Quick Start Guide

i.MX53 Quick Start Board
Take your multimedia
experience to the max

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About the i.MX53 Quick Start Board

The i.MX53 Quick Start board introduces designers to multimedia and connectivity applications on the i.MX53 series ARM® Cortex™-A8 applications processor. Designed as a cost-effective, feature-rich development platform, the i.MX53 Quick Start board includes hardware design files and a board support package (BSP) containing drivers optimized for multimedia operations. This helps to reduce time to market by providing a basic product design and serves as a launching point for more complex designs.
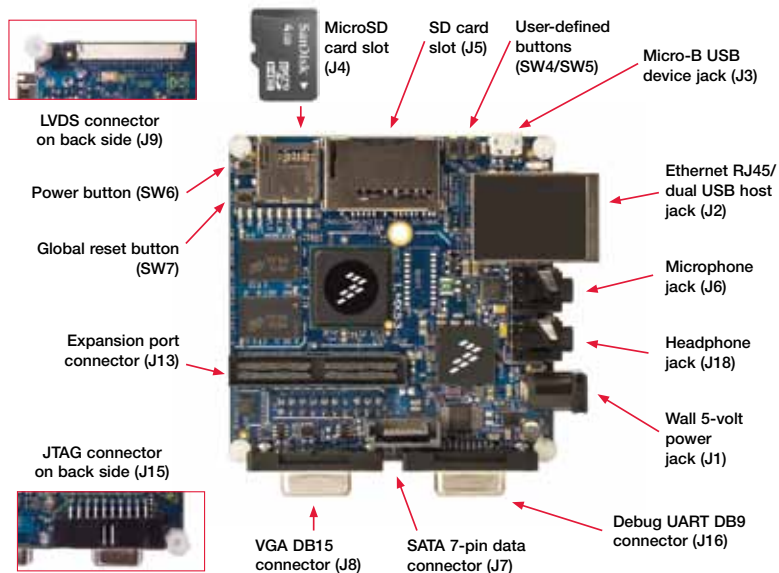
Included on the DVD is a VMware image to rapidly bring up the Linux® BSP on a Windows® PC without requiring you to first set up a standard Linux build environment.

The following features are available with the i.MX53 Quick Start board:

- i.MX53 applications processor
- Freescale MC34708 PMIC
- 1 GB DDR3 SDRAM memory
- Dual USB host connectors
- Micro USB device connector
- Ethernet (10/100T) connector
- SD/multimedia card (MMC) connector
- microSD/multimedia card (MMC) connector
- SATA 7-pin data connector
- One console UART (debug)
- VGA video output connector
- Audio I/O jacks
- LVDS connector
- HDMI and LCD expansion port connector

Get to Know the i.MX53 Quick Start Board

LVDS connector on back side (J9)

Power button (SW6)

Global reset button (SW7)

Expansion port connector (J13)

JTAG connector on back side (J15)

MicroSD card slot (J4)

SD card slot (J5)

User-defined buttons (SW4/SW5)

Micro-B USB device jack (J3)

Ethernet RJ45/ dual USB host jack (J2)

Microphone jack (J6)

Headphone jack (J18)

Wall 5-volt power jack (J1)

Debug UART DB9 connector (J16)

VGA DB15 connector (J8)

SATA 7-pin data connector (J7)

Top view of the i.MX53 Quick Start board without the HDMI module.

Getting Started

1 Unpacking the Kit

Ensure the items listed in **Table 1** are included in the i.MX53 development kit. Remove the Quick Start board from the antistatic bag and perform a visual inspection.

2 Web-Based Contents

Refer to **freescale.com/iMXQuickStart** for the latest i.MX53 Quick Start board documents and software.

Table 2 lists the documents available on **freescale.com/iMXQuickStart**.

i.MX53 Quick Start Board Development Kit Contents

Item	Description
Board	• i.MX53 Quick Start board
microSD Card	• microSD card loaded with Linux® (May be shipped in SD card adapter)
Cables	• USB cable (micro-B to standard-A)
Power Supply	• 5-volt/2-amp universal power supply
Documentation	• Quick start guide (this document)
DVD	• "Getting started" video tutorials and useful Web links

Table 1

Website Contents

| Type	Requirement
Quick Start Board Documentation	• Schematics, layout and Gerber files for the Quick Start board and HDMI board • i.MX53 Quick Start board hardware user guide • i.MX53 Quick Start board Linux demo image readme • i.MX53 Quick Start board quick start guide (this document) • i.MX53 Quick Start board Linux release notes • i.MX53 Quick Start board Linux user's guide • i.MX53 Quick Start board Linux reference manual • i.MX53 Quick Start board Linux "Hello World" application note
Software Development Tool	• Linux SDK installation file
i.MX53 Quick Start Demo Image	• Copy of the BSP provided on the microSD card

Table 2

HDMI Board Assembly

The i.MX53 Quick Start board is connected to the add-on HDMI board (MCIMXHDMICARD) using a 120-pin surface mount connector. The connector is keyed to avoid incorrect connection. Therefore, there is only one way to connect the boards together. The HDMI board is connected to the expansion port connector (J13) located on the top of the i.MX53 Quick Start board. A standard metric M3 machine screw can be inserted into the brass standoff from the bottom side of the board to make a more permanent connection.

For HDMI operation, connect an HDMI cable to the optional HDMI card. Connect the other end of the HDMI cable to an HDMI-capable monitor.
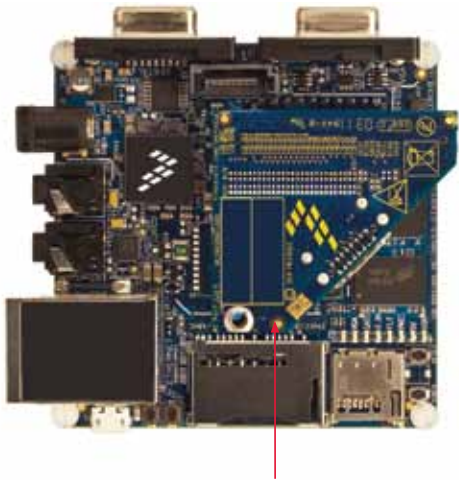
Note: The HDMI board is an optional card and it is sold separately from the i.MX53 Quick Start board.

LCD Daughter Card Assembly

The i.MX53 Quick Start board can also be connected to the optional LCD board (MCIMX28LCD) using the 120-pin surface mount expansion port connector (J13). A standard metric M3 machine screw can be inserted into the corresponding LCD board standoff from the bottom side of the board to make a more secure attachment.

Note: The 4.3" 800x480 widescreen video graphics array (WVGA) LCD board is an optional card and is sold separately from the i.MX53 Quick Start board.

LVDS Display Kit

Note: Note: The 10.1" LVDS display is an optional display kit and is sold separately from the i.MX53 Quick Start board.

LVDS Connector

A 10" LVDS display kit is available from Freescale for use with i.MX53 evaluation products. The part number for this kit is MCIMX-LVDS1. The kit comes with the LVDS display mounted in a Plexiglas® frame, two legs that can be attached for any desired orientation and a custom cable designed to fit in the 30-pin LVDS connector. Power to the LVDS panel is supplied by the Quick Start board via the LVDS cable.

To use the display, insert the legs as desired. Turn the Quick Start board over so the bottom side is facing up. With the free end of the cable and the metal ground bar facing up, insert the cable into the LVDS connector (J9). Orient the Quick Start board as desired and continue with the Getting Started instructions. Note: LVDS connectors and cables are normally inside consumer products and are not ruggedized. Handle cable with care.

Setting Up the Board

1 Insert microSD Card

Insert the supplied microSD card into the microSD card socket J4.

Note: The microSD card may be shipped inside the SD card adapter.

2 Connect RS232 Cable

Connect the RS232 cable to the debug UART port J16 (optional).

Serial port configuration: 115.2 kbaud, 8 data bits, 1 stop bit, no parity

3a Connect VGA Cable

Connect a VGA cable to the video output port J8. Connect the other end of the cable to a suitable monitor.

3b Optional Video Output

If either HDMI, LCD or LVDS video output is desired, follow one of the three previous sections to set up that option.

Note: The Linux demo code supplied will run VGA by default. See the section labeled Boot Process for Other Video Output Formats on how to modify the demo code to output other forms of video.

4 Connect USB Keyboard

Connect a USB capable keyboard to the upper USB host port J2.

5 Connect USB Mouse

Connect a USB mouse to a USB port on the connected keyboard.

If available, the mouse may also be connected to the lower USB host port J2. However, as the lower USB host port is connected internally to the Micro-B USB port, they may not be used simultaneously as two different ports.

6 Connect Ethernet Cable

Connect an Ethernet cable to the Ethernet jack J2 (optional).

7 Connect Power Supply

Connect the 5-volt power supply cable to the 5-volt DC power jack J1. The Quick Start board will automatically turn on when power is connected.

Boot Process for the Linux VGA and Other Video Output Formats

Boot Process for VGA

1. During the boot process, there will be operating system status information scrolling on the terminal window of the PC. The Linux penguin image will initially appear in the upper left corner of the monitor screen.

2. When the boot process is complete, the Linux operating system will be displayed.

3. When working from the terminal window on the host PC, the following log on information must be entered:

   User Name: lucid
   Password: lucid

Boot Process for Other Video Modes

1. This step is only necessary the first time the i.MX53 Quick Start board is booted using an alternate video mode.

   a. At the beginning of the boot process, the following message will appear on the terminal window of the PC:
   AUTOBOOT WILL BEGIN IN:

   Press any key on the host PC before this message counts down to zero. The user will typically have three seconds.

   b. The user now has access to make modifications to the U-Boot initialization code. On the terminal PC, type in the following all on one line:
   set bootargs_base 'set bootargs console=ttymxc0,115200 gpu_ nommu ${xxx}'

   Where ${xxx} is one of the following four options:
   ${hdmi} = HDMI output
   ${lcd}   = LCD output
   ${lvds} = LVDS output
   ${vga}   = VGA output

c. After pressing Return, enter the word **saveenv** and press Return. Code modifications have now been saved to the demo code on the microSD card.

d. To resume the boot process, either type the word **boot** and press Return, or power off the i.MX53 Quick Start board and then power the board back on.

2. During the boot process, there will be operating system status information scrolling on the terminal window of the PC. The Linux penguin image will initially appear in the upper left corner of the monitor screen.

3. When the boot process is complete, the Linux operating system will be displayed.

4. When working from the terminal window on the host PC, the following log on information must be entered:

    User Name: lucid
    Password: lucid

Switch Options

Board's Push Button Switch Functions

Reference Designator	Name	Description
SW3	RESET (Not populated by default)	i.MX53 Quick Start processor reset button. • Momentary depress of switch will reset the i.MX53 processor and begin a boot sequence. The PMIC will not reset.
SW4	USERDEF1	Not used in demo code. The user can program desired functionality for this switch.
SW5	USERDEF2	Not used in demo code. The user can program desired functionality for this switch.
SW6	POWER	i.MX53 Quick Start board power button. • Momentary depress of switch will turn on the Quick Start board and initiate the boot process. • Prolonged depress (>4 sec) will force the Quick Start board off.
SW7	GLOBAL RESET	i.MX53 Quick Start board reset button. • Depressing button more than four seconds will power down, reset registers and power back on PMIC. Processor will then restart from fully off state.

Table 3

Having trouble?

Visit the i.MX community at
imxcommunity.org.

Warranty

One (1) year limited warranty.
Visit **freescale.com/warranty**
for complete warranty information.

For more information, visit
freescale.com/iMXQuickStart

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