

SYSTEM BASIS CHIP

Integrated CAN FD controller and transceiver

The automotive system basis chip (SBC) from Texas Instruments helps designers add CAN FD without changing their micro-controller, reducing design and time to market for in-vehicle networks.

Texas Instruments' (TI) automotive system basis chip allows to integrate a controller and transceiver for Classical CAN and CAN FD. Designed to meet the high-bandwidth and data-rate flexibility needs of in-vehicle networks, the TCAN4550-Q1 uses the Serial Peripheral Interface (SPI) bus of almost any micro-controller to implement, with minimal hardware changes, a CAN FD interface or increase the amount of CAN FD bus ports in a system.

Previously, designers had to incorporate multiple discrete components into their designs or change micro-controllers entirely when upgrading to or expanding CAN FD functionality – an often time-consuming and expensive process. With the TCAN4550-Q1 system basis chip, designers can maintain their existing micro-controller-based architecture and streamline CAN FD upgrade or expansion in body electronics and lighting, advanced driver assistance systems (ADAS) and automotive gateway designs.



(Source: Texas Instruments)

Designers can simplify their designs with the high integration of the TCAN4550-Q1 – including integrated $\pm 58\text{-V}_{\text{DC}}$ bus fault protection, watchdog timer and fail-safe modes – and its cross-compatibility with the Classical CAN protocol. Designers can also use the chip to add more CAN FD networks via the existing SPI port in an automotive system when the micro-controller has a limited number of CAN FD ports. Typically this type of bus expansion can require system redesign, which is not necessary when using the TCAN4550-Q1.

With an integrated 125-mA low-dropout (LDO) linear regulator, the TCAN4550-Q1 can power itself while also providing a 70-mA external output that can be used to power sensors or additional components, which enables a smaller power design footprint by reducing the need for external power components.

The product helps designers lower system power consumption when in standby mode through wake and inhibit features. It also enables faster programmability of automotive software during vehicle assembly through a maximum data rate of 8 Mbit/s, which exceeds the 5-Mbit/s maximum data rate of the CAN FD protocol. The product is available now through the TI store and authorized distributors. It comes in a 4,5-mm by 3,5-mm quad flat no-lead package.

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