

# CAN SIC XL Transceivers

## TJA1482 and TJA1483



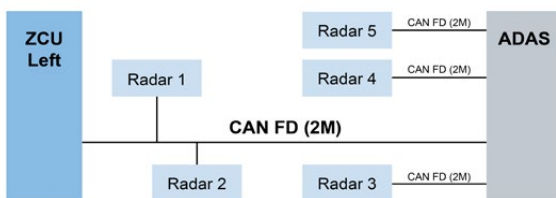
CAN SIC XL was initiated in 2018 and first standardized in 2024 (latest ISO 11898 1:2026) to handle large data coming from ADAS, autonomous driving, connected services and bridge the gap to automotive Ethernet by supporting Ethernet frame tunnelling. CAN SIC XL keeps CAN's strengths of efficient arbitration and robustness while supporting co-existence with CAN and CAN FD networks. In short, CAN SIC XL will be essential for software-defined vehicles and zonal architectures.

CAN SIC XL supports data rates up to 20 Mbit/s and payloads of 2048 bytes, ensuring ultra-low microsecond latency—even across expansive networks with extended stubs and diverse topologies. In addition to Signal Improvement Capability (SIC) mode, CAN SIC XL introduces a FAST mode, which translates a TXD PWM signal into symmetrical differential bus signals. This enables consistently high data rates, helping build larger network architectures without the cost and complexity of subnetworks.

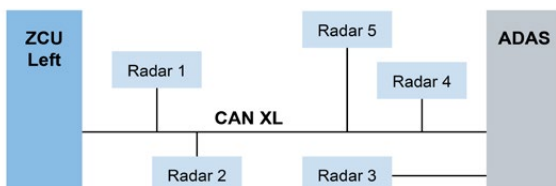
CAN SIC XL brings value to multiple use cases such as increased bandwidth applications. Consider an ADAS/radar example where multiple CAN FD sub-branches can be merged into a single CAN XL branch saving transceivers, cable and connectors.

Large payload applications become easier as well with CAN XL. For Battery Management Systems (BMS), with the amounts of battery cell measurements increasing, higher update frequencies and better bus load margins can be enabled. In corner radars and predicted increases in object detection from 30 to 50–60 objects, data segmentation can be prevented. CAN XL can also be used as a low-latency and low-cost service channel (using Ethernet tunnelling over CAN XL) and a diversified fail-safe back-up channel for Ethernet.

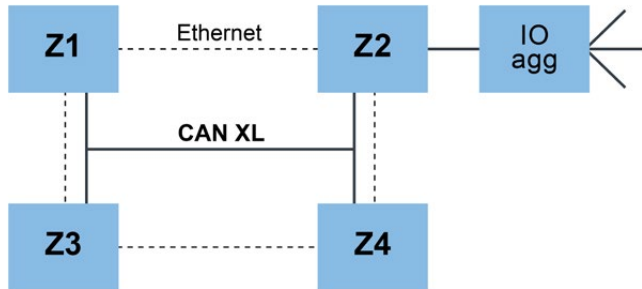
### CAN FD based



### CAN XL based



## Diversified zonal redundancy



Finally, brake-by-wire, steer-by-wire and advanced ADAS/radar features common in electric vehicles and mandatory for autonomous driving, are latency critical application best enabled by CAN SIC XL.

## NXP's CAN SIC XL portfolio

This generation introduces two new devices:

- **TJA1482:** Standby CAN SIC XL (pin-to-pin compatible with TJA1044)
- **TJA1483:** Sleep CAN SIC XL (pin-to-pin compatible with TJA1043)

The new devices maintain the same pinout as the latest CAN FD generation to ensure smooth and effortless migration for existing designs.

## Key features

### Predictable and fail-safe behaviour

All supply pins for undervoltage are monitored and handled in a controlled way. Reliable operation between the undervoltage threshold and the maximum voltage limits is guaranteed. Below the threshold behaviour is clearly defined and predictable. If voltage drops too low (off mode), the transceiver disconnects from the bus (high impedance).

### Low-power management

- 21  $\mu$ A standby mode or 26  $\mu$ A sleep mode with host, local and CAN bus wake-up support
- Wake-up detection uses a fast pattern filter (0.15–0.95  $\mu$ s) compatible with Classical CAN, CAN FD, and CAN XL

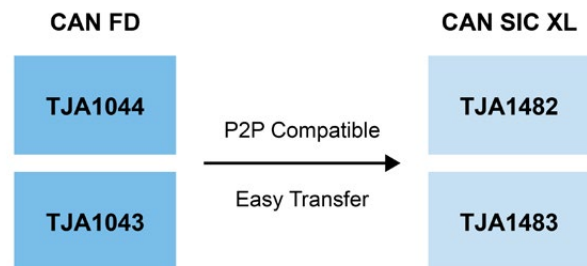
- Supports the standardized four-stage CAN wake-up pattern defined in ISO 11898-2:2024
- Entire node can be powered down while still maintaining all wake-up capabilities (TJA1483)

### Protection

- Thermal protection and diagnostics including overtemperature, bus dominant bus failure and cold start (first battery connection)
- Transmit Data (TXD) dominant time-out and TXD-to-RXD short-circuit handler with diagnosis
- MCU reaction timeout and FAST transmit mode PWM symbol time-out function
- High ESD handling capability on the bus pins. Bus pins and VBAT protected against transients in automotive environments
- ListenOnly mode for node diagnosis and failure containment (TJA1483)

All variants are fully developed to ISO 26262 ASIL B systematics, and are part of NXP's SafeAssure program.

## Migration path



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