

## Class-D Amp For High-Definition Audio Adds Safety-Related Diagnostics

[STMicroelectronics'](#) HFDA801A is a high-resolution audio amplifier that is specifically designed for compact, cost-effective automotive applications. The IC is a 2-MHz switching PWM Class-D amplifier with a quad-bridge configuration (see the figure).

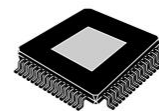
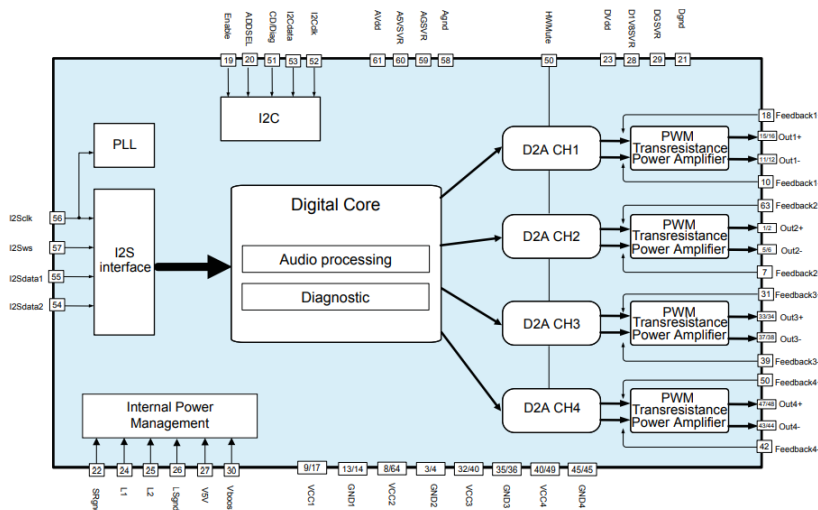
According to the vendor, an integrated high-performance digital-to-analog converter ensures hi-fi quality sound under any load condition, with noiseless turn-on/turn-off and without creating any output artifacts. With a 121-dB signal-to-noise ratio, a 120-dB dynamic range, and only 10  $\mu$ V of output noise, the HFDA801A delivers an extraordinary level of audio performance from an inexpensive small form-factor component, says the company.

The feedback configuration with integrated L-C low-pass filter provides an ultra-wide flat frequency response up to 80 kHz and minimizes dependence on external components. The wide bandwidth allows use in high-definition (HD) audio applications, letting designers rely on excellent linearity and low distortion that are independent of the inductor and capacitor quality.

The specific architecture implemented derives all required voltages internally, enabling the HFDA801A to draw its supply from the vehicle battery without the need for additional power converters. The amplifier benefits from a wide range of load capabilities, ensuring stable performance even while driving high power on low-impedance loads of 2  $\Omega$  on all four channels.

In addition, by integrating in-play diagnostics as well as a digital impedance meter and real-time load-current monitor, the HFDA801A can be used in safety-related audio applications that must demonstrate ASIL compliance, such as acoustic vehicle alerting systems (AVASs).

The amplifier is housed in a 64-pin LQFP with exposed pad up. The HFDA801A is sampling now and will be in production in the second half of 2021. Contact your ST sales office for pricing options and sample requests. For more information, see the HFDA801A [page](#).



**LQFP64 (exposed pad up)**

*Figure. The HFDA801A is a 4 x 80-W digital-input, class-D automotive audio amplifier with Hi-Fi audio quality, advanced diagnostics, 2-MHz switching frequency and high-resolution bandwidth. The IC integrates a 24-bit 120-dB DAC and a 2-MHz switching PWM class D output stage. This configuration enables the design of a compact and inexpensive application, while also enabling outstanding audio performance.*