



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 64 KB Flash memory
 - Up to 12 KB SRAM
 - Up to 4 KB EEPROM with Drivers in ROM for ease of use
- ▶ Serial peripherals
 - USB 2.0 full-speed device controller (LPC134x only) with on-chip PHY, separate USB PLL and USB Drivers in ROM for ease of use
 - UART with fractional baud rate generation, internal FIFO, and RS-485 support. LPC1347/46/45/17/16/15 also support Synchronous (USART) mode and Smart Card Interface.
- 1-2 SSP/SPI controller with FIFO and multi-protocol capabilities
- I²C-bus interface supporting full I²C-bus specification and Fast-mode plus with a data rate of 1 Mbit/s, multiple address recognition, and monitor mode
- ▶ Analog peripherals:
 - 12-bit analog-to-digital converter (ADC) with eight channels and conversion rates up to 500 K samples per second. LPC1343/42/13/11 have 10-bit ADC.
- ▶ Other peripherals:
 - Up to 51 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 Windowed Watchdog timer (WWDT) with lock-out feature
 - System tick timer
 - Each peripheral has its own clock divider for power savings



Applications

- ▶ USB
- ▶ Smart Card Readers
- ▶ Consumer peripherals
- ▶ Remote sensors
- ▶ 16/32-bit applications

Built around a Cortex-M3 Rev2 processor core, the LPC1300 is equipped with up to 64 KB of Flash and up to 12 KB of SRAM, uses a single 3.3 V power supply (for operation between 2.0 and 3.6 V), and is available in LQFP64, LQFP48 or HVQFN33 packages.

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

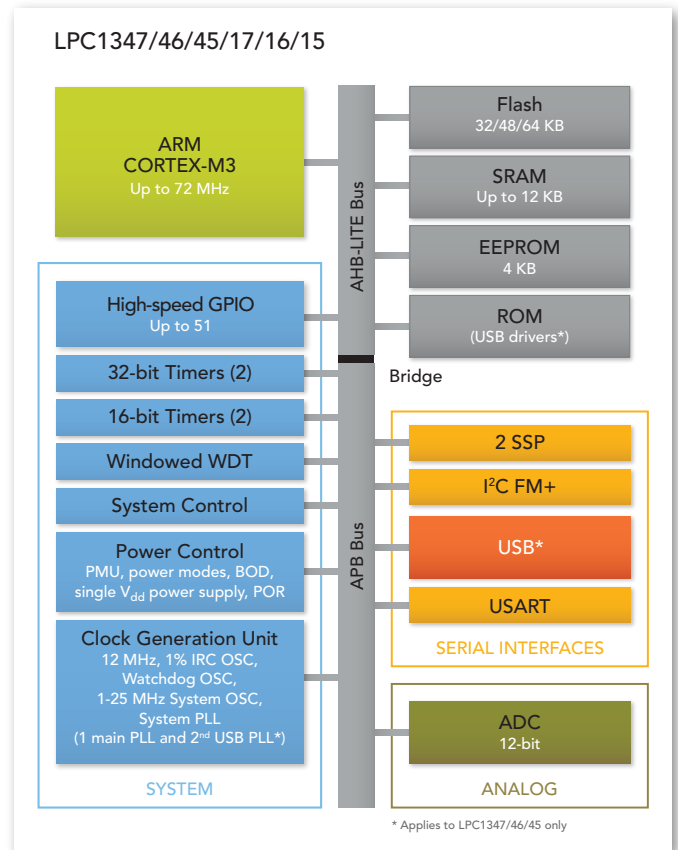
Also, in keeping with NXP's existing line of more than 50 USB-equipped ARM MCUs, the LPC134x offers support for USB full-speed operation. HID and mass storage USB driver software is included in a dedicated on-chip ROM, maximizing the amount of Flash memory available for user code. The ROM also contains EEPROM drivers to make writing to EEPROM extremely simple. There are also Power Profiles that enable optimized low power consumption in Active and Sleep Modes.

Tools

The LPC1300 series is supported by development tools from IAR, Keil, Hitex, Code Red, and many others. For the most current listing, please visit www.nxp.com/microcontrollers.

LPC1300 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 selection guide

Part number	Flash	Total RAM	EEPROM	UART	I ² C FM+	SSP	USB device	ADC bits/channels	Packages
LPC1317	64 KB	10 KB	4 KB	1 (USART)	1	2	No	12-/ 8	LQFP64, LQFP48, HVQFN33
LPC1316	48 KB	8 KB	4 KB	1 (USART)	1	2	No	12-/ 8	LQFP48, HVQFN33
LPC1315	32 KB	8 KB	2 KB	1 (USART)	1	2	No	12-/ 8	LQFP48, HVQFN33
LPC1313/01	32 KB	8 KB	0 KB	1	1	2	No	10-/ 8	LQFP48, HVQFN33
LPC1311/01	8 KB	2 KB	0 KB	1	1	2	No	10-/ 8	HVQFN33
LPC1347	64 KB	12 KB	4 KB	1 (USART)	1	2	Yes	12-/ 8	LQFP64, LQFP48, HVQFN33
LPC1346	48 KB	10 KB	4 KB	1 (USART)	1	2	Yes	12-/ 8	LQFP48, HVQFN33
LPC1345	32 KB	10 KB	2 KB	1 (USART)	1	2	Yes	12-/ 8	LQFP48, HVQFN33
LPC1343	32 KB	8 KB	0 KB	1	1	1	Yes	10-/ 8	LQFP48, HVQFN33
LPC1342	16 KB	4 KB	0 KB	1	1	1	Yes	10-/ 8	HVQFN33

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