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1. INTRODUCTION

1.1. PREFACE

Welcome to use the **6SMM7** motherboard. It is a Celeron™ Socket 370 Processor based PC / AT compatible system with AGP/ PCI / ISA Bus, and has been designed to be the fastest PC / AT system. There are some new features allow you to operate the system with just the performance you want.

This manual also explains how to install the motherboard for operation, and how to set up your CMOS CONFIGURATION with BIOS SETUP program.

1.2. KEY FEATURES

- ❑ Intel Celeron™ Socket 370 Processor based PC / AT compatible mainboard.
- ❑ Socket 370 Pins ZIF white socket on board.
- ❑ Supports Celeron™ Socket 370 processor running at 366-533 MHz.
- ❑ SiS 620 / 5595 chipset, Supports SDRAM / Ultra DMA/33 IDE / Keyboard Power On.
- ❑ Built-in ESS SOLO1 PCI audio chip.
- ❑ Supports external Modem Ring-On on COM A & COM B and internal Modem Ring-On.
- ❑ Built-in SIS 620 AGP chip.
- ❑ Supports Wake-up on LAN .
- ❑ Supports 3x DIMMs SDRAM DIMM module.
- ❑ Supports 16 MB ~ 768 MB EDO / SDRAM memory on board.
- ❑ 3x PCI Bus slots, 1x ISA Bus slots.
- ❑ Supports 2 channels Ultra DMA/33 IDE ports for 4 IDE Devices.
- ❑ Supports 2x COM (16550), 1x LPT (EPP / ECP), 1x VGA Port , 1x Floppy port.
- ❑ Supports 1x Line in, 1x Line Out, 1x Mic in, 1x CD Line in, 1x GAME Port, 1x TEL Port, 1x AUX Line in.
- ❑ Supports 2x USB ports, 1x PS/2 Mouse, 1x PS/2 Keyboard.
- ❑ Licensed AWARD BIOS, 2Mbits FLASH RAM.
- ❑ 24.2 cm x 20 cm Micro-ATX form factor, 4 layers PCB.

1.3. PERFORMANCE LIST

The following performance data list is the testing results of some popular benchmark testing programs.

These data are just referred by users, and there is no responsibility for different testing data values gotten by users. (The different Hardware & Software configuration will result in different benchmark testing results.)

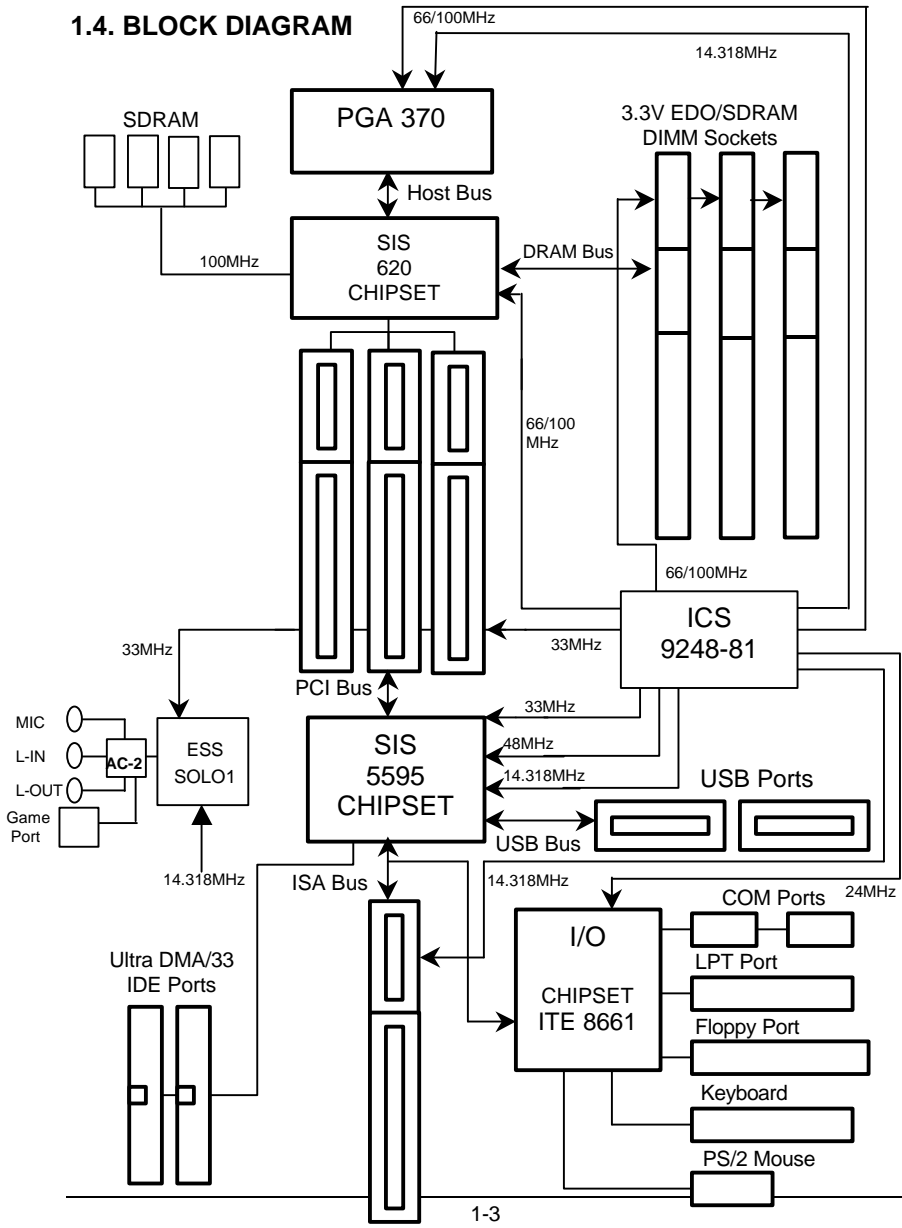
- CPU Intel® Celeron™ 366/466MHz Socket 370 processor
- DRAM (128x 1) MB SDRAM (MT 48LC8M8A2-8E B)
- CACHE SIZE 128 KB included in CPU
- DISPLAY Onboard SIS 620 graphics acceleration (8MB SDRAM)

- STORAGE Onboard IDE (Seagate ST34520)
- O.S. Windows NT™4.0 SPK4
- DRIVER Display Driver at 1024 x 768 x 64k colors x 75Hz.

SIS PCI Master IDE Miniport Driver

Processor	366MHz (66x5.5)	466MHz (66x7)
Winbench98		
CPU mark32	643	718
FPU Winmark	1960	2500
Business Disk	4010	4200
Hi-End Disk	9260	9560
Business Graphics	99.8	108
Hi-End Graphics	256	298
Winstone98		
Business	23	25
Hi-End	21.5	24.1

1.4. BLOCK DIAGRAM



1.5. INTRODUCE THE INTEL® Celeron™ Socket 370 Processor

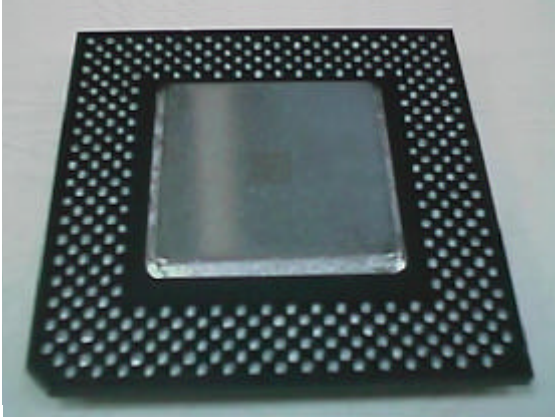


Figure 1: INTEL® Celeron™ Socket370 Processor

1.6 What is AGP?

The Accelerated Graphics Port (AGP) is a new port on the Host-To-PCI bridge device that supports an AGP port. The main purpose of the AGP port is to provide fast access to system memory.

The AGP port can be used either as fast PCI port (32-bits at 66MHz vs. 32-bits at 33MHz) or as an AGP port which supports 2x data-rate, a read queue, and side band addressing. When the 2x-data rate is used, the port can transmit data at 533MB/sec ($66.6 \times 2 \times 4$). The read-queue can be used to pipeline reads – removing the effects of the reads-latency. Side band addressing can be used to transmit the data address on a separate line in order to speed up the transaction.

2. SPECIFICATION

2.1. HARDWARE

- CPU
 - Celeron™ Socket 370 processor 366–533 MHz.
 - 66MHz Socket 370 on board.
- SPEED
 - 66 MHz system speed.
 - 66 MHz AGP bus speed. (2X mode 133MHz)
 - 33 MHz PCI-Bus speed.
 - 8 MHz AT bus speed.
- PROTECTION
 - Speaker Alarm when detect "CPU FAN Failure" or "CPU Overheat".
 - Automatically slow down CPU speed when "CPU Overheat".
 - H/W monitor power status (+5V, VTT, VCC3, Vcore, CPU voltage).
- DRAM MEMORY
 - 3 banks 168 pins DIMM module sockets on board.
 - Use 16 / 32 / 64 / 128 / 256 MB DIMM module DRAM.
 - Supports 16 ~ 768MB EDO / SDRAM.
 - Supports 3.3V EDO / SDRAM.
- CACHE MEMORY
 - 32 KB 1st cache memory included in CPU.
 - 128KB 2nd cache in CPU.
 - Supports DIB speed mode for L2 Cache.
- I/O BUS SLOTS
 - 3 33MHz Master / Slave PCI-BUS.
 - 1 8MHz 16 bits ISA BUS.
- IDE PORTS
 - 2 Ultra DMA/33 Bus Master IDE channels on board.(Using IRQ14; IRQ15)
 - Support Mode 3,4 IDE & ATAPI CD – ROM.

- I/O PORTS
 - Supports 2 16550 COM ports.
 - Supports 1 LPT port.
 - Supports 1 Floppy port.
 - Supports 2 USB ports.
 - Supports 1 PS/2 Mouse.
 - Supports 1 PS/2 Keyboard.
- SOUND
 - Built-in ESS SOLO1 PCI audio chip.
 - Supports Line Out, Line In, MIC, Game Port and CD-Line, TEL Port, AUX Line in.
- GREEN FUNCTION
 - Suspend mode support.
 - Green switch & Green LED support.
 - IDE & Display power down support.
 - Monitor all IRQ / DMA / Display / I/O events.
- BIOS
 - 2M bits FLASH RAM.
 - Supports Plug & Play, DMI Function.
- DIMENSION
 - Micro ATX Form Factor, 4 layers PCB.

2.2. SOFTWARE

- DRIVER
 - UUCD.(SIS 620 AGP driver, ESS solot-1 sound driver)
- BIOS
 - Licensed AWARD BIOS.
 - AT CMOS Setup, BIOS / Chipset Setup, Green Setup, Hard Disk Utility included.
- O.S.
 - Operation with MS-DOS®, Windows®95, Windows®98, WINDOWS™ NT, OS/2, NOVELL and SCO UNIX.

2.3. ENVIRONMENT

- Ambient Temp.
 - 0°C to +50°C (Operating).
- Relative Hum.
 - 0 to +85% (Operating).
- Altitude
 - 0 to 10,000 feet (Operating).
- Vibration
 - 0 to 1,000 Hz.
- Electricity
 - 4.9 V to 5.2 V. (Max. 20A current at 5V.)

3. HARDWARE INSTALLATION

3.1. UNPACKING

The mainboard package should contain the following:

- The **6SMM7** mainboard.
- USER'S MANUAL for mainboard.
- Cable set for IDE, COM B (Optional), Floppy devices, .
- CD for Mainboard ; (Sound and AGP driver & other Utility).

The mainboard contains sensitive electric components, which can be easily damaged by static electricity, so the mainboard should be left in its original packing until it is installed.

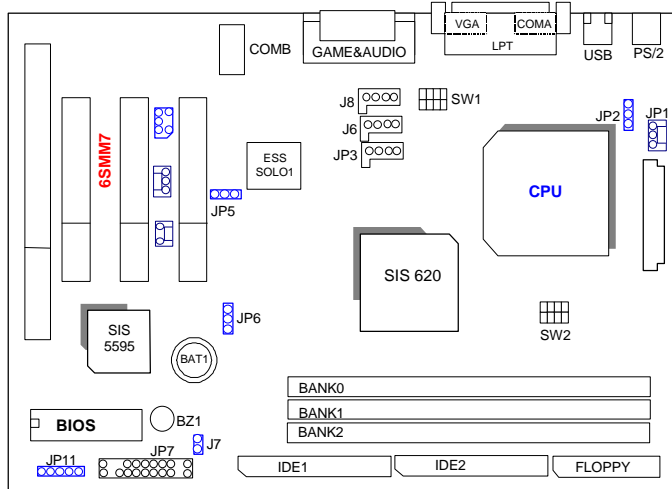
Unpacking and installation should be done on a grounded anti-static mat. The operator should be wearing an anti static wristband, grounded at the same point as the anti-static mat.

Inspect the mainboard carton for obvious damage. Shipping and handling may cause damage to your board. Be sure there are no shipping and handling damages on the board before proceeding.

After opening the mainboard carton, extract the system board and place it only on a grounded anti-static surface component side up. Again inspect the board for damage. Press down on all of the socket IC's to make sure that they are properly seated. Do this only on with the board placed on a firm flat surface.

⚠ DO NOT APPLY POWER TO THE BOARD IF IT HAS BEEN DAMAGED.

3.2. MAINBOARD LAYOUT



<Figure 3.1>

3.3. QUICK REFERENCE FOR JUMPERS & CONNECTORS

◆ I/O Ports Connector	
USB	USB port.
IDE1	For Primary IDE port.
IDE2	For Secondary IDE port.
PS/2	For PS/2 Keyboard / Mouse port.
FLOPPY	For Floppy port
COMA	For Serial port1 (COM A).
COM B	For Serial port2 (COM B).
LPT	For LPT port.
VGA	For VGA port.
GAME	For GAME port.
AUDIO	For MIC,LINE-IN,LINE-OUT,TEL port.

◆ Socket 370	
For Celeron™ Socket 370 Processor installed	

◆ JP1:CPU FAN : CPU cooling FAN Power Connector	
Pin	Function
1	GND.
2	+12V
3	Signal

◆ JP9 :Wake on Lan	
Pin	Function
1	+5V SB
2	GND
3	Signal

◆ JP5 : Onboard Sound Function Selection	
Pin	Function
1-2 short	Onboard Sound Function Enabled.(Default)
2-3 short	Onboard Sound Function Disabled.

◆ JP2 : Keyboard Power On Selection	
Pin	Function
1-2 short	Enabled Keyboard power on.
2-3 short	Disabled Keyboard power on. (Default)

◆ JP8:SB-LINK (For PCI Sound Card Connector) (Optional)	
Pin	Function
1	Signal
2	GND
3	NC
4	Signal
5	GND
6	Signal

◆ JP6 : Clear COMS Function	
Pin	Function
1-2 short	Clear CMOS.
2-3 short	Normal.(Default)

◆ J6 : CD Audio Line In	
Pin	Function
1	Left
2	GND
3	GND
4	Right

◆ JP3 : TEL: The Connector is for Modem with internal Voice connector	
Pin	Function
1	Signal-In
2	GND
3	GND
4	Signal-Out

◆ JP11:IR: Infrared Connector (Optional)	
Pin	Function
1	IR DATA OUTPUT
2	GND
3	IR DATA INPUT
4	NC
5	POWER (i)

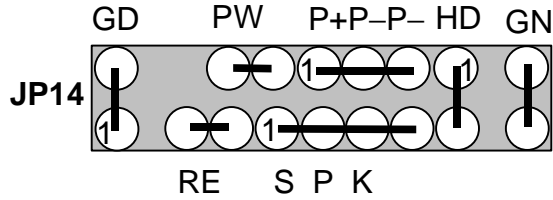
◆ JP10:Internal Modem Card Ring PWR On	
Pin	Function
1	Signal
2	GND

◆ J8 : AUX IN	
Pin	Function
1	AUX-L
2.3	GND
4	AUX-R

◆ J7 : Internal Buzzer (Optional)	
Pin	Function

Short	Enabled(Default)
Open	Disabled

JP7 : For 2X11 PINs Jumper

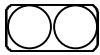


PW: Soft Power Connector



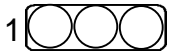
Open: Normal Operation
Short: Power On/Off

RE: Reset Switch



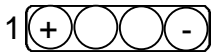
Open: Normal Operation
Short: For Hardware Reset System

P+P- P- : Power LED



PIN 1 : anode (+)
PIN 2 : cathode (-)
PIN 3 : cathode (-)

SPK: Speaker Connector



PIN 1 : VCC
PIN 2 : NC
PIN 3 : NC
PIN 4 : Data

HD: IDE Hard Disk Active LED



PIN 1: LED anode (+)



PIN 2: LED cathode (-)

GN: Green Function Switch

Open : Normal operation
 Short : Entering Green Mode

GD: Green LED

PIN 1 : LED anode (+)
 PIN 2 : LED cathode (-)

3.4. DRAM INSTALLATION

The main board can be installed with 16 / 32 / 64 / 128 / 256 MB 168 pins DIMM module DRAM, and the DRAM speed must be 67~100 MHz for SDRAM when system bus speed is set to 66MHz. When system bus speed is set to 100MHz, 100MHz SDRAM is required. The DRAM memory system on main board consists of bank 0, 1& bank 2.

Since 168 pins DIMM module is 64 bits width, therefore 1 piece of DIMM module may match a 64 bits system. The total memory size is 16 MB ~ 768MB SDRAM. The DRAM installation position refer to Figure 3.1, and notice the Pin 1 of DIMM module must match with the Pin 1 of DIMM socket. Insert the DRAM DIMM module into the DIMM socket at Vertical angle. If there is a wrong direction of Pin 1, the DRAM DIMM module could not be inserted into socket completely.

3.5. CPU SPEED SETUP

The system bus frequency can be switched between 66MHz and 133MHz by adjusting DIP SW2. The CPU frequency ratio can be switched from X3 to X8 by adjusting DIP SW1. The user can set up CPU speed for 366~533MHz processors by adjusting SW1 and SW2 properly.

SW1: (O:ON / X:OFF)

CLK RATIO	1	2	3	4
X3	ON	ON	ON	OFF

X3.5	ON	OFF	ON	OFF
X4	ON	ON	OFF	ON
X4.5	ON	OFF	OFF	ON
X5	ON	ON	OFF	OFF
X5.5	ON	OFF	OFF	OFF
X6	OFF	ON	ON	ON
X6.5	OFF	OFF	ON	ON
X7	OFF	ON	ON	OFF
X7.5	OFF	OFF	ON	OFF
X8	OFF	ON	OFF	ON

Set System Bus Speed

SW2:

CPU	1	2	3	4
66	O	O	O	X
75	X	O	O	X
83	O	X	O	X
100	O	O	X	X
112	X	O	X	X
133	X	X	X	X

- The CPU is a sensitive electric component and it can be easily damaged by static electricity, so users must keep it away from metal surface when the CPU is installed onto main board.
- **Note:** Please set the CPU host frequency in accordance with your processor's specifications. We don't recommend you to set the system bus frequency over the CPU's specification because these specific bus frequencies are not the standard specifications for CPU, chipset and most of the peripherals. Whether your system can run under these specific bus frequencies properly will depend on your hardware configurations, including CPU, Chipsets, SDRAM, Cards..etc.

3.6. CMOS RTC & ISA CFG CMOS SRAM

The mainboard contains RTC & CMOS SRAM on board. They have a power supply from external battery to keep the DATA inviolate & effective. The RTC is a REAL-TIME CLOCK device, which provides the DATE & TIME to system. The CMOS SRAM is used for keeping the information of system

configuration, so the system can automatically boot OS every time. Since the lifetime of internal battery is 5 years, the user can change a new Battery to replace old one when it has consumed.

3.7. SPEAKER CONNECTOR INSTALLATION

There is a speaker in AT system for sound purpose. The 4 - Pins connector **SPK** is used to connect speaker.

3.8. HARDWARE RESET SWITCH CONNECTOR INSTALLATION

The RESET switch on panel provides users with HARDWARE RESET function. The system will do a cold start after the RESET switch is press and released by user. The RESET switch is a 2 PINS connector and should be installed to **RE** on mainboard.

3.9. POWER LED CONNECTOR INSTALLATION

System has power LED lamp on the panel of case. The power LED will light on off or flash to indicate which step on the system. The connector should be connected to **LED** of mainboard in correct direction.

3.10. IDE & ATAPI DEVICE INSTALLATION

There are two-Enhanced PCI IDE ports (**IDE1, IDE2**) on board, which following ATAPI standard SPEC. Any one IDE port can connected to two ATAPI devices (IDE Hard Disk, CD-ROM & Tape Driver), so total four ATAPI devices can exist in a system. The **HD** is the active LED port for ATAPI devices.

3.11. PERIPHERAL DEVICE INSTALLATION

After the I/O device installation and jumpers setup, the mainboard can be mounted into the case and fixed by screw. To complete the mainboard installation, the peripheral device could be installed now. The basic system needs a display interface card. If the PCI - Bus device is to be installed in the system, any one of three PCI - Bus slots can be used.

3.12.PS/2 KEYBOARD & MOUSE INSTALLATION

The main board supports PS/2 Mouse. The BIOS will auto detect whether the PS/2 Mouse is installed or not & assign IRQ12 for PS/2 Mouse port if it is installed. After installing the peripheral device, the user should check everything again, and prepare to power-on the system.