

AMI Semiconductor

AMIS-4168x Fault Tolerant CAN Transceiver

Key Features

- Support for 3.3V and 5V CAN controller interface
 - 3.3V interface: AMIS-41683
 - 5V interface: AMIS-41682
- Fully compatible with the "ISO 11898-3" standard
- Optimized for in-car low-speed communication
 - Baud rate up to 125kBaod
 - Up to 32 nodes can be connected
 - Very low electromagnetic emission (EME) due to built-in slope control function and a very good matching of the CANL and CANH bus outputs
 - Fully integrated receiver filters
 - Permanent dominant monitoring of transmit data input
 - Differential receiver with wide common-mode range for low electromagnetic susceptibility (EMS) in normal- and low-power modes
 - ESD protection guaranteed up to +/-8KV
 - Transmit data (TxD) dominant time-out function
- Management in case of bus failure
 - In the event of bus failures, automatic switching to single-wire mode, even when the CANH bus wire is short circuited to Vcc
 - The device will automatically reset to differential mode if the bus failure is removed
 - During failure modes there is full wake-up capability
- Protection
 - Short-circuit proof to battery and ground



- Thermal protection
- The bus lines are protected against transients in an automotive environment
- An un-powered node does not disturb the bus lines
- Support for low power modes
 - Low current sleep and standby mode with wake-up via the bus lines
 - Power-on-reset flag on the output
 - Two-edge sensitive wake-up input signal via pin SLEEP

Product Description

The AMIS-41682 and the AMIS-41683 are fault tolerant CAN transceivers with 5V and 3.3V compatible interfaces to the CAN controller. The transceivers work as the interface between the CAN protocol controller and the physical wires of the CAN bus. They are primarily intended for low speed applications, up to 125kBaod, in passenger cars. The devices provide differential transmit capability to the CAN bus and differential receive capability to the CAN controller.

To reduce EME, the rise and fall slope are limited. Excellent matching of CANL and CANH output stages that allow the use of an unshielded twisted pair or a parallel pair of wires for the bus lines.

The symmetry of the outputs is guaranteed through the parameters $V_{CM-peak}$ and $V_{CM-step}$.

The failure detection logic automatically selects a suitable transmission mode, differential or single-wire transmission.

These products consolidate the expertise of AMIS in car multiplex transceivers and adds to the growing line of transceiver products currently available: AMIS-30522 (VAN), AMIS-30660 and AMIS-30633 (CAN high-speed 5V and 3.3V), AMIS-30600 (LIN), and AMIS-42665 (CAN high-speed 5V - low power, sleep and Vsplit circuit).

Important Characteristics

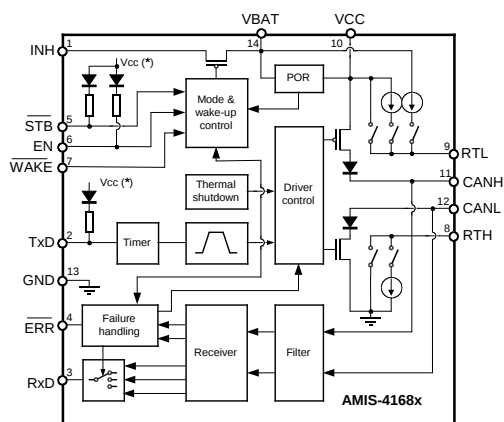
Symbol	Parameter	Conditions	Min.	Max.	Units
V_{CANH}	DC voltage at pin CANH, CANL	$0 < V_{CC} < 5.25V$; no time limit	-40	+40	V
V_{bat}	Voltage at pin Vbat	Load-dump		40	V
$V_{CM-peak}$	Common-mode peak	See data sheet	-1.5	1.5	V
$V_{CM-step}$	Common-mode variation	See data sheet	-0.5	0.5	V

Note: The parameters $V_{CM-peak}$ and $V_{CM-step}$ guarantee low electromagnetic emission.

AMIS-4168X - Fault Tolerant CAN Transceiver Feature Sheet

Pin Description

Block Diagram



The diagram illustrates the electrical connection between a CAN controller and the AMIS-41682 IC. The CAN controller is connected to the AMIS-41682 via its control and data pins. The AMIS-41682 is powered by a 5V regulator connected to its VBAT pin. The CAN bus lines (CANL and CANH) are connected to the CANL and CANH pins of the AMIS-41682. The diagram also shows a CAN BUS LINE and a CAN BUS LINE terminal.



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