

## Automotive Audio Bus A<sup>2</sup>B Transceiver

## AD2401/AD2402/AD2403/AD2410

## **A2B BUS FEATURES**

### Line topology

Single master, multiple slave Up to 10 m between nodes and up to 40 m overall cable length Communication over distance Synchronous data Multichannel I<sup>2</sup>S/TDM to I<sup>2</sup>S/TDM Clock synchronous, phase aligned in all nodes Control and status Information I<sup>2</sup>C to I<sup>2</sup>C Phantom power or local power slave nodes Configurable with SigmaStudio<sup>™</sup> graphical software tool Qualified for automotive applications

## **ADDITIONAL TRANSCEIVER FEATURES**

Configurable as A<sup>2</sup>B bus master or slave (AD2403/AD2410) I<sup>2</sup>C interface 8-bit to 32-bit multichannel I<sup>2</sup>S/TDM interface Up to 32 upstream channels or combination with up to 32 downstream channels I<sup>2</sup>S/TDM or PDM microphone inputs

## **APPLICATIONS**

Automotive audio communication link

- **Communication network for:**
- Microphones/speakers
- Sensor/actuator
- I<sup>2</sup>C peripherals

## **GENERAL DESCRIPTION**

The Automotive Audio Bus ( $A^2B^{\circledast}$ ) provides a multichannel, I<sup>2</sup>S/TDM link over distances of up to 10 m between nodes. It embeds bidirectional synchronous data (for example digital audio), clock, and synchronization signals onto a single differential wire pair.  $A^2B$  supports a direct point to point connection and allows multiple, daisy-chained nodes at different locations to contribute or consume time division multiplexed channel content.  $A^2B$  is a single-master, multiple-slave system where the transceiver chip at the host controller is the master. It generates clock, synchronization, and framing for all slave nodes. The master  $A^2B$  chip is programmable over a control bus (I<sup>2</sup>C) for configuration and read back. An extension of this control bus is embedded in the  $A^2B$  data stream allowing direct access of registers and status information on slave transceivers as well as I<sup>2</sup>C to I<sup>2</sup>C communication over distance.

Complete technical specifications are available for the A<sup>2</sup>B transceiver. Contact your nearest Analog Devices sales office to complete the nondisclosure agreement (NDA) required to receive additional product information.

### Table 1. Product Comparison Guide

Feature	AD2401	AD2402	AD2403	AD2410
Master capable	No	No	Yes	Yes
Functional TRX blocks	A only	A + B	A + B	A + B
I <sup>2</sup> S/TDM support	No	No	Yes	Yes
PDM microphone inputs	4 Mics	4 Mics	None	4 Mics
Maximum node to node cable length	10 m	10 m	1 m	10 m

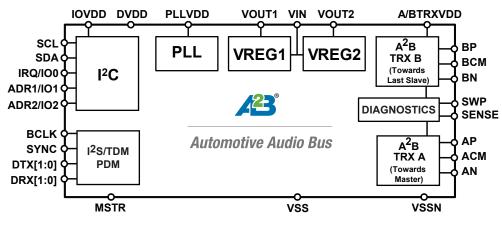


Figure 1. Functional Block Diagram

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# AD2401/AD2402/AD2403/AD2410

I<sup>2</sup>C refers to a communications protocol originally developed by Philips Semiconductors (now NXP Semiconductors).

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