MS-6377 100

Intel PGA 370 Processor
ServerWorks CNB30LE + OSB4 Chipset
National Semiconductor PC97317 IO Chip

Title: Cover Sheet		Rev: 100
Document Number		
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St. Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Tuesday, July 03, 2001	
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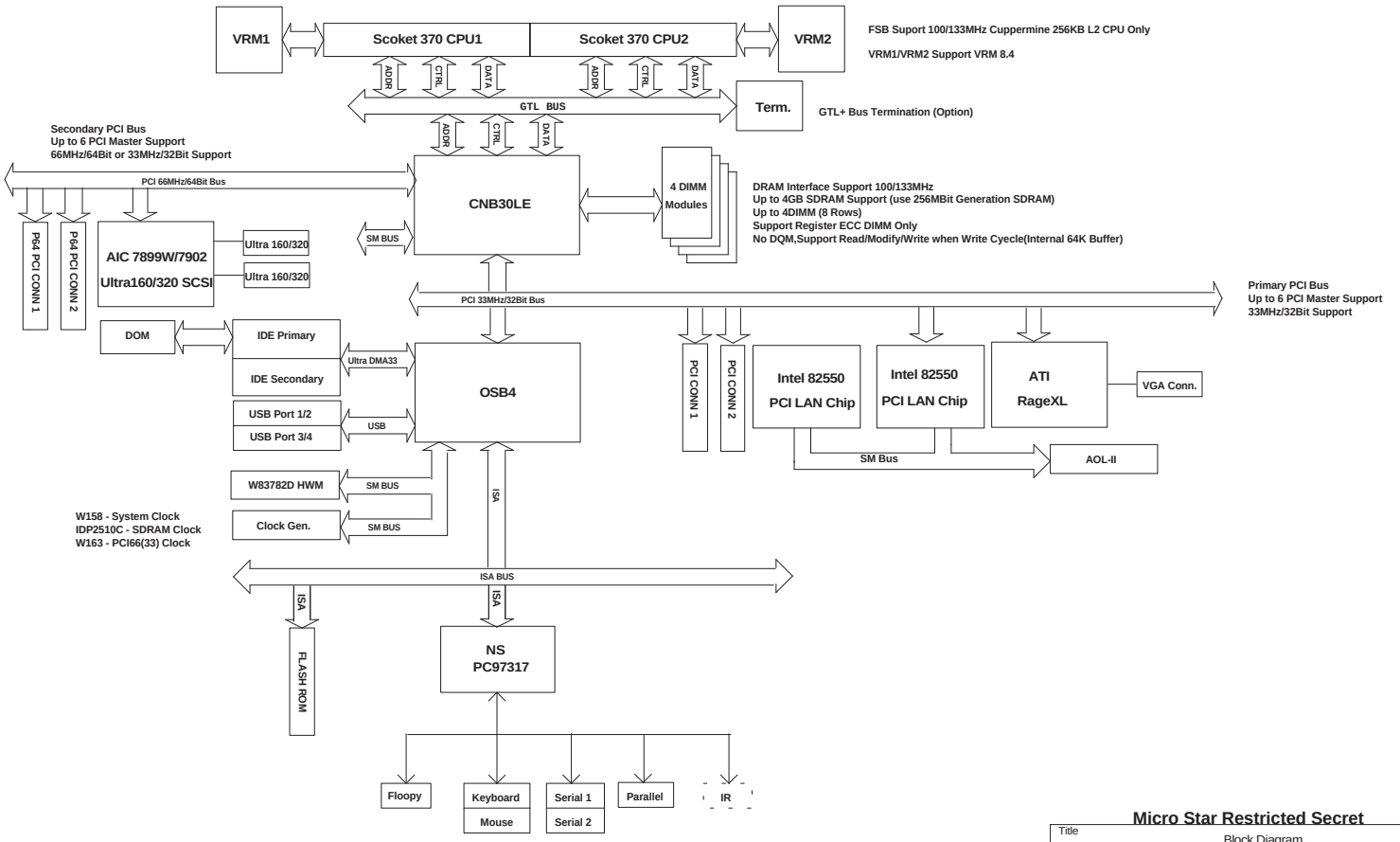
MS6377 Block Diagram

BLOCK DIAGRAM



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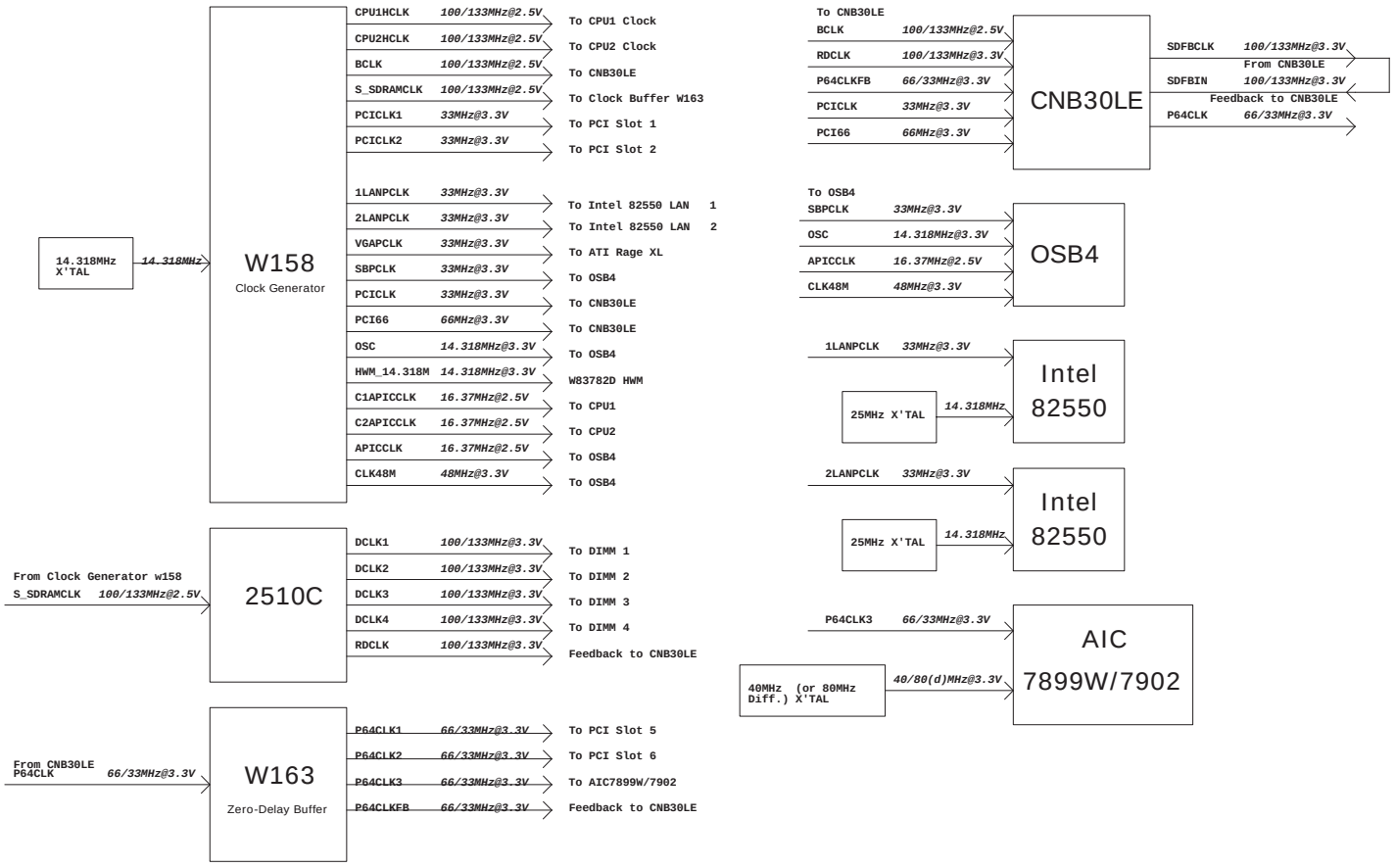
MS6377 Clock Map



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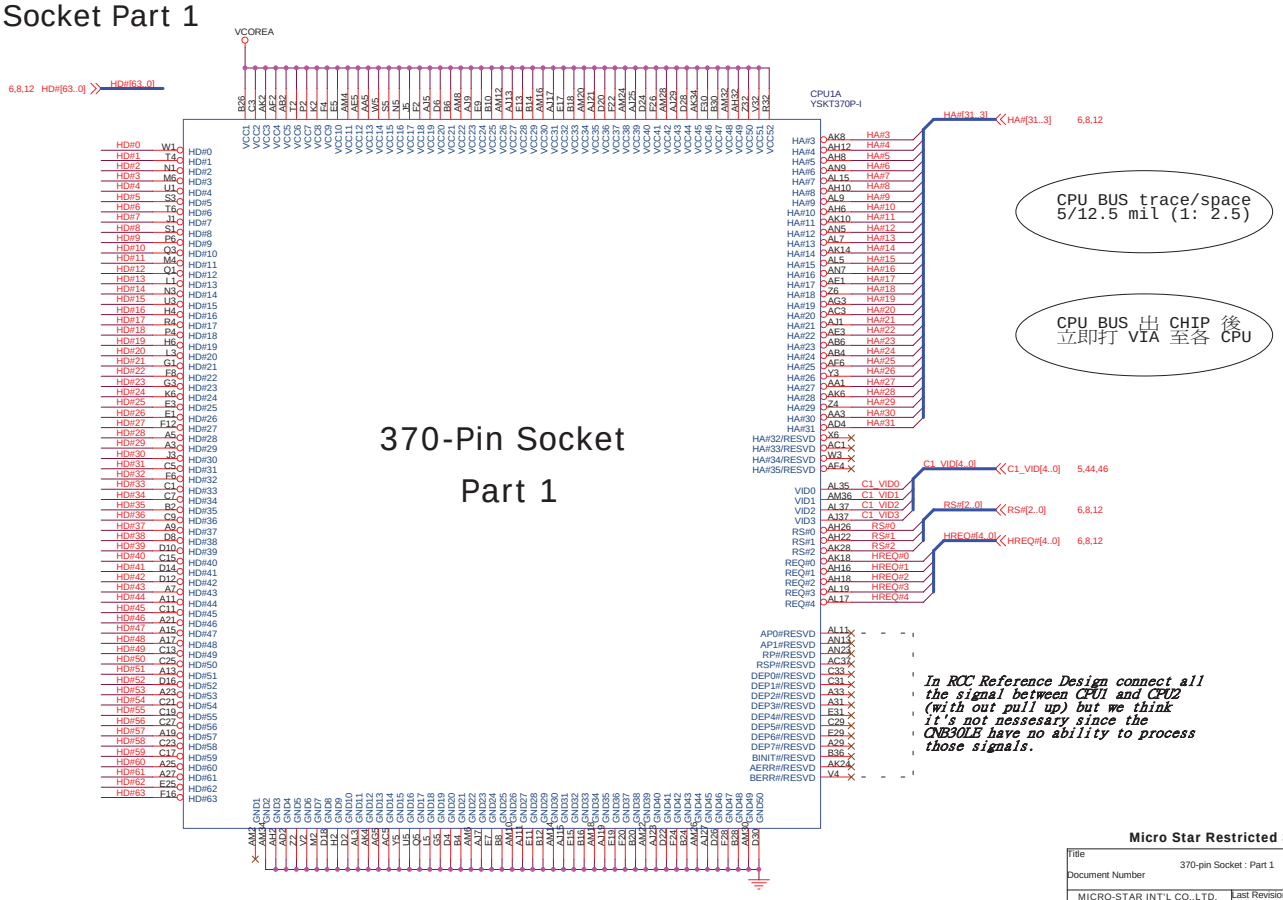
370PGA Socket Part 1



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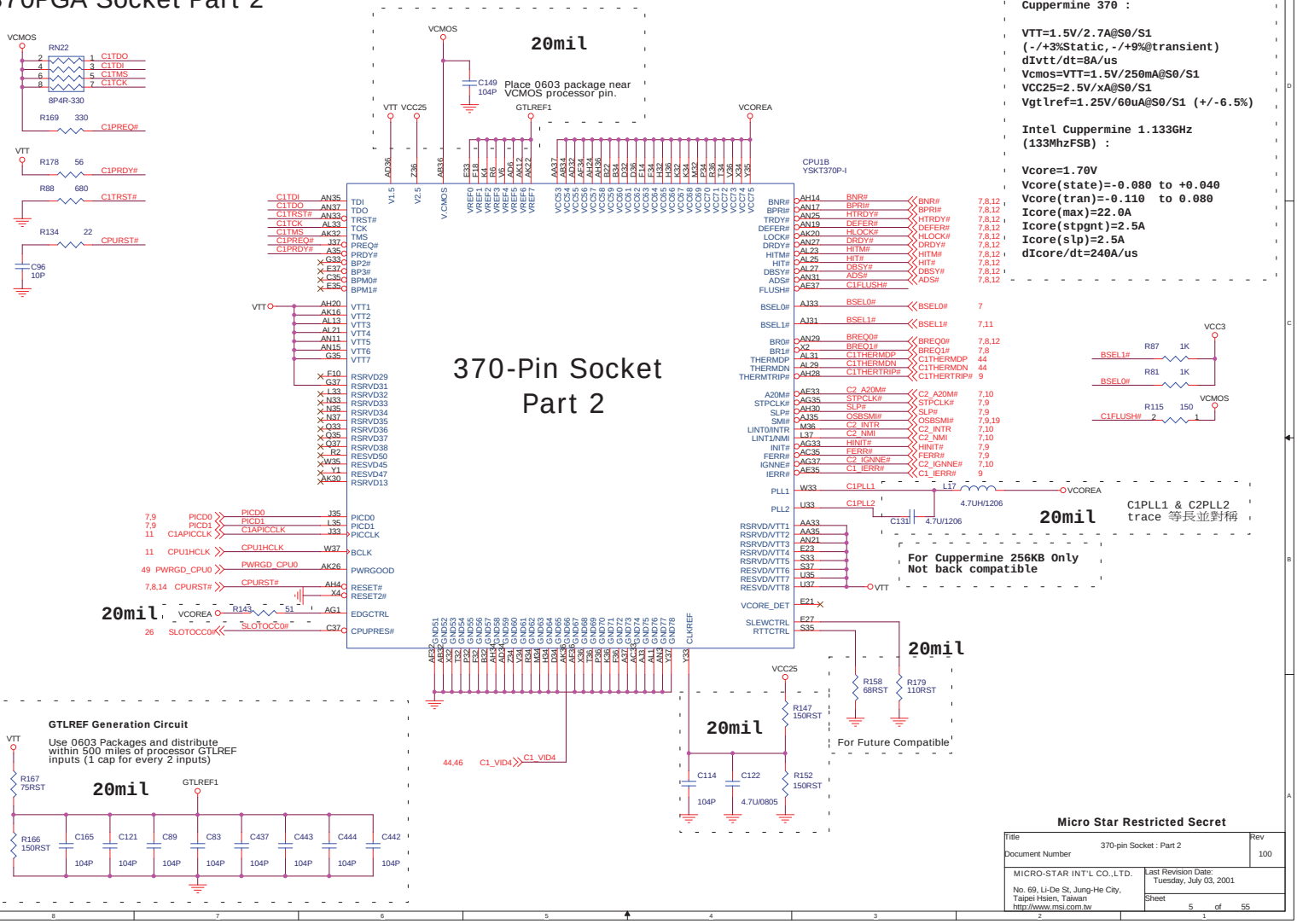
370PGA Socket Part 2



Cuppermine 370 :

VTT=1.5V/2.7A@S0/S1
(-/+3%Static,-/+9%@transient)
dIvtt/dt=8A/us
Vcmos=VTT=1.5V/250mA@S0/S1
VCC25=2.5V/xA@S0/S1
Vgtlref=1.25V/60uA@S0/S1 (+/-6.5%)

Intel Cuppermine 1.133GHz
(133MhzFSB) :

Vcore=1.70V
Vcore(state)=-0.080 to +0.040
Vcore(tran)=-0.110 to 0.080
Icore(max)=22.0A
Icore(stpgnt)=2.5A
Icore(slp)=2.5A
dIcore/dt=240A/us

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Title	370-pin Socket : Part 2	Rev
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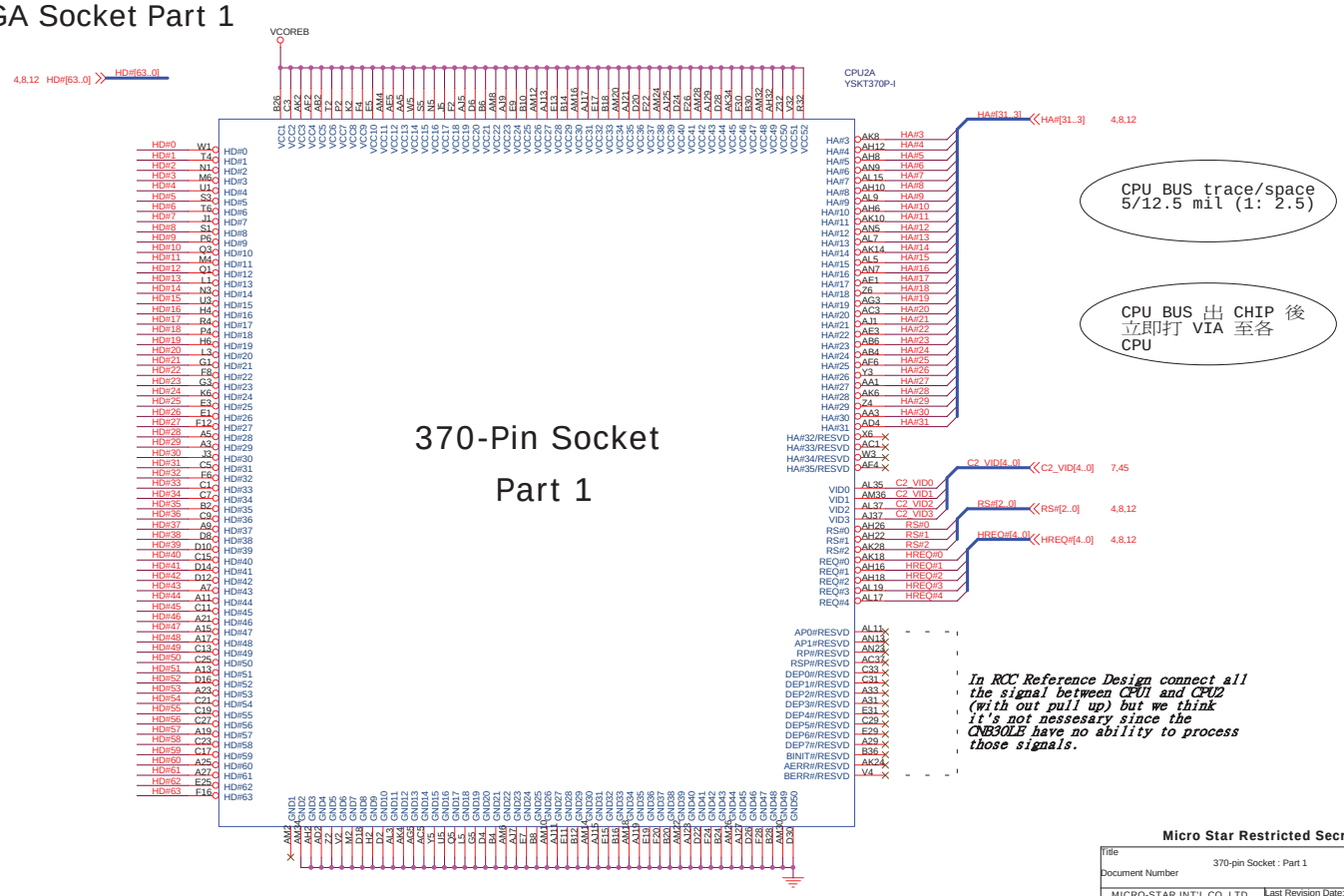
370PGA Socket Part 1



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Title: 370-pin Socket : Part 1		Rev: 100
Document Number		
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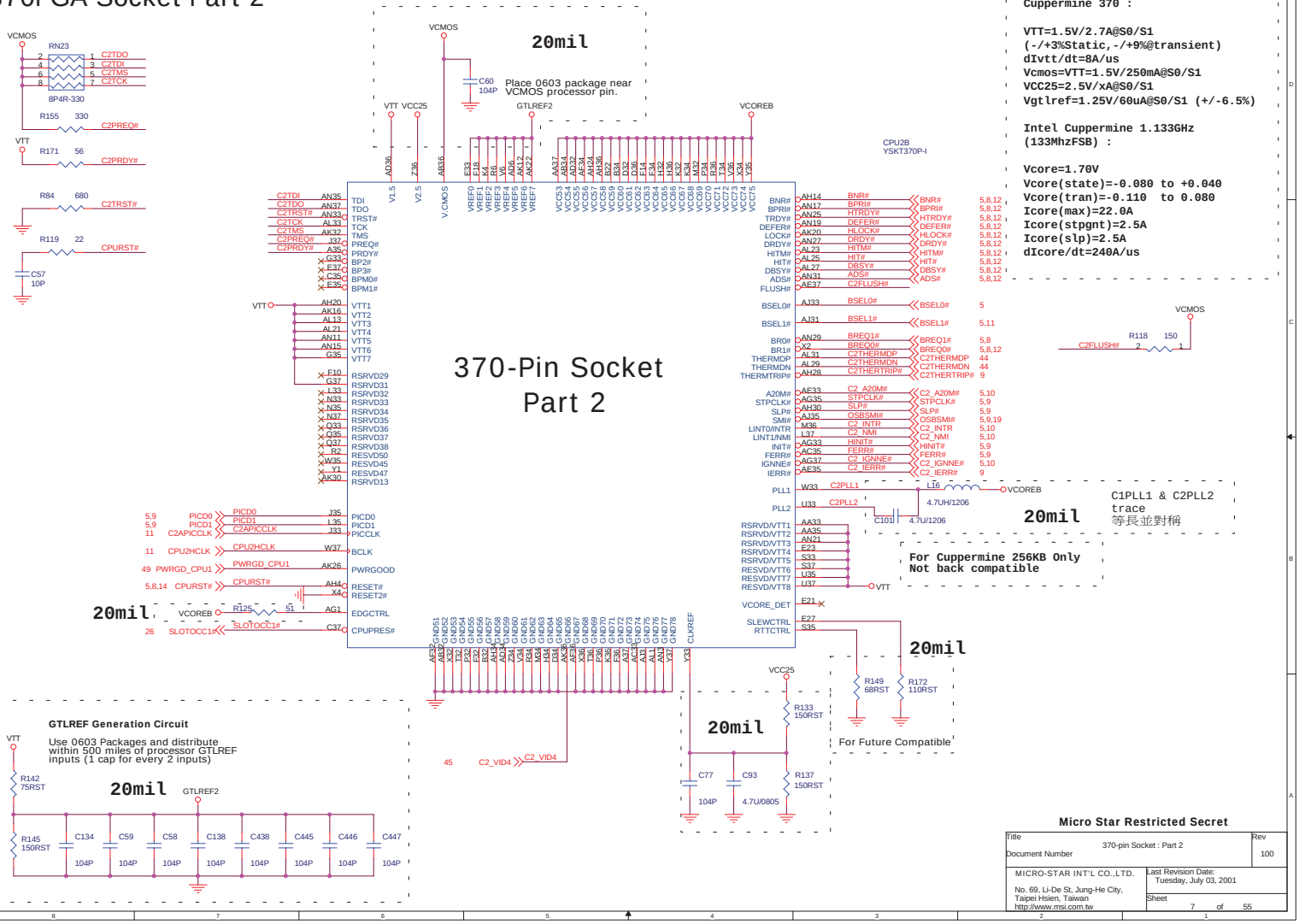
370PGA Socket Part 2



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Title	370-pin Socket : Part 2	Rev
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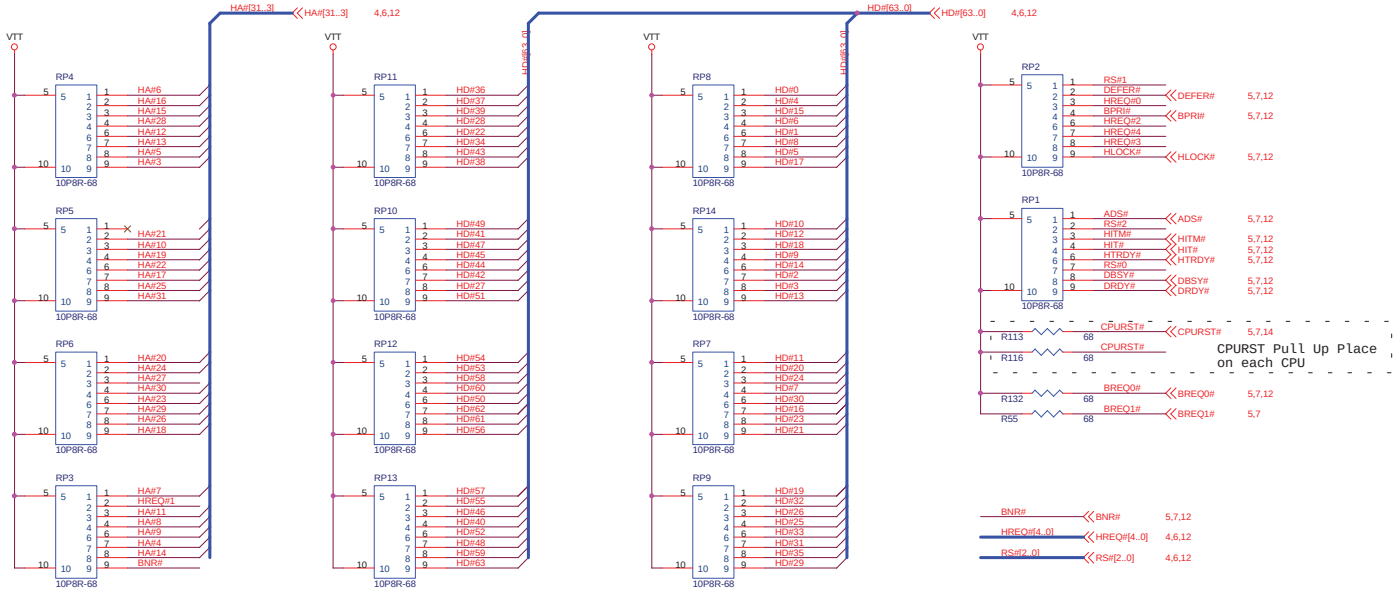
AGTL Termination



CPURST Pull Up Place on each CPU

In RCC Reference Design without the GTL+ Bus termination. For signal quality issue we implement termination in our design.Put the termination inside the CPU2 socket.

一顆排阻放一顆電容

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Title: AGTL Termination		Rev: 100
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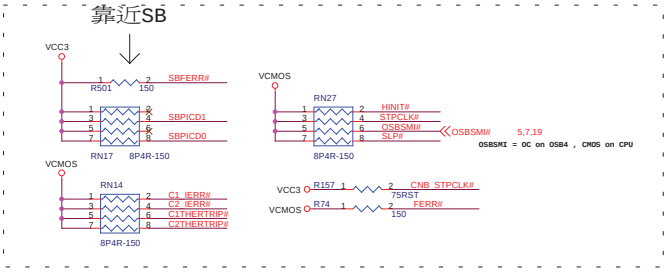
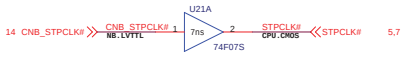
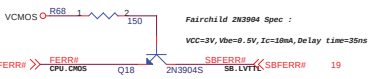
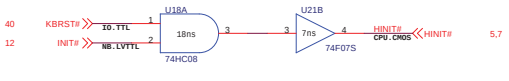
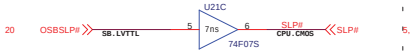




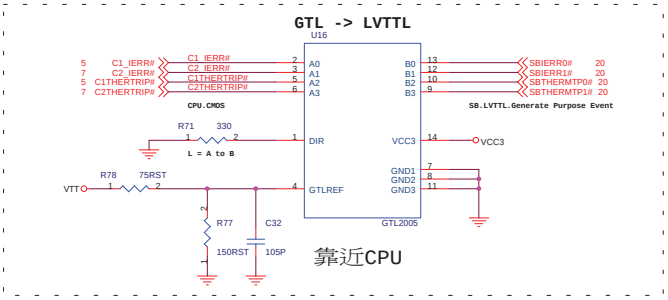






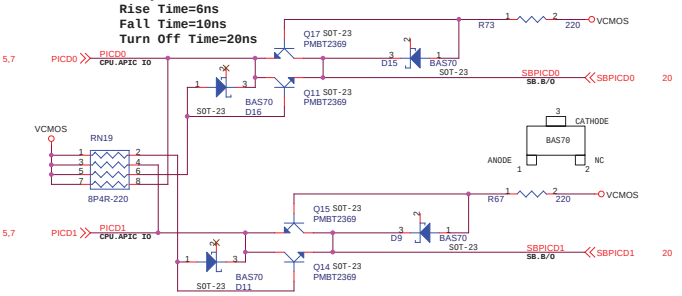
Philip TTL Spec . T=25

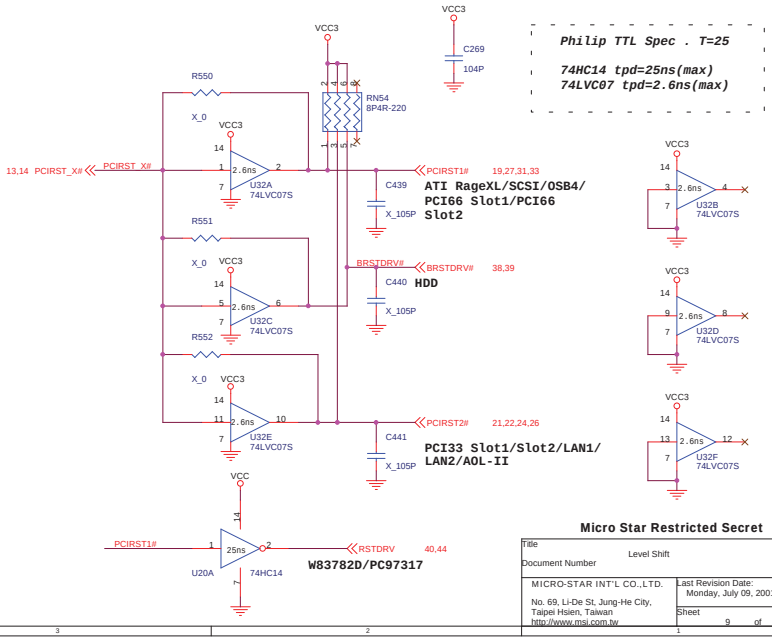
74HC08 tpd=18ns(max)
74HC14 tpd=25ns(max)
74F07 tpd= 7ns(max)



PMBT2369 NPN Switching Tr.

Turn On Time=10ns
Delay Time=4ns
Rise Time=6ns
Fall Time=10ns
Turn Off Time=20ns





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Title	Level Shift	Rev 100
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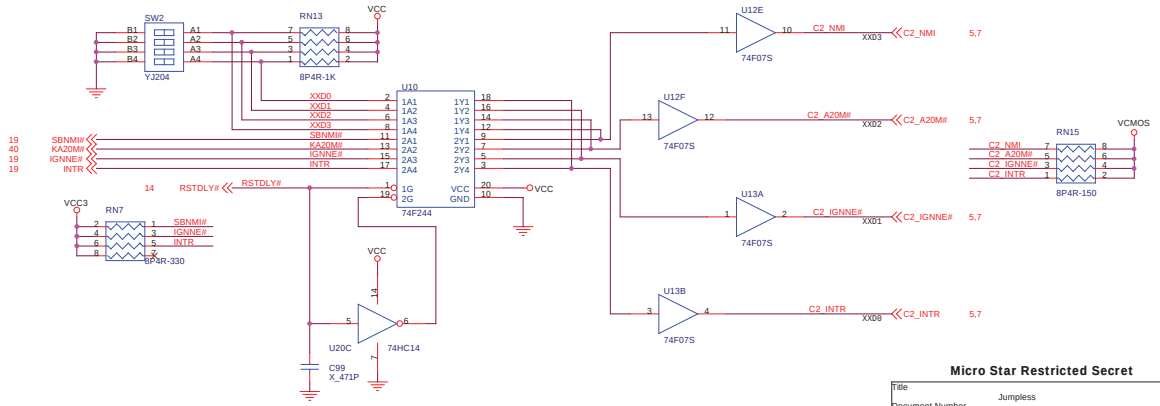
CPU RATIO TABLE :

A1	A2	A3	A3	
LINT1	A20M#	IGNNE#	LINT0	Ratio
0	0	0	0	2
0	0	0	1	2.5
0	0	1	0	3 /11
0	0	1	1	3.5/11.5
0	1	0	0	4
0	1	0	1	4.5/8.5
0	1	1	0	5
0	1	1	1	5.5/9.5
1	0	0	0	6 /10
1	0	0	1	6.5/10.5
1	0	1	0	7
1	0	1	1	7.5
1	1	0	0	8
1	1	0	1	1.5
1	1	1	0	Reserved
1	1	1	1	2



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Document Number		
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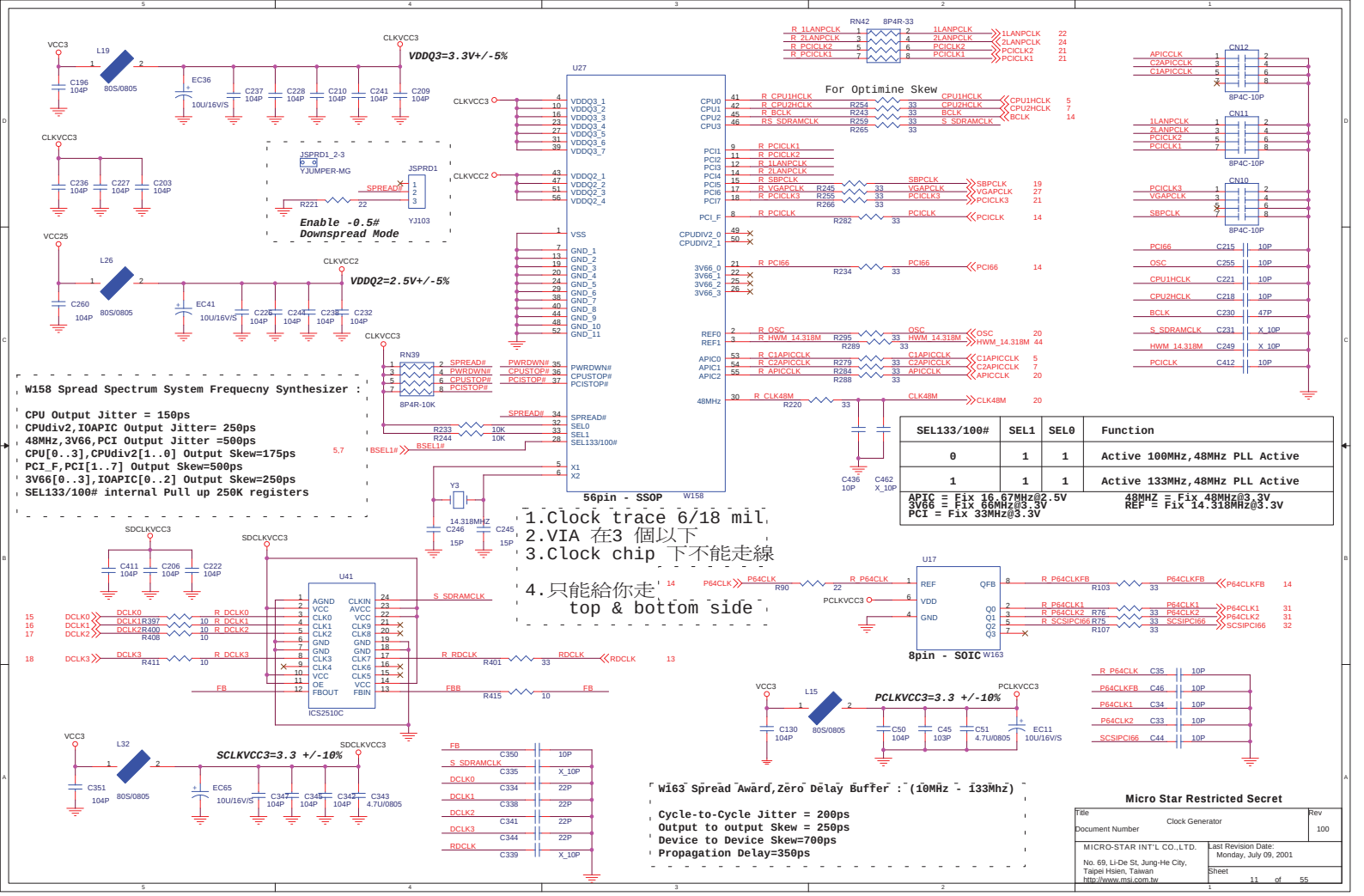
VDDQ3=3.3V+/-5%
VDDQ2=2.5V+/-5%
SCLKVCC3=3.3 +/-10%
PCLKVCC3=3.3 +/-10%
Enable -0.5# Downspread Mode
For Optimine Skew
W158 Spread Spectrum System Frequecny Synthesizer :
CPU Output Jitter = 150ps
CPUdiv2,IOAPIC Output Jitter= 250ps
48MHz,3V66,PCI Output Jitter =500ps
CPU[0..3],CPUdiv2[1..0] Output Skew=175ps
PCI_F,PCI[1..7] Output Skew=500ps
3V66[0..3],IOAPIC[0..2] Output Skew=250ps
SEL133/100# internal Pull up 250K registers
56pin - SSOP
1.Clock trace 6/18 mil
2.VIA 在3 個以下
3.Clock chip 下不能走線
4.只能給你走 top & bottom side
8pin - SOIC
W163 Spread Award,Zero Delay Buffer : (10MHz - 133MHz)
Cycle-to-Cycle Jitter = 200ps
Output to output Skew = 250ps
Device to Device Skew=700ps
Propagation Delay=350ps
SEL133/100# | SEL1 | SEL0 | Function
0 | 1 | 1 | Active 100MHz,48MHz PLL Active
1 | 1 | 1 | Active 133MHz,48MHz PLL Active
APIC = Fix 16.67MHz@2.5V
3V66 = Fix 66MHz@3.3V
PCI = Fix 33MHz@3.3V
48MHZ = Fix 48MHz@3.3V
REF = Fix 14.318MHz@3.3V
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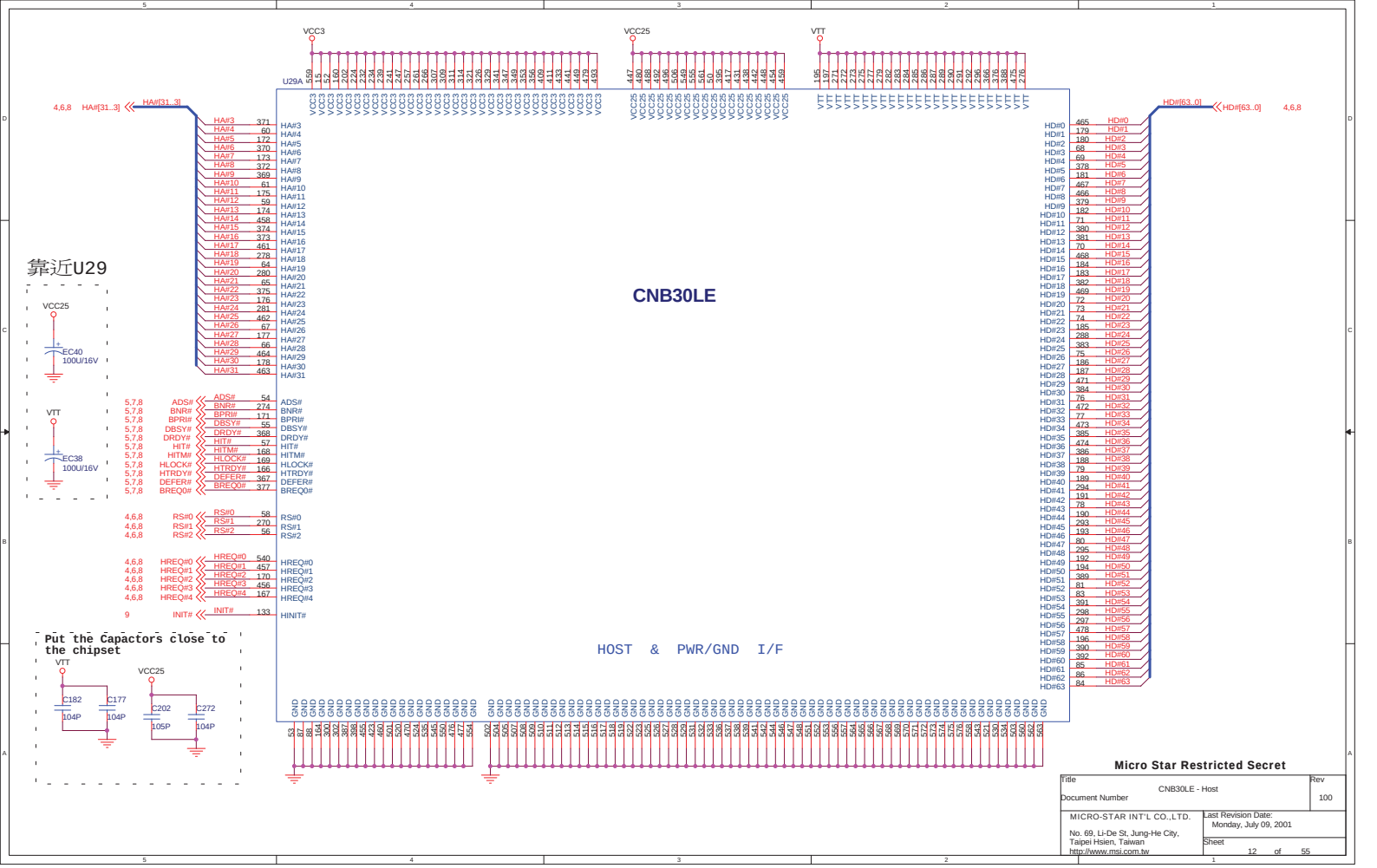
Clock Generator
MICRO-STAR INT'L CO.,LTD.
No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan
http://www.msi.com.tw
Last Revision Date: Monday, July 09, 2001



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Title	CNB30LE - Host	Rev 100
Document Number		
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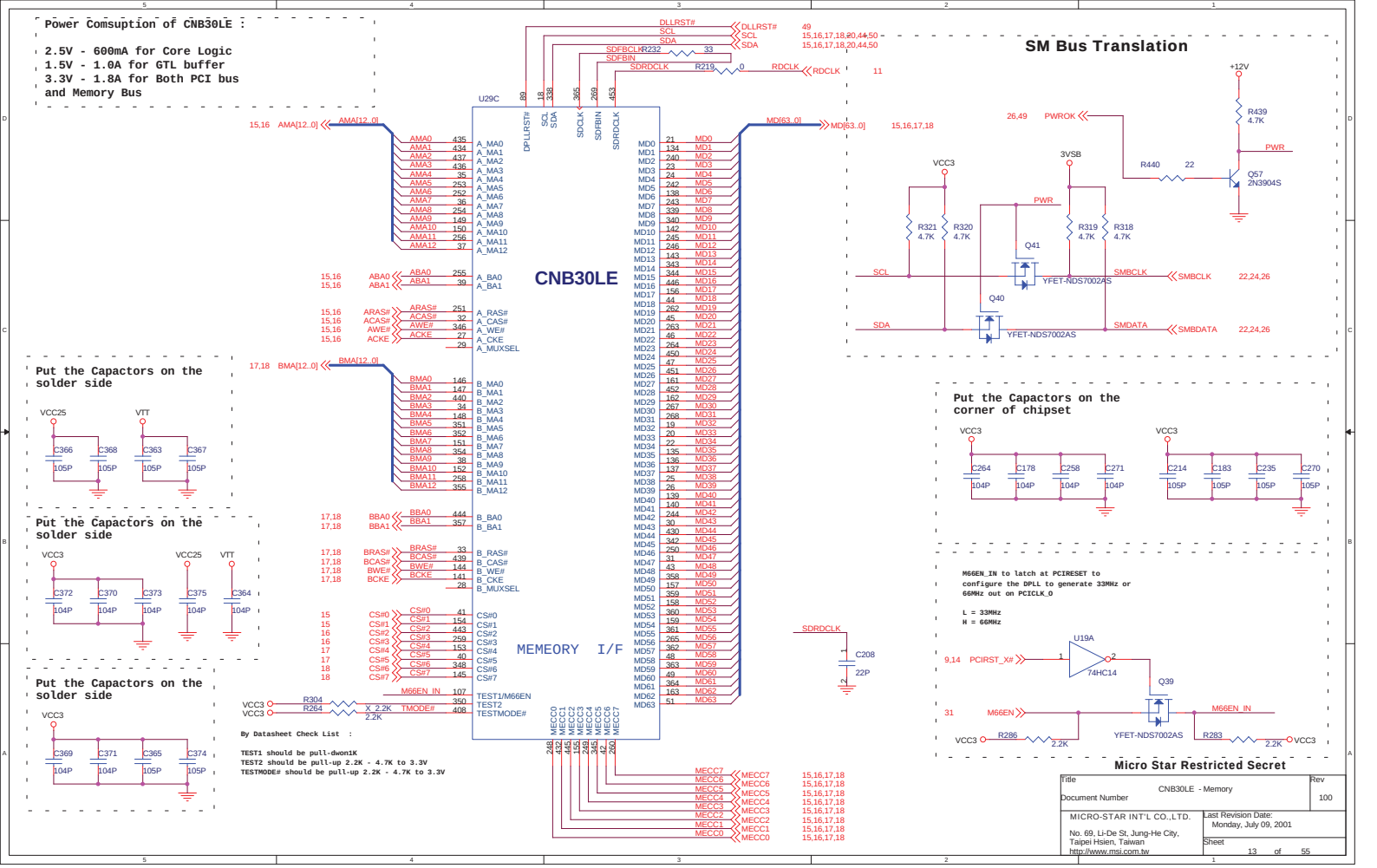
Power Comsuption of CNB30LE :

2.5V - 600mA for Core Logic
1.5V - 1.0A for GTL buffer
3.3V - 1.8A for Both PCI bus and Memory Bus



By Datasheet Check List :

TEST1 should be pull-dwon1K
TEST2 should be pull-up 2.2K - 4.7K to 3.3V
TESTMODE# should be pull-up 2.2K - 4.7K to 3.3V

Put the Capactors on the solder side

Put the Capactors on the solder side

Put the Capactors on the solder side

SM Bus Translation

Put the Capactors on the corner of chipset

M66EN_IN to latch at PCIRESET to configure the DPLL to generate 33MHz or 66MHz out on PCICLK_0

L = 33MHz
H = 66MHz

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Title	CNB30LE - Memory	Rev 100
Document Number		
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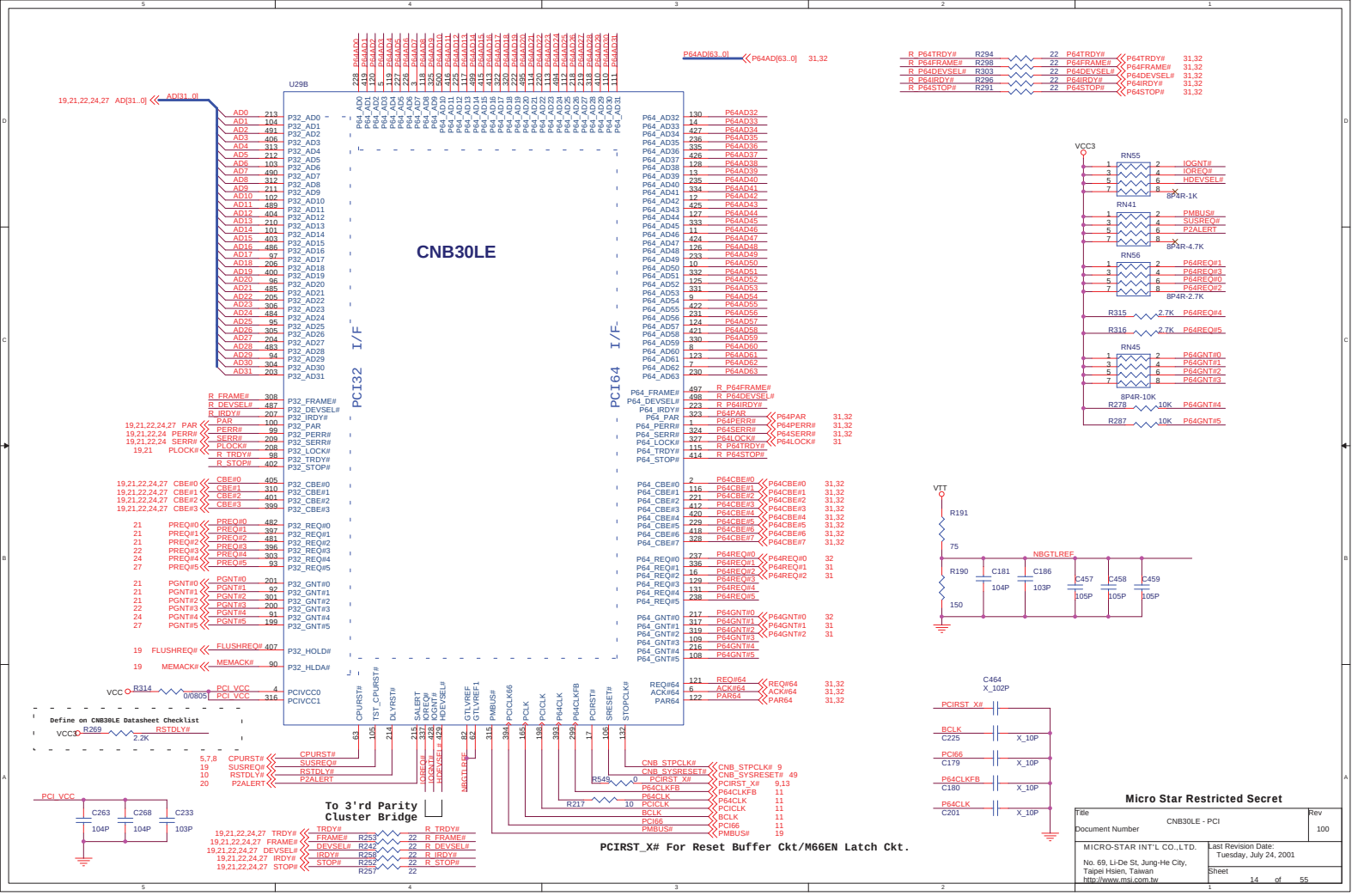
U29B
CNB30LE
PCI32 I/F
PCI64 I/F
AD[31..0]
P64AD[63..0]
P64AD[63..0] 31,32
R_P64TRDY# R294 22 P64TRDY# P64TRDY# 31,32
R_P64FRAME# R298 22 P64FRAME# P64FRAME# 31,32
R_P64DEVSEL# R303 22 P64DEVSEL# P64DEVSEL# 31,32
R_P64IRDY# R296 22 P64IRDY# P64IRDY# 31,32
R_P64STOP# R291 22 P64STOP# P64STOP# 31,32
VCC3
RN55
IOGNT#
IOREQ#
HDEVSEL#
8P4R-1K
RN41
PMBUS#
SUSREQ#
P2ALERT
8P4R-4.7K
RN56
P64REQ#1
P64REQ#3
P64REQ#0
P64REQ#2
8P4R-2.7K
R315 2.7K P64REQ#4
R316 2.7K P64REQ#5
RN45
P64GNT#0
P64GNT#1
P64GNT#2
P64GNT#3
8P4R-10K
R278 10K P64GNT#4
R287 10K P64GNT#5
VTT
R191
75
R190
150
NBGTLREF
C181 104P
C186 103P
C457 105P
C458 105P
C459 105P
C464
X_102P
PCIRST_X#
BCLK
C225 X_10P
PCI66
C179 X_10P
P64CLKFB
C180 X_10P
P64CLK
C201 X_10P
R_TRDY# R_FRAME# R_DEVSEL# R_IRDY# R_STOP#
R253 R242 R258 R252 R257 22
To 3'rd Parity
Cluster Bridge
PCIRST_X# For Reset Buffer Ckt/M66EN Latch Ckt.
R549 0 PCIRST_X#
R217 10 PCICLK
PCI_VCC
C263 104P
C268 104P
C233 103P
R314 0/0805
R269 2.2K RSTDLY#
Define on CNB30LE Datasheet Checklist
CPURST# SUSREQ# RSTDLY# P2ALERT
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http://www.msi.com.tw
Title CNB30LE - PCI
Rev 100
Document Number
Last Revision Date: Tuesday, July 24, 2001
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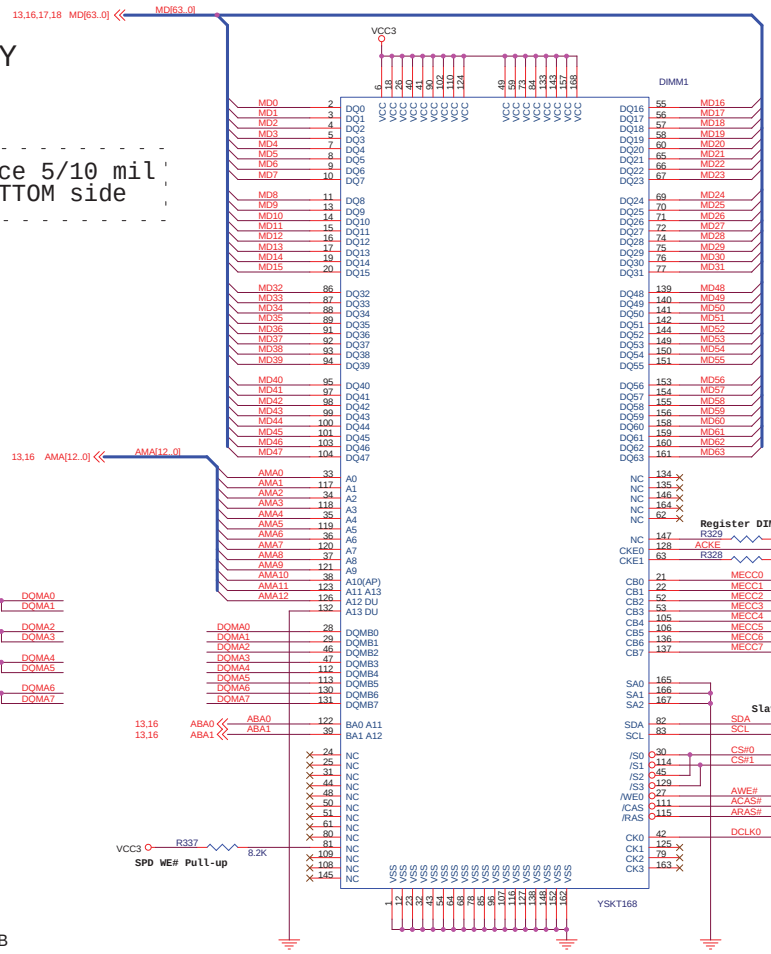
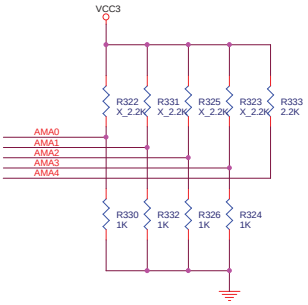
SYSTEM MEMORY

Memory BUS trace 5/10 mil
Only TOP or BOTTOM side

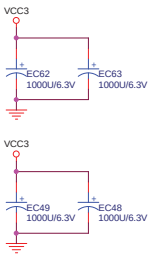


SLAVE ADDRESS = 1010000B

CNB30LE H/W Strap



Pin	Register	Description
TEST1	SCR2[0]	Secondary PCI Frequency 0 = 33MHz 1 = 66MHZ
AMA[4]	SCR2[1]	Always Pull Up
AMA[3]	SCR[3]	Not Use.Can be Pull Up or Down
AMA[2]	SCR[2]	Alwasy Pull Low 0 = Enable Internal PLL's 1 = Diable Internal PLL's
AMA[1]	SCR[1]	In order Queue Depth 0 = IOQ depth is 8 1 = IOQ depth is 1
AMA[0]	SCR[0]	Bridge ID.The ID must always be 0 to Primary CNB30



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Title	System Memory : DIMM 1	Rev
Document Number		100
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Tuesday, July 03, 2001	
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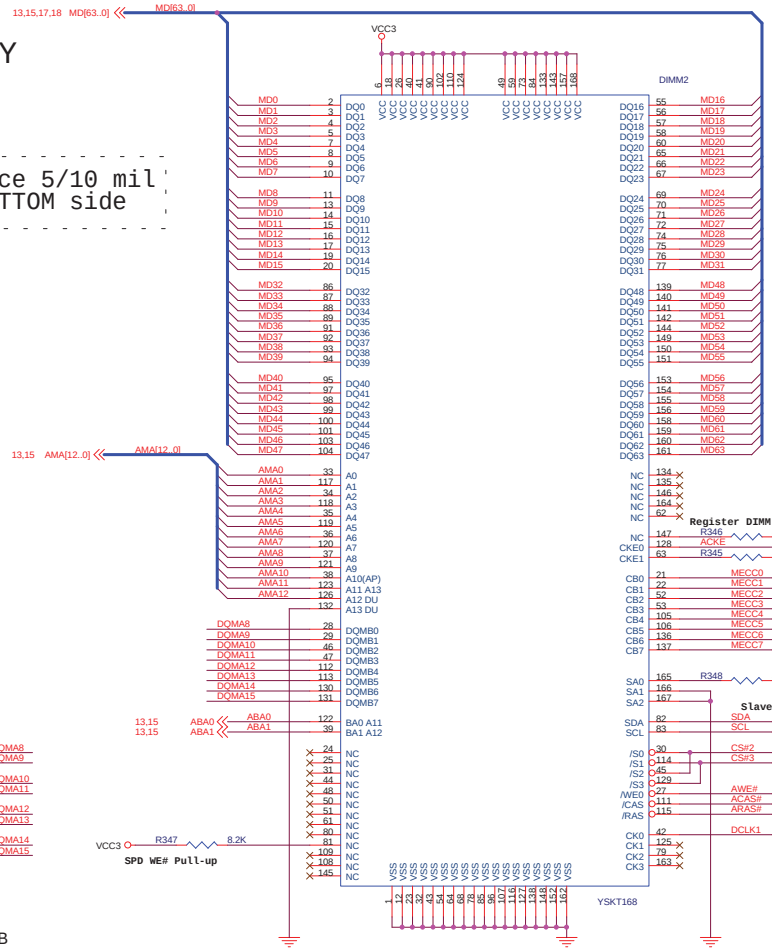
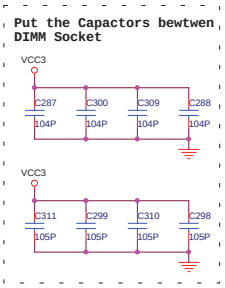
SYSTEM MEMORY

Memory BUS trace 5/10 mil
Only TOP or BOTTOM side





SLAVE ADDRESS = 1010001B

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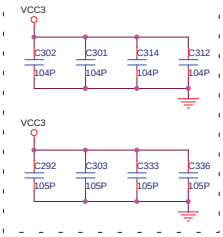
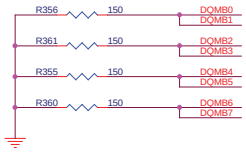
Title: System Memory : DIMM 2		Rev: 100
Document Number		
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Tuesday, July 03, 2001	Sheet 16 of 55

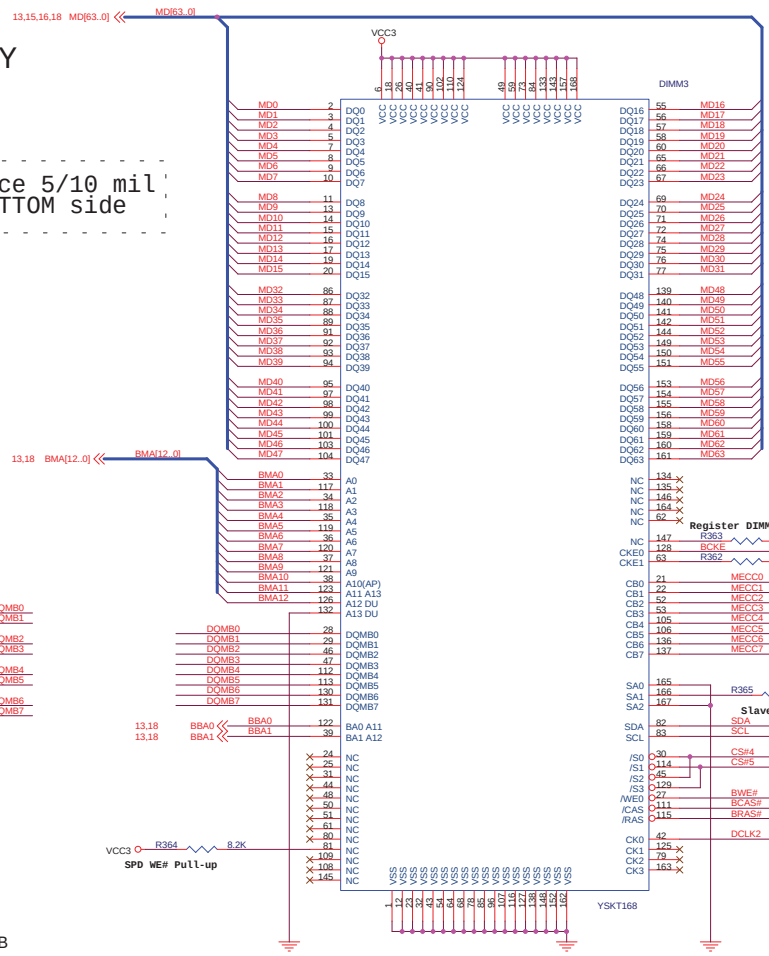
SYSTEM MEMORY

Memory BUS trace 5/10 mil
Only TOP or BOTTOM side

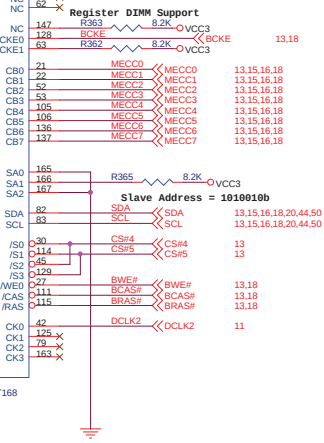
Put the Capactors bewtwen DIMM Socket

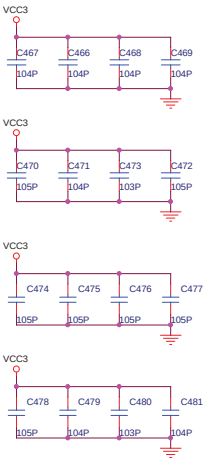






Register DIMM Support





SLAVE ADDRESS = 1010010B

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Title: DIMM3		Rev: 100
Document Number		
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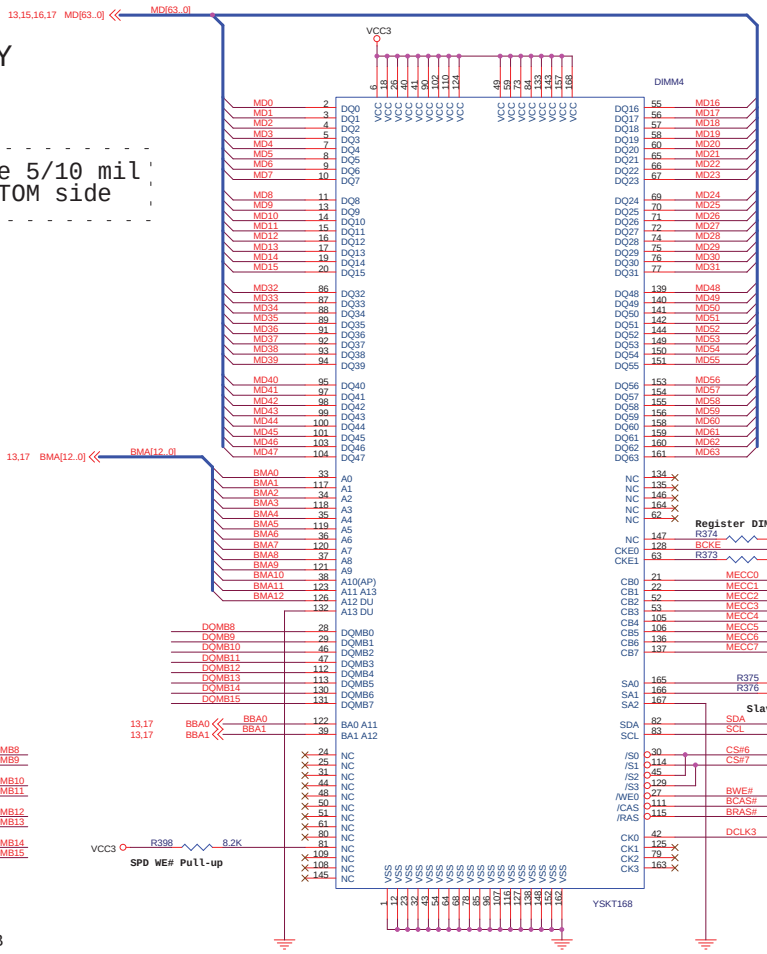
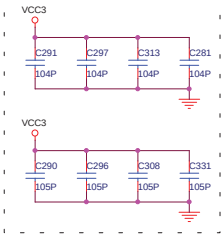
SYSTEM MEMORY

Memory BUS trace 5/10 mil
Only TOP or BOTTOM side



Put the Capactors
bewtwen DIMM Socket



SLAVE ADDRESS = 1010011B

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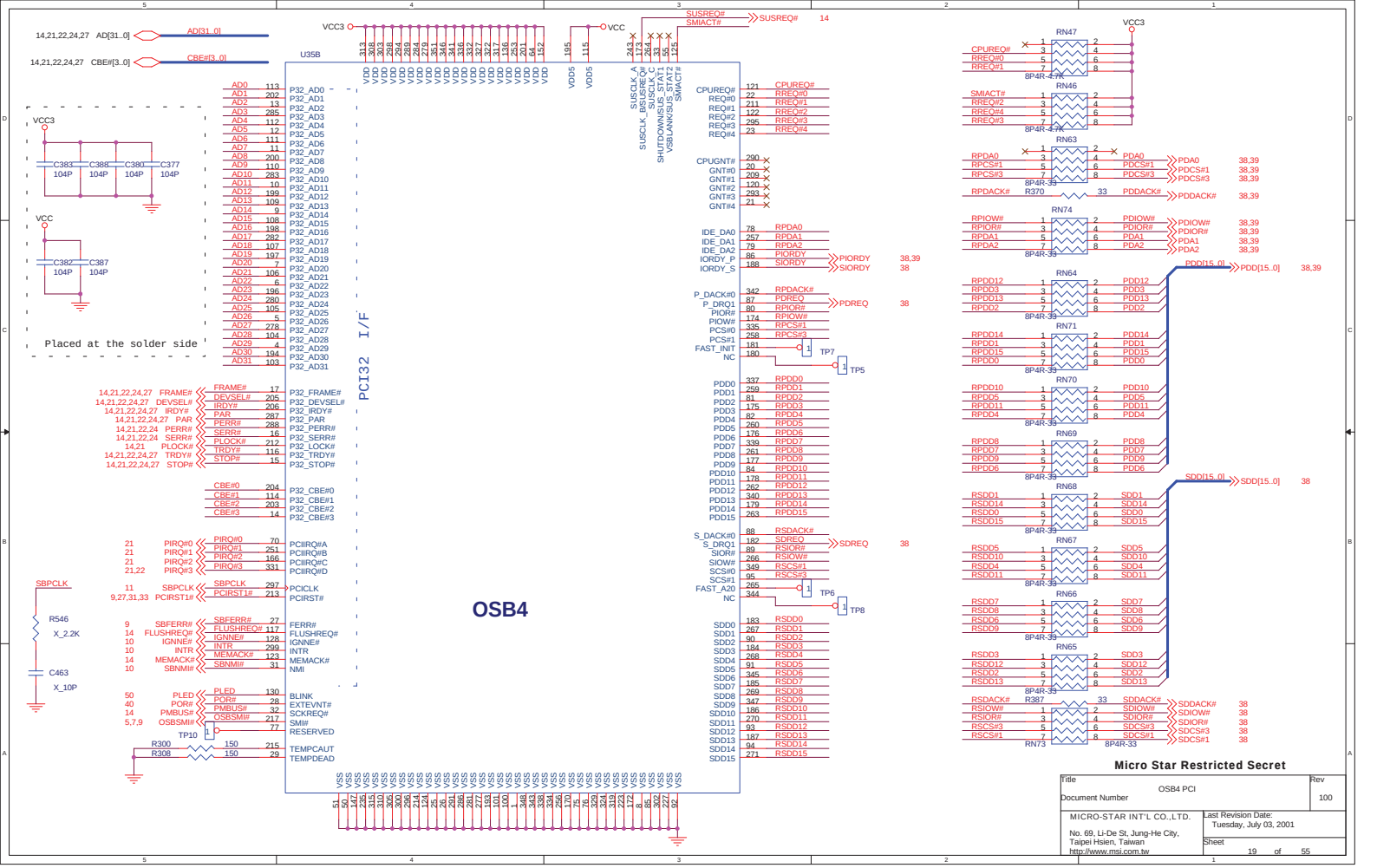
Title: DIMM4		Rev: 100
Document Number		
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Tuesday, July 03, 2001	Sheet 18 of 55


OSB4
PCI32 I/F
U35B
Placed at the solder side
Micro Star Restricted Secret
Title
OSB4 PCI
Document Number
100
MICRO-STAR INT'L CO.,LTD.
No. 69, Li-De St, Jung-He City,
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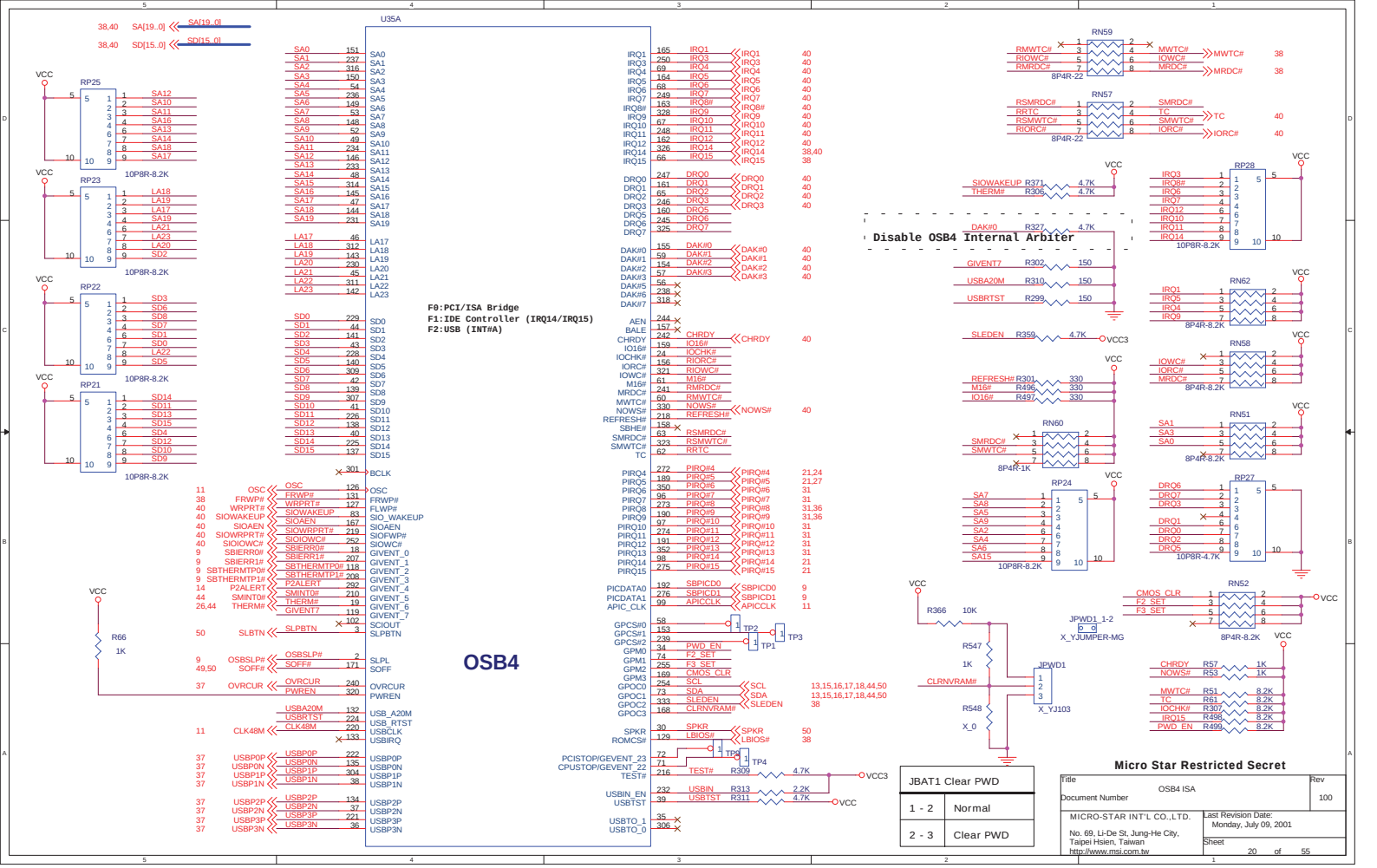
U35A
OSB4
F0:PCI/ISA Bridge
F1:IDE Controller (IRQ14/IRQ15)
F2:USB (INT#A)
Disable OSB4 Internal Arbiter
JBAT1 Clear PWD
1 - 2 Normal
2 - 3 Clear PWD
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MICRO-STAR INT'L CO.,LTD.
No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan
http://www.msi.com.tw
OSB4 ISA
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Rev
100
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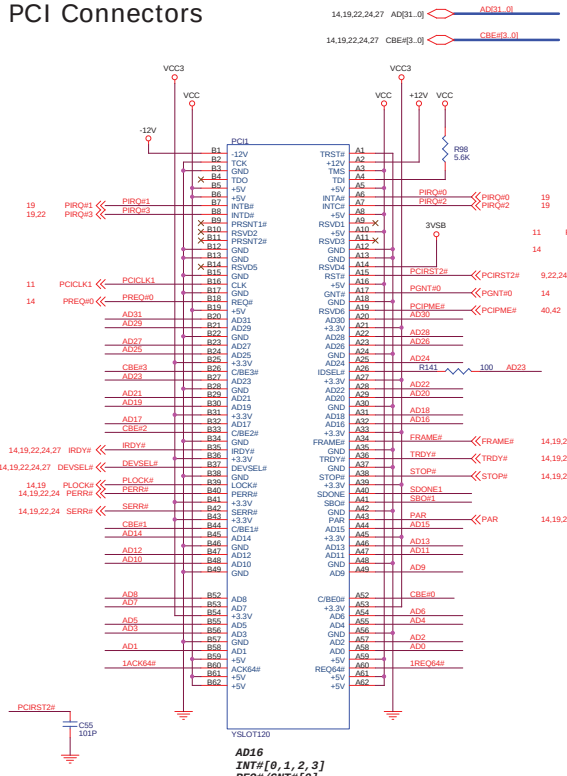
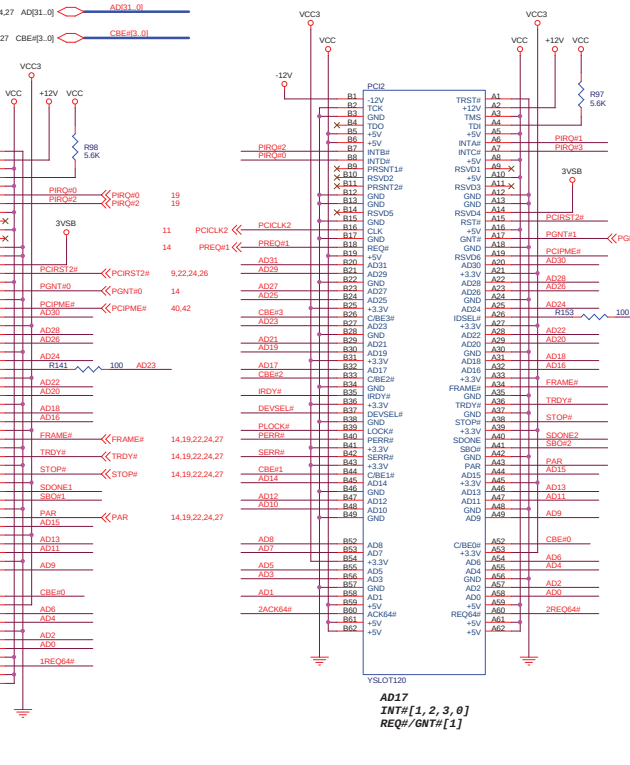
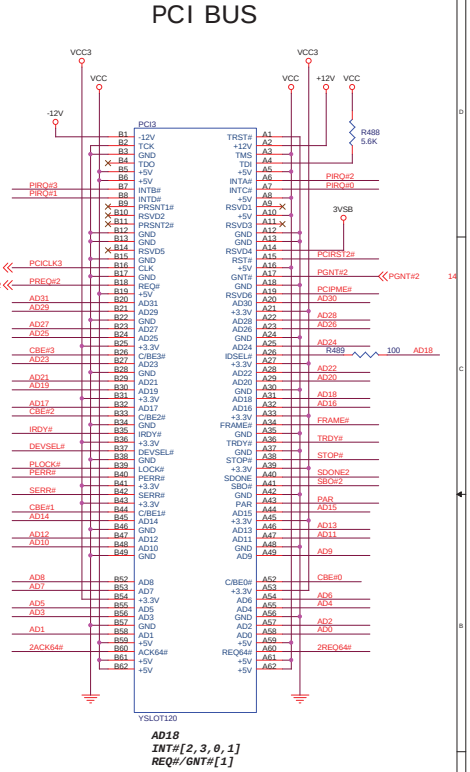
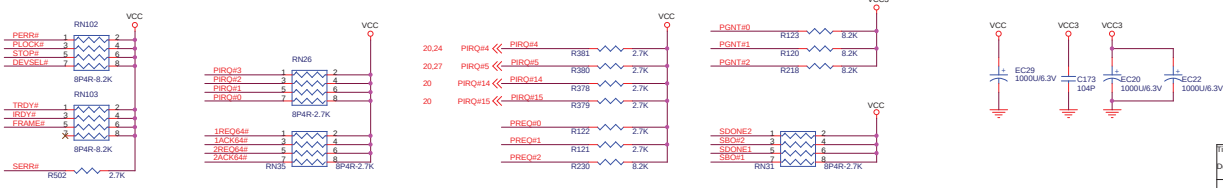
PCI Connectors









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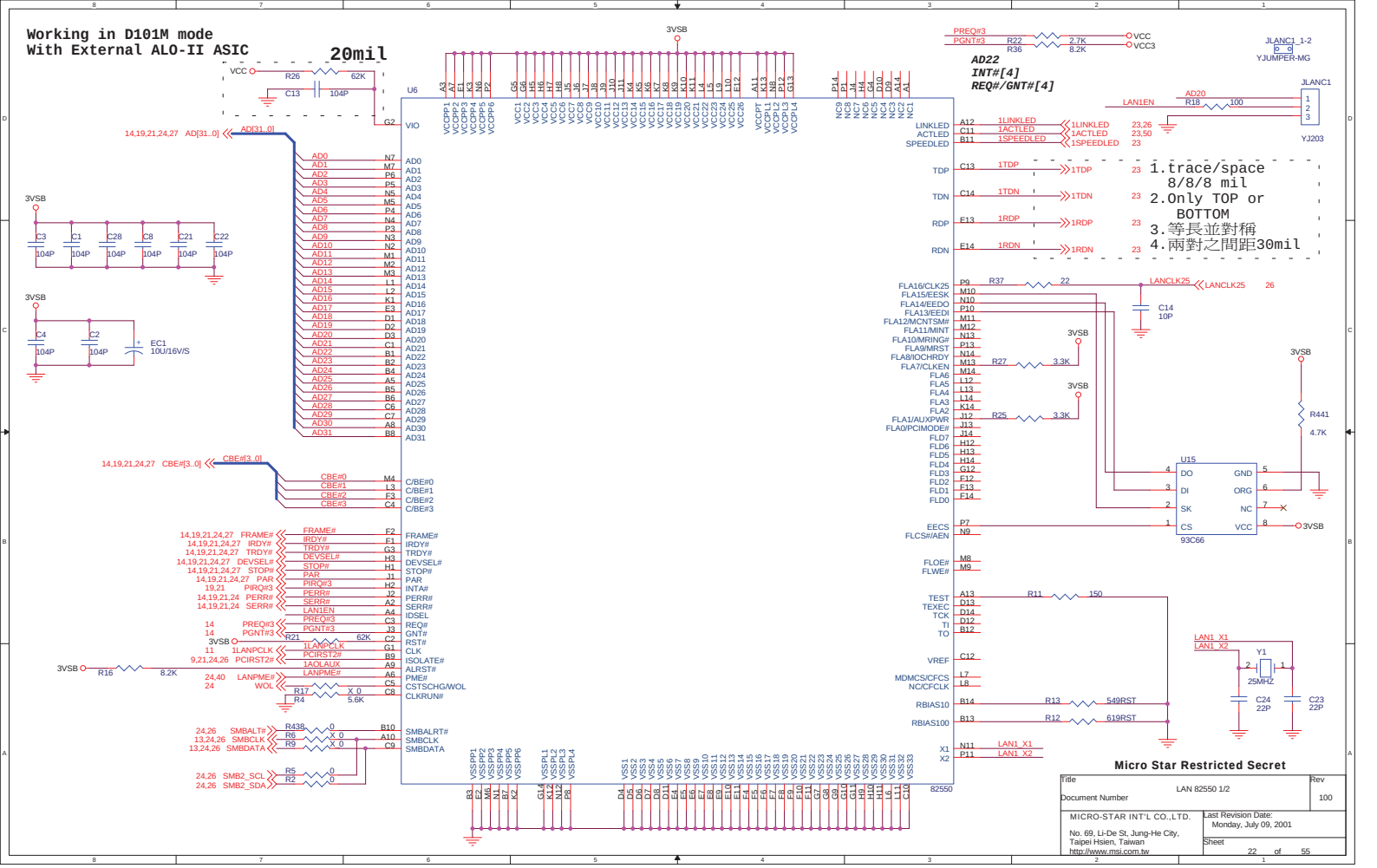
Title	PCI Connector 1/2	Rev
Document Number		100
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Tuesday, July 03, 2001
		Sheet 21 of 55


Working in D101M mode
With External ALO-II ASIC
20mil
AD22
INT#[4]
REQ#/GNT#[4]
1.trace/space 8/8/8 mil
2.Only TOP or BOTTOM
3.等長並對稱
4.兩對之間距30mil
U6
82550
U15
93C66
YJUMPER-MG
YJ203
25MHZ
Micro Star Restricted Secret
Title
LAN 82550 1/2
Document Number
Rev
100
MICRO-STAR INT'L CO.,LTD.
No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan
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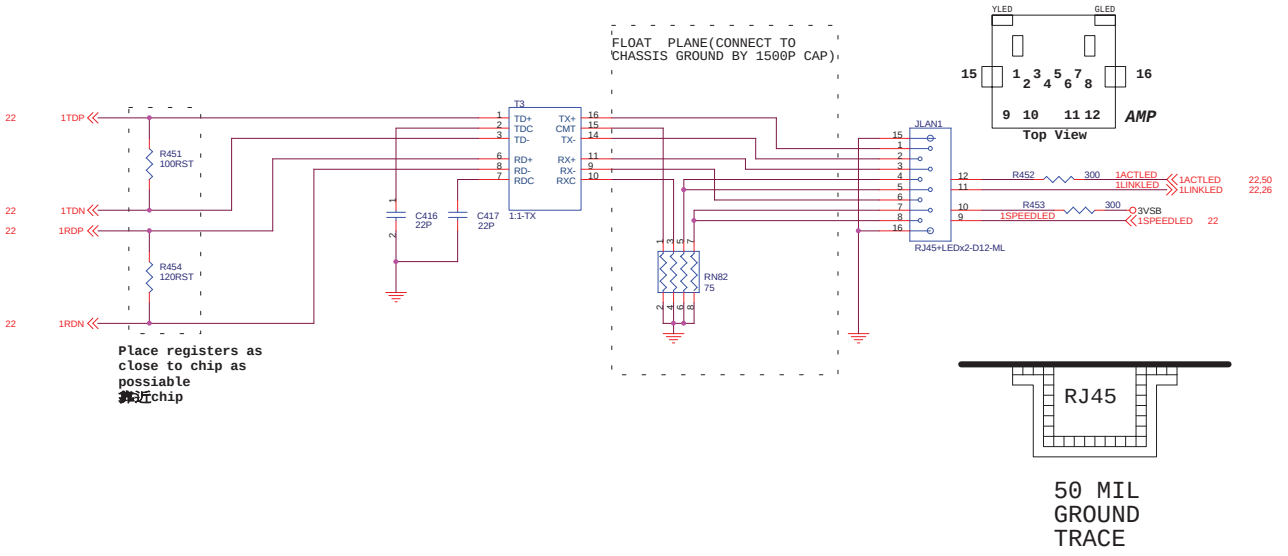

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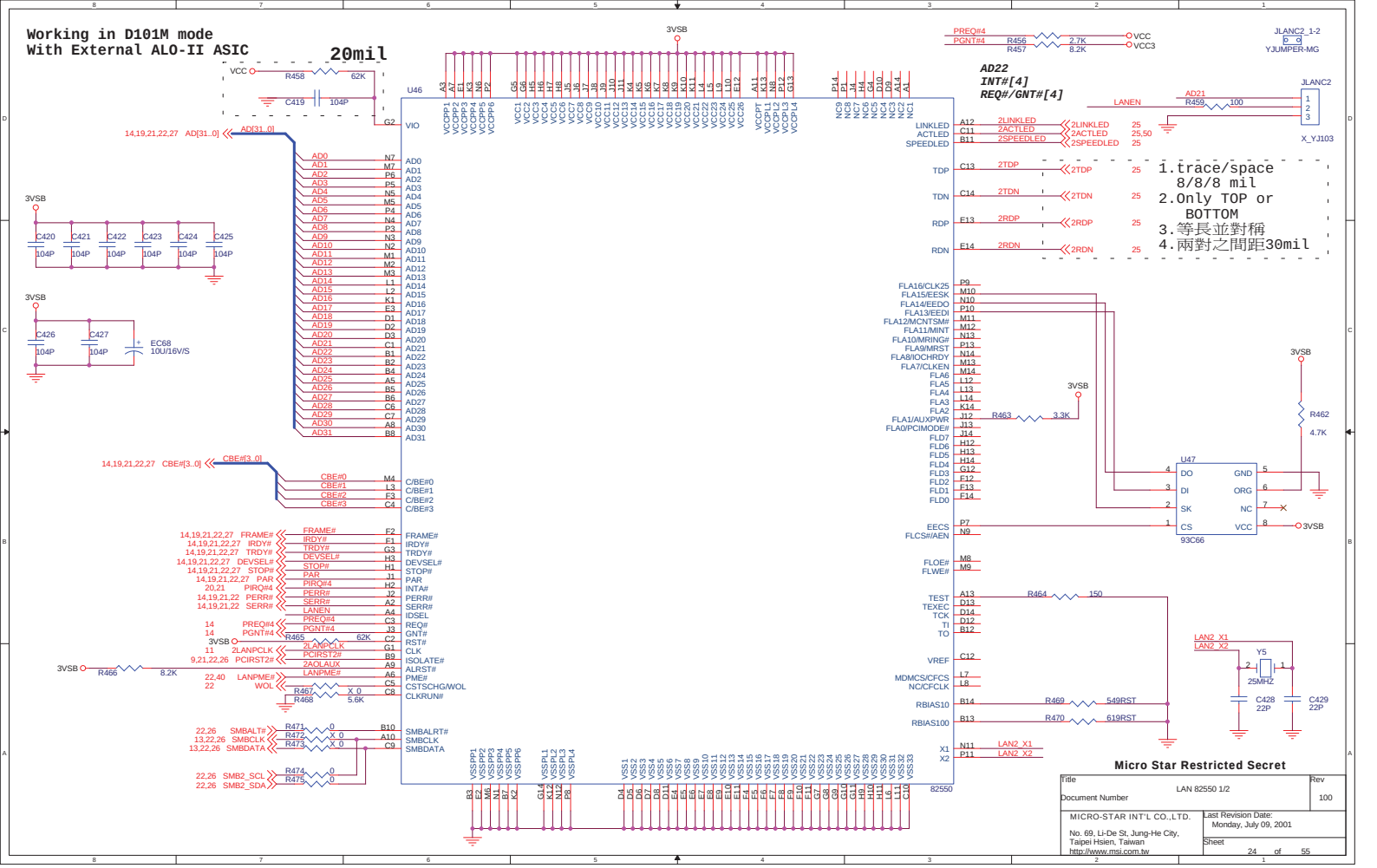
Title: LAN 82550 1 - 2/2		Rev: 100
Document Number		
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Tuesday, July 03, 2001	Sheet 23 of 55


Working in D101M mode
With External ALO-II ASIC
20mil
AD22
INT#[4]
REQ#/GNT#[4]
1.trace/space
8/8/8 mil
2.Only TOP or
BOTTOM
3.等長並對稱
4.兩對之間距30mil
U46
82550
U47
93C66
Micro Star Restricted Secret
LAN 82550 1/2
MICRO-STAR INT'L CO.,LTD.
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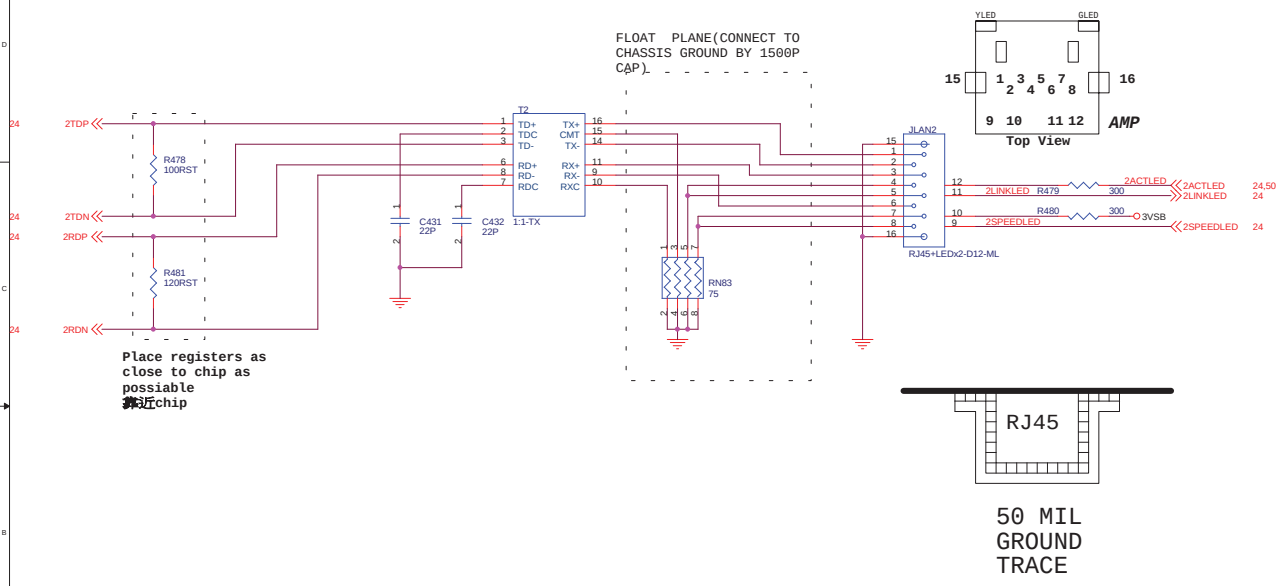
Taipei Hsien, Taiwan
http://www.msi.com.tw
Monday, July 09, 2001



50 MIL GROUND TRACE

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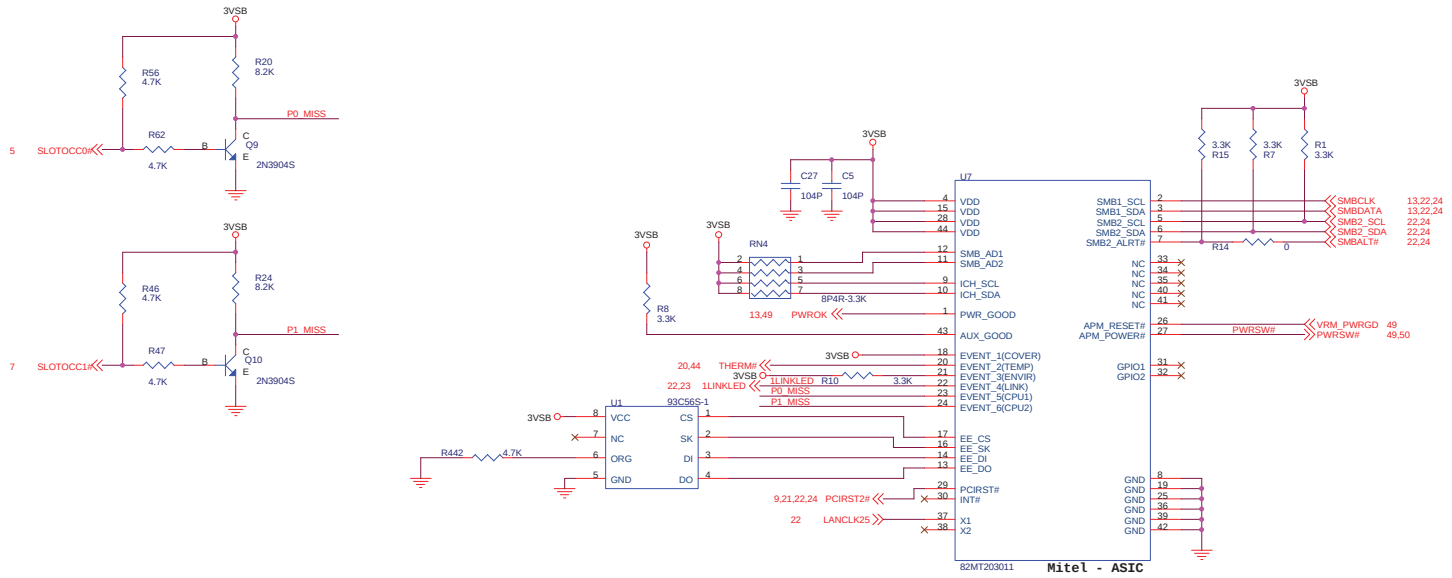
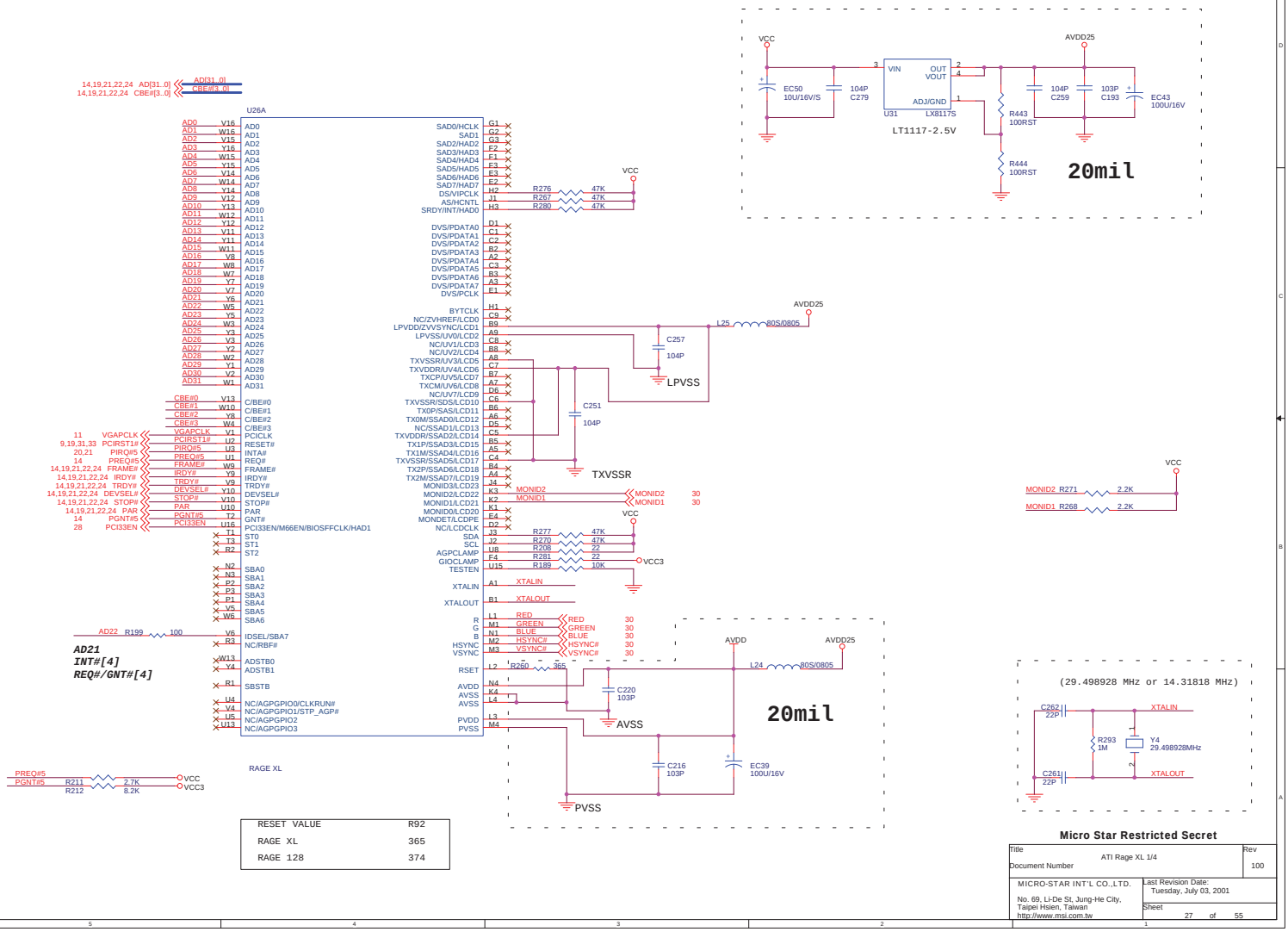
Title: LAN 82550 (AOL-II) 2/2		Rev: 100
Document Number		
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Tuesday, July 03, 2001	Sheet 25 of 55

AlertOnLAN 2



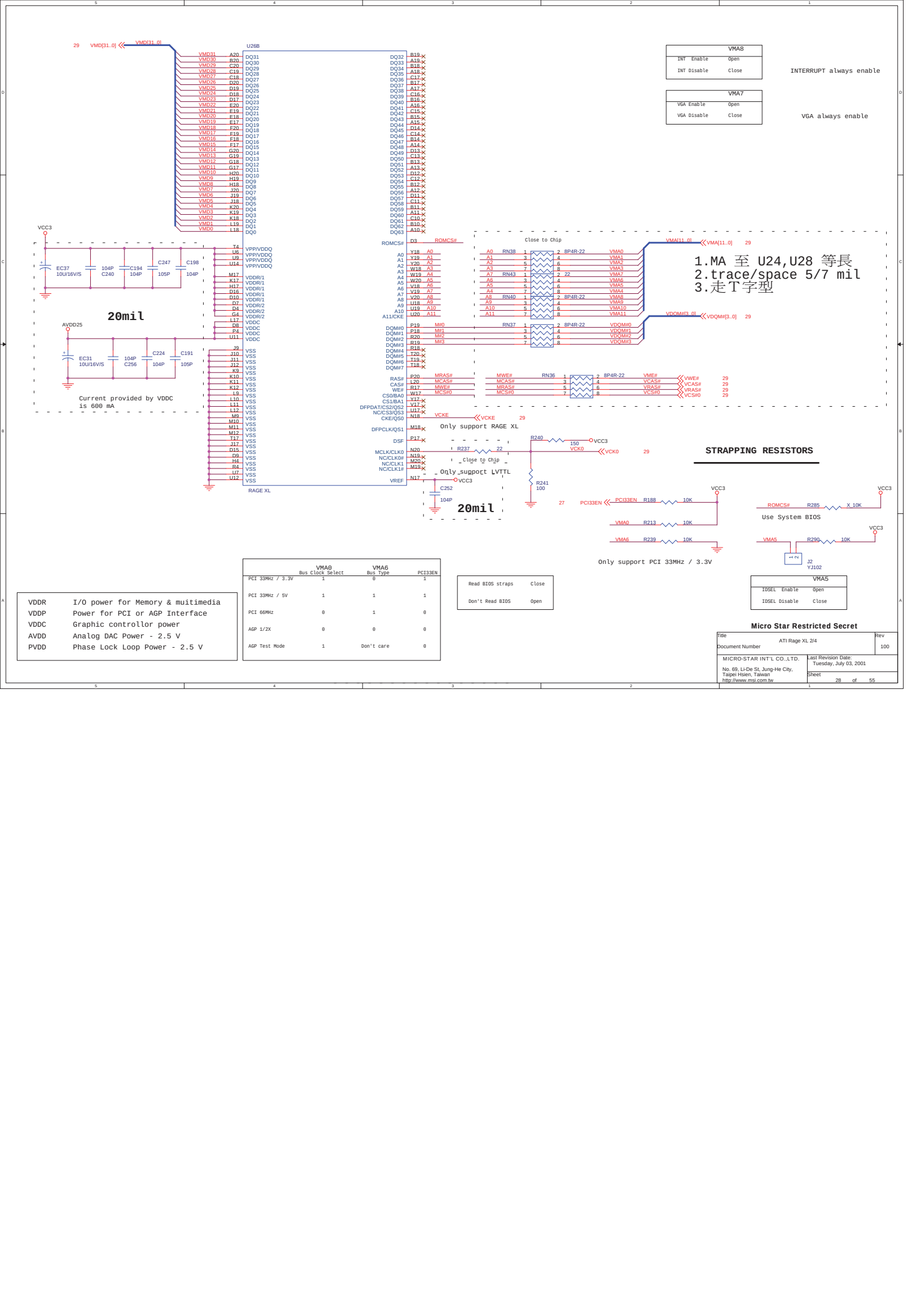
Micro Star Restricted Secret

Title: LAN 82550 (AOL-II) 2/2		Rev: 100
Document Number		
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Tuesday, July 03, 2001	Sheet 26 of 55



Micro Star Restricted Secret

Title	ATI Rage XL 1/4	Rev
Document Number		100
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Tuesday, July 03, 2001
		Sheet 27 of 55


U26B
RAGE XL
VMD[31..0]
VCC3
AVDD25
20mil
Current provided by VDDC is 600 mA
1.MA 至 U24,U28 等長
2.trace/space 5/7 mil
3.走T字型
Close to Chip
Only support RAGE XL
Only support LVTTL
Only support PCI 33MHz / 3.3V
Use System BIOS
STRAPPING RESISTORS
INTERRUPT always enable
VGA always enable
VMA8
INT Enable Open
INT Disable Close
VMA7
VGA Enable Open
VGA Disable Close
VMA5
IOSEL Enable Open
IOSEL Disable Close
Read BIOS straps Close
Don't Read BIOS Open
VDDR I/O power for Memory & muitimedia
VDDP Power for PCI or AGP Interface
VDDC Graphic controllor power
AVDD Analog DAC Power - 2.5 V
PVDD Phase Lock Loop Power - 2.5 V
VMA0 Bus Clock Select
VMA6 Bus Type
PCI33EN
PCI 33MHz / 3.3V 1 0 1
PCI 33MHz / 5V 1 1 1
PCI 66MHz 0 1 0
AGP 1/2X 0 0 0
AGP Test Mode 1 Don't care 0
Micro Star Restricted Secret
Title ATI Rage XL 2/4
Rev 100
Document Number
MICRO-STAR INT'L CO.,LTD.
No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan
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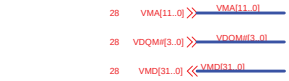
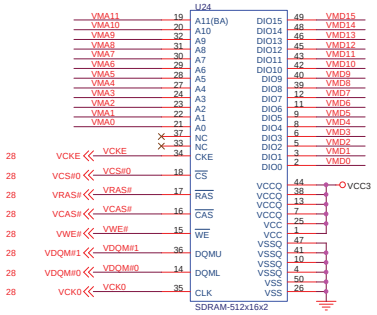
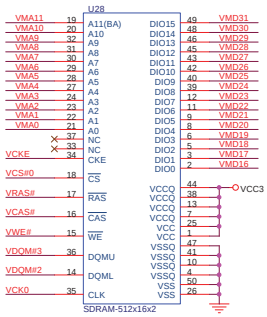
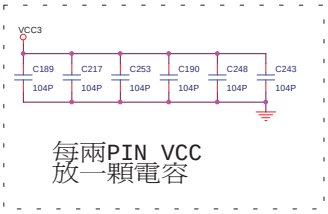
4MBytes SDRAM 16Mbit 512Kx16x2









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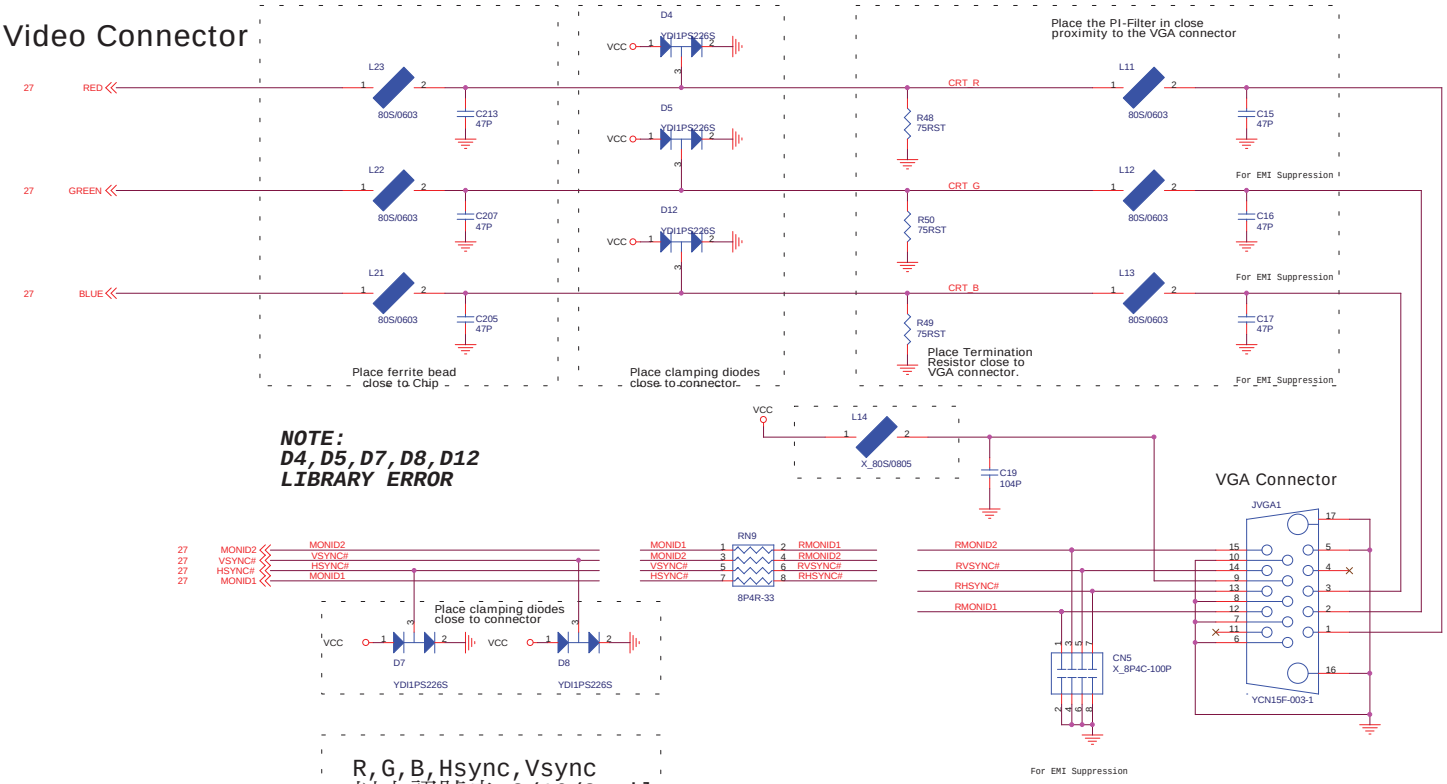
Title: ATI Rage XL 3/4	Rev: 100
Document Number	
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Tuesday, July 03, 2001 Sheet 29 of 55

Video Connector



NOTE:
D4,D5,D7,D8,D12
LIBRARY ERROR

VGA Connector

R,G,B,Hsync,Vsync
以上訊號走 8/16/8 mil
並包GND

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Document Number		
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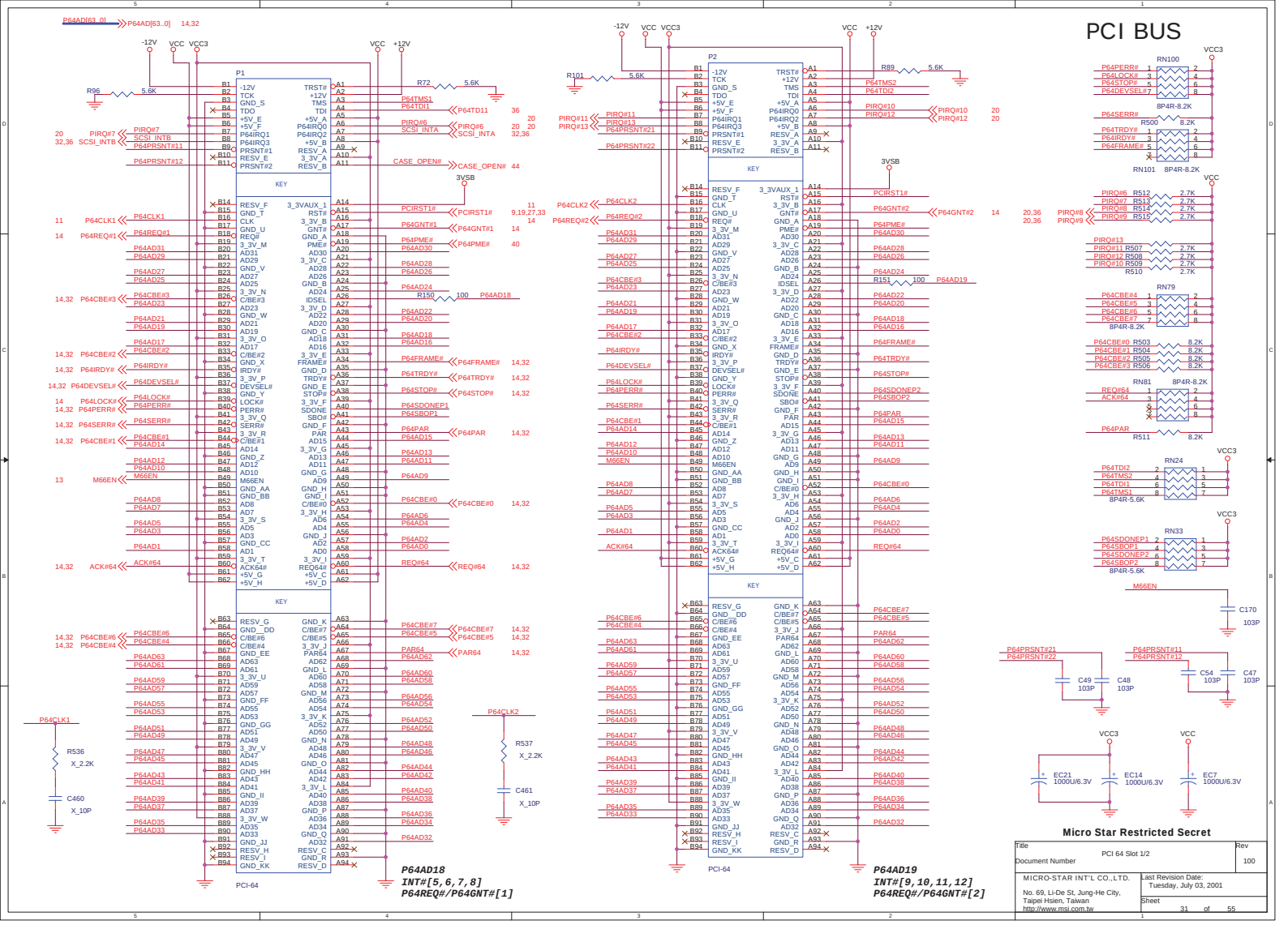
PCI BUS
P64AD[63..0]
P1
P2
PCI-64
KEY
P64AD18
INT#[5,6,7,8]
P64REQ#/P64GNT#[1]
P64AD19
INT#[9,10,11,12]
P64REQ#/P64GNT#[2]
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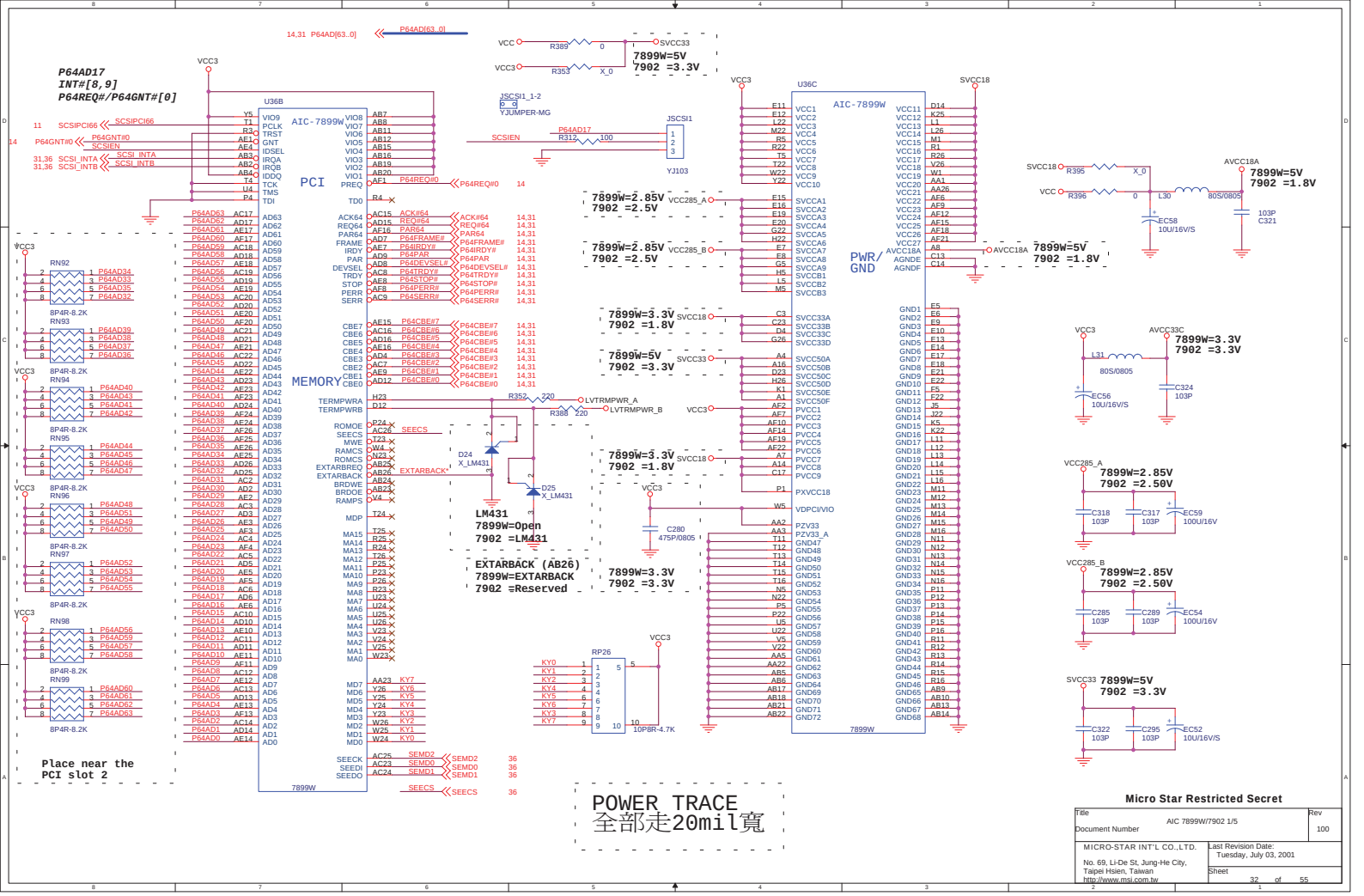
MICRO-STAR INT'L CO.,LTD.
No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan
http://www.msi.com.tw
PCI 64 Slot 1/2
Tuesday, July 03, 2001


P64AD17
INT#[8,9]
P64REQ#/P64GNT#[0]
14,31 P64AD[63..0]
P64AD[63..0]
U36B
AIC-7899W
PCI
MEMORY
7899W
U36C
PWR/
GND
7899W
SCSIPCI66
P64GNT#0
SCSIEN
SCSI_INTA
SCSI_INTB
RN92
RN93
RN94
RN95
RN96
RN97
RN98
RN99
8P4R-8.2K
Place near the
PCI slot 2
R389 0
R353 X_0
7899W=5V
7902 =3.3V
JSCSI1_1-2
YJUMPER-MG
JSCSI1
YJ103
R312 100
7899W=2.85V
7902 =2.5V
7899W=3.3V
7902 =1.8V
7899W=3.3V
7902 =3.3V
R352 220
R388 220
LVTRMPWR_A
LVTRMPWR_B
D24
X_LM431
D25
X_LM431
LM431
7899W=Open
7902 =LM431
EXTARBACK (AB26)
7899W=EXTARBACK
7902 =Reserved
C280
475P/0805
RP26
10P8R-4.7K
R395 X_0
R396 0
L30
80S/0805
EC58
10U/16V/S
103P
C321
L31
80S/0805
EC56
10U/16V/S
C324
103P
C318
103P
C317
103P
EC59
100U/16V
C285
103P
C289
103P
EC54
100U/16V
C322
103P
C295
103P
EC52
10U/16V/S
POWER TRACE
全部走20mil寬
Micro Star Restricted Secret
Title
AIC 7899W/7902 1/5
Rev
100
Document Number
MICRO-STAR INT'L CO.,LTD.
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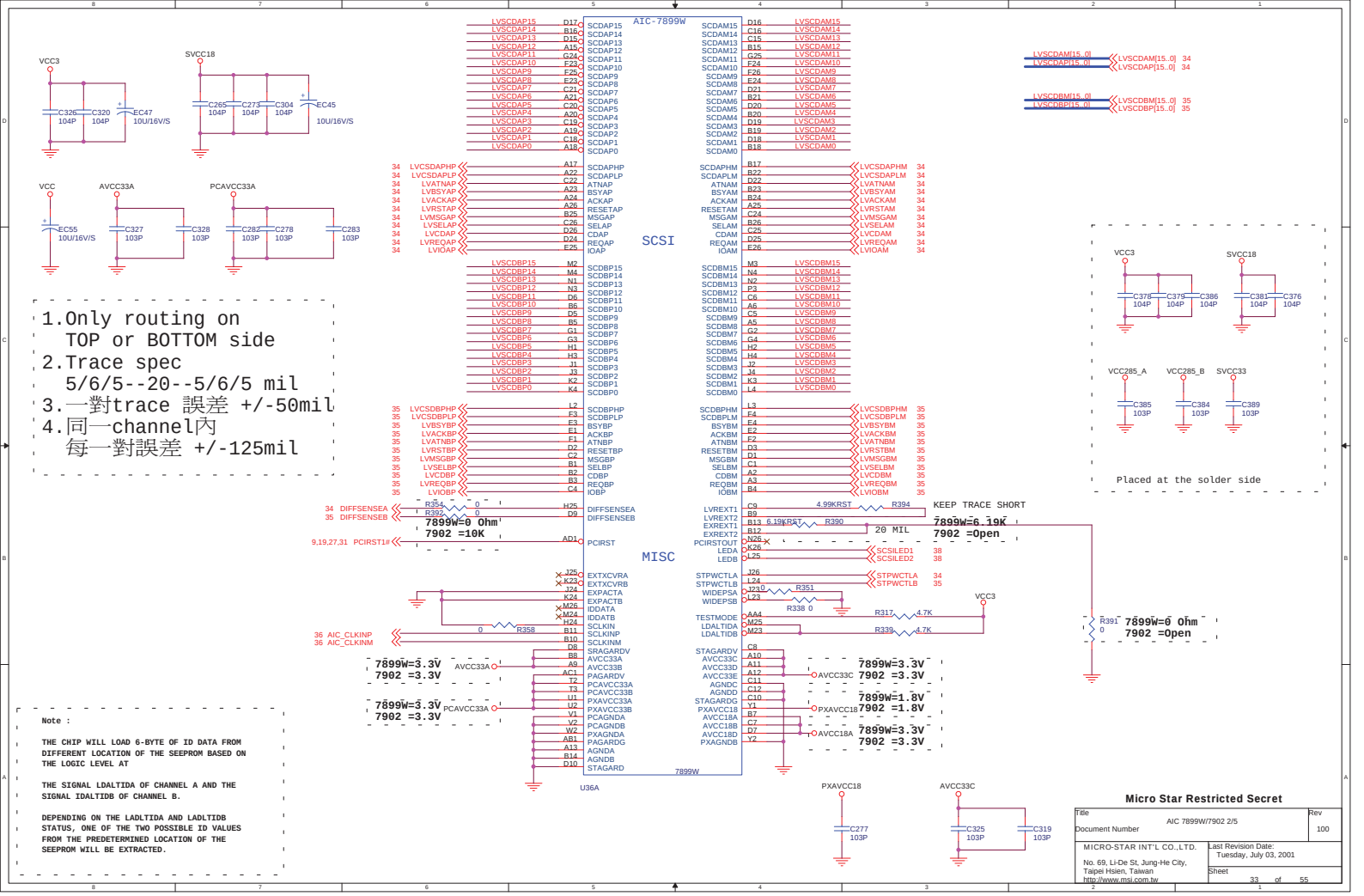
AIC-7899W
SCSI
MISC
U36A
7899W
1.Only routing on
TOP or BOTTOM side
2.Trace spec
5/6/5--20--5/6/5 mil
3.一對trace 誤差 +/-50mil
4.同一channel內
每一對誤差 +/-125mil
KEEP TRACE SHORT
7899W=0 Ohm
7902 =10K
7899W=6.19K
7902 =Open
20 MIL
7899W=0 Ohm
7902 =Open
7899W=3.3V
7902 =3.3V
7899W=1.8V
7902 =1.8V
Placed at the solder side
Note :
THE CHIP WILL LOAD 6-BYTE OF ID DATA FROM DIFFERENT LOCATION OF THE SEEPROM BASED ON THE LOGIC LEVEL AT
THE SIGNAL LDALTIDA OF CHANNEL A AND THE SIGNAL IDALTIDB OF CHANNEL B.
DEPENDING ON THE LADLTIDA AND LADLTIDB STATUS, ONE OF THE TWO POSSIBLE ID VALUES FROM THE PREDETERMINED LOCATION OF THE SEEPROM WILL BE EXTRACTED.
Micro Star Restricted Secret
MICRO-STAR INT'L CO.,LTD.
No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan
http://www.msi.com.tw
AIC 7899W/7902 2/5
100
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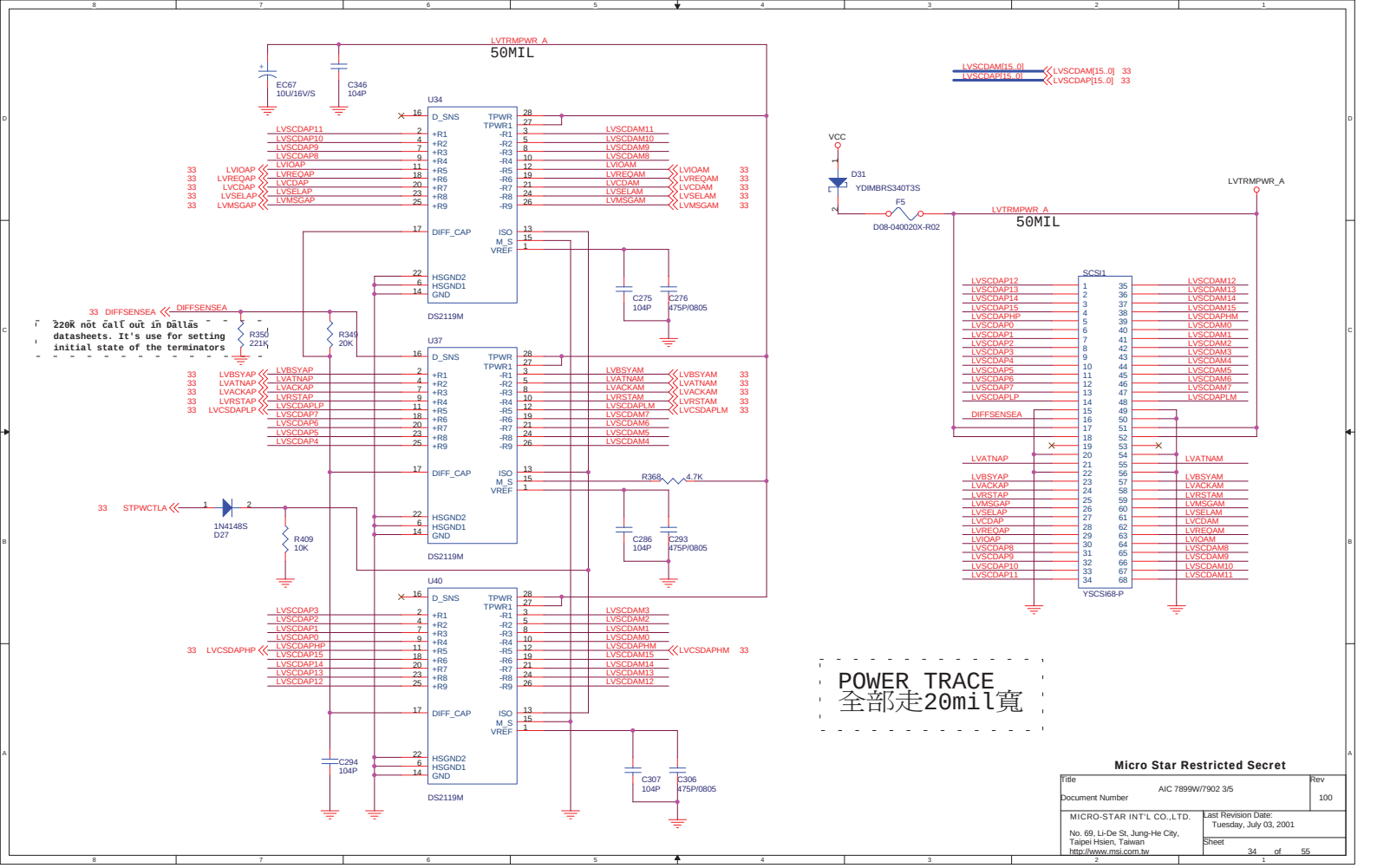

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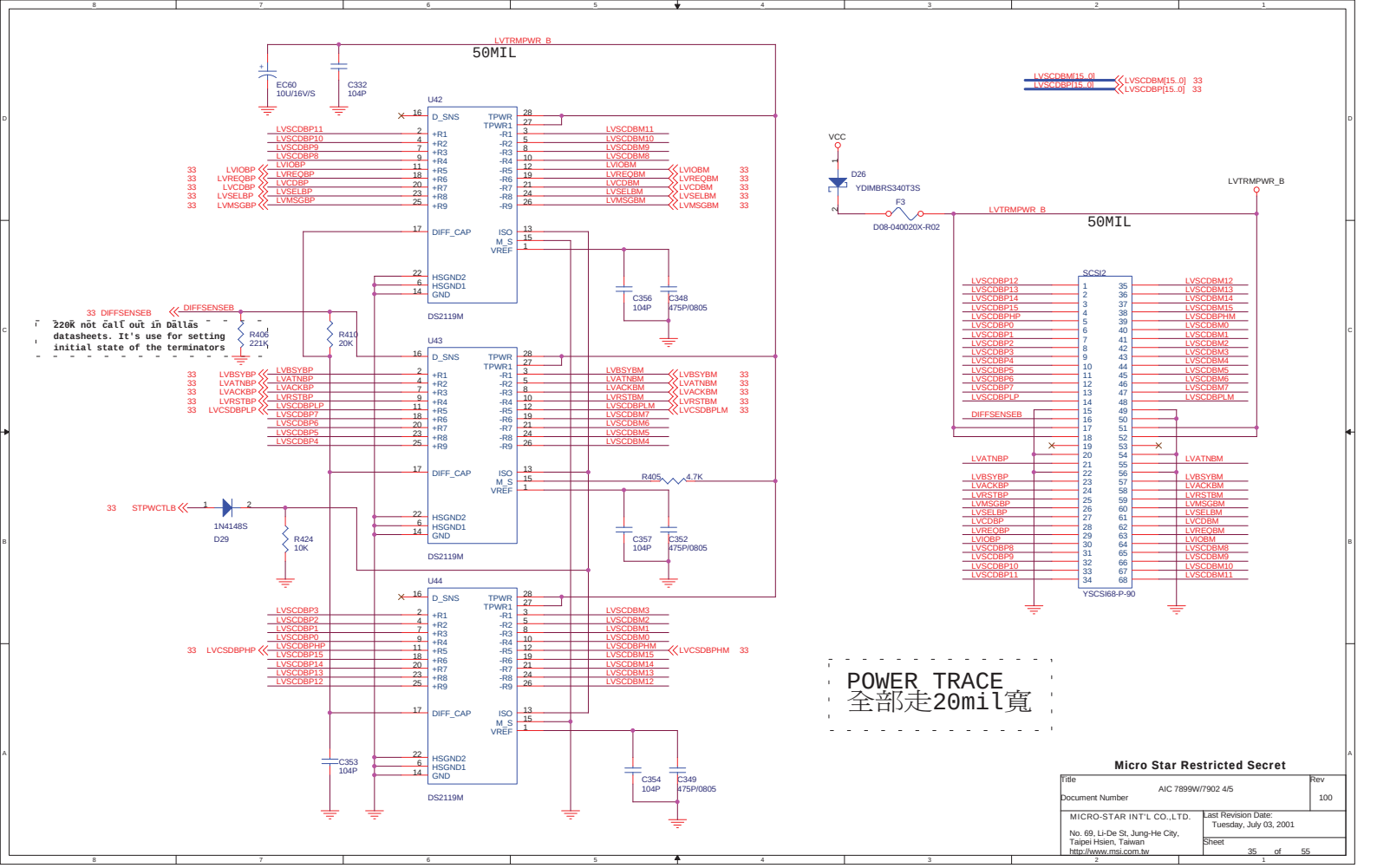
Document Number	Rev 100
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Tuesday, July 03, 2001 Sheet 34 of 55


LVTRMPWR_B
50MIL
EC60
10U/16V/S
C332
104P
U42
D_SNS
TPWR
TPWR1
+R1
+R2
+R3
+R4
+R5
+R6
+R7
+R8
+R9
-R1
-R2
-R3
-R4
-R5
-R6
-R7
-R8
-R9
DIFF_CAP
ISO
M_S
VREF
HSGND2
HSGND1
GND
DS2119M
LVSCDBP11
LVSCDBP10
LVSCDBP9
LVSCDBP8
LVIOBP
LVREQBP
LVCDBP
LVSELBP
LVMSGBP
LVSCDBM11
LVSCDBM10
LVSCDBM9
LVSCDBM8
LVIOBM
LVREQBM
LVCDBM
LVSELBM
LVMSGBM
33 DIFFSENSEB
DIFFSENSEB
220K not call out in Dallas datasheets. It's use for setting initial state of the terminators
R406
221K
R410
20K
C356
104P
C348
475P/0805
U43
LVBSYBP
LVATNBP
LVACKBP
LVRSTBP
LVSCDBPLP
LVSCDBP7
LVSCDBP6
LVSCDBP5
LVSCDBP4
LVBSYBM
LVATNBM
LVACKBM
LVRSTBM
LVSCDBPLM
LVSCDBM7
LVSCDBM6
LVSCDBM5
LVSCDBM4
R405
4.7K
33 STPWCTLB
1N4148S
D29
R424
10K
C357
104P
C352
475P/0805
U44
LVSCDBP3
LVSCDBP2
LVSCDBP1
LVSCDBP0
LVSCDBPHP
LVSCDBP15
LVSCDBP14
LVSCDBP13
LVSCDBP12
LVSCDBM3
LVSCDBM2
LVSCDBM1
LVSCDBM0
LVSCDBPHM
LVSCDBM15
LVSCDBM14
LVSCDBM13
LVSCDBM12
C353
104P
C354
104P
C349
475P/0805
LVSCDBM[15..0]
LVSCDBP[15..0]
VCC
D26
YDIMBRS340T3S
F3
D08-040020X-R02
SCSI2
YSCSI68-P-90
POWER TRACE
全部走20mil寬
Micro Star Restricted Secret
Title
AIC 7899W/7902 4/5
Document Number
Rev
100
MICRO-STAR INT'L CO.,LTD.
No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan
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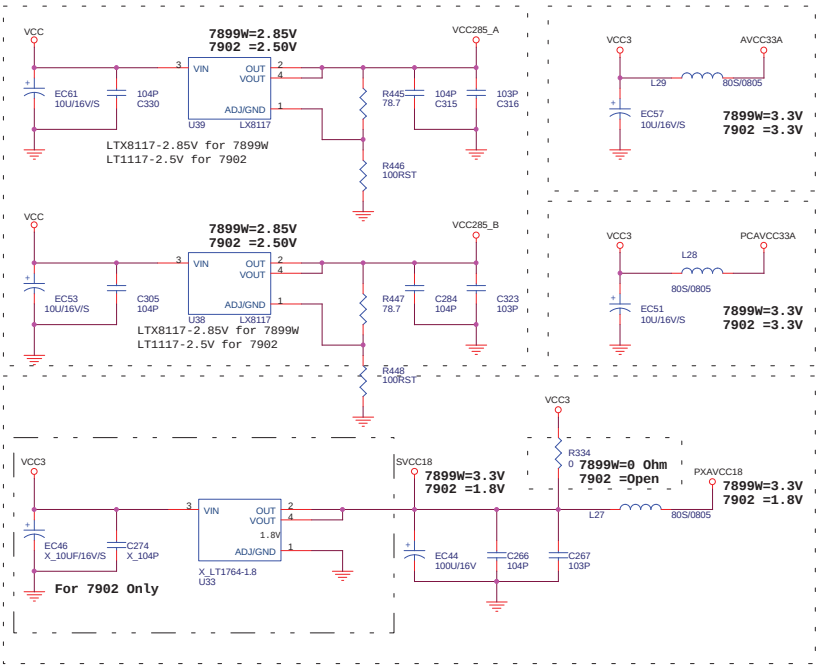
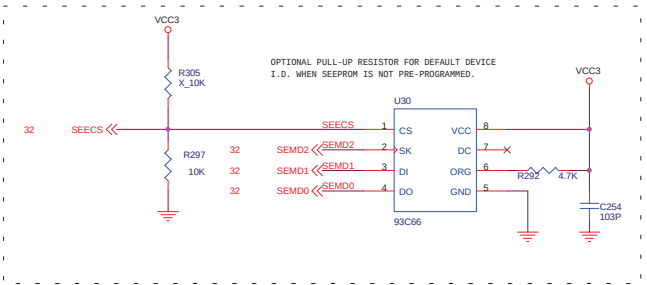
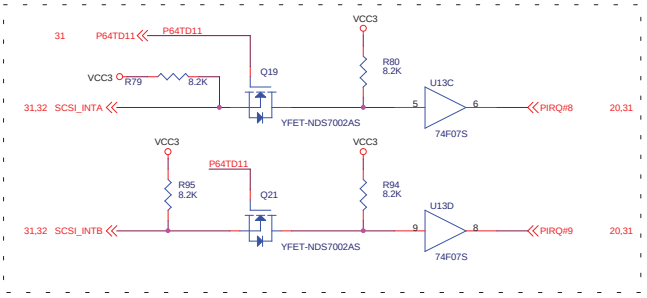
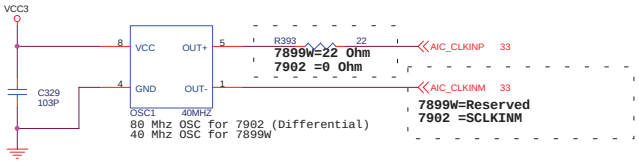
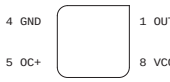






SCSI ASIC Voltage	AIC7902		AIC7899W	
	Current(A)	Power(W)	Current(A)	Power(W)
1 x 1.8V	TBD	TBD	N/A	N/A
2 x 2.5V	TBD	TBD	N/A	N/A
2 x 2.85V	N/A	N/A	0.630	1.796
1 x 3.3V	TBD	TBD	0.477	1.574
1 x 5V	N/A	N/A	0.043	0.215
Total		TBD		3.59





POWER TRACE
全部走20mil寬

SCSI Bus Mode	Diffsense Signal Voltage Range(V)	Maxumum SCSI Transfer Rate
SE	-0.35 to 0.5	40MB/Sec
LVD	0.7 to 1.9	320MB/Sec
HVD	2.4 to 5.5	40MB/Sec

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Title	AIC 7899W/7902 5/5
Document Number	Rev 100
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Tuesday, July 03, 2001
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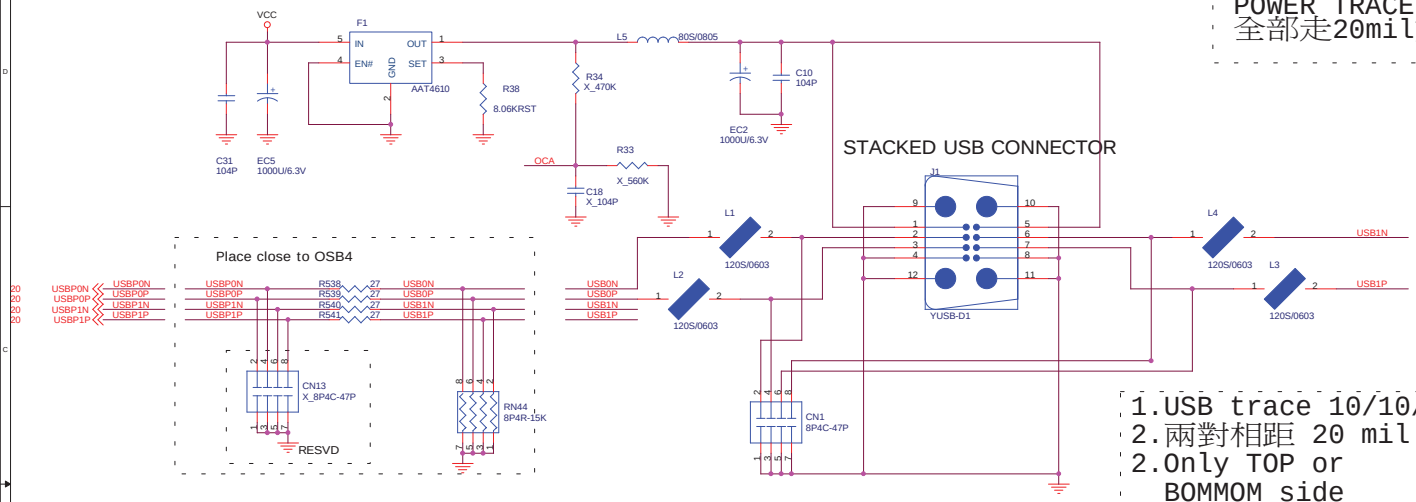
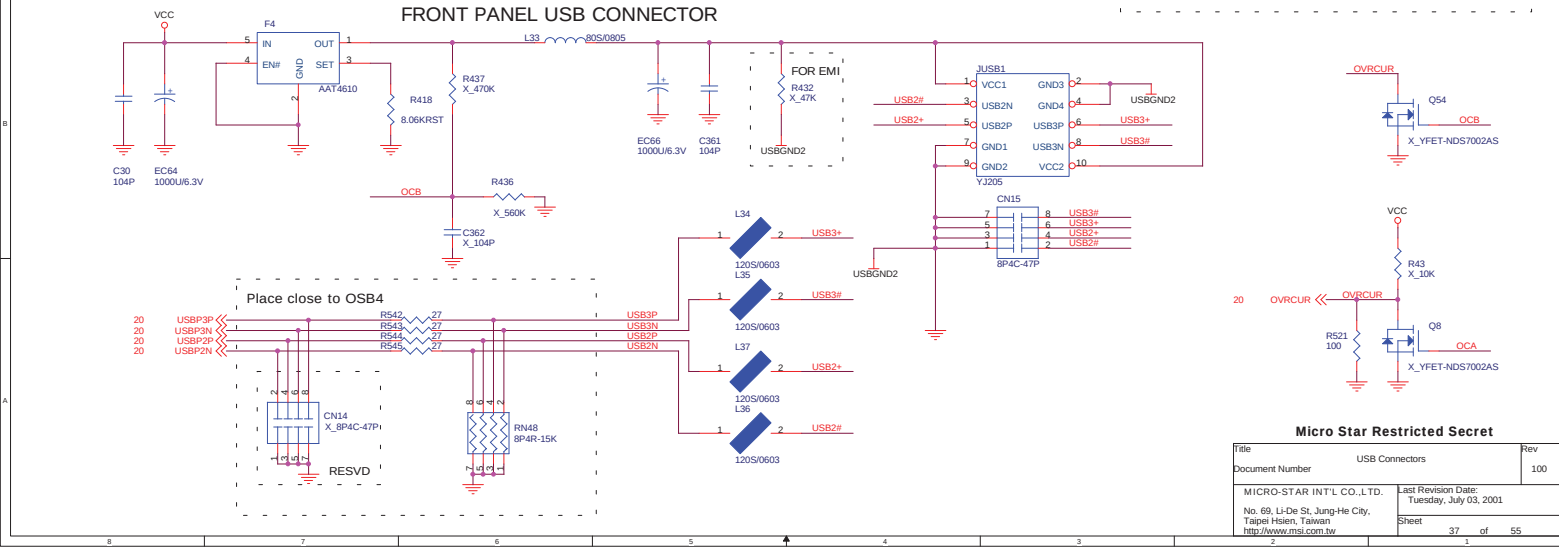
USB Connectors

POWER TRACE
全部走20mil寬



1.USB trace 10/10/10 mil
2.兩對相距 20 mil
2.Only TOP or
BOMMOM side

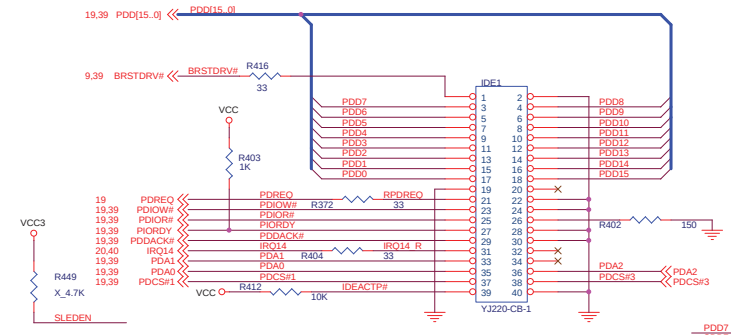


Micro Star Restricted Secret

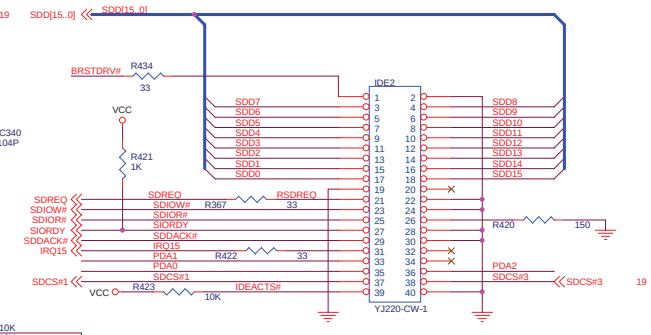
Title	USB Connectors	Rev 100
Document Number		
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Tuesday, July 03, 2001	Sheet 37 of 55

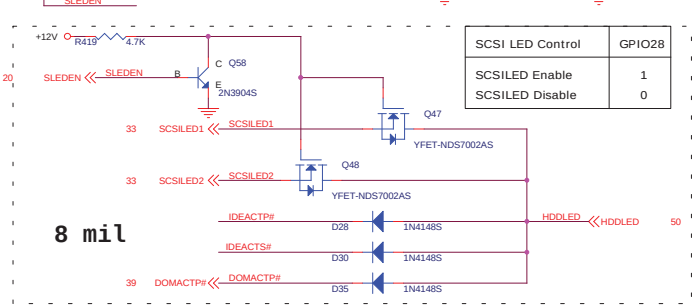
ATA100 IDE CONNECTORS

PRIMARY IDE CONN.

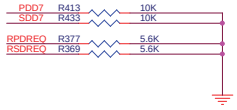


SECONDARY IDE CONN.

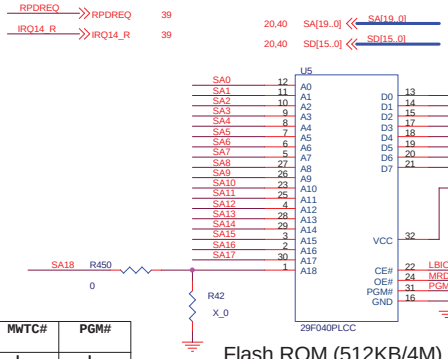




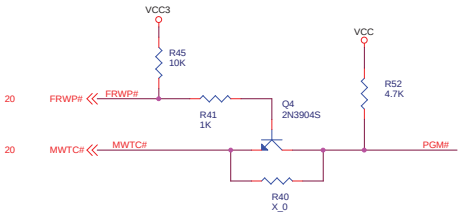
SCSI LED Control	GPIO28
SCSILED Enable	1
SCSILED Disable	0



1.IDE 同一channel等長
2.trace spec 5/7/5 mil



Flash ROM (512KB/4M)



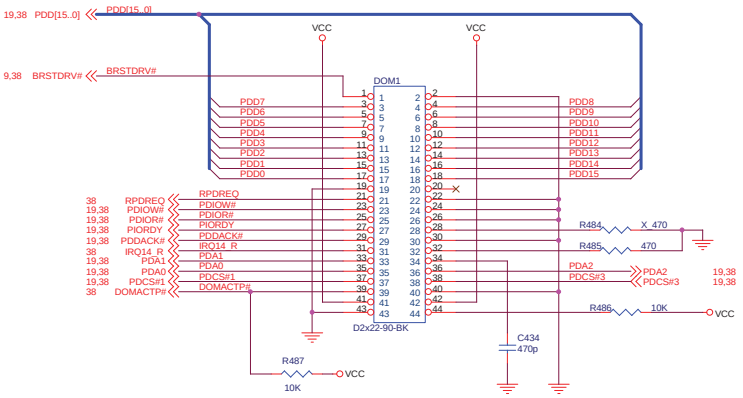
FRWP#	MWTC#	PGM#
L	L	L
L	H	H
H	L	H
H	H	H

Micro Star Restricted Secret

Title: ATA 66 IDE Connectors		Rev: 100
Document Number		
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Tuesday, July 03, 2001	Sheet 38 of 55

Disk On Module

Share with Primary IDE



Micro Star Restricted Secret

Title: Disk On Module		Rev: 100
Document Number		
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Tuesday, July 03, 2001	
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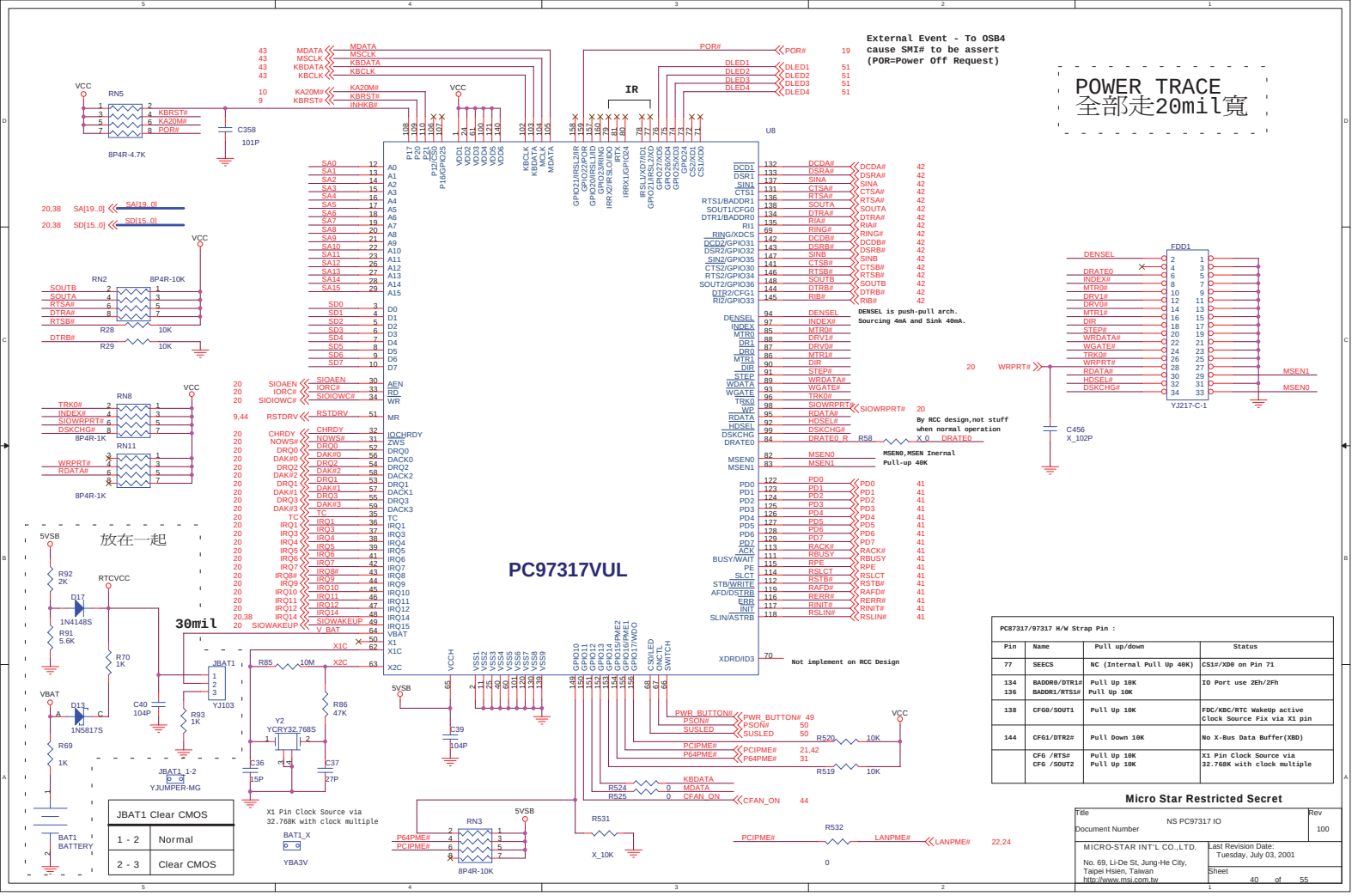
External Event - To OSB4 cause SMI# to be assert (POR=Power Off Request)
POWER TRACE
全部走20mil寬
PC97317VUL
IR
U8
RN5
8P4R-4.7K
C358
101P
RN2
8P4R-10K
R28
10K
R29
10K
RN8
8P4R-1K
RN11
8P4R-1K
放在一起
30mil
R92
2K
D17
1N4148S
R91
5.6K
R70
1K
D13
1N5817S
R69
1K
BAT1
BATTERY
JBAT1
YJUMPER-MG
YJ103
C40
104P
R93
1K
R85
10M
R86
47K
Y2
YCRY32.768S
C36
15P
C37
27P
C39
104P
RN3
8P4R-10K
R531
X_10K
R532
0
R520
10K
R519
10K
R524
0
R525
0
C456
X_102P
FDD1
YJ217-C-1
R58
X_0
JBAT1 Clear CMOS
1 - 2 Normal
2 - 3 Clear CMOS
X1 Pin Clock Source via 32.768K with clock multiple
BAT1_X
YBA3V
PC87317/97317 H/W Strap Pin :
Pin | Name | Pull up/down | Status
77 | SEECS | NC (Internal Pull Up 40K) | CS1#/XD0 on Pin 71
134 | BADDR0/DTR1# | Pull Up 10K | IO Port use 2Eh/2Fh
136 | BADDR1/RTS1# | Pull Up 10K |
138 | CFG0/SOUT1 | Pull Up 10K | FDC/KBC/RTC WakeUp active Clock Source Fix via X1 pin
144 | CFG1/DTR2# | Pull Down 10K | No X-Bus Data Buffer(XBD)
CFG /RTS# Pull Up 10K
CFG /SOUT2 Pull Up 10K
X1 Pin Clock Source via 32.768K with clock multiple
Micro Star Restricted Secret
Title
NS PC97317 IO
Rev
100
Document Number
MICRO-STAR INT'L CO.,LTD.
No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan
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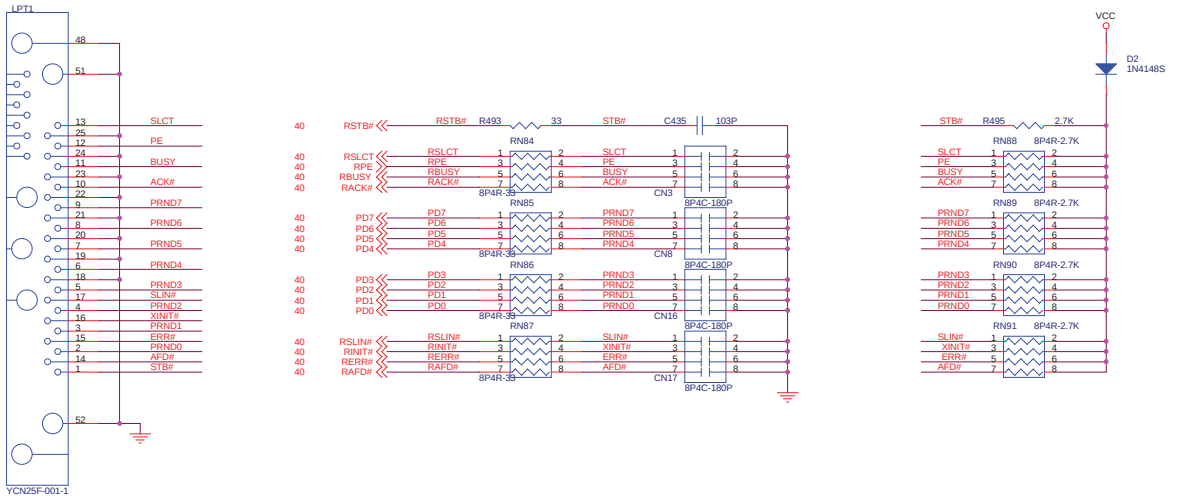
Parallel Port Header



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Title: Parallel Port Header		Rev: 100
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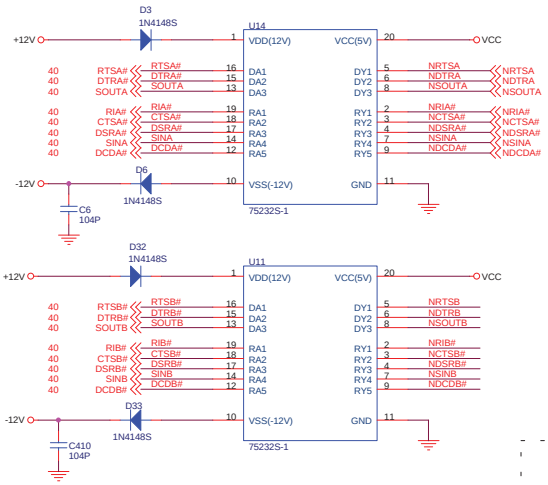
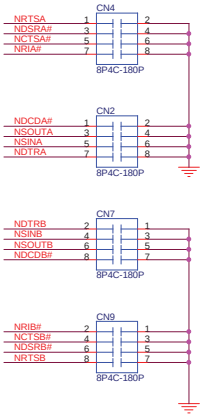
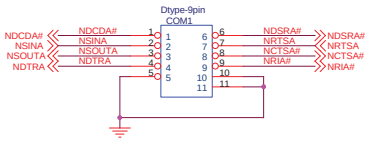
Serial Port/COM Headers

POWER TRACE
全部走20mil寬

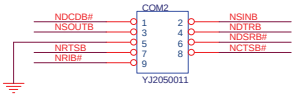




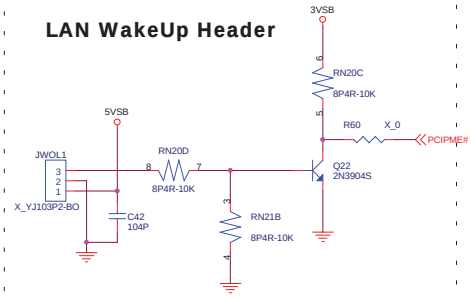
RS232



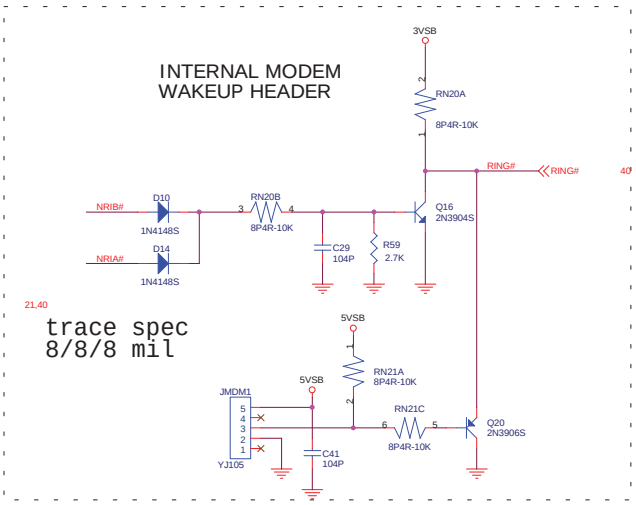
COM2 HEADER



LAN WakeUp Header



INTERNAL MODEM WAKEUP HEADER



Micro Star Restricted Secret

Title	Serial Port Header	Rev
Document Number		100

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Taipei Hsien, Taiwan
http://www.msi.com.tw

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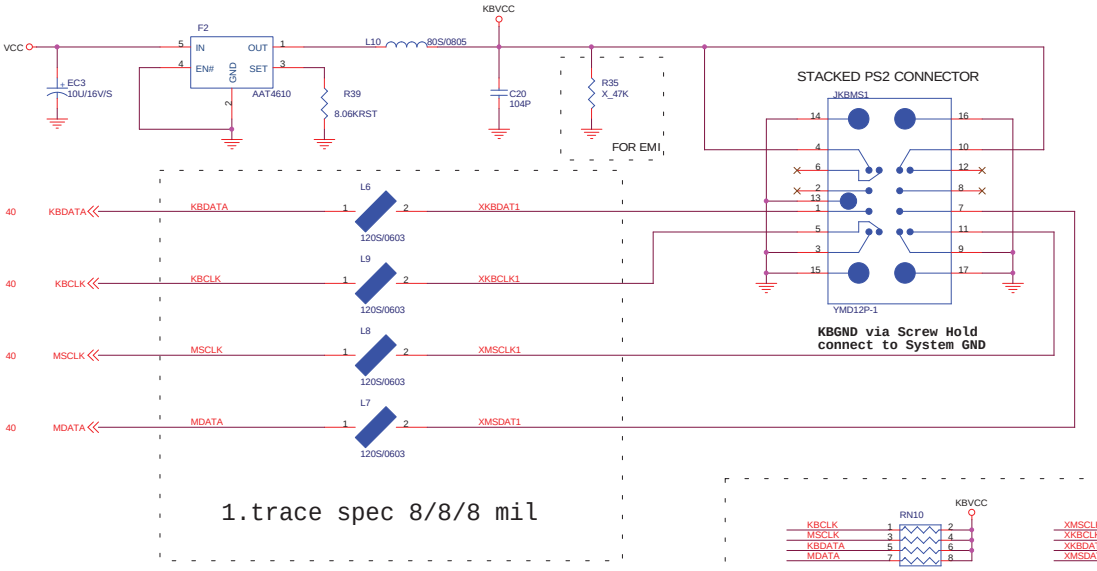
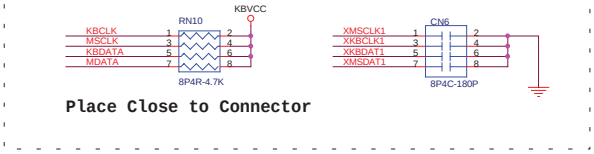
Keyboard/Mouse Ports

POWER TRACE
全部走20mil寬



1.trace spec 8/8/8 mil



Place Close to Connector

Micro Star Restricted Secret

Title: Keyboard/Mouse Ports		Rev: 100
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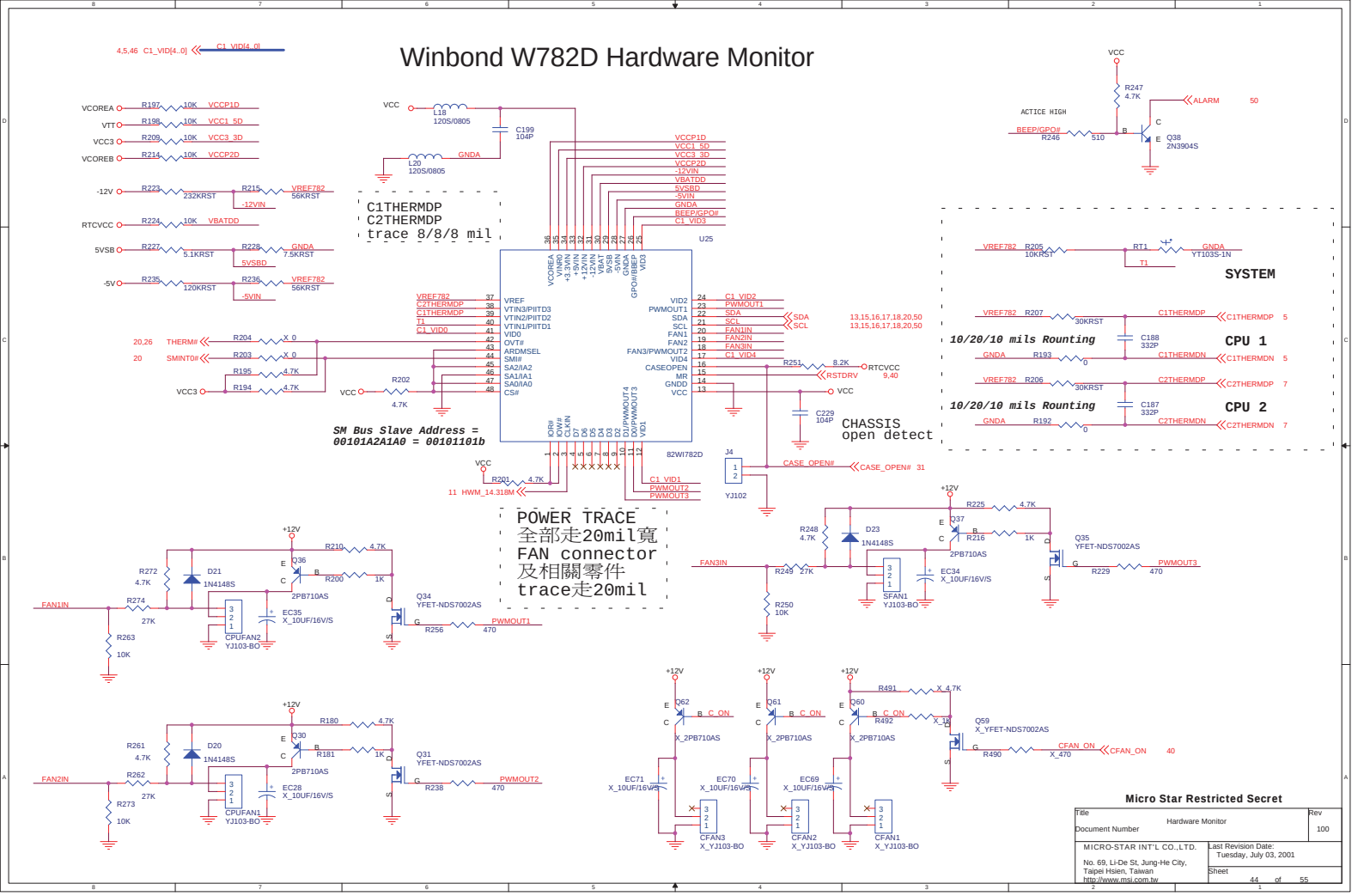
Winbond W782D Hardware Monitor



VRM 8.4

CNB30LE = 600mA@S0/S1
Clock W158=90mA@S0/S1
CPU1= x A@S0/S1@Cuppermine 370
CPU2= x A@S0/S1@Cuppermine 370

Q28,Q24須以plane方式或30mil以上的trace

Fairchild,NDS351N (N-CH,SOT-23)

1. Vgs=+/-20V
2. Id(max)=1.1A@Normal =10A@Pulse
3. Id=-1.1A,Rds(on)=250mOHm @ Vgs=-4.5V,T=25 Id=1.1A,Rds(on)=370mOHm @ Vgs=4.5V,T=125
4. Qg=3.5nC(max),Qgs=1nC(max),Qgd=2nC(max) @Vds=40V,Id=10A,Vgs=10V

CNB30LE = 1A@S0/S1
CPU1=2.7A@S0/S1
CPU2=2.7A@S0/S1
CPU1cmos=250mA@S0/S1
CPU2cmos=250mA@S0/S1

Philip,PHD3055 (N-CH,TO-252)

1. Vgs=+/-30V
2. Id(max)=12A@Vgs=10V,T=25 =9A@Vgs=10V,T=100
3. Id=-12A,Rds(on)=150mOHm @ Vgs=-10V,T=25
4. Qg=12nC(max),Qgs=3nC(max),Qgd=7nC(max) @Vds=40V,Id=10A,Vgs=10V

除VID訊號外,其餘全部寬20mil以上

Output Cap. :
Use Fujitsu 820UF/4V (10*12.5mm) * 3 (Spec of Num=1.2315)
ESR=12mOHm,RippleCurrent=5.04A

Input Cap.: (Total RippleCurrent=11.1A,Spec=8.34A)
Use Rubycon 4700UF/10V * 1
ESR=15mOHm,RippleCurrent=3.4A (25mm)
Use Lelon 1500UF/10V (20mm) * 1
ESR=22mOHm,RippleCurrent=2.15A

To meet Cuppermine 1.133GHz CPU Transient Spec.
The spec as follow :
Vcore=1.7V,Imax=22A,Istpgnt=2.5A
Vtran(min)=-0.110V,Vtran(max)=+0.080V
Iripple(input)=8.34A

CET,CEB703AL (N-CH,TO-263)

1. Vgs=+/-20V
2. Id(max)=40A@T=125-Pulse
3. Id=-25A,Rds(on)=17mOHm @ Vgs=-10V Id=-10A,Rds(on)=30mOHm @ Vgs=-4.5
4. Qg=50nC(max),Qgs=6nC(typ),Qgd=7nC(typ) @Vds=10V,Id=25A,Vgs=10V

Vishay,SUB75N03-07 (N-CH,TO-263)

1. Vgs=+/-20V
2. Id(max)=75A@T=25 (Packet Limit) =64A@T=100
3. Id=-30A,Rds(on)=7mOHm @ Vgs=-10V Id=-30A,Rds(on)=11mOHm @ Vgs=-10V,T=125
4. Qg=130nC(max),Qgs=18nC(typ),Qgd=10nC(typ) @Vds=15V,Id=75A,Vgs=10V

Micro Star Restricted Secret

Title: VRM 8.4 - 1		Rev: 100
Document Number		
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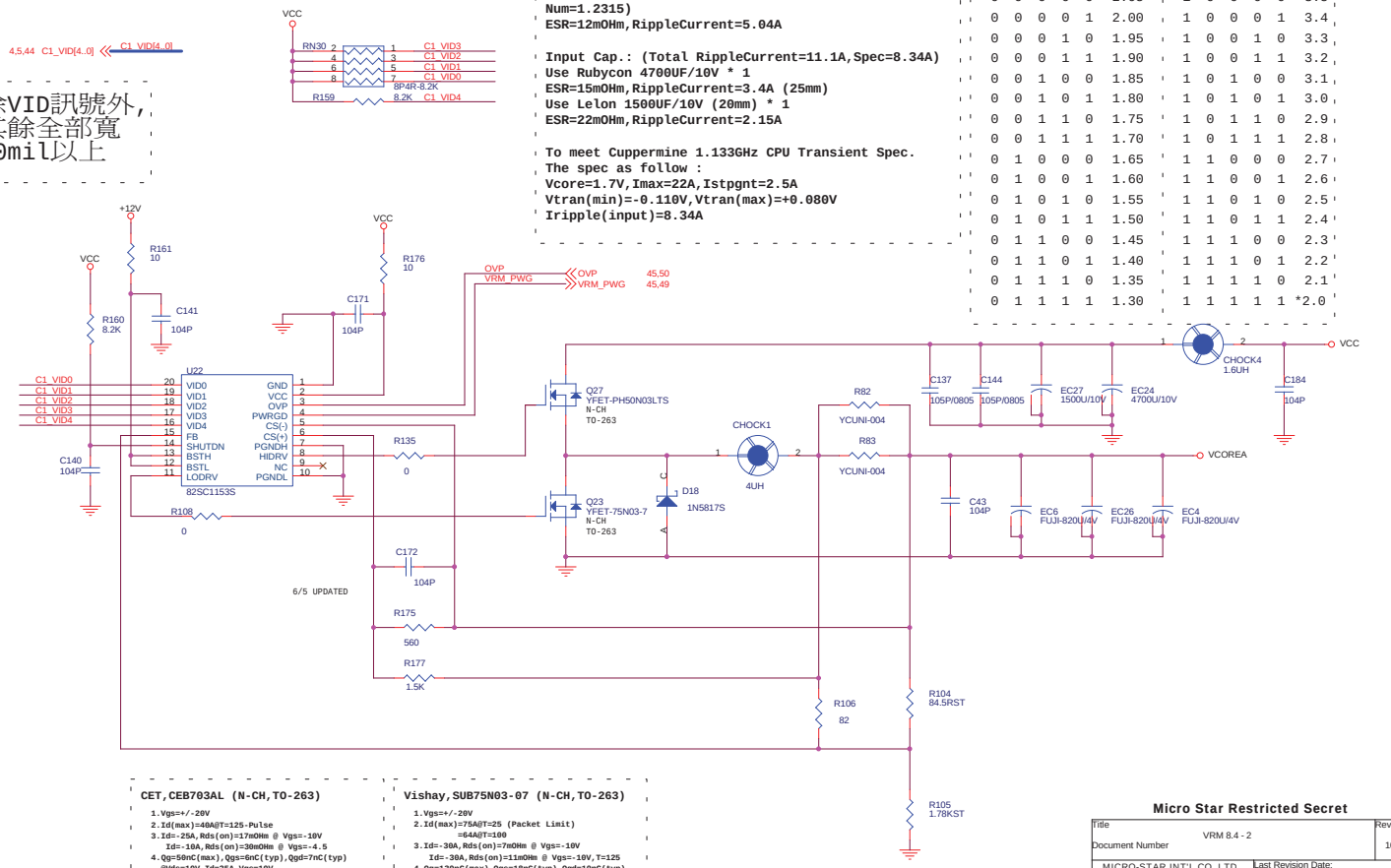
除VID訊號外,
其餘全部寬
20mil以上

Output Cap. :
Use Fujitsu 820UF/4V (10*12.5mm) * 3 (Spec of Num=1.2315)
ESR=12mOHm,RippleCurrent=5.04A

Input Cap.: (Total RippleCurrent=11.1A,Spec=8.34A)
Use Rubycon 4700UF/10V * 1
ESR=15mOHm,RippleCurrent=3.4A (25mm)
Use Lelon 1500UF/10V (20mm) * 1
ESR=22mOHm,RippleCurrent=2.15A

To meet Cuppermine 1.133GHz CPU Transient Spec.
The spec as follow :
Vcore=1.7V,Imax=22A,Istpgnt=2.5A
Vtran(min)=-0.110V,Vtran(max)=+0.080V
Iripple(input)=8.34A

D4	D3	D2	D1	D0	Vs	D4	D3	D2	D1	D0	Vs
0	0	0	0	0	2.05	1	0	0	0	0	3.5
0	0	0	0	1	2.00	1	0	0	0	1	3.4
0	0	0	1	0	1.95	1	0	0	1	0	3.3
0	0	0	1	1	1.90	1	0	0	1	1	3.2
0	0	1	0	0	1.85	1	0	1	0	0	3.1
0	0	1	0	1	1.80	1	0	1	0	1	3.0
0	0	1	1	0	1.75	1	0	1	1	0	2.9
0	0	1	1	1	1.70	1	0	1	1	1	2.8
0	1	0	0	0	1.65	1	1	0	0	0	2.7
0	1	0	0	1	1.60	1	1	0	0	1	2.6
0	1	0	1	0	1.55	1	1	0	1	0	2.5
0	1	0	1	1	1.50	1	1	0	1	1	2.4
0	1	1	0	0	1.45	1	1	1	0	0	2.3
0	1	1	0	1	1.40	1	1	1	0	1	2.2
0	1	1	1	0	1.35	1	1	1	1	0	2.1
0	1	1	1	1	1.30	1	1	1	1	1	*2.0



CET,CEB703AL (N-CH,TO-263)

1. Vgs=+/-20V
2. Id(max)=40A@T=125-Pulse
3. Id=-25A,Rds(on)=17mOHm @ Vgs=-10V
   Id=-10A,Rds(on)=30mOHm @ Vgs=-4.5
4. Qg=50nC(max),Qgs=6nC(typ),Qgd=7nC(typ)
   @Vds=10V,Id=25A,Vgs=10V

Vishay,SUB75N03-07 (N-CH,TO-263)

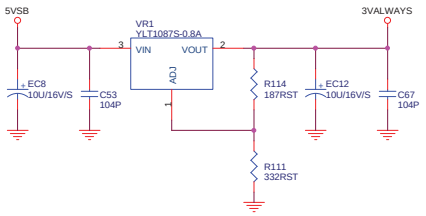
1. Vgs=+/-20V
2. Id(max)=75A@T=25 (Packet Limit)
   =64A@T=100
3. Id=-30A,Rds(on)=7mOHm @ Vgs=-10V
   Id=-30A,Rds(on)=11mOHm @ Vgs=-10V,T=125
4. Qg=130nC(max),Qgs=18nC(typ),Qgd=10nC(typ)
   @Vds=15V,Id=75A,Vgs=10V

Micro Star Restricted Secret

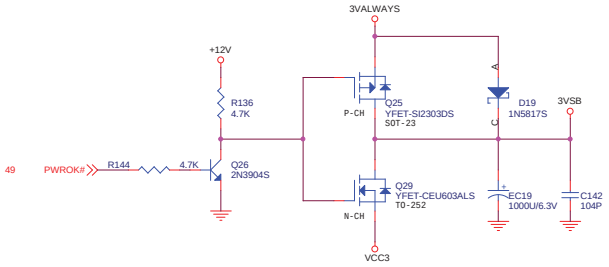
Title: VRM 8.4 - 2	Rev: 100
Document Number	
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Tuesday, July 03, 2001 Sheet 46 of 55

Voltage Regulators

VCC 3SBY Voltage Regulator



以plane方式走線



SI2303DS (P-CH,SOT-23) Spec :

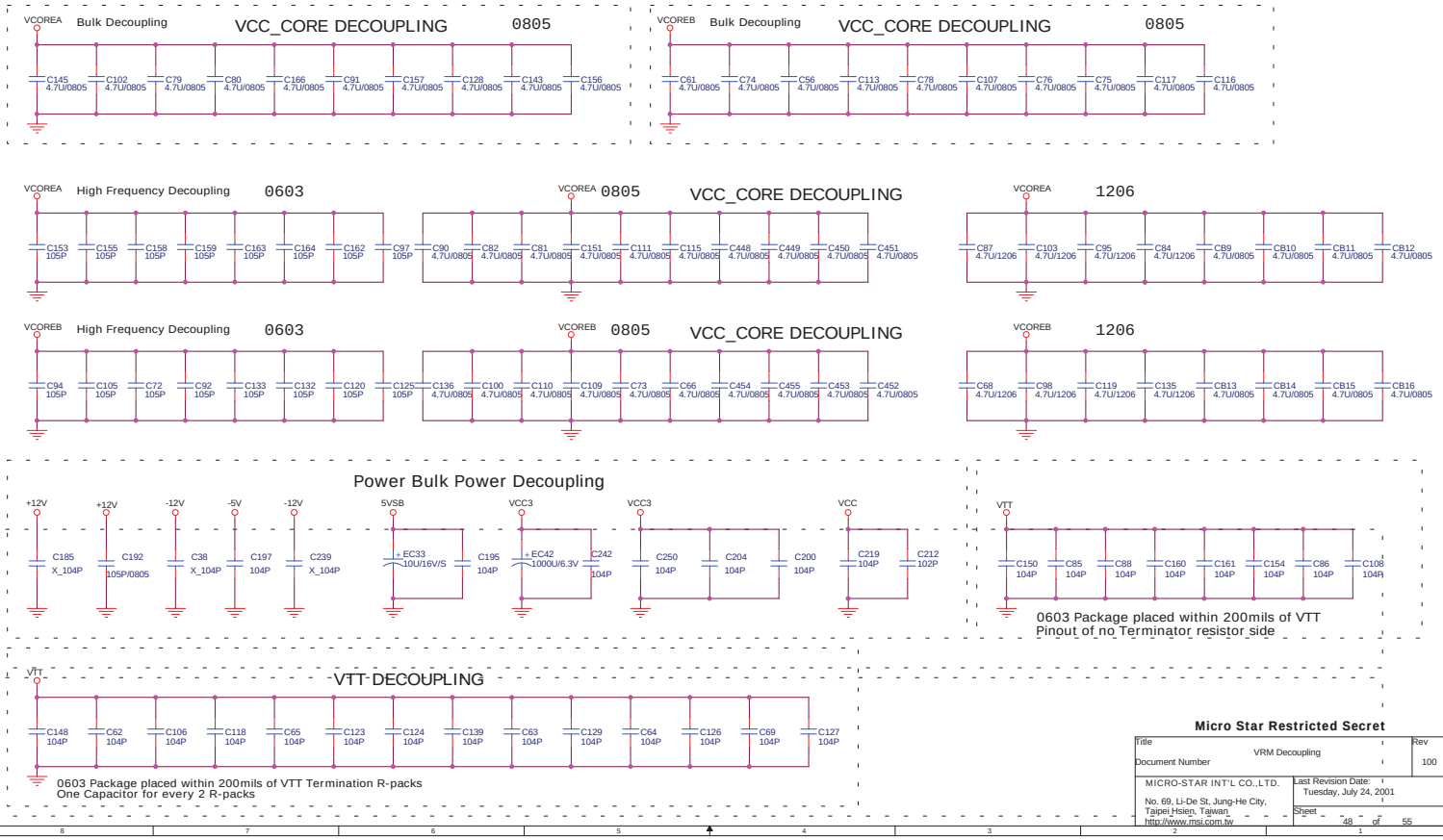
1. Vgs=+/-20V
2. Id=-1.7A,Rds(on)=210mOHm @ Vgs=-10V,T=25
   Id=-1.3A,Rds(on)=460mOHm @ Vgs=-4.5

CET,CEU73AL (P-CH,TO-252)

1. Vgs=+/-20V
2. Id(max)=240A@T=125-Pulse
3. Id=-25A,Rds(on)=22mOHm @ Vgs=-10V
   Id=-10A,Rds(on)=40mOHm @ Vgs=-4.5
4. Qg=40nC(max),Qgs=6nC(typ),Qgd=2nC(typ)
   @Vds=10V,Id=25A,Vgs=10V

Title / Document Number	System Voltage Regulators	Rev 100
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Tuesday, July 03, 2001	Sheet 47 of 55

370-pin Socket Decoupling



Micro Star Restricted Secret

Title: VRM Decoupling		Rev: 100
Document Number		
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Tuesday, July 24, 2001	
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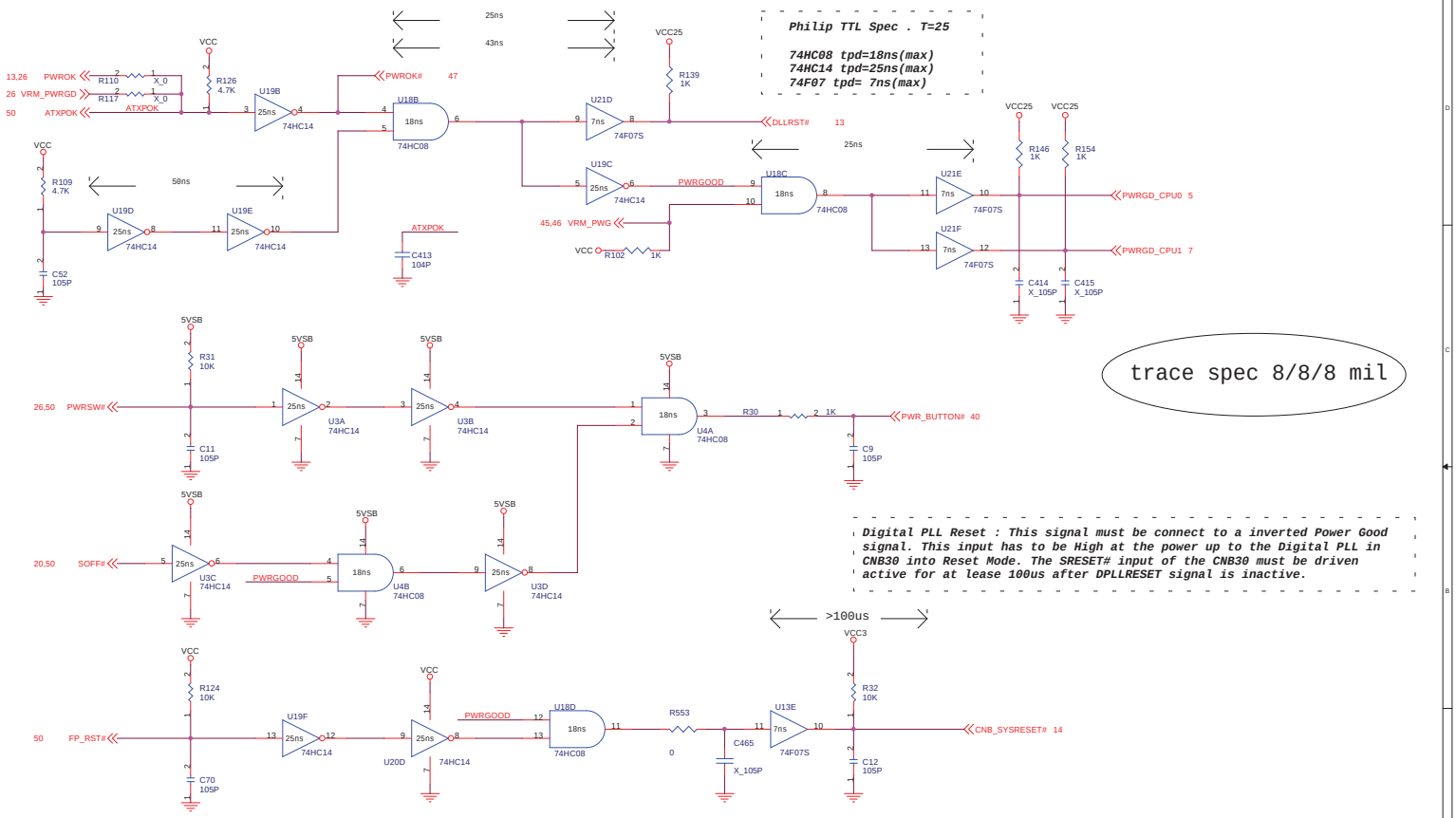
Philip TTL Spec . T=25
74HC08 tpd=18ns(max)
74HC14 tpd=25ns(max)
74F07 tpd= 7ns(max)
trace spec 8/8/8 mil
Digital PLL Reset : This signal must be connect to a inverted Power Good signal. This input has to be High at the power up to the Digital PLL in CNB30 into Reset Mode. The SRESET# input of the CNB30 must be driven active for at lease 100us after DPLLRESET signal is inactive.
>100us
Philip TTL Spec . T=25
74HC08 Ioh=40mA(max)
MAX709M Power Comsumption 200uA(max)
MAX709M will keep RESET# assert for 140ms after VCC rises above the threshold (790M=4.40V) and Output voltage will be VCC-1.5V
Micro Star Restricted Secret
Title
Power OK / Reset
Rev
100
Document Number
MICRO-STAR INT'L CO.,LTD.
No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan
http://www.msi.com.tw
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Tuesday, July 03, 2001
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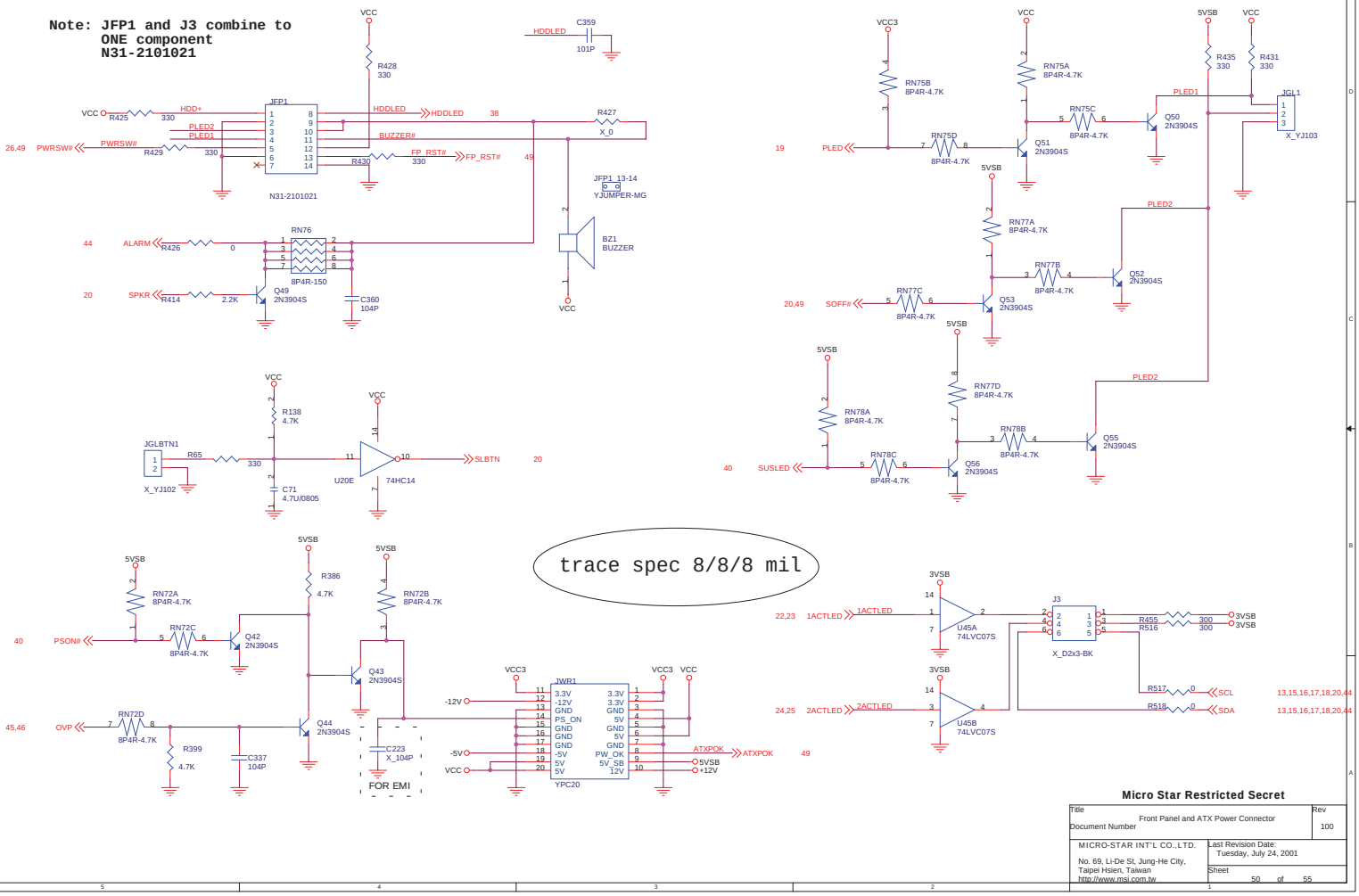

Micro Star Restricted Secret

Title	Front Panel and ATX Power Connector	Rev
Document Number		100
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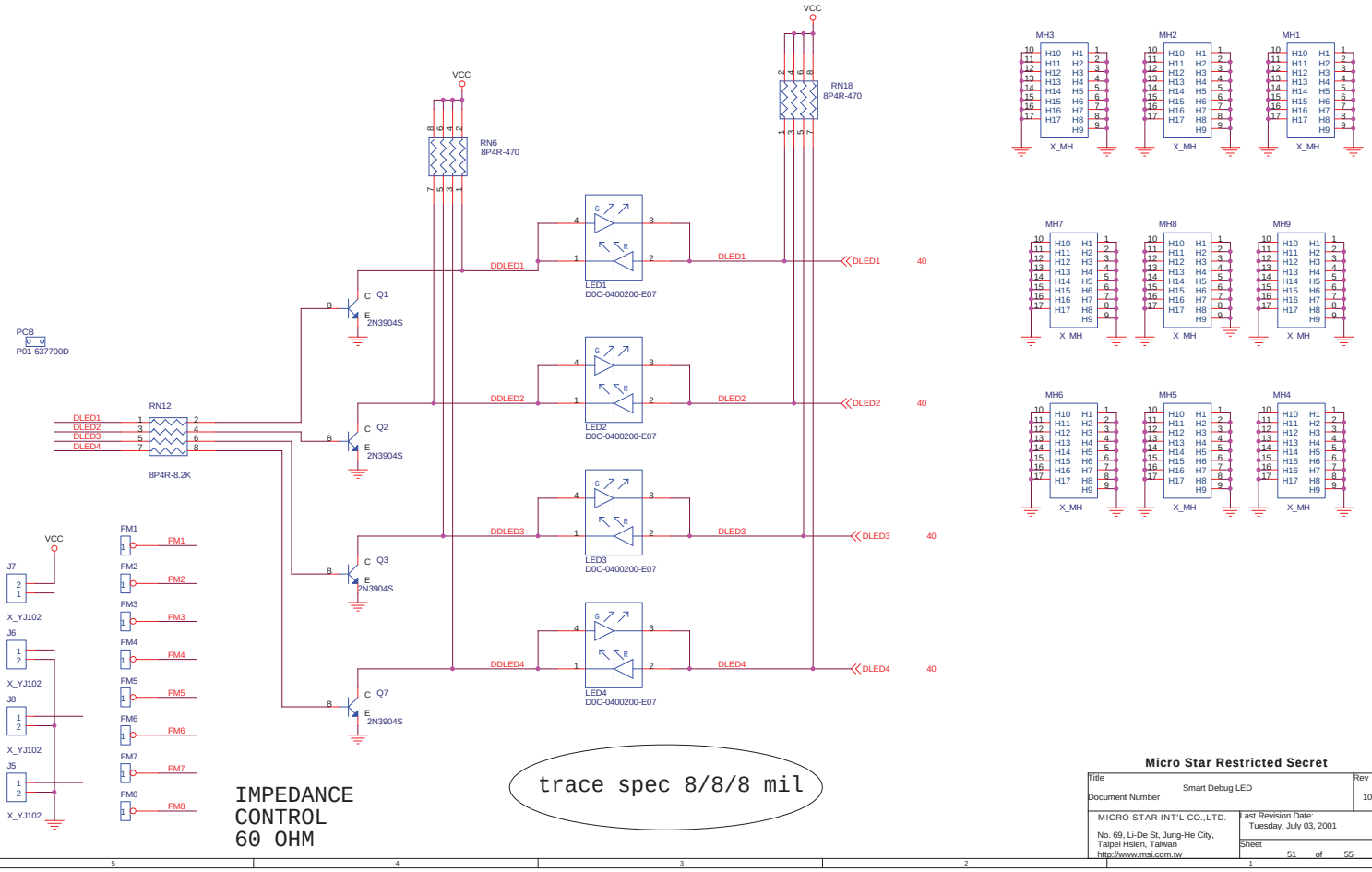
VCC
RN6
8P4R-470
RN18
8P4R-470
Q1
Q2
Q3
Q7
2N3904S
DDLED1
DDLED2
DDLED3
DDLED4
DLED1
DLED2
DLED3
DLED4
LED1
LED2
LED3
LED4
D0C-0400200-E07
PCB
P01-637700D
RN12
8P4R-8.2K
J7
J6
J8
J5
X_YJ102
FM1
FM2
FM3
FM4
FM5
FM6
FM7
FM8
MH1
MH2
MH3
MH4
MH5
MH6
MH7
MH8
MH9
X_MH
IMPEDANCE
CONTROL
60 OHM
trace spec 8/8/8 mil
Micro Star Restricted Secret
Title
Smart Debug LED
Rev
100
Document Number
MICRO-STAR INT'L CO.,LTD.
No. 69, Li-De St, Jung-He City,
Taipei Hsien, Taiwan
http://www.msi.com.tw
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General Spec.

PCI Config.

DEVICE	ICH INT Pin	IDSEL	CLOCK	PIN OUT	R#/G#
PCI SLOT1	INT#0 INT#1 INT#2 INT#3	AD23	PCICLK1		0
PCI SLOT2	INT#1 INT#2 INT#3 INT#0	AD17	PCICLK2		1
PCI SLOT3	INT#2 INT#3 INT#0 INT#1	AD18	PCICLK3		2
OSB4	INT#0 (USB) INT#1 INT#2 INT#3	*AD26 **AD19	SBPCLK		X
LAN 1	INT#3	AD20	1LANPCLK		3
LAN 2	INT#4	AD21	2LANPCLK		4
ATI VGA	INT#5	AD22			5
SCSI	INT#8(I) INT#9(I)	P64AD17	SCSIPCI66		0
PCI66 SLOT5	INT#6 INT#7 INT#8(I) INT#9(I)	P64AD18	P64CLK1		1
PCI66 SLOT6	INT#10 INT#11 INT#12 INT#13	P64AD19	P64CLK2		2

*AD26 = Check on ASUS board
**AD19 = Check on RCC
reference schematic

NS PC97317

GPIO Pin	Type	Function	Pin Number
GPIO 24	I/O	DLED4	73
GPIO 25	I/O	DLED3	74
GPIO 26	I/O	DLED2	75
GPIO 27	I/O	DLED1	76
GPIO 10	I/O	LAN PME# Event	149
GPIO 11	I/O	CFAN_ON	150
GPIO 12	I/O	MOUSE WAKE UP EVENT	151
GPIO 13	I/O	KEYBOARD WAKE UP EVENT	152
GPIO 14	I/O	Pull Up to 5V with 10K ohm	153
GPIO 15	I/O	PCI64 Bus PME# Event	154
GPIO 16	I/O	PCI32 Bus PME# Event	155
GPIO 17	I/O	Pull Up to 5V through 10K ohm	156
CS0/LED	I/O	Suspend LED	68
CS1/XD0	I/O	NC	71
GPIO22/POR	I/O	POR - External Event	159
P17	I/O	Pull Up to 5V with 4.7K ohm	108
P18	I/O	KB Reset#	109
P19	I/O	A20 Mask	110

DRAM Config.

DEVICE	ADDRESS	CLOCK
DIMM 1	1010000B	DCLK0
DIMM 2	1010001B	DCLK1
DIMM 3	1010010B	DCLK2
DIMM 4	1010011B	DCLK3

W83782D	01011010B(5A)
82550	11001000B

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General Spec.

ROSB General Purpose Event List

Pin	Event	Orginal Signal	MS6377 Implement
V1_18	GEVENT_0	ACPI General Purpose Event	CPU 1 SERR# Event
U3_207	GEVENT_1	ACPI General Purpose Event	CPU 2 SERR# Event
W2_118	GEVENT_2	ACPI General Purpose Event	CPU 1 THERMTRIP# Event
V3_208	GEVENT_3	ACPI General Purpose Event	CPU 2 THERMTRIP# Event
W4_292	GEVENT_4	ACPI General Purpose Event	P2ALERT
Y3_210	GEVENT_5	ACPI General Purpose Event	SMIINT0#,W83782D SMI Event)
W1_19	GEVENT_6	ACPI General Purpose Event	THERM#,W83782D Thermer Evvent)
Y2_119	GEVENT_7	ACPI General Purpose Event	Not Use. Pull Down
W26_58	GEVENT_8	General Purpose Chip Select 0	Not Use. NC.
W25_153	GEVENT_9	General Purpose Chip Select 1	Not Use. NC.
Y24_239	GEVENT_10	General Purpose Chip Select 2	Not Use. NC.
AF9_34	GEVENT_11	GPM0	Not Use. PULL-HIGH.
C26_74	GEVENT_12	General Purpose Port	Not Use. PULL-HIGH.
C24_255	GEVENT_13	General Purpose Port	Not Use. PULL-HIGH.
C25_169	GEVENT_14	General Purpose Port	Not Use. PULL-HIGH.
D26_168	GEVENT_15	GP for Backplane	Not Use. PULL-HIGH.(CLRNVRAM#)
AC14_306	GEVENT_16	USB Test Mode Enable	Not Use. NC.
AF10_35	GEVENT_17	USB Test Mode Select 1	Not Use. NC.
AE11_133	GEVENT_18	USB Intrrupt	Not Use. NC.
E25_167	GEVENT_19	Super IO Address Enable	SIOAEN.Super IO Address Enable
G24_252	GEVENT_20	Super IO Write/Previously MIDCLK	SIOWC#.Super IO Write Command
AE9_131	GEVENT_21	Flash ROM Write	FRWP#.Flash ROM Write Protect
F26_71	GEVENT_22	CPU Stop CLK	Not Use. NC.
E26_72	GEVENT_23	PCI Stop CLK /Previously MIDIN	Not Use. NC.
AE8_130	BLINK	BLINK	POWER LED (PLED1)
C1_3	SLPBTN	SLPBTN	SLEEP BUTTON

Program on OSB 2.4.4.39 to 2.4.4.50 :
GPEConfiguration /Input Level/Status Register

PC97317 POR#,SCI,ONCTL# Generation

POR# Generator :

* SMI Command
  ACPI Global Lock Release
  Sleep Enable
  Select Rising/Falling/High/Low(GPIO12,GPIO13,P12)
  Select Rising/Falling/High/Low(PME1,PME2,IRRX1,IRRX2,GPIO10)
  Switch Off Event(SWITCH#)

  MS-6377 Implement :

  GPO10 :
  GPO12 :
  GPO13 :
  GPO15/PME2 : P64PME#
  GPO16/PME1 : PCIPME#
  P12/CS0# : NC
  IRRX1 : NC
  IRRX2 : NC

* SCI Generator :

  RTC Alarm
  Power Management Timer
  Switch Off Event(SWITCH#)
  BIOS Global Lock Release
  Select Rising/Falling/High/Low(GPIO12,GPIO13,P12)
  Select Rising/Falling/High/Low(PME1,PME2,IRRX1,IRRX2,GPIO10)

* ONCTL# Generator :

  RTC Alarm
  Fail Saft Timer
  Select Rising/Falling/High/Low(GPIO12,GPIO13,P12)
  Select Rising/Falling/High/Low(PME1,PME2,IRRX1,IRRX2,GPIO10)
  Switch Off Event(SWITCH#)
  Switch On Event(SWITCH#)
  Pulse/Tran Select(RING#,RI1#,RI2#)
  MATCH

CNB30LE DRAM Support List

Generation	Depth	Size/Row
16M 2-Banks SDRAM	11/9	16MB
	11/10	32MB
64M 2-Banks SDRAM	13/10	128MB
64M 4-Banks SDRAM	12/8	32MB
	12/9	64MB
	12/10	128MB
	13/10	256MB**
	12/9	64MB
128M 4-Banks SDRAM	12/10	128MB**
	13/10	256MB**
	*12/11	256MB
256M 4-Banks SDRAM	13/8	64MB
	13/9	128MB
	13/10	256MB
	13/11	512MB
	*12/10	128MB

*Not List in CNB30LE"Table2. MA Mapping for Row and Column Address for SDRAM"
** Not List in CNB30LE "Table 1. Support SDRAMs" table

TTL Gate Count List :

TTL	Num.	Locate (Free Gate)
74F07	3	U10(1),U6(0),U1(0)
74F08	2	U58-5VSB(2)
74F244	2	U7(0),U9(0)
74HC08	1	U2(0)
74HC14	3	U5(1),U16(0),U57-5VSB(2)
74HC273	1	U8(0)
74LVC07	1	U3(0)

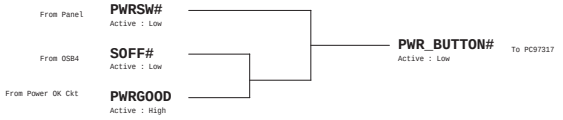
Intel PC SDRAM Register DIMM Spec :

Type	PLL	Support
64MByte 72bit ECC SDRAM	Non	No
64MByte 72bit ECC SDRAM	Yes	Yes
72bit ECC Stacked SDRAM (2 Rows)	Yes	Yes
256MB using 16M*4 (64Mbit) SDRAMs		
512MB using 32M*4 (128Mbit) SDRAMs		
1GB using 64M*4 (256Mbit) SDRAMs		
72bit ECC Unstacked SDRAM (1 Row)	Yes	Yes
128MB using 16M*4 (64Mbit) SDRAMs		
256MB using 32M*4 (128Mbit) SDRAMs		
512MB using 64M*4 (256Mbit) SDRAMs		

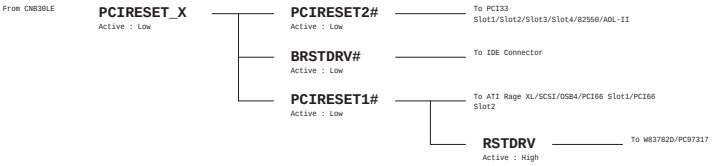
Note :
1.With PLL = CK0 -> PLL , CK1,CK2,CK3 Terminated
2.Register Signal :
  S0#/S2# (Chip Selset)
  DOMB[0..7] (DQ Mask)
  BA[0..1] (Bank Select)
  A[0..12] (Address)
  RAS# (Row Address Strobe)
  CAS# (Column Address Strobe)
  CKE0 (Clock Enable)
  WE# (Write Enable)

General Spec.

Power Button Event Ckt :



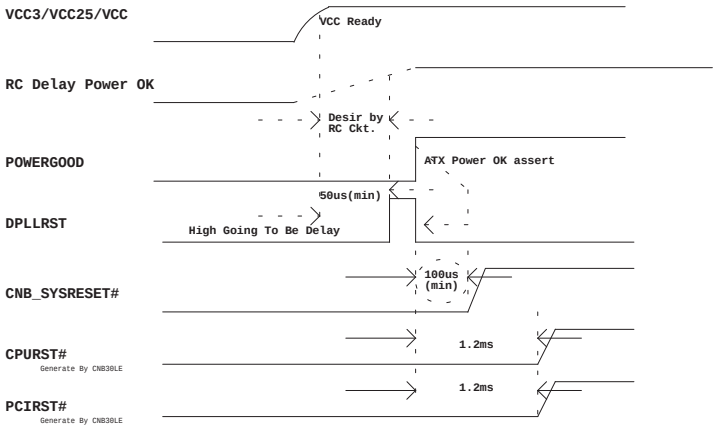
System Reset Map :



Panel Reset Button Event Ckt :

System Power OK Architecture :

Reset Timing :



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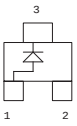
BAS70



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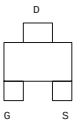

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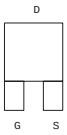

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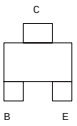

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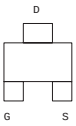

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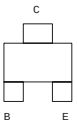
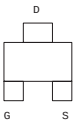
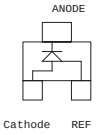


Si2303



LM431



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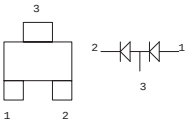

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