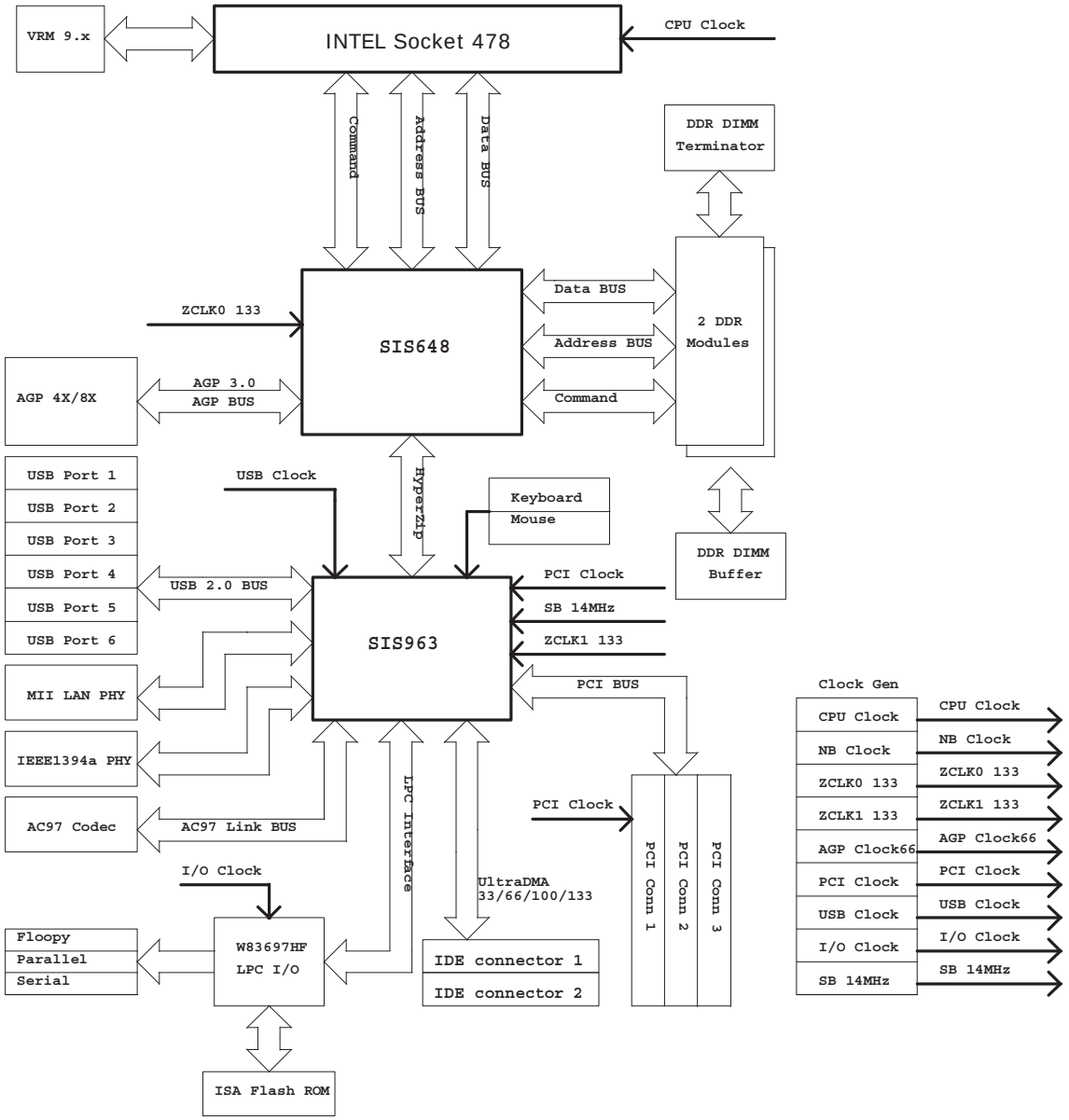
# MS-6703 Ver:0D




**CPU:**

Pentium4 socket-478 Processor

**System Chipset:**

SIS648(NB) + SIS963(SB)

**On Board Function Chip:**

LPC I/O-W83697HF

IEEE1394a PHY Realtek 8801B

MII LAN PHY Realtek 8201BL

Audio Codec-Realtek ALC650/AD1980

**Expansion Slot:**

AGP3.0 Slot*1

PCI2.2 Slot*3



MSI MICRO-STAR

Title: Cover Sheet & Block Diagram

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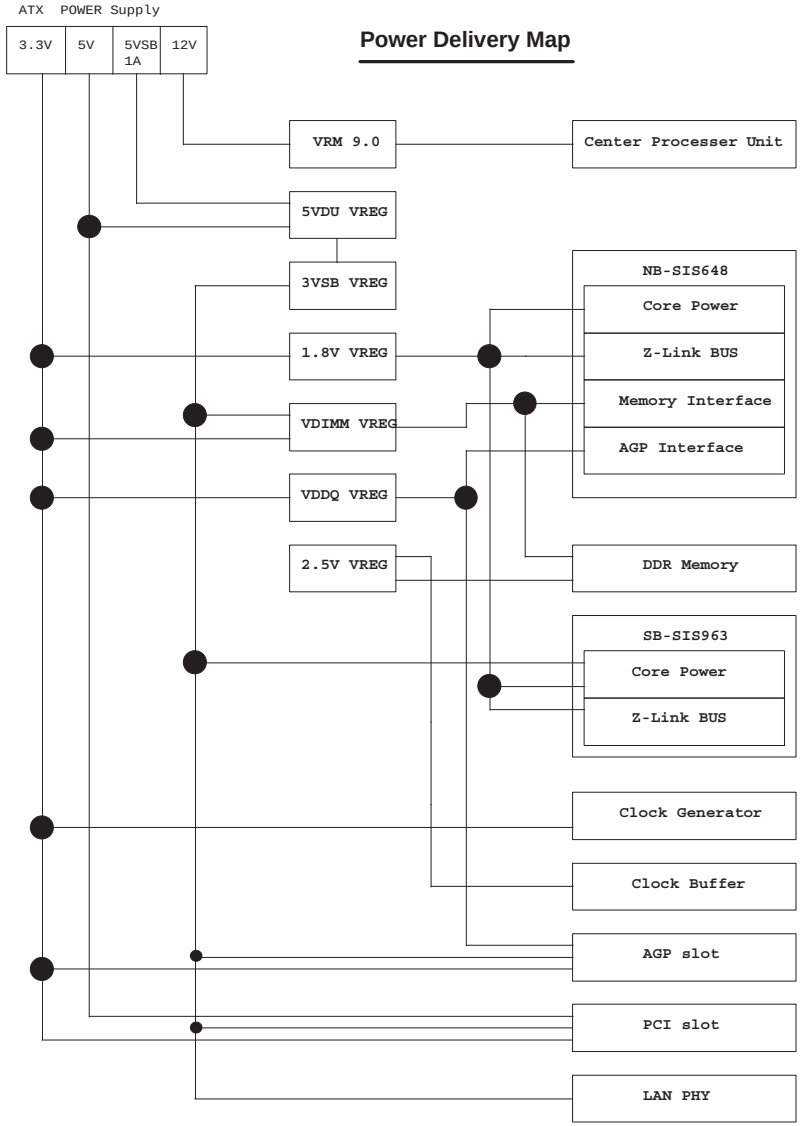


## SIS963 GPIO Function Define

| | | | |
|---|---|---|---|
| GPIO_0 | I/O | MAIN | M/B ID0 |
| GPIO_1 | I/O | MAIN | M/B ID1 |
| GPIO_2 | I/O | MAIN | THERM# |
| GPIO_3 | I/O | MAIN | M/B ID2 |
| GPIO_4 | I/O | MAIN | M/B ID3 |
| GPIO_5 | I/O | MAIN | CLEAR CMOS |
| GPIO_6 | I/O | MAIN | CLEAR PASSWORD |
| GPIO_7 | I | RESUME | Flash ROM Protection H: Enable ; L: Disabled. |
| GPI_8 | I | RESUME | RESERVED |
| GPI_9 | I | RESUME | RESERVED |
| GPI_10 | I | RESUME | RESERVED |
| GPIO_11 | I/O | RESUME | RESERVED |
| GPIO_12 | I/O | RESUME | RESERVED |
| GPIO_13 | I/O | RESUME | RESERVED |
| GPIO_14 | I/O | RESUME | RESERVED |
| GPIO_15 | I/O | RESUME | KBDAT |
| GPIO_16 | I/O | RESUME | KBCLK |
| GPIO_17 | I/O | RESUME | MSDAT |
| GPIO_18 | I/O | RESUME | MSCLK |
| GPIO_19 | I/O | RESUME | SMBCLK |
| GPIO_20 | I/O | RESUME | SMBDAT |

## PCI

| DEVICES | INT# | IDSEL | REQ#/GNT# | CLOCK |
|---|---|---|---|---|
| PCI SLOT 1 | INT#B<br>INT#C<br>INT#D<br>INT#A | AD17 | PREQ#0<br>PGNT#0 | PCICLK1 |
| PCI SLOT 2 | INT#C<br>INT#D<br>INT#A<br>INT#B | AD18 | PREQ#1<br>PGNT#1 | PCICLK2 |
| PCI SLOT 3 | INT#D<br>INT#A<br>INT#B<br>INT#C | AD19 | PREQ#2<br>PGNT#2 | PCICLK3 |

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Title: Power Delivery

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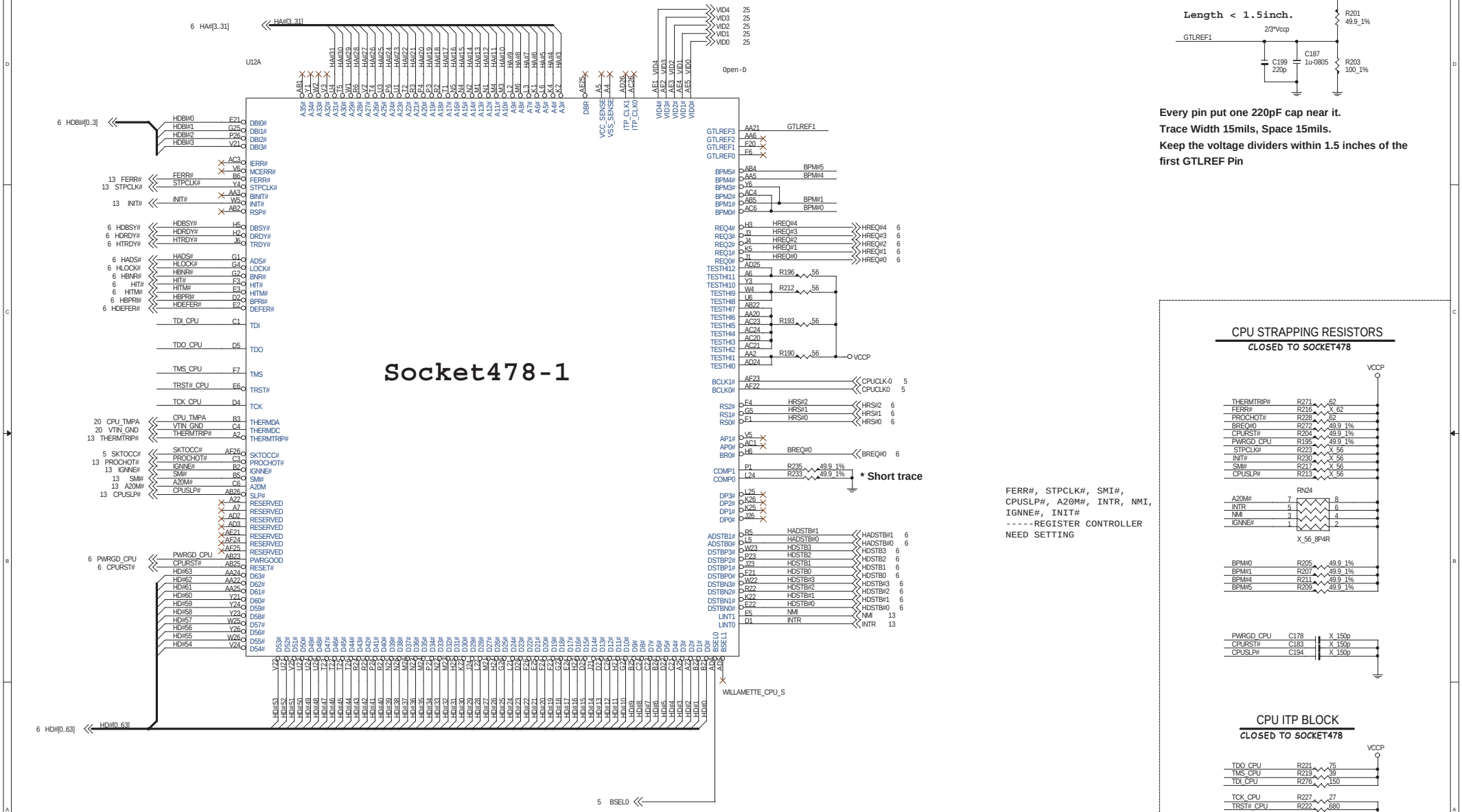
Socket478-1
U12A
6 HA#[3..31]
HA#[3..31]
Open-D
VID4 25
VID3 25
VID2 25
VID1 25
VID0 25
6 HDBI#[0..3]
HDBI#0 F21
HDBI#1 G25
HDBI#2 P26
HDBI#3 V21
DBI0#
DBI1#
DBI2#
DBI3#
IERR# AC3
MCERR# V6
13 FERR# FERR# B6
13 STPCLK# STPCLK# Y4
BINIT# AA3
13 INIT# INIT# W5
RSP# AB2
6 HDBSY# HDBSY# H5
6 HDRDY# HDRDY# H2
6 HTRDY# HTRDY# J5
DBSY#
DRDY#
TRDY#
6 HADS# HADS# G1
6 HLOCK# HLOCK# G4
6 HBNR# HBNR# G2
6 HIT# HIT# F3
6 HITM# HITM# E3
6 HBPRI# HBPRI# D2
6 HDEFER# HDEFER# E2
ADS#
LOCK#
BNR#
HIT#
HITM#
BPRI#
DEFER#
TDI_CPU C1
TDI
TDO_CPU D5
TDO
TMS_CPU F7
TMS
TRST# CPU E6
TRST#
TCK_CPU D4
TCK
20 CPU_TMPA CPU_TMPA B3
20 VTIN_GND VTIN_GND C4
13 THERMTRIP# THERMTRIP# A2
THERMDA
THERMDC
THERMTRIP#
5 SKTOCC# SKTOCC# AF26
13 PROCHOT# PROCHOT# C3
13 IGNNE# IGNNE# B2
13 SMI# SMI# B5
13 A20M# A20M# C6
13 CPUSLP# CPUSLP# AB26
SKTOCC#
PROCHOT#
IGNNE#
SMI#
A20M#
SLP#
RESERVED
RESERVED
RESERVED
RESERVED
RESERVED
RESERVED
RESERVED
PWRGOOD
RESET#
6 PWRGD_CPU PWRGD_CPU AB23
6 CPURST# CPURST# AB25
RESET#
HD#63 AA24
HD#62 AA22
HD#61 AA25
HD#60 Y21
HD#59 Y24
HD#58 Y23
HD#57 W25
HD#56 Y26
HD#55 W26
HD#54 V24
D63#
D62#
D61#
D60#
D59#
D58#
D57#
D56#
D55#
D54#
6 HD#[0..63]
HD#[0..63]
GTLREF3 AA21 GTLREF1
GTLREF2 AA6
GTLREF1 F20
GTLREF0 F6
BPM5# AB4 BPM#5
BPM4# AA5 BPM#4
BPM3# Y6
BPM2# AC4
BPM1# AB5 BPM#1
BPM0# AC6 BPM#0
REQ4# H3 HREQ#4 HREQ#4 6
REQ3# J3 HREQ#3 HREQ#3 6
REQ2# M HREQ#2 HREQ#2 6
REQ1# K5 HREQ#1 HREQ#1 6
REQ0# J1 HREQ#0 HREQ#0 6
TESTHI12 AD25
TESTHI11 A6 R196 56
TESTHI10 Y3
TESTHI9 W4 R212 56
TESTHI8 U6
TESTHI7 AB22
TESTHI6 AA20
TESTHI5 AC23 R193 56
TESTHI4 AC24
TESTHI3 AC20
TESTHI2 AC21
TESTHI1 AA2 R190 56 VCCP
TESTHI0 AD24
BCLK1# AF23 CPUCLK-0 5
BCLK0# AF22 CPUCLK0 5
RS2# E4 HRS#2 HRS#2 6
RS1# G5 HRS#1 HRS#1 6
RS0# F1 HRS#0 HRS#0 6
AP1# V5
AP0# AC1
BR0# H6 BREQ#0 BREQ#0 6
COMP1 P1 R235 49.9 1%
COMP0 L24 R233 49.9 1%
* Short trace
DP3# L25
DP2# K26
DP1# K25
DP0# J26
ADSTB1# R5 HADSTB#1 HADSTB#1 6
ADSTB0# L5 HADSTB#0 HADSTB#0 6
DSTBP3# W23 HDSTB3 HDSTB3 6
DSTBP2# P23 HDSTB2 HDSTB2 6
DSTBP1# T23 HDSTB1 HDSTB1 6
DSTBP0# F21 HDSTB0 HDSTB0 6
DSTBN3# W22 HDSTB#3 HDSTB#3 6
DSTBN2# R22 HDSTB#2 HDSTB#2 6
DSTBN1# K22 HDSTB#1 HDSTB#1 6
DSTBN0# E22 HDSTB#0 HDSTB#0 6
LINT1 E5 NMI NMI 13
LINT0 D1 INTR INTR 13
BSEL0
BSEL1
WILLAMETTE_CPU_S
5 BSEL0
FERR#, STPCLK#, SMI#,
CPUSLP#, A20M#, INTR, NMI,
IGNNE#, INIT#
-----REGISTER CONTROLLER
NEED SETTING
CPU GTL REFERNCE VOLTAGE BLOCK
VCCP
Length < 1.5inch.
R201 49.9_1%
2/3*Vccp
GTLREF1
C199 220p
C187 1u-0805
R203 100_1%
Every pin put one 220pF cap near it.
Trace Width 15mils, Space 15mils.
Keep the voltage dividers within 1.5 inches of the first GTLREF Pin
CPU STRAPPING RESISTORS
CLOSED TO SOCKET478
VCCP
THERMTRIP# R271 62
FERR# R216 X_62
PROCHOT# R228 62
BREQ#0 R272 49.9_1%
CPURST# R204 49.9_1%
PWRGD_CPU R195 49.9_1%
STPCLK# R223 X_56
INIT# R230 X_56
SMI# R217 X_56
CPUSLP# R213 X_56
RN24
A20M# 7 8
INTR 5 6
NMI 3 4
IGNNE# 1 2
X_56_8P4R
BPM#0 R205 49.9_1%
BPM#1 R207 49.9_1%
BPM#4 R211 49.9_1%
BPM#5 R209 49.9_1%
PWRGD_CPU C178 X_150p
CPURST# C183 X_150p
CPUSLP# C194 X_150p
CPU ITP BLOCK
CLOSED TO SOCKET478
VCCP
TDO_CPU R221 75
TMS_CPU R219 39
TDI_CPU R276 150
TCK_CPU R227 27
TRST# CPU R222 680
MSI
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Title
FCPGA478-1
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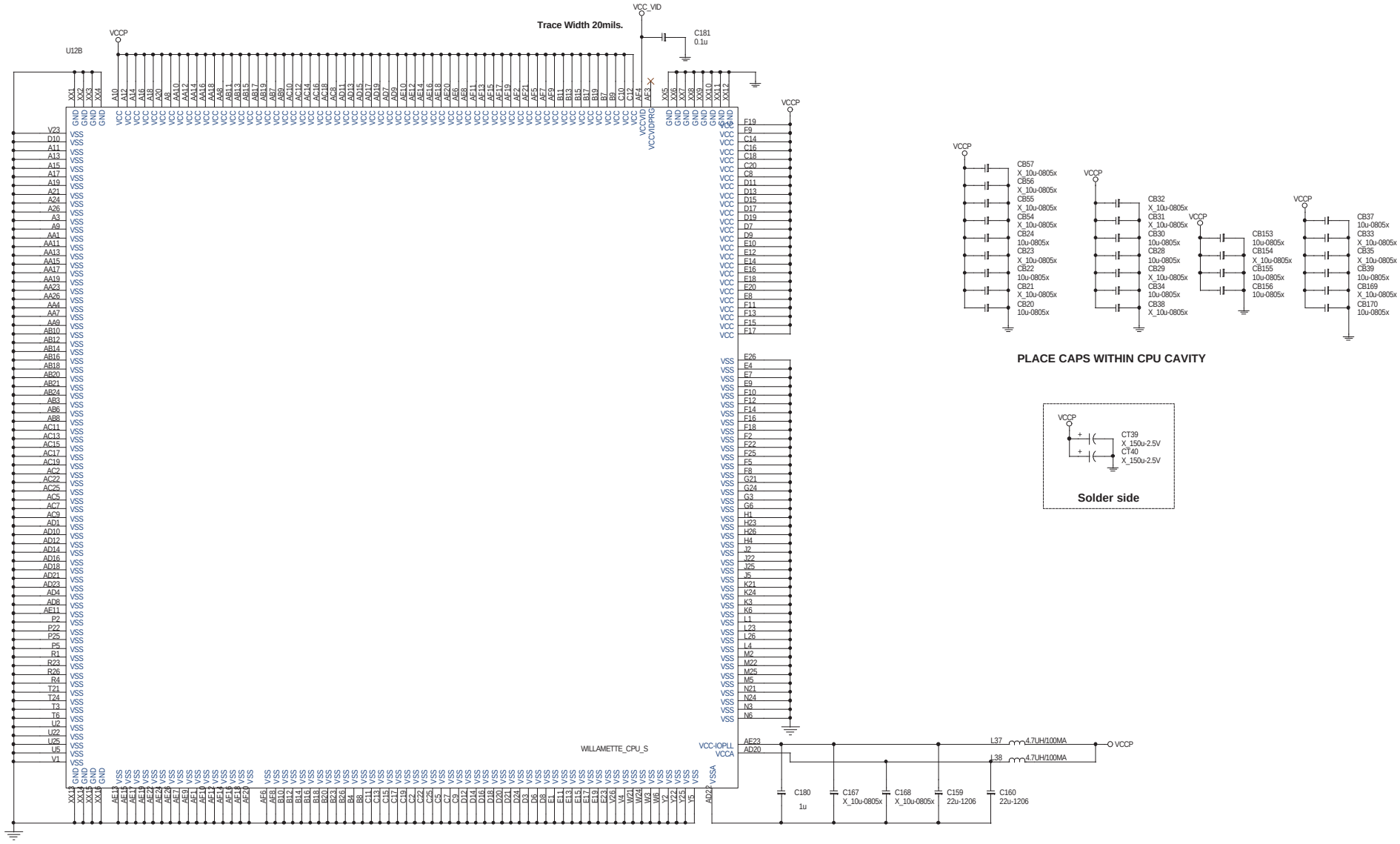
**FOR NORTHWOOD**
**CPU ONLY**

**Trace Width 20mils.**




**PLACE CAPS WITHIN CPU CAVITY**




**Solder side**

N12-4780020-F02
N12-4780020-A10
N12-4780020-M06

| | | | |
|---|---|---|---|
| MSI | MICRO-STAR | | |
| Title | FCPGA478-2 | | |
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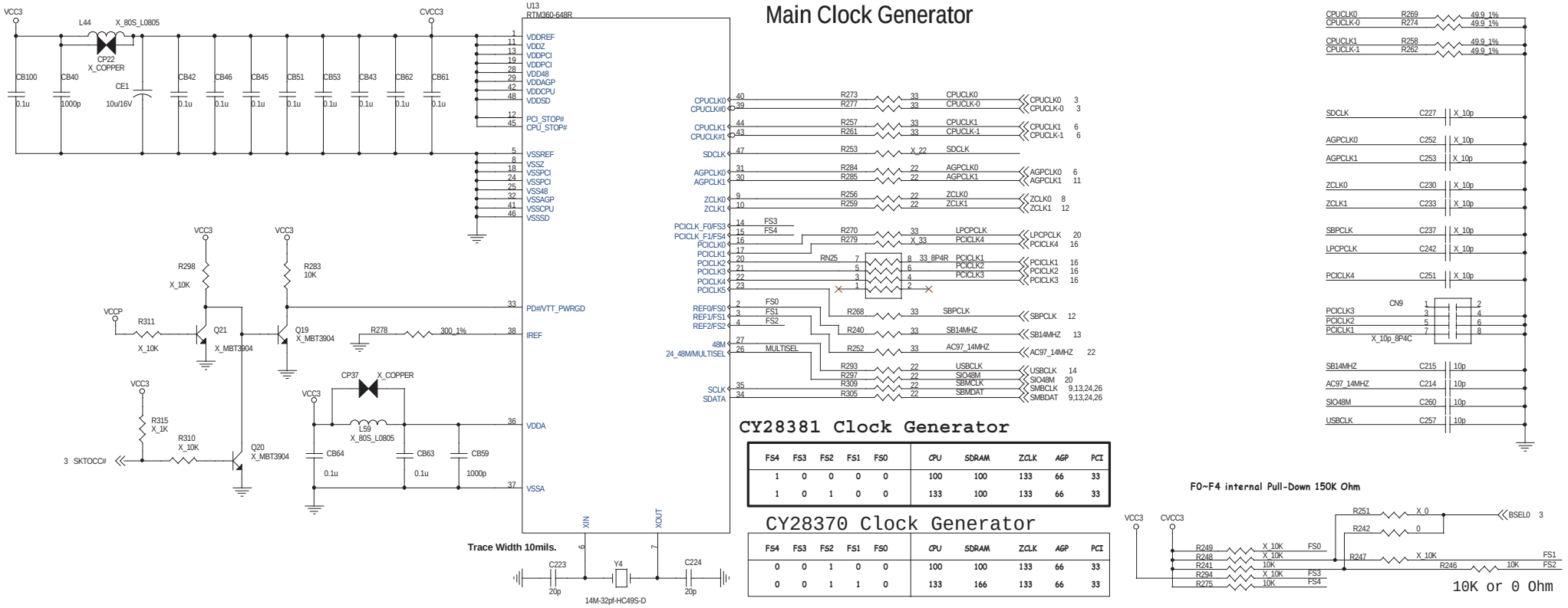
# Main Clock Generator




Trace Width 10mils.

## CY28381 Clock Generator

| FS4 | FS3 | FS2 | FS1 | FS0 | CPU | SDRAM | ZCLK | AGP | PCI |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | 100 | 100 | 133 | 66 | 33 |
| 1 | 0 | 1 | 0 | 0 | 133 | 100 | 133 | 66 | 33 |

## CY28370 Clock Generator

| FS4 | FS3 | FS2 | FS1 | FS0 | CPU | SDRAM | ZCLK | AGP | PCI |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 1 | 0 | 0 | 100 | 100 | 133 | 66 | 33 |
| 0 | 0 | 1 | 1 | 0 | 133 | 166 | 133 | 66 | 33 |

F0~F4 internal Pull-Down 150K Ohm

10K or 0 Ohm

# Clock Buffer (DDR)

By-Pass Capacitors
Place near to the Clock Buffer

MULTISEL internal Pull-Up 150K Ohm

Select Clock Buffer

| PART | CY28353 | ICS93722 | CY28352 |
|---|---|---|---|
| A | 10K_1% | X | X |
| B | 10K_1% | X | X |
| C | 104pf | X | X |

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Title: Main CLK GEN

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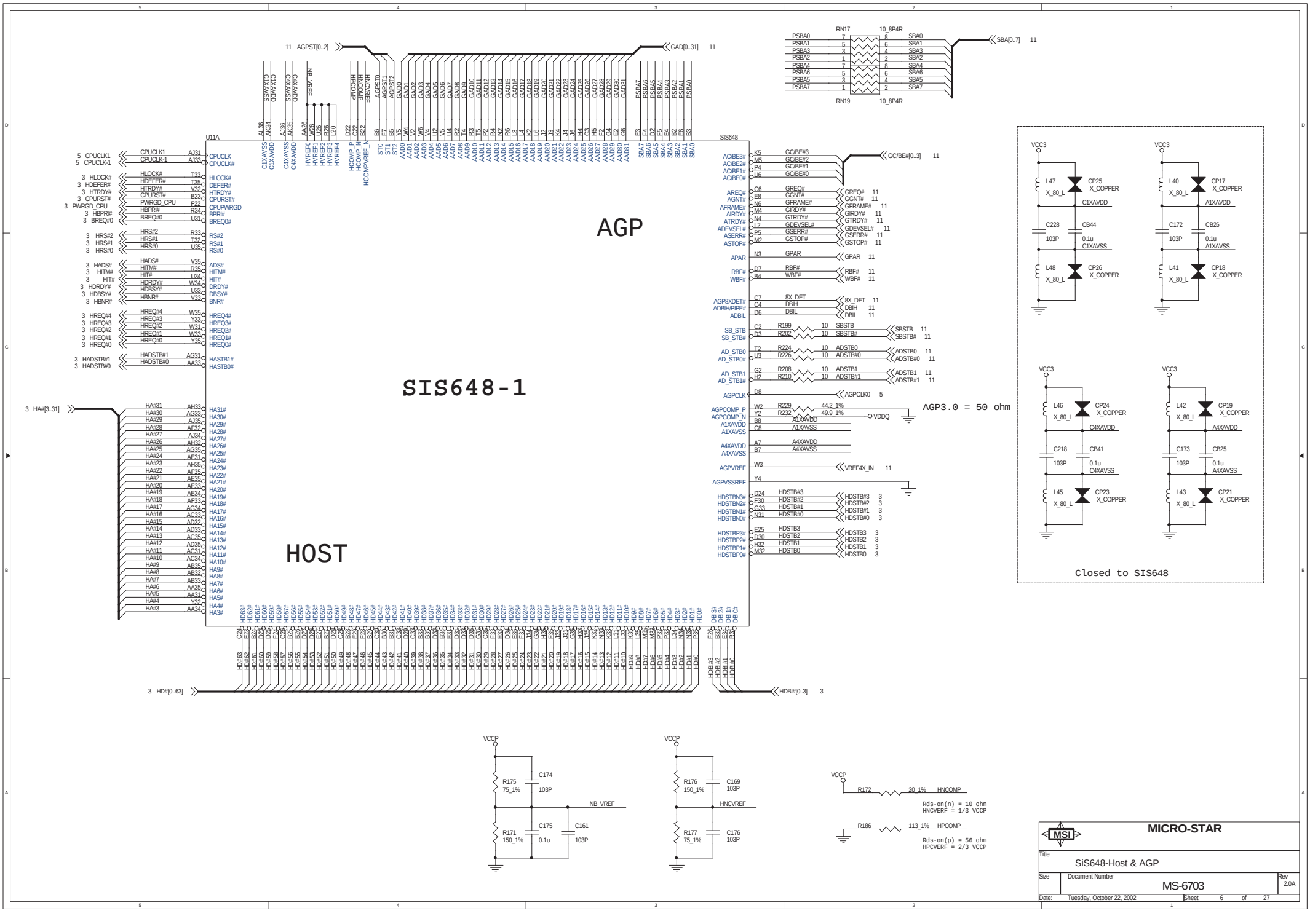
SIS648-1
HOST
AGP
U11A
SIS648
AGP3.0 = 50 ohm
Closed to SIS648
MICRO-STAR
SiS648-Host & AGP
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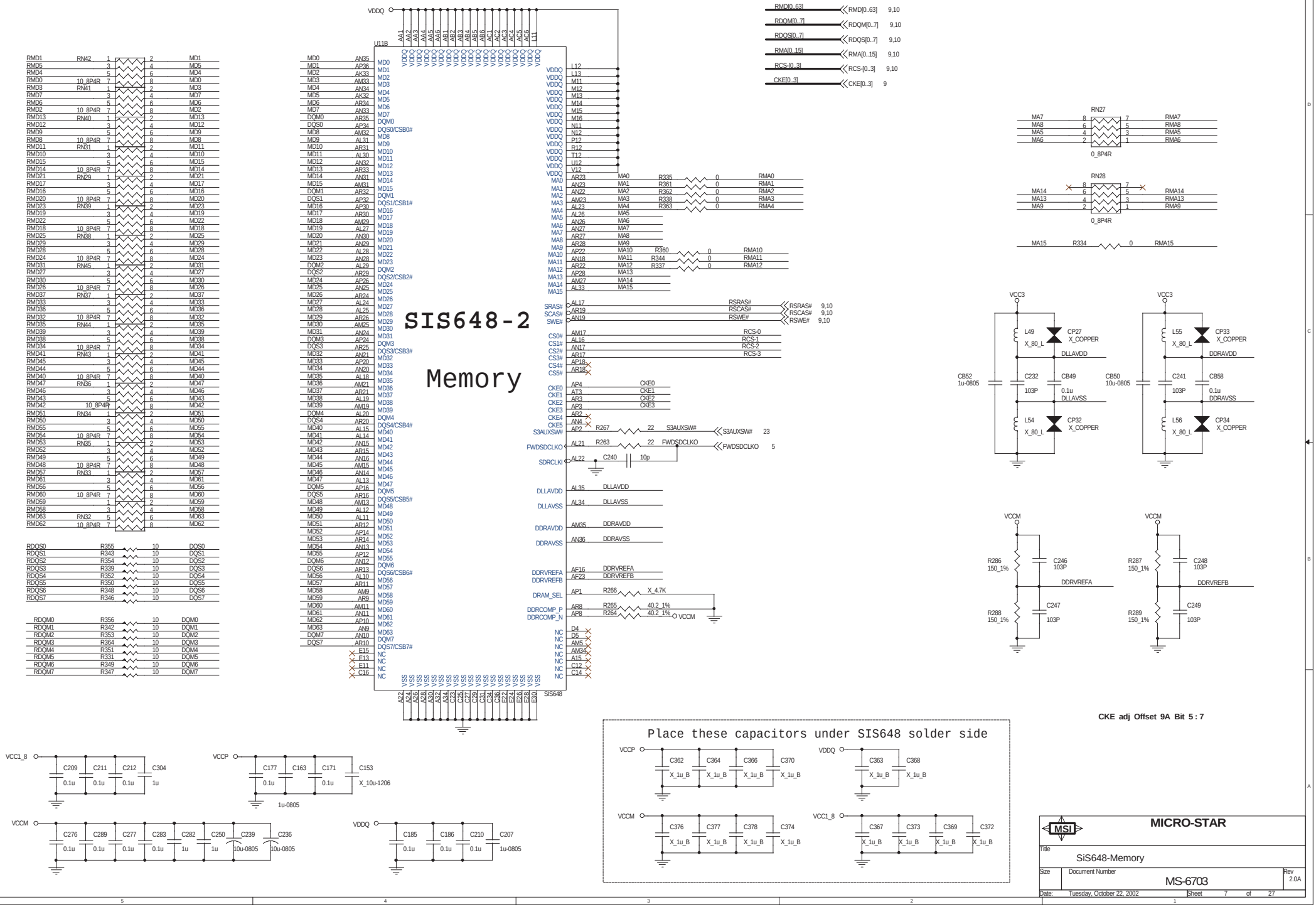
# SIS648-2 Memory




Place these capacitors under SIS648 solder side

CKE adj Offset 9A Bit 5:7

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| | | |
|---|---|---|
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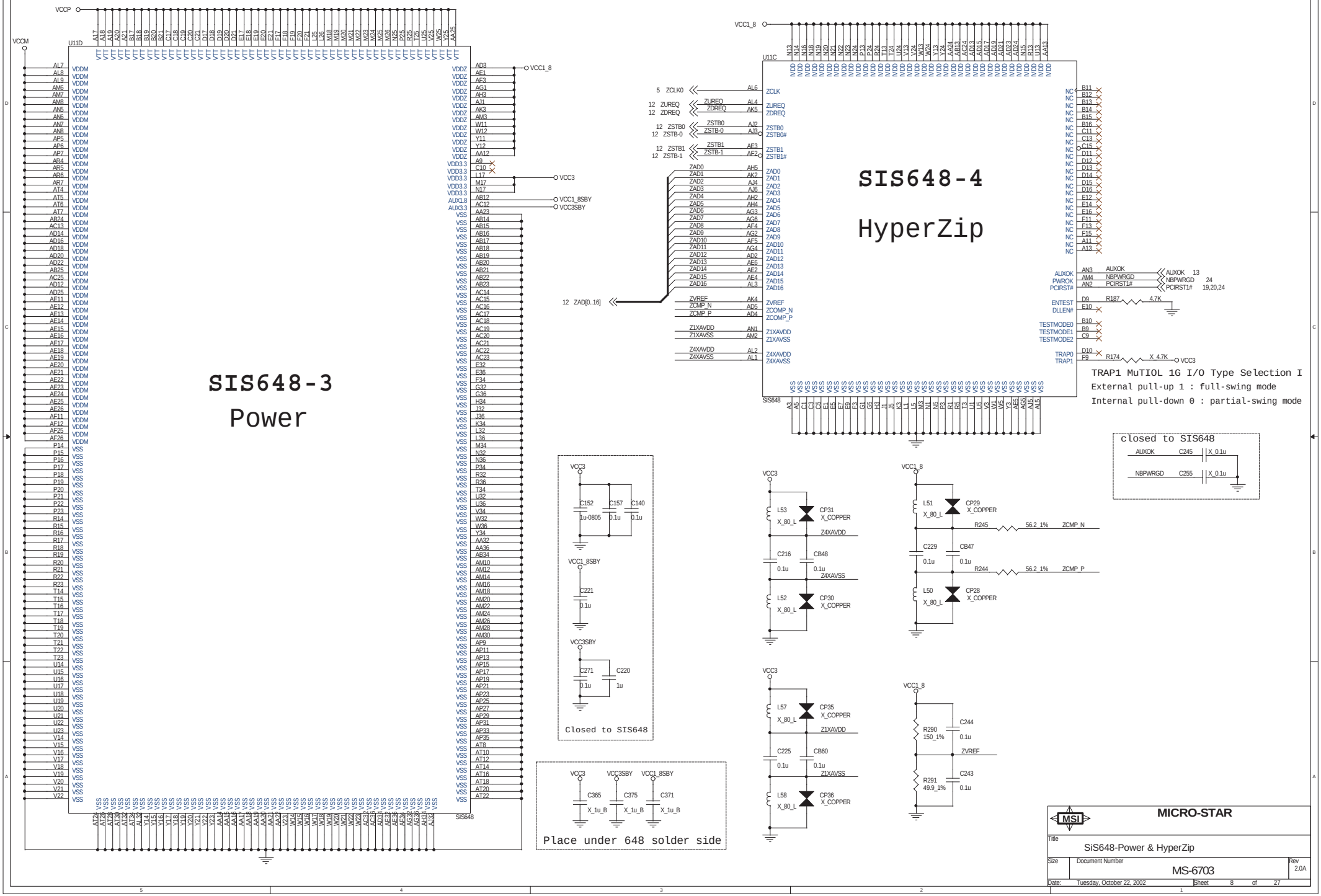
SIS648-3
Power
SIS648-4
HyperZip
U11D
U11C
SIS648
VCCP
VCCM
VCC1_8
VCC3
VCC1_8SBY
VCC3SBY
12 ZAD[0..16]
5 ZCLK0
12 ZUREQ
12 ZDREQ
12 ZSTB0
12 ZSTB-0
12 ZSTB1
12 ZSTB-1
TRAP1 MuTIOL 1G I/O Type Selection I
External pull-up 1 : full-swing mode
Internal pull-down 0 : partial-swing mode
closed to SIS648
Closed to SIS648
Place under 648 solder side
MICRO-STAR
MSI
SiS648-Power & HyperZip
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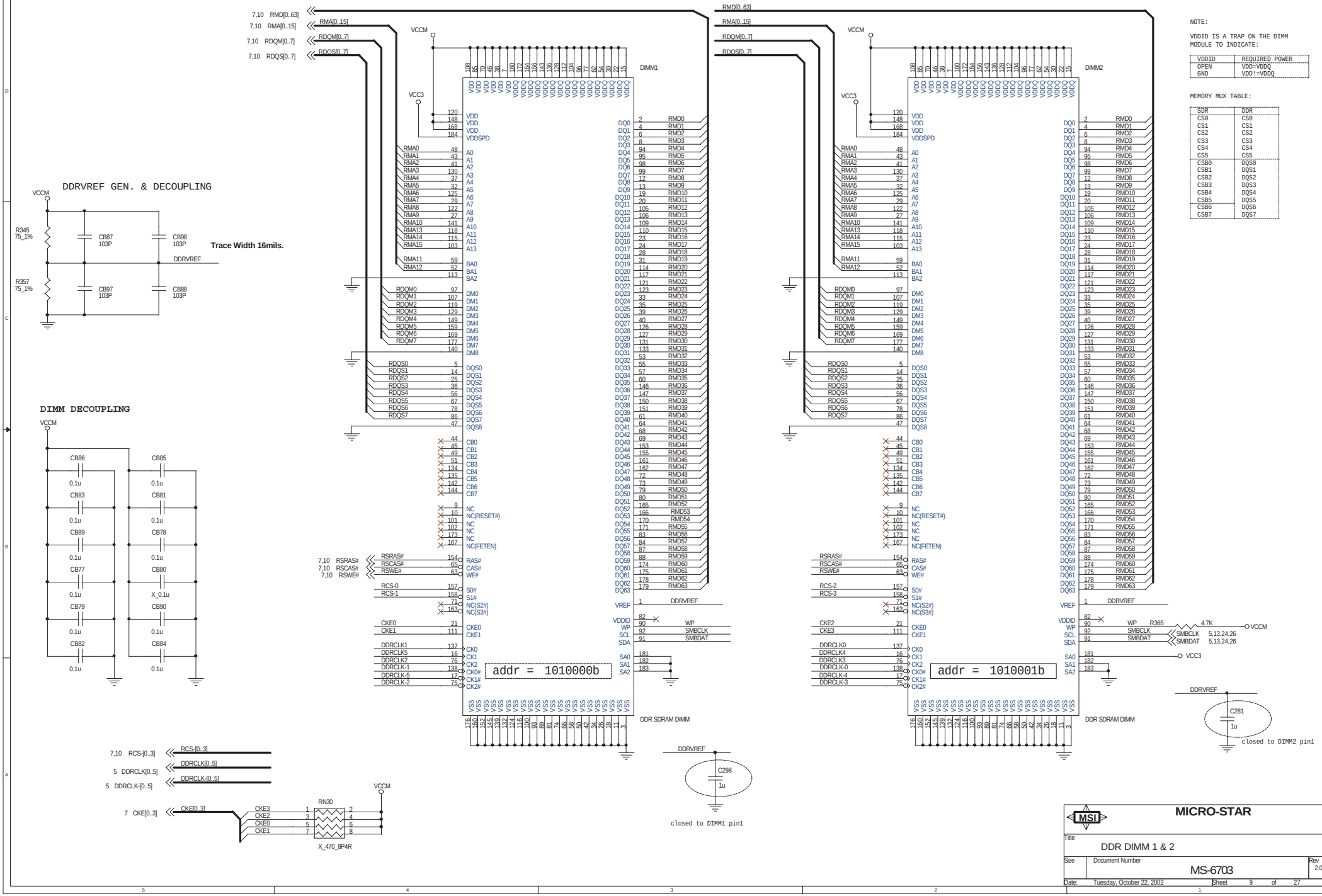
# DDR DIMM1 & DIMM2




NOTE:

VDDID IS A TRAP ON THE DIMM MODULE TO INDICATE:

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

MEMORY MUX TABLE:

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

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| | | |
|---|---|---|
| Title | DDR DIMM 1 & 2 | |
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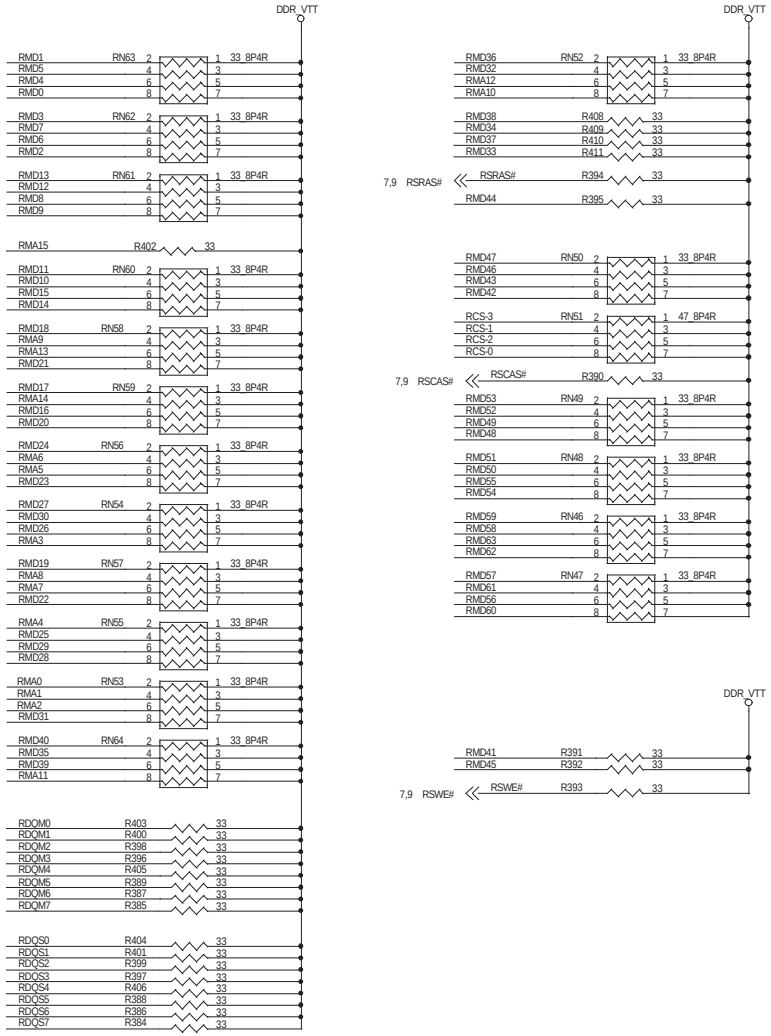
# DDR TERMINATOR

## SSTL-2 Termination Resistors

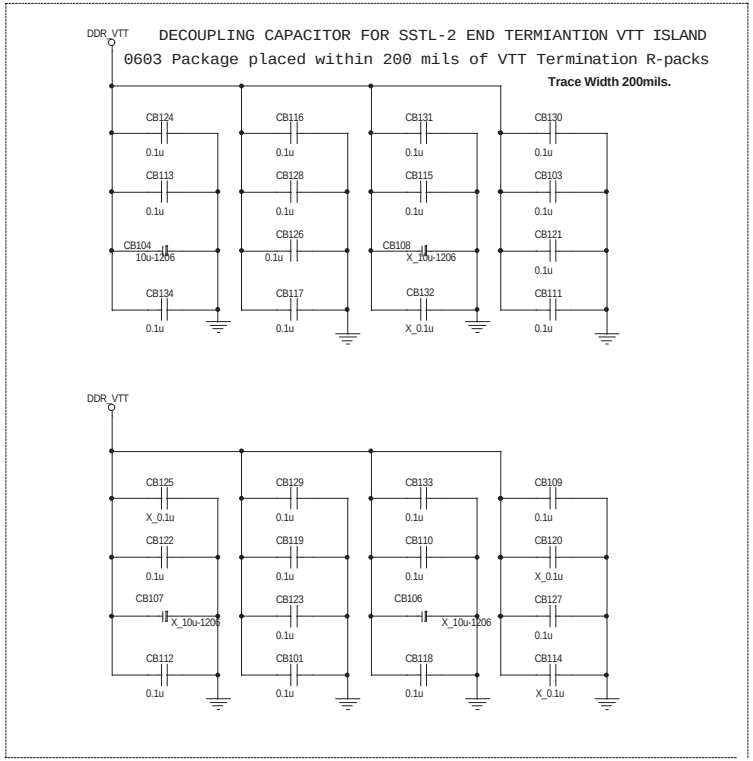
RMD[0..63] → RMD[0..63] 7,9
RDQM[0..7] → RDQM[0..7] 7,9
RDQS[0..7] → RDQS[0..7] 7,9
RMA[0..15] → RMA[0..15] 7,9
RCS-[0..3] → RCS-[0..3] 7,9

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







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Title: DDR Terminator

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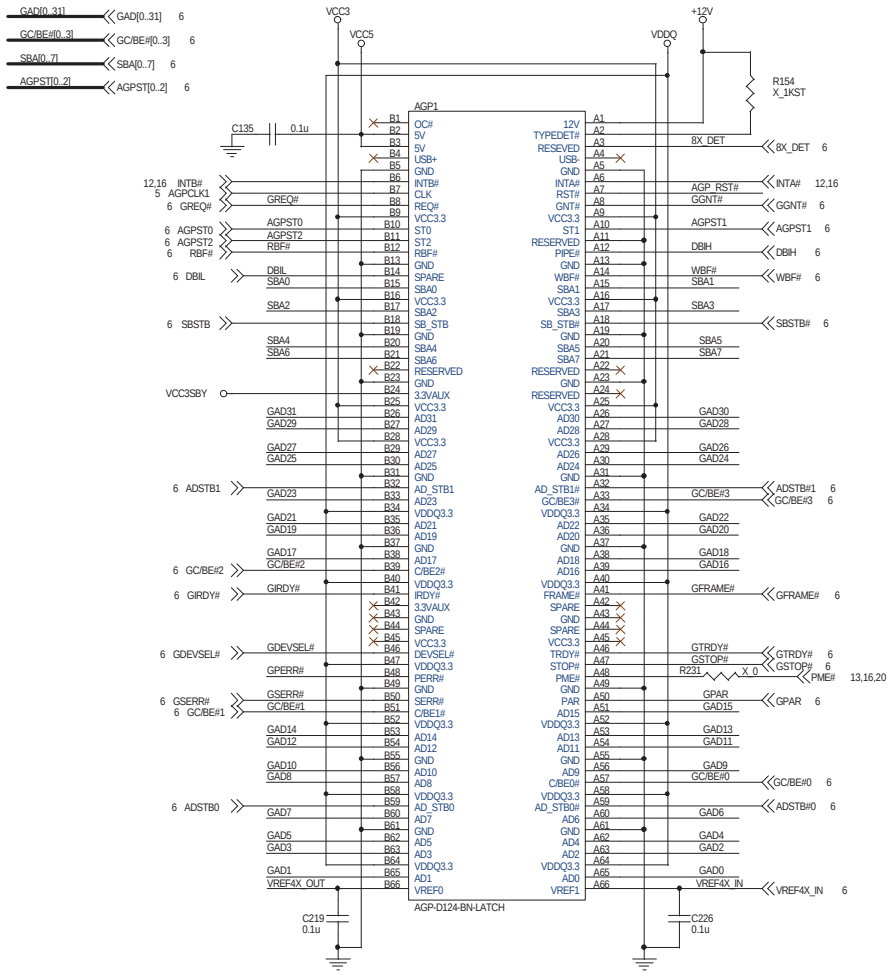


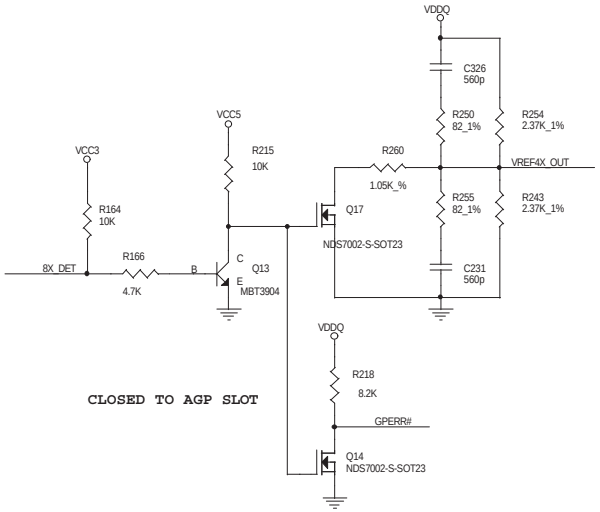


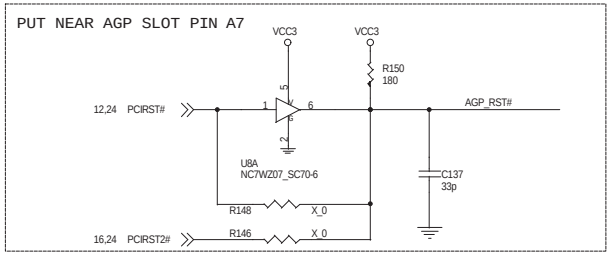


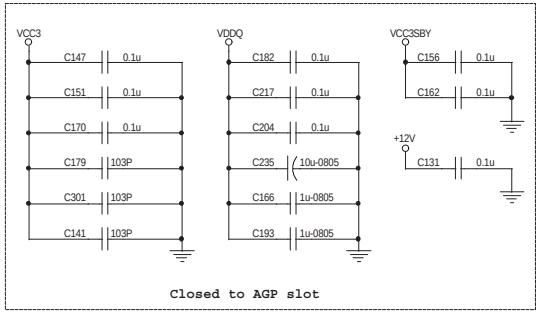


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Title: AGP Slot & Pull up/down resistor

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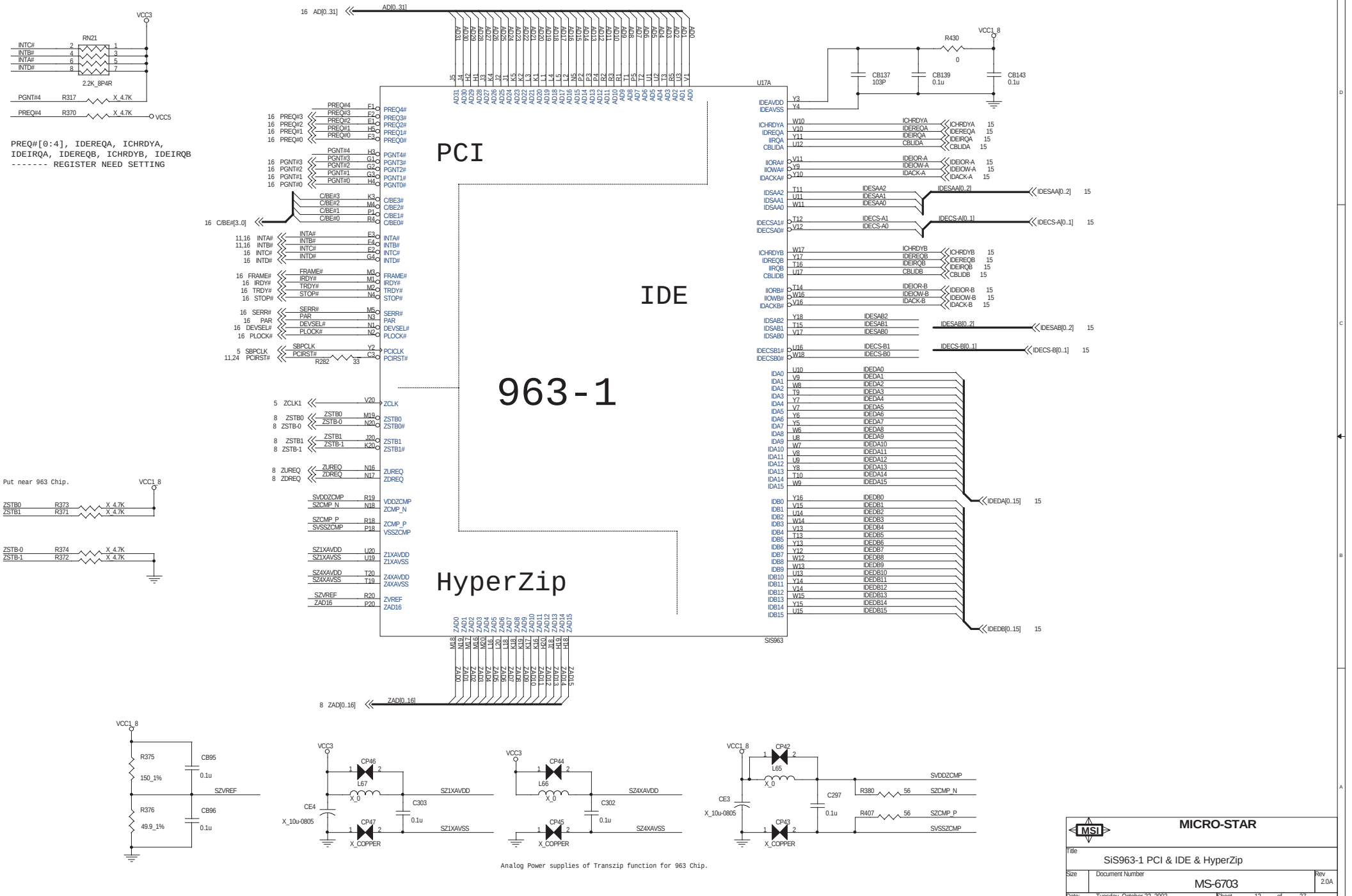
PCI
IDE
963-1
HyperZip
SIS963
PREQ#[0:4], IDEREQA, ICHRDYA, IDEIRQA, IDEREQB, ICHRDYB, IDEIRQB
------- REGISTER NEED SETTING
Put near 963 Chip.
Analog Power supplies of Transzip function for 963 Chip.
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SiS963-1 PCI & IDE & HyperZip
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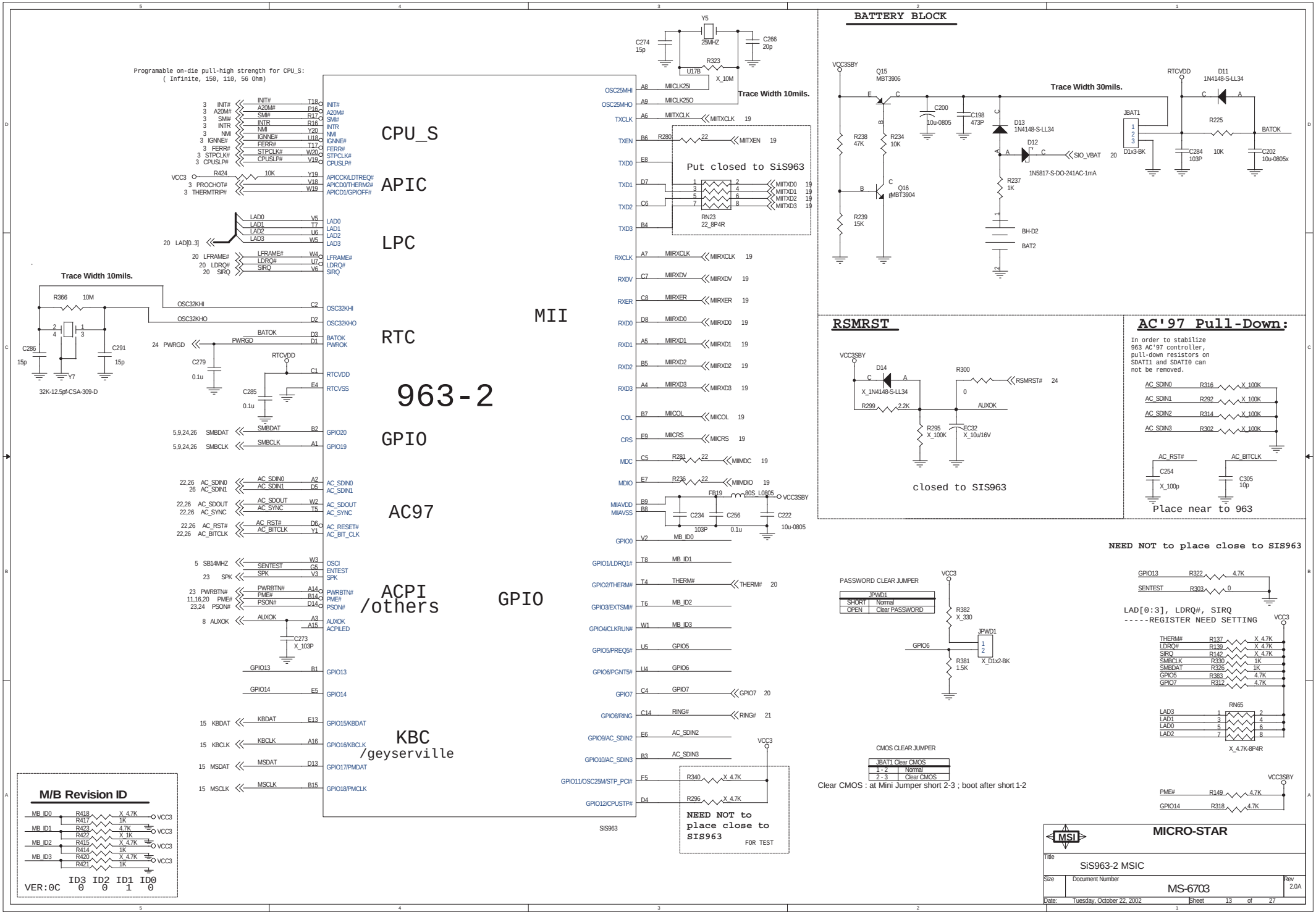
CPU_S
APIC
LPC
MII
RTC
963-2
GPIO
AC97
ACPI
/others
GPIO
KBC
/geyserville
SIS963
BATTERY BLOCK
RSMRST
AC'97 Pull-Down:
In order to stabilize 963 AC'97 controller, pull-down resistors on SDATI1 and SDATI0 can not be removed.
Place near to 963
closed to SIS963
Put closed to SiS963
Trace Width 10mils.
Trace Width 30mils.
Programable on-die pull-high strength for CPU_S:
( Infinite, 150, 110, 56 Ohm)
32K-12.5pf-CSA-309-D
1N5817-S-DO-241AC-1mA
1N4148-S-LL34
MBT3906
MBT3904
BH-D2
BAT2
D1x3-BK
X_D1x2-BK
X_4.7K-8P4R
RN23
22_8P4R
RN65
PASSWORD CLEAR JUMPER
CMOS CLEAR JUMPER
Clear CMOS : at Mini Jumper short 2-3 ; boot after short 1-2
NEED NOT to place close to SIS963
FOR TEST
LAD[0:3], LDRQ#, SIRQ
-----REGISTER NEED SETTING
M/B Revision ID
VER:0C 0 0 1 0
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SiS963-2 MSIC
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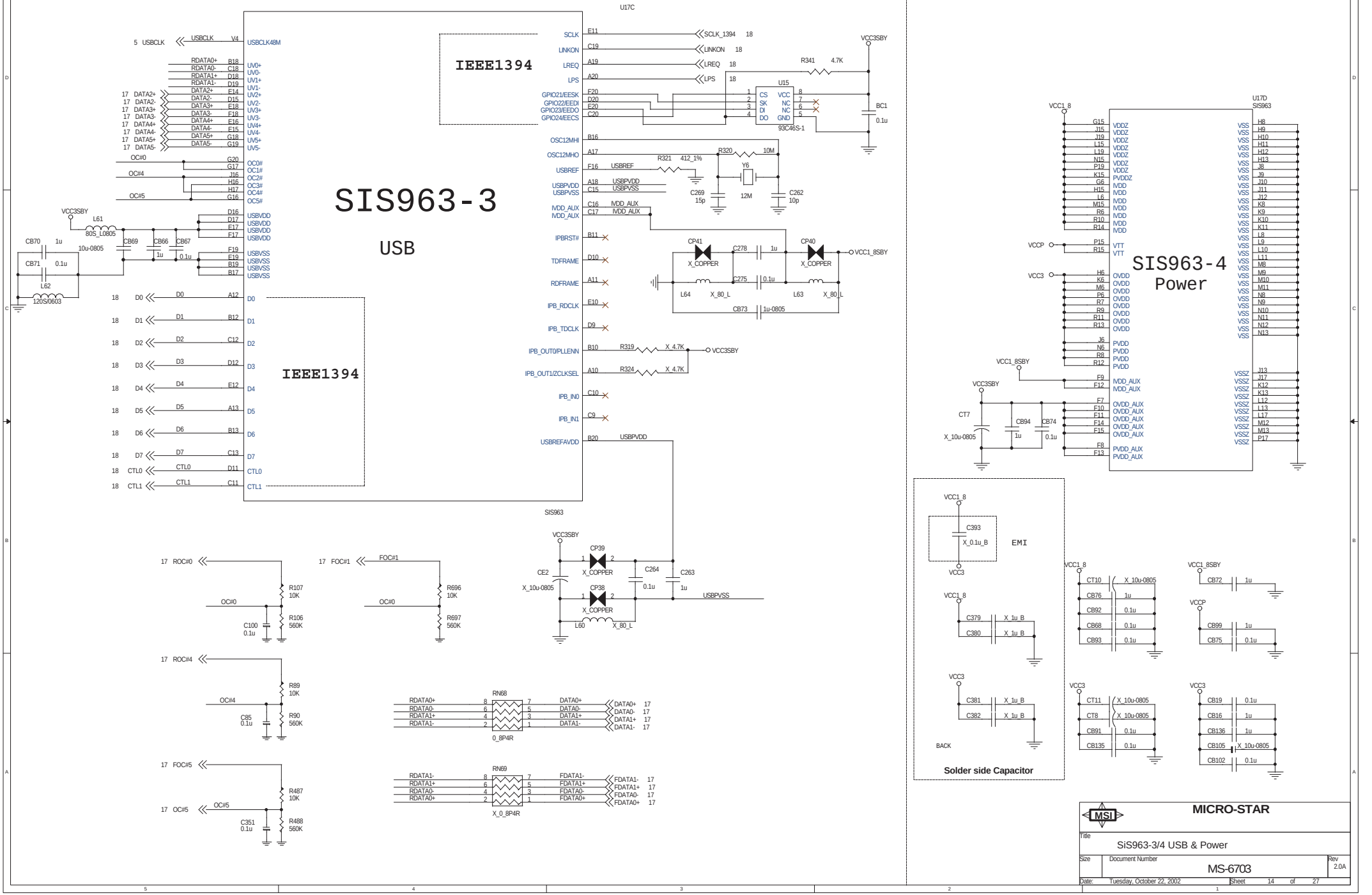


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Title: SiS963-3/4 USB & Power

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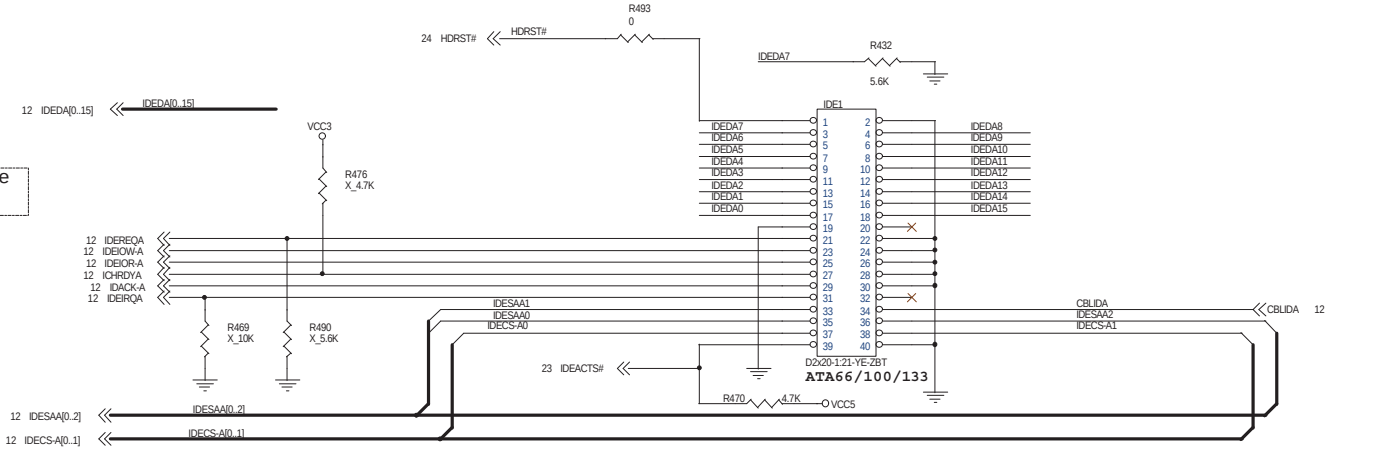
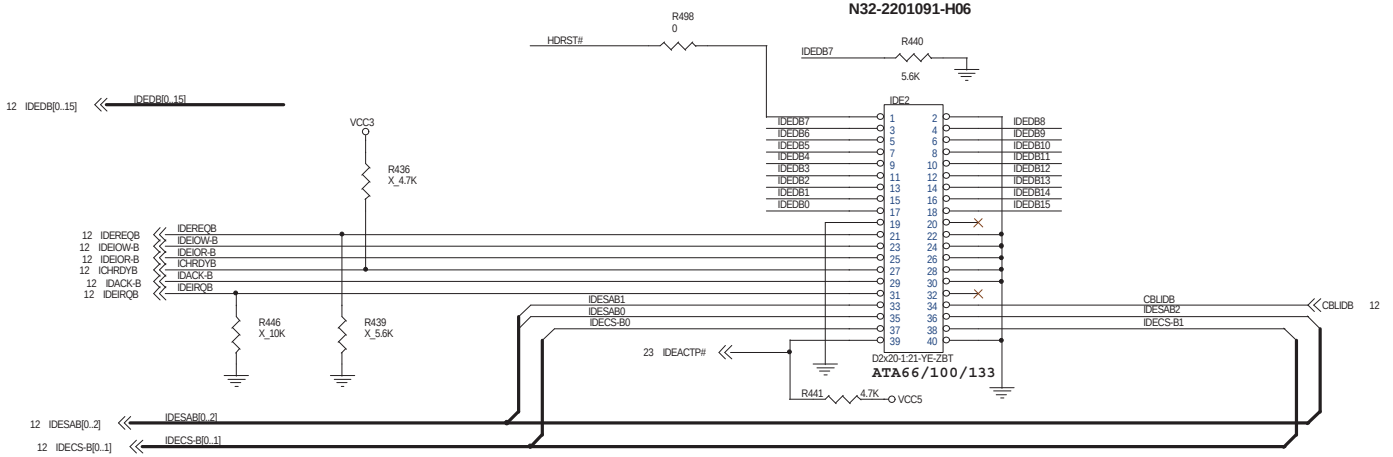
# IDE1 & IDE2

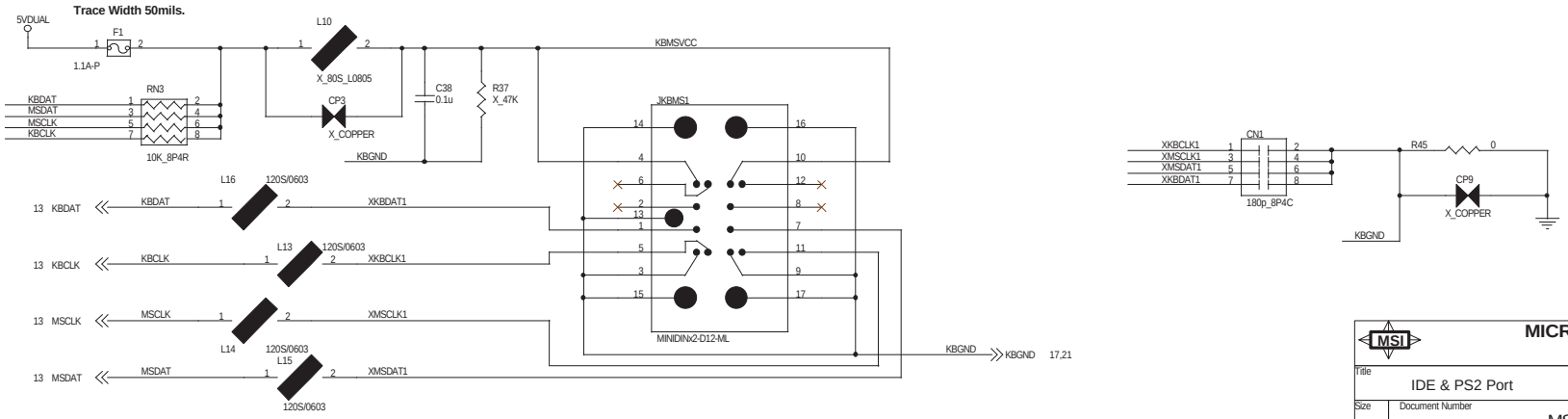
Reference a963004.PDF file
Removed R Value




**N32-2201091-H06**




# PS2 KB/MS




| | | |
|---|---|---|
| MSI | MICRO-STAR | |
| Title | IDE & PS2 Port | |
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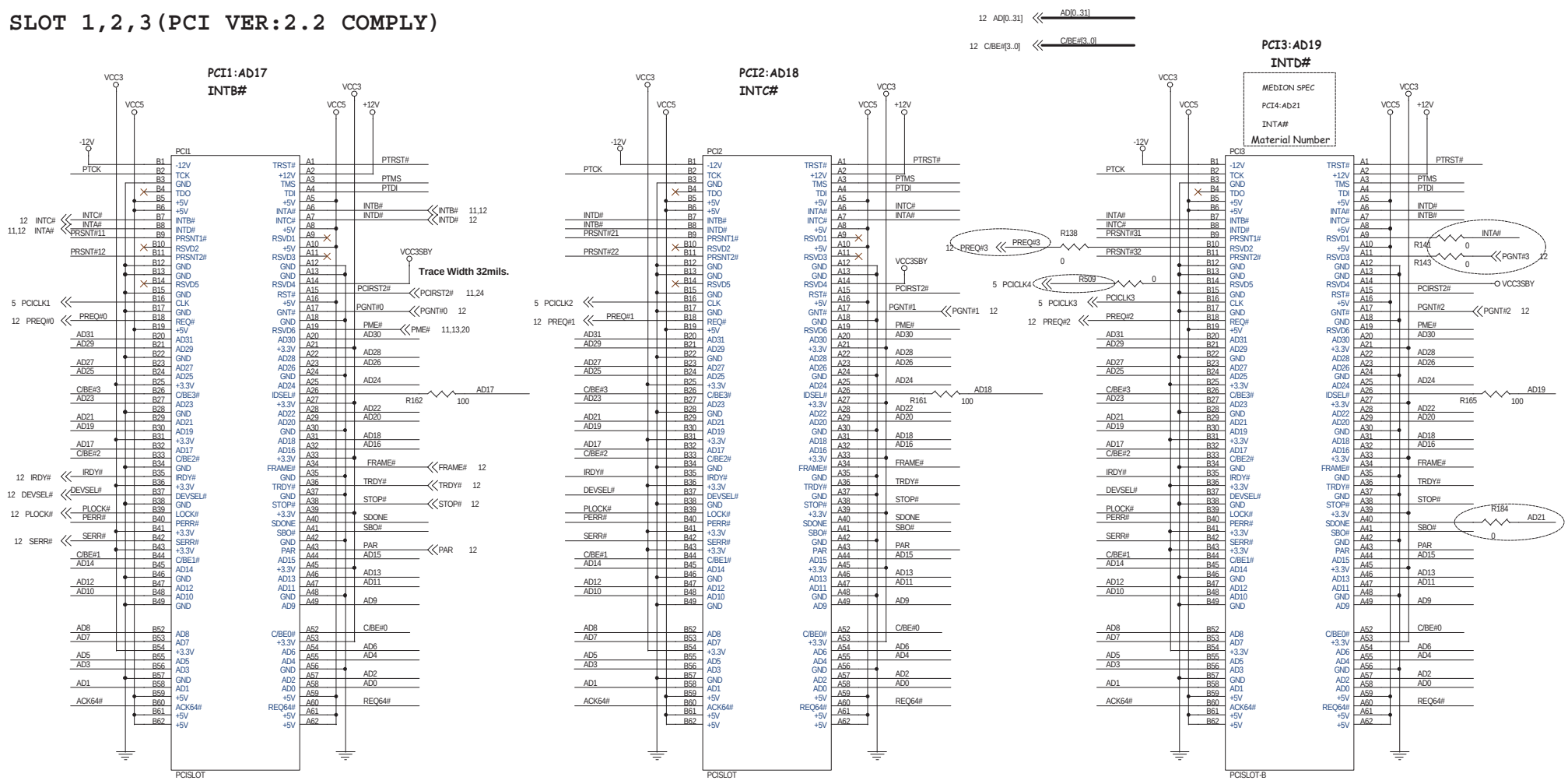
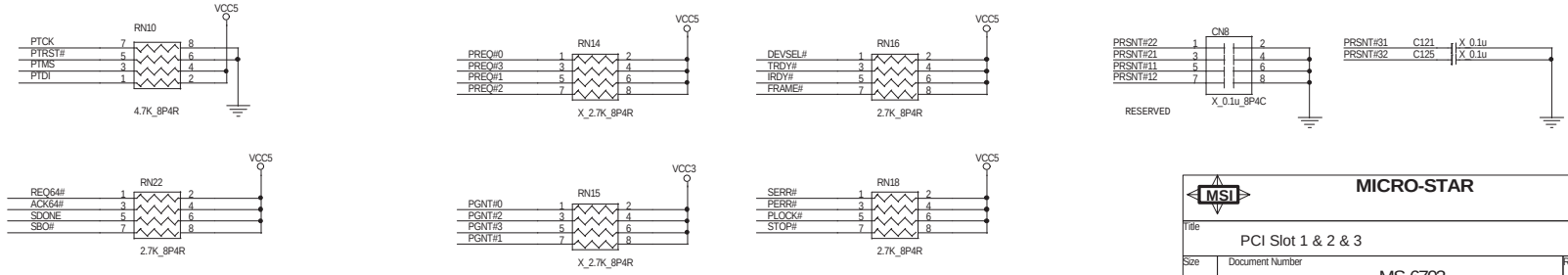
# PCI SLOT 1,2,3(PCI VER:2.2 COMPLY)




## PCI BUS PULL-UP




MICRO-STAR

Title: PCI Slot 1 & 2 & 3

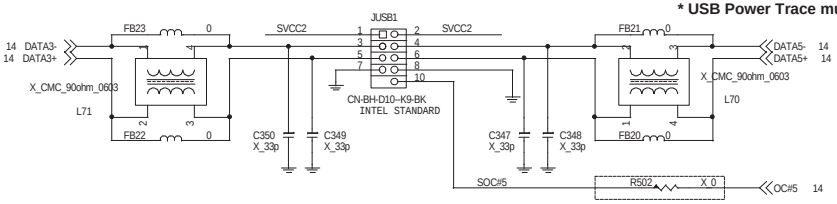
| Size | Document Number | Rev |
|---|---|---|
| | MS-6703 | 2.0A |

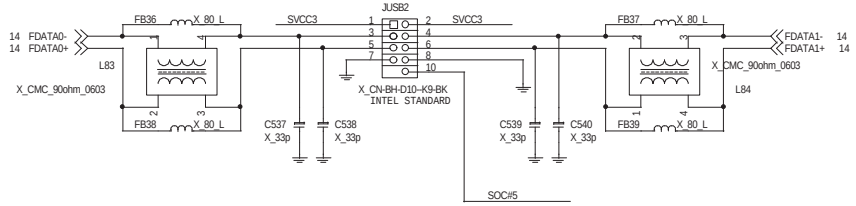
Date: Tuesday, October 22, 2002 Sheet 16 of 27

# USB PORT

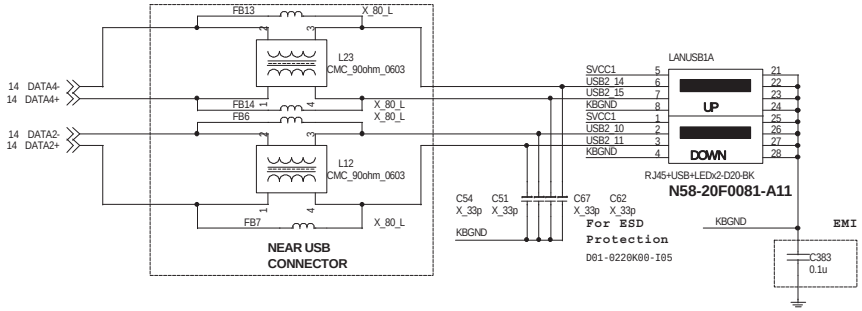
* USB Trace width : 7 mils
* USB Trace Spacing : 20 mils
* Differential USB Signlas Trace, Spacing : 6 mils
* USB Power Trace must be 50mils width

## FRONT PANEL USB CONNECTOR FOR USB PORT 3,5

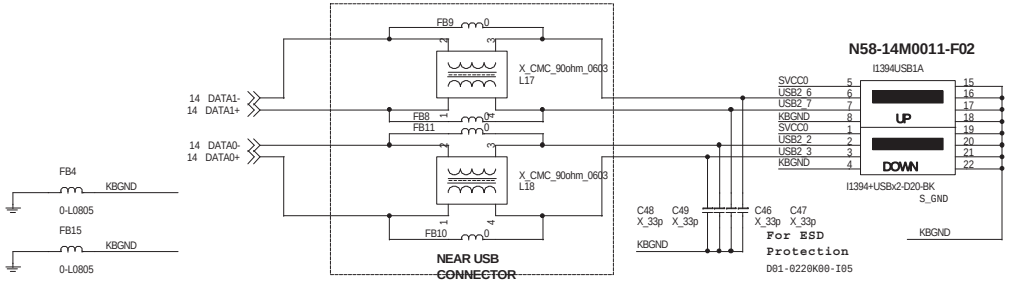



## REAR PANEL LAN_USB CONNECTOR FOR USB PORT 2,4



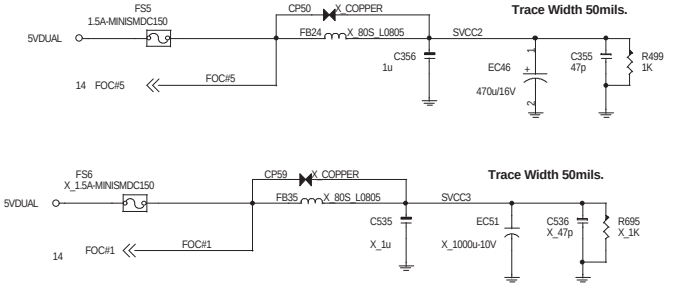

## REAR PANEL USB CONNECTOR FOR USB PORT 0,1




## POWER CIRCUIT FOR USB PORT 3,5

NEAR USB CONNECTOR

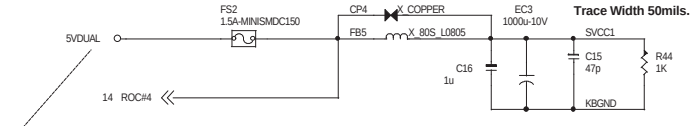
Trace Width 50mils.




## POWER CIRCUIT FOR USB PORT 2,4

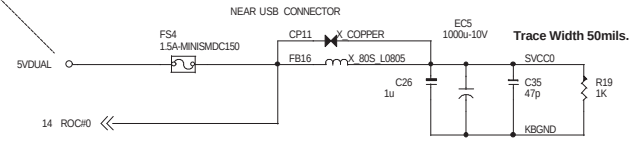
NEAR USB CONNECTOR

Trace Width 100mils.

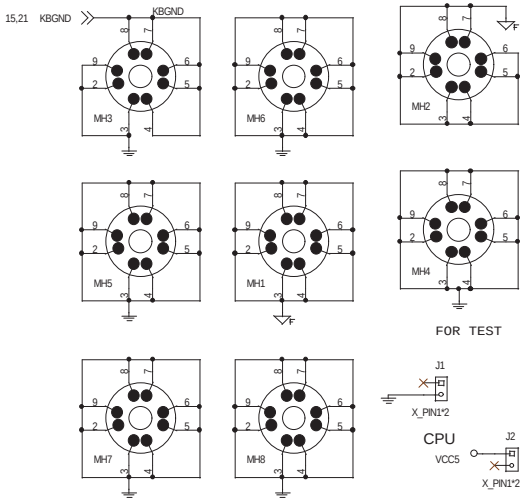


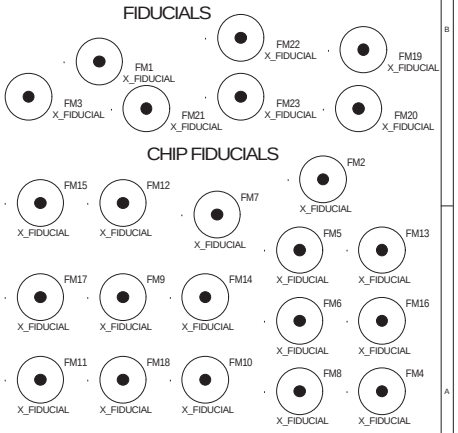

## POWER CIRCUIT FOR USB PORT 0,1

NEAR USB CONNECTOR




## PCB OTHER COMPONENT




MICRO-STAR

Title: USB Port & BIOS

Size: Document Number: MS-6703 Rev: 2.0A

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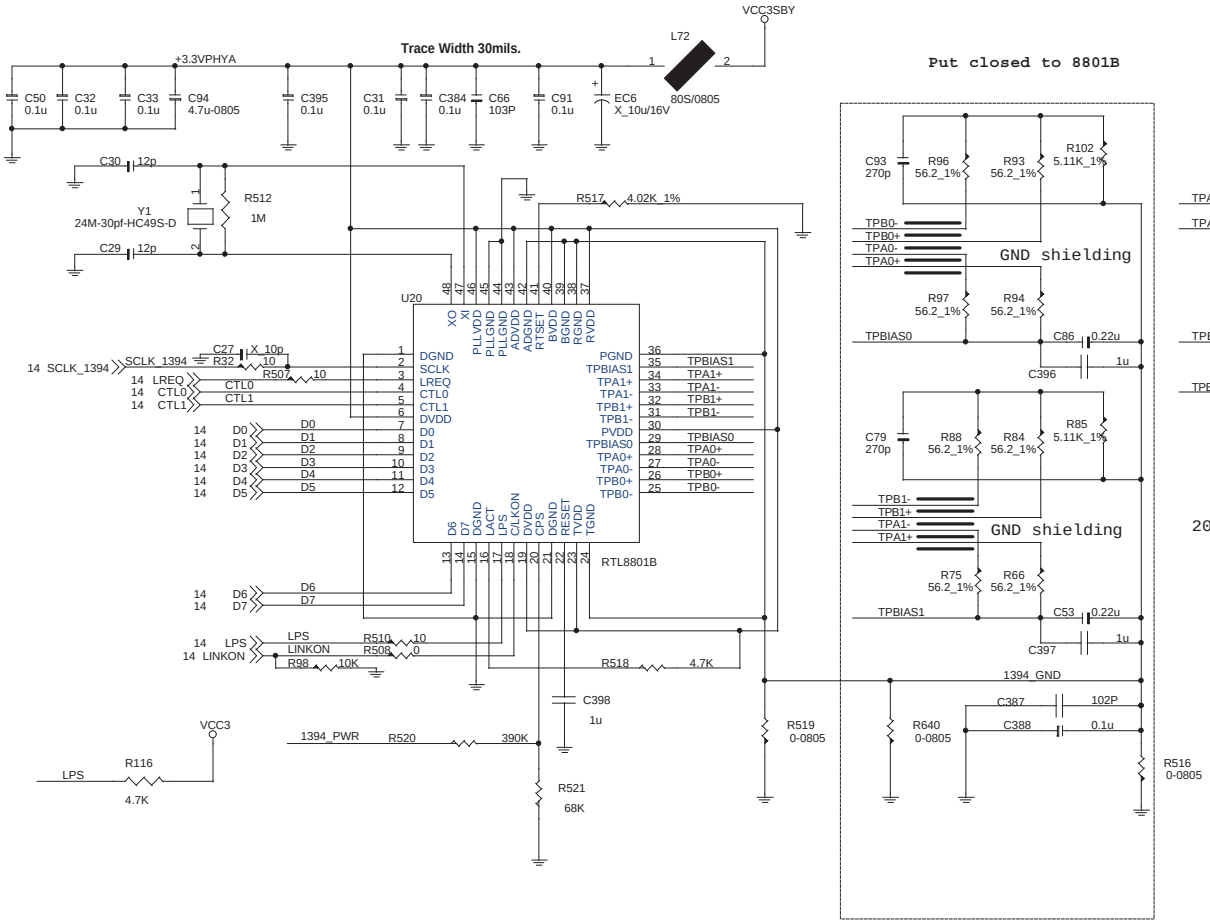
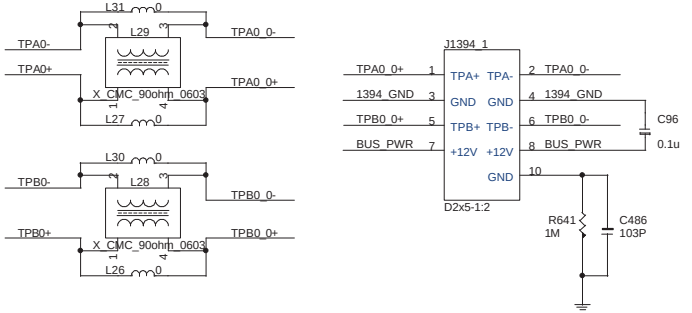
## Realtek IEEE 1394a PHY RTL8801B





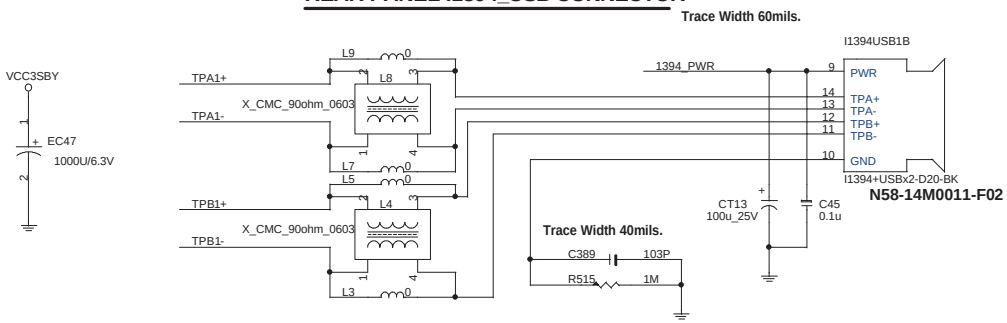


## FRONT PANEL IEEE 1394 CONNECTORS

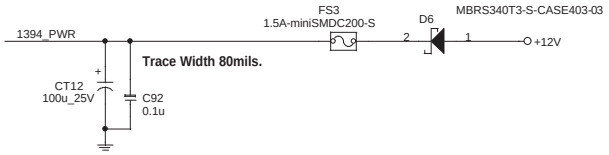



20 / 10 / 10 / 10 / 20

## REAR PANEL I1394_USB CONNECTOR

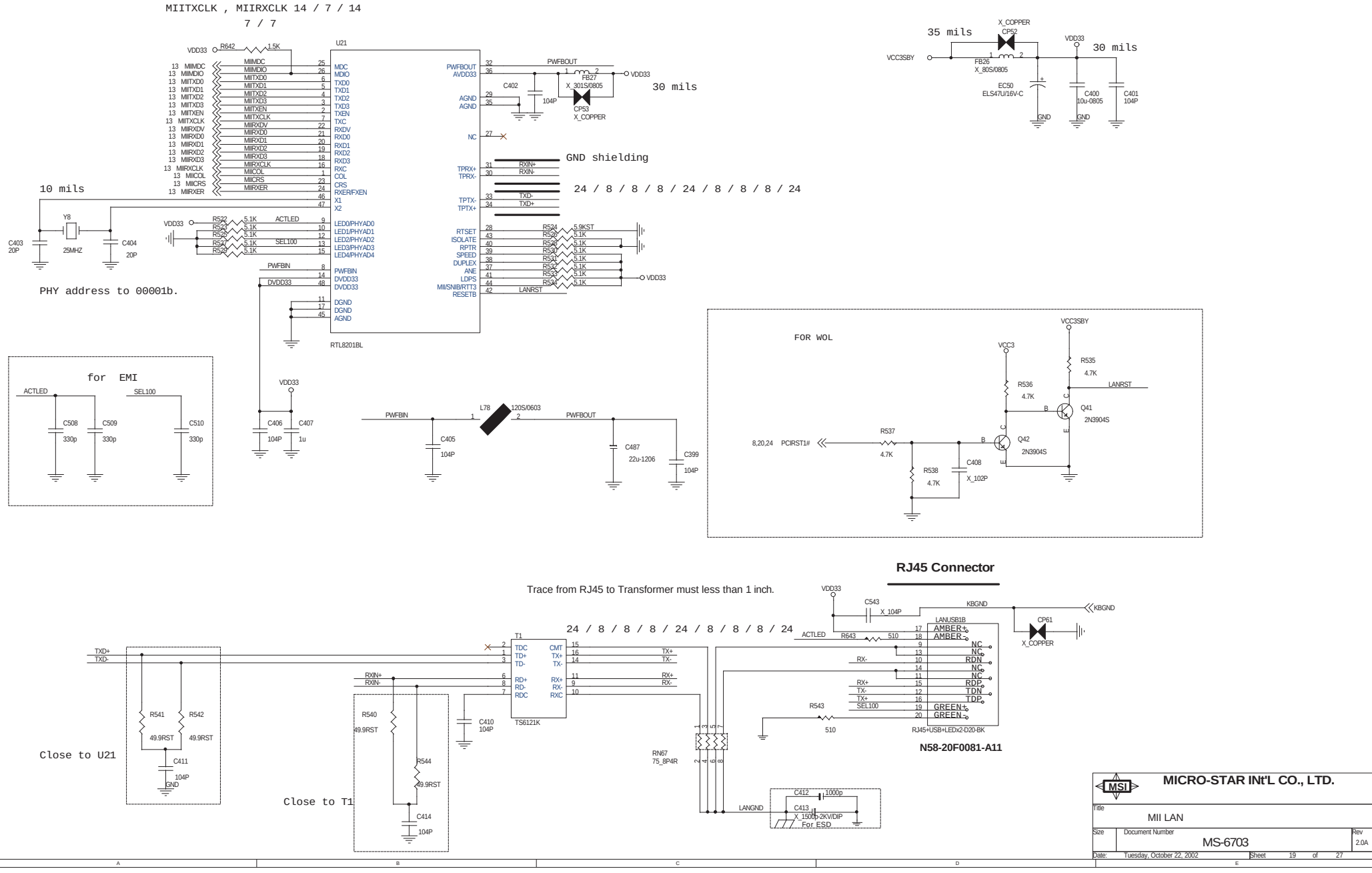



**N58-14M0011-F02**

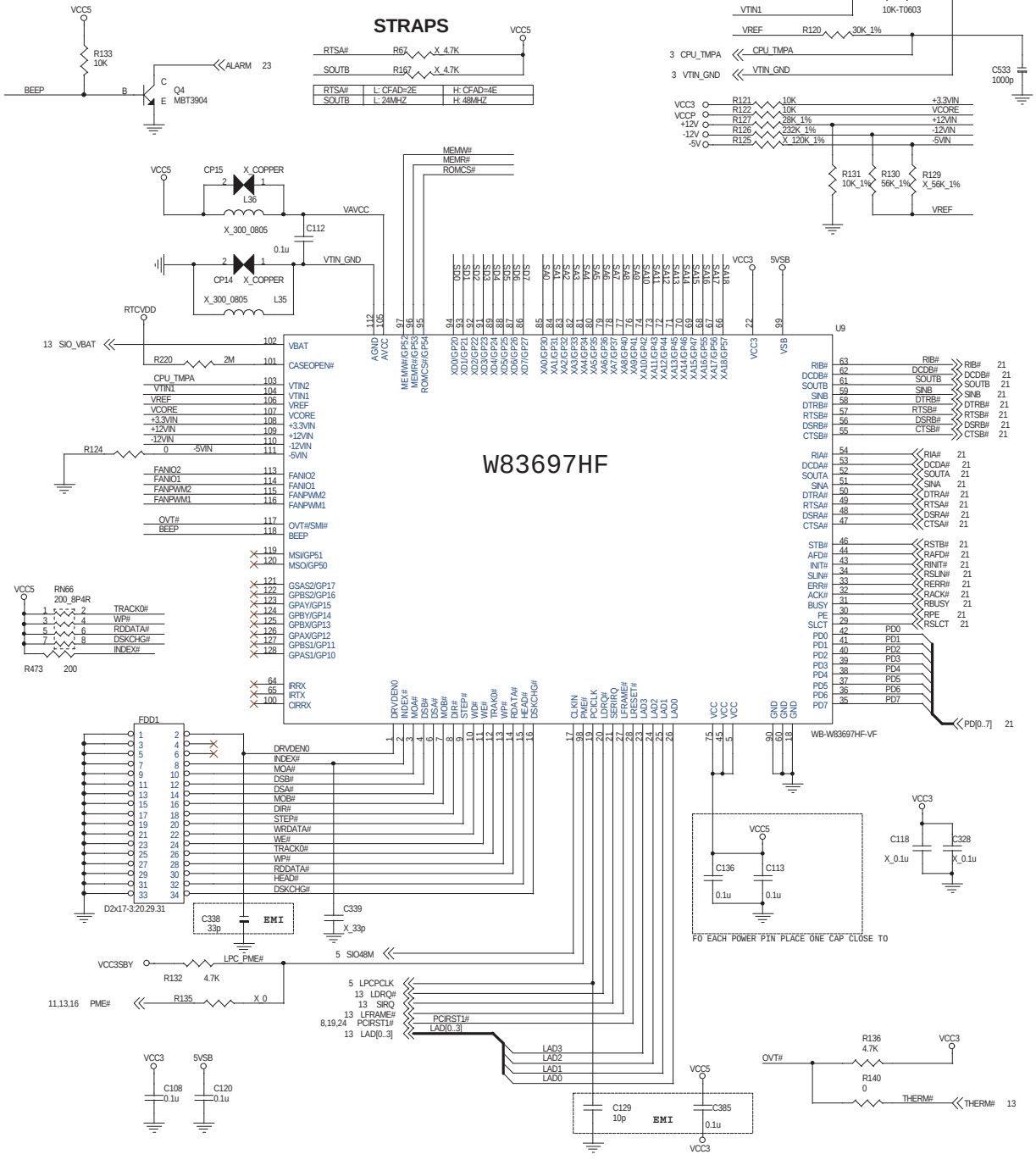



| | | |
|---|---|---|
| MSI | MICRO-STAR INt'L CO., LTD. | |
| Title | 1394a PHY & Connectors | |
| Size | Document Number MS-6703 | Rev 2.0A |
| Date: Tuesday, October 22, 2002 | Sheet 18 of 27 | |

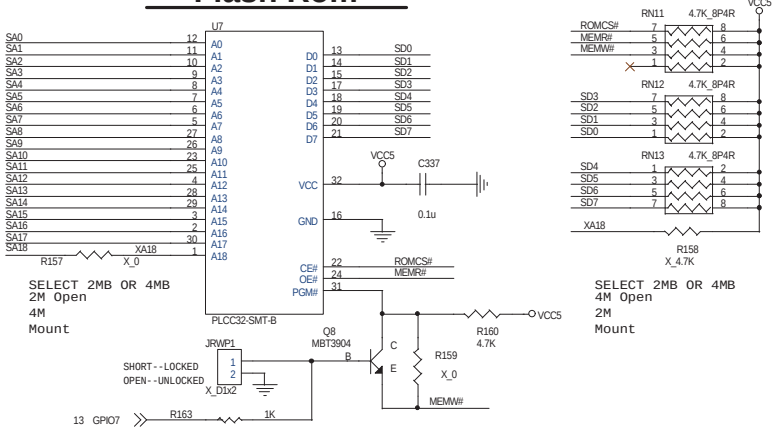
# REALTEK 8201BL MII PHY



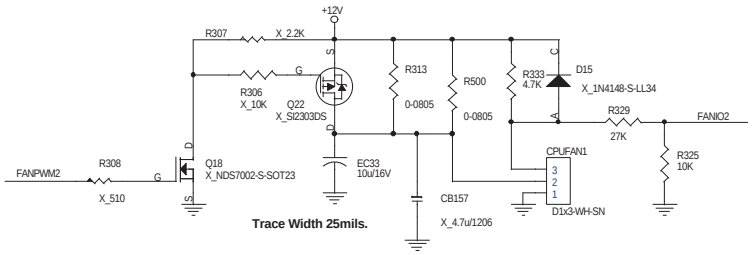
# SUPER I/O



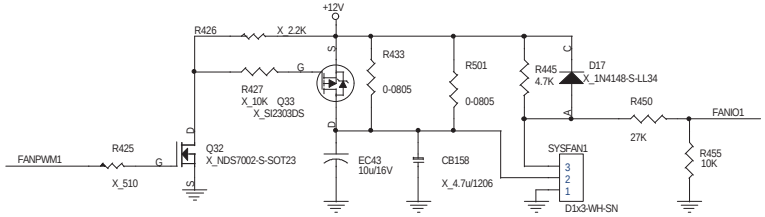

# Flash Rom



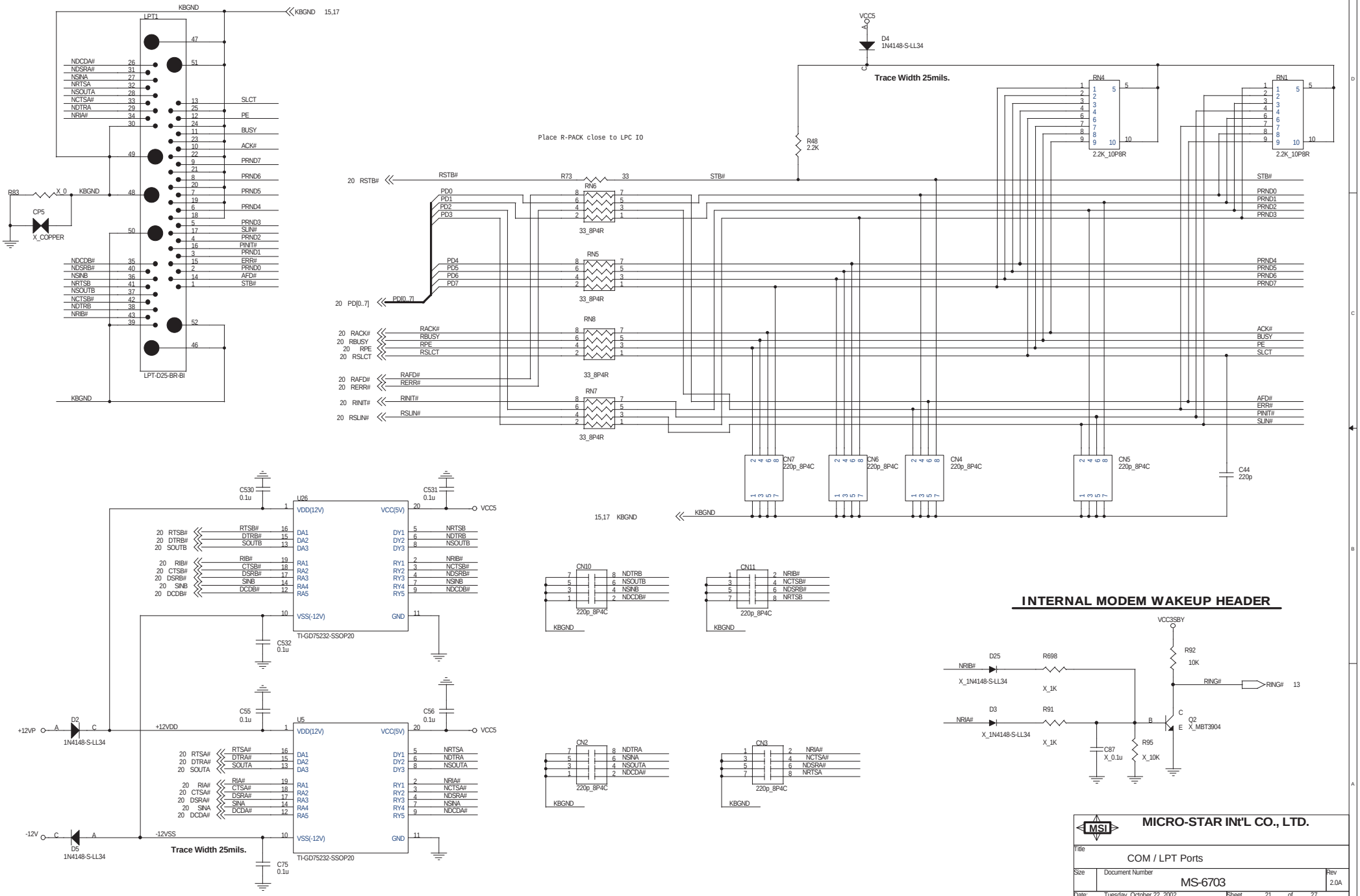

## CPU FAN




## SYSTEM FAN



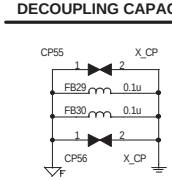

| | | | |
|---|---|---|---|
| MSI | MICRO-STAR INt'L CO., LTD. | | |
| Title | W83697HF I/O & H/W MONITOR | | |
| Size | Document Number | MS-6703 | Rev 2.0A |
| Date: | Tuesday, October 22, 2002 | Sheet 20 of 27 | |




| | |
|---|---|
| MSI | MICRO-STAR INt'L CO., LTD. |
| Title | COM / LPT Ports |
| Size | Document Number: MS-6703 |
| Rev | 2.0A |
| Date: | Tuesday, October 22, 2002 |
| Sheet | 21 of 27 |

# AC650 AC97 CODEC

## DECOUPLING CAPACITOR

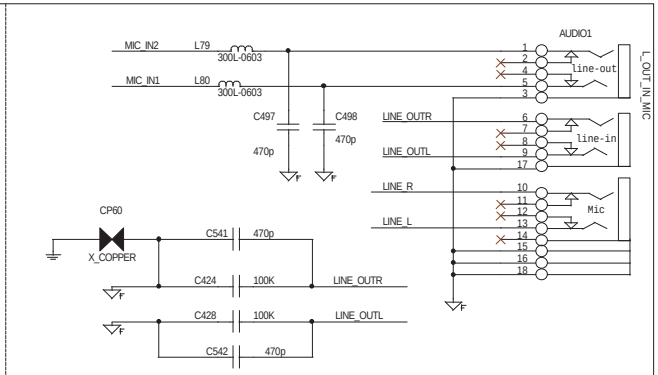



## AUDIO CODE CD / AUX IN HEADERS

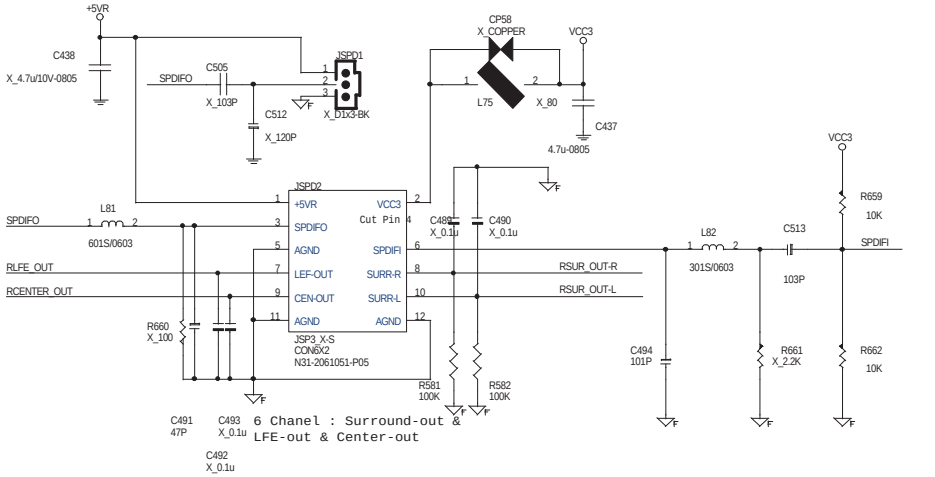



## Codec Selection :

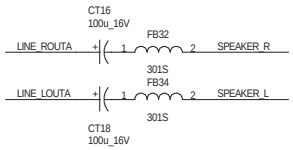
| NAME | ALC650/E | ADI1980 | ALC202A |
|---|---|---|---|
| R644 | X | V | X |
| R645 | X | V | X |
| R646 | X | V | X |
| R647 | X | V | X |
| R648 | X | V | X |
| C495 | X | V | X |
| C496 | X | V | X |
| C415 | V | X | X |
| C416 | V | X | X |
| R547 | V | V | X |
| C417 | V | V | X |
| C419 | V | V | X |
| R564 | V | V | X |
| R568 | V | V | X |
| R573 | V | V | X |
| R574 | V | V | X |
| R575 | V | V | X |
| R576 | V | V | X |
| R581 | V | V | X |
| R582 | V | V | X |
| JSPD1 | V | V | X |
| JSPD2 | V | V | X |



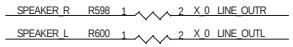

CLOSE TO CONNECTOR

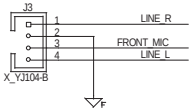



## Speaker Out Decoupling

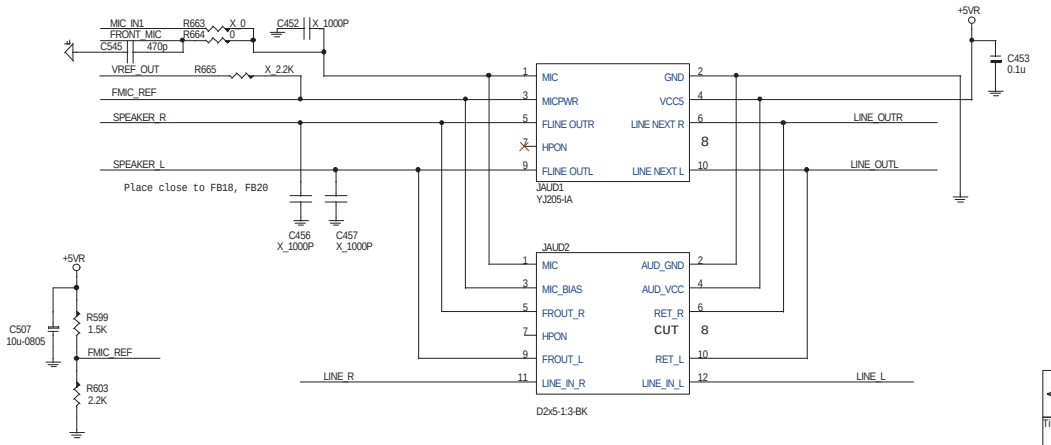



Place those component close to audio connector.



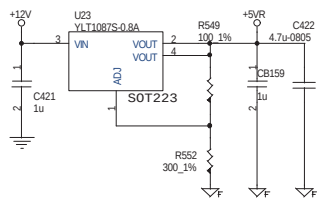



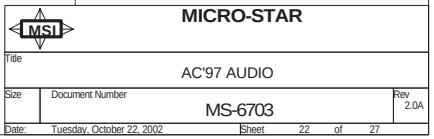

## Intel Front Audio Connector



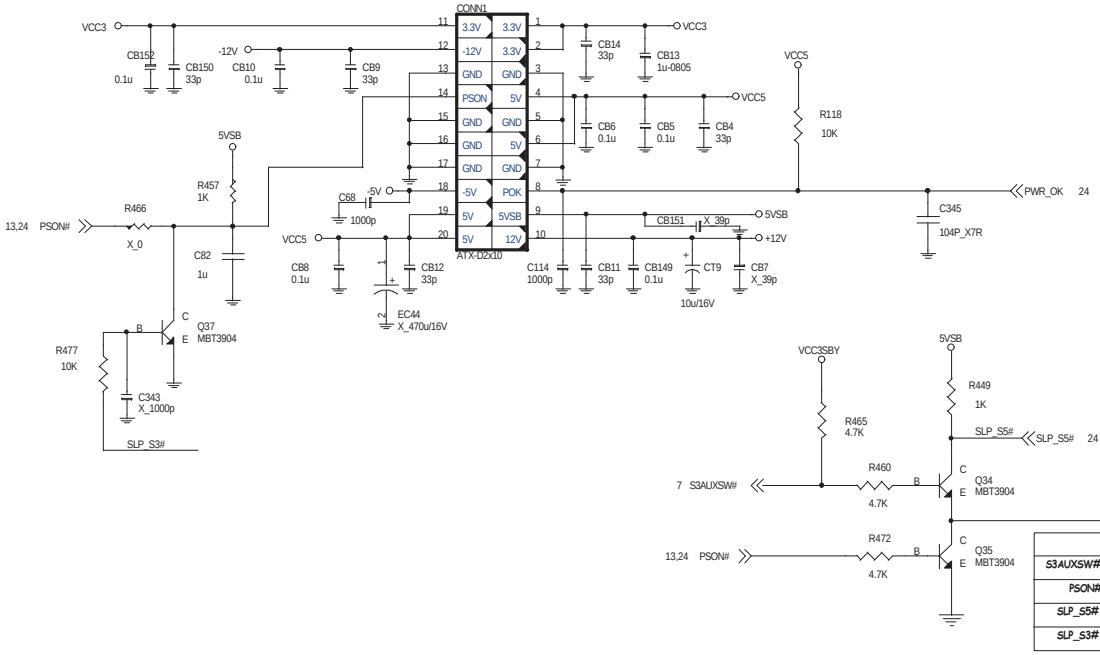

Short pin 5 & 6 , Short pin 9 & 10.

## AUDIO CODE REGULATORS



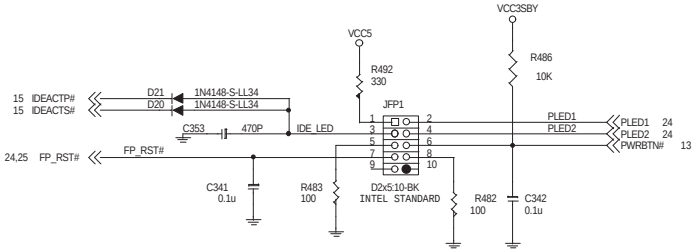



# ATX CONNECTOR

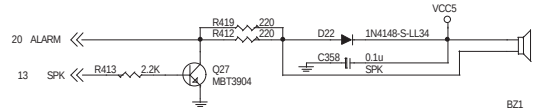



| | S0 | S3 | S5 |
|---|---|---|---|
| S3AUXSW# | 1 | 0 | 1 |
| PSON# | 0 | 1 | 1 |
| SLP_S5# | 1 | 1 | 0 |
| SLP_S3# | 1 | 0 | 0 |

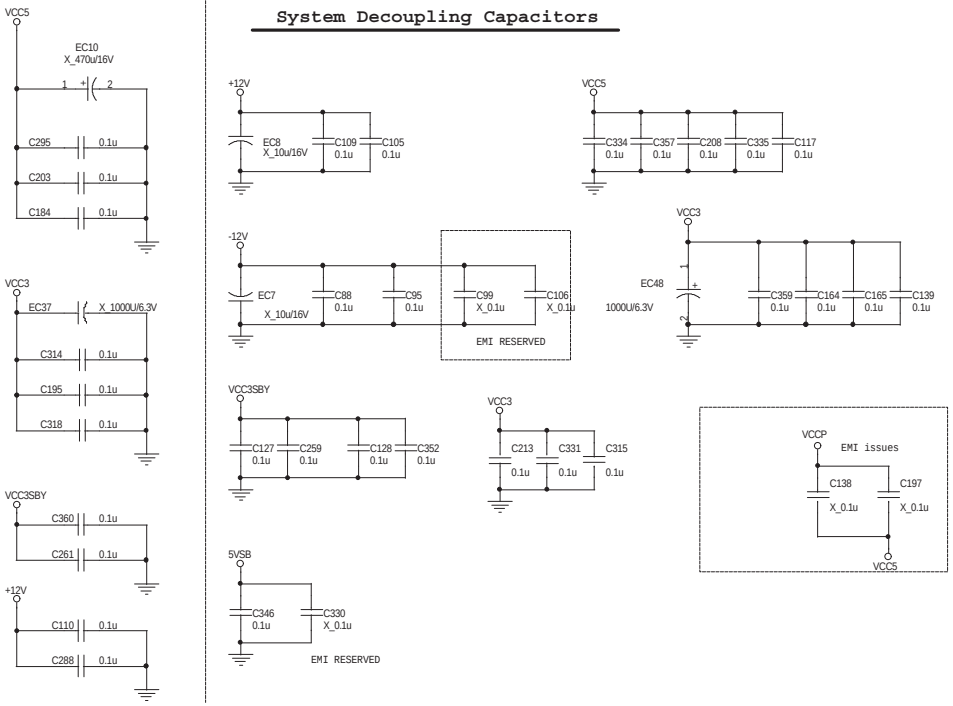
## FRONT PANEL



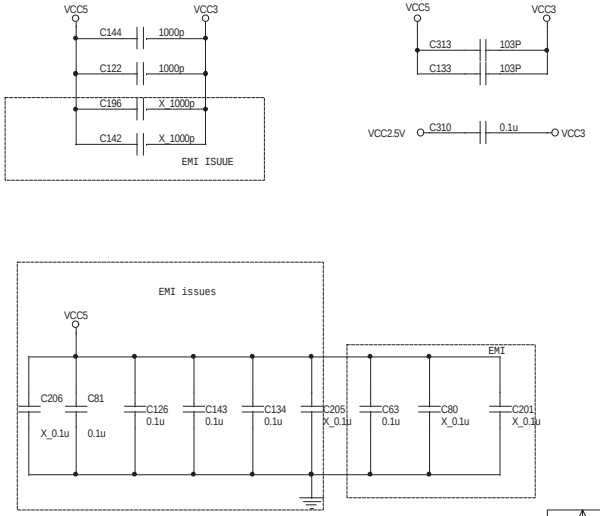

## SPEAKER

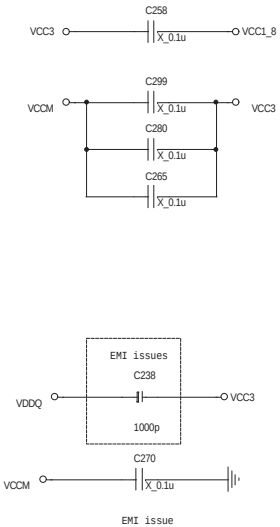



## System Decoupling Capacitors

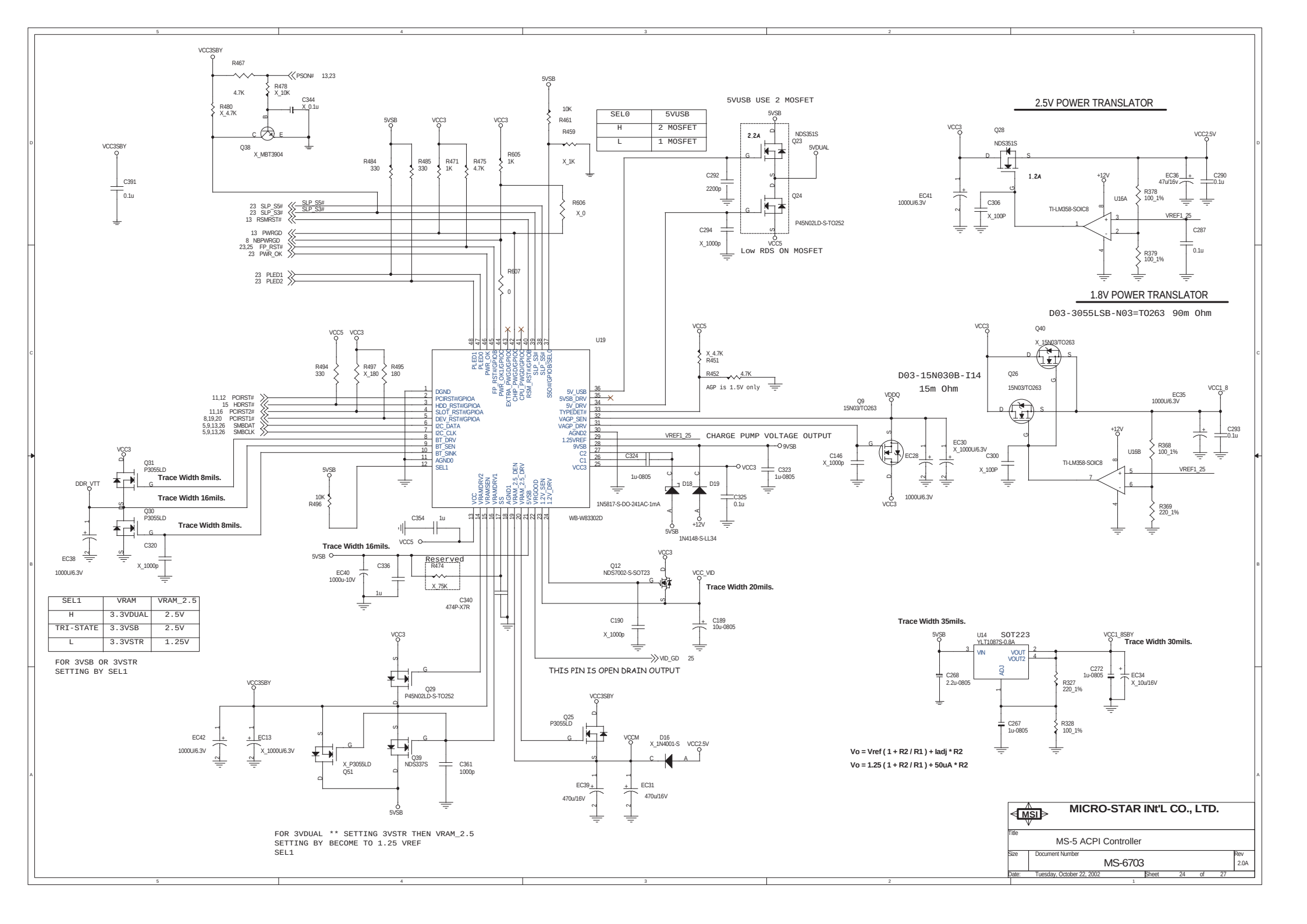


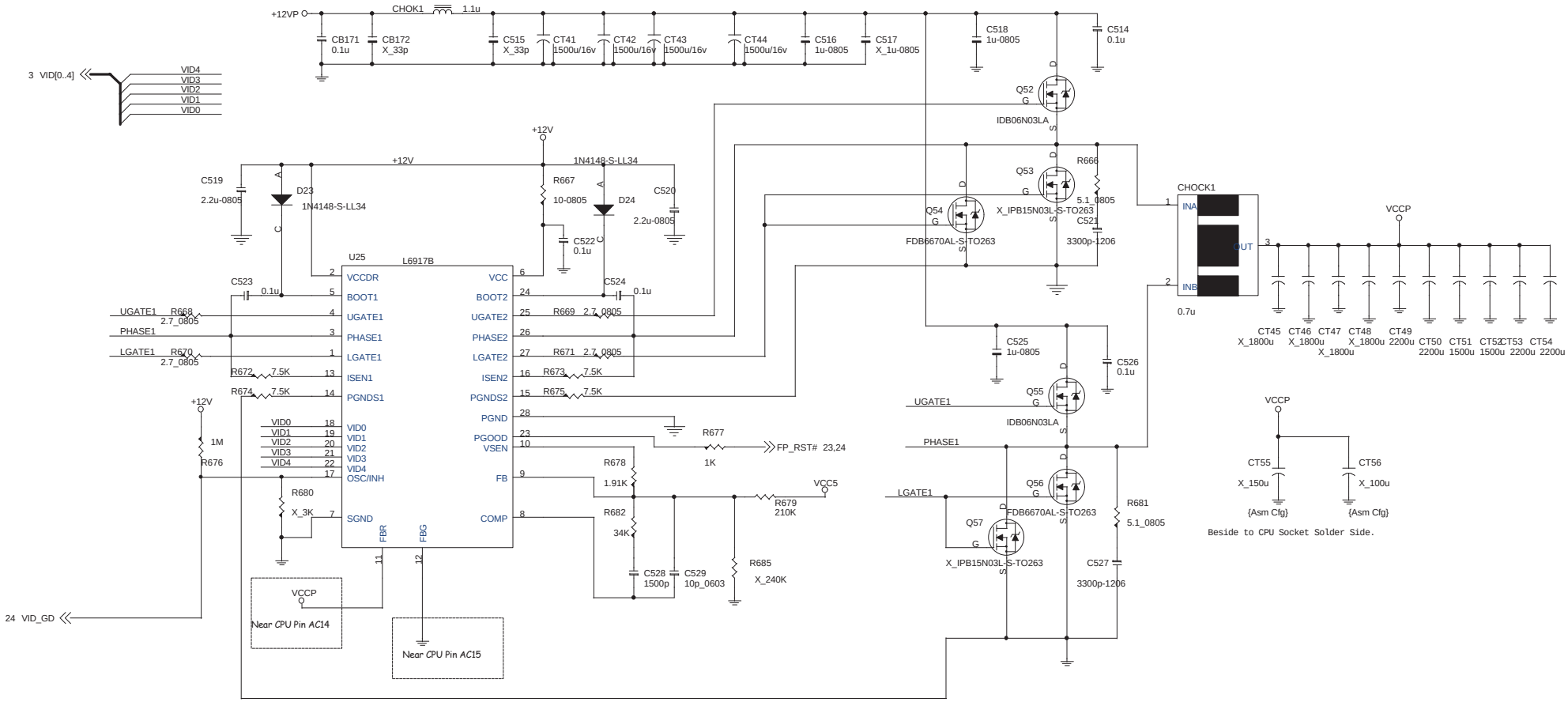

## High Freq. return current decoupling



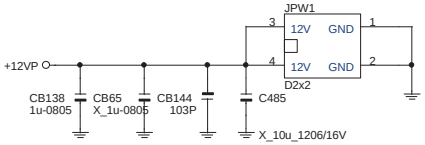




| | | |
|---|---|---|
| MSI | MICRO-STAR INt'L CO., LTD. | |
| Title | ATX & F-Panel | |
| Size | Document Number: MS-6703 | Rev: 2.0A |
| Date: Tuesday, October 22, 2002 | Sheet 23 of 27 | |

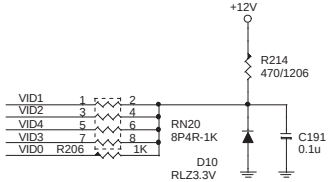

5VUSB USE 2 MOSFET
SEL0 | 5VUSB
H | 2 MOSFET
L | 1 MOSFET
Low RDS ON MOSFET
2.5V POWER TRANSLATOR
1.8V POWER TRANSLATOR
D03-3055LSB-N03=TO263 90m Ohm
D03-15N030B-I14
15m Ohm
CHARGE PUMP VOLTAGE OUTPUT
Reserved
THIS PIN IS OPEN DRAIN OUTPUT
Trace Width 8mils.
Trace Width 16mils.
Trace Width 8mils.
Trace Width 16mils.
Trace Width 20mils.
Trace Width 35mils.
Trace Width 30mils.
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
FOR 3VDUAL ** SETTING 3VSTR THEN VRAM_2.5
SETTING BY BECOME TO 1.25 VREF
SEL1
Vo = Vref ( 1 + R2 / R1 ) + Iadj * R2
Vo = 1.25 ( 1 + R2 / R1 ) + 50uA * R2
MICRO-STAR INt'L CO., LTD.
MS-5 ACPI Controller
MS-6703
Tuesday, October 22, 2002




## ATX12V POWER CONNECTOR

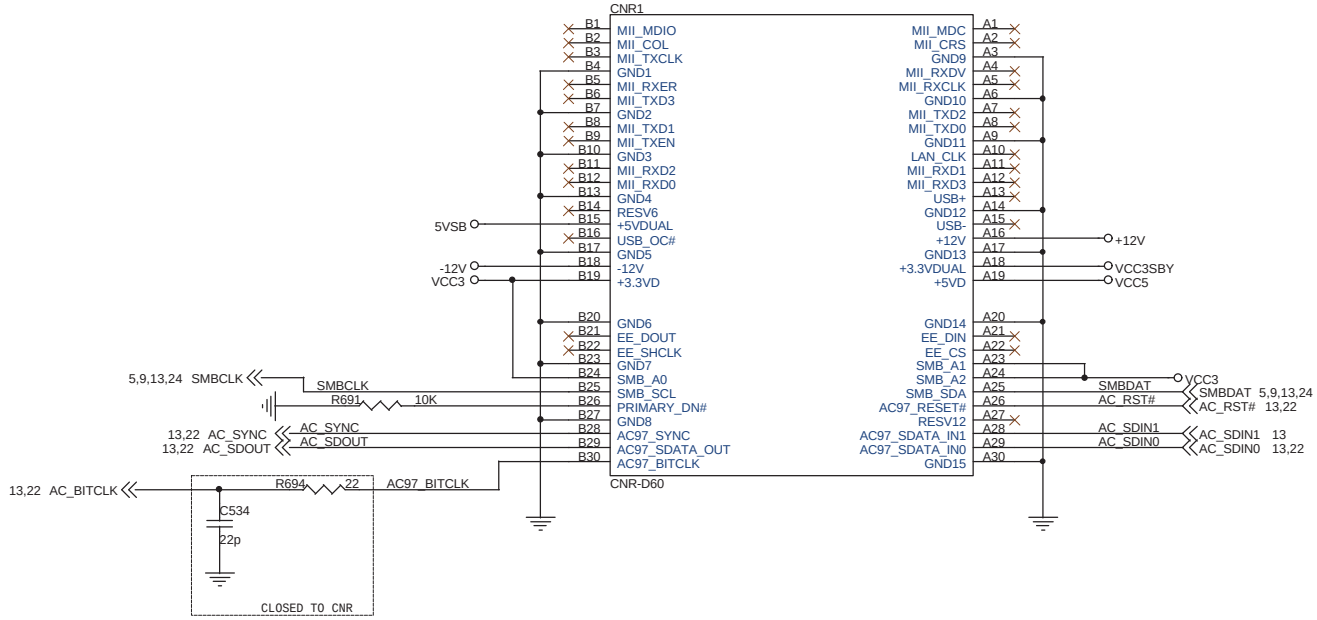



## VID PULL-UP RESISTORS




MICRO-STAR

| | | |
|---|---|---|
| Title | VRM 9.0 | |
| Size | Document Number MS-6703 | Rev 2.0A |
| Date: Tuesday, October 22, 2002 | Sheet 25 of 27 | |




| | | |
|---|---|---|
| MSI | MICRO-STAR | |
| Title | CNR | |
| Size | Document Number MS-6703 | Rev 2.0A |
| Date: Tuesday, October 22, 2002 | Sheet 26 of 27 | |

## MANUAL PART

BAT2_M

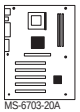

BATTERY

U7_M


4 Mega

M31-29040P8-W03
M31-3904008-S20

PCB



MS-6703-20A

U11_M

NB-Heat Sink

E31-0400070-A02
E31-0400070-K08
E31-0400070-E25

Q52-Q54

MOS-HEATSINK

Q55-Q56

MOS-HEATSINK

JBAT1(1-2)
JC-D2-GN

CMOS CLEAR(1-2)

JPWD1(1-2)
X_JC-D2-GN

CLEAR PassWord(1-2)

JAUD1(5-6
JC-D2-GN

JAUD1(9-10
JC-D2-GN

U12_M


CPU_Retention

U12_MB

X_BACK PLATE

U12_M1



X_SCREW

U12_M2



X_SCREW

U12_M3



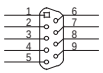
X_SCREW

U12_M4



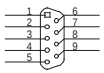
X_SCREW

COM1




COMport

COM2




COMport

| Jumper | Description | |
|---|---|---|
| JAUD1 | AUDIO FRONT PANEL HEADPHONE JACK HEADER | |
| JBAT1 | CLEAR CMOS | |
| 1-2 | NORMAL | (Default) |
| 2-3 | CLEAR CMOS | |
| JPWD1 | CLEAR PASSWORD | |
| 1-2(SHORT) | NORMAL | (Default) |
| 1-2(OPEN) | CLEAR PASSWORD | |

MICRO-STAR

Title: Manual Parts

Size | Document Number: MS-6703 | Rev: 2.0A

Date: Tuesday, October 22, 2002 | Sheet 27 of 27