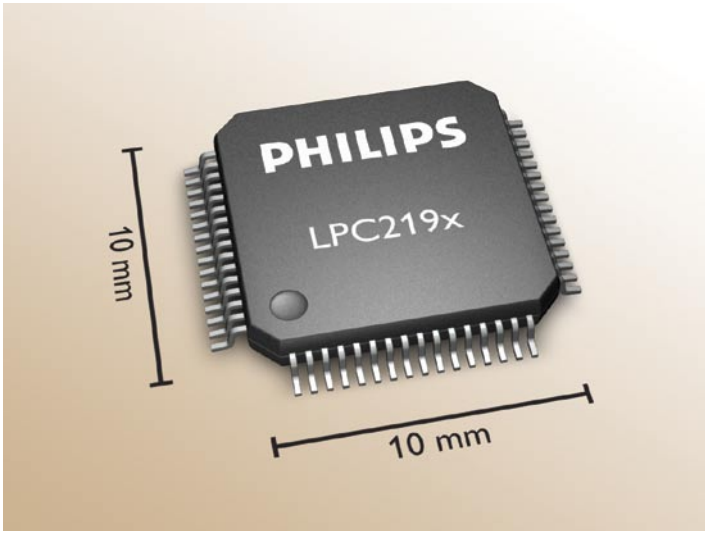
LPC219x family

Tiny 16/32-bit ARM7TDMI-S™ processors with 10-bit ADC and 4x CAN

These tiny ARM-based microcontrollers, with multiple CAN interfaces and an extended temperature operating range, improve performance in automotive and industrial applications, as well as medical, communication, and general-purpose applications. Integrating 256 KB of on-chip Flash, 16 KB of on-chip RAM, a 10-bit ADC, they measure only 10 mm x 10 mm.



Semiconductors

These 16/32-bit ARM7TDMI-S microcontrollers, housed in tiny LQFP or HVQFN packages, use a 128-bit-wide memory interface and a unique accelerator architecture to enable 32-bit code execution at a maximum clock rate of 60 MHz. For code-size critical applications, they use an alternative 16-bit Thumb Mode that reduces code by more than 30% with minimal performance penalty.

The initial part in the family is the LPC2194. Offering four interconnected CAN interfaces with advanced acceptance filters and an extended temperature range of -40 °C to +105 °C, it has is especially useful in automotive and industrial applications that use the CAN bus. It has 256 KB of on-chip Flash and 16 KB of on-chip RAM.

In-System (ISP) and In-Application (IAP) software minimize programming time — each 512-byte line takes only 1 ms to program, while single selector or full-chip erases take only 400 ms.

It has a Vectored Interrupt Controller (VIC), and uses Embedded ICE-RT and ETM (Embedded Trace Macrocell) to provide extensive, real-time debug capabilities.

There are two 32-bit timers (with four capture and four compare channels each), a PWM unit (with 6 outputs), a real-time clock, and a watchdog timer. Multiple serial interfaces, including two UARTs (16C550), two Fast I^2C (400 kbps) and two SPI serial interfaces (one with buffering and variable data-length capabilities), increase design flexibility.

Key features

- 60-MHz operation from single-chip 16/32-bit ARM7TDMI-S processor
  - LPC2194 with 256 KB Flash, 16 KB RAM, 10-bit ADC, 4x CAN
- Extended temperature range of -40 °C to +105 °C
- Optional 16-bit Thumb Mode for code-size critical applications
- Very fast Flash programming via on-chip boot-loader software
- Two 32-bit timers, PWM unit, real-time clock, watchdog timer
- Multiple serial interfaces: two UARTs, Fast I^2C-bus, two SPI
- Tiny LQFP64 package (only 10 mm x 10 mm)

Applications

- Automotive (CAN gateways, CAN bridges, multi-CAN interfaces)
- Industrial control, medical systems, access control, point-of-sale
- Communication gateways, protocol converters, embedded soft modems
- General-purpose applications

PHILIPS

LPC219x family

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www.semiconductors.philips.com

LPC219x block diagram

Third-party development tools

Through third-party suppliers, Philips offers an extensive portfolio of development tools for these microcontrollers. For the most current listing, please visit www.semiconductors.philips.com/markets/mms/products/microcontrollers/support/development_tools/ for the most current list of available tools.

Development tool support selection

Tool Name	Vendor
Emulators	
Multi-ICE	ARM
MultiTrace	ARM
RealView ICE	ARM
Genia	Ashling
Opella	Ashling
Vitra	Ashling
Tanto	Hitex
j-link	IAR Systems
ULINK	Keil
TRACE32-ICD	Lauterbach
TRACE32-PowerTrace	Lauterbach
EMUL-ARM-PC	Nohau
JTAGjet	Signum
Development & Evaluation Boards	
FA-EVBA-64	Ashling
MCB2100	Keil
TinyARM DIP50	Pasat
In-Systems Programming Software	
Flash ISP Utility	Philips

Tool Name	Vendor
Integrated Development Environment	
ADS	ARM
RealView	ARM
AsIDE ARM	Ashling
MULTI	Green Hills
Embedded Workbench	IAR Systems
µVision3	Keil
CrossWorks	Rowley
Monitors/Debuggers/Simulators	
PathFinder-2100	Ashling
C-SPY	IAR Systems
µVision3	Keil
'Seehau'	Nohau
Universal Debug Engine	PLS
Chameleon	Signum Systems
Real-Time Operating Systems	
ChronOS	Interniche
µC/OSII	Micrium
TCP/IP Stacks	
NicheStack	Interniche

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