



Consumer, Industrial and Automotive Markets

i.MX 6 Series of Applications Processors

Scalable multicore solutions breaking the boundaries of user experience

Target Applications

- Automotive infotainment
- Ereaders
- Human-machine interface
- Home energy management systems
- In-flight entertainment
- Intelligent industrial control systems
- IP phones
- IPTV
- Portable medical
- Smartbooks
- Tablets

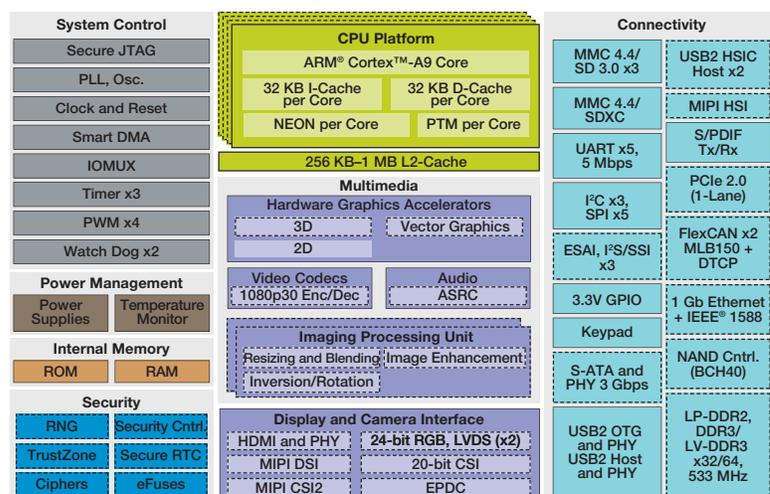
Overview

The i.MX 6 series of applications processors unleashes a scalable multicore platform that includes single-, dual- and quad-core families based on the ARM® Cortex™-A9 architecture for next-generation consumer, industrial and automotive applications. By combining the power-efficient processing capabilities of the ARM Cortex-A9 architecture with bleeding edge 3D and 2D graphics, as well as high-definition video, the i.MX 6 series provides a new level of multimedia performance to enable an unbounded next-generation user experience.

The market for intelligent, multimedia-centric, touch-based devices is increasing exponentially. Tomorrow's battery-powered smart devices, auto infotainment and in-flight entertainment

systems, medical systems, personal and enterprise class intelligent control and data systems and new classes of devices never before seen need to present data and user

i.MX 6 Series Applications Processor Block Diagram



Available on certain product families



interface choices to the end user primarily through rich sound, video, voice, pictures and touch, rather than keyboards and mice. The need for manufacturers to quickly provide multiple devices to fit specific market segments or niches and provide their customers with a broader range of choices is increasing just as quickly.

The i.MX 6 series was designed specifically to enable this new market by bringing together high-performance scalable multimedia processing, a software-compatible family of five processors and pin*-compatible processor solutions with integrated power management so that a manufacturer can deploy a full portfolio of products with a single hardware design.

Scalable Multicore Solutions

The i.MX 6 series reaches a new level of power versus performance by providing a scalable family of single-, dual- and quad-core processor families based on the ARM Cortex-A9 architecture. Single- and dual-core designs provide cost-effective performance scalability while the flagship i.MX 6Quad processor provides more performance at lower power for the most demanding applications with constrained power budgets.

Five Scalable Families

The i.MX 6Quad family encompasses a quad-core platform running up to 1.2 GHz with 1 MB of L2 cache, and 64-bit DDR3 or 2-channel, 32-bit LPDDR2 support. Integrated FlexCAN and MLB busses, PCI Express® and SATA-2 provide excellent connectivity while integration of dual, MIPI display port, MIPI camera port and HDMI v1.4 makes it an ideal platform for consumer, automotive and industrial multimedia applications.

The i.MX 6Dual family provides dual cores running up to 1.2 GHz with 1 MB of L2 cache, and 64-bit DDR3 or 2-channel, 32-bit LPDDR2 support. Leveraging the same integration of the i.MX 6Quad family, the i.MX 6Dual provides a scalable solution for consumer, automotive and industrial applications.

i.MX 6 Series at a Glance

Red indicates change from column to the left

i.MX6SoloLite	i.MX6Solo	i.MX6DualLite	i.MX6Dual	i.MX6Quad
<ul style="list-style-type: none"> Single ARM® Cortex™-A9 at 1.0 GHz 256 KB L2 cache, Neon, VFPv16 Trustzone 2D graphics 32-bit DDR3 and LPDDR2 at 400 MHz Integrated EPD controller 	<ul style="list-style-type: none"> Single ARM Cortex-A9 at 1.0 GHz 512 KB L2 cache, Neon, VFPv16 Trustzone 3D graphics with one shader 2D graphics 32-bit DDR3 and LPDDR2 at 400 MHz Integrated EPD controller 	<ul style="list-style-type: none"> Dual ARM Cortex-A9 at 1.0 GHz 512 KB L2 cache, Neon, VFPv16 Trustzone 3D graphics with one shader 2D graphics 64-bit DDR3 and 2-channel 32-bit LPDDR2 at 400 MHz Integrated EPD controller 	<ul style="list-style-type: none"> Dual ARM Cortex-A9 at 1.2 GHz 1 MB L2 cache, Neon, VFPv16 Trustzone 3D graphics with four shaders Two 2D graphics engines 64-bit DDR3 and 2-channel 32-bit LPDDR2 at 533 MHz Integrated SATA-II 	<ul style="list-style-type: none"> Quad ARM Cortex-A9 at 1.2 GHz 1 MB L2 cache, Neon, VFPv16 Trustzone 3D graphics with four shaders Two 2D graphics engines 64-bit DDR3 and 2-channel 32-bit LPDDR2 at 533 MHz Integrated SATA-II

i.MX 6 Series Highlights

- ARM Cortex-A9-based solutions ranging up to 1.2 GHz
- HD 1080p encode and decode (except 6SL)
- 3D video playback in high definition (except 6SL)
- Low-power 1080p playback at 350 mW integrated I/Os that include HDMI v1.4, MIPI and LVDS display ports, MIPI camera, Gigabit Ethernet, multiple USB 2.0 and PCI Express™
- SW support Google Android™, Windows® Embedded CE, Ubuntu, Linux®, Skype™



The i.MX 6DualLite family introduces dual cores running up to 1.0 GHz with 512 KB of L2 cache, and 64-bit DDR3 or 2-channel, 32-bit LPDDR2 support. With integrated PCI Express, LVDS, and support for MIPI cameras and displays as well as HDMI v1.4, the device is a great fit for consumer and industrial applications such as media or market-specific smart devices.

The i.MX 6Solo family provides a single core running up to 1.0 GHz with 512 KB of L2 cache and 32-bit DDR3/LPDDR2 support. Integrated LVDS, MIPI display, MIPI camera port, HDMI v1.4, FlexCAN and MLB enables the i.MX 6Solo to be a flexible platform for consumer, automotive and industrial applications.

The i.MX 6SoloLite family introduces a single core running up to 1.0 GHz with 256 KB of L2 cache and 32-bit DDR3/LPDDR2 support. Targeted integration of EPD controller and an LCD controller makes it ideal for next-generation ereaders and smart devices.

Unbounded User Experience

Next-generation graphics and high-definition video are centric to the i.MX 6 series, with the full lineup supporting an integrated 1080p encoder/decoder hardware engine and high-performance graphics accelerators tailored to each member of the family. The i.MX 6 series supports up to 1080p60 video playback, enabling exceptionally high-quality video with long battery life for devices playing high-definition content. The 3D graphics engine is capable of providing up to 200 Mt/s, which enables ultra-vivid, realistic graphics critical for gaming, applications which combine the power of the main cores with the until-now-untapped potential of the 3D engine to perform computational tasks. The combined multimedia processing power of the i.MX 6 series enables a new generation of smart mobile devices and auto infotainment with compelling features such as augmented reality applications, content creation capabilities and multichannel HD video processing for a new level of user experience.

i.MX 6 Series Features

- Scalable single-, dual- and quad-core offerings based on ARM Cortex-A9 up to 1.2 GHz, with ARMv7™, Neon, VFPv3 and Trustzone support
- 32 KB instruction and data L1 caches and 256 KB to 1 MB of L2 cache
- Multi-stream-capable HD video engine delivering 1080p60 decode, 1080p30 encode and 3D video playback in HD in high-performance families
- Superior 3D graphics performance with up to quad shaders performing 200 Mt/s and OpenCL support
- Separate 2D and/or Vertex acceleration engines for an optimal user interface experience
- Stereoscopic image sensor support for 3D imaging
- Integrated market-specific I/Os, which may include HDMI v1.4 with integrated PHY, SD3.0, multiple USB 2.0 ports with integrated PHY, Gigabit Ethernet with integrated PHY, SATA-II with integrated PHY, PCI Express® with integrated PHY, MIPI CSI, MIPI DSI, MIPI HSI and FlexCAN for automotive applications
- Comprehensive security features include cryptographic accelerators, high-assurance boot and tamper protection
- Optional integration of an EPD display controller for ereaders and similar applications

i.MX 6 Series Benefits

- Pin* and software compatible single-, dual- and quad-core families enables easy design of a broad portfolio of next-generation products
- Ultra-realistic 3D gaming and richer user interfaces enabled by an integrated 3D graphics engine in high-performance families
- Aggressive power management enables HD multi-stream video playback in high-performance families
- Highly integrated family with a broad range of integrated I/Os to reduce design complexity and time to market

Development Tools

The following i.MX 6 series Freescale-supported development tools will be available in Q4 2012:

- SABRE platform for automotive infotainment
- SABRE platform for smart devices
- SABRE board for smart devices

*i.MX 6SoloLite is not pin compatible

For development tools and third-party resources, visit freescale.com/iMX6series



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Document Number: IMX6SRSFS REV 4