

## Model Name:GA-G31M-ES2L

Revision 2.02

SHEET

TITLE

01	COVER SHEET
02	BLOCK DIAGRAM
03	BOM & PCB MODIFY HISTORY
04	P4_LGA775_A
05	P4_LGA775_B,D
06	P4_LGA775_C
07	P4_LGA775_E,F,G,H
08	G31_HOST
09	G31_DDRII
10	G31_PCI E, DMI
11	G31_VGA
12	G31_GND
13	G31_PWR
14	PCI EXPRESS*16 SLOT
15	DDRII CHANNEL A
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	ALC883

SHEET

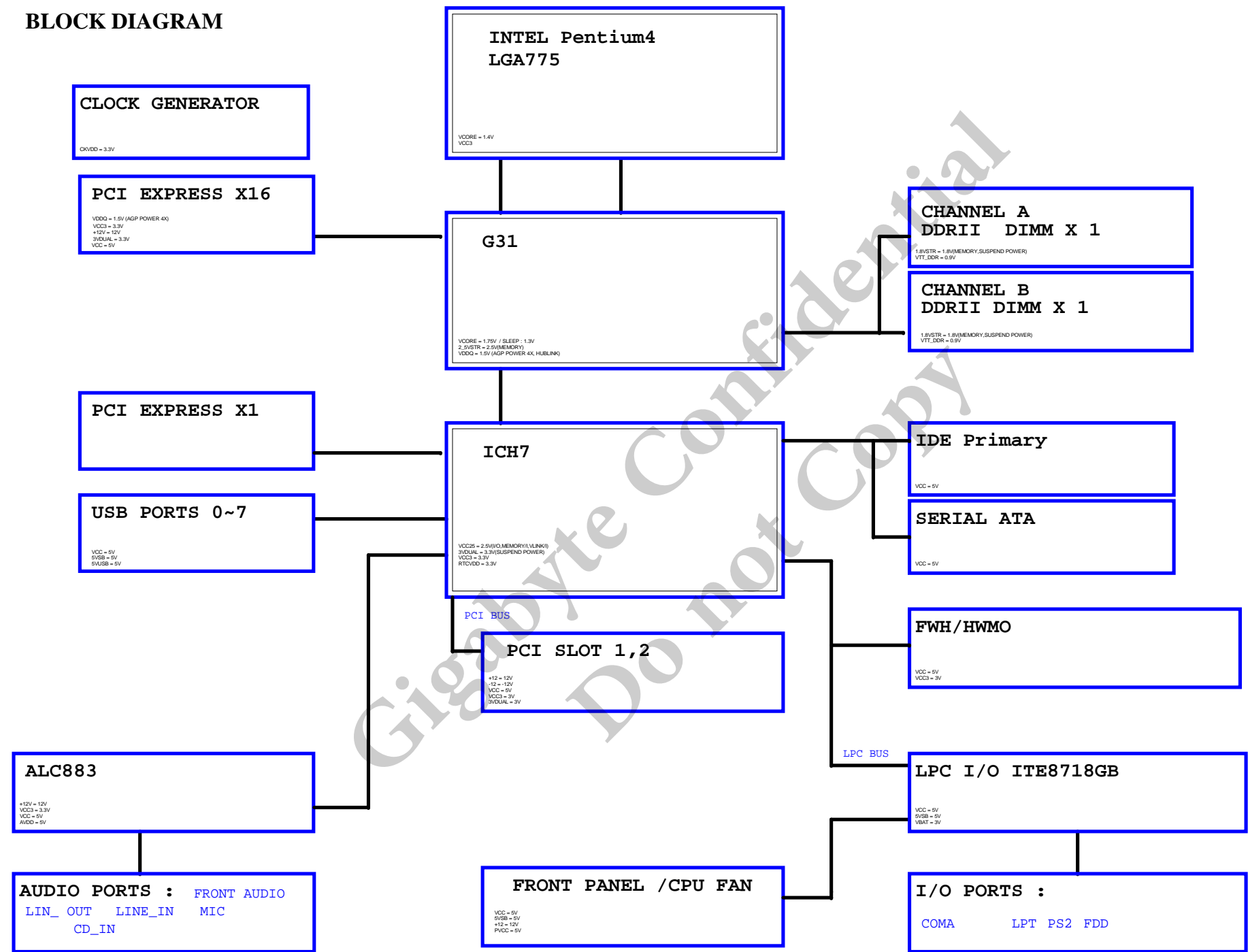
TITLE

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

**Gigabyte Technology**

Title			
Cover Sheet			
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BLOCK DIAGRAM



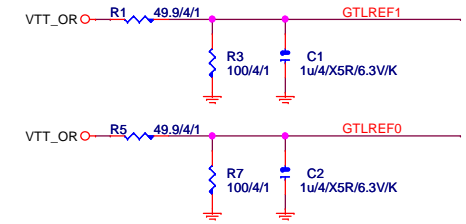
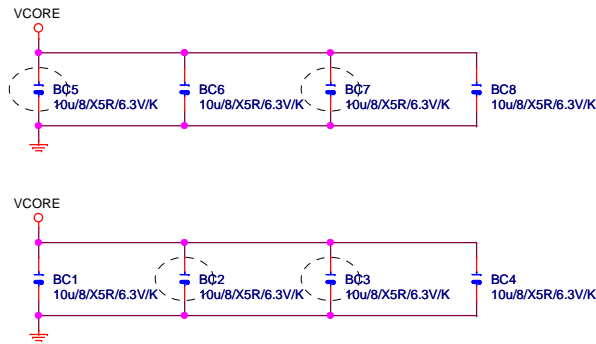
**Version: 2.02**

## 2009/05/08

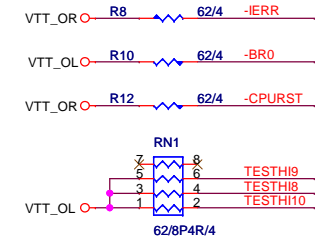
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DATE	Change Item	Reason
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[illegible]



中間値0.9V



LGA775-39

LGA775A

LGA775  
(1/8)

TP\_CPU18

TP\_CPU19

HA[3..16]

HA[17..35]

HA[3..16]

HA[17..35]

HA[3..16]

HA[17..35]

HA[3..16]

HA[17..35]

HA[3..16]

HA[17..35]

HA[3..16]

HA[17..35]

HA[3..16]

HA[17..35]

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HA[17..35]

HA[3..16]

HA[17..35]

HA[3..16]

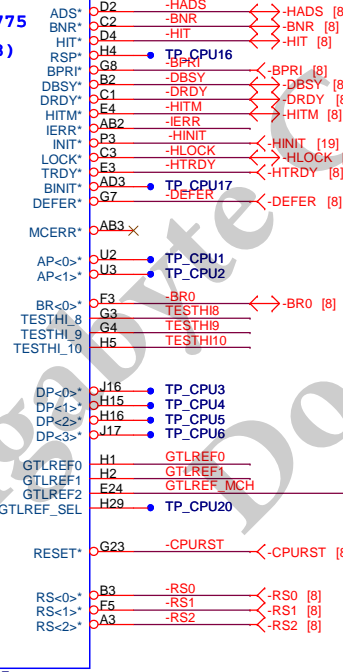
HA[17..35]

HA[3..16]

HA[17..35]

HA[3..16]

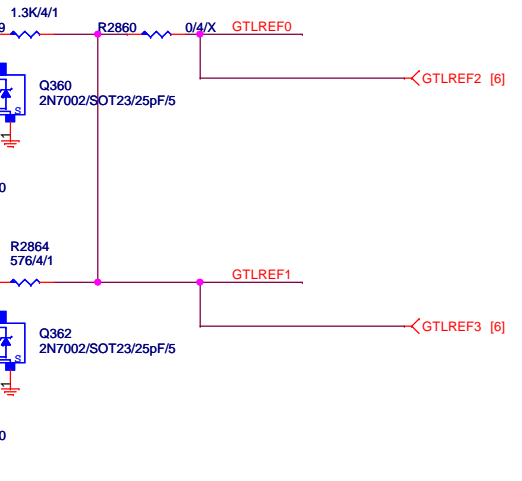
HA[17..35]



CPU-SK775/S/GF

[24] GTLREF\_UV0

[24] GTLREF\_UV1

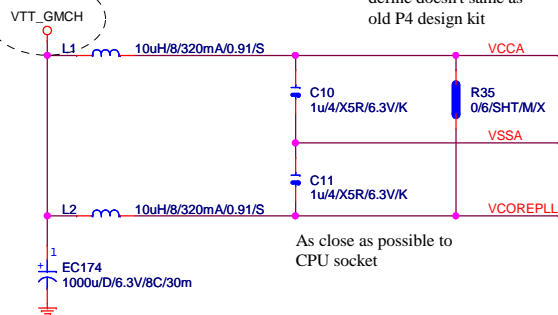


Gigabyte Technology

Title				
P4_LGA775-A				
Size B	Document Number			Rev
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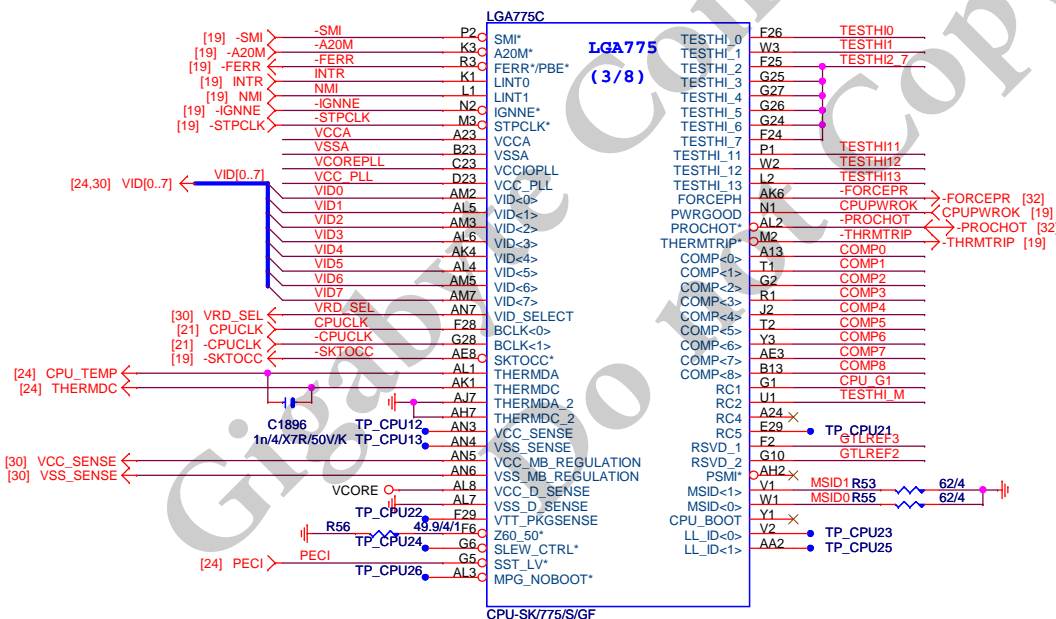


Note:  
VCCA & VCOREPLL  
define doesn't same as  
old P4 design kit

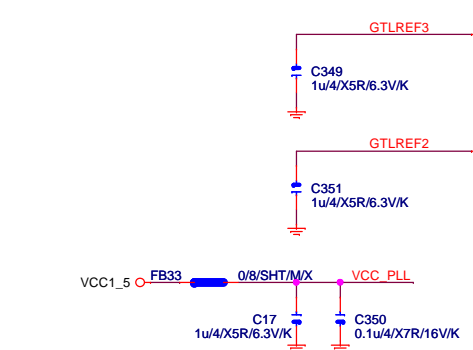
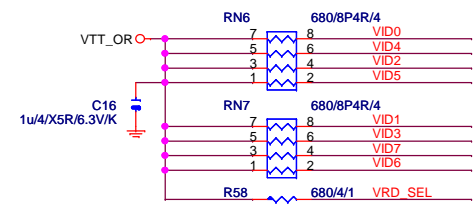
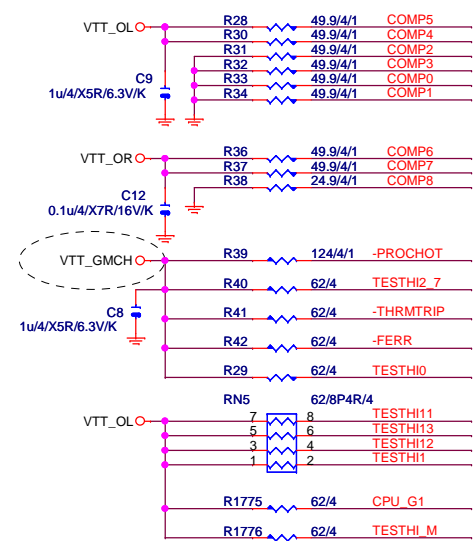


Trace width doesn't  
less than 12 Mil

As close as possible to  
CPU socket



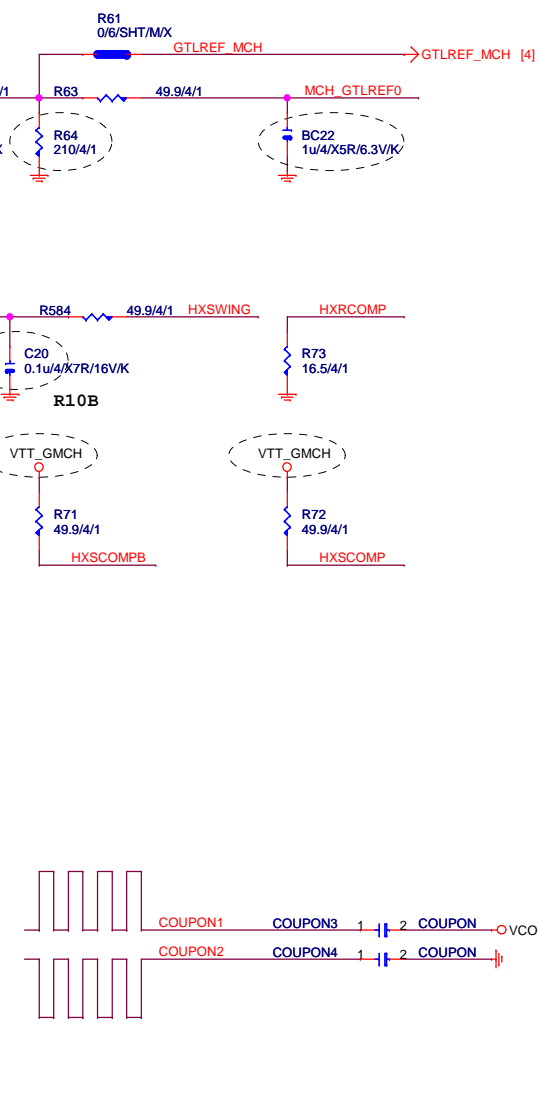
Place outside of CPU socket



Gigabyte Technology			
P4_LGA775-C			
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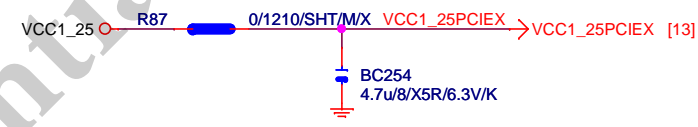
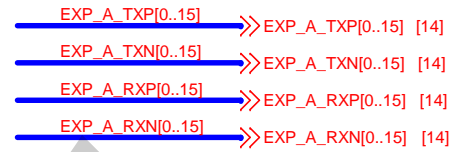
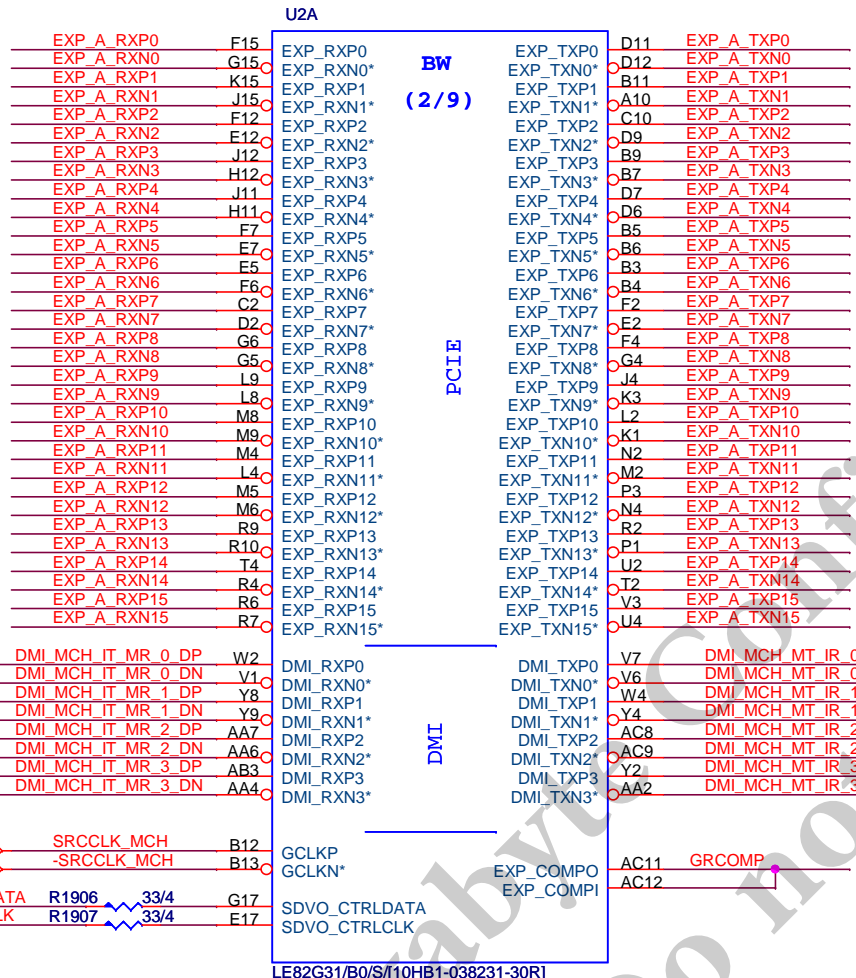
PECI:Platform Environment Control Interface



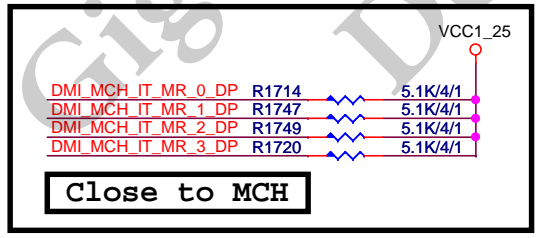
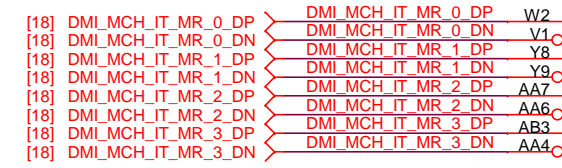
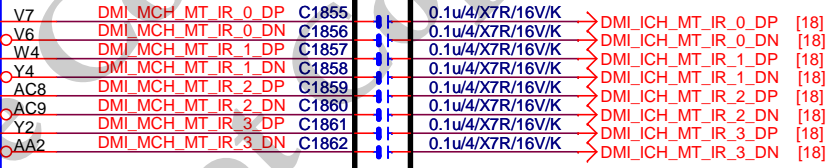
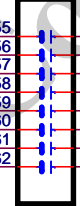








Close to MCH

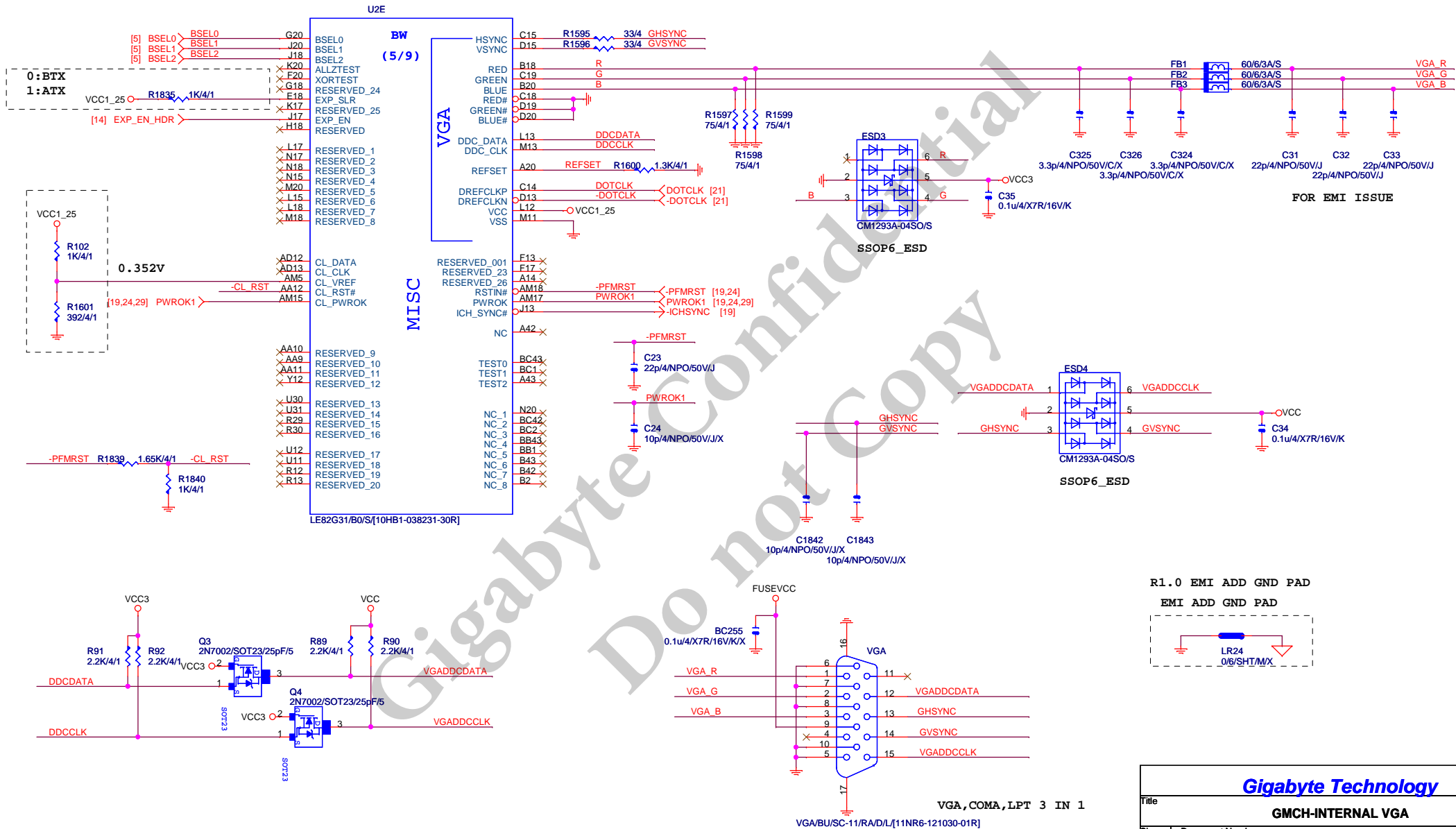


**Gigabyte Technology**

Title  
**GMCH-PCI E & DMI**

Size Custom Document Number **GA-G31M-ES2L** Rev **2.02**

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U2G			
BC37	VSS_1	BW	VSS_181
BC32	VSS_2	(7/9)	VSS_182
BC28	VSS_3		VSS_183
BC24	VSS_4		VSS_184
BC10	VSS_5		VSS_185
BC5	VSS_6	GND 1/2	VSS_186
BB7	VSS_7		VSS_187
AY41	VSS_8		VSS_188
AY4	VSS_9		VSS_189
AW43	VSS_10		VSS_190
AW41	VSS_11		VSS_191
AW1	VSS_12		VSS_192
AV37	VSS_13		VSS_193
AV35	VSS_14		VSS_194
AV27	VSS_15		VSS_195
AV23	VSS_16		VSS_196
AV21	VSS_17		VSS_197
AV17	VSS_18		VSS_198
AV11	VSS_19		VSS_199
AV9	VSS_20		VSS_200
AV7	VSS_21		VSS_201
AU42	VSS_22		VSS_202
AU38	VSS_23		VSS_203
AU32	VSS_24		VSS_204
AU24	VSS_25		VSS_205
AU20	VSS_26		VSS_206
AU6	VSS_27		VSS_207
AU2	VSS_28		VSS_208
AT31	VSS_29		VSS_209
AT29	VSS_30		VSS_210
AT15	VSS_31		VSS_211
AT13	VSS_32		VSS_212
AT12	VSS_33		VSS_213
AR38	VSS_34		VSS_214
AR33	VSS_35		VSS_215
AR32	VSS_36		VSS_216
AR27	VSS_37		VSS_217
AR26	VSS_38		VSS_218
AR23	VSS_39		VSS_219
AR21	VSS_40		VSS_220
AR20	VSS_41		VSS_221
AR17	VSS_42		VSS_222
AR9	VSS_43		VSS_223
AR6	VSS_44		VSS_224
AP43	VSS_45		VSS_225
AP24	VSS_46		VSS_226
AP18	VSS_47		VSS_227
AP1	VSS_48		VSS_228
AN38	VSS_49		VSS_229
AN31	VSS_50		VSS_230
AN29	VSS_51		VSS_231
AN24	VSS_52		VSS_232
AN23	VSS_53		VSS_233
AN20	VSS_54		VSS_234
AN15	VSS_55		VSS_235
AN13	VSS_56		VSS_236
AN12	VSS_57		VSS_237
AN11	VSS_58		VSS_238
AN4	VSS_59		VSS_239
AM42	VSS_60		VSS_240
AM40	VSS_61		VSS_241
AM36	VSS_62		VSS_242
AM33	VSS_63		VSS_243
AM29	VSS_64		VSS_244
AM24	VSS_65		VSS_245
AM23	VSS_66		VSS_246
AM20	VSS_67		VSS_247
AM11	VSS_68		VSS_248
AM9	VSS_69		VSS_249
AM7	VSS_70		VSS_250
AM4	VSS_71		VSS_251
AM2	VSS_72		VSS_252
AM1	VSS_73		VSS_253
AL36	VSS_74		VSS_254
AL33	VSS_75		VSS_255
AK43	VSS_76		VSS_256
AJ39	VSS_77		VSS_257
AJ36	VSS_78		VSS_258
AJ33	VSS_79		VSS_259
AH42	VSS_80		VSS_260
AG37	VSS_81		VSS_261
AG34	VSS_82		VSS_262
AF43	VSS_83		VSS_263
AF37	VSS_84		VSS_264
AF36	VSS_85		VSS_265
AF10	VSS_86		VSS_266
AF9	VSS_87		VSS_267
AF8	VSS_88		VSS_268
AF7	VSS_89		VSS_269
AF6	VSS_90		VSS_270

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

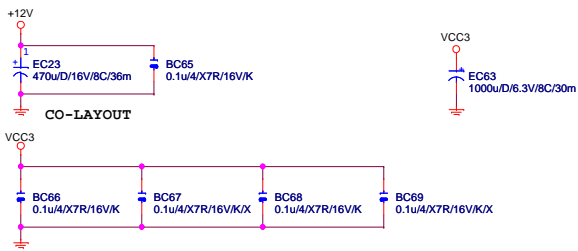
U2I			
M27	VSS_91	BW	VSS_271
M21	VSS_92	(9/9)	VSS_272
M17	VSS_93		VSS_273
M15	VSS_94		VSS_274
M10	VSS_95	GND 2/2	VSS_275
M7	VSS_96		VSS_276
M1	VSS_97		VSS_277
L33	VSS_98		VSS_278
L32	VSS_99		VSS_279
L31	VSS_100		VSS_280
L29	VSS_101		VSS_281
L21	VSS_102		VSS_282
L20	VSS_103		VSS_283
L11	VSS_104		VSS_284
L7	VSS_105		VSS_285
L5	VSS_106		VSS_286
L3	VSS_107		VSS_287
K43	VSS_108		VSS_288
K26	VSS_109		VSS_289
K21	VSS_110		VSS_290
K18	VSS_111		VSS_291
K13	VSS_112		VSS_292
K12	VSS_113		VSS_293
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		
E43	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		
N7	VSS_175		
N5	VSS_176		
M42	VSS_177		
M18	VSS_178		
M35	VSS_179		
A7	VSS_180		

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

BC41	
BC3	
BA1	
AY40	
AF23	
AF21	
AF19	
AF24	
AE22	
AE20	
AE18	
AC18	
AA18	
W24	
W22	
W20	
R21	
E1	
C43	
C1	
A41	
A5	
A3	

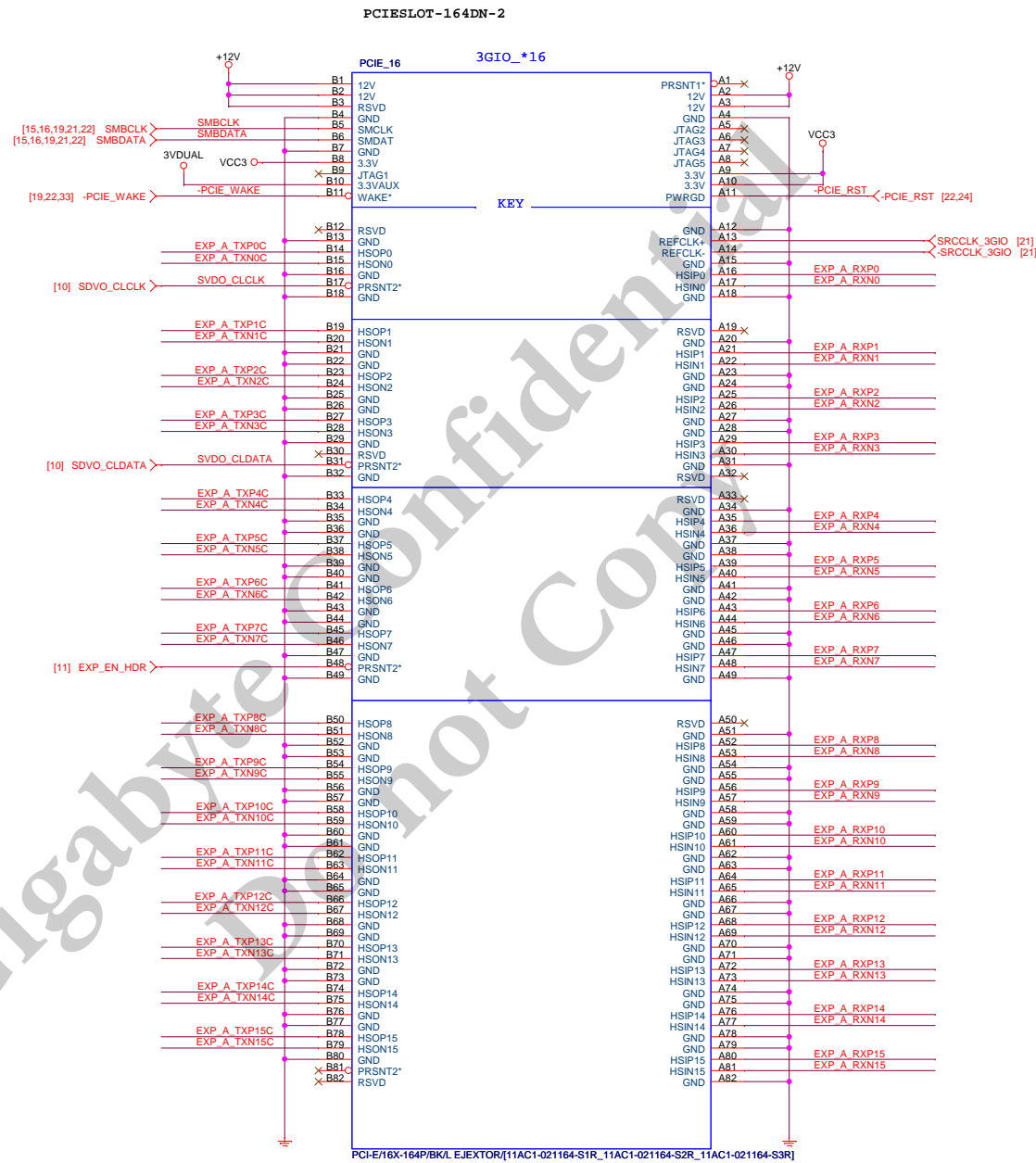
Gigabyte Technology		
Title		
GMCH-GND		
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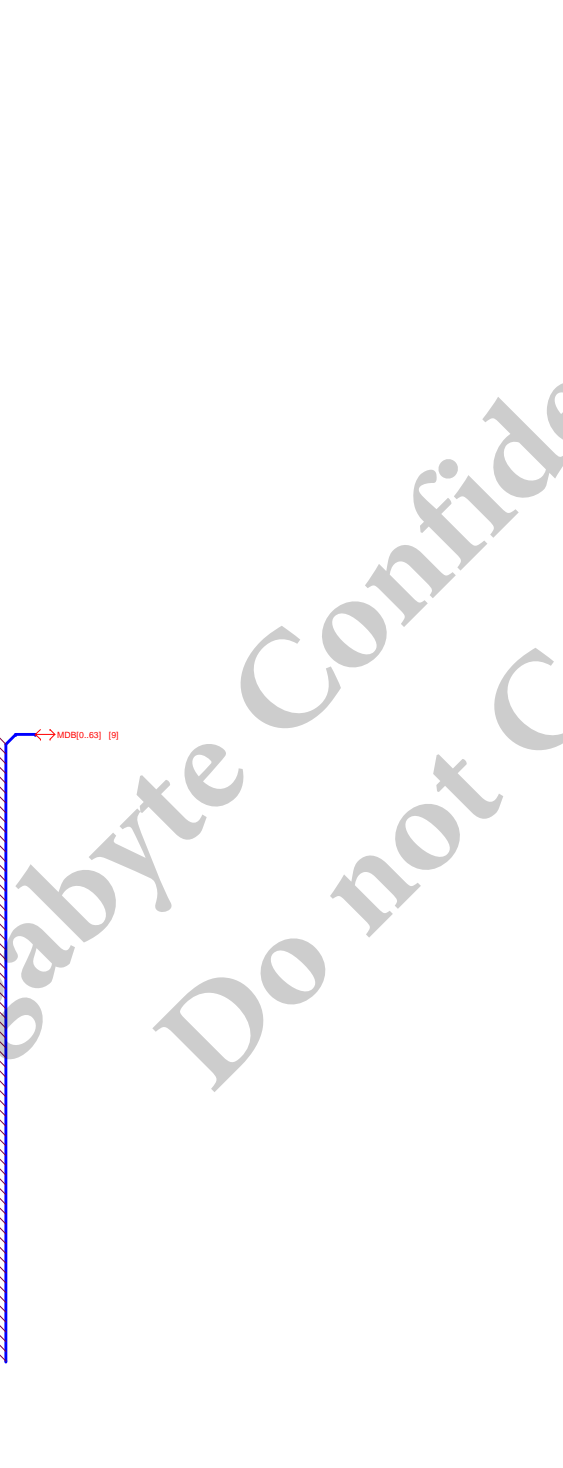
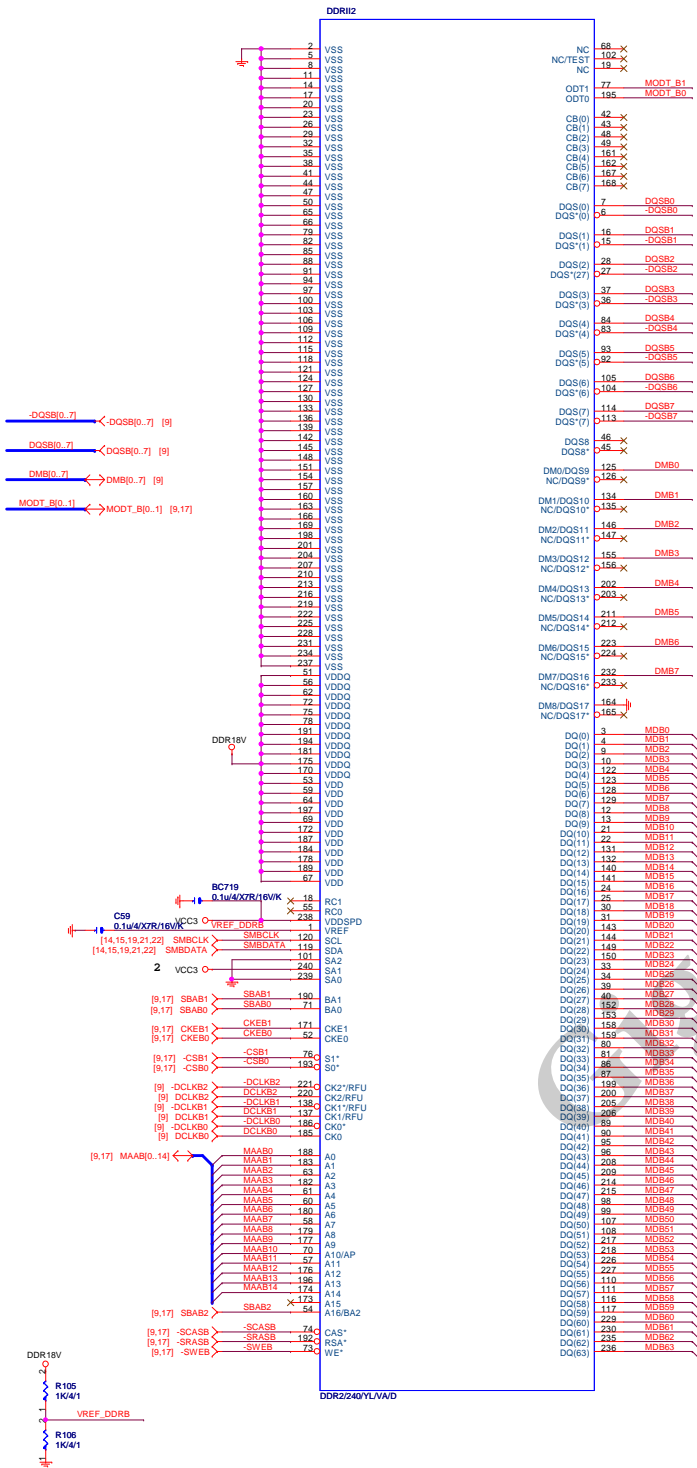
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EXP\_A\_TXN[0..15] >>> EXP\_A\_TXN[0..15] [10] EXP\_A\_RXN[0..15] >>> EXP\_A\_RXN[0..15] [10]

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





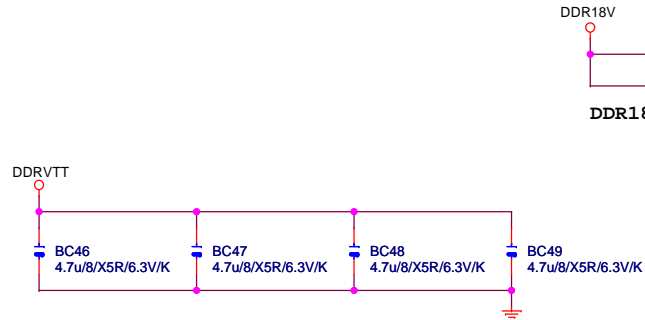




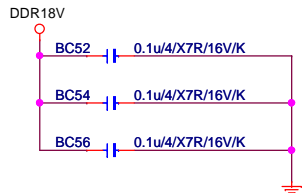


# DDR TERMINATION CHANNEL A

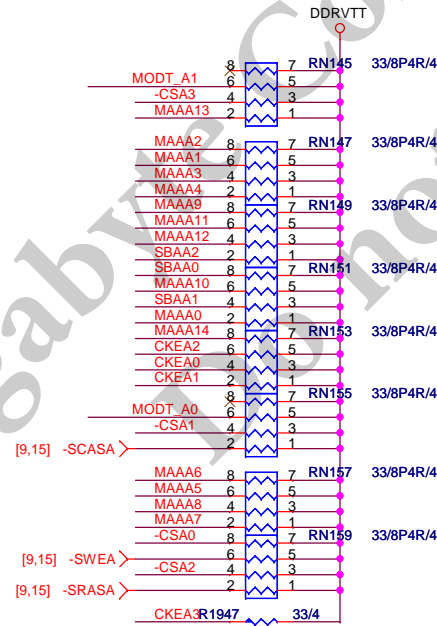
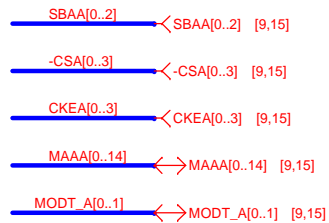
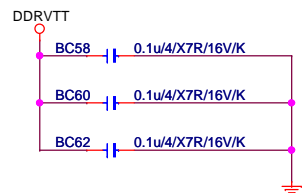
## DDRVTT Decouple



## DDR18V Decouple

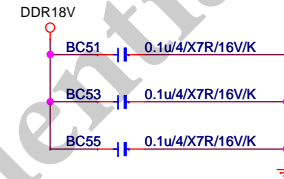


## DDRVTT Decouple

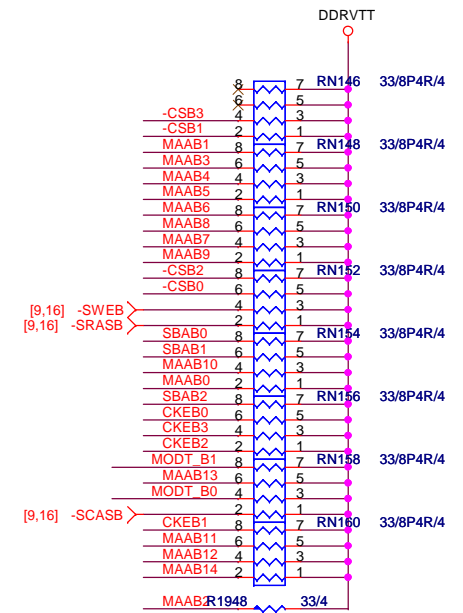
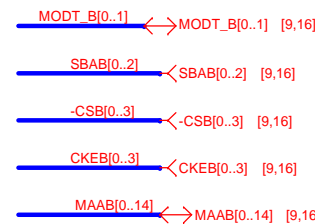
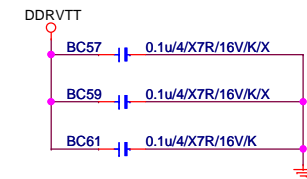


# DDR TERMINATION CHANNEL B

## DDR18V Decouple



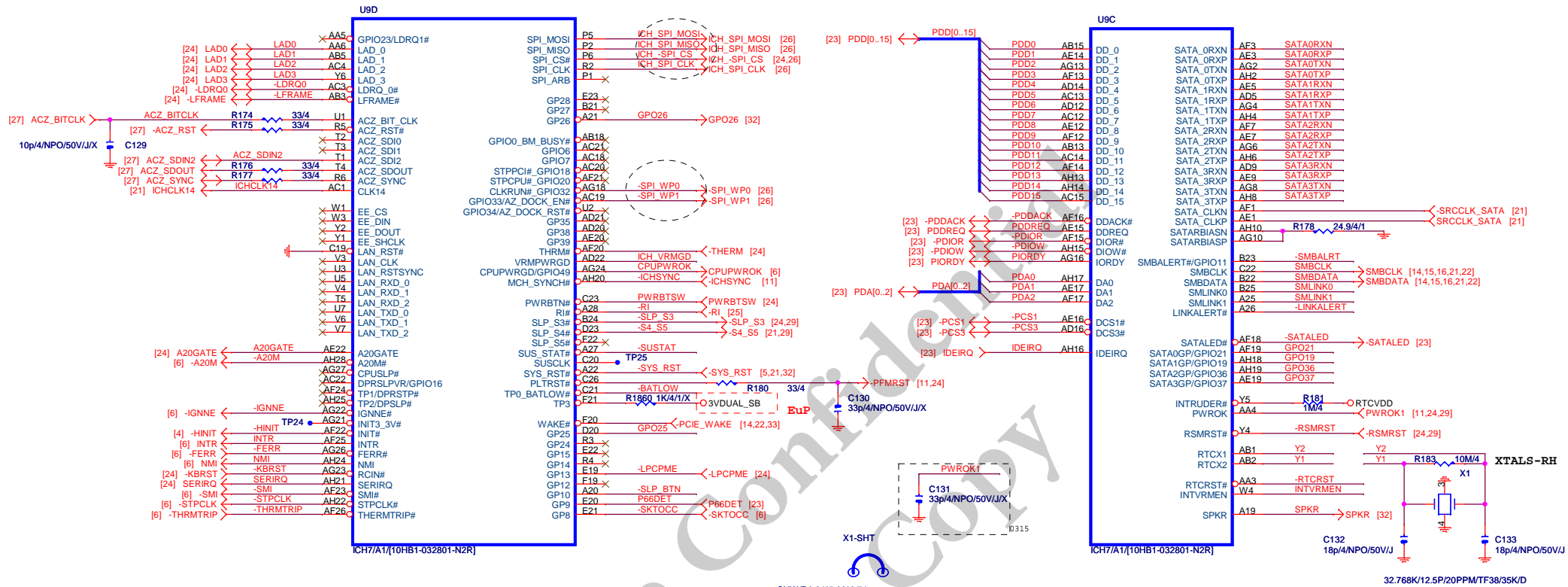
## DDRVTT Decouple



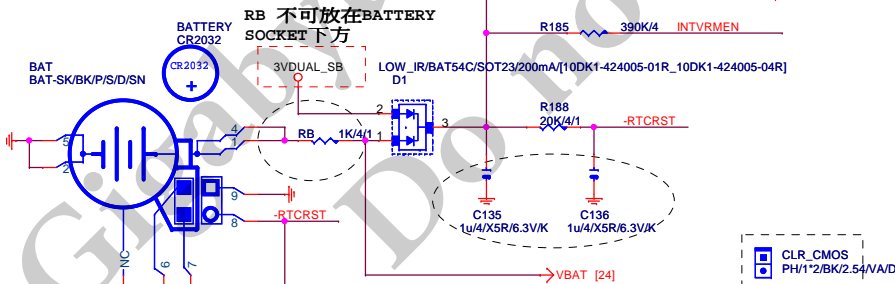
Gigabyte Technology

Title			
DDR II TERMINATOR			
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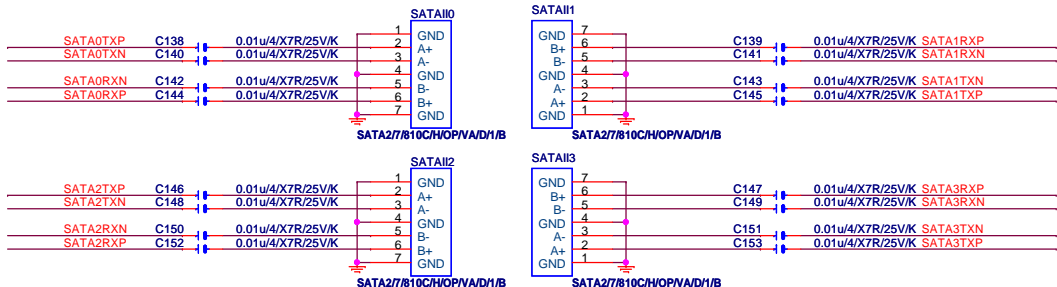
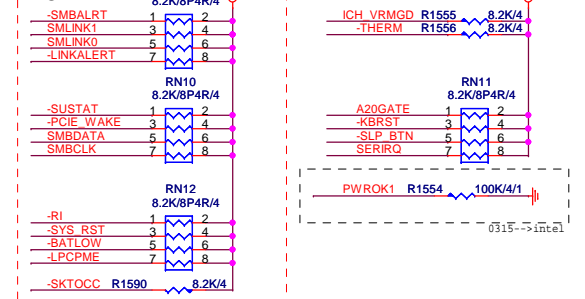




### NEW TYPE: BATTERY-DUAL-4

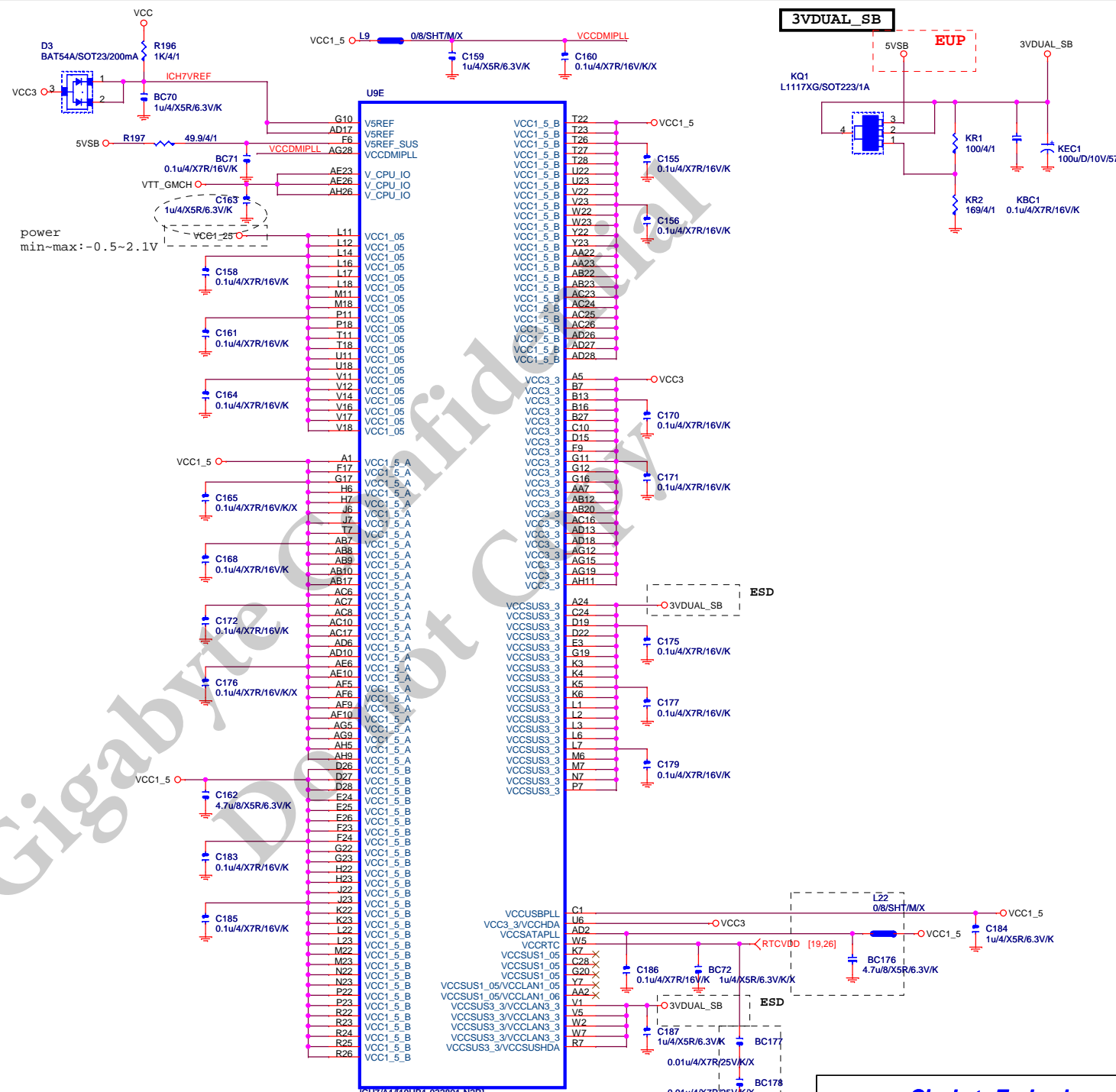


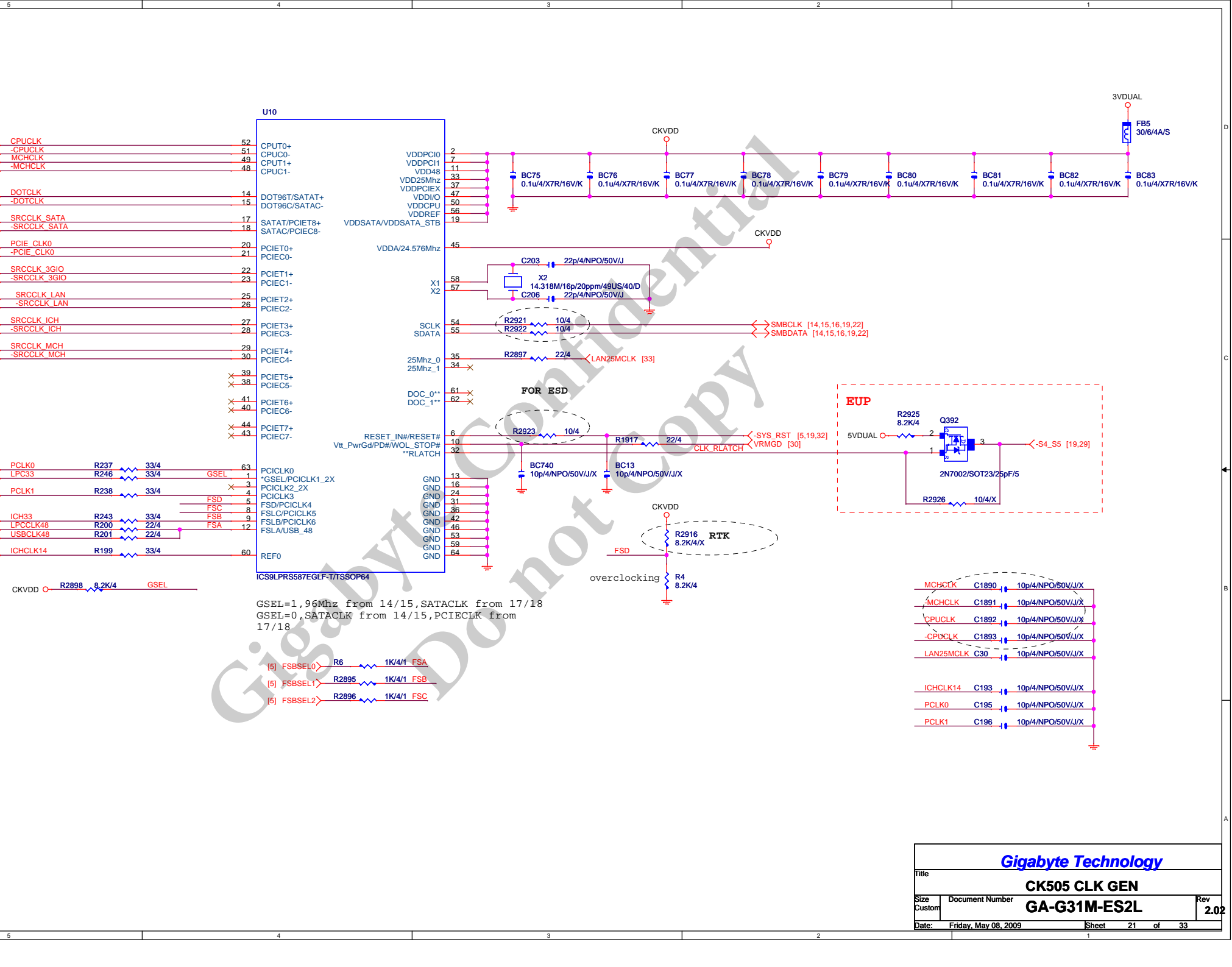
### EUP



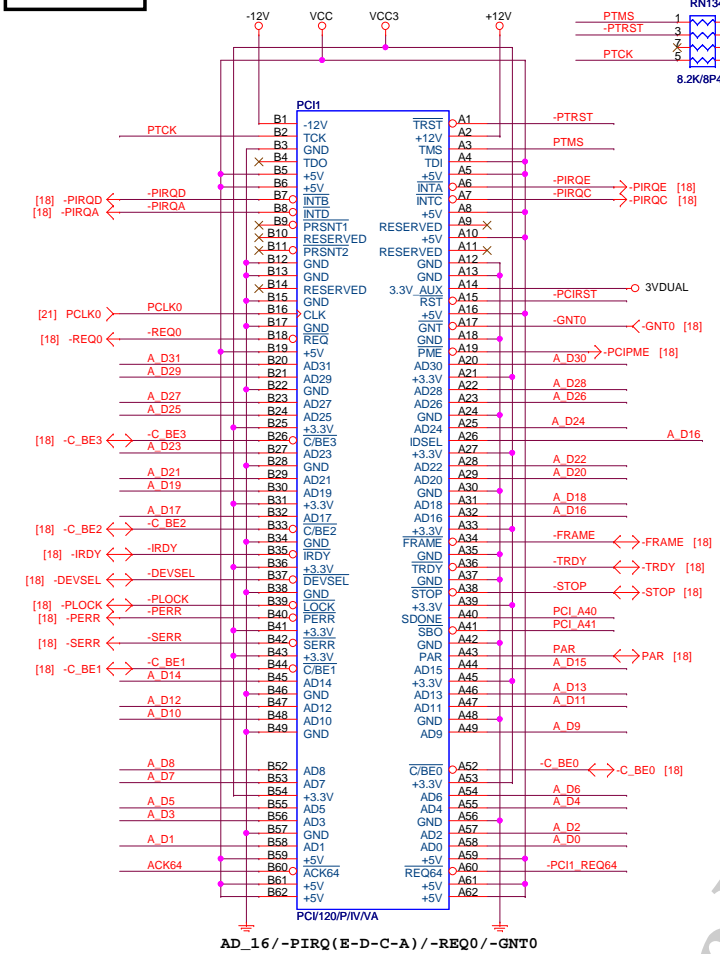
R1.1 DES LITE DESIGN

U9F		
A4	VSS1	VSS101
A23	VSS2	VSS102
B1	VSS3	VSS103
B8	VSS4	VSS104
B11	VSS5	VSS105
B14	VSS6	VSS106
B17	VSS7	VSS107
B20	VSS8	VSS108
B26	VSS9	VSS109
B28	VSS10	VSS110
C2	VSS11	VSS111
C6	VSS12	VSS112
D10	VSS13	VSS113
D13	VSS14	VSS114
D18	VSS15	VSS115
D21	VSS16	VSS116
D24	VSS17	VSS117
E1	VSS18	VSS118
E2	VSS19	VSS119
E8	VSS20	VSS120
E15	VSS21	VSS121
F3	VSS22	VSS122
F4	VSS23	VSS123
F5	VSS24	VSS124
F12	VSS25	VSS125
F27	VSS26	VSS126
F28	VSS27	VSS127
G1	VSS28	VSS128
G2	VSS29	VSS129
G5	VSS30	VSS130
G6	VSS31	VSS131
G9	VSS32	VSS132
G14	VSS33	VSS133
G18	VSS34	VSS134
G21	VSS35	VSS135
G24	VSS36	VSS136
G25	VSS37	VSS137
G26	VSS38	VSS138
H3	VSS39	VSS139
H4	VSS40	VSS140
H24	VSS41	VSS141
H27	VSS42	VSS142
H28	VSS43	VSS143
I1	VSS44	VSS144
I2	VSS45	VSS145
J5	VSS46	VSS146
J24	VSS47	VSS147
J25	VSS48	VSS148
J26	VSS49	VSS149
K24	VSS50	VSS150
K27	VSS51	VSS151
K28	VSS52	VSS152
L13	VSS53	VSS153
L15	VSS54	VSS154
L24	VSS55	VSS155
L25	VSS56	VSS156
L26	VSS57	VSS157
M3	VSS58	VSS158
M4	VSS59	VSS159
M5	VSS60	VSS160
M12	VSS61	VSS161
M13	VSS62	VSS162
M14	VSS63	VSS163
M15	VSS64	VSS164
M16	VSS65	VSS165
M17	VSS66	VSS166
M24	VSS67	VSS167
M27	VSS68	VSS168
M28	VSS69	VSS169
N1	VSS70	VSS170
N2	VSS71	VSS171
N5	VSS72	VSS172
N6	VSS73	VSS173
N11	VSS74	VSS174
N12	VSS75	VSS175
N13	VSS76	VSS176
N14	VSS77	VSS177
N15	VSS78	VSS178
N16	VSS79	VSS179
N17	VSS80	VSS180
N18	VSS81	VSS181
N24	VSS82	VSS182
N25	VSS83	VSS183
N26	VSS84	VSS184
P3	VSS85	VSS185
P4	VSS86	VSS186
P12	VSS87	VSS187
P13	VSS88	VSS188
P14	VSS89	VSS189
P15	VSS90	VSS190
P16	VSS91	VSS191
P17	VSS92	VSS192
P24	VSS93	VSS193
P27	VSS94	VSS194
P28	VSS95	VSS195
R1	VSS96	VSS196
R11	VSS97	VSS197
R12	VSS98	VSS198
R13	VSS99	VSS199
	VSS100	VSS200

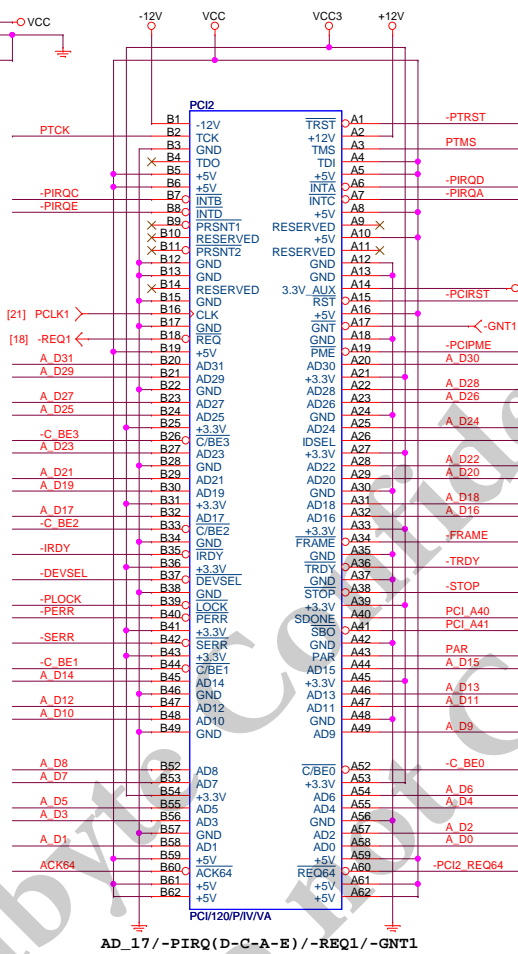




PCI1, 2 SLOT

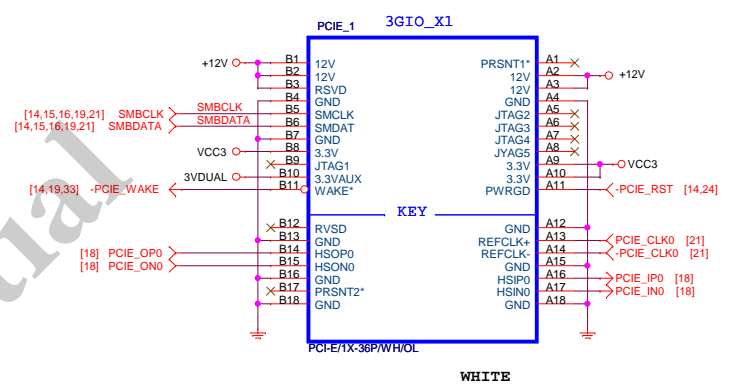


AD\_16/-PIRQ(E-D-C-A)/-REQ0/-GNT0

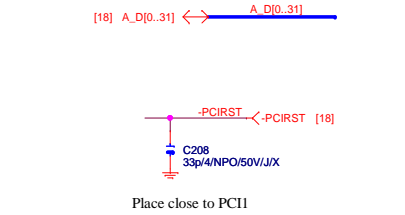


AD\_17/-PIRQ(D-C-A-E)/-REQ1/-GNT1

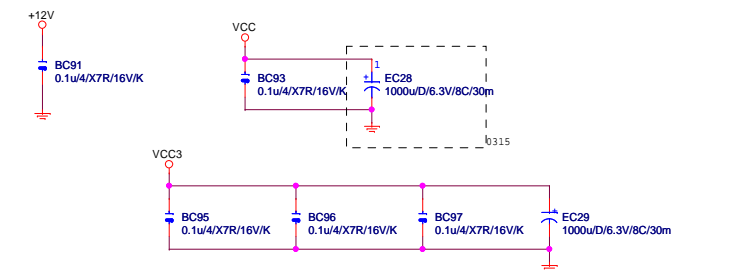
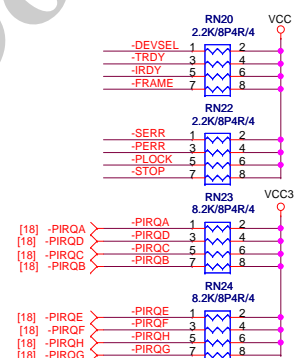
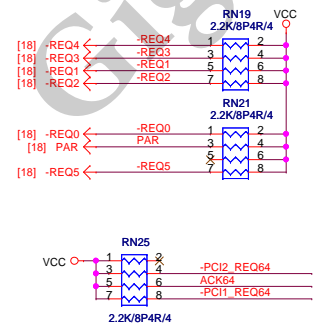
PCI-E\*1



WHITE



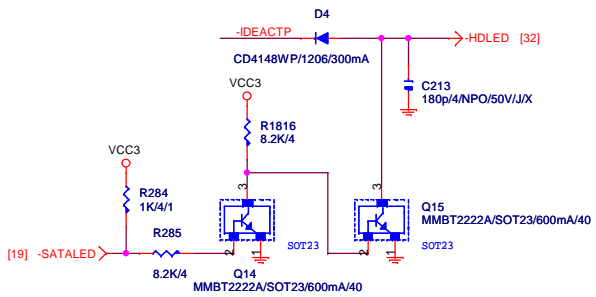
[14,15,16,19,21] SMBCLK  
[14,15,16,19,21] SMBDATA



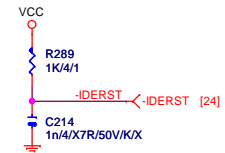
Gigabyte Technology			
Title			
PCI SLOT 1, 2/PCIEX1			
Size			
Custom			
Document Number			
GA-G31M-ES2L			
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2.02			
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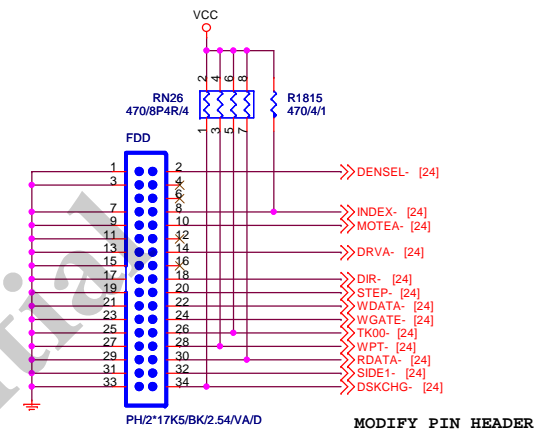
# IDE/SATA LED



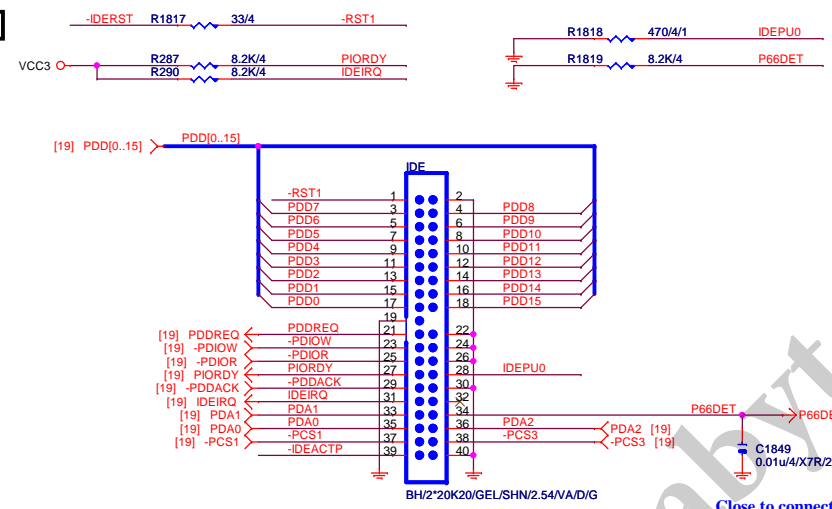
# IDE RESET



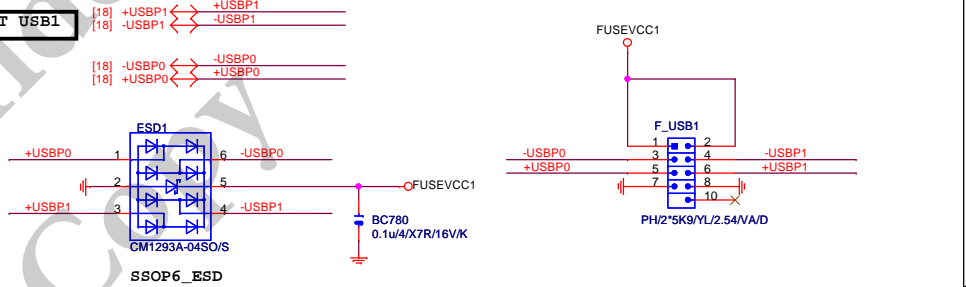
# FLOPPY



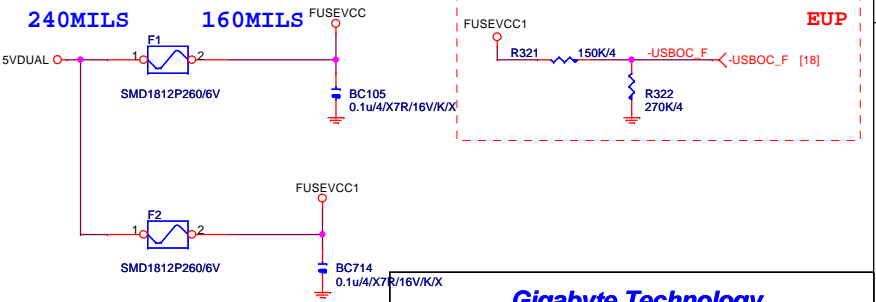
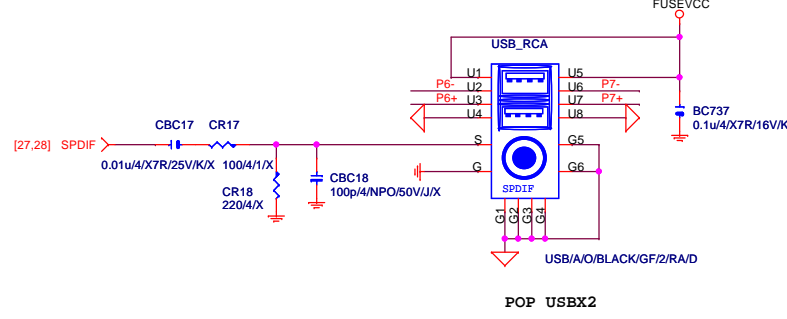
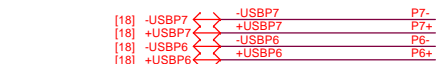
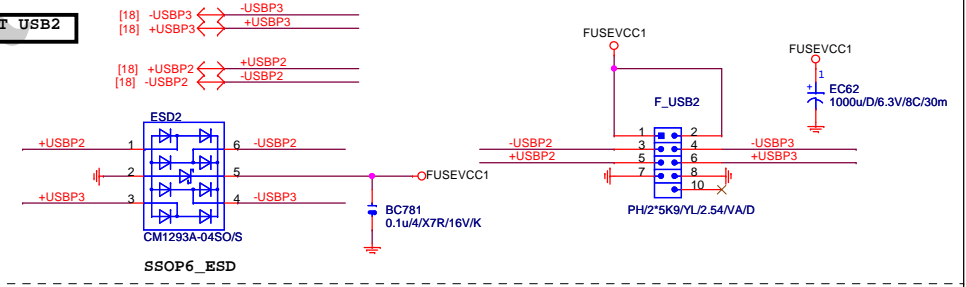
# IDE



# FRONT USB1

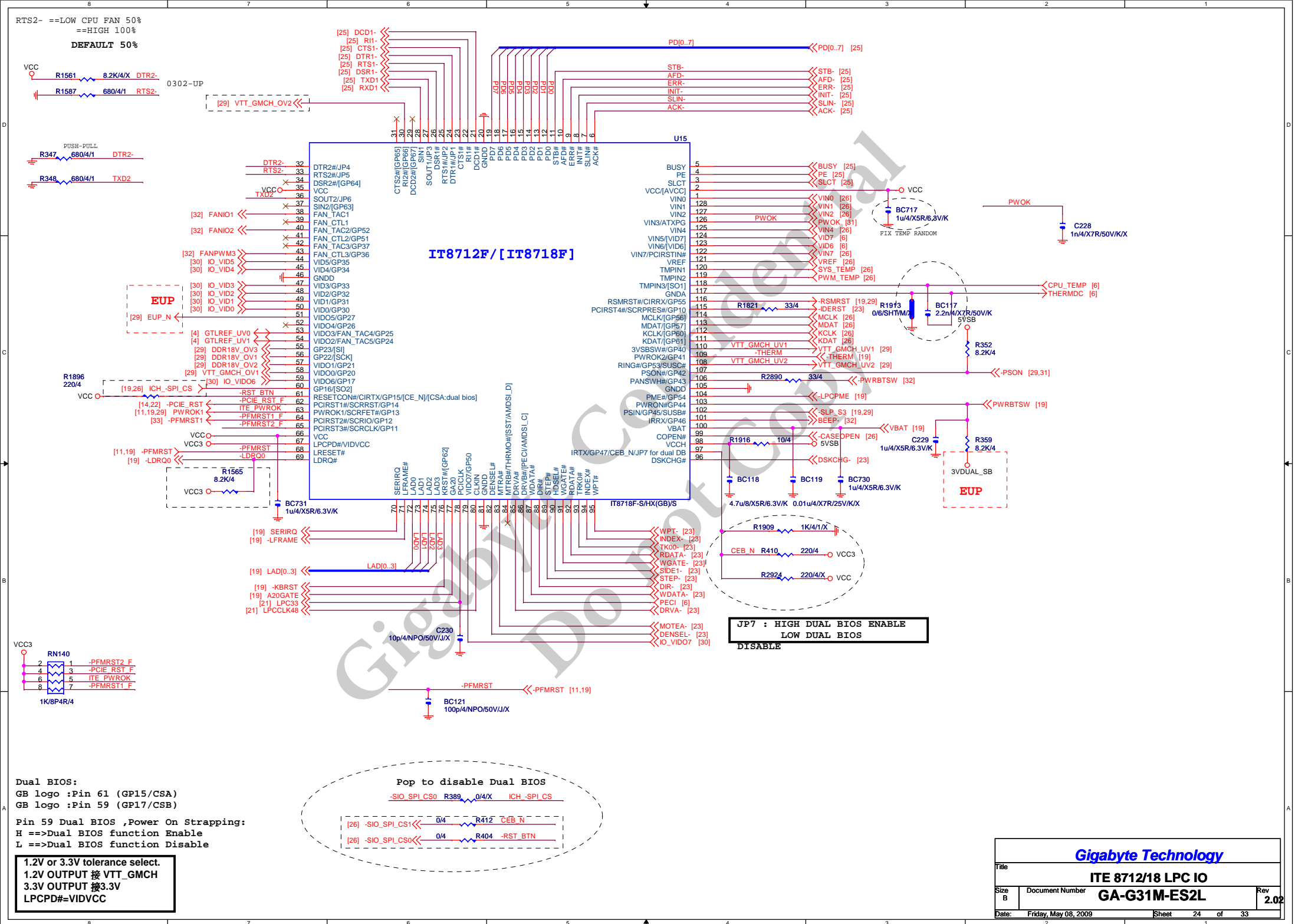


# FRONT USB2



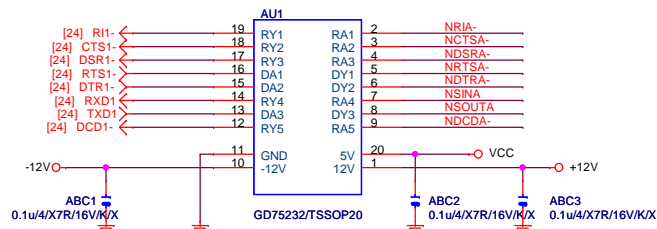
Gigabyte Technology

Title		IDE,FDD,F USB,USB RCA	
Size	Document Number	GA-G31M-ES2L	
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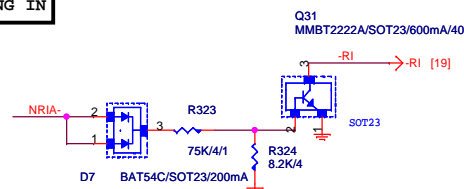




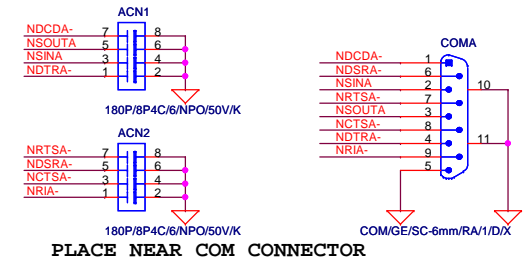
## COMA



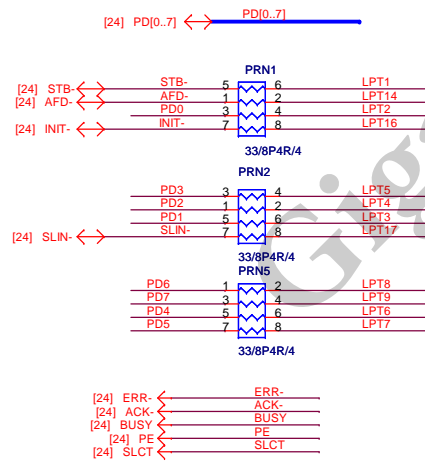
## RING IN



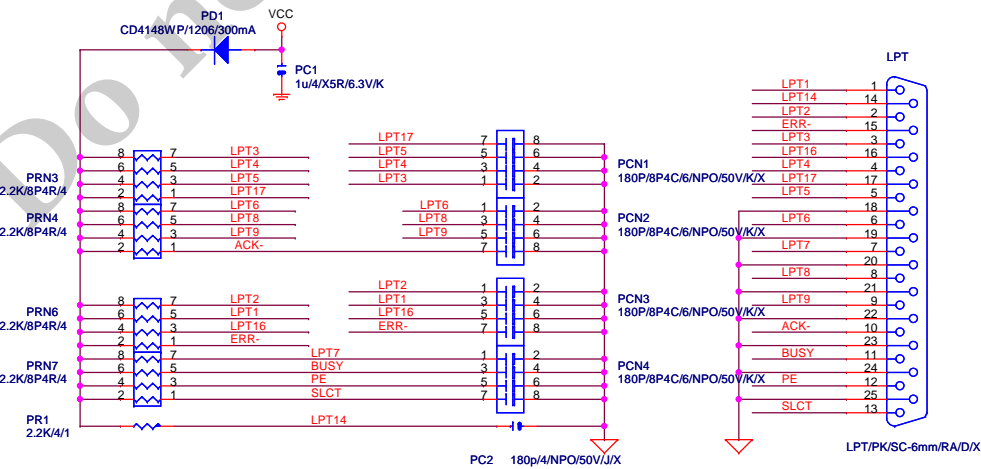
## EXTERNAL COMA



## LPT PORT

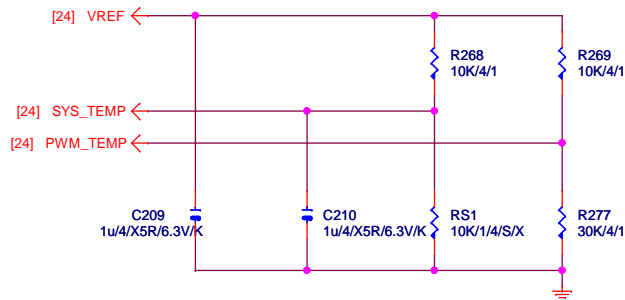


## VGA, COMA, LPT 3 IN 1

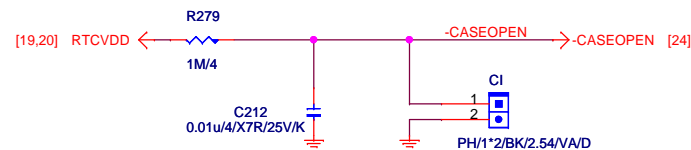


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# TEMP H/W MONITOR

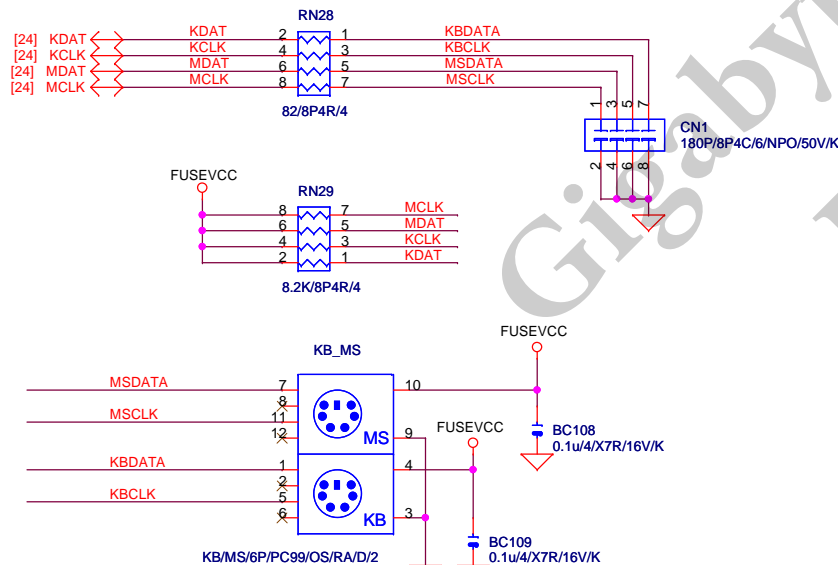


# CASE OPEN

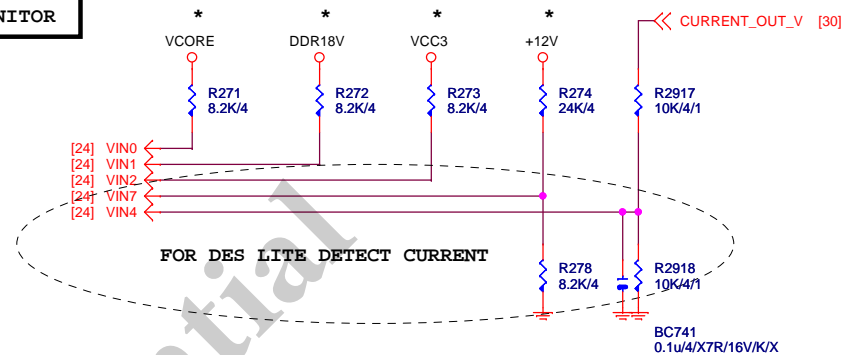


Case Open Circuits

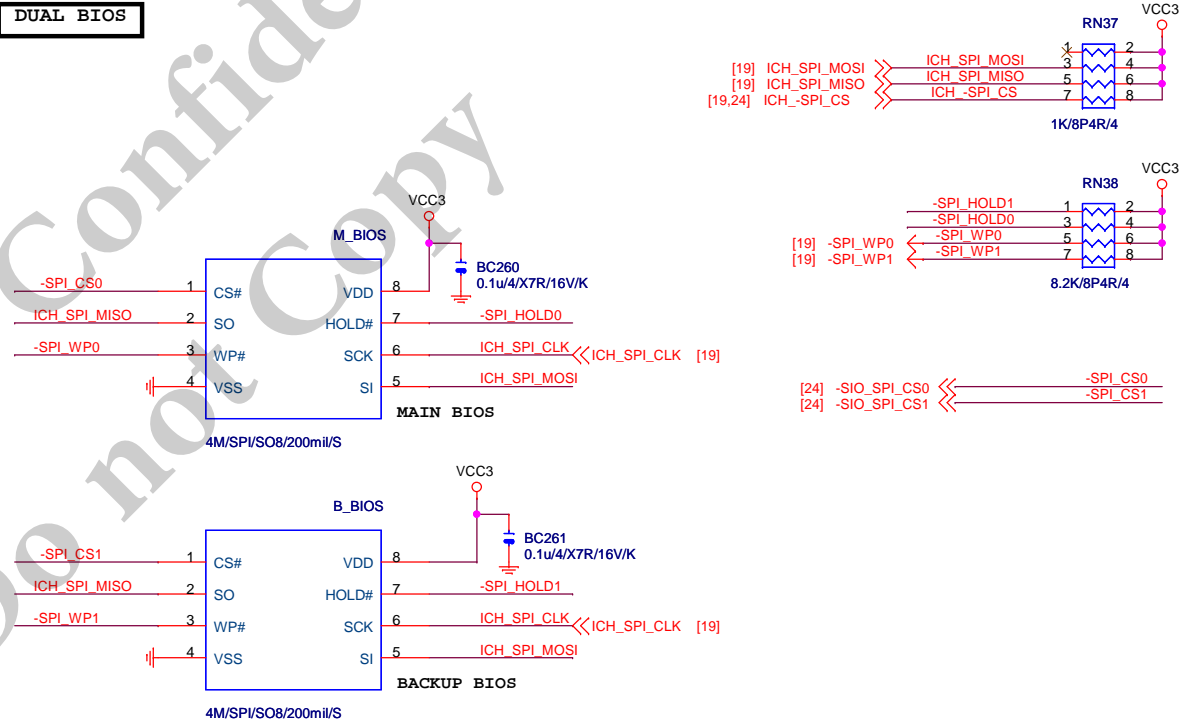
# KB/MS



# VOLTAGE-- H/W MONITOR

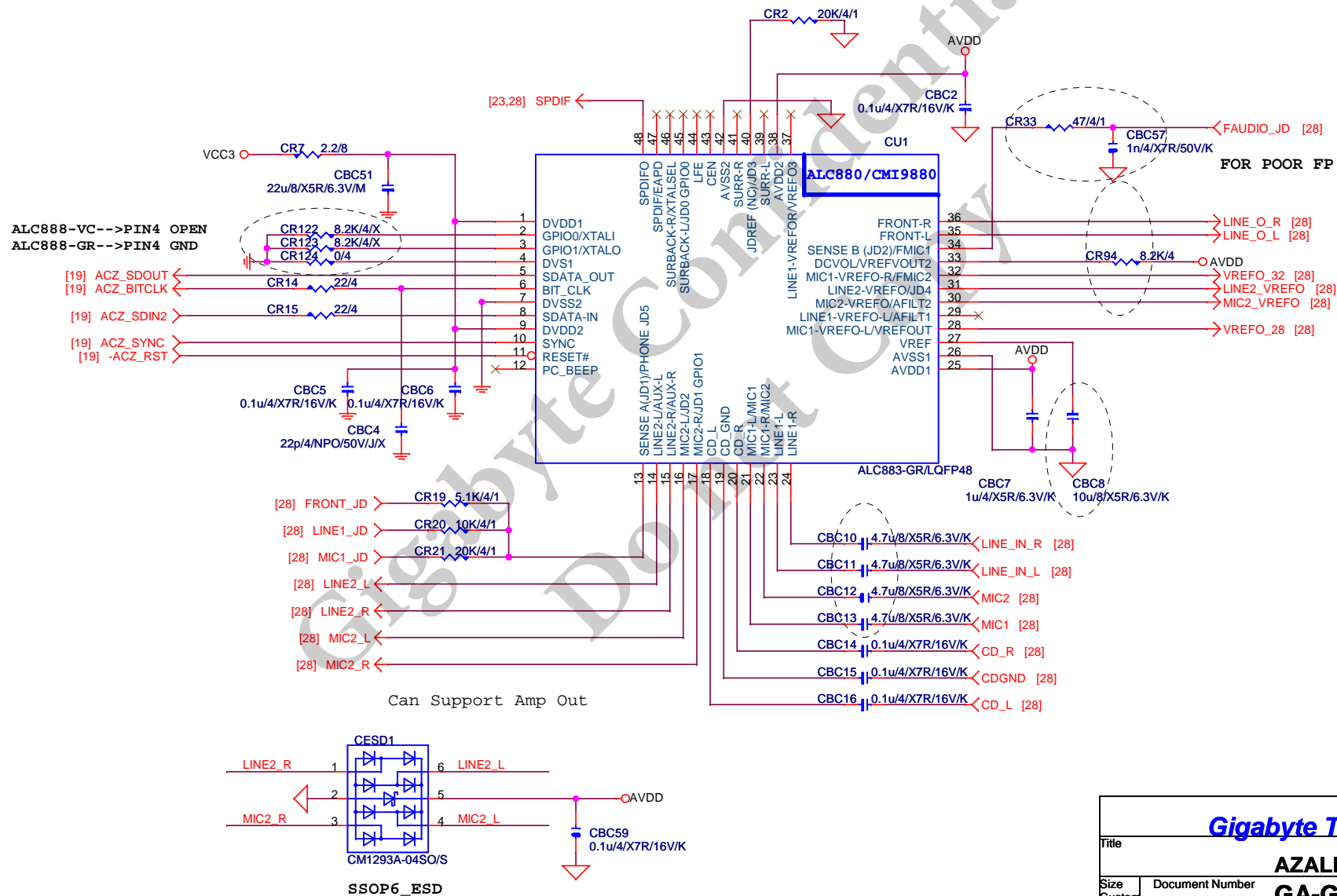


# DUAL BIOS



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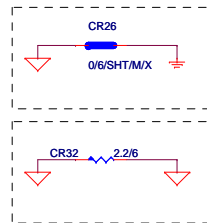
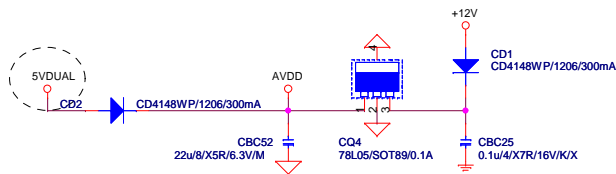
Title			HW-MONITOR/CI/KB/MS/BIOS	
Size	Document Number	GA-G31M-ES2L		Rev
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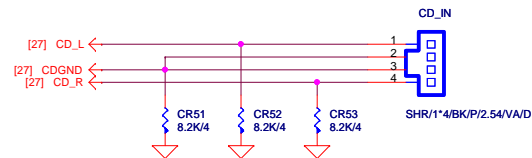
Gigabyte Technology

Title			AZALIA ALC883	
Size			Document Number	
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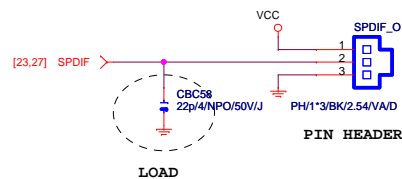
## CODEC POWER/EMI PAD



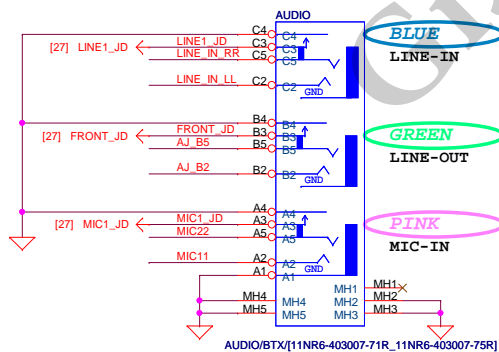
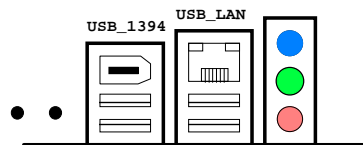
CD	IN
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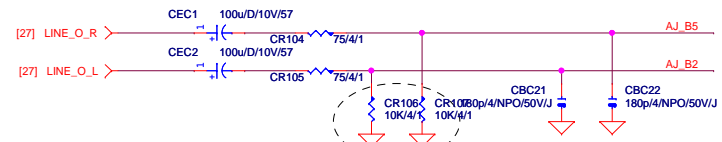
## SPDIF IN



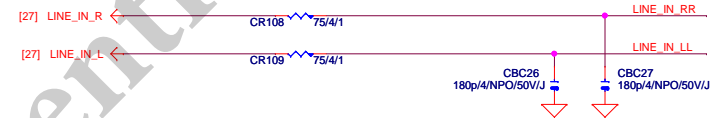
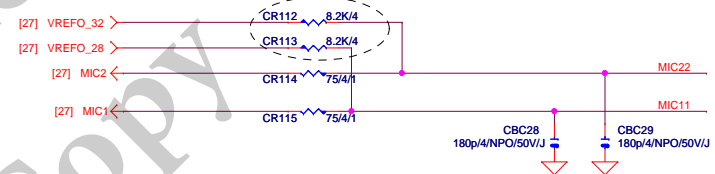
**AZALIA JACK**



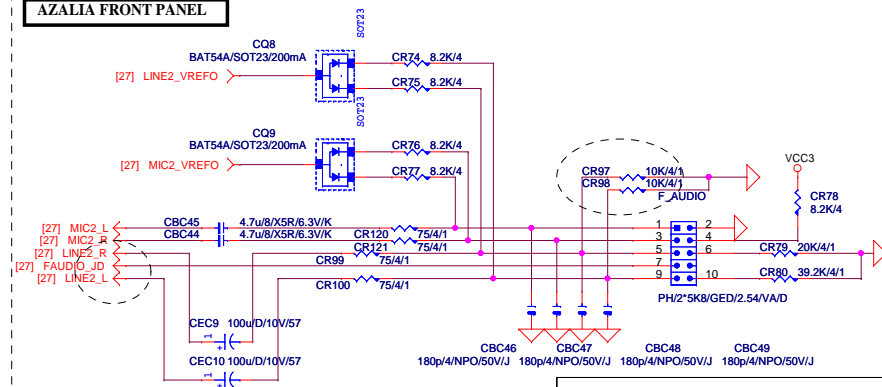
## LINE-OUT



**LINE-IN**

**MIC-IN**

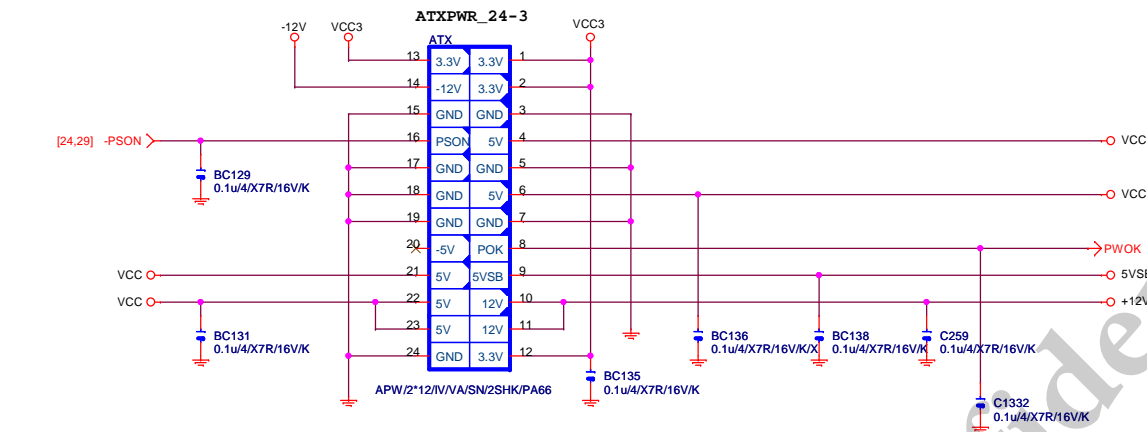
## AZALIA FRONT PANEL



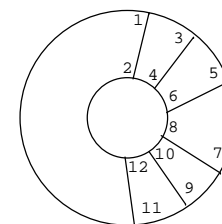
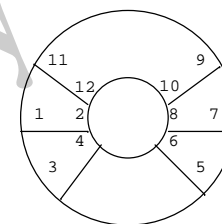
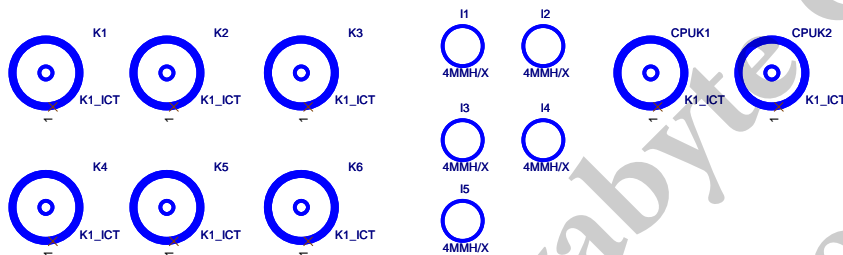
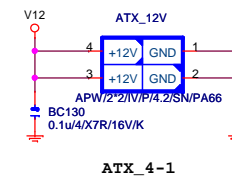
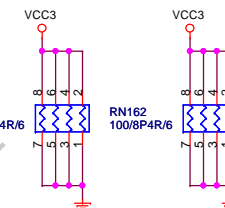




# ATX POWER CONNECTOR

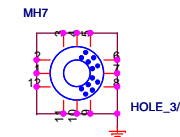
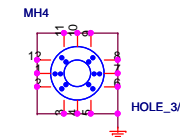
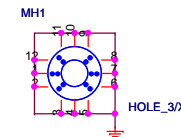
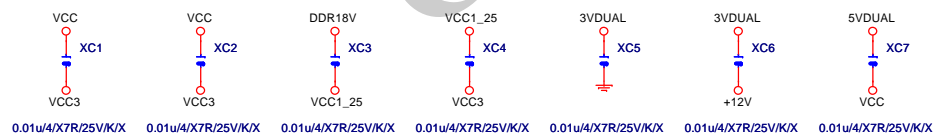


## FIX PWR AcBel (ATX-400C-A2ADB)



HOLE\_4-RH-1

HOLE\_4-RH-5MM-1



Gigabyte Technology

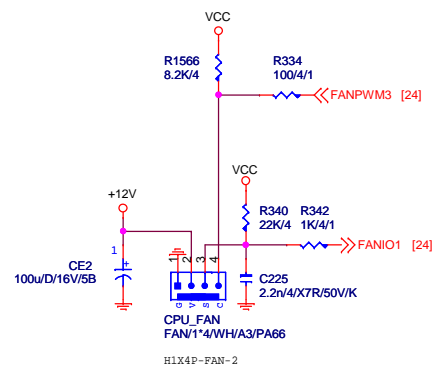
ATX POWER CONNECTOR

GA-G31M-ES2L

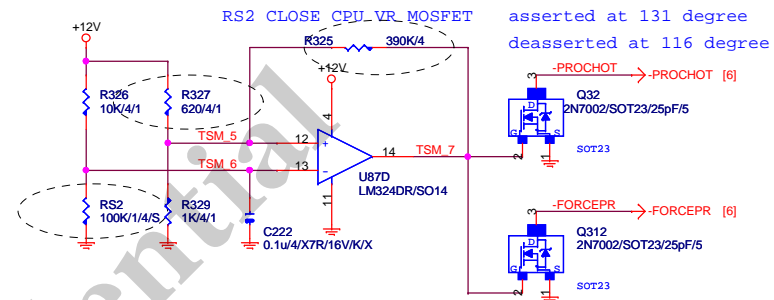
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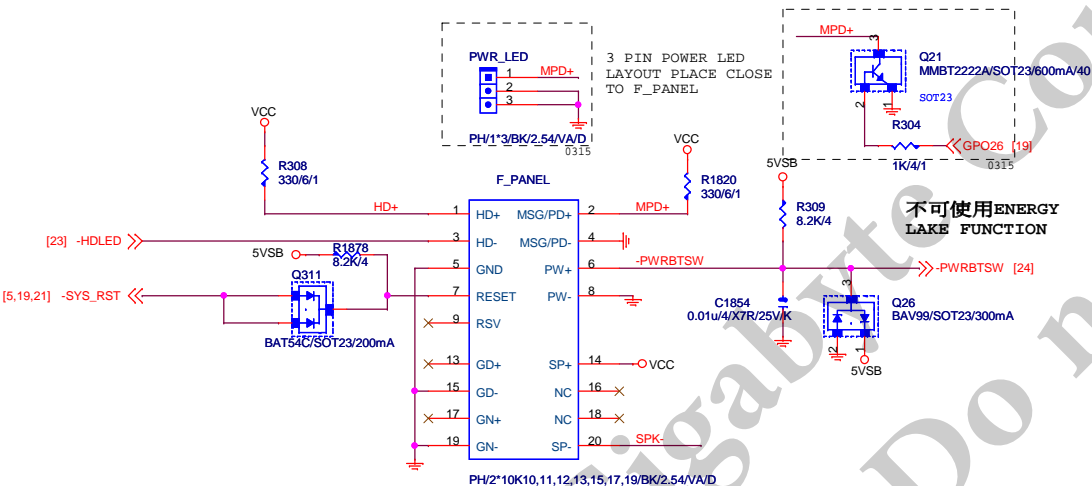
# CPU SMART FAN SMART FAN



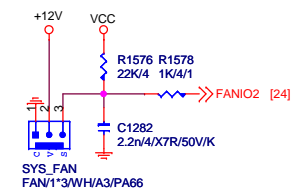
# PROCESSOR HOT



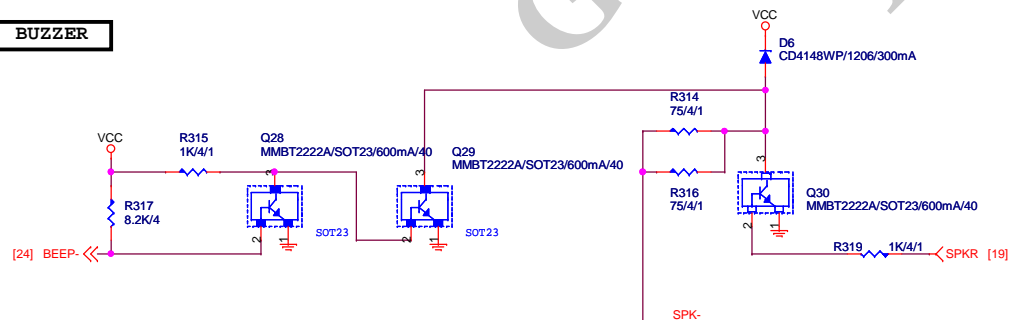
# INTEL FRONT PANEL



# SYS\_FAN



# BUZZER



Gigabyte Technology

Title			FRONT PANEL
Size	Document Number	GA-G31M-ES2L	
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# PCIE-1G LAN

## CLOSE LAN CHIP

LC1 0.1u4/X7R/16V/K  
LC2 0.1u4/X7R/16V/K

[18] ML\_IN  
[18] ML\_IP  
[21] -SRCCLK\_LAN  
[21] SRCCLK\_LAN  
[18] ML\_OP  
[18] ML\_ON

LBC13 0.1u4/X7R/16V/K

LBC12 1u4/X5R/6.3V/K

LBC9 0.1u4/X7R/16V/K

LBC1 0.1u4/X7R/16V/K

CHOKE4U7-500MA-1

LL1 4.7uH/1A/10LC3-5A470B-01R

LBC27 10u8/X5R/6.3V/K  
LBC16 0.1u4/X7R/16V/K

AVDD CEN

LBC20 0.1u4/X7R/16V/K

LBC2 0.1u4/X7R/16V/K

LBC3 0.1u4/X7R/16V/K/X  
LBC5 0.1u4/X7R/16V/K

LBC4 0.1u4/X7R/16V/K/X

LBC6 0.1u4/X7R/16V/K/X

AR8132M---N/A

P MDI0+  
P MDI0-  
P MDI1+  
P MDI1-  
P MDI2+  
P MDI2-  
P MDI3+  
P MDI3-

LR16 49.9/4/1  
LR14 49.9/4/1  
LR13 49.9/4/1  
LR11 49.9/4/1  
LR10 49.9/4/1  
LR9 49.9/4/1  
LR6 49.9/4/1  
LR5 49.9/4/1

LC6 0.1u4/X7R/16V/K  
LC5 0.1u4/X7R/16V/K  
LC4 0.1u4/X7R/16V/K  
LC3 0.1u4/X7R/16V/K

CLOSE LAN CHIP

AR8132M---N/A

LBC18 1u4/X5R/6.3V/K  
LBC8 0.1u4/X7R/16V/K  
LBC10 0.1u4/X7R/16V/K  
LBC11 0.1u4/X7R/16V/K

AR8132M---N/A

AR8132M---N/A

AR8132M---N/A

AR8132M---N/A

AR8132M---N/A

AR8132M---N/A

AR8132M---N/A

AR8132M---N/A

AR8132M---N/A

AR8132M---N/A

AR8132M---N/A

AR8132M---N/A

AR8132M---N/A

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AR8132M---N/A

AR8132M---N/A

AR8132M---N/A

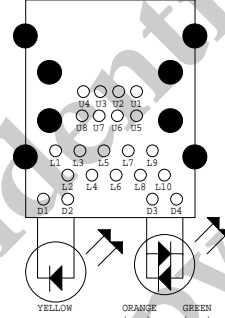
Dual Color LED

D4 D3  
Green  
D3 D3  
Orange

Single Color LED

D2 D1  
Yellow

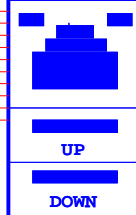
P35-152-19W9



# USB\_LAN CONNECTOR

1G :USB+LAN/1G/GO,Y/OS/RA/D/1  
100M:USB+LAN/100/GO,Y/OS/RA/D/1

USB\_LAN



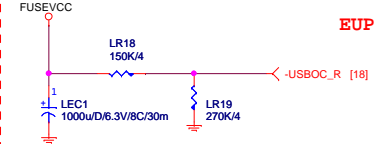
USB+LAN/1G/GO,Y/OS/RA/D/1

# USB\_LAN



EMI  
LFB1 0/6/SHT/M/X

LBC25 0.1u4/X7R/16V/K/X  
LBC15 0.1u4/X7R/16V/K/X



EUP

LR18 150K/4  
LR19 270K/4  
-USBOC\_R [18]

P4+  
P4-  
P5+  
P5-  
-USBP4 [18]  
-USBP4 [18]  
-USBP5 [18]  
-USBP5 [18]

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ATHEROS AR8131M/AR8132M		
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