FRDM Automotive S32K312 Development Board for General Purpose

FRDM-A-S32K312 **UPDATED**
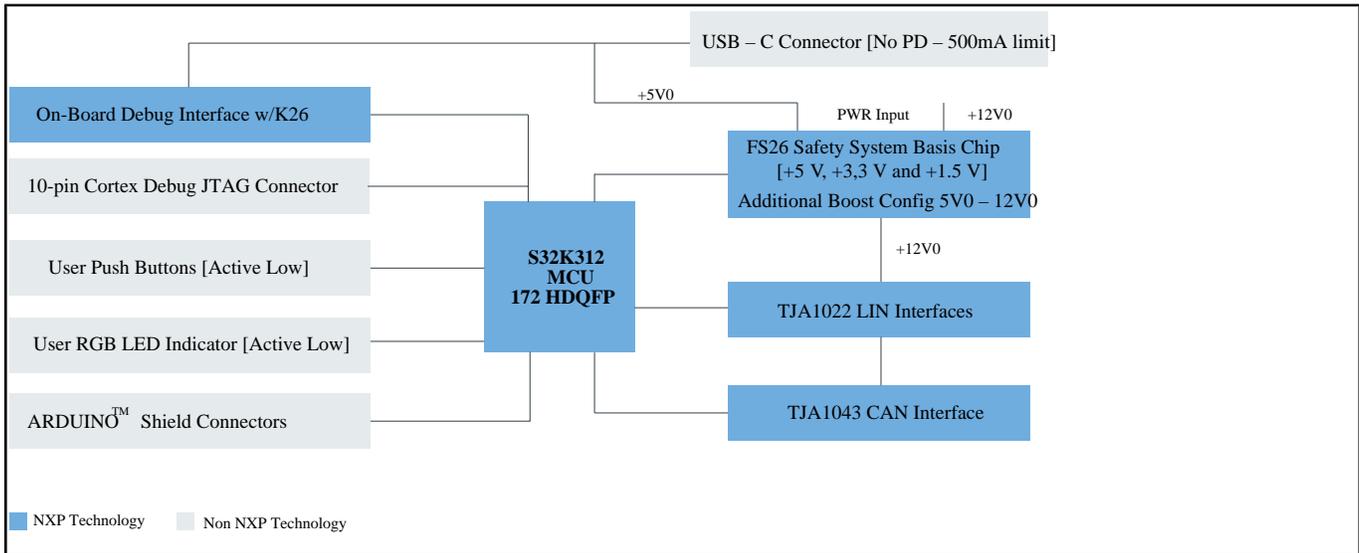
Active

Last Updated: Mar 10, 2026

S32K312MINI#EVB Renamed to FRDM#A#S32K312: Now part of the FRDM Automotive Ecosystem under its new name, the board keeps the same hardware and adds full ecosystem compatibility for flexible, scalable development.

The FRDM-A-S32K312 is a development board for general-purpose industrial and automotive applications.

Based on the 32-bit Arm® Cortex®-M7 S32K3 microcontroller unit (MCU) in a 172 High Density Quad Flat Package (HDQFP) package, the FRDM-A-S32K312 offers a single-core mode, Hardware Security Engine (HSE), over-the-air (OTA) support, advanced connectivity and low-power.

The FRDM-A-S32K312 offers a standard-based form factor compatible with the Arduino® UNO pin layout, providing a broad range of expansion board options for quick application prototyping and demonstration.

FRDM-A-S32K312 Development Board Block Diagram

USB – C Connector [No PD – 500mA limit]

+5V0

On-Board Debug Interface w/K26

10-pin Cortex Debug JTAG Connector

User Push Buttons [Active Low]

User RGB LED Indicator [Active Low]

ARDUINO™ Shield Connectors

S32K312
MCU
172 HDQFP

PWR Input   +12V0

FS26 Safety System Basis Chip
[+5 V, +3,3 V and +1.5 V]
Additional Boost Config 5V0 – 12V0

+12V0

TJA1022 LIN Interfaces

TJA1043 CAN Interface

NXP Technology   Non NXP Technology

S32K3 Family Block Diagram

K311	K312	K314	Common Features	K322	K324	K341	K342	K344	K328	K338	K348	K358
1 x Arm® Cortex®-M7 @120 MHz		1x Cortex-M7 @240 MHz	AEC-Q100, 125 °C, 3.3/5 V	2 x Cortex-M7 @240 MHz		1 Lockstep Cortex-M7 @ 240 MHz			2 x Cortex-M7 @ 240 MHz	3 x Cortex-M7 @ 240 MHz	1 LS Cortex-M7 @ 240 MHz	1 LS Cortex-M7 + 1 Cortex-M7 @ 240 MHz
1 MB Flash	2 MB Flash	4 MB Flash	HSE-B Crypto Security Engine	2 MB Flash	4 MB Flash	1 MB Flash	2 MB Flash	4 MB Flash	8 MB Flash			
128 K SRAM	192 K SRAM	512 K SRAM	FOTA (Firmware Over-the-Air)	256 k SRAM	512 k SRAM	256 k SRAM	256 k SRAM	512 k SRAM	1152 KB SRAM	1152 KB SRAM	1152 KB SRAM	1152 KB SRAM
up to 84 I/Os	up to 143 I/Os	up to 218 I/Os	Low-Power Operating Modes and Peripherals (LP UART, FlexIO)	up to 143 I/Os	up to 218 I/Os	up to 143 I/Os	up to 143 I/Os	up to 218 I/Os	up to 218 I/Os			
16-ch. eDMA		32-ch. eDMA		32-ch. eDMA					32-ch. eDMA			
3 x CAN (3 x FD)	6 x CAN (6 x FD)		ASIL B/D Safety: (ECC Memories, MPU, CRC, Watchdogs)	4 x CAN (4 x FD)	6 x CAN (6 x FD)	4 x CAN (4 x FD)	4 x CAN (4 x FD)	6 x CAN (6 x FD)	8 x CAN (8 x FD)	8 x CAN (8 x FD)	8 x CAN (8 x FD)	8 x CAN (8 x FD)
		100 Mbit/s Ethernet (TSN)		100 Mbit/s Ethernet (TSN)					1 Gbit/s Ethernet (TSN)			
2 x I²C	2 x I²C	2 x I²C	eMIOS Timers, Analogue Comparator, Logic Control Unit, Body Cross Triggering Unit, Trigger Mux	2 x I²C	2 x I²C	2 x I²C	2 x I²C	2 x I²C	2 x I²C			
4 x SPI*		6 x SPI*		4 x SPI*	6 x SPI*	4 x SPI*	4 x SPI*	6 x SPI*	6 x SPI*			
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	2 x 24-ch. 12-bit ADC	2 x 24-ch. 12-bit ADC	3 x 24-ch. 12-bit ADC	3 x 24-ch. 12-bit ADC			
		2 x SAI (I²S)	JTAG	2 x SAI (I²S)					2 x SAI (I²S)			
		Quad SPI	S32 Design Studio IDE	Quad SPI					Quad SPI + SDHC (SDIO)			
LQFP-48	HDQFP-172		Real-Time Drivers (AUTOSAR® and Non-AUTOSAR)	HDQFP-172					HDQFP-172			
HDQFP-100				HDQFP-100		HDQFP-100	HDQFP-100					
		MAPBGA-257	Security F/W Safety Software Framework Application Software		MAPBGA-257			MAPBGA-257	MAPBGA-289			

View additional information for FRDM Automotive S32K312 Development Board for General Purpose.

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