MITAC Desktop Board PH10SU
Product Guide

Desktop Board Features

This chapter briefly describes the features of Desktop Board PH10SU.
Table 1 summarizes the major features of the Desktop Board.

Feature Summary

TABLE. MITAC DESKTOP BOARD PH10SU FEATURES

Form Factor	Micro-ATX (244 millimeters [9.6 inches] x 244 millimeters [9.6 inches])	
Processor	6th generation Intel® Core processor family with up to 91 W TDP in an LGA1151 socket	
Main Memory	● Support Dual channel DDR4 ● Support for up to 64 GB of system memory	
	● 288-pin DDR4 u-DIMM	4
Chipset	Intel® Q170 Platform Controller Hub (PCH)	
Integrated Graphics	Intel® HD Graphics/ Iris Graphics (By CPU)	
External Graphics	External graphics support provided through the PCIe 3.0 x16 bus connector	
Audio	RealTek* ALC662 audio codec for 5.1 (6-channel) High Definition Audio (HD Audio) and AC '97 Audio. Front panel microphone/headphone header with support for HD Audio or AC '97 Audio	
Legacy I/O	Legacy I/O Controller (Nuvoton* NCT6104D) that provides: Hardware management support	
	Serial Port (Rear IO)	2 (Support power S232)
	Serial Port (On board)	2 (configurable for RS232/422/485)
	Parallel port via an onboard header	1
Expansion Capabilities	PCIe 3.0 x16 (Blue)	1
	PCIe 2.0 x4 (Black)	1
	PCIe 2.0 x1 (Black)	1
	M.2 Suport Socket 3 Type2280, 2260, 2242	1
Peripheral Interfaces	● USB 3.0 back panel connectors (blue)	4
	● USB 2.0 back panel connectors (black)	2
	● USB 3.0 front panel ports	2 (Headers)
	● USB 2.0 front panel ports	2 (Headers)

	● Serial ATA (SATA) 6.0 Gb/s interfaces	5
	● 4-pin SATA power for DOM	1
Hardware Monitor Subsystem	Hardware monitoring through the Nuvoton* NCT6104D legacy I/O controller, including: ● Remote thermal sensor ● 4-pin system fan header	
LAN Support	Intel® I219 Gigabit (10/100/1000 Mb/s) LAN Intel® I210 Gigabit (10/100/1000 Mb/s) LAN	
BIOS	AMI UEFI BIOS Support for Advanced Configuration and Power Interface (ACPI)	
Instantly Available PC Technology	● Support for PCI Express Revision 3.0 ● Wake on USB, PCI Express, LAN, serial, PS/2, and front panel	
Power Requirement	ATX12V	
Environment	● Operating Temperature: 0 °C to +50 °C ● Storage Temperature: -20°C to +70°C	
Safety	● CE ● FCC	

Desktop Board Components

The Figure shows the approximate location of the major components on the top side of MiTAC Desktop Board PH10SU.

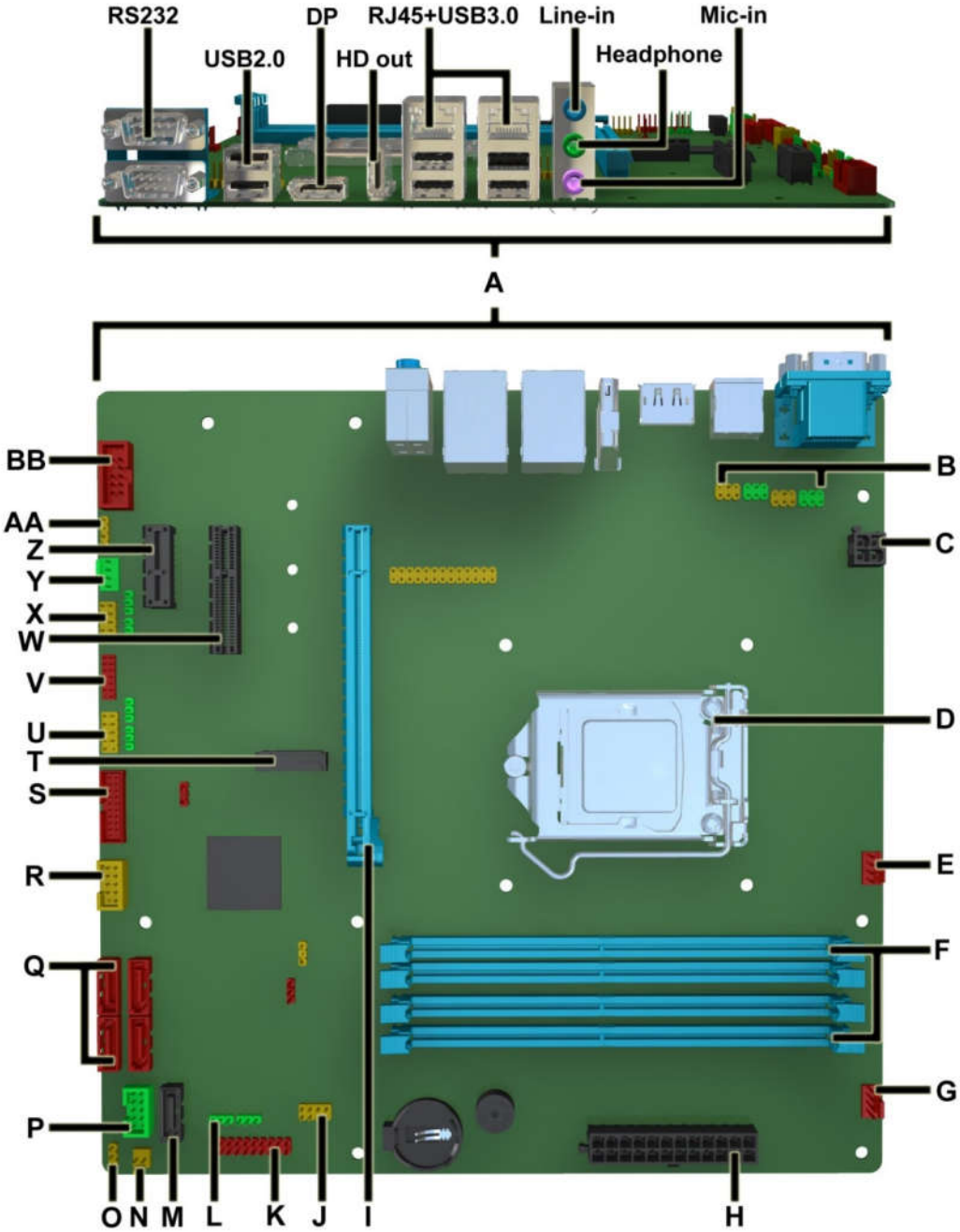

Figure 1. MiTAC Desktop Board PH10SU Components (Top)

TABLE . MITAC DESKTOP BOARD PH10SU COMPONENTS (SHOWN IN THE FIGURE)

A	Back Panel Connectors
B	RS232 power select header
C	4-pin Power header
D	CPU Socket
E	CPU FAN header
F	DIMM Sockets
G	Front FAN header
H	ATX Power 24pin header
I	PCIe x16 slot
J	APS header
K	MiAPI header
L	MiAPI function select header
M	SATA Connector
N	Chassis Intrusion Header
O	CMOS clear header
P	Front panel main header
Q	SATA Connectors
R	Dual USB2.0 header
S	Dual USB3.0 header
T	M.2 slot
U	COM port header
V	Debug header
W	PCIe x4 slot
X	COM port header
Y	Rear FAN header
Z	PCIe x1 slot
AA	SPDIF Out header
BB	Front Audio header

Processor

The board supports 6th generation Intel Core processors. Other processors may be supported in the future. This board supports processors with a maximum wattage of 91 W Thermal Design Power (TDP).

NOTE

This board has specific requirements for providing power to the processor. Additional power required will depend on configurations chosen by the integrator.

System Memory

NOTE

To be fully compliant with all applicable DDR SDRAM memory specifications, the board should be populated with DIMMs that support the Serial Presence Detect (SPD) data structure. This allows the BIOS to read the SPD data and program the chipset to accurately configure memory settings for optimum performance. If non-SPD memory is installed, the BIOS will attempt to correctly configure the memory settings, but performance and reliability may be impacted or the DIMMs may not function under the determined frequency.

The Desktop Board has four 288-pin DDR4 u-DIMM sockets with gold-plated contacts. These sockets support:

- Serial Presence Detect (SPD) memory only
- Non-ECC memory
- Up to 64 GB of memory

MITAC Desktop Board PH10SU
Hardware Specifiction

1. Platform Definition

1.1 Major Sub-systems

1.1.1 System Memory

Board must support the following memory configurations. .

- DDR4/-RS 1866MHz to 2133MHz or maximum multiplier supported by the CPU
  - o Board must support all DIMMs in this range
- 4Gb, 8Gb and 16Gb technology (and any others supported by the processor)
- Extended Memory Profiles (XMP) support
- Single-sided and double-sided memory module support
- Support for 1.2V (standard voltage) JEDEC-compliant memory
- Support for dual-channel interleaved mode
- 32GB maximum memory with 4 DIMMs

Supported DDR4/-RS Non-ECC UDIMM Module Configurations (S-Processor Line)

Raw Card Version	DIMM Capacity	DRAM Device Technology	DRAM Organization	# of DRAM Devices	# of Ranks	# of Row/Col Address Bits	# of Banks Inside DRAM	Page Size
A	4GB	4Gb	512M x 8	8	1	15/10	16	8K
A	8GB	8Gb	1024M x 8	8	1	16/10	16	8K
B	8GB	4Gb	512M x 8	16	2	15/10	16	8K
B	16GB	8Gb	1024M x 8	16	2	16/10	16	8K

DIMM connectors must be color coded as follows; refer to Figure 1:

- DIMM 1, DIMM 2 for channels A must be black with black latches
- DIMM 3, DIMM 4 for channels B must be black with black latches

Note: Channel A, DIMM0 must be closest to the CPU.

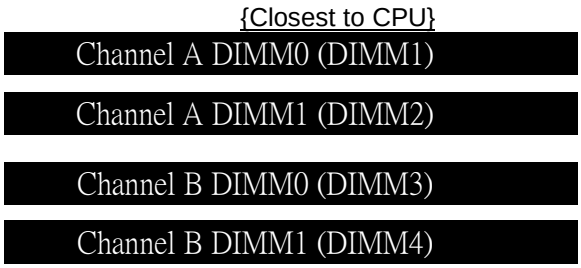

Figure 1: Q170 4xDIMMs Connector Layout

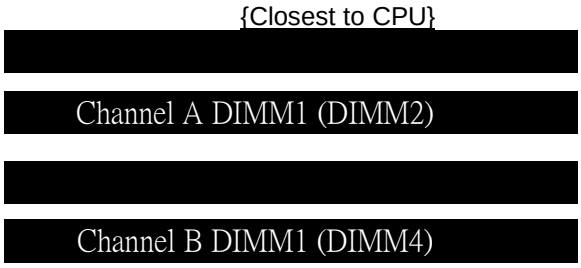

Figure 1: H110 2xDIMMs Connector Layout

1.1.2 External Graphics

Board must support single primary PCIe x16 external graphics

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Note: External graphics cards must also be supported on all PCI Express and PCI slot(s), if available.

System must be compatible with cards with and without ASPM support. BIOS must auto-detect if the card supports ASPM. Refer to the BIOS Requirements Document for implementation details.

PCI Express* Maximum Transfer Rates and Theoretical Bandwidth

PCI Express* Gen	Encoding	Maximum Transfer Rate [GT/s]	Theoretical Bandwidth [GB/s]				
			x1	x2	x4	x8	x16
Gen 1	8b/10b	2.5	0.25	0.5	1.0	2.0	4.0
Gen 2	8b/10b	5	0.5	1.0	2.0	4.0	8.0
Gen 3	128b/130b	8	1.0	2.0	3.9	7.9	15.8

1.1.3 Onboard Graphics

Board must support all integrated graphics features supported by the processor through the PCH (including but not limited to DirectX, HD/Blu-ray video hardware decoding, PAVP-Lite and HDCP).

Processor Supported Audio Formats over HDMI and DisplayPort*

Audio Formats	HDMI*	DisplayPort*
AC-3 Dolby* Digital	Yes	Yes
Dolby Digital Plus	Yes	Yes
DTS-HD*	Yes	Yes
LPCM, 192 kHz/24 bit, 8 Channel	Yes	Yes
Dolby TrueHD, DTS-HD Master Audio* (Lossless Blu-Ray Disc* Audio Format)	Yes	Yes

The processor will continue to support Silent stream. Silent stream is an integrated audio feature that enables short audio streams, such as system events to be heard over the HDMI* and DisplayPort* monitors. The processor supports silent streams over the HDMI and DisplayPort interfaces at 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz, and 192 kHz sampling rates.

Standard	S-Processor Line (display 1,2,3,4)	Notes
DP*	4096x2304 @ 60Hz, 24bpp	1,2,3
HDMI* 1.4 (native)	4096x2160 @ 24 Hz, 24 bpp	1,2,3

Notes:

1. Maximum resolution is based on implementation of 4 lanes with HBR2 link data rate.
2. bpp - bit per pixel.
3. S-processor line support up to 4 displays but only three can be active at the same time.

Display Link Data Rate Support

Technology	Link Data Rate
DisplayPort*	RBR (1.62 GT/s) HBR (2.7 GT/s) HBR2 (5.4 GT/s)
HDMI*	2.97 Gb/s

Display Resolution and Link Rate Support

Resolution	Link Rate Support	High Definition
4096x2304	5.4 (HBR2)	UHD (4K)
3840x2160	5.4 (HBR2)	UHD (4K)
3200x2000	5.4 (HBR2)	QHD+
3200x1800	5.4 (HBR2)	QHD+
2880x1800	2.7 (HBR)	QHD
2880x1620	2.7 (HBR)	QHD
2560x1600	2.7 (HBR)	QHD
2560x1440	2.7 (HBR)	QHD
1920x1080	1.62 (RBR)	FHD

Display Bit Per Pixel (BPP) Support

Technology	Bit Per Pixel (bpp)
DisplayPort*	24,30,36
HDMI*	24,36

The following onboard graphics connectors must be supported when onboard graphics is enabled.

HD feature: High-Definition Multimedia Interface (HDMI*)

- HD – HDMI1.4 flush mount graphics connector: backpanel video

- The High-Definition Multimedia Interface (HDMI*) is provided for transmitting uncompressed digital audio and video signals from DVD players, set-top boxes, and other audio-visual sources to television sets, projectors, and other video displays. It can carry high-quality multi-channel audio data and all standard and high-definition consumer electronics video formats. The HDMI display interface connecting the processor and display devices uses transition minimized differential signaling (TMDS) to carry audiovisual information through the same HDMI cable.
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- HDMI includes three separate communications channels: TMDS, DDC, and the optional CEC (consumer electronics control). CEC is not supported on the processor. As shown in the following figure, the HDMI cable carries four differential pairs that make up the TMDS data and clock channels. These channels are used to carry video, audio, and auxiliary data. In addition, HDMI carries a VESA DDC. The DDC is used by an HDMI Source to determine the capabilities and characteristics of the Sink.
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- Audio, video, and auxiliary (control/status) data is transmitted across the three TMDS data channels. The video pixel clock is transmitted on the TMDS clock channel and is used by the receiver for data recovery on the three data channels. The digital display data signals driven natively through the PCH are AC coupled and needs level shifting to convert the AC coupled signals to the HDMI compliant digital signals.
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- The processor HDMI interface is designed in accordance with the High-Definition Multimedia Interface.

Type A Connector Pin Assignment

PIN	Signal Assignment
1	TMDS Data2+
3	TMDS Data2–
5	TMDS Data1 Shield
7	TMDS Data0+
9	TMDS Data0–
11	TMDS Clock Shield
13	CEC
15	SCL
17	DDC/CEC Ground
19	Hot Plug Detect

PIN	Signal Assignment
2	TMDS Data2 Shield
4	TMDS Data1+
6	TMDS Data1–
8	TMDS Data0 Shield
10	TMDS Clock+
12	TMDS Clock–
14	Reserved (N.C. on device)
16	SDA
18	+5V Power

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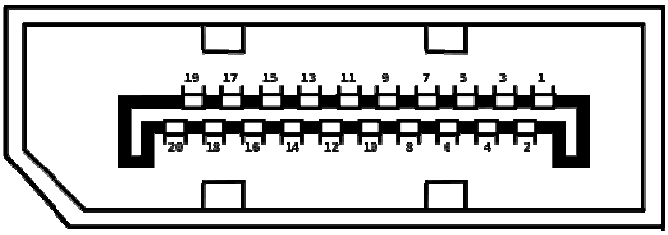
- ## DisplayPort* feature
- Display Port: backpanel video (with embedded audio) connector for digital display support up to max resolution allowed by the processor/PCH. Design must be Display Port v1.2 compliant and support the following features:
- 

Pin Number	Signal Type	Pin Name	Mating Row Contact Location
1	Out	ML_Lane 0(p)	Top
2	GND	GND	Bottom
3	Out	ML_Lane 0 (n)	Top
4	Out	ML_Lane 1 (p)	Bottom
5	GND	GND	Top
6	Out	ML_Lane 1 (n)	Bottom
7	Out	ML_Lane 2 (p)	Top
8	GND	GND	Bottom
9	Out	ML_Lane 2 (n)	Top
10	Out	ML_Lane 3 (p)	Bottom
11	GND	GND	Top
12	Out	ML_Lane 3 (n)	Bottom
13	CONFIG (see note 1)	CONFIG1	Top
14	CONFIG (see note 1)	CONFIG2	Bottom
15	I/O	AUX CH (p)	Top
16	GND	GND	Bottom
17	I/O	AUX CH (n)	Top
18	In	Hot Plug Detect	Bottom
19	RTN	Return	Top
20	PWR Out (see note 2)	DP_PWR	Bottom
- o Hot-plug detect
  - o Display Port Interoperability - to allow use of a Display Port to DVI or Display Port to HDMI dongles as described in the Shark Bay Platform Design Guide
  - o

Supported resolutions[1] for HBR2 (5.4Gbps) by link width

Link Width	Max Link Bandwidth [Gbps]	Max Pixel Clock (theoretical) [MHz]	S-processor line
4 lanes	21.6	720[2]	See Table 2-19
2 lanes	10.8	360	2880x1800@60Hz, 24bpp
1 lane	5.4	180	2048x1280@60Hz, 24bpp

Notes:
1. The examples assumed 60 Hz refresh rate and 24 bpp.
2. The actual Max pixel clock for HBR2 is limited by the CD clock to 675 MHz for -processor line.

Supported resolutions[1] for HBR (2.7Gbps) by link width

Link Width	Max Link Bandwidth [Gbps]	Max Pixel Clock (theoretical) [MHz]	S-processor line
4 lanes	10.8	360	2880x1800@60Hz, 24bpp
2 lanes	5.4	180	2048x1280@60Hz, 24bpp
1 lane	2.7	90	1280x960@60Hz, 24bpp

Notes:
1. The examples assumed 60Hz refresh rate and 24 bpp.

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Switchable/Hybrid Graphics Support

Operating System	Hybrid Graphics	Switchable Graphics[2]
Windows* 7	N/A	Yes[1]
Windows* 8.1	Yes[1]	N/A
Windows* 10	Yes[1]	N/A

Note:
1. Contact your graphics vendor to check for support.
2. Intel does not validate any SG configurations on Win8.1 or Win10.

Hardware Accelerated Video Encode

Codec	Profile	Level	Maximum Resolution
MPEG2	Main	High	1080p
AVC/H264	Main High	L5.1	2160p(4K)
VP8	Unified profile	Unified level	—
JPEG	Baseline	—	16Kx16K
HEVC/H265	Main	L5.1	2160p(4K)
VP9	Support 8 bits 4:2:0 BT2020 may be obtained the pre/post processing	—	—

Hardware decode for H264 SVC is not supported.

Hardware Accelerated Video Processing

There is hardware support for image processing functions such as De-interlacing, Film cadence detection, Advanced Video Scaler (AVS), detail enhancement, image stabilization, gamut compression, HD adaptive contrast enhancement, skin tone enhancement, total color control, Chroma de-noise, SFC pipe (Scalar

and Format Conversion), memory compression, Localized Adaptive Contrast Enhancement (LACE), spatial de-noise, Out-Of-Loop De-blocking (from AVC decoder), 16 bpc support for denoise/ de-mosaic.

There is support for Hardware assisted Motion Estimation engine for AVC/MPEG2 encode, True Motion, and Image stabilization applications.

The HW video processing is exposed by the graphics driver using the following APIs:

- Direct3D* 9 Video API (DXVA2).
- Direct3D 11 Video API.
- Intel Media SDK.
- MFT (Media Foundation Transform) filters.
- Intel CUI SDK.

1.1.4 Audio

High Definition audio using 5+2 channel codec, supporting:

Implemented using the Realtek ALC662

- 3-port analog audio stack back panel connector

Board must support 3-channel audio output from the rear analog ports, with jack detection as indicated in Table 1. An additional 2-channel analog port is required for front panel audio, with jack detection and independent multi-streaming support for separate front vs back panel audio streams (i.e. simultaneous VoIP and 8.1/10 audio streams).

	Microphone	Headphones	Line-Out (Front Spks)	Line-In	Rear Surr	Center/Sub	Mic-In (Side Surr)
FP Green		Default					
FP Pink	Default						
Rear Blue				Default			
Rear Green		(ctrl panel)	Default				
Rear Pink							Default

Table 1: Backpanel and headphone/mic front panel audio port assignments

Front panel audio header must be 2x5, 2.54mm pitch, colored yellow (Pantone color code 123C) and keyed at pin 8, as shown in Figure 2. It must be designed and validated to support both HD Audio and passive AC'97 front panel devices (AUD_5V on pin-7 is not used on passive AC'97 implementations). Passive AC'97 support is required due to the expected large number of chassis with legacy AC'97 front panel ports. BIOS must have the option to auto detect the front panel and provide option to enable/disable it. Connector must be shrouded.

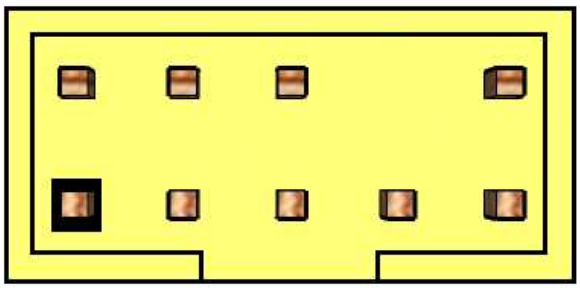


Figure 2: Front panel audio header

Pin	Signal name	Description
1	MIC	Front panel microphone input signal (biased when supporting stereo microphone)
2	AUD_GND	Ground used by analog audio circuits
3	MIC_BIAS	Microphone power / additional MIC input for stereo microphone support
4	PRESENCE#	Active low signal that signals BIOS that an Intel® HD Audio dongle is connected to the analog header. PRESENCE# = 0 when an Intel® HD Audio dongle is connected.
5	FP_OUT_R	Right channel audio signal to front panel (headphone drive capable)
6	AUD_GND	Ground used by analog audio circuits
7	RESERVED	Reserved
8	KEY	No pin
9	FP_OUT_L	Left channel audio signal to front panel (headphone drive capable)
10	AUD_GND	Ground used by analog audio circuits

1.1.5 LAN

Board must implement a LAN solution supporting 10/100/1000 Mb/s with the following features:

Onboard RJ45 connectors must have integrated magnetics and support dual status LEDs per port, as shown in Table 2.

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

Table 2: RJ45 LED behavior

Note: LAN subsystem must be tested for IEEE802.3 conformance on each port.

1.1.6 SATA

SATA Gen 3

Board must also support the following Serial ATA Gen 3 compliant ports driven by the PCH:

- Six (6) fully-shrouded right angle internal SATA gen 3 ports (colored blue Pantone 285C)

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

1.1.7 Super I/O

Board must support the following features through a SuperIO controller device:

- PECI support for CPU Temp

- SMBUS/SMLink support for PCH temp
- Support for as many 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)
- Power sequencing and motherboard glue logic
- Legacy I/O (for applicable ports)
- Deep Sleep glue logic

1.2 Expansion I/O

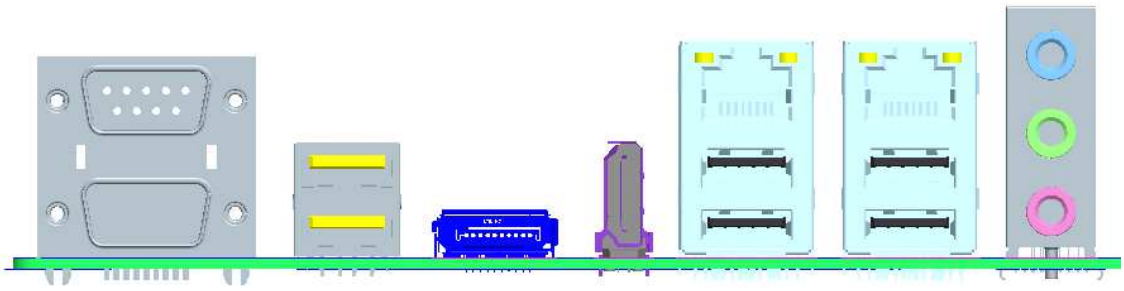
1.2.1 Back Panel I/O

Backpanel must be designed with horizontal keepout space between ports exceeding specifications for ease of cable connectivity/removal. A minimum of 2 mm between cable connectors is required when all ports are being used with commonly available “off-the-shelf” cables.

Board must have a back panel layout similar to Figure 3, 5:

				LAN	LAN	Audio LINE_IN_C
COM P2	USB			USB3	USB3	Audio FRONT_E
COM P1	USB	DisplayPort(1)	HD	USB3	USB3	Audio MIC_IN_D

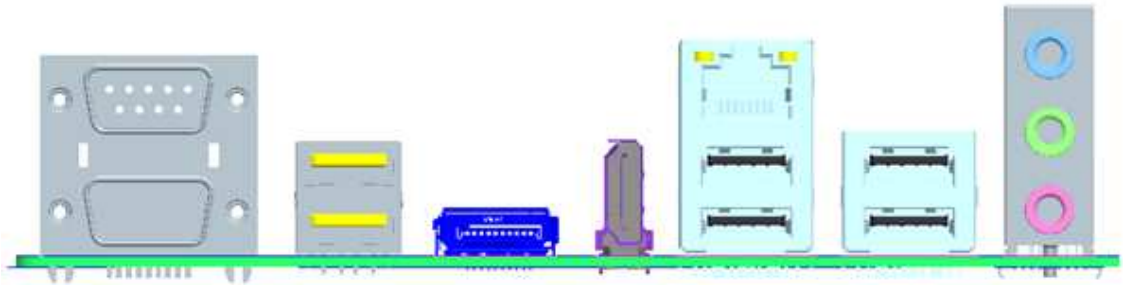
Figure 3: Q170 Back panel layout



1) Supported but not stuffed on production boards

				LAN		Audio LINE_IN_C
COM P2	USB			USB2	USB3	Audio FRONT_E
COM P1	USB	DisplayPort(1)	HD	USB2	USB3	Audio MIC_IN_D

Figure 5: H110 Back panel layout



1.2.2 USB

Board must support the following Universal Serial Bus ports:

Port Summary

- 10 total USB2.0 Ports (4 back-panel, 6 internal)
- 4 total USB 3.0 Ports (2 back-panel / 2 internal)

Implementation Details:

- 2 USB v2.0 ports via the back-panel
- 4 USB v3.0 ports via the back-panel
- 2 USB v2.0 ports via 1 dual-port internal headers for front panel cabling
- 2 USB v3.0 ports via 1 dual-port internal headers for front panel cabling
    - Header must be placed on the lower edge of the board near the 2x12 power header near uATX mounting hole 'L'

Front panel USB3 header must be 2x10 shrouded, 2.00mm pitch, colored light blue (Pantone color code 298C) and keyed at pin 20, as defined in Table 3 and shown in Figure6. USB 3.0 Internal Connector and Cable Specification can be found at:

http://download.intel.com/technology/usb/USB_3.0_Internal_Connector_and_Cable_Specification.pdf

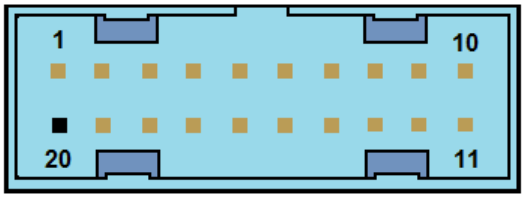


Figure6: Front Panel USB 3.0 header

Pin	Signal	Description
1	Vbus	Power
2	IntA_P1_SSRX-	USB3 ICC Port1 SuperSpeed Rx-
3	IntA_P1_SSRX+	USB3 ICC Port1 SuperSpeed Rx+
4	GND	Ground
5	IntA_P1_SSTX-	USB3 ICC Port1 SuperSpeed Tx-

Pin	Signal	Description
6	IntA_P1_SSTX+	USB3 ICC Port1 SuperSpeed Tx+
7	GND	Ground
8	IntA_P1_D-	USB3 ICC Port1 D- (USB2 Signal D-)
9	IntA_P1_D+	USB3 ICC Port1 D- (USB2 Signal D+)
10	ID	Over Current Protection
11	IntA_P2_D+	USB3 ICC Port2 D+ (USB2 Signal D+)
12	IntA_P2_D-	USB3 ICC Port2 D- (USB2 Signal D-)
13	GND	Ground
14	IntA_P2_SSTX+	USB3 ICC Port2 SuperSpeed Tx+
15	IntA_P2_SSTX-	USB3 ICC Port2 SuperSpeed Tx-
16	GND	Ground
17	IntA_P2_SSRX+	USB3 ICC Port2 SuperSpeed Rx+
18	IntA_P2_SSRX-	USB3 ICC Port2 SuperSpeed Rx-
19	Vbus	Power
20	Key	Not Connected

Table 3: Front Panel USB3.0 header signal

- Front panel USB header must be 2x5 fully shrouded, 2.54mm pitch, colored black and keyed at pin 9, as

Blue color for all USB3 back-panel ports must be Pantone color code 300C.

Board must support BIOS option to leave back-panel USB2 ports enabled during low-power states so as to power peripherals when in S3/S4/S5.

Note: Footprint for back-panel USB/PS2 combo-jack must also allow dual-port USB stack only, shall future SKU revision require such stuffing option.

Refer to “Back Panel I/O” section for preferred back-panel USB layout implementation.

Each port, whether on the back panel or internal header, must have its own address space so that individual port disabling can be performed.

Front panel USB2.0 headers must be **shrouded** 2x5, 2.54mm pitch, colored black and keyed at pin 9, as defined in Figure 4 and Table 1. Follow the Intel Front Panel I/O Connectivity Design Guide for front panel USB solutions.

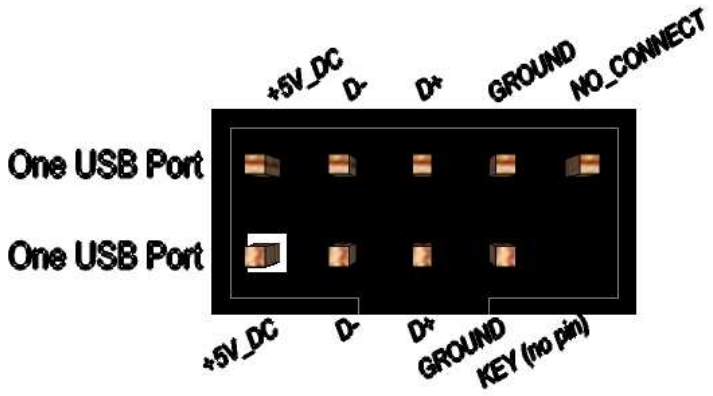


Figure 4: Front panel USB header pin-out

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

Table 1: Front panel USB header signals

Notes: Front panel USB headers must be placed within a keep-out-zone no smaller than 1 inch (half-inch to the left and half-inch to the right of the header) so as to support commonly available USB connectors.

Thermistor protection is required for all back panel and front panel USB ports.

ESD protection is required for all D+ and D- signals. Signal routing/layout for all front panel and backpanel ports must include pads for ESD protection; protection components must be stuffed. ESD protection circuitry must meet respective signal qualification, functionality and performance.

Common mode choke footprint must be routed for all back panel and front panel USB ports (to be stuffed on back panel ports shall EMI test fail with less than 4dB margin).

1.2.3 SPI Programing Header - None

The SPI Program Header is a default header designed by Dediprog with use with the SF100 and SF300 USBprogrammers. Can be used with the SF200 with the adapter cable.

Header to be used should be a 2.54mm pitched. See Figure 7 for recommended Header.

Figure 7: SPI small format programming header

Pin	LPC header signals	Pin	LPC header signals
1	LPC CLK 24Mhz	2	Ground
3	PLTRST#N	4	LPC FRAME#N
5	LPC Data0	6	LPC Data1

7	LPC Data2	8	LPC Data3
9	Ground	10	Ground
11	VCC3	12	VCC3
13	Key (no pin)	14	VCC3

1.2.4 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, …).

1.2.5 Expansion Slot Layout

Board must have the following expansion slot layout:

Slot Configuration	Electrical	Physical Connector	Color
Slot 7 (closest to CPU)	PCI Express 3.0 x16	X16	Blue with blue latch
Slot 6	M.2 key M socket	M.2 Key M socket	Black
Slot 5	PCI Express 3.0 x4	X4	Black
Slot 4	PCI Express 3.0 x1	X1	Black

Notes: PCI express x16 connectors must have dual side retention latch.

- **M.2 Suport Socket 3 Type2280, 2260, 2242 by movable stand-off Connector Key M**

1.3 Additional Headers

1.3.1 Front Panel

The front panel main header must be shrouded 2x5, 2.54mm pitch, multi-colored, keyed at pin 10 and with silkscreen text as defined in Figure 8 and Table 4. Polarity markings on pins 1 & 2 and color-coding on all pins are required. Refer to Intel PN 2100C888-121 and other Intel® Desktop Boards for front panel header connectivity references.

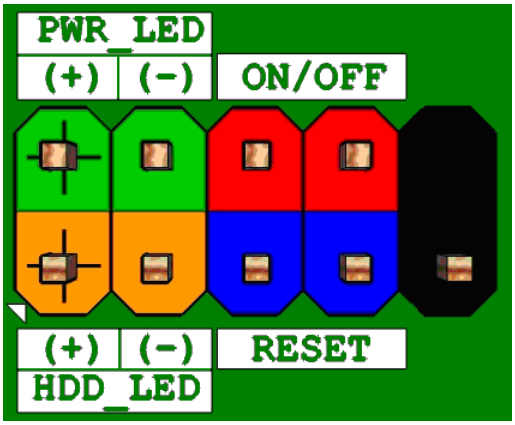


Figure 8: Front panel main header pin-out

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

Table 4: Front panel main header signals

1.3.2 Chassis Intrusion Detection

The chassis intrusion detection header must be 1x2, 2.54mm pitch, colored black and with extended back, as defined in 9.

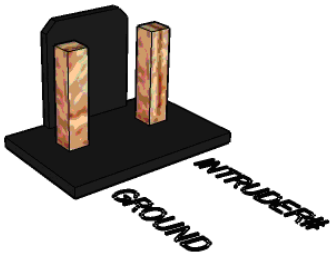


Figure 9 Chassis intrusion detection header

1.3.3 MiAPI feature

The MiAPI port header must be 2x10, 2.54mm pitch, colored black and keyed at pin 20, as defined in

Pin	Signal			Pin	Signal		
	RS232	**RS485**	**RS422**		**RS232**	**RS485**	**RS422**
1	DCD (Data Carrier Detect)	R(A) / T(A)	TX(B)	2	RXD# (Receive Data)	R(B) / T(B)	TX(A)
3	TXD# (Transmit Data)	NC	RX(A)	4	DTR (Data Terminal Ready)	NC	RX(B)
5	Ground	Ground	Ground	6	DSR (Data Set Ready)	NC	NC
7	RTS (Request To Send)	DE#/RE	NC	8	CTS (Clear To Send)	NC	NC
9	RI (Ring Indicator)	NC	NC	10	Key (no pin)	Key (no pin)	Key (no pin)

Table 25.

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

Table 5: Serial port header signals

1.3.4 Serial Port

The serial port header must be 2x5, 2.54mm pitch, colored green and keyed at pin 10, as defined in Figure 0 and

Pin	Signal			Pin	Signal		
	RS232	**RS485**	**RS422**		**RS232**	**RS485**	**RS422**
1	DCD (Data Carrier Detect)	R(A) / T(A)	TX(B)	2	RXD# (Receive Data)	R(B) / T(B)	TX(A)
3	TXD# (Transmit Data)	NC	RX(A)	4	DTR (Data Terminal Ready)	NC	RX(B)
5	Ground	Ground	Ground	6	DSR (Data Set Ready)	NC	NC
7	RTS (Request To Send)	DE#/RE	NC	8	CTS (Clear To Send)	NC	NC
9	RI (Ring Indicator)	NC	NC	10	Key (no pin)	Key (no pin)	Key (no pin)

Table 26. Header must be located around the expansion slots area to minimize port dongle cable length (most are 4” or less).

Internal I/O header: Standart 9 pin RS232 or RS485, RS422 port

COM port 3; COM port 4

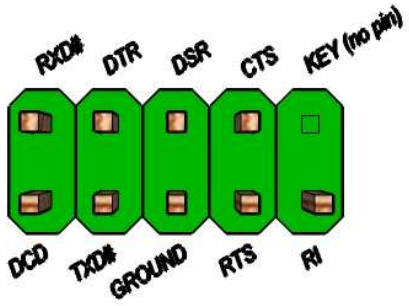


Figure 10: Serial port header pin-out

Pin	Signal			Pin	Signal		
	RS232	**RS485**	**RS422**		**RS232**	**RS485**	**RS422**
1	DCD (Data Carrier Detect)	R(A) / T(A)	TX(B)	2	RXD# (Receive Data)	R(B) / T(B)	TX(A)
3	TXD# (Transmit Data)	NC	RX(A)	4	DTR (Data Terminal Ready)	NC	RX(B)
5	Ground	Ground	Ground	6	DSR (Data Set Ready)	NC	NC
7	RTS (Request To Send)	DE#/RE	NC	8	CTS (Clear To Send)	NC	NC
9	RI (Ring Indicator)	NC	NC	10	Key (no pin)	Key (no pin)	Key (no pin)

Table 2: Serial port header signals

Note: The serial port header must be placed within a keep-out-zone no smaller than 1 inch (half-inch to the left and half-inch to the right of the header) so as to support commonly available dongles.

Back Panel I/O: Standart 9 pin RS232 port and POS RS232

COM port 1; COM port 2

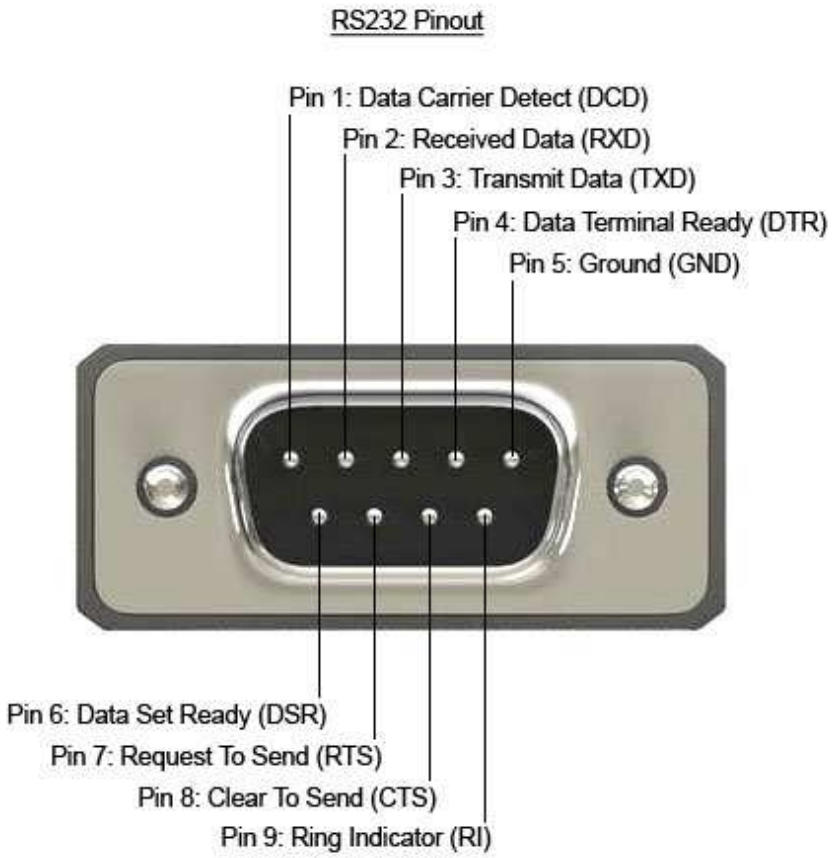


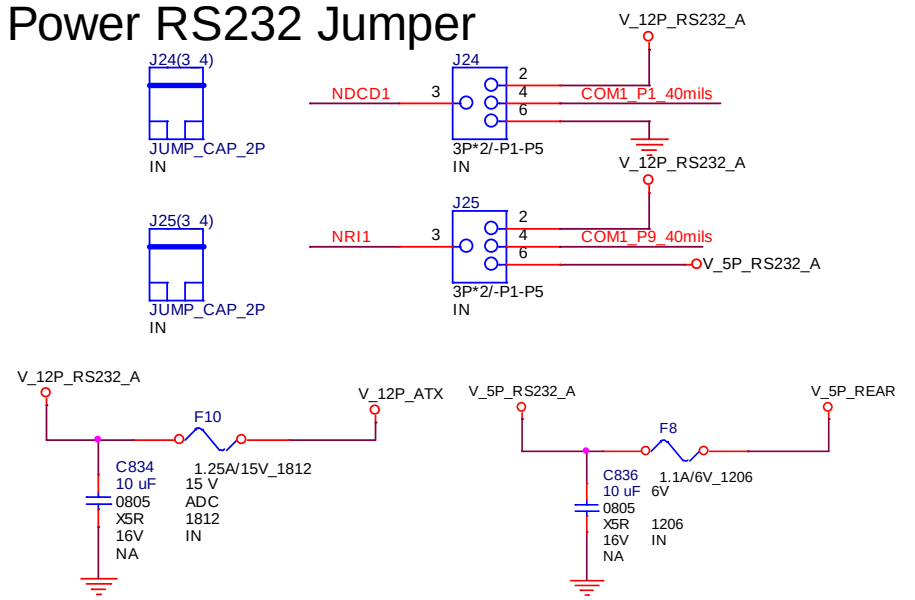
Figure 51: RS232 Serial port pin-out

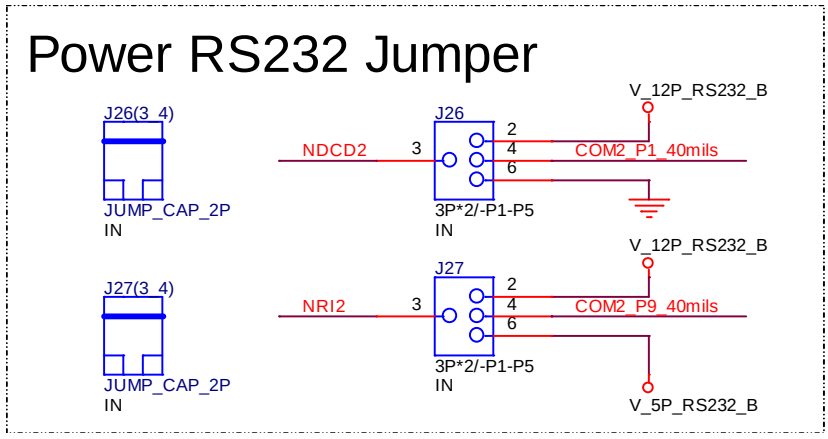
Pin	Signal	Signal Name	DTE Signal direction
1	DCD	Data Carrier Detect	In
2	RXD	Receive Data	In
3	TXD	Transmit Data	Out
4	DTR	Data Terminal Ready	Out
5	GND	Ground	-
6	DSR	Data Set Ready	In
7	RTS	Request to Send	Out
8	CTS	Clear to Send	In
9	RI	Ring Indicator	In

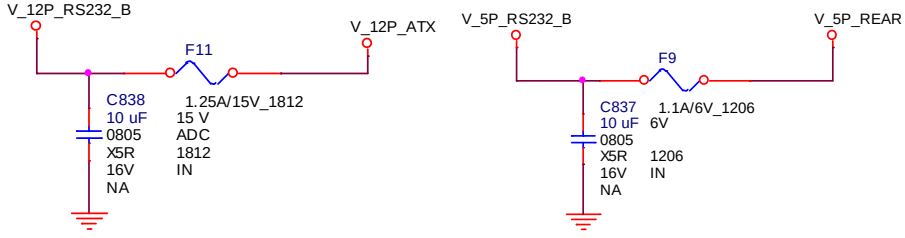
Table7: RS232 Serial port signals

Pin1 can select 12V / GND/ RS232: NDCD at J24 and J26 Pin1 12V: J24.2<=>J24.4 J26.2<=>J26.4 Pin1 GND: J24.6<=>J24.4 J26.6<=>J26.4 Pin1 NDCD: J24.3<=>J24.4 J26.3<=>J26.4 Pin9 can select 12V/ 5V / RS232: NRI at J25 and J27 Pin9 12V: J25.2<=>J25.4 J27.2<=>J27.4 Pin9 5V: J25.6<=>J25.4 J27.6<=>J27.4 Pin9 NRI: J25.3<=>J26.4 J27.3<=>J27.4

Table8: POS RS232 Serial port signals







1.3.5 Parallel Port

The parallel port header must be 2x13, 2.54mm pitch, colored pink (Pantone color code “Rhodamine Red C”) and keyed at pin 26, as defined in Figure 62 and Table9. Header must be located around the expansion slots area to minimize port dongle cable length.

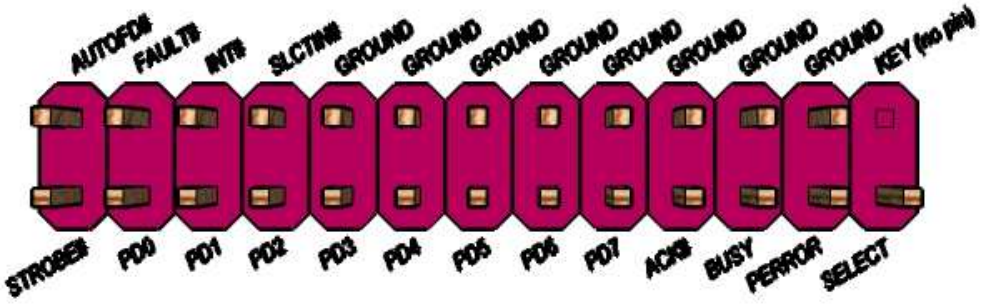


Figure 62: Parallel port header pin-out

Pin	Standard Signal Name	ECP Signal Name	EPP Signal Name
1	STROBE#	STROBE#	WRITE#
2	AUTOFD#	AUTOFD#, HOSACK	DATASTB#
3	PD0	PD0	PD0
4	FAULT#	FAULT#, PERIPHREQST#	FAULT#
5	PD1	PD1	PD1
6	INT#	INT#, REVERSERQST#	RESET#
7	PD2	PD2	PD2
8	SLCTIN#	SLCTIN#	ADDRSTB#
9	PD3	PD3	PD3
10	GROUND	GROUND	GROUND
11	PD4	PD4	PD4
12	GROUND	GROUND	GROUND
13	PD5	PD5	PD5
14	GROUND	GROUND	GROUND
15	PD6	PD6	PD6
16	GROUND	GROUND	GROUND
17	PD7	PD7	PD7
18	GROUND	GROUND	GROUND
19	ACK#	ACK#	INTR
20	GROUND	GROUND	GROUND
21	BUSY	BUSY#, PERIPHACK	WAIT#
22	GROUND	GROUND	GROUND
23	PERROR	PE, ACKREVERSE#	PE
24	GROUND	GROUND	GROUND
25	SELECT	SELECT	SELECT
26	KEY (no pin)	KEY (no pin)	KEY (no pin)

Table 9: Parallel port header signals

1.4 Thermal Management and Fan Control

- Nuvoton NCT6104D SuperIO: 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 SuperIO solution for hardware monitoring and thermal management. SuperIO 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:
  - internal thermal diode in the CPU (CPU DTS) via PECI (Platform Environmental Control Interface)
  - internal thermal diode in the PCH (PCH DTS) via SMLINK (SMBUS)
  - remote diode near CPU VR FETs
  - remote diode near or on the memory components
- Voltage monitoring (in priority order): +12V, +5V, +5V_SB, CPU +Vccp

1.4.1 CPU and System Fans

Board must implement a 4-pin fan header for the processor/heatsink 4-wire fan. Processor/heatsink fan must be tachometer/PWM controlled and header color must be white, as shown in Figure 73.

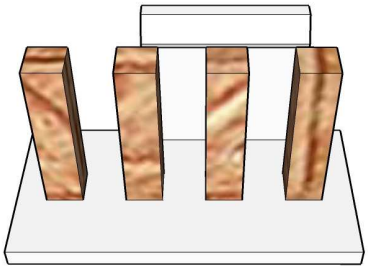


Figure 73: Processor fan header

Board must implement a 4-pin fan header for the processor/heatsink 4-wire fan. Processor/heatsink fan must be tachometer/PWM controlled and header color must be colored red (Pantone color code 186C), as shown in Figure 84.

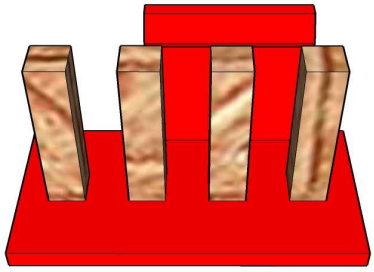


Figure 84: Front/Rear fan header

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1.4.2 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

The below requirements must be met for the front fan header:

- Closed loop fan speed control via the FANPWM1 signal routed to pin-4
- Route fan tachometer signal to FANTACH1 input
- Must support 1.5A continuous current draw
- Clearly label as “FRONT FAN”
- Locate near front edge of the board

The below requirements must be met for the rear fan header:

- Closed loop fan speed control via the FANPWM2 signal routed to pin-4
- Route fan tachometer signal to FANTACH2 input
- Must support 1.5A continuous current draw
- Clearly label as “REAR FAN”
- Locate near back edge of the board

1.5 Silkscreen Text

Board silkscreen text must clearly label all connectors and headers with reference designators as well as user-friendly names as noted in this section.

Note: Silkscreen text shown in `Courier` font for clarity.

There must be minimal silkscreen on the board aside from labels and logos. All silkscreen component outlines should be removed or as minimal as possible to meet manufacturing requirements.

Silkscreen labels should be white back-ground with clear text: .

- ATX board must have expansion slots clearly labeled as follows:
  - PCIe x16 (PCIE_X16_SLOT1)
  - PCIe M2 Key-M (J_M2_KM_1)
  - PCIe x4 (PCIE_X4_SLOT1)
  - PCIe x1 (PCIE_X1_SLOT1)
- SATA ports from PCH SATA controller must be clearly labeled:
  - SATA 0 / SATADOM
  - SATA 1
  - SATA 2
  - SATA 3
  - SATA 5
- Front panel audio header must be clearly labeled:
  - FP AUDIO (J_HDA_1 location)
- Internal IEEE1394a headers must be clearly labeled: None
- DIMM connectors must show reference designators and be clearly labeled as follows:
  - **DIMM 1**
  - **DIMM 2**
  - **DIMM 3**
  - **DIMM 4**
- Fan headers must be clearly labeled as indicated in the “CPU and System Fans” section.
- Front panel main header must be clearly labeled FRONT PANEL and with the clarifying pin-out text as shown in the “Front Panel Main Header” section. The following table must also be shown nearby:

FRONT PANEL (J_FIO_1)

HD LED (Orange)	⊕1	3⊖
PWR LED (Green)	⊕2	4⊖
RESET (Blue)	5	7
PWR ON (Red)	6	8

- Alternate Power LED must be clearly labeled: none
- BIOS configuration header must be clearly labeled BIOS CFG, with the following table shown nearby:

BIOS Config
(J_CMOS1)

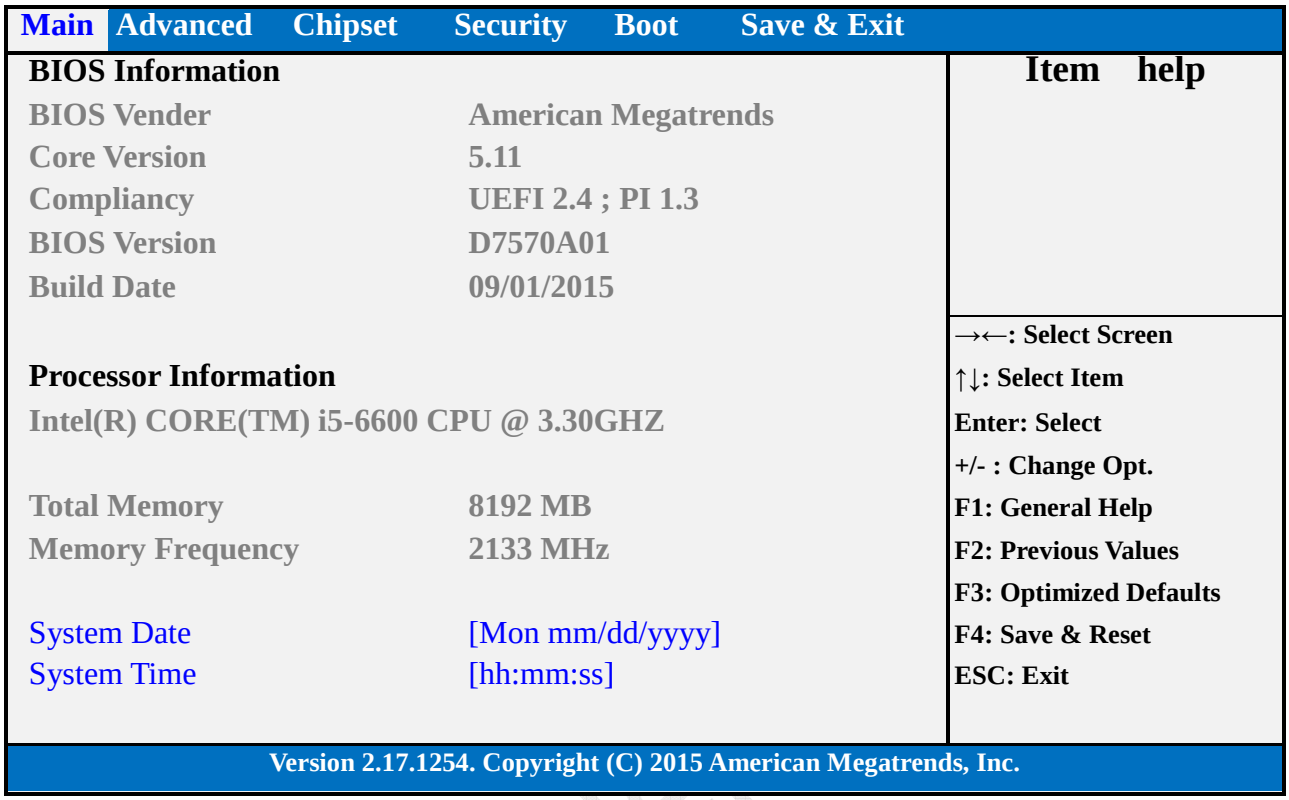
1-2	NORMAL
2-3	CONFIG
NO JMP	RCVRY

- Internal USB2.0 headers must be clearly labeled:
  - **FP USB2.0** (FP_USB_1 location)
- Internal USB3.0 headers must be clearly labeled:
  - **FP USB3.0** (FP_USB3_1 location)
- Internal COM headers must be clearly labeled:

- **FP COM P3** (COM3 location)
- **FP COM P4** (COM4 location)

- PS/2 port header must be clearly labeled: None
- Chassis intrusion detection header must be clearly labeled:
  - INTRD (J_INTRD1 location)
- VR Hot LED must be clearly labeled: None
- PROCHOT LED must be clearly labeled: None
- HTPC LEDs header must be clearly labeled None
- Onboard standby LED must be clearly labeled:
  - STDBY (D_STDBY1 location)
- SPI location must be clearly labeled:
  - SPI (U_SPI1 location)

1 Main Page



Field Name	**BIOS Vender**
Default Value	AMI Megatrends
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Core Version**
Default Value	5.011
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Compliancy**
Default Value	UEFI 2.4 ; PI 1.3
Comment	This field is not selectable. There is no help text associated with it.

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 date 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.

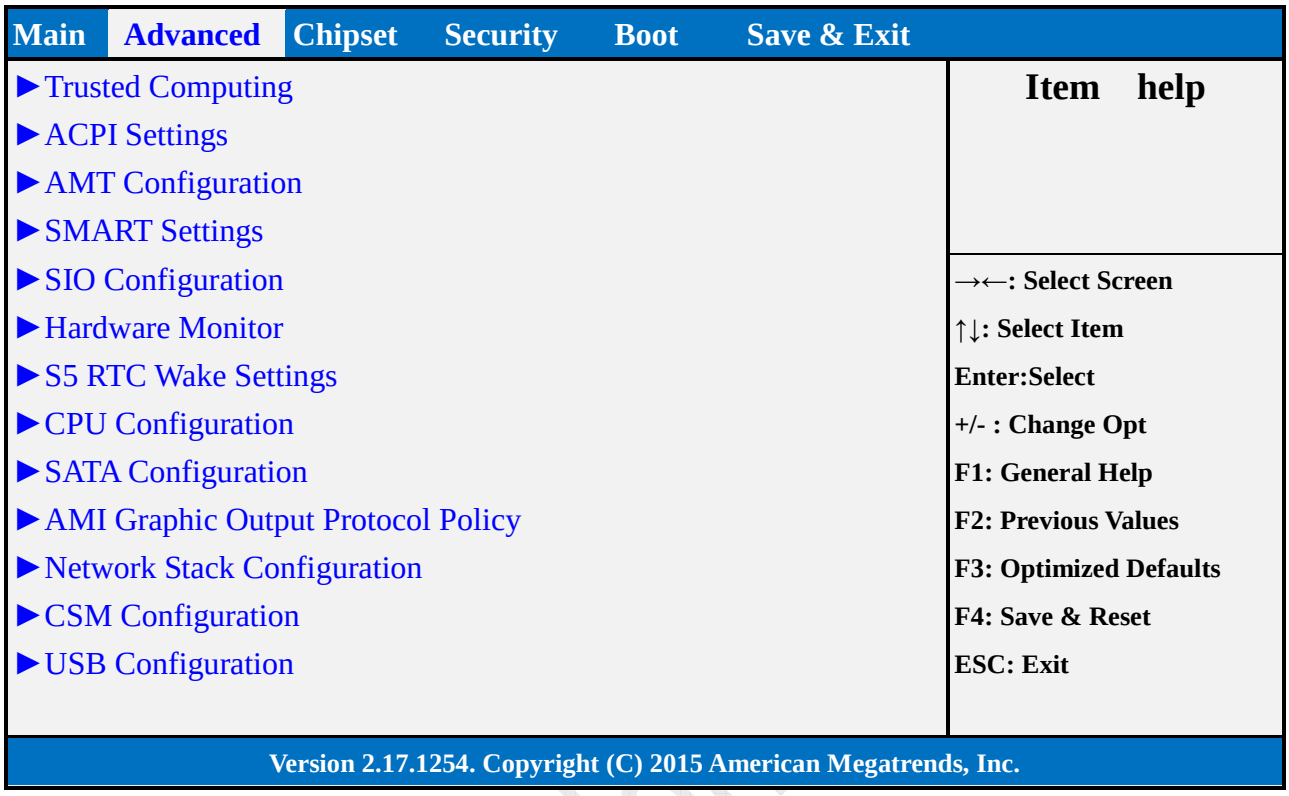
Field Name	**Total Memory**
Value	Display the installed memory size.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Memory Frequency**
Value	Display the installed memory frequency.
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.

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.

2 Advanced Page



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

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

Field Name	**AMT Configuration**
Help	Configure Active Management Technology parameters.
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	**SIO Configuration**
Help	System Super IO Chip Parameters.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Hardware Monitor**
Help	Monitor hardware status
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	**SATA Configuration**
Help	SATA Devices Options Settings.
Comment	Press Enter when selected to go into the associated Sub-Menu.

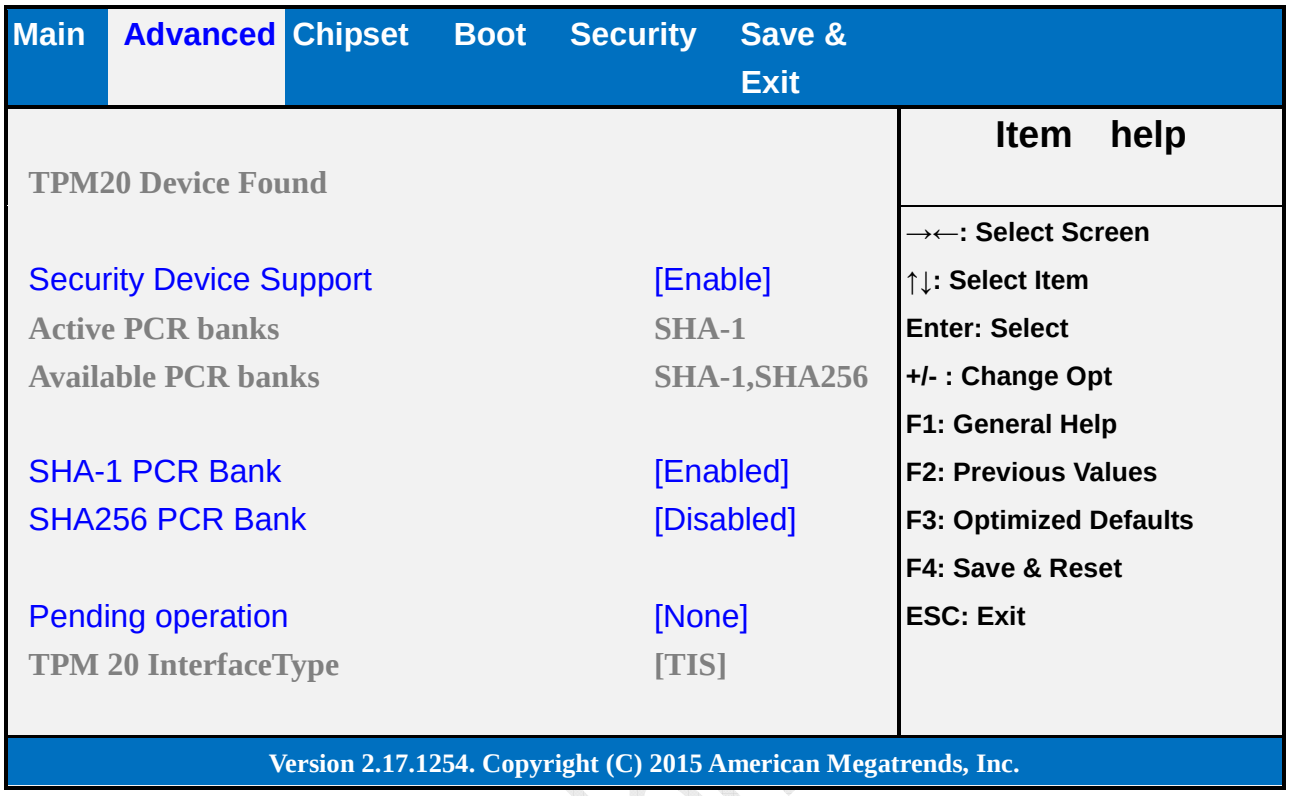
Field Name	**AMI Graphic Output Protocol Policy (Hided if "Launch CSM" = Enabled)**
Help	User Select Monitor Output by Graphic Output Protocol
Comment	Press Enter when selected to go into the associated Sub-Menu.

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

Field Name	**CSM Configuration**
Help	CSM configuration: Enable/Disable, Option Rom execution setting, etc.
Comment	Press Enter when selected to go into the associated Sub-Menu.

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

2.1 Trusted Computing



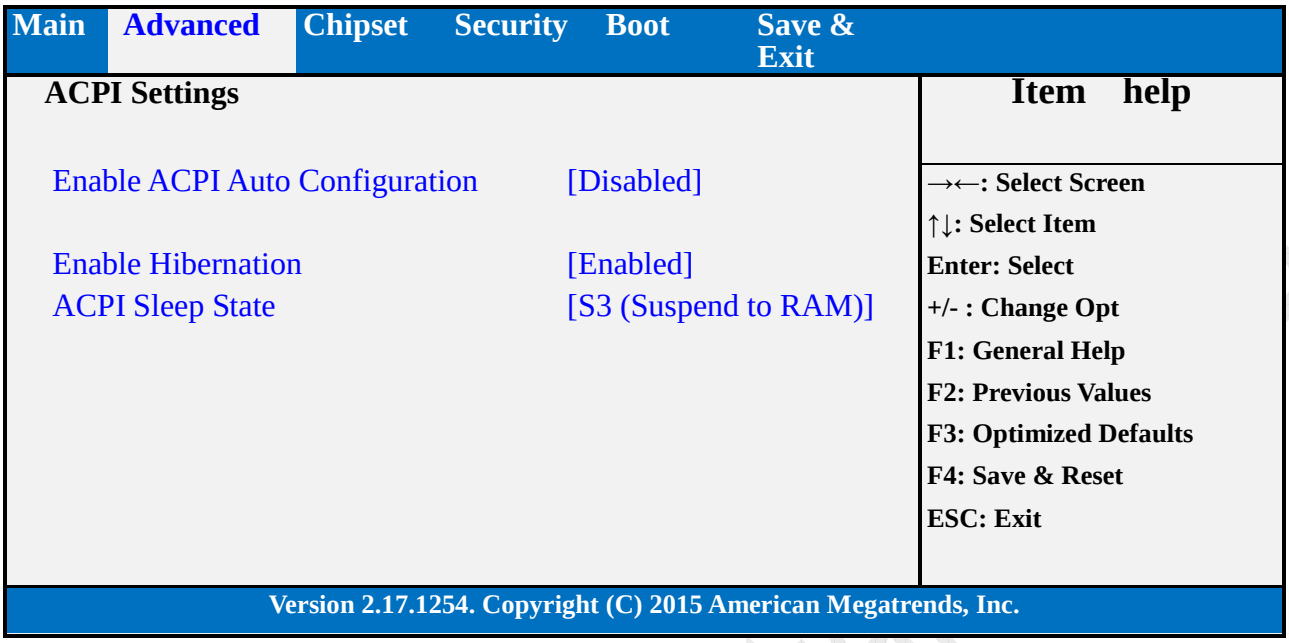
Field Name	**Security Device SUPPORT**
Default Value	[Enable]
Possible Value	Enable Disable
Help	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

Field Name	**SHA-1 PCR Bank**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Enables or Disables SHA-1 PCR Bank.

Field Name	**SHA256 PCR Bank**
Default Value	[Disabled]
Possible Value	Enabled Disabled
Help	Enables or Disables SHA256 PCR Bank.

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.

2.2 ACPI Settings

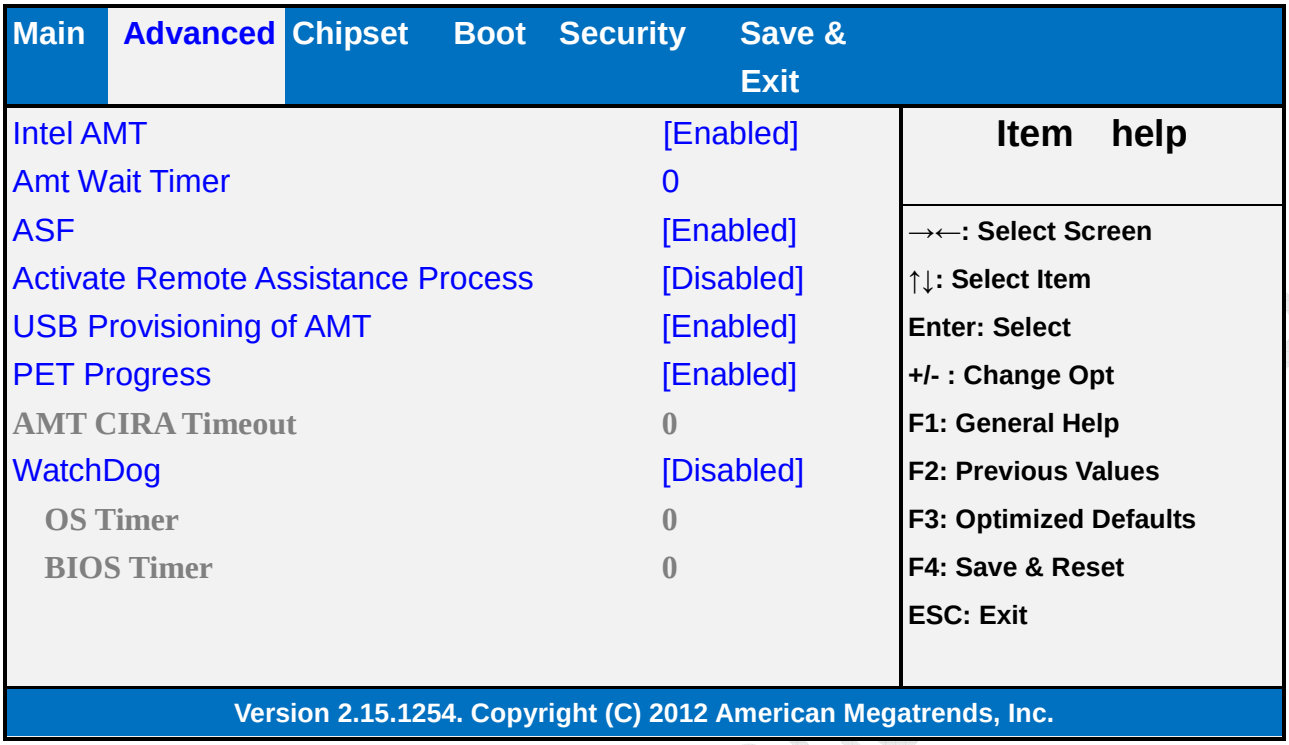


Field Name	**Enable ACPI Auto Configuration**
Default Value	[Disabled]
Possible Value	Enabled Disabled
Help	Enables or Disables BIOS ACPI Auto Configuration.

Field Name	**Enable Hibernation**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.

Field Name	**ACPI Sleep State**
Default Value	[S3 (Suspend to RAM)]
Possible Value	Suspend Disabled S3 (Suspend to RAM)
Help	Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.

2.3 AMT Configuration



Field Name	**Intel AMT**
Default Value	[Enabled]
Possible Value	Disabled / Enabled
Help	Enable/Disable Intel(R) Active Management Technology BIOS Extension. Note: iAMT H/W is always enabled. This option just controls the BIOS extension execution. If enable, this requires additional Firmware in the SPI device.

Field Name	Amt Wait Timer
Default Value	0
Possible Value	0 - 65535
Help	Set timer to wait before sending ASF_GET_BOOT_OPTIONS..

Field Name	ASF
Default Value	Enabled
Possible Value	Disabled / Enabled
Help	Enable/Disable Alert Specification Format.

Field Name	Activate Remote Assistance Process
Default Value	Disabled
Possible Value	Disabled / Enabled
Help	Trigger CIRA boot

Field Name	USB Provisioning of AMT
Default Value	Enabled
Possible Value	Disabled / Enabled
Help	Enable/Disable of AMT USB Provisioning.

Field Name	PET Progress

Default Value	Enabled
Possible Value	Disabled / Enabled
Help	User can Enable/Disabled PET events progress to receive PET events o not.

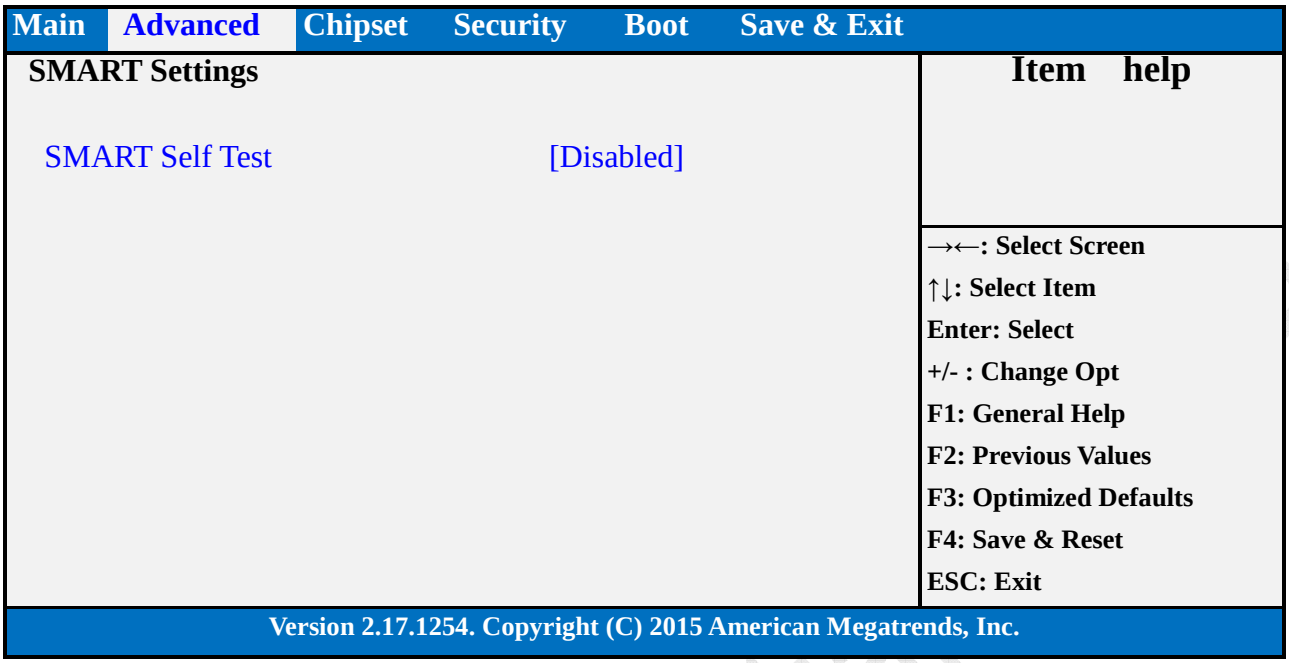
Field Name	AMT CIRA Timeout
Default Value	0
Possible Value	0 - 255
Help	OEM defined timeout for MPS connection to be established. 0 – use the default timeout value of 60 seconds. 255 – MEBX waits until the connection succeeds.

Field Name	WatchDog
Default Value	Disabled
Possible Value	Disabled / Enabled
Help	Enable/Disable Watchdog Timer.

Field Name	OS Timer
Default Value	0
Possible Value	0 – 65535
Help	Set OS watchdog timer.

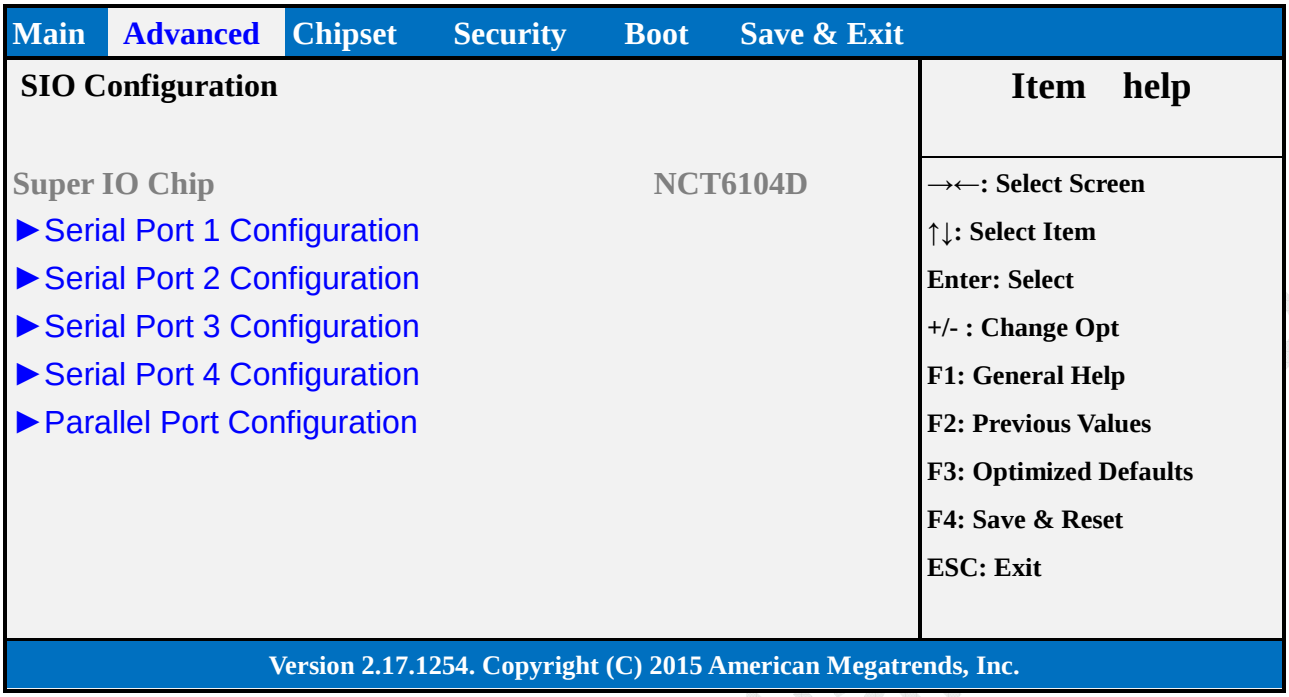
Field Name	BIOS Timer
Default Value	0
Possible Value	0 – 65535
Help	Set BIOS watchdog timer.

2.4 SMART Settings



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

2.5 Super IO Configuration



Field Name	**Serial Port 1 Configuration**
Help	Set Parameters of Port 1 (COMC)
Comment	Press Enter when selected to go into the associated Sub-Menu.

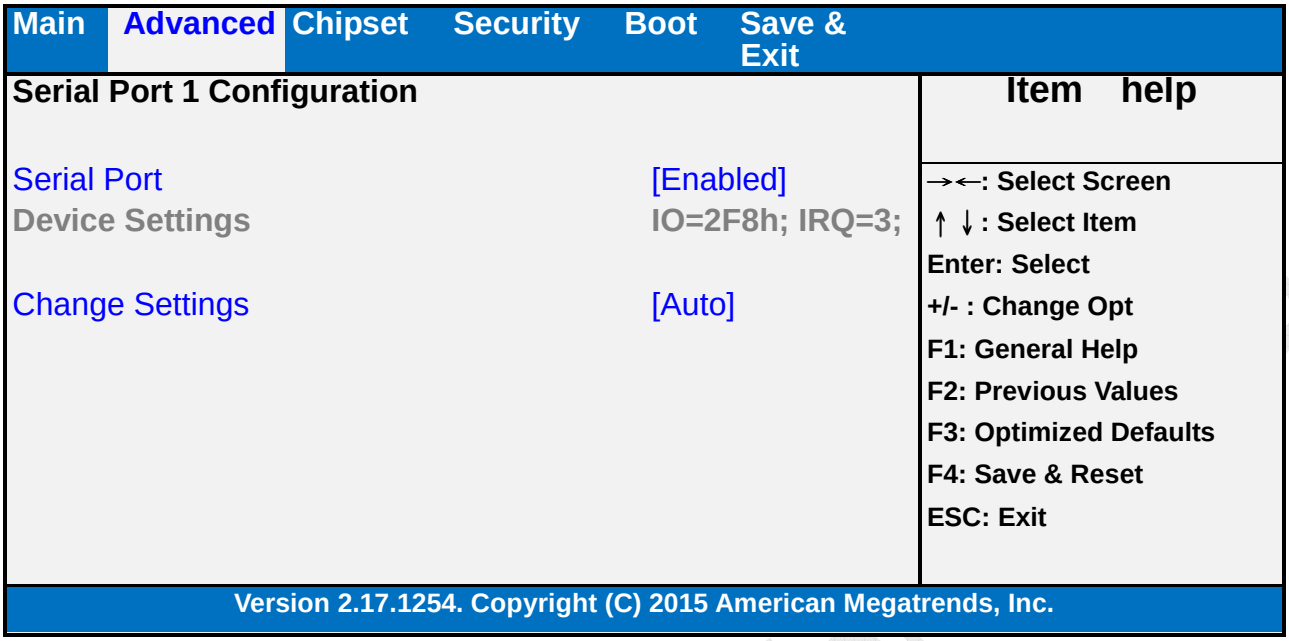
Field Name	**Serial Port 2 Configuration**
Help	Set Parameters of Port 2 (COMD)
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Serial Port 3 Configuration**
Help	Set Parameters of Port 3 (COME)
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Serial Port 4 Configuration**
Help	Set Parameters of Port 4 (COMA)
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Parallel Port Configuration**
Help	Set Parameters of Parallel Port (LPT/LPTE)
Comment	Press Enter when selected to go into the associated Sub-Menu.

2.5.1 Serial Port 1 Configuration

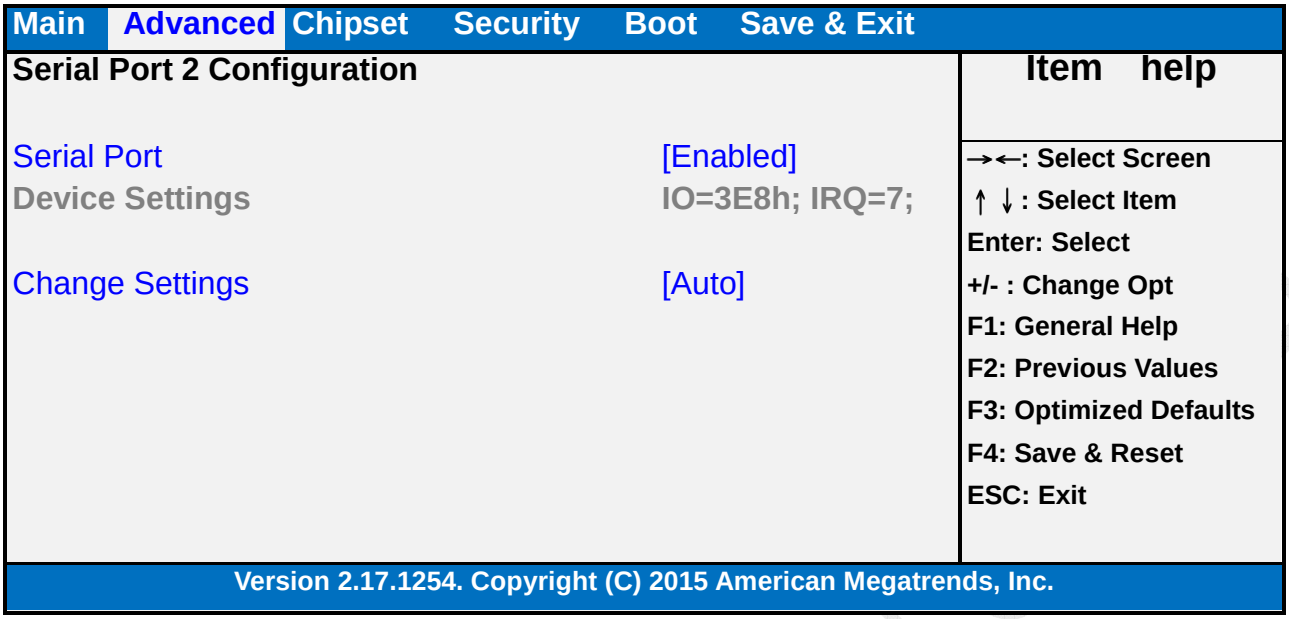


Field Name	**Serial Port**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable or Disable Serial Port(COM)

Field Name	**Device Settings**
Default Value	Device Super IO COM1 Address and IRQ.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Change Settings**
Default Value	[Auto]
Possible Value	Auto IO=2F8h; IRQ=3; IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12; IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;
Help	Select an optimal settings for Super IO Device

2.5.2 Serial Port 2 Configuration

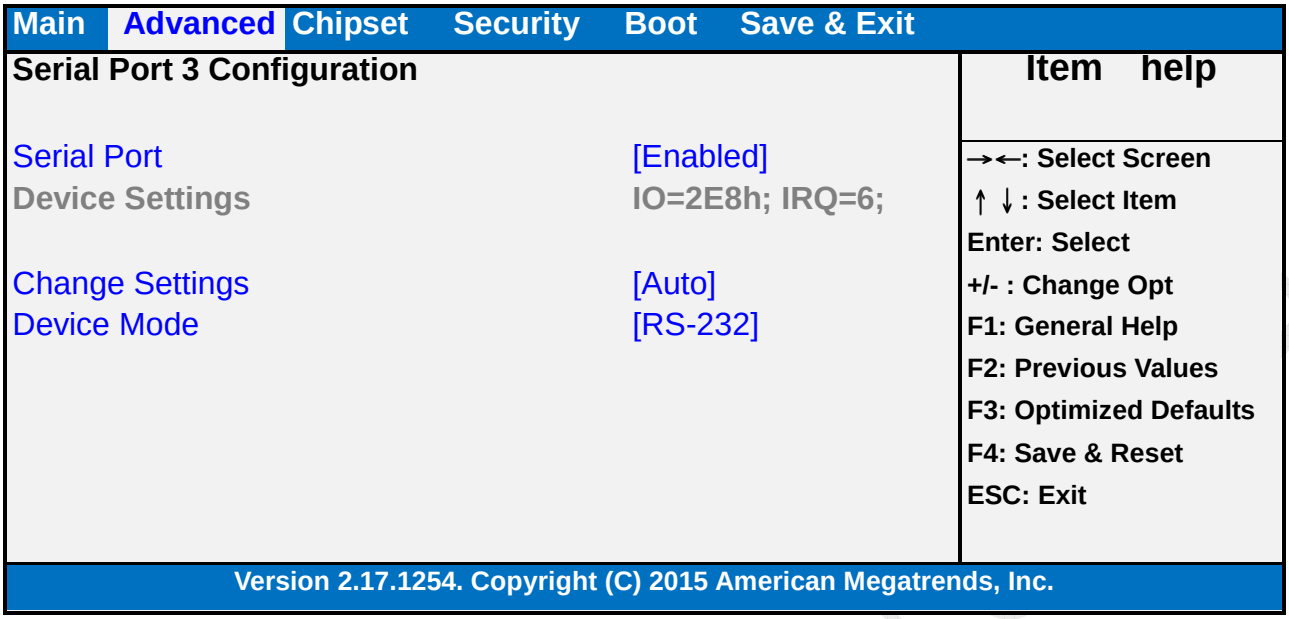


Field Name	**Serial Port**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable or Disable Serial Port(COM)

Field Name	**Device Settings**
Default Value	Device Super IO COM2 Address and IRQ.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Change Settings**
Default Value	[Auto]
Possible Value	Auto IO=2E8h; IRQ=7; IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2F0h; IRQ=3,4,5,6,7,9,10,11,12; IO=2E0h; IRQ=3,4,5,6,7,9,10,11,12;
Help	Select an optimal settings for Super IO Device

2.5.3 Serial Port 3 Configuration



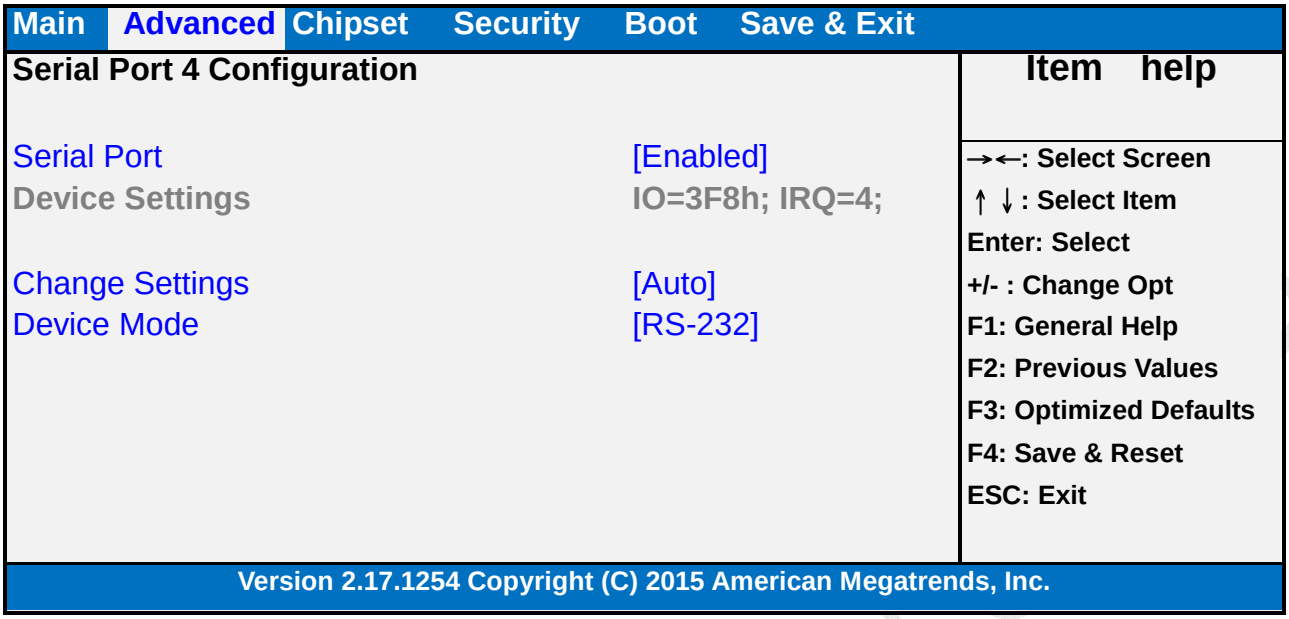
Field Name	**Serial Port**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable or Disable Serial Port(COM)

Field Name	**Device Settings**
Default Value	Device Super IO COM3 Address and IRQ.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Change Settings**
Default Value	[Auto]
Possible Value	Auto IO=2E8h; IRQ=7; IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2F0h; IRQ=3,4,5,6,7,9,10,11,12; IO=2E0h; IRQ=3,4,5,6,7,9,10,11,12;
Help	Select an optimal settings for Super IO Device

Field Name	**Device Mode**
Default Value	[RS-232]
Possible Value	RS-422 RS-232 RS-485
Help	Change the Serial Port Mode

2.5.4 Serial Port 4 Configuration



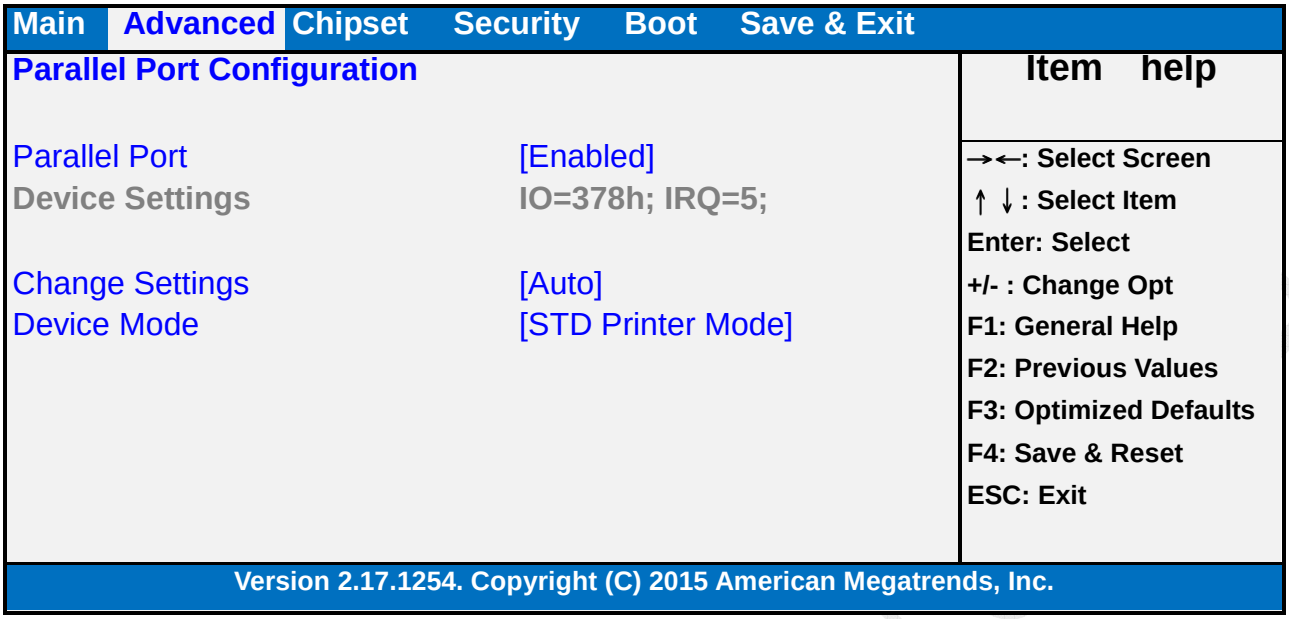
Field Name	**Serial Port**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable or Disable Serial Port(COM)

Field Name	**Device Settings**
Default Value	Device Super IO COM4 Address and IRQ.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Change Settings**
Default Value	[Auto]
Possible Value	Auto IO=3F8h; IRQ=4; IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12; IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;
Help	Select an optimal settings for Super IO Device

Field Name	**Device Mode**
Default Value	[RS-232]
Possible Value	RS-422 RS-232 RS-485
Help	Change the Serial Port Mode

2.5.5 Parallel Port Configuration



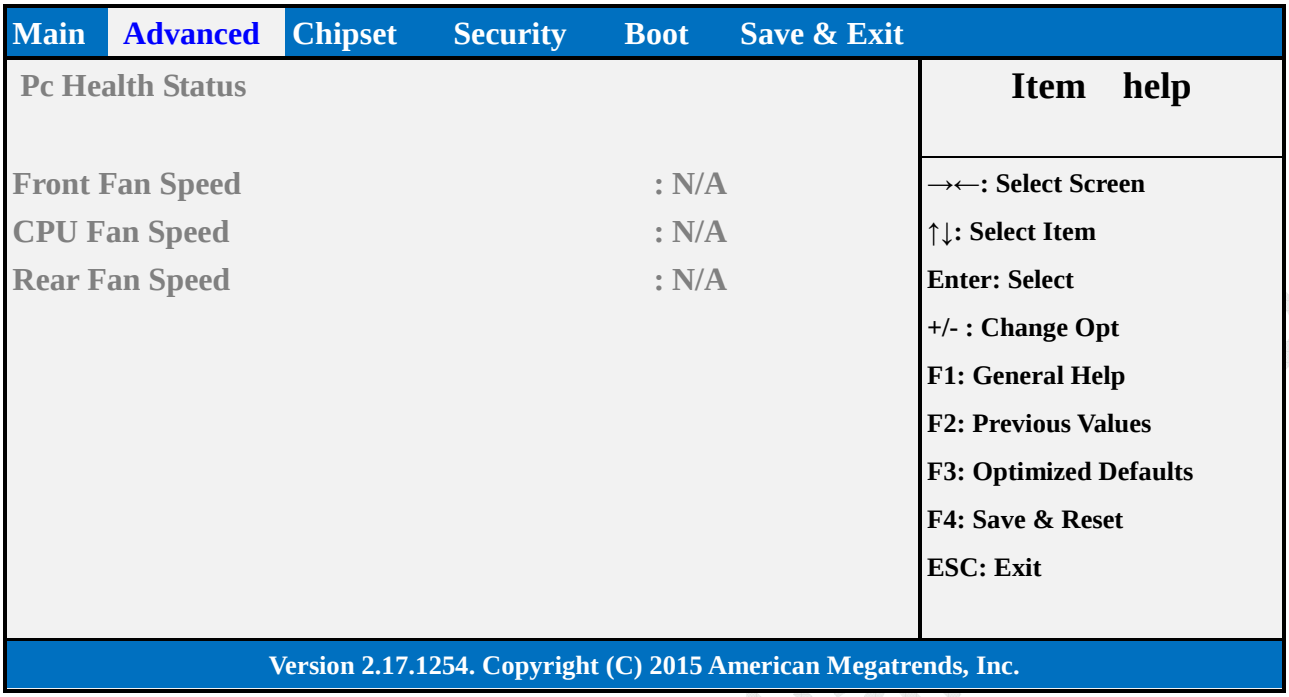
Field Name	**Parallel Port**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable or Disable Parallel Port(LPT/LPTE)

Field Name	**Device Settings**
Default Value	Device Super IO Parallel Port Address/IRQ/DMA.
Comment	This field is not selectable. There is no help text associated with it.

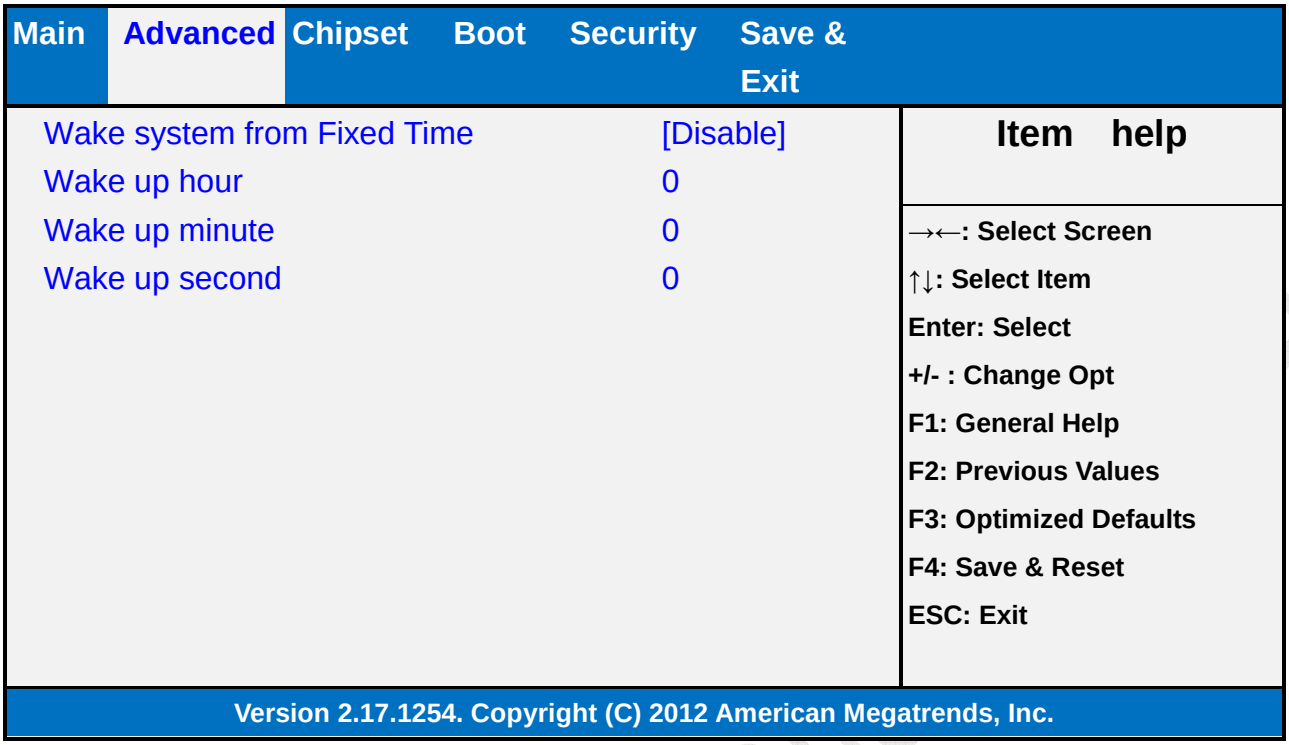
Field Name	**Change Settings**
Default Value	[Auto]
Possible Value	Auto IO=378h; IRQ=5; IO=378h; IRQ=5,6,7,9,10,11,12; IO=278h; IRQ=5,6,7,9,10,11,12; IO=3BCh; IRQ=5,6,7,9,10,11,12;
Help	Select an optimal settings for Super IO Device

Field Name	**Device Mode**
Default Value	[STD Printer Mode]
Possible Value	STD Printer Mode SPP Mode EPP-1.9 and SPP Mode ECP Mode ECP and EPP 1.9 Mode ECP and EPP 1.7 Mode
Help	Change the Printer Port mode

2.6 Hardware Monitor



2.7 S5 RTC Wake Settings



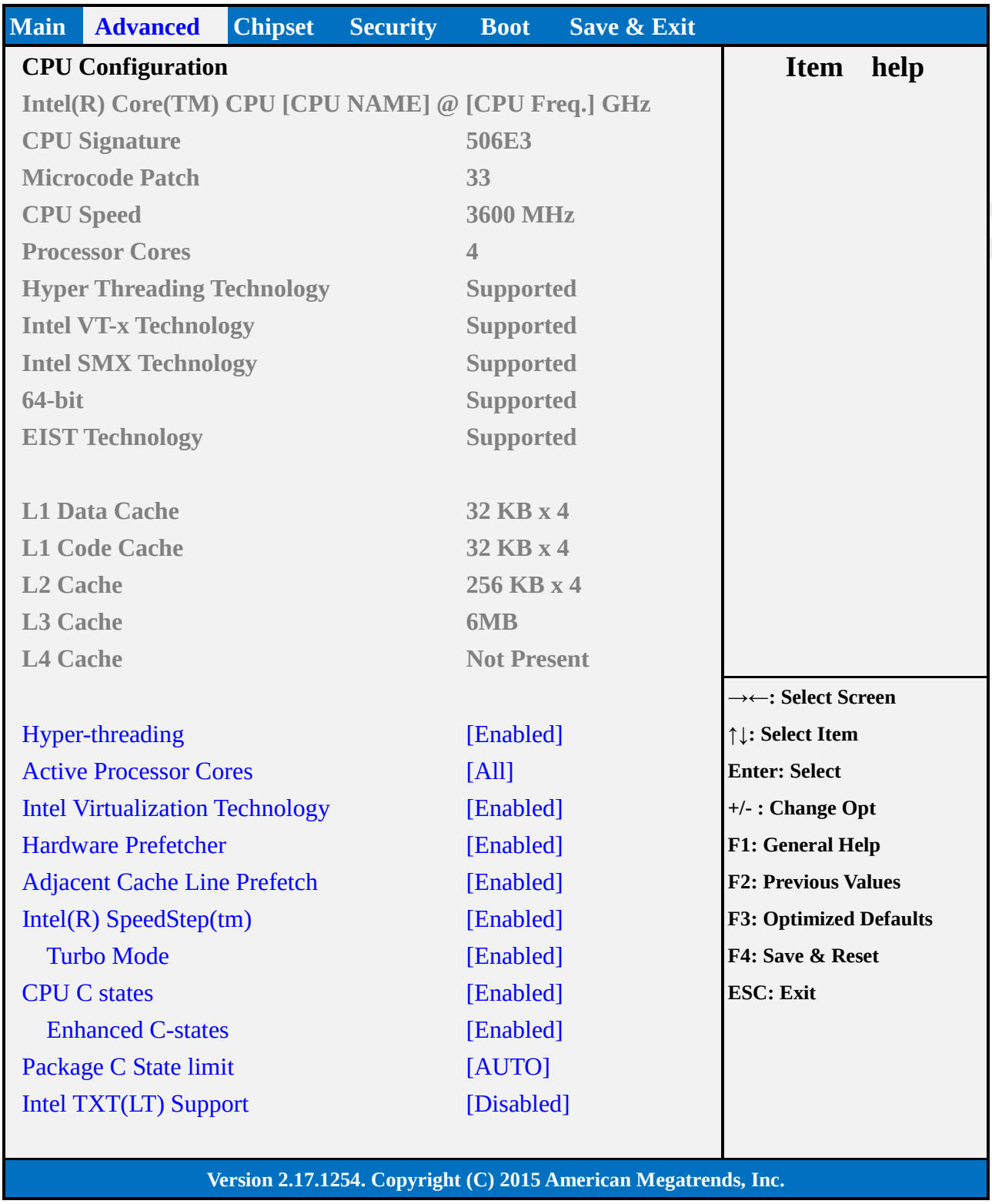
Field Name	Wake system from Fixed Time
Default Value	[Disabled]
Possible Value	Disabled Enabled
Help	Enable or Disable System wake on alarm event.

Field Name	Wake up hour
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
Default Value	[0]
Possible Value	0-59
Help	0 - 59

Field Name	Wake up second
Default Value	[0]
Possible Value	0 - 59
Help	0 - 59

2.8 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	**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	**Intel SMX Technology**
Default Value	Secure Mode extensions support.
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	**EIST Technology**
Default Value	Displays if EIST Technology 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	**L4 Cache**
Default Value	L4 Cache Size

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

Field Name	**Hyper-threading (Hided if HT not Supported)**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology). When Disable only one thread per enabled core is enabled.

Field Name	**Active Processor Cores**
Default Value	[All]
Possible Value	All 1/2/3/4/5/6/7/8
Help	Number of cores to enable in each processor package.

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

Field Name	**Hardware Prefetcher**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	To turn on/off the MLC streamer prefetcher.

Field Name	**Adjacent Cache Line Prefetch**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	To turn on/off the prefetching of adjacent cache lines.

Field Name	**Intel(R) SpeedStep(tm)**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Allows more than two frequency ranges to be supported.

Field Name	**Turbo Mode**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Turbo Mode

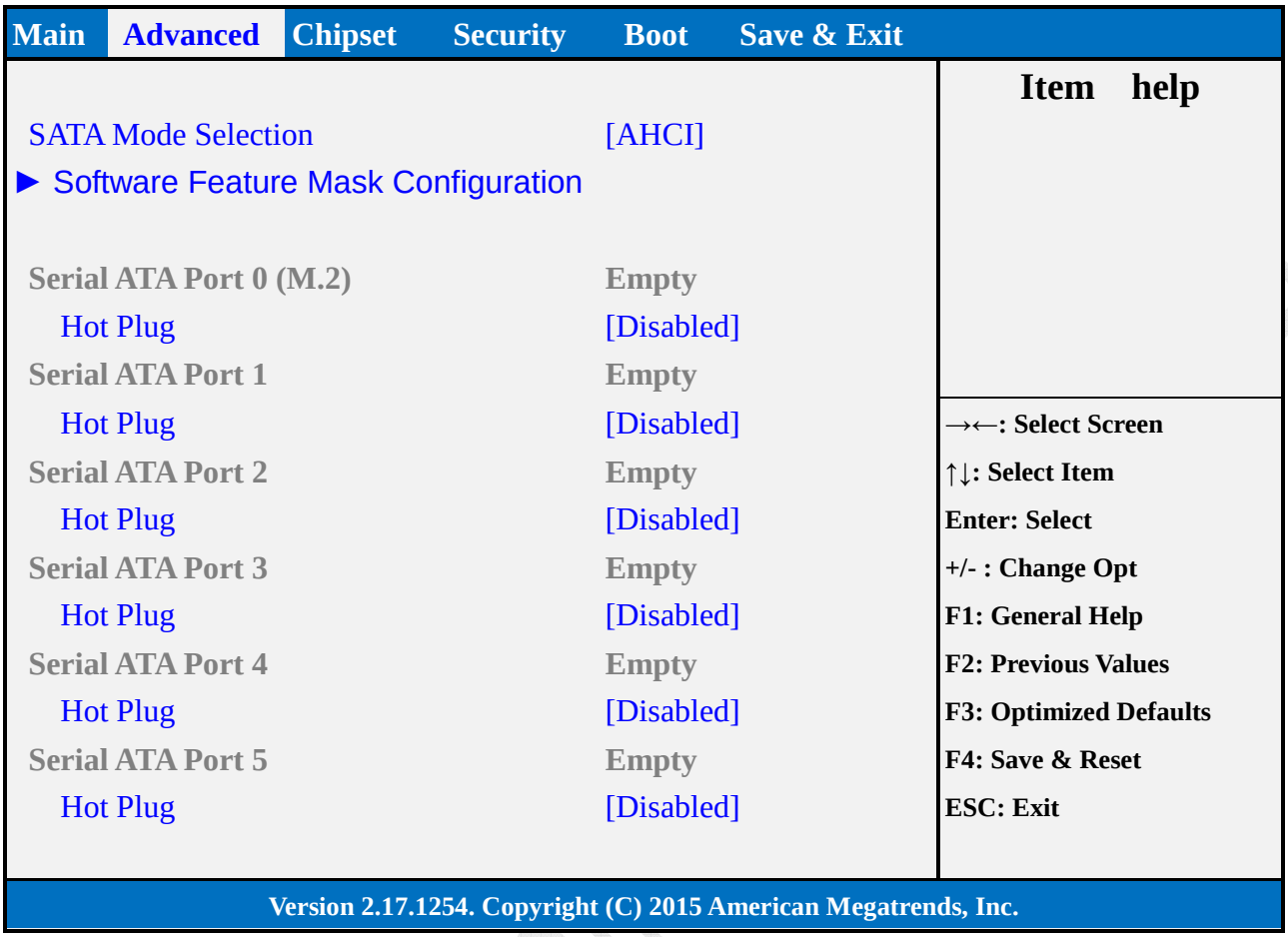
Field Name	**CPU C states**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Enable or disable CPU C states.

Field Name	**Enhanced C-states**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Enable/Disable C1E. When enabled, CPU will switch to minimum speed when all cores enter C-State.

Field Name	**Package C state limit**
Default Value	[AUTO]
Possible Value	C0/C1 C2 C3 C6 C7 C7s C8 AUTO
Help	Package C State limit

Field Name	**Intel TXT(LT) Support**
Default Value	[Disabled]
Possible Value	Disabled Enable
Help	Enables or Disables Intel(R) TXT(LT) support

2.9 SATA Configuration



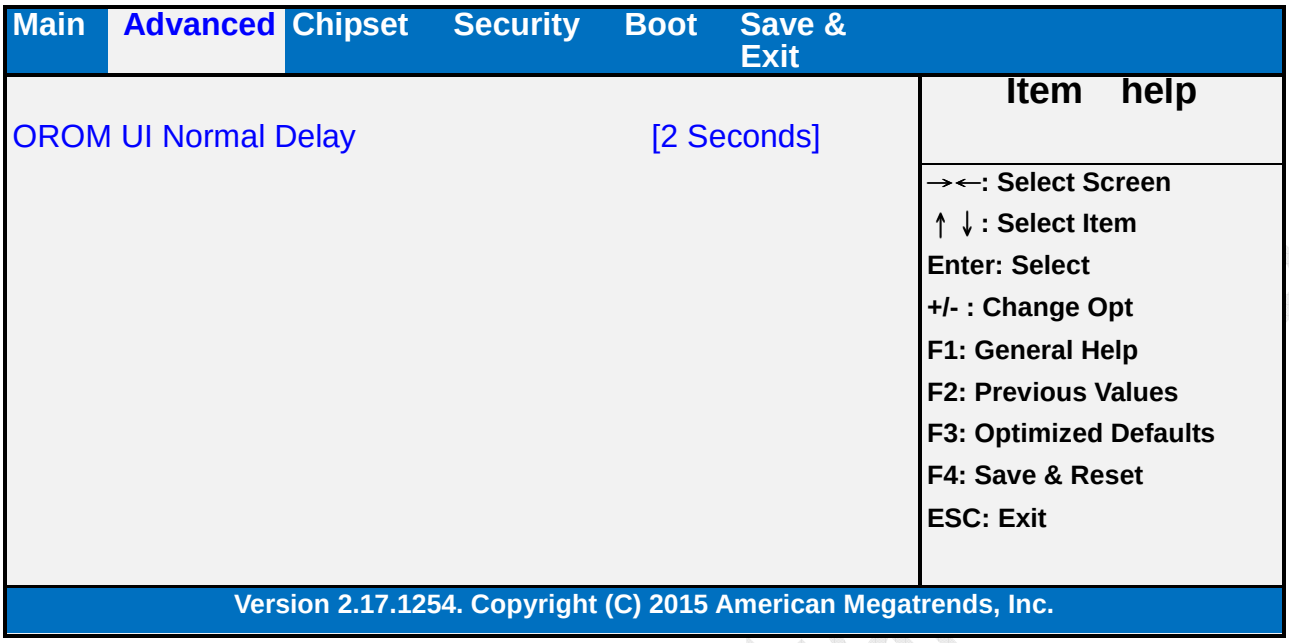
Field Name	**SATA Mode Selection**
Default Value	[AHCI]
Possible Value	AHCI/RAID
Help	Determines how SATA controller(s) operate.

Field Name	**Software Feature Mask Configuration**
Help	RAID OROM/RST driver will refer to the SWFM configuration to enable or disable the storage features.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Serial ATA Port [0:5]**
Default Value	Empty
Possible Value	SATA Device Model Name

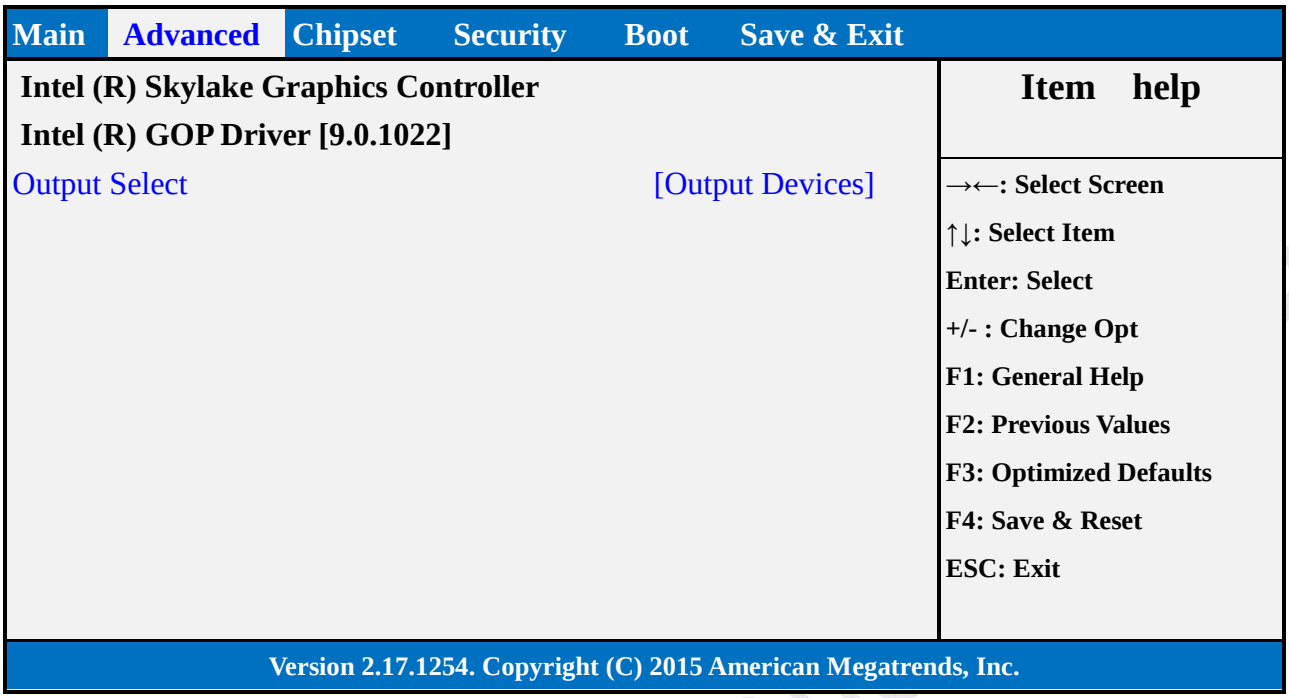
Field Name	**Hot Plug**
Default Value	[Disabled]
Possible Value	Disabled/Enabled
Help	Designates this port as Hot Pluggable.

2.9.1 Software Feature Mask Configuration



Field Name	**OROM UI Normal Delay**
Default Value	[2 Seconds]
Possible Value	2 Seconds 4 Seconds 6 Seconds 8 Seconds
Help	Select the delay time of the OROM UI Splash Screen in a normal status.

2.10 AMI Graphic Output Protocol Policy



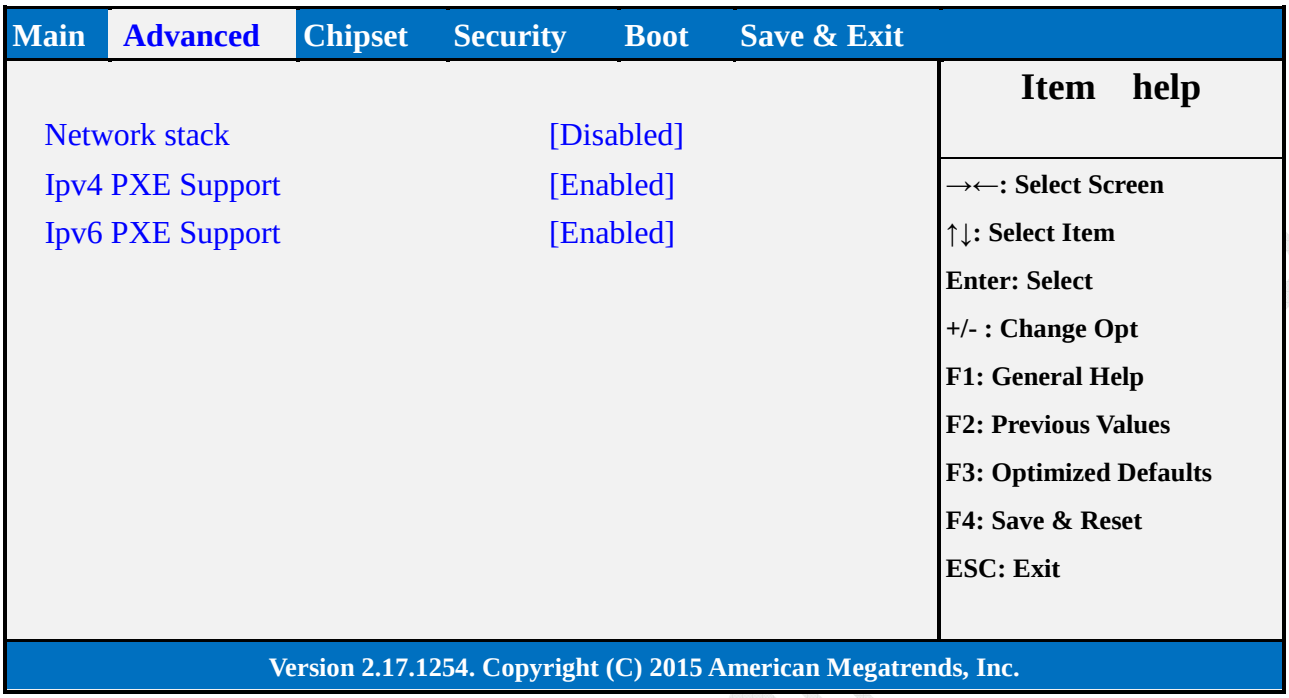
Field Name	**Display Device Name**
Default Value	By Graphic card
Possible Value	By Graphic card
Help	NA

Field Name	**Display Device Driver Version Information**
Default Value	By Graphic card
Possible Value	By Graphic card
Help	NA

Field Name	**Output Select**
Default Value	Dynamic generate by graphic GOP driver, no fixed name.
Possible Value	Output Device 1 Output Device 2
Help	Output Interface

1.1

2.11 Network Stack Configuration

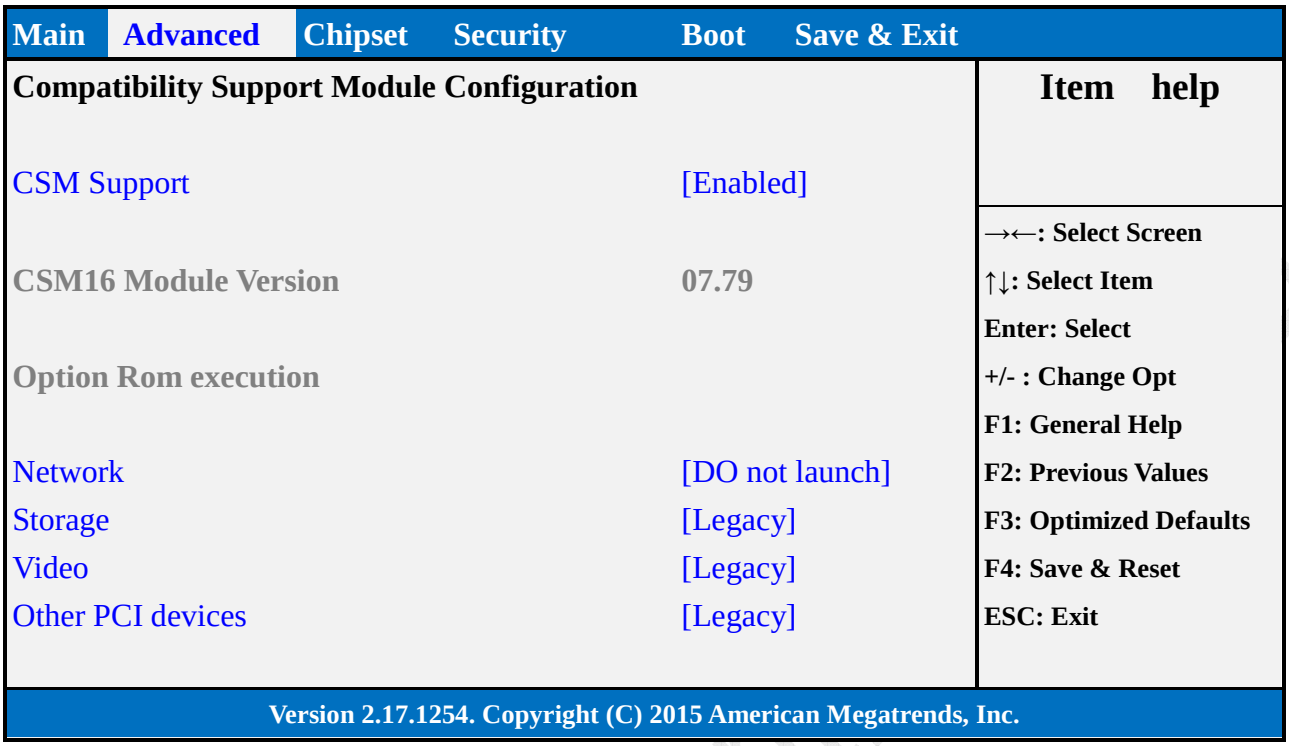


Field Name	**Network stack**
Default Value	[Disabled]
Possible Value	Disabled (Restore non-Windows 8 Default) Enabled
Help	Enable/Disable UEFI Network stack.

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.

2.12 CSM Configuration



Field Name	**CSM support**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable/Disable CSM Support.
Comment	This option controls if CSM will be launched. (It can't be selected, it only shows the status of the PXE OpROM's status , it can be changed by Boot Mode.)

Field Name	**CSM16 Module Version**
Default Value	07.79
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Network**
Default Value	[DO not launch]
Possible Value	DO not launch UEFI Legacy
Help	Controls the execution of UEFI and Legacy PXE OpROM.

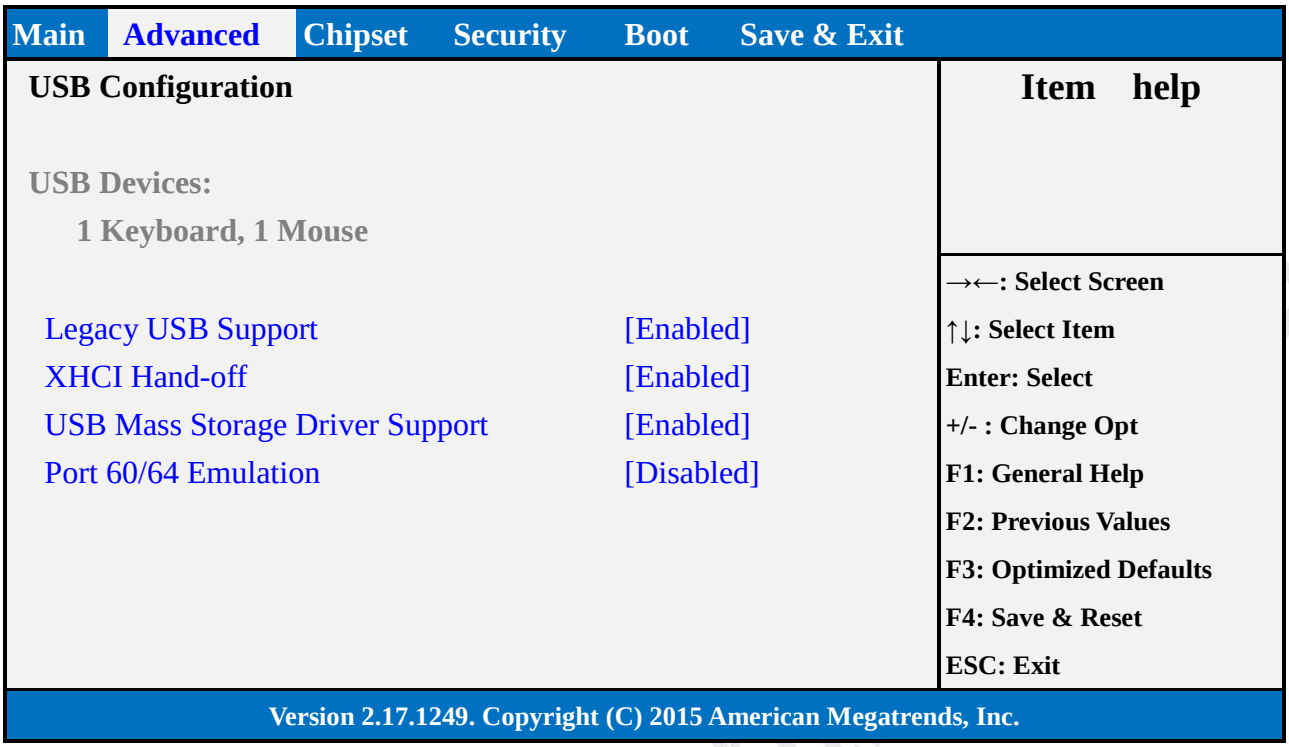
Field Name	**Storage**
Default Value	[Legacy]
Possible Value	DO not launch UEFI Legacy
Help	Controls the execution of UEFI and Legacy Storage OpROM.

Field Name	**Video**
Default Value	[Legacy]

Possible Value	UEFI Legacy
Help	Controls the execution of UEFI and Legacy Video OpROM.

Field Name	**Other PCI devices**
Default Value	[Legacy]
Possible Value	DO not launch UEFI Legacy
Help	Determines OpROM execution policy for devices other than Network, Storage, or Video.

2.13 USB Configuration



Field Name	**USB Devices:**
Default Value	Connected USB devices
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Legacy USB Support**
Default Value	[Enabled]
Possible Value	Disabled Enabled Auto
Help	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB device available only for EFI applications.

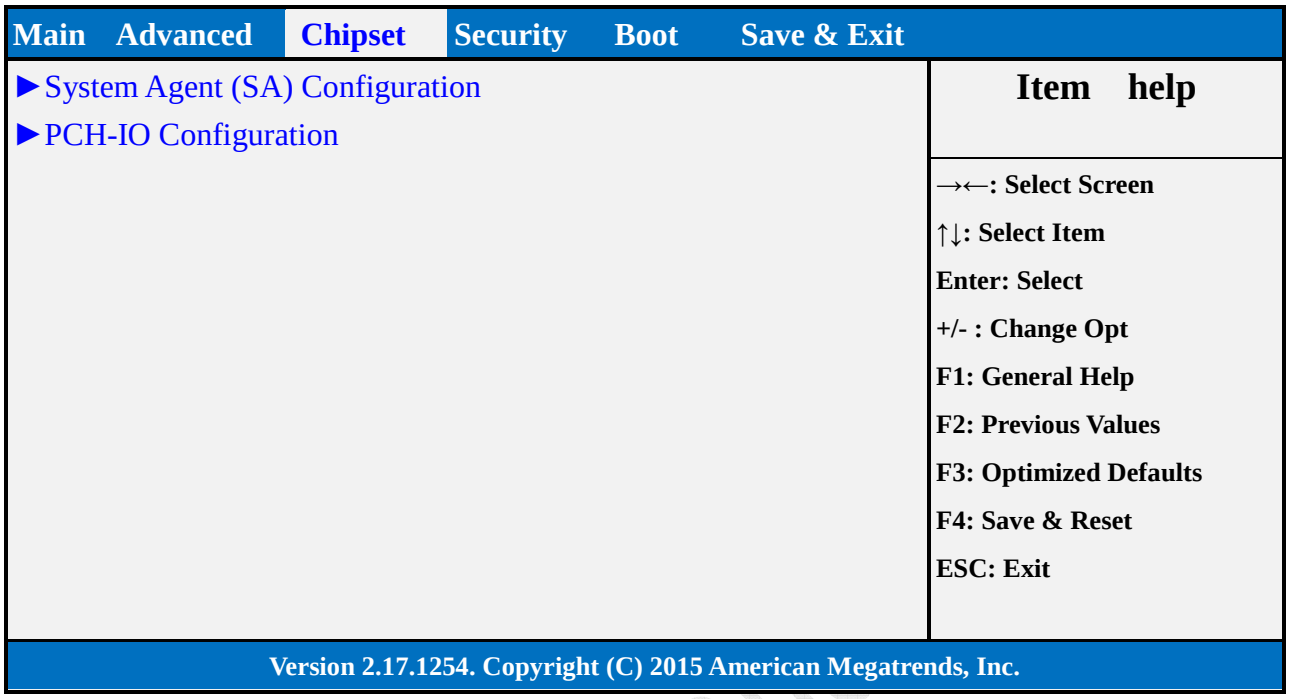
Field Name	**XHCI Hand-off**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

Field Name	**USB Mass Storage Driver Support**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable/Disable USB Mass Storage Driver Support.

Field Name	**Port 60/64 Emulation**
Default Value	[Disabled]

Possible Value	Disabled Enabled
Help	Enables I/O port 60h/64h emulation support. This should be enabled for the complete USB keyboard legacy support for non-USB aware OSes.

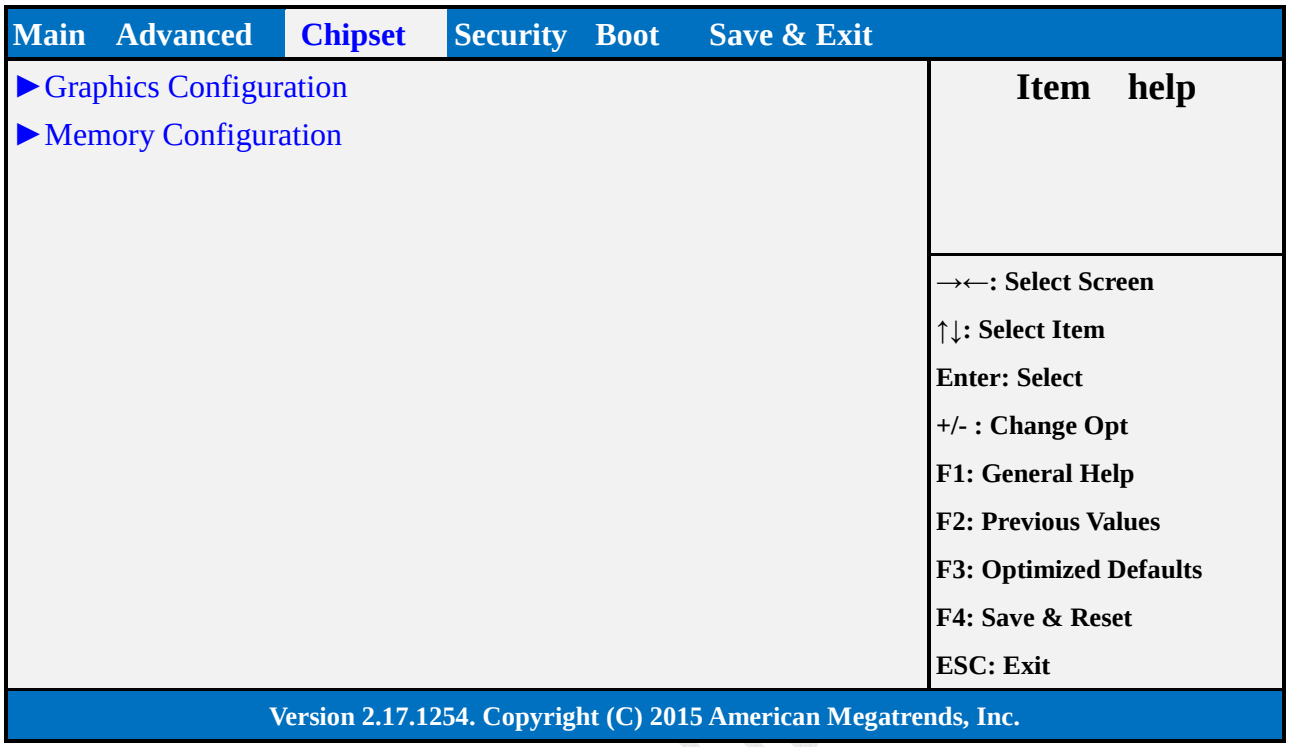
3 Chipset Page



Field Name	**System Agent (SA) Configuration**
Help	System Agent (SA) Parameters
Comment	Press Enter when selected to go into the associated Sub-Menu.

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

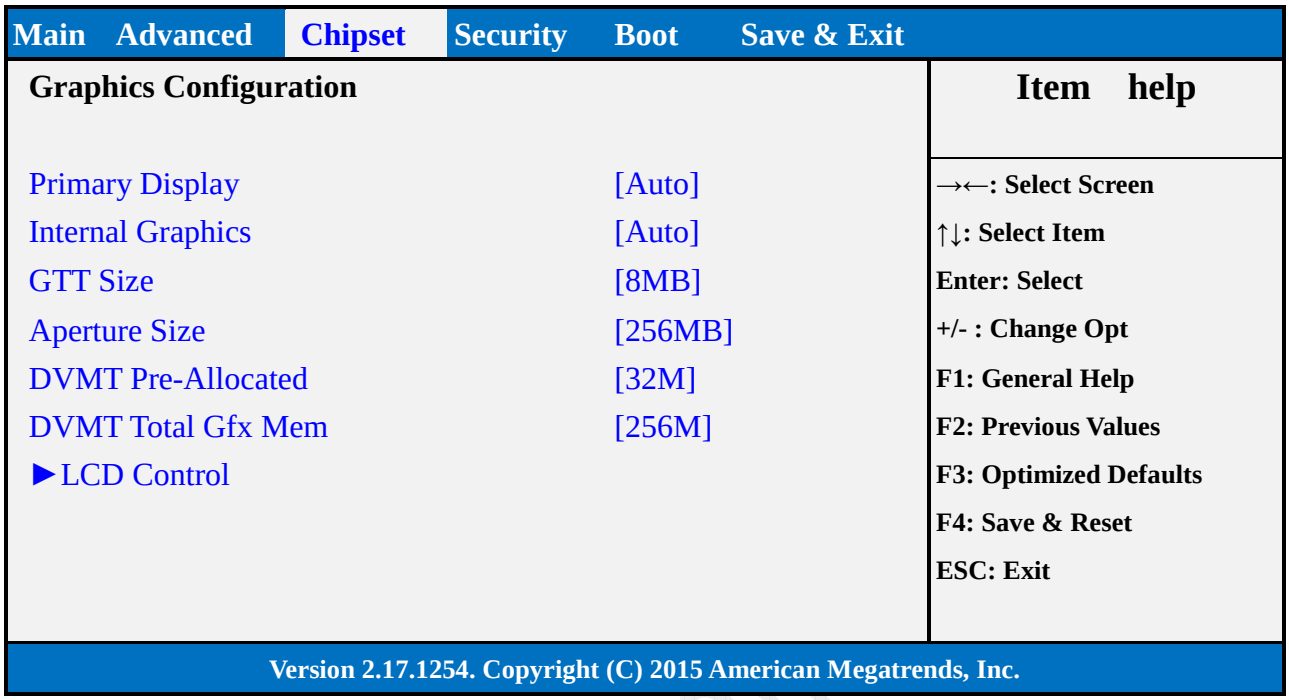
1.2 System Agent (SA) Configuration



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

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

3.1.1 Graphics Configuration



Field Name	**Primary Display**
Default Value	[Auto]
Possible Value	AUTO/IGFX/PEG/PCIE/SG
Help	Select which of IGFX/PEG/PCI Graphics device should be Primary Display Or select SG for Switchable Gfx.

Field Name	**Internal Graphics**
Default Value	[AUTO]
Possible Value	AUTO/Disabled/Enabled
Help	Keep IGFX enabled based on the setup options.

Field Name	**GTT Size**
Default Value	[8MB]
Possible Value	2MB/4MB/8MB
Help	Select the GTT Size

Field Name	**Aperture Size**
Default Value	[256M]
Possible Value	128MB/256MB/512MB/1024MB/2048MB/4096MB
Help	Select the Aperture Size Note : Above 4GB MMIO BIOS assignment is automatically enabled when selecting 2048MB aperture. To use this feature, please disable CSM Support.

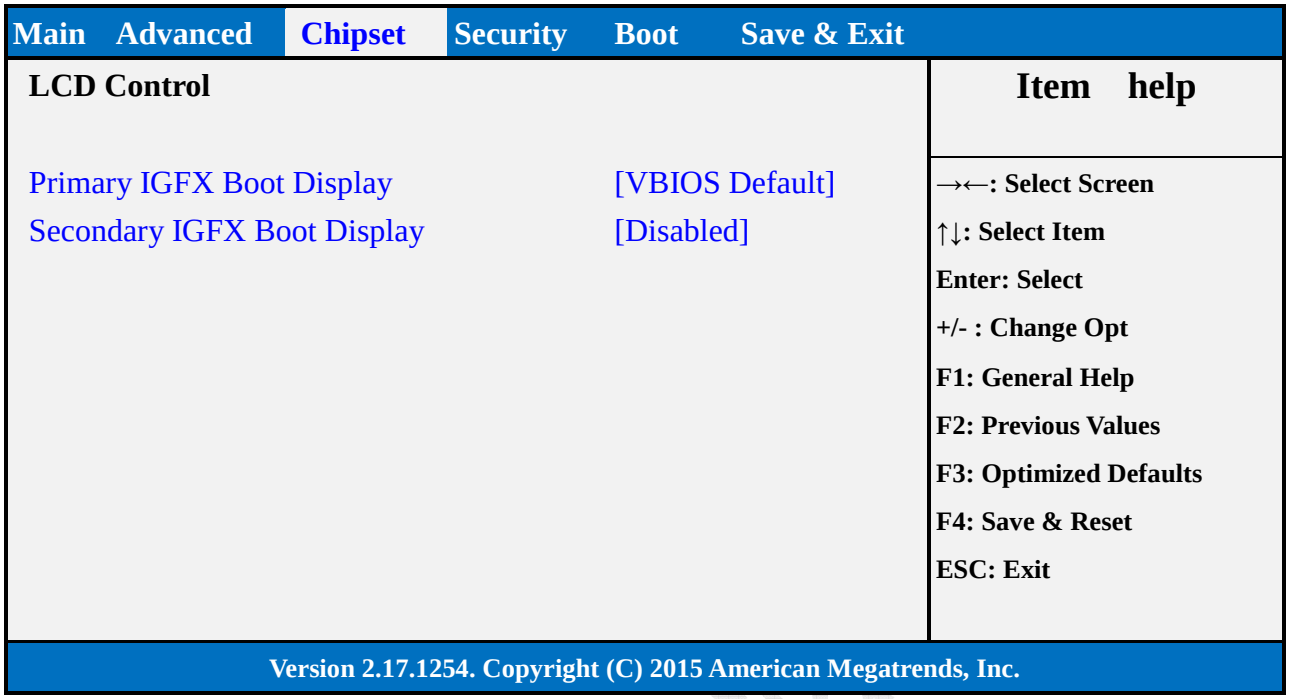
Field Name	**DVMT Pre-Allocated**
Default Value	[32M]
Possible Value	32M / 64M / 96M / 128M / 160M / 192M / 224M / 256M / 288M /320M / 352M / 384M / 416M / 448M / 480M / 512M/ 1024M/

	1536M/ 2048M/ 4M/ 8M/ 12M/ 16M/ 20M/ 24M/ 28M/ (32M/F7)/ 36M/ 40M/ 44M/ 48M/ 52M/ 56M/ 60M
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	[128M]
Possible Value	128MB / 256MB / MAX
Help	Select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.

Field Name	**LCD Control**
Help	LCD Control
Comment	Press Enter when selected to go into the associated Sub-Menu.

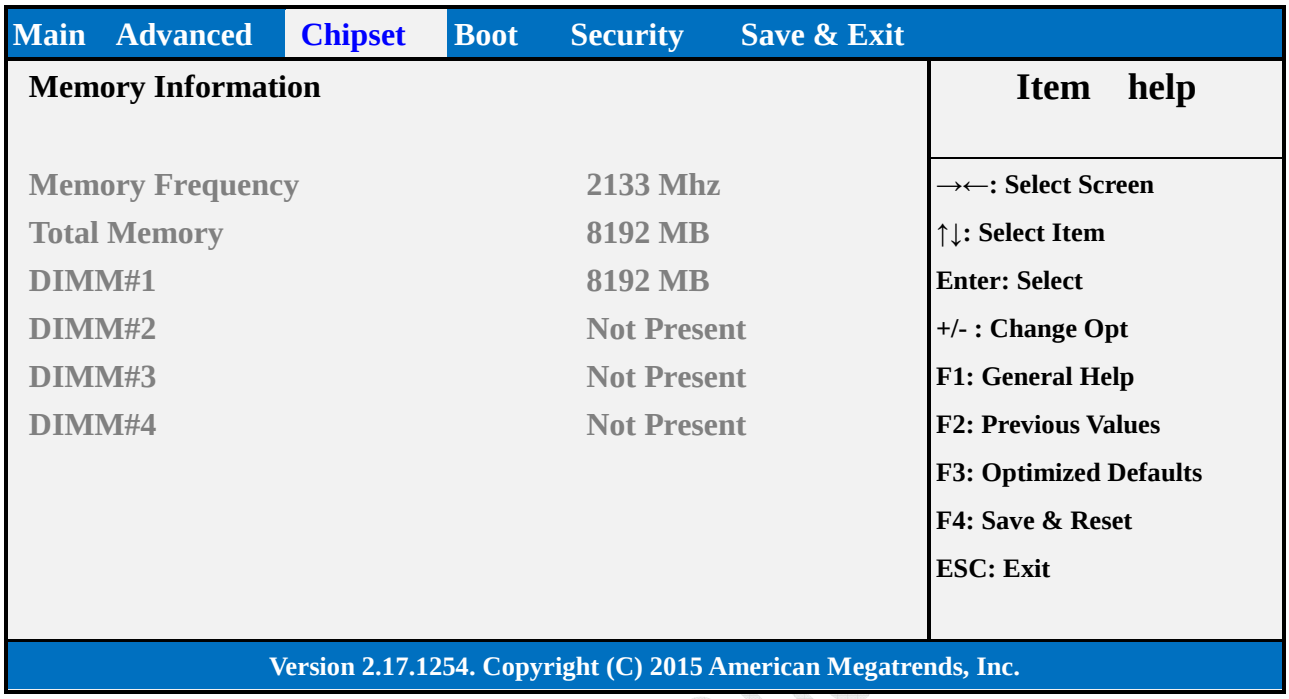
3.1.1.1 LCD Control



Field Name	**Primary IGFX Boot Display**
Default Value	[VBIOS Default]
Possible Value	VBIOS Default / EFP2 / EFP3
Help	Select the Video Device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection. VGA modes will be supported only on primary display

Field Name	**Secondary IGFX Boot Display**
Default Value	[Disabled]
Possible Value	Disabled / EFP2 / EFP3
Help	Select Secondary Display Device.

3.1.2 Memory Configuration

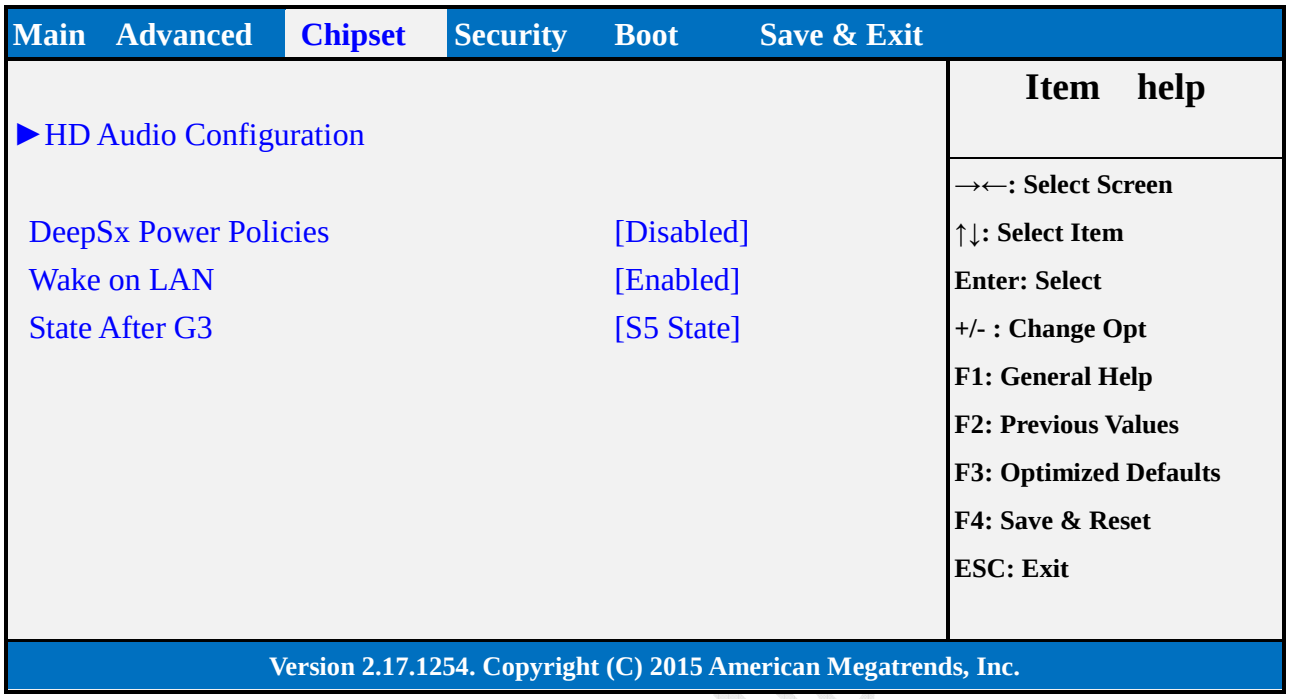


Field Name	**Memory Frequency**
Help	Show Memory Frequency.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Total Memory**
Help	Total Memory in the System.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**DIMM#[1:4]**
Help	Memory in the DIMM.
Comment	This field is not selectable. There is no help text associated with it.

1.3 PCH-IO Configuration



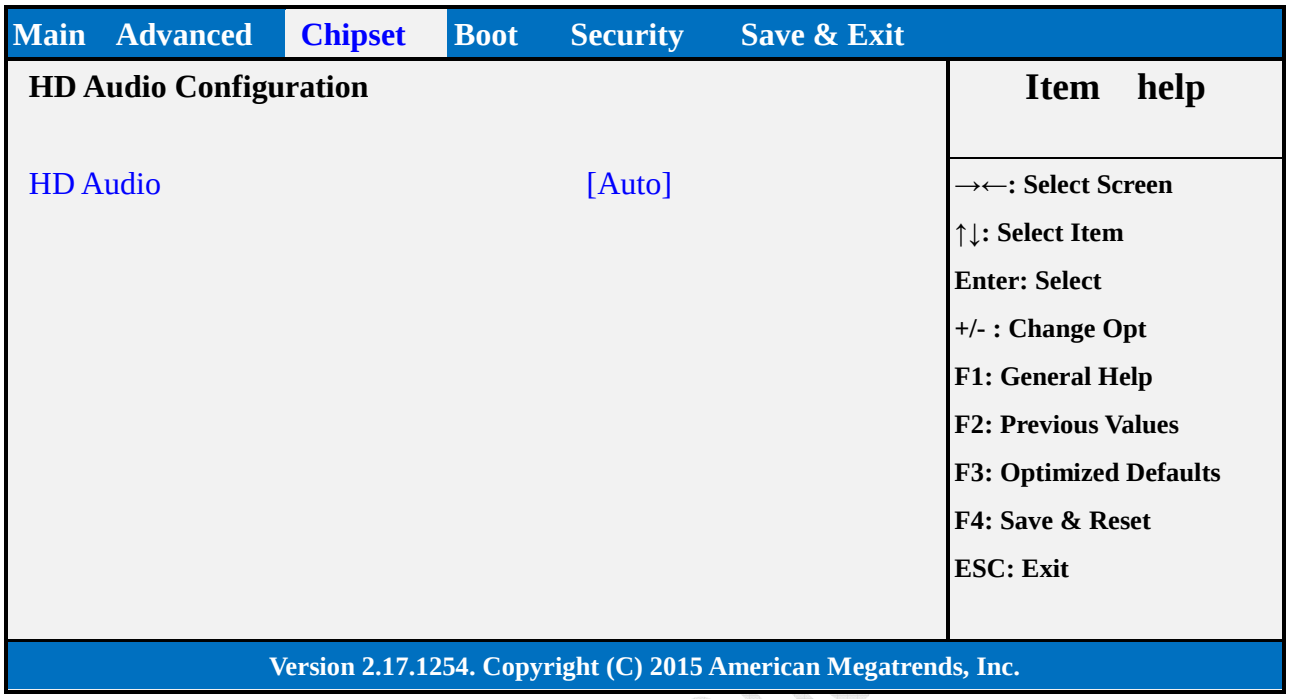
Field Name	**HD Audio Configuration**
Help	HD Audio Subsystem Configuration Settings
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**DeepSx Power Policies**
Default Value	[Disabled]
Possible Value	Disabled Enabled in S4-S5
Help	Configure the DeepSx Mode configuration.

Field Name	**Wake on LAN**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Enable or disable integrated LAN to wake the system. (The Wake On LAN cannot be disabled if ME is on at Sx state.)

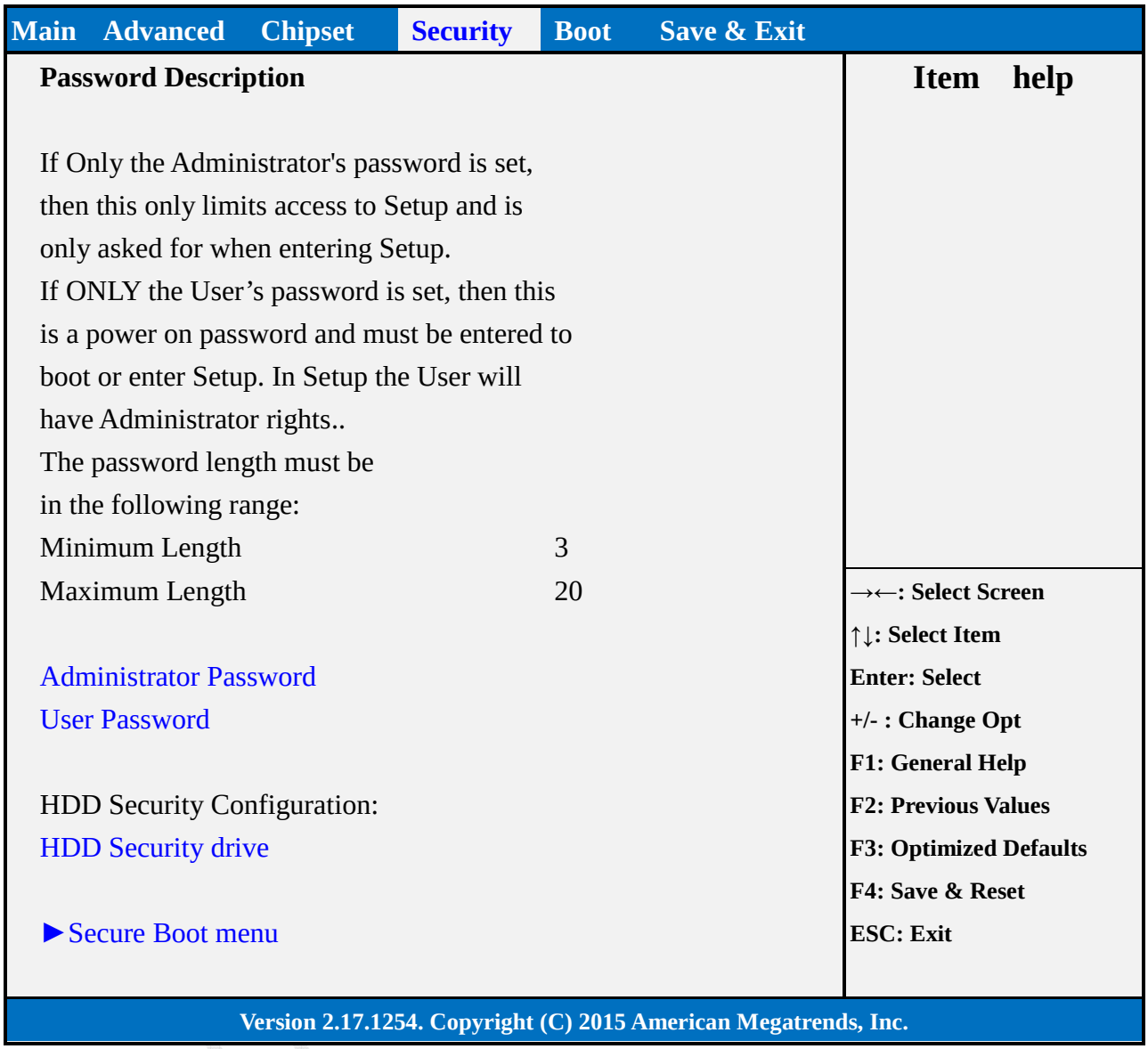
Field Name	**State After G3**
Default Value	[S5 State]
Possible Value	S0 State S5 State
Help	Specify what state to go to when power is re-applied after a power failure (G3 state).

1.4 HD Audio Configuration



Field Name	**HD Audio**
Value	[Auto]
Possible Value	Auto / Enable / Disable
Help	Control Detection of HD-Audio device. Disabled = HDA will be unconditionally disabled Enable = HDA will be unconditionally enabled Auto = HDA will be enabled if present, disabled otherwise.

4 Security Page



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

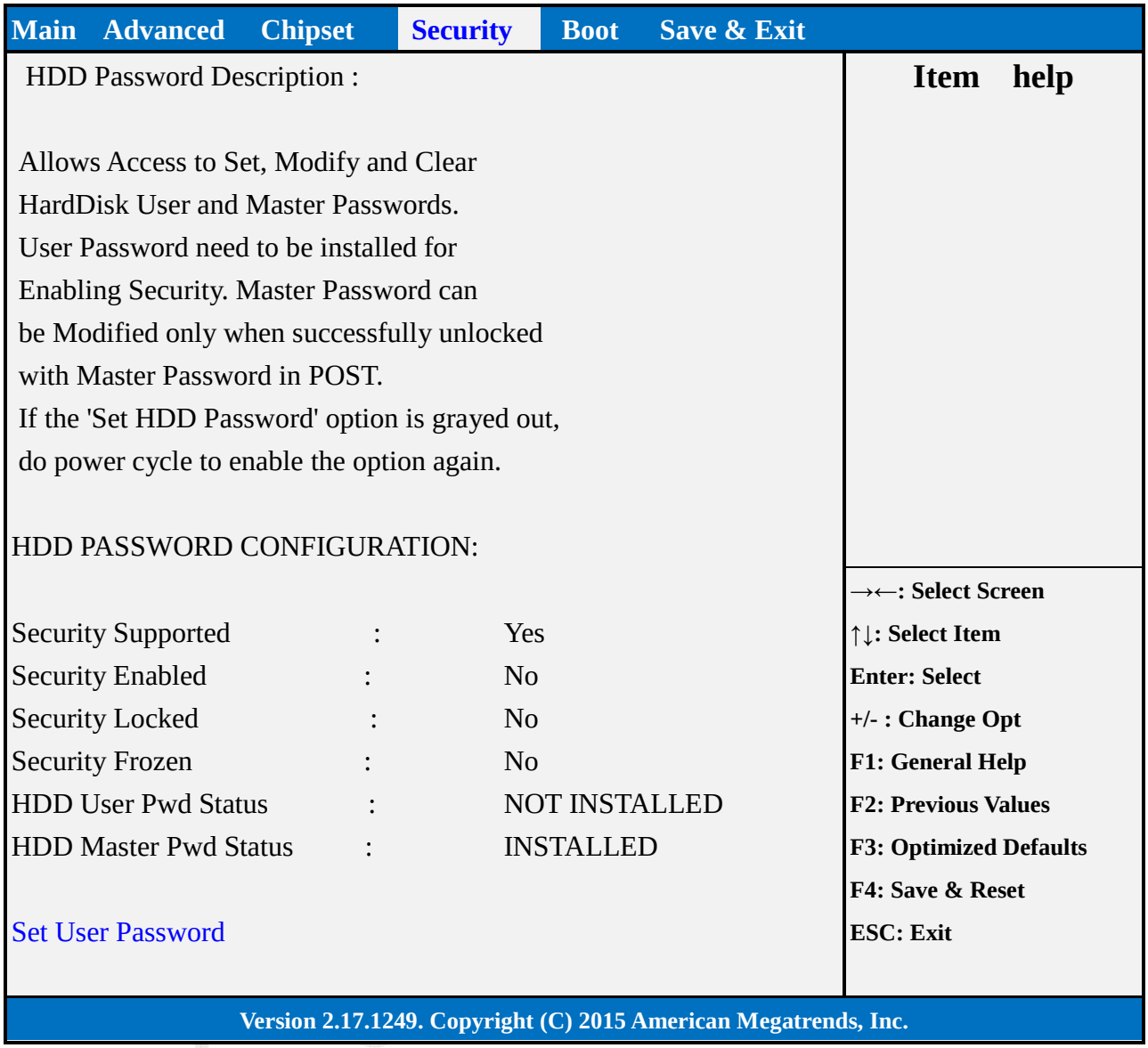
Field Name	**User Password**
Help	Set User Password.
Comment	Press Enter when selected to go into the associated Sub-Menu.

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

Field Name	**Secure Boot menu**
Help	Customizable Secure Boot settings

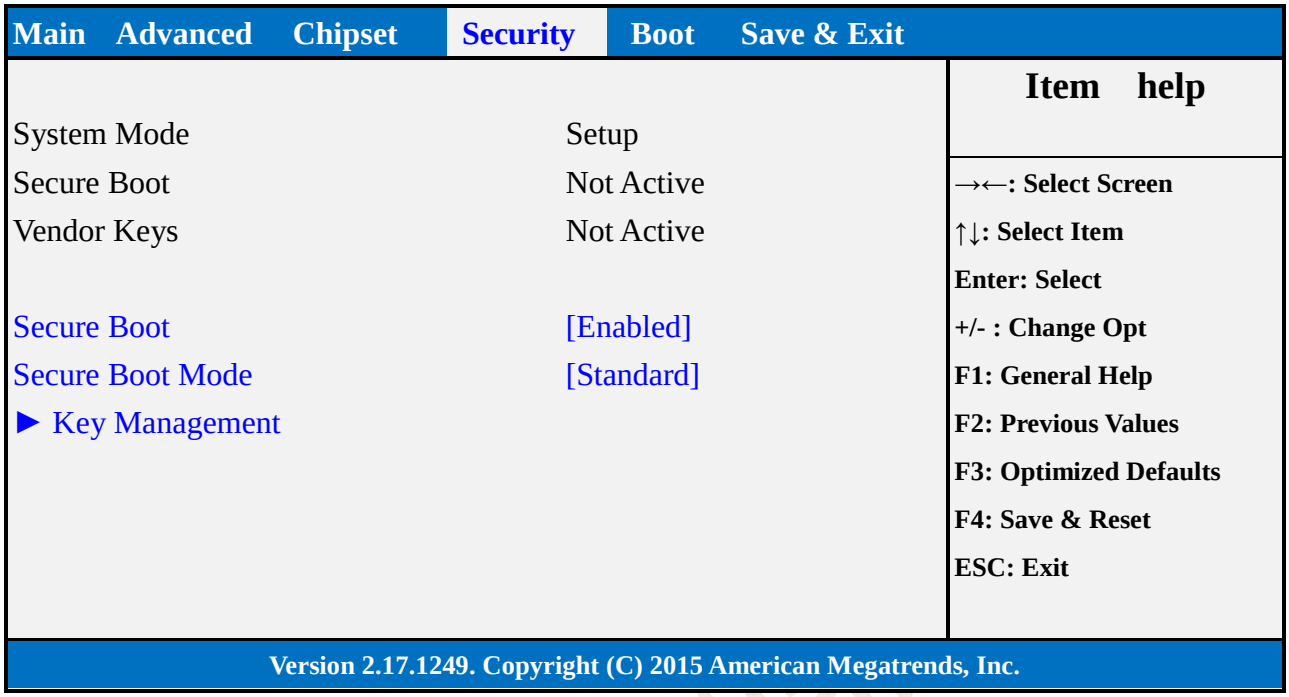
Comment	Press Enter when selected to go into the associated Sub-Menu.

1.5 HDD Security



Field Name	**Set User Password**
Help	Set User Password
Comment	Set HDD User Password. *** Advisable to Power Cycle System after Setting Hard Disk Passwords ***.Discard or Save changes option in setup does not have any impac on HDD when password is set or removed. If the 'Set HDD User Password' option is grayed out, do power cycle to enable the option again

1.6 Secure Boot Mode

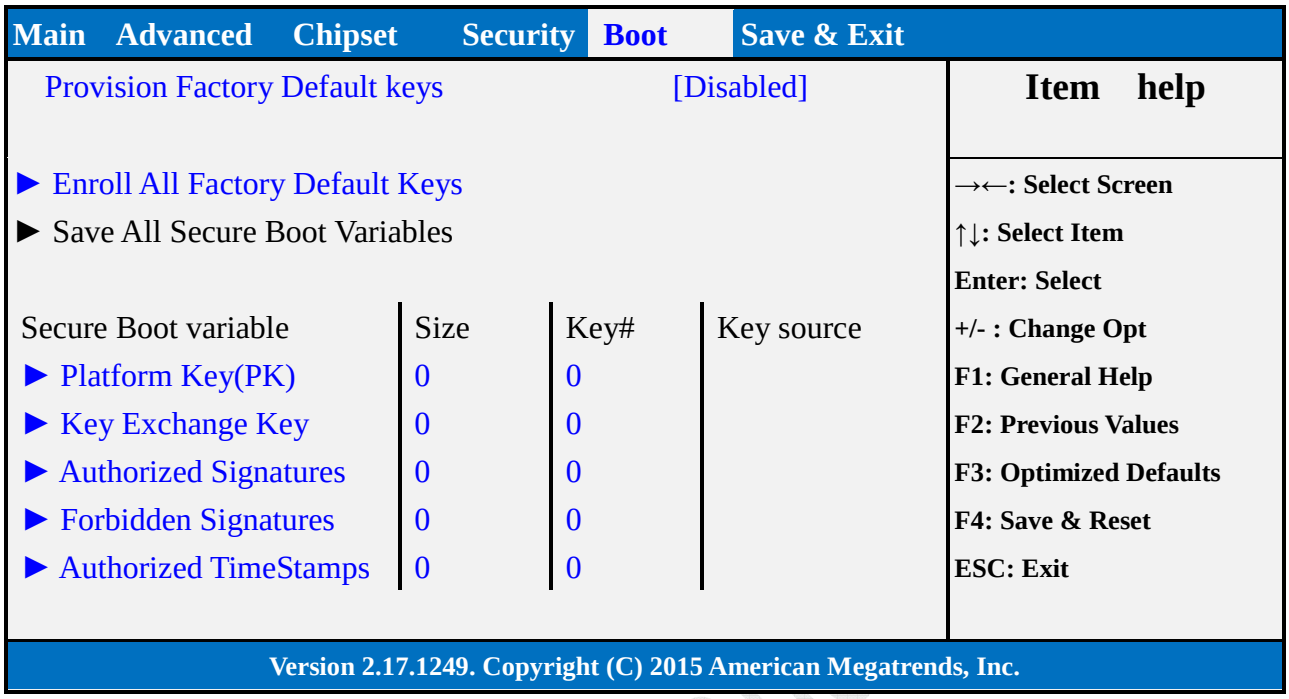


Field Name	**Secure Boot**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Secure Boot can be enabled if 1.System running in User mode with enrolled Platform Key (PK) 2. CSM function is disabled.

Field Name	**Secure Boot Mode**
Default Value	[Standard]
Possible Value	Standard Custom
Help	Secure Boot mode selector. 'Custom' Mode enables users to change Image Execution policy and manage Secure Boot Keys..

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.

1.7 Key Management



Field Name	**Provision Factory Default Keys**
Default Value	[Disabled]
Possible Value	Enabled Disabled
Help	Install Factory default Secure Boot Keys when System is in Setup Mode.

Field Name	**Enroll All Factory Default Key**
Help	Force System to User Mode - install all Factory Default keys(PK, KEK, db, dbx, dbt). Change takes effect after reboot
Comment	

Field Name	**Save All Secure Boot Variables**
Help	Save NVRAM content of all Secure Boot variables to the files (EFI_SIGNATURE_LIST data format) in root folder on a target files system device.
Comment	

Field Name	**Platform Key (PK)**
Default Value	Size:0, Key#:0, Key source: *
Help	Enroll Factory Default Keys or load from a file formatted as: 1.Public Key Certificate in: a)EFI_SIGNATURE_LIST, b)EFI_CERT_X509 (DER encoded), c)EFI_CERT_RSA2048 (bin), d)EFI_CERT_SHA256 (bin) 2.Authenticated UEFI Variable Key source: Default, Custom, Mixed (*) modified through Setup menu
comment	Press Enter when selected to go into the associated Sub-Menu “Key Management”.

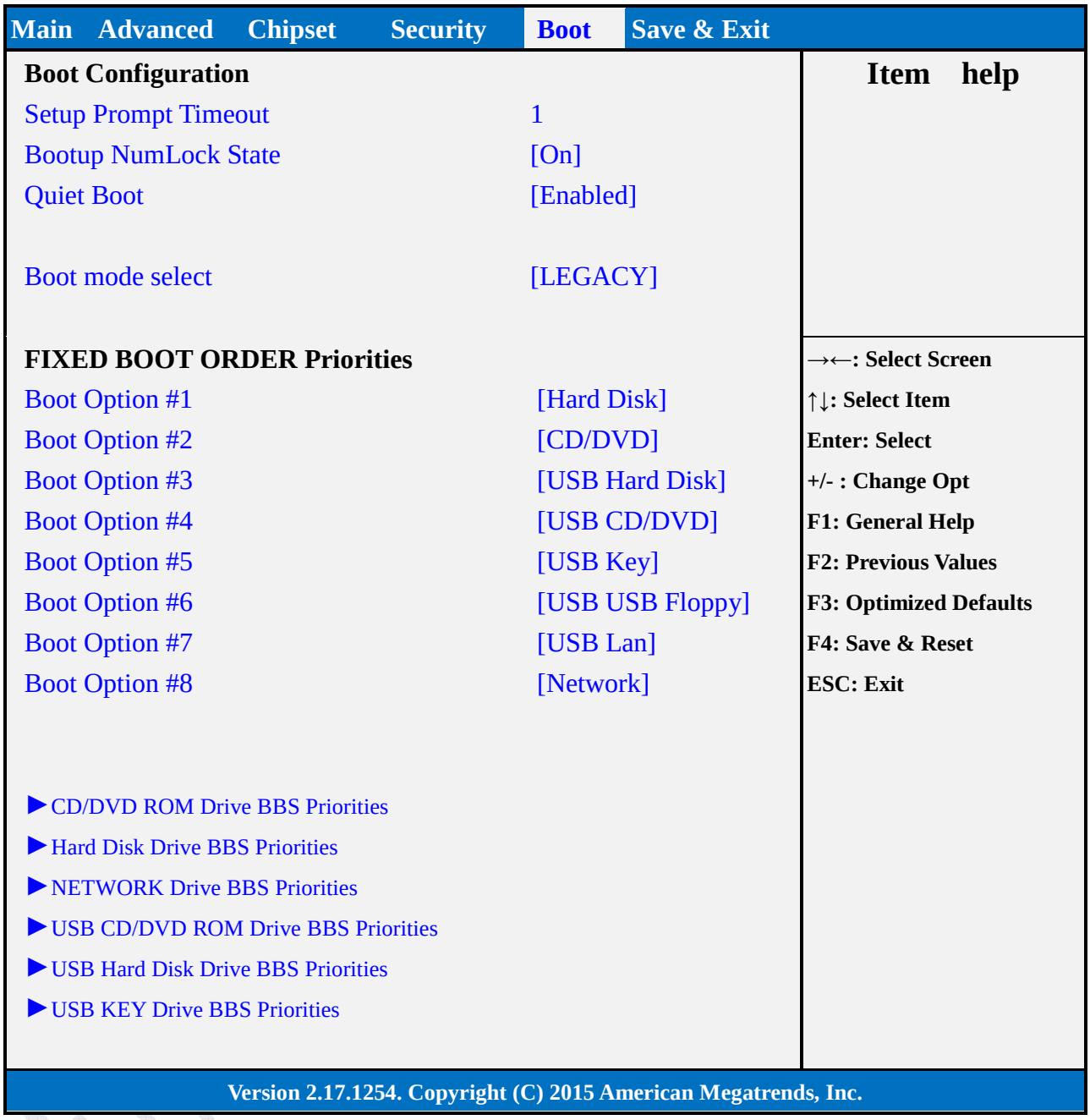
Field Name	**Key Exchange Key**
Default Value	Size:0, Key#:0, Key source: *
Help	Enroll Factory Default Keys or load from a file formatted as: 1.Public Key Certificate in: a)EFI_SIGNATURE_LIST, b)EFI_CERT_X509 (DER encoded), c)EFI_CERT_RSA2048 (bin), d)EFI_CERT_SHA256 (bin) 2.Authenticated UEFI Variable Key source: Default, Custom, Mixed (*) modified through Setup menu
comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Authorized Signature**
Default Value	Size:0, Key#:0, Key source: *
Help	Enroll Factory Default Keys or load from a file formatted as: 1.Public Key Certificate in: a)EFI_SIGNATURE_LIST, b)EFI_CERT_X509 (DER encoded), c)EFI_CERT_RSA2048 (bin), d)EFI_CERT_SHA256 (bin) 2.Authenticated UEFI Variable Key source: Default, Custom, Mixed (*) modified through Setup menu
comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Forbidden Signature**
Default Value	Size:0, Key#:0, Key source: *
Help	Enroll Factory Default Keys or load from a file formatted as: 1.Public Key Certificate in: a)EFI_SIGNATURE_LIST, b)EFI_CERT_X509 (DER encoded), c)EFI_CERT_RSA2048 (bin), d)EFI_CERT_SHA256 (bin) 2.Authenticated UEFI Variable Key source: Default, Custom, Mixed (*) modified through Setup menu
comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Authorized TimeStamps**
Default Value	Size:0, Key#:0, Key source: *
Help	Enroll Factory Default Keys or load from a file formatted as: 1.Public Key Certificate in: a)EFI_SIGNATURE_LIST, b)EFI_CERT_X509 (DER encoded), c)EFI_CERT_RSA2048 (bin), d)EFI_CERT_SHA256 (bin) 2.Authenticated UEFI Variable Key source: Default, Custom, Mixed (*) modified through Setup menu
comment	Press Enter when selected to go into the associated Sub-Menu.

5 Boot Page



Field Name	**Setup Prompt Timeout**
Default Value	1
Possible Value	1~65535
Help	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.

Field Name	**Boot NumLock State**
Default Value	[On]
Possible Value	On Off
Help	Select the keyboard NumLock state

Field Name	**Quiet Boot**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Select the keyboard NumLock state

Field Name	**Boot mode select**
Default Value	[LEGACY]
Possible Value	LEGACY UEFI
Help	Select boot mode LEGACY/UEFI.

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

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

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

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

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

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

Field Name	**Boot Option #7**
Default Value	[USB Lan]
Possible Value	Hard Disk, CD/DVD, USB Hard Disk, USB CD/DVD, USB Key, USB

	Floppy , USB Lan, Network
Help	Sets the system boot order

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

Field Name	**(UEFI) CD/DVD ROM Drive BBS Priorities**
Help	Specifies the Boot Device Priority sequence from available CDROM/DVD Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**(UEFI) Hard Disk Drive BBS Priorities**
Help	Specifies the Boot Device Priority sequence from available Hard Disk Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**(UEFI) NETWORK Drive BBS Priorities**
Help	Specifies the Boot Device Priority sequence from available NETWORK Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

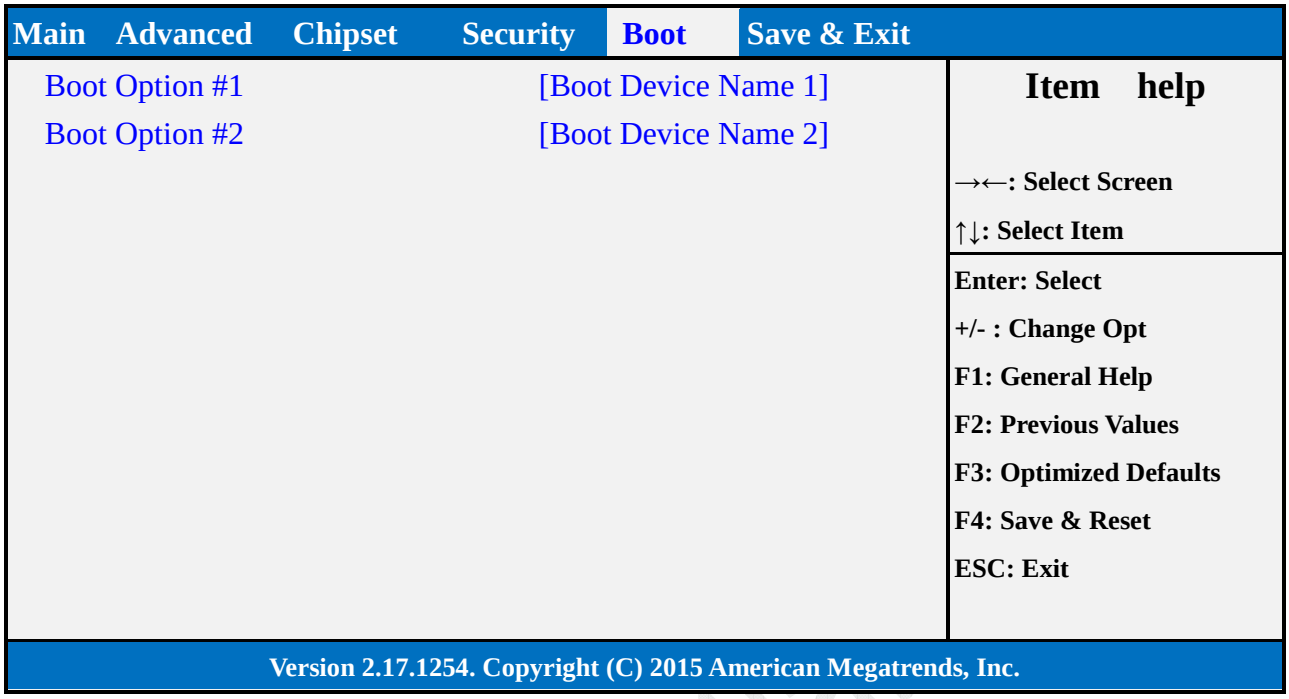
Field Name	**(UEFI) USB CD/DVD ROM Drive BBS Priorities**
Help	Specifies the Boot Device Priority sequence from available USB CDROM/DVD Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**(UEFI) USB Hard Disk Drive BBS Priorities**
Help	Specifies the Boot Device Priority sequence from available USB Hard Disk Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**(UEFI) USB KEY Drive BBS Priorities**
Help	Specifies the Boot Device Priority sequence from available USB Key Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**USB Floppy Drive BBS Priorities (UEFI Boot Mode Not Support)**
Help	Specifies the Boot Device Priority sequence from available USB Floppy Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

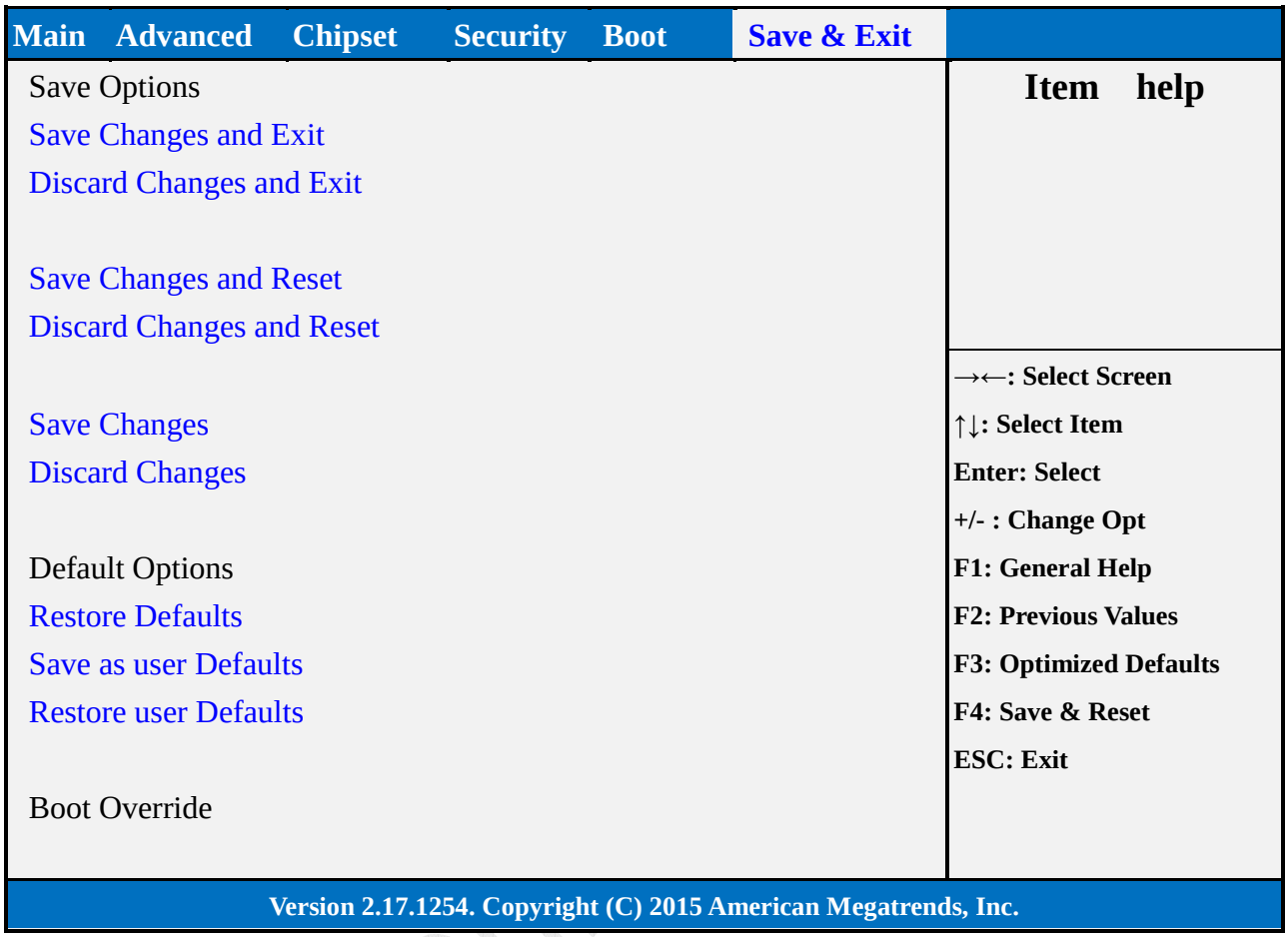
1.8 (List Boot Device Type) Drive BBS Priorities



Field Name	**Boot Option #1**
Default Value	
Possible Value	Boot Device Name 1 of this type
Help	Sets the system boot order

Field Name	**Boot Option #2**
Default Value	
Possible Value	Boot Device Name 2 of this type
Help	Sets the system boot order

6 Save & Exit Page



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 with without saving any changes.
Comment	

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

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

Field Name	**Save Changes**
Help	Save Changes done so far to any of the setup options.
Comment	

Field Name	**Discard Changes**
Help	Discard Changes done so far to any of the setup options.
Comment	

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

Field Name	**Save as User Defaults**
Help	Save the changes done so far as User Defaults.
Comment	

Field Name	**Restore User Defaults**
Help	Restore the User Defaults to all the setup options.
Comment	