

CAN Newsletter Online

ELECTRONICA 2022

CAN FD is set and CAN XL is coming

The Electronica 2022 trade show with 2144 exhibitors and about 70 000 visitors saw some announcements regarding CAN technology. This includes new MCUs (micro-controller unit) and board-level products.



(Source: Bosch)

establish new engineering centers in the coming years. The company is also expanding its manufacturing operations so that it can meet the further increase in customer demand. For example, the 300-mm wafer fab in Dresden, which went into operation in 2021, is already expanding its clean-room area after just one year. Further expansions are also underway in the existing clean-room spaces for 200-mm wafers at the Reutlingen location. In Malaysia, the test center in Penang will be completed in 2023; the existing test center in Suzhou, China, was expanded in 2021.

“We want to continue to be a leading supplier of key products for the automotive and consumer electronics industries. That’s why, in addition to our manufacturing activities, we are also consistently expanding our development capacity in the areas of integrated circuits, systems-on-a-chip (SoCs), micro-mechanical sensors, and power semiconductors,” said Jens Fabrowsky, who as executive vice president in the Automotive Electronics division is responsible for the semiconductor business at Bosch.

MCUs with CAN FD



The S32K39 series of automotive MCUs featuring CAN FD connectivity is optimized for electric vehicle (EV) control applications (Source: NXP)

gallium nitride (GaN) technologies. With dual 200-kHz control loops featured by the two motor control coprocessors, these can enable smaller, lighter, more efficient inverters, allowing motors to deliver a longer driving range. They can also control six-phase motors with increased power density and can enable fault tolerance for improved long-term reliability. Engineering MCU samples, evaluation boards, and a set of software support and tools are now available for lead customers. The S32K39 chips can be combined with the company’s FS26 safety system basis chip (SBC). Production release is planned for end of 2023.

Recently, Continental announced to use the CV3 AI (artificial intelligence) SoC (system-on-chip) family from Ambarella for ADAS (advanced driver assistance systems) applications. The product comes with CAN FD interfaces on chip. A centralized single-chip processing based on 5-nm technology enables the next generation of vehicles to process the environment perception of multiple sensors even quicker due to an increasing performance level, explained the German Tier-1 supplier. Sensor solutions include high-resolution cameras, radars, lidars as well as ultrasonic sensors. The integrated SoC enables early data fusion, in which the information from different sensors is superimposed simultaneously for various modalities such as emergency brake assist, parking or cruising.

“After exchanging on different use cases with Ambarella for two years, Continental is now integrating its high-performance, low latency, and low-power processing chipset into our assisted driving solutions. This brings our ADAS systems to the next level and helps to serve the growing amount of sensor data in the vehicle. With this, we achieve a more comprehensive and accurate environment perception,” said Frank Petznick, Head of the Autonomous Mobility Business Area at Continental.

From November 15 to 18, the Electronica 2022 exhibition took place in Munich, Germany. It confirmed its status as the world’s leading trade fair for electronics with 2144 exhibitors, 64 percent of them came from countries outside of Germany, and about 70 000 visitors (about less than 14 percent below the result from 2018).

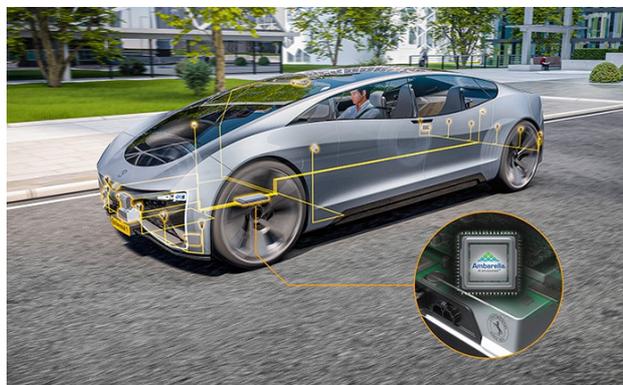
Bosch participated with its CAN XL demonstrator. The exhibited “X_CAN” IP module is a CAN XL protocol controller for integration into micro-controllers. CAN XL enables data transmission rates of up to 20 Mbit/s in CAN networks. The Tier-1 supplier for the automotive industry is readying itself for further growth: in July 2022, the Bosch announced it would be making billions of euros of investments in its own semiconductor business. At locations such as Dresden and Reutlingen, this money will enable Bosch to



Bosch’s CAN XL demonstrator at the Electronica 2022 tradeshow (Source: Gregor Sunderdiek)

In future road vehicles, CAN FD will play an important role. This is why, in Munich several new MCUs with CAN FD on chip have been introduced. NXP has introduced its S32K39 micro-controller series. These MCUs include networking, cybersecurity, and functional safety capabilities beyond traditional automotive features to address the needs of zonal vehicle E/E architectures and software-defined vehicles. In particular, they can be used to control electric vehicle (EV) traction inverters. Besides TSN (time-sensitive networking) Ethernet interfaces, the MCUs provide up to CAN FD ports. The products control traditional insulated-gate bipolar transistors (IGBT), as well as silicon carbide (SiC) and

The CV3 by Ambarella comes with multiple CAN FD on-chip modules. It is intended as domain controller for semi-automatic driving (SAE level 2+ to level 4). The multi-core processor unit and the broad range of sensor interfaces combined with Ethernet and CAN FD connectivity makes the SoC suitable for different ADAS applications.



Continental is expanding its solutions for assisted driving with system-on-chips from Ambarella (Source: Continental)



At the next Electronica in 2024 (November 12 to 15), there will be first MCUs and SoCs with CAN XL connectivity exhibited (Source: Electronica)

CAN FD is so-to-speak set for in-vehicle networking. But there are also non-automotive micro-controllers available offering multiple CAN FD interfaces. In Munich, Infineon announced its [XMC7000 micro-controllers](#) with up to 10 CAN FD on-chip modules. Avnet showed its [Smarc modules](#) implementing Renesas' RZ/G2UL ARM Cortex-A55 micro-controller coming with two CAN FD ports.

The growth in the global market for semiconductors shows no signs of. For automotive semiconductors alone, IHS Markit expects average annual growth of 12 percent through 2028. In 2021, this slice of the market was worth some 49 billion dollars. The key drivers of this development are semiconductors for electrified and automated driving. This includes MCUs and SoCs with CAN FD modules on chip.

[hz](#)