



S32K39/37/36 Microcontrollers for Electrification Applications

S32K39-37-36

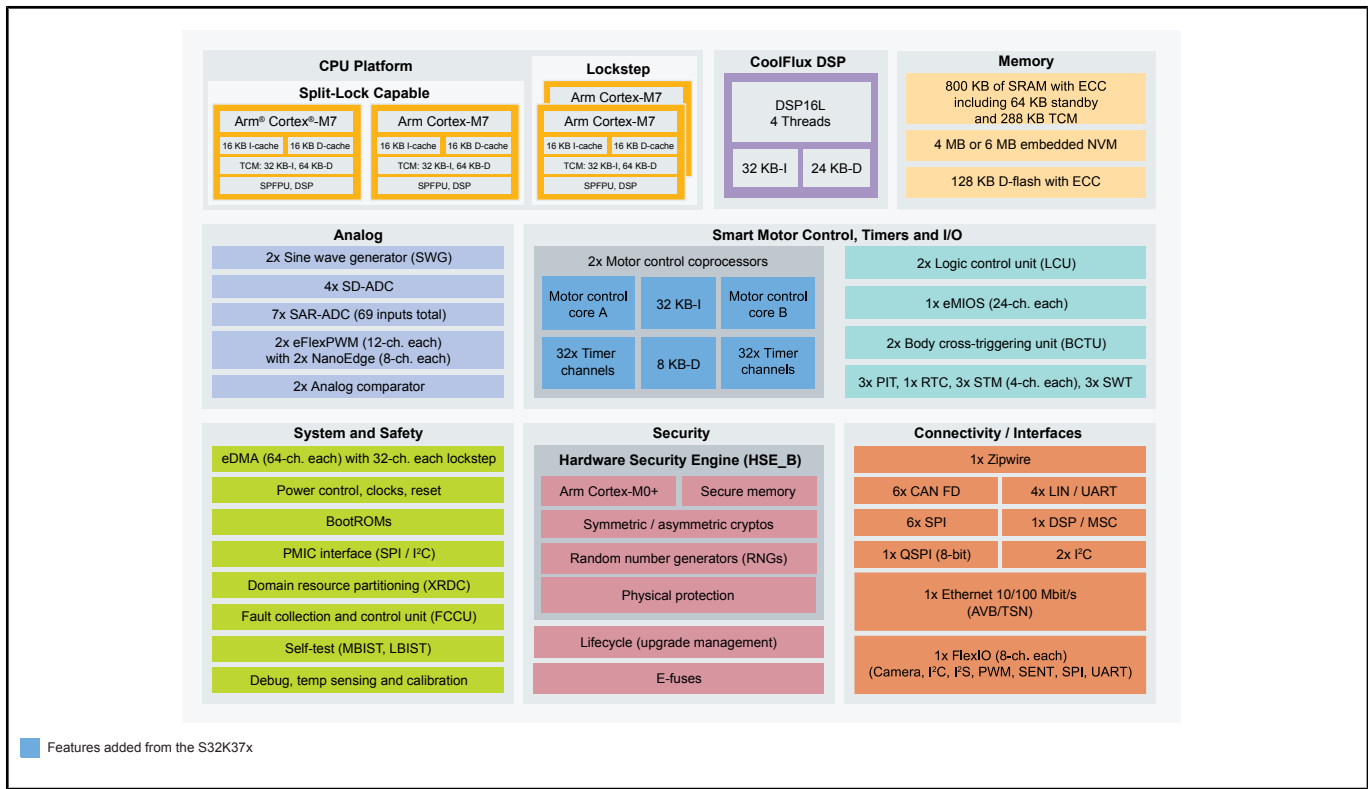
Last Updated: Jul 14, 2024

S32K39-37-36 is a purpose-built device addressing the new electric vehicle (EV) needs with a compelling combination of performance, integration, networking, security and functional safety capabilities.

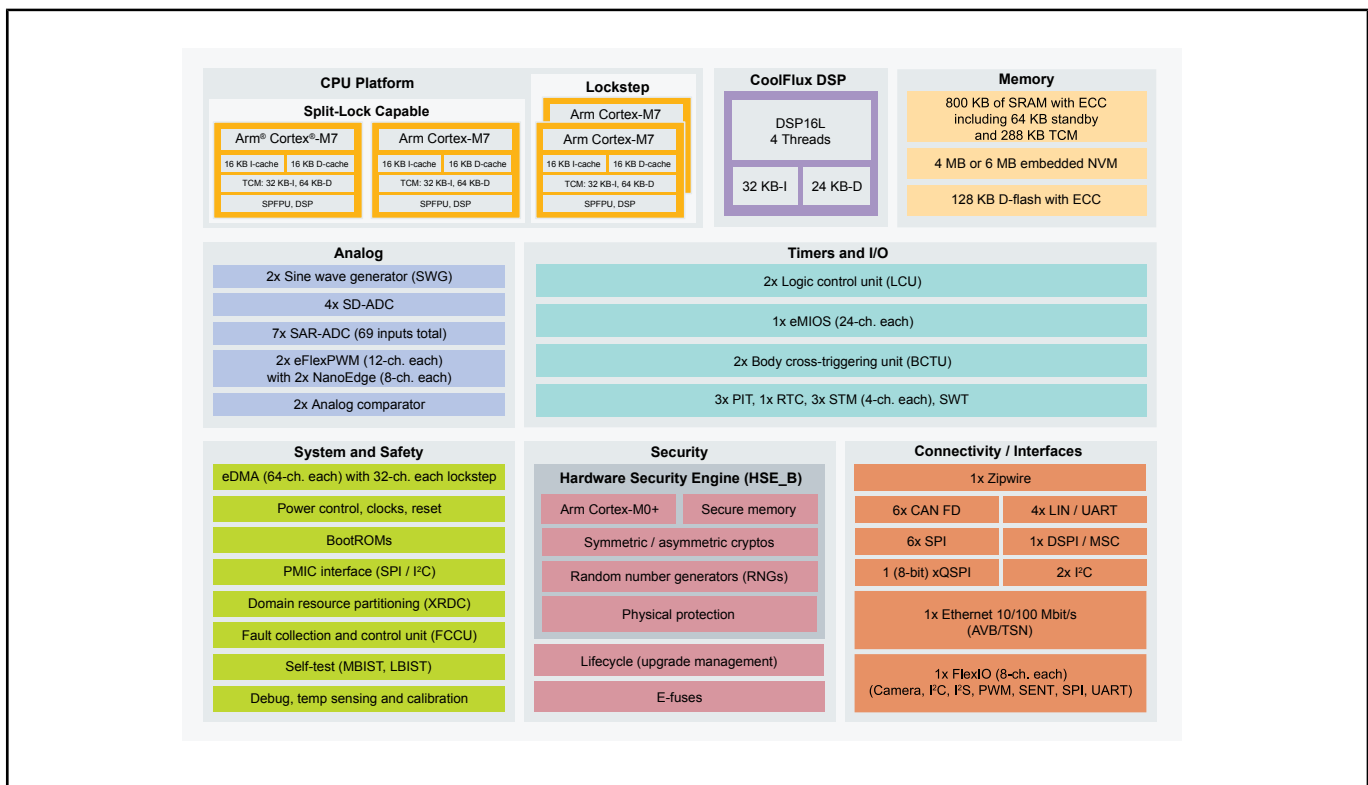
S32K39-36 has enough compute power to support up to one six-phase or two three-phase motors controlled by over 200 kHz control loops, while hosting AI/ML algorithms or other monitoring applications. It supports remote smart actuation applications using Time-Sensitive Networking (TSN) Ethernet for new zonal vehicle architectures. It also reduces system cost with ASIL D software resolver and analog integration.

The S32K37 high-compute capabilities are ideal for high-end [battery management systems](#) (BMS) applications.

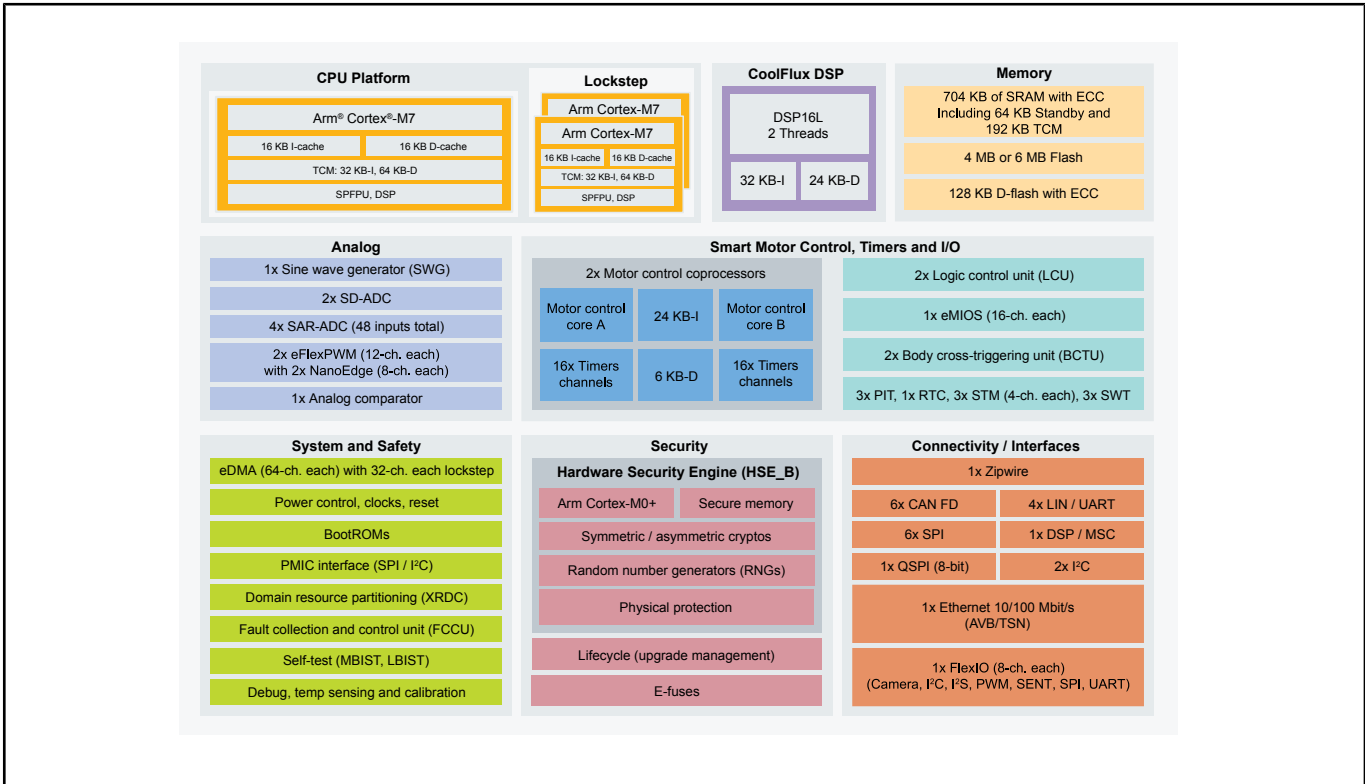
S32K39 Microcontrollers Block Diagram



S32K37 Microcontrollers Block Diagram



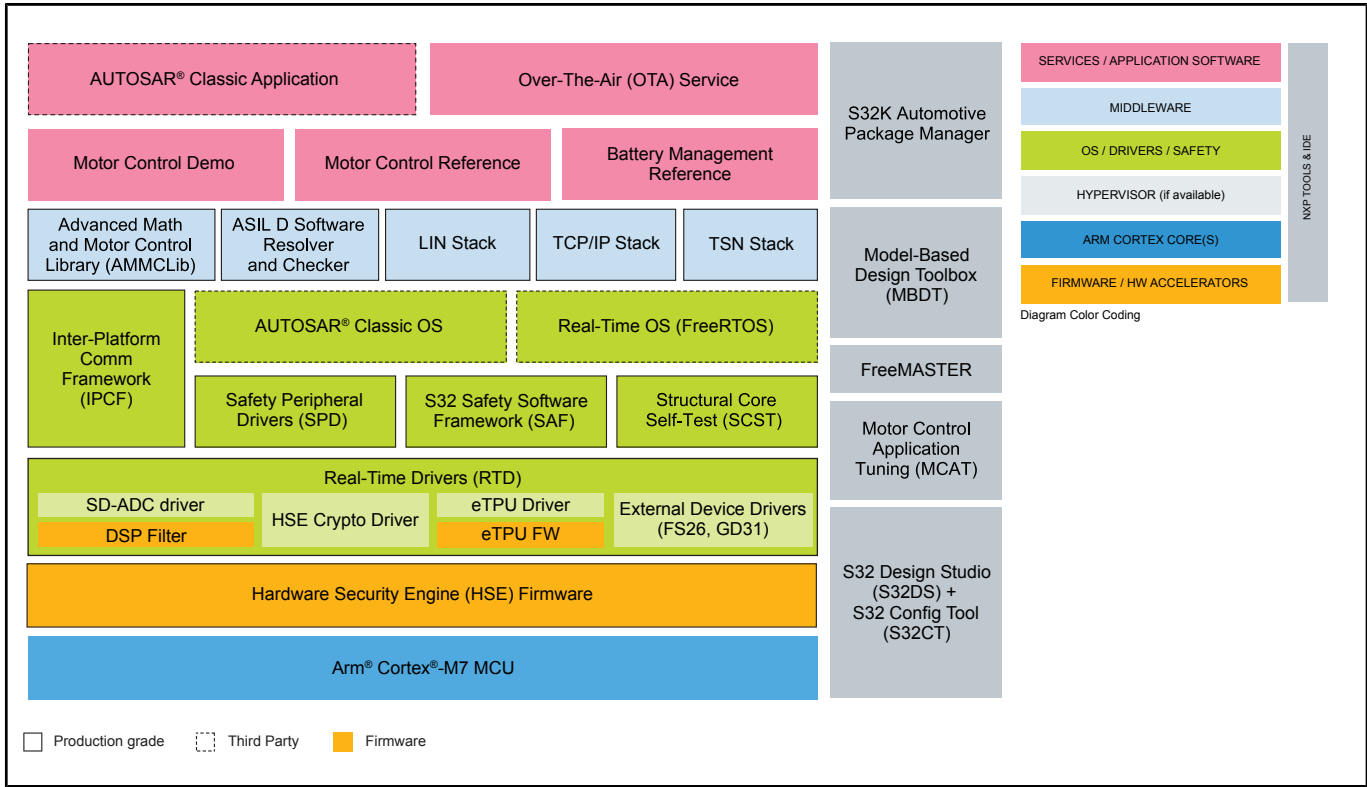
S32K36 Microcontrollers Block Diagram



S32K39 Family Features Block Diagram

Common Features	K396	K394	K376	K374	K366	K364
AEC-Q100, 125°C, 3.3/5 V	1 lockstep Cortex-M7 + 2 split-lock Cortex-M7 @ 320 MHz				1 lockstep Cortex-M7 + 1 Single Cortex-M7 @ 320 MHz	
HSE_B Hardware Security Engine	4x sigma-delta ADC with programmable DSP				2x sigma-delta ADC with programmable DSP	
AEC-Q100, 125°C, 3.3/5 V	2x motor control coprocessors (2x 32-ch.)				2x motor control coprocessors (2x 16-ch.)	
HSE_B Hardware Security Engine	6 MB Flash	4 MB Flash	6 MB Flash	4 MB Flash	6 MB Flash	4 MB Flash
FOTA Firmware Over-the-Air	800 KB SRAM (512 KB System RAM + 288 KB TCM)				704 KB SRAM (512 KB System RAM + 192 KB TCM)	
Low-Power Operating Modes and Peripherals IPUART, FlexIO	Up to 211 I/Os				Up to 211 I/Os	
ASILD Safety (ECC Memories, Lockstep Cores, CRC, Watchdog)	64-ch DMA with 32-ch. lockstep					
eMIOS Timer, Analog Comparators, Logic Control Units, Trigger Mux(es)	6x CAN (FD), 4x IPUART (LIN)					
JTAG	100 Mbit/s Ethernet (AVB/TSN)					
S32 Design Studio IDE	Zipwire					
Real-Time Drivers (AUTOSAR® and non-AUTOSAR)	2x I²C, 6x SPI					
Security Firmware S32 Safety Software Framework Application Software	2x eFlex PWM with 12-ch. each (8-ch. each high-resolution PWM)				7x SAR-ADC 12-bit, 1Mps (69 analog inputs) 2x SWG (Sine Wave Generator)	
	QuadSPI				4x SAR-ADC 12-bit, 1Mps (48 analog inputs) 1x SWG (Sine Wave Generator)	
	MAPBGA-289					
	176LQFP-EP					

S32K39/37/36 Software Enablement Block Diagram



View additional information for [S32K39/37/36 Microcontrollers for Electrification Applications](#).

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