NXP 204-MHz, 32-bit Cortex-M4/ Cortex-M0 MCU LPC4300 series

Cortex-M4 MCUs with Cortex-M0 coprocessor, HS USB, and more

Multiple cores and a unique set of configurable peripherals make it easy to develop advanced applications within a single architecture and development environment.

KEY FEATURES

▸ 204 MHz, 32-bit ARM Cortex-M4 with FPU
▸ 204 MHz, 32-bit ARM Cortex-M0 coprocessor
▸ Up to 1 MB dual-bank Flash
▸ Up to 282 KB SRAM
▸ Up to 16 KB EEPROM
▸ Memory Protection Unit (MPU)
▸ Two high-speed USB 2.0 interfaces, with on-chip high-speed PHY
▸ 10/100T Ethernet MAC with MII and RMII interfaces
▸ LCD controller with 1024 x 768 pixel display resolution
▸ Innovative Quad SPI Flash Interface (SPIFI)
▸ State Configurable Timer with up to 16 PWMs
▸ Configurable Serial GPIO
▸ Two CAN 2.0B
▸ Up to 164 GPIO
▸ Pin-compatible with the LPC1800 series

ADDITIONAL FEATURES

▸ 8-channel GPDMA controller
▸ Two 8-channel, 400 Ksps 10-bit ADCs and one 10-bit DAC, the optional 12-bit 80Msps ADC
▸ Motor Control PWM and Quadrature Encoder Interface
▸ Four UARTs, smart card interface
▸ Two Fast-mode I²C, two I²S, three SSP/SPI
▸ Extended temperature range: -45 to +105 °C

KEY APPLICATIONS

▸ Industrial automation
▸ Instrumentation
▸ Embedded audio
▸ Automotive accessories
▸ Robotics
▸ Medical

The NXP LPC4300 series combines industry leading microcontroller performance and advanced peripheral functionality to deliver superior integration for the most challenging embedded applications. The LPC4300 architecture uses multiple cores – a sophisticated Cortex-M4 processor with a floating-point unit (FPU), plus one or two Cortex-M0 coprocessor cores. The multi-core approach makes it easy to partition a design for maximum efficiency, letting the powerful Cortex-M4 core crunch numbers and letting the Cortex-M0 coprocessor(s) manage data movement and I/O handling.
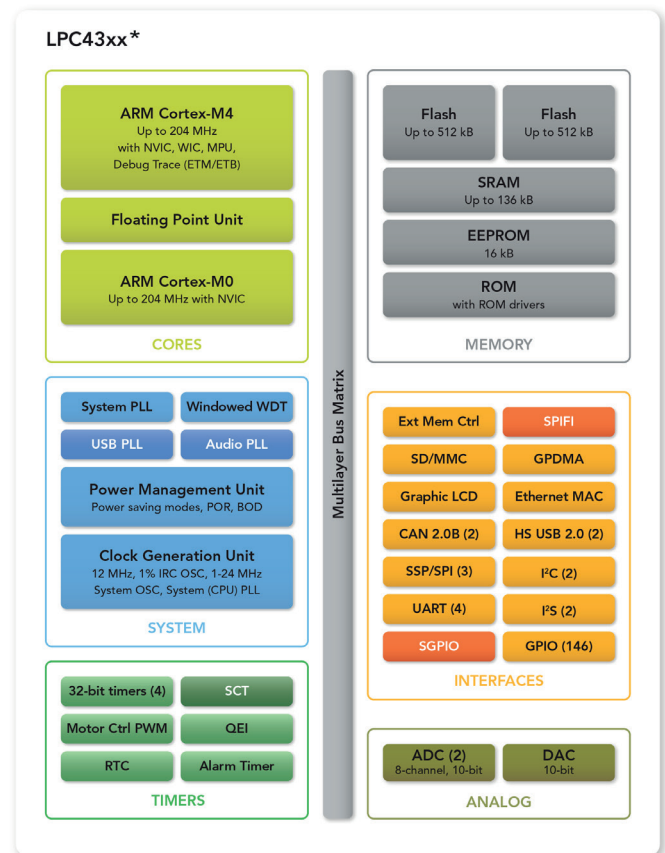
The multi-core approach also reduces time-to-market, since design and debug take place in a single development environment. The processor cores are supported by a long list of high-performance peripherals, integrated interrupt control, and low-power modes that give embedded engineers new ways to solve complex design problems.

Depending on their application needs, designers can choose an LPC4300 device with or without on-chip Flash. There are also options for extended temperature range.

Several LPC4300 features are unique to NXP. The SCT subsystem, consisting of a timer array with a state machine, makes it easy to configure complex PWM and timer functions. The SPIFI peripheral provides a seamless interface to SPI and quad-SPI memories, and the Serial GPIO expand the options for serial interfaces like I^2C and I^2S.

The LPC4300 series is also equipped with an extensive list of connectivity interfaces and analog functions. Options include two HS USB controllers, an on-chip HS PHY, a 10/100T Ethernet controller with hardware-enabled TCP/IP checksum calculation, and a high-resolution color LCD controller.
Analog functionality includes two 8-channel, 10-bit ADCs running at 400 Ksps or a 6-channel, 12-bit ADC running at 80 Msps, and a 10-bit DAC.

LPC43xx*

CORES
- ARM Cortex-M4 — Up to 204 MHz with NVIC, WIC, MPU, Debug Trace (ETM/ETB)
- Floating Point Unit
- ARM Cortex-M0 — Up to 204 MHz with NVIC

MEMORY
- Flash — Up to 512 kB
- Flash — Up to 512 kB
- SRAM — Up to 136 kB
- EEPROM — 16 kB
- ROM — with ROM drivers

SYSTEM
- System PLL
- Windowed WDT
- USB PLL
- Audio PLL
- Power Management Unit — Power saving modes, POR, BOD
- Clock Generation Unit — 12 MHz, 1% IRC OSC, 1-24 MHz System OSC, System (CPU) PLL

INTERFACES
- Ext Mem Ctrl
- SPIFI
- SD/MMC
- GPDMA
- Graphic LCD
- Ethernet MAC
- CAN 2.0B (2)
- HS USB 2.0 (2)
- SSP/SPI (3)
- I^2C (2)
- UART (4)
- I^2S (2)
- SGPIO
- GPIO (146)

TIMERS
- 32-bit timers (4)
- SCT
- Motor Ctrl PWM
- QEI
- RTC
- Alarm Timer

ANALOG
- ADC (2) — 8-channel, 10-bit
- DAC — 10-bit

Multilayer Bus Matrix

*The LPC4370 adds an 80Msps 12-bit ADC and a subsystem with a second Cortex-M0 peripheral handler.

| Type | Memory | | M4F/M0 | LCD | Ethernet | USB | SCT | Serial GPIO | External bus interface | Temperature range | Package |
	Flash	Ram									
LPC4310		168 KB	•				•	•	8-16	-40 to +85 °C	LQFP144, TBGA100
LPC4312	512	104 KB	•				•	•	8-16	-40 to +105 °C	LQFP144, TBGA100
LPC4313	256x2	104 KB	•				•	•	8-16	-40 to +105 °C	LQFP144, TBGA100
LPC4315	768	136 KB	•				•	•	8-16	-40 to +105 °C	LQFP144, TBGA100
LPC4317	1024	136 KB	•				•	•	8-16	-40 to +105 °C	LQFP144, TBGA100
LPC4320		200 KB	•			1	•	•	8-16	-40 to +85 °C	LQFP144, TBGA100
LPC4322	512	104 KB	•			1	•	•	8-16	-40 to +105 °C	LQFP144, TBGA100
LPC4323	256x2	104 KB	•			1	•	•	8-16	-40 to +105 °C	LQFP144, TBGA100
LPC4325	768	136 KB	•			1	•	•	8-16	-40 to +105 °C	LQFP144, TBGA100
LPC4327	1024	136 KB	•			1	•	•	8-16	-40 to +105 °C	LQFP144, TBGA100
LPC4330		264 KB	•		•	2	•	•	16-32	-40 to +85 °C	BGA256, BGA180, LQFP144, BGA100
LPC4333	512	136 KB	•		•	2	•	•	16-32	-40 to +105 °C	BGA256, BGA180, LQFP144, BGA100
LPC4337	1024	136 KB	•		•	2	•	•	16-32	-40 to +105 °C	BGA256, BGA180, LQFP144, BGA100
LPC4350		264 KB	•	•	•	2	•	•	16-32	-40 to +85 °C	BGA256, LQFP208, BGA180
LPC4353	512	136 KB	•	•	•	2	•	•	16-32	-40 to +105 °C	BGA256, LQFP208, BGA180
LPC4357	1024 (2x512)	136 KB	•	•	•	2	•	•	16-32	-40 to +105 °C	BGA256, LQFP208, BGA180
LPC4370		282 KB	•	•	•	2	•	•	8-32	-40 to +85 °C	BGA256, BGA100

Note: LPC4370 combines a Cortex-M4 with two Cortex-M0 cores

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