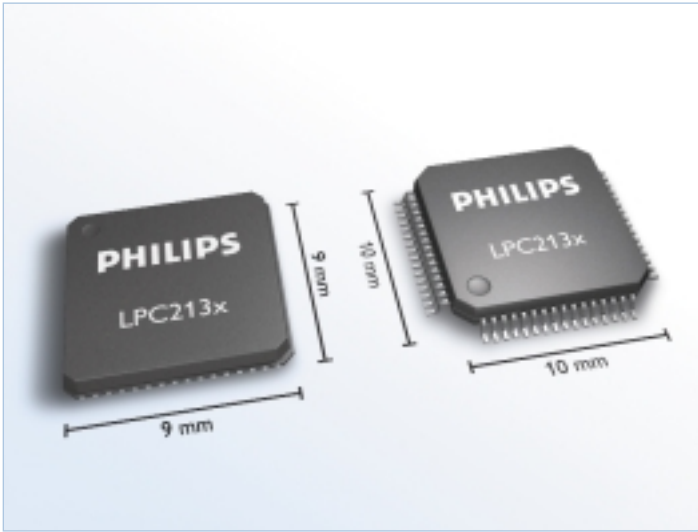


LPC213x family

These tiny ARM-based microcontrollers, optimized for low power consumption, improve performance in a variety of industrial, medical, communication, and general-purpose applications. Integrating 512 KB of on-chip Flash, up to 32 KB of on-chip RAM, and up to two 10-bit ADCs.



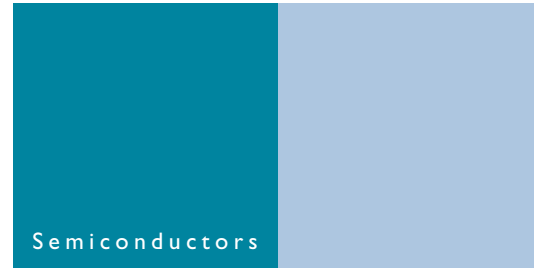
Key Features

- 60-MHz operation from single-chip 32-bit ARM7TDMI-S processor
 - LPC2131 with 32KB Flash, 8KB RAM, 1x 10-bit ADC, and low-power options
 - LPC2132 with 64 KB Flash, 16 KB RAM, 1x 10-bit ADC, 10-bit DAC, and low-power options
 - LPC2134 with 128K Flash, 16 KB RAM, 2x 10-bit ADC, 10-bit DAC, and low power options
 - LPC2136 with 256K Flash, 32 KB RAM, 2x 10-bit ADC, 10-bit DAC, and low power options
 - LPC2138 with 512 KB Flash, 32 KB RAM, 2x 10-bit ADCs, 10-bit DAC, and low-power options
- Optional 16-bit Thumb Mode for critical code-size 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, two Fast I²C-bus, two SPI
- Temperature range: -40 °C to +85 °C
- Tiny HVQFN64 or LQFP64 package (9 mm x 9 mm or 10 mm x 10 mm)

Applications

- Access control, point-of-sale, industrial control, medical systems
- Communication gateways, protocol converters, embedded soft modems
- General-purpose applications

Tiny 32-bit ARM7TDMI-S™ processors with ADC and DAC



These 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 LPC2138. Optimized for low-power operation, it has 512 kB of Flash and 32 kB of SRAM. There are two 8-channel 10-bit A/D converters (for a total of 16 analog inputs) with conversion times as low as 2.44 μ s per channel. It has a 10-bit D/A converter for generating variable analog outputs and offers up to forty-seven 5V-tolerant GPIO. It uses a single power supply with POR (Power On Reset) and BOD (Brown Out Detection) circuits. The real-time clock uses independent power and clock supplies, so power consumption in the power-save modes is extremely low. It has a CPU operating voltage range of 3.0V to 3.6V (3.3V \pm 10%).

In-System (ISP) and In-Application (IAP) software minimize programming time — each 256-byte line takes only 1 ms to program, while single selector or full-chip erases take only 400 ms.

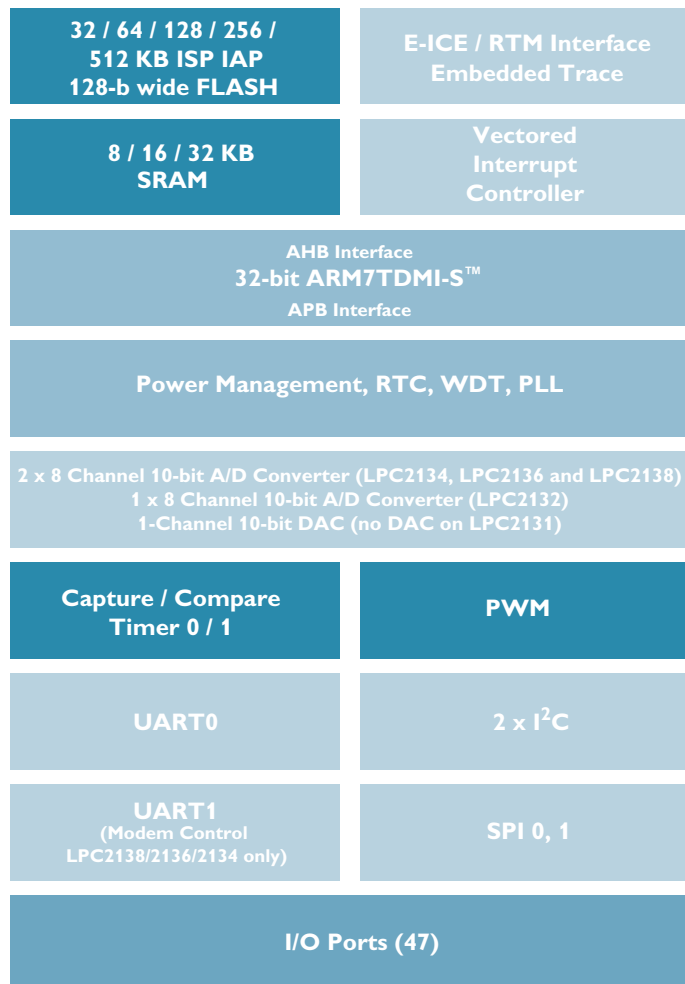
It has a Vectored Interrupt Controller (VIC), and uses Embedded ICE-RT and ETM (Embedded Trace Macrocell) to provide extensive, real-time debug capabilities.

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 I²C (400 kbps) and two SPI serial interfaces (one with buffering and variable data-length capabilities), increase design flexibility.

PHILIPS

LPC213x family

Tiny 32-bit ARM7TDMI-S processors with ADC and DAC



LPC213x block diagram



Purchase of Philips I²C components conveys a license under the Philips' patent to use the components in the I²C system provided the system conforms to the I²C specification defined by Philips.



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	Tool Name	Vendor
Emulators		Integrated Development Environment	
Multi-ICE	ARM	ADS	ARM
MultiTrace	ARM	RealView	ARM
RealView ICE	ARM	AsIDE ARM	Ashling
Genia	Ashling	MULTI	Green Hills
Opella	Ashling	Embedded Workbench	IAR Systems
Vitra	Ashling	Vision3	Keil
Tanto	Hitex	Crossworks	Rowley
j-link	IAR Systems	Monitors/Debuggers/Simulators	
ULINK	Keil	PathFinder-2100	Ashling
TRACE32-ICD	Lauterbach	C-SPY	IAR Systems
TRACE32-PowerTrace	Lauterbach	Vision3	Keil
EMUL-ARM-PC	Nohau	'Seehau'	Nohau
JTAGjet	Signum	Universal Debug Engine	PLS
Development & Evaluation Boards		Chameleon	Signum Systems
MCB2130	Keil	Real-Time Operating Systems	
In-Systems Programming Software		ChronOS	Interniche
Flash ISP Utility	Philips	C/OSII	Micrium
		TCP/IP Stacks	
		NicheStack	Interniche

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