

MS-6395 Micro-ATX (244mm X 200mm) REVISION 7.0

Copyright (c) MSI Corporation 2001

General Purpose I/O Spec.

ICH2

GPIO Pin	Type	Function
GPIO 0	I	Non Connect
GPIO 1	I	Non Connect
GPIO 2~4	I	Not Implemented
GPIO 5	I	Non Connect
GPIO 6	I	CNR Detect
GPIO 7	I	None
GPIO 8	I	LAN Wake Up
GPIO 9	I	AC'97 Serial Data In
GPIO 10	I	Non Connect
GPIO 11	I	Non Connect
GPIO 12	I	External SMI
GPIO 13	I	LPC PME
GPIO 14~15	I	Not Implemented
GPIO 16	O	Non Connect
GPIO 17	O	Non Connect
GPIO 18	O	Not Implemented
GPIO 19	O	Power FAN control
GPIO 20	O	Non
GPIO 21	O	CPUFAN Ctrl
GPIO 22	O	Non
GPIO 23	OD	BIOS Locked/Unlocked
GPIO 24	O	Non
GPIO 25	O	Non
GPIO 26	O	Non
GPIO 27	I/O	Audio 4 channel control
GPIO 28	I/O	non
GPIO 29~31	I/O	Not Implemented

FWH

GPIO Pin	Type	Function
GPI 0	I	ATA IDE 1 Detect
GPI 1	I	ATA IDE 2 Detect
GPI 2	I	Reserved
GPI 3	I	Reserved

DEVICE	ICH INT Pin	IDSEL
PCI Slot 1	INTA# INTB# INTC# INTD#	AD16
PCI Slot 2	INTB# INTC# INTD# INTA#	AD17
PCI Slot 3	INTC# INTD# INTA# INTB#	AD18

Title	Page
Cover Sheet	1
Block Diagram	2
370PGA Socket	3,4
GTL Termination	5
Clock Synthesizer	6
GMCH	7,8,9
ICH2	10,11
Graphics Connectors	12
System Memory	13
PCI Connectors	14,15
ISA bridge + ISA Slot	16,17
CNR Riser	18
FWH + CD play control+ Intel front panel	19
LPC I/O	20
Hardware monitor	21
AC'97 Codec	22
Audio amplifier + Game Port	23
USB + IDE ATA33/66/100 Connectors	24
Parallel Port + Wake up on LAN	25
Keyboard/Mouse Connectors + COM Port	26
VRM 8.5	27
Voltage Regulators	28
Front Panel + Power connector	29
Realtek 8100BL PCI LAN	30
Decoupling Cap.	31

CPU:

Intel PIII & Tualtlan &
Celeron / VIA C3
(PGA370) Processor

System Chipset:

Intel 810E+ ICH2
Chipset

Onboard Chipset:

BIOS--2MB FWH
Clockgen--ICW209C
Audio--ADI1881A Codec
LAN--Realtek 8100BL
LPC I/O--W83627HF-AW

Expansion Slots:

ISA Slot*1
CNR Slot*1
PCI2.2 Slots*3

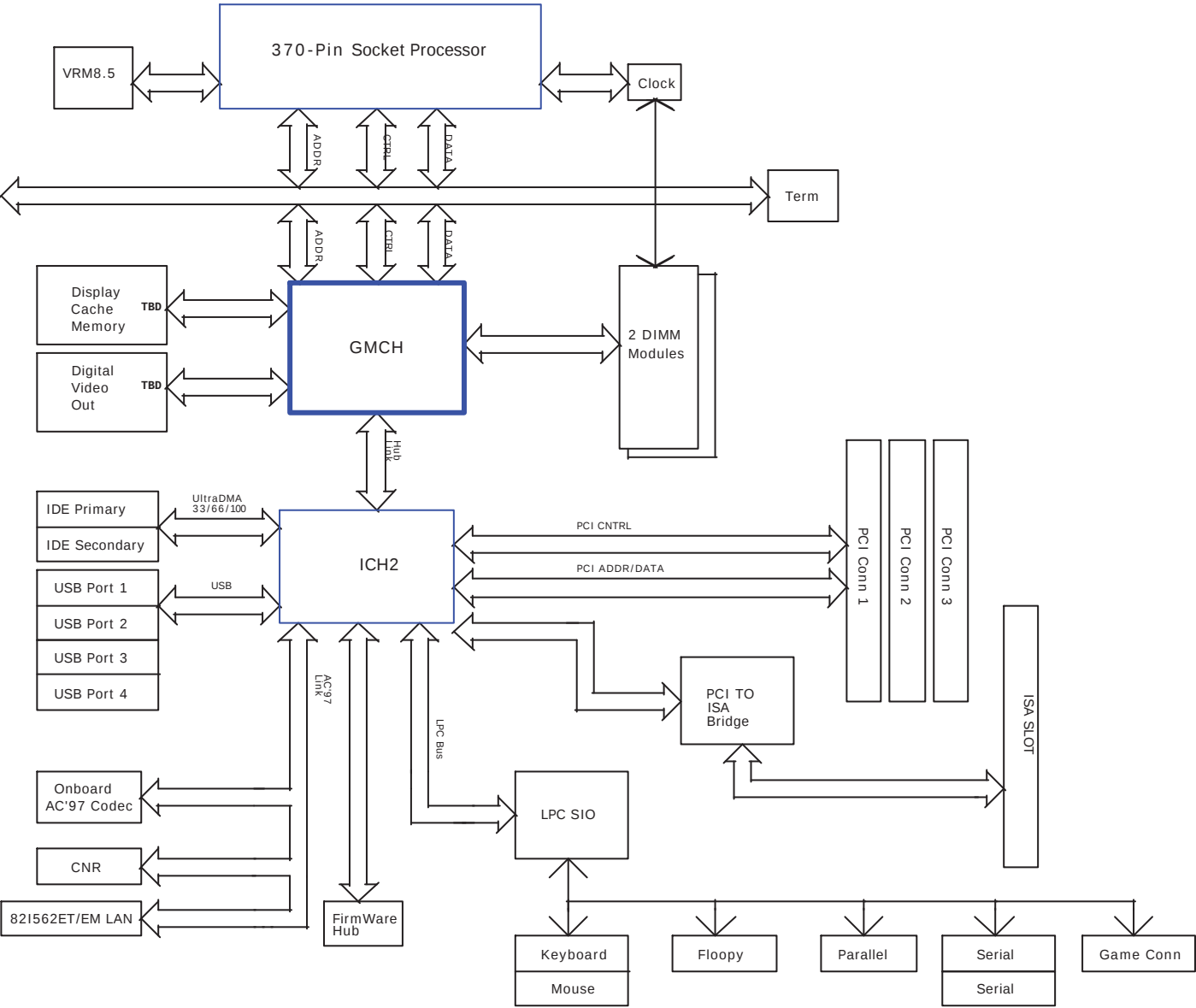
Jumper Setting Table

Sheet	Location	Function	Default	
16	JBAT1	CMOS Keep/Clear	(1-2)Normal	(2-3)Clear CMOS
17	JP1	BootSector Lock/Unlock	Short : Unlock	Open : lock
18	JP2	Onboard Audio Enable/Disable	(1-2): Enable	(2-3): Disable
20	J1	Chassis Instruction	Open	
32	USB2/3	External USB Connector		
35	JKBV1	KB Voltage Select	(1-2)5VSB	(2-3)VCC5

Micro Star Restricted Secret

Title	Cover Sheet & GPIO & Jumper setting	Rev	700
Document Number	MS-6395		
MICRO-STAR INT'L CO., LTD.		Last Revision Date:	
No. 69, Li-De St, Jung-Hsi City, Taipei Hsien, Taiwan		Monday, September 23, 2002	
http://www.msi.com.tw		Sheet	1 of 34

Block Diagram



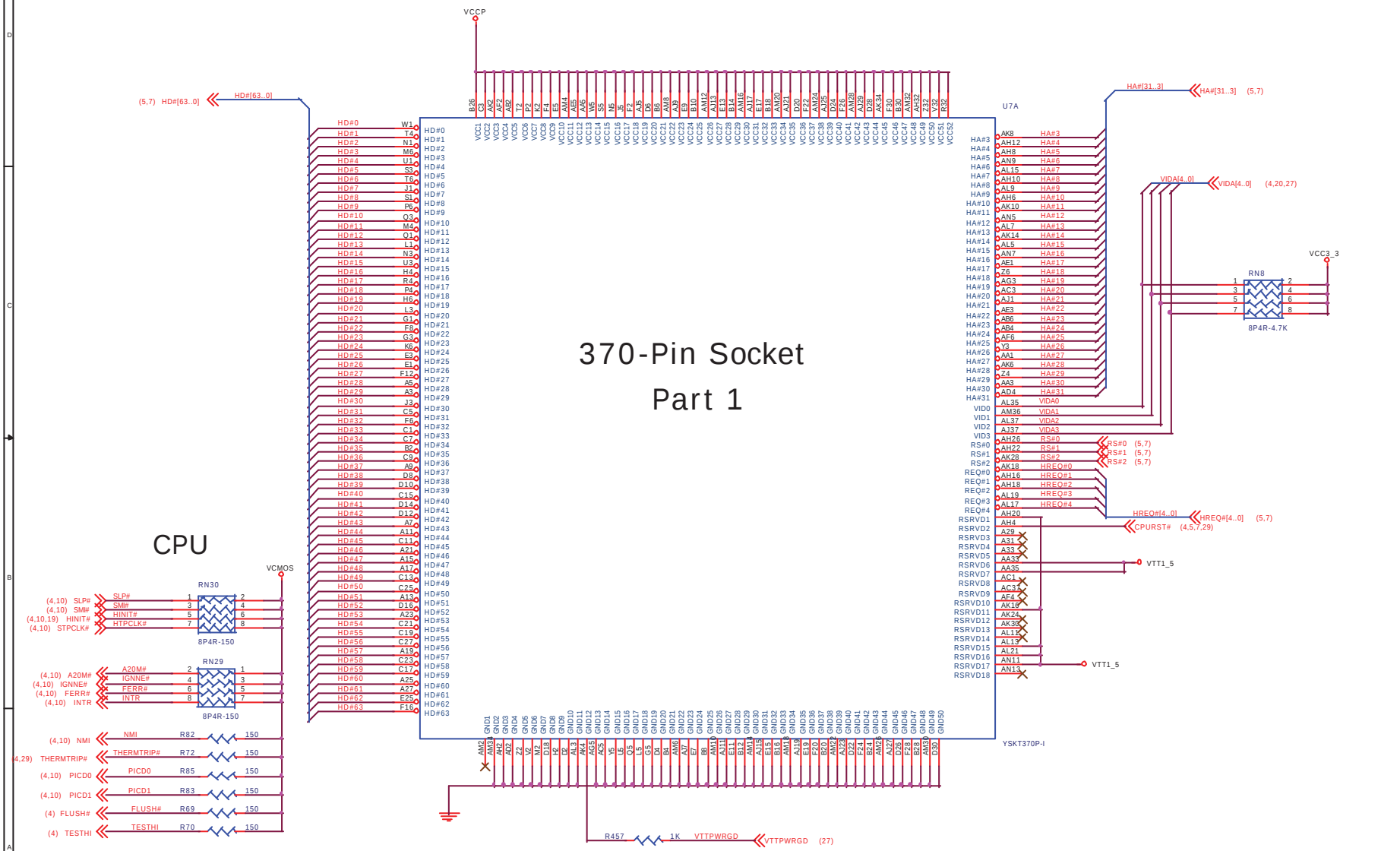
Micro Star Restricted Secret

Title	Block Diagram	Rev
Document Number	MS-6395	700
MICRO-STAR INT'L CO.,LTD.		Last Revision Date:
No. 69, Li-De St. Jung-He City,		Monday, September 23, 2002
Taipei Hsien, Taiwan		Sheet
http://www.msi.com.tw		2 of 34

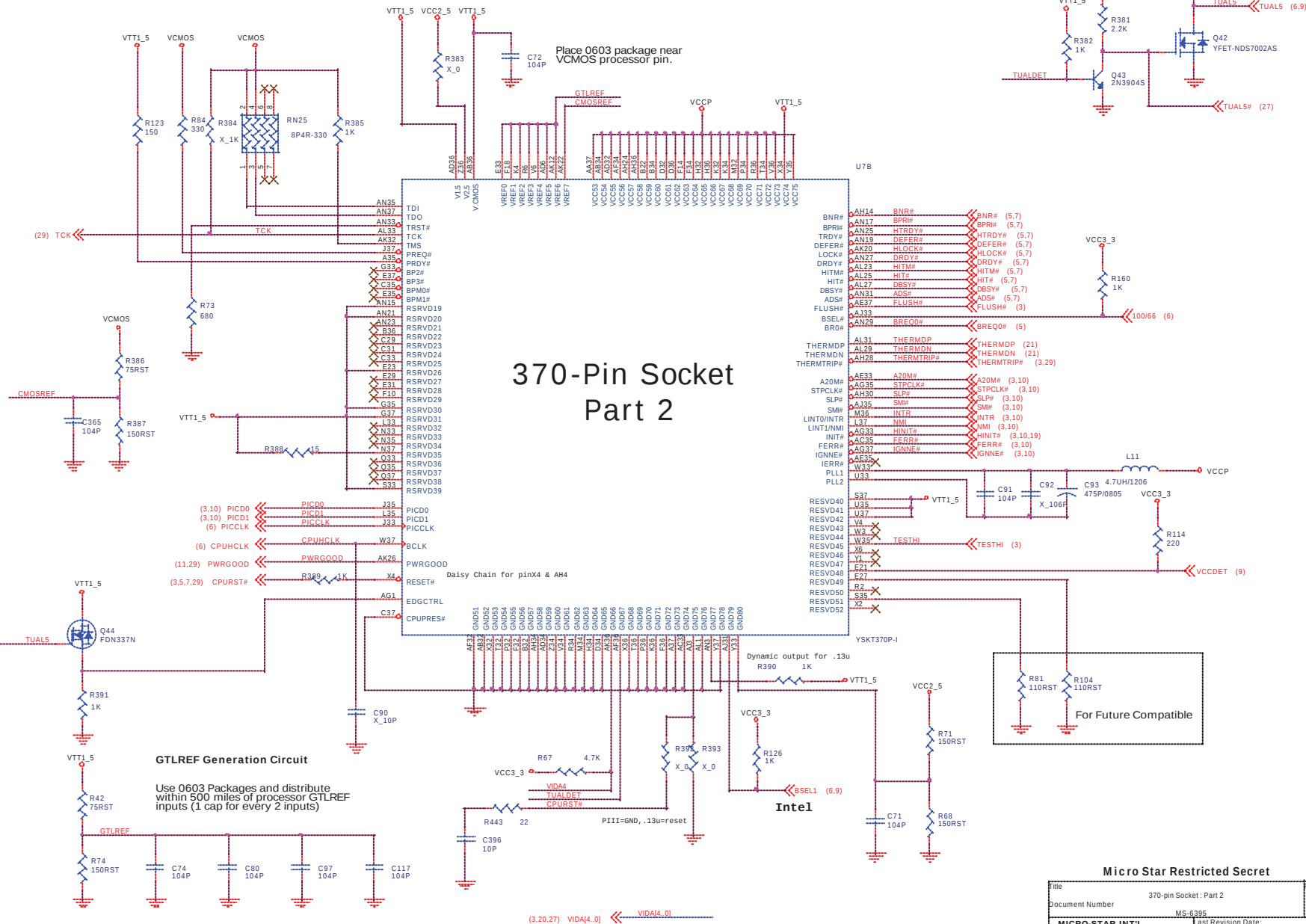
370PGA Socket Part 1

370-Pin Socket
Part 1

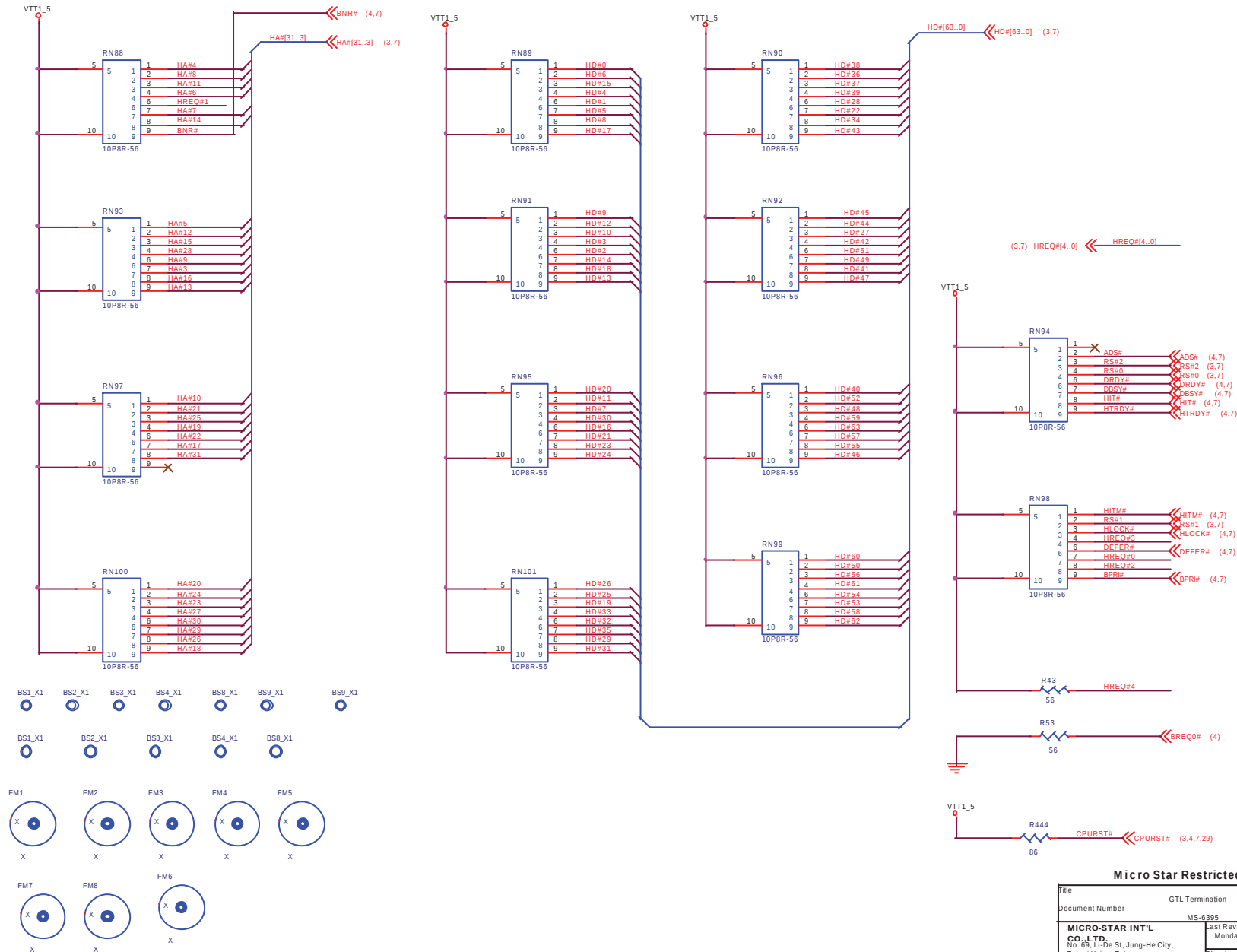
CPU



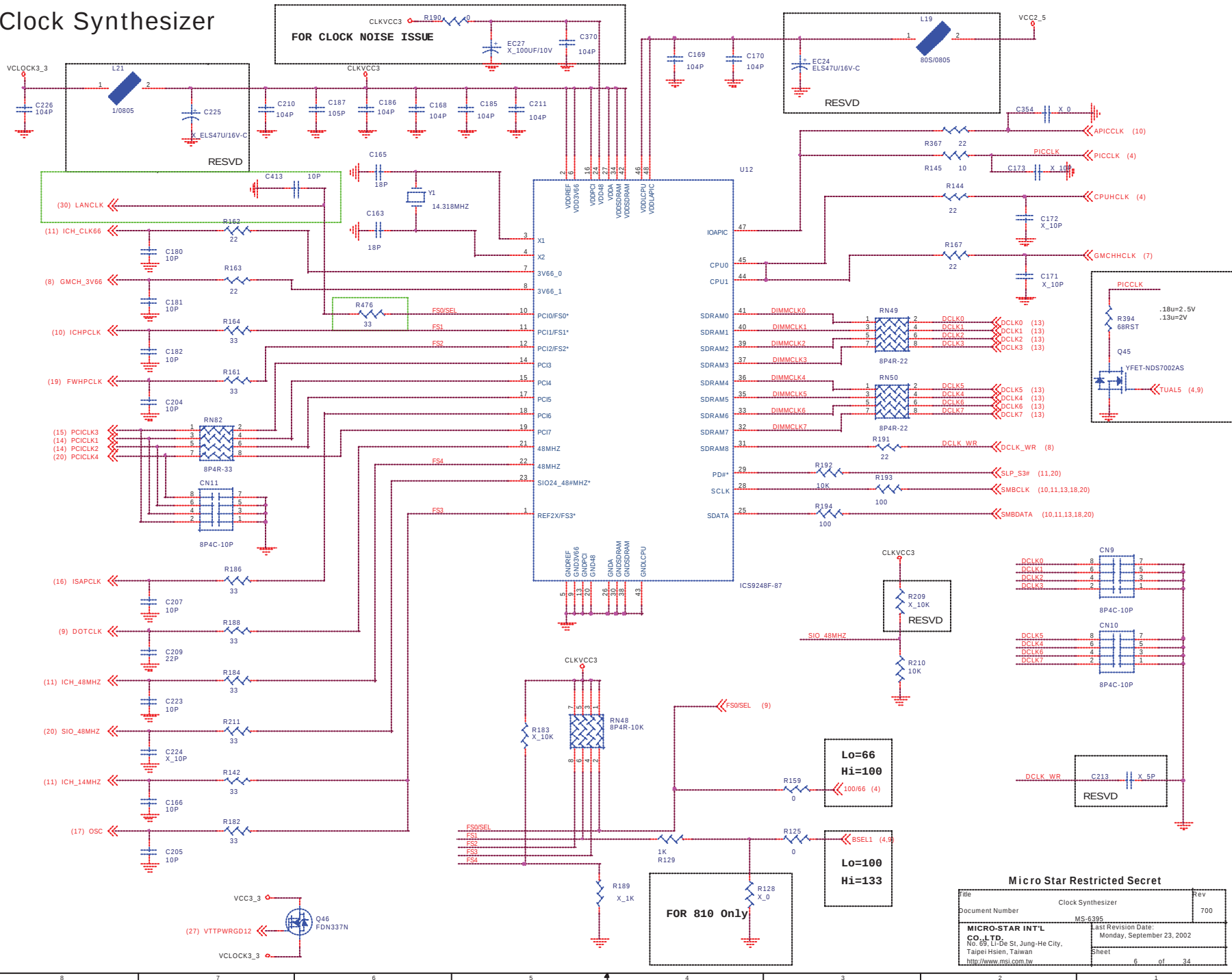
370PGA Socket Part 2



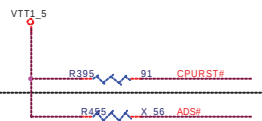
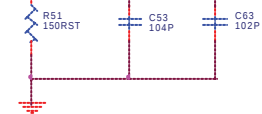
GTL Termination



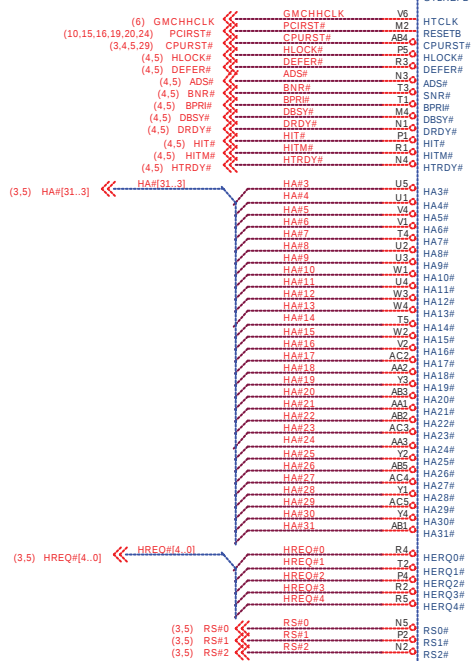
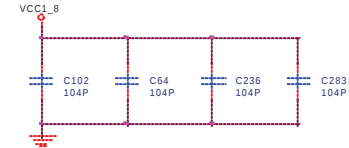
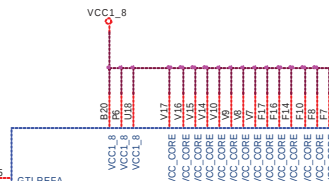
Clock Synthesizer



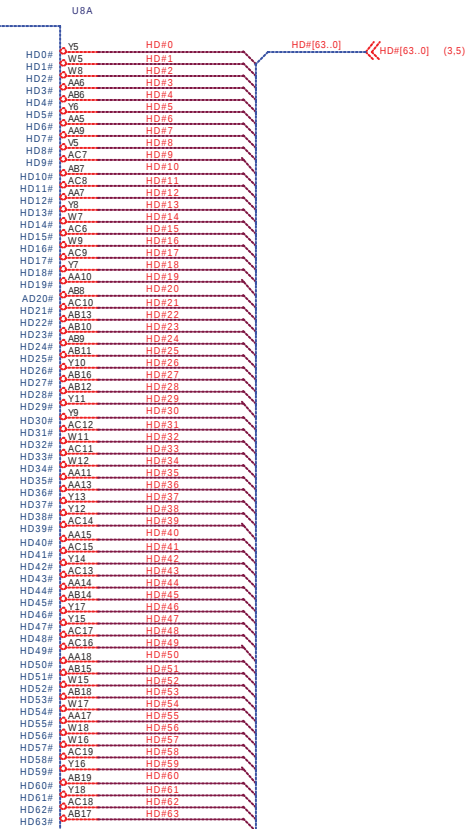
82810E, PART 1 : HOST INTERFACE



FOR B-STEP Only



INTEL 82810
PART 1
HOST INTERFACE

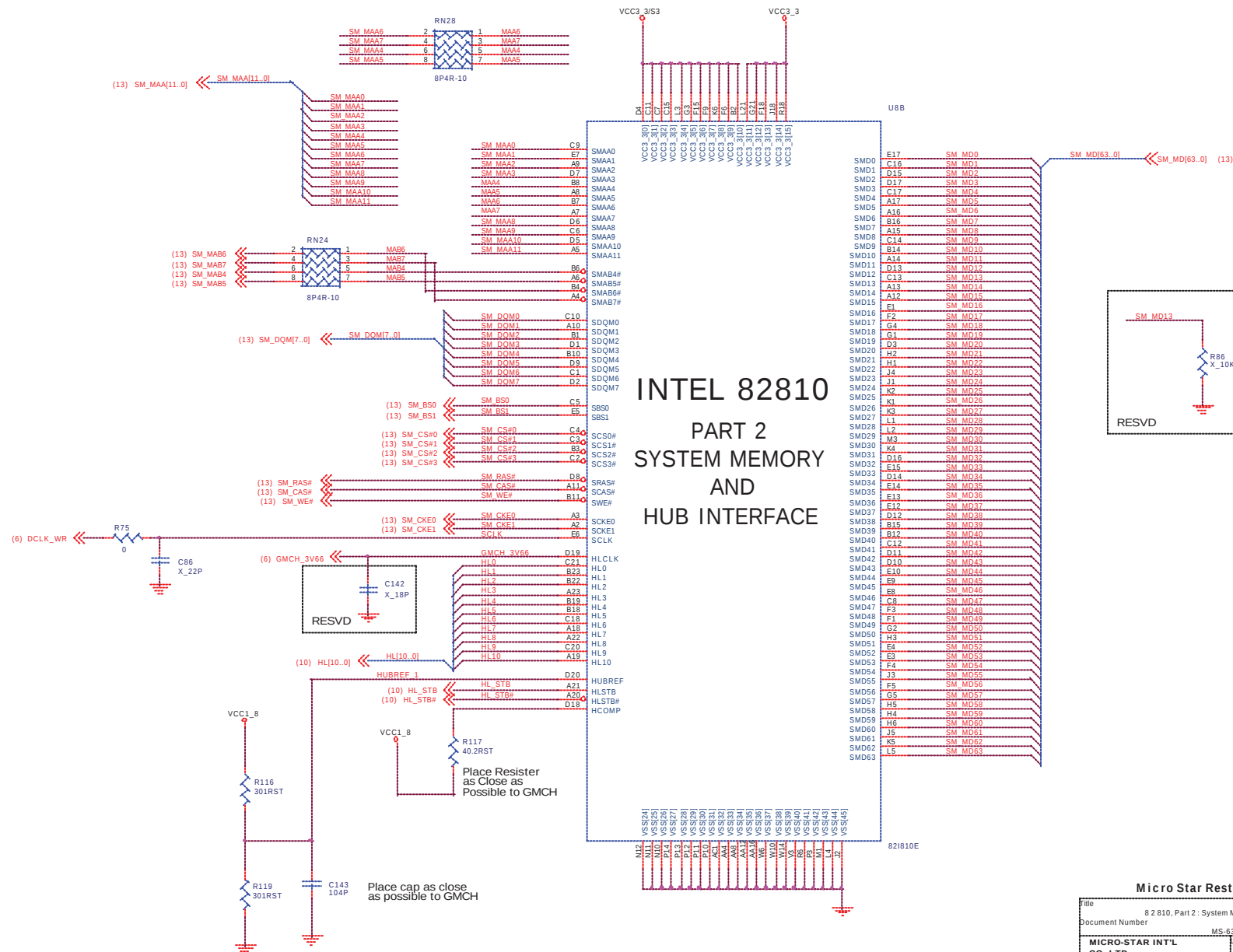


821810E

Micro Star Restricted Secret

Title	82810, Part 1 : Host Interface	Rev	
Document Number			700
MS-6395		Last Revision Date:	
MICRO-STAR INT'L CO., LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Monday, September 23, 2002	
		Sheet 7 of 34	

82810E, PART 2 : SYSTEM MEMORY AND HUB INTERFACE

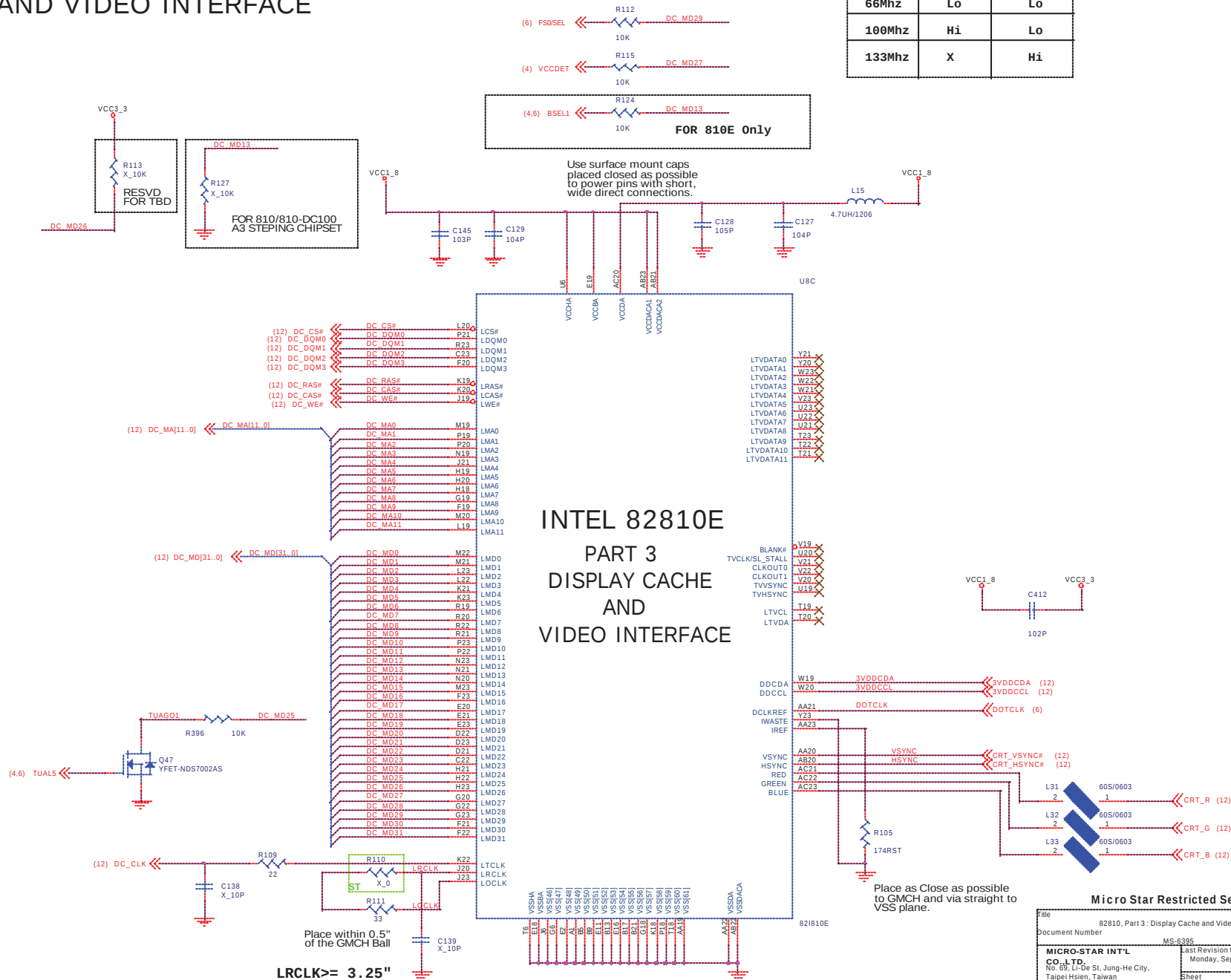


Micro Star Restricted Secret

Title	8 2 810 , Part 2 : System Memory and Hub	Rev	
Document Number	MS-6395		700
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, September 23, 2002	
		Sheet	8 of 34

810E, PART 3 : DISPLAY CACHE AND VIDEO INTERFACE

	MD29	MD13
66Mhz	Lo	Lo
100Mhz	Hi	Lo
133Mhz	X	Hi



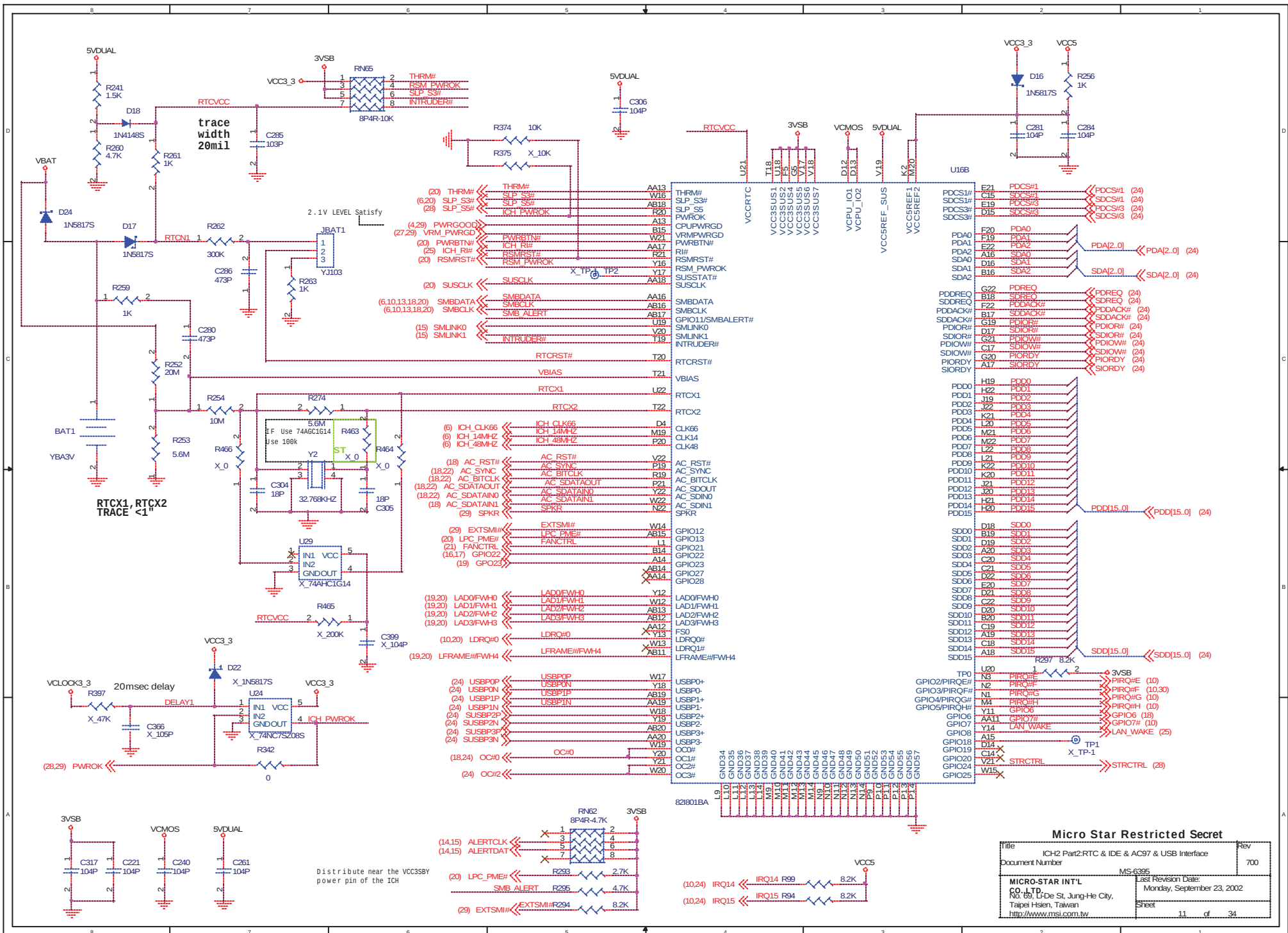
Micro Star Restricted Secret

Title	82810, Part 3 : Display Cache and Video	Rev	
Document Number	MS-6395		700
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, September 23, 2002 Sheet 9 of 34	

The diagram illustrates the internal architecture of the ICH2-1 chip, showing its connection to various system components. Key features include:

- Power and Ground Connections:** Multiple VCC and GND pins are shown, with specific decoupling capacitors (e.g., C239, C278, C241, C242, C319, C279, C228, C282, C258) and a 100pF capacitor for the XSMI# signal.
- Signal Connections:**
 - AD[31:0]:** Address bus connections to the AD[31:0] pins.
 - REQ#A, REQ#B, REQ#C, REQ#D:** Request signals for various components.
 - PIRQ#A, PIRQ#B, PIRQ#C, PIRQ#D:** Interrupt request signals.
 - GPIO#A, GPIO#B, GPIO#C, GPIO#D:** General Purpose Input/Output signals.
 - LAN_CLK, LAN_RXD0, LAN_RXD1, LAN_TXD0, LAN_TXD1, LAN_TXD2:** LAN interface signals.
 - CLAN_RSTSYNC, CLAN_RXD2, CLAN_TXD2, CLAN_TXD0, CLAN_TXD1:** LAN interface signals.
- Functional Blocks:**
 - LAN:** LAN interface block with LAN_CLK, LAN_RXD0, LAN_RXD1, LAN_TXD0, LAN_TXD1, LAN_TXD2 signals.
 - USB:** USB interface block with USB0, USB1, USB2, USB3, USB4, USB5, USB6, USB7, USB8, USB9, USB10, USB11, USB12, USB13, USB14, USB15, USB16, USB17, USB18, USB19, USB20, USB21, USB22, USB23, USB24, USB25, USB26, USB27, USB28, USB29, USB30, USB31, USB32, USB33, USB34, USB35, USB36, USB37, USB38, USB39, USB40, USB41, USB42, USB43, USB44, USB45, USB46, USB47, USB48, USB49, USB50, USB51, USB52, USB53, USB54, USB55, USB56, USB57, USB58, USB59, USB60, USB61, USB62, USB63, USB64, USB65, USB66, USB67, USB68, USB69, USB70, USB71, USB72, USB73, USB74, USB75, USB76, USB77, USB78, USB79, USB80, USB81, USB82, USB83, USB84, USB85, USB86, USB87, USB88, USB89, USB90, USB91, USB92, USB93, USB94, USB95, USB96, USB97, USB98, USB99, USB100, USB101, USB102, USB103, USB104, USB105, USB106, USB107, USB108, USB109, USB110, USB111, USB112, USB113, USB114, USB115, USB116, USB117, USB118, USB119, USB120, USB121, USB122, USB123, USB124, USB125, USB126, USB127, USB128, USB129, USB130, USB131, USB132, USB133, USB134, USB135, USB136, USB137, USB138, USB139, USB140, USB141, USB142, USB143, USB144, USB145, USB146, USB147, USB148, USB149, USB150, USB151, USB152, USB153, USB154, USB155, USB156, USB157, USB158, USB159, USB160, USB161, USB162, USB163, USB164, USB165, USB166, USB167, USB168, USB169, USB170, USB171, USB172, USB173, USB174, USB175, USB176, USB177, USB178, USB179, USB180, USB181, USB182, USB183, USB184, USB185, USB186, USB187, USB188, USB189, USB190, USB191, USB192, USB193, USB194, USB195, USB196, USB197, USB198, USB199, USB200, USB201, USB202, USB203, USB204, USB205, USB206, USB207, USB208, USB209, USB210, USB211, USB212, USB213, USB214, USB215, USB216, USB217, USB218, USB219, USB220, USB221, USB222, USB223, USB224, USB225, USB226, USB227, USB228, USB229, USB230, USB231, USB232, USB233, USB234, USB235, USB236, USB237, USB238, USB239, USB240, USB241, USB242, USB243, USB244, USB245, USB246, USB247, USB248, USB249, USB250, USB251, USB252, USB253, USB254, USB255, USB256, USB257, USB258, USB259, USB260, USB261, USB262, USB263, USB264, USB265, USB266, USB267, USB268, USB269, USB270, USB271, USB272, USB273, USB274, USB275, USB276, USB277, USB278, USB279, USB280, USB281, USB282, USB283, USB284, USB285, USB286, USB287, USB288, USB289, USB290, USB291, USB292, USB293, USB294, USB295, USB296, USB297, USB298, USB299, USB300, USB301, USB302, USB303, USB304, USB305, USB306, USB307, USB308, USB309, USB310, USB311, USB312, USB313, USB314, USB315, USB316, USB317, USB318, USB319, USB320, USB321, USB322, USB323, USB324, USB325, USB326, USB327, USB328, USB329, USB330, USB331, USB332, USB333, USB334, USB335, USB336, USB337, USB338, USB339, USB340, USB341, USB342, USB343, USB344, USB345, USB346, USB347, USB348, USB349, USB350, USB351, USB352, USB353, USB354, USB355, USB356, USB357, USB358, USB359, USB360, USB361, USB362, USB363, USB364, USB365, USB366, USB367, USB368, USB369, USB370, USB371, USB372, USB373, USB374, USB375, USB376, USB377, USB378, USB379, USB380, USB381, USB382, USB383, USB384, USB385, USB386, USB387, USB388, USB389, USB390, USB391, USB392, USB393, USB394, USB395, USB396, USB397, USB398, USB399, USB400, USB401, USB402, USB403, USB404, USB405, USB406, USB407, USB408, USB409, USB410, USB411, USB412, USB413, USB414, USB415, USB416, USB417, USB418, USB419, USB420, USB421, USB422, USB423, USB424, USB425, USB426, USB427, USB428, USB429, USB430, USB431, USB432, USB433, USB434, USB435, USB436, USB437, USB438, USB439, USB440, USB441, USB442, USB443, USB444, USB445, USB446, USB447, USB448, USB449, USB450, USB451, USB452, USB453, USB454, USB455, USB456, USB457, USB458, USB459, USB460, USB461, USB462, USB463, USB464, USB465, USB466, USB467, USB468, USB469, USB470, USB471, USB472, USB473, USB474, USB475, USB476, USB477, USB478, USB479, USB480, USB481, USB482, USB483, USB484, USB485, USB486, USB487, USB488, USB489, USB490, USB491, USB492, USB493, USB494, USB495, USB496, USB497, USB498, USB499, USB500, USB501, USB502, USB503, USB504, USB505, USB506, USB507, USB508, USB509, USB510, USB511, USB512, USB513, USB514, USB515, USB516, USB517, USB518, USB519, USB520, USB521, USB522, USB523, USB524, USB525, USB526, USB527, USB528, USB529, USB530, USB531, USB532, USB533, USB534, USB535, USB536, USB537, USB538, USB539, USB540, USB541, USB542, USB543, USB544, USB545, USB546, USB547, USB548, USB549, USB550, USB551, USB552, USB553, USB554, USB555, USB556, USB557, USB558, USB559, USB560, USB561, USB562, USB563, USB564, USB565, USB566, USB567, USB568, USB569, USB570, USB571, USB572, USB573, USB574, USB575, USB576, USB577, USB578, USB579, USB580, USB581, USB582, USB583, USB584, USB585, USB586, USB587, USB588, USB589, USB590, USB591, USB592, USB593, USB594, USB595, USB596, USB597, USB598, USB599, USB600, USB601, USB602, USB603, USB604, USB605, USB606, USB607, USB608, USB609, USB610, USB611, USB612, USB613, USB614, USB615, USB616, USB617, USB618, USB619, USB620, USB621, USB622, USB623, USB624, USB625, USB626, USB627, USB628, USB629, USB630, USB631, USB632, USB633, USB634, USB635, USB636, USB637, USB638, USB639, USB640, USB641, USB642, USB643, USB644, USB645, USB646, USB647, USB648, USB649, USB650, USB651, USB652, USB653, USB654, USB655, USB656, USB657, USB658, USB659, USB660, USB661, USB662, USB663, USB664, USB665, USB666, USB667, USB668, USB669, USB670, USB671, USB672, USB673, USB674, USB675, USB676, USB677, USB678, USB679, USB680, USB681, USB682, USB683, USB684, USB685, USB686, USB687, USB688, USB689, USB690, USB691, USB692, USB693, USB694, USB695, USB696, USB697, USB698, USB699, USB700, USB701, USB702, USB703, USB704, USB705, USB706, USB707, USB708, USB709, USB710, USB711, USB712, USB713, USB714, USB715, USB716, USB717, USB718, USB719, USB720, USB721, USB722, USB723, USB724, USB725, USB726, USB727, USB728, USB729, USB730, USB731, USB732, USB733, USB734, USB735, USB736, USB737, USB738, USB739, USB740, USB741, USB742, USB743, USB744, USB745, USB746,

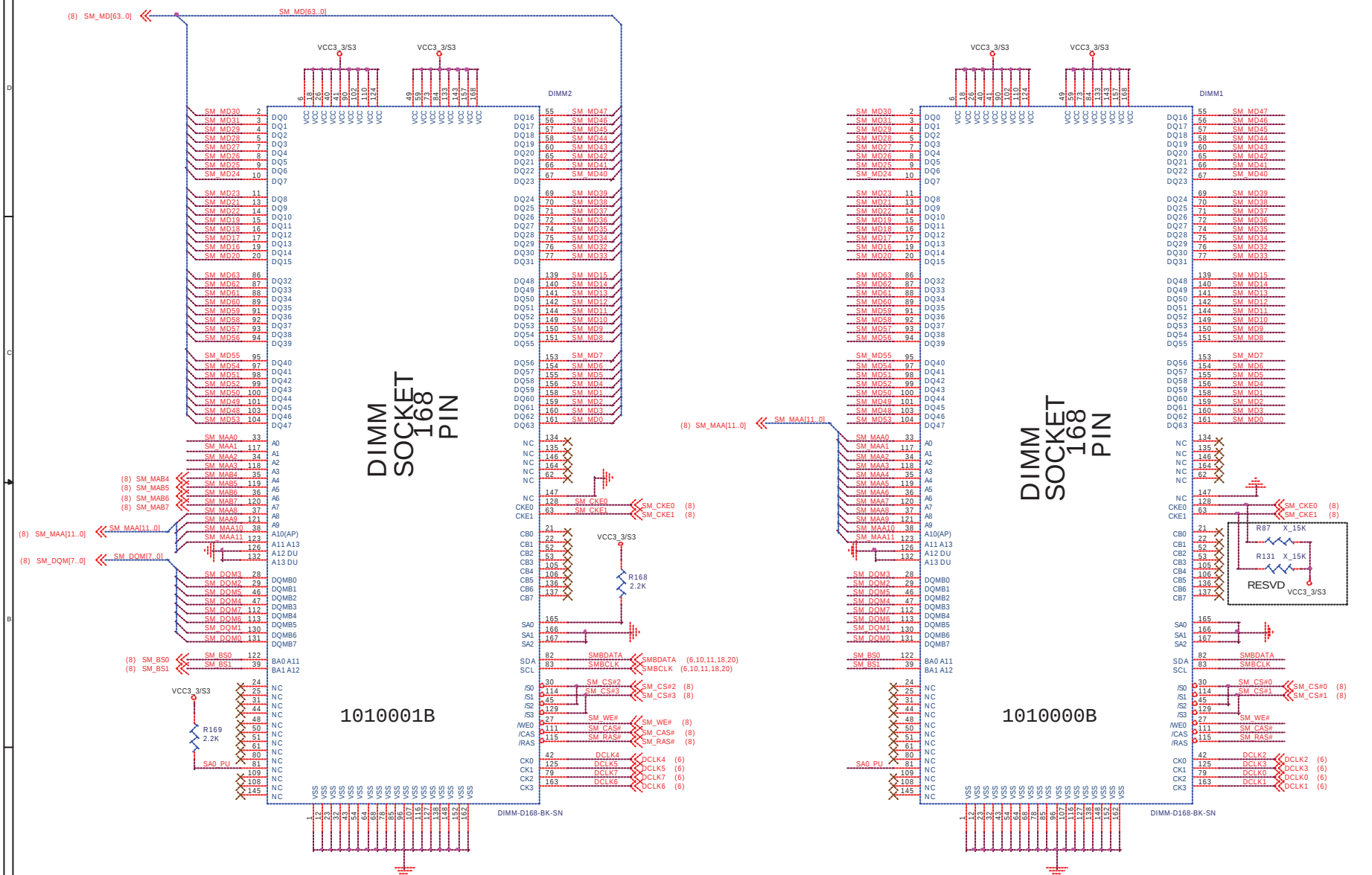
Title	ICH2 Part1:PCI & HUB & LAN Interface	Rev	
Document Number	MS-6395		700
MICRO-STAR INT'L CO., LTD. No. 69, Li-De St, Jung-Ho City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Monday, September 23, 2002		
	Sheet		
	10 of 34		



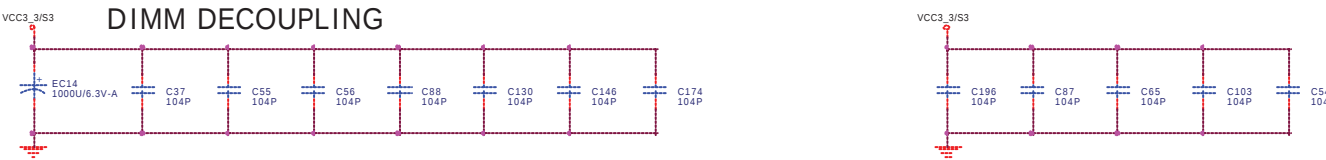
[illegible]

Title	Video Connector/Display cache	Rev	
Document Number	MS-6395		700
MICRO-STAR INT'L CO., LTD. No. 89, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Monday, September 23, 2002	
Sheet		12	of 34

SYSTEM MEMPRY



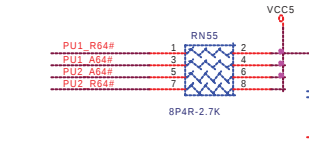
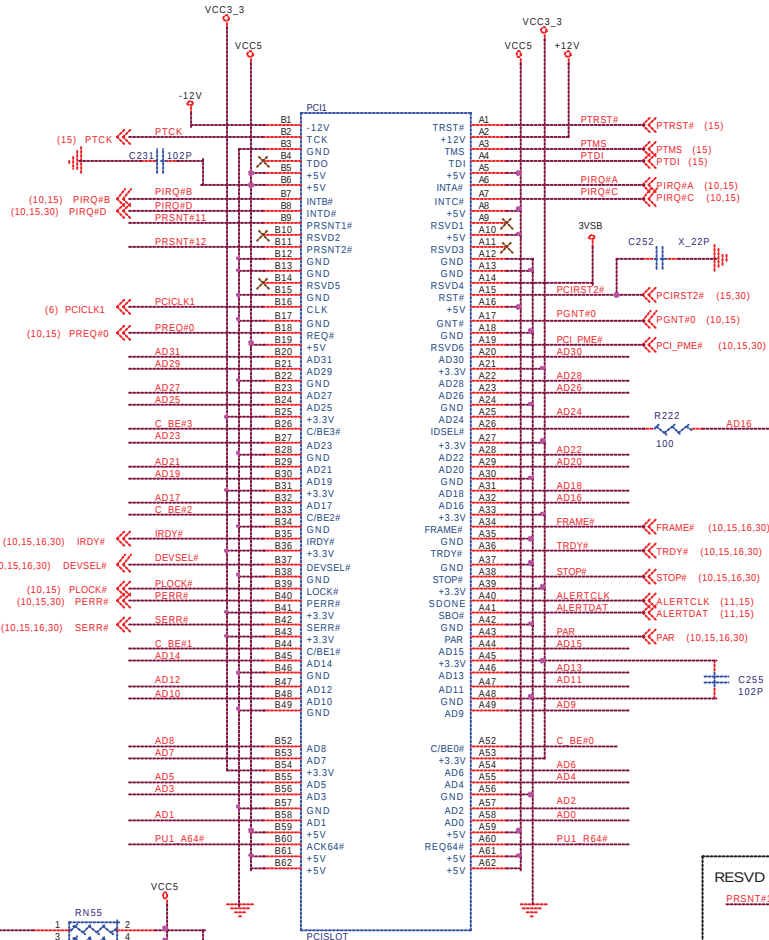
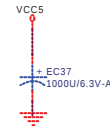
DIMM DECOUPLING



Micro Star Restricted Secret

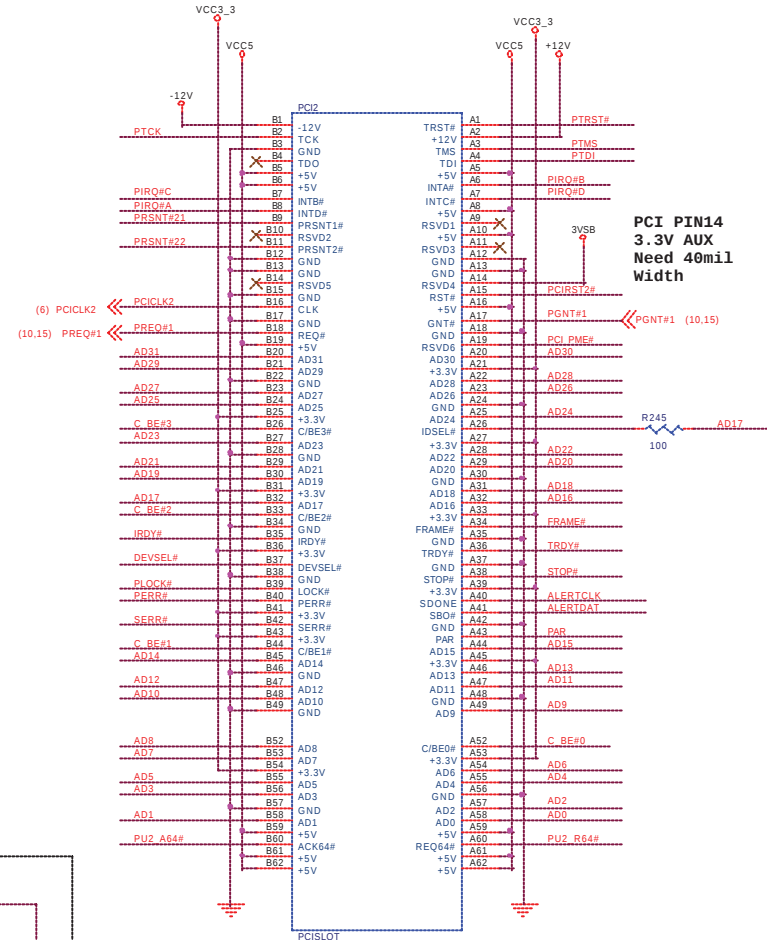
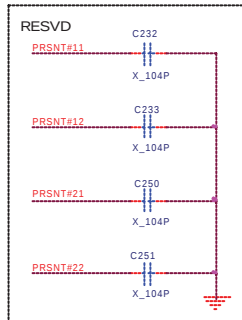
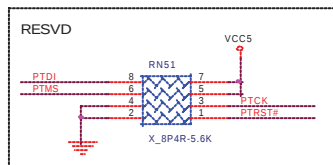
File	System Memory : DIMM 2	Rev
Document Number	MS-6395	700
MICRO-STAR INT'L		Last Revision Date:
CO., LTD.		Monday, September 23, 2002
No. 89, Le De St. Jung-He City,		Sheet
Taipei Hsien, Taiwan		13 of 34
http://www.msi.com.tw		

PCI Connectors



(10,15,16,30) AD[31..0] << AD[31..0]

(10,15,16,30) C_BE#[3..0] << C_BE#[3..0]

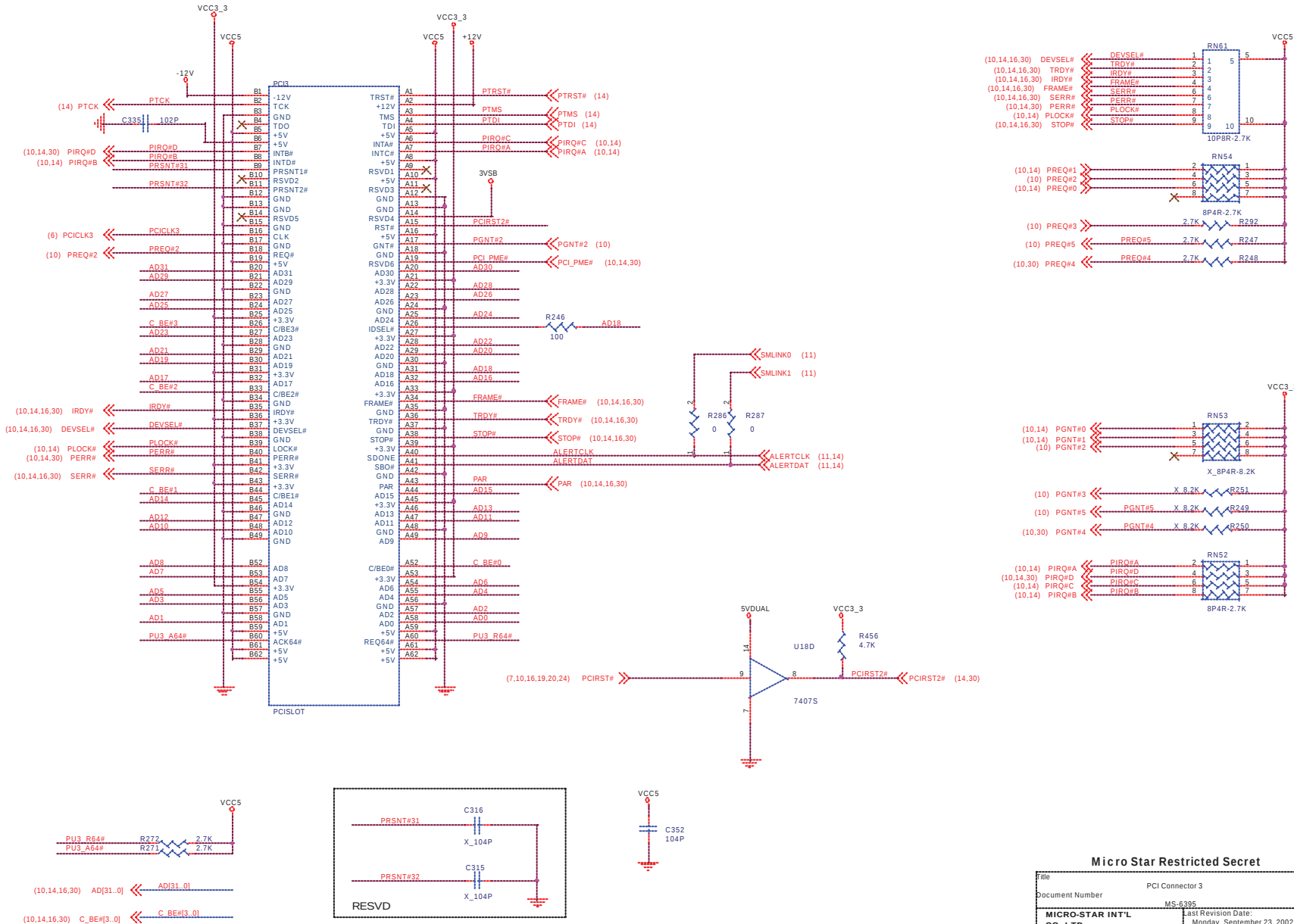


PCI PIN14
3.3V AUX
Need 40mil
Width

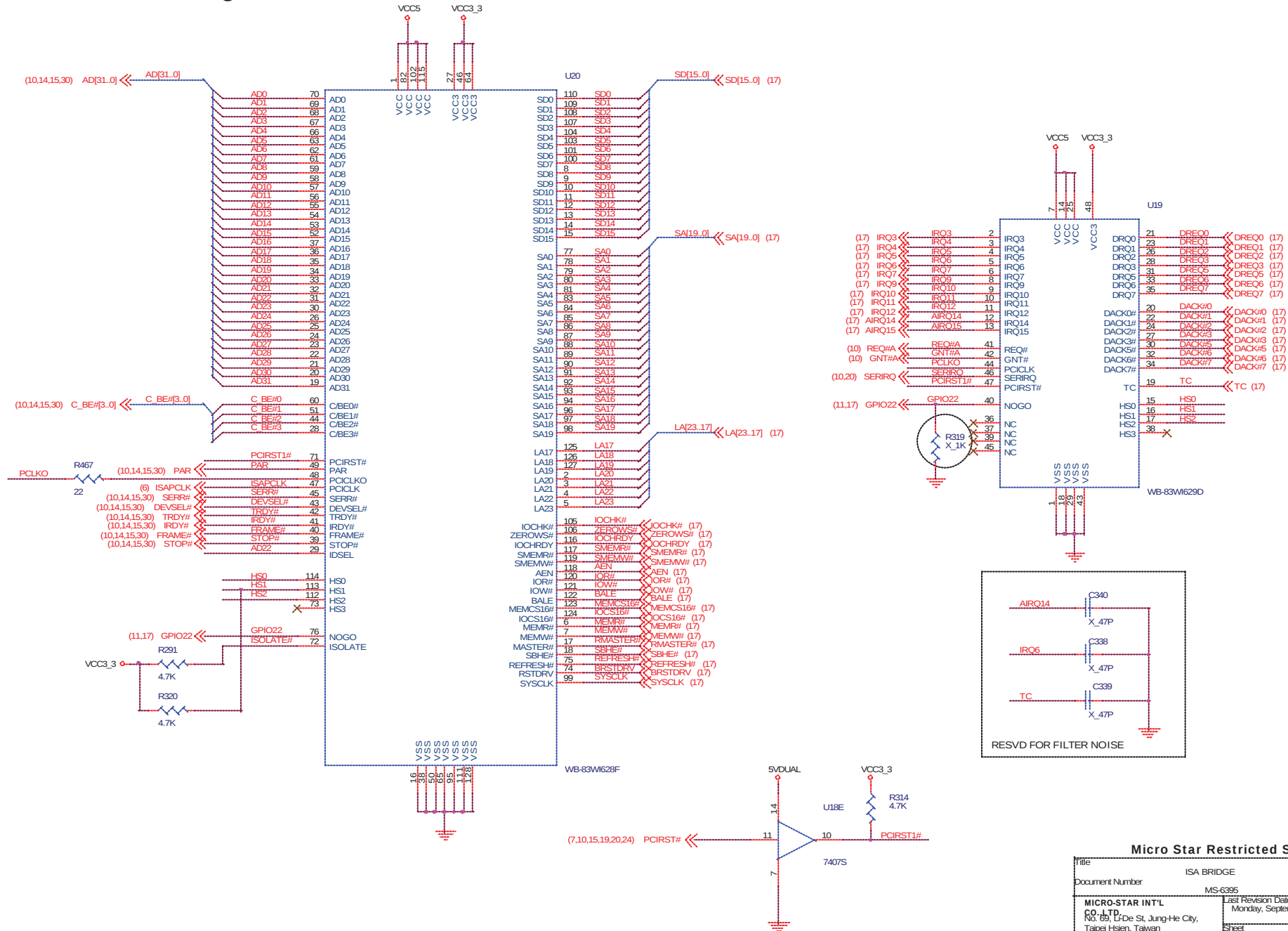
Micro Star Restricted Secret

File	PCI Connector 1 & 2	Rev
Document Number	MS-6395	700
MICRO-STAR INT'L CO., LTD. No. 88, Li-De St, Jung-Ho City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Monday, September 23, 2002	
	Sheet	14 of 34

PCI Connectors



PCI To ISA Bridge

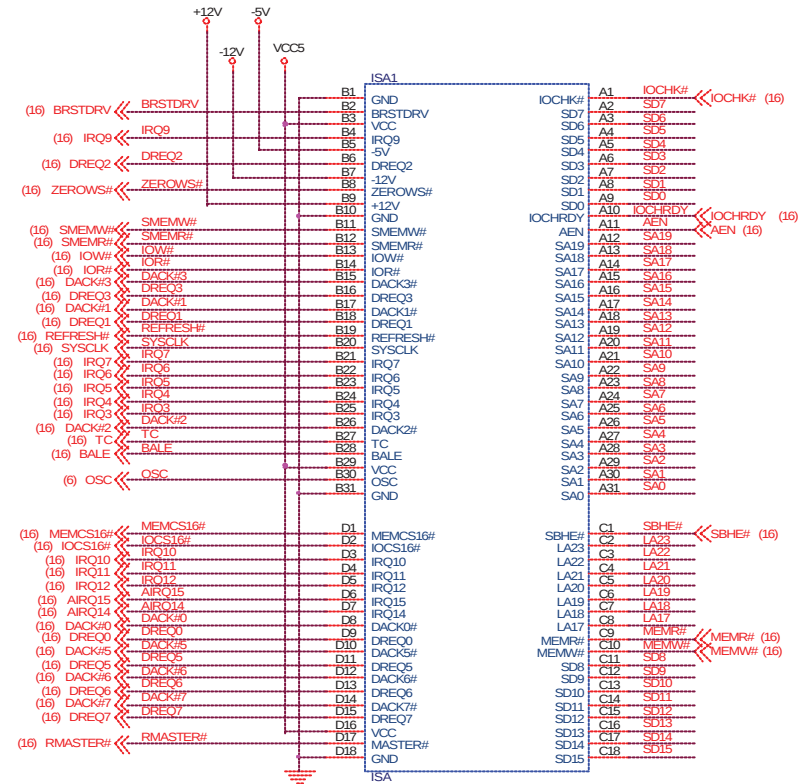


Micro Star Restricted Secret

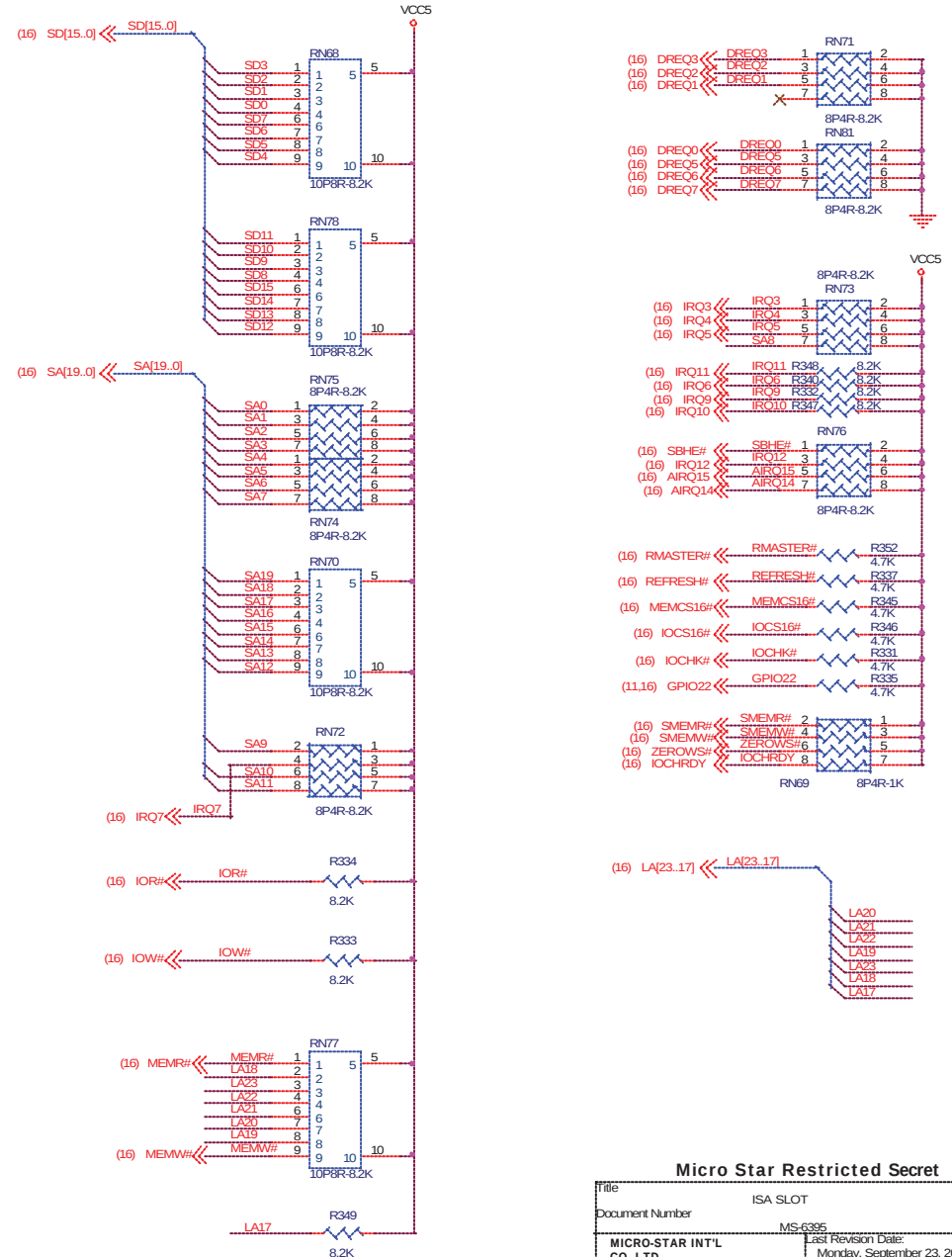
File	ISA BRIDGE	Rev
Document Number	MS-6395	700
MICRO-STAR INT'L		Last Revision Date:
No. 101, F-De St, Jung-He City,		Monday, September 23, 2002
Taipei Hsien, Taiwan		Sheet
http://www.msi.com.tw		16 of 34

ISA Slot

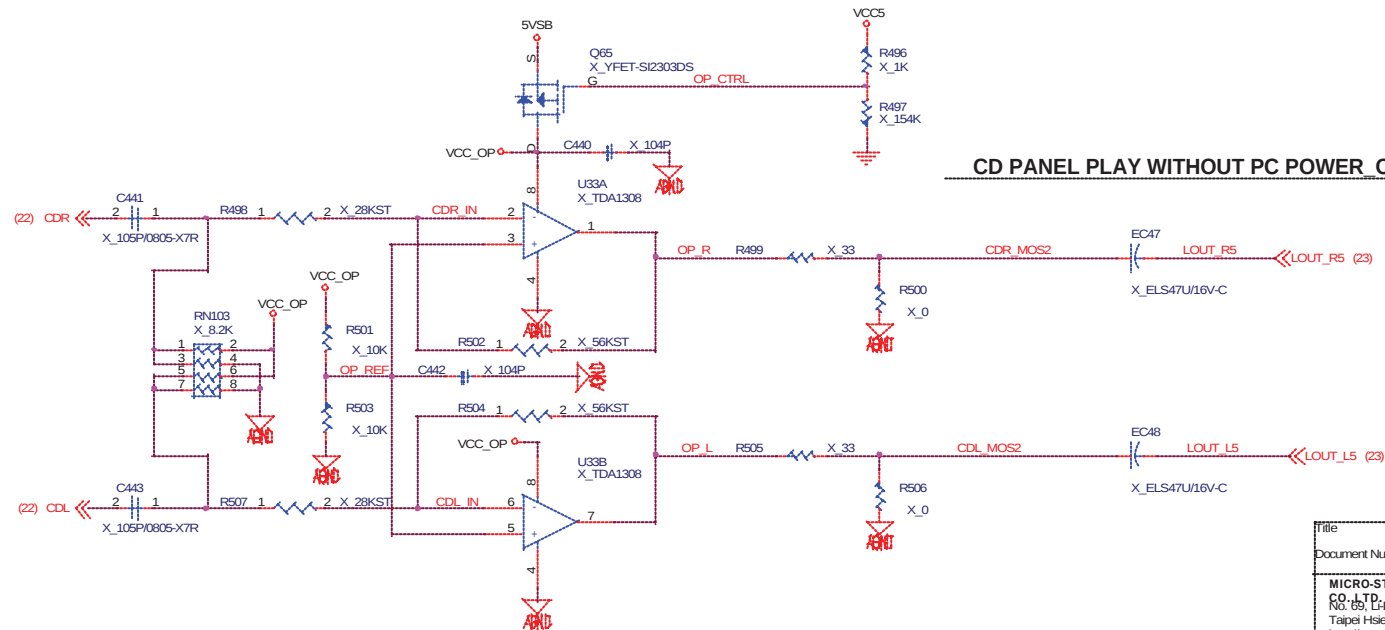
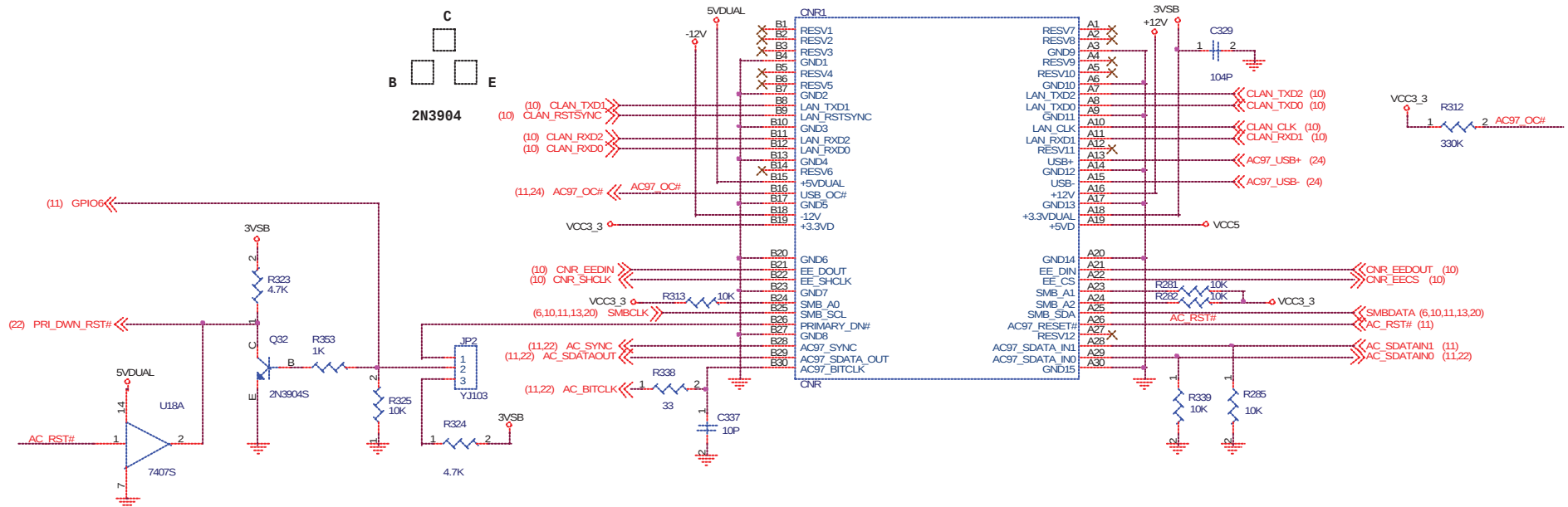
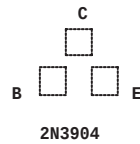
(16) SD[15..0] << SD[15..0]
(16) SA[19..0] << SA[19..0]
(16) LA[23..17] << LA[23..17]



ISA Pull-up Resistors



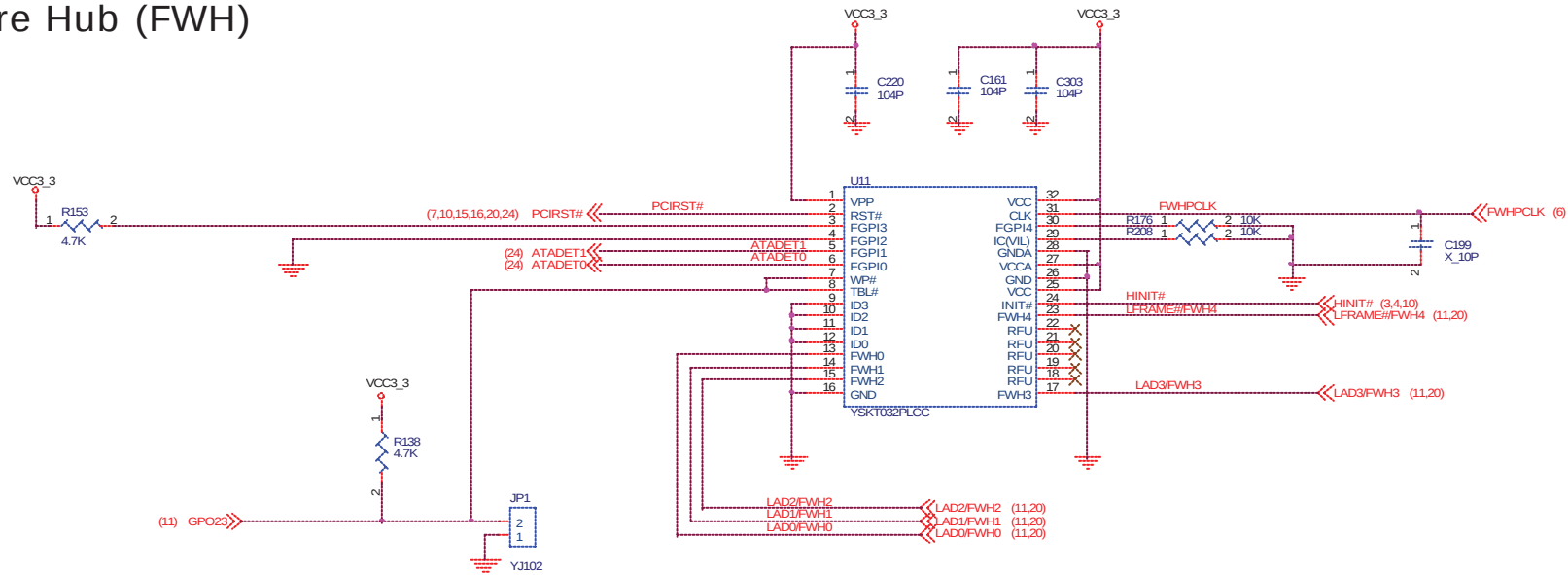
CNR RISER



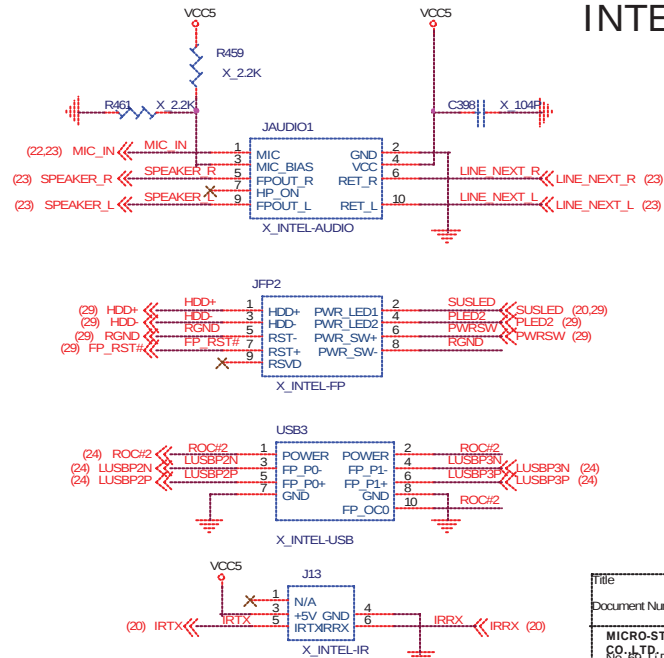
Micro Star Restricted Secret

File	CNR Slot	Rev
Document Number	MS-6395	700
MICRO-STAR INT'L		
Last Revision Date: Monday, September 23, 2002		
R.O. LTD.		
No. 68, U-De St, Jung-He City,		
Taipei Hsien, Taiwan		
http://www.msi.com.tw		
Sheet	18	of 34

Firware Hub (FWH)



INTEL FRONT PANNEL

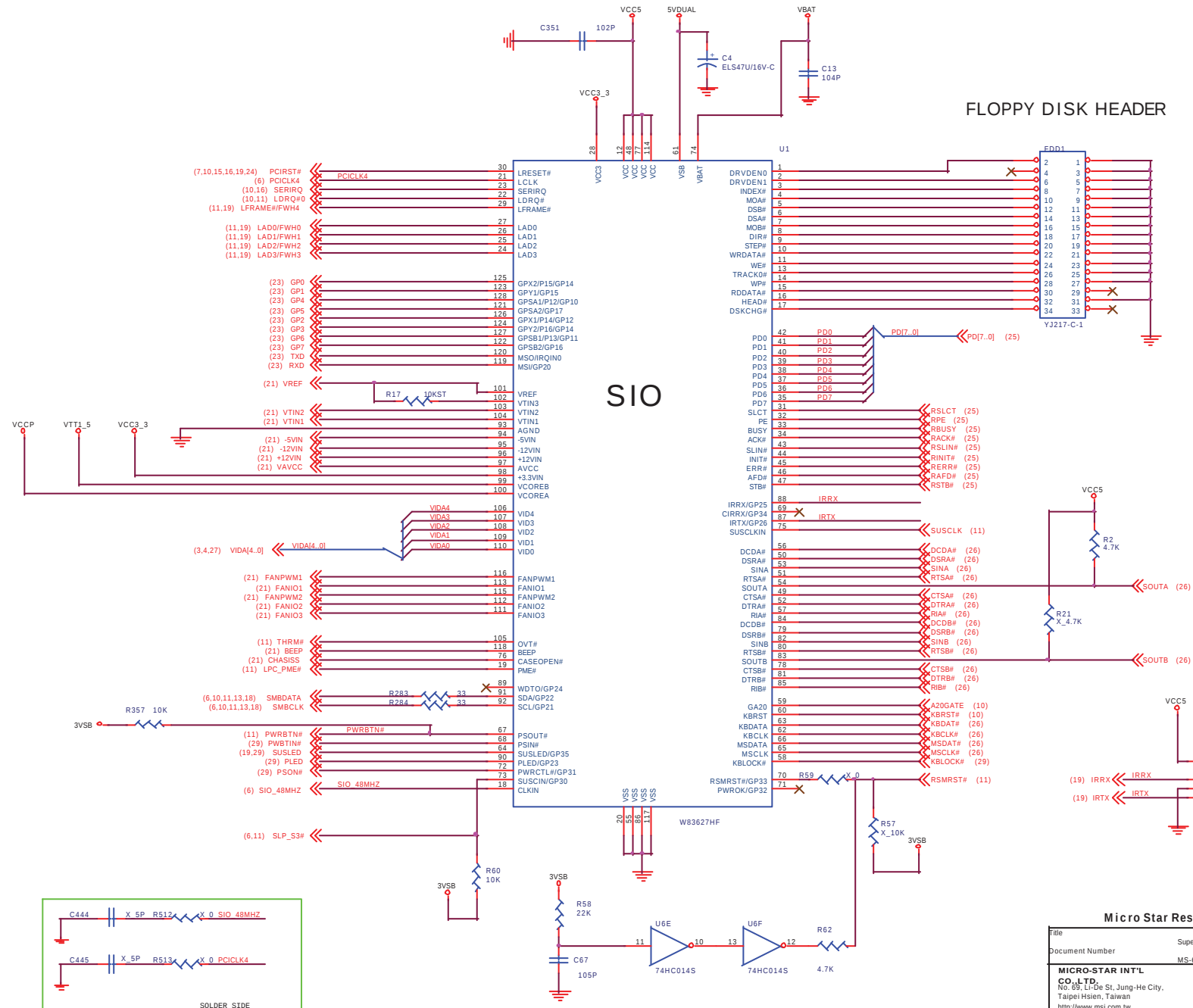


L2 NO USE

Micro Star Restricted Secret

File	Firmware HUB(FWH)	Rev
Document Number	MS-6395	700
MICRO-STAR INT'L		
Last Revision Date: Monday, September 23, 2002		
Sheet 19 of 34		
http://www.msi.com.tw		

Super I/O

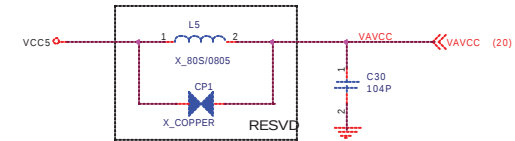
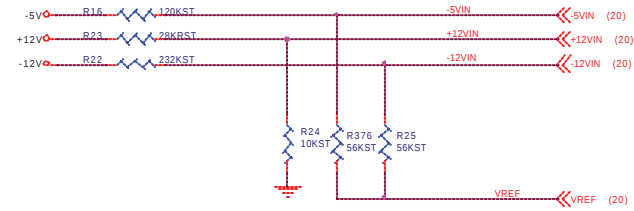
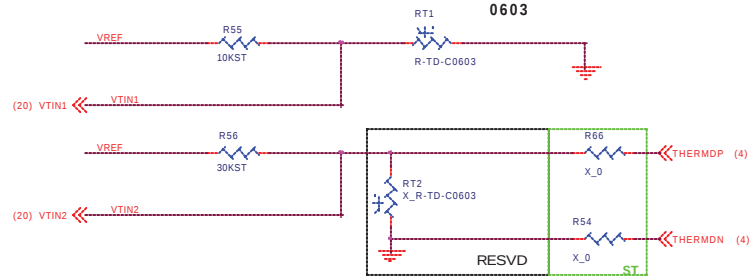


Micro Star Restricted Secret

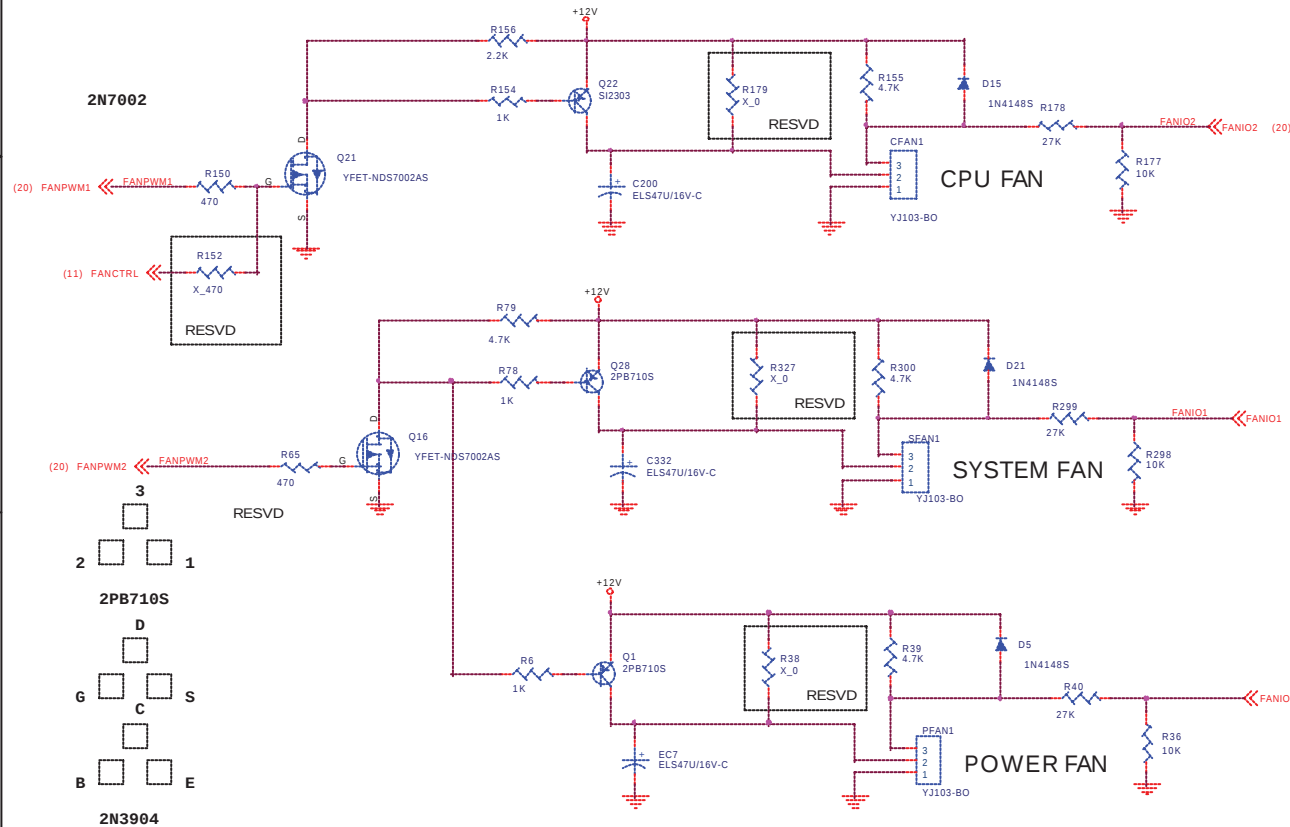
Title	Super I/O	Rev
Document Number	MS-6395	700
MICRO-STAR INT'L CO., LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Monday, September 23, 2002	
	Sheet 20 of 34	

Hardware Monitor

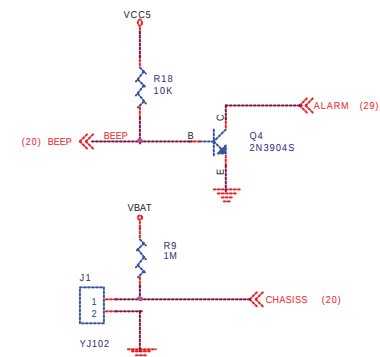
SMD
0603



2N7002



Chassis Intrusion Header



Micro Star Restricted Secret

File	Hardware Monitor	Rev
Document Number	MS-6395	700
MICRO-STAR INT'L CO., LTD. No. 89, Li-De St., Jung-Ho City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Monday, September 23, 2002
		Sheet
		21 of 34

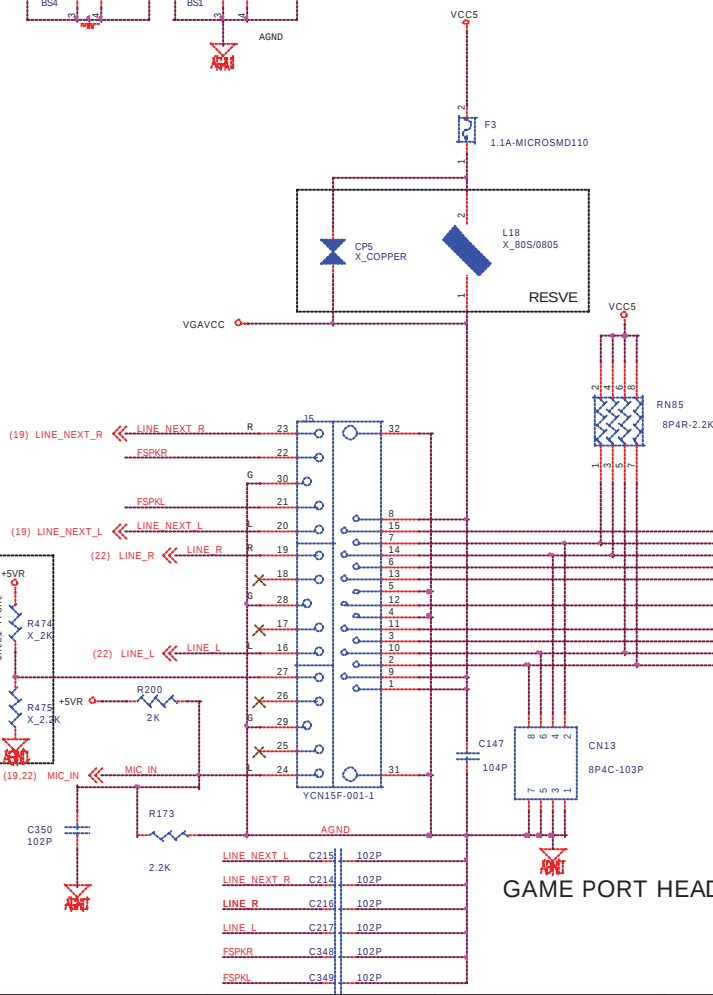
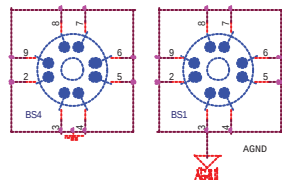
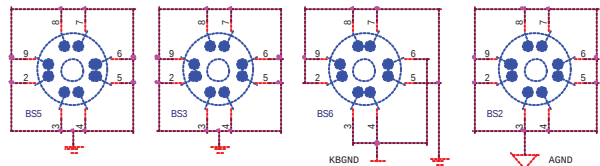
AUDIO CODEC

The schematic illustrates the internal connections of an audio codec system. Key components and their functions include:

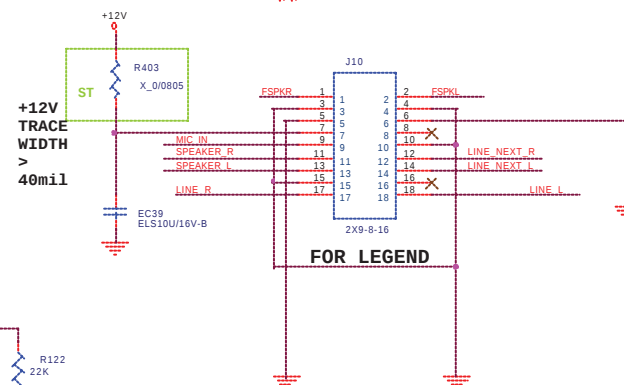
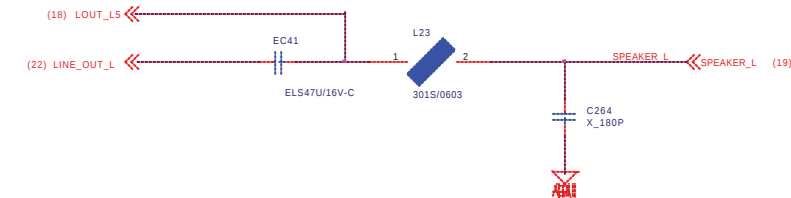
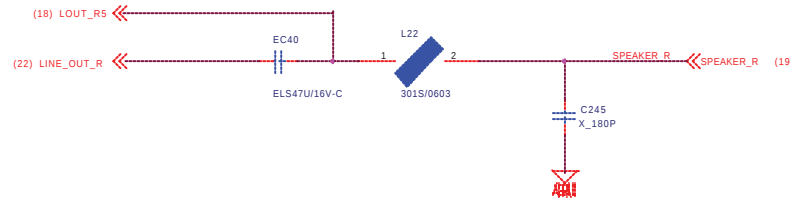
- Power Supply:** +12V and +5VR rails are regulated and distributed across the board.
- Audio Outputs:** The ALC201A codec drives two channels of audio output (L and R) through SOT223 op-amp buffers.
- Inputs:** The system supports multiple input types: microphone (MIC_IN), compact disc (CD_IN Header), auxiliary (AUX_IN Header), and modem (MODEM_IN Header).
- Passive Components:** Numerous capacitors (e.g., C313, C314, C302, C300, C273, C437, C276, C277, C278, C279, C280, C281, C282, C283, C284, C285, C286, C287, C288, C289, C290, C291, C292, C293, C294, C295, C296, C297, C298, C299, C301, C303, C304, C305, C306, C307, C308, C309, C310, C311, C312, C315, C316, C317, C318, C319, C320, C321, C322, C323, C324, C325, C326, C327, C328, C329, C330, C331, C332, C333, C334, C335, C336, C337, C338, C339, C340, C341, C342, C343, C344, C345, C346, C347, C348, C349, C350, C351, C352, C353, C354, C355, C356, C357, C358, C359, C360, C361, C362, C363, C364, C365, C366, C367, C368, C369, C370, C371, C372, C373, C374, C375, C376, C377, C378, C379, C380, C381, C382, C383, C384, C385, C386, C387, C388, C389, C390, C391, C392, C393, C394, C395, C396, C397, C398, C399, C400, C401, C402, C403, C404, C405, C406, C407, C408, C409, C410, C411, C412, C413, C414, C415, C416, C417, C418, C419, C420, C421, C422, C423, C424, C425, C426, C427, C428, C429, C430, C431, C432, C433, C434, C435, C436, C437, C438, C439, C440, C441, C442, C443, C444, C445, C446, C447, C448, C449, C450, C451, C452, C453, C454, C455, C456, C457, C458, C459, C460, C461, C462, C463, C464, C465, C466, C467, C468, C469, C470, C471, C472, C473, C474, C475, C476, C477, C478, C479, C480, C481, C482, C483, C484, C485, C486, C487, C488, C489, C490, C491, C492, C493, C494, C495, C496, C497, C498, C499, C500, C501, C502, C503, C504, C505, C506, C507, C508, C509, C510, C511, C512, C513, C514, C515, C516, C517, C518, C519, C520, C521, C522, C523, C524, C525, C526, C527, C528, C529, C530, C531, C532, C533, C534, C535, C536, C537, C538, C539, C540, C541, C542, C543, C544, C545, C546, C547, C548, C549, C550, C551, C552, C553, C554, C555, C556, C557, C558, C559, C560, C561, C562, C563, C564, C565, C566, C567, C568, C569, C570, C571, C572, C573, C574, C575, C576, C577, C578, C579, C580, C581, C582, C583, C584, C585, C586, C587, C588, C589, C590, C591, C592, C593, C594, C595, C596, C597, C598, C599, C600, C601, C602, C603, C604, C605, C606, C607, C608, C609, C610, C611, C612, C613, C614, C615, C616, C617, C618, C619, C620, C621, C622, C623, C624, C625, C626, C627, C628, C629, C630, C631, C632, C633, C634, C635, C636, C637, C638, C639, C640, C641, C642, C643, C644, C645, C646, C647, C648, C649, C650, C651, C652, C653, C654, C655, C656, C657, C658, C659, C660, C661, C662, C663, C664, C665, C666, C667, C668, C669, C670, C671, C672, C673, C674, C675, C676, C677, C678, C679, C680, C681, C682, C683, C684, C685, C686, C687, C688, C689, C690, C691, C692, C693, C694, C695, C696, C697, C698, C699, C700, C701, C702, C703, C704, C705, C706, C707, C708, C709, C710, C711, C712, C713, C714, C715, C716, C717, C718, C719, C720, C721, C722, C723, C724, C725, C726, C727, C728, C729, C730, C731, C732, C733, C734, C735, C736, C737, C738, C739, C740, C741, C742, C743, C744, C745, C746, C747, C748, C749, C750, C751, C752, C753, C754, C755, C756, C757, C758, C759, C760, C761, C762, C763, C764, C765, C766, C767, C768, C769, C770, C771, C772, C773, C774, C775, C776, C777, C778, C779, C780, C781, C782, C783, C784, C785, C786, C787, C788, C789, C790, C791, C792, C793, C794, C795, C796, C797, C798, C799, C800, C801, C802, C803, C804, C805, C806, C807, C808, C809, C810, C811, C812, C813, C814, C815, C816, C817, C818, C819, C820, C821, C822, C823, C824, C825, C826, C827, C828, C829, C830, C831, C832, C833, C834, C835, C836, C837, C838, C839, C840, C841, C842, C843, C844, C845, C846, C847, C848, C849, C850, C851, C852, C853, C854, C855, C856, C857, C858, C859, C860, C861, C862, C863, C864, C865, C866, C867, C868, C869, C870, C871, C872, C873, C874, C875, C876, C877, C878, C879, C880, C881, C882, C883, C884, C885, C886, C887, C888, C889, C890, C891, C892, C893, C894, C895, C896, C897, C898, C899, C900, C901, C902, C903, C904, C905, C906, C907, C908, C909, C910, C911, C912, C913, C914, C915, C916, C917, C918, C919, C920, C921, C922, C923, C924, C925, C926, C927, C928, C929, C930, C931, C932, C933, C934, C935, C936, C937, C938, C939, C940, C941, C942, C943, C944, C945, C946, C947, C948, C949, C950, C951, C952, C953, C954, C955, C956, C957, C958, C959, C960, C961, C962, C963, C964, C965, C966, C967, C968, C969, C970, C971, C972, C973, C974, C975, C976, C977, C978, C979, C980, C981, C982, C983, C984, C985, C986, C987, C988, C989, C990, C991, C992, C993, C994, C995, C996, C997, C998, C999, C1000, C1001, C1002, C1003, C1004, C1005, C1006, C1007, C1008, C1009, C1010, C1011, C1012, C1013, C1014, C1015, C1016, C1017, C1018, C1019, C1020, C1021, C1022, C1023,

Micro Star Restricted Secret		
Title	Audio Codec	Rev
Document Number	MS-6395	700
MICRO-STAR INT'L CO., LTD. No. 89, Li-De St. Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Monday, September 23, 2002 Sheet 22 of 34

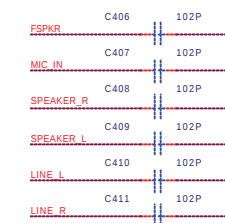
AUDIO AMPLIFIER AND GAME PORT HEADER



GAME PORT HEADER



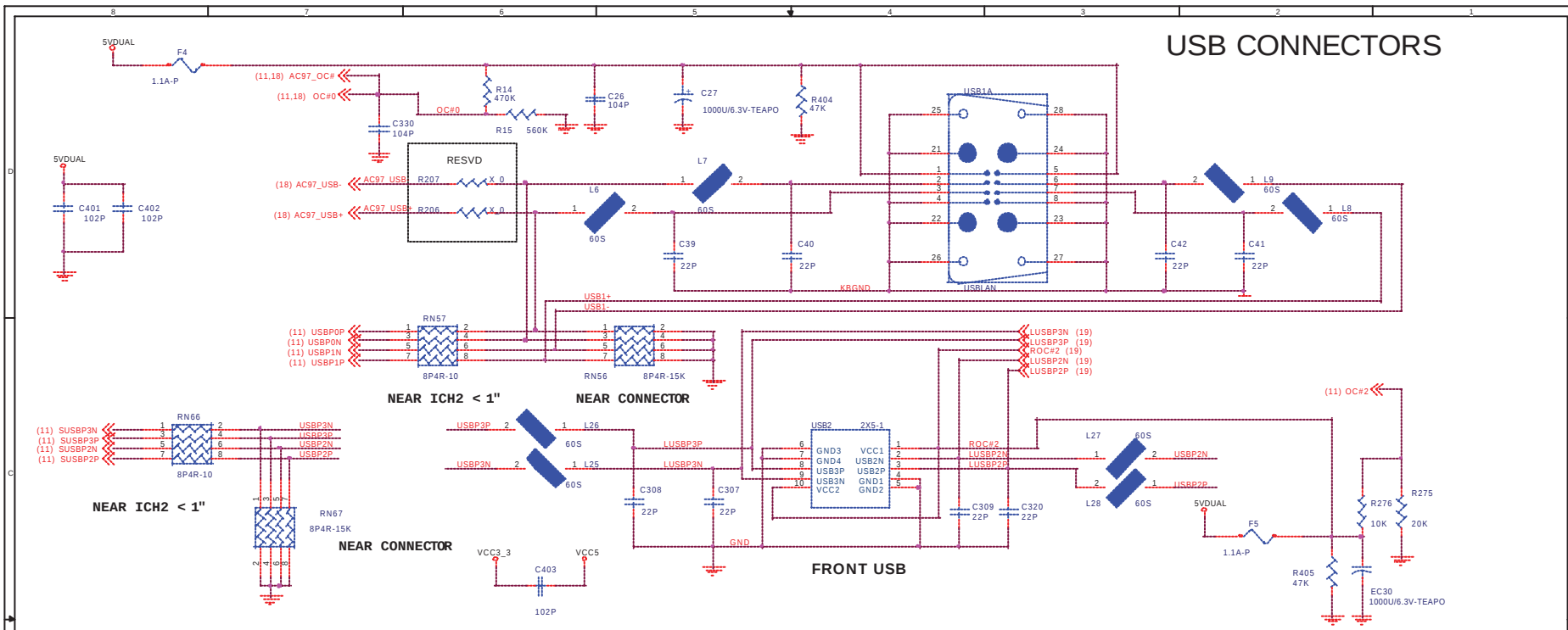
FOR LEGEND



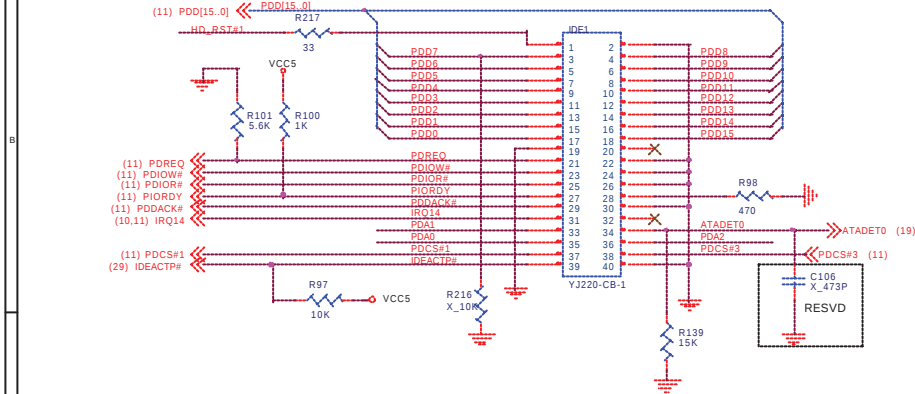
Micro Star Restricted Secret

File	Audio Amplifier And Game Port Header	Rev
Document Number	MS-6395	700
MICRO-STAR INT'L CO., LTD. No. 89, Lin De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Monday, September 23, 2002 Sheet
		23 of 34

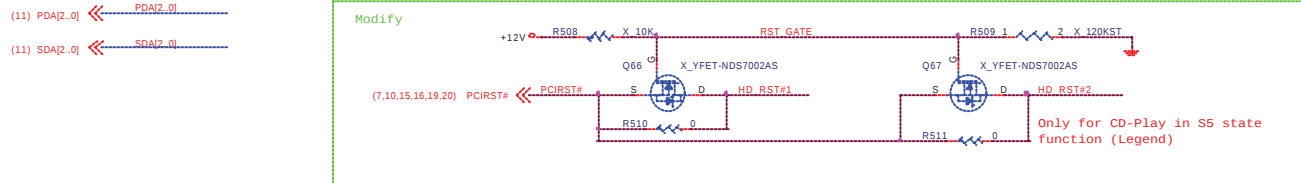
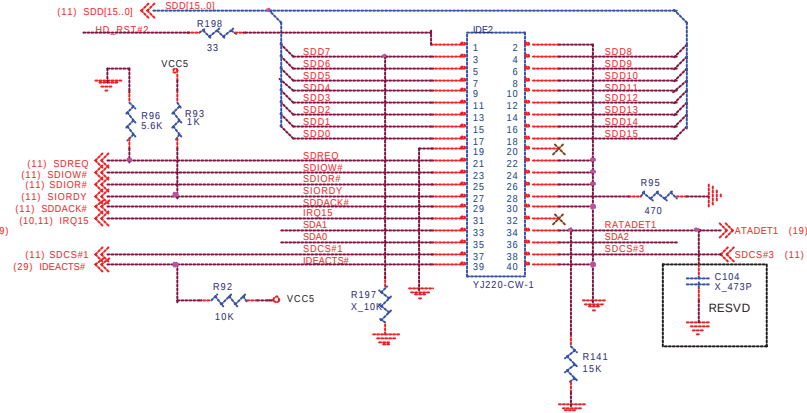
USB CONNECTORS



PRIMARY IDE CONN.



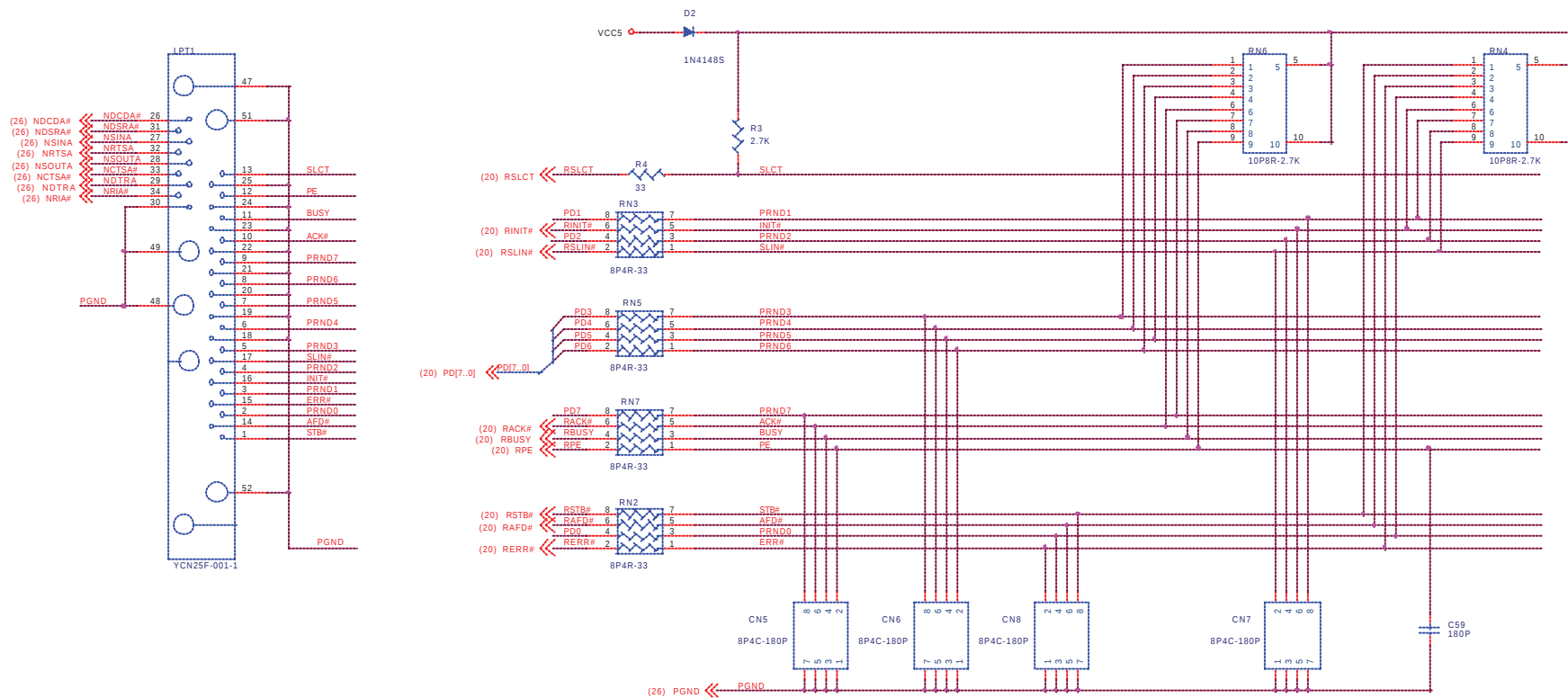
SECONDARY IDE CONN.



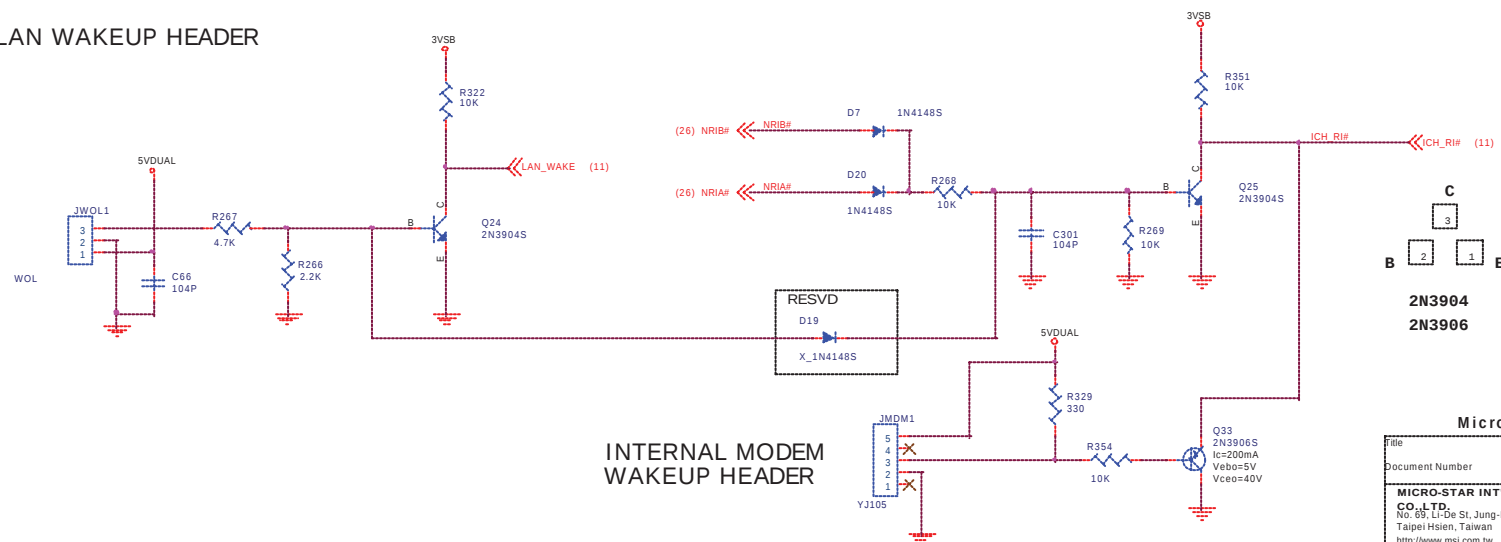
Micro Star Restricted Secret

Title	USB Connectors & IDE Connectors	Rev	
Document Number	MS-6395		700
MICRO-STAR INT'L CO., LTD. No. 69, Li-De St, Jung-Ho City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Monday, September 23, 2002	
Sheet		24 of 34	

Parallel Port Header



LAN WAKEUP HEADER

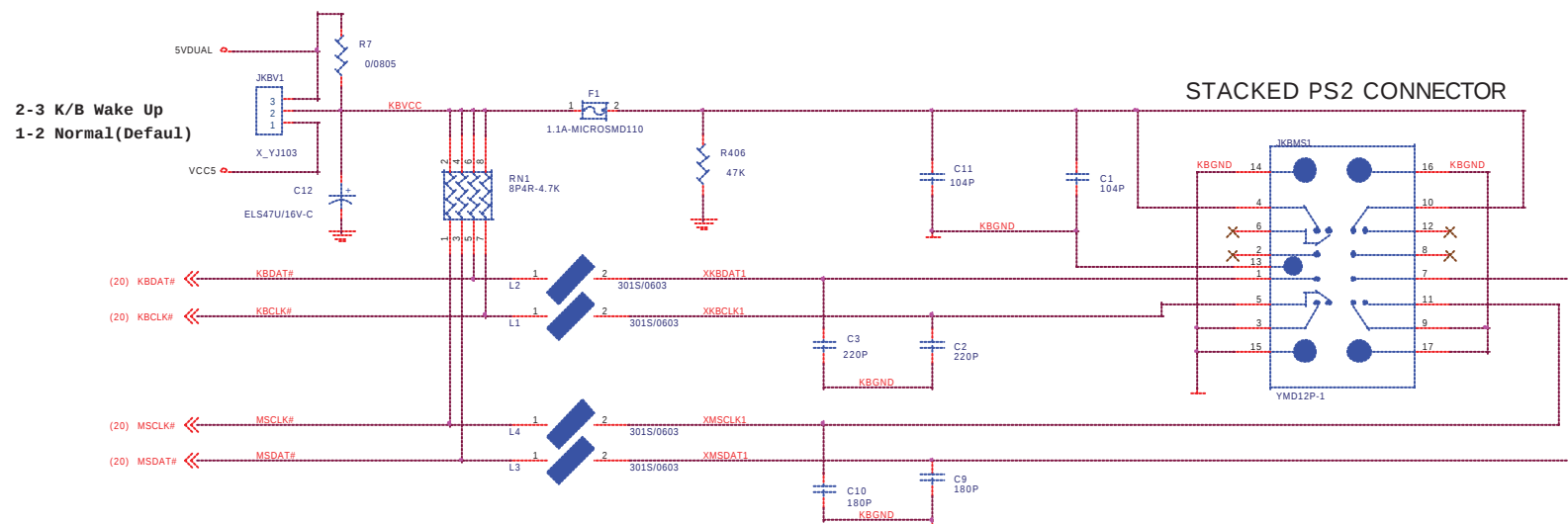


INTERNAL MODEM WAKEUP HEADER

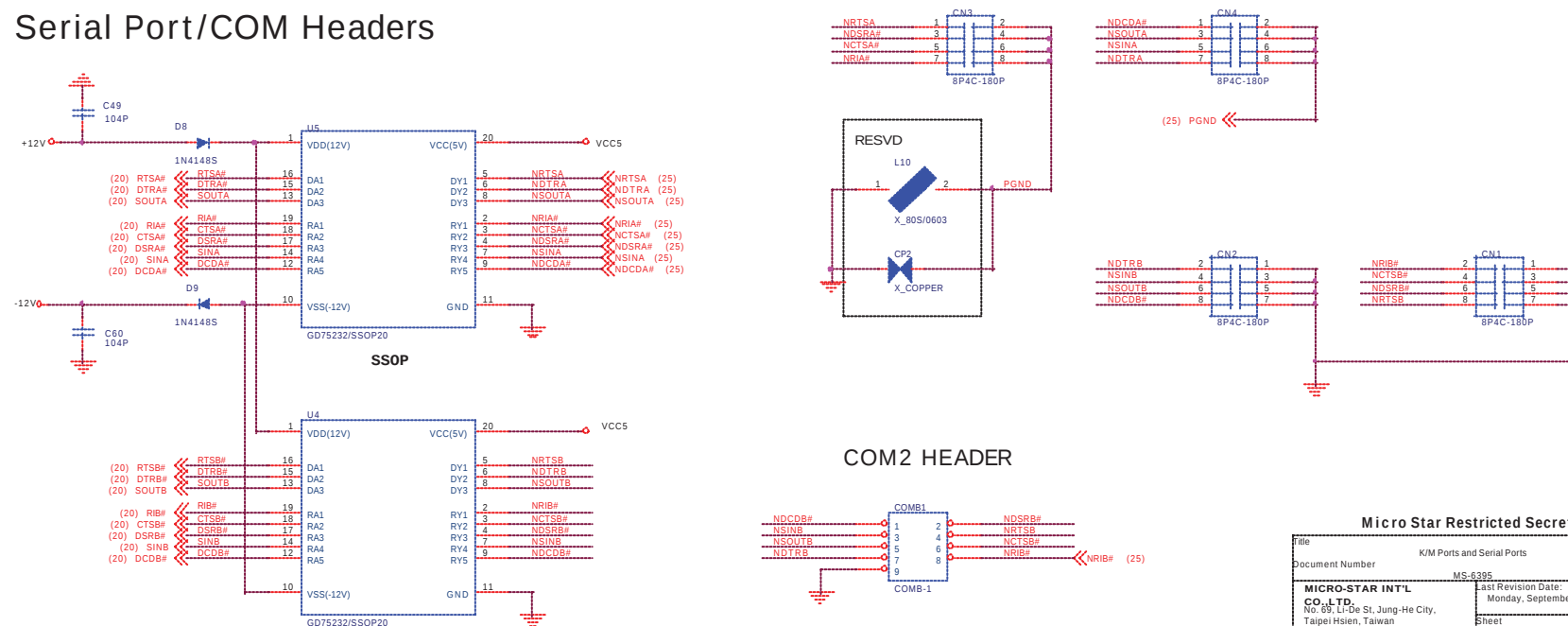


Micro Star Restricted Secret		
File	Parallel Port Header/WOL	Rev
Document Number	MS-6395	700
MICRO-STAR INT'L CO., LTD.		Last Revision Date:
No. 88, Lin De St. Jung-Ho City, Taipei Hsien, Taiwan		Monday, September 23, 2002
http://www.msi.com.tw		Sheet
		25 of 34

KEYBOARD/MOUSE PORTS



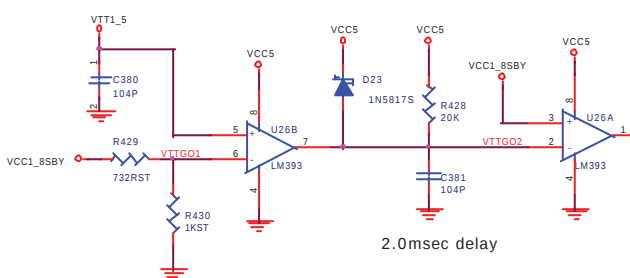
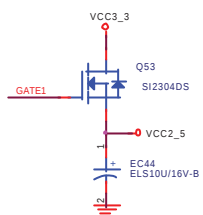
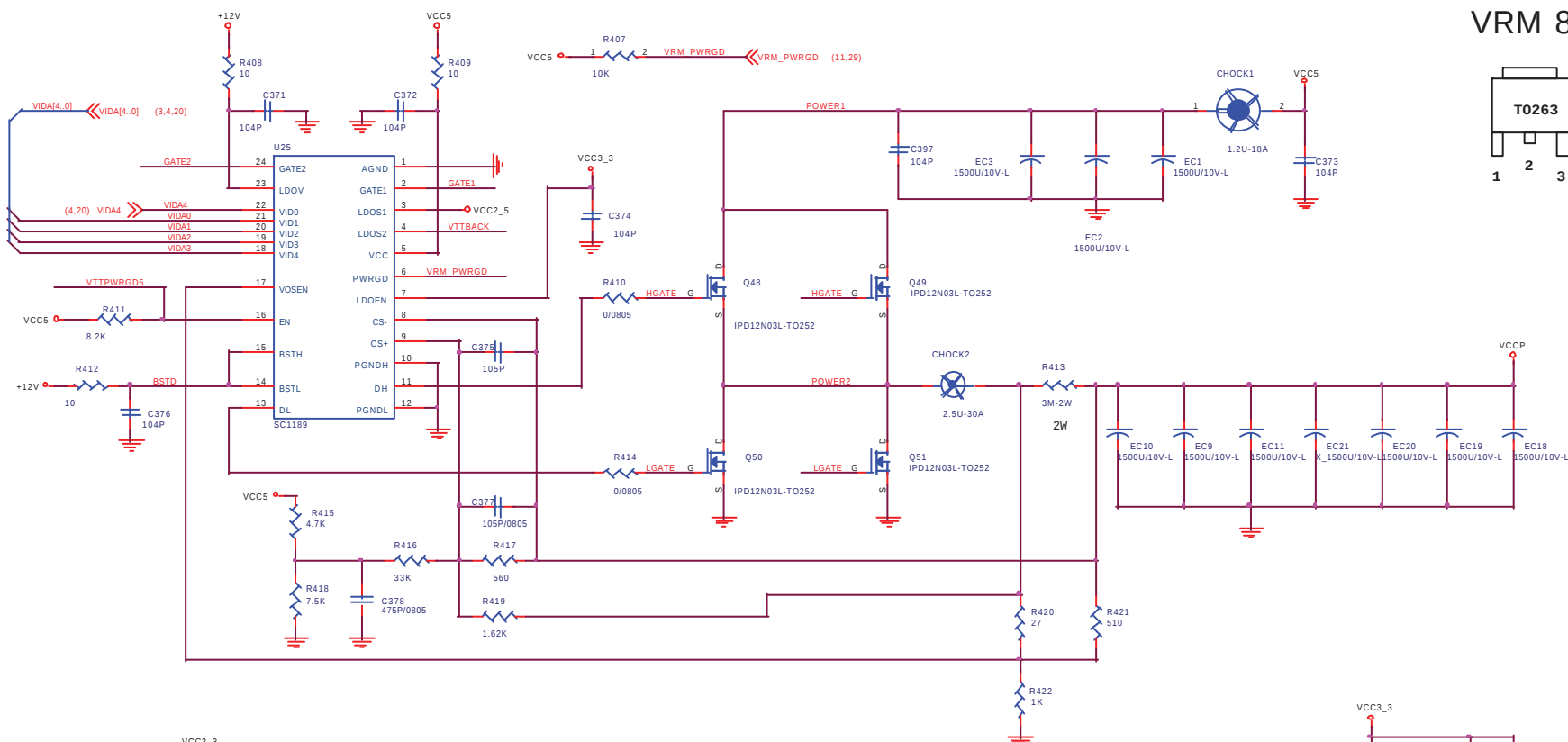
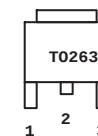
Serial Port/COM Headers



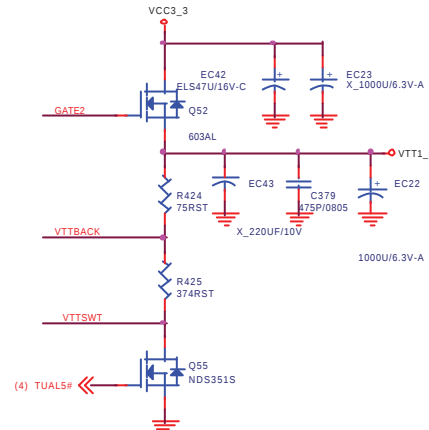
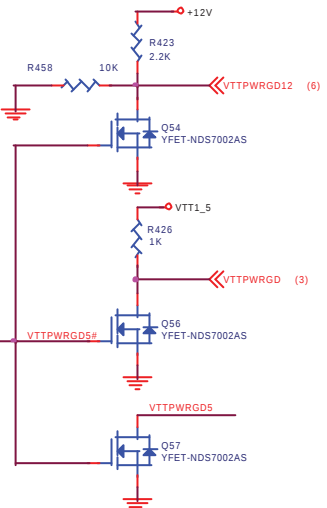
Micro Star Restricted Secret

Title		Rev
K/M Ports and Serial Ports		
Document Number	MS-6395	700
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, September 23, 2002
Sheet		26 of 34

VRM 8.5



2.0msec delay



Micro Star Restricted Secret

Title	VRM 8.5	Rev
Document Number	MS-6395	700
MICRO-STAR INT'L CO., LTD. No. 89, Lin De St., Jung-Ho City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Monday, September 23, 2002
Sheet		27 of 34

SDRAM Voltage Regulators

STR Control Config.

STR Control Config.	GPIO24
Power Off	X
Power On / Disable	1
Before Enter S3	0

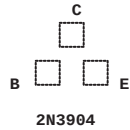
2N3904

5V DUAL

5V DUAL

0805 resistors for disabled S3 function

STR Control Config.	GPIO24
Power Off	X
Power On / Disable	1
Before Enter S3	0

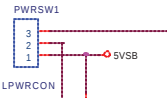
[illegible]

The schematic diagram shows a voltage divider circuit. A supply voltage VCC3_3 is connected to a resistor R181 (49.9RST). The other end of R181 is connected to a resistor R180 (10). The output of the divider, VOUT, is connected to the non-inverting input (VIN) of an op-amp buffer VR5 (TL10875-0.8A). The op-amp is configured as a voltage follower, with its output (VOUT) connected back to its inverting input (AOI). The output of the buffer is connected to the CMOS input of the SOT89 sensor. A capacitor C151 (X_104P) is connected between the CMOS input and ground. A capacitor EC25 (X_ELS10U/16V-B) is connected between the VCC3_3 supply and ground. Another capacitor EC25 (X_ELS10U/16V-B) is connected between the output of the buffer and ground.

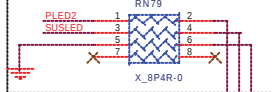
Title	System Voltage Regulators	Rev	700
Document Number	MS-6395		
MICRO-STAR INT'L CO., LTD. No. 89, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Monday, September 23, 2002	
Sheet		28	of 34

FRONT PANEL AND POWER CONNECTOR

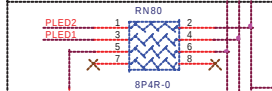
FOR LEGEND



FOR MSI



FOR LEGEND



MSI & LEGEND

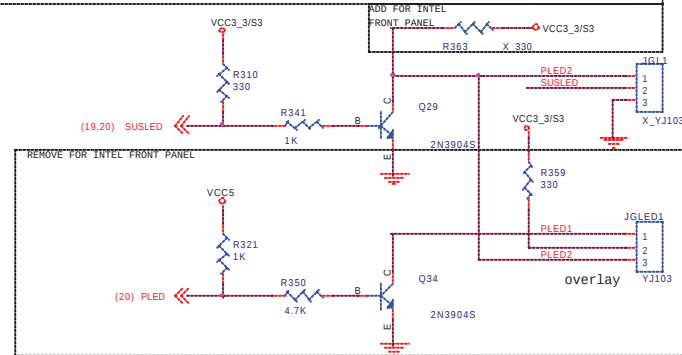
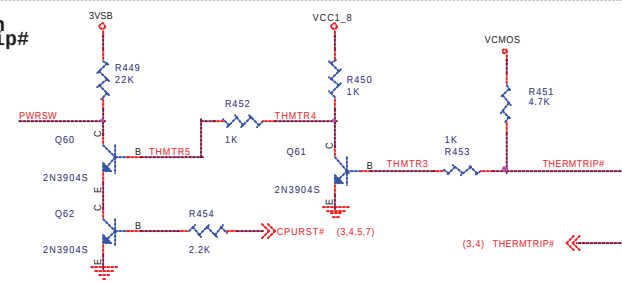
JFPT1 PIN CONFIGURATION

- 1.FOR LEGEND USE PIN3-PIN18
- 2.FOR MSI USE PIN1-PIN18

FOR INTEL FRONT PANNEL

- HDD+ (19)
- HDD- (19)
- FP_RST# (19)
- RGND (19)
- PWRSW (19)
- PLED2 (19)

Tualatin Thermtrip#

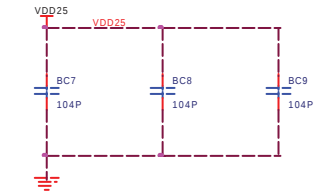


Intel workaround of Tualatin

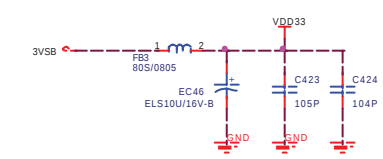
	R?	R?
* Non ITP	Stuff	----
Use ITP	----	Stuff

Micro Star Restricted Secret

File	Front Panel and ATX Power Connector	Rev
Document Number	MS-6395	700
MICRO-STAR INT'L CO., LTD.	Last Revision Date: Monday, September 23, 2002	
No. 89, Li-De St, Jung-Ho City, Taipei Hsien, Taiwan	Sheet	
http://www.msi.com.tw	29 of 34	

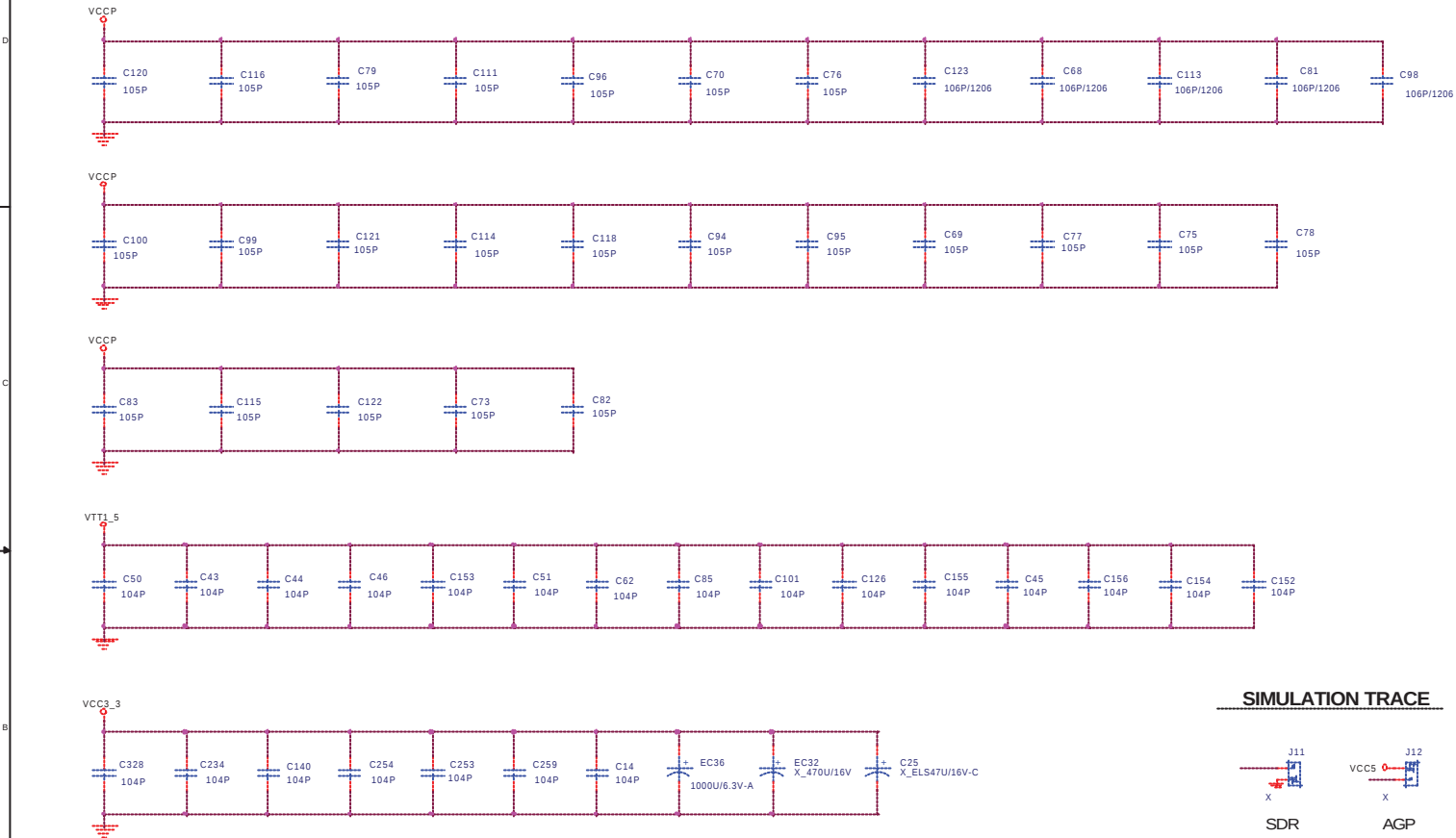


DE-COUPLE CAPS OF RTL8100 MUST BE
PLACED AS CLOSE TO CHIP AS POSSIBLE.



JLAN1	LAN SELECT
1-2	ENABLED
2-3	DISABLED

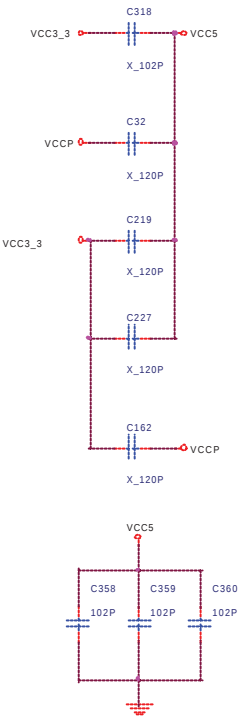
Decoupling



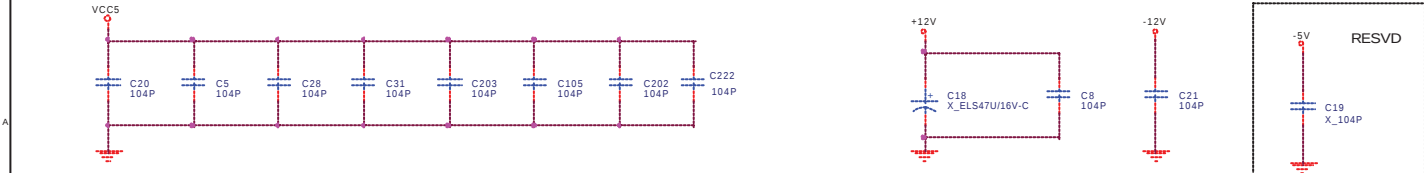
SIMULATION TRACE



FOR EMI



BULK POWER DECOUPLING



Micro Star Restricted Secret		
File	Decoupling	Rev
Document Number	MS-6395	700
MICRO-STAR INT'L		
CO., LTD.		
No. 89, LinDe St., Jung-Ho City,		
Taipei Hsien, Taiwan		
http://www.msi.com.tw		
Last Revision Date:		
Monday, September 23, 2002		
Sheet		
31 of 34		

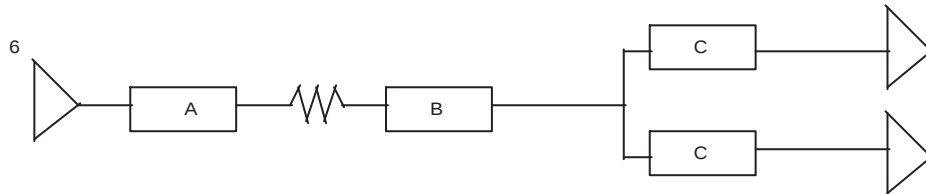
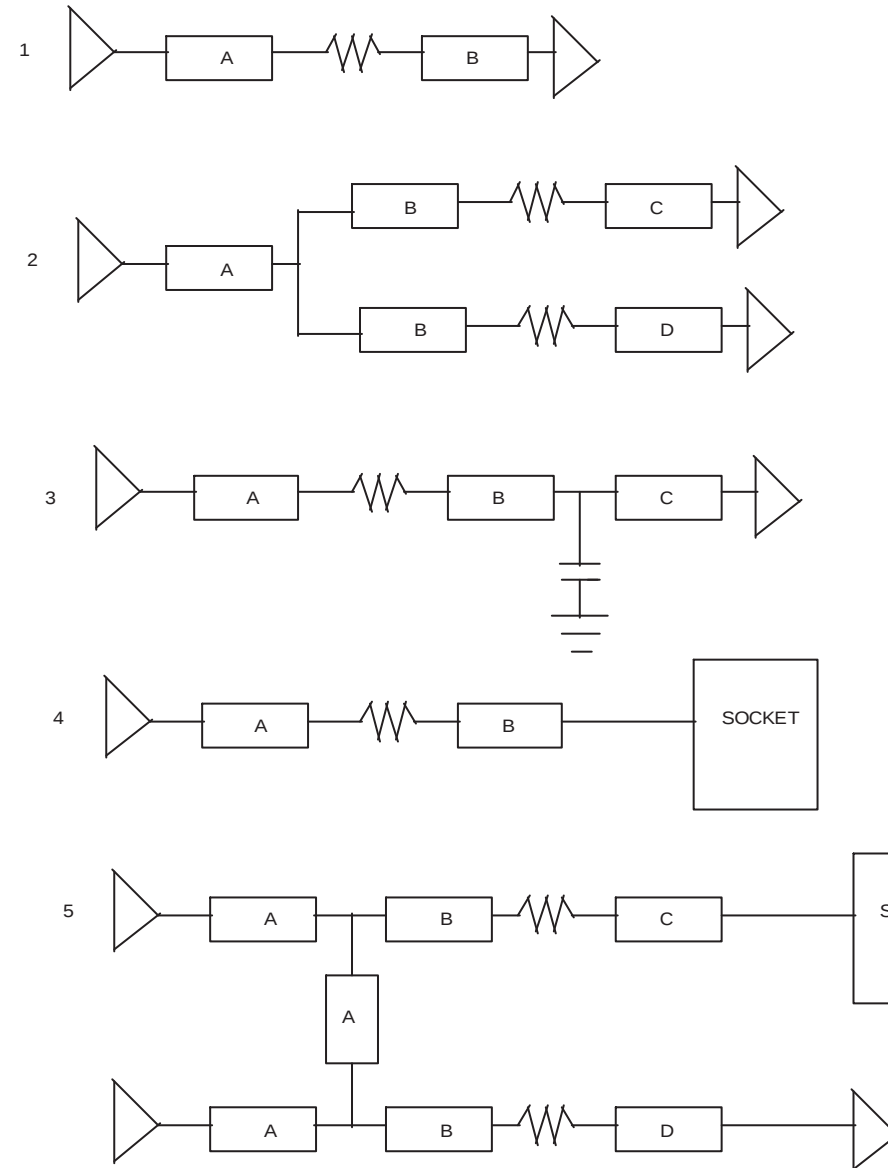
Layout Guide

Layout Dimensions

Group	Receiver	Topology	A	B	C	D
DCLK[0:7]	DIMM	1	0.5"	X		
CPUHCLK,GMCHHCLK	C=CPUHCLK D=GMCHHCLK	5	0.1"	0.5"	X+4.8"	X+7.1"
GMCH_3V66	GMCH	3	0.5"	X+1.4"	0.5"	
ICH_CLK66	ICH	3	0.5"	X+1.4"	0.5"	
ICHPCCLK	ICH	1	0.5"	X+4.4"		
LOCLK,LRCLK	GMCH	1	0.5"	3.25" To 3.75"		
PICCLK	PPGA	4	0.5"	Y		
PCICLK1,PCICLK2 PCICLK3,	PCI socket	4	0.5"	X+0" To X+6.0"		
FWHPCLK,PCICLK4	PCI device	1	0.5"	X+3" To X+9.3"		
DCLK_WR	GMCH	3	0.5"	X+3.2"		
DC_CLK	SDRAM	6	0.5"	1.5" To 2.5"	0.75" To 1.25"	

Suggested values are:X=5.0",Y=4.2"

Different Topologies for the clock routing guidelines



Micro Star Restricted Secret

Title	LayoutGuide	Rev
Document Number	MS-6395	700
MICRO-STAR INT'L CO., LTD.		Last Revision Date:
No. 69, Li-De St., Jung-Ho City		Monday, September 23, 2002
Tainan, Taiwan		Sheet
http://www.msi.com.tw		of

Layout Guide

GTL Signals interface:

AGTL+ to non-AGTL+Processor signals 5:20
Intragroup AGTL+signals(same group AGTL+) 5:10
Intragroup AGTL+signals(different group AGTL+) 5:15

HUB-Link Signals interface:

Hub link data signals is maximum 7".Trace width of 5 and a trace spacing of 15.

IDE Signals interface:

The IDE Interface can be routed with 5-mil trace on 10-mil space and must be less than 8".

USB signals interface:

USB requires 9-mil trace and with other signals need 25-mil spacing.

The signal+ /signal- also be the same length.

15-ohm series resistors should be place as close as possible to ICH2(<1").

The signal+ /signal- pair must be routed together and not paraller with other signal trace.

RTC Layout Considerations:

Keep the RTC lead lengths as short as possible.Approximately 0.25" is sufficient.

Put a ground plane under the XTAL components.

RTCX1,RTCX2,VBIAS should all be routed with trace lengths less than 1".The shorter,the better.

ICH2 LAN signals interface:(TBD)

LAN signals total trace length should not exceed 13" (LOM/CNR)

The length of each data trace is either equal in length to the ELAN_CLK trace or up to 0.5" shorter the ELAN_CLK trace.

ICH2 to LAN connector trace length $3" < L < 10"$.

ICH2 to CNR Slot trace length $2.5" < L < 9"$.

Do not route the transmit differential trace closer than 70-mils from the receive differntial traces.

Do not route any other signal trace both parallel to the the differential trace and closer than 70-mils from the differntial traces.

Do not route traces and vias under crystals or oscillators.

Keep the total length of each differential pair under 4"

PH163112S component should be placed as close as possible RJ45 connect.

82I562EM component to RJ45 length 1.5" to 4.5"

LAN clock signal and reset signal 5:10

LAN RX+ -/TX+ - signals 7:12

Micro Star Restricted Secret

Title	LayoutGuide	Rev
Document Number	MS-6395	700
MICRO-STAR INTL CO., LTD. No. 69, Li-De St. Jung-Ho City Tainan, Taiwan http://www.msi.com.tw		Last Revision Date: Monday, September 23, 2002
Sheet		of

JLAN1/2	CONFIG
1 - 2	ENABLED

	JBAT1 Clear CMOS
*	
1 - 2	Normal
2 - 3	Clear CMOS

JP2	AUDIO DOWN
1 - 2	Enable onboard audio codec
2 - 3	Disable onboard audio codec

JP1 BIOS Update	
SHORT	Locked
* OPEN	Unlocked



MS-6395-700



If no use
INTEL front
audio need
short for real
panel audio



If used KB & MS wake up
install JKBV1 jumper,
else used jumper wire
short 2 - 3 pin.



Legend request
JGLED1 which is for
suspend_led to
change 2 pin



U11(A)	
1 VPP	32 VCC
2 RST#	31 CLK
3 FGPB	30 FGP4
4 FGP2	29 ICNVL
5 FGP1	28 GND4
6 FGP0	27 VCCA
7 WP#	26 GND
8 TBL#	25 VCC
9 ID3	24 INIT#
10 ID2	23 FWH4
11 ID1	22 RFU
12 ID0	21 RFU
13 FWH0	20 RFU
14 FWH1	19 RFU
15 FWH2	18 RFU
16 GND	17 FWH3

SST49LF002A

Micro Star Restricted Secret

Title	Packing BOM	Rev
Document Number	MS-6395	700
MICRO-STAR INT'L CO., LTD. No. 89, Li-De St, Jung-Ho City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Monday, September 23, 2002	
	Sheet	34 of 34