



S32K3 車載向け汎用マイクロコントローラ

S32K3

Last Updated: Oct 13, 2025

S32K3ファミリは、Arm® Cortex®-M7をベースとしたシングル、デュアル、ロックステップ・コア構成の32ビット・マイクロコントローラ (MCU) ファミリです。コア数、メモリ、ペリフェラルの拡張性および優れたパフォーマンスとともに、最大ASIL DまでのISO 26262に準拠した機能安全を提供します。

S32K3ファミリは、開発および本番環境向けに包括的なエンドツーエンドのソリューションを提供します。S32K3 MCUは、NXPファームウェアを搭載したハードウェア・セキュリティ・エンジン (HSE)、FOTA (Firmware Over-the-Air) アップデートへの対応、AUTOSAR®と非AUTOSARの両方のアプリケーションに適したISO 26262準拠のリアルタイム・ドライバ (RTD) を特徴としています。

NXP S32車載プラットフォームとの互換性を通じて、ボディ、ゾーン制御、電動化の各種アプリケーションでソフトウェアのシームレスな再利用と柔軟性を実現します。

S32K3 MCUは、MAPBGA、LQFP、HDQFPなど、さまざまなパッケージ・タイプで供給され、統合と設計に柔軟性が得られます。また、NXP HDQFPパッケージは、標準のQFPパッケージと比べてパッケージのフットプリントを最大55%削減しています。

S32K3ファミリの特長パート1 Block Diagram

Common Features	K310	K311	K312	K314
AEC-Q100, 125 °C, 3.3/5 V	1 x Arm® Cortex®-M7 @120 MHz			1 x Arm® Cortex®-M7 @160 MHz
HSE-B Crypto Security Engine	512 KB Flash	1 MB Flash	2 MB Flash	4 MB Flash
FOTA (Firmware Over-the-Air)	112 KB SRAM (incl. 96 KB TCM)	128 KB SRAM (incl. 96 KB TCM)	192 KB SRAM (incl. 96 KB TCM)	512 KB SRAM (incl. 96 KB TCM)
Low-Power Operating Modes and Peripherals (LPUART, FlexIO)	38/83 I/Os	38/83 I/Os	83/145 I/Os	142/218 I/Os
ASIL B/D Safety: (ECC Memories, MPU, CRC, Watchdogs)	12-ch eDMA			32-ch eDMA
	3 x CAN (FD)			6 x CAN (FD)
eMIOS Timers Logic Control Unit Body Cross Triggering Unit Trigger Mux	2 x I ² C, 4 x UART(LIN)		2 x I ² C, 8 x UART(LIN)	2 x I ² C, 16 x UART(LIN)
	4 x SPI			6 x SPI
	2 x 24ch 12-bit ADC			3 x 24ch 12-bit ADC
Debug/Trace (SWD/JTAG/ETB)	Analog Comparator		2 x Analog Comparator	3 x Analog Comparator
S32 Design Studio IDE S32 Configuration Tool				2 x SAI (I ² S)
Real-Time Drivers (AUTOSAR® and Non-AUTOSAR)				Quad SPI (4-bit data)
Security F/W Safety Software Framework Communication Stacks Application Software	LQFP-48			
	HDQFP-100			
				HDQFP-172
Model-Based Design Toolbox				MAPBGA-257

S32K3ファミリの特長パート2 Block Diagram

Common Features	K322	K324	K341	K342	K344
AEC-Q100, 125 °C, 3.3/5 V	2 x Arm® Cortex®-M7 @160 MHz		1 x LockStep Arm® Cortex®-M7 @160 MHz		
HSE-B Crypto Security Engine	2 MB Flash	4 MB Flash	1 MB Flash	2 MB Flash	4 MB Flash
FOTA (Firmware Over-the-Air)	256 KB SRAM (incl. 192 KB TCM)	512 KB SRAM (incl. 192 KB TCM)	256 KB SRAM (incl. 192 KB TCM)	256 KB SRAM (incl. 192 KB TCM)	512 KB SRAM (incl. 192 KB TCM)
Low-Power Operating Modes and Peripherals (LPUART, FlexIO)	80/142 I/Os	142/218 I/Os	80/142 I/Os	80/142 I/Os	142/218 I/Os
	32-ch eDMA				
ASIL B/D Safety: (ECC Memories, MPU, CRC, Watchdogs)	4 x CAN (FD)	6 x CAN (FD)	4 x CAN (FD)	4 x CAN (FD)	6 x CAN (FD)
	100 Mbit/s Ethernet (TSN)				
eMIOS Timers Logic Control Unit Body Cross Triggering Unit Trigger Mux	4 x UART(LIN)	16 x UART(LIN)	4 x UART(LIN)		16 x UART(LIN)
	2 x I²C				
	4 x SPI	6 x SPI	4 x SPI		6 x SPI
Debug/Trace (SWD/JTAG/ETB)	2 x 24-ch 12-bit ADC	3 x 24-ch 12-bit ADC	2 x 24-ch 12-bit ADC		3 x 24-ch 12-bit ADC
S32 Design Studio IDE S32 Configuration Tool	2 x Analog Comparator	3 x Analog Comparator	2 x Analog Comparator		3 x Analog Comparator
Real-Time Drivers (AUTOSAR® and Non-AUTOSAR)	2 x SAI (I²S)				
Security F/W Safety Software Framework Communication Stacks Application Software	Quad SPI (4-bit data)				
	HDQFP-100	HDQFP-100			
	HDQFP-172				
Model-Based Design Toolbox	MAPBGA-257		MAPBGA-257		

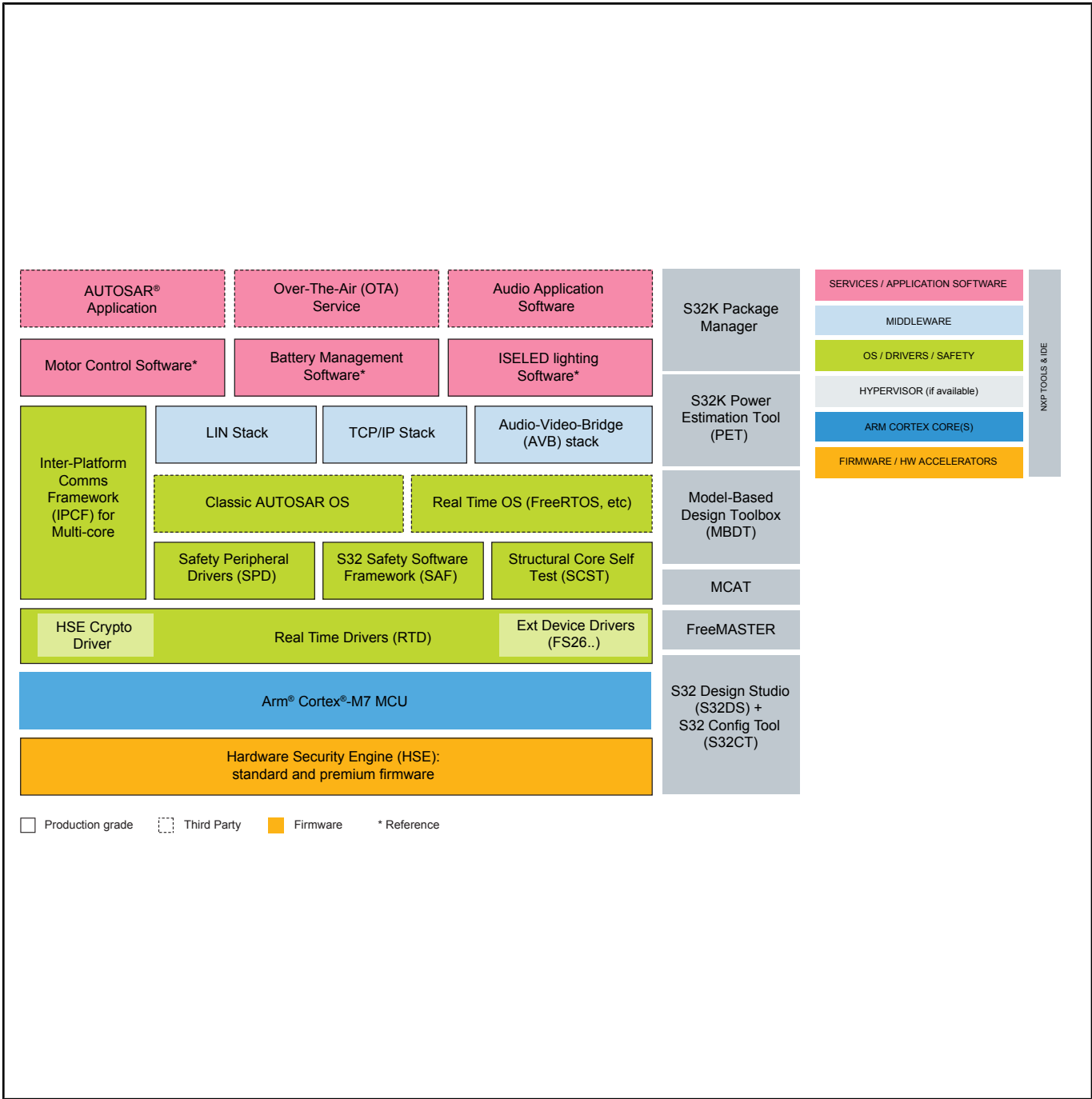
S32K3ファミリの特長パート3 Block Diagram

Common Features	K364	K366	K374	K376	K394	K396
AEC-Q100, 125 °C, 3.3/5 V	1 x LockStep + 1 Arm® Cortex®-M7 @320 MHz		1 x LockStep + 2 x Split-Lock Arm® Cortex®-M7 @320 MHz			
HSE_B Crypto Security Engine	2 x motor control coprocessor (2x 16ch)				2 x motor control coprocessor (2x 32ch)	
FOTA (Firmware Over-the-Air)	4 MB Flash	6 MB Flash	4 MB Flash	6 MB Flash	4 MB Flash	6 MB Flash
Low-Power Operarting Modes and Peripherals (LPUART, FlexIO)	704 KB SRAM (incl. 192 KB TCM)		800 KB SRAM (incl. 288 KB TCM)			
	127/ 209+8LVDS I/Os					
	64-ch eDMA with 32ch LockStep					
	6 x CAN (FD)					
ASIL D Safety: (ECC Memories, MPU, CRC, Watchdogs)	100 Mbit/s Ethernet (AVB/TSN)					
eMIOS Timers Logic Control Unit Body Cross Triggering Unit Trigger Mux	ZipWire					
	6 x SPI, 4x UART(LIN), 2 x I²C					
Debug/Trace (SWD/JTAG/ETB)	2x 12-ch eFlexPWM with NanoEdge (8-ch each high-resolution PWM)					
S32 Design Studio IDE S32 Configuration Tool	2 x sigma-delta ADC with programmable DSP		4 x sigma-delta ADC with programmable DSP			
Real-Time Drivers (AUTOSAR® and Non-AUTOSAR)	4 x 12-bit SAR-ADC (48 inputs)		7 x 12-bit SAR-ADC (69 inputs)			
Security F/W Safety Software Framework Communication Stacks Application Software	2x Sine Wave Generator, 2 x Analog Comparator					
	Quad SPI (8-bit data width, SDR and DDR mode)					
	LQFP-EP-176					
ASIL-D SW Resolver, IPCF, MBDT	MAPBGA-289					

S32K3ファミリの特長パート4 Block Diagram

Common Features	K328	K338	K348	K358	K388	K389*
AEC-Q100, 125 °C, 3.3/5 V	2 x Arm® Cortex®-M7 @240 MHz	3 x Arm® Cortex®-M7 @240 MHz	1 x LockStep Arm® Cortex®-M7 @240 MHz	1 x LockStep + 1 Arm® Cortex®-M7 @240 MHz	1 x LockStep + 3 or 2 x LockStep + 1 Arm® Cortex®-M7 @320 MHz	1 x LockStep + 3 or 2 x LockStep + 1 Arm® Cortex®-M7 @320 MHz
HSE-B Crypto Security Engine	8 MB Flash					12 MB Flash
FOTA (Firmware Over-the-Air)	1152 KB SRAM (incl. 192 TCM)	1152 KB SRAM (incl. 384 TCM)	1152 KB SRAM (incl. 192 TCM)	1152 KB SRAM (incl. 384 TCM)		2304 KB SRAM (incl. 384 TCM)
Low-Power Operarting Modes and Peripherals (LPUART, FlexIO)	137/235 I/Os				202 I/Os	321 I/Os
ASIL B/D Safety: (ECC Memories, MPU, CRC, Watchdogs)	32-ch eDMA					
	8 x CAN (FD)					12 x CAN (FD)
eMIOS Timers Analog Comparator Logic Control Unit Body Cross Triggering Unit Trigger Mux	1 Gbit/s Ethernet (TSN)				2x 1 Gbit/s Ethernet (TSN)	
	2 x I ² C, 16 x UART(LIN)					
	6 x SPI					
Debug/Trace (SWD/JTAG/ETB)	3 x 24-ch 12-bit ADC					
S32 Design Studio IDE S32 Configuration Tool	2 x SAI (I ² S)					
Real-Time Drivers (AUTOSAR® and Non-AUTOSAR)	Quad SPI (8-bit data width, SDR and DDR mode)				Quad SPI (4-bit data)	
	uSDHC (SDIO)					
Security F/W Safety Software Framework Communication Stacks Application Software	HDQFP-EP-172					
	MAPBGA-289					
Model-Based Design Toolbox	*S32K389 feature set is under evaluation and subject to change.					MAPBGA-437

S32K3のソフトウェア・エコシステム Block Diagram



View additional information for [S32K3 車載向け汎用マイクロコントローラ](#).

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