

MS-6585 Ver:5.0

CPU:

Pentium4 socket-478 Processor

System Chipset:

SIS648FX(NB) + SIS963L(SB)

On Board Function Chip:

LPC I/O-W83697HF

LAN-Broadcom BCM4401/5705

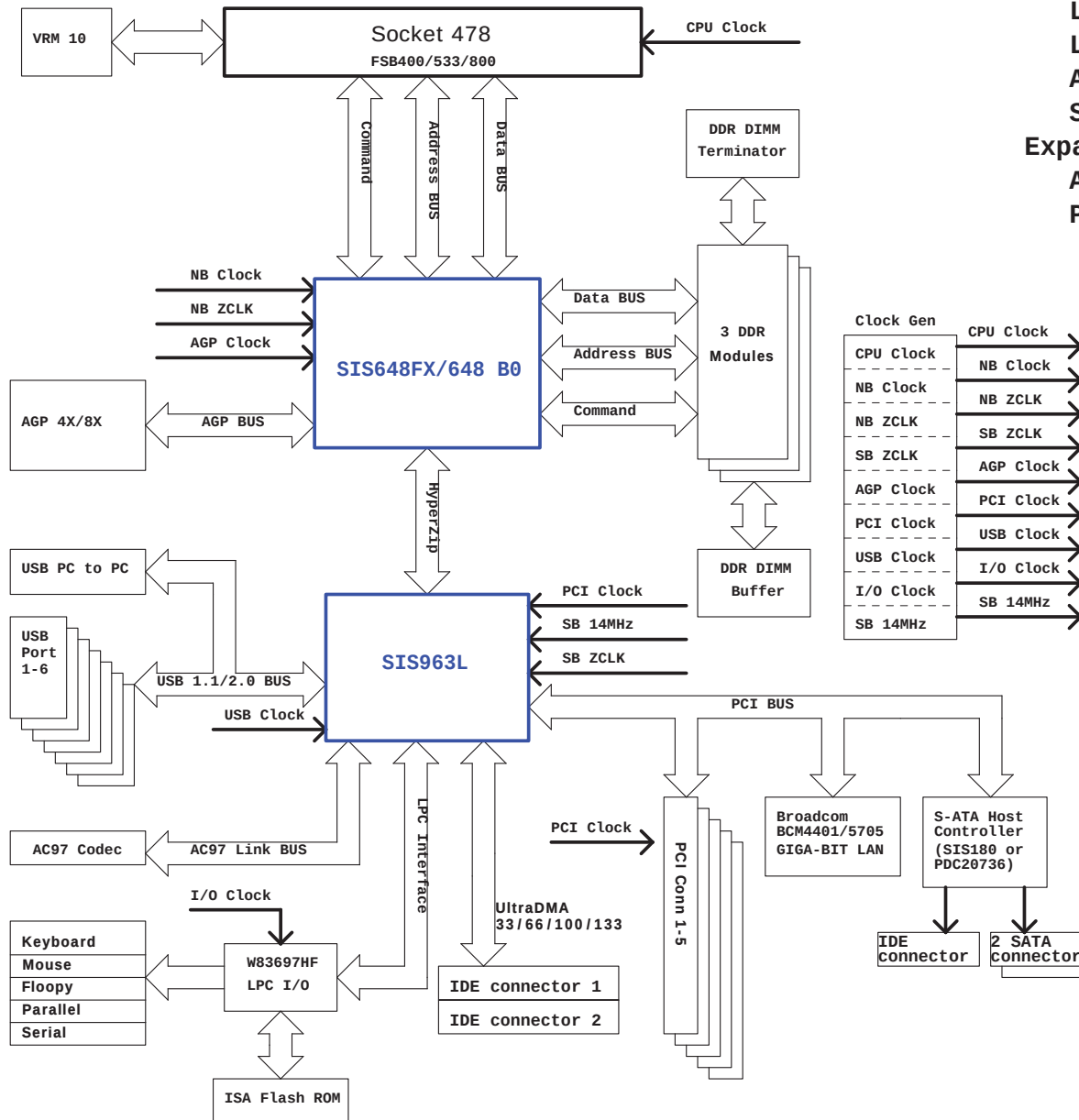
Audio Codec-Realtek ALC650

Sreial-ATA SIS180 or PDC20736

Expansion Slot:

AGP3.0 Slot*1

PCI2.2 Slot*6



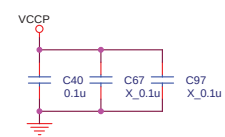
cfg6585-std:Non-Lan
cfg6585-optA:Gigabit Lan,SATA
cfg6585-optB:10/100 Lan

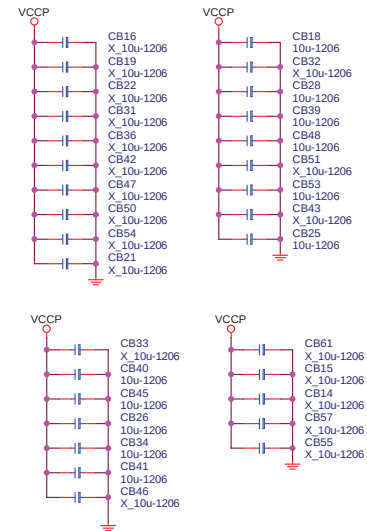
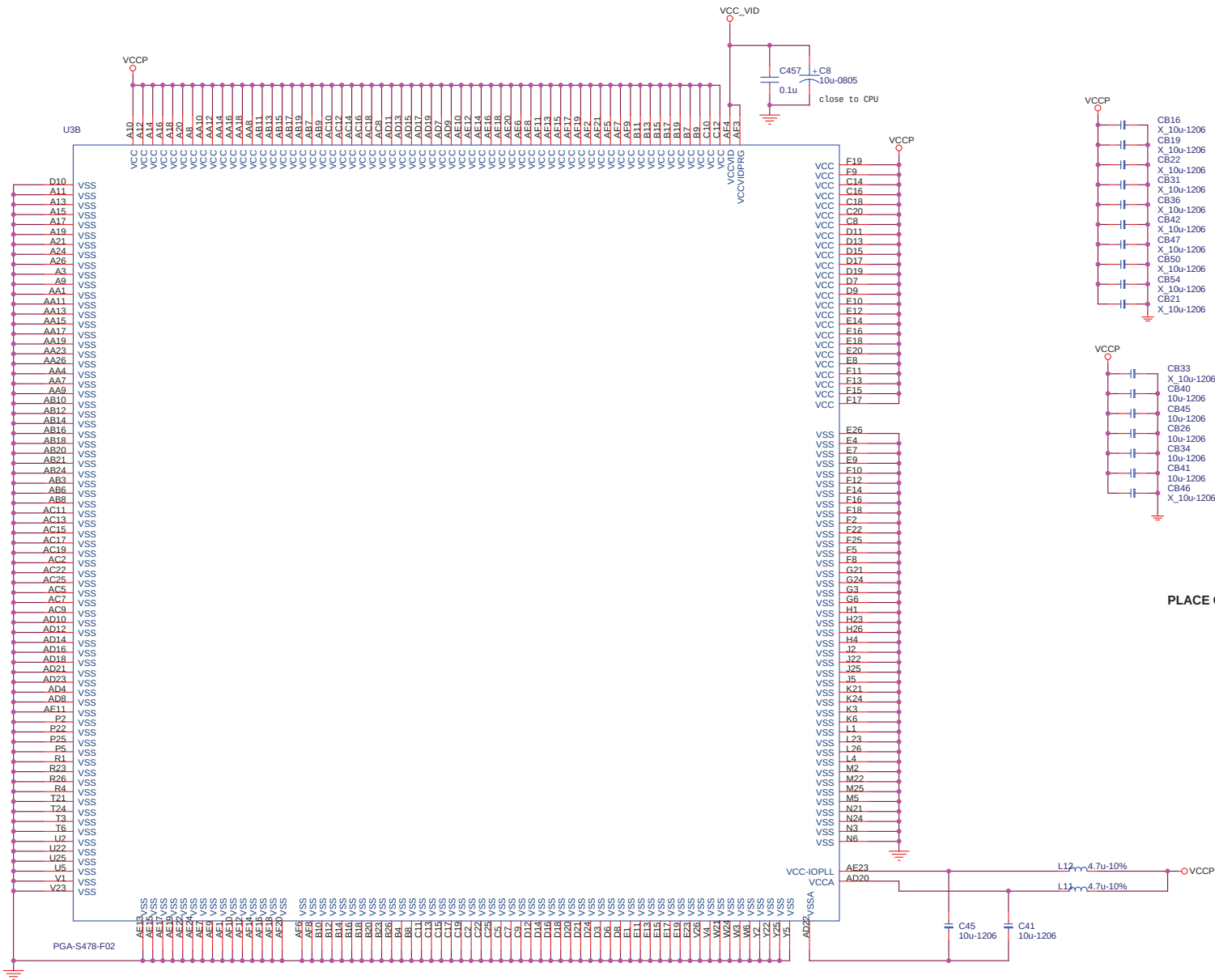
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MICRO-STAR INT'L CO.,LTD.

Cover Sheet & Block Diagram		
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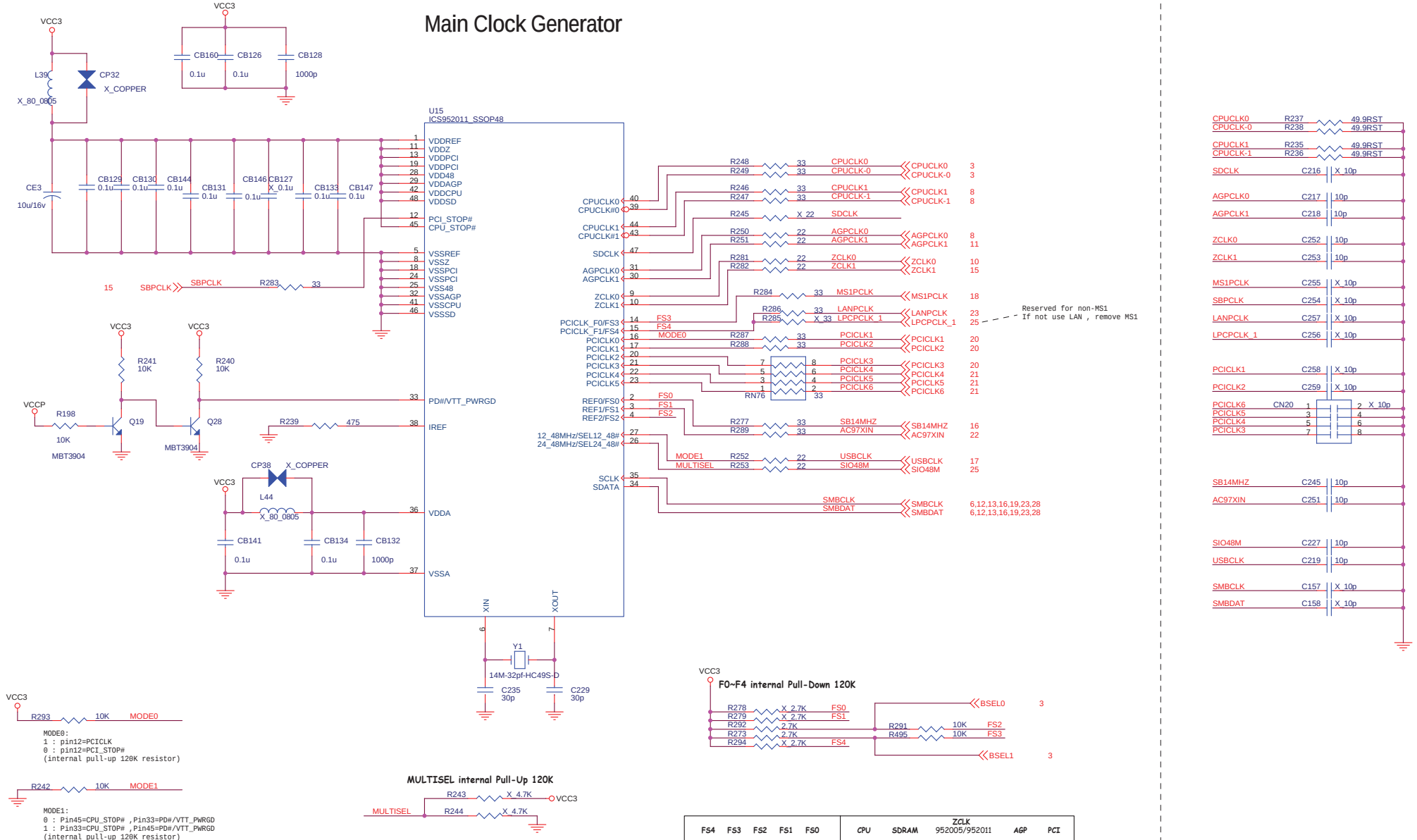




PLACE CAPS WITHIN CPU CAVITY

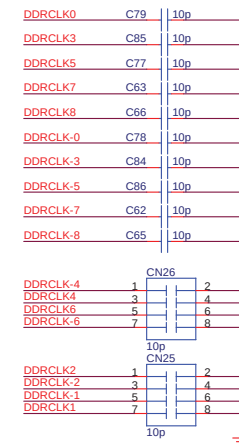
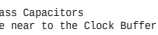
MICRO-STAR INT'L CO., LTD.			
Title			
FCPGA478-2			
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Main Clock Generator

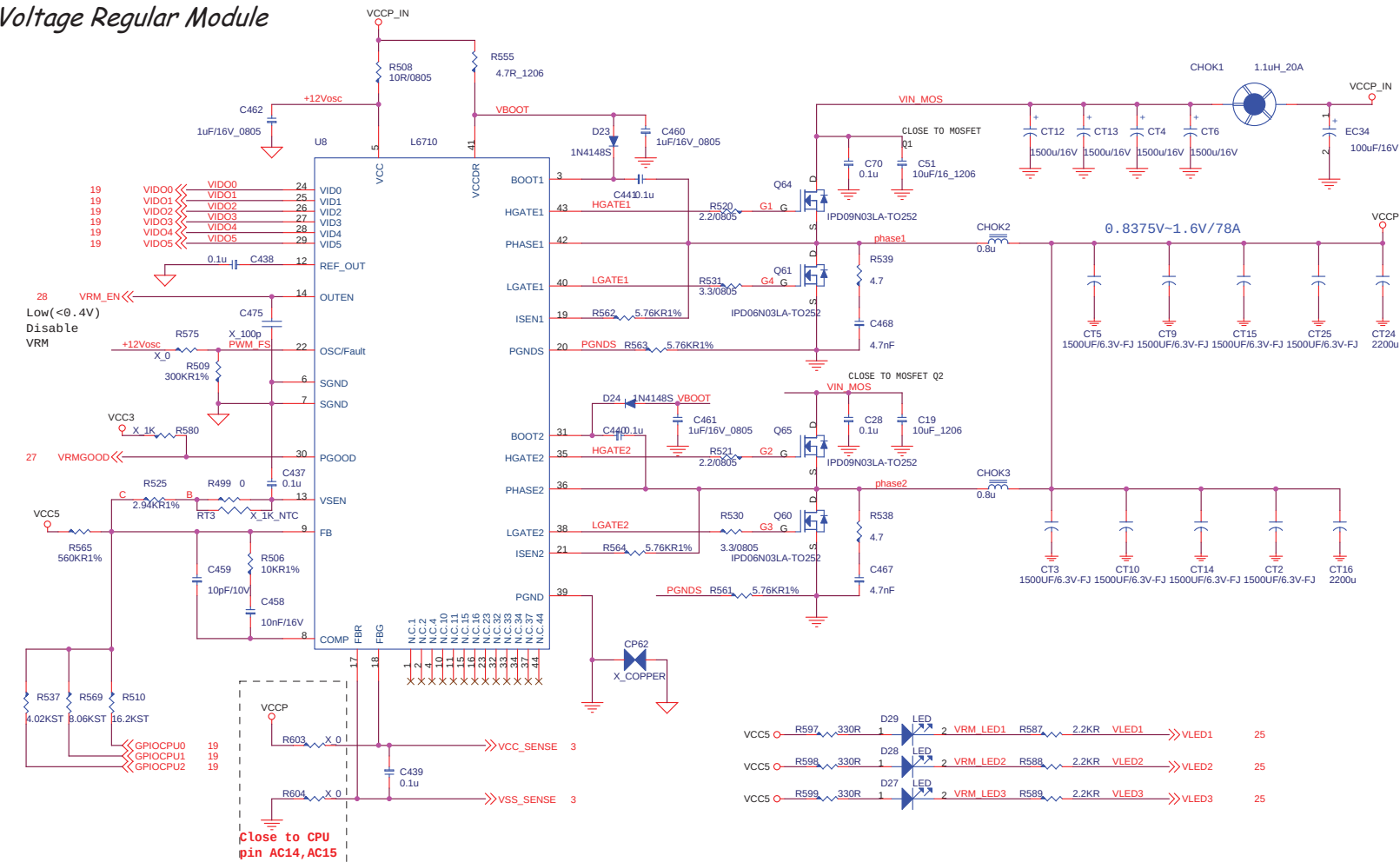


FS4	FS3	FS2	FS1	FS0	CPU	SDRAM	ZCLK 952005/952011	AGP	PCI
0	0	0	0	0	100	100	80/66	66	33
0	0	1	0	0	133	100	80/66	66	33
0	1	0	0	0	166	100	80/66	66	33
0	1	1	0	0	200	100	80/66	66	33

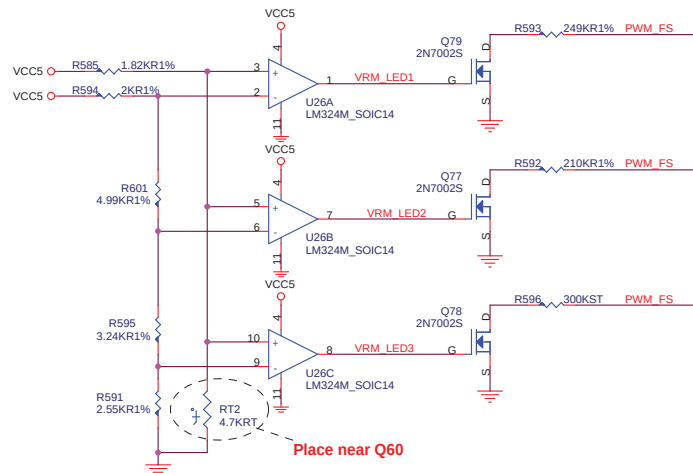
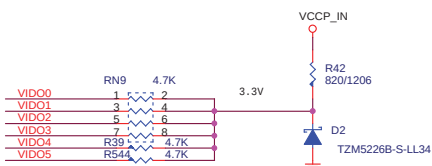
(OPTIONS)
1: (ICS-93705)



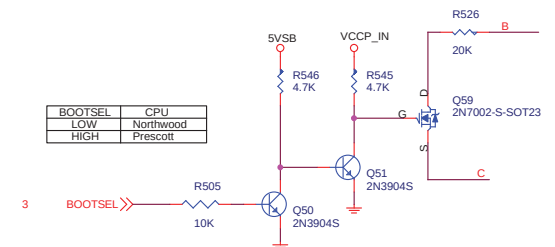
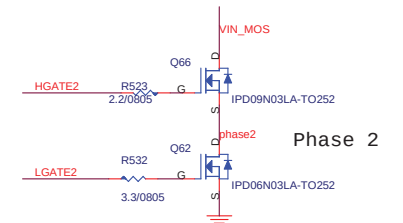
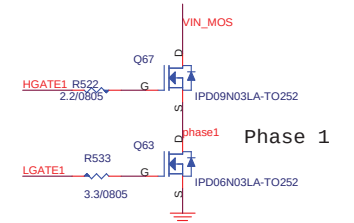
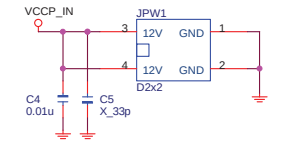
Voltage Regular Module



VID PULL-UP RESISTORS

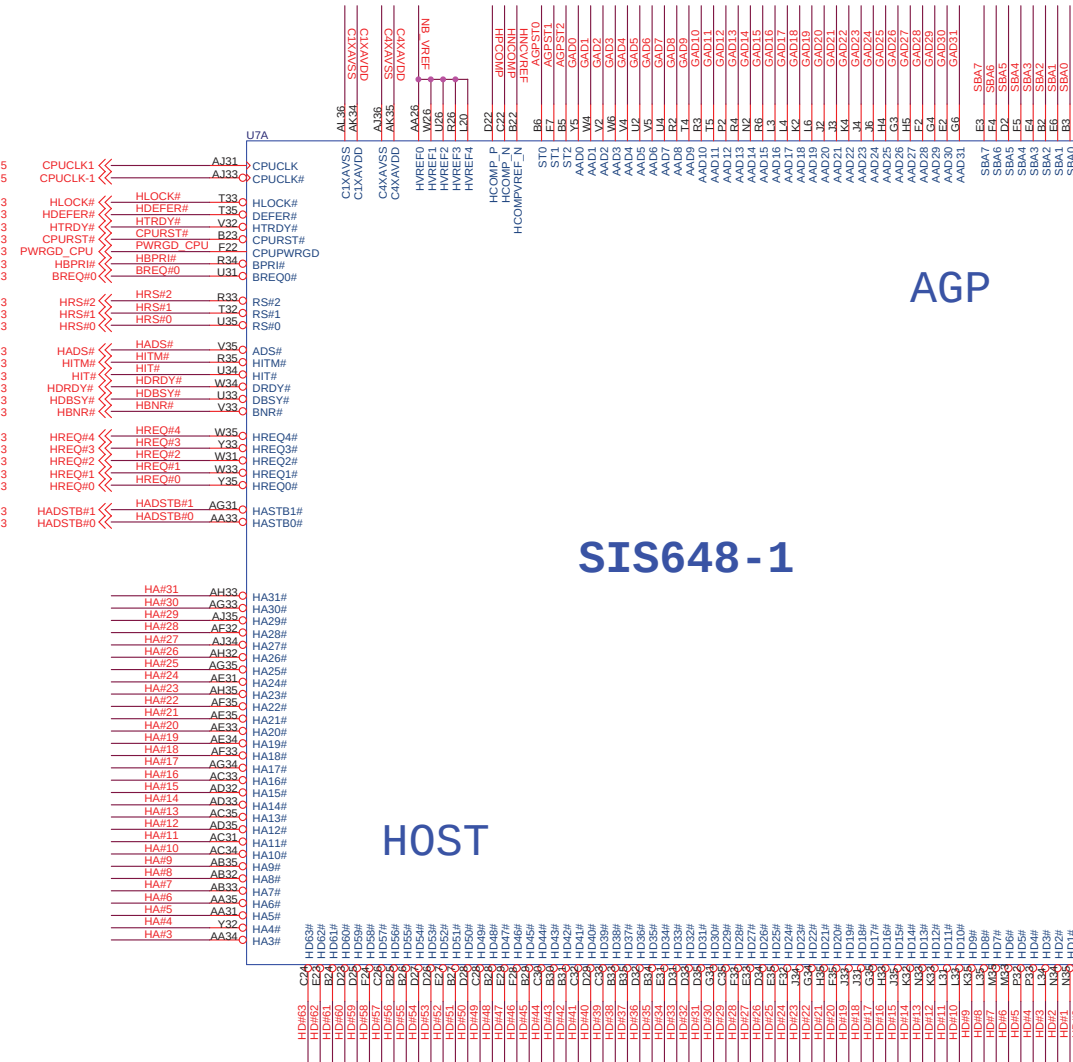


ATX12V POWER CONNECTOR



BOOTSEL	CPU
LOW	Northwood
HIGH	Prescott

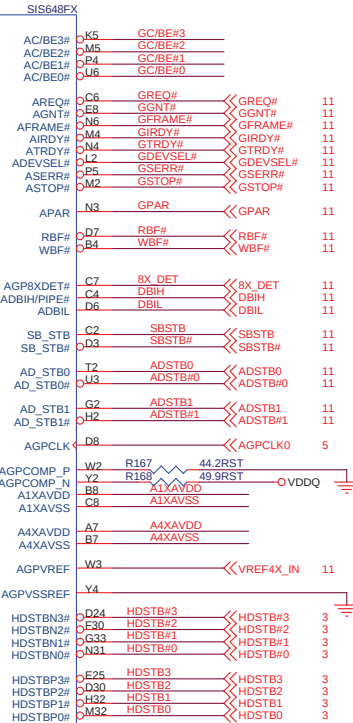
MICRO-STAR INT'L LO.,LTD.			
Title VRM 10			
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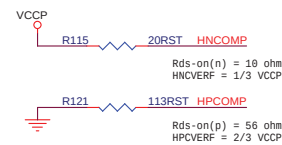
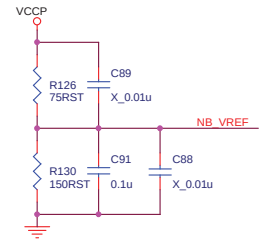
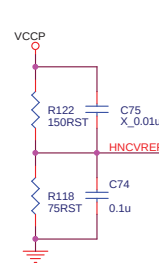
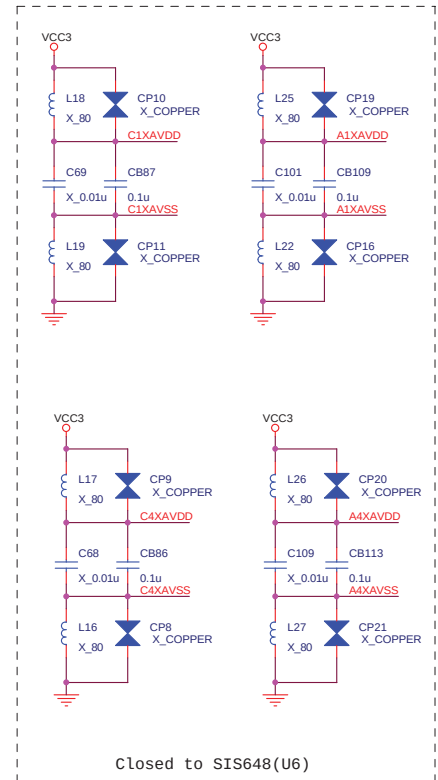
AGP

SIS648-1

HOST

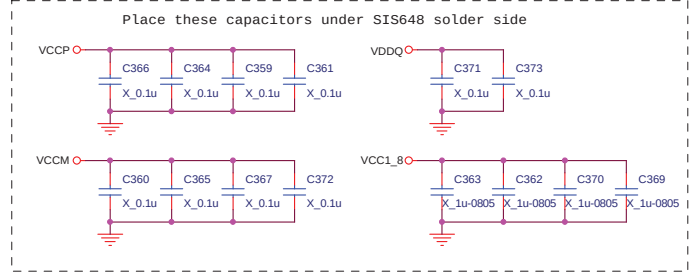
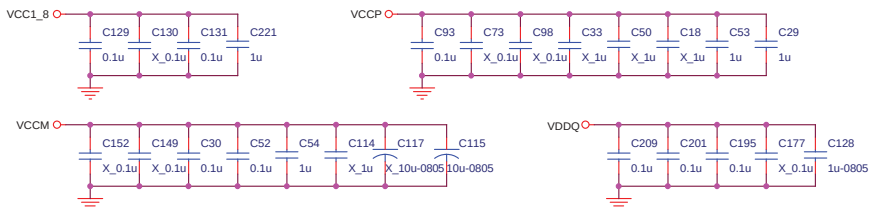
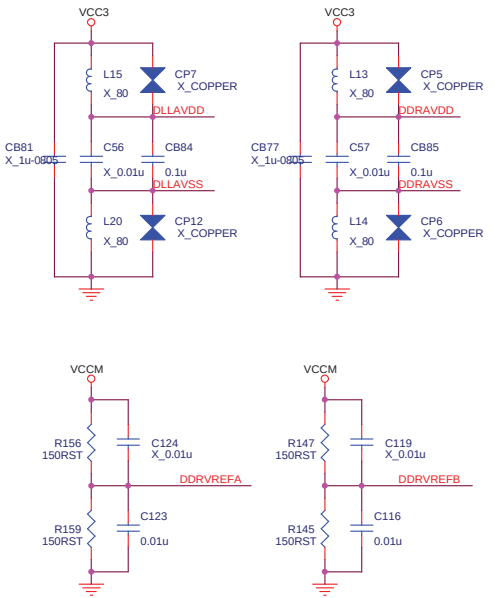
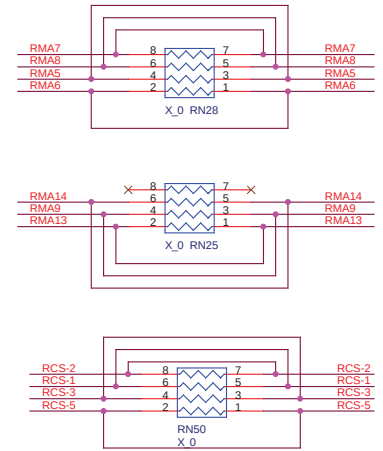
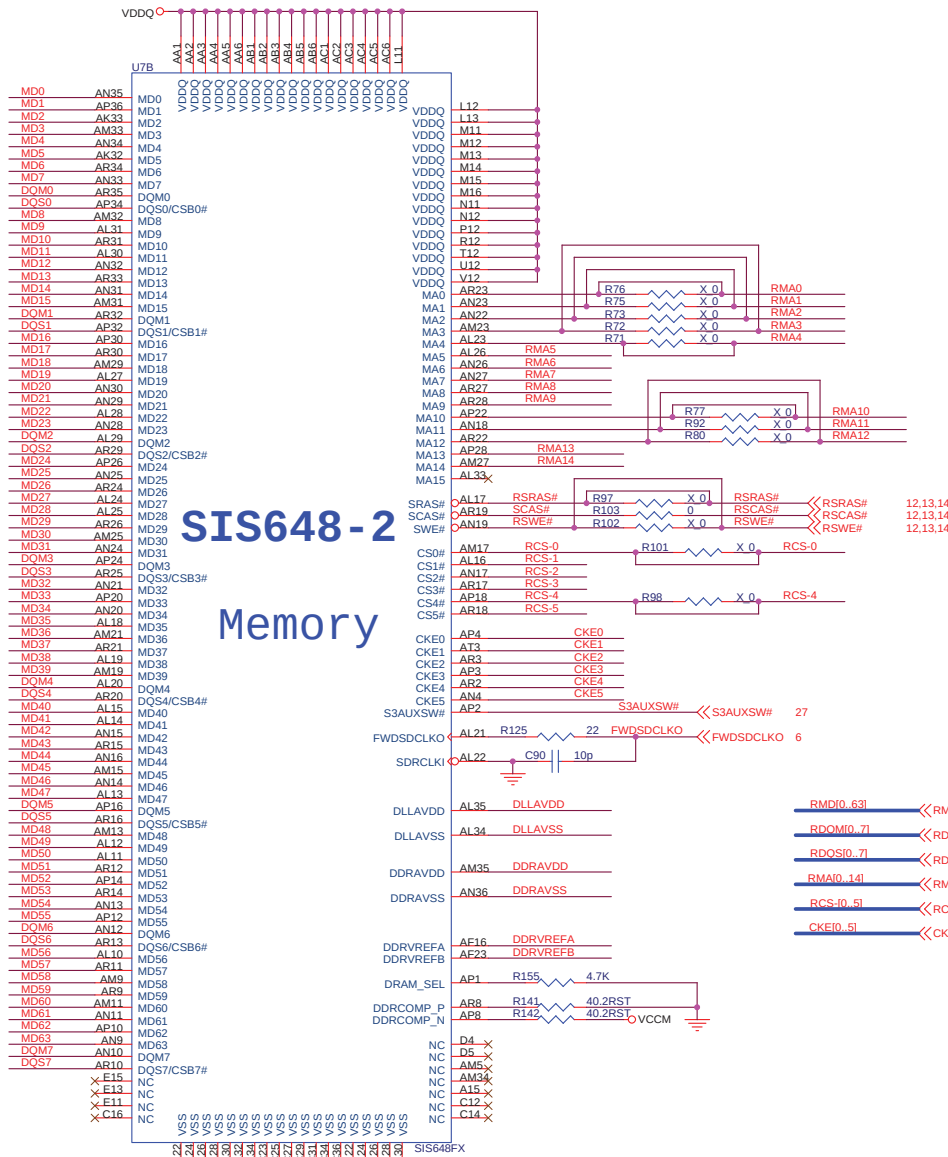


AGP3.0 = 50 ohm

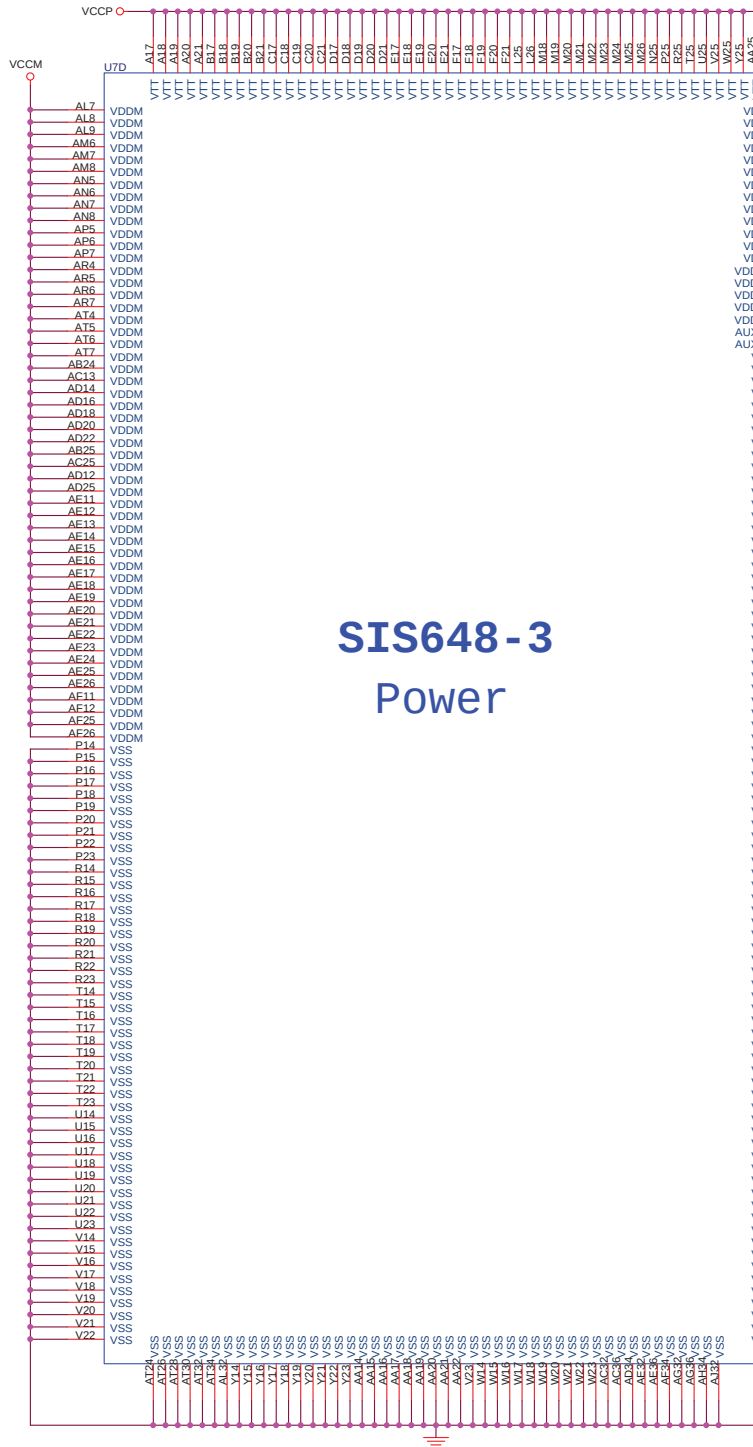


MICRO-STAR INT'L CO., LTD.			
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SIS648-Host & AGP			
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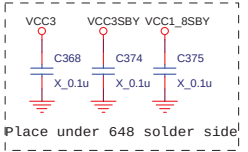
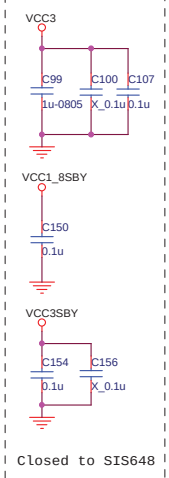
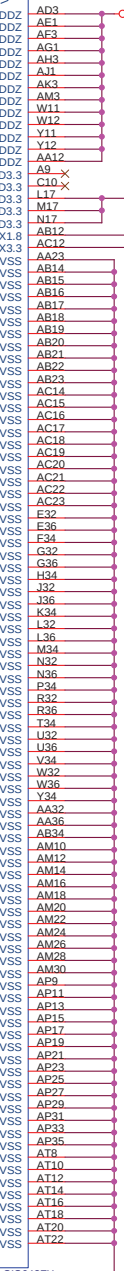
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RMD5		3	4	MD5
RMD4		5	6	MD4
RMD0	10	7	8	MD0
RMD6	RN10	1	2	MD6
RMD2		3	4	MD2
RDMQ0		5	6	DMQ0
RMQS0	10	7	8	MQS0
RMD9	RN12	1	2	MD9
RMD8		3	4	MD8
RMD7		5	6	MD7
RMD3	10	7	8	MD3
RMD11	RN16	1	2	MD11
RMD10		3	4	MD10
RMD15		5	6	MD15
RMD14	10	7	8	MD14
RDMQ1	RN14	1	2	DMQ1
RMD13		3	4	MD13
RDCS1		5	6	DCS1
RMD12	10	7	8	MD12
RMD21	RN21	1	2	MD21
RMD17		3	4	MD17
RMD16		5	6	MD16
RMD20	10	7	8	MD20
RMD22	RN23	1	2	MD22
RMD18		3	4	MD18
RDMQ2		5	6	DMQ2
RDCS2	10	7	8	DCS2
RMD28	RN29	1	2	MD28
RMD24		3	4	MD24
RMD23		5	6	MD23
RMD19	10	7	8	MD19
RMD31	RN35	1	2	MD31
RMD27		3	4	MD27
RMD30		5	6	MD30
RMD26	10	7	8	MD26
RDMQ3	RN32	1	2	DMQ3
RDCS3		3	4	DCS3
RMD25		5	6	MD25
RMD29	10	7	8	MD29
RMD37	RN44	1	2	MD37
RMD33		3	4	MD33
RMD36		5	6	MD36
RMD32	10	7	8	MD32
RMD38	RN45	1	2	MD38
RMD34		3	4	MD34
RDMQ4		5	6	DMQ4
RDCS4	10	7	8	DCS4
RMD44	RN47	1	2	MD44
RMD40		3	4	MD40
RMD35		5	6	MD35
RMD39	10	7	8	MD39
RMQS5	RN49	1	2	MQS5
RDMQ5		3	4	DMQ5
RMD41		5	6	MD41
RMD45	10	7	8	MD45
RMD47	RN51	1	2	MD47
RMD46		3	4	MD46
RMD43		5	6	MD43
RMD42	10	7	8	MD42
RMD55	RN55	1	2	MD55
RMQS6		3	4	MQS6
RMD54		5	6	MD54
RDMQ6	10	7	8	DMQ6
RMD53	RN53	1	2	MD53
RMD52		3	4	MD52
RMD49		5	6	MD49
RMD48	10	7	8	MD48
RMD56	RN58	1	2	MD56
RMD60		3	4	MD60
RMD51		5	6	MD51
RMD50	10	7	8	MD50
RMD62	RN60	1	2	MD62
RDMQ7		3	4	DMQ7
RMD57		5	6	MD57
RMD61	10	7	8	MD61
RMD59		9	10	MD59
RMD63		11	12	MD63
RMD58	RN63	1	2	MD58
RMQS7	10	7	8	MQS7



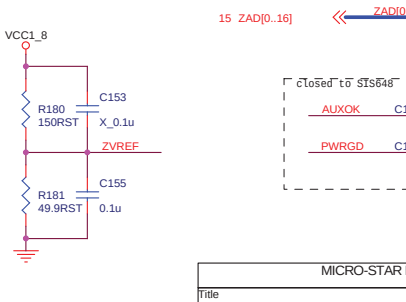
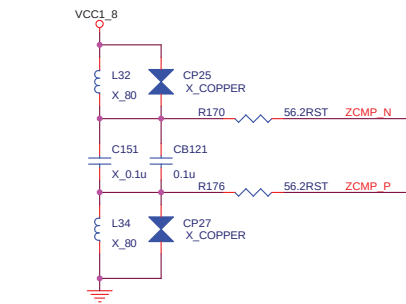
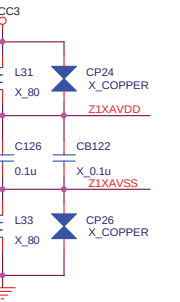
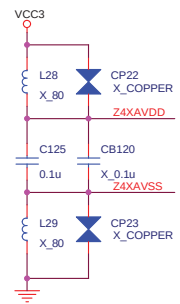
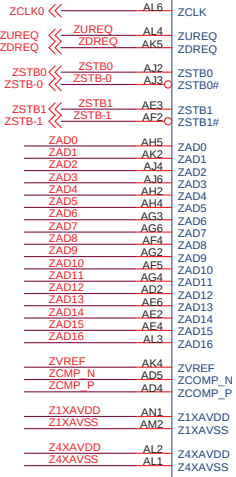
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SIS648-Memory		
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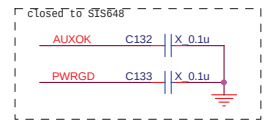
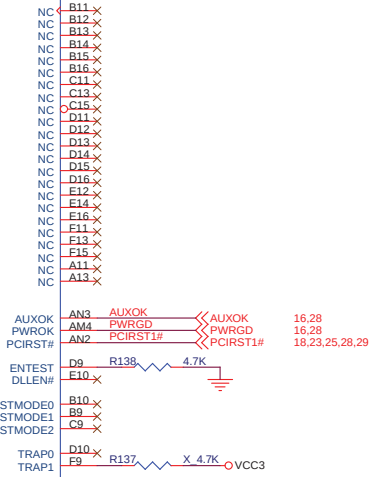
SIS648-3 Power



Place under 648 solder side

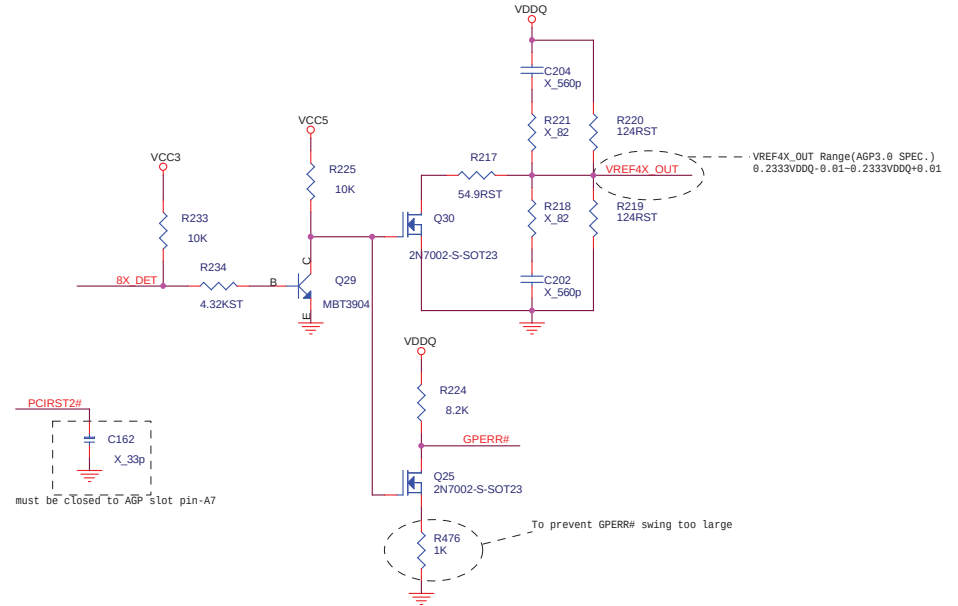
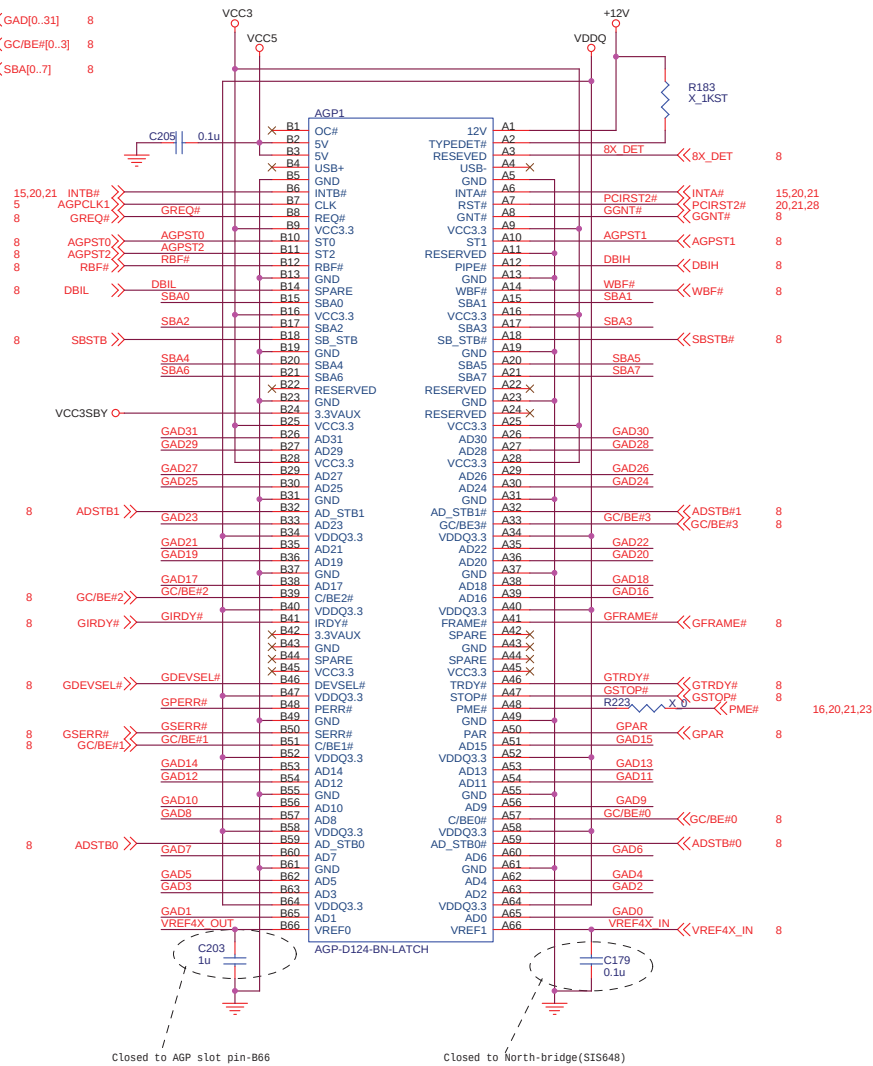


SIS648-4 HyperZip

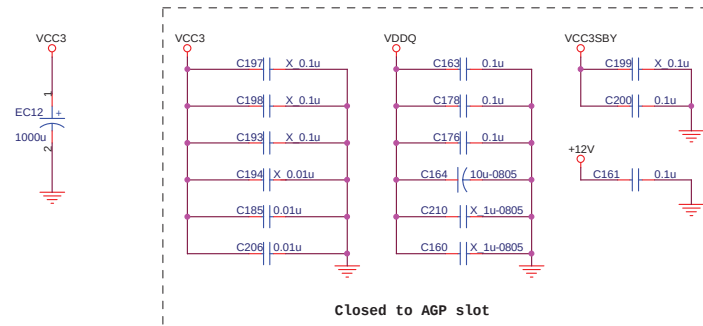


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GAD[0..31] << GAD[0..31] 8
GC/BE#[0..3] << GC/BE#[0..3] 8
SBA[0..7] << SBA[0..7] 8



CLOSED TO AGP SLOT



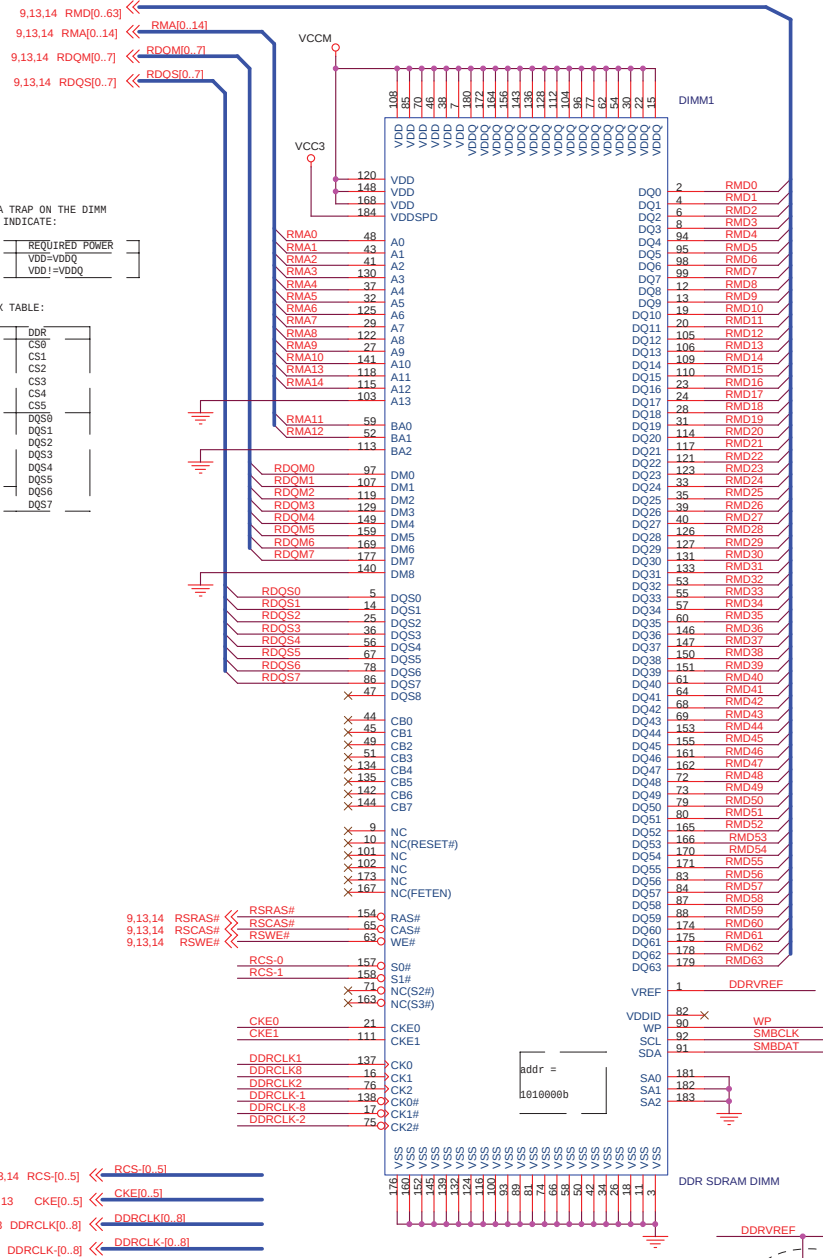
Closed to AGP slot

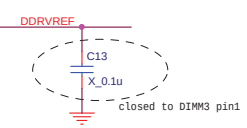
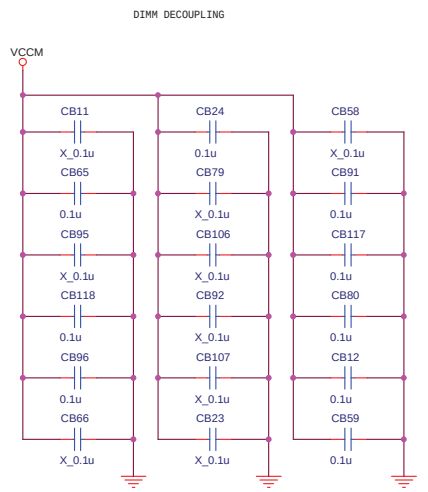
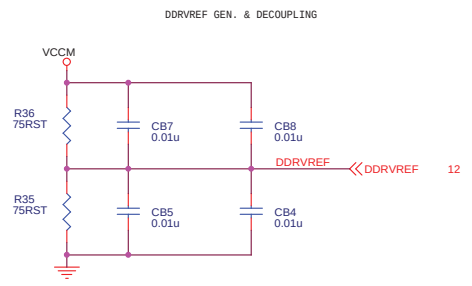
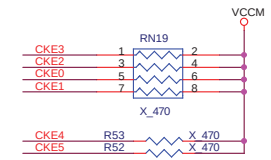
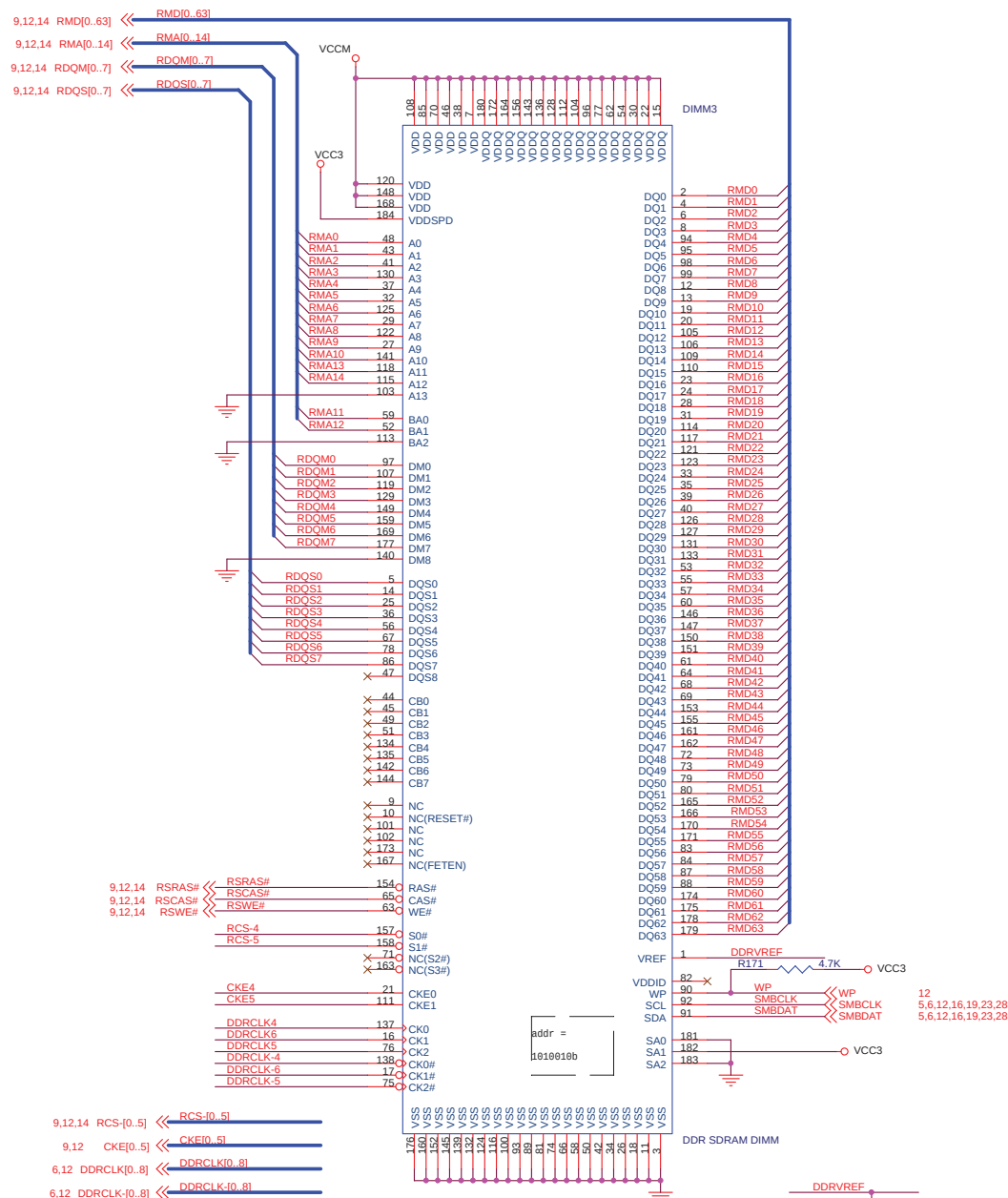
NOTE:
VDDID IS A TRAP ON THE DIMM MODULE TO INDICATE:

VDDID	REQUIRED POWER
OPEN	VDD=VDDQ
GND	VDD1=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

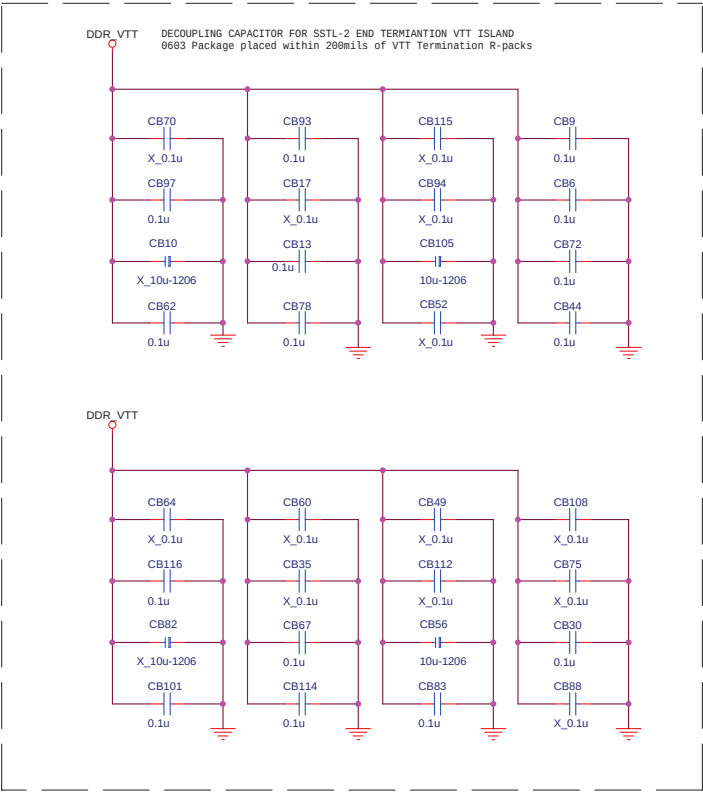
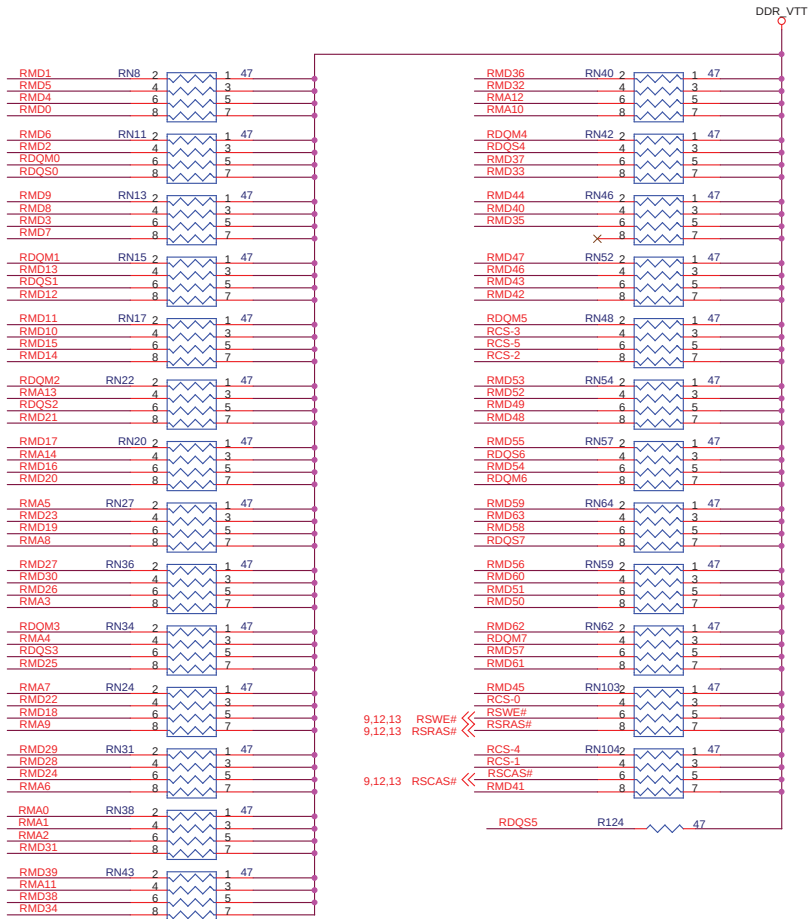


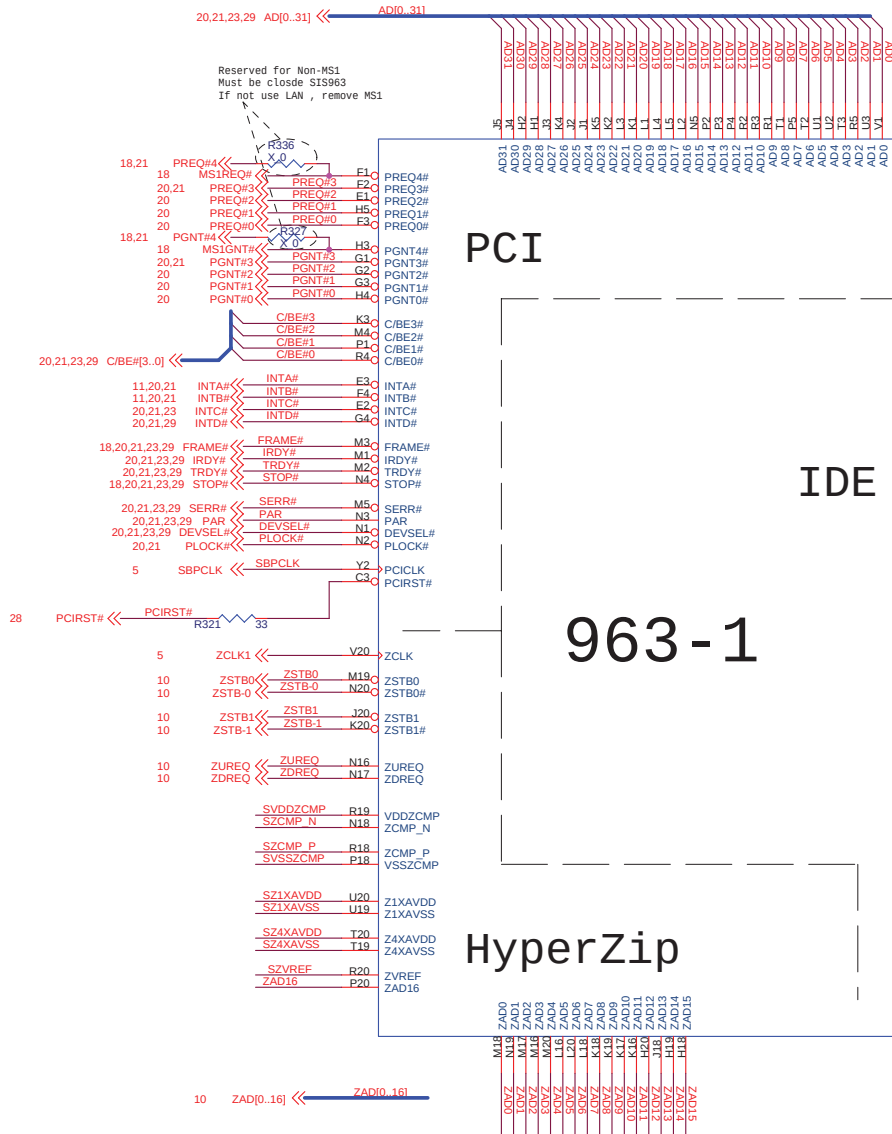


SSTL-2 Termination Resistors

RMD[0..63]	<<RMD[0..63]	9.12.13
RDOM[0..7]	<<RDOM[0..7]	9.12.13
RDQS[0..7]	<<RDQS[0..7]	9.12.13
RMA[0..14]	<<RMA[0..14]	9.12.13
RCS[0..5]	<<RCS[0..5]	9.12.13

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



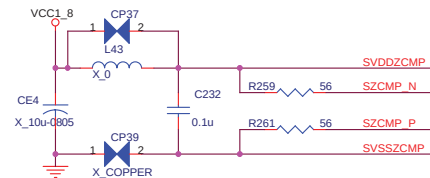
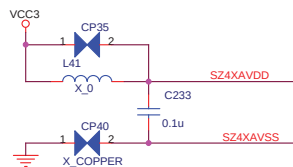
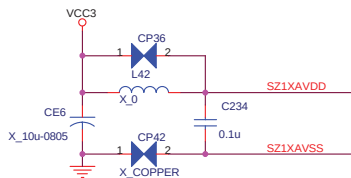
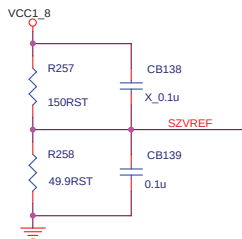
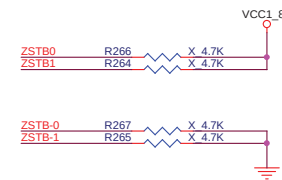
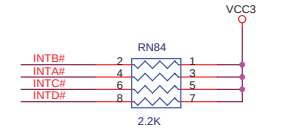
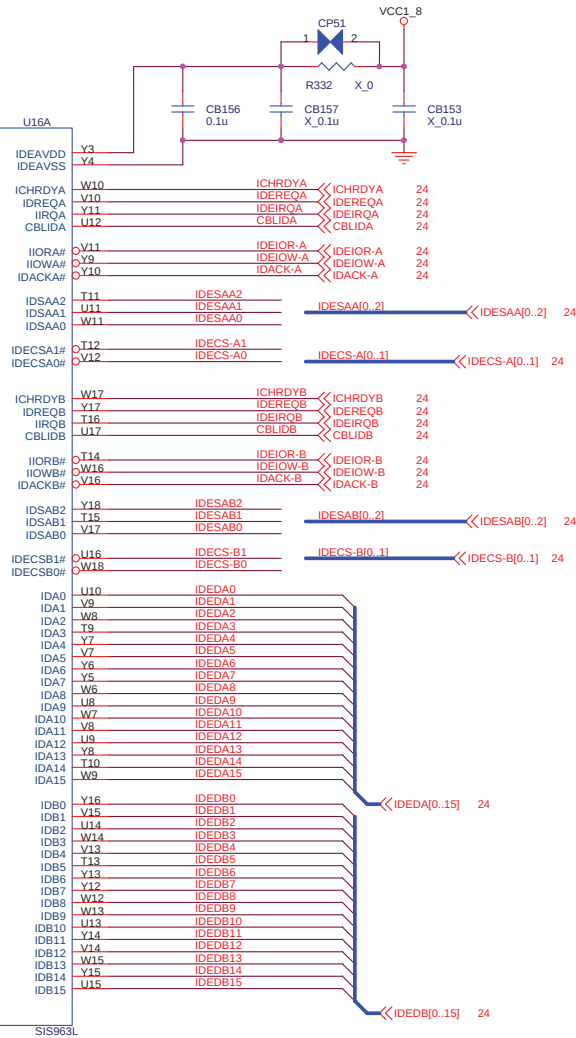


PCI

IDE

963-1

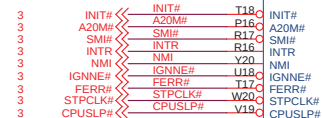
HyperZip



Analog Power supplies of Transzip function for 963 Chip.

MICRO-STAR INT'L CO., LTD.			
Title SIS963-1 PCI & IDE & HyperZip			
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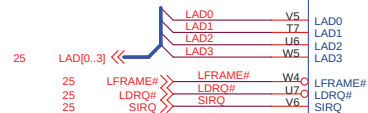
Programmable on-die pull-high strength for CPU_S:
(Infinite, 150, 110, 56 Ohm)



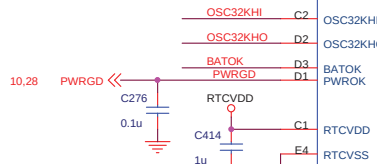
CPU_S



APIC

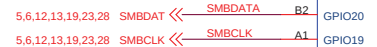


LPC

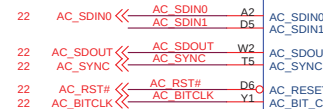


RTC

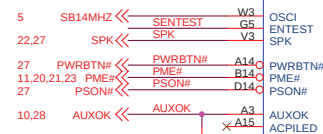
963-2



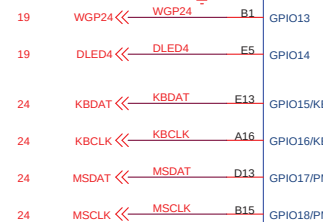
GPIO



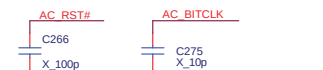
AC97



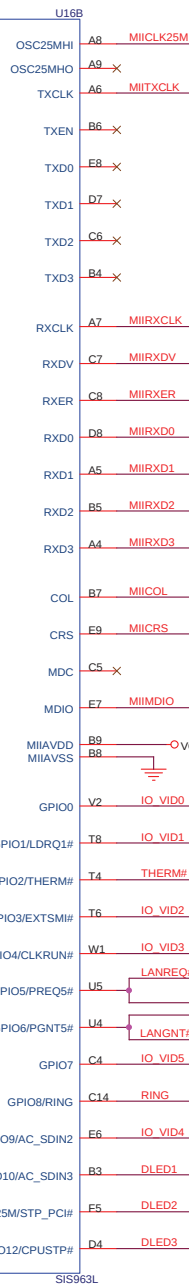
ACPI
/others



KBC
/geyserville



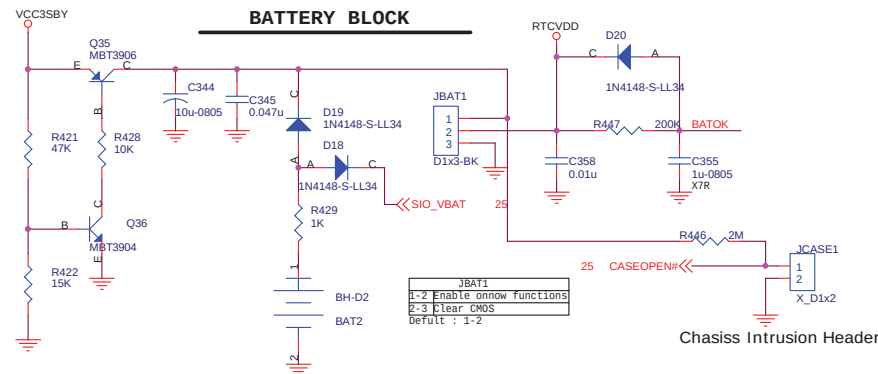
Place near to 96X



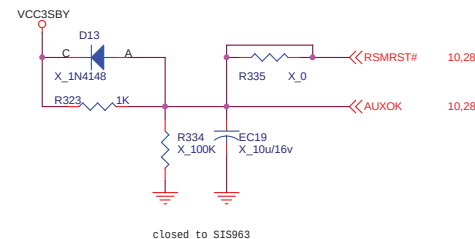
MII

GPIO

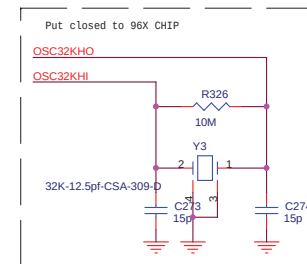
SIS963L



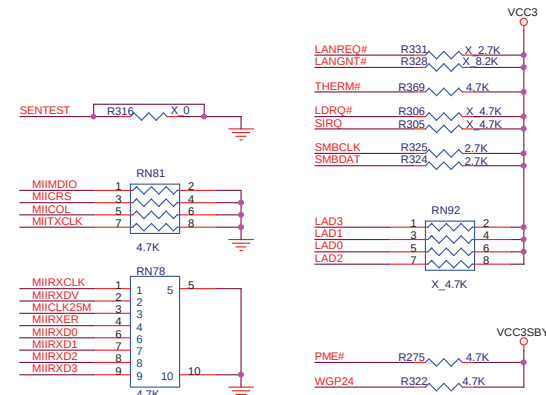
Chassis Intrusion Header



closed to SIS963



NEED NOT to place close to SIS96X

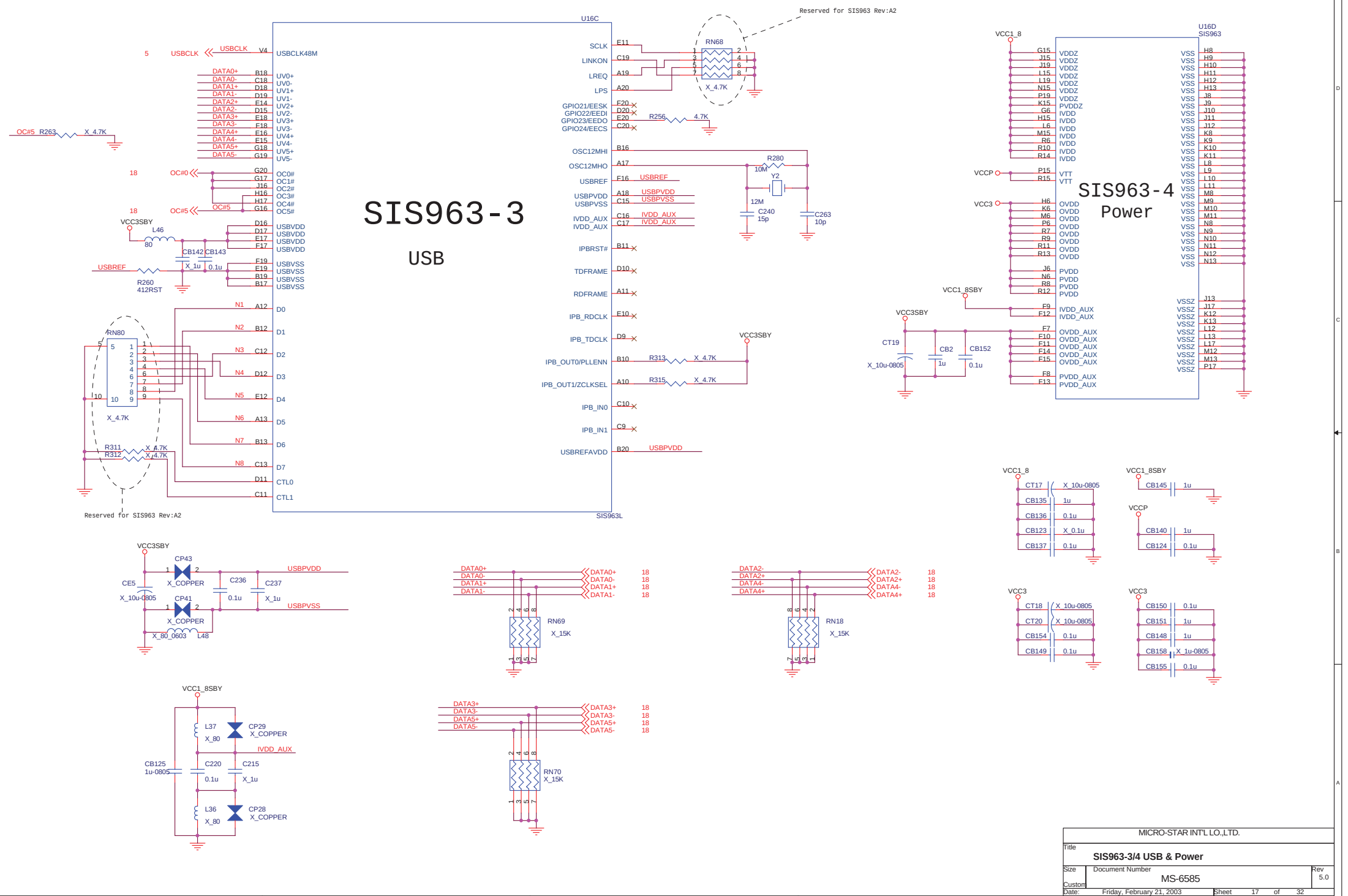


AC'97 Pull-Down:
In order to stabilize
963 AC'97 controller,
pull-down resistors on
SDAT11 and SDAT10 can
not be removed.

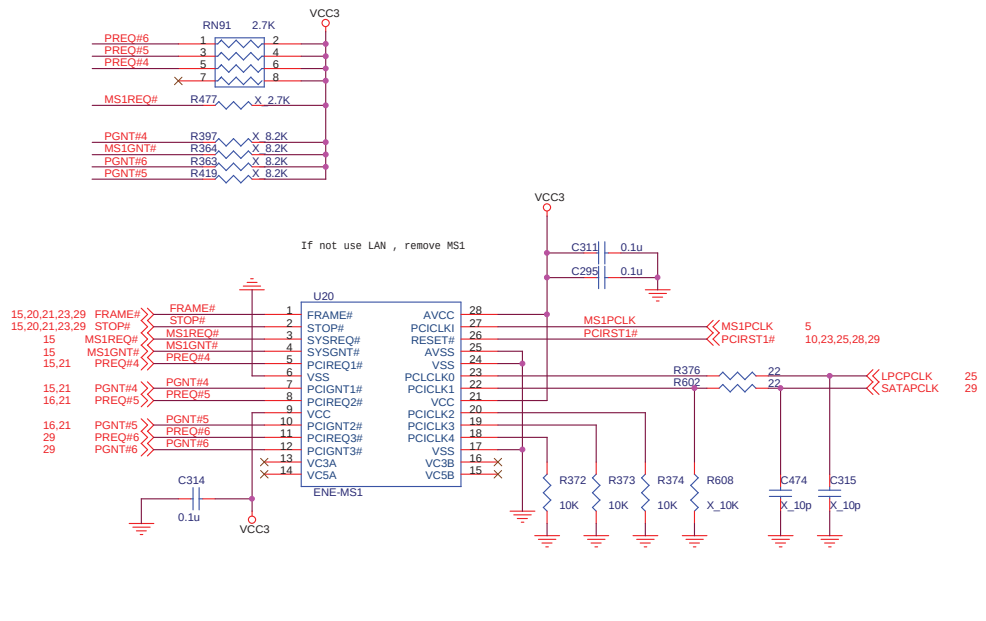


MICRO-STAR INT'L CO., LTD.

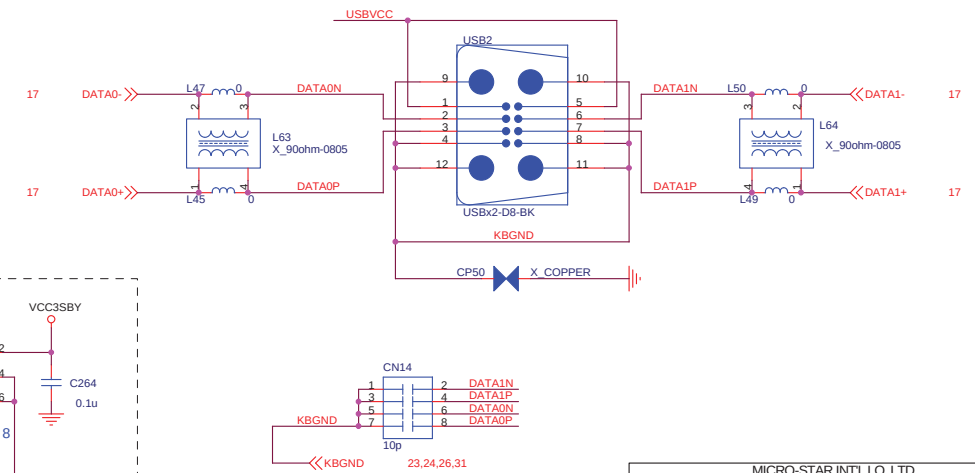
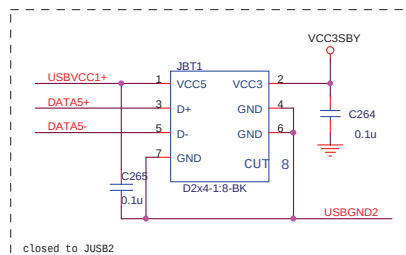
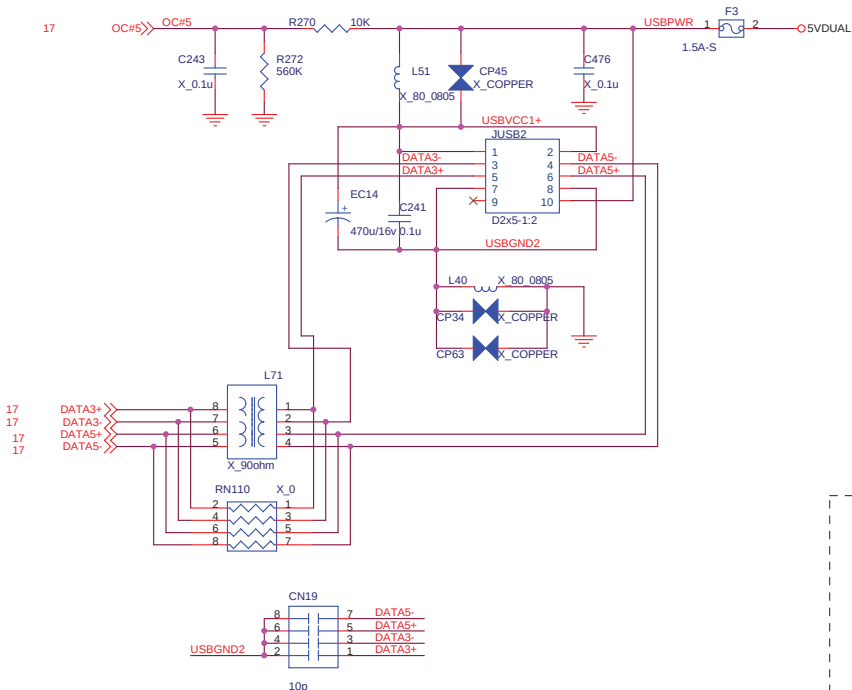
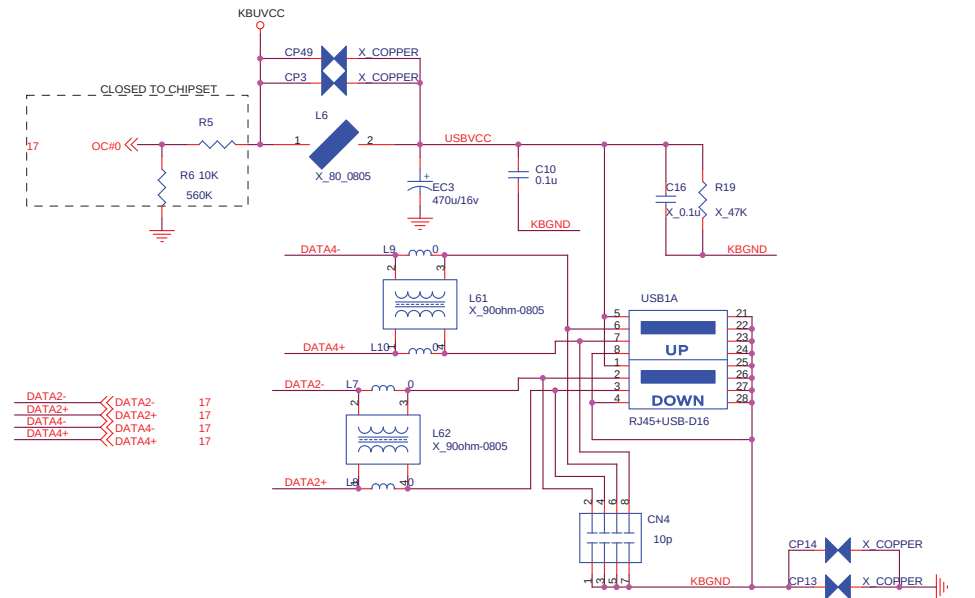
Title		
SIS963-2 MSIC.		
Size	Document Number	Rev
	MS-6585	5.0
Customer		
Date:	Friday, February 21, 2003	Sheet 16 of 32



MS1-PCI Arbitration Circuit

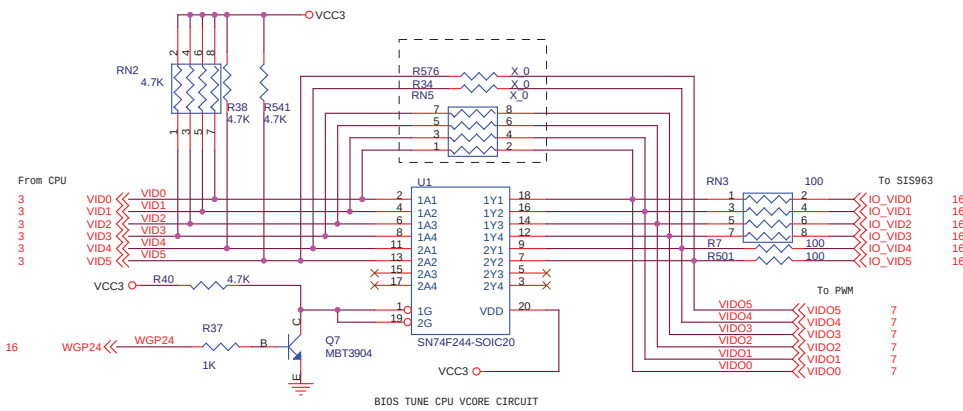


USB CONNECTOR

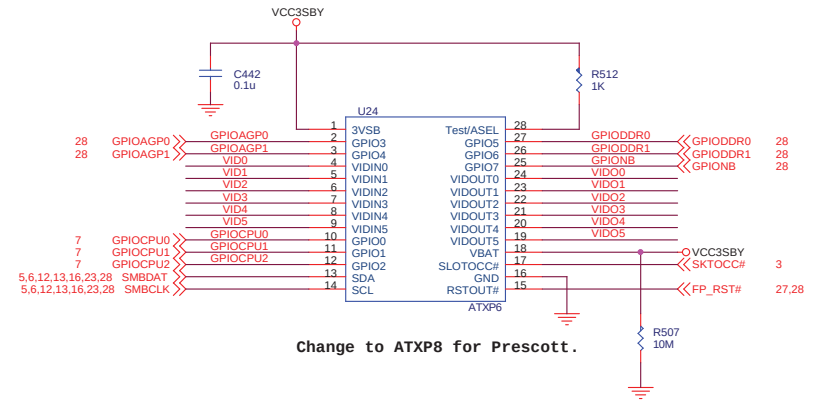


MICRO-STAR INT'L CO., LTD.		
Title		
USB port & MS1		
Size	Document Number	Rev
Custom	MS-6585	5.0
Date:	Friday, February 21, 2003	Sheet 18 of 32

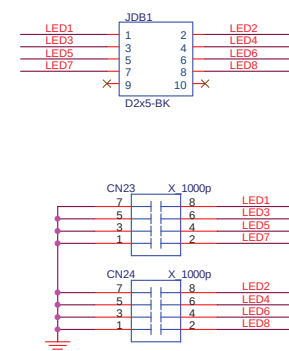
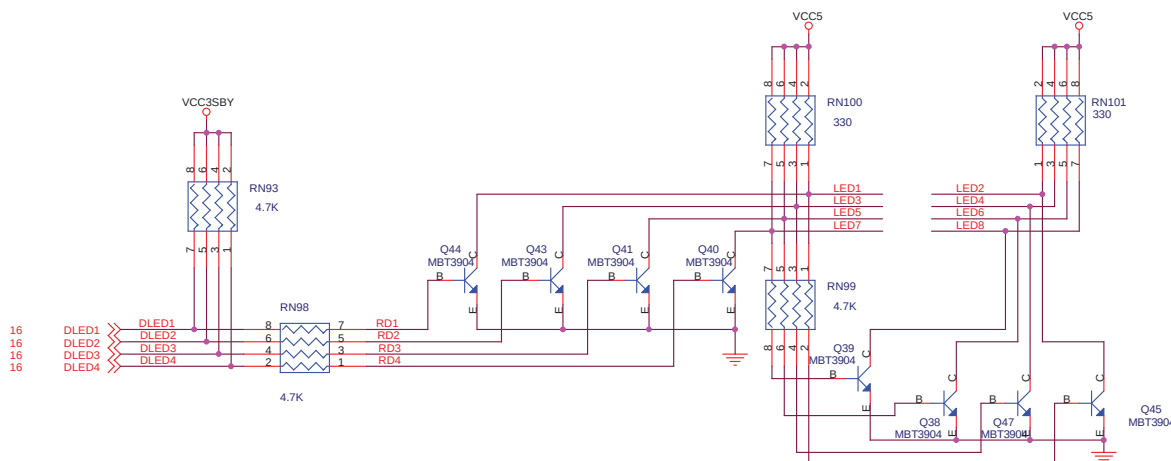
VID Adjust by SB



VID Adjust by ATXP8



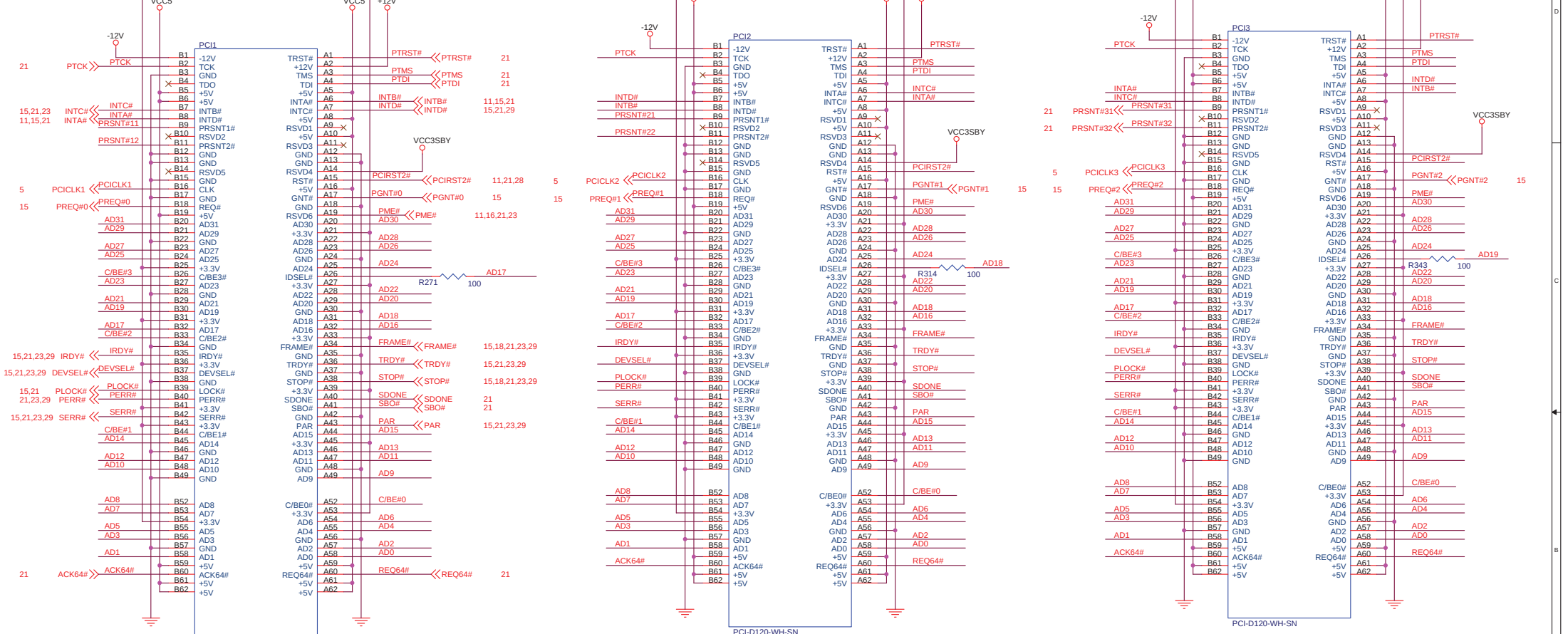
D-LED Circuit



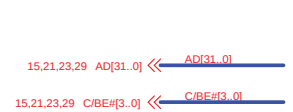
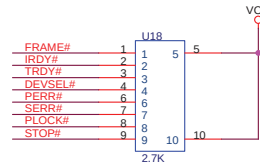
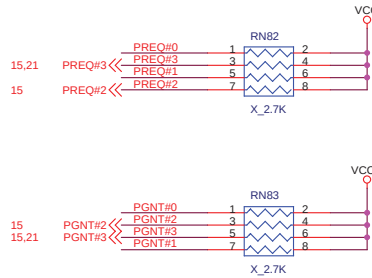
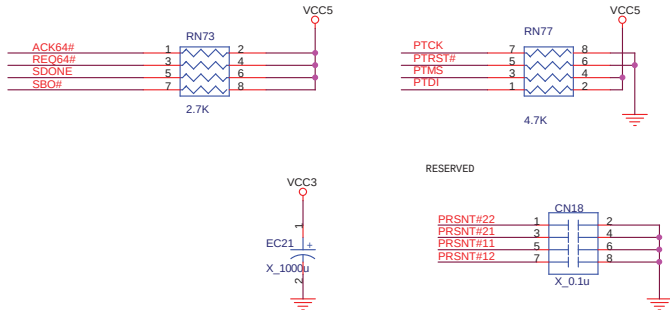
PCI1:AD17
INTB#
PREQ#0
PGNT#0

PCI2:AD18
INTC#
PREQ#1
PGNT#1

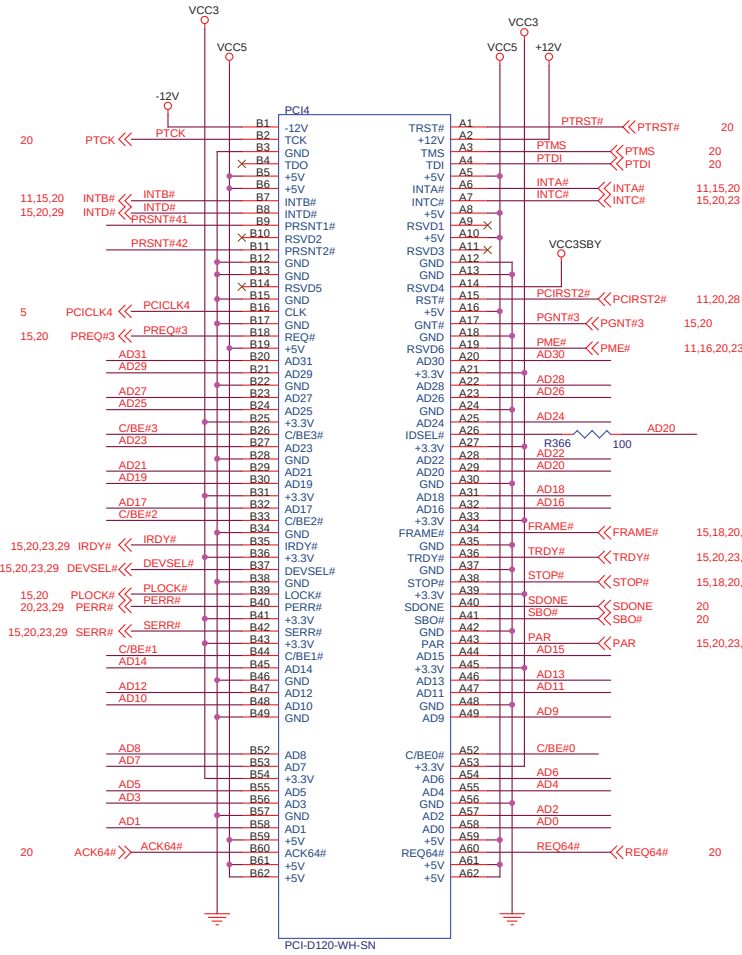
PCI3:AD19
INTD#
PREQ#2
PGNT#2



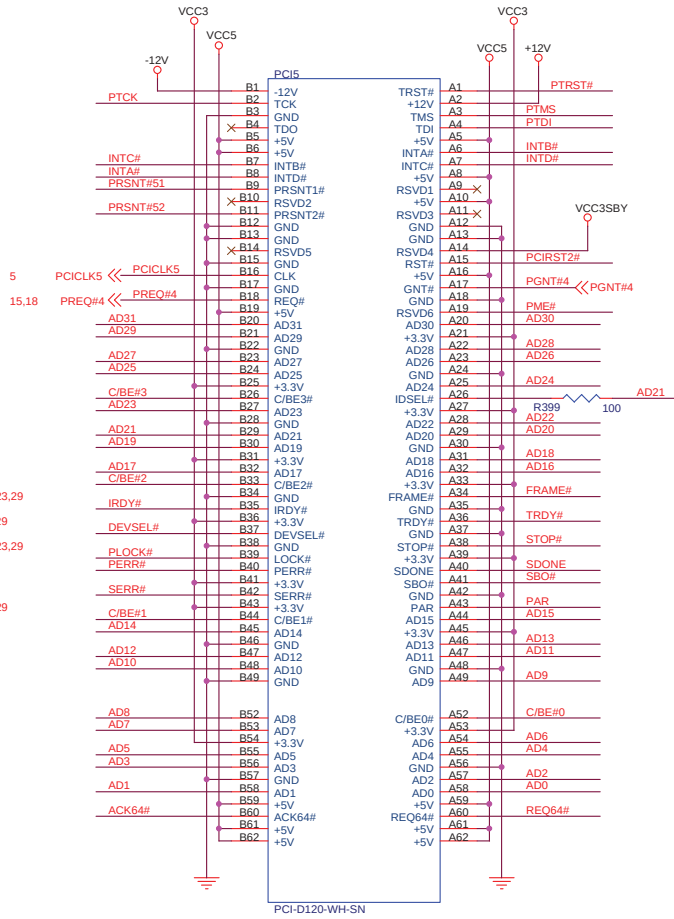
PCI BUS PULL-UP



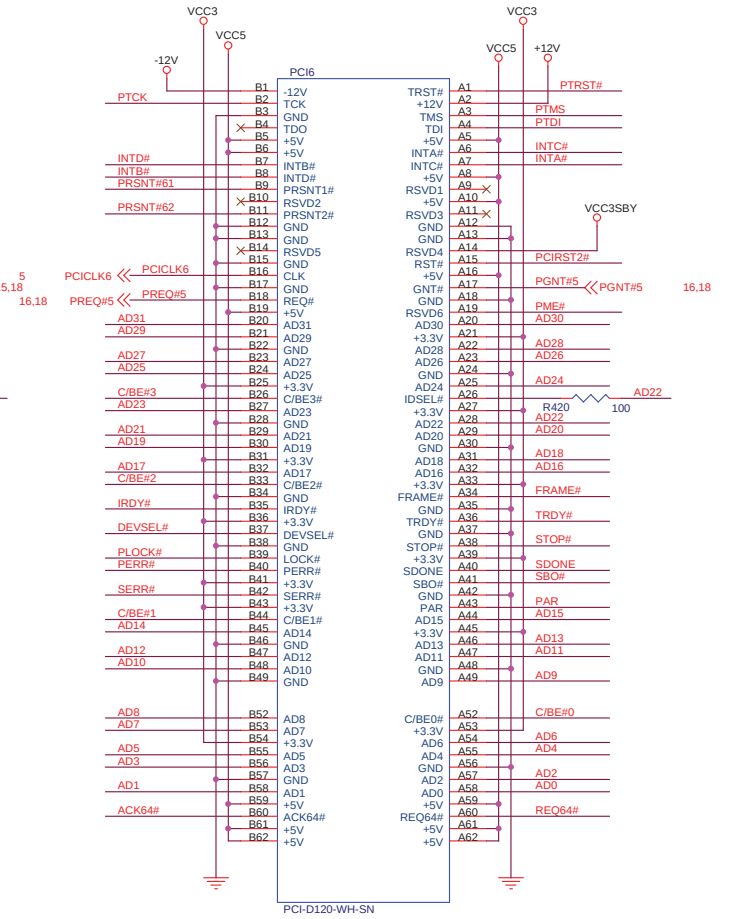
PCI4:AD20
INTA#
PREQ#3(share with MS1REQ#)
PGNT#3(share with MS1GNT#)



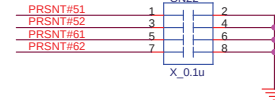
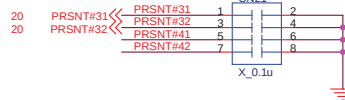
PCI5:AD21
INTB#
PREQ#4(share with LANREG#)
PGNT#4(share with LANGNT#)

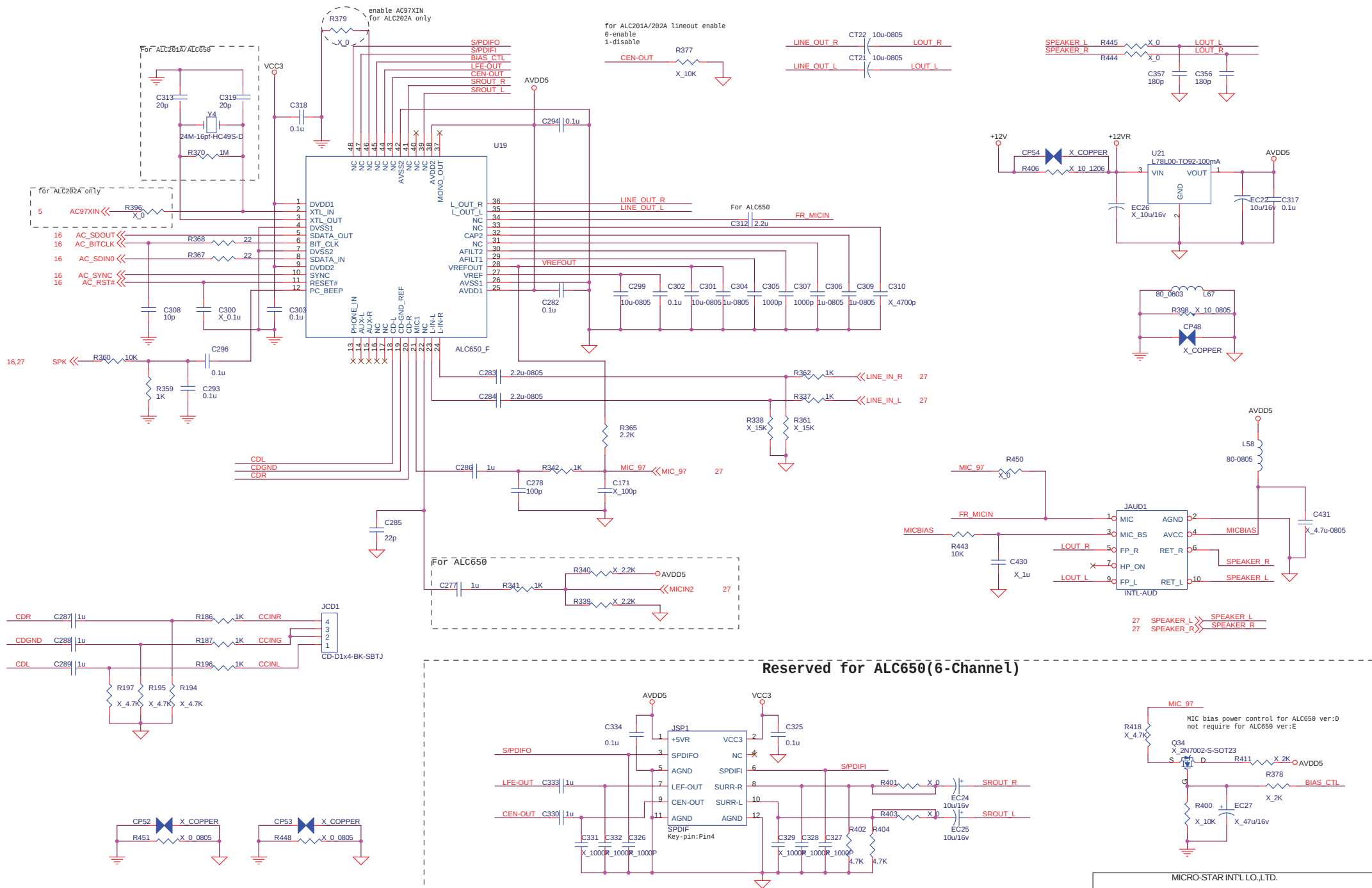


PCI6:AD22
INTC#
PREQ#5(share with LANREG#)
PGNT#5(share with LANGNT#)



15,20,23,29 AD[31..0] << AD31..0I
15,20,23,29 C/BE[3..0] << C/BE#3..0I





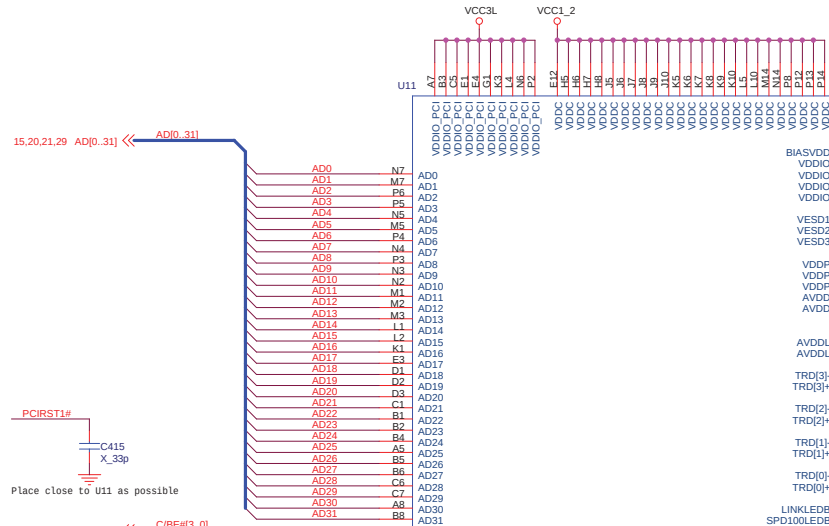
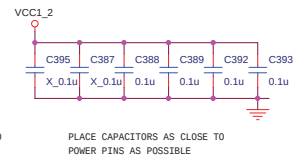
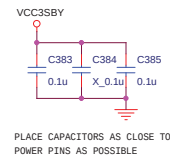
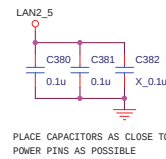
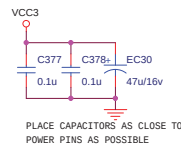
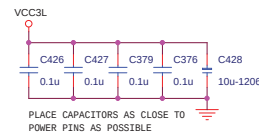
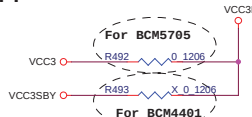
Gigabit Ethernet MAC-PHY

LAN:AD26

INTC#

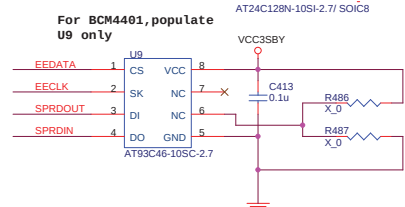
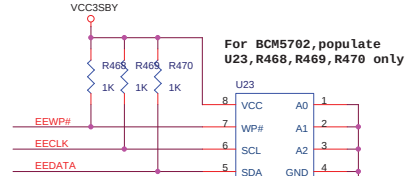
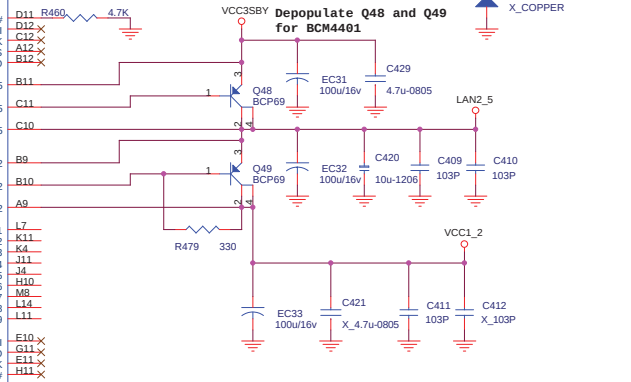
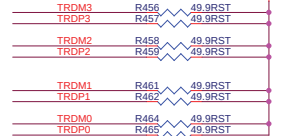
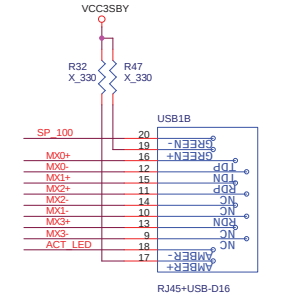
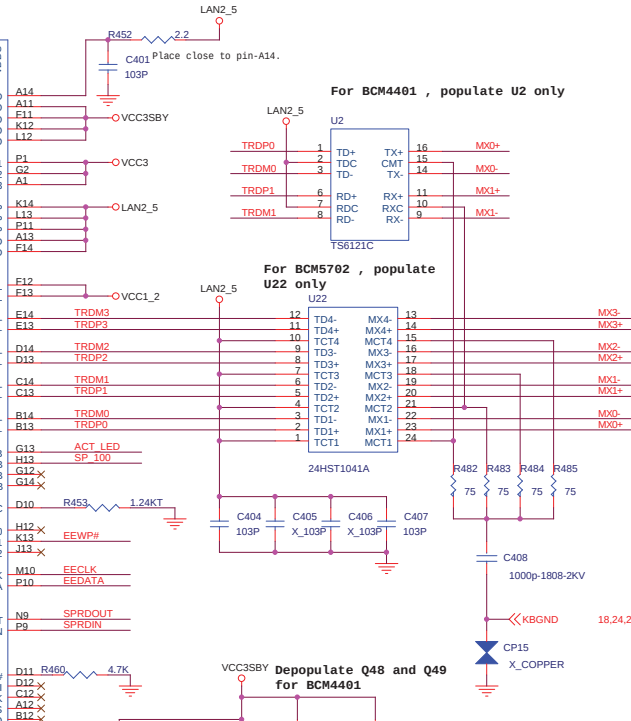
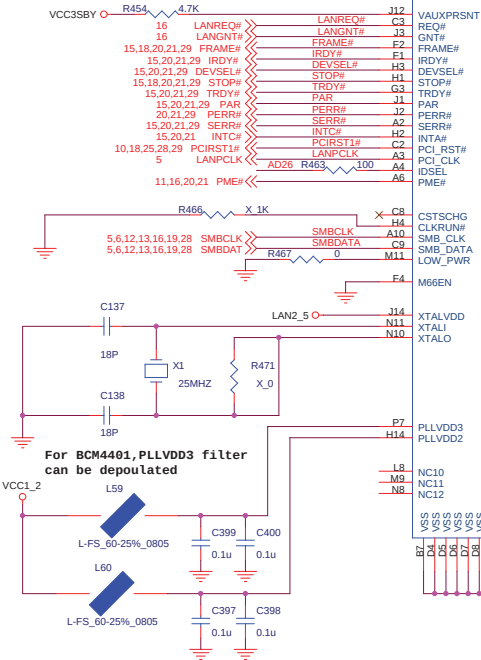
LANREQ#(share with PREQ#5)

LANGNT#(share with PGNT#5)



BCM4401 / BCM5702/ BCM5705M

15mm x 15mm
BGA196

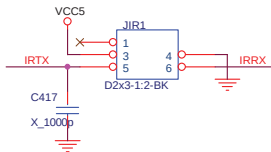


STRAPS

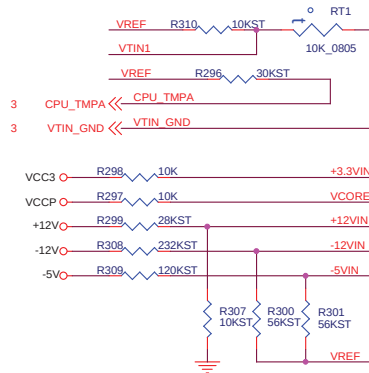
RTSA#	L: CFAD=2E	H: CFAD=4E
SOUTB	L: 24MHZ	H: 48MHZ
SOUTA	L: ROM-EN	
DTRA#	L: CL-Default	

W83697HF Internally pull-down(200K-300K ohm)

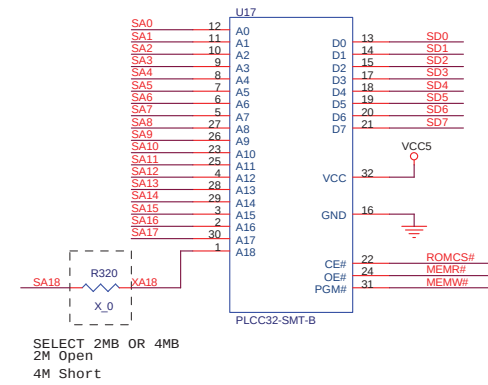
INTEL IR



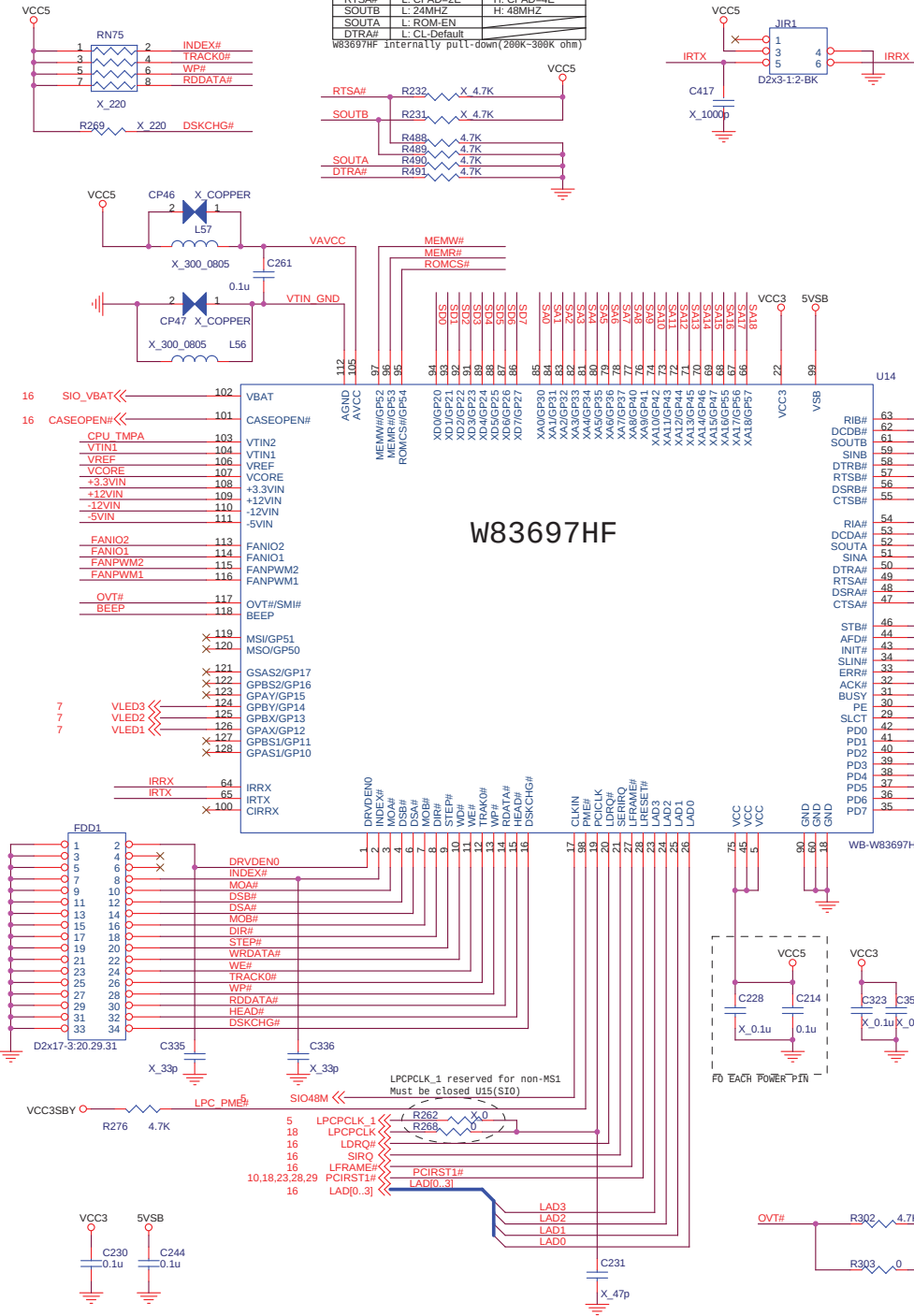
Hardware Monitor



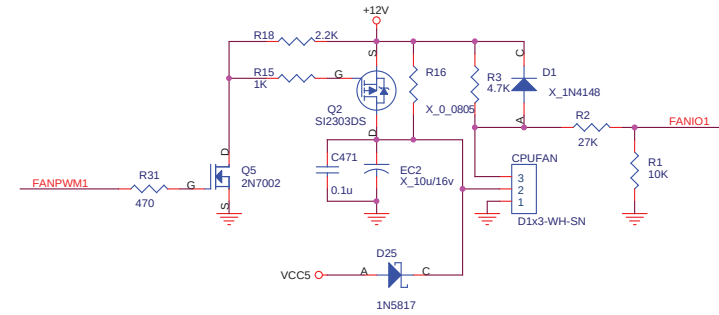
Flash Rom



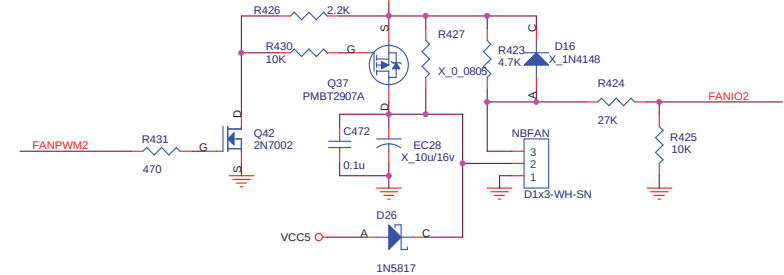
W83697HF



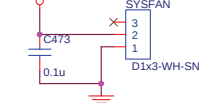
CPU FAN



CHIP FAN

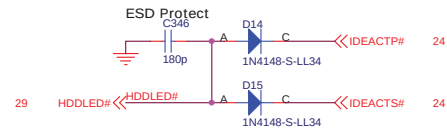
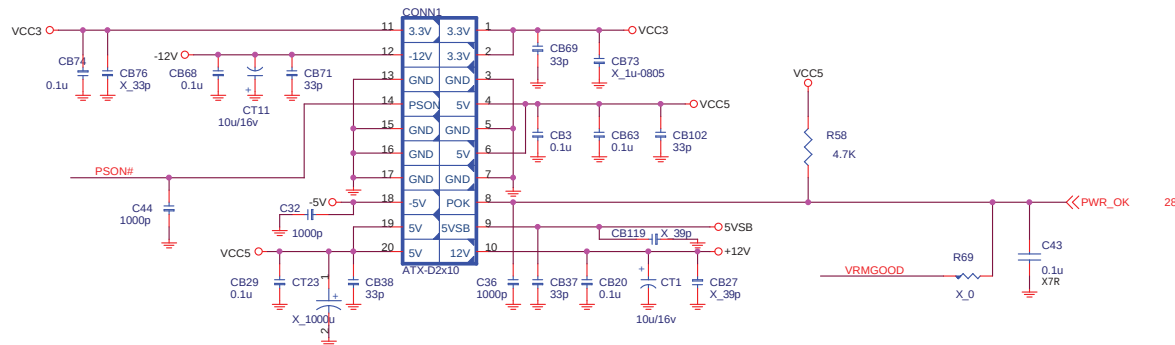


SYSTEM FAN

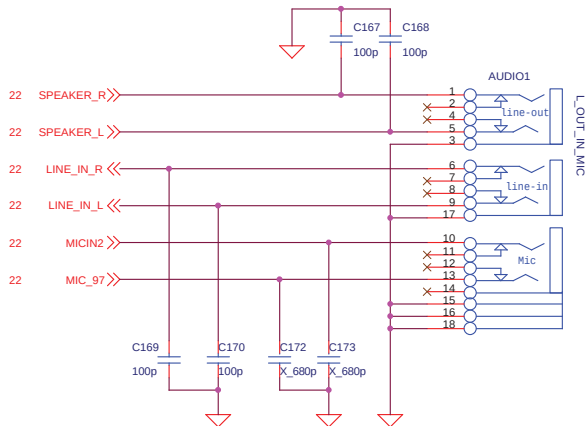


MICRO-STAR INT'L CO., LTD.			
Title			
W83697HF I/O & BIOS			
Size	Document Number	Rev	
		MS-6585	
Custom		Date	
		Friday, February 21, 2003	
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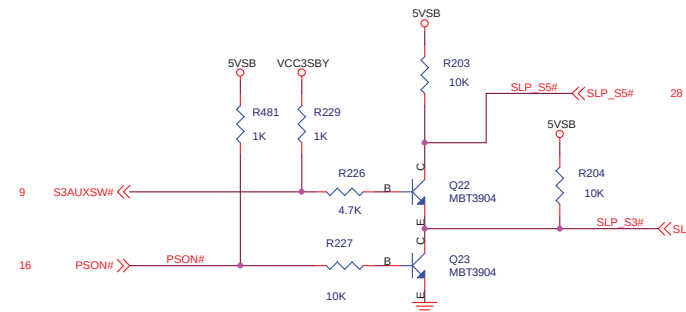
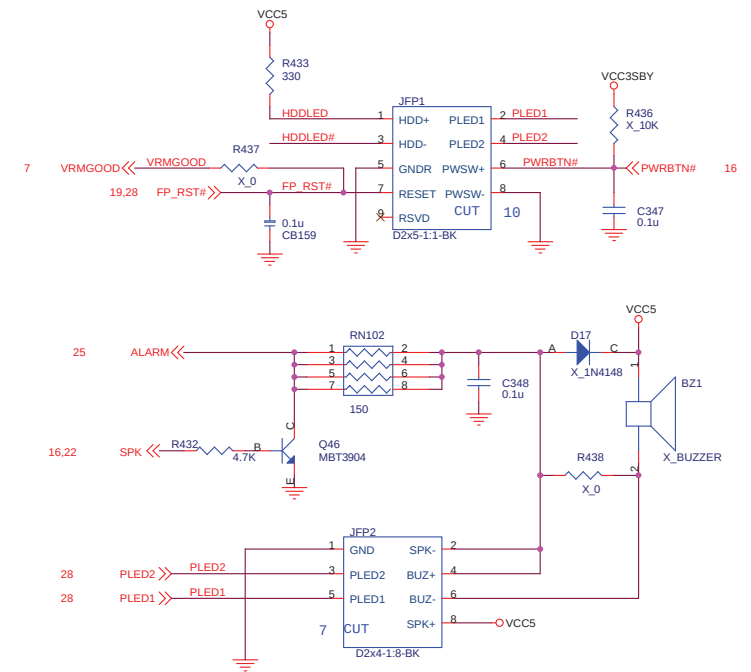
ATX CONNECTOR



AUDIO-CONNECTOR



FRONT-PANEL



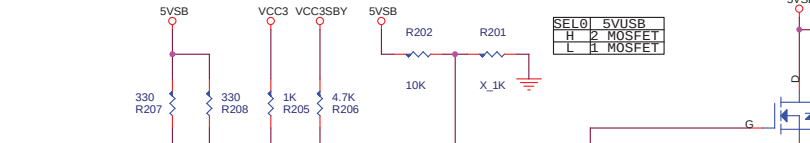
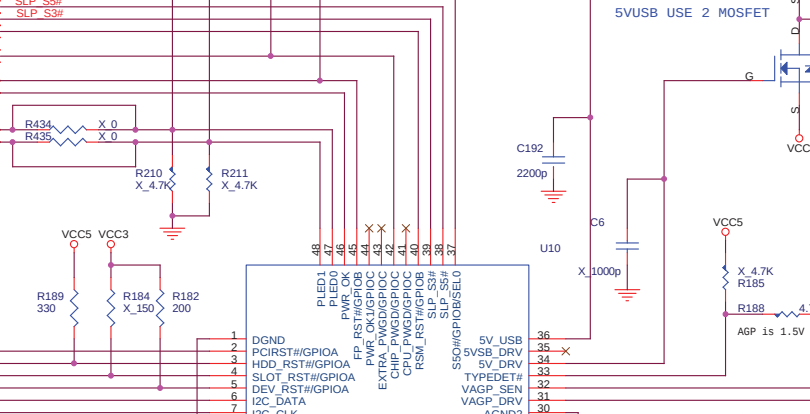
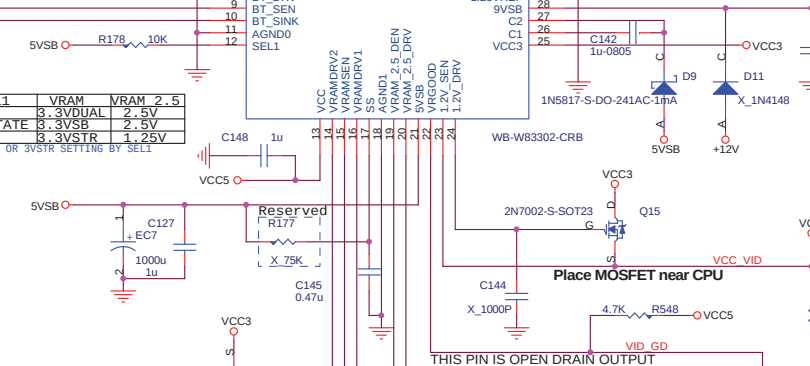
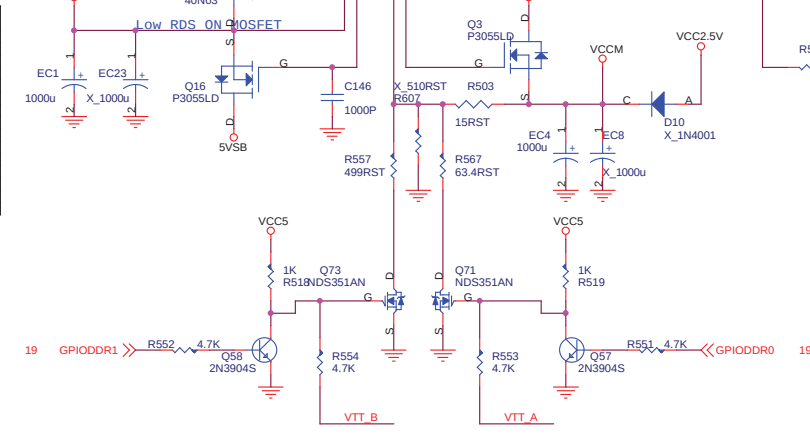
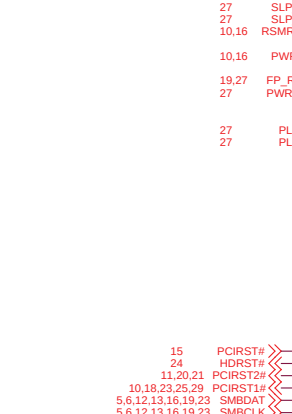
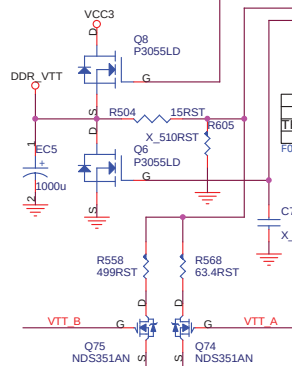
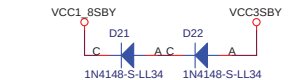
	S0	S3	S5
S3AUXSW#	1	0	1
PSON#	0	1	1
SLP_S5#	1	1	0
SLP_S3#	1	0	0

MICRO-STAR INT'L CO., LTD.		
Title ATX & F-panel & Audio port		
Size Document Number	Rev 5.0	
Custom Date: Friday, February 21, 2003	Sheet 27 of 32	

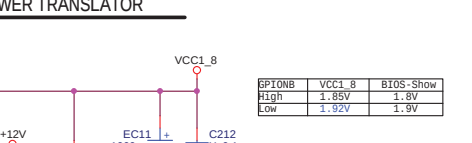
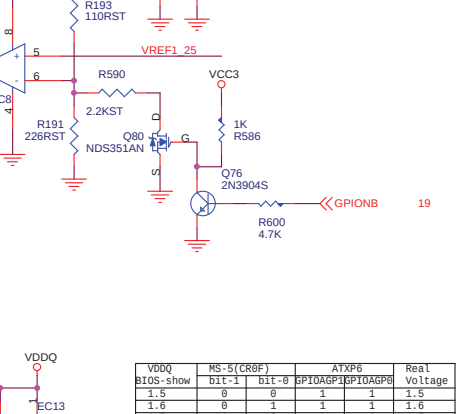
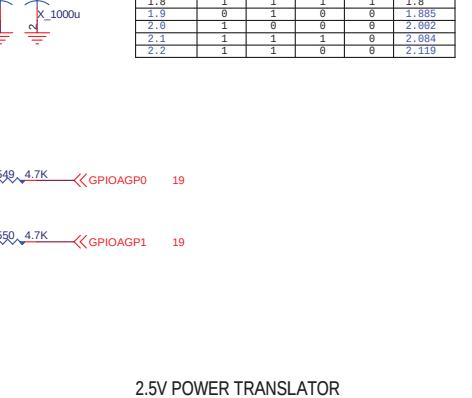
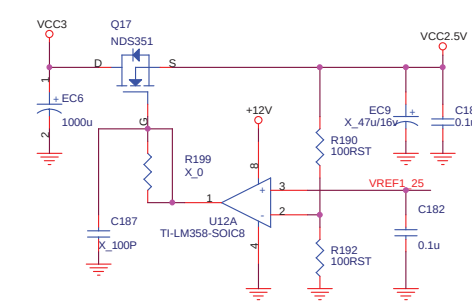
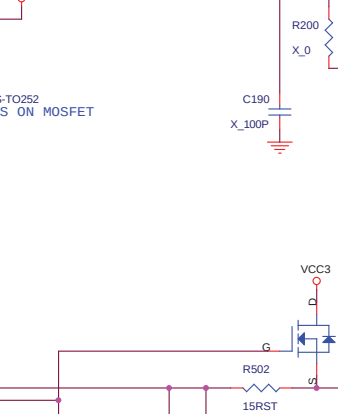
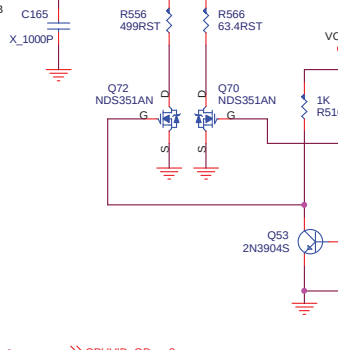
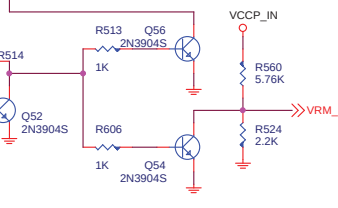
DDR_VTT	MS-5(CR10)	ATXP6	Real Voltage	
BIOS-show	bit-3	bit-2	SP1000R0FFSP1000R0	
1.25	0	0	1	1.25
1.275	0	0	0	1.275
1.3	0	1	1	1.3
1.325	0	1	0	1.325
1.35	1	0	1	1.35
1.375	1	0	0	1.375
1.4	1	1	1	1.4
1.425	1	1	0	1.425
1.45	0	0	1	1.4471
1.475	0	0	0	1.4722
1.5	0	1	0	1.489
1.525	0	1	0	1.5311
1.55	1	0	1	1.5629
1.575	1	0	0	1.5839
1.6	1	1	1	1.6289

MS-5(CR11) bit[1:0]=00(VTT training with VCCN)

MS-5(CR11) bit[1:0]=00(VTT tracing with VCCM)



VCCM	MS-5(CR10)	ATXP6	Real	
BIOS-show	bit-3	bit-2	bit-1	Voltage
2.5	0	0	1	2.5
2.55	0	0	0	2.5501
2.6	0	1	1	2.6
2.65	0	1	0	2.6521
2.7	1	0	1	2.7
2.75	1	0	0	2.7541
2.8	1	1	1	2.8
2.85	1	1	0	2.8501
2.9	0	0	1	2.8943
2.95	0	0	0	2.9444
3	0	1	1	3.0101
3.05	0	1	0	3.0622
3.1	1	0	1	3.1258
3.15	1	0	0	3.1799
3.2	1	1	1	3.2416



Serial ATA - SIS180 or PDC20376

15,20,21,23 AD[0..31] << ADI0_31I

15,20,21,23 C/BE#[3..0] << C/BE#[3..0I]

C/BE#3 4
C/BE#2 17
C/BE#1 29
C/BE#0 40

20,21,23 PERR# 26
15,20,21,23 SERR# 25

15,20,21,23 PAR 28
15,18,20,21,23 STOP# 24

15,20,21,23 DEVSEL# 22

15,20,21,23 TRDY# 21
15,20,21,23 IRDY# 19

15,18,20,21,23 FRAME# 18

AD25 R500 100 5

18 PREQ#6 121
18 PGNT#6 118

15,20,21 INTD# 117

18 SATAPCLK# 120

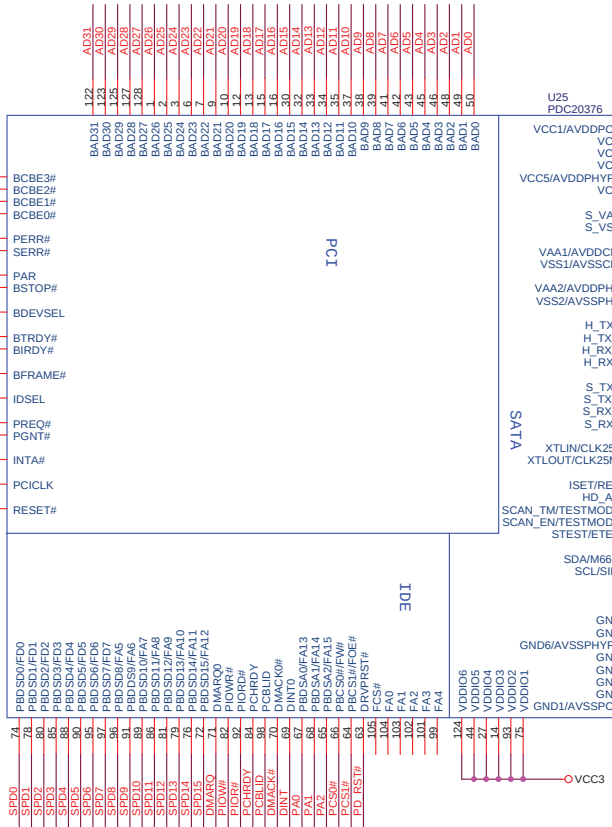
10,18,23,25 PCIRST1# 119

SATA:AD25

INTD#

PREQ#6

PGNT#6



VCC1_8

AVDDPCLK

VCC3

AVDDPHYPLL

VCC5/AVDDPHYPLL

VCC6

S_VAA2

S_VSS2

VAA1/AVDDCMP

VSS1/AVSSCMP

VAA2/AVDDPHY1

VSS2/AVSSPHY1

H_TX_P

H_TX_M

H_RX_M

H_RX_P

S_TX_P

S_TX_M

S_RX_M

S_RX_P

XTLI/CLK25M

XTLO/CLK25M

ISCT/REXT

HD_ACT

SCAN_TM/TESTMODE1

SCAN_EN/TESTMODE0

TEST/TEST

SDA/M6EN

SCL/SIRQ

GND8

GND7

GND6/AVSSPHYPLL

GND5

GND4

GND3

GND2

GND1/AVSSPCLK

VCC3

STX1+

STX1-

SRX1+

SRX1-

GND

HT+

HT-

GND

HR+

HR-

GND

STX2+

STX2-

SRX2+

SRX2-

GND

XTLI

XTLO

HDLED#

VCC3

AVSSPHYPLL

AVSSPCLK

AVSSPHYPLL

AVSSPCLK

AVSSPHYPLL

AVSSPCLK

AVSSPHYPLL

AVSSPCLK

AVSSPHYPLL

AVSSPCLK

AVSSPHYPLL

AVSSPCLK

AVSSPHYPLL

AVSSPCLK

AVSSPHYPLL

AVSSPCLK

AVSSPHYPLL

AVSSPCLK

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AVSSPCLK

AVSSPHYPLL

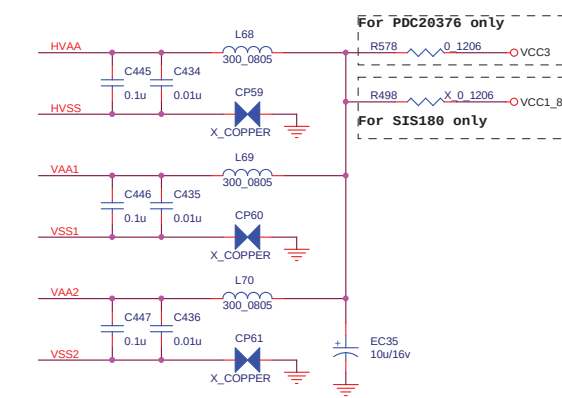
AVSSPCLK

AVSSPHYPLL

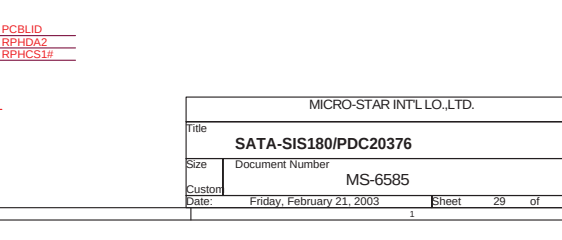
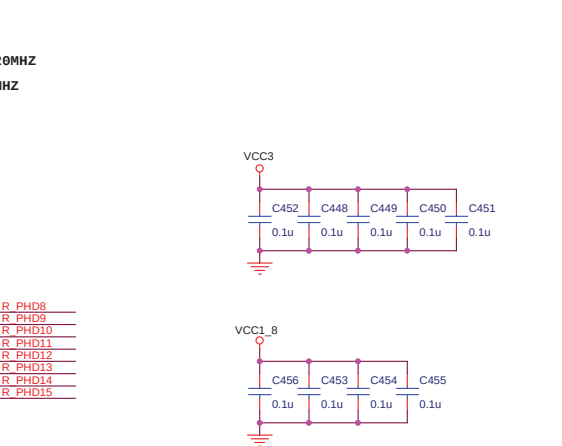
AVSSPCLK

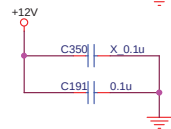
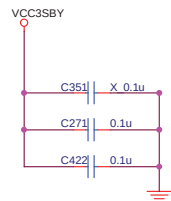
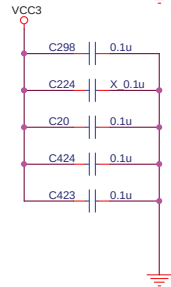
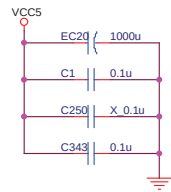
AVSSPHYPLL

AVSSPCLK

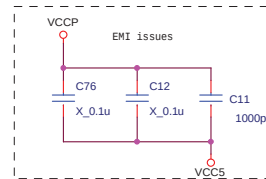
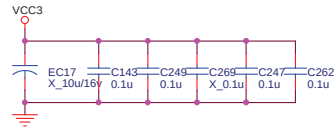
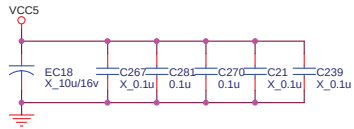
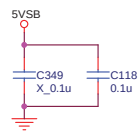
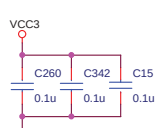
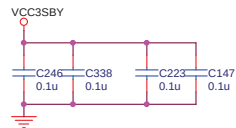
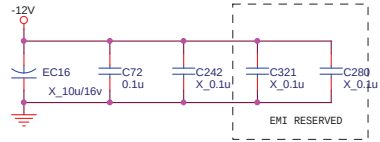
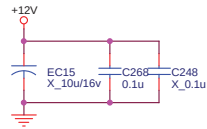


These Power & Gnd trace width should be 16mils.

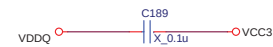
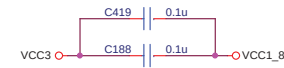
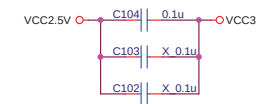
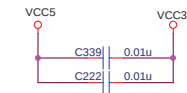
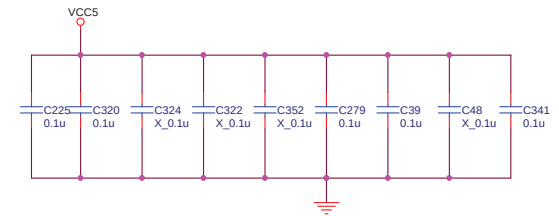
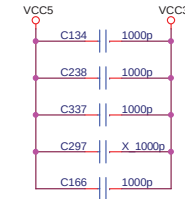




System Decoupling Capacitors



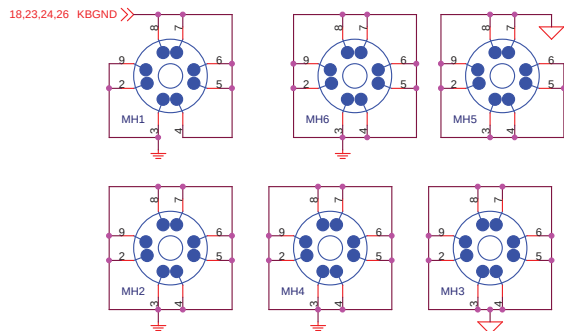
High Freq. return current decoupling



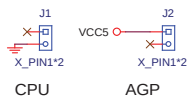
EMI issue

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Decoupling Capacitor			
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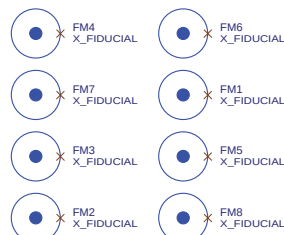
PCB OTHER COMPONENT



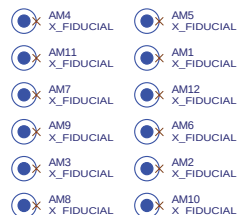
FOR TEST



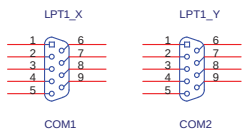
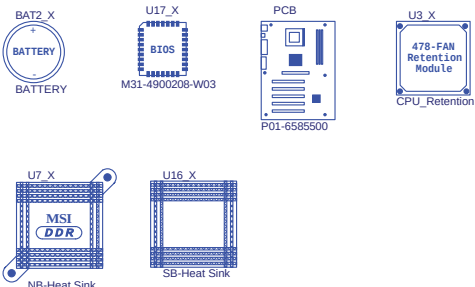
FIDUCIALS



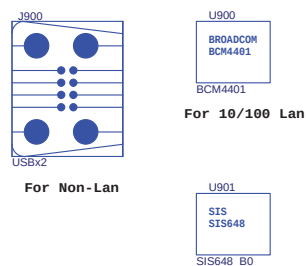
CHIP FIDUCIALS



MANUAL PART



OPTION PART



GPIO SPEC. & PCI ROUTING

SB(SIS963) GPIO

GPIO	PIN	Function Description
GPIO0	V2	VCORE-ID0
GPIO1	T8	VCORE-ID1
GPIO2	T4	Thermal detect from H/M OVT#(83697HF)
GPIO3	T6	VCORE-ID2
GPIO4	W1	VCORE-ID3
GPIO5	U5	Default for LANREQ# (option for PCIREQ#5)
GPIO6	U4	Default for LANGNT# (option for PCIGNT#5)
GPIO7	C4	VCORE-ID5
GPIO8	C14	Wake on RING event (Active Low)
GPIO9	E6	VCORE-ID4
GPIO10	B3	DLED1
GPIO11	F5	DLED2
GPIO12	D4	DLED3
GPIO13	B1	Active over VCORE function (Active Low)
GPIO14	E5	DLED4
GPIO15	E13	Keyboard Data
GPIO16	A16	Keyboard Clock
GPIO17	D13	Mouse Data
GPIO18	B15	Mouse Clock
GPIO19	A1	Programming for "SMBCLK"
GPIO20	B2	Programming for "SMBDATA"

ATXP8 GPIO

GPIO	PIN	Function Description	NOTE
GPIO0	10	CPU_VCORE ADJUST	3-bit,8-level(with PWM) 0.1 increments(1.6~2.3)
GPIO1	11	CPU_VCORE ADJUST	
GPIO2	12	CPU_VCORE ADJUST	
GPIO3	2	AGP_POWER ADJUST	2-bit,8-level(with MS-5)
GPIO4	3	AGP_POWER ADJUST	0.1 increments
GPIO5	27	DDR_POWER ADJUST	2-bit,16-level(with MS-5) 0.05 increments(2.5~3.2)
GPIO6	26	DDR_POWER ADJUST	
GPIO7	25	NB1.8V POWER ADJUST	
			1 bit ,1.8V/1.9V

PCI Config.

DEVICE	INT Pin	IDSEL
PCI Slot 1 PREQ#0	INTB# INTC# INTD# INTA#	AD17
PCI Slot 2 PREQ#1	INTC# INTD# INTA# INTB#	AD18
PCI Slot 3 PREQ#2	INTD# INTA# INTB# INTC#	AD19
PCI Slot 4 PREQ#3	INTA# INTB# INTC# INTD#	AD20
PCI Slot 5 PREQ#4	INTB# INTC# INTD# INTA#	AD21
PCI Slot 6 PREQ#5	INTC# INTD# INTA# INTB#	AD22

* PREQ#4:option for MS1REQ#

LAN(Broadcom):

AD26
INTC#
LANREQ#(option for PREQ#5)

S-ATA(SIS180):

AD25
INTD#
PREQ#6

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Title			
Revision History			
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