S32K3X4EVB-Q172: Evaluation and Development Board for General Purpose

FOLLOW

Overview

The S32K3X4EVB-Q172 is an evaluation and development board for general purpose automotive applications.

Based on the 32-bit Arm® Cortex®-M7 S32K3 MCU in a 172 MaxQFP package, the S32K3X4EVB-Q172 offers dual cores configured in lockstep mode, ASIL D safety hardware, HSE security engine, OTA support, advanced connectivity and low power.

The S32K3X4EVB-Q172 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.

Target Applications

Automotive Zone Controller (/applications/automotive/vehicle-networking/automotive-zone-controller:AUTOMOTIVE-ZONE-CONTROLLER)

Battery Management System (/applications/automotive/powertrain-vehicle-dynamics/electrification/battery-management-system:BATTERY-MANAGEMENT-SYSTEM)
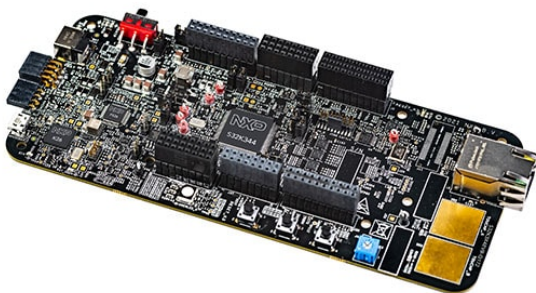
Belt-Driven Starter Generator (BSG), Turbo Charger, Fan/Pump Controller

Body Control Modules

E-Shifter

Electric Pumps (/applications/automotive/body-and-comfort/electric-pumps:ELECTRIC-PUMPS)
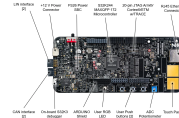
Infotainment IO Controller

S32K3X4EVB-Q172
Evaluation board -
Hero

S32K3X4EVB-Q172
Evaluation board -
Top

S32K3X4EVB-Q172
Evaluation board -
Back

S32K3X4EVB-Q172
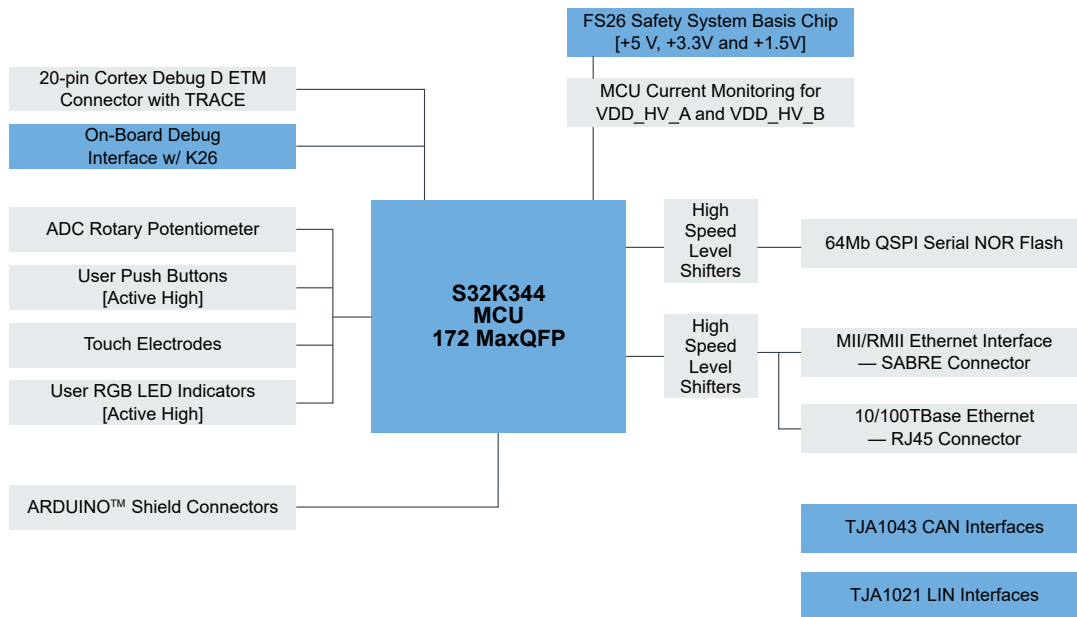Evaluation board -
Hero Specs

Specifications

Choose a diagram

S32K3X4EVB-Q172 BLOCK DIAGRAM **S32K3 FAMILY FEATURES**

S32K3X4EVB-Q172 Block Diagram

S32K3X4EVB-Q172 Block Diagram

FS26 Safety System Basis Chip
[+5 V, +3.3V and +1.5V]

MCU Current Monitoring for
VDD_HV_A and VDD_HV_B

20-pin Cortex Debug D ETM
Connector with TRACE

On-Board Debug
Interface w/ K26

ADC Rotary Potentiometer

User Push Buttons
[Active High]

Touch Electrodes

User RGB LED Indicators
[Active High]

**S32K344
MCU
172 MaxQFP**

High
Speed
Level
Shifters

64Mb QSPI Serial NOR Flash

High
Speed
Level
Shifters

MII/RMII Ethernet Interface
— SABRE Connector

10/100TBase Ethernet
— RJ45 Connector

ARDUINO™ Shield Connectors

TJA1043 CAN Interfaces

TJA1021 LIN Interfaces

NXP Technology   Non NXP Technology   Optional Technology

Technical and Functional Specifications

Microcontroller (MCU)	• 32-bit Arm Cortex-M7-based S32K344 (/products/processors-and-microcontrollers/arm-microcontrollers/s32k-automotive-mcus/s32k3-microco • K26 (/products/processors-and-microcontrollers/arm-microcontrollers/general-purpose-mcus/k-series-cortex-m4/k2x-usb/kinetis-k26-180-mhz-
Safety System Basis Chip (SBC)	• FS26 (/products/power-management/pmics-and-sbcs/safety-sbcs/safety-system-basis-chip-sbc-with-low-power-fit-for-asil-d:FS26): Safety syst
Transceivers	• TJA1021 (/products/interfaces/automotive-lin-solutions/lin-2-1-sae-j2602-transceiver:TJA1021): LIN 2.1/SAE J2602 transceiver • TJA1043 (/products/interfaces/can-transceivers/can-with-flexible-data-rate/high-speed-can-transceiver-with-standby-and-sleep-mode:TJA1043
Hardware Features	• 64 Mb QSPI NOR flash • 100 Mbit Ethernet physical Layer • Power supply switch • MCU voltage/current measurement • User RGB LED • 2x user push-buttons • ADC rotary potentiometer • 2x touch pad electrode
Software Features	• Free of charge S32 Design Studio IDE (/design/software/development-software/s32-design-studio-ide:S32-DESIGN-STUDIO-IDE) (Eclipse, G • Free of charge (/design/automotive-software-and-tools/real-time-drivers-rtd:AUTOMOTIVE-RTD)Real Time Drivers for AUTOSAR® and non-AU • Configuration tools for both AUTOSAR and non-AUTOSAR users • Free of charge security firmware: SHE+ compliant NXP supplied, designed for ISO 21434 • S32 Safety Software Framework (/design/automotive-software-and-tools/s32-safety-software-framework-saf:SAF) (SAF): Six fault detection ar • Free of charge Safety Peripheral Drivers (SPD) • Structural Core Self Test (/docs/en/product-brief/S32K3xx-SCST-PB.pdf) (SCST) • Free of charge inter-platform communication framework (/design/automotive-software-and-tools/inter-platform-communication-framework-ipcf: • Free of charge Model-Based Design Toolbox (/design/automotive-software-and-tools/model-based-design-toolbox-mbdt:MBDT) for MATLAB®:
Programing Debug interfaces	• On-board S32K3 debug interface • 20-Pin Cortex debug + ETM connector
Compatibility	• Arduino UNO pint-out compatible with expansion "shield" support
Interfaces	• On-board HS-CAN • 2x on-board LIN • Ethernet 100 Mbit Physical Layer with RJ-45 connector for fast prototyping • SWD/JTAG debug interface for S32K3 debugger

Buy

S32K3X4EVB-Q172 (/part/S32K3X4EVB-Q172) ACTIVE

S32K3X4EVB-Q172 Evaluation and Development Board for General Purpose

Kit Contains

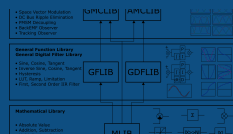- S32K3X4 in 172MaxQFP Evaluation Board

1 @ US
$219.00

🛒 USE COUPON (HTTPS://STORE.NXP.COM/WEBAPP/ECOMMERCE.ADD_ITEM.FRAMEWORK?PART_NUMBER=S32K3X4EVB-Q172&QUANTITY=1&ITEM_TYPE=TOOL_HW)

Availability?

DISTRIBUTOR

Don't have an NXP coupon? You can purchase this product from one of our authorized distributors.

Related Products

(/design/automotive-software-and-tools/automotive-math-and-motor-control-library-ammclib:AMMCLIB)

Automotive Math and Motor Control Library (AMMCLib) (/design/automotive-software-and-tools/automotive-math-and-motor-control-library-ammclib:AMMCLIB)
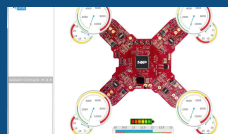
Embedded Software

(/design/software/development-software/s32-design-studio-ide/s32-design-studio-for-s32-platform:S32DS-S32PLATFORM)

S32 Design Studio for S32 Platform (/design/software/development-software/s32-design-studio-ide/s32-design-studio-for-s32-platform:S32DS-S32PLATFORM)
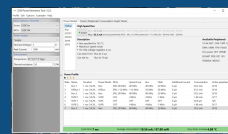
IDE and Build Tools

(/design/software/development-software/freemaster-run-time-debugging-tool:FREEMASTER)

FreeMASTER Run-Time Debugging Tool (/design/software/development-software/freemaster-run-time-debugging-tool:FREEMASTER)

Test, Debug and Analyzer Software

(/design/automotive-software-and-tools/s32k-power-estimation-tool-pet:S32K-PET)

S32K Power Estimation Tool (PET) (/design/automotive-software-and-tools/s32k-power-estimation-tool-pet:S32K-PET)

Calculators

(/design/automotive-software-and-tools/model-based-design-toolbox-mbdt:MBDT)

Model-Based Design Toolbox (MBDT) (/design/automotive-software-and-tools/model-based-design-toolbox-mbdt:MBDT)

Embedded Software

Design Resources

Get Started

1. Review this Getting Started guide to get familiar with the hardware specifications.

Getting Started

Getting Started with the S32K3X4EVB-Q172 Evaluation Board (/document/guide/getting-started-with-the-s32k3x4evb-q172-evaluation-board:GS-S32K3X4EVB-Q172)

HTML   Oct 6, 2021   GS-S32K3X4EVB-Q172

2. Review this user manual to get familiar with the board.

User Manual

S32K3X4EVB-Q172 Evaluation Board – HW User Manual (/webapp/Download?colCode=S32K3X4EVB-Q172_HW-UM)

PDF   Rev A   Oct 20, 2021   S32K3X4EVB-Q172_HW-UM   English

DOCUMENTS (8)

Reference Manual (1)

User Guide (1)

Brochure (1)

Errata (1)

Product Brief (4)

DESIGN RESOURCES (4)

Design Tools & Files (4)

SOFTWARE (7)

Embedded Software (3)

Development Software (4)

Documents

Reference Manual (1)

S32K3X4EVB-Q172 Evaluation Board – HW User Manual (/webapp/Download?colCode=S32K3X4EVB-Q172_HW-UM)
Hardware User Manual for the S32K3X4EVB-Q172 Evaluation Board.

PDF   Rev A   Oct 20, 2021   S32K3X4EVB-Q172_HW-UM   English

User Guide (1)

Getting Started with the S32K3X4EVB-Q172 Evaluation Board (/document/guide/getting-started-with-the-s32k3x4evb-q172-evaluation-board:GS-S32K3X4EVB-Q172)
This page will help guide you through the process of learning about your S32K3X4EVB-Q172 evaluation board

HTML   Oct 6, 2021   GS-S32K3X4EVB-Q172   English

Brochure (1)

S32K3 Arm Cortex-M7-based Automotive MCUs – Brochure (/docs/en/brochure/S32KBRA4.pdf)
The S32K3 family includes scalable 32-bit Arm Cortex-M7 based MCUs in single, dual and Lockstep core configurations supporting up to ASIL D level safety. Features include a hardware security subsystem with NXP firmware, support for firmware over-the-air (FOTA) updates, and ISO 26262 compliant Real-Time Drivers (RTD) software package for AUTOSARTM and non-AUTOSAR.

PDF   Rev 0   Oct 19, 2021   S32KBRA4   English

Errata (1)

Mask Set Errata for Mask 0P55A/1P55A - Errata (/webapp/Download?colCode=S32K3X4-0P55A-1P55A-ERRATA)🔒
This report applies to mask 0P55A/1P55A for these products S32K344, S32K324 and S32K314

PDF   Rev 14   Oct 14, 2021   S32K3X4-0P55A-1P55A-ERRATA   English

Product Brief (4)

S32 Safety Software Framework (SAF) for S32K3xx Microcontrollers - Product Brief (/docs/en/product-brief/S32K3xx-SAF-PB.pdf)
The S32 Safety Software Framework (SAF) is a software product containing software components for establishing the safety foundation for customer's safety applications compliant with ISO 26262 functional safety.

PDF   Rev 1   Sep 30, 2021   858.4 KB   S32K3xx-SAF-PB   English

Structural Core Self-Test Library (SCST) for S32K3xx Microcontrollers - Product Brief (/docs/en/product-brief/S32K3xx-SCST-PB.pdf)
The SCST (Structural Core Self-Test) Library is the software product used for the runtime detection of permanent HW faults in the MCU core.

PDF   Rev 1   Oct 14, 2021   S32K3xx-SCST-PB   English

Real-Time Drivers (RTD) for S32K3xx Microcontrollers – Product Brief (/docs/en/product-brief/RTD-S32K3-PB.pdf)
S32-based platform products offer Real-Time Drivers (RTD) software supporting both AUTOSAR and non-AUTOSAR (similar to traditional SDKs) applications.

PDF   Rev 1.5   Nov 11, 2021   397.5 KB   RTD-S32K3-PB   English

Inter-Platform Communication Framework (IPCF) - Product Brief (/docs/en/product-brief/IPCFPB.pdf)
Inter-Platform Communication Framework (IPCF) is a subsystem which enables applications, running on multiple homogenous or heterogenous processing cores, located on the same chip or different chips, running on different operating systems (AUTOSAR, FreeRTOS etc.), to communicate over various transport interfaces (Shared Memory, etc.).

PDF   Rev 1   Oct 13, 2021   441.4 KB   IPCFPB   English

Design Resources

Design Tools & Files (4)

Printed Circuit Boards and Schematics (3)

S32K3X4EVB-Q172 Evaluation Board – REV A Design Files (/webapp/Download?colCode=S32K3X4EVBQ172_CAD_FILES_REVA)🔒
Design Files REV A for the S32K3X4EVB-Q172 Evaluation Board.

ZIP   Rev A   Oct 20, 2021   S32K3X4EVBQ172_CAD_FILES_REVA

DOWNLOAD (/WEBAPP/DOWNLOAD?COLCODE=S32K3X4EVBQ172_CAD_FILES_REVA) ⌄

S32K3X4EVB-Q172 Evaluation Board – REV A Schematics (/webapp/Download?colCode=S32K3X4EVB-Q172_SCH)🔒
Schematics REV A for the S32K3X4EVB-Q257 Evaluation Board.

PDF   Rev A   Oct 20, 2021   S32K3X4EVB-Q172_SCH

DOWNLOAD (/WEBAPP/DOWNLOAD?COLCODE=S32K3X4EVB-Q172_SCH) ⌄

S32K3 MCUs for General Purpose – REV A Hardware Design Package (/webapp/Download?colCode=S32K3_HW-DesignPackage)⌷

Hardware considerations for the S32K3xx MCUs, covering power considerations, bulk/bypass and decoupling required capacitors, reset, crystal, Ethernet and QSPI configurations, and PCB layout recommendations.

ZIP   Rev A   Sep 29, 2021   8.6 MB   S32K3_HW-DesignPackage

DOWNLOAD (/WEBAPP/DOWNLOAD?COLCODE=S32K3_HW-DESIGNPACKAGE) ⌄

Calculators (1)

S32K Power Estimation Tool (PET) (/design/automotive-software-and-tools/s32k-power-estimation-tool-pet:S32K-PET)

S32K PET provides a user interface to generate a power profile for an application use case quickly; it also helps calculate a first estimate of the average power consumption for developing automotive battery-operated applications

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Software

Embedded Software (3)

Embedded Software (3)

S32 Safety Software Framework (SAF) (/design/automotive-software-and-tools/s32-safety-software-framework-saf:SAF)

The S32 Safety Software Framework (SAF) is a software product containing software components for establishing the safety foundation for customer's safety applications compliant with ISO 26262 functional safety.

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Automotive Math and Motor Control Library (AMMCLib) (/design/automotive-software-and-tools/automotive-math-and-motor-control-library-ammclib:AMMCLIB)

The Automotive Math and Motor Control Library (AMMCLib) set is a collection of production-ready, easy-to-use, software libraries for rapid development of motor control and other real-time embedded systems.

DOWNLOAD OPTIONS (/DESIGN/AUTOMOTIVE-SOFTWARE-AND-TOOLS/AUTOMOTIVE-MATH-AND-MOTOR-CONTROL-LIBRARY-AMMCLIB:AMMCLIB?TAB=DESIGN_TOOLS_TAB)

Model-Based Design Toolbox (MBDT) (/design/automotive-software-and-tools/model-based-design-toolbox-mbdt:MBDT)

The NXP Model-Based Design Toolbox (MBDT) is a comprehensive collection of tools that plug into the MATLAB and Simulink model-based design environment to support fast prototyping, verification, and validation

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Development Software (4)

IDE and Build Tools (2)

S32 Design Studio for S32 Platform (/design/software/development-software/s32-design-studio-ide/s32-design-studio-for-s32-platform:S32DS-S32PLATFORM)

The S32 Design Studio is a tool suite for developing your applications for NXP Automotive and Ultra-Reliable Microcontrollers

DOWNLOAD OPTIONS (/DESIGN/SOFTWARE/DEVELOPMENT-SOFTWARE/S32-DESIGN-STUDIO-IDE/S32-DESIGN-STUDIO-FOR-S32-PLATFORM:S32DS-S32PLATFORM?TAB=DESIGN_TOOLS_TAB)

S32K3 Standard Software (/webapp/swlicensing/sso/downloadSoftware.sp?catid=SW32K3-STDSW-D)

S32K3 Standard Software includes Real Time Drivers for AUTOSAR® and non-AUTOSAR operating systems, Standard HSE Security firmware, Safety Peripheral Drivers, an Inter-Platform Communication Framework (IPCF) for communications between the Cortex-M7 cores. Additionally user also get access to Real Time Driver of FS26 SBC, S32 Design Studio IDE and EB tresos Studio.

EXTERNAL   Rev 0   Sep 30, 2021   null KB   SW32K3-STDSW-D

DOWNLOAD (/WEBAPP/SWLICENSING/SSO/DOWNLOADSOFTWARE.SP?CATID=SW32K3-STDSW-D)

Test, Debug and Analyzer Software (1)

FreeMASTER Run-Time Debugging Tool (/design/software/development-software/freemaster-run-time-debugging-tool:FREEMASTER)

Graphical PC host tool to control and debug embedded applications in run-time.

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Host Device Drivers (1)

Inter-Platform Communication Framework (IPCF) (/design/automotive-software-and-tools/inter-platform-communication-framework-ipcf:IPCF)

Inter-Platform Communication Framework (IPCF) is a subsystem which enables applications, running on multiple homogenous or heterogenous processing cores, located on the same chip or different chips, running on different operating systems (AUTOSAR, FreeRTOS etc.), to communicate over various transport interfaces (Shared Memory, etc.).

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RECOMMENDED COMMUNITIES

S32K ⬀

S32 Design Studio ⬀

MBDT Community Articles ⬀

FreeMASTER ⬀

SUGGESTED LINKS

Functional Safety documents AVAILABLE | Require access to the SafeAssure NDA group ⬀

News Jan 4, 2022 | Read More (https://media.nxp.com/news-releases/news-release-details/nxp-advances-iot-connectivity-industrys-first-secure-tri-radio)

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