AD2426W/AD2427W/AD2428W
Enhanced Automotive Audio Bus Transceivers

Overview

Automotive Audio Bus® technology provides a multi-channel, I²S/TDM link over distances of up to 15 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)
- Road noise cancellation (RNC)
- Microphone arrays for hands-free, in-car communications and eCall systems

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

SigmaStudio Graphical Design Environment

- Visual bus setup and stream-based network design
- Intuitive graphical user interface to configure the bus
- Export/import of streams, nodes, and bus configuration
- Extensive debug and tracing support
- 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

Evaluation Board Ordering Guide

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVAL-AD2428WB1BZ</td>
<td>Phantom power slave evaluation board; stereo in, stereo out, and stereo microphone</td>
</tr>
<tr>
<td>EVAL-AD2428WC1BZ</td>
<td>Phantom power slave evaluation board with four microphones</td>
</tr>
<tr>
<td>EVAL-AD2428WD1BZ</td>
<td>Master evaluation board with SigmaDSP® ADAU1452</td>
</tr>
<tr>
<td>EVAL-AD2428WG1BZ</td>
<td>Local power slave evaluation board; stereo in, stereo out</td>
</tr>
<tr>
<td>EVAL-AD2428WD2DZ</td>
<td>Master EMC board</td>
</tr>
<tr>
<td>EVAL-AD2428WG1DZ</td>
<td>Local power slave EMC board</td>
</tr>
<tr>
<td>EVAL-AD2428WC1DZ</td>
<td>Phantom power slave EMC board</td>
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</tbody>
</table>

Product Comparison Guide

<table>
<thead>
<tr>
<th>Feature</th>
<th>AD2426WCCSZ®</th>
<th>AD2427WCCSZ®</th>
<th>AD2428WCCSZ®</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master capable</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Functional TRx blocks</td>
<td>A only</td>
<td>A and B</td>
<td>A and B</td>
</tr>
<tr>
<td>P/D/PDMS support</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>PDM microphone inputs</td>
<td>4 mics</td>
<td>4 mics</td>
<td>4 mics</td>
</tr>
<tr>
<td>Maximum node-to-node cable length</td>
<td>15 m</td>
<td>15 m</td>
<td>15 m</td>
</tr>
</tbody>
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Z = RoHS compliant part.
W = qualified for automotive applications.

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