

MS-6787 Ver : 10D

VIA P4M266A + VT8235 Chipset

CPU:
P4 Socket 478

System Chipset:
VIA P4M266A + VT8235

On Board Chipset:
LPC Super I/O -- W83697HF
Lan : Via PHY VT6103

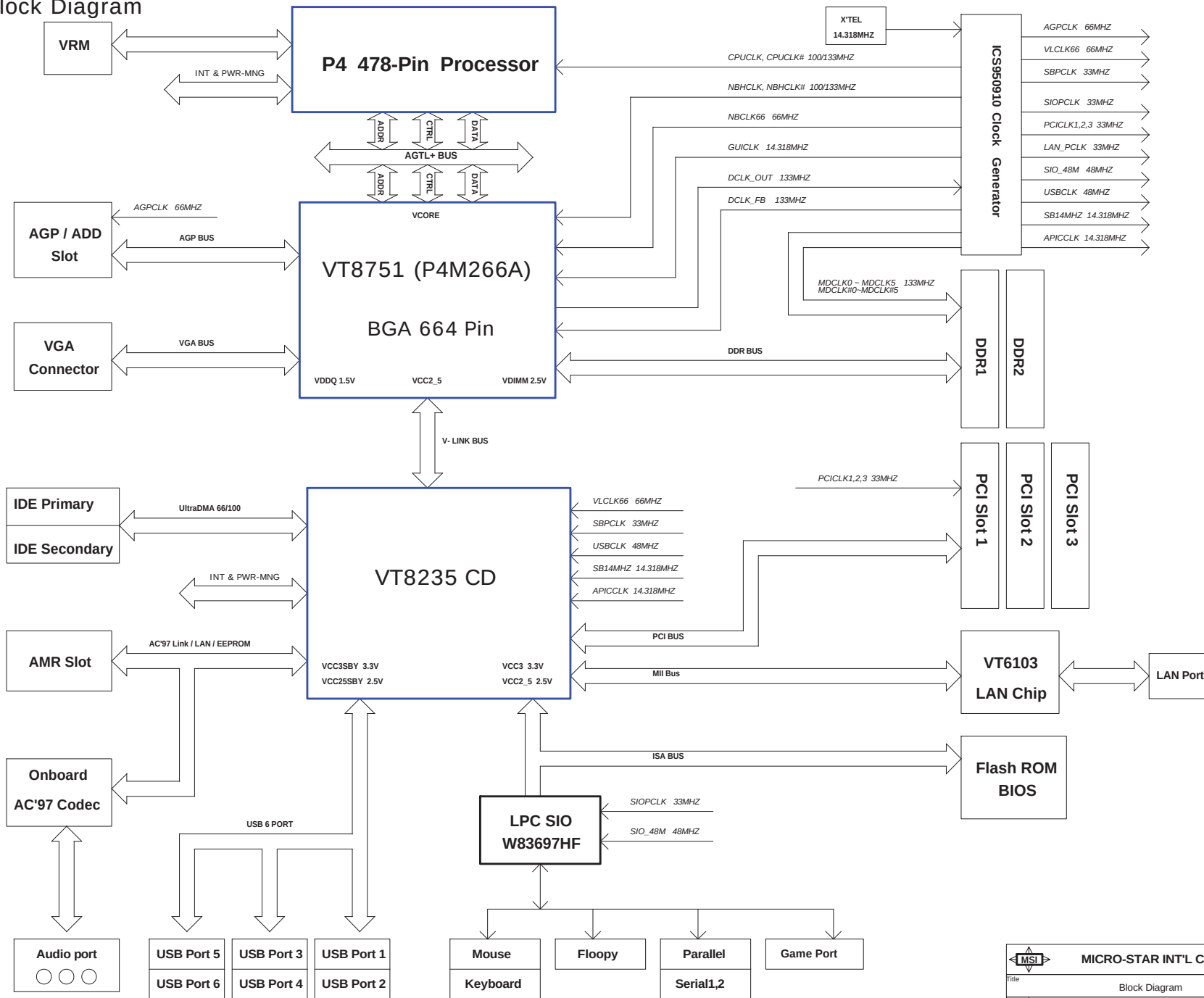
Expansion Slots:
AGP 3.0 Slot * 1
DDR Slot * 2
PCI 2.2 Slot * 3
CNR Slot * 1

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MODEL Config.	ORCAD Config.	Function	Option	ERP Number
MS6787 STD	cfg6787-LAN	STD	STD	601-6787-020

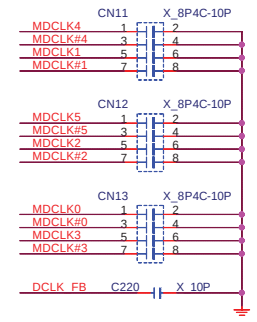
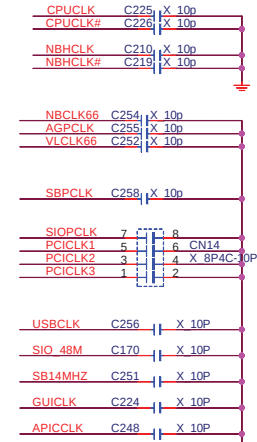
		Micro-Star	
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Block Diagram





Pull-Down Capacitors



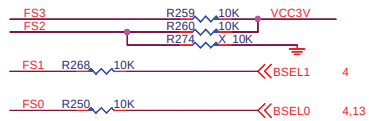
used only for EMI issue
Trace less 0.2"

Shut Source Termination Resistors

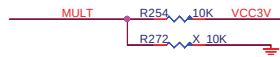
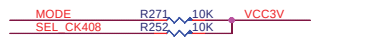


Trace less 0.2" 49.9ohm for 50ohm M/B impedance

CLOCK STRAPPING RESISTORS



FS3	FS2	FS1	FS0	FSB (MHz)
1	1	0	0	100 MHz
1	1	0	1	133 MHz
1	1	1	0	200 MHz
1	1	1	1	166 MHz



MULT	Rr	Iref	Ioh	Voh
0	221	5.00mA	4*Iref	1.0V
1	475	2.32mA	6*Iref	0.7V

DCLK4	MDCLK4
DCLK#4	MDCLK#4
DCLK1	MDCLK1
DCLK#1	MDCLK#1

DCLK5	MDCLK5
DCLK#5	MDCLK#5
DCLK2	MDCLK2
DCLK#2	MDCLK#2

DCLK0	MDCLK0
DCLK#0	MDCLK#0
DCLK3	MDCLK3
DCLK#3	MDCLK#3



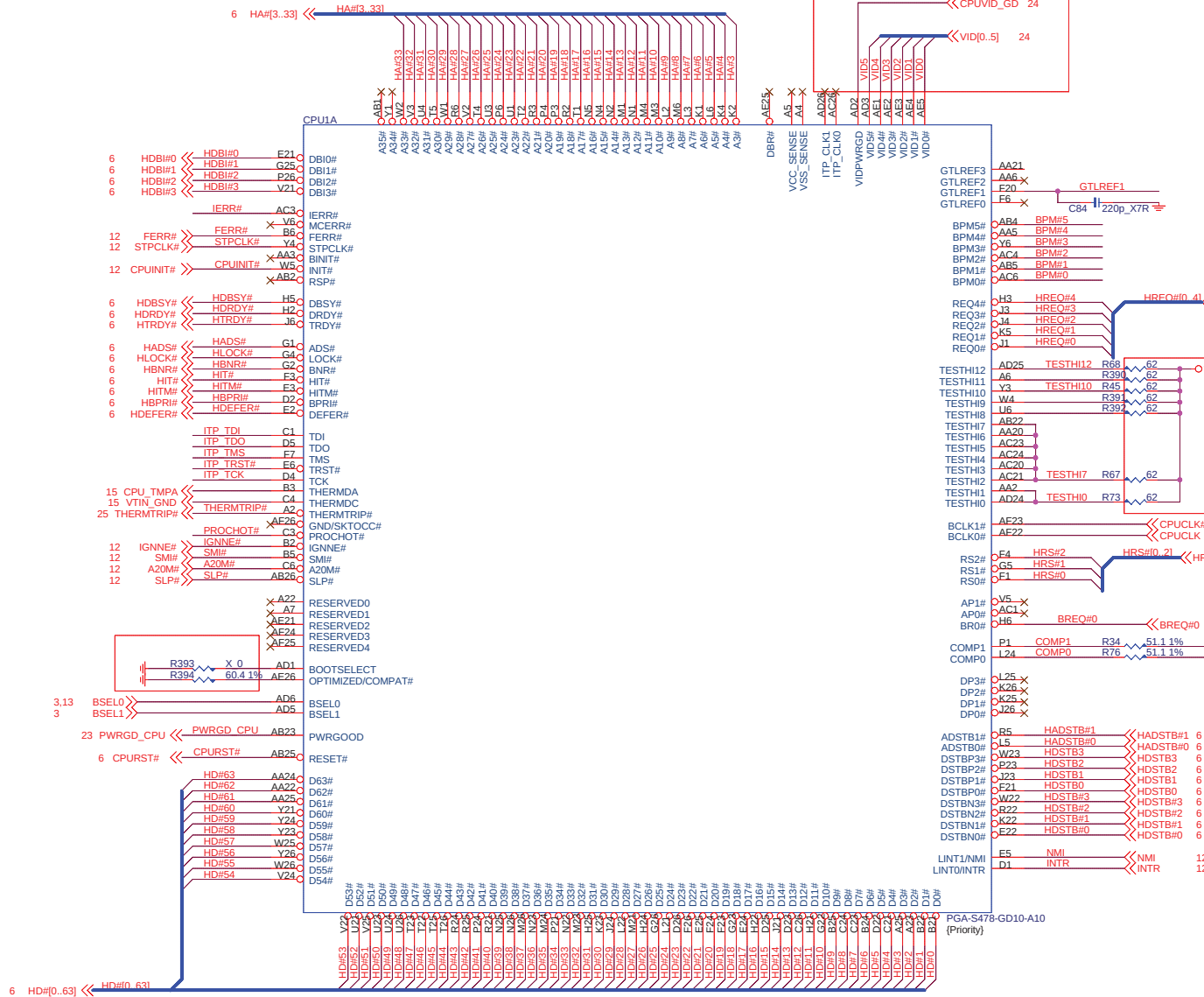
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Clock Generator

MS-6787

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CPU SIGNAL BLOCK

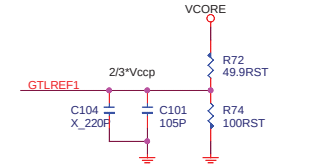


VIDPWRGD DC Specifications

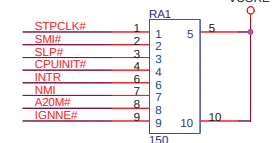
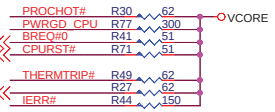
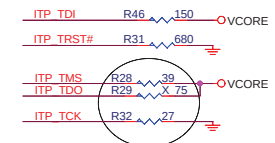
	Min	Typ	Max
VIL			0.3
VIH	0.9		

It must route to the enable pin of PWM and CK-409.
VIDGD to Vccp delay time is from 1ms to 10ms.
VIDGD rising time is 150ns.

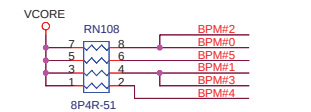
CPU GTL REFERENCE VOLTAGE BLOCK



CPU ITP BLOCK

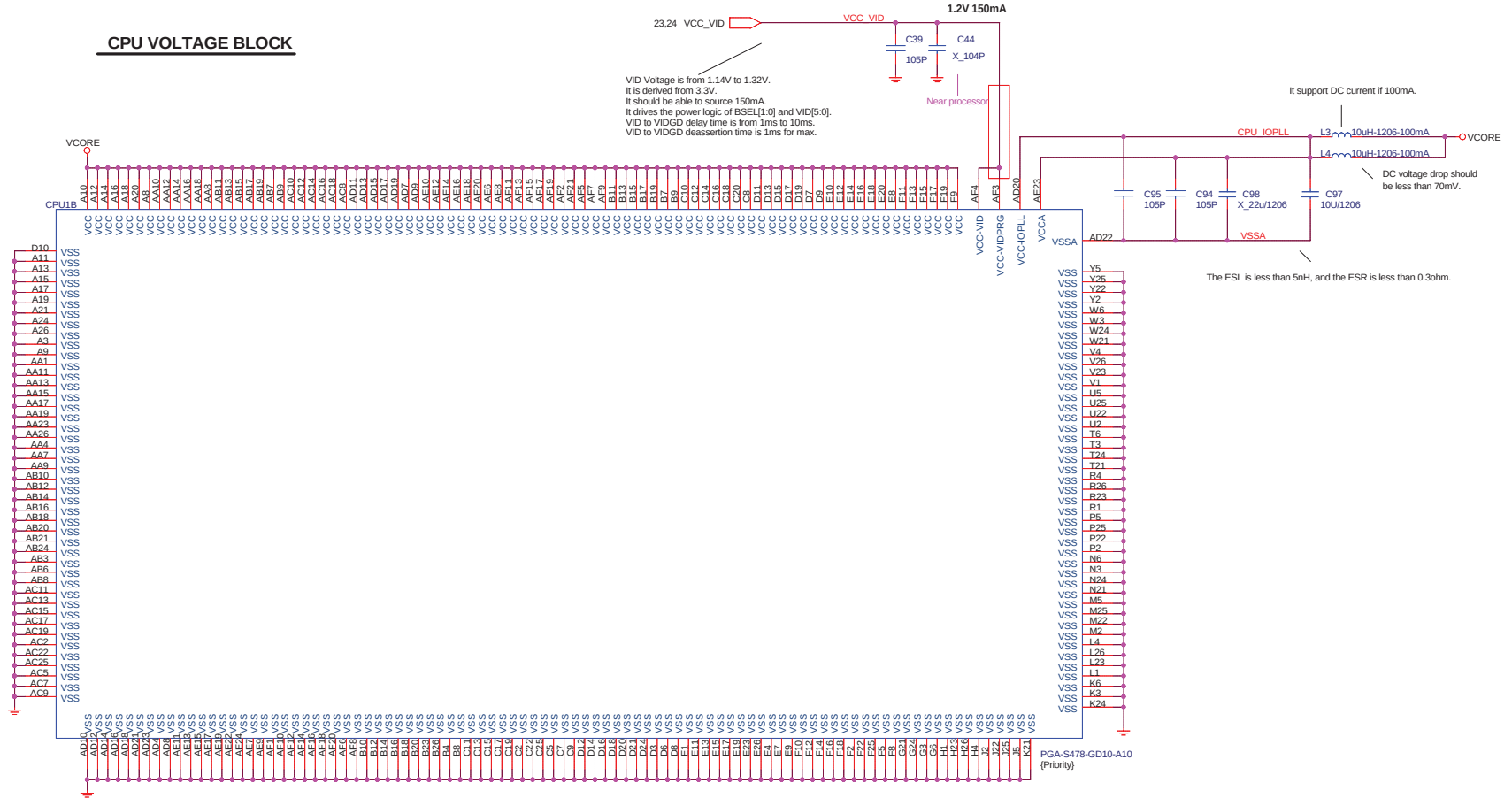


CPU STRAPPING RESISTORS

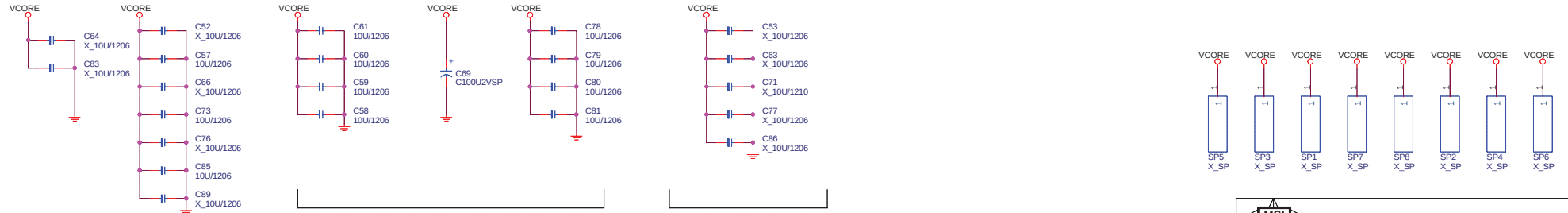


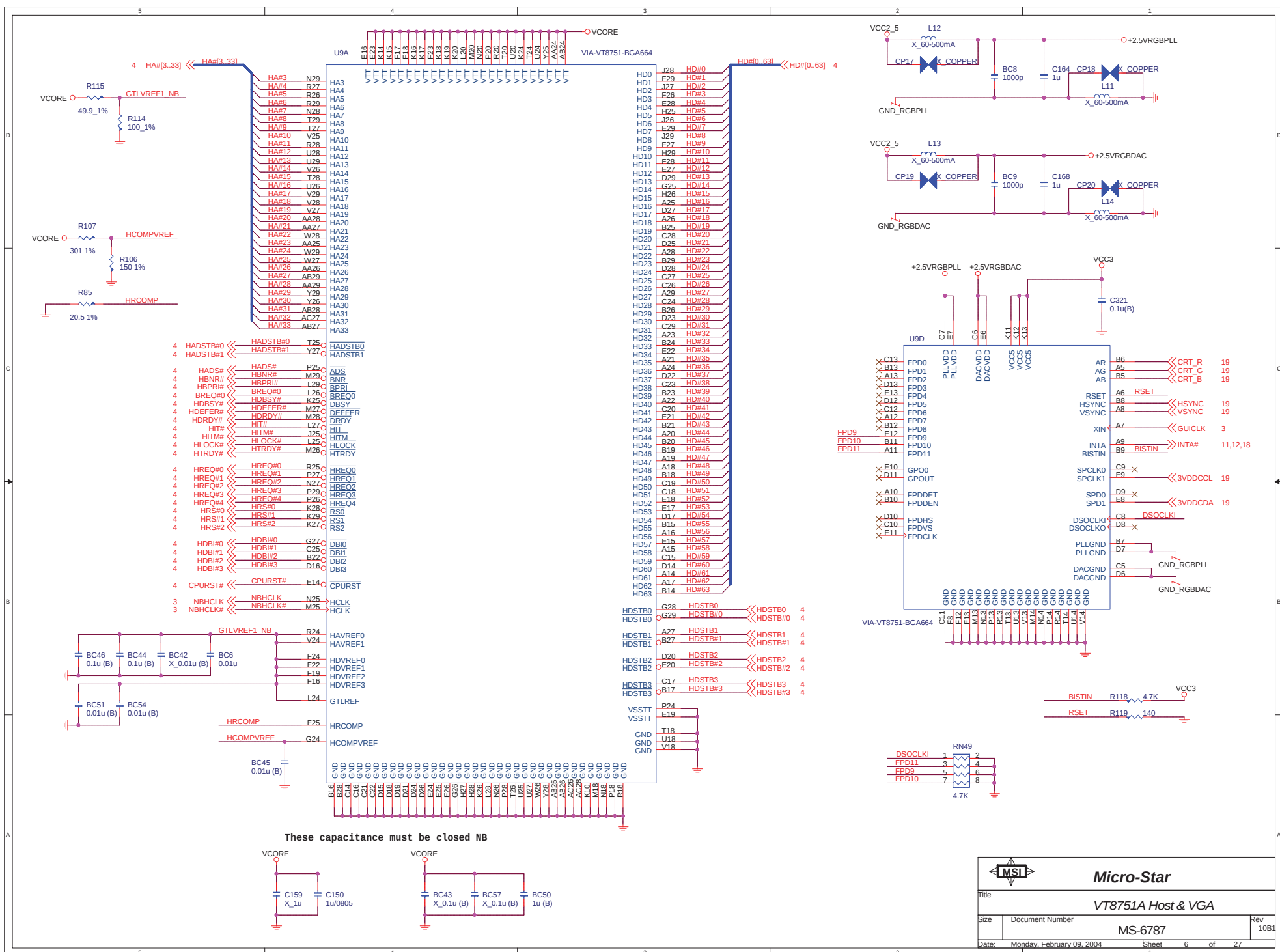
Micro-Star			
Title: CPU Socket 478 part1			
Size:	Document Number:	Rev: 10B1	
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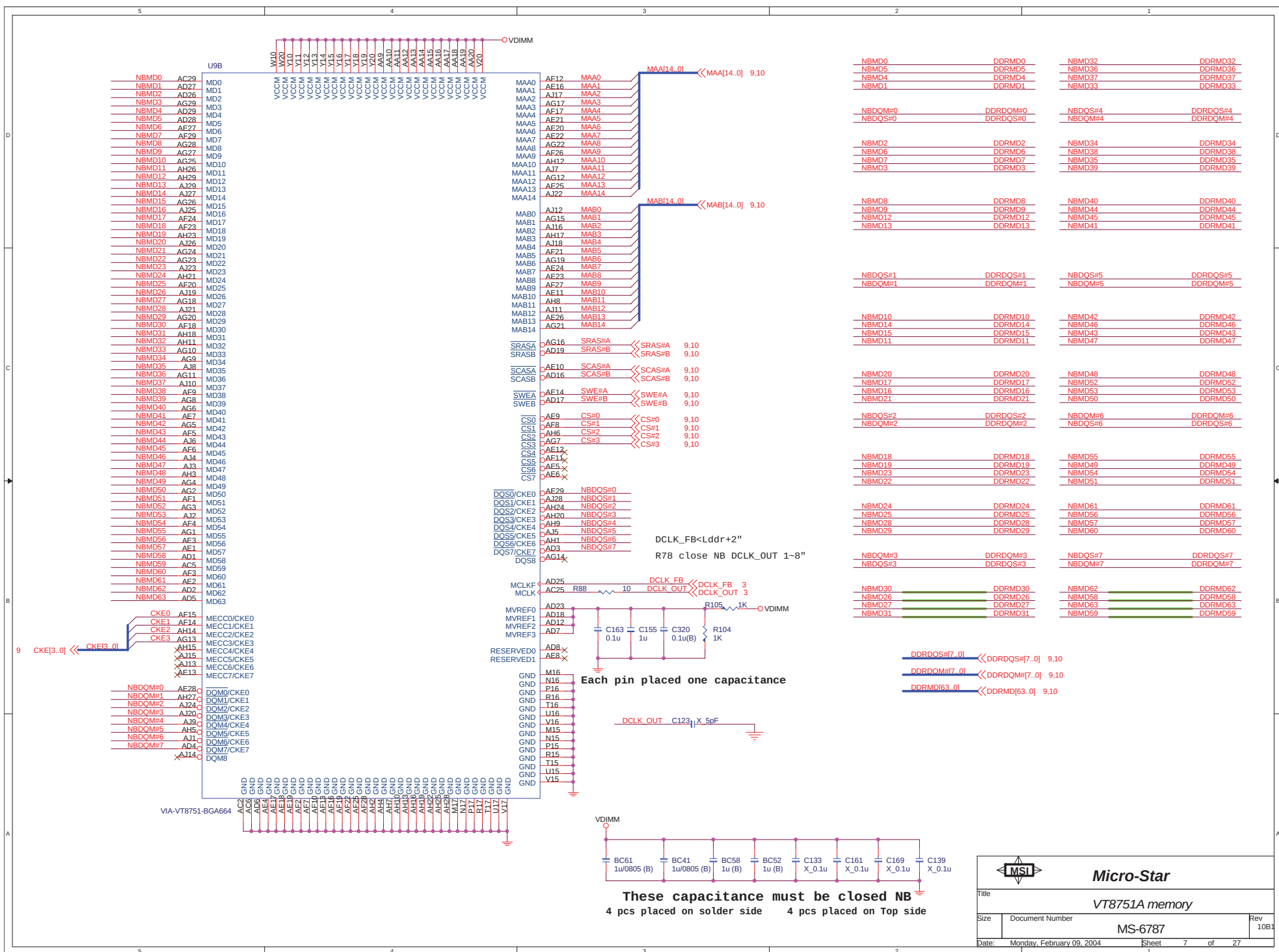
CPU VOLTAGE BLOCK

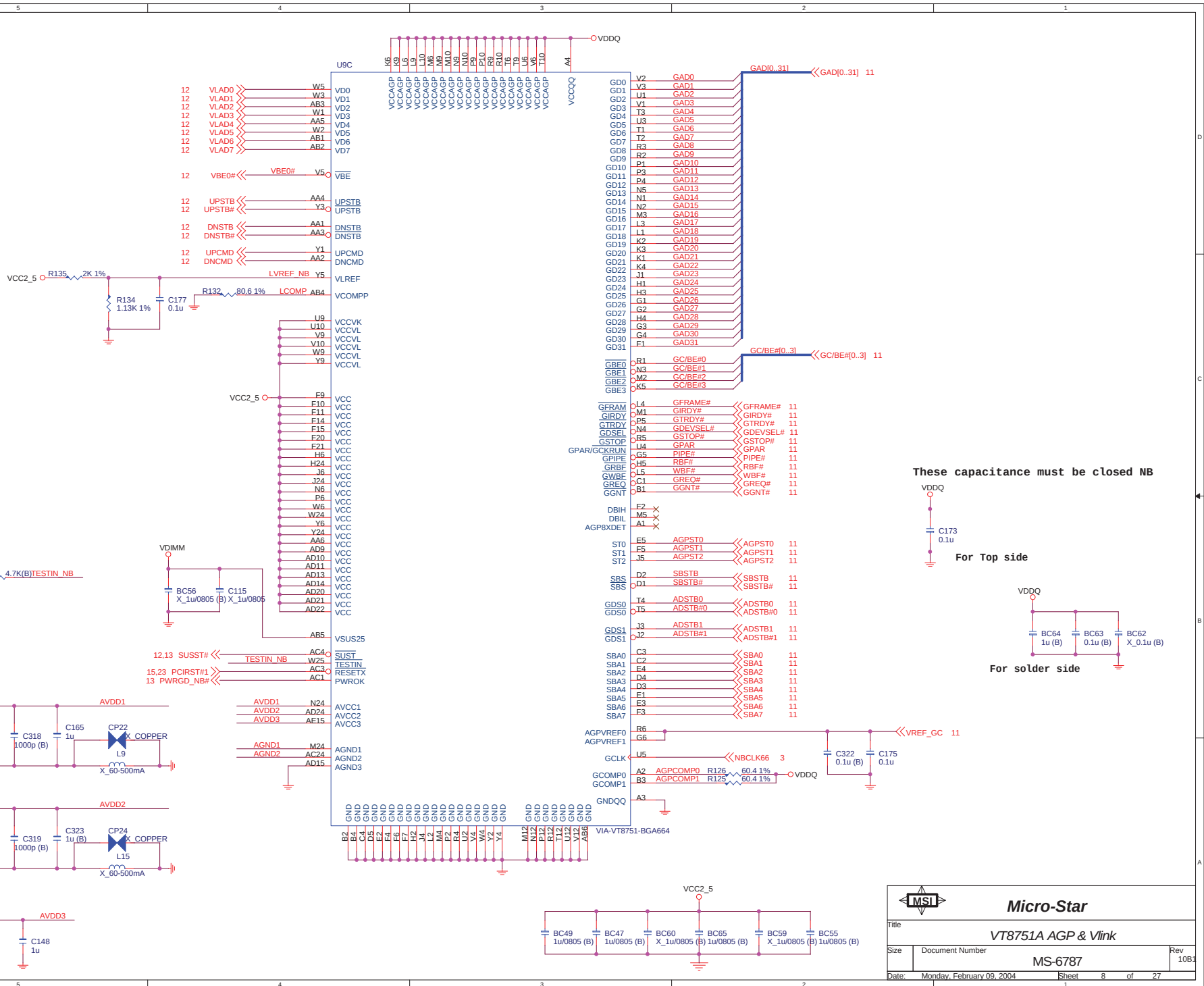


CPU DECOUPLING CAPACITORS





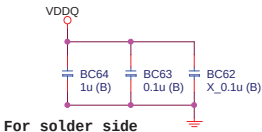




These capacitance must be closed NB



For Top side



For solder side

**Micro-Star**

Title

VT8751A AGP & Vlink

Size

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Date

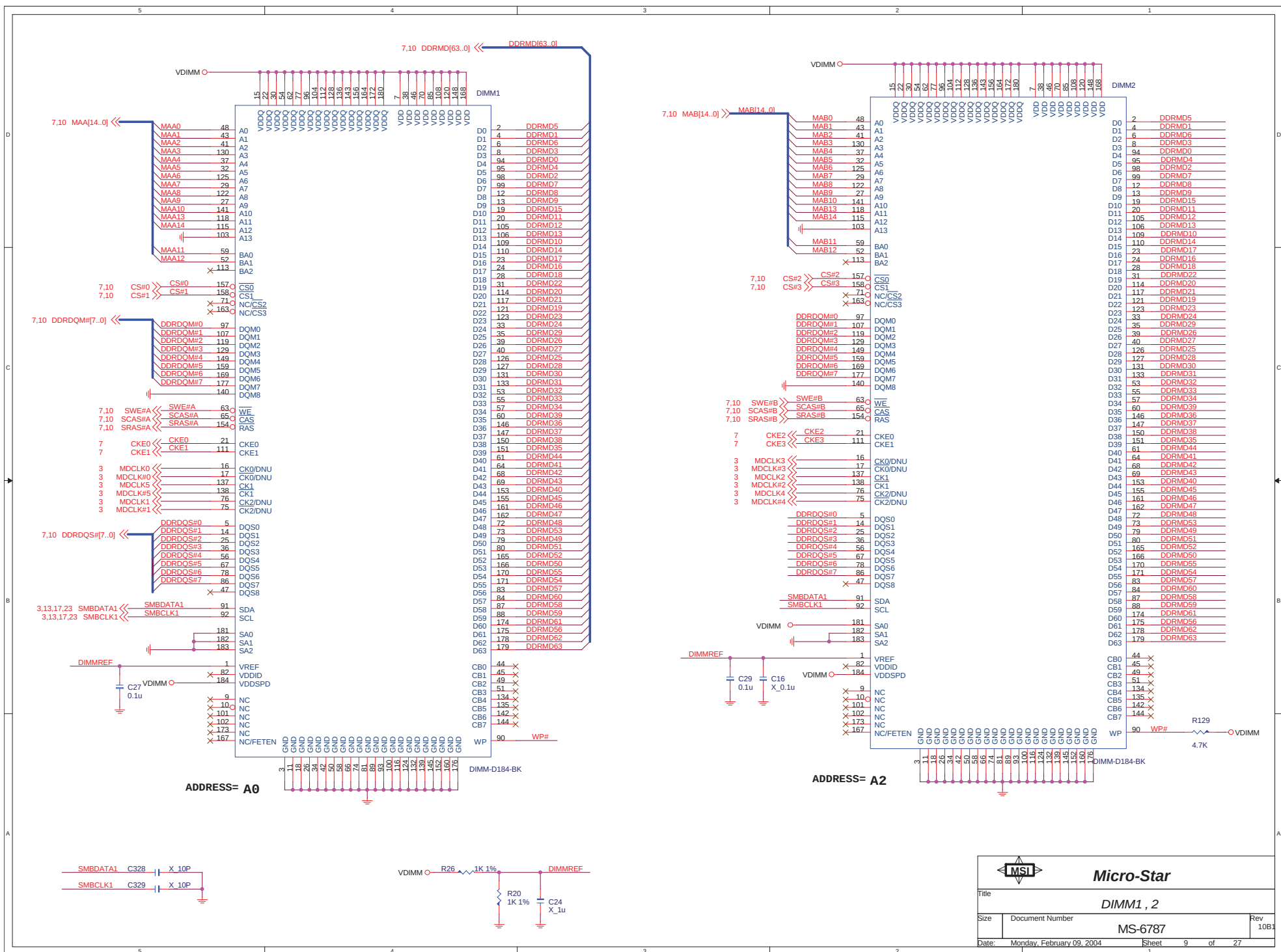
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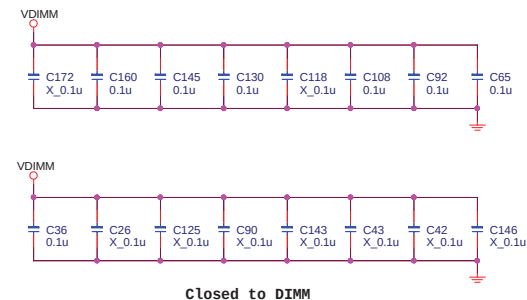
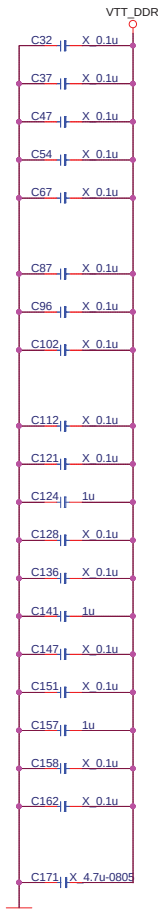
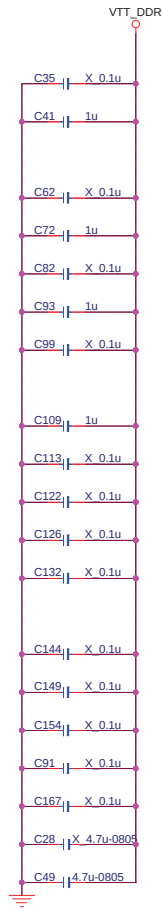
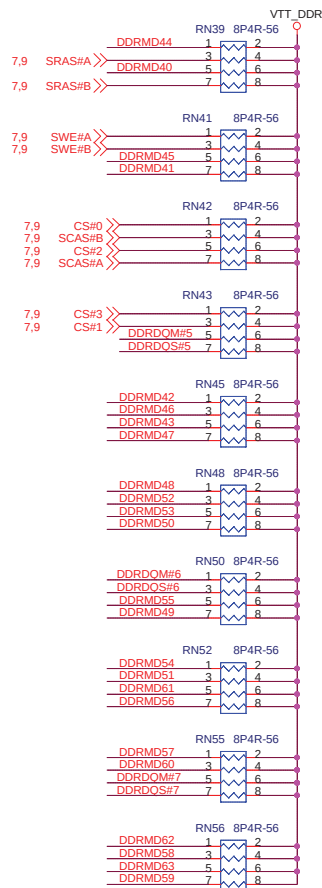
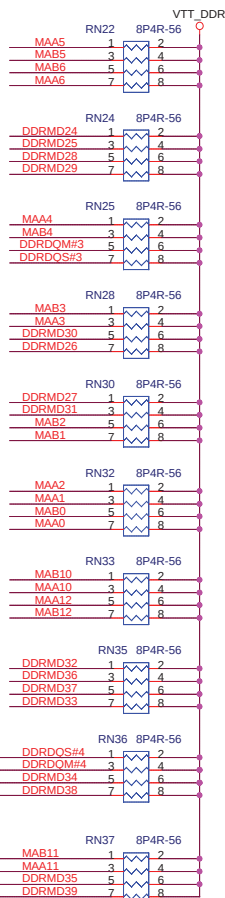
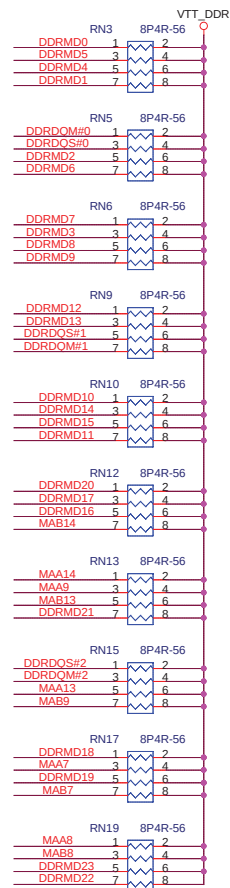
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DDRMD[63..0] <<DDRMD[63..0] 7,9
DDRQDM#7..0 <<DDRQDM#7..0 7,9
DDRQDS#7..0 <<DDRQDS#7..0 7,9

MAA[14..0] >>MAA[14..0] 7,9

MAB[14..0] <<MAB[14..0] 7,9

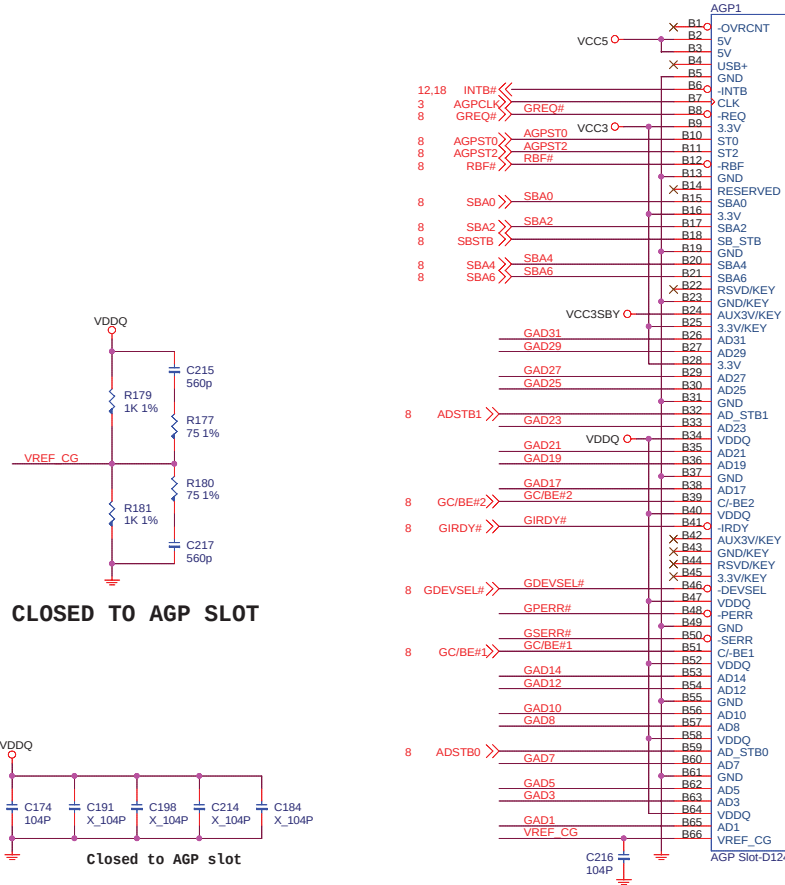


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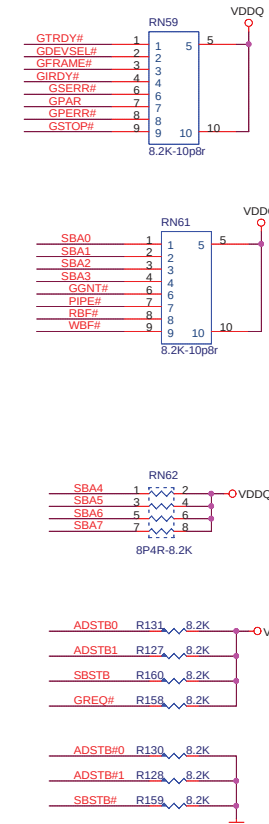
Title			DDR terminator
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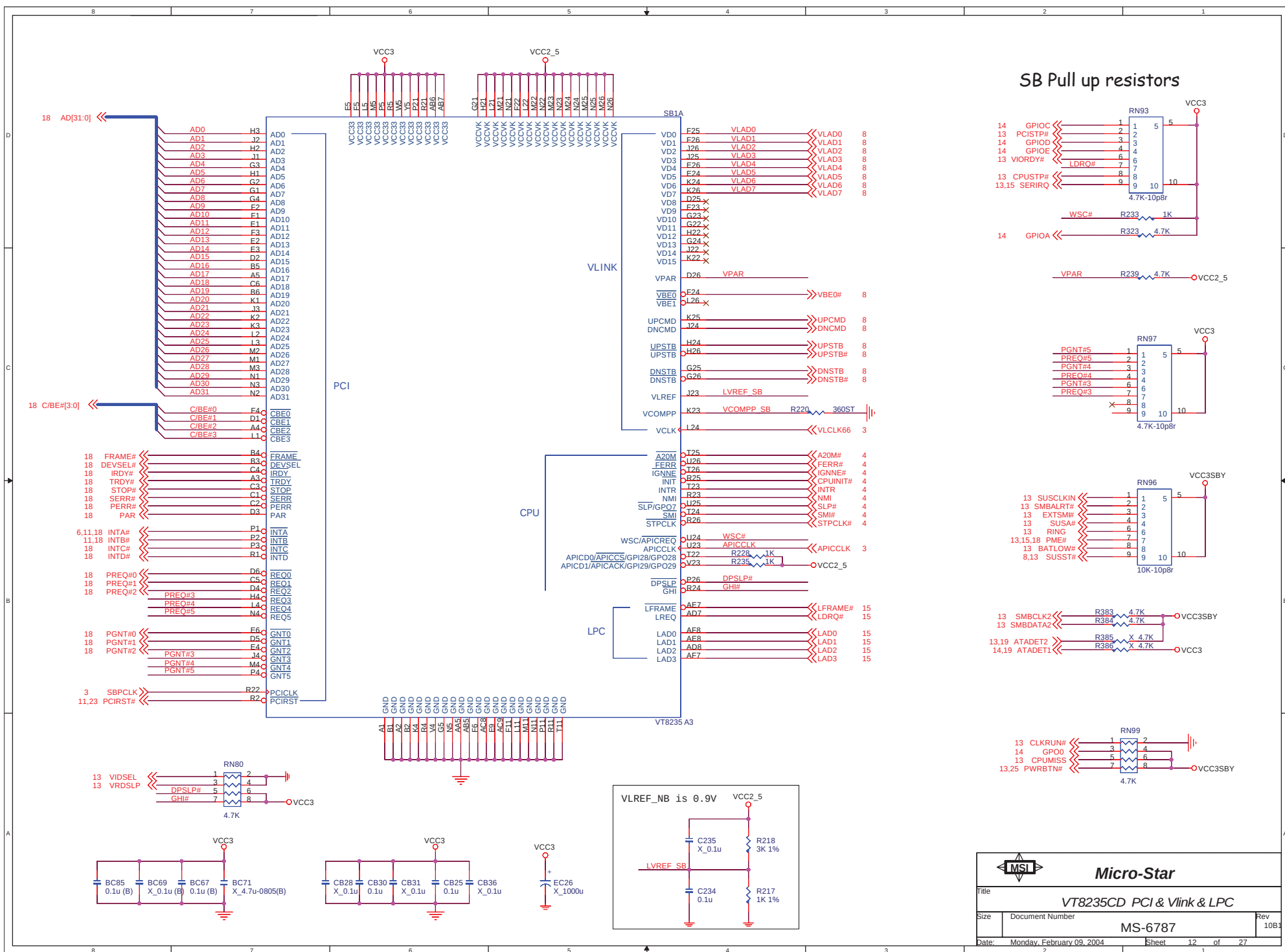
AGP 1.5V 4X/8X SLOT(AGP VER:3.0)

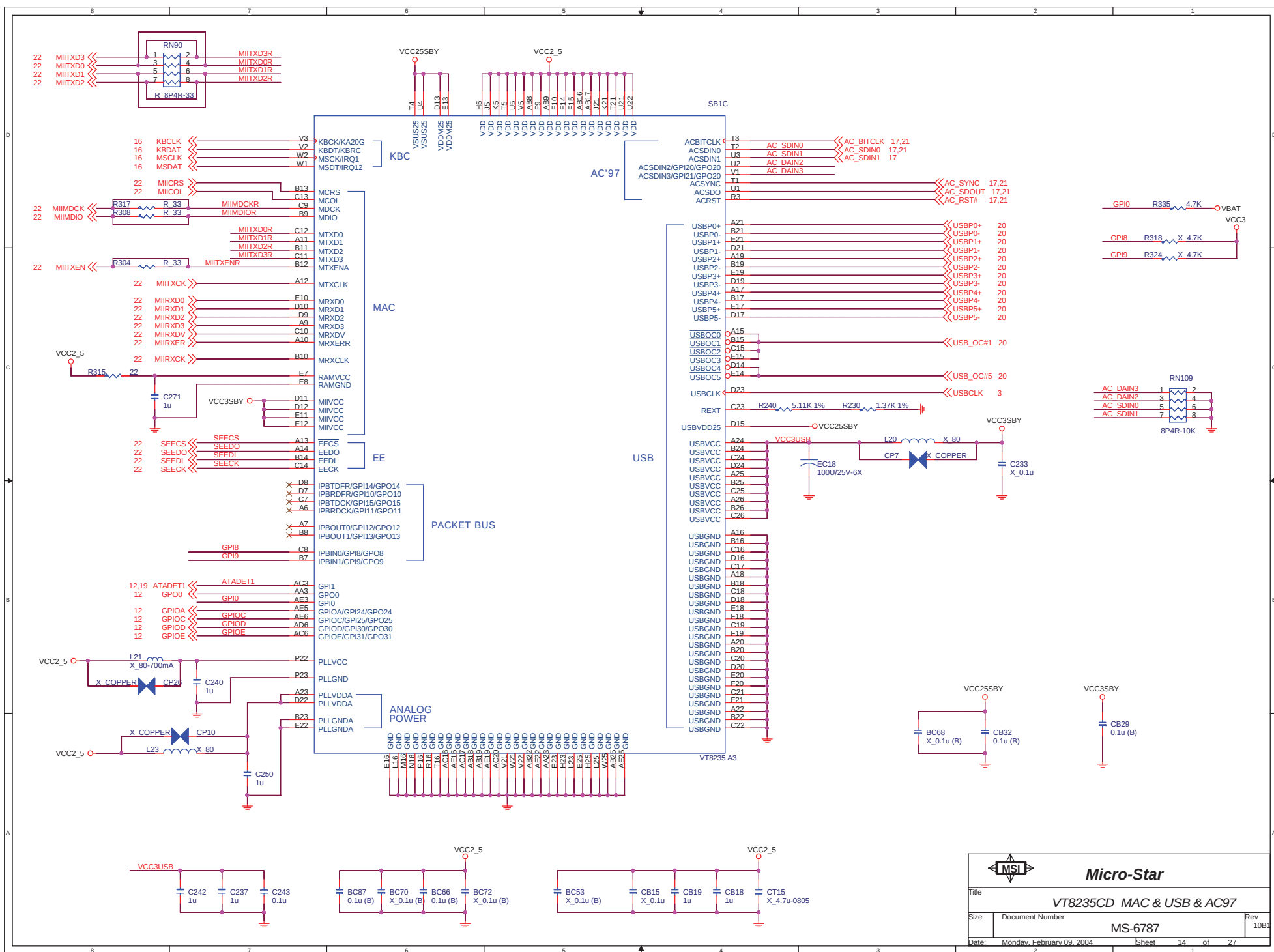
VCC5 = 60mils trace / 15 mils space

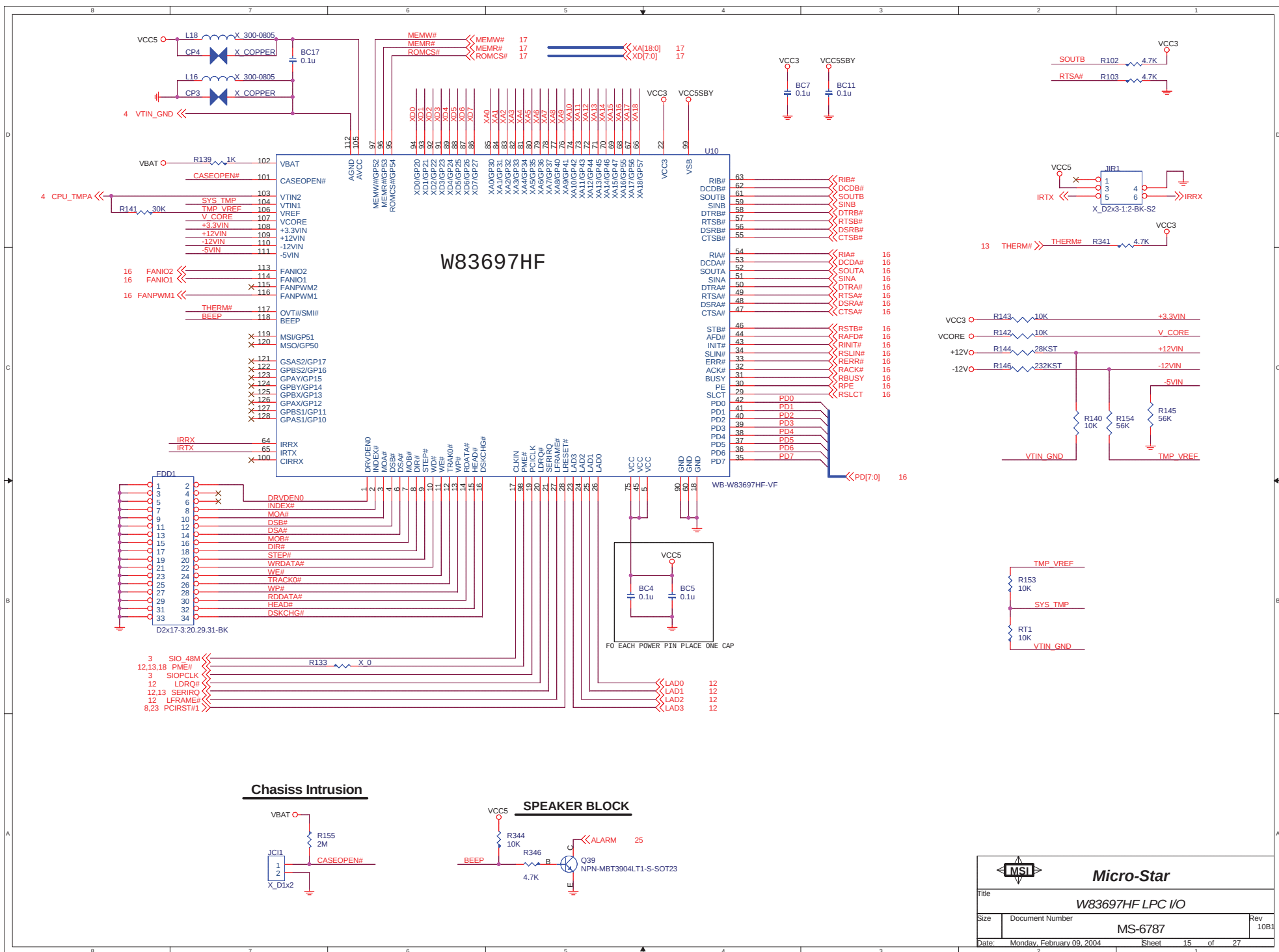


AGP TERMINATION RESISTORS

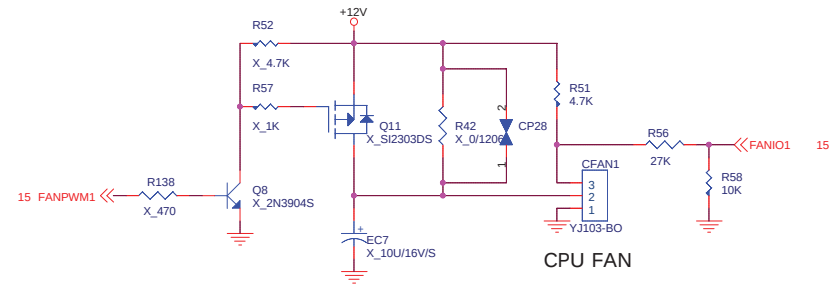
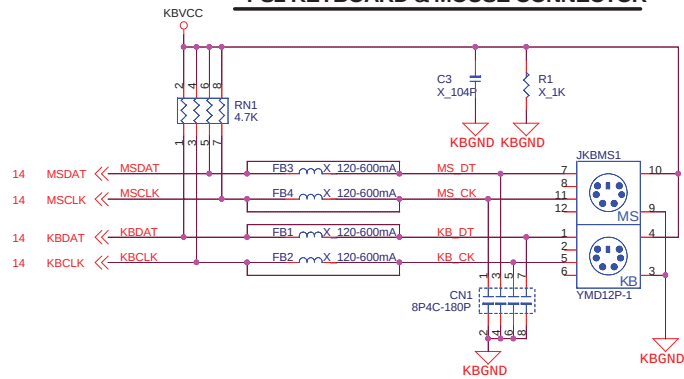




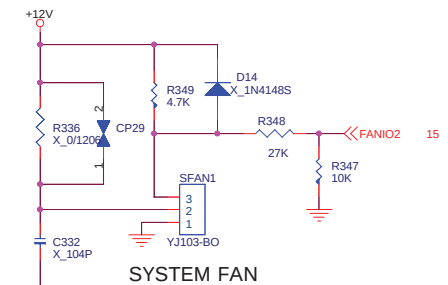
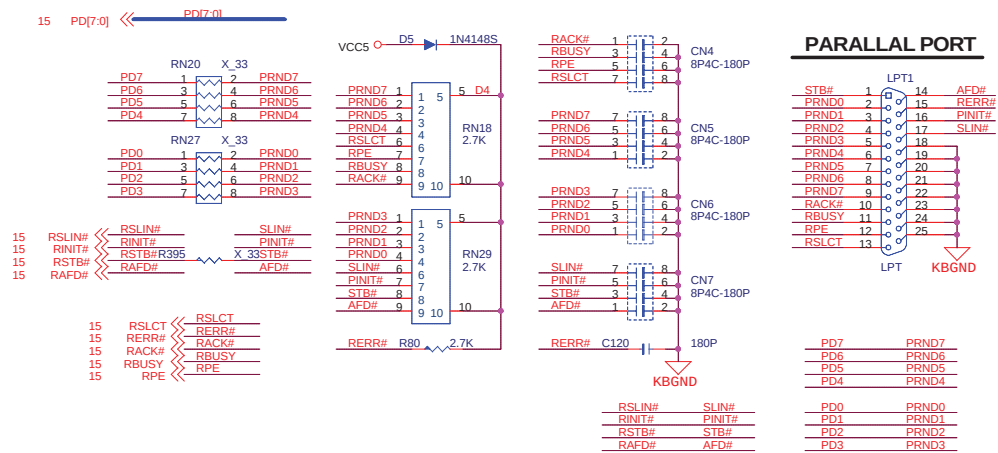




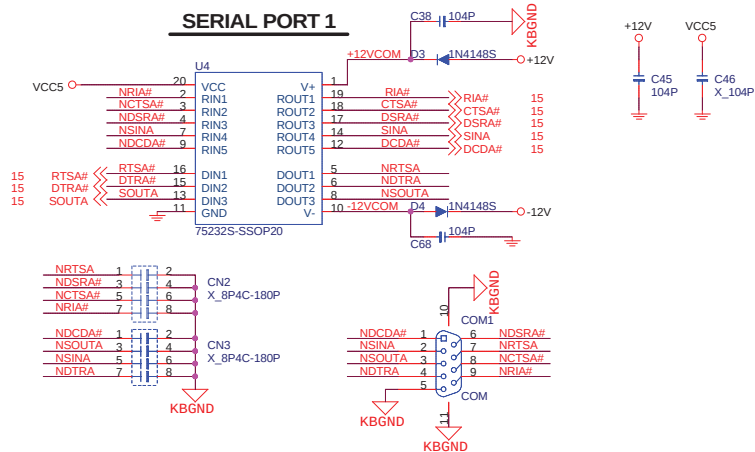
PS2 KEYBOARD & MOUSE CONNECTOR



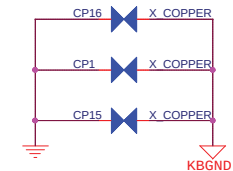
PARALLAL PORT



SERIAL PORT 1



EMI

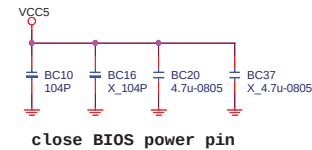
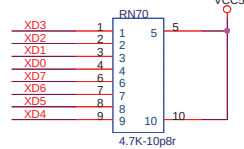
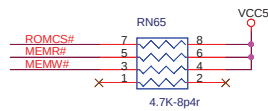
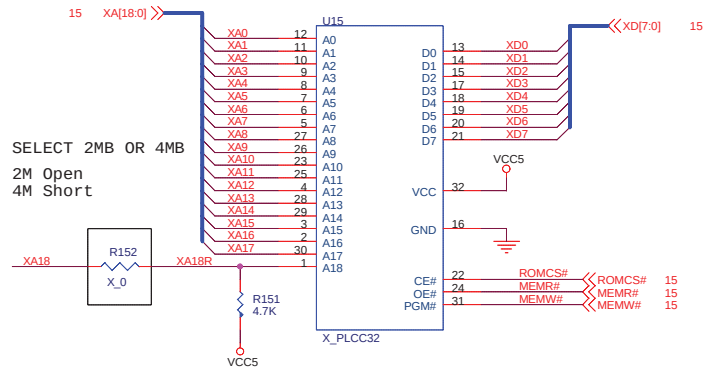


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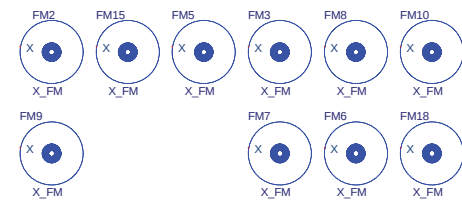
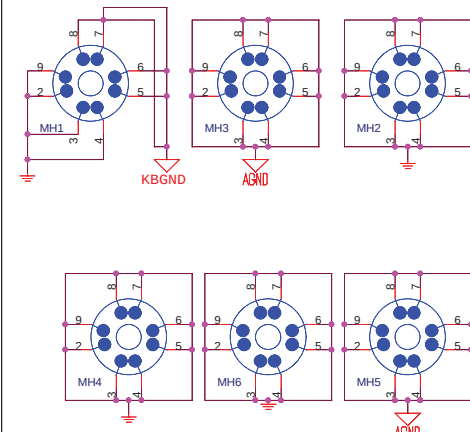
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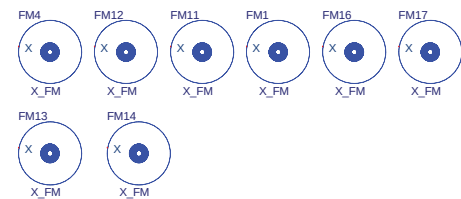
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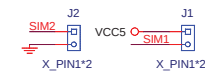
Mounting Holes



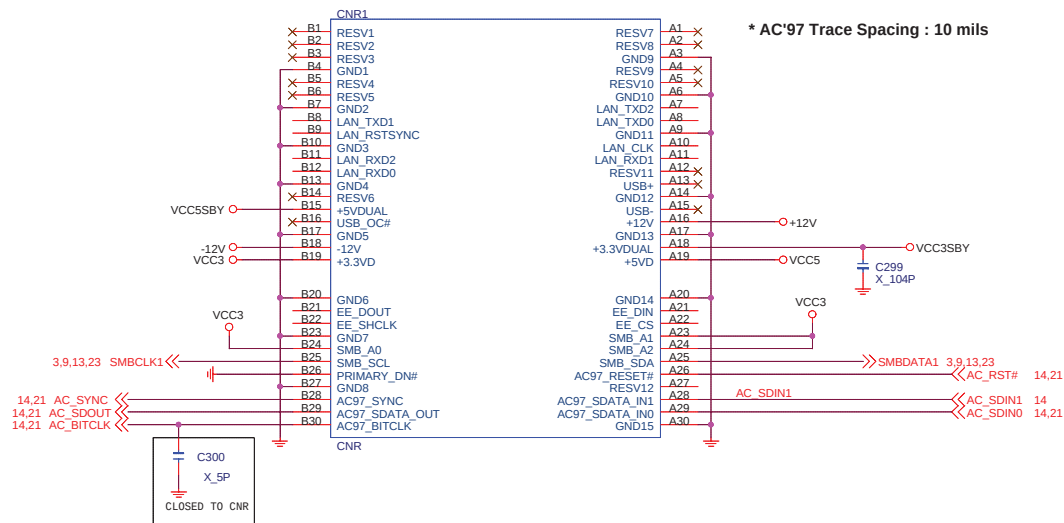
Optics Orientation Holes



Simulation

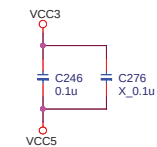
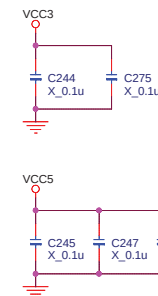
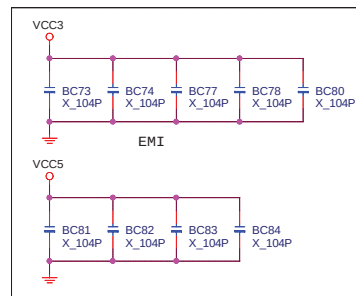
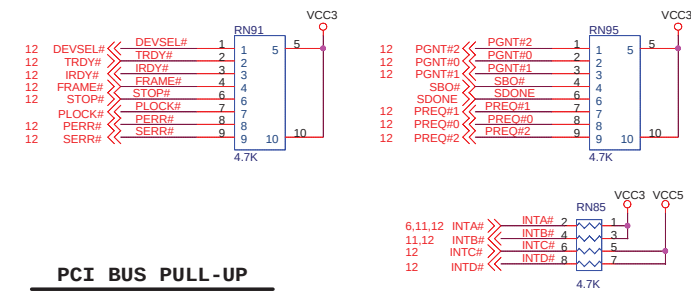
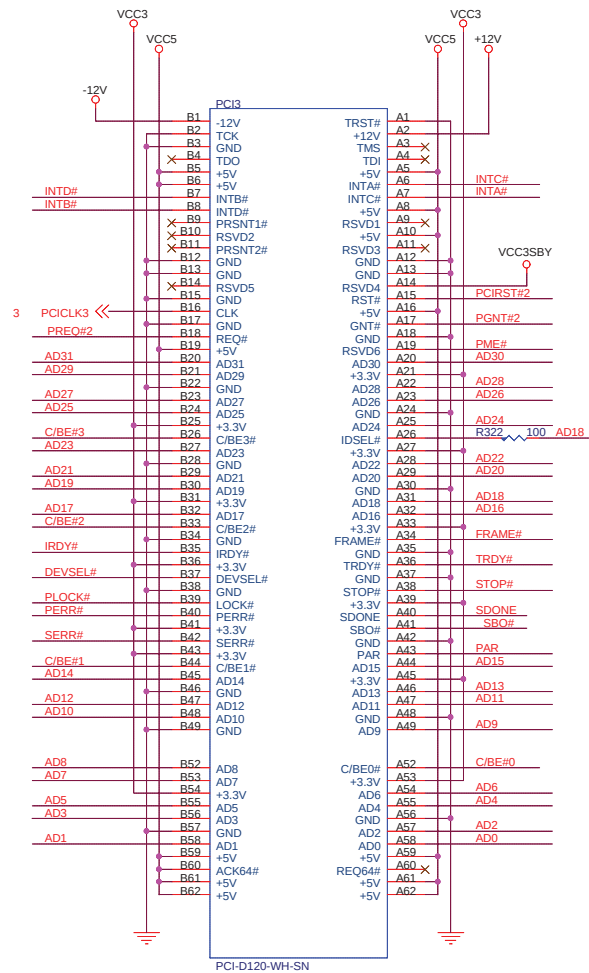
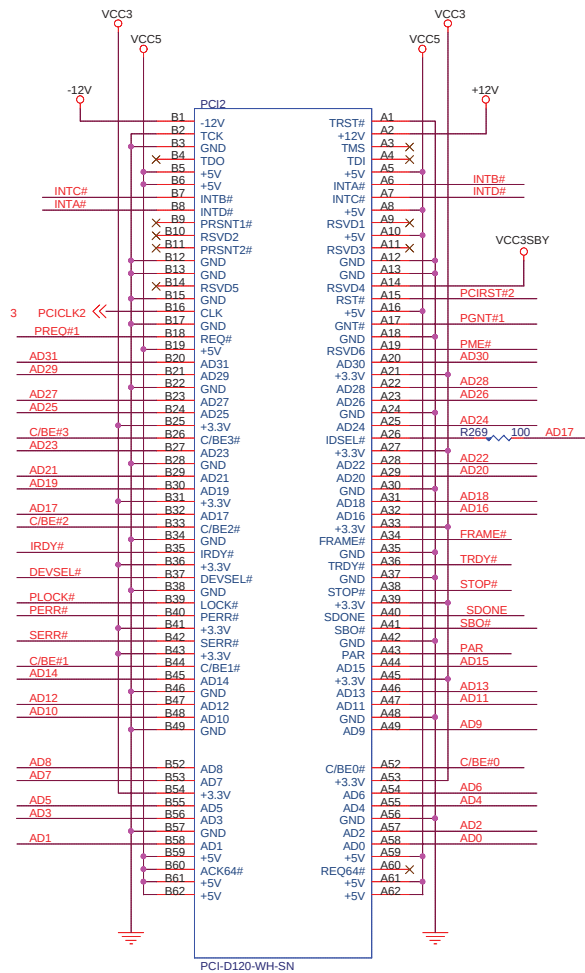
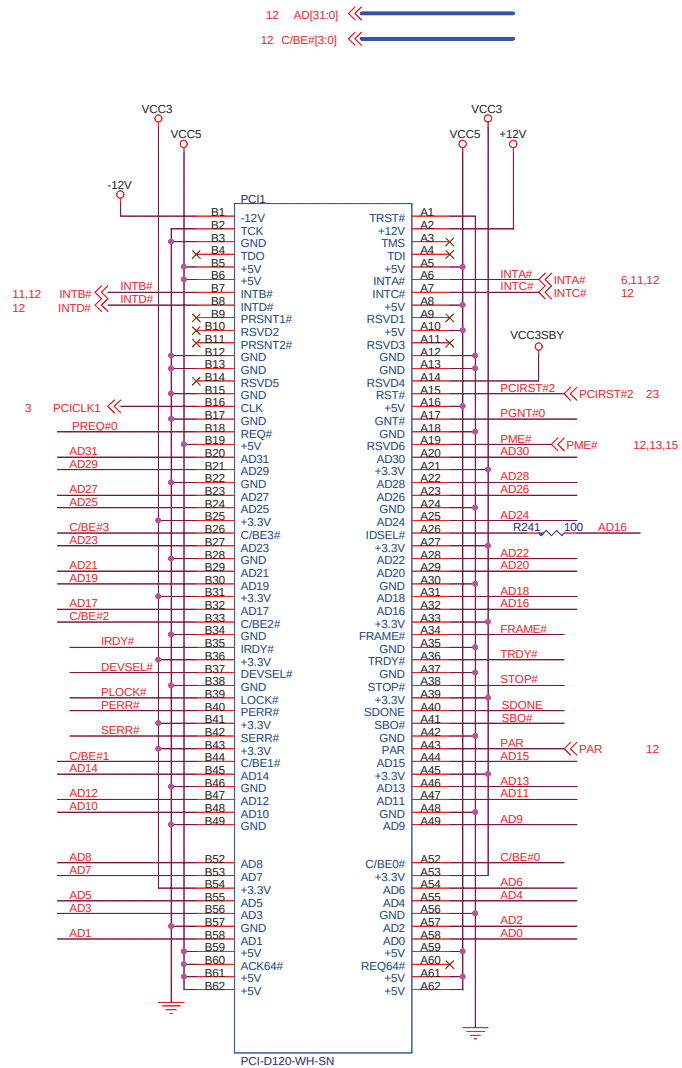


CNR RISER



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Title			AMR & ROM & Battery
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MSI

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PCI 1& 2 & 3

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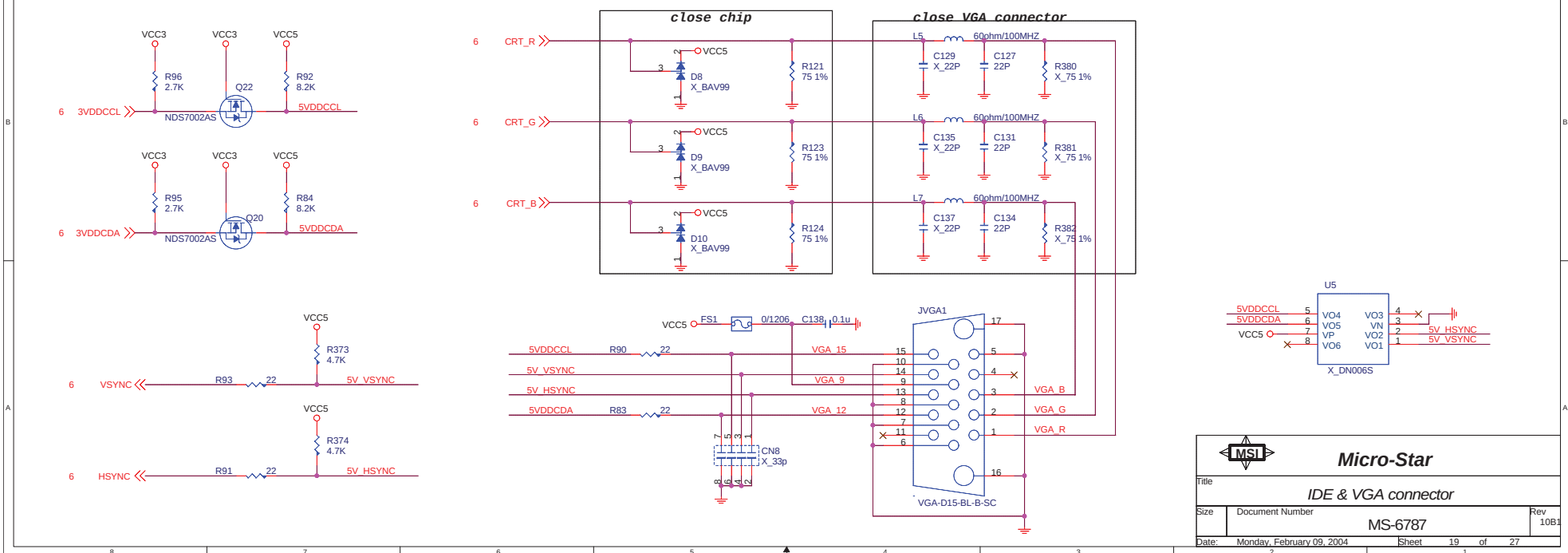
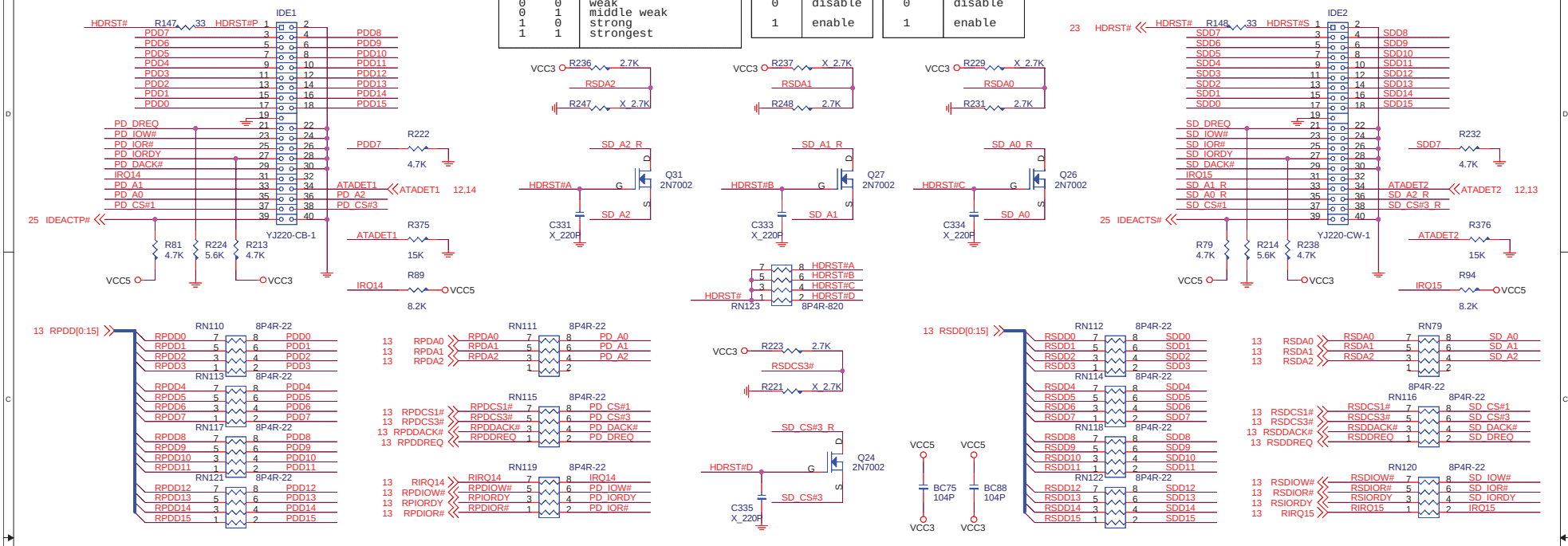
PRIMARY IDE BLOCK

SDA1	SDA0	GTL driving strength
0	0	weak
0	1	middle
1	0	weak
1	1	strongest

SDA2	ROMSIP
0	disable
1	enable

SD_CS#3	Hyper Thr.
0	disable
1	enable

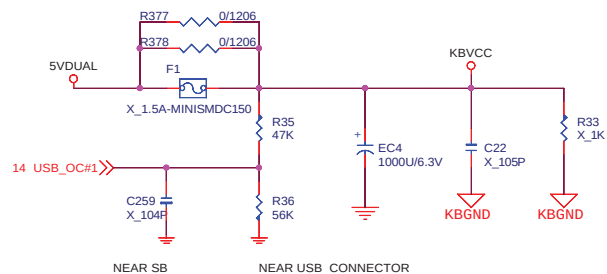
SECONDARY IDE BLOCK



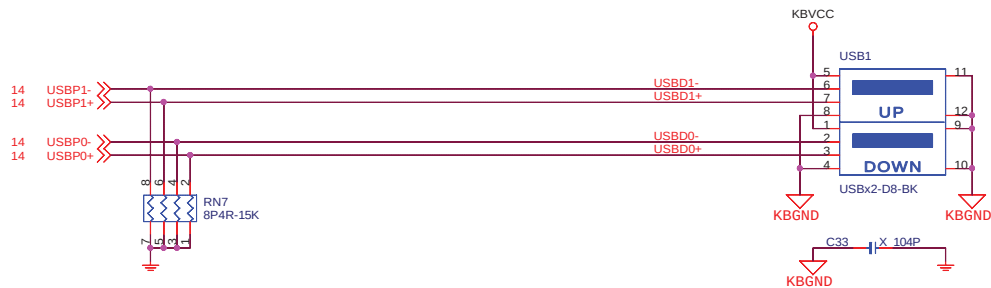
Micro-Star

Title: IDE & VGA connector
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POWER CIRCUIT FOR USB PORT 0,1



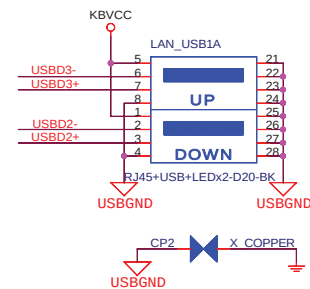
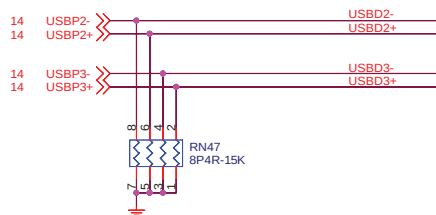
REAR PANEL USB CONNECTOR FOR USB PORT 0,1



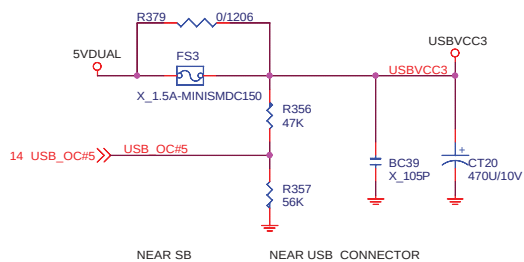
POWER CIRCUIT FOR USB PORT 2,3



REAR PANEL USB CONNECTOR FOR USB PORT 2,3



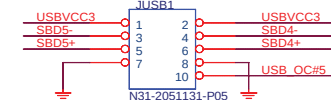
POWER CIRCUIT FOR USB PORT 4,5



FRONT PANEL USB CONNECTOR FOR USB PORT 4,5



Intel Front USB Header

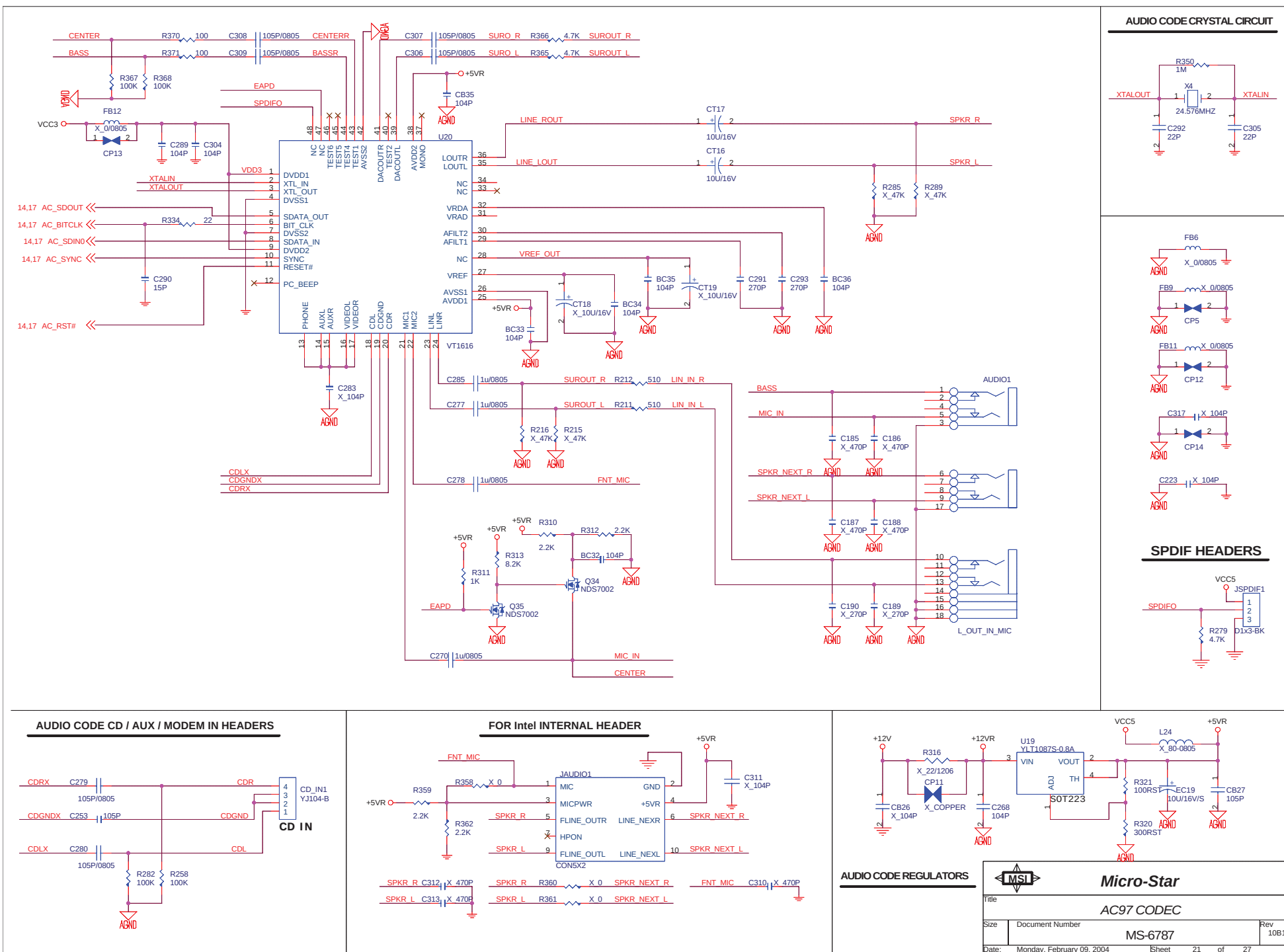


NEAR USB CONNECTOR

* USB Trace width : 7.5 mils
* USB Trace Spacing : 20 mils

* Differential USB Signlas Trace, Spacing : 7.5 mils
* USB Power Trace must be 50mils width

		Micro-Star	
		USB CONNECTORS	
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ACPI Controller

SEL0	5VUSB
H	2 MOSFET
L	1 MOSFET

**S50# pin function(Hi level = 5V)
same as 5VUSB(Hi level = 12V)
5VUSB USE 2 MOSFET

1.7V@250mA

Power	S0	S3	S5
VCC3_SB	Main	Standby	Standby
VCC5_STR	Main	Standby	0V
MEM_STR	Main	Standby	0V

DDR VTT Power

1.275V/2.1A

SEL1	VRAM	VRAM_2.5
H	3.3VDUAL	2.5V
TRI-STATE	3.3VSB	2.5V
L	3.3VSTR	1.25V

FOR 3VSB OR 3VSTR
SETTING BY SEL1

Pin 15,19,22,32 Must
reserve capacitor.

ICH5 300mA
PCI 375+20+20=415mA
VCC3_SB 715mA

** SETTING 3VSTR THEN VRAM_2.5
BECOME TO 1.25 VREF

5V DUAL Power

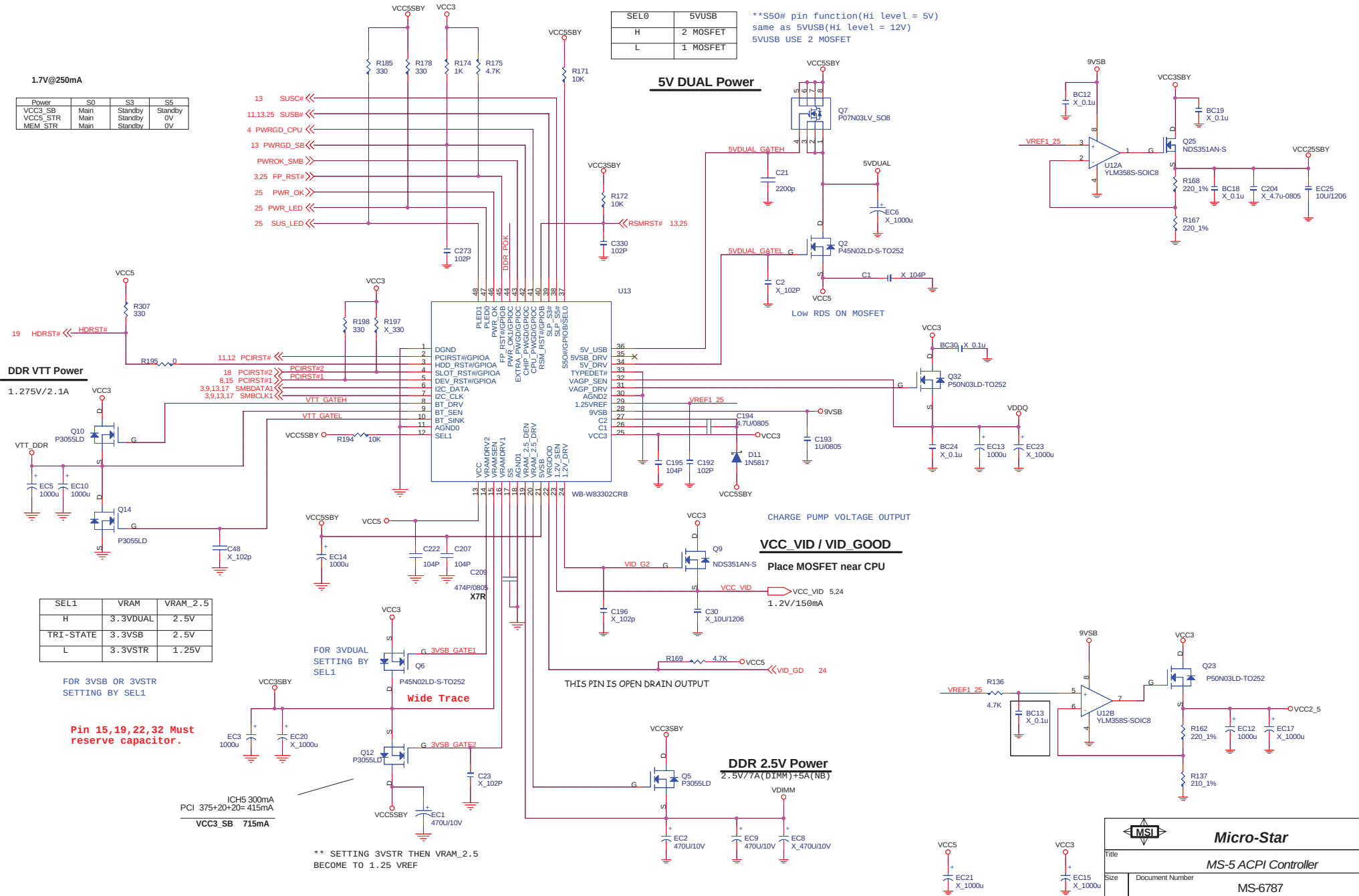
CHARGE PUMP VOLTAGE OUTPUT

VCC VID / VID_GOOD

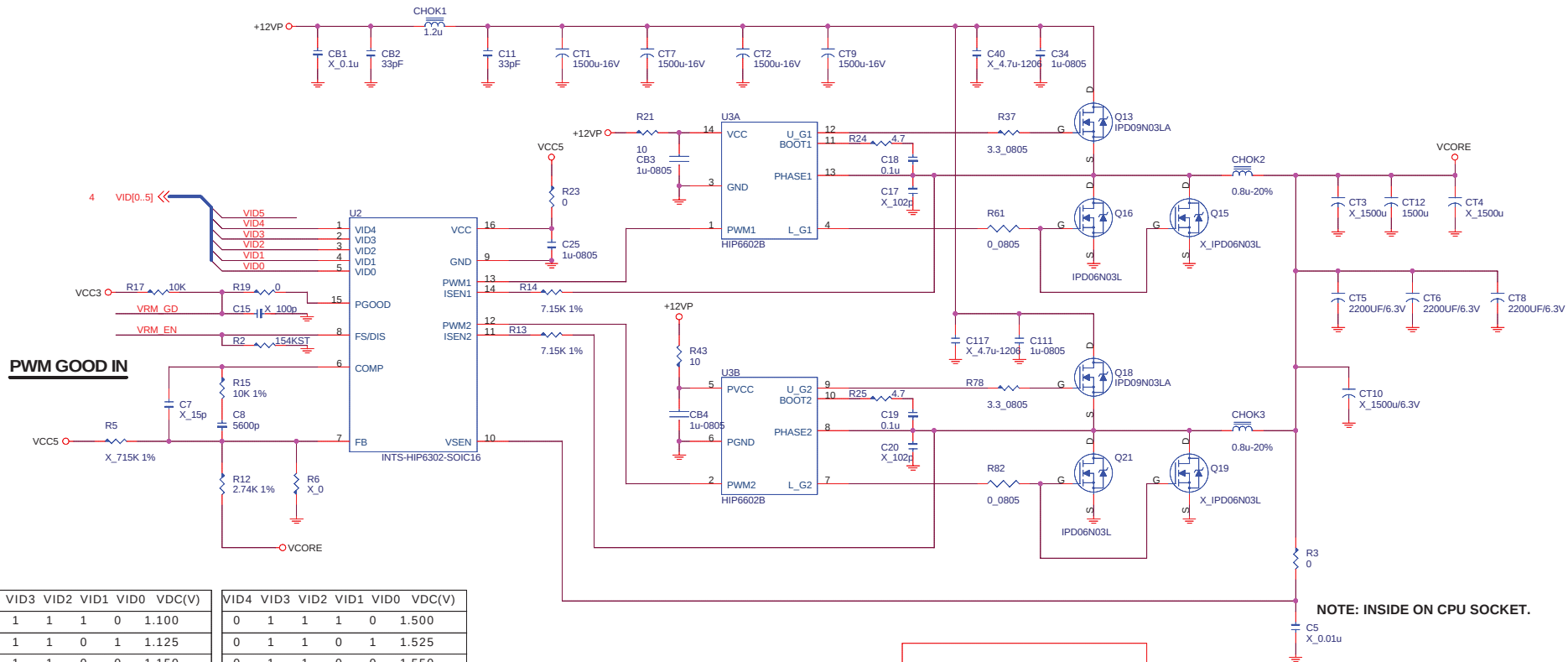
Place MOSFET near CPU

DDR 2.5V Power

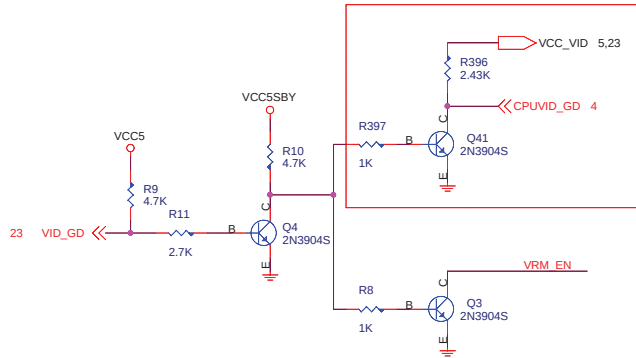
2.5V/7A(D1MM)+5A(NB)



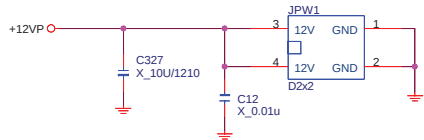
MSI			
Micro-Star			
Title			
MS-5 ACPI Controller			
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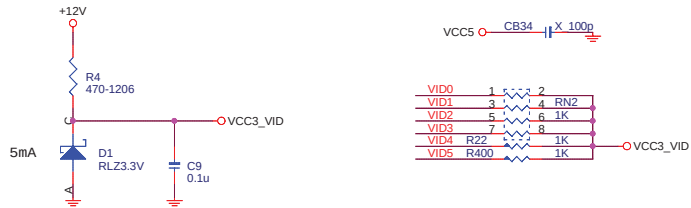
VID4	VID3	VID2	VID1	VID0	VDC(V)	VID4	VID3	VID2	VID1	VID0	VDC(V)
1	1	1	1	0	1.100	0	1	1	1	0	1.500
1	1	1	0	1	1.125	0	1	1	0	1	1.525
1	1	1	0	0	1.150	0	1	1	0	0	1.550
1	1	0	1	1	1.175	0	1	0	1	1	1.575
1	1	0	1	0	1.200	0	1	0	1	0	1.600
1	1	0	0	1	1.225	0	1	0	0	1	1.625
1	1	0	0	0	1.250	0	1	0	0	0	1.650
1	0	1	1	1	1.275	0	0	1	1	1	1.675
1	0	1	1	0	1.300	0	0	1	1	0	1.700
1	0	1	0	1	1.325	0	0	1	0	1	1.725
1	0	1	0	0	1.350	0	0	1	0	0	1.750
1	0	0	1	1	1.375	0	0	0	1	1	1.775
1	0	0	1	0	1.400	0	0	0	1	0	1.800
1	0	0	0	1	1.425	0	0	0	0	1	1.825
1	0	0	0	0	1.450	0	0	0	0	0	1.850
0	1	1	1	1	1.475	1	1	1	1	1	OFF



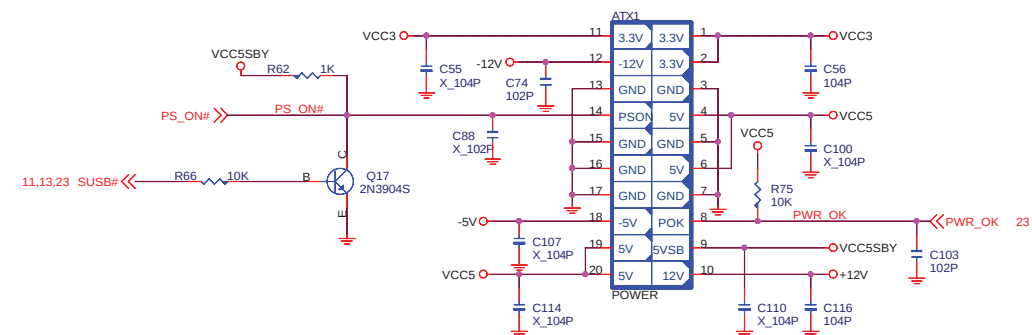
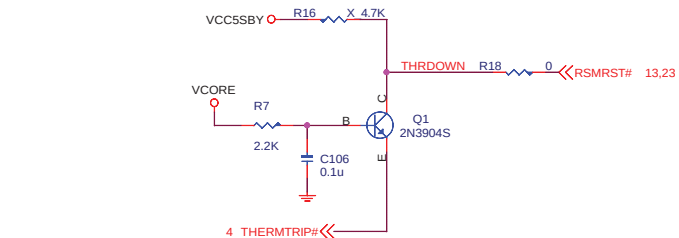
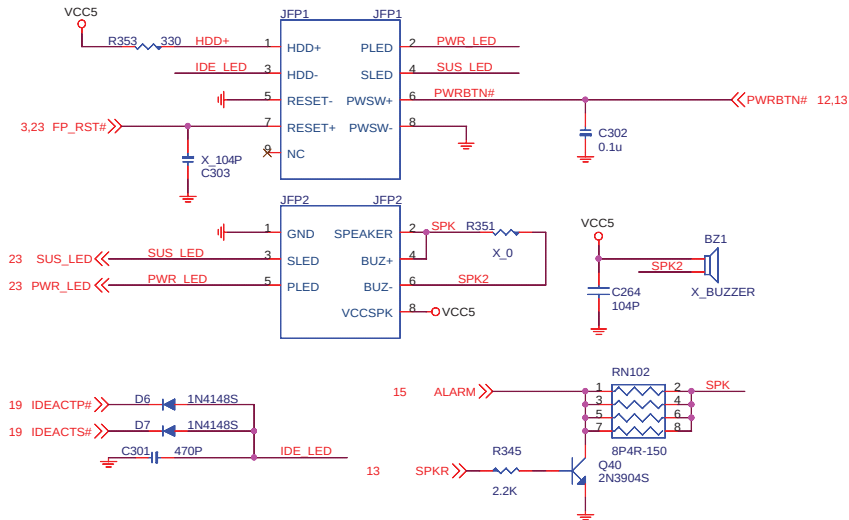
ATX12V POWER CONNECTOR



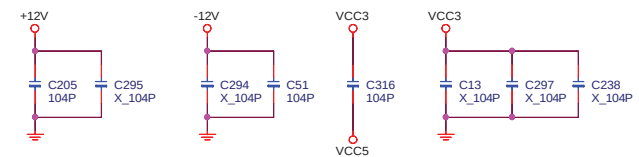
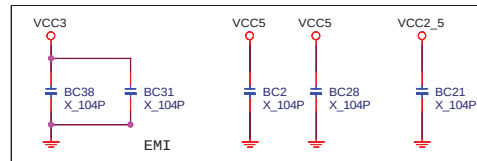
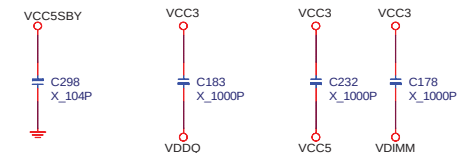
VID PULL-UP RESISTORS



MSI / Intel Front Panel



High Freq. return current decoupling



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GPIO FUNCTION

VT8235

GPIO Pin	Mux with	Power	Default function	Used function
GPI 0		VDD	GPI0	Pull up to VBAT
GPI 1		VDD	GPI1	IDE1 Detect
GPI 2	EXTSMI#	VDD	EXTSMI#	Pull up to VCC3SBY
GPI 3	RING#	VDD	RING#	Pull up to VCC3SBY
GPI 4	LID#	VDD	LID#	IDE2 Detect
GPI 5	BATLOW#	VDD	BATLOW#	Pull up to VCC3SBY
GPI 6	AGPBZ	VDD	AGPBZ	Pull up to VCC3
GPI 7	REQ5	VDD	GPI7	Pull up to VCC3
GPIO 8	GPO8/PCREQA/ VGATE	VDD	GPI8	GPI8
GPIO 9	GPO9/VRDPSLP	VDD	GPI9	GPI9
GPIO 10	GPO10	VDD	GPI10	GPI10
GPIO 11	GPO11	VDD	GPI11	GPI11
GPIO 12	GPO12/INTE#	VDD	GPI12	GPI12
GPIO 13	GPO13/INTF#	VDD	GPI13	GPI13
GPIO 14	GPO14/INTG#	VDD	GPI14	GPI14
GPIO 15	GPO15/INTH#	VDD	GPI15	GPI15
GPIO 16	INTRUDER#	VDD	INTRUDER#	INTRUDER#
GPIO 17	CPUMISS	VDD	CPUMISS	CPUMISS
GPIO 18	AOLGPI/THRM#	VDD	AOLGPI	AOLGPI
GPIO 19	IORDY	VDD	IORDY	IORDY
GPIO 20	SDIN2/PCS0#	VDD	SDIN2	SDIN2
GPIO 21	SDIN3/PCS1#/ SLPBTN#	VDD	SDIN3	SDIN3
GPIO 22	GPO22/GHI#	VDD	GPO22	GPO22
GPIO 23	GPO23/DPSLP	VDD	GPO23	GPO23
GPIO 24	GPO24/GPIOA	VDD	GPO24	GPO24
GPIO 25	GPO25/GPIOC	VDD	GPO25	GPO25
GPIO 26	GPO26/SMBDT2	VDD	SMBDT2	Pull up
GPIO 27	GPO27/SMBCK2	VDD	SMBCK2	Pull up
GPIO 28	GPO28/VIDSEL	VDD	GPO28	GPO28
GPIO 29	GPO29/VRDPSLP	VDD	GPO29	GPO29
GPIO 30	GPO30/GPIOD	VDD	GPO30	GPO30
GPIO 31	GPO31/GPIOE	VDD	GPO31	GPO31

FWH

GPIO Pin	Type	Function
GPI 0	I	PD_DET
GPI 1	I	SD_DET
GPI 2	I	Pull down through 1K ohms (unused)
GPI 3	I	Pull down through 1K ohms (unused)
GPI 4	I	Pull down through 1K ohms (unused)

DDR DIMM Config.

DEVICE	ADDRESS	CLOCK
DIMM 1	1010000B	MCLK_A0/MCLK_A0# MCLK_A1/MCLK_A1# MCLK_A2/MCLK_A2#
DIMM 2	1010001B	MCLK_B0/MCLK_B0# MCLK_B1/MCLK_B1# MCLK_B2/MCLK_B2#

PCI RESET DEVICE

Signals	Target
PCIRST# ICH5	AGP,FWH,MS-5
PCIRST#1	Springdale,LAN, Super I/O,SATA, 1394,MS-1
PCIRST#2	PCI slot 1-6
HD_RST#	Primary, Scondary IDE

PCI

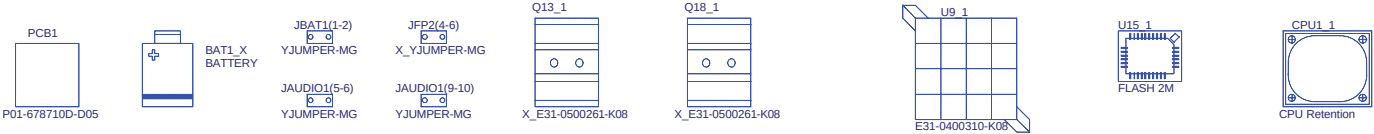
DEVICES	INT#	IDSEL	REQ#/GNT#	CLOCK
PCI SLOT 1	INT#A INT#B INT#C INT#D	AD16	PREQ#1 PGNT#1	PCICLK1
PCI SLOT 2	INT#B INT#C INT#D INT#A	AD17	PREQ#2 PGNT#2	PCICLK2
PCI SLOT 3	INT#C INT#D INT#A INT#B	AD18	PREQ#3 PGNT#3	PCICLK3
PCI SLOT 4	INT#D INT#A INT#B INT#C	AD19	PREQ#4 PGNT#4	PCICLK4
PCI SLOT 5	INT#B INT#C INT#D INT#A	AD20	PREQ#5 PGNT#5	PCICLK5
PCI SLOT 6	INT#A INT#B INT#C INT#D	AD21	PCI6REQ# PCI6GNT#	PCICLK6
SERIAL ATA	INT#E	AD25	SATA_GNT# SATA_REQ#	SATA_PCLK
1394	INT#F	AD26	1394_GNT# 1394_REQ#	1394_PCLK
MS-1			PREQ#0 PGNT#0	



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Jumper Setting & Connector Setting



STD	LAN_USB1_A USB X 2 - 8pin
LAN	LAN_USB1_B USB X2 +RJ45