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**Model Name : IG31M-M7S**

**Marketing name : G31M**

**VER: 7.1**

**CPU :**

Intel Core 2 Quad /Core 2 Duo/ Pentium Dual-Core /  
Celeron Dual Core /Celeron 4xx

**System Chipset :**

INTEL G31  
INTEL ICH7

**On Board Chip :**

Clock Gen. -- REALTEK RTM876-665  
Audio Codec -- VIA VT1708B  
Lan Chip -- REALTEK 8102EL/8103EL  
PWM Controller -- UP6219B + NIKO-SEM MOS  
Super I/O -- ITE 8721FBX  
SPI Flash 4M

**Main Memory :**

2 Channel DDR II \* 2 (Max 4GB)

**Expansion Slot :**

PCI Express x16 Slot \* 1  
PCI Slot \* 1

**Heatsink :**

NB: NBHS-G31G  
SB: BNP SMALL-L

**I/O Pannel :**

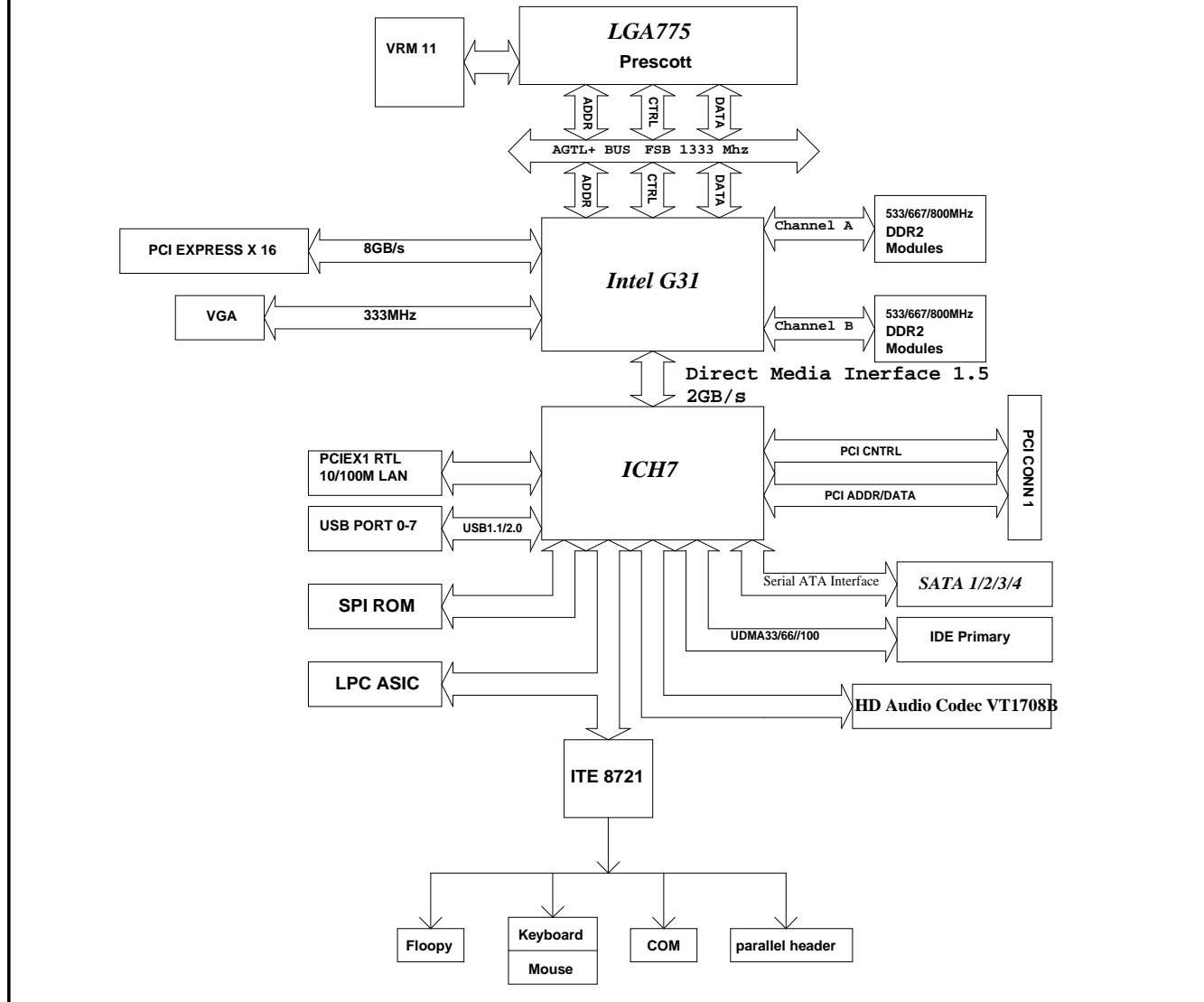
47-RIOBRACKET-68B

**PCB SIZE :**

169.99 X 224.97mm  
4-layers-1080

HW Engineer:		Date:	
HW Leader1:		Date:	
HW Leader2:		Date:	
		Title	
		COVER SHEET	
		Size Custom	Document Number IG31M-M7S
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# BLOCK DIAGRAM



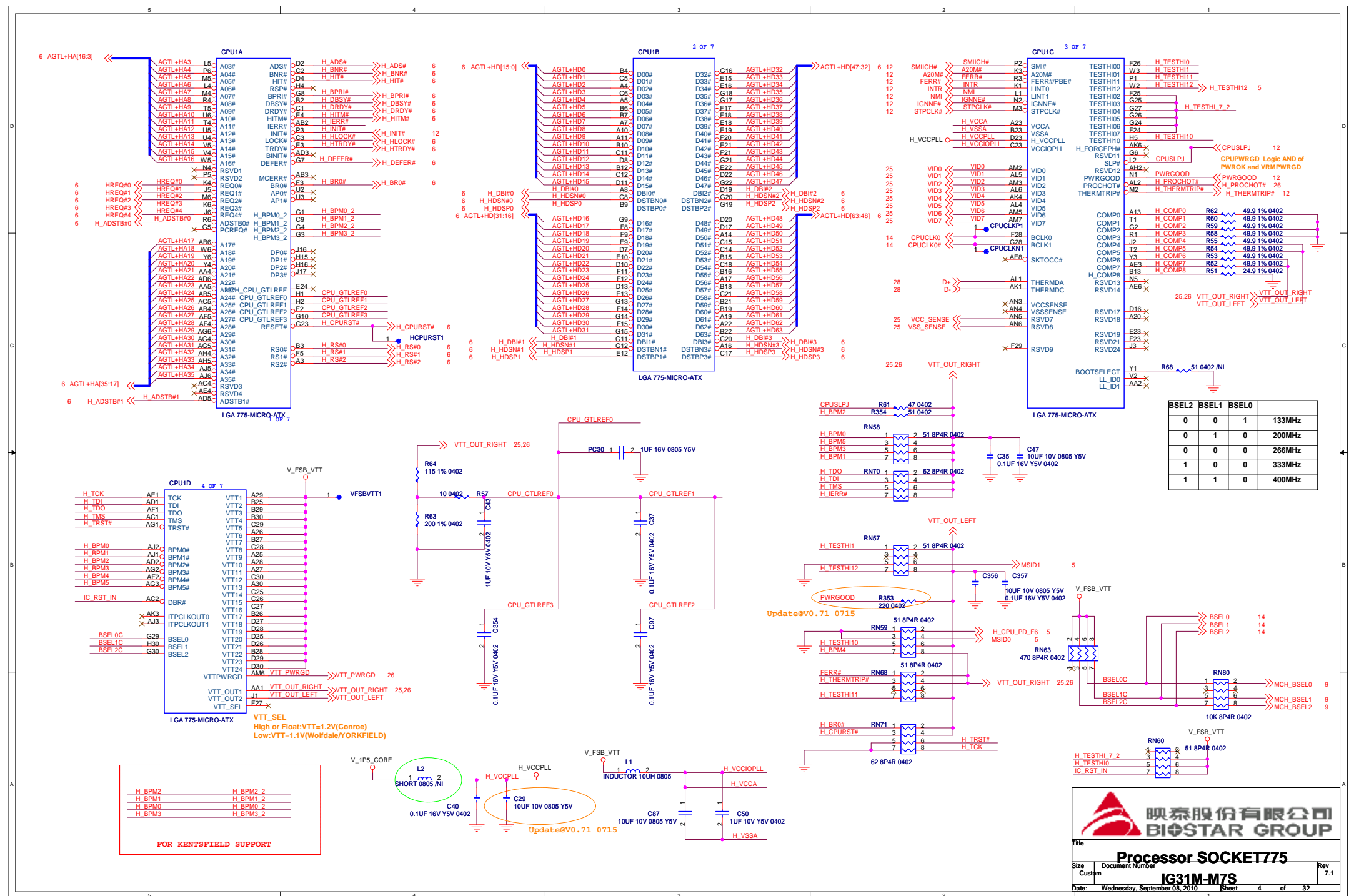
(1) 2010/06/07 (V0.7-->V0.71)  
V0.71 Changed As Below  
1.CPU Output Choke change to "INDUCTOR 1UH 30A" ㄟ VIN Cap-->4.7UF ㄟ V\_SM Output Add one "1000UF 6.3V 8X12" To Reduce Ripple  
2.Add LM431,Ude 2V5\_REF as V\_FSB\_VTT ㄟ V\_IP05 ㄟ V\_IP5\_CORE Reference Voltage  
3.SIO: Update SLP\_S4 ㄟ Update VBAT Circuit  
4.For PEX16 & DIMM SLOT Too Closed ㄟ Move DIMM SLOTS up to 80mils  
5.Update +5V\_DUAL Circuit  
6.Add V\_SM ㄟ V\_FSB\_VTT OV Function ㄟ Modify V\_SM Default Voltage=1.95V ㄟ Use SIO GP65,GP66 as V\_FSB\_VTT OV  
7.Change Component's Reference ㄟ KBMS1,VGA1,RJ45USB1,USB1,F\_USB1,F\_USB2,PANEL1,PRINT1,ATXPWR1 ㄟ  
8.NB PLL Delete "SHORT 0805 /NI", Add "1UF 10V Y5V 0402"MLCC  
9.Add R353 For "PWRGOOD" Pull High; Add R61 For "CPUSLPJ" Pull High

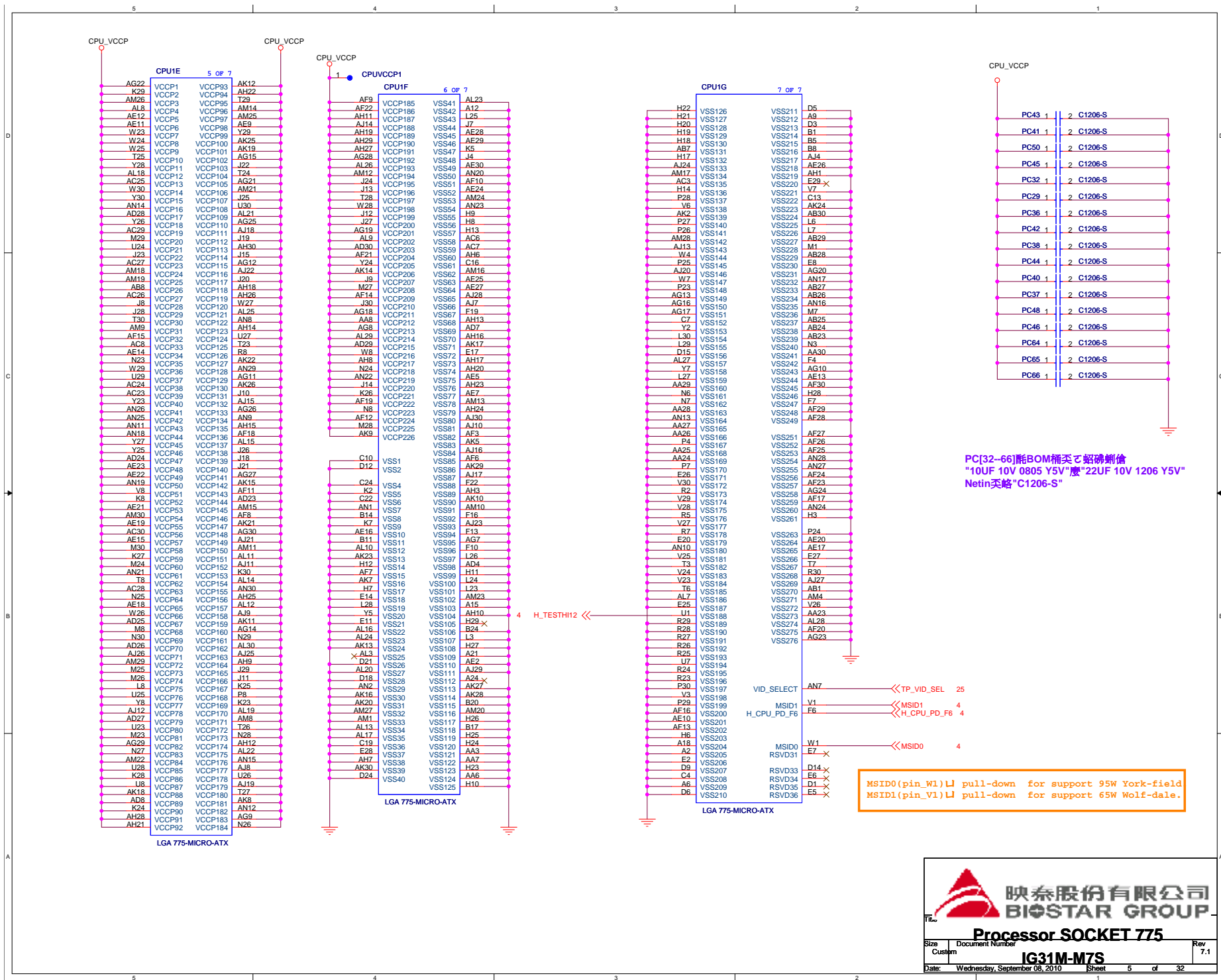
(2) 2010/08/05 (V0.71-->V7.0)  
V7.0 Changed As Below  
1.Change R239 TO "1.3K 1% 0402" For V\_FSB\_VTT Default Voltage 1.3V--->1.25V  
2.Modify Asynchronous Sideband Signal's Reference Layer in Layout(H\_INIT#,NMI,IGNNE#,STPCLK#)  
3.Add 3PCS "100P 50V NPO 0402 /NI" Close to Audio Connector For EMI  
4.Add CT20 "1000UF 6.3V 8X12" For VCC3\_3  
5.Add BNC5,BNC6 "10UF 10V 0805 Y5V /NI" For V\_FSB\_VTT  
6.Change C113 "10UF 10V 0805 Y5V" For V\_CPU\_IO  
7.Add C368,C553 For VCC3\_3 BYPASS  
8.Add R213,R216 For 6321A VBOOT;R210,R211 10 0805-->0 0805

(3) 2010/09/02 (V7.0-->V7.1)

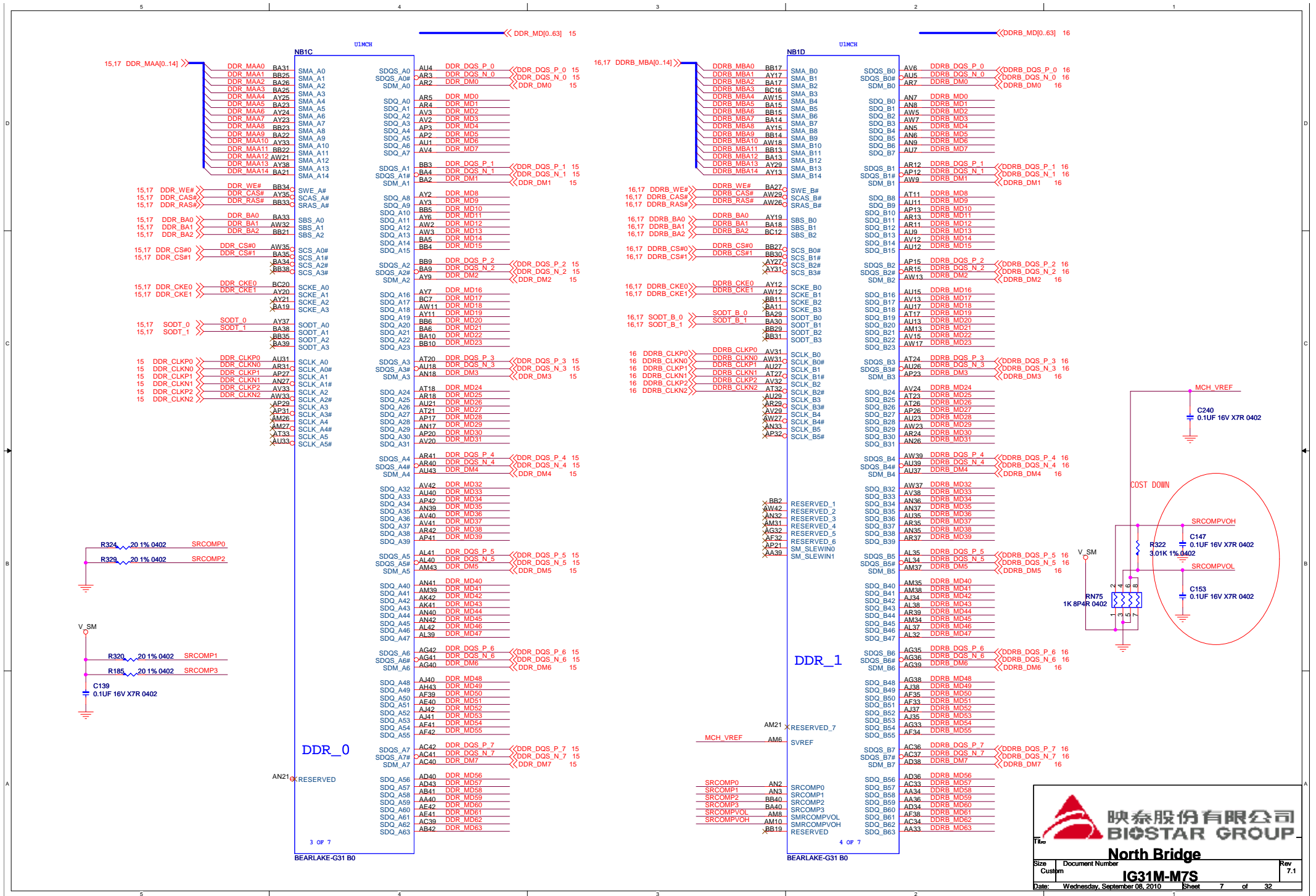
V7.1 Changed As Below

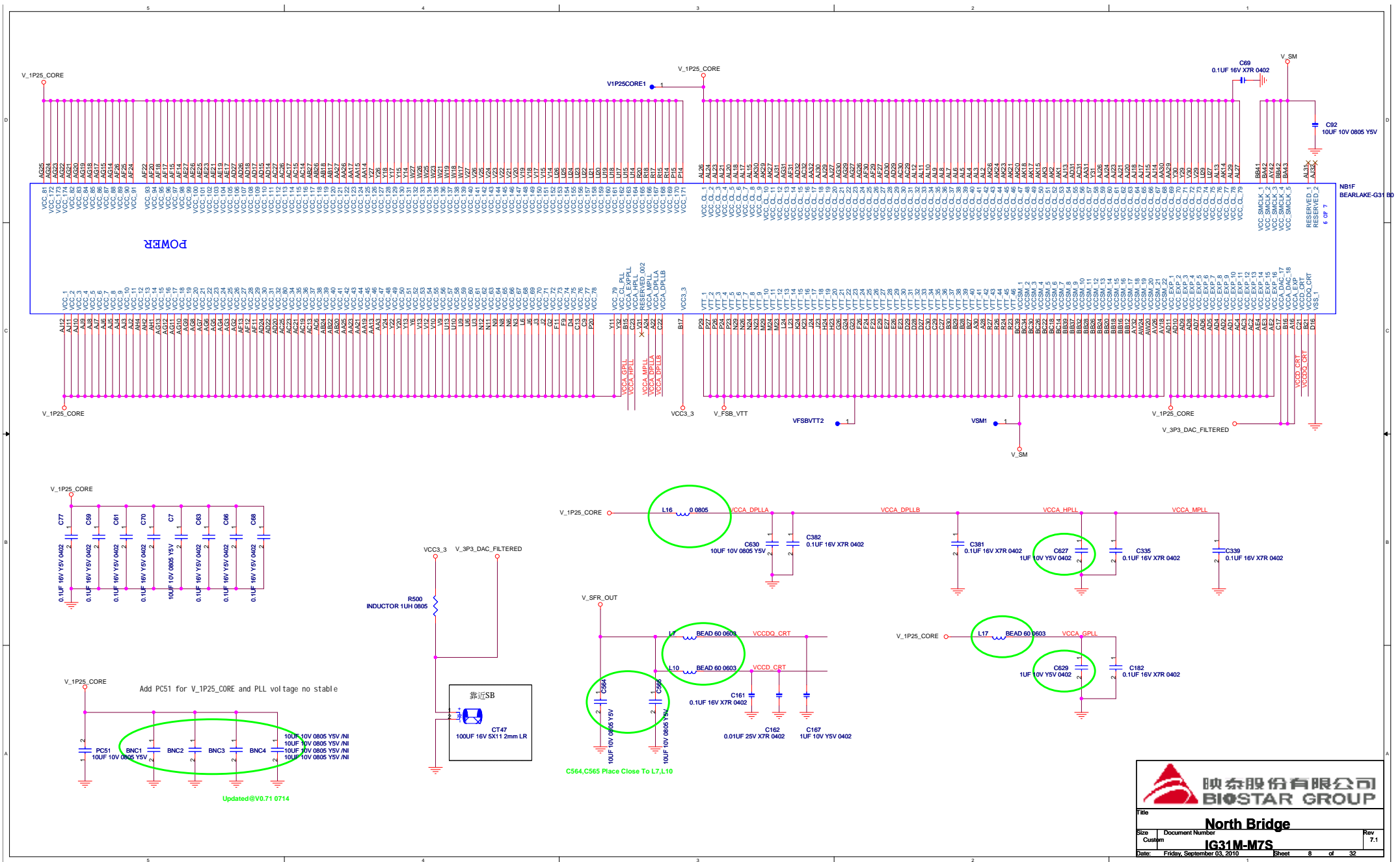
- 1.Page22: Add Q91,Q92 "CM1293 SOT23-6" For Front USB ESD Protection  
2.Page27: Change R208,R282 "10 0805"--->"4.7 0805"  
3.Page31: Change LAN ESD Q73 CM1293 /NI--->RCLAMP3304 /NI  
4.Page25: Change PR31,PR32"0 0402"--->"2.7 0805"  
5.Page21: Change RN6,RN10,RN20"22 8P4R 0402"--->"33 8P4R 0402" For Impedance Match  
6.Page21: Change C2,C3,C4,C6"33P 50V NPO 0402"--->"47P 50V NPO 0402"  
7.Page05: Change C35,C37,C40,C97,C354,C356"0.1UF 16V X7R 0402"--->"0.1UF 16V Y5V 0402"  
8.Page06: Change C95,C134"0.1UF 16V X7R 0402"--->"0.1UF 16V Y5V 0402"  
9.Page09: Change C363"0.1UF 16V X7R 0402"--->"0.1UF 16V Y5V 0402" For Cost down  
10.Page27: Change R326,R373 "10K 1% 0402"--->"10K 0402" For Cost Down





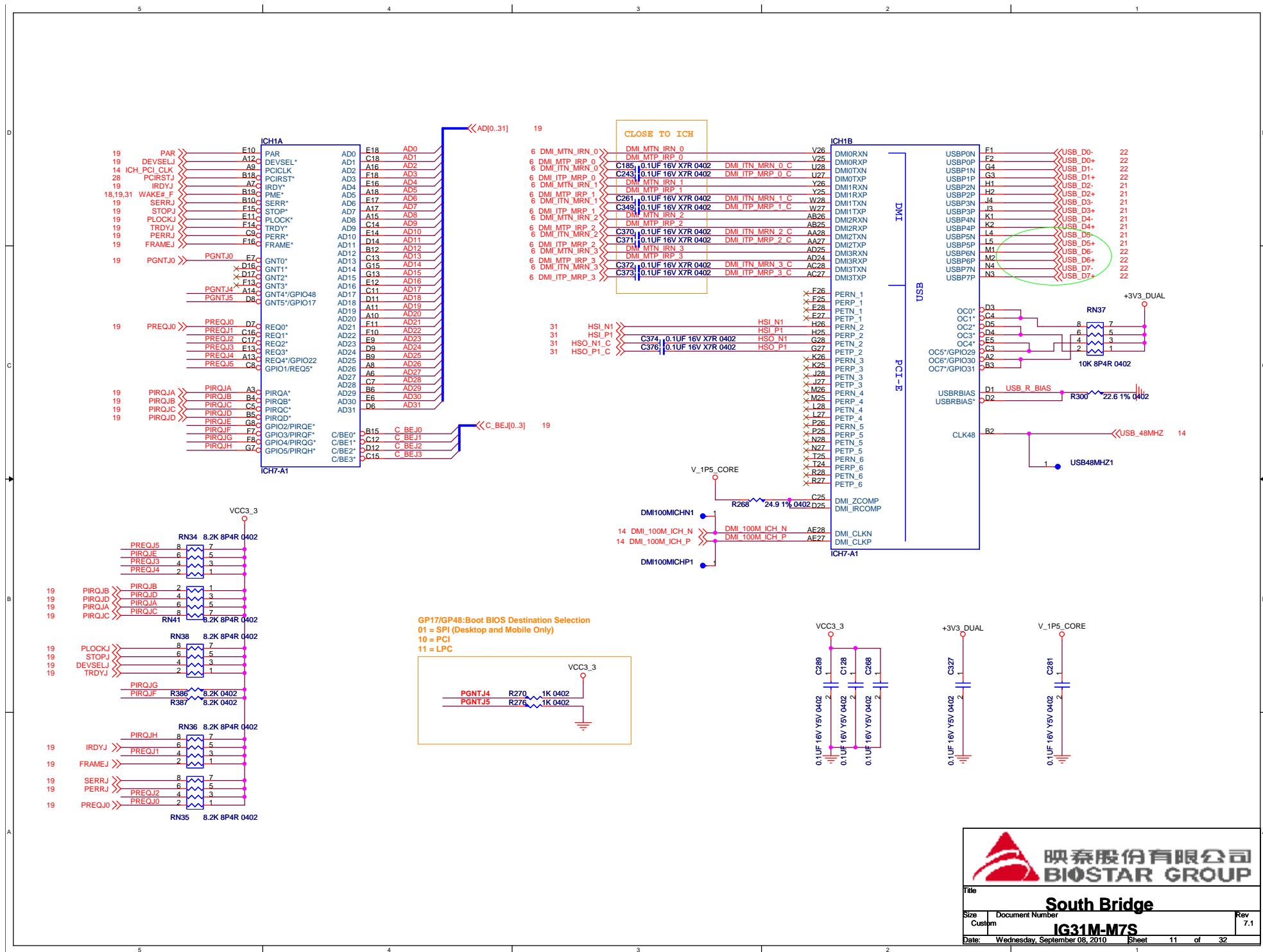


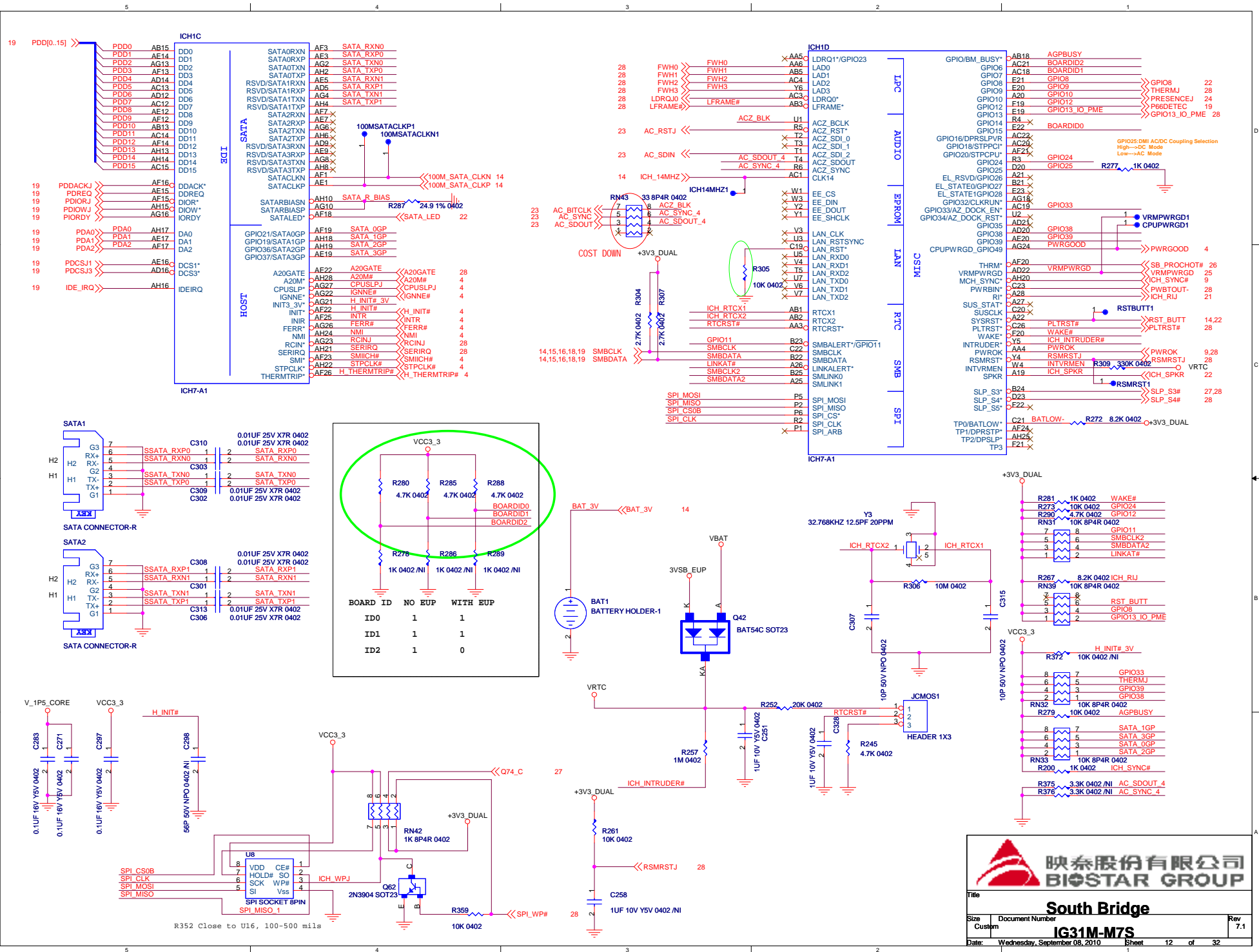


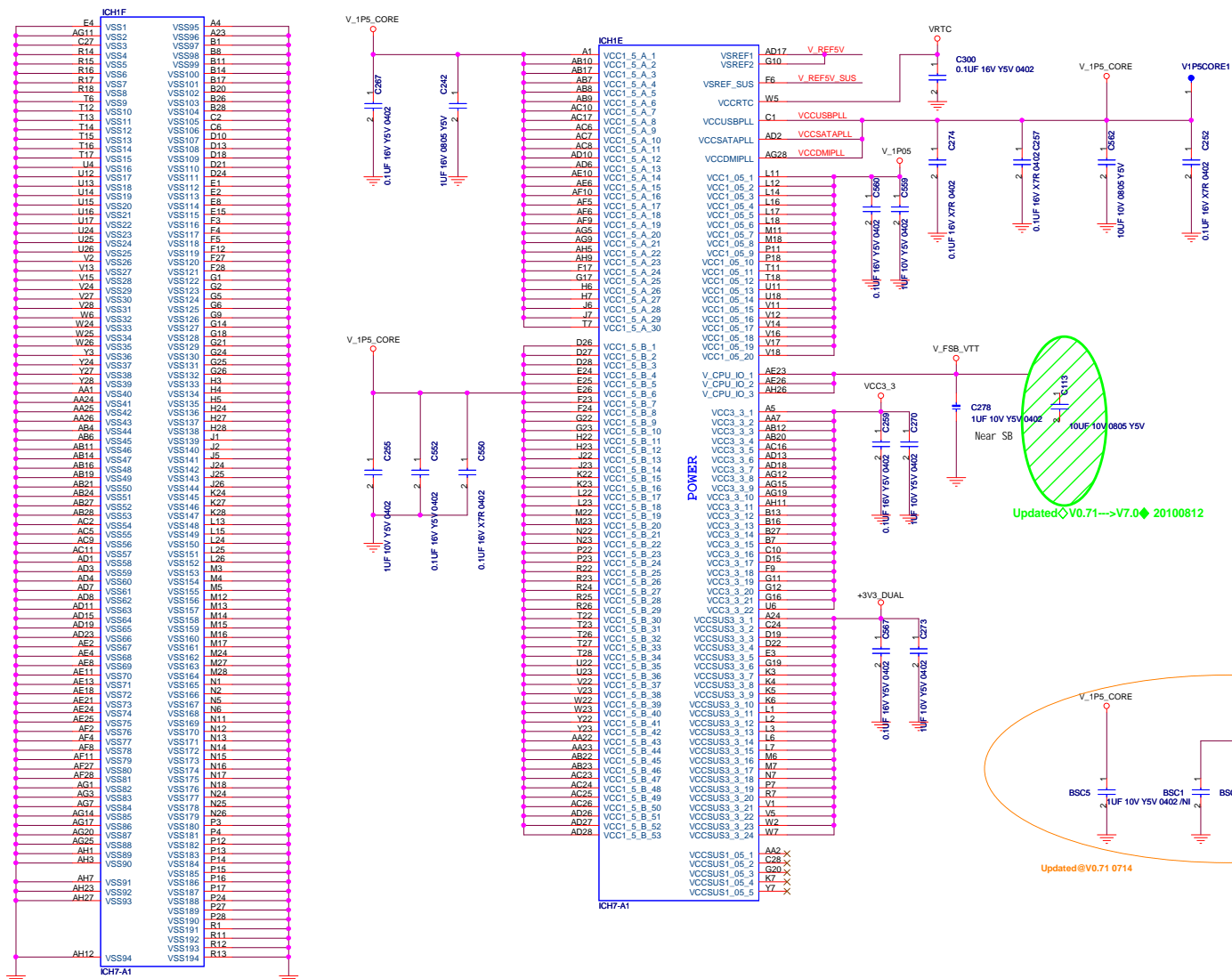
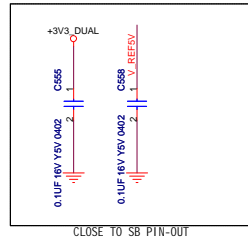


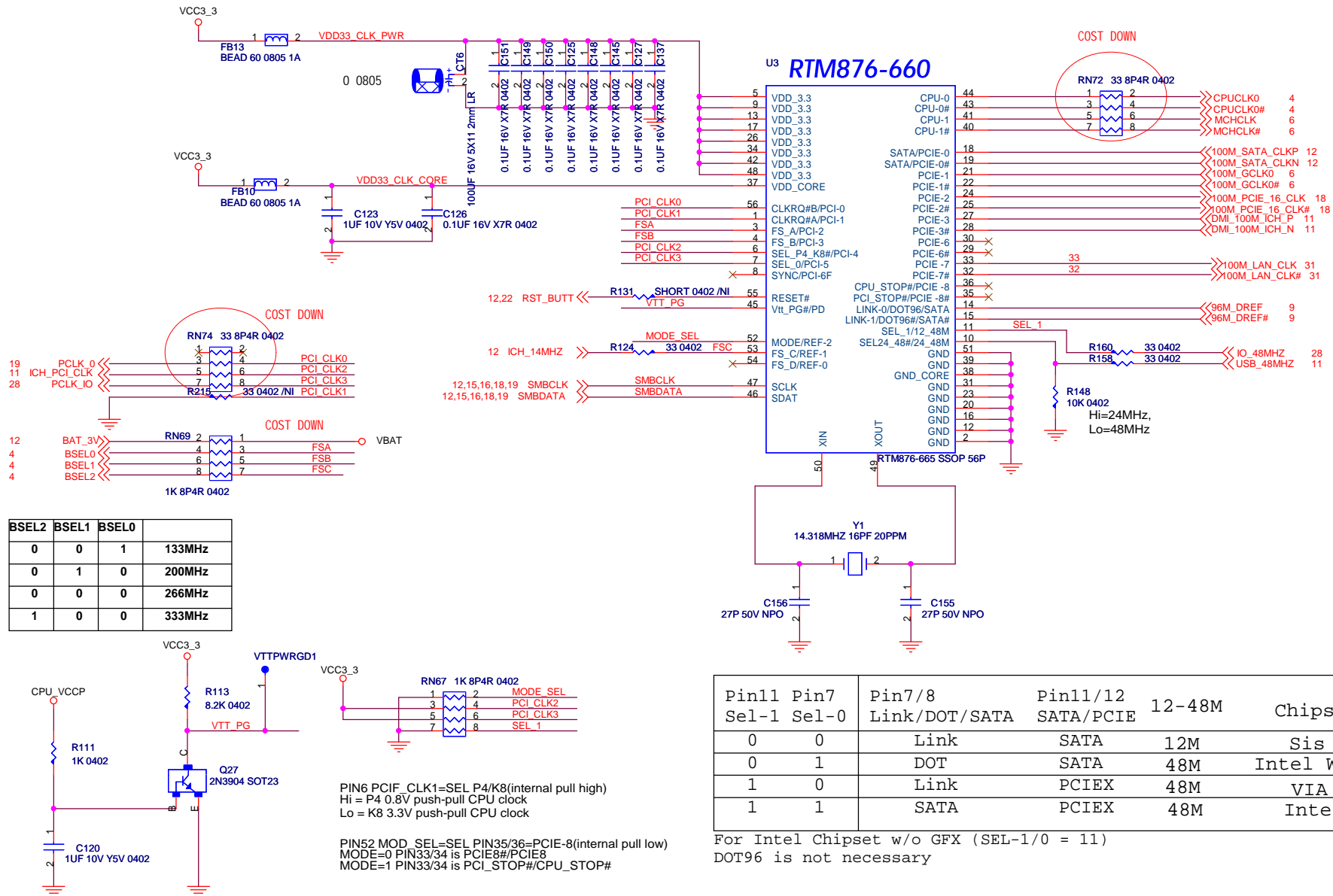


NB10		
BC37	VSS_1	AF1
BC38	VSS_2	VSS_161
BC39	VSS_3	AF2
BC40	VSS_4	VSS_164
BC41	VSS_5	AF1
BC42	VSS_6	VSS_165
BC43	VSS_7	VSS_166
BC44	VSS_8	VSS_167
BC45	VSS_9	VSS_168
BC46	VSS_10	VSS_169
BC47	VSS_11	VSS_170
BC48	VSS_12	VSS_171
BC49	VSS_13	VSS_172
BC50	VSS_14	VSS_173
BC51	VSS_15	VSS_174
BC52	VSS_16	VSS_175
BC53	VSS_17	VSS_176
BC54	VSS_18	VSS_177
BC55	VSS_19	VSS_178
BC56	VSS_20	VSS_179
BC57	VSS_21	VSS_180
BC58	VSS_22	VSS_181
BC59	VSS_23	VSS_182
BC60	VSS_24	VSS_183
BC61	VSS_25	VSS_184
BC62	VSS_26	VSS_185
BC63	VSS_27	VSS_186
BC64	VSS_28	VSS_187
BC65	VSS_29	VSS_188
BC66	VSS_30	VSS_189
BC67	VSS_31	VSS_190
BC68	VSS_32	VSS_191
BC69	VSS_33	VSS_192
BC70	VSS_34	VSS_193
BC71	VSS_35	VSS_194
BC72	VSS_36	VSS_195
BC73	VSS_37	VSS_196
BC74	VSS_38	VSS_197
BC75	VSS_39	VSS_198
BC76	VSS_40	VSS_199
BC77	VSS_41	VSS_200
BC78	VSS_42	VSS_201
BC79	VSS_43	VSS_202
BC80	VSS_44	VSS_203
BC81	VSS_45	VSS_204
BC82	VSS_46	VSS_205
BC83	VSS_47	VSS_206
BC84	VSS_48	VSS_207
BC85	VSS_49	VSS_208
BC86	VSS_50	VSS_209
BC87	VSS_51	VSS_210
BC88	VSS_52	VSS_211
BC89	VSS_53	VSS_212
BC90	VSS_54	VSS_213
BC91	VSS_55	VSS_214
BC92	VSS_56	VSS_215
BC93	VSS_57	VSS_216
BC94	VSS_58	VSS_217
BC95	VSS_59	VSS_218
BC96	VSS_60	VSS_219
BC97	VSS_61	VSS_220
BC98	VSS_62	VSS_221
BC99	VSS_63	VSS_222
BC100	VSS_64	VSS_223
BC101	VSS_65	VSS_224
BC102	VSS_66	VSS_225
BC103	VSS_67	VSS_226
BC104	VSS_68	VSS_227
BC105	VSS_69	VSS_228
BC106	VSS_70	VSS_229
BC107	VSS_71	VSS_230
BC108	VSS_72	VSS_231
BC109	VSS_73	VSS_232
BC110	VSS_74	VSS_233
BC111	VSS_75	VSS_234
BC112	VSS_76	VSS_235
BC113	VSS_77	VSS_236
BC114	VSS_78	VSS_237
BC115	VSS_79	VSS_238
BC116	VSS_80	VSS_239
BC117	VSS_81	VSS_240
BC118	VSS_82	VSS_241
BC119	VSS_83	VSS_242
BC120	VSS_84	VSS_243
BC121	VSS_85	VSS_244
BC122	VSS_86	VSS_245
BC123	VSS_87	VSS_246
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BC152	VSS_116	VSS_275
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BC154	VSS_118	VSS_277
BC155	VSS_119	VSS_278
BC156	VSS_120	VSS_279
BC157	VSS_121	VSS_280
BC158	VSS_122	VSS_281
BC159	VSS_123	VSS_282
BC160	VSS_124	VSS_283
BC161	VSS_125	VSS_284
BC162	VSS_126	VSS_285
BC163	VSS_127	VSS_286
BC164	VSS_128	VSS_287
BC165	VSS_129	VSS_288
BC166	VSS_130	VSS_289
BC167	VSS_131	VSS_290
BC168	VSS_132	VSS_291
BC169	VSS_133	VSS_292
BC170	VSS_134	VSS_293
BC171	VSS_135	VSS_294
BC172	VSS_136	VSS_295
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BC203	VSS_167	VSS_326
BC204	VSS_168	VSS_327
BC205	VSS_169	VSS_328
BC206	VSS_170	VSS_329
BC207	VSS_171	VSS_330
BC208	VSS_172	VSS_331
BC209	VSS_173	VSS_332
BC210	VSS_174	VSS_333
BC211	VSS_175	VSS_334
BC212	VSS_176	VSS_335
BC213	VSS_177	VSS_336
BC214	VSS_178	VSS_337
BC215	VSS_179	VSS_338
BC216	VSS_180	VSS_339





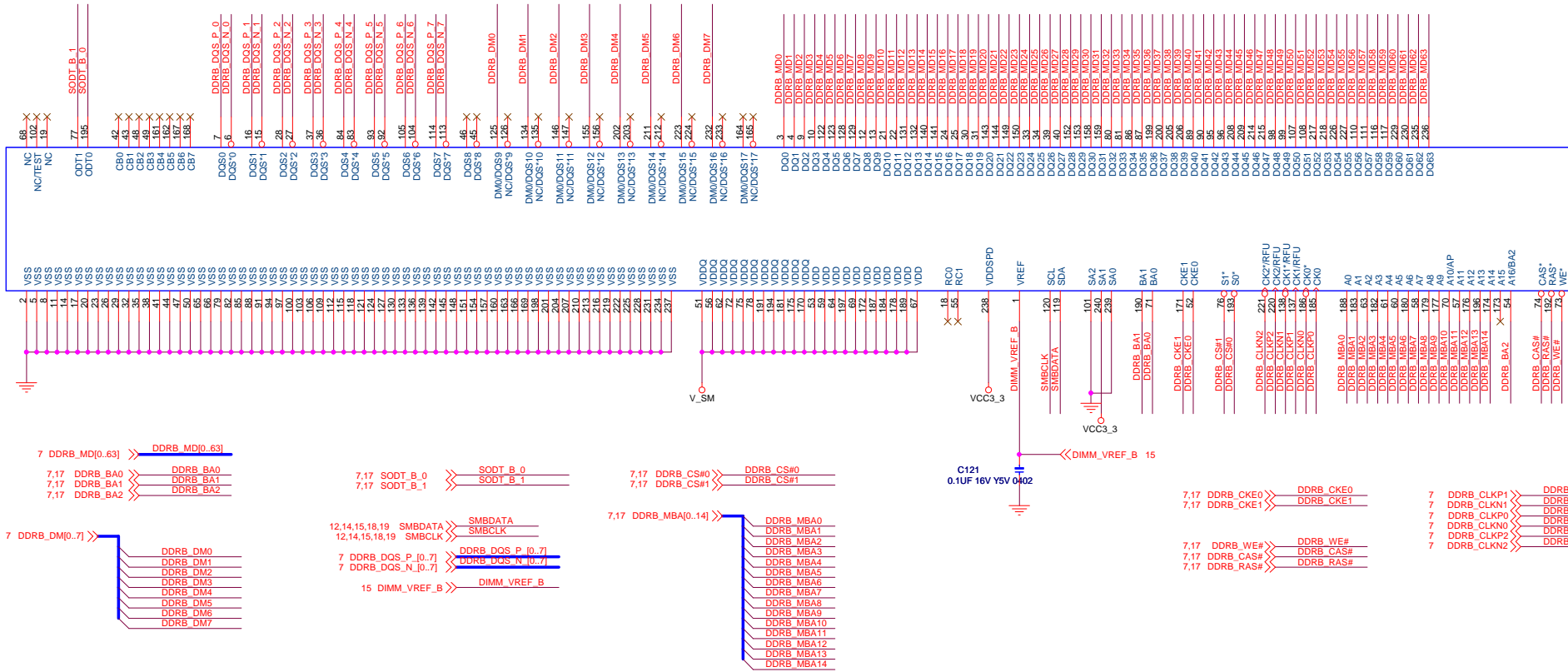




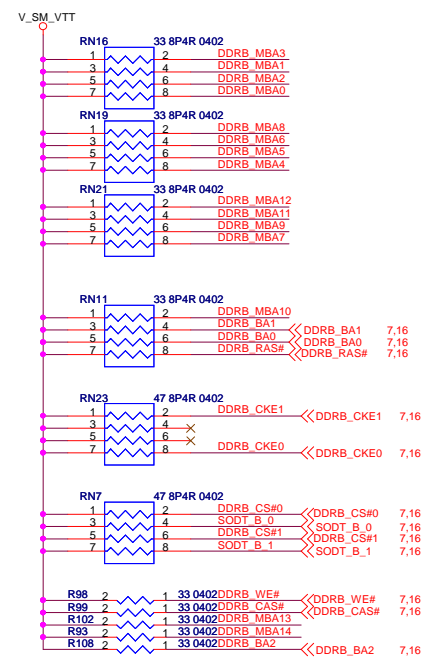
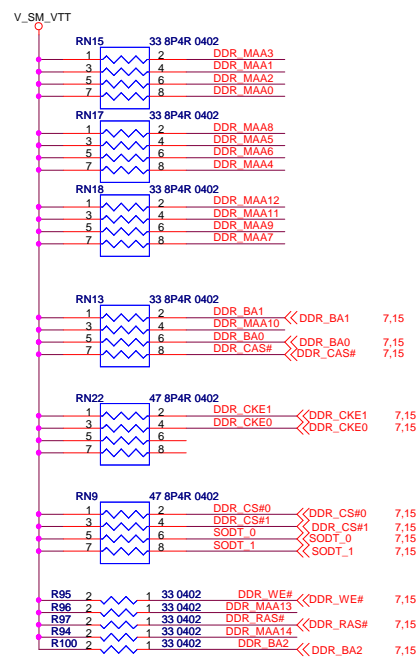
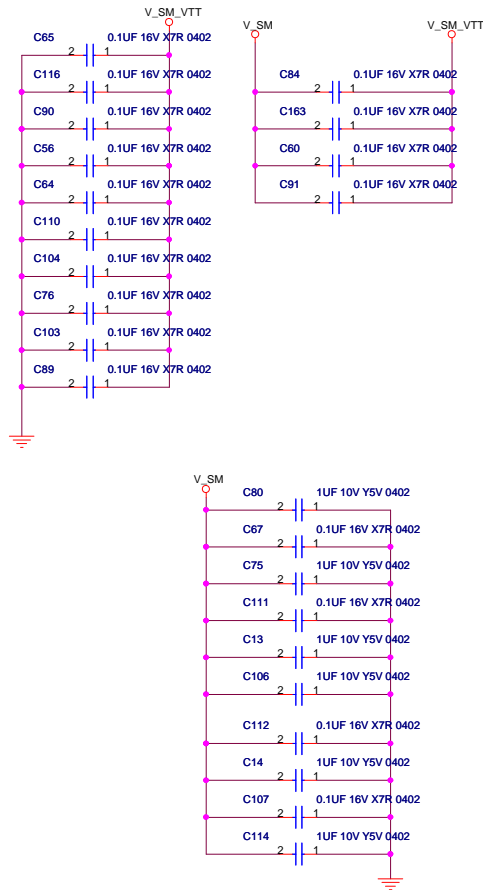
Pin11	Pin7	Pin7/8	Pin11/12	12-48M	Chipset
Sel-1	Sel-0	Link/DOT/SATA	SATA/PCIE		
0	0	Link	SATA	12M	Sis
0	1	DOT	SATA	48M	Intel W/GFX
1	0	Link	PCIEX	48M	VIA
1	1	SATA	PCIEX	48M	Intel

For Intel Chipset w/o GFX (SEL-1/0 = 11)  
DOT96 is not necessary





DDR2\_B1  
DDR2-240 PIN-R

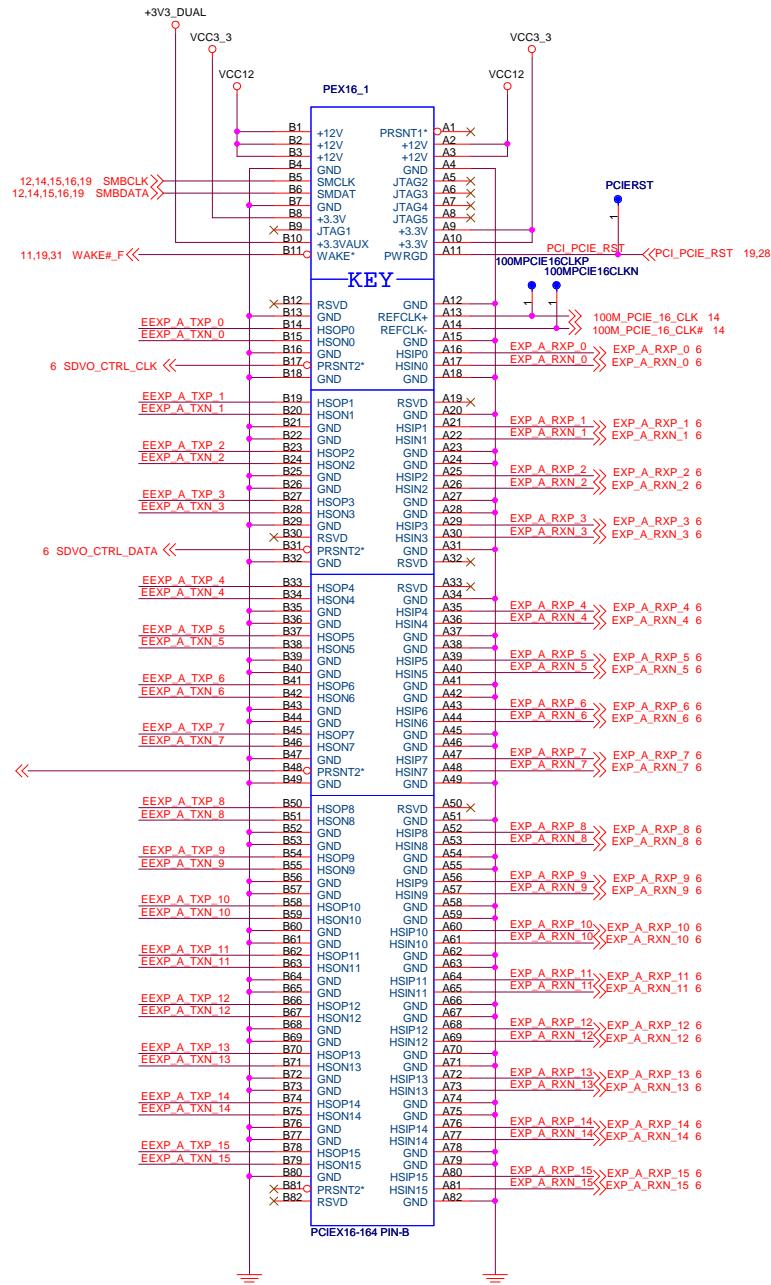
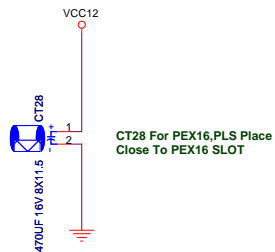


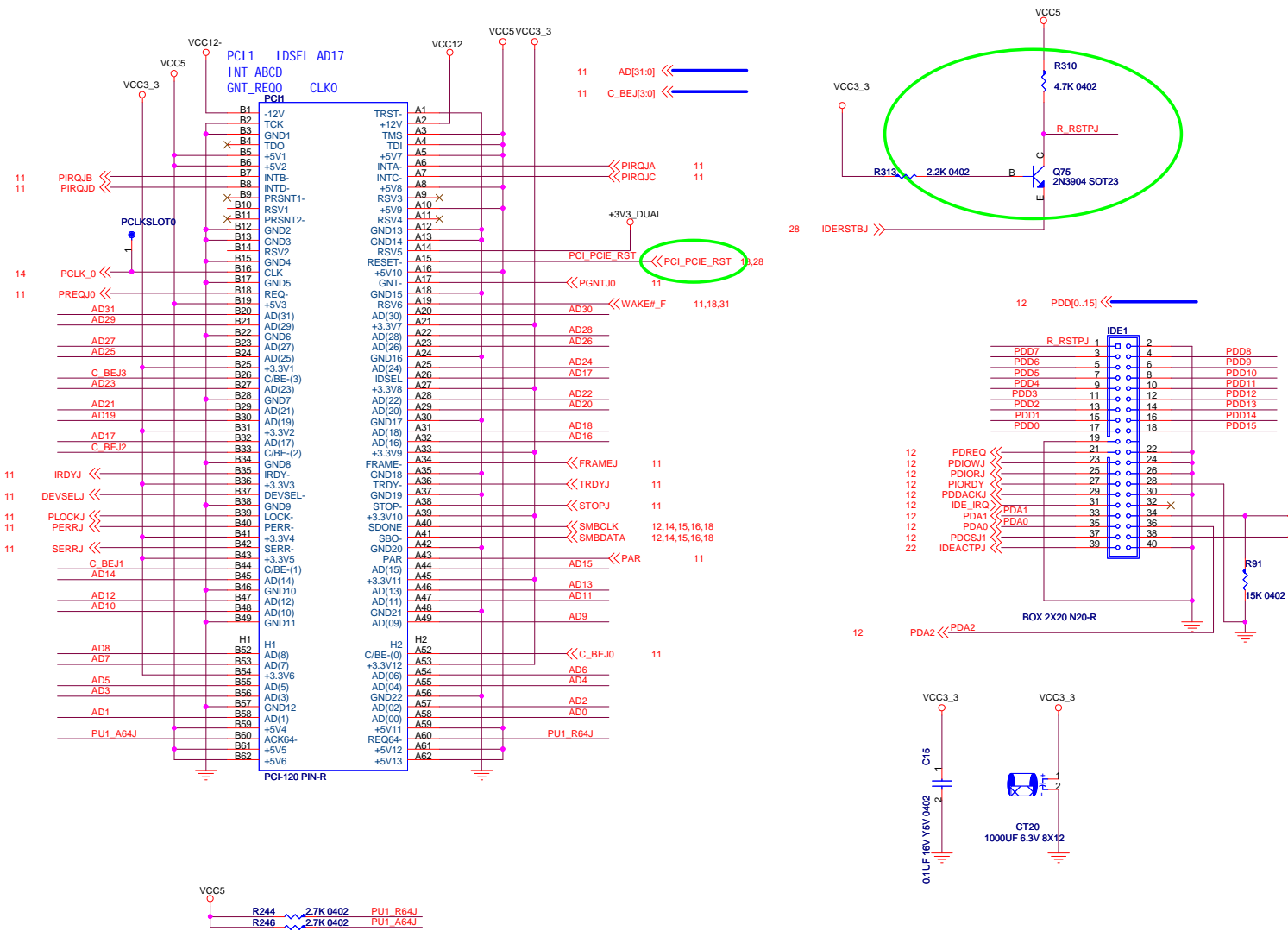
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 <<DDR\_DM[0..7] 7,15  
 <<DDR\_MD[0..63] 7,15  
 <<DDR\_B\_MBA[0..12] 7,16  
 <<DDR\_B\_DM[0..7] 7,16  
 <<DDR\_B\_MD[0..63] 7,16

<<DDR\_MAA[0..14] 7,15

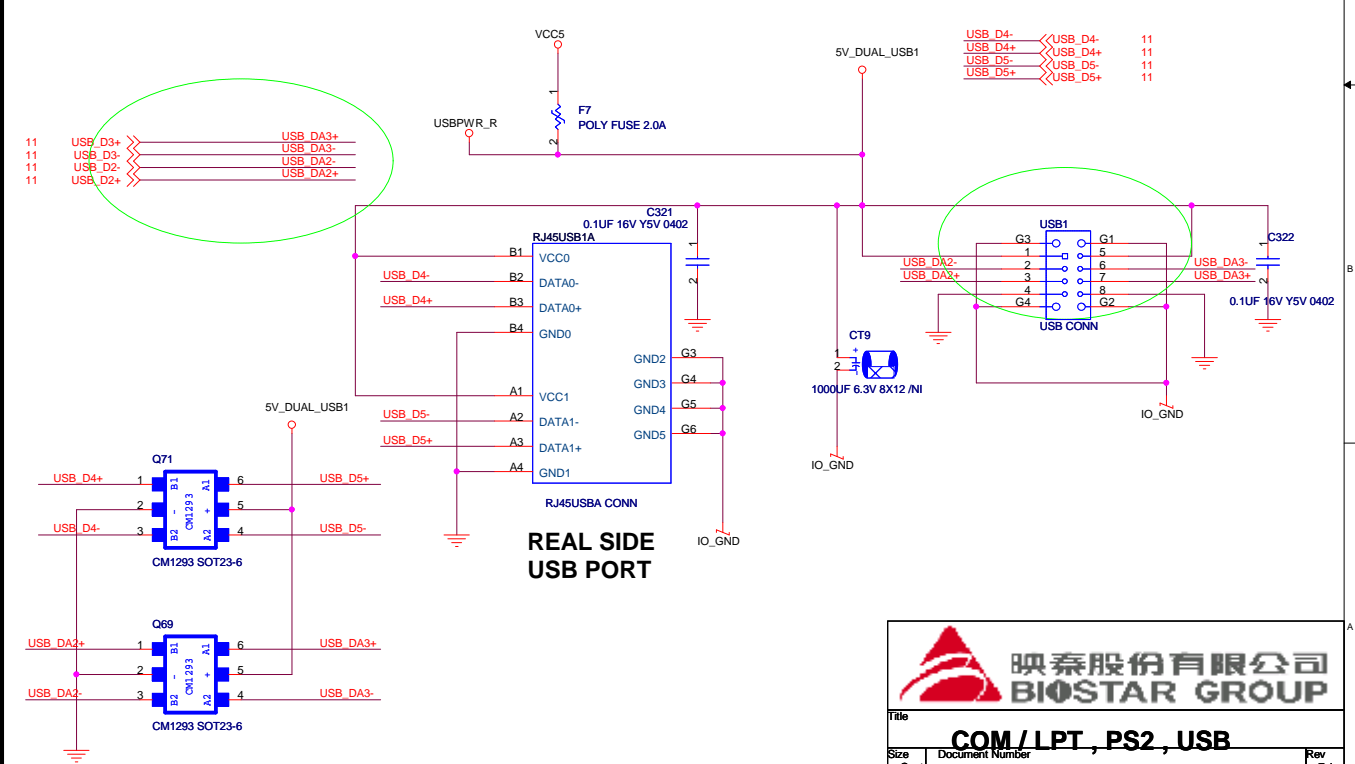
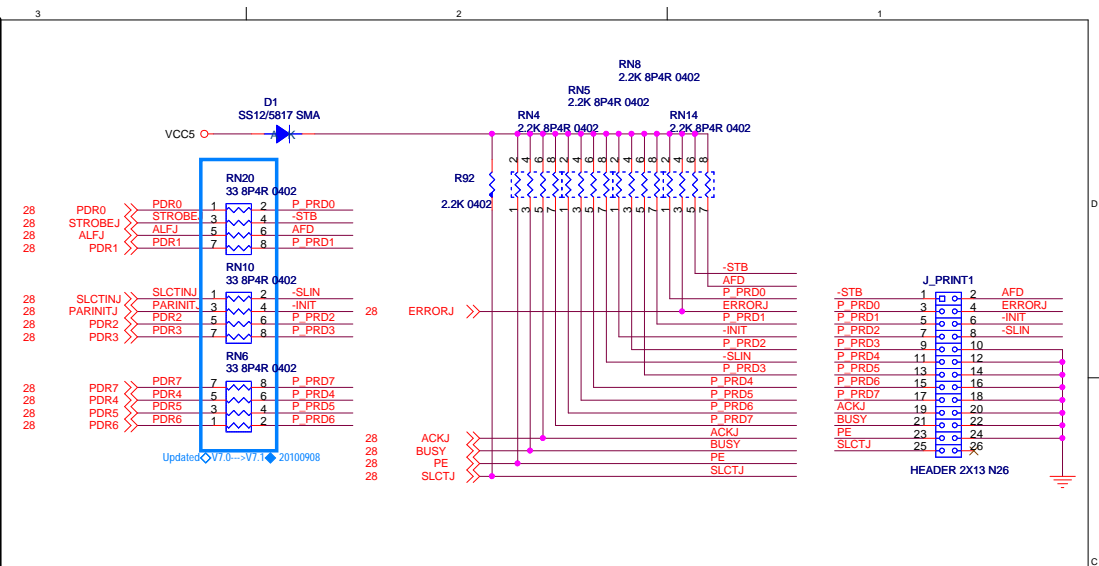
<<DDR\_B\_MBA[0..14] 7,16

6	EXP_A_TXP_0	<< EXP_A_TXP_0_1	2	EEXP_A_TXP_0
6	EXP_A_TXN_0	<< EXP_A_TXN_0_1	2	EEXP_A_TXN_0
6	EXP_A_TXP_1	<< EXP_A_TXP_1_1	2	EEXP_A_TXP_1
6	EXP_A_TXN_1	<< EXP_A_TXN_1_1	2	EEXP_A_TXN_1
6	EXP_A_TXP_2	<< EXP_A_TXP_2_1	2	EEXP_A_TXP_2
6	EXP_A_TXN_2	<< EXP_A_TXN_2_1	2	EEXP_A_TXN_2
6	EXP_A_TXP_3	<< EXP_A_TXP_3_1	2	EEXP_A_TXP_3
6	EXP_A_TXN_3	<< EXP_A_TXN_3_1	2	EEXP_A_TXN_3
6	EXP_A_TXP_4	<< EXP_A_TXP_4_1	2	EEXP_A_TXP_4
6	EXP_A_TXN_4	<< EXP_A_TXN_4_1	2	EEXP_A_TXN_4
6	EXP_A_TXP_5	<< EXP_A_TXP_5_1	2	EEXP_A_TXP_5
6	EXP_A_TXN_5	<< EXP_A_TXN_5_1	2	EEXP_A_TXN_5
6	EXP_A_TXP_6	<< EXP_A_TXP_6_1	2	EEXP_A_TXP_6
6	EXP_A_TXN_6	<< EXP_A_TXN_6_1	2	EEXP_A_TXN_6
6	EXP_A_TXP_7	<< EXP_A_TXP_7_1	2	EEXP_A_TXP_7
6	EXP_A_TXN_7	<< EXP_A_TXN_7_1	2	EEXP_A_TXN_7
6	EXP_A_TXP_8	<< EXP_A_TXP_8_1	2	EEXP_A_TXP_8
6	EXP_A_TXN_8	<< EXP_A_TXN_8_1	2	EEXP_A_TXN_8
6	EXP_A_TXP_9	<< EXP_A_TXP_9_1	2	EEXP_A_TXP_9
6	EXP_A_TXN_9	<< EXP_A_TXN_9_1	2	EEXP_A_TXN_9
6	EXP_A_TXP_10	<< EXP_A_TXP_10_1	2	EEXP_A_TXP_10
6	EXP_A_TXN_10	<< EXP_A_TXN_10_1	2	EEXP_A_TXN_10
6	EXP_A_TXP_11	<< EXP_A_TXP_11_1	2	EEXP_A_TXP_11
6	EXP_A_TXN_11	<< EXP_A_TXN_11_1	2	EEXP_A_TXN_11
6	EXP_A_TXP_12	<< EXP_A_TXP_12_1	2	EEXP_A_TXP_12
6	EXP_A_TXN_12	<< EXP_A_TXN_12_1	2	EEXP_A_TXN_12
6	EXP_A_TXP_13	<< EXP_A_TXP_13_1	2	EEXP_A_TXP_13
6	EXP_A_TXN_13	<< EXP_A_TXN_13_1	2	EEXP_A_TXN_13
6	EXP_A_TXP_14	<< EXP_A_TXP_14_1	2	EEXP_A_TXP_14
6	EXP_A_TXN_14	<< EXP_A_TXN_14_1	2	EEXP_A_TXN_14
6	EXP_A_TXP_15	<< EXP_A_TXP_15_1	2	EEXP_A_TXP_15
6	EXP_A_TXN_15	<< EXP_A_TXN_15_1	2	EEXP_A_TXN_15



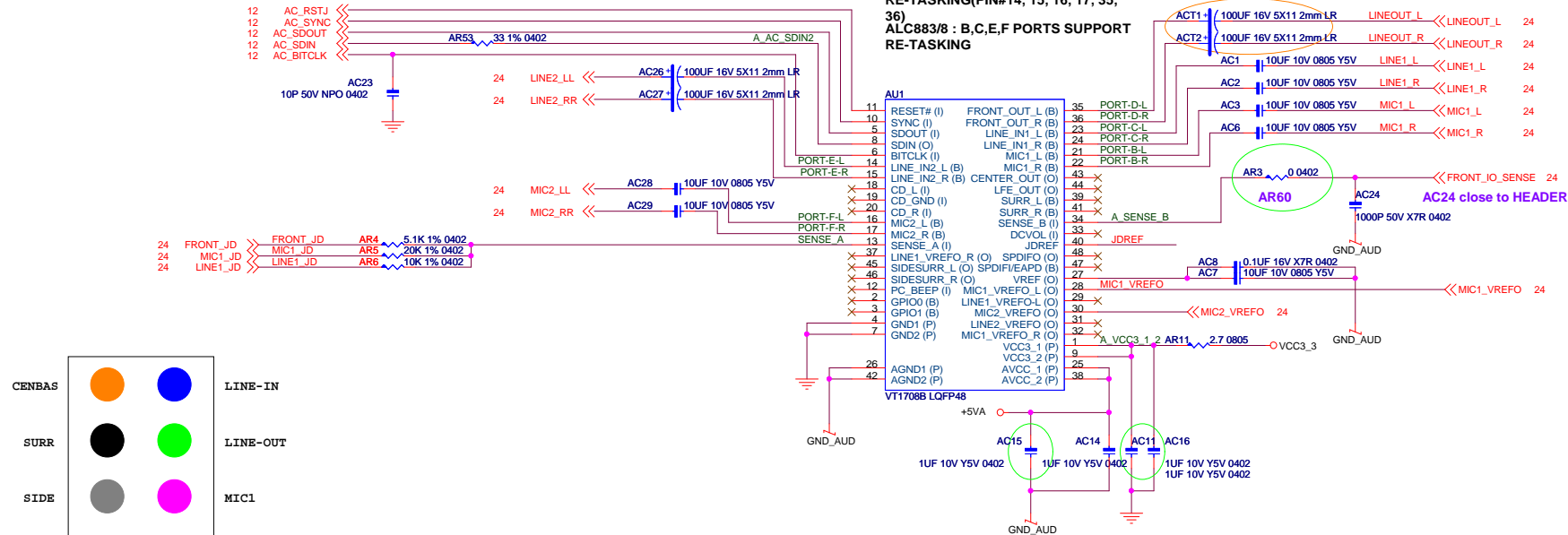




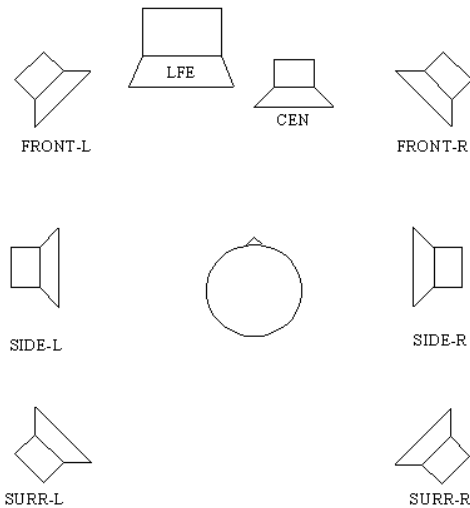


 <b>映泰股份有限公司</b> <b>BIOSTAR GROUP</b>				A	
Title					
<b>COM / LPT , PS2 , USB</b>					
Size		Document Number			Rev
Custom		<b>IG31M-M7S</b>			7.1
Date:		Wednesday, September 08, 2010		Sheet	21 of 32

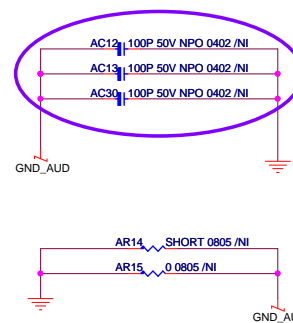




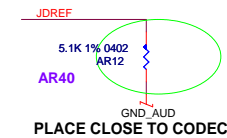
## 7.1 Speaker Configuration



Update@V7.0 0805  
Place Close To Audio JACK



VT1708B: AR60-->0, AR40-->5.1K  
ALC662: AR60-->47, AR40-->20K



### Configuration

	PORT-A	PORT-B	PORT-C	PORT-D	PORT-E	PORT-F	PORT-G	PORT-H
Function	SURR	MIC1	LINE1	LINEOUT	LINE2	MIC2	CEN/LFE	SIDE
Location	Rear	Rear	Rear	Rear	Front	Front	Rear	Rear

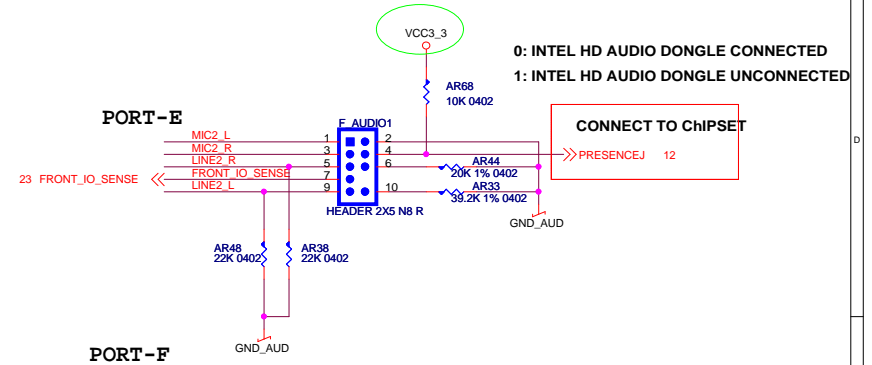
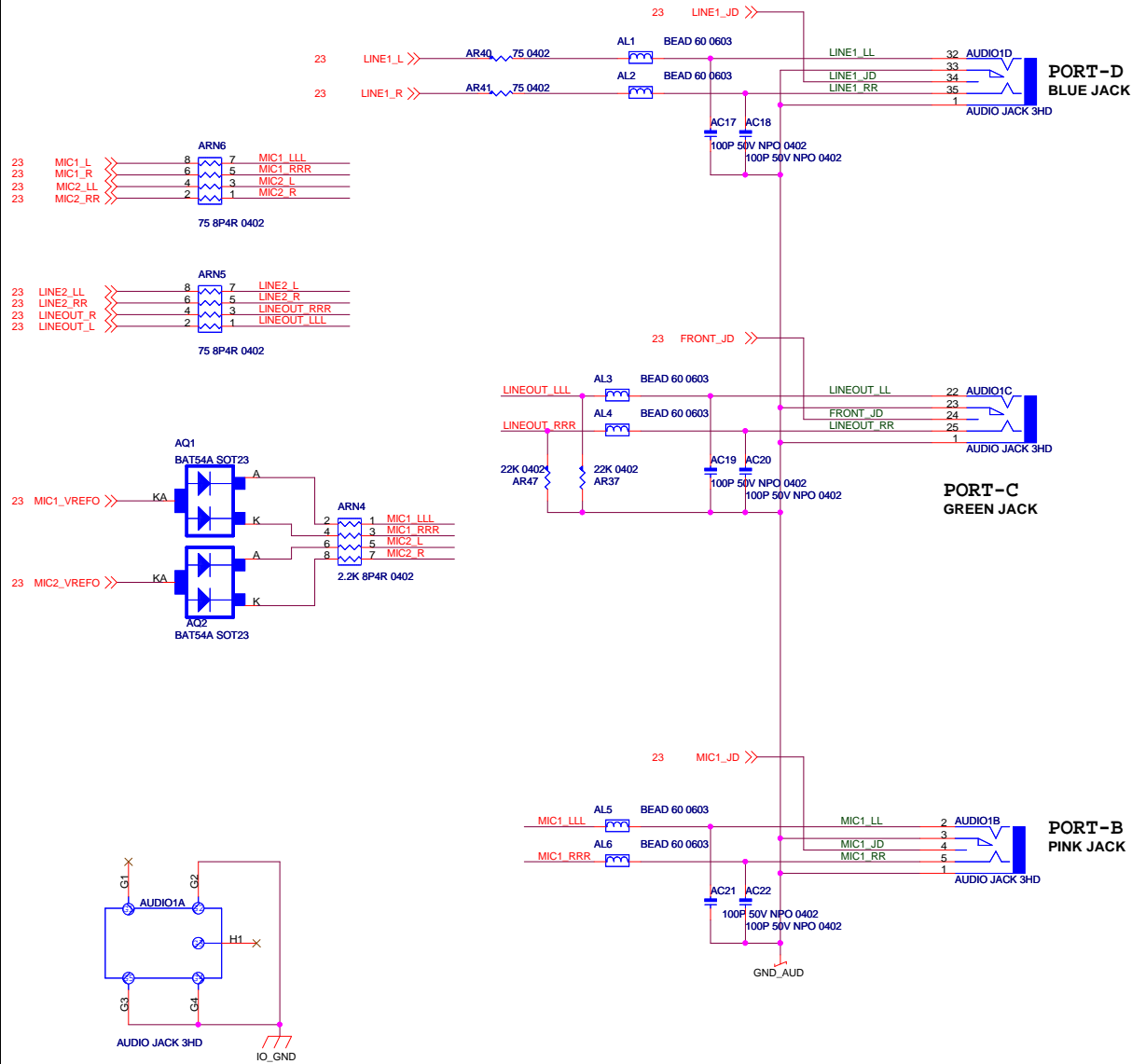
 **映泰股份有限公司**  
**BIOSTAR GROUP**

Title  
**VT1708B**

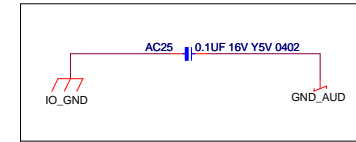
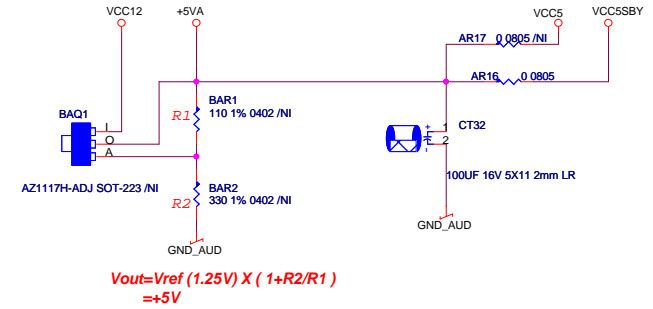
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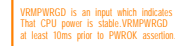
Date: Wednesday, September 08, 2010 Sheet 23 of 32

## Rear Panel Onboard Analog I/O



## AUDIO ANALOG POWER





ATXPWR2 VCC12Q0

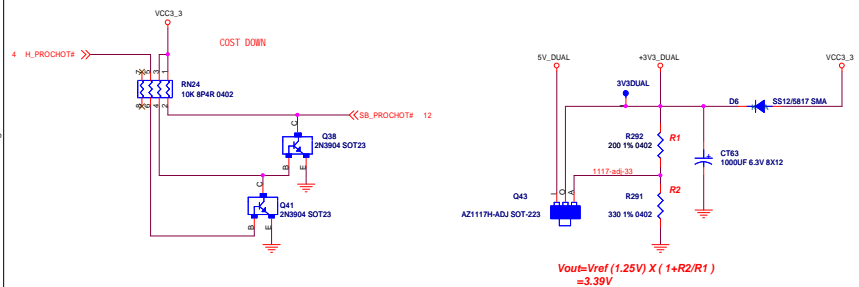
1.25A 30A 1X10X5 CARVE

POWER CONN ATX12V232

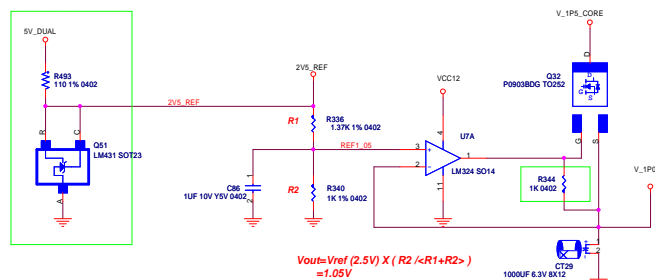
PCT1 PCT2 PCT3

1500UF 16V 10X20X5 LR O BX11 1500UF 16V 10X20X5 LR O BX11 1500UF 16V 10X20 LR O BX11

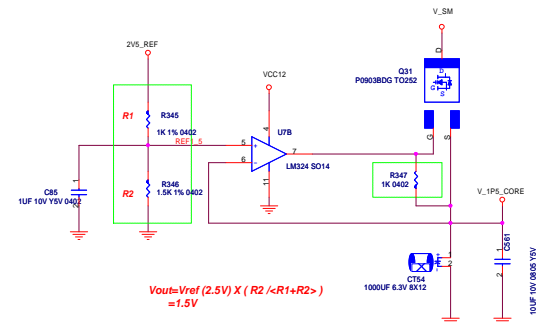
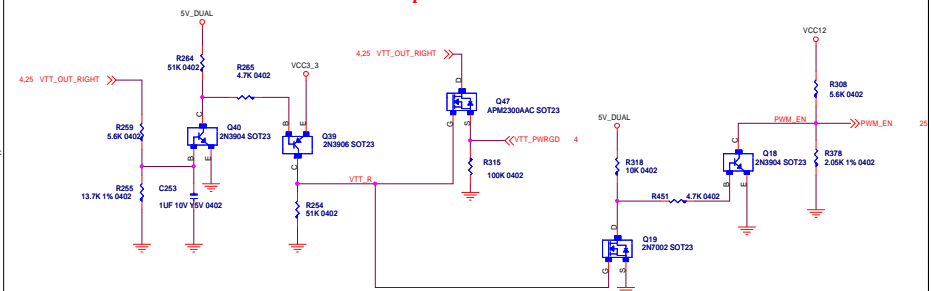
## +3V3\_DUAL



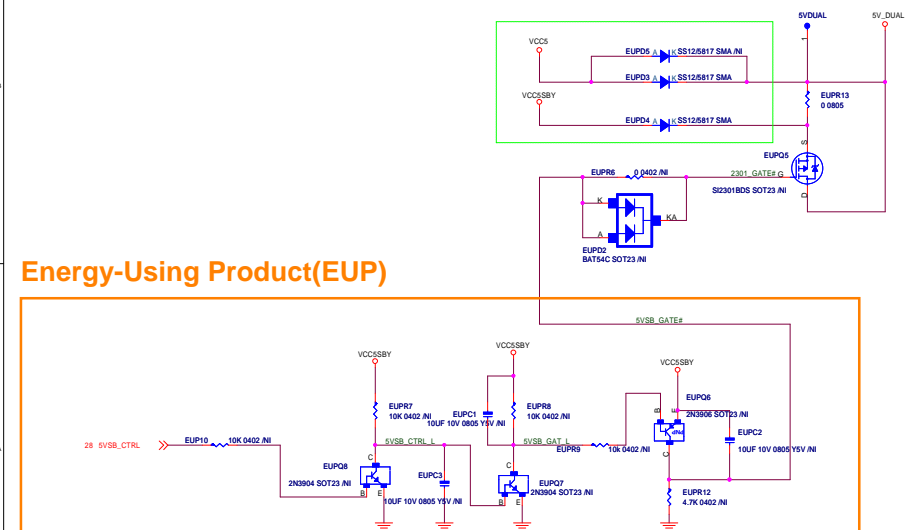
## 1D05V For SB



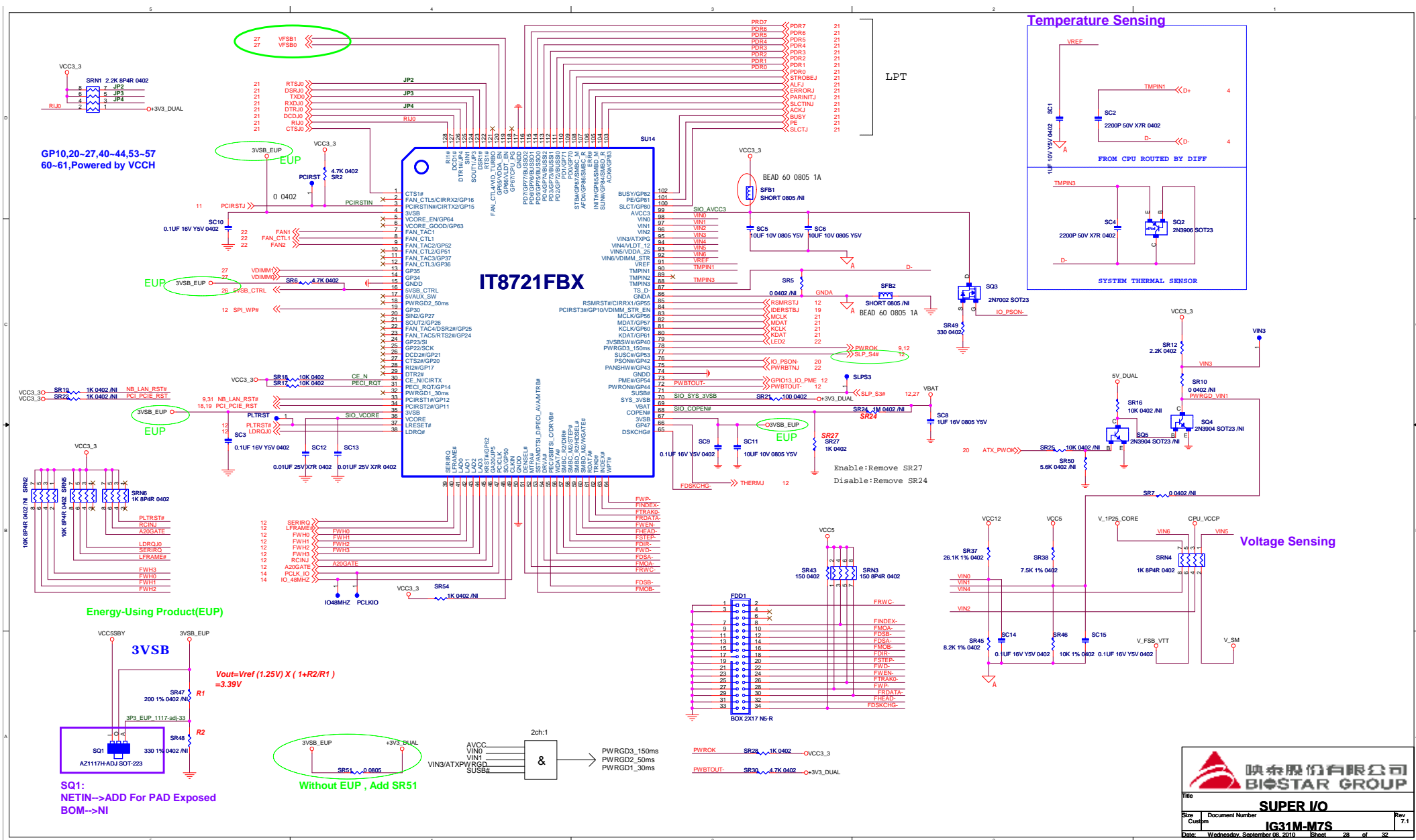
## PWM Sequence



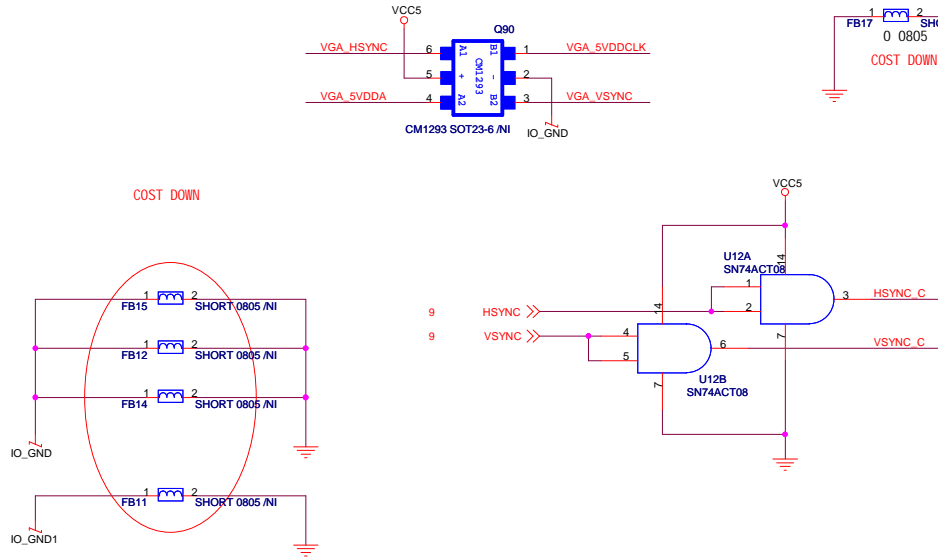
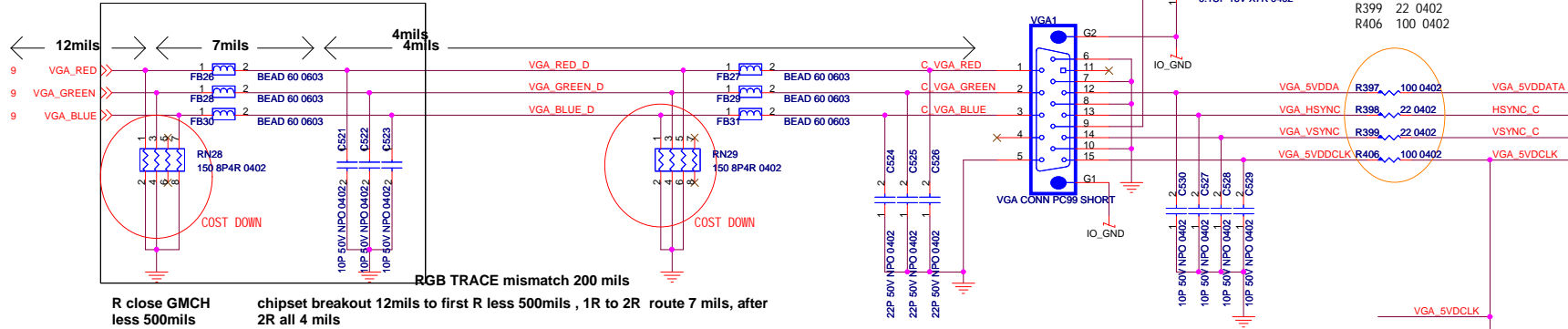
## Energy-Using Product(EUP)

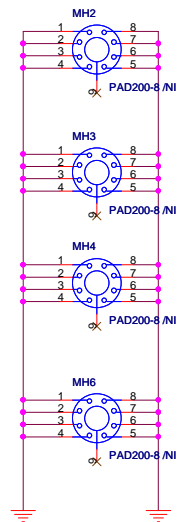
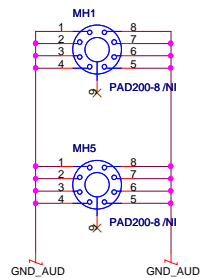




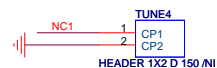


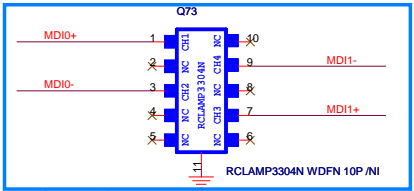
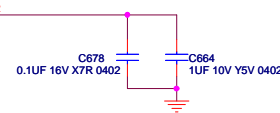
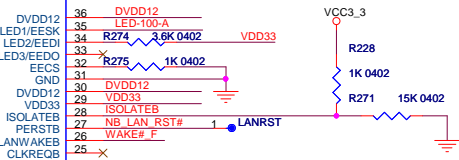
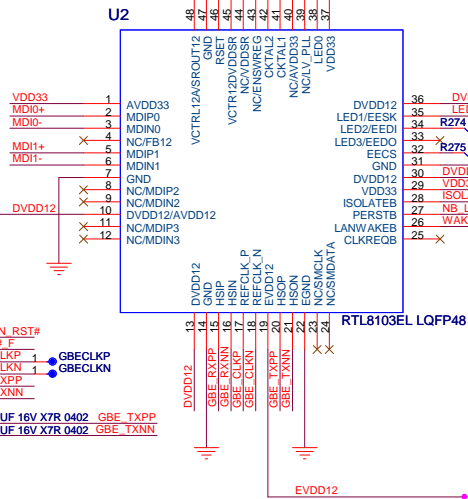
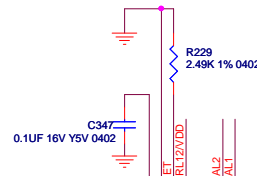
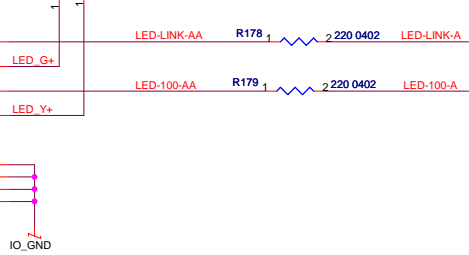
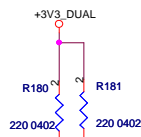
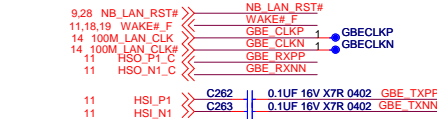
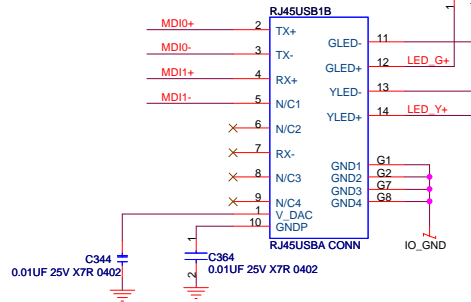
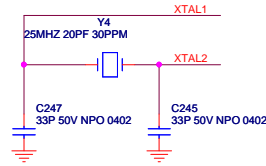
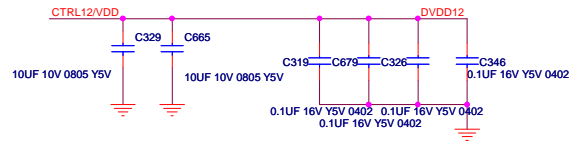
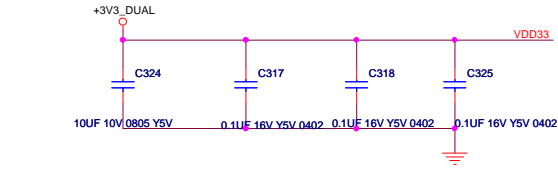
close to GMCH





# Impedance Testing Coupon





5 4 3 2 1

(BAT1)  
電池  
3V BATTERY SONY

JCMOS1(1\_2)  
JUMPER 2P B

(Y3)  
XTAL WIRE

(U8)  
FLASH ROM  
SPI MX25L4005 DIP

PCB  
IG31M-M7S VER:7.1


15-N30-171000R11 ... IG31M-M7S VER:7.1/OSP/BLACK/(169.99\*224.97\*1.5)mm/4L/TREND  
86-IG31MM7S-R02P-71  
96-IG31MM7S-R02P-71

(PCB)  
PCB POLON  
POLON 235X182

(NB1)  
NB HEATSINK  
NBHS-G31G

(ICH1)  
SB HEATSINK  
BNP SMALL-L

5 4 3 2 1



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