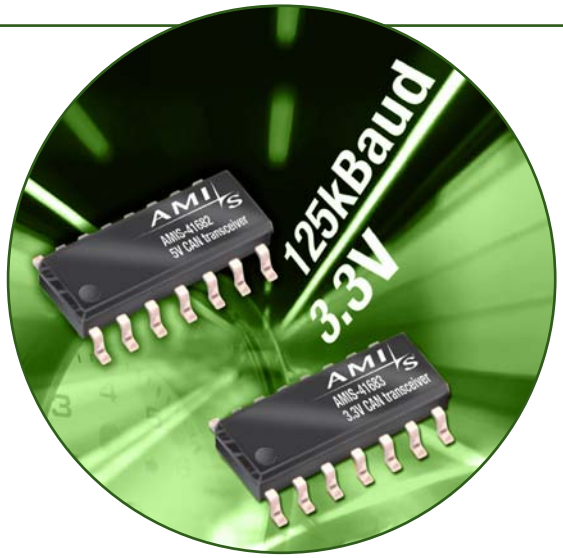
AMIS-4168x - Fault Tolerant CAN Transceiver Feature Sheet

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 125kBaud
  - 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 125kBaud, 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 < Vcc < 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.

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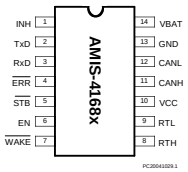
Ordering Codes

Part N°	AMIS-41682AGA	Part N°	AMIS-41683AGA
I/O Voltage	5.0V	I/O Voltage	3.3V
Package	SOIC 150 14 Green & Idem	Package	SOIC 150 14 Green & Idem
Temp. Range	-40°C…125°C	Temp. Range	-40°C…125°C

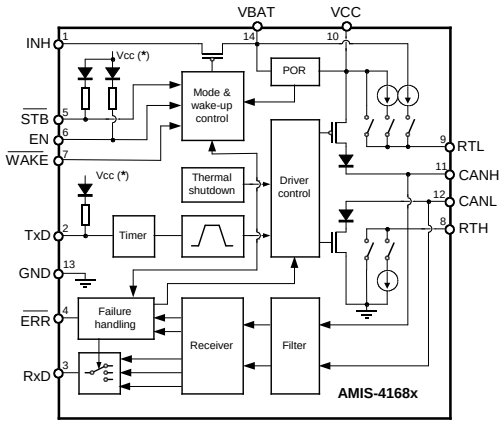


Contact your local sales office at www.amis.com/sales for more information.

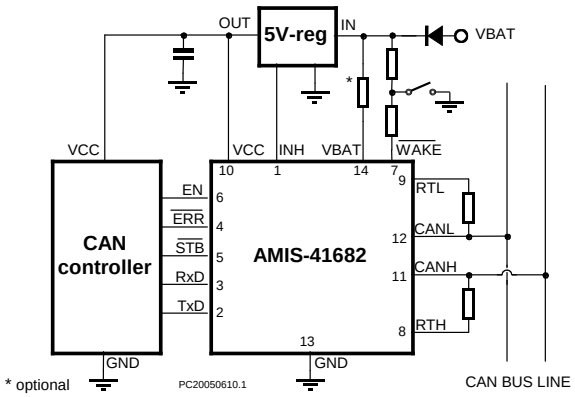
Pin Description

Pin	Name	Description
1	INH	Inhibit output for external voltage regulator
2	TxD	Transmit data input; internal pull-up current
3	RxD	Receive data output
4	ERR-B	Error; wake-up and power-on flag; active low
5	STB-B	Standby digital control input; active low; pull-down resistor
6	EN	Standby digital control input; active high; pull-down resistor
7	WAKE-B	Enable digital control input; falling and rising edges are both detected
8	RTH	Pin for external termination resistor at CANH
9	RTL	Pin for external termination resistor at CANL
10	VCC	5V supply input
11	CANH	Bus line; high in dominant state
12	CANL	Bus line; low in dominant state
13	GND	Ground
14	BAT	Battery supply

Block Diagram



Typical Application



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