



灵江工控

PCM5-QM77

用户手册



版本

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修订：A0

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商标

本手册使用的所有商标均属于各自的商标持有者所有：

Intel和Atom是Intel的注册商标

Win7 和Windows XP是Microsoft的注册商标

装箱物品检查

请确认您所购买的产品包装盒是否完整, 如果包装有所损坏、或是有任何配件欠缺的情形, 请尽快与我们联系。

- 1 块PCM5-QM77主板
- 6 组串口转接电缆
- 1 条 SATA 电缆
- 1 条SATA-PWOR电缆

订货信息

产品型号	描述
PCM5-QM77标配	VGA/HDMI+DP/6COM/18/24 Bit LVDS/GPIO/4SATA/MSATA/2MPCIE/EDP/PCIE 16X 2LAN/SIM卡槽/AUDIO/触摸屏控制（4/5/8线）
可选功能	双通道24位LVDS
可选配件	遥控器 遥控接收器 薄膜轻触开关



安全指导

- 1) 请仔细通读本安全指导, 并留意设备及手册上注明的所有注意事项和警告事项
- 2) 请妥善保管使用手册以备将来参考
- 3) 请保持本设备的干燥使其远离潮湿环境
- 4) 机箱的开口缝槽是用于通风避免机箱内的部件过热, 请勿将此类开口掩盖或堵塞
- 5) 在将本设备与电源连接前请确认电源电压值并正确地针对相应电压做出调整
- 6) 请将电源线置于不会被践踏到的地方并且不要在电源线上堆置任何物件
- 7) 设备要有良好的接电线, 避免静电损坏, 进行安装前, 请先断开电源, 否则会损坏主板
- 8) 为了避免主板上的元件受到静电的损坏, 绝不要把主板直接放到地毯等类似的地方, 也要记住在接触主板前使用一个静电手腕带或接触金属
- 9) 通过边缘拿住整块主板安装, 切勿接触芯片
- 10) 插拔任何扩展卡或内存模块前请将电源线自插座拔出
- 11) 不得将任何液体自开口处注入否则会产生严重损坏甚至导致电击
- 12) 如果发生以下情况请找技术服务人员处理:
 - ◇ 电源线或插头损坏
 - ◇ 液体渗入设备内
 - ◇ 设备暴露在潮湿的环境中
 - ◇ 设备工作不正常或用户不能按照使用手册的指导使其正常工作
 - ◇ 设备跌落或受创, 有明显的破损迹象



注意: 如果电池换置不当会产生爆炸的危险请务必使用同一型号或相当类型的且为制造商推荐的电池。



1.1 产品介绍

PCM5-QM77是一款无风扇低功耗高性能嵌入式主板，支持英特尔酷睿i3、i5、i7 rPGA高性能处理器与多个I/O接口和1个PCIe 16x槽扩展(兼容X1, X2, X4, X8)，2个MPCIe带SIM卡槽，支持3个USB 3.0和6个USB 2.0，2个intel 82573/82574可选千兆网卡。显示设备支持VGA+HDMI+DP高清输出、内置LVDS+EDP视频输出。内置板载4/5/8线电阻触摸屏控制器，支持IAMT技术。

1.2 产品规格

1.2.1 功能特点

- **处理器:** 支持英特尔酷睿i3/i5/i7 移动系列处理 (rPGA)
- **芯片组:** Intel® QM77 I/O Controller
- **BIOS:** AMI 64-Mbit SPI Flash BIOS
- **内存:** 2 x DDR3 1600MHz to 32GB
- **看门狗:** 0⁻255级，由软件编程设置
- **I/O 接口:**
 - 5 x RS232, 1 x 422/485
- **USB:**
 - 3 x USB 3.0 and 6 x USB 2.0
- **音频接口:** Line out, Mic-in
- **存储设备:** 2 x 2.5" SATA3.0 ,1 x mSATA
- **扩展设备:** 2 x MiniPCIe (带1个SIM卡槽)

1.2.2 显示设备

- **处理器显卡:** Intel® HD Graphics 4000
- **显示接口:**
 - CRT:1 x VGA
 - HDMI: 1 x HDMI , 1920 x 1200 @ 60Hz
 - Display Port: 2560 x 1600 @ 60Hz (显示只支持3代处理器)
 - 内部显示接口: LVDS+EDP
- **独立双显:**
 - VGA+HDMI, VGA + DP,VGA+LVDS,VGA+EDP,DP+HDMI,DP+LVDS,DP+EDP, LVDS+EDP
- **独立三显:**
 - VGA + HDMI + DP (DP不能在DOS下显示)
 - HDMI + DP + LVDS (DP不能在DOS下显示)
 - = LVDS + EDP + VGA
 - HDMI + EDP + VGA



1.2.3 以太网设备

- **芯片型号:**
 - LAN1 Intel® 82573L
 - LAN2 Intel® 82573L
- **速度:** 10/100/1000 Mbps
- **端口:** 2 x RJ45

1.2.4 音频设备

- **芯片型号:**
 - Realtek ALC892:
- **端口:** 1 x Speak-out, 1 x Mic-in

1.2.5 机械参数

- **尺寸:** 170 x 170 mm
- **重量:** 1Kg

1.3 电源参数

1.3.1 供电类型

- AC to DC (9~25VDC)

1.3.2 时钟电池

- **纽扣电池:** 3 V/210 mAh

1.4 环境参数

1.4.1 工作温度

- **工业级SSD:** - 20 ~ 60° C
- **机械硬盘:** - 0 ~ 40° C

1.4.2 相对湿度

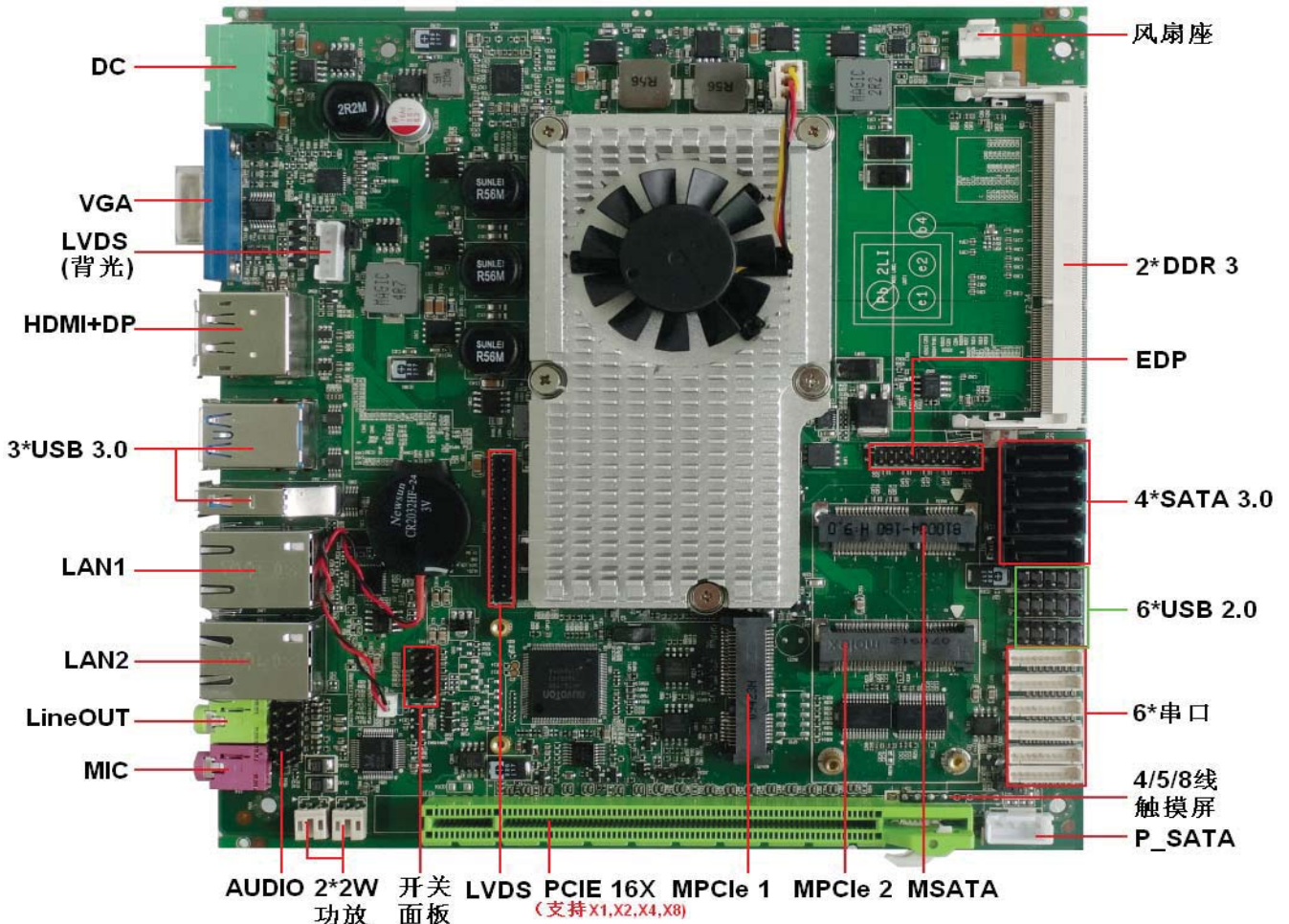
- 95% @ 40° C

1.4.3 储存温度

- - 40 ~ 85° C

2.1 主板参数

2.1.1 主板接口/排针标识



2.1.2 主板外置接口

1 x DC、1 x VGA、1 x HDMI+DP、3 x USB 3.0、2 x LAN、1 x AUDIO

2.1.3 主板内置接口

1 x LVDS、1 x AUDIO、1 x FP1、6 x USB2.0、2 x SATS3.0、2 x Minipole、6 x COM
1 x MSATA、1 x EDP、4 x SATA3.0、1 x PCIE 16x、1 x 4/5/8触摸屏控制器

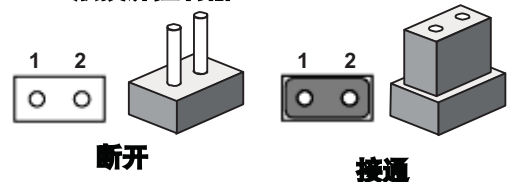
2.1.4 主板内置跳线

JP7	LVDS
1-2	5V
2-3	3.3V
JP6	12V

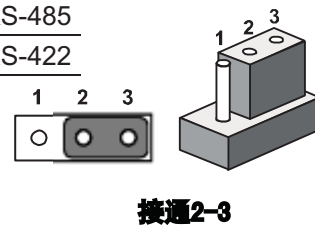
CMOS	
J1D2	CLEAR ME
J1D3	清除CMOS

J1D1	
1-2	LVDS
2-3	EDP

J3F2	EDP
1-2	5V
2-3	12V



JCOM1	
1-2	RS-485
2-3	RS-422

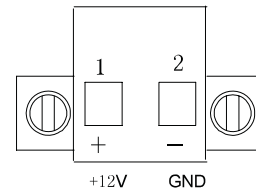


2.2 接口定义参数

2.2.1 面板接口定义

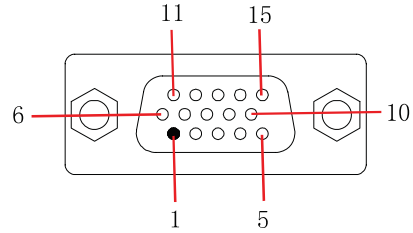
2.2.2 DC Connect

管脚	信号名称	管脚	信号名称
1	+12V	2	GND



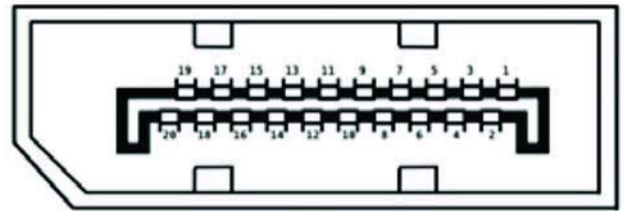
2.2.3 VGA Connect

管脚	信号名称	管脚	信号名称
1	RED	2	GREEN
3	BLUE	4	NC
5	GND	6	GND
7	GND	8	GND
9	+5V	10	GND
11	NC	12	DDCD_ATA
13	HSYNC	14	VSYNC
15	DDC_CLK		



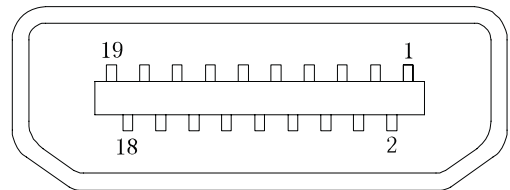
2.2.4 DisplayPort Connector

管脚	信号名称	管脚	信号名称
1	ML_Lane 0 (p)	2	GND
3	ML_Lane 0 (n)	4	ML_Lane 1 (p)
5	GND	6	ML_Lane 1 (n)
7	ML_Lane 2 (p)	8	GND
10	ML_Lane 2 (n)	11	ML_Lane 3 (p)
12	GND	12	ML_Lane 3 (n)
13	GND	14	GND
15	AUX CH (p)	16	GND
17	AUX CH (n)	18	Hot Plug
19	GND	20	DP_PWR



2.2.5 HDMI Connect

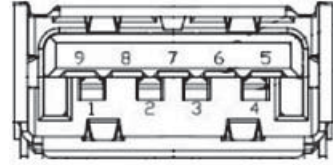
管脚	信号名称	管脚	信号名称
1	TMDS Data 2+	2	TMDS Data 2 shield
3	TMDS Data 2-	4	TMDS Data 1+
5	TMDS Data 1 shield	6	TMDS Data 1-
7	TMDS Data 0+	8	TMDS Data 0 shield
9	TMDS Data 0-	10	TMDS clock+
11	TMDS clock shield	12	TMDS clock-
13	CEC	14	Reserved
15	SCL	16	SDA
17	DDC/CEC Ground	18	+5V
19	Hot Plug Detect		



HDMI

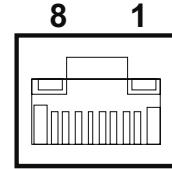
2.2.6 USB 3.0 Connector

管脚	信号名称	管脚	信号名称
1	+5V	2	USB_data-
3	USB_data+	4	GND
5	SSRX-	6	SSRX+
7	GND	8	SSTX-
9	SSTX+		



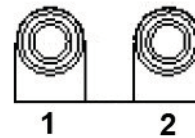
2.2.7 LAN1-2 Connector

Pin	10/100/1000BaseT Signal Name
1	TX+
2	TX-
3	RX+
4	MDI2+
5	MDI2-
6	RX-
7	MDI3+
8	MDI3-



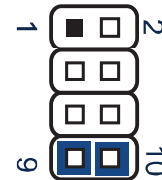
2.2.8 Audio Conne

Pin	Audio Signal Name
1	Line out
2	Mic in



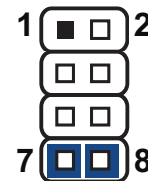
2.2.9 AUDIO Connector

管脚	信号名称	管脚	信号名称
1	LIN-R	2	MIC1_JD
3	LIN_L	4	MIC-L
5	MIC-R	6	GND
7	FRONT-JD	8	LOUT-L
9	LOUT-R	10	GND



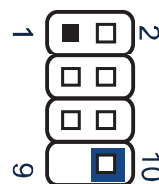
2.2.10 FP1 Connector

管脚	信号名称	管脚	信号名称
1	LIN-R	2	MIC1_JD
3	LIN_L	4	MIC-L
5	MIC-R	6	GND
7	FRONT-JD	8	LOUT-L
9	LOUT-R	10	GND



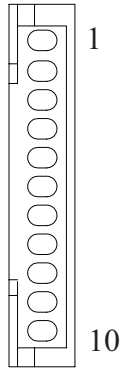
2.2.11 USB 2.0 Connector

Pin	Signal Name	Pin	Signal Name
1	+5V	2	+5V
3	USB_a-	4	USB_b-
5	USB_a+	6	USB_b+
7	GND	8	GND
9	KEY	8	GND



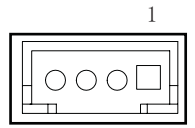
2.2.12 RS-232 Connector

Pin	Signal Name
1	DCD
2	RxD
3	TxD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI



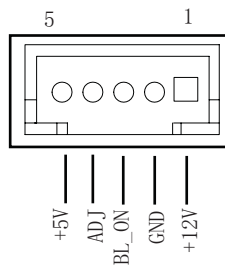
2.2.13 SATA(POW) Connector

Pin	Signal Name
1	12V
2	GND
3	GND
4	5V



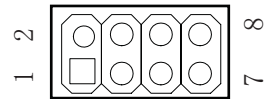
2.2.14 LCD Connector

Pin	Signal Name
1	12V
2	GND
3	BKL-TEN
4	ADJ
5	5V



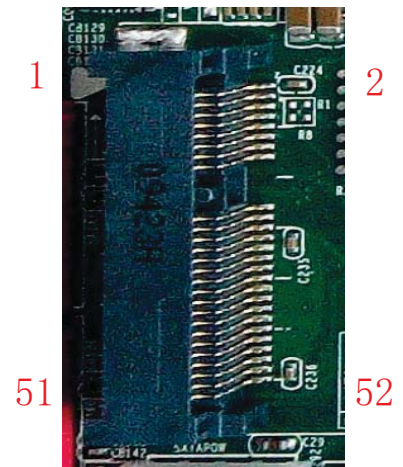
2.2.15 FP1 Connector

Pin	Signal	Pin	Signal
1	HDD LED+	2	PWR LED+
3	HDD LED-	4	PWR LED-
5	RST+	6	POWER+
7	RST-	8	POWER-

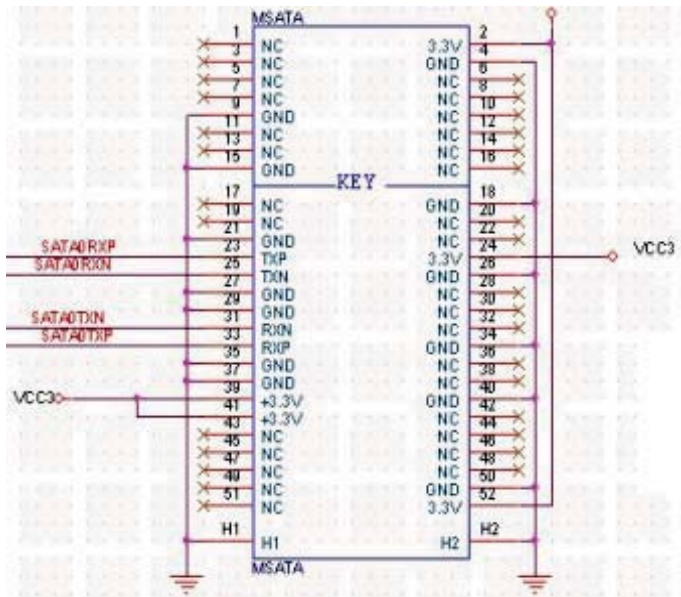


2.2.16 MPCIE Connector

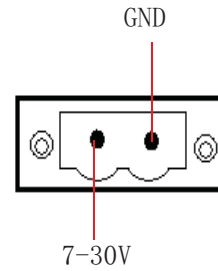
管脚	信号名称	管脚	信号名称	管脚	信号名称	管脚	信号名称
1	Wake#	2	+3.3V	27	GND	28	+1.5V
3	NC	4	GND	29	GND	30	SMB_CLK
5	NC	6	+1.5V	31	PET_NO	32	SMB_DATA
7	CLKREQ	8	NC	33	PET_PO	34	GND
9	GND	10	NC	35	GND	36	USB-
11	CLK-	12	NC	37	GND	38	USB+
13	CLK+	14	NC	39	NC	40	GND
15	GND	16	NC	41	NC	42	NC
17	NC	18	GND	43	GND	44	NC
19	NC	20	NC	45	NC	46	NC
21	GND	22	PERST#	47	NC	48	+1.5V
23	PER_NO	24	3.3VSB	49	NC	50	GND
25	PER_PO	26	GND	51	NC	52	+3.3V



2.2.17 MSATA Connector

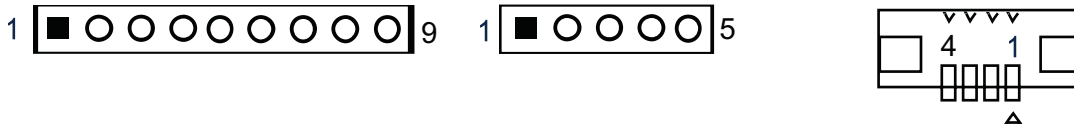


2.2.18 DC Connector



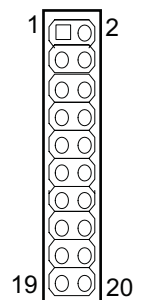
2.2.19

8线		5线		4线	
Pin	Signal	Pin	Signal	Pin	Signal
1	Y-	2	SENSE	1	Y+
3	Y+	4	Y+	2	X+
5	X-	6	X-	3	SENSE
7	X+	8	X+	4	Y-
8	GND	5	X-	1	Y-
				2	X-
				3	Y+
				4	X+



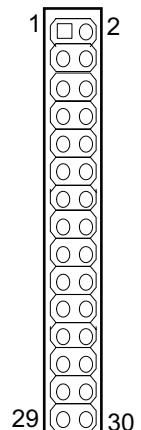
2.2.20 EDP Connector

管脚	信号名称	管脚	信号名称	管脚	信号名称	管脚	信号名称
1	VDD(5/12V)	2	TXN_3	11	3.3V	12	TXP_1
3	VDD(5/12V)	4	TXP_3	13	GND	14	TXN_0
5	VDD(5/12V)	6	TXN_2	15	GND	16	TXP_0
7	3.3V	8	TXP_2	17	GND	18	AUXP
9	3.3V	10	TXN_1	19	HPD	20	AUXN



2.2.21 LVDS Connector

管脚	信号名称	管脚	信号名称	管脚	信号名称	管脚	信号名称
1	VCC	2	VCC	17	A_3-	18	A_3+
3	VCC	4	GND	19	B_0-	20	B_0+
5	GN	6	GND	21	B_1-	22	B_1+
7	A_0-	8	A_0+	23	B_2-	24	B_2+
9	A_1-	10	A_1+	25	GND	26	GND
11	A_2-	12	A_2+	27	B_CLK-	28	B_CLK+
13	GND	14	GND	29	B_3-	30	3+
15	A_CLK-	16	A_CLK+				



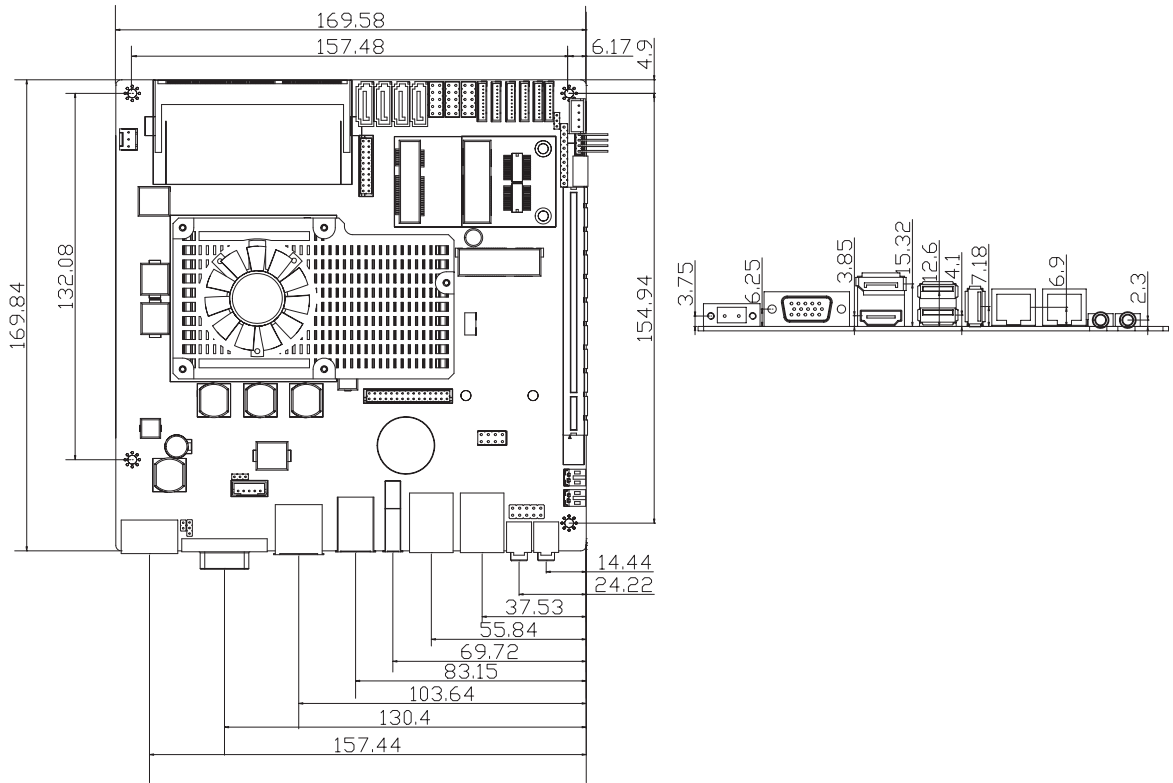
2.2.22 PCIe X16

管脚	信号名称	管脚	信号名称	管脚	信号名称	管脚	信号名称
A1	PRSNT1#	A2	+12V	B1	+12V	B2	+12V
A3	+12V	A4	GND	B3	+12V	B4	GND
A5	TCK	A6	TDI	B5	SMCLK	B6	SMDATA
A7	TDO	A8	TMS	B7	GND	B8	+3.3V
A9	+3.3V	A10	+3.3V	B9	TRST#	B10	3.3Vaux
A11	PWRGD/PERST#	A12	GND	B11	WAKE#	B12	RSVD
A13	REFCLK+	A14	REFCLK-	B13	GND	B14	PET0+
A15	GND	A16	PER0+	B15	PET0-	B16	GND
A17	PER0-	A18	GND	B17	PRSNT2#	B18	GND
A19	RSVD	A20	GND	B19	PET1+	B20	PET1-
A21	PER1+	A22	PER1-	B21	GND	B22	GND
A23	GND	A24	GND	B23	PET2+	B24	PET2-
A25	PER2+	A26	PER2-	B25	GND	B26	GND
A27	GND	A28	GND	B27	PET3+	B28	PET3-
A29	PER3+	A30	PER3-	B29	GND	B30	RSVD

A31	GND	A32	RSVD	B31	PRSNT2#A	B32	GND
A33	RSVD	A34	GND	B33	PET4+	B34	PET4-
A35	PER4+	A36	PER4-	B35	GND	B36	GND
A37	GND	A38	GND	B37	PET5+	B38	PET5-
A39	PER5+	A40	PER5-	B39	GND	B40	GND
A41	GND	A42	GND	B41	PET6+	B42	PET6-
A43	PER6+	A44	PER6-	B43	GND	B44	GND
A45	GND	A46	GND	B45	PET7+	B46	PET7-
A47	PER7+	A48	PER7-	B47	GND	B48	PRSNT2#B
A49	GND	A50	RSVD	B49	GND	B50	PET8+
A51	GND	A52	PER8+	B51	PET8-	B52	GND
A53	PER8-	A54	GND	B53	GND	B54	PET9+
A55	GND	A56	PER9+	B55	PET9-	B56	GND
A57	PER9-	A58	GND	B57	GND	B58	PET10+
A59	GND	A60	PER10+	B59	PET10-	B60	GND
A61	PER10-	A62	GND	B61	GND	B62	PET11+
A63	GND	A64	PER11+	B63	PET11-	B64	GND
A65	PER11-	A66	GND	B65	GND	B66	PET12+
A67	GND	A68	PER12+	B67	PET12-	B68	GND
A69	PER12-	A70	GND	B69	GND	B70	PET13+
A71	GND	A72	PER13+	B71	PET13-	B72	GND
A73	PER13-	A74	GND	B73	GND	B74	PET14+
A75	GND	A76	PER14+	B75	PET14-	B76	GND
A77	PER14-	A78	GND	B77	GND	B78	PET15+
A79	GND	A80	PER15+	B79	PET15-	B80	GND
A81	PER15-	A82	GND	B81	PRSNT2#C	B82	RSVD



2.2.23 机构参数



3.1 简介

本部分描述如何运用BIOS配置程序设置您的系统。正确设置BIOS各项参数可使系统稳定可靠地工作，同时也能提升系统的整体性能，不恰当的甚至错误的BIOS系统工作性能大为降低，使系统工作不稳定甚至无法正常工作。

当系统接通电源，正常开机后便可看见进入BIOS设置程序提示的信息，此时其它时间无效按下提示信息所指定的按键（通常为键）即可进入BIOS设置程序。CMOS中BIOS设置内容被破坏时系统也会要求进入BIOS设置程序，通过BIOS修改的所有设置值也都保存在系统的CMOS存储器中，该CMOS存储器由电池供电，即使切断外部电源其内容也不会丢失，除非执行清除CMOS内容的操作。

一旦您进入了AMIBIOS设定程序，屏幕上会显示出主菜单。主菜单共提供了六种设定功能和两种退出选择。用户可通过方向键选择功能项目，按Enter 键进入子菜单。

<↑>向前移一项；<↓>向后移一项；<←>向左移一项；

<→>向右移一项；<Enter>确定选择此选项；

<ESC>跳到退出菜单或者从子菜单回到主菜单

<F1>主题帮助，仅在状态显示菜单和选择设定菜单有效

<F7>放弃设置但是不退出 BIOS；

<F8>载入故障安全缺省值

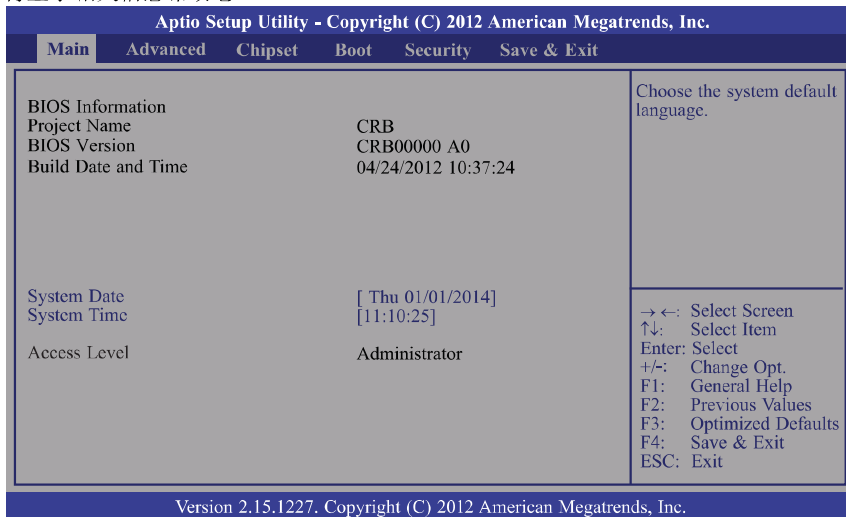
<F9>载入优化缺省值

<F10> 保存并退出

设置方法：使用方向键移动白色高光标至设定处，按回车键进入设定菜单。

3.2 Main (BIOS主界面)

当您进入 BIOS 设置程序时，主界面将会显现并显示系统概况。主菜单顶部显示的是控制菜单的控制键主菜单的中部显示的是当前所选，第一个控制菜单的内容灰色信息是只读的内存及CPU信息。根据用户系统配置的改变自动调整。菜单右下部是本菜单所用的控制键如果您需要帮助，按<F1>将显示相关信息帮助您。



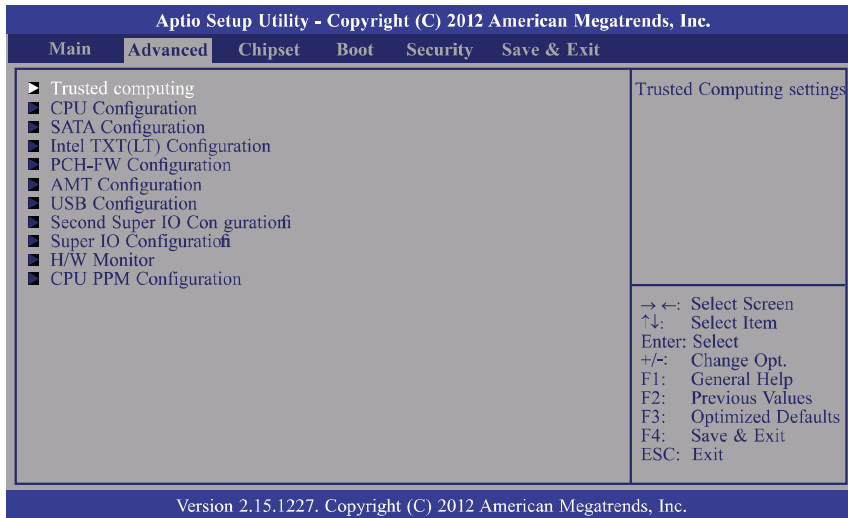
3.2.1 System Date / System Time

日期和时间修改项



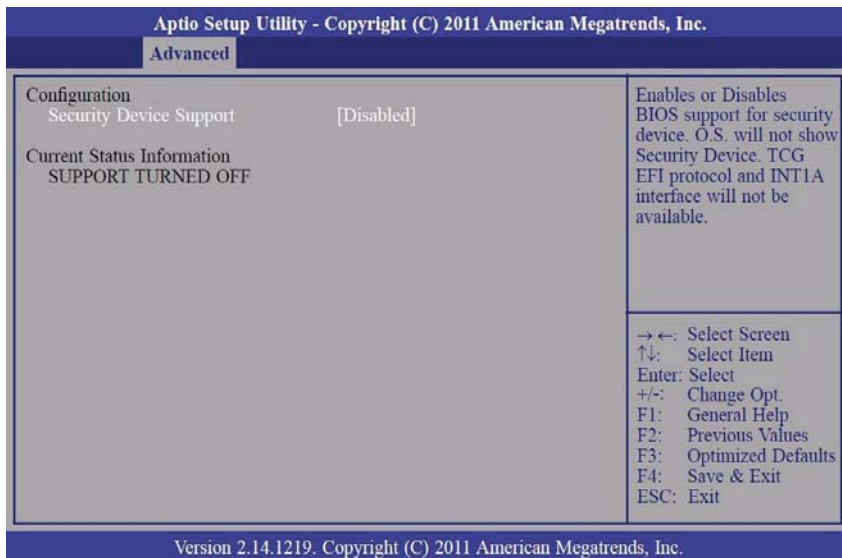
3.3 Advanced (高级BIOS设置)

此组选项设置系统的基本硬件配置。



3.3.1 Trusted computing

This section configures settings relevant to Trusted Computing innovations.



3.3.1.1 Security Device Support

Enables or Disables BIOS support for security device. O.S. will not show SecurityDevice. TCG EFI protocol and INT1A interface will not be available.



3.3.2 CPU Configuration

This section is used to configure the CPU. It will also display the detected CPU information.

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.

Advanced

CPU Configuration		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 Disabled only one thread per enabled core is enabled.
Intel (R) Core (TM) i7-2710QE CPU @ 2.10GHz		
CPU Signature	206a7	→ ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Microcode Patch	25	
Max CPU Speed	2300 MHz	
Min CPU Speed	1200 MHz	
CPU Speed	2300 MHz	
Processor Cores	4	
Intel HT Technology	Supported	
Intel VT-x Technology	Supported	
Intel SMX Technology	Supported	
64-bit	Supported	
L1 Data Cache	32 kB x 4	
L1 Code Cache	32 kB x 4	
L2 Cache	256kB x 4	
L3 Cache	6144 kB	
Hyper-threading	[Enabled]	
Active Processor Cores	[All]	
Intel Virtualization Technology	[Disabled]	

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3.3.2.1 Hyper-threading

Enable this field for Windows XP and Linux which are optimized for Hyper-Threading technology. Select disabled for other OSes not optimized for Hyper-Threading technology. When disabled, only one thread per enabled core is enabled.

3.3.2.2 Active Processor Cores

Number of cores to enable in each processor package.

3.3.2.3 Intel Virtualization Technology

When this field is set to Enabled, the VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

3.3.3 SATA Configuration

This section is used to configure the CPU. It will also display the detected CPU information.

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.

Advanced

SATA Controller(s)	[Enabled]	Enable or disable SATA Device.
SATA Mode Selection	[IDE]	
Aggressive LPM Support	[Enabled]	
SATA Controller Speed	[Gen2]	
IDE Legacy / Native Mode Selection	[Native]	
Serial ATA Port 0	Empty	→ ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Software Preserve	Unknown	
Serial ATA Port 1	Empty	
Software Preserve	Unknown	
Serial ATA Port 2	Empty	
Software Preserve	Unknown	
Serial ATA Port 3	Empty	
Software Preserve	Unknown	
Serial ATA Port 4	Empty	
Software Preserve	Unknown	
Serial ATA Port 5	Empty	
Software Preserve	Unknown	

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3.3.3.1 SATA Controller(s)

This field is used to enable or disable the Serial ATA channels.

3.3.3.2 SATA Mode Selection

IDE Mode

This option configures the Serial ATA drives as Parallel ATA storage devices.

AHCI Mode

This option allows the Serial ATA devices to use AHCI (Advanced Host Controller Interface).

RAID Mode

This option allows you to create RAID or Intel Matrix Storage configuration on Serial ATA devices. If AHCI or RAID is selected in the SATA Mode Selection, it will display the following information:

3.3.3.3 Aggressive LPM Support

This option configures the Serial ATA drives as Parallel AEnter PCH to aggressively enter link power state. TA storage devices.

3.3.4 Intel TXT (LT) Configuration

This section is used to configure the Intel Trusted Execution technology.

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.	
Advanced	
Intel Trusted Execution Technology Configuration	
Intel TXT support only can be enabled/disabled if SMX is enabled. VT and VT-d support must also be enabled prior to TXT.	
Secure Mode Extension (SMX)	Enabled
Intel TXT(LT) Support	[Disabled]
→ ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.	

3.3.4.1 Secure Mode Extensions (SMX)

The options are Enabled and Disabled.

3.3.4.2 Intel TXT(LT) Support

The options are Enabled and Disabled.



3.3.5 PCH-FW Configuration

This section is used to configure the Intel Trusted Execution technology.

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.

Advanced

ME FW Version 8.0.3. 1502 ME Firmware Mode Normal Mode ME Firmware Type Full Sku Firmware ME Firmware SKU Unidentified	→ ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
--	--

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3.3.6 Intel AMT Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.

Advanced

Intel AMT [Enabled] Disable ME [Disabled] Un-Configure ME [Disabled]	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 enabled, this requires additional firmware in the SPI device.
---	---

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3.3.6.1 Intel AMT

Enables or disables the AMT function.

3.3.6.2 Un-Configure ME

Select Enabled to unconfigure the ME function without the need for a password.



3.3.7 USB Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.	
Advanced	
USB Configuration USB Devices: 1 Keyboard, 1 mouse, 2 Hubs Legacy USB Support [Enabled]	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications. → ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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3.3.7.1 Legacy USB Support

Enabled

Enables legacy USB.

Auto

Disables support for legacy when no USB devices are connected.

Disabled

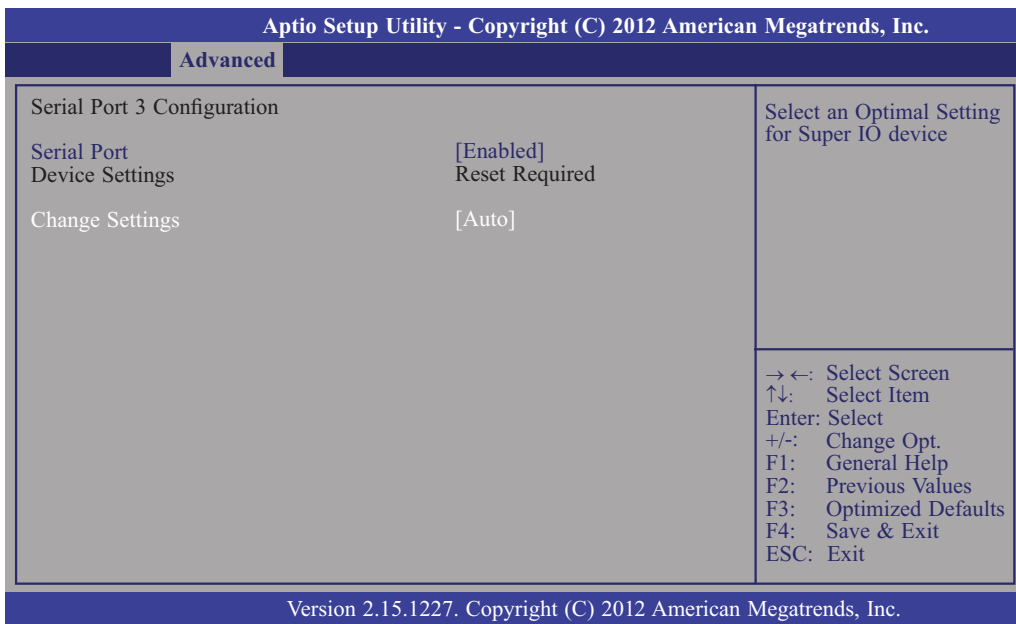
Keeps USB devices available only for EFI applications.

3.3.8 Second Super IO Configuration

This section is used to configure the serial port functions.

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
Second Super IO Configuration Second Super IO Chip 2 Fintek F81216D ▶ Serial Port 3 Configuration ▶ Serial Port 4 Configuration ▶ Serial Port 5 Configuration ▶ Serial Port 6 Configuration	Set Parameters of Serial Port 4 (COMB) → ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.15.1227. Copyright (C) 2012 American Megatrends, Inc.	

Serial Port 3 Configuration to Serial Port 6 Configuration



3.3.8.1 Serial Port

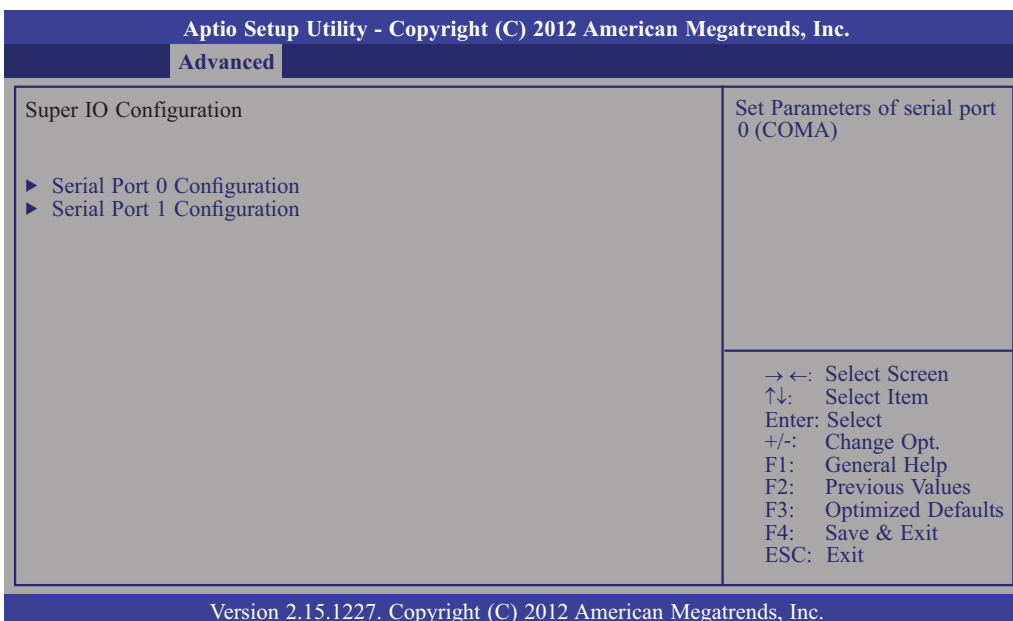
Enables or disables the serial port.

3.3.8.2 Change Settings

Selects the IO/IRQ setting of the I/O device.

3.3.9 Super IO Configuration

This section is used to configure the I/O functions supported by the onboard Super I/O chip.



Serial Port 0 Configuration to Serial Port 2 Configuration

Enables or disables the serial port.



Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Advanced		
Serial Port 0 Configuration		Enable or Disable Serial Port (COM)
Serial Port Device Settings	[Enabled] IO=3F8h; IRQ=4;	
Change Settings	[Auto]	
		→ ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

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Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Advanced		
Serial Port 1 Configuration		Enable or Disable Serial Port (COM)
Serial Port Device Settings	[Enabled] IO=2F8h; IRQ=3;	
Change Settings	[Auto]	
		→ ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

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3.3.9.1 Serial Port

Enables or disables the serial port.

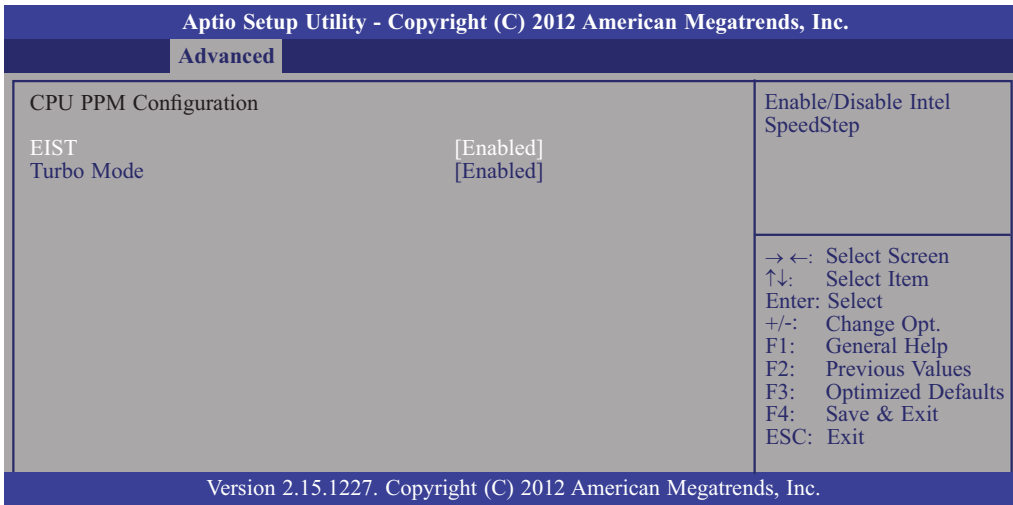
3.3.9.2 Change Settings

Selects the IO/IRQ setting of the I/O device.



3.3.10 CPU PPM Configuration

This section is used to configure the I/O functions supported by the onboard Super I/O chip.



3.3.10.1 EIST

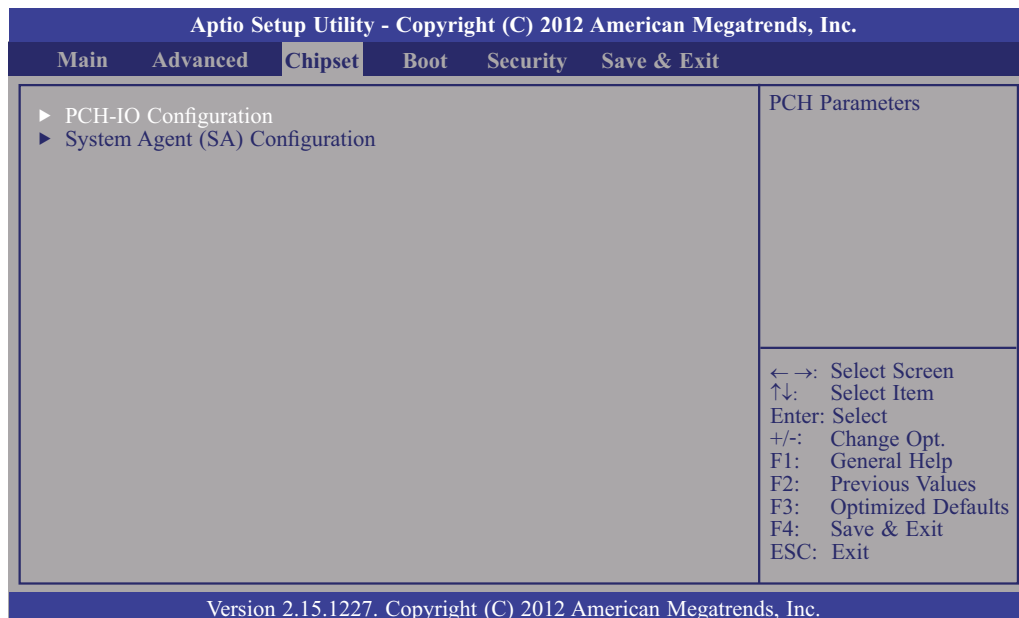
Enable/Disable Intel SpeedStep. This field is used to enable or disable the Intel Enhanced SpeedStep Technologies or disables the serial port.

3.3.10.2 Turbo Mode

The options are Enabled and Disabled.

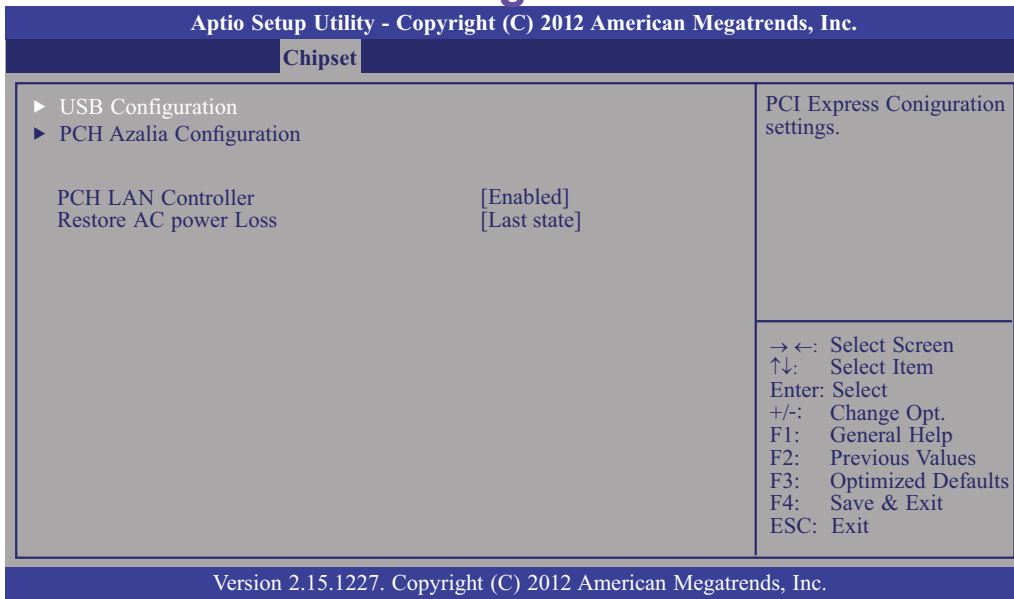
3.4 Chipset

Configures relevant chipset functions.





3.4.1 PCH-IO Configuration



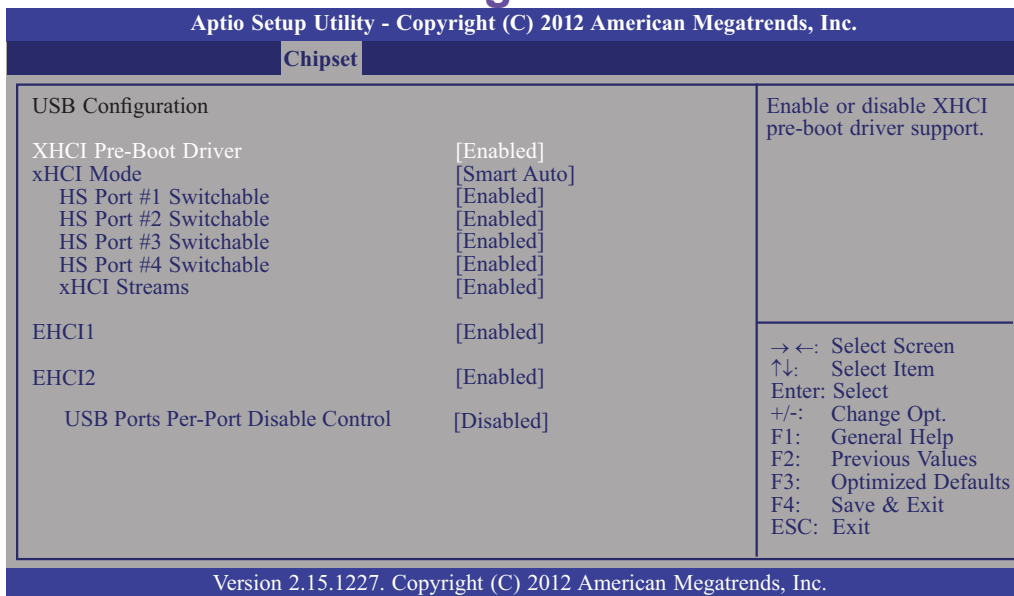
PCH LAN Controller

Enables or disables the PCH LAN Controller.

Restore AC power Loss

Power Off / Power On / Last State

3.4.1.1 USB Configuration



xHCI Pre-Boot Driver

Enables or disables xHCI Pre-Boot Driver support.

xHCI Mode

Mode of operation of xHCI controller. Options are Smart Auto, Auto, Enabled, Disabled.

EHCI1 and EHCI2

These fields are used to enable or disable USB 2.0.



3.4.1.2 PCH Azalia Configuration

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Chipset		
PCH Azalia Configuration		Control detection of the Azalia device. Disable= Azalia will be unconditionally disabled Enabled= Azalia will be unconditionally enabled Auto=Azalia will be enabled if present, disabled otherwise. → ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Azalia	[Auto]	
Azalia Internal HDMI Codec	[Enabled]	
Azalia HDMI Code Port B	[Enabled]	
Azalia HDMI Code Port C	[Enabled]	
Azalia HDMI Code Port D	[Enabled]	
Version 2.15.1227. Copyright (C) 2012 American Megatrends, Inc.		

Azalia internal HDMI codec

Enables or disables the Azalia internal HDMI codec.

xHCI Mode

Mode of operation of xHCI controller. Options are Smart Auto, Auto, Enabled, Disabled.

EHCI1 and EHCI2

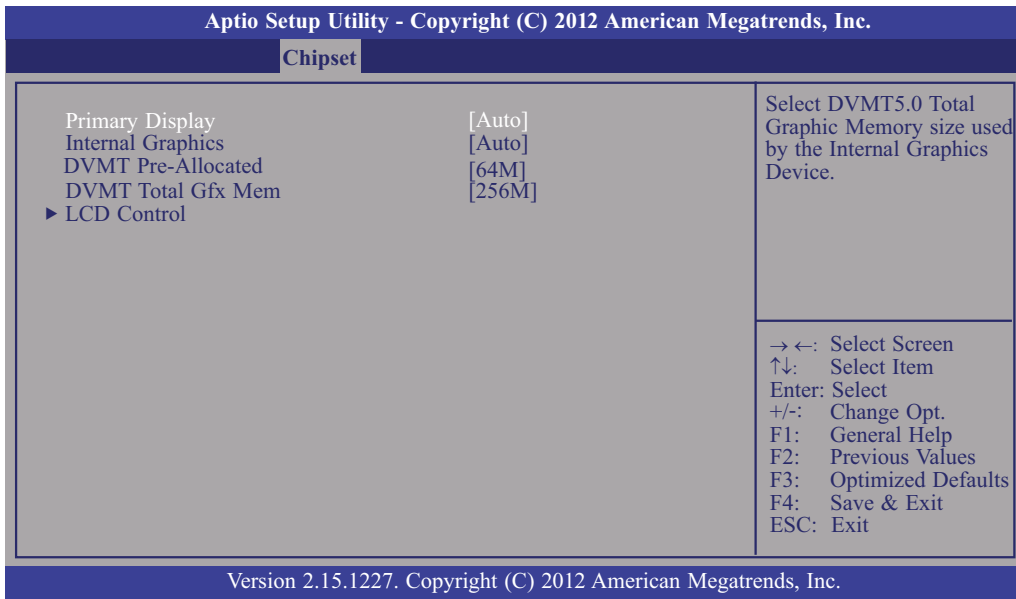
These fields are used to enable or disable USB 2.0.

3.4.2 System Agent (SA) Configuration

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Chipset		
VT-d	[Enabled]	Config Graphics Settings. → ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
▶ Graphics Configuration		
Version 2.15.1227. Copyright (C) 2012 American Megatrends, Inc.		



3.4.2.1 Graphics Configuration



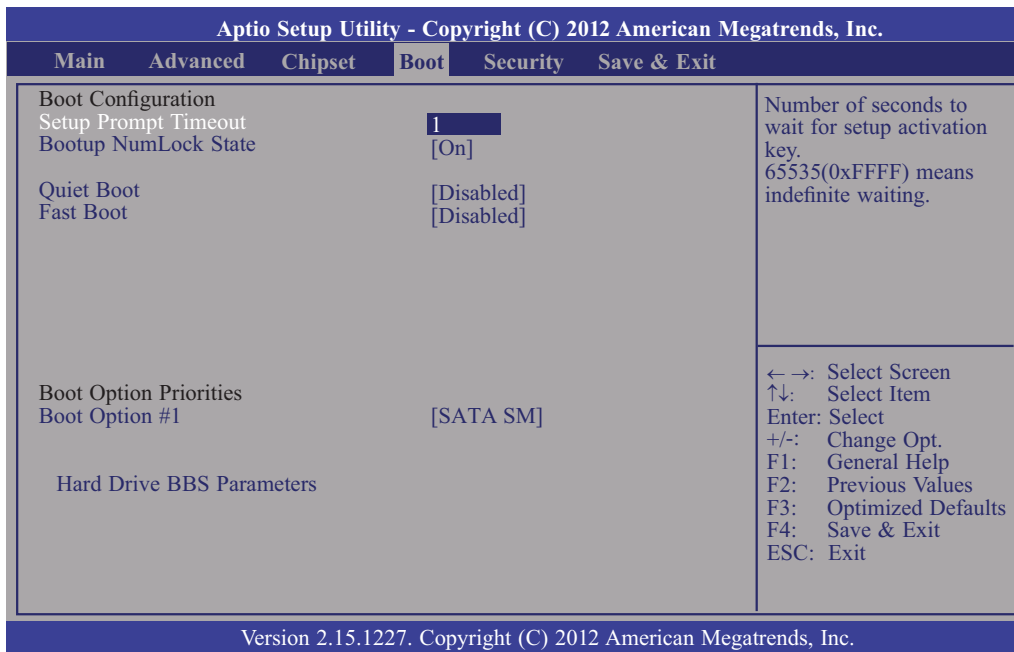
Primary Display

- Auto When the system boots, it will auto detects the display de-vice
- IGFX When the system boots, it will fi rst initialize the onboard VGA
- PEG When the system boots, it will fi rst initialize the PCI Express x16 graphics card.

DVMT Total Gfx Mem

This field is used to select the graphics memory size used by DVMT mode.

3.5 Boot



Setup Prompt Timeout

Selects the number of seconds to wait for the setup activation key.65535(0xFFFF) denotes indefi nite waiting.

Bootup NumLock State

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.



Quiet Boot

Enables or disables the quiet boot function

Fast Boot

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.

3.6 Security

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.					
Main	Advanced	Chipset	Boot	Security	Save & Exit
Password Description If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup. If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights. The password length must be in the following range: Minimum length Maximum length Administrator Password HDD Security Configuration HDD SanDisk PSSD HDD Security Configuration				Set Administrator Password. → ←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.15.1227. Copyright (C) 2012 American Megatrends, Inc.					

3.7 Save & Exit

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.					
Main	Advanced	Chipset	Boot	Security	Save & Exit
Save Changes and Reset Discard Changes and Exit Save Changes and Reset Discard Changes and Reset Save Options Save Changes Discard Changes Boot Override SATA SM: SanDisk PSSD-S2 16GB Launch EFI Shell from filesystem device				Reset the system after saving the changes. ← →: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.15.1227. Copyright (C) 2012 American Megatrends, Inc.					



4.1 看门狗

```
EC_Command_Port = 0x29Ah
EC_Data_Port = 0x299h
Write EC HW ram = 0x89
Watch dog event flag = 0x57
Watchdog reset delay time = 0x5E
Reset event = 0x04
Start WDT function = 0x28
=====
.model small
.486p
.stack 256
.data
.code
org 100h
.STARTUp
mov dx, EC_Command_Port
mov al,89h ; Write EC HW ram.
out dx,al

mov dx, EC_Data_Port
mov al, 5Fh ; Watchdog reset delay time low byte (5Eh is high byte) index, Timebase:
100ms
out dx,al
mov dx, EC_Data_Port
mov al, 64h ;Set 10 seconds delay time.
out dx,al

mov dx, EC_Command_Port
mov al,89h ; Write EC HW ram.
out dx,al

mov dx, EC_Data_Port
mov al, 57h ; Watch dog event flag.
out dx,al

mov dx, EC_Data_Port
mov al, 04h ; Reset event.
out dx,al

mov dx, EC_Command_Port
mov al,28h ; start WDT function. (Stop: 0x29, Reset: 0x2A)
out dx,al

.exit
```