

Flexible, space-saving class-D amplifier for in-car audio from STMicroelectronics adds automotive-optimized diagnostics

Delivers clear and powerful listening experiences

GENEVA, SWITZERLAND, September 23, 2024 /EINPresswire.com/ -- The STMicroelectronics [HFA80A](#) automotive-grade analog-input class-D audio amplifier combines high efficiency, small size, and a low bill of materials, with load diagnostics optimized for automotive and native electromagnetic compatibility (EMC).



With its feedback-before-filter topology and 2MHz nominal PWM frequency, the HFA80A lets designers optimize the output filter for the targeted performance and achieve a compact outline with small component values. Spread-spectrum operation simplifies meeting the mandatory CISPR 25 specification, with no additional EMC-specific filtering required.

The amplifier delivers clear and powerful listening experiences, driving up to 4x 49W into 2Ω speakers at 14.4V and with typical harmonic distortion (THD) specified at 0.015% (1W/4Ω). Pure sound is assured, with low output noise and crosstalk as well as 80dB power supply rejection specified at 1W/1kHz with 4Ω loads.

Flat frequency response up to 40kHz ensures generous bandwidth for high-resolution audio, which designers can extend to 80kHz by optimizing the filter. In addition, the HFA80A can handle performance-centric applications such as noise cancelling thanks to low latency by design.

The automotive-specific diagnostics is based on a specially conceived noise-immune algorithm capable of detecting anomalous load conditions and variations. Features include independent DC and AC load detection for each channel, detection of short-circuit on startup, and overcurrent protection with configurable thresholds. Further diagnostic checks include input-voltage DC-offset detection, output-current offset detection, and thermal protection with a choice of four different thermal warnings.

A dedicated, configurable pin signals the host microcontroller when new diagnostic information is available, which simplifies host communications and relieves CPU workload. An I2C-bus interface provides access to the device features and diagnostic data, and a backup mode lets the amplifier continue operating even if I2C control is lost. In addition, the HFA80A features a digital admittance meter (DAM) that eases development by helping engineers check the connected speaker characteristics without external measurement tools or sensors.

The HFA80A is available now in a compact 7mm x 7mm LQFP48L thermally enhanced package with exposed pads, from \$4.80 for orders of 1000 pieces.

Please visit www.st.com/hfa80a-class-d-audio-amp for more information.

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