

NXP single digital-loop Class-D amplifiers TDF853x

Class-D amplifiers for an A+ audio experience

Equipped with a single digital-feedback loop, these ultra-performance Class-D amplifiers reduce system cost in automotive applications while delivering unparalleled sound quality.

KEY FEATURES

- Three, four, or five 2 or 4 Ω load Class-D BTL channels
- Two BTL channels can combine to drive 1 Ω
- Feedback after low-pass filter for lower BOM cost and better audio quality
- Operation voltage from 5.5 V to 18 V (optional 25 or 45)
- Digital input in TDM/I²S format to ensure easy board layout
- Line-driver mode to drive an external amplifier via direct loudspeaker cable
- Quality in accordance with AEC-Q100
- Diagnostic
  - Startup diagnostic for AC and DC coupled loads
  - Supply voltage feedback with 8-bit resolution
  - Selectable clip detection
  - Selectable diagnostic information on DIAG pins
  - IEEE 1194.1-compliant, board-level boundary scan
  - DC output offset diagnostics
- Protection
  - Independent output current per channel with selectable thresholds
  - Load dump protection (50 V)
  - Over- and undervoltage protection
  - Thermal fold-back and thermal protection
- Interleaved power stages (optional) for improved EMC and reduced output-filter cost/complexity

TARGET APPLICATIONS

- Automotive head-unit radio
- Automotive sound systems
- Automotive-engine sound design

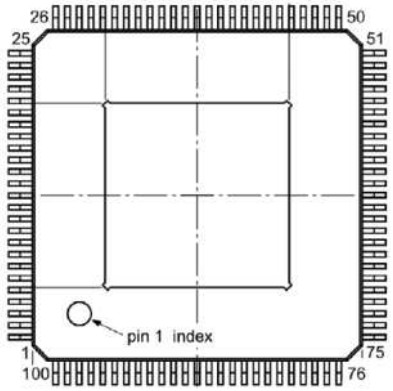
The NXP TDF853x family is a series of ultra-efficient Class-D amplifiers that create a seamless audio experience in vehicles that support 5.5 V stop- start requirements.

Ideally suited for use in active noise-cancellation systems, these amplifiers also fit head units and sound systems, and can be used to generate ambient and/or engine sounds in electric vehicles.

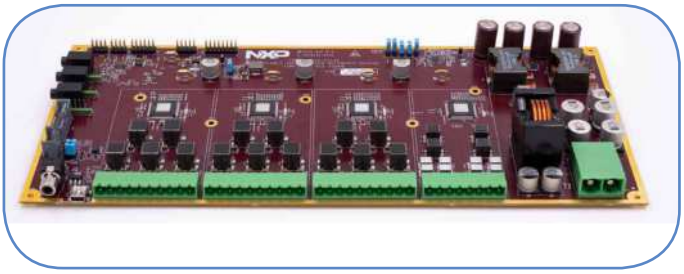
The output power per channel varies with the supply voltage. The devices support up to 18 or 25 V, with 45 V to drive the loudspeaker.

The TDF8531 has three channels, the TDF8532 has four channels, and the TDF8534 has five channels. The TDF8536 has four 45 V channels.

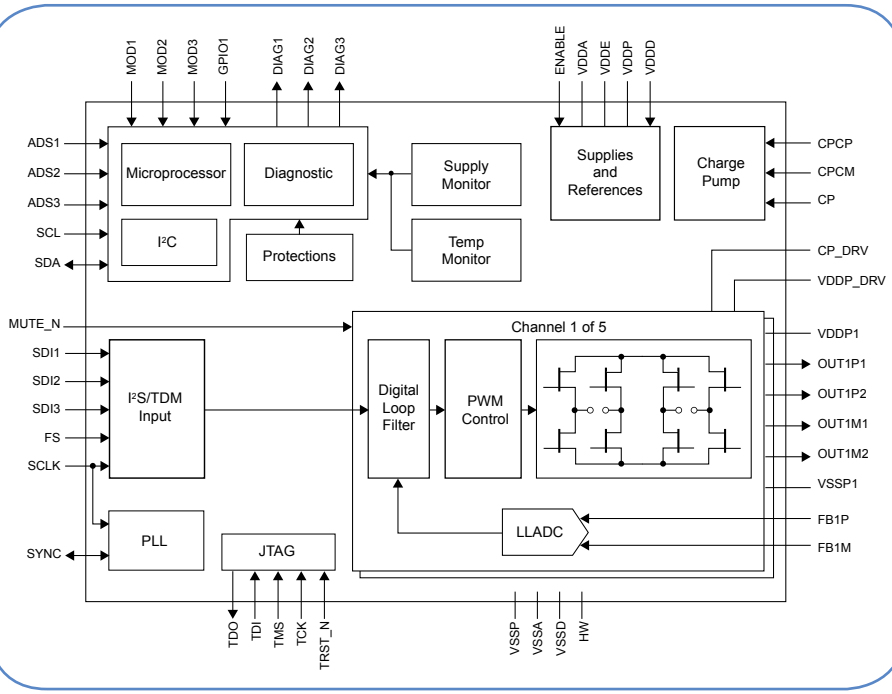
HLQFP100 PACKAGE



TDF853X CLASS-D AMPLIFIER REFERENCE DESIGN



TDF853X BLOCK DIAGRAM



SELECTION GUIDE

Type	Channel	Supply	Max output power	THD+N / Noise	Parallel Mode	Idle Power Dissipation	Interleaved Mode
TDF8531HH	3	5.5 V – 25 V	3 x 80 W	0.005 % 26 µV	Yes	2.1 W	Key Code
TDF8532HH	4	5.5 V – 25 V	4 x 80 W	0.02 % 26 µV	Yes	2.8 W	Key Code
TDF8532BHH	4	5.5 V – 18 V	4x 70 W	0.005 % 42 µV	–	2.8 W	–
TDF8534HH	5	5.5 V – 25 V	5 x 80 W	0.005 % 26 µV	Yes	3.5 W	Key Code
TDF8534BHH	5	5.5 V – 18 V	5x 70 W	0.02 % 42 µV	–	3.5 W	–
TDF8536HH	4	5.5 V – 45 V	4 x 140 W	0.005 % 48 µV	Yes	3.0W	Included

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