

NXP 150 MHz, 32-bit
Cortex-M4 /Cortex-M0 DSC
LPC4300 series

First asymmetrical, dual-core digital signal controller featuring Cortex-M4 & Cortex-M0

A dual-core architecture and a unique set of configurable peripherals make it possible to develop DSP and MCU applications within a single architecture and development environment.

Key features

- ▶ 150 MHz, 32-bit ARM Cortex-M4
- ▶ 150 MHz, 32-bit ARM Cortex-M0 asymmetrical coprocessor
- ▶ Up to 1 MB Flash
- ▶ Up to 264 KB SRAM
- ▶ Memory Protection Unit (MPU)
- ▶ Two high-speed USB 2.0 interfaces, with on-chip high-speed PHY
- ▶ Ethernet MAC
- ▶ LCD Interface
- ▶ Innovative SPI Flash Interface
- ▶ State Configurable Timer Subsystem
- ▶ Configurable Serial GPIO
- ▶ Up to 146 GPIO

Additional features

- ▶ 8-channel GPDMA controller
- ▶ Two 8-channel, 10-bit ADCs and one 10-bit DAC (400 K samples per second)
- ▶ Motor Control PWM and Quadrature Encoder Interface
- ▶ Four UARTs, smart card interface
- ▶ Two Fast-mode I²C, two I²S, three SSP/SPI
- ▶ Temperature range: -40 to +85 °C

High Performance and Lower Power

Combined with large accelerated Flash and SRAM memories and a set of unique configurable peripherals, the 150 MHz LPC4300 enables customers to develop a wide range of applications such as motor control, power management, industrial automation, robotics, medical, automotive accessories and embedded audio.

Combining MCU and DSP capabilities

The Cortex-M4 processor combines the benefits of a microcontroller – integrated interrupt control, low power modes, low cost debug and ease of use – with high-performance digital signal processing features such as single-cycle MAC, single instruction multiple data (SIMD) techniques, saturating arithmetic, and a floating point unit. A Cortex-M0 coprocessor offloads many of the data movement and I/O handling duties that can drain the bandwidth of the Cortex-M4 core. This allows the Cortex-M4 to concentrate fully on crunching numbers for digital signal control applications.

Extensive peripheral set

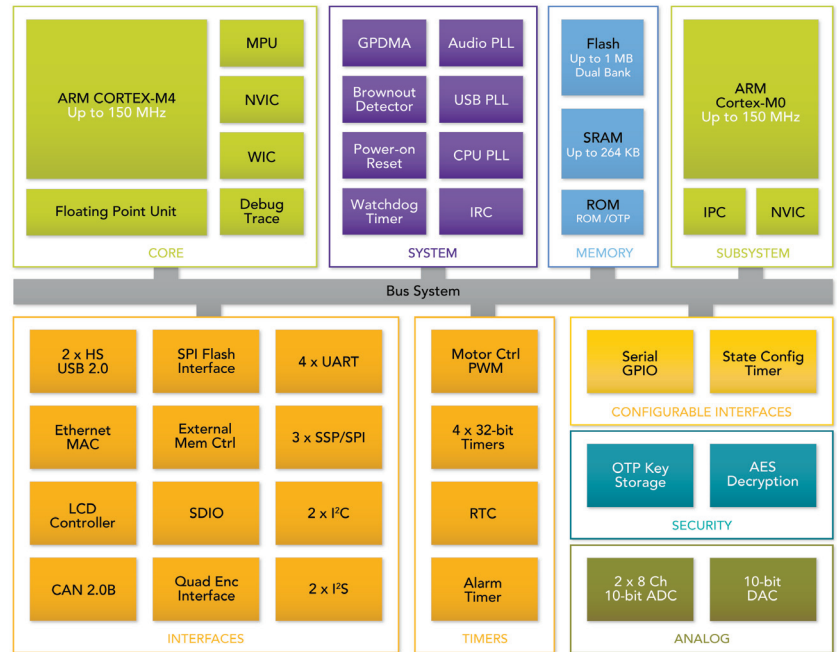
The LPC4300 features three new innovative peripherals: a flexible SPI Flash Interface, a State Configurable Timer



subsystem and Serial GPIO. The State Configurable Timer Subsystem consists of a timer array with a state machine enabling complex functionality, including event-controlled PWM waveform generation, ADC synchronization, and dead-time control. The SPI Flash Interface provides a seamless high-speed memory-mapped connection to virtually all SPI and quad-SPI manufacturers. The LPC4300's Serial GPIO, available for the first time, allows a developer the flexibility to interface to any non-standard serial interface or to mimic multiple standard serial interfaces (such as I²S, TDM for multi-channel audio, I²C and more).

Additional peripherals available on the LPC4300 include two HS USB controllers, an on-chip HS PHY, a 10/100T Ethernet controller with hardware enabled TCP/IP checksum calculation, a high-resolution color LCD controller, and AES decryption, including two 128-bit secure OTP memories for key storage. Versions with AES encryption are available on request.

LPC43xx



| Type | Memory | | M4/M0 | LCD | Ethernet | USB | State Config Timer | Serial GPIO | External bus interface | Temp. range options | Package |
|---------|--------------|--------|-------|-----|----------|-----|--------------------|-------------|------------------------|---------------------|-------------------------|
| | Flash | Ram | | | | | | | | | |
| LPC4310 | | 168 KB | • | | | | • | • | 8-16 | -40 to +85 °C | LQFP144, TBGA100 |
| LPC4312 | 512 | 104 KB | • | | | | • | • | 8-16 | -40 to +85 °C | LQFP144, TBGA100 |
| LPC4313 | 256x2 | 104 KB | • | | | | • | • | 8-16 | -40 to +85 °C | LQFP144, TBGA100 |
| LPC4315 | 768 | 136 KB | • | | | | • | • | 8-16 | -40 to +85 °C | LQFP144, TBGA100 |
| LPC4317 | 1024 | 136 KB | • | | | | • | • | 8-16 | -40 to +85 °C | LQFP144, TBGA100 |
| LPC4320 | | 200 KB | • | | | 1 | • | • | 8-16 | -40 to +85 °C | LQFP144, TBGA100 |
| LPC4322 | 512 | 104 KB | • | | | 1 | • | • | 8 | -40 to +85 °C | LQFP144, TBGA100 |
| LPC4323 | 256x2 | 104 KB | • | | | 1 | • | • | 8-16 | -40 to +85 °C | LQFP144, TBGA100 |
| LPC4325 | 768 | 136 KB | • | | | 1 | • | • | 8-16 | -40 to +85 °C | LQFP144, TBGA100 |
| LPC4327 | 1024 | 136 KB | • | | | 1 | • | • | 8-16 | -40 to +85 °C | LQFP144, TBGA100 |
| LPC4330 | | 264 KB | • | | • | 2 | • | • | 16-32 | -40 to +85 °C | LQFP208, BGA256, BGA180 |
| LPC4333 | 512 | 136 KB | • | | • | 2 | • | • | 16-32 | -40 to +85 °C | LQFP208, BGA256, BGA180 |
| LPC4337 | 1024 | 136 KB | • | | • | 2 | • | • | 16-32 | -40 to +85 °C | LQFP208, BGA256, BGA180 |
| LPC4350 | | 264 KB | • | • | • | 2 | • | • | 16-32 | -40 to +85 °C | LQFP208, BGA256, BGA180 |
| LPC4353 | 512 | 136 KB | • | • | • | 2 | • | • | 16-32 | -40 to +85 °C | LQFP208, BGA256, BGA180 |
| LPC4357 | 1024 (2x512) | 136 KB | • | • | • | 2 | • | • | 16-32 | -40 to +85 °C | LQFP208, BGA256, BGA180 |

www.nxp.com/microcontrollers

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