



Scalable and
power-efficient
multimarket MCUs

LPC541xx MCU Family

Offering a wide range of performance and feature scalability, the LPC541xx MCU family of single- and dual-core MCUs delivers improved power efficiency for a variety of always-on applications.

TARGET APPLICATIONS

- ▶ Portable fitness and activity trackers
- ▶ Health and wellness monitoring
- ▶ Intelligent sensing and motion tracking
- ▶ Home and building automation
- ▶ Industrial/commercial sensor nodes
- ▶ Mobile handsets and tablets
- ▶ Fleet management and asset tracking
- ▶ Gaming and USB accessories

OVERVIEW

The LPC541xx MCU family represents the next generation of industry-leading power efficiency. With added scalability and feature integration, these breakthrough devices enable continued growth for always-on applications.

The LPC54100 and LPC54110 MCU sub-families, based on the Arm® Cortex®-M4 core, offer an optional Cortex®-M0+ co-processor for added flexibility.

The LPC54110 MCU sub-family finds the right balance between feature integration and power efficiency with the Cortex-M4 core achieving an active mode current of 80 $\mu\text{A}/\text{MHz}$. With an industry-leading dual-core option, the

LPC5411x MCU can shut down the Cortex-M4 for a tiered power approach and use the Cortex-M0+ to perform less taxing tasks, achieving an even lower active mode of 60 $\mu\text{A}/\text{MHz}$.

The optional on-chip digital microphone (DMIC) subsystem on the LPC54110 MCU sub-family dramatically reduces power consumed in applications that demand voice input and processing, achieving the stringent power efficiencies needed for always-on voice activation in battery-operated products.

LOW-POWER ARCHITECTURE

The LPC541xx MCU family is architected for power efficiency. In addition to the dual-core optimization, the low-power interfaces can wake the CPU from power down once data is received. The 12-bit, 12-channel ADC delivers 5 Msps operation at full spec, including 1.62 V, which performs conversion while the CPU is asleep.

The low-power flash memory is writable at 1.62 V. Core and peripheral voltages are automatically scaled for reduced power consumption at any frequency. An asynchronous peripheral bus enables reduced peripheral clock speed without affecting the CPU clock, which minimizes peripheral power consumption.



COMPREHENSIVE ENABLEMENT SOLUTIONS

LPCOpen

- ▶ Extensive suite of robust peripheral drivers, stacks and middleware
- ▶ Includes software examples demonstrating use of peripheral drivers and middleware
- ▶ Operating system abstraction (OSA) layer with FreeRTOS application examples

Integrated Development Environments (IDE)

- ▶ IAR Embedded Workbench®
- ▶ Arm Keil® Microcontroller Development Kit
- ▶ LPCXpresso
 - No-cost software; includes a professional integrated development environment (IDE) for LPC MCUs
 - Eclipse- and GCC-based IDE for C/C++ editing, compiling and debugging

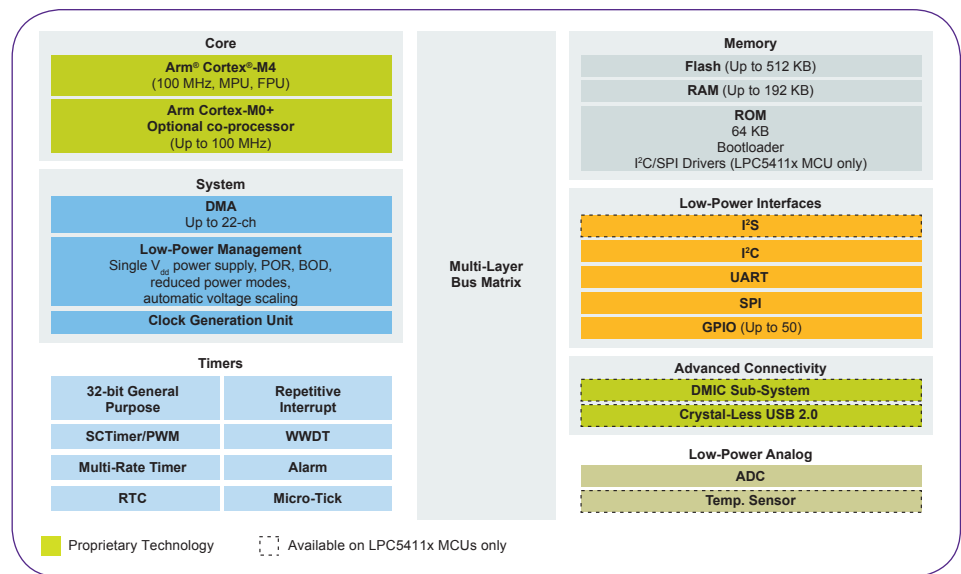
ROM

- ▶ Common bootloader for the LPC541xx MCU family
- ▶ In-system flash programming over a serial connection: erase, program, verify
- ▶ ROM or flash-based bootloader with open-source software and host-side programming utilities
- ▶ Providing commonly used I²C and SPI drivers in LPC54110 MCUs

Development Hardware

- ▶ LPCXpresso development boards
 - Low-cost evaluation
 - Arduino® R3 compatible shields

LPC54000 SERIES BLOCK DIAGRAM



LPC54000 SERIES OF POWER-EFFICIENT MCUS

Parts	Core	Flash (KB)	RAM (KB)	Crystal-Less FS USB	Digital Microphone Subsystem	Package Name	Recommended Development Board
LPC54101J256BD64	M4	256	104	No	No	LQFP64	OM13077
LPC54101J256UK49	M4	256	104	No	No	WLCSP49	OM13077
LPC54101J512BD64	M4	512	104	No	No	LQFP64	OM13077
LPC54101J512UK49	M4	512	104	No	No	WLCSP49	OM13077
LPC54102J256BD64	M4/M0+	256	104	No	No	LQFP64	OM13077
LPC54102J256UK49	M4/M0+	256	104	No	No	WLCSP49	OM13077
LPC54102J512BD64	M4/M0+	512	104	No	No	LQFP64	OM13077
LPC54102J512UK49	M4/M0+	512	104	No	No	WLCSP49	OM13077
LPC54113J128BD64	M4	128	96	Yes	Yes	LQFP64	OM13089
LPC54113J256BD64	M4	256	192	Yes	Yes	LQFP64	OM13089
LPC54113J256UK49	M4	256	192	Yes	Yes	WLCSP49	OM13089
LPC54114J256BD64	M4/M0+	256	192	Yes	Yes	LQFP64	OM13089
LPC54114J256UK49	M4/M0+	256	192	Yes	Yes	WLCSP49	OM13089

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