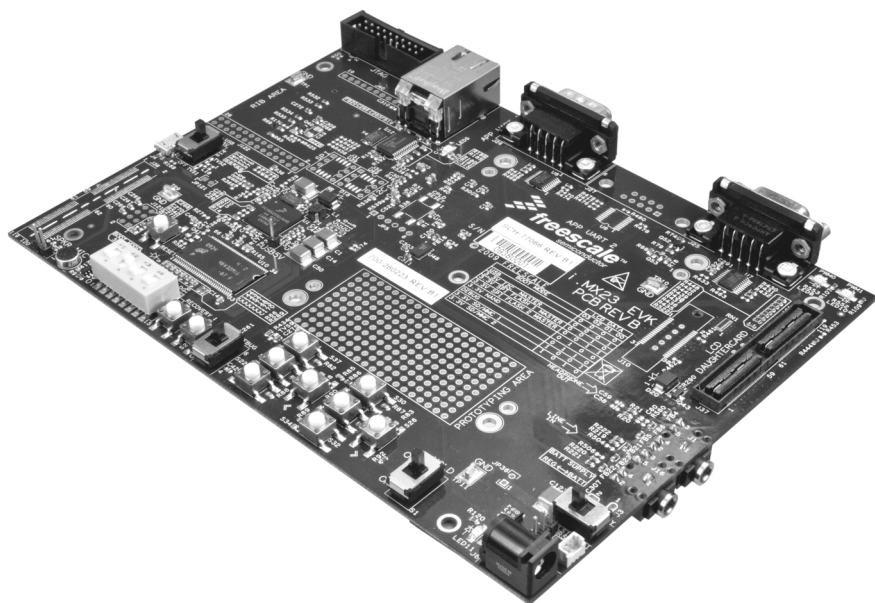


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# i.MX23 EVK Windows Embedded CE 6.0

## Quick Start Guide



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# Chapter 1

## About the Board

This chapter provides detailed information about the i.MX23 EVK and the locations of the connectors and switches.

The i.MX23 Windows CE EVK that is designed for multimedia and connectivity applications uses the i.MX23 series ARM9<sup>®</sup> Applications Processor. The i.MX23 EVK that can be used as a hardware and software development platform decreases the time to market the products providing a near-to-final product design. The board support packages (BSP) for the i.MX23 EVK, contain drivers optimized for multimedia operations using the i.MX23.

The following are included in the i.MX23 EVK:

- CPU board that contains the i.MX23 CPU, DDR1, and NAND Flash
- USB Connection
- Ethernet Connection
- SD/MMC Connection
- Two UARTs
- Audio I/O Jack
- Speaker Out
- Microphone
- JTAG

## 1.1 Block Diagram

Figure 1-1 shows the block diagram of i.MX23 EVK.

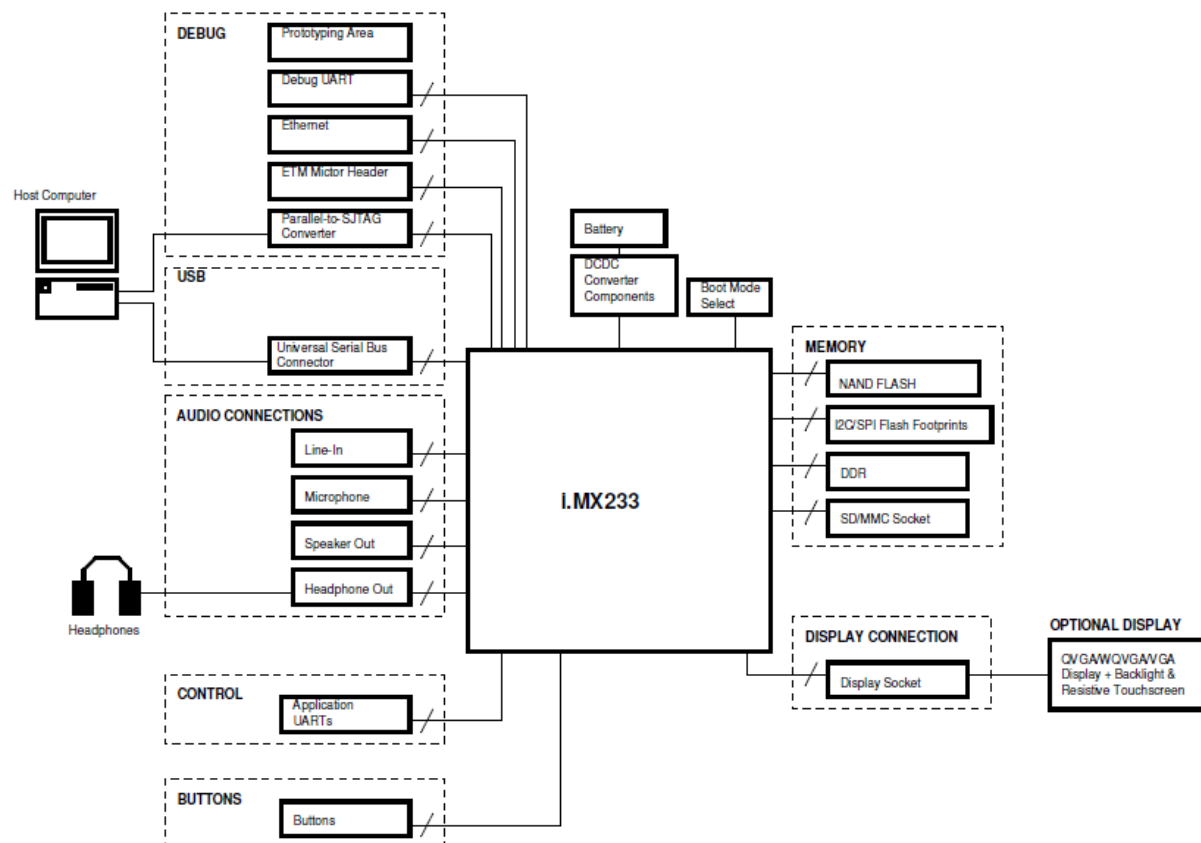


Figure 1-1 i.MX23 EVK Block Diagram

## 1.2 i.MX23 EVK Board

Figure 1-2 shows the top view of the i.MX23 EVK board without the LCD module.

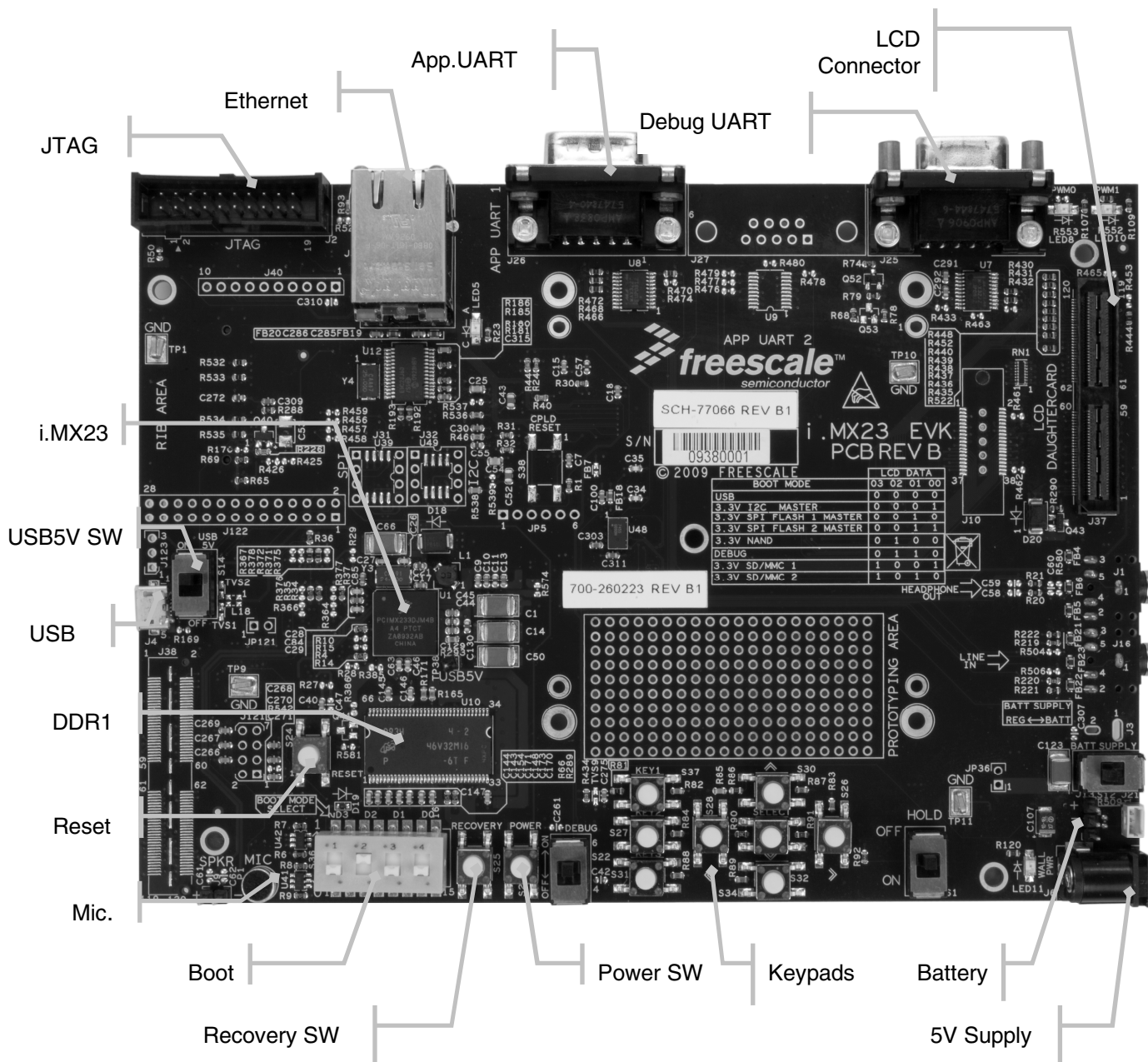


Figure 1-2 i.MX23 EVK Top View (Without LCD)

Figure 1-3 shows the bottom view of the i.MX23 EVK board.

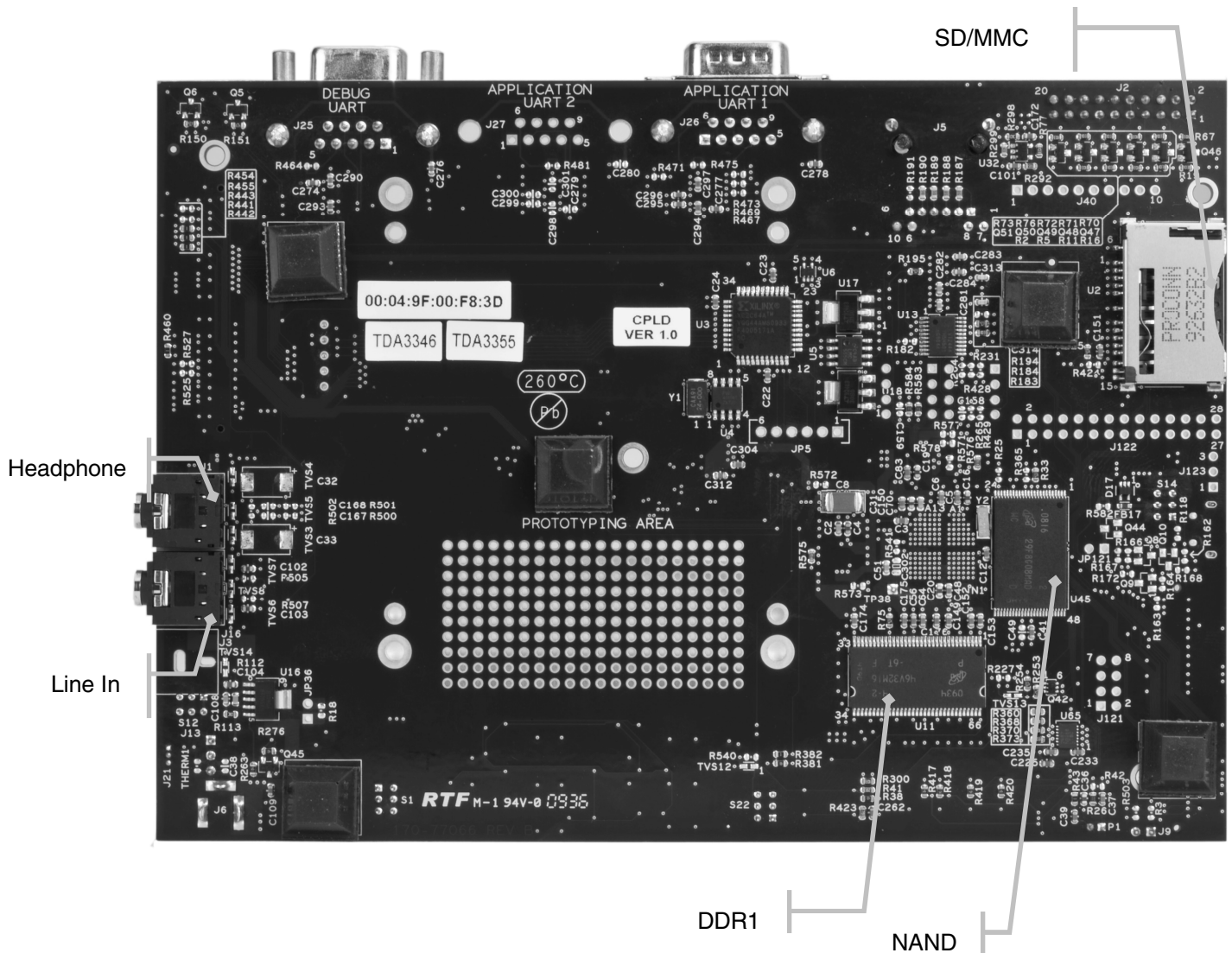


Figure 1-3 i.MX23 EVK Bottom View

## Chapter 2

# Getting Started

This chapter describes how to start using the i.MX23 Software Development Kit (SDK), what is included in the kit and the development PC requirements.

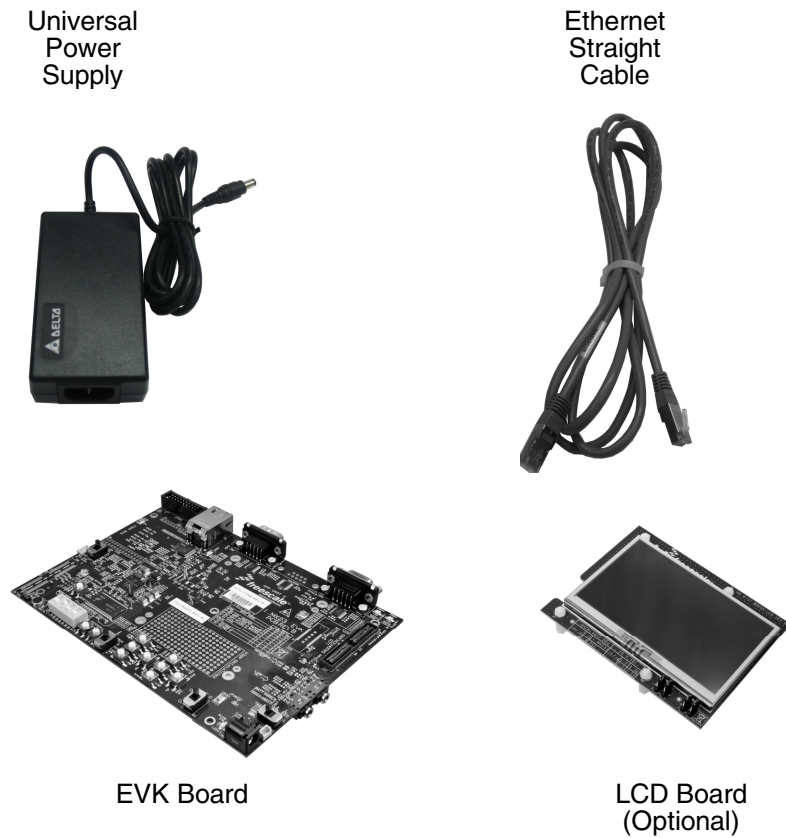
## 2.1 Unpack the Kit

The i.MX23 SDK is shipped with the items listed in Table 2-1.

**Table 2-1 i.MX23 EVK Development Kit Contents**

Item	Description
Board	i.MX23 EVK Board LCD Module (optional)
Cables	Ethernet Straight Cable
Power Supply	5.0 V/5.0 A Universal Power Supply
Documentation	Software and Documentation Web Content End-User License Agreement Quick Start Guide (this document) Warranty Card Freescale Support Card

Verify whether all of the items are within the package, as shown in Figure 2-1. Remove all the boards from the anti-static bags and check the boards for any visible damage.



**Figure 2-1 i.MX23 EVK Kit Contents**

## 2.2 Web Based Contents

All the i.MX23 EVK latest documentation and software are posted in the product's website: [www.freescale.com/imx23evk](http://www.freescale.com/imx23evk) . Table 2-2 lists all the documents that are posted in this site.

**Table 2-2 DVD Contents**

Type	Requirement
Product Documentation	Schematics, and Gerber files for CPU, Personality, and Debug Boards i.MX23 Hardware User's Guide i.MX23 Windows CE Demo Image Readme i.MX23 Windows CE Quick Start Guide (this document) i.MX23 Windows CE Release Notes i.MX23 Windows CE User's Guide i.MX23 Windows CE Reference Manual i.MX23 Windows CE Hello World Application Note
Software Development Tools	Windows CE SDK Installation File
i.MX23 EVK Windows Demo Image	Copy of the OS image flashed on the board

## 2.3 Development PC Requirements

To develop applications using the i.MX23 SDK, a PC is required with the requirements shown in the Table 2-3.

**Table 2-3 Development PC Requirements**

Type	Requirement
Operating System	Windows XP Professional with Service Pack 1 or Windows 2000 Professional with Service Pack 4
Network	Internet access
Software Tools	<ul style="list-style-type: none"><li>• Microsoft ® .NET Framework, version 1.1</li></ul>
PC HW	<ul style="list-style-type: none"><li>• 933 MHz Pentium II or later processor;</li><li>• 2 GHz processor recommended</li><li>• 512 MByte of RAM; 1 GByte recommended</li><li>• 1 GByte of available space required on system drive</li><li>• 18 GByte of available hard-disk space</li><li>• DVD ROM drive</li><li>• 1024x768 or higher resolution display with 256 colors</li></ul>

---

## Chapter 3

# LCD Board Assembly

This section explains how to connect the LCD board on the i.MX23 EVK board.

The i.MX23 EVK board is connected to the LCD board using 120 pin Mictor connectors. The connectors are keyed to avoid misconnection. Hence, there is only one way to connect these boards.

The LCD board is connected to the J37 connector. The J37 connector is located on the top layer of the i.MX23 EVK board. See Figure 3-1 to locate the J37 connector.

### NOTE

The 4.3" WQVGA LCD Board is an optional card for the i.MX23 EVK board and it is sold separately from the i.MX23 EVK board.

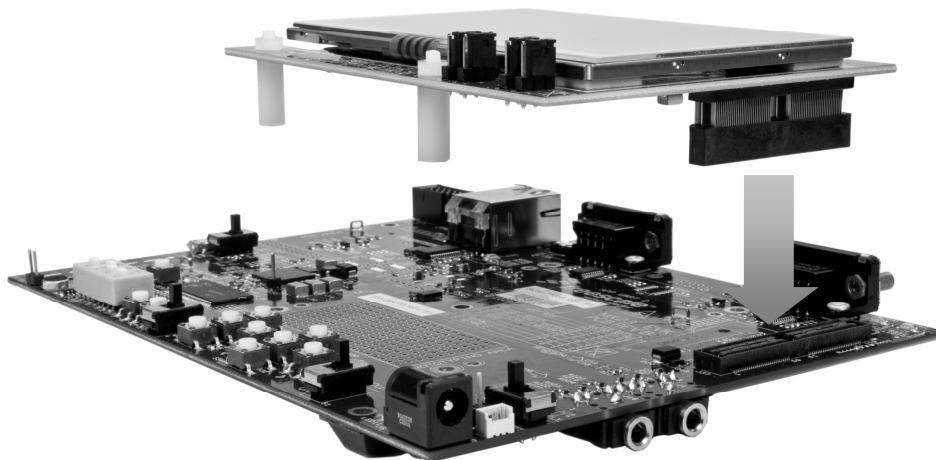


Figure 3-1 LCD Board Assembly



Figure 3-2 shows the i.MX23 EVK board with the LCD attached.

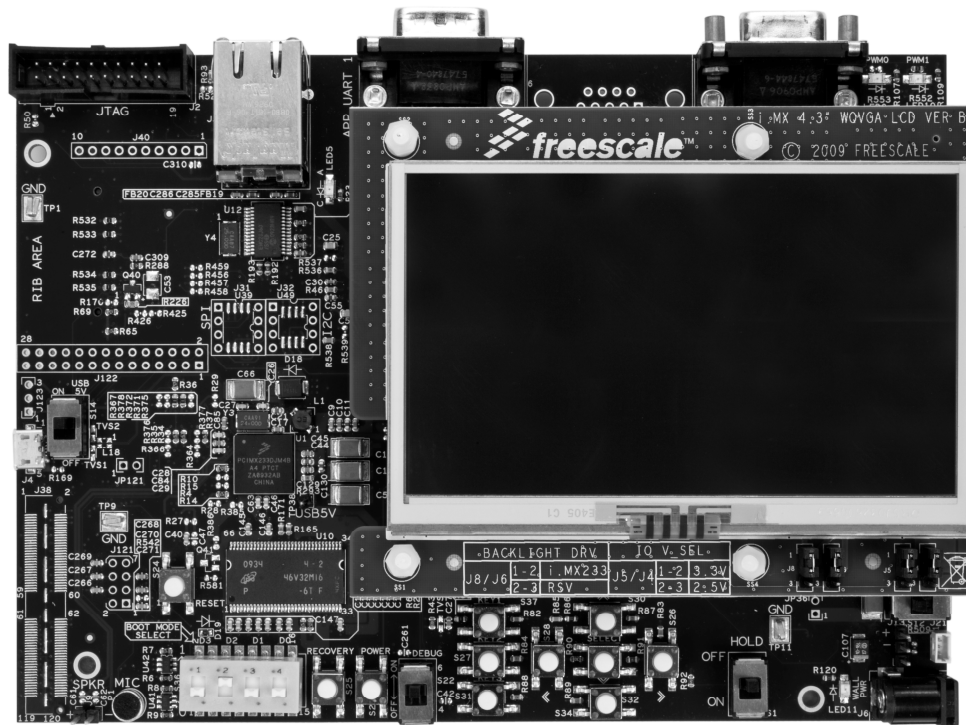


Figure 3-2 i.MX23 EVK with LCD Board



## Chapter 4

# Using the Demo Image

This chapter shows how to use the Windows Embedded CD 6.0 demo image shipped with your i.MX23 Windows CE EVK system. For details on how to flash the demo image to the EVK NAND flash, see the *i.MX23EVK Windows CE User Guide*.

### NOTE

The demo image present in all the Windows CE EVK boards needs the LCD board to work properly. If the EVK board has no LCD board, compile a Windows CE image without the GUI using our SDK, and then download that image to your board. To follow this procedure, see the *i.MX23EVK Windows CE User Guide*.

## 4.1 Boot from NAND

The section explains how to boot from NAND:

- Set the Boot Mode dip switches on the EVK board to NAND boot as shown in Table 4-1.

**Table 4-1 Boot Mode Setting**

Boot Mode	D3	D2	D1	D0
NAND boot	0	1	0	0

- Connect the Debug UART (J25) to a serial terminal using the configuration settings shown in Table 4-2.

**Table 4-2 Serial Terminal Configuration**

Parity	None
Data bits	8
Stop bit	1
Baud Rate	115200

- Connect DC 5V and press POWER button.

## 4.2 Multimedia Codecs Content

The Windows Embedded CE 6.0 Demo Images contain a set of multimedia codecs that support various use cases. These codecs are optimized to run on the i.MX23 platform.

For a list of the provided codecs, see *i.MX23 EVK Windows Embedded CE 6.0 Demo Image Readme*.

For more information about the multimedia codecs, contact a Freescale sales representative or distributor.

## 4.3 Downloading Multimedia Content to the i.MX23 EVK Board

There are two ways to load multimedia content to the i.MX23 EVK board using the Windows Embedded CE 6.0 image.

- Using ActiveSync®
- Using an Secure Digital (SD) Card

### 4.3.1 Using ActiveSync

ActiveSync is a very useful tool to use with a Windows Embedded CE 6.0 device. To obtain the ActiveSync download and the instructions, go to:

<http://www.microsoft.com/windowsmobile/activesync/activesync45.mspx/>

When ActiveSync is installed, communication between the i.MX23 EVK board and host PC is established.

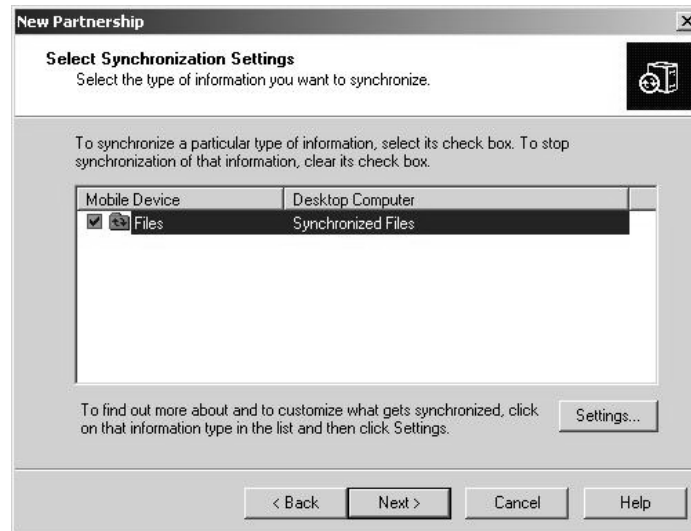
To establish the communication between the host PC and the i.MX23 EVK board, follow these steps:

1. Ensure that the i.MX23 EVK board is ON and the Windows Embedded CE 6.0 is running.
2. Ensure that ActiveSync is running on your host PC (the ActiveSync icon should appear gray on the Windows task bar).
3. Using the microUSB B to type A cable, connect the microUSB B end to the J4 USB OTG connector on the i.MX23 EVK board, and the other end to the any available USB port on your Host PC.
4. Once the communication is established, Windows in host PC recognizes the i.MX23 EVK board as a Windows Embedded CE 6.0 device, and the ActiveSync wizard is displayed on the host PC as shown in Figure 4-1.



**Figure 4-1 Set Up a Partnership**

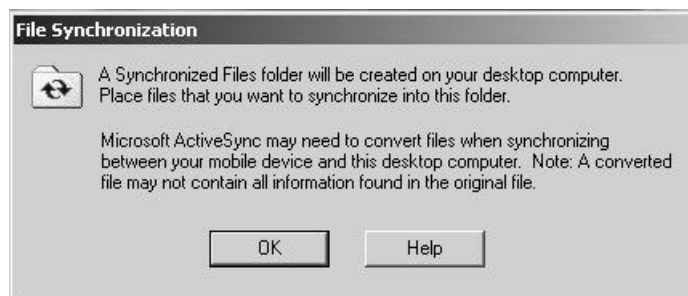
5. Select **Yes**, and then click **Next**. The Select Synchronization Settings options are displayed as shown in Figure 4-2



**Figure 4-2 Select Synchronization Options**

6. Select the **Files** option from the Select Synchronization Settings window, to synchronize the type of information. See Figure 4-2.

The following message is displayed, see Figure 4-3. The message notes that the program will create a folder to transfer files to the Mobile Device (i.MX23 EVK).



**Figure 4-3 Warning from ActiveSync File Synchronization**

7. Click **OK**.

- Continue through the wizard until it is complete.

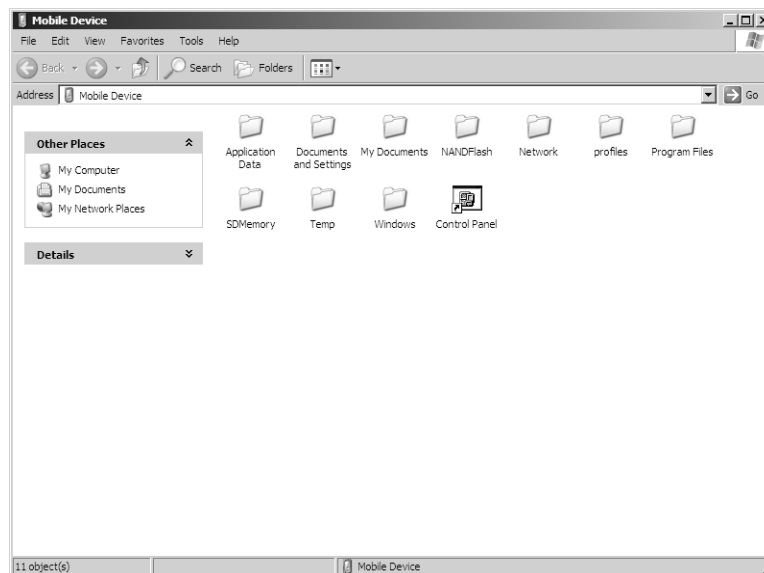
When ActiveSync establishes communications with the i.MX23 EVK board, the ActiveSync main window is displayed with the status of the connection. See Figure 4-4.



**Figure 4-4 Viewing the Connection Status**

- To browse the Mobile Device folders, click the Explore icon in the ActiveSync window.

A new Windows explorer window for the Mobile Device opens on the host PC. See Figure 4-5.



**Figure 4-5 Windows Explorer for Mobile Device**

10. To download a multimedia file to the EVK board, drag the file to the Mobile Device window.

The ActiveSync program transfers the file to the board and displays a message indicating that the file will be converted.

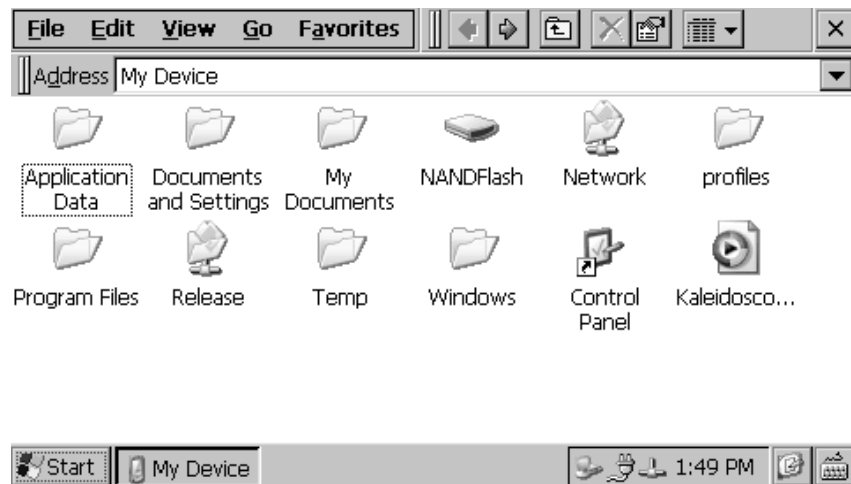
11. Click **OK**. The download begins.

### NOTE

For more information about the multimedia files supported by the Windows Embedded CE 6.0 image pre-loaded in the board, see *i.MX23 EVK Windows Embedded CE 6.0 Demo Image Readme* in the EVK documentation.

12. To access the files, double-click the My Device icon in the Windows Embedded CE 6.0 desktop (on the i.MX23 EVK board).

A Windows Explorer window displays the content you downloaded with ActiveSync. See Figure 4-6.



**Figure 4-6 Downloaded Content**

13. Plug the headphones into the J1 Audio jack connector.
14. Double-click your multimedia file to play the file.

## 4.3.2 Using an SD Card

If you have an SD Card with pictures or other multimedia content, you can use the i.MX23 EVK Board to view its content.

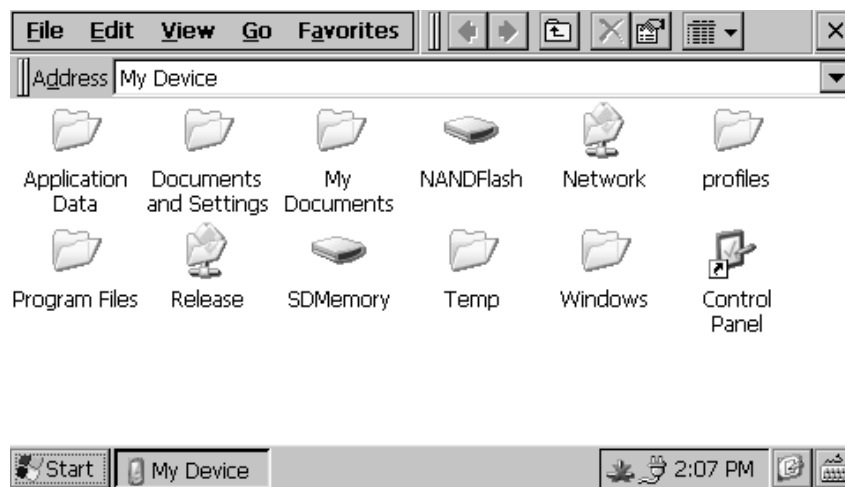


To use the SD Card, follow these steps:

1. Ensure that the i.MX23 EVK is powered ON and the Windows Embedded CE 6.0 demo image is running.
2. Insert the SD Card in the MMC/SD Card slot (U2), which is located on the bottom layer of the EVK board.
3. Click the My Device icon located in the Windows Embedded CE 6.0 desktop.

A Windows Explorer window opens, displaying the SD Memory icon. See Figure 4-7.

4. To access the SD Card content, double click the SD Memory icon.



**Figure 4-7 Viewing the SD Memory Icon**

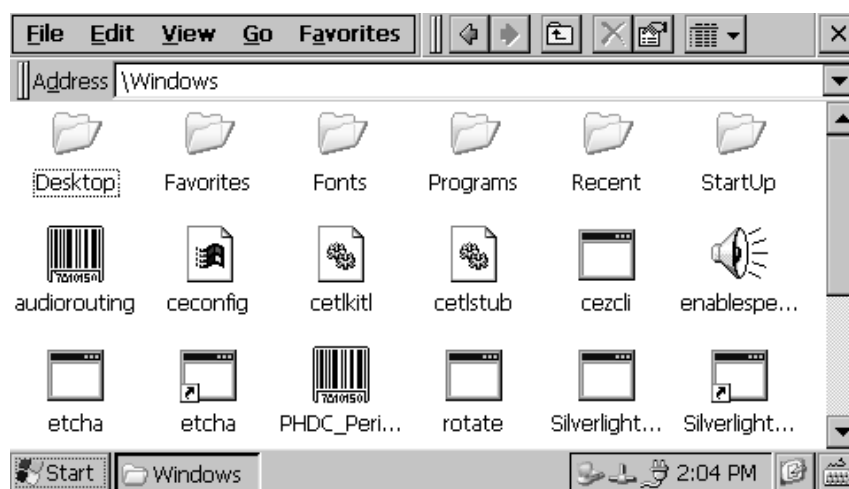
## 4.4 Running the Demo Applications

The Windows Embedded CE 6.0 image that is pre-loaded on the i.MX23 EVK board includes the demo applications described in Table 4-3.

**Table 4-3 Demo Applications Included in OS Demo Image**

Application	Description
Enablespeaker.exe	Route the audio to the speaker connector J9 (Not populated with a speaker)
Etcha.exe	Touch Driver Test Program
Rotate.exe	Application that rotate the orientation of the GUI.
SilverlightClock.exe	Demo application of the use of the Microsoft Silverlight.
USB Set Applications	Multiple applications to set mode of the USB function driver.
PHDC_Peripheral_App.exe	Demo GUI application.

To access the demo applications on the OS image, click the My Device icon on the Windows Embedded CE 6.0 desktop. Open the Windows folder to view the demo applications. See Figure 4-8.



**Figure 4-8 Demo Applications in Windows Folder**

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## Chapter 5

### Documentation

The following documents contain more information to assist development with the i.MX23 SDK:

- i.MX23 Hardware User Guide provides hardware information for the EVK, including the connectors, switches, options, and pins.
- i.MX23 Windows Embedded CE 6.0 Release Notes provides the tools needed to use the SDK, including the driver availability and known errors.
- i.MX23 Windows Embedded CE 6.0 User Guide explains how to build and modify a Windows image and deploy the image to the EVK.
- i.MX23 Windows Embedded CE 6.0 Reference Manual provides detailed information about the BSP drivers, including functional information, dependencies, and building options for each driver.
- i.MX23 Windows Embedded CE 6.0 Hello World Application Note explains how to create a simple Hello World application.

For additional information, see the support documentation in the i.MX23 SDK package.