

# CAN XL IP core



*Digital Core Design (Poland) in cooperation with DCD-Semi (Poland) has unveiled its DCAN-XL IP Core implemented according to the latest ISO 11898-1:2024 standard.*

*(Source: Digital Core Design)*

The DCAN-XL IP Core has been designed to bridge the gap between CAN FD and 100-Mbit/s Ethernet. It should enable faster high-speed communication and reliable data transmission for automotive and industrial applications. The introduced IP core supports data rates up to 20 Mbit/s and provides a data field length of up to 2048 bytes, making it suitable for demanding real-time applications. By maintaining the advantages and reliability that CAN is renowned for, while offering enhanced speed and flexibility, the DCAN-XL opens up different possibilities for next-generation automotive and industrial systems.

One of the key features of the IP core is its backward compatibility, providing support for CAN CC (classic), CAN FD, and CAN XL protocols. This ensures seamless integration with existing systems while future-proofing designs for evolving industry standards.

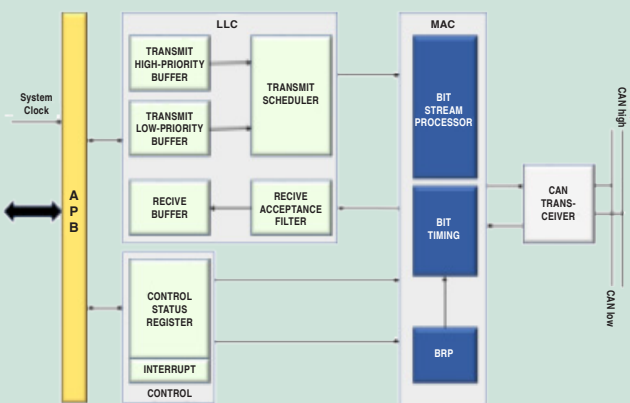
To establish a physical connection to the CAN network, external transceiver hardware is required. DCD recommends to use CAN transceivers for bit rates below 10 Mbit/s and CAN SIC XL transceivers for bit rates over 10 Mbit/s. The DCAN-XL utilizes a single or dual ported message RAM connected via the Generic

## IP core featuring CAN FD light

The CAN FD light specification is available in the ISO 11898-1:2024 standard (formerly in the CiA 604-1 specification). Arasan offers a compliant IP core implementing a CAN FD light responder node. The launched CAN FD light IP (intellectual property) core can be integrated in host processor using the AMBA-APB interface. The configurable core supports programmable interrupts, frame acceptance filters, and frame buffering schemes. The bit rate is configurable, too.

The offered IP core complies with the CAN FD light responder specification in ISO 11898-1:2024. Additionally, it supports the time stamping as specified in CiA 603 as well as TTCAN level-1 functionality as specified in ISO 11898-4. According to the supplier, the IP core is optimized for Autosar and J1939 support. The provided listen-only mode enables analysis of CAN FD traffic and automatic bit-rate detection for performance measurement. The loopback mode is intended for debugging and self-testing during integration and system set-up.

Arasan delivers Verilog RTL source code, a simplified test bench with simulation models, to run the initial set of



Block diagram of the CAN FD light core (Source: Arasan)

tests after release. Besides other deliverables, the company provides synthesis scripts, exception lists, and timing reports as well as application notes. Sample firmware with software drivers is available, too. CAN protocol and trademark licenses are not included.

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Master Interface, enabling efficient message handling and streamlined data exchange. Integration with the host CPU (central processing unit) is possible through the 32-bit Generic Interface, compatible with interface wrappers such as AMBA, Altera Avalon Bus, and Xilinx OPB Bus.

"The DCAN-XL represents a significant leap forward in CAN technology, offering unparalleled speed, reliability, and flexibility," said Jacek Hanke, CEO of Digital Core Design. "With its support for higher data rates and larger data frames, the DCAN-XL is poised to revolutionize automotive and industrial applications, enabling the development of advanced systems that were previously beyond reach."

The IP core is available in two versions: Basic and Safety-Enhanced. The Safety-Enhanced version has been developed as an ISO 26262-10 Safety Element out of Context, providing additional safety mechanisms and comprehensive safety documentation to meet the stringent requirements of automotive safety standards. Third-party audits validate the safety-related work products, ensuring compliance with the ASIL-B (automotive safety integrity level) requirements. The thorough FMEDA (failure modes effects and diagnostic analysis) analysis provided by DCD offers step-by-step instructions for seamless integration and system-level safety analysis. Achieving ASIL-B readiness, this design is suitable for integration into automotive safety systems, with the option for higher ASIL level readiness.

The DCAN-XL is designed in accordance to ISO 11898-1:2024 and CiA 610-1 specifications, with support for CAN CC, CAN FD, and CAN XL frames. Its flexible data rates, Autosar support, and SAE J1939 compatibility make it a versatile solution for a wide range of applications.

Digital Core Design (DCD) is a provider of semiconductor IP cores, specializing in solutions for automotive, industrial, and consumer electronics applications. With a focus on innovation and quality, DCD's IP cores are trusted by leading companies worldwide to power their most demanding designs. This year, DCD is celebrating its 25<sup>th</sup> anniversary, operating in the IP core market since 1999. ◀

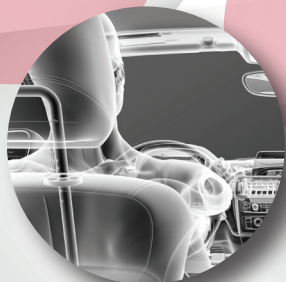
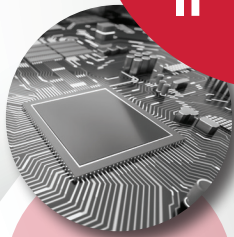


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## CAN Controller IP Core



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