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.

**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.
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

- MCUXpresso development boards
  - LPC55S69 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 OPTIONS

<table>
<thead>
<tr>
<th>Part Number</th>
<th>CPU Freq (MHz)</th>
<th>Flash</th>
<th>SRAM</th>
<th>Dual Core</th>
<th>DSP Accelerator</th>
<th>TrustZone</th>
<th>Secure Boot</th>
<th>Crypto Accel</th>
<th>Real Time Decrypt</th>
<th>FS&amp;HS USB</th>
<th>Package</th>
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<tbody>
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<td>100</td>
<td>640 KB</td>
<td>320 KB</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Internal</td>
<td>LQFP100, 14x14, 0.5mm pitch</td>
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<tr>
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<td>144 KB</td>
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<td>Internal</td>
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<td>Yes</td>
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<td>VFBGA98, 7x7, 0.5mm pitch</td>
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www.nxp.com/LPC55S6x

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