



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

www.nxp.com

© 2010 NXP Semiconductors N.V.

All rights reserved. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice. No liability will be accepted by the publisher for any consequence of its use. Publication thereof does not convey nor imply any license under patent- or other industrial or intellectual property rights.

Date of release: November 2010

Document order number: 9397 750 17013

Printed in the Netherlands