Automotive Audio Bus
A²B 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 I²S/TDM to I²S/TDM
    Clock synchronous, phase aligned in all nodes
  Control and status Information
    I²C to I²C
Phantom power or local power slave nodes
Configurable with SigmaStudio™ graphical software tool
Qualified for automotive applications

ADDITIONAL TRANSCEIVER FEATURES

Configurable as A²B bus master or slave (AD2403/AD2410)
I²C interface
8-bit to 32-bit multichannel I²S/TDM interface
Up to 32 upstream channels or combination with up to 32 downstream channels
I²S/TDM or PDM microphone inputs

APPLICATIONS

Automotive audio communication link
Communication network for:
  Microphones/speakers
  Sensor/actuator
  I²C peripherals

GENERAL DESCRIPTION

The Automotive Audio Bus (A²B®) provides a multichannel, I²S/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. A²B 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. A²B 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 A²B chip is programmable over a control bus (I²C) for configuration and read back. An extension of this control bus is embedded in the A²B data stream allowing direct access of registers and status information on slave transceivers as well as I²C to I²C communication over distance.

Complete technical specifications are available for the A²B 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
I²S/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
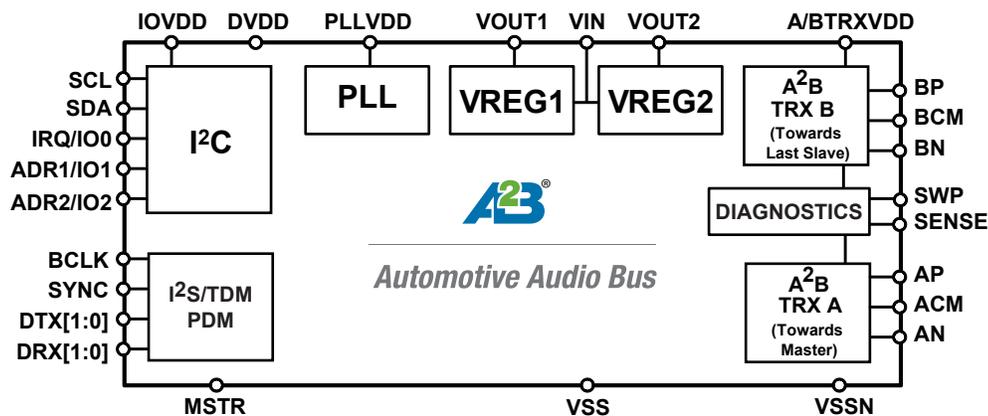
Figure 1. Functional Block Diagram

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I^2C refers to a communications protocol originally developed by Philips Semiconductors (now NXP Semiconductors).

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