

# Platform for electronic control units

NXP's S32 micro-controller has been selected by eight of 15 automakers for upcoming models. The AEC-Q100-qualified S32K family provides ISO CAN FD connectivity.

S32K11x MCUs		Common Features	S32K14x MCUs			
S32K116 MCU	S32K118 MCU		AEC-Q100	S32K142 MCU	S32K144 MCU	S32K146 MCU
ARM®Cortex®-M0+ core @ 48 MHz		CSEc Security Module	ARM®Cortex®-M4F core @ up to 112 MHz			
128 KB Flash	256 KB Flash	MPU	256 KB Flash	512 KB Flash	1 MB Flash	2 MB Flash
16 KB SRAM	24 KB SRAM	Low-Power Operating Modes & Peripherals	32 KB SRAM	64 KB SRAM	128 KB SRAM	256 KB SRAM
up to 43 I/Os	up to 58 I/Os	FlexIO	up to 89 I/Os		up to 128 I/Os	up to 156 I/Os
DMA - 4 ch.		ASIL-B Capable (ECC, MPU, WDOG...)	DMA - 16 ch.			
1 x CAN FD		JTAG	1 x CAN, 1 x CAN FD	2 x CAN, 1 x CAN FD	1 x CAN, 2 x CAN FD	3 x CAN FD
QFN-32	LQFP-64	FlexTimer	LQFP-64 and LQFP-100		LQFP-100 and LQFP-144	LQFP-144 and LQFP-176
LQFP-48		SDK	MAPBGA-100			
		NFC Stack	ENET			
		AUTOSAR MCAL / OS	QuadSPI			
		S32 Design Studio IDE	ETM Trace			
			SAI			

The S32K family offers a secure CAN FD diagnostics (Photo: NXP)

The processors provide ten-times more performance than competing products based on public available statements, stated NXP. The scalable S32 family offers a unified architecture of micro-controllers (MCU) and microprocessors (MPU) with identical software environment across application platforms. The S32K series features CAN FD connectivity by means of one or multiple on-chip controllers. A common feature is the Asil-B support (automotive safety integrity level). Of course, other members of the family are suitable for Asil-D applications.

"Traditional and disruptive automakers, even more than Tier-1s, seek a standardized way of working across vehicle domains, segments and regions to meet increasing performance demands while contemporarily ensuring fast time to market and control over skyrocketing development costs," said Luca DeAmbroggi, from IHS Markit. "A common architecture and a scalable approach can cut development time for critical applications in domains like ADAS, autonomous driving or connectivity from both the hardware and the software perspective."

The ARM-based processors support Over-The-Air (OTA) updates with roll back options. The products also support NXP's core security concept. "Our insight into the future of automotive caused us to re-evaluate the interrelationship between hardware and software," said Matt Johnson from NXP. "We saw that to build the software of tomorrow, the software behind future vehicles, we had to reinvent the hardware. We built our hardware to enable an identical software development environment across products and applications, thereby significantly reducing software development effort and shortening time to market. Our customers see it the same way."

Leading OEMs are now using pre-silicon emulation and development tools available from third party partners. Further announcements from NXP partners related to these capabilities are expected soon. The S32K family includes members with CAN FD as well as Classical CAN only on-chip modules. The scalable products feature up to 2-MiB flash memory and up to 256-KiB static RAM. The smallest MCU has 43 I/O ports and the most powerful provides 156 I/O lines.

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