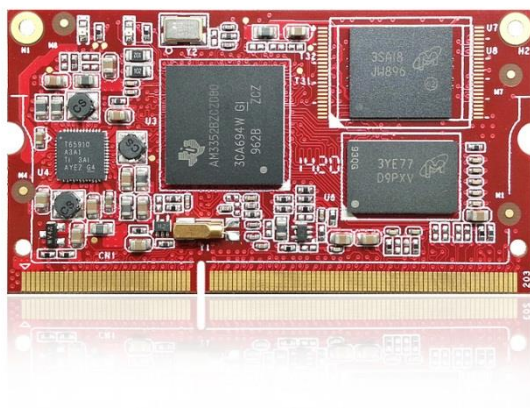


SBC335x-B1A 快速操作指南 v1.0

基于 TI AM335x 核心平台



免责声明



本文档是作者对 GOEMBED 产品进行实际操作和测试后，自我操作总结。

由于作者水平有限，建议读者具备一定的计算机基础和基本软件操作能力，

如在操作过程中，遇到疑问和错误，欢迎加 QQ 群(462424566)交流和建议，

或发厂商技术支持邮箱进行咨询: support@goembed.com

操作环境配套说明:

硬件	详细介绍链接
SBC3358-B1A 单板机	
串口调试器: COM10U	 <p>Audio cable x1</p> <p>Cable x1</p> <p>USB to RS232/TTL Converter Module</p> <p>FTDI FT232RL</p>
软件	详细介绍链接
Ubuntu 版本: 12.04 LTS (64bit)	http://www.ubuntu.org.cn/download/desktop
Linux 版本: 3.11.0-15-generic	
gcc 版本: 4.6.3	

SBC3358-B1A 单板机软件特性

1、BootLoader 版本: u-boot-2013.01.01

2、内核版本: Linux-3.2.0

- LCD 驱动
- LCD 背光驱动
- 电阻式触摸屏驱动
- VGA 驱动
- HSMMC/SD/MMC/SDIO 驱动
- IIC 驱动
- SPI 驱动
- 音频驱动
- DMA 驱动
- RTC 实时时钟驱动
- 电源管理
- USB HOST/DEVICE 驱动
- USB OTG 驱动
- DEBUG 驱动
- 以太网驱动
- TF 卡驱动
- CAN 驱动
- 串口驱动
- WG 驱动

3、交叉工具链: arm-Linux-gnueabi-hf-gcc

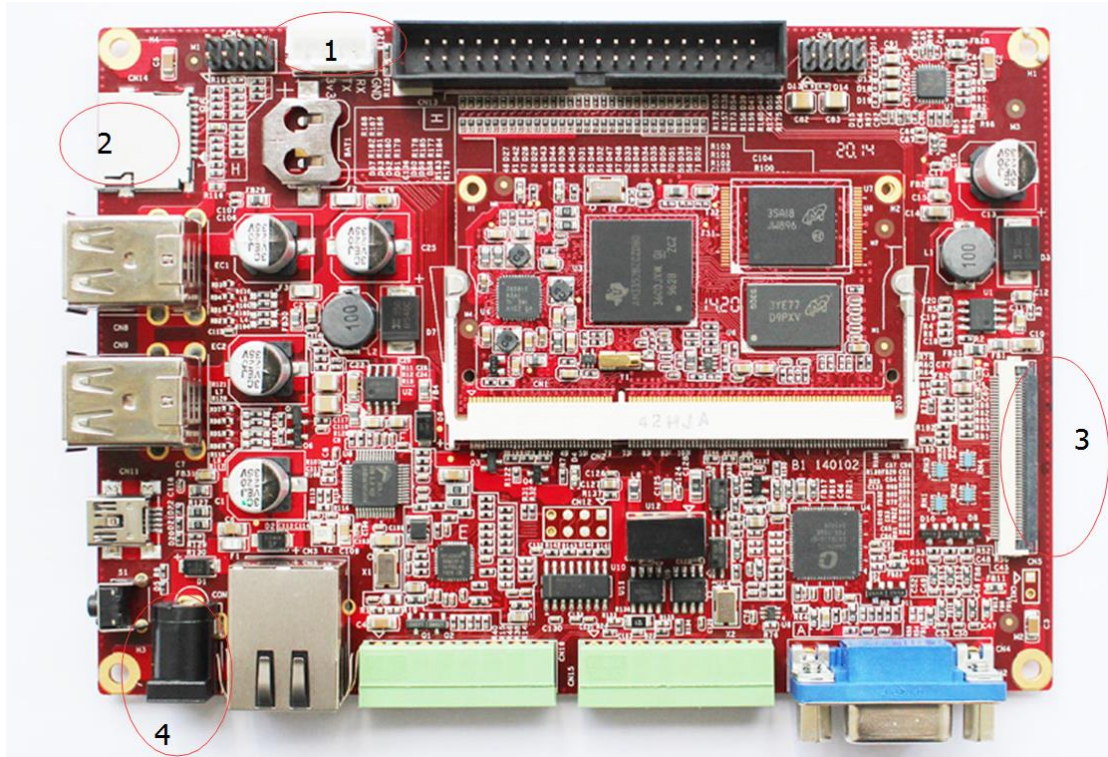
SBC3358-B1A 单板机资源分配特性

1、eMMC 空间分配

Partition	Size	Description
BootLoader	200MB	FAT32 格式分区
rootfs	约 1500MB	EXT3 格式分区

一、准备工作

1、硬件连接。

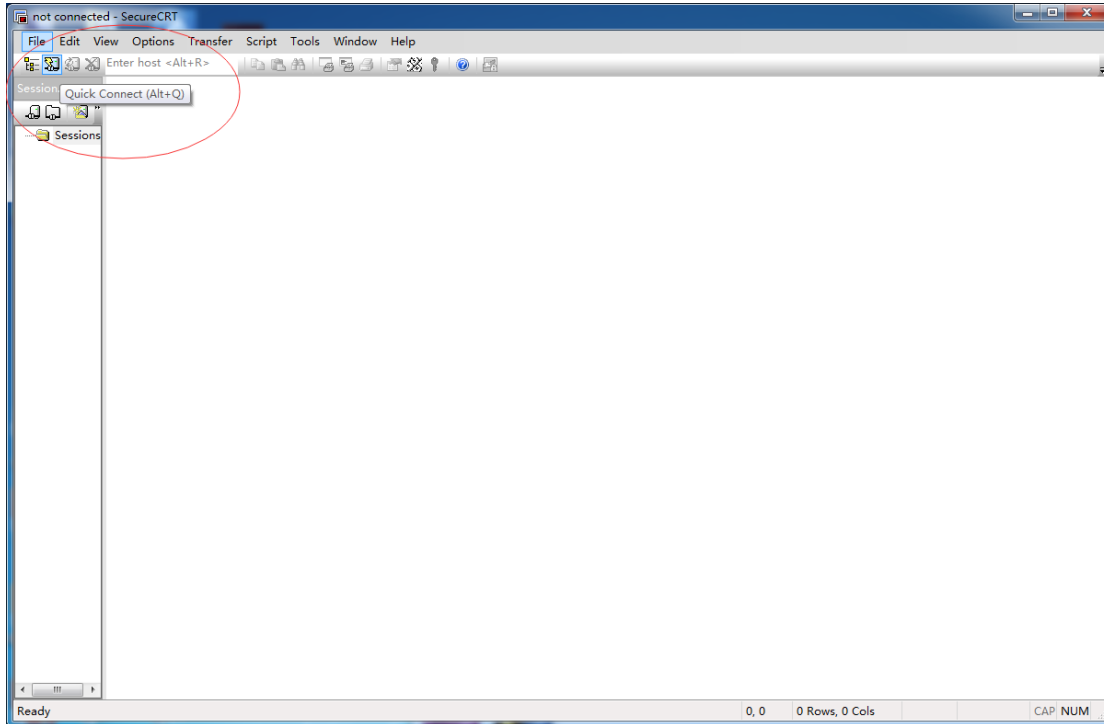


编号	描述	编号	描述
1	串口接口（TTL 电平）	3	LCD 液晶屏接口
2	TF 卡接口	4	连接电源适配器（12V）

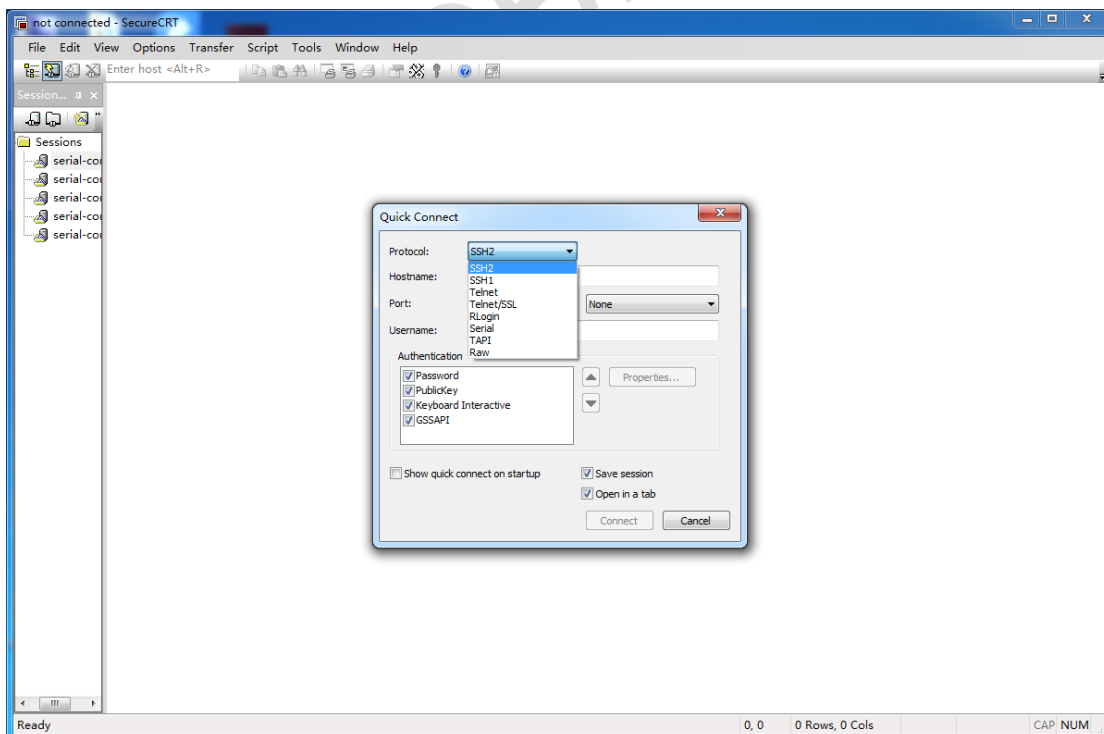
- (1)、编号 1 处接串口线，上图从左往右插针依次为 3V3，TX,RX,GND。
- (2)、编号 2 处接 TF 卡，如果开发板内部 eMMC 已烧写系统可不接。
- (3)、编号 3 处接 LCD 显示屏，不需要可不接。
- (4)、编号 4 处接 12v 直流电源适配器。

2、配置 SecureCRT

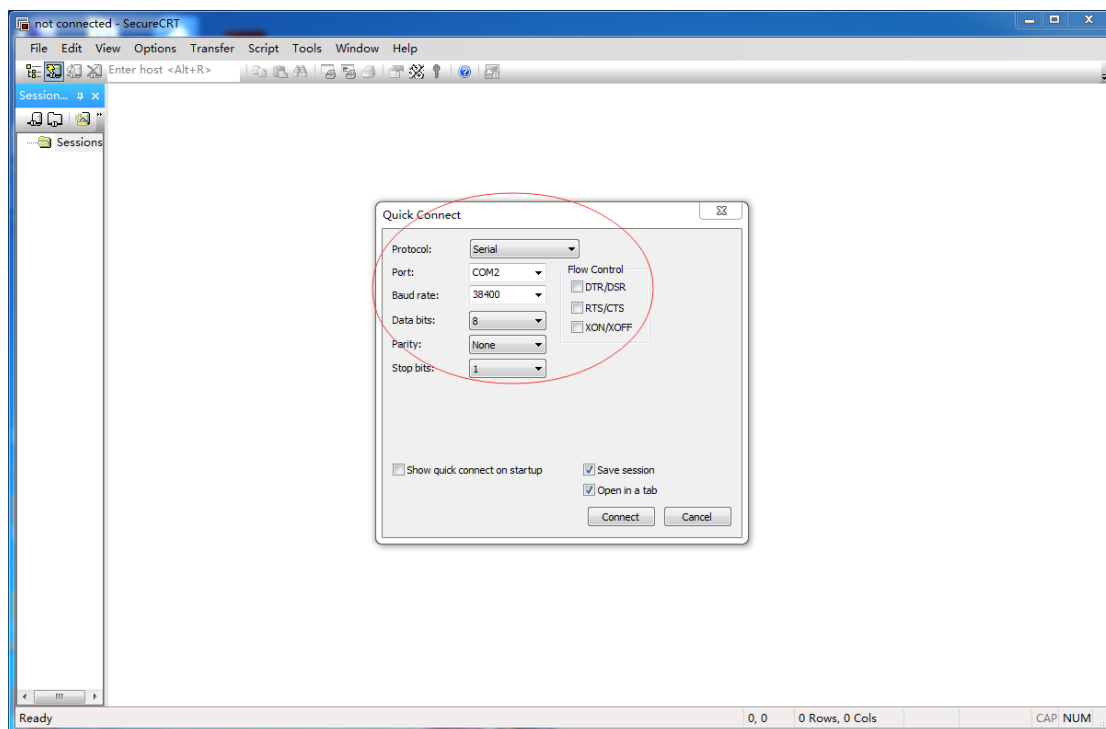
- (1)、打开 SecureCRT 软件。
- (2)、点击 Quick Connect 按钮，如图。



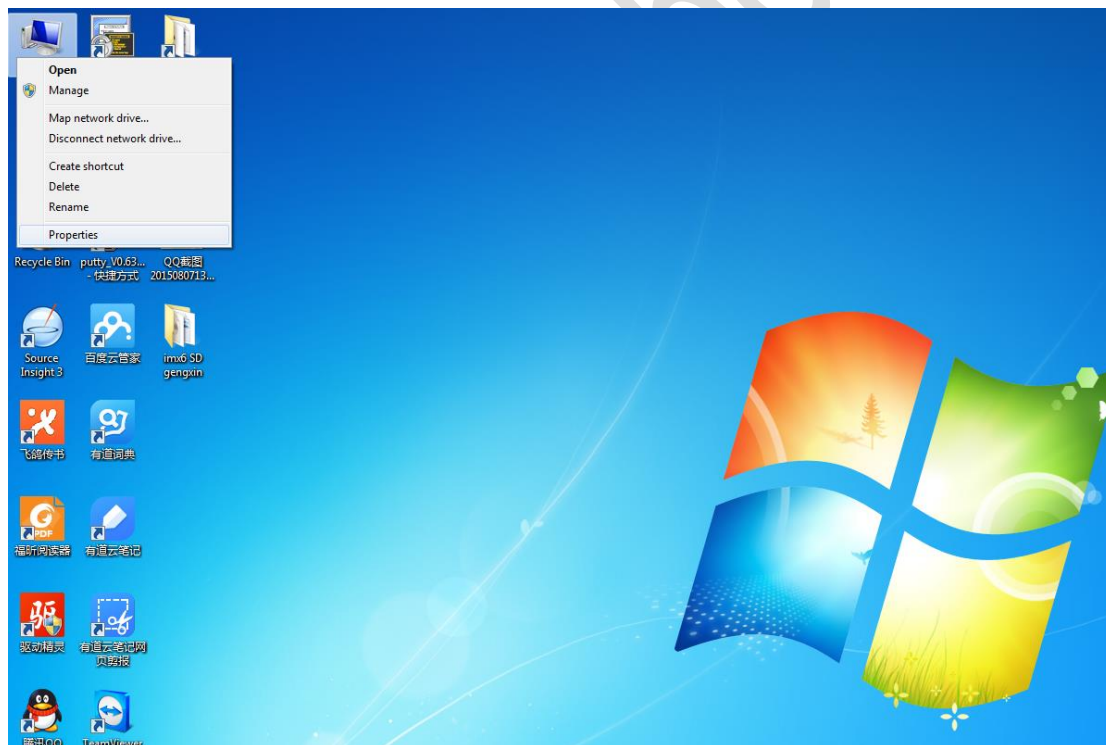
- (3)、点击 SSH2 出现下拉菜单



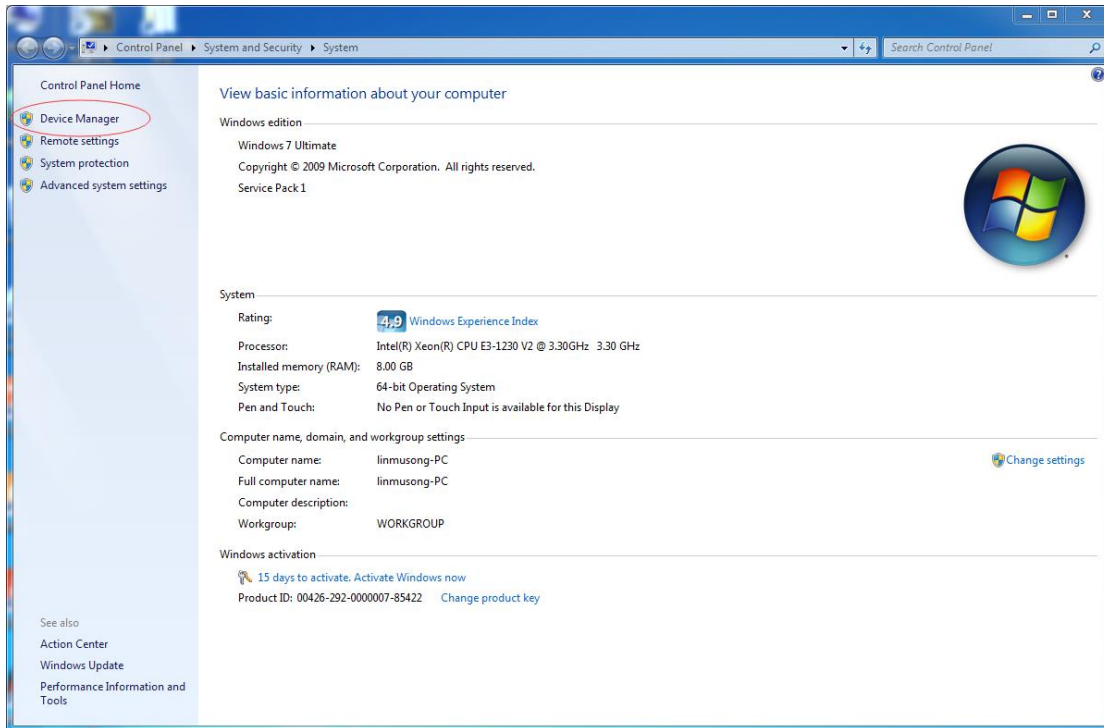
- (4)、选中 Serial



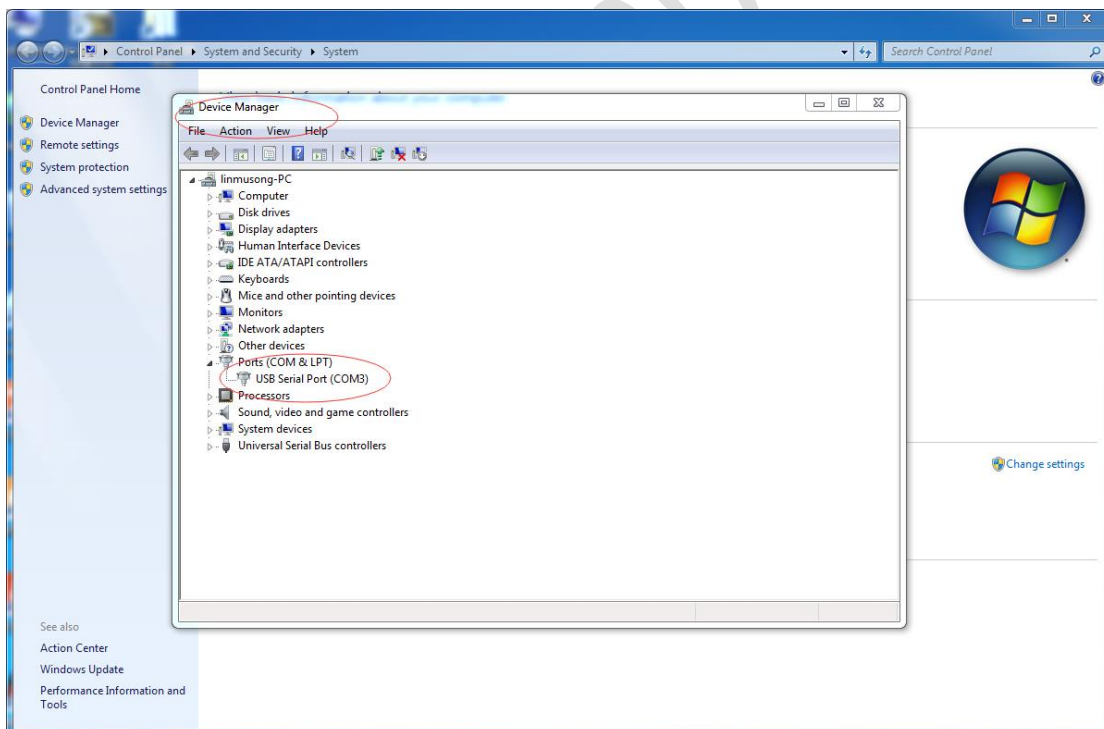
(5)、右键，我的电脑，管理。



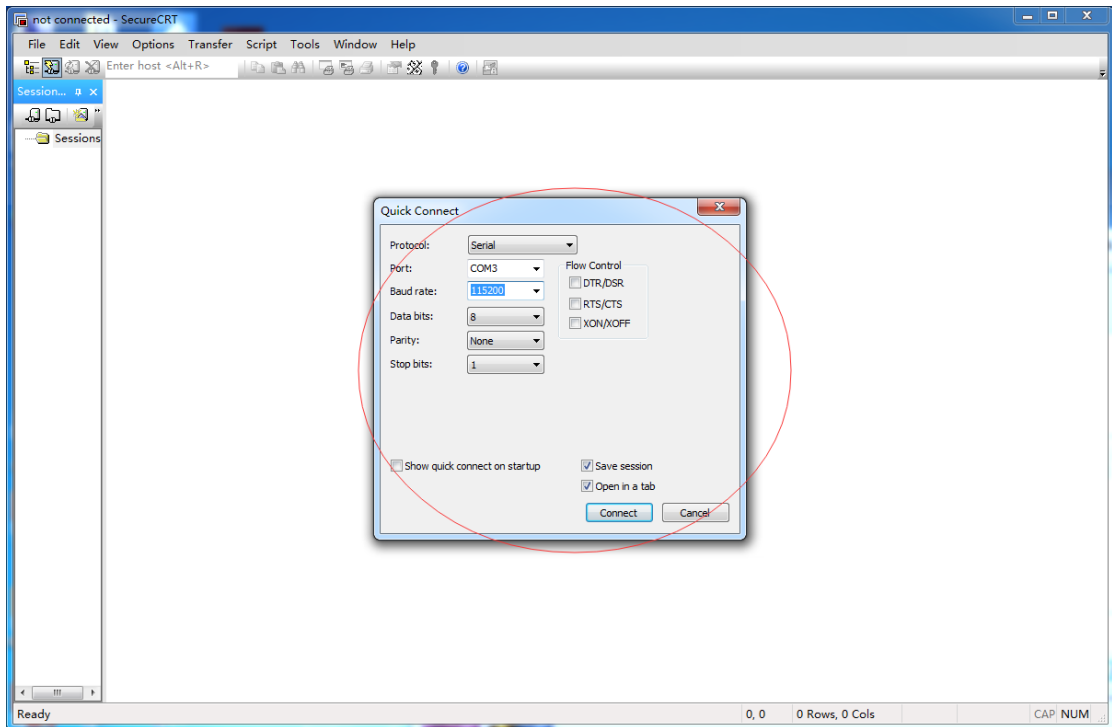
(6)、选择“设备管理器”。



(7) 点开端口，查看到自己的 USB 串口号为 COM3（不同的电脑不一样，根据实际情况来）

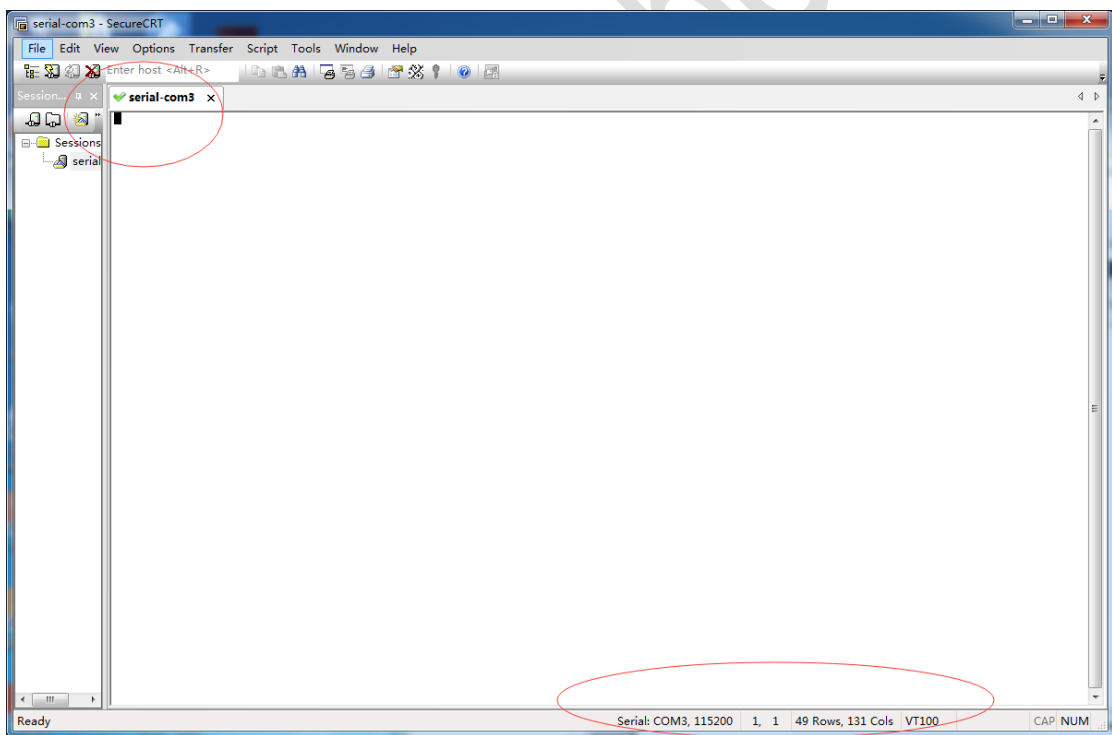


(7)、选择 SecureCRT 的 port 号为 COM3，Baud rate 为 115200，Data bits 为 8，Parity 为 None，Stop bits 为 1。



(8)、点

击 Connect 后有黑色光标在闪，同时右下角显示当前配置信息。



二、启动操作系统

注：SBC3358-B1A 默认先从 eMMC 启动，如果 eMMC 中没有镜像，则会从 TF 卡启动，如果 TF 卡中也没有镜像，则串口终端会一直打印“CCCC”。当 eMMC 中有镜像且 TF 卡

也有镜像时，如果这时想从 TF 卡启动，只要先将板子上的 CN17 引脚短接再上电即可从 TF 卡启动。

1、eMMC 启动系统

- (1) 接入串口模块，接上 7 寸 LCD 液晶屏，然后接上 12V 电源适配器。
- (2) 打开串口终端。
- (3) 打开开发板开关（前提是 eMMC 中已烧好系统）则可看到打印信息。出现如下界面，输入 root 可操作 Linux 系统。

```

serial-com3 - SecureCRT
File Edit View Options Transfer Script Tools Window Help
Enter host <Alt+R>
Sessions
serial-com3
U-Boot SPL 2013.01.01-g86c9b4c-dirty (Jul 12 2014 - 06:17:47)
OMAP SD/MMC: 0
mmc_send_cmd: timeout: No status update
reading u-boot.img
reading u-boot.img

U-Boot 2013.01.01-g86c9b4c-dirty (Jul 12 2014 - 06:17:47)

I2C: ready
DRAM: 512 MiB
WARNING: Caches not enabled
NAND: No NAND device found!!!
0 MiB
MMC: OMAP SD/MMC: 0, OMAP SD/MMC: 1
*** warning - readenv() failed, using default environment
Net: <ethaddr> not set. Validating first E-fuse MAC
PHY reset timed out
cpsw
Hit any key to stop autoboot: 0
mmc_send_cmd: timeout: No status update
Card did not respond to voltage select!
mmc0(part 0) is current device
mmc_send_cmd: timeout: No status update
Card did not respond to voltage select!
mmc_send_cmd: timeout: No status update
mmc1(part 0) is current device
SD/MMC found on device 1
reading uEnv.txt
18 bytes read in 4 ms (3.9 KiB/s)
Loaded environment from uEnv.txt
Importing environment from mmc ...
reading uImage
3199520 bytes read in 339 ms (9 MiB/s)
Booting from mmc ...
## Booting kernel from Legacy Image at 80007fc0 ...
Image Name: Linux-3.2.0+
Image Type: ARM Linux Kernel Image (uncompressed)
Data Size: 3199456 Bytes = 3.1 MiB
Load Address: 80008000
Entry Point: 80008000
verifying checksum ... OK
XIP Kernel Image ... OK
OK
Starting kernel ...

Ready
Serial: COM3, 115200 49, 15 49 Rows, 132 Cols VT100 CAP NUM

```

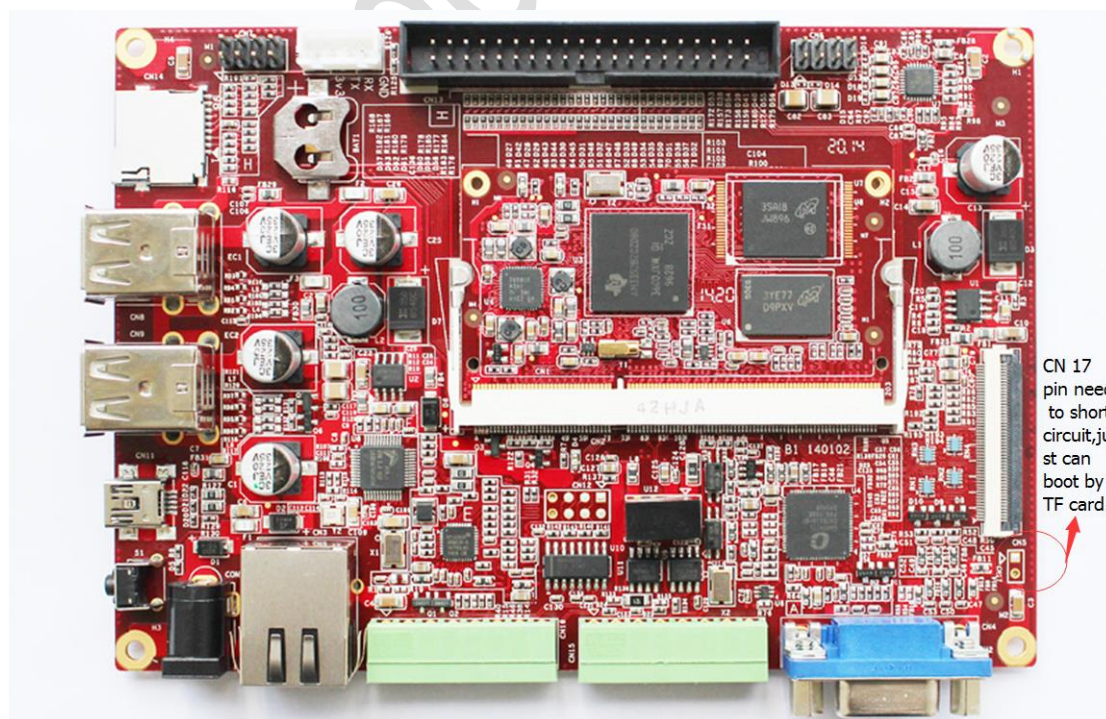
```

serial-com3 - SecureCRT
File Edit View Options Transfer Script Tools Window Help
Enter host <Alt+R>
Sessions
serial-com3
1.308441 can: broadcast manager protocol (rev 20090105 t)
1.314361 Registering the dns_resolver key type
1.319366 VFP support V0.3: Implementor 41 architecture 3 part 30 variant c rev 3
1.327362 ThumbEE CPU extension supported.
1.331878 mux: Failed to setup hmod to irq -22
1.337341 Power Management for AM335x family
1.342193 Trying to load am335x-pm-firmware.bin (60 secs timeout)
1.348876 Copied the M3 firmware to UMEM
1.354675 usb 1-1: New USB device found, idVendor=1a40, idProduct=0101
1.361694 usb 1-1: New USB device strings: Mfr=0, Product=1, SerialNumber=0
1.369140 usb 1-1: Product: USB 2.0 hub [HTT]
1.377960 clock: disabling unused clocks to save power
1.385437 Detected MACID=d0:ff:50:14:34:8d
1.392181 hub 1-1:1.0: USB hub found
1.396301 omap_rtc omap_rtc: setting system clock to 2000-01-01 02:01:22 UTC (946692082)
1.405334 hub 1-1:1.0: 4 ports detected
1.410888 waiting for root device /dev/mmcblk0p2...
1.454437 mmc1: new high speed MMC card at address 0001
1.460784 mmcblk0: mmc1:0001 MMC02G 1.78 GiB
1.465606 mmcblk0boot0: mmc1:0001 MMC02G partition 1 1.00 MiB
1.471923 mmcblk0boot1: mmc1:0001 MMC02G partition 2 1.00 MiB
1.480438 mmcblk0: p1 p2
1.485870 mmcblk0boot1: unknown partition table
1.492797 mmcblk0boot0: unknown partition table
1.948120 kjournald starting. Commit interval 5 seconds
1.956542 EXT3-fs (mmcblk0p2): using internal journal
1.962036 EXT3-fs (mmcblk0p2): recovery complete
1.968383 EXT3-fs (mmcblk0p2): mounted filesystem with ordered data mode
1.975616 VFS: Mounted root (ext3 filesystem) on device 179:2.
1.985778 devtmpfs: mounted
1.989318 Freeing init memory: 240k
Starting logging: ok
Populating /dev using udev: [ 2.303375] udevd[645]: starting version 182
done
initializing random number generator... done.
Starting system message bus: Unknown group "lp" in message bus configuration file
done
Starting network...
4.175415 net eth0: CPSW phy found : id is : 0x4dd072
4.181732 PHY 0:06 not found
udhcpc (v1.21.0) started
Sending discover...
Sending discover...
Sending discover...
No lease, failing
Starting sshd: OK
Welcome to cm335x
cm335x login:
Ready
Serial: COM3, 115200 49, 15 49 Rows, 132 Cols VT100 CAP NUM

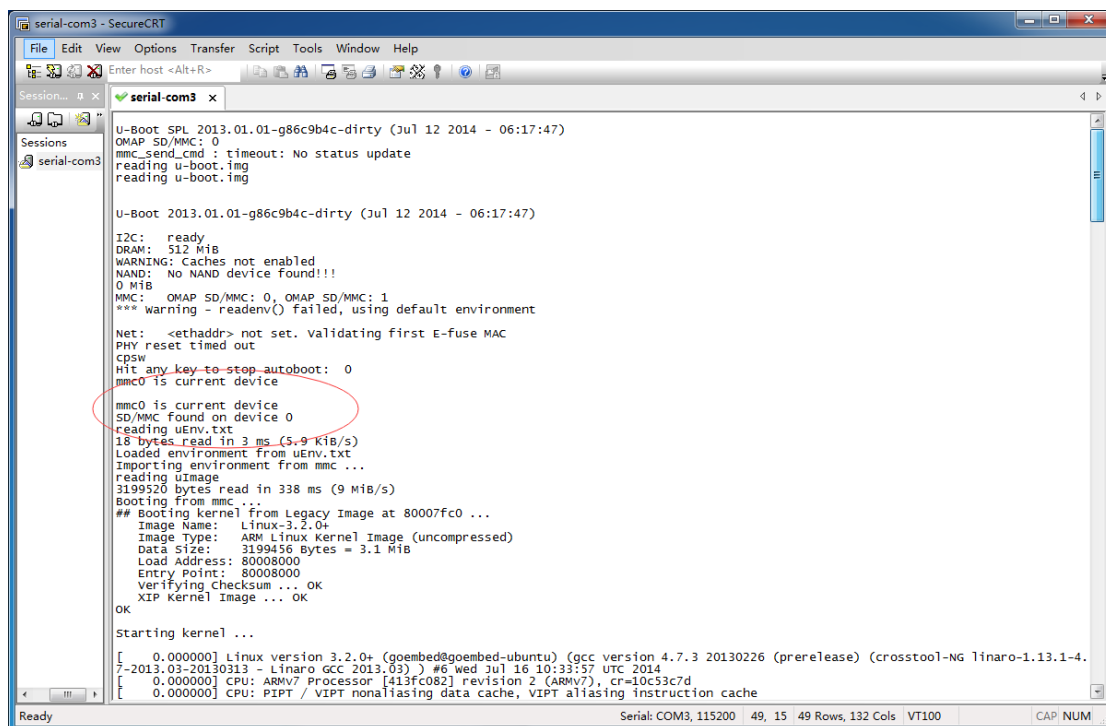
```

2、TF 启动系统

- (1) 将制作好 Linux 系统的 TF 卡插入卡槽。
- (2) 接入串口模块，接上 7 寸 LCD 液晶屏。如果 eMMC 中有系统但又不想从 eMMC 启动的话则短接 CN17 可改从 TF 卡启动（如果 eMMC 无系统则自动从 TF 卡启动），如下图所示



(3) 终端可看到如下信息。输入 root 可操作 Linux 系统。



```

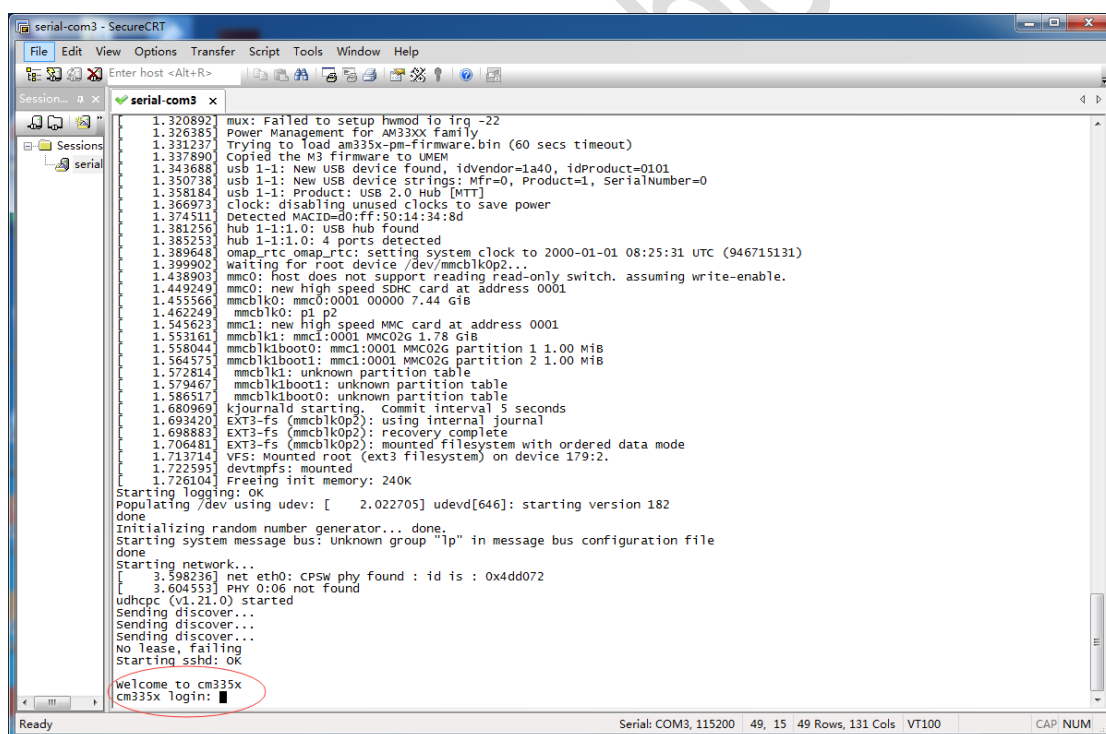
serial-com3 - SecureCRT
File Edit View Options Transfer Script Tools Window Help
Enter host <Alt+R>
Sessions
serial-com3
U-Boot SPL 2013.01.01-g86c9b4c-dirty (Jul 12 2014 - 06:17:47)
OMAP SD/MMC: 0
mmc_send_cmd : timeout: No status update
reading u-boot.img
reading u-boot.img

U-Boot 2013.01.01-g86c9b4c-dirty (Jul 12 2014 - 06:17:47)

I2C: ready
DRAM: 512 MiB
WARNING: Caches not enabled
NAND: No NAND device found!!!
0 MiB
MMC: OMAP SD/MMC: 0, OMAP SD/MMC: 1
*** warning - readenv() failed, using default environment
Net: <ethaddr> not set. Validating first E-fuse MAC
PHY reset timed out
cpsw
Hit any key to stop autoboot: 0
mmc0 is current device
mmc0 is current device
SD/MMC found on device 0
reading uEnv.txt
18 bytes read in 3 ms (5.9 KiB/s)
Loaded environment from uEnv.txt
Importing environment from mmc...
reading uImage
3199520 bytes read in 338 ms (9 MiB/s)
Booting from mmc...
## Booting kernel from Legacy Image at 80007fc0 ...
Image Name: Linux-3.2.0+
Image Type: ARM Linux Kernel Image (uncompressed)
Data Size: 3199456 Bytes = 3.1 MiB
Load Address: 80008000
Entry Point: 80008000
Verifying Checksum ... OK
XIP Kernel Image ... OK

Starting kernel ...

[ 0.000000] Linux version 3.2.0+ (goembed@goembed-ubuntu) (gcc version 4.7.3 20130226 (prerelease) (crosstool-NG linaro-1.13.1-4.7-2013.03-20130313 - Linaro GCC 2013.03) ) #6 wed Jul 16 10:33:57 UTC 2014
[ 0.000000] CPU: ARMv7 Processor [413fc082] revision 2 (ARMv7), cr=10c53c7d
[ 0.000000] CPU: PIPT / VIPT nonaliasing data cache, VIPT aliasing instruction cache
  
```



```

serial-com3 - SecureCRT
File Edit View Options Transfer Script Tools Window Help
Enter host <Alt+R>
Sessions
serial-com3
1.320892] mux: Failed to setup hwmod to irq -22
1.326385] Power Management for AM33XX family
1.331237] Trying to load am335x-pm-firmware.bin (60 secs timeout)
1.337890] Copied the W3 firmware to UMEM
1.343688] usb 1-1: New USB device found, idVendor=1a40, idProduct=0101
1.350738] usb 1-1: New USB device strings: Mfr=0, Product=1, SerialNumber=0
1.358184] usb 1-1: Product: USB 2.0 Hub [WTT]
1.369973] clock: disabling unused clocks to save power
1.374511] Detected MACID=00:ff:50:14:34:8d
1.381256] hub 1-1:1.0: USB hub found
1.385253] hub 1-1:1.0: 4 ports detected
1.389648] omap_rtc omap_rtc: setting system clock to 2000-01-01 08:25:31 UTC (946715131)
1.399902] waiting for root device /dev/mmcblk0p2...
1.438903] mmc0: host does not support reading read-only switch. assuming write-enable.
1.449249] mmc0: new high speed SDHC card at address 0001
1.453566] mmcblk0: mmc0:0001 00000 7.44 GiB
1.462249] mmcblk0: p1 p2
1.545623] mmc1: new high speed MMC card at address 0001
1.553164] mmcblk1: mmc1:0001 MMC02G 1.78 GiB
1.558044] mmcblk1boot0: mmc1:0001 MMC02G partition 1 1.00 MiB
1.564575] mmcblk1boot1: mmc1:0001 MMC02G partition 2 1.00 MiB
1.572814] mmcblk1: unknown partition table
1.579467] mmcblk1boot1: unknown partition table
1.586577] mmcblk1boot0: unknown partition table
1.680969] kjournald starting. Commit interval 5 seconds
1.693420] EXT3-fs (mmcblk0p2): using internal journal
1.698883] EXT3-fs (mmcblk0p2): recovery complete
1.706481] EXT3-fs (mmcblk0p2): mounted filesystem with ordered data mode
1.713714] VFS: Mounted root (ext3 filesystem) on device 179:2.
1.722595] devtmpfs: mounted
1.725104] Freeing init memory: 240K
Starting logging: OK
Populating /dev using udev: [ 2.022705] udevd[646]: starting version 182
done
Initializing random number generator... done.
Starting system message bus: Unknown group "lp" in message bus configuration file
done
Starting network...
[ 3.598236] net eth0: cpsw phy found : id is : 0x4dd072
[ 3.604553] PHY 0:06 not found
udhcpc (v1.21.0) started
Sending discover...
Sending discover...
Sending discover...
No lease, failing
Starting sshd: OK

Welcome to cm335x
cm335x login: █
  
```

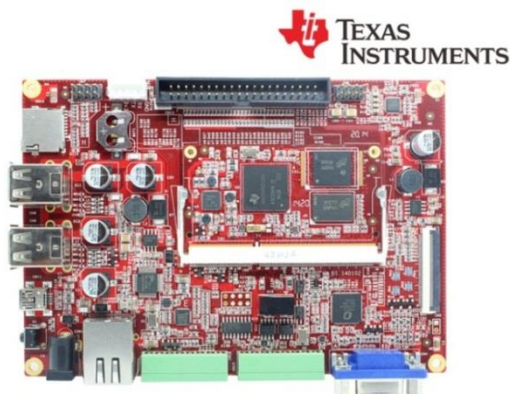
3、改动屏幕参数

我们修改 LCD 屏的参数不需要重新编译内核，只需要修改传递的参数，也就是说通过修改 uEnv.txt 文件即可修改 LCD 屏参数。修改操作可以在终端中完成，如果 uEnv.txt 在 TF 卡中也可通过电脑来修改。

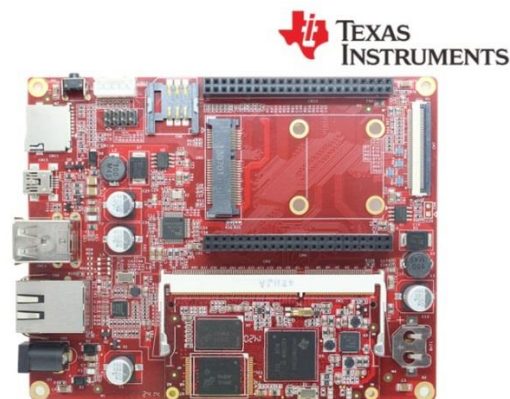
如果使用是 4.3 寸屏，需要修改 uEnv.txt 内容为 `dispmode=4.3inch_LCD`。
如果使用是 7 寸屏，需要修改 uEnv.txt 内容为 `dispmode=7inch_LCD`。
如果我们使用的是 VGA 显示，需要修改 uEnv.txt 内容为 `dispmode=VGA`。
修改完重启系统即可。

www.goembed.com

附 相关 GOEMBED 产品介绍



SBC335x – B1A



SBC335x – B2A

The single board computer SBC335x-B1A/B2A which has an expansion board to carry the CM335X is one of our design of the base plate. The flexible design allows the fast and easy way of realizing and upgrading the controller's capabilities. In addition to those features offered by CM335X.

The B1A features 4 serial ports (including 2 RS232 and 2 TTL), 4 USB Host and 1 USB OTG, 1 Ethernet ports, CAN, RS485, Wiegand, VGA, LCD, Touch screen, Audio, ADC and more other peripherals.

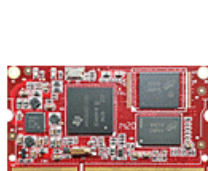
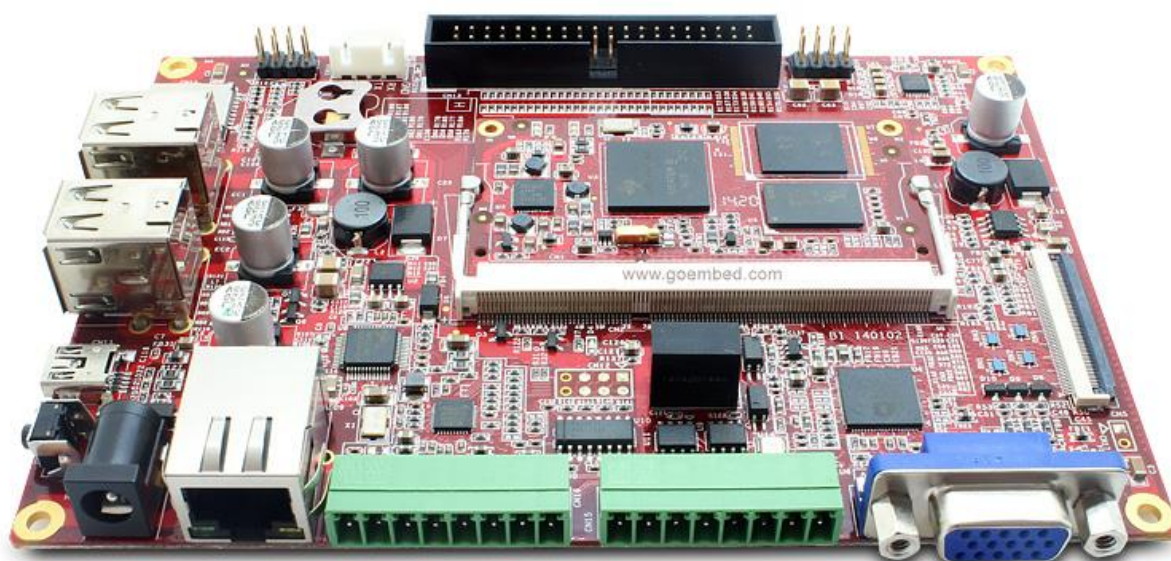
The B2A features 4 USB Host and 1 USB OTG, 1 Ethernet ports, LCD, Touch screen, RTC, and more other peripherals.

The SBC board targets a wide range of applications, including: HMIs, Digital Signage, POS, Data Terminal, Medical Devices, Navigation, Industrial Automation, Entertainment system, Thin Clients, Robotics, Game Console and much more.

The SBC335x-B1A/B2A are ready-to-run platform to support **Linux 3.x**, **Android 4.x** and **WinCE 7.0/6.0** operating systems.

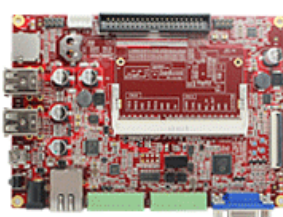
If you want to support other Operating System, For more information to contact us.

Single Board Computer
SBC335x-B1A
A perfect solution for upgrading ARM9 or ARM11 devices



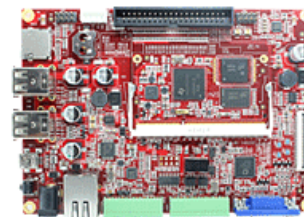
CM3352 ACW

+



B1A

=



SBC3352 ACW-B1A

SBC335x-B1A boards Description of part code:

Series	B1	B1	B1	B1
Part Code	SBC3352 ACW-B1A	SBC3352 BCW-B1A	SBC3358 ACW-B1A	SBC3358 BCW-B1A
Order Code	-	-	-	-
Core Module	<u>CM3352 ACW</u> <u>-M51E20/08</u>	<u>CM3352 BCW</u> <u>-M51E40/08</u>	<u>CM3358 ACW</u> <u>-M51E20/10</u>	<u>CM3358 BCW</u> <u>-M51E40/10</u>
CPU Type	ARM Cortex™-A8			
CPU Cores	1x			
CPU Clock	800MHz	800MHz	1.0GHz	1.0GHz
RAM DDR3	Micron 512MB@16bit*1			
eMMC Flash	2GB@8bit*1	4GB@8bit*1	2GB@8bit*1	4GB@8bit*1
PMU	TI TPS65910A3			
Supply Voltage	DC 9-14V			
Optimal Input	DC 12V,1.5A			
Size(L*W)	146 x 102 mm			
Temperature	0° to 70° C			
Support OS	Linux 3.x/ Android 4.x/ Ubuntu/ Angstrom/ Debian/ QT/ WinCE 6.0/7.0			
Inventory status	In Stock	Out of Stock <u>Contact us</u>	In Stock	Out of Stock <u>Contact us</u>
Minimum Availability	2022			

SBC335x-B1A Block Diagram

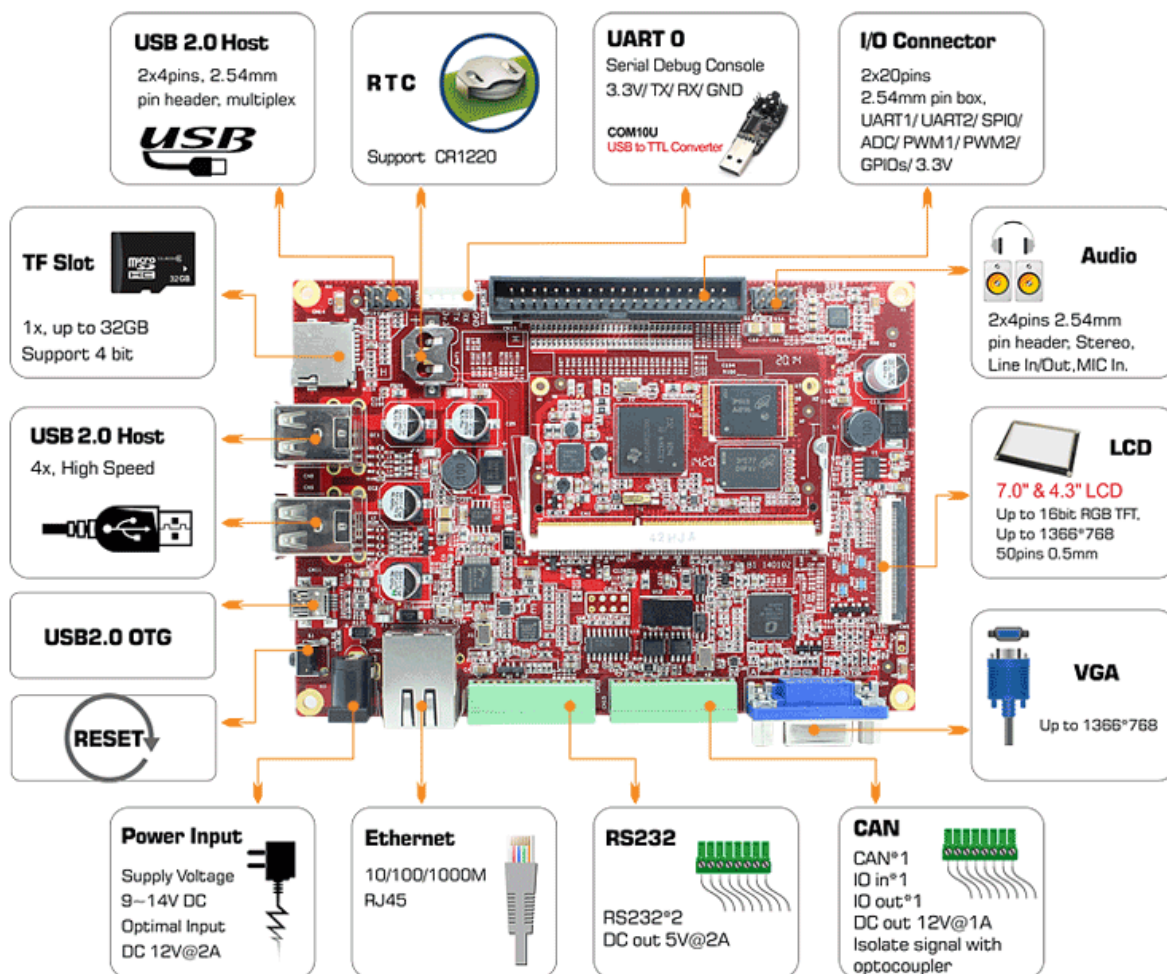


Figure 1 B1 Block Diagram

SBC335x-B2A

Single Board Computer



CM3358 ACW

+



B2A

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SBC3358 ACW-B2A

SBC335x-B2A boards Description of part code:

Series	B2A	B2A	B2A	B2A
Part Code	SBC3352 ACW-B2A	SBC3352 BCW-B2A	SBC3358 ACW-B2A	SBC3358 BCW-B2A
Order Code	-	-	-	-
Core Module	<u>CM3352 ACW</u> <u>-M51E20/08</u>	<u>CM3352 BCW</u> <u>-M51E40/08</u>	<u>CM3358 ACW</u> <u>-M51E20/10</u>	<u>CM3358 BCW</u> <u>-M51E40/10</u>
CPU Type	ARM Cortex™-A8			
CPU Cores	1x			
CPU Clock	800MHz	800MHz	1.0GHz	1.0GHz
RAM DDR3	Micron 512MB@16bit*1			
eMMC Flash	2GB@8bit*1	4GB@8bit*1	2GB@8bit*1	4GB@8bit*1
PMU	TI TPS65910A3			
Supply Voltage	DC 9-14V			
Optimal Input	DC 12V,1.5A			
Size(L*W)	130 x 103.5 mm			
Temperature	0° to 70° C			
Support OS	Linux 3.x/ Android 4.x/ Ubuntu/ Angstrom/ Debian/ QT/ WinCE 6.0/7.0			
Inventory status	In Stock	Out of Stock <u>Contact us</u>	In Stock	Out of Stock <u>Contact us</u>
Minimum Availability	2022			

SBC335x-B2A Block Diagram

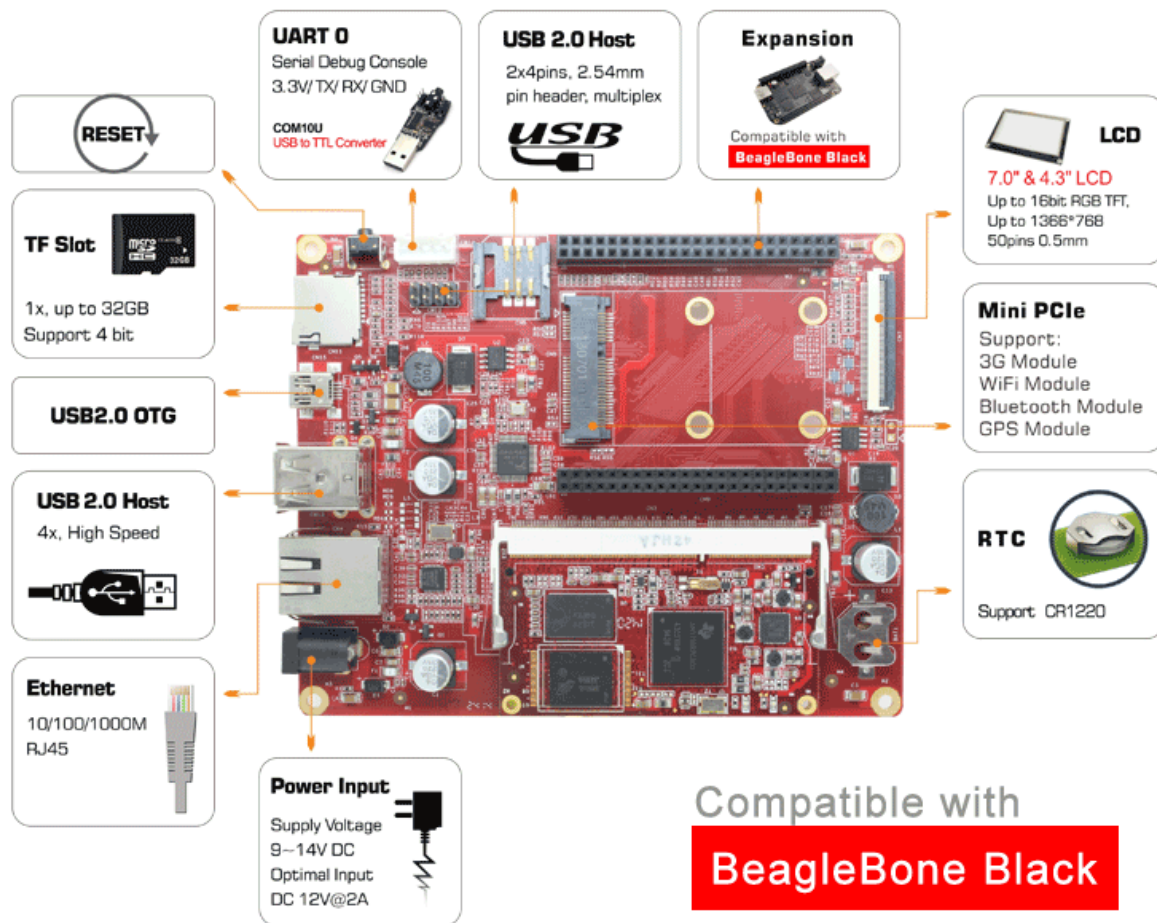


Figure 1 B2A Block Diagram

ABOUT GOEMBED

GOEMBED team with experienced embedded engineers who have been engaged in ARM hardware and software design for 10+ years.

Our products include single board computers and CPU core modules based on TI® Sitara and Freescale® i.MX Applications Processors based on ARM® Cores. Supported by Linux / Android / Debian / Ubuntu / QT / Angstrom / WinCE 7.0 & 6.0 / uCOS. We can redesign carrier boards and SBC as your idea quickly.

GOEMBED focus on Embedded Board Solutions, provide a complete new board for your specified requirement or even a turnkey solution to accelerate your new products to market.

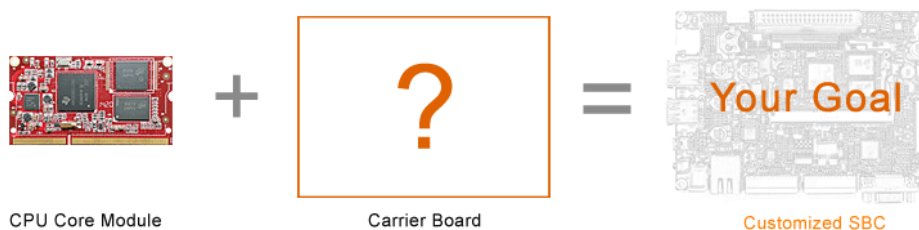
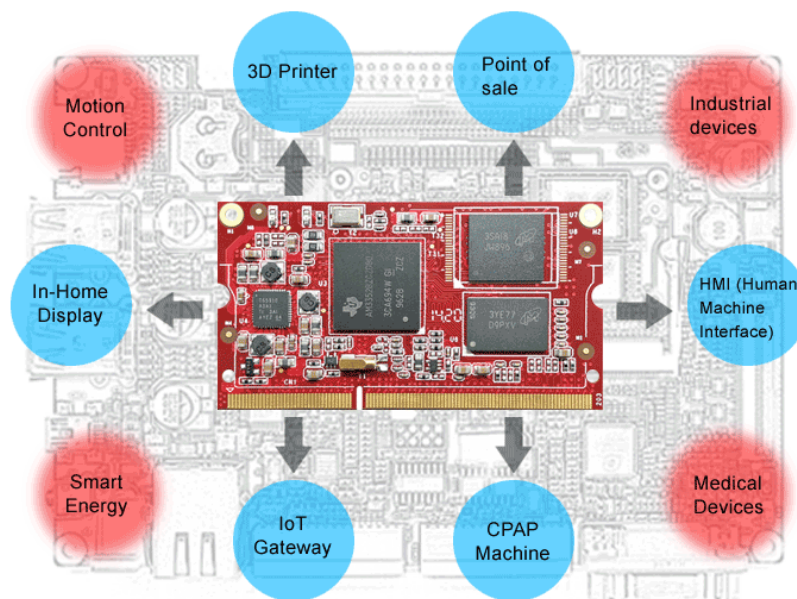
We are your trust worthy partner on ARM embedded design services and solutions.

More Carrier Boards

Customized based on your needs!

ODM / OEM Services

Bring your new products to market quickly



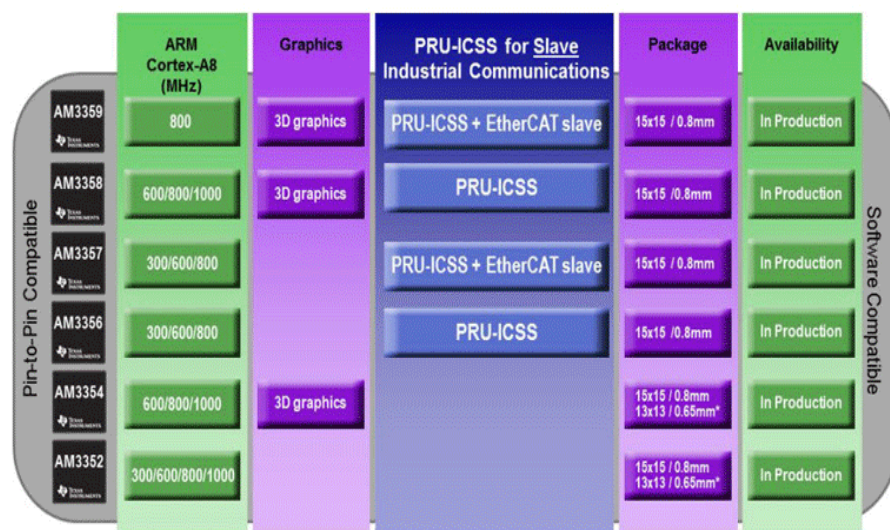
Related end equipment



Learn more applications please click <http://www.ti.com/lstds/ti/apps/appshomepage.page>

WWW

AM335x - A scalable platform with 6 pin-to-pin compatible devices



✓ PRU-ICSS is used for slave industrial communication protocols such as Profibus, Profinet, Powerlink & Ethernet/IP

Package	15x15mm (ZCZ)	13x13mm (ZCE)
ARM speed	Up to 1000 MHz	Up to 600 MHz
USB 2.0 OTG + PHY	x2	x1
EMAC	2-port switch	Single port

TI Sitara ARM Cortex-A8 AM335x processors information (Content from TI):

AM335x Cortex™-A8 based processors

Benefits

- High performance Cortex-A8 at ARM9/11 prices
- Rich peripheral integration reduces system complexity and cost

Sample Applications

- Industrial / Home Automation
- Smart Appliances
- Portable Navigation Devices
- Low power instrumentation
- Robotics
- Wireless Accessories
- Consumer electronics
- Networking

Software and development tools

- Free Linux and Android support packages direct from TI
- StarterWare enables quick and simple programming and migration among TI embedded processors
- WinCE and RTOS (QNX, Wind River, Mentor, etc.) from partners
- Full featured and low cost development board options

Power Estimates

- Total Power: 600mW-1000mW
- Standby Power: ~25mW
- Deep Sleep Power: ~5-7mW

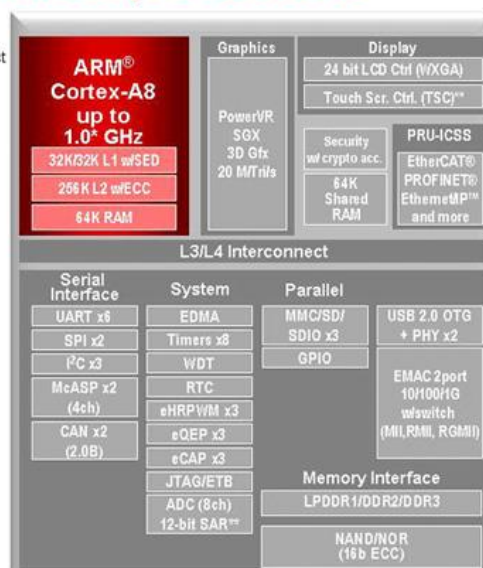
Schedule and packaging

- Status: In production
- Dev. Tools: Available today
- Docs: Available today
- Packaging: 13x13, 0.65mm via channel array
15x15, 0.8mm

More Information

- www.ti.com/am335x

Availability of some features, derivatives, or packages may be delayed from initial silicon availability. Peripheral limitations may apply among different packages. Some features may require third party support. All speeds shown are for commercial temperature range only.



* 800MHz+ only available on 15x15 package. 13x13 supports up to 600 MHz.
** Use of TSC will limit available ADC channels.
SED: single error detection/parity

TEXAS INSTRUMENTS