



LIN 2.0/SAE-J2602 standalone transceiver TJA1021

Shift your automotive LIN applications to the next level

The rapid adoption by automotive makers of the LIN 2.0 protocol has made this cost-effective, low-speed serial communication system bus the natural choice for arbitration-free local communications. Optimized for reliable and cost-effective LIN master and slave node implementations, with its sleep current consumption $< 10\mu\text{A}$ and providing IEC-61000-4-2 compliant $\pm 6\text{ kV}$ ESD protection, the TJA1021 gives you the leading-edge when creating LIN systems.

Key features

- ▶ LIN 2.0 / SAE J2602 compliant transceiver
 - Choice of baud-rates: 20 kbps (LIN 2.0) and 10.4 kbps (SAE J2602)
 - Each version available in three package options - SO8, HVSON8 and bare die
- ▶ ESD protection of $\pm 6\text{ kV}$ compliant with IEC-61000-4-2
- ▶ Sleep current less than $10\mu\text{A}$
- ▶ Outstanding EMC performance
 - Very low ElectroMagnetic Emission (EME)
 - High ElectroMagnetic Immunity (EMI)
- ▶ Passive behavior in unpowered state
- ▶ Transmit data (TXD) dominant time-out function
- ▶ 'LIN-shorted-to-ground' protection
- ▶ Input levels compatible with 3.3 V and 5 V devices
- ▶ Integrated termination resistor for LIN slaves
- ▶ Wake-up source recognition (local / remote)
- ▶ Bus terminal and battery pin protected against transients in the automotive environment (ISO7637)

Key benefits

- ▶ Helps meet car maker's ESD requirements without the need for external components
- ▶ Low quiescent current ($< 10\mu\text{A}$) helps meet more relaxed current consumption targets
- ▶ Leadless HVSON8 package offers 60% board space reduction compared to SO8
- ▶ Fail-safe features allowing easier design-in
- ▶ Easily interfaces with a wide range of microcontrollers
- ▶ Zero reverse bus current allows partial networking without introducing extra network design complexity
- ▶ Drop-in replacement for TJA1020

LIN lets you easily interconnect locally applied sensors, actuators and switches (in switch panels, door and seat modules for example) to the CAN backbone with a standardized front end. This helps significantly reduce costs and design-in effort for a wide range of human reaction time triggered applications, such as powered mirrors and windows.

Combining a sleep current consumption $<10\mu\text{A}$ and with an ESD performance of $\pm 6\text{kV}$ (IEC61000-4-2), the TJA1021 brings a robust, high performance transceiver to your automotive LIN systems. The IC interfaces the master/slave protocol controller to the physical bus. It is optimized for automotive sub-bus applications using baud rates up to 20 kBaud. To minimize EME, the controller's transmitted data stream at the TXD input is converted into a bus signal with optimal slew rate and wave shaping. The receiver detects the data stream and transfers it to the microcontroller. Moreover, in an HVSON8 package, the TJA1021 frees up 60% board space compared to an SO8.

The next comfort level

Drivers and passengers want their journeys to be safer and more comfortable, allowing them to relax while they travel. Much of this assurance comes from improvements in secure automotive network design, which in turn depends significantly on the robust quality of the transceiver.

Manufactured in our 3rd generation SOI (Silicon-On-Insulator) technology – developed specially to handle power, analog and digital devices on a single die – the TJA1021 delivers the steadfast performance you need to achieve higher levels of system reliability. With built-in protections, fail-safe features and passive behaviour when unpowered, the solution combines ruggedness with lower design risk, shorter time-to-market and reduced system costs. The end result virtually eliminates any potentially perilous miscommunication in the electrically noisy and hazardous automotive environment.

