



NXP 2.1-W/Ch stereo filter-free Class-D audio power amplifier SA58670

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
 - 2.1 W/Ch into 4 Ω at 5V
 - 1.4 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: 77 dB at 217 Hz
- ▶ 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: 24 K/W with exposed die-attach paddle
- ▶ Small (4 x 4 mm) HVQFN20 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 SA58670 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 2.1 W per channel, and with an 8- Ω load is 1.4 W per channel. With a 3.6-V power supply, the maximum is 720 mW per channel.

To save space in portable designs, the SA58670 is housed in a small HVQFN20 package that measures only 4 x 4 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.

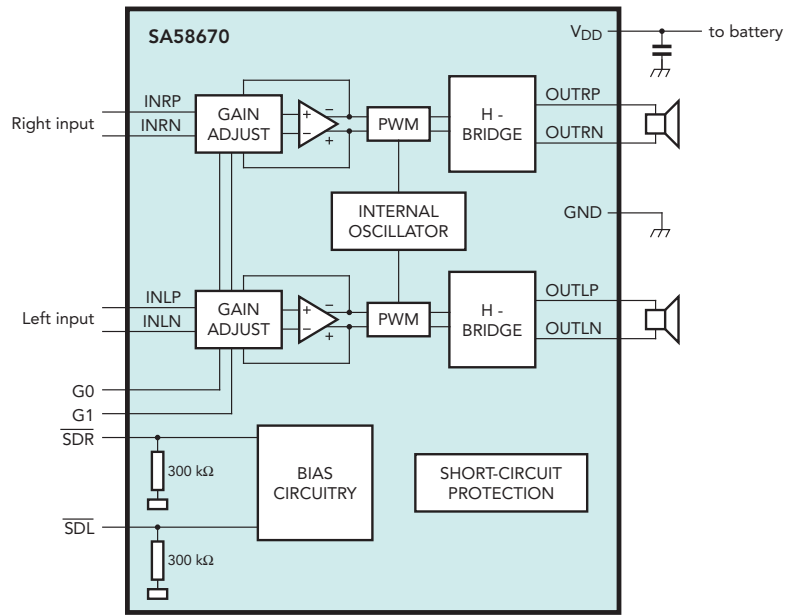
There are independent shutdown controls for each channel. Using G0 and G1 select pins, the gain can be set at 6, 12, 18, or 24 dB.

An exposed die-attach paddle reduces junction-to-ambient thermal resistance to only 24 K/W, and increases power dissipation. Protective circuitry guards against short-circuits and thermal problems.

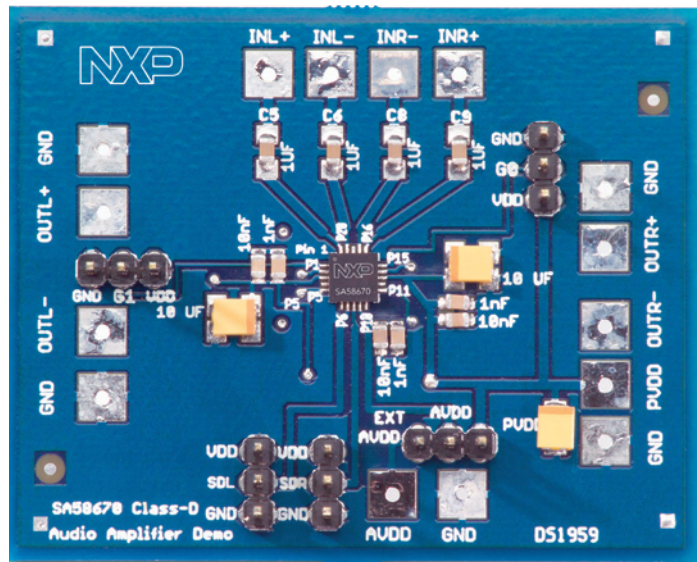
When used with a differential audio source, there's no need for input coupling capacitors.

To simplify manufacturing and increase reliability, solder mounts can be connected directly to the PCB heat spreader.

For more information visit www.nxp.com/interface.



SA5867x block diagram



SA58670 evaluation board

www.nxp.com



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