## Scalable multicore solutions breaking the boundaries of user experience

# i.MX 6 Series of Applications Processors

The i.MX 6 series of applications processors is a feature- and performance-scalable multicore platform that includes single-, dual- and quad-core families based on the ARM® Cortex® architecture, including the Cortex-A9 core, combined Cortex-A9 + Cortex-M4 cores and Cortex-A7-based solutions up to 1.2 GHz.

## TARGET APPLICATIONS

‣ Automotive infotainment

‣ Digital signage

‣ Digital cluster

‣ E-Readers

‣ Human-machine interface

‣ Home energy management systems

‣ In-flight entertainment

‣ Intelligent industrial control systems

‣ IoT gateways

‣ IP phones

‣ Point-of-sale devices

‣ Portable medical devices

‣ Tablets

Targeting consumer, industrial and automotive applications, the i.MX 6 series combines broad levels of integration and power-efficient processing capabilities all the way up to bleeding edge 3D and 2D graphics, as well as high-definition video, to provide a new level of multimedia performance for an unbounded next-generation user experience. The i.MX 6 series is supported by our proprietary companion power management integrated circuits (PMICs).
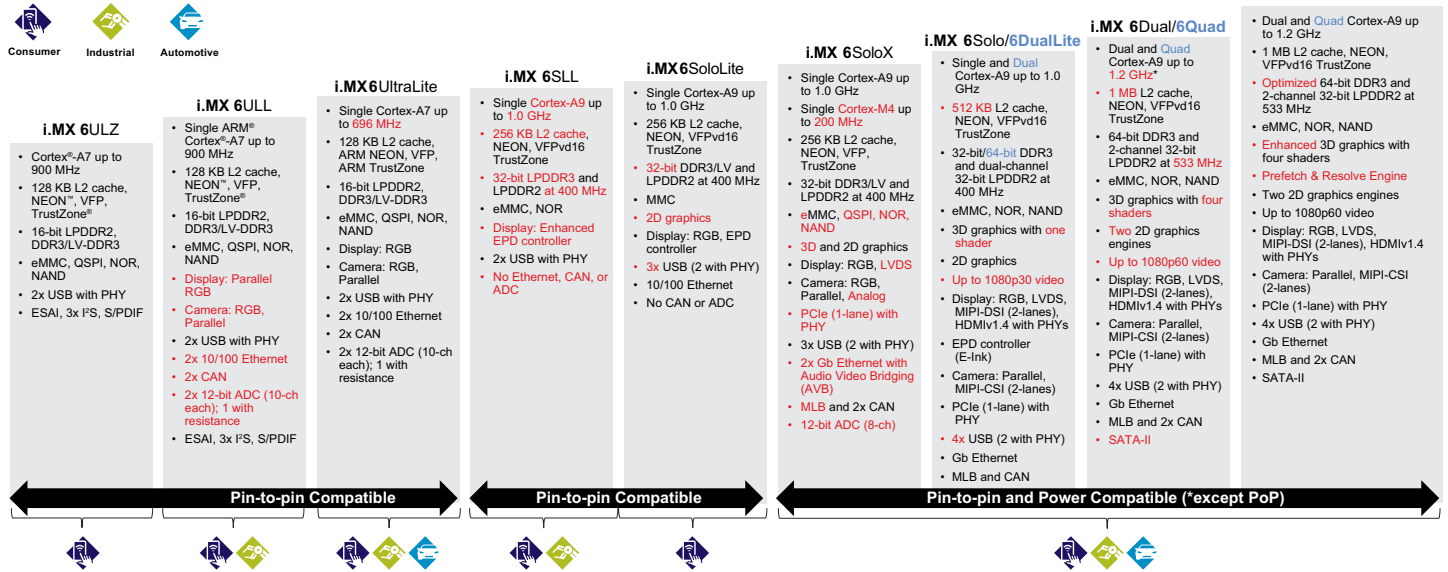
## ELEVEN SCALABLE FAMILIES

The **i.MX 6QuadPlus** family encompasses a quad-core platform running up to 1.2 GHz with 1 MB of L2 cache, hardware accelerated graphics 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-lane MIPI display ports, a MIPI camera port and HDMI v1.4 makes it an ideal platform for consumer, automotive and industrial multimedia applications.

The **i.MX 6DualPlus** family provides dual cores running up to 1.2 GHz with 1 MB of L2 cache, enhanced hardware accelerated graphics, prefetch and resolve engine and optimized 64-bit DDR3 or 2-channel, 32-bit LPDDR2 support. Leveraging the same integration of the i.MX 6QuadPlus family, the i.MX 6DualPlus 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
Blue indicates change within column

Consumer  Industrial  Automotive

**i.MX 6ULZ**
- Cortex®-A7 up to 900 MHz
- 128 KB L2 cache, NEON™, VFP, TrustZone®
- 16-bit LPDDR2, DDR3/LV-DDR3
- eMMC, QSPI, NOR, NAND
- 2x USB with PHY
- ESAI, 3x I²S, S/PDIF

**i.MX 6ULL**
- Single ARM® Cortex®-A7 up to 900 MHz
- 128 KB L2 cache, NEON™, VFP, TrustZone®
- 16-bit LPDDR2, DDR3/LV-DDR3
- eMMC, QSPI, NOR, NAND
- Display: Parallel RGB
- Camera: RGB, Parallel
- 2x USB with PHY
- 2x 10/100 Ethernet
- 2x CAN
- 2x 12-bit ADC (10-ch each); 1 with resistance
- ESAI, 3x I²S, S/PDIF

**i.MX 6UltraLite**
- Single Cortex-A7 up to 696 MHz
- 128 KB L2 cache, ARM NEON, VFP, ARM TrustZone
- 16-bit LPDDR2, DDR3/LV-DDR3
- eMMC, QSPI, NOR, NAND
- Display: RGB
- Camera: RGB, Parallel
- 2x USB with PHY
- 2x 10/100 Ethernet
- 2x CAN
- 2x 12-bit ADC (10-ch each); 1 with resistance

**i.MX 6SLL**
- Single Cortex-A9 up to 1.0 GHz
- 256 KB L2 cache, NEON, VFPvd16 TrustZone
- 32-bit LPDDR3 and LPDDR2 at 400 MHz
- eMMC, NOR
- Display: Enhanced EPD controller
- 2x USB with PHY
- No Ethernet, CAN, or ADC

**i.MX 6SoloLite**
- Single Cortex-A9 up to 1.0 GHz
- 256 KB L2 cache, NEON, VFPvd16 TrustZone
- 32-bit DDR3/LV and LPDDR2 at 400 MHz
- MMC
- 2D graphics
- Display: RGB, EPD controller
- 2x USB with PHY
- 10/100 Ethernet
- No CAN or ADC

**i.MX 6SoloX**
- Single Cortex-A9 up to 1.0 GHz
- Single Cortex-M4 up to 200 MHz
- 256 KB L2 cache, NEON, VFP, TrustZone
- 32-bit DDR3/LV and LPDDR2 at 400 MHz
- eMMC, QSPI, NOR, NAND
- 3D and 2D graphics
- Display: RGB, LVDS
- Camera: RGB, Parallel, Analog
- PCIe (1-lane) with PHY
- 3x USB (2 with PHY)
- 2x Gb Ethernet with Audio Video Bridging (AVB)
- MLB and 2x CAN
- 12-bit ADC (8-ch)

**i.MX 6Solo/6DualLite**
- Single and Dual Cortex-A9 up to 1.0 GHz
- 512 KB L2 cache, NEON, VFPvd16 TrustZone
- 32-bit/64-bit DDR3 and dual-channel 32-bit LPDDR2 at 400 MHz
- eMMC, QSPI, NOR, NAND
- 3D graphics with one shader
- 2D graphics
- Display: RGB, LVDS, MIPI-DSI (2-lanes), HDMIv1.4 with PHYs
- EPD controller (E-Ink)
- Camera: Parallel, MIPI-CSI (2-lanes)
- PCIe (1-lane) with PHY
- 4x USB (2 with PHY)
- Gb Ethernet
- MLB and CAN

**i.MX 6Dual/6Quad**
- Dual and Quad Cortex-A9 up to 1.2 GHz
- 1 MB L2 cache, NEON, VFPvd16 TrustZone
- 64-bit DDR3 and 2-channel 32-bit LPDDR2 at 533 MHz
- eMMC, NOR, NAND
- 3D graphics with four shaders
- Two 2D graphics engines
- Up to 1080p60 video
- Display: RGB, LVDS, MIPI-DSI (2-lanes), HDMIv1.4 with PHYs
- Camera: Parallel, MIPI-CSI (2-lanes)
- PCIe (1-lane) with PHY
- 4x USB (2 with PHY)
- Gb Ethernet
- MLB and 2x CAN
- SATA-II

**i.MX 6DualPlus/6QuadPlus**
- Dual and Quad Cortex-A9 up to 1.2 GHz
- 1 MB L2 cache, NEON, VFPvd16 TrustZone
- Optimized 64-bit DDR3 and 2-channel 32-bit LPDDR2 at 533 MHz
- eMMC, NOR, NAND
- Enhanced 3D graphics with four shaders
- Prefetch & Resolve Engine
- Two 2D graphics engines
- Up to 1080p60 video
- Display: RGB, LVDS, MIPI-DSI (2-lanes), HDMIv1.4 with PHYs
- Camera: Parallel, MIPI-CSI (2-lanes)
- PCIe (1-lane) with PHY
- 4x USB (2 with PHY)
- Gb Ethernet
- MLB and 2x CAN
- SATA-II

◄—— Pin-to-pin Compatible ——►   ◄—— Pin-to-pin Compatible ——►   ◄—— Pin-to-pin and Power Compatible (*except PoP) ——►

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The **i.MX 6Quad** family encompasses a quad-core platform running up to 1.2 GHz with 1 MB of L2 cache, hardware accelerated graphics 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 lane MIPI display ports, MIPI camera port and HDMI v1.4 makes it an ideal platform for many applications.

The **i.MX 6Dual** family provides dual cores running up to 1.2 GHz with 1 MB of L2 cache, hardware accelerated graphics 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 is a scalable solution.

The **i.MX 6DualLite** family features 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. It has integrated FlexCAN and MLB busses, PCI Express, LVDS, and support for MIPI cameras and displays as well as HDMI v1.4.

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 enable the i.MX 6Solo family to be a flexible platform.

The **i.MX 6SoloX** family has a single core running up to 1.0 GHz (Cortex-A9) and 227 MHz (Cortex-M4) with 256 KB of L2 cache and 32-bit DDR3/LPDDR2 support. Integrated LVDS, FlexCAN, and PCIe Express enable the i.MX 6SoloX to be a low-power and flexible platform for applications that require real-time responsiveness and a higher level of system integrity.

The **i.MX 6SoloLite** family provides a single core running up to 1.0 GHz with 256 KB of L2 cache and 32-bit DDR3/LPDDR2 support. Targeted integration of an electronic paper display (EPD) controller makes it an ideal solution for next generation e-readers and other emerging consumer and embedded devices using EPD technology.

The **i.MX 6SLL** family provides a single Cortex-A9 core, which operates at speeds up to 1GHz. The processor includes a 32-bit DDR interface that supports LPDDR2 and LPDDR3 and includes E Ink display controller supporting EPD panels up to 2332 x 1650 resolution and 5-bit grayscale.

The **i.MX 6UltraLite** family features a single Cortex-A7 core running up to 696 MHz with 128 KB of L2 cache and 16-bit DDR3/LPDDR2 support. This efficient, cost–optimized multi-market applications processor, with integrated power management, advanced security unit and wide range of connectivity interfaces, provides new ways to address performance scalability and low power for secure smart homes and IoT applications.

The **i.MX 6ULL** family offers a single Cortex-A7 core running up to 900 MHz with 128 KB of L2 cache and 16-bit DDR3/LPDDR2 support. The i.MX6ULL provides the lowest power, optimized feature integration and most competitive cost to meet the requirements of IoT gateways, end nodes and consumer electronics.

The **i.MX 6ULZ** family offers a single Cortex-A7 core running up to 900 MHz with 128 KB of L2 cache and 16-bit DDR3/LPDDR2 support. The 6ULZ provides the lowest cost Linux processor for consumer applications.

Join fellow i.MX developers online at **www.imxcommunity.org**.

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## www.nxp.com/iMX6Series

Product Longevity

Energy Efficient Solutions