



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.



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

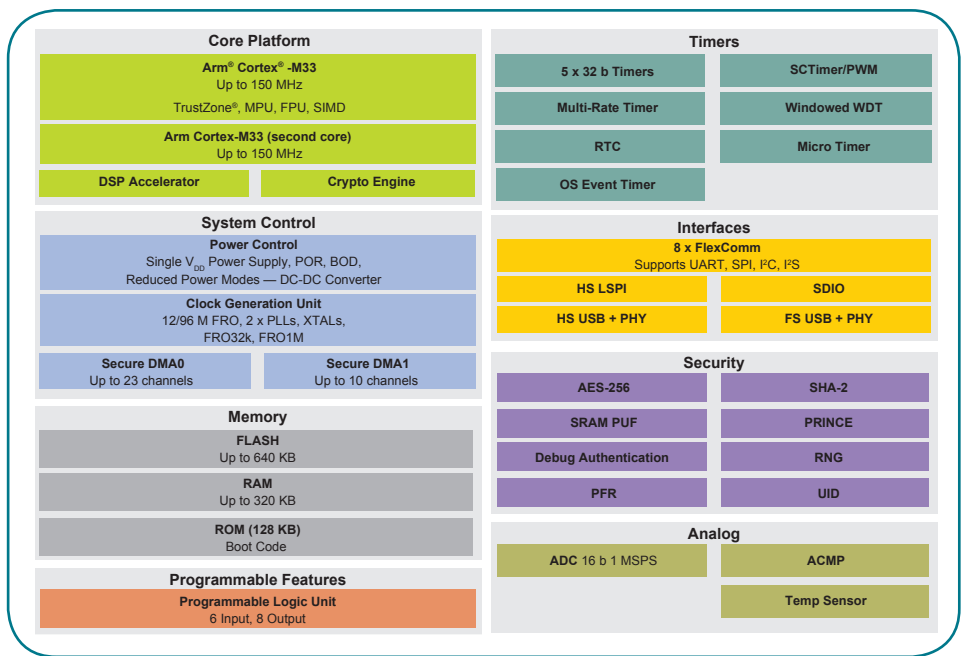
ROM

- ▶ 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

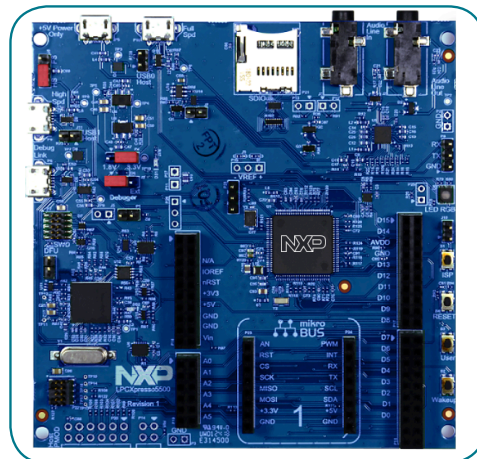
Development Hardware

- ▶ LPCXpresso development boards
 - LPC5569 dual-Cortex-M33 core processor
 - Onboard, high-speed USB, Link2 debug probe
 - Flexible expansion – Arduino®, Mikroe and PMod headers
 - Various onboard interfaces and components

LPC556X MCU FAMILY BLOCK DIAGRAM



LPCXPRESSO5569 DEVELOPMENT BOARD (LPC5569-EVK)



LPC556x 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
LPC5569JBD100	150	640 KB	320 KB	Yes	Yes	Yes	Yes	Yes	Internal	Yes	HLQFP100, 14 x 14, 0.5 mm pitch
LPC5566JBD100	150	256 KB	144 KB	Yes	Yes	Yes	Yes	Yes	Internal	Yes	HLQFP100, 14 x 14, 0.5 mm pitch
LPC5569JEV98	150	640 KB	320 KB	Yes	Yes	Yes	Yes	Yes	Internal	Yes	VFBGA98, 7 x 7, 0.5 mm pitch
LPC5566JEV98	150	256 KB	144 KB	Yes	Yes	Yes	Yes	Yes	Internal	Yes	VFBGA98, 7 x 7, 0.5 mm pitch

www.nxp.com/LPC556x

NXP and the NXP logo are trademarks of NXP B.V. All other product or service names are the property of their respective owners. Arm, Cortex, Keil and TrustZone trademarks or registered trademarks of Arm Limited (or its subsidiaries) in the US and/or elsewhere. The related technology may be protected by any or all of patents, copyrights, designs and trade secrets. All rights reserved. © 2019 NXP B.V.

Document Number: LPC556XFS REV 4