



## NXP 72 MHz, 32-bit Cortex-M3™ microcontrollers LPC1300

# Low-power Cortex-M3 based microcontrollers simplify USB designs

The LPC1300 series includes USB based LPC134x and low power LPC1300L microcontrollers. The LPC1340 includes on-chip USB drivers for mass storage class (MSC) and human interface device (HID). This greatly simplifies USB implementations since the USB drivers are incorporated in ROM, and saves around 5-6 Kbytes of user code. The LPC1300L includes power profiles in ROM and offers low active power consumption at approximately 170 uA/MHz.

### Key features

- ▶ ARM Cortex-M3 processor
  - 72 MHz operation
  - Nested Vectored Interrupt Controller for fast deterministic interrupts
  - Wakeup Interrupt Controller allows automatic wake from an priority interrupt
  - Three reduced-power modes: Sleep, Deep-sleep, and Deep power-down
- ▶ Memories
  - Up to 32 KB Flash memory
  - Up to 8 KB SRAM
- ▶ Serial peripherals
  - USB 2.0 full-speed device controller with on-chip PHY
  - UART with fractional baud rate generation, internal FIFO, and RS-485 support
  - 1-2 SSP/SPI controller with FIFO and multi-protocol capabilities
  - I<sup>2</sup>C-bus interface supporting full I<sup>2</sup>C-bus specification and Fast-mode plus with a data rate of 1 Mbit/s, multiple address recognition, and monitor mode
- ▶ Analog peripherals:
  - 10-bit analog-to-digital converter (ADC) with eight channels and conversion rates up to 400 K samples per second
- ▶ Other peripherals:
  - Up to 42 General Purpose I/O (GPIO) pins with configurable pull-up/down resistors and a new, configurable open-drain operating mode
  - Four general-purpose counter/timers, with a total of four capture inputs and 13 match outputs
  - Programmable Watchdog timer (WDT) with lock-out feature
  - System tick timer
  - Each peripheral has its own clock divider for power savings

### Applications

- ▶ White goods
- ▶ e-Metering
- ▶ Consumer peripherals
- ▶ Remote sensors
- ▶ 16/32-bit applications



Built around a Cortex-M3 Rev2 processor core, the LPC1300 is equipped with up to 32 KB of Flash and up to 8 KB of SRAM, uses a single 3.3 V power supply (for operation between 2.0 and 3.6 V), and is available in LQFP48 or HVQFN33 packages.

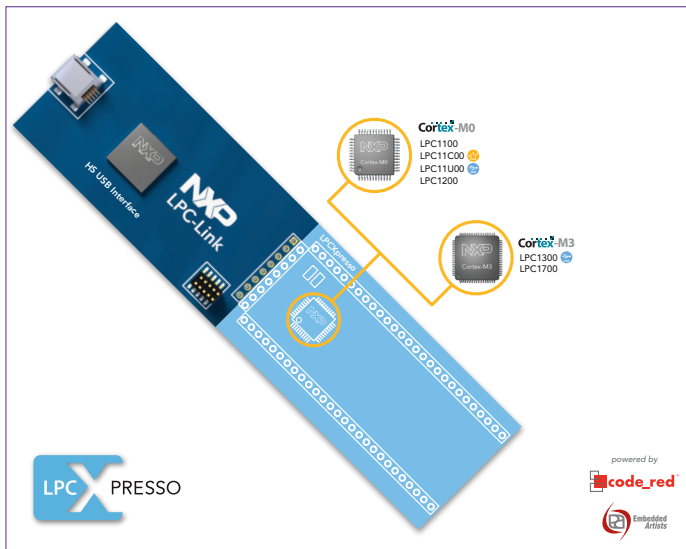
The LPC1300 series is pin-to-pin compatible with the LPC1100 series, NXP's new family of Cortex-M0 MCUs, so it gives designers a straightforward migration path to the even lower-power features of the Cortex-M0 architecture.

Also, in keeping with NXP's existing line of more than 50 USB-equipped ARM MCUs, the LPC134x offers support for USB full-speed operation. HID and mass storage USB driver software is included in a dedicated on-chip ROM, maximizing the amount of Flash memory available for user code.

### Tools

The LPC1300 series is supported by LPCXpresso, an easy-to-use, comprehensive development tool platform for under US\$30. It's also supported by development tools from IAR, Keil, Hitex, Code Red, and many others. For the most current listing, please visit [www.nxp.com/microcontrollers](http://www.nxp.com/microcontrollers).

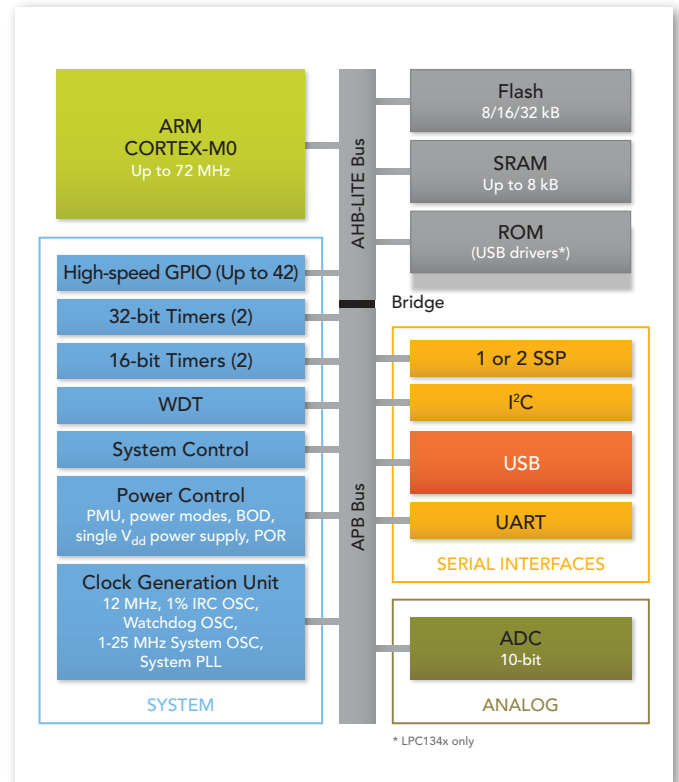
### LPCXpresso supports all Cortex-M devices



LPC1300L (LPC131x/01) include the following enhancements:

- ▶ Power profiles enable lower power consumption in Active and Sleep modes
- ▶ Four levels for BOD forced reset
- ▶ Second SSP controller
- ▶ Windowed Watchdog Timer (WWDT)
- ▶ Internal pull-up resistors pull up pins to full  $V_{DD}$  level
- ▶ Programmable pseudo open-drain mode for GPIO pins

### LPC1300 block diagram



### LPC1300 selection guide

Type number	Flash	Total SRAM	USB	UART RS-485	I2C/Fast+	SSP/SPI	ADC channels	Packages
LPC1343	32 KB	8 KB	Device	1	1	1	8	LQFP48, HVQFN33
LPC1342	16 KB	4 KB	Device	1	1	1	8	HVQFN33
LPC1313/01	32 KB	8 KB	-	1	1	2	8	LQFP48, HVQFN33
LPC1311/01	8 KB	2 KB	-	1	1	2	8	HVQFN33

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