



Enabling power-efficient, secure IoT applications

i.MX 7Solo, i.MX 7Dual Applications Processors

The i.MX 7Solo and i.MX 7Dual are highly integrated multi-market applications processors designed to enable secure and portable applications within the Internet of Things.

TARGET APPLICATIONS

- ▶ Building automation
- ▶ Wearables
- ▶ Point-of-sale
- ▶ Enterprise scanners and printers
- ▶ E-Readers
- ▶ Smart home controls
- ▶ Patient monitoring
- ▶ IoT solutions

The i.MX 7Solo and i.MX 7Dual utilize both the ARM® Cortex®-A7 and Cortex-M4 cores for general-purpose programmable processing. The heterogeneous asymmetric architecture provides flexibility for customers by enabling a single-chip solution that can run sophisticated operating systems and provide real-time responsiveness. The processors incorporate four independently controlled resource domains for maximum effectiveness and security when partitioning system resources such as memory and peripherals. The i.MX 7Solo and i.MX 7Dual are supported by NXP's companion power management ICs (PMICs).

FEATURES

- ▶ **Cortex-A7**—The Cortex-A7 core enhances the capabilities of portable, connected applications by fulfilling the ever-increasing power-efficient MIPS needs of operating systems and applications.
- ▶ **Heterogeneous processing architecture**—The dual-core architecture enables the device to run a rich operating system like Linux® on the Cortex-A7 core and an RTOS on the Cortex-M4 core.
- ▶ **Multi-level memory system**—The multi-level memory system of the Cortex-A7 processor is based on the L1 instruction and data caches, L2 cache, and internal and external memory. The processors support many types of external memory devices, including DDR3, low-voltage DDR3L, LPDDR2 and LPDDR3, NOR Flash, NAND Flash (MLC and SLC), QSPI and managed NAND including eMMC rev. 5.0.



► **Power efficiency**—Power management implemented throughout the IC enables multimedia features and peripherals to consume minimum power in both active and various low-power modes.

► **Advanced security**—The processors deliver hardware-enabled security features that enable secure e-commerce, digital rights management (DRM), information encryption and secure boot.

► **Multimedia**—The multimedia performance of each processor is enhanced by a multi-level cache system, NEON™ MPE (Media Processor Engine) coprocessor and a programmable smart DMA (SDMA) controller.

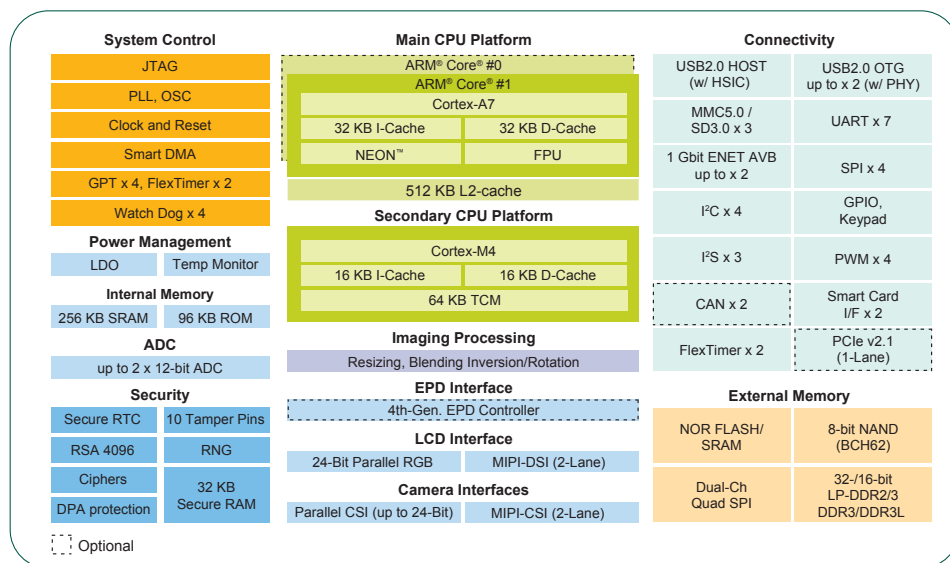
► **Up to 2 x Gigabit Ethernet with AVB**—2 x 10/100/1000 Mbps Ethernet controllers.

► **Electronic paper display controller**—The processor integrates an EPD controller that supports E-INK color and monochrome panels with up to 2048 x 1536 resolution at 106 Hz refresh, 4096 x 4096 resolution at 20 Hz refresh and 5-bit grayscale (32-levels per color channel).

► **Human-machine interface**—Each processor provides up to two separate display interfaces (parallel display and 2-lane MIPI DSI) and CMOS sensor interface (MIPI and parallel).

► **Interface flexibility**—Each processor supports connections to a variety of interfaces: high-speed USB On-The-Go with PHY, high-speed USB host with PHY, high-speed inter-chip USB, multiple expansion card ports (high-speed MMC/SDIO host and other), 2 Gigabit Ethernet controllers with support for Ethernet AVB, PCIe®-II, four single-ended-input 12-bit ADCs, two CAN ports, I²S audio interface and a variety of other popular interfaces (such as UART, I²C).

i.MX 7SOLO, i.MX 7DUAL BLOCK DIAGRAM



SOFTWARE AND TOOLS

The i.MX 7Solo and i.MX 7Dual processors are supported by the SABRE Board for Smart Devices and comes with an SD card pre-installed with the Linux operating system. We also offer the Android™ OS, as well as FreeRTOS for the Cortex-M4 core.

ECOSYSTEM

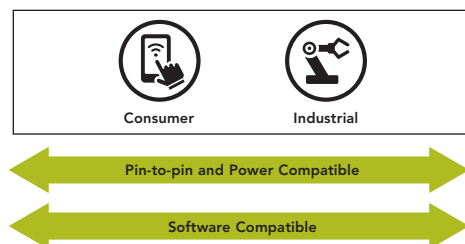
Leveraging the broad ARM community, the i.MX 7Solo and i.MX 7Dual build technology alliances to enable better customer solutions and faster time to market. Partner solutions include:

- Tool chains
- Software
- Codecs
- Middleware/applications
- Embedded board solutions
- Design services
- System integrators
- Training

DEVICE OPTIONS

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i.MX 7Solo	i.MX 7Dual
- Single ARM® Cortex®-A7 up to 800 MHz - Cortex-M4 up to 200 MHz 512 KB L2 cache 16-/32-bit DDR3/DDR3L and LPDDR2/3 at 533 MHz - Single Gigabit Ethernet (AVB) - USB 2.0 OTG (w/ PHY) - Full security w/ tamper resist	- Dual ARM® Cortex®-A7 up to 1.2GHz - Cortex-M4 up to 200 MHz 512 KB L2 cache 16-/32-bit DDR3/DDR3L and LPDDR2/3 at 533 MHz - Dual Gigabit Ethernet (AVB) - Dual USB 2.0 OTG (w/ PHY) - Full security w/ tamper resist - EPD controller - PCIe (x1 lane)



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Document Number: IMX7SOLODUALFS REV 2 cc

