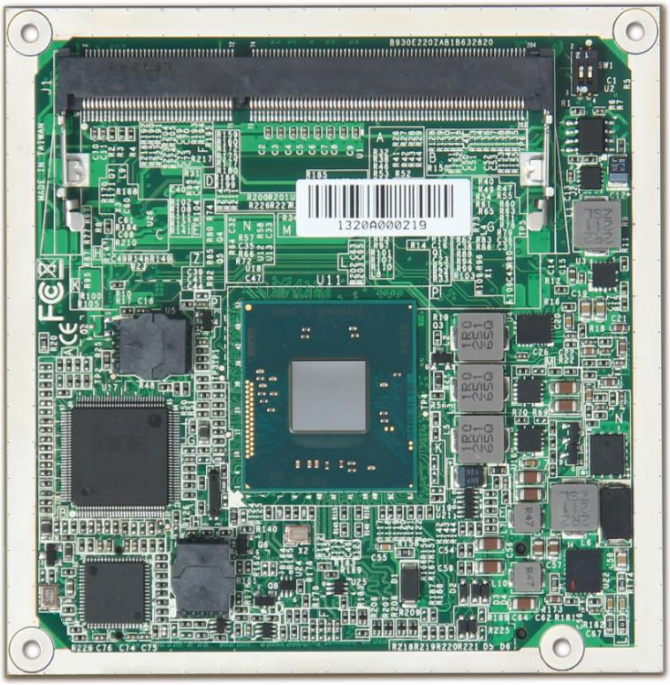
PCOM-B632VG

COM Express Type VI Non-ECC Module

User Manual



Version 1.2

Preface

Revision History

Table 1. Revision history

No.	Date	Author	Description
0.0	Nov.4. 2013	Portwell	Document started.
1.0	Feb.13. 2014	Portwell	Chapter 4 BIOS Setting Information updated.
1.1	Mar.26. 2014	Portwell	Chapter 2 HW configuration update.
1.2	Oct.27. 2014	Portwell	Update pin definition of RoW

Notational Conventions

This document lists and rates the required features of the product and provides some informative text to help the reader understand the primary positioning and target of the platform and product.

Table of Contents

How to Use This Manual

The manual describes how to configure your PCOM-B632VG to meet various operating requirements. It is divided into five chapters, with each chapter addressing a basic concept and operation of this COM Express Module.

Chapter 1: System Overview. Presents what you have in the box and give you an overview of the product specifications and basic system architecture for this model of single board computer.

Chapter 2: **Hardware Configuration.** Show the definition and location of Jumpers and Connectors that you can easily configure your system.

Chapter 3: **System Installation.** Describes how to properly mount the CPU, main memory to get a safe installation and provides a programming guide of Watch Dog Timer function.

Chapter 4: **BIOS Setup Information.** Specifies the meaning of each setup parameters, how to get advanced BIOS performance and update new BIOS. In addition, POST checkpoint list will give users some guidelines of trouble-shooting.

Chapter 5: **Trouble shooting.**

The content of this manual and EC declaration document is subject to change without prior notice. These changes will be incorporated in new editions of the document. **Portwell** may make supplement or change in the products described in this document at any time.

Updates to this manual, technical clarification, and answers to frequently asked questions will be shown on the following web site: http://www.portwell.com.tw

Chapter 1
System Overview

1.1 Introduction

COM Express Type 6, holds by PICMG (PCI Industrial Computer Manufacturer Group) defines new industrial computer platform in “Module board” and “Carrier board” architecture. The “Module board” equipped processor or its socket, chipset, memory or memory socket and single Ethernet controller on it. The On-The-Shelf Module board allows users to create their own Carrier board easily and quickly since most critical parts are ready on Module board. COM Express Module board offers expansion interfaces such as PCI Express, PCI, SATA, LPC, HDMI, DP, DVI, and Audio etc. that could support variety functions depending on Carrier board design.

The Carrier board was customized design to fit in different mechanical requirements. In the meanwhile, its variety functions were also customized to meet the application. Compare to the platform that designed from nothing, COM Express architecture platform only needs to develop Carrier board. Users could keep their know-how which related to their core competence in the Carrier board.

PCOM-B632 is Type VI COM Express Module board equipped Intel BayTrail BGA processor (1.9GHz Quad Core、1.75GHz / 1.46GHz / 1.33GHz Dual Core and 1.46GHz single core processor on-board), one DDR3L SO-DIMM sockets, one Gigabit Ethernet controller on it to provide expansion interfaces – PCI Express (x4 / x1), eDP port (supports HDMI/DP/DVI), SATA and so on.

1.2 Check List

The PCOM-B632VG series package should cover the following basic items

- ✓ One PCOM-B632VG module board

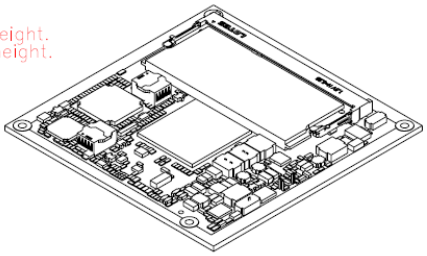
If any of these items is damaged or missing, please contact your vendor and keep all packing materials for future replacement and maintenance.

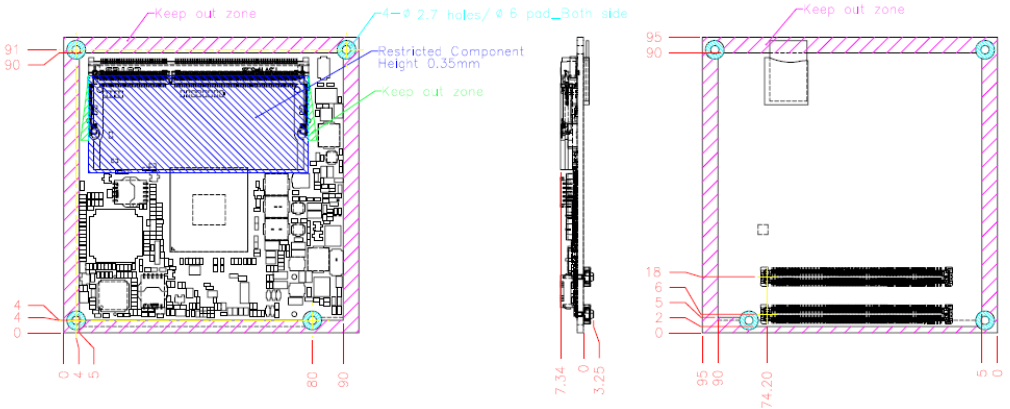
1.3 Product Specification

#	Requirement	Detailed Description
1	Form Factor	Type 6, Compact Form Factor COM Express
2	Processor	- Intel BayTrail-E3845, 1.91GHz 2MB Cache 4 Core (10W) - Intel BayTrail-E3827, 1.75GHz 1MB Cache 2 Core (8W) - Intel BayTrail-E3826, 1.46GHz 1MB Cache 2 Core (7W) - Intel BayTrail-E3825, 1.33GHz 1MB Cache 2 Core (6W) - Intel BayTrail-E3815, 1.46GHz 512KB Cache 1 Core (5W)
3	Chipset	-SoC
4	Memory	-Supports up to 8GB DDR3L 1067/1333 MT/s SDRAM on one 204-pin SODIMM sockets.
5	BIOS	- Phoenix UEFI
6	Ethernet	Intel® Ethernet Controller I210IT (NC Sideband Interface, Jumbo frames , 1000Base-T)
7	Graphic	Intel® Gen7 Graphics supports DX11.1, OpenGL 3.0 / ES2.0
8	Display	eDP: Resolution up to 2560x1600 VGA: Resolution up to 2560x1600 DP: Resolution up to 2560x1600
9	PCI Express	PCI Express Gen2 (5.0GT/s) x 4, x 2, x 1
10	SATA	2 x SATA 3.0Gb/s
11	USB Port	4 x USB 1.0/2.0(HS/FS), 1 x USB3.0(SS).
12	Watchdog Timer	Programmable via S/W from 1 sec to 255 min
13	LPC	LPC Interface (4-bit-wide bus operating at 4 times the clock speed, 33.3MHz)
14	Hardware Monitoring	-ITE 8528 ; CPU, Voltage , Temperature
15	Connector	COM Express Connector x2
16	Audio	Intel® High Definition Audio (2x channels delivering 192-KHz 32-bits, and 8x channels delivering 96-KHz 32-Bits)
17	Board Size	95x95mm
18	Environment	-Operation Temperature: -40° C ~ +85° C (-40° F~+185° F) -Relative Humidity: 5~95%

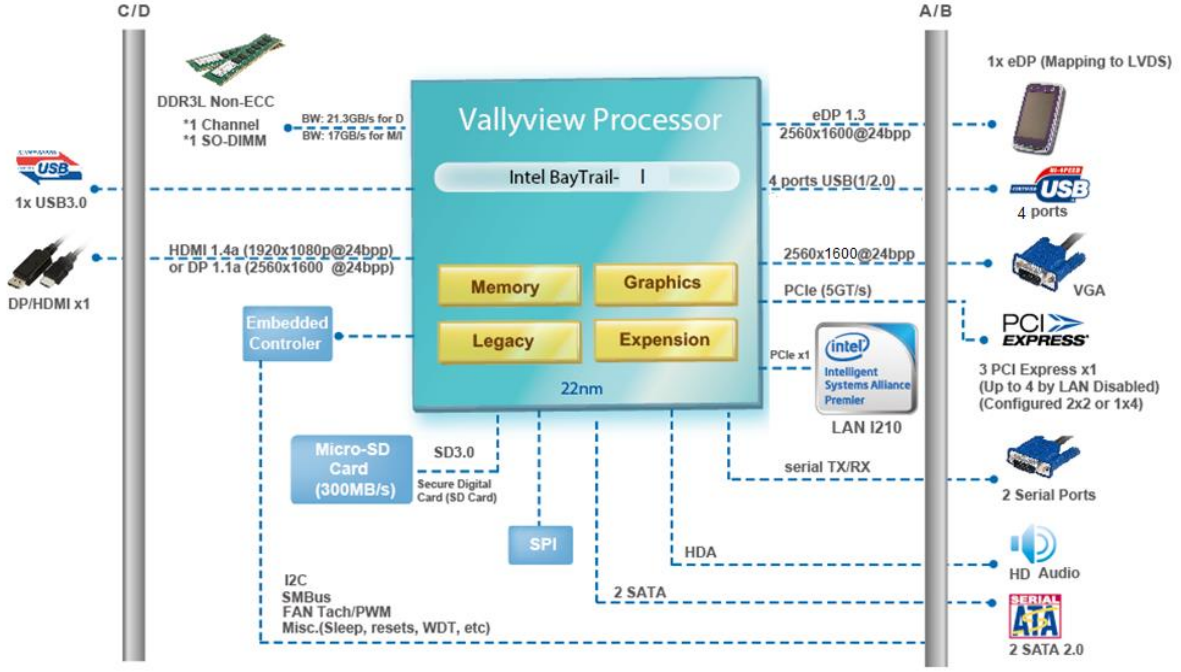
1.4 Mechanical Drawing

NOTE:
- Restricted component height on the top side of the module : 8 mm
- Restricted component height on the bottom side of the module : 3.8 mm
- Do not place plugging component in the zone of restricted component height.
- Do not place DIP type component in the zone of restricted component height.



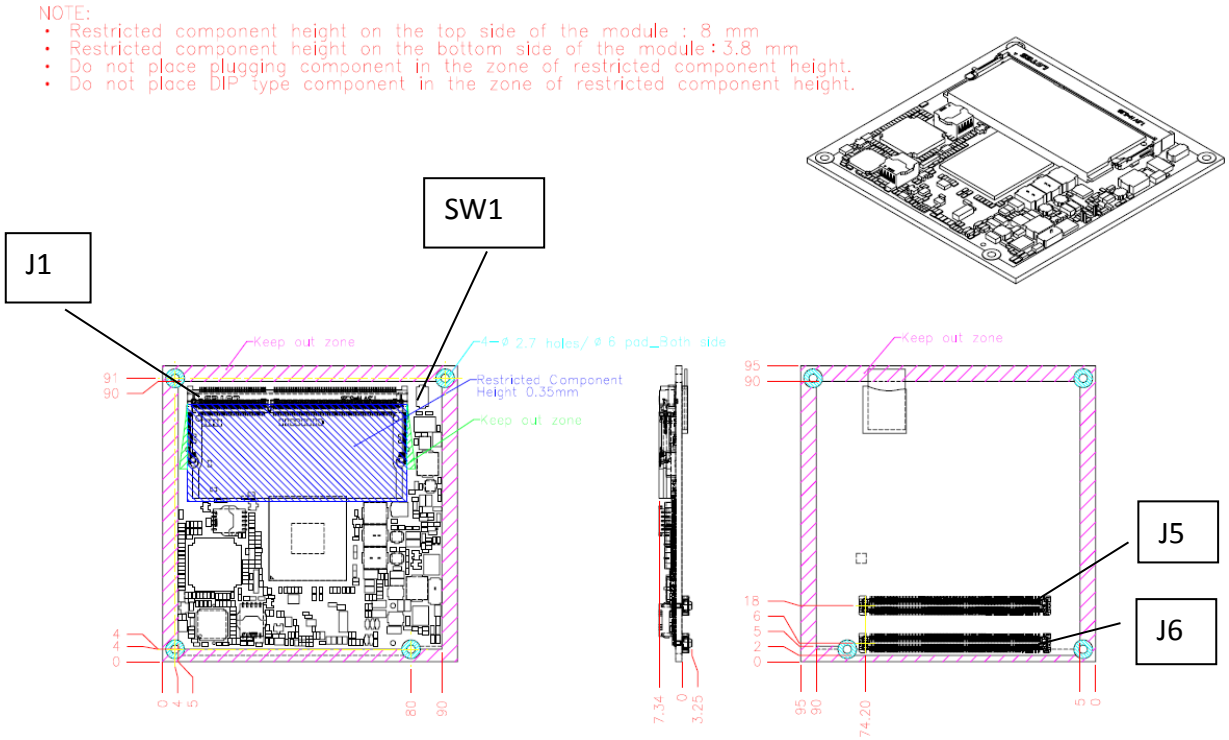


1.5 System Architecture



Chapter 2
Hardware Configuration

This chapter indicates connectors' Pin Assignment.



2.1 Connector Allocation

Connector Function List

Connector	Function	Remark
J1	DDR3L channel connector.	
J5	COM Express connector raw C and D	
J6	COM Express connector raw A and B	

SW1	Function	Remark
1-4	ATX_DETECT	Default Off
2-3	BIOS_RECOVERY	Default Off

Pin Assignment of Connectors

J3				J4			
Row A		Row B		Row C		Row D	
Pin No	Signal Description	Pin No	Signal Description	Pin No	Signal Description	Pin No	Signal Description
A1	GND (FIXED)	B1	GND (FIXED)	C1	GND (FIXED)	D1	GND (FIXED)
A2	GBE0_MDI3-	B2	GBE0_ACT#	C2	GND	D2	GND

A3	GBE0_MDI3+	B3	LPC_FRAME#	C3	USB0_SSRX-	D3	USB0_SSTX-
A4	GBE0_LINK100#	B4	LPC_AD0	C4	USB0_SSRX+	D4	USB0_SSTX+
A5	GBE0_LINK1000#	B5	LPC_AD1	C5	GND	D5	GND
A6	GBE0_MDI2-	B6	LPC_AD2	C6	NC	D6	NC
A7	GBE0_MDI2+	B7	LPC_AD3	C7	NC	D7	NC
A8	GBE0_LINK#	B8	NC	C8	GND	D8	GND
A9	GBE0_MDI1-	B9	NC	C9	NC	D9	NC
A10	GBE0_MDI1+	B10	LPC_PCLK	C10	NC	D10	NC
A11	GND (FIXED)	B11	GND (FIXED)	C11	GND (FIXED)	D11	GND (FIXED)
A12	GBE0_MDI0-	B12	PWRBTN#	C12	NC	D12	NC
A13	GBE0_MDI0+	B13	SMB_CLK	C13	NC	D13	NC
A14	GBE0_CTREF	B14	SMB_DAT	C14	GND	D14	GND
A15	SUS_S3#	B15	SMB_ALERT#	C15	NC	D15	DDI0_AUXP
A16	SATA0_TX+	B16	SATA1_TX+	C16	NC	D16	DDI0_AUXN
A17	SATA0_TX-	B17	SATA1_TX-	C17	NC	D17	NC
A18	SUS_S4#	B18	SUS_STAT#	C18	NC	D18	NC
A19	SATA0_RX+	B19	SATA1_RX+	C19	NC	D19	NC
A20	SATA0_RX-	B20	SATA1_RX-	C20	NC	D20	NC
A21	GND (FIXED)	B21	GND (FIXED)	C21	GND (FIXED)	D21	GND (FIXED)
A22	NC	B22	NC	C22	NC	D22	NC
A23	NC	B23	NC	C23	NC	D23	NC
A24	SUS_S5#	B24	PWROK	C24	DDI0_HPD	D24	NC
A25	NC	B25	NC	C25	NC	D25	NC
A26	NC	B26	NC	C26	NC	D26	DDI0_TXP0
A27	BATLOW#	B27	WDT	C27	NC	D27	DDI0_TXN0
A28	ATA_ACT#	B28	NC	C28	NC	D28	NC
A29	HDA_SYNC	B29	HDA_SDIN1	C29	NC	D29	DDI0_TXP1
A30	HDA_RST#	B30	HDA_SDIN0	C30	NC	D30	DDI0_TXN1
A31	GND (FIXED)	B31	GND (FIXED)	C31	GND (FIXED)	D31	GND (FIXED)
A32	HDA_BITCLK	B32	SPKR	C32	NC	D32	DDI0_TXP2
A33	HDA_SDOUT	B33	I2C_CLK	C33	NC	D33	DDI0_TXN2
A34	BIOS_DIS0#	B34	I2C_DAT	C34	NC	D34	DDI0_AUX_SEL
A35	NC	B35	THRM#	C35	NC	D35	NC
A36	NC	B36	NC	C36	NC	D36	DDI0_TXP3
A37	NC	B37	NC	C37	NC	D37	DDI0_TXN3
A38	NC	B38	USB_4_5_OC#	C38	NC	D38	NC

A39	HSIC_0_STROBE	B39	HSIC_1_STROBE	C39	NC	D39	NC
A40	HSIC_0_DATA	B40	HSIC_1_DATA	C40	NC	D40	NC
A41	GND (FIXED)	B41	GND (FIXED)	C41	GND (FIXED)	D41	GND (FIXED)
A42	USB2-	B42	USB3-	C42	NC	D42	NC
A43	USB2+	B43	USB3+	C43	NC	D43	NC
A44	USB_2_3_OC#	B44	USB_0_1_OC#	C44	NC	D44	NC
A45	USB0-	B45	USB1-	C45	NC	D45	NC
A46	USB0+	B46	USB1+	C46	NC	D46	NC
A47	VCC_RTC	B47	EXCD1_PERST#	C47	NC	D47	NC
A48	EXCD0_PERST#	B48	EXCD1_CPPE#	C48	NC	D48	NC
A49	EXCD0_CPPE#	B49	SYS_RST#	C49	NC	D49	NC
A50	LPC_SERIRQ	B50	CB_RESET#	C50	NC	D50	NC
A51	GND (FIXED)	B51	GND (FIXED)	C51	GND (FIXED)	D51	GND (FIXED)
A52	NC	B52	NC	C52	NC	D52	NC
A53	NC	B53	NC	C53	NC	D53	NC
A54	GPI0	B54	GPO1	C54	NC	D54	NC
A55	NC	B55	NC	C55	NC	D55	NC
A56	NC	B56	NC	C56	NC	D56	NC
A57	GND	B57	GPO2	C57	NC	D57	NC
A58	NC	B58	NC	C58	NC	D58	NC
A59	NC	B59	NC	C59	NC	D59	NC
A60	GND (FIXED)	B60	GND (FIXED)	C60	GND (FIXED)	D60	GND (FIXED)
A61	PCIE_TX2+	B61	PCIE_RX2+	C61	NC	D61	NC
A62	PCIE_TX2-	B62	PCIE_RX2-	C62	NC	D62	NC
A63	GPI1	B63	GPO3	C63	NC	D63	NC
A64	PCIE_TX1+	B64	PCIE_RX1+	C64	NC	D64	NC
A65	PCIE_TX1-	B65	PCIE_RX1-	C65	NC	D65	NC
A66	GND	B66	WAKE0#	C66	NC	D66	NC
A67	GPI2	B67	WAKE1#	C67	NC	D67	GND
A68	PCIE_TX0+	B68	PCIE_RX0+	C68	NC	D68	NC
A69	PCIE_TX0-	B69	PCIE_RX0-	C69	NC	D69	NC
A70	GND (FIXED)	B70	GND (FIXED)	C70	GND (FIXED)	D70	GND (FIXED)
A71	DDI1_TXP2	B71	NC	C71	NC	D71	NC
A72	DDI1_TXN2	B72	NC	C72	NC	D72	NC
A73	DDI1_TXP1	B73	NC	C73	GND	D73	GND
A74	DDI1_TXN1	B74	NC	C74	NC	D74	NC

A75	DDI1_TXP0	B75	NC	C75	NC	D75	NC
A76	DDI1_TXN0	B76	NC	C76	GND	D76	GND
A77	DDI1_VDDEN	B77	NC	C77	NC	D77	NC
A78	NC	B78	NC	C78	NC	D78	NC
A79	NC	B79	DDI1_BKLT_EN	C79	NC	D79	NC
A80	GND (FIXED)	B80	GND (FIXED)	C80	GND (FIXED)	D80	GND (FIXED)
A81	DDI1_TXP3	B81	NC	C81	NC	D81	NC
A82	DDI1_TXN3	B82	NC	C82	NC	D82	NC
A83	DDI1_ AUXP	B83	DDI1_BKLT_CTRL	C83	NC	D83	NC
A84	DDI1_ AUXN	B84	VCC_5V_SBY	C84	GND	D84	GND
A85	GPI3	B85	VCC_5V_SBY	C85	NC	D85	NC
A86	NC	B86	VCC_5V_SBY	C86	NC	D86	NC
A87	DDI1_HPD	B87	VCC_5V_SBY	C87	GND	D87	GND
A88	PCIE0_CK_REF+	B88	BIOS_DIS1#	C88	NC	D88	NC
A89	PCIE0_CK_REF-	B89	VGA_RED	C89	NC	D89	NC
A90	GND (FIXED)	B90	GND (FIXED)	C90	GND (FIXED)	D90	GND (FIXED)
A91	SPI_POWER	B91	VGA_GRN	C91	NC	D91	NC
A92	SPI_MISO	B92	VGA_BLU	C92	NC	D92	NC
A93	GPO0	B93	VGA_HSYNC	C93	GND	D93	GND
A94	SPI_CLK	B94	VGA_VSYNC	C94	NC	D94	NC
A95	SPI_MOSI	B95	VGA_DDC_CLK	C95	NC	D95	NC
A96	NC	B96	VGA_DDC_DAT	C96	GND	D96	GND
A97	NC	B97	SPI_CS#	C97	NC	D97	NC
A98	SER0_TX	B98	NC	C98	NC	D98	NC
A99	SER0_RX	B99	NC	C99	NC	D99	NC
A100	GND (FIXED)	B100	GND (FIXED)	C100	GND (FIXED)	D100	GND (FIXED)
A101	SER1_TX	B101	FAN_PWNOUT	C101	NC	D101	NC
A102	SER1_RX	B102	FAN_TACHIN	C102	NC	D102	NC
A103	LID#	B103	SLEEP#	C103	GND	D103	GND
A104	VCC_12V	B104	VCC_12V	C104	VCC_12V	D104	VCC_12V
A105	VCC_12V	B105	VCC_12V	C105	VCC_12V	D105	VCC_12V
A106	VCC_12V	B106	VCC_12V	C106	VCC_12V	D106	VCC_12V
A107	VCC_12V	B107	VCC_12V	C107	VCC_12V	D107	VCC_12V
A108	VCC_12V	B108	VCC_12V	C108	VCC_12V	D108	VCC_12V
A109	VCC_12V	B109	VCC_12V	C109	VCC_12V	D109	VCC_12V
A110	GND (FIXED)	B110	GND (FIXED)	C110	GND (FIXED)	D110	GND (FIXED)

Chapter 3
System Installation

This chapter provides you with instructions to set up your system. The additional information is enclosed to help you set up onboard PCI device and handle Watch Dog Timer (WDT) and operation of GPIO in software programming.

3.1 Intel® Valleyview CPU

Intel® E3845 (4 core, 10W, 1.91GHz, 1333MT)
Intel® E3827 (2 core, 8W, 1.75GHz, 1333MT)
Intel® E3826 (2 core, 7W, 1.46GHz, 1067MT)
Intel® E3825 (2 core, 6W, 1.33GHz, 1067MT)
Intel® E3815 (1 core, 5W, 1.46GHz, 1067MT)

3.2 Main Memory

PCOM-B632 provides 1 x 204-pin SO-DIMM sockets which supports 1333 MT/s DDR3L-SDRAM (1.35V) as main memory, Non-ECC (Error Checking and Correcting),. The maximum memory can be up to 8GB. Memory clock and related settings can be detected by BIOS via SPD interface.

Watch out the contact and lock integrity of memory module with socket, it will impact on the system reliability. Follow normal procedures to install memory module into memory socket. Before locking, make sure that all modules have been fully inserted into the card slots.

3.3 Installing the Single Board Computer

To install your PCOM-B632 into standard chassis or proprietary environment, please perform the following:

Step 1: Check all jumpers setting on proper position
Step 2: Install and configure CPU and memory module on right position
Step 3: Place PCOM-B632 into the dedicated position in the system
Step 4: Attach cables to existing peripheral devices and secure it

WARNING
Please ensure that SBC is properly inserted and fixed by mechanism.

Note:
Please refer to section 3.3.1 to 3.3.6 to install INF/VGA/LAN/Audio/Sideband Fabric

Device/Trusted Execution Engine drivers.

3.3.1 Chipset Component Driver

PCOM-B632 uses state-of-art Intel® BayTrail-I chipset. It's a new chipset that some old operating systems might not be able to recognize. To overcome this compatibility issue, for Windows Operating Systems such as Windows 8, please install its INF before any of other Drivers are installed. You can find very easily this chipset component driver in PCOM-B632 CD-title

3.3.2 Intel® Gen7 Graphic Controller

PCOM-B632 has integrated Intel® Gen7 Graphic which supports DX11, OpenGL3.2. It is the most advanced design to gain an outstanding graphic performance. PCOM-B632 supports VGA, eDP **(Optional)**, DP (1.1a) **(Optional)**, HDMI **(Optional)** and dual display **(Optional)**. This combination makes PCOM-B632 an excellent piece of multimedia hardware.

Drivers Support

Please find the Graphic driver in the PCOM-B632 CD-title. The driver supports Windows 8.

3.3.3 Intel I210LM Gigabit Ethernet Controller

Drivers Support

Please find Intel I210LM LAN driver in /Ethernet directory of PCOM-B632 CD-title. The driver supports Windows 8.

3.3.4 Intel HD Audio Controller

Please find Intel® High Definition Audio driver form PCOM-B632 CD-title. The driver supports Windows 8.

3.3.5 Intel Sideband Fabric Device

Please find Intel® Sideband Fabric Device driver form PCOM-B632 CD-title. The driver supports Windows 8.

3.3.6 Intel Trusted Execution Engine

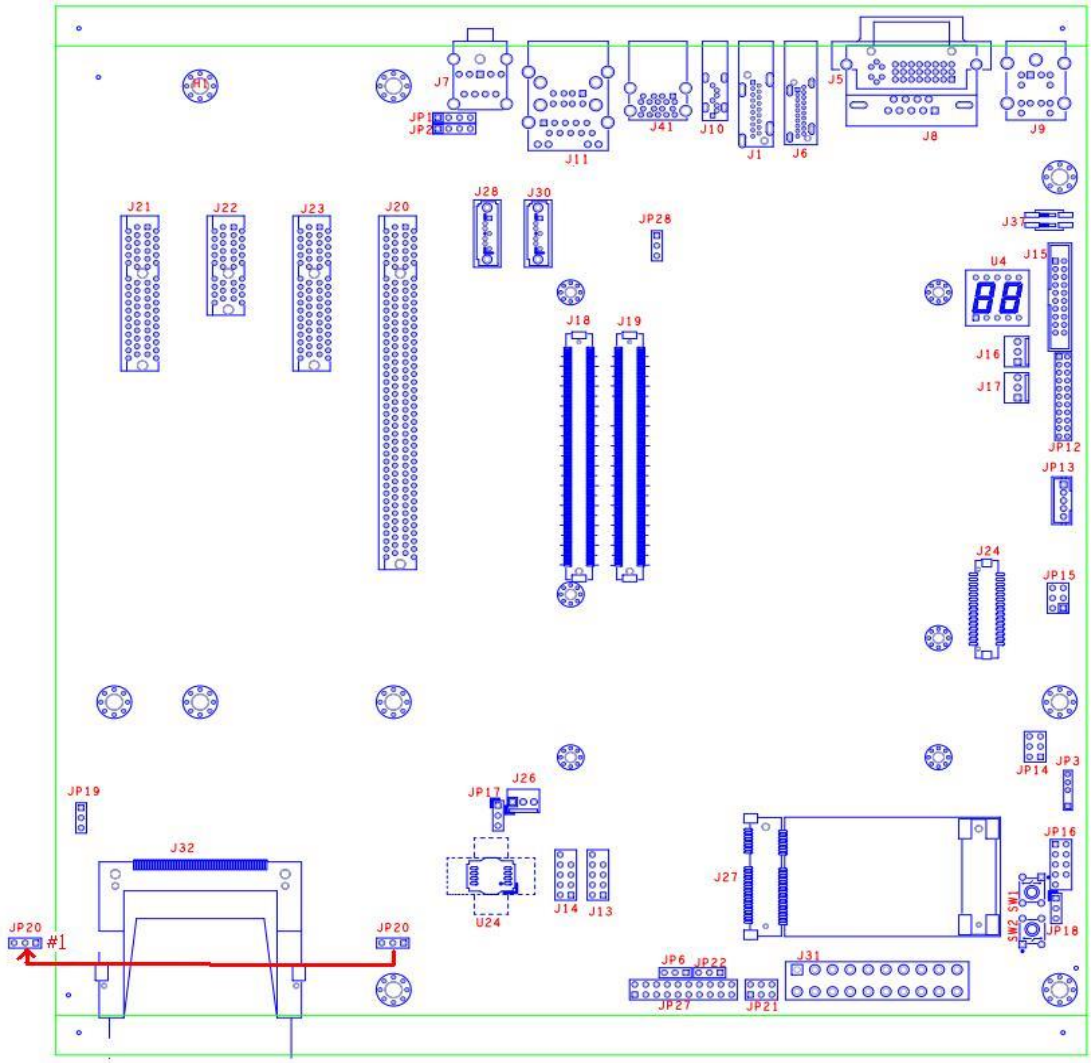
Please find Intel® Trusted Execution Engine driver form PCOM-B632 CD-title. The driver supports Windows 8.

3.4 Clear CMOS Operation

The following table indicates how to enable/disable Clear CMOS Function hardware circuit by putting jumper of the PCOM-C600 carrier board.

JP20：CMOS Setting

	Jumper Setting Describe
*1-2	Default
2-3	Clean CMOS



BIOS Setup Information

PCOM-B632 is equipped with the Phoenix BIOS stored in Flash ROM. These BIOS has a built-in Setup program that allows users to modify the basic system configuration easily. This type of information is stored in CMOS RAM so that it is retained during power-off periods. When system is turned on, PCOM-B632 communicates with peripheral devices and checks its hardware resources against the configuration information stored in the CMOS memory. If any error is detected, or the CMOS parameters need to be initially defined, the diagnostic program will prompt the user to enter the SETUP program. Some errors are significant enough to abort the start up.

Entering Setup -- Launch System Setup

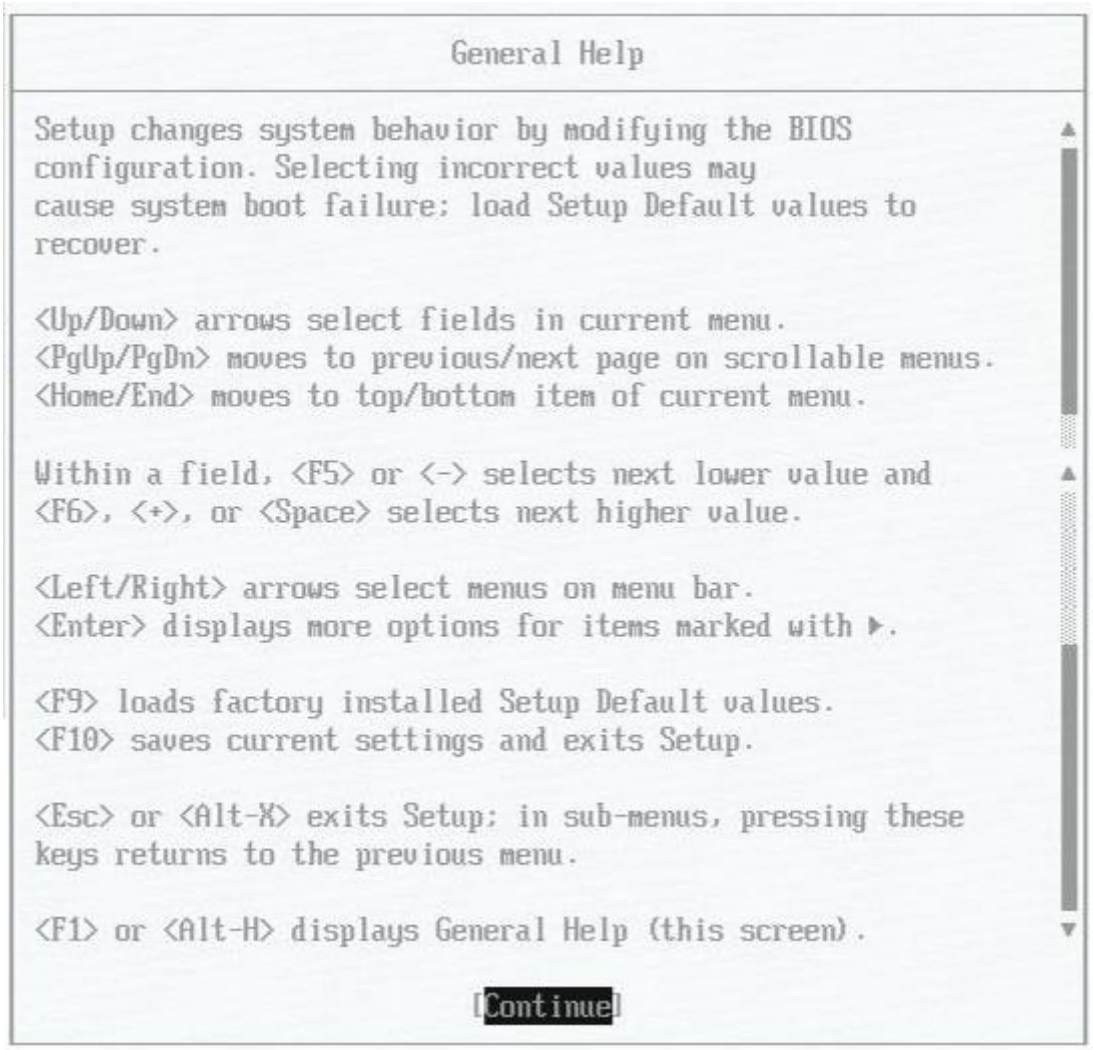
Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press <F2> key will enter BIOS setup screen.

Press <F2> to enter SETUP

If the message disappears before responding and still wish to enter Setup, please restart the system by turning it OFF and On or pressing the RESET button. It can be also restarted by pressing <Ctrl>, <Alt>, and <Delete> keys on keyboard simultaneously.

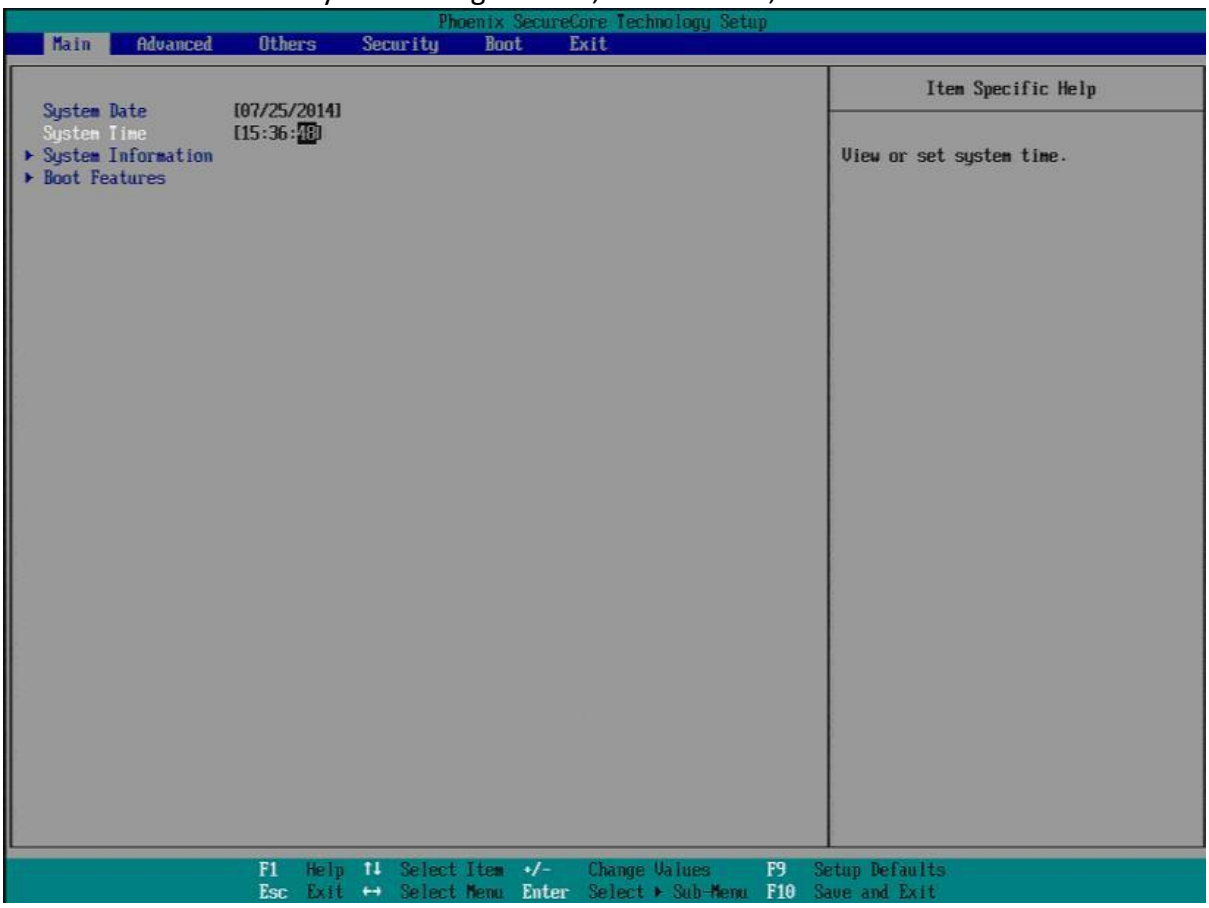
Press <F1> to Run General Help or Resume

The BIOS setup program provides a General Help screen. The menu can be easily called up from any menu by pressing <F1>. The Help screen lists all the possible keys to use and the selections for the highlighted item. Press <Esc> to exit the Help screen.


General Help
Setup changes system behavior by modifying the BIOS configuration. Selecting incorrect values may cause system boot failure: load Setup Default values to recover.
<Up/Down> arrows select fields in current menu.
<PgUp/PgDn> moves to previous/next page on scrollable menus.
<Home/End> moves to top/bottom item of current menu.
Within a field, <F5> or <-> selects next lower value and <F6>, <+>, or <Space> selects next higher value.
<Left/Right> arrows select menus on menu bar.
<Enter> displays more options for items marked with ▶.
<F9> loads factory installed Setup Default values.
<F10> saves current settings and exits Setup.
<Esc> or <Alt-X> exits Setup: in sub-menus, pressing these keys returns to the previous menu.
<F1> or <Alt-H> displays General Help (this screen).
[Continue]

Main

Use this menu for basic system configurations, such as time, date etc.



System Date

View or set system date

The date format is <Day>, <Month> <Date> <Year>. Use [＋] or [－] to configure system Date.

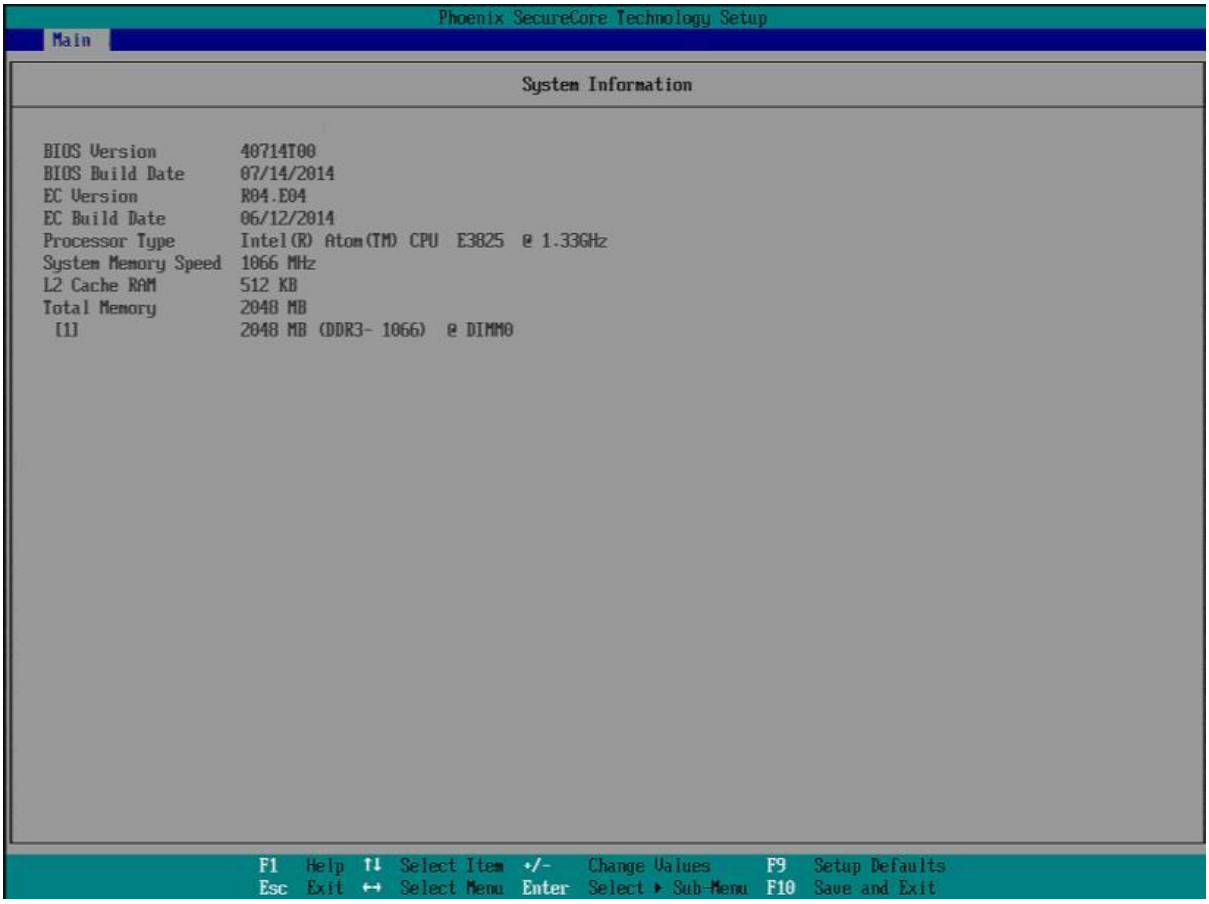
System Time

View or set system time

The time format is <Hour> <Minute> <Second>. Use [＋] or [－] to configure system Time.

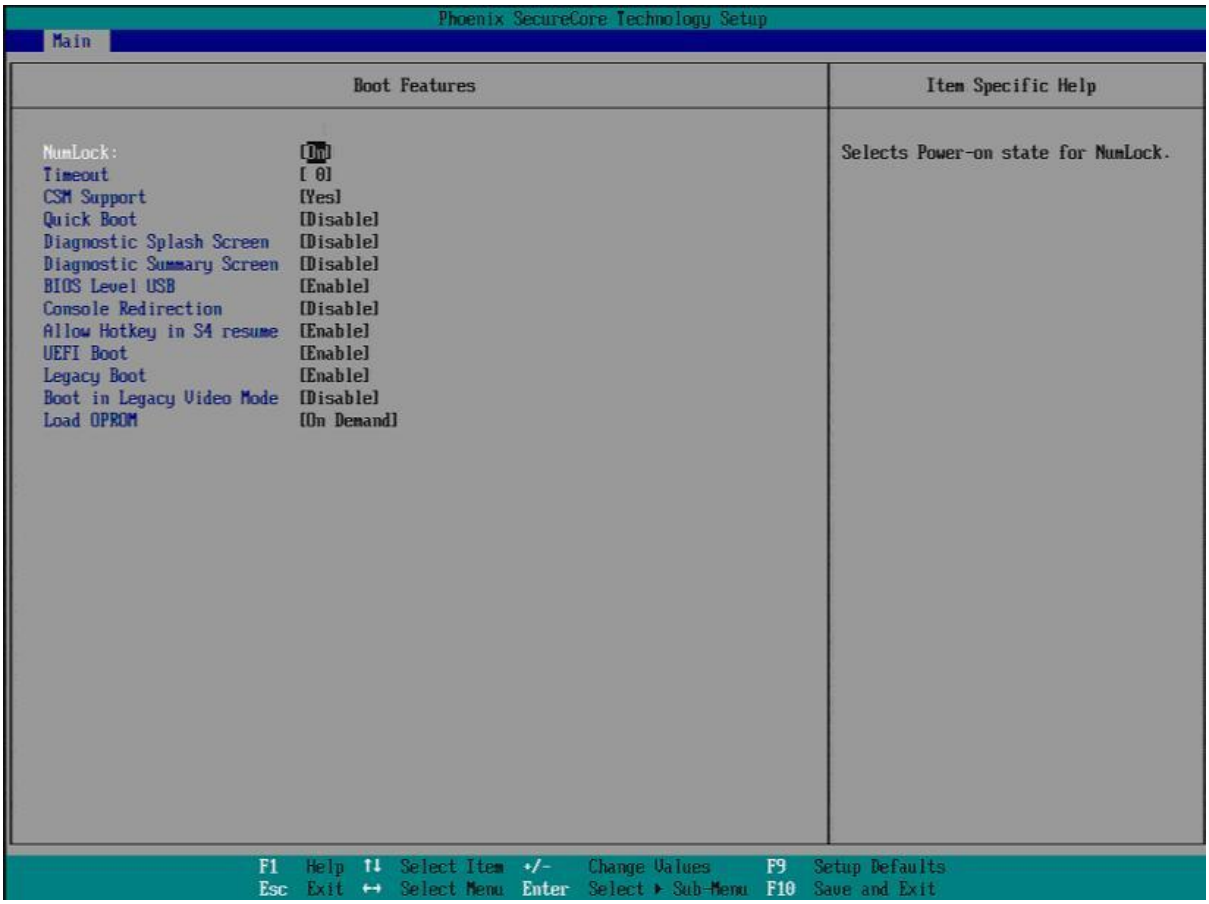
System Information

Display System Information, Show only



Boot Features

Select Boot features



NumLock:

Selects Power-on state for NumLock
Choices: On, Off.

Timeout

Number of seconds that P.O.S.T will wait for the user input before booting
Choices: 0-99 seconds.

CSM Support

Compatibility Support Module that provide backward compatibility services for legacy BIOS services, like int10/int13, dependent OS.
Choices: No, Yes.

Quick Boot

Enable/Disable quick boot
Choices: Disable, Enable.

Diagnostic Splash Screen

If you select ‘Enabled’ the diagnostic splash screen always displays during boot. If you select

'Disabled' the diagnostic splash screen does not displays unless you press HOTKEY during boot
Choices: Disable, Enable.

Diagnostic Summary Screen
Display the Diagnostic summary screen during boot
Choices: Disable, Enable.

BIOS Level USB
Enable/Disable all BIOS support for USB in order to reduce boot time. Note that this will prevent using a USB keyboard in setup or a USB biometric scanner such as a finger print reader to control access to setup, but does not prevent the operating system from supporting such hardware
Choices: Disable, Enable.

Console Redirection
Enable/Disable Universal Console Redirection
Choices: Disable, Enable.

Allow Hotkey in S4 Resume
Enable hotkey detection when system resuming from Hibernate state
Choices: Disable, Enable.

UEFI Boot
Enable the UEFI boot
Choices: Disable, Enable.

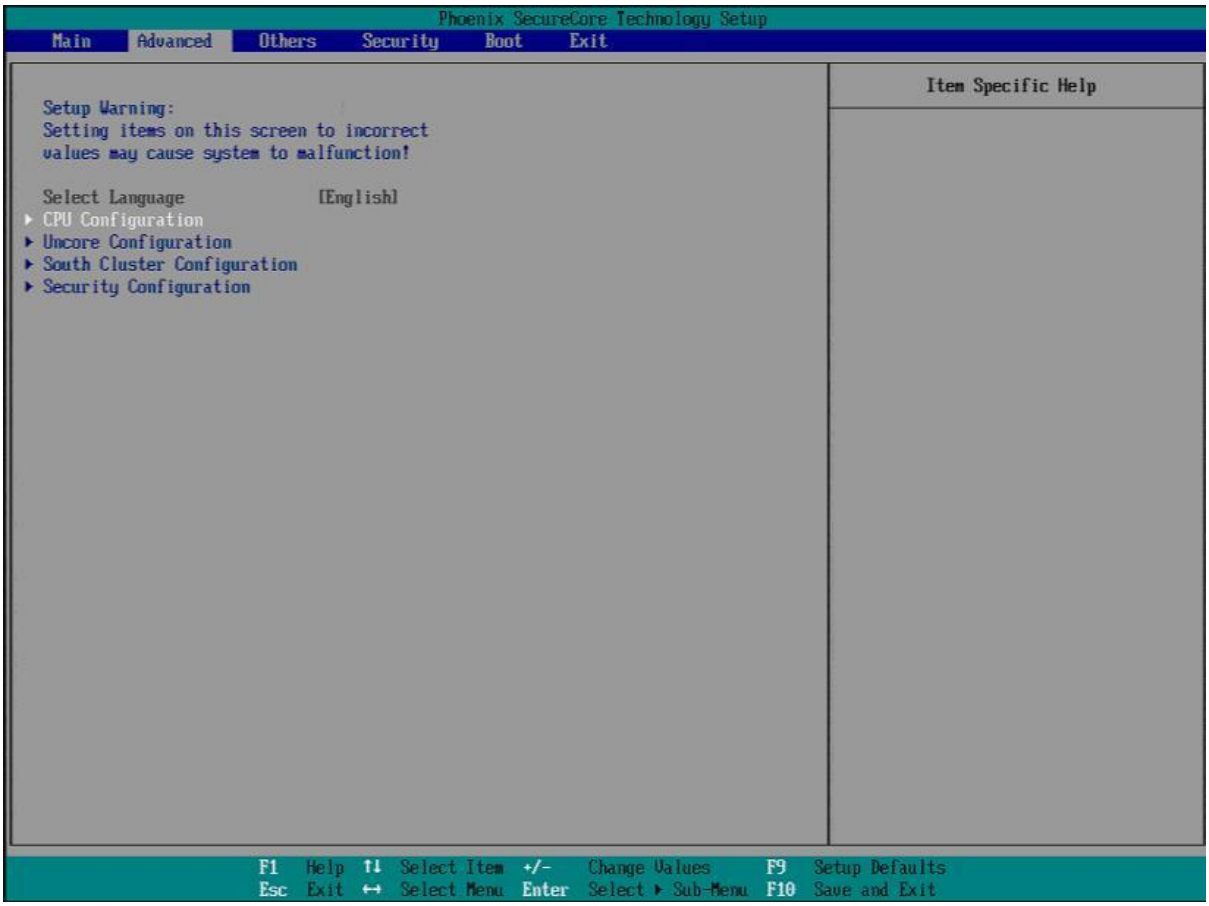
Legacy Boot
Enable the Legacy boot
Choices: Disable, Enable.

Boot in Legacy Video Mode
Enable to force the display adapter to switch the video mode to Text Mode 3 at the end of BIOS POST for non-UEFI boot mode (Legacy Boot). Some legacy software, such as DUET, requires that the BIOS explicitly enter text video mode prior to boot.
Choices: Disable, Enable.

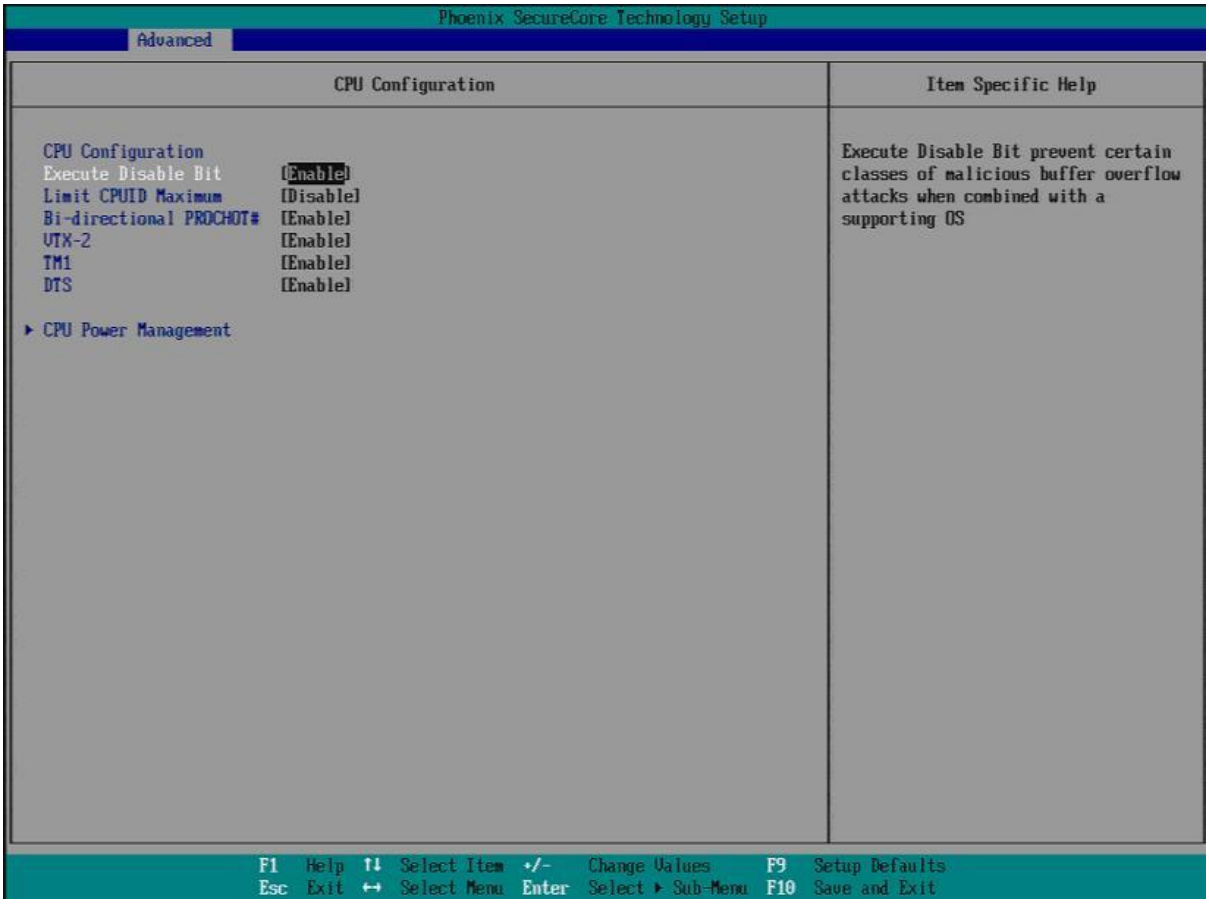
Load OPROM
Load all OPROMs or on demand according to the boot device
Choices: All, Demand.

Advanced

Setup Warning:
Setting items on this screen to incorrect values may cause system to malfunction!



CPU Configuration



Execute Disabled Bit

Execute Disabled Bit prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS

Choices: Disable, Enable.

Limit CPUID Maximum

Disabled for Windows XP

Choices: Disable, Enable.

Bi-directional PROCHOT#

When a processor thermal sensor trips (either core), the PROCHOT# will be driven

If bi-direction is enabled, external agents can drive PROCHOT# to throttle the processor

Choices: Disable, Enable.

VTX-2

To enable or disable the VTX-2 Mode support

Choices: Disable, Enable.

TM1

Enable/Disable TM1

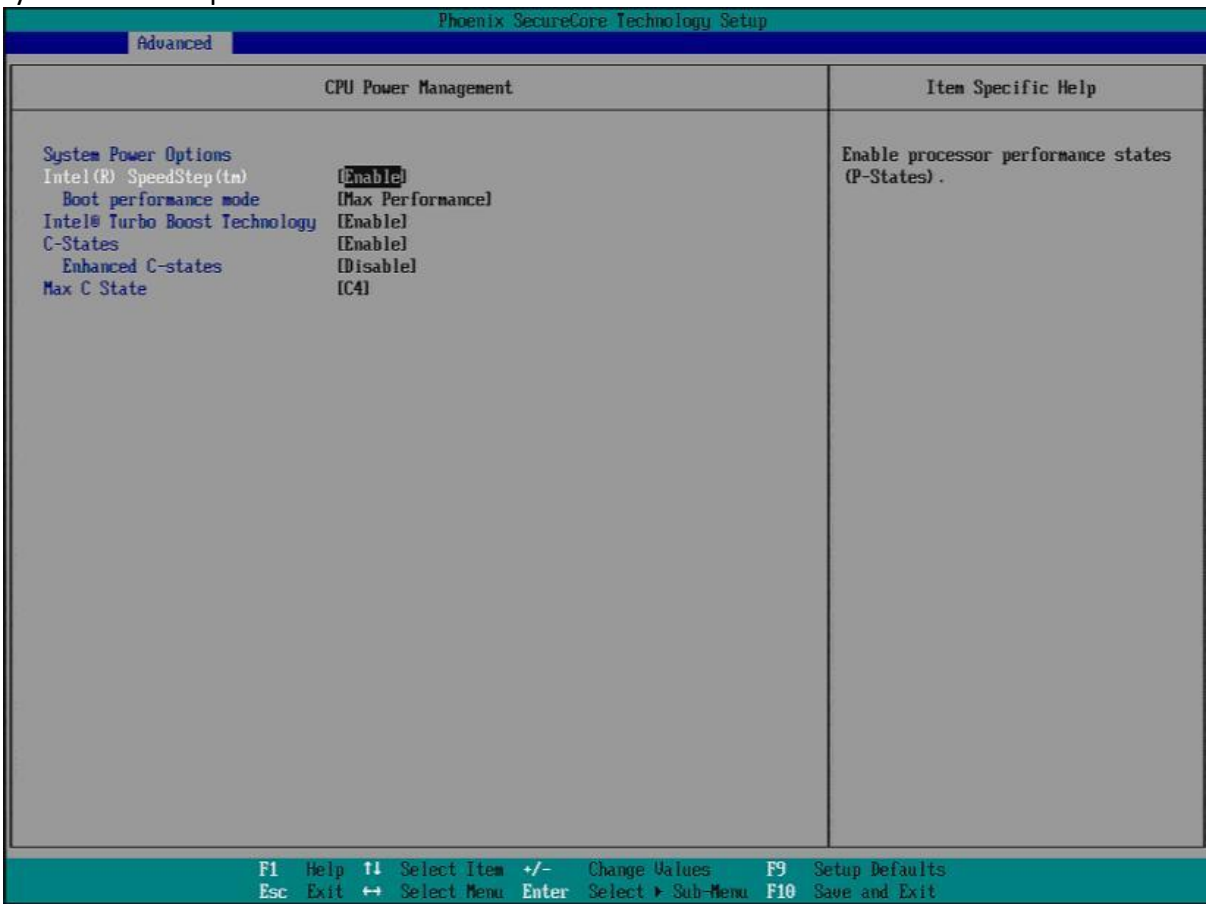
Choices: Disable, Enable.

DTS

Enabled/Disable Digital Thermal Sensor
Choices: Disable, Enable.

CPU Power Management

System Power Options



Intel® SpeedStep™

Allows more than two frequency ranges to be supported
Choices: Disabled, Enabled.

Boot performance mode

Select the performance state that the BIOS will set before OS handoff
Choices: Max Performance, Max Battery.

Intel ® Turbo Boost Technology

Enable to automatically allow processor cores to run Faster than the base operating frequency if it's operating below power, current, and temperature specification limits.
Choices: Disable, Enable.

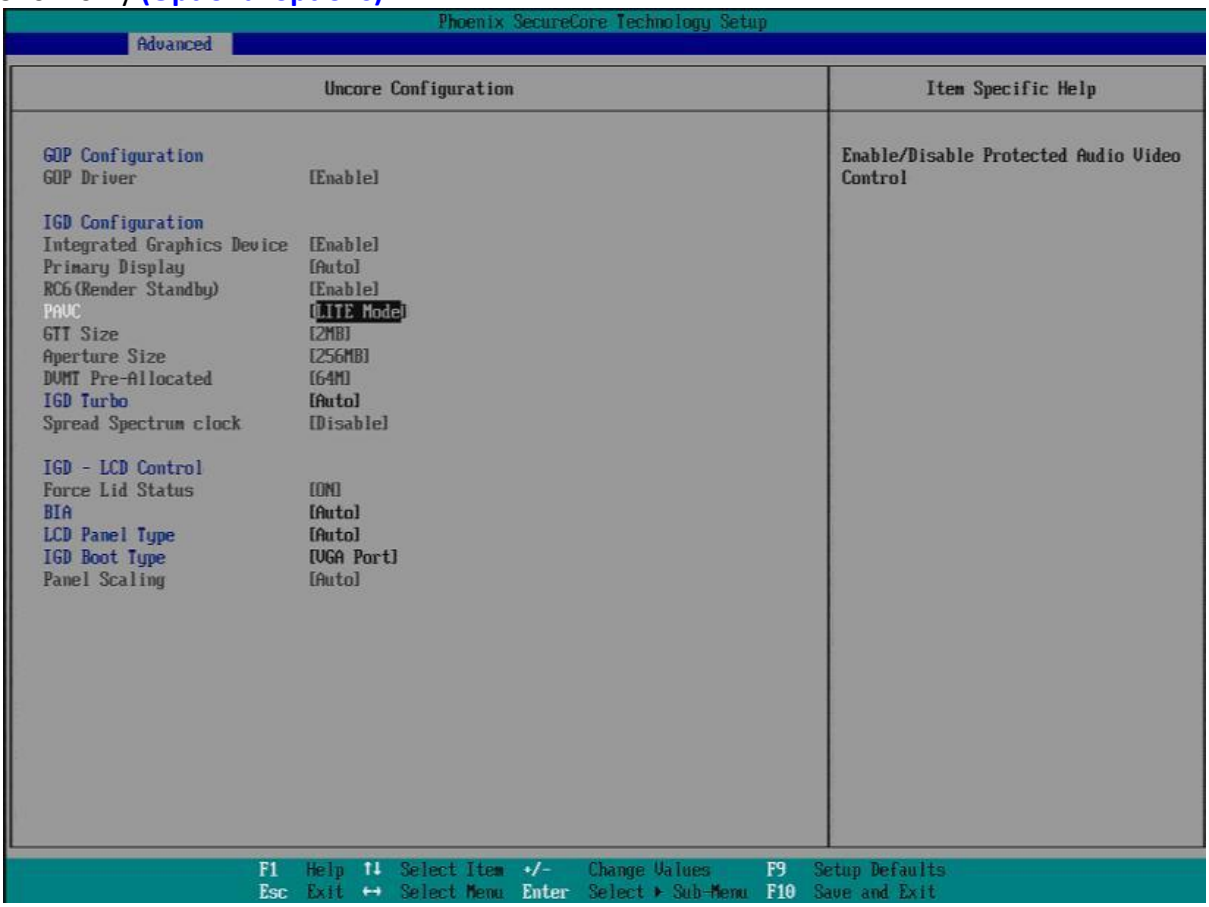
C-States

Enable/Disable C States
Choices: Disable, Enable.

Enhanced C-States →我手上沒有看到此選項
Enable/Disable C1E, C2E and C4E. When enabled, CPU will switch to minimum speed when all cores enter C-State
Choices: Disable, Enable.

Max C State →我手上沒有看到此選項
This option controls the Max C State that the processor will support
Choices: C7, C6, C4, C1.

Uncore Configuration
Show only **(Optional options)**



GOP Driver (Optional)
Enable GOP Driver will unload VBIOS; Disable it will load VBIOS
Choices: Enable, Disable.

Integrated Graphic Device (Optional)
Enable: Enable Integrated Graphics Device (IGD) when selected as the Primary Video Adapter.
Disable: Always disable IGD
Choices: Disable, Enable.

Primary Display (Optional)
Select which of IGD/PCI Graphics device should be Primary Display.

Choices: Auto, IGFX, IGD, PCIe.

RC6 (Rander Standby) (Optional)
Check to enable render standby support
Choices: Enable, Disable.

PAVC
Enable/Disable Protected Audio Video control
Choices: Enable, LITE Mode, SERPENT Mode.

GTT Size (Optional)
Select the GTT Size
Choices: 1MB, 2MB.

Aperture Size (Optional)
Select the Aperture Size
Choices: 128MB, 256MB, 512MB.

DVMT Pre-Allocated (Optional)
Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory sized used by the Internal Graphic Device
Choices: 32M, 64M, 96M, 128M, 160M, 192M, 224M, 256M, 288M, 320M, 352M, 384M,416M, 448M, 480M, 512M.

IGT Turbo
Select the IGT Turbo feature, if Auto selected , IGD Turbo will only be enabled when SOC stepping is B0 or above.
Choices: Auto, Enable, Disable.

Spread Spectrum clock (Optional)
Enable clock chip Spread Spectrum feature
Choices: Disable, Enable.

Force Lid States (Optional)
For test: Force to set lid status as on or off
Choices: OFF, ON.

BIA
>>Auto: GMCH Use VBIOS Default; >> Level n: Enabled with Selected Aggressiveness Level.
Choices: Auto, Disabled, Level 1, Level 2, Level 3, Level 4, Level 5.

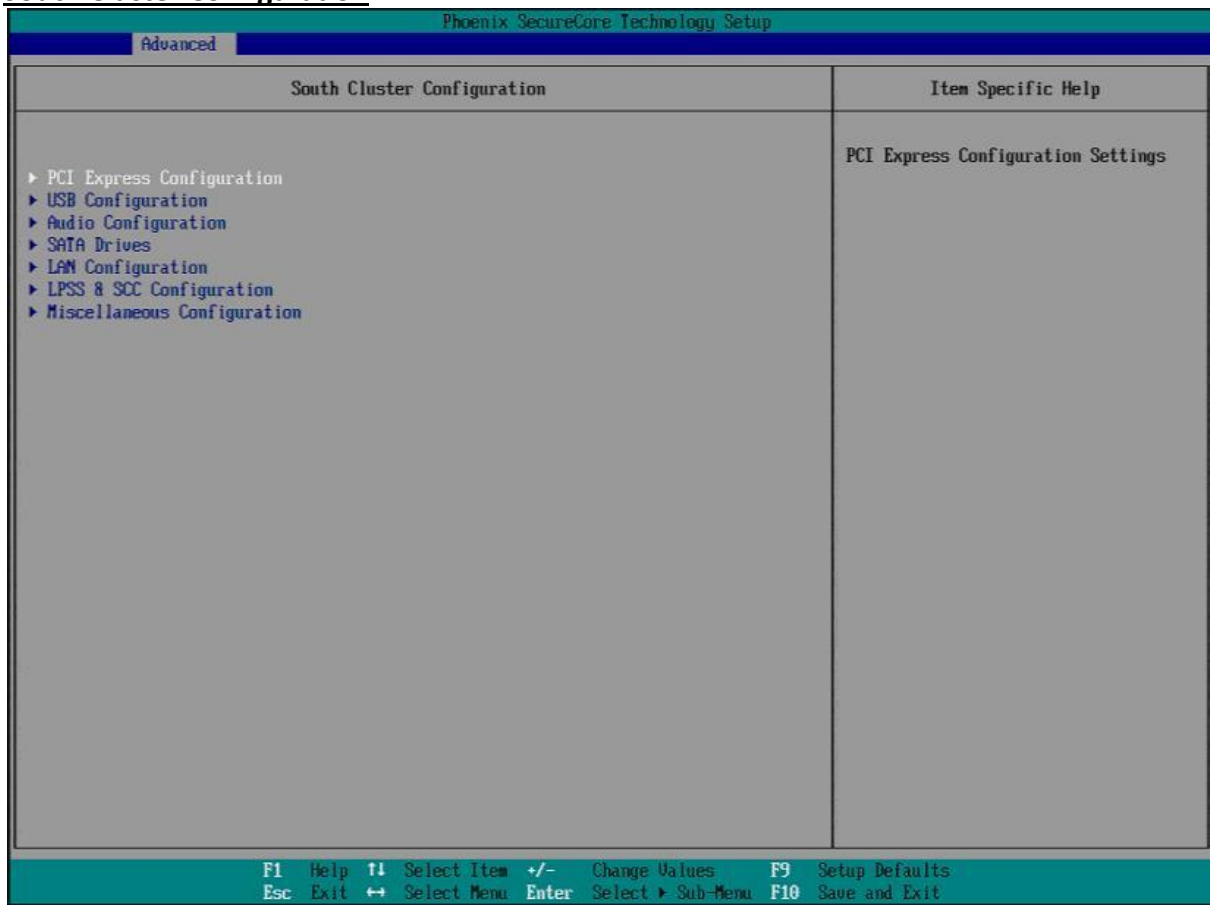
LCD Panel Type
Choices: Auto, 640 x 480, 800 x 600, 1024 x 768, 1280 x 1024, 1366 x 768, 1680 x 1050, 1600 x 1200, 1280 x 800.

IGD Boot Type
Select preference for Integrated Graphics Device (IGD) display interface used when system

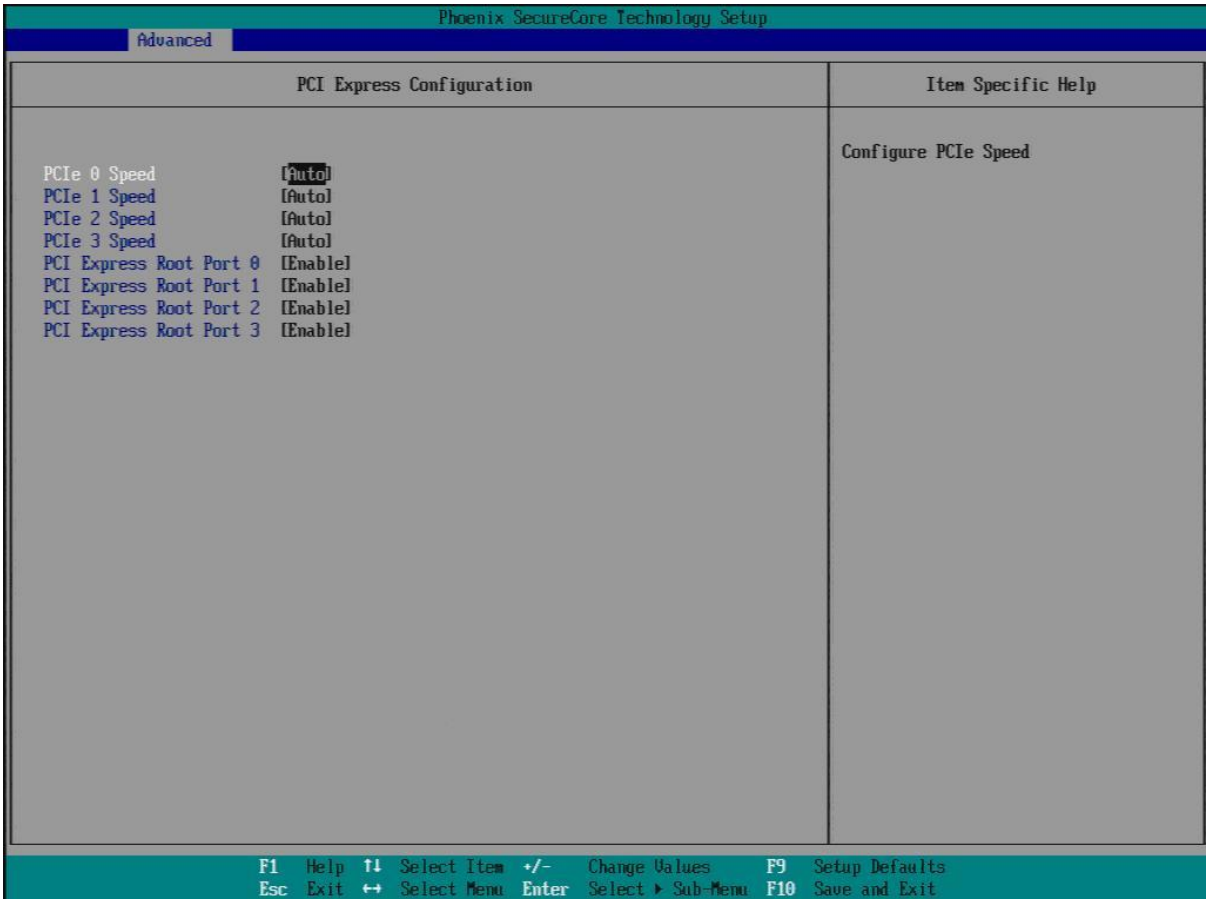
boots
Choices: Auto, VGA Port, DP Port B, eDP.

Panel Scaling (Optional)
Select the LCD Panel scaling option used by Internal Graphic device
Choices: Auto, Centering, Stretching.

South Cluster Configuration



PCI Express Configuration
PCI Express Configuration Settings



PCIe 0-3 Speed

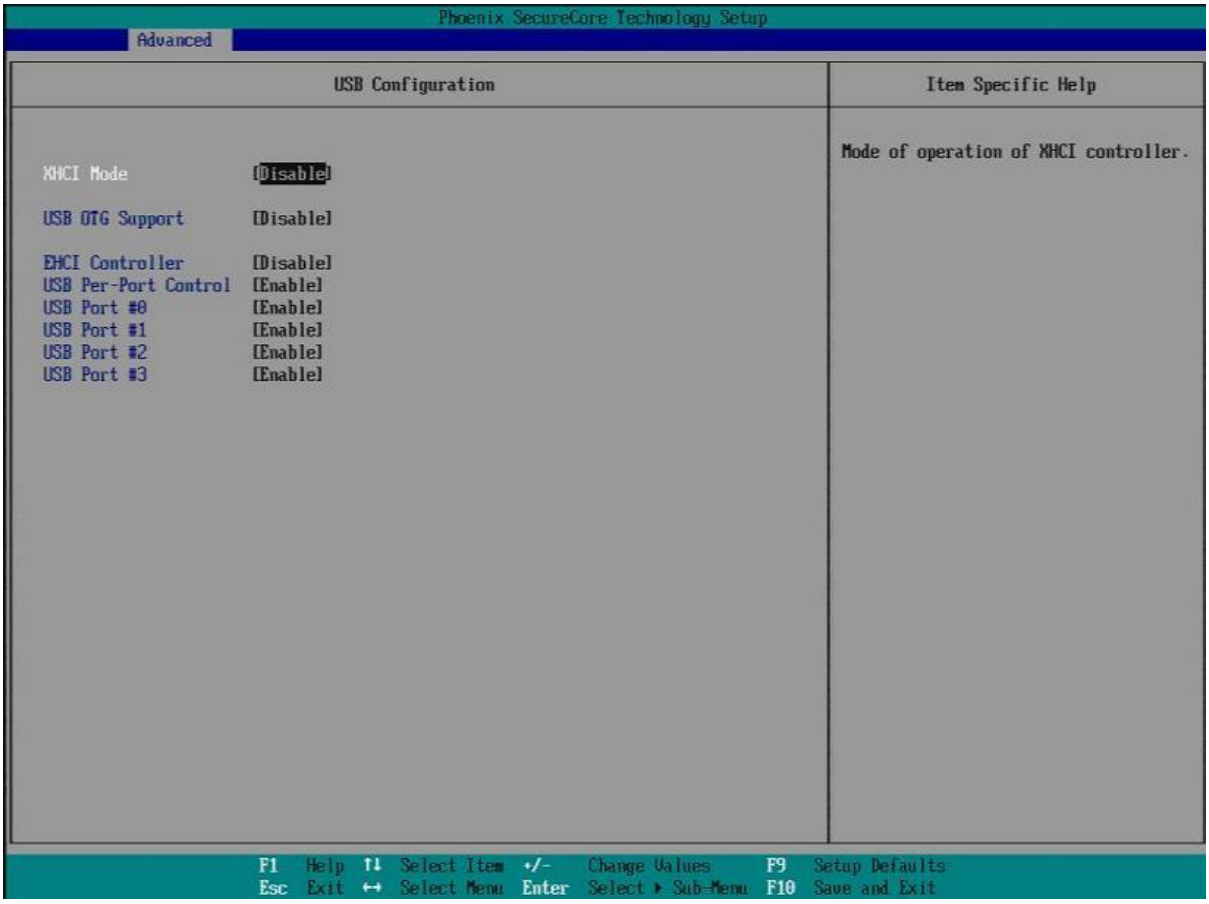
Configure PCIe 0-3 Speed
Choices: Auto, Gen1, Gen2.

PCI Express Root Port 0-3

Control PCI Express root port
Choices: Enable, Disable.

USB Configuration

USB Configuration settings



XHCI Mode
Mode of operation of XHCI controller
Choices: Smart Auto, Auto, Enable, Disable.

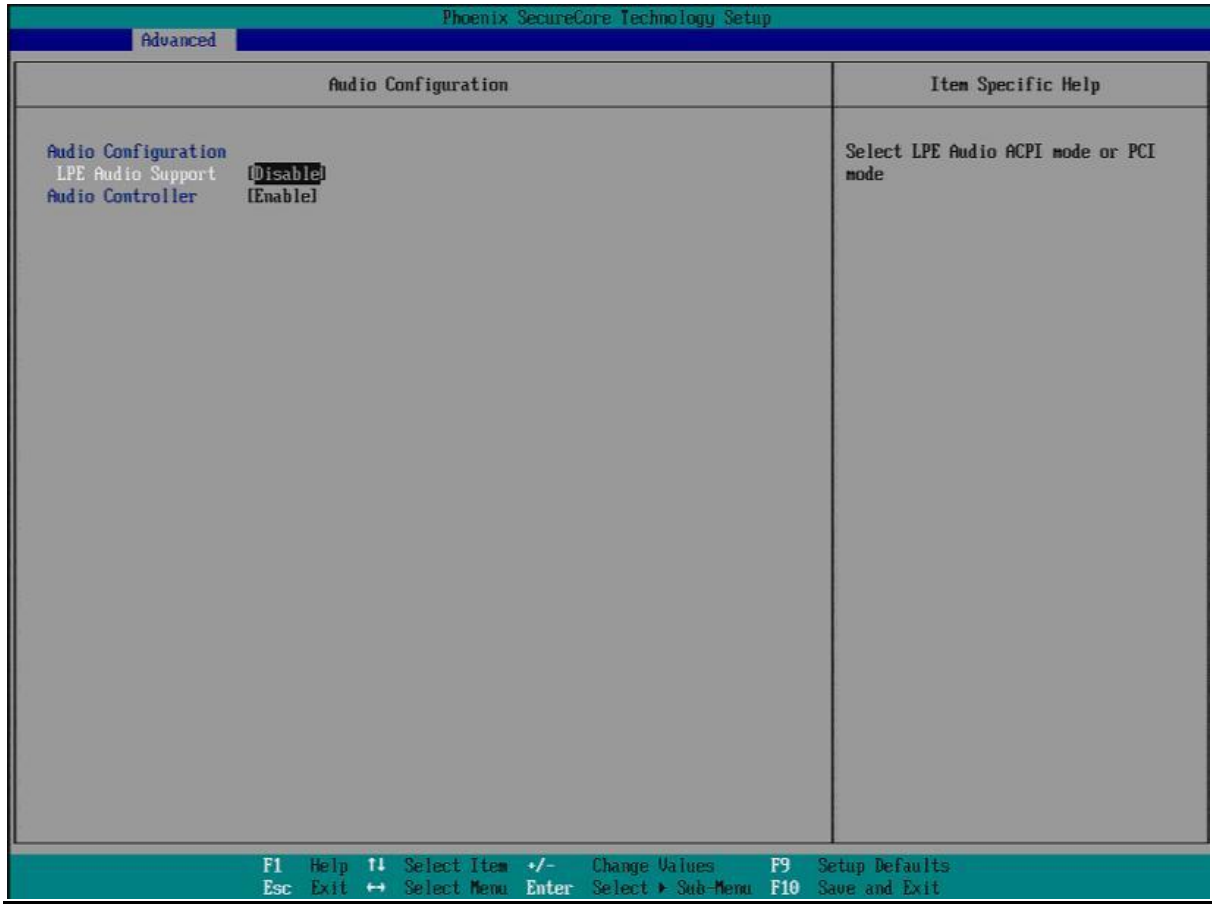
USB OTG Support
Enable/Disable USB OTG Support
Choices: Disable, PCI Mode, ACPI Mode.

EHCI Controller 我手上的是 Enable
Control the USB EHCI (USB2.0) functions. One EHCI controller must always be enabled.
Choices: Enable, Disable.

USB Per-Port Disable Control
Control each of the USB ports (0~3) disabling
Choices: Disable, Enable.

USB Port #0-#3 Disable
Disable each USB port (#0-#3).
Choices: Enable, Disable.

Audio Configuration
Audio Configuration Settings



LPE Audio Support

Select LPE Audio ACPI mode or PCI mode

Choices: Disable, LPE Audio PCI mode, LPE Audio ACPI mode.

Audio Controller

Control Detection of the Azalia device

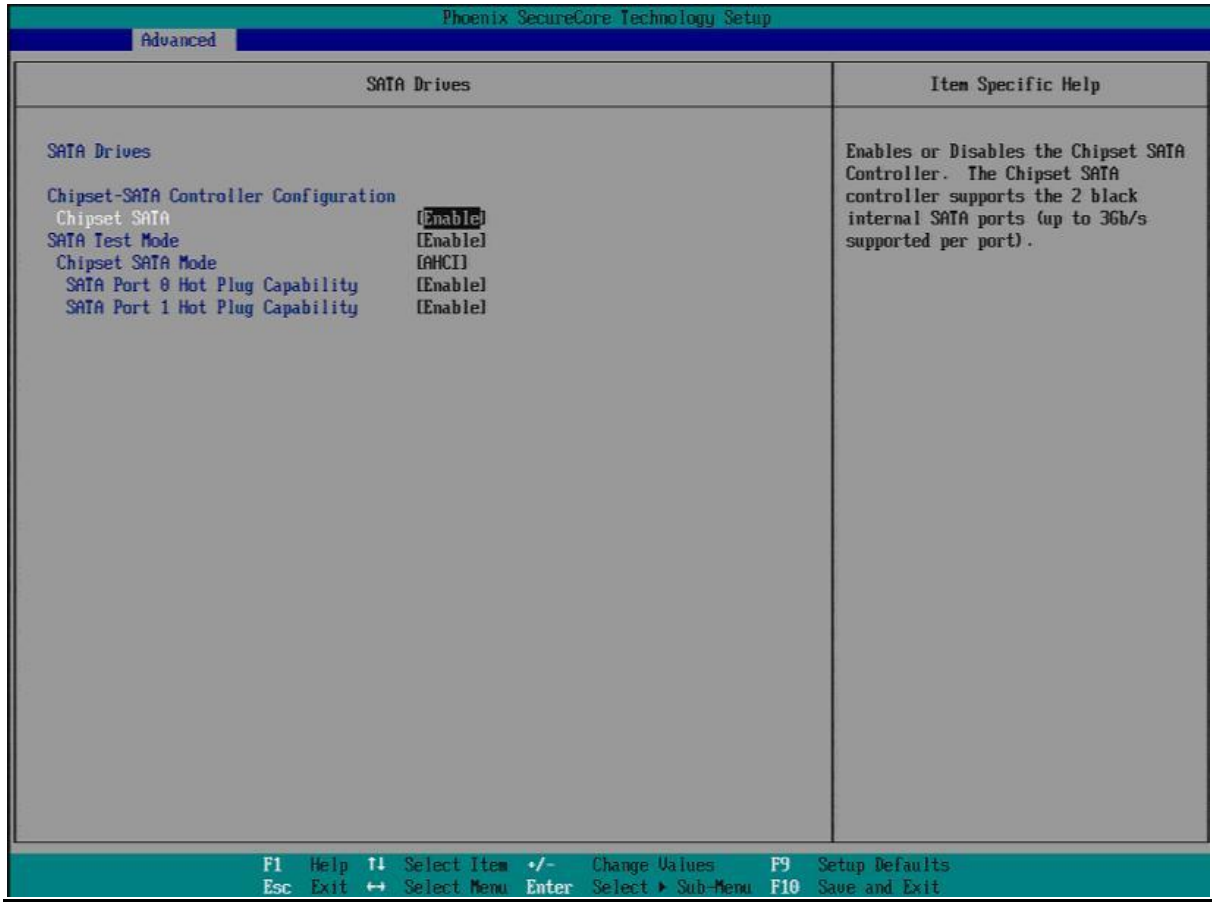
Disabled = Azalia will be unconditionally disabled.

Enabled = Azalia will be unconditionally enabled.

Choices: Disable, Enable.

SATA Drives

Press<Enter> to select the SATA Device Configuration Setup options.



Chipset SATA

Enables or Disables the Chipset SATA Controller. The Chipset SATA controller supports the 2 black internal SATA ports (up to 3Gb/s supported per port).
Choices: Enable, Disable.

SATA Test Mode

Test Mode Enable/Disable
Choices: Enable, Disable.

Chipset SATA Mode

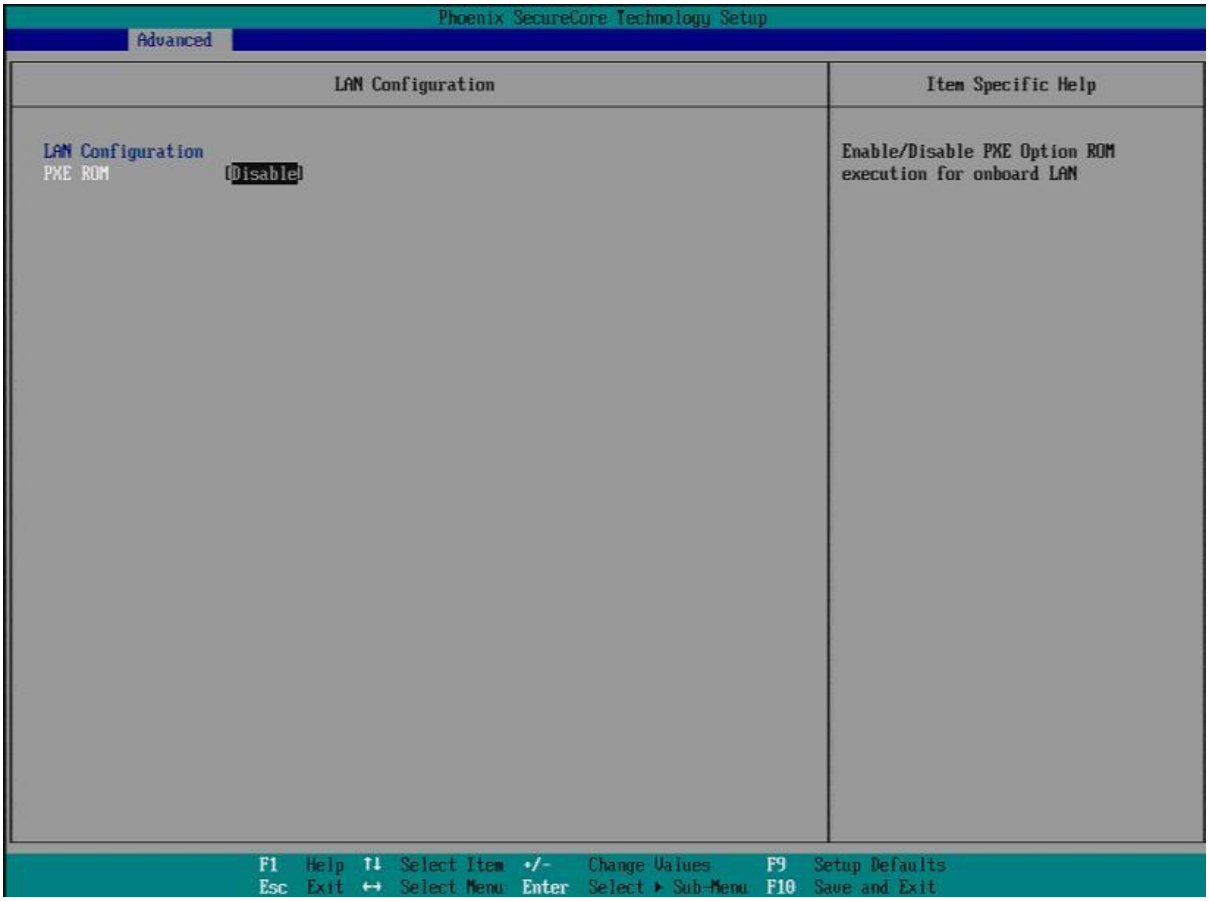
IDE: Compatibility mode disables
AHCI support: Supports advanced SATA features such as Native Command Queuing.
Warning: OS may not boot if this setting is changed after OS install.
Choices: IDE, AHCI.

Serial Port 0/1 Hot Plug Capability

If enabled, SATA port 0/1 will be reported as Hot Plug capable.
Choices: Enable, Disable.

LAN Configuration

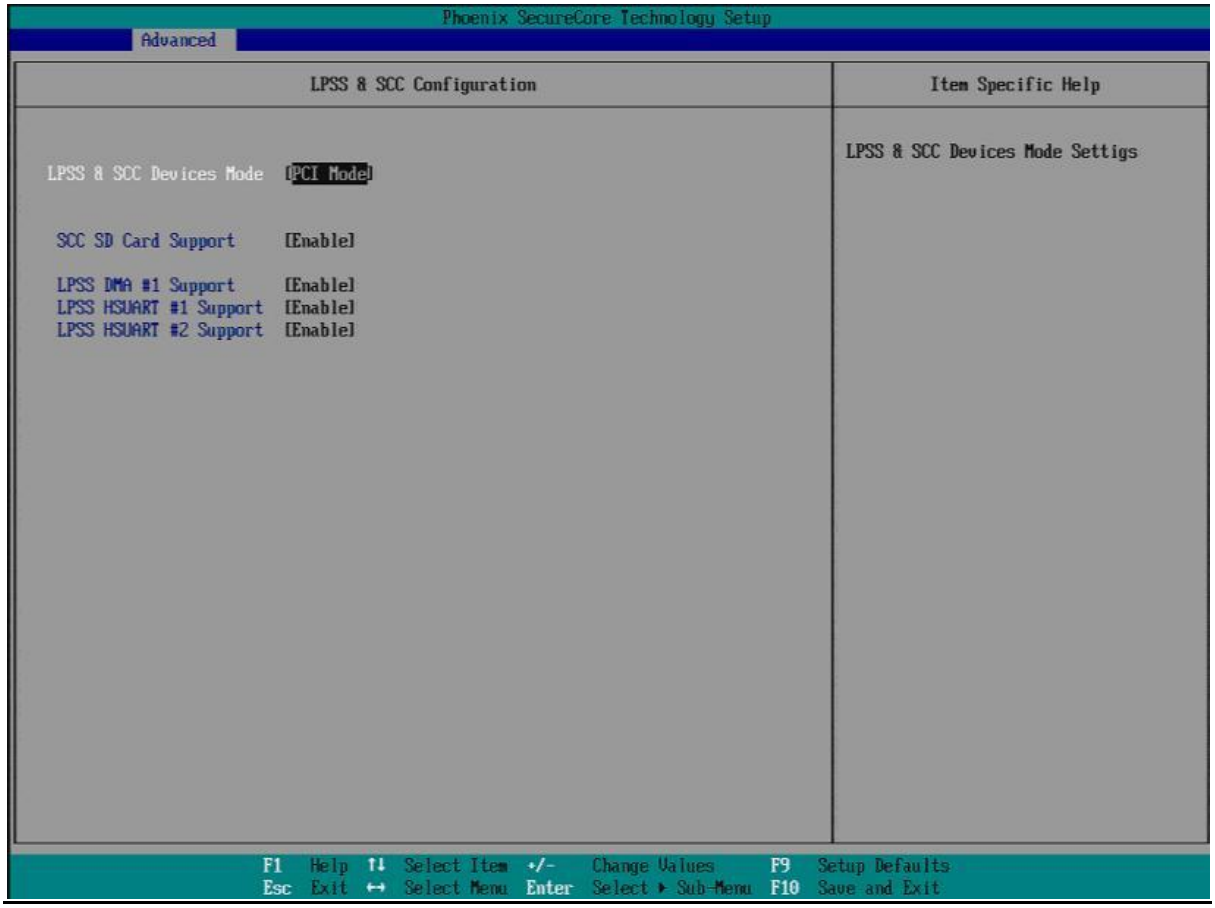
LAN Configuration Settings



PXE ROM

Enable/Disable PXE Option ROM execution for onboard LAN
Choices: Enable, Disable.

LPSS & SCC Configuration



LPSS & SCC Device Mode
LPSS & SCC Devices Mode Settings
Choices: ACPI Mode, PCI Mode.

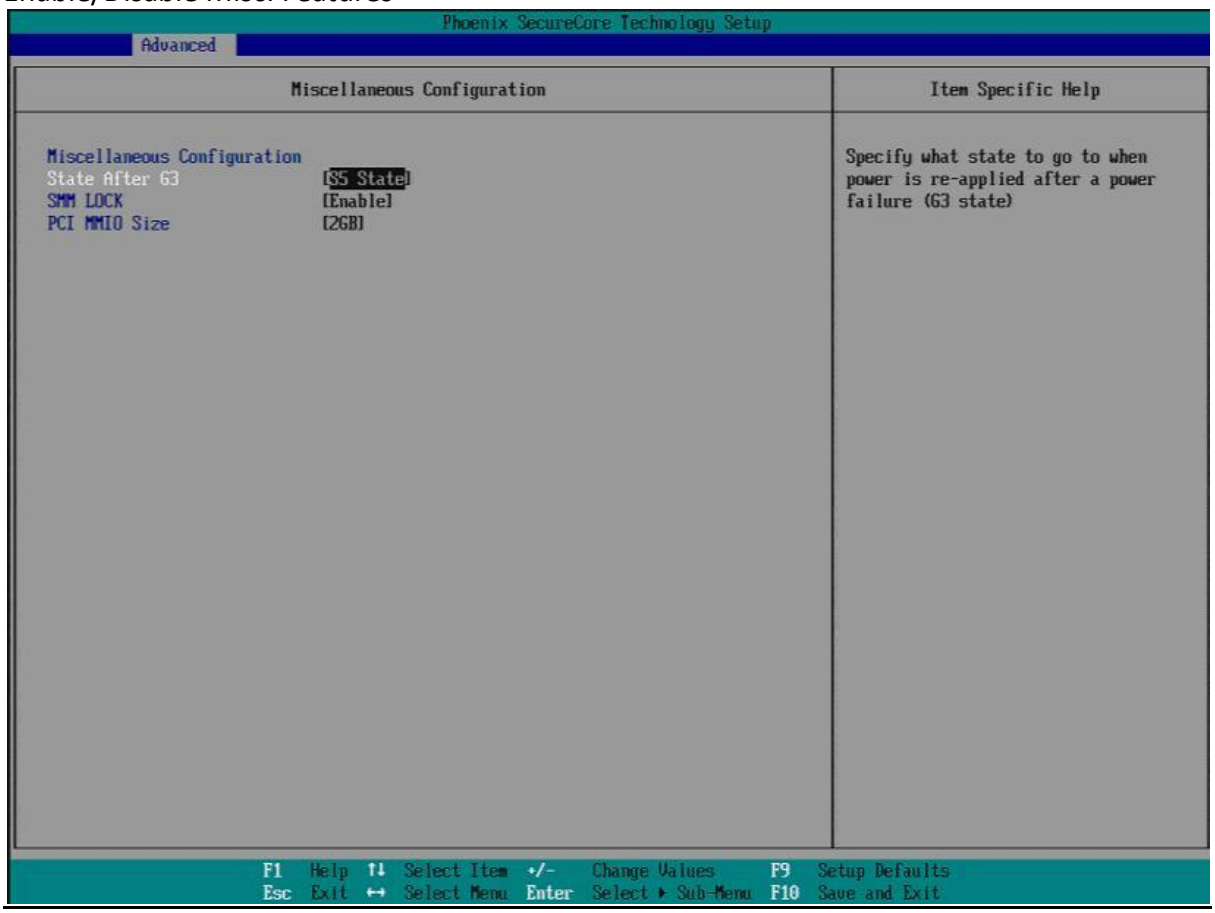
SCC SD Card Support
Choices: Disable, Enable.

LPSS DMA #1 Support →我手上的 **W4 BIOS** 沒看到
LPSS DMA #1 Support Enable/Disable
Choices: Disable, Enable.

LPSS HSUART #1-#2 Support →我手上的 **W4 BIOS** 沒看到
LPSS HSUART #1-#2 Support Enable/Disable
Choices: Disable, Enable.

Miscellaneous Configuration

Enable/Disable Misc. Features



State After G3

Specify what state to go to when power is re-applied after a power failure (G3 state)
Choices: S0 State, S5 State.

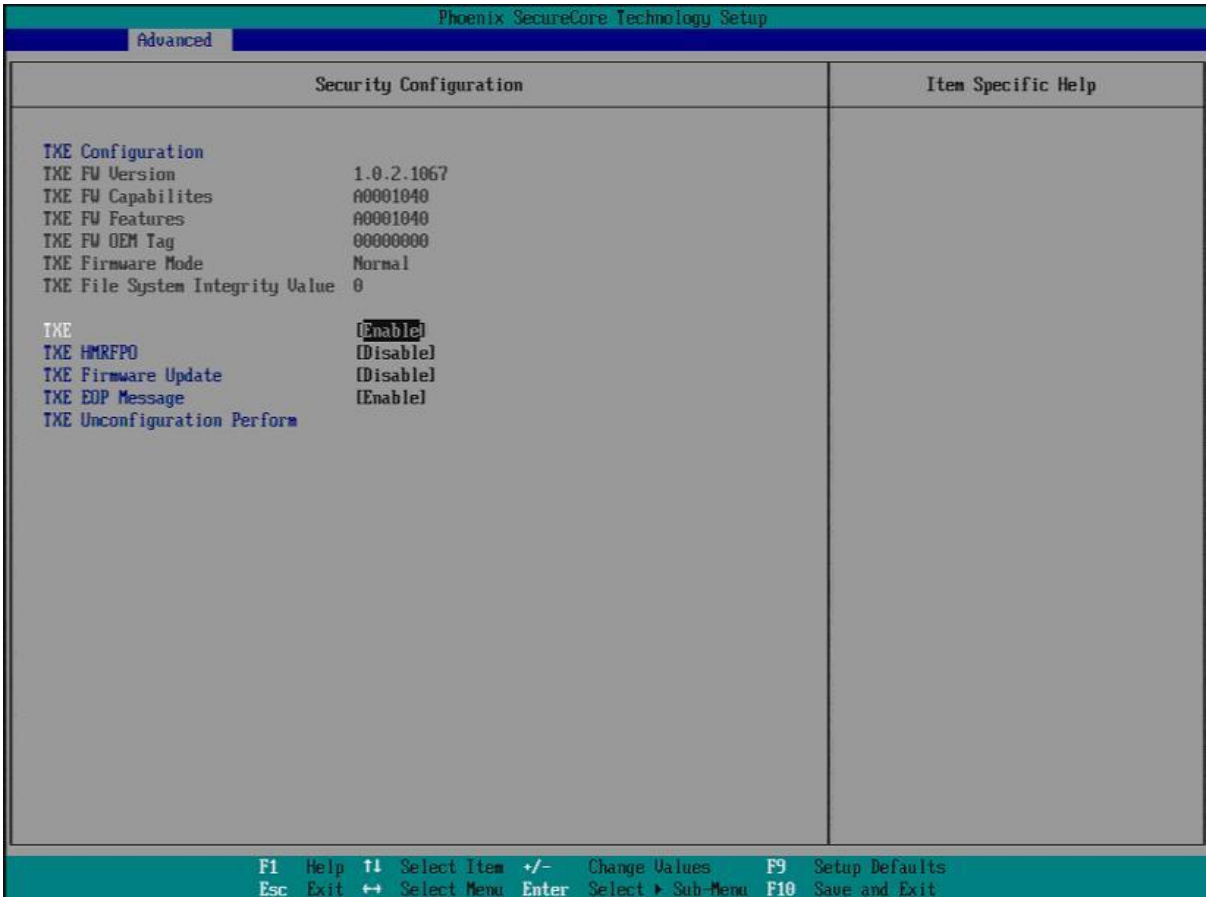
SMM LOCK

Enable/Disable SMM Lock feature. It will lock the SMRAM and unable load SMM driver any more.
Choices: Disable, Enable.

PCI MMIO Size

PCI MMIO Size
Choices: 2GB, 1.5GB, 1.25GB, 1GB.

Security Configuration



TXE
Choices: Disable, Enable.

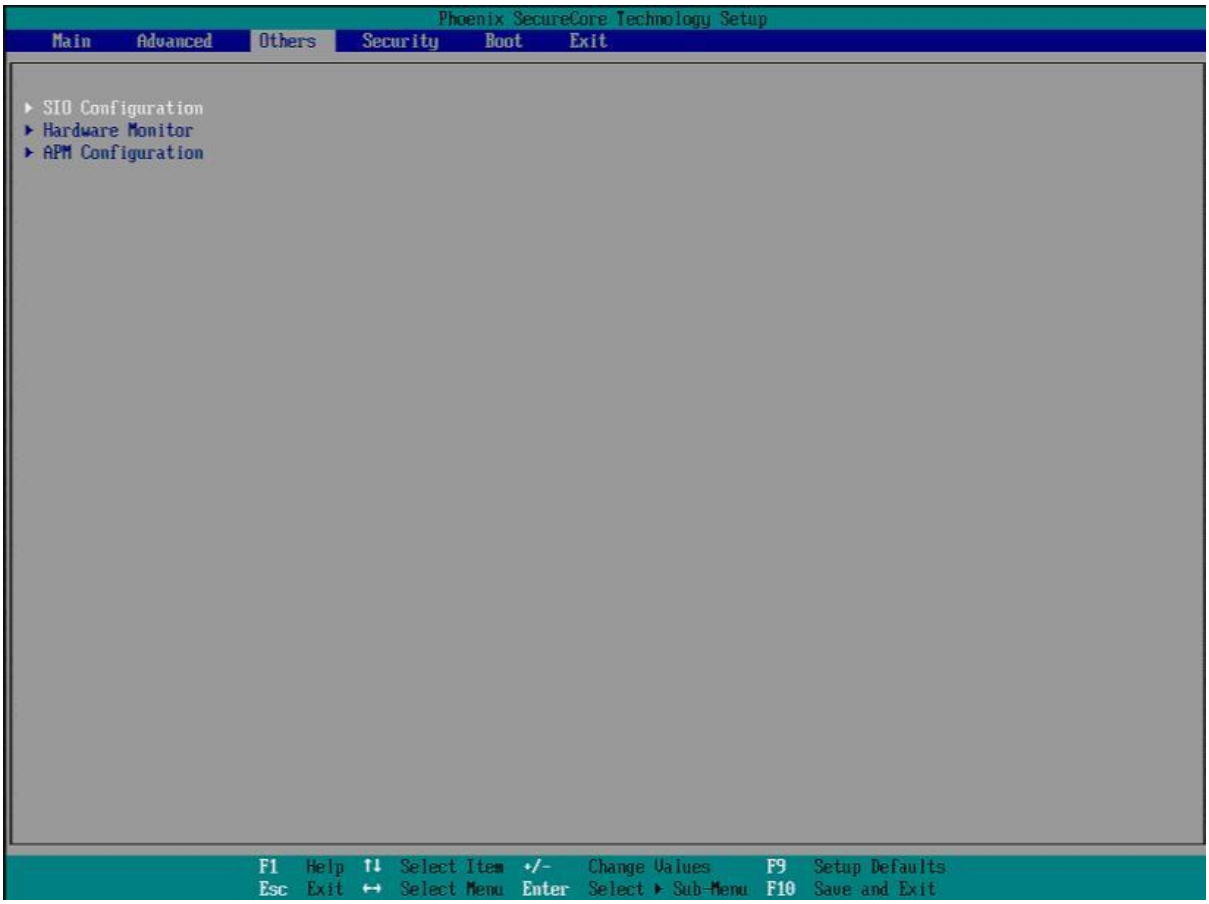
TXE HMRFPO
Choices: Disable, Enable.

TXE Firmware Update
Choices: Disable, Enable.

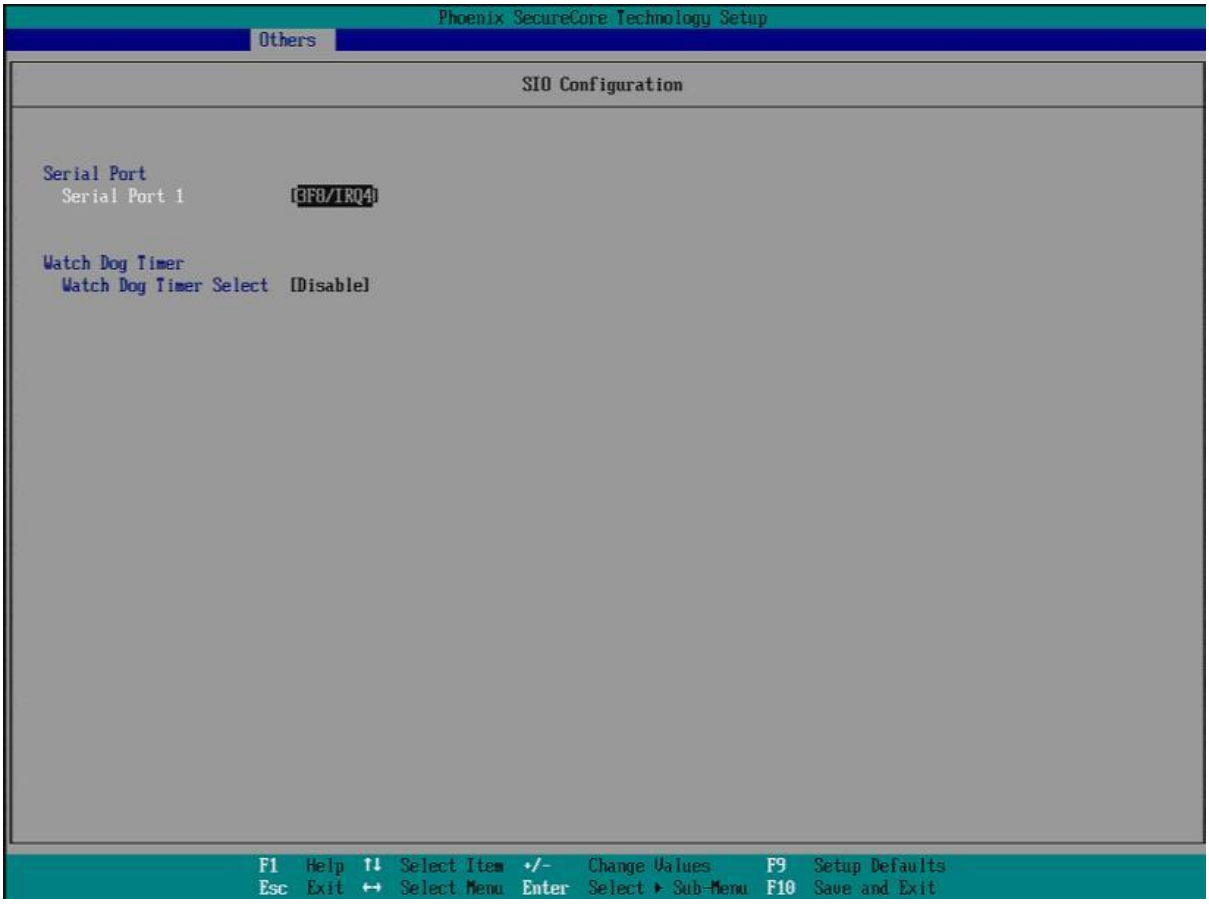
TXE EOP Message
Send EOP Message Before Enter OS
Choices: Disable, Enable.

TXE Unconfiguration Perform
Revert TXE Settings to factory defaults
Choices: No, Yes.

Others



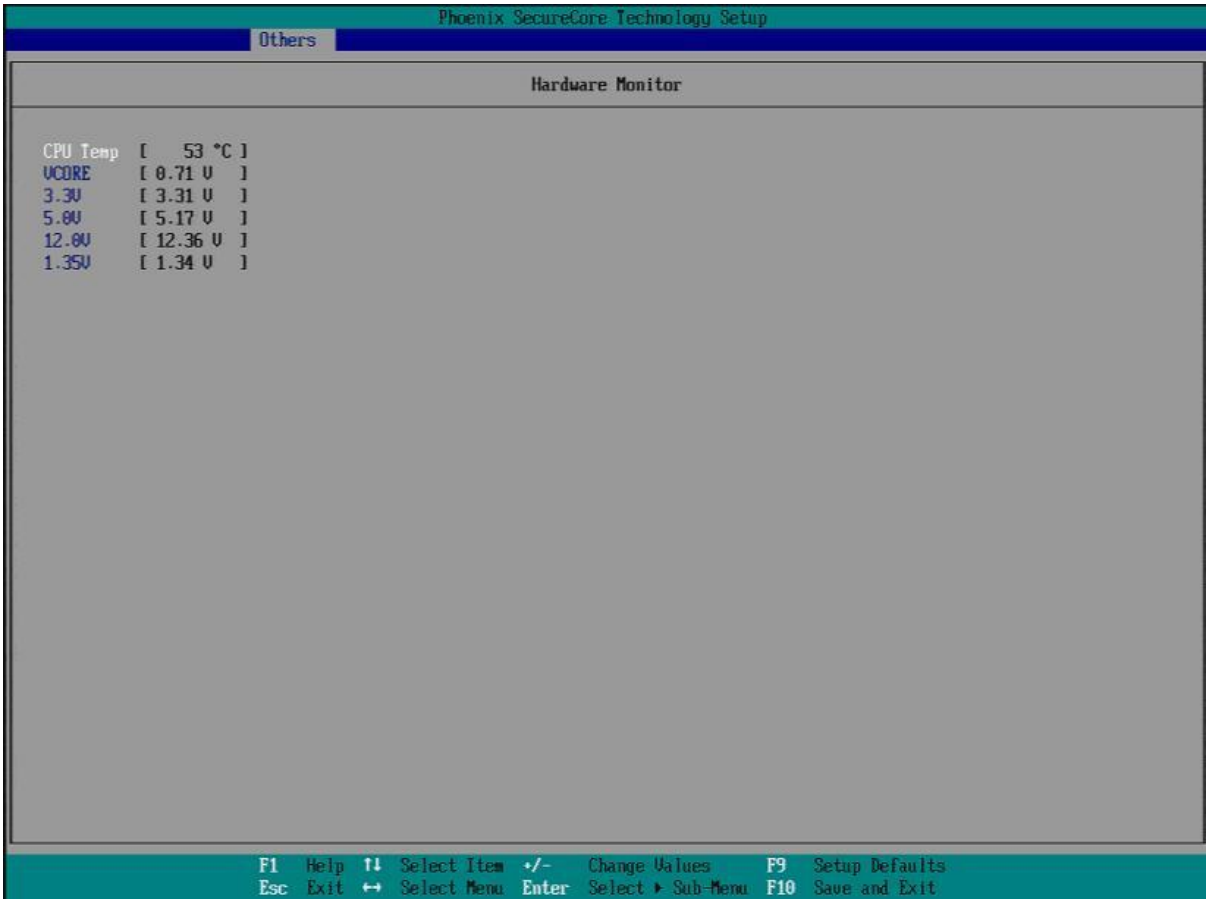
SIO Configuration



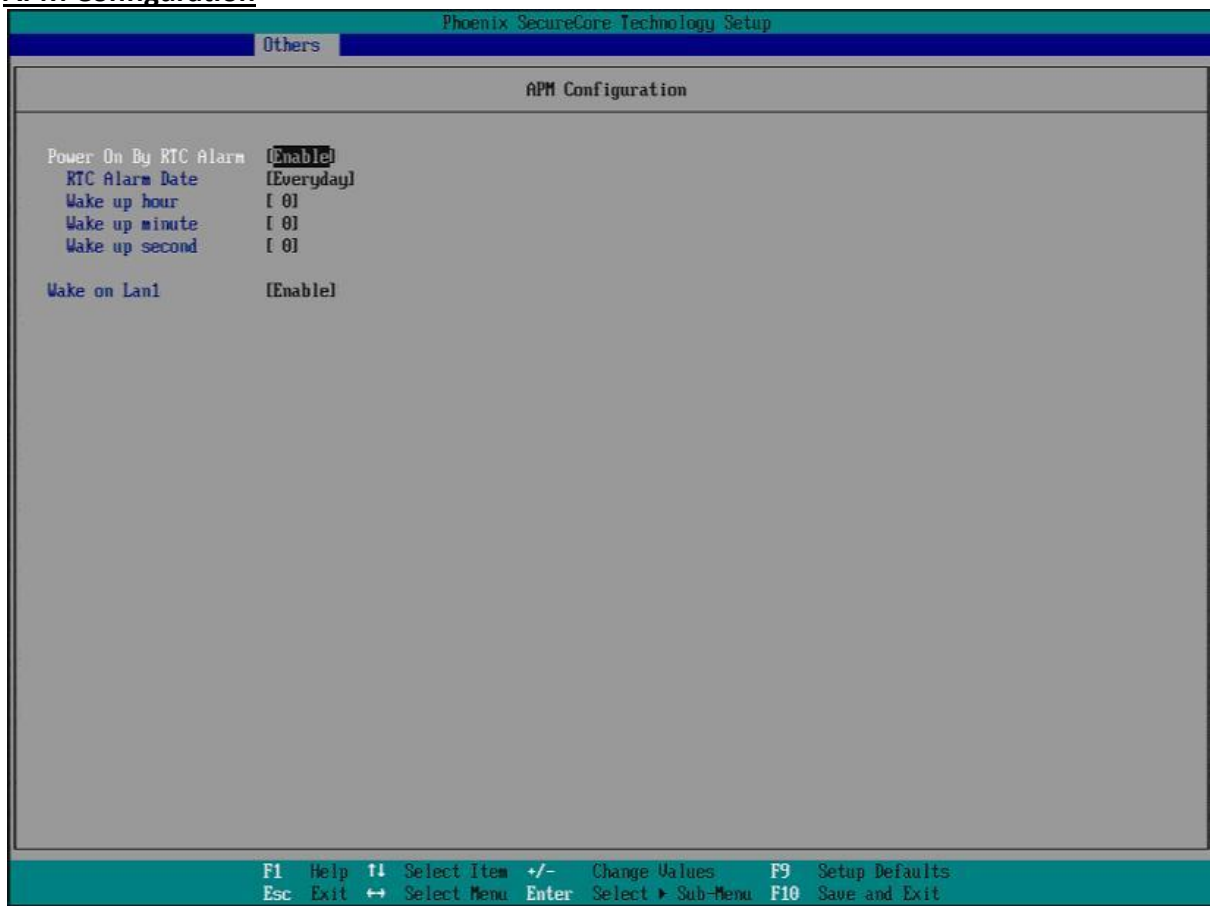
Serial Port1
Choices: Disable 3F8/IRQ4.

Watch Dog Timer Select
Choices: Disable, 15 secs, 30 secs, 1 min, 2 mins, 3 mins.

Hardware Monitor


Phoenix SecureCore Technology Setup
Others
Hardware Monitor
CPU Temp [53 °C]
VCORE [0.71 V]
3.3V [3.31 V]
5.0V [5.17 V]
12.0V [12.36 V]
1.35V [1.34 V]
F1 Help ↑↓ Select Item +/- Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

APM Configuration



Power On By RTC Alarm
Choices: Disable, Enable.

RTC Alarm Date
Choices: Every day, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31.

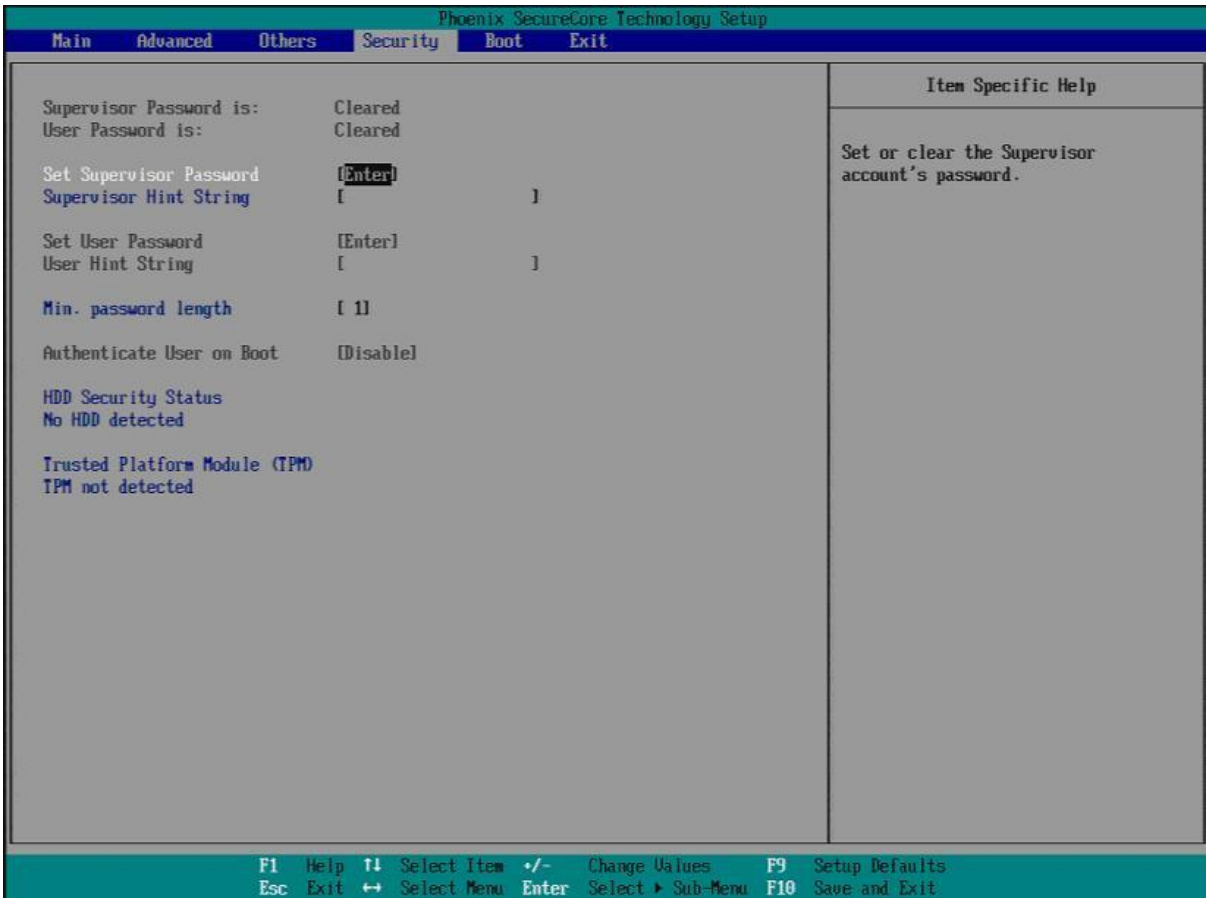
Wake up hour
Choices: 0-23.

Wake up minute
Choices: 0-59.

Wake up second
Choices: 0-59.

Wake on LAN1
Choices: Disable, Enable.

Security



Set Supervisor Password
Set or clear the Supervisor account' password.

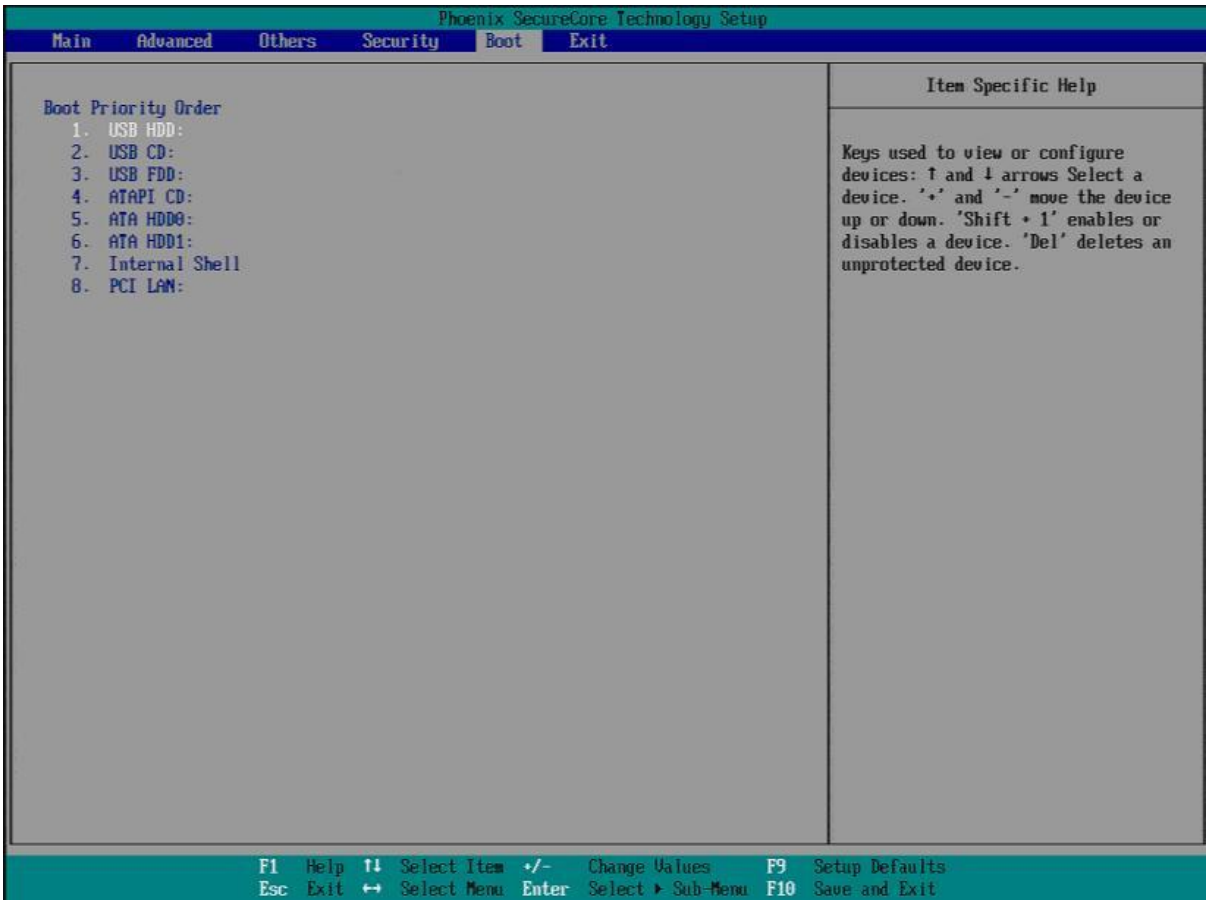
Supervisor Hint String
Press Enter to type Supervisor Hint String.

Set User Password
Set or clear the User account' password.

Supervisor Hint String
Press Enter to type User Hint String.

Min. password length
Set the minimum number of characters for password (1-20).

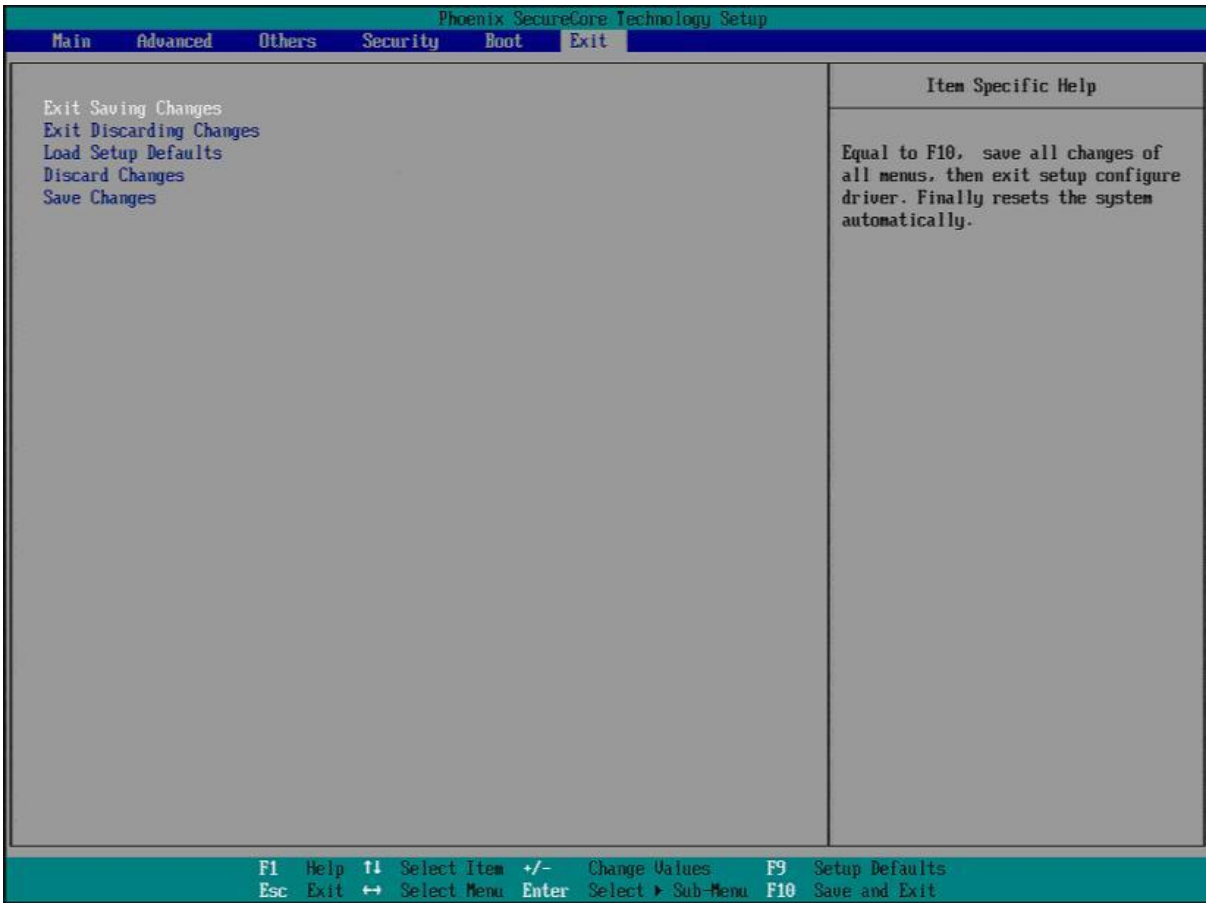
Boot



Boot Priority Order

Keys used to view or configure devices: ↑ and ↓ arrows Select a device. '+' and '-'move the device up or down. 'Shift + 1' enabled or disables a device. 'Del' deletes an unprotected device.

Exit



Exit Saving Changes
Equal to F10, save all changes of all menus, then exit setup configure driver. Finally resets the system automatically.

Exit Discarding Changes
Equal to ESC, never save changes, then exit setup configure driver.

Load Setup Defaults
Equal to F9. Load standard default values.

Load Optimized Defaults
Load settings for optimized boot time and system performance.

Discard Changes
Load the original value of this boot time. Not the default Setup value.

Save Changes
Save all changes of all menus, but do not reset system.

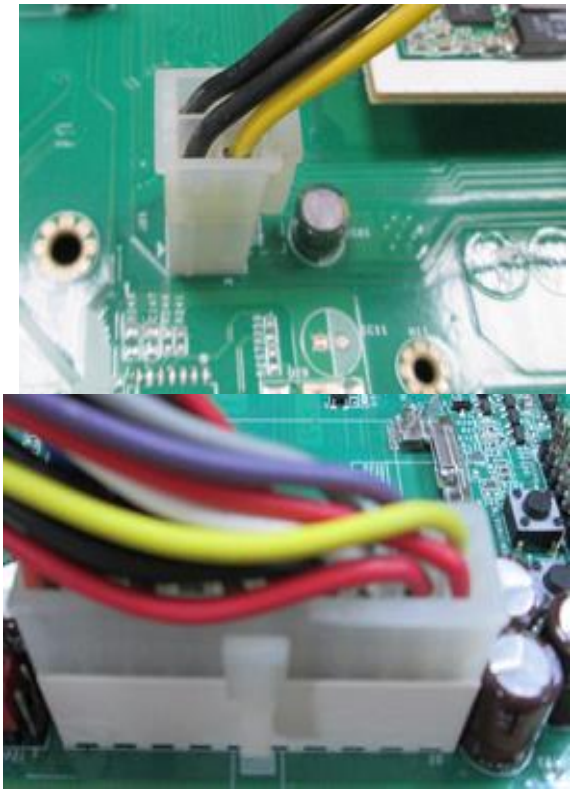
Chapter 5
Troubleshooting

This chapter provides a few useful tips to quickly get PCOM-B632 running with success. As basic hardware installation has been addressed in Chapter 2, this chapter will primarily focus on system integration issues, in terms of BIOS setting, and OS diagnostics.

5.1 Hardware Quick Installation

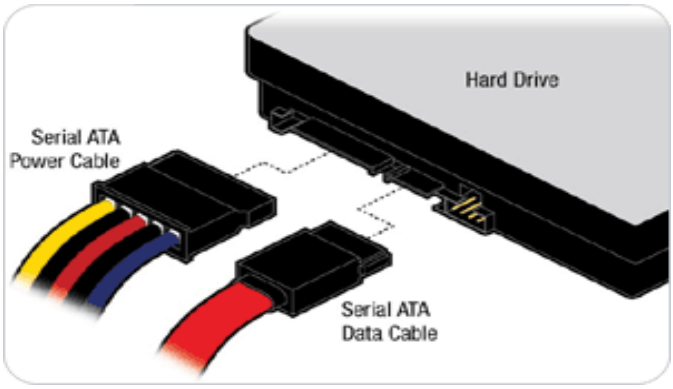
ATX Power Setting

Unlike other Single board computer, PCOM-B632 supports ATX only. Therefore, there is no other setting that really needs to be set up. However, there are only two connectors that must be connected—J25 (4 pins ATX power connector) & J31 (20 pins ATX Power Connector) in the PCOM-C600 carrier board.



Serial ATA

Unlike IDE bus, each Serial ATA channel can only connect to one SATA hard disk at a time; The installation of Serial ATA is simpler and easier than IDE, because SATA hard disk doesn't require setting up Master and Slave, which can reduce mistake of hardware installation.



The PCOM-B632 can support two SATA interface (SATAII, 3.0Gb/s) to the PCOM-C600 carrier board with AHCI or IDE mode. It has two J28 & J30 SATA ports in PCOM-C600 carrier board.

5.2 BIOS Setting

It is assumed that users have correctly adopted modules and connected all the devices cables required before turning on ATX power. 204-pin DDR3 Memory, keyboard, mouse, SATA hard disk, VGA connector, power cable of the device, ATX accessories are good examples that deserve attention. With no assurance of properly and correctly accommodating these modules and devices, it is very possible to encounter system failures that result in malfunction of any device.

To make sure that you have a successful start with PCOM-B632, it is recommended, when going with the boot-up sequence, to hit "F2" key and enter the BIOS setup menu to tune up a stable BIOS configuration so that you can wake up your system far well.

Loading the default optimal setting

When prompted with the main setup menu, please scroll down to "**Load Setup Defaults**", press "**Enter**" and select "**Yes**" to load in default optimal BIOS setup. This will force your BIOS setting back to the initial factory configuration. It is recommended to do this so you can be sure the system is running with the BIOS setting that Portwell has highly endorsed. As a matter of fact, users can load the default BIOS setting any time when system appears to be unstable in boot up sequence.

5.3 FAQ

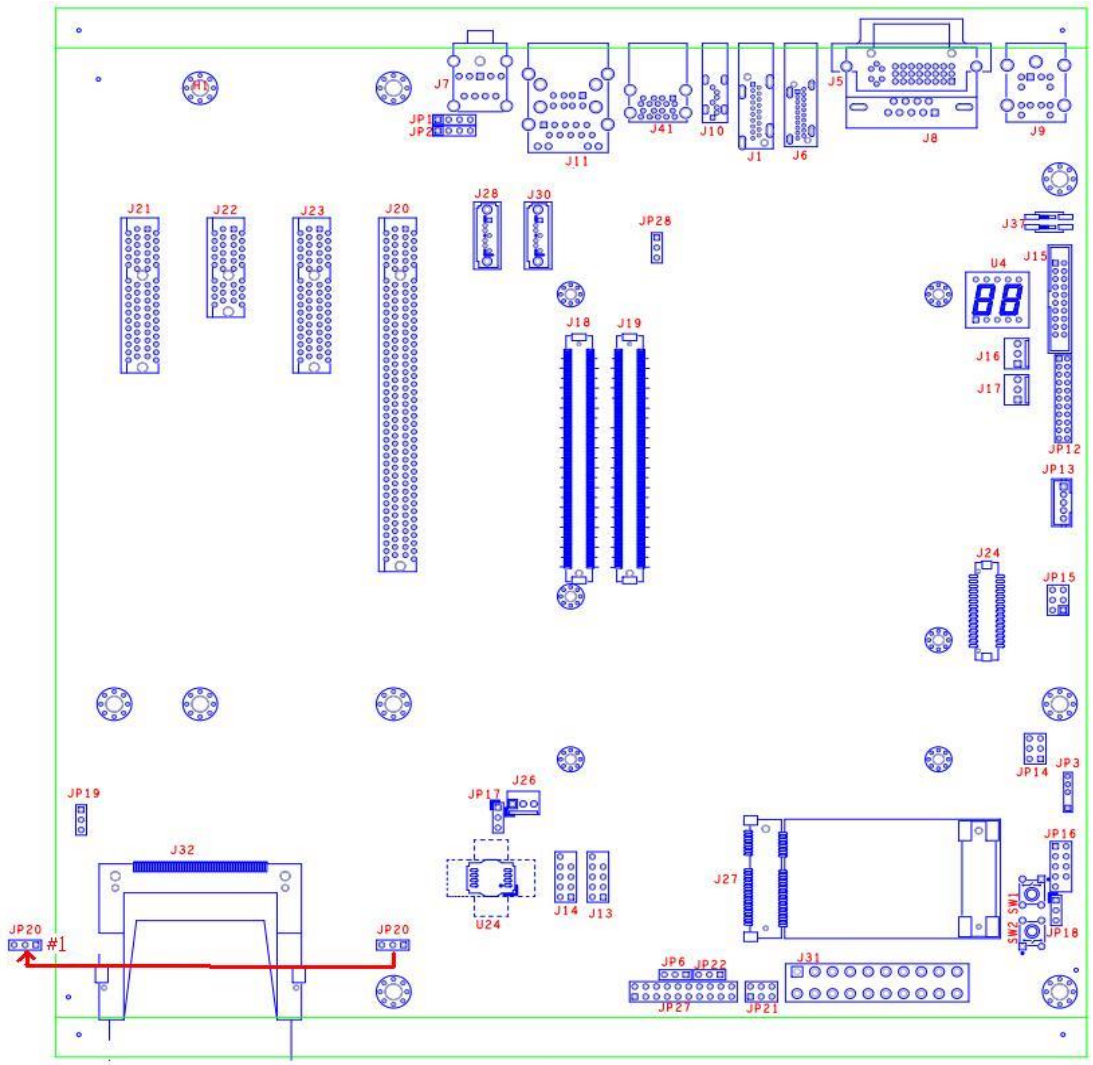
Information & Support

Question: I forget my password of system BIOS, what am I supposed to do?

Answer: You can switch off your power supply then find the JP20 of the PCOM-C600 carrier board to set it from 1-2 short to 2-3 short and wait 5 seconds to clean your password then set it back to 1-2 short to switch on your power supply.

JP20：CMOS Setting

	Jumper Setting Describe
*1-2	Default
2-3	Clean CMOS



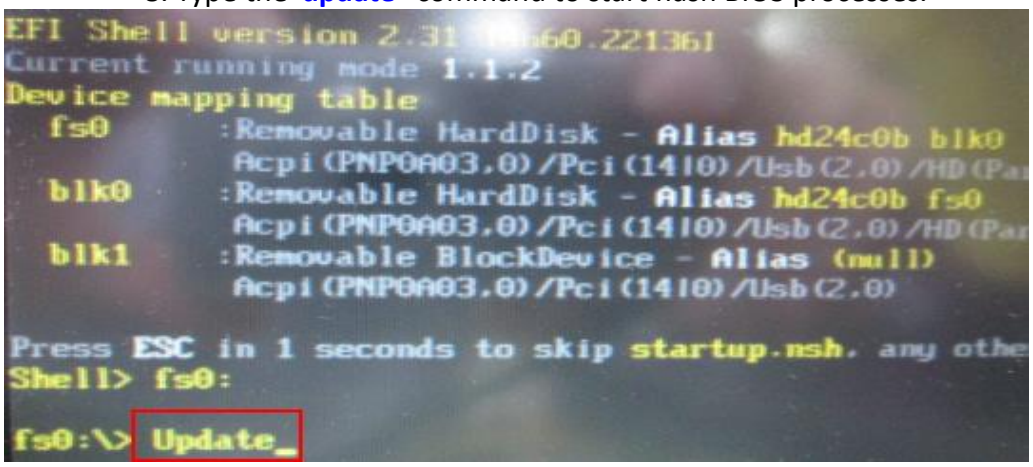
Question: How to update the BIOS file of the PCOM-B632?

Answer: 1. Please visit web site of the **Portwell download center** as below hyperlink
http://www.portwell.com.tw/support/download_center.php
But you must register an account first. **(The E-Mail box should be an existing Company email address that you check regularly.)**
http://www.portwell.com.tw/member/newmember.php

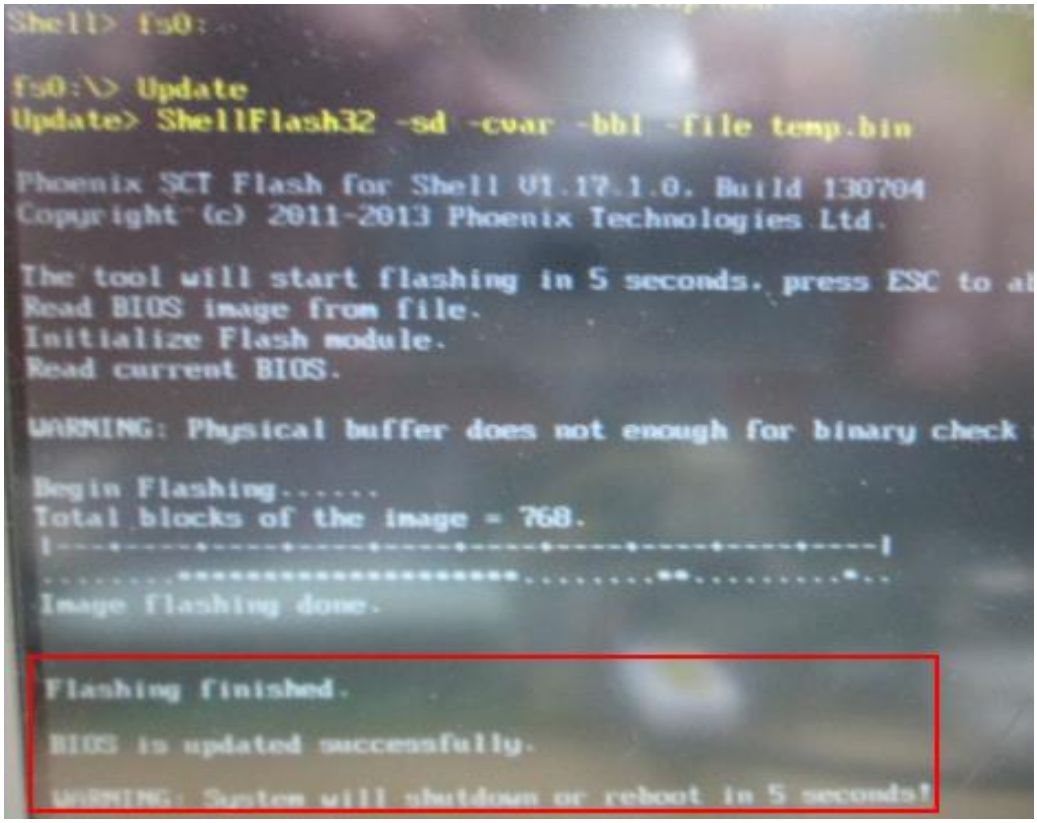
2. Input your User name and password to log in the download center.
3. Select the **"Search download"** to input the keyword **"PCOM-B632"**.
4. Find the **"BIOS "**page to download the ROM file and flash utility.
5. Execute the zip file to root of the bootable USB pen drive. You can get the**"ShellFlash32.efi","temp.bin","Update.nsh"** three files.
6. Insert your USB pen drive in USB port of the PCOM-C600 carrier board and power-on.

7. Boot to EFI-Shell mode then input the "**fs0:**" command to switch to the root of the USB pen drive.

8. Type the"**update**" command to start flash BIOS processes.



9. When it finished all update processes, it will reboot in 5 seconds automatically.



10. Please press the **"F2"** key to BIOS setup menu to select **"Load Setup Defaults"** and then select **"Exit Saving Changes"** option to finish all BIOS flash processes.

Question: What are the attention options when insert PCOM-B632 in PCOM-C600 carrier board?

Answer: 1. The PCOM-C600 carrier board doesn't support the DP display function in Win8 operation system. It must use the **PCOM-C605** carrier board which can support the DP display function.

2. It you want to use the **eDP** display function, it needs to use a **PA-M1V display adapter (optional)** and need to modify a customized version BIOS to enable the DP option of the BIOS. If you need to use this adapter, please ask your PCOM-B632 provider or distributor.

Note:
Please visit our Download Center to get the Catalog, User manual, BIOS, and driver files.
http://www.portwell.com.tw/support/download_center.php
If you have other additional technical information or request which is not covered in this manual, please fill in the technical request form as below hyperlink.
http://www.portwell.com.tw/support/problem_report.php
We will do our best to provide a suggestion or solution for you.
Thank you.