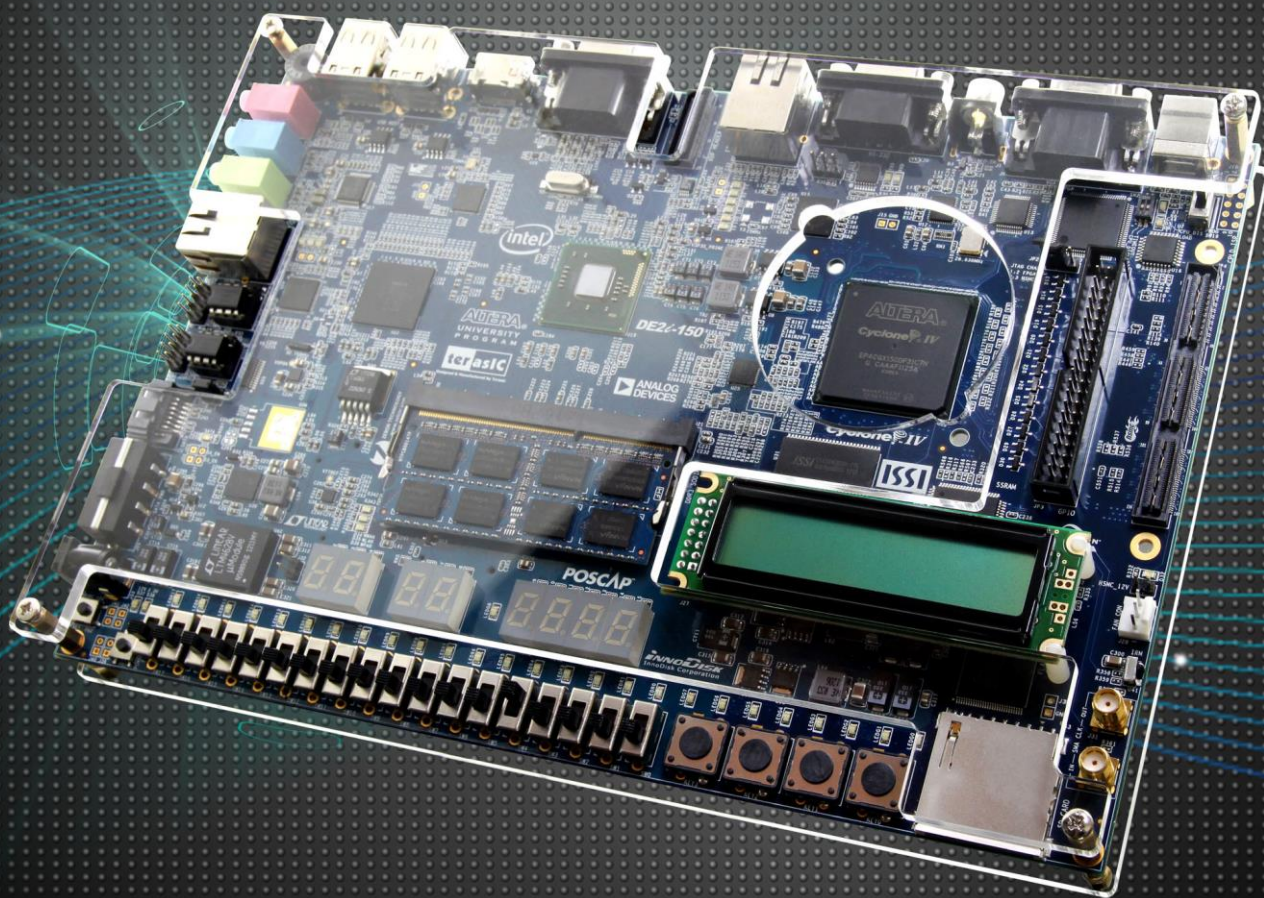


# DE2i-150

DEVELOPMENT KIT

WINDOWS USER MANUAL



**terasic**  
www.terasic.com

**ALTERA**



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# Chapter 1

## *Introduction*

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This document provides an introduction to the installation of Windows 7 to the mSATA SSD (Solid State Drive) on the DE2i-150 board. Examples of how to develop a C/C++ application program on the system, using the PCI Express channels between the CPU and FPGA, are also provided.

### **1.1 Requirements**

To install Windows to mSATA SSD on DE2i-150, the following items are required:

- Windows 7 installation DVD with license from Microsoft
- USB flash drive, 8GB at least
- Windows based host PC with USB host ports and DVD-ROM.

32-bit Windows 7 is recommended for DE2i-150. The host PC may be running any version of Windows compatible with the tools needed to download and setup the flash drive.

### **1.2 Develop Windows Program**

To develop a C/C++ software program to communicate with FPGA, the following items are required:

- PCI express driver installed (provided by Terasic)
- C/C++ compiler kit. Visual Studio C/C++ 2012 or Borland C++ Builder 6.0 is preferred.

## Chapter 2

# *Windows Installation*

This chapter will introduce how to use a USB flash drive to install Windows 7 to mSATA SSD on DE2i-150 board.

Items needed are listed below:

- Windows 7 installation DVD (32-bit version is preferred to support different peripherals' drivers).
- USB flash drive (8G or above)
- Host PC equipped with DVD-ROM

In the next section we will introduce how to create a Windows 7 .iso file and put it in a USB flash drive as a boot device.

### **2.1 Create Windows 7 ISO File**

The process described below will convert a Windows 7 .iso image on a CD/DVD to a flash drive. The flash drive can then be used to boot the DE2i-150 or be transferred to the SSD on the DE2i-150 board.

1. There are several software applications available to convert Windows installation DVD to .iso file. A freeware application called "ISO Recorder" is used to create .iso file.
2. Prepare one Windows 7 installation DVD.
3. Download ISO Recorder from <http://alexfeinman.com/isorecorder.htm> based on your operating system and install it to your host PC.
4. Insert Windows 7 installation DVD to the DVD-ROM of your PC.
5. Open "My Computer" and right-click on the Windows 7 installation DVD to select "Create image from CD/DVD, as shown in **Figure 2-1**.

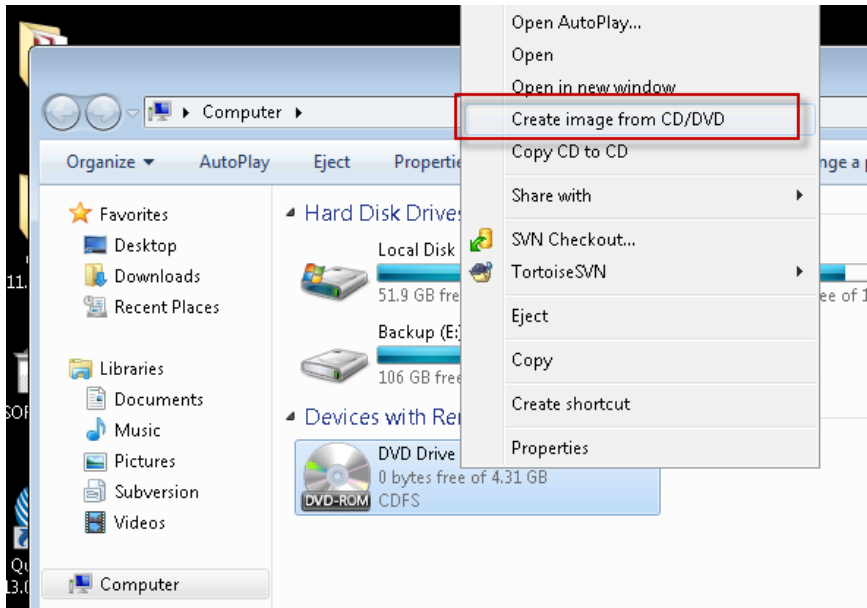


Figure 2-1 Create image from CD/DVD

6. A “Record CD/DVD” window will show up. Select a folder on the host PC and then click “Next”.

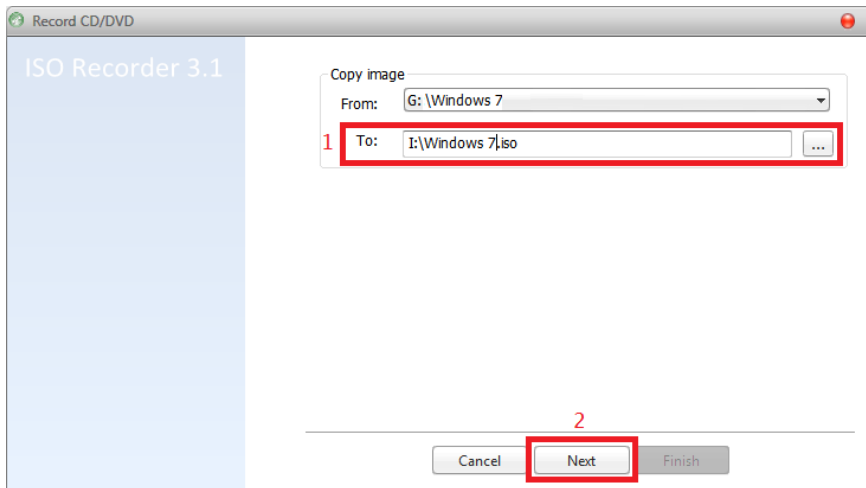


Figure 2-2 Record CD/DVD window

7. Wait for Windows 7 ISO image creation to complete and then click “Finish” to exit.

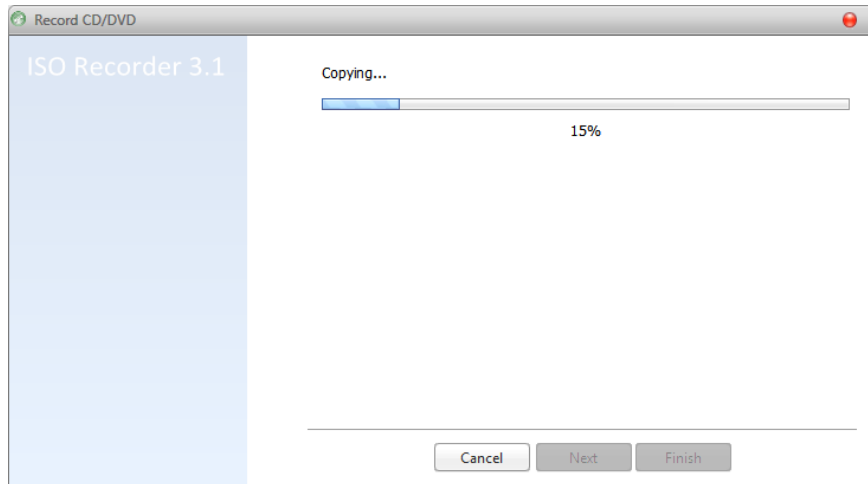
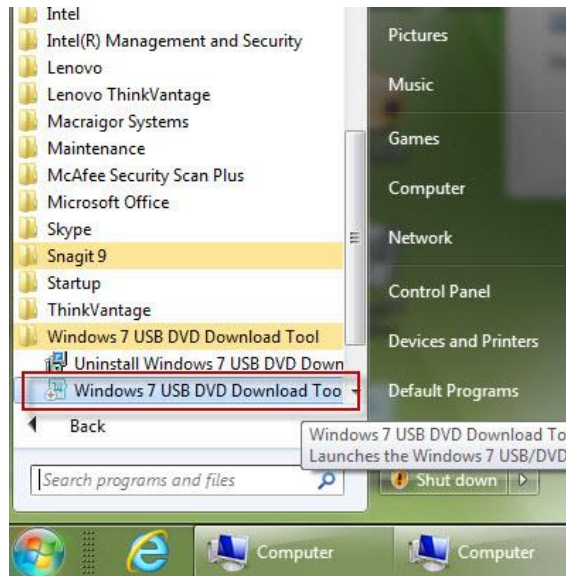


Figure 2-3 Copy files to create .ISO

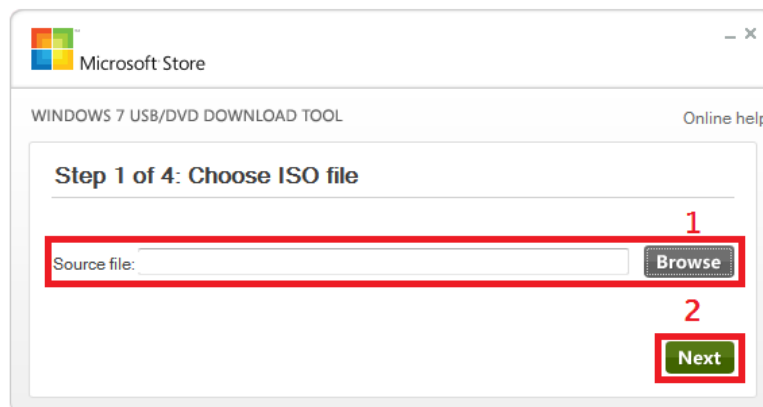
## 2.2 Make a Windows 7 Bootable USB Flash Drive

1. After creating the windows 7.iso file, the next step is to copy this .iso file onto a USB drive. We used the “windows7-usb-dvd-tool” software on accomplishing it. The Windows 7 USB/DVD download tool from Microsoft is used to make a Windows 7 bootable device.
2. Download the Windows 7 USB/DVD download tool from <http://images2.store.microsoft.com/prod/clustera/framework/w7udt/1.0/en-us/Windows7-USB-DVD-tool.exe>.
3. Execute Windows7-USB-DVD-tool.exe to start the installation.
4. Plug in a USB flash drive into your PC.
5. Execute Windows 7 USB DVD Download Tool from the ALL PROGRAMS list by clicking the Windows START button and then Windows 7 USB/DVD Download Tool.



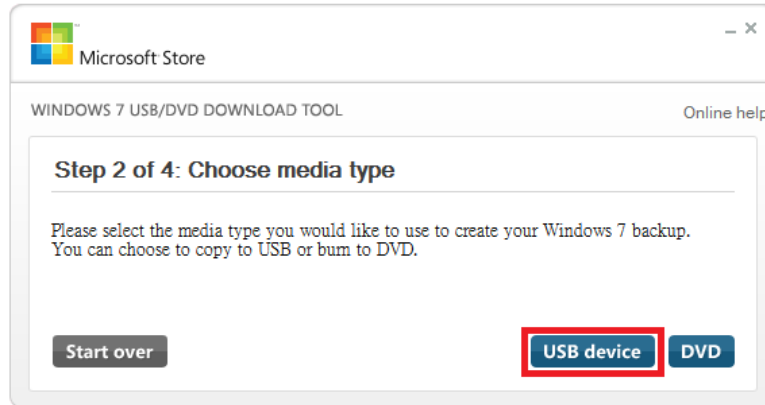
**Figure 2-4 Execute Windows 7 USB DVD Download Tool**

6. Select the Windows 7 image source file. This file is in the directory that you chose to store in file in Step 6 of the last section. Click Next.



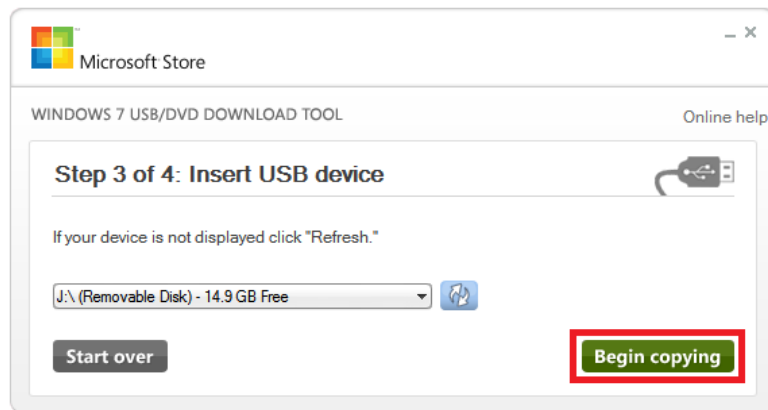
**Figure 2-5 Select Windows 7 image source file**

7. Select the “USB device” as the media type rather than the DVD.



**Figure 2-6 Choose media device**

8. When the next window appears, click on “Begin copying”.



**Figure 2-7 Record CD/DVD window**

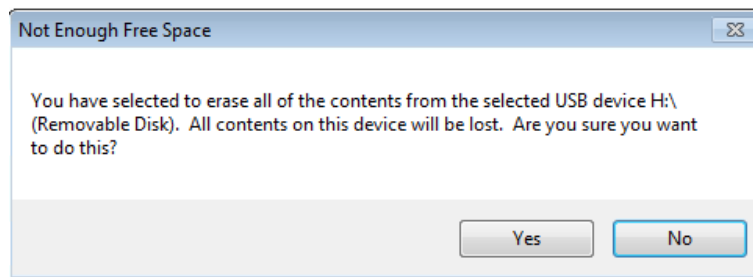
9. Click on the “Erase USB Device” option when a pop-up window appears. Please note that any information that was on the Flash drive will be erased.





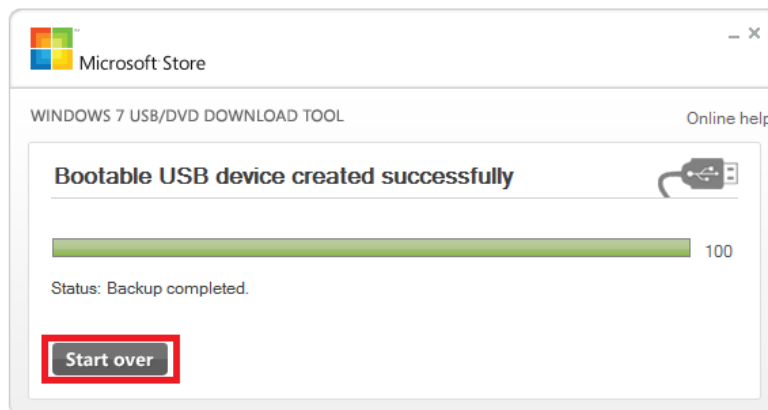
**Figure 2-8 Erase USB device**

10. Click “Yes” to erase Disk.



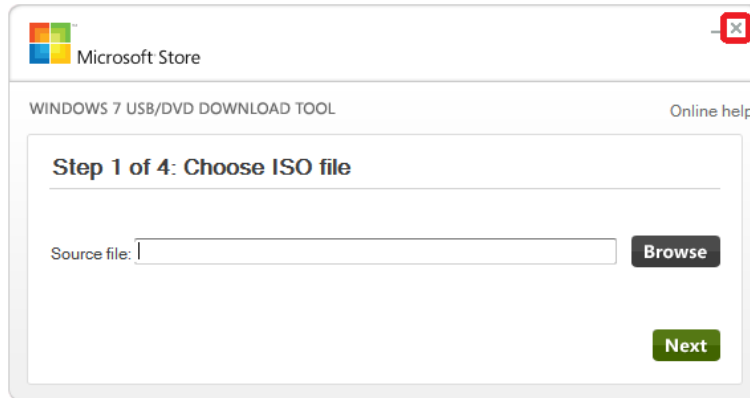
**Figure 2-9 Erase USB device**

11. Wait for bootable USB device creation to finish and then click Start over.



**Figure 2-10 Bootable USB device created successfully**

12. Close the tool.

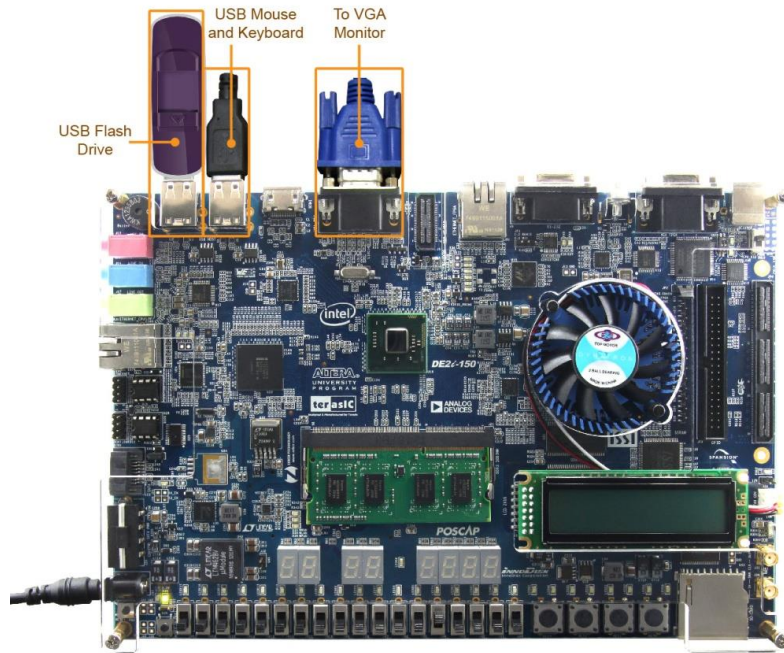


**Figure 2-11 Record CD/DVD window**

13. The Windows 7 bootable USB flash drive has now been created and is ready to be used with the DE2i-150 board.

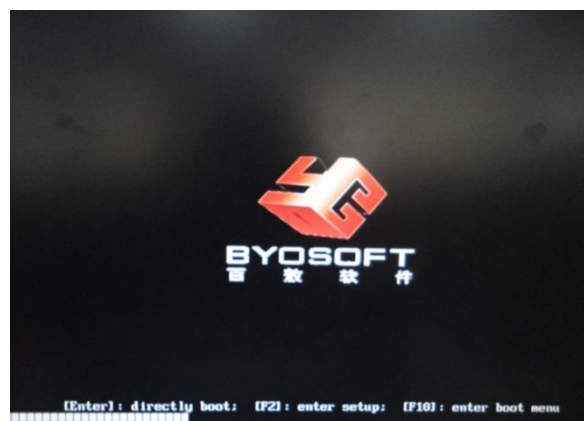
## **2.3 Boot DE2i-150 with Windows 7 Bootable USB Flash Drive**

1. Plug in your Windows 7 bootable USB flash drive to one of the USB ports on DE2i-150, as shown in [Figure 2-12](#).



**Figure 2-12 Hardware setup for the installation of Windows 7 from USB flash drive**

2. Insert the connector(s) for the mouse and keyboard to the other USB ports and connect a monitor with VGA input to the VGA port of DE2i-150.
3. Connect the power adapter to the power jack of the DE2i-150.
4. Press the power on button on the bottom-left corner. The board should power on, emitting some beeps to indicate a successful load of the BIOS.
5. When the BIOS logo is shown on the VGA monitor, press the F10 key on the keyboard to enter the boot menu.



**Figure 2-13 BIOS logo**

6. Select the USB flash drive that is plugged into the board and press Enter to set the BIOS of DE2i-150 to boot from the USB device.

Note: Do not select the EFI options. If you have more than one USB flash drive inserted in the board, please check to make sure that you are selecting the flash drive with the new OS image.

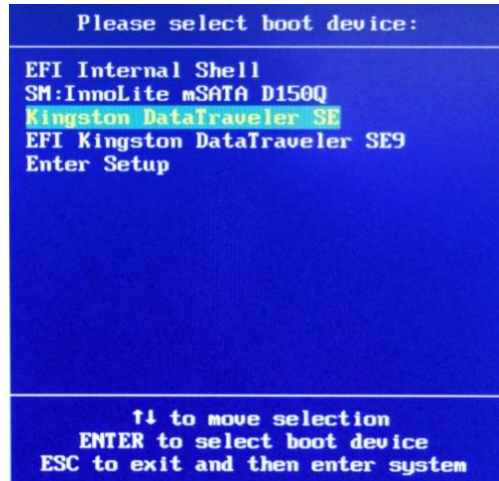


Figure 2-14 Select boot device in BIOS

7. The DE2i-150 will reboot and enter the Windows loading screen.

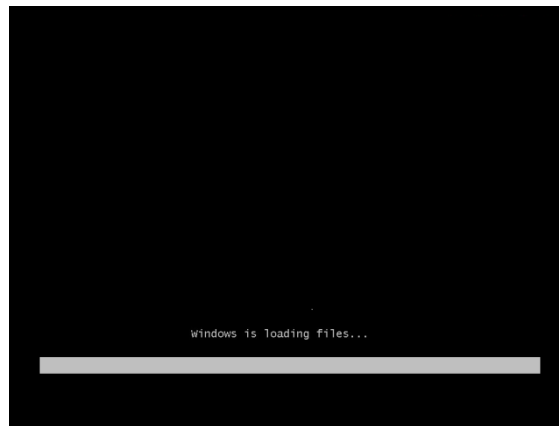
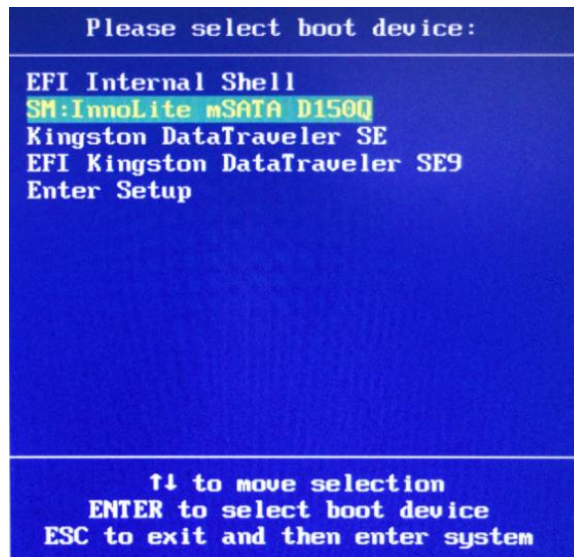


Figure 2-15 Windows loading screen



**Figure 2-16 Windows installation menu**

8. Users can follow the instructions to install the Windows 7.
9. The DE2i-150 will automatically restart several times during the installation of Windows note: Users will need to set the boot device from USB Flash drive back to the mSTAT SSD after the installation is successful (press “F10” when the BIOS logo shows up and set the boot device to “SM:InnoLite mSATA D150Q”, as shown in **Figure 2-17**).



**Figure 2-17 Boot Device setup in BIOS**

10. The windows 7 driver for the DE2i-150 hardware can be found at [http://www.terasic.com/downloads/cd-rom/de2i-150/Drivers\\_for\\_CPU\\_System/](http://www.terasic.com/downloads/cd-rom/de2i-150/Drivers_for_CPU_System/).

# *Additional Information*

## **Getting Help**

Here is the contact information where you can get help if you encounter problem:

Terasic Technologies  
9F., No.176, Sec.2, Gongdao 5th Rd,  
East Dist, HsinChu City, 30070. Taiwan, 30070  
Email: [support@terasic.com](mailto:support@terasic.com)  
Web: [www.terasic.com](http://www.terasic.com)  
DE2i-150 Web: [DE2i-150.terasic.com](http://DE2i-150.terasic.com)

## **Revision History**

<b>Date</b>	<b>Version</b>	<b>Changes</b>
2013.7	First publication	
2017.4	V1.1.0	Remove Altera Lolo