

LPC214x family

Full-speed USB 2.0 Microcontroller

These 32/16-bit ARM7TDMI-S™ processors offer USB 2.0 full-speed capability, Fast I/O, 32 end points, 1 KB x 2 buffer, and flexible DMA. They have up to 512 KB of on-chip Flash and up to 40 KB of on-chip SRAM.



Key Features

- 60-MHz operation
- On-chip Flash and SRAM memory
 - LPC2141: 32 KB Flash, 8 KB SRAM
 - LPC2142: 64 KB Flash, 16 KB SRAM
 - LPC2144: 128 KB Flash, 16 KB SRAM
 - LPC2146: 256 KB Flash, 40 KB SRAM
 - LPC2148: 512 KB Flash, 40 KB SRAM
- Very fast Flash programming via on-chip boot-loader software
- 45 Fast I/O pins (5-V tolerant) – up to 15-MHz switching
- Temperature range: -40 to +85 °C
- LQFP64 package (10 x 10 mm), HVQFN (9 x 9 mm)

Applications

- Automotive (entertainment only)
- Connectivity
- Display

Semiconductors

The LPC214x family is based on a 32/16-bit ARM7TDMI-S CPU with real-time emulation and embedded trace support. The architecture combines a microcontroller with up to 512 KB of embedded high-speed Flash memory and up to 40 KB of on-chip SRAM.

The architecture includes a full-speed USB 2.0 device, two 16C550 UARTs, two Fast I²C-bus (400 kbps) interfaces, and two SPI interfaces (one with capabilities for buffering and variable data length). There are also up to 2 x 10-bit ADCs with result registers for each channel.

The full-speed USB 2.0 device supports 32 end points with two KB of endpoint RAM with 8 KB of RAM usable by the USB DMA (LPC2146/2148 only). USB supports Control, Interrupt, Bulk and Isochronous data transfer modes. Customers can choose between Good Link™ or Soft Connect™ functionality.

A 128-bit wide memory interface and a unique accelerator structure enable 32-bit code execution at the maximum clock rate. For critical code-size applications, an alternative 16-bit Thumb mode reduces code by more than 30% with minimal performance penalties.

Multiple serial communications interfaces increase design flexibility, provide larger buffer size, and deliver high processing power. This makes the LPC214x family well suited to a variety of applications, including communications gateways and protocol converters, software modems, voice recognition, and low-end imaging.

In-system (ISP) and In-application (IAP) software minimize programming time. Each 256-byte line takes only one millisecond to program, and single selector or full-chip erases take only 400 ms.

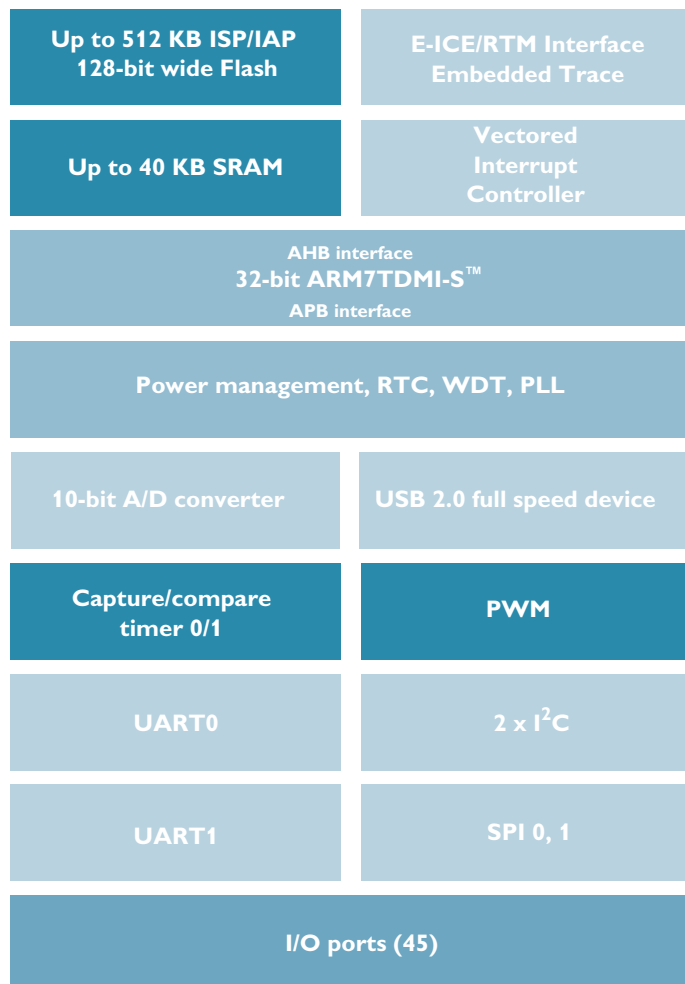
A Vectored Interrupt Controller (VIC), along with Embedded ICE-RT and Embedded Trace Macrocell (ETM), provide extensive real-time debug capabilities.

Additional features include two 32-bit timers (each with four capture and four compare channels), a PWM unit with six outputs, a real-time clock, and a Watchdog timer.

PHILIPS

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LPC214x 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.philips.com/standardics for the most current list of available tools.

Development tool support

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	Embedded Workbench	IAR Systems
Opella	Ashling	µVision3	Keil
Vitra	Ashling	Crossworks	Rowley
Tanto	Hitex	Monitors/debuggers/simulators	
j-link	IAR Systems	PathFinder-2100	Ashling
ULINK	Keil	C-SPY	IAR Systems
TRACE32-ICD	Lauterbach	µVision3	Keil
TRACE32-PowerTrace	Lauterbach	'Seehau'	Nohau
EMUL-ARM-PC	Nohau	Universal Debug Engine	PLS
JTAGjet	Signum	Chameleon	Signum Systems
Development & evaluation boards		Real-time operating systems	
MCB214x	Keil	ChronOS	Interniche
KS214x	IAR	µC/OSII	Micrium
In-system programming software		TCP/IP stacks	
Flash ISP Utility	Philips	NicheStack	Interniche

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