MS-7120

Version 0A

INTEL (R) Brookdale-GV Chipset

Willamette/Northwood/533Prescott 478pin mPGA-B Processor Schematics

CPU: Willamette/Northwood/533Prescott mPGA-478B Processor

System Chipset:

INTEL Brookdale-GV GMCH + ICH4

On Board Chipset:

BIOS -- FWH

LPC Super I/O -- W83627HF-AW

Clock Generator -- CY28349

AC'97 Codec -- RealTek ALC650/655

Onboard Lan Chipset-- RealTek RTL8101L

Expansion Slots:

AGP2.0 SLOT * 1 (PCI-BUS)

PCI2.2 SLOT * 2

Platform: Micro ATX

MODEL Config.	ORCAD Config.	Function	Option	ERP Number
MS7120-0A	cfg7120GV-LAN	GV+LAN+Com2	A	

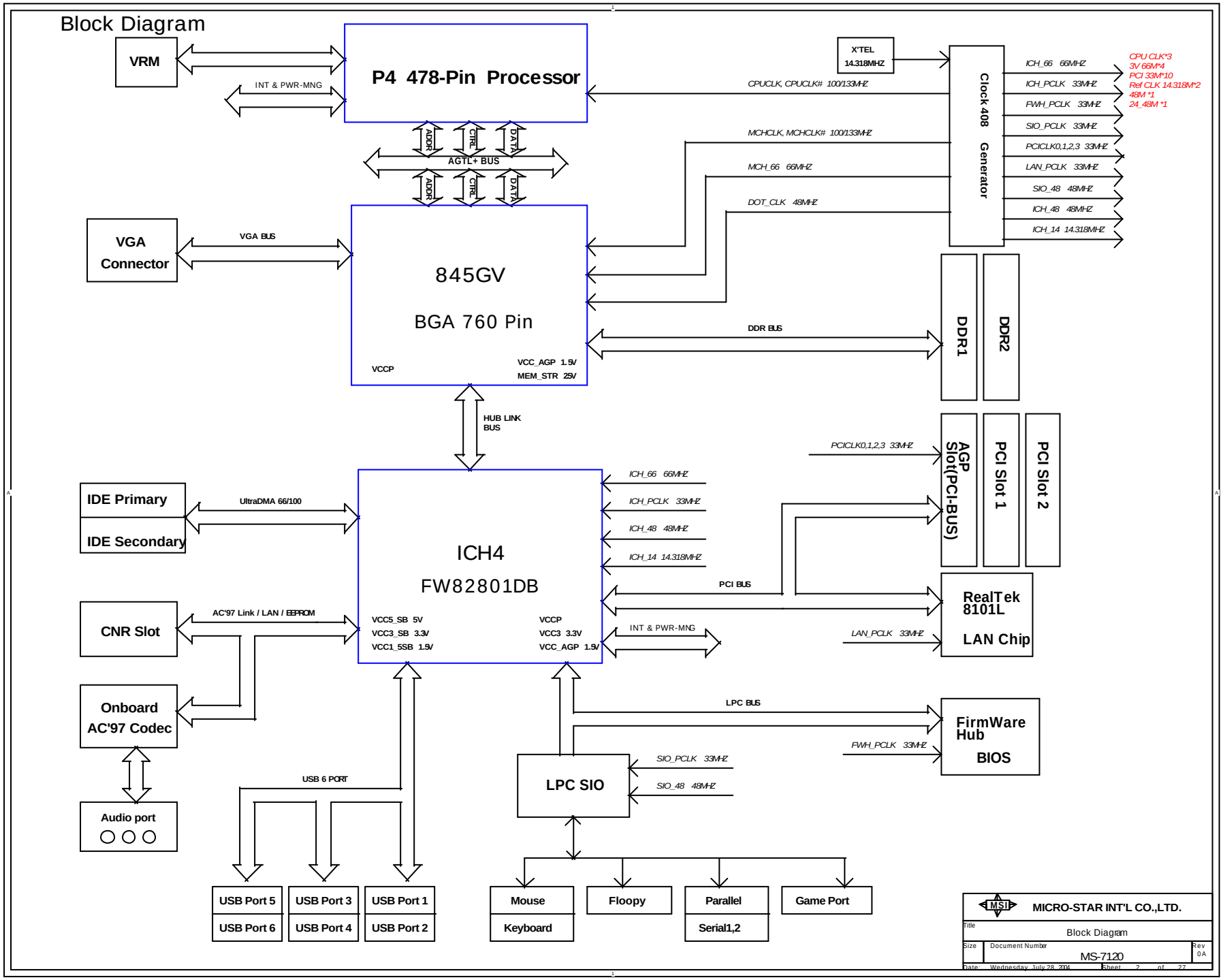
Cover Sheet	1
Block Diagram	2
Clock CY28349 & ATA100 IDE Connector	3
mPGA478-B INTEL CPU Sockets	4 - 5
INTEL Brookdale-GV GMCH -- North Bridge	6 - 8
INTEL ICH4 -- South Bridge	9 - 10
LPC I/O W83627HF-AW	11
FWH & CNR & Manual Part	12
DDR DIMMM1,2	13
DDR Damping & DDR Termination	14
AGP SLOT (3.3V)	15
PCI SLOT 1 & 2	16
IO Connector	17
AC'97 Codec and Audio Connector	18
USB Connector	19
ACPI Controller (MS-5)	20
VRM 9 NIKO N2101	21
Realtek RTL8101L LAN	22
VGA Connector	23
Front Panel & Connectors & FAN	24
GPIO Definition	25-27

MICRO-STAR

Title: COVER SHEET

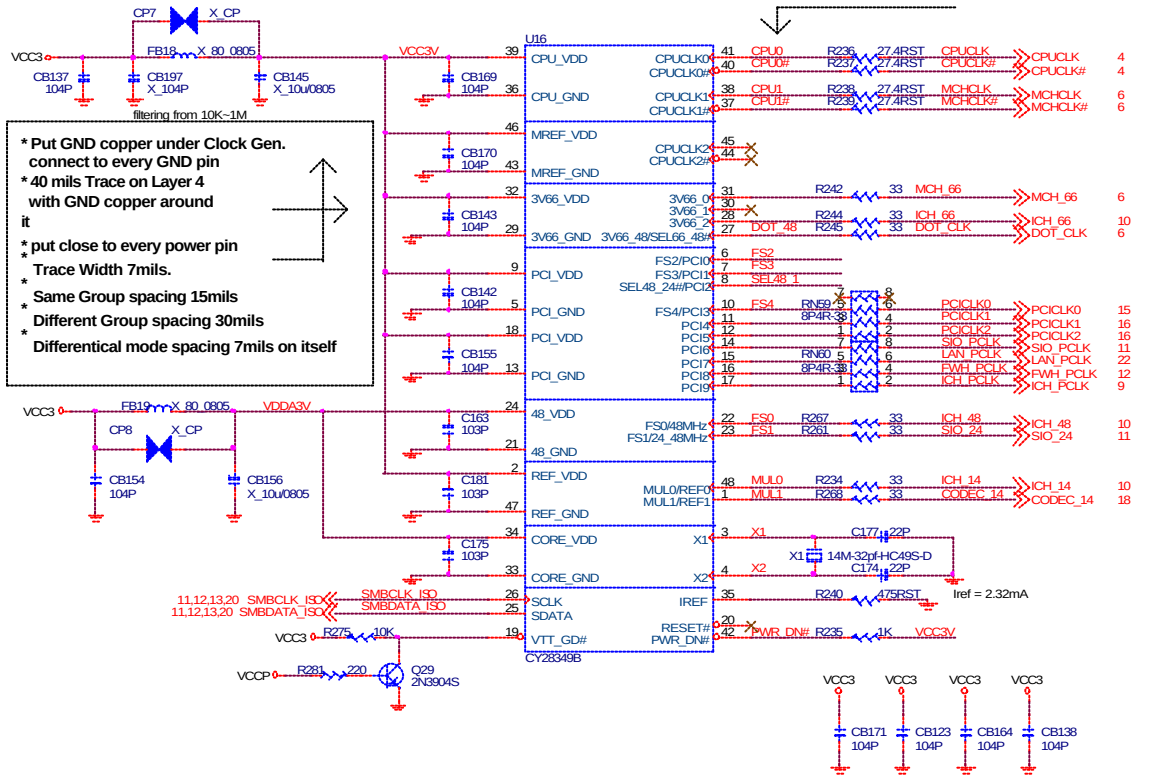
Size | Document Number: MS-7120 | Rev: 0A

Date: Friday, August 20, 2004 | Sheet 1 of 27


Block Diagram
VRM
INT & PWR-MNG
P4 478-Pin Processor
X'TEL
14.318MHZ
CPUCLK, CPUCLK# 100/133MHZ
Clock 408 Generator
ICH_66 66MHZ
ICH_PCLK 33MHZ
FWH_PCLK 33MHZ
SIO_PCLK 33MHZ
PCICLK0,1,2,3 33MHZ
LAN_PCLK 33MHZ
SIO_48 48MHZ
ICH_48 48MHZ
ICH_14 14.318MHZ
CPU CLK*3
3V 66M*4
PCI 33M*10
Ref CLK 14.318M*2
48M *1
24_48M *1
ADDR
CTRL
DATA
AGTL+ BUS
MCHCLK, MCHCLK# 100/133MHZ
MCH_66 66MHZ
DOT_CLK 48MHZ
VGA Connector
VGA BUS
845GV
BGA 760 Pin
VCCP
VCC_AGP 1.5V
MEM_STR 25V
DDR BUS
DDR1
DDR2
HUB LINK BUS
PCICLK0,1,2,3 33MHZ
AGP Slot(PCI-BUS)
PCI Slot 1
PCI Slot 2
IDE Primary
IDE Secondary
UltraDMA 66/100
ICH4
FW82801DB
ICH_66 66MHZ
ICH_PCLK 33MHZ
ICH_48 48MHZ
ICH_14 14.318MHZ
PCI BUS
RealTek 8101L
LAN Chip
LAN_PCLK 33MHZ
CNR Slot
AC'97 Link / LAN / EEPROM
VCC5_SB 5V
VCC3_SB 3.3V
VCC1_5SB 1.5V
VCCP
VCC3 3.3V
VCC_AGP 1.5V
INT & PWR-MNG
Onboard AC'97 Codec
LPC BUS
FirmWare Hub
BIOS
FWH_PCLK 33MHZ
LPC SIO
SIO_PCLK 33MHZ
SIO_48 48MHZ
USB 6 PORT
Audio port
USB Port 5
USB Port 6
USB Port 3
USB Port 4
USB Port 1
USB Port 2
Mouse
Keyboard
Floopy
Parallel
Serial1,2
Game Port
MSI
MICRO-STAR INT'L CO.,LTD.
Title
Block Diagram
Size
Document Number
MS-7120
Rev
0A
Date: Wednesday, July 28, 2004
Sheet 2 of 27

CLOCK GENERATOR BLOCK

*Trace < 0.5"



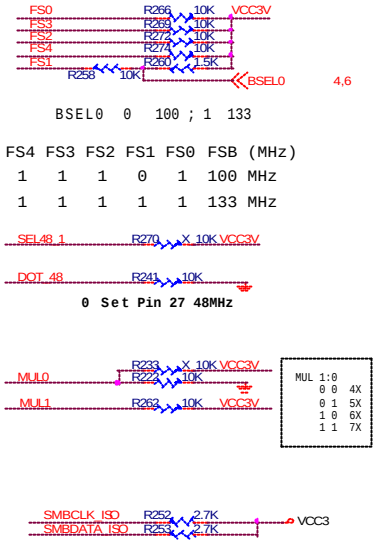
* Put GND copper under Clock Gen. connect to every GND pin
* 40 mils Trace on Layer 4 with GND copper around it
* put close to every power pin
* Trace Width 7mils.
* Same Group spacing 15mils
* Different Group spacing 30mils
* Differential mode spacing 7mils on itself

Shut Source Termination Resistors

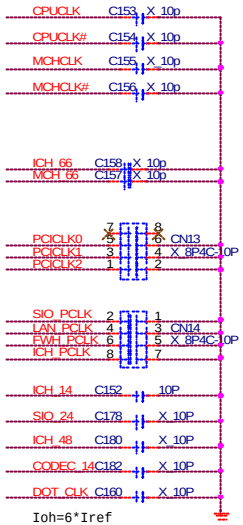
Trace less 0.2"

49.9ohm for 50ohm M/B impedance

CLOCK STRAPPING RESISTORS



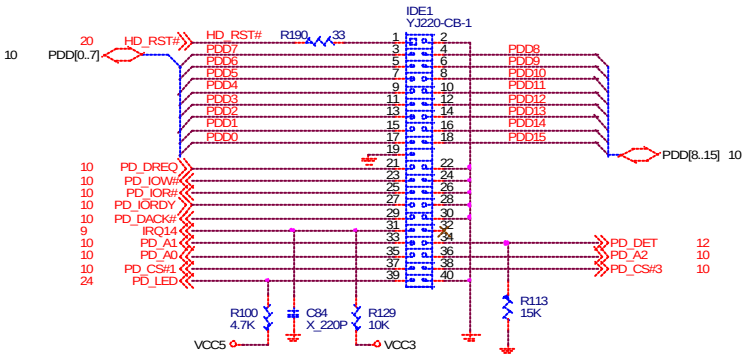
Pull-Down Capacitors



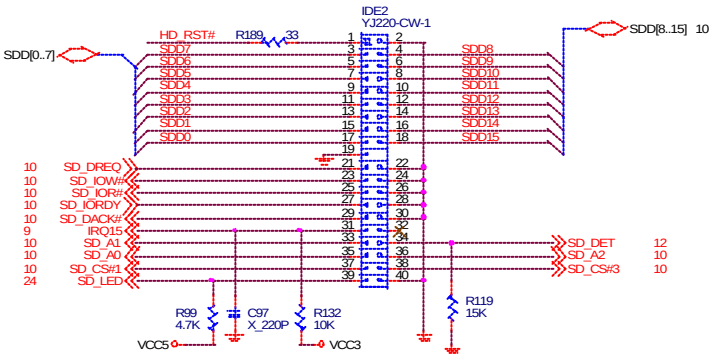
used only for EMI issue

Trace less 0.2"

PRIMARY IDE BLOCK



SECONDARY IDE BLOCK

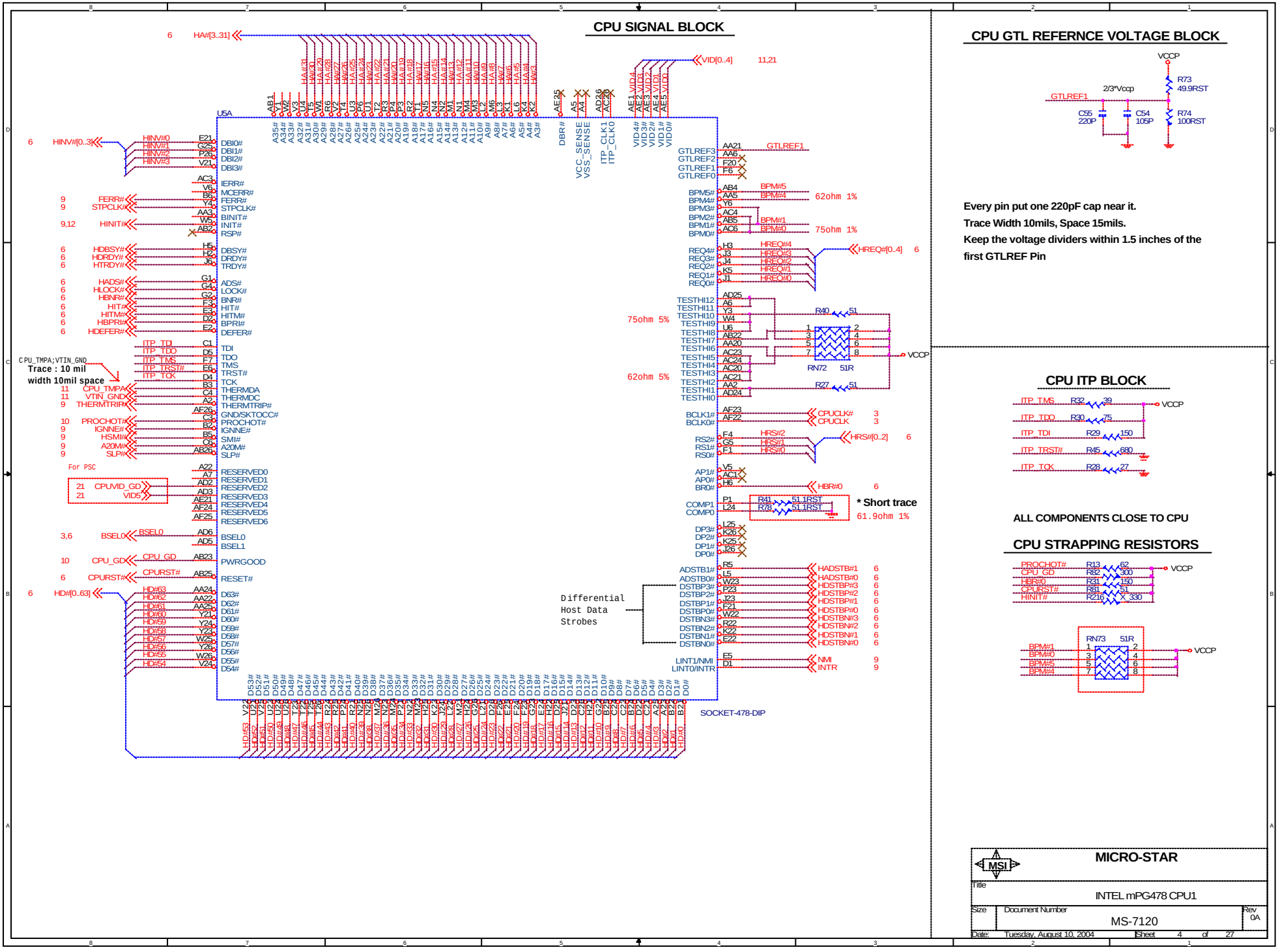


ATA100 IDE CONNECTORS

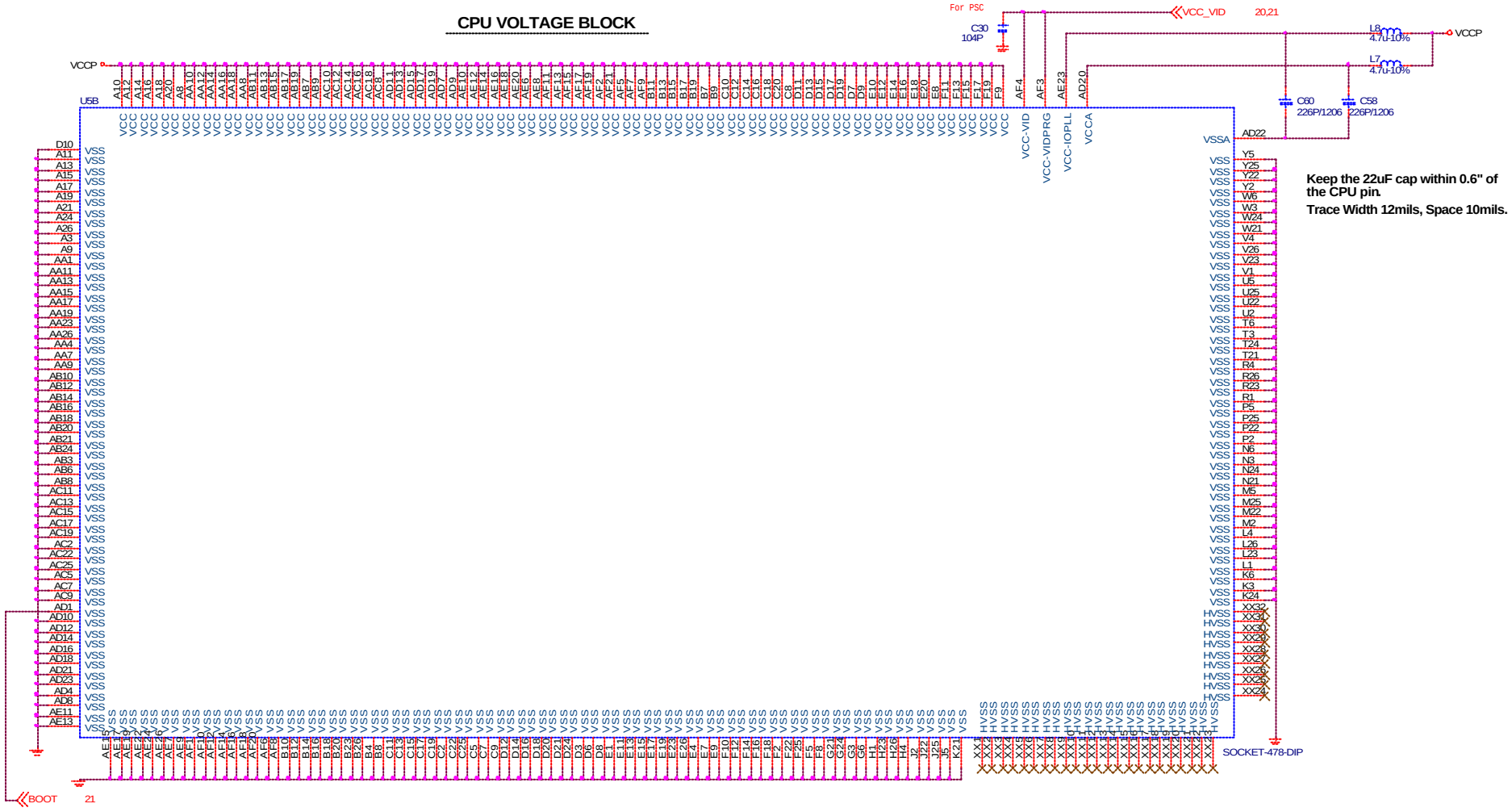
* Trace Width : 5mils
* Trace Spacing : 7mils
* Length(longest)-Length(shortest)<0.5"
* Trace Length less than5"

MICRO-STAR

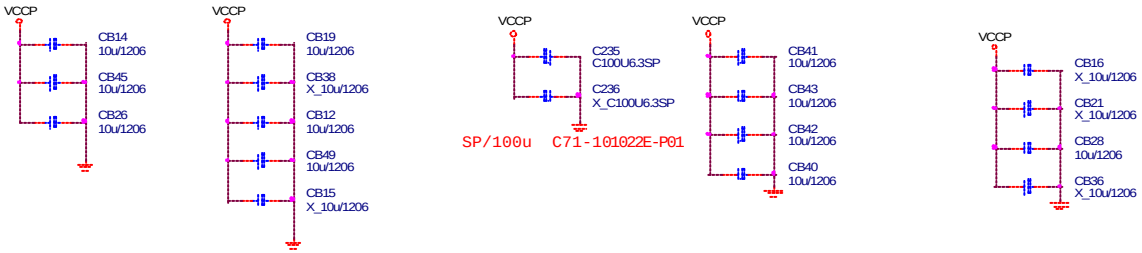
Title	CLOCK GEN & ATA100 IDE	
Size	Document Number MS-7120	Rev 0A
Date: Thursday, July 29, 2004	Sheet 3 of 27	


CPU SIGNAL BLOCK
CPU GTL REFERNCE VOLTAGE BLOCK
VCCP
R73 49.9RST
2/3*Vccp
GTLREF1
C55 220P
C54 105P
R74 100RST
Every pin put one 220pF cap near it.
Trace Width 10mils, Space 15mils.
Keep the voltage dividers within 1.5 inches of the first GTLREF Pin
CPU ITP BLOCK
ITP_TMS R32 39
ITP_TDO R30 75
ITP_TDI R29 150
ITP_TRST# R45 680
ITP_TCK R28 27
ALL COMPONENTS CLOSE TO CPU
CPU STRAPPING RESISTORS
PROCHOT# R13 62
CPU_GD R82 300
HBR#0 R31 150
CPURST# R81 51
HINIT# R216 330
RN73 51R
BPM#1
BPM#0
BPM#5
BPM#4
U5A
SOCKET-478-DIP
HA#[3..31]
HD#[0..63]
HINV#[0..3]
VID[0..4]
HREQ#[0..4]
HRS#[0..2]
CPU_TMPA;VTIN_GND
Trace : 10 mil
width 10mil space
For PSC
CPUVID_GD
VID5
Differential
Host Data
Strobes
* Short trace
61.9ohm 1%
62ohm 1%
75ohm 1%
75ohm 5%
62ohm 5%
RN72 51R
R40 51
R27 51
R41 51.1RST
R78 51.1RST
MICRO-STAR
INTEL mPG478 CPU1
MS-7120
Tuesday, August 10, 2004
Sheet 4 of 27

CPU VOLTAGE BLOCK

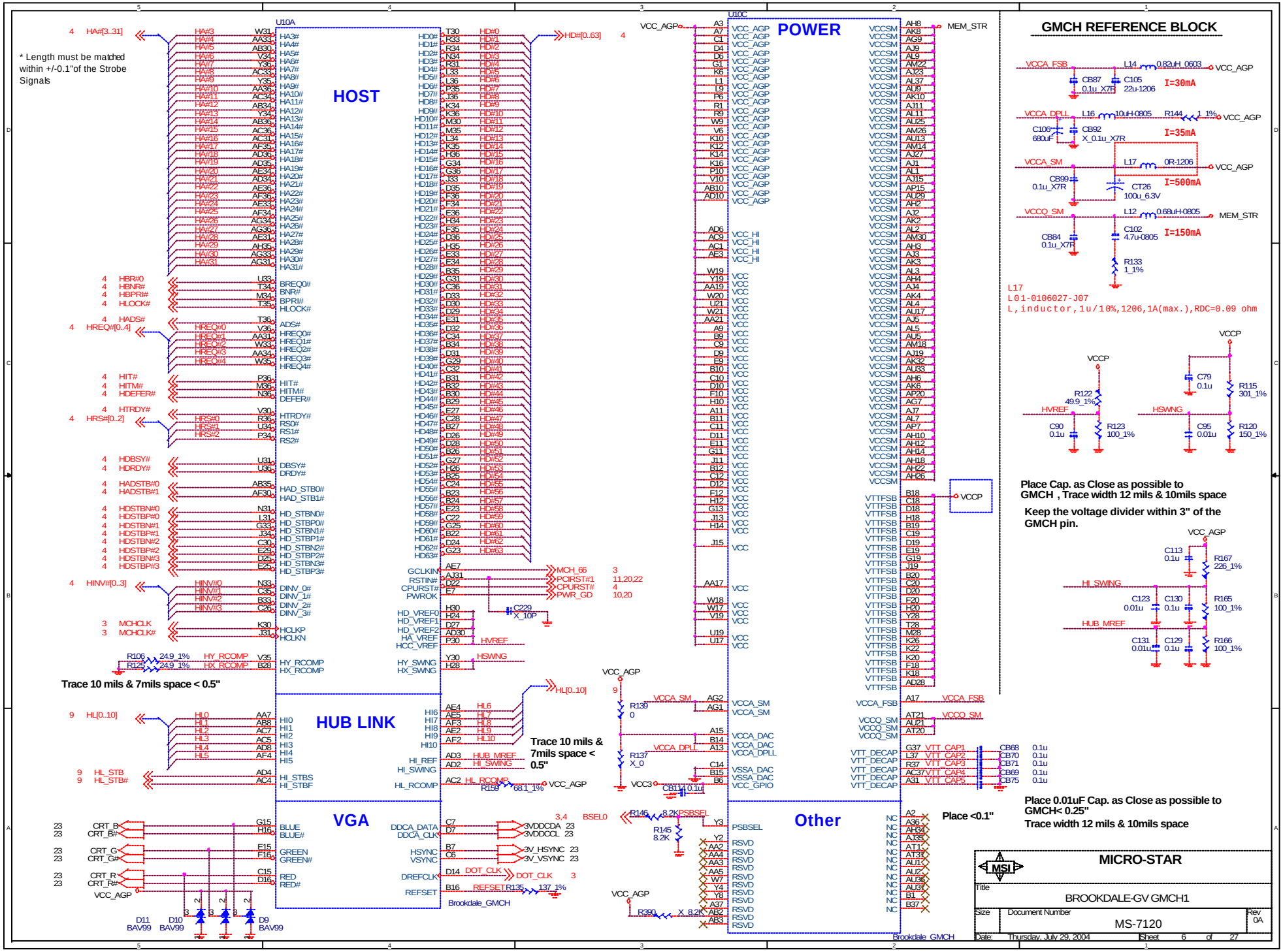


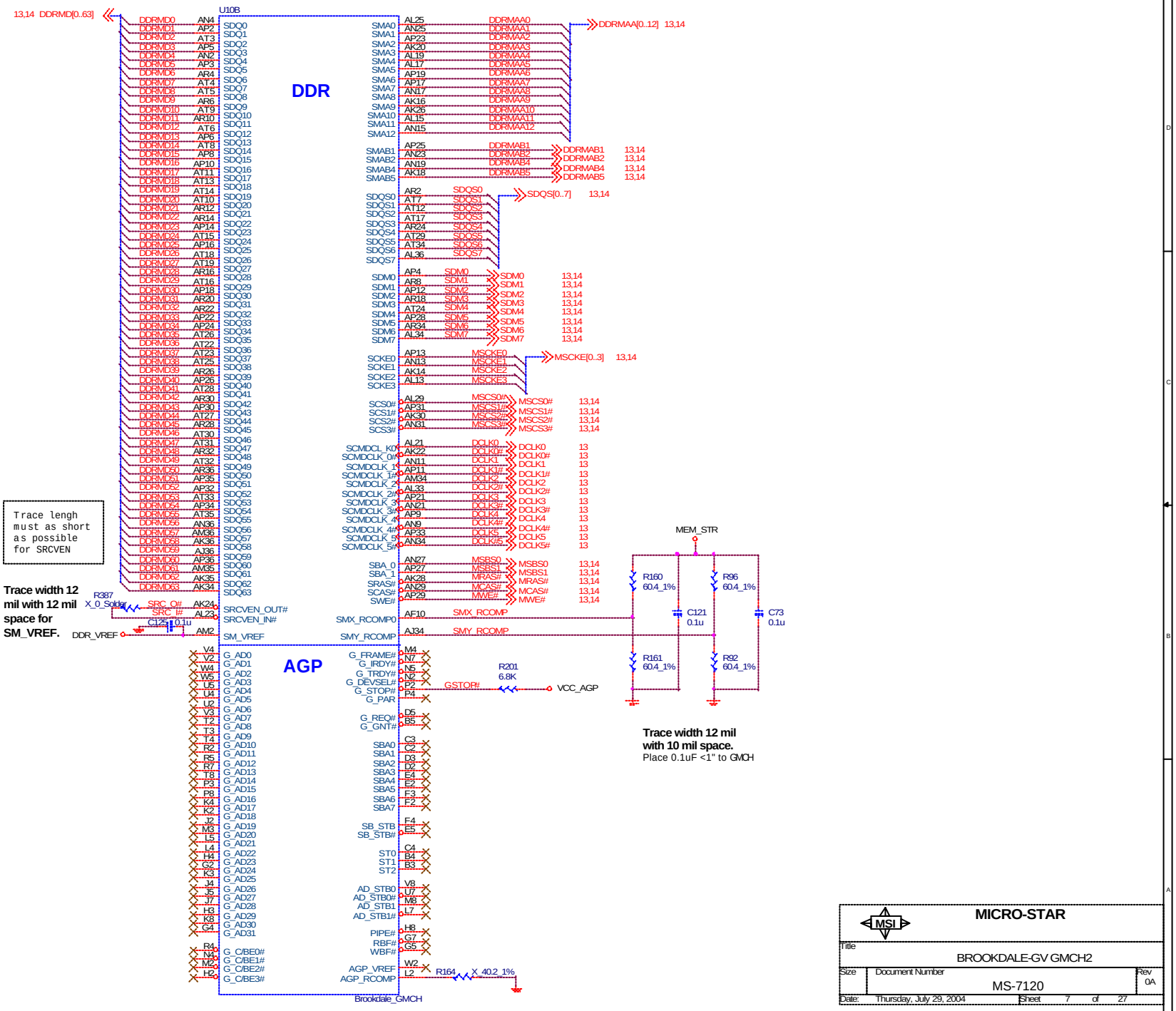
CPU DECOUPLING CAPACITORS

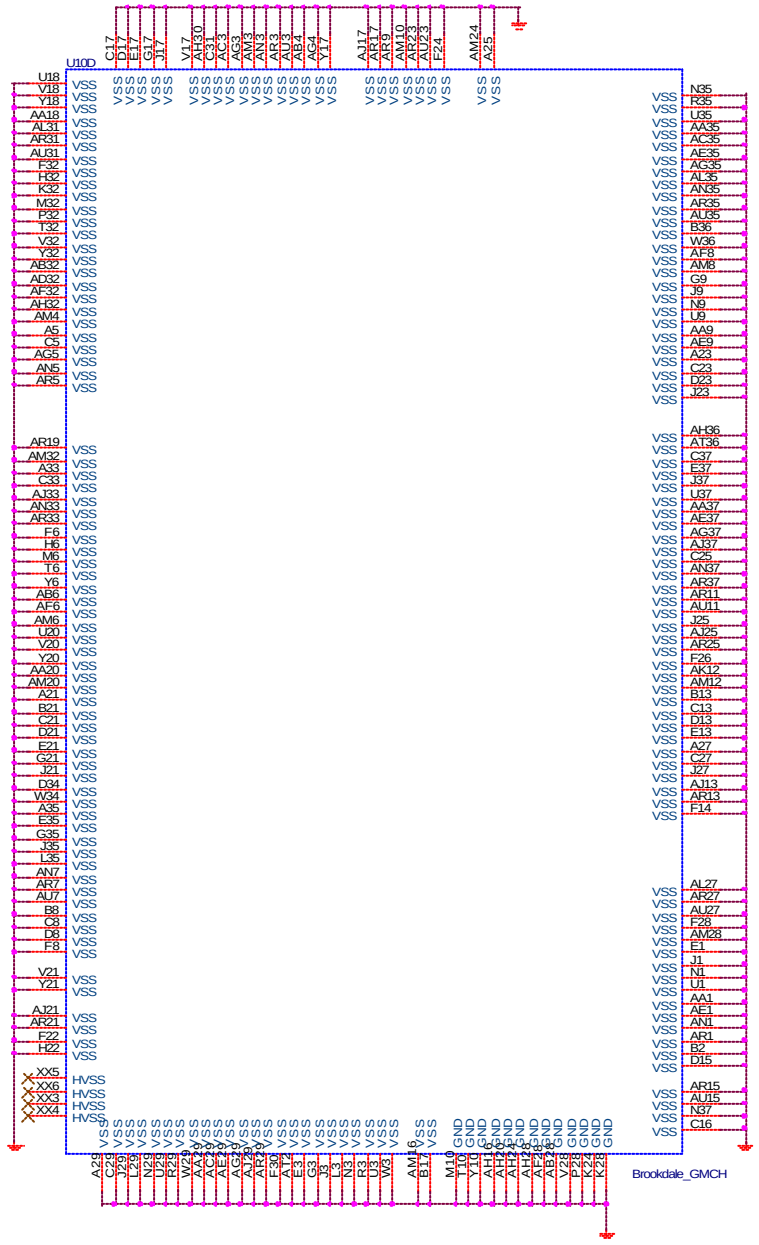


MICRO-STAR

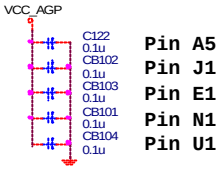
Title	INTEL mPGA478-B CPU2	
Size	Document Number: MS-7120	Rev: 0A
Date: Friday, August 20, 2004	Sheet 5 of 27	


HOST
POWER
HUB LINK
VGA
Other
U10A
U10C
* Length must be matched within +/-0.1"of the Strobe Signals
Trace 10 mils & 7mils space < 0.5"
Trace 10 mils & 7mils space < 0.5"
GMCH REFERENCE BLOCK
L17
L01-0106027-J07
L,inductor,1u/10%,1206,1A(max.),RDC=0.09 ohm
Place Cap. as Close as possible to GMCH , Trace width 12 mils & 10mils space
Keep the voltage divider within 3" of the GMCH pin.
Place 0.01uF Cap. as Close as possible to GMCH< 0.25"
Trace width 12 mils & 10mils space
Place <0.1"
Brookdale_GMCH
MICRO-STAR
BROOKDALE-GV GMCH1
MS-7120
Thursday, July 29, 2004
Sheet 6 of 27


U10B
DDR
AGP
Brookdale_GMCH
13,14 DDRMD[0..63]
DDRMAA[0..12] 13,14
DDRMAB1 13,14
DDRMAB2 13,14
DDRMAB4 13,14
DDRMAB5 13,14
SDQS[0..7] 13,14
MSCKE[0..3] 13,14
MSCS0# 13,14
MSCS1# 13,14
MSCS2# 13,14
MSCS3# 13,14
DCLK0 13
DCLK0# 13
DCLK1 13
DCLK1# 13
DCLK2 13
DCLK2# 13
DCLK3 13
DCLK3# 13
DCLK4 13
DCLK4# 13
DCLK5 13
DCLK5# 13
MSBS0 13,14
MSBS1 13,14
MRAS# 13,14
MCAS# 13,14
MWE# 13,14
Trace lengh must as short as possible for SRCVEN
Trace width 12 mil with 12 mil space for SM_VREF.
R387 X_0_Solder
C125 0.1u
DDR_VREF
SRCVEN_OUT#
SRCVEN_IN#
SM_VREF
SMX_RCOMP
SMY_RCOMP
R201 6.8K
GSTOP#
VCC_AGP
MEM_STR
R160 60.4_1%
R96 60.4_1%
R161 60.4_1%
R92 60.4_1%
C121 0.1u
C73 0.1u
Trace width 12 mil with 10 mil space.
Place 0.1uF <1" to GMCH
R164 X_40.2_1%
MICRO-STAR
MSI
Title
BROOKDALE-GV GMCH2
Size
Document Number
MS-7120
Rev 0A
Date: Thursday, July 29, 2004
Sheet 7 of 27

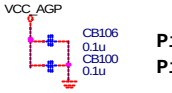


GMCH DECOUPLING CAPACITOR



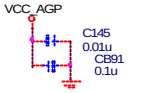
Pin A5
Pin J1
Pin E1
Pin N1
Pin U1

Place decoupling cap close to GMCH AGP Interface < 0.1"



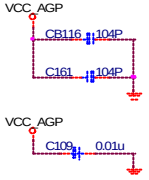
Pin AA1
Pin AE1

Place decoupling cap close to GMCH Hub-Link Interface< 0.1"

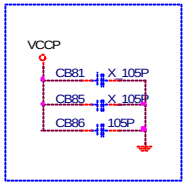


Pin B14
Pin A15

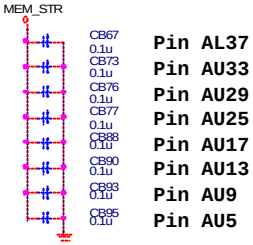
Place decoupling cap close to GMCH DAC Interface< 0.1"



Place decoupling cap close to GMCH Core Logic Interface < 0.1"

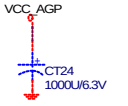


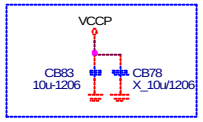
Place decoupling cap close to GMCH CPU Interface < 250mil in the Vtt corridor



Pin AL37
Pin AU33
Pin AU29
Pin AU25
Pin AU17
Pin AU13
Pin AU9
Pin AU5

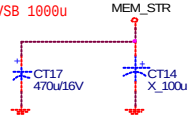
Place decoupling cap close to GMCH Memory Interface < 0.1", with 18 mil trach width





Place Bulk cap for Core Logic, AGP & Hub Link Interface

MEM_STR 470u*2 <3VSB 1000u



Place Bulk cap between GMCH & DIMM slot

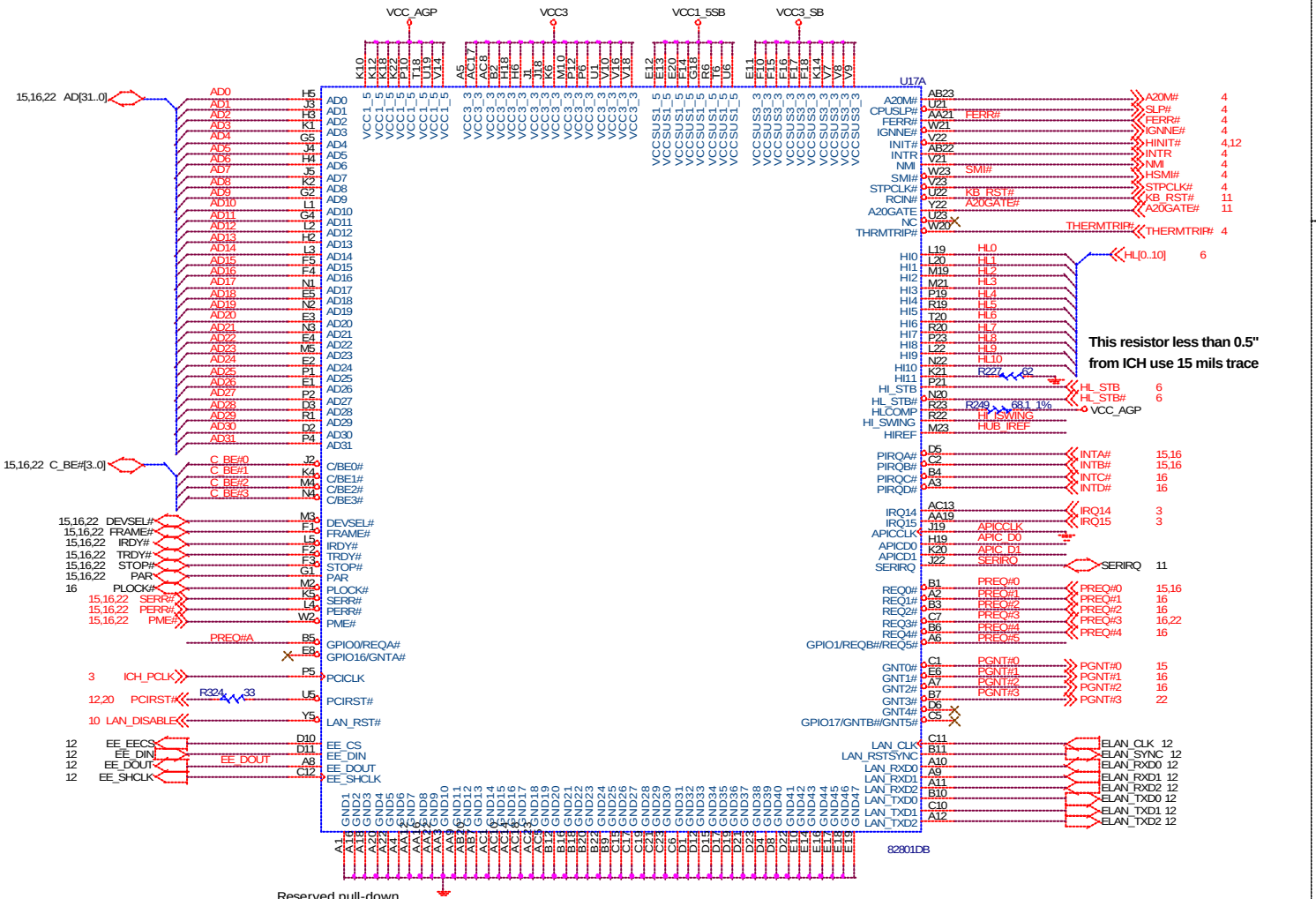
MICRO-STAR

Title: Broodale-GV GMCH3

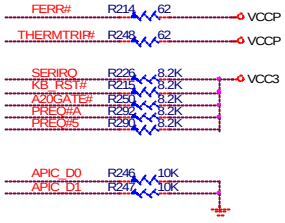
Size | Document Number: MS-7120 | Rev: 0A

Date: Tuesday, August 17, 2004 | Sheet 8 of 27

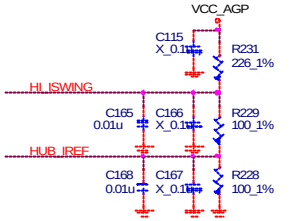
ICH4 PCI / HUB LINK / CPU / LAN / INTERRUPT SIGNALS



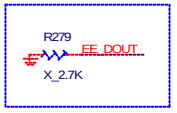
ICH4 PULL-UP/DOWN RESISTORS



ICH4 REFERENCE VOLTAGE

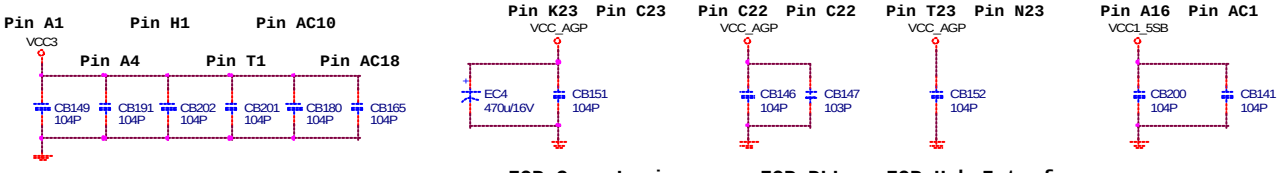


Place Cap. as Close as possible to ICH4 < 0.25"
Trace width use 12 mils and 10mils space



ICH4 DECOUPLING CAPACITORS

Place one 0.1u close to ICH4 <100 mil

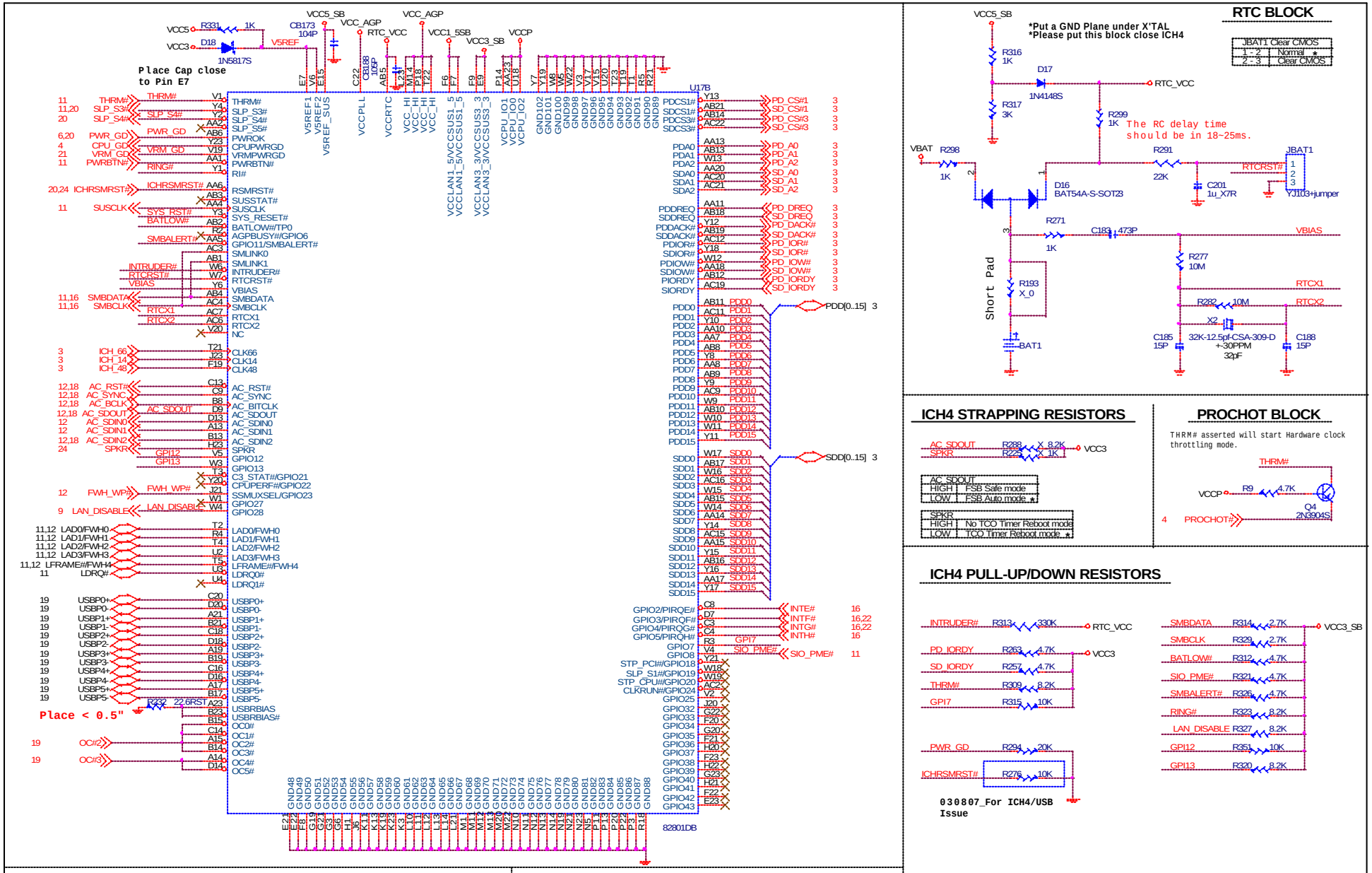


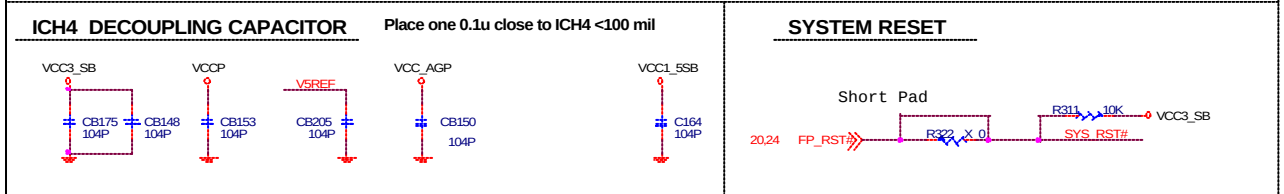
MICRO-STAR

Title: ICH4 PCI/HI/LAN

Size | Document Number: MS-7120 | Rev: 0A

Date: Thursday, July 29, 2004 | Sheet 9 of 27





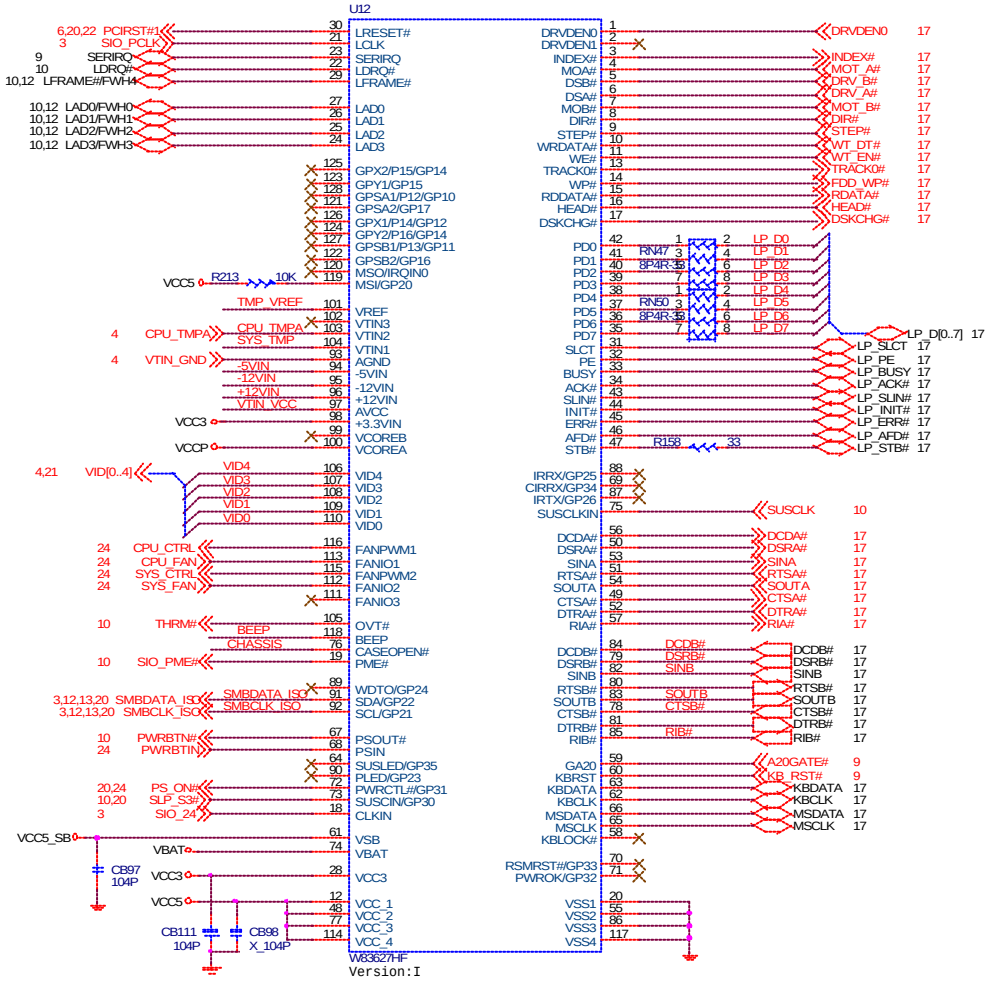
MICRO-STAR

Title: ICH4 OTHER

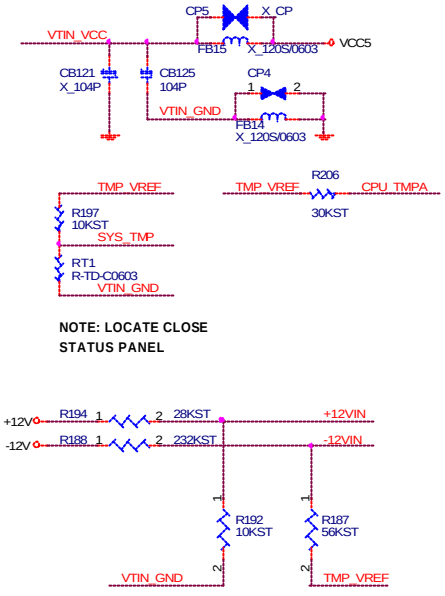
Size: | Document Number: MS-7120 | Rev: 0A

Date: Thursday, July 29, 2004 | Sheet 10 of 27

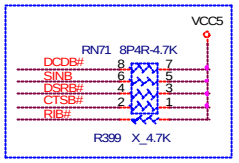
LPC SUPER I/O W83627HF



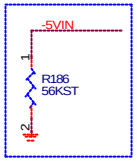
THERMAL RESISTOR BLOCK



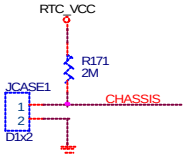
W83627F/HF Ap.15
Avoid Noise From ULTRAB



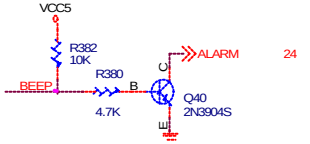
Intel Front IR Header



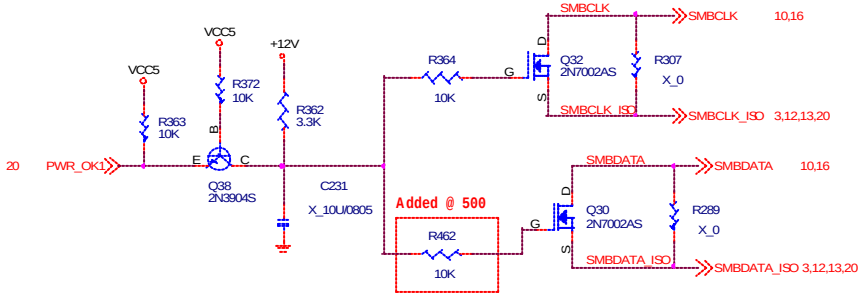
Chasiss Intrusion Header



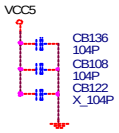
SPEAKER BLOCK



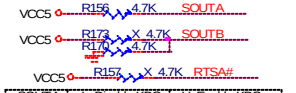
SMBus Isolation



LPC I/O DECOUPLING CAPACITORS



SUPER I/O STRAPPING RESISTOR



SOUTA	L: Disable KBC	H: Enable KBC
SOUTB	L: 24MHZ	H: 48MHZ
RTSA#	L: CFAD=2E	H: CFAD=4E
DTRA#	L: PNP Default	H: PNP no Default

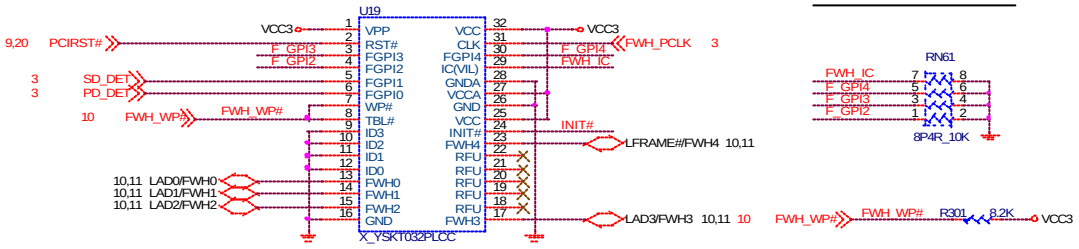
MSI MICRO-STAR

Title: LPC SUPER I/O

Size | Document Number: MS-7120 | Rev: 0A

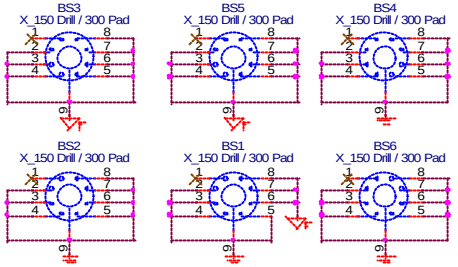
Date: Tuesday, August 10, 2004 | Sheet 11 of 27

Firware Hub (FWH)

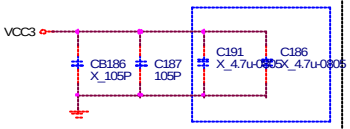


FWH RESISTORS

PCB Mounting Holes



FWH DECOUPLING CAPACITORS

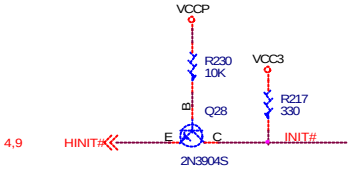


Place Cap. as Close to FWH< 350 mil

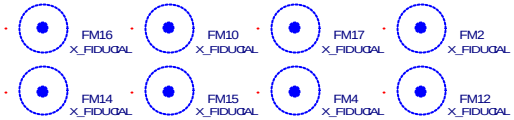
FWH write protect

	BIOS_WP BIOS Update
SHORT	Flash Write Disable
OPEN	Flash Write Enable **(Default)**

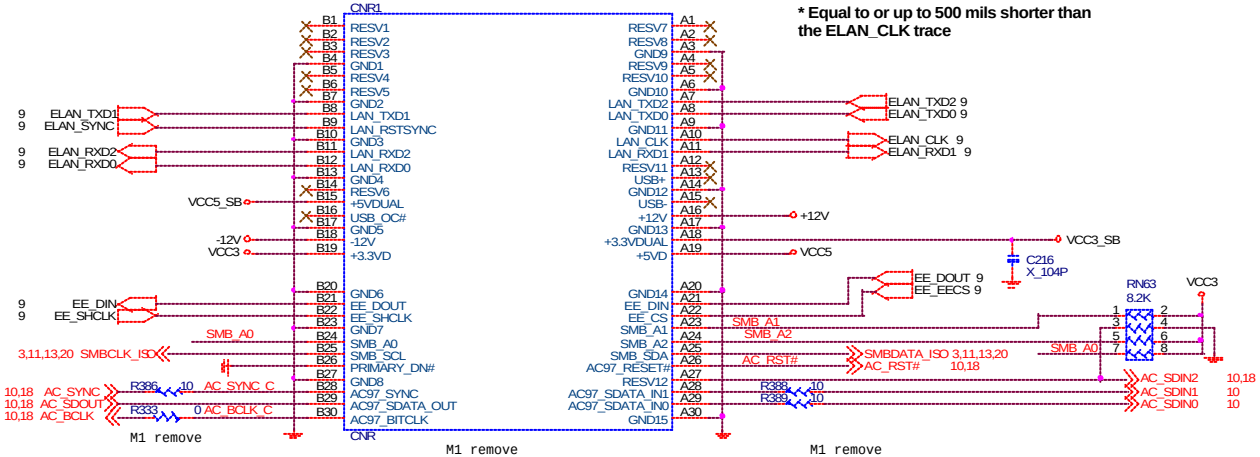
FWH INIT Signal Voltage Translation Block



PCB Fiducials



CNR RISER



*** LAN Trace width : 5 mils**

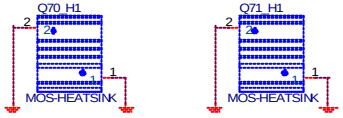
*** AC'97 Trace Spacing : 10 mils**

*** Maxium trace length < 9.5"**

*** Equal to or up to 500 mils shorter than the ELAN_CLK trace**

SIMULATION TRACE

MOSFET HEATSINK



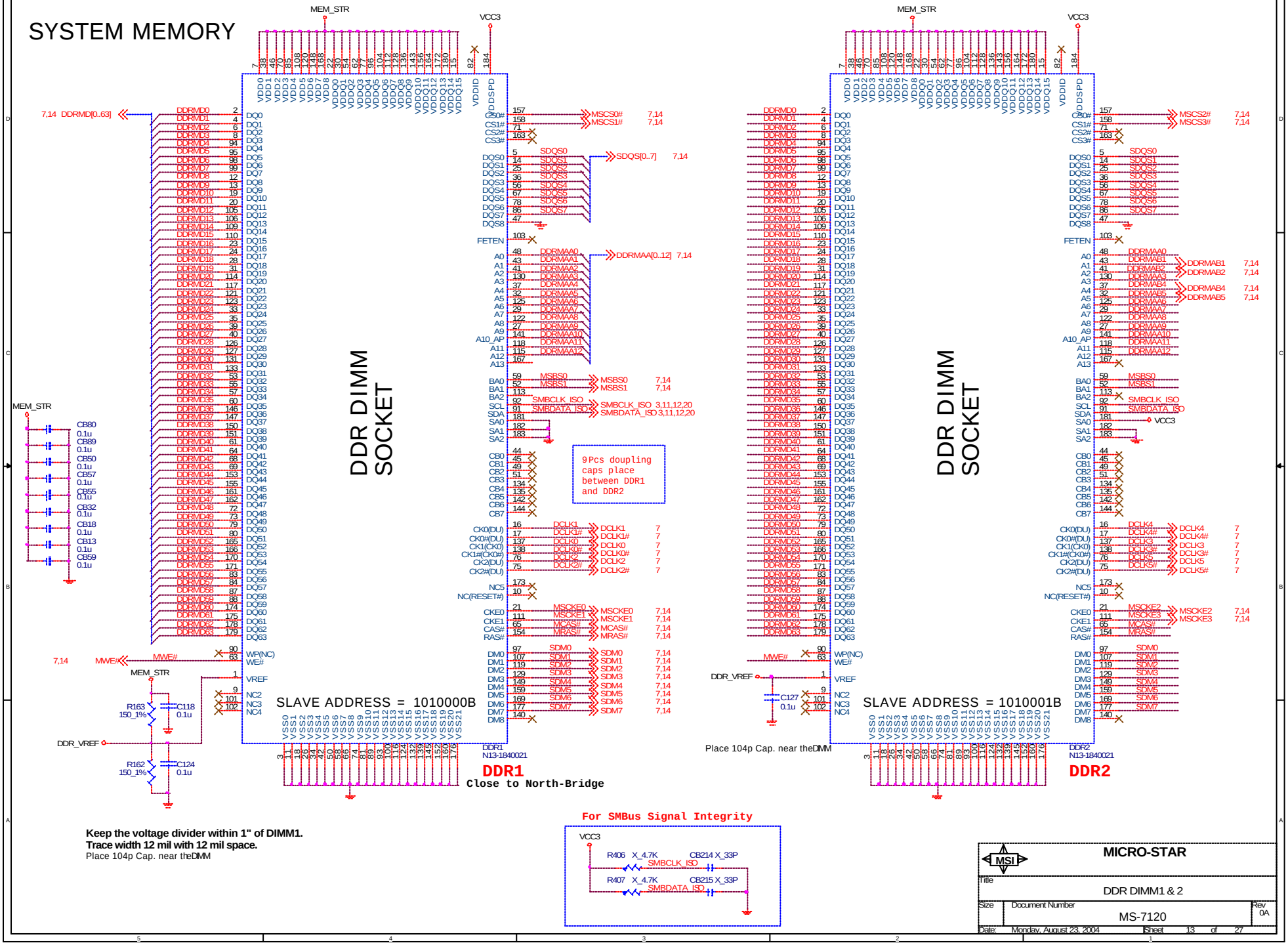
MSI **MICRO-STAR**

Title: FWH & CNR & Manual Part

Size	Document Number	Rev
	MS-7120	0A

Date: Friday, August 20, 2004 Sheet 12 of 27

SYSTEM MEMORY



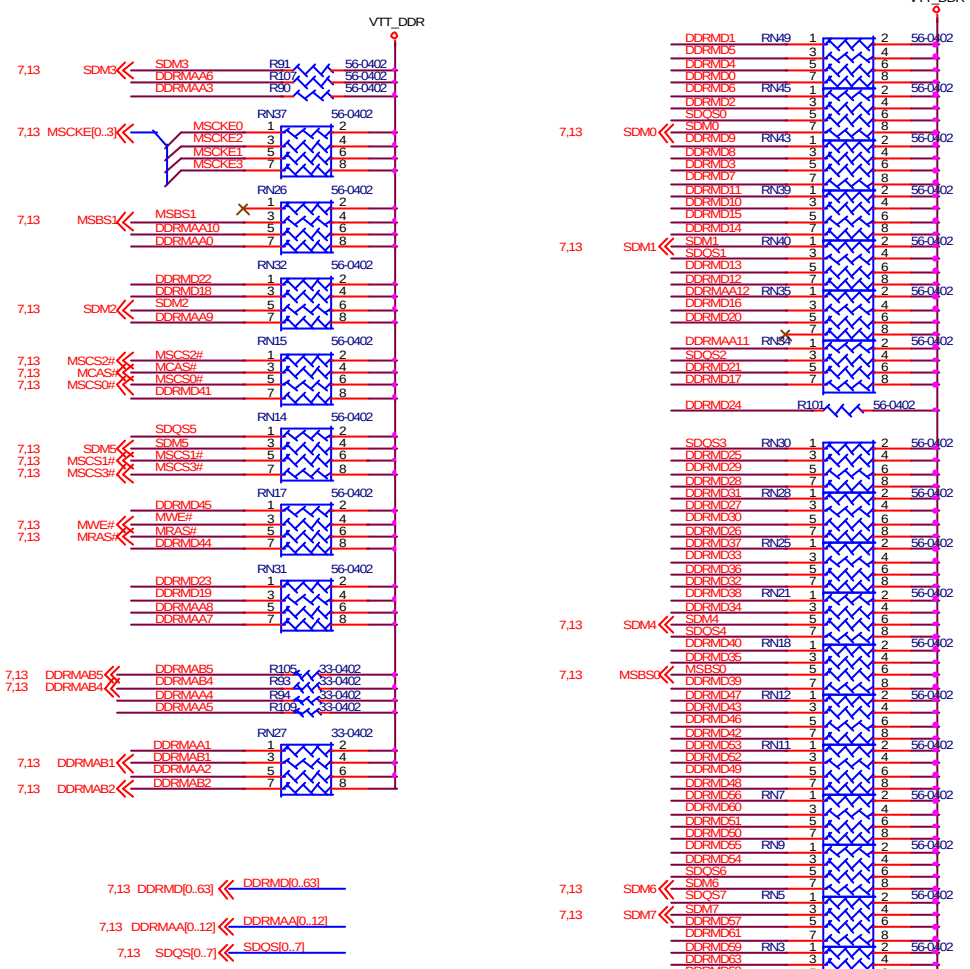
Keep the voltage divider within 1" of DIMM1.
Trace width 12 mil with 12 mil space.
Place 104p Cap. near theDIMM

For SMBus Signal Integrity

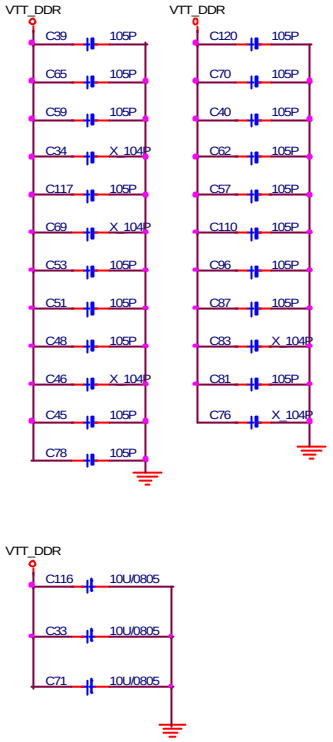
MICRO-STAR

Title	DDR DIMM1 & 2	
Size	Document Number MS-7120	Rev 0A
Date: Monday, August 23, 2004	Sheet 13 of 27	

DDR TERMINATORS



TERMINATION DECOUPLING



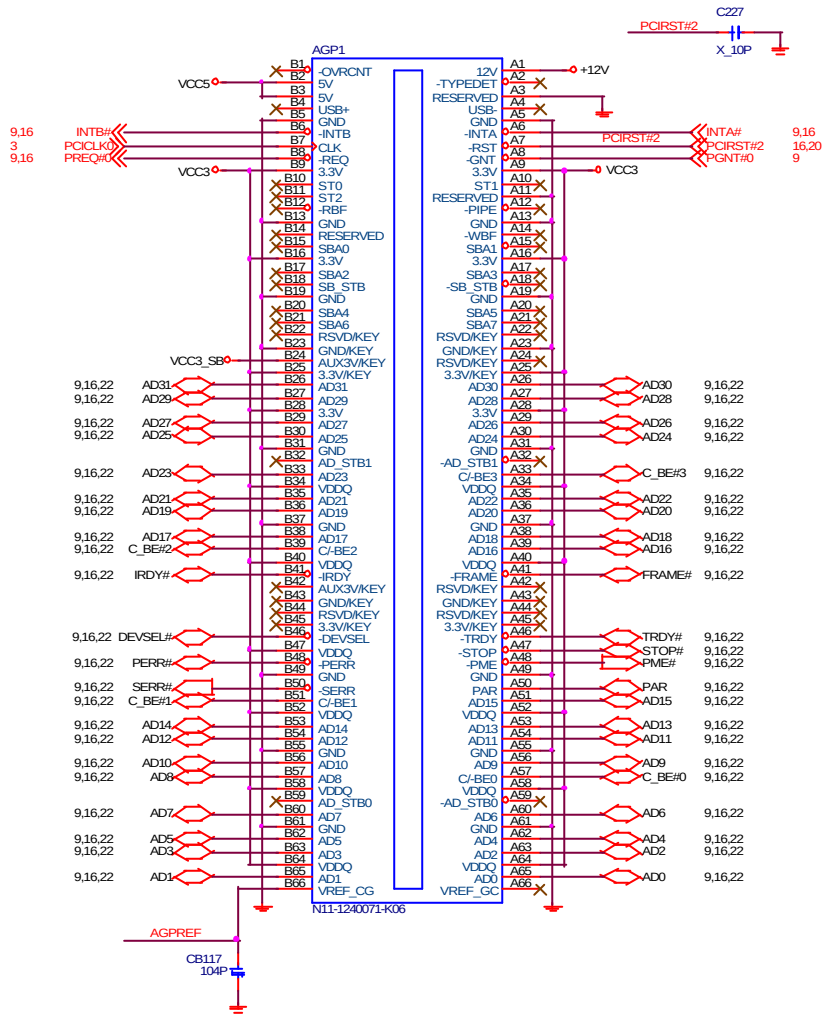
MICRO-STAR

Title: DDR DAMPING

Size | Document Number: MS-7120 | Rev: 0A

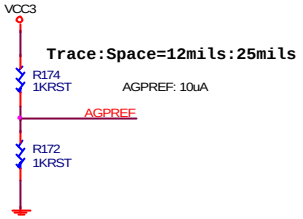
Date: Tuesday, August 10, 2004 | Sheet 14 of 27

AGP UNIVERSAL 2X/4X SLOT



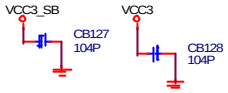
MASTER = PREQ0
INTA#

AGP SIGNAL REFERENCE CIRCUIT



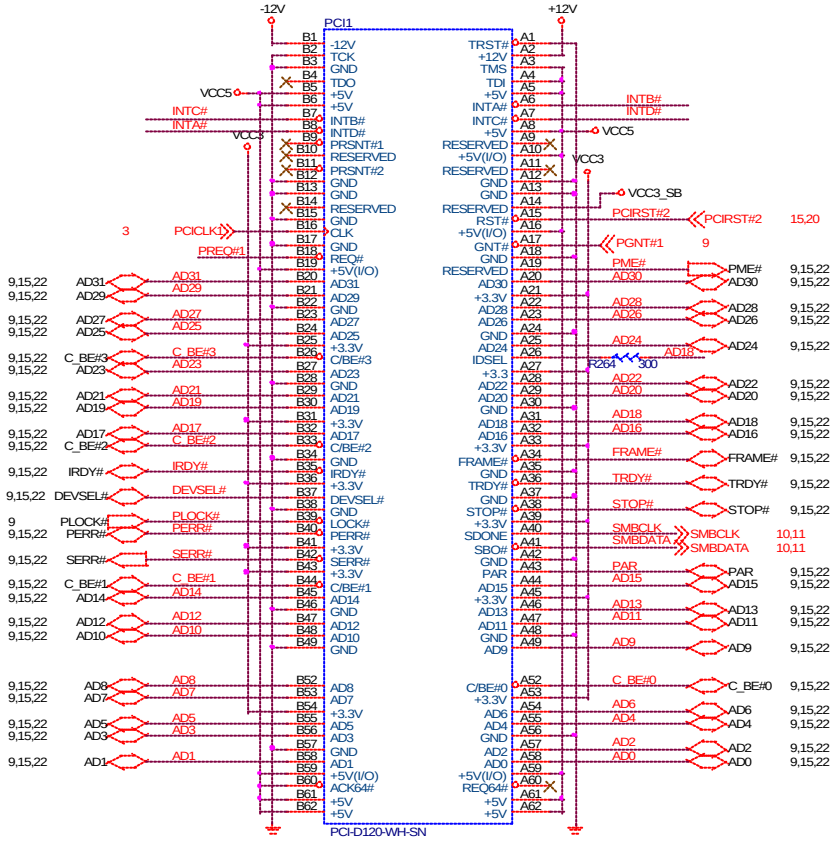
NEAR AGP SLOT

AGP SLOT DECOUPLING CAPACITORS



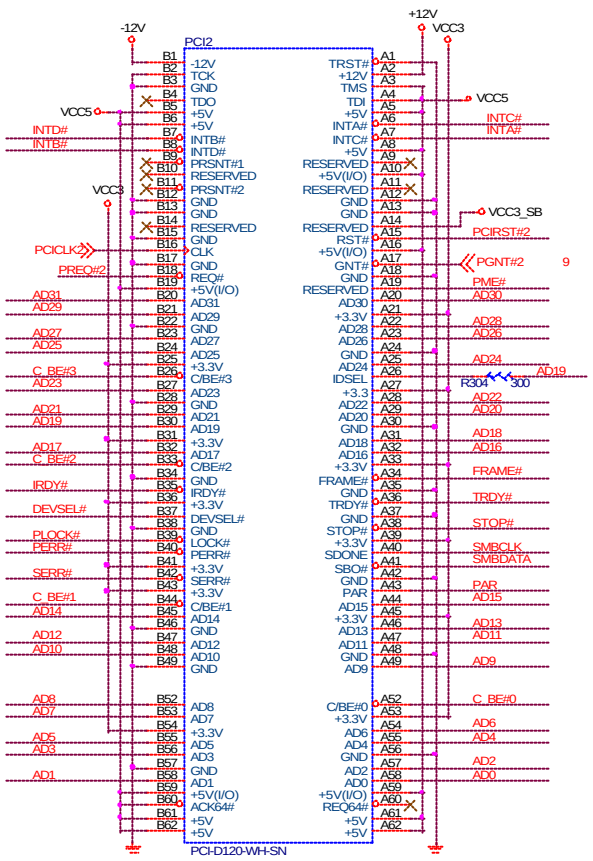
MSI	MICRO-STAR	
Title	AGP SLOT	
Size	Document Number MS-7120	Rev 0A
Date: Thursday, July 29, 2004	Sheet 15 of 27	

PCI SLOT 1 (PCI VER: 2.2 COMPLY)



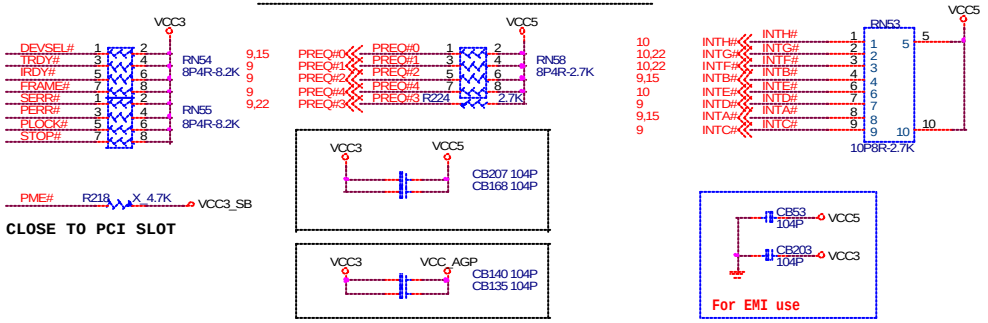
IDSEL = AD18
MASTER = PREQ1
INTB#

PCI SLOT 2 (PCI VER: 2.2 COMPLY)

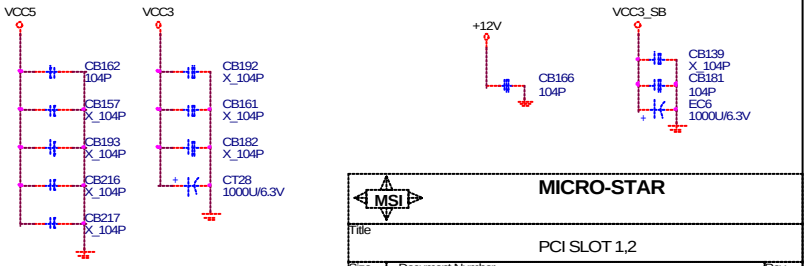


IDSEL = AD19
MASTER = PREQ2
INTC#

PCI PULL-UP / DOWN RESISTORS



PCI SLOT DECOUPLING CAPACITORS



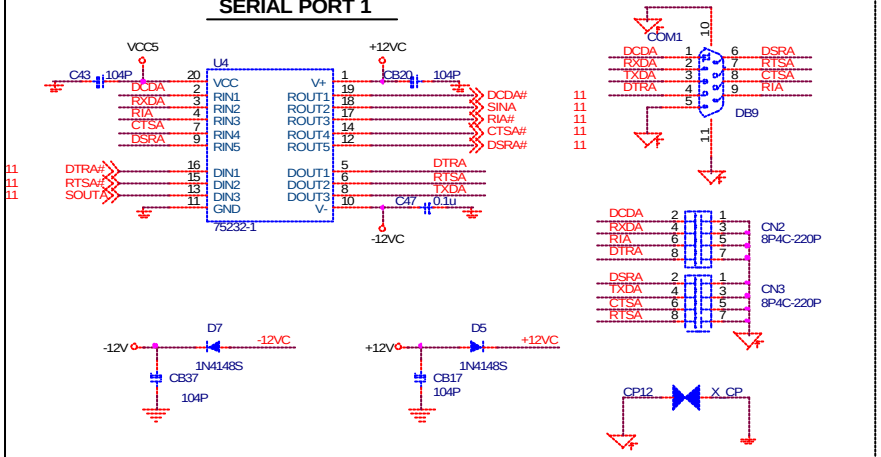
MICRO-STAR

Title: PCI SLOT 1,2

Size | Document Number: MS-7120 | Rev: 0A

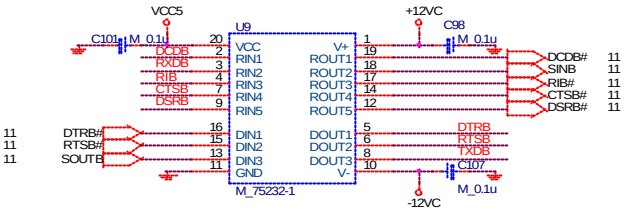
Date: Thursday, August 19, 2004 | Sheet 16 of 27

SERIAL PORT 1

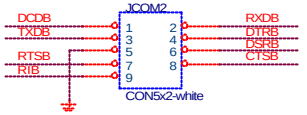


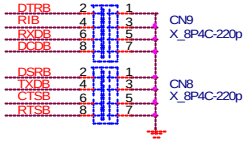
SERIAL PORT 2

Take off CN11 & CN12

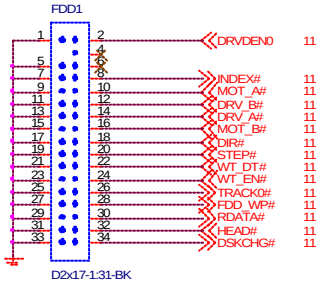


COM2 HEADER

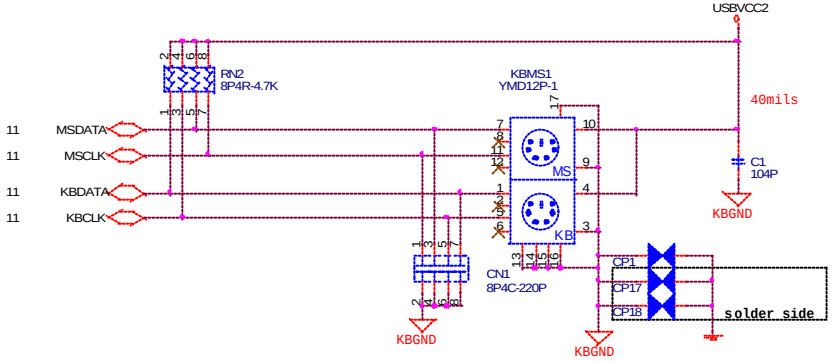




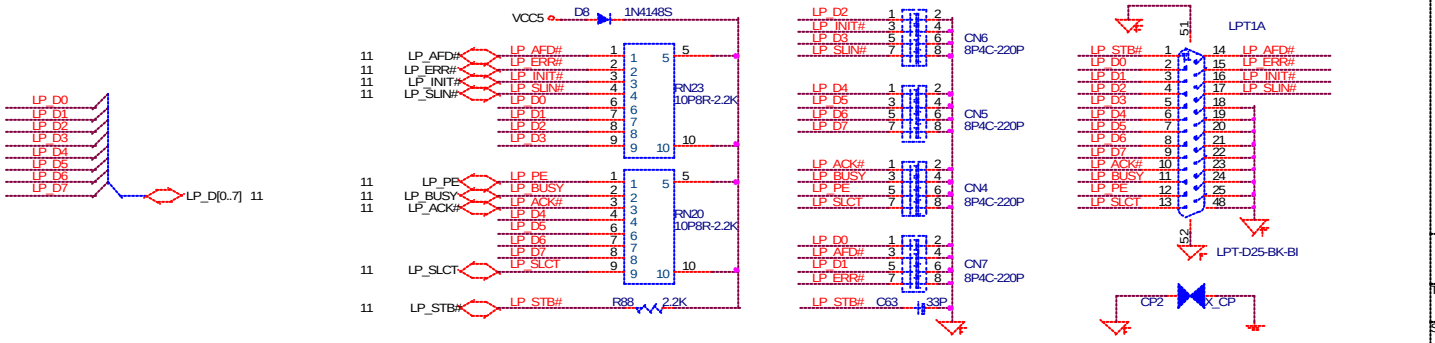
FLOPPY CONNECTOR

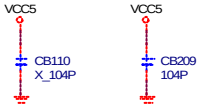


PS2 KEYBOARD & MOUSE CONNECTOR



PARALLAL PORT



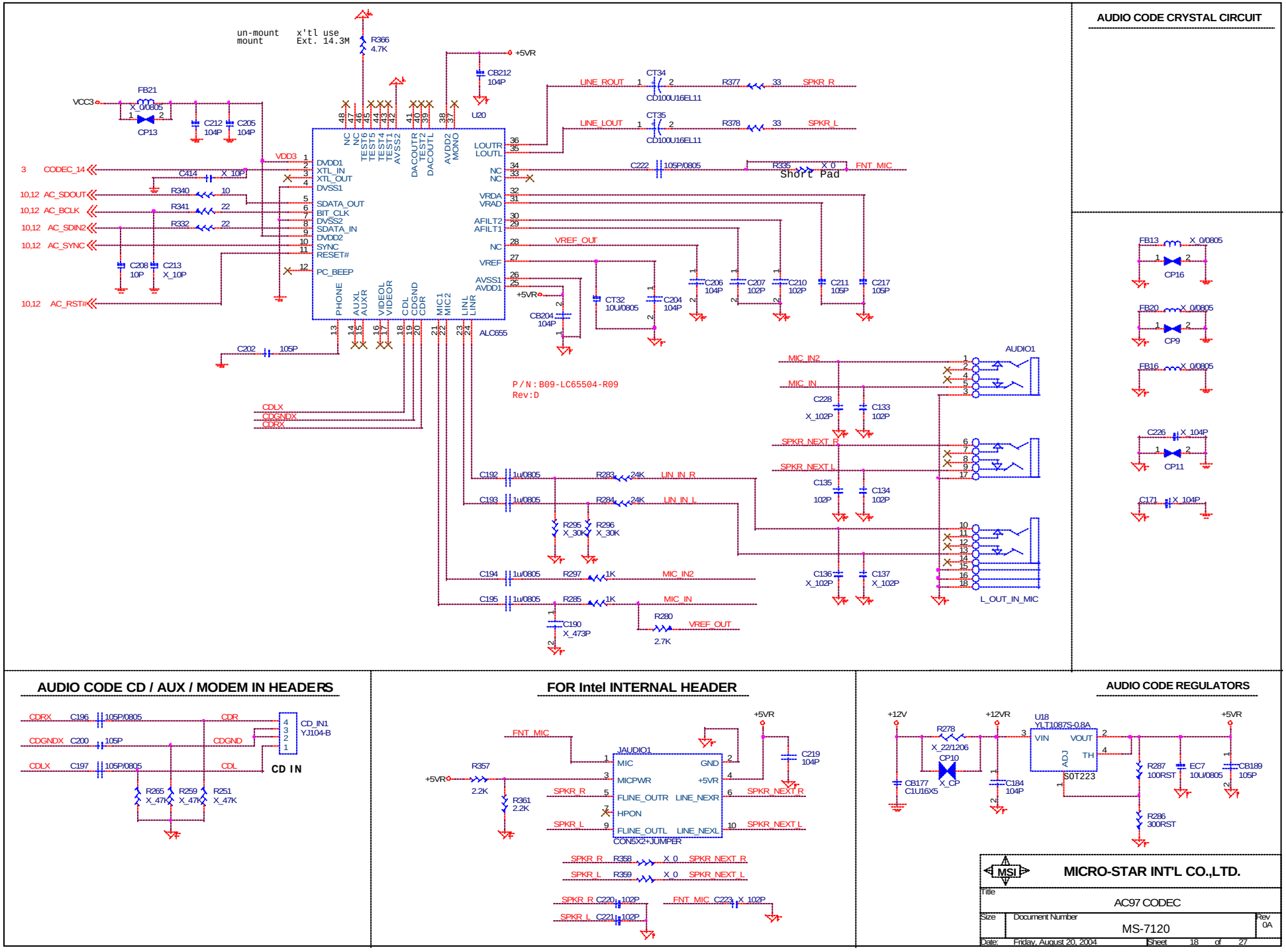


MSI MICRO-STAR

Title: I/O CONNECTORS

Size	Document Number	Rev
	MS-7120	0A

Date: Thursday, August 19, 2004 Sheet 17 of 27



AUDIO CODE CRYSTAL CIRCUIT

AUDIO CODE CD / AUX / MODEM IN HEADERS

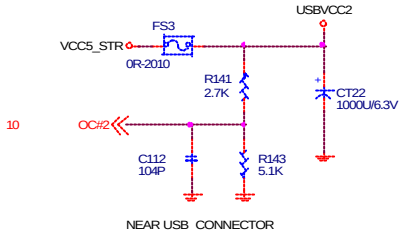
FOR Intel INTERNAL HEADER

AUDIO CODE REGULATORS

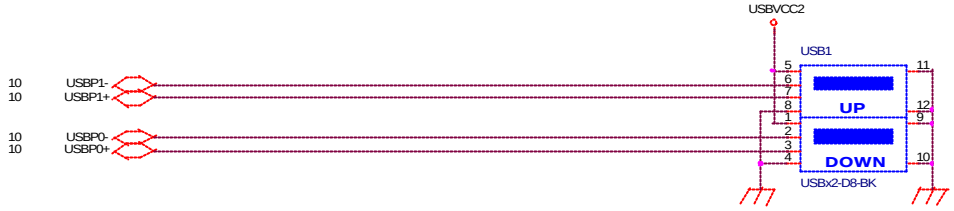
MSI **MICRO-STAR INT'L CO.,LTD.**

Title	AC97 CODEC	
Size	Document Number MS-7120	Rev 0A
Date: Friday, August 20, 2004	Sheet 18 of 27	

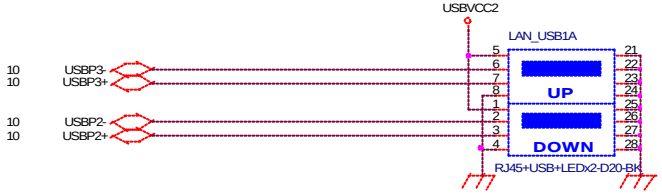
POWER CIRCUIT FOR USB PORT 0~3



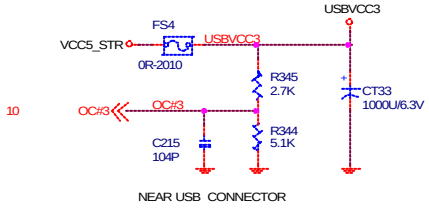
REAR PANEL USB CONNECTOR FOR USB PORT 0,1



REAR PANEL USB CONNECTOR FOR USB PORT 2,3



POWER CIRCUIT FOR USB PORT 4,5

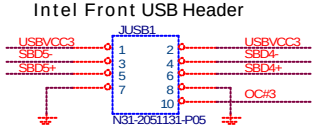


*** USB Trace width : 7.5 mils**
*** USB Trace Spacing : 20 mils**

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

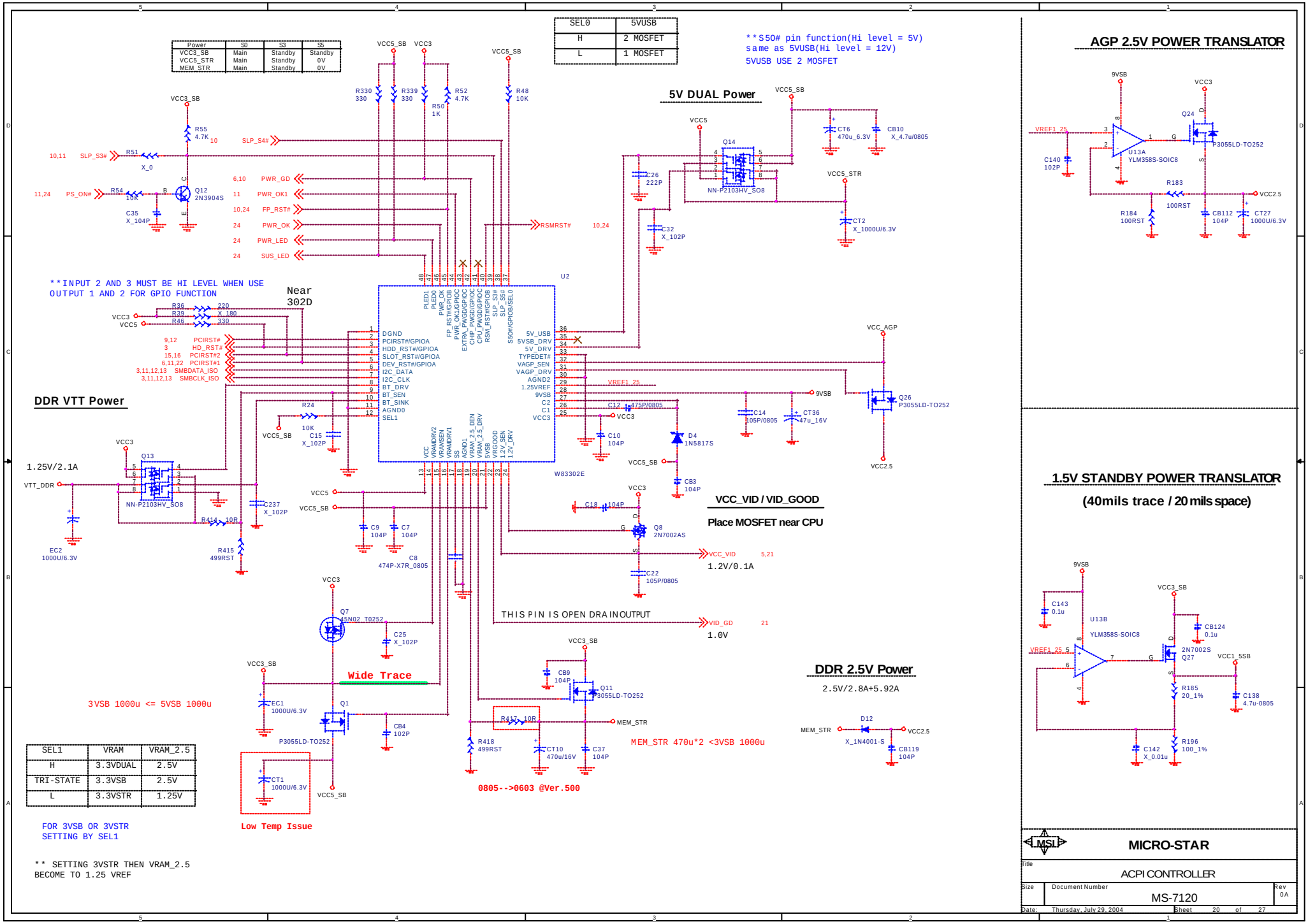
FRONT PANEL USB CONNECTOR FOR USB PORT 4,5

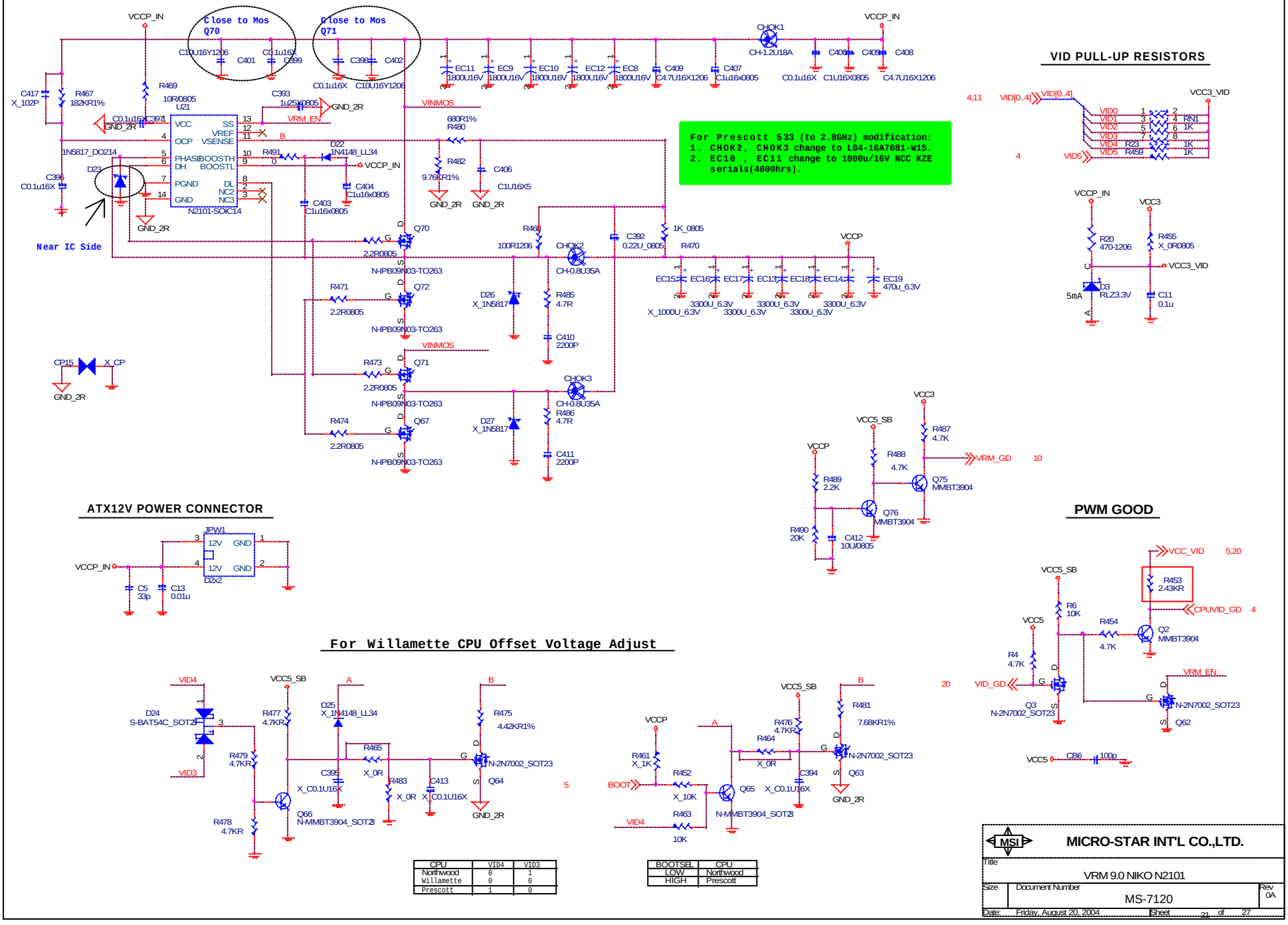
Intel Front USB Header

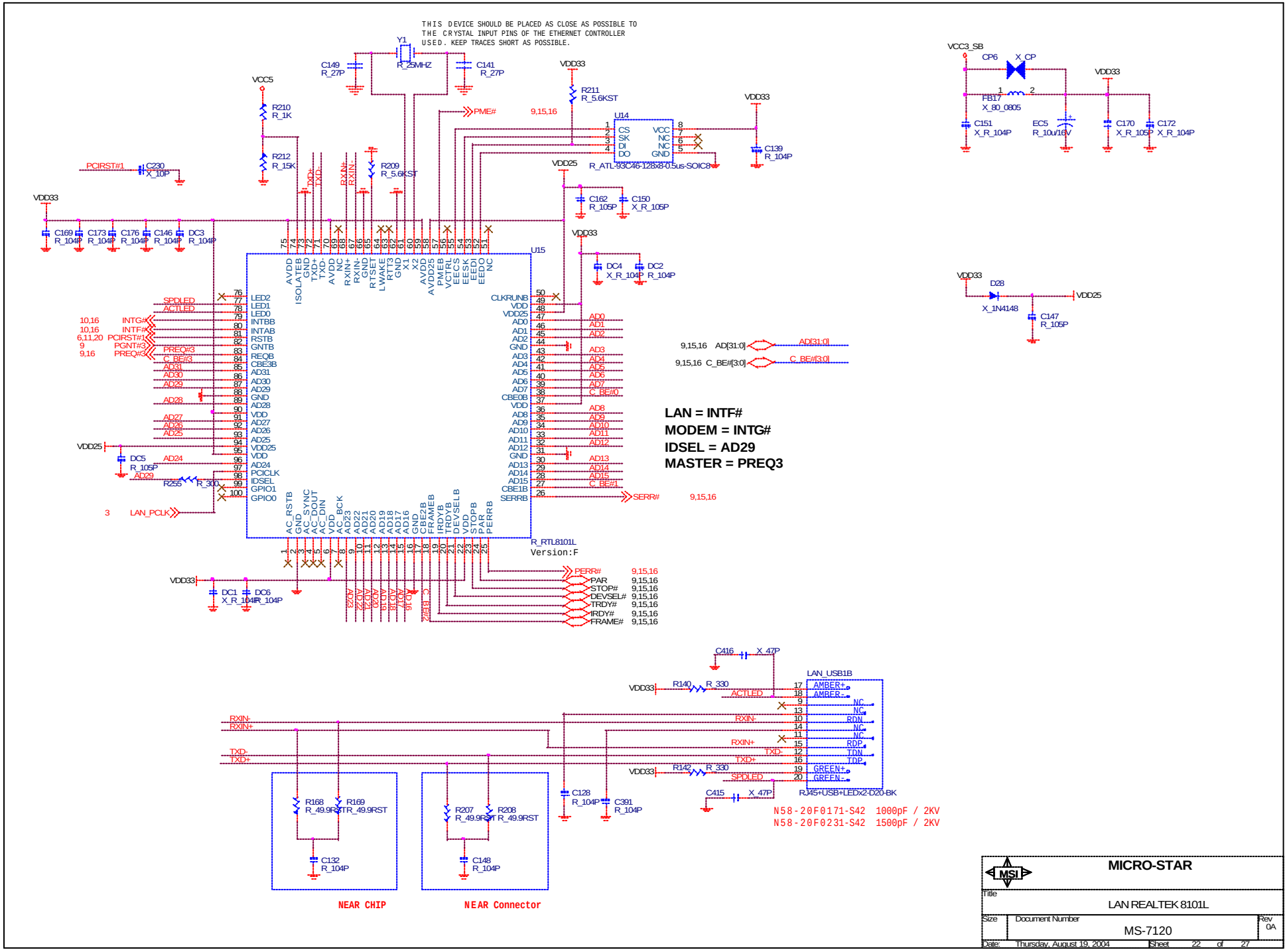


MSI **MICRO-STAR**

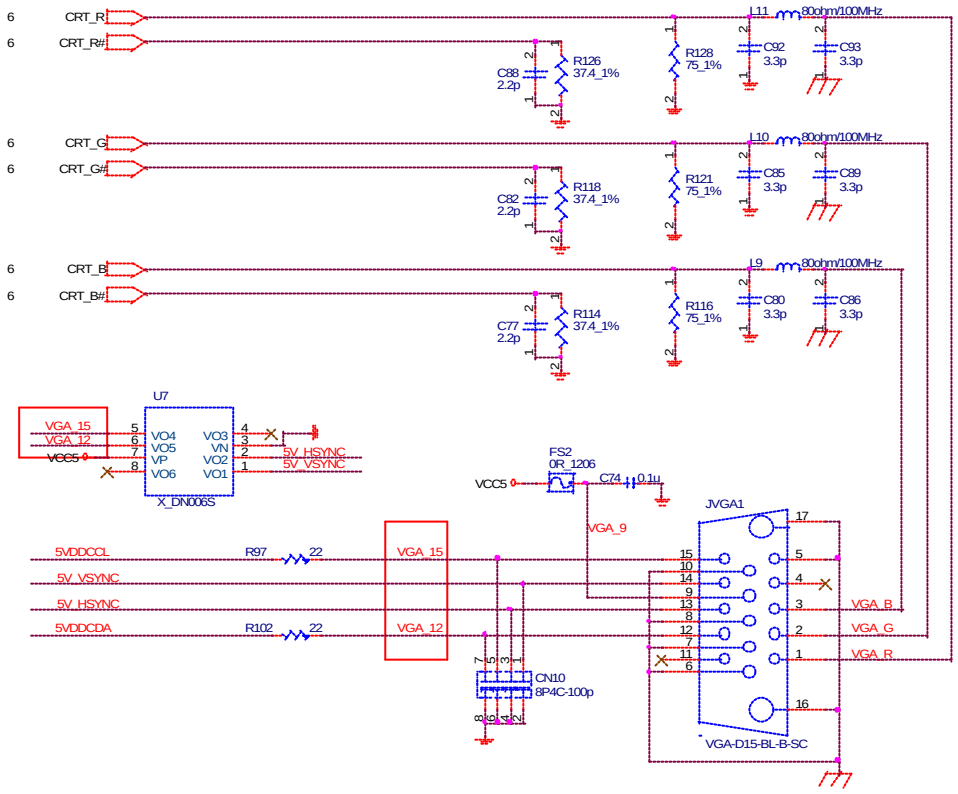
Title	USB CONNECTORS	
Size	Document Number: MS-7120	Rev: 0A
Date: Thursday, August 19, 2004	Sheet 19 of 27	

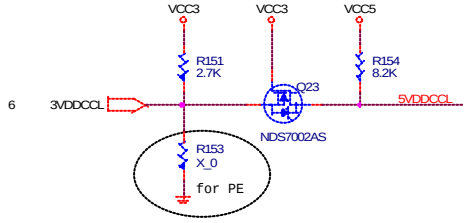

Power | S0 | S3 | S5
VCC3_SB | Main | Standby | Standby
VCC5_STR | Main | Standby | 0V
MEM_STR | Main | Standby | 0V
SEL0 | 5VUSB
H | 2 MOSFET
L | 1 MOSFET
**S5O# pin function(Hi level = 5V)
same as 5VUSB(Hi level = 12V)
5VUSB USE 2 MOSFET
AGP 2.5V POWER TRANSLATOR
5V DUAL Power
DDR VTT Power
**INPUT 2 AND 3 MUST BE HI LEVEL WHEN USE
OUTPUT 1 AND 2 FOR GPIO FUNCTION
Near 302D
U2
W83302E
VCC_VID / VID_GOOD
Place MOSFET near CPU
1.2V/0.1A
THIS PIN IS OPEN DRAIN OUTPUT
1.0V
DDR 2.5V Power
2.5V/2.8A+5.92A
1.5V STANDBY POWER TRANSLATOR
(40mils trace / 20 mils space)
Wide Trace
3VSB 1000u <= 5VSB 1000u
MEM_STR 470u*2 <3VSB 1000u
0805-->0603 @Ver.500
Low Temp Issue
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
** SETTING 3VSTR THEN VRAM_2.5
BECOME TO 1.25 VREF
MSI
MICRO-STAR
ACPI CONTROLLER
MS-7120
Thursday, July 29, 2004
Sheet 20 of 27

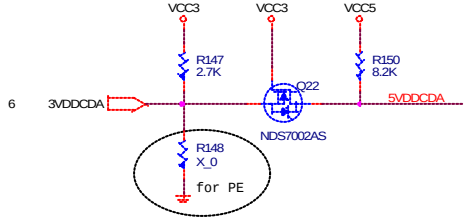

VCCP_IN
Close to Mos Q70
Close to Mos Q71
C10U16Y1206
C401
C0.1u16X
C399
C398
C402
C0.1u16X
C10U16Y1206
EC11 1800U16V
EC9 1800U16V
EC10 1800U16V
EC12 1800U16V
EC8 1800U16V
C409 C4.7U16X1206
C407 C1u16x0805
CHOK1
CH-1.2U18A
C409
C409
C408
C0.1u16X
C1U16X0805
C4.7U16X1206
VCCP_IN
C417 X_102P
R467 182KR1%
R469 10R/0805
U21
C0.1u16X
C397
GND_2R
VCC
OCP
PHASE
DH
PGND
GND
SS
VREF
VSENSE
BOOSTH
BOOSTL
DL
NC2
NC3
N2101-SOIC14
C393 1u25x0805
GND_2R
VRM_EN
B
VINMOS
680R1% R480
R482 9.76KR1%
C406 C1U16X5
GND_2R
GND_2R
1N5817_DO214
D23
C396 C0.1u16X
R491 0
D22 1N4148_LL34
VCCP_IN
C404 C1u16x0805
C403 C1u16x0805
Near IC Side
GND_2R
Q70
2.2R0805
N-IPB09N03-TO263
R460 100R1206
CHOK2
CH-0.8U35A
C392 0.22U_0805
1K_0805 R470
EC15 EC16 EC17 EC13 EC18 EC14 3300U_6.3V
EC19 470u_6.3V
X_1000U_6.3V
VCCP
R471
Q72
2.2R0805
N-IPB09N03-TO263
D26 X_1N5817
R485 4.7R
C410 2200P
VINMOS
R473
Q71
2.2R0805
N-IPB09N03-TO263
CHOK3
CH-0.8U35A
R474
Q67
2.2R0805
N-IPB09N03-TO263
D27 X_1N5817
R486 4.7R
C411 2200P
CP15 X_CP
GND_2R
For Prescott 533 (to 2.8GHz) modification:
1. CHOK2, CHOK3 change to L04-16A7081-W15.
2. EC10 , EC11 change to 1000u/16V NCC KZE serials(4000hrs).
VID PULL-UP RESISTORS
4,11
VID[0..4]
VID[0..4]
VCC3_VID
VID0
VID1
VID2
VID3
VID4
VID5
RN1 1K
R23 1K
R459 1K
4
VCCP_IN
VCC3
R20 470-1206
R455 X_0R0805
VCC3_VID
D3 RLZ3.3V
5mA
C11 0.1u
VCC3
VCC5_SB
VCCP
R487 4.7K
R488 4.7K
VRM_GD
10
Q75 MMBT3904
R489 2.2K
Q76 MMBT3904
R490 20K
C412 10U/0805
ATX12V POWER CONNECTOR
JPW1
VCCP_IN
12V
GND
D2x2
C5 33p
C13 0.01u
PWM GOOD
VCC_VID
5,20
VCC5_SB
R453 2.43KR
CPUVID_GD
4
R6 10K
VCC5
R454 4.7K
Q2 MMBT3904
R4 4.7K
VID_GD
20
Q3 N-2N7002_SOT23
VRM_EN
N-2N7002_SOT23
Q62
VCC5
CB6
100p
For Willamette CPU Offset Voltage Adjust
VID4
D24 S-BAT54C_SOT23
VID3
R479 4.7KR
R478 4.7KR
VCC5_SB
A
R477 4.7KR
D25 X_1N4148_LL34
R465
C395 X_C0.1U16X
X_0R
R483 X_0R
C413 X_C0.1U16X
Q66 N-MMBT3904_SOT23
B
R475 4.42KR1%
N-2N7002_SOT23
Q64
GND_2R
5
VCCP
R461 X_1K
BOOT
R452 X_10K
R463 10K
VID4
A
R476 4.7KR
R464 X_0R
C394 X_C0.1U16X
Q65 N-MMBT3904_SOT23
VCC5_SB
B
R481 7.68KR1%
N-2N7002_SOT23
Q63
GND_2R
CPU | VID4 | VID3
Northwood | 0 | 1
Willamette | 0 | 0
Prescott | 1 | 0
BOOTSEL | CPU
LOW | Northwood
HIGH | Prescott
MSI
MICRO-STAR INT'L CO.,LTD.
Title
VRM 9.0 NIKO N2101
Size
Document Number
MS-7120
Rev 0A
Date: Friday, August 20, 2004
Sheet 21 of 27

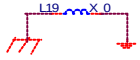

THIS DEVICE SHOULD BE PLACED AS CLOSE AS POSSIBLE TO THE CRYSTAL INPUT PINS OF THE ETHERNET CONTROLLER USED. KEEP TRACES SHORT AS POSSIBLE.
U15
R_RTL8101L
Version:F
LAN = INTF#
MODEM = INTG#
IDSEL = AD29
MASTER = PREQ3
NEAR CHIP
NEAR Connector
N58-20F0171-S42 1000pF / 2KV
N58-20F0231-S42 1500pF / 2KV
MICRO-STAR
LAN REALTEK 8101L
MS-7120
Thursday, August 19, 2004
22 of 27

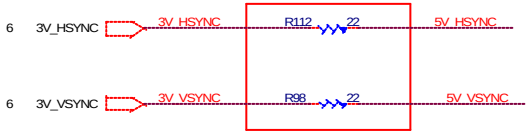
Video Connector











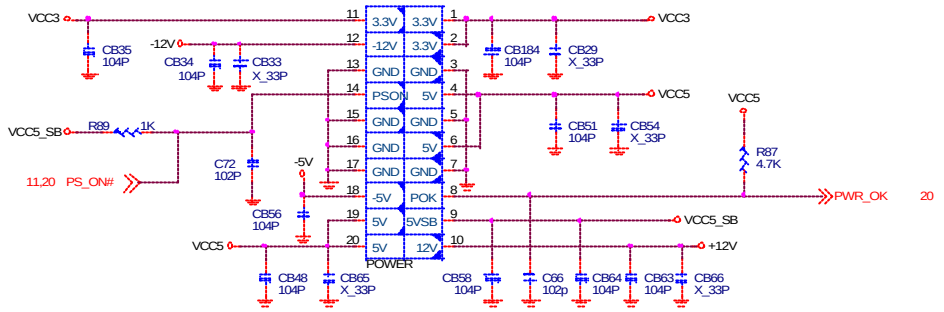
MICRO-STAR

Title: VGA CONNECTOR

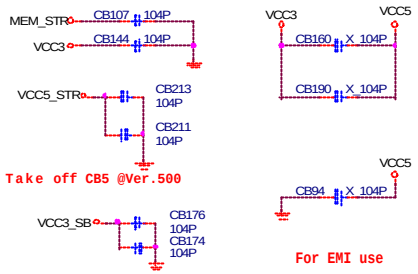
Size	Document Number	Rev
	MS-7120	0A

Date: Tuesday, August 10, 2004 Sheet 23 of 27

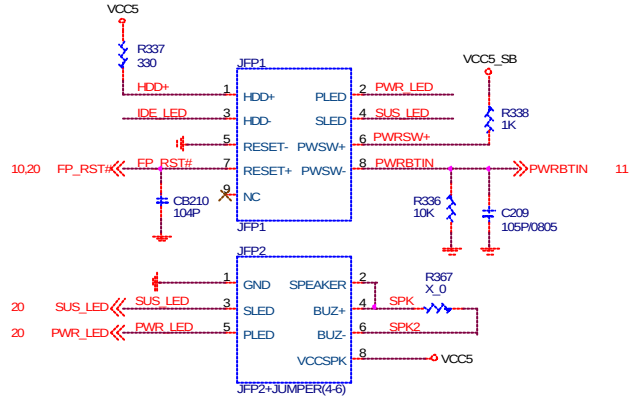
ATX CONNECTOR



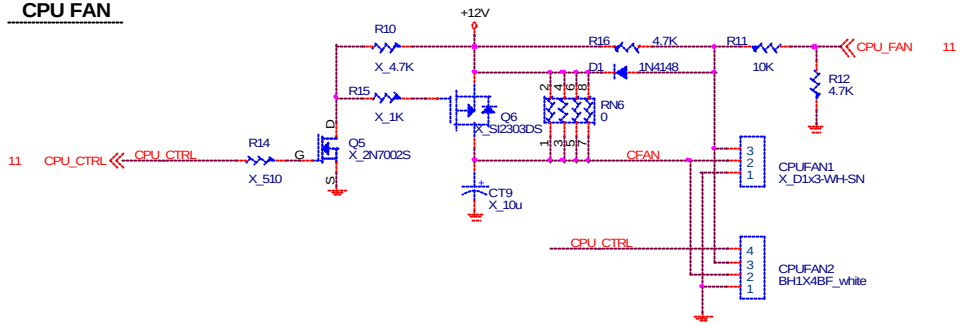
REGULATORS OUTPUT DECOUPLING CAPACITORS



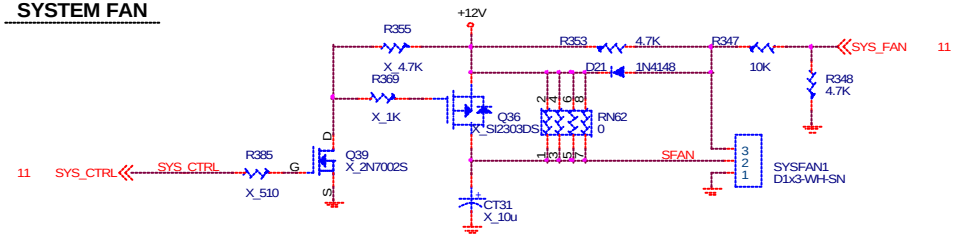
Intel Front Panel

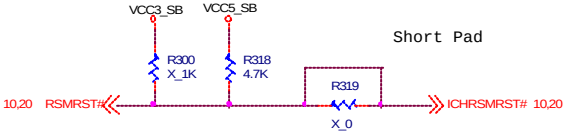


CPU FAN

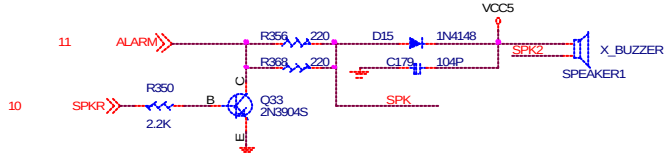


SYSTEM FAN

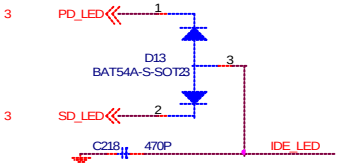




BUZZER



IDE LED



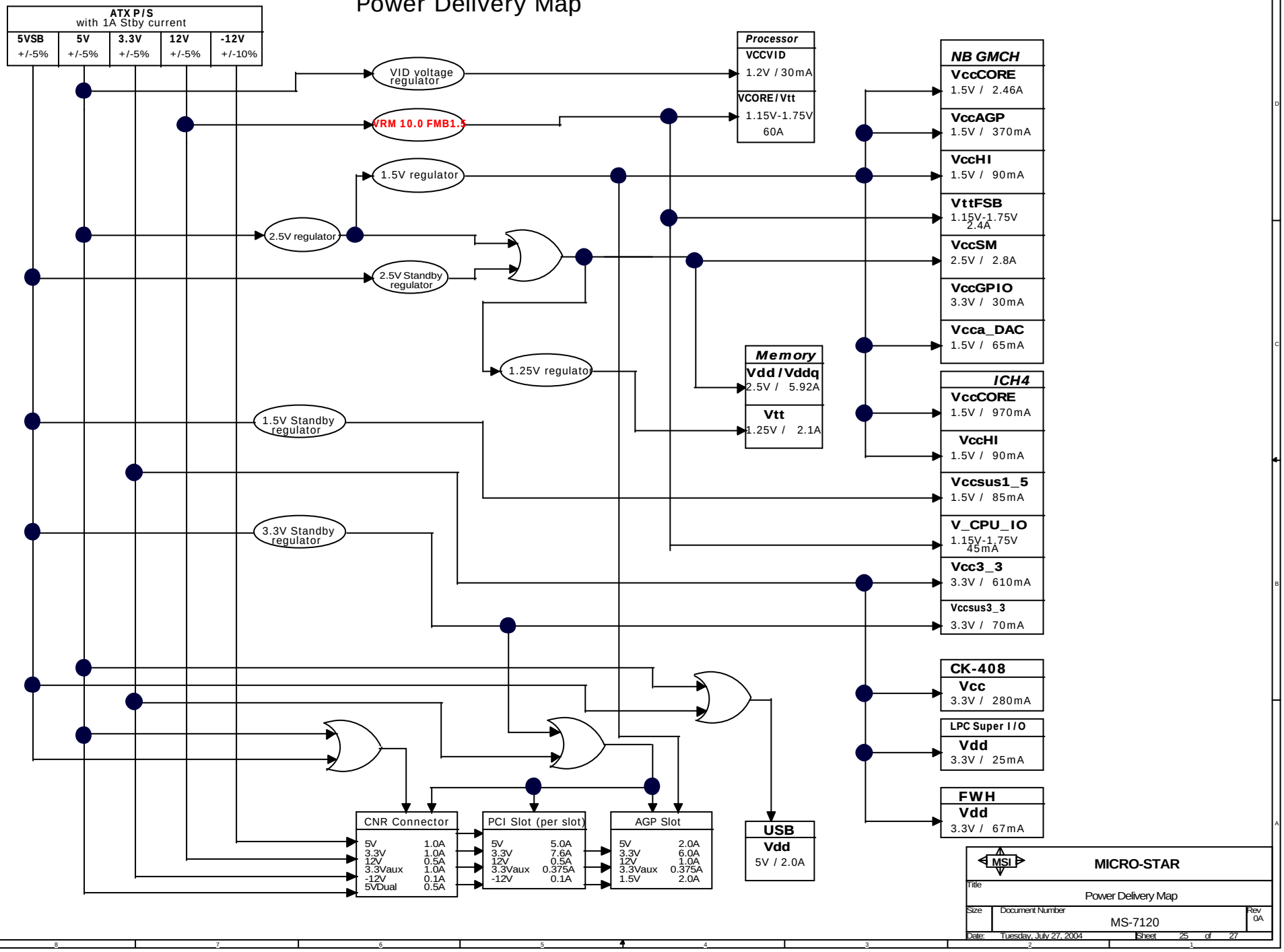
MSI **MICRO-STAR**

Title: Front Panel & ATX Connector & FAN

Size | Document Number: MS-7120 | Rev: 0A

Date: Monday, August 23, 2004 | Sheet 24 of 27

Power Delivery Map



MSI MICRO-STAR

Title: Power Delivery Map

Size | Document Number: MS-7120 | Rev: 0A

Date: Tuesday, July 27, 2004 | Sheet 25 of 27

General SPEC

ICH4

GPIO Pin	Type	Function
GPIO 0	I	REQ#A (multifunction pin)
GPIO 1	I	REQ#B (multifunction pin)
GPIO 2	I	Pull up through 8.2K ohms (PIRQE#)
GPIO 3	I	Pull up through 8.2K ohms (PIRQF#)
GPIO 4	I	Pull up through 8.2K ohms (PIRQG#)
GPIO 5	I	Pull up through 8.2K ohms (PIRQH#)
GPIO 6	I	Pull down through 10K ohms (unused)
GPIO 7	I	Pull down through 10K ohms (unused)
GPIO 8	I	Pull Up to 3.3VSBY through 4.7K ohms (SIO_PME)
GPIO 9	I	Not Implemented
GPIO 10	I	Not Implemented
GPIO 11	I	SMB_ALERT (multifuntion pin)
GPIO 12	I	EXTSMI# with Pull up 10K ohms to VCC3_SB
GPIO 13	I	Pull down through 10K ohms (unused)
GPIO 14~15	I	Not Implemented
GPIO 16	O	GNT#A (multifunction pin)
GPIO 17	O	GNT#B (multifuntion pin)
GPIO 18	O	No Connected
GPIO 19	O	No Connected
GPIO 20	O	No Connected
GPIO 21	O	No Connected
GPIO 22	OD	No Connected
GPIO 23	O	Pull Up to 3.3V through 8.2K ohms (BIOS protect)
GPIO 24	I/O	GPIO 24
GPIO 25	I/O	GPIO 25
GPIO 26	I/O	Not Implemented
GPIO 27	I/O	No Connected
GPIO 28	I/O	No Connected
GPIO 29~31	O	Not Implemented
GPIO 32	I/O	No Connected
GPIO 33	I/O	No Connected
GPIO 34	I/O	Primary IDE ATA66/100 detection (PD_DET)
GPIO 35	I/O	Secondary IDE ATA66/100 detection (SD_DET)
GPIO 36	I/O	No Connected
GPIO 37	I/O	No Connected
GPIO 38	I/O	No Connected
GPIO 39	I/O	No Connected
GPIO 40	I/O	No Connected
GPIO 41	I/O	No Connected
GPIO 42	I/O	No Connected
GPIO 43	I/O	No Connected
GPIO 44~47	I/O	Not Implemented

FWH

GPIO Pin	Type	Function
GPI 0	I	Pull down through 8.2K ohms (unused)
GPI 1	I	Pull down through 8.2K ohms (unused)
GPI 2	I	P1 customer defined
GPI 3	I	P1 customer defined
GPI 4	I	Pull down through 8.2K ohms (unused)

PCI Config.

DEVICE	ICH INT Pin	IDSEL	CLOCK	CLK GEN PIN OUT
AGP1	INTA# INTB#	AD16	PCICLK0	10 (PCI3/FS4)
PCI Slot 1	INTB# INTC# INTD# INTA#	AD18	PCICLK1	11 (PCI4)
PCI Slot 2	INTC# INTD# INTA# INTB#	AD19	PCICLK2	12 (PCI5)
PCI LAN	INTF# INTG#	AD29	LAN_PCLK	17 (PCI9)

**ICH4 reserved PCI address line AD22 for the PCI-to-ISA Bridge's IDSEL input.*

DIMM Config.

DEVICE	ADDRESS	CLOCK
DIMM 1	1010000B	DCLK0/DCLK0# DCLK1/DCLK1# DCLK2/DCLK2#
DIMM 2	1010001B	DCLK3/DCLK3# DCLK4/DCLK4# DCLK5/DCLK5#

MSI **MICRO-STAR**

Title: General SPEC

Size | Document Number: MS-7120 | Rev: 0A

Date: Thursday, August 19, 2004 | Sheet 26 of 27

Jumper Setting & Connector Setting

PCB1
P50-712000A-T53

BAT1_X
BATTERY

U10_X
E31-0401520-E25

U19_1
FLASH 4M

U5_1
CPU Retention

JMCH1
X_FAN Header

JMCH2
X_FAN Header

LABEL1
G51-LA00830

STD	U10_A B01-845GE15-I06 **845GE B1** U17_A B01-801DB55-I06 **ICH4 B0** LAN_USB1_A USB X 2 - 8pin Only USB*2	U19_B1 FLASH 4M LABEL1_A G51-LA00830 **845GE**
LAN	LAN_USB1_B USB X2 +RJ45 N58-16F0041-S42 1000pF / 2KV LAN & Tramsformer + USB*2	R135_A 137_1% R126_A 37.4_1% R118_A 37.4_1% R114_A 37.4_1% R128_A 75_1% R121_A 75_1% R116_A 75_1% Onboard VGA :Yes
GV	U10_B B01-845GV15-I06 **845GV B1** U17_B B01-801DB55-I06 **ICH4 B0**	U19_A1 FLASH 2M LABEL1_B G51-LA00828 **845GV**
G	U10_C B01-0845G65-I06 **845G B1** U17_C B01-801DB55-I06 **ICH4 B0**	LABEL1_C G51-LA00829 **845G(B)**
GL	U10_D B01-845GL15-I06 **845GL B1** U17_D B01-801DB55-I06 **ICH4 B0**	LABEL1_D G51-LA00831 **845GL**
B	U10_E B01-845PE15-I06 **845PE B1** U17_E B01-801DB55-I06 **ICH4 B0**	CB92_B 0 ohm R135_B 0 C160_B 0 R126_B 0 R118_B 0 R114_B 0 R128_B 0 R121_B 0 R116_B 0 Onboard VGA :No
OPT:A **OPT:B**		L9_A 600ohm/100MHz L10_A 600ohm/100MHz L11_A 600ohm/100MHz C80_A 10p C86_A 10p C85_A 10p C89_A 10p C92_A 10p C93_A 10p

cfg6714GV-LAN-Pr

EC900 1000U16V
EC901 1000U16V
CHOK900 CH-1.6U30A
CHOK901 CH-1.6U30A

MICRO-STAR

Title: JUMPER SETTING & MANUAL PARTS

Size | Document Number: MS-7120 | Rev: 0A

Date: Friday, August 20, 2004 | Sheet 27 of 27