

TS2012

Filter-free stereo Class D audio amplifier



Mobile phones are morphing into portable entertainment centers, with excellent audio capabilities a central part of a successful platform.

The ultra-efficient TS2012 stereo Class D speaker driver, provides quality audio performances while maximizing battery life and minimizing board space.

Designed specifically for battery-operated devices such as mobile phones, its Class D architecture ensures maximum efficiency ratings (power consumption versus output channel power), which translates into longer battery life.

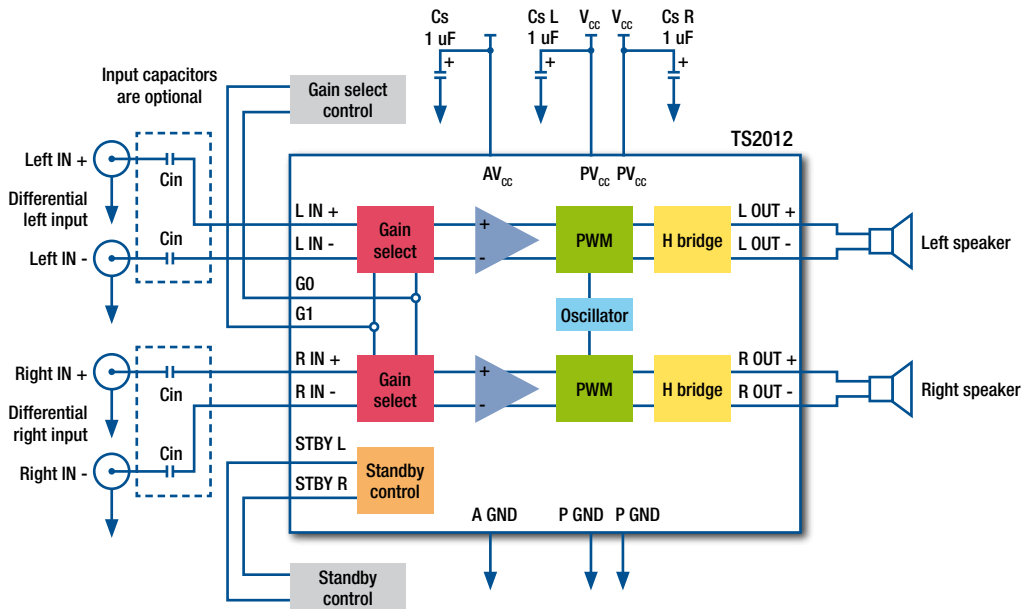
Packaged in chip-scale flip-chip and QFN packages, the TS2012 requires as little as 4.5 mm². In addition, the TS2012 does not require output signal filtering, which reduces component count, cost and board space.

Key features

- Operating voltage (V_{CC}) from 2.5 V to 5.5 V
- Standby mode active low
- Output power per channel: 1.2 W @ 5 V or 0.65 W @ 3.6 V into 8 Ω with 1 % THD maximum
- Output power per channel: 2 W @ 5 V into 4 Ω with 1 % THD maximum
- Selectable gain settings: 6, 12, 18, 24 dB
- Low current consumption
- PSRR: 63 dB typ.
- Fast start up phase: 5 ms
- Thermal shutdown protection
- Available in flip-chip 16 (2.1 mm x 2.1 mm) or QFN20 (4 x 4 mm) packages

Main applications

- Mobile phones
- Notebooks
- PDAs

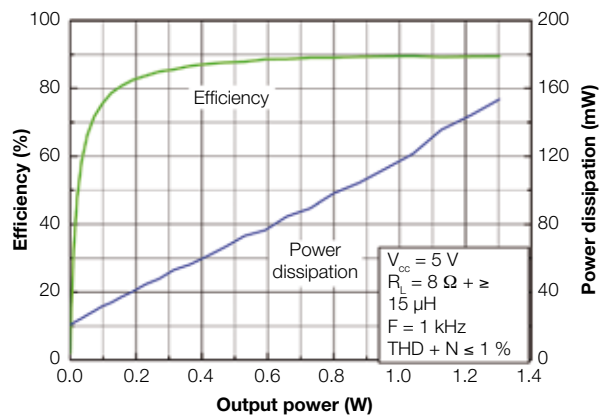


Typical application schematic

The TS2012 is a stereo Class D fully differential audio speaker amplifier with selectable gain, designed to give customers flexibility and ease-of-use in mobile phones and other portable handheld devices.

The device includes a start-up internal block to eliminate pop noise during power-on/power-off transitions. The TS2012's higher efficiency reduces overall system heat and provides longer battery life – both essential features for platforms with small board areas that are extremely sensitive to heat dissipation. In fact, talk-times are greatly increased by the device consuming as little as 0.02 μ A in shutdown/mute mode, the lowest in its category. Moreover, an internal thermal shutdown mechanism protects the device from overheating, making it virtually indestructible.

Offering 1.2 watts output power per channel on an 8-ohm load, the TS2012 operates on a supply range of 2.5 V to 5.5 V. The selectable gain feature allows the customer to choose between 6, 12, 18 and 24 dB gain settings, making this single-chip stereo solution flexible for a variety of platforms, as well as easy and economical to implement, owing to reduced external component needs.



Output power vs. efficiency and power dissipation

The TS2012's Class D architecture makes output filtering optional, further reducing the number of external components and necessary board space. The TS2012's own small footprint – the flip-chip package using less than 4.5 mm^2 – is ideal for tight board space requirements.



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