



World's first general purpose Arm<sup>®</sup> Cortex<sup>®</sup>-M33 based MCU

## LPC55S6x MCU Family

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

### TARGET APPLICATIONS

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

### OVERVIEW

The LPC55S6x MCU family builds on the world's first general purpose Cortex-M33 based microcontroller as the first family introduced as part of NXP's new LPC5500 MCU series. This high efficiency family leverages the latest Armv8-M architecture, introducing new levels of performance and advanced security capabilities including TrustZone and co-processor extensions. The LPC55S6x MCU family enables these co-processors 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.

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

### BREAKTHROUGHS IN EMBEDDED SECURITY AND PROTECTION

The LPC55S6x MCU devices feature a unique integrated security ecosystem providing layers of protection for embedded systems while protecting end products from unknown or unexpected threats over its life cycle, including SRAM PUF based root of trust and provisioning, real-time execution from encrypted images and debug authentication. Furthermore, the LPC55S6x MCU family series introduces additional features from Armv8-M TrustZone providing a level of isolation within the MCU that creates 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

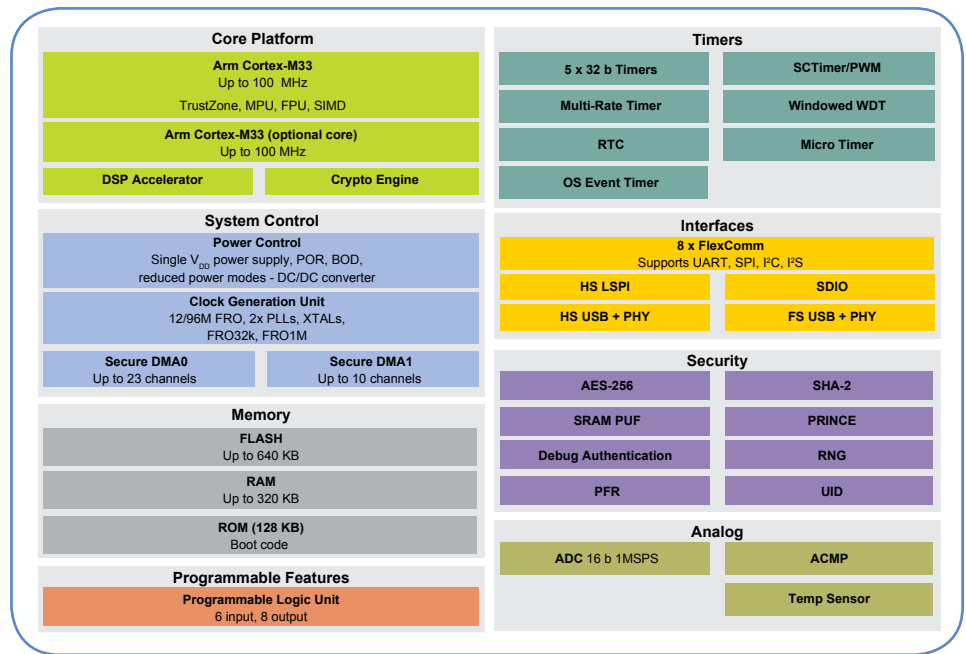
### ROM

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

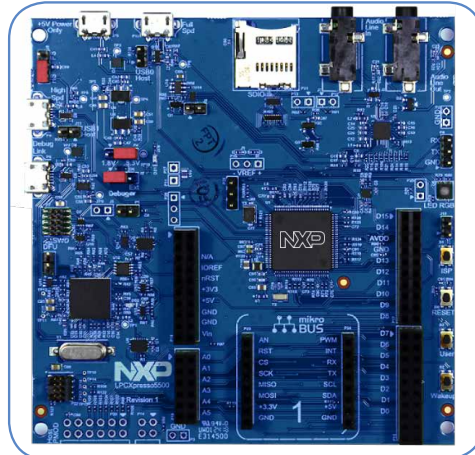
### Development Hardware

- ▶ LPCXpresso development boards
  - LPC5569 dual-Cortex-M33 core processor
  - Onboard, high-speed USB, Link2 debug probe
  - Flexible expansion – Arduino, Mikroe and PMod headers
  - Various on-board 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	100	640 KB	320 KB	Yes	Yes	Yes	Yes	Yes	Internal	Yes	HLQFP100, 14x14, 0.5mm pitch
LPC55S66JBD100	100	256 KB	144 KB	Yes	Yes	Yes	Yes	Yes	Internal	Yes	HLQFP100, 14x14, 0.5mm pitch
LPC55S69JEV98	100	640 KB	320 KB	Yes	Yes	Yes	Yes	Yes	Internal	Yes	VFBGA98, 7x7, 0.5mm pitch
LPC55S66JEV98	100	256 KB	144 KB	Yes	Yes	Yes	Yes	Yes	Internal	Yes	VFBGA98, 7x7, 0.5mm pitch

[www.nxp.com/LPC55S6x](http://www.nxp.com/LPC55S6x)

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