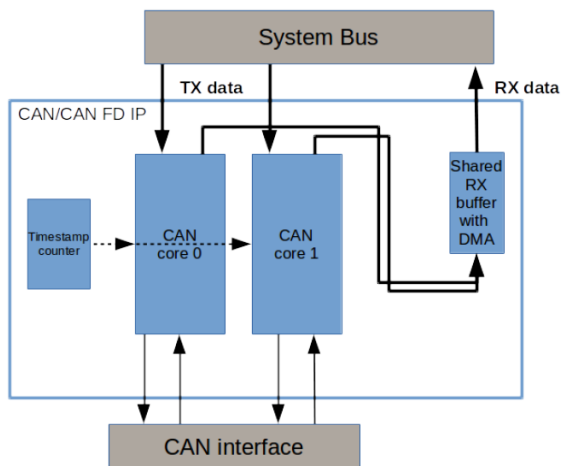


CAN/CAN FD IP Product Brief



In Short

A CAN (Controller Area Network) is a multicast multimaster serial bus commonly used in automotive and industrial applications. The IP conforms to the CAN/CAN FD (Flexible Data-Rate) standard ISO 11898-1:2015 and is 100% compliant to the Bosch reference model. It supports standard CAN bus speeds between 1 kbit/s to 1Mbit/s and CAN FD data phase bit rates of up to 13.333 Mbit/s at 3 clock cycles per bit with a 40 MHz clock.

The IP may be configured to contain multiple CAN cores. These will share a receive buffer and timestamp counter, potentially saving precious resources. Data can be transferred to the host system either by reading the shared receive buffer, or using its low-latency DMA solution.

The IP is delivered as a system bus interfaceable core bundled with demo software to allow for easy integration. The bus type varies between platforms. It is also possible to directly interface the BSP (Bit Stream Processor) block. This is the core module of the IP, stripped of buffers and many features, thus making it very small. Approximate resource usage is 1,100 4-input LUTs and 330 registers.

Features

- CAN FD, both ISO and non-ISO
- CAN 2.0A and 2.0B
- Small Footprint
- System Bus Interface
- Multiple Channels
- Configurable Hardware Buffer Size
- Status Updates in Data Stream
- Interrupt Logic
- Low-Latency DMA with Interrupt Rate Adaptation
- Transmit Rate Adaptation
- Timestamps
- Listen Only-mode
- Self-Listen-Mode
- Auto Acknowledge Mode
- Single Shot Mode
- Separate System Bus and Core Clocks
- Support for Xilinx, Intel, Lattice and Microsemi FPGAs

Sample Build Sizes

The IP has been designed to have a small resource usage. Approximate build results for a few different settings are shown in the table below.

Setup	4-input LUTs	Registers
CAN core, RX buffer	2 400	1 200
CAN core, RX buffer with DMA	2 500	1 300
CAN core, RX buffer with DMA, Timestamps	2 700	1 600
CAN core, RX buffer with DMA, Timestamps, Bus synchronization	2 900	1 800



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Synective Labs - The FPGA Experts

Synective Labs is specializing in FPGA technology and FPGA based solutions with focus on high performance systems. Our offerings range from development of complete systems to assisting in our customers' development process, helping them to design better products. We operate in a wide range of technology fields like Automotive, Telecommunication and Image Processing where we have long experience and specific domain knowledge.



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