



Fault-Tolerant CAN transceivers TJA105x

Proven performance ensures automotive applications can always communicate

As the major proponent of CAN solutions since this networking standard was introduced, NXP continues its industry-leading strategem with innovative developments. Fully ISO 11898-3 compliant, our fault-tolerant FT-CAN transceivers now carry the added benefits of our robust SOI process technology to offer excellent EMC performance.

Key features

- ▶ TJA1054 – ‘golden device’ for defining ISO 11898-3 (FT-CAN) standard
- ▶ Excellent EMC performance, both EMI and EME
- ▶ Enhanced bus failure management
- ▶ Low power mode, with remote and local wake-up capability (also during bus failures)
- ▶ Supports unshielded bus wires and chokeless networks
- ▶ Integrated temperature protection
- ▶ Slope control and receive filtering
- ▶ TXD dominant time-out function
- ▶ Improved error signaling and behavior during ‘power-loss’ situations
- ▶ Passive behavior while unpowered
- ▶ Baud rate up to 125 kbaud
- ▶ Up to 32 nodes can be connected
- ▶ SO14 package and bare die options
- ▶ Battery supply can be as low as 5 V

Additional features of TJA1054A

- ▶ 100% compatible with TJA1054
- ▶ Improved ESD performance (± 4 kV Human Body Model)
- ▶ C&S certified for ISO 11898-3 compliance

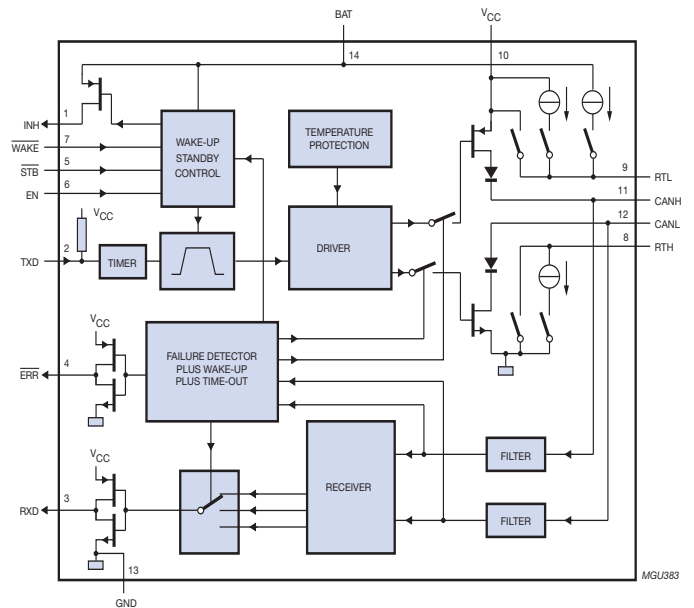
Additional features of TJA1055

- ▶ 100% compatible with TJA1054(A)
- ▶ Improved ESD performance ± 8 kV Human Body Model (± 6 kV IEC 61000-4-2)
- ▶ Dedicated 3 V version for interfacing with low-voltage microcontrollers
- ▶ C&S certified for ISO11898-3 compliance

The de-facto body network standard in Europe, 125 kBaud Fault-Tolerant (FT) CAN physical layer maintains functionality in the case of a broken or shorted bus wire. This is of great importance in areas where such failures can occur, particularly seat, door, and roof nodes which are especially vulnerable. If such a fault condition occurs the FT-CAN node simply switches to single-wire operation. Automatic detection of bus system recovery then automatically returns the transceiver to differential mode when the failure has been cleared.

Involved in the development of FT-CAN transceivers since the inception of this physical layer, NXP continues to introduce enhanced performance and improved functionality. The original PCA82C252 has been succeeded first by the TJA1053, then the TJA1054 and the TJA1054A, which features advanced Bus Failure Management functionality and improved EMC performance through the use of Silicon-On-Insulator (SOI) technology. In fact, during the definition of the ISO 11898-3 FT-CAN standard, the TJA1054 was used as the 'golden device' and became the de-facto FT-CAN transceiver standard due to its excellent performance on the road.

The latest member of the FT-CAN family is the TJA1055, a drop-in replacement for TJA1054(A). Using next generation of SOI technology it offers significant improvements in ESD, EMC and power consumption. Two versions are available, the TJA1055T which is capable of interfacing with 5 V microcontrollers and TJA1055T/3 for 3 and 3.3 V devices.



Block diagram of TJA1055

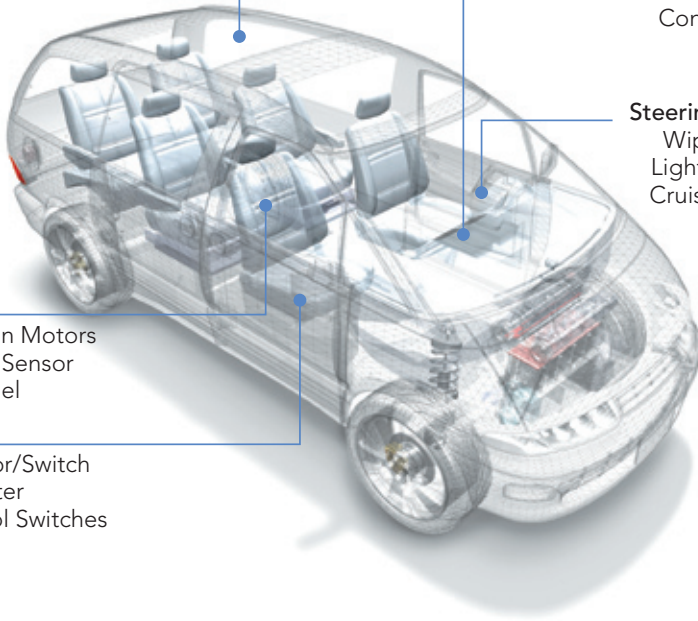
Roof:
 Rain Sensor
 Light Sensor/Control
 Sun Roof

Climate:
 Small Motors
 Control Panel

Steering Wheel:
 Wiper Switch
 Light Switches
 Cruise Control

Seat:
 Seat Position Motors
 Occupancy Sensor
 Control Panel

Door:
 Mirror Motor/Switch
 Window Lifter
 Seat Control Switches
 Door Lock



FT-CAN applications