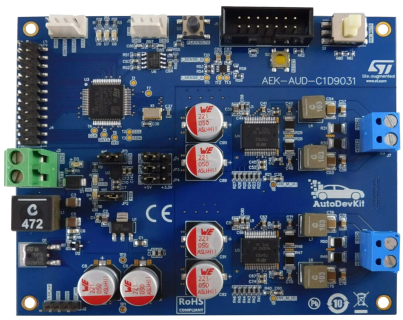
# AEK-AUD-C1D9031

Data brief

# AVAS solution based on SPC582B60E1 Chorus family MCU and FDA903D Class D audio amplifier



## Features

- Embeds two FDA903D class D automotive grade audio amplifiers and an SPC582B60E1 Chorus family MCU with 1 Mb flash
- Supports audio stream via $I^2S$ interface
- Configurable through dedicated $I^2C$ bus
- Supports CAN bus interface for remote control and diagnostics
- Dedicated DC diagnostic interrupt pin to signal malfunctions
- Dedicated MUTE pin
- Open load in play detection
- Short to $V_{CC}$/GND diagnostics
- Output voltage and current detection
- Thermal protection
- Compact size: 110 mm x 90 mm
- WEEE and RoHS compliant
- Included in AutoDevKit initiative

| Product summary | |
|---|---|
| AVAS solution based on SPC582B60E1 Chorus family MCU and FDA903D Class D audio amplifier | AEK-AUD-C1D9031 |
| 32-bit power architecture MCU for automotive general purpose applications - Chorus family | SPC582B60E1 |
| Class D digital input automotive power amplifier | FDA903D |
| AutoDevKit library plugin for SPC5-STUDIO | STSW-AUTODEVKIT |
| Applications | In-Vehicle Infotainment<br>Acoustic Vehicle Alerting System (AVAS) |

## Description

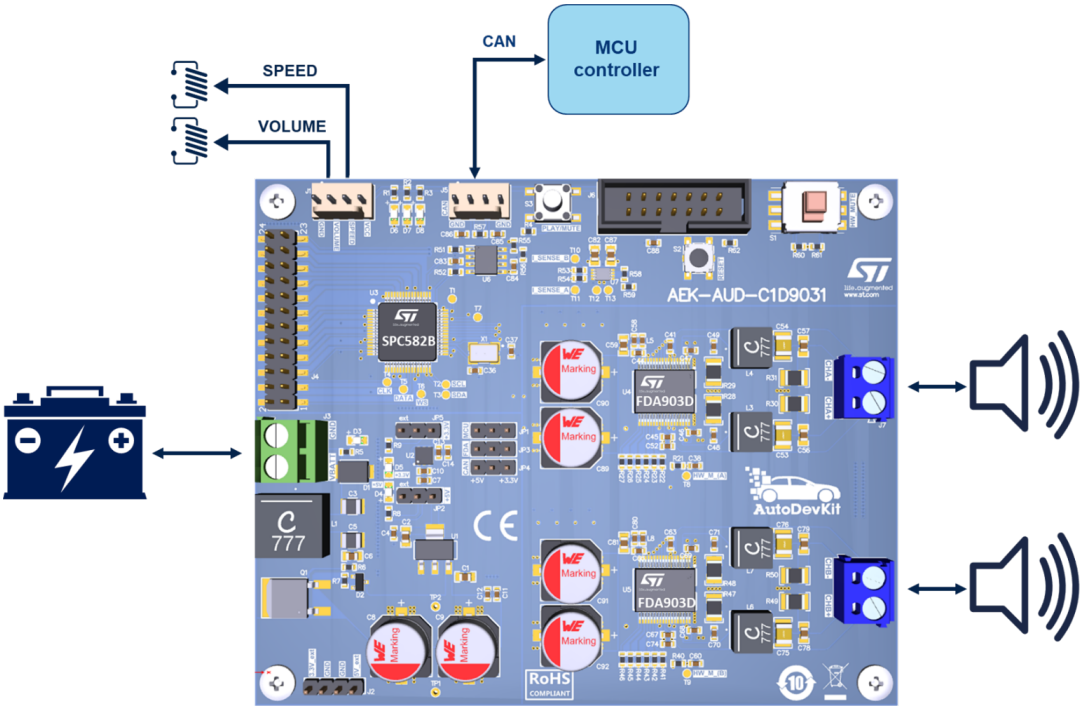
The AEK-AUD-C1D9031 is a very compact AVAS solution based on SPC582B60E1 Chorus family MCU and FDA903D Class D audio amplifiers that emits warning sounds to alert pedestrians of the presence of e-vehicles.

The AEK-AUD-C1D9031 integrates two audio amplifiers in stereo mode or two separate audio channels. The board compact size allows the designer to strategically place different modules around the vehicle to ensure that warning sounds can be heard along the entire vehicle length. All the modules can be controlled by a central MCU via CAN interface.

The embedded SPC582B60E1 microcontroller monitors and controls the two Class-D FDA903D power amplifiers driving the loudspeakers; the MCU sends the audio samples via $I^2S$ bus and programs the amplifiers via $I^2C$ interface.

# 1 Block diagram

Figure 1. **AEK-AUD-C1D9031 block diagram**



# 2 Schematic diagrams

**Figure 2. AEK-AUD-C1D9031 circuit schematic (1 of 6)**

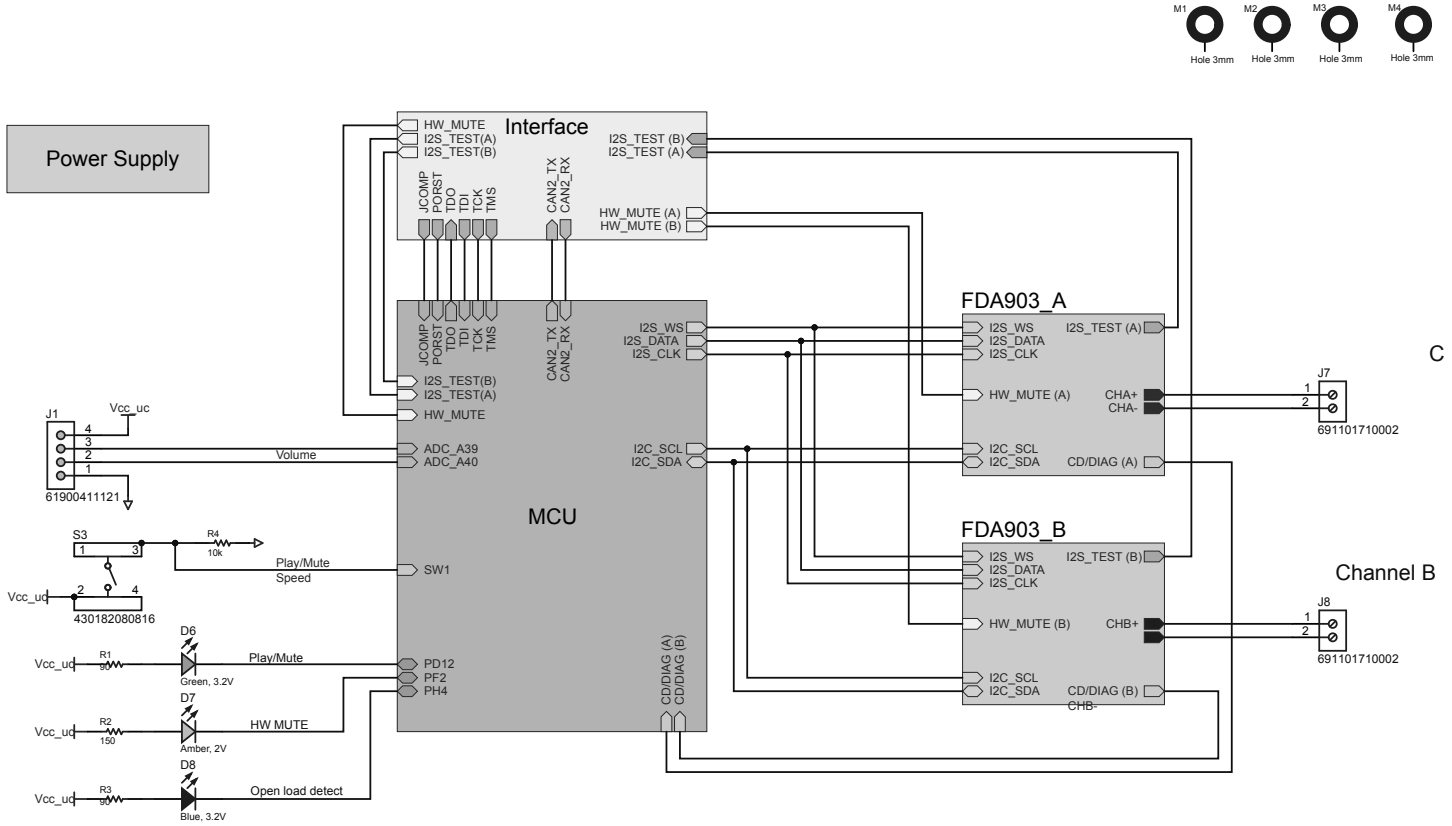


**Figure 3. AEK-AUD-C1D9031 circuit schematic (2 of 6)**

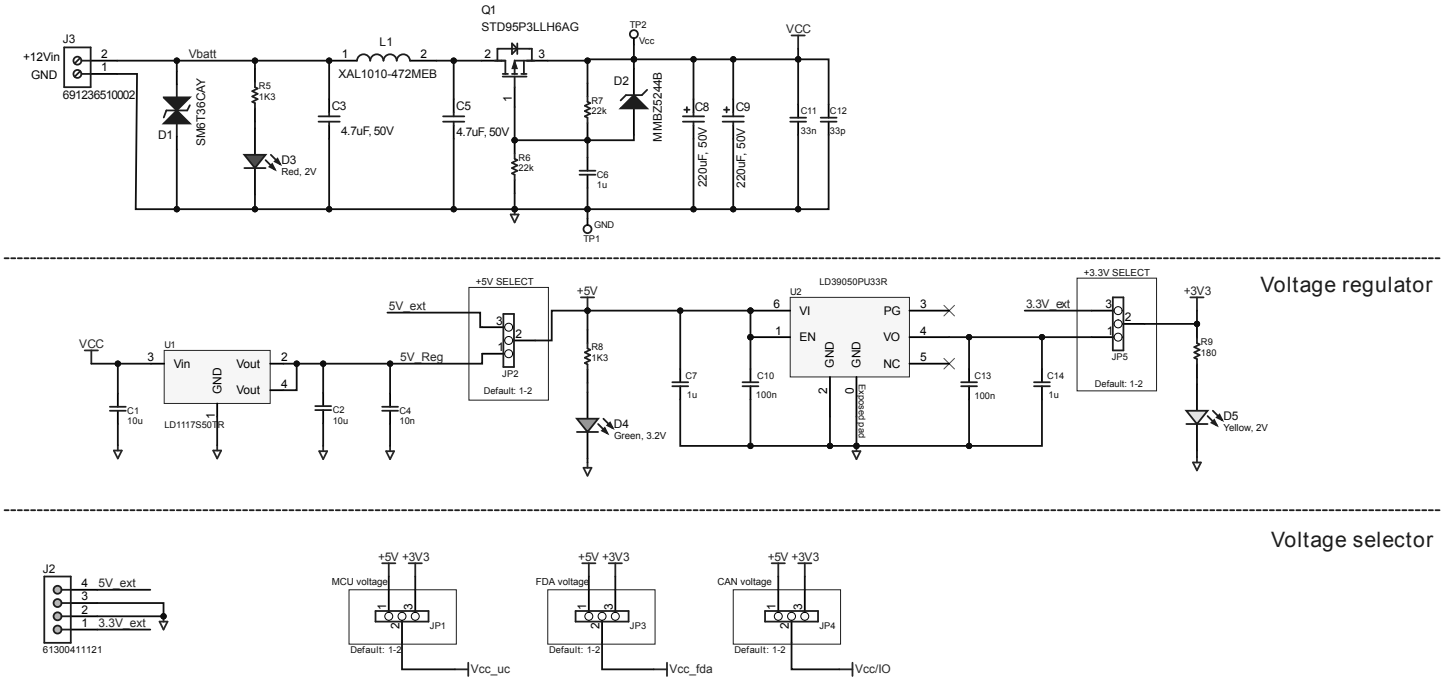


**Figure 4. AEK-AUD-C1D9031 circuit schematic (3 of 6)**

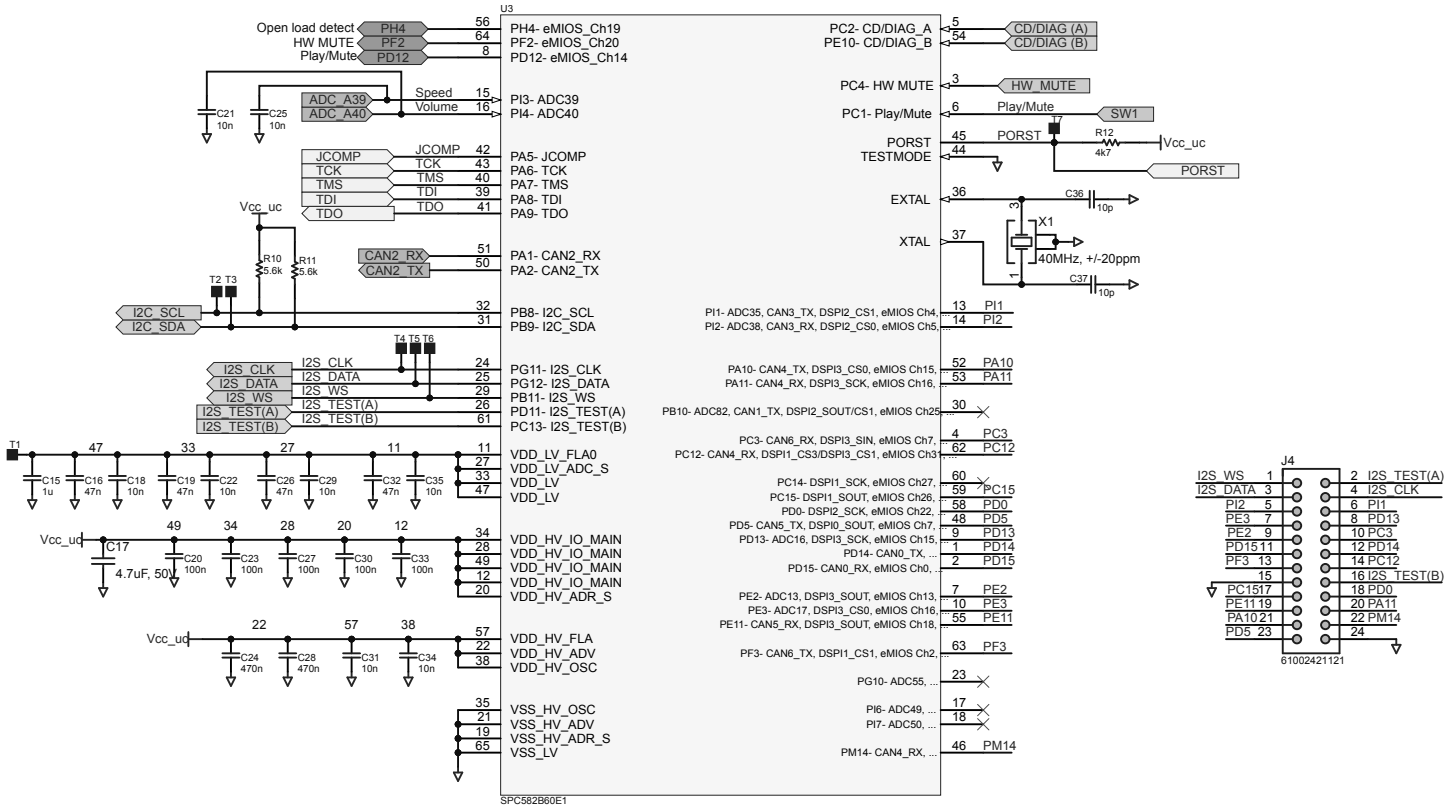


**Figure 5. AEK-AUD-C1D9031 circuit schematic (4 of 6)**

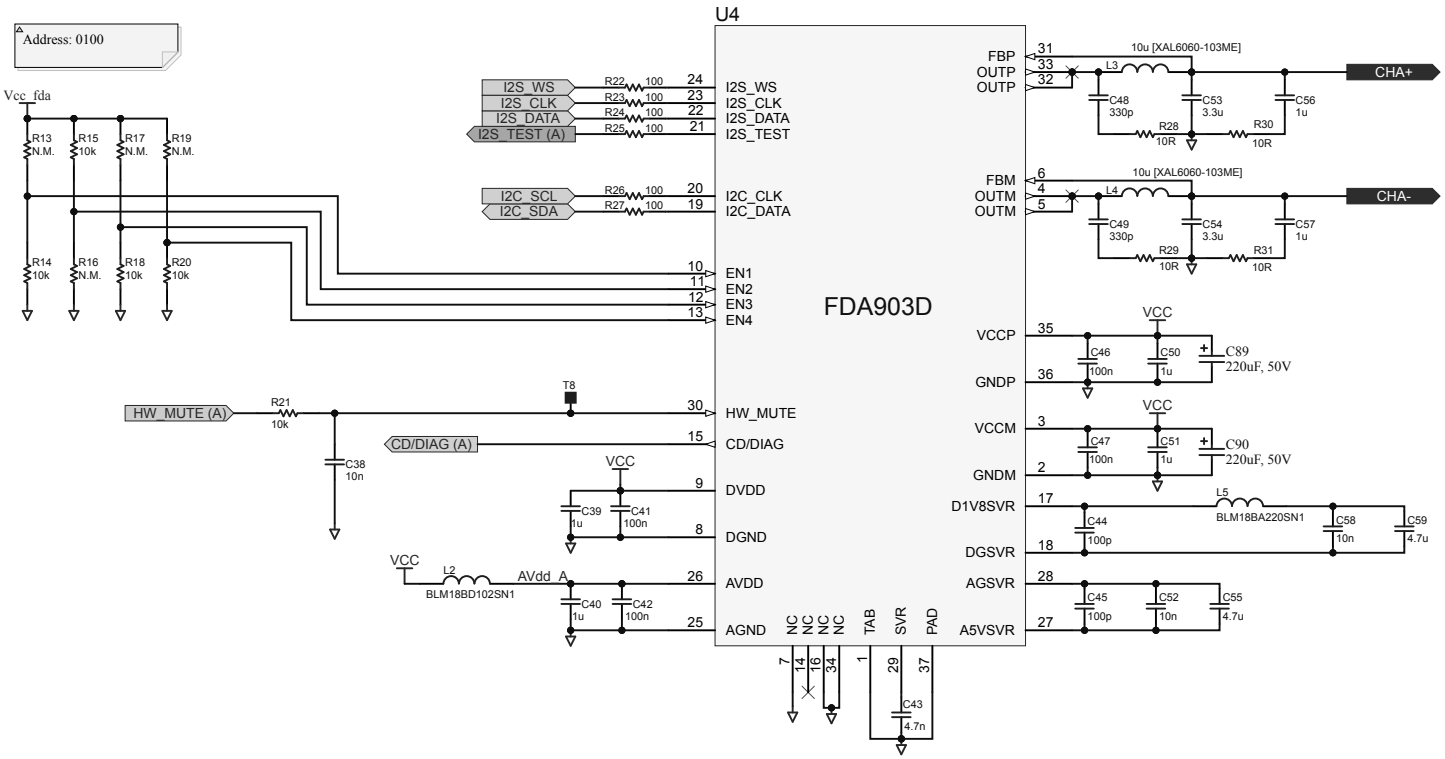


**Figure 6. AEK-AUD-C1D9031 circuit schematic (5 of 6)**

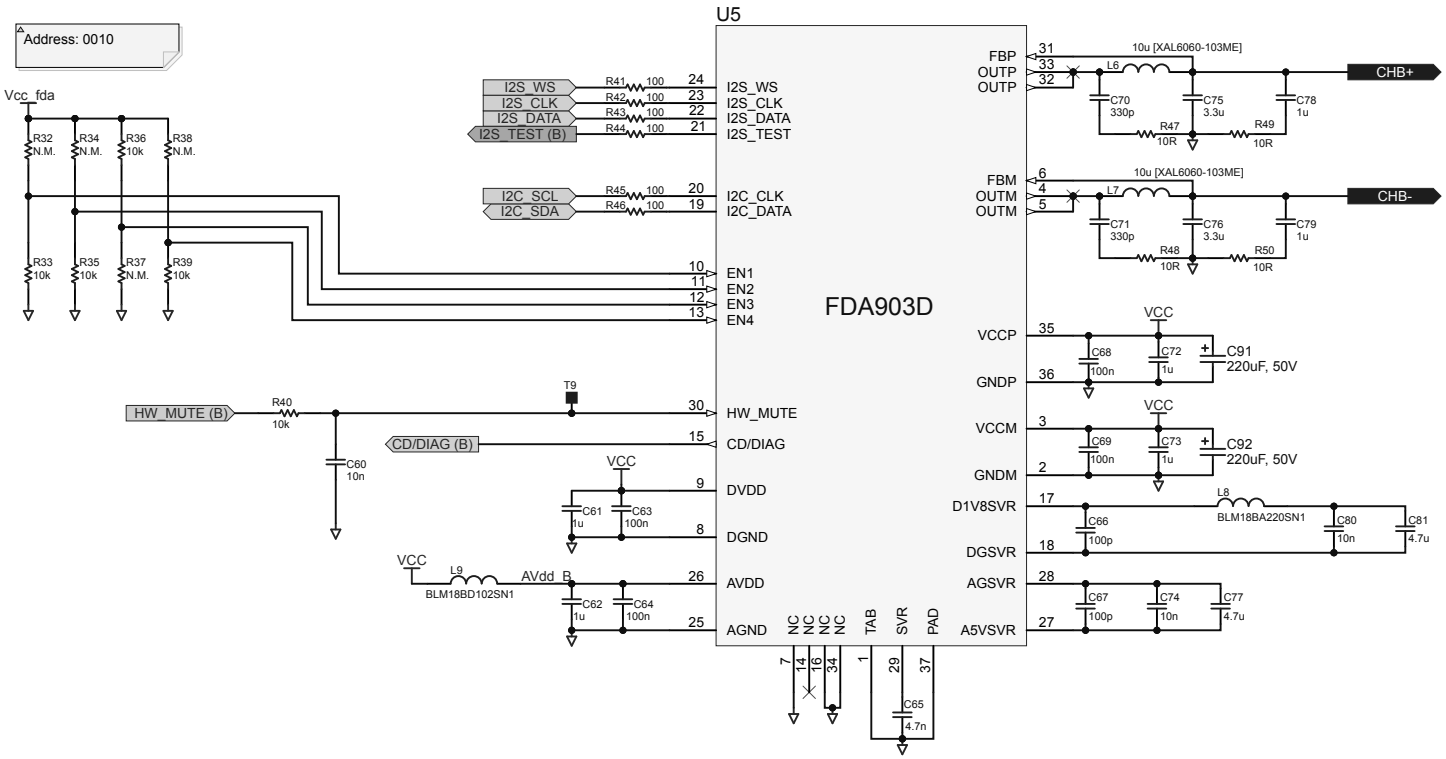
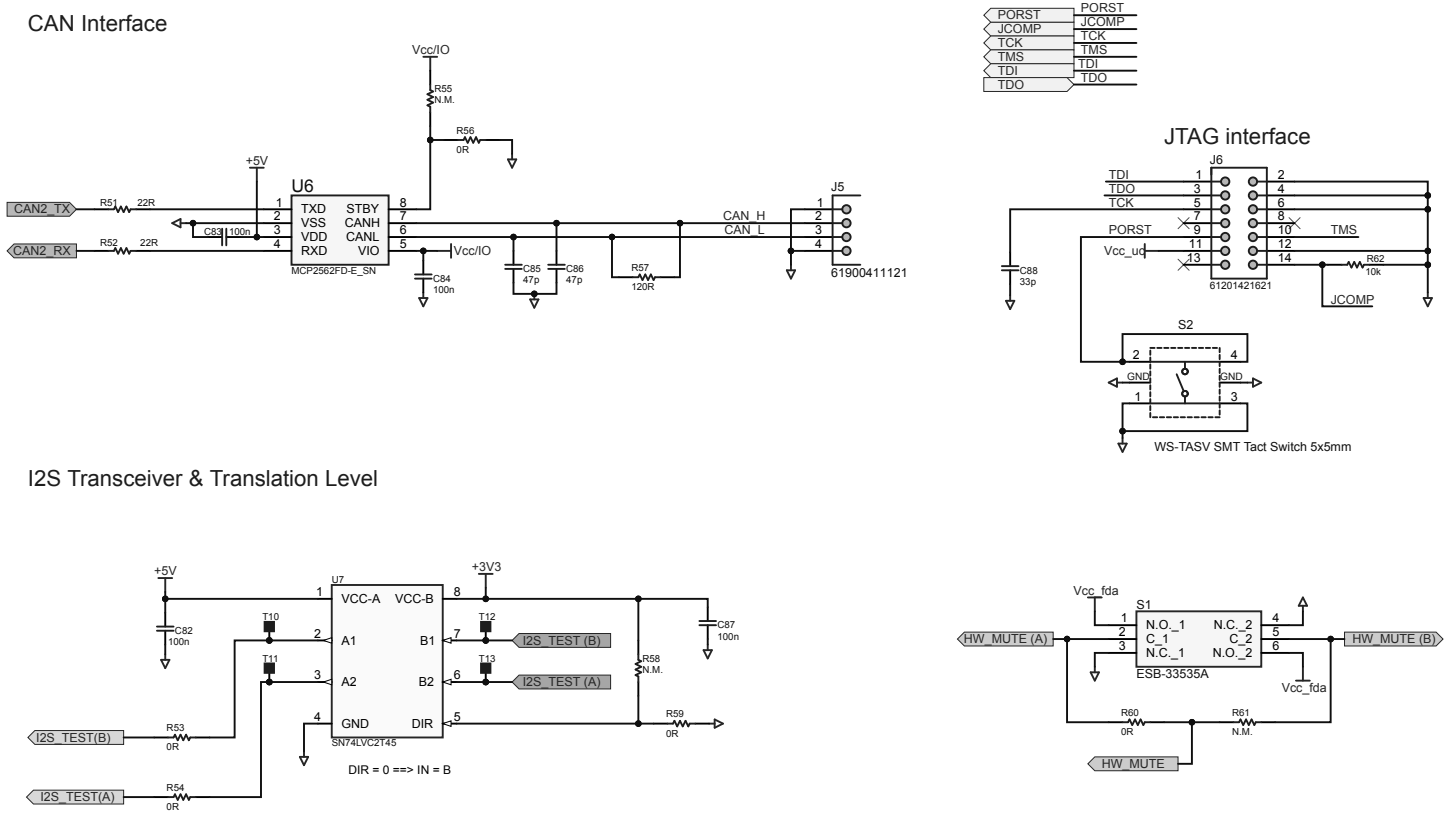


**Figure 7. AEK-AUD-C1D9031 circuit schematic (6 of 6)**



## Revision history

Table 1. **Document revision history**

| Date | Version | Changes |
|---|---|---|
| 04-Feb-2021 | 1 | Initial release. |