

# COM10801-6B

COM-Express Type6 核心板  
USER' Manual V1.0

## USER'S MANUAL 用户手册

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## 安全须知

1	产品使用前，务必仔细阅读产品说明书。
2	对未准备安装的板卡，应将其保存在防静电保护袋中。
3	在从包装袋中拿板卡前，应将手先置于接地金属物体上一会儿，以释放身体及手中的静电。
4	在拿板卡时，需佩带静电保护手套，并且应该养成只触及边缘部份的习惯。
5	主板与电源连接时，请确认电源电压。
6	为避免人本被电击或产品被损坏，在每次对主板、板卡进行拔插或生新配置时须先关闭交流电源或将交流电源线从电源插座中拔掉。
7	在对板卡进行搬动前，先将交流电源线从电源插座中拔掉。
8	当您需连接或拔除任何设备前，须确定所有的电源线事先已被拔掉。
9	为避免频繁开关机对产品造成不必要的损伤,关机后,应至少等待30秒后再开机。
10	设备在使用过程时出现异常情况，请找专业人员处理。

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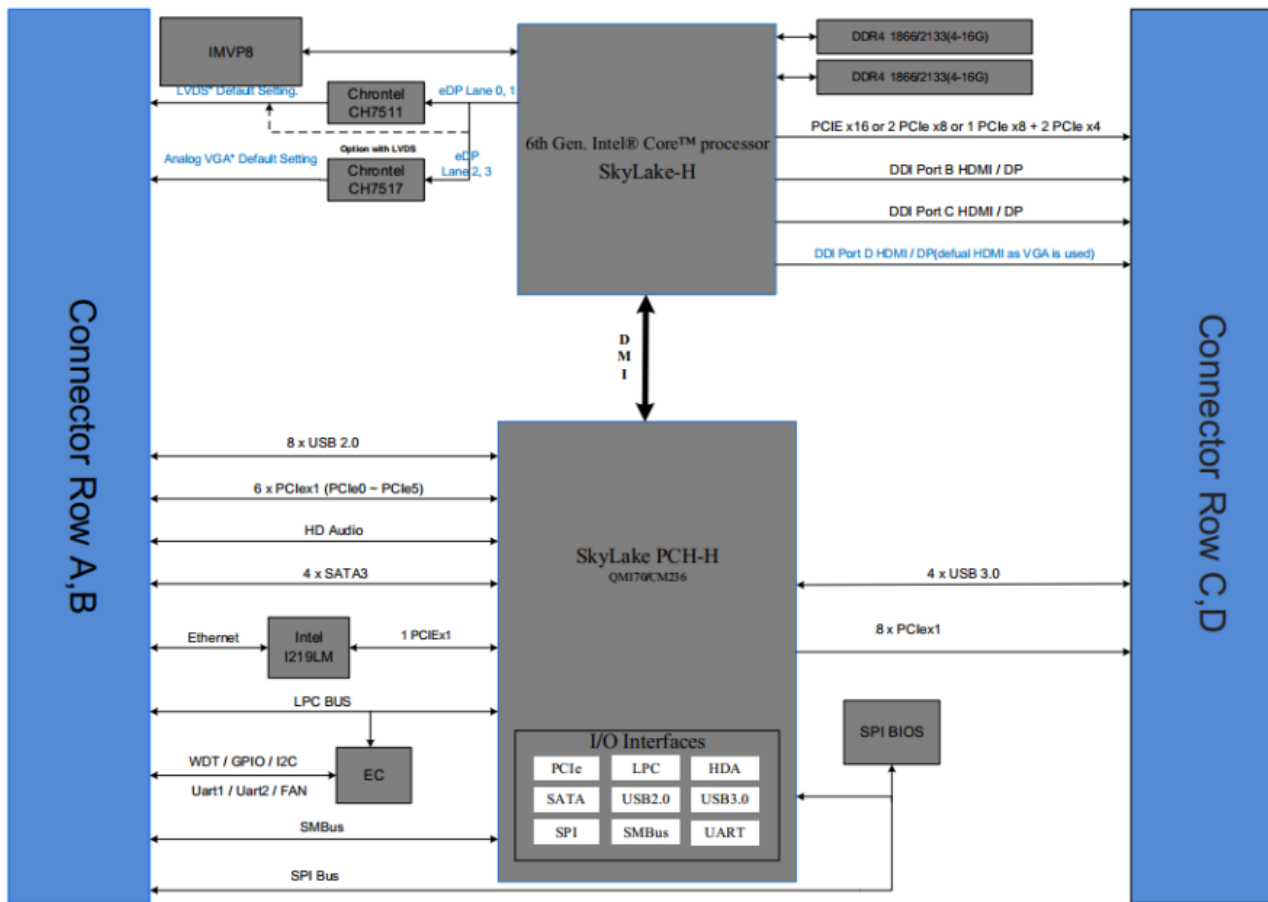
## 第一章 产品介绍

### 1.1 产品规格

Model		ZRT-COM10801-6B	
配置 Item	规格 Specification	描述 Describe	
处理器 Processor System	处理器 CPU	I7-6820EQ	I7-6700HQ
	内核数 Core Number	4C/8T	4C/8T
	最高主频 Max. Speed	3.5 GHz	3.5 GHz
	二级缓存 L2 Cache	8M	6M
	功耗 TDP (W)	45W	45W
	指令集 Instruction Set Extensions	SSE4.1, SSE4.2, AVX2	
扩展插槽 Expansion Slot	PCI Express	1 x PCIe x16(Option 1 x16, 2 x8, 1 x8 + 2 x4) 8 x PCIe x1	
内存 Memory	规格 Technology	DDR4	
	最大容量 Max. Capacity	16G 2133MHz	
	插槽 Socket	On Board	
显示 Display	接口 Display	3 x DDI(Option HDMI、 DP、 eDP)	
	最大分辨率 Max Resolution	HDMI 1.4:4096 x 2304@24Hz DP:4096 x 2304@60Hz eDP:4096 x 2304@60Hz	
以太网 Ethernet	控制器 Controller	INTEL I219	
	速率 Speed	1 x GBE MDI 10/100/1000M	

<b>内部接口</b> Internal Connector	<b>USB 3.0</b>	4 x USB 3.0
	<b>USB 2.0</b>	8 x USB 2.0
	<b>SATS3.0</b>	4 x SATA3.0
	<b>其他</b> Others	1 x HAD Audio 1 x SMBUS 1 x LPC BUS 1 x Power button 1 x RESET
	<b>拓展</b> Connector	2 x COMe 220Pin
<b>电源</b> Power Requirements	<b>电源类型</b> Power Type	ATX: Vin,Vsb AT: Vin
	<b>电源电压</b> Input Voltage	54W
	<b>连接器</b> Connector type	底板供电
<b>环境</b> Environment	<b>工作温度</b> Operating Temperature	0~60°C
	<b>存储温度</b> Storage Temperature	-40~85°C
	<b>工作湿度</b> Operating Humidity	20~90% (non-condensing)
<b>物理特性</b> Physical	<b>尺寸</b> Dimensions	95*125mm
	<b>PCB 颜色</b> Color	Green
<b>操作系统</b> OS	<b>Microsoft</b>	Windows 10 1809(RS5)
	<b>Linux</b>	Yocto 2.4 Rocko

## 1.2 功能框图

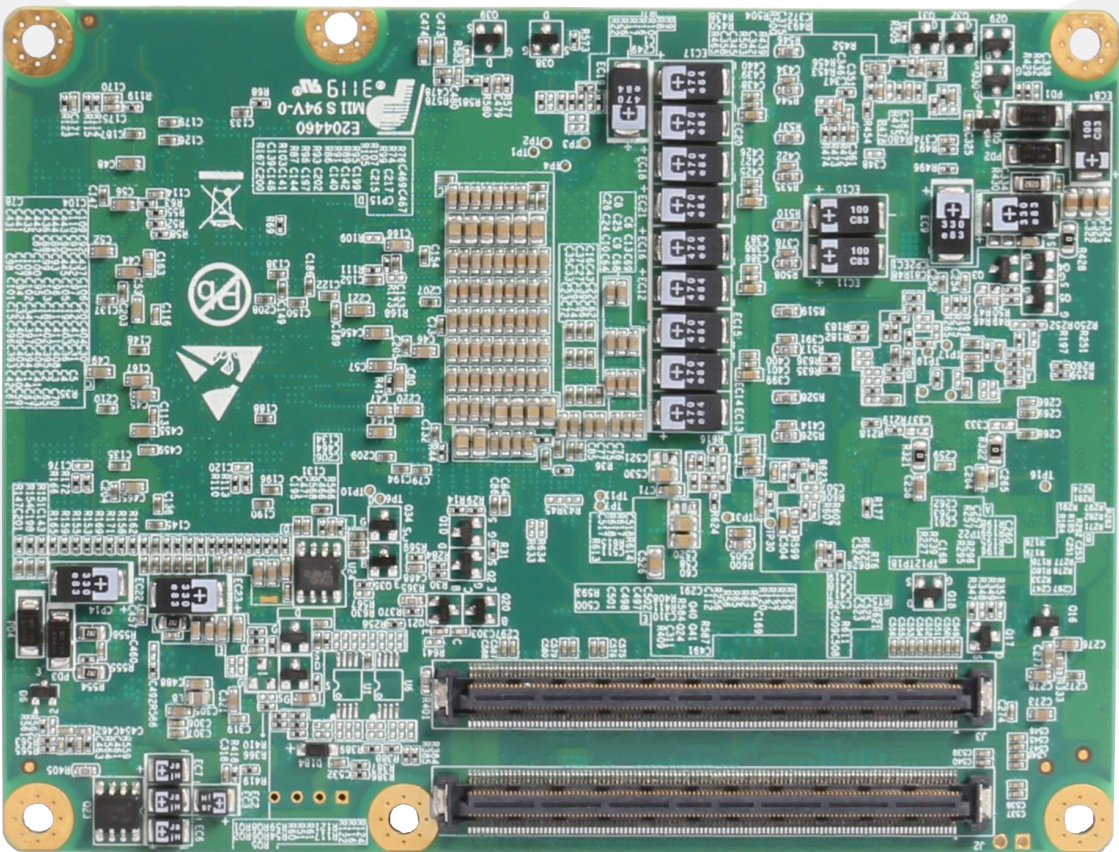
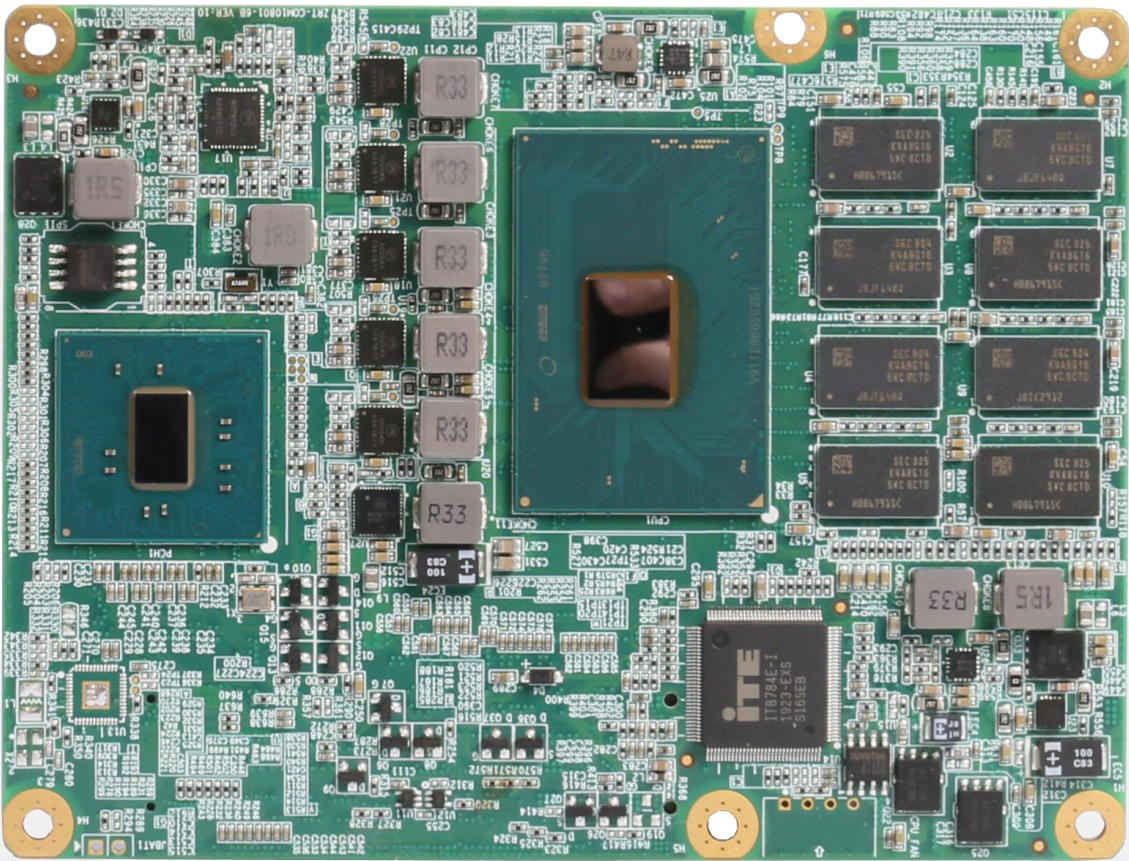


## 1.3 产品料号

Model	Part Number	Specification
ZRT-COM10801-6B	8.ZRT.80-6301-21-LFF	ZRT-COM10801-6B 8G,PCB VER 10,SKYLAKE-H i7-6820EQ,QM170,DDR4.2GB*4,IT8784E-EX+COM EXPRESS



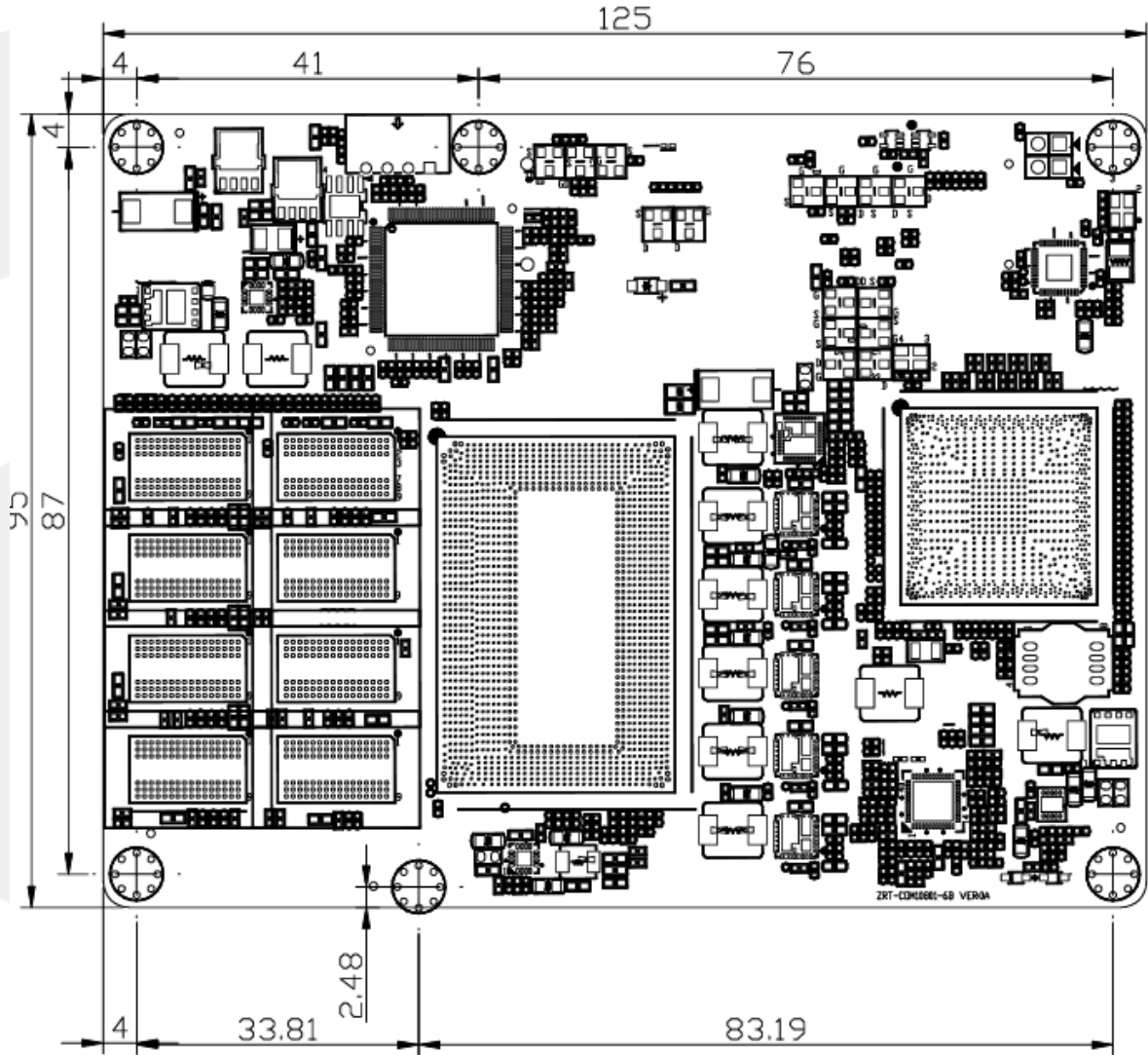
### 1.4 产品照片



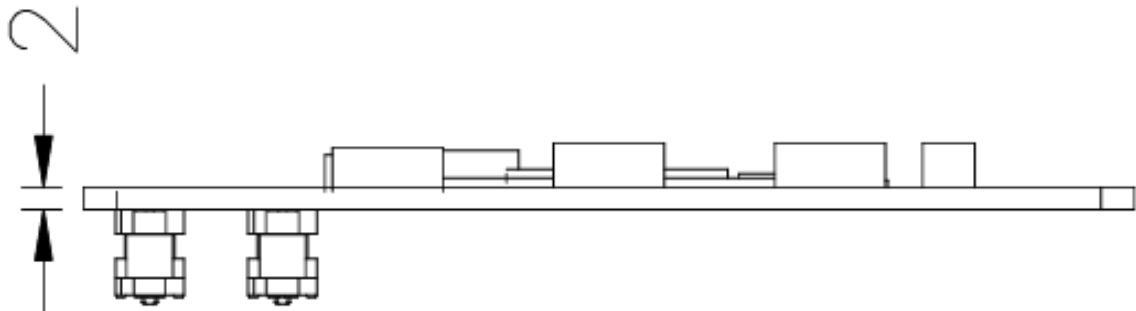
## 第二章 安装说明

### 2.1 接口/尺寸图

安装设备时, 请对照此示意图并详细阅读下面的说明, 安装组件过程中必须小心, 对于有些部件, 如果安装不正确, 设备将不能正常工作。



Mechanical Drawing (TOP Side)



## 2.2 硬件安装

**⚠ 注意：操作时，请戴上防静电手套，因为静电有可能会损坏部件。**

本主板关键元器件都是集成电路，而这些元件很容易因为遭受静电的影响而损坏。因此，请在正式安装主板之前，请先做好以下的准备：

1. 拿主板时手握板边，尽可能不触及元器件和插头插座的引脚。
2. 接触集成路元件（如 CPU、RAM 等）时，最好戴上防静电手环/手套。
3. 在集成电路元件未安装前，需将元件放在防静电垫或防静电袋内。
4. 在确认电源的开关处于断开位置后，再插上电源插头。

## 2.3 接口引脚定义

Pin	Signal Name	Pin	Signal Name	Pin	Signal Name	Pin	Signal Name
A1	GND(FIXED)	B1	GND(FIXED)	C1	GND(FIXED)	D1	GND(FIXED)
A2	GBE0_MDI3-	B2	GBE0_ACT#	C2	GND	D2	GND
A3	GBE0_MDI3+	B3	LPC_FRAME#	C3	USB_SSRX0-	D3	USB_SSTX0-
A4	GBE0_LINK100#	B4	LPC_AD0	C4	USB_SSRX0+	D4	USB_SSTX0+
A5	GBE0_LINK1000#	B5	LPC_AD1	C5	GND	D5	GND
A6	GBE0_MDI2-	B6	LPC_AD2	C6	USB_SSRX1-	D6	USB_SSTX1-
A7	GBE0_MDI2+	B7	LPC_AD3	C7	USB_SSRX1+	D7	USB_SSTX1+
A8	GBE0_LINK#	B8	LPC_DRQ0#	C8	GND	D8	GND
A9	GBE0_MDI1-	B9	NC	C9	USB_SSRX2-	D9	USB_SSTX2-
A10	GBE0_MDI1+	B10	LPC_CLK	C10	USB_SSRX2+	D10	USB_SSTX2+
A11	GND(FIXED)	B11	GND(FIXED)	C11	GND(FIXED)	D11	GND(FIXED)
A12	GBE0_MDI0-	B12	PWRBTN#	C12	USB_SSRX3-	D12	USB_SSTX3-
A13	GBE0_MDI0+	B13	SMB_CK	C13	USB_SSRX3+	D13	USB_SSTX3+
A14	GBE0_CTREF	B14	SMB_DAT	C14	GND	D14	GND
A15	SUS_S3#	B15	SMB_ALERT#	C15	NC	D15	DDI1_AUX+
A16	SATA0_TX+	B16	SATA1_TX+	C16	NC	D16	DDI1_AUX-
A17	SATA0_TX-	B17	SATA1_TX-	C17	RSVD	D17	RSVD
A18	SUS_S4#	B18	SUS_STAT#	C18	RSVD	D18	RSVD
A19	SATA0_RX+	B19	SATA1_RX+	C19	PCIE_RX6+	D19	PCIE_TX6+
A20	SATA0_RX-	B20	SATA1_RX-	C20	PCIE_RX6-	D20	PCIE_TX6-
A21	GND(FIXED)	B21	GND(FIXED)	C21	GND(FIXED)	D21	GND(FIXED)
A22	SATA2_TX+	B22	SATA3_TX+	C22	PCIE_RX7+	D22	PCIE_TX7+
A23	SATA2_TX-	B23	SATA3_TX-	C23	PCIE_RX7-	D23	PCIE_TX7-
A24	SUS_S5#	B24	PWR_OK	C24	DDI1_HPD	D24	RSVD
A25	SATA2_RX+	B25	SATA3_RX+	C25	NC	D25	RSVD
A26	SATA2_RX-	B26	SATA3_RX-	C26	NC	D26	DDI1_PAIR0+
A27	BATLOW#	B27	WDT	C27	RSVD	D27	DDI1_PAIR0-
A28	(S)ATA_ACT#	B28	NC	C28	GND	D28	RSVD
A29	AC/HDA_SYN C	B29	AC/HDA_SDIN 1	C29	NC	D29	DDI1_PAIR1+

Pin	Signal Name	Pin	Signal Name	Pin	Signal Name	Pin	Signal Name
A30	AC/HDA_RST#	B30	AC/HDA_SDIN 0	C30	NC	D30	DDI1_PAIR1-
A31	GND(FIXED)	B31	GND(FIXED)	C31	GND(FIXED)	D31	GND(FIXED)
A32	AC/HDA_BITC LK	B32	SPKR	C32	DDI2_CTRLCLK	D32	DDI1_PAIR2+
A33	AC/HDA_SDO UT	B33	NC	C33	DDI2_CTRLDA TA	D33	DDI1_PAIR2-
A34	NC	B34	NC	C34	NC	D34	NC
A35	THRMTRIP#	B35	THRM#	C35	RSVD	D35	RSVD
A36	USB6-	B36	USB7-	C36	DDI3_AUX+	D36	DDI1_PAIR3+
A37	USB6+	B37	USB7+	C37	DDI3_AUX-	D37	DDI1_PAIR3-
A38	USB_6_7_OC#	B38	USB_4_5_OC#	C38	NC	D38	RSVD
A39	USB4-	B39	USB5-	C39	DDI3_PAIR0+	D39	DDI2_PAIR0+
A40	USB4+	B40	USB5+	C40	DDI3_PAIR0-	D40	DDI2_PAIR0-
A41	GND(FIXED)	B41	GND(FIXED)	C41	GND(FIXED)	D41	GND(FIXED)
A42	USB2-	B42	USB3-	C42	DDI3_PAIR1+	D42	DDI2_PAIR1+
A43	USB2+	B43	USB3+	C43	DDI3_PAIR1-	D43	DDI2_PAIR1-
A44	USB_2_3_OC#	B44	USB_0_1_OC#	C44	DDI3_HPD	D44	DDI2_HPD
A45	USB0-	B45	USB1-	C45	RSVD	D45	RSVD
A46	USB0+	B46	USB1+	C46	DDI3_PAIR2+	D46	DDI2_PAIR2+
A47	VCC_RTC	B47	EXCD1_PERST #	C47	DDI3_PAIR2-	D47	DDI2_PAIR2-
A48	EXCD0_PERST #	B48	EXCD1_CPPE#	C48	RSVD	D48	RSVD
A49	EXCD0_CPPE#	B49	SYS_RESET#	C49	DDI3_PAIR3+	D49	DDI2_PAIR3+
A50	LPC_SERIRQ	B50	CB_RESET#	C50	DDI3_PAIR3-	D50	DDI2_PAIR3-
A51	GND(FIXED)	B51	GND(FIXED)	C51	GND(FIXED)	D51	GND(FIXED)
A52	PCIE_TX5+	B52	PCIE_RX5+	C52	PEG_RX0+	D52	PEG_TX0+
A53	PCIE_TX5-	B53	PCIE_RX5-	C53	PEG_RX0-	D53	PEG_TX0-
A54	GPIO	B54	GPO1	C54	NC	D54	NC
A55	PCIE_TX4+	B55	PCIE_RX4+	C55	PEG_RX1+	D55	PEG_TX1+
A56	PCIE_TX4-	B56	PCIE_RX4-	C56	PEG_RX1-	D56	PEG_TX1-
A57	GND	B57	GPO2	C57	NC	D57	NC
A58	PCIE_TX3+	B58	PCIE_RX3+	C58	PEG_RX2+	D58	PEG_TX2+
A59	PCIE_TX3-	B59	PCIE_RX3-	C59	PEG_RX2-	D59	PEG_TX2-
A60	GND(FIXED)	B60	GND(FIXED)	C60	GND(FIXED)	D60	GND(FIXED)
A61	PCIE_TX2+	B61	PCIE_RX2+	C61	PEG_RX3+	D61	PEG_TX3+
A62	PCIE_TX2-	B62	PCIE_RX2-	C62	PEG_RX3-	D62	PEG_TX3-
A63	GPI1	B63	GPO3	C63	RSVD	D63	RSVD
A64	PCIE_TX1+	B64	PCIE_RX1+	C64	RSVD	D64	RSVD
A65	PCIE_TX1-	B65	PCIE_RX1-	C65	PEG_RX4+	D65	PEG_TX4+
A66	GND	B66	WAKE0#	C66	PEG_RX4-	D66	PEG_TX4-
A67	GPI2	B67	NC	C67	RSVD	D67	GND
A68	PCIE_TX0+	B68	PCIE_RX0+	C68	PEG_RX5+	D68	PEG_TX5+

Pin	Signal Name	Pin	Signal Name	Pin	Signal Name	Pin	Signal Name
A69	PCIE_TX0-	B69	PCIE_RX0-	C69	PEG_RX5-	D69	PEG_TX5-
A70	GND(FIXED)	B70	GND(FIXED)	C70	GND(FIXED)	D70	GND(FIXED)
A71	edp_tx2+	B71	NC	C71	PEG_RX6+	D71	PEG_TX6+
A72	edp_tx2-	B72	NC	C72	PEG_RX6-	D72	PEG_TX6-
A73	edp_tx1+	B73	NC	C73	GND	D73	GND
A74	edp_tx1-	B74	NC	C74	PEG_RX7+	D74	PEG_TX7+
A75	edp_tx0+	B75	NC	C75	PEG_RX7-	D75	PEG_TX7-
A76	edp_tx0-	B76	NC	C76	GND	D76	GND
A77	edp_vdden	B77	NC	C77	RSVD	D77	RSVD
A78	NC	B78	NC	C78	PEG_RX8+	D78	PEG_TX8+
A79	NC	B79	EDP_BKLTEN	C79	PEG_RX8-	D79	PEG_TX8-
A80	GND(FIXED)	B80	GND(FIXED)	C80	GND(FIXED)	D80	GND(FIXED)
A81	edp_tx3+	B81	NC	C81	PEG_RX9+	D81	PEG_TX9+
A82	edp_tx3-	B82	NC	C82	PEG_RX9-	D82	PEG_TX9-
A83	edp_aux+	B83	EDP_BKLTCTL	C83	RSVD	D83	RSVD
A84	edp_aux-	B84	VCC_5V_SBY	C84	GND	D84	GND
A85	GPI3	B85	VCC_5V_SBY	C85	PEG_RX10+	D85	PEG_TX10+
A86	NC	B86	VCC_5V_SBY	C86	PEG_RX10-	D86	PEG_TX10-
A87	eDP_HPD	B87	VCC_5V_SBY	C87	GND	D87	GND
A88	PCIE_CLK_REF+	B88	NC	C88	PEG_RX11+	D88	PEG_TX11+
A89	PCIE_CLK_REF-	B89	NC	C89	PEG_RX11-	D89	PEG_TX11-
A90	GND(FIXED)	B90	GND(FIXED)	C90	GND(FIXED)	D90	GND(FIXED)
A91	SPI_POWER	B91	NC	C91	PEG_RX12+	D91	PEG_TX12+
A92	SPI_MISO	B92	NC	C92	PEG_RX12-	D92	PEG_TX12-
A93	GPO0	B93	NC	C93	GND	D93	GND
A94	SPI_CLK	B94	NC	C94	PEG_RX13+	D94	PEG_TX13+
A95	SPI_MOSI	B95	NC	C95	PEG_RX13-	D95	PEG_TX13-
A96	TPM_PP	B96	NC	C96	GND	D96	GND
A97	NC	B97	SPI_CS#	C97	RSVD	D97	RSVD
A98	SER0_TX	B98	RSVD	C98	PEG_RX14+	D98	PEG_TX14+
A99	SER0_RX	B99	ATX_PSON_N	C99	PEG_RX14-	D99	PEG_TX14-
A100	GND(FIXED)	B100	GND(FIXED)	C100	GND(FIXED)	D100	GND(FIXED)
A101	SER1_TX	B101	FAN_PWMOUT	C101	PEG_RX15+	D101	PEG_TX15+
A102	SER1_RX	B102	FAN_TACHIN	C102	PEG_RX15-	D102	PEG_TX15-
A103	LID#	B103	SLEEP#	C103	GND	D103	GND
A104	VCC_12V	B104	VCC_12V	C104	VCC_12V	D104	VCC_12V
A105	VCC_12V	B105	VCC_12V	C105	VCC_12V	D105	VCC_12V
A106	VCC_12V	B106	VCC_12V	C106	VCC_12V	D106	VCC_12V
A107	VCC_12V	B107	VCC_12V	C107	VCC_12V	D107	VCC_12V
A108	VCC_12V	B108	VCC_12V	C108	VCC_12V	D108	VCC_12V
A109	VCC_12V	B109	VCC_12V	C109	VCC_12V	D109	VCC_12V
A110	GND(FIXED)	B110	NC	C110	GND(FIXED)	D110	GND(FIXED)

## 第三章 BIOS 程序设置

### AMI BIOS 刷新

BIOS 提供对硬件资源的底层驱动，是联系硬件和操作系统的桥梁。现在硬件和各种应用软件不断更新，当您的系统遇到问题时，例如系统不支持最新公布的 CPU 时，就需要升级您的 BIOS 了。

#### 注意：

1. 升级 BIOS 只在遇到问题，必要的时候进行。
2. 升级 BIOS 请使用我们驱动光盘内所附的 BIOS 读写程序，或者在相关网站下载更新版本的程序。
3. 在升级过程中不要关闭电源或重新启动系统，这亲您的 BIOS 资料将被损坏，系统也可能不能启动。
4. 为防止意外发生，请您先备份当前的 BIOS 资料。

### AMI BIOS 描述

开机时，BIOS 会对主板上的硬件进行自我诊断，设定硬件时序参数等工作，最后才将系统控制权交给操作系统。如何正确的设定 BIOS 参数对系统是否稳定的工作及系统是否工作在最佳状态至关重要。

### 进入 BIOS 参数设置

电脑开机，在完成自我诊断后，屏幕上会显示出如下信息：Del->SETUP，此时您点击一下 Del 键，则 BIOS 在完成 IDE 等设备的侦测后会自动转入 SETUP 设置画面。

1. 打开系统电源或重新启动系统，显示器屏幕将出现自我测试的信息。
2. 当屏幕中间出现“Press<Del>to enter setup”提示时，按下<Del>键，就可以进入 BIOS 设定程序。
3. 以方向键移动至您要修改的选项，按下<Enter>键即可进入该选项的子画面。
4. 使用方向键及<Enter>键即可修改所选项目的值，按回车键选择 BIOS 选项并修改。
5. 任何时候按下<Esc>键即可回到上一画面。



**提示：**BIOS 参数属于系统关键信息，请勿随意设置，如需设置或者升级请联系我司售后支持，谢谢！

### 3.1 Setup Utility User Interface

本文档介绍 BIOS 设置实用程序的用户界面，主屏幕是进入 BIOS 设置时显示的第一个屏幕。



Setup Item	Options	Help Text	Comments
<b>BIOS Information</b>			
BIOS Vendor			Displays BIOS vendor.
Core Version			Displays the core version.
Compliance			Displays Compliance Spec.
Project Version			Displays Project Version.
Build Date and Time			Displays Build Date and Time.
Access Level			Displays password level that setup is running in: Administrator or User. With no passwords set, Administrator is the default mode.
<b>Processor Information</b>			
Brand String			Displays Processor Name.
Processor ID			Displays Processor ID.
Stepping			Displays Processor Stepping.
Number of Processors			Displays Processor Number.
Microcode Revision			Displays Microcode Revision.
IGFX VBIOS Version			Displays VBIOS Version.
Total Memory			Displays Total Memory Size.
Memory Frequency			Displays Memory Frequency.
PCH SKU			Displays PCH SKU model.
Stepping			Displays PCH SKU Stepping.
System Language	English	Choose the system default language.	
System Date	[Day of week MM/DD/YYYY]	Set and display the Date.	
System Time	[HH:MM:SS]	Set and display the Time.	



### 3.2 Advanced Screen

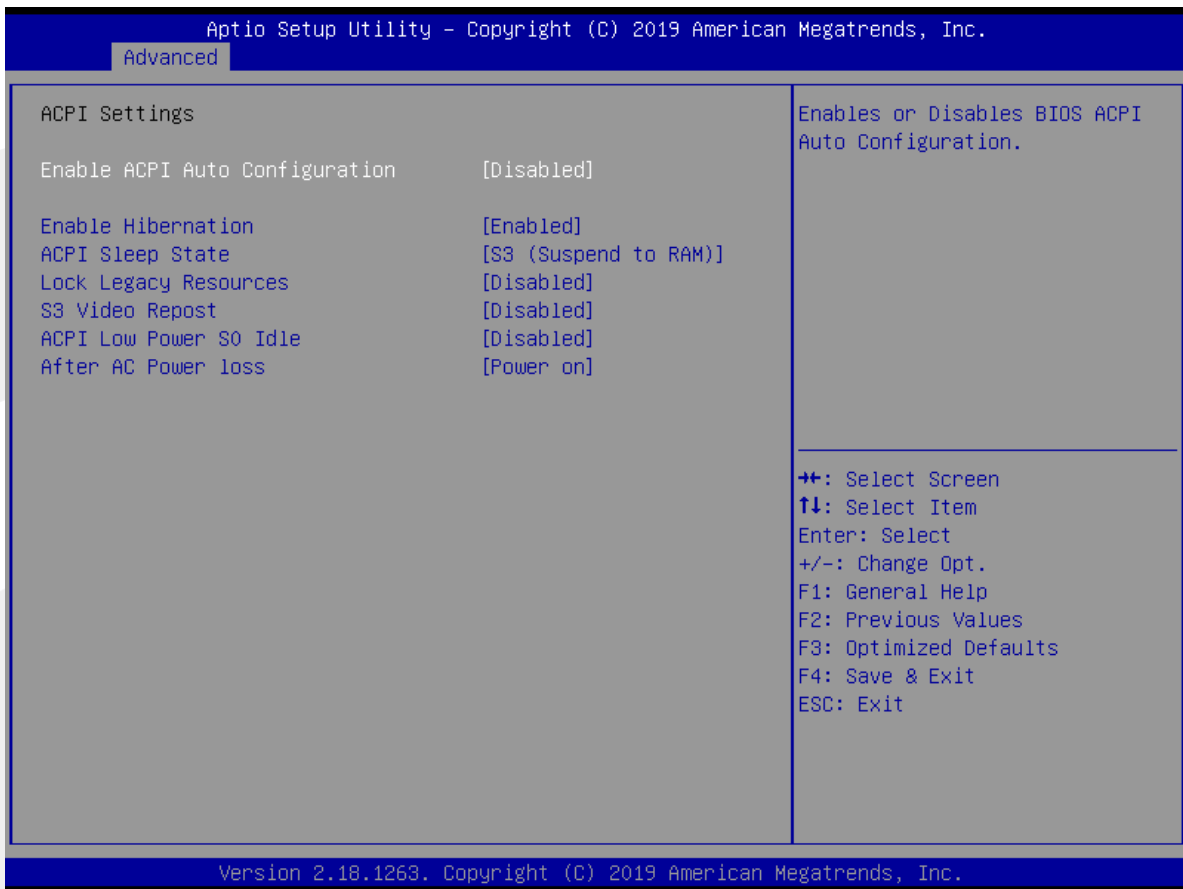
Advanced (高级) 提供了一个用于配置多个选项的访问点。在此屏幕上, 用户选择要配置的选项。



Setup Item	Options	Help Text	Comments
ACPI Settings		System ACPI Parameters.	
PCH-FW Configuration		PCH FW Configuration Parameters.	
Hardware Monitor		PC Health Status.	
CPU Configuration		CPU Configuration Parameters.	
SATA Configuration		SATA Devices Configuration.	
SIO Configuration		System Super IO Chip Parameters.	
PXE Boot		Boot From LAN PXE Configuration.	
CSM Configuration		CSM Configuration Parameters.	
USB Configuration		USB Configuration Parameters.	

### 3.3 ACPI Settings Screen

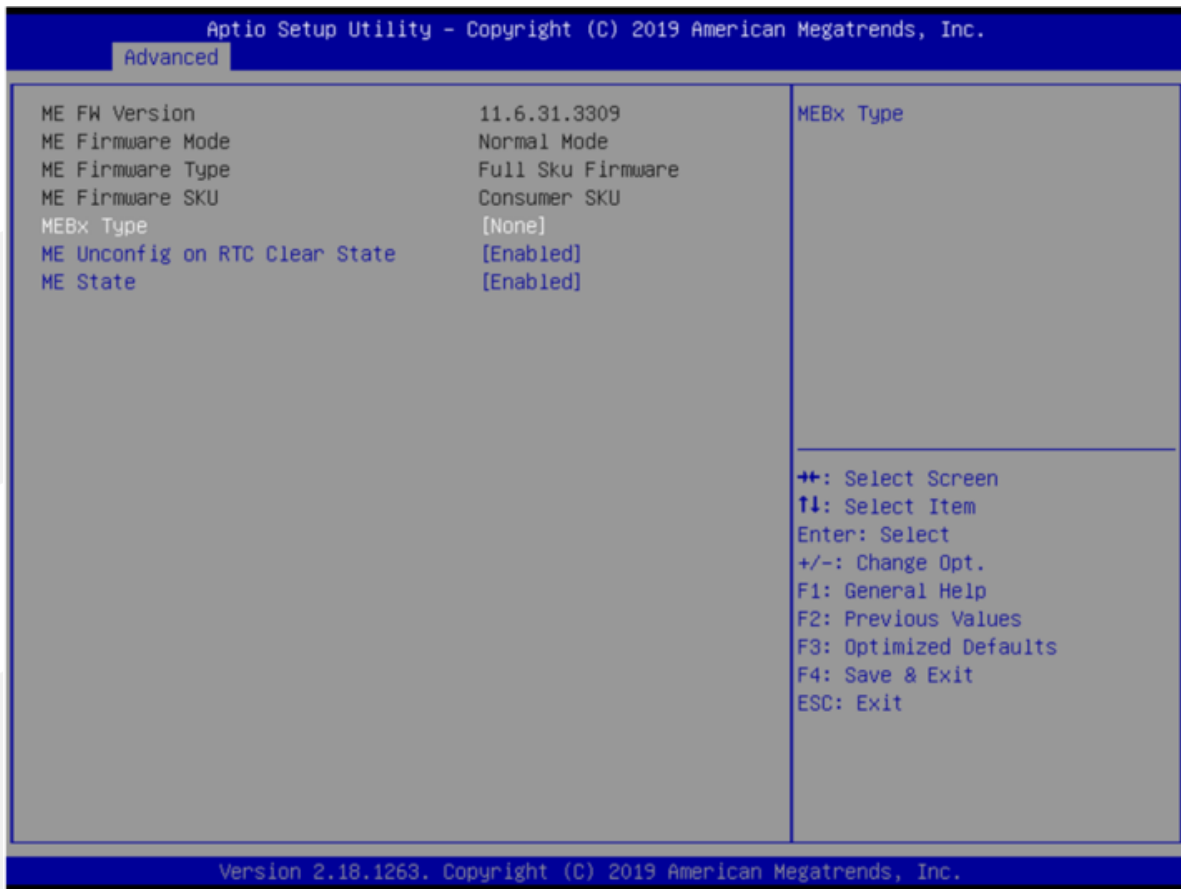
ACPI Settings (ACPI 设置) 屏幕允许用户设置系统 ACPI 参数。要从主屏幕访问此屏幕, 请选择 **Advanced > ACPI Settings**.



Setup Item	Options	Help Text	Comments
<b>ACPI Settings</b>			
Enable ACPI Auto Configuration		Enables or Disables BIOS ACPI Auto Configuration.	
Enable Hibernation	Disabled Enabled	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.	
ACPI Sleep State	Suspend Disabled S1 (CPU Stop Clock)	Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.	Sleep supported optionally.
Lock Legacy Resources	Disabled Enabled	Enables or Disables Lock of Legacy Resources.	
S3 Video Repost	Disabled Enabled	Enable or Disable S3 Video Repost.	
ACPI Low Power S0 Idle	Disabled Enabled	Enable or Disable ACPI Low Power S0 Idle Support.	
After AC Power loss	Power on Power off	Specify what state to go to when power is re-applied after a power failure (G3 state).	

### 3.4 PCH-FW Configuration Screen

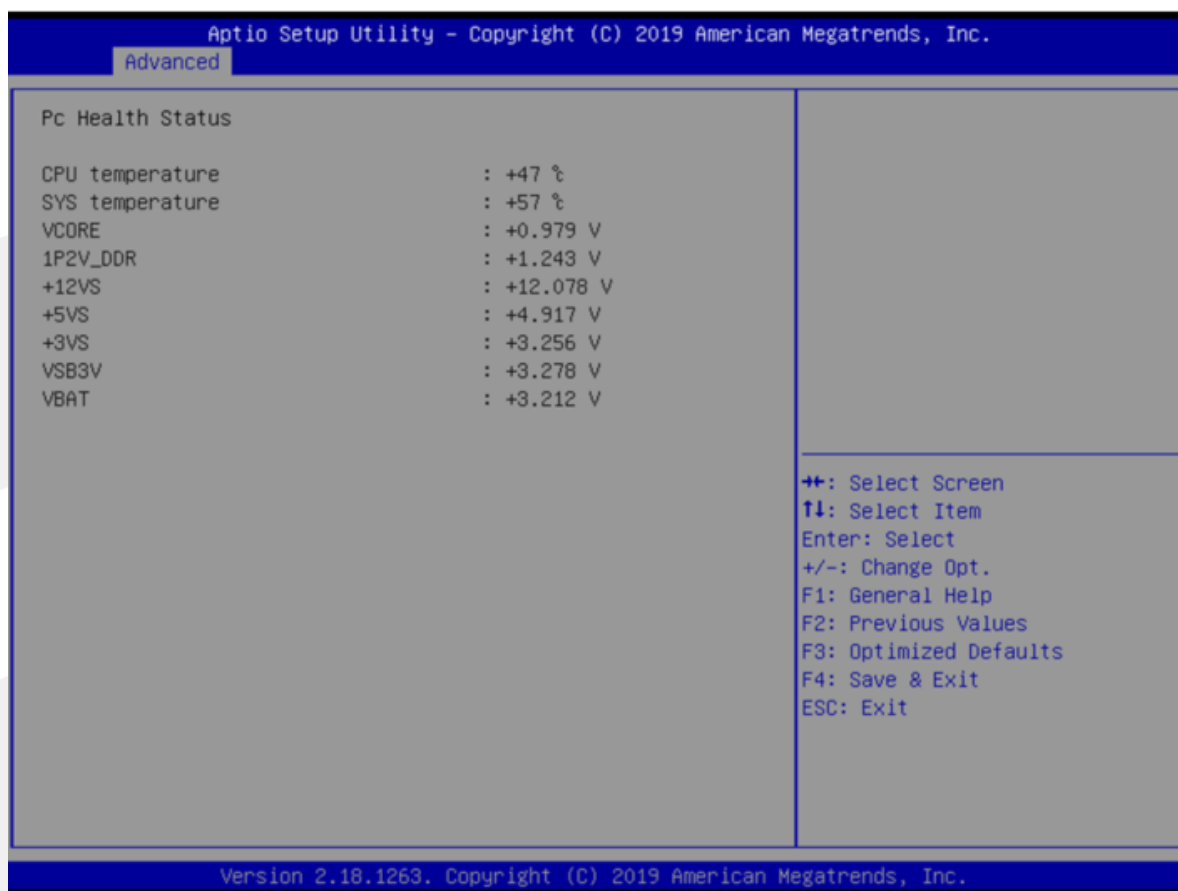
PCH-FW 配置屏幕允许用户设置系统 MEI 参数。要从主屏幕访问此屏幕，请选择 **Advanced > PCH-FW Configuration**。



Setup Item	Options	Help Text	Comments
<b>PCH-FW Configuration</b>			
ME FW Version			Displays ME FW Version.
ME Firmware Mode			Displays ME Firmware Mode.
ME Firmware Type			Displays ME Firmware Type.
ME Firmware SKU			Displays ME Firmware SKU.
MEBx Type	None MiniMEBx	MEBx Type.	
ME Unconfig on RTC Clear State	Disabled Enabled	Disabling this option will cause ME not to unconfigure on RTC clear.	
ME State	Disabled Enabled	Set ME to Soft Temporary Disabled.	

### 3.5 Hardware Monitor

硬件监视器屏幕显示电脑运行状况，包括温度、风扇转速和电压。要从主屏幕访问此屏幕，请选择 **Advanced > Hardware Monitor**.



Setup Item	Options	Help Text	Comments
<b>PC Health Status</b>			
CPU Temperature			Show Current CPU temperature.
SYS Temperature			Show Current SYS temperature.
VCORE			Show Current Voltages status.
1P2V_DDR			
+12VS			
+5VS			
+3VS			
VSB3V			
VBAT			

### 3.6 CPU Configuration Screen

CPU 配置屏幕允许用户查看处理器信息，并启用或禁用处理器选项。要从主屏幕访问此屏幕，请选择 **Advanced > CPU Configuration**.



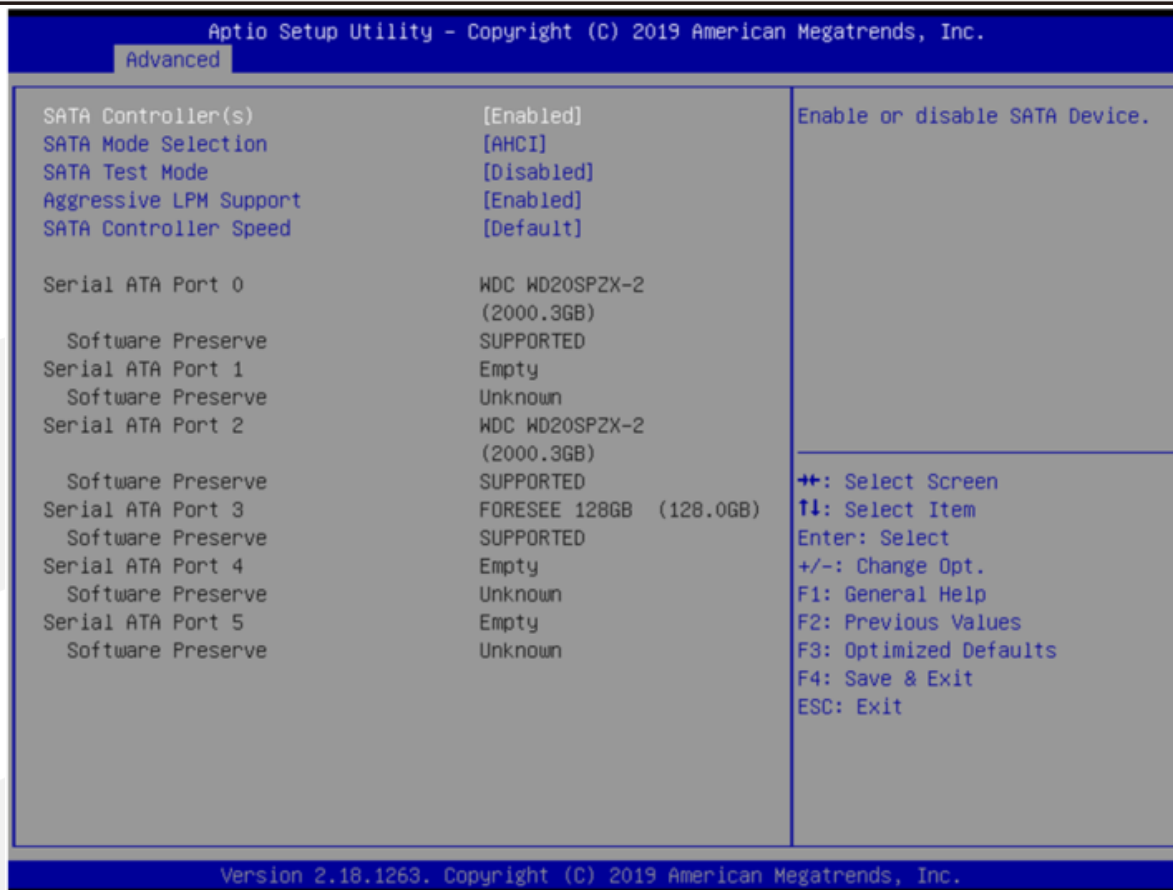
Setup Item	Options	Help Text	Comments
<b>CPU Configuration</b>			
Processor Type			Current frequency of the processor.
CPU signature			Displays the CPU Speed.
Microcode Patch			Displays Microcode Patch.
Processor Cores			Number of the Processor cores.
HyperThreading Technology			If Current processor supports Intel HT Technology it shows supported.
Intel VT-x Technology			If Current processor supports Intel VT-x Technology it shows supported.
64-bit			If Current processor supports 64 bit, it shows supported.
L1 Data Cache			Displays L1 Data Cache sizes.
L1 Code Cache			Displays L1 Code Cache sizes.
L2 Cache			Displays L2 Cache sizes.
L3 Cache			Displays L3 Cache sizes.
L4 Cache			Displays L4 Cache sizes.

Setup Item	Options	Help Text	Comments
Hyper-threading	Disabled	Enabled for Windows XP and	

	Enabled	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.	
Active Processor Cores	All 1 2 ... N	Number of cores to enable in each processor package.	
Overclocking lock	Disabled Enabled	FLEX_RATIO(194) MSR.	
Intel Virtualization Technology	Disabled Enabled	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.	

### 3.7 SATA Configuration Screen

SATA 配置屏幕允许用户配置 SATA 控制器。要从主菜单访问此屏幕, 请选择 **Advanced > SATA Configuration**.



Setup Item	Options	Help Text	Comments
<b>SATA Configuration</b>			
SATA Controller(s)	Enabled Disabled	Enable or disable SATA Device.	
SATA Mode Selection	AHCI RAID	Determines how SATA controller(s) operate.	
SATA Test Mode	Enabled Disabled	Test Mode Enable/Disable (Loop Back).	
Aggressive LPM Support	Enabled Disabled	Enable PCH to aggressively enter link power state.	
SATA Controller Speed	Default Gen1 Gen2 Gen3	Indicates the maximum speed the SATA controller can support.	
Serial ATA Port 0	Empty /<Drive Info.>		If HDD present on the port, show HDD information.
Serial ATA Port 1	Empty /<Drive Info.>		
Serial ATA Port 2	Empty /<Drive Info.>		<i>NOTE :Port number supported is SKU specific.</i>
Serial ATA Port 3	Empty /<Drive Info.>		

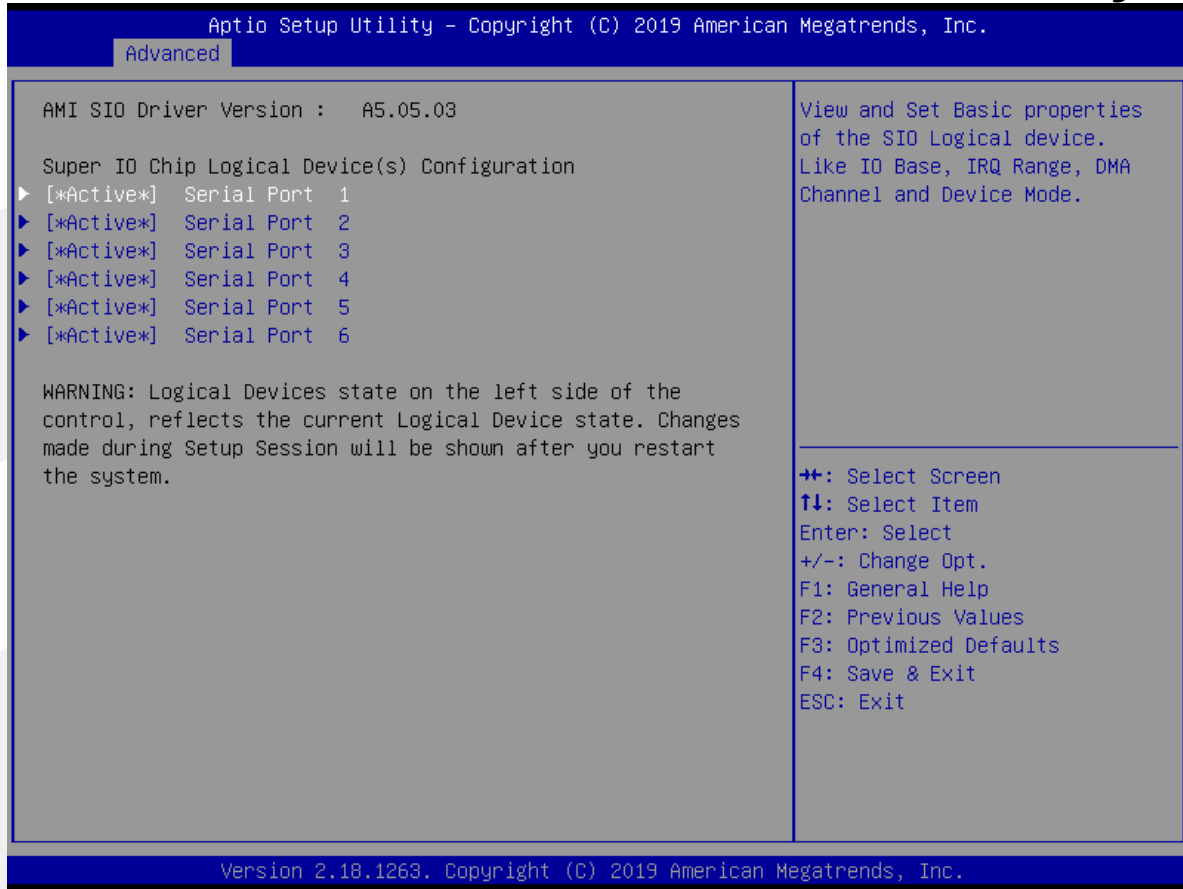
Setup Item	Options	Help Text	Comments
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Serial ATA Port 4	Empty /<Drive Info.>		f HDD present on the port, show HDD information.
Serial ATA Port 5	Empty /<Drive Info.>		<i>NOTE :Port number supported is SKU specific.</i>
Software Preserve			Show SATA Software Preserve status.



### 3.8 SIO Configuration Screen

超级 IO 配置屏幕允许用户配置超级 IO。要从主屏幕访问此屏幕，请选择 **Advanced > SIO Configuration**。



Setup Item	Options	Help Text	Comments
<b>SIO Configuration</b>			
Serial Port 1		View and Set Basic properties of the SIO Logical device. Like IO Base, IRQ Range, DMA Channel and Device Mode.	Show [*Active*] if device status is ON, and show [Disabled] if device status is off.
Serial Port 2			
Serial Port 3			
Serial Port 4			
Serial Port 5			
Serial Port 6			

### 3.9 PXE Boot Screen

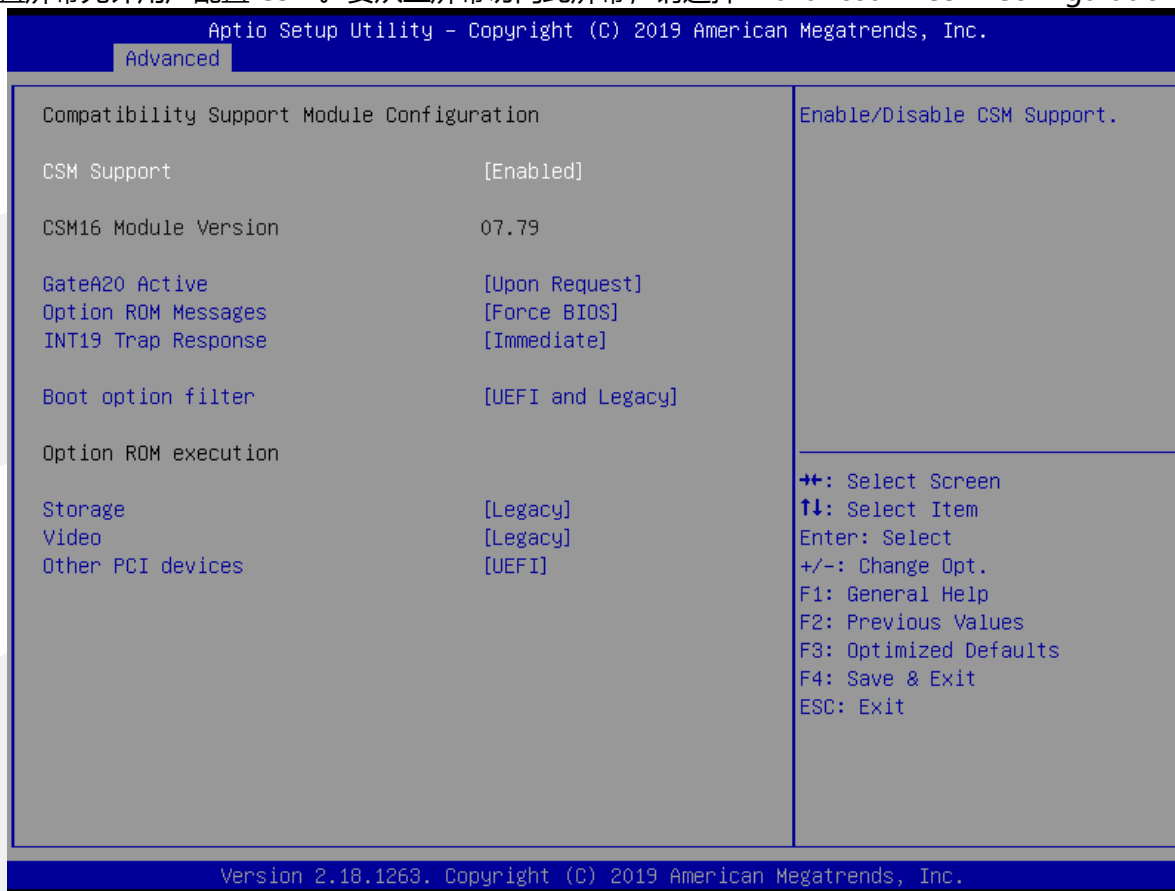
PXE 引导屏幕允许用户配置是否从 LAN PXE 引导系统。要从主屏幕访问此屏幕，请选择 **Advanced > PXE Boot**。



Setup Item	Options	Help Text	Comments
<b>PXE Boot</b>			
PXE Function Support	Disabled Enabled	Legacy Pxe support Control.	

### 3.10 CSM Configuration Screen

CSM 配置屏幕允许用户配置 CSM。要从主屏幕访问此屏幕，请选择 Advanced > CSM Configuration.

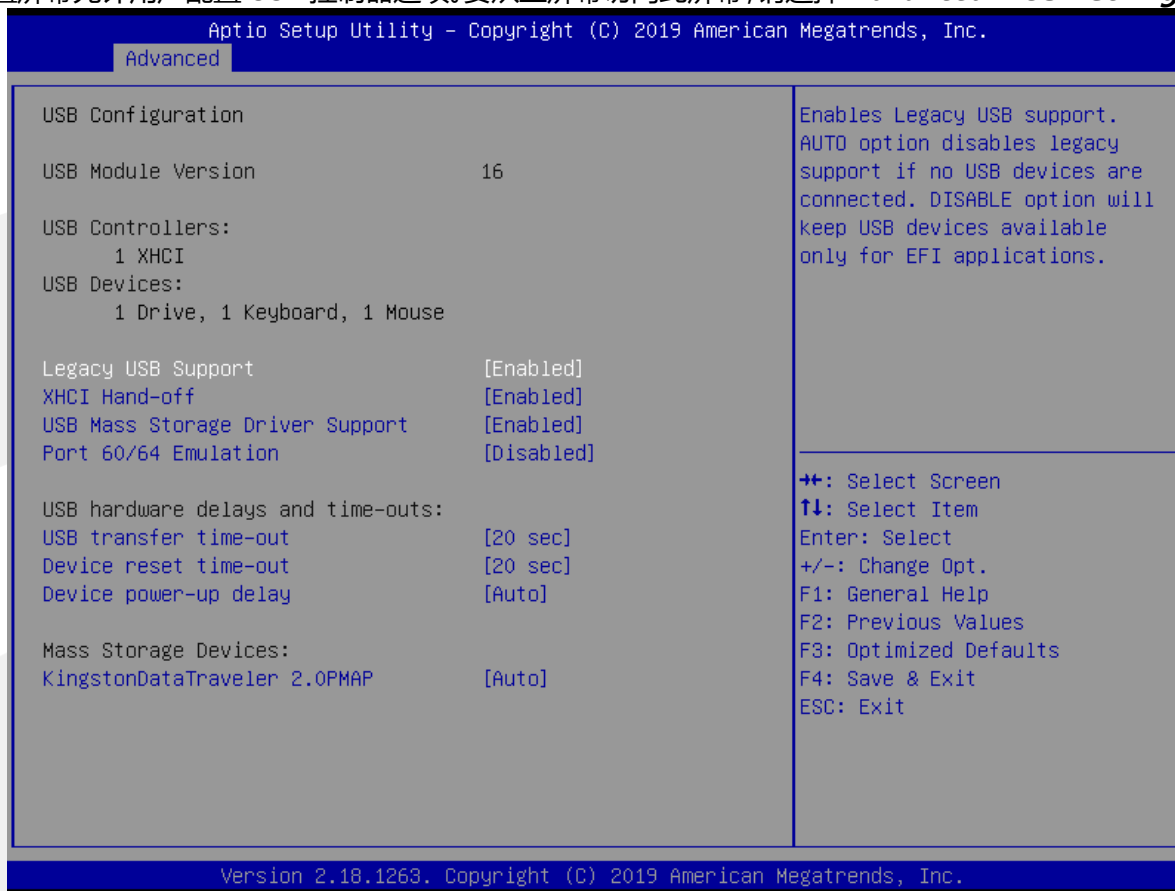


Setup Item	Options	Help Text	Comments
<b>Compatibility Support Module Configuration</b>			
CSM Support	Disabled Enabled	Enable/Disable CSM Support.	
CSM16 Module Version			Display Module Version.
GateA20 Active	Upon Request Always	UPON REQUEST - GA20 can be disabled using BIOS services. ALWAYS - do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.	
Option ROM Messages	Force BIOS Keep Current	Set display mode for Option ROM.	
INT19 Trap Response	Immediate Postponed	BIOS reaction on INT19 trapping by Option ROM: IMMEDIATE - execute the trapright away; POSTPONED - execute the trap during legacy boot.	

Setup Item	Options	Help Text	Comments
Boot option filter	UEFI and Legacy Legacy only UEFI only	This option controls Legacy/UEFI ROMs priority.	
<b>Option ROM execution</b>			
Storage	Do not launch UEFI Legacy	Controls the execution of UEFI and Legacy Storage OpROM.	
Video	Do not launch UEFI Legacy	Controls the execution of UEFI and Legacy Video OpROM.	
Other PCI devices	Do not launch UEFI Legacy	Determines OpROM execution policy for devices other than Network, Storage, or Video.	

### 3.11 USB Configuration Screen

USB 配置屏幕允许用户配置 USB 控制器选项。要从主屏幕访问此屏幕, 请选择 **Advanced > USB Configuration**.



Setup Item	Options	Help Text	Comments
<b>USB Configuration</b>			
USB Module Version			Display USB Module Version number.
USB Controllers			List USB Controllers in the system currently.
USB Devices:			List USB devices in the system currently.
Legacy USB Support	Enabled Disabled Auto	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.	

Setup Item	Options	Help Text	Comments
XHCI Hand-off	Enabled Disabled	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.	
USB Mass Storage Driver Support	Enabled Disabled	Enable/Disable USB Mass Storage Driver Support.	
Port 60/64 Emulation	Enabled Disabled	Enables I/O port 60h/64h emulation support. This should be enabled for the complete USB keyboard legacy support for non-USB aware OSes."	
<b>USB hardware delays and time-outs</b>			
USB transfer time-out	1 sec 5 sec 10 sec 20 sec	The time-out value for Control, Bulk, and Interrupt transfers.	
Device reset time-out	10sec 20sec 30 sec 40 sec	USB mass storage device Start Unit command time-out.	
Device power-up delay	Auto Manual	Maximum time the device will take before it properly reports itself to the Host Controller. 'Auto' uses default value: for a Root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor.	
<b>Mass Storage Devices</b>			
KingstonDataTraverler 2.0PMAP			

### 3.12 Chipset Screen

芯片集屏幕提供了一个访问点来配置系统代理 (SA) 配置和 PCH-IO 配置。要从主屏幕访问此屏幕，请按向右键头，直到选择芯片集屏幕。



Setup Item	Options	Help Text	Comments
<b>Chipset</b>			
System Agent (SA) Configuration		System Agent (SA) Configuration parameters.	
PCH-IO Configuration		PCH-IO Configuration parameters.	

### 3.13 System Agent (SA) Configuration Screen

系统代理 (SA) 配置屏幕允许用户查看有关图形配置和内存配置的详细信息要从主屏幕访问此屏幕, 请选择 **Chipset > System Agent (SA) Configuration**.

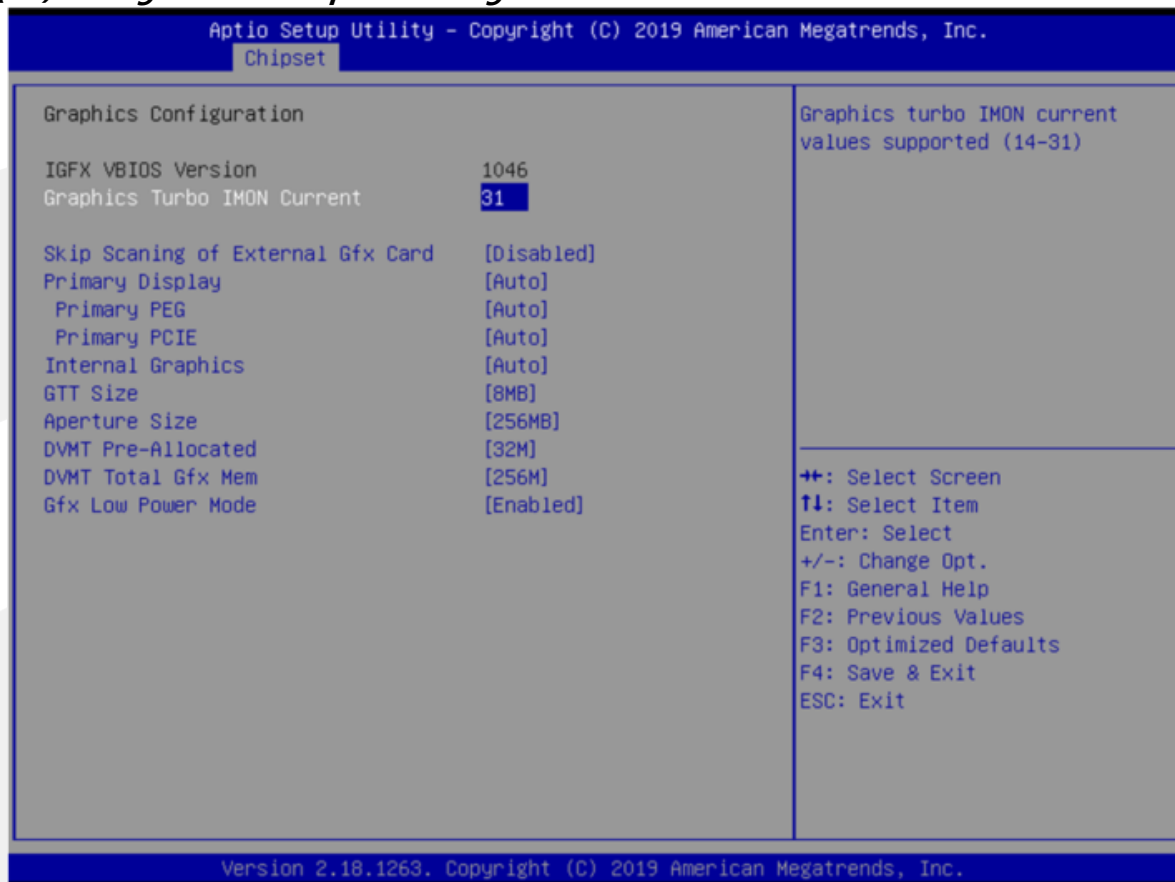


Setup Item	Options	Help Text	Comments
<b>System Agent (SA) Configuration</b>			
System Agent Bridge Name			Show System Agent Bridge Name.
SA PCIe Code Version			Show SA PCIe Code Version.
VT-d			Show supported if chipset support VT-d Technology.
VT-d	Enable Disable	VT-d capability.	
Above 4GB MMIO BIOS assignment	Enable Disable	Enable/Disable above 4GB MemoryMapped IO BIOS assignment This is disabled automatically when Aperture Size is set to 2048MB.	
Graphics Configuration		Graphics Configuration parameters.	
Memory Configuration		Memory Configuration parameters.	



### 3.14 Graphics Configuration Screen

系统代理(SA)配置屏幕允许用户查看有关图形配置的详细信息要从主屏幕访问此屏幕,请选择 **Chipset > System Agent (SA) Configuration > Graphics Configuration**.



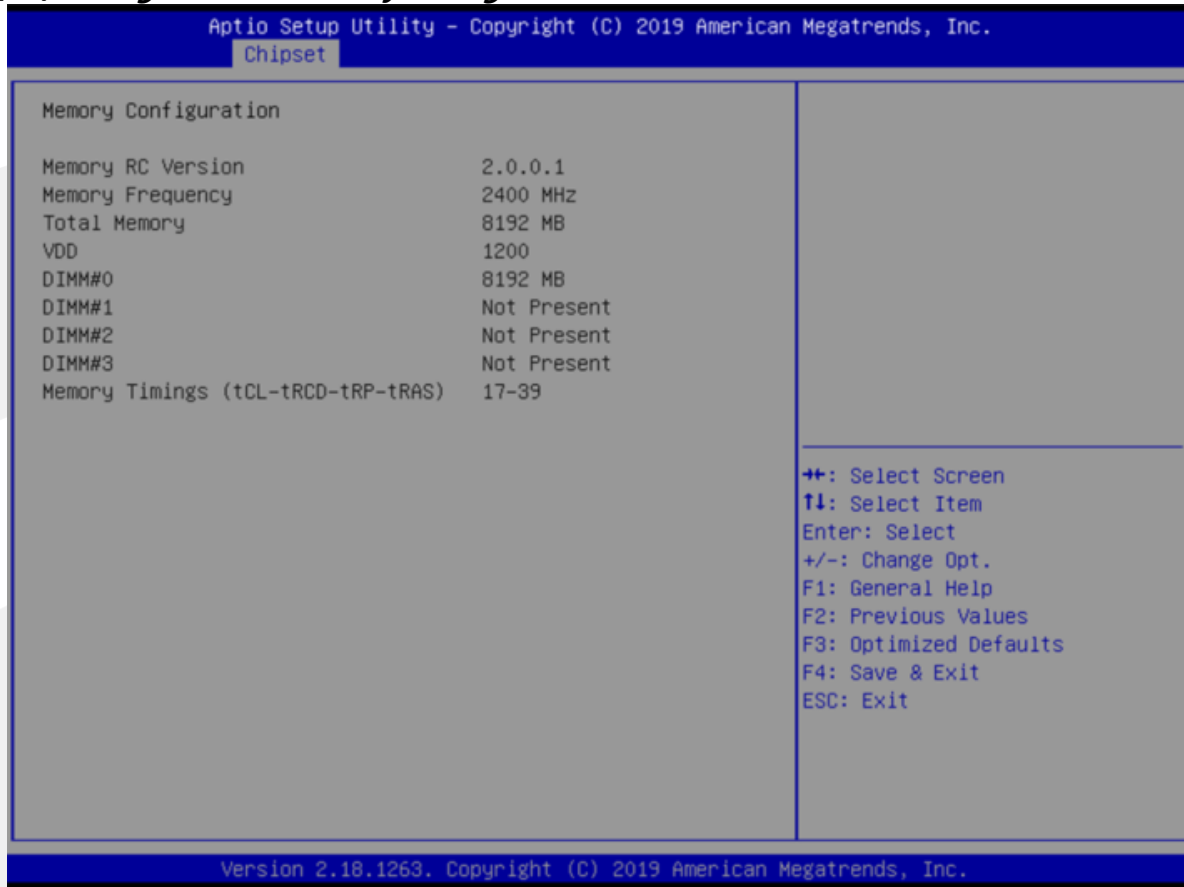
Setup Item	Options	Help Text	Comments
<b>Graphics Configuration</b>			
IGFX VBIOS Version			Show IGFX VBIOS Version
Graphics Turbo IMON Current	14-31	Graphics turbo IMON current values supported (14-31).	
Skip Scanning of External Gfx Card	Enable Disable	If Enable, it will not scan for External Gfx Card on PEG and PCH PCIE Ports.	
Primary Display	Auto IGFX PEG PCI	Select which of IGFX/PEG/PCI Graphics device should be Primary Display Or select SG for Switchable Gfx.	
Primary PEG	Auto PEG11 PEG12	Select PEG0/PEG1/PEG2/PEG3 Graphics device should be Primary PEG.	

Setup Item	Options	Help Text	Comments
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Primary PCIE	Auto PCIE1 PCI E2 ... PCIE19	Select Auto/PCIE1/PCIE2/PCIE3/PCIE4/PCI E5/PCIE6/PCIE7 of D28:F0/F1/F2/F3/F4/F5/F6/F7, PCIE8/PCIE9/PCIE10/PCIE11/PCIE12/PCIE13/PCIE14/PCIE15 of D29:F0/F1/F2/F3/F4/F5/F6/F7, PCIE16/PCIE17/PCIE18/PCIE19 of D27:F0/F1/F2/F3,Graphics device should be Primary PCIE.	
Internal Graphics	Auto Disabled Enabled	Keep IGFX enabled based on the setup options.	
GTT Size	2MB 4MB 8MB	Select the GTT Size.	
Aperture Size	128MB 256MB 512MB 1024MB 2048MB 4096MB	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.	
DVMT Pre-Allocated	32M 64M 96M 128M 160M 192M 224M 256M 288M 320M	Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.	
DVMT Total Gfx Mem	128M 256M	Select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.	
Gfx Low Power Mode	Enable Disable	This option is applicable for SFF only.	

### 3.15 Memory Configuration Screen

系统代理 (SA) 配置屏幕允许用户查看有关内存配置的详细信息要从主屏幕访问此屏幕, 请选择 **Chipset > System Agent (SA) Configuration > Memory Configuration**.



Setup Item	Options	Help Text	Comments
<b>Memory Configuration</b>			
Memory RC Version			Displays Memory RC Version.
Memory Frequency			Displays the Frequency of Memory.
Total Memory			Displays Total Memory.
VDD			Displays VDD value (mVolts).
DIMM#0			Displays Memory in the DIMM, Display "Not Present" if No memory in the DIMM.
DIMM#1			
DIMM#2			
DIMM#3			
Memory Timings (tCL-tRCD-tRP-tRAS)			Displays Memory Timings.

### 3.16 PCH-IO Configuration Screen

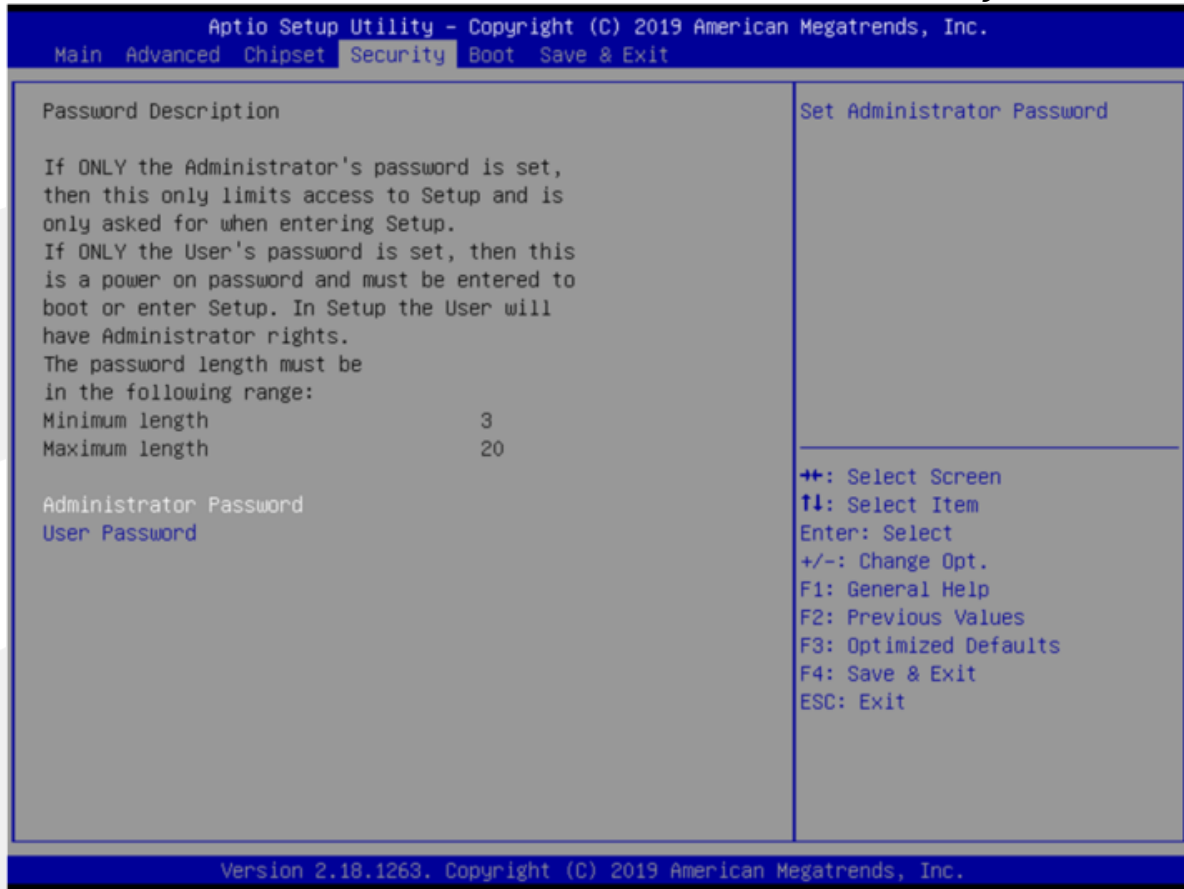
南桥屏幕允许用户设置 PCH-IO 配置。要从主屏幕访问此屏幕，请选择 **Chipset > PCH-IO Configuration**。



Setup Item	Options	Help Text	Comments
<b>PCH-IO Configuration</b>			
Intel PCH RC Version			Displays Intel PCH RC Version.
Intel PCH SKU Name			Displays Intel PCH SKU Name.
Intel PCH Rev ID			Displays Intel PCH Rev ID.
HD Audio Configuration		HD Audio Configuration parameters.	

### 3.17 Security Screen

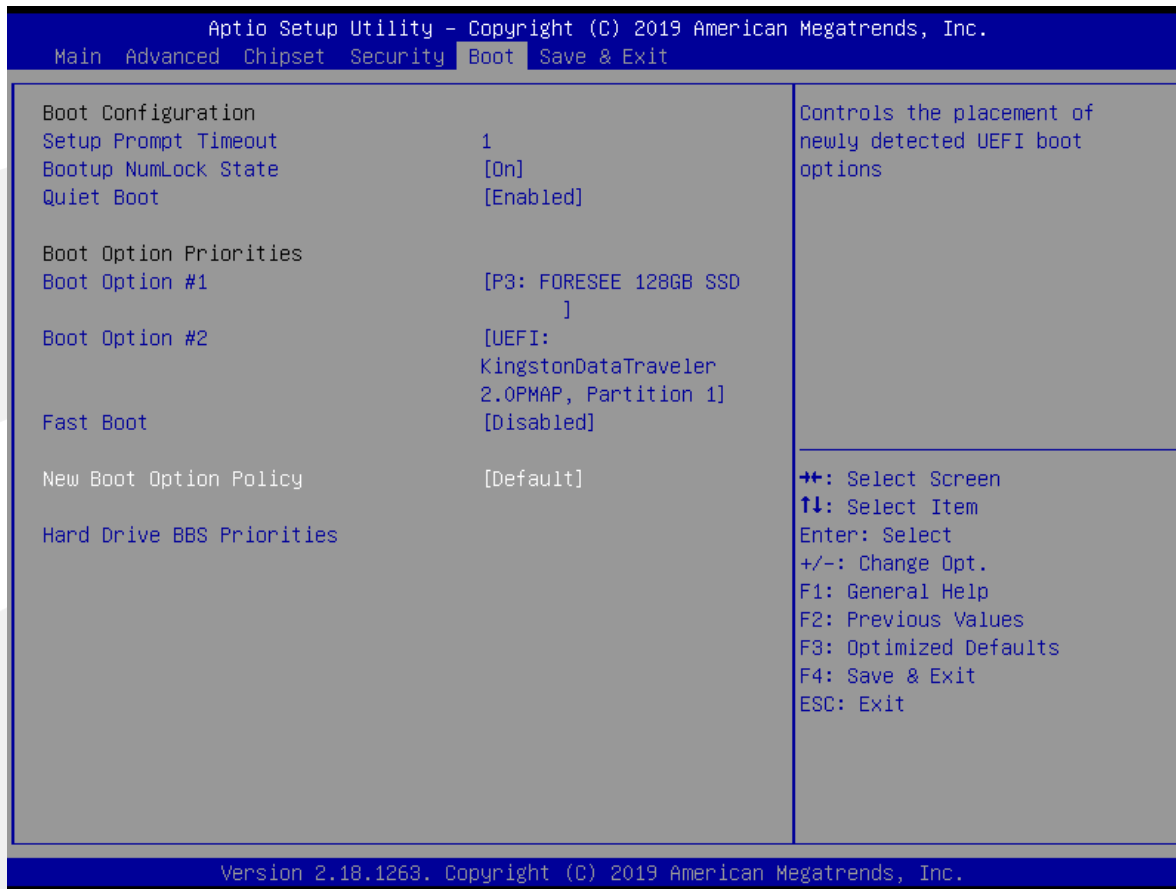
安全屏幕允许用户启用和设置用户和管理密码。要从主屏幕访问此屏幕，请选择 **Security**。



Setup Item	Options	Help Text	Comments
<b>Password Description</b>			
Administrator Password		Set Setup Administrator Password.	<i>NOTE: Password can be cleared when blank password set. 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.</i>
User Password		Set User Password.	

### 3.18 Boot Screen

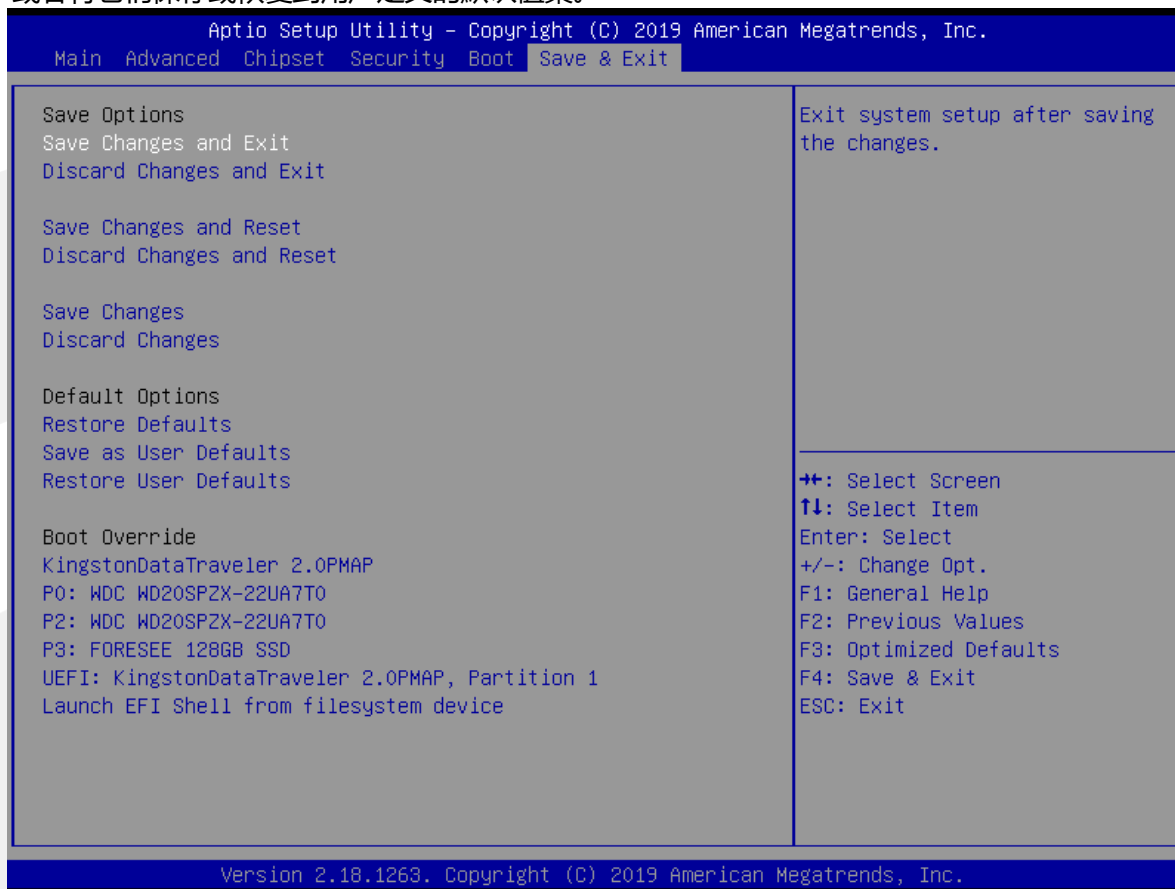
引导屏幕显示 POST 期间遇到的任何可引导介质, 并允许用户配置所需的引导设备。要从主屏幕访问此屏幕, 请选择 **Boot**.



Setup Item	Options	Help Text	Comments
<b>Boot Configuration</b>			
Setup Prompt Timeout	1-65535	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.	
Bootup NumLock State	On Off	Select the keyboard NumLock state.	
Quiet Boot	Disabled Enabled	Enables/Disables Quiet Boot option.	
<b>Boot Option Priorities</b>			
Boot Option #1		Sets the system boot order.	<i>Note: Showed When boot.</i>
Boot Option #2		Sets the system boot order.	
New Boot Option Policy	Default		
Hard Drive BBS Priorities		Set the order of the legacy devices in this group.	Set boot order in each group of the same kind, such as HDD, network.

### 3.19 Save & Exit Screen

保存和退出屏幕允许用户选择是保存还是放弃在其他屏幕上所做的配置更改。它还允许用户将服务器恢复到出厂默认值，或者将它们保存或恢复到用户定义的默认值集。



Setup Item	Options	Help Text	Comments
<b>Save Options</b>			
Save Changes and Exit		Exit system setup after saving the changes.	User is prompted for confirmation only if any of the setup fields were modified.
Discard Changes and Exit		Exit system setup without saving any changes.	
Save Changes and Reset		Reset system setup after saving the changes.	
Discard Changes and Reset		Reset system setup without saving any changes.	
Save Changes		Save Changes done so far to any of the setup options.	
Discard Changes		Discard Changes done so far to any of the setup options.	
<b>Default Options</b>			
Restore Defaults		Restore/Load Defaults values for all the setup options.	User is prompted for confirmation only if any of the setup fields were modified.
Save as User Defaults		Save the changes done so far as User Defaults.	
Restore User Defaults		Restore the User Defaults to	

		all the setup options.	
<b>Boot Override</b>			
Show Devices that can boot from system, selected it and press enter key to boot.			
Launch EFI Shell from filesystem device			Attempts to Launch EFI Shell application (Shell.efi) from one of the available file system devices.

## 第四章 Electrical Specifications



## 4.1 Input Power - General Considerations

The Compact, Basic and Extended Module Modules shall use a single main power rail with a nominal value of +12V. The Mini Module shall support a wide range power supply of 4.75V to 20.0V. In addition, the Mini Module shall be optimized for 5V operation and Module vendors should report Module power figures at 5V, 12V and 18V input voltages.

Two additional rails are specified: a +5V standby power rail and a +3V battery input to power the Module Real-time Clock (RTC) circuit in the absence of other power sources. The +5V standby rail may be left unconnected on the Carrier Board if the standby functions are not required by the application. Likewise, the +3V battery input may be left open if the application does not require the RTC to keep time in the absence of the main and standby sources. There may be Module specific concerns regarding storage of system setup parameters that may be affected by the absence of the +5V standby and / or the +3V battery.

The rationale for this power-delivery scheme is:

- Module pins are scarce. It is more pin-efficient to bring power in on a higher voltage rail.
- Single supply operation is attractive to many users.
- Lithium ion battery packs for mobile systems are most prevalent with a +14.4V output. This is well suited for the +12V main power rail.
- Contemporary chipsets have no power requirements for +5V other than to provide a reference voltage for +5V tolerant inputs. No COM Express Module pins are allocated to accept +5V except for the +5V standby pins. In the case of an ATX supply, the switched (non standby) +5V line would not be used for the COM Express Module, but it might be used elsewhere on the Carrier Board.

## 4.2 Input Power - Current Load

The Module connector pins limit the amount of power that can be brought into the COM Express Module. The limits are different for Module Pin-out Type 10 vs. Pin-out Types 6 and 7, based on the number of 12V power pins as Pin-out Type 10 has fewer pins available.

**Table 4.1: Input Power - Pin-Out Type 10 Modules (Single Connector, 220 pins)**

Power Rail	Module Pin Current Capability (Amps)	Nominal Input (Volts)	Input Range (Volts)	Derated Input (Volts)	Max Input Ripple (mV)	Max Module Input Power (w. derated input) (Watts)	Assumed Conversion Efficiency	Max Load Power (Watts)
VCC_12V	6	12	11.4 - 12.6	11.4	+/-100	68	85%	58
Wide input (Mini)	6		4.75 – 20.0	4.75	+/-100	28		
VCC_5V_SBY	2	5	4.75 - 5.25	4.75	+/-50	9		
VCC_RTC	0.5	3	2.0 - 3.3		+/-20			

**Table 4.2: Input Power - Pin-Out Type 6/7 Modules (Dual Connector, 440 pins)**

Power Rail	Module Pin Current Capability (Amps)	Nominal Input (Volts)	Input Range (Volts)	Derated Input (Volts)	Max Input Ripple (mV)	Max Module Input Power (w. derated input) (Watts)	Assumed Conversion Efficiency	Max Load Power (Watts)
VCC_12V	12	12	11.4 - 12.6	11.4	+/-100	137	85%	116
VCC_5V_SBY	2	5	4.75 - 5.25	4.75	+/-50	9		
VCC_RTC	0.5	3	2.0 - 3.3		+/-20			

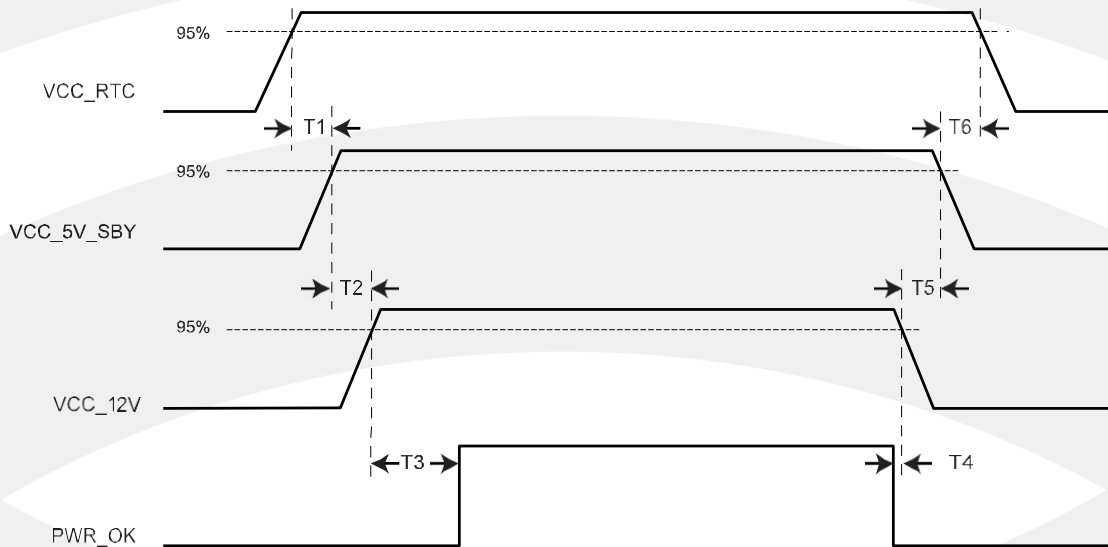
The ripple voltage, if present, must not cause the input voltage range to be exceeded.

### 4.3 Input Power - Sequencing

COM Express input power sequencing requirements are as follows:

- VCC\_RTC shall come up at the same time or before VCC\_5V\_SBY comes up(if use)
  - VCC\_5V\_SBY shall come up at the same time or before VCC\_12V comes up(if use)
  - PWR\_OK shall be active at the same time or after VCC\_12V comes up(if use)
  - PWR\_OK shall be inactive at the same time or before VCC\_12V goes down(if use)
  - VCC\_12V shall go down at the same time or before VCC\_5V\_SBY goes down
  - VCC\_5V\_SBY shall go down at the same time or before VCC\_RTC goes down(if use)
- Wide input (Mini) shall follow the power sequencing of the VCC\_12V

**Figure 4-1: Power Sequencing**



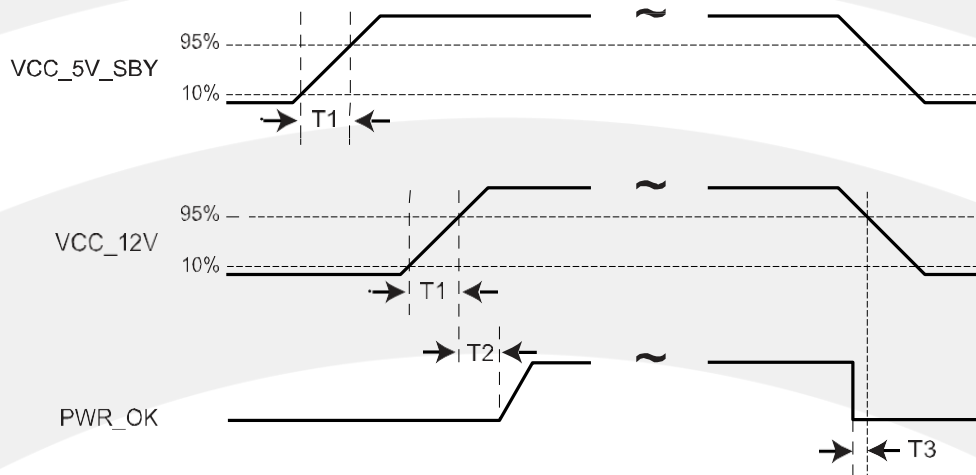
**Table 4.3: Power Sequencing**

T1	VCC_RTC rise to VCC_5V_SBY rise	$\geq 0$ ms
T2	VCC_5V_SBY rise to VCC_12V rise	$\geq 0$ ms
T3	VCC_12V rise to PWROK rise	$\geq 0$ ms
T4	PWR_OK fall to VCC_12V fall	$\geq 0$ ms
T5	VCC_12V fall to VCC_5V_SBY fall	$\geq 0$ ms
T6	VCC_5V_SBY fall to VCC_RTC fall	$\geq 0$ ms

## 4.4 Input Power - Rise Time

The input voltages to the COM Express Module VCC\_12V, wide input (Mini) and VCC\_5V\_SBY if used shall rise from  $\leq 10\%$  of nominal to within the regulation ranges within 0.1 ms to 20 ms ( $0.1 \text{ ms} \leq T_2 \leq 20 \text{ ms}$ ). There must be a smooth and continuous ramp of each DC output voltage from 10% to 90% of its final set point within the regulation band. The smooth turn-on requires that, during the 10% to 90% portion of the rise time, the slope of the turn-on waveform must be positive and have a value of between 0 V/ms and  $[\text{Vout, nominal} / 0.1] \text{ V/ms}$ . Also, for any 5ms segment of the 10% to 90% rise time waveform, a straight line drawn between the end points of the waveform segment must have a slope  $\geq [\text{Vout, nominal} / 20] \text{ V/ms}$ .

**Figure 4-2: Input Power Rise Time**



- $T1, \text{min} = 0,1 \text{ ms}$
- $T1, \text{max} = 20 \text{ ms}$
- $T2 \geq 0 \text{ ms}$
- $T3 \geq 0 \text{ ms}$

The values chosen were selected to be compatible and enable use of ATX specification R2.2.

## 4.5 Signal Integrity Requirements

The signal groups listed in the following table have signal-integrity concerns that should be accounted for in Module and Carrier Board designs. A general description is shown in the table for reference only. The designer should consult the relevant interface specification documents for complete information.

**Table 4.4: Signal Integrity Requirements**

Signal Group	General Description	Source Spec Reference
Gigabit Ethernet	Differential pairs	IEEE 802.3 Specification
LVDS	100Ω edge coupled differential pairs	National Semiconductor LVDS web site
PCI and LPC clocks	50Ω single ended ground-referenced	
PCI Express	Differential pairs	PCI SIG - PCI Express Specification
PCI Express clocks	100Ω edge couple differential pair, ground-referenced	
Serial ATA	Differential pairs	SATA Specification
USB	Differential pairs	USB 2.0 Specification
10GBASE-KR	Differential pairs	IEEE 802.3 Specification
USB SS	Differential pairs	USB 3.0 Specification
SPI	50Ω single ended ground-referenced	
eSPI	50Ω single ended ground-referenced	

## 附一：术语表

### ACPI

高级配置和电源管理。ACPI 规范允许操作系统控制计算机及其附加设备的大部份电能。

### BIOS

基本输入/输出系统。是在 PC 中包含所有的输入/输出控制代码界面的软件。它在系统启动时进行硬件检测，开始操作系统的运作，在操作系统和硬件之间提供一个界面。BIOS 是存储在一个只读存储器芯片内。

### BUS

总线。在计算机系统中，不同部件之间交换数据的通道，是一组硬件线路。我们所指的 BUS 通常是 CPU 和主内存元件内部的局部线路。

### Chipset

芯片组。是为执行一个或多个相关功能而设计的集成芯片。我们指的是由南桥和北桥组成的系统级芯片组，他决定了主板的架构和主要功能。

### CMOS

互补金属-氧化物半导体。是一种被广泛应用的半导体类型。它具有高速、低功耗的特点。我们指的 CMOS 是在主板上的 CMOS RAM 中预留的一部份空间，用来保存日期、时间、系统信息和系统参数设定信息等。

### COM

串口。一种通用的串行通信接口，一般采用标准 DB9 公头接口连接方式。

### DIMM

双列直插式内存模块。是一个带有内存芯片组的小电路板。提供 64bit 的内存总线宽度。

### DRAM

动态随机存取存储器。是一个普通计算机的通用内存类型。通常用一个晶体管和一个电容来存储一个位。随着技术的发展，DRAM 的类型和规格已经在计算机应用中变得越来越多样化。例如现在常用的就有 SDRAM、DDR SDRAM 和 RDRAM。

### I2C

Inter-Integrated Circuit 总线是一种由 PHILIPS 公司开发的两线式串行总线，用于连接微控制器及其外围设备。

### LAN

局域网络接口。一个小区域内相互关联的计算机组成的一个计算机网络，一般是在一个企事业单位或一栋建筑物。局域网一般由服务器、工作站、一些通信链接组成，一个终端可以通过电线访问数据和设备的任何地方，许多用户可以共享昂贵的设备和资源。

### LED

发光二极管，一种半导体设备，当电流流过时它会被点亮，通常用来把信息非常直观的进行表示出来，例如表示电源已

经导通或硬盘驱动器正在工作等。

## PnP

即插即用。允许 PC 对外接设备进行自动配置，不用用户手动操作系统就可以自己工作的一种规格。为实现这个特点，BIOS 支持 PnP 和一个 PnP 扩展卡都是必需的。

## POST

上电自检。在启动系统期间，BIOS 会对系统执行一个连续的检测操作，包括检测 RAM，键盘，硬盘驱动器等，看它们是否正确连接和是否正常工作。

## PS/2

由 IBM 发展的一种键盘和鼠标连接的接口规范。PS/2 是一个仅有 6PIN 的 DIN 接口，也可以用以连接其他的设备，比如调制解调器。

## USB

通用串行总线。一种适合低速外围设备的硬件接口，一般用来连接键盘、鼠标等。一台 PC 最多可以连接 127 个 USB 设备，提供一个 12Mbit/s 的传输带宽；USB 支持热插拔和多数数据流功能即在系统工作时可以插入 USB 设备，系统可以自动识别并让插入的设备正常。

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