USER'S MANUAL

SA-5852

Intel® Atom™ D2550
Book-sized PC

SA-5852 M2

SA-5852 Intel® Atom™ D2550
Book-sized PC

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DISCLAIMER

This operation manual is meant to assist both Embedded Computer manufacturers and end users in installing and setting up the system. The information contained in this document is subject to change without any notice.

CE NOTICE

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

FCC NOTICE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any change or modifications to the equipment not expressly approve by the party responsible for compliance could void your authority to operate such equipment.

CAUTION! Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

WARNING! Some internal parts of the system may have high electrical voltage. And therefore we strongly recommend that qualified engineers open and disassemble the system.

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INTRODUCTION

CHAPTER

1

This chapter gives you the information for SA-5852. It also outlines the System specification.

Section includes:

- About This Manual
- System Specifications
- Safety Precautions

Experienced users can skip to chapter 2 on page 2-1 for Quick Start.

1-1. ABOUT THIS MANUAL

Thank you for purchasing our SA-5852 Intel® Atom™ D2550 Book-sized PC. SA-5852 provides faster processing speed, greater expandability and can handle more task than before. This manual is designed to assist you how to install and set up the system. It contains four chapters. The user can apply this manual for configuration according to the following chapters:

Chapter 1 Introduction

This chapter introduces you to the background of this manual, and the specifications for this system. The final page of this chapter will indicate how to avoid damaging this board.

Chapter 2 Hardware Configuration

This chapter outlines the component locations and their functions. In the end of this chapter, you will learn how to set jumper and how to configure this card to meet your own needs.

Chapter 3 Software Utilities

This chapter contains helpful information for proper installations of the VGA utility, LAN utility, and Sound utility.

Chapter 4 BIOS Setup

This chapter indicates you how to set up the BIOS configurations.

Appendix A System Diagrams

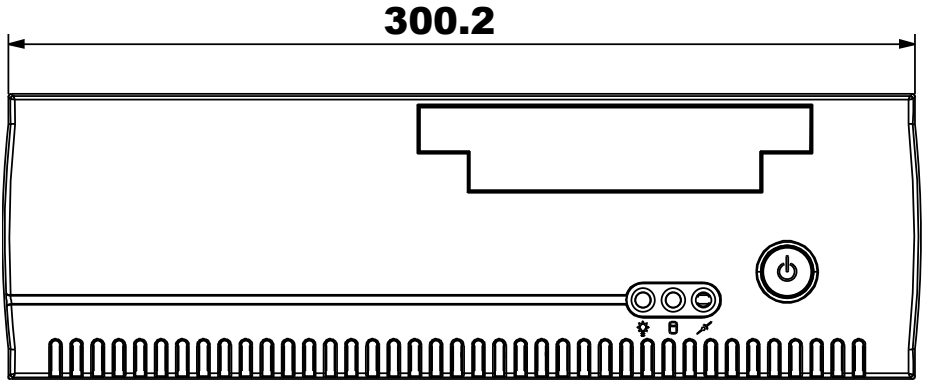
This appendix shows the exploded diagrams and part numbers of SA-5852 components.

Appendix B Technical Summary

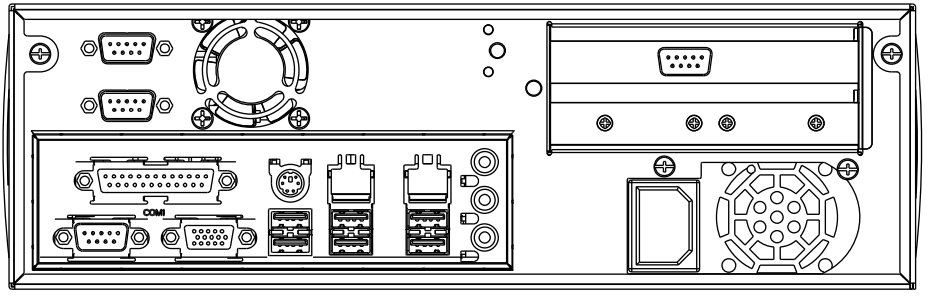
This appendix gives you the information about the Technical maps, Watchdog-timer configuration, and Flash BIOS Update.

1-2. SYSTEM ILLUSTRATION

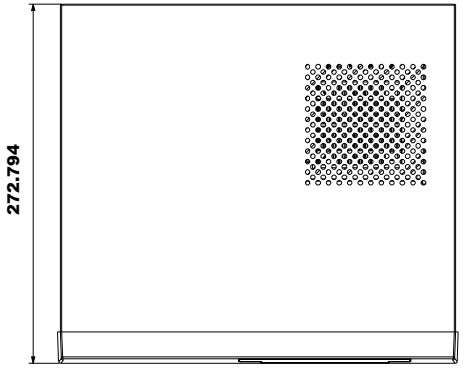
Front View



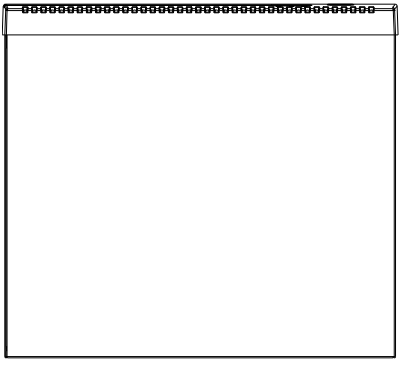
Rear View



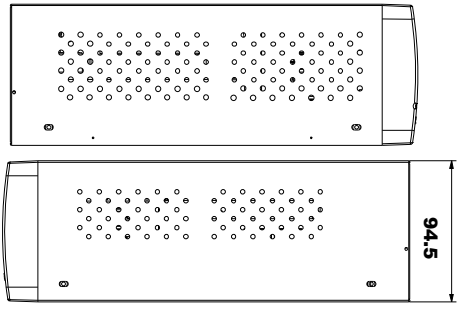
Top View



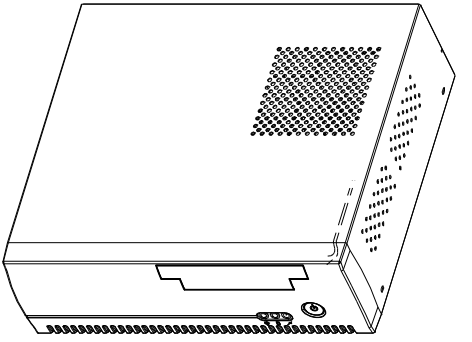
Bottom View



Side View



Quarter View



Unit: mm

1-3. SYSTEM SPECIFICATION

System

CPU Support	Intel® Atom™ D2550 (1.86 GHz)
Chipset	Intel® NM10
Memory Support	1 x 204-pin SO-DIMM DDR3 (up to 4GB)
Power Supply	Flex ATX 220W
Operating System	Microsoft Windows 7 (32bit) & WS7E
Drive Bay	▪ 1 x 3.5" SATA HDD ▪ 1 x Slim DVD-ROM ▪ **Optional:** 2 x 2.5" SATA HDD 1 x DVD-ROM
BIOS	AMI BIOS
System Weight	4.5 kg
Dimension (WxHxD)	300 x 94 x 270 mm (11.8" x 3.7" x 10.6")
Certificate	FCC/CE

I/O Ports

USB	▪ 6 x USB 2.0 ▪ **Optional:** Additional 2 x USB 2.0
Serial Port	3 x COM port ▪ All are 5V/12V/RI selectable. ▪ **COM2** for RS-232/422/485 ▪ **Optional:** COM4
Parallel Port	1 x parallel port
Keyboard / Mouse	1 x PS/2
LAN	2 x Intel® 82583V 10/100/1000 Mbps
VGA	1 x D-SUB, support CRT
Audio	Realtek ALC888S High Definition: Line-in/Line-out/Mic
Expansion Slots	1 x PCIe

Environment

Operation Temp.	0 ~ 40°C (32 ~ 104°F)
Storage Temp.	-20 ~ 60°C (-4 ~ 140°F)
Humidity	20 ~ 90%

1-4. SAFETY PRECAUTIONS

Follow the messages below to avoid your systems from damage:

1. Keep your system away from static electricity on all occasions.

2. Prevent electric shock. Don't touch any components of this card when the card is power-on. Always disconnect power when the system is not in use.

3. Disconnect power when you change any hardware devices. For instance, when you connect a jumper or install any cards, a surge of power may damage the electronic components or the whole system.

CHAPTER

2

HARDWARE CONFIGURATION

*** QUICK START ***

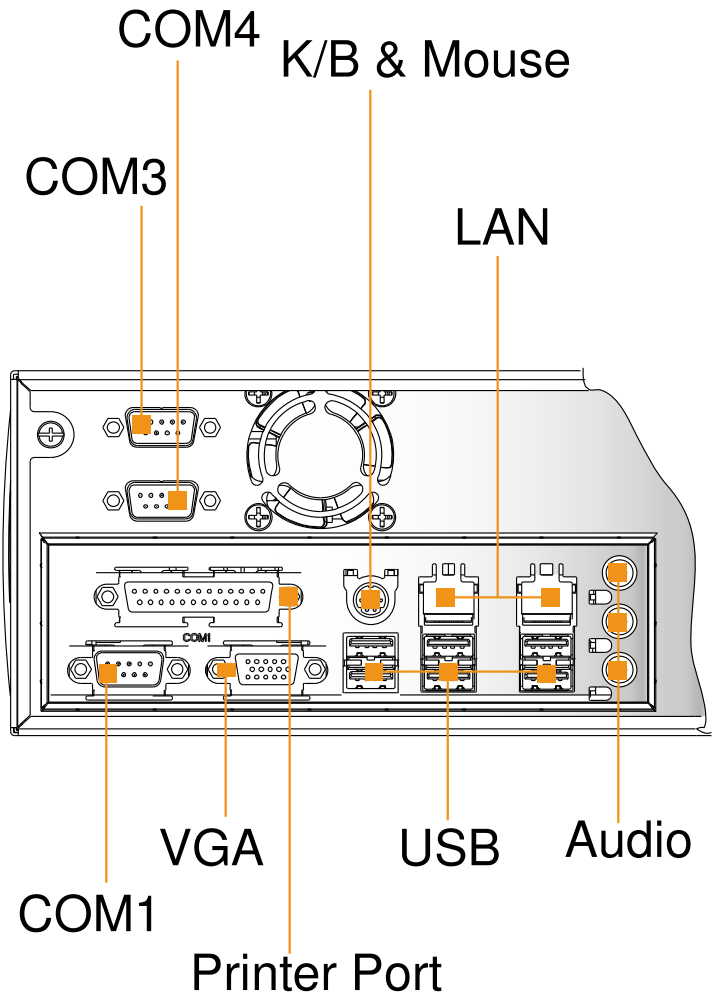
Helpful information describes the jumper & connector settings, and component locations.

Sections included:

- System External I/O Ports & Pin Assignment
- Jumper & Connector Quick Reference Table
- Component Locations
- Configuration and Jumper settings
- Connector's Pin Assignments

2-1. SYSTEM EXTERNAL I/O PORTS & PIN ASSIGNMENT

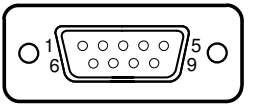
I/O View



2-1-1. COM PORT & CONNECTOR

COM1: COM Port, fixed as RS-232
The pin assignments are as follows:

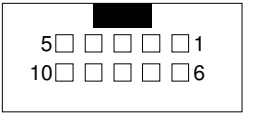
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	COM1_DCD_C	6	COM1_DSR_C
2	COM1_RX_C	7	COM1_RTS_C
3	COM1_TX_C	8	COM1_CTS_C
4	COM1_DTR_C	9	COM1_RIJ_SEL
5	GND		NC



COM1

COM2: COM Connector, fixed as RS-232/422/485
The pin assignments are as follows:

PIN	ASSIGNMENT		
	RS-232	RS-422	RS-485
1	COM2_DCDJ_I	TX-	485-
2	COM2_RX_I	TX+	485+
3	COM2_TX_I	RX+	X
4	COM2_DTRJ_I	RX-	X
5	GND	GND	GND
6	COM2_DSRJ_I	X	X
7	COM2_RTSJ_I	X	X
8	COM2_CTSJ_I	X	X
9	COM2_RIJ_SEL	X	X
10	NC	NC	NC

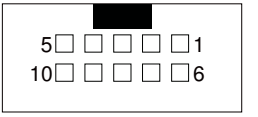


COM2

COM3, COM4: COM Connectors, fixed as RS-232
The pin assignments are as follows:

COM3:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	COM3_DCD_C	6	COM3_DSR_C
2	COM3_RX_C	7	COM3_RTS_C
3	COM3_TX_C	8	COM3_CTS_C
4	COM3_DTR_C	9	COM3_RIJ_SEL
5	GND	10	NC



COM3/ COM4

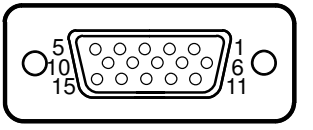
COM4:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	COM4_DCD_C	6	COM4_DSR_C
2	COM4_RX_C	7	COM4_RTS_C
3	COM4_TX_C	8	COM4_CTS_C
4	COM4_DTR_C	9	COM4_RIJ_SEL
5	GND	10	NC

2-1-2. VGA PORT

VGA1: VGA Connector
The pin assignments are as follows:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	RED	9	+5V
2	GREEN	10	GND
3	BLUE	11	NC
4	NC	12	DCA DATA
5	GND	13	HSYNC
6	GND	14	VSYNC
7	GND	15	DDCA CLK
8	GND		



VGA1

2-1-3. PS/2 & USB PORT

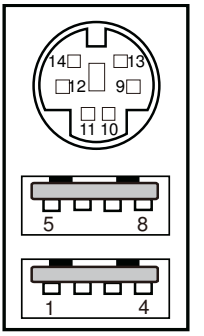
JPS2USB1: PS/2 & 2 USB Ports
The pin assignments are as follows:

PS/2 signal:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
9	GND	12	VCC5_SB
10	KDAT	13	KCLK
11	MDAT	14	MCLK

USB signal:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	GND	5	GND
2	USB2P	6	USB3P
3	USB2N	7	USB3N
4	VCC5_USB_23	8	VCC5_USB_23



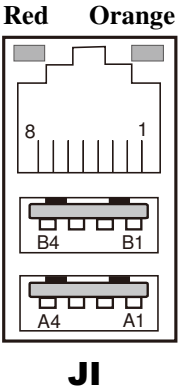
JPS2USB1

2-1-4. LAN & USB PORT

J1: RJ45 LAN & 2 USB Ports
The pin assignments are as follows:

LAN signal:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	LAN1_MDI_P0	5	LAN1_MDI_P2
2	LAN1_MDI_N0	6	LAN1_MDI_N2
3	LAN1_MDI_P1	7	LAN1_MDI_P3
4	LAN1_MDI_N1	8	LAN1_MDI_N3



JI

LAN LED Indicator:
Left Side LED

Red Color On	Giga LAN Speed Indicator
OFF	No LAN Switch/Hub Connected

Right Side LED

Orange Color Blinking	LAN Message Active
OFF	No LAN Message Active

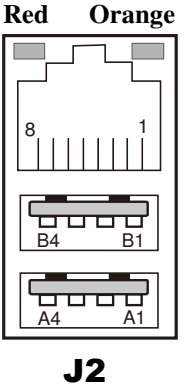
USB signal:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
A1	VCC5_USB_45	B5	VCC5_USB45
A2	USB5N	B6	USB4N
A3	USB5P	B7	USB4P
A4	GND	B8	GND

J2: RJ45 LAN & 2 USB Ports
The pin assignments are as follows:

LAN signal:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	LAN2_MDI_P0	5	LAN2_MDI_P2
2	LAN2_MDI_N0	6	LAN2_MDI_N2
3	LAN2_MDI_P1	7	LAN2_MDI_P3
4	LAN2_MDI_N1	8	LAN2_MDI_N3



J2

LAN LED Indicator:
Left Side LED

Red Color On	Giga LAN Speed Indicator
OFF	No LAN Switch/Hub Connected

Right Side LED

Orange Color Blinking	LAN Message Active
OFF	No LAN Message Active

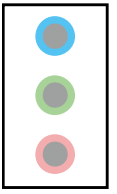
USB signal:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
A1	VCC5_USB_67	B5	VCC5_USB67
A2	USB7N	B6	USB6N
A3	USB7P	B7	USB6P
A4	GND	B8	GND

2-1-5. AUDIO CONNECTOR

AUDIO1: Sound Connector, including Line-In, Line-Out & Mic.
The pin assignments are as follows:

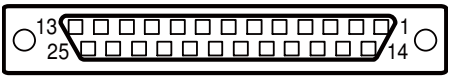
COLOR	ASSIGNMENT
Light Blue	LINE-IN
Light Green	LINE-OUT
Light Pink	MIC-IN



AUDIO1

2-1-6. PRINTER PORT

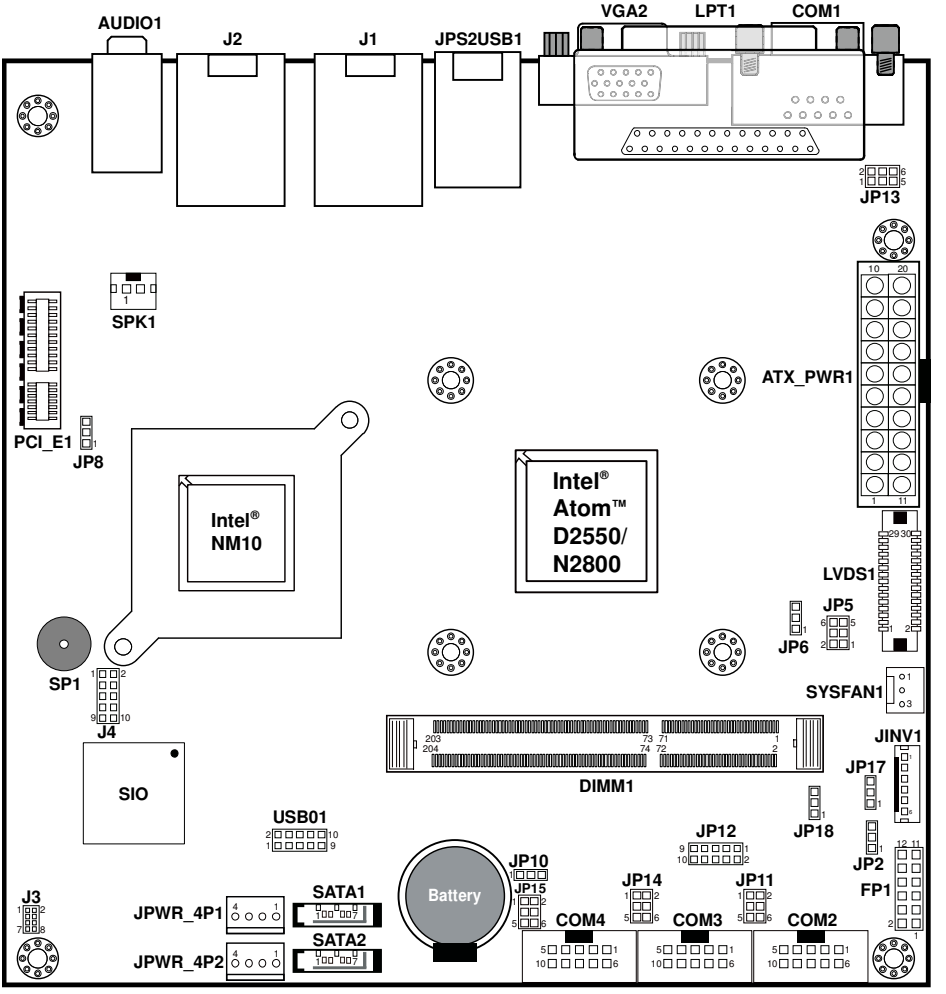
LPT1: Printer Port
The pin assignments are as follows:



LPT1

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	STB	14	AFD#
2	PDR0	15	ERR#
3	PDR1	16	INIT#
4	PDR2	17	SLIN#
5	PDR3	18	GND
6	PDR4	19	GND
7	PDR5	20	GND
8	PDR6	21	GND
9	PDR7	22	GND
10	ACK#	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SLCT	26	NC

2-2. COMPONENT LOCATIONS



SA-5852 Front Connector, Jumper and Component locations

2-2-1. JUMPER & CONNECTOR QUICK REFERENCE TABLE

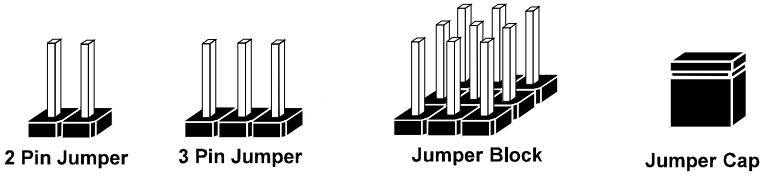
JUMPER / CONNECTOR	NAME
COM Port & Connector	COM1, COM2, COM3, COM4
COM Port RI & Voltage Selection	JP11, JP13, JP14, JP15
COM2 Auto Detect Selection	JP10
RS-232/422/485 (COM2) Selection	JP12
VGA Port	VGA1
PS/2 & USB Ports	JPS2USB1
LAN & USB Ports	J1, J2
Audio Connector	AUDIO1
USB Connector	USB01
LVDS Connector	LVDS1
LVDS Voltage Selection	JP5
Inverter Enable Voltage Selection	JP18
Backlight Connector	JINV1
Backlight PWM Voltage Selection	JP17
ATX Power Connector	ATX_PWR1
ATX Power Mode Selection	JP2
SATA & SATA Power Connector	SATA1, SATA2, JPWR_4P1, JPWR_4P2
Fan Connector	SYSFAN1
Speaker Connector	SPK1
Printer Port	LPT1
VCCRAMXXX Power Voltage Selection	JP6
Clear CMOS Data Selection	JP8
JPANEL Connector	FP1

2-3. HOW TO SET JUMPERS

You can configure your board by setting jumpers. Jumper is consists of two or three metal pins with a plastic base mounted on the card, and by using a small plastic "cap", Also known as the jumper cap (with a metal contact inside), you are able to connect the pins. So you can set-up your hardware configuration by "open" or "close" pins.

The jumper can be combined into sets that called jumper blocks. When the jumpers are all in the block, you have to put them together to set up the hardware configuration. The figure below shows how this looks like.

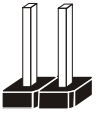
JUMPERS AND CAPS



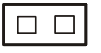
If a jumper has three pins (for examples, labelled PIN1, PIN2, and PIN3), You can connect PIN1 & PIN2 to create one setting by shorting. You can either connect PIN2 & PIN3 to create another setting. The same jumper diagrams are applied all through this manual. The figure below shows what the manual diagrams look and what they represent.

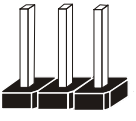
JUMPER DIAGRAMS

Jumper Cap looks like this



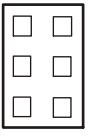
2 pin Jumper looks like this





3 pin Jumper looks like this

Jumper Block looks like this

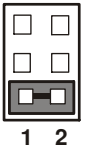


JUMPER SETTINGS

2 pin Jumper close(enabled) Looks like this

3 pin Jumper 2-3 pin close(enabled) Looks like this

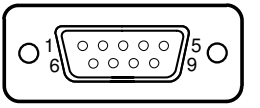
Jumper Block 1-2 pin close(enabled) Looks like this



2-4. COM PORT & CONNECTOR

COM1: COM Port, fixed as RS-232
The pin assignments are as follows:

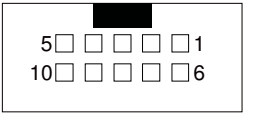
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	COM1_DCD_C	6	COM1_DSR_C
2	COM1_RX_C	7	COM1_RTS_C
3	COM1_TX_C	8	COM1_CTS_C
4	COM1_DTR_C	9	COM1_RIJ_SEL
5	GND		NC



COM1

COM2: COM Connector, fixed as RS-232/422/485
The pin assignments are as follows:

PIN	ASSIGNMENT		
	RS-232	RS-422	RS-485
1	COM2_DCDJ_I	TX-	485-
2	COM2_RX_I	TX+	485+
3	COM2_TX_I	RX+	X
4	COM2_DTRJ_I	RX-	X
5	GND	GND	GND
6	COM2_DSRJ_I	X	X
7	COM2_RTSJ_I	X	X
8	COM2_CTSJ_I	X	X
9	COM2_RIJ_SEL	X	X
10	NC	NC	NC

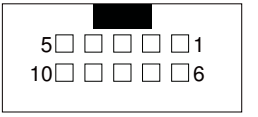


COM2

COM3, COM4: COM Connectors, fixed as RS-232
The pin assignments are as follows:

COM3:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	COM3_DCD_C	6	COM3_DSR_C
2	COM3_RX_C	7	COM3_RTS_C
3	COM3_TX_C	8	COM3_CTS_C
4	COM3_DTR_C	9	COM3_RIJ_SEL
5	GND	10	NC



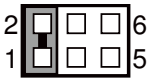
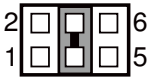
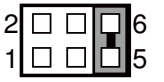
COM3/ COM4

COM4:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	COM4_DCD_C	6	COM4_DSR_C
2	COM4_RX_C	7	COM4_RTS_C
3	COM4_TX_C	8	COM4_CTS_C
4	COM4_DTR_C	9	COM4_RIJ_SEL
5	GND	10	NC

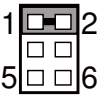
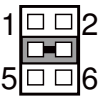
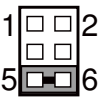
2-5. COM PORT RI & VOLTAGE SELECTION

JP13: COM1 RI & Voltage Selection
The selections are as follows:

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
RI	1-2	 **JP13**
12V	3-4,	 **JP13**
5V	5-6,	 **JP13**

Note: Manufacturing default is RI.

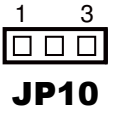
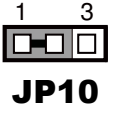
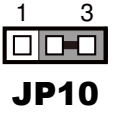
JP11, JP14, JP15: COM2, COM3, COM4 respective RI & Voltage Selection
The selections are as follows:

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
RI	1-2	 **JP11/ JP14/ JP15**
12V	3-4,	 **JP11/ JP14/ JP15**
5V	5-6,	 **JP11/ JP14/ JP15**

Note: Manufacturing default is RI.

2-6. COM2 AUTO DETECT SELECTION

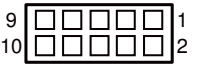
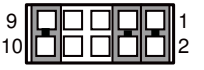
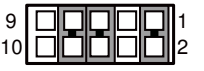
JP10: COM2 Auto Detect Selection
The selections are as follows:

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
RS-232/422	Open	
Normal (RS-485)	1-2	
Auto Gating (RS-485)	2-3	

Note: Manufacturing default is RS-232/422.

2-7. COM2 RS-232/422/485 SELECTION

JP12: RS-232/422/485 (COM2) Selection
The selections are as follows:

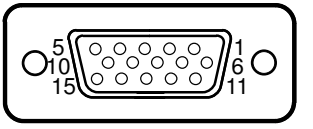
SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
RS-232	Open	 **JP12**
RS-422	1-2, 3-4, 9-10	 **JP12**
RS-485	1-2, 5-6, 7-8	 **JP12**

Note: Manufacturing default is RS-232.

2-8. VGA PORT

VGA1: VGA Connector
The pin assignments are as follows:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	RED	9	+5V
2	GREEN	10	GND
3	BLUE	11	NC
4	NC	12	DCA DATA
5	GND	13	HSYNC
6	GND	14	VSYNC
7	GND	15	DDCA CLK
8	GND		



VGA1

2-9. PS/2 & USB PORT

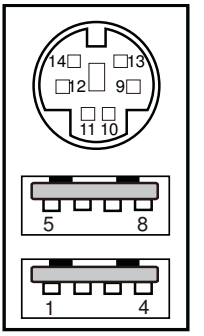
JPS2USB1: PS/2 & 2 USB Ports
The pin assignments are as follows:

PS/2 signal:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
9	GND	12	VCC5_SB
10	KDAT	13	KCLK
11	MDAT	14	MCLK

USB signal:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	GND	5	GND
2	USB2P	6	USB3P
3	USB2N	7	USB3N
4	VCC5_USB_23	8	VCC5_USB_23



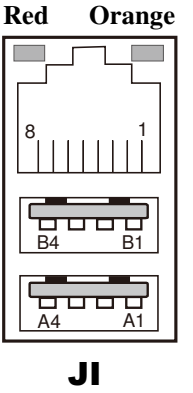
JPS2USB1

2-10. LAN & USB PORT

J1: RJ45 LAN & 2 USB Ports
The pin assignments are as follows:

LAN signal:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	LAN1_MDI_P0	5	LAN1_MDI_P2
2	LAN1_MDI_N0	6	LAN1_MDI_N2
3	LAN1_MDI_P1	7	LAN1_MDI_P3
4	LAN1_MDI_N1	8	LAN1_MDI_N3



JI

LAN LED Indicator:
Left Side LED

Red Color On	Giga LAN Speed Indicator
OFF	No LAN Switch/Hub Connected

Right Side LED

Orange Color Blinking	LAN Message Active
OFF	No LAN Message Active

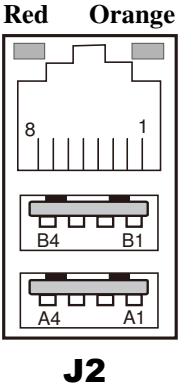
USB signal:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
A1	VCC5_USB_45	B5	VCC5_USB45
A2	USB5N	B6	USB4N
A3	USB5P	B7	USB4P
A4	GND	B8	GND

J2: RJ45 LAN & 2 USB Ports
The pin assignments are as follows:

LAN signal:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	LAN2_MDI_P0	5	LAN2_MDI_P2
2	LAN2_MDI_N0	6	LAN2_MDI_N2
3	LAN2_MDI_P1	7	LAN2_MDI_P3
4	LAN2_MDI_N1	8	LAN2_MDI_N3



J2

LAN LED Indicator:
Left Side LED

Red Color On	Giga LAN Speed Indicator
OFF	No LAN Switch/Hub Connected

Right Side LED

Orange Color Blinking	LAN Message Active
OFF	No LAN Message Active

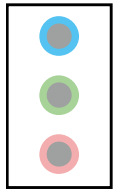
USB signal:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
A1	VCC5_USB_67	B5	VCC5_USB67
A2	USB7N	B6	USB6N
A3	USB7P	B7	USB6P
A4	GND	B8	GND

2-11. AUDIO CONNECTOR

AUDIO1: Sound Connector, including Line-In, Line-Out & Mic.
The pin assignments are as follows:

COLOR	ASSIGNMENT
Light Blue	LINE-IN
Light Green	LINE-OUT
Light Pink	MIC-IN

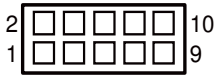


AUDIO1

2-12. USB CONNECTOR

USB01: USB Connectors
The pin assignments are as follows:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	VCC5_USB_01	6	USBC1P
2	VCC5_USB_01	7	GND
3	USBC0N	8	GND
4	USBC1N	9	GND
5	USBC0P	10	GND

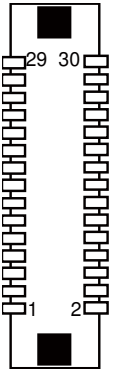


USB01

2-13. LVDS CONNECTOR

LVDS1: LVDS Connector
The pin assignments are as follows:

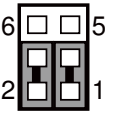
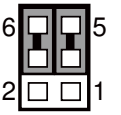
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	LVDS_VCC	16	LVDS_CLK+
2	GND	17	LVDS_CLK-
3	NC	18	GND
4	NC	19	LVDS_TX2+
5	GND	20	LVDS_TX2-
6	NC	21	GND
7	NC	22	LVDS_TX1+
8	GND	23	LVDS_TX1-
9	NC	24	GND
10	NC	25	LVDS_TX0+
11	NC	26	LVDS_TX0-
12	NC	27	NC (N2800) LVDS_TX3+ (D2550)
13	NC	28	NC (N2800) LVDS_TX3- (D2550)
14	NC	29	LVDS_VCC
15	GND	30	LVDS_VCC



LVDS1

2-14. LVDS VOLTAGE SELECTION

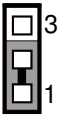
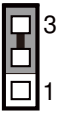
JP5: LVDS Voltage Selection
The selections are as follows:

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
3.3V	1-3, 2-4	 **JP5**
5V	3-5, 4-6	 **JP5**

Note: Manufacturing default is 3.3V.

2-15. INVERTER ENABLE VOLTAGE SELECTION

JP18: Inverter Enable Voltage Selection
The selections are as follows:

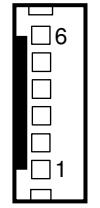
SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
3.3V	1-2	 **JP18**
5V	2-3	 **JP18**

Note: Manufacturing default is 3.3V.

2-16. BACKLIGHT CONNECTOR

JINV1: Backlight Connector
The selections are as follows:

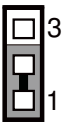
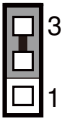
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	+12V	4	PWM (Backlight brightness control signal)
2	+12V	5	GND
3	GND	6	ENABKL (Backlight ON/OFF control signal)



JINV1

2-17. BACKLIGHT PWM VOLTAGE SELECTION

JP17: Backlight PWM Voltage Selection
The selections are as follows:

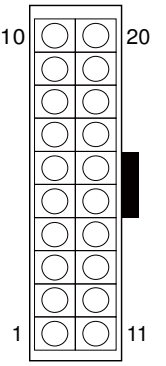
SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
3.3V	1-2	 **JP17**
5V	2-3	 **JP17**

Note: Manufacturing default is 3.3V.

2-18. ATX POWER CONNECTOR

ATX_PWR1: Power Connector
The pin assignments are as follows:

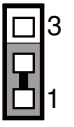
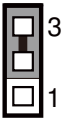
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	GND	13	GND
4	+5V	14	PSON
5	GND	15	GND
6	+5V	16	GND
7	GND	17	GND
8	POK	18	-5V
9	5VSB	19	+5V
10	+12V	20	+5V



ATX_PWR1

2-19. ATX POWER MODE SELECTION

JP2: ATX Power Mode Selection
The selections are as follows:

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
HW Power On	1-2	 **JP2**
HW Power Off	2-3	 **JP2**

Note: Manufacturing default is HW Power Off.

2-20. SATA & SATA POWER CONNECTOR

SATA1, SATA2: SATA Connectors
The pin assignments are as follows:

SATA1:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	GND	5	SATA0_RX_N_C
2	SATA0_TX_P_C	6	SATA0_RX_P_C
3	SATA0_TX_N_C	7	GND
4	GND		

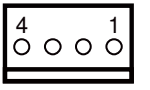
SATA1/ SATA2

SATA2:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	GND	5	SATA1_RX_N_C
2	SATA1_TX_P_C	6	SATA1_RX_P_C
3	SATA1_TX_N_C	7	GND
4	GND		

JPWR_4P1, JPWR_4P2: SATA Power Connectors
The pin assignments are as follows:

PIN	ASSIGNMENT
1	VCC5
2	GND
3	GND
4	VCC12

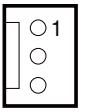


JPWR_4P1/ JPWR_4P2

2-21. FAN CONNECTOR

SYSFAN1: Fan Connectors
The pin assignments are as follows:

PIN	ASSIGNMENT
1	GND
2	+12V (Max. 0.5A)
3	FANPWM (From FAN)

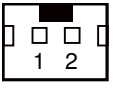


SYSFAN1

2-22. SPEAKER CONNECTOR

SPK1: Speaker Connectors
The pin assignments are as follows:

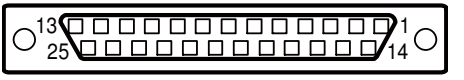
PIN	ASSIGNMENT
1	MONO_SPK
2	SPK_GND_OUT



SPK1

2-23. PRINTER PORT

LPT1: Printer Port
The pin assignments are as follows:

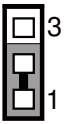
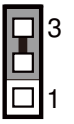


LPT1

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	STB	14	AFD#
2	PDR0	15	ERR#
3	PDR1	16	INIT#
4	PDR2	17	SLIN#
5	PDR3	18	GND
6	PDR4	19	GND
7	PDR5	20	GND
8	PDR6	21	GND
9	PDR7	22	GND
10	ACK#	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SLCT	26	NC

2-24. VCCRAMXXX POWER VOLTAGE SELECTION

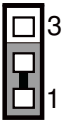
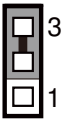
JP6: VCCRAMXXX Power Voltage Selection
The selections are as follows:

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
1.05V	1-2	 **JP6**
1.14V	2-3	 **JP6**

Note: Manufacturing default is 1.05V.

2-25. CLEAR CMOS DATA SELECTION

JP8: Clear CMOS Data Selection
The selections are as follows:

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
Normal	1-2	 **JP8**
Clear CMOS*	2-3	 **JP8**

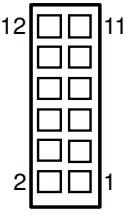
Note: Manufacturing default is Normal.

*To clear CMOS data, user must power-off the computer and set the jumper to "Clear CMOS" as illustrated above. After five to six seconds, set the jumper back to "Normal" and power-on the computer.

2-26. JPANEL CONNECTOR & SELECTION

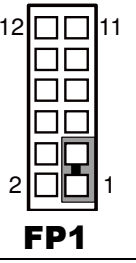
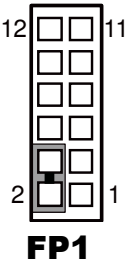
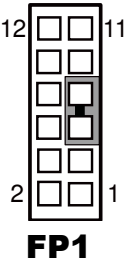
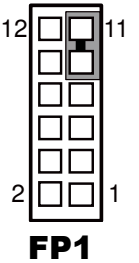
FP1: JPANEL Connector
The pin assignments are as follows:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	HD_LED+	7	RESET_BUTTON
2	PW_LED+	8	P_SPK
3	HD_LED-	9	PWR_BUTTON
4	PW_LED-	10	P_SPK
5	GND	11	GND
6	VCC	12	P_SPK



FP1

Front Panel Connector Selections are as follows:

SELECTION	JUMPER SETTINGS	JUMPER ILLUSTRATION
Hard Disk Drive LED	1-3	
Power LED	2-4	
Reset Button	5-7	
Power Button	9-11	

SOFTWARE UTILITIES

CHAPTER

3

This chapter comprises the detailed information of VGA driver, LAN driver, and Sound driver.

Sections included:

- Introduction.
- Intel® Chipset Software Installation Utility
- VGA Driver Utility
- LAN Driver Utility
- Sound Driver Utility

3-1. INTRODUCTION

Enclosed with our SA-5852 package are our driver utilities, which come in a format of CD ROM or floppy disk. Refer to the following table for driver locations:

FILENAME **(Assume that CD ROM drive is D:)**	**PURPOSE**
D:\Driver\Platfrom\Win7(32-bit)\UTILITY	Intel® Chipset Device Software Installation Utility
D:\Driver\Platfrom\Win7(32-bit)\VGA	Intel® Graphics Media Accelerator 3600 for VGA driver installation
D:\Driver\Platfrom\Win7(32-bit)\LAN	Intel® 82583V for LAN driver installation
D:\Driver\Platfrom\Win7(32-bit)\Sound	Realtek ALC888S HD audio driver installation
D:\Driver\Flash BIOS	For Aptio(EFI) BIOS update utility

Note: Be sure to install the Utility right after the OS fully installed.

3-2. INTEL® CHIPSET SOFTWARE INSTALLATION UTILITY

3-2-1. Introduction

The Intel® Chipset Device Software installs Windows *.INF files to the target system, and this package contains the drivers for all the interfaces such as USB, SATA, I2C, SPI of the Intel® Platform Controller Hub EG20T with information about a piece of hardware on the system. These files outline to the operating system how to configure the Intel® chipset components in order to ensure that the following features function properly:

- DMA Support
- GPIO Support
- I^2C Support
- Packet HUB Support
- Serial Peripheral Interface (SPI) Support
- PCIe Support
- IDE/ATA33/ATA66/ATA100 Storage Support
- SATA Storage Support
- USB Support

3-2-2. Installation of Utility for Windows 7

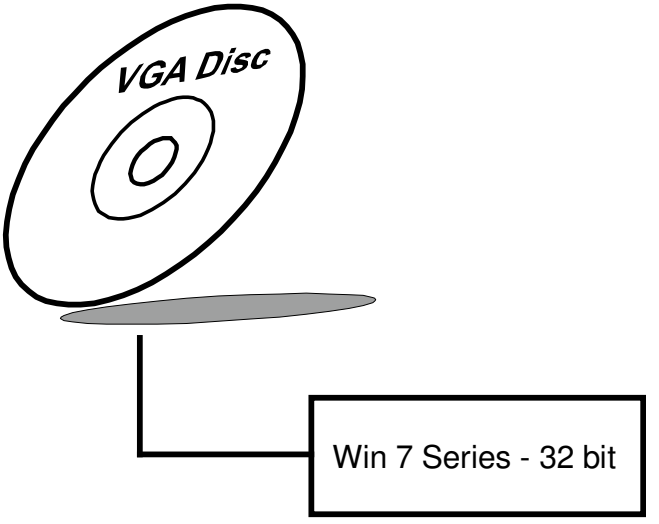
The Utility Pack is to be installed only for Windows 7 (32 bit), and it should be installed right after the OS installation. Please follow the steps below:

1. Insert the driver disk into a CD ROM device.
2. Under Windows system, go to the directory where the Utility driver is located.
3. Run the application with administrative privileges.

3-3. VGA DRIVER UTILITY

3-3-1. Introduction

The VGA interface embedded with our SA-5852 can support a wide range of display. You can display CRT, LVDS simultaneously with the same mode.



3-3-2. Installation of VGA Driver

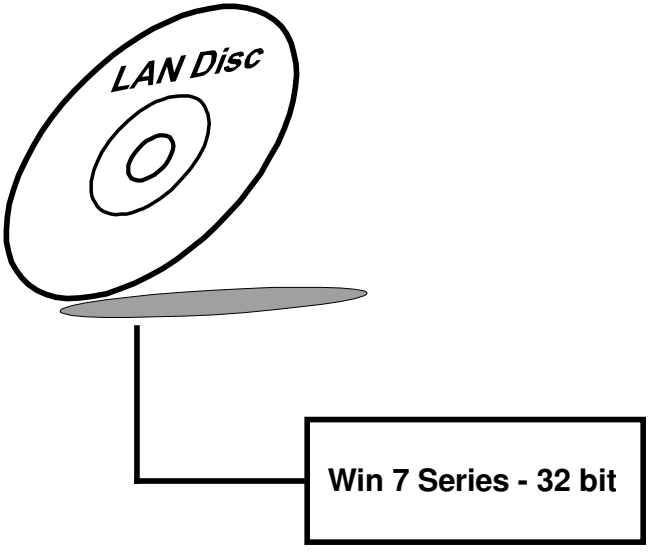
To install the VGA Driver, simply follow the following steps:

1. Insert the driver disk into a CD ROM device.
2. Under Windows system, go to the directory where the VGA driver is located.
3. Run the application with administrative privileges..

3-4. LAN DRIVER UTILITY

3-4-1. Introduction

SA-5852 is enhanced with LAN function that can support various network adapters. Installation programs for LAN drivers are listed as follows:

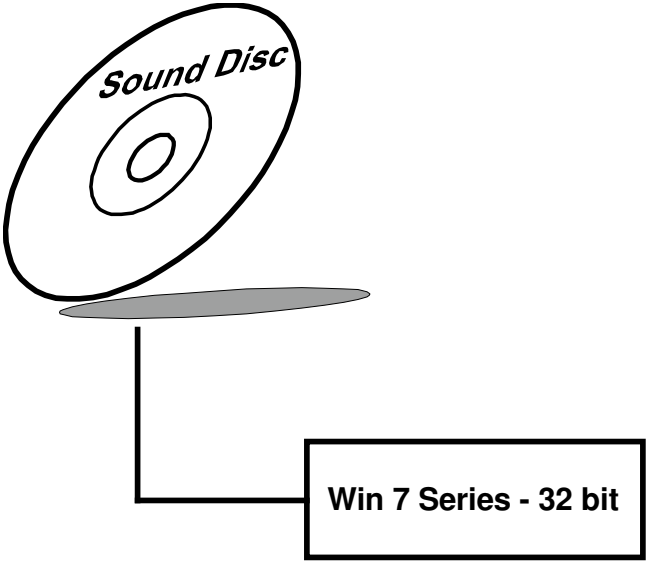


For more details on Installation procedure, please refer to Readme.txt file found on LAN Driver Utility.

3-5. SOUND DRIVER UTILITY

3-5-1. Introduction

The Realtek sound function enhanced in this system is fully compatible with Windows 7. Below, you will find the content of the Sound driver:



3-5-2. Installation of Sound Driver

1. Insert the driver disk into a CD ROM device.
2. Under Windows system, go to the directory where the Sound driver is located.
3. Run the application with administrative privileges..
4. Follow the instructions on the screen to complete the installation.
5. Once the installation is completed, shut down the system and restart in order for the changes to take effect.

CHAPTER

4

BIOS SETUP

This chapter shows how to set up the AMI BIOS.

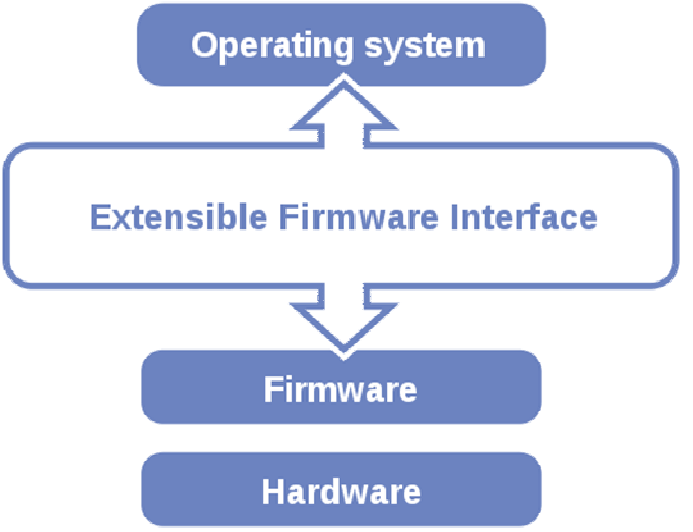
Sections included:

- Introduction
- Entering Setup
- Main
- Advanced
- Chipset
- Boot
- Security
- Save & Exit

4-1. INTRODUCTION

The board SA-5852 uses an AMI Aptio BIOS that is stored in the Serial Peripheral Interface Flash Memory (SPI Flash) and can be updated. The SPI Flash contains the BIOS Setup program, Power-on Self-Test (POST), the PCI auto-configuration utility, LAN EEPROM information, and Plug and Play support.

Aptio is AMI's BIOS firmware based on the UEFI (Unified Extensible Firmware Interface) Specifications and the Intel Platform Innovation Framework for EFI. The UEFI specification defines an interface between an operating system and platform firmware. The interface consists of data tables that contain platform-related information, boot service calls, and runtime service calls that are available to the operating system and its loader. These provide standard environment for booting an operating system and running pre-boot applications. Following illustration shows Extensible Firmware Interface's position in the software stack.



EFI BIOS provides an user interface allow users the ability to modify hardware configuration, e.g. change system date and time, enable or disable a system component, decide bootable device priorities, setup personal password, etc., which is convenient for modifications and customization of the computer system and allows technicians another method for finding solutions if hardware has any problems.

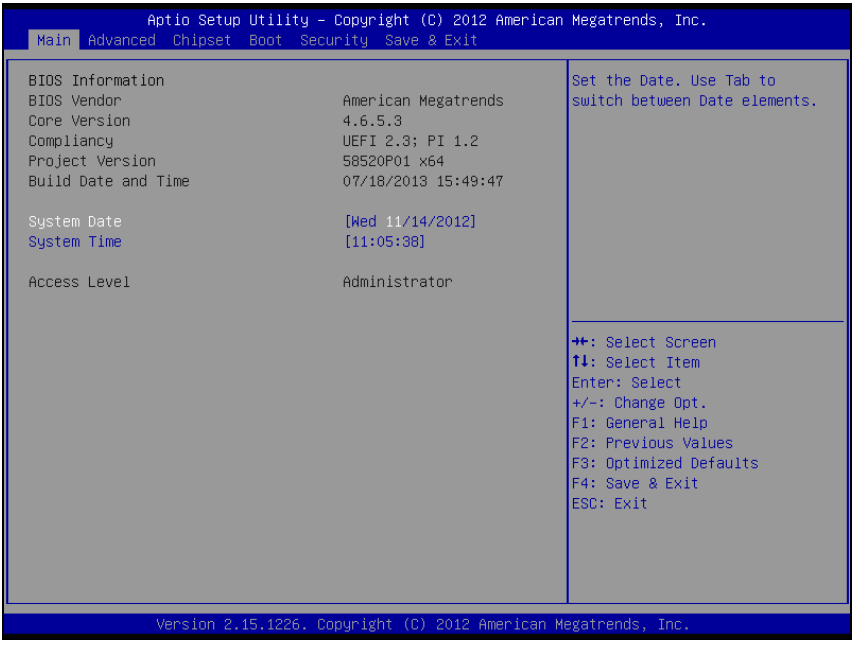
The BIOS Setup program can be used to view and change the BIOS settings for the computer. The BIOS Setup program is accessed by pressing the <Del> or <F2> key after the POST memory test begins and before the operating system boot begins. The settings are shown below.

4-2. ENTERING SETUP

When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines and the following message will appear on the lower screen:

POST screen

As long as this message is present on the screen you may press the <Del> key (the one that shares the decimal point at the bottom of the number keypad) to access the Setup program. In a moment, the main menu of the Aptio Setup Utility will appear on the screen:



BIOS setup program initial screen

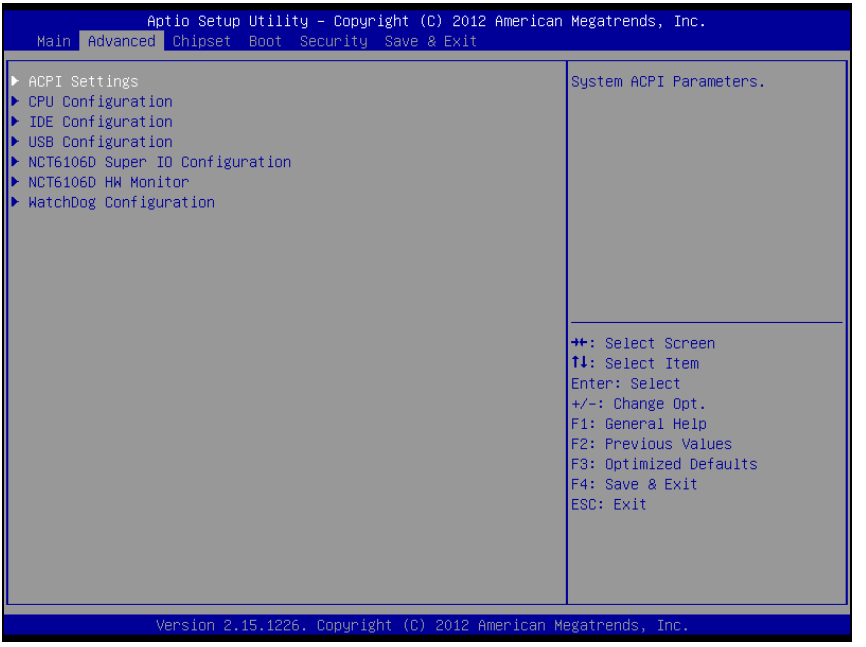
You may move the cursor by up/down keys to highlight the individual menu items. As you highlight each item, a brief description of the highlighted selection will appear at the bottom of the screen.

4-3. MAIN

Main screen

BIOS Setting	Options	Description/Purpose
BIOS Vendor	No changeable options	Displays the BIOS vendor.
Core Version	No changeable options	Displays the current BIOS core version.
Project Version	No changeable options	Displays the version of the BIOS currently installed on the platform.
Build Date	No changeable options	Displays the date of current BIOS version.
Total Memory	No changeable options	Displays the current memory installed amount and type.
System Date	Month, day, year	Specifies the current date.
System Time	Hour, minute, second	Specifies the current time.
Access Level	Administrator	Access level status

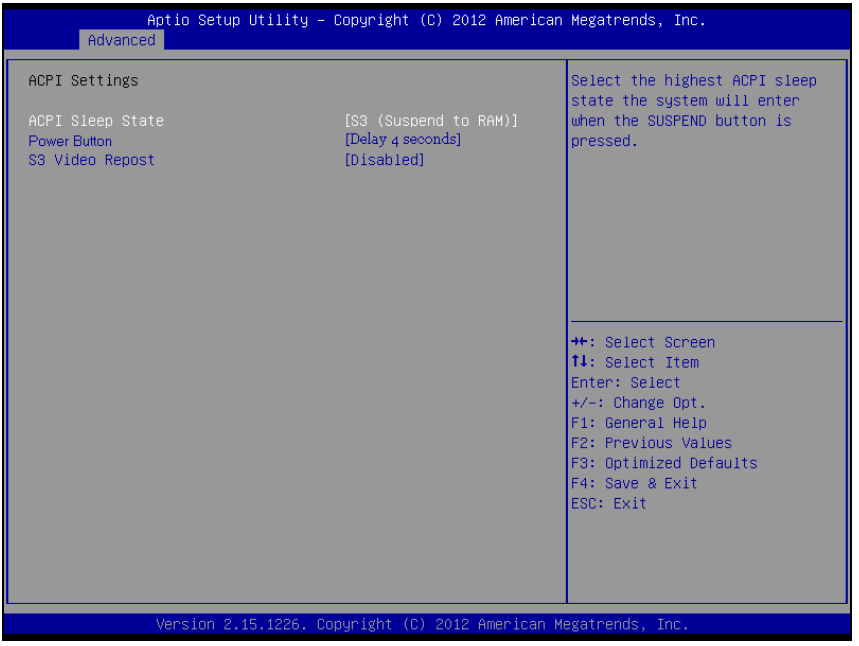
4-4. ADVANCED



Advanced screen

BIOS Setting	Options	Description/Purpose
ACPI Settings	Enter	System ACPI Parameters
CPU Configuration	Enter	CPU Configuration Parameters
IDE Configuration	Enter	IDE Device Configuration
USB Configuration	Enter	USB Configuration Parameters
NCT6106D Super IO Configuration	Enter	System Super IO Chip Parameters.
NCT6106D HW Monitor	Enter	Monitor hardware status.
WatchDog Configuration	Enter	Set System Watchdog Parameters.

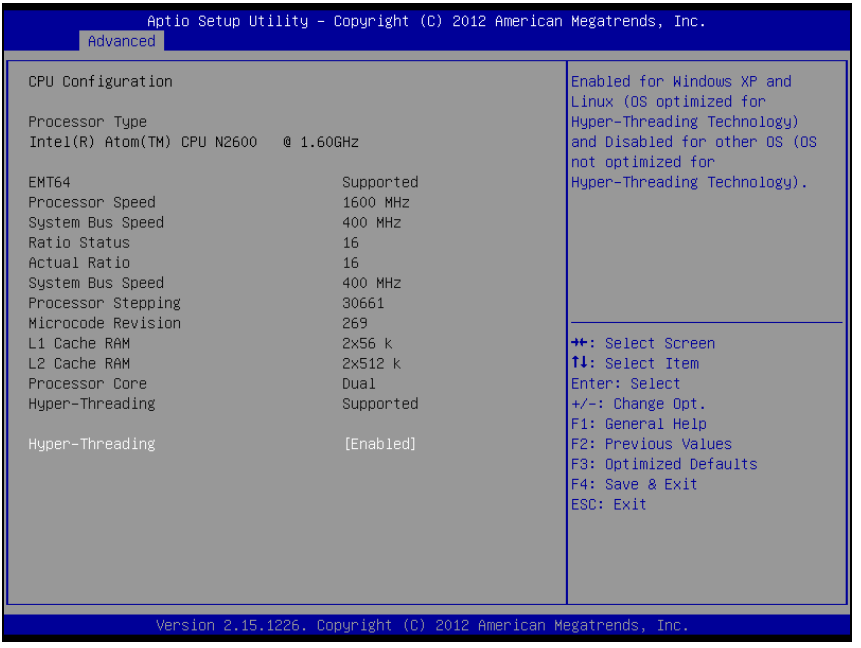
4-4-1. ACPI Settings



ACPI settings screen

BIOS Setting	Options	Description/Purpose
ACPI Sleep State	-Suspend Disabled -S1 (CPU Stop Clock) -S3 (Suspend to RAM)	Specifies the ACPI sleep state. ▪ **Disabled** disables ACPI sleep feature. ▪ **S1** mode allows the CPU stop executing instructions. ▪ **S3** allows the platform to enter Sleep (also known as Standby or Suspend to RAM) mode.
Power Button	-Delay 4 seconds -ON/OFF	-
S3 Video Repost	-Disabled -Enabled	Enable or Disable S3 Video Repost.

4-4-2. CPU Configuration

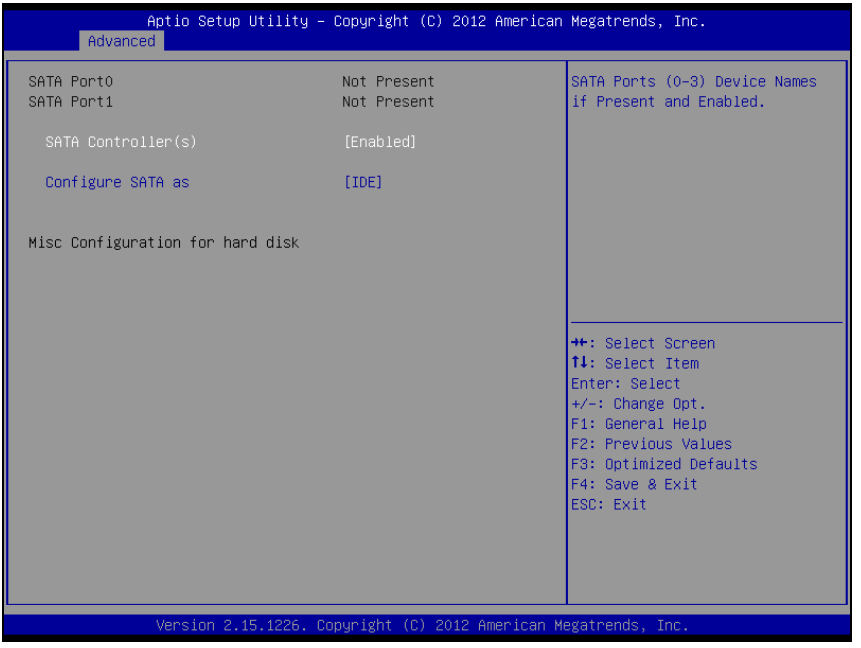


CPU configuration screen

BIOS Setting	Options	Description/Purpose
Processor Type	No changeable options	Displays the current processor model number.
EMT64	No changeable options	Reports if processor supports Intel x86-64 (amd64) implementation.
Processor Speed	No changeable options	Displays the current processor frequency.
System Bus Speed	No changeable options	Displays System Bus speed
Ratio Status	No changeable options	Displays ratio status
Actual Ratio	No changeable options	Displays actual ratio
Processor Stepping	No changeable options	Displays Processor Stepping

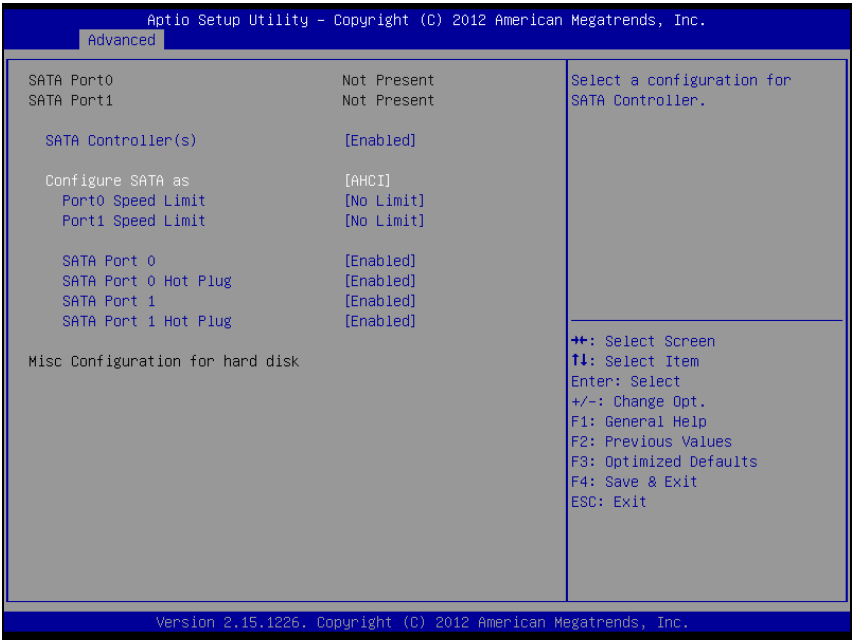
BIOS Setting	Options	Description/Purpose
Microcode Revision	No changeable options	Displays processor's microcode update revision.
L1 Cache RAM	No changeable options	Displays L1 Cache ram size
L2 Cache RAM	No changeable options	Displays L2 Cache ram size
Processor Cores	No changeable options	Displays number of physical cores in processor.
Hyper-Threading	No changeable options	Reports if Intel Hyper-Threading Technology is supported by processor.
Hyper-threading	-Disabled -Enabled	When disabled, only one thread per active core will operate.

4-4-3. IDE Configuration



IDE Configuration screen

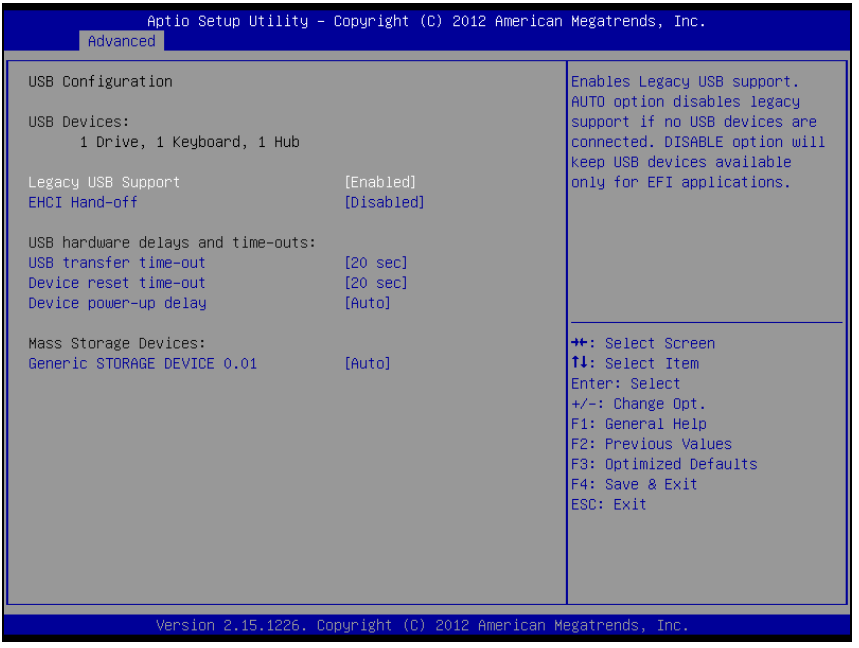
BIOS Setting	Options	Description/Purpose
SATA Port0	[drive]	Displays the drive installed on this SATA port. Shows [Not Present] if no drive is installed.
SATA Port1	[drive]	Displays the drive installed on this SATA port. Shows [Not Present] if no drive is installed.
SATA Controller(s)	-Disabled -Enabled	SATA Ports Device Names if Present and Enabled.
Configure SATA as	-IDE -AHCI	Select a configuration for SATA Controller.



AHCI screen

BIOS Setting	Options	Description/Purpose
Port0 Speed Limit	-No Limit -Gen1 Rate -Gen2 Rate	Select Port0 AHCI Speed Limit
Port1 Speed Limit	-No Limit -Gen1 Rate -Gen2 Rate	Select Port1 AHCI Speed Limit
SATA Port 0	-Disabled -Enabled	Enable or Disable SATA Port
SATA Port 0 Hot Plug	-Disabled -Enabled	Designates this port as Hot Pluggable.
SATA Port 1	-Disabled -Enabled	Enable or Disable SATA Port
SATA Port 1 Hot Plug	-Disabled -Enabled	Designates this port as Hot Pluggable.

4-4-4. USB Configuration

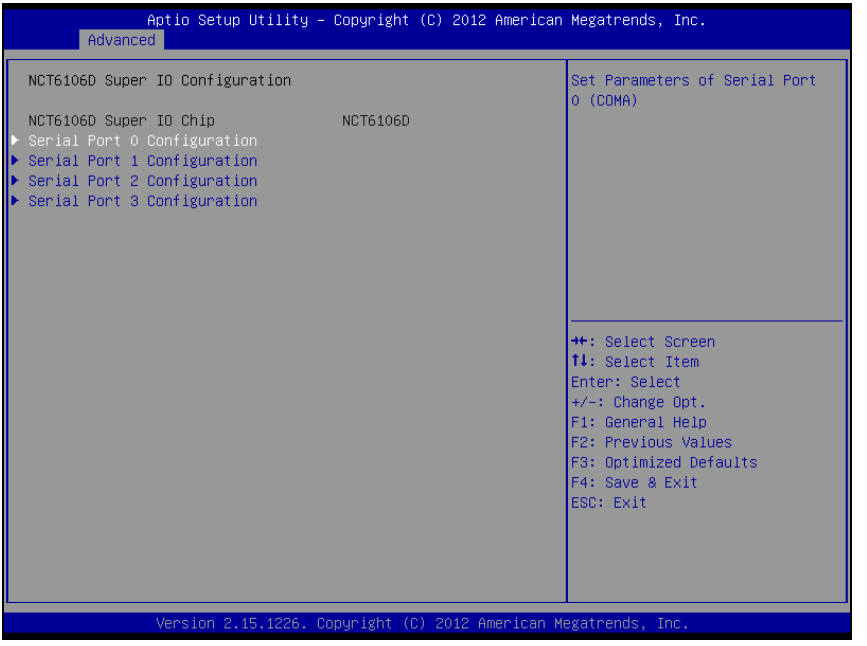


USB configuration screen

BIOS Setting	Options	Description/Purpose
USB Devices	No changeable options	Displays number of available USB devices.
Legacy USB Support	-Disabled -Enabled -Auto	Enables support for legacy USB.
EHCI Hand-off	-Disabled -Enabled	When enabled it allows BIOS support control of the EHCI controller and the OS handoff synchronization capability.
USB Transfer time-out	-1 sec -5 sec -10 sec -20 sec	The time-out value for Control, Bulk, and Interrupt transfers.

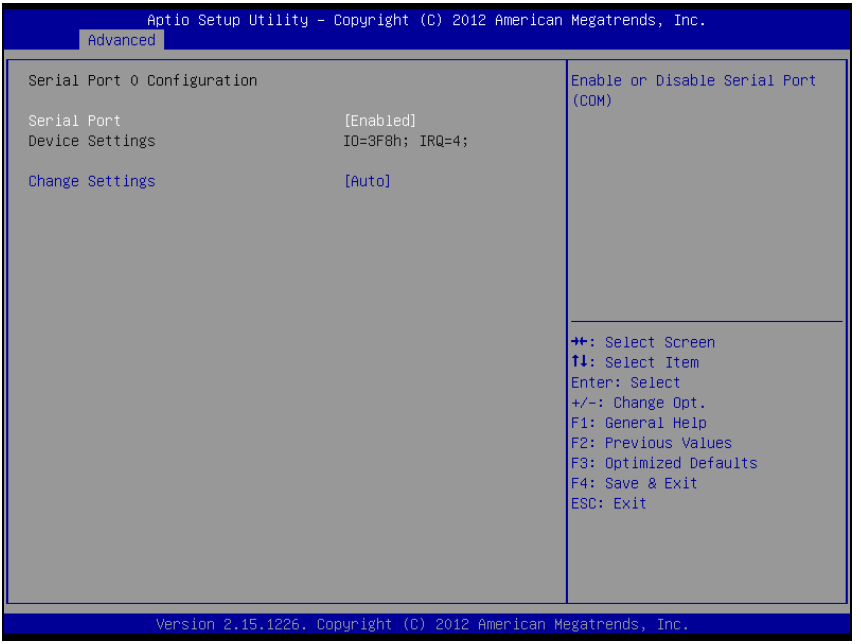
BIOS Setting	Options	Description/Purpose
Device Reset timeout	-10 sec -20 sec -30 sec -40 sec	Specifies the value for device reset timeout.
Device power-up delay	-Auto -Manual	Maximum time the device will take before it properly reports itself to the Host Controller. **Auto** uses default value: for a root port it is 100ms, for a hub port the delay is taken from hub descriptor.
Mass Storage Devices Type	-Auto -Floppy -Forced FDD -Hard Disk -CD-ROM	Mass storage device emulation type. ▪ **Auto** enumerates devices less than 530MB as floppies. ▪ **Forced FDD** option can be used to force HDD formatted drive to boot as FDD (e.g. ZIP drive).

4-4-5. NCT6106D Super IO Configuration



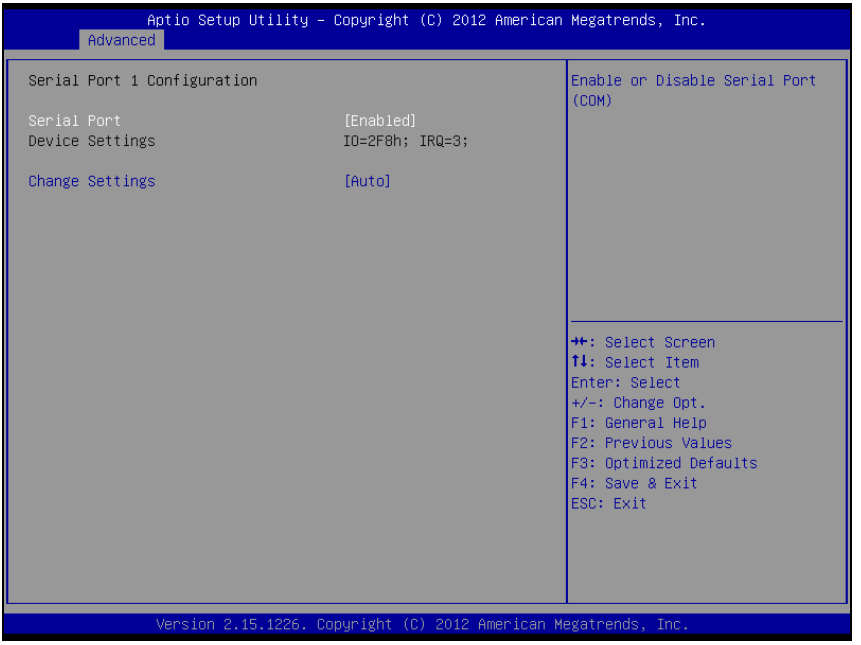
NCT6106D Super IO Configuration screen

BIOS Setting	Options	Description/Purpose
Super IO Chip	No changeable options	Displays the super IO chip model and its manufacturer.



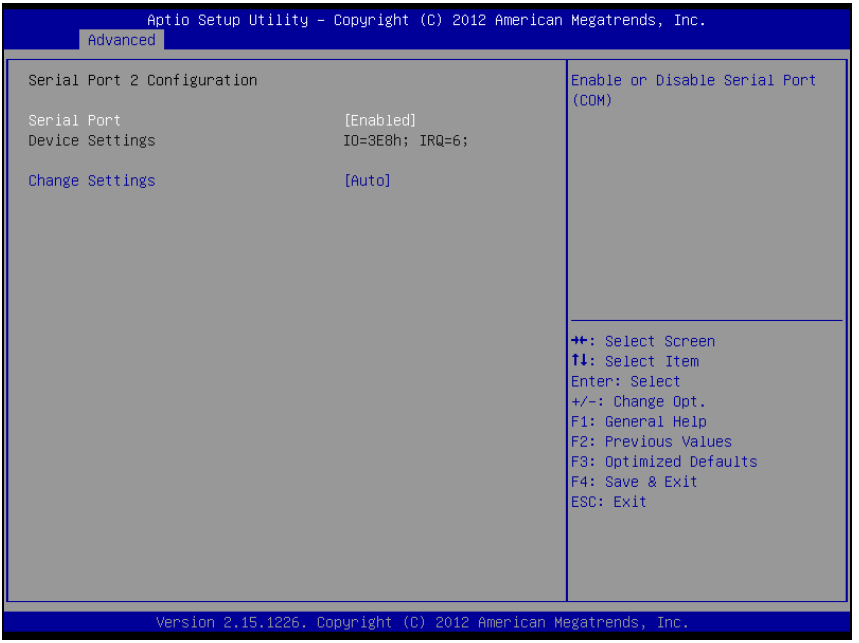
Serial Port 0 Configuration screen

BIOS Setting	Options	Description/Purpose
Serial Port	-Disabled -Enabled	Configures the serial port 0.
Device Settings	No changeable options	Reports the current serial port 0 setting.
Change Settings	-Auto -IO=3F8h; IRQ=4 -IO=3F8h; IRQ=3,4,5,6,7,10,11,12 -IO=2F8h; IRQ=3,4,5,6,7,10,11,12 -IO=3E8h; IRQ=3,4,5,6,7,10,11,12 -IO=2E8h; IRQ=3,4,5,6,7,10,11,12	Specifies the base I/O address and interrupt request for the serial port 0 if enabled.



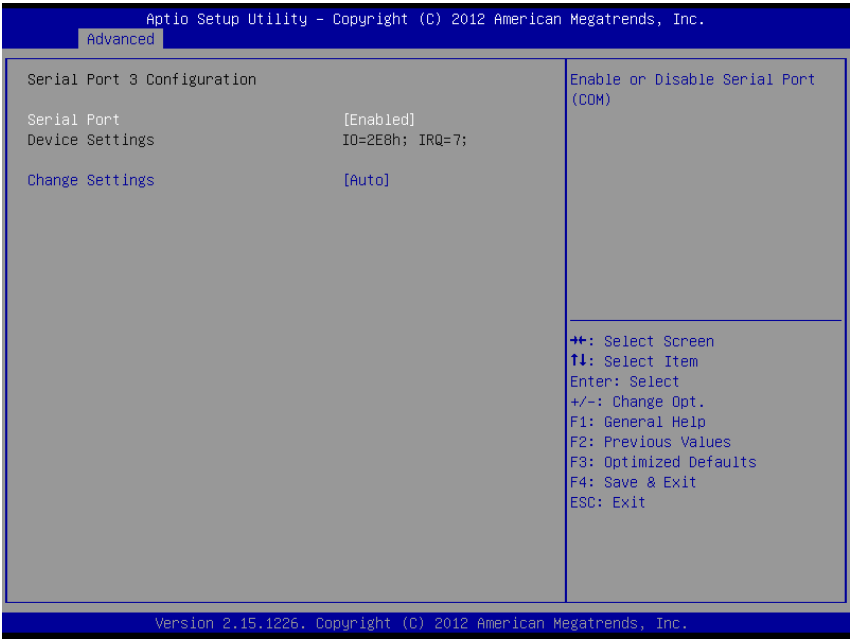
Serial Port 1 Configuration screen

BIOS Setting	Options	Description/Purpose
Serial Port	-Disabled -Enabled	Configures the serial port1.
Device Settings	No changeable options	Reports the current serial port 1 setting.
Change Settings	-Auto -IO=2F8h; IRQ=3 -IO=3F8h; IRQ=3,4,5,6,7,10,11,12 -IO=2F8h; IRQ=3,4,5,6,7,10,11,12 -IO=3E8h; IRQ=3,4,5,6,7,10,11,12 -IO=2E8h; IRQ=3,4,5,6,7,10,11,12	Specifies the base I/O address and interrupt request for the serial port 1 if enabled.



Serial Port 2 Configuration screen

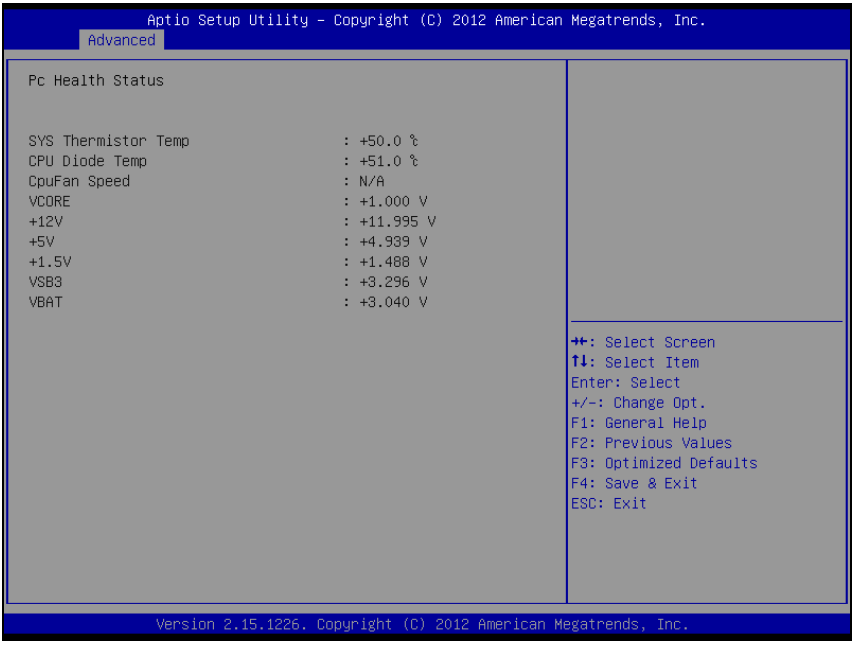
BIOS Setting	Options	Description/Purpose
Serial Port	-Disabled -Enabled	Configures the serial port2.
Device Settings	No changeable options	Reports the current serial port 2 setting.
Change Settings	-Auto -IO=3E8h; IRQ=6 -IO=3F8h; IRQ=3,4,5,6,7,10,11,12 -IO=2F8h; IRQ=3,4,5,6,7,10,11,12 -IO=3E8h; IRQ=3,4,5,6,7,10,11,12 -IO=2E8h; IRQ=3,4,5,6,7,10,11,12	Specifies the base I/O address and interrupt request for the serial port 2 if enabled.



Serial Port 3 Configuration screen

BIOS Setting	Options	Description/Purpose
Serial Port	-Disabled -Enabled	Configures the serial port3.
Device Settings	No changeable options	Reports the current serial port 3 setting.
Change Settings	-Auto -IO=2E8h; IRQ=7 -IO=3F8h; IRQ=3,4,5,6,7,10,11,12 -IO=2F8h; IRQ=3,4,5,6,7,10,11,12 -IO=3E8h; IRQ=3,4,5,6,7,10,11,12 -IO=2E8h; IRQ=3,4,5,6,7,10,11,12	Specifies the base I/O address and interrupt request for the serial port 3 if enabled.

4-4-6. Hardware Monitor

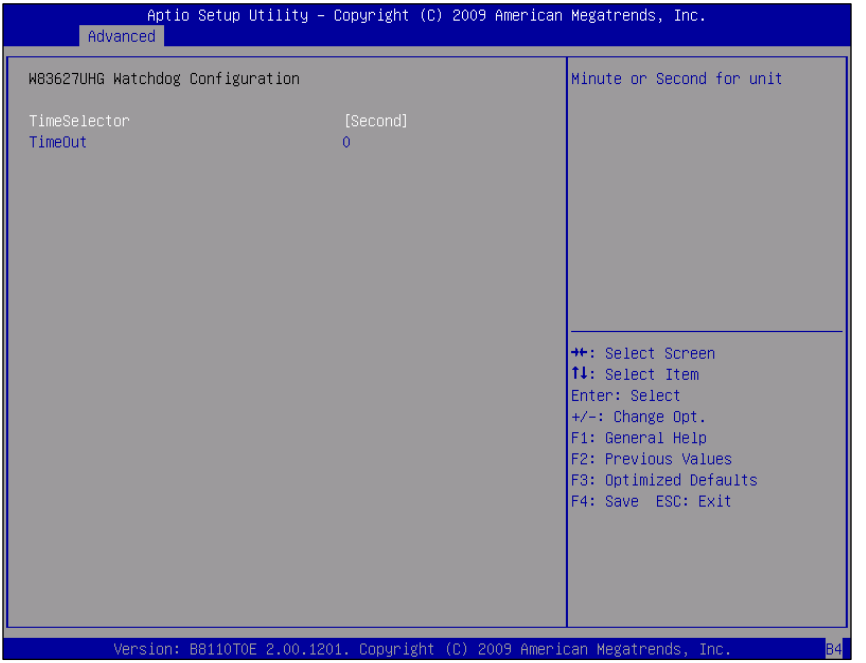


Hardware monitor screen

BIOS Setting	Options	Description/Purpose
System Temperature	No changeable options	Displays temperature in the remote thermal sensor zone.
CPU Diode Tem	No changeable options	Displays processor's temperature.
CPU Fan Speed	No changeable options	Displays fan speed of the CPU fan.
VCORE	No changeable options	Displays voltage level of the +VCORE in supply.
+12V	No changeable options	Displays voltage level of the +12V in supply.

BIOS Setting	Options	Description/Purpose
+5V	No changeable options	Displays voltage level of the +1.5V in supply.
+1.5V	No changeable options	Displays voltage level of the +5V in supply.
VSB3	No changeable options	Displays voltage level of the +1.5V in supply.
VBAT	No changeable options	Displays voltage level of the backup CMOS battery.

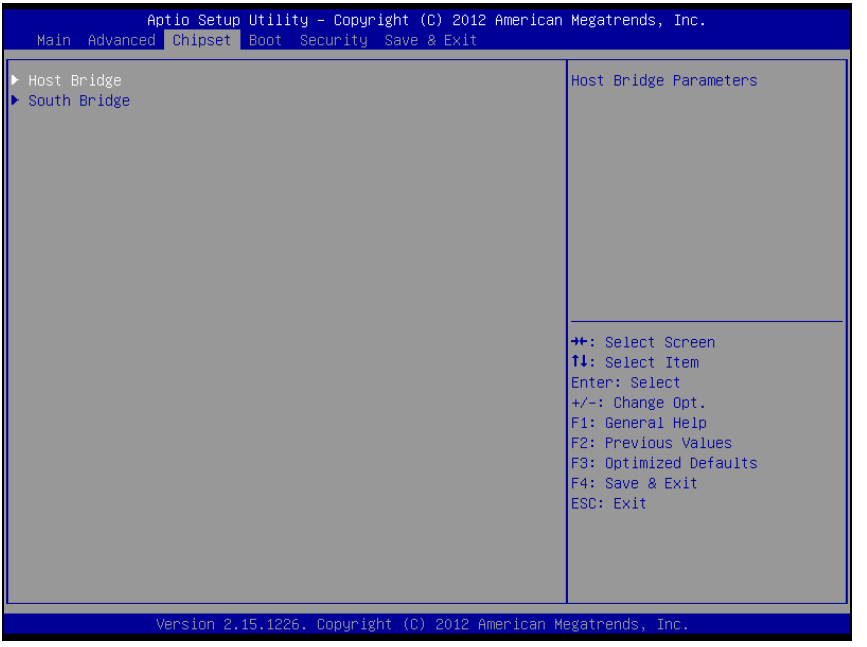
4-4-7. Watchdog Configuration



Hardware monitor screen

BIOS Setting	Options	Description/Purpose
TimeSelector	-Minute -Second	Selects unit for watchdog timer.
TimeOut	Multiple options ranging from 0 to 255	Sets the desired value for watchdog timer.

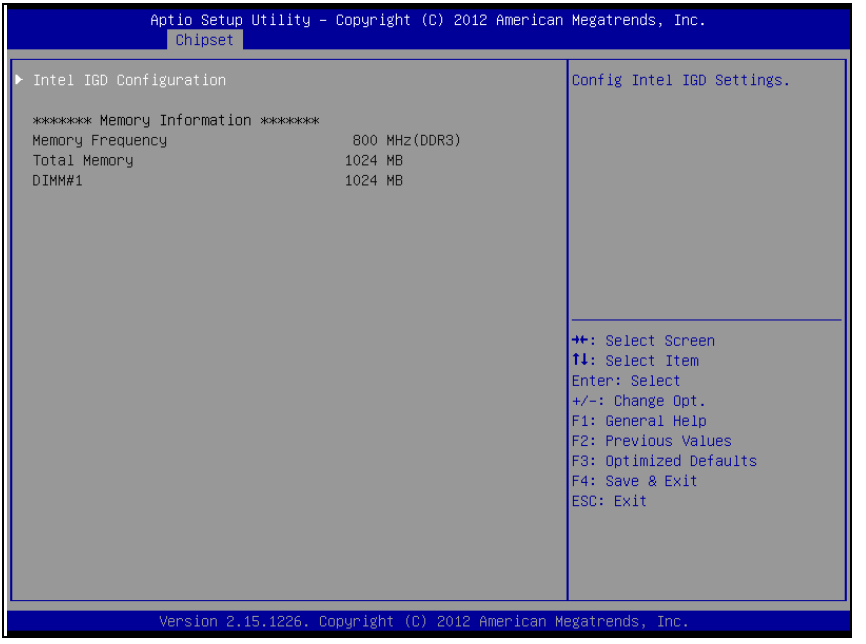
4-5. CHIPSET



Chipset screen

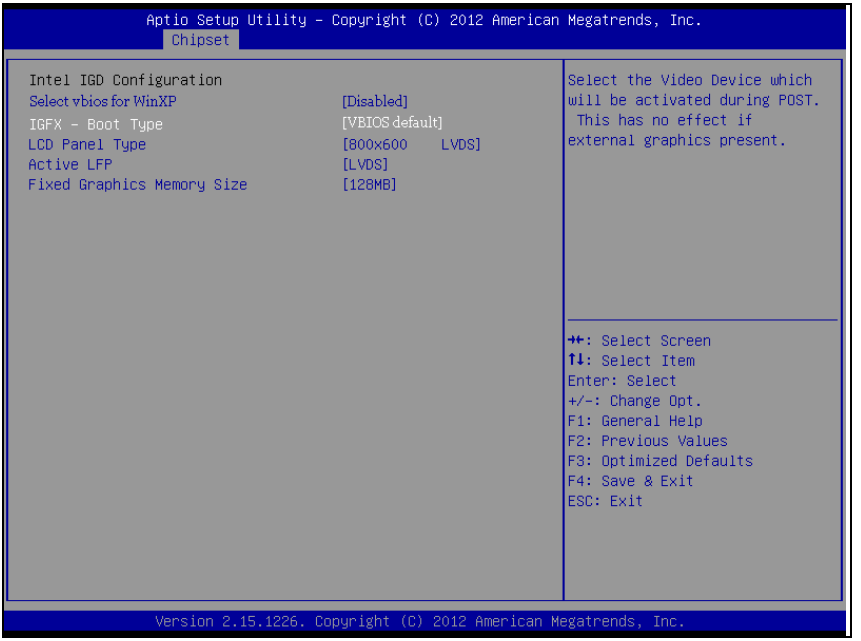
BIOS Setting	Options	Description/Purpose
Host Bridge	-	Host Bridge Parameters
South Bridge	-	South Bridge Parameters

4-5-1. North Bridge



North Bridge screen

BIOS Setting	Options	Description/Purpose
Intel IGD Configuration	Enter	Config Intel IGD Settings.
Memory Frequency	Show only	Displays memory frequency
Total Memory	Show only	Displays Dimm total size.
DIMM#1	Show only	Displays DIMM#1 size

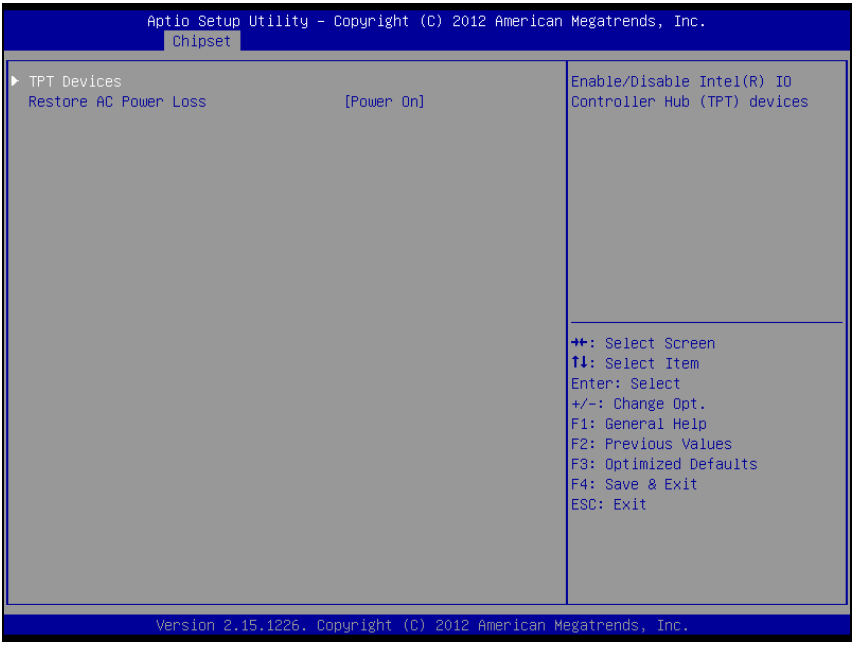


North Bridge – Intel IGD configuration screen

BIOS Setting	Options	Description/Purpose
IGFX- Boot Type	-VBIOS Default -CRT -LFP -CRT+LFP	Select the Video Device which will be activated during POST, This has no effect if external graphics present.
LCD Panel Type	-VBIOS Default -640x480 LVDS -800x600 LVDS -1024x768 LVDS -1280x1024 LVDS -1366x768 LVDS -1224x600 LVDS -1280x800 LVDS	Select LCD panel used by Internal Graphics Device by selecting the appropriate setup item.

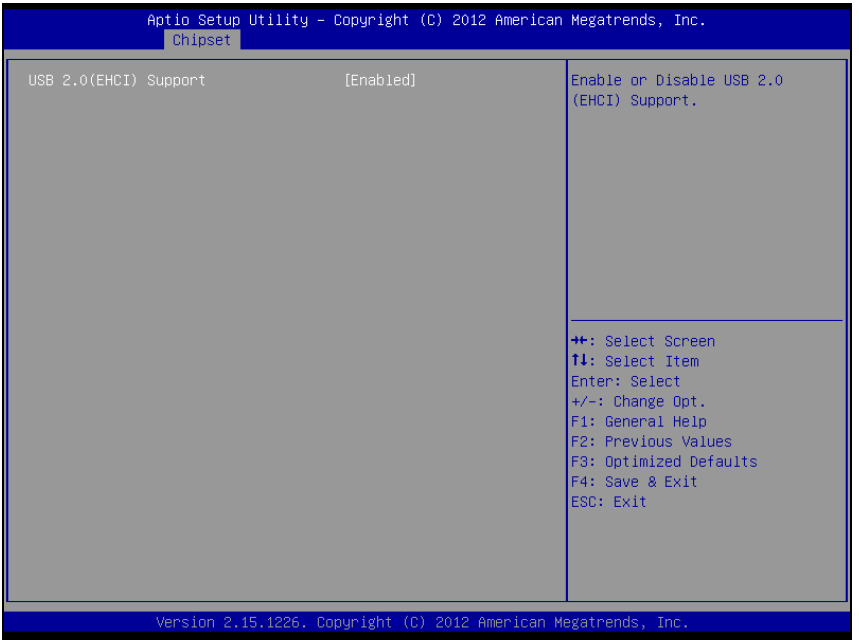
BIOS Setting	Options	Description/Purpose
Active LFP	-No LVDS -LVDS	Select the Active LFP configuration. ▪ **No LVDS:** VBIOS does not enable LVDS. ▪ **LVDS:** VBIOS enables LVDS driver by integrated encoder.
Fixed Graphics Memory size	-128MB -256MB	Configure Fixed Graphics Memory size

4-5-2. South Bridge



South Bridge screen

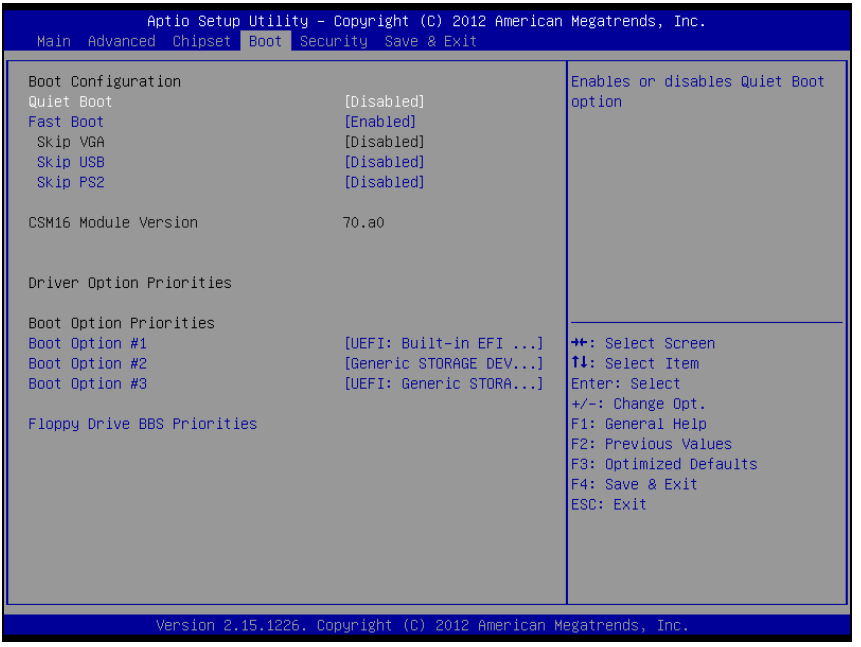
BIOS Setting	Options	Description/Purpose
TPT Devices	Enter	Enable/Disable Intel® IO Controller Hub (TPT) Devices
Restore AC Power Loss	-Power Off -Power On -Last State	Select AC power state when power is re-applied after a power failure.



Southbridge – USB configuration screen

BIOS Setting	Options	Description/Purpose
USB2.0 (EHCI) Support	-Disabled -Enabled	Enable or Disable USB2.0 (EHCI) Support.

4-6. BOOT

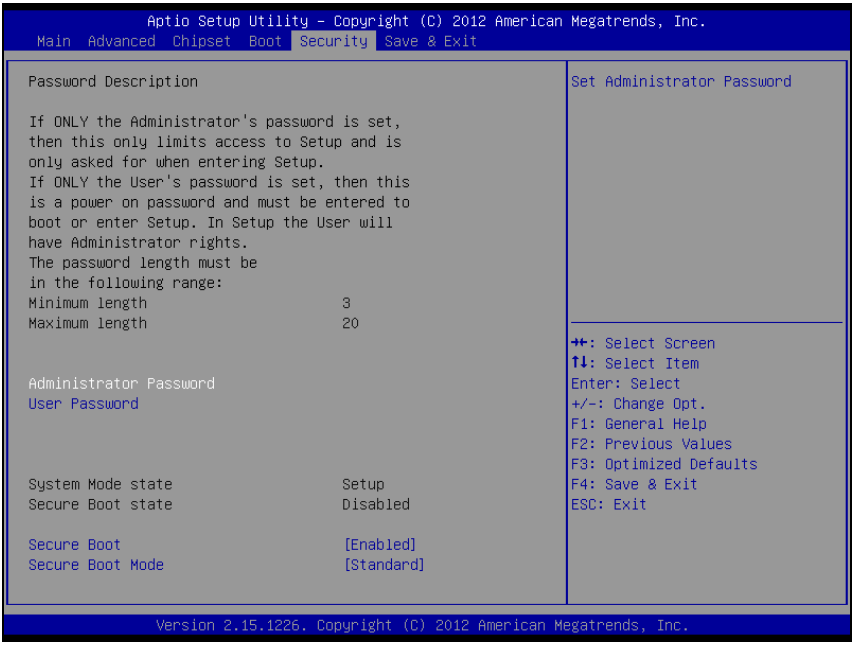


Boot screen

BIOS Setting	Options	Description/Purpose
Quiet Boot	-Disabled -Enabled	When quiet boot is enabled, it displays OEM logo instead of POST messages during boot.
Fast Boot	-Disabled -Enabled	When fast boot is enabled, it boots with minimal set of devices required to launch active boot option.
Skip VGA	-Disabled	Skip VGA to boot fast.
Skip USB	-Disabled -Enabled	If Enabled, USB devices will not be available until after OS boot. If Disable, USB device will be available before OS boot.

BIOS Setting	Options	Description/Purpose
Skip PS2	-Disabled -Enabled	If Enabled, PS2 devices will be skipped.
CSM16 Module Version	Show only	Displays module version.
Boot Option Priorities	Boot order	Sets the system boot order

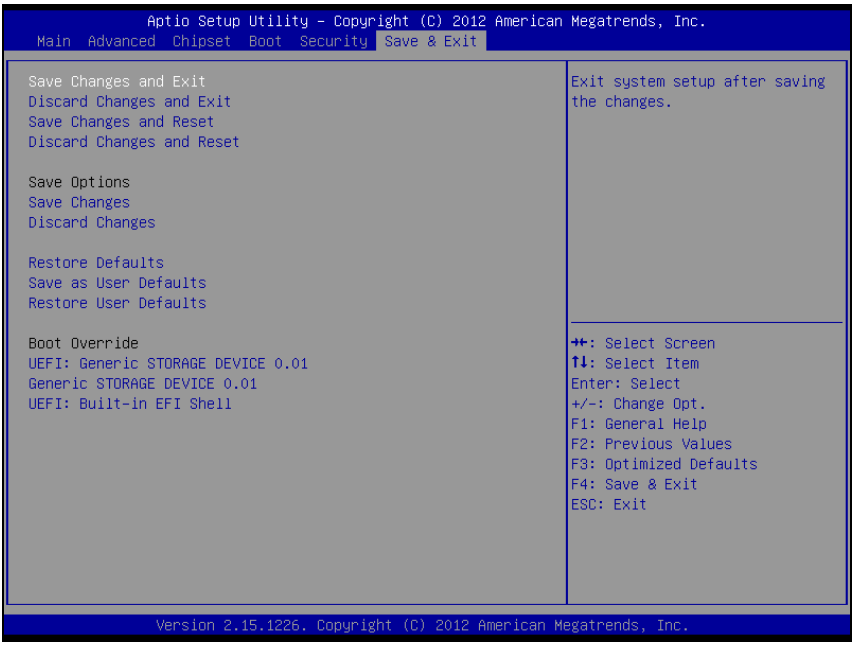
4-7. SECURITY



Security screen

BIOS Setting	Options	Description/Purpose
Administrator Password	Password can be up to 20 alphanumeric characters.	Specifies the administrator password.
User Password	Password can be up to 20 alphanumeric characters.	Specifies the user password.
Secure Boot	-Disabled -Enabled	Secure Boot flow control. Secure Boot is possible only if system runs in User Mode.
Secure Boot Mode	-Standard -Custom	Secure Boot Mode selector. ▪ **Standard** - fixed secure boot policy ▪ **Custom** - changeable Image Execution policy and Secure Boot Key databases.

4-8. SAVE & EXIT



Save & Exit screen

BIOS Setting	Options	Description/Purpose
Save Changes and Exit	No changeable options	Exits and saves the changes in CMOS SRAM.
Discard Changes and Exit	No changeable options	Exits without saving any changes made in BIOS settings.
Save Changes and Reset	No changeable options	Saves the changes in CMOS SRAM and resets.
Discard Changes and Reset	No changeable options	Resets without saving any changes made in BIOS settings.
Save Changes	No changeable options	Saves the changes done in BIOS settings so far.
Discard Changes	No changeable options	Discards the changes done in BIOS settings so far.

BIOS Setting	Options	Description/Purpose
Restore Defaults	No changeable options	Loads the optimized defaults for BIOS settings.
Save as User Defaults	No changeable options	Saves the current values as user defaults.
Restore User Defaults	No changeable options	Loads the user defaults for BIOS settings.
Boot Override	-[drive(s)]	Forces to boot from selected [drive(s)].

APPENDIX

A

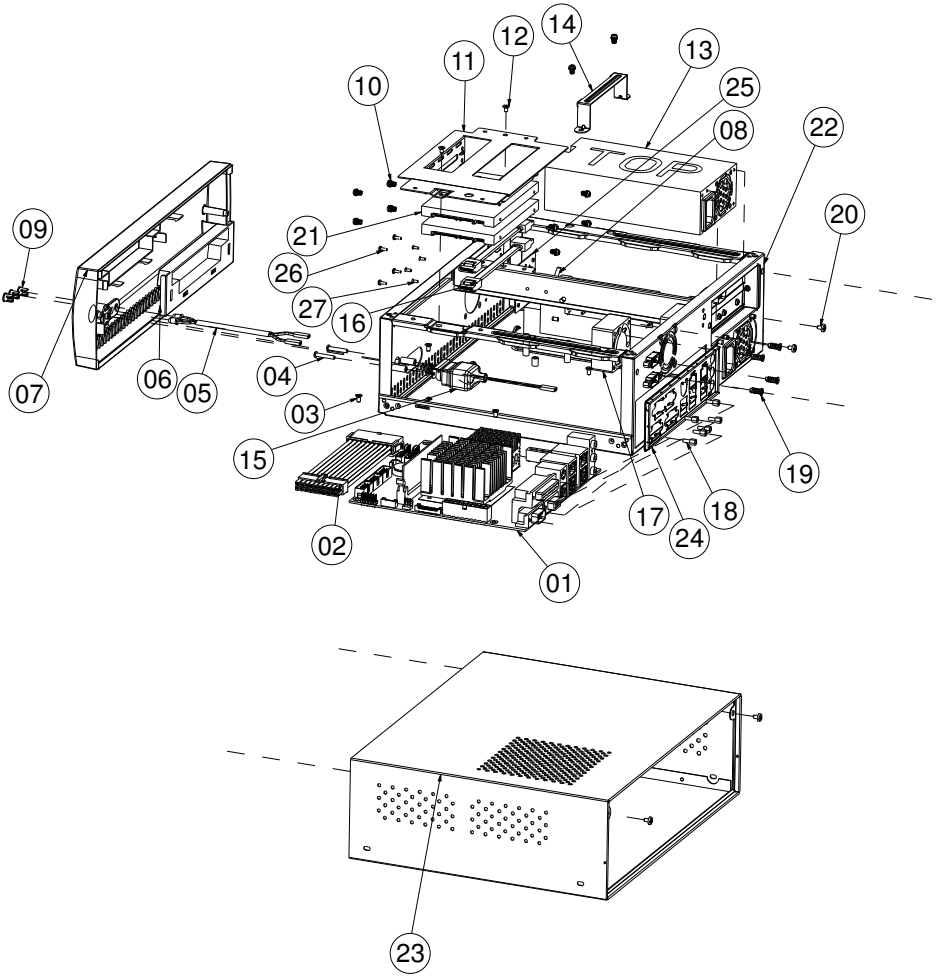
SYSTEM ASSEMBLY

This appendix contains the exploded diagram of theSA-5852 system.

Section includes:

- Exploded Diagram for the Whole System

EXPLODED DIAGRAM FOR THE WHOLE SYSTEM



No.	Name	P/N No.	Qt'y
1	PCBA	BM-0852	1
2	POWER CABLE(20M TO 20F)	27-012-00002073	1
3	FLAT HEAD SCREW	22-215-30060011	4
4	PAN HEAD SCREW	22-222-30018011	2
5	LED CABLE	27-018-08204071	1
6	FRONR PANEL CD-ROM FDD LID	30-003-08410006	1
7	FRONT PANEL STD	30-003-08610006	1
8	PA-6970 SPEAKER	13-500-08280418	1
9	LED HOUSING	30-014-04100009	3
10	SPRING WASHER SCREW	22-232-30060211	10
11	DRIVER BAY	20-006-03001203	1
12	FLAT HEAD SCREW	22-212-30005311	2
13	POWER SUPPLY	--	1
14	POWER SUPPLY HOLDER	20-029-03001082	1
15	POWER SWITCH CABLE	27-012-00002071	1
16	MINI SATA LOCK CABLE	27-008-22704031	2
17	SYSTEM FAN	21-004-04040008	1
18	HEX CU BOSS	22-692-40048051	6
19	FLAT HEAD SCREW	22-212-46011011	4
20	PAN HEAD SCREW	22-622-60005011	4
21	2.5 SATA HDD	52-451-10110102	2
22	INNER CHASSIS ASSY	20-015-03005203	1
23	TOP CHASSIS	20-015-03061203	1
24	BA-0901 I/O SHIELD	80-010-07001259	1
25	SPEAKER BRACKET	20-006-03002005	1
26	PAN HEAD SCREW	22-222-20060011	4
27	FLAT HEAD SCREW	22-115-20005014	4

TECHNICAL SUMMARY

APPENDIX

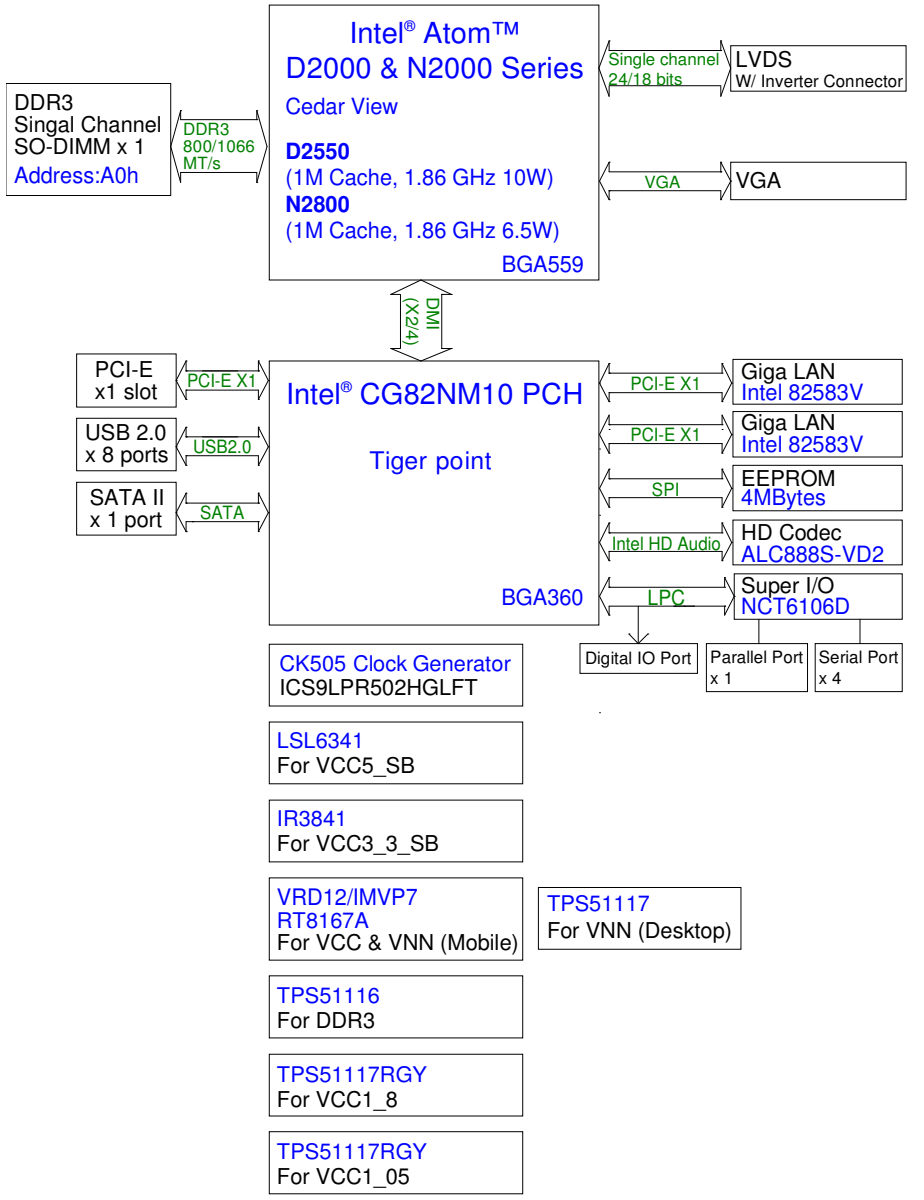
B

This section introduce you the maps concisely.

Sections included:

- Block Diagram
- Interrupt Map
- DMA Channel Map
- I/O Map
- Memory Map
- Watchdog Timer Configuration
- Flash BIOS Update

BLOCK DIAGRAM



INTERRUPT MAP

IRQ	ASSIGNMENT
0	Intel(R) Graphics Media Accelerator 3600 Series
0	System timer
3	Communications Port (COM2)
4	Communications Port (COM1)
6	Communications Port (COM3)
7	Intel(R) N10/ICH7 Family SMBus Controller - 27DA
8	System CMOS/real time clock
13	Numeric data processor
16	Intel(R) N10/ICH7 Family USB Universal Host Controller - 27CB
16	Intel(R) N10/ICH7 Family PCI Express Root Port - 27D0
18	Intel(R) N10/ICH7 Family PCI Express Root Port - 27D4
18	Intel(R) N10/ICH7 Family USB Universal Host Controller - 27CA
19	Standard AHCI 1.0 Serial ATA Controller
19	Intel(R) N10/ICH7 Family PCI Express Root Port - 27D6
19	Intel(R) N10/ICH7 Family USB Universal Host Controller - 27C9
22	High Definition Audio Controller
23	Intel(R) N10/ICH7 Family USB Universal Host Controller - 27C8
23	Intel(R) N10/ICH7 Family USB2 Enhanced Host Controller - 27CC
81	Microsoft ACPI-Compliant System
82	Microsoft ACPI-Compliant System
83	Microsoft ACPI-Compliant System
84	Microsoft ACPI-Compliant System
85	Microsoft ACPI-Compliant System
86	Microsoft ACPI-Compliant System
87	Microsoft ACPI-Compliant System
88	Microsoft ACPI-Compliant System
89	Microsoft ACPI-Compliant System
90	Microsoft ACPI-Compliant System
91	Microsoft ACPI-Compliant System
92	Microsoft ACPI-Compliant System

IRQ	ASSIGNMENT
93	Microsoft ACPI-Compliant System
94	Microsoft ACPI-Compliant System
95	Microsoft ACPI-Compliant System
96	Microsoft ACPI-Compliant System
97	Microsoft ACPI-Compliant System
98	Microsoft ACPI-Compliant System
99	Microsoft ACPI-Compliant System
100	Microsoft ACPI-Compliant System
101	Microsoft ACPI-Compliant System
102	Microsoft ACPI-Compliant System
103	Microsoft ACPI-Compliant System
104	Microsoft ACPI-Compliant System
105	Microsoft ACPI-Compliant System
106	Microsoft ACPI-Compliant System
107	Microsoft ACPI-Compliant System
108	Microsoft ACPI-Compliant System
109	Microsoft ACPI-Compliant System
110	Microsoft ACPI-Compliant System
111	Microsoft ACPI-Compliant System
112	Microsoft ACPI-Compliant System
113	Microsoft ACPI-Compliant System
114	Microsoft ACPI-Compliant System
115	Microsoft ACPI-Compliant System
116	Microsoft ACPI-Compliant System
117	Microsoft ACPI-Compliant System
118	Microsoft ACPI-Compliant System
119	Microsoft ACPI-Compliant System
120	Microsoft ACPI-Compliant System
121	Microsoft ACPI-Compliant System
122	Microsoft ACPI-Compliant System
123	Microsoft ACPI-Compliant System
124	Microsoft ACPI-Compliant System

IRQ	ASSIGNMENT
125	Microsoft ACPI-Compliant System
126	Microsoft ACPI-Compliant System
127	Microsoft ACPI-Compliant System
128	Microsoft ACPI-Compliant System
129	Microsoft ACPI-Compliant System
130	Microsoft ACPI-Compliant System
131	Microsoft ACPI-Compliant System
132	Microsoft ACPI-Compliant System
133	Microsoft ACPI-Compliant System
134	Microsoft ACPI-Compliant System
135	Microsoft ACPI-Compliant System
136	Microsoft ACPI-Compliant System
137	Microsoft ACPI-Compliant System
138	Microsoft ACPI-Compliant System
139	Microsoft ACPI-Compliant System
140	Microsoft ACPI-Compliant System
141	Microsoft ACPI-Compliant System
142	Microsoft ACPI-Compliant System
143	Microsoft ACPI-Compliant System
144	Microsoft ACPI-Compliant System
145	Microsoft ACPI-Compliant System
146	Microsoft ACPI-Compliant System
147	Microsoft ACPI-Compliant System
148	Microsoft ACPI-Compliant System
149	Microsoft ACPI-Compliant System
150	Microsoft ACPI-Compliant System
151	Microsoft ACPI-Compliant System
152	Microsoft ACPI-Compliant System
153	Microsoft ACPI-Compliant System
154	Microsoft ACPI-Compliant System
155	Microsoft ACPI-Compliant System
156	Microsoft ACPI-Compliant System

IRQ	ASSIGNMENT
157	Microsoft ACPI-Compliant System
158	Microsoft ACPI-Compliant System
159	Microsoft ACPI-Compliant System
160	Microsoft ACPI-Compliant System
161	Microsoft ACPI-Compliant System
162	Microsoft ACPI-Compliant System
163	Microsoft ACPI-Compliant System
164	Microsoft ACPI-Compliant System
165	Microsoft ACPI-Compliant System
166	Microsoft ACPI-Compliant System
167	Microsoft ACPI-Compliant System
168	Microsoft ACPI-Compliant System
169	Microsoft ACPI-Compliant System
170	Microsoft ACPI-Compliant System
171	Microsoft ACPI-Compliant System
172	Microsoft ACPI-Compliant System
173	Microsoft ACPI-Compliant System
174	Microsoft ACPI-Compliant System
175	Microsoft ACPI-Compliant System
176	Microsoft ACPI-Compliant System
177	Microsoft ACPI-Compliant System
178	Microsoft ACPI-Compliant System
179	Microsoft ACPI-Compliant System
180	Microsoft ACPI-Compliant System
181	Microsoft ACPI-Compliant System
182	Microsoft ACPI-Compliant System
183	Microsoft ACPI-Compliant System
184	Microsoft ACPI-Compliant System
185	Microsoft ACPI-Compliant System
186	Microsoft ACPI-Compliant System
187	Microsoft ACPI-Compliant System
188	Microsoft ACPI-Compliant System

IRQ	ASSIGNMENT
189	Microsoft ACPI-Compliant System
190	Microsoft ACPI-Compliant System
4294967293	Intel(R) 82583V Gigabit Network Connection #2
4294967294	Intel(R) 82583V Gigabit Network Connection

DMA CHANNELS MAP

TIMER CHANNEL	ASSIGNMENT
Channel 4	Direct memory access controller

I/O MAP

I/O MAP	ASSIGNMENT
0x00000000-0x0000001F	Direct memory access controller
0x00000000-0x0000001F	PCI bus
0x00000010-0x0000001F	Motherboard resources
0x00000020-0x00000021	Programmable interrupt controller
0x00000022-0x0000003F	Motherboard resources
0x00000024-0x00000025	Programmable interrupt controller
0x00000028-0x00000029	Programmable interrupt controller
0x0000002C-0x0000002D	Programmable interrupt controller
0x0000002E-0x0000002F	Motherboard resources
0x00000030-0x00000031	Programmable interrupt controller
0x00000034-0x00000035	Programmable interrupt controller
0x00000038-0x00000039	Programmable interrupt controller
0x0000003C-0x0000003D	Programmable interrupt controller
0x00000040-0x00000043	System timer
0x00000044-0x0000005F	Motherboard resources
0x0000004E-0x0000004F	Motherboard resources
0x00000050-0x00000053	System timer
0x00000061-0x00000061	Motherboard resources
0x00000062-0x00000063	Motherboard resources
0x00000063-0x00000063	Motherboard resources
0x00000065-0x0000006F	Motherboard resources
0x00000065-0x0000006F	Motherboard resources
0x00000067-0x00000067	Motherboard resources
0x00000070-0x00000077	System CMOS/real time clock
0x00000070-0x00000077	Motherboard resources
0x00000072-0x0000007F	Motherboard resources
0x00000080-0x00000080	Motherboard resources
0x00000080-0x00000080	Motherboard resources
0x00000081-0x00000091	Direct memory access controller
0x00000084-0x00000086	Motherboard resources

I/O MAP	ASSIGNMENT
0x00000088-0x00000088	Motherboard resources
0x0000008C-0x0000008E	Motherboard resources
0x00000090-0x0000009F	Motherboard resources
0x00000092-0x00000092	Motherboard resources
0x00000093-0x0000009F	Direct memory access controller
0x000000A0-0x000000A1	Programmable interrupt controller
0x000000A2-0x000000BF	Motherboard resources
0x000000A4-0x000000A5	Programmable interrupt controller
0x000000A8-0x000000A9	Programmable interrupt controller
0x000000AC-0x000000AD	Programmable interrupt controller
0x000000B0-0x000000B1	Programmable interrupt controller
0x000000B2-0x000000B3	Motherboard resources
0x000000B4-0x000000B5	Programmable interrupt controller
0x000000B8-0x000000B9	Programmable interrupt controller
0x000000BC-0x000000BD	Programmable interrupt controller
0x000000C0-0x000000DF	Direct memory access controller
0x000000E0-0x000000EF	Motherboard resources
0x000000F0-0x000000F0	Numeric data processor
0x000001CE-0x000001CF	VgaSave
0x00000290-0x0000029F	Motherboard resources
0x000002A0-0x000002AF	Motherboard resources
0x000002E8-0x000002EF	VgaSave
0x000002F8-0x000002FF	Communications Port (COM2)
0x000003B0-0x000003BB	VgaSave
0x000003C0-0x000003DF	VgaSave
0x000003E8-0x000003EF	Communications Port (COM3)
0x000003F8-0x000003FF	Communications Port (COM1)
0x00000400-0x0000047F	Motherboard resources
0x00000400-0x0000047F	Motherboard resources
0x000004D0-0x000004D1	Motherboard resources
0x000004D0-0x000004D1	Programmable interrupt controller
0x00000500-0x0000057F	Motherboard resources

I/O MAP	ASSIGNMENT
0x00000500-0x0000057F	Motherboard resources
0x00000600-0x0000061F	Motherboard resources
0x00000680-0x0000069F	Motherboard resources
0x000006A0-0x000006AF	Motherboard resources
0x000006B0-0x000006EF	Motherboard resources
0x00000D00-0x0000FFFF	PCI bus
0x00001000-0x0000100F	Motherboard resources
0x0000D000-0x0000DFFF	Intel(R) N10/ICH7 Family PCI Express Root Port - 27D6
0x0000E000-0x0000EFFF	Intel(R) N10/ICH7 Family PCI Express Root Port - 27D4
0x0000F000-0x0000F01F	Intel(R) N10/ICH7 Family SMBus Controller - 27DA
0x0000F020-0x0000F02F	Standard AHCI 1.0 Serial ATA Controller
0x0000F040-0x0000F05F	Intel(R) N10/ICH7 Family USB Universal Host Controller - 27CB
0x0000F060-0x0000F07F	Intel(R) N10/ICH7 Family USB Universal Host Controller - 27CA
0x0000F080-0x0000F09F	Intel(R) N10/ICH7 Family USB Universal Host Controller - 27C9
0x0000F0A0-0x0000F0BF	Intel(R) N10/ICH7 Family USB Universal Host Controller - 27C8
0x0000F0C0-0x0000F0C3	Standard AHCI 1.0 Serial ATA Controller
0x0000F0D0-0x0000F0D7	Standard AHCI 1.0 Serial ATA Controller
0x0000F0E0-0x0000F0E3	Standard AHCI 1.0 Serial ATA Controller
0x0000F0F0-0x0000F0F7	Standard AHCI 1.0 Serial ATA Controller
0x0000F100-0x0000F107	Intel(R) Graphics Media Accelerator 3600 Series
0x0000FFFF-0x0000FFFF	Motherboard resources
0x0000FFFF-0x0000FFFF	Motherboard resources

MEMORY MAP

MEMORY MAP	ASSIGNMENT
0xFED00000-0xFED003FF	High precision event timer
0xDFF04000-0xDFF043FF	Standard AHCI 1.0 Serial ATA Controller
0xDFE00000-0xDFEFFFFF	Intel(R) N10/ICH7 Family PCI Express Root Port - 27D4
0xDFE00000-0xDFEFFFFF	Intel(R) 82583V Gigabit Network Connection
0xDFD00000-0xDFDFFFFF	Intel(R) N10/ICH7 Family PCI Express Root Port - 27D6
0xDFD00000-0xDFDFFFFF	Intel(R) 82583V Gigabit Network Connection #2
0xDFF00000-0xDFF03FFF	High Definition Audio Controller
0xDFC00000-0xDFCFFFFF	Intel(R) Graphics Media Accelerator 3600 Series
0xDFD20000-0xDFD23FFF	Intel(R) 82583V Gigabit Network Connection #2
0xFF000000-0xFFFFFFFF	Intel(R) 82802 Firmware Hub Device
0xFF000000-0xFFFFFFFF	Intel(R) 82802 Firmware Hub Device
0xFED14000-0xFED19FFF	System board
0xE0000000-0xEFFFFFFF	System board
0xFED1C000-0xFED1FFFF	Motherboard resources
0xFED1C000-0xFED1FFFF	Motherboard resources
0x0000-0x3FFF	Motherboard resources
0x0000-0x3FFF	Motherboard resources
0x0000-0x3FFF	Motherboard resources
0xFED45000-0xFED8FFFF	Motherboard resources
0xDFE20000-0xDFE23FFF	Intel(R) 82583V Gigabit Network Connection
0xFEC00000-0xFEC00FFF	Motherboard resources
0xFEE00000-0xFEE00FFF	Motherboard resources
0xFED20000-0xFED8FFFF	Motherboard resources
0xFFC00000-0xFFFFFFFF	Motherboard resources
0xDFF05000-0xDFF053FF	Intel(R) N10/ICH7 Family USB2 Enhanced Host Controller - 27CC
0xA0000-0xBFFFF	PCI bus
0xA0000-0xBFFFF	VgaSave

MEMORY MAP	ASSIGNMENT
0xC0000-0xDFFFF	PCI bus
0xE0000-0xEFFFF	PCI bus
0xF0000-0xFFFFF	PCI bus
0x3F800000-0x3FFFFFFF	PCI bus
0x40000000-0xFEBFFFFF	PCI bus

WATCHDOG TIMER CONFIGURATION

The I/O port address of the watchdog timer is 2E (hex) and 2F (hex). 2E (hex) is the address port. 2F (hex) is the data port. User must first assign the address of register by writing address value into address port 2E (hex), then write/read data to/from the assigned register through data port 2F (hex).

Configuration Sequence

To program NCT6106D configuration registers, the following configuration sequence must be followed:

1. Enter the extended function mode
2. Configure the configuration registers
3. Exit the extended function mode

1. Enter the extended function mode

To place the chip into the Extended Function Mode, two successive writes of 0x87 must be applied to Extended Function Enable Registers (EFERs, i.e. 2Eh or 4Eh).

2. Configure the configuration registers

The chip selects the Logical Device and activates the desired Logical Devices through Extended Function Index Register (EFIR) and Extended Function Data Register (EFDR). The EFIR is located at the same address as the EFER, and the EFDR is located at address (EFIR+1). First, write the Logical Device Number (i.e. 0x07) to the EFIR and then write the number of the desired Logical Device to the EFDR. If accessing the Chip (Global) Control Registers, this step is not required. Secondly, write the address of the desired configuration register within the Logical Device to the EFIR and then write (or read) the desired configuration register through the EFDR.

3. Exit the extended function mode

To exit the Extended Function Mode, writing 0xAA to the EFER is required. Once the chip exits the Extended Function Mode, it is in the normal running mode and is ready to enter the configuration mode.

Example Program

Enable watchdog timer and set 30 sec. as timeout interval

```
;------ Enter to extended function mode ------------------------------------------------------
Mov     dx,     2eh
Mov     al,     87h
Out     dx,     al
Out     dx,     al
;------ Select Logical Device 8 of watchdog timer ----------------------------------------
Mov     al,     07h
Out     dx,     al
Inc     dx
Mov     al,     08h
Out     dx,     al
;------ Set second as counting unit ------------------------------------------------------
Dec     dx
Mov     al,     0f0h
Out     dx,     al
Inc     dx
In      al,     dx
And     al,     not 08h
Out     dx,     al
;------ Set timeout interval as 30seconds and start counting ----------------------------
Dec     dx
Mov     al,     0f1h
Out     dx,     al
Inc     dx
Mov     al,     30
Out     dx,     al
;------ Exit the extended function mode ------------------------------------------------------
Dec     dx
Mov     al,     0aah
Out     dx,     al
```

Flash BIOS Update

I. Before System BIOS update

1. Prepare a bootable media (ex. USB storage device) which can boot system to DOS prompt.
2. Download and save the BIOS file (ex. 58520P01.ROM) to the bootable device.
3. Copy AMI flash utility – AFUDOS.exe into bootable device.

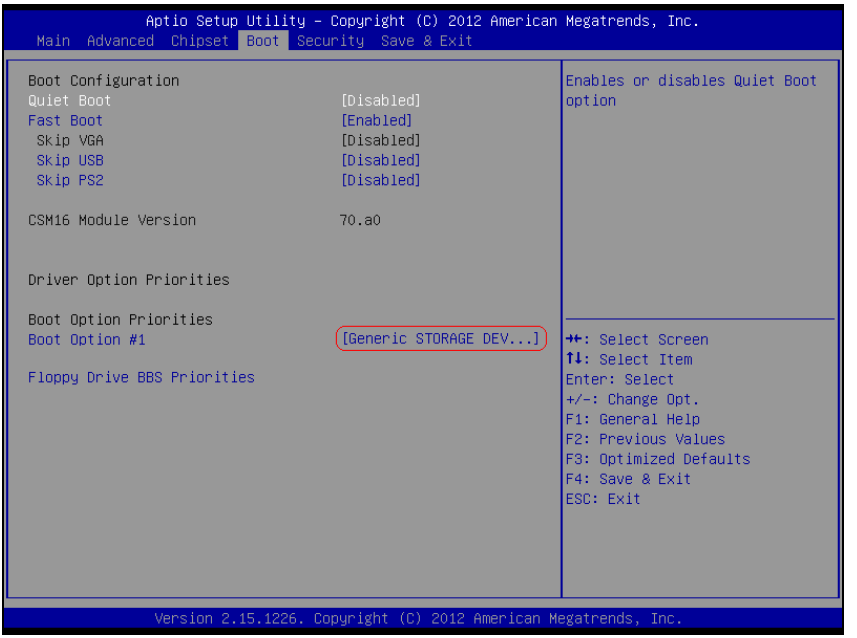
```
C:\>dir


 Volume in drive C is PROTECH
 Volume Serial Number is 3CCE-a150
 Directory of C:\

                     <DIR>        12-14-12   5.50P
                     <DIR>        12-14-12   5.50P
AFUDOS    EXE       159,008        03-04-10   4.16p
README    TXT         2,684        03-04-10   2.33p
AFUDOS    TXT         2,906        03-04-10   3.02p
58520P01  ROM     4,194,304        15-12-14   3.32p
          4 file(d)          4,358,902 bytes
          2 dir(s)        787,197,952 bytes free

C:\>
```

4. Make sure the target system can first boot to the bootable device.
   a. Connect the bootable USB device.
   b. Turn on the computer and press <F2> or <Del> key during boot to enter BIOS Setup.
   c. System will go into the BIOS setup menu.
   d. Select [Boot] menu.
   e. Select [Hard Drive BBS Priorities], set the USB bootable device to be the 1st boot device.
   f. Press <F4> key to save configuration and exit the BIOS setup menu.


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Boot Configuration
Quiet Boot [Disabled]
Fast Boot [Enabled]
Skip VGA [Disabled]
Skip USB [Disabled]
Skip PS2 [Disabled]
CSM16 Module Version 70.a0
Driver Option Priorities
Boot Option Priorities
Boot Option #1 [Generic STORAGE DEV...]
Floppy Drive BBS Priorities
Enables or disables Quiet Boot option
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.

II. AFUDOS Command for System BIOS Update

AFUDOS.exe is the AMI firmware update utility; the command line is shown as below:

AFUDOS <ROM File Name> [option1] [option2]…

You can type AFUDOS /? to see all the definition of each control options. The recommended options for BIOS ROM update consist of following parameters:

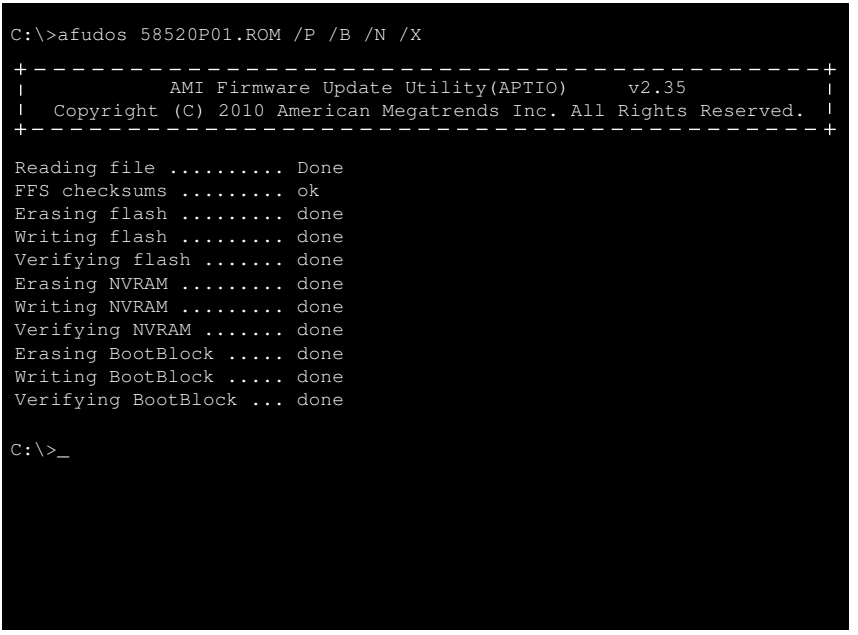
/P: program main BIOS image
/B: program Boot Block
/N: program NVRAM
/X: don't check ROM ID

III. BIOS update procedure

1. Use the bootable USB device to boot up system into the MS-DOS command prompt.
2. Type in AFUDOS 5852xxxx.ROM /p /b /n /x and press enter to start the flash procedure.

   Note: xxxx means the BIOS revision part, ex. 0P01…

3. During the update procedure, you will see the BIOS update process status and its percentage. Beware! Do not turn off system power or reset your computer if the whole procedure are not complete yet, or it may crash the BIOS ROM and make system unable to boot up next time.
4. After BIOS update procedures is complete, the messages should be like the figure shown below:



5. You can restart the system and boot up with new BIOS now.
6. Update is complete after restart.

7. Verify during following boot that the BIOS version displayed at initialization screen has changed.