MS-6541 Micro-ATX

INTEL (R) Brookdale-G Chipset
Willamette/Northwood 478pin mPGA-B Processor Schematics

CPU:

Willamette/Northwood mPGA-478B Processor

System Brookdale-G Chipset:

INTEL GMCH (North Bridge) +
INTEL ICH4 (South Bridge)

On Board Chipset:

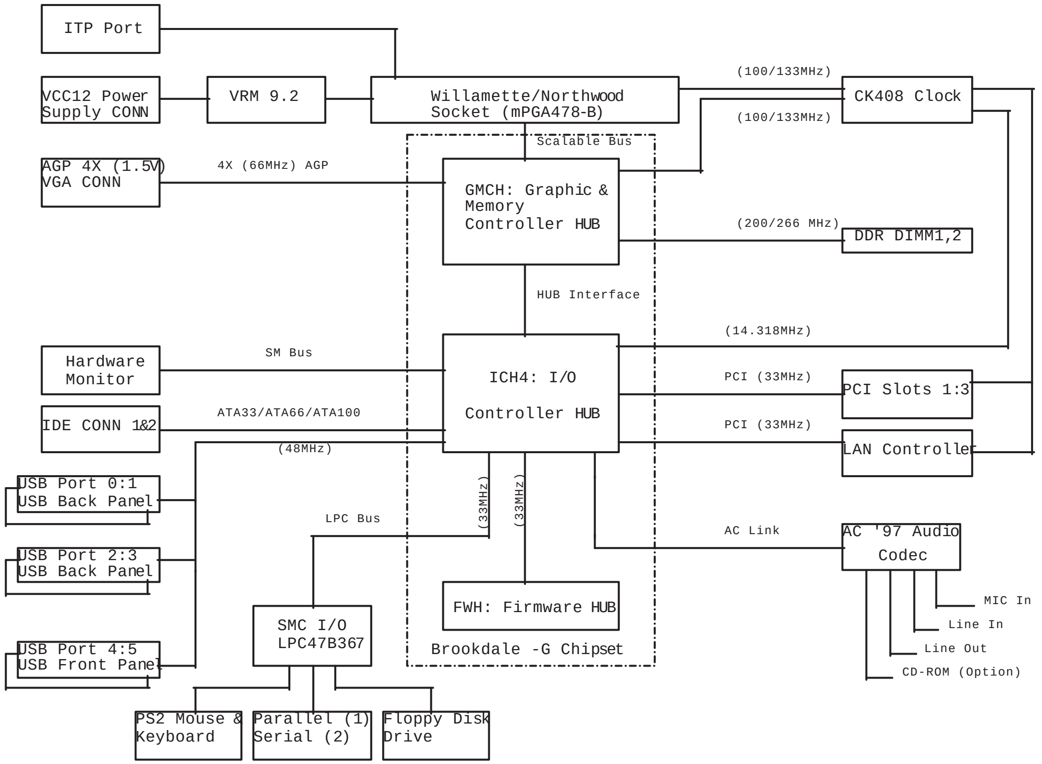
BIOS -- FWH
AC'97 Codec -- AD1981
LPC Super I/O -- LPC47B367
Clock Generation -- CY28323 / ICS950219
LAN -- Intel KINNERITH controller

Expansion Slots:

PCI2.2 SLOT * 3

PCI Extender Connector * 1

MSI	MICRO-STAR	
Title	COVER SHEET	
Size	Document Number: MS-6541I1	Rev 0B
Date: Monday, April 08, 2002	Sheet 1 of 32	



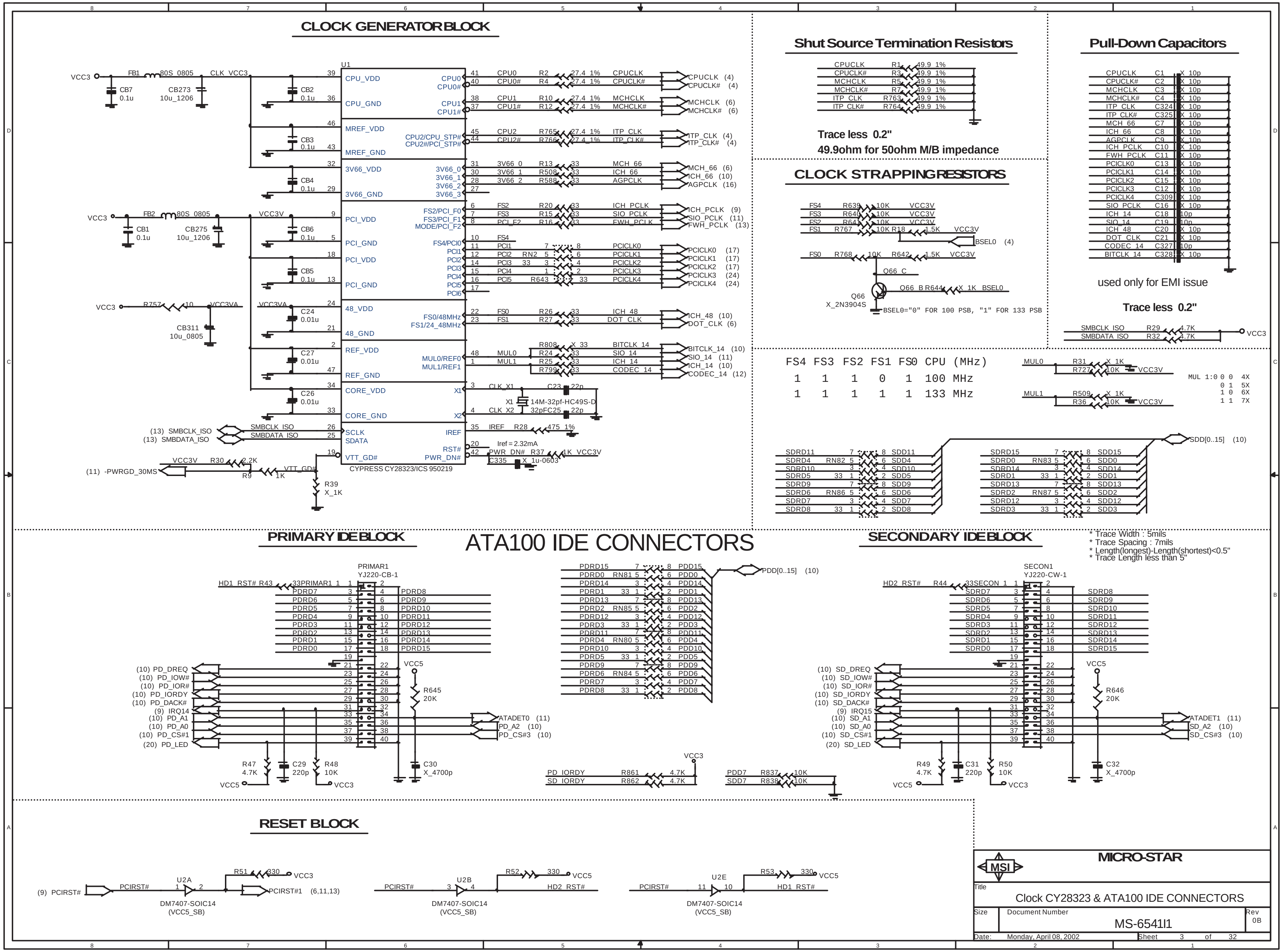
MICRO-STAR

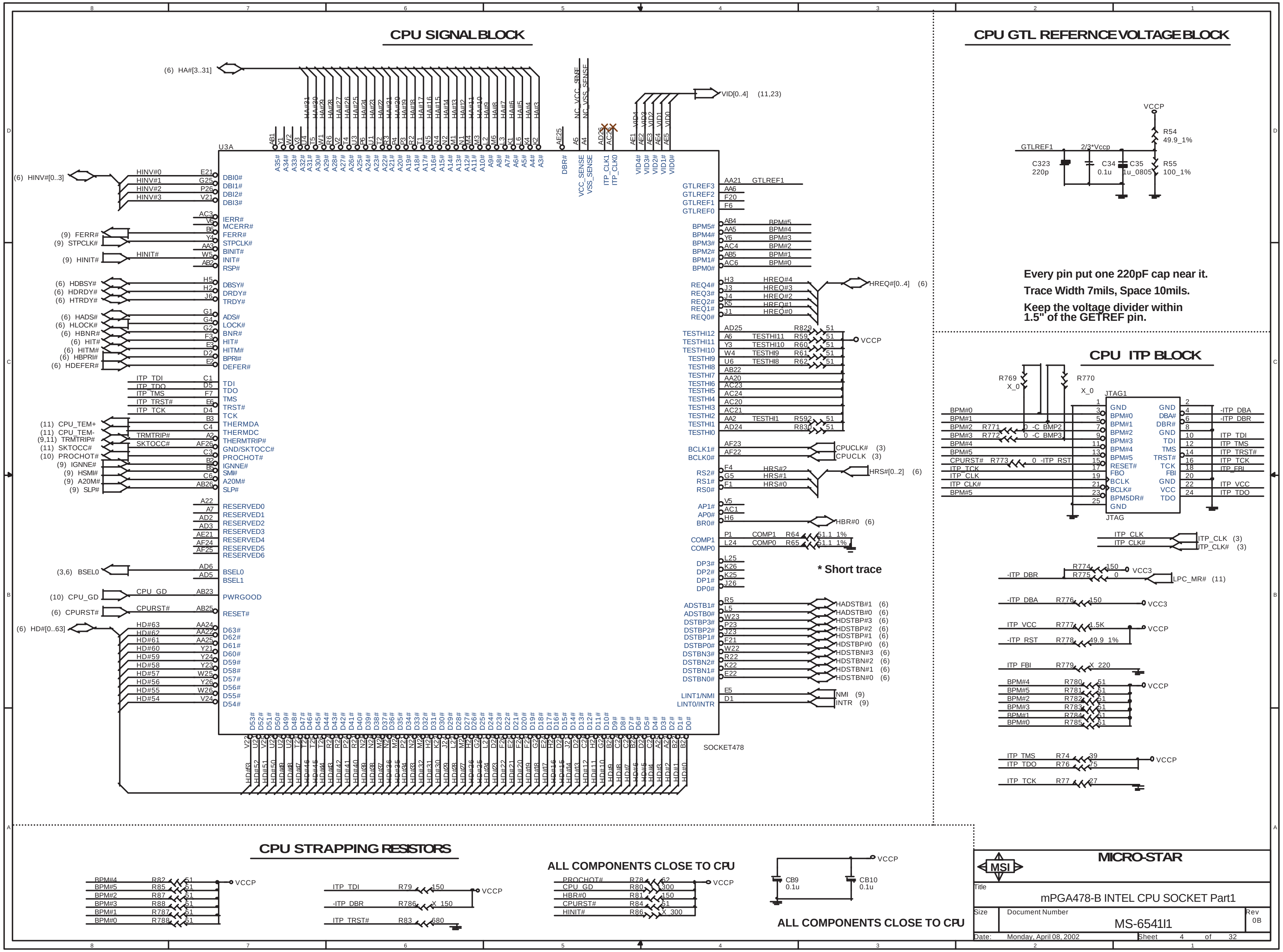
MSI

Title: BLOCK DIAGRAM

Size	Document Number	Rev
	MS-6541I1	0B

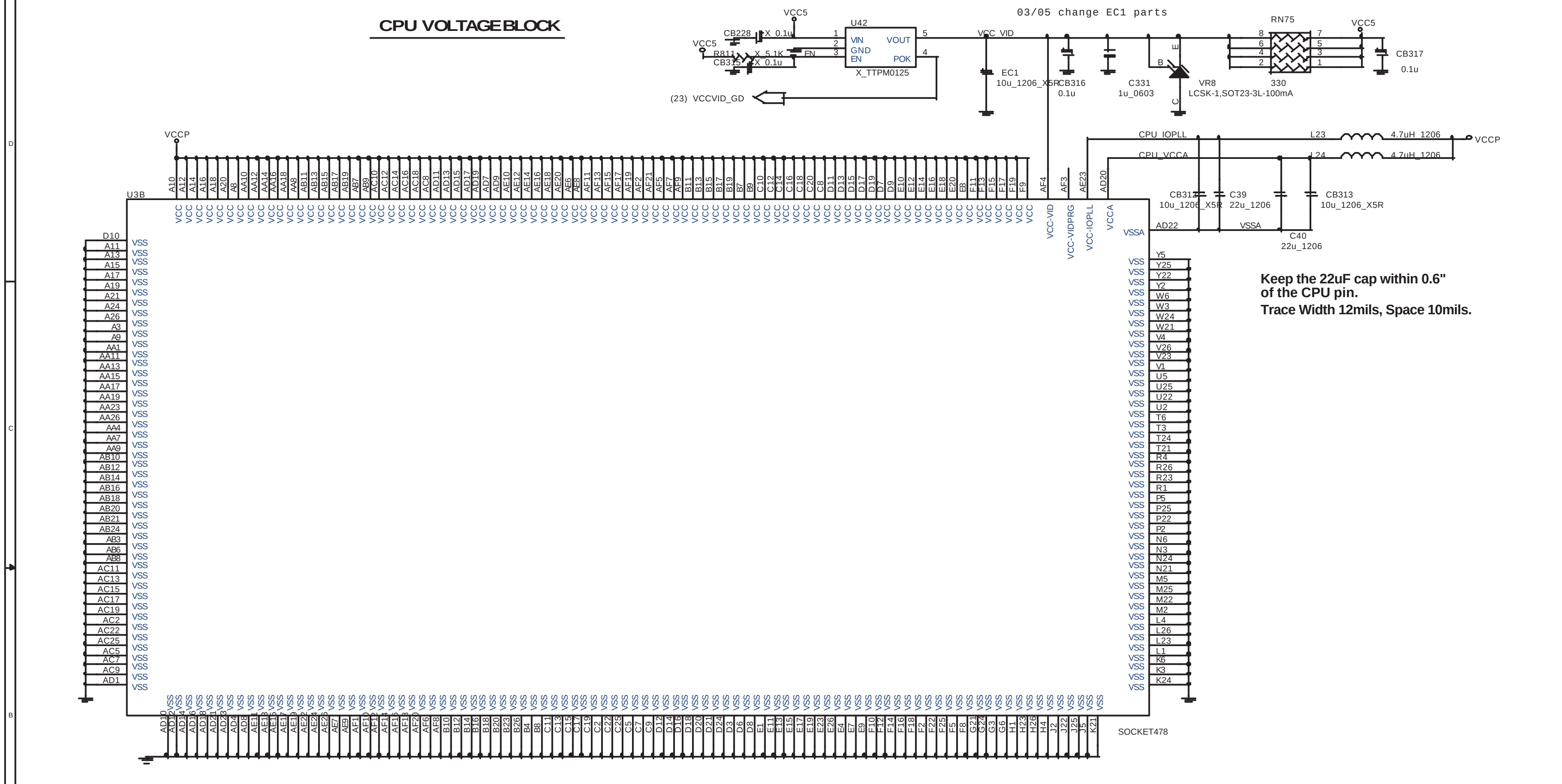
Date: Monday, April 08, 2002 | Sheet 2 of 32


CLOCK GENERATOR BLOCK
U1
CYPRESS CY28323/ICS 950219
Shut Source Termination Resistors
Trace less 0.2"
49.9ohm for 50ohm M/B impedance
Pull-Down Capacitors
used only for EMI issue
Trace less 0.2"
CLOCK STRAPPING RESISTORS
BSEL0="0" FOR 100 PSB, "1" FOR 133 PSB
FS4 FS3 FS2 FS1 FS0 CPU (MHz)
1 1 1 0 1 100 MHz
1 1 1 1 1 133 MHz
MUL 1:0 0 0 4X
0 1 5X
1 0 6X
1 1 7X
ATA100 IDE CONNECTORS
PRIMARY IDE BLOCK
PRIMAR1
YJ220-CB-1
SECONDARY IDE BLOCK
SECON1
YJ220-CW-1
* Trace Width : 5mils
* Trace Spacing : 7mils
* Length(longest)-Length(shortest)<0.5"
* Trace Length less than 5"
RESET BLOCK
DM7407-SOIC14
(VCC5_SB)
MICRO-STAR
MSI
Title
Clock CY28323 & ATA100 IDE CONNECTORS
Size
Document Number
MS-6541I1
Rev
0B
Date: Monday, April 08, 2002
Sheet 3 of 32



CPU SIGNAL BLOCK
CPU GTL REFERNCE VOLTAGE BLOCK
Every pin put one 220pF cap near it.
Trace Width 7mils, Space 10mils.
Keep the voltage divider within 1.5" of the GETREF pin.
CPU ITP BLOCK
* Short trace
SOCKET478
CPU STRAPPING RESISTORS
ALL COMPONENTS CLOSE TO CPU
ALL COMPONENTS CLOSE TO CPU
MICRO-STAR
MSI
Title
mPGA478-B INTEL CPU SOCKET Part1
Size
Document Number
MS-6541I1
Rev
0B
Date: Monday, April 08, 2002
Sheet 4 of 32

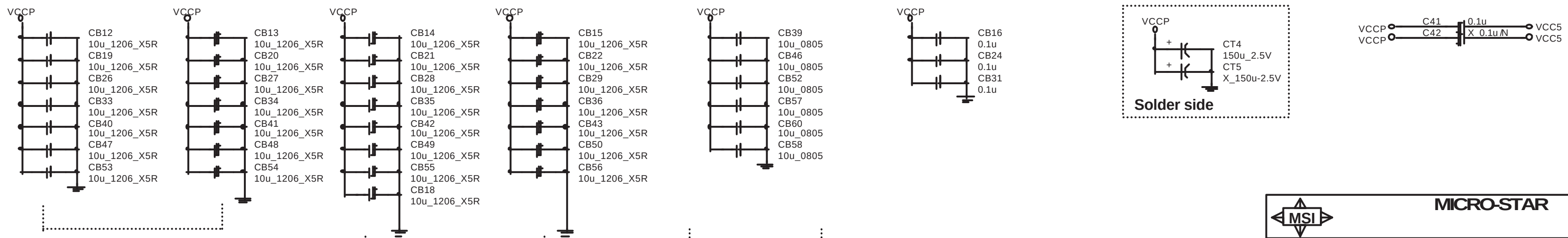
CPU VOLTAGE BLOCK



Keep the 22uF cap within 0.6" of the CPU pin.

Trace Width 12mils, Space 10mils.

CPU DECOUPLING CAPACITORS



Place 14 pcs 1206 size cap north side of processor

PLACE CAPS WITHIN CPU CAVITY

Place these caps on south side of processor

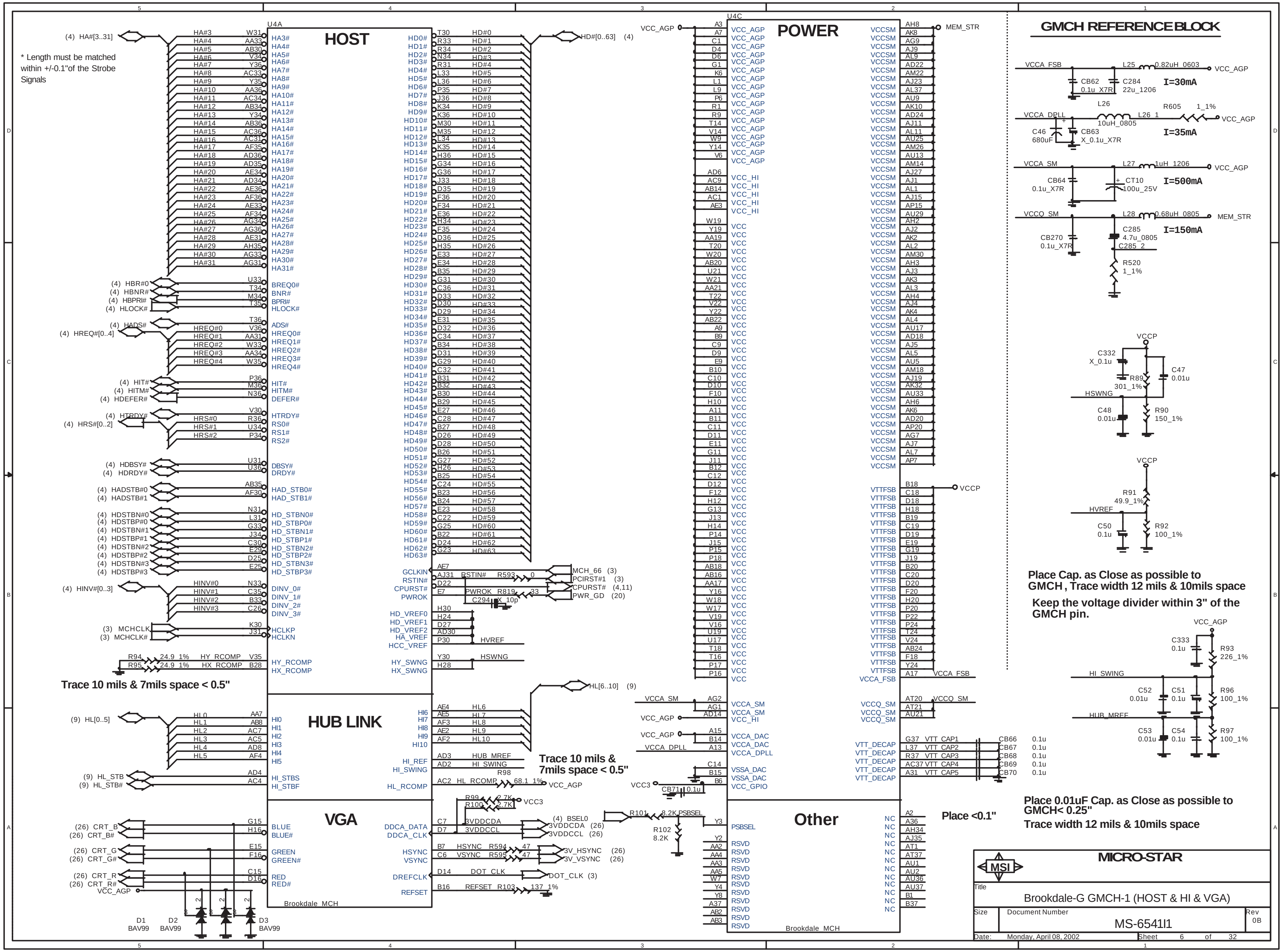
MICRO-STAR

MSI

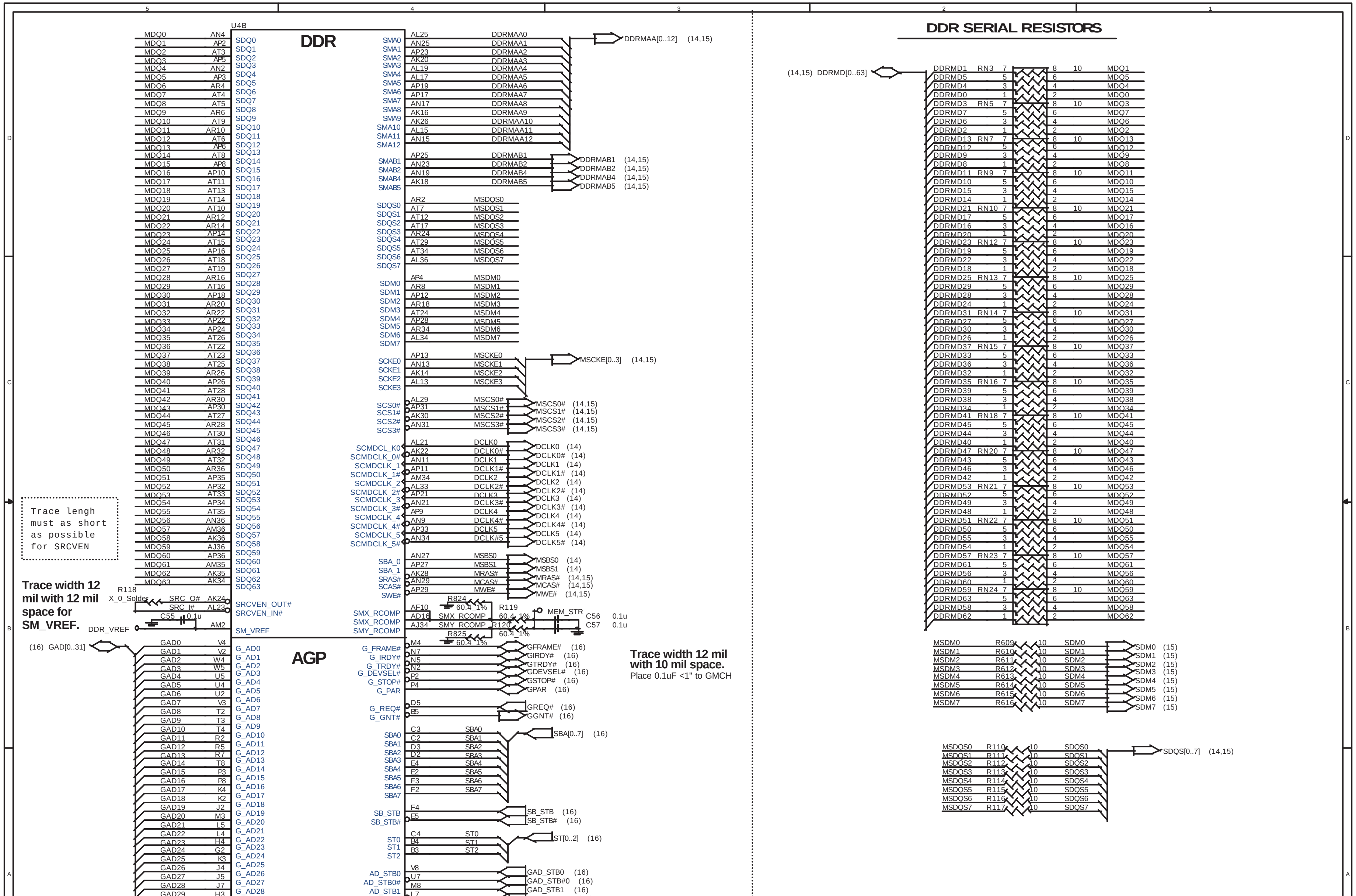
Title: mPGA478-B INTEL CPU Part2

Size | Document Number: MS-6541I1 | Rev: 0B

Date: Monday, April 08, 2002 | Sheet 5 of 32



HOST
POWER
HUB LINK
VGA
Other
GMCH REFERENCE BLOCK
* 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"
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 <0.1"
Place 0.01uF Cap. as Close as possible to GMCH< 0.25"
Trace width 12 mils & 10mils space
I=30mA
I=35mA
I=500mA
I=150mA
Brookdale_MCH
MSI
MICRO-STAR
Title
Brookdale-G GMCH-1 (HOST & HI & VGA)
Size
Document Number
MS-6541I1
Rev
0B
Date: Monday, April 08, 2002
Sheet 6 of 32



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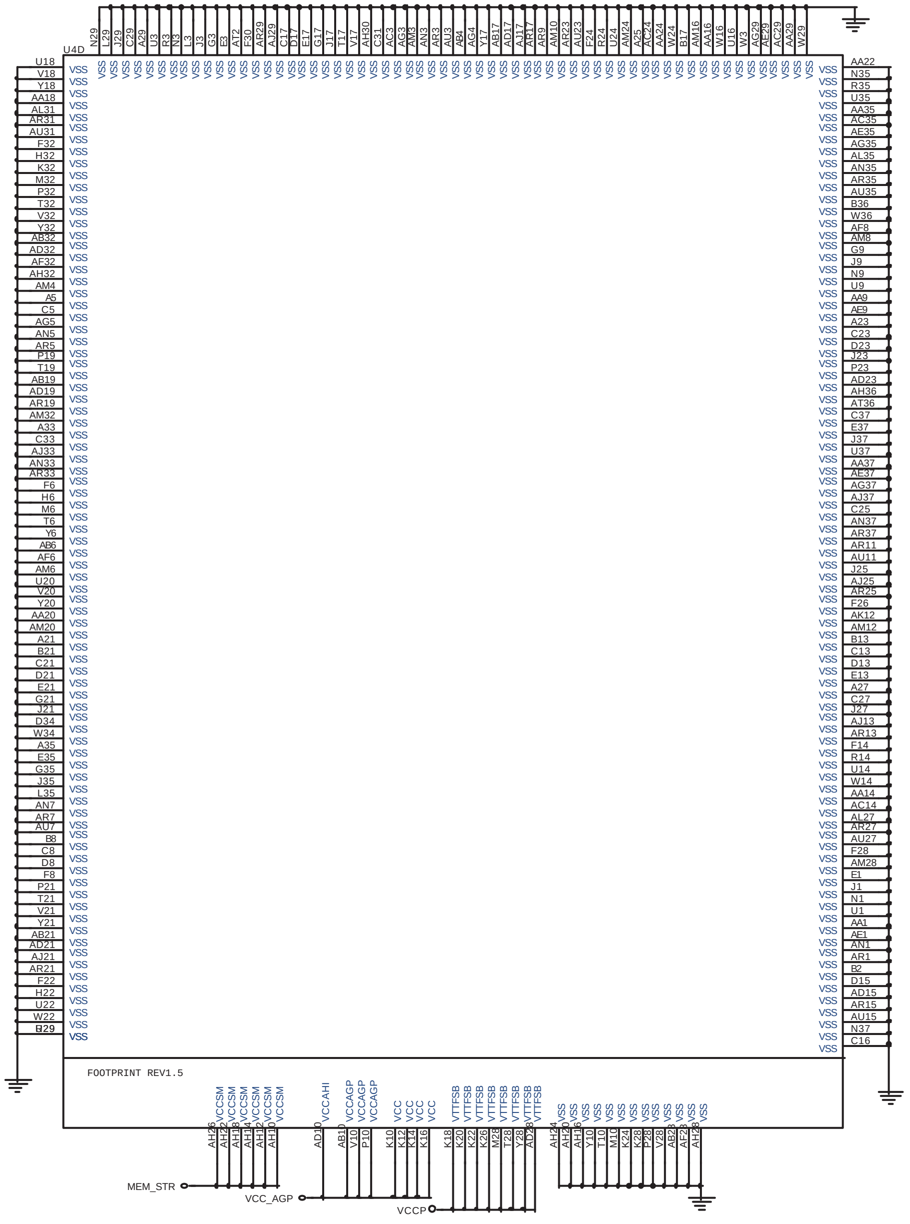
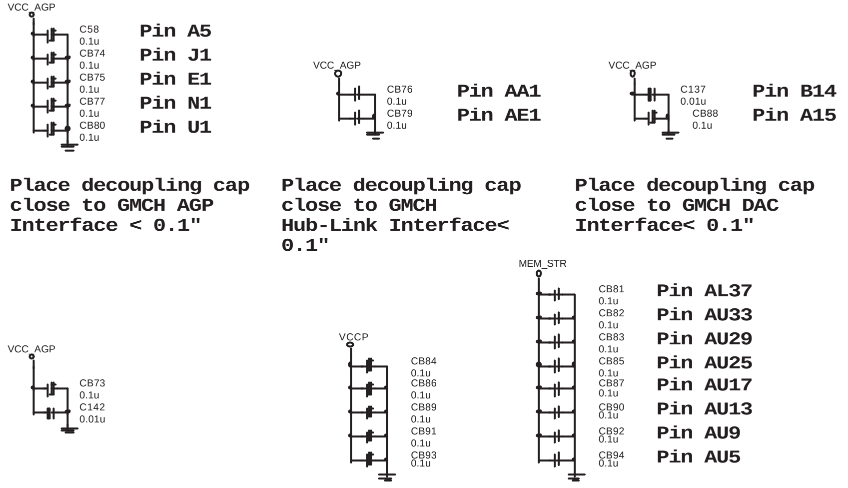
Title: Brookdale-G GMCH-2 (DDR & AGP)

Size | Document Number: MS-6541l1 | Rev 0B

Date: Monday, April 08, 2002 | Sheet 7 of 32



GMCH DECOUPLING CAPACITOR



Place decoupling cap close to GMCH AGP Interface < 0.1"

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

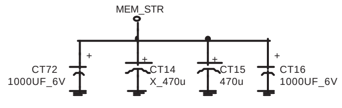
Place decoupling cap close to GMCH DAC Interface< 0.1"

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

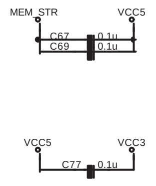
Place decoupling cap close to GMCH CPU Interface < 250mil in the Vtt corridor

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

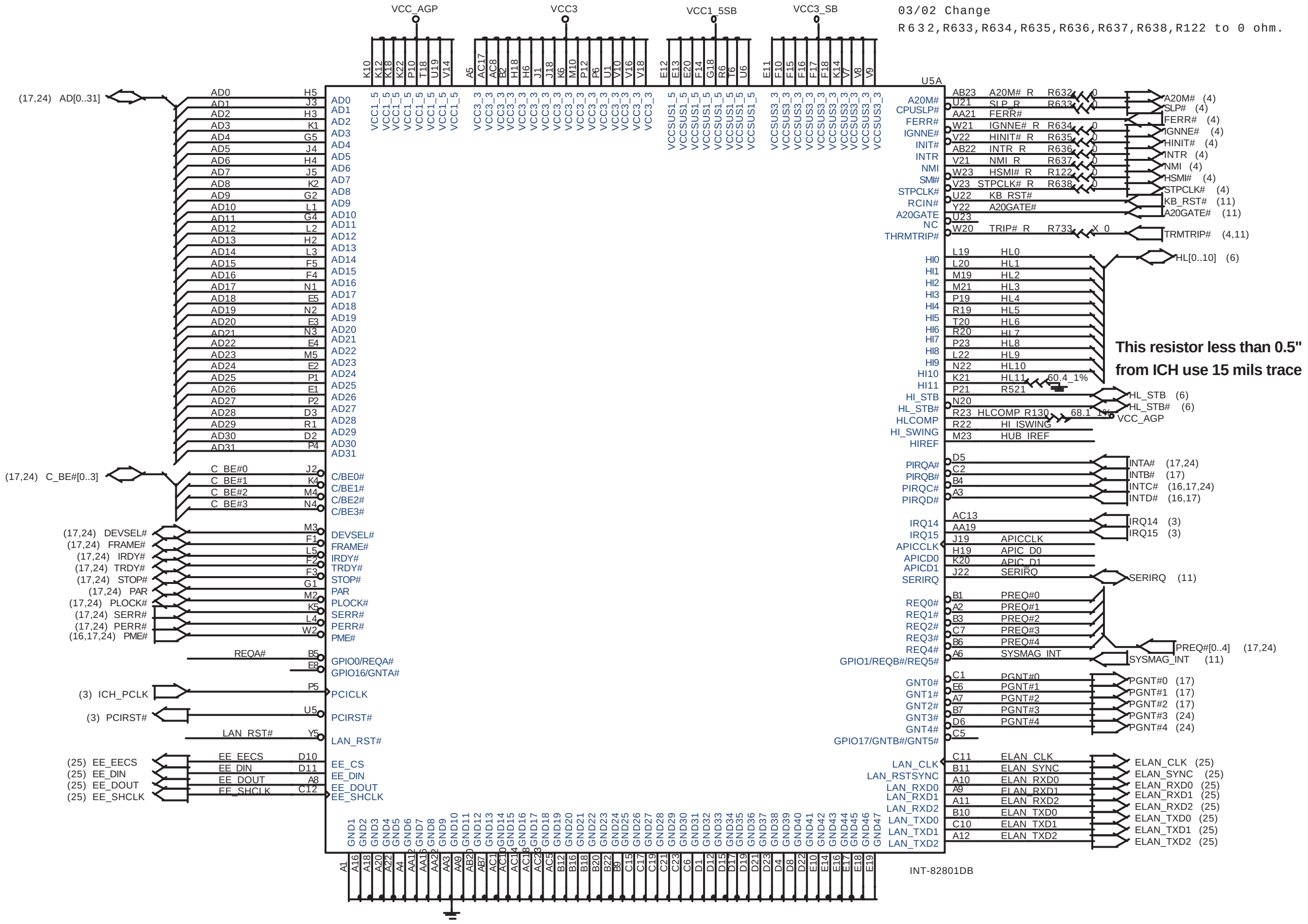


Place Bulk cap between GMCH & DIMM slot

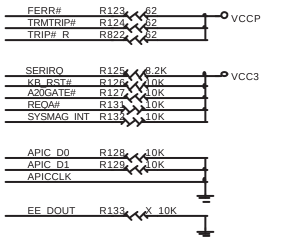


MSI	MICRO-STAR
Title	Broodale GMCH(VSS)
Size / Document Number	MS-6541I1
Rev	0B
Date:	Monday, April 08, 2002
Sheet	8 of 32

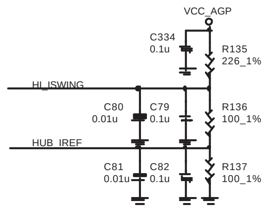
ICH4 PCI / HUB LINK / CPU/LAN/INTERRUPT SIGNALS



ICH4 STRAPPING RESISTORS

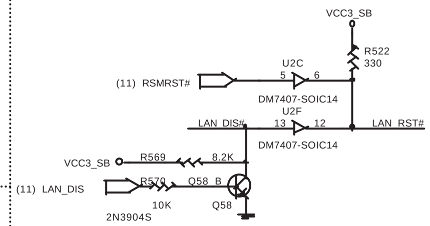


ICH4 REFERENCE VOLTAGE



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

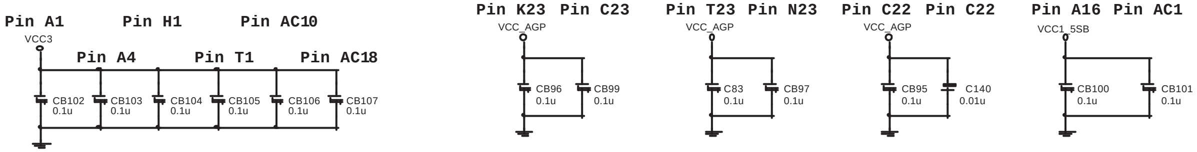
LAN Disable Circuit



If LAN_DIS="L", LAN_RST#=RSMRST#,
If LAN_DIS="H", LAN_RST#="L"

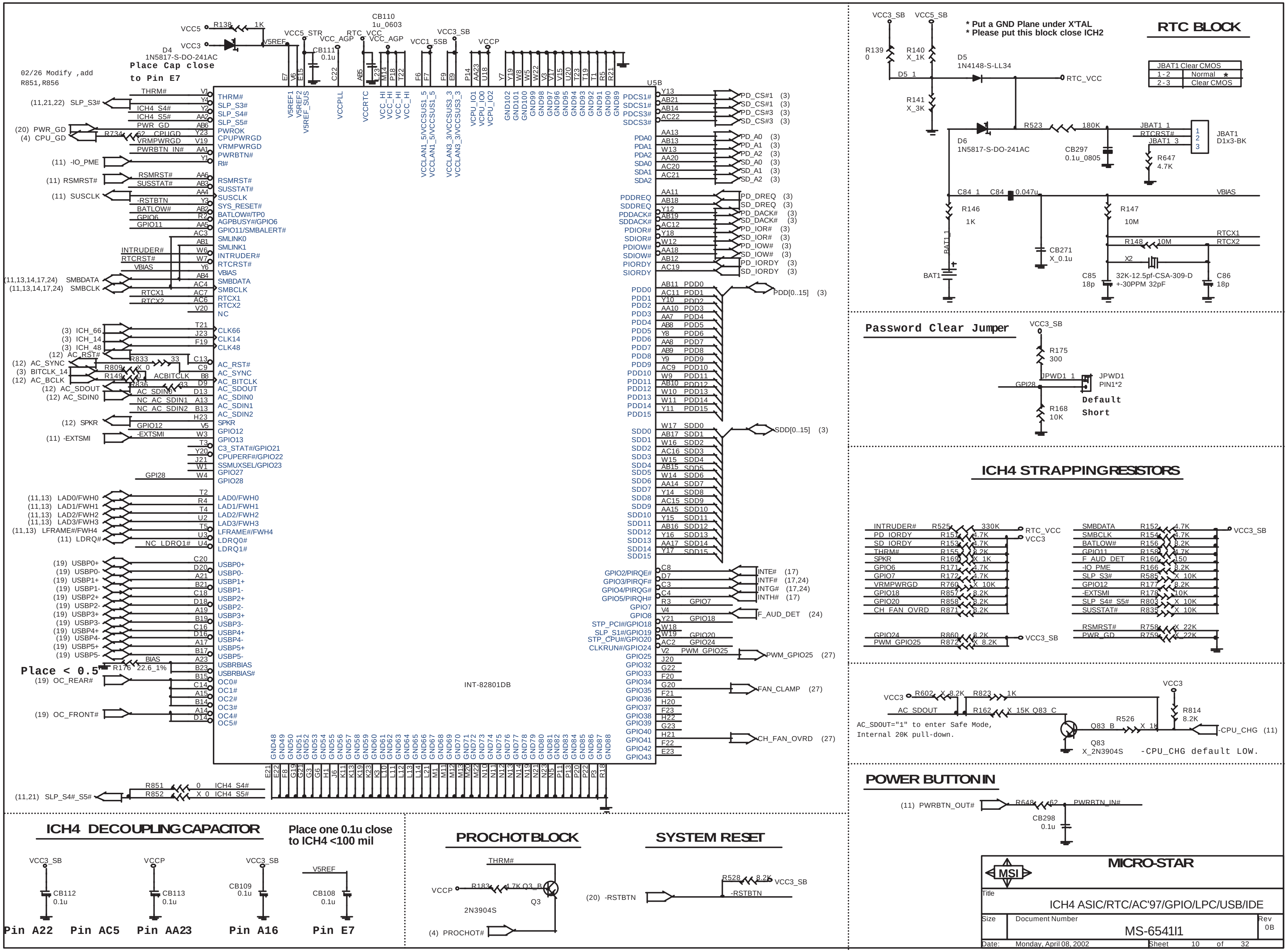
ICH4 DECOUPLING CAPACITORS

Place one 0.1u close to ICH4 <100 mil

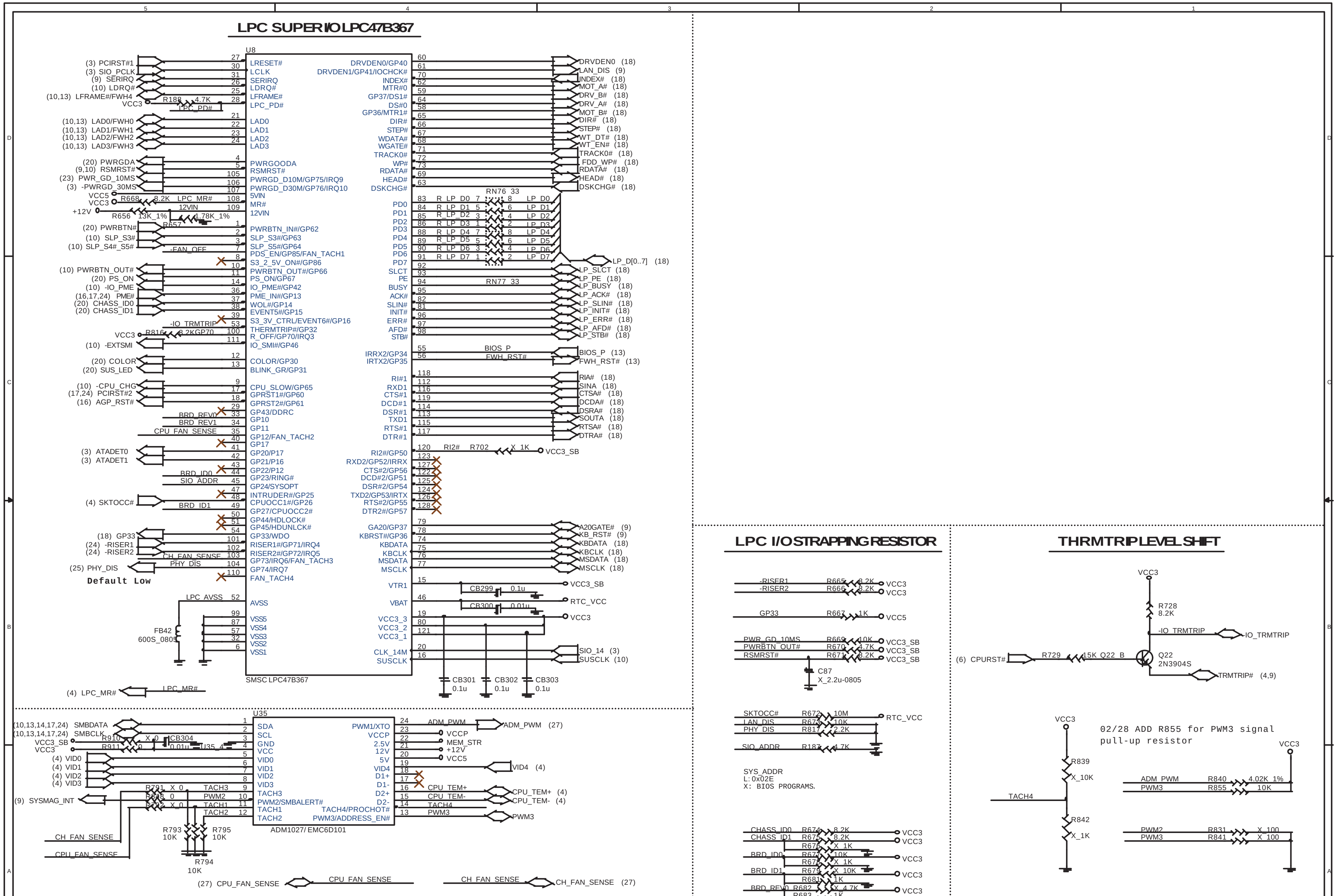


FOR Core Logic FOR Hub Interface FOR PLL

MICRO-STAR	MSI
Title	Brookdale-G ICH4 PCI & HI & LAN
Size / Document Number / Rev	MS-6541I1 / 0B
Date:	Monday, April 08, 2002
Sheet	9 of 32



02/26 Modify ,add
R851,R856
Place Cap close
to Pin E7
INT-82801DB
U5B
RTC BLOCK
* Put a GND Plane under X'TAL
* Please put this block close ICH2
JBAT1 Clear CMOS
1-2 Normal ★
2-3 Clear CMOS
Password Clear Jumper
Default
Short
ICH4 STRAPPING RESISTORS
AC_SDOUT="1" to enter Safe Mode,
Internal 20K pull-down.
-CPU_CHG default LOW.
POWER BUTTON IN
ICH4 DECOUPLING CAPACITOR
Place one 0.1u close
to ICH4 <100 mil
Pin A22
Pin AC5
Pin AA23
Pin A16
Pin E7
PROCHOT BLOCK
SYSTEM RESET
Place < 0.5
MICRO-STAR
MSI
Title
ICH4 ASIC/RTC/AC'97/GPIO/LPC/USB/IDE
Size
Document Number
MS-6541I1
Rev
0B
Date: Monday, April 08, 2002
Sheet 10 of 32



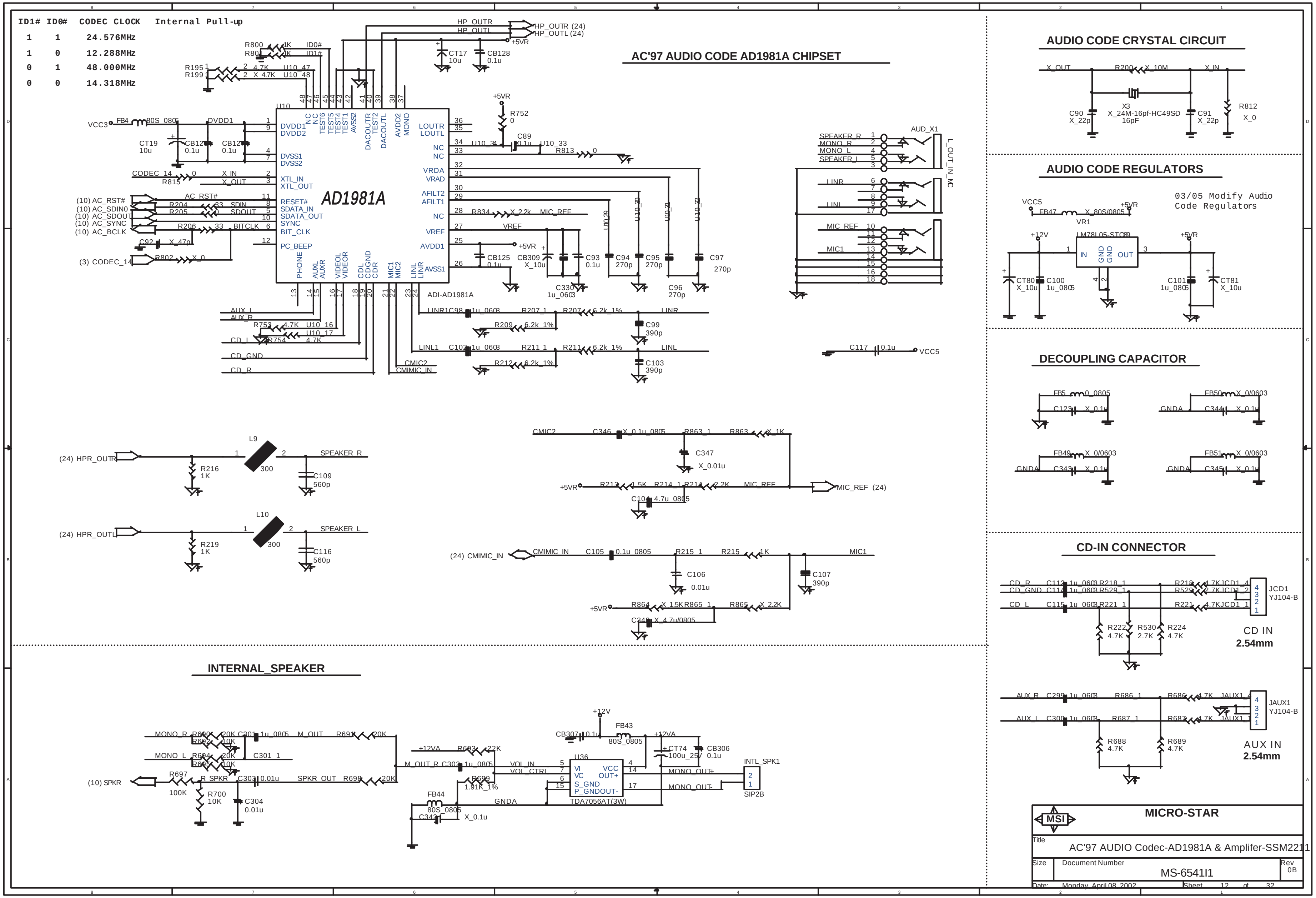
MICRO-STAR

MSI

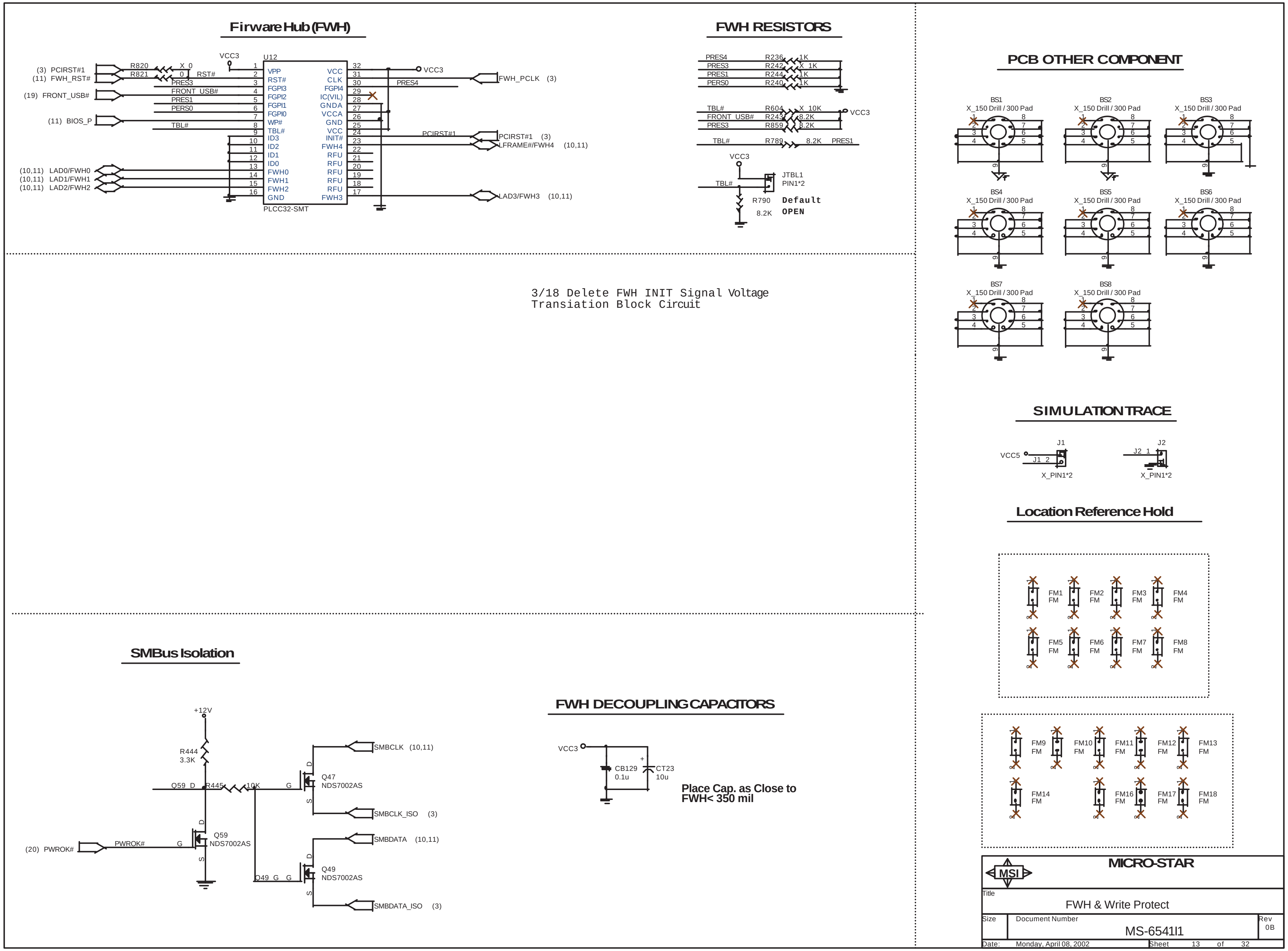
Title: I/O LPC47B367 & ADM1028

Size | Document Number: MS-6541I1 | Rev: 0B

Date: Monday, April 08, 2002 | Sheet 11 of 32



ID1# ID0# CODEC CLOCK Internal Pull-up
1 1 24.576MHz
1 0 12.288MHz
0 1 48.000MHz
0 0 14.318MHz
AC'97 AUDIO CODE AD1981A CHIPSET
AD1981A
ADI-AD1981A
AUDIO CODE CRYSTAL CIRCUIT
AUDIO CODE REGULATORS
03/05 Modify Audio
Code Regulators
DECOUPLING CAPACITOR
CD-IN CONNECTOR
CD IN
2.54mm
AUX IN
2.54mm
INTERNAL_SPEAKER
TDA7056AT(3W)
MICRO-STAR
MSI
Title
AC'97 AUDIO Codec-AD1981A & Amplifer-SSM2211
Size
Document Number
MS-6541I1
Rev
0B
Date:
Monday, April 08, 2002
Sheet 12 of 32



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Title: FWH & Write Protect

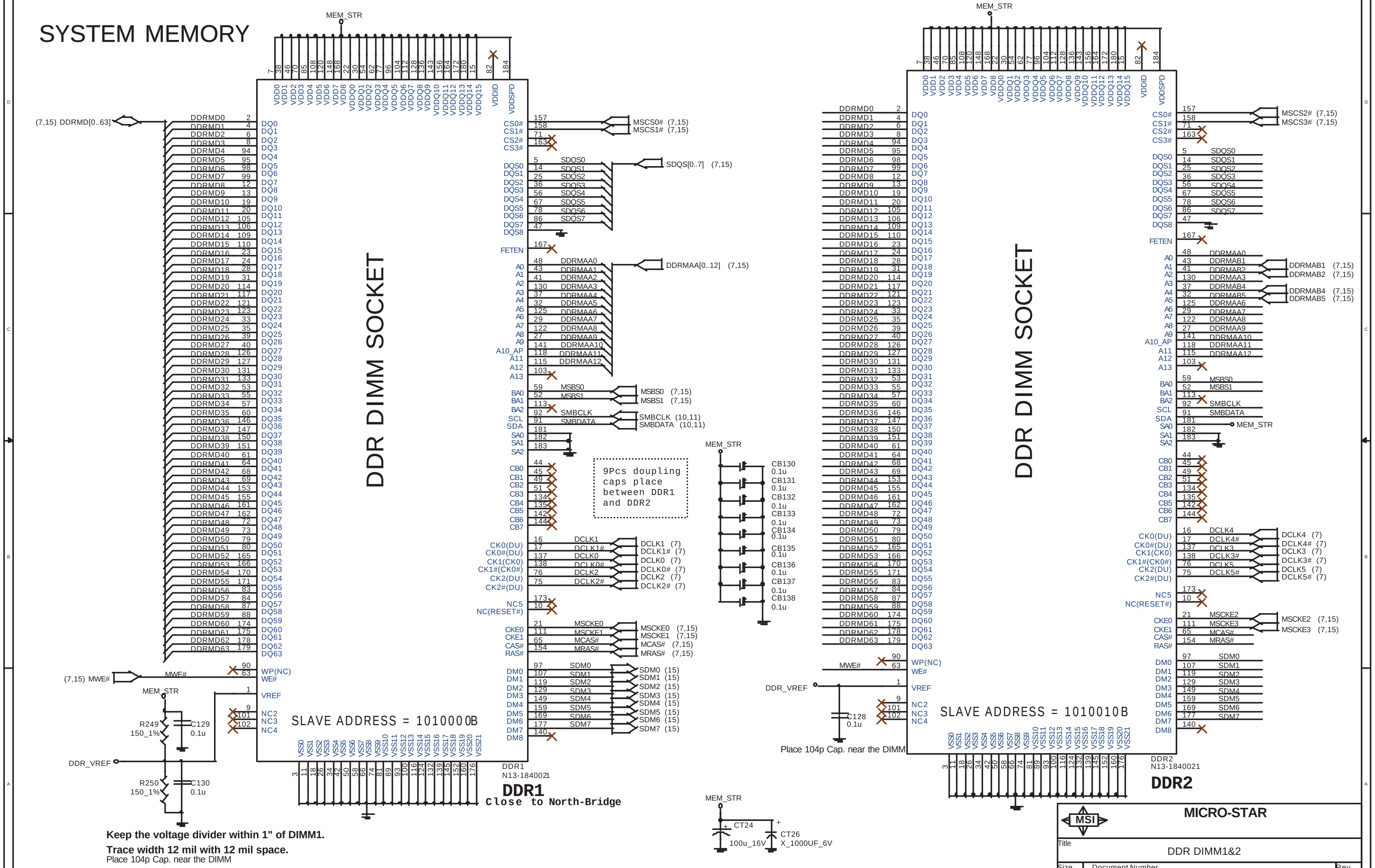
Document Number: MS-6541I1

Rev: 0B

Date: Monday, April 08, 2002

Sheet 13 of 32

SYSTEM MEMORY



Keep the voltage divider within 1" of DIMM1.

Trace width 12 mil with 12 mil space.

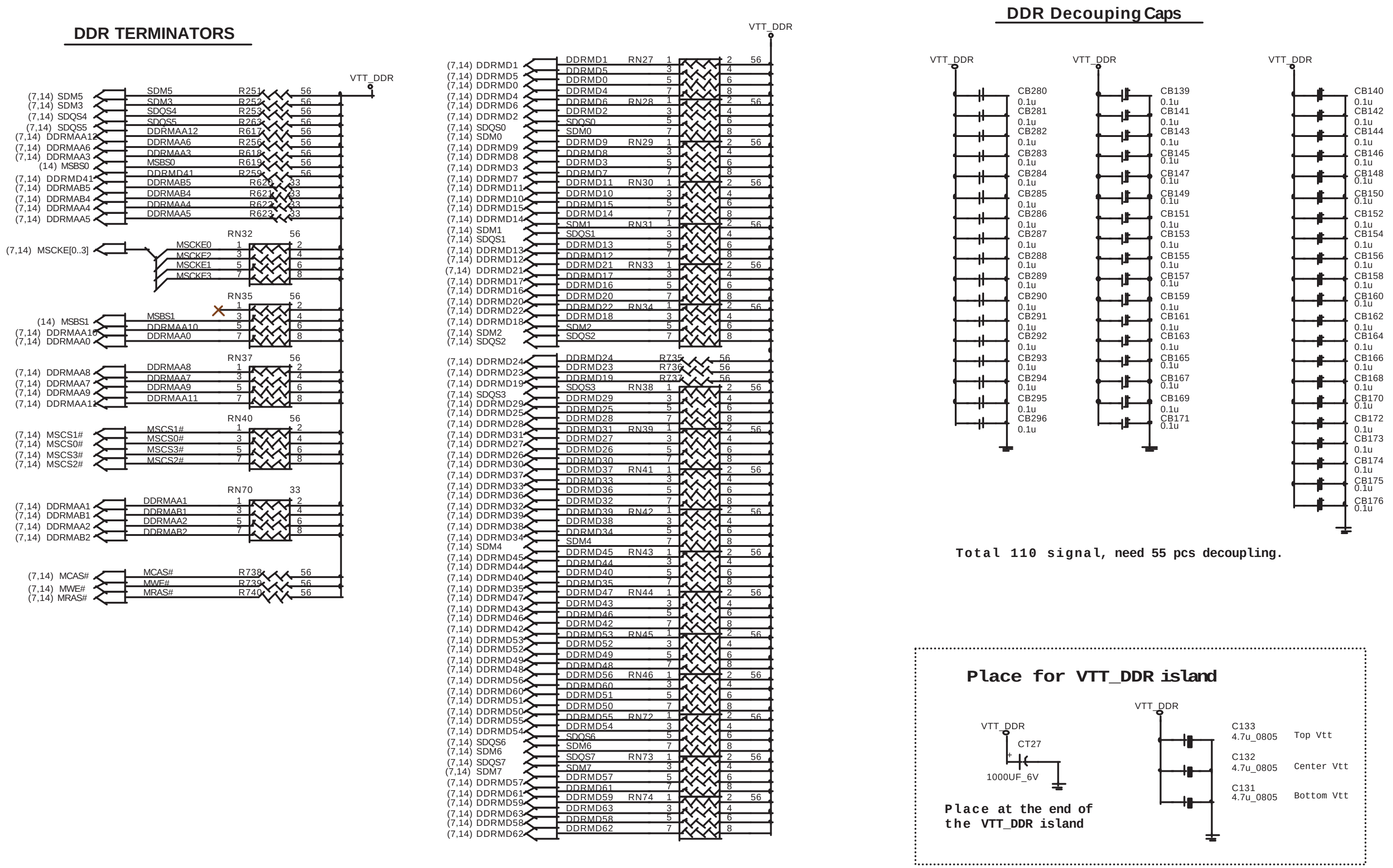
Place 104p Cap. near the DIMM

MICRO-STAR

Title: DDR DIMM1&2

Size | Document Number: MS-6541I1 | Rev 0B

Date: Monday, April 08, 2002 | Sheet 14 of 32

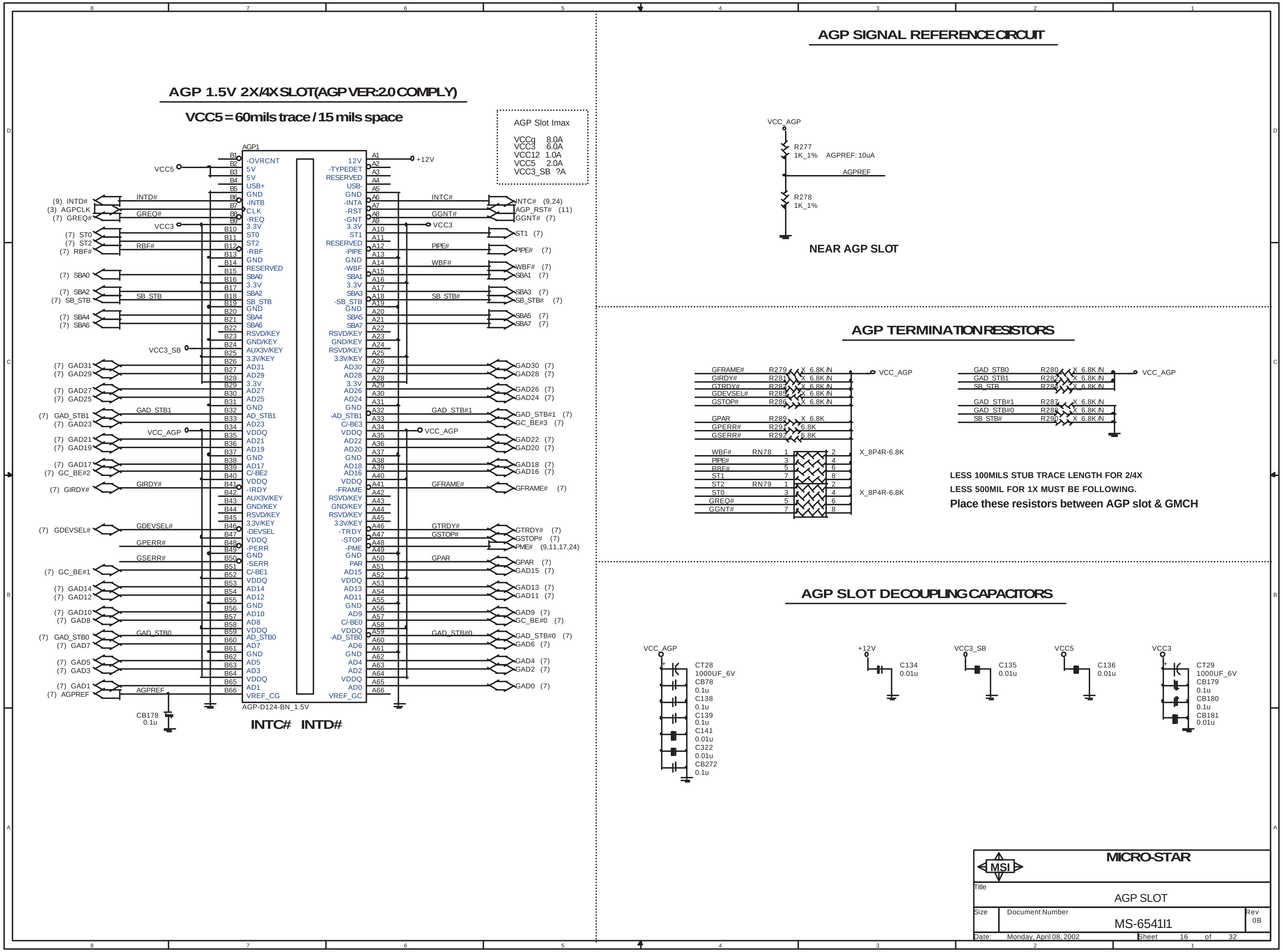


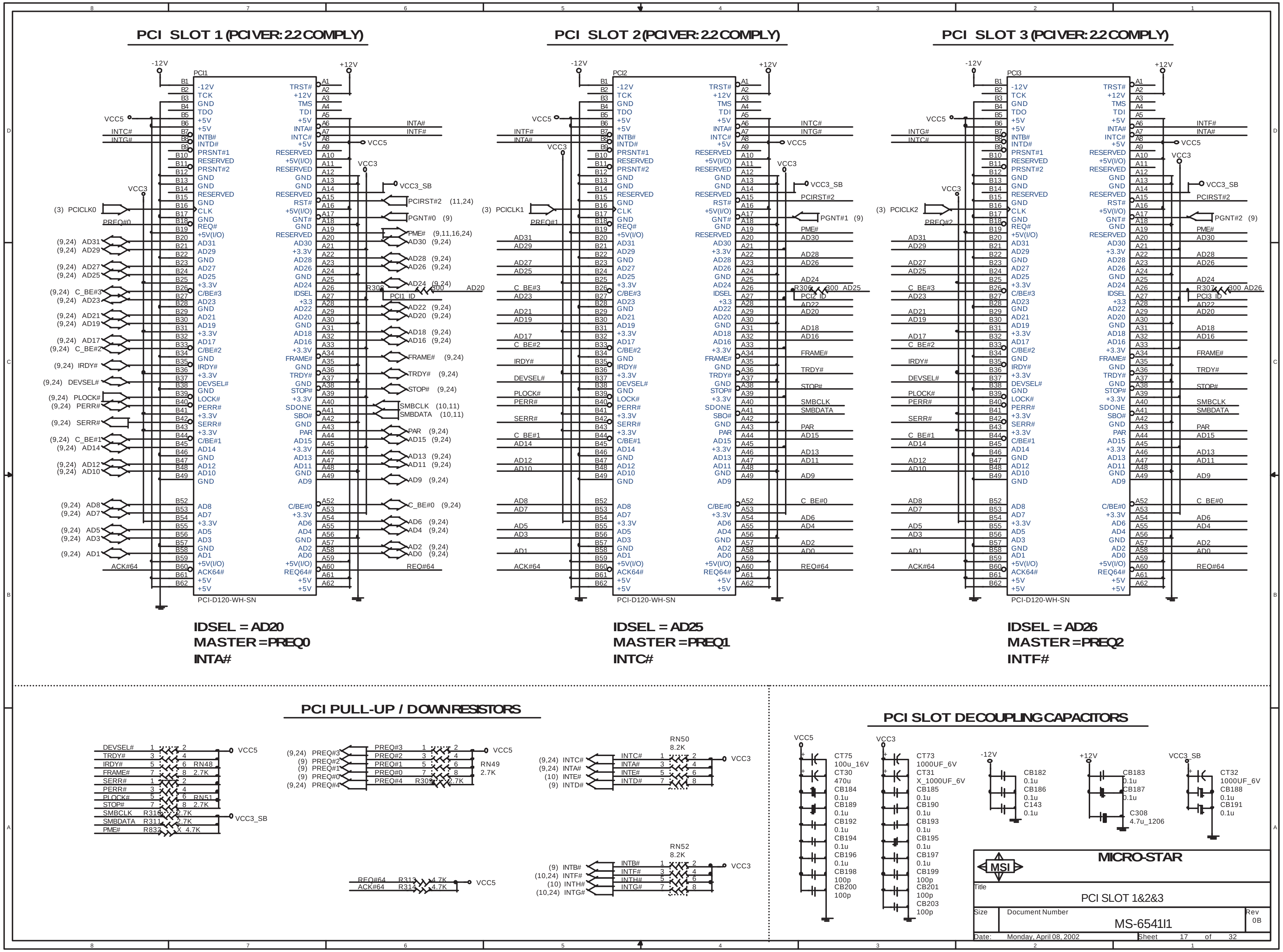
MICRO-STAR

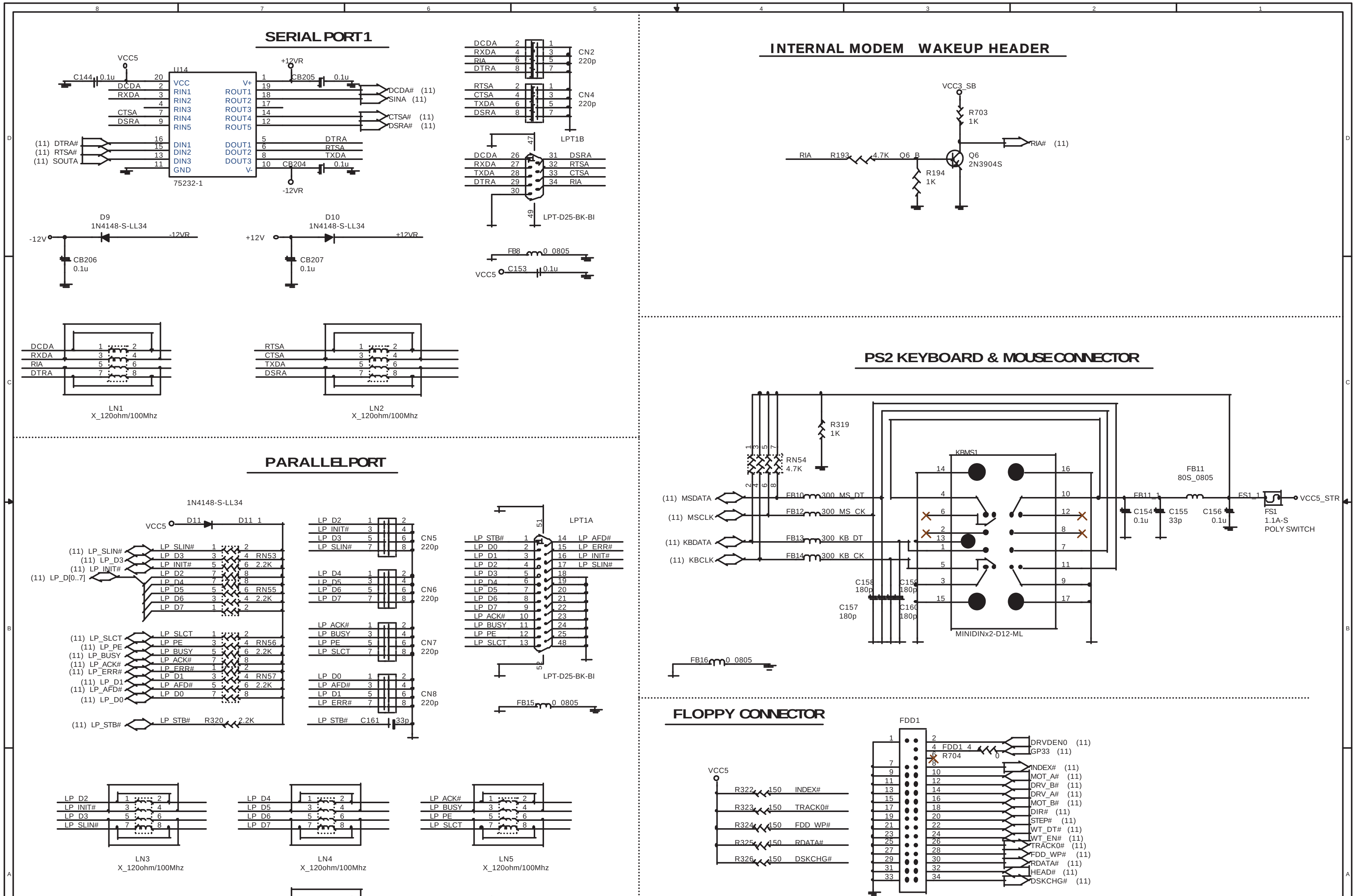
Title: DDR Terminator Resistor

Size	Document Number	Rev
	MS-6541I1	0B

Date: Monday, April 08, 2002 Sheet 15 of 32


AGP 1.5V 2X/4X SLOT(AGP VER:2.0 COMPLY)
VCC5 = 60mils trace / 15 mils space
AGP Slot Imax
VCCq 8.0A
VCC3 6.0A
VCC12 1.0A
VCC5 2.0A
VCC3_SB ?A
AGP1
AGP-D124-BN_1.5V
INTC# INTD#
AGP SIGNAL REFERENCE CIRCUIT
VCC_AGP
R277
1K_1%
AGPREF: 10uA
AGPREF
R278
1K_1%
NEAR AGP SLOT
AGP TERMINATION RESISTORS
X_8P4R-6.8K
LESS 100MILS STUB TRACE LENGTH FOR 2/4X
LESS 500MIL FOR 1X MUST BE FOLLOWING.
Place these resistors between AGP slot & GMCH
AGP SLOT DECOUPLING CAPACITORS
MICRO-STAR
MSI
Title
AGP SLOT
Size
Document Number
MS-6541I1
Rev
0B
Date: Monday, April 08, 2002
Sheet 16 of 32


PCI SLOT 1 (PCI VER: 2.2 COMPLY)
PCI SLOT 2 (PCI VER: 2.2 COMPLY)
PCI SLOT 3 (PCI VER: 2.2 COMPLY)
PCI-D120-WH-SN
IDSEL = AD20
MASTER = PREQ0
INTA#
IDSEL = AD25
MASTER = PREQ1
INTC#
IDSEL = AD26
MASTER = PREQ2
INTF#
PCI PULL-UP / DOWN RESISTORS
PCI SLOT DECOUPLING CAPACITORS
MICRO-STAR
MSI
Title
PCI SLOT 1&2&3
Size
Document Number
MS-6541I1
Rev
0B
Date: Monday, April 08, 2002
Sheet 17 of 32



MICRO-STAR

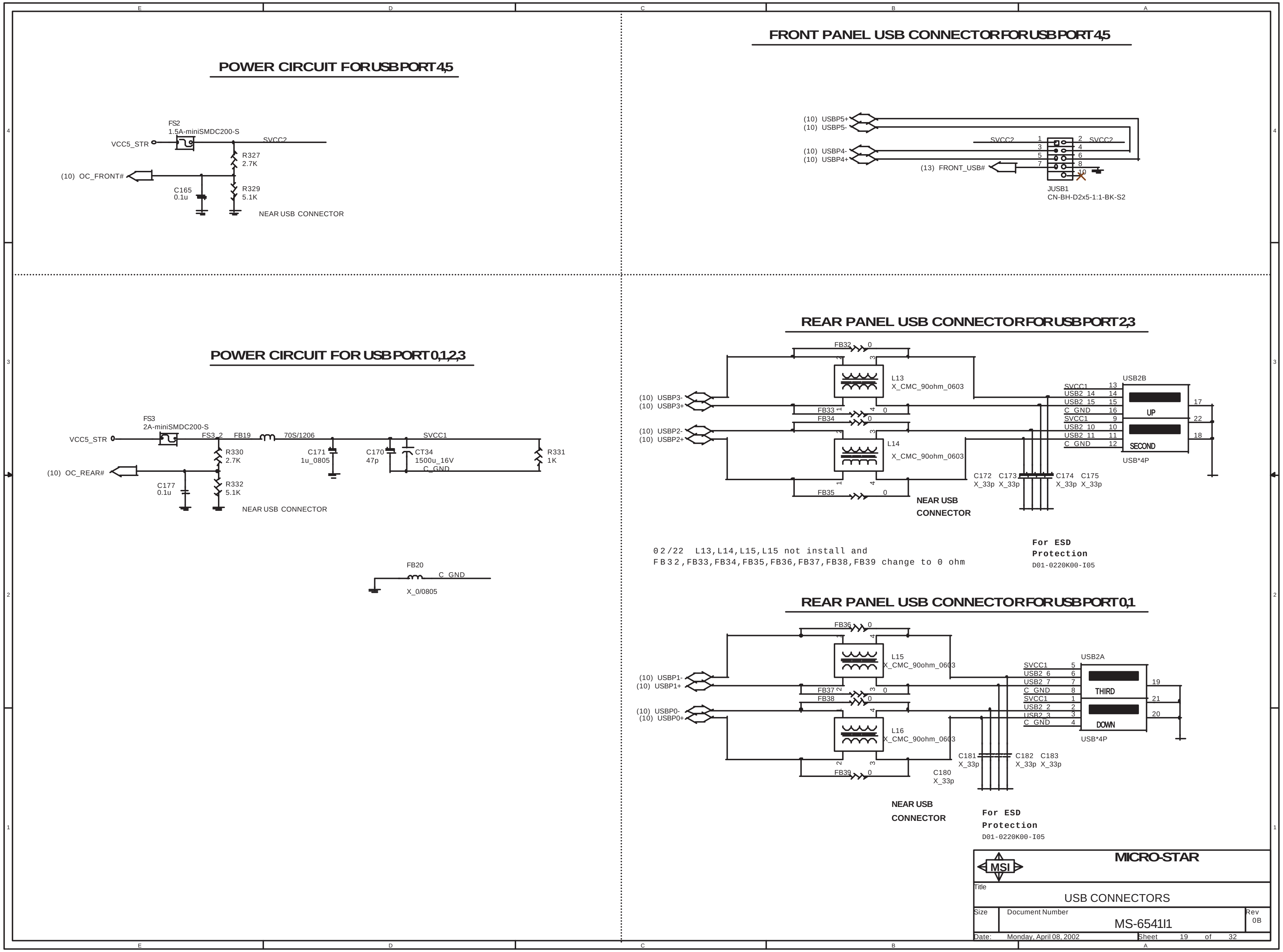
MSI

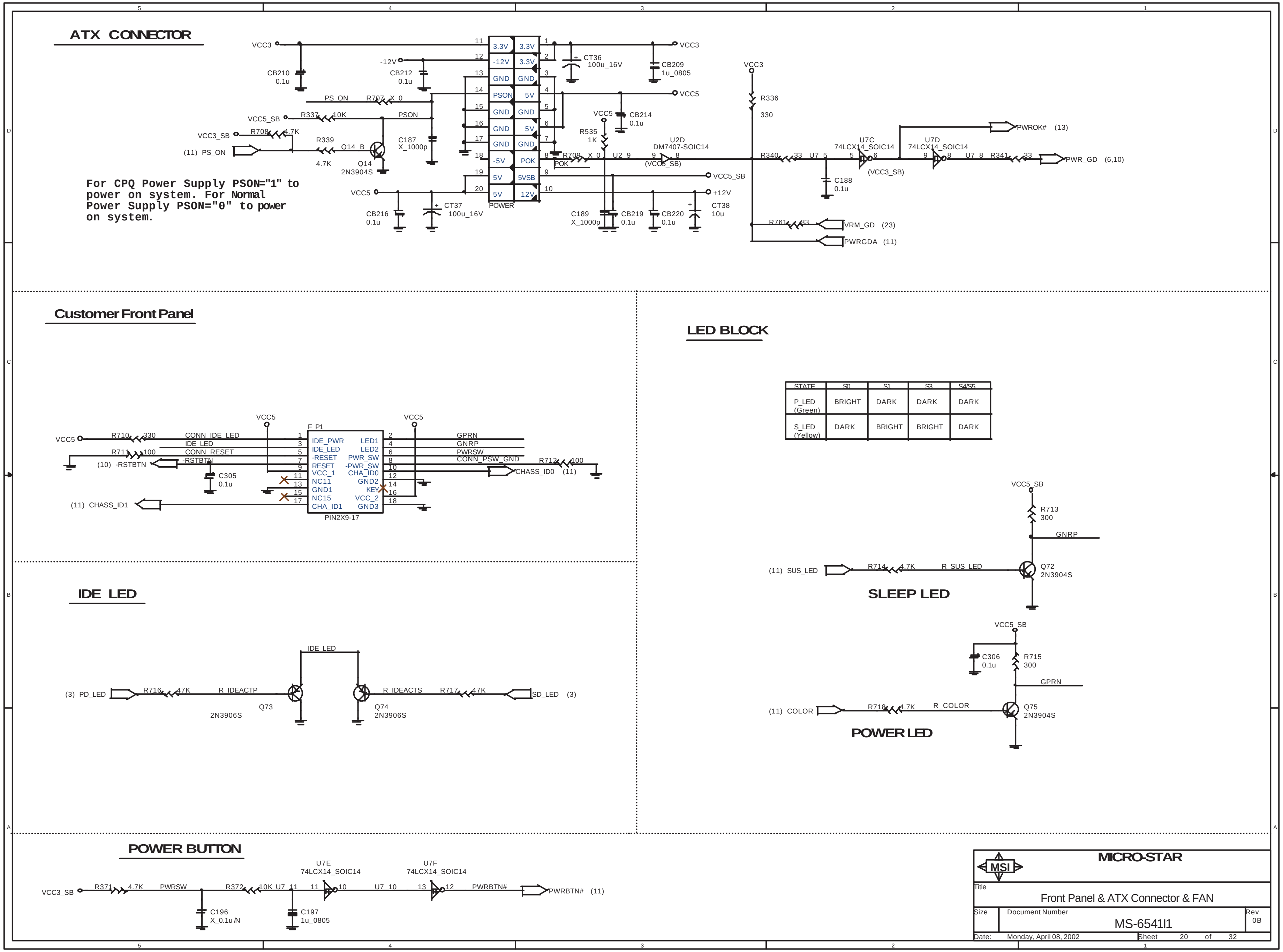
Title

I/O CONNECTORS

Size	Document Number	Rev
	MS-6541I1	0B

Date: Monday, April 08, 2002 Sheet 18 of 32


POWER CIRCUIT FOR USB PORT 4,5
FS2
1.5A-miniSMDC200-S
VCC5_STR
SVCC2
R327
2.7K
(10) OC_FRONT#
C165
0.1u
R329
5.1K
NEAR USB CONNECTOR
FRONT PANEL USB CONNECTOR FOR USB PORT 4,5
(10) USBP5+
(10) USBP5-
(10) USBP4-
(10) USBP4+
(13) FRONT_USB#
SVCC2
SVCC2
JUSB1
CN-BH-D2x5-1:1-BK-S2
POWER CIRCUIT FOR USB PORT 0,1,2,3
FS3
2A-miniSMDC200-S
VCC5_STR
FS3_2
FB19
70S/1206
SVCC1
R330
2.7K
C171
1u_0805
C170
47p
CT34
1500u_16V
C_GND
R331
1K
(10) OC_REAR#
C177
0.1u
R332
5.1K
NEAR USB CONNECTOR
FB20
C_GND
X_0/0805
REAR PANEL USB CONNECTOR FOR USB PORT 2,3
FB32 0
L13
X_CMC_90ohm_0603
(10) USBP3-
(10) USBP3+
FB33 0
FB34 0
(10) USBP2-
(10) USBP2+
L14
X_CMC_90ohm_0603
FB35 0
USB2B
SVCC1 13
USB2_14 14
USB2_15 15
C_GND 16
SVCC1 9
USB2_10 10
USB2_11 11
C_GND 12
UP
SECOND
17
22
18
USB*4P
C172 X_33p
C173 X_33p
C174 X_33p
C175 X_33p
NEAR USB CONNECTOR
02/22 L13,L14,L15,L15 not install and
FB32,FB33,FB34,FB35,FB36,FB37,FB38,FB39 change to 0 ohm
For ESD Protection
D01-0220K00-I05
REAR PANEL USB CONNECTOR FOR USB PORT 0,1
FB36 0
L15
X_CMC_90ohm_0603
(10) USBP1-
(10) USBP1+
FB37 0
FB38 0
(10) USBP0-
(10) USBP0+
L16
X_CMC_90ohm_0603
FB39 0
USB2A
SVCC1 5
USB2_6 6
USB2_7 7
C_GND 8
SVCC1 1
USB2_2 2
USB2_3 3
C_GND 4
THIRD
DOWN
19
21
20
USB*4P
C181 X_33p
C182 X_33p
C183
X_33p
C180 X_33p
NEAR USB CONNECTOR
For ESD Protection
D01-0220K00-I05
MSI
MICRO-STAR
Title
USB CONNECTORS
Size
Document Number
MS-6541I1
Rev
0B
Date: Monday, April 08, 2002
Sheet 19 of 32



STATE	S0	S1	S3	S4/S5
P_LED (Green)	BRIGHT	DARK	DARK	DARK
S_LED (Yellow)	DARK	BRIGHT	BRIGHT	DARK

For CPQ Power Supply PSON="1" to power on system. For Normal Power Supply PSON="0" to power on system.

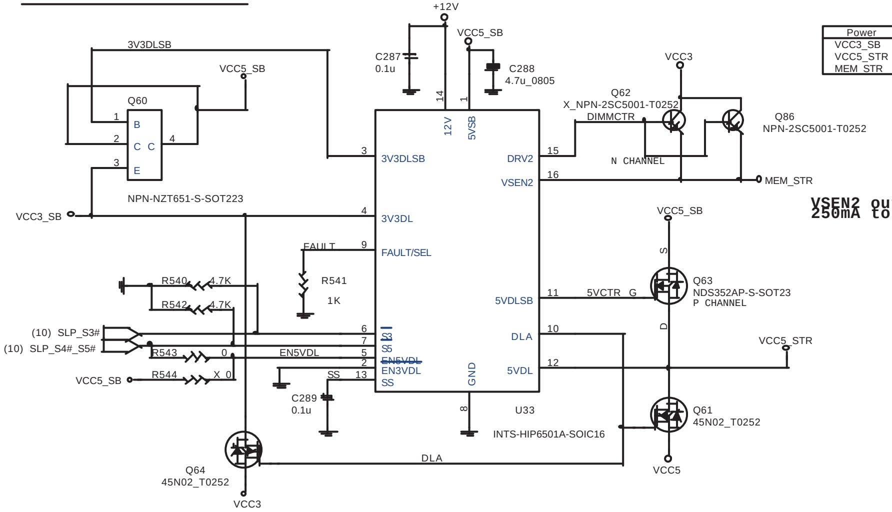
MICRO-STAR

Title: Front Panel & ATX Connector & FAN

Size | Document Number: MS-6541I1 | Rev 0B

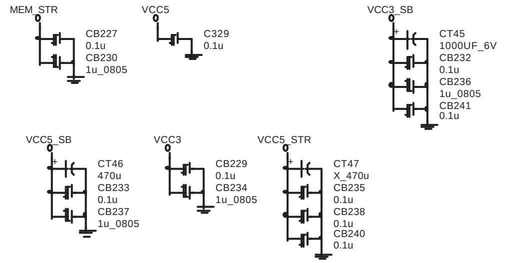
Date: Monday, April 08, 2002 | Sheet 20 of 32

POWER TRANSLATOR



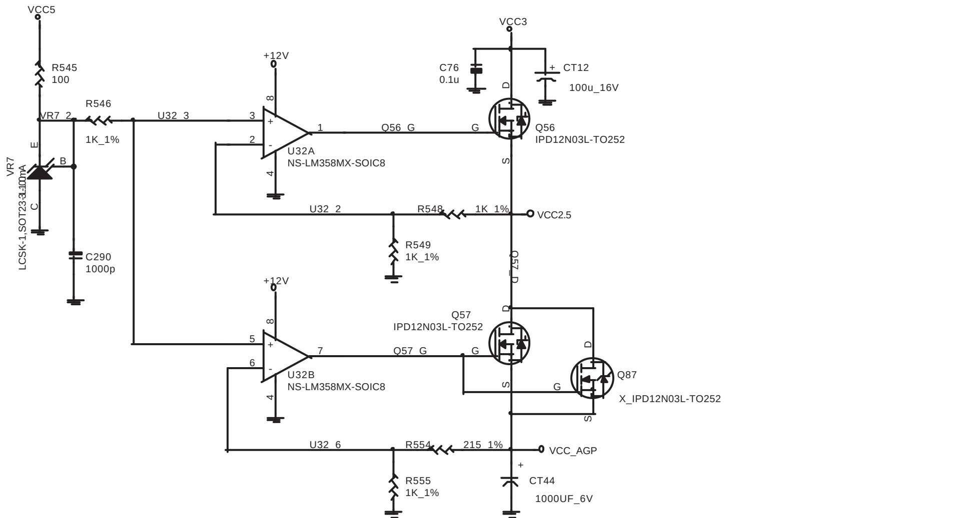
Power	S0	S3	S5
VCC3_SB	Main	Standby	Standby
VCC5_STR	Main	Standby	0V
MEM_STR	Main	Standby	0V

REGULATORS OUTPUT DECOUPLING CAPACITORS

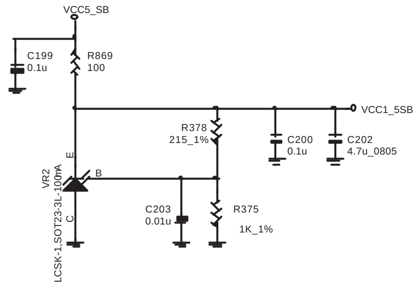


AGP 4X 1.5V & GMCH POWER TRANSLATOR

03/13 change Q56,Q57,Q87 to 12N03L_TO252



1.5V STANDBY POWER TRANSLATOR



MICRO-STAR

MSI

Title: VOLTAGE REGULATOR

Size | Document Number: MS-6541I1 | Rev: 0B

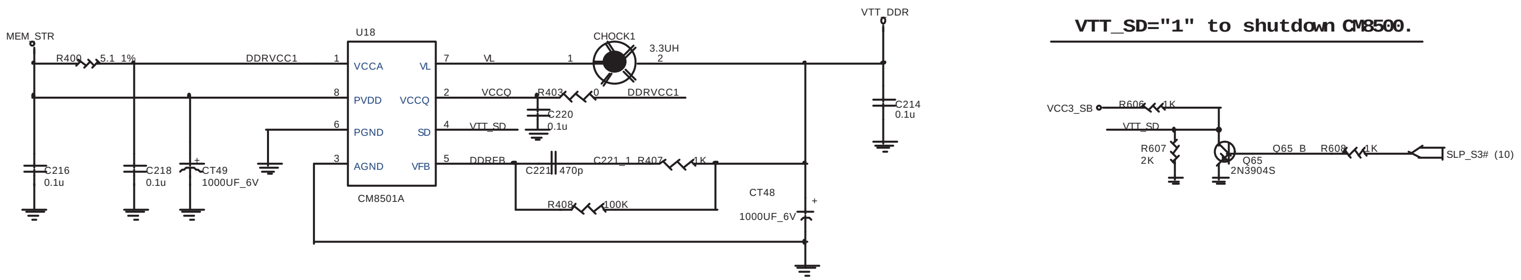
Date: Monday, April 08, 2002 | Sheet 21 of 32

DDR REGULATOR

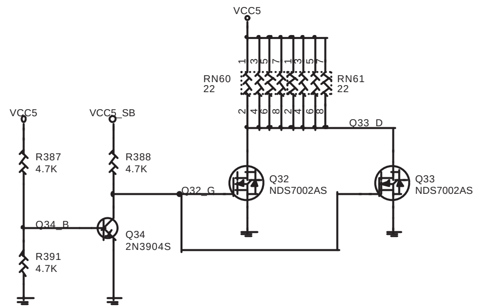
03/05 Change CM8500 to CM8501/A

03/06 Change CM8501A to SOP-8 package

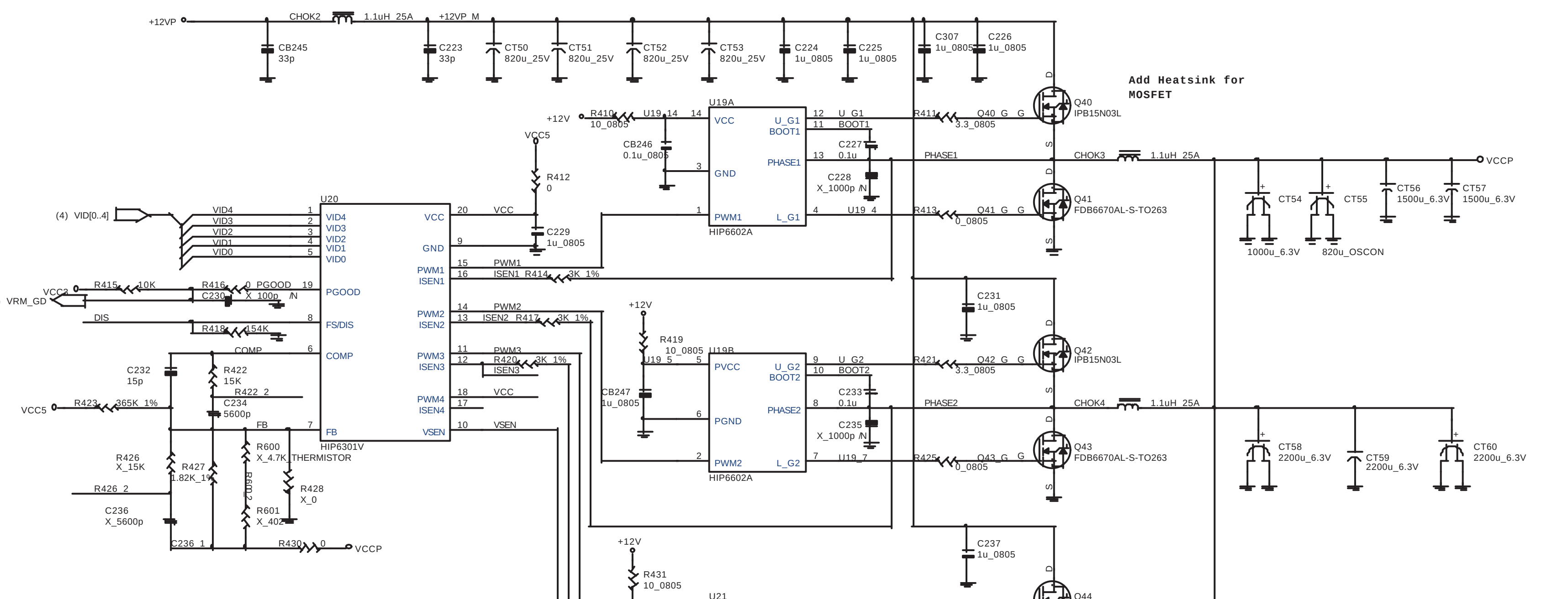
VTT_SD="1" to shutdown CM8500.



VCC5 Discharge residual voltage on Power Off

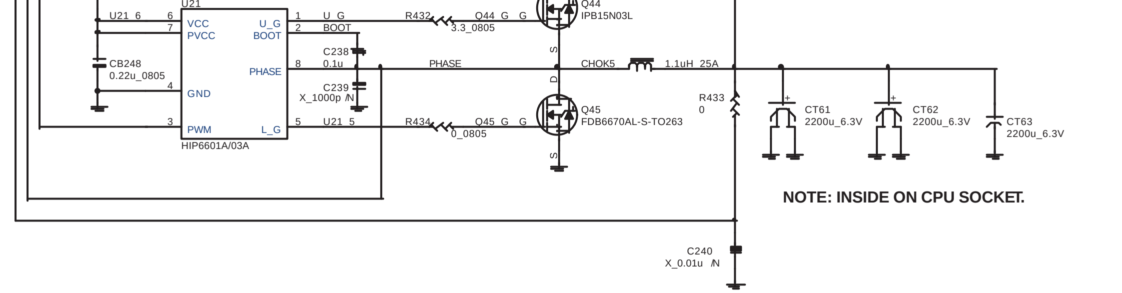


MICRO-STAR	
Title	DDR REGULATOR& THERMTRIP
Size / Document Number	MS-6541I1
Rev	0B
Date:	Monday, April 08, 2002
Sheet	22 of 32

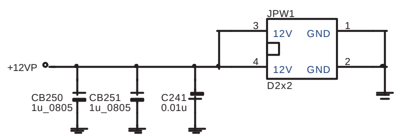


HIP6301 -- VRM 9.0/9.2

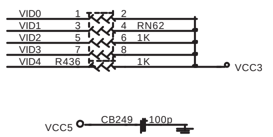
VID4	VID3	VID2	VID1	VID0	VDC(V)	VID4	VID3	VID2	VID1	VID0	VDC(V)
1	1	1	1	1	OFF	1	0	1	0	1	1.325
1	1	1	1	0	1.100	1	0	1	0	0	1.350
1	1	1	0	1	1.125	1	0	0	1	1	1.375
1	1	1	0	0	1.150	1	0	0	1	0	1.400
1	1	0	1	1	1.175	1	0	0	0	1	1.425
1	1	0	1	0	1.200	1	0	0	0	0	1.450
1	1	0	0	1	1.225	0	1	1	1	1	1.475
1	1	0	0	0	1.250	0	1	1	1	0	1.500
1	0	1	1	1	1.275	0	1	1	0	1	1.525
1	0	1	1	0	1.300	0	1	1	0	0	1.550



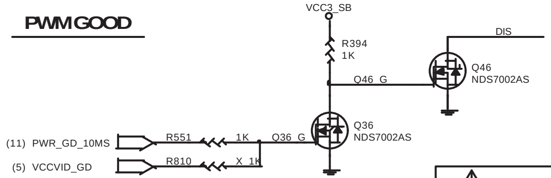
ATX12V POWER CONNECTOR



VID PULL-UP RESISTORS



PWM GOOD



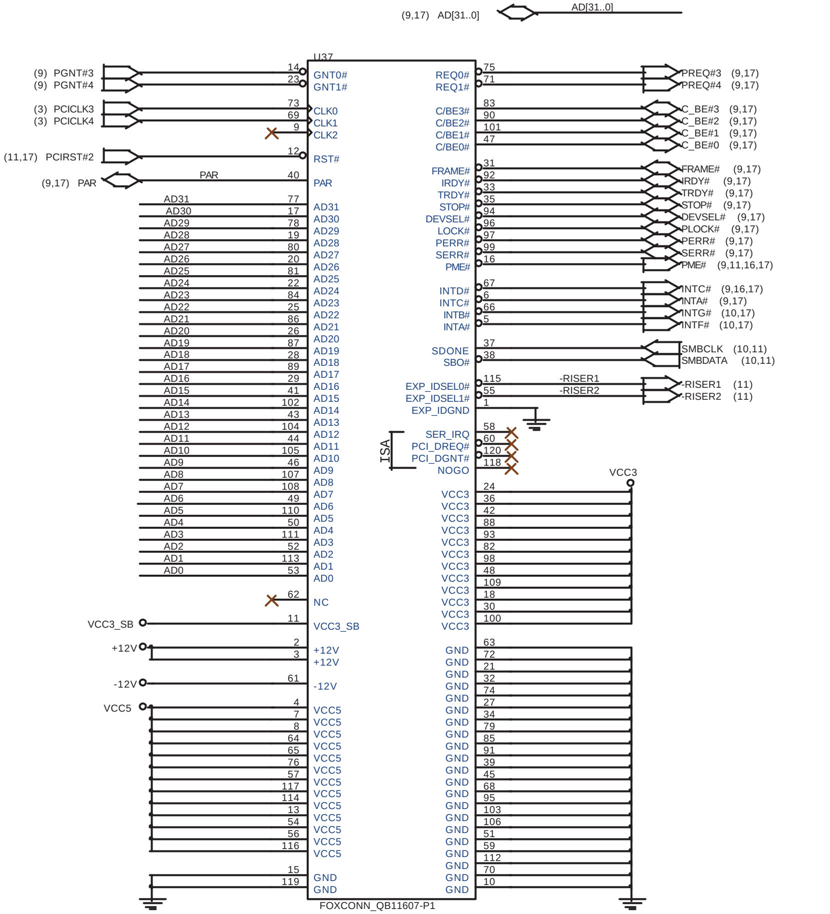
MICRO-STAR

Title: INTERSIL HIP6301A+HIP6601A/02A - CPU Power

Size | Document Number: MS-6541I1 | Rev: 0B

Date: Monday, April 08, 2002 | Sheet 23 of 32

PCI EXPANSION

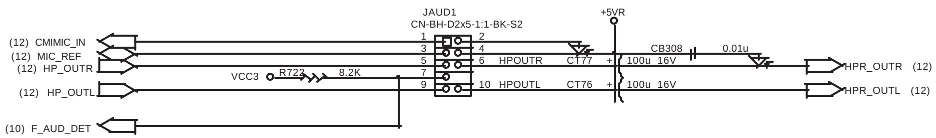


03/08 Remove JAUD1 pin 3 MIC_REF , connect to net JS1.

03/05 change CT77,CT76 parts.

02/25 Modify Front Audio Headers Circuit

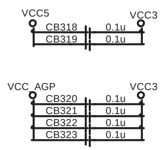
FRONT AUDIO HEADERS



JAUD1 Default 5-6 PIN, 9-10 PIN short

1. DON'T USE FRONT AUDIO BOARD
   USE MINI JUMPER TO
   CONNECT PIN5&6 AND PIN9&10
2. USE FRONT AUDIO BOARD
   UNINSTALL MINI JUMPER

Stitch CAP



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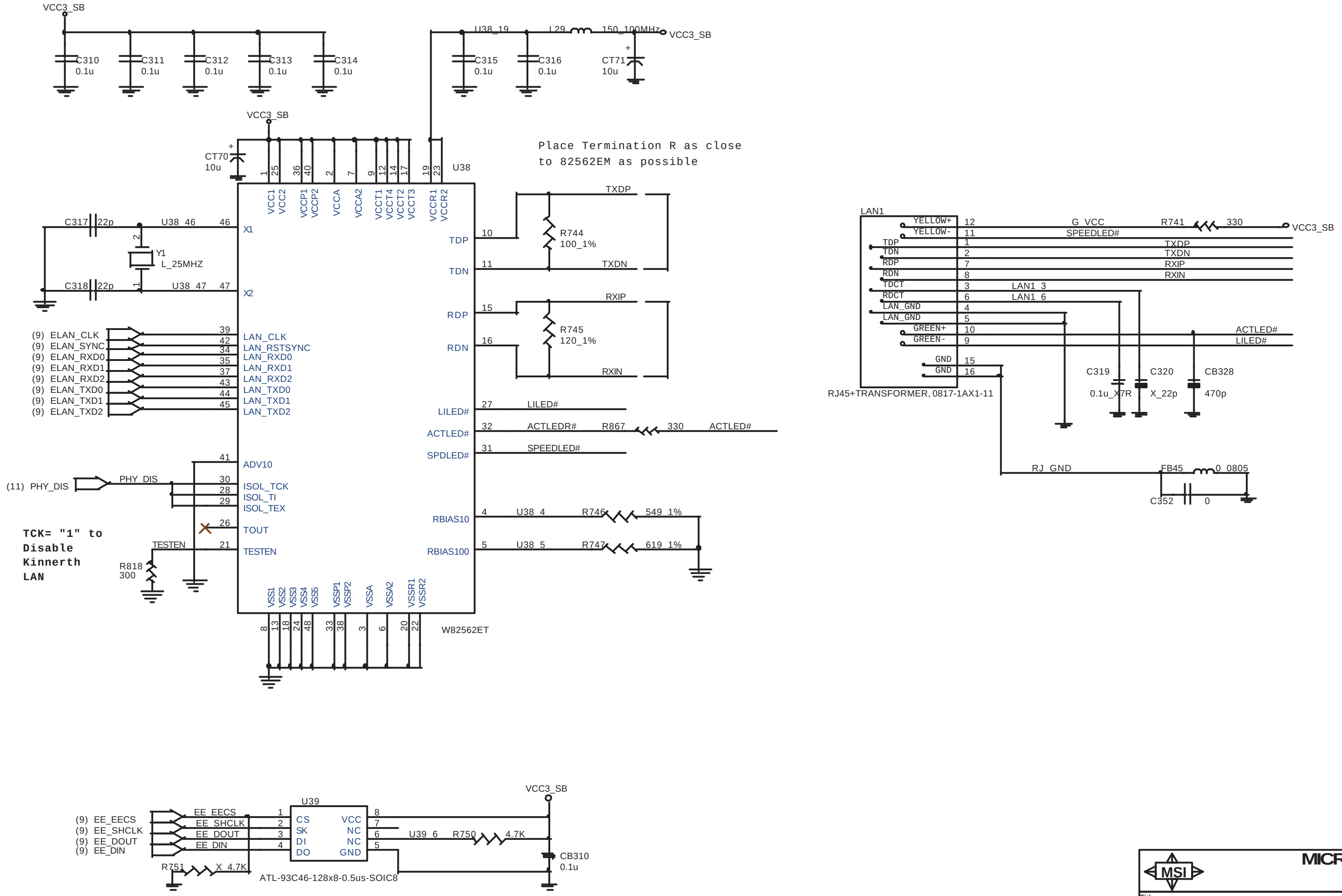
Title: SMBUS_ISOLATION

Size | Document Number: MS-6541I1 | Rev 0B

Date: Monday, April 08, 2002 | Sheet 24 of 32



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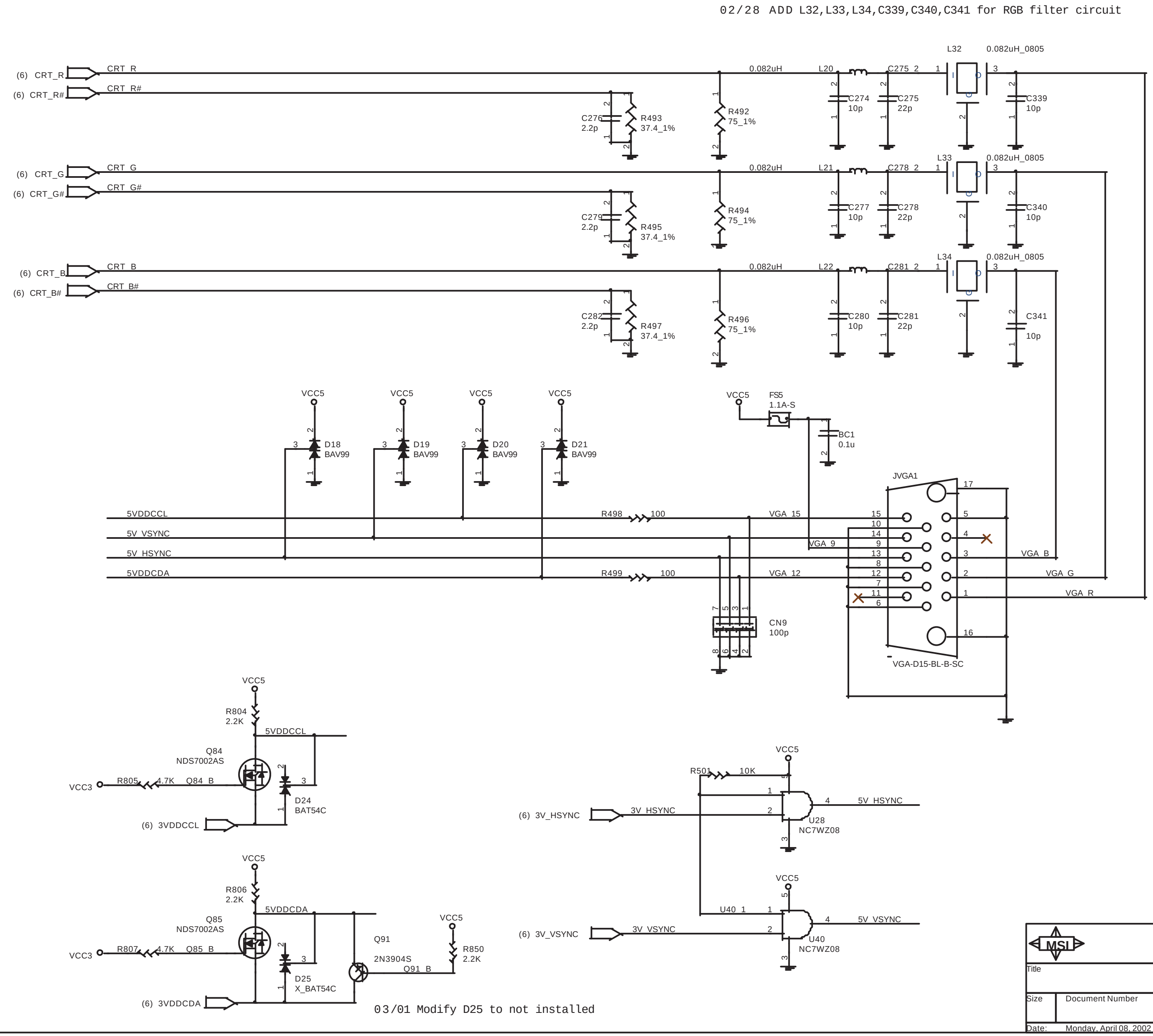
Title

LAN LAVON/KENAI32

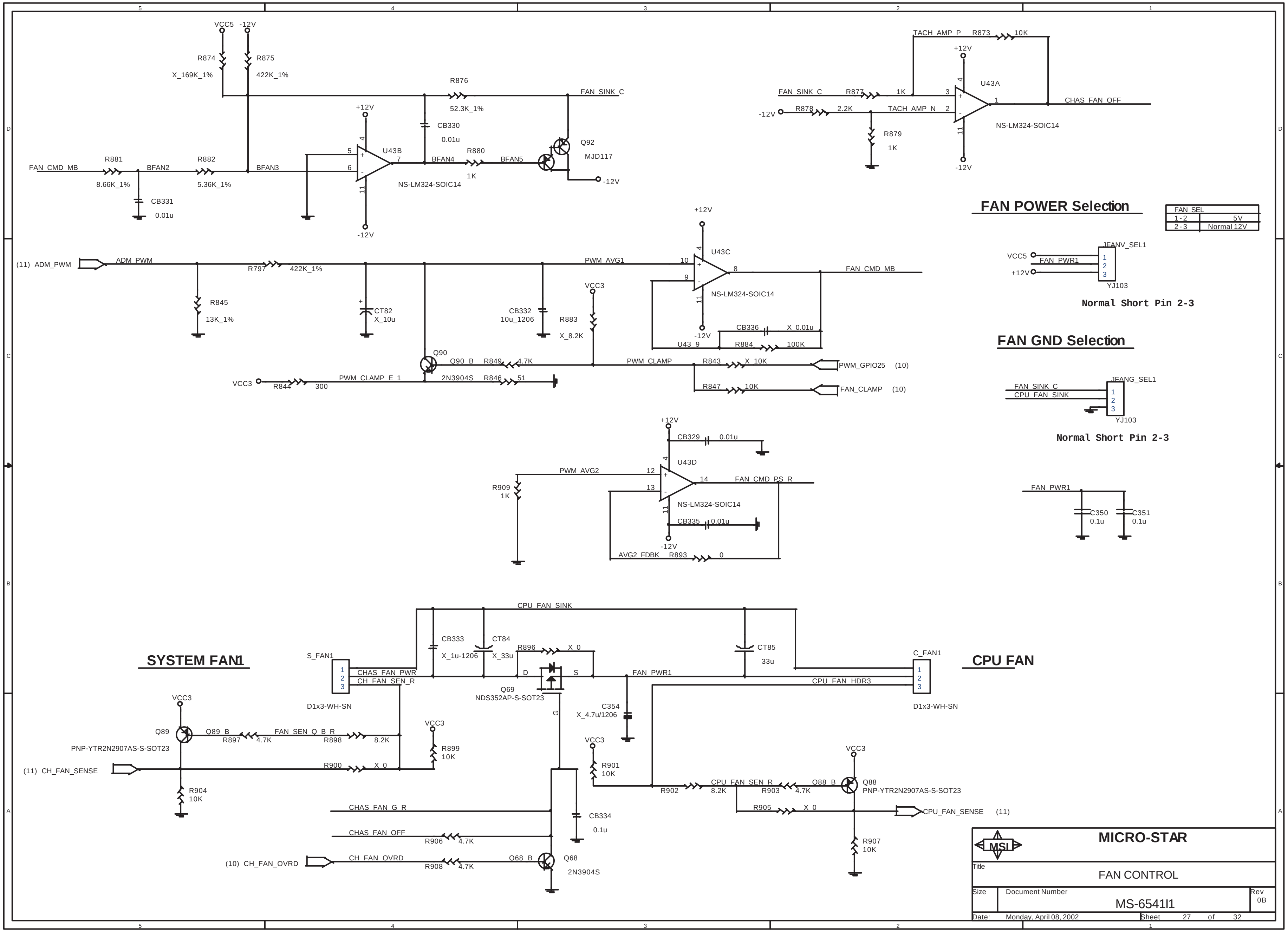
Size	Document Number	Rev
	MS-6541I1	0B

Date: Monday, April 08, 2002 Sheet 25 of 32

Video Connector



MICRO-STAR		
Title: VGA Connector		
Size	Document Number: MS-6541I1	Rev: 0B
Date: Monday, April 08, 2002	Sheet 26 of 32	



VCC5 -12V
R874 X_169K_1%
R875 422K_1%
R876 52.3K_1%
FAN_SINK_C
CB330 0.01u
+12V
U43B NS-LM324-SOIC14
BFAN4 R880 1K BFAN5
Q92 MJD117
FAN_CMD_MB R881 8.66K_1% BFAN2 R882 5.36K_1% BFAN3
CB331 0.01u
TACH_AMP_P R873 10K
U43A NS-LM324-SOIC14
FAN_SINK_C R877 1K
-12V R878 2.2K TACH_AMP_N
R879 1K
CHAS_FAN_OFF
FAN POWER Selection
FAN_SEL
1-2 5V
2-3 Normal 12V
JFANV_SEL1
VCC5 FAN_PWR1 +12V
YJ103
Normal Short Pin 2-3
(11) ADM_PWM
ADM_PWM R797 422K_1%
R845 13K_1%
CT82 X_10u
CB332 10u_1206
PWM_AVG1
U43C NS-LM324-SOIC14
FAN_CMD_MB
VCC3 R883 X_8.2K
CB336 X_0.01u
U43_9 R884 100K
Q90 Q90_B R849 4.7K PWM_CLAMP
R843 X_10K PWM_GPIO25 (10)
R847 10K FAN_CLAMP (10)
VCC3 R844 300 PWM_CLAMP_E_1 2N3904S R846 51
FAN GND Selection
FAN_SINK_C CPU_FAN_SINK
JFANG_SEL1
YJ103
Normal Short Pin 2-3
CB329 0.01u
U43D NS-LM324-SOIC14
PWM_AVG2
R909 1K
FAN_CMD_PS_R
CB335 0.01u
AVG2_FDBK R893 0
FAN_PWR1
C350 0.1u
C351 0.1u
CPU_FAN_SINK
SYSTEM FAN1
S_FAN1
CB333 X_1u-1206
CT84 X_33u
R896 X_0
CT85 33u
C_FAN1
CPU FAN
CHAS_FAN_PWR
CH_FAN_SEN_R
D1x3-WH-SN
Q69 NDS352AP-S-SOT23
FAN_PWR1
CPU_FAN_HDR3
C354 X_4.7u/1206
VCC3
Q89 Q89_B R897 4.7K FAN_SEN_Q_B_R R898 8.2K
PNP-YTR2N2907AS-S-SOT23
R899 10K
(11) CH_FAN_SENSE
R900 X_0
R904 10K
R901 10K
R902 CPU_FAN_SEN_R 8.2K R903 4.7K Q88_B
Q88 PNP-YTR2N2907AS-S-SOT23
R905 X_0
CPU_FAN_SENSE (11)
R907 10K
CHAS_FAN_G_R
CB334 0.1u
CHAS_FAN_OFF R906 4.7K
(10) CH_FAN_OVRD
CH_FAN_OVRD R908 4.7K Q68_B
Q68 2N3904S
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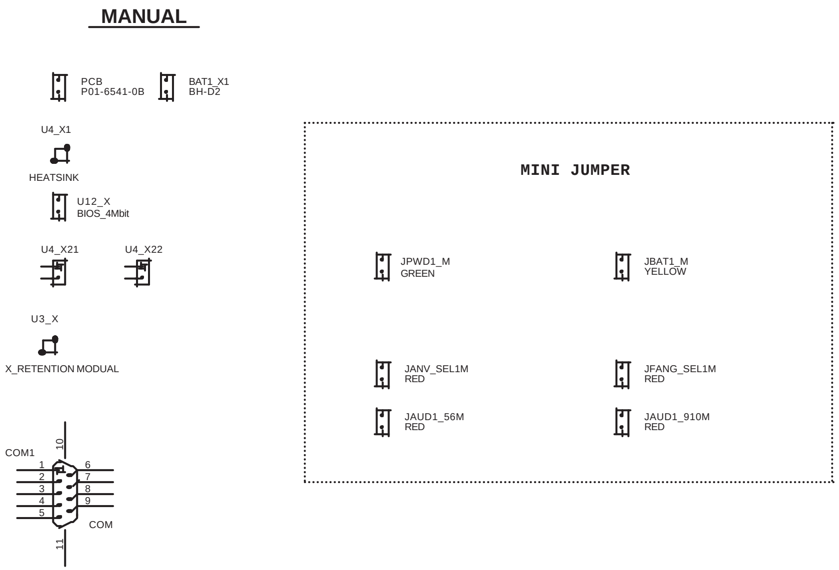
MICRO-STAR
Title
FAN CONTROL
Size
Document Number
MS-6541I1
Rev
0B
Date: Monday, April 08, 2002
Sheet 27 of 32



MSI	MICRO-STAR	
Title	MANUAL PART	
Size	Document Number: MS-6541I1	Rev: 0B
Date: Monday, April 08, 2002	Sheet 28 of 32	

	PIN NAME	POWER WELL	USAGE	DURING RESET	S3/ S4/S5	NOTES
ICH4	GPI0	CORE	REQA#			
	GPI1	CORE	SYSMAG_INT			
	GPI2	CORE	INTE#			
	GPI3	CORE	INTF#			
	GPI4	CORE	INTG#			
	GPI5	CORE	INTH#			
	GPI6	CORE	GPIO6			
	GPI7	CORE	GPIO7			
	GPI8	RESUME	F_AUD_DET			Front Audio Cable detection, active LOW
	GPI11	RESUME	GPIO11			
	GPI12	RESUME	GPI12			Connect to SMBALERT# signal of ADM1028.
	GPI13	RESUME	-EXTSMI			From LPC I/O IO_SMI# signal.
	GPO16	CORE	UNUSED	HIGH	OFF	
	GPO17	CORE	UNUSED	HIGH	OFF	
	GPO18	CORE	GPIO18	HIGH	OFF	
	GPO19	CORE	UNUSED	HIGH	OFF	
	GPO20	CORE	GPIO20	HIGH	OFF	
	GPO21	CORE	UNUSED	HIGH	OFF	
	GPO22	CORE	UNUSED	HIGH-Z	OFF	
	GPO23	CORE	UNUSED	LOW	OFF	
	GPO24	RESUME	GPIO24	LOW	DEFINED	
	GPO25	RESUME	PWM_GPIO25	HIGH	DEFINED	
	GPO27	RESUME	UNUSED	HIGH	DEFINED	
	GPO28	RESUME	GPI28	HIGH	DEFINED	Clear password indicator, Active LOW.
	GPI32	CORE	UNUSED	HIGH	OFF	
	GPI33	CORE	UNUSED	HIGH	OFF	
	GPI34	CORE	UNUSED	HIGH	OFF	
	GPI35	CORE	FAN_CLAMP	HIGH	OFF	
	GPI36	CORE	UNUSED	HIGH	OFF	
	GPI37	CORE	UNUSED	HIGH	OFF	
	GPI38	CORE	UNUSED	HIGH	OFF	
	GPI39	CORE	UNUSED	HIGH	OFF	
	GPI40	CORE	UNUSED	HIGH	OFF	
	GPIO41	CORE	CH_FAN_OVRD	HIGH	OFF	
	GPIO42	CORE	UNUSED	HIGH	OFF	
	GPIO43	CORE	UNUSED	HIGH	OFF	
	RI*	RESUME	-IO_PME			From LPC I/O IO_PME# signal
	THERM*	CORE	THRM#			From CPU PROHOT# signal
FWH	GPI0		UNUSED	INPUT	DEFINED	
	GPI1		TBL#	INPUT	DEFINED	FWH TBL function, Active High.
	GPI2		FRONT_USB#	INPUT	DEFINED	Front USB Cable detection, active LOW
	GPI3		UNUSED	INPUT	DEFINED	
	GPI4		UNUSED	INPUT	DEFINED	

MSI MICRO-STAR

Title: GPIO SETTING

Size | Document Number: MS-6541I1 | Rev: 0B

Date: Monday, April 08, 2002 | Sheet 29 of 32

SIO

PIN NAME	USAGE	Input/Output	NOTES
GPIO14	CHASSID_ID0	INPUT	CHASSIS ID 0
GPIO15	CHASSID_ID1	INPUT	CHASSIS ID 1
GPIO30	COLOR	OUTPUT	For POWER LED use
GPIO31	SUS_LED	OUTPUT	For Suspend LED use
GPIO65	-CPU_CHG	OUTPUT	When CPU had been changed, let this signal to LOW to enter SAFE mode.
GPIO20	ATADET0	INPUT	Detect ATA cable type for Primary IDE.
GPIO21	ATADET1	INPUT	Detect ATA cable type for Secondary IDE.
GPIO26	SKTOCC#	INPUT	Connect to CPU SKTOCC#, Low to High means CPU had been changed.
GPIO41	LAN_DIS	OUTPUT	LAN disable control. Active High.
GPIO71	-RISER1	INPUT	Riser card 1 insert, active LOW.
GPIO72	-RISER2	INPUT	Riser card 2 insert, active LOW.
GPIO73	CH_FAN_SENSE	INPUT	System FAN techometer input.
GPIO12	CPU_FAN_SENSE	INPUT	CPU FAN techometer input.
GPIO34	BIOS_P	OUTPUT	FWH write protection function, active LOW.
GPIO35	FWH_RST#	OUTPUT	FWH reset signal. Need to confirm this signal's level.
GPIO32	-IO_TRMTRIP	INPUT	Connect to CPU TRMTRIP#, active LOW.
GPIO75	PWR_GD_10MS	OUTPUT	Power Good delay 10m Second output.
GPIO76	PWR_GD_30MS	OUTPUT	Power Good delay 30m Second output.
GPIO62	PWRBTN#	INPUT	Power buttom input
GPIO63	SLP_S3#	INPUT	S3 state indicator signal
GPIO64	SLP_S4#_S5#	INPUT	S5 state indicator signal
GPIO67	PS_ON	OUTPUT	Connector to Power Supply to turn Power.
GPIO42	-IO_PME	OUTPUT	LPC I/O PME function.
GPIO13	PME#	INPUT	PCI PME# signal input.
GPIO60	PCIRST#2	OUTPUT	Reset signal output for PCI Slot.
GPIO61	AGP_RST#	OUTPUT	Reset signal output for AGP Slot.
GPIO27	BRD_ID1	INPUT	Board ID 1
GPIO23	BRD_ID0	INPUT	Board ID 0
GPIO10	BRD_REV0	INPUT	Initial Version ID
GPIO11	BRD_REV1	INPUT	Initial Version ID
GPIO85	-FAN_OFF	OUTPUT	FAN ON/OFF control, HIGH to turn on FAN.
GPIO66	PWRBTN_OUT#	OUTPUT	Power buttom output, connect to ICH4 power buttom input.
GPIO46	-EXTSMI	OUTPUT	LPC I/O SMI# signal.
GPIO33	GP33	INPUT	Floppy TYPE indicator
GPIO24	SIO_ADDR	INPUT	SYS_ADDR

Before 11/6

GPIO74	PHY_DIS	OUTPUT	PHY disable control. Active High.

Revision Initial ver: 0B

1. Modify resistor & capacitor value for Audio precision test. R216, R219 change from 10k to 1k, C109, C116 change from 1000p to 560p, R215 change from 1k to 100 ohm, C106 change from 0.01uf to 0.1uf, C107 change from 1000p to 390p, C99, C103 change from 1000p to 390p.

2. Change some capacitor for MEM_STR & DDR_VTT from 470uF to 1000uF(CT27,CT26,CT72).

3. L27 use dual footprint for 0805 & 1206 size.(p/n need to request).

4. Add VCC5 (CT78) bulk capacitor for COM & LPT port.

5. Change SMX_RCOMP & SMY_RCOMP connect to 60 ohm 1% to MEM_STR(add 0.1uf decoupling cap) and 60 ohm 1% to gnd.

6. Change R521 from 62 ohm to 60 ohm.

7. R704 default not mount.

8. Add resistor for TESTHI0 & 12 (R829 & R830).

9. Change C323 value to 220p.

10. Delete R145,R338.

11. Change CB62, CB64, CB270 from Y5V to X7R(C11-1042023-W08).

12. Change R523 from 150K to 180K, CB297 change from 1u_0805 to 0.1u_0805(C11-1042014-W08).

13. mount C153 for LPT VCC5 power decouling.

14. Reserve R834 (2.2k ohm) connect to MIC_REF for ADI suggestion.

15. Chagne R149 from 33ohm to 0 ohm.

16. Chagne R206 from 0 ohm to 33 ohm to improve signal quality.

17. Add R833 (33 ohm) for AC_SYNC to improve overshoot.

18. Change R205 from 33 ohm to 0 ohm for AC_SDOUT to improve overshoot.

19. Reserve CT80, CT81 (10u_16v) for +12V & +5VR power for ADI suggestion.

20. Reserve R835 for SUS_STAT# pull-up.

21. Add R836 (33_ohm) for AC_SDOUT to reduce overshoot.

22. Reserve VR9, C336, C337, CT82 for ADI suggestion.

23. Change R410, R419, R431 from 0 ohm_0603 to 10 ohm_0805; R411, R421, R432 from 3.3 ohm_0603 to 3.3 ohm_0805; R413,R425,R434 from 0 ohm_0603 to 0 ohm_0805.

24. Change CB246 from 1u_0805 to 0.1u_0805, CB248 from 1u_0805 to 0.22u_0805.

25. Reserve capacitor (C335) to PWR_DN# pin, for ICH4 1.5V rail sensitivity issue.

26. Add CT79 for VCC3_SB & R832 for PME# (default not mount).

27. Change R31 from mount to non-mount, R727 from non-mount to mount to set mulitiplier from 6X to 7X.

02/22 Modify

1.SHEET 3 : ADD R837,R838 pull down resistor for PDD7&SDD7.

2.SHEET 11 : Change ADM1027 to EMC6D100 , modify CPU FAN and SYSTEMFAN1 circuit.

3.SHEET 19 : Not install L13,L14,L15,L16 ,replace FB32,FB33,FB34,FB35,FB36,FB37,FB38,FB38 and change value from 80 ohm to 0 ohm resistor.

02/25 Modify

1.SHEET 3 : ADD ICS950219 as second source clock generator.

2.SHEET 11 : Change R796 to not installed,FAN_CLAMP signal connect to ICH4 pin G20 GPIO35.

3.SHEET 24: Modify Front Audio Headers Circuit.

4.SHEET 26: Modify 3VDDCDA Circuit,ADD Q91,R850.

5. SHEET 27: Modify MANUAL PARTS,Yellow jumper for JBAT1 (CMOS),Green jumper for JPWD1(PASSWORD),Red jumpers for others.

02/26 Modify

1. SHEET 13: Modify FWH INIT Signal Voltage Conversion circuit.

2. SHEET 10: Modify SLP_S4#_S5# Signal Circuit

02/27 Modify

1. SHEET 11: Modify R681 is installed, R679 is not installed.

2. SHEET 24: Connect LOCK# pin 96 from PCI Expansion connector to net PLOCK#.

02/28 Modify

1. SHEET 11: Move R796 to net ADM_PWM and pull-up to VCC2.5,R796 from 8.2K change to 1K, add R855 10K pull-up resistor for U35 pin 13.

2. SHEET 11& 10 : Install R848 ,Connect U35 Pin 10 to ICH4 pin AA5.

3. SHEET 21:Modify signal SLP_S4#_S5#.

4. SHEET 26: ADD L32,L33,L34,C339,C340,C341 for RGB filter circuit.

03/01 Modify

1. SHEET 11: Change CB305 to 1000pF,Connect CPU_TEM+ to D2+,CPU_TEM- to D2-,D1+ and D1- not installed.

2. SHEET 26: Add net name Q91_B

3. SHEET 13: Add net name Q7_B

4. SHEET 26: Modify RGB filter circuit, change D25 to not installed.

5. SHEET 11: Add CB324 33uF capacitor.

03/02 Modify

1. SHEET 9: Change R632,R633,R634,R635,R636,R637,R122,R638 to 0 ohm.

2. SHEET 18: Change R704 to installed.

03/05 Modify

1. SHEET 12: Modify Audio codec regulator circuit

2. SHEET 5:Change EC1 part

3. SHEET 21: Change CT12 to 100uF

4. SHEET 8: Change CT11 to 100uF

5. SHEET 20: Change CT36,CT37 to 100uF

6. SHEET 14: Change CT24 to 100uF

7. SHEET 8: Change CT16 to 1000uF

8. SHEET 24: Change CT76,CT77 to 100uF

9. Change CT14,CT13,CT31,CT70,CT26,CT47 to not installed.

10. SHEET 22: Change CM8500 to CM8501/A

03/06 Modify

1. SHEET 22 : Change CM8501A to SOP8.

2. SHEET 11: Change U35 pin 22 (VCC2_5) to MEM_STR

03/07 Modify

1. SHEET 12 : Change R215 to 1K ohm.

03/08 Modify

1. SHEET 12 : Change C106 to 0.01uF , Change R199 to not installed, Add Max Bracket Header Circuit .

2. SHEET 10: Remove SYSMAG_INT from pin AA5.Connect net SYSMAG_INT to ICH4 pin A6(GPIO1).

3. SHEET 16: Change AGP SLOT connector pin B6 connect to net INTD#.Change pin A6 connect to INTC#

03/12 Modify

1. SHEET 06 : Change R137 to 137%1 ohm.

03/13 Modify

1. SHEET 10 : Add R177 8.2K ohm pull-up VCC3_SB for GPIO12.

2. SHEET 10 : Add R857 8.2K ohm pull-up VCC3 for GPIO18.

3. SHEET 10 : Add R858 8.2K ohm pull-up VCC3 for GPIO20.

4. SHEET 10 : Add R860 8.2K ohm pull-up VCC3 for GPIO24.

5. SHEET 13 : Add R859 8.2K ohm pull-up VCC3 for PRES3.

6. SHEET 21 : Change Q56,Q57,Q87 to 12N03L-TO252

03/14 Modify

1. SHEET 12 : Remove Max Bracket Header Circuit.

03/15 Modify

1. SHEET 12 : Add Decoupling Capacitor

MSI	MICRO-STAR	
Title	Revsion History	
Size	Document Number MS-6541I1	Rev 0B
Date: Monday, April 08, 2002	Sheet 31 of 32	

03/18 Modify

1. SHEET 13 : Pin 24 of FWH connect to PCIRST#1 signal.
2. SHEET 10 : Change R175 pull-up VCC3 to pull-up VCC3_SB.
3. SHEET 11 :Move CPU_FAN from pin 110 to pin 35.
4. SHEET 3 : Add R861,R862 for IDEIORDY signal.
5. SHEET 10 : Change R840 to not installed.
6. SHEET 3 : Add DATA signal series termination resistor.

03/19 Modify

1. SHEET 10 : Change GPIO24 pull-up VCC3 to pull-up VCC3_SB.

03/20 Modify

1. SHEET 26 : Change R,G,B filter circuit values
2. SHEET 12 : Add CMIC2 circuit.
3. SHEET 10 : Change U5 pin E15 connect to VCC5_STR

03/21 Modify

1. SHEET 11 : Modify H/W monitor circuit.
2. SHEET 12 : Change VR1 footprint to STO89.

03/22 Modify

1. SHEET 25 : Modify LAN circuit , add R867,CB328,CB329.

03/25 Modify

1. SHEET 25 : Change T1 TS6121C to Pulse H1012.
2. SHEET 21 : Modify 1.5V standby power circuit. Change LM317 to TL431.
3. SHEET 13 :Add ADM1030 HW monitor parts for dual_lay.

03/26 Modify

1. SHEET 25 : Remove H1012 ,Add RJ45+Transformer

03/27 Modify

1. SHEET 27 : Add sheet 27. Modify fan control circuit.

03/28 Modify

1. SHEET 11 : Delete R652,R660,R798
2. SHEET 5 : Change CB25,CB32,CB59 to 1206
3. SHEET 25 : Delete R870
4. SHEET 27 : Modify fan control circuit.

03/29 Modify

1. SHEET 5 : Delete CB25,CB32,CB59,Change CB14,CB21,CB28,CB35,CB42,CB49,CB55,CB18,CB15,CB22,CB29,CB36,CB43,CB50,CB56 to footprint 1206.
2. SHEET 5 : Change CT4 to installed.
3. SHEET 23 : Change R410,R419,R431 connect to +12V.
4. SHEET 27 : Add CB336 0.01uF
5. SHEET 27 : Delete R796.,Change R846 to 51 ohm.

04/01 Modify

1. SHEET 20 : Connect R713 and R715 to VCC5_SB
2. SHEET 27 : Change R876 to 52.3K 1% and change R882 to 5.36K 1%, change R873 to 10K

04/02 Modify

1. SHEET 11 : U8 pin 35 Connect to CPU_FAN_SENSE,U8 pin 103 connect to CH_FUN_SENSE
2. SHEET 18: Floppy connector keyon pins 3&5.
3. SHEET 20: Change R715 to 300 ohm.
4. SHEET 25: Change C352 to 0 ohm.

04/03 Modify

1. SHEET 11 : Change R910 to not installed ,R911 to installed.
2. SHEET 10 : Add cap CB111 for VCC5_STR

MSI	MICRO-STAR	
Title	Revsion History	
Size	Document Number MS-6541I1	Rev 0B
Date: Monday, April 08, 2002	Sheet 32 of 32	