NXP 180 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
▸ 180 MHz, 32-bit ARM Cortex-M4
▸ 180 MHz, 32-bit ARM Cortex-M0 coprocessor
▸ Up to 1 MB dual-bank Flash
▸ Up to 264 KB SRAM
▸ Up to 4 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 (SCT) Subsystem
▸ Configurable Serial GPIO
▸ Two CAN 2.0B
▸ AES Decryption with 128-bit secure OTP key storage
▸ 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
▸ Motor Control PWM and Quadrature Encoder Interface
▸ Four UARTs, smart card interface

▸ Two Fast-mode I^{2}C, two I^{2}S, 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
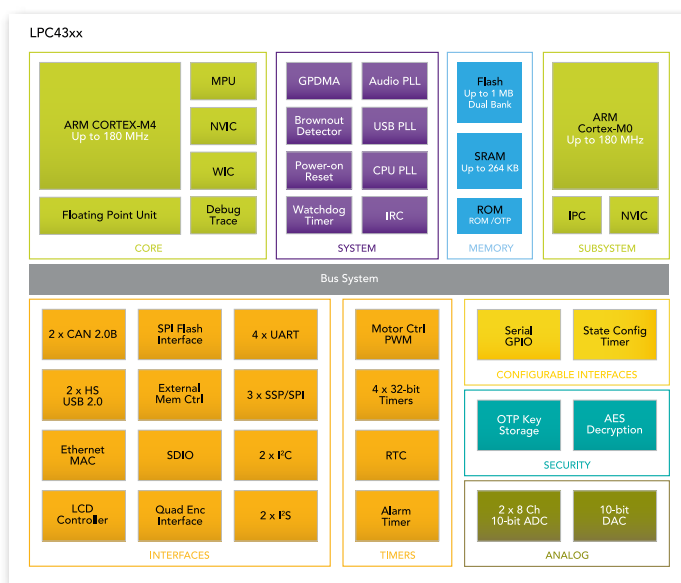
Type	Memory		M4/M0	LCD	Ethernet	USB	State Config Timer	Serial GPIO	External bus interface	Temp. range options	Package
	Flash	Ram									
LPC4310		168 KB	•				•	•	8-16	-40 to +85 °C	LQFP144, TBGA100
LPC4312	512	104 KB	•				•	•	8-16	-40 to +85 °C	LQFP144, TBGA100
LPC4313	256x2	104 KB	•				•	•	8-16	-40 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, LQFP100
LPC4322	512	104 KB	•			1	•	•	8-16	-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, LQFP100
LPC4330		264 KB	•		•	2	•	•	16-32	-40 to +85 °C	BGA256, BGA180, LQFP144, BGA100
LPC4333	512	136 KB	•		•	2	•	•	16-32	-40 to +85 °C	BGA256, BGA180, LQFP144, BGA100
LPC4337	1024	136 KB	•		•	2	•	•	16-32	-40 to +85 °C	BGA256, BGA180, LQFP144, BGA100
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

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