



NXP 1.2-W/Ch stereo filter-free Class-D audio power amplifier SA58671

Stereo, filter-free, efficient Class-D audio amplifier for portable applications

This small, highly efficient Class-D audio amplifier saves space and extends battery life in wireless and cellular handsets, PDAs, portable DVD players, USB speakers, notebook PCs, portable radios, portable gaming, educational toys, and more.

Key features

- ▶ Output power
 - 1.2 W/Ch into 4 Ω at 5V
 - 1.3 W/Ch into 8 Ω at 5 V
 - 720 mW/Ch into 8 Ω at 3.6 V
- ▶ Power supply range: 2.5 to 5.5V
- ▶ Independent shutdown control for each channel
- ▶ Selectable gain: 6, 12, 18, or 24 dB
- ▶ High PSSR: 77dB at 217Hz
- ▶ Fast start-up time: 3.5 ms
- ▶ Low supply current
- ▶ Low shut-down current
- ▶ Short-circuit and thermal protection
- ▶ Low junction-to-ambient thermal resistance: 110 K/W with adequate heat sinking of WL-CSP
- ▶ Small (2 x 2 mm) WL-CSP package

Benefits

- ▶ Excellent maximum power efficiency: 70-74% into 4 Ω and 84-88% into 8 Ω
- ▶ Independent shutdown controls for each channel

- ▶ Improved immunity to noise and RF rectification
- ▶ No need for input coupling capacitors when used with a differential audio source

Applications

- ▶ Cell phones
- ▶ USB speakers
- ▶ PDAs
- ▶ Notebook PCs
- ▶ LCD TVs
- ▶ Portable radios
- ▶ Portable gaming
- ▶ Educational toys

Designed for use in a wide range of portable applications, the NXP Class-D audio amplifier SA58671 delivers highly efficient operation in a small form factor.

The maximum power efficiency is 70 to 74% into 4 Ω and 84 to 88% into 8 Ω . The result is reduced power consumption and longer battery life in portable applications.

Using a 5-V power supply, the maximum output power with a 4-Ω load is 1.2 W per channel, and with an 8-Ω load is 1.3 W per channel. With a 3.6-V power supply, the maximum is 720 mW per channel.

To save space in portable designs, the SA58671 is housed in a 16 bump wafer level chip scale package that measures only 2.1 x 2.15 mm. High integration reduces the footprint even further, since the amplifier requires only two external components.

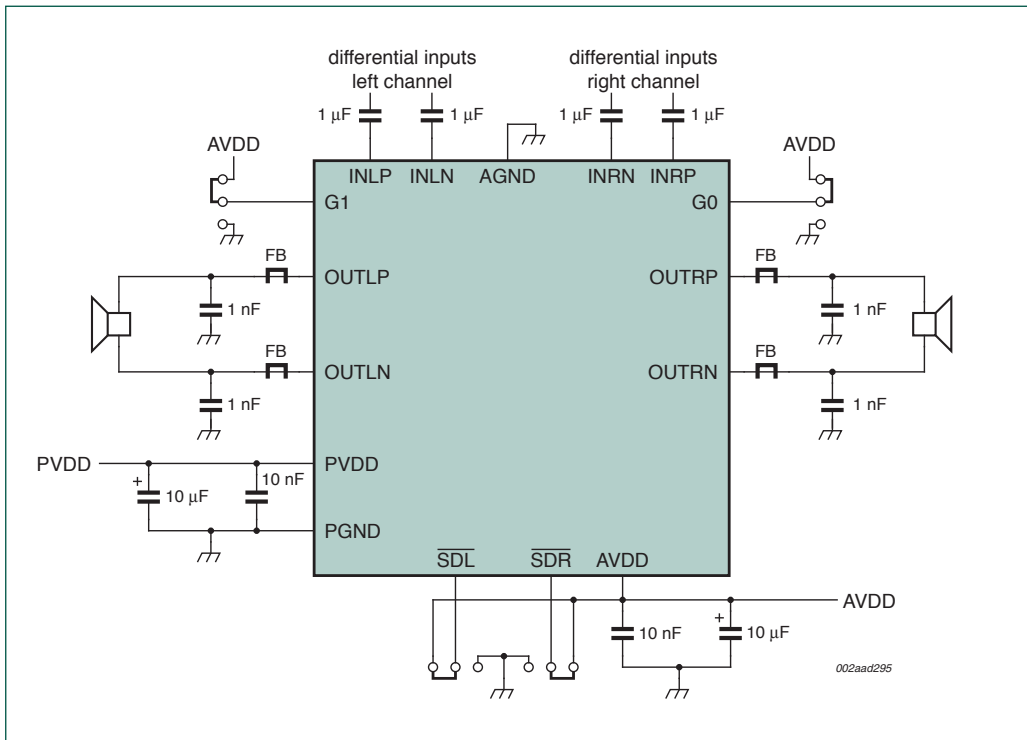
Fast start-up time (only 3.5 ms) is another feature that benefits portable applications. Also, improved immunity to noise and RF rectification results in better overall audio performance.

There are independent shutdown controls for each channel. Using G0 and G1 select pins, the gain can be set at 6, 12, 18, or 24 dB.

With adequate heat sinking provided by the WL-CSP16 package, the device achieves a low junction-to-ambient thermal resistance of only 110 K/W.

To simplify manufacturing and increase reliability, solder bumps can be connected directly to the PCB heat spreader. Protective circuitry guards against short-circuits and thermal problems.

When used with a differential audio source, there's no need for input coupling capacitors.



SA58671 block diagram