

## AS8221

## High Performance Bus Transceiver

## PRODUCT BRIEF

## General Description

The AS8221 is a high-speed automotive transceiver for fault tolerant and high speed applications, operating as the bi-directional interface between a generic communication controller and the twisted pair copper wires. The device enables two-way communications with the microcontroller with full mode handling, including the low-power modes.

Package: lead-free SSOP20

## Functional Description

Transmission rates up to 10 Mbps as well as the implemented Bus Guardian interface enables this transceiver the usage in fault tolerant and hard real-time applications in the stringent automotive environment.

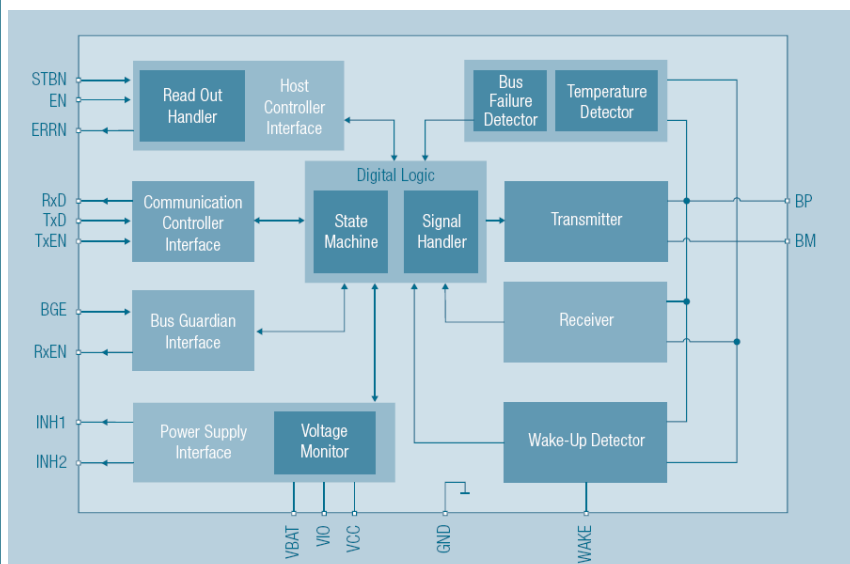
An extended diagnostic interface, offers advanced bus-failure detection capabilities with the intelligent combination of bus-current measurement and logical comparators. A thermal sensor circuit with an integral shutdown mechanism prevents damage to the device in extreme temperature conditions. The symmetrical transient control for the high- and low-side driver for both the bus-minus and bus-plus line allows an ideal balance of communications over different network topologies, with excellent EMC performance.

## Applications

- FlexRay™ networks
- High speed automotive bus systems
- Backbone bus and gateways
- Safety critical applications
- X-by-wire systems
- Redundant bus systems
- Bus topologies with active stars

## Key Features

- Data transfer up to 10 Mbps
- Supports 2.5, 3, 3.3, 5 V microcontrollers and automatically adapts to interface levels
- Does not disturb the bus line when un-powered
- Fail silent behaviour
- Protection against damage due to short circuit conditions on the bus (positive and negative battery voltage)
- Supports 12, 24, 42 V systems with low sleep current (30 µA)
- Integrated power management system
  - o Two INH pins for the external voltage
  - o Local wake-up input via STBN-, WAKE- and TxD-Pins
  - o Remote wake-up capability via FlexRay™ bus in sleep mode
- Operating temperature range -40°C to +125°C
- Compliant with FlexRay™ Electrical Physical Layer specification
  - Excellent EMC performance
  - High common mode range insure excellent signal integrity on diverse bus topologies
  - Bus guardian Interface for optional bus supervision
  - Automatic thermal shutdown protection



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**Pin Description**

| Pin | Pin Name | Pin Type | Notes                                         |
|-----|----------|----------|-----------------------------------------------|
| 1   | INH2     | AIO      | Inhibit switch floating in standby/sleep mode |
| 2   | INH1     | AIO      | Inhibit switch floating in sleep mode         |
| 3   | EN       | DI_PD    | Enable input                                  |
| 4   | VIO      | S        | I/O supply voltage                            |
| 5   | TxD      | DI_PD    | Transmission data input                       |
| 6   | TxEN     | DI_PU    | Transmission data enable                      |
| 7   | RxD      | DO       | Receive data output                           |
| 8   | BGE      | DI_PD    | Bus guardian enable                           |
| 9   | STBN     | DI_PD    | Standby input                                 |
| 10  | Not used |          |                                               |
| 11  | Not used |          |                                               |
| 12  | RxEN     | DO       | Receive data enable output                    |
| 13  | ERRN     | DO       | Error diagnosis output                        |
| 14  | VBAT     | S        | Battery supply voltage                        |
| 15  | WAKE     | AIO      | Local wakeup input                            |
| 16  | GND      | S        | Ground                                        |
| 17  | BM       | AIO      | Bus line Minus                                |
| 18  | BP       | AIO      | Bus line Plus                                 |
| 19  | VCC      | S        | Supply voltage                                |
| 20  | Not used |          |                                               |

**PIN Types:**

S.....supply pad  
 AIO.....analog I/O  
 DI .....digital input  
 DI\_PU .....digital input with pull-up  
 DI\_PD .....digital input with pull-down  
 DIO\_PU.....digital I/O with pull-up  
 DIO\_PD.....digital I/O with pull-down  
 DIO\_T .....digital I/O / tristate  
 DO.....digital output  
 DO\_OD .....digital output open drain

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