LPC553x/S3x: Advanced Analog Arm®Cortex®-M33-Based MCU Family
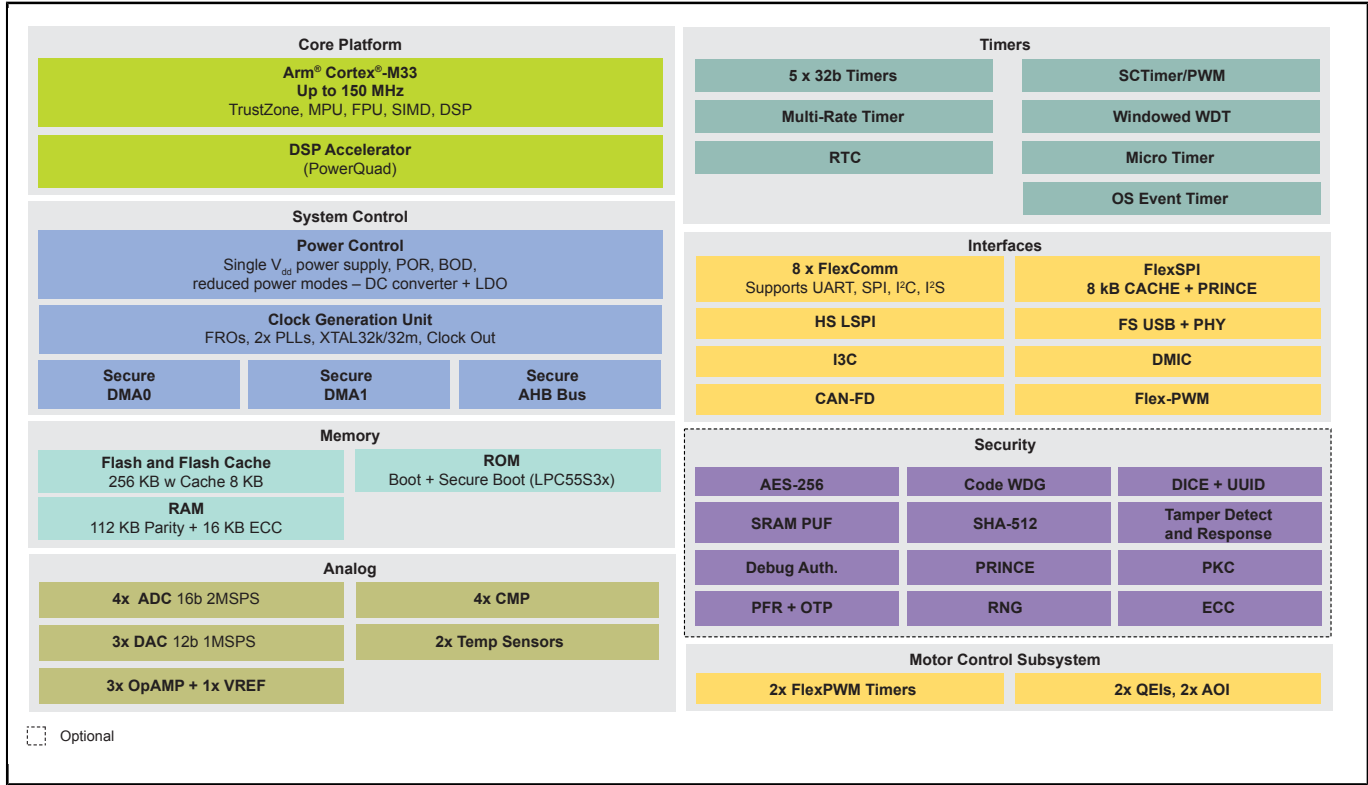
LPC553x

Last Updated: Apr 11, 2024

The LPC553x/S3x MCU family further expands the general purpose Cortex-M33-based MCU series, offering significant performance enhancement, all on-chip RAM with Parity or ECC, renewed security features and precision analog additions, leveraging the cost-effective 40-nm NVM process technology.

The LPC553x/S3x family includes a proprietary DSP accelerator offering 10x clock cycle reduction, bringing significant signal processing efficiency gains.

LPC553x/55S3x MCU 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

View additional information for LPC553x/S3x: Advanced Analog Arm®Cortex®-M33-Based MCU Family.

Note: The information on this document is subject to change without notice.