

A2B BUS FEATURES

Line topology

Single master, multiple slave

Up to 15 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

Low latency slave to slave communication

Control and status information I²C to I²C

GPIO over distance

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 (AD2425W)

I²C interface

8-bit to 32-bit multichannel I²S/TDM interface

I²S/TDM/PDM programmable data rate

Up to 32 upstream and 32 downstream channels

PDM inputs for 4 high dynamic range microphones

APPLICATIONS

Automotive audio communication link

Active noise cancellation

Microphone arrays for hands free and in car communication

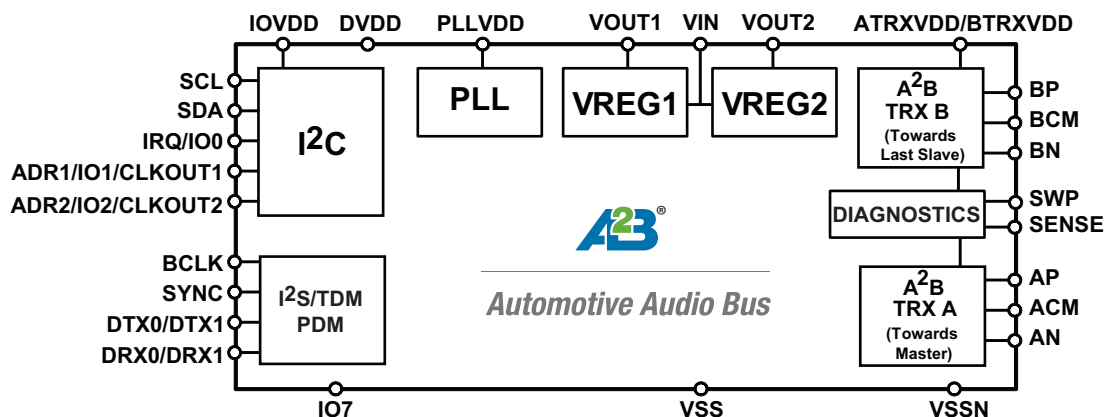
GENERAL DESCRIPTION

The Automotive Audio Bus (A²B[®]) provides a multichannel, I²S/TDM link over distances of up to 15 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. The master 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, which grants direct access of registers and status information on slave transceivers as well as I²C to I²C communication over distance.

Table 1. Product Comparison Guide

Feature	AD2421W	AD2422W	AD2425W
Master capable	No	No	Yes
Functional TRX blocks	A only	A + B	A + B
I ² S/TDM support	No	No	Yes
PDM microphone inputs	4 mics	4 mics	4 mics
Maximum node to node cable length	15 m	15 m	15 m

FUNCTIONAL BLOCK DIAGRAM



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I²C refers to a communications protocol originally developed by Philips Semiconductors (now NXP Semiconductors).