SBC81207 Series

Intel® Atom™
N450/D410/D510 PICMG 1.0 Full-size
User's Manual

Disclaimers

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CAUTION

If you replace wrong batteries, it causes the danger of explosion. It is recommended by the manufacturer that you follow the manufacturer's instructions to only replace the same or equivalent type of battery, and dispose of used ones.

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Printed in Taiwan

ESD Precautions

Computer boards have integrated circuits sensitive to static electricity. To prevent chipsets from electrostatic discharge damage, please take care of the following jobs with precautions:

- Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.
- Before holding the board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. It discharges static electricity from your body.
- Wear a wrist-grounding strap, available from most electronic component stores, when handling boards and components.

Trademarks Acknowledgments

Table of Contents

Chapter 1

Introduction

The **SBC81207** PICMG 1.0 full-size Single Board Computer supports Intel® N450/D410/D510 processors .The board integrates chipsets Intel® ICH8M that deliver outstanding system performance through high-bandwidth interfaces, multiple I/O functions for interactive applications and various embedded computing solutions. There are two 200-pin unbuffered SO-DIMM sockets for signal channel DDR2- 667 MHz memory, maximum memory capacity up to 2GB. It also features Gigabit/Fast Ethernet, three serial ATA channels for total three Serial ATA hard drives at maximum transfer rate up to 300MB/sec, and six USB 2.0 high speed compliant.

1.1 Specifications

Intel® ATOM processor with N450/D410/D510 supported.

- **System Chipset**
  - ICH8M & ITE8888
- **CPU**
  - N450/D410/D510
- **BIOS**
  - American Megatrends Inc. BIOS.
  - 16Mbit SPI Flash, DMI, Plug and Play
  - "Load Optimized Default" to backup customized Setting in the BIOS flash chip to prevent from CMOS battery fail
- **System Memory**
  - Maximum of two 200-pin unbuffered DDR2 SO-DIMM with Raw Card-A or Raw Card-C format.
  - Maximum of 2GB DDR2-667 MHz memory capacity supported.

Support DDR2 SO-DIMM Module Configurations for each SO-DIMM

DIMM Capacity	DRAM Organization	# of Device
256MB	32Mb x 16	4
512MB	32Mb x 16	8
512MB	64Mb x 16	4
1GB	64Mb x 16	8
1GB	128Mb x 16	4

Note:

1. Raw Card-A = 2Ranks of x16 SDRAMs (Double-sided)
2. Raw Card-C = 1Rank of x16 SDRAMs (Single-sided)
3. N450, D410, D510 processor can't support x8 SDRAM component.

- **Onboard Multi I/O**
  - Controller: Winbond W83627DHG-P
  - Parallel Port: one bi-directional with ECP/EPP/SPP support
  - Serial Ports: One ports for RS-232(COM1) and one port for RS-232/422/485(COM2)
  - Floppy controller: supports two drives (1.44MB for each)
- **USB Interface**
  - Six USB ports with fuse protection and complies with USB Spec. Rev. 2.0
- **Display**
  - Chipset Integrated VGA Controller and Supports up to 1400x1050 (For Intel N450 processor) and 2048x1536 (For Intel D410 & D510 processors) at 60 Hz with 32-bit color resolution on non-interlaced CRT monitors via 15-pin D-Sub connector on the edge

- **Watchdog Timer**
  - 1~255 seconds; up to 255 levels
- **Ethernet**
  - The LAN1/LAN2: LAN1 with Intel82567V for Gigabit/Fast Ethernet, LAN2 with RTL8111DL for Gigabit/Fast Ethernet.
  - Via PCI Express x1 bus
  - Wake-on-LAN support
- **Serial ATA**
  - Built-in three SATA II ports onboard support the maximum transfer rate up to 3.0 Gb/sec
- **Hardware Monitoring**
  - Monitoring temperatures, voltages, and cooling fan status
- **Dimensions:** 338 x 122 mm (6 layers)

NOTE *All specifications and images are subject to change without notice.*

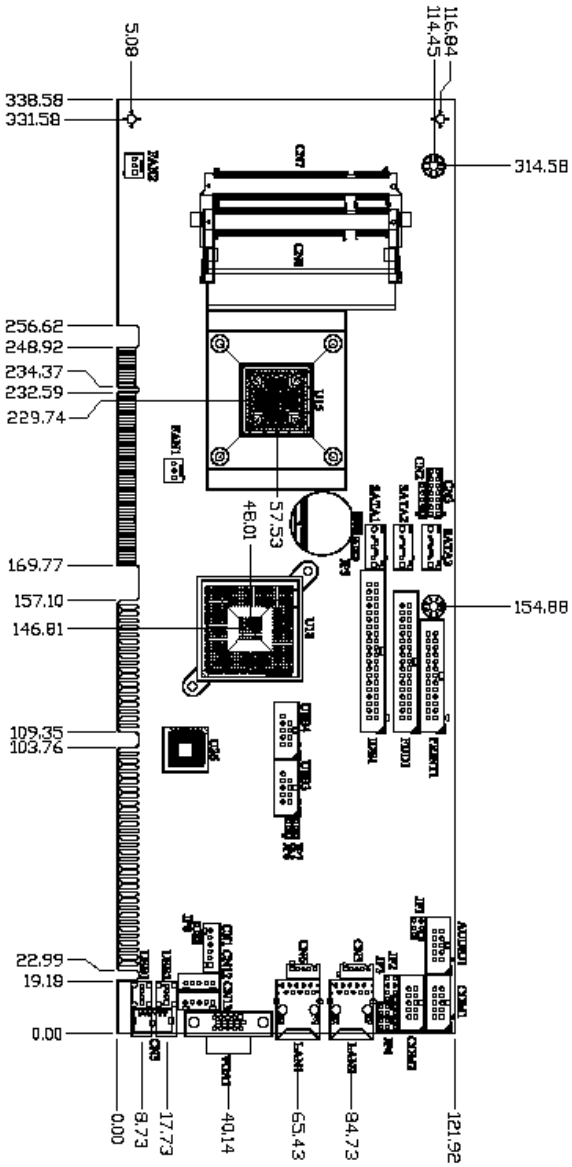
1.2 Utilities Supported

- Chipset Driver
- Ethernet Driver
- Graphic Driver
- Audio Driver

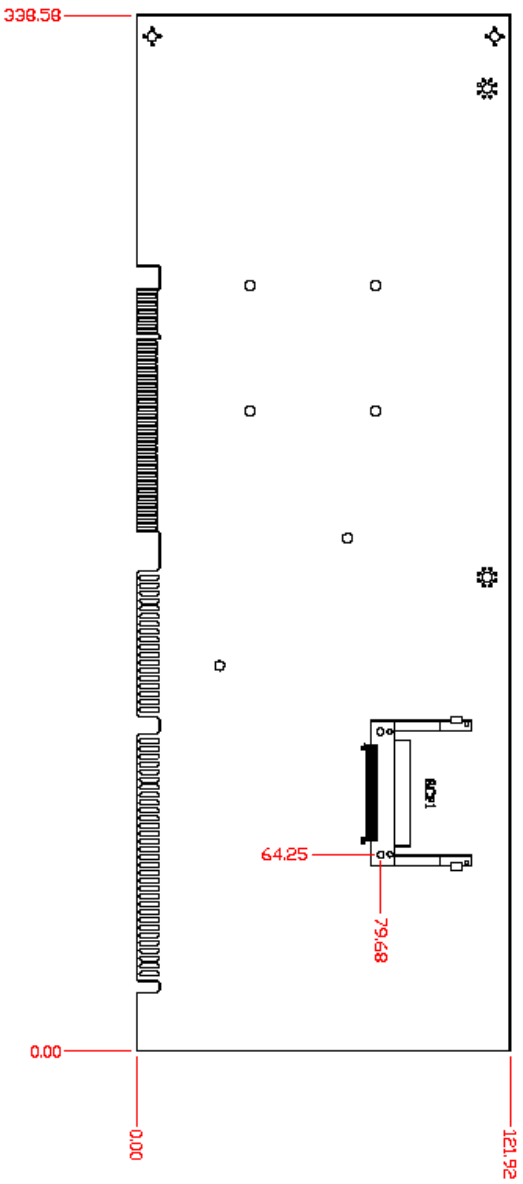
Chapter 2

Board Layout and Pin Assignments

2.1 Board Dimensions and Fixing Holes

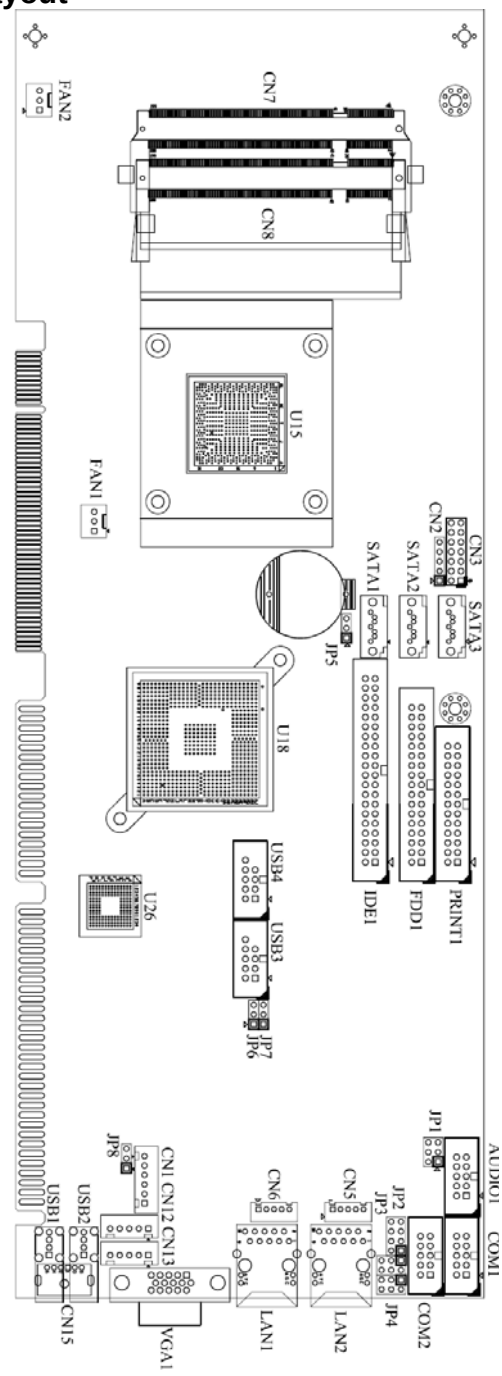


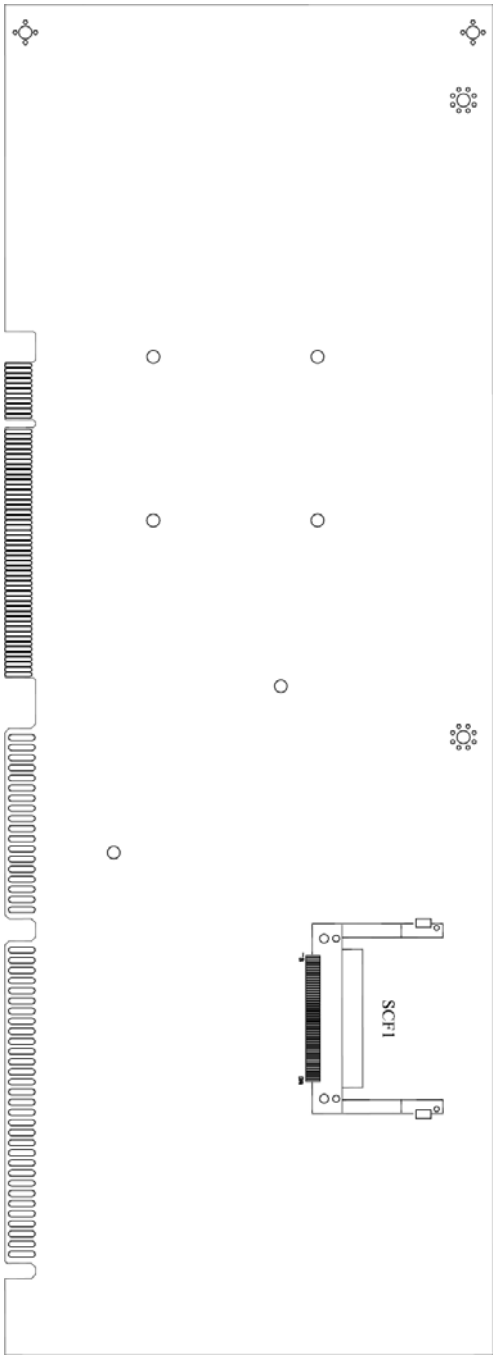
Component Side



Solder Side

2.2 Board Layout




SCF1

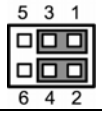
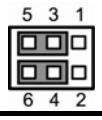
2.2 Jumper Setting

Proper jumper settings configure the **SBC81207** to meet your application purpose. We are herewith listing a summary table of all jumpers and default settings for onboard devices, respectively.

Jumper	Default		Setting
JP1	Audio Line Out/Speaker Out: Line out (Optional)		Short 1-3 Short 2-4
JP2	COM2 Mode Select: RS-232		Short 1-2
JP3	COM2 Mode Select	COM2 Pin 1: DCD	Short 3-5
		COM2 Pin 8: RI	Short 4-6
JP4	COM2 Mode Select	COM2 Pin 1: DCD	Short 3-5
		COM2 Pin 8: RI	Short 4-6
JP5	Clear CMOS Setting: Normal		Short 1-2
JP6	Compact Flash Master/Slave: Slave (Optional)		Short 1-2
JP7	Compact Flash Voltage Selection: 3.3V (Optional)		Short 1-2
JP8	AT/ATX Power Selection: ATX Power		Short 1-2

2.3 Audio Output Jumper: JP1

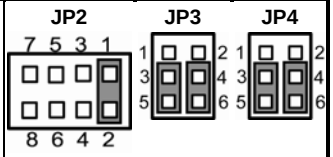
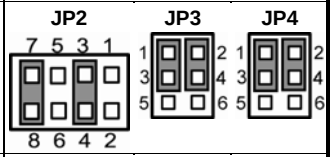
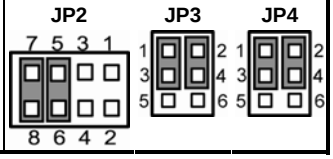
This jumper makes the selection of Audio output.

Description	Function	Jumper Setting
Audio Output	Line Out (Default)	
	Speaker Out	

This jumper is *optional*. It is not mounted as a default design.

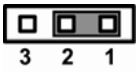
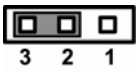
2.4 COM2 Mode Select Jumper: JP2, JP3, JP4

These jumpers select the COM2 port's communication mode to operate RS-232 or RS-422/485.

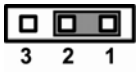
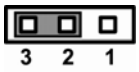
Description	Function	Jumper Setting
COM2 Mode Select	RS-232 (Default)	
	RS-422	
	RS-485	

2.5 CMOS Clear Jumper: JP5

You can use this jumper is to clear the CMOS memory if incorrect settings in Setup Utility.

Description	Function	Jumper Setting
CMOS Clear	Normal (Default)	
	Clear CMOS	

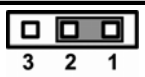
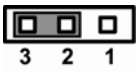
2.6 Compact Flash™ Master/Slave: JP6

Description	Function	Jumper Setting
Compact Flash™ Master/Slave	Slave (Default)	
	Master	

This jumper is *optional*. It is not mounted as a default design.

2.7 Compact Flash™ Voltage Selection: JP7

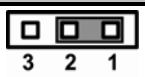
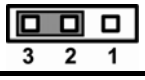
This jumper is to select the voltage for CompactFlash™ interface.

Description	Function	Jumper Setting
Compact Flash™ Voltage Selection	3.3V (Default)	
	5V	

This jumper is optional. It is not mounted as a default design.

2.8 AT/ATX Power Selection: JP8

When Jumper JP8 is set 2-3 short for AT power input, the system will be automatically power ON without pressing power button; when JP8 is 1-2 short for ATX power input, it is necessary to manually press power button to make the system power ON.

Description	Function	Jumper Setting
AT/ATX Power Selection	ATX Power (Default)	
	AT Power	

2.9 Connectors

Connectors connect the board with other parts of the system. Loose or improper connection might cause problems. Make sure all connectors are properly and firmly connected. Here is a summary table shows you all connectors on the **SBC81207** Series.

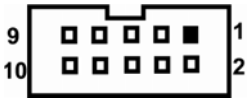
Connectors	Label
Audio Connector	AUDIO1
Serial Port1 Connector	COM1
Serial Port2 Connector	COM2
Front Panel Connector	CN3
LAN2 Link/Active & Speed LED Connector	CN5
LAN1 Link/Active & Speed LED Connector	CN6
USB Port5/6 Connector	USB4
USB Port3/4 Connector	USB3
AXIOMTEK ACPI Connector	CN11
Internal PS/2 Keyboard Connector	CN12
Internal PS/2 Mouse Connector	CN13
USB Port2 Connector	USB2
USB Port1 Connector	USB1
PS/2 KB/MS Connector (Optional)	CN15

Connectors	Label
Serial ATA Port Connector	SATA1、2、3
VGA Connector	VGA1
CPU FAN Connector	FAN1
System FAN Connector	FAN2
Floppy Connector	FDD1
Parallel IDE Connector	IDE1
CompactFlash™ Connector (Optional)	SCF1
Printer Port Connectors	PRINT1
LAN1 Connector	LAN1
LAN2 Connector	LAN2
DDR2 SO-DIMM Sockets	CN7、CN8

2.10 Audio Connector: AUDIO1

AUDIO1 is a 10pin-header connector commonly used for the audio.

Pin	Signal	Pin	Signal
1	MIC-IN	2	GND
3	Line In L	4	GND
5	Line In R	6	GND
7	Audio Out L	8	GND
9	Audio Out R	10	GND



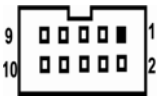
It is an optional function by request.

2.11 COM1, COM2 Port Connectors: COM1, COM2

The serial interface for the board consists of COM1 port support for RS-232 and COM2 for RS-232/RS-422/RS-485.

Please refer to the RS-232 pin assignment as listed below:

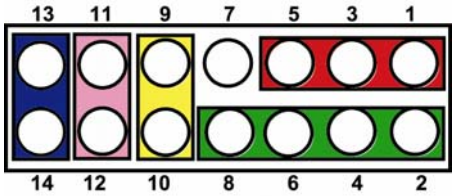
Pin	Signal	Pin	Signal
1	Data Carrier Detect (DCD)	2	Data Set Ready (DSR)
3	Receive Data (RXD)	4	Request to Send (RTS)
5	Transmit Data (TXD)	6	Clear to Send (CTS)
7	Data Terminal Ready (DTR)	8	Ring Indicator (RI)
9	Ground (GND)	10	NC



COM2 Serial Port 10-pin (Box-header) Connector Pin Assignment list

Pin #	Signal Name	
	RS-422	RS-485
1	TX-	DATA-
2	No connector	No connector
3	TX+	DATA+
4	No connector	No connector
5	RX+	No connector
6	No connector	No connector
7	RX-	No connector
8	No connector	No connector
9	GND	GND
10	NC	NC

2.12 Front Panel Bezel Connector: CN3



Power LED

This 3-pin connector named as Pin 1, 3 and Pin 5 connect the system power LED indicator to such a switch on the case. Pin 1 is assigned as +, and Pin 3, Pin 5 as -. The Power LED lights up when the system is powered ON.

External Speaker and Internal Buzzer Connector

Pin 2, 4, 6 and 8 can be connected to the case-mounted speaker unit or internal buzzer. While connecting the CPU card to an internal buzzer, please short pins 2-4; while connecting to an external speaker, you need to set pins 2-4 to Open and connect the speaker cable to pin 8 (+) and pin 6 (-).

ATX Power On/Off Button

This 2-pin connector named as Pin 9 and 10 connect the front panel's ATX power button to the CPU card, which allows users to control ATX power supply to be power on/off.

System Reset Switch

Pin 11 and 12 can be connected to the case-mounted reset switch that reboots your computer, not turns OFF the power switch. It is a better way to reboot your system for a longer life of the system's power supply.

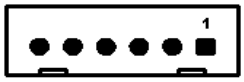
HDD Activity LED

This connection is linked to hard drive activity LED on the control panel. LED flashes when HDD is being accessed. Pin 13 and 14 connect the hard disk drive to the front panel HDD LED, Pin 13 assigned as -, and Pin 14 as +.

2.13 ACPI Connector: CN11

Advanced Configuration and Power Interface (ACPI) defines a flexible and extensible interface that allows system designers to select appropriate cost/feature trade-offs for power management. The interface enables and supports reliable power management through improved hardware and operating system coordination. The specification enables new power management technology to evolve independently in operating systems and hardware while ensuring that they continue to work together.
CN11 is a 6-pin header connector that provides ACPI interface.

Pin	Signal
1	EXTSMI
2	GND
3	Power Button
4	GND
5	PSON
6	+5VSB



2.14 USB Port Connector (USB1/USB2)

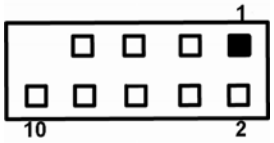
The 4-pin standard Universal Serial Bus (USB) port connector on the board is for the installation of peripherals supporting the USB interface.

Pin	Signal
1	USB POWER
2	USB -
3	USB +
4	GND

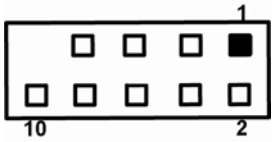
2.15 USB Connectors: USB3, USB4

These Universal Serial Bus (USB) connectors on this board are for installing versatile USB interface peripherals.

Pin	Signal	Pin	Signal
1	+5V	2	+5V
3	USB D2-	4	USB D3-
5	USB D2+	6	USB D3+
7	Ground (GND)	8	Ground (GND)
9	NC	10	Ground (GND)

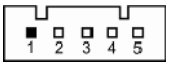


Pin	Signal	Pin	Signal
1	+5V	2	+5V
3	USB D4-	4	USB D5-
5	USB D4+	6	USB D5+
7	Ground (GND)	8	Ground (GND)
9	NC	10	Ground (GND)



2.16 LAN1/LAN2 Link/Active & Speed LED Connector: CN5, CN6

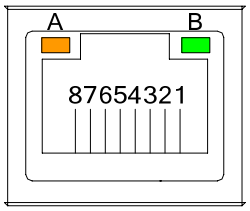
Pin	Signal
1	Link/Active LED (+)
2	Link/Active LED (-)
3	Speed LED-10/100, Low Active
4	+ 3.3V
5	Speed LED-1000, Low Active



2.17 Ethernet RJ-45 Connector with LED: LAN1, LAN2

The board is equipped with two high performance Plug and Play Ethernet interface fully compliant with the IEEE 802.3 standard. To connect the board to 10-Base-T, 100-Base-T or 1000 Base-T hub, just plug one end of cable to the Ethernet connector and connect the other end (phone jack) to a 10-Base-T, 100-Base-T or 1000 Base-T hub.

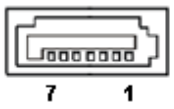
Pin	Signal
1	RJ-1(For 1000 base T-Only)
2	RJ-1(For 1000 base T-Only)
3	Rx- (Data reception negative)
4	RJ-1(For 1000 base T-Only)
5	RJ-1(For 1000 base T-Only)
6	Rx+(Data reception positive)
7	Tx- (Data transmission negative)
8	Tx+ (Data transmission positive)
A	Active LED
B	100 LAN LED(Green)/ 1000 LAN LED(Orange)



2.18 SATA Connector: SATA1、2、3

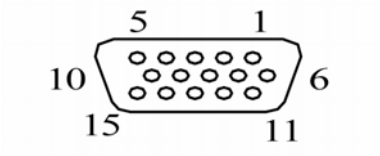
These SATA connectors are for high-speed SATA interface ports and they can be connected to hard disk devices.

PIN	Signal
1	GND
2	SATA_TX+
3	SATA_TX-
4	GND
5	SATA_RX-
6	SATA_RX+
7	GND



2.19 VGA Connector: VGA1

The VGA connector **VGA1** is a standard 15-pin connector commonly used for the CRT VGA display.

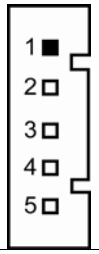


Pin	Signal	Pin	Signal	Pin	Signal
1	Red	2	Green	3	Blue
4	NC	5	GND	6	GND
7	GND	8	GND	9	+5V
10	GND	11	NC	12	DDC DATA
13	Horizontal Sync	14	Vertical Sync	15	DDC CLK

2.20 Keyboard & Mouse External Connector: CN12、CN13

The board provides the Keyboard (CN12)/ Mouse (CN13) interface with a 5-pin connector.

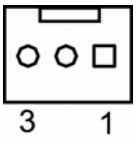
Pin	Signal
1	Clock
2	Data
3	NC
4	GND
5	Power



2.21 Fan Connectors: FAN1, FAN2

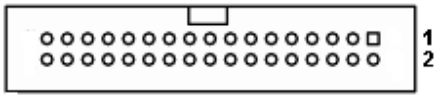
FAN1/FAN2 are fan connectors and provide power to CPU/System.

Pin	Signal
1	GND
2	+12V
3	Sensor

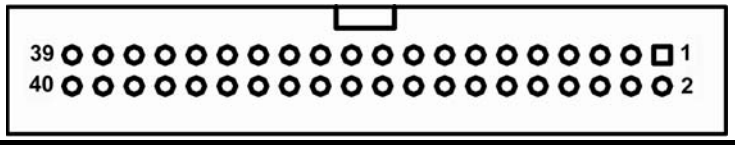


2.22 Floppy Disk Port Connector: FDD1

Pin	Signal	Pin	Signal	Pin	Signal
1	GND	2	Drive Density Select	3	GND
4	No connector	5	GND	6	No connector
7	GND	8	Index#	9	GND
10	Motor enable A#	11	GND	12	No connector
13	GND	14	Drive select A#	15	GND
16	No connector	17	GND	18	Direction#
19	GND	20	STEP#	21	GND
22	Write data#	23	GND	24	Write gate#
25	GND	26	Track 0 #	27	GND
28	Write protect#	29	No connector	30	Read data#
31	GND	32	Head selection#	33	No connector
34	Disk change#				



2.23 Parallel IDE Connector: IDE1

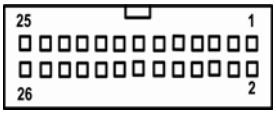


Pin	Signal	Pin	Signal	Pin	Signal
1	Reset #	2	GND	3	Data 7
4	Data 8	5	Data 6	6	Data 9
7	Data 5	8	Data 10	9	Data 4
10	Data 11	11	Data 3	12	Data 12
13	Data 2	14	Data 13	15	Data 1
16	Data 14	17	Data 0	18	Data 15
19	GND	20	N.C	21	DREQ#
22	GND	23	IOW #	24	GND
25	IOR #	26	GND	27	IOCHRDY
28	CSEL	29	DACK#	30	GND
31	Interrupt	32	N.C	33	SA1
34	PDIAG#	35	SA0	36	SA2
37	HDC CS0 #	38	HDC CSI #	39	HDD Active #
40	**GND**				

2.24 Parallel Port

Connector: PRINT1

Pin	Signal	Pin	Signal
1	Strobe#	2	Auto Form Feed#
3	Data 0	4	Error#
5	Data 1	6	Initialize#
7	Data 2	8	Printer Select In#
9	Data 3	10	GND
11	Data 4	12	GND
13	Data 5	14	GND
15	Data 6	16	GND
17	Data 7	18	GND
19	Acknowledge#	20	GND
21	Busy	22	GND
23	Paper Empty#	24	GND
25	Printer Select	26	NC



CHAPTER 3

HARDWARE DESCRIPTION

3.1 Microprocessors

The **SBC81207** Series supports Intel® Atom™ processor N270, which make your system operated under Windows XP and Windows VISTA environments. The system performance depends on the microprocessor. Make sure all correct settings are arranged for your installed microprocessor to prevent the CPU from damages.

3.2 BIOS

The **SBC81207** Series uses AMI Plug and Play BIOS with a single 8Mbit SPI Flash, DMI, Plug and Play.

3.3 System Memory

The **SBC81207** Series industrial CPU card supports one 200-pin unbuffered DDR2 SO-DIMM sockets for a maximum memory of 2GB DDR2 SDRAMs. The memory module can come in sizes of 128MB, 256MB, 512MB and 1GB.

3.4 I/O Port Address Map

There are total 1KB port addresses (under OS WinXP) available for assignment to other devices via I/O expansion cards.

■ I/O Port Address Map

[00000000 - 0000000F] Direct memory access controller
[00000000 - 00000CF7] PCI bus
[00000010 - 0000001F] Motherboard resources
[00000020 - 00000021] Programmable interrupt controller
[00000022 - 0000003F] Motherboard resources
[00000040 - 00000043] System timer
[00000044 - 0000005F] Motherboard resources
[00000060 - 00000060] Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
[00000061 - 00000061] System speaker
[00000062 - 00000063] Motherboard resources
[00000064 - 00000064] Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
[00000065 - 0000006F] Motherboard resources
[00000070 - 00000071] System CMOS/real time clock
[00000072 - 0000007F] Motherboard resources
[00000080 - 00000080] Motherboard resources
[00000081 - 00000083] Direct memory access controller
[00000084 - 00000086] Motherboard resources
[00000087 - 00000087] Direct memory access controller
[00000088 - 00000088] Motherboard resources
[00000089 - 0000008B] Direct memory access controller
[0000008C - 0000008E] Motherboard resources
[0000008F - 0000008F] Direct memory access controller
[00000090 - 0000009F] Motherboard resources
[000000A0 - 000000A1] Programmable interrupt controller
[000000A2 - 000000BF] Motherboard resources
[000000C0 - 000000DF] Direct memory access controller
[000000E0 - 000000EF] Motherboard resources
[000000F0 - 000000FF] Numeric data processor
[000001F0 - 000001F7] Primary IDE Channel
[00000274 - 00000277] ISAPNP Read Data Port
[00000279 - 00000279] ISAPNP Read Data Port
[000002F8 - 000002FF] Communications Port (COM2)
[00000378 - 0000037F] Printer Port (LPT1)
[000003B0 - 000003BB] Intel(R) Graphics Media Accelerator 3150
[000003C0 - 000003DF] Intel(R) Graphics Media Accelerator 3150
[000003F6 - 000003F6] Primary IDE Channel
[000003F8 - 000003FF] Communications Port (COM1)

CHAPTER 4

AMI BIOS SETUP UTILITY

This chapter provides users with detailed description about how to set up basic system configuration through the AMIBIOS8 BIOS setup utility.

4.1 Starting

To enter the setup screens, follow the steps below:

1. Turn on the computer and press the <Del> key immediately.
2. After pressing the <Delete> key, the main BIOS setup menu displays. You can access to other setup screens from the main BIOS setup menu, such as the Chipset and Power menus.

4.2 Navigation Keys

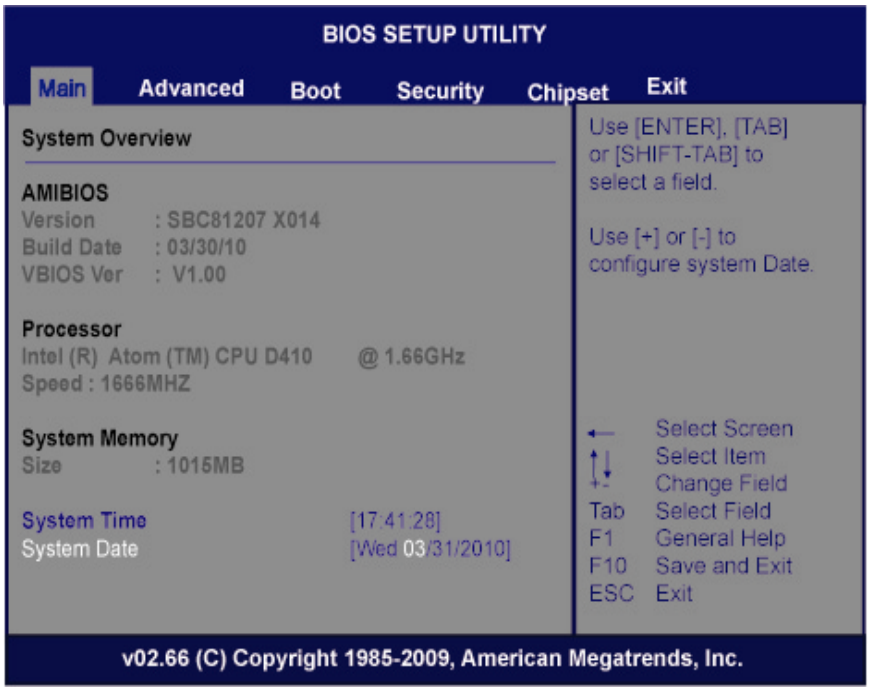
The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process.
These keys include <F1>, <F10>, <Enter>, <ESC>, <Arrow> keys, and so on.

Note *Some of navigation keys differ from one screen to another.*

← Left/Right	The Left and Right <Arrow> keys allow you to select a setup screen.
↑↓ Up/Down	The Up and Down <Arrow> keys allow you to select a setup screen or sub-screen.
+– Plus/Minus	The Plus and Minus <Arrow> keys allow you to change the field value of a particular setup item.
Tab	The <Tab> key allows you to select setup fields.
F1	The <F1> key allows you to display the General Help screen.
F10	The <F10> key allows you to save any changes you have made and exit Setup. Press the <F10> key to save your changes.
Esc	The <Esc> key allows you to discard any changes you have made and exit the Setup. Press the <Esc> key to exit the setup without saving your changes.
Enter	The <Enter> key allows you to display or change the setup option listed for a particular setup item. The <Enter> key can also allow you to display the setup sub- screens.

4.3 Main Menu

When you first enter the Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab. There are two Main Setup options. They are described in this section. The Main BIOS Setup screen is shown below.



System Time/Date

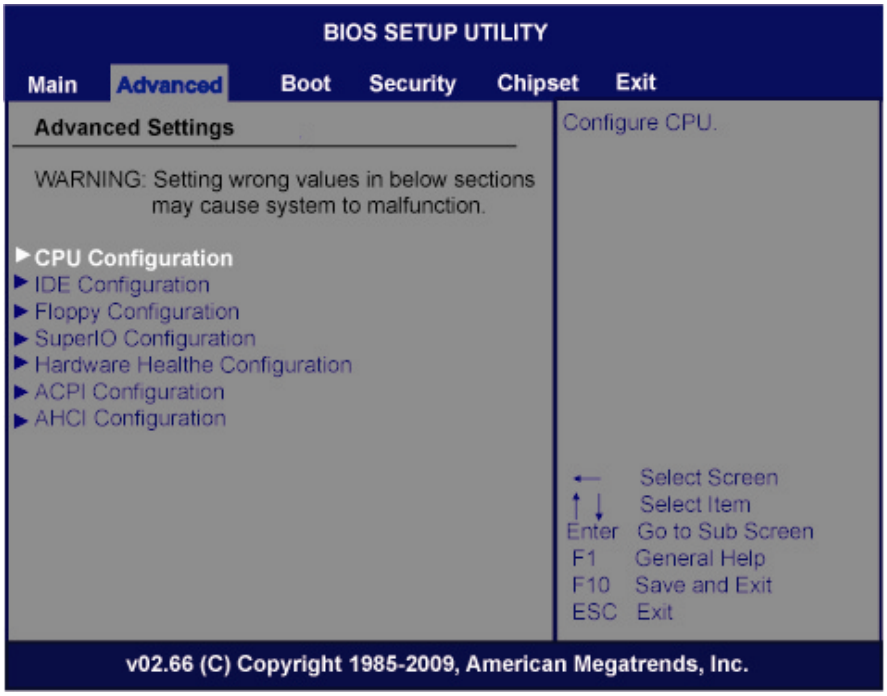
Use this option to change the system time and date. Highlight *System Time* or *System Date* using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format.

4.4 Advanced Menu

The Advanced menu allows users to set configuration of the CPU and other system devices. You can select any of the items in the left frame of the screen to go to the sub menus:

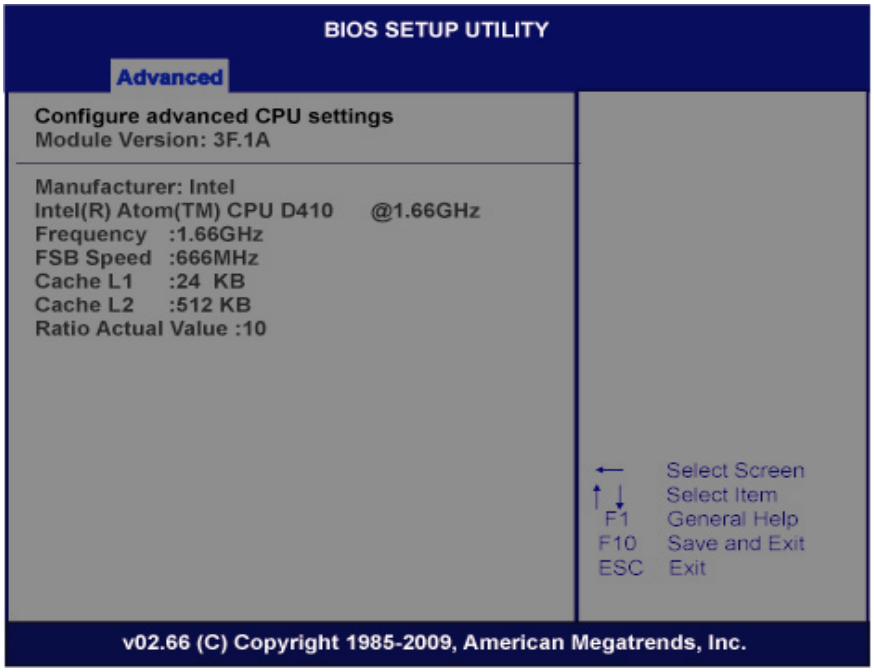
- CPU Configuration
- IDE Configuration
- Floppy Configuration
- SuperIO Configuration
- Hardware Health Configuration
- ACPI Configuration
- AHCI Configuration

For items marked with "►", please press <Enter> for more options.



4.4.1 Configure advanced CPU settings

This screen shows the CPU Configuration, and you can change the value of the selected option.



- **Execute-Disable Bit Capability**

  This item helps you enable or disable the No-Execution Page Protection Technology.

- **Hyper Threading Technology**

  Use this item to enable or disable Hyper-Threading Technology, which makes a single physical processor perform multi-tasking function as two logical ones.

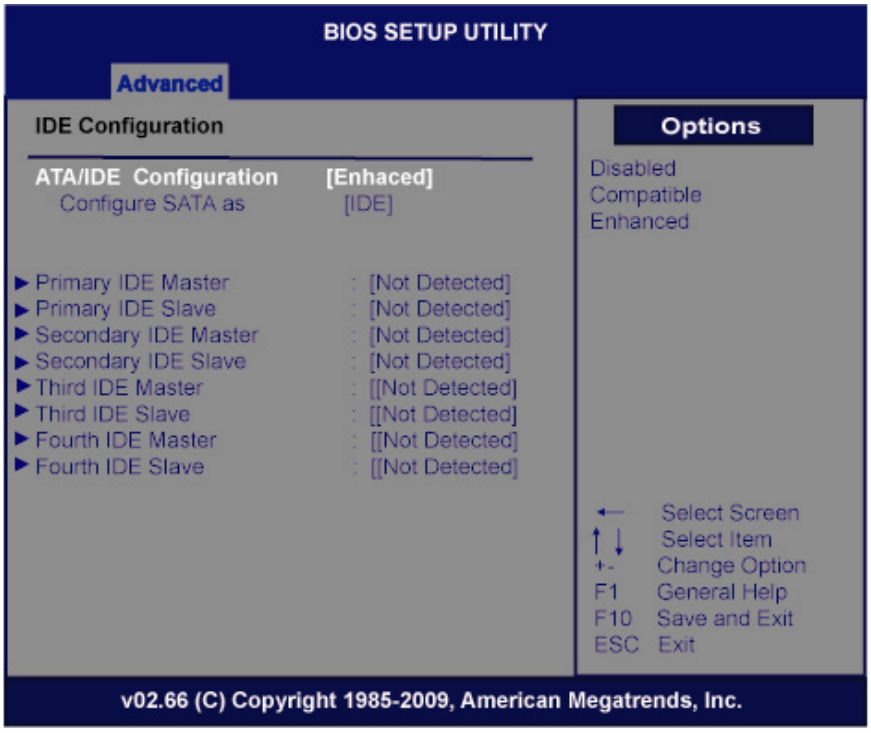
- **Intel (R) Speed Step (tm) tech**

  Use this item to enable or disable the Intel Speed Step Technology.

- **Intel (R) C-STATE tech**
  Use this item to enable or disable the C-State technology.
- **Enhanced C-States**
  Use this item to enable or disable any available enhanced C-states (C1E, C2E, C3E, C4E and Hard C4E).

4.4.2 IDE Configuration

Use this screen to select options for the IDE Configuration and change the value of the selected option. A description of the selected item appears on the right side of the screen. For items marked with "►", please press <Enter> for more options.

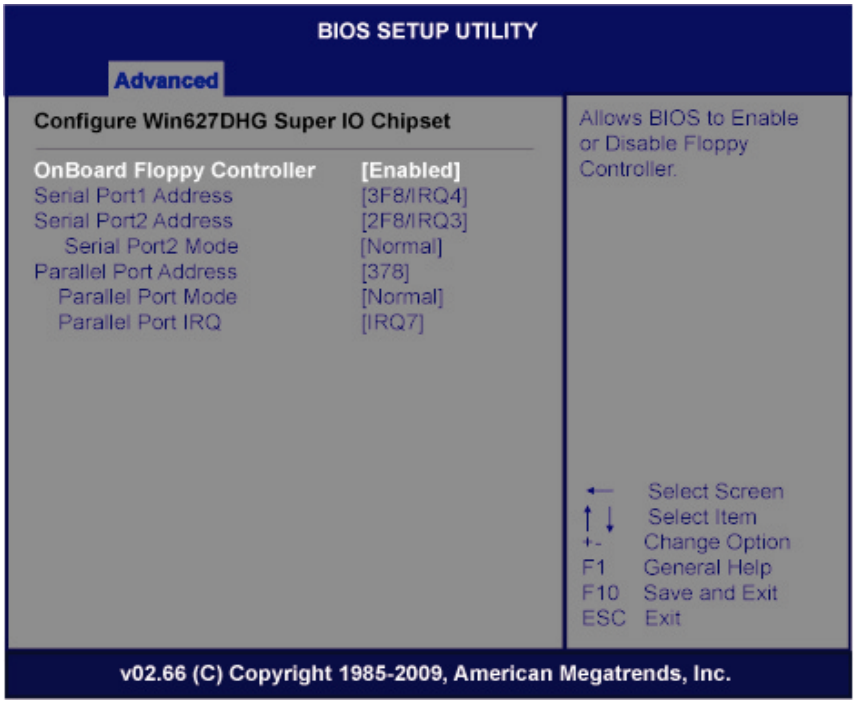


- **ATA/IDE Configuration**
  Use this item to specify the integrated IDE controller. There are three options for your selection: *Disabled*, *Compatible* and *Enhanced*.

- **Legacy IDE Channels**
  When the ATA/IDE Configuration is set to *Compatible*, this item will be displayed.
- **Primary/Secondary/Third IDE Master/Slave/ Fourth IDE Master/Slave**
  Select one of the hard disk drives to configure IDE devices installed in the system by pressing <Enter> for more options.

4.4.3 Super IO Configuration

Use this screen to select options for the Super IO Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.



- **Serial Port1 Address**

  This item specifies the base I/O port address and Interrupt Request address of serial port 1. The Optimal setting is *3F8/IRQ4*. The Fail-Safe default setting is *Disabled*.

- **Serial Port1 IRQ**

  This item specifies the IRQ used by the serial port 1.

- **Serial Port2 Address**

  This item specifies the base I/O port address and Interrupt Request address of serial port 2. The Optimal setting is *2F8/IRQ3*. The Fail-Safe setting is *Disabled*.

- **Serial Port2 IRQ**

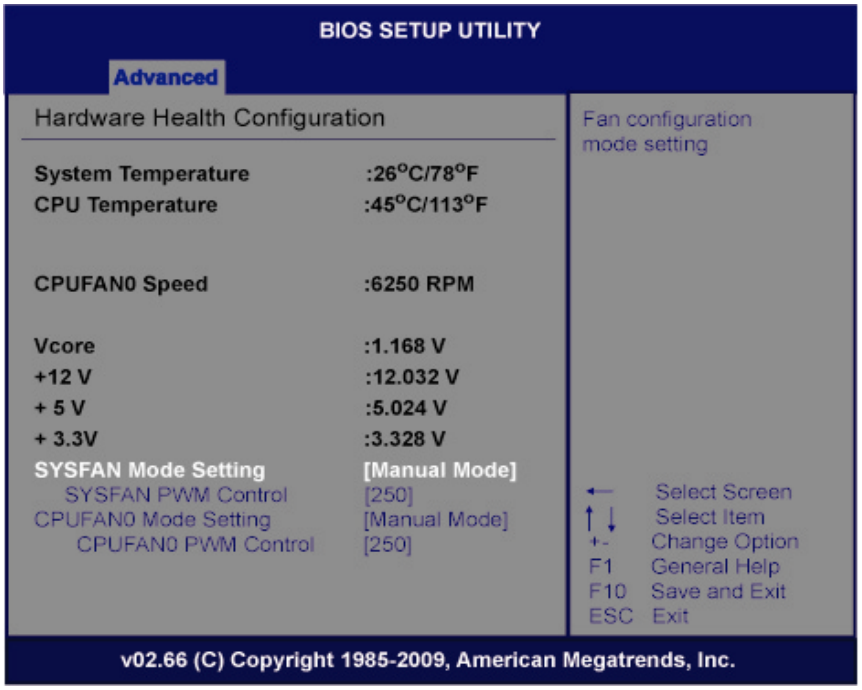
  This item specifies the IRQ used by the serial port 2.

- **Serial Port2 Mode**

  This item specifies the mode used by the serial port 2.

4.4.4 Hardware Health Configuration

This screen shows the Hardware Health Configuration, and a description of the selected item appears on the right side of the screen.

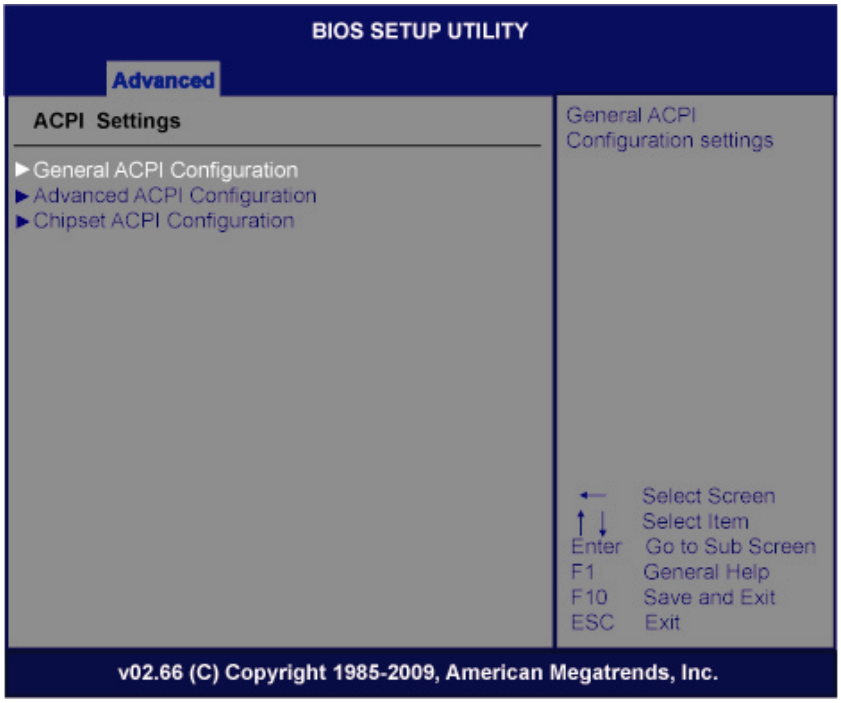


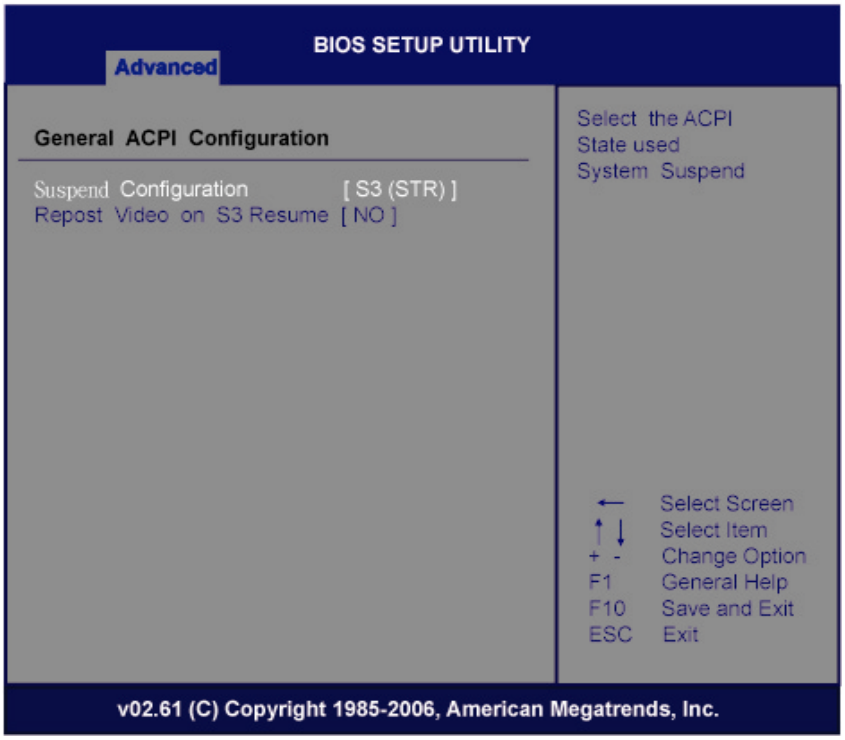
- **System Temperature/CPU Temperature**

  These items display the temperature of CPU and System, Vcore, etc.

4.4.5 ACPI Settings

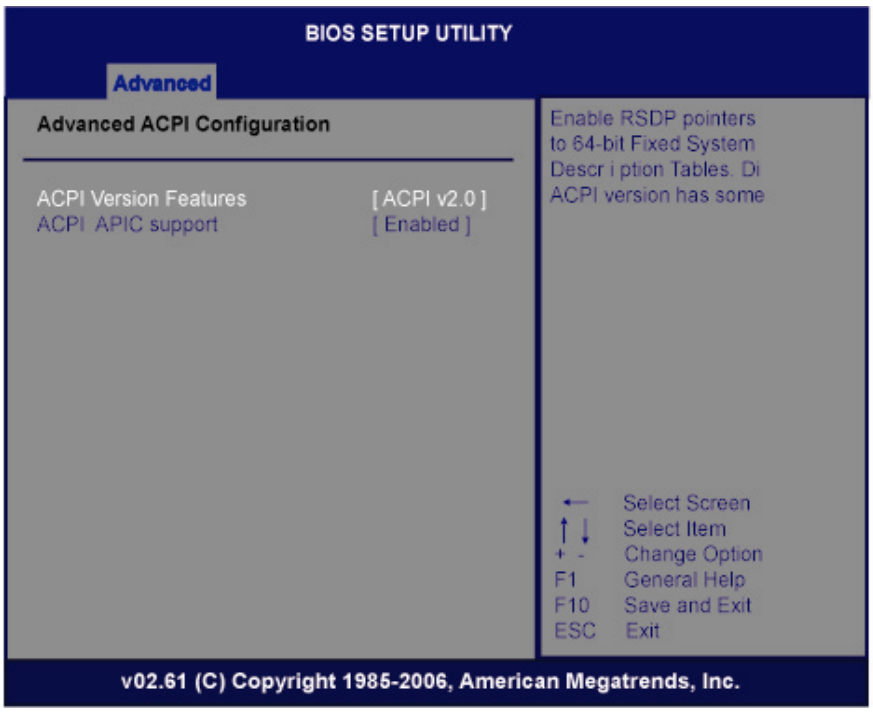
Use this screen to select options for the ACPI Settings, and change the value of the selected option. A description of the selected item appears on the right side of the screen.





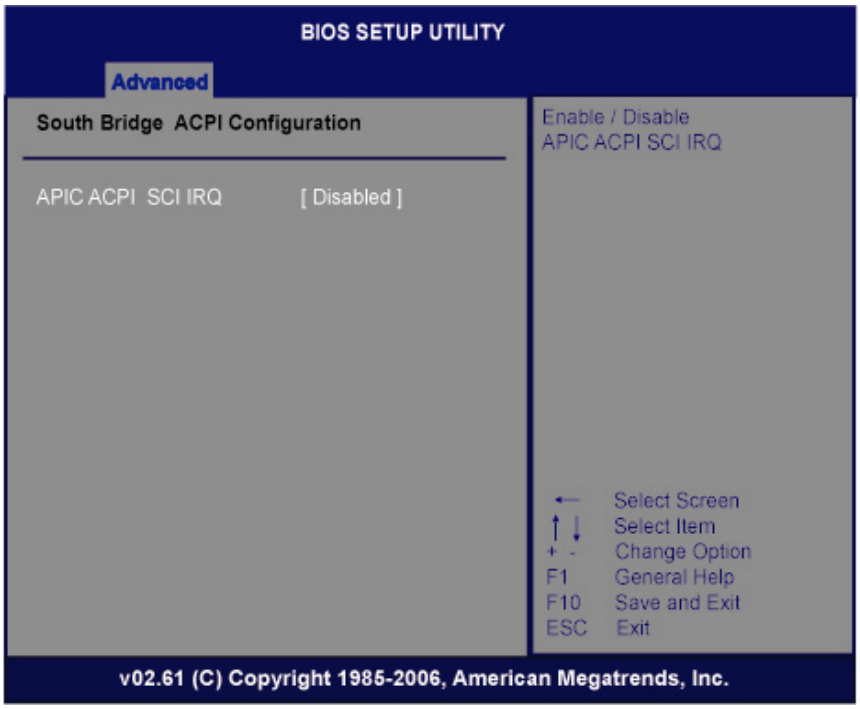
- **General ACPI Configuration**

  Scroll this item and press <Enter> to view the General ACPI Configuration sub menu, which contains General ACPI (Advanced Configuration and Power Management Interface) options for your configuration.



- **Advanced ACPI Configuration**

  Scroll this item and press <Enter> to view the Advanced ACPI Configuration sub menu, which contains Advanced ACPI (Advanced Configuration and Power Management Interface) options for your configuration.

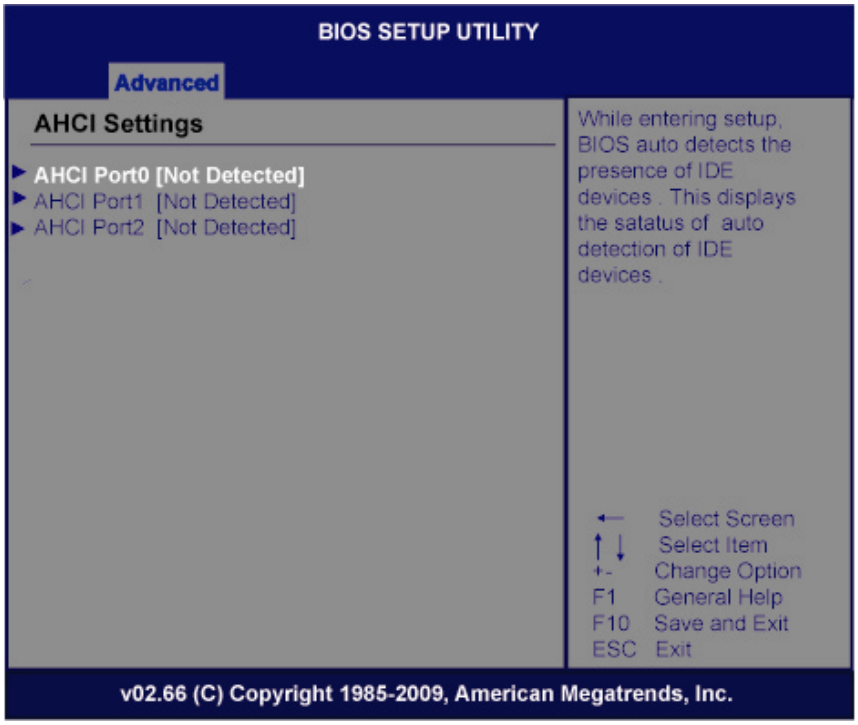


- **Chipset ACPI Configuration**

  Scroll this item and press <Enter> to view the Chipset ACPI Configuration sub menu, which contains Chipset ACPI (Advanced Configuration and Power Management Interface) options for your configuration.

4.4.6 AHCI Configuration

You can use this screen to select options for the AHCI Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.



- **AHCI BIOS Support**

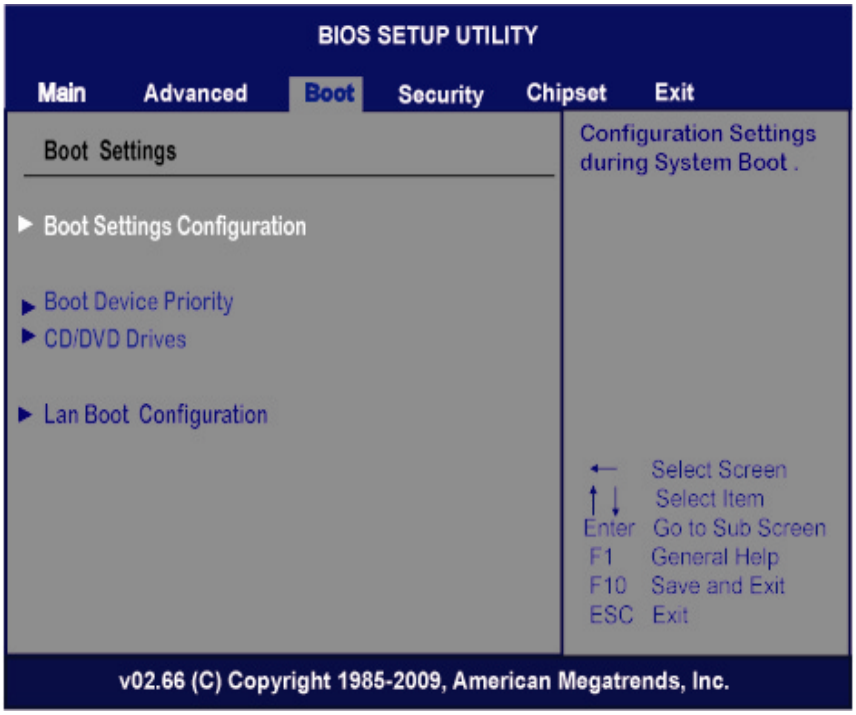
You can enable or disable this item to control the AHCI function of the SATA controller.

4.5 Boot Menu

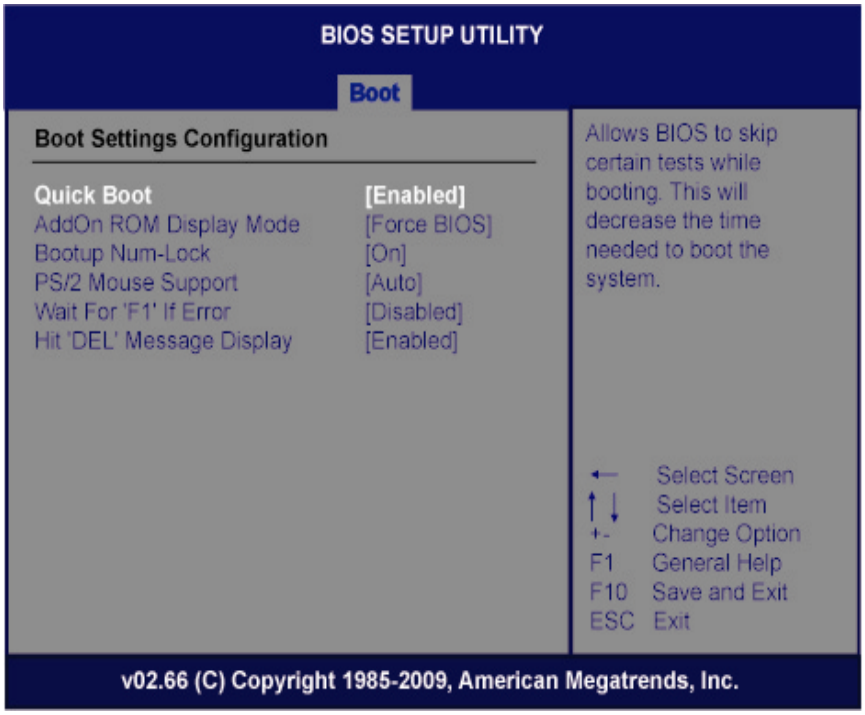
The Boot menu allows users to change boot options of the system. You can select any of the items in the left frame of the screen to go to the sub menus:

- Boot Settings Configuration
- Boot Device Priority
- CD/DVD Drives
- Lan Boot Configuration

For items marked with "►", please press <Enter> for more options.



Boot Settings Configuration



- **Quick Boot**
  Enabling this item lets the BIOS skip some power on self tests (POST). The default setting is *Enabled*.
- **AddOn ROM Display Mode**
  This item selects the display mode for option ROM. The default setting is *Force BIOS*.
- **Boot Num-Lock**
  Use this item to select the power-on state for the NumLock. The default setting is *On*.

- **PS/2 Mouse Support**

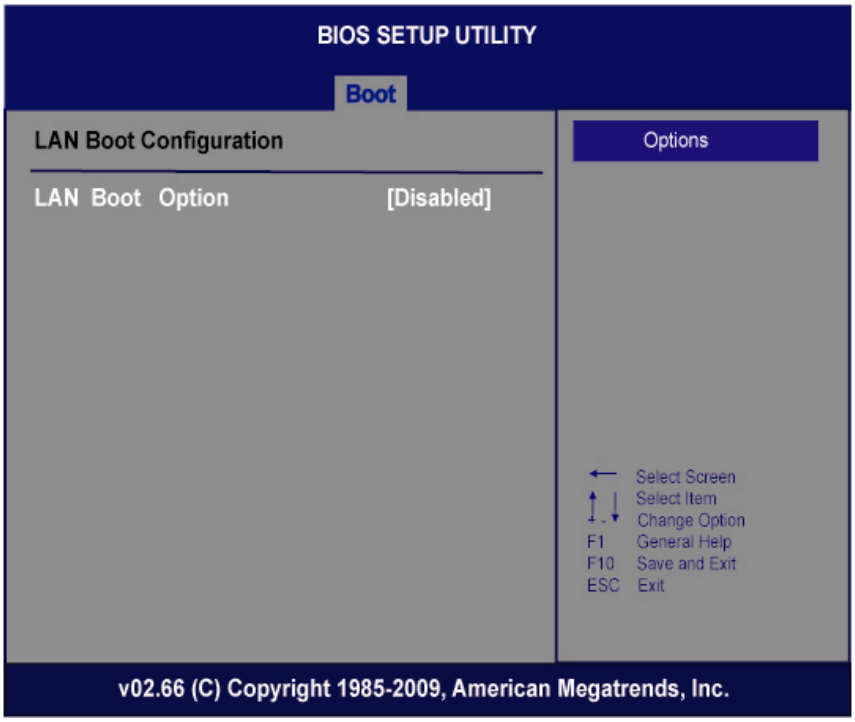
  This item determines if the BIOS should reserve IRQ12 for the PS/2 mouse or allow other devices to make use of this IRQ. Here are the options for your selection, *Auto*, *Enabled* and *Disabled*.

- **Wait For 'F1' If Error**

  If this item is enabled, the system waits for the F1 key to be pressed when error occurs. The default setting is Disabled.

- **Hit 'DEL' Message Display**

  If this item is enabled, the system displays the message "Press DEL to run Setup" during POST. The default setting is *Enabled*.

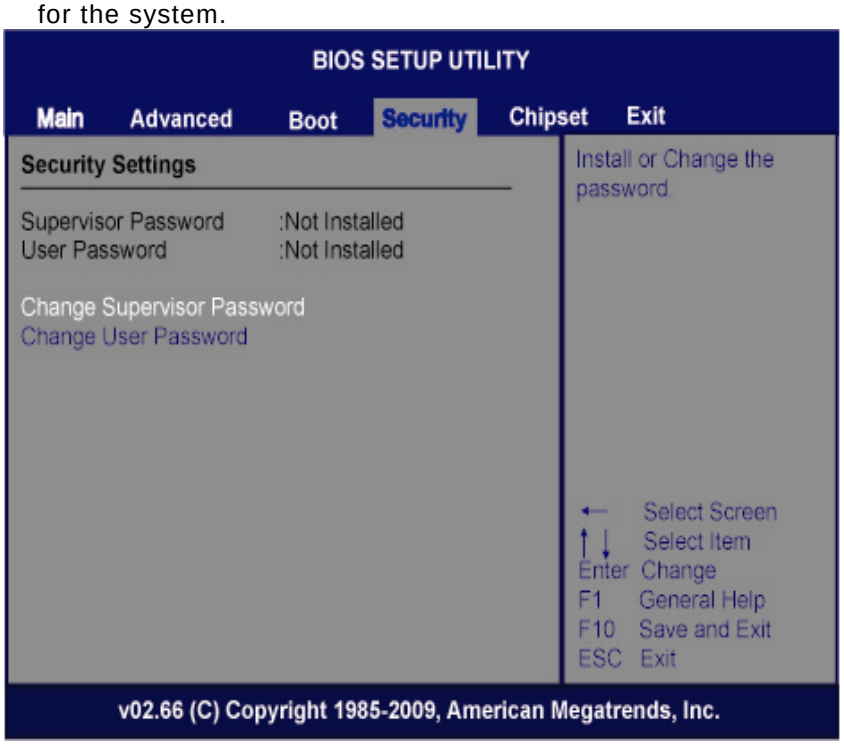


- **LAN Boot**

  Use these items to enable or disable the Boot ROM function of the onboard LAN chip when the system boots up.

4.6 Security Menu

The Security menu allows users to change the security settings for the system.



- **Supervisor Password**

  This item indicates whether a supervisor password has been set. If the password has been installed, Installed displays. If not, Not Installed displays.

- **User Password**

  This item indicates whether a user password has been set. If the password has been installed, Installed displays. If not, Not Installed displays.

- **Change Supervisor Password**

  Select this option and press <Enter> to access the sub menu. You can use the sub menu to change the supervisor password.

- **Change User Password**

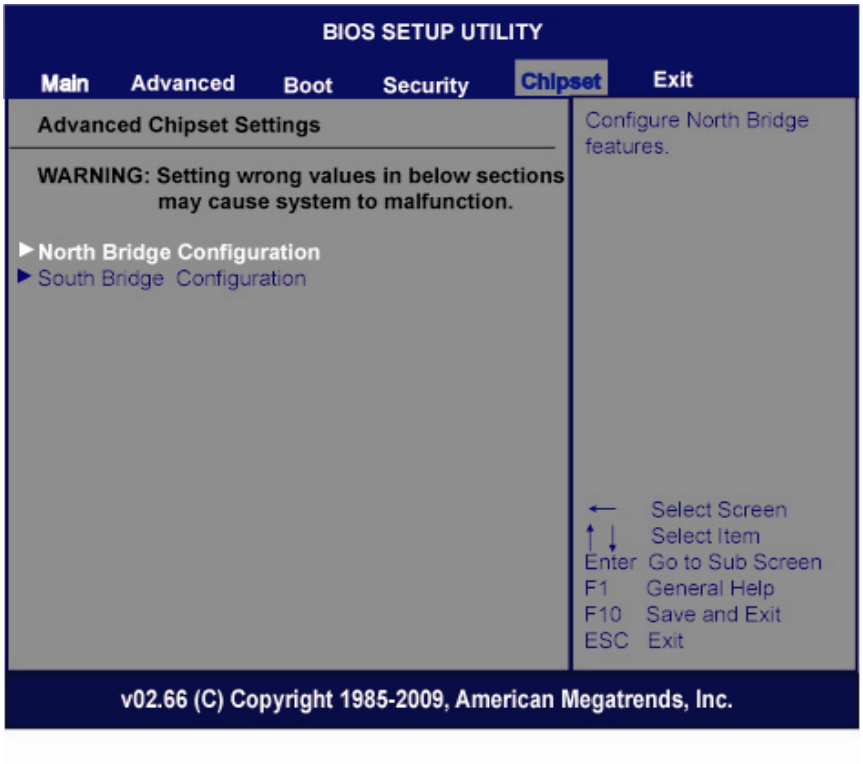
  Select this option and press <Enter> to access the sub menu. You can use the sub menu to change the user password.

4.7 Chipset Menu

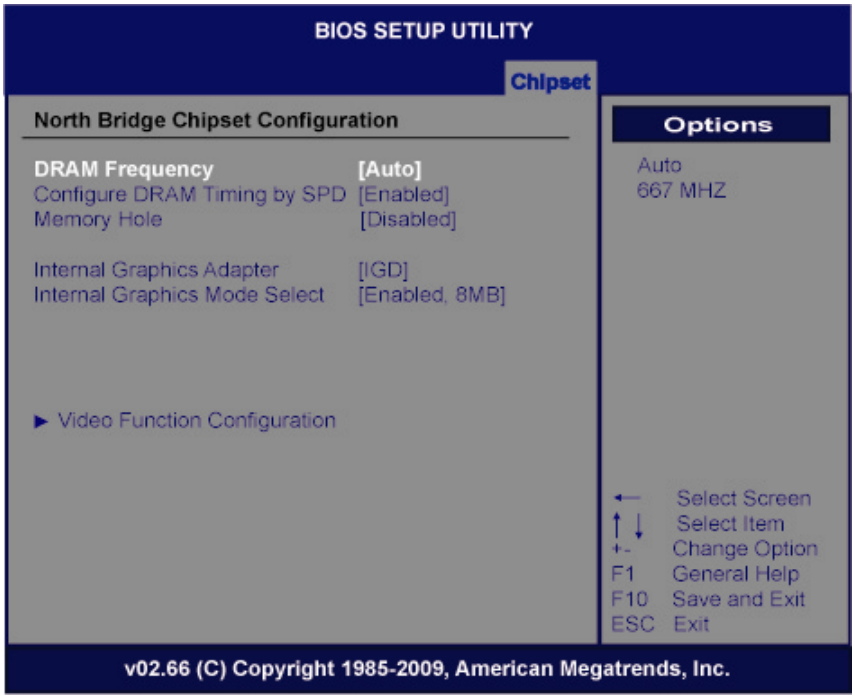
The Chipset menu allows users to change the advanced chipset settings. You can select any of the items in the left frame of the screen to go to the sub menus:

- North Bridge Configuration
- South Bridge Configuration

For items marked with "►", please press <Enter> for more options.



4.7.1 North Bridge Configuration

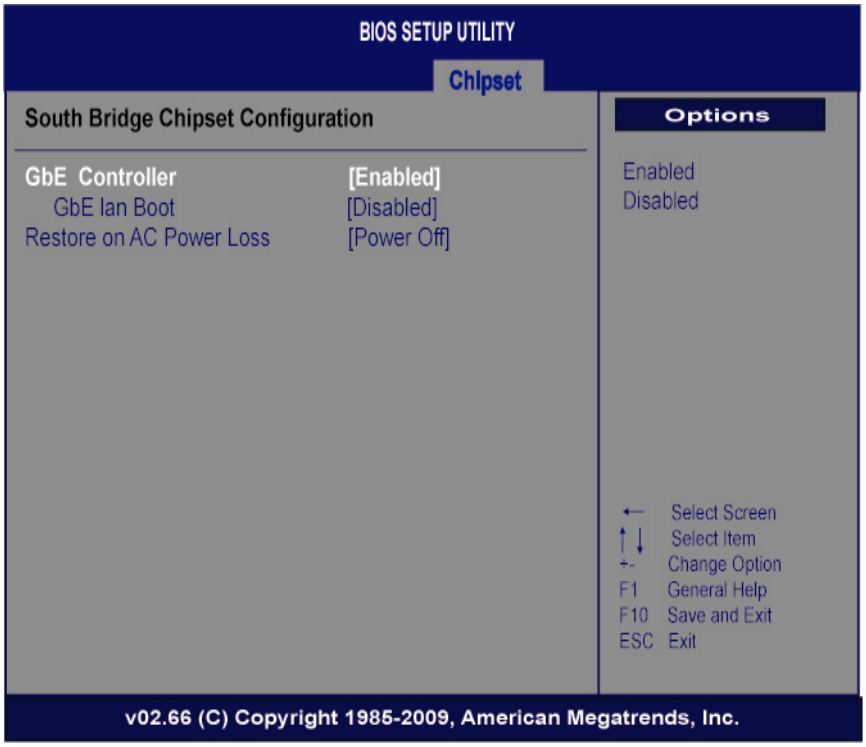


- **DRAM Frequency**
  Use this item to control the Memory Clock.
- **Configure DRAM Timing by SPD**
  Use this item to enable or disable DRAM timing by SPD (Serial Presence Detect) device, which is a small EEPROM chip on the memory module, containing important information about the module speed, size, addressing mode and various parameters.
- **Memory Hole**
  This area of system memory can be reserved for ISA adapter ROM. When this area is reserved it cannot be cached. Check the user information of peripherals that need to use this area of system memory for the memory requirements. Here are the options, *Disabled* and *15M-16M*.

- **Internal Graphics Mode Select**

  This item allows you to select the amount of system memory used by the internal graphics device.

4.7.2 South Bridge Configuration

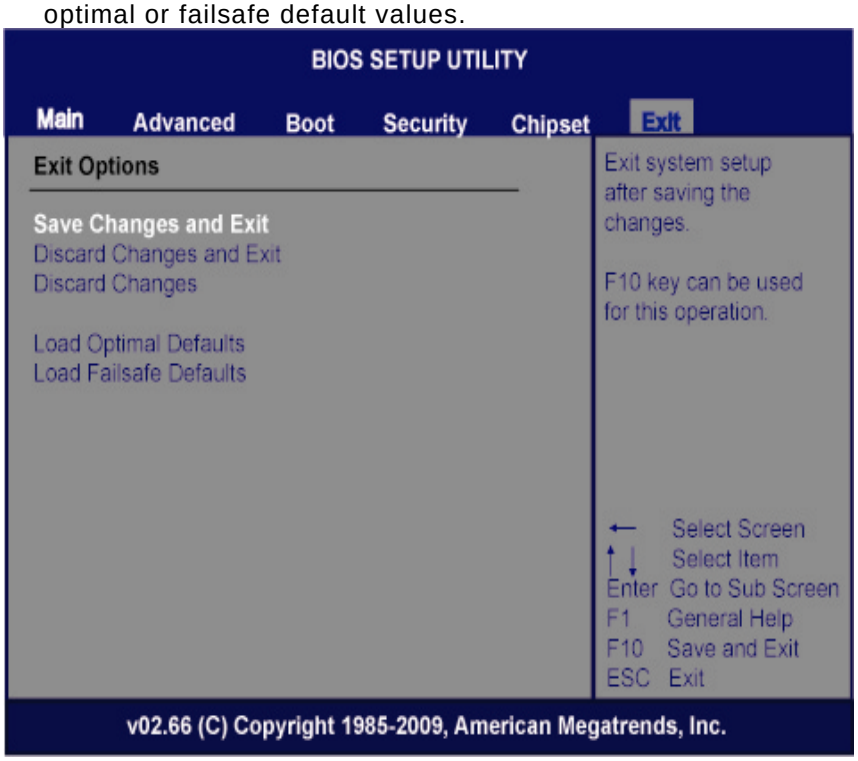


- **Restore on AC Power Loss**

  This item can control how the PC will behave once power is restored following a power outage, or other unexpected shutdown.

4.8 Exit Menu

The Exit menu allows users to load the system configuration with optimal or failsafe default values.



- **Save Changes and Exit**

  When you have completed the system configuration changes, select this option to leave Setup and reboot the computer so the new system configuration parameters can take effect. Select *Save Changes and Exit* from the Exit menu and press <Enter>. Select Ok to save changes and exit.

- **Discard Changes and Exit**

  Select this option to quit Setup without making any permanent changes to the system configuration. Select *Discard Changes and Exit* from the Exit menu and press <Enter>. Select Ok to discard changes and exit.

- **Discard Changes**

  Use this item to abandon all changes.

- **Load Optimal Defaults**

  It automatically sets all Setup options to a complete set of default settings when you select this option. The Optimal settings are designed for maximum system performance, but may not work best for all computer applications. In particular, do not use the Optimal Setup options if your computer is experiencing system configuration problems. Select Load Optimal Defaults from the Exit menu and press <Enter>.

- **Load Fail-Safe Defaults**

  It automatically sets all Setup options to a complete set of default settings when you select this option. The Fail-Safe settings are designed for maximum system stability, but not maximum performance. Select the Fail-Safe Setup options if your computer is experiencing system configuration problems.

  Select Load Fail-Safe Defaults from the Exit menu and press <Enter>. Select Ok to load Fail-Safe defaults.

APPENDIX A

WATCHDOG TIMER

■ Watchdog Timer Setting

After the system stops working for a while, it can be auto-reset by the Watchdog Timer. The integrated Watchdog Timer can be set up in the system reset mode by program.

Using the Watchdog Function

Start

Un-Lock WDT

O 2E 87 ; Un-lock super I/O
O 2E 87 ; Un-lock super I/O

Set WDT Function

O 2E 2D
O 2F 20

Select Logic device

O 2E 07
O 2F 08

Activate WDT

O 2E 30
O 2F 01

Set Second or Minute

O 2E F5
O 2F N **N=00 or 08(See below table)**

Set base timer

O 2E F6
O 2F M=00, 01, 02...FF (Hex), Value=0 to 255

WDT counting

Re-set timer

O 2E F6
O 2F M; M=00, 01, 02...FF (See below table)

IF No re-set timer **WDT time-out, generate RESET**

IF to disable WDT

O 2E 30
O 2F 00; Can be disable at any time

N=00

M= 00h: Time-out Disable
01h: Time-out occurs after 1 second
02h: Time-out occurs after 2 second
03h: Time-out occurs after 3 second
……
FFh: Time-out occurs after 255 second

N=08

M=00h: Time-out Disable
01h: Time-out occurs after 1 minute
02h: Time-out occurs after 2 minutes
03h: Time-out occurs after 3 minutes
……