H61M-DS2**    Rev: **2.01**

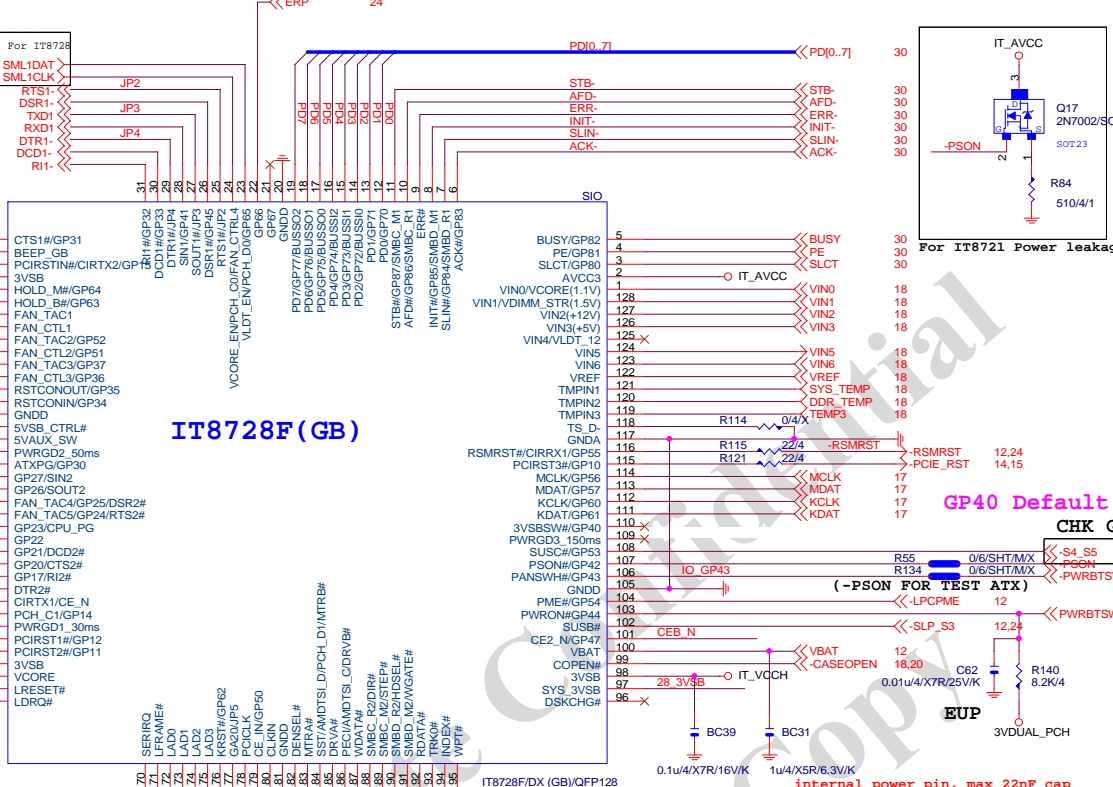
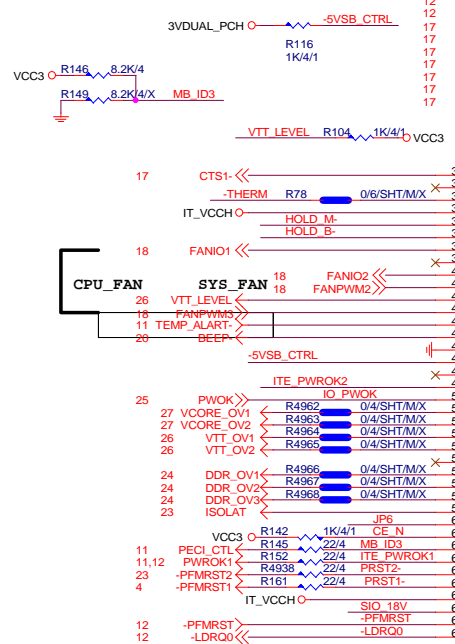
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<b>Gigabyte Technology</b>			
<b>PCIEX1,X2/CLK GEN</b>			
Size Custom	Document Number	<b>GA-H61M-DS2</b>	Rev <b>2.01</b>
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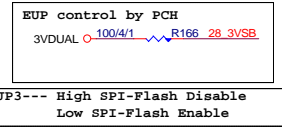
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 GP23 Default CPU\_PG DOD8



IT8728F (GB)

GP40 Default 3VBSW# DO8  
 CHK GPIO53

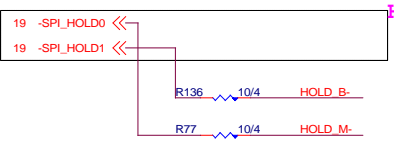
H61M-S2 1.1 JP6 stuff  
 pull down



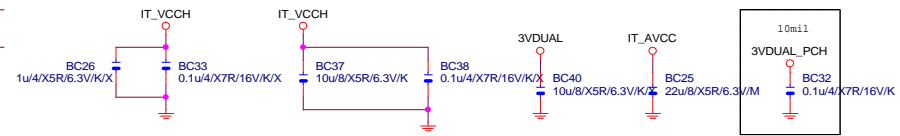
JP3--- High SPI-Flash Disable  
 Low SPI-Flash Enable

PCIRST1 is od in  
 IT8728

IT8728	
PIN121	VCORE_EN/PCH_C0
PIN120	VLDI_TEN/PCH_D0
PIN19	ATXPG
PIN31	PCH_C1
PIN53	SST/AMDTSI_D/MIRB#/PCH_DI
PIN55	PECI/AMDTSI_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



H61M-DS2 R0.2



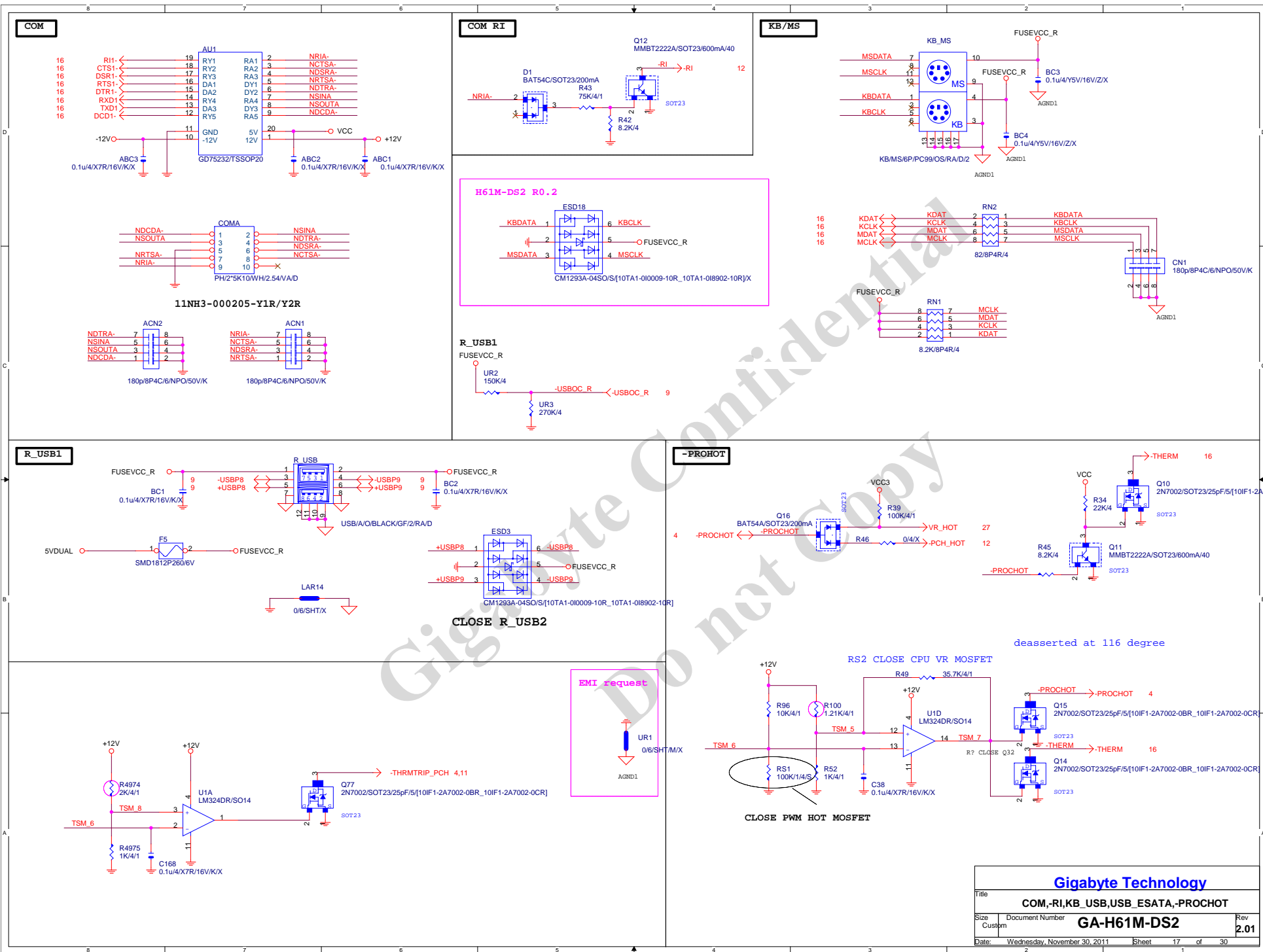
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Title: **ITE 8728 LPC IO**

Size B Document Number: **GA-H61M-DS2** Rev **2.01**

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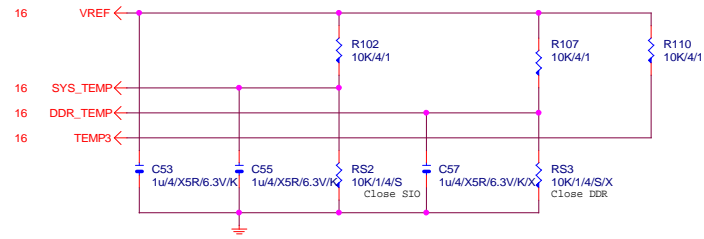




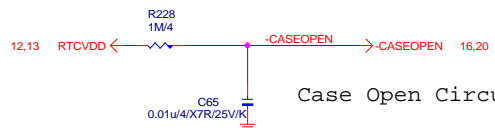
Gigabyte Technology

Title			COM,-RI,KB_USB,USB_ESATA,-PROCHOT		
Size	Document Number	GA-H61M-DS2		Rev	2.01
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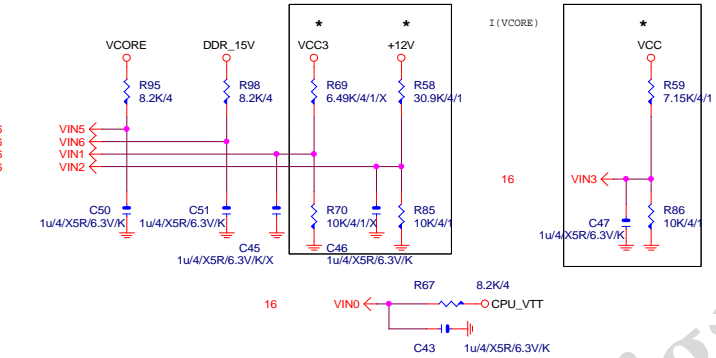
**TEMP H/W MONITOR**



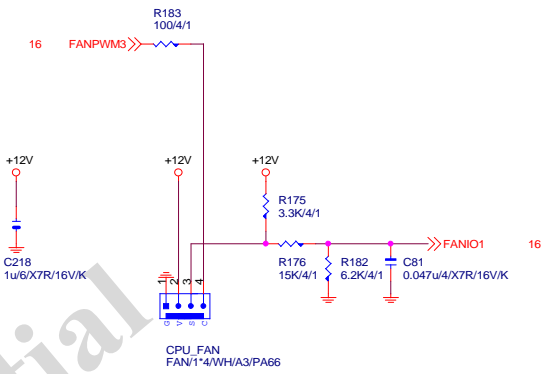
**CASE OPEN**



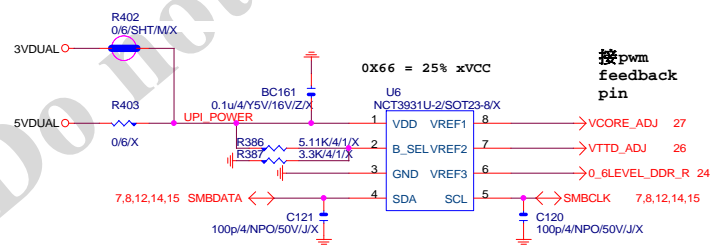
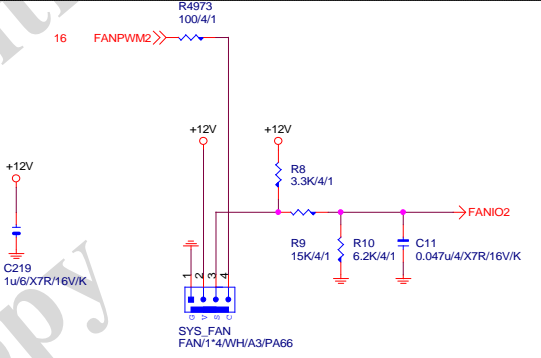
**VOLTAGE-- H/W MONITOR**



**CPU SMART FAN**

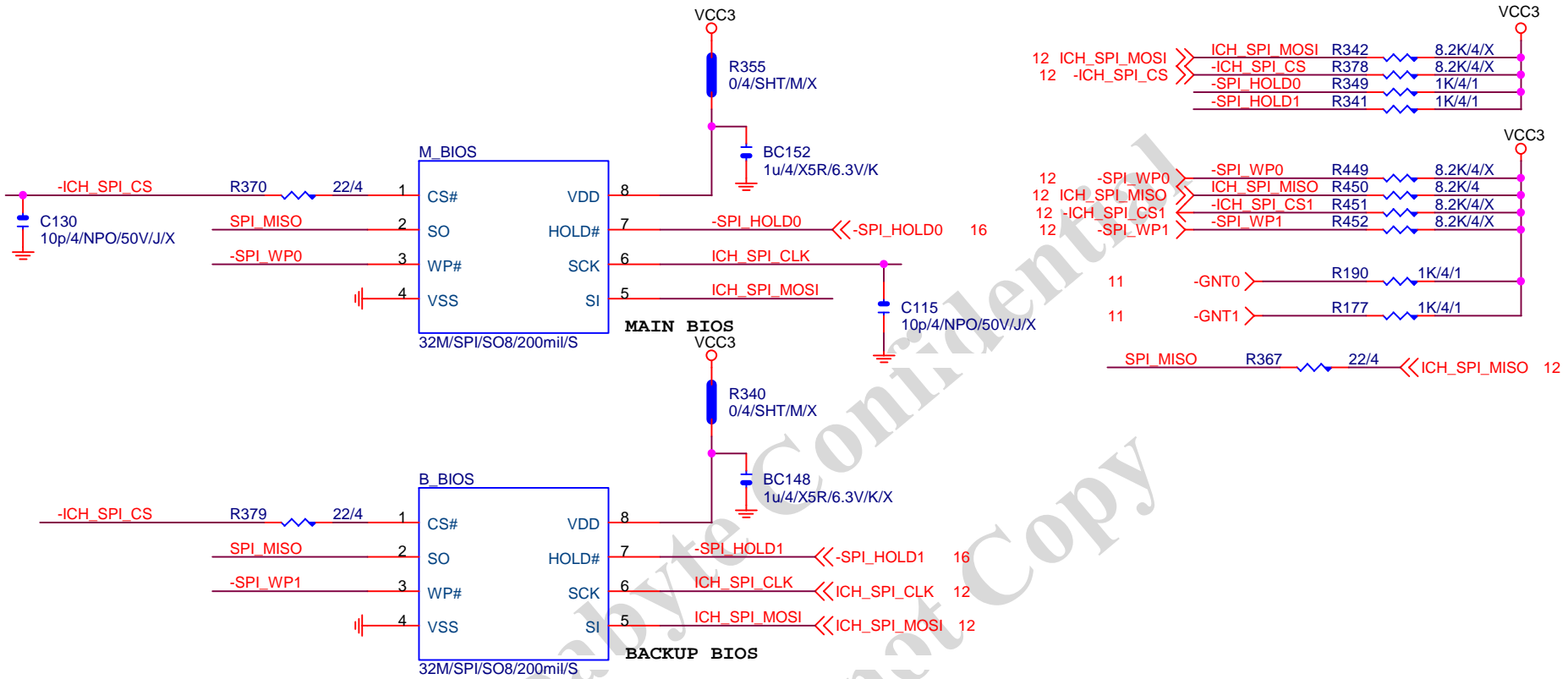


**SYS SMART FAN**



<b>Gigabyte Technology</b>		
Title: HWM,FAN CTRL_OV		
Size: Custom	Document Number: GA-H61M-DS2	Rev: 2.01
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# DUAL BIOS

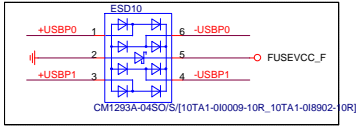
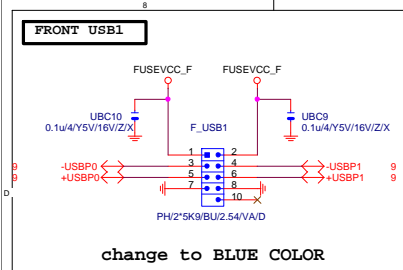


BOOT DEVICE	GNT1	GNT0
LPC	0	0
PCI	0	1
SPI	1	1

1 means floating  
0 means PD 1K

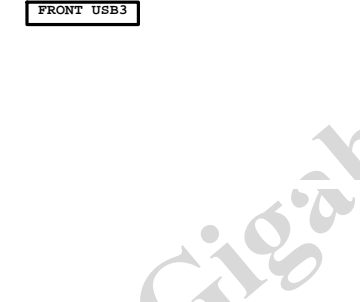
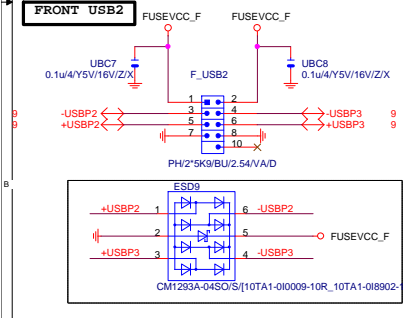
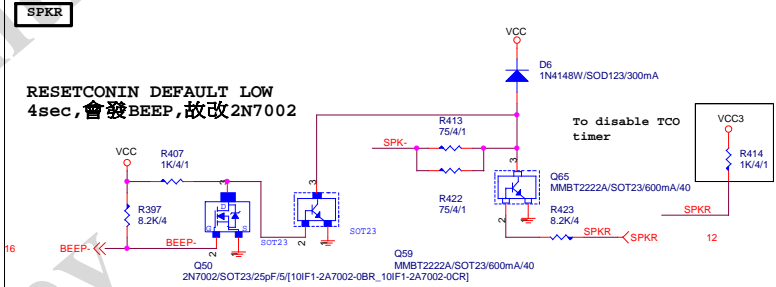
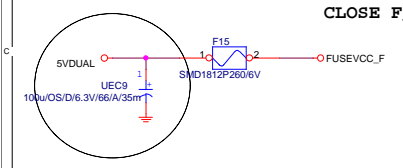
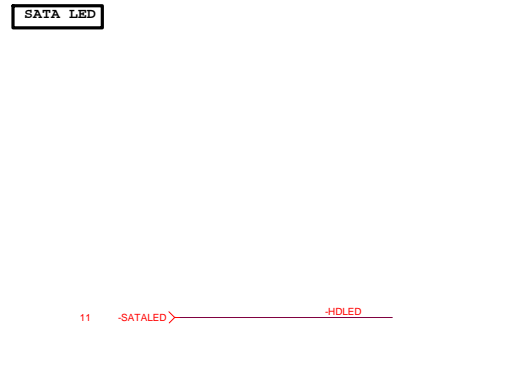
**Gigabyte Technology**

Title		
<b>DUAL BIOS</b>		
Size A	Document Number	Rev
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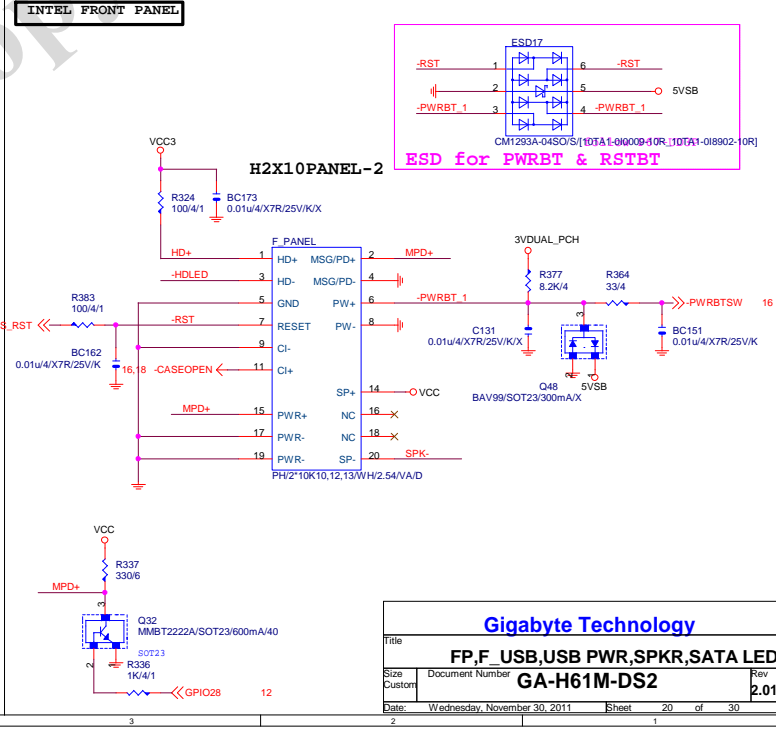


Close to connector

change to BLUE COLOR

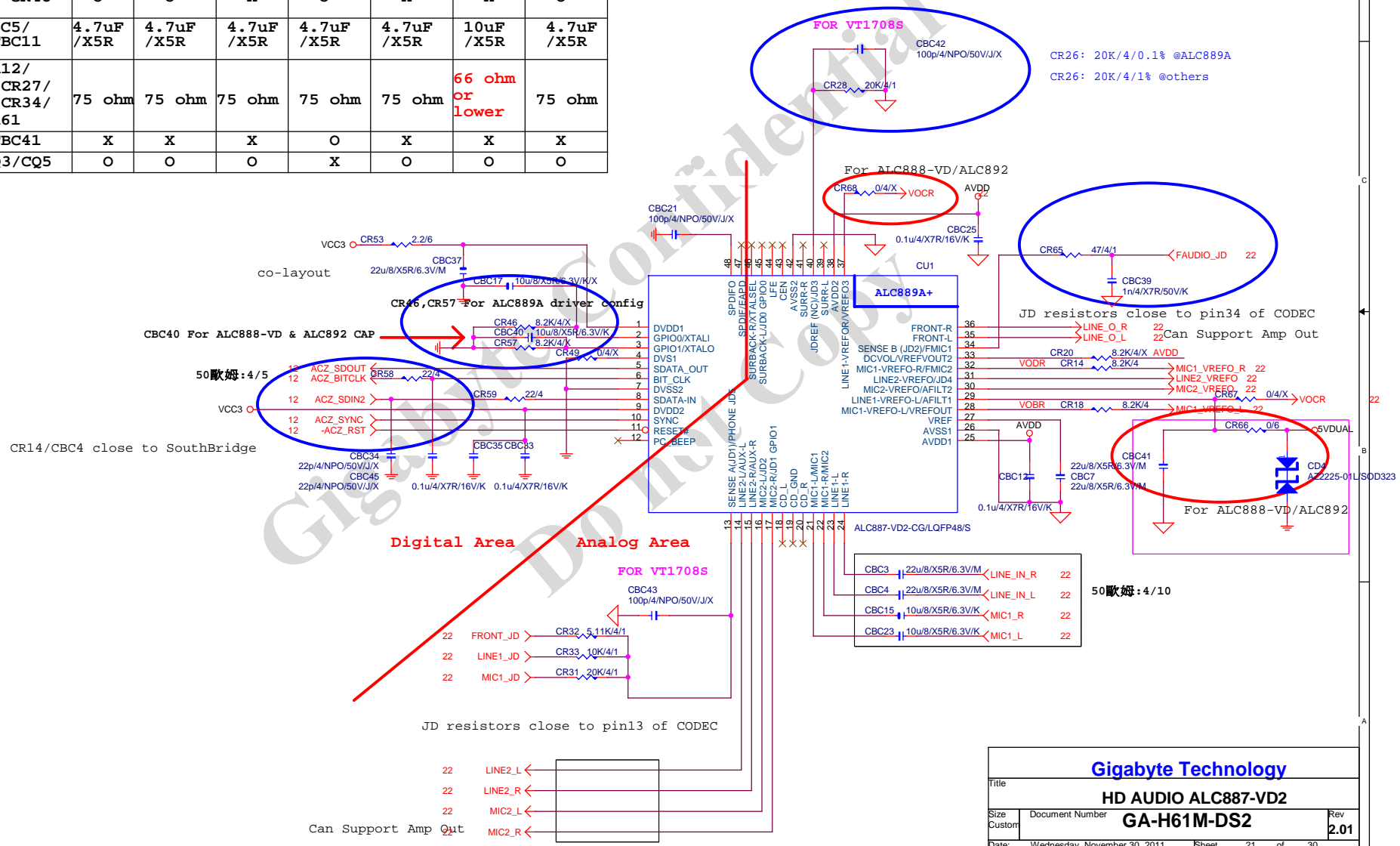


Close to connector



Gigabyte Technology		
File	FP,F_USB,USB PWR,SPKR,SATA LED	
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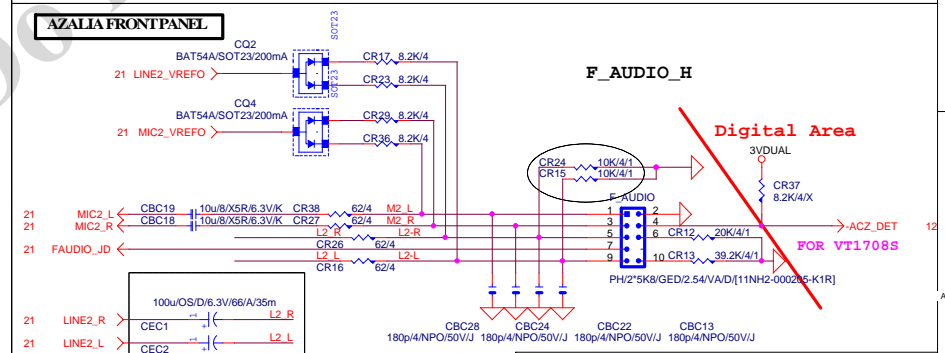
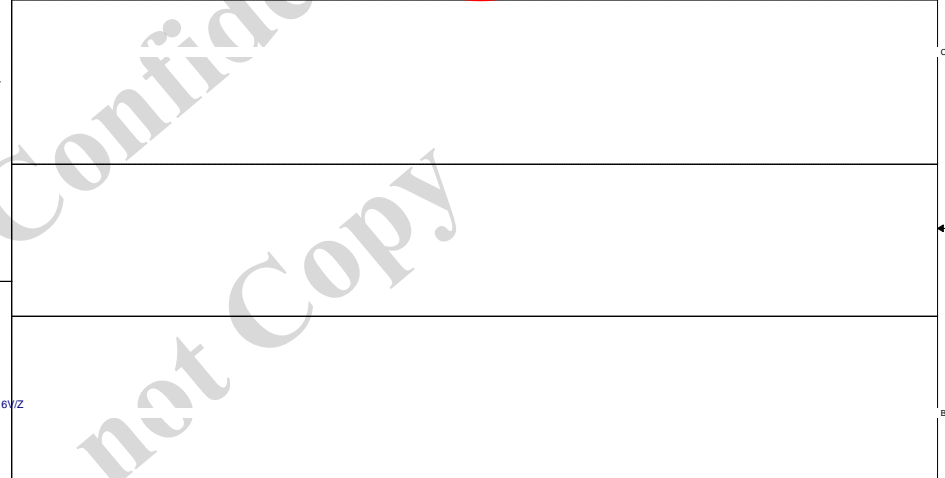
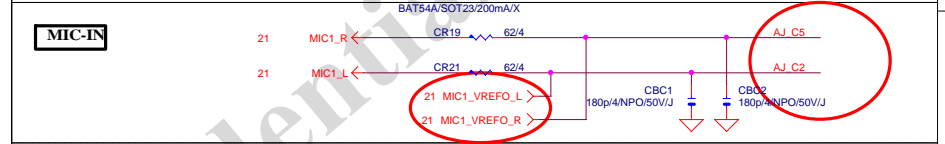
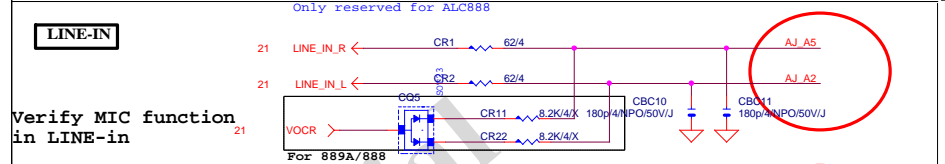
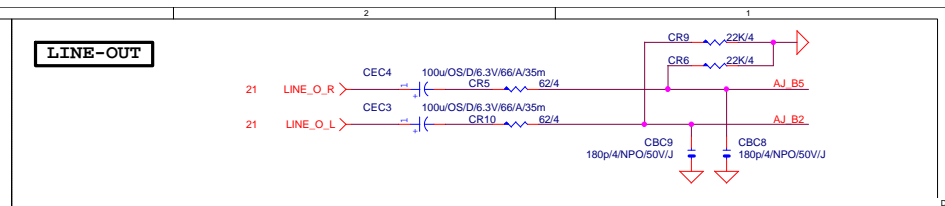
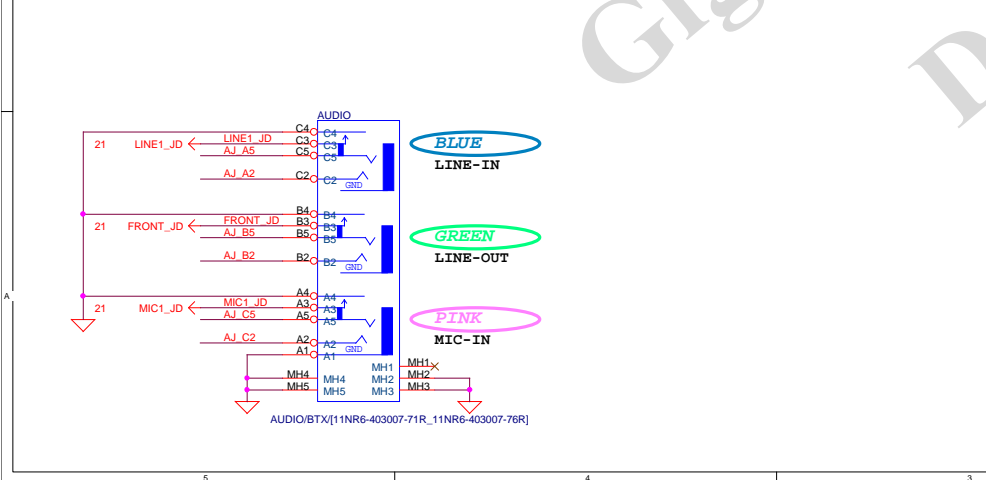
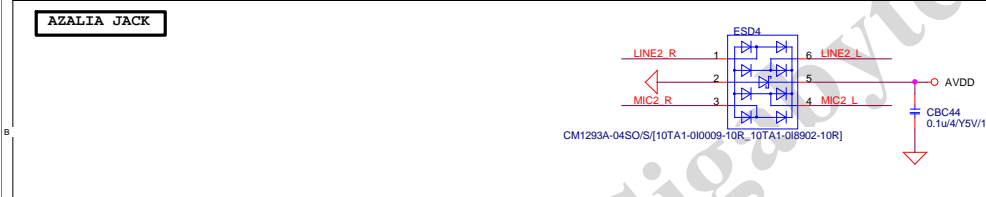
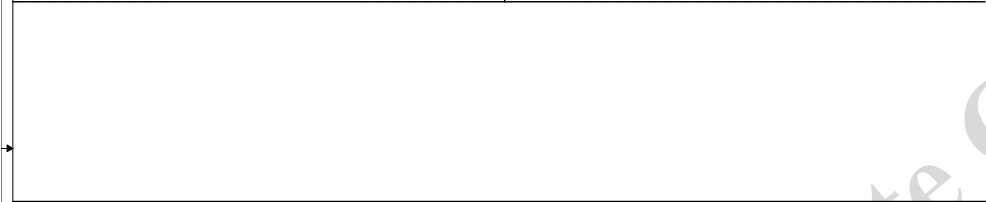
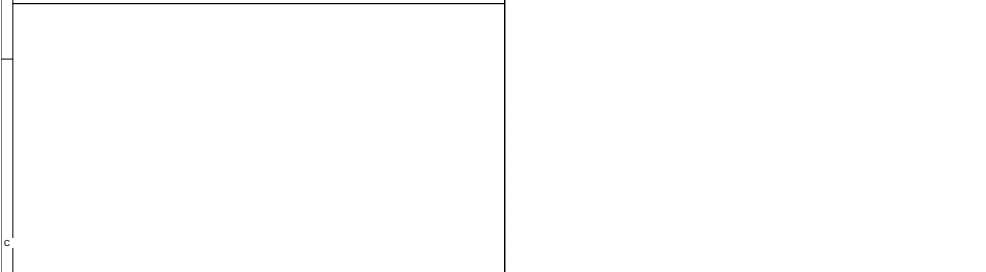
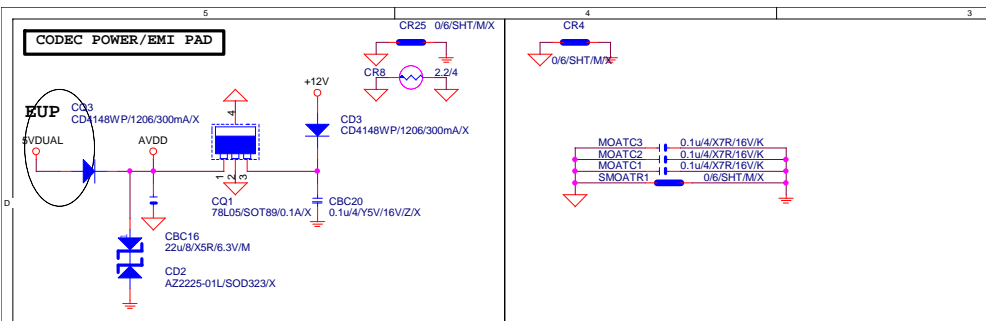
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CR46	X	X	X	X	X	X	O
CR57	X	X	X	X	X	X	O
CR49	O	O	X	X	X	O	O
CBC40	X	X	X	10uF/X5R	10uF/X5R	X	X
CR20	O	X	X	X	X	X	X
CR26	20K/1%	20K/1%	20K/1%	20K/1%	20K/1%	20K/1%	20K/0.1%
CR47	X	X	O	X	O	O	X
CR48	O	O	X	O	X	X	O
CBC2/CBC4/CBC5/CBC6/CBC10/CBC11	4.7uF/X5R	4.7uF/X5R	4.7uF/X5R	4.7uF/X5R	4.7uF/X5R	10uF/X5R	4.7uF/X5R
CR1/CR3/CR10/CR12/CR15/CR19/CR56/CR27/CR55/CR37/CR28/CR34/CR6/CR9/CR51/CR61	75 ohm	75 ohm	75 ohm	75 ohm	75 ohm	66 ohm or lower	75 ohm
CR66/CR68/CD3/CBC41	X	X	X	O	X	X	X
CR67/CD1/CD2/CQ3/CQ5	O	O	O	X	O	O	O



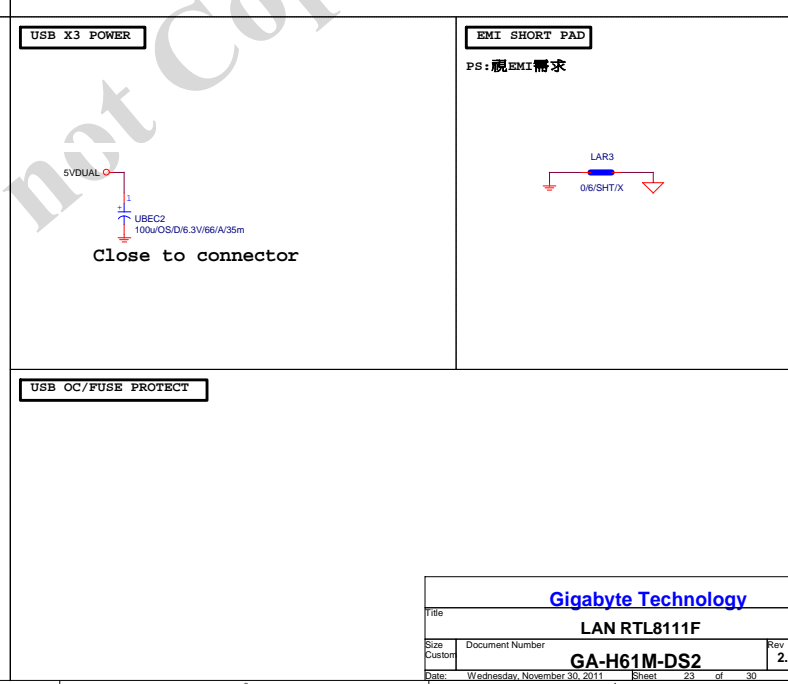
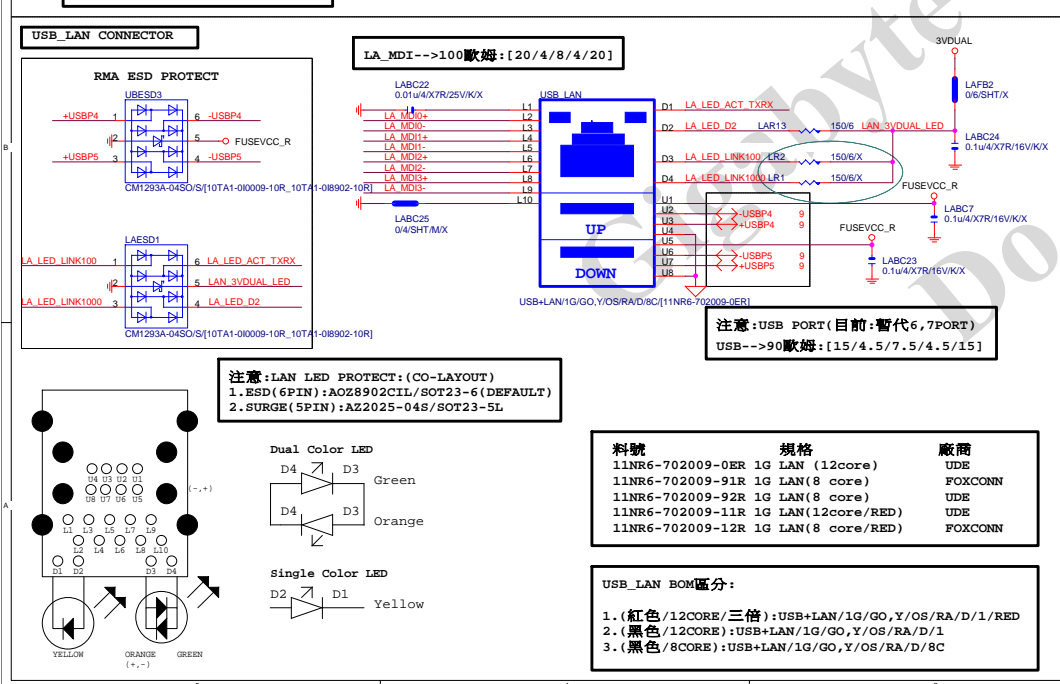
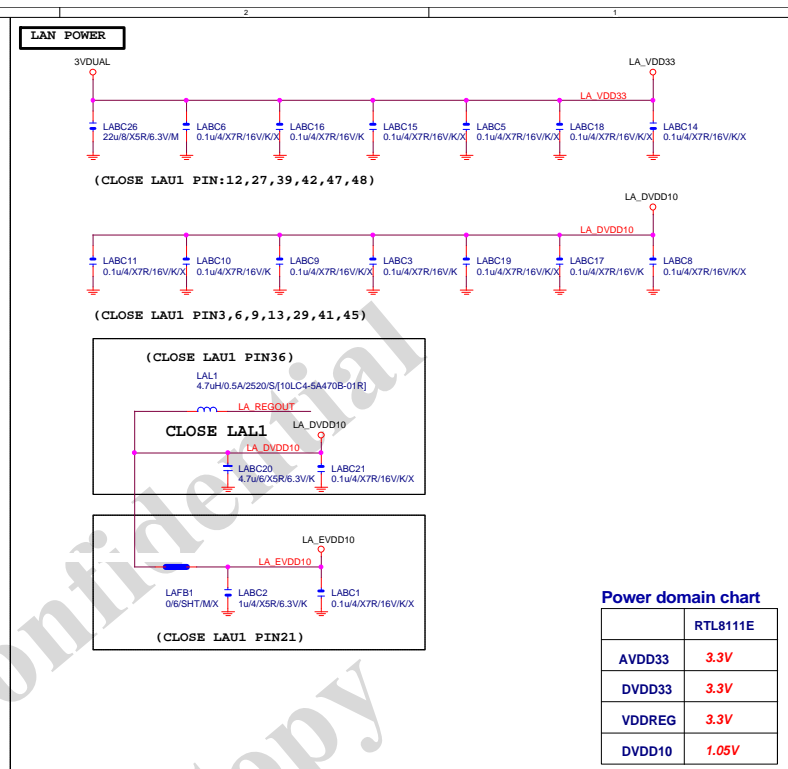
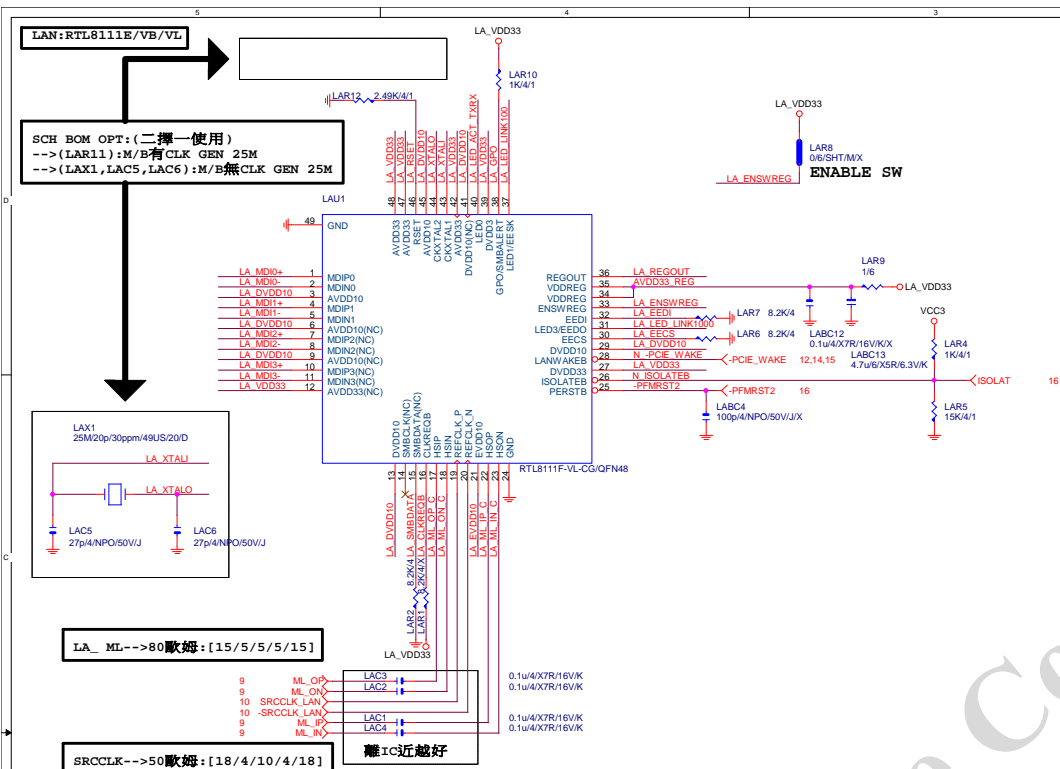
**Gigabyte Technology**

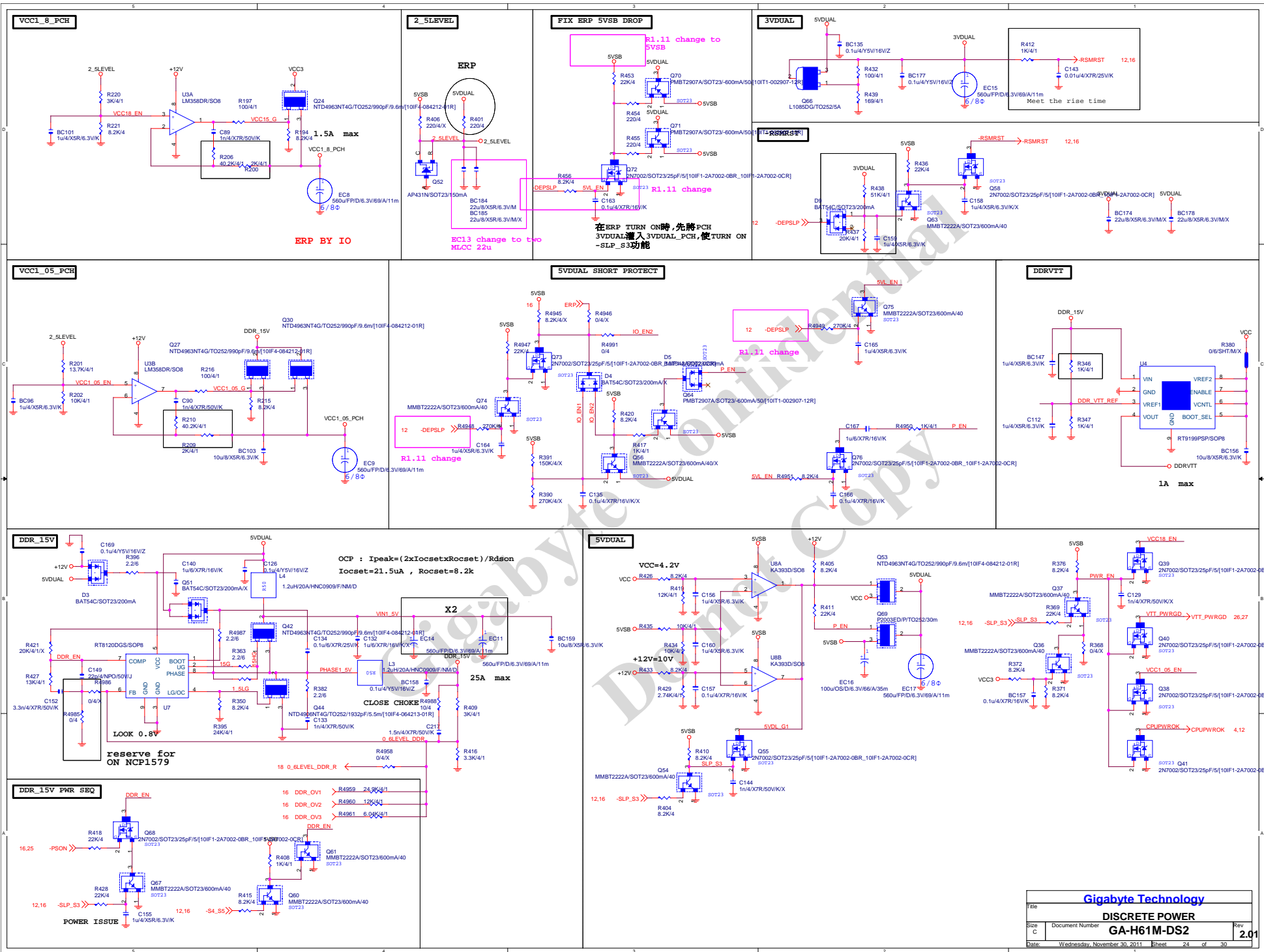
**HD AUDIO ALC887-VD2**

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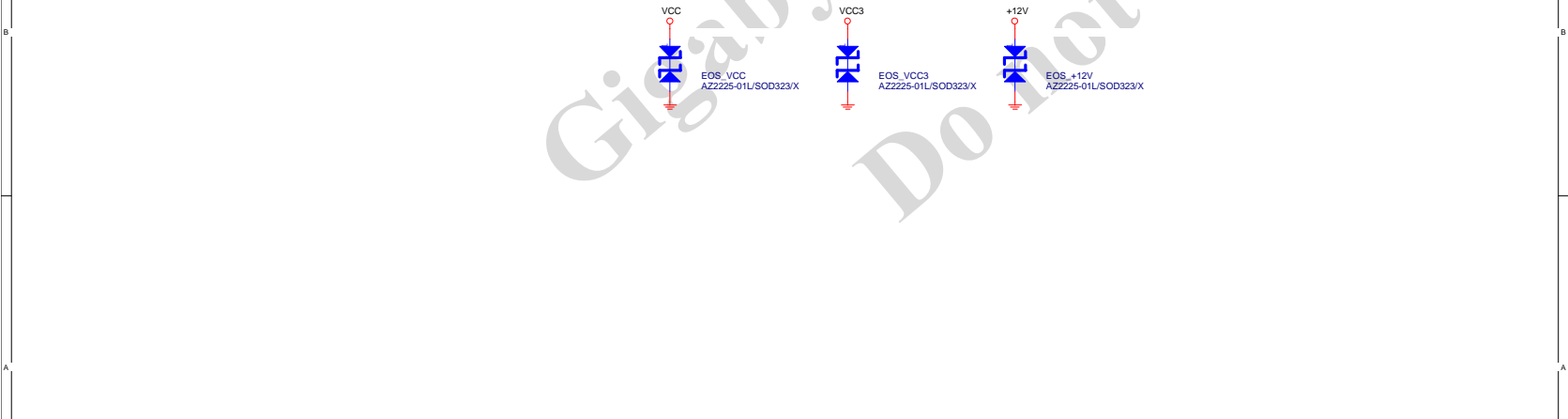
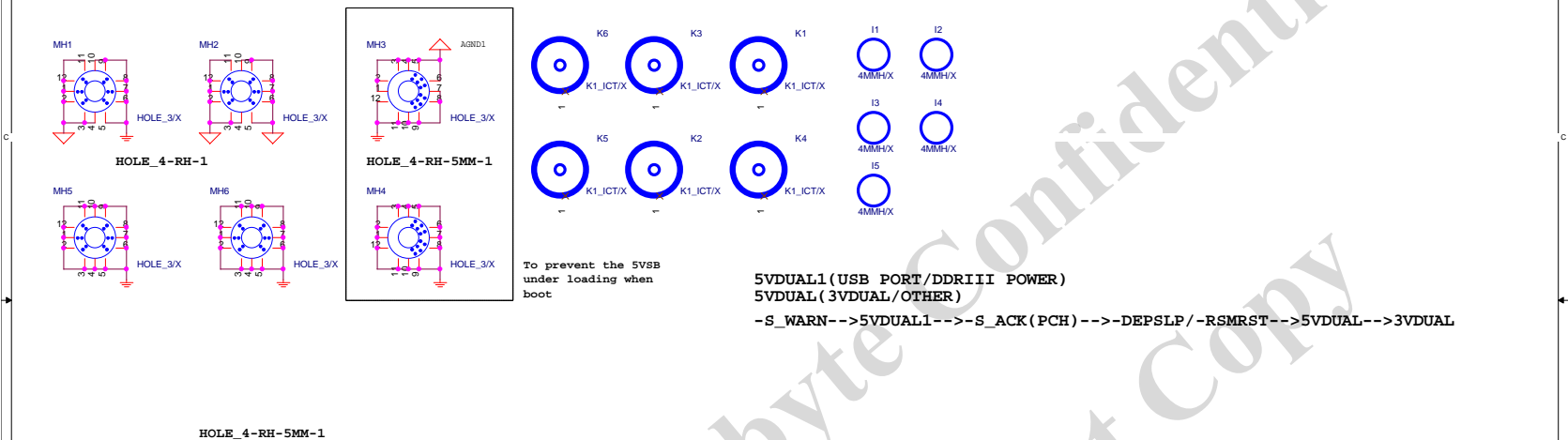
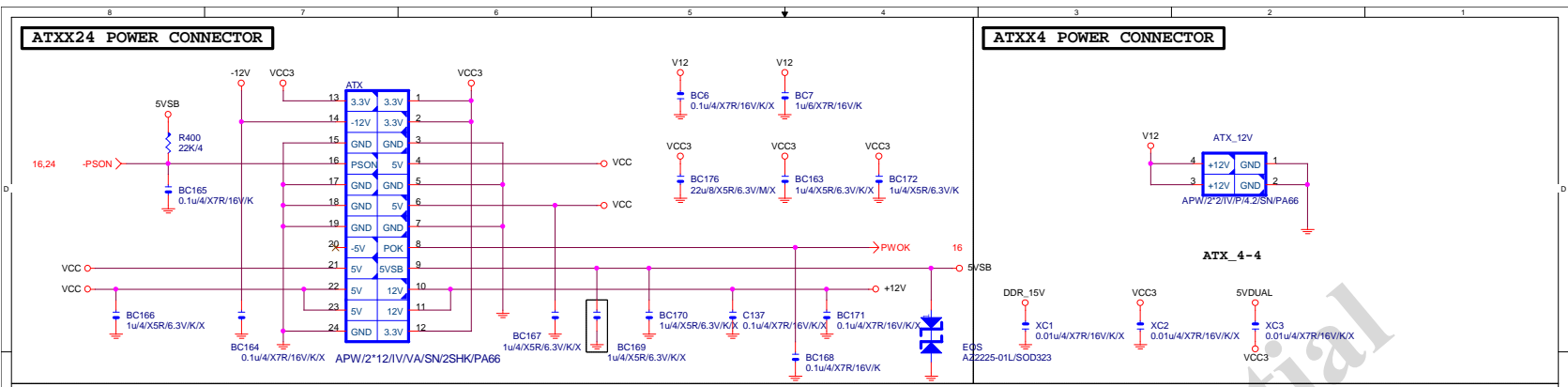


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AUDIO JACK		
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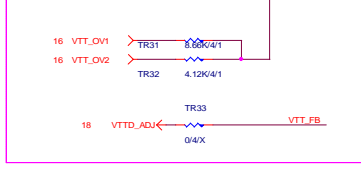




<b>Gigabyte Technology</b>		
File: <b>ATX CONNECTOR</b>		
Size Custom:	Document Number: <b>GA-H61M-DS2</b>	Rev: <b>2.01</b>
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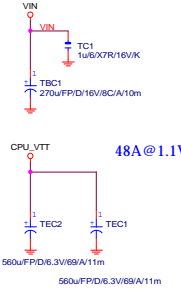
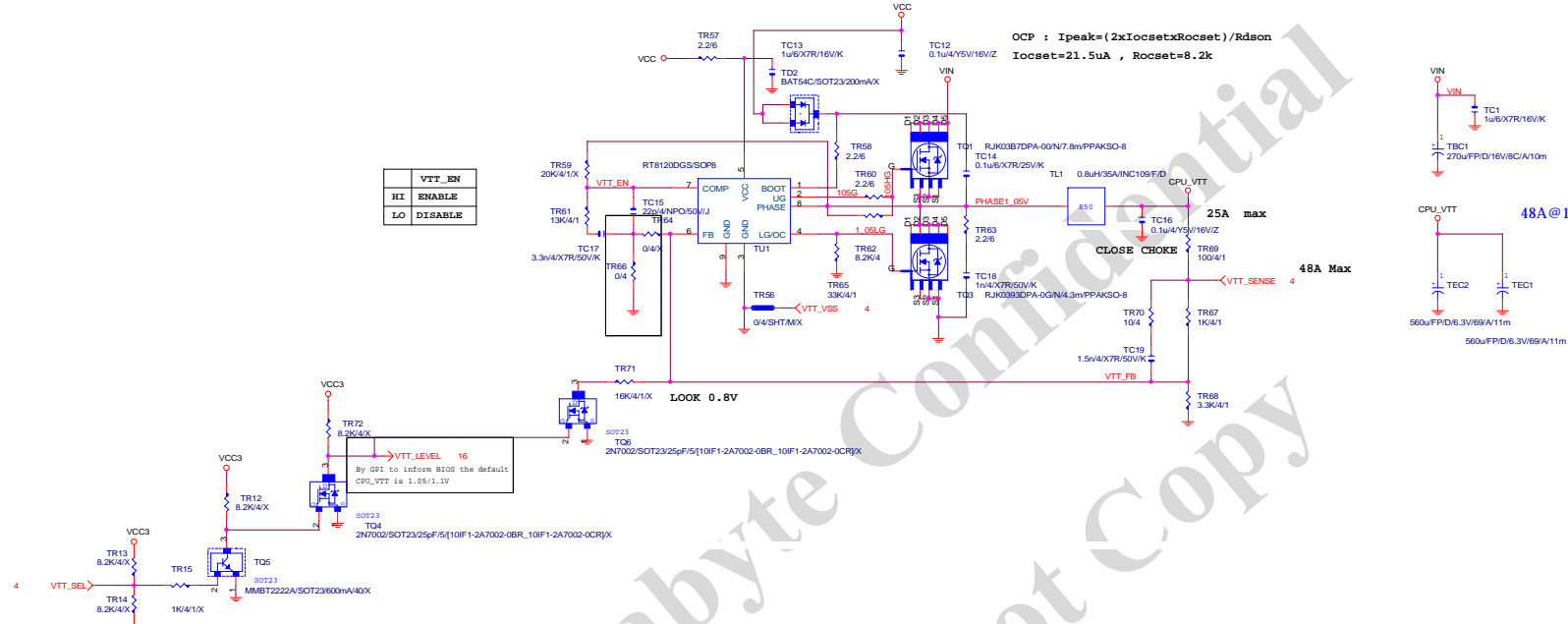
**CPU\_VTT**

**VTT OV option**



VTT_EN	
HI	ENABLE
LO	DISABLE

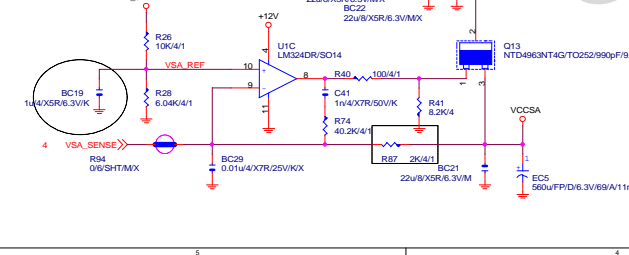
OCp :  $I_{peak} = (2 \times I_{ocset} \times R_{ocset}) / R_{dson}$   
 $I_{ocset} = 21.5\mu A$  ,  $R_{ocset} = 8.2k$



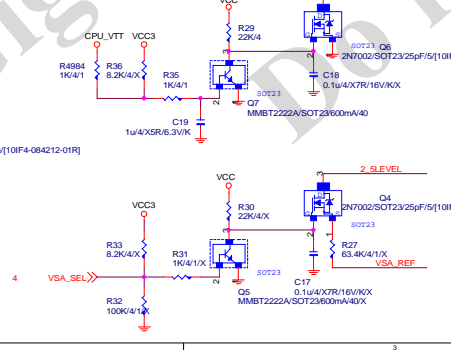
**VCCSA**

PDG 0.8

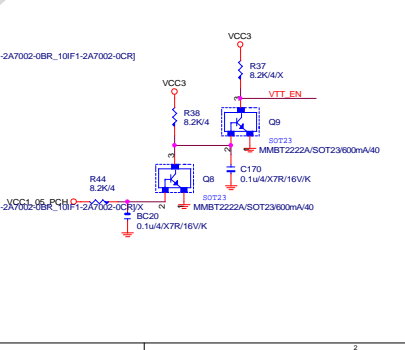
VSA_SEL	
HI	0.85V
LO	0.925V



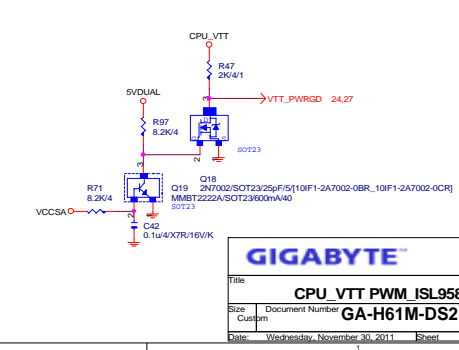
**VCCSA PWR SEQ**



**CPU\_VTT PWR SEQ**

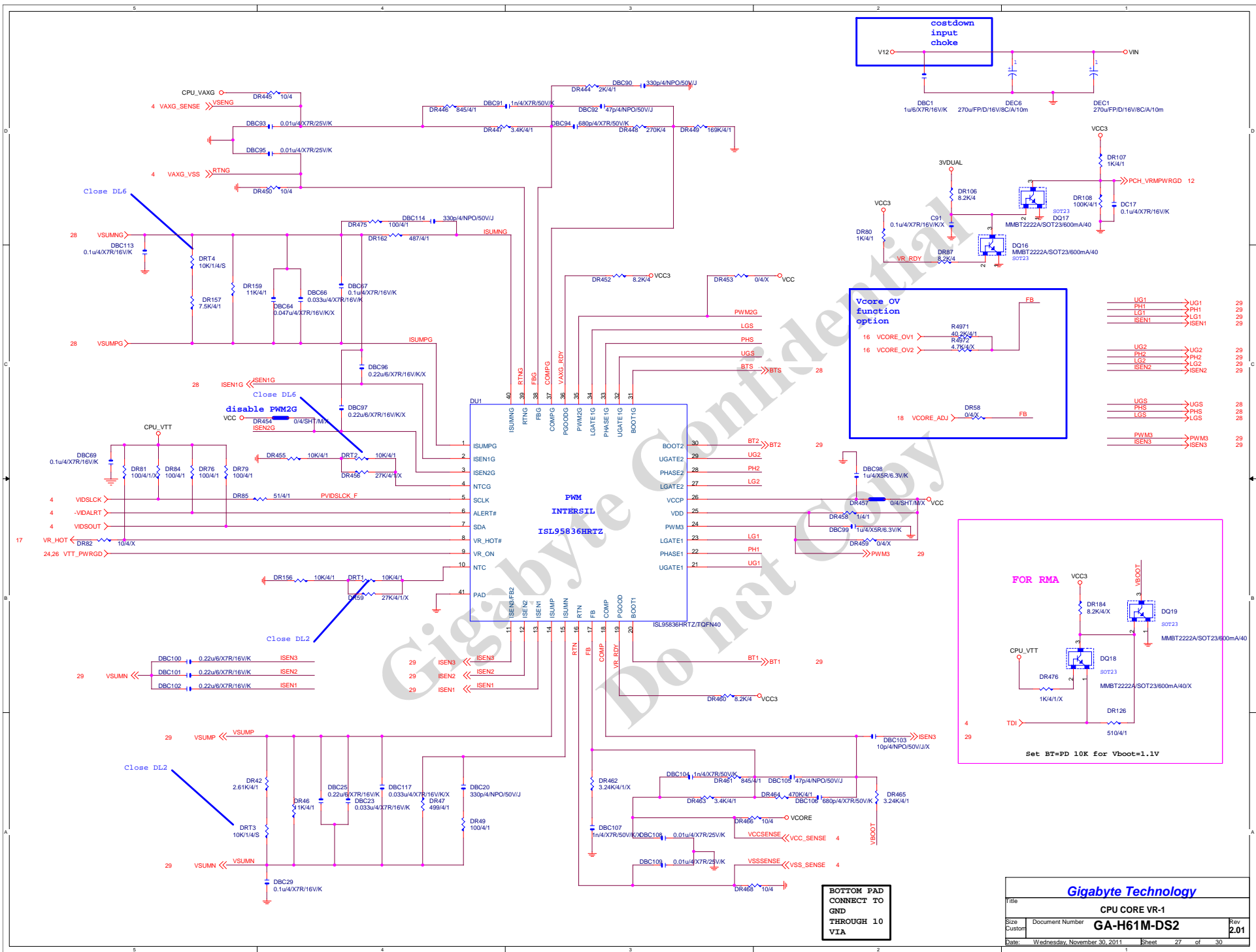


**VTT\_PWRGD**

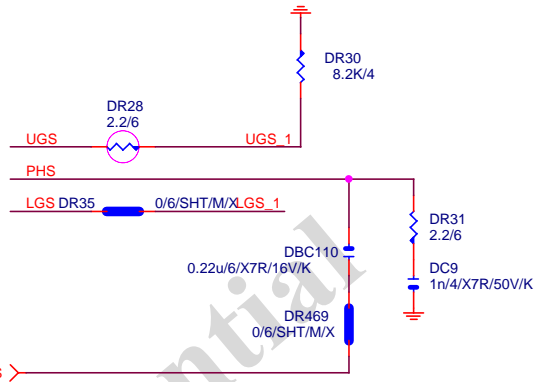
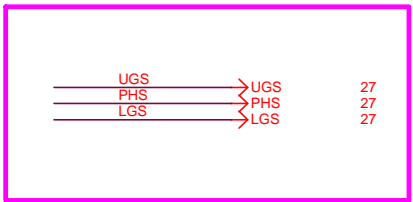


**GIGABYTE**

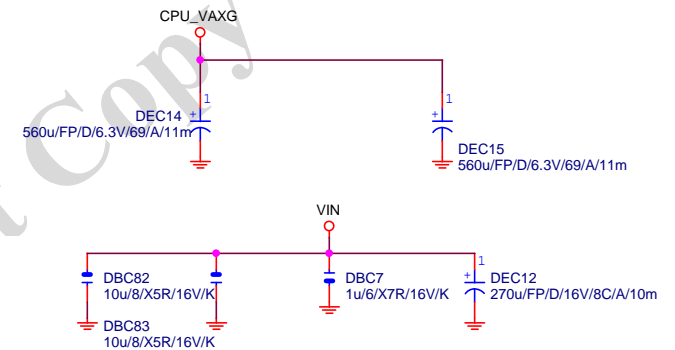
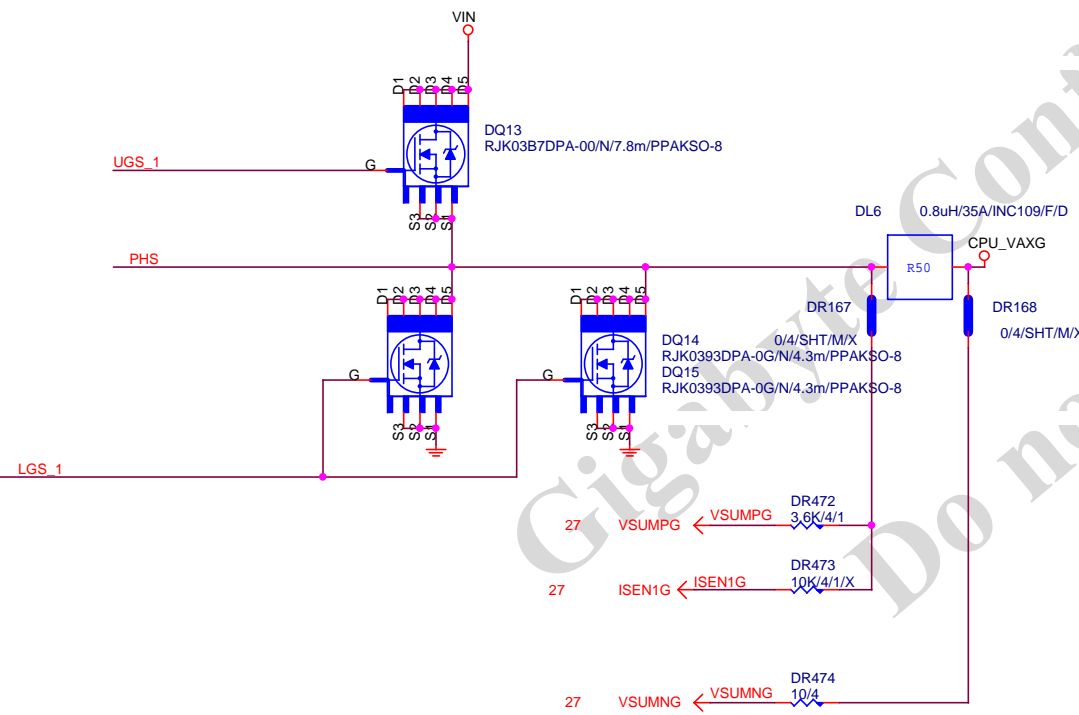
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VAXG

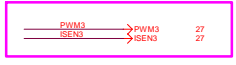
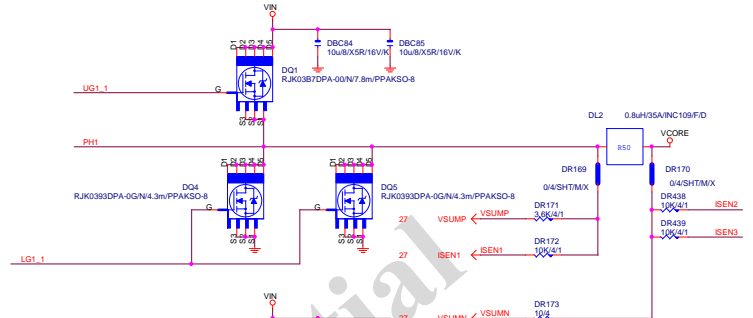
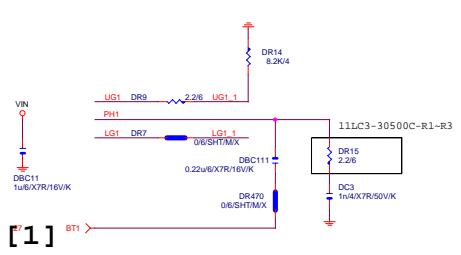


27 BTS

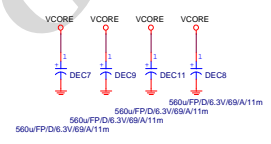
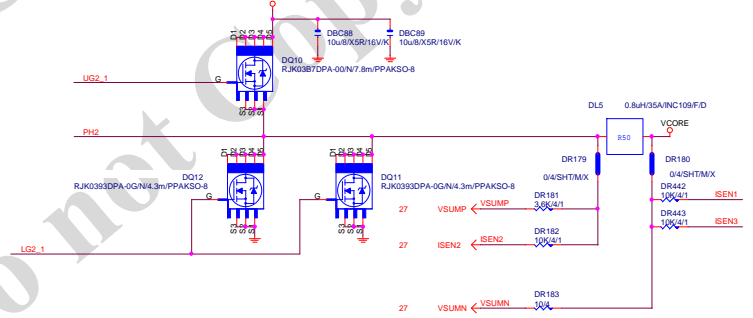
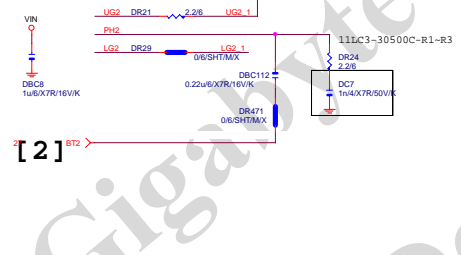
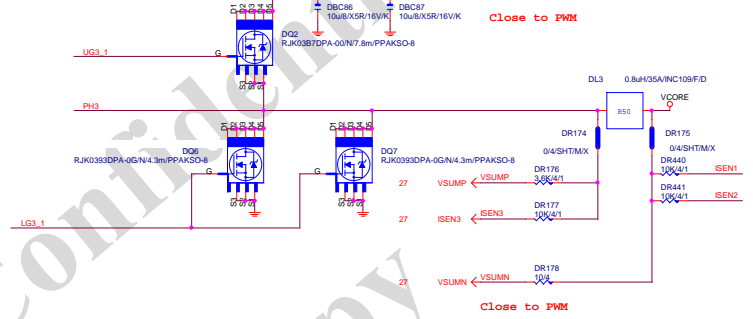
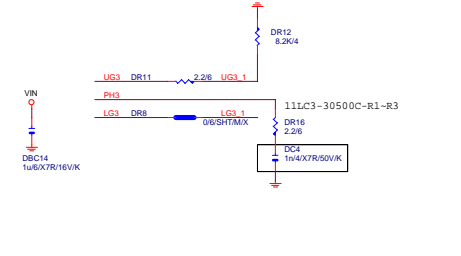
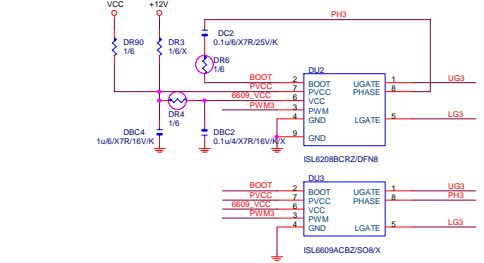


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CPU CORE VR-2		
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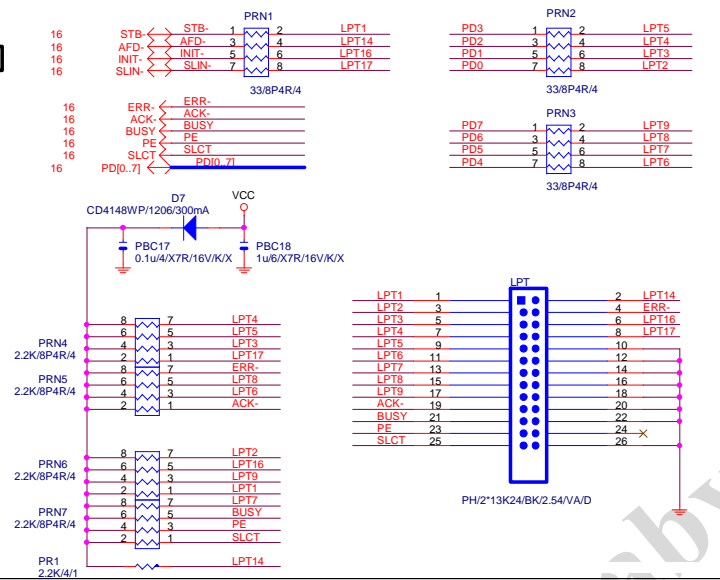


Pop: ISL6625CB For P91  
[1SL6625CBZ/991]



<b>Gigabyte Technology</b>			
<b>CPU CORE VR-3</b>			
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**LPT PORT**



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