

# info SDcard img Detalhes

Imagem padrão Linux para o kit DE10-nano da Terasic:

Arquivo	MD5 (.tar.gz)
<a href="#">de10-nano-insper.tar.gz</a>	c43c2d423fde5a01e45e50e135baa84c

A iso possui as seguintes especificações:

## Software

- Toolchain
  - gcc-linaro-7.2.1-2017.11-x86\_64\_arm-linux-gnueabi
- Linux Kernel 4.14
  - <https://github.com/altera-opensource/linux-socfpga>
- FileSystem (buildroot):
- user: **root**
- password: **1234**
- Networking:
  - aftp, sshfs, dropbear
- Debuggin, profiling and benchmark:
  - dgb (server), cache-calibrator
- Graphic libraries
  - direcfb, x.org
- Crypto
  - openssl, libsha1

## u-boot

- meta-de10-nano
- VERSION-2017.03.31

Essa versão do u-boot aloca um framebuffer no endereço: 0x3F000000

```
+ "hdmi_fdt_mod=" \
+ "load mmc 0:1 ${fdt_addr} " \
+ "socfpga_cyclone5_de10_nano.dtb; " \
+ "fdt addr ${fdt_addr}; " \
+ "fdt resize; " \
+ "fdt mknode /soc framebuffer@3F000000; " \
+ "setenv fdt_frag /soc/framebuffer@3F000000; " \
+ "fdt set ${fdt_frag} compatible \"simple-framebuffer\"; \"\
+ "fdt set ${fdt_frag} reg <0x3F000000 8294400>; " \
+ "fdt set ${fdt_frag} format \"x8r8g8b8\"; \"\
+ "fdt set ${fdt_frag} width <${HDMI_h_active_pix}>; \"\
+ "fdt set ${fdt_frag} height <${HDMI_v_active_lin}>; \"\
+ "fdt set ${fdt_frag} stride <${HDMI_stride}>; \"\
+ "fdt set /soc stdout-path \"display0\"; \"\
+ "fdt set /aliases display0 \"/soc/framebuffer@3F000000\"; \"\
```

Assumi-se que o kernel possui nome `zImage`, que o baudrate do console é `115200` e que o hardware a ser carregado na FPGA é o arquivo `de10-nano.rbf` e o device tree com nome `socfpga_cyclone5_de10_nano.dtb`

```
#define CONFIG_BOOTFILE      "zImage"
#define CONFIG_BOOTARGS     "console=ttyS0,"
_stringify(CONFIG_BAUDRATE)
#define CONFIG_BOOTCOMMAND "run mmcload; run mmcboot"
```

## Hardware

O Hardware contido nessa ISO é o `de10-nano-fft` fornecido no repositório do github da Intel. Com o hardware detalhado a seguir:

```
Flow Status Successful - Mon Oct  1 17:47:53 2018
Quartus Prime Version  16.1.0 Build 196 10/24/2016 SJ Standard
Edition
Revision Name    de10-nano-fft
```

Top-level Entity Name    top  
Family   Cyclone V  
Device   5CSEBA6U23I7DK  
Timing Models    Final  
Logic utilization (in ALMs) 20,797 / 41,910 ( 50 % )  
Total registers 34901  
Total pins   265 / 314 ( 84 % )  
Total virtual pins   0  
Total block memory bits 1,798,248 / 5,662,720 ( 32 % )  
Total DSP Blocks    18 / 112 ( 16 % )  
Total HSSI RX PCSs   0  
Total HSSI PMA RX Deserializers 0  
Total HSSI TX PCSs   0  
Total HSSI PMA TX Serializers   0  
Total PLLs   1 / 6 ( 17 % )  
Total DLLs   1 / 4 ( 25 % )