NXP 50-MHz, 32-bit
Cortex-M0™ microcontrollers
LPC1100

Cortex-M0 based microcontrollers with industry-leading power and efficiency

Built around the new Cortex-M0 architecture, the smallest, lowest power, and most energy-efficient ARM core ever developed, these MCUs are ideally equipped for use in many traditional 8/16-bit applications.

Key features

▶ ARM Cortex-M0 processor
- 50 MHz operation
- Nested Vectored Interrupt Controller for fast deterministic interrupts
- Wakeup Interrupt Controller allows automatic wake from a priority interrupt
- Three reduced-power modes: Sleep, Deep-sleep, and Deep power-down
▶ Memories
- Up to 32 KB Flash memory
- Up to 16 KB SRAM
▶ Serial peripherals
- UART with fractional baud rate generation, internal FIFO, and RS-485 support
- Up to 2 SPI controllers 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 with multiple address recognition and monitor mode

▶ Analog peripheral
- 10-bit Analog-to-Digital Converter with eight channels and conversion rates up to 400 K samples per second
▶ Other:
- 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
▶ 8/16-bit applications
▶ Industrial networking
▶ System supervisors

NXP's LPC1100 is the lowest-priced 32-bit MCU solution in the market. It offers greater value than existing 8/16-bit microcontroller by delivering unprecedented performance, simplicity, low power, and dramatic reductions in code size for every application.

With over 45 DMIPS of performance compared to the sub-DMIP performance typical of 8-bit MCUs and 3 to 5 DMIPS for 16-bit MCUs, the LPC1100 not only execute basic control tasks but sophisticated algorithms as well, making even the most complex tasks within reach. Using less time to do more tasks translates directly into lower energy consumption. This level of performance is delivered at 50 MHz, with extensive power optimization, at less than 10 mA.

Challenging the belief that 8/16-bit microcontrollers use less code, industry-standard Coremark benchmarks show that the LPC1100 requires 40-50% less code for most common microcontroller tasks.
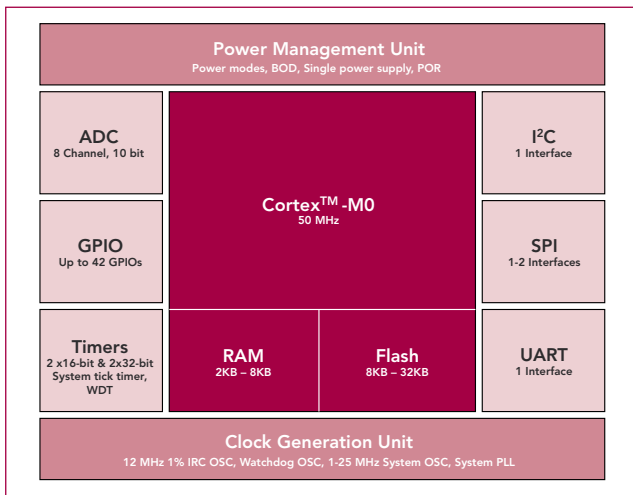
Development tools

The LPC1100 family is supported by the LPCXpresso , an easy to use, comprehensive development tool platform for under US$30, as well as development tools from IAR, Keil, Hitex, Code Red, and many others. For the most current listing, please visit www.nxp.com/microcontrollers.

Additional features

▸ Serial Wire Debug (4 breakpoints)
▸ High-current output driver (20 mA) on one pin
▸ High-current sink drivers (20 mA) on two pins
▸ Integrated PMU (Power Management Unit) to minimize power consumption during Sleep, Deep-sleep, and Deep power-down modes
▸ Single 3.3 V power supply (1.8 to 3.6 V)
▸ Over 5 kV ESD for rugged applications
▸ 13 GPIO pins can be used as edge and level sensitive interrupt sources
▸ Clock generation unit with divider that can reflect the main oscillator clock, IRC clock, CPU clock, and Watchdog clock.
▸ Processor wake-up from Deep-sleep mode via interrupts from various peripherals
▸ Brownout detect with four separate thresholds for interrupt and forced reset
▸ Power-On Reset (POR)
▸ Crystal oscillator with an operating range of 1 MHz to 25 MHz
▸ 12 MHz internal RC oscillator trimmed to 1% accuracy that can also be used as a system clock
▸ PLL allows CPU operation up to the maximum CPU rate without the need for a high-frequency crystal. Can be run run from the main oscillator, the internal RC oscillator, or the Watchdog oscillator.
▸ Available in 48-pin LQFP, 33-pin HVQFN, or 44-pin PLCC package

LPC1100 block diagram

Power Management Unit
Power modes, BOD, Single power supply, POR

ADC 8 Channel, 10 bit
I²C 1 Interface
Cortex™ -M0 50 MHz
GPIO Up to 42 GPIOs
SPI 1-2 Interfaces
Timers 2 x16-bit & 2x32-bit System tick timer, WDT
RAM 2KB – 8KB
Flash 8KB – 32KB
UART 1 Interface

Clock Generation Unit
12 MHz 1% IRC OSC, Watchdog OSC, 1-25 MHz System OSC, System PLL

LPC111x ordering options

Type number	Flash	Total SRAM	UART RS-485	I²C / Fast+	SPI	ADC Channels	Package
LPC1111							
LPC1111FHN33/101	8 KB	2 KB	1	1	1	8	HVQFN33
LPC1111FHN33/201	8 KB	4 KB	1	1	1	8	HVQFN33
LPC1112							
LPC1112FHN33/101	16 KB	2 KB	1	1	1	8	HVQFN33
LPC1112FHN33/201	16 KB	4 KB	1	1	1	8	HVQFN33
LPC1113							
LPC1113FHN33/201	24 KB	4 KB	1	1	1	8	HVQFN33
LPC1113FHN33/301	24 KB	8 KB	1	1	1	8	HVQFN33
LPC1113FBD48/301	24 KB	8 KB	1	1	2	8	LQFP48
LPC1114							
LPC1114FHN33/201	32 KB	4 KB	1	1	1	8	HVQFN33
LPC1114FHN33/301	32 KB	8 KB	1	1	1	8	HVQFN33
LPC1114FBD48/301	32 KB	8 KB	1	1	2	8	LQFP48
LPC1114FA44/301	32 KB	8 KB	1	1	2	8	PLCC44