

Model Name : GA-G31M-ES2C

Revision 2.3

SHEET

TITLE

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03	BOM & PCB MODIFY HISTORY
04	P4 LGA775 A
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06	P4 LGA775 C
07	P4 LGA775 E,F,G,H
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09	G31 DDRII
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14	PCI EXPRESS*16 SLOT
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16	DDRII CHANNEL B
17	DDRII TERMINATION
18	ICH7 PCI, USB, DMI, LAN
19	ICH7 IDE, GPIO, SATA, CTRL
20	ICH7 VCC, GND
21	CK505 CLOCK.
22	PCI SLOT 1,2,PCIE*1
23	IDE/FLOPPY
24	ITE 8718 GB/HX
25	COM LPT
26	CI, HWM, KB/MS, DUALBIOS
27	ALC888B

SHEET

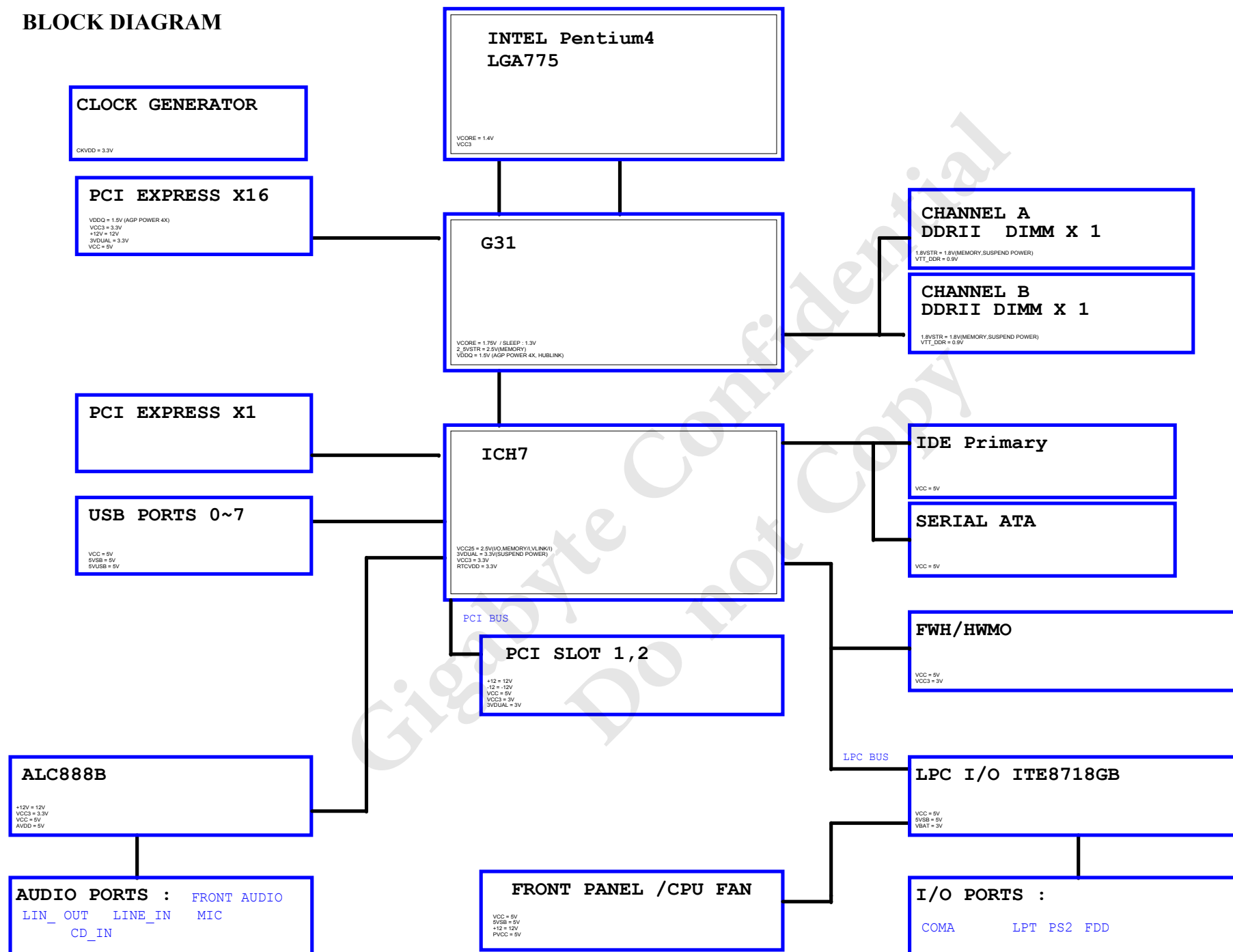
TITLE

28	REAR AUDIO JACK
29	DISCRETE POWER
30	VCORE PWM ISL6312CRZ
31	ATX, OTHERS POWER
32	FRONT PANEL
33	ATHEROS AR8131M/AR8132M

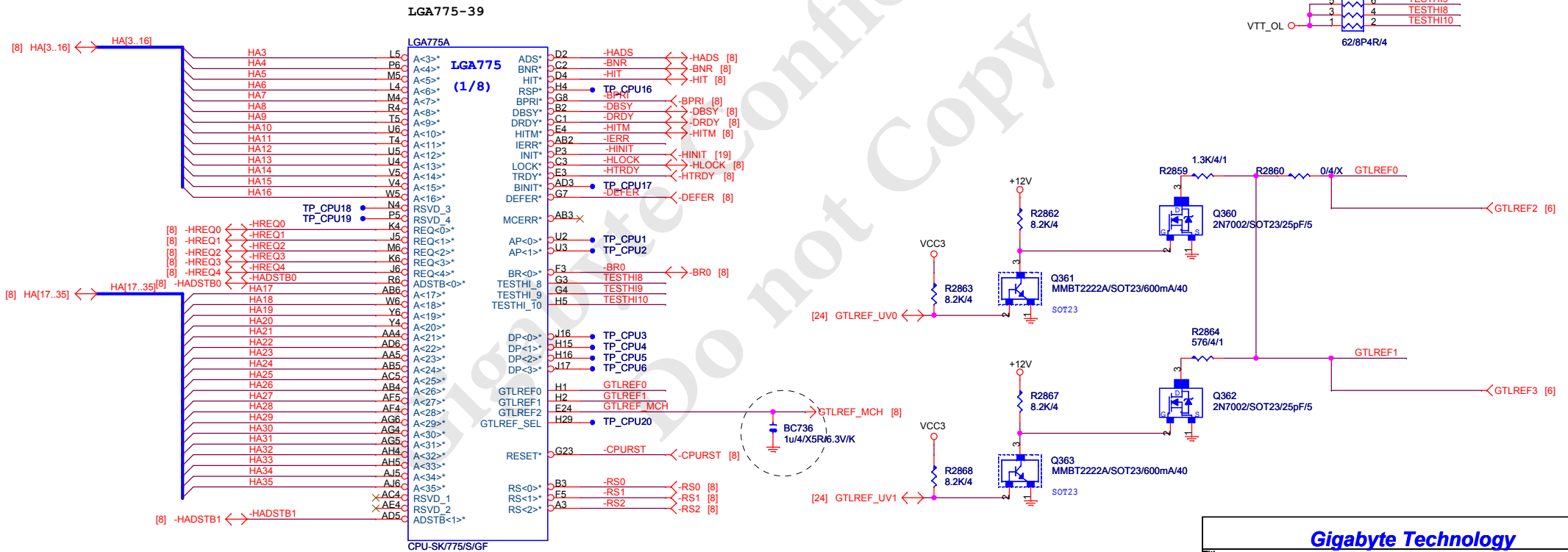
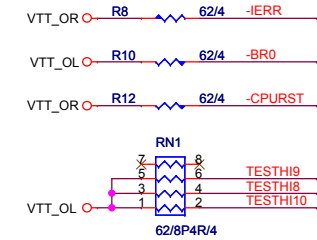
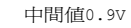
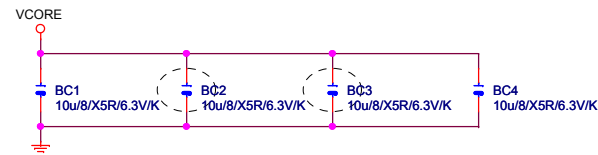
**Gigabyte Technology**

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## BLOCK DIAGRAM



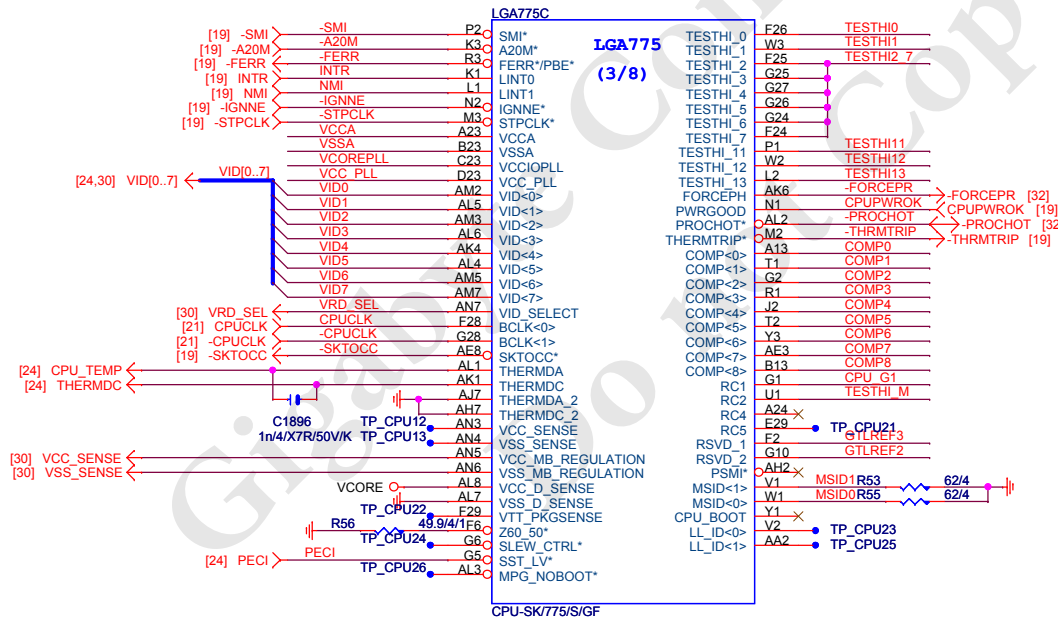
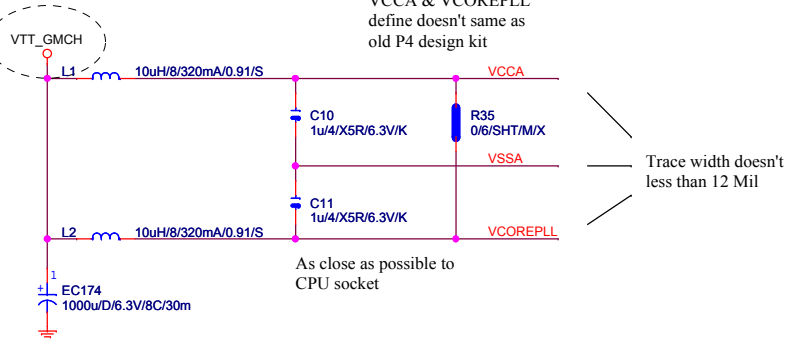
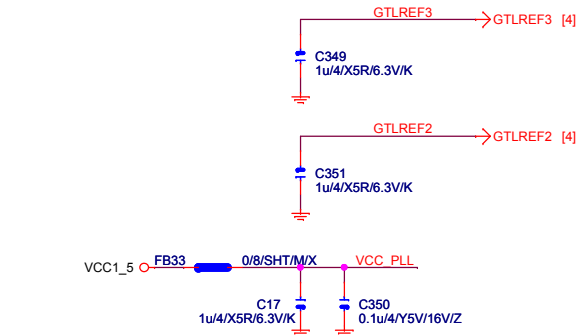
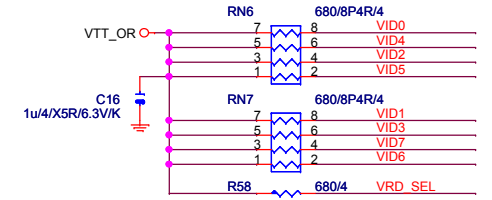
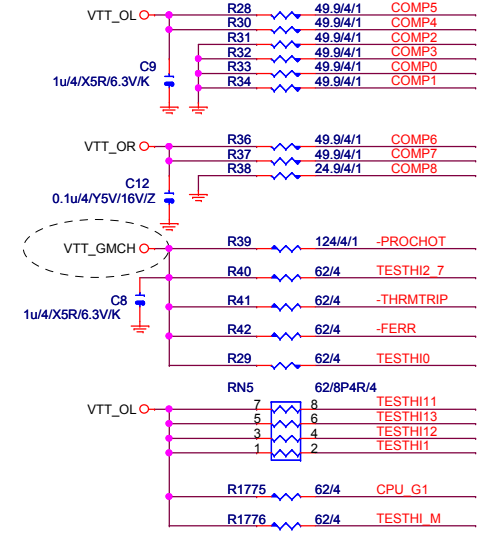






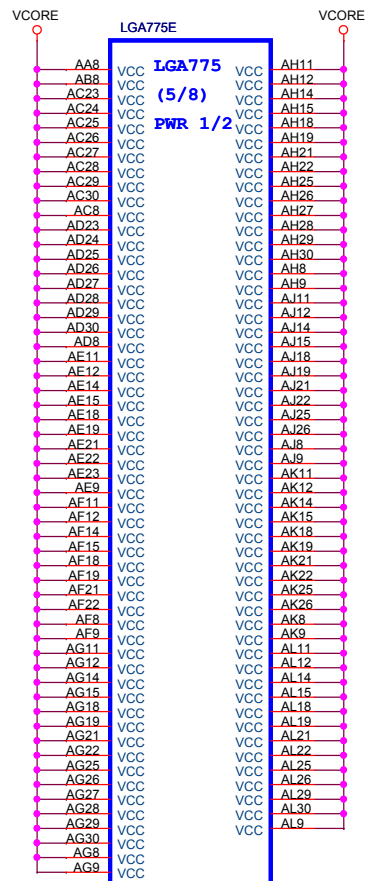
**Note:**

VCCA & VCOREPLL  
define doesn't same as  
old P4 design kit

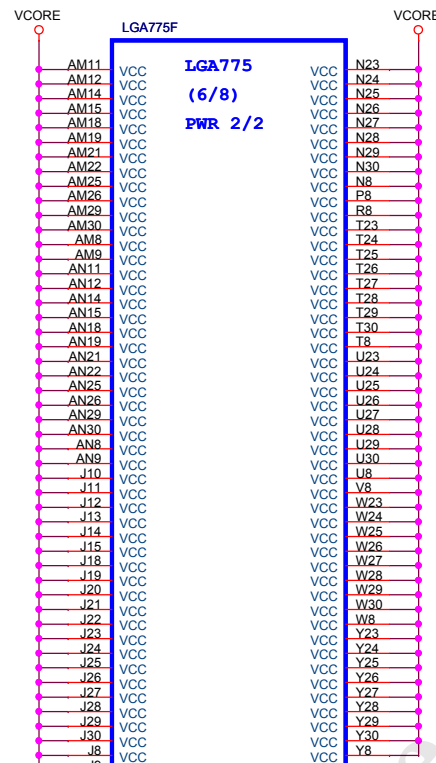
**Place outside of CPU socket****Gigabyte Technology**

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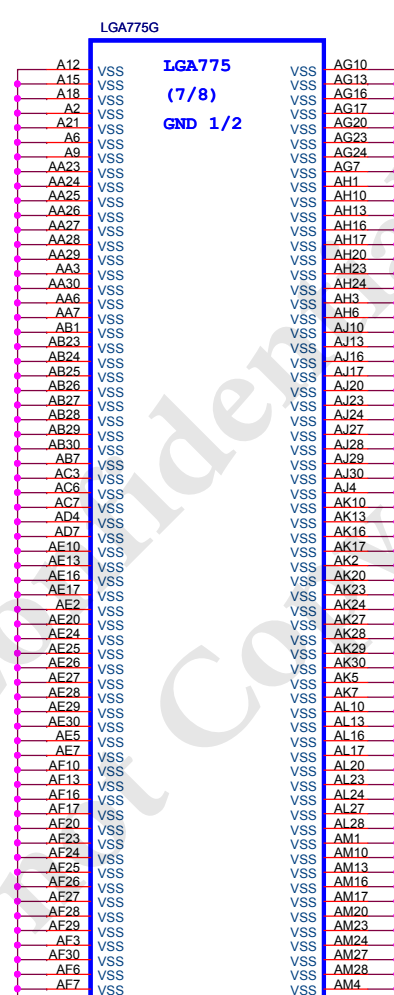
PECI:Platform Environment Control Interface



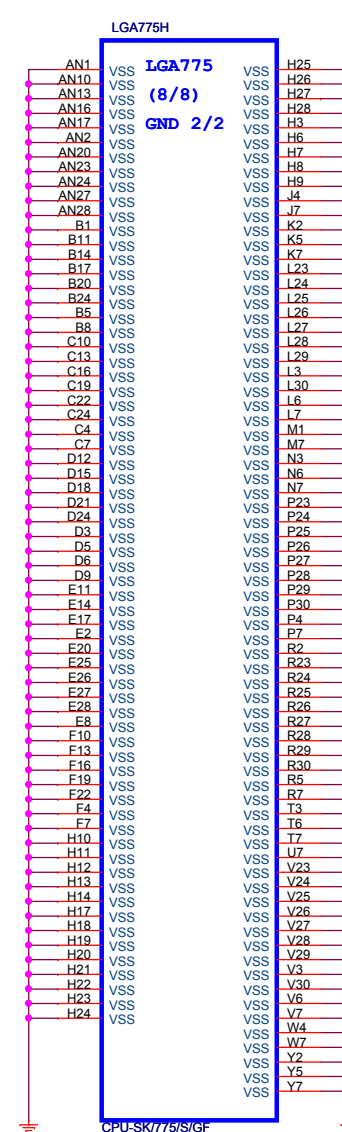
CPU-SK/775/S/GF



CPU-SK/775/S/GF



CPU-SK/775/S/GF



CPU-SK/775/S/GF

**Gigabyte Technology**

Title

**P4\_LGA775-E,F,G,H**

Size

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**GA-G31M-ES2C**

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U2G

BC37	VSS_1	BW	VSS_181	AF5
BC32	VSS_2	(7/9)	VSS_182	AF3
BC28	VSS_3		VSS_183	AF2
BC24	VSS_4		VSS_184	AF1
BC10	VSS_5		VSS_185	AD42
BC5	VSS_6	GND 1/2	VSS_186	AD39
BB7	VSS_7		VSS_187	AD37
AY41	VSS_8		VSS_188	AD35
AY4	VSS_9		VSS_189	AD33
AW43	VSS_10		VSS_190	AD25
AW41	VSS_11		VSS_191	AD23
AW1	VSS_12		VSS_192	AD21
AV37	VSS_13		VSS_193	AD19
AV35	VSS_14		VSS_194	AC38
AV27	VSS_15		VSS_195	AC35
AV23	VSS_16		VSS_196	AC24
AV21	VSS_17		VSS_197	AC22
AV17	VSS_18		VSS_198	AC20
AV11	VSS_19		VSS_199	AC10
AV9	VSS_20		VSS_200	AC7
AV7	VSS_21		VSS_201	AC5
AU42	VSS_22		VSS_202	AB43
AU38	VSS_23		VSS_203	AB25
AU32	VSS_24		VSS_204	AB23
AU24	VSS_25		VSS_205	AB21
AU20	VSS_26		VSS_206	AB19
AU6	VSS_27		VSS_207	AB2
AU2	VSS_28		VSS_208	AB1
AT31	VSS_29		VSS_209	AA38
AT29	VSS_30		VSS_210	AA35
AT15	VSS_31		VSS_211	AA24
AT13	VSS_32		VSS_212	AA22
AT12	VSS_33		VSS_213	AA20
AR38	VSS_34		VSS_214	AA8
AR33	VSS_35		VSS_215	AA5
AR32	VSS_36		VSS_216	Y42
AR27	VSS_37		VSS_217	Y37
AR26	VSS_38		VSS_218	Y35
AR23	VSS_39		VSS_219	Y33
AR21	VSS_40		VSS_220	Y25
AR20	VSS_41		VSS_221	Y23
AR17	VSS_42		VSS_222	Y21
AR9	VSS_43		VSS_223	Y19
AR6	VSS_44		VSS_224	Y10
AP43	VSS_45		VSS_225	Y7
AP24	VSS_46		VSS_226	Y5
AP18	VSS_47		VSS_227	Y1
AP1	VSS_48		VSS_228	W3
AN38	VSS_49		VSS_229	W43
AN31	VSS_50		VSS_230	V39
AN29	VSS_51		VSS_231	V37
AN24	VSS_52		VSS_232	V34
AN23	VSS_53		VSS_233	V32
AN20	VSS_54		VSS_234	V11
AN15	VSS_55		VSS_235	V8
AN13	VSS_56		VSS_236	V5
AN12	VSS_57		VSS_237	V2
AN11	VSS_58		VSS_238	U38
AN4	VSS_59		VSS_239	U35
AM42	VSS_60		VSS_240	U8
AM40	VSS_61		VSS_241	U7
AM36	VSS_62		VSS_242	U5
AM33	VSS_63		VSS_243	T42
AM29	VSS_64		VSS_244	T1
AM24	VSS_65		VSS_245	R36
AM23	VSS_66		VSS_246	R33
AM20	VSS_67		VSS_247	R31
AM11	VSS_68		VSS_248	R11
AM9	VSS_69		VSS_249	R8
AM7	VSS_70		VSS_250	R5
AM4	VSS_71		VSS_251	R3
AM2	VSS_72		VSS_252	P43
AM1	VSS_73		VSS_253	P30
AL36	VSS_74		VSS_254	P21
AL33	VSS_75		VSS_255	P18
AK43	VSS_76		VSS_256	P17
AJ39	VSS_77		VSS_257	P2
AJ38	VSS_78		VSS_258	N36
AJ33	VSS_79		VSS_259	N33
AH42	VSS_80		VSS_260	N31
AG37	VSS_81		VSS_261	N27
AG34	VSS_82		VSS_262	N21
AF43	VSS_83		VSS_263	N13
AF37	VSS_84		VSS_264	N10
AF36	VSS_85		VSS_265	N7
AF10	VSS_86		VSS_266	N5
AF9	VSS_87		VSS_267	M42
AF8	VSS_88		VSS_268	M37
AF7	VSS_89		VSS_269	M35
AF6	VSS_90		VSS_270	M33

LE82G31/B0/S[10HB1-038231-30R\_10HB1-038231-50R]

U2M

M27	VSS_91	BW	VSS_271	BC41
M21	VSS_92	(9/9)	VSS_272	BC3
M17	VSS_93		VSS_273	BA1
M15	VSS_94		VSS_274	AY40
M10	VSS_95	GND 2/2	VSS_275	AF23
M7	VSS_96		VSS_276	AF21
M1	VSS_97		VSS_277	AF19
L33	VSS_98		VSS_278	AF24
L32	VSS_99		VSS_279	AE22
L31	VSS_100		VSS_280	AE20
L29	VSS_101		VSS_281	AE18
L21	VSS_102		VSS_282	AC18
L20	VSS_103		VSS_283	AA18
L11	VSS_104		VSS_284	W24
L7	VSS_105		VSS_285	W22
L5	VSS_106		VSS_286	W20
L3	VSS_107		VSS_287	R21
K43	VSS_108		VSS_288	E1
K26	VSS_109		VSS_289	C43
K21	VSS_110		VSS_290	C1
K18	VSS_111		VSS_291	A41
K13	VSS_112		VSS_292	A5
K12	VSS_113		VSS_293	A3
K2	VSS_114			
J38	VSS_115			
J35	VSS_116			
J32	VSS_117			
J27	VSS_118			
J21	VSS_119			
J9	VSS_120			
J7	VSS_121			
J5	VSS_122			
H31	VSS_123			
H29	VSS_124			
H21	VSS_125			
H20	VSS_126			
H17	VSS_127			
H15	VSS_128			
H13	VSS_129			
G42	VSS_130			
G38	VSS_131			
G32	VSS_132			
G21	VSS_133			
G13	VSS_134			
G12	VSS_135			
G11	VSS_136			
G9	VSS_137			
G7	VSS_138			
G1	VSS_139			
F37	VSS_140			
F35	VSS_141			
F27	VSS_142			
F21	VSS_143			
F18	VSS_144			
F3	VSS_145			
F43	VSS_146			
E32	VSS_147			
E24	VSS_148			
E21	VSS_149			
E20	VSS_150			
E15	VSS_151			
E13	VSS_152			
E11	VSS_153			
E9	VSS_154			
E3	VSS_155			
D40	VSS_156			
D31	VSS_157			
D21	VSS_158			
D17	VSS_159			
D3	VSS_160			
C26	VSS_161			
C11	VSS_162			
C6	VSS_163			
C5	VSS_164			
C4	VSS_165			
B37	VSS_166			
B32	VSS_167			
B31	VSS_168			
B26	VSS_169			
B23	VSS_170			
B22	VSS_171			
B19	VSS_172			
B14	VSS_173			
B10	VSS_174			
A39	VSS_175			
A34	VSS_176			
A26	VSS_177			
A18	VSS_178			
A12	VSS_179			
A7	VSS_180			

LE82G31/B0/S[10HB1-038231-30R\_10HB1-038231-50R]

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Title

GMCH-GND

Size  
Custom

Document Number

GA-G31M-ES2C

Rev  
2.3

Date:

Thursday, May 13, 2010

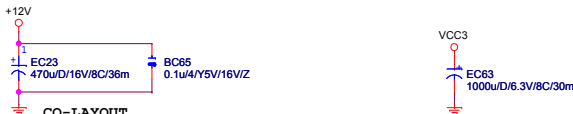
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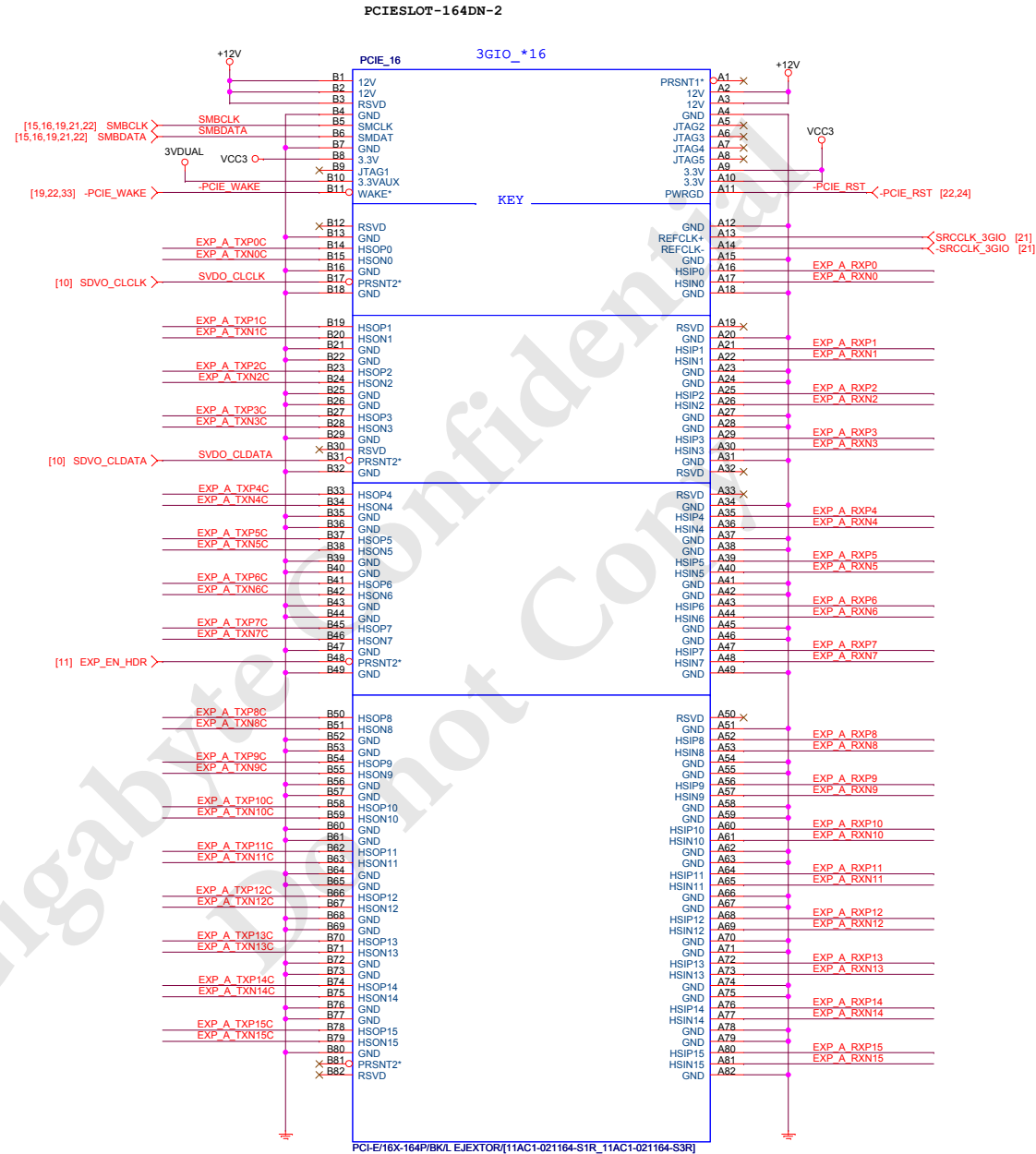
33





EXP\_A\_TXP[0..15] >>> EXP\_A\_TXP[0..15] [10]      EXP\_A\_RXP[0..15] >>> EXP\_A\_RXP[0..15] [10]  
 EXP\_A\_TXN[0..15] >>> EXP\_A\_TXN[0..15] [10]      EXP\_A\_RXN[0..15] >>> EXP\_A\_RXN[0..15] [10]

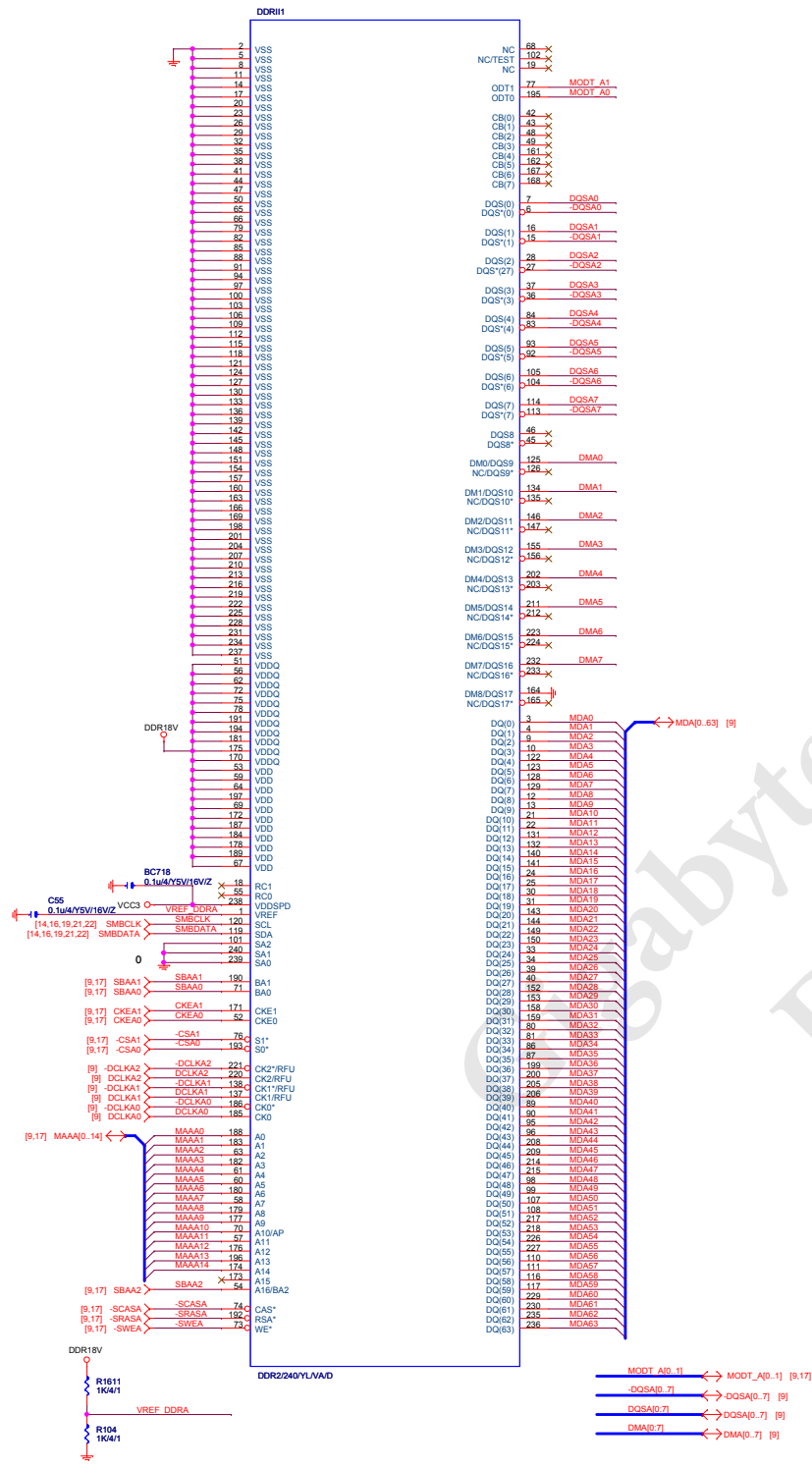
EXP_A_TXP0	C92	0.1uF/4X7R/16V/K	EXP_A_TXP0C
EXP_A_TXN0	C93	0.1uF/4X7R/16V/K	EXP_A_TXN0C
EXP_A_TXP1	C94	0.1uF/4X7R/16V/K	EXP_A_TXP1C
EXP_A_TXN1	C95	0.1uF/4X7R/16V/K	EXP_A_TXN1C
EXP_A_TXP2	C96	0.1uF/4X7R/16V/K	EXP_A_TXP2C
EXP_A_TXN2	C97	0.1uF/4X7R/16V/K	EXP_A_TXN2C
EXP_A_TXP3	C98	0.1uF/4X7R/16V/K	EXP_A_TXP3C
EXP_A_TXN3	C99	0.1uF/4X7R/16V/K	EXP_A_TXN3C
EXP_A_TXP4	C100	0.1uF/4X7R/16V/K	EXP_A_TXP4C
EXP_A_TXN4	C101	0.1uF/4X7R/16V/K	EXP_A_TXN4C
EXP_A_TXP5	C102	0.1uF/4X7R/16V/K	EXP_A_TXP5C
EXP_A_TXN5	C103	0.1uF/4X7R/16V/K	EXP_A_TXN5C
EXP_A_TXP6	C104	0.1uF/4X7R/16V/K	EXP_A_TXP6C
EXP_A_TXN6	C105	0.1uF/4X7R/16V/K	EXP_A_TXN6C
EXP_A_TXP7	C106	0.1uF/4X7R/16V/K	EXP_A_TXP7C
EXP_A_TXN7	C107	0.1uF/4X7R/16V/K	EXP_A_TXN7C
EXP_A_TXP8	C108	0.1uF/4X7R/16V/K	EXP_A_TXP8C
EXP_A_TXN8	C109	0.1uF/4X7R/16V/K	EXP_A_TXN8C
EXP_A_TXP9	C110	0.1uF/4X7R/16V/K	EXP_A_TXP9C
EXP_A_TXN9	C111	0.1uF/4X7R/16V/K	EXP_A_TXN9C
EXP_A_TXP10	C112	0.1uF/4X7R/16V/K	EXP_A_TXP10C
EXP_A_TXN10	C113	0.1uF/4X7R/16V/K	EXP_A_TXN10C
EXP_A_TXP11	C114	0.1uF/4X7R/16V/K	EXP_A_TXP11C
EXP_A_TXN11	C115	0.1uF/4X7R/16V/K	EXP_A_TXN11C
EXP_A_TXP12	C116	0.1uF/4X7R/16V/K	EXP_A_TXP12C
EXP_A_TXN12	C117	0.1uF/4X7R/16V/K	EXP_A_TXN12C
EXP_A_TXP13	C118	0.1uF/4X7R/16V/K	EXP_A_TXP13C
EXP_A_TXN13	C119	0.1uF/4X7R/16V/K	EXP_A_TXN13C
EXP_A_TXP14	C120	0.1uF/4X7R/16V/K	EXP_A_TXP14C
EXP_A_TXN14	C121	0.1uF/4X7R/16V/K	EXP_A_TXN14C
EXP_A_TXP15	C122	0.1uF/4X7R/16V/K	EXP_A_TXP15C
EXP_A_TXN15	C123	0.1uF/4X7R/16V/K	EXP_A_TXN15C



Gigabyte Technology

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PCI EXPRESS * 16			
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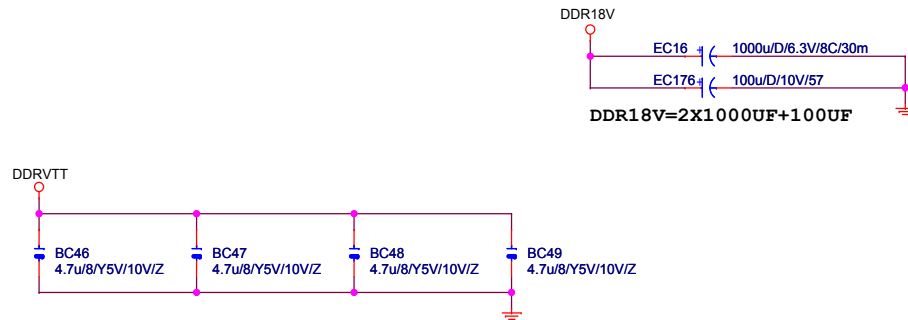




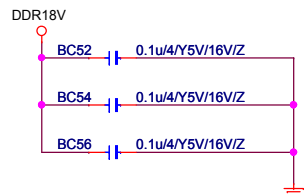


# DDR TERMINATION CHANNEL A

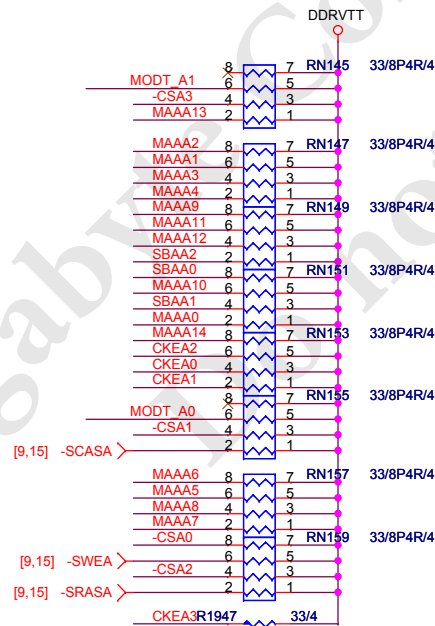
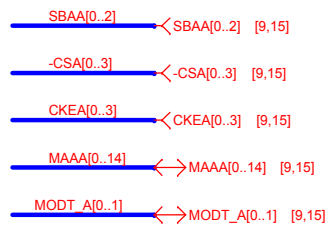
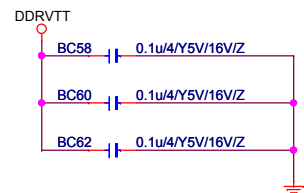
## DDRVTT Decouple



## DDR18V Decouple

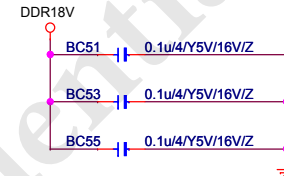


## DDRVTT Decouple

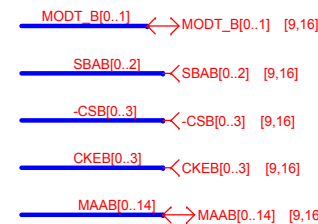
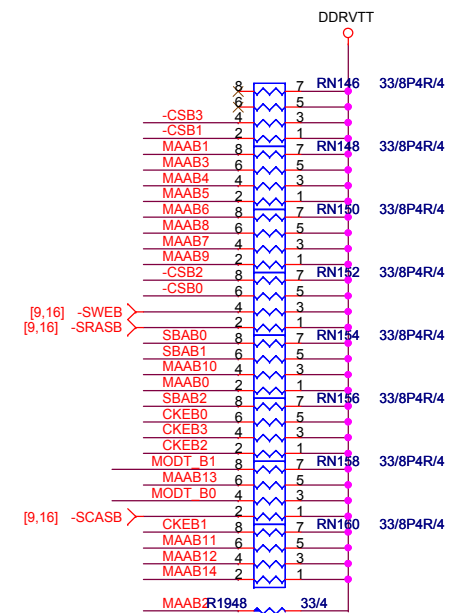
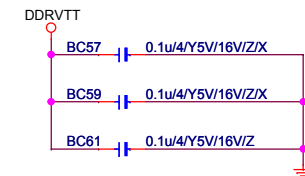


# DDR TERMINATION CHANNEL B

## DDR18V Decouple

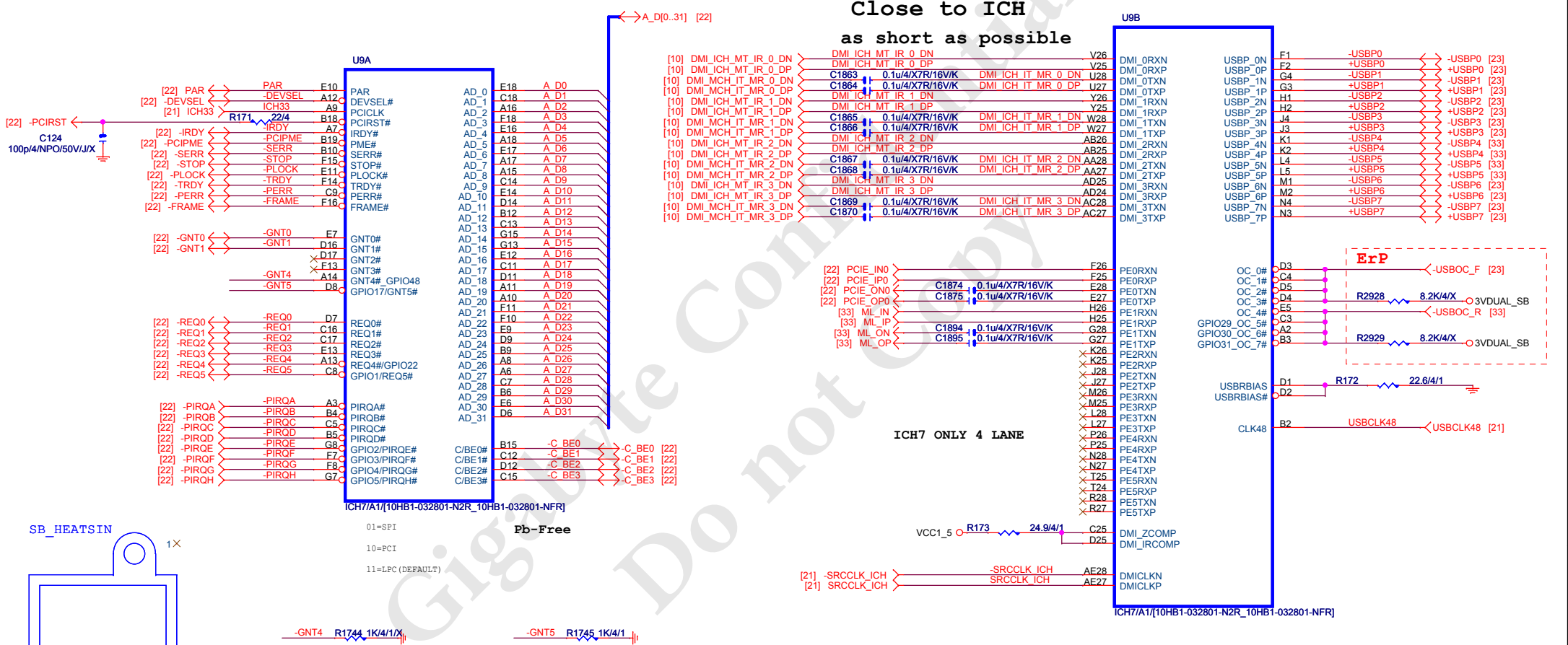


## DDRVTT Decouple

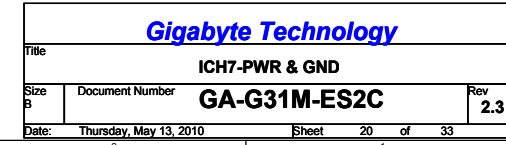


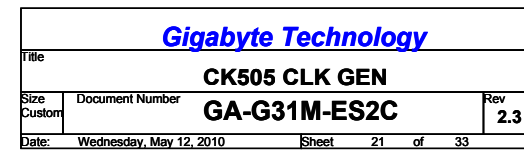
**Gigabyte Technology**

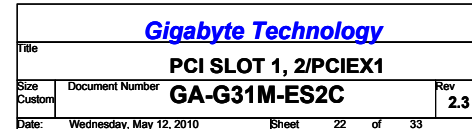
Title			
DDRII TERMINATOR			
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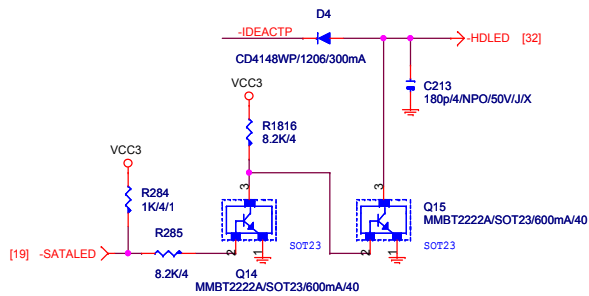




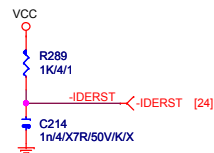




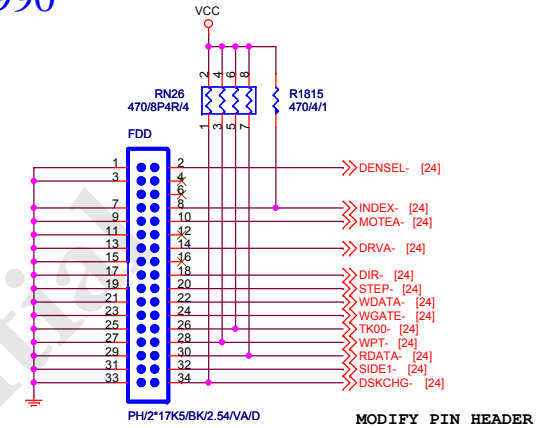
## IDE/SATA LED



## IDE RESET

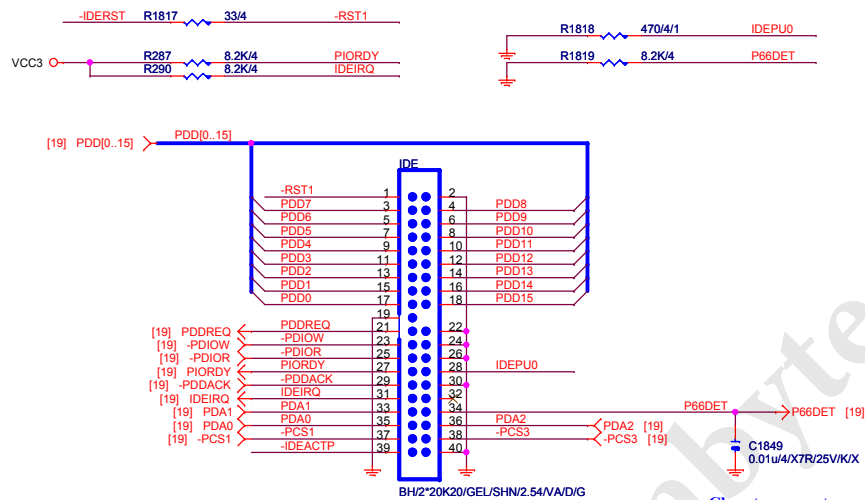


## FLOPPY



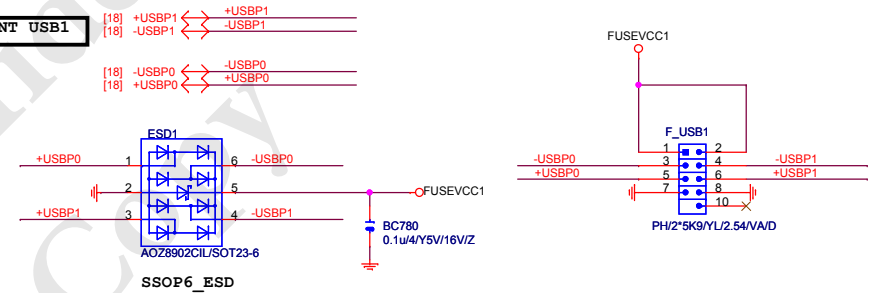
MODIFY PIN HEADER

## IDE

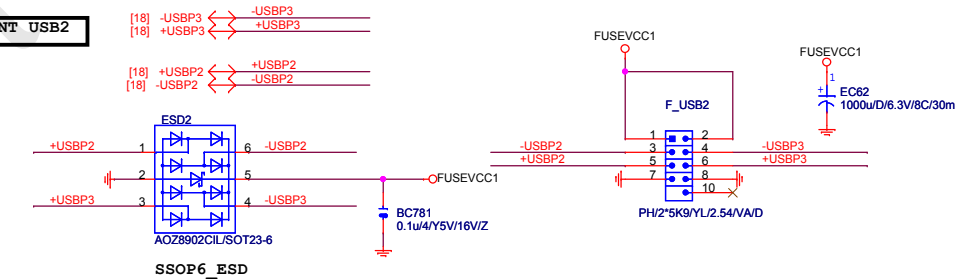


Close to connector

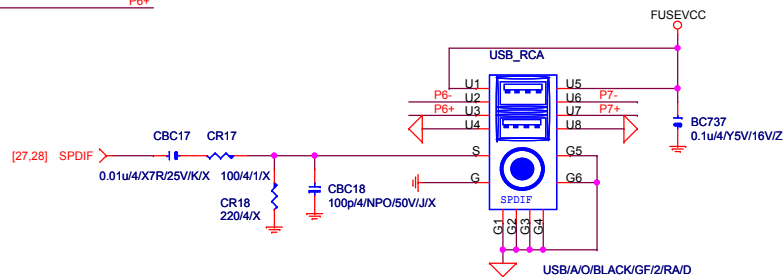
## FRONT USB1



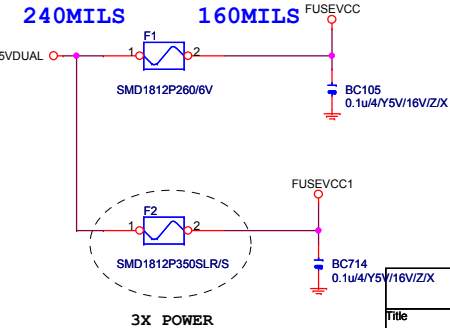
## FRONT USB2



[18] -USBP7 <-> +USBP7 P7-  
 [18] +USBP7 <-> -USBP7 P7+  
 [18] -USBP6 <-> +USBP6 P6-  
 [18] +USBP6 <-> -USBP6 P6+



POP USBX2



3X POWER

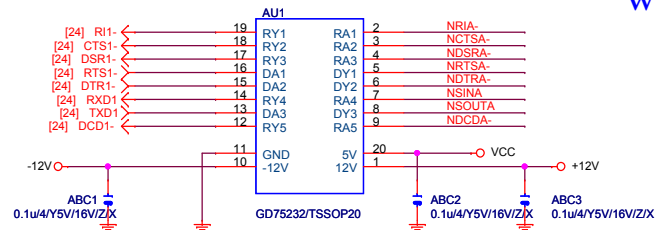
Gigabyte Technology

Title			IDE,FDD,F USB,USB RCA
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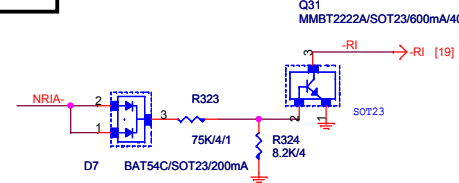




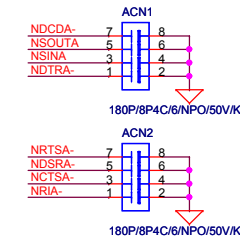
## COMA



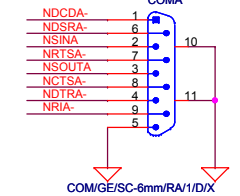
## RING IN



## EXTERNAL COMA

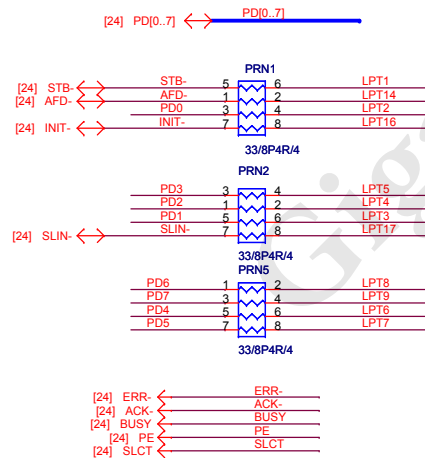


## VGA, COMA, LPT 3 IN 1

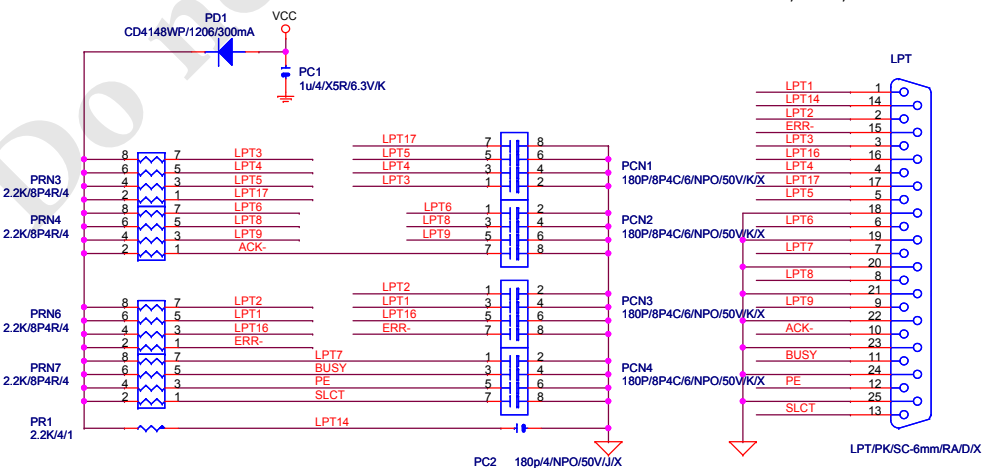


PLACE NEAR COM CONNECTOR

## LPT PORT



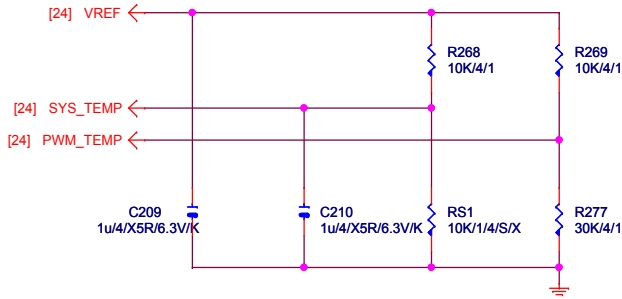
## VGA, COMA, LPT 3 IN 1



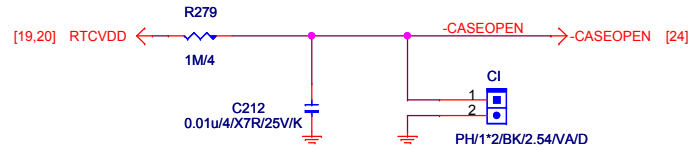
Gigabyte Technology

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COM & LPT PORT		
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TEMP H/W MONITOR

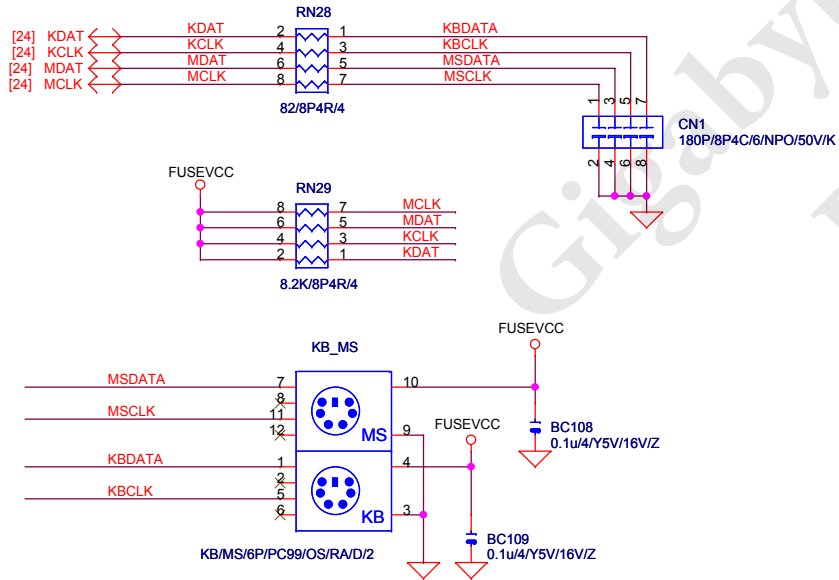


## CASE OPEN

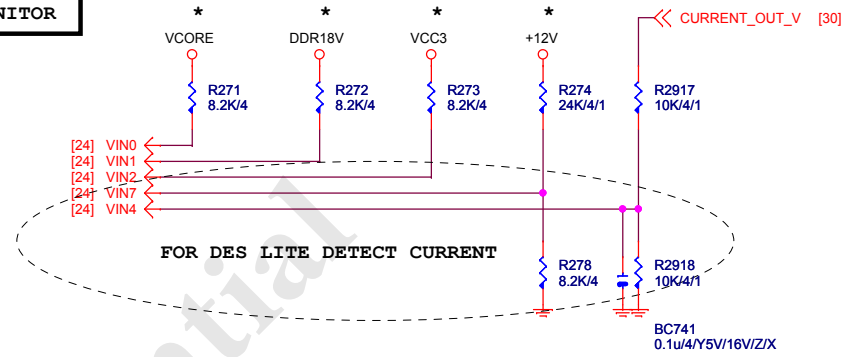


## Case Open Circuits

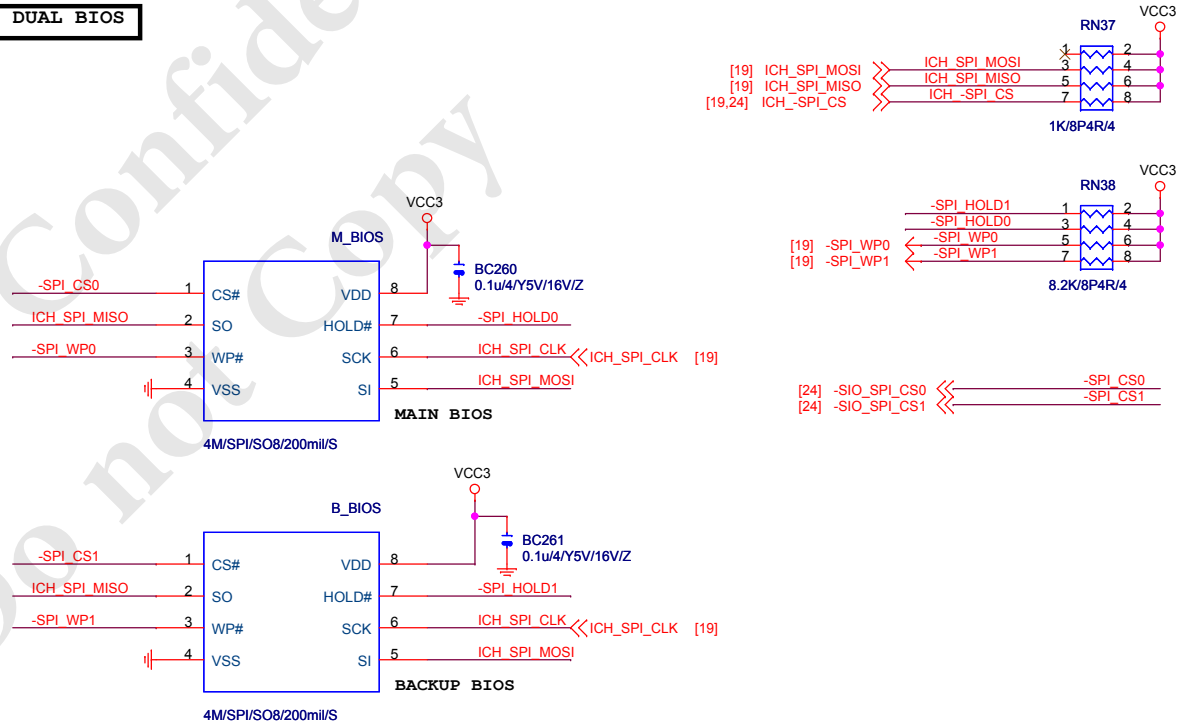
## KB/MS



VOLTAGE-- H/W MONITOR



## DUAL BIOS

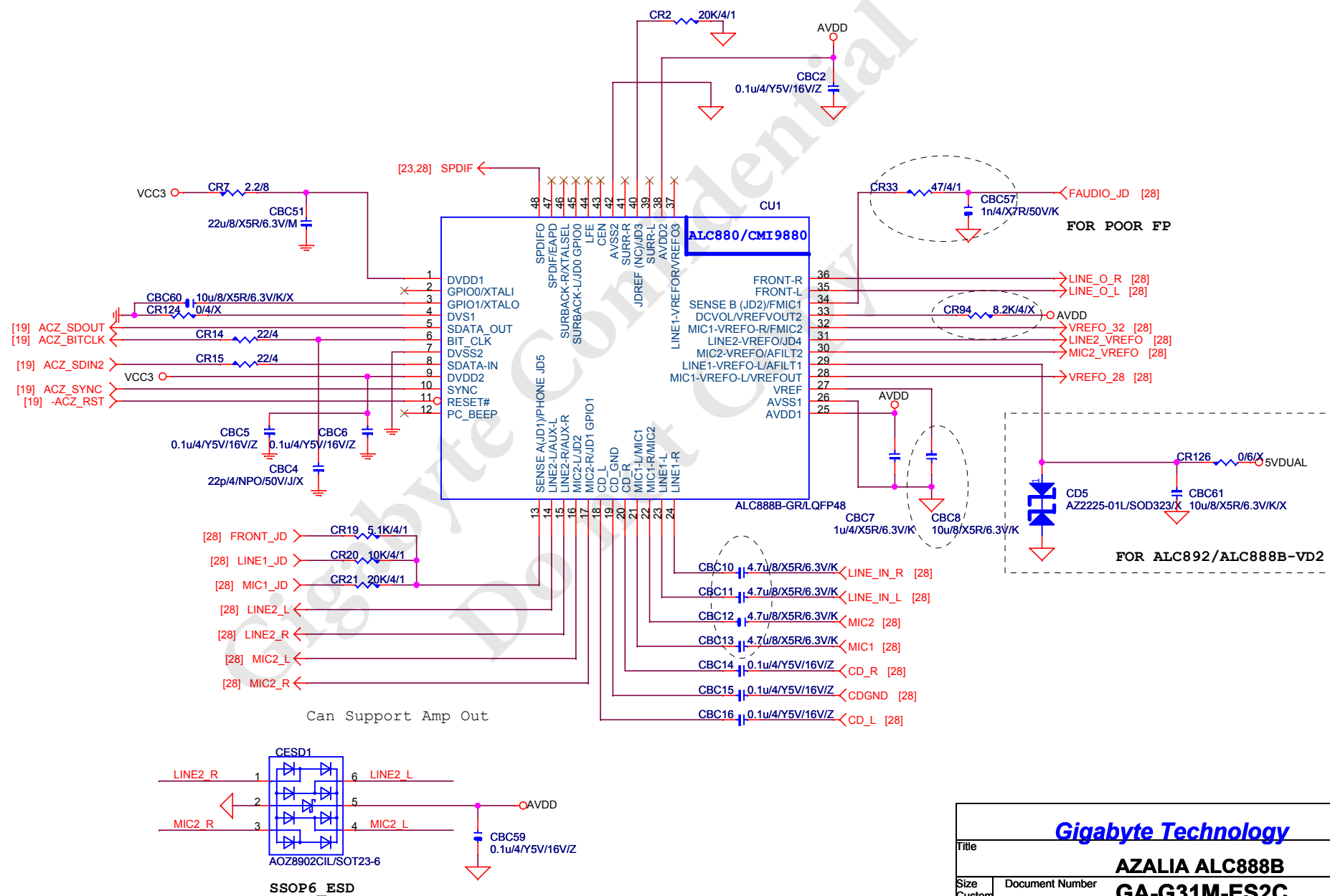


## Gigabyte Technology

## HW-MONITOR/CI/KB/MS/BIOS

Size Custom	Document Number <b>GA-G31M-ES2C</b>	Rev <b>2.3</b>
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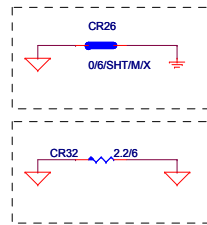
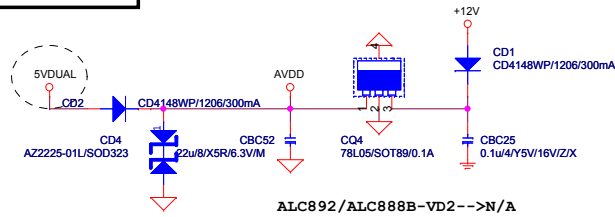
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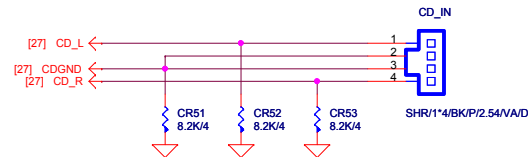
## Gigabyte Technology

Title			
AZALIA ALC888B			
Size	Document Number	Rev	
Customr	GA-G31M-ES2C	2.3	
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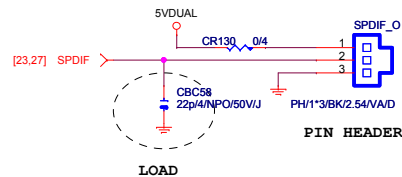
## CODEC POWER/EMI PAD



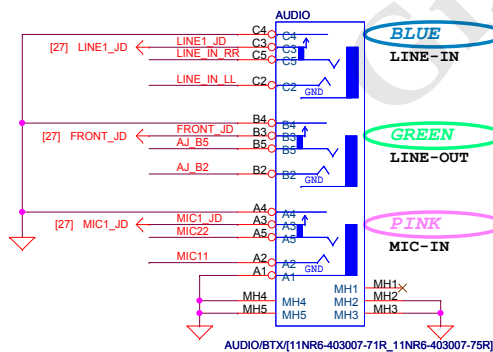
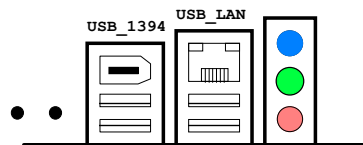
## CD IN



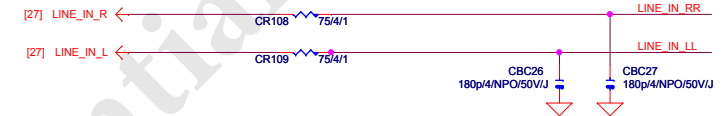
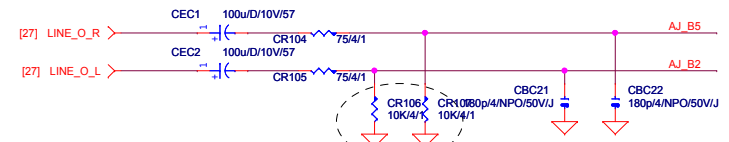
## SPDIF IN



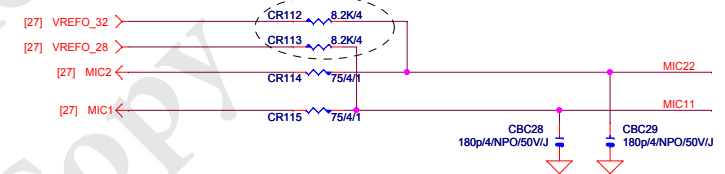
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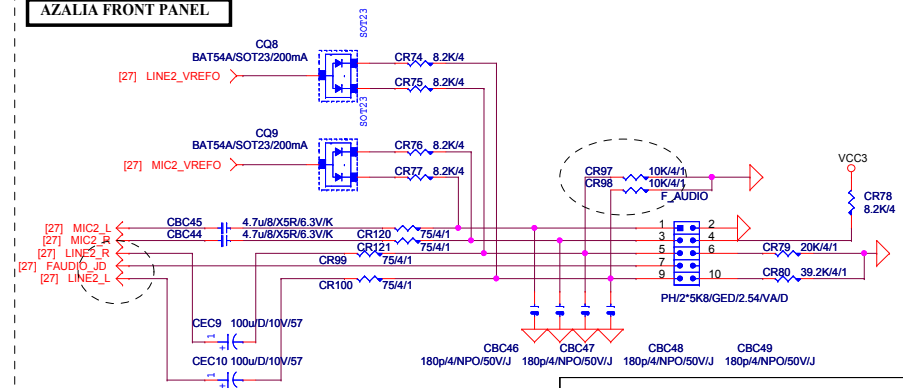
## LINE-IN



## MIC-IN



## AZALIA FRONT PANEL



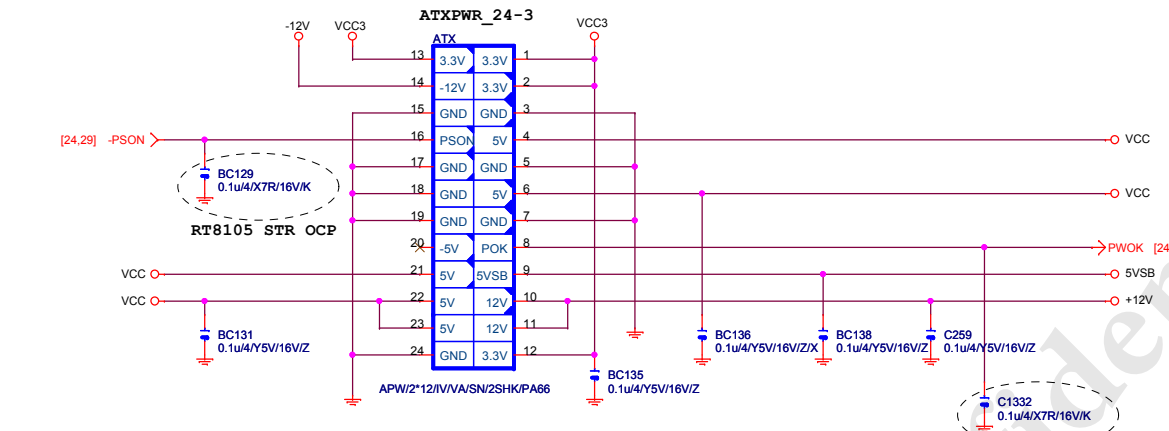
Gigabyte Technology

Title		
AUDIO JACK		
Size	Document Number	Rev
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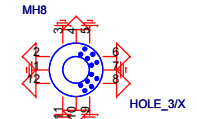
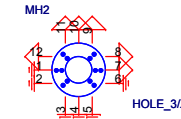
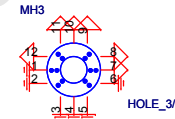
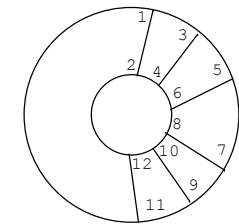
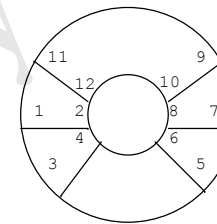
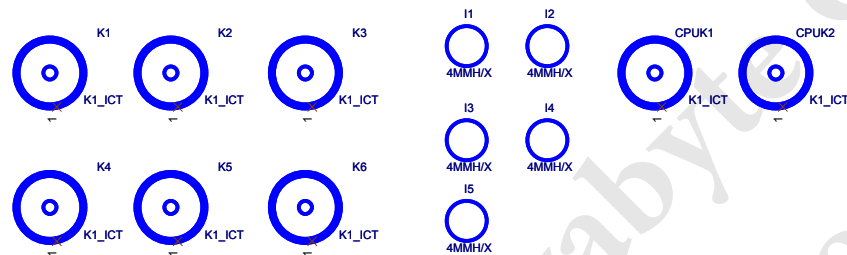
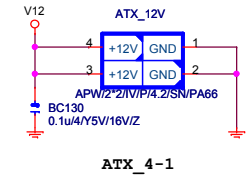
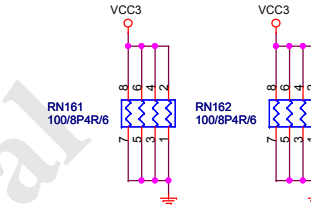




## ATX POWER CONNECTOR

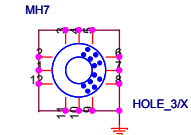
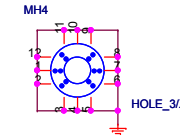
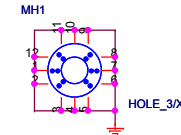
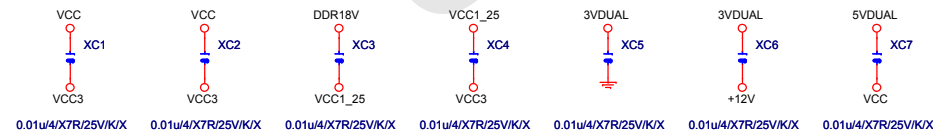


## FIX PWR AcBel (ATX-400C-A2ADB)



HOLE\_4-RH-1

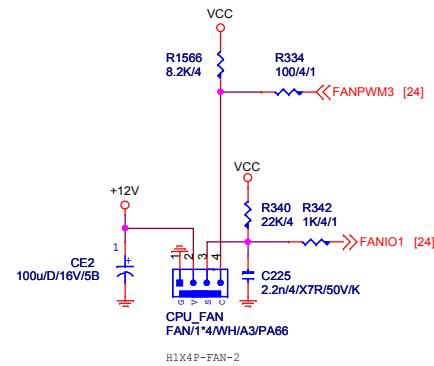
HOLE\_4-RH-5MM-1



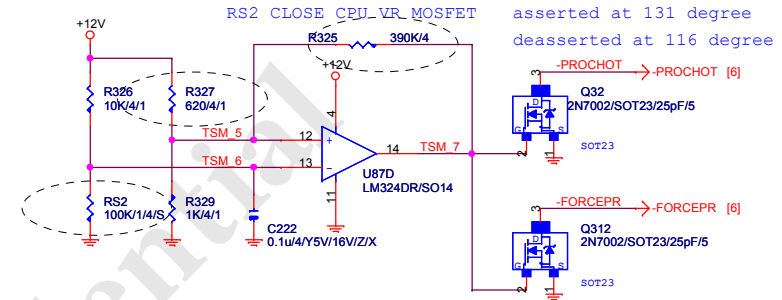
Gigabyte Technology

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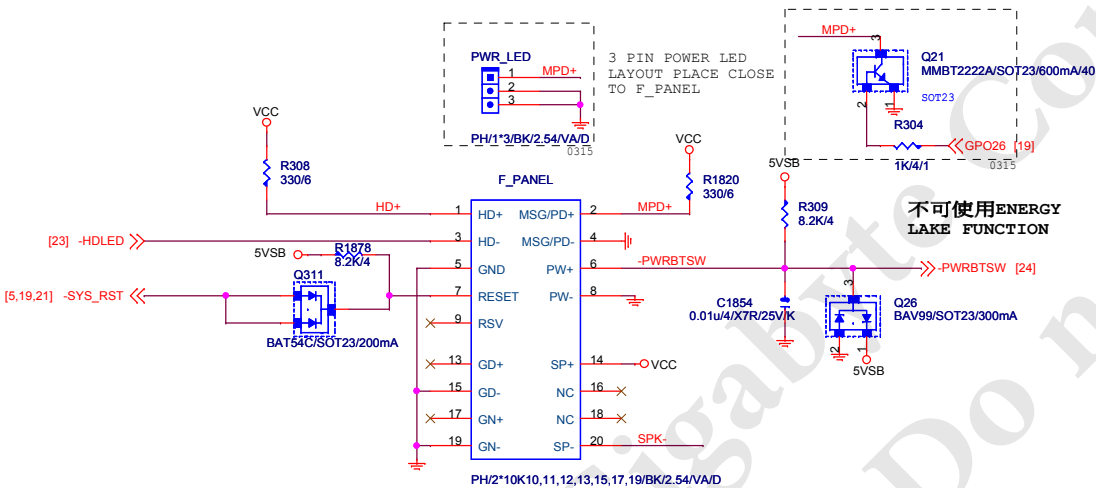
## CPU SMART FAN SMART FAN



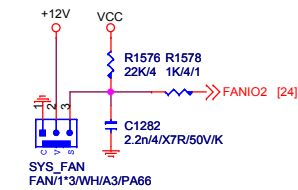
## PROCESSOR HOT



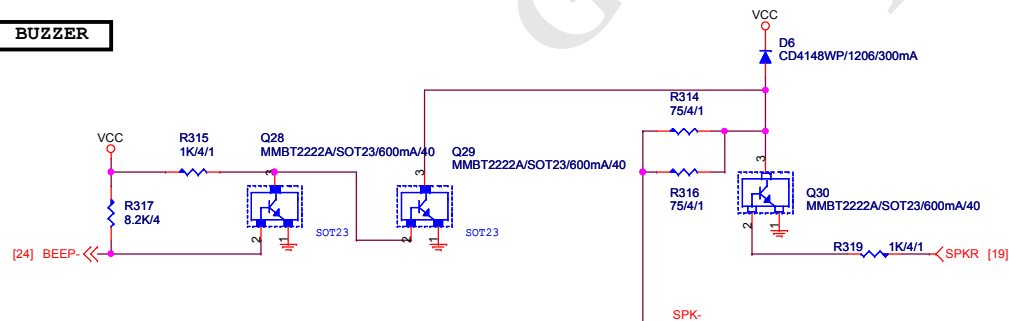
## INTEL FRONT PANEL



## SYS\_FAN



## BUZZER



Gigabyte Technology

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