661FX-M

Rev: A

Revision History :

1. Ver A: Initial
2. Ver B:
   (1) Add North Bridge Fan Sink Header
   (2) Delete SATA Crystal
   (3) Modify USB, AUDIO, S/P DIF Out, Front Panel Headers for ACER
   (4) Add SATA Status LED Signal via Front Panel
   (5) Modify USB Power Source on South Bridge due to SiS AP note
   (6) Add One More Fuse for 1394 Header
   (7) Add SPDIFO2 Header (Pitch 2.0mm) for HP S/P DIF Out
   (8) Modify Hardware Reset Circuit
   (9) Modify VCCVID Power Good Circuit
   (10) Remove IR, SIRQ Headers
   (11) Add JP4, JP5 Headers for HP
   (12) Modify CPU Fan Control Circuit
   (13) Change RT9173 for DDR Vtt
   (14) Change LAN Connector Type
3. Ver 1.0:
   (1) Add C289, MC40 for EMI Solution

Page Index

	SIGNATURE	DATE
DESIGNER		
LAYOUT		
CHECK		
APPROVAL		

Elitegroup Computer Systems

Title: 661FX-M		
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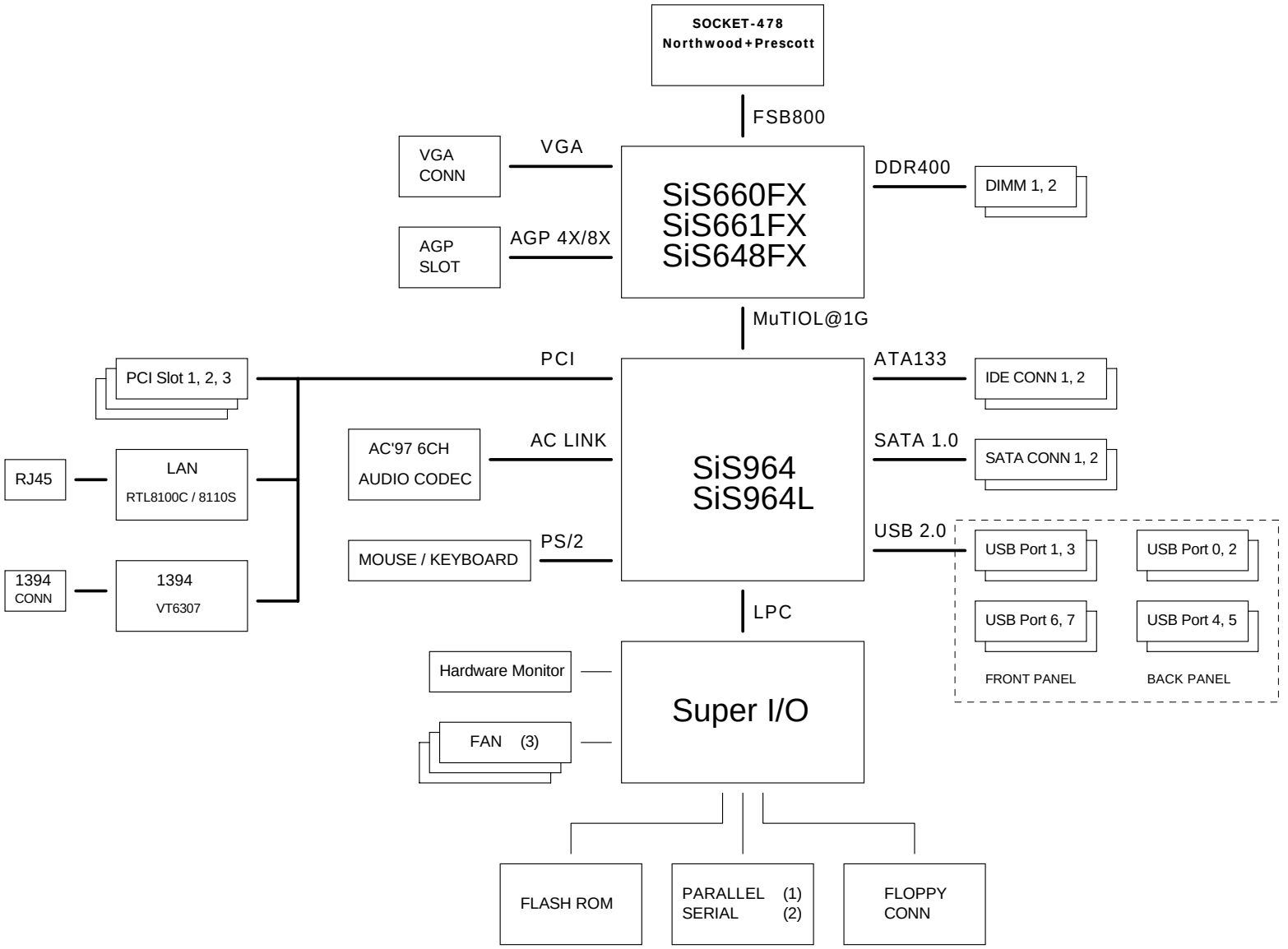
Date: Monday, September 22, 2003	Sheet 1 of 34	

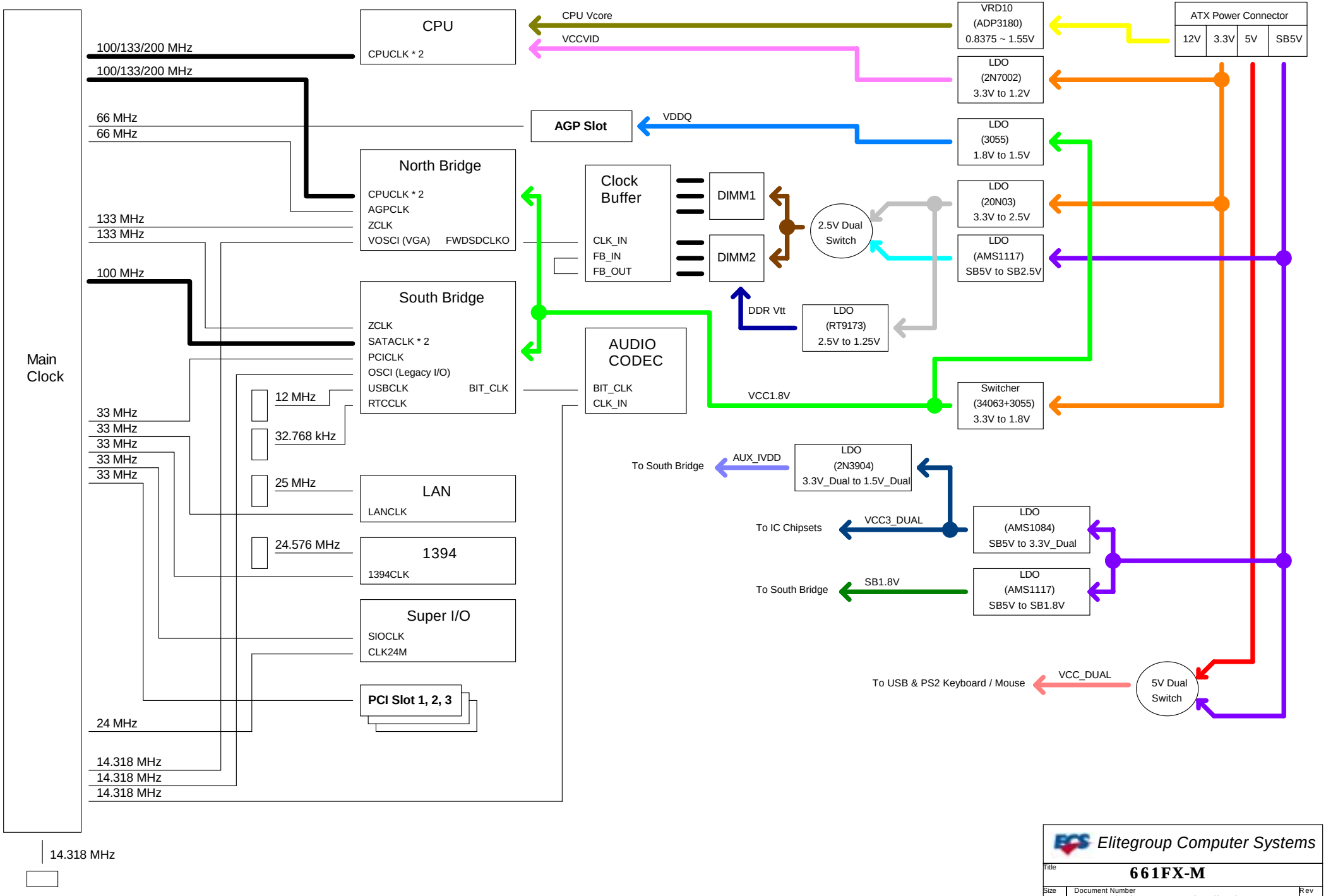


Elitegroup Computer Systems

Title: 661FX-M

Size: Custom | Document Number: Block Diagram | Rev: A

Date: Monday, September 22, 2003 | Sheet 2 of 34

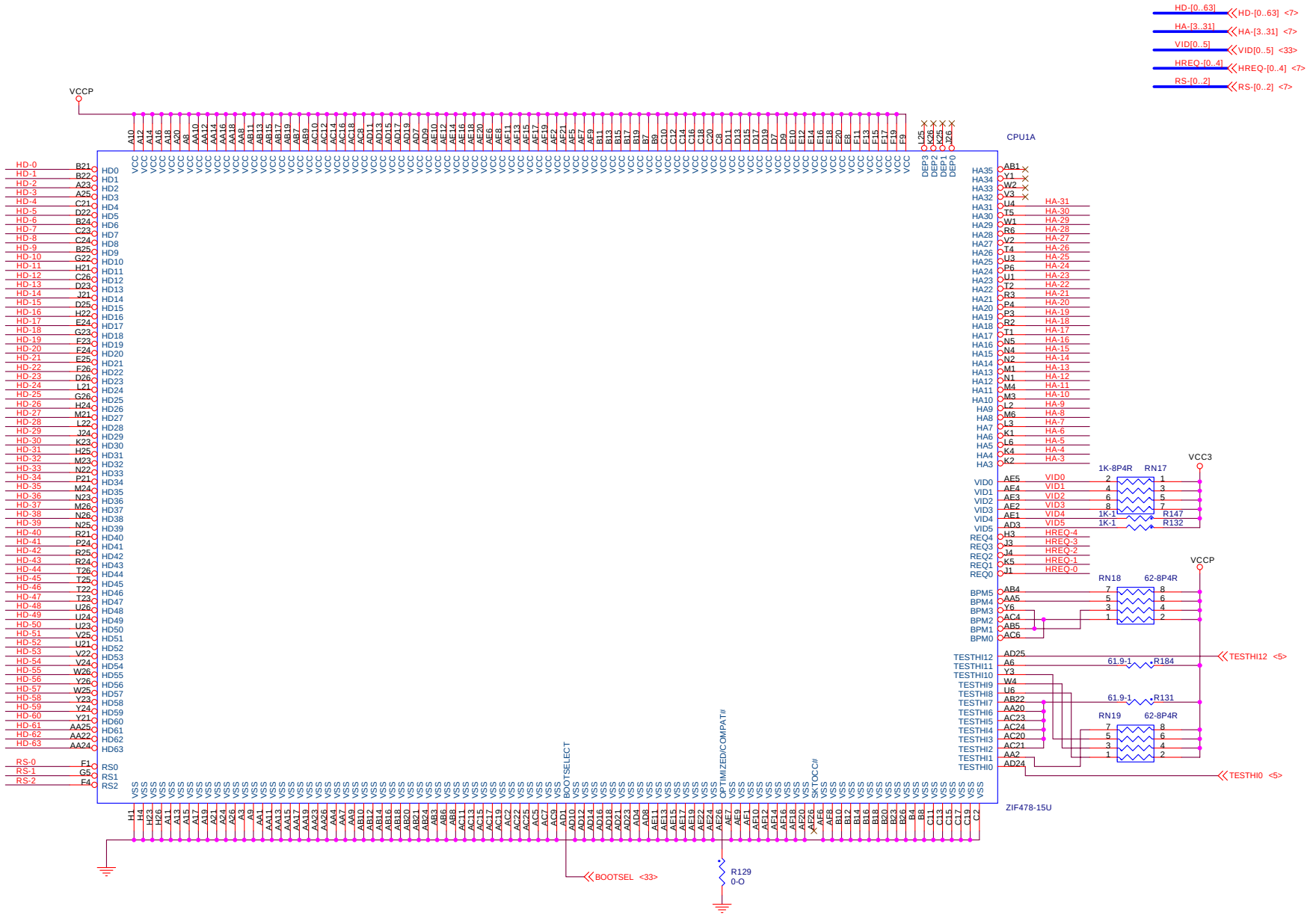


Elitegroup Computer Systems

Title: 661FX-M

Size: Custom | Document Number: Clock & Power Distribution | Rev: A

Date: Monday, September 22, 2003 | Sheet 3 of 34



Elitegroup Computer Systems	
Title	661FX-M
Size: Custom	Document Number: Socket478-1
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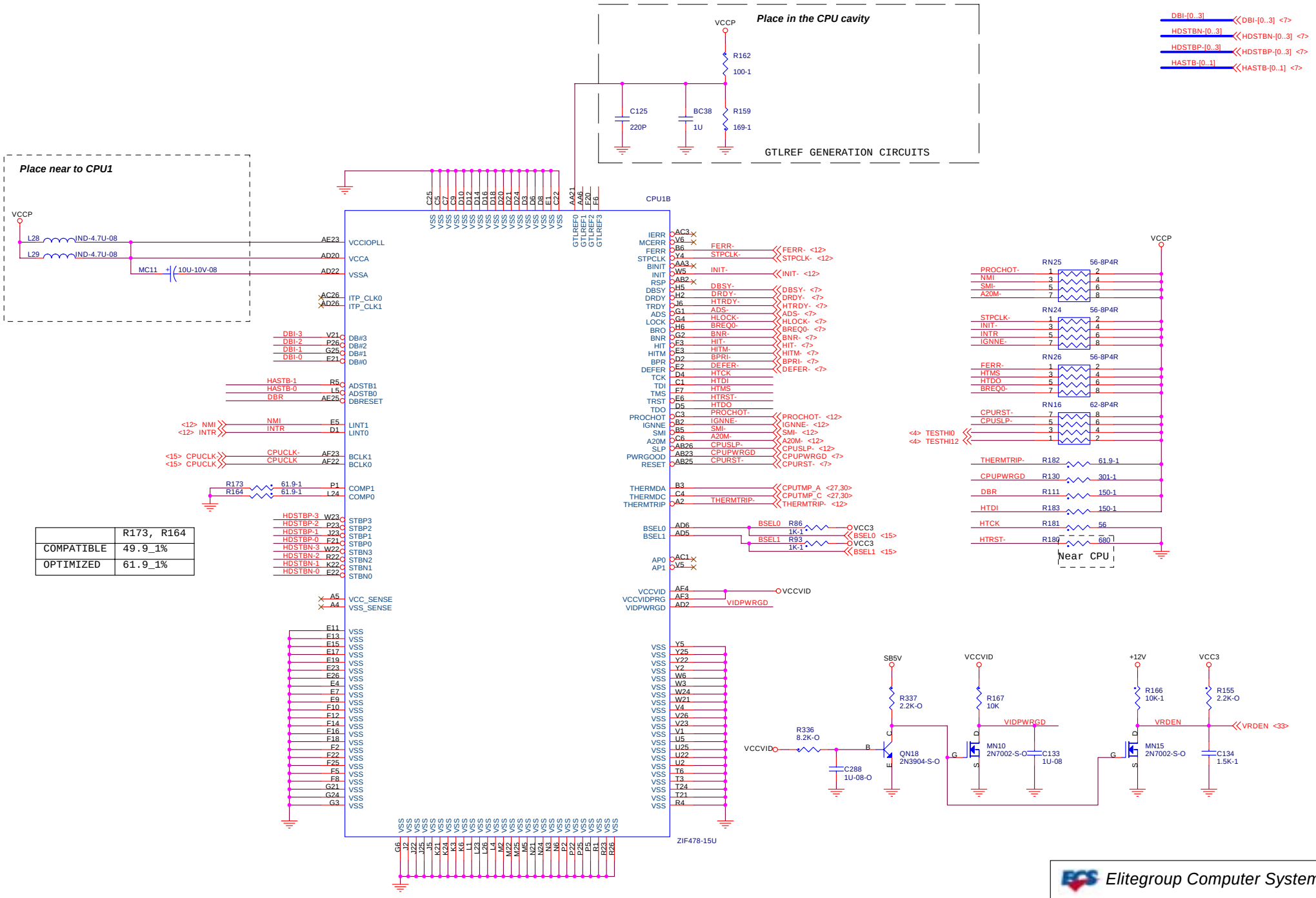
Date: Monday, September 22, 2003	Sheet 4 of 34



	R173, R164
COMPATIBLE	49.9_1%
OPTIMIZED	61.9_1%

Elitegroup Computer Systems

Title	661FX-M	
Size: Custom	Document Number: Socket478-2	Rev: A
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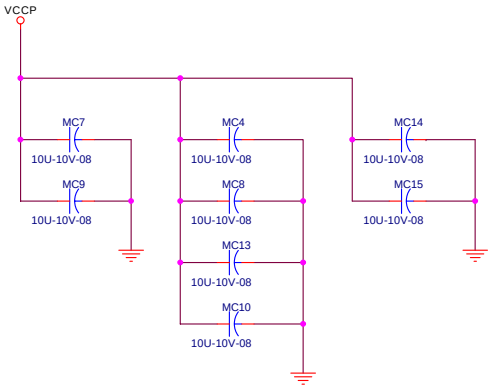
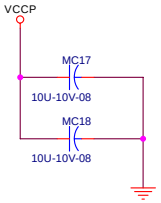
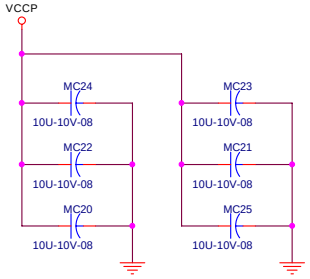
Put these capacitors at processor NORTH SIDE



Put these capacitors INSIDE PROCESSOR CAVITY

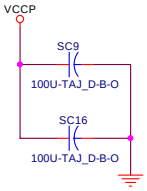


Put these capacitors at processor SOUTH SIDE



P.S. Choose X7R/X5R components instead of Y5V for all 10uF_1206 capacitors on this page.

Put these capacitors at processor SOLDER SIDE



Elitegroup Computer Systems

Title: 661FX-M

Size: Custom | Document Number: Decoupling Circuit | Rev: A

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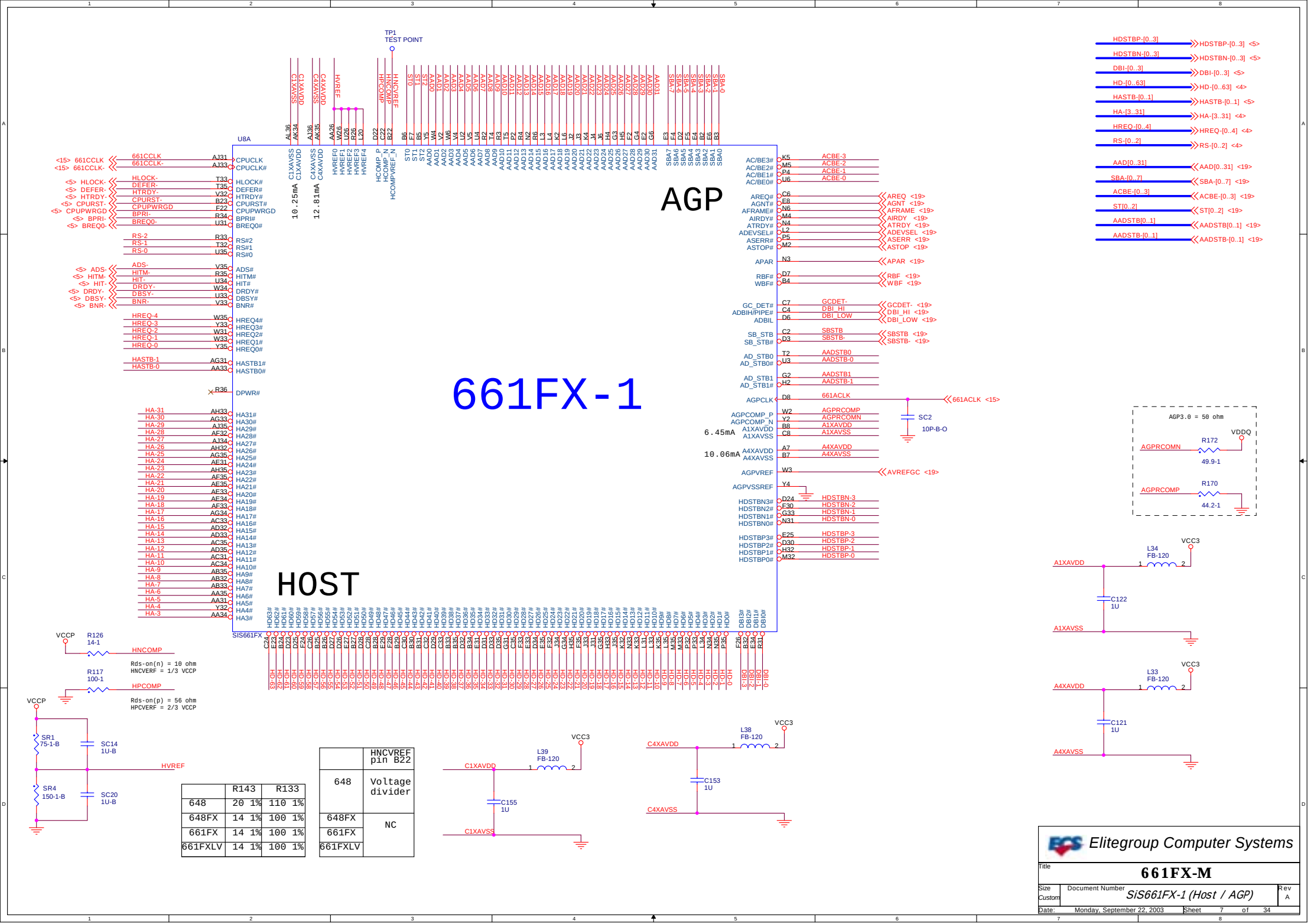

	R143	R133
648	20 1%	110 1%
648FX	14 1%	100 1%
661FX	14 1%	100 1%
661FXLV	14 1%	100 1%

	HNCVREF pin B22
648	Voltage divider
648FX	NC
661FX	
661FXLV	

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Title: 661FX-M

Size: Custom | Document Number: SiS661FX-1 (Host / AGP) | Rev: A

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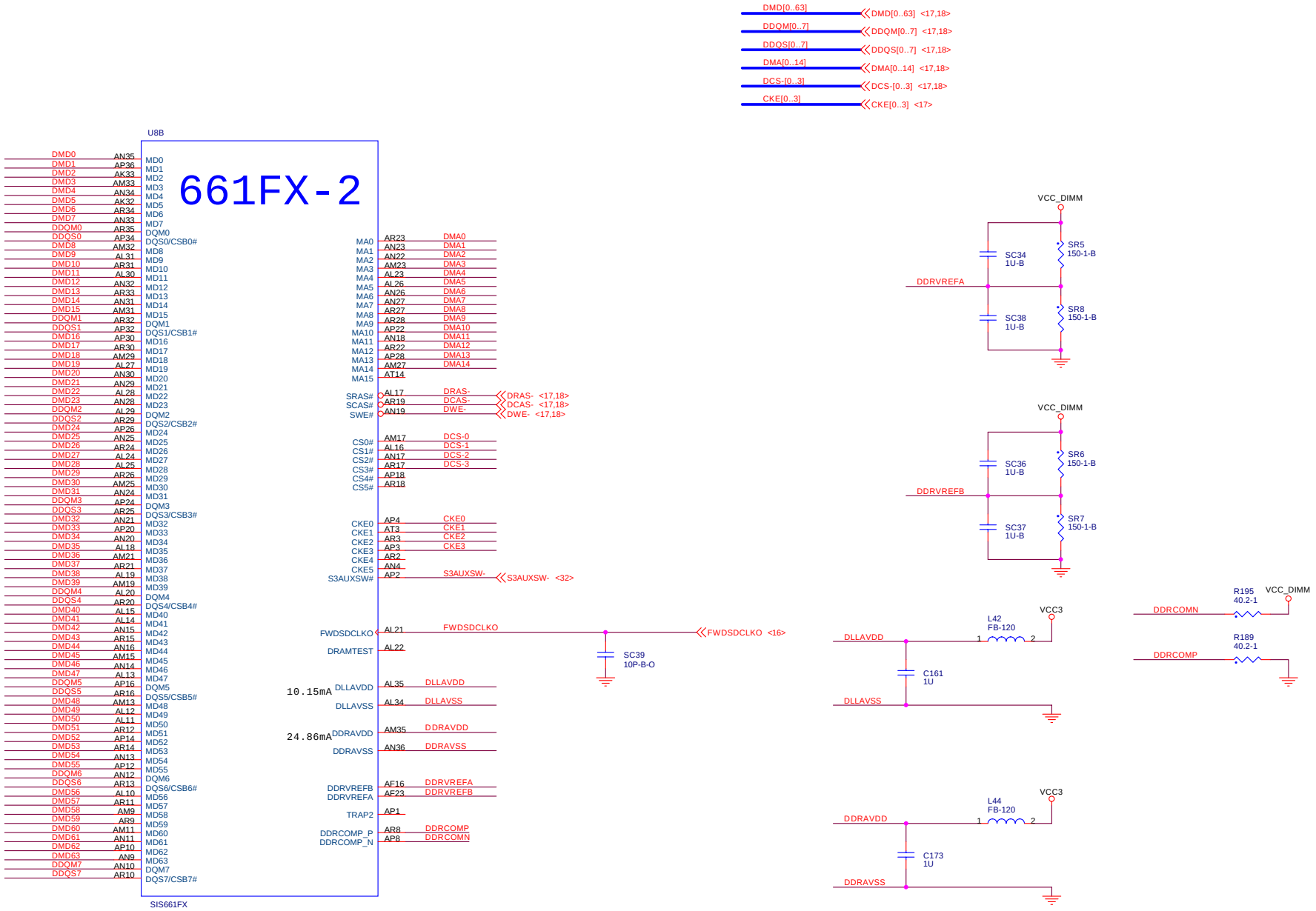

Elitegroup Computer Systems		
Title	661FX-M	
Size: Custom	Document Number: SiS661FX-2 (Memory)	Rev: A
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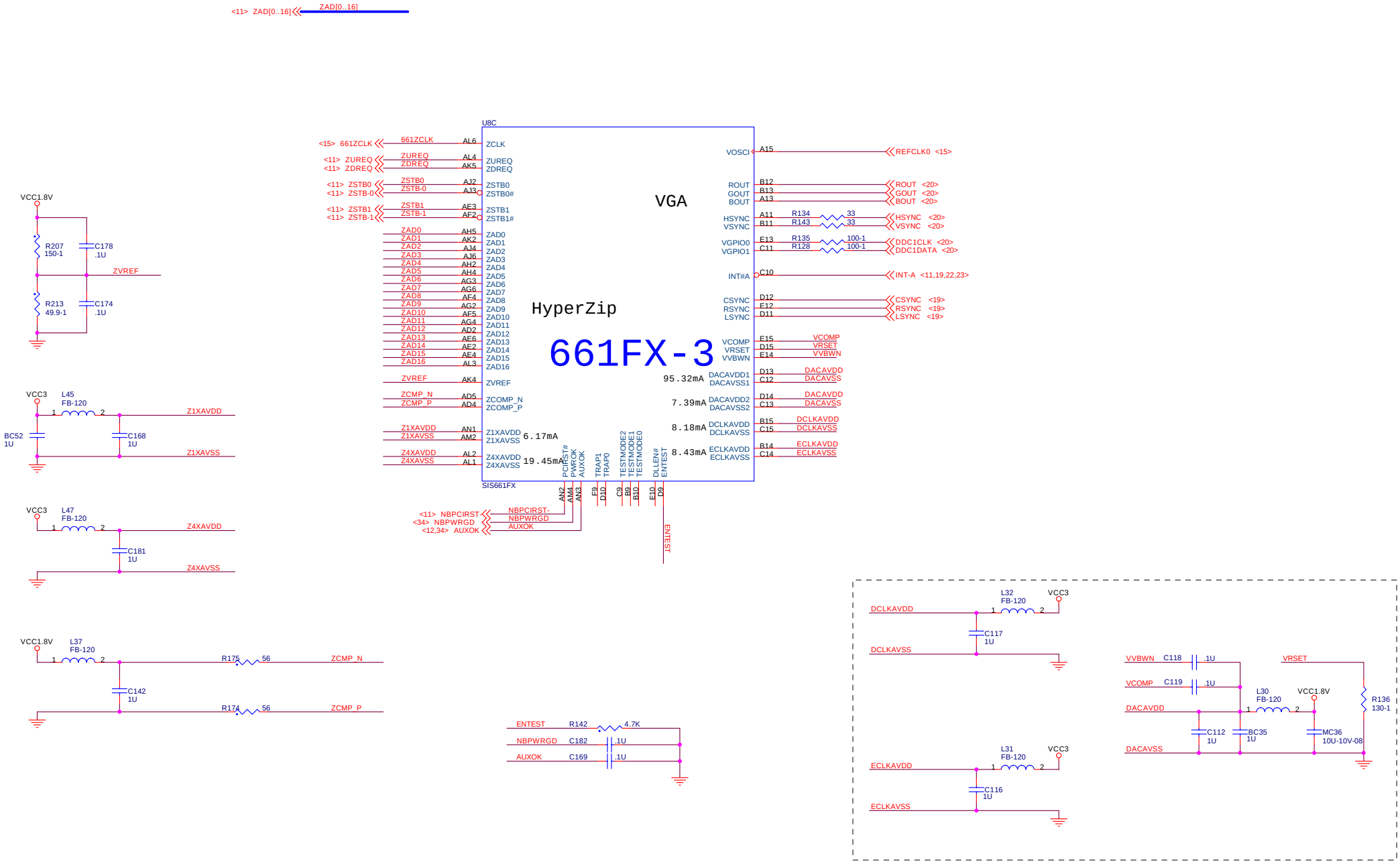

Elitegroup Computer Systems	
Title	661FX-M
Size: Custom	Document Number: SiS661FX-3 (HyperZip)
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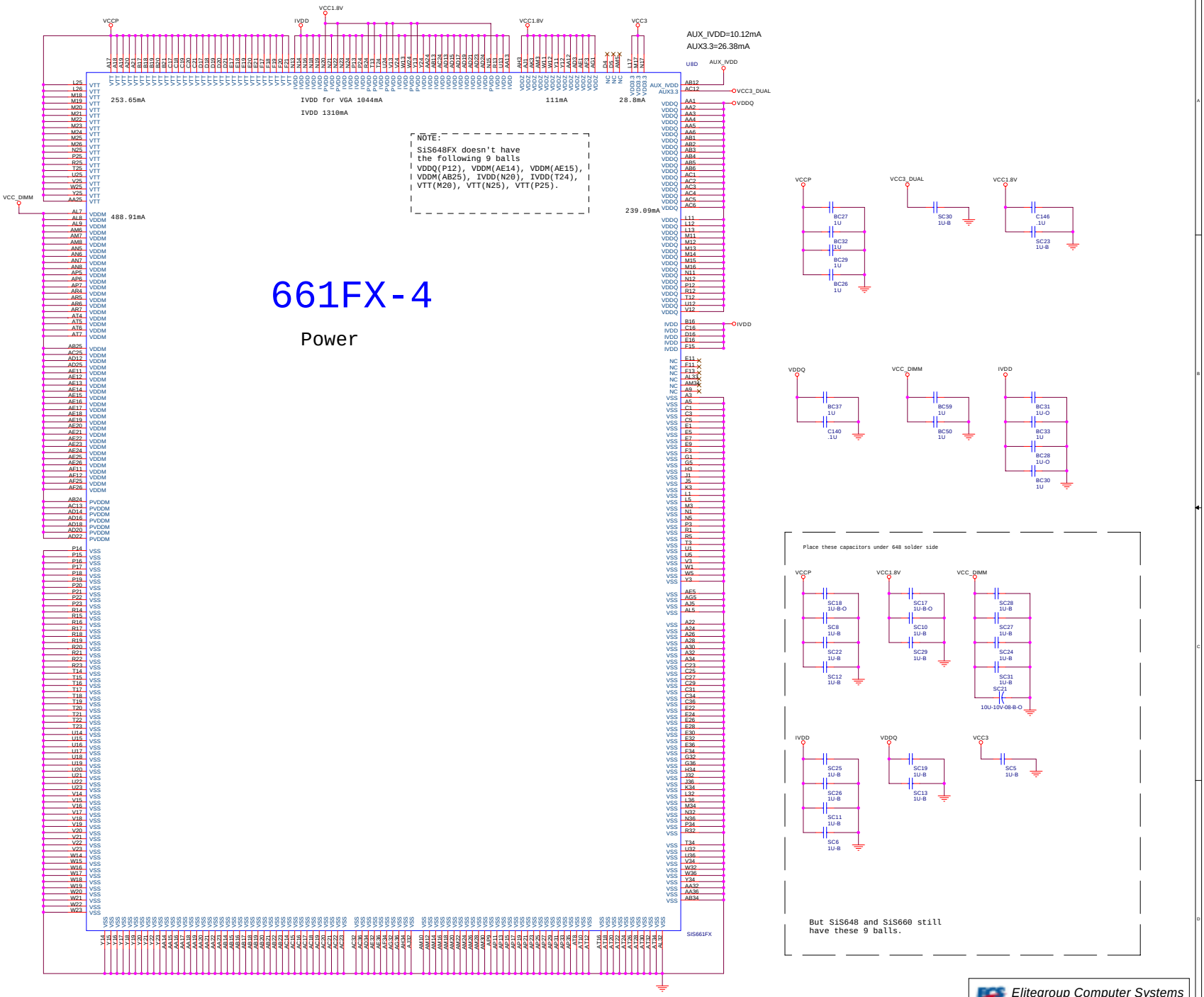

Elitegroup Computer Systems		
Title	661FX-M	
Size: Custom	Document Number: SiS661FX-4 (Power)	Rev: A
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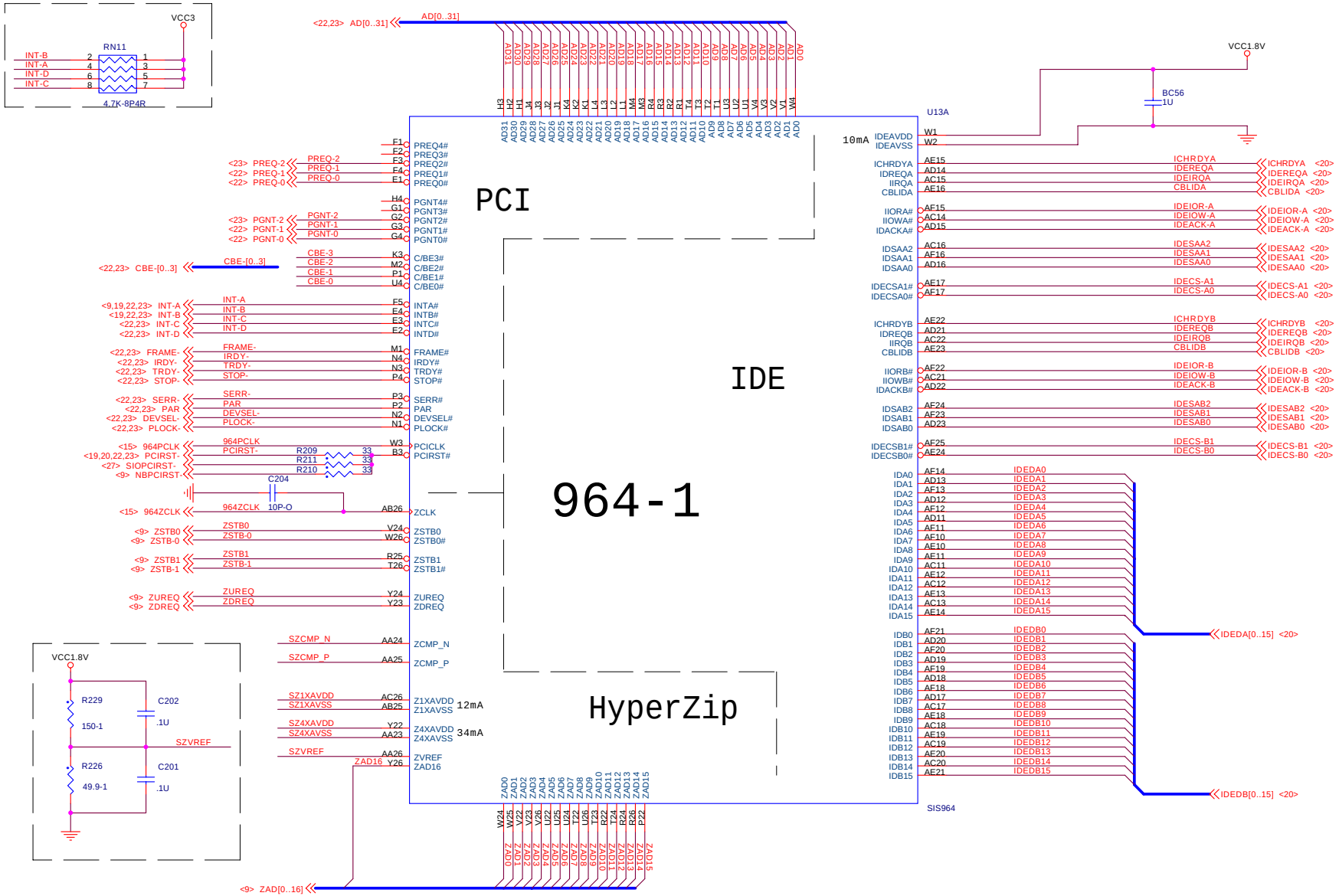

Elitegroup Computer Systems			
Title	661FX-M		
Size: Custom	Document Number: SiS964-1 (PCI / IDE / Link)		Rev: A
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Programable on-die pull-high strength for CPU_S:
(Infinite, 150, 110, 56 Ohm)

U13B

CPU_S
APIC
LPC
RTC
964-2
GPIO
AC97
ACPI /others
KBC /geyserville
MII
GPIO

SIS964

SiS963, 964 GPIO 0~7 internal pull up

SiS963, 964 GPIO 9,10 internal pull down

Put closed to 96X CHIP

NEED NOT to place close to 964

Elitegroup Computer Systems

Title: 661FX-M

Size: Custom | Document Number: SiS964-2 (Misc. Signals) | Rev: A

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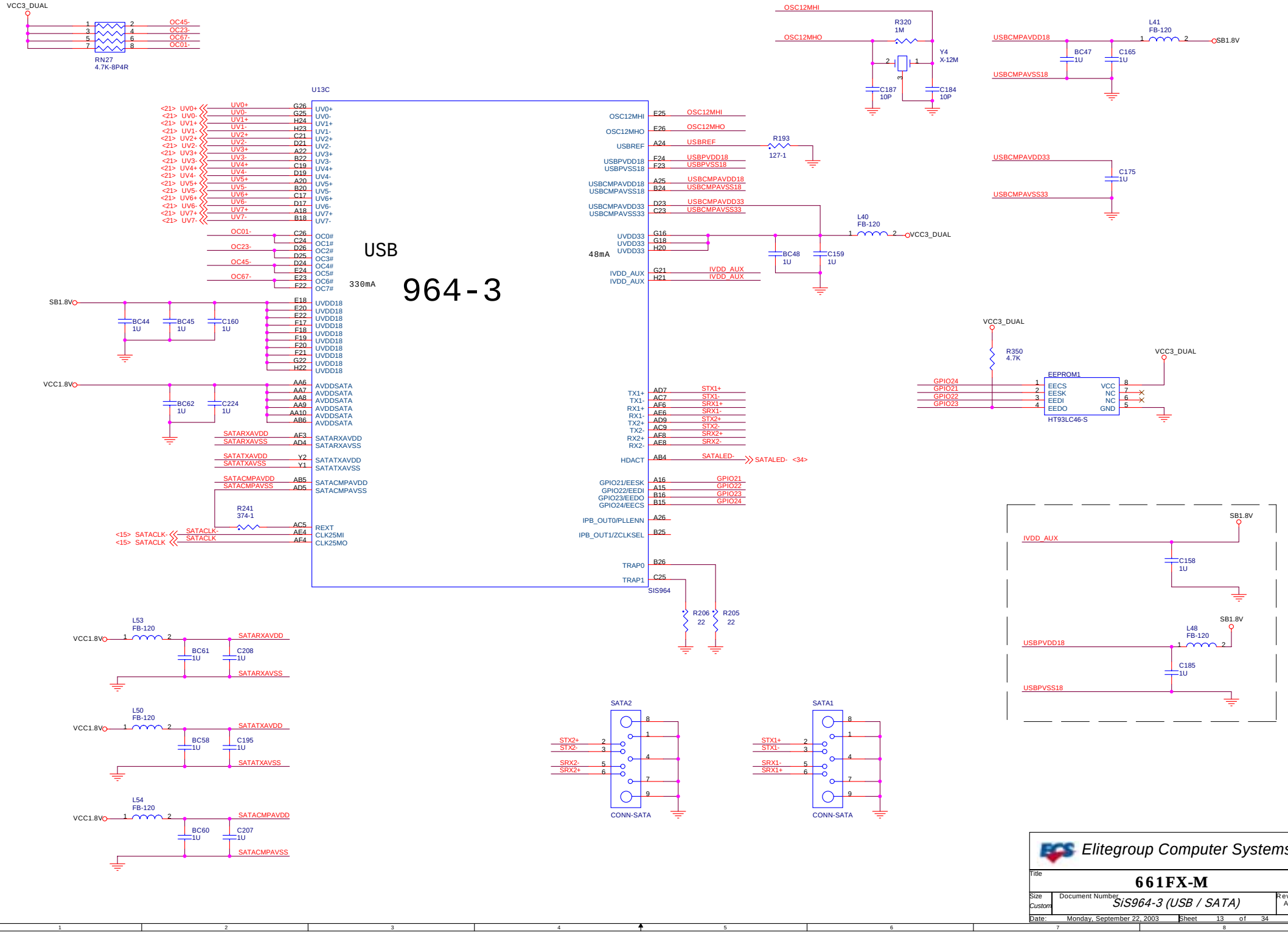

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Title: 661FX-M

Size: Custom | Document Number: SiS964-3 (USB / SATA) | Rev: A

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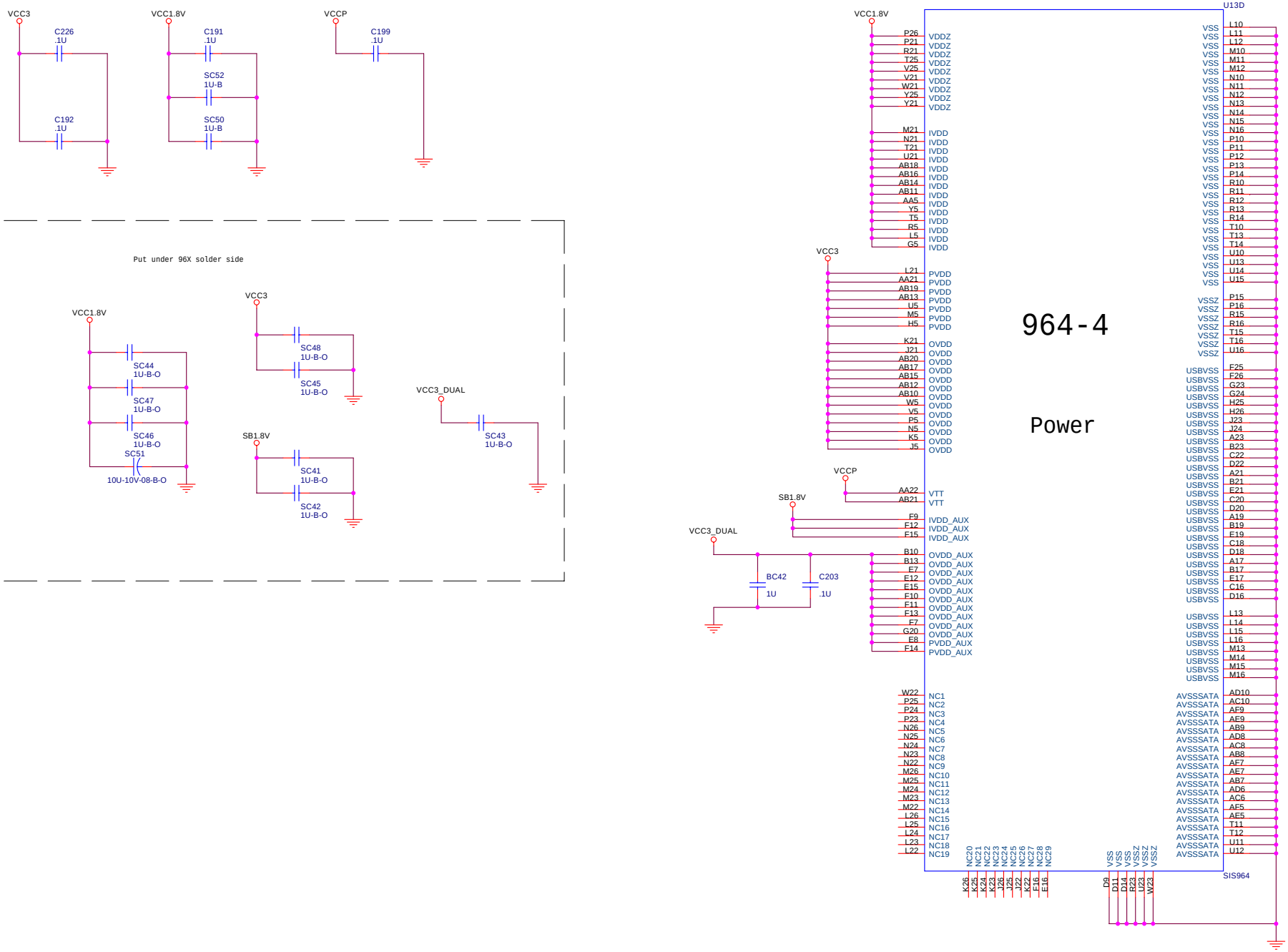

Elitegroup Computer Systems	
Title	661FX-M
Size: Custom	Document Number: SiS964-4 (Power)
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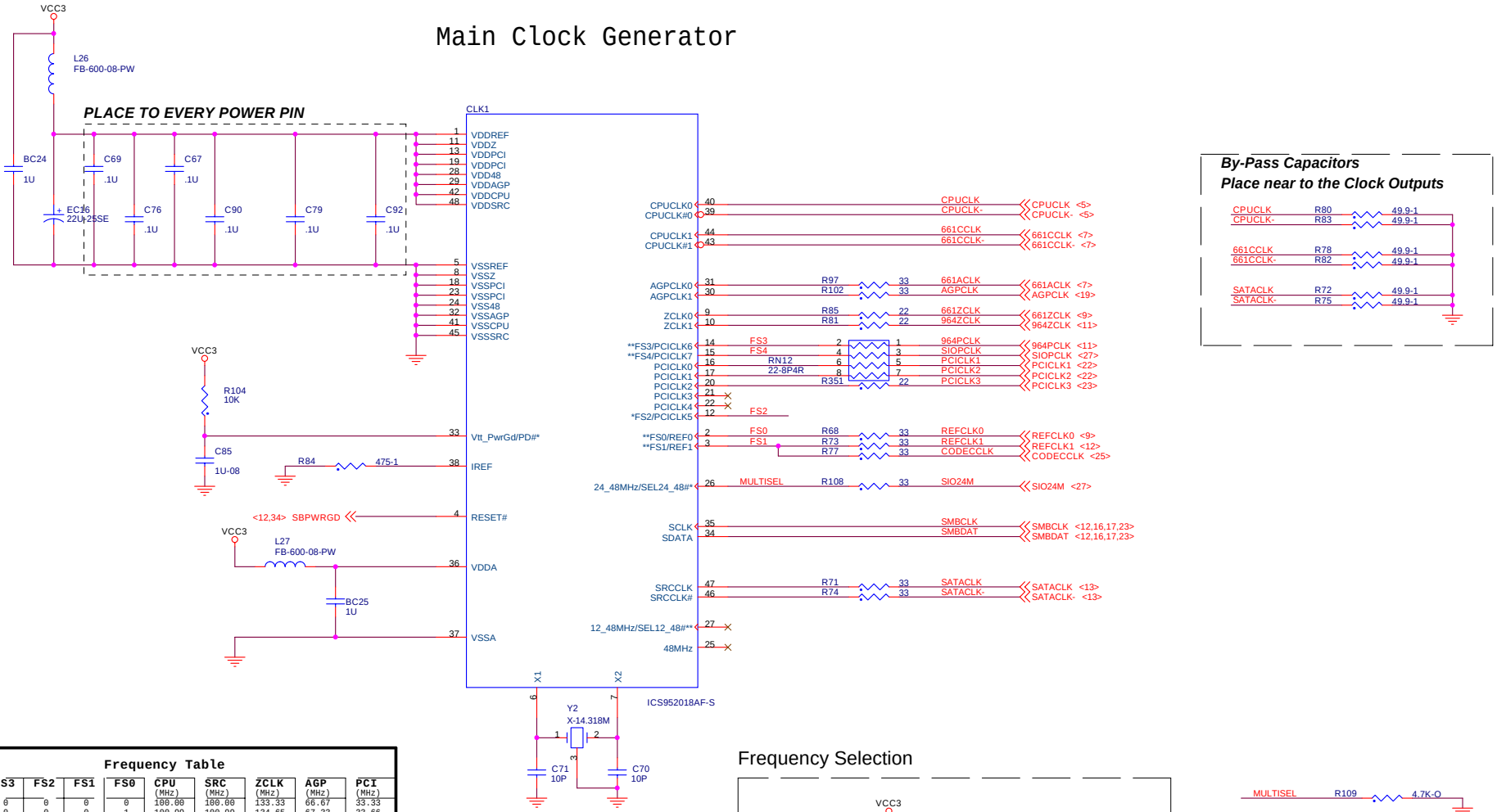
Main Clock Generator



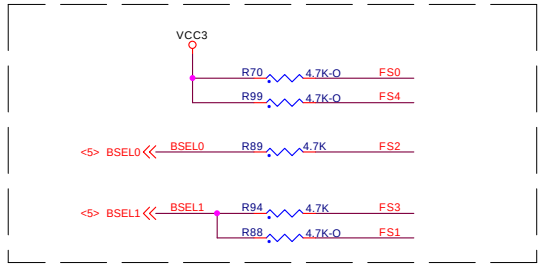
Frequency Table

FSB	FS4	FS3	FS2	FS1	FS0	CPU (MHz)	SRC (MHz)	ZCLK (MHz)	AGP (MHz)	PCI (MHz)
FSB400	0	0	0	0	0	100.00	100.00	133.33	66.67	33.33
	0	0	0	0	1	100.99	100.99	134.65	67.33	33.66
	0	0	0	1	0	103.00	103.00	137.33	68.67	34.33
FSB533	0	0	0	1	1	100.00	100.00	133.33	66.67	33.33
	0	0	1	0	0	133.33	100.00	133.33	66.66	33.33
	0	0	1	0	1	134.65	100.99	134.65	67.32	33.66
	0	0	1	1	0	137.33	103.00	137.33	68.66	34.33
	0	0	1	1	1	133.33	100.00	133.33	66.67	33.33
FSB800	0	1	0	0	0	200.00	100.00	133.33	66.67	33.33
	0	1	0	0	1	201.98	100.99	134.65	67.33	33.66
	0	1	0	1	0	206.00	103.00	137.33	68.67	34.33
	0	1	0	1	1	200.00	100.00	133.33	66.67	33.33
	0	1	1	0	0	166.66	125.00	125.00	66.66	33.33
	0	1	1	0	1	168.31	126.23	126.23	67.32	33.66
	0	1	1	1	0	171.66	128.74	128.74	68.66	34.33
	0	1	1	1	1	166.66	125.00	125.00	66.66	33.33

Frequency Table

FS4	FS3	FS2	FS1	FS0	CPU (MHz)	SRC (MHz)	ZCLK (MHz)	AGP (MHz)	PCI (MHz)
1	0	0	0	0	105.00	105.00	140.00	70.00	35.00
1	0	0	0	1	107.00	107.00	142.67	71.33	35.67
1	0	0	1	0	109.00	109.00	145.33	72.67	36.33
1	0	0	1	1	110.00	110.00	146.67	73.33	36.67
1	0	1	0	0	140.00	105.00	140.00	70.00	35.00
1	0	1	0	1	142.66	107.00	142.67	71.33	35.67
1	0	1	1	0	145.33	109.00	145.33	72.66	36.33
1	0	1	1	1	146.66	110.00	146.66	73.33	36.67
1	1	0	0	0	210.00	105.00	140.00	70.00	35.00
1	1	0	0	1	214.00	107.00	142.67	71.33	35.67
1	1	0	1	0	218.00	109.00	145.33	72.67	36.33
1	1	0	1	1	220.00	110.00	146.67	73.33	36.67
1	1	1	0	0	266.66	100.00	133.33	66.67	33.33
1	1	1	0	1	269.33	101.00	134.67	67.33	33.67
1	1	1	1	0	274.66	103.00	137.33	68.67	34.33
1	1	1	1	1	266.66	100.00	133.33	66.67	33.33

Frequency Selection



Clock Generator Table / Hardware Traping	FS4 Low	FS3 BSEL1	FS2 BSEL0	FS1 Low	FS0 Low
CPU=100 (BSEL[1:0]=00)	0	0	0	0	0
CPU=133 (BSEL[1:0]=01)	0	0	1	0	0
CPU=200 (BSEL[1:0]=10)	0	1	0	0	0

Elitegroup Computer Systems

Title: **661FX-M**

Size: Custom | Document Number: Main Clock | Rev: A

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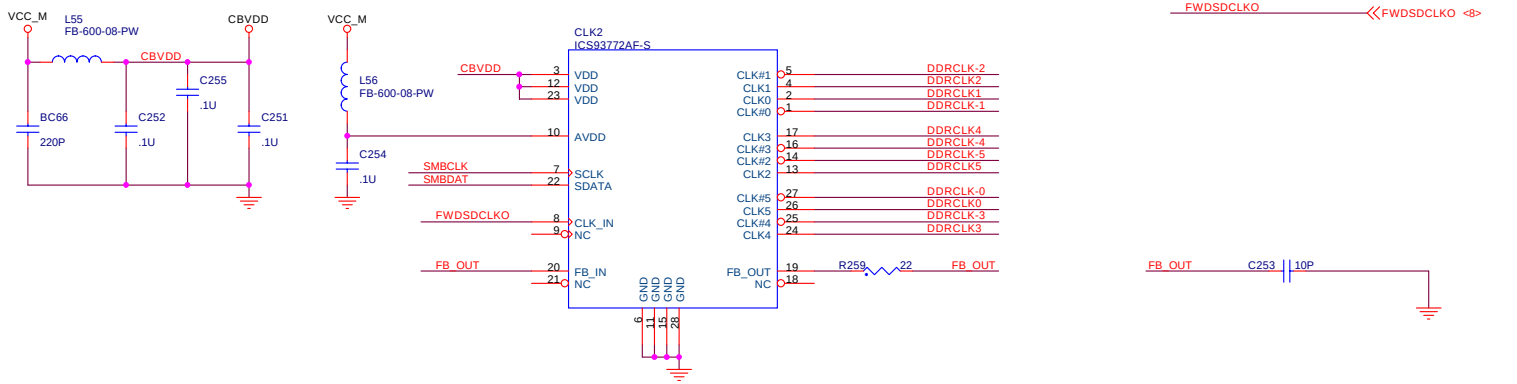
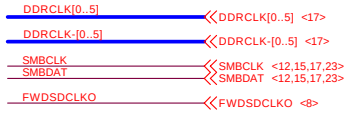
Clock Buffer (DDR)

(5 OPTIONS)
1: (ICS) ICS93716
2: (Winbond)
3: (ICWorks)
4: (IMI)
5: (AMI)

By-Pass Capacitors
Place near to the Clock Buffer





Elitegroup Computer Systems

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Size: Custom	Document Number: Clock Buffer	Rev: A
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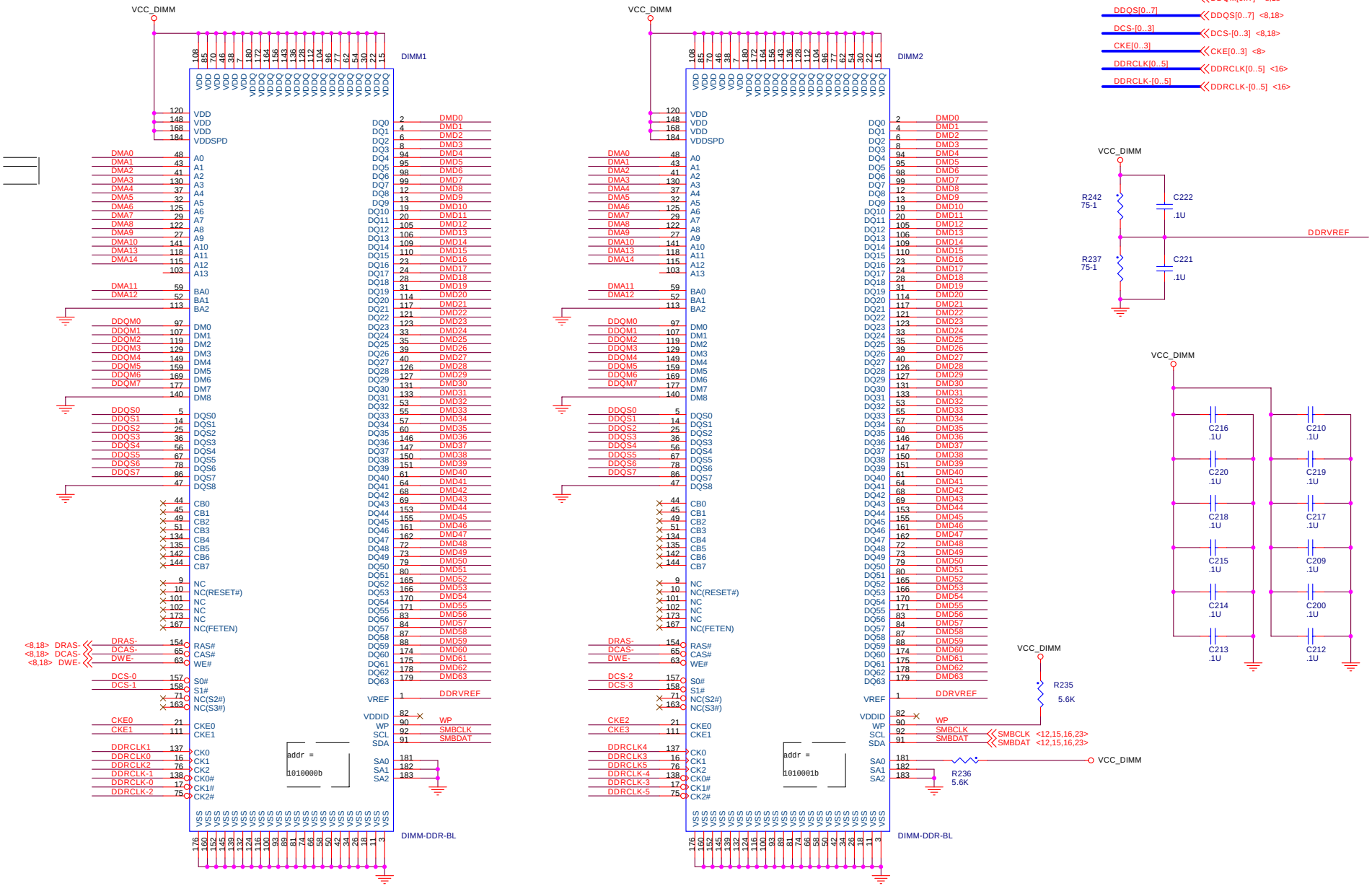
NOTE:

VDDID IS A TRAP ON THE DIMM MODULE TO INDICATE:

VDDID	REQUIRED POWER
OPEN	VDD=VDDQ
GND	VDD!=VDDQ

MEMORY MUX TABLE:

SDR	DDR
CS0	CS0
CS1	CS1
CS2	CS2
CS3	CS3
CS4	CS4
CS5	CS5
CSB0	DQS0
CSB1	DQS1
CSB2	DQS2
CSB3	DQS3
CSB4	DQS4
CSB5	DQS5
CSB6	DQS6
CSB7	DQS7



Elitegroup Computer Systems		
Title	661FX-M	
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SSTL-2 Termination Resistors

	SDR		DDR		
		Rs		Rs	Rtt
MD/DQM(/DQS)	LV-CMOS	0/10/-	SSTL-2	10	33
MA/Control	LV-CMOS	10	SSTL-2	0	33
CS	LV-CMOS	0	SSTL-2	0	47
CKE	OD 3.3V		OD 2.5V		

DMD[0..63]
DMA[0..14]
DDQM[0..7]
DDQS[0..7]
DCS-[0..3]

DMD[0..63] <8,17>
DMA[0..14] <8,17>
DDQM[0..7] <8,17>
DDQS[0..7] <8,17>
DCS-[0..3] <8,17>

DDR_VTT

RN30 56-8P4R: DMD1, DMD5, DMD0, DMD4
RN29 56-8P4R: DMD6, DMD2, DDQS0, DDQM0
RN42 56-8P4R: DMD9, DMD8, DMD3, DMD7
RN41 56-8P4R: DDQM1, DDQS1, DMD13, DMD12
RN40 56-8P4R: DMD11, DMD10, DMD15, DMD14
RN37 56-8P4R: DMA7, DMD22, DMD18, DMA9
RN39 56-8P4R: DMD17, DMA14, DMD16, DMD20
RN36 56-8P4R: DMA5, DMD19, DMD23, DMA8
RN33 56-8P4R: DMD26, DMD27, DMD30, DMA3
RN34 56-8P4R: DDQM3, DMA4, DDQS3, DMD25

RN52 56-8P4R: DMD34, DMD37, DDQS4, DMD33
RN51 56-8P4R: DMD39, DMA11, DMD38, DDQM4
RN50 56-8P4R: DRAS-, DMD44, DMD40, DMD35
RN46 56-8P4R: DMD42, DMD46, DDQS5, DDQM5
RN49 56-8P4R: DCS-0, DMD41, DMD45, DWE-
RN45 56-8P4R: DMD52, DMD48, DMD47, DMD43
RN44 56-8P4R: DMD50, DDQS6, DMD54, DDQM6
RN48 56-8P4R: DMD56, DMD60, DMD51, DMD55
RN43 56-8P4R: DMD62, DDQM7, DMD57, DMD61
RN53 56-8P4R: DMD59, DMD63, DMD58, DDQS7
RN47 56-8P4R: DCS-3, DCS-1, DCS-2, DCAS-

<8,17> DRAS-
<8,17> DWE-
<8,17> DCAS-

DDR_VTT

RN32 56-8P4R: DMA0, DMA1, DMD31, DMA2
RN35 56-8P4R: DMD29, DMD28, DMA6, DMD24
RN31 56-8P4R: DMD36, DMD32, DMA12, DMA10
RN38 56-8P4R: DDQM2, DMA13, DMD21, DDQS2

R250 56: DMD49
R249 56: DMD53

DECOUPLING CAPACITOR FOR SSTL-2 END TERMIANTION VTT ISLAND
0603 Package placed within 200mils of VTT Termination R-packs

DDR_VTT

C248 .1U, C247 .1U, C246 .1U
C244 .1U, C243 .1U, C242 .1U
C240 .1U, C239 .1U, C238 .1U
C236 .1U, C235 .1U, C234 .1U

Elitegroup Computer Systems

Title: 661FX-M

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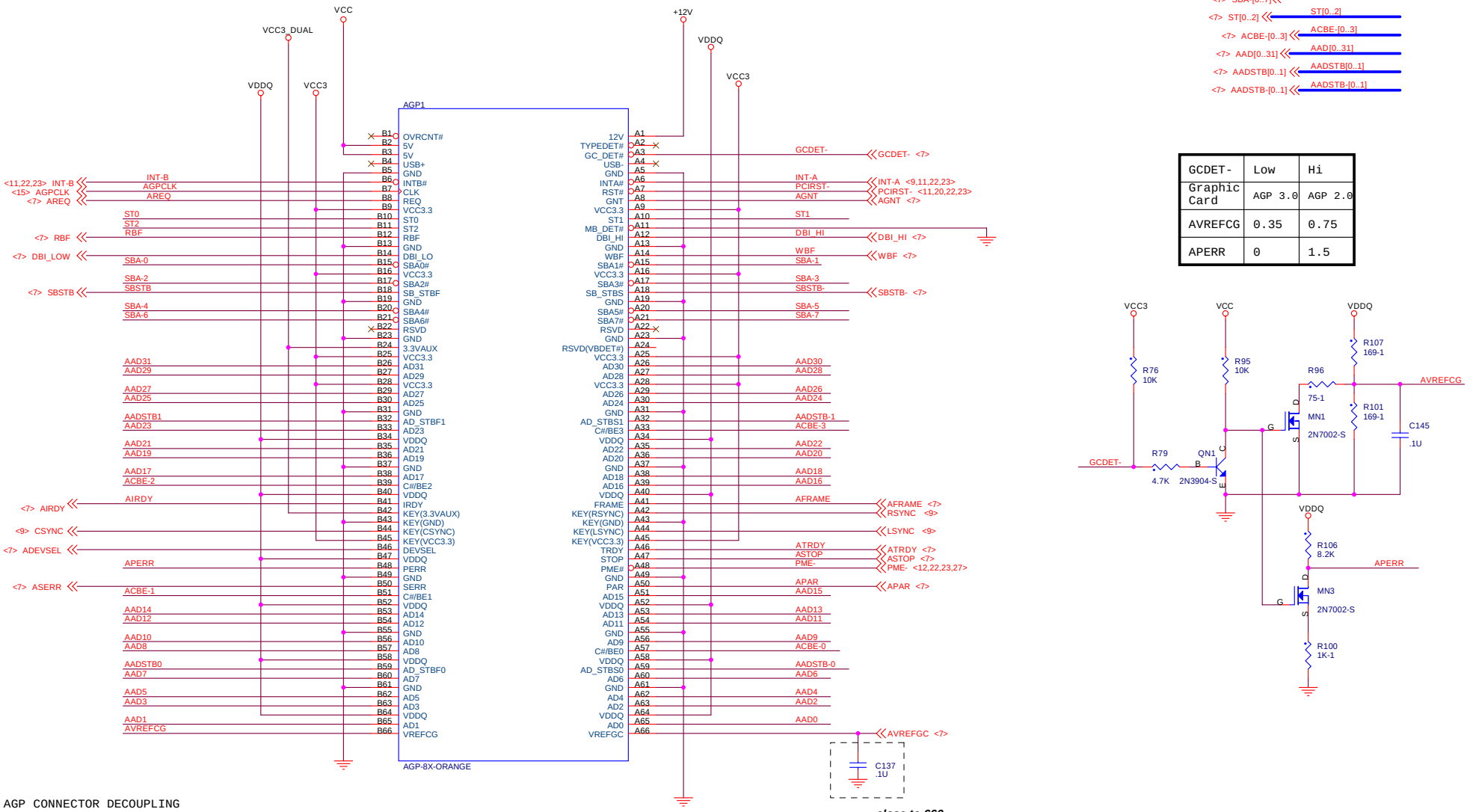

GCDET-	Low	Hi
Graphic Card	AGP 3.0	AGP 2.0
AVREFCG	0.35	0.75
APERR	0	1.5

Elitegroup Computer Systems

Title: 661FX-M

Size: Custom | Document Number: AGP Slot | Rev: A

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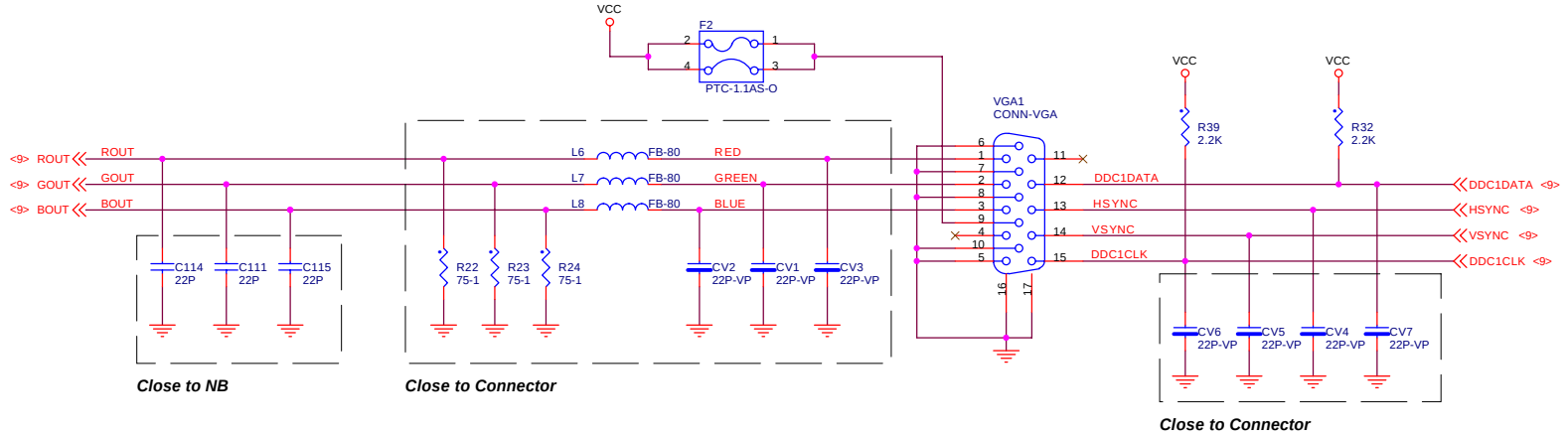
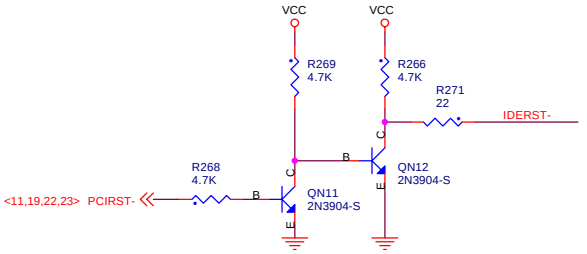


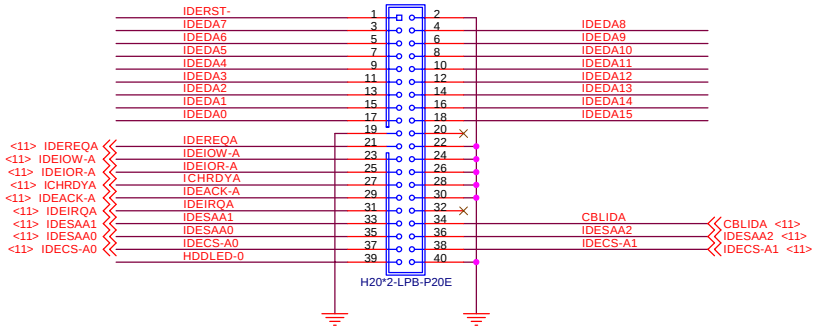


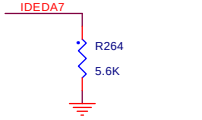
<11> IDEDA[0..15] IDEDA[0..15]

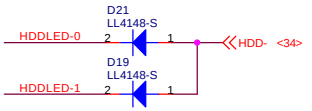
<11> IDEDB[0..15] IDEDB[0..15]

PRIMARY

IDE1

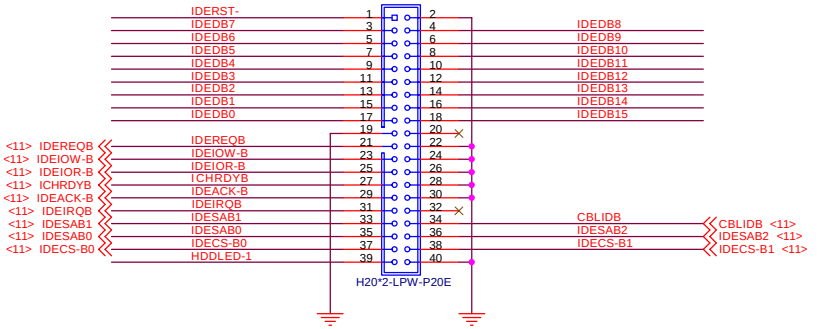


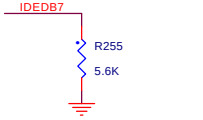




SECONDARY

IDE2





Elitegroup Computer Systems

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Size: Custom | Document Number: VGA / IDE | Rev: A

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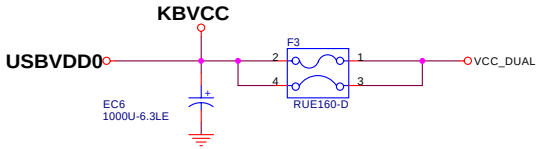
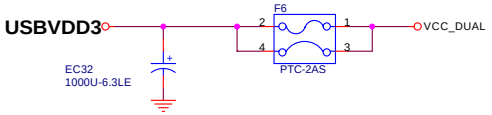
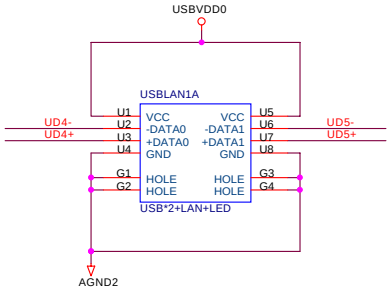
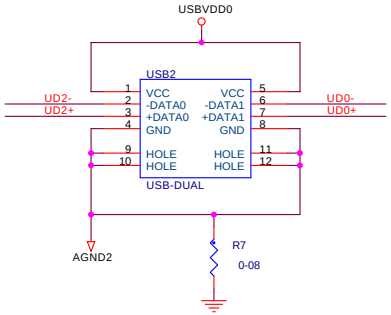


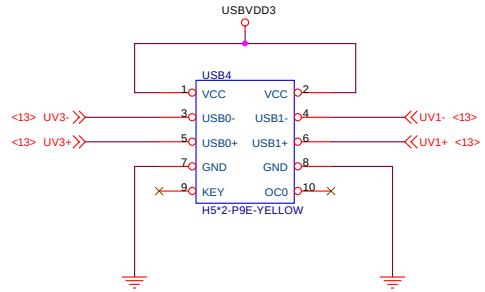


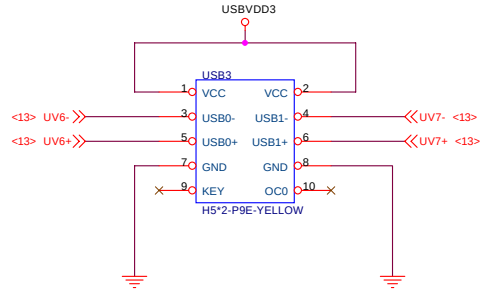


Close to USBLAN1 connector

Close to USB1394A_J1 connector

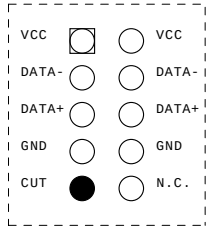




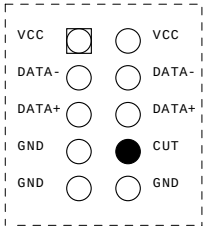


	USB port
Control 0	0, 3, 6
Control 1	1, 4, 7
Control 2	2, 5

Intel USB Header



ACER USB Header



Elitegroup Computer Systems

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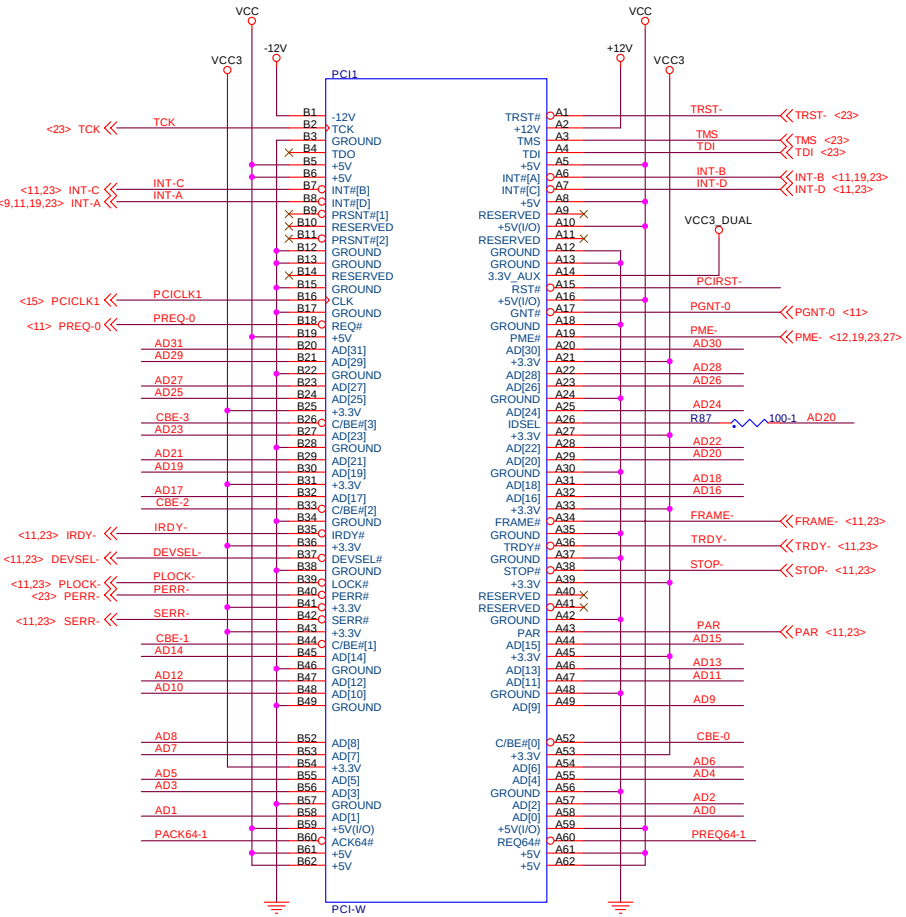
PCI Slot 1 & 2



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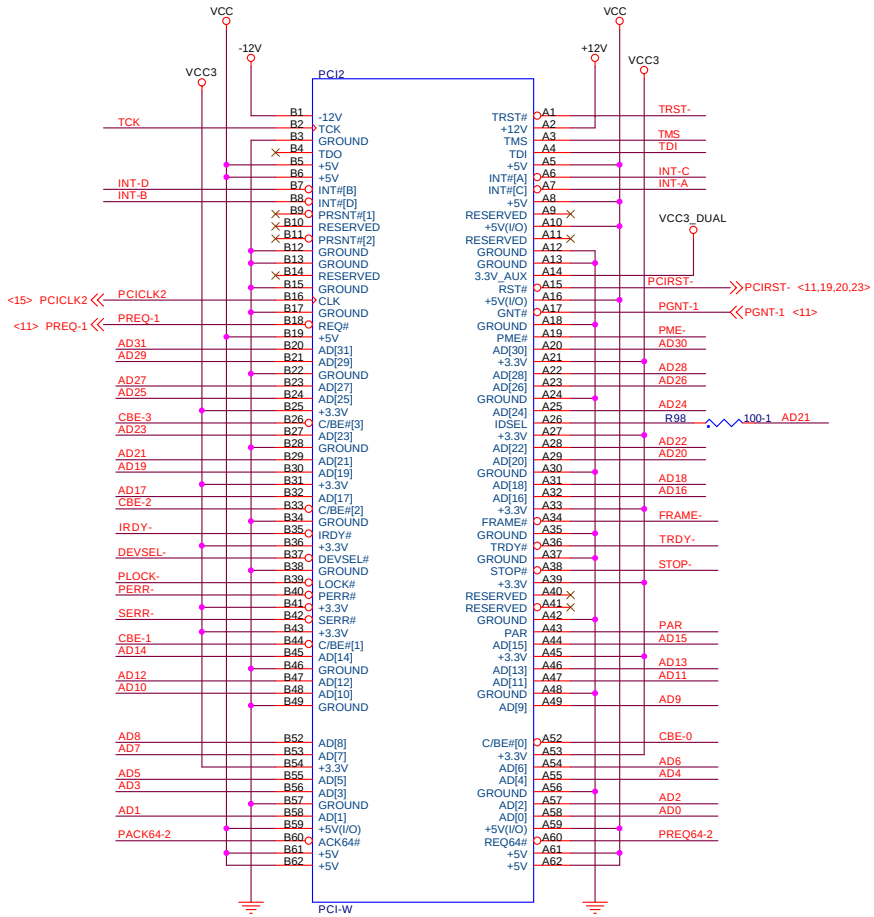
INT[B,C,D,A]



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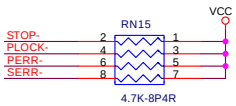

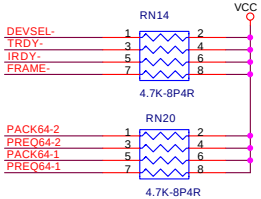

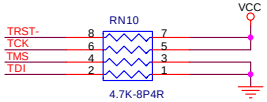

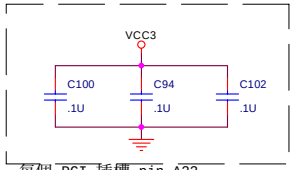

每個 PCI 插槽 pin A33
各放一顆

Elitegroup Computer Systems

Title	661FX-M	
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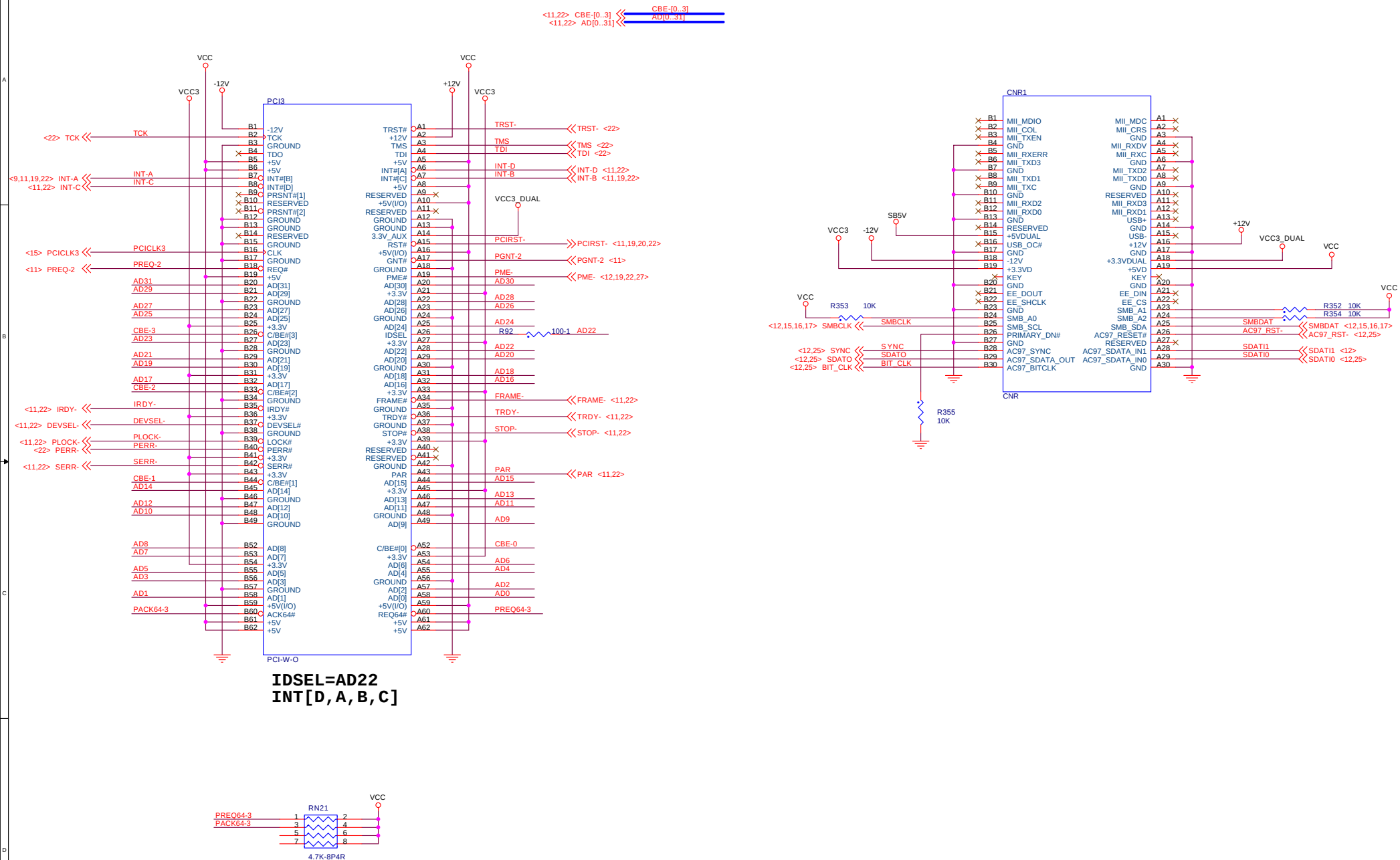
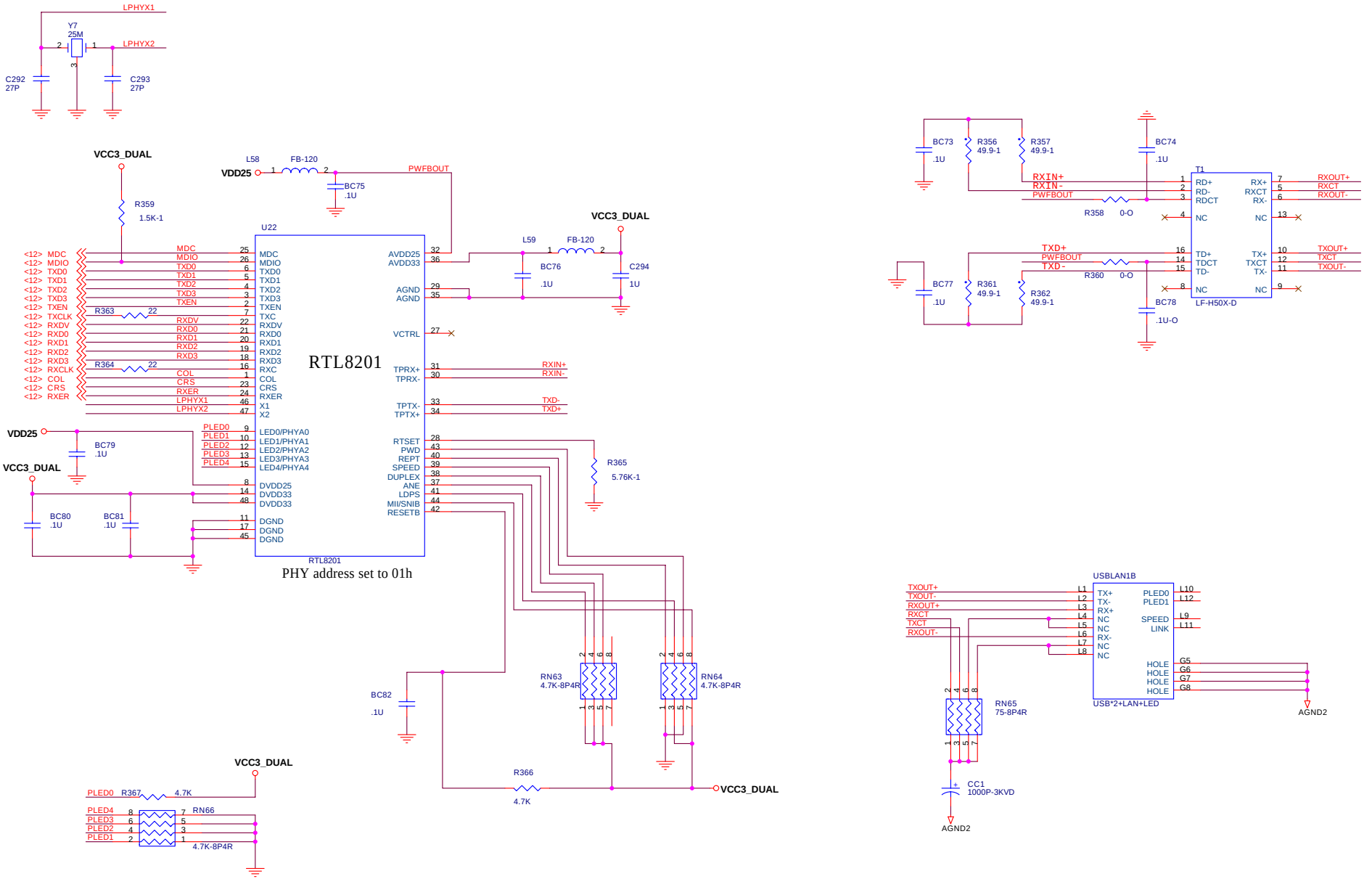

PCI3
PCI-W-O
CNR1
CNR
RN21
4.7K-8P4R
R353 10K
R355 10K
R92 100-1
R352 10K
R354 10K
IDSEL=AD22
INT[D,A,B,C]



Elitegroup Computer Systems		
Title	661FX-M	
Size: Custom	Document Number: LAN PHY	Rev: A
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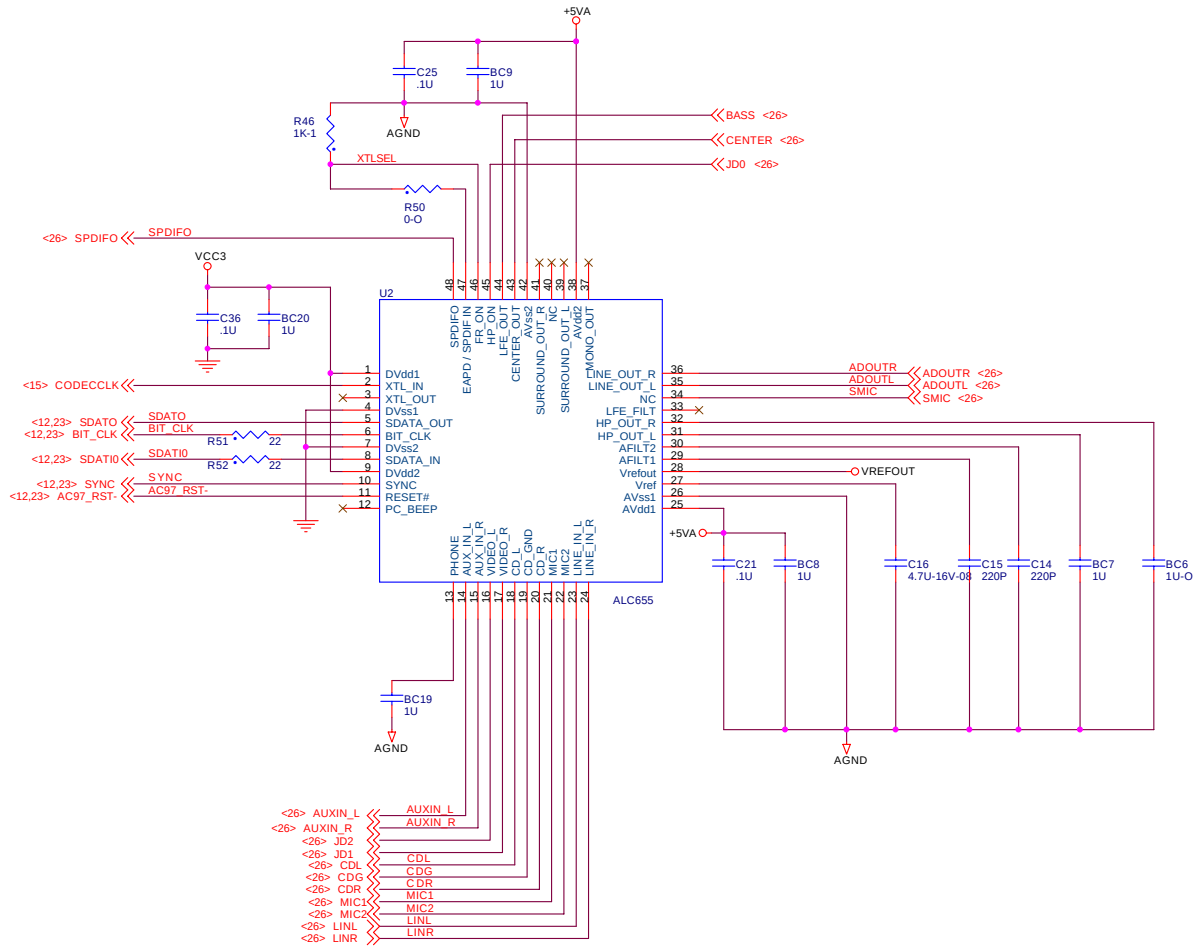

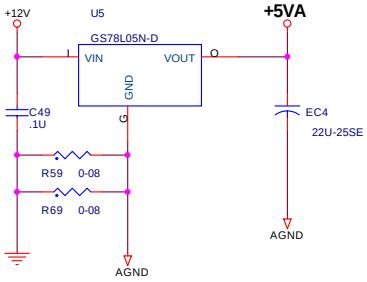

Elitegroup Computer Systems		
Title: 661FX-M		
Size: Custom	Document Number: Audio Codec	Rev: A
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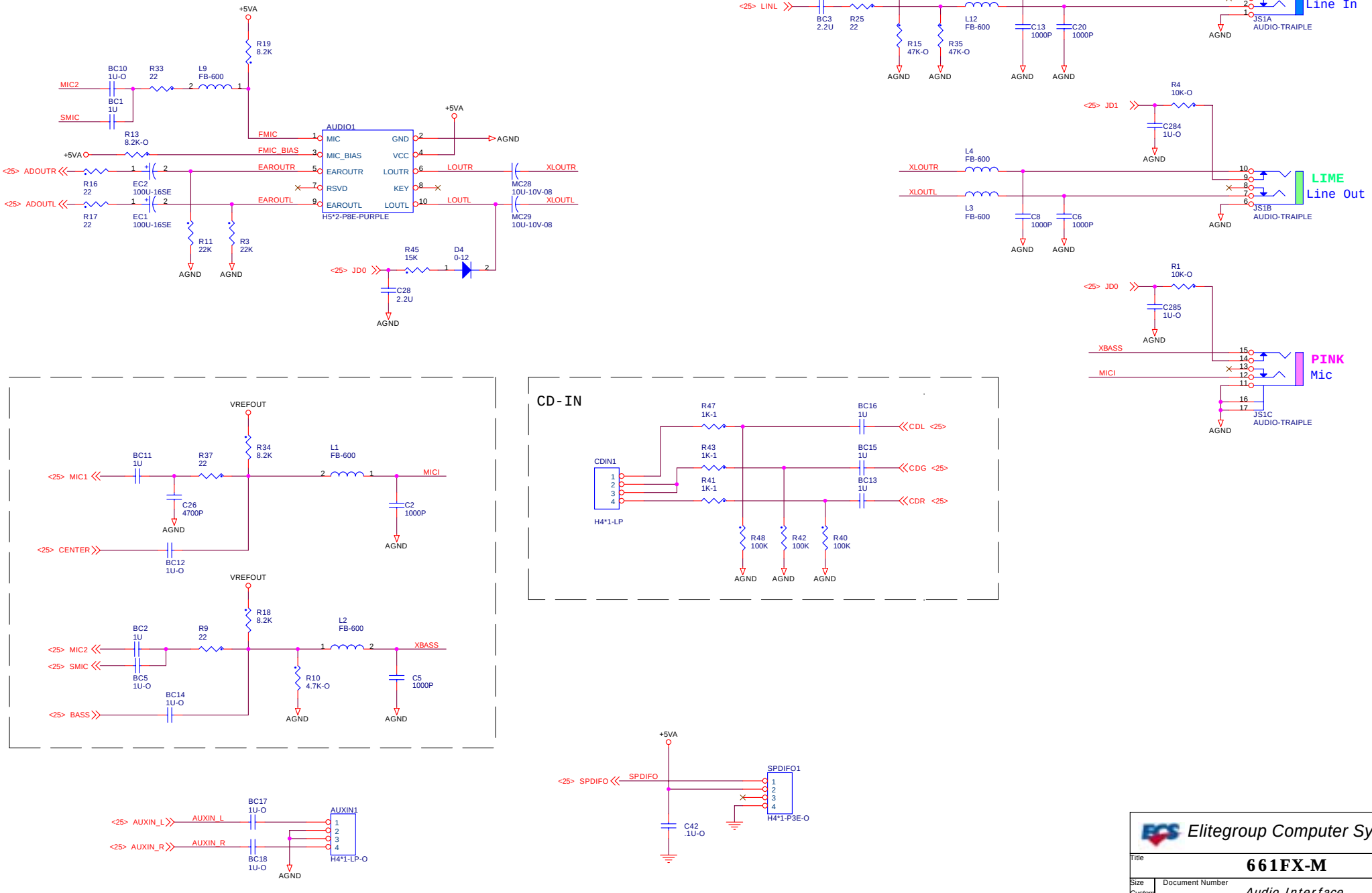

Elitegroup Computer Systems

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Size: Custom | Document Number: Audio Interface | Rev: A

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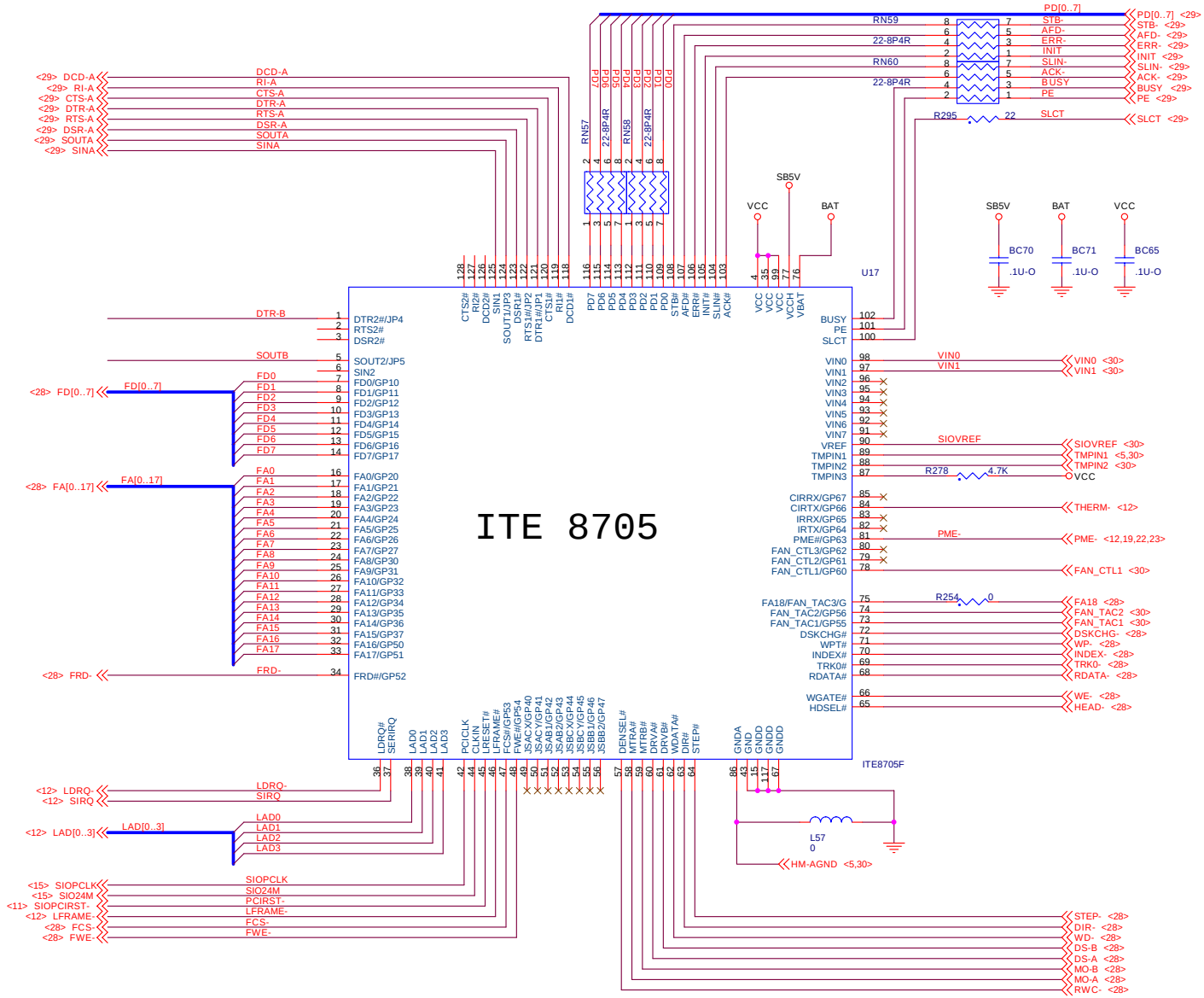

Elitegroup Computer Systems

Title	661FX-M	
Size: Custom	Document Number: Super I/O	Rev: A
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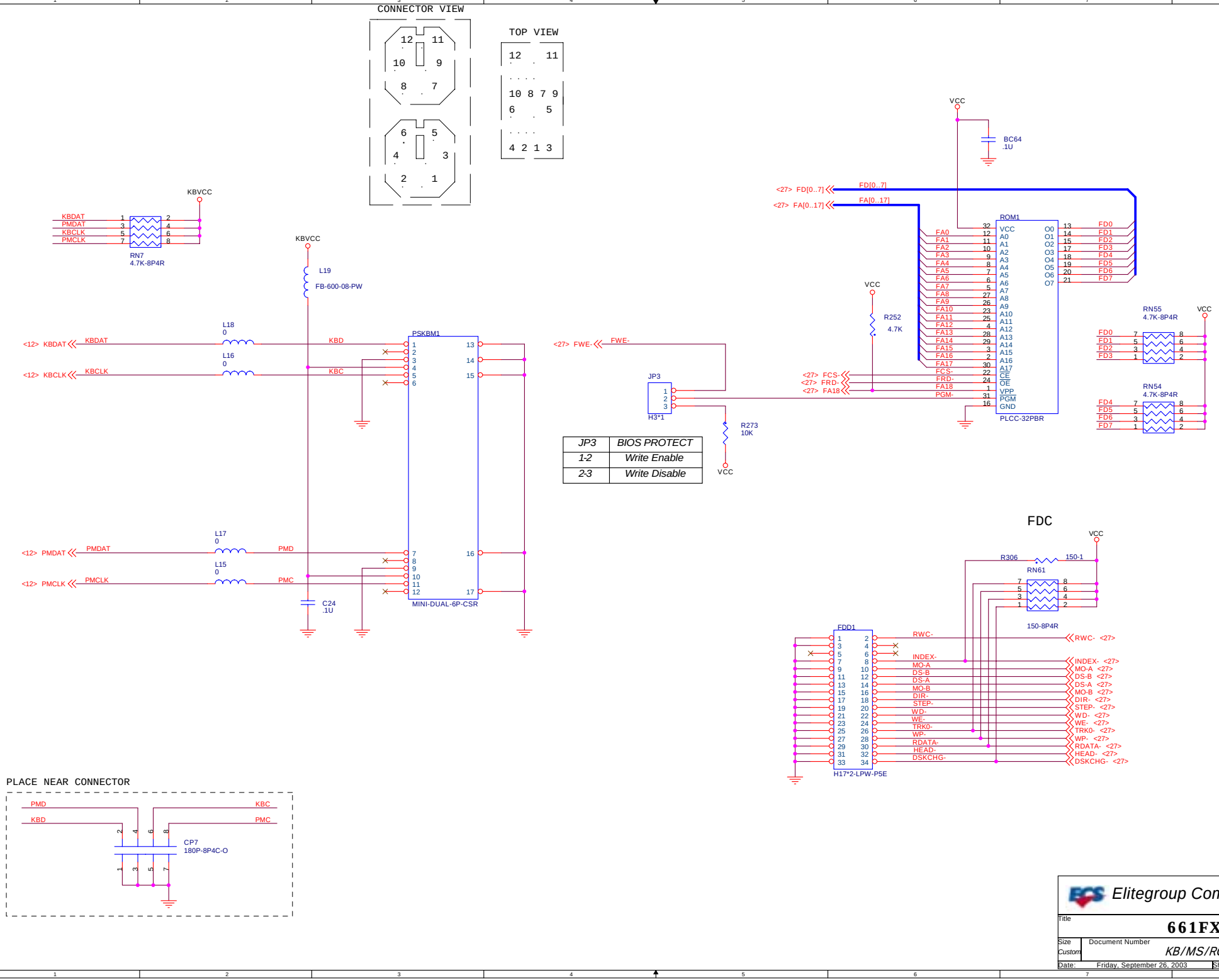

JP3	BIOS PROTECT
1-2	Write Enable
2-3	Write Disable

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Size: Custom | Document Number: KB/MS/ROM/FDC/IR | Rev: A

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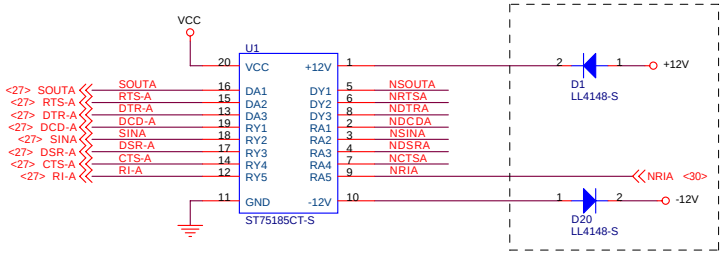
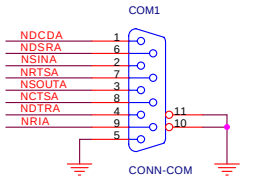
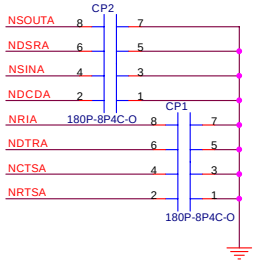
COM

close to IC

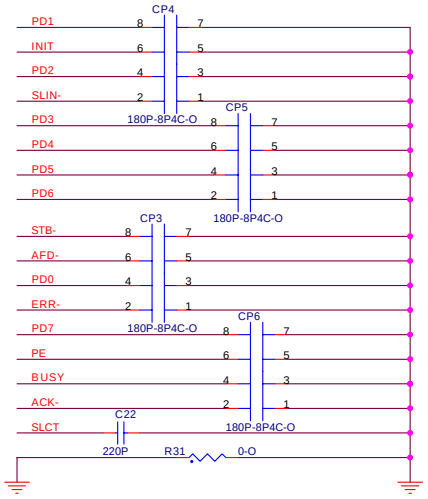


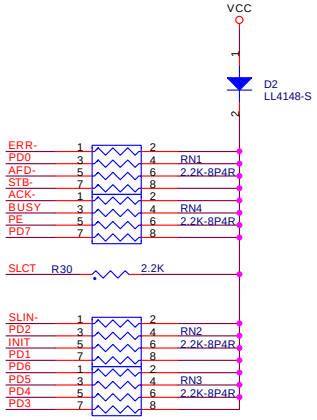
COM1 USE CONNECTOR

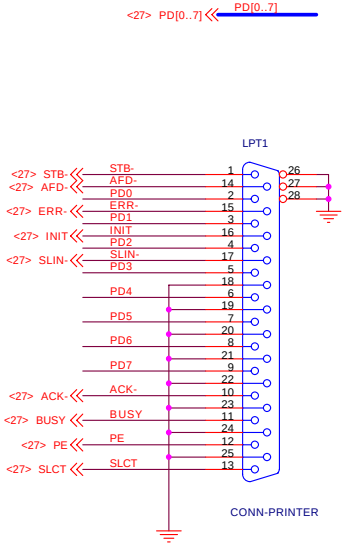


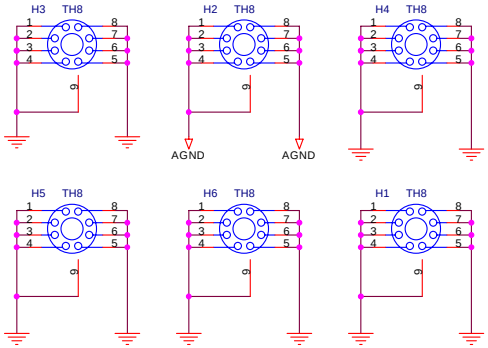


PRT









Elitegroup Computer Systems		
Title: 661FX-M		
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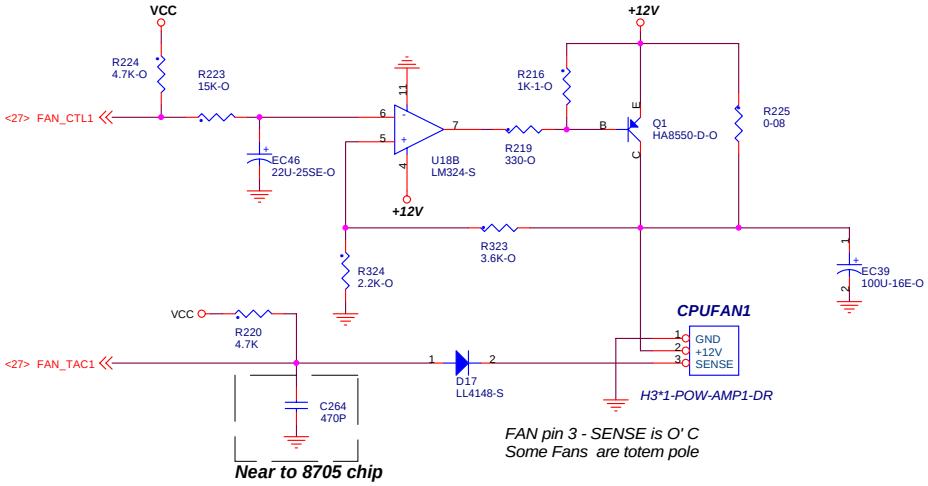
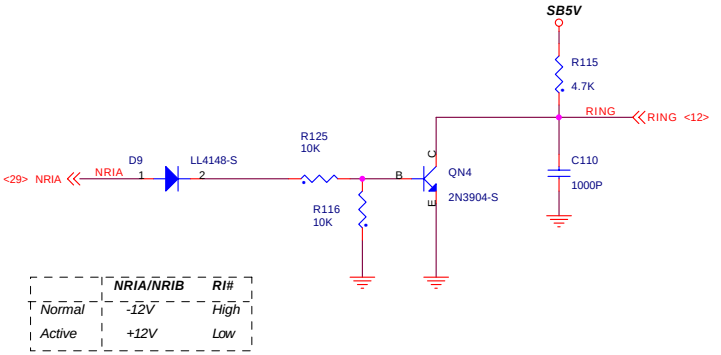
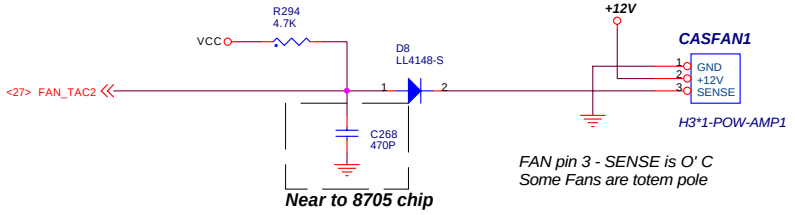
Layout :

Power Signals : CPUFAN, CASEFAN, PWRFAN trace width should > 20 mil with current 200 mA .



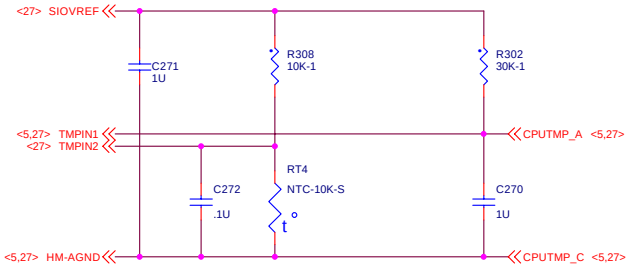


	NRIA/NRIB	RI#
Normal	-12V	High
Active	+12V	Low

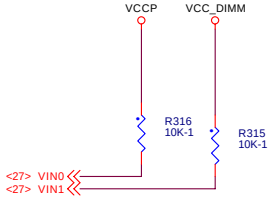


Temperature Monitor

Choosing method of measuring temperature by either thermistor or diode



Voltage Monitor



Elitegroup Computer Systems

Title: **661FX-M**

Size: Custom | Document Number: HM / FAN / RING | Rev: A

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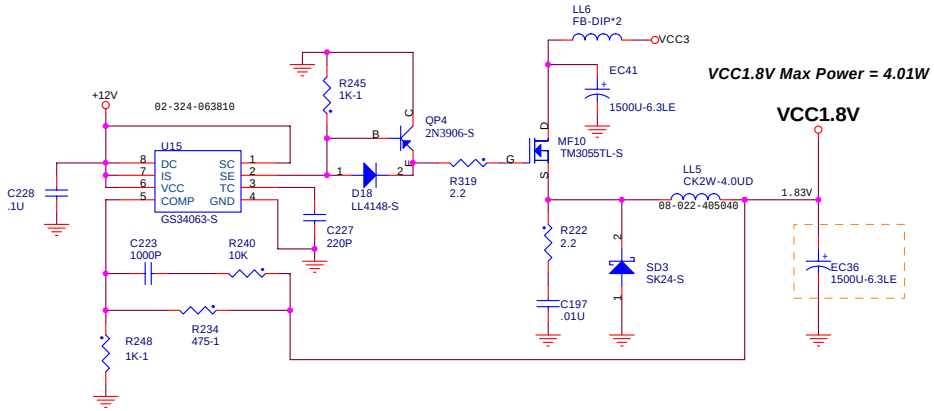
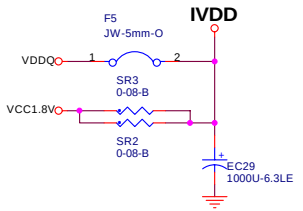
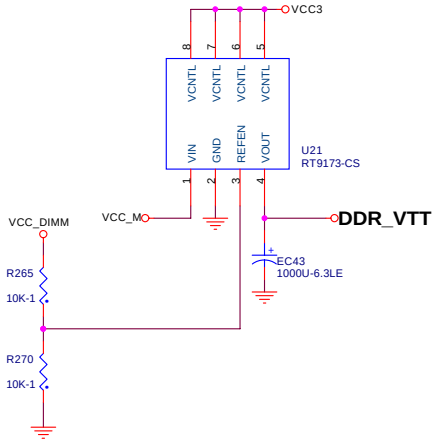
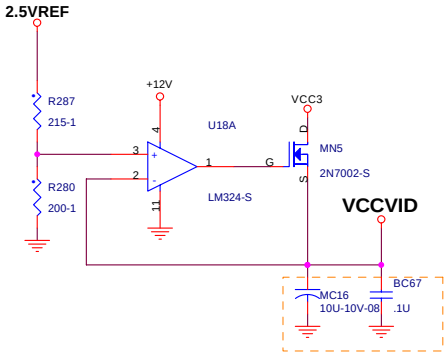


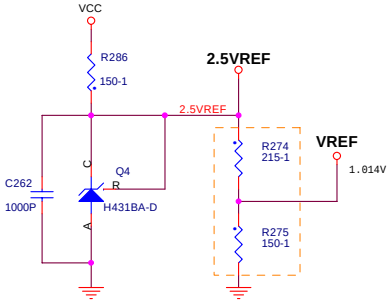




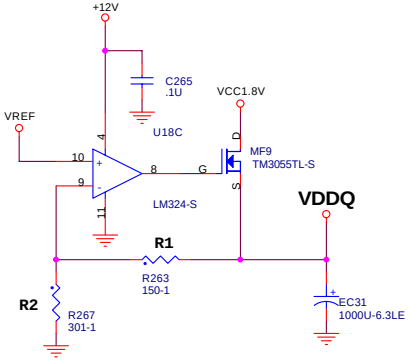


	IVDD	VCC1.8V	
648	1.8V	1.8V	short two power plane, one regulator
648FX	1.9V	1.9V	short two power plane, one regulator
661FX	1.8V	1.8V	short two power plane, one regulator or two regulator
661FXLV	1.5V	1.8V	two regulator

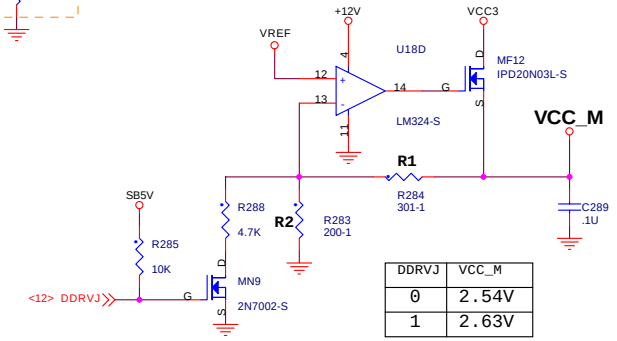
	AUX_IVDD	SB1.8V	
648	1.8V	1.8V	short two power plane, one regulator
648FX	1.9V	1.9V	short two power plane, one regulator
661FX	1.8V	1.8V	short two power plane, one regulator
661FXLV	1.5V	1.8V	two regulator



VCC1.5V Max Power = 0.3*(0.289+2.35)=0.7917W



Vo=VREF(1 + R1/R2)



DDRVJ	VCC_M
0	2.54V
1	2.63V

Elitegroup Computer Systems

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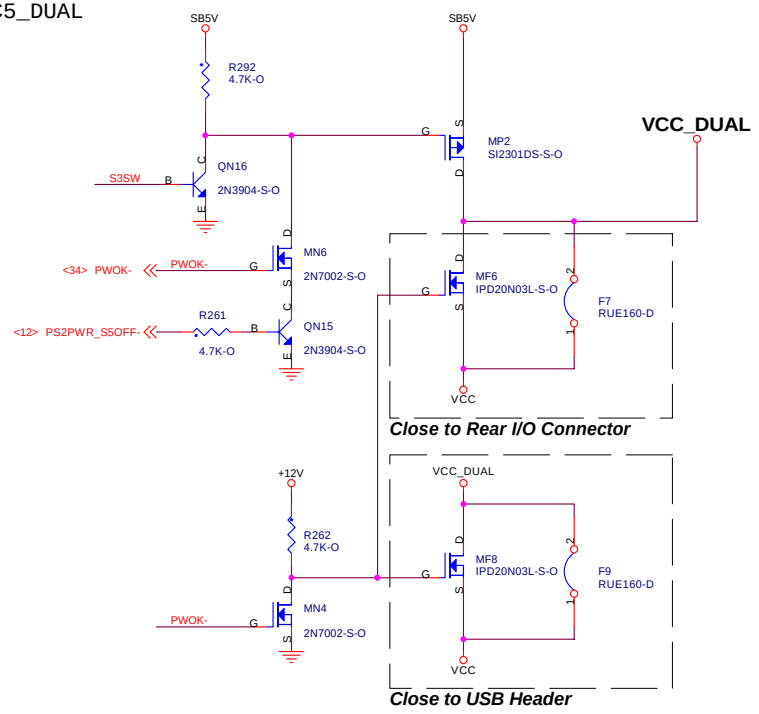
AUTO VOLTAGE SWITCH FOR ACPI STATE 3

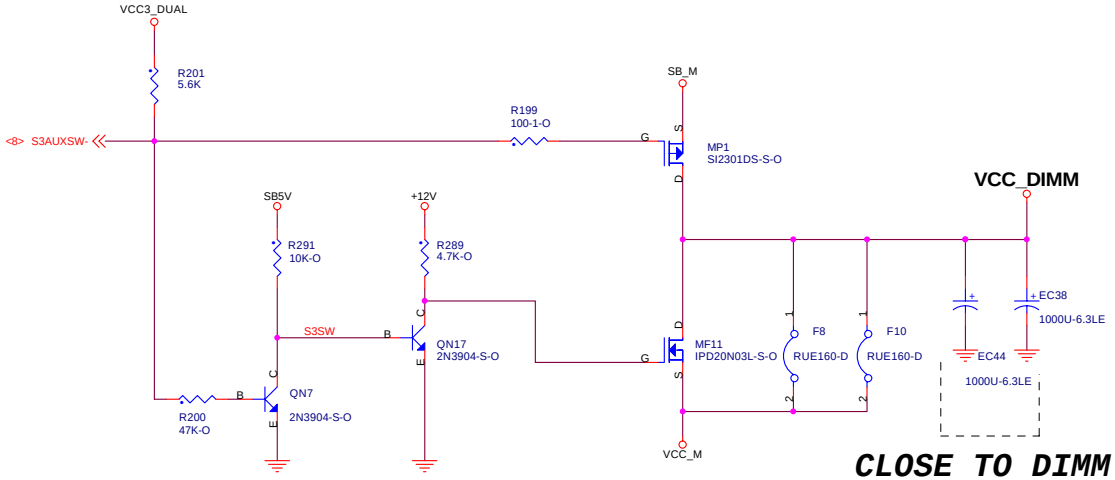
1.IN S0,S1
THIS CIRCUIT PASSES THE NORMAL POWER

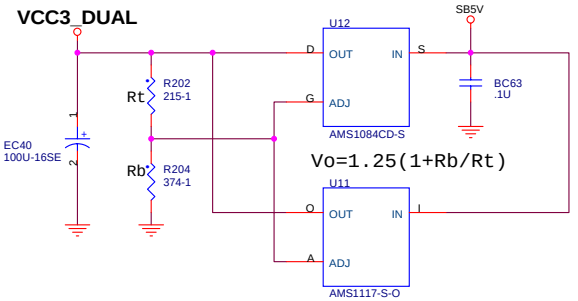
2.IN S3,S4,S5
THIS CIRCUIT PASSES THE STANDBY POWER

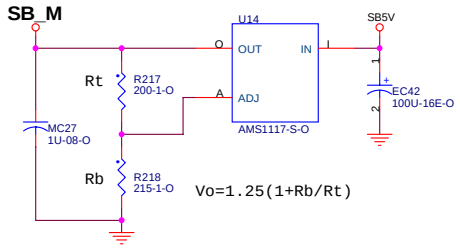
NOTE:
BECAUSE OF THE MAXIMUM CURRENT FROM POWER SUPPLY IS ONLY ABOUT 750~1000mA SO IF YOU WANT TO SUPPORT WAKE UP FROM S3 BY USB, YOU MUST HAVE A POWER SUPPLY WITH LARGER POWER.(ADDITIONAL 500mA PER USB PORT)

VCC3_DUAL & VCC5_DUAL

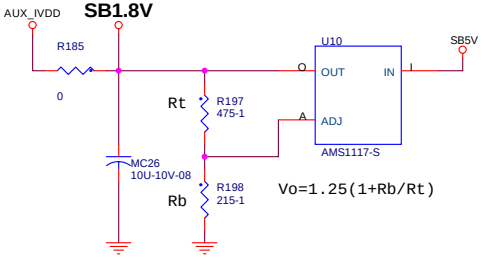




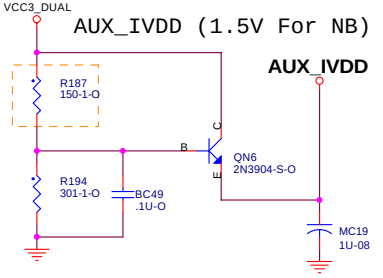




SB1.8V (For SB) 450mA



AUX_IVDD (1.5V For NB) 10mA



BCS Litegroup Computer Systems

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Size: Custom	Document Number: Dual 5V&3V, STR	Rev: A
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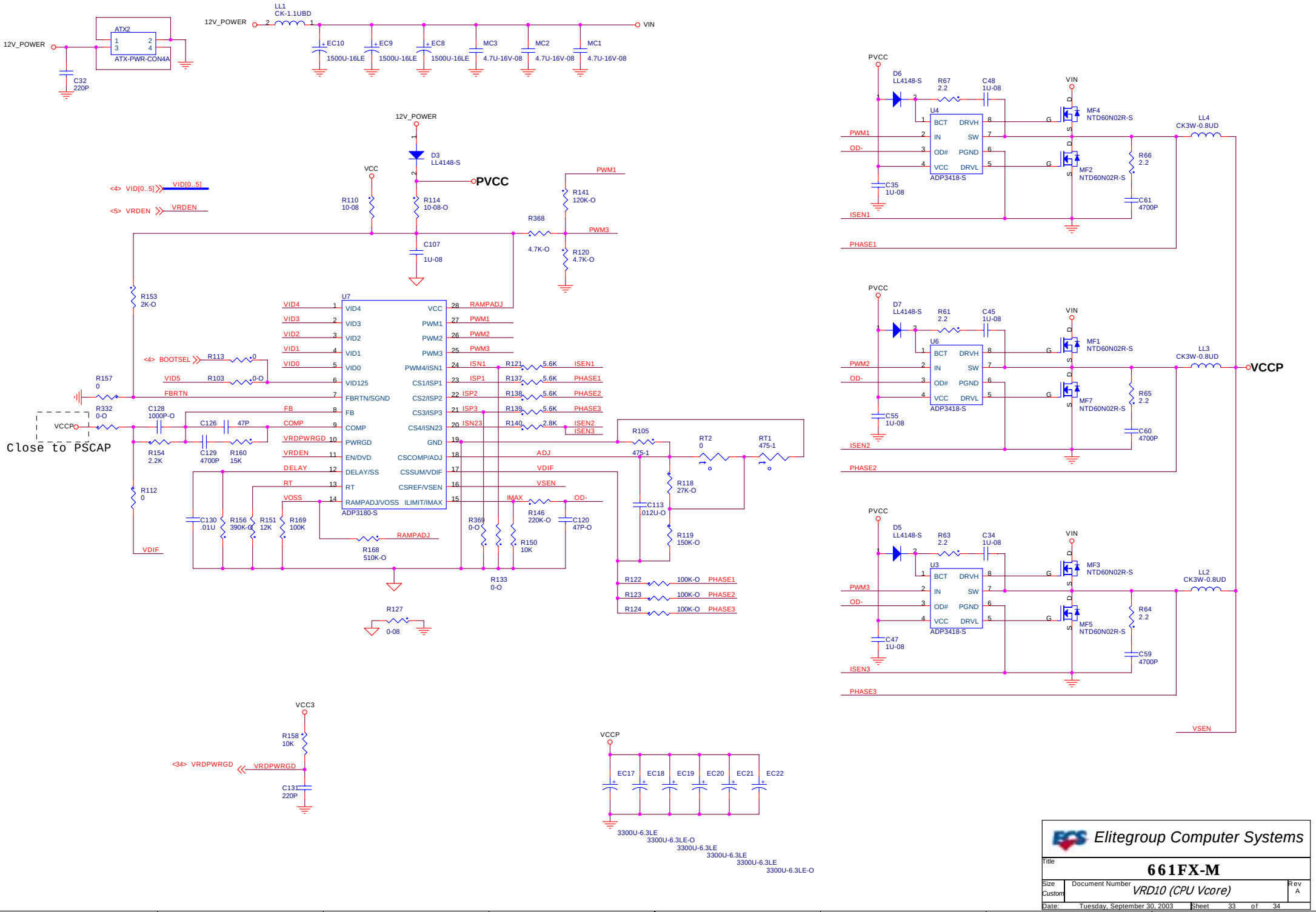

Elitegroup Computer Systems		
Title	661FX-M	
Size: Custom	Document Number: VRD10 (CPU Vcore)	Rev: A
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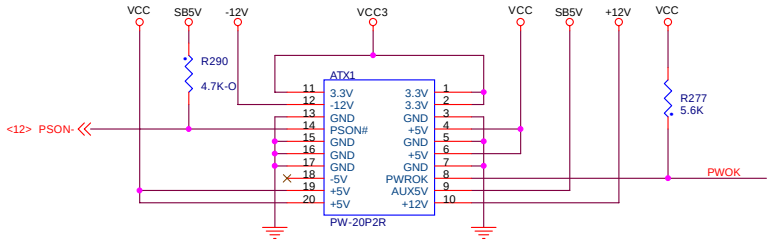
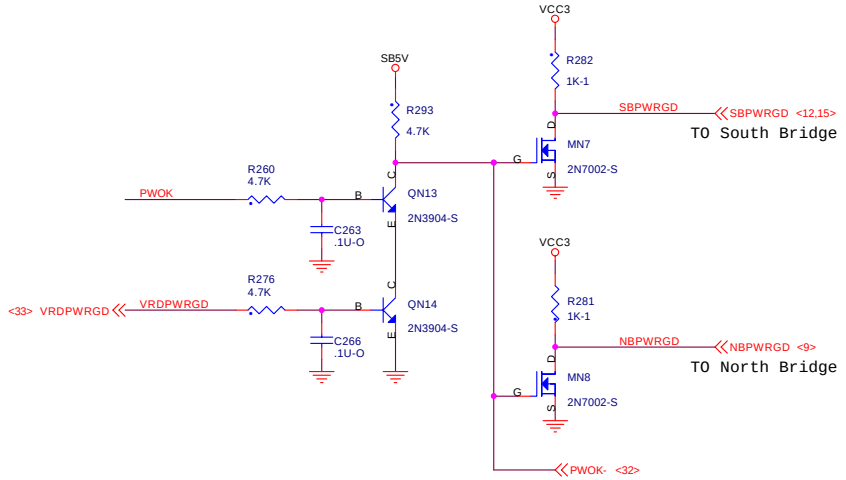
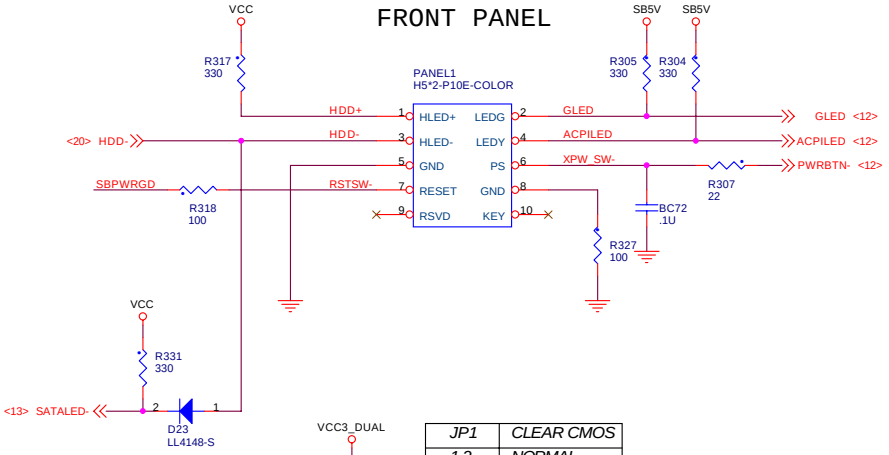
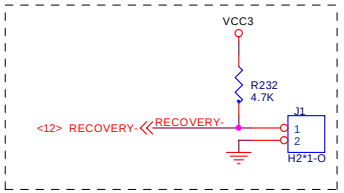
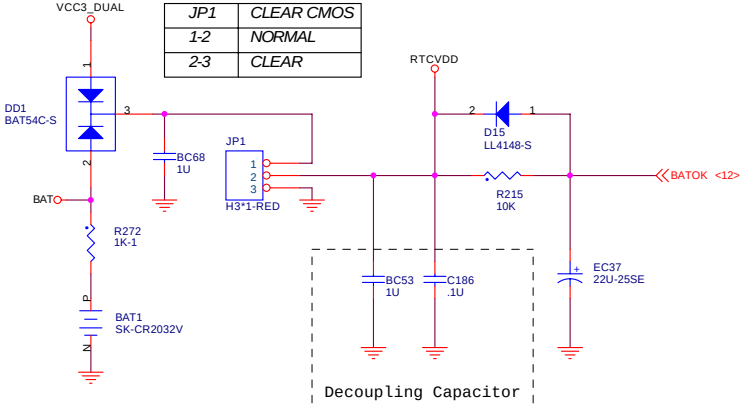




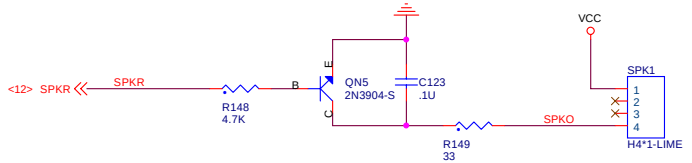




For Acer

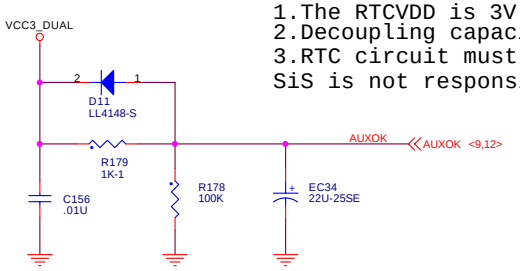


JP1	CLEAR CMOS
1-2	NORMAL
2-3	CLEAR



RTC

NOTE!
1.The RTCVDD is 3V
2.Decoupling capacitor must be close to 635 RTCVDD pin.
3.RTC circuit must strictly follow SiS's recommended design
SiS is not responsible for RTC problems from foreign designs.



Elitegroup Computer Systems

Title: 661FX-M

Size: Custom | Document Number: ATX / Panel / RTC | Rev: A

Date: Tuesday, September 30, 2003 | Sheet 34 of 34