



# NXP 50-MHz, 32-bit Cortex-M0™ microcontrollers LPC1102

## World's smallest 32-bit ARM microcontroller

Delivering unprecedented computing power in 5 mm<sup>2</sup> of PCB area, the LPC1102 is targeted at applications requiring an ultra-miniature footprint. It provides low power, high performance, and high value, while adding the new dimension of miniaturization.

### Key features

- ▶ ARM Cortex-M0 processor
  - 50 MHz operation
  - Nested Vectored Interrupt Controller for fast deterministic interrupts
  - Serial Wire Debug
  - Two reduced-power modes: Sleep, Deep-sleep
- ▶ Memories
  - Up to 32 KB Flash memory
  - Up to 8 KB SRAM
- ▶ Serial peripherals
  - UART with fractional baud rate generation, internal FIFO, and RS-485 support
  - SPI controller with FIFO and multi-protocol capabilities

### Additional features

- ▶ Unique device serial number for identification
- ▶ Single 3.3 V power supply (1.8 to 3.6 V)
- ▶ Available as WLCSP16 package (2 x 2 mm footprint)

### ▶ Analog peripheral

- 10-bit Analog-to-Digital Converter with five channels and conversion rates up to 400 K samples per second

### ▶ Other features

- Up to 11 general-purpose I/O (GPIO) pins with configurable pull-up/down resistors
- Four general-purpose counter/timers, with a total of one capture input and nine match outputs
- Programmable Watchdog Timer (WDT) with lock-out feature
- System tick timer
- Each peripheral has its own clock divider for power savings

### Applications

- ▶ Mobile devices
- ▶ Consumer peripherals
- ▶ Portable devices
- ▶ Lighting
- ▶ 8/16-bit applications



The NXP LPC1102, a member of the highly successful LPC1100 series of 32-bit ARM Cortex-M0 microcontrollers, offers up to 32 KB of Flash and up to 8 KB of RAM, and is available in Wafer Level Chip Scale Packaging (WL-CSP) with dimensions of 2.17 x 2.32 mm, a thickness of 0.65 mm, and a pitch of 0.5 mm. 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 LPC1102 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 LPC1102 requires 40-50% less code for most common microcontroller tasks.

### LPC1102 block diagram

