Scalable and Power-Efficient Broad Market MCUs

LPC540xx MCU Family

Offering flashless design and security integration, the LPC540xx MCU family provides up to 180 MHz performance while retaining outstanding power efficiency as low as 100 uA / MHz. Its flexible communication interfaces make it ideal for HMI and connectivity needs of next-generation IoT applications.

TARGET APPLICATIONS

▸ Building control and automation

▸ Diagnostic equipment

▸ Multi-node/multi-protocol communication hubs

▸ HMI/GUI applications

▸ Data collectors, infotainment/navigation

▸ Telematics/fleet management

OVERVIEW

The LPC540xx MCU family builds on the industry-leading power efficiency introduced with the LPC54000 series. This new family enables continued growth in the connected smart world through new feature integration and advanced security capabilities.

The LPC540xx MCU family, powered by the Arm® Cortex®-M4 core, offers a larger SRAM with up to 360KB, a quad SPI Flash interface, Ethernet support, a TFT LCD controller and two CAN FD modules, while striking the right balance between feature integration and power efficiency with the Cortex-M4 achieving an active mode current of 100 μA/MHz.

For added security, the new LPC54S0xx MCU devices in this family provide Physical Unclonable Function (PUF) root key using dedicated SRAM for silicon fingerprint making it possible to generate, store, and reconstruct keys. In addition, the LPC54S0xx devices feature an on-chip hardware AES engine to protect the image content and accelerate

processing for data integrity and proof of origin. Data can be encrypted or decrypted by the AES engine using the encrypted key stored in the OTP, SRAM PUF-based or a software supplied key.

ENABLING NEXT-GENERATION CONNECTED DEVICES

The LPC540xx MCU family is architected to be power efficient for applications that require data aggregation from several different inputs. This MCU family provides a variety

LPC540XX MCU FAMILY BLOCK DIAGRAM
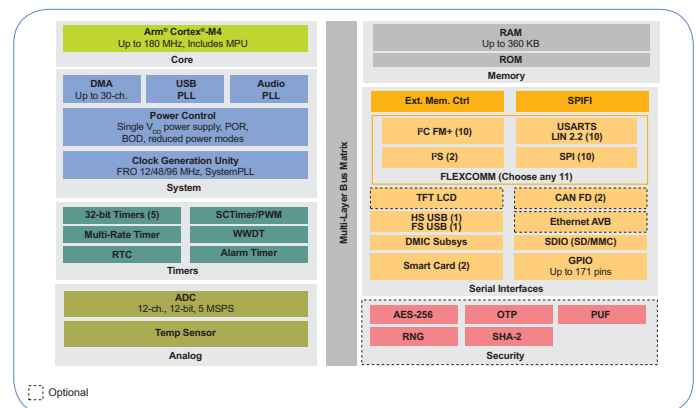
of wake-up sources including the FlexComm peripherals. Once the MCU becomes active, application use cases are endless with 11 FlexComm interfaces for sensors and HMI, options for cloud connectivity, and a graphics display to interact with the information.

COMPREHENSIVE ENABLEMENT SOLUTIONS

▸ MCUXpresso SDK

 – Extensive suite of robust peripheral drivers, stacks, and middleware

 – Software examples demonstrating use of peripheral drivers and middleware

▸ Integrated Development Environments (IDE)

 – MCUXpresso IDE

 – IAR® Embedded Workbench

 – ARM Keil® Microcontroller Development Kit

▸ ROM

 – Dedicated Bootloader for the LPC540xx/LPC54S0xx

 – 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

 – LPCXpresso54S018 (LPC54S018-EVK) development board for low-cost evaluation

 – LPCXpresso54018 (OM40003) development board for low-cost evaluation

   • Two PMod expansion headers

   • Arduino™ R3 compatible shields
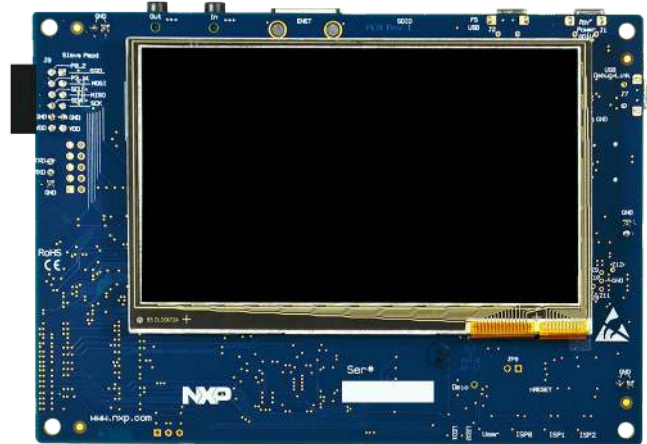
LPCXpresso54018 (OM40003) Development Board

LPC540XX MCU FAMILY OPTIONS

Family	SRAM (KB)	FS USB	HS USB	Ethernet AVB	Classic CAN	CAN FD	LCD	SHA	PUF	Security (AES, RSA, Secure Boot)	Package
LPC54005	360	X	X					X			BGA100, LQFP100
LPC54016	360	X	X	X	X	X		X			BGA180, LQFP208, LQFP100
LPC54018	360	X	X	X	X	X	X	X			BGA180, LQFP208
LPC54S005	360	X	X					X	X	X	BGA100, LQFP100
LPC54S016	360	X	X	X	X	X		X	X	X	BGA180, LQFP208, LQFP100
LPC54S018	360	X	X	X	X	X	X	X	X	X	BGA180, LQFP208

www.nxp.com/LPC540xx