OXY5323A

3.5" SBC with Intel® Apollo Lake Processor

Safety Information

Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that your power supply is set to the correct voltage in your area.
- If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your local distributor.

Operation safety

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter any technical problems with the product, contact your local distributor

Statement

Revision History

Revision	Date (yyyy/mm/dd)	Changes
V1.0	2021/09/08	First release
V1.1	2022/02/15	Add Standard Compliance

Packing List

Item	Description	Q'ty
1	OXY5323A	1
2	Driver CD+ User's manual	1

If any of the above items is damaged or missing, please contact your local distributor.

Ordering information

Model	Description
OXY5323A-01ET	Intel®Apollo Lake-I E3930,DDR3L 1866MHz,1 x 204-pin SO-DIMM, Max. 8GB (Non-ECC),2 x Intel® I210-IT Giga LAN,4 x USB 3.0,1 x HDMI 1.4, 1 x VGA,2 x RJ-45,Normal Temperature: -20 to 70°C
OXY5323A-01UT	Intel®Apollo Lake-I E3930,DDR3L 1866MHz,1 x 204-pin SO-DIMM, Max. 8GB (Non-ECC),2 x Intel® I210-IT Giga LAN,4 x USB 3.0,1 x HDMI 1.4, 1 x VGA,2 x RJ-45,Wide Temperature **(Optional*) : -40 to 85°C**
OXY5323A-02ET	Intel®Apollo Lake-M N3350,DDR3L 1866MHz,1 x 204-pin SO-DIMM, Max. 8GB (Non-ECC),2 x Intel® I210- IT Giga LAN,4 x USB 3.0,1 x HDMI 1.4, 1 x VGA,2 x RJ-45,Normal Temperature: -20 to 70°C
OXY5323A-02UT	Intel®Apollo Lake-M N3350,DDR3L 1866MHz, x 204-pin SO-DIMM, Max. 8GB (Non-ECC),2 x Intel® I210- IT Giga LAN,4 x USB 3.0,1 x HDMI 1.4, 1 x VGA,2 x RJ-45, Wide Temperature **(Optional*):-40 to 85°C**
OXY5323A-03ET	Intel®Apollo Lake-M N4200,DDR3L 1866MHz,1 x 204-pin SO-DIMM, Max. 8GB (Non-ECC),2 x Intel® I210- IT Giga LAN,4 x USB 3.0,1 x HDMI 1.4, 1 x VGA,2 x RJ-45,Normal Temperature: -20 to 70°C
OXY5323A-03UT	Intel®Apollo Lake-M N4200,DDR3L 1866MHz,1 x 204-pin SO-DIMM, Max. 8GB (Non-ECC),2 x Intel® I210- IT Giga LAN,4 x USB 3.0,1 x HDMI 1.4, 1 x VGA,2 x RJ-45, Wide Temperature **(Optional*):-40 to 85°C**

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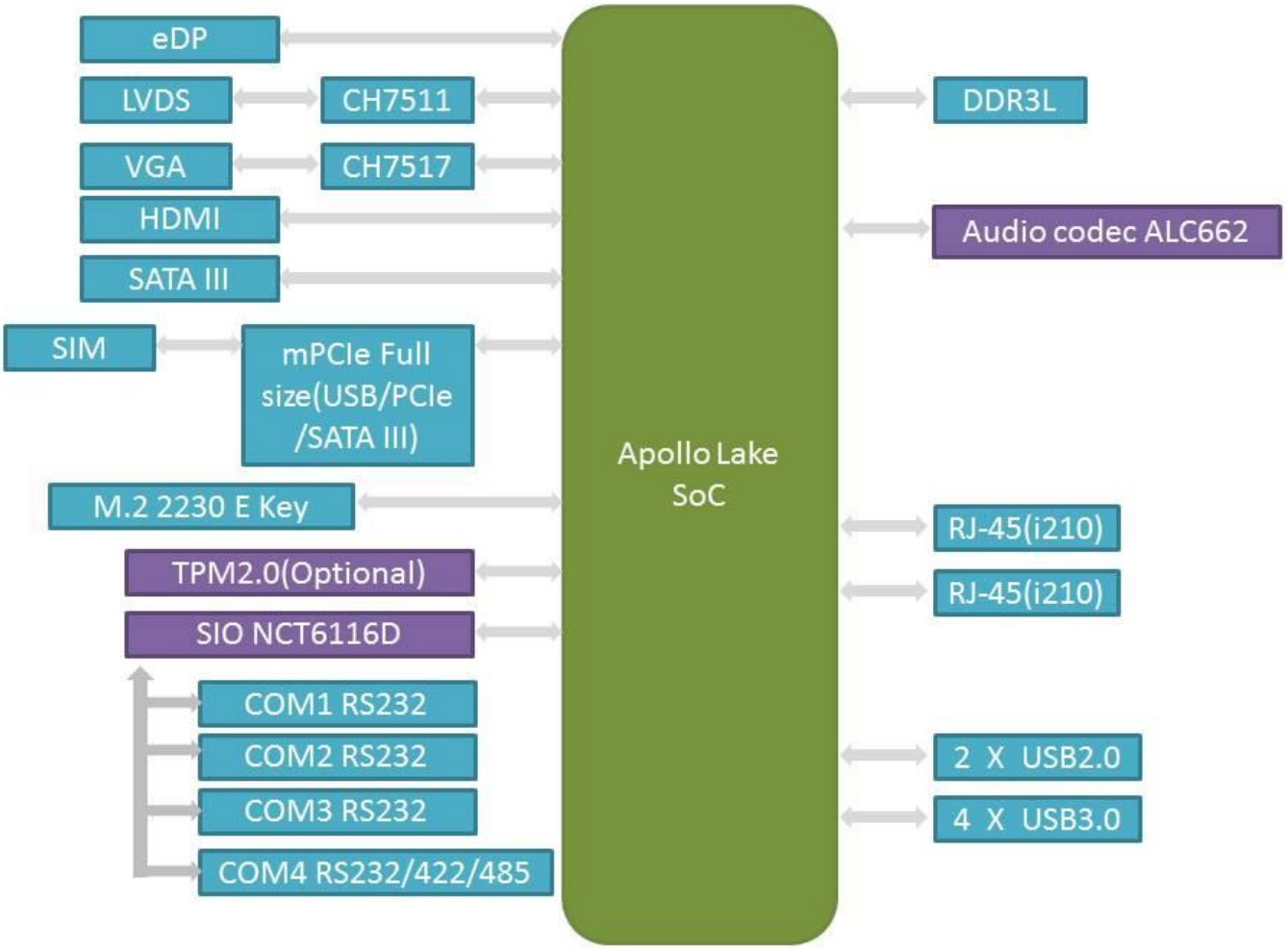
Chapter 1 : Production Introduction

1.1 Block Diagram

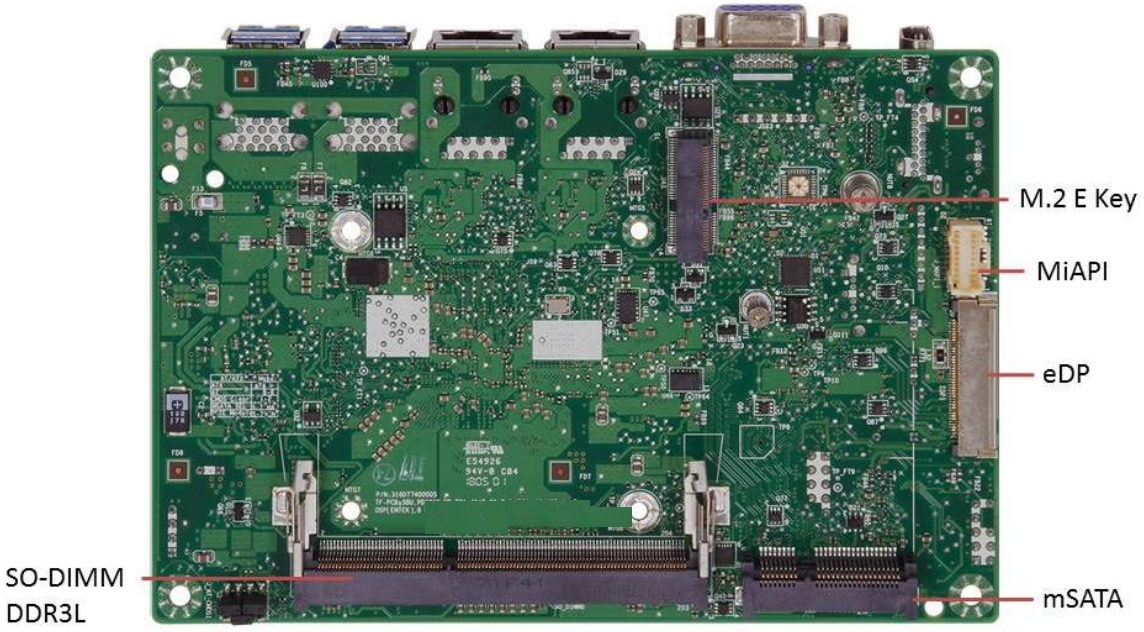


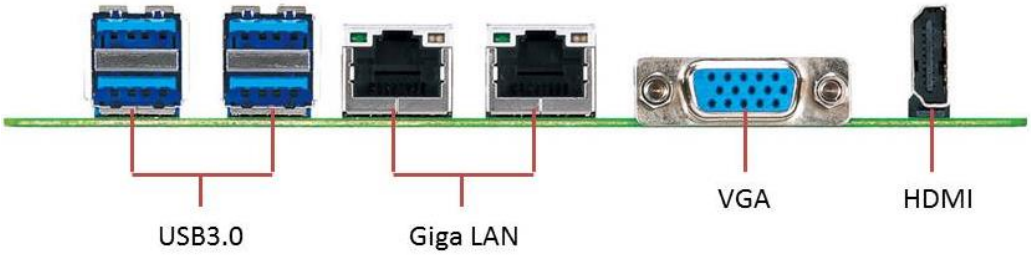
1.2 Specifications

System	
CPU	Intel® Apollo Lake-M N3350/N4200 Processor Intel® Apollo Lake-I E3930 Processor
Memory type	DDR3L 1866MHz,1 x 204pin SO-DIMM, Max. 8GB (Non-ECC)
Chipset	Intel® SoC Integrated
Graphics	Intel® HD Graphics
Ethernet	2 x Intel® I210-IT Giga LAN
Audio	Realtek® ALC662
I/O Chipset	Nuvoton NCT6116D
TPM	Nuvoton NPCT650ABCYX TPM2.0 (Optional)
Expansion Slot	Storage: Mini PCIe Full size (USB / PCIe / SATA), w/ SIM Card Holder Wireless: M.2 2230 E-key (PCIe, USB)
BIOS	AMI BIOS
H / W Monitor	Temperature Monitor, Voltage Monitor
Watchdog Timer	1 to 255 Steps by Software Program
Smart Fan Control	CPU Fan
Graphics	
VGA	Up to 1920 x 1200 @60 Hz
HDMI	Up to 4K (3840 x 2160) @30 Hz
LVDS	Up to 1920 x 1200 @60 Hz
eDP (Option)	Up to 4K (3840 x 2160) @60 Hz
Rear I/O	
USB	4 x USB 3.0
Display I/O	1 x HDMI 1.4, 1 x VGA
LAN I/O	2 x RJ-45
Internal Connectors	
Storage	2 x SATAIII (1 x SATA is multiplexed with 1 x mSATA port)
USB	2 x USB 2.0
Display I/O	1 x LVDS, 1 x eDP 1 x Backlight Connector
Audio I/O	1 x Audio Header (Front Panel Mic-in & Line-out)
Serial Port	4 x RS232 (One Supports RS232/422/485)
GPIO	1 x MiAPI Header (Programmable. Support 10bit GPIO)

Fan	1 x 4-pin CPU Fan Header
Power	1 x 8~24V ATX Power Connector, 1 x AT/ATX Mode Select Jumper
Others	1 x CMOS Jumper
Power Requirement	
Power Input	8~24V Wide Range DC Input w/4-pin ATX connector (Pitch: 4.2mm)
Environmental	
Operating Temperature	-20 to 70°C (Optional -40 to 85°C)
Storage Temperature	-40 to 85°C
Operating Humidity	10% to 95% R/H, non-condensing
Standard Compliance	
Standard Compliance	CE/FCC
OS	
OS Support	Windows® 10 64bit, Linux(Support by request)

1.3 Board Placement

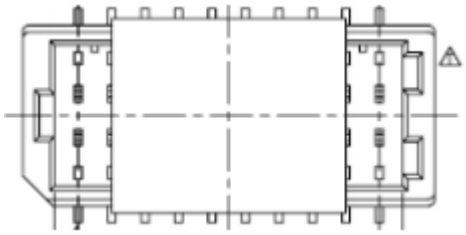




Chapter 2 : Jumpers and Connectors

2.1 FRONT_PANEL1 (JLVDS1) LVDS panel pin out define

PIN	DEFINITION	PIN	DEFINITION
1	Minus signal of odd channel 0 (LVDS)	2	Minus signal of odd channel 0 (LVDS)
3	Plus signal of odd channel 0 (LVDS)	4	Plus signal of odd channel 0 (LVDS)
5	Minus signal of odd channel 1 (LVDS)	6	Minus signal of odd channel 1 (LVDS)
7	Plus signal of odd channel 1 (LVDS)	8	Plus signal of odd channel 1 (LVDS)
9	Minus signal of odd channel 2 (LVDS)	10	Ground
11	Plus signal of odd channel 2 (LVDS)	12	Minus signal of odd channel 2 (LVDS)
13	Ground	14	Plus signal of odd channel 2 (LVDS)
15	Minus signal of odd clock channel (LVDS)	16	Minus signal of odd clock channel (LVDS)
17	Plus signal of odd clock channel (LVDS)	18	Plus signal of odd clock channel (LVDS)
19	Minus signal of odd channel 3 (LVDS)	20	Minus signal of odd channel 3 (LVDS)
21	Plus signal of odd channel 3 (LVDS)	22	Plus signal of odd channel 3 (LVDS)
23	Ground	24	Ground
25	NC	26	NC
27	Power Supply +12.0V	28	Power Supply +12.0V
29	Power Supply +12.0V	30	Power Supply +12.0V

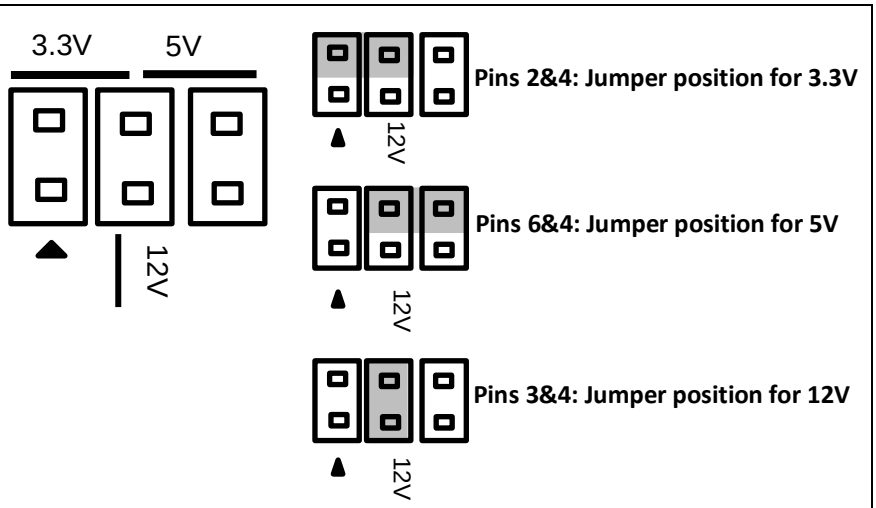


2.2 eDP1 Pin out define

Pin	Signal	Pin	Signal
1	NC_ Reserved	21	LCD_VCC
2	High-speed _GND	22	LCD_ Self _ Test-or-NC
3	Lane3_N(DDPD_[3]N)	23	LCD_GND
4	Lane3_P(DDPD_[3]P)	24	LCD_GND
5	High-speed_ GND	25	LCD_GND
6	Lane2_N(DDPD_[2]N)	26	LCD_GND
7	Lane2_P(DDPD_[2]P)	27	HDP(DDPD_HPD)
8	High-speed_ GND	28	BKLT_GND
9	Lane1_N(DDPD_[1]N)	29	BKLT_GND
10	Lane1_P(DDPD_[1]P)	30	BKLT_GND
11	High-speed_ GND	31	BKLT_GND
12	Lane0_N(DDPD_[0]N)	32	BKLT_ENABLE
13	Lane0_P(DDPD_[0]P)	33	BKLT_PWM_DIM
14	High-speed_ GND	34	NC_ Reserved
15	AUX_CH_P(DDPD_AUXP)	35	NC_ Reserved
16	AUX_CH_N(DDPD_AUXN)	36	BKLT_PWR
17	High-speed_ GND	37	BKLT_PWR
18	LCD_VCC	38	BKLT_PWR
19	LCD_VCC	39	BKLT_PWR
20	LCD_VCC	40	NC_ Reserved

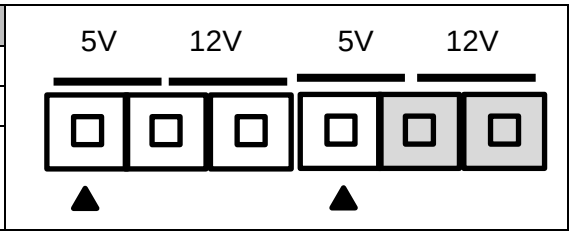
LCD_PS1 : Panel LCD voltage selection header pin-out

Pin	Signal	Description
1	Key	No pin
2	3.3V	3.3V option (Default)
3	12V	12V option
4	LCD_VCC	Send voltage to connector
5	Key	No pin
6	5V	5V option



BKLT_PS1 : Backlight inverter voltage selection header

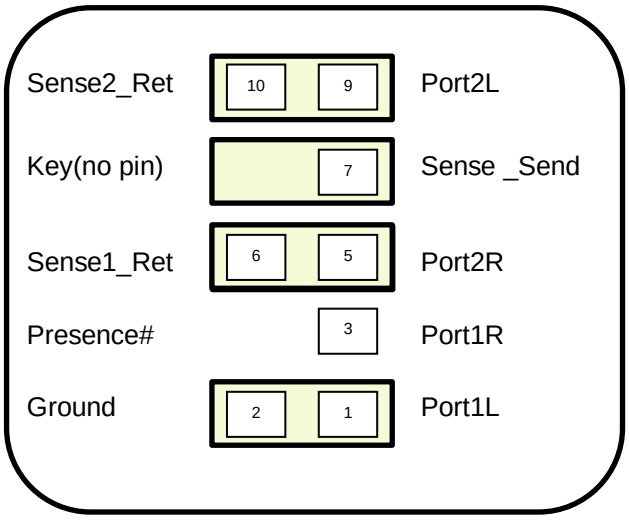
Pin	Signal	Description
1	5V	5V option
2	BKLT_PWR	BKLT_PWR
3	12V	12V option (default)

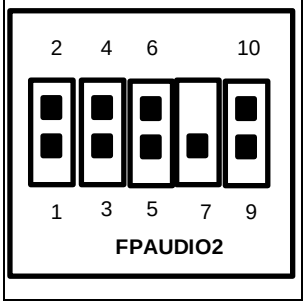


FPD_PWR1 Pin out define

Pin	Signal	Description
1	BKLT_EN	Backlight enable
2	BKLT_PWM	Backlight control
3	BKLT_PWR	Backlight inverter power
4	BKLT_PWR	Backlight inverter power
5	BKLT_GND/Brightness _GND	Ground (shared)
6	BKLT_GND/Brightness _GND	Ground (shared)
7	Brightness _Up	Panel brightness increase
8	Brightness _Down	Panel brightness decrease

2.3 FPAUDIO2 Audio Pin out define





Pin	Pin Assignment	Pin	Pin Assignment
1	MIC2 L (Microphone 2 Left)	2	AGND (Analog Ground)
3	MIC2 R (Microphone 2 Right)	4	AVCC (Analog VCC Power)
5	FRO-R (Front Right)	6	MIC2_JD (Microphone 2 Jack Detect)
7	F_IO_SEN (Front I/O Sensor)	8	Key
9	FRO-L (Front Left)	10	LINE2_JD (LINE 2 Jack Detect)

2.4 LAN port

Diagram	LED	Color	State	Condition
	Link	N/A	Off	LAN link is not established
		Green	On	LAN link is established
			Blinking	LAN activity occurring
	Speed	N/A	Off	10 Mb/s data rate
		Green	On	100 Mb/s data rate
		Yellow	On	1000 Mb/s data rate

2.5 SATA

SATA PORT0: This is optional port from mini PCI-E and SATA0 Connector
Board must also support the following Serial ATA Gen 3 compliant ports
One fully-shrouded right angle internal SATA gen 3 ports (colored GREY)

SATA PORT1
Board must also support the following Serial ATA Gen 3 compliant
one fully-shrouded right angle internal SATA gen 3 ports (colored BLACK)

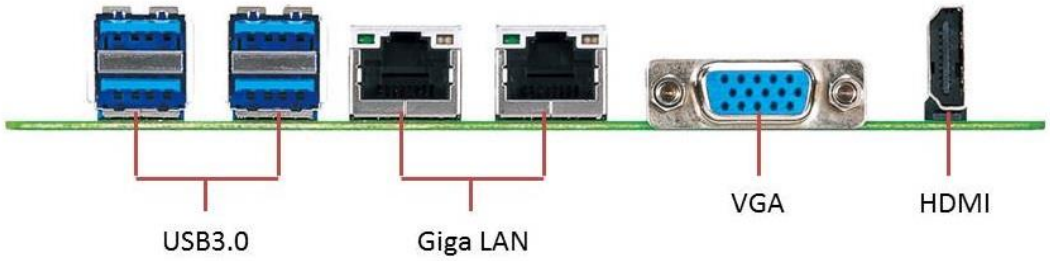
Note: All SATA must be compliant with the Serial ATA Revision 3.0 Specification, as noted in the Reference Documentation section.

2.6 Super I/O

Board must support the following features through a Super IO controller device:

- SMBUS/SMLink support for SOC temp
- Support for as one fan headers as required in section 1.4.2 - Fan Header Requirements
- Support minimum of 2 temperature inputs per PWM Controller for duty cycle determination
- Support for non-ACPI based fan control (thermal responsiveness independent of system software) Support 4ea serial port: 3ea RS232, 1ea RS485/RS422/RS232
- Legacy I/O (for applicable ports)

2.7 Back Panel I/O

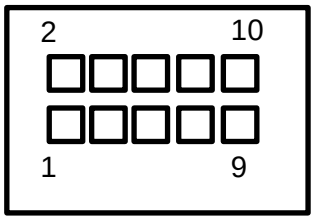


2.8 USB

Front panel USB header pin-out define (FP_USB1)

Pin	Signal	Pin	Signal
1	+5V DC	2	+5V DC
3	Data (negative)	4	Data (negative)
5	Data (positive)	6	Data (positive)
7	Ground	8	Ground
9	Key (no pin)	10	No Connect

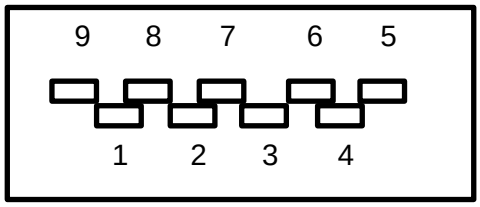
FP_USB1



Rear USB3.0 I/O port (J5/J10)

Pin	Signal Name	Description	Mating Sequence
1	VBUS	Power	Second
2	D-	USB 2.0 differential pair	Third
3	D+		
4	GND	Ground for power return	Second
5	StdA _SSRX-	SuperSpeed receiver differential pair	Last
6	StdA_ SSRX+		
7	GND_DRAIN	Ground for signal return	
8	StdA_ SSTX-	SuperSpeed transmitter differential pair	
9	StdA_ SSTX+		
Shell	Shield	Connector metal shell	First

J5/J10



2.9 PCI Express Expansion Slots

Board's PCI Express slot(s) must be PCI Express Specification v2.0 compliant and compatible with PCI Express v2.0 and v1.1 add-in cards.

PCI Express x16 slot must be compatible with x16/x8/x4/x1 PCI Express add-on cards. PCIe x16 slot's retention mechanism must be consistent across Intel desktop boards.

PCI Express x4 slot(s) must be compatible with PCI Express x4 and x1 add-on cards. Slot power capability must comply with 25W requirement as defined in the PCI Express Card Electromechanical 3.0 Specification.

PCI Express x1 slot(s) must be compatible with x1 PCI Express add-on cards.

Route WAKE# to support ACPI wake events.

Design must provide SMBus routed to all PCI Express slots, with individual/per slot de-stuffing option via strapping resistor (strapping resistor must be stuffed by default).

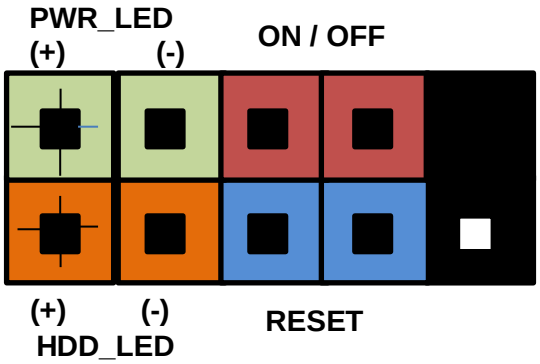
Follow the ATX specification and Industrial DFA (Design for Assembly) standard requirements for connector placement and spacing.

Keep-out zone of PCI Express v3.0 x16 slot must allow use of double-width and long graphics cards without blocking access to any connectors (i.e. SATA ports, DIMM connector tabs, front panel audio header, …).

2.10 Expansion Slot Layout

Slot Configuration	Electrical	Physical Connector	Color
J43	M.2 key M socket	M.2 Key E socket	Black
J25	PCI Express 3.0 x1	Mini PCIE	Black

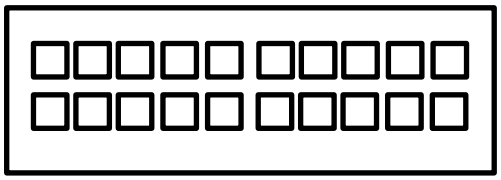
2.11 Front Panel Pin out define (JS2)



Pin	Signal Name	Description	Pin	Signal Name	Description
1	HDD_POWER_LED	Pull-up resistor (750Ω) to +5V	2	POWER_LED_MAIN	[Out] Front panel LED (main color)
3	HDD_LED#	[Out] Hard disk activity LED	4	POWER_LED_ALT	[Out] Front panel LED (alt color)
5	GROUND	Ground	6	POWER_SWITCH#	[In] Power switch
7	RESET_SWITCH#	[In] Reset switch	8	GROUND	Ground
9	+5V_DC	Power	10	KEY	No pin

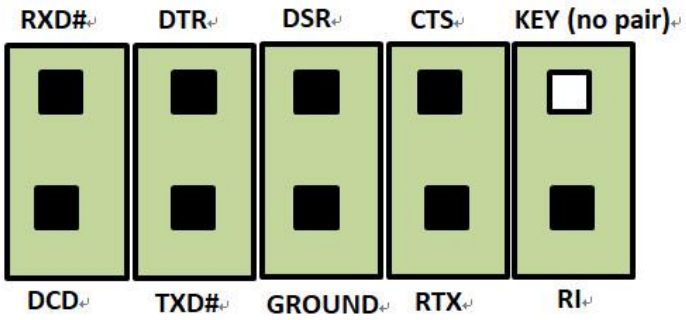
2.12 J_MiAPI_1 Pin out define

Pin	Signal Name	Pin	Signal Name
1	MAPI_GPIO1	2	VCC
3	MAPI_GPIO2	4	MAPI_GPIO6
5	MAPI_GPIO3	6	MAPI_GPIO7
7	MAPI_GPIO4	8	MAPI_GPIO8
9	MAPI_GPIO5	10	MAPI_GPIO9
11	Watchdog Timer	12	MAPI_GPIO10
13	Power Button	14	SMB_MAIN_DATA
15	UART_TX	16	SMB_MAIN_CLK
17	UART_RX	18	5VSB
19	GND	20	N/C



2.13 Serial Port

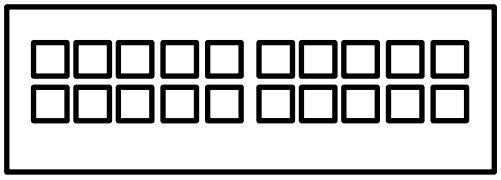
J_RS485_P4, J_RS232_P2 Serial port header pin out define



RS232_P1P3 Serial port header pin out define

Pin	Signal RS232	Pin	Signal RS232
1	DCD (Data Carrier Detect)	2	RXD# (Receive Data)
3	TXD# (Transmit Data)	4	DTR (Data Terminal Ready)
5	Ground	6	DSR (Data Set Ready)
7	RTS (Request To Send)	8	CTS (Clear To Send)
9	RI (Ring Indicator)	10	NC
11	DCD (Data Carrier Detect)	12	RXD# (Receive Data)
13	TXD# (Transmit Data)	14	DTR (Data Terminal Ready)
15	Ground	16	DSR (Data Set Ready)
17	RTS (Request To Send)	18	CTS (Clear To Send)
19	RI (Ring Indicator)	20	NC

RS485/RS422/RS232 feature:



2.14 AT/ATX, CMOS , mSATA header in silkscreen / feature (J_AT_CMOS1) pin out define

JUMPER	J_AT_CMOS1
(1-2)	Clear CMOS
(1-3)	Normal
(4-6)	ATX
(6-8)	AT
(5-7)	PCIE
(5-7) NA	mSATA

JUMPER	(1-2)	(1-3)
Clear CMOS	Clear CMOS	Normal

CMOS clear
Normal: 1-3
Clear CMOS: 1-2

JUMPER	(8-6)	(4-6)
AT/ATX	AT Mode	ATX(Default)

mSATA detection function:

JUMPER	(5-7) IN	(5-7) NA
mSATA/PCIE	PCIE 3G Module(Default)	mSATA

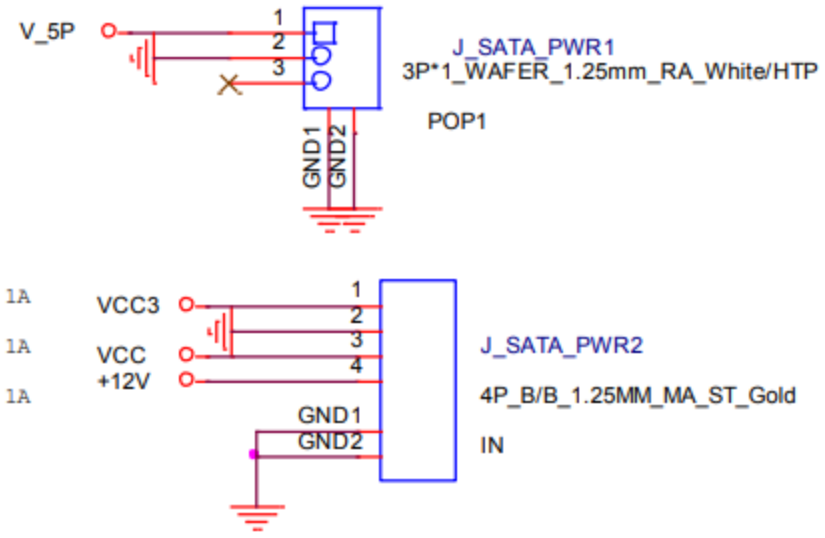
2.15 SATA power 1.25mm cable pin out define

J_SATA_PWR1

Pin	signal
1	5V
2	GND
3	NC

J_SATA_PWR2

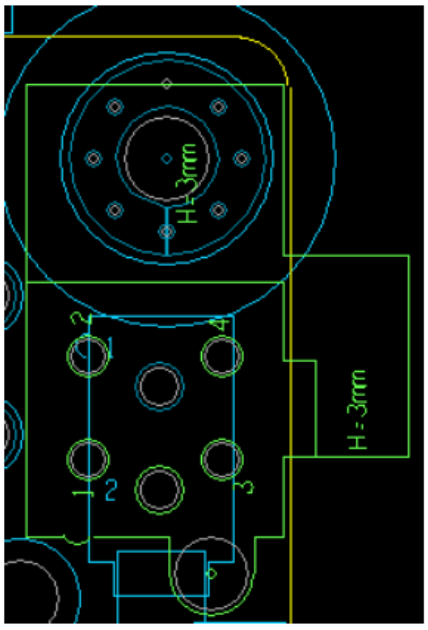
Pin	signal
1	VCC3
2	GND
3	VCC
4	+12V

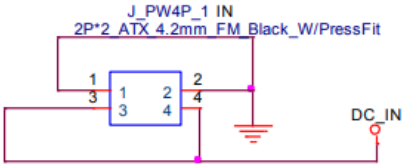


2.16 ATX power 4P/DC power 4.2mm pin out define

J_PW4P_1

Pin	signal
1	GND
2	GND
3	Power 8V~24V
4	Power 8V~24V





2.17 Thermal Management and Fan Control

Nuvoton NCT6104D Super IO: backup alternate solution as it leverages existing hardware in the designs, but software infrastructure must be put in place to support this solution.

Regardless of solution chosen, BIOS/driver/tools support and subsystem validation is required, even if solution is not needed by pilot.

Board must use Super IO solution for hardware monitoring and thermal management.
Super IO implementation must be supported by BIOS, tools and drivers necessary for custom thermal profile management no later than by fab B samples.

BIOS/tools/driver support and subsystem validation is required.

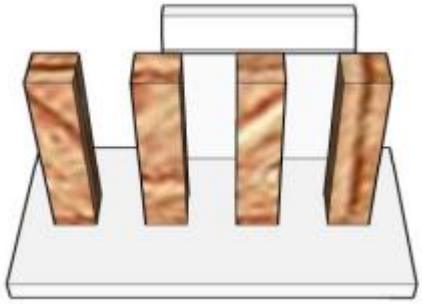
The thermal management capability must support temperature sensors near CPU VR FETs as well as near or on the memory components; shall only one temperature sensor be feasible it must be located near the CPU VR FETs.

The following thermal management features must be supported:

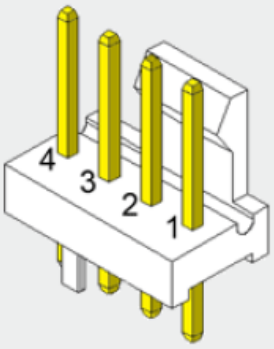
Temperature monitoring at the following locations:
• remote diode near CPU VR FETs
• remote diode near or on the memory components
 Voltage monitoring (in priority order): +12V, V_SM, CPU VCC_VCGI, CPU VNN_SVID

2.18 CPU Fans

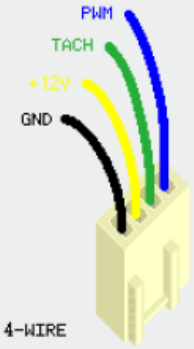
Processor fan header (J20) :



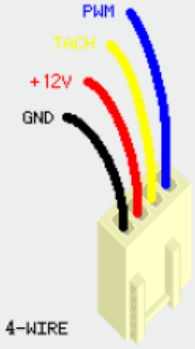
Motherboard Fan 4 Pin header Connector.



Fan 4 Pin Connector.



Pin	Name	Color
1	GND	black
2	+12VDC	yellow
3	Sense	green
4	Control	blue



For some AMD cpu fans:

Pin	Name	Color
1	GND	black
2	+12VDC	red
3	Sense	yellow
4	Control	blue

2.19 Fan Header Requirements

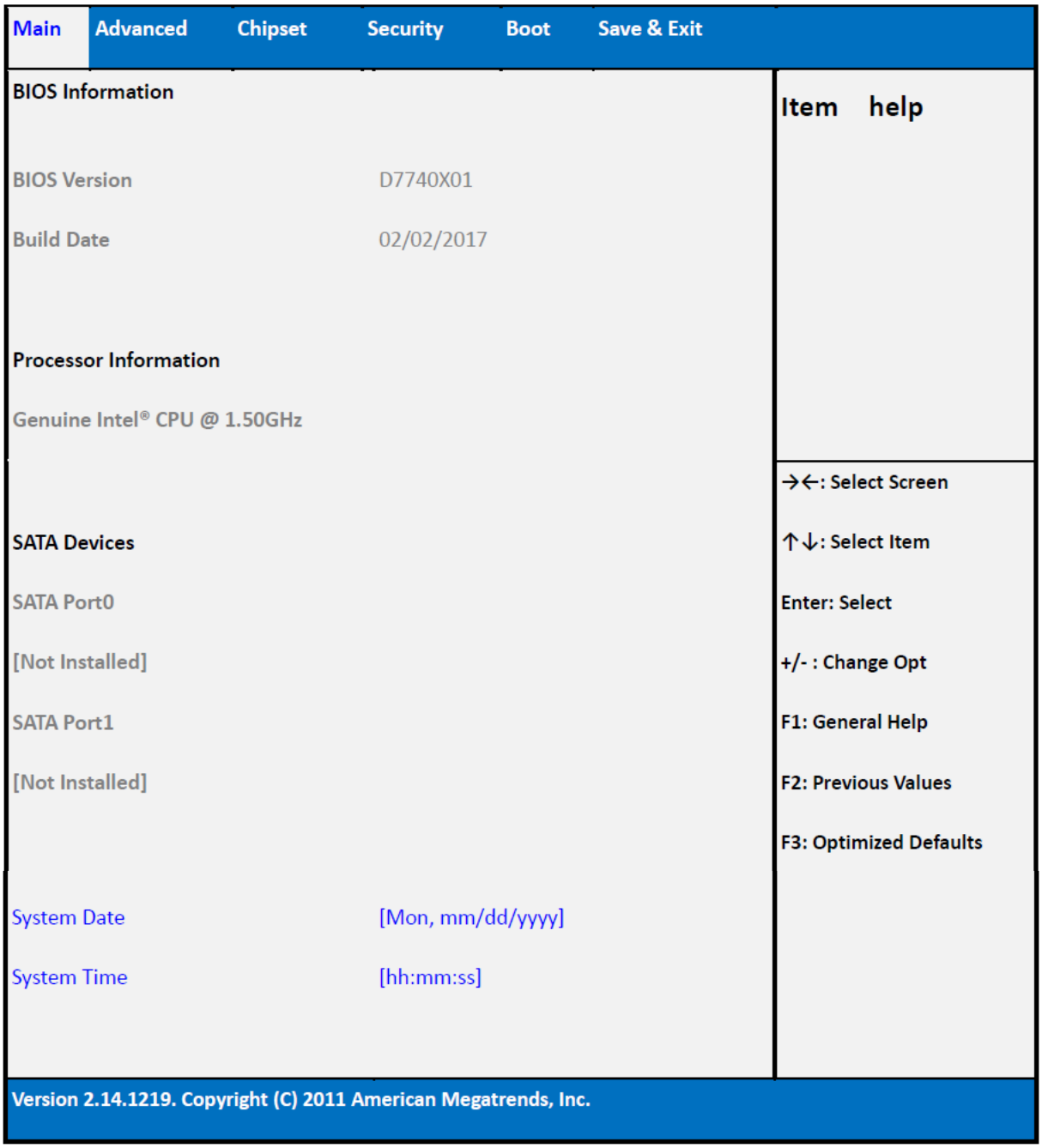
The below requirements must be met for the 4-pin processor/heatsink fan (CPU FAN) header:

- Closed loop fan speed control via the FANPWM0 signal routed to pin-4
- Route fan tachometer signal to FANTACH0 input
- Support 2A continuous draw
- Clearly label as "CPU FAN"
- Locate closest to the CPU as required by the CDPG boxed CPU

Chapter 3 : BIOS Specification

This chapter provides information about how to set up BIOS and use BIOS menu items to adjust basic function settings.

3.1 MAIN PAGE



Field Name	BIOS Version
Default Value	Display the version of the BIOS
Comment	This field is not selectable. There is no help text associated with it.

Field Name	Build Date
Default Value	Display build time of the BIOS
Comment	This field is not selectable. There is no help text associated with it.

Field Name	Processor Information
Value	Display the installed CPU brand.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	SATA Port 0
Value	Display the installed SATA port 0 devices.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	SATA Port 1
Value	Display the installed SATA port 0 devices.
Comment	This field is not selectable. There is no help text associated with it.

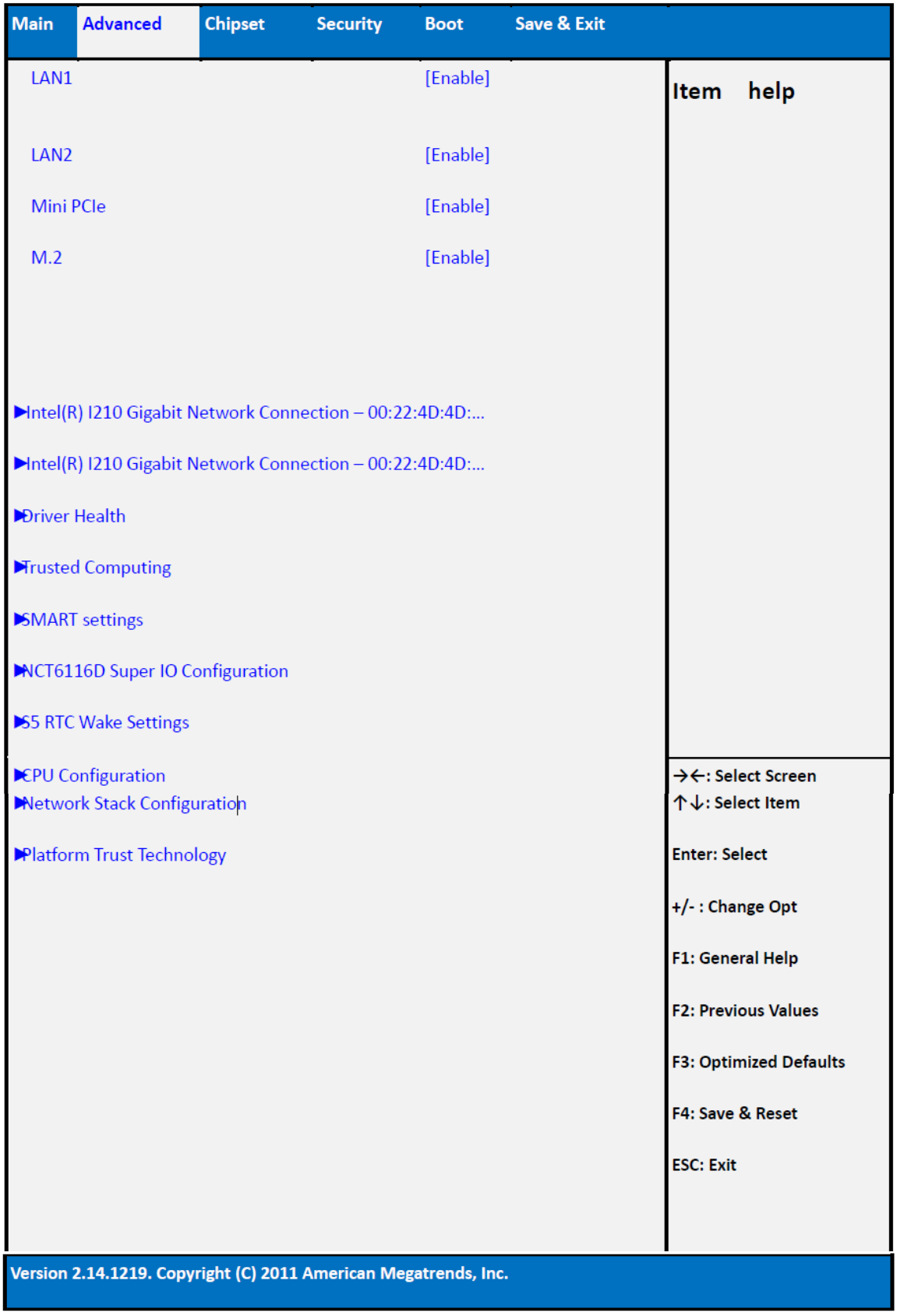
Field Name	Total Memory
Value	Display the installed memory size.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	Memory Speed
Default Value	Display the installed memory speed
Comment	This field is not selectable. There is no help text associated with it.

Field Name	System Date
Default Value	[xxx, mm dd yyyy]
Possible Value	[xxx, xx:xx:xxxx]
Help	Set the Date. Use Tab to switch between Date elements. Default Ranges: Year: 2005-2099 Months: 1-12 Days: dependent on month

Field Name	System Time
Default Value	[hh :mm :ss]
Possible Value	[xx :xx :xx]
Help	Set the Time. Use Tab to switch between Time elements.

3.2 ADVANCED PAGE



Field Name	**LAN1**
Default Value	Enabled
Possible Value	Disabled Enabled
Help	Enable/Disable LAN Device

Field Name	**LAN2**
Default Value	Enabled
Possible Value	Disabled Enabled
Help	Enable/Disable LAN Device

Field Name	**Mini PCIe**
Default Value	Enabled
Possible Value	Disabled Enabled
Help	Enable/Disable mini PCIE

Field Name	**M.2**

Default Value	Enabled
Possible Value	Disabled Enabled
Help	Enable/Disable M.2

Field Name	**Intel(R) I210 Gigabit Network Connection – 00:22:4D:4D:00:01**
Help	Configure Gigabit Ethernet device parameters
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Intel(R) I210 Gigabit Network Connection – 00:22:4D:4D:00:02**
Help	Configure Gigabit Ethernet device parameters
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Driver Health**
Help	Provides Health Status for the Drivers/Controllers
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Trusted Computing**
Help	Trusted Computing settings
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**SMART Settings**
Help	System SMART settings.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**NCT6104D Super IO Configuration**
Help	System Super IO Chip Parameters.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**S5 RTC Wake Settings**
Help	Enable system to wake from S5 using RTC alarm
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**CPU Configuration**
Help	CPU Configuration Parameters.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Network Stack Configuration**
Help	Network stack Settings.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Platform Trust Technology**
Help	Platform Trust Technology
Comment	Press Enter when selected to go into the associated Sub-Menu.

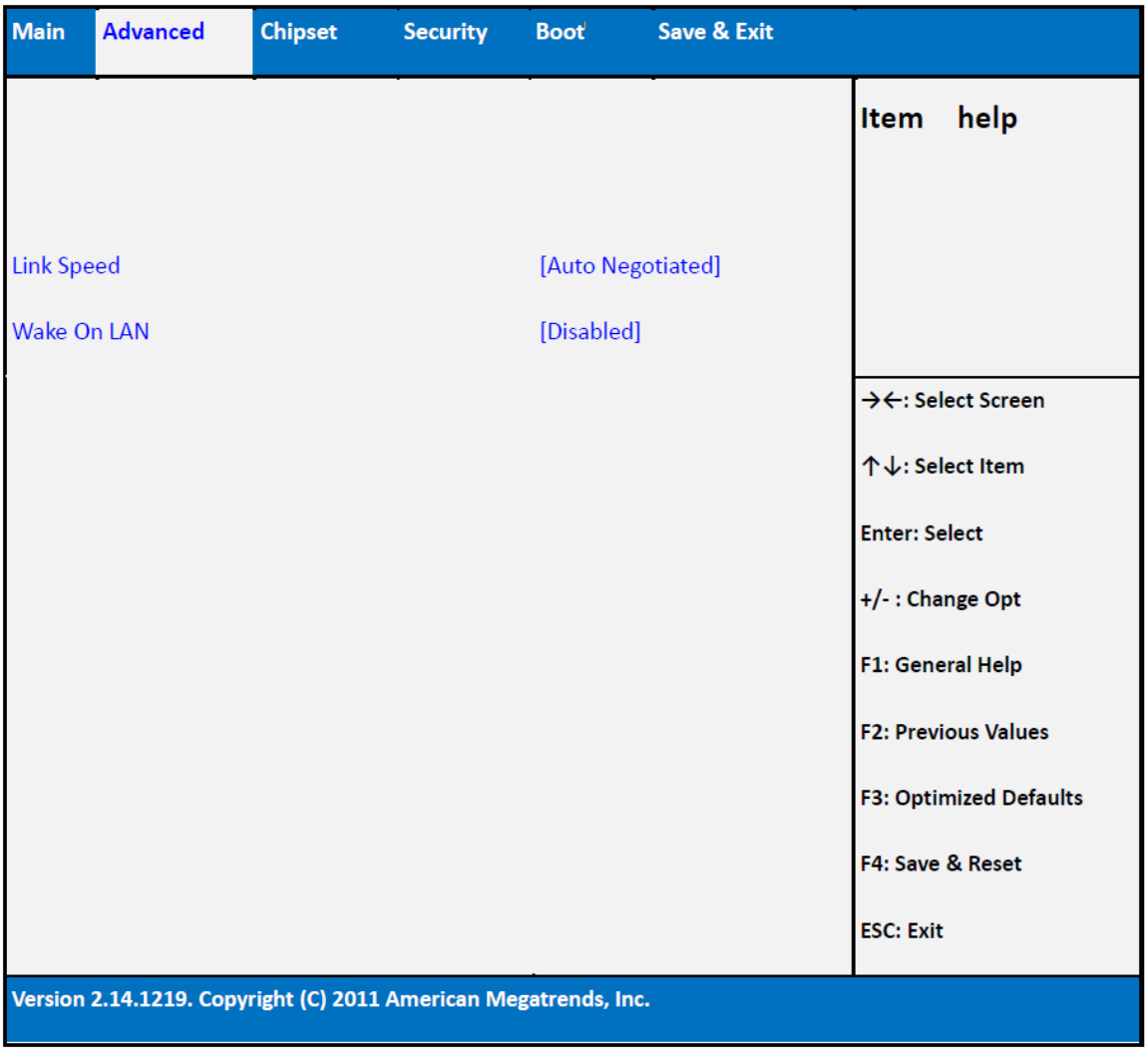
3.2.1 INTEL® I210 GIGABIT NETWORK CONNECTION – 00:22:4D:4D:00:01

Field Name	**NIC Configuration**
Help	Click to configure the network device port.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Blink LEDs**

Default Value	0
Possible Value	0-15
Help	Identify the physical network port by blinking the associated LED.

3.2.2 NIC CONFIGURATION



Field Name	**Link Speed**
Default Value	Auto Negotiated
Possible Value	Auto Negotiated 10Mbps Half 10 Mbps Full 100 Mbps Half 100 Mbps Full

Help	Specifies the port speed used for the selected boot protocol.

Field Name	**Wake On LAN**
Default Value	Enabled
Possible Value	Disabled Enabled
Help	Enables the server to be powered on using an in-band magic packet.

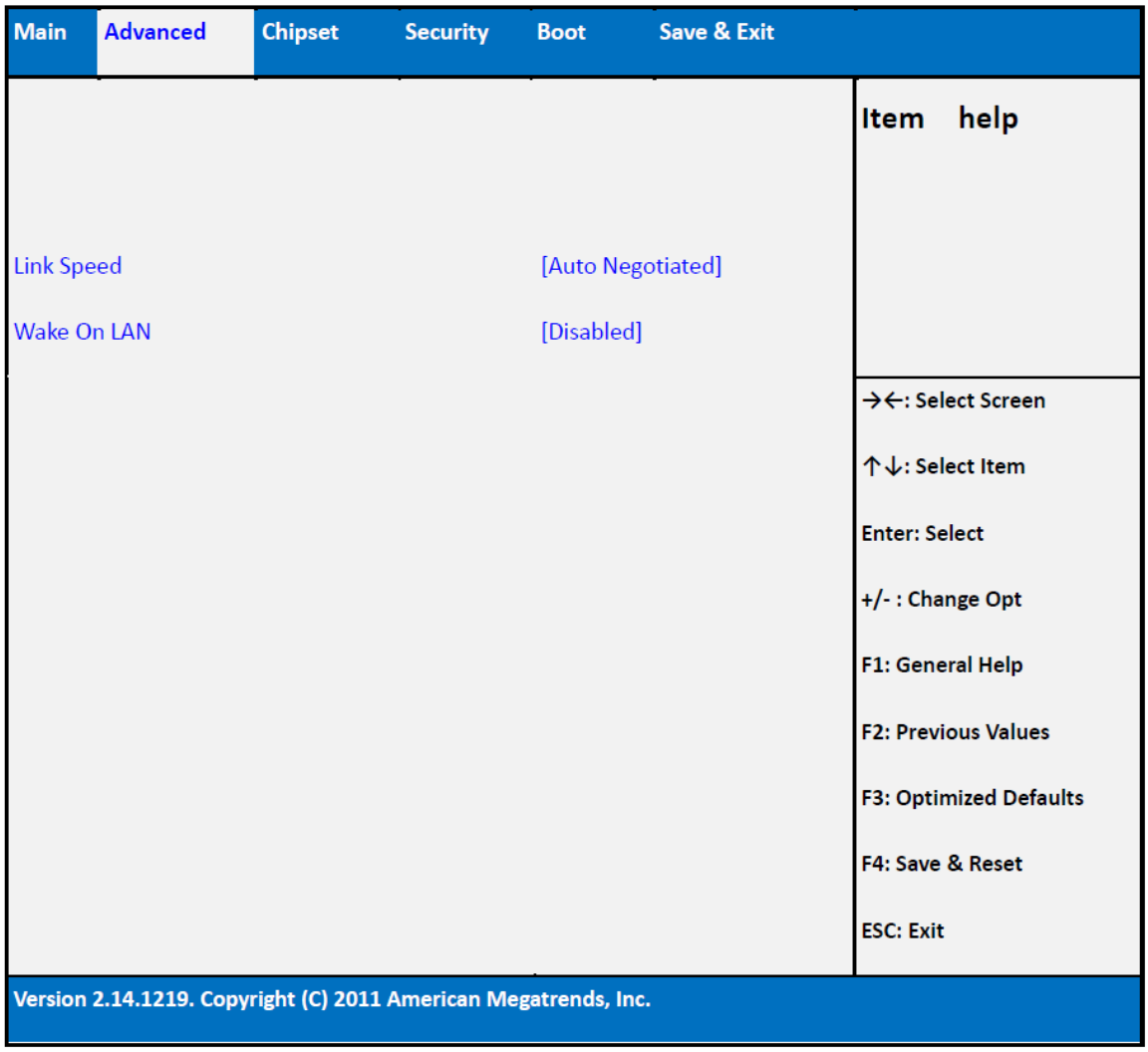
3.2.3 INTEL® I210 GIGABIT NETWORK CONNECTION – 00:22:4D:4D:00:02

Field Name	**NIC Configuration**
Help	Click to configure the network device port.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Blink LEDs**

Default Value	0
Possible Value	0-15
Help	Identify the physical network port by blinking the associated LED.

3.2.4 NIC CONFIGURATION

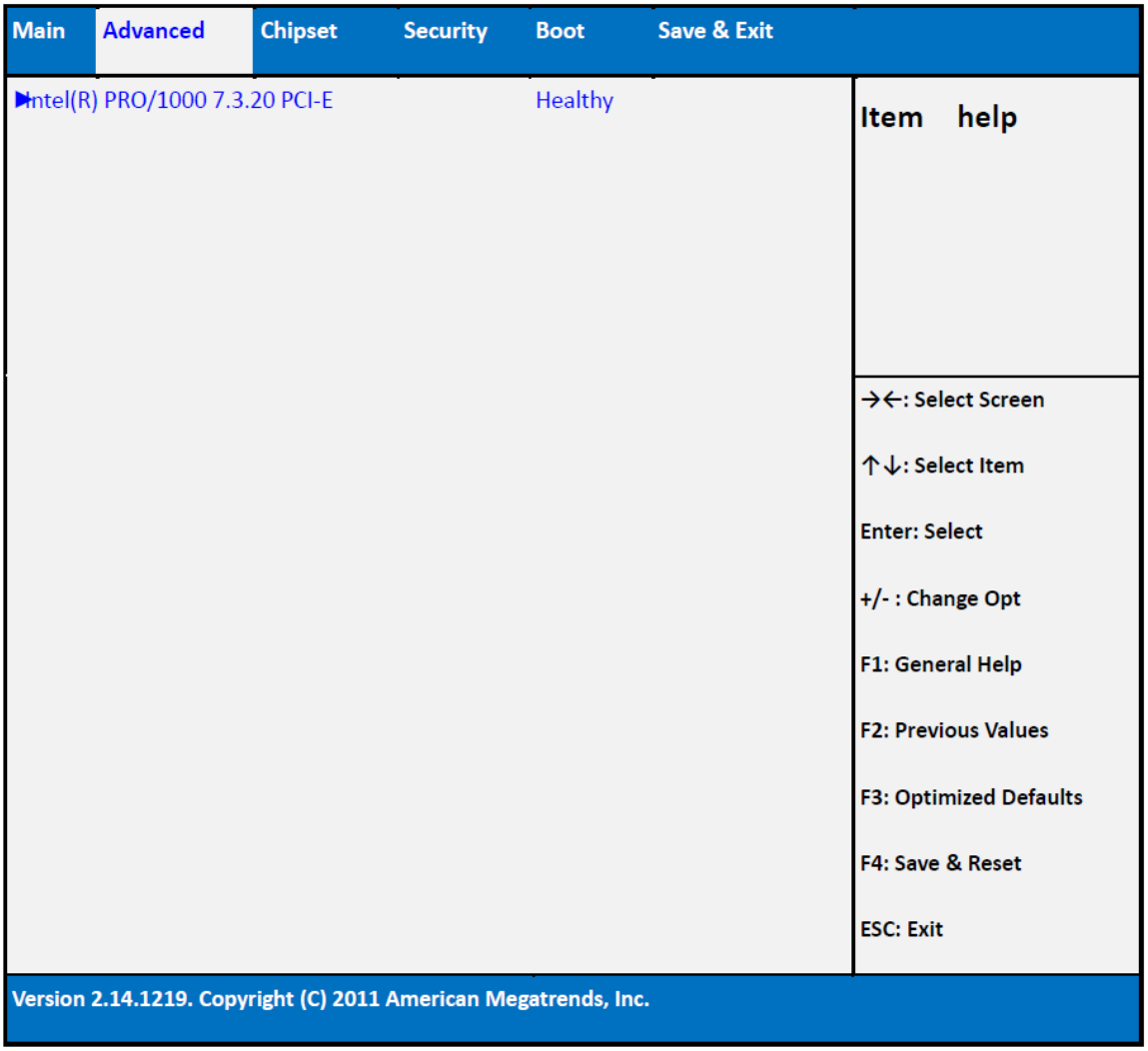


Field Name	**Link Speed**
Default Value	Auto Negotiated
Possible Value	Auto Negotiated 10Mbps Half 10 Mbps Full 100 Mbps Half 100 Mbps Full

Help	Specifies the port speed used for the selected boot protocol.

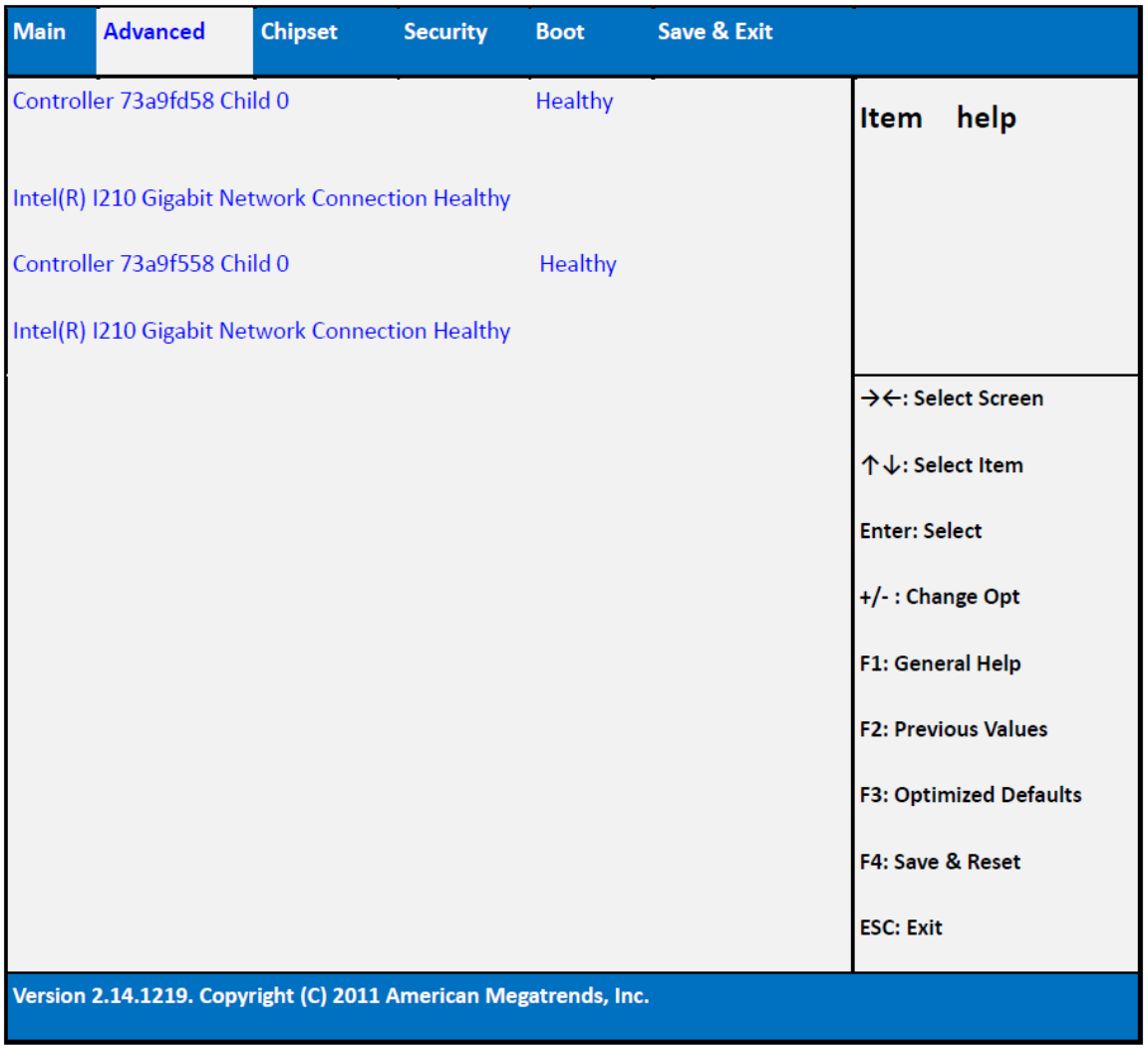
Field Name	**Wake On LAN**
Default Value	Enabled
Possible Value	Disabled Enabled
Help	Enables the server to be powered on using an in-band magic packet.

3.3 DRIVER HEALTH



Field Name	**Intel(R) PRO/1000 7.3.20 PCI-E**
Help	Provides Health Status for the Drivers/Controllers
Comment	Press Enter when selected to go into the associated Sub-Menu.

3.3.1 INTEL® PRO/1000 7.3.20 PCI-E



Field Name	**Controller 73a9fd58 Child 0**
Help	Provides Health Status for the Drivers/Controllers
Comment	Show driver/controller status

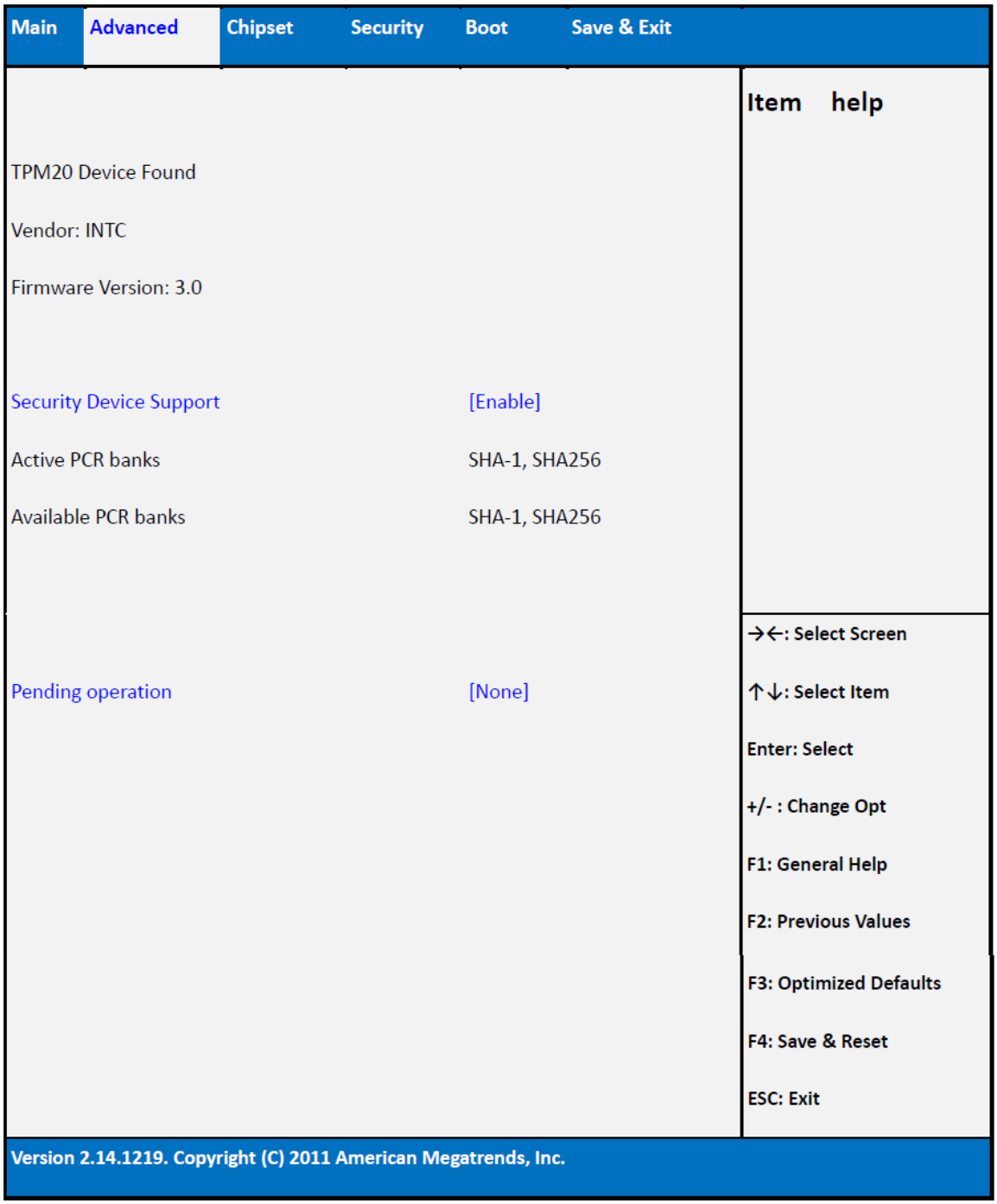
Field Name	**Intel(R) I210 Gigabit Network Connection**
Help	Provides Health Status for the Drivers/Controllers

Comment	Show driver/controller status

Field Name	**Controller 73a9f558 Child 0**
Help	Provides Health Status for the Drivers/Controllers
Comment	Show driver/controller status

Field Name	**Intel(R) I210 Gigabit Network Connection**
Help	Provides Health Status for the Drivers/Controllers
Comment	Show driver/controller status

3.4 TRUSTED COMPUTING

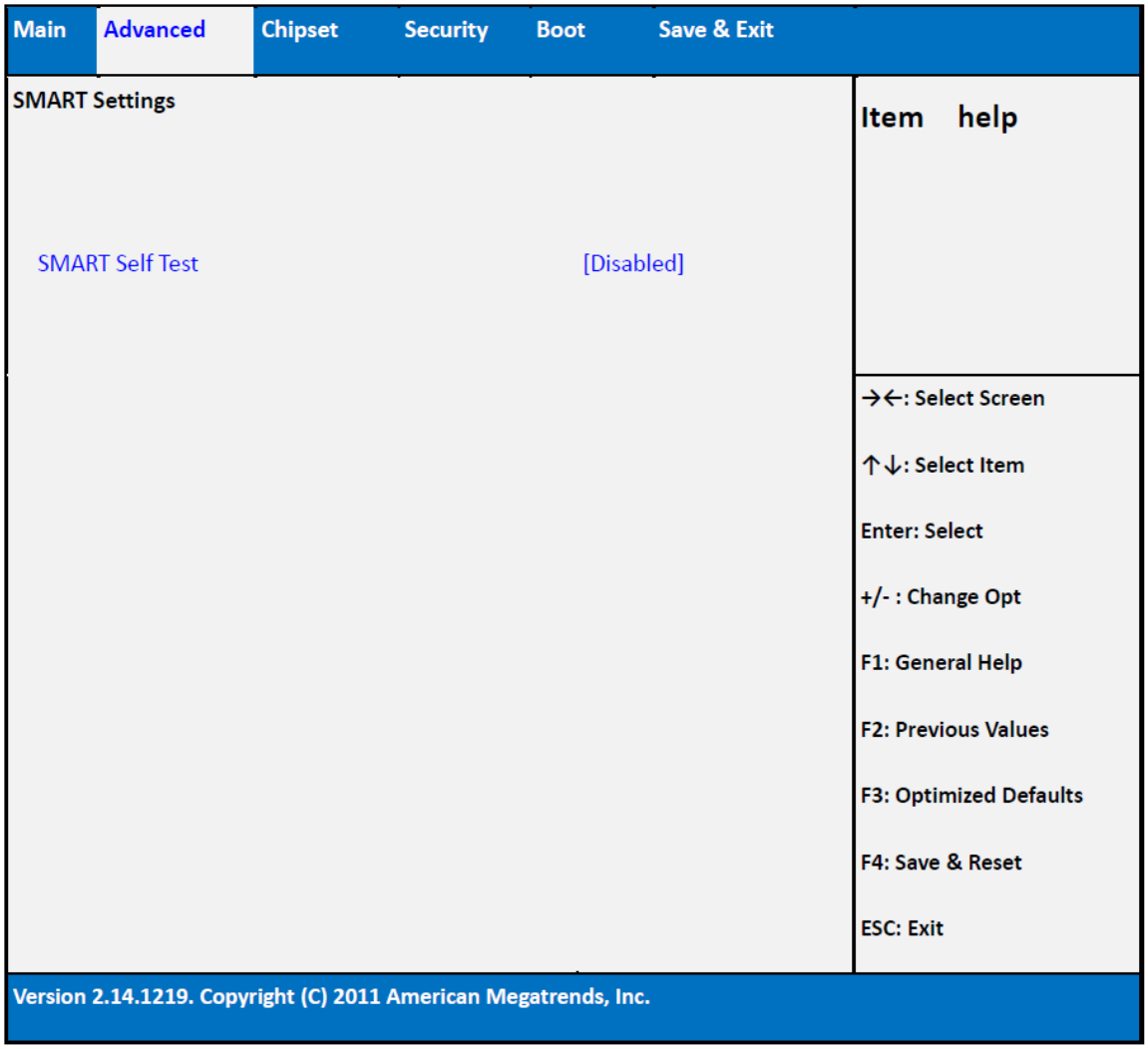


Field Name	**Security Device Support**
Default Value	Enabled

Possible Value	Disabled Enabled
Help	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

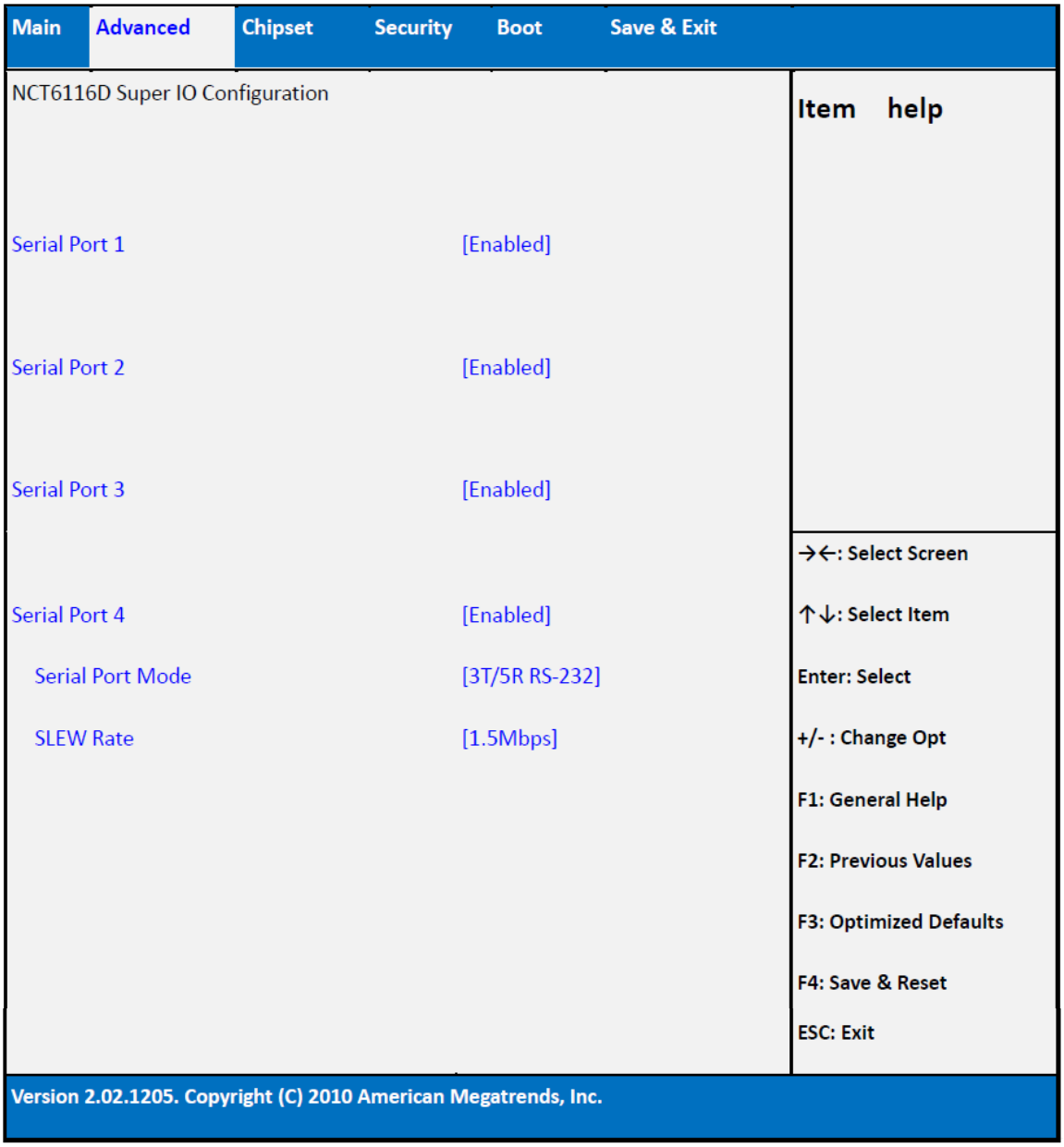
Field Name	**Pending operation**
Default Value	None
Possible Value	None TPM Clear
Help	Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device.

3.5 SMART SETTINGS



Field Name	SMART Self Test
Default Value	[Disabled]
Possible Value	Disabled Enabled
Help	Run SMART Self Test on all HDDs during POST.

3.6 NCT6116D SUPER IO CONFIGURATION



Field Name	Serial Port 1
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Enable or Disable Serial Port (COM)

Field Name	Serial Port 2
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Enable or Disable Serial Port (COM)

Field Name	Serial Port 3
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Enable or Disable Serial Port (COM)

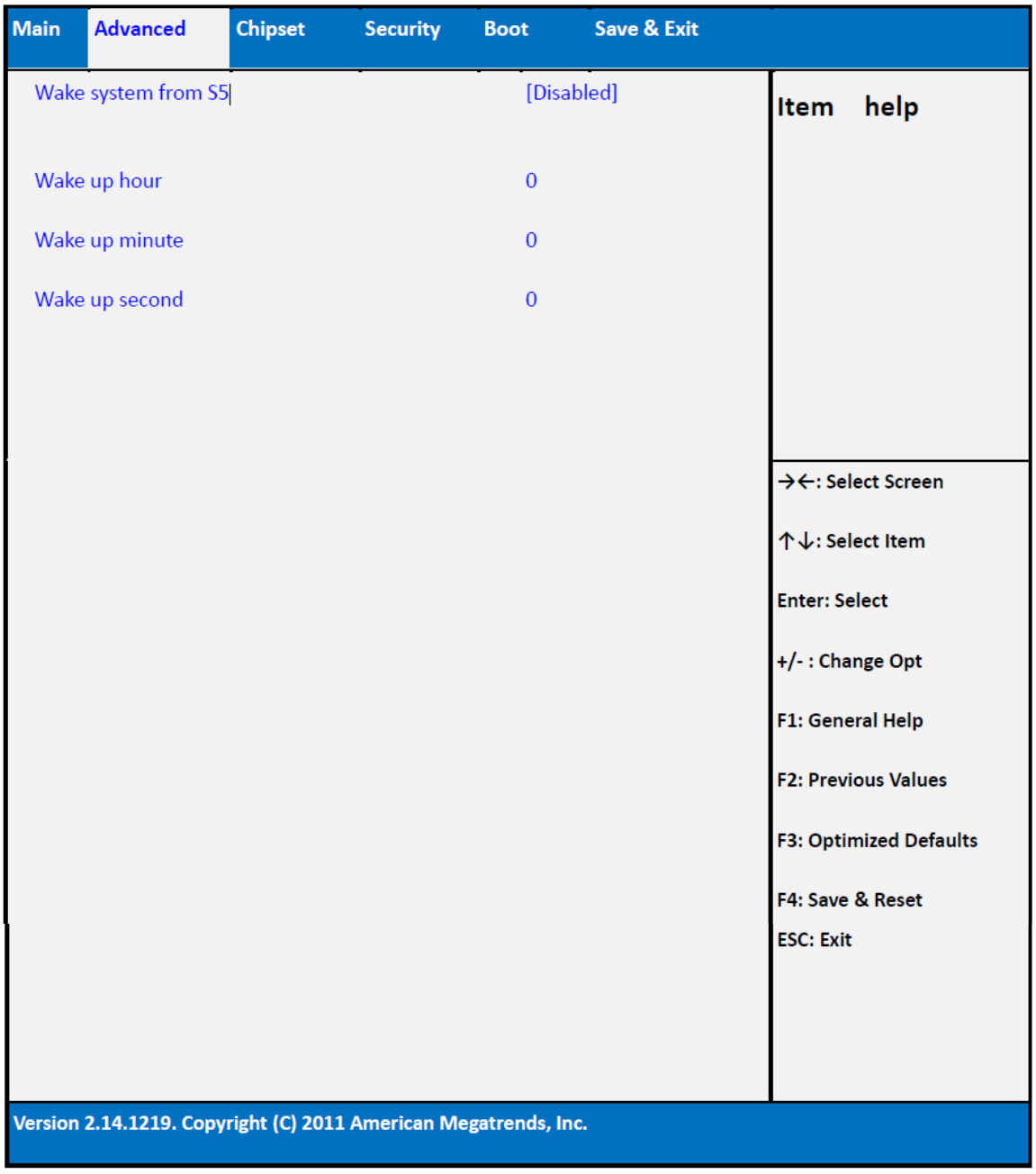
Field Name	Serial Port 4
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Enable or Disable Serial Port (COM)

Field Name	Serial Port Mode
Default Value	[3T/5R RS-232]
Possible Value	1T/1R RS-422 3T/5R RS-232 1T/1R RS-485 TX ENABLE Low Active 1T/1R RS-485 with termination resistor TX ENABLE Low Active

	1T/1R RS-422 with termination resistor Disabled
Help	Enable or Disable Serial Port (COM)

Field Name	SLEW Rate
Default Value	[1.5Mbps]
Possible Value	256Kbps 1. 5Mbps
Help	Select SLEW rate to 1.5Mbps or 256Kbps

3.7 S5 RTC WAKE SETTINGS (NO FUNCTION WHEN DEEPSX POWER POLICIES ENABLED)



Field Name	Wake system from S5
Default Value	[Disabled]

Possible Value	Disabled Fixed Time Dynamic Time
Help	Enabler or disable System wake on alarm event, Select FixedTime, system will wake on the hr::min::sec specified. Select DynamicTime , system will wake on the current time + Increase minute (s)

Field Name	Wake up hour(Show when Wake system from S5 set to Fixed Time)
Default Value	0
Possible Value	0-23
Help	Select 0-23 For example enter 3 for 3am and 15 for 3pm

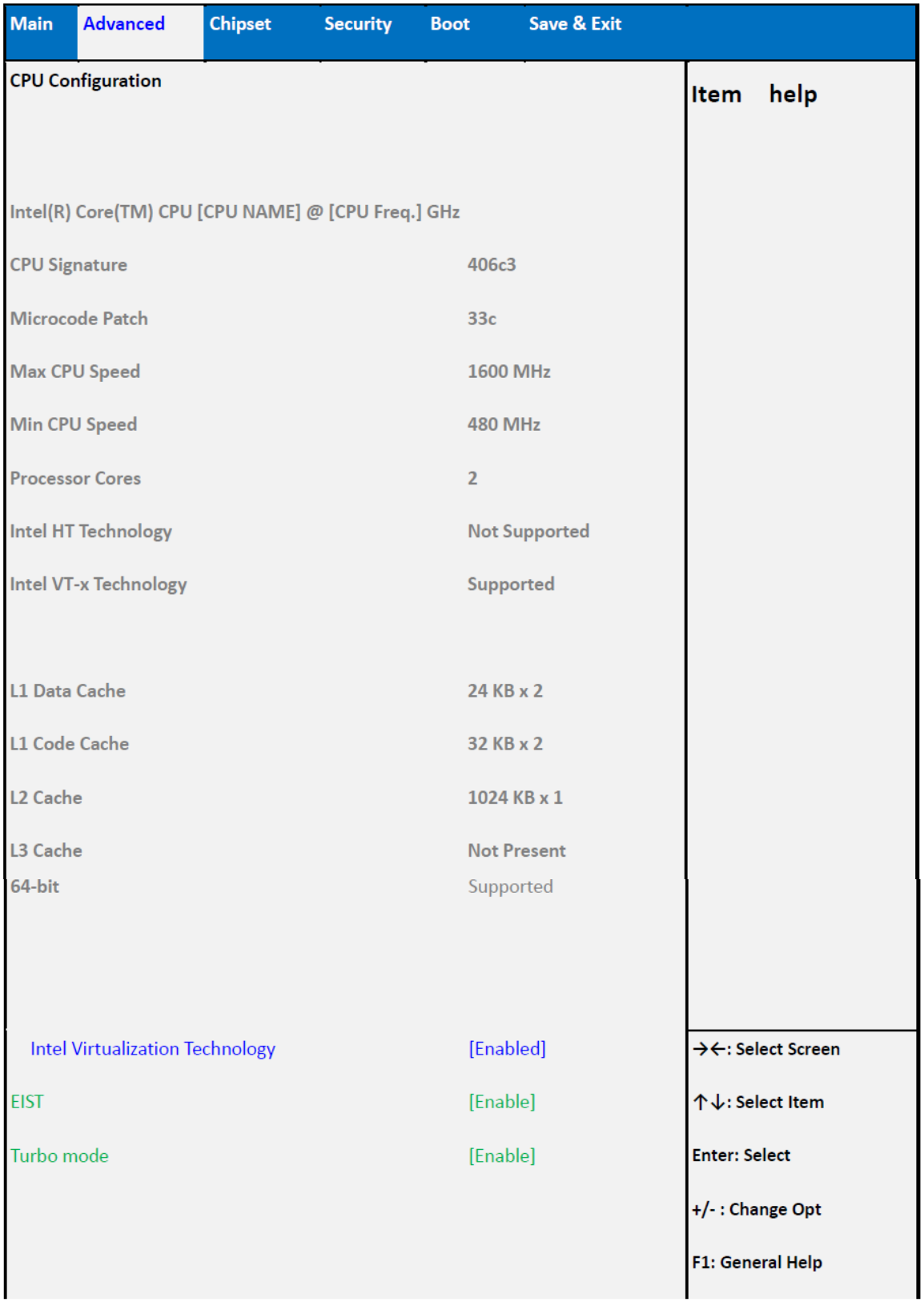
Field Name	Wake up minute(Show when Wake system from S5 set to Fixed Time)
Default Value	0
Possible Value	0-59
Help	0 - 59

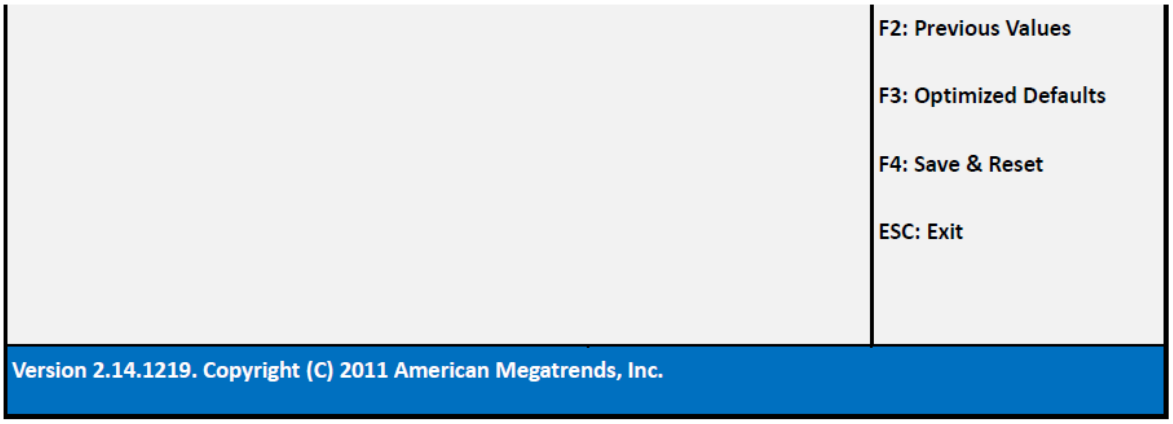
Field Name	Wake up second(Show when Wake system from S5 set to Fixed Time)
Default Value	0
Possible Value	0 - 59
Help	0 - 59

Field Name	Wake up minute increase(Show when Wake system from S5 set to Dynamic Time)
Default Value	1
Possible Value	1-5

Help	1 - 5

3.8 CPU CONFIGURATION





Field Name	CPU Configuration
Default Value	[Intel CPU Brand String]
Comment	This field is not selectable. There is no help text associated with it.

Field Name	CPU Signature
Default Value	Displays CPU Signature
Comment	This field is not selectable. There is no help text associated with it.

Field Name	Microcode Patch
Default Value	CPU Microcode Patch Revision
Comment	This field is not selectable. There is no help text associated with it.

Field Name	Max CPU Speed
Default Value	Displays the Max CPU Speed
Comment	This field is not selectable. There is no help text associated with it.

Field Name	Min CPU Speed
Default Value	Displays the Min CPU Speed

Comment	This field is not selectable. There is no help text associated with it.

Field Name	CPU Speed
Default Value	Displays the CPU Speed
Comment	This field is not selectable. There is no help text associated with it.

Field Name	Processor Cores
Default Value	Displays number of cores.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	Intel HT Technology
Default Value	When Hyper-threading is enabled, 2 logical CPUS per core is present.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	Intel VT-x Technology
Default Value	CPU VMX hardware support for virtual machines.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	64-bit
Default Value	Displays if 64-bit supported
Comment	This field is not selectable. There is no help text associated with it.

Field Name	L1 Data Cache
Default Value	L1 Data Cache Size
Comment	This field is not selectable. There is no help text associated with it.

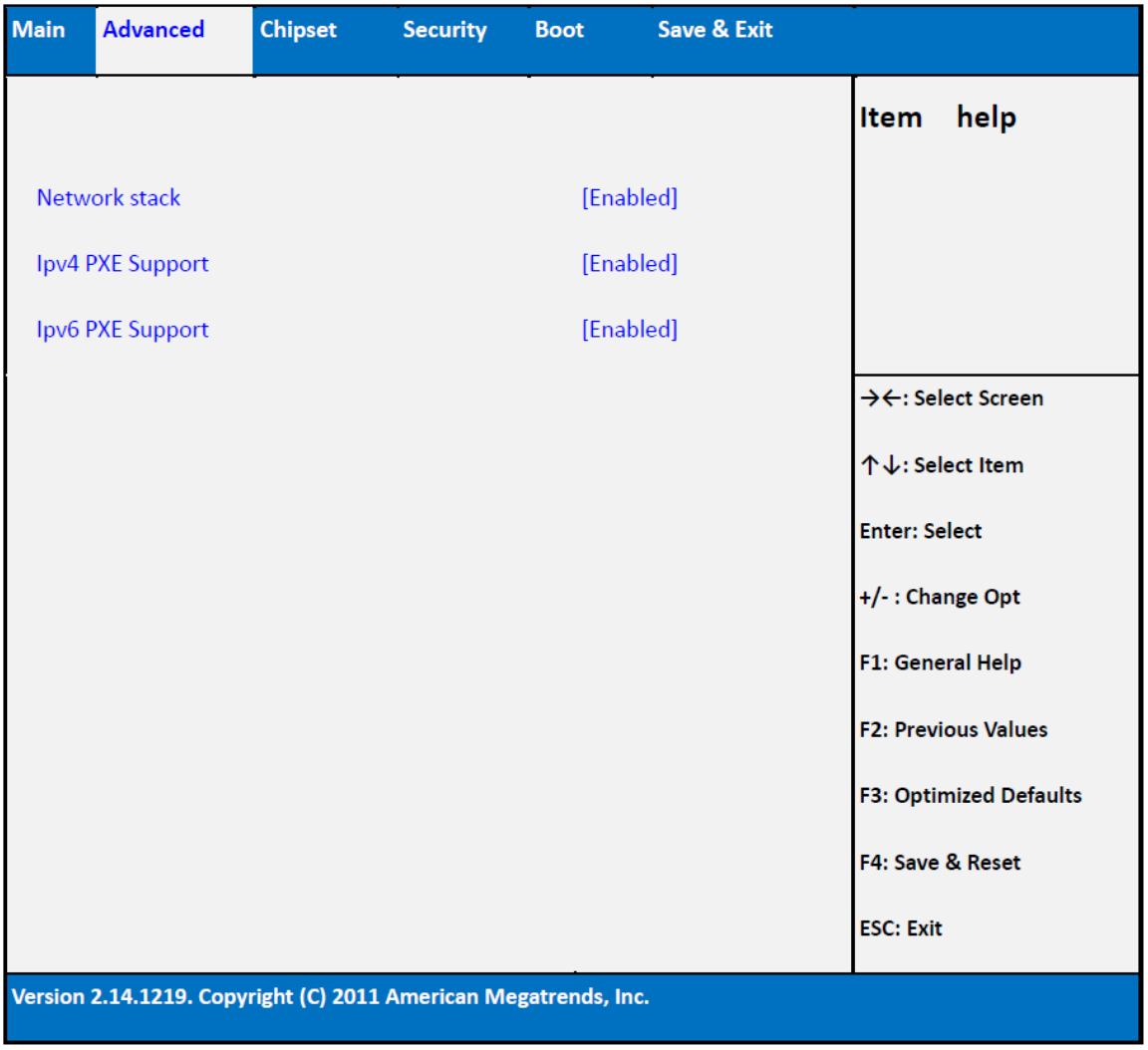
Field Name	L1 Code Cache
Default Value	L1 Code Cache Size
Comment	This field is not selectable. There is no help text associated with it.

Field Name	L2 Cache
Default Value	L2 Cache Size
Comment	This field is not selectable. There is no help text associated with it.

Field Name	L3 Cache
Default Value	L3 Cache Size
Comment	This field is not selectable. There is no help text associated with it.

Field Name	Intel Virtualization Technology
Default Value	[Disabled]
Possible Value	Enabled Disabled
Help	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology

3.9 NETWORK STACK CONFIGURATION



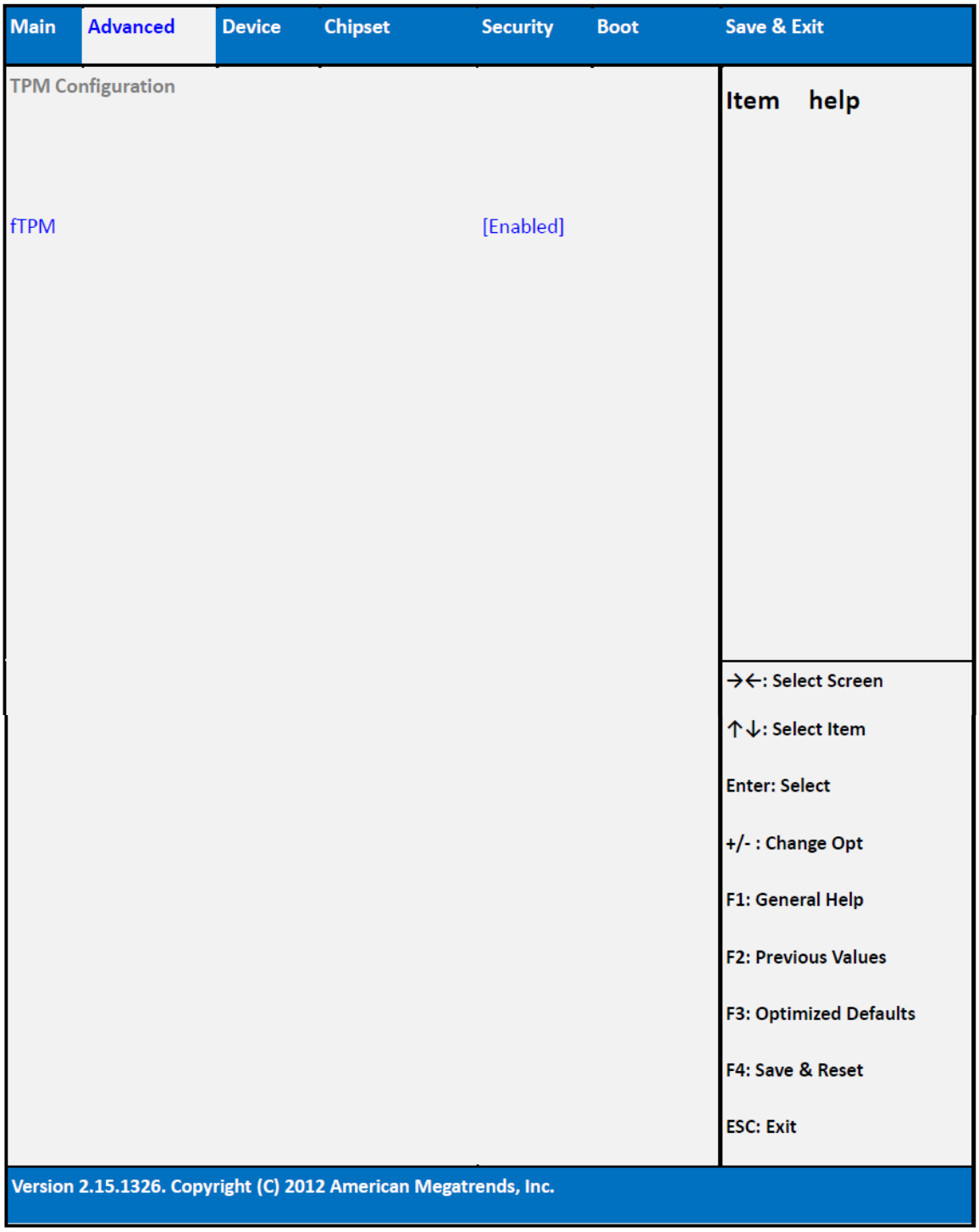
Field Name	Network stack
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable/Disable UEFI network stack.

Field Name	Ipv4 PXE Support
Default Value	[Enabled]

Possible Value	Disabled Enabled
Help	Enable Ipv4 PXE Boot Support. If disabled IPV4 PXE boot option will not be created.

Field Name	Ipv6 PXE Support
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable Ipv6 PXE Boot Support. If disabled IPV6 PXE boot option will not be created.

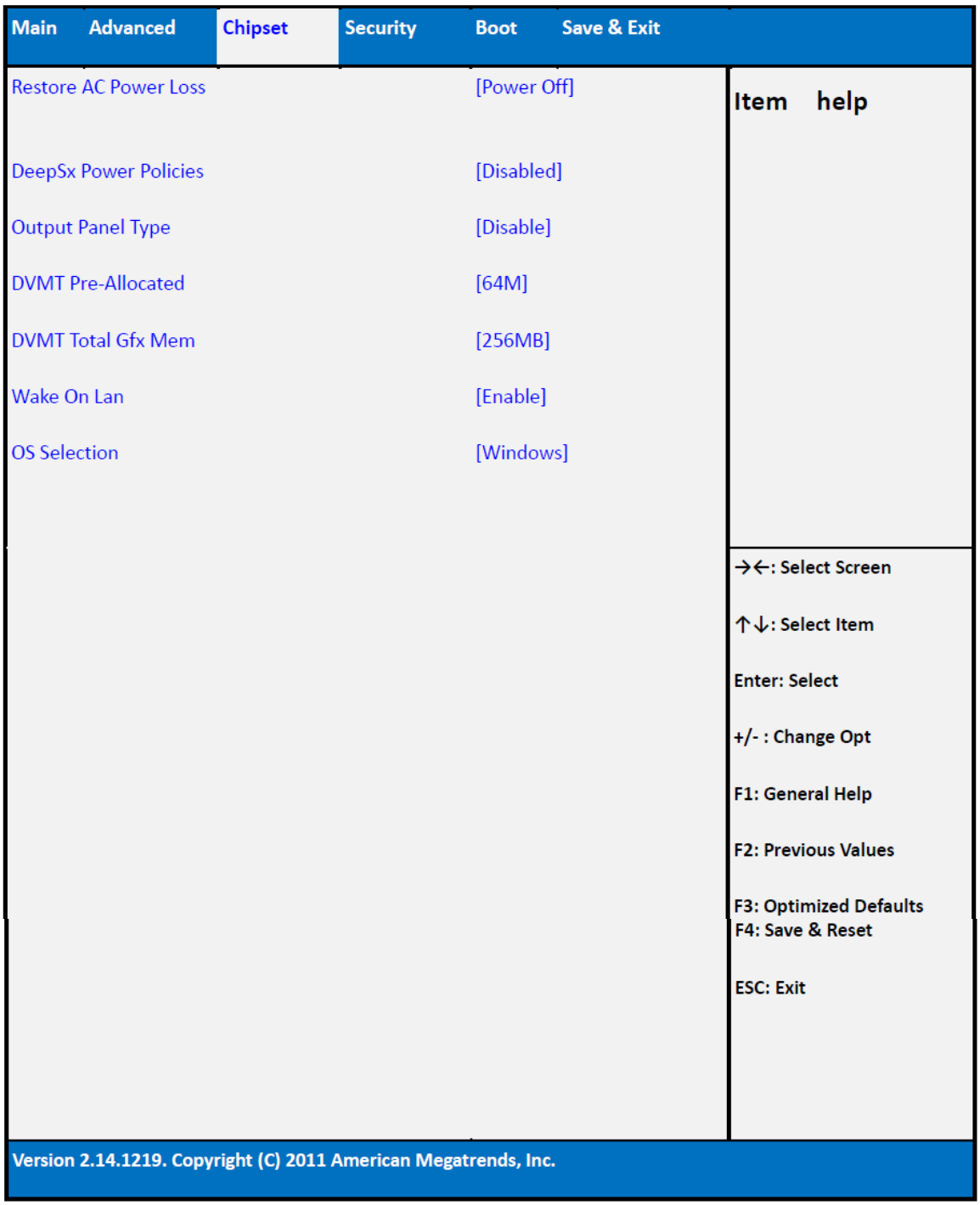
3.10 PLATFROM TRUST TECHNOLOGY



Field Name	Compatibility Support Module Configuration

Field Name	fTPM Support
Default Value	[Enabled]
Possible Value	Disabled/Enabled
Help	Enable/Disable fTPM

3.11 CHIPSET



Field Name	Restore AC Power State

Default Value	[Power Off]
Possible Value	Power off Power on Last State
Help	Select AC power state when power is re-applied after a power failure.

Field Name	DeepSx Power Policies
Default Value	Disabled
Possible Value	Disabled Enabled
Help	Configure the DeepSx Mode configuration.
Note	When enabled, "Wake On Lan" and "S5 RTC Wake Settings" are no function.

Field Name	Output Panel Type
Default Value	Disable
Possible Value	LVDS eDP Disabled
Help	Select Output Panel Type

Field Name	LVDS Interface Type
Default Value	8 bit-VESA Dual Channel
Possible Value	8 bit-VESA Single Channel 8 bit-VESA Dual Channel

	6 bit-VESA Single Channel 6 bit-VESA Dual Channel
Help	Sets LVDS connectivity.
Comment	This field only show when Output Panel Type set to LVDS

Field Name	LVDS Panel Type
Default Value	1920x1080
Possible Value	800x600 1024x768 1366x768 1280x800 1920x1080
Help	Select LVDS panel used by Internal Graphics Device by selecting the appropriate setup item.
Comment	This field only show when Output Panel Type set to LVDS

Field Name	DVMT Pre-Allocated
Default Value	[64M]
Possible Value	64M /96M /128M /160M /192M /224M /256M /288M /320M 352M /384M /416M /448M /480M /512M
Help	Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.

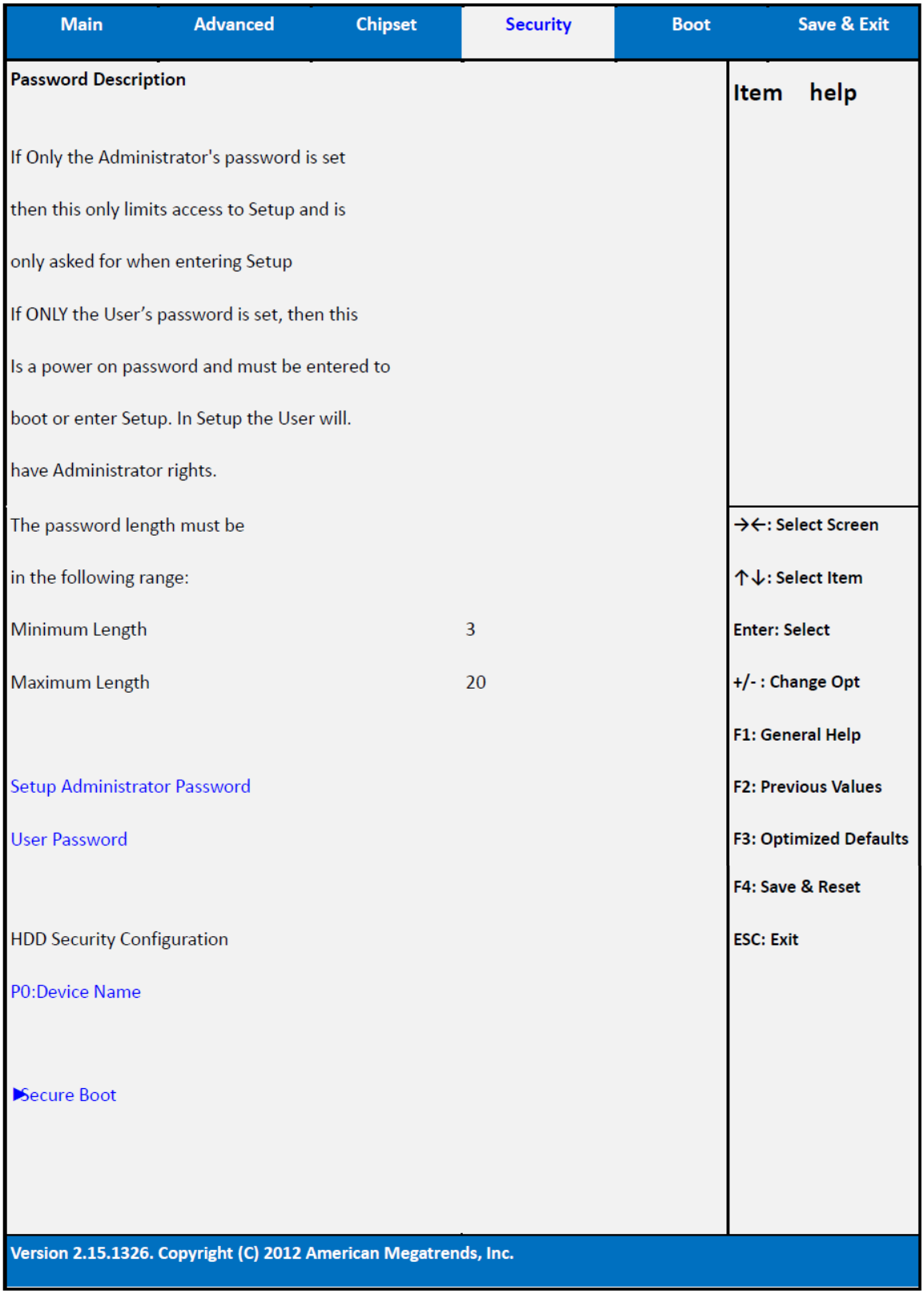
Field Name	DVMT Total Gfx Mem
Default Value	[256MB]

Possible Value	128MB /256MB /Max
Help	Select DVMT 5.0 Total Graphic Memory size used by the Internal Graphics Device.

Field Name	Wake On Lan
Default Value	Enabled
Possible Value	Disabled Enabled
Help	Enable or Disable the Wake on Lan

Field Name	OS Selection
Default Value	Windows
Possible Value	Windows Intel Linux
Help	Select the target OS.

3.12 SECURITY



Field Name	Setup Administrator Password
Help	Set Administrator Password
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	User Password
Help	Set User Password.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**P0: Device Name**
Help	HDD Security Configuration for selected drive
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	Secure Boot
Help	Customizable Secure Boot settings.
Comment	Press Enter when selected to go into the associated Sub-Menu.

3.12.1 HDD SECURITY CONFIGURATION

Main	Advanced	Chipset	Security	Boot	Save & Exit

HDD Password Description

Allow Access to Set, Modify and Clear
Hard Disk User and Master Password.
User Password need to be installed for
Enabling Security. Master Password can
Be Modified only when successfully unlocked
With Master Password in POST.
If the 'Set HDD Password' option is grayed out,
do power cycle to enable the option again.

HDD PASSWORD CONFIGURATION:

Security Supported	:	Yes
Security Enabled	:	No
Security Locked	:	No
Security Frozen	:	No
HDD User Pwd Status		NOT INSTALLED

Set User Password

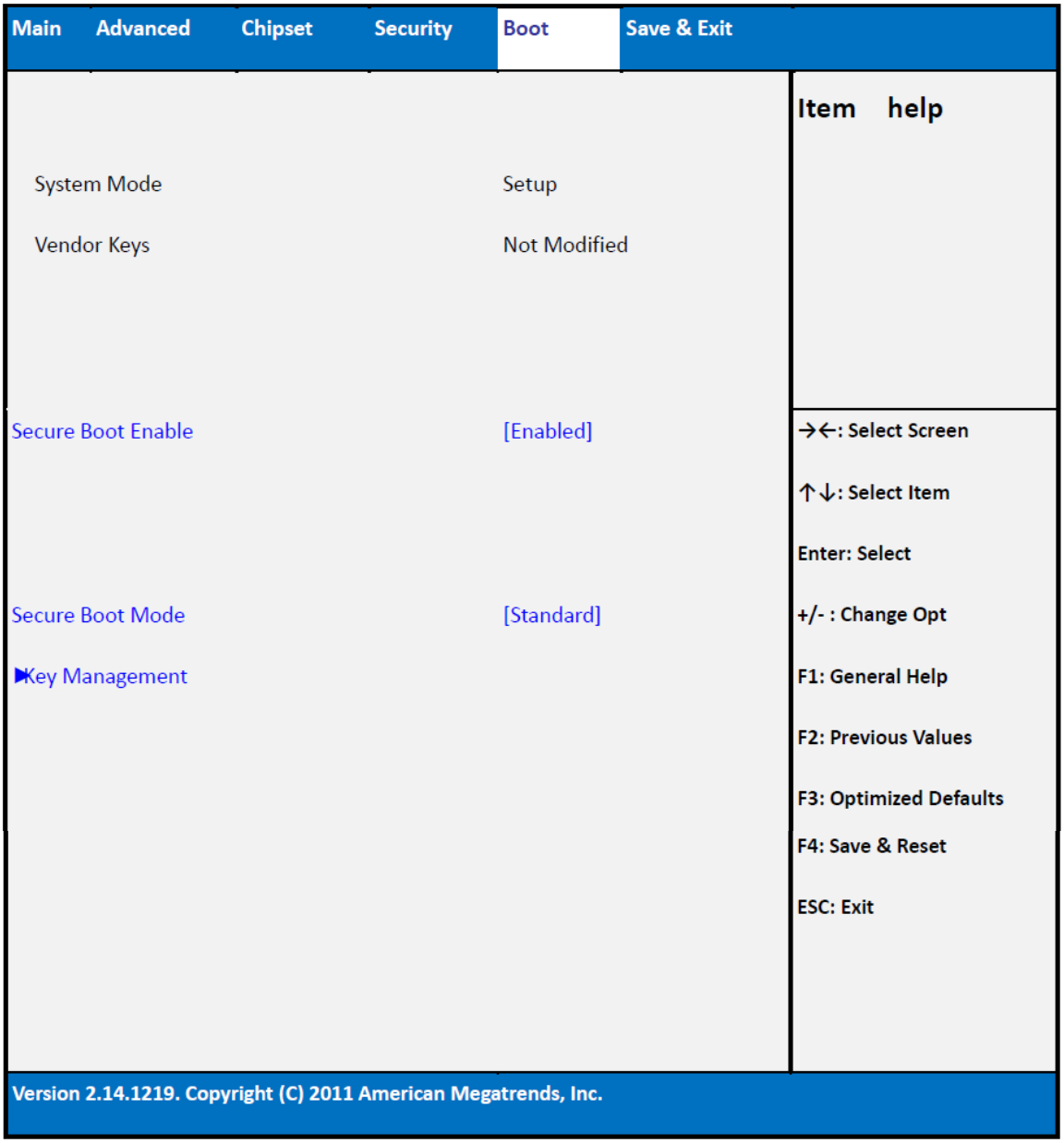
Item help

→←: Select Screen
↑↓: Select Item
Enter: Select
+/- : Change Opt
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Reset
ESC: Exit

Version 2.15.1326. Copyright (C) 2012 American Megatrends, Inc.

Field Name	Set User Password
Help	Set HDD User Password
Comment	Press Enter when selected to go into the associated Sub-Menu.

3.12.2 SECURE BOOT MODE

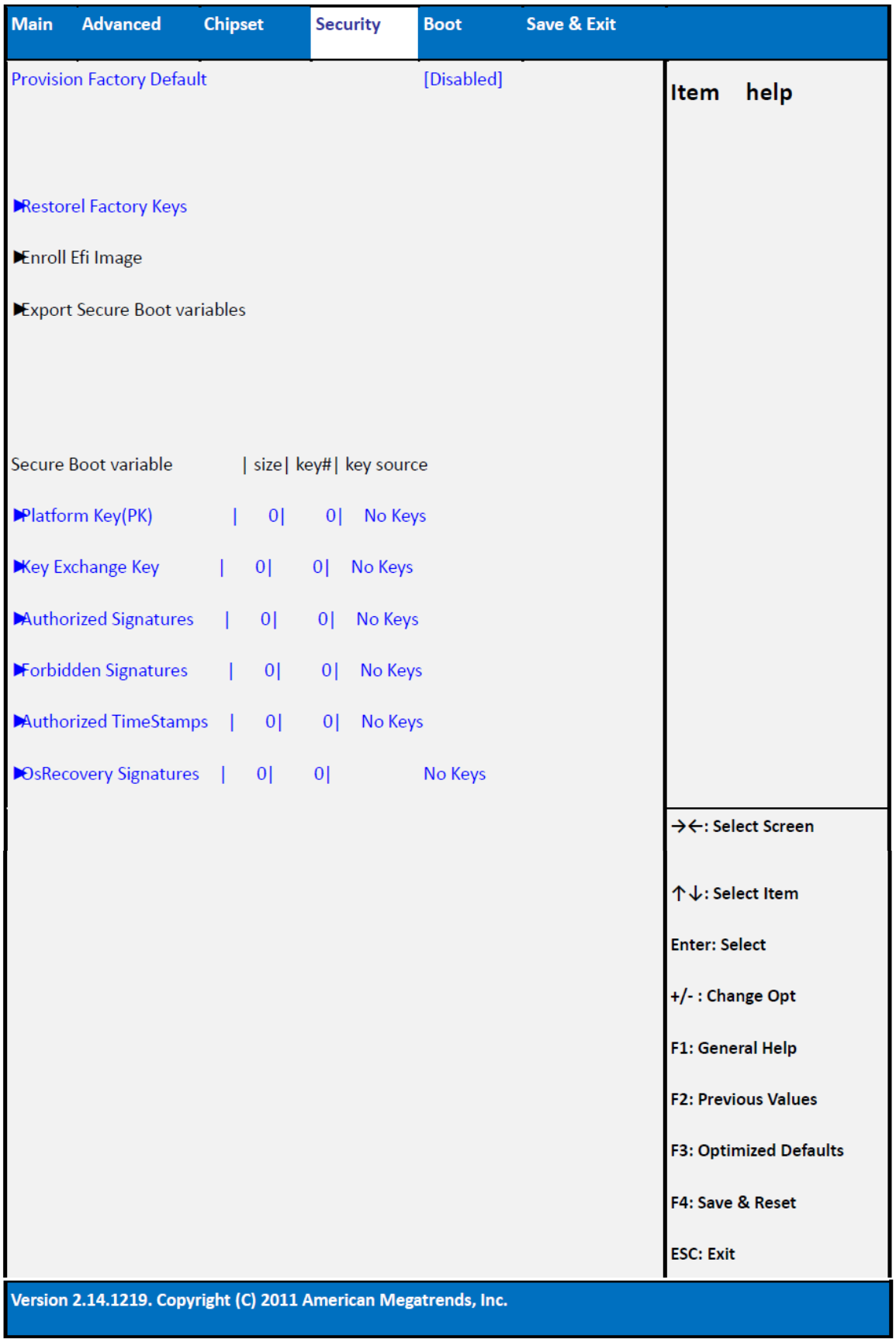


Field Name	Secure Boot Enable
Default Value	[Enabled]
Possible Value	Enabled / Disabled
Help	Secure Boot activated when Platform Key(PK) is enrolled, System mode is User/Deployed, and CSM function is disabled

Field Name	Secure Boot Mode
Default Value	[Standard]
Possible Value	Standard / Custom
Help	Secure Boot Mode - Custom & Standard, Set UEFI Secure Boot Mode to STANDARD mode or CUSTOM mode, this change is effect after save. And after reset, the mode will return to STANDARD mode

Field Name	Key Management
Help	Enables experienced users to modify Secure Boot variables
Comment	Press Enter when selected to go into the associated Sub-Menu.

3.12.3 KEY MANAGERMENT



Field Name	Provision Factory Default
Default Value	[Disabled]
Possible Value	Enabled Disabled
Help	Provision factory default keys on next system re-boot while platform is in Setup Mode.

Field Name	Restore Factory Keys
Help	Reset the content of all UEFI Secure Boot key databases to their factory default values
Comment	

Field Name	Reset to Setup Mode
Help	Delete the content of all UEFI Secure Boot key databases. This puts the system in Setup Mode
Comment	

Field Name	Enroll Efi Image
Help	Allow the image to run in Secure Boot mode. Enroll SHA256 hash of an efi binary into Authorized Signature Database(db)
Comment	

Field Name	Export Secure Boot Variables
Help	Save NVRAM content of Secure Boot policy variables to the files

	(EFI_SIGNATURE_LIST data format) in root folder on a target file system device
Comment	

Field Name	Platform Key (PK) : 0 0 No Keys
Possible Value	Details Export Set New Delete
Help	Enroll Factory Defaults or load certificates from a file: 1.Public Key Certificate in: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER encoded) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHA256,384,512 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256) Key Source: Default,External,Mixed,TestAMI

Field Name	Key Exchange Key : 0 0 No Keys
Possible Value	Details Export Set New Append Delete
Help	Enroll Factory Defaults or load certificates from a file: 1.Public Key Certificate in: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER encoded) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHA256,384,512 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256) Key Source: Default,External,Mixed,TestAMI

Field Name	Authorized Signature : 0 0 No Keys
Possible Value	Details

	Export Set New Append Delete
Help	Enroll Factory Defaults or load certificates from a file: 1.Public Key Certificate in: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER encoded) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHA256,384,512 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256)\nKey Source: Default,External,Mixed,TestAMI

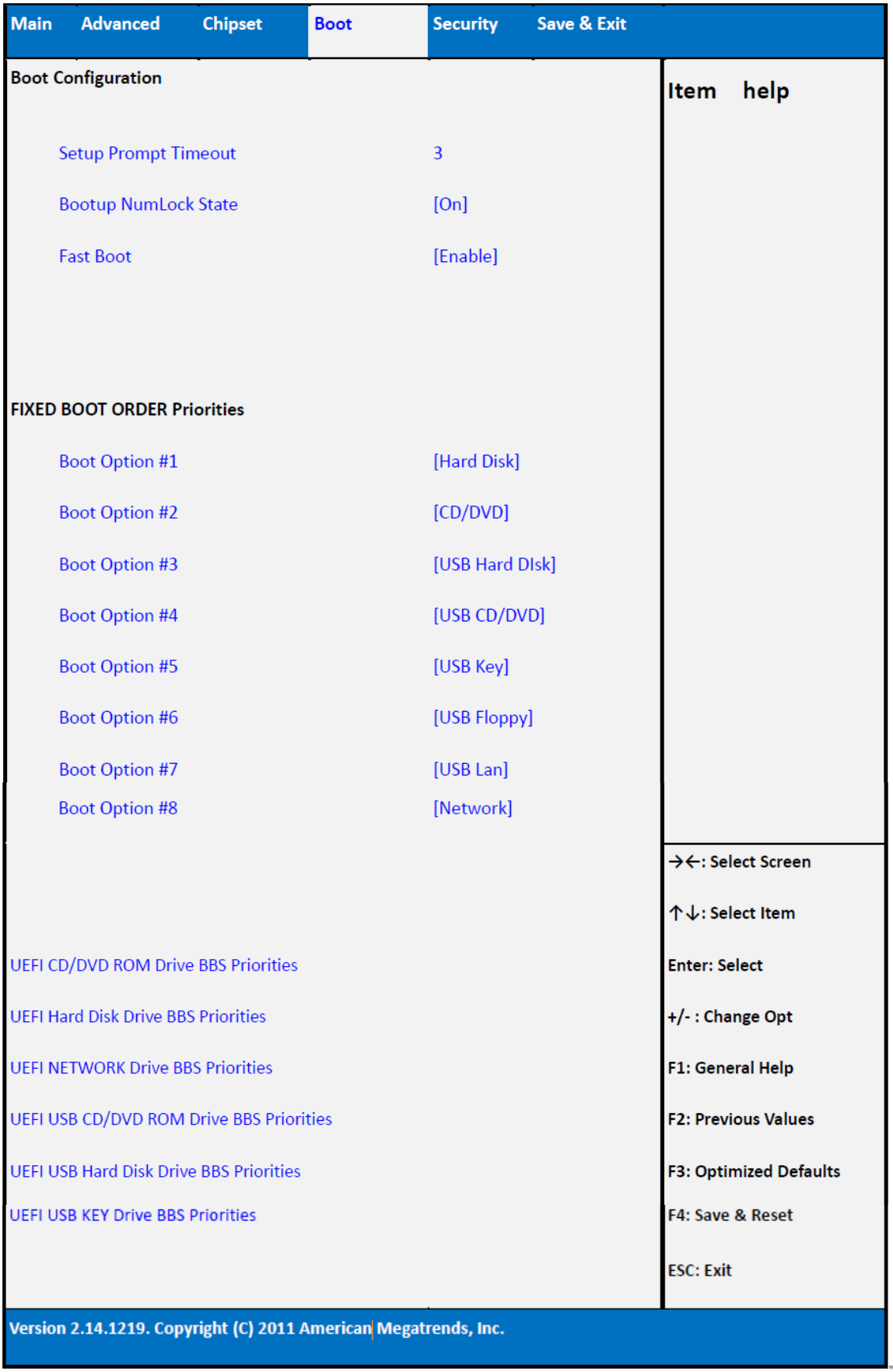
Field Name	Forbidden Signature : 0 0 No Keys
Possible Value	Details Export Set New Append Delete
Help	Enroll Factory Defaults or load certificates from a file: 1.Public Key Certificate in: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER encoded) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHA256,384,512 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256) Key Source: Default,External,Mixed,TestAMI

Field Name	Authorized TimeStamps : 0 0 No Keys
Possible Value	Set New Append
Help	Enroll Factory Defaults or load certificates from a file: 1.Public Key Certificate in: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER encoded) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHA256,384,512 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256)\nKey Source: Default,External,Mixed,TestAMI

Field Name	OsRecovery Signatures: 0 0 No Keys
Possible Value	Set New Append
Help	Enroll Factory Defaults or load certificates from a file: 1.Public Key Certificate in: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER encoded) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHA256,384,512 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256)\nKey Source: Default,External,Mixed,TestAMI

3.13 BOOT

Boot mode select = UEFI



Boot mode select = UEFI

Field Name	**Boot Option #1**
Default Value	[Hard Disk]
Possible Value	CD/DVD, Hard Disk, Network, USB CD/DVD, USB Hard Disk, USB KEY, USB Floppy, USB Lan
Help	Set the system boot order

Field Name	**Boot Option #2**
Default Value	[CD/DVD]
Possible Value	CD/DVD, Hard Disk, Network, USB CD/DVD, USB Hard Disk, USB KEY, USB Floppy, USB Lan
Help	Set the system boot order

Field Name	**Fast Boot**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Enables or disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.

Field Name	**Boot Option #3**
Default Value	[USB Hard Disk]
Possible Value	CD/DVD, Hard Disk, Network, USB CD/DVD, USB Hard Disk, USB KEY, USB Floppy, USB Lan
Help	Set the system boot order

Field Name	**Boot Option #4**
Default Value	[USB CD/DVD]
Possible Value	CD/DVD, Hard Disk, Network, USB CD/DVD, USB Hard Disk, USB KEY, USB Floppy, USB Lan
Help	Set the system boot order

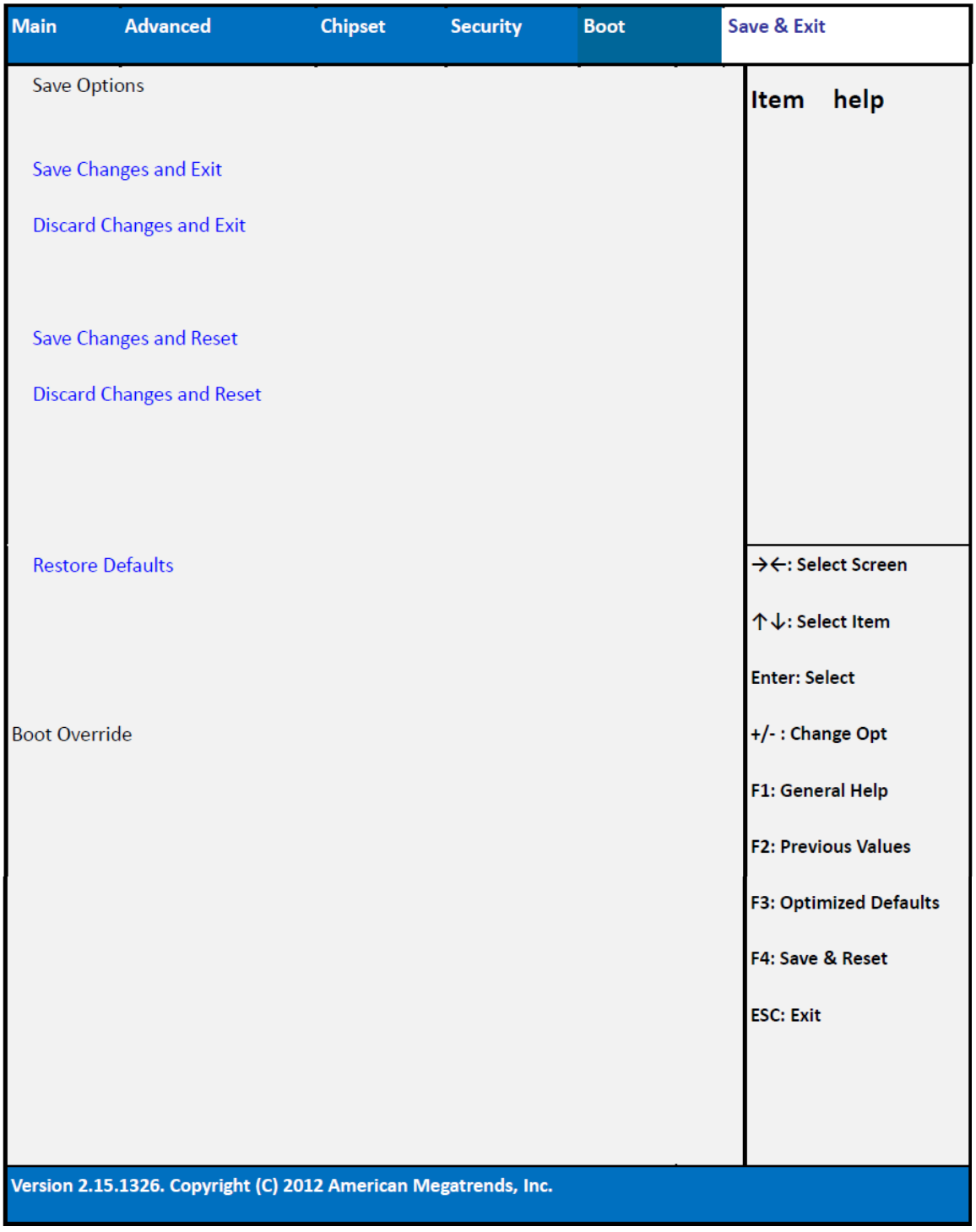
Field Name	**Boot Option #5**
Default Value	[USB Key]
Possible Value	CD/DVD, Hard Disk, Network, USB CD/DVD, USB Hard Disk, USB KEY, USB Floppy, USB Lan
Help	Set the system boot order

Field Name	**Boot Option #6**
Default Value	[USB Floppy]
Possible Value	CD/DVD, Hard Disk, Network, USB CD/DVD, USB Hard Disk, USB KEY, USB Floppy, USB Lan
Help	Set the system boot order

Field Name	**Boot Option #7**
Default Value	[USB Lan]
Possible Value	CD/DVD, Hard Disk, Network, USB CD/DVD, USB Hard Disk, USB KEY, USB Floppy, USB Lan
Help	Set the system boot order

Field Name	**Boot Option #8**
Default Value	[Network]
Possible Value	CD/DVD, Hard Disk, Network, USB CD/DVD, USB Hard Disk, USB KEY, USB Floppy, USB Lan
Help	Set the system boot order

3.14 SAVE & EXIT



Field Name	Save Options

Field Name	Save Changes and Exit
Help	Exit system setup after saving the changes.
Comment	

Field Name	Discard Changes and Exit
Help	Exit system setup without saving the changes.
Comment	

Field Name	Save Changes and Reset
Help	Reset the system after saving the changes.
Comment	

Field Name	Discard Changes and Reset
Help	Reset system setup without saving any changes.
Comment	

Field Name	Restore Defaults
Help	Restore/Load Default values for all the setup options.
Comment	