ECS ELITEGROUP

(P4 LGA775P Processor with DDR2 SDRAM Mainboard)

G31T-M7 Rev:1.0

Schematics Version History Table :

Circuit Ver.	PCB Ver.	Total Page	Modified Page(s)	Date

Page Title of Schematic :

Elitegroup Computer Systems

Title: Cover Sheet

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DEVICE	IDSEL	INT#	REQ#	GNT#
PCI1	17	C/D/E/F	PREQ-0	PGNT-0
PCI2	18	D/E/F/G	PREQ-1	PGNT-1

PCB : 244 x 210 mm ; 4 layers

VCORE POWER
PWM VRD11
(RT8802A)

INTEL
P4 Processor
Core 2 Duo & Wolfdale
LGA 775 pin

CLOCK GEN:9LPRS437

FSB : 1066MHz & Freq : 266MHz
FSB : 800MHz & Freq : 200MHz

BW : 10.7GB/s @ DDR2 :800/667MHz

PCIEx16

INTEL
G31
1210pin FC-BGA

DIMM1: DDR2 Socket 240P

DIMM2 : DDR2 Socket 240P

VGA

Analong Display
RAMDAC: 400MHz
Resolutions Up To 2048x1536@75Hz

BW : 2GB/s

USB V2.0

USB1
2 ports

USB2
2 ports

USB3
2 ports

Up to Ultra ATA/100

IDE1 40pin

One IDE Channel

INTEL
ICH7
652pin EBGA

PCIEx1

BW : 133MB/s @Freq : 33MHz

PCI1 Slot 120pin @ AD17

PCI2 Slot 120pin @ AD18

PCIE-LAN
PCIE LAN L1e/L2-48

USBLAN
RJ45

Line in
Line out
Mic in

Audio Codec
VT1708B

Azalia I/F

Flash Bios

SPI

LPC bus

SATA1 7Pin

SATA2 7pin

SATA3 7Pin

SATA4 7pin

BW : 150MB/s

Super I/O
IT8713F
128pin PQFP

www.schematic-x.blogspot.com

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Title: System Block Diagram

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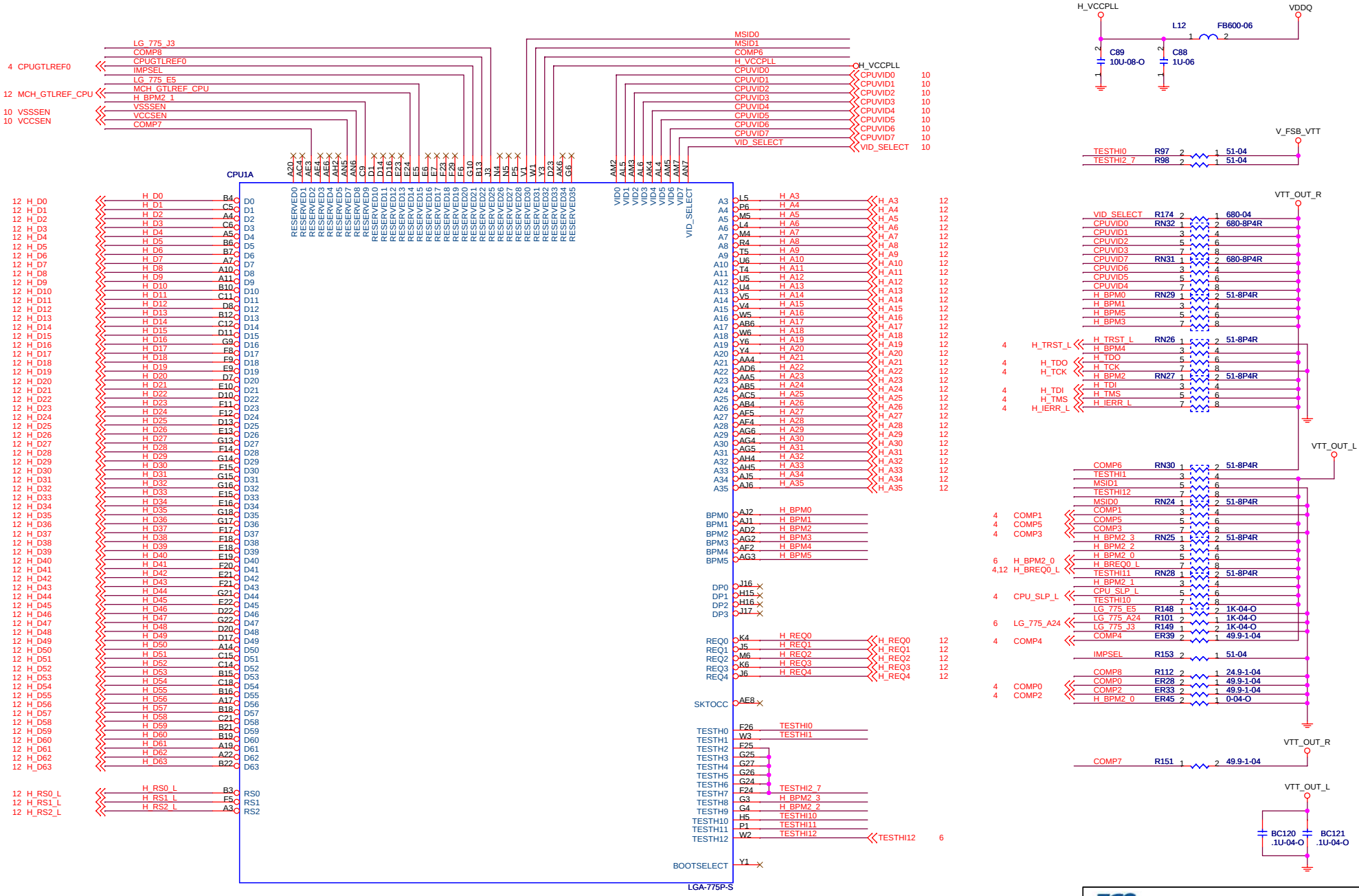

Company	Elitegroup Computer Systems
Title	P4 LGA775P Part A
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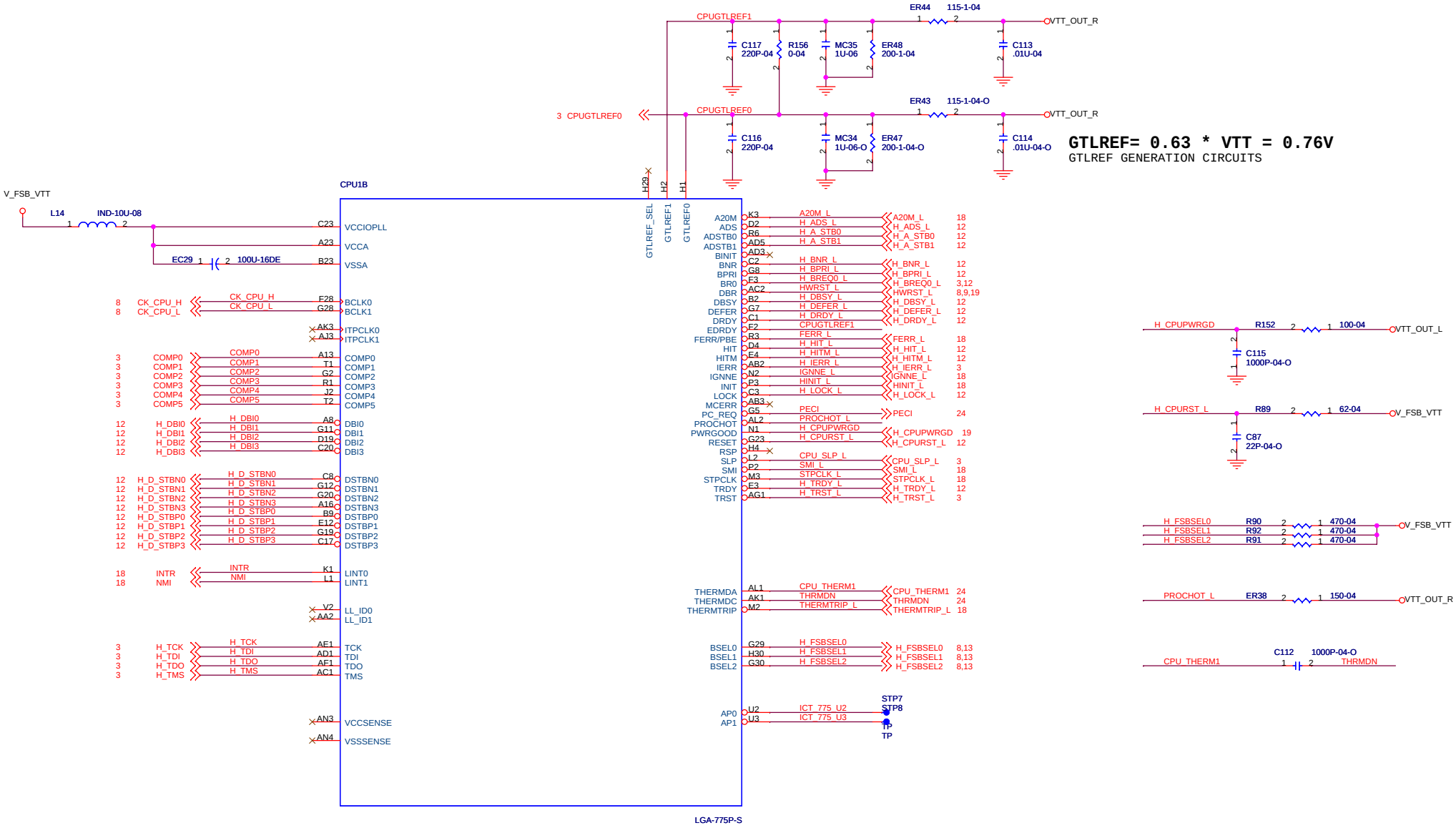

Elitegroup Computer Systems			
Title: P4 LGA775P Part B			
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Elitegroup Computer Systems	
Title	P4 LGA775P Part C
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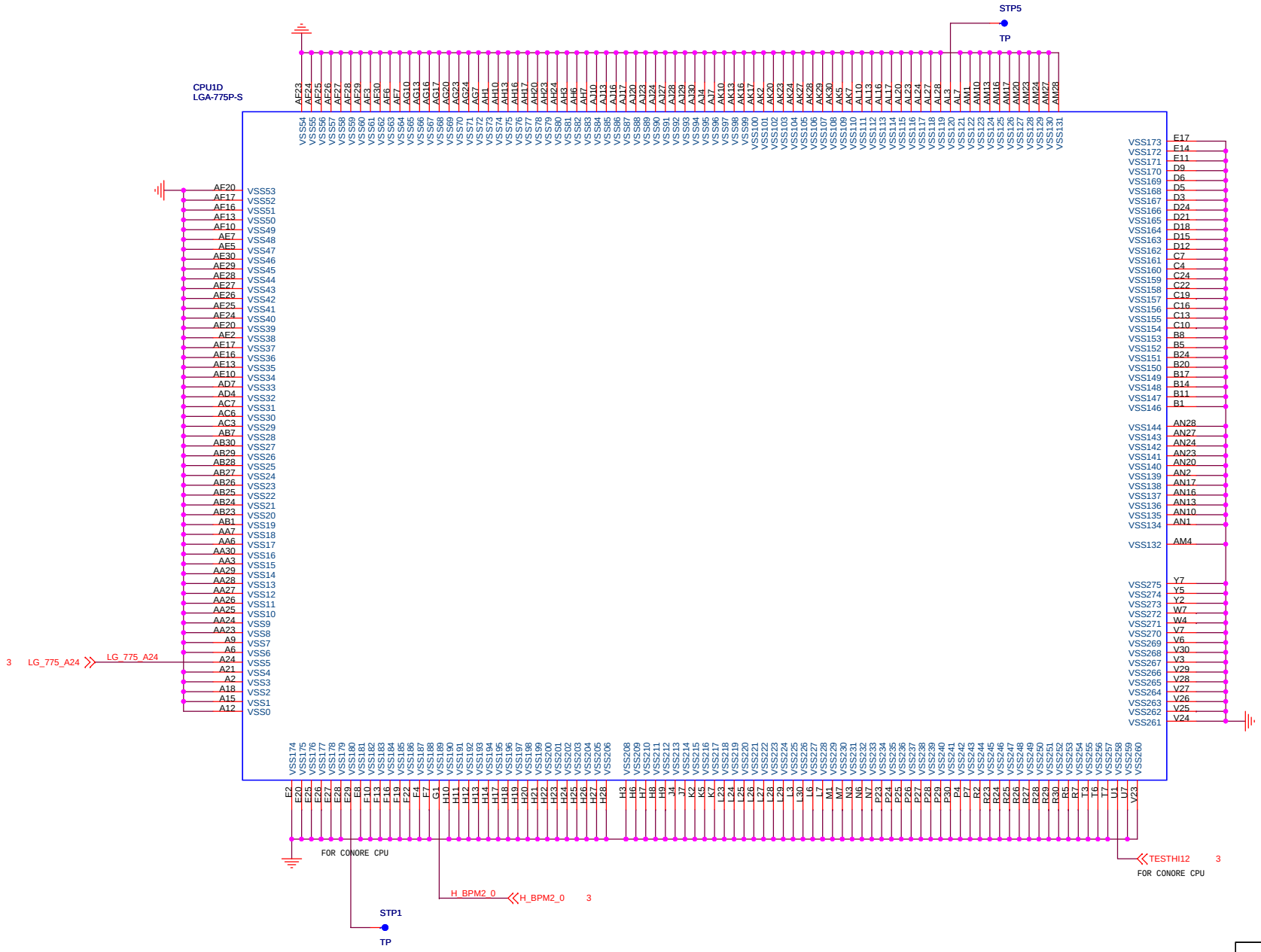

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Title	P4 LGA775P Part D	
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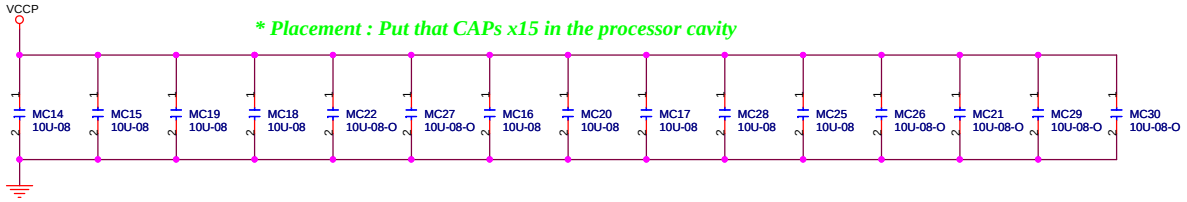
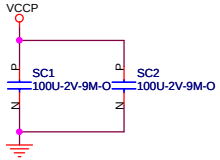
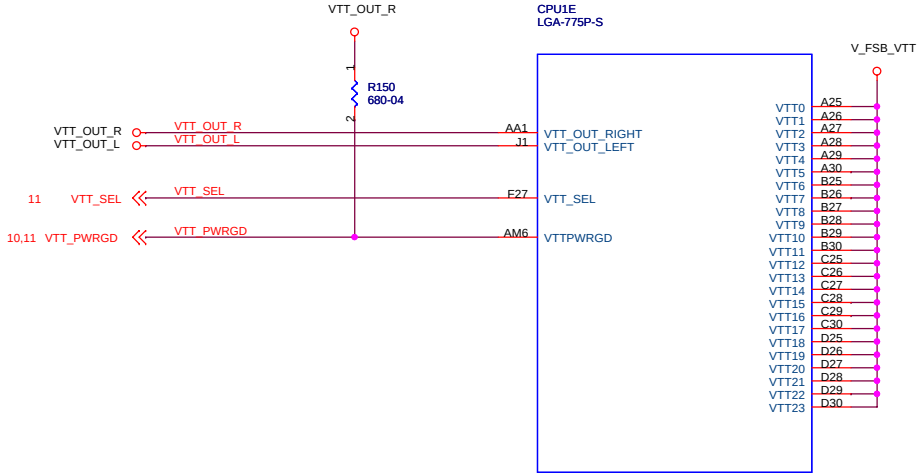
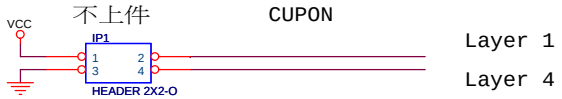


* Placement : Put that CAPs x2 on solder side








```
1080 : trace width 4 mil 50 ohm
       Trace Length 3150 mils
       Spacing: 1.clearance to itself 50/4/50(S:W:S)
                2.clearance to other signal 3W
```

Elitegroup Computer Systems

Title: P4 LGA775P Part E		
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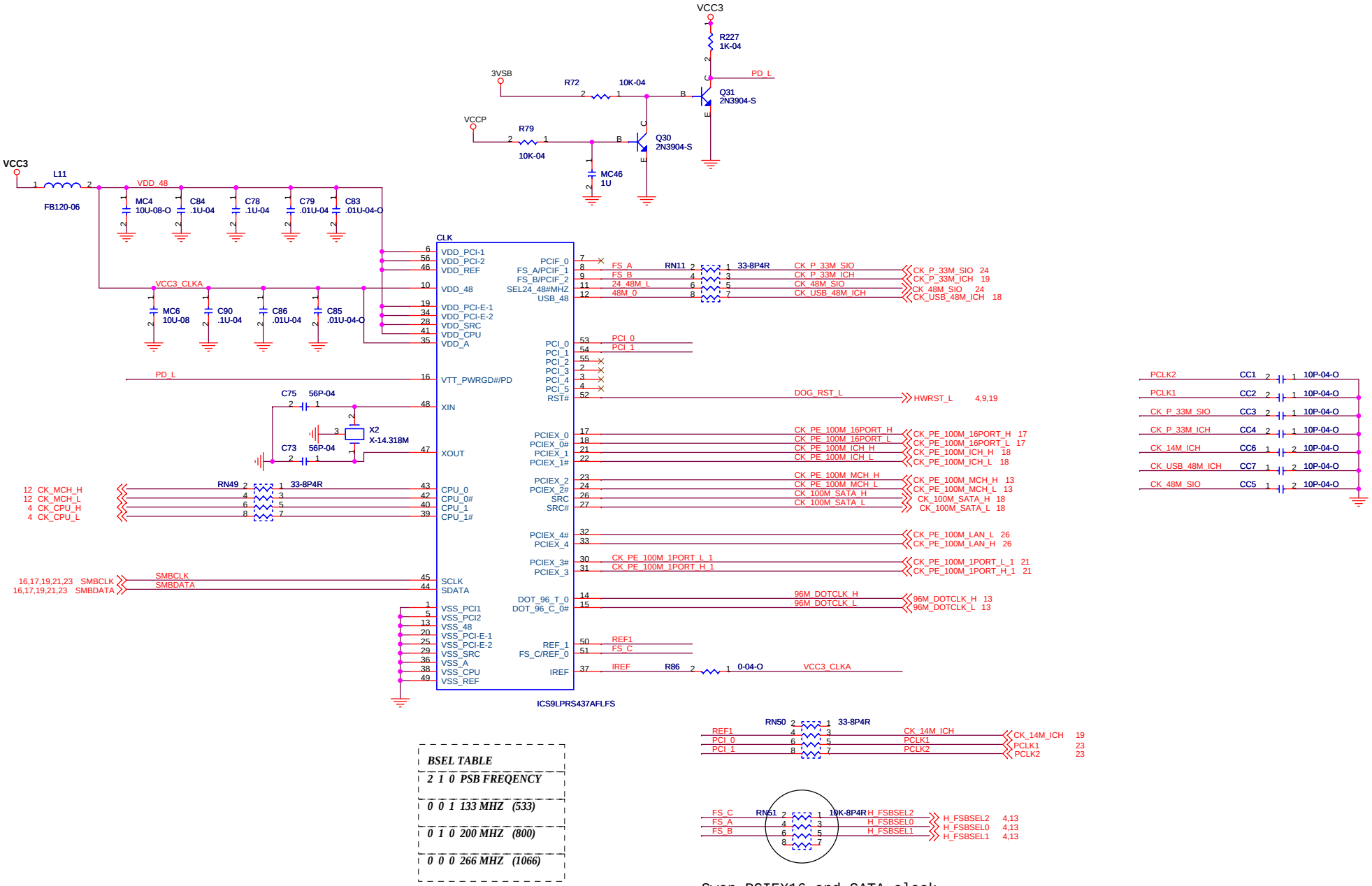

BSEL TABLE			
2	1	0	PSB FREQENCY
0	0	1	133 MHZ (533)
0	1	0	200 MHZ (800)
0	0	0	266 MHZ (1066)

Swap PCIEX16 and SATA clock
Change ICH clk to pin 8

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Title: CLK 9LPRS437

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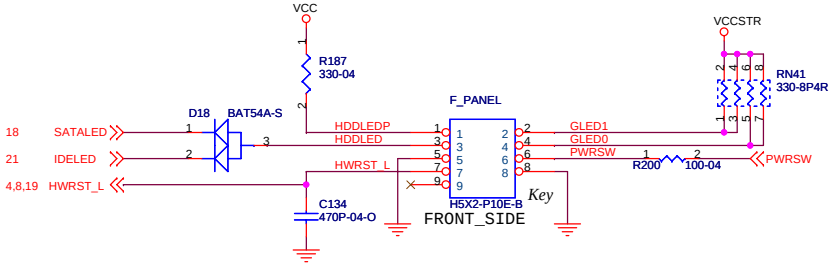
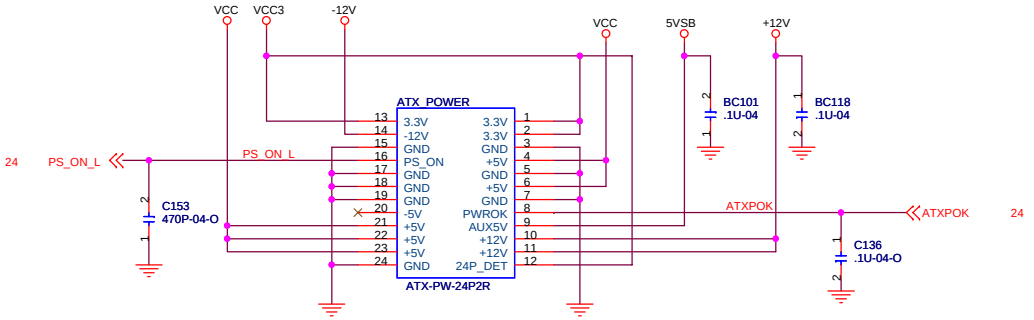
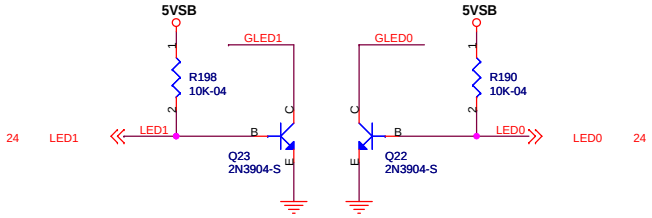
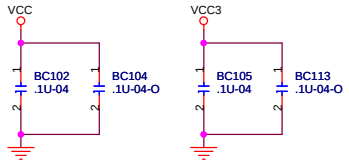
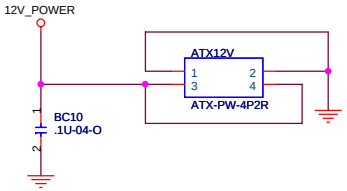




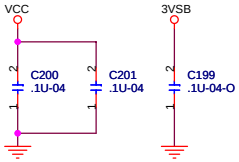


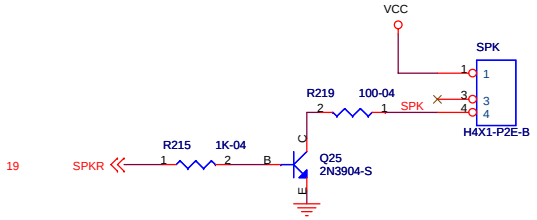


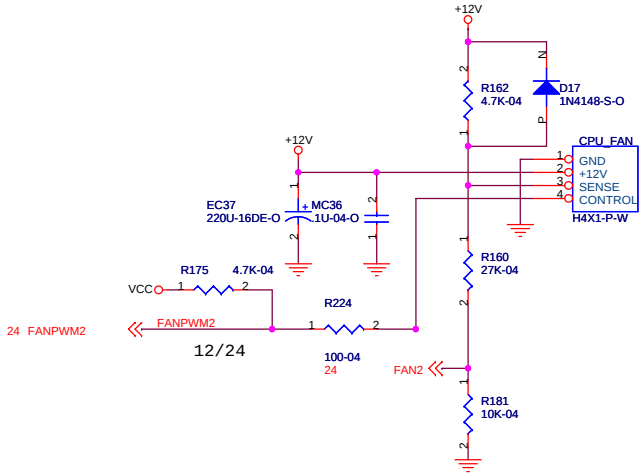


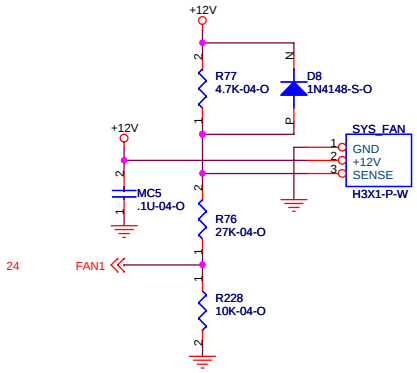
GLED1(pin2)(-SUS_LED) GLED0(pin4)(-PLED)

	AC_ON	S0	S1	S3	S5
LED0(PIN78)	0	1	B	B	0
LED1(PIN84)	0	0	0	1	0
-GLED0(PIN4)	0	0	B	B	0
-GLED1(PIN2)	0	1	1	0	0
LED STATE	OFF	Green	G-blink	Y-blink	OFF









Elitegroup Computer Systems			
Title: ATX Power & Front Panel			
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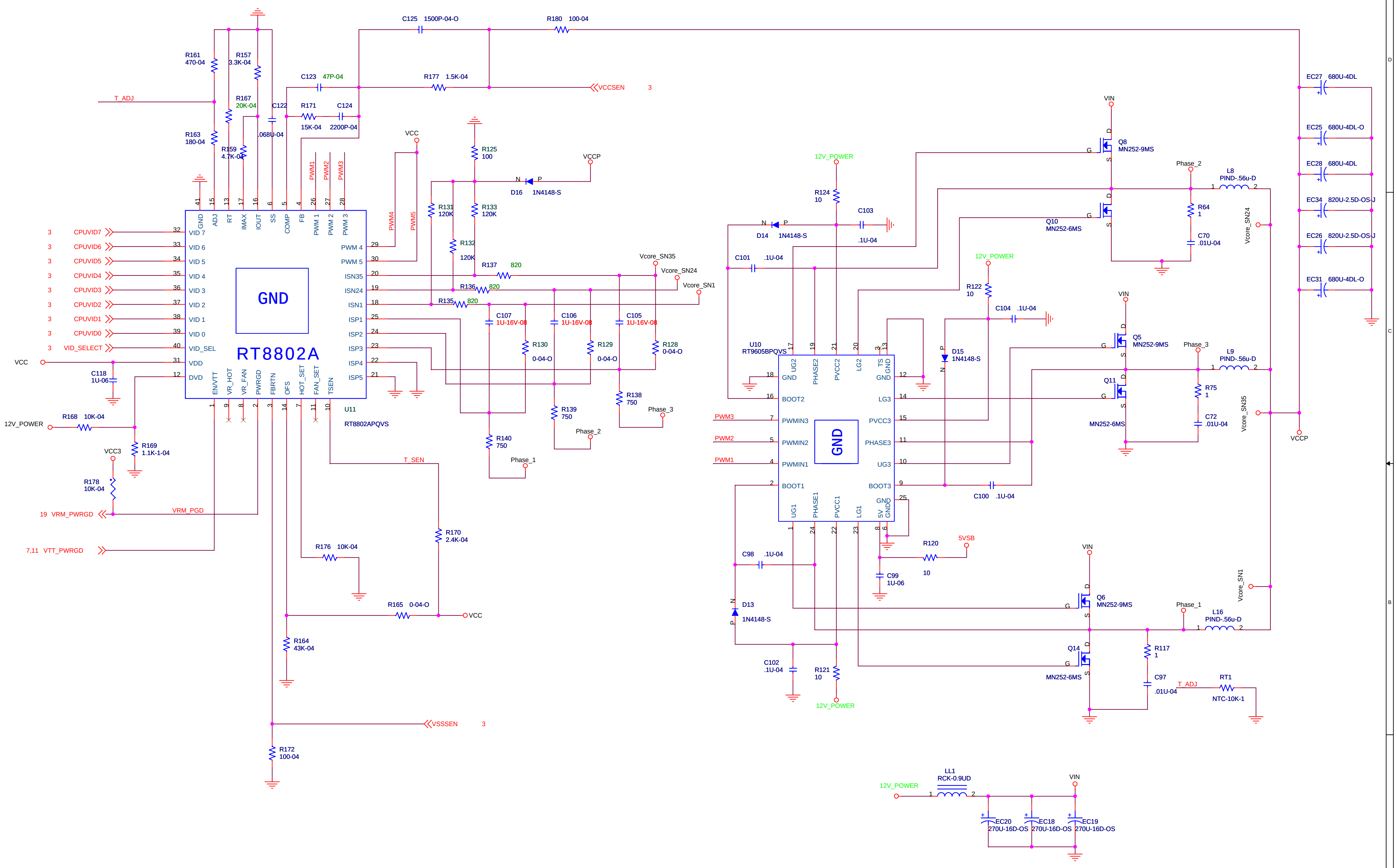
+0.1



RT8802A
GND
U11
RT8802APQVS
U10
RT9605BPQVS
T_ADJ
VCCSEN
VSSSEN
CPUVID7
CPUVID6
CPUVID5
CPUVID4
CPUVID3
CPUVID2
CPUVID1
CPUVID0
VID_SELECT
VCC
12V_POWER
VCC3
19 VRM_PWRGD
7,11 VTT_PWRGD
VRM_PGD
T_SEN
PWM1
PWM2
PWM3
PWM4
PWM5
VCCP
VIN
5VSB
Vcore_SN35
Vcore_SN24
Vcore_SN1
Phase_1
Phase_2
Phase_3
C125 1500P-04-O
R180 100-04
C123 47P-04
R177 1.5K-04
R161 470-04
R157 3.3K-04
R167 20K-04
C122 .068U-04
R171 15K-04
C124 2200P-04
R163 180-04
R159 4.7K-04
R125 100
D16 1N4148-S
R131 120K
R133 120K
R132 120K
R137 820
R136 820
R135 820
C107 1U-16V-08
C106 1U-16V-08
C105 1U-16V-08
R130 0-04-O
R129 0-04-O
R128 0-04-O
R139 750
R138 750
R140 750
C118 1U-06
R168 10K-04
R169 1.1K-1-04
R178 10K-04
R170 2.4K-04
R176 10K-04
R165 0-04-O
R164 43K-04
R172 100-04
R124 10
C103 .1U-04
D14 1N4148-S
C101 .1U-04
R122 10
C104 .1U-04
D15 1N4148-S
C100 .1U-04
C98 .1U-04
D13 1N4148-S
C102 .1U-04
R121 10
R120 10
C99 1U-06
Q8 MN252-9MS
Q10 MN252-6MS
Q5 MN252-9MS
Q11 MN252-6MS
Q6 MN252-9MS
Q14 MN252-6MS
L8 PIND-.56u-D
L9 PIND-.56u-D
L16 PIND-.56u-D
R64 1
C70 .01U-04
R75 1
C72 .01U-04
R117 1
C97 .01U-04
RT1 NTC-10K-1
EC27 680U-4DL
EC25 680U-4DL-O
EC28 680U-4DL
EC34 820U-2.5D-OS-J
EC26 820U-2.5D-OS-J
EC31 680U-4DL-O
LL1 RCK-0.9UD
EC20 270U-16D-OS
EC18 270U-16D-OS
EC19 270U-16D-OS

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Title	VOCRE DC-DC	
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co-lay (0805-10u)(1206)

5VSB U12 ADJ1086-S
Vo=1.25(1+Rb/Rt)
3VSB RSMVCC3
ER53 110 100-04
ER52 180 169-1-04
EC45 100U-16DE

VCC3 ER9 150-04 VREF2.5V D9 431-S ER10 4.02K-1-04 ER11 3K-1-04 VREF1_05V

VREF1_05V +12V +12V VCC1_25 U4B OP358-S R83 1K-04 Q20 P3055LDG-S
1.05V @ICH 1.5A
V_1P05_ICH EC38 1000U-6.3DL BC84 1U-06-O

7,10 VTT_PWRGD BC29 .1U-04-O BC91 .1U-04-O VCC1_25 Q15 MN252-9MS
+12V VCC R95 10 R96 10-O BC30 .1U-04
U7 RT9218PSS VCC BOOT PGOOD UGATE DRV PHASE FBL OPS LGATE NC NC NC FB GND
D11 BAT54C-S BC36 .1U-04 R119 2.2 UG1_VDDQ Q17 MN252-9MS
PHASE1_VDDQ ER20 22K-04 R103 2.2 LG1_VDDQ Q18 MN252-9MS
L17 CK-4.0UD R123 1 BC71 .01U-04 SC3 .1U-04-O
VCC3 LL2 FB-D 5VIN_VDDQ EC33 1000U-6.3DL
VCC1_25 MC24 22U-12 CGND 04-817-226005
1.2V @ 6.2A V_FSB_VTT EC30 1000U-6.3DL ER14 510-1-04 ER17 1.3K-1-04
R93 1K-04 ER15 4.42K-1-04 ER18 130-1-04 ER19 75-1-04
R94 1K-04 Q12 2N3904-S 7 VTT_SEL
BC76 .1U-04-O MC32 10U-08-O EC36 1000U-6.3DL EC35 1000U-6.3DL

(VDDQ 1.5V/1.8A)

VREF1_05V +12V 1_8VSTR R185 10K-04 U4A OP358-S Q21 P3055LDG-S
ER12 100-1-04 ER13 232-1-04 BC25 .1U-04-O EC49 1000U-6.3DL VDDQ

High:1.2V(Conroe)
LOW:1.1V(Wolfdale)

5VSB R222 10K-04 Q24 2N3904-S R221 10K-04 3VSB
+12V R223 10K-04 Q26 2N3904-S R217 10K-04 3VSB
ST1 24
U9 NPSO8-S 5VSB VCC VCCSTR

1_8VSTR ER55 10K-1-04 ER57 10K-1-04 BC116 .1U-04-O BC115 .1U-04-O
1_8VSTR VTT_DDR U13 9173P-S VIN GND REFEN VOUT Vcntl Vcntl Vcntl Vcntl 3VSB

VCC 5VSB VCC 5VSB D20 BAT54C-S D21 BAT54C-S
VCCSTR LL3 FB-D 5VIN_VSTR EC44 1000U-6.3DL
ER58 20K-04 BC114 .1U-04 BC119 .1U-04 R220 2.2 Q27A NNSO8-S
U14 RT9214PSS VCC BOOT COMP/OCSET UGATE FB PHASE GND LGATE
PHASE1_VSTR L21 CK-4.0UD 1_8VSTR R218 1 BC112 .01U-04 BC103 .1U-04
R216 2.2 Q27B NNSO8-S
VOUT= 0.8V(1+Rt / Rb)
ER54 137-1-04 ER56 100-1-04 MC40 4.7U-08-O BC89 .1U-04 EC43 1000U-6.3DL

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Title: MIS DC-DC
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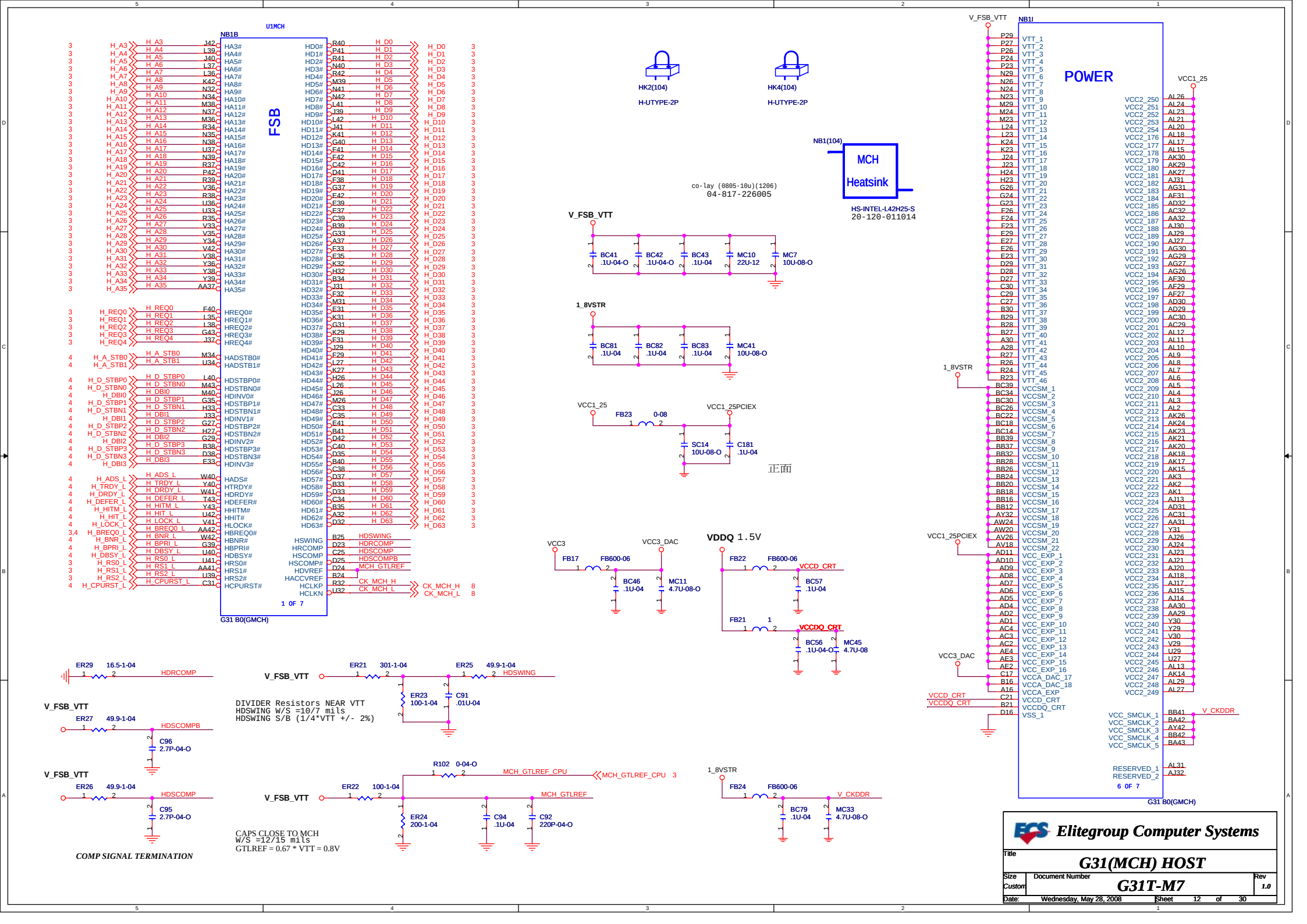
U1MCH
NB1B
FSB
G31 B0(GMCH)
1 OF 7
HK2(104)
H-UTYPE-2P
HK4(104)
H-UTYPE-2P
NB1(104)
MCH
Heatsink
HS-INTEL-L42H25-S
20-120-011014
co-lay (0805-10u)(1206)
04-817-226005
V_FSB_VTT
BC41 .1U-04-O
BC42 .1U-04-O
BC43 .1U-04
MC10 22U-12
MC7 10U-08-O
1_8VSTR
BC81 .1U-04
BC82 .1U-04
BC83 .1U-04
MC41 10U-08-O
VCC1_25
FB23 0-08
VCC1_25PCIEX
SC14 10U-08-O
C181 .1U-04
正面
VCC3
FB17 FB600-06
VCC3_DAC
BC46 .1U-04
MC11 4.7U-08-O
VDDQ 1.5V
FB22 FB600-06
VCCD_CRT
BC57 .1U-04
FB21
VCCDQ_CRT
BC56 .1U-04-O
MC45 4.7U-08
V_FSB_VTT
NB1I
POWER
G31 B0(GMCH)
6 OF 7
V_CKDDR
ER29 16.5-1-04
HDRCOMP
V_FSB_VTT
ER27 49.9-1-04
HDSCOMPB
C96 2.7P-04-O
V_FSB_VTT
ER26 49.9-1-04
HDSCOMP
C95 2.7P-04-O
COMP SIGNAL TERMINATION
ER21 301-1-04
ER25 49.9-1-04
HDSWING
ER23 100-1-04
C91 .01U-04
DIVIDER Resistors NEAR VTT
HDSWING W/S =10/7 mils
HDSWING S/B (1/4*VTT +/- 2%)
R102 0-04-O
MCH_GTLREF_CPU
MCH_GTLREF_CPU 3
ER22 100-1-04
MCH_GTLREF
ER24 200-1-04
C94 .1U-04
C92 220P-04-O
CAPS CLOSE TO MCH
W/S =12/15 mils
GTLREF = 0.67 * VTT = 0.8V
FB24 FB600-06
V_CKDDR
BC79 .1U-04
MC33 4.7U-08-O
Elitegroup Computer Systems
Title
G31(MCH) HOST
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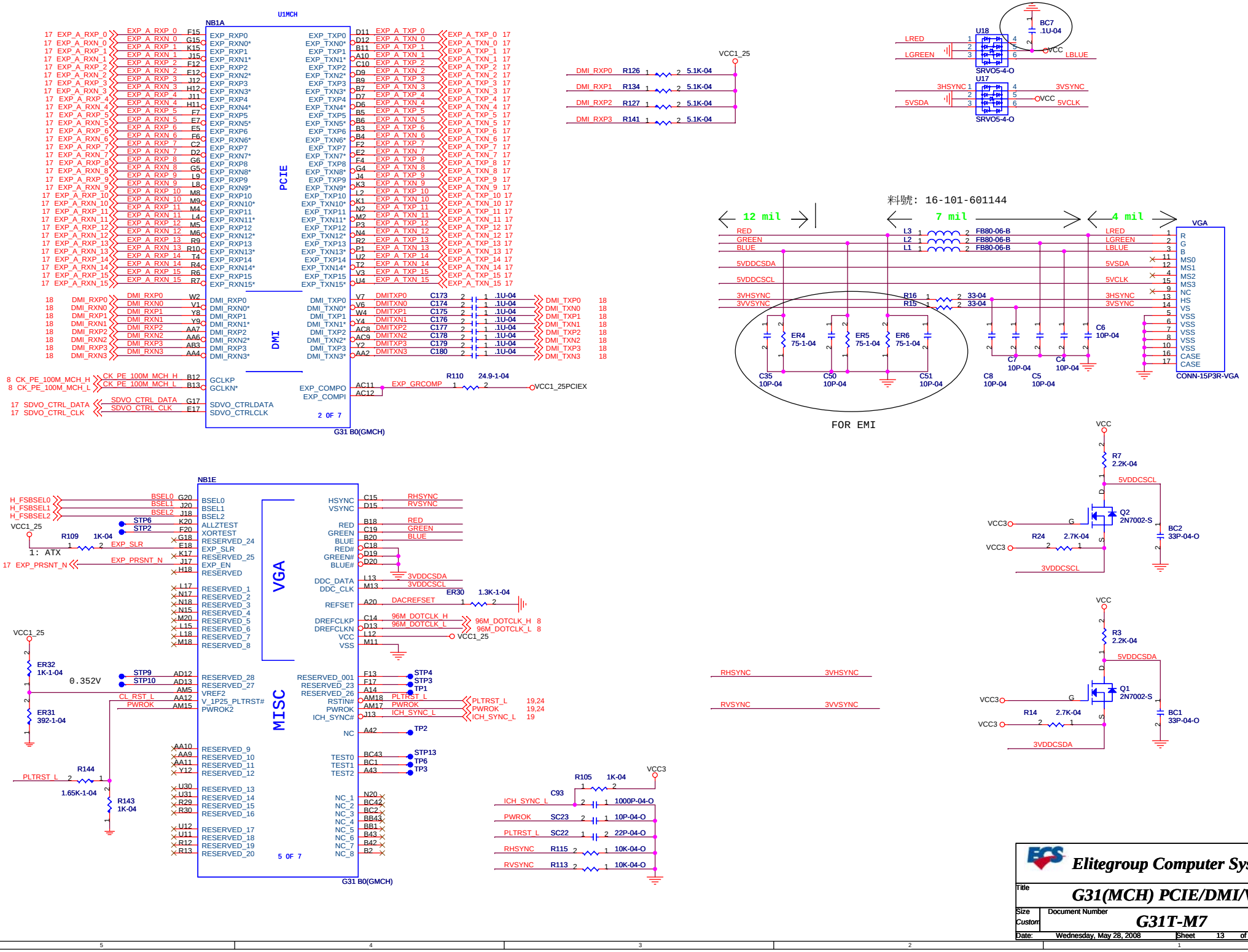
NB1A
PCIE
DMI
U1MCH
G31 B0(GMCH)
2 OF 7
NB1E
VGA
MISC
5 OF 7
G31 B0(GMCH)
料號: 16-101-601144
12 mil
7 mil
4 mil
VGA
CONN-15P3R-VGA
FOR EMI
U18
U17
SRVO5-4-O
SRVO5-4-O
Elitegroup Computer Systems
G31(MCH) PCIE/DMI/VGA
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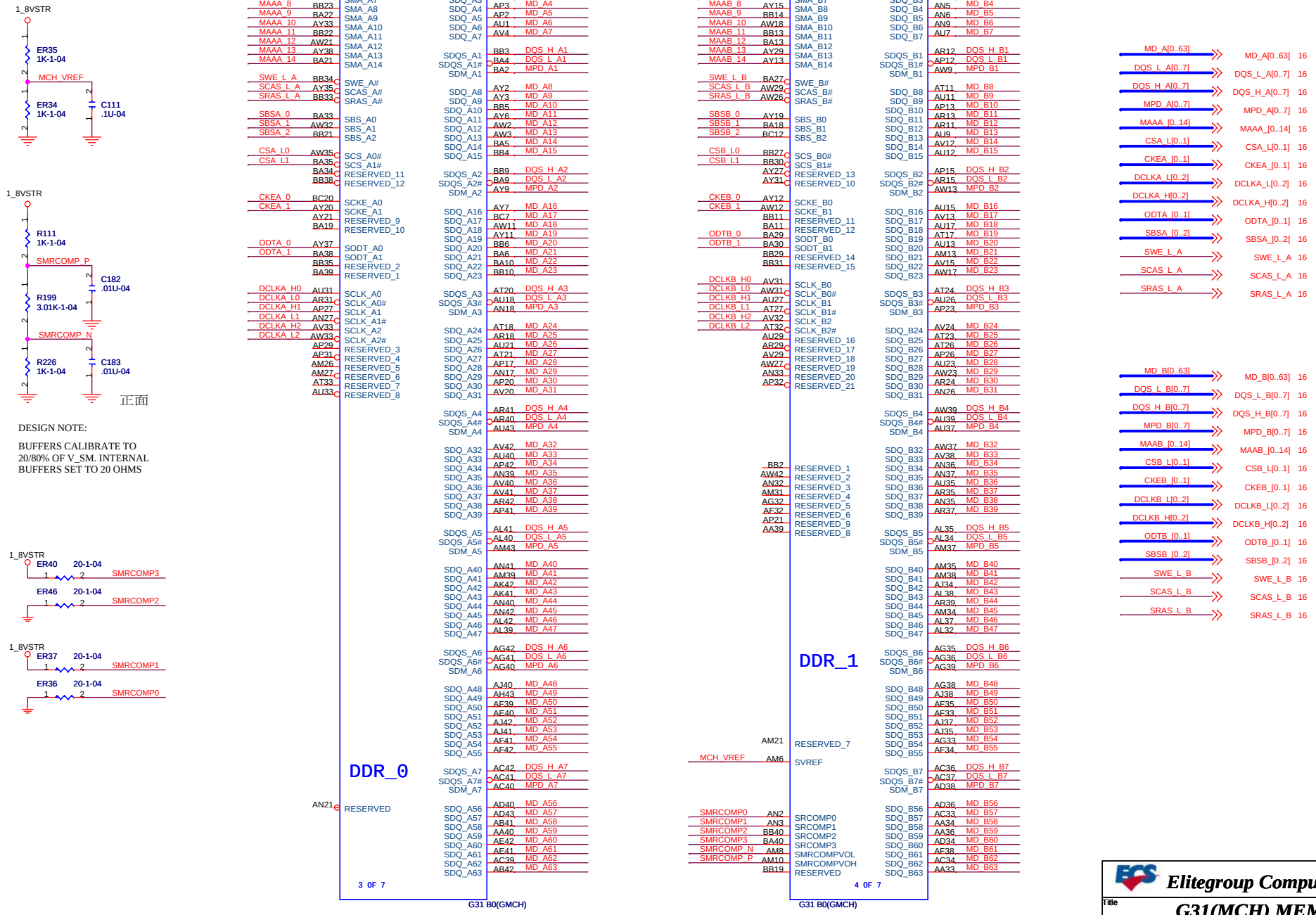
1_8VSTR
ER35 1K-1-04
MCH_VREF
ER34 1K-1-04
C111 .1U-04
1_8VSTR
R111 1K-1-04
SMRCOMP_P
C182 .01U-04
R199 3.01K-1-04
SMRCOMP_N
R226 1K-1-04
C183 .01U-04
正面
DESIGN NOTE:
BUFFERS CALIBRATE TO 20/80% OF V_SM. INTERNAL BUFFERS SET TO 20 OHMS
1_8VSTR
ER40 20-1-04 SMRCOMP3
ER46 20-1-04 SMRCOMP2
1_8VSTR
ER37 20-1-04 SMRCOMP1
ER36 20-1-04 SMRCOMP0
U1MCH
NB1C
DDR_0
3 OF 7
G31 B0(GMCH)
U1MCH
NB1D
DDR_1
4 OF 7
G31 B0(GMCH)
MD_A[0..63] 16
DQS_L_A[0..7] 16
DQS_H_A[0..7] 16
MPD_A[0..7] 16
MAAA_[0..14] 16
CSA_L[0..1] 16
CKEA_[0..1] 16
DCLKA_L[0..2] 16
DCLKA_H[0..2] 16
ODTA_[0..1] 16
SBSA_[0..2] 16
SWE_L_A 16
SCAS_L_A 16
SRAS_L_A 16
MD_B[0..63] 16
DQS_L_B[0..7] 16
DQS_H_B[0..7] 16
MPD_B[0..7] 16
MAAB_[0..14] 16
CSB_L[0..1] 16
CKEB_[0..1] 16
DCLKB_L[0..2] 16
DCLKB_H[0..2] 16
ODTB_[0..1] 16
SBSB_[0..2] 16
SWE_L_B 16
SCAS_L_B 16
SRAS_L_B 16
Elitegroup Computer Systems
Title
G31(MCH) MEMORY
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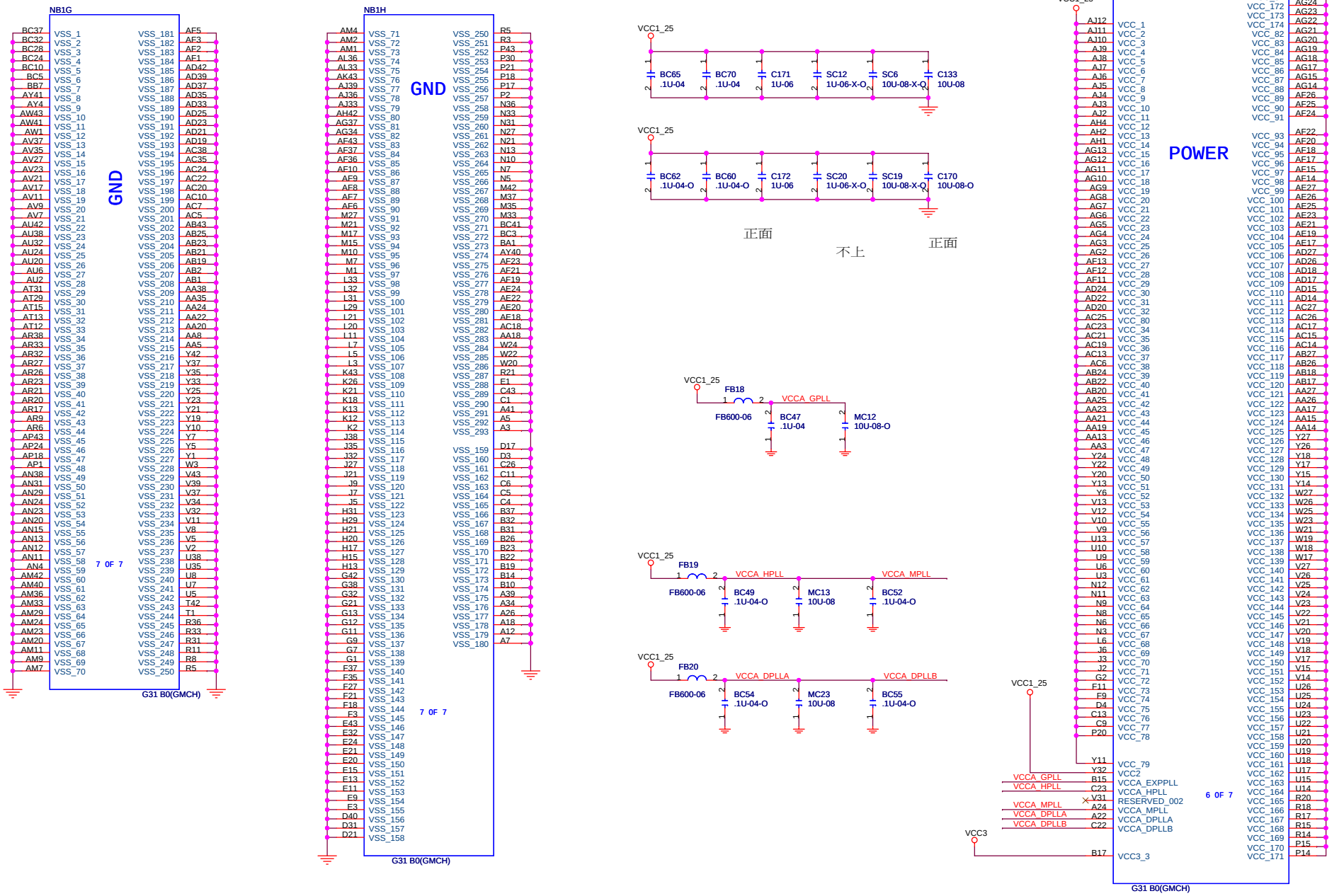

Elitegroup Computer Systems	
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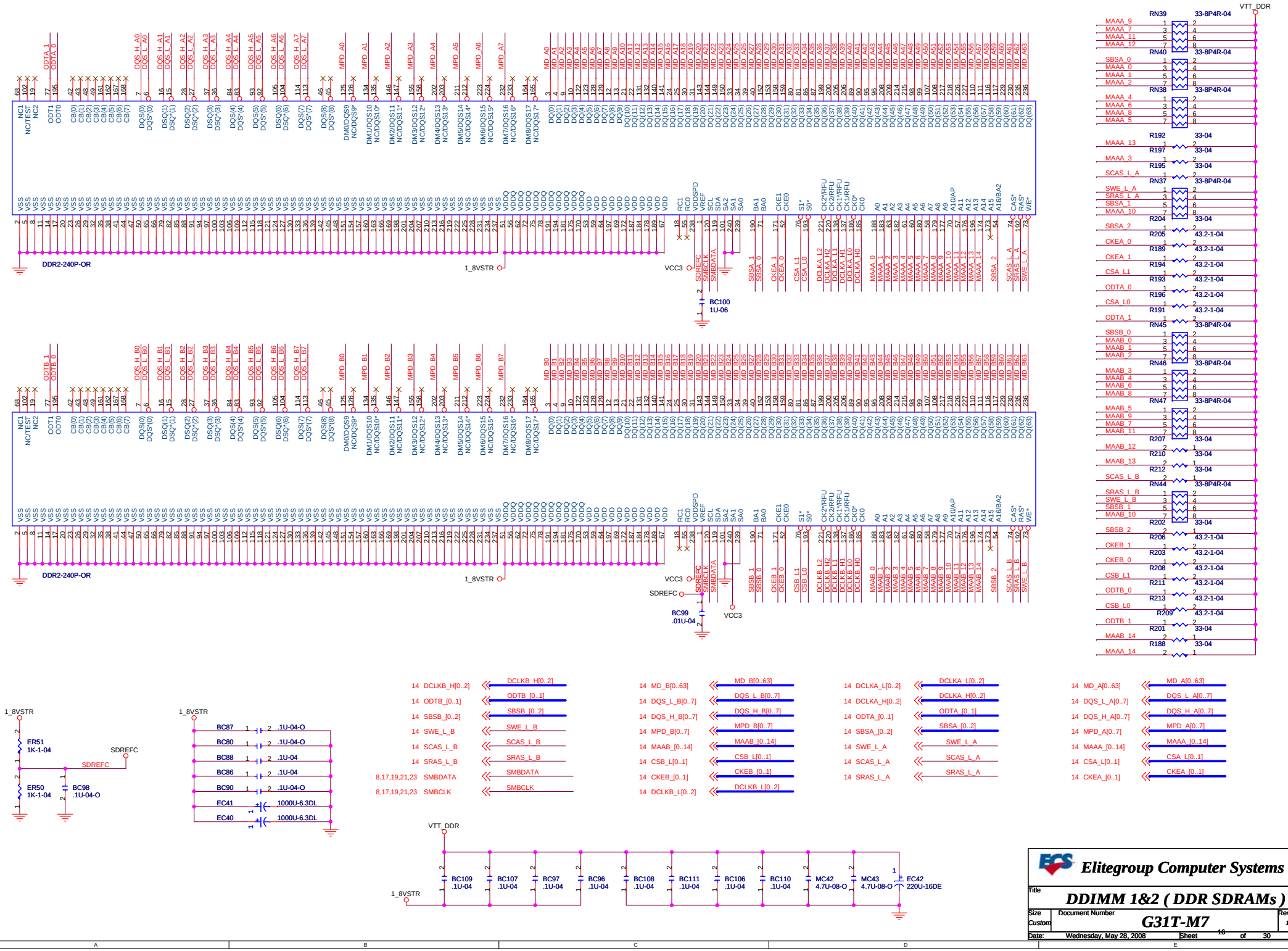

14 DCLKB_H[0..2] DCLKB_H[0..2]
14 ODTB_[0..1] ODTB_[0..1]
14 SBSB_[0..2] SBSB_[0..2]
14 SWE_L_B SWE_L_B
14 SCAS_L_B SCAS_L_B
14 SRAS_L_B SRAS_L_B
8,17,19,21,23 SMBDATA SMBDATA
8,17,19,21,23 SMBCLK SMBCLK

14 MD_B[0..63] MD_B[0..63]
14 DQS_L_B[0..7] DQS_L_B[0..7]
14 DQS_H_B[0..7] DQS_H_B[0..7]
14 MPD_B[0..7] MPD_B[0..7]
14 MAAB_[0..14] MAAB_[0..14]
14 CSB_L[0..1] CSB_L[0..1]
14 CKEB_[0..1] CKEB_[0..1]
14 DCLKB_L[0..2] DCLKB_L[0..2]

14 DCLKA_L[0..2] DCLKA_L[0..2]
14 DCLKA_H[0..2] DCLKA_H[0..2]
14 ODTA_[0..1] ODTA_[0..1]
14 SBSA_[0..2] SBSA_[0..2]
14 SWE_L_A SWE_L_A
14 SCAS_L_A SCAS_L_A
14 SRAS_L_A SRAS_L_A

14 MD_A[0..63] MD_A[0..63]
14 DQS_L_A[0..7] DQS_L_A[0..7]
14 DQS_H_A[0..7] DQS_H_A[0..7]
14 MPD_A[0..7] MPD_A[0..7]
14 MAAA_[0..14] MAAA_[0..14]
14 CSA_L[0..1] CSA_L[0..1]
14 CKEA_[0..1] CKEA_[0..1]

Elitegroup Computer Systems

Title: DDIMM 1&2 (DDR SDRAMs)

Size: Custom | Document Number: G31T-M7 | Rev: 1.0

Date: Wednesday, May 28, 2008 | Sheet 16 of 30

Company	Elitegroup Computer Systems
Title	PCIEX16 slot
Size	Custom
Document Number	G31T-M7
Rev	1.0
Date	Wednesday, May 28, 2008
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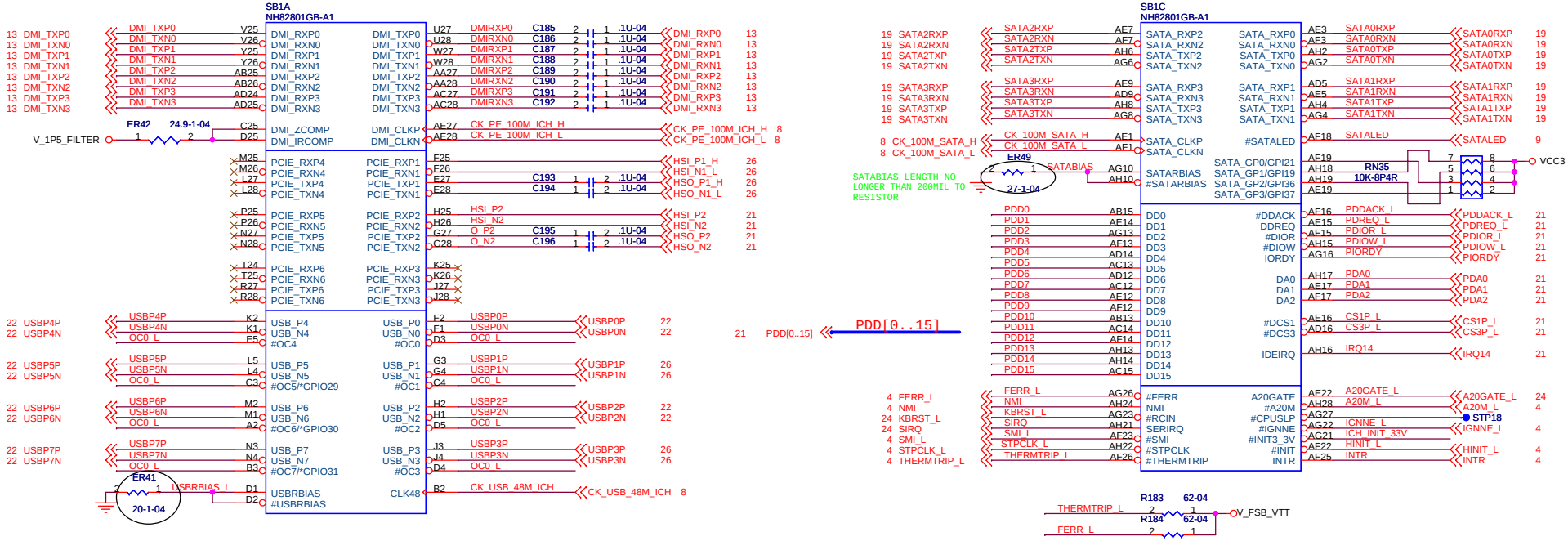
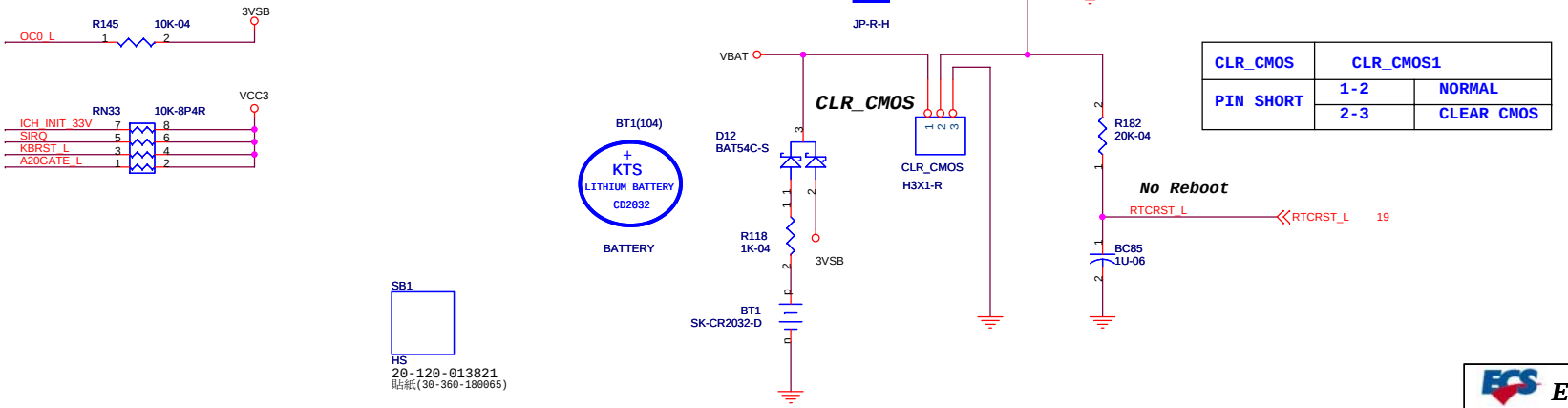




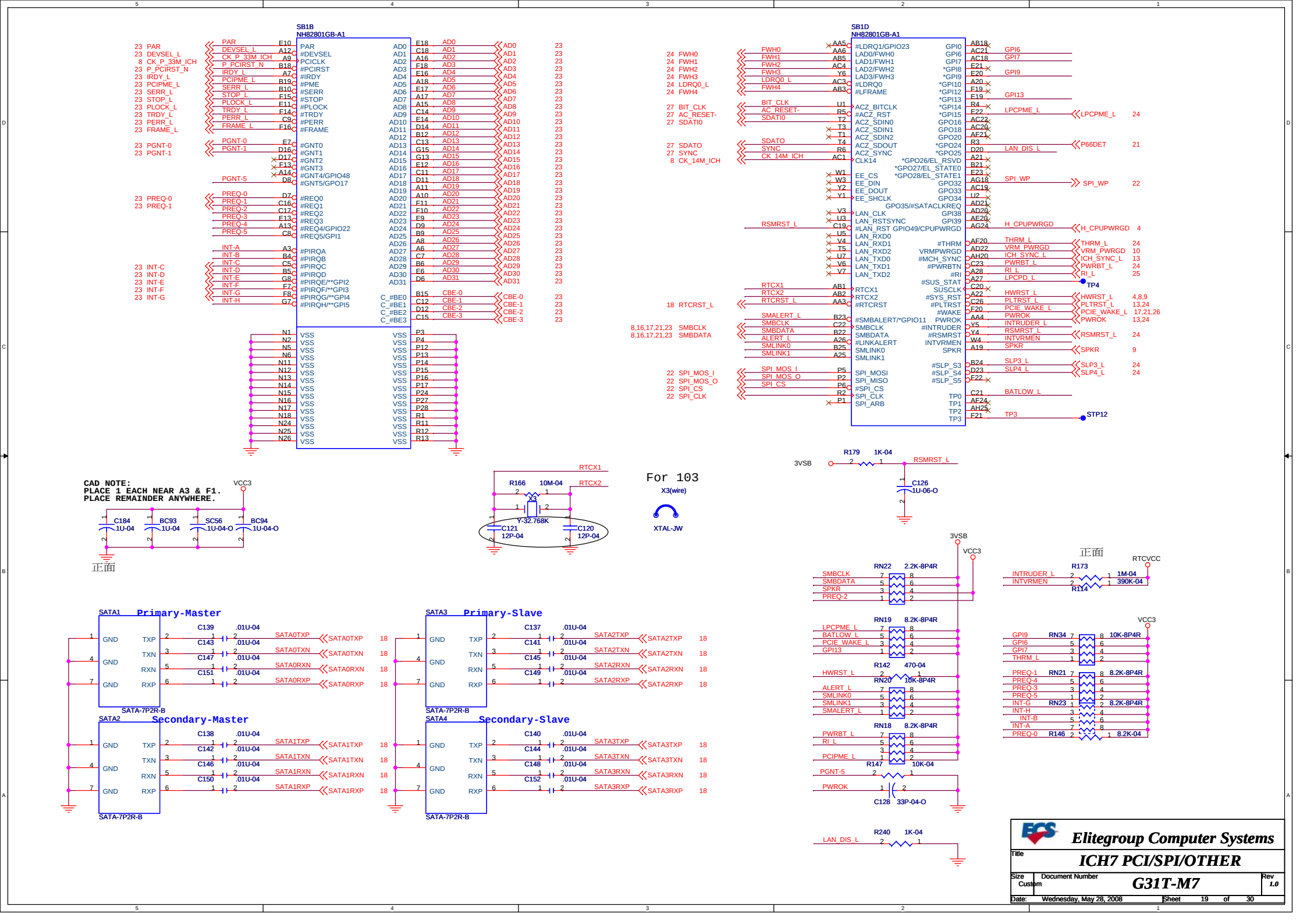
CLR_CMOS	CLR_CMOS1	
PIN SHORT	1-2	NORMAL
	2-3	CLEAR CMOS

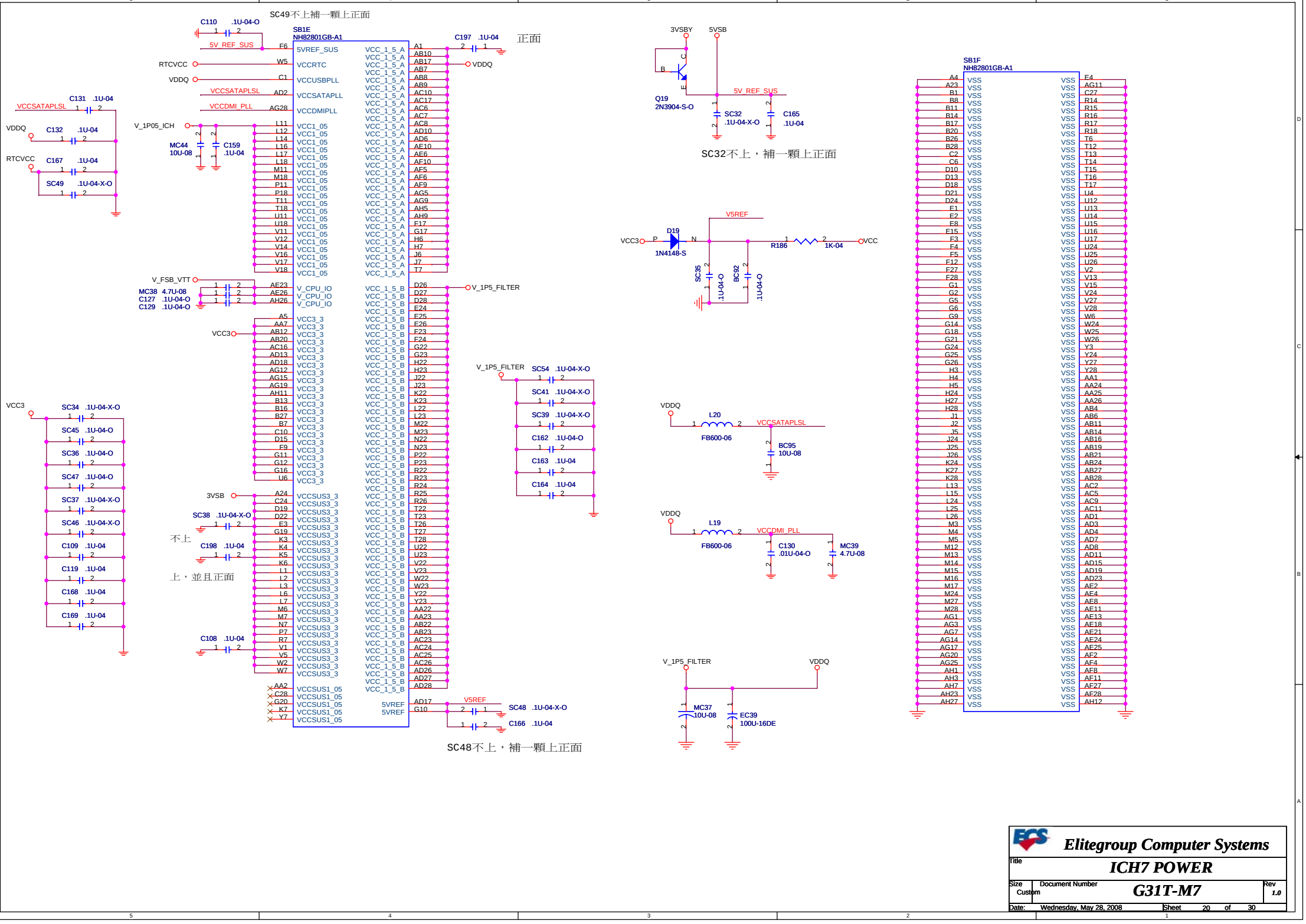
Elitegroup Computer Systems

Title: ICH7 DMI/PCIE/USB/SATA

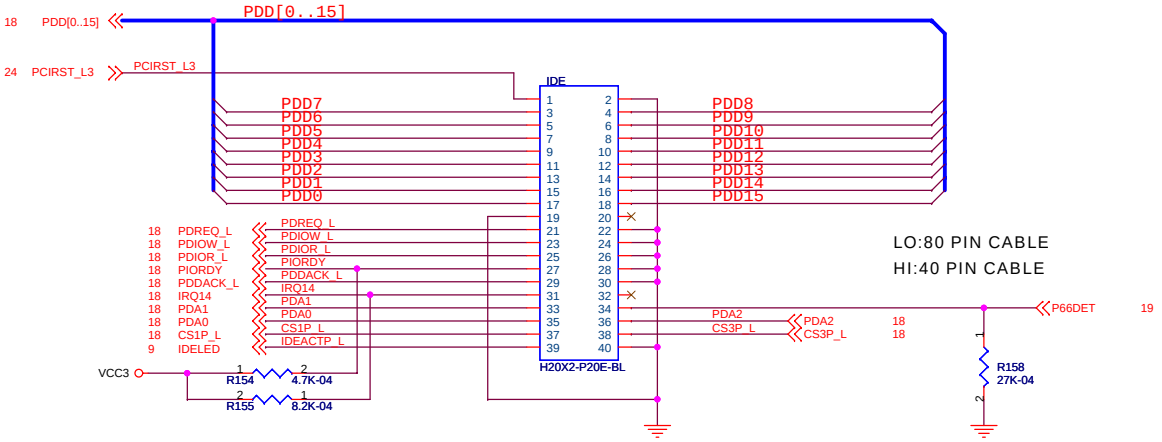
Size: Custom | Document Number: G31T-M7 | Rev: 1.0

Date: Wednesday, May 28, 2008 | Sheet 18 of 30

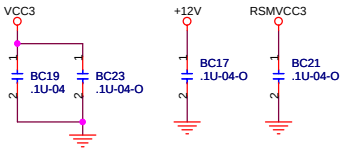

SB1B
NH82801GB-A1
SB1D
NH82801GB-A1
CAD NOTE:
PLACE 1 EACH NEAR A3 & F1.
PLACE REMAINDER ANYWHERE.
正面
For 103
X3(wire)
XTAL-JW
正面
SATA1 Primary-Master
SATA3 Primary-Slave
SATA2 Secondary-Master
SATA4 Secondary-Slave
SATA-7P2R-B
Elitegroup Computer Systems
ICH7 PCI/SPI/OTHER
G31T-M7
Wednesday, May 28, 2008

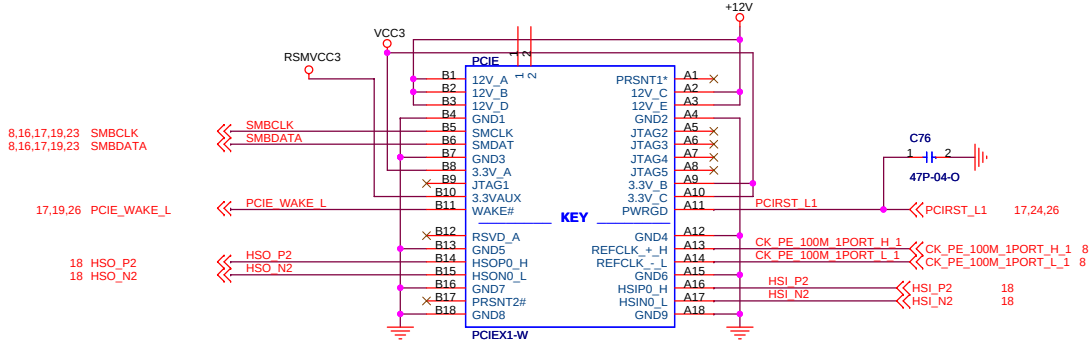


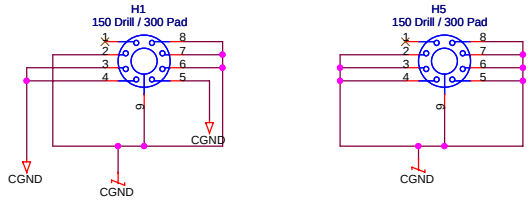
Elitegroup Computer Systems			
Title: ICH7 POWER			
Size: Custom	Document Number: G31T-M7		Rev: 1.0
Date: Wednesday, May 28, 2008	Sheet 20 of 30		

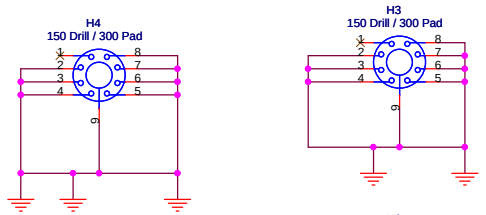


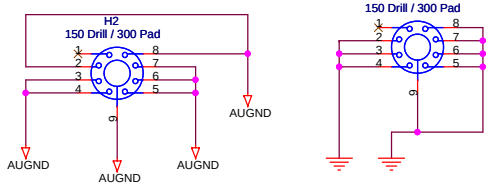
DATA LINES SHOULD BE MATCHED TO STROBES (PDIOR_L , PIORDY_L) WITHIN +/- 250 MIL,
STROBES SHOULD BE MATCHED TO THEIR COMPLEMENT WITHIN +/- 10MIL.



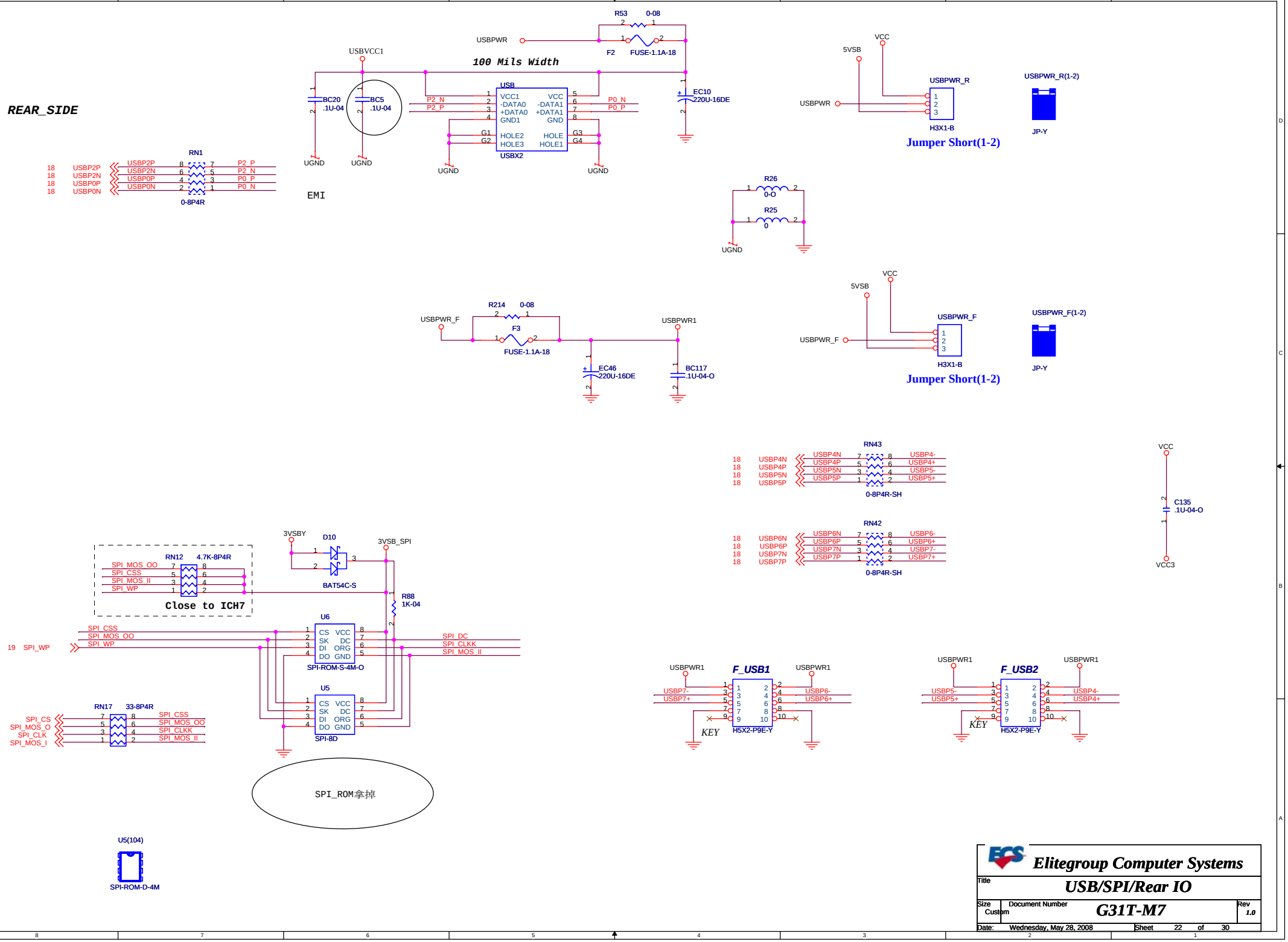




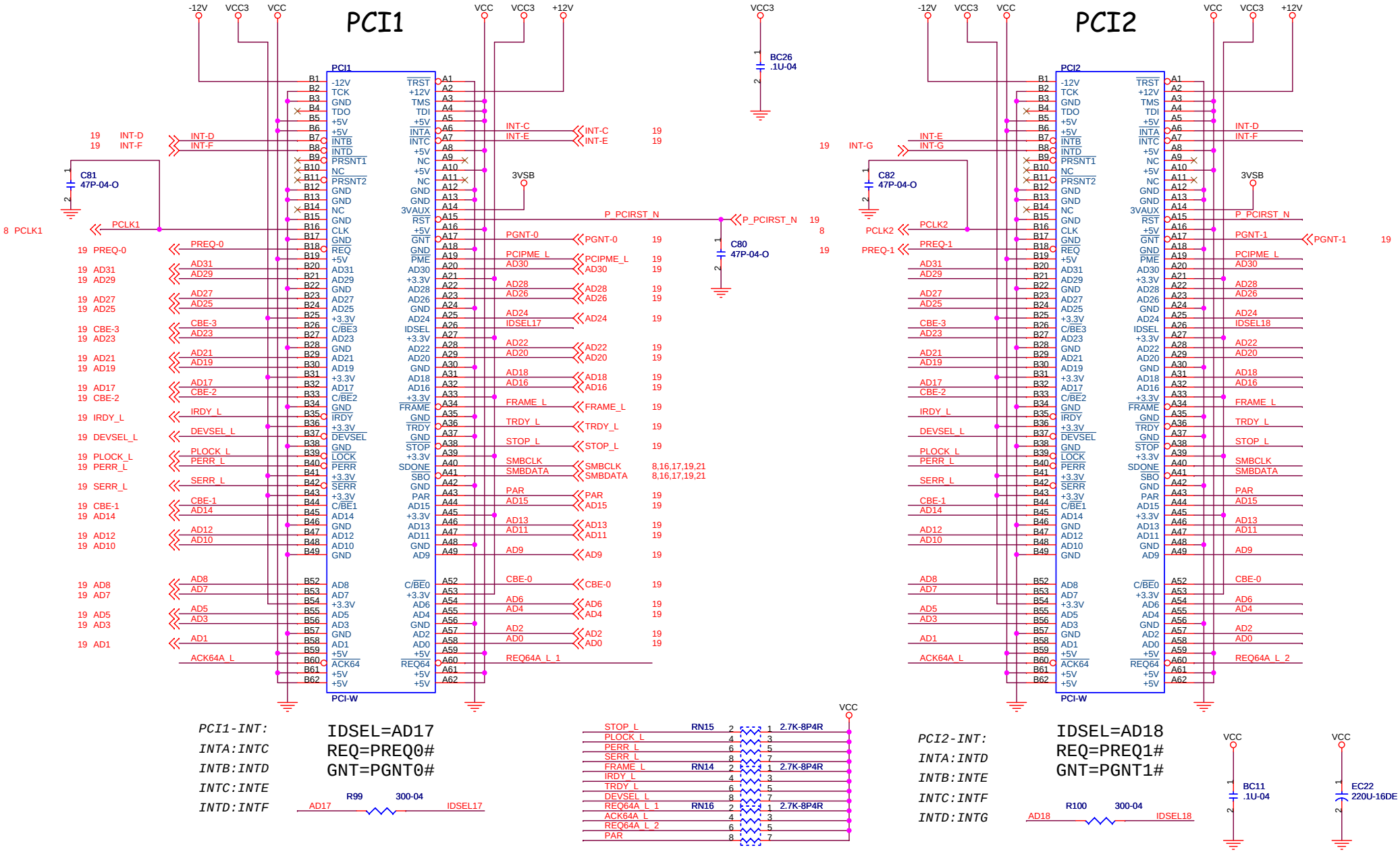




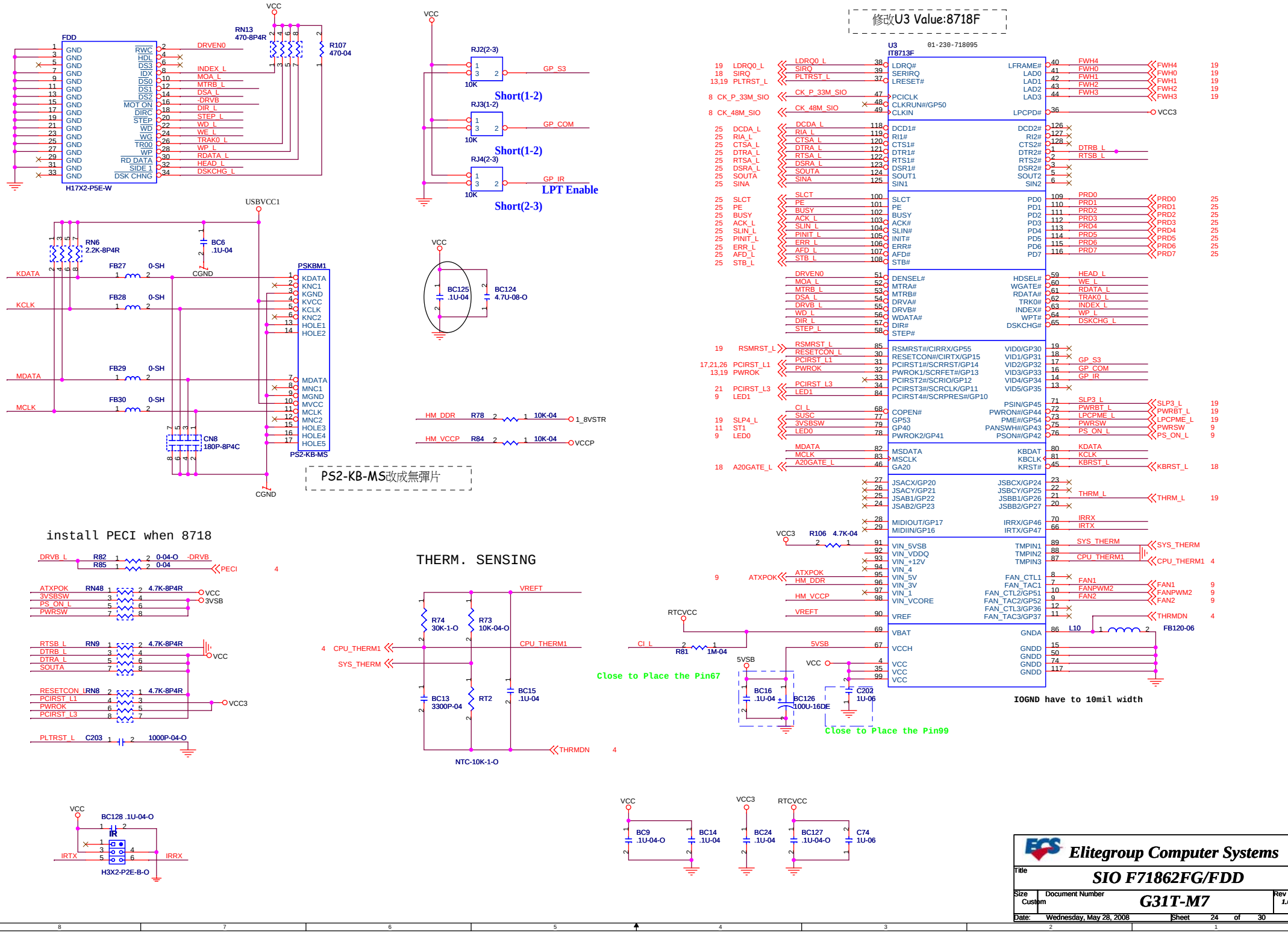
Elitegroup Computer Systems			
Title: IDE / PCIEX1			
Size: Custom	Document Number: G31T-M7		Rev: 1.0
Date: Wednesday, May 28, 2008	Sheet 21 of 30		



Elitegroup Computer Systems			
Title	USB/SPI/Rear IO		
Size: Custom	Document Number: G31T-M7		Rev: 1.0
Date: Wednesday, May 28, 2008	Sheet 22 of 30		



Elitegroup Computer Systems			
Title	PCI Slot 1&2		
Size: Custom	Document Number: G31T-M7	Rev: 1.0	
Date: Wednesday, May 28, 2008	Sheet 23 of 30		


修改U3 Value:8718F
U3
IT8713F
01-230-718095
FDD
H17X2-P5E-W
RN13
470-8P4R
R107
470-04
RN6
2.2K-8P4R
PSKBM1
PS2-KB-MS
PS2-KB-MS改成無彈片
USBVCC1
CN8
180P-8P4C
BC6
.1U-04
BC125
.1U-04
BC124
4.7U-08-O
RJ2(2-3)
RJ3(1-2)
RJ4(2-3)
Short(1-2)
Short(1-2)
Short(2-3)
LPT Enable
HM_DDR R78 10K-04 1_8VSTR
HM_VCCP R84 10K-04 VCCP
install PECI when 8718
THERM. SENSING
NTC-10K-1-O
R74 30K-1-O
R73 10K-04-O
BC13 3300P-04
RT2
BC15 .1U-04
R106 4.7K-04
R81 1M-04
BC16 .1U-04
BC126 100U-16DE
C202 1U-06
Close to Place the Pin67
Close to Place the Pin99
IOGND have to 10mil width
L10 FB120-06
BC128 .1U-04-O
IR
H3X2-P2E-B-O
BC9 .1U-04-O
BC14 .1U-04
BC24 .1U-04
BC127 .1U-04-O
C74 1U-06
Elitegroup Computer Systems
SIO F71862FG/FDD
G31T-M7
Size Custom
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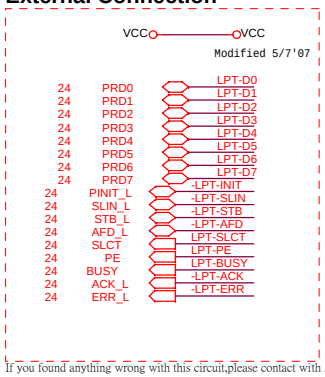
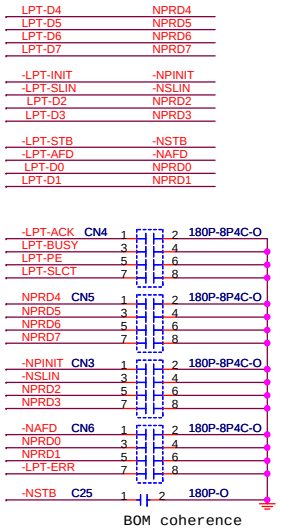
LPT

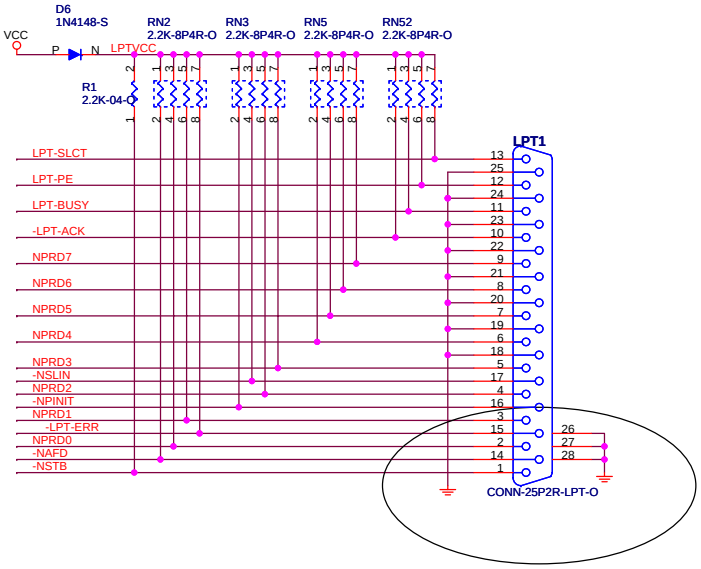
External Connection



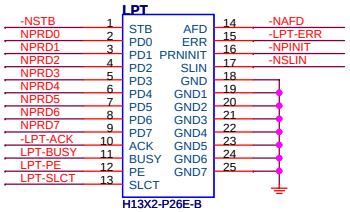
If you found anything wrong with this circuit,please contact with Jack Hu (Ext:622)



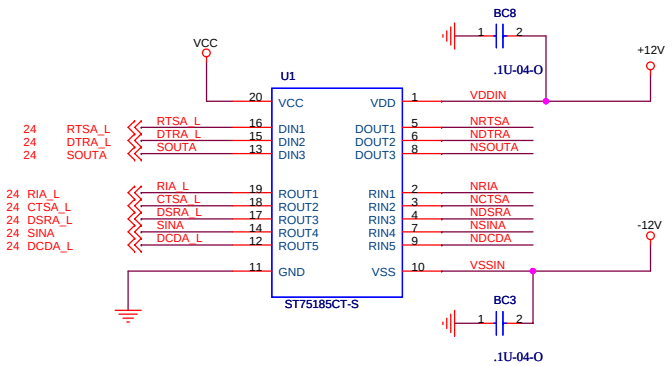
BOM coherence

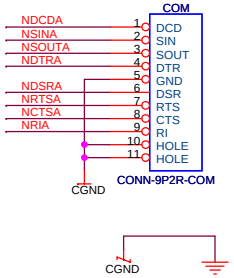


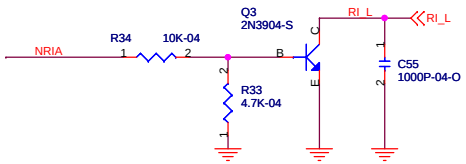
Selection design with LPT1

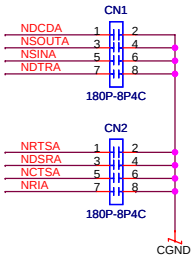


COM



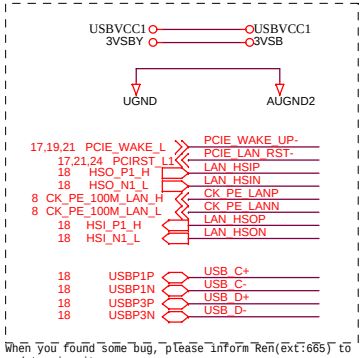






Elitegroup Computer Systems			
Title: I/O Ports			
Size: Custom	Document Number: G31T-M7		Rev: 1.0
Date: Wednesday, May 28, 2008	Sheet 25 of 30		

External Connection



When you found some bug, please inform Ren(ext:665) to update circuit.

新手提醒:

LAN_HSOP/N請接到SB的PCIE RX端

LAN_HSIP/N請接到SB的PCIE TX端

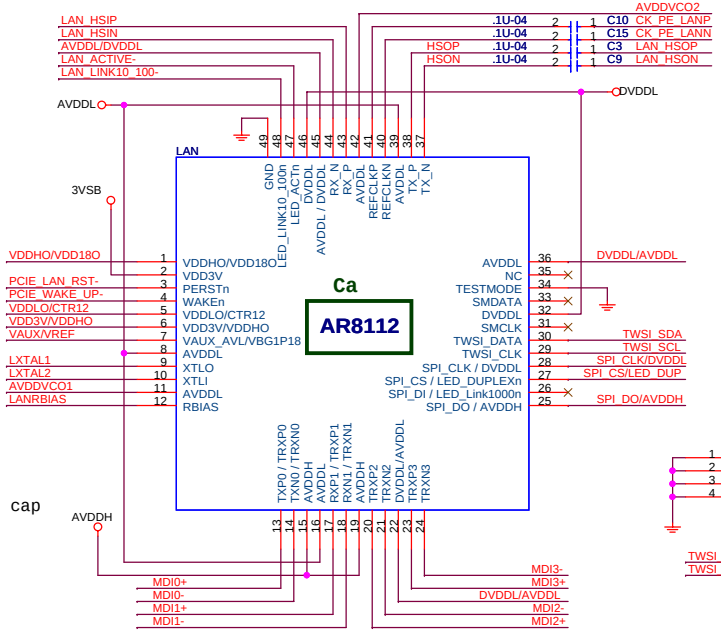
LAN_HSIP/N在SB的PCIE TX端要記得放AC coupling cap

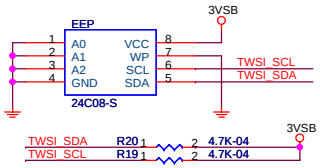
BOM Difference

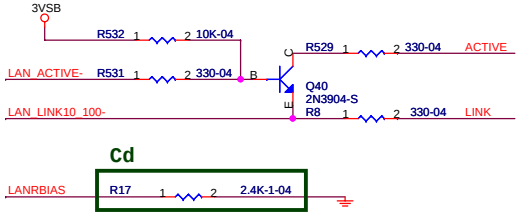
	L2-48 10/100M	L1e 1000M
Ca	AR8112	AR8121
Cb	X	V
Cc	V	X
Cd	2.4K-1-04	2.37K-1-04
Ce	X	V
Cf	X	V
Cg	USBX2-LAN-100	USBX2-LAN-1000
Ch	V	X
Ci	.01U-04	0-04
Cj	0	FB120-06
Ck	1U	1000P
Cl	V	X

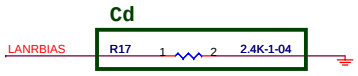
Power Difference

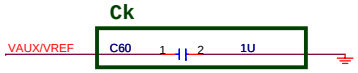
	L2	L1
3VSB	3.3V 3VSB供應	3.3V 3VSB供應
AVDDL	1.5V pin5供應	1.2V pin5 CTRL
DVDDL	1.5V pin5供應	1.2V pin5 CTRL
AVDDH	2.5V pin1供應	2.5V pin6供應
VDDO18	N/A	1.8V pin1供應

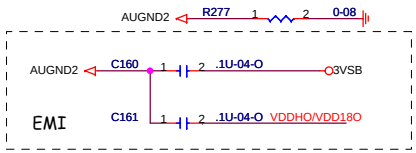


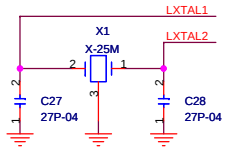


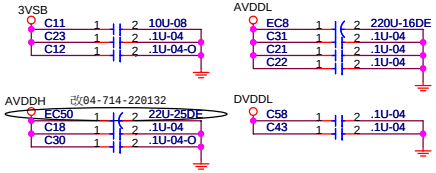


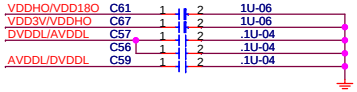


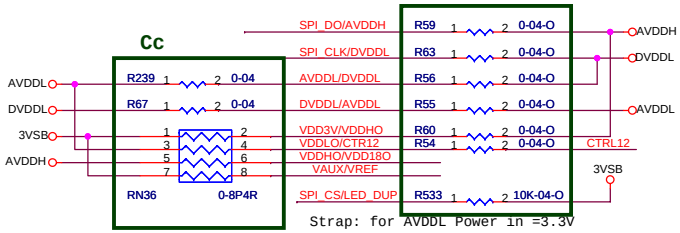


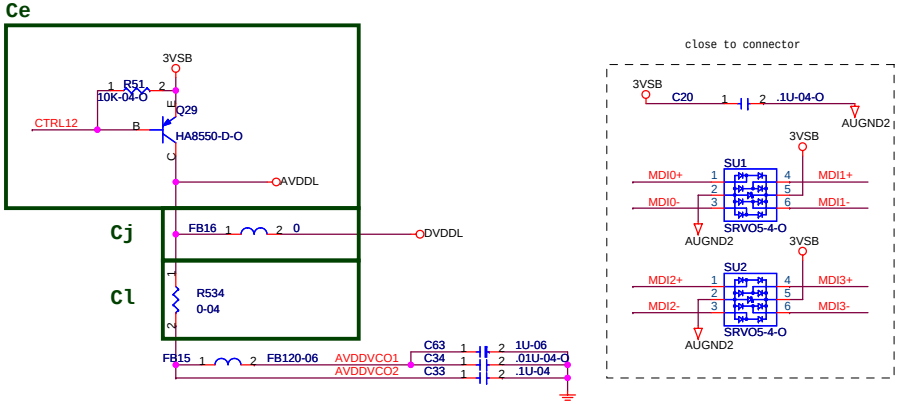


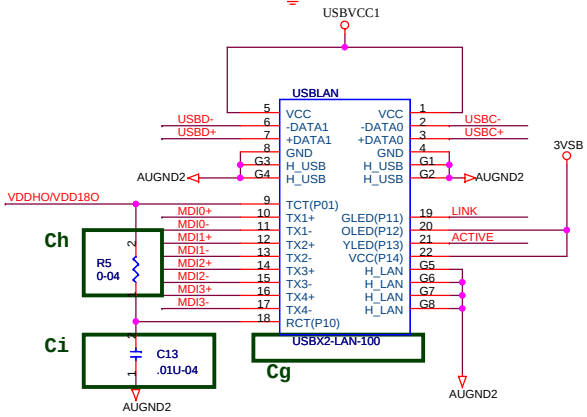




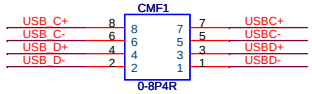




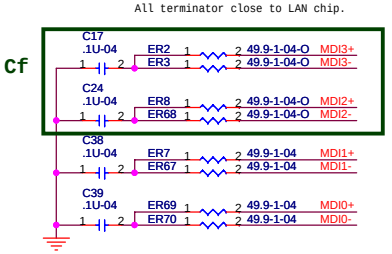




Link 10/100/1000: Green on
Active: Yellow blinking



All terminator close to LAN chip.



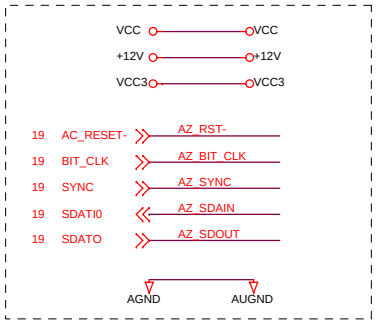
Elitegroup Computer Systems

Title: PCIE LAN L1e/L2-48

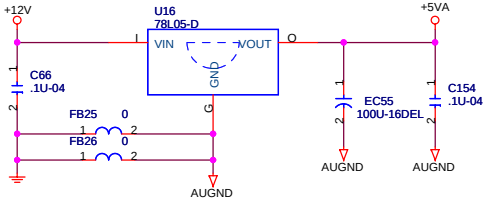
Size: Custom | Document Number: G31T-M7 | Rev: 1.0

Date: Wednesday, May 28, 2008 | Sheet 26 of 30

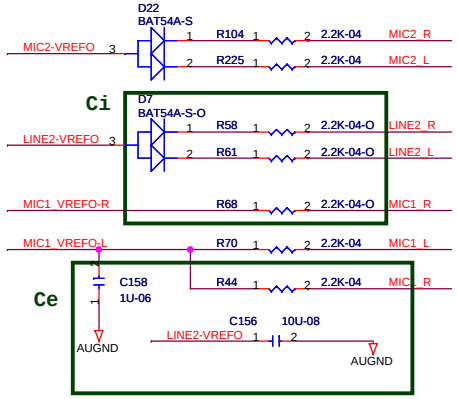
External Connection

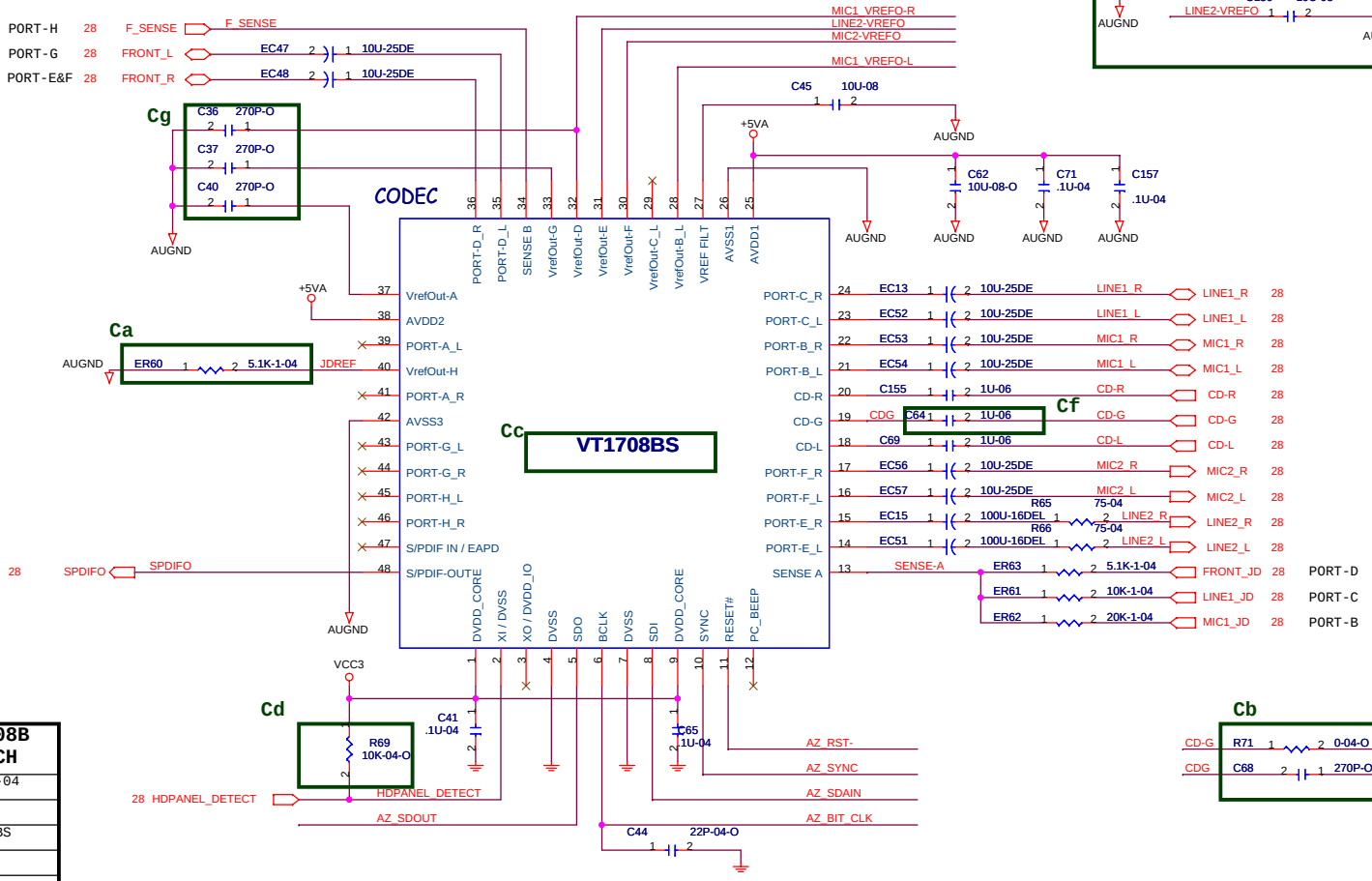


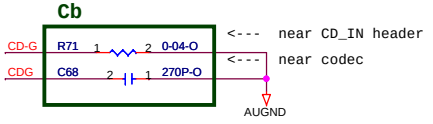
When you found some bug, please inform Ren(ext:665) to update circuit.



MIC Bias







BOM Difference

Location	ALC662 5.1 CH	VT1708A 5.1 CH	VT1708B 5.1 CH
Ca	20K-1-04	5.1K-1-04	5.1K-1-04
Cb	X	V	X
Cc	ALC662	VT1708AS	VT1708BS
Cd	V	X	X
Ce	X	V	V
Cf	V	X	V
Cg	X	V	X
Ci	V	X	X

02-301-662690
ALC662-GR

02-301-708621
VT1708BS

When you change BOM, remember change GPI to inform BIOS use different Verb-Table.

Elitegroup Computer Systems

Title: AUDIO VT1708BS(CHIP)

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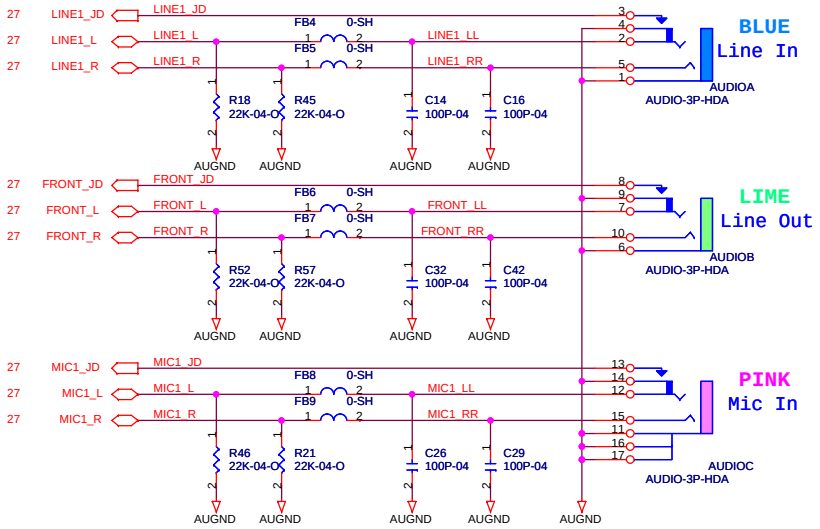
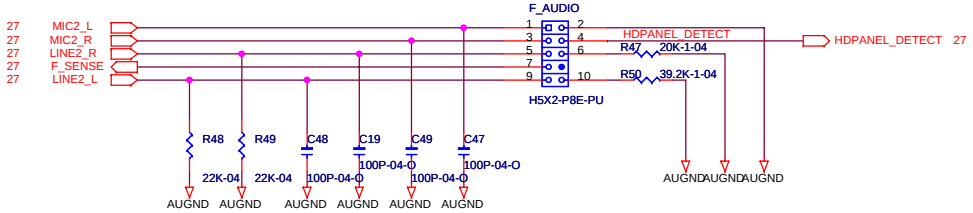
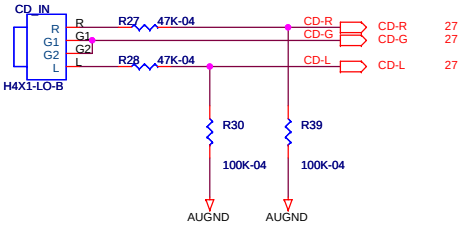
REAR-AUDIO



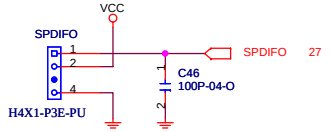
FRONT-AUDIO

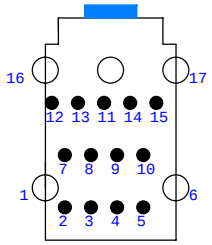


CD_IN

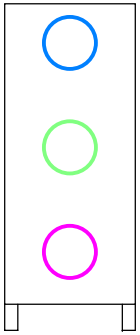


SPDIF-OUT





TOP VIEW



Line in

Front out

Mic in

FRONT VIEW

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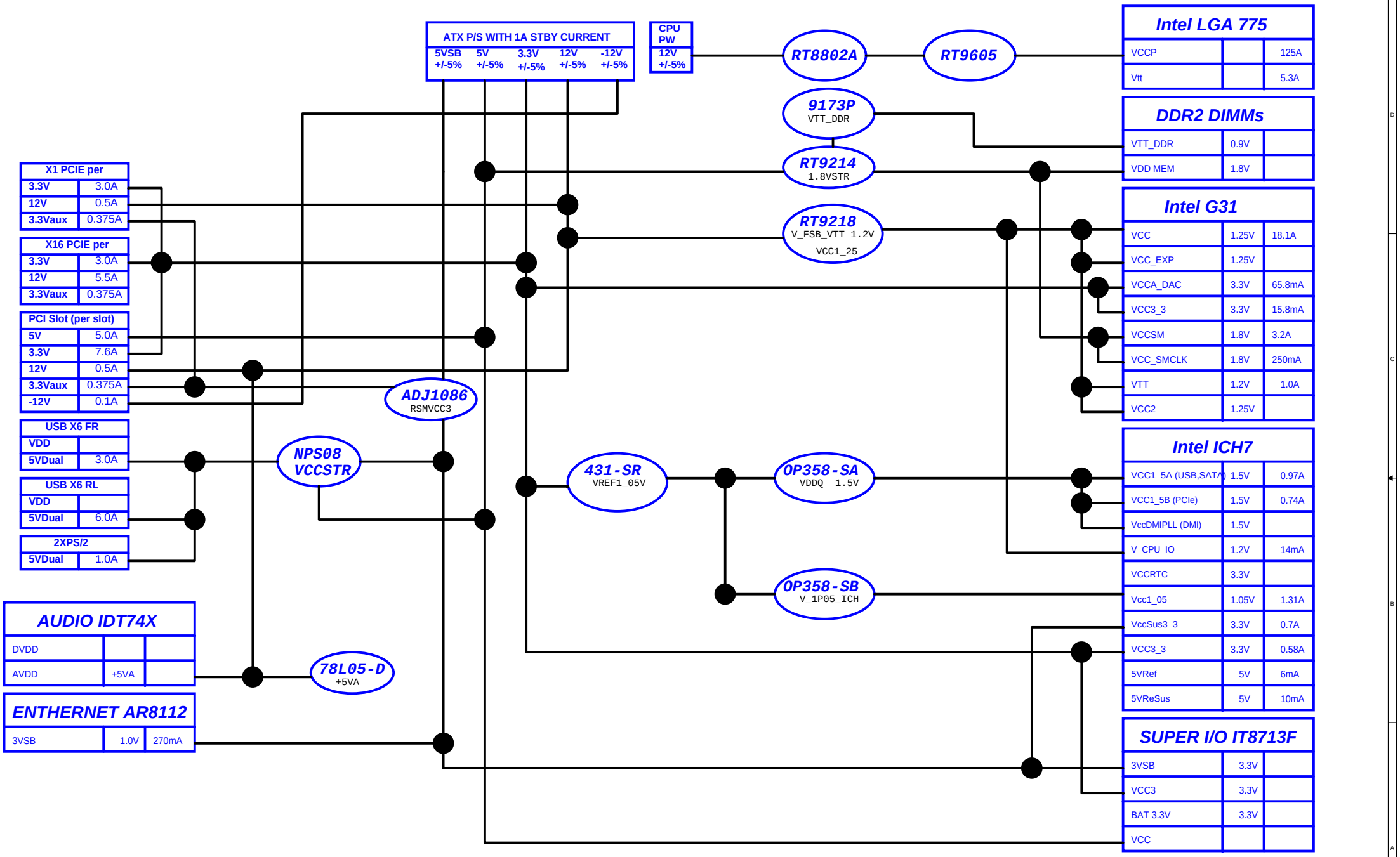

Elitegroup Computer Systems

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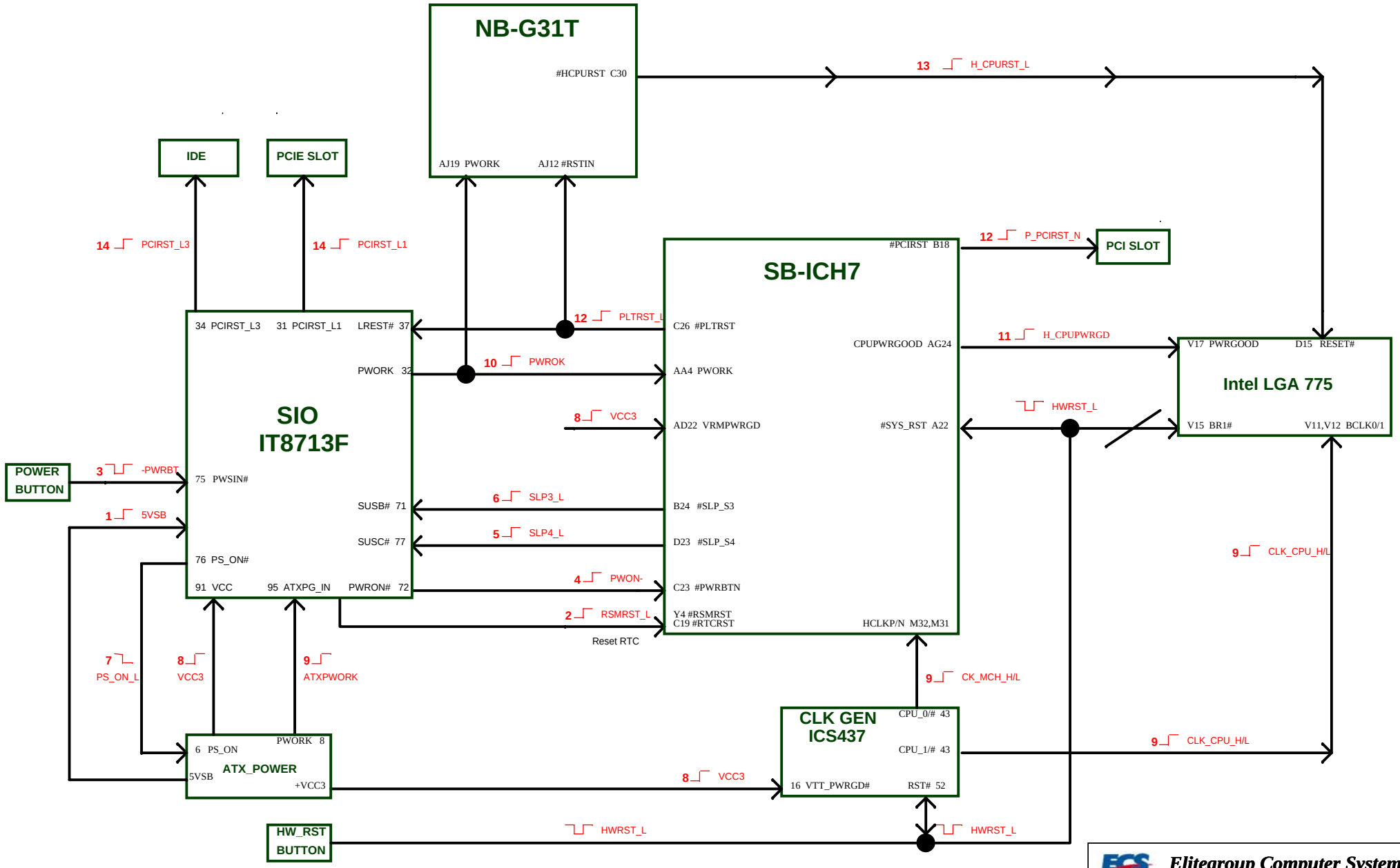

Elitegroup Computer Systems

Title: Power Sequence

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