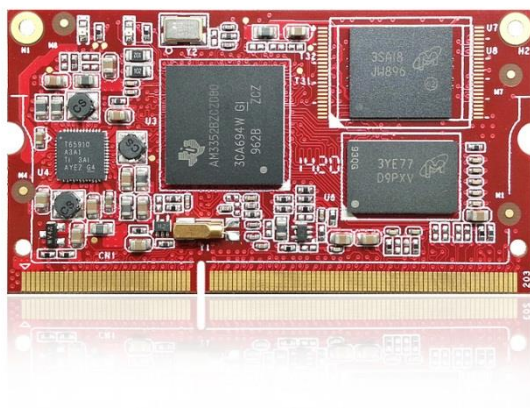


Linux 下内核 logo 定制教程 v1.0

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

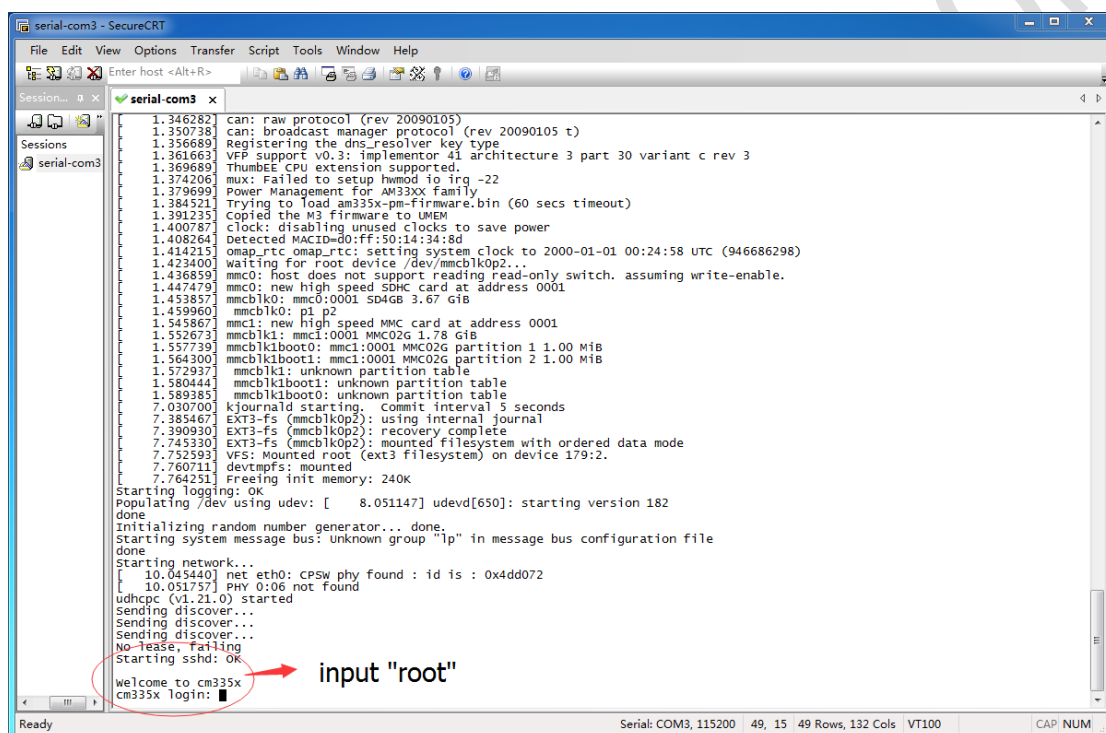
SBC3358-B1A 单板机资源分配特性

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、准备好已经烧好 Linux 系统的 TF 卡，且 TF 卡 FAT 分区中必须有：ML0、u-boot.img、uEnv.txt、uImage 和 rootfs.tar.bz2 这几个文件，再把卡插到开发板中。
- 2、连接好 USB 转 TTL 串口模块，打开串口调试软件 SecureCRT.exe。
- 3、开发板接上 12V 电源适配器，开机后串口调试软件打印如下信息：



```

1.346282 can: raw protocol (rev 20090105)
1.350738 can: broadcast manager protocol (rev 20090105 t)
1.356689 Registering the dns_resolver key type
1.361663 VFP support v0.3: implementor 41 architecture 3 part 30 variant c rev 3
1.369689 ThumbEE CPU extension supported.
1.374206 mux: Failed to setup hwmod io irq -22
1.379699 Power Management for AM33XX family
1.384521 Trying to load am335x-pm-firmware.bin (60 secs timeout)
1.391235 Copied the M3 firmware to UMEM
1.400787 clock: disabling unused clocks to save power
1.408264 Detected MACID=00:FF:50:14:34:8d
1.414215 omap_rtc omap_rtc: setting system clock to 2000-01-01 00:24:58 UTC (946686298)
1.423400 waiting for root device /dev/mmcblk0p2...
1.436859 mmc0: host does not support reading read-only switch. assuming write-enable.
1.447479 mmc0: new high speed SDHC card at address 0001
1.453857 mmcblk0: mmc0:0001 SD4GB 3.67 GiB
1.459660 mmcblk0: p1 p2
1.545867 mmc1: new high speed MMC card at address 0001
1.552673 mmcblk1: mmc1:0001 MMC02G 1.78 GiB
1.557739 mmcblk1boot0: mmc1:0001 MMC02G partition 1 1.00 MiB
1.564300 mmcblk1boot1: mmc1:0001 MMC02G partition 2 1.00 MiB
1.572937 mmcblk1: unknown partition table
1.580444 mmcblk1boot1: unknown partition table
1.589385 mmcblk1boot0: unknown partition table
7.030700 kjournald starting. Commit interval 5 seconds
7.385467 EXT3-fs (mmcblk0p2): using internal journal
7.390930 EXT3-fs (mmcblk0p2): recovery complete
7.745330 EXT3-fs (mmcblk0p2): mounted filesystem with ordered data mode
7.752593 VFS: Mounted root (ext3 filesystem) on device 179:2.
7.760711 devtmpfs: mounted
7.764251 Freeing init memory: 240K
Starting logging: OK
Populating /dev using udev: [ 8.051147] udevd[650]: starting version 182
done
Initializing random number generator... done.
Starting system message bus: unknown group "lp" in message bus configuration file
done
Starting network...
10.045440 net eth0: CPSW phy found : id is : 0x4dd072
10.051757 PHY 0:06 not found
udhcpc (v1.21.0) started
Sending discover...
Sending discover...
No lease, failing
Starting sshd: OK
Welcome to cm335x
cm335x login:
  
```

- 4、输入 root 登录 Linux 系统。
- 5、为了方便阅读和修改代码，在这里我使用的是 Source Insight(一个代码编辑工具)对代码进行修改。用户可以直接在终端使用 VI 编辑器编辑代码，结果是一样的，这里是为了阅读方便。

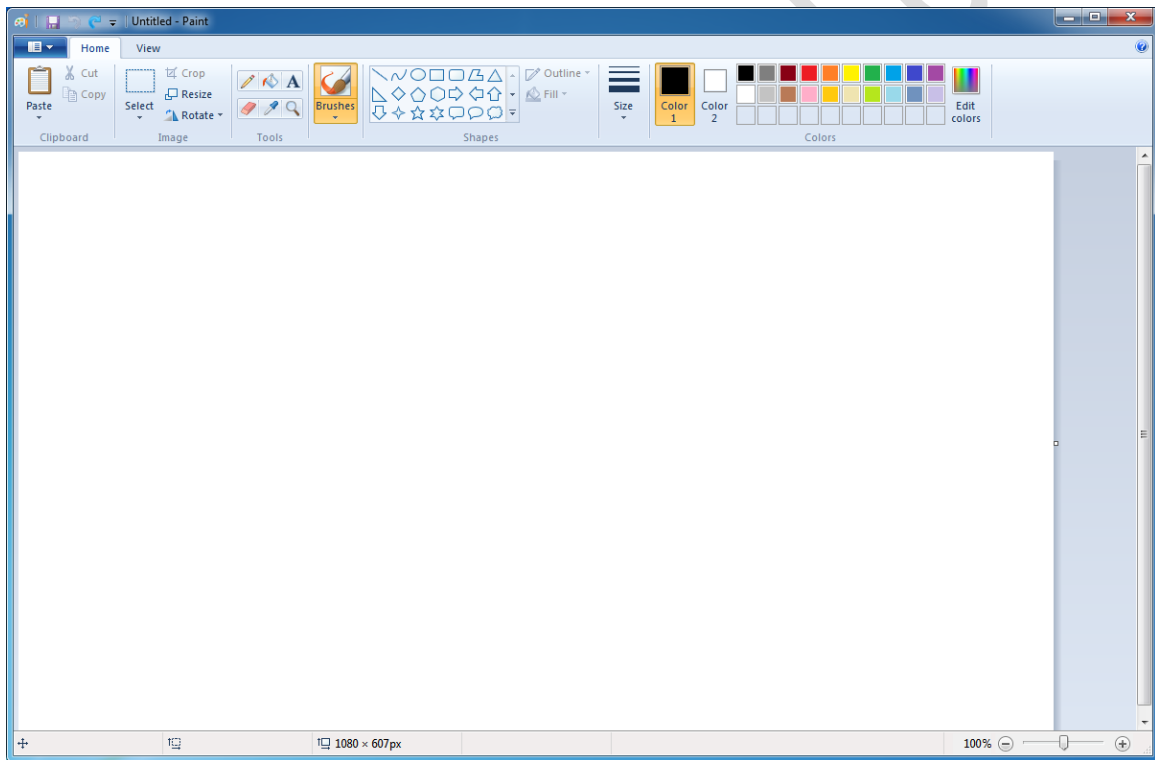
二、Windows 下 logo 图片处理

我从网上随意下载了一张图片，我的下载链接是：

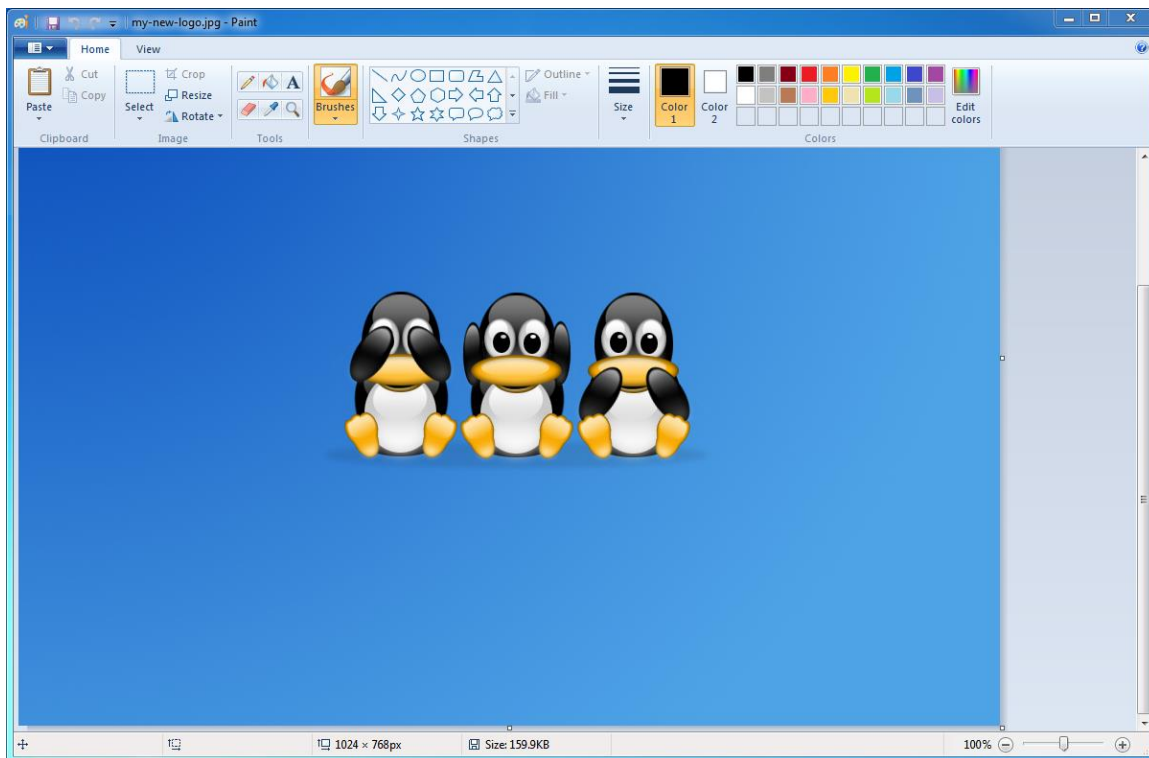
http://www.ivsky.com/bizhi/linux_v3181/pic_90344.html（**版权原作者**

所有）图片大小随意只要比屏幕的尺寸大一些就行。然后我们来修改图片的分辨率以适应我们的液晶屏。在这里我用 800*272 分辨率，4.3 寸的液晶屏演示。修改图片分辨率的方法如下：

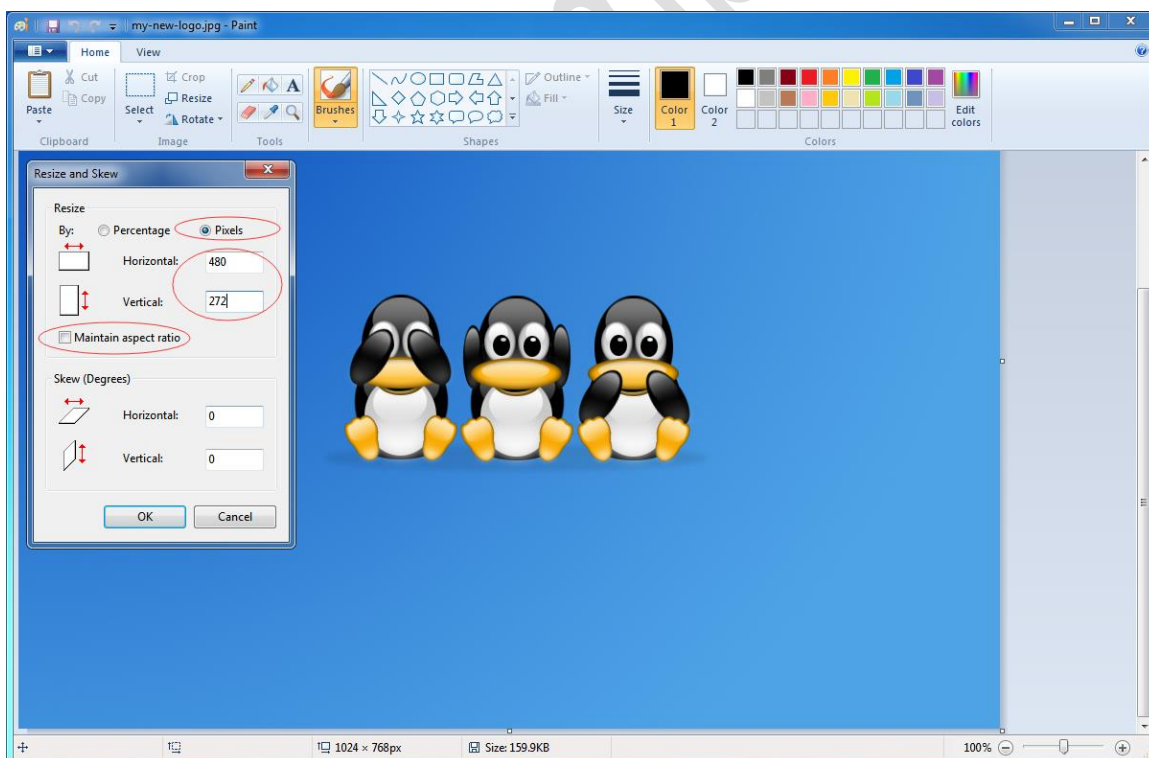
1、打开 windows 自带的“画图”软件



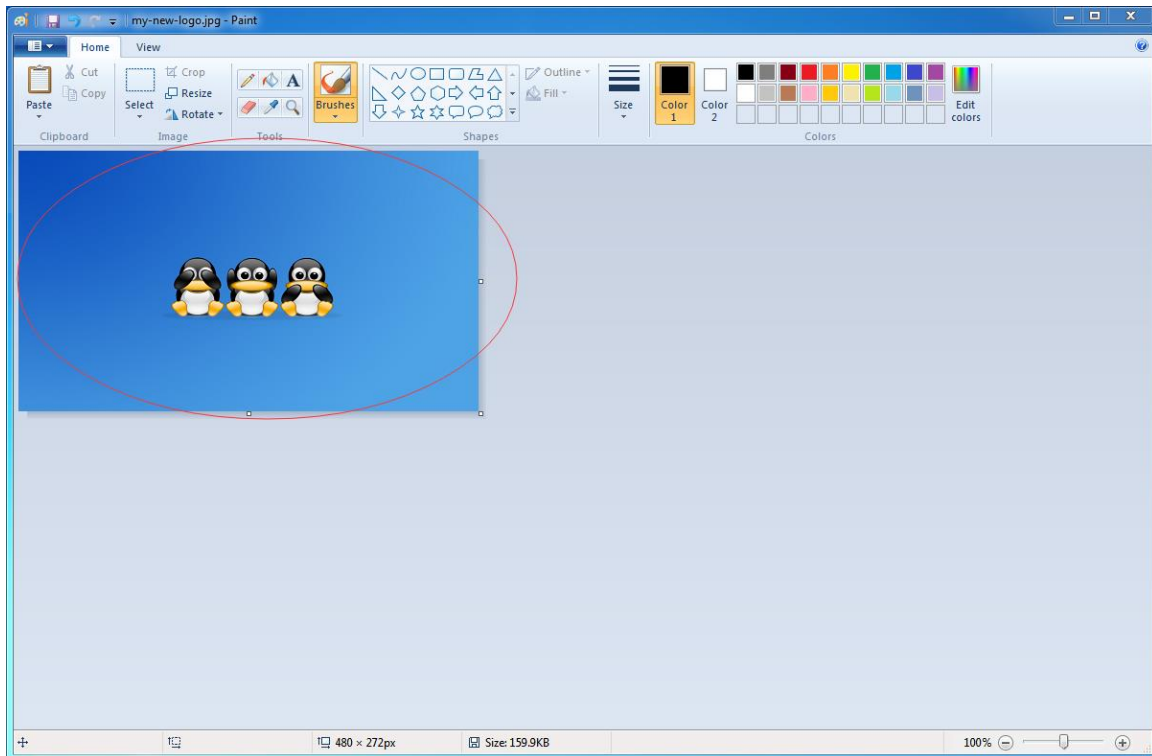
2、插入待处理图片



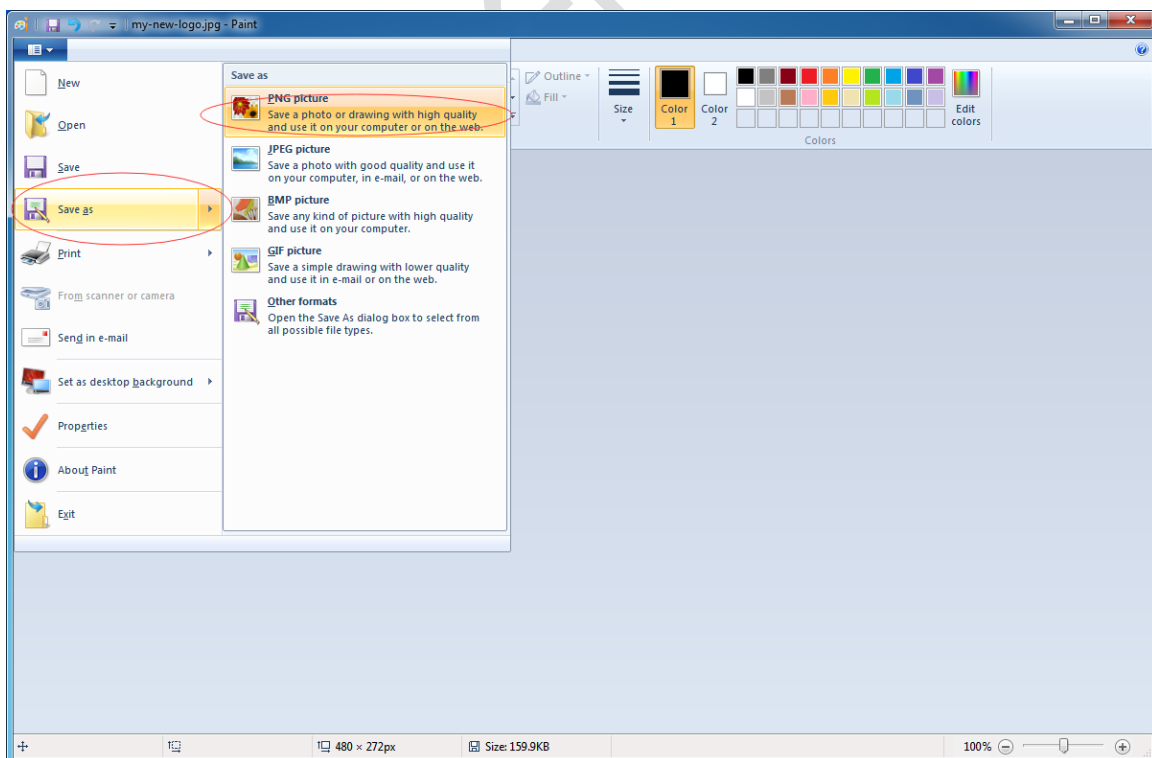
3、根据我们液晶屏参数修改图片的分辨率：



4、 点击“OK”显示如下：



5、如下图，把新的图片另存为 png 格式的文件并命名为“my-new-logo.png”：



6、把“my-new-logo.png”放在内核源码：linux-3.2.0-psp04.06.00.08.

sdk\drivers\video\logo 路径下，并找到刚才的文件：

```
lin@goembed-ubuntu: ~/linux-3.2.0-psp04.06.00.08.sdk/drivers/video/logo
-rw-rw-r-- 1 lin lin 55752 Jun 3 2014 logo_blackfin_clut224.ppm
-rw-rw-r-- 1 lin lin 19881 Oct 21 14:14 logo_blackfin_vga16.c
-rw-rw-r-- 1 lin lin 54088 Jun 3 2014 logo_blackfin_vga16.ppm
-rw-rw-r-- 1 lin lin 2446 Jun 3 2014 logo.c
-rw-rw-r-- 1 lin lin 42789 Oct 21 14:14 logo_dec_clut224.c
-rw-rw-r-- 1 lin lin 76866 Jun 3 2014 logo_dec_clut224.ppm
-rw-rw-r-- 1 lin lin 793019 Nov 27 02:13 logo_linux_clut224.c
-rw-rw-r-- 1 lin lin 131476 Nov 27 02:13 logo_linux_clut224.o
-rw-rw-r-- 1 lin lin 1264293 Nov 27 02:08 logo_linux_clut224.ppm
-rw-rw-r-- 1 lin lin 5260 Oct 21 14:14 logo_linux_mono.c
-rw-rw-r-- 1 lin lin 1948 Oct 21 14:14 logo_linux_mono.o
-rw-rw-r-- 1 lin lin 12847 Jun 3 2014 logo_linux_mono.pbm
-rw-rw-r-- 1 lin lin 19866 Oct 21 14:14 logo_linux_vga16.c
-rw-rw-r-- 1 lin lin 4352 Oct 21 14:14 logo_linux_vga16.o
-rw-rw-r-- 1 lin lin 76844 Jun 3 2014 logo_linux_vga16.ppm
-rw-rw-r-- 1 lin lin 41646 Oct 21 14:14 logo_m32r_clut224.c
-rw-rw-r-- 1 lin lin 75502 Jun 3 2014 logo_m32r_clut224.ppm
-rw-rw-r-- 1 lin lin 42826 Oct 21 14:14 logo_mac_clut224.c
-rw-rw-r-- 1 lin lin 76846 Jun 3 2014 logo_mac_clut224.ppm
-rw-rw-r-- 1 lin lin 2227 Nov 24 08:53 logo.o
-rw-rw-r-- 1 lin lin 43522 Oct 21 14:14 logo_parisc_clut224.c
-rw-rw-r-- 1 lin lin 78444 Jun 3 2014 logo_parisc_clut224.ppm
-rw-rw-r-- 1 lin lin 42862 Oct 21 14:14 logo_sgi_clut224.c
-rw-rw-r-- 1 lin lin 76840 Jun 3 2014 logo_sgi_clut224.ppm
-rw-rw-r-- 1 lin lin 13279 Oct 21 14:14 logo_spe_clut224.c
-rw-rw-r-- 1 lin lin 14216 Jun 3 2014 logo_spe_clut224.ppm
-rw-rw-r-- 1 lin lin 43483 Oct 21 14:14 logo_sun_clut224.c
-rw-rw-r-- 1 lin lin 78440 Jun 3 2014 logo_sun_clut224.ppm
-rw-rw-r-- 1 lin lin 42390 Oct 21 14:14 logo_superh_clut224.c
-rw-rw-r-- 1 lin lin 76843 Jun 3 2014 logo_superh_clut224.ppm
-rw-rw-r-- 1 lin lin 5265 Oct 21 14:14 logo_superh_mono.c
-rw-rw-r-- 1 lin lin 12845 Jun 3 2014 logo_superh_mono.pbm
-rw-rw-r-- 1 lin lin 19871 Oct 21 14:14 logo_superh_vga16.c
-rw-rw-r-- 1 lin lin 76842 Jun 3 2014 logo_superh_vga16.ppm
-rw-rw-r-- 1 lin lin 2014 Jun 3 2014 Makefile
-rwx----- 1 lin lin 163776 Nov 27 03:13 my-new-logo.jpg
-rwx----- 1 lin lin 125506 Nov 27 03:28 my-new-logo.png
lin@goembed-ubuntu:~/linux-3.2.0-psp04.06.00.08.sdk/drivers/video/logo$ pwd
/home/lin/linux-3.2.0-psp04.06.00.08.sdk/drivers/video/logo
lin@goembed-ubuntu:~/linux-3.2.0-psp04.06.00.08.sdk/drivers/video/logo$
```

三、Linux 下 logo 图片处理

我们已经准备好了新的 logo 图片，但是我们还需要再进一步处理才可以拿来使用。依次输入以下命令对图片进行处理：

- 1、pngtopnm my-new-logo.png > my-new-logo.pnm
- 2、pnmquant 224 my-new-logo.pnm > my-new-logo-224.pnm
- 3、pnmtoplainpnm my-new-logo-224.pnm > my-new-logo-224.ppm

命令执行过程如下图所示：


```
lin@goembed-ubuntu: ~/linux-3.2.0-psp04.06.00.08.sdk/drivers/video/logo
-rw-rw-r-- 1 lin lin 1264293 Nov 27 02:08 logo_linux_clut224.ppm
-rw-rw-r-- 1 lin lin 5260 Oct 21 14:14 logo_linux_mono.c
-rw-rw-r-- 1 lin lin 1948 Oct 21 14:14 logo_linux_mono.o
-rw-rw-r-- 1 lin lin 12847 Jun 3 2014 logo_linux_mono.pbm
-rw-rw-r-- 1 lin lin 19866 Oct 21 14:14 logo_linux_vga16.c
-rw-rw-r-- 1 lin lin 4352 Oct 21 14:14 logo_linux_vga16.o
-rw-rw-r-- 1 lin lin 76844 Jun 3 2014 logo_linux_vga16.ppm
-rw-rw-r-- 1 lin lin 41646 Oct 21 14:14 logo_m32r_clut224.c
-rw-rw-r-- 1 lin lin 75502 Jun 3 2014 logo_m32r_clut224.ppm
-rw-rw-r-- 1 lin lin 42826 Oct 21 14:14 logo_mac_clut224.c
-rw-rw-r-- 1 lin lin 76846 Jun 3 2014 logo_mac_clut224.ppm
-rw-rw-r-- 1 lin lin 2227 Nov 24 08:53 logo.o
-rw-rw-r-- 1 lin lin 43522 Oct 21 14:14 logo_parisc_clut224.c
-rw-rw-r-- 1 lin lin 78444 Jun 3 2014 logo_parisc_clut224.ppm
-rw-rw-r-- 1 lin lin 42862 Oct 21 14:14 logo_sgi_clut224.c
-rw-rw-r-- 1 lin lin 76840 Jun 3 2014 logo_sgi_clut224.ppm
-rw-rw-r-- 1 lin lin 13279 Oct 21 14:14 logo_spe_clut224.c
-rw-rw-r-- 1 lin lin 14216 Jun 3 2014 logo_spe_clut224.ppm
-rw-rw-r-- 1 lin lin 43483 Oct 21 14:14 logo_sun_clut224.c
-rw-rw-r-- 1 lin lin 78440 Jun 3 2014 logo_sun_clut224.ppm
-rw-rw-r-- 1 lin lin 42390 Oct 21 14:14 logo_superh_clut224.c
-rw-rw-r-- 1 lin lin 76843 Jun 3 2014 logo_superh_clut224.ppm
-rw-rw-r-- 1 lin lin 5265 Oct 21 14:14 logo_superh_mono.c
-rw-rw-r-- 1 lin lin 12845 Jun 3 2014 logo_superh_mono.pbm
-rw-rw-r-- 1 lin lin 19871 Oct 21 14:14 logo_superh_vga16.c
-rw-rw-r-- 1 lin lin 76842 Jun 3 2014 logo_superh_vga16.ppm
-rw-rw-r-- 1 lin lin 2014 Jun 3 2014 Makefile
-rwx----- 1 lin lin 163776 Nov 27 03:13 my-new-logo.jpg
-rwx----- 1 lin lin 125506 Nov 27 03:28 my-new-logo.png
-rw-rw-r-- 1 lin lin 391695 Nov 27 03:44 my-new-logo.pnm
lin@goembed-ubuntu:~/linux-3.2.0-psp04.06.00.08.sdk/drivers/video/logo$ pngtopnm my-new-logo.png >my-new-logo.pnm
lin@goembed-ubuntu:~/linux-3.2.0-psp04.06.00.08.sdk/drivers/video/logo$ pnmquant 224 my-new-logo.pnm > my-new-logo-224.pnm
pnmcolormap: making histogram...
pnmcolormap: 6084 colors found
pnmcolormap: choosing 224 colors...
pnmremap: 208 colors found in colormap
lin@goembed-ubuntu:~/linux-3.2.0-psp04.06.00.08.sdk/drivers/video/logo$ pnmtoplainpnm my-new-logo-224.pnm >my-new-logo-224.ppm
lin@goembed-ubuntu:~/linux-3.2.0-psp04.06.00.08.sdk/drivers/video/logo$
```

查看处理完成的 my-new-logo-224.ppm 文件:

```
lin@goembed-ubuntu: ~/linux-3.2.0-psp04.06.00.08.sdk/drivers/video/logo
-rw-rw-r-- 1 lin lin 19881 Oct 21 14:14 logo_blackfin_vga16.c
-rw-rw-r-- 1 lin lin 54088 Jun 3 2014 logo_blackfin_vga16.ppm
-rw-rw-r-- 1 lin lin 2446 Jun 3 2014 logo.c
-rw-rw-r-- 1 lin lin 42789 Oct 21 14:14 logo_dec_clut224.c
-rw-rw-r-- 1 lin lin 76866 Jun 3 2014 logo_dec_clut224.ppm
-rw-rw-r-- 1 lin lin 793019 Nov 27 02:13 logo_linux_clut224.c
-rw-rw-r-- 1 lin lin 131476 Nov 27 02:13 logo_linux_clut224.o
-rw-rw-r-- 1 lin lin 1264293 Nov 27 02:08 logo_linux_clut224.ppm
-rw-rw-r-- 1 lin lin 5260 Oct 21 14:14 logo_linux_mono.c
-rw-rw-r-- 1 lin lin 1948 Oct 21 14:14 logo_linux_mono.o
-rw-rw-r-- 1 lin lin 12847 Jun 3 2014 logo_linux_mono.pbm
-rw-rw-r-- 1 lin lin 19866 Oct 21 14:14 logo_linux_vga16.c
-rw-rw-r-- 1 lin lin 4352 Oct 21 14:14 logo_linux_vga16.o
-rw-rw-r-- 1 lin lin 76844 Jun 3 2014 logo_linux_vga16.ppm
-rw-rw-r-- 1 lin lin 41646 Oct 21 14:14 logo_m32r_clut224.c
-rw-rw-r-- 1 lin lin 75502 Jun 3 2014 logo_m32r_clut224.ppm
-rw-rw-r-- 1 lin lin 42826 Oct 21 14:14 logo_mac_clut224.c
-rw-rw-r-- 1 lin lin 76846 Jun 3 2014 logo_mac_clut224.ppm
-rw-rw-r-- 1 lin lin 2227 Nov 24 08:53 logo.o
-rw-rw-r-- 1 lin lin 43522 Oct 21 14:14 logo_parisc_clut224.c
-rw-rw-r-- 1 lin lin 78444 Jun 3 2014 logo_parisc_clut224.ppm
-rw-rw-r-- 1 lin lin 42862 Oct 21 14:14 logo_sgi_clut224.c
-rw-rw-r-- 1 lin lin 76840 Jun 3 2014 logo_sgi_clut224.ppm
-rw-rw-r-- 1 lin lin 13279 Oct 21 14:14 logo_spe_clut224.c
-rw-rw-r-- 1 lin lin 14216 Jun 3 2014 logo_spe_clut224.ppm
-rw-rw-r-- 1 lin lin 43483 Oct 21 14:14 logo_sun_clut224.c
-rw-rw-r-- 1 lin lin 78440 Jun 3 2014 logo_sun_clut224.ppm
-rw-rw-r-- 1 lin lin 42390 Oct 21 14:14 logo_superh_clut224.c
-rw-rw-r-- 1 lin lin 76843 Jun 3 2014 logo_superh_clut224.ppm
-rw-rw-r-- 1 lin lin 5265 Oct 21 14:14 logo_superh_mono.c
-rw-rw-r-- 1 lin lin 12845 Jun 3 2014 logo_superh_mono.pbm
-rw-rw-r-- 1 lin lin 19871 Oct 21 14:14 logo_superh_vga16.c
-rw-rw-r-- 1 lin lin 76842 Jun 3 2014 logo_superh_vga16.ppm
-rw-rw-r-- 1 lin lin 2014 Jun 3 2014 Makefile
-rw-rw-r-- 1 lin lin 391695 Nov 27 03:45 my-new-logo-224.pnm
-rw-rw-r-- 1 lin lin 1524634 Nov 27 03:46 my-new-logo-224.ppm
-rwx----- 1 lin lin 163776 Nov 27 03:13 my-new-logo.jpg
-rwx----- 1 lin lin 125506 Nov 27 03:28 my-new-logo.png
-rw-rw-r-- 1 lin lin 391695 Nov 27 03:45 my-new-logo.pnm
lin@goembed-ubuntu:~/linux-3.2.0-psp04.06.00.08.sdk/drivers/video/logo$
```

到这里，图片处理全部完成。

四、编译新 logo 进内核

1、查看 logo 编译对应的 Makefile 文件

编译 logo 对应的 Makefile 文件（路径也就是 linux-3.2.0-psp04.06.00.08.sdk\drivers\video\logo）中，操作 logo 图片的代码是：

```
lin@goembed-ubuntu: ~/linux-3.2.0-psp04.06.00.08.sdk/drivers/video/logo
# Makefile for the Linux logos

obj-$(CONFIG_LOGO) += logo.o
obj-$(CONFIG_LOGO_LINUX_MONO) += logo_linux_mono.o
obj-$(CONFIG_LOGO_LINUX_VGA16) += logo_linux_vga16.o
obj-$(CONFIG_LOGO_LINUX_CLUT224) += logo_linux_clut224.o
obj-$(CONFIG_LOGO_BLACKFIN_CLUT224) += logo_blackfin_clut224.o
obj-$(CONFIG_LOGO_BLACKFIN_VGA16) += logo_blackfin_vga16.o
obj-$(CONFIG_LOGO_DEC_CLUT224) += logo_dec_clut224.o
obj-$(CONFIG_LOGO_MAC_CLUT224) += logo_mac_clut224.o
obj-$(CONFIG_LOGO_PARISC_CLUT224) += logo_parisc_clut224.o
obj-$(CONFIG_LOGO_SGI_CLUT224) += logo_sgi_clut224.o
obj-$(CONFIG_LOGO_SUN_CLUT224) += logo_sun_clut224.o
obj-$(CONFIG_LOGO_SUPERH_MONO) += logo_superh_mono.o
obj-$(CONFIG_LOGO_SUPERH_VGA16) += logo_superh_vga16.o
obj-$(CONFIG_LOGO_SUPERH_CLUT224) += logo_superh_clut224.o
obj-$(CONFIG_LOGO_M32R_CLUT224) += logo_m32r_clut224.o

obj-$(CONFIG_SPU_BASE) += logo_spe_clut224.o

# How to generate logo's

# Use logo-cfiles to retrieve list of .c files to be built
logo-cfiles = $(notdir $(patsubst %,$(2), %.c, \
    $(wildcard $(srctree)/$(src)/*(1).$(2))))

# Mono logos
extra-y += $(call logo-cfiles, _mono, pbm)

# VGA16 logos
extra-y += $(call logo-cfiles, _vga16, ppm)

# 224 Logos
extra-y += $(call logo-cfiles, _clut224, ppm)

# Gray 256
extra-y += $(call logo-cfiles, _gray256, pgm)

"Makefile" 61L, 2014C 1,1 Top
```

系统默认的 logo 文件名是：

WWW.G

```
lin@goembed-ubuntu: ~/linux-3.2.0-psp04.06.00.08.sdk/drivers/video/logo
lin@goembed-ubuntu:~/linux-3.2.0-psp04.06.00.08.sdk/drivers/video/logo$ vi Makefile
lin@goembed-ubuntu:~/linux-3.2.0-psp04.06.00.08.sdk/drivers/video/logo$ ls -l
total 6992
-rw-rw-r-- 1 lin lin 388815 Nov 27 02:07 aa_224.pnm
-rw-rw-r-- 1 lin lin 388815 Nov 27 02:07 aa.pnm
-rw-rw-r-- 1 lin lin 76845 Jul 19 2014 back.ppm
-rw-rw-r-- 1 lin lin 137456 Nov 27 02:13 built-in.o
-rw-rw-r-- 1 lin lin 417 Oct 21 14:14 clut_vga16.c
-rw-rw-r-- 1 lin lin 230 Jun 3 2014 clut_vga16.ppm
-rw-rw-r-- 1 lin lin 1594 Jun 3 2014 Kconfig
-rw-rw-r-- 1 lin lin 43481 Oct 21 14:14 logo_blackfin_clut224.c
-rw-rw-r-- 1 lin lin 55752 Jun 3 2014 logo_blackfin_clut224.ppm
-rw-rw-r-- 1 lin lin 19881 Oct 21 14:14 logo_blackfin_vga16.c
-rw-rw-r-- 1 lin lin 54088 Jun 3 2014 logo_blackfin_vga16.ppm
-rw-rw-r-- 1 lin lin 2446 Jun 3 2014 logo.c
-rw-rw-r-- 1 lin lin 42789 Oct 21 14:14 logo_dec_clut224.c
-rw-rw-r-- 1 lin lin 76866 Jun 3 2014 logo_dec_clut224.ppm
-rw-rw-r-- 1 lin lin 793019 Nov 27 02:13 logo_linux_clut224.c
-rw-rw-r-- 1 lin lin 131476 Nov 27 02:13 logo_linux_clut224.o
-rw-rw-r-- 1 lin lin 1264293 Nov 27 02:08 logo_linux_clut224.ppm
-rw-rw-r-- 1 lin lin 5260 Oct 21 14:14 logo_linux_mono.c
-rw-rw-r-- 1 lin lin 1948 Oct 21 14:14 logo_linux_mono.o
-rw-rw-r-- 1 lin lin 12847 Jun 3 2014 logo_linux_mono.pbm
-rw-rw-r-- 1 lin lin 19866 Oct 21 14:14 logo_linux_vga16.c
-rw-rw-r-- 1 lin lin 4352 Oct 21 14:14 logo_linux_vga16.o
-rw-rw-r-- 1 lin lin 76844 Jun 3 2014 logo_linux_vga16.ppm
-rw-rw-r-- 1 lin lin 41646 Oct 21 14:14 logo_m32r_clut224.c
-rw-rw-r-- 1 lin lin 75502 Jun 3 2014 logo_m32r_clut224.ppm
-rw-rw-r-- 1 lin lin 42826 Oct 21 14:14 logo_mac_clut224.c
-rw-rw-r-- 1 lin lin 76846 Jun 3 2014 logo_mac_clut224.ppm
-rw-rw-r-- 1 lin lin 2227 Nov 24 08:53 logo.o
-rw-rw-r-- 1 lin lin 43522 Oct 21 14:14 logo_parisc_clut224.c
-rw-rw-r-- 1 lin lin 78444 Jun 3 2014 logo_parisc_clut224.ppm
-rw-rw-r-- 1 lin lin 42862 Oct 21 14:14 logo_sgi_clut224.c
-rw-rw-r-- 1 lin lin 76840 Jun 3 2014 logo_sgi_clut224.ppm
-rw-rw-r-- 1 lin lin 13279 Oct 21 14:14 logo_spe_clut224.c
-rw-rw-r-- 1 lin lin 14216 Jun 3 2014 logo_spe_clut224.ppm
-rw-rw-r-- 1 lin lin 43483 Oct 21 14:14 logo_sun_clut224.c
-rw-rw-r-- 1 lin lin 78440 Jun 3 2014 logo_sun_clut224.ppm
-rw-rw-r-- 1 lin lin 42390 Oct 21 14:14 logo_superh_clut224.c
```

我们有两个方案可以替换原来的 logo 文件，一是修改 Makefile 文件，使代码对应新的 logo 文件名，二是修改 logo 文件的文件名为原来 logo 文件的文件名，这样就不用修改 Makefile 文件。在这里，我们用第二种方法演示。

2、修改新 logo 文件的文件名

命令为：mv my-new-logo-224.ppm logo_linux_clut224.ppm(会覆盖原来的同名文件，如果不想覆盖可以使用-i 参数，重名时会提示用户处理)：

```
lin@goembed-ubuntu: ~/linux-3.2.0-psp04.06.00.08.sdk/drivers/video/logo
-rw-rw-r-- 1 lin lin 54088 Jun 3 2014 logo_blackfin_vga16.ppm
-rw-rw-r-- 1 lin lin 2446 Jun 3 2014 logo.c
-rw-rw-r-- 1 lin lin 42789 Oct 21 14:14 logo_dec_clut224.c
-rw-rw-r-- 1 lin lin 76866 Jun 3 2014 logo_dec_clut224.ppm
-rw-rw-r-- 1 lin lin 793019 Nov 27 02:13 logo_linux_clut224.c
-rw-rw-r-- 1 lin lin 131476 Nov 27 02:13 logo_linux_clut224.o
-rw-rw-r-- 1 lin lin 1264293 Nov 27 02:08 logo_linux_clut224.ppm
-rw-rw-r-- 1 lin lin 5260 Oct 21 14:14 logo_linux_mono.c
-rw-rw-r-- 1 lin lin 1948 Oct 21 14:14 logo_linux_mono.o
-rw-rw-r-- 1 lin lin 12847 Jun 3 2014 logo_linux_mono.pbm
-rw-rw-r-- 1 lin lin 19866 Oct 21 14:14 logo_linux_vga16.c
-rw-rw-r-- 1 lin lin 4352 Oct 21 14:14 logo_linux_vga16.o
-rw-rw-r-- 1 lin lin 76844 Jun 3 2014 logo_linux_vga16.ppm
-rw-rw-r-- 1 lin lin 41646 Oct 21 14:14 logo_m32r_clut224.c
-rw-rw-r-- 1 lin lin 75502 Jun 3 2014 logo_m32r_clut224.ppm
-rw-rw-r-- 1 lin lin 42826 Oct 21 14:14 logo_mac_clut224.c
-rw-rw-r-- 1 lin lin 76846 Jun 3 2014 logo_mac_clut224.ppm
-rw-rw-r-- 1 lin lin 2227 Nov 24 08:53 logo.o
-rw-rw-r-- 1 lin lin 43522 Oct 21 14:14 logo_parisc_clut224.c
-rw-rw-r-- 1 lin lin 78444 Jun 3 2014 logo_parisc_clut224.ppm
-rw-rw-r-- 1 lin lin 42862 Oct 21 14:14 logo_sgi_clut224.c
-rw-rw-r-- 1 lin lin 76840 Jun 3 2014 logo_sgi_clut224.ppm
-rw-rw-r-- 1 lin lin 13279 Oct 21 14:14 logo_spe_clut224.c
-rw-rw-r-- 1 lin lin 14216 Jun 3 2014 logo_spe_clut224.ppm
-rw-rw-r-- 1 lin lin 43483 Oct 21 14:14 logo_sun_clut224.c
-rw-rw-r-- 1 lin lin 78440 Jun 3 2014 logo_sun_clut224.ppm
-rw-rw-r-- 1 lin lin 42390 Oct 21 14:14 logo_superh_clut224.c
-rw-rw-r-- 1 lin lin 76843 Jun 3 2014 logo_superh_clut224.ppm
-rw-rw-r-- 1 lin lin 5265 Oct 21 14:14 logo_superh_mono.c
-rw-rw-r-- 1 lin lin 12845 Jun 3 2014 logo_superh_mono.pbm
-rw-rw-r-- 1 lin lin 19871 Oct 21 14:14 logo_superh_vga16.c
-rw-rw-r-- 1 lin lin 76842 Jun 3 2014 logo_superh_vga16.ppm
-rw-rw-r-- 1 lin lin 2014 Jun 3 2014 Makefile
-rw-rw-r-- 1 lin lin 391695 Nov 27 03:45 my-new-logo-224.pnm
-rw-rw-r-- 1 lin lin 1524634 Nov 27 03:46 my-new-logo-224.ppm
-rwx----- 1 lin lin 163776 Nov 27 03:13 my-new-logo.jpg
-rwx----- 1 lin lin 125506 Nov 27 03:28 my-new-logo.png
-rw-rw-r-- 1 lin lin 391695 Nov 27 03:45 my-new-logo.pnm
lin@goembed-ubuntu:~/linux-3.2.0-psp04.06.00.08.sdk/drivers/video/logo$ mv my-new-logo-224.ppm logo_linux_clut224.ppm
lin@goembed-ubuntu:~/linux-3.2.0-psp04.06.00.08.sdk/drivers/video/logo$
```

3、导出交叉编译工具并编译

- 1、请参考《TI AM335x Linux 系统编译 v1.0》导出交叉编译工具。
- 2、回到内核源码第一级目录，编译新的内核：

命令如下：

make ARCH=arm CROSS_COMPILE=arm-linux-gnueabi- uImage

```
lin@goembedded-ubuntu: ~/linux-3.2.0-psp04.06.00.08.sdk
-rw-rw-r-- 1 lin lin 41646 Oct 21 14:14 logo_m32r_clut224.c
-rw-rw-r-- 1 lin lin 75502 Jun 3 2014 logo_m32r_clut224.ppm
-rw-rw-r-- 1 lin lin 42826 Oct 21 14:14 logo_mac_clut224.c
-rw-rw-r-- 1 lin lin 76846 Jun 3 2014 logo_mac_clut224.ppm
-rw-rw-r-- 1 lin lin 2227 Nov 24 08:53 logo.o
-rw-rw-r-- 1 lin lin 43522 Oct 21 14:14 logo_parisc_clut224.c
-rw-rw-r-- 1 lin lin 78444 Jun 3 2014 logo_parisc_clut224.ppm
-rw-rw-r-- 1 lin lin 42862 Oct 21 14:14 logo_sgi_clut224.c
-rw-rw-r-- 1 lin lin 76840 Jun 3 2014 logo_sgi_clut224.ppm
-rw-rw-r-- 1 lin lin 13279 Oct 21 14:14 logo_spe_clut224.c
-rw-rw-r-- 1 lin lin 14216 Jun 3 2014 logo_spe_clut224.ppm
-rw-rw-r-- 1 lin lin 43483 Oct 21 14:14 logo_sun_clut224.c
-rw-rw-r-- 1 lin lin 78440 Jun 3 2014 logo_sun_clut224.ppm
-rw-rw-r-- 1 lin lin 42390 Oct 21 14:14 logo_superh_clut224.c
-rw-rw-r-- 1 lin lin 76843 Jun 3 2014 logo_superh_clut224.ppm
-rw-rw-r-- 1 lin lin 5265 Oct 21 14:14 logo_superh_mono.c
-rw-rw-r-- 1 lin lin 12845 Jun 3 2014 logo_superh_mono.pbm
-rw-rw-r-- 1 lin lin 19871 Oct 21 14:14 logo_superh_vga16.c
-rw-rw-r-- 1 lin lin 76842 Jun 3 2014 logo_superh_vga16.ppm
-rw-rw-r-- 1 lin lin 2014 Jun 3 2014 Makefile
-rw-rw-r-- 1 lin lin 391695 Nov 27 03:45 my-new-logo-224.pnm
-rw-rw-r-- 1 lin lin 1524634 Nov 27 03:46 my-new-logo-224.ppm
-rwx----- 1 lin lin 163776 Nov 27 03:13 my-new-logo.jpg
-rwx----- 1 lin lin 125506 Nov 27 03:28 my-new-logo.png
-rw-rw-r-- 1 lin lin 391695 Nov 27 03:45 my-new-logo.pnm
lin@goembedded-ubuntu:~/linux-3.2.0-psp04.06.00.08.sdk/drivers/video/logo$ mv my-new-logo-224.ppm logo_linux_clut224.ppm
lin@goembedded-ubuntu:~/linux-3.2.0-psp04.06.00.08.sdk/drivers/video/logo$ cd ../../..
lin@goembedded-ubuntu:~/linux-3.2.0-psp04.06.00.08.sdk$ ls
arch      crypto    fs         Kbuild    MAINTAINERS  net        scripts    tools      vmlinux.o
block     Documenta include  Kconfig    Makefile     README     security   usr
COPYING   drivers   init       kernel     mm            REPORTING-BUGS  sound      virt
CREDITS   firmware ipc       lib        Module.symvers samples     System.map  vmlinux
lin@goembedded-ubuntu:~/linux-3.2.0-psp04.06.00.08.sdk$ make ARCH=arm CROSS_COMPILE=arm-linux-gnueabi- uImage
CHK include/linux/version.h
CHK include/generated/utsrelease.h
make[1]: `include/generated/mach-types.h' is up to date.
CALL scripts/checksyscalls.sh
CHK include/generated/compile.h
CHK kernel/config_data.h
LOGO drivers/video/logo/logo_linux_clut224.c
CC drivers/video/logo/logo_linux_clut224.o
LD drivers/video/logo/built-in.o
LD drivers/video/built-in.o
LD drivers/built-in.o
LD vmlinux.o
MODPOST vmlinux.o
GEN .version
CHK include/generated/compile.h
UPD include/generated/compile.h
CC init/version.o
LD init/built-in.o
LD .tmp_vmlinux1
KSYM .tmp_kallsyms1.S
AS .tmp_kallsyms1.o
LD .tmp_vmlinux2
KSYM .tmp_kallsyms2.S
AS .tmp_kallsyms2.o
LD vmlinux
SYSMAP System.map
SYSMAP .tmp_System.map
OBJCOPY arch/arm/boot/Image
Kernel: arch/arm/boot/Image is ready
GZIP arch/arm/boot/compressed/piggy.gzip
AS arch/arm/boot/compressed/piggy.gzip.o
LD arch/arm/boot/compressed/vmlinux
OBJCOPY arch/arm/boot/zImage
Kernel: arch/arm/boot/zImage is ready
UIMAGE arch/arm/boot/uImage
Image Name: Linux-3.2.0
Created: Fri Nov 27 04:10:55 2015
Image Type: ARM Linux Kernel Image (uncompressed)
Data Size: 3247216 Bytes = 3171.11 KB = 3.10 MB
Load Address: 0x80008000
Entry Point: 0x80008000
Image arch/arm/boot/uImage is ready
lin@goembedded-ubuntu:~/linux-3.2.0-psp04.06.00.08.sdk$
```

提示生成新的内核:

```
lin@goembedded-ubuntu: ~/linux-3.2.0-psp04.06.00.08.sdk
CALL scripts/checksyscalls.sh
CHK include/generated/compile.h
CHK kernel/config_data.h
LOGO drivers/video/logo/logo_linux_clut224.c
CC drivers/video/logo/logo_linux_clut224.o
LD drivers/video/logo/built-in.o
LD drivers/video/built-in.o
LD drivers/built-in.o
LD vmlinux.o
MODPOST vmlinux.o
GEN .version
CHK include/generated/compile.h
UPD include/generated/compile.h
CC init/version.o
LD init/built-in.o
LD .tmp_vmlinux1
KSYM .tmp_kallsyms1.S
AS .tmp_kallsyms1.o
LD .tmp_vmlinux2
KSYM .tmp_kallsyms2.S
AS .tmp_kallsyms2.o
LD vmlinux
SYSMAP System.map
SYSMAP .tmp_System.map
OBJCOPY arch/arm/boot/Image
Kernel: arch/arm/boot/Image is ready
GZIP arch/arm/boot/compressed/piggy.gzip
AS arch/arm/boot/compressed/piggy.gzip.o
LD arch/arm/boot/compressed/vmlinux
OBJCOPY arch/arm/boot/zImage
Kernel: arch/arm/boot/zImage is ready
UIMAGE arch/arm/boot/uImage
Image Name: Linux-3.2.0
Created: Fri Nov 27 04:10:55 2015
Image Type: ARM Linux Kernel Image (uncompressed)
Data Size: 3247216 Bytes = 3171.11 KB = 3.10 MB
Load Address: 0x80008000
Entry Point: 0x80008000
Image arch/arm/boot/uImage is ready
lin@goembedded-ubuntu:~/linux-3.2.0-psp04.06.00.08.sdk$
```

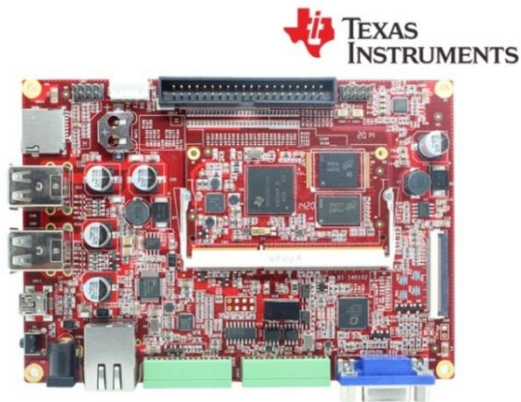
五、测试新内核

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。

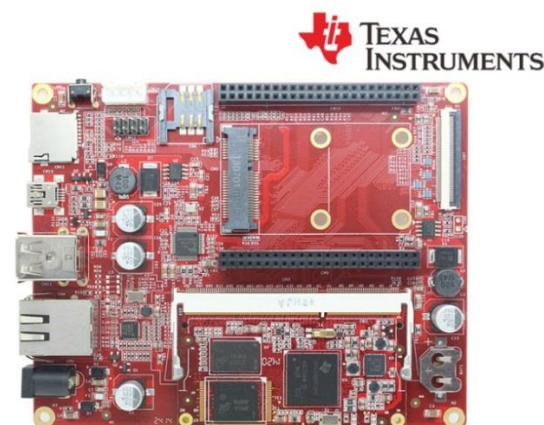
- (1)、用新的 `ulmage` 文件替换原来的 `ulmage` 文件。
- (2)、插上卡，接好串口线，打开串口调试软件。
- (3)、软件设置为：波特率 115200,8 bit 数据位，无校验位，1bit 停止位，无流控。
- (4)、打开电源后输入“root”登录系统。
- (5)、重新启动系统后可以显示新的内核 logo 图片。

到这里，Linux 下内核 logo 定制教程编写完成。

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.

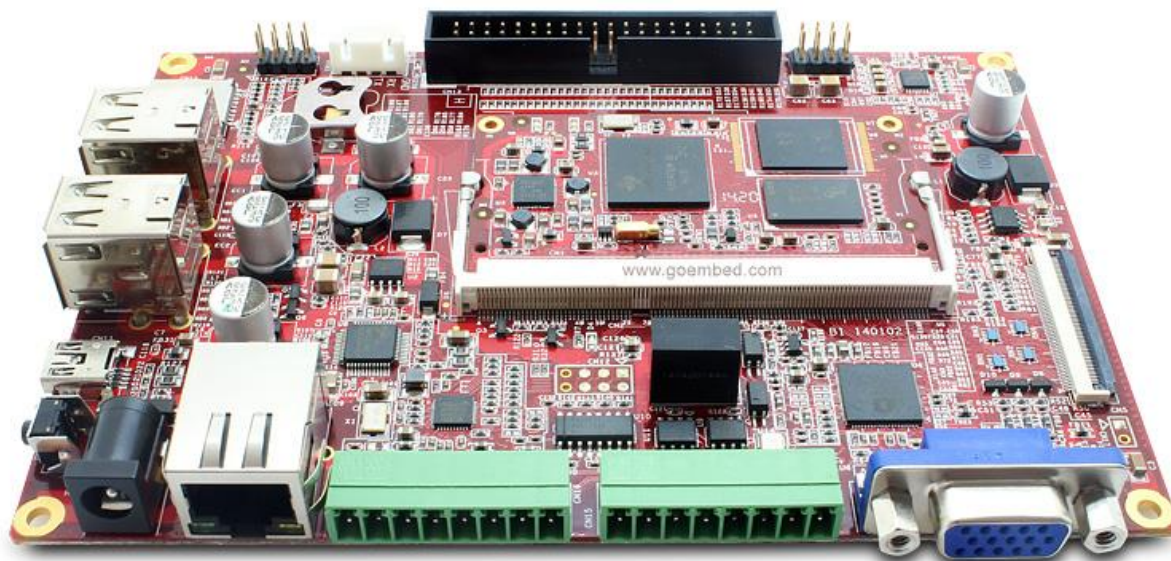
The B2A features 4 USB Host and 1 USB OTG, 1 Ethernet ports, LCD, Touch screen, RTC, and more other peripherals.

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.

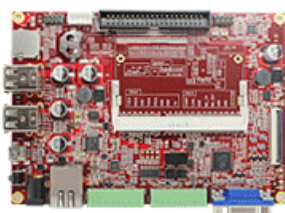
The SBC335x-B1A/B2A are ready-to-run platform to support **Linux 3.x**, **Android 4.x** and **WinCE 7.0/6.0** operating systems.

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

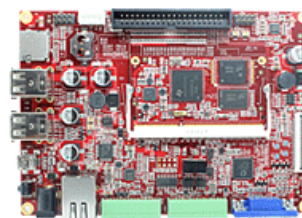
Single Board Computer
SBC335x-B1A
A perfect solution for upgrading ARM9 or ARM11 devices



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

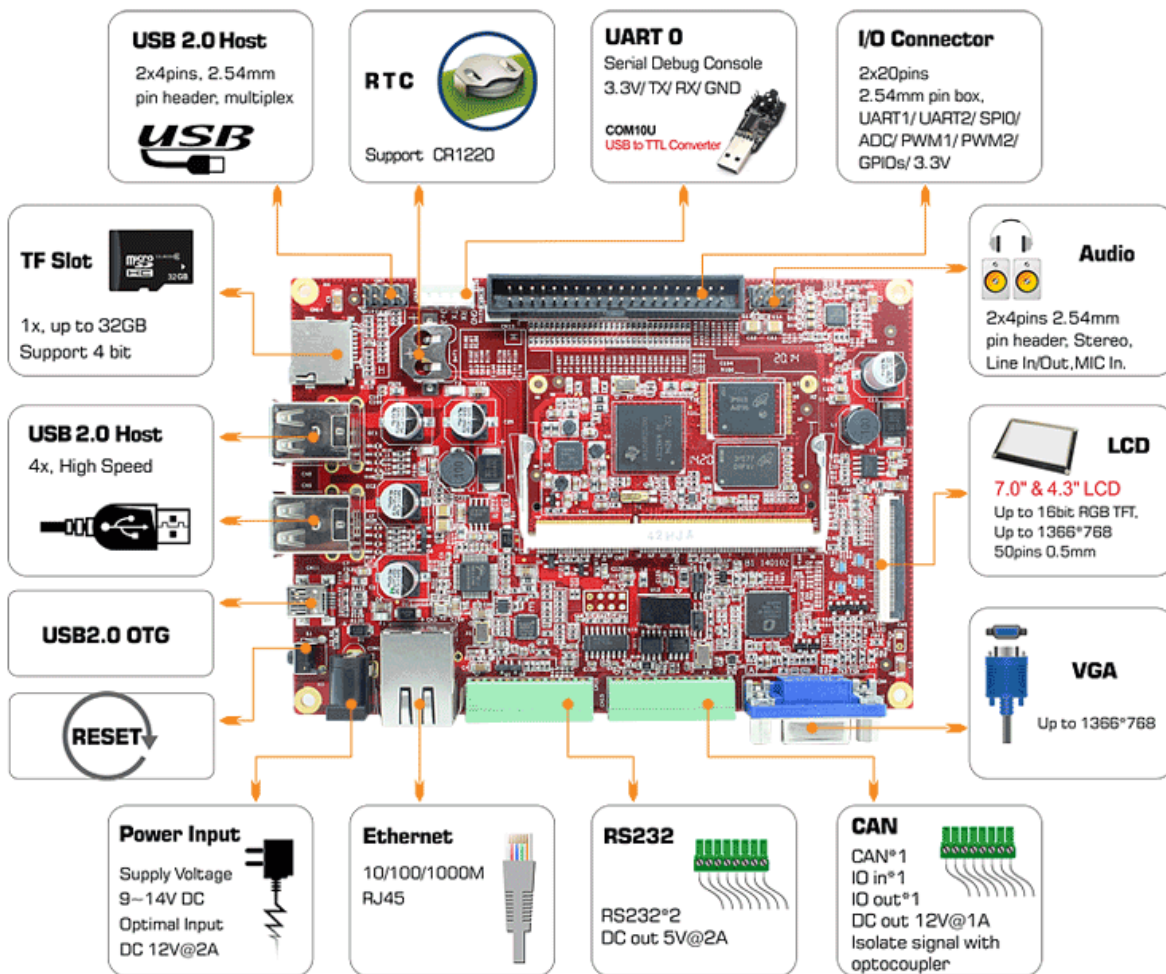


Figure 1 B1 Block Diagram

SBC335x-B2A

Single Board Computer



CM3358 ACW

+



B2A

=



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

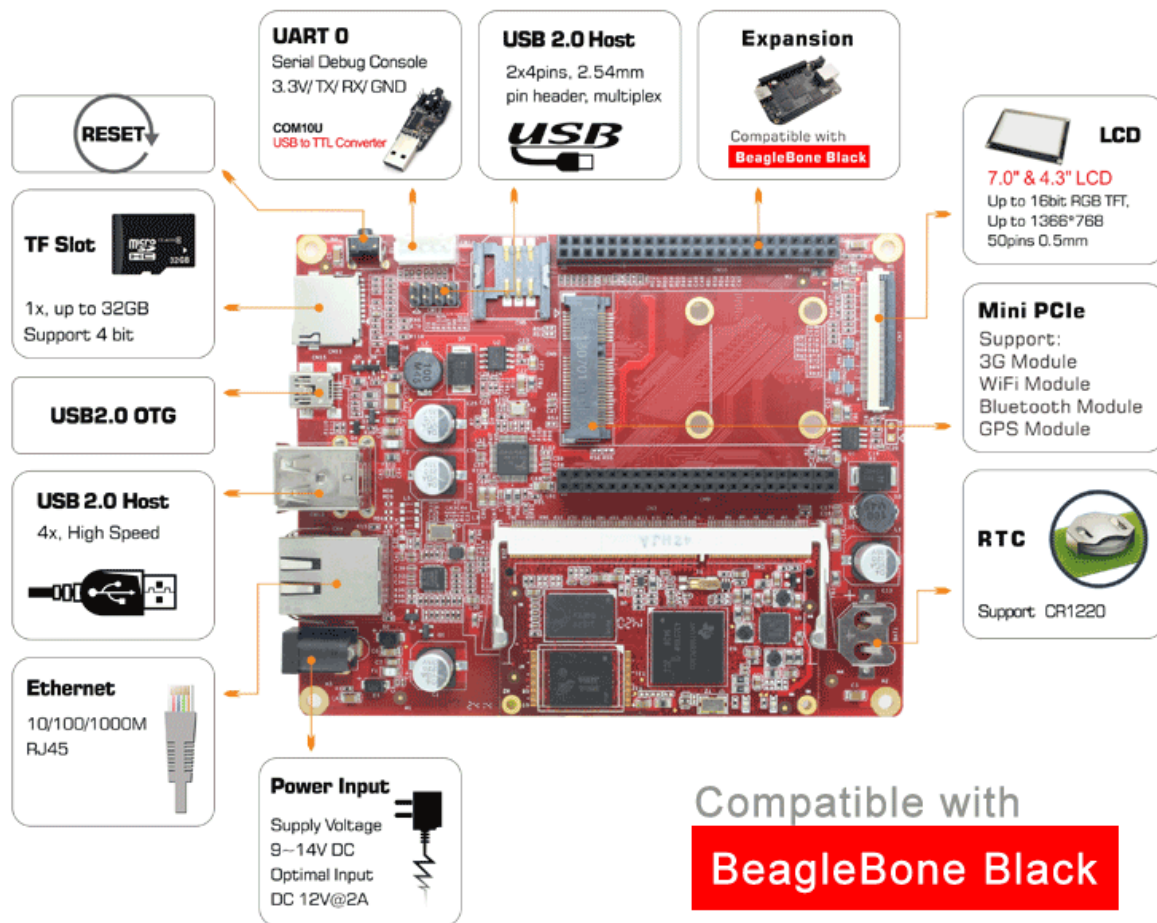


Figure 1 B2A Block Diagram

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.

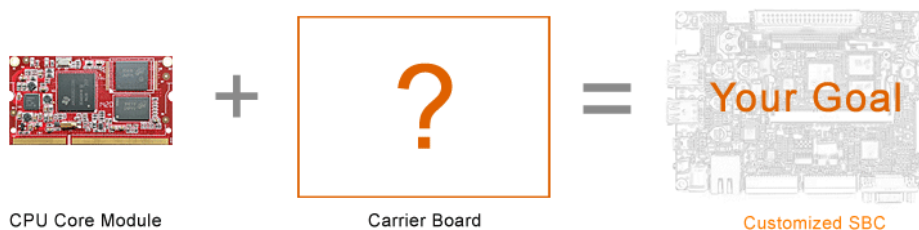
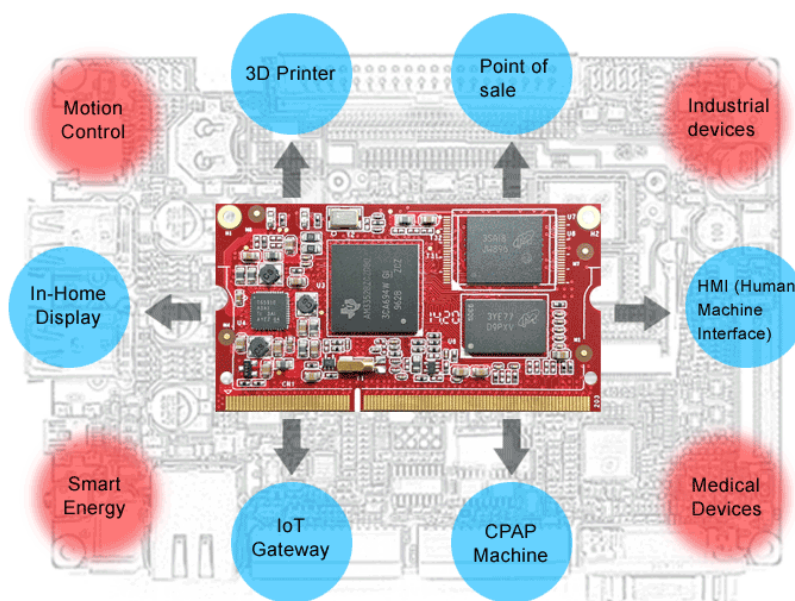
We are your trust worthy partner on ARM embedded design services and solutions.

More Carrier Boards

Customized based on your needs!

ODM / OEM Services

Bring your new products to market quickly

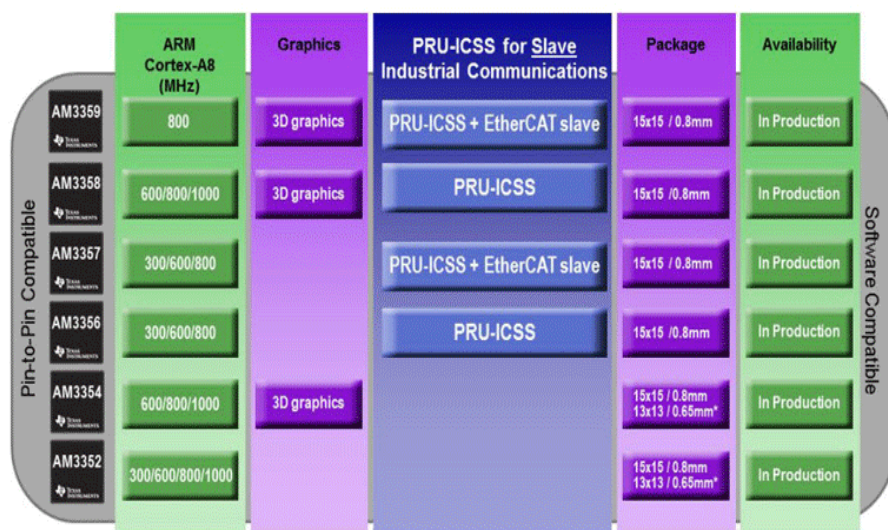


Related end equipment



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

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

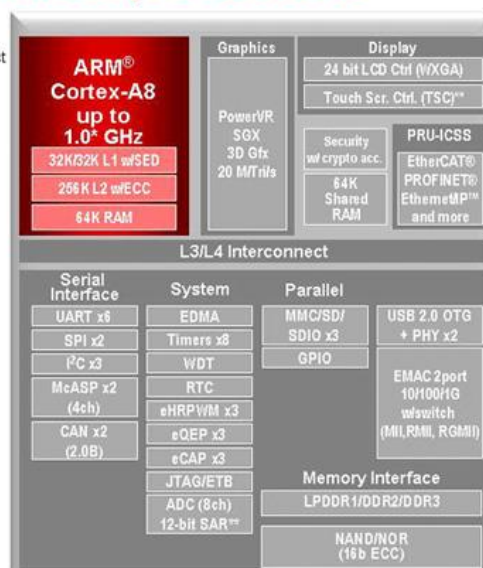
Schedule and packaging

- Status: In production
- Dev. Tools: Available today
- Docs: Available today
- Packaging: 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