LPC553x/S3x MCUS BRING NEW LEVELS OF ANALOG INTEGRATION AND HIGH SYSTEM RELIABILITY TO LPC5500 SERIES

The LPC553x/S3x MCU family expands the general purpose Arm® Cortex®-M33 based LPC5500 MCU series

TARGET APPLICATIONS

- Industrial IoT
- Industrial automation
- Building control
- Secure applications
- Consumer electronics
- General embedded

This LPC family introduces new levels of integration and analog features. LPC553x MCUs offer high-precision and fast ADCs, instrumentation class OpAmp with PGA supporting 64x and DAC. In addition, the newly added low power cache enhance the system performance and 100% Flash with ECC and RAM with parity/ECC support system safety integration provide the industrial applications an layer of extra protection and assurance.

The LPC5500 MCU series offers advantages for developers, including cost-effective 40-nm NVM process technology, along with software- and peripheral-compatibility for ease of use and to help accelerate time to market. NXP's comprehensive enablement package includes the MCUXpresso Software and Tools ecosystem along with low-cost development boards.

HIGH ANALOG AND DIGITAL INTEGRATION

The LPC553x/S3x MCU family offers a combination of precision analog integration, low power consumption and motor control PWMs. With multiple connectivity options including CAN 2.0, CAN FD, USB FS Device/Host, high-speed SPI and FlexComm interfaces (configurable as either SPI/I2C/I2S,UART), this MCU family features a versatile integration for today's high-demand needs.

The newly added FlexSPI with 8KB Cache support On-The-Fly Encrypt/Decrypt enable applications to expand the on chip memory, support various boot options and execute directly from external serial memories.

COMPREHENSIVE ENABLEMENT SOLUTIONS

MCUXPRESSO SDK

- Extensive suite of robust peripheral drivers, stacks and middleware
- Motor control example code working directly with FRDM-MC-LVPMSM Freedom Development Platform for Low-Voltage, 3-Phase PMSM Motor Control
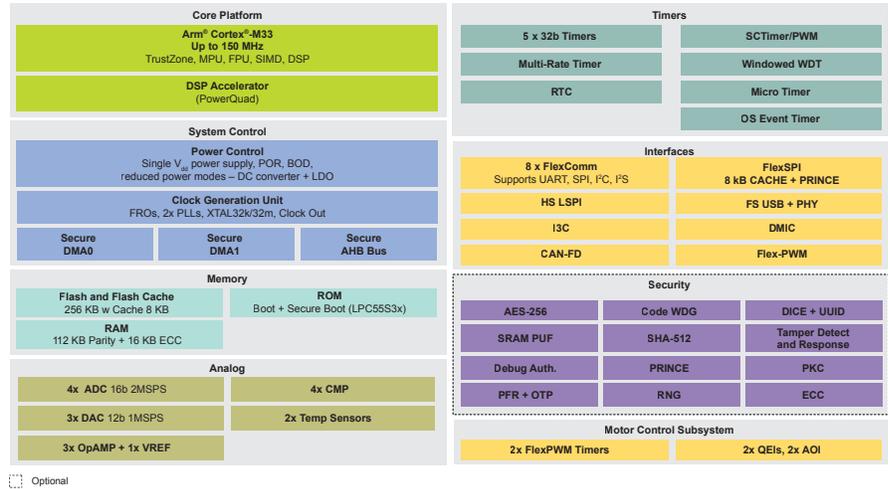- INTEGRATED DEVELOPMENT ENVIRONMENTS (IDE)
- MCUXpresso IDE
- IAR® Embedded Workbench
- Arm Keil® Microcontroller Development Kit

ROM

- Dedicated bootloader for the LPC5500 MCU family
- In-system flash programming over serial connection: erase, program, verify
- ROM or flash-based bootloader with open-source software and host-side programming utilities

LPC553x/LPC55S3x BLOCK DIAGRAM

| **Core Platform** |
| Arm® Cortex®-M33
Up to 150 MHz
TrustZone, MPU, FPU, SIMD, DSP |
| DSP Accelerator
(PowerQuad) |

| **System Control** |
| Power Control
Single V_DD power supply, POR, BOD,
reduced power modes – DC converter + LDO |
| Clock Generation Unit
FROs, 2x PLLs, XTAL32k/32m, Clock Out |

| Secure DMA0 | Secure DMA1 | Secure AHB Bus |

| **Memory** |
| Flash and Flash Cache
256 KB w Cache 8 KB | ROM
Boot + Secure Boot (LPC55S3x) |
| RAM
112 KB Parity + 16 KB ECC | |

| **Analog** |
4x ADC 16b 2MSPS	4x CMP
3x DAC 12b 1MSPS	2x Temp Sensors
3x OpAMP + 1x VREF	

| **Timers** |
5 x 32b Timers	SCTimer/PWM
Multi-Rate Timer	Windowed WDT
RTC	Micro Timer
	OS Event Timer

| **Interfaces** |
8 x FlexComm Supports UART, SPI, I2C, I2S	FlexSPI 8 kB CACHE + PRINCE
HS LSPI	FS USB + PHY
I3C	DMIC
CAN-FD	Flex-PWM

| **Security** |
AES-256	Code WDG	DICE + UUID
SRAM PUF	SHA-512	Tamper Detect and Response
Debug Auth.	PRINCE	PKC
PFR + OTP	RNG	ECC

| **Motor Control Subsystem** |
| 2x FlexPWM Timers | 2x QEIs, 2x AOI |

☐ Optional

LPC553X / S3X DEVELOPMENT BOARD

- LPC5536 Cortex-M33-based processor on LPC5536-EVK
- LPC55S36 Cortex-M33-based processor on LPC55S36-EVK
- Onboard MCU Link debug probe
- Flexible expansion: Arduino®, Mikroe and PMod headers
- Various on-board interfaces and components
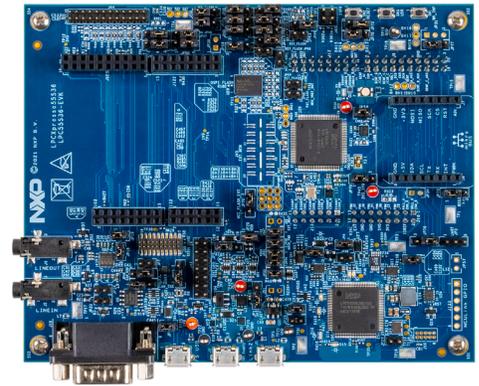
PART NUMBER	FLASH	SRAM	SECURITY FEATURES	ANALOG FEATURES	COMMUNICATION INTERFACES	PACKAGES
LPC5534	128 KB	96 KB	–	4x ADC 3x Analog Comparator 3x DAC 3x OpAmp	FS USB, I3C, CAN-FD, FlexComm (8)	LQFP100, HTQFP64, HVQFN48
LPC5536	256 KB	128 KB	–	4x ADC 3x Analog Comparator 3x DAC 3x OpAmp	FS USB, I3C, CAN-FD, FlexComm (8)	LQFP100, HTQFP64, HVQFN48
LPC55S36	256 KB	128 KB	TrustZone, Secure Boot, Crypto Accelerator, Real-Time Encrypt/Decrypt, SRAM PUF	4x ADC 3x Analog Comparator 3x DAC 3x OpAmp	FS USB, I3C, CAN-FD, FlexComm (8)	LQFP100, HVQFN48
LPC5536-EVK	Evaluation Kit for LPC553x					
LPC55S36-EVK	Evaluation Kit for LPC55S3x					

www.nxp.com/LPC553x