



## mbed NXP LPC1768 prototyping board

# Rapid prototyping for the LPC1768 MCU

This board, which works with the groundbreaking mbed tool suite, lets you create a functioning prototype faster than ever. The tightly coupled combination of hardware and software makes it easy to explore designs quickly, so you can be more adventurous, more inventive, and more productive.

### Features

- ▶ Convenient form-factor: 40-pin DIP, 0.1-inch pitch
- ▶ Drag-and-drop programming, with the board represented as a USB drive
- ▶ Best-in-class Cortex-M3 hardware
  - 100 MHz ARM with 64 KB of SRAM, 512 KB of Flash
  - Ethernet, USB OTG
  - SPI, I<sup>2</sup>C, UART, CAN
  - GPIO, PWM, ADC, DAC
- ▶ Easy-to-use online tools
  - Web-based C/C++ programming environment
  - Uses the ARM RealView compile engine
  - API-driven development using libraries with intuitive interfaces
  - Comprehensive help and online community

### Benefits

- ▶ Get started right away, with nothing to install
- ▶ Get working fast, using high-level APIs
- ▶ Explore, test, and demonstrate ideas more effectively
- ▶ Write clean, compact code that's easy to modify
- ▶ Log in from anywhere, on Windows, Mac or Linux

The mbed NXP LPC1768 board lets you create prototypes without having to work with low-level microcontroller details, so you can experiment and iterate faster than ever.

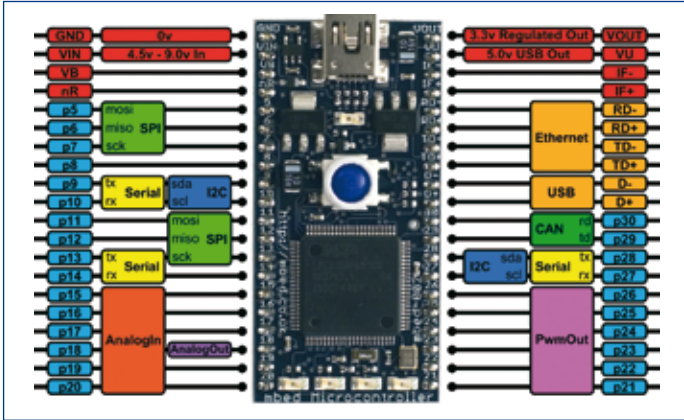
Designers compose and compile embedded software using a browser-based IDE, then download it quickly and easily, using a simple drag-and-drop function, to the board's NXP Cortex-M3 microcontroller LPC1768.

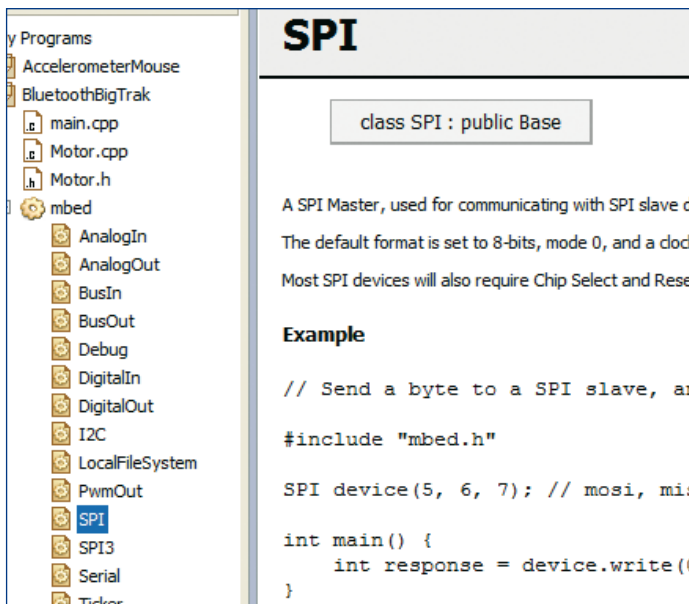
Engineers new to embedded applications can use the board to prototype real products incorporating microcontrollers, while experienced engineers can use it to be more productive in early stages of development. The mbed tools are designed to let you try out new ideas quickly, in much the same way that an architect uses a pencil and paper to sketch out concepts before turning to an advanced CAD program to implement a design.

## Elegant simplicity

The mbed tool has been designed for the best trade-off between versatility and immediate connectivity. The LPC1768, housed in an LQFP package, is mounted on the mbed board, which uses a 40-pin DIP with a 0.1-inch pitch. The convenient form factor works seamlessly with solderless breadboards, stripboards, and PCBs.

There is no software to install – everything, even the compiler, is online. The compiler and libraries are completely modular, so they're easy to use, yet powerful enough to take on complex, real-world applications.



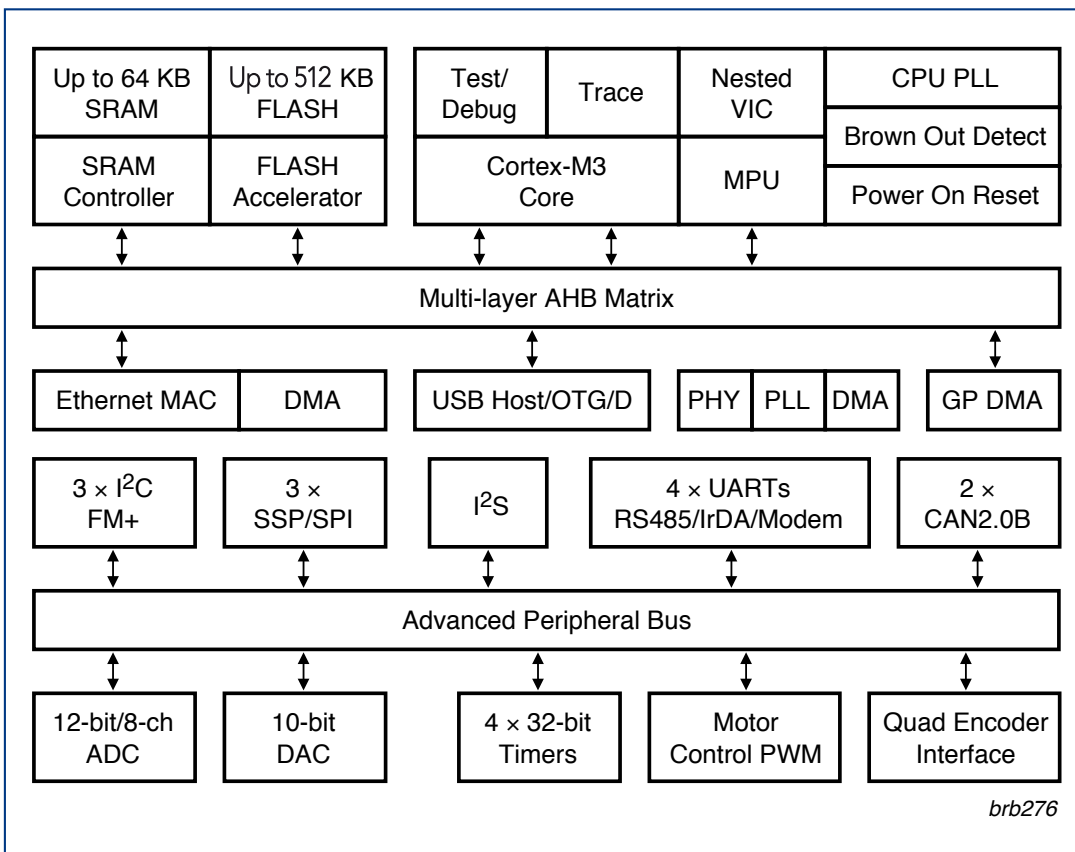


making it possible to migrate to other toolchains or implement custom code for peripheral interfaces.

### LPC176x microcontrollers

The NXP microcontroller family LPC176x is a series of cost-effective, low-power Cortex-M3 devices that operate at up to 100 MHz. They feature best-in-class peripheral support, including Ethernet, USB 2.0 host/OTG/device, and CAN 2.0B. There are 512 KB of Flash memory and 64 KB of SRAM. The architecture uses a multi-layer AHB bus that allows high-bandwidth peripherals such as Ethernet and USB to run simultaneously, without impacting performance. The family is pin-compatible with NXP's 100-pin LPC236x series of ARM7-based microcontrollers.

The mbed Library



LPC1768 block diagram

## LPC1768 features

ARM Cortex-M3 core	<ul style="list-style-type: none"><li>• 100 MHz operation</li><li>• Nested Vectored Interrupt Controller for fast deterministic interrupts</li><li>• Wakeup Interrupt Controller allows automatic wake from any priority interrupt</li><li>• Memory Protection Unit</li><li>• Four reduced-power modes: sleep, deep sleep, power-down and deep power-down</li></ul>
Memories	<ul style="list-style-type: none"><li>• 512 KB of Flash memory</li><li>• 64 KB of SRAM</li></ul>
Serial peripherals	<ul style="list-style-type: none"><li>• 10/100 Ethernet MAC</li><li>• USB 2.0 full-speed device/Host/ OTG controller with on-chip PHY</li><li>• Four UARTs with fractional baud rate generation, RS-48, modem control, and IrDA</li><li>• Two CAN 2.0B controllers</li><li>• Three SSP/SPI controllers</li><li>• Three I<sup>2</sup>C-bus interfaces with one supporting Fast Mode Plus (1-Mbit/s data rates)</li><li>• I<sup>2</sup>S interface for digital audio</li></ul>
Analog peripherals	<ul style="list-style-type: none"><li>• 12-bit ADC with eight channels</li><li>• 10-bit DAC</li></ul>
Other peripherals	<ul style="list-style-type: none"><li>• Ultra-low-power (&lt; 1 uA) RTC</li><li>• General-purpose DMA controller with eight channels</li><li>• Up to 70 GPIO</li><li>• Motor control PWM and Quadrature Encoder Interface to support three-phase motors</li><li>• Four 32-bit general-purpose timers/counters</li></ul>
Package	<ul style="list-style-type: none"><li>• 100-pin LQFP (14 x 14 x 1.4 mm)</li></ul>

mbed

<http://mbed.org>

[www.nxp.com](http://www.nxp.com)

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