

# HFDA AND FDA SERIES

## Full digital audio amplifiers for car infotainment systems



### ST's HFDA & FDA combine high quality audio with automotive robustness

With a wide bandwidth up to 80 kHz, our new HFDA80x 2-MHz Class-D audio amplifiers offer high-frequency switching ideal for inexpensive, compact, high-definition (HD) audio applications. For low-frequency switching applications, our FDA80x and FDA90x Class-D audio amplifiers ensure unrivaled efficiency.

Designed for automotive applications, our HFDA and FDA fully digital audio amplifiers deliver a high level of load detection accuracy, diagnostics, protections and advanced real-time load monitoring functions.

#### KEY FEATURES & BENEFITS

- Class-D efficiency, above 90%
- Very high output power capability
- I<sup>2</sup>S or TDM digital input
- Compatibility (H)EV battery profiles
- Low-pass output filter included in the feedback loop
- Input and output offset detector
- DIM (digital input meter) to communicate the speaker impedance through I<sup>2</sup>C bus (optional)
- Very low output noise
- Line driver mode (optional)
- Real-time load current monitor (optional) on I<sup>2</sup>C or I<sup>2</sup>S data bus
- Hi Definition audio, 80kHz bandwidth (HFDA80x)
- No need for digital-to-analog

- conversion and input filtering
- Extremely low power dissipation
- Feedback loop helps reduce radiated emissions, allowing the use of a very low cost and small footprint output filter as well as guaranteeing a flat, load-independent frequency response
- Full real-time diagnostics and advanced speaker tuning for audio enhancement and suitable for ASIL compliant application too

#### KEY APPLICATIONS

- Head units
- Sound systems and boosters
- Telematics audio and eCall
- Austic Vehicle Alerting Systems (AVAS)

## HFDA & FDA PRODUCT FAMILY

ST automotive full digital amplifiers eliminate the cost of an external DAC and capacitors (removing the risk of DC offset for leakage), are immune to RF noise injection (mobile phones) and have excellent audio performance (SNR and DR > 110 dB). The implementation of ST's innovative feedback concept after the external filter helps ensure that the amplifiers comply with international EMI standards, allows the use of low-cost LC filters, makes diagnostics very precise and reliable and also improves the amplifier frequency response and sound quality, independently of the load.

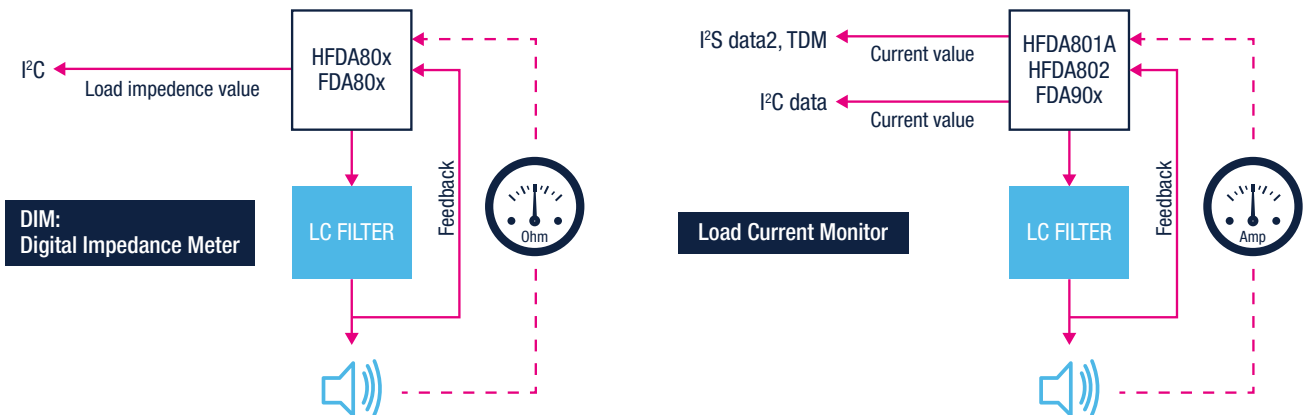
The HFDA & FDA amplifiers reduce the dissipated power with an efficiency higher than 90%, enabling very precise and reliable diagnostics.

Most of the HFDA/FDA products have an embedded "DIM", an innovative feature that measures load impedance, making load diagnostic routines simple and reliable with any kind of speaker connection and configuration. The FDA802x is compatible with a 50 V supply voltage, adding support for 8 Ohm speakers at full power. The FDA90x, HFDA801A and HFDA802 embed a real-time load current monitoring feature that enables the continuous control of the speakers,

helping to build systems that enhance audio performance and maintain sound quality over the system lifetime with added robustness. Able to operate at voltages as low as 3.3V, the FDA803x/FDA903x are designed to support audio applications, telematics systems, eCall boxes, and sound generators for electric vehicles. HFDA80x, enables the design of compact and un-expensive application, thanks to the 2MHz switching PWM.

The feedback loop includes the output L-C low-pass filter, allowing Ultra Wide band frequency response linearity and lower distortion up to 80 kHz.

## HFDA & FDA FAMILY INNOVATIVE FEATURES



## DEVICE SUMMARY

Part number	Description
FDA801/FDA801B	4 x 50 W Class-D digital input power amplifier with I2C diagnostics, 25V operation and DIM (B version)
FDA901	4 x 50 W Class-D digital input power amplifier with I2C diagnostics, 25V operation, load current monitor and DIM
FDA802A/FDA802AB	2 x 125 W Class-D digital input power amplifier with I2C diagnostics, 50V operation and DIM (B version)
FDA802P/FDA802PB	2 x 125 W Class-D digital input power amplifier with I2C diagnostics, 40V operation and DIM (B version)
FDA803D/FDA903D	1 x 45 W Class-D digital input power amplifier with I2C diagnostics and load current monitor (FDA903D) for car audio and telematics
FDA803U/FDA903U	1 x 45 W Class-D digital input power amplifier with I2C diagnostics and load current monitor (FDA903U) for car audio and telematics
FDA803Q/FDA903Q	1 x 45 W Class-D digital input power amplifier with I2C diagnostics load current monitor (FDA903Q) for car audio and telematics
FDA803S/FDA903S	1 x 10 W Class-D digital input power amplifier with I2C diagnostics and load current monitor (FDA903S) for car audio and telematics
HFDA801A	4 x 80 W Class-D digital input power amplifier with Hi-Fi audio quality, advanced diagnostics, load current monitoring, 2MHz switching frequency and high-resolution bandwidth, 25V operation
HFDA801L	4 x 80 W Class-D digital input power amplifier with Hi-Fi audio quality, advanced diagnostics, 2MHz switching frequency and high-resolution bandwidth
HFDA802	2 x 80 W Class-D digital input power amplifier with Hi-Fi audio quality, advanced diagnostics, load current monitoring, 2MHz switching frequency and high-resolution bandwidth, 25V operation



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