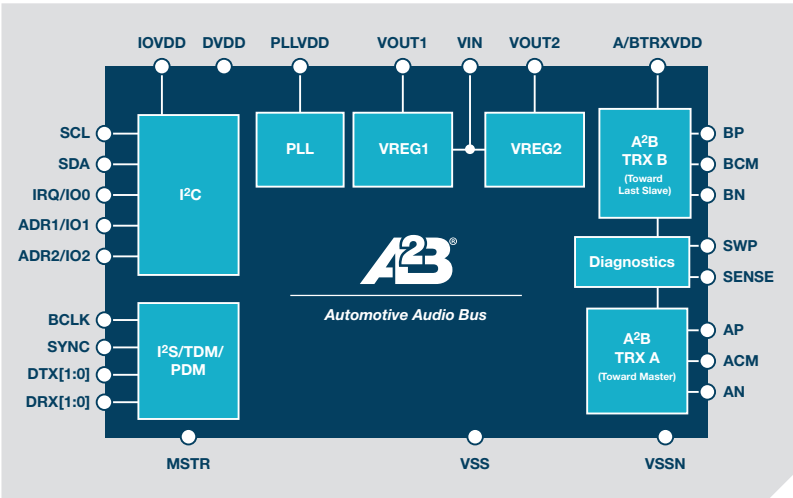
AD2401/AD2402/AD2410

Automotive Audio Bus Transceivers

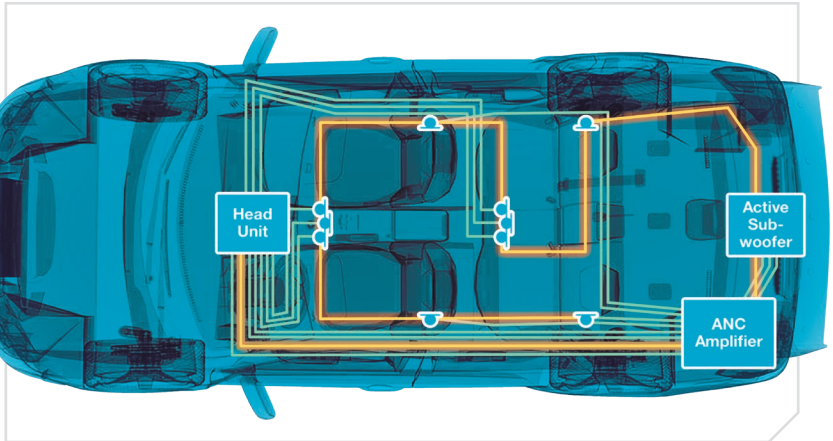
Overview

The Automotive Audio Bus® provides a multichannel, I²S/TDM link over distances of up to 10 meters between nodes. It embeds bidirectional synchronous data, clock, control data, and a power supply 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 readback. 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.



Target Applications Include

- Audio ECU communication links
- Active noise cancellation (ANC)
- Microphone arrays for hands-free and in-car communications systems



Hands-Free and ANC: Two Approaches

- Traditional approach: analog audio; many expensive cables and connectors.
- New approach: digital audio; single, low cost, unshielded twisted pair (UTP) wire transports audio, control, clock, and power.

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Features and Benefits

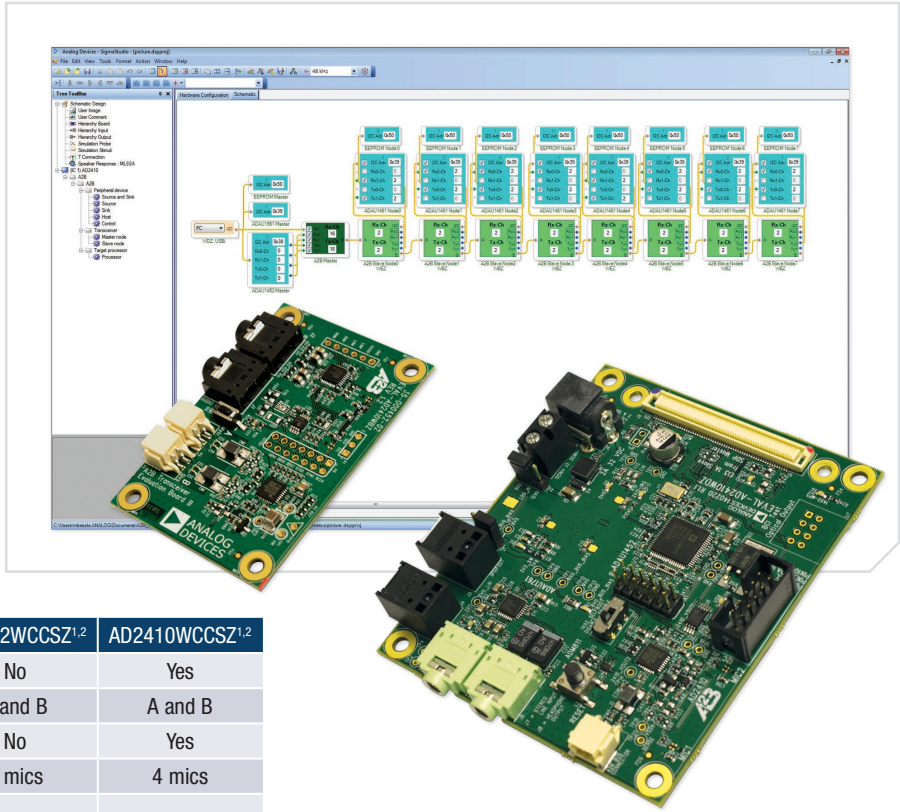
High bandwidth (50 Mbps) digital bus	Support for up to 32 upstream and downstream audio channels
Data, control, clock, plus power on a single wire pair	System cost reduction using low cost, UTP cable
Single master, multiple slave, line topology	Daisy-chaining supported with zero processor overhead
Phantom power capability	Eliminates the need for local power supplies
Embedded diagnostics	Easy system-level fault detection and correction
Fully configurable via SigmaStudio™ graphical design environment	Fast time to market

SigmaStudio Graphical Design Environment

- Visual bus setup and configuration
- Graphical user interface to view and configure all registers
- Bus bandwidth utilization calculation
- Bit error rate test (BERT)
- Line diagnostics
- Firmware driver generation

Multifunction Evaluation Systems

- Proof of concept
- Test and verification
- Debug, EMC testing



Product Comparison Guide

Feature	AD2401WCCSZ[1,2]	AD2402WCCSZ[1,2]	AD2410WCCSZ[1,2]
Master capable	No	No	Yes
Functional TRX blocks	A only	A and B	A and B
I²S/TDM support	No	No	Yes
PDM microphone inputs	4 mics	4 mics	4 mics
Maximum node-to-node cable length	10 m	10 m	10 m

Ordering Guide

Model	Description
EVAL-AD2410WBZ	Phantom power slave evaluation board; stereo in, stereo out, and stereo microphone
EVAL-AD2410WCZ	Phantom power slave evaluation board with three microphones
EVAL-AD2410WDZ	Master evaluation board with SigmaDSP® ADAU1452
EVAL-AD2410WFZ	Master evaluation board with SHARC® ADSP-21489
EVAL-AD2410WGZ	Local power slave evaluation board; stereo in, stereo out

[1] Z = RoHS compliant part.
[2] W = qualified for automotive applications.

To learn more about the breakthrough Automotive Audio Bus technology, watch the video at

www.analog.com/en/education/education-library/videos/3832751027001.html

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