NXP ARM® Cortex™-M0/M0+ MCUs LPC11E00

Feature-rich Cortex-M0/M0+ EEPROM solutions with USART, I²C & two SSP

Built around the smallest, lowest-power, and most energy-efficient ARM cores, the Cortex-M0 and Cortex-M0+, the LPC11E00 series is ideal for use in low-power applications needing a feature-rich EEPROM solution. Also included are on-chip ROM drivers for the EEPROM, 32-bit divide, and power management.

KEY FEATURES

- Low-power, 50 MHz ARM Cortex-M0/M0+
- Up to 256 kB Flash
- Up to 36 kB SRAM
- 4 kB EEPROM
- EEPROM API, 32-bit divide library
- Up to five USARTs, up to two I²C, two SSP
- Timing features
  - Four standard timers
  - Two configurable SCTimer/PWMs (4x 16-bit or 2x 32-bit timers)
  - Windowed WDT and RTC
- Analog features
  - ADC with up to 12 channels, 12 bits, and 2 Msps sample rate
  - Integrated temp sensor for precise readings over entire range
- 16-channel DMA engine with programmable input triggers
- Low-power features: RTC, low-power modes, power profiles
- Up to 80 GPIO with configurable ports
- Extended temp range of -40 to +105 °C
- Packages: LQFP and HVQFN

TARGET APPLICATIONS

- Metering and data collection
- Lighting
- Large appliances
- Industrial control
- Wired and wireless routing
- Handheld medical equipment
- PC/gaming accessories
- Other portable systems

ENERGY-EFFICIENT OPERATION

Designed to save power in a wide range of applications, NXP's 32-bit LPC11E00 microcontrollers support lower-power modes and include API-driven power profiles that provide developers with easy-to-use dynamic current management at runtime.

SERIAL INTERFACES

Connectivity options on the LPC11Exx series include two SSP interfaces, up to two I²C Fast-mode plus (Fm+) interfaces, and up to five USARTs. The USART peripheral is designed to wake up from low-power modes. A SmartCard interface (ISO7816-3), available on the LPC11E1x/3x, provides plug-and-play interoperability, making these devices a good fit for eCommerce applications.

ADDED ROBUSTNESS (LPC11E6x)

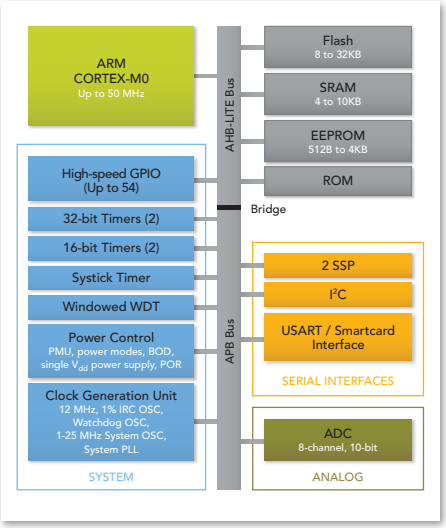
The LPC11E6x versions extend the temperature range to cover from -40 to +105 °C, and add the features necessary to create robust industrial applications: larger memories, more serial connectivity, a faster ADC, a temp sensor, advanced timers, and a new, power-efficient Cortex-M0+ core.

GETTING STARTED

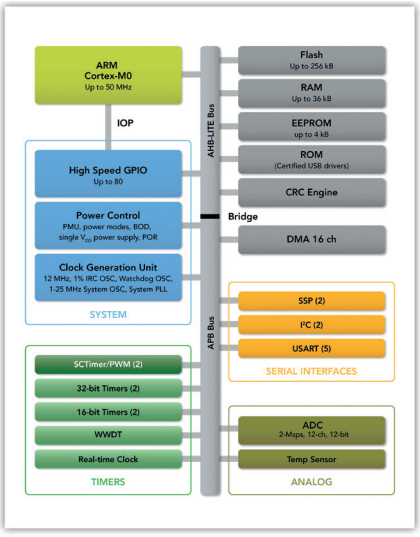
For faster development, all LPC11E00 devices are available with libraries for popular toolchains, including Keil MDK, IAR EWARM, and the NXP LPCXpresso IDE, a cross-platform C/C++ development suite, priced under US $30, that supports all of NXP's LPC microcontrollers. Also, for added convenience, LPC11E6x MCUs can be used with the LPC11U6x LPCXpresso V2 board for rapid prototyping and evaluation. A complete list of all the available development tools can be found at www.nxp.com/microcontrollers.

All of NXP's Cortex-M microcontrollers are upwardly binary compatible and offer the advantages of a single development toolchain. This makes it easy to migrate designs from Cortex-M0 and Cortex-M0+ to Cortex-M3 with minimal effort.

LPC11E1x/3x block diagram



LPC11E6x block diagram



LPC11E00 selection guide

	Memory			Timers			Serial interfaces			Analog							
Type	Flash (kB)	RAM (kB)	EEPROM (kB)	Standard timers[1]	PWM channels[2]	State-configurable timer (SCTimer/PWM)[3]	USART	I²C	SPI/SSP	ADC channels/ resolution[4]	RTC	GPIO	Max CPU frequency (MHz)	Supply voltage (V)	Temperature range (°C)	Package
LPC11E11	8	4	512b	6	11		1	1	2	8 ch/10 b		28	50	1.8-3.6	-40 to +85	HVQFN33
LPC11E12	16	6	1	6	11		1	1	2	8 ch/10 b		40	50	1.8-3.6	-40 to +85	LQFP48
LPC11E13	24	8	2	6	11		1	1	2	8 ch/10 b		40	50	1.8-3.6	-40 to +85	LQFP48
LPC11E14	32	10	4	6	11		1	1	2	8 ch/10 b		28/40/54	50	1.8-3.6	-40 to +85	LQFP48/64, HVQFN33
LPC11E36	96	12	4	6	11		1	1	2	8 ch/10 b		28/54	50	1.8-3.6	-40 to +85	LQFP64, HVQFN33
LPC11E37	128	12	4	6	11		1	1	2	8 ch/10 b		40/54	50	1.8-3.6	-40 to +85	LQFP48/64
LPC11E66	64	8	4	11[5]	14[6]	2	5	2	2	12 ch/12 b	1	36	50	2.4-3.6	-40 to +105	LQFP48/64/100
LPC11E67	128	16	4	11[5]	14[6]	2	5	2	2	12 ch/12 b	1	36/50/80	50	2.4-3.6	-40 to +105	LQFP48/64/100
LPC11E68	256	36	4	11[5]	14[6]	2	5	2	2	12 ch/12 b	1	36/50/80	50	2.4-3.6	-40 to +105	LQFP48/64/100

[1] Includes timers 0-3, Watchdog timer, and systick timer
[2] Using timers 0-3
[3] SCTimer/PWM peripheral can be configured as additional timers and/or PWM channels
[4] ADC sample rate is 400 ksps, except for LPC11E6x, which has a 12-bit conversion rate of 2 MHz
[5] Includes timers 0-3, SCTimer/PWMs configured as four 16-bit timers, one Watchdog timer, one real-time clock, and one systick timer
[6] Includes timers 0-3 and SCTimer/PWM as PWM (LPC11U68 configuration is package-dependent)

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