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World's first general-purpose Arm® Cortex®-M33 based MCU

LPC55S6x MCU Family

The LPC55S6x MCU family brings advancements to market that stretch far beyond a new core technology. These features include advanced energy efficiency and real-time performance with breakthroughs in embedded security and protection in addition to exceptional mixed-signal integration that leverages NXP's cost-effective 40 nm embedded flash technology.

TARGET APPLICATIONS

- Consumer electronics
- Diagnostic equipment
- Building control and automation
- Secure applications
- Industrial IoT
- Machine learning

OVERVIEW

The LPC55S6x MCU family is the first family introduced as part of NXP's LPC5500 Cortex-M33-based MCU series. This high-efficiency family leverages the latest Armv8-M architecture, introducing new levels of performance and advanced security capabilities including Arm TrustZone® and coprocessor extensions. The LPC55S6x MCU family enables these coprocessors' extensions and leverages them to bring significant signal processing efficiency gains from a proprietary DSP accelerator offering a 10x clock cycle reduction. An optional second Cortex-M33 core offers flexibility to balance high performance and power efficiency.

Like other members of the LPC5500 MCU series, the LPC55S6x MCU family provides a comprehensive offering, scalable options and several families. The entire MCU series benefits from 40 nm NVM-based process technology cost advantages, broad scalable packages and memory options, as well as a robust enablement including the MCUXpresso Software and Tools ecosystem and low-cost development boards.

BREAKTHROUGHS IN EMBEDDED SECURITY AND PROTECTION

LPC55S6x MCU devices feature a unique integrated security ecosystem that provides layers of protection for embedded systems while protecting end products from unknown or unexpected threats over its life cycle. These protections include SRAM PUF-based root-of-trust and provisioning, real-time execution from encrypted images and debug authentication. Furthermore, the LPC55S6x MCU family introduces additional features from the Armv8-M TrustZone architecture security extension, providing a level of isolation within the MCU that creates a trusted execution environment with full access to the system memory map and rich execution environment with no access to security critical registers and data.

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COMPREHENSIVE ENABLEMENT SOLUTIONS

Comprehensive MCUXpresso SDK

- Extensive suite of robust peripheral drivers, stacks, and middleware
- Example code, including SHA/AES, SRAM PUF, and secure boot startup enablement

Integrated Development Environments (IDE)

- MCUXpresso IDE
- IAR® Embedded Workbench
- Arm Keil® Microcontroller Development Kit

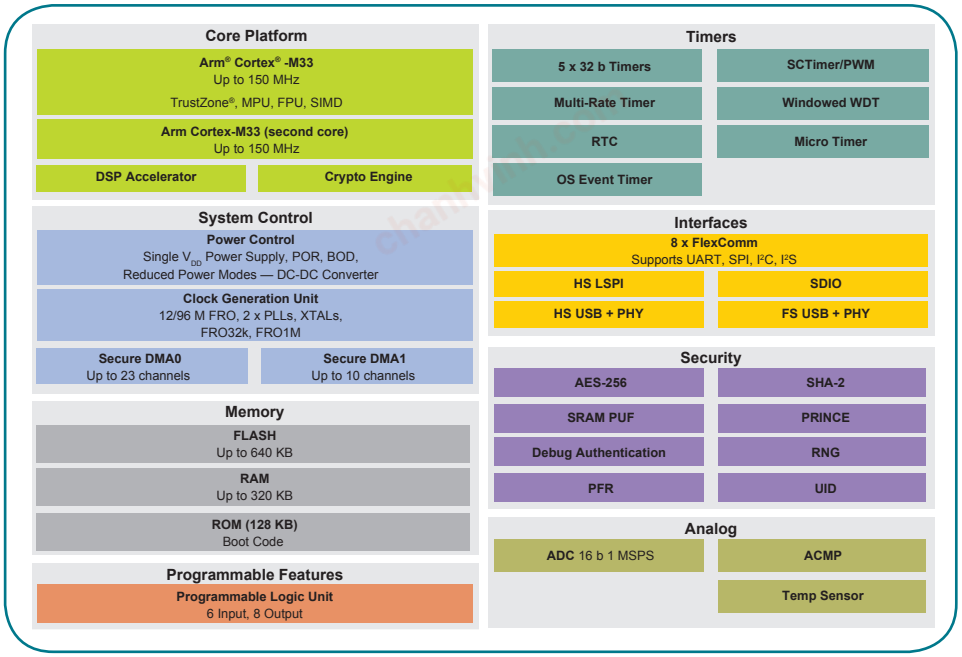
ROM

- Dedicated bootloader for the LPC5500 MCU series
- In-system flash programming over serial connection: erase, program, verify
- ROM or flash-based bootloader with open-source software and host-side programming utilities

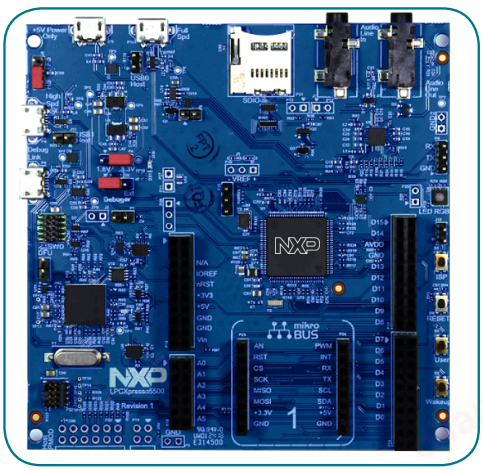
Development Hardware

- LPCXpresso development boards
  - LPC55S69 dual-Cortex-M33 core processor
  - Onboard, high-speed USB, Link2 debug probe
  - Flexible expansion – Arduino®, Mikroe and PMod headers
  - Various onboard interfaces and components

LPC55S6X MCU FAMILY BLOCK DIAGRAM



LPCXPRESSO55S69 DEVELOPMENT BOARD (LPC55S69-EVK)



LPC55S6x MCU FAMILY OPTIONS

Part Number	CPU Freq (MHz)	Flash	SRAM	Dual Core	DSP Accelerator	TrustZone®	Secure Boot	Crypto Accel	Real Time Decrypt	FS&HS USB	Package
LPC55S69JBD100	150	640 KB	320 KB	Yes	Yes	Yes	Yes	Yes	Internal	Yes	HLQFP100, 14 x 14, 0.5 mm pitch
LPC55S66JBD100	150	256 KB	144 KB	Yes	Yes	Yes	Yes	Yes	Internal	Yes	HLQFP100, 14 x 14, 0.5 mm pitch
LPC55S69JEV98	150	640 KB	320 KB	Yes	Yes	Yes	Yes	Yes	Internal	Yes	VFBGA98, 7 x 7, 0.5 mm pitch
LPC55S66JEV98	150	256 KB	144 KB	Yes	Yes	Yes	Yes	Yes	Internal	Yes	VFBGA98, 7 x 7, 0.5 mm pitch

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