

## Amplifier Combines High-Definition Sound With Class-G Efficiency

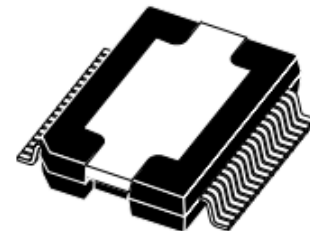
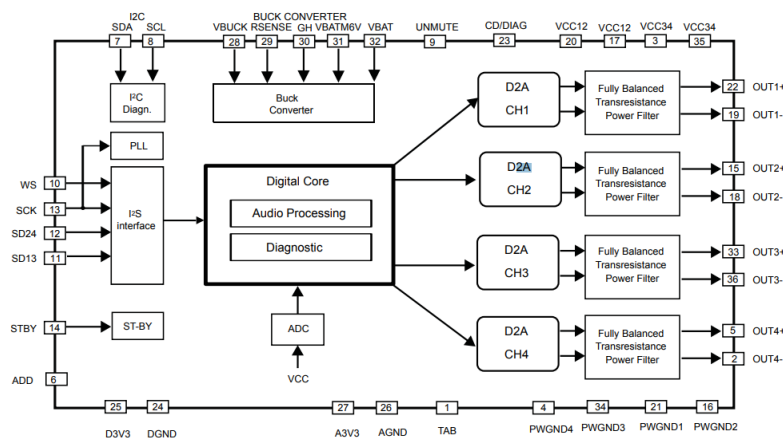
[STMicroelectronics'](#) TDA7901 automotive amplifier integrates a buck converter for class-G power switching and supports high-definition audio, a market-unique combination for great listening and high efficiency, according to the vendor. In class-G operation, the TDA7901 buck controller automatically optimizes the voltage supplied to the bridge-tied load (BTL) power stage depending on the audio-signal level. The resulting smooth, analog sound comes with near-class-D efficiency at normal listening levels, says the company.

Because the power dissipation is much lower compared with a conventional class-A/B amplifier, the heatsink requirement is optimized. Integrating the buck controller in the IC contributes to reducing system size and weight. It also cuts the bill of materials, simplifies circuit design, and saves developing firmware to control the voltage rail (see the figure).

The TDA7901 is suited to use in many in-vehicle information (IVI) systems, such as head units, smart cockpit systems, external amplifiers, and other applications. The amplifier signals full in-play diagnostics including real-time load-current monitoring through I<sup>2</sup>S or I<sup>2</sup>C interfaces, enabling ASIL-A certification of safety-related applications like warning-tone generators and acoustic vehicle alerting systems (AVASs). A digital impedance meter is also provided, ensuring systems containing the TDA7901 can meet the most demanding requirements of automotive OEMs.

With its I<sup>2</sup>S digital input and intelligent quad-BTL output, the TDA7901 delivers 4 x 43 W of audio power (at 4- $\Omega$  load, saturated output at 14.4 V). The amplifier has 80-kHz bandwidth to handle high-definition audio. Its wide supply-voltage range, spanning 4.5 V to 18.5 V, prevents disruption by start-stop engine operation and general automotive electrical transients.

The TDA7901 is due to enter production in the second half of 2022, in a Power-SO36 package. Pricing starts at \$7.90 for orders of 1000 pieces. For further information please see the TDA7901 [page](#).



*Figure. The TDA7901 is a four-bridge channel amplifier featuring a powerful integrated digital-to-analog converter, ensuring high audio quality and immunity from any input disturbances. Moreover, it adds the advantages of the Class-G solution to the improved high efficiency (SB-I) already embedded in the TDA780x running family. Class-G works based on an integrated buck controller that automatically adjusts the voltage rail depending on the audio signal level thus optimizing efficiency at each output level. Thanks to this innovative combination of features, the TDA7901 is nearly as efficient as a Class-D amplifier when providing the normal listening level of audio power (1 W). The IC's Power-SO36 package is shown on the right.*