Freescale Semiconductor
Product Brief

Product Brief

i.MX31 MAX PDK

The i.MX31 MAX Product Development Kit (PDK) provides full-scale development implementation for Freescale Semiconductor's multimedia integrated applications processors.

This robust hardware and software platform for the Windows CE 5.0, Windows Embedded CE 6.0, and Linux environments is based on the exceptional capability provided by the Freescale i.MX31 applications processor. The development kit offers optimized middleware and codecs, allowing your critical resources to focus on what makes your product unique, because Freescale has already completed the fundamental elements for your design.

The PDK includes an optimized and validated board-support-package (BSP), is upgradeable either with additional hardware modules or accessing key codecs, and is one-half the cost of the original Freescale ADS development kit.

Contents

Developers perform design and application work using the i.MX31 MAX PDK, which comprises a "stack" of three separate modules, connected together for software development and debugging purposes. The module set, designed for essential re-use, includes the CPU, Debug, and Personality modules. The Debug module provides the common interface for the CPU and Personality modules. It also provides the functions for a software engineer to develop applications and any accompanying software. The Personality module is a peripheral and connectivity board for product development.
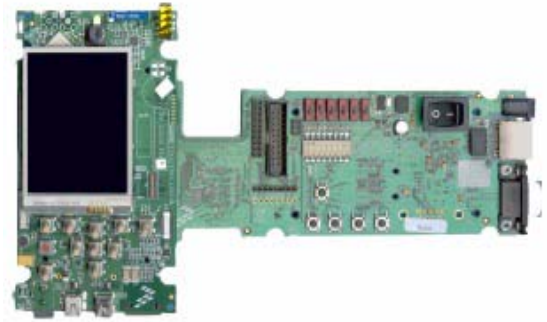
1 BENEFITS

Developers can use this platform as a reference design, and begin immediately on their multimedia projects, with a near-end product platform. Hardware designers can develop a custom product quickly and software designers can begin long in advance of having any custom hardware. The integrated design methodology (hardware and software) greatly reduces your development time.

2 FEATURES

The i.MX31 MAX PDK comprises the following features, which support its architecture, design, operation, and functionality:

- Near form-factor demonstration modules and working platforms.
- Solid reference schematics that closely resemble final products to aid customers' designs.
- CPLD Files
- Three-board system
  — CPU board with i.MX31 ARM-11 MCU, MC13783 Atlas chip
  — Personality board with peripheral components and interface connectors
  — Debug board with two RS232 interfaces, 10/100 Base-T Ethernet connector, and current measure connectors
- 2.8 inch TFTLCD display panel with touch panel and LED backlight
- 2.4 inch QVGA smart display panel connector
- Image sensor camera connector
- Smart Speed Technology
- 256 MB of NAND Flash Memory
- 128 MB of 32 bit DDR SDRAM memory
- Stereo microphone jack, headphone and video jack, stereo and mono (ear piece) speaker terminals
- One connector to out board GPS module
- FM Receiver

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- TV decoder that supports 8-bit color and NTSC & PAL format
- SD card connectors, with card sense functionality
- One USB OTG high-speed transceiver with miniature USB connector
- One USB high-speed host transceiver, with standard USB host connector
- ATA5 controller with one 44-position dual row 2mm header for small form-factor disk drivers, and one 40 pin ZIF connector for Toshiba HDD
- Onboard accelerometer with sensitivity in three separate axes (X, Y, and Z)
- Two RS-232 interfaces with DB-9 connectors: one is driven by a UART channel internal to the MX31 and supports DCE with optional full modem controls; the other is DTE with optional full modem controls

3 SYSTEM REQUIREMENTS

The system requirements are as follows:

- IBM PC or compatible computer with Microsoft Windows 98, Windows ME, Windows 2000, Windows XP, or Windows NT (version 4.0) operating system
- +5VDC, 2.4A power supply with a female (inside positive) power connector (included)

3.1 Block Diagram

Figure 1, Figure 2, and Figure 3 illustrate the functional modules of the i.MX31 MAX PDK debug board, CPU board, and personality board, respectively.
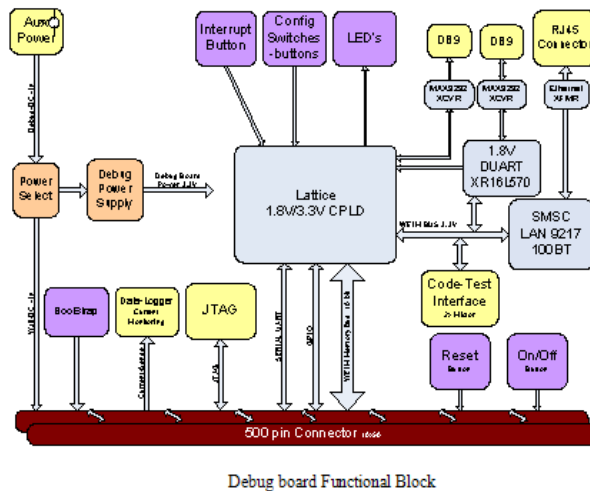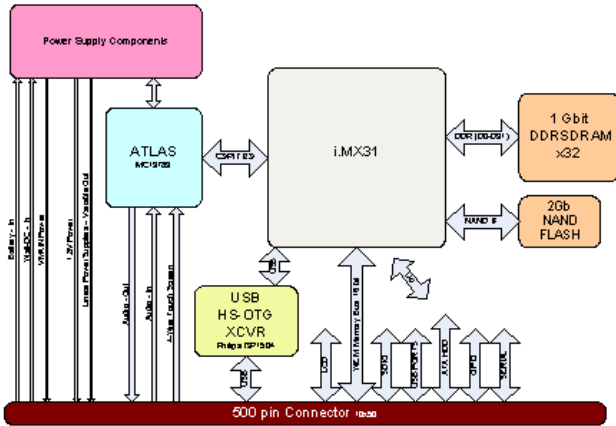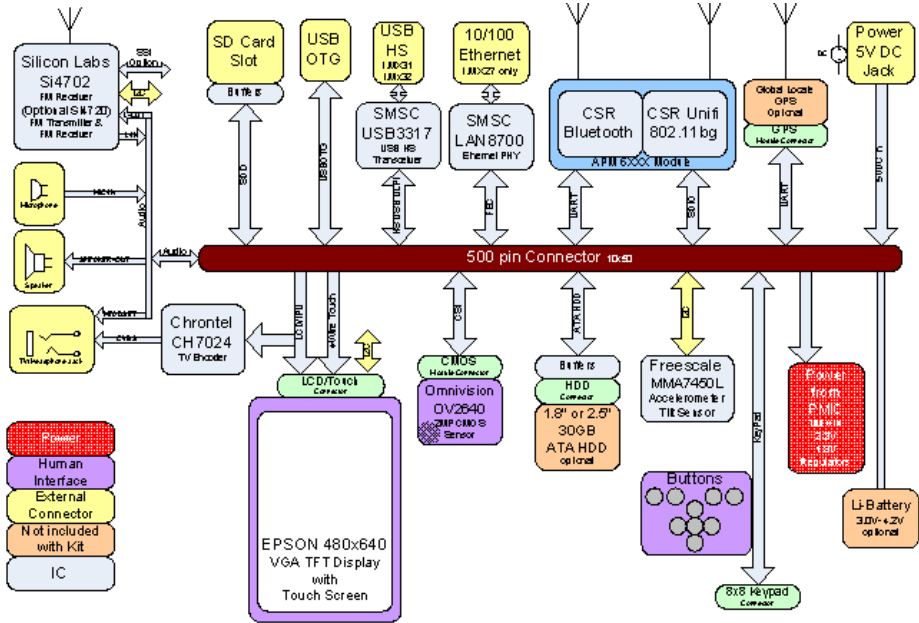
Figure 1. Debug Board Functional Block Diagram

Debug board Functional Block

Figure 2. CPU Engine Board Functional Block

CPU Engine board Functional Block

Figure 3. Personality Board Functional Block Diagram

Personality board Functional Block

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3.2   Physical Connectors

- 10/100 Base-T Ethernet RJ45 connector
- WEIM Data and Address measure connector
- i.MX31 JTAG connector
- Samtec 500 pins board-to- board connector
- UART DB9 male connector and UART DB9 female connector
- 2.0M pixel CMOS sensor connector
- Debug port for WiFi and Bluetooth module
- 40 pin ZIF connector for Toshiba HDD
- Epson VGA LCD connector
- 44-position dual row, 2mm header for HDD
- SD card socket
- Current measure connector
- 2 mini USBOTG connectors, one for HOST connection only
- Giantplus QVGA Smart display connector
- GPS module connector
- Audio and Video connector

4 PRODUCT DOCUMENTATION

The table that follows describes the associated documentation.

Table 1. Product Documentation

	Document Name	Contents
1	i.MX31 MAX PDK Product Brief (this document)	Overview of the i.MX31 MAX Product Development Kit, including block diagrams and list of features.
2	i.MX31 3-Stack Platform System User's Guide	Detailed description of the hardware present in the i.MX31 MAX PDK.
3	i.MX Platform Advanced ToolKit User's Guide	Installation, configuration, and instructions for using the Advanced ToolKit (ATK) with the i.MX31 MAX PDK.
Windows Documentation		
4	i.MX31 MAX PDK Hello World Application Note, Windows CE 5.0	Instructions for using the Hello World application and creating a new application.
5	i.MX31 MAX PDK Release Notes, Windows CE 5.0	Release contents, system requirements, summary of features, component features, and known problems.
6	i.MX31 MAX PDK Quick Start Guide, Windows CE 5.0	Detailed description of the initial steps to start to work with the i.MX31 MAX PDK, using the default images.
7	i.MX31 MAX PDK User's Guide, Windows CE 5.0	BSP installation, configuration and build instructions for the OS images, steps for configuring and initializing the target and development workstations, and descriptions of the Windows CE 5.0 applications supported by the BSP.
8	i.MX31 MAX PDK Reference Manual, Windows CE 5.0	Detailed description of the BSP.

How to Reach Us:

Home Page:
www.freescale.com

Web Support:
http://www.freescale.com/support

USA/Europe or Locations Not Listed:
Freescale Semiconductor
Technical Information Center, EL516
2100 East Elliot Road
Tempe, Arizona 85284
+1-800-521-6274 or +1-480-768-2130
www.freescale.com/support

Europe, Middle East, and Africa:
Freescale Halbleiter Deutschland GmbH
Technical Information Center
Schatzbogen 7
81829 Muenchen, Germany
+44 1296 380 456 (English)
+46 8 52200080 (English)
+49 89 92103 559 (German)
+33 1 69 35 48 48 (French)
www.freescale.com/support

Japan:
Freescale Semiconductor Japan Ltd.
Headquarters
ARCO Tower 15F
1-8-1, Shimo-Meguro, Meguro-ku,
Tokyo 153-0064
Japan
0120 191014 or +81 3 5437 9125
support.japan@freescale.com

Asia/Pacific:
Freescale Semiconductor Hong Kong Ltd.
Technical Information Center
2 Dai King Street
Tai Po Industrial Estate
Tai Po, N.T., Hong Kong
+800 2666 8080
support.asia@freescale.com

For Literature Requests Only:
Freescale Semiconductor Literature Distribution Center
P.O. Box 5405
Denver, Colorado 80217
1-800-441-2447 or 303-675-2140
Fax: 303-675-2150
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