

## 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™ 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<sup>2</sup>B®) 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<sup>2</sup>B 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<sup>2</sup>B 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<sup>2</sup>B 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<sup>2</sup>B 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

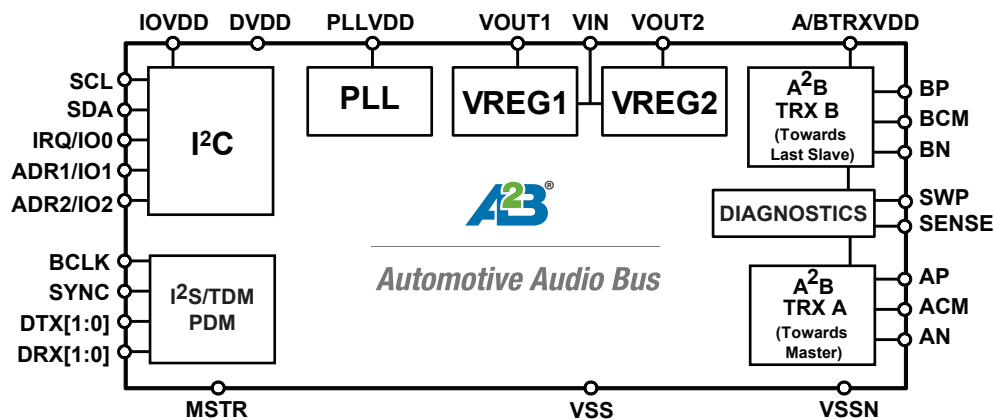


Figure 1. Functional Block Diagram

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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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