NXP 204 MHz dual-core Cortex-M4F & M0 32-bit MCUs LPC43Sxx

Microcontrollers with integrated security for protecting connected applications

These high-performance microcontrollers offer high-speed connectivity, advanced peripherals, and integrated security features including AES encryption, OTP key storage, and true random number generation.

KEY FEATURES

- 204 MHz, 32-bit ARM Cortex-M4F
- 204 MHz, 32-bit ARM Cortex-M0 coprocessor
- Memories
  - Up to 1 MB Flash
  - Up to 282 kB RAM
- Memory expansion
  - SPI Flash interface (SPIFI)
  - 8/16/32-bit external memory controller (EMC)
- Security features including
  - AES-128 encryption engine
  - True random number generator(TRNG)
  - OTP key storage
  - Code read protection (CRP)
- Hi-Speed USB 2.0 interface, with on-chip Hi-Speed PHY
- Hi-Speed USB 2.0 with ULPI interface
- 10/100 Ethernet
- Graphic LCD up to 1024 x 768 pixel resolution
- SCTimer/PWM
- Configurable serial GPIO (SGPIO)
- 8-channel GPDMA controller
- Two 8-channel, 10-bit, 400 ksps ADCs and one 10-bit DAC
- Two Fast-mode I²C, three SPI, four UARTs, smart card interface, SDIO
- Two I²S, audio PLL
- Temperature range
  -40 to +85 °C (Flashless)
  -40 to +105 °C (Flash)
- Pin-compatible with LPC4300 and LPC1800 Series microcontrollers

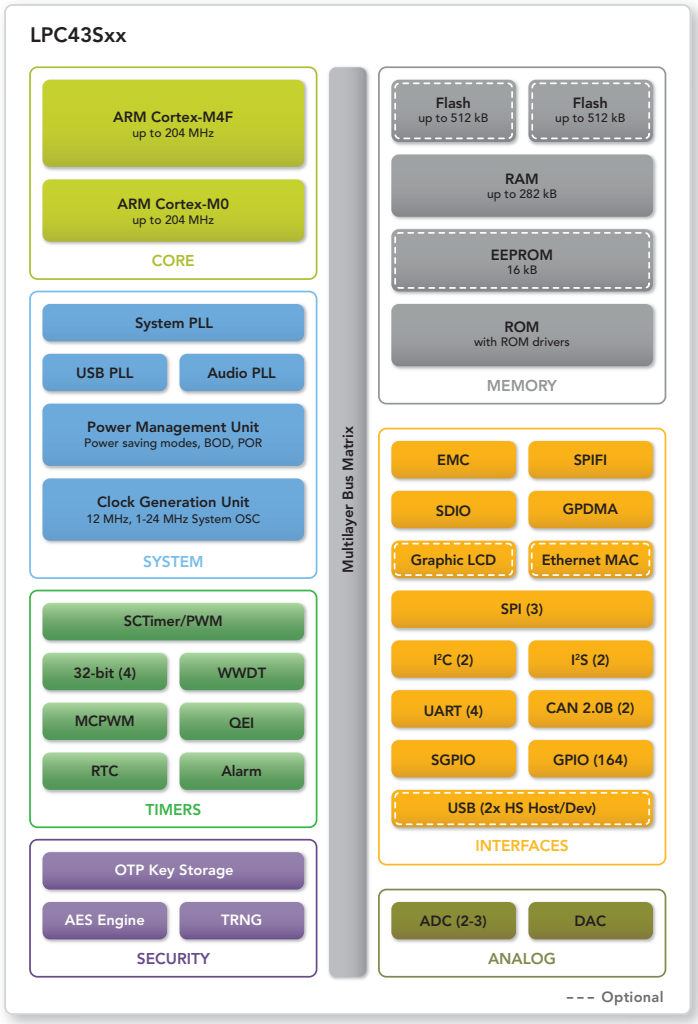
APPLICATIONS

- Secure industrial gateways
- Automotive aftermarket, including telematics
- Smart meters
- Industrial controls
- Industrial automation
- Diagnostic equipment
- White goods HMI
- Data collectors and navigation
- Electronic instruments

The LPC43Sxx family of microcontrollers combines dual-core performance and an extensive range of high-speed connectivity and advanced peripherals with security features that enables designers to protect application IP and prevent unauthorized access to data messages. With features such as hardware-accelerated AES encryption, two 128-bit non-volatile OTP memories for encrypted, hardware-randomized key storage, and a true random number generator for unique key creation, the LPC43Sxx family enables applications to implement secure boot, secure messaging, and more.

Peripherals for high-speed internet connectivity include a 10/100 Ethernet controller with hardware enabled TCP/IP checksum calculation and SDIO for interfacing to WiFi modules. Other peripherals include Hi-Speed USB with integrated PHY or ULPI, and CAN 2.0. An optimized graphic LCD display controller supports vivid color and monochrome LCD panels with resolutions up to 1024 x 768 pixels. The expandable memory architecture gives developers powerful options for scaling memory to the ideal requirements. In addition, Flashless options with SPIFI lower cost and maximize internal RAM.

LPC43Sxx microcontrollers are supported by a wide range of software solutions available from ecosystem partners that support secure firmware updates, secure IoT connectivity, and secure networking stacks (SSL, TLS). For applications requiring total device integrity, LPC43Sxx microcontrollers can be paired with an NXP A-Series secure element to add tamper detection, secure authentication with hardware accelerated RSA and ECC, extraction proof keys using banking grade security, and more.



LPC43Sxx block diagram

Part number	Flash	RAM	SPIFI	SGPIO	SDIO	CAN	USB	LCD	Ethernet	AES engine	OTP key storage	TRNG	Packages
LPC43S20		200	1	1	1	2	1 x HS			•	•	•	LQFP144, BGA180
LPC43S30		264	1	1	1	2	2 x HS		1	•	•	•	LQFP144, BGA100, BGA256
LPC43S37	1024	136	1	1	1	2	2 x HS		1	•	•	•	LQFP144, BGA100
LPC43S50		264	1	1	1	2	2 x HS	•	1	•	•	•	BGA180, BGA256
LPC43S57	1024	136	1	1	1	2	2 x HS	•	1	•	•	•	LQFP208, BGA256
LPC43S70		282	1	1	1	2	2 x HS	•	1	•	•	•	BGA100, BGA256

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