

# MAX98372

## Digital Input Class D Amplifier with DHT and Brownout Protection

High-Power Digital Class D with Brownout Protection and DHT Requires No Programming



NDA Required. Request Full Data Sheet

### Overview

### Description

The MAX98372 is a high-efficiency, mono Class D audio amplifier featuring dynamic headroom tracking (DHT) and brownout protection. DHT automatically optimizes the headroom available to the Class D amplifier as the power supply voltage varies, due to sudden transients and declining battery life to maintain a consistent listening experience. A wide 5.5V to 18V supply range allows the device to reach 19W into an 8Ω load.

The MAX98372's flexible digital audio interface (DAI) supports I<sup>2</sup>S, left-justified, and TDM formats. The digital audio interface accepts 32kHz, 44.1kHz, 48kHz, 88.2kHz, and 96kHz sample rates with 16-/24-/32-bit data supported for all data formats. In TDM mode, the device can support up to 16 channels of audio data. A unique clocking structure eliminates the need for an external MCLK signal that is typically needed for PCM communication. This reduces pin count and simplifies board layout.

Active emissions limiting with edge rate control minimizes EMI and eliminates the need for output filtering found in traditional Class D devices.

An 8-bit PVDD supply voltage ADC enables the dynamic headroom tracking circuit. DHT optimizes audio program peak behavior as the supply voltage varies and provides flexible user-defined parameters.

Thermal foldback protection ensures robust behavior when the thermal limits of the device are exercised. The circuit can be enabled to automatically reduce the output power above a user specified temperature. This allows for uninterrupted music playback even at high ambient temperatures. Traditional thermal protection is also available in addition to robust overcurrent protection.

All MAX98372 control is performed using a standard 2-wire, I<sup>2</sup>C interface. One of sixteen slave addresses can be selected through two, four-level address pins. The IC is available in a 0.4mm pitch, 30-bump WLP package. It is specified over the extended, -40°C to +85°C temperature range.

## Key Features

- Wide Supply Range (5.5V to 18V)
- Dynamic Headroom Tracking Maintains a Consistent Listening Experience
- Integrated Thermal Foldback Allows Robust Operation in a WLP Package
- Remote Output Sensing Allows Up to 20dB THD+N Improvement When Ferrites Are Used
- Class D Edge Rate Control Enables Filterless Operation
- 110dB A-Weighted Dynamic Range
- Output Power at 1% THD+N:
  - 15.7W into 8Ω, V<sub>PVDD</sub> = 17V
  - 13.2W into 4Ω, V<sub>PVDD</sub> = 12V
- Output Power at 10% THD+N
  - 19W into 8Ω, V<sub>PVDD</sub> = 17V
  - 15.8W into 4Ω, V<sub>PVDD</sub> = 12V
- Speaker Amplifier Efficiency
  - 91% at 10W into 8Ω, V<sub>PVDD</sub> = 12V
  - 81% at 15W into 4Ω, V<sub>PVDD</sub> = 12V
- ALC Provides Battery Brownout Protection
- Extensive Click-and-Pop Suppression
- Space Saving, 30-Bump WLP Package (2.2mm x 2.8mm x 0.6mm, 0.4mm Pitch)

## Applications/Uses

- Notebook Computers
- Soundbars
- Tablets

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**KEY SPECS**

Part Number	Class	Spkr. Amp.	Spkr. Amp.	Spkr. Amp.	P <sub>OUT</sub> into 4Ω	P <sub>OUT</sub> into 4Ω	P <sub>OUT</sub> into 8Ω	P <sub>OUT</sub> into 8Ω	Spkr. Amp. Half Pwr. THD+N (%)	SNR (dB)	PSRR (dB)	Package/Pins
		V <sub>CC</sub> (V)	V <sub>CC</sub> (V)	I <sub>CC</sub> (mA)	@ 1% THD+N (W)	@ 10% THD+N (W)	@ 1% THD+N (W)	@ 10% THD+N (W)		A-Weighted	min	
<b>MAX98372 NEW!</b>	D	5.5	18	8.4	13.2	15.8	15.7	19	0.02	110	60	WLP/30