

LIN transceiver TJA1020

An easy first step to simplifying sub-bus applications

Strengthening our leadership in IVN solutions the TJA1020 dedicated LIN transceiver is an essential component in any automotive LIN system. Ideal for solid and cost-effective LIN master and slave node implementations, this first IC in NXP's growing LIN family offers best-in-class EMC and power consumption and boasts a range of built-in features.

Key features

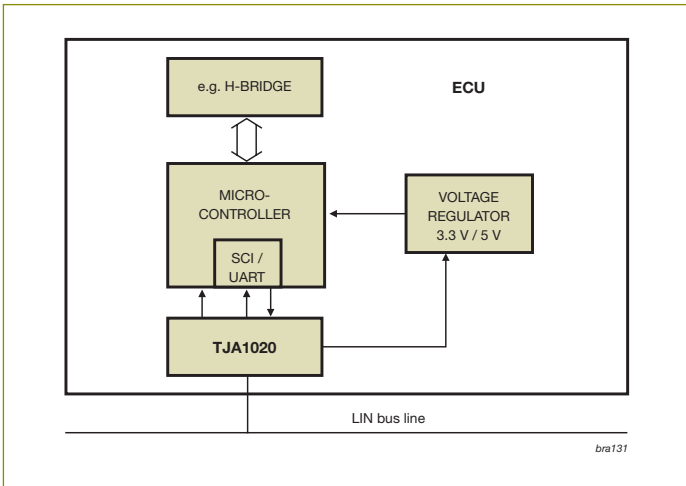
- ▶ Baud rate up to 20 kBaud
- ▶ Very low Electromagnetic Emission (EME) and high Electromagnetic Immunity (EMI)
- ▶ Low-slope mode further reduces EME
- ▶ Passive behavior in unpowered state
- ▶ Input levels compatible with 3.3 and 5 V devices
- ▶ Integrated termination resistor for LIN slave applications
- ▶ Wake-up source recognition (local or remote)
- ▶ Supports K-line like functions
- ▶ 'LIN shorted to ground' protection
- ▶ Very low current consumption in sleep mode with local and remote wake-up capability

Key benefits

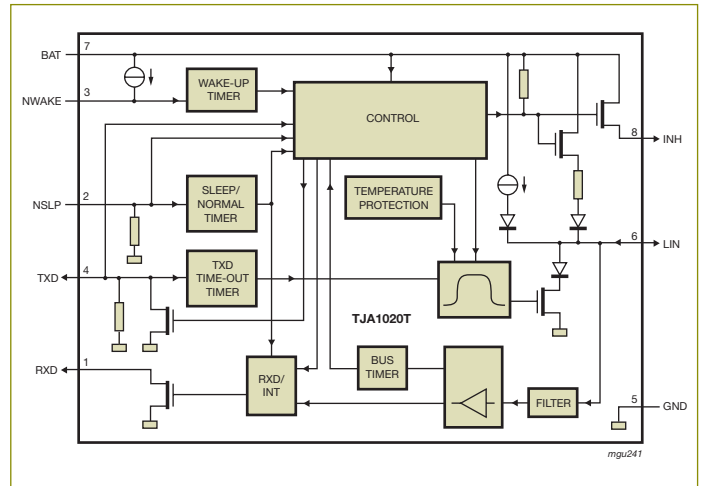
- ▶ Capable of directly driving voltage regulator, allowing use of lower-cost regulators
- ▶ Best-in-class low power consumption (3 μ A for entire node)
- ▶ Transmit data (TXD) dominant time-out function prevents network lock-up
- ▶ Best-in-class Electromagnetic Compatibility (EMC) performance verified by independent tests

The TJA1020 interfaces the master / slave protocol controller to the physical bus in a Local Interconnect Network (LIN). It is a general-purpose stand-alone LIN transceiver, ideal for in-car sub-bus applications using baud rates from 2.4 to 20 kbaud. With I/O levels compatible with 3.3 V and 5 V devices, it can be designed-in with a wide range of microcontrollers. On-chip circuitry safeguards against transients while LIN-to-ground short-circuit protection prevents battery discharge. Along with a TxD-dominant monitor, they ensure the TJA1020 is completely fail-safe. Moreover, the TJA1020 exhibits completely passive behavior in its unpowered state.

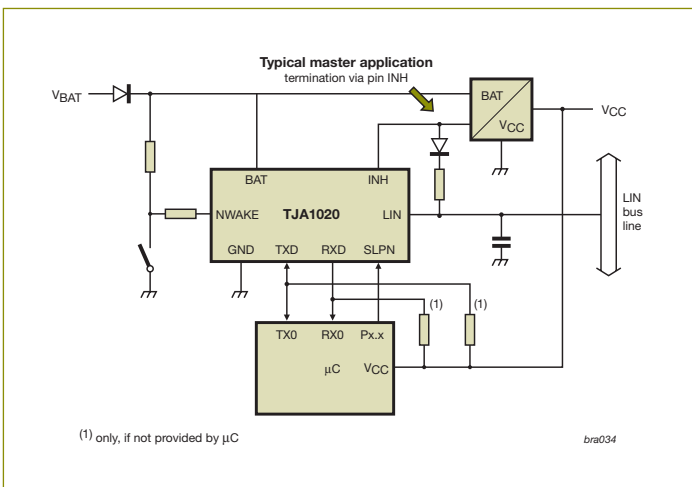
Solid automotive network design heavily depends on the robustness of the transceiver. However, a challenging factor of single-wire bus systems like LIN is EMC. The TJA1020 boasts best-in-class EMC performance together with high EMI and extremely low EME, which can be further reduced by using the 'low slope' operating mode. Despite its extreme low current consumption in sleep, the TJA1020 will adequately react on any valid local or remote wake-up event.



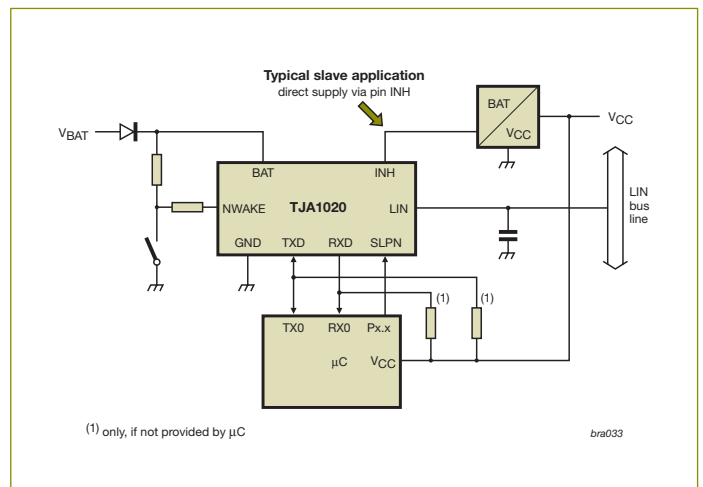
Typical LIN ECU



TJA1020 block diagram



Typical LIN master application



Typical LIN slave application

