

NXP HS-CAN transceiver TJA1145 & SBC UJA1168 for partial networking

Take advantage of partial networking

These two devices, an HS-CAN transceiver and a system basis chip, let manufacturers reap the benefits of partial networking (PN). They optimize power consumption and help increase energy efficiency in conventional cars and new eVehicles.

Key features

- ▶ Optional “selective” wake-up function according to NWP ISO11898-6
- ▶ Wake-up only by special messages in PN mode
- ▶ Wake-up on any CAN message if PN mode disabled
- ▶ Available for high-speed CAN up to 1 MBaud
- ▶ Compatible with ISO11898-2/-5
- ▶ Similar footprint to TJA1041A and TJA1043, for easy upgrade
- ▶ Quiescent current below 50 μ A (bus inactive)
- ▶ NWP ISO 11898-6 compliant
- ▶ Available in SO14 and HVSON14 packages

Benefits

- ▶ Switch off inactive ECUs
- ▶ Reduce current to less than 1 mA (bus active)
- ▶ CO₂ reduction up to 2.6 g/km per vehicle - resulting in cost advantage of 247 € (considering a fee of 95 €/g CO₂/km in 2015)
- ▶ Makes sub-network design more flexible
- ▶ Autonomous biasing ensures ideal EMC behavior

The NXP solution for partial networking includes two devices that optimize energy efficiency: the TJA1145, a high-speed CAN (HS-CAN) transceiver, and the UJA1168, a system basis chip (SBC) for small electronic control units (ECUs) in body and comfort applications.

The TJA1145 and UJA1168 optimize the energy efficiency of the car by allowing inactive ECUs to remain in low-power mode while other ECUs remain active on the bus. Partial networking enables to switch off ECUs that aren't in use. The switched-off ECUs can still listen for special wake-up messages, but don't impact the other ECUs on the bus. The ECUs are only activated when needed by receiving selective wake-up messages, resulting in a more efficient and cost-effective operation.

In eVehicles, the reduction of energy consumption with the partial networking approach increases cruising range. Battery charging requires a minimum of modules to be active on the CAN bus, while the remaining modules can be kept inactive. This saves energy while charging, and helps increase reliability over the vehicle's lifetime.



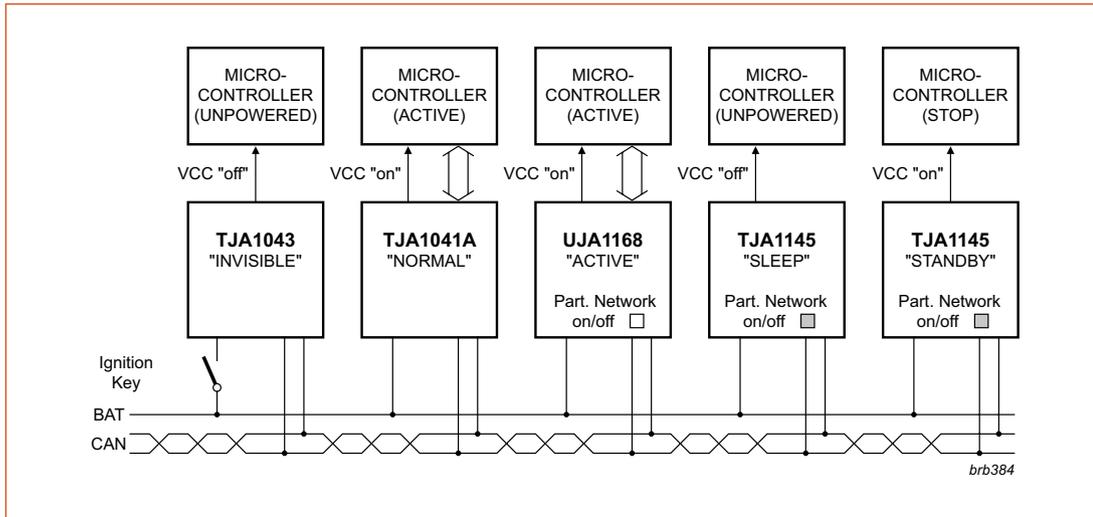
The TJA1145 can also be used to enhance vehicle features. Many more functions can be enabled during ignition off, as unused ECUs do not drain the battery.

The TJA1145 and the UJA1168 both support operation with and without selective wake-up function. They also deliver high EMI robustness and low EME. No additional hardware is required to

implement the PN functions. The required software updates come with Autosar version 3.2.1 and higher.

The partial networking function can be implemented just on defined ECUs on the bus; hardware of ECUs that don't use the PN feature do not need to be changed.

Sample TJA1145/UJA1168 application



TJA1145 block diagram

