MS-7122 (MAGA3) *Version 0A*

Intel (R) Springdale (GMCH) + ICH5 Chipset
Intel Prescott LGA775 Processor

CPU:

Intel LGA775 Prescott

System Chipset:

Intel Springdale - GMCH (North Bridge)
Intel ICH5 (South Bridge)

On Board Chipset:

BIOS -- FWH EEPROM
AC'97 Codec --RealTek ALC658
LPC Super I/O -- SMSC 47M292
LAN --REALTEK LAN 8110S/8100C
CLOCK --ICS 952617

Main Memory:

DDR * 2 (Max 2GB)

Expansion Slots:

PCI2.3 SLOT *1&MINI CPI*1

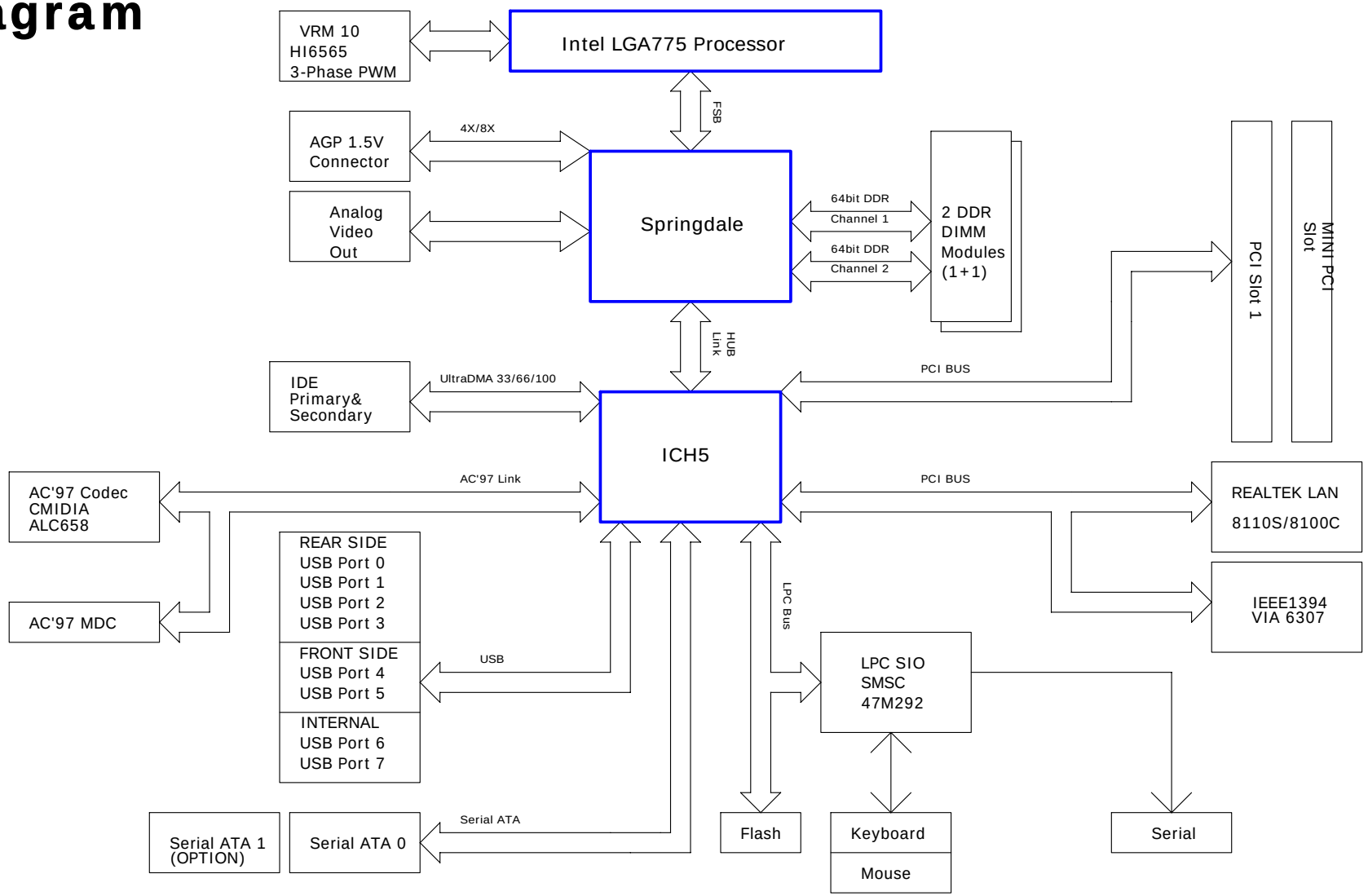
PWM:

Controller: Intersil 6565

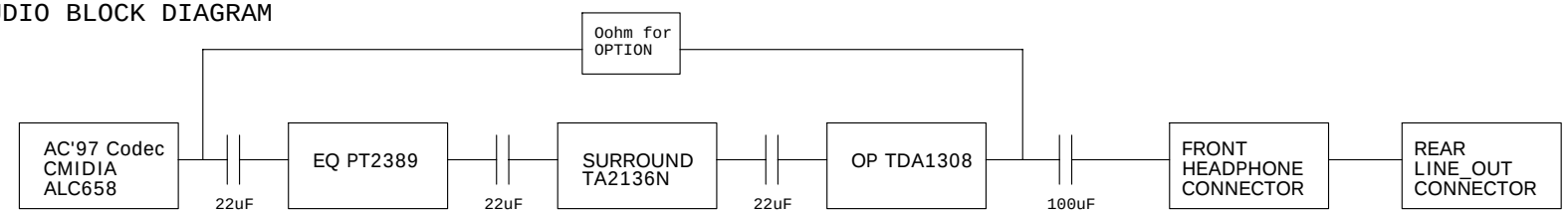
MICRO-STAR INt'L CO., LTD.

Title: COVER SHEET		
Size	Document Number: MS-7122	Rev: 0A
Date: Wednesday, August 11, 2004	Sheet 1 of 26	

Block Diagram



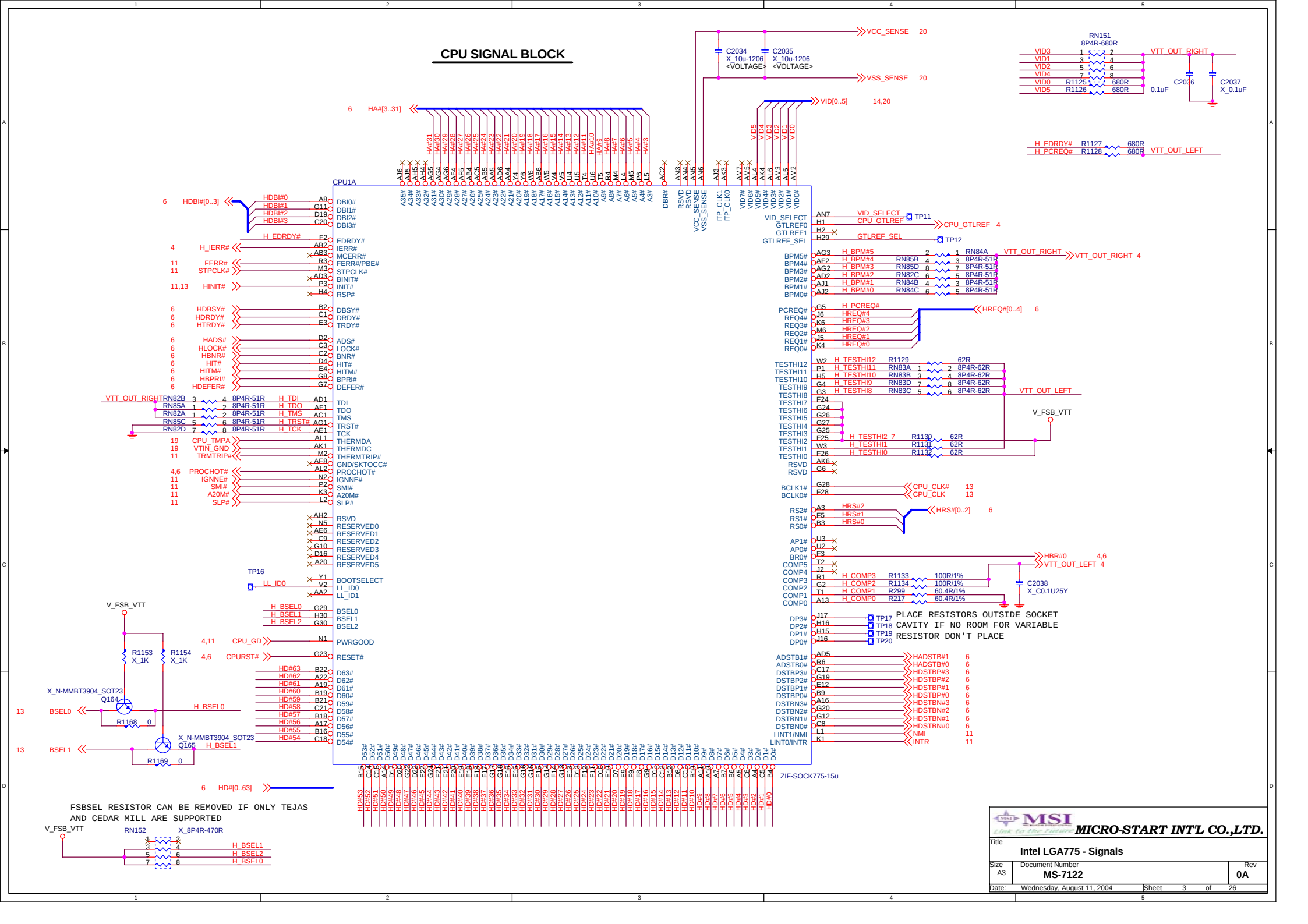
AUDIO BLOCK DIAGRAM



MICRO-STAR INt'L CO., LTD.

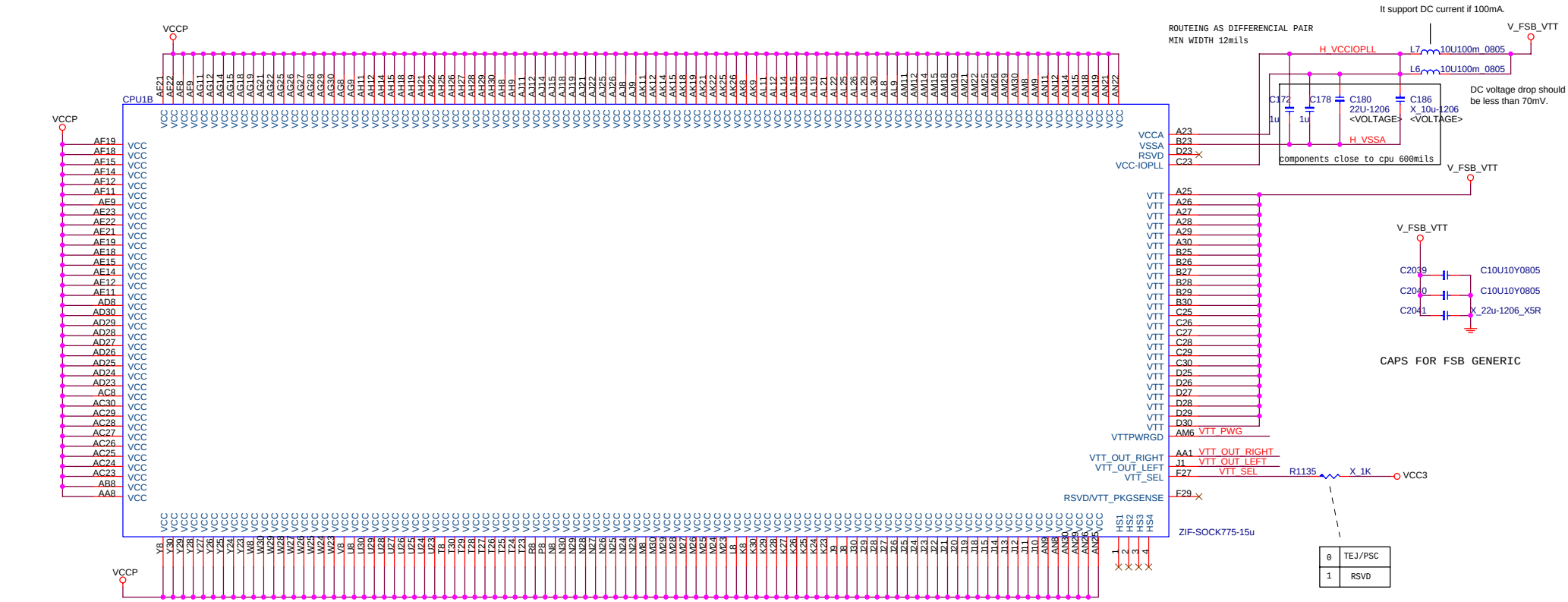
Title	BLOCK DIAGRAM	
Size	Document Number: MS-7122	Rev: 0A
Date: Wednesday, August 11, 2004	Sheet 2 of 26	

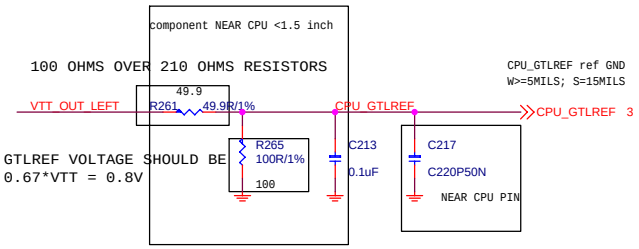
CPU SIGNAL BLOCK

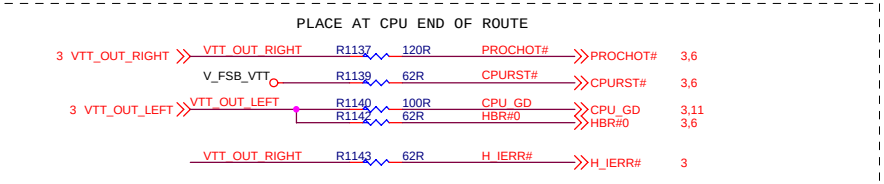


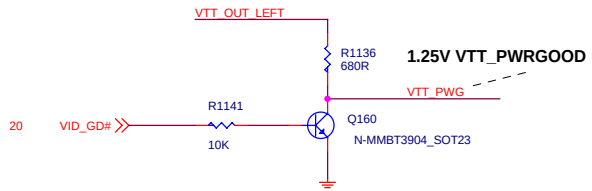
Title	Intel LGA775 - Signals
Size	A3
Document Number	MS-7122
Rev	0A
Date:	Wednesday, August 11, 2004
Sheet	3 of 26

MSI MICRO-START INT'L CO.,LTD.



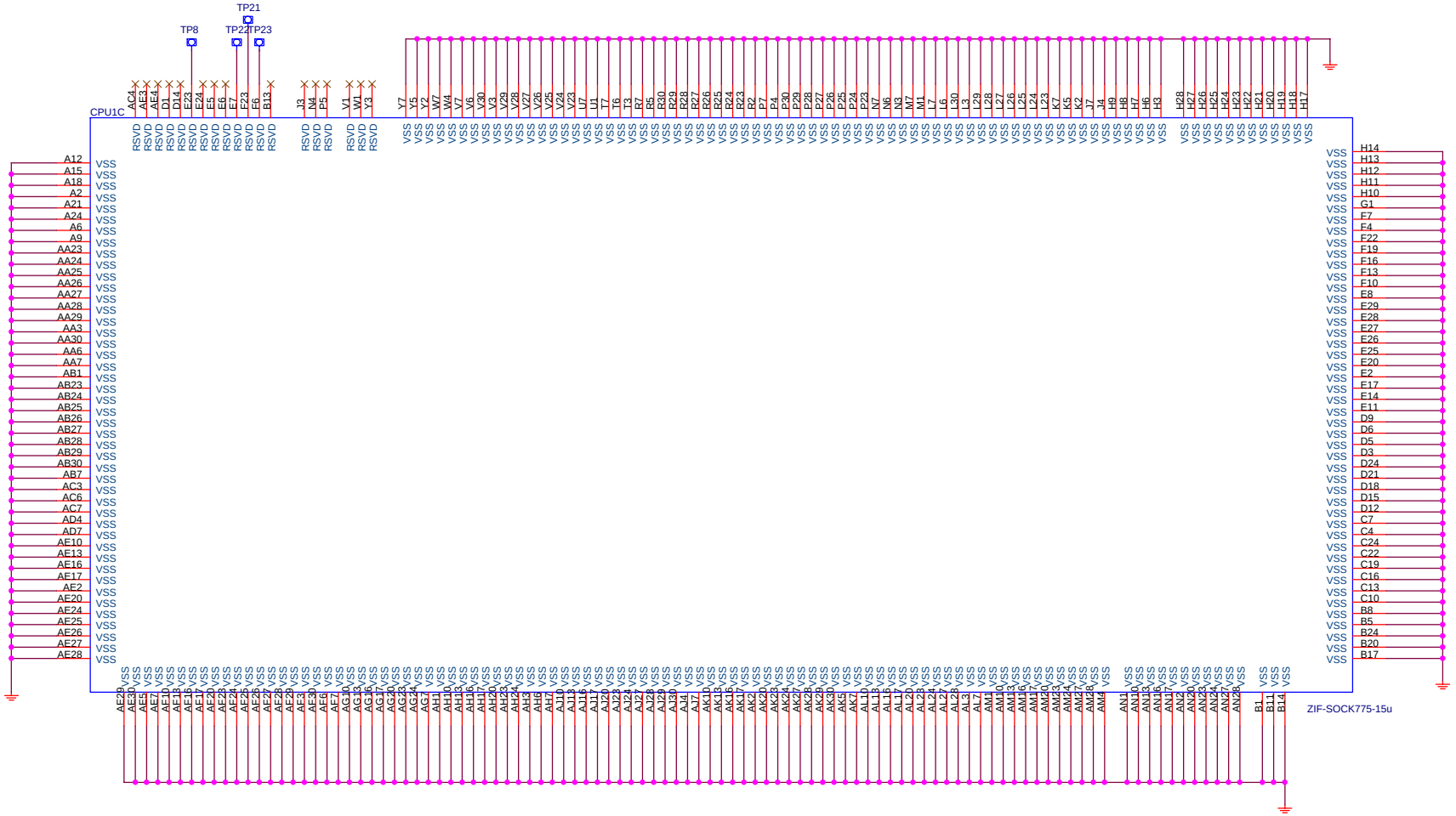




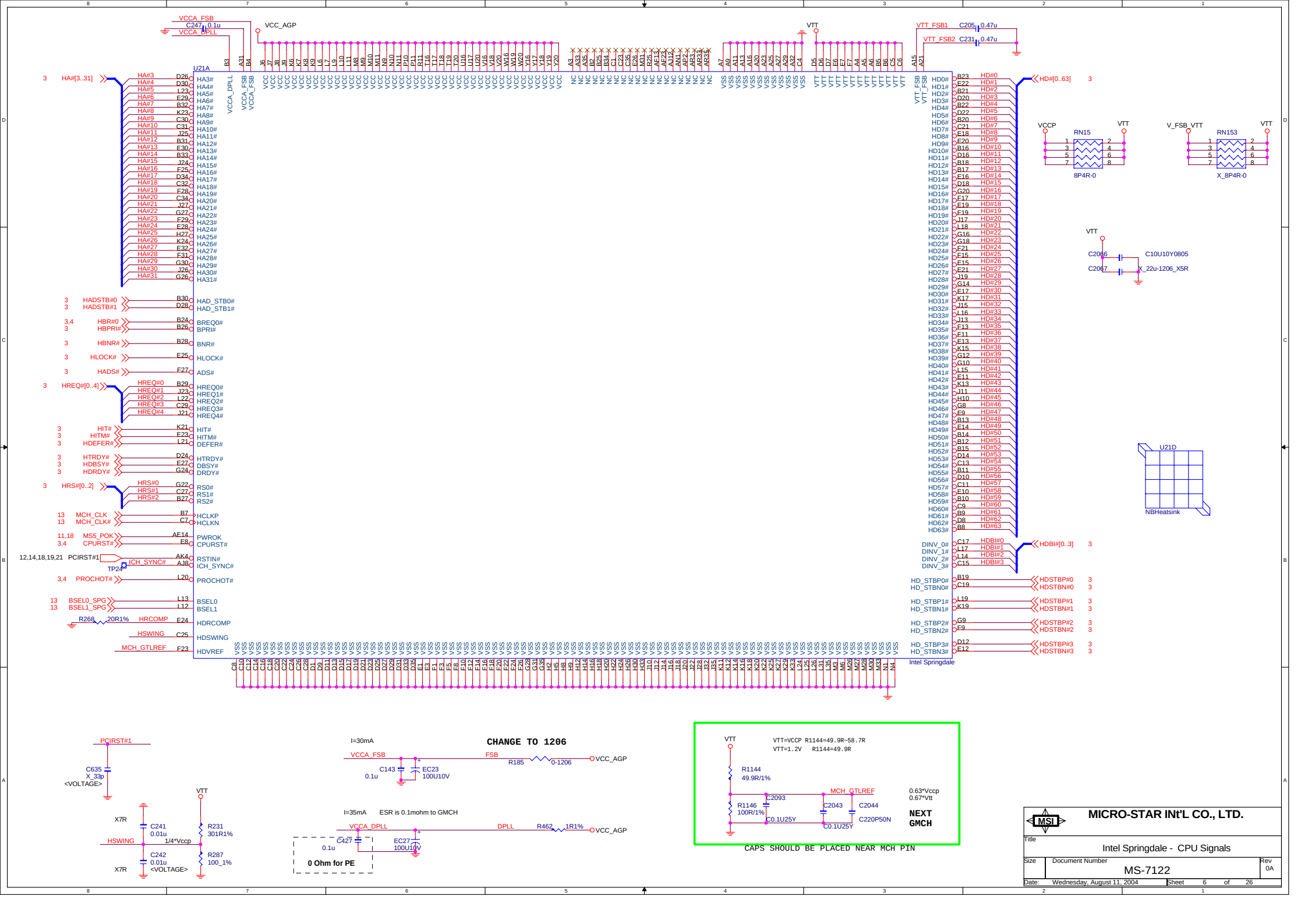


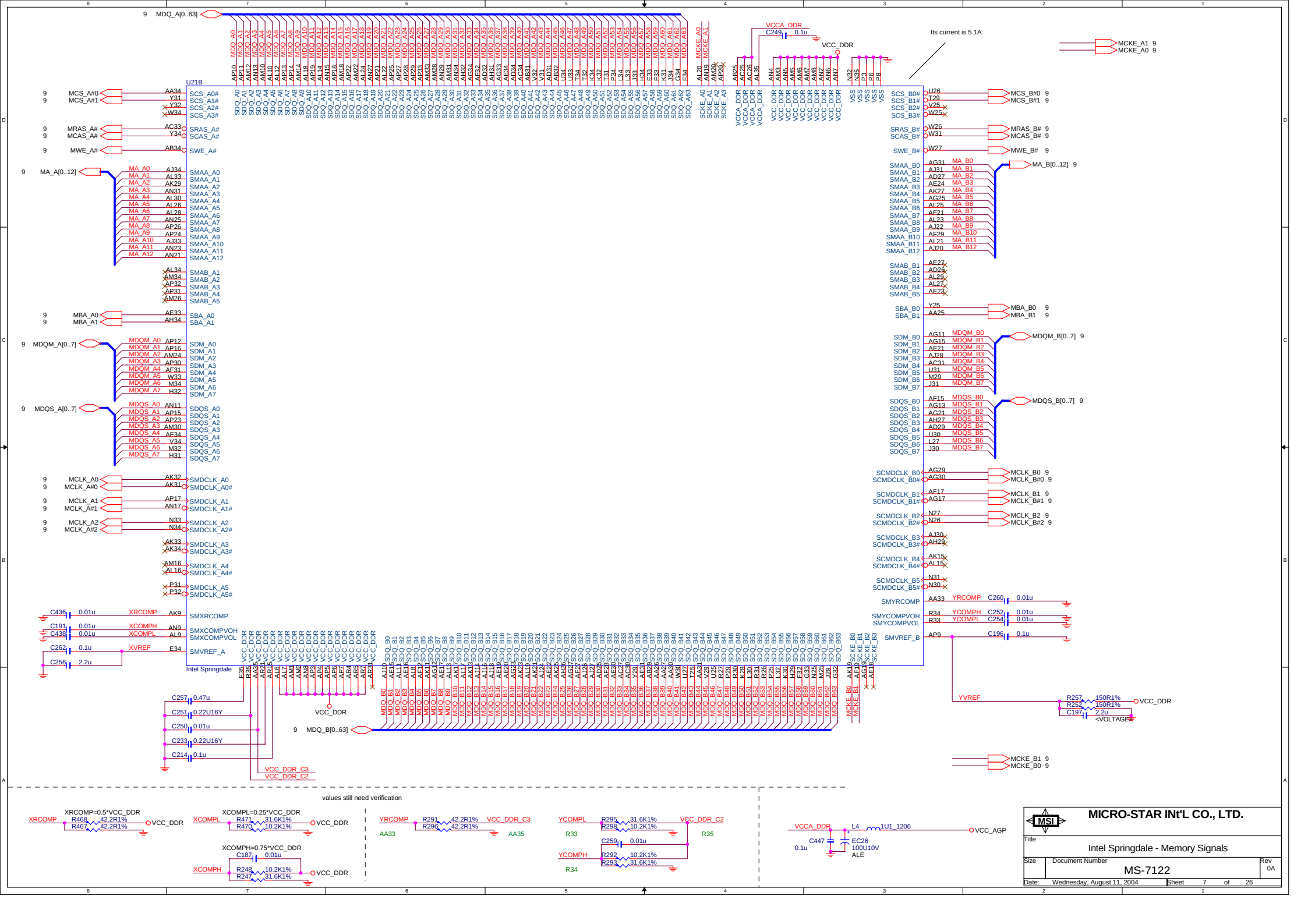
MSI Link to the Future MICRO-START INT'L CO.,LTD.

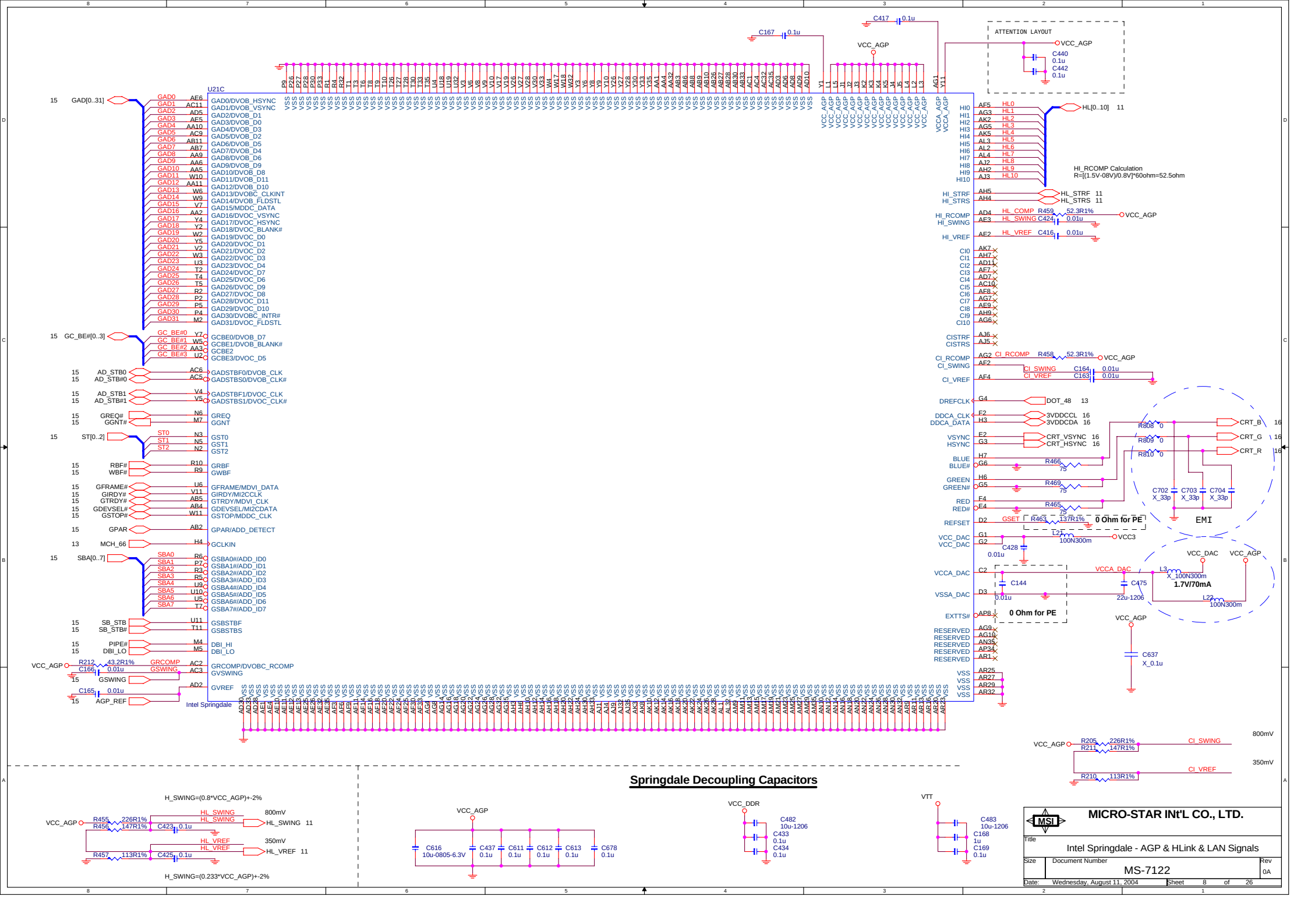
Title: Intel LGA775 - Power		
Size: A3	Document Number: MS-7122	Rev: 0A
Date: Wednesday, August 11, 2004	Sheet 4 of 26	



MSI MICRO-START INT'L CO.,LTD.		
Title: Intel LGA775- GND		
Size: A3	Document Number: MS-7122	Rev: 0A
Date: Wednesday, August 11, 2004	Sheet 5 of 26	

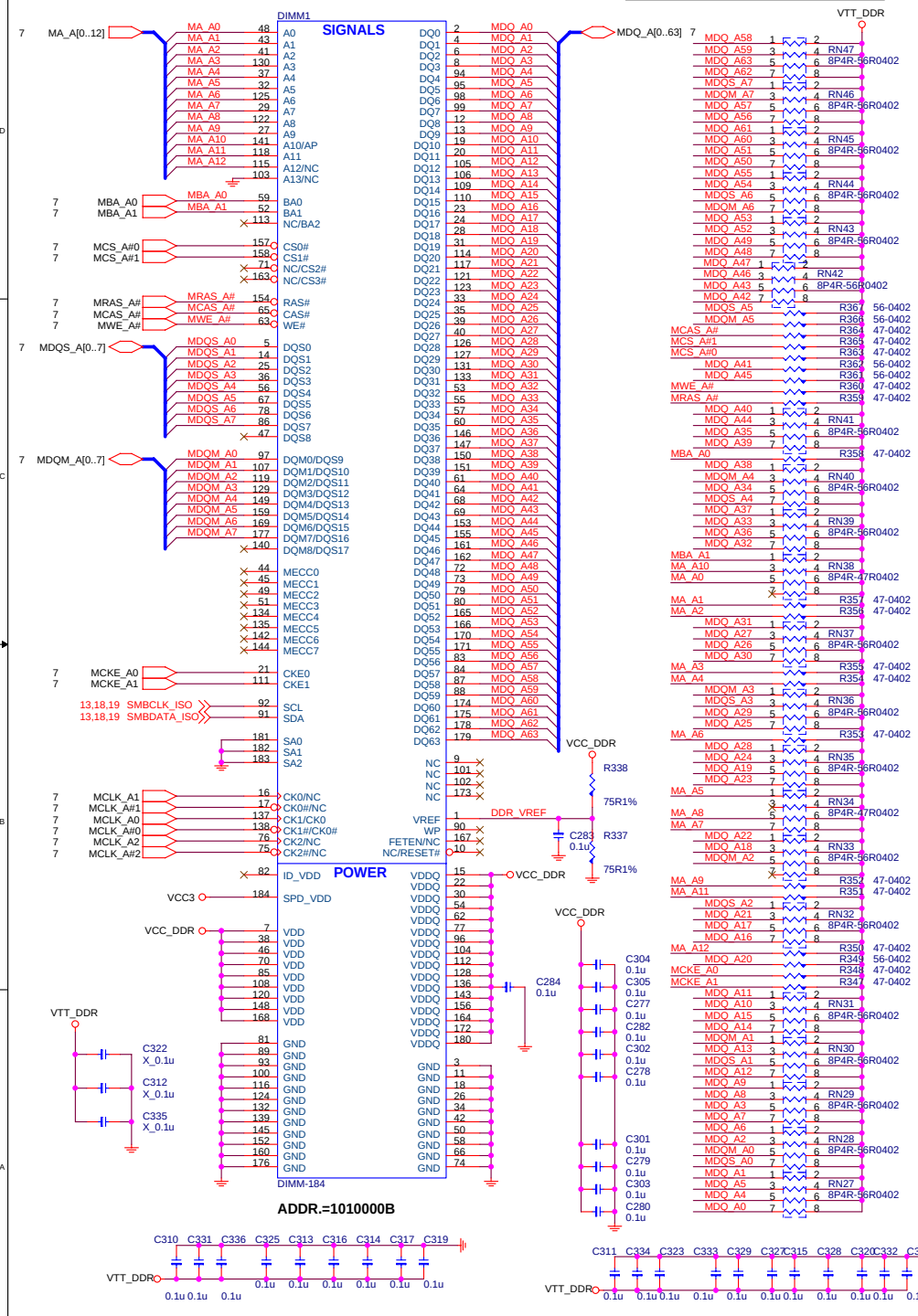

VCCA_FSB
C247 0.1u
VCCA_DPLL
VCC_AGP
VTT
VTT_FSB1 C205 0.47u
VTT_FSB2 C231 0.47u
U21A
HA#[3..31]
HADSTB#0
HADSTB#1
HBR#0
HBPR#
HBNR#
HLOCK#
HADS#
HREQ#[0..4]
HIT#
HITM#
HDEFER#
HTRDY#
HDBSY#
HDRDY#
HRS#[0..2]
MCH_CLK
MCH_CLK#
MS5_POK
CPURST#
PCIRST#1
ICH_SYNC#
TP24
PROCHOT#
BSEL0_SPG
BSEL1_SPG
R268 20R1% HRCOMP
HSWING
MCH_GTLREF
HD#[0..63]
HDBI#[0..3]
HD_STBP0#
HD_STBN0#
HD_STBP1#
HD_STBN1#
HD_STBP2#
HD_STBN2#
HD_STBP3#
HD_STBN3#
HDSTBP#0
HDSTBN#0
HDSTBP#1
HDSTBN#1
HDSTBP#2
HDSTBN#2
HDSTBP#3
HDSTBN#3
Intel Springdale
VCCP
RN15
8P4R-0
V_FSB_VTT
RN153
X_8P4R-0
C2066 C10U10Y0805
C2067 X_22u-1206_X5R
U21D
NBHeatsink
C635 X_33p <VOLTAGE>
X7R
C241 0.01u
HSWING
1/4*Vccp
C242 0.01u <VOLTAGE>
R231 301R1%
R287 100_1%
I=30mA
CHANGE TO 1206
VCCA_FSB
C143 0.1u
EC23 100U10V
FSB
R185 0-1206
VCC_AGP
I=35mA ESR is 0.1mohm to GMCH
VCCA_DPLL
C427 0.1u
EC27 100U10V
DPLL
R462 1R1%
0 Ohm for PE
VTT=VCCP R1144=49.9R~58.7R
VTT=1.2V R1144=49.9R
R1144 49.9R/1%
R1146 100R/1%
C2093
C0.1U25Y
C2043
C0.1U25Y
C2044
C220P50N
0.63*Vccp
0.67*Vtt
NEXT GMCH
CAPS SHOULD BE PLACED NEAR MCH PIN
MICRO-STAR INt'L CO., LTD.
Title
Intel Springdale - CPU Signals
Size
Document Number
MS-7122
Rev 0A
Date: Wednesday, August 11, 2004
Sheet 6 of 26


U21B
Intel Springdale
9 MDQ_A[0..63]
MCS_A#0 9
MCS_A#1 9
MRAS_A# 9
MCAS_A# 9
MWE_A# 9
MA_A[0..12] 9
MDQM_A[0..7] 9
MDQS_A[0..7] 9
MCLK_A0 9
MCLK_A#0 9
MCLK_A1 9
MCLK_A#1 9
MCLK_A2 9
MCLK_A#2 9
MBA_A0 9
MBA_A1 9
SMXRCOMP
SMXCOMPVOH
SMXCOMPVOL
SMVREF_A
SMYRCOMP
SMYCOMPVOH
SMYCOMPVOL
SMVREF_B
VCCA_DDR
VCC_DDR
Its current is 5.1A.
MCKE_A1 9
MCKE_A0 9
MCS_B#0 9
MCS_B#1 9
MRAS_B# 9
MCAS_B# 9
MWE_B# 9
MA_B[0..12] 9
MDQM_B[0..7] 9
MDQS_B[0..7] 9
MBA_B0 9
MBA_B1 9
MCLK_B0 9
MCLK_B#0 9
MCLK_B1 9
MCLK_B#1 9
MCLK_B2 9
MCLK_B#2 9
MCKE_B1 9
MCKE_B0 9
VCC_AGP
values still need verification
XRCOMP=0.5*VCC_DDR
XCOMPL=0.25*VCC_DDR
XCOMPH=0.75*VCC_DDR
MICRO-STAR INt'L CO., LTD.
Intel Springdale - Memory Signals
MS-7122
Rev 0A
Wednesday, August 11, 2004
Sheet 7 of 26


U21C
Intel Springdale
GAD[0..31]
GC_BE#[0..3]
AD_STB0
AD_STB#0
AD_STB1
AD_STB#1
GREQ#
GGNT#
ST[0..2]
RBF#
WBF#
GFRAME#
GIRDY#
GTRDY#
GDEVSEL#
GSTOP#
GPAR
MCH_66
SBA[0..7]
SB_STB
SB_STB#
PIPE#
DBI_LO
GSWING
AGP_REF
VCC_AGP
R212 43.2R1%
C166 0.01u
C165 0.01u
GRCOMP
GSWING
GAD0/DVOB_HSYNC
GAD1/DVOB_VSYNC
GAD2/DVOB_D1
GAD3/DVOB_D0
GAD4/DVOB_D3
GAD5/DVOB_D2
GAD6/DVOB_D5
GAD7/DVOB_D4
GAD8/DVOB_D6
GAD9/DVOB_D9
GAD10/DVOB_D8
GAD11/DVOB_D11
GAD12/DVOB_D10
GAD13/DVOBC_CLKINT
GAD14/DVOB_FLDSTL
GAD15/MDDC_DATA
GAD16/DVOC_VSYNC
GAD17/DVOC_HSYNC
GAD18/DVOC_BLANK#
GAD19/DVOC_D0
GAD20/DVOC_D1
GAD21/DVOC_D2
GAD22/DVOC_D3
GAD23/DVOC_D4
GAD24/DVOC_D7
GAD25/DVOC_D6
GAD26/DVOC_D9
GAD27/DVOC_D8
GAD28/DVOC_D11
GAD29/DVOC_D10
GAD30/DVOBC_INTR#
GAD31/DVOC_FLDSTL
GCBE0/DVOB_D7
GCBE1/DVOB_BLANK#
GCBE2
GCBE3/DVOC_D5
GADSTBF0/DVOB_CLK
GADSTBS0/DVOB_CLK#
GADSTBF1/DVOC_CLK
GADSTBS1/DVOC_CLK#
GREQ
GGNT
GST0
GST1
GST2
GRBF
GWBF
GFRAME/MDVI_DATA
GIRDY/MI2CCLK
GTRDY/MDVI_CLK
GDEVSEL/MI2CDATA
GSTOP/MDDC_CLK
GPAR/ADD_DETECT
GCLKIN
GSBA0#/ADD_ID0
GSBA1#/ADD_ID1
GSBA2#/ADD_ID2
GSBA3#/ADD_ID3
GSBA4#/ADD_ID4
GSBA5#/ADD_ID5
GSBA6#/ADD_ID6
GSBA7#/ADD_ID7
GSBSTBF
GSBSTBS
DBI_HI
DBI_LO
GRCOMP/DVOBC_RCOMP
GVSWING
GVREF
C417 0.1u
C167 0.1u
VCC_AGP
ATTENTION LAYOUT
C440 0.1u
C442 0.1u
HL[0..10] 11
HI_RCOMP Calculation
R=[(1.5V-08V)/0.8V]*60ohm=52.5ohm
HL_STRF 11
HL_STRS 11
HL_COMP R459 52.3R1%
HL_SWING C424 0.01u
HL_VREF C416 0.01u
CI_RCOMP R458 52.3R1%
CI_SWING C164 0.01u
CI_VREF C163 0.01u
DOT_48 13
3VDDCCL 16
3VDDCDA 16
CRT_VSYNC 16
CRT_HSYNC 16
R466 75
R469 75
R465 75
GSET R463 137R1%
0 Ohm for PE
L21 100N300m
VCC3
C428 0.01u
R808 0
R809 0
R810 0
CRT_B 16
CRT_G 16
CRT_R 16
C702 X_33p
C703 X_33p
C704 X_33p
EMI
VCC_DAC
VCCA_DAC
C144 0.01u
C475 22u-1206
L3 X_100N300m
1.7V/70mA
L22 100N300m
0 Ohm for PE
C637 X_0.1u
R205 226R1%
R211 147R1%
R210 113R1%
800mV
350mV
H_SWING=(0.8*VCC_AGP)+-2%
R455 226R1%
R456 147R1%
C423 0.1u
HL_SWING 800mV
HL_VREF 350mV
R457 113R1%
C425 0.1u
H_SWING=(0.233*VCC_AGP)+-2%
Springdale Decoupling Capacitors
C616 10u-0805-6.3V
C437 0.1u
C611 0.1u
C612 0.1u
C613 0.1u
C678 0.1u
VCC_DDR
C482 10u-1206
C433 0.1u
C434 0.1u
VTT
C483 10u-1206
C168 1u
C169 0.1u
MICRO-STAR INt'L CO., LTD.
Title
Intel Springdale - AGP & HLink & LAN Signals
Size
Document Number
MS-7122
Rev
0A
Date: Wednesday, August 11, 2004
Sheet 8 of 26

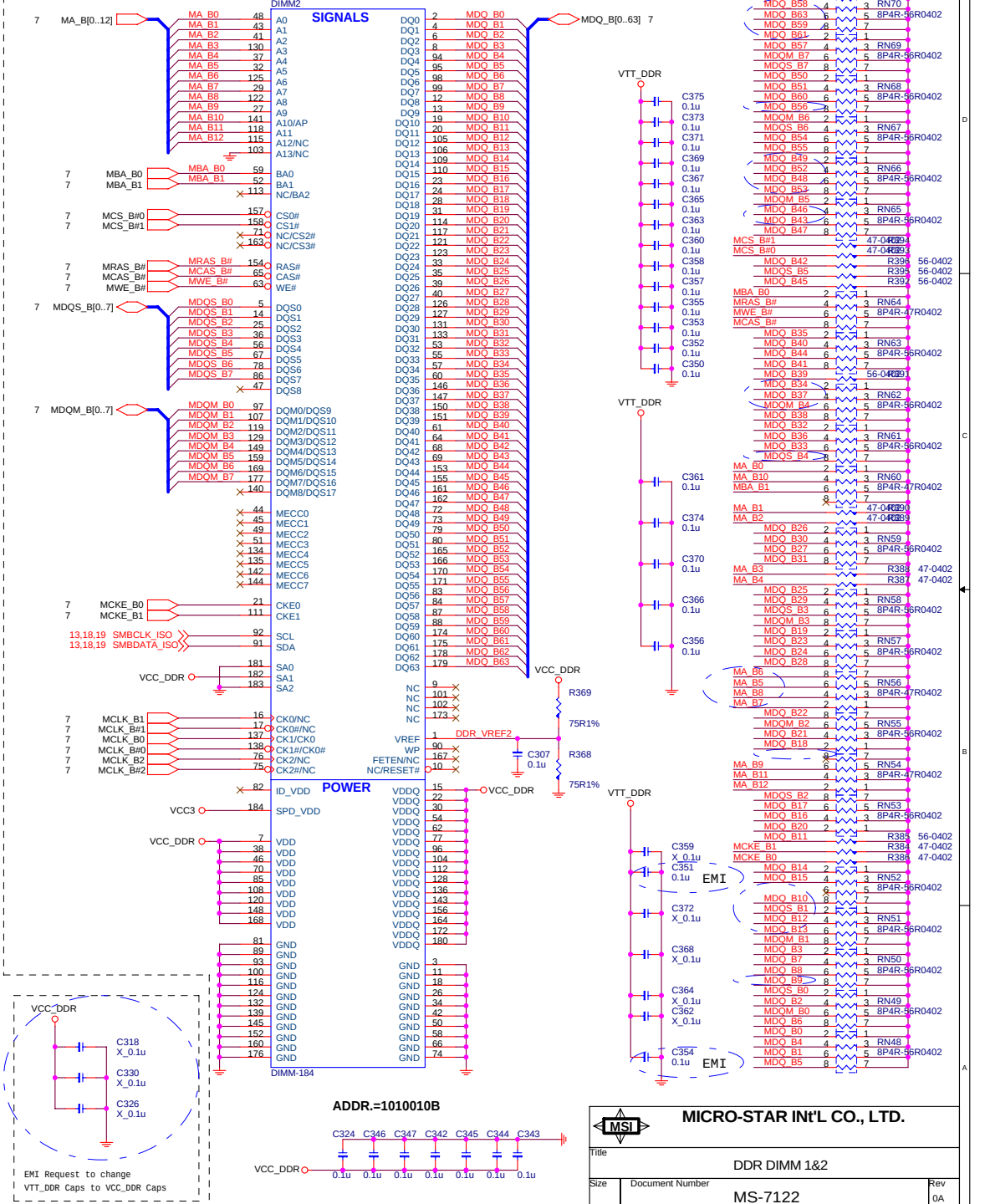
DDR DIMM1 CHA

DDR Terminational Resisitors



DDR DIMM2 CHB

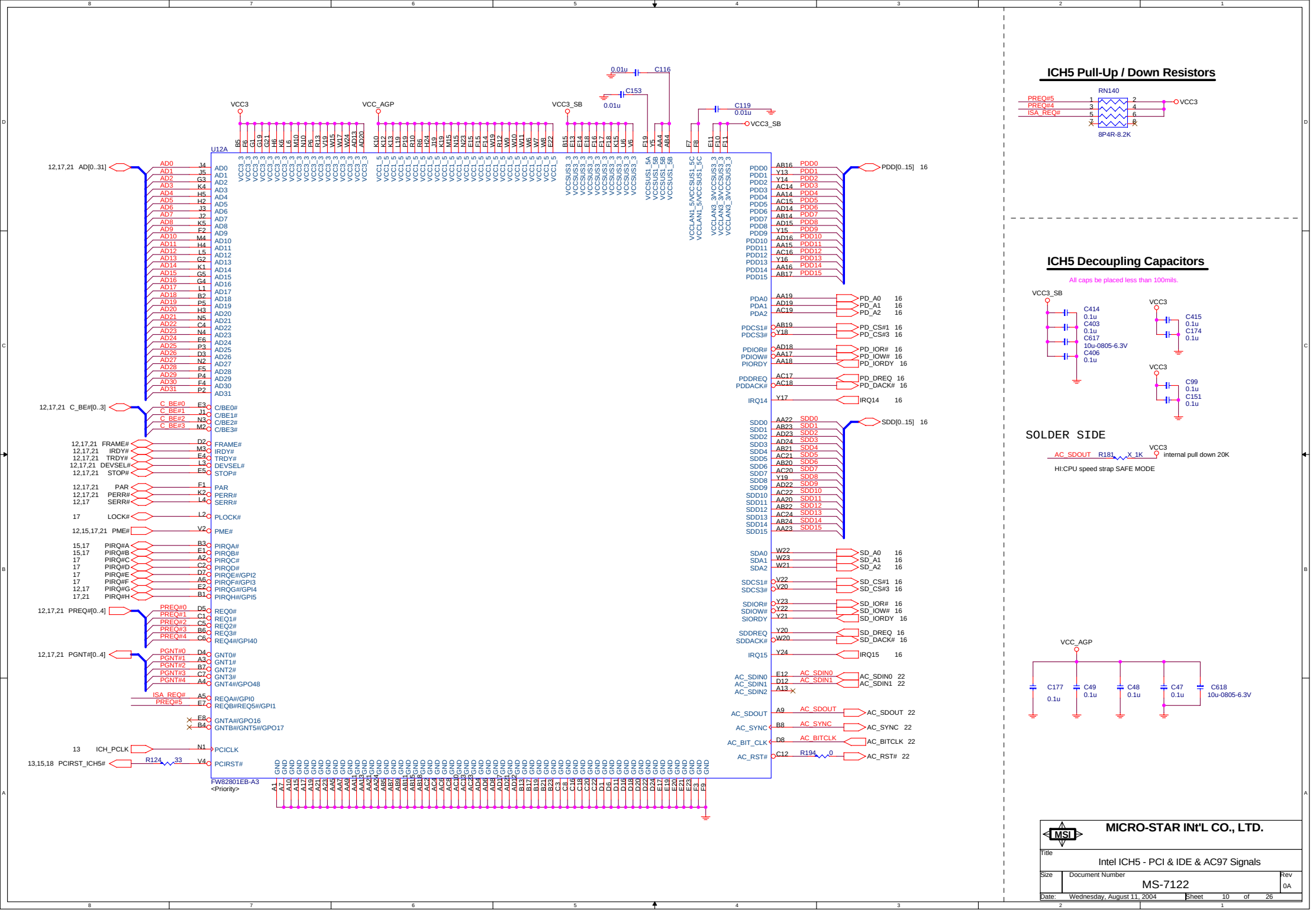
DDR Terminational Resisitors



EMI Request to change
VTT_DDR Caps to VCC_DDR Caps

MICRO-STAR INt'L CO., LTD.

Title	DDR DIMM 1&2	
Size	Document Number	Rev
	MS-7122	0A
Date: Wednesday, August 11, 2004	Sheet 9 of 26	



ICH5 Pull-Up / Down Resistors

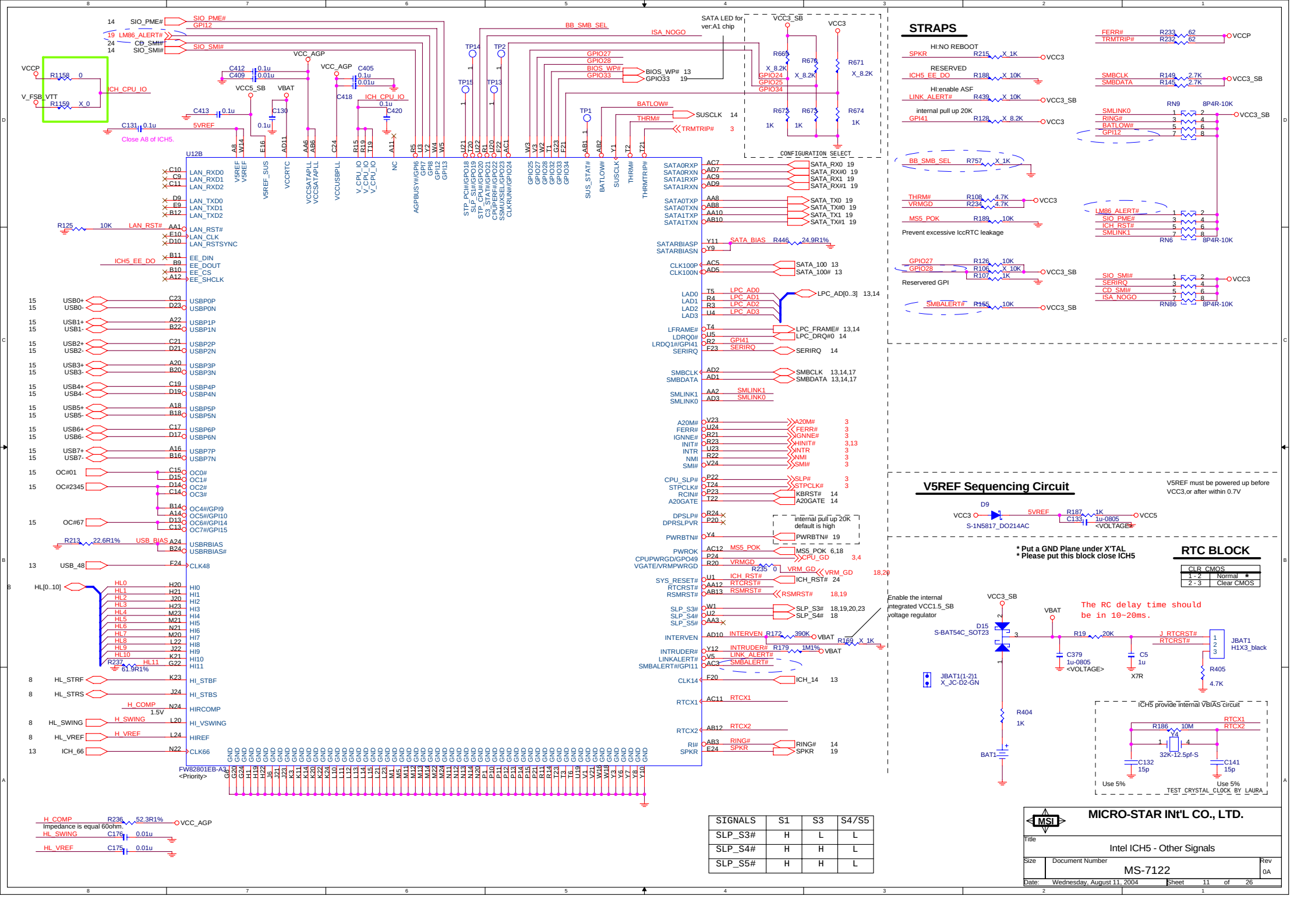
ICH5 Decoupling Capacitors

All caps be placed less than 100mils.

SOLDER SIDE

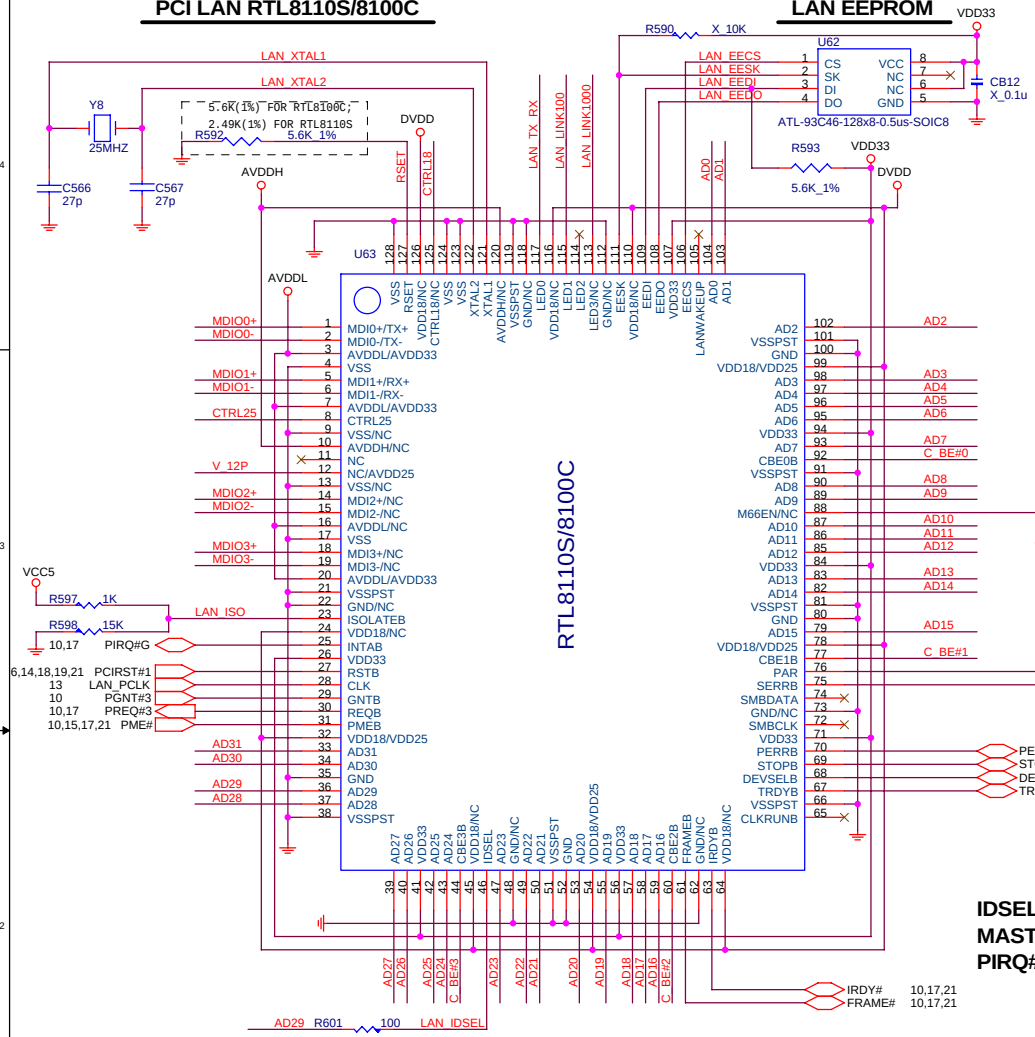
HI:CPU speed strap SAFE MODE

MSI	MICRO-STAR INt'L CO., LTD.
Title	Intel ICH5 - PCI & IDE & AC97 Signals
Size	Document Number: MS-7122 — Rev: 0A
Date: Wednesday, August 11, 2004	Sheet 10 of 26

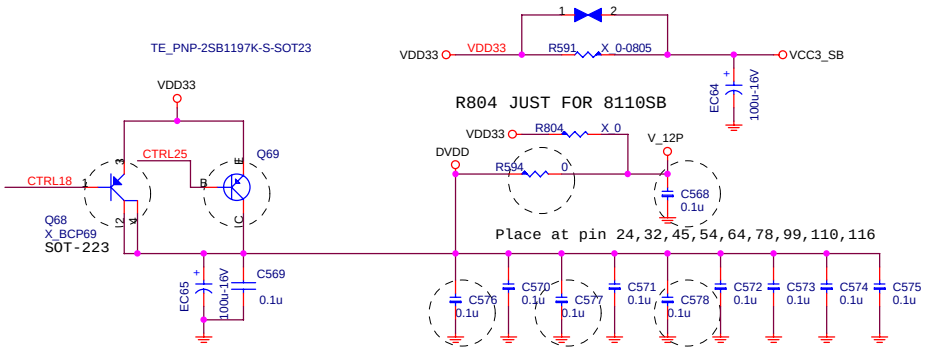

STRAPS
HI:NO REBOOT
SPKR
R215
X_1K
VCC3
RESERVED
ICH5_EE_DO
R188
X_10K
HI:enable ASF
LINK_ALERT#
R439
VCC3_SB
internal pull up 20K
GPI41
R128
X_8.2K
BB_SMB_SEL
R757
X_1K
THRM#
R108
4.7K
VRMGD
R234
MS5_POK
R189
10K
Prevent excessive IccRTC leakage
GPIO27
GPIO28
R126
R106
R107
Reserved GPI
SMBALERT#
R155
FERR#
TRMTRIP#
R233
R232
62
VCCP
SMBCLK
SMBDATA
R149
R145
2.7K
RN9
8P4R-10K
SMLINK0
RING#
BATLOW#
GPI12
LM86_ALERT#
SIO_SMI#
ICH_RST#
SMLINK1
RN6
SERIRQ
CD_SMI#
ISA_NOGO
RN86
V5REF Sequencing Circuit
D9
S-1N5817_DO214AC
5VREF
R187
1K
C133
1u-0805
<VOLTAGE>
VCC5
V5REF must be powered up before VCC3,or after within 0.7V
* Put a GND Plane under X'TAL
* Please put this block close ICH5
RTC BLOCK
CLR_CMOS
1 - 2 Normal
2 - 3 Clear CMOS
Enable the internal integrated VCC1.5_SB voltage regulator
The RC delay time should be in 10~20ms.
D15
S-BAT54C_SOT23
R19
20K
J_RTCRST#
RTCRST#
JBAT1
H1X3_black
C379
1u-0805
C5
1u
X7R
R405
4.7K
JBAT1(1-2)1
X_JC-D2-GN
R404
1K
BAT1
ICH5 provide internal VBIAS circuit
R186
10M
Y4
32K-12.5pf-S
C132
15p
C141
15p
Use 5%
TEST_CRYSTAL_CLOCK BY LAURA
SATA LED for ver:A1 chip
CONFIGURATION SELECT
R669
R670
R671
X_8.2K
R672
R673
R674
1K
BIOS_WP#
GPIO33
SUSCLK
TRMTRIP#
ICH_CPU_IO
R1158
R1159
V_FSB_VTT
VCCP
Close A8 of ICH5.
5VREF
VCC_AGP
VCC5_SB
VBAT
U12B
FW82801EB-A3
<Priority>
LAN_RXD0
LAN_RXD1
LAN_RXD2
LAN_TXD0
LAN_TXD1
LAN_TXD2
LAN_RST#
LAN_CLK
LAN_RSTSYNC
EE_DIN
EE_DOUT
EE_CS
EE_SHCLK
R125
10K
LAN_RST#
ICH5_EE_DO
USBP0P
USBP0N
USBP1P
USBP1N
USBP2P
USBP2N
USBP3P
USBP3N
USBP4P
USBP4N
USBP5P
USBP5N
USBP6P
USBP6N
USBP7P
USBP7N
OC0#
OC1#
OC2#
OC3#
OC4#/GPI9
OC5#/GPI10
OC6#/GPI14
OC7#/GPI15
R213
22.6R1%
USB_BIAS
USBRBIAS
USBRBIAS#
USB_48
CLK48
HL[0..10]
HI0
HI1
HI2
HI3
HI4
HI5
HI6
HI7
HI8
HI9
HI10
HI11
R237
61.9R1%
HL_STRF
HL_STRS
HI_STBF
HI_STBS
H_COMP
1.5V
HIRCOMP
H_SWING
HI_VSWING
H_VREF
HIREF
ICH_66
CLK66
SATA0RXP
SATA0RXN
SATA1RXP
SATA1RXN
SATA0TXP
SATA0TXN
SATA1TXP
SATA1TXN
SATARBIASP
SATARBIASN
SATA_BIAS
R446
24.9R1%
CLK100P
CLK100N
SATA_100
SATA_100#
LAD0
LAD1
LAD2
LAD3
LPC_AD0
LPC_AD1
LPC_AD2
LPC_AD3
LPC_AD[0..3]
LFRAME#
LDRQ0#
LDRQ1#/GPI41
SERIRQ
LPC_FRAME#
LPC_DRQ#0
SMBCLK
SMBDATA
SMLINK1
SMLINK0
A20M#
FERR#
IGNNE#
INIT#
INTR
NMI
SMI#
SLP#
STPCLK#
KBRST#
A20GATE
DPSLP#
DPRSLPVR
PWRBTN#
PWROK
CPUPWRGD/GPO49
VGATE/VRMPWRGD
MS5_POK
CPU_GD
VRMGD
VRM_GD
SYS_RESET#
RTCRST#
RSMRST#
ICH_RST#
SLP_S3#
SLP_S4#
SLP_S5#
INTERVEN
INTRUDER#
LINKALERT#
SMBALERT#/GPI11
ICH_14
RTCX1
RTCX2
R#
SPKR
RING#
SPKR
internal pull up 20K
default is high
Signals
SLP_S3#
SLP_S4#
SLP_S5#
S1
S3
S4/S5
H
L
H
H
H
L
H_COMP
R236
52.3R1%
Impedance is equal 60ohm.
HL_SWING
C176
0.01u
HL_VREF
C175
0.01u
VCC_AGP
MSI
MICRO-STAR INt'L CO., LTD.
Title
Intel ICH5 - Other Signals
Size
Document Number
MS-7122
Rev
0A
Date: Wednesday, August 11, 2004
Sheet 11 of 26

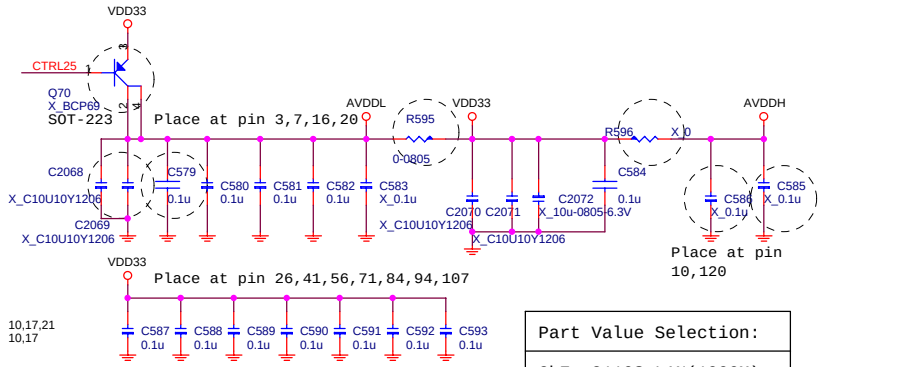
PCI LAN RTL8110S/8100C

LAN EEPROM



IDSEL = AD29
MASTER = PREQ#3
PIRQ#G

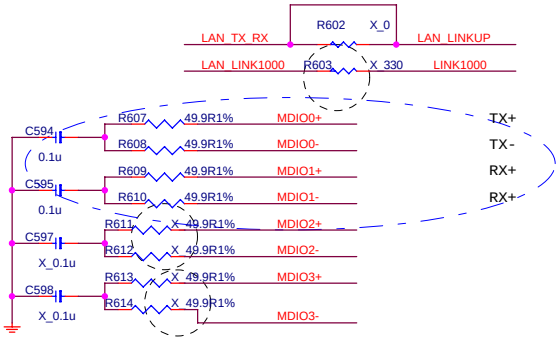


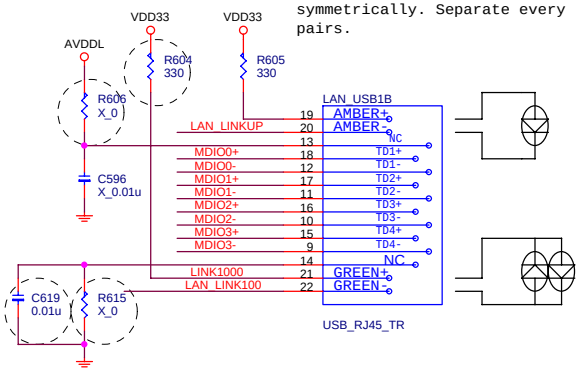


	DVDD	DVDDA	AVDDL	AVDDH	V-12P
8100C	2.5V	2.5V	3.3V	X	2.5V
8110S	1.8V	1.8V	2.5V	3.3V	X

Part Value Selection:
GbE: 8110S LAN(1000M)
TE: 8100C LAN(10/100M)
L: With LAN option
X: No Stuff

RJ45 Connector (with transformer)





1- MDIO+ & MDIO- pairs should be 100-ohm differential impedance. Route equal length and symmetrically. Separate every pairs.

10,17,21 AD[0..31] AD[0..31]
10,17,21 C_BE#[0..3] C_BE#[0..3]

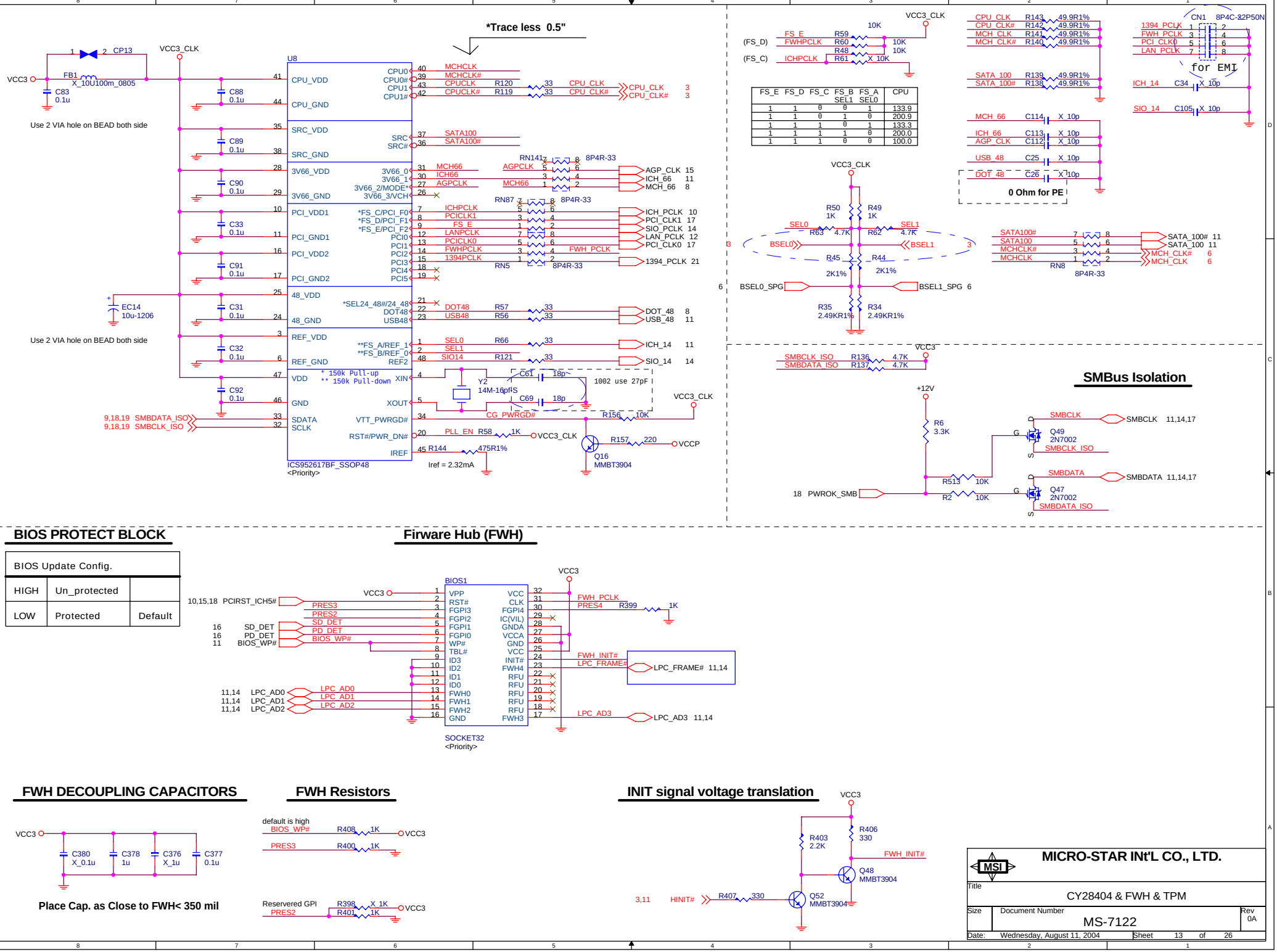
PCIRST#1 C599 X_33p

DEFAULT 10/100, ( ) for GIGALAN OPTION

N58-22F0031-S42 for GIGALAN
N58-22F0061-S42 for 10/100

MSI

Title	REALTEK LAN 8110S/8100C	
Size A3	Document Number MS-7122	Rev 0A
Date: Wednesday, August 11, 2004	Sheet 12 of 26	


*Trace less 0.5"
U8
ICS952617BF_SSOP48
<Priority>
Use 2 VIA hole on BEAD both side
Use 2 VIA hole on BEAD both side
* 150k Pull-up
** 150k Pull-down
1002 use 27pF
Iref = 2.32mA
0 Ohm for PE
for EMI
SMBus Isolation
BIOS PROTECT BLOCK
BIOS Update Config.
HIGH Un_protected
LOW Protected Default
Firware Hub (FWH)
BIOS1
SOCKET32
<Priority>
FWH DECOUPLING CAPACITORS
Place Cap. as Close to FWH< 350 mil
FWH Resistors
default is high
Reserved GPI
INIT signal voltage translation
MICRO-STAR INt'L CO., LTD.
Title
CY28404 & FWH & TPM
Size
Document Number
MS-7122
Rev 0A
Date: Wednesday, August 11, 2004
Sheet 13 of 26

LPC SUPER I/O 49M292

U64

SMSC LPC47M292

W/Game port VREF=5V
W/O Game port VREF depends on layout

SMBus address strapping Hi=5A Low=58

SUPER I/O STRAPPING RESISTOR

R81 X_4.7K
R80 1K SIO_ADDR H: 0x04E L: 0x02E (DEFAULT)

SERIAL PORT 1

U26 GD75232_SSOP20

VGA1B 6723-VGA-COM

PS2 KEYBOARD & MOUSE CONNECTOR

JKBMS2 MINIDINx2-D12-ML

CN9 8P4C-220P50N for EMI

CN10 CN11 X_8P4C-220P50N

Internal Ring Wake Up Block

Q11 MMBT3904

LPC I/O DECOUPLING CAPACITORS

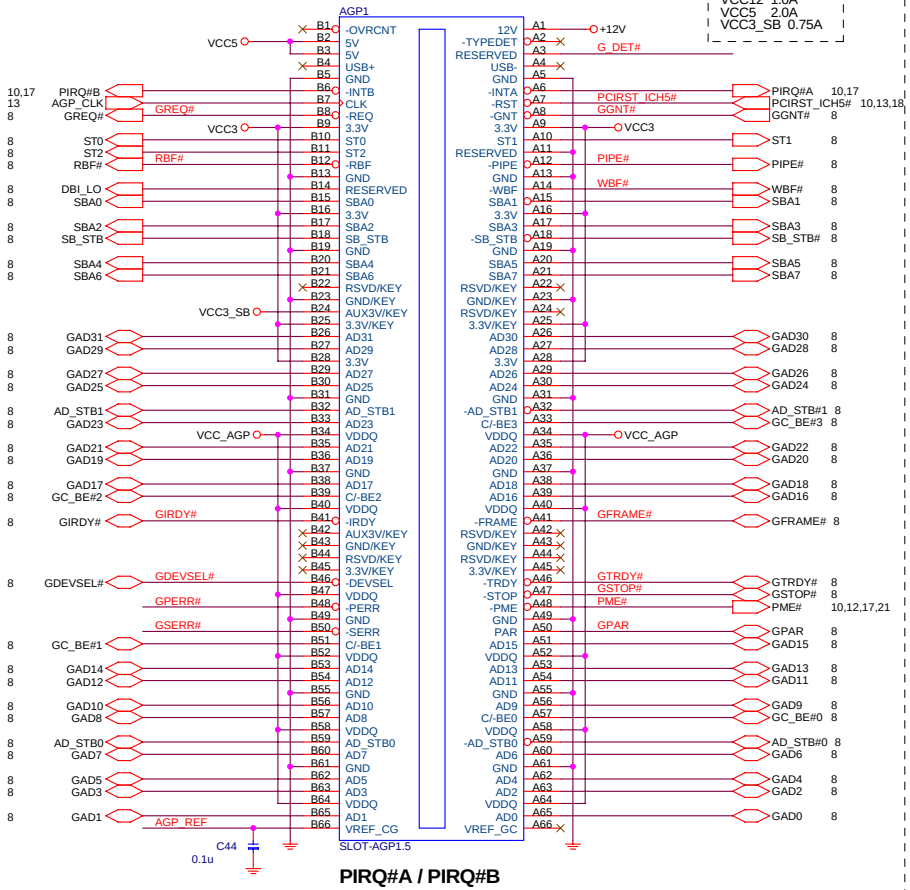
Title	MICRO-STAR INt'L CO., LTD.
	LPC SUPER I/O & CONNECTORS
Size	Document Number: MS-7122 Rev: 0A
Date:	Wednesday, August 11, 2004 Sheet 14 of 26

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

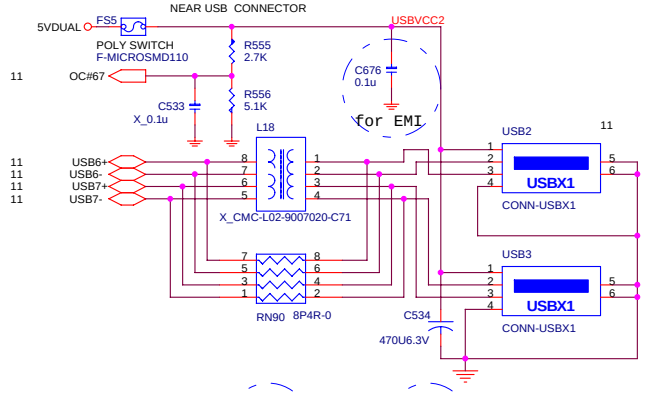
VCC5 = 60mils trace / 15 mils space

AGP Slot Imax

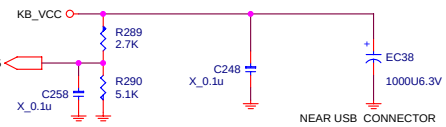
VCCg	2.0A
VCC3	6.0A
VCC12	1.0A
VCC5	2.0A
VCC3_SB	0.75A

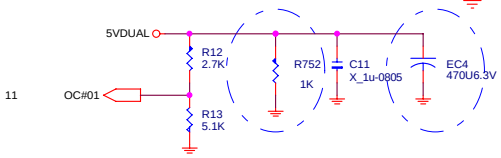


FRONT PANEL USB CONNECTOR FOR USB PORT 5, 6

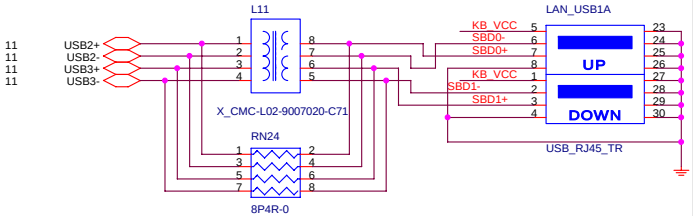


POWER CIRCUIT FOR USB PORT 1~4

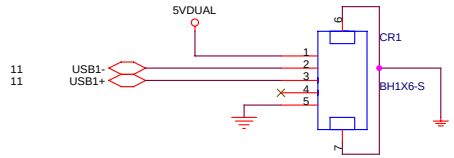


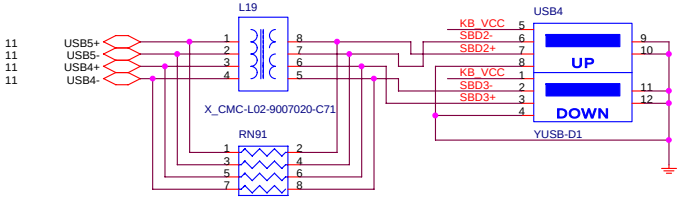


REAR PANEL USB CONNECTOR FOR USB PORT 1~4

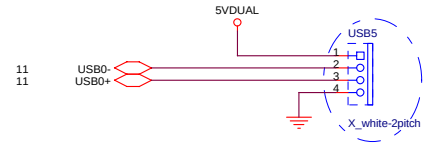


FRONT CARD READER USB CONNECTOR

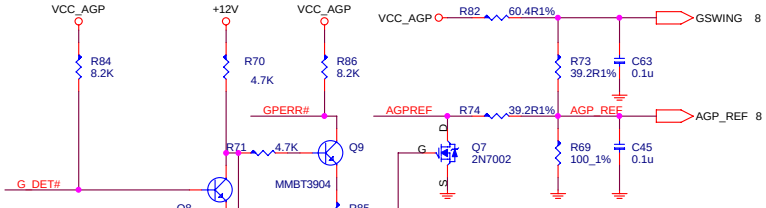




PS2 RF/ BT USB CONNECTOR



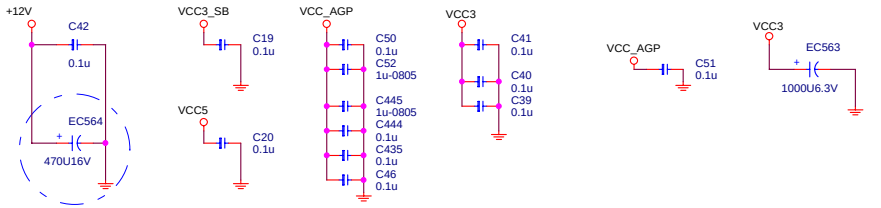
Springdale Reference & Swing Voltage Circuit



G_DET#	SPEC	AGP_REF
FLOATING	AGP2.0	0.75V>0.55V
LOW	AGP3.0	0.35V<0.55V

AGP TERMINATION RESISTORS

AGP SLOT DECOUPLING CAPACITORS



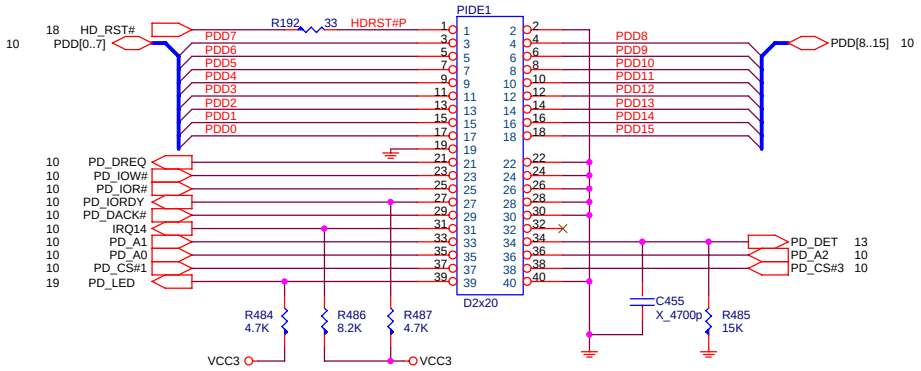
16V/CAPs: EC564 NP: C94-4711611-T30
FP: 560UF_4V

MICRO-STAR INt'L CO., LTD.

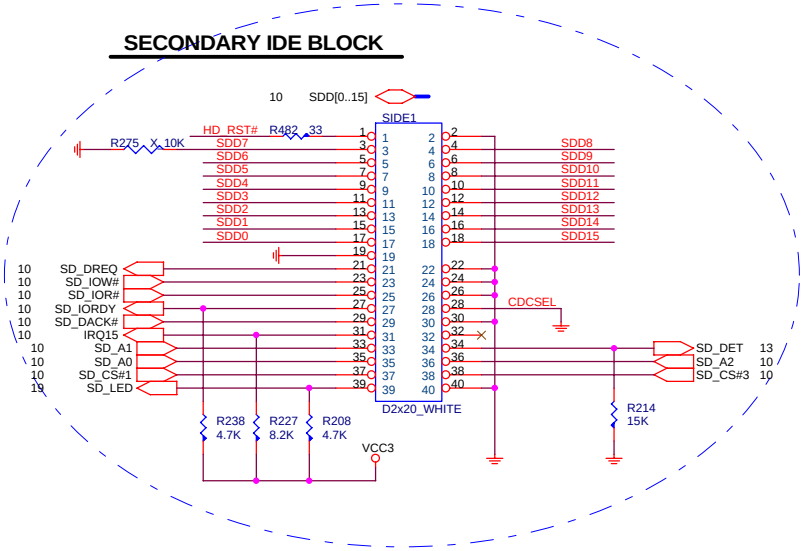
Title	AGP 1.5V SLOT & USB CONN	
Size	Document Number MS-7122	Rev 0A
Date: Wednesday, August 11, 2004	Sheet 15 of 26	

PRIMARY IDE BLOCK

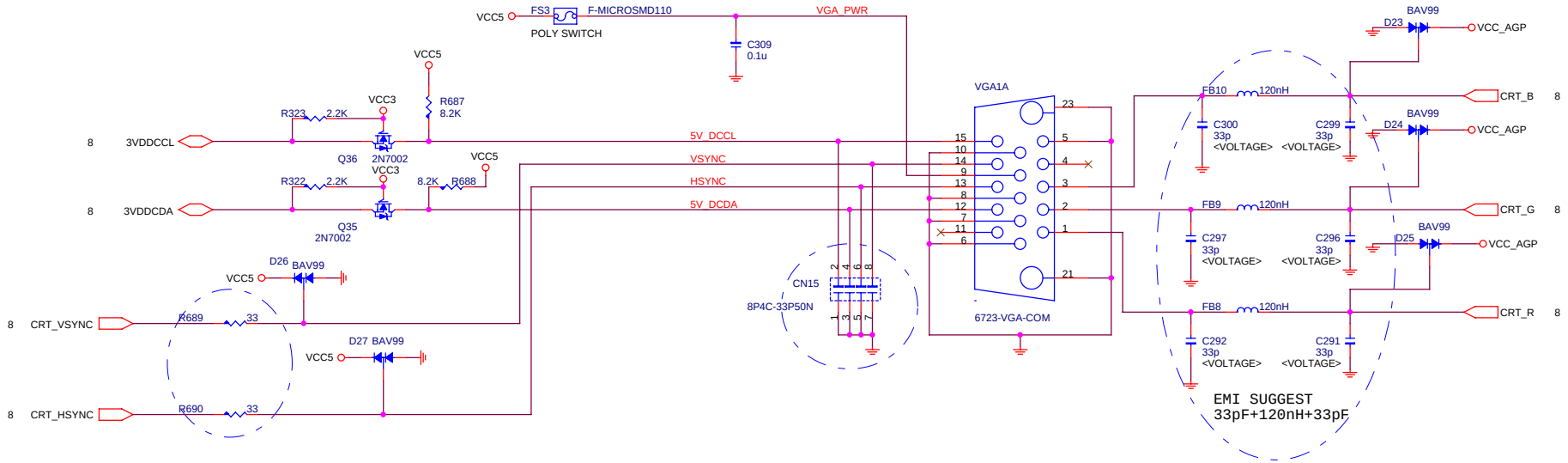
ATA 33/66/100 IDE Connectors



SECONDARY IDE BLOCK



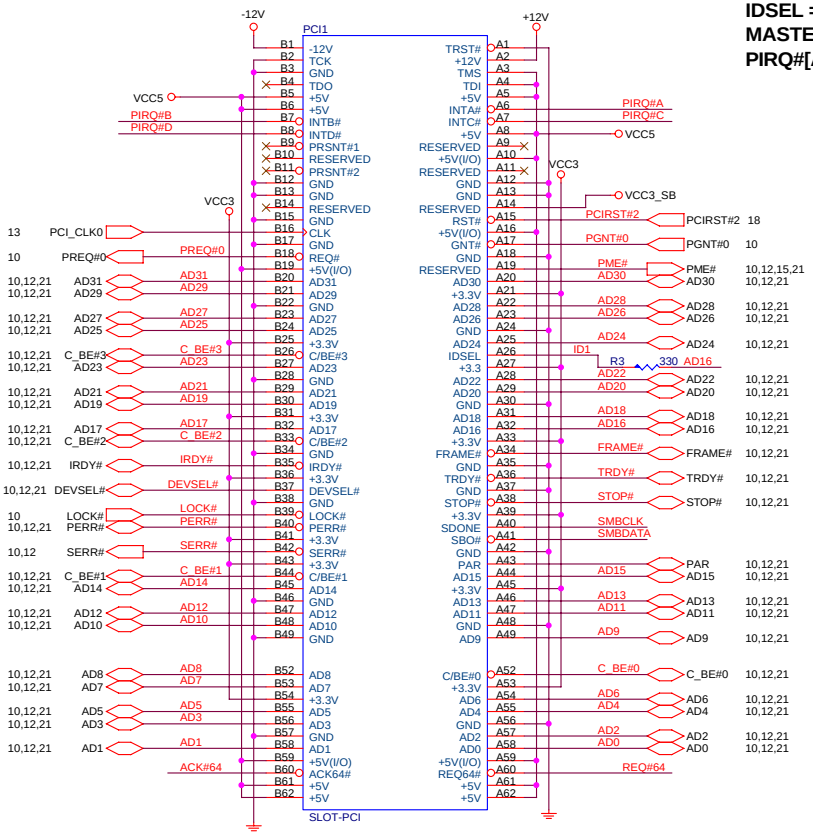
Video Connector



MICRO-STAR INt'L CO., LTD.

Title	ATA33/66/100 IDE & VIDEO Connectors	
Size	Document Number MS-7122	Rev 0A
Date: Wednesday, August 11, 2004	Sheet 16 of 26	

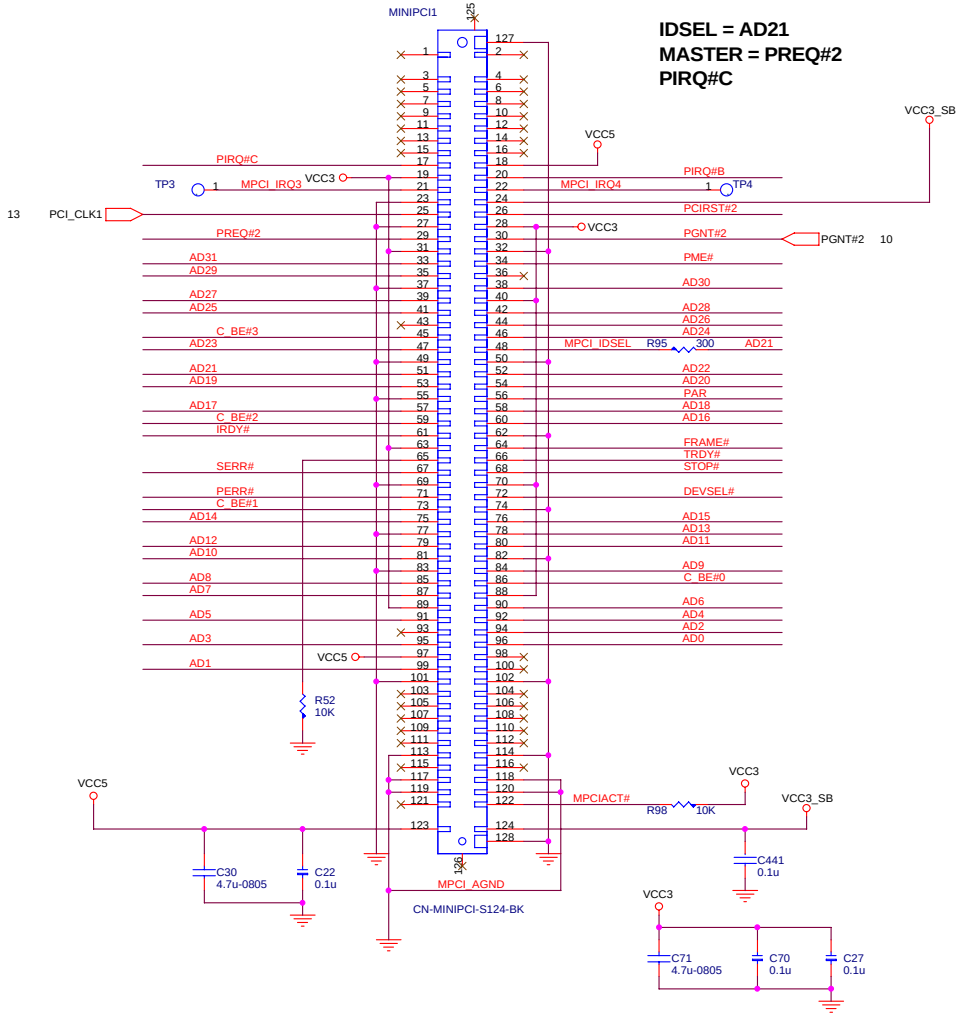
PCI SLOT 1 (PCI VER: 2.2 COMPLY)



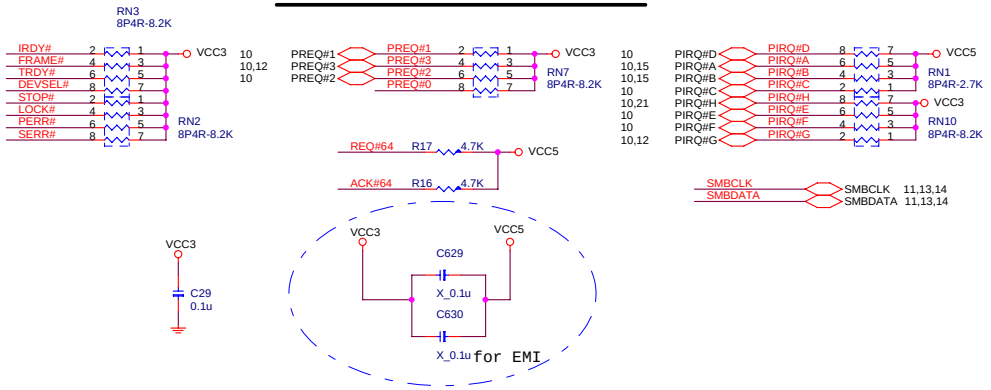
IDSEL = AD16
MASTER = PREQ#0
PIRQ#[A..D]

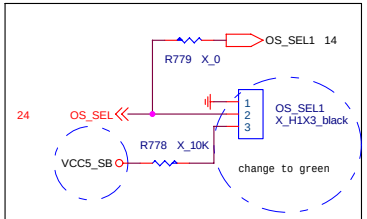
IDSEL = AD16
MASTER = PREQ#0
PIRQ#A

IDSEL = AD21
MASTER = PREQ#2
PIRQ#C

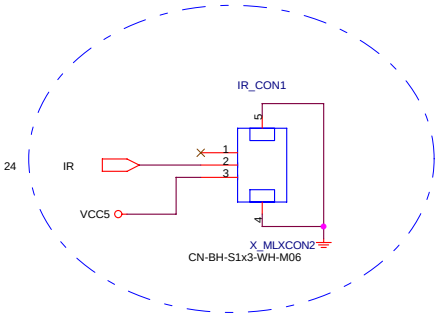


PCI PULL-UP / DOWN RESISTORS





OS_SEL	ACTIVE	OS_SEL1 PIN
INSTANT-ON	LOW	PIN(1-2)
WINDOWS(MCE)	HIGH	PIN(2-3)



MICRO-STAR INt'L CO., LTD.

Title	PCI 1&MINI PCI	
Size	Document Number: MS-7122	Rev: 0A
Date: Wednesday, August 11, 2004	Sheet 17 of 26	

ACPI Controller

3VSB MODE SELECT

3VSB MODE	3VDLDEC#
SINGLE MOSFET	PULL HIGH
DUAL MOSFET	PULL LOW

VDIMM LINEAR OR PWM SELECT

VDIMM MODE	EXTRAM
LINEAR REGULATOR	PULL LOW
PWM REGULATOR	PULL HIGH

Please connect device with tree mode, not daisy chain mode.
Please refer attached file. Noticed that one of push-pull reset# (PCIRST_BUF#, SLOT_RST#) at most can connect 5 devices.

AGP POWER

MS-6+

1.5V / 1A(AGP)+4.6A(NB)+0.9A(SB)=6.5A+VTT(5.5A)=12A

CLOSE TO CHIP

10V/CAP: C80 NP: C11-1053023-W08
FP: C0603

CHARGE PUMP VOLTAGE OUTPUT

for EMI

5V DUAL Power

REAR

FRONT

Low RDS ON MOSFET

MS-7

THIS PIN IS OPEN DRAIN OUTPUT

DDR AND DDR II VOLT SELECT

DDRTYPE	VDIMM
PULL LOW	2.5V
PULL HIGH	1.8V

VCC_DAC VOLTAGE ANALYSIS TABLE

990hm	28.350hm	1.54V
1000hm	27.0hm	1.52V
1010hm	25.650hm	1.50V

(1+R178/R170)*Vref=VCC_DAC
Vref=1.2V

靠近U6

VCC_VID / VID_GOOD

Place MOSFET near CPU

DDR VTT Power

VCC3_SB& DDR 2.5V Power PUT CLOSED

2.5V / 4A(DIMM)*2+5.7A(NB)=13.7A

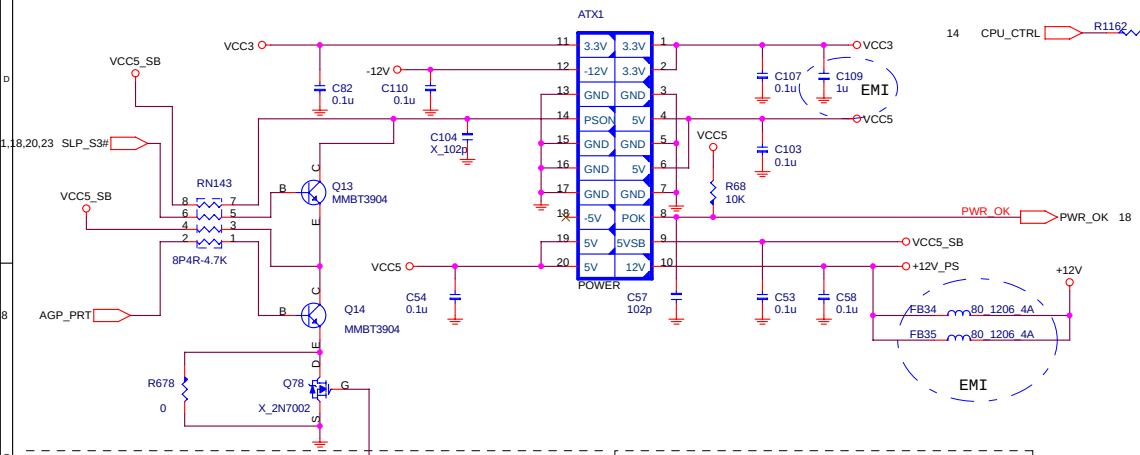
(1+Rf/Rs)*Vref=Vout

dummy

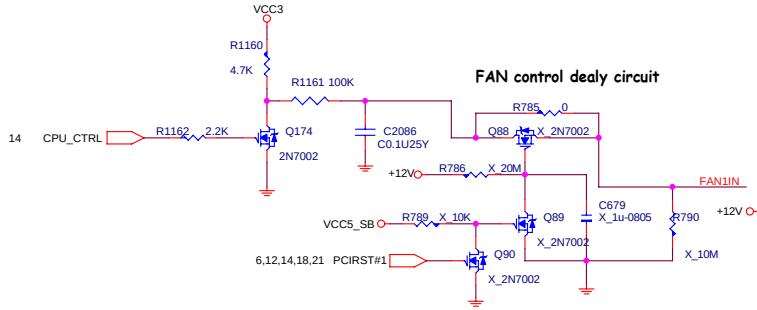
MICRO-STAR INt'L CO., LTD.	
Title	ACPI controller
Size	Document Number: MS-7122 Rev: 0A
Date: Wednesday, August 11, 2004	Sheet 18 of 26

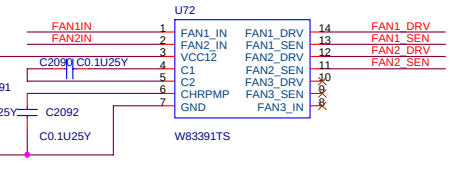
FAN CONTROL

ATX Connector

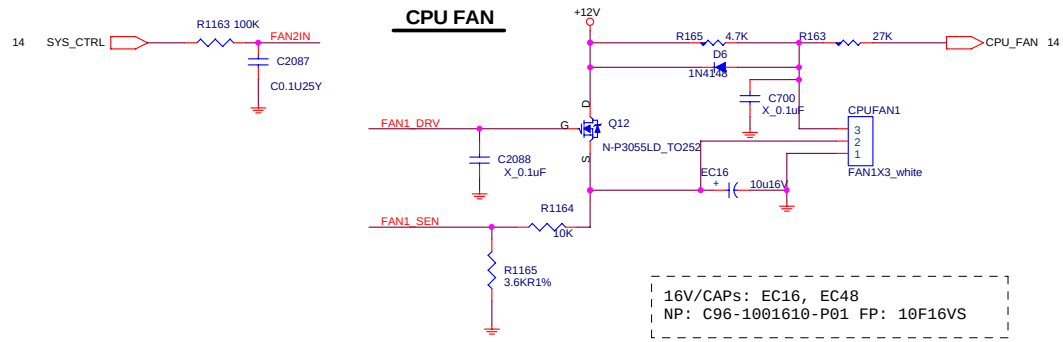


FAN control dealy circuit

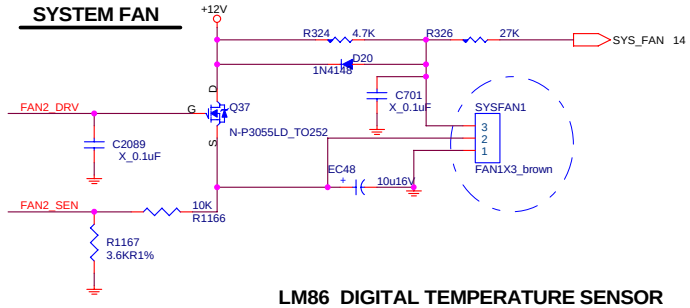




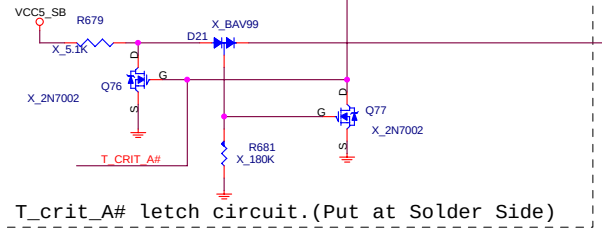
CPU FAN



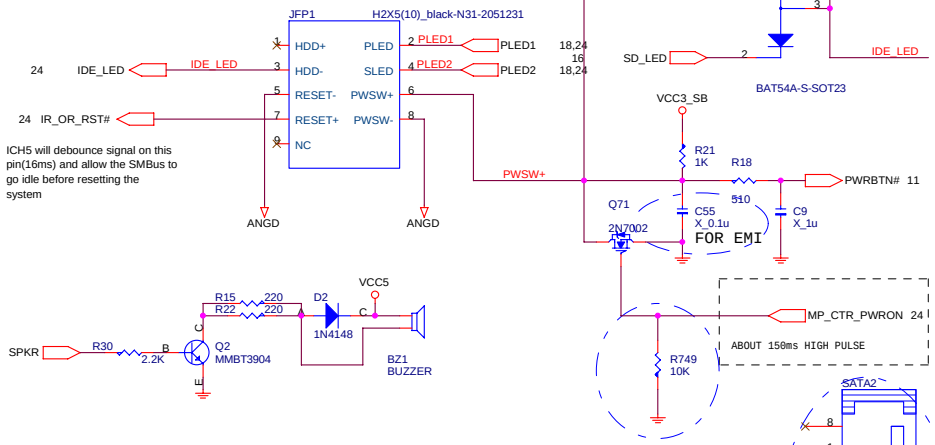
SYSTEM FAN



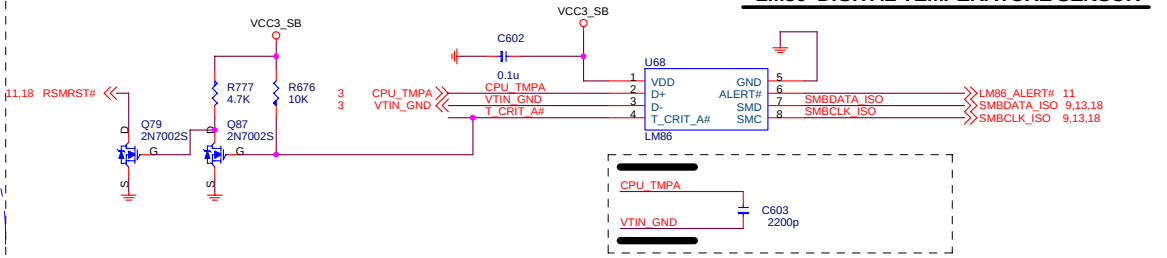
T_crit_A# letch circuit.(Put at Solder Side)



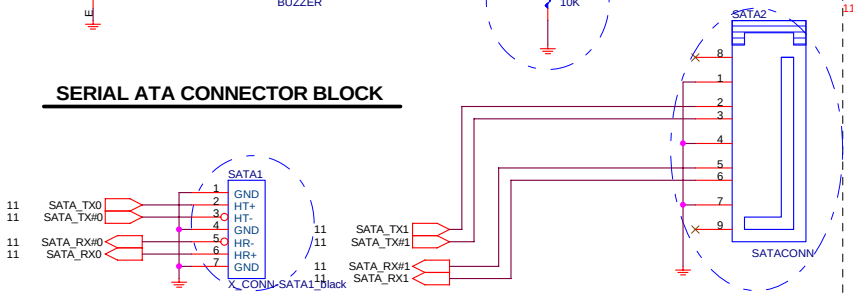
Front Panel Connector



LM86 DIGITAL TEMPERATURE SENSOR



SERIAL ATA CONNECTOR BLOCK



N5N-07M0021-M06 SHORT; N5N-07M0051-H06 LONG

MICRO-STAR INt'L CO., LTD.

Title: Front Panel/Fan/LM86

Size | Document Number: MS-7122 | Rev: 0A

Date: Wednesday, August 11, 2004 | Sheet 19 of 26

Voltage Regular Module

MOSFET Gate signal : 20 mils
Phase signal : 20 mils
Boot signal : 16 mils

JPW1 PWR-2X2M

U25 Intersil 6565ACV

U24A / U24B HIP6602B

U22 MOSDVR-INTS-HIP6601B-SOIC8

Q42 Q161 Q43 Q46 Q34 Q162 Q33 Q32 Q26 Q163 Q25 Q24 IPF09N03LA / IPF06N03LA

L12 L10 L8 0.6uH/40A

0.8375~1.6V / 119A

CHECK THIS! CONNECT TO BULK CAPACITOR

Q45 N-MMBT3904_SOT23

Q80 Q81 MMBT3904

The solution for S0-S3-S0 quickly pulse

CPU DECOUPLING CAPACITORS

Place these caps within socket cavity

OS-CON Capactiors

MOSFET Heatsinks

EL Capacitors

SP Capacitors

Solder Side

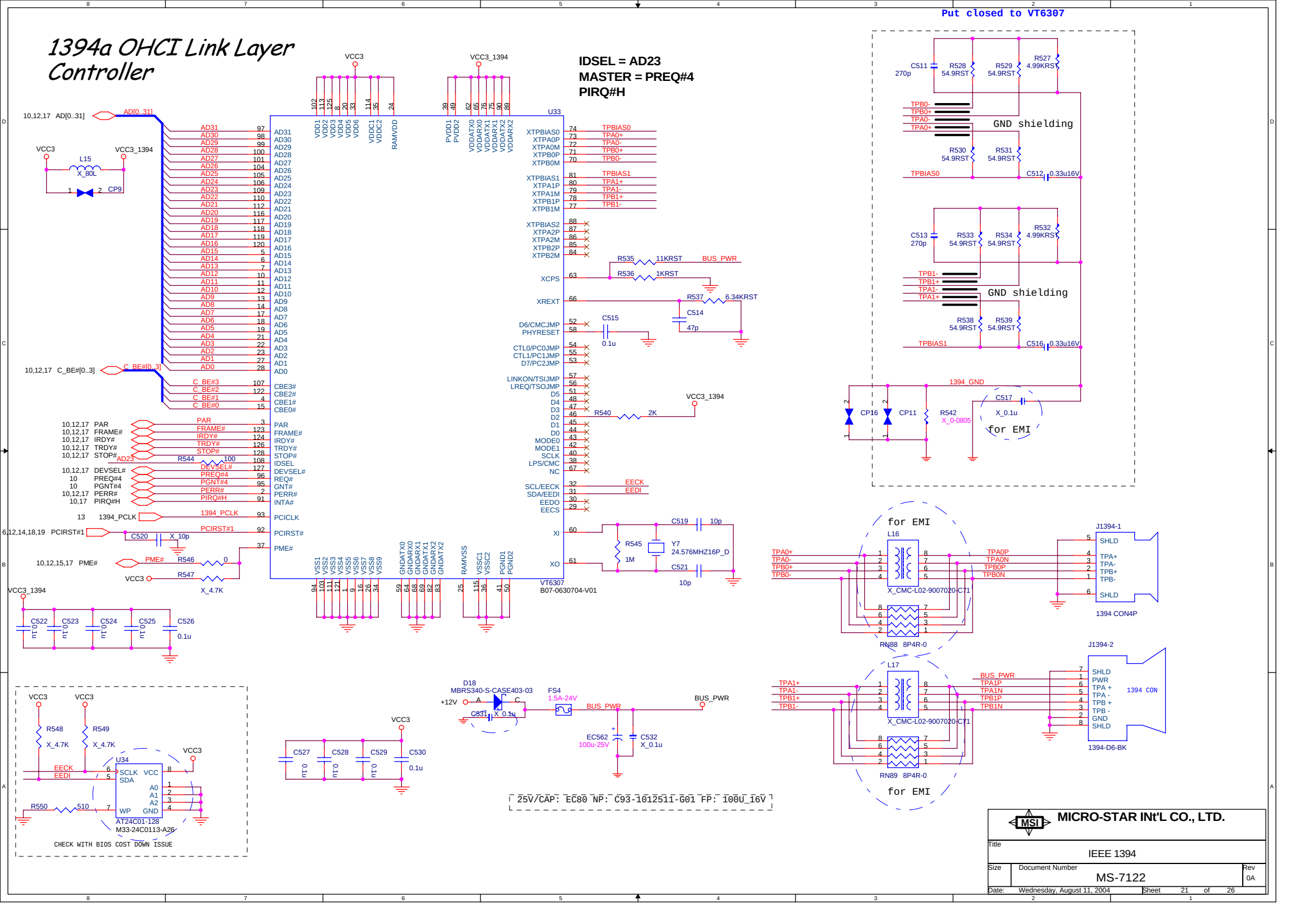
Title	VRM10.1 Intersil 6565 3Phase
Size	A3
Document Number	MS-7122
Rev	0A
Date:	Wednesday, August 11, 2004
Sheet	20 of 26

MICRO-START INT'L CO.,LTD.

1394a OHCI Link Layer Controller

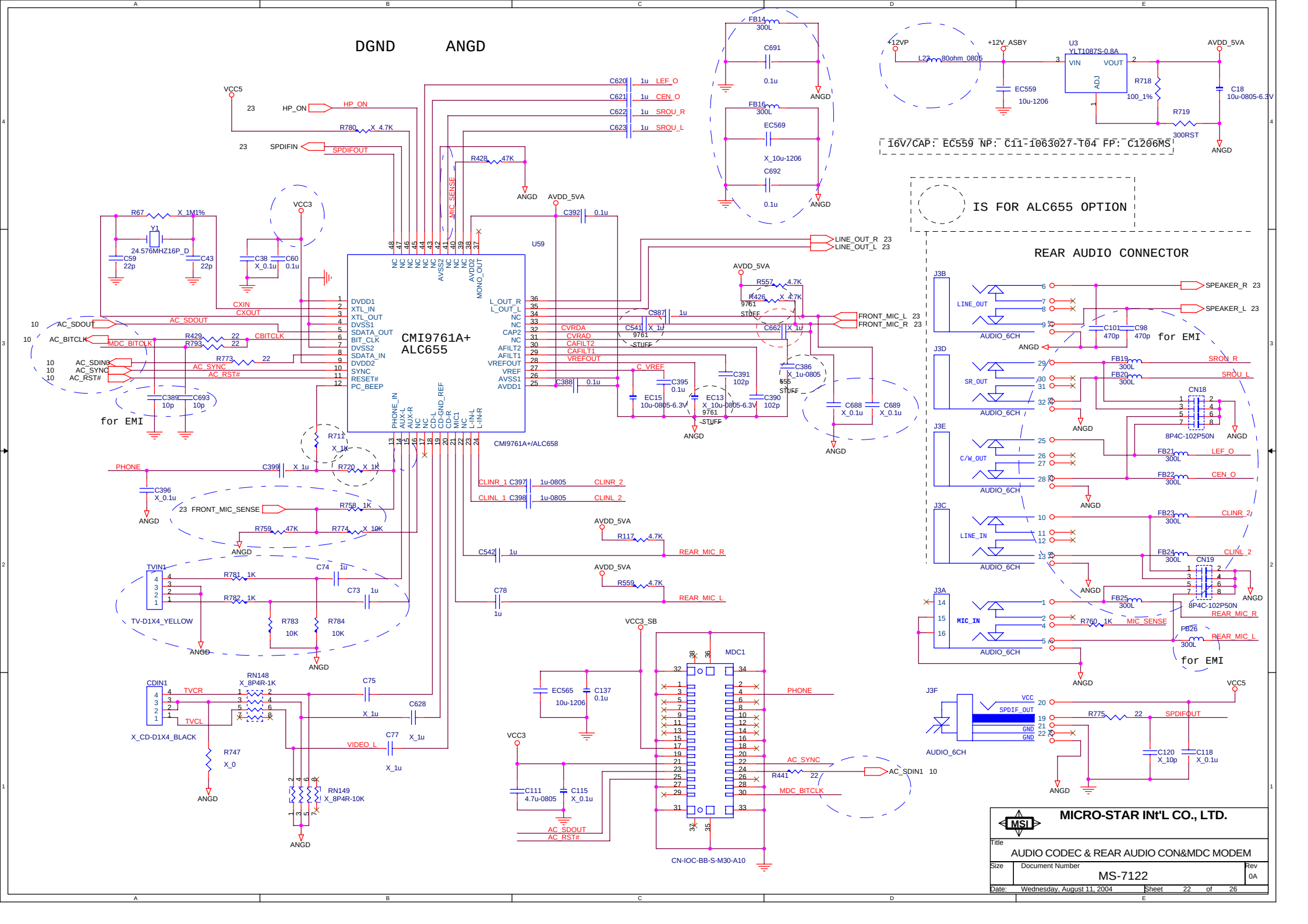
IDSEL = AD23
MASTER = PREQ#4
PIRQ#H

Put closed to VT6307

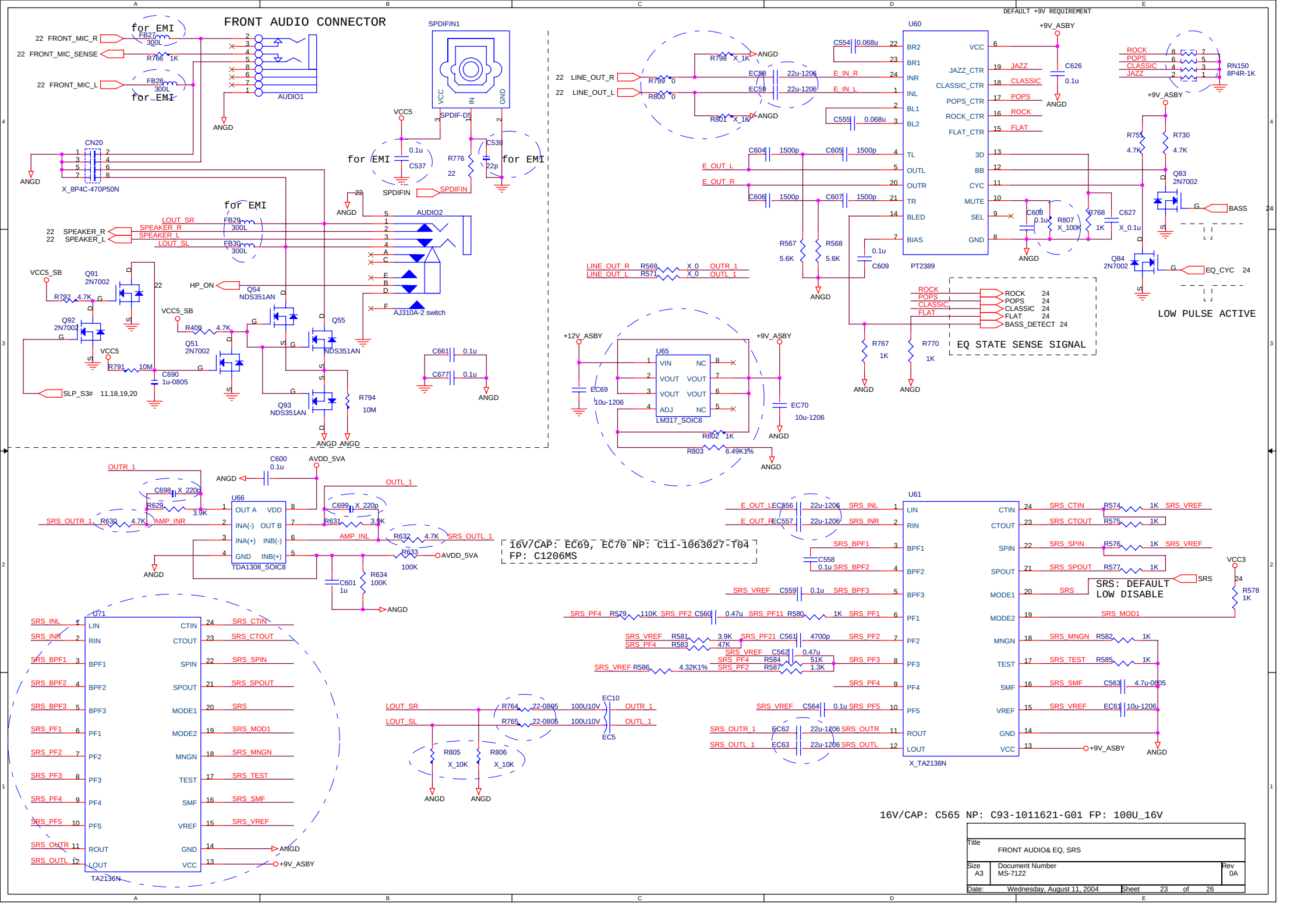


Title	IEEE 1394
Size	Document Number: MS-7122
Rev	0A
Date:	Wednesday, August 11, 2004
Sheet	21 of 26

MICRO-STAR INt'L CO., LTD.


DGND
ANGD
CMI9761A+
ALC655
CMI9761A+/ALC658
U59
REAR AUDIO CONNECTOR
IS FOR ALC655 OPTION
16V/CAP: EC559 NP: C11-1063027-T04 FP: C1206MS
for EMI
MICRO-STAR INt'L CO., LTD.
AUDIO CODEC & REAR AUDIO CON&MDC MODEM
MS-7122
Wednesday, August 11, 2004
Sheet 22 of 26

FRONT AUDIO CONNECTOR



Title	FRONT AUDIO& EQ, SRS	
Size A3	Document Number MS-7122	Rev 0A
Date: Wednesday, August 11, 2004	Sheet 23 of 26	

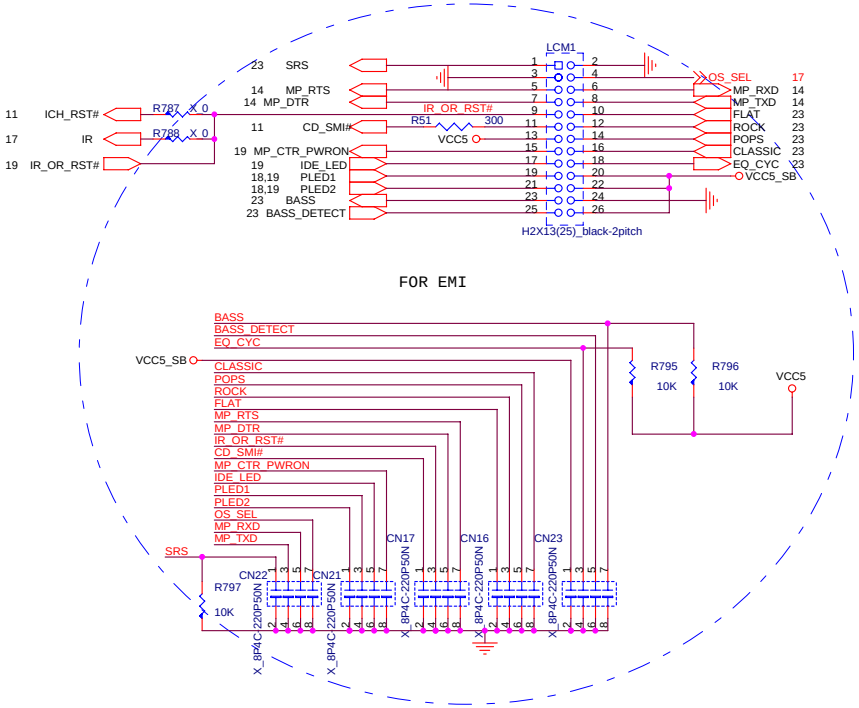
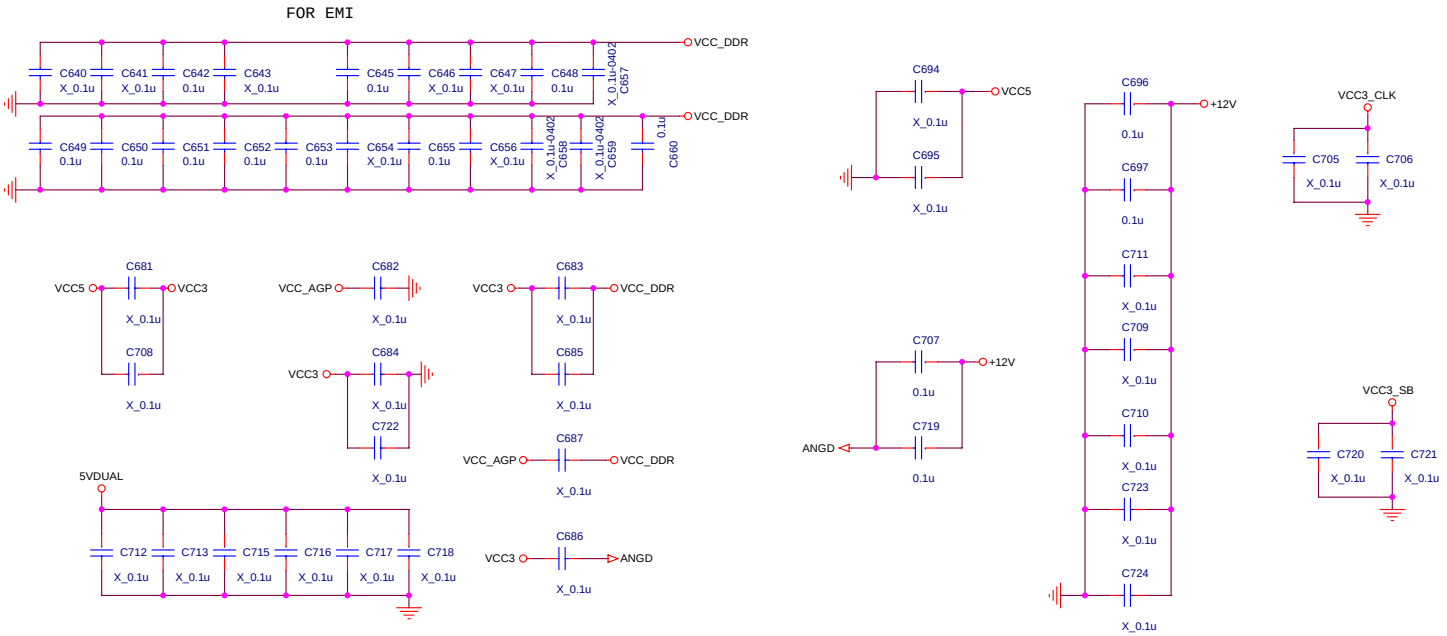


Table for POWER LED's behavior on LCM.

LCM 1 / MODE	PLED1 PIN19	PLED2 PIN21	LED State
S0/ INSTANT-ON	H	L	Green
S1	Flash	L	Flash Green / 1Hz
S3	L	H	Yellow
S4/5	L	L	Dark



MSI MICRO-STAR INt'L CO., LTD.

Title: FRONT LED CONNECTOR

Size | Document Number: MS-7122 | Rev: 0A

Date: Wednesday, August 11, 2004 | Sheet 24 of 26

ICH5

GPIO Pin	Target	Function	Power well	PULL RESISTOR	
GPI 0	NA	ISA_REQ#	MAIN	8.2K	VCC3
GPI 1	NA	PREQ#5	MAIN	8.2K	VCC3
GPI 2	NA	PIRQ#E	MAIN	8.2K	VCC3
GPI 3	NA	PIRQ#F	MAIN	8.2K	VCC3
GPI 4	LAN	PIRQ#G	MAIN	8.2K	VCC3
GPI 5	1394	PIRQ#H	MAIN	8.2K	VCC3
GPI 6	SIO	SIO_SMI#	MAIN	10K	VCC3
GPI 7	MP	CD_SMI#	MAIN	10K	VCC3
GPI 8	LM86	LM86_ALERT#	RESUME	10K	VCC3_SB
GPI 9	USB	OC#45	RESUME	2.7K/5.1K	5VDUAL
GPI 10	USB	OC#45	RESUME	2.7K/5.1K	5VDUAL
GPI 11	NA	**SMBALERT#**	RESUME	10K	VCC3_SB
GPI 12	NA	**GPI12**	RESUME	10K	VCC3_SB
GPI 13	SIO	SIO_PME#	RESUME	10K	VCC3_SB
GPI 14	USB	**OC#67**	RESUME	2.7K/5.1K	5VDUAL
GPI 15	USB	**OC#67**	RESUME	2.7K/5.1K	5VDUAL
GPO 16	NA	ISA_GNT#	MAIN	NA	
GPO 17	NA	PGNT#5	MAIN	NA	
GPO 18	NA	GPO18	MAIN	NA	
GPO 19	NA	GPO19	MAIN	NA	
GPO 20	U72	BB_SMB_SEL	MAIN	1K	GND
GPO 21	NA	ISA_NOGO	MAIN	10K	VCC3
GPO 22	NA	GPO22	MAIN	NA	
GPO 23	NA	GPO23	MAIN	NA	
GPIO 24/I	NA	**CFG_SEL1**	RESUME	BY CFG	
GPIO 25/I	NA	**CFG_SEL2**	RESUME	BY CFG	
GPIO 27	NA	GPO27	RESUME	10K	VCC3_SB
* GPIO 28	NA	**GPIO 28**	RESUME	1K	GND
GPIO 32	BIOS	BIOS_WP#	MAIN	1K	VCC3
GPIO 33/O	I/O	SATA LED	MAIN	4.7K	VCC3
GPIO 34/I	NA	**CFG_SEL3**	MAIN	BY CFG	
GPI 40	1394	PREQ#4	MAIN	8.2K	VCC3
GPI 41	NA	GPI41	MAIN	X_8.2K	VCC3
GPO 48	1394	PGNT#4	MAIN	NA	
GPO 49	CPU	CPU_GD	MAIN	62Ohm	VCCP

PS: GPIO 24~25, 27~28, 32~34 Default Output

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)

SIO

GPIO Pin	Type	Function
GP26	I	VID5
GP25	I	VID4

PCI Config.

DEVICE	MCP1 INT Pin	REQ#/GNT#	IDSEL	CLOCK	CLK GEN PIN OUT
PCI Slot 1	PIRQ#A PIRQ#B PIRQ#C PIRQ#D	PREQ#0 PGNT#0	AD16	PCICLK0	13 (PCI1)
MPCI	PIRQ#B PIRQ#C	PREQ#2 PGNT#2	AD21	PCICLK1	14 (PCI2)
REALTEK LAN 8110S/8100C	PIRQ#G	PREQ#3 PGNT#3	AD29	LAN_PCLK	12 (PCI0)
IEEE 1394 VIA 6307	PIRQ#H	PREQ#4 PGNT#4	AD23	1394_PCLK	15 (PCI3)

CONFIGURATION SELECT

GPIO Pin	Type	DEFAULT	CONFIG 1	CONFIG 2	CONFIG 3
ICH5 GPIO 24	I	LOW			
ICH5 GPIO 25	I	LOW			
ICH5 GPIO 34	I	LOW			

PS: PULL LOW BY 1K; PULL HIGH BY 8.2K

DDR DIMM Config.

DEVICE	ADDRESS	CLOCK
DIMM 1	1010000B	MCLK_A0/MCLK_A0# MCLK_A1/MCLK_A1# MCLK_A2/MCLK_A2#
DIMM 3	1010010B	MCLK_B0/MCLK_B0# MCLK_B1/MCLK_B1# MCLK_B2/MCLK_B2#

PCI RESET DEVICE

Signals	Target
PCIRST#_ICH5	AGP slot, FWH, MS7
PCIRST#1	Springdale,LAN, Super I/O,1394, CPU FAN
PCIRST#2	PCI slot 1, ext PCI slot
HD_RST#	Primary, Scondary IDE

SMBus DEVICE

Signals	Target	POWER
SMBCLK SMBDATA	ICH5, LAN, PCI SLOT, LPC I/O, BLUEBIRD	VCC3_SB
SMBCLK_ISO SMBDATA_ISO	DIMM1, DIMM2, CLK GEN, MS7, LM86	VCC3

POWER ON SEQUENCE

SIGNAL	FROM	SIGNAL TIMING	TO
VCC3_SB		80ms	
RSMRST#	VCC3_SB		MS7 SB
PWSW+	FRONT PANEL		SB
SLP_S3#	SB		MS7 ATX
PS_ON	ATX POWER	200ms	
VCC_VID	MS7		CPU
VID_GD_1	MS7		CPU VRM
PWR_OK	ATX POWER	2ms	MS7
MS5_POK ICH_PWROK	MS7		NB SB
CPU_GD	SB		CPU
PCIRST_ICH5#	SB		AGP FWH MS7
PCIRST#1 PCIRST#2 HD_RST#	MS7		NB LAN LPC 1394 PCI IDE
CPURST#	NB		CPU

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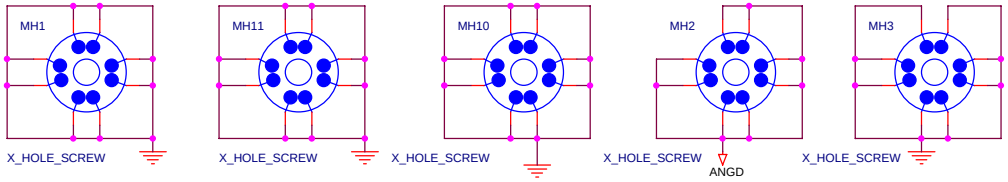
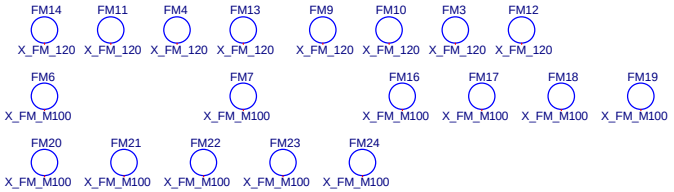
Title: General Purpose Spec

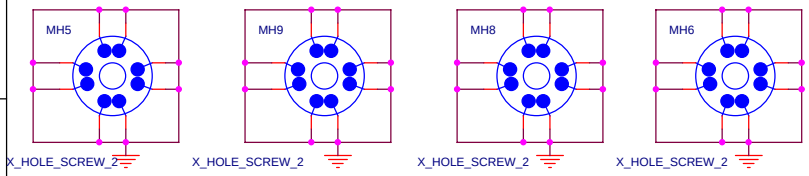
Size | Document Number: MS-7122 | Rev: 0A

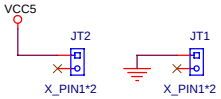
Date: Wednesday, August 11, 2004 | Sheet 25 of 26



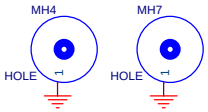


CPU Holes





MDC Holder



MODE/BUTTON BEHAVIOR

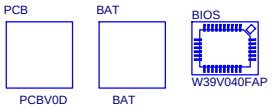
MODE \ BUTTON	PC	Instant-On
PC S0	depend on windows function	X
PC S3	S3 → S0	X
PC S4/S5	S4/S5 → S0	S4/S5 → INST
Instant-On	INST → S5 → S0	INST → S5

865G& ICH5 POWER MAP

PART	POWER	VOLTAGE	CURRENT
CPU	VCCP	1.05~1.55V	95A
	V_FSB_VTT	1.2V	2.9A~3.5A
NB	VCC_AGP	1.5V	4.6A
	VTT	1.05~1.55V	1.6A
	VCC_DDR	2.5V	5.7A
	VCC_DAC	1.5V	70mA
	VCCA_DDR	1.5V	1A
DDR/ CHANNEL	VCC_DDR	2.5V	4A
	VTT_DDR	1.25V	900mA
	DDR_VREF	1.25V	
AGP	VCC_AGP	1.5V	1A
	VCC3	3.3V	6A
	VCC3_SB	3.3V	750mA
	VCC5	5V	2A
	+12V	12V	1A
SB	VCC_AGP	1.5V	880mA
	VCC3_SB	3.3V	356mA
	VCC3	3.3V	528mA
	VCC5_SB	5V	
	VCCP	1.05~1.55V	3mA
I/O	USB/ PORT	5V	500mA

MOSFET PACKAGE FEATURE

PACKAGE	NEW PN	VOLTAGE& CURRENT FEATURE
TO263	D03-10N03LB	Vgs(on)=1.2V; Id=73A; Vds=30V
TO252	D03-06N030B	Vgs(on)=1.2~2V; Id=50A; Vds=25V
SOT89	D03-2054N09	Vgs(on)=0.6~1.5V; Id=6A; Vds=20V
SOT23	D03-351AN09	Vgs(on)=0.8V; Id=1.2A; Vds=30V



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Title: Others/ Power Map

Size | Document Number: MS-7122 | Rev: 0A

Date: Wednesday, August 11, 2004 | Sheet 26 of 26