

NXP 3.0-W mono,
filter-free, Class-D audio
power amplifier SA58672UK

A better Class-D amplifier for mobile and wired applications

This small, highly efficient Class-D audio amplifier saves space and extends battery life in a wide range of portable and wired applications, from mobile handsets to gas-station pumps

Key features

- ▶ Output power
 - 3.0 W at 5 V into 4 Ω
 - 1.7 W at 5 V into 8 Ω
 - 800 mW at 3.6 V into 8 Ω
- ▶ Power supply range: 2.5 to 5.5 V
- ▶ Efficiency at 3.6 V with an 8 Ω speaker: 89 % at 400 mW
- ▶ Shutdown control
- ▶ Low supply current
- ▶ High PSSR: -93 dB eliminates need for voltage regulator
- ▶ Unique modulation scheme reduces EMI emissions
- ▶ Excellent immunity to noise
- ▶ Fully differential design reduces RF rectification and eliminates bypass capacitor
- ▶ Improved CMRR eliminates two input coupling capacitors
- ▶ Integrated Pop & Click suppression circuitry
- ▶ Fast start-up time: 7 ms
- ▶ Thermal and short-circuit shutdown protection
- ▶ Tiny WCSP package (1.66 x 1.71 mm)
- ▶ RoHS compliant and 100 % lead (Pb)-free

Applications

- ▶ Mobile handsets
- ▶ PDAs
- ▶ PNDs and GPS devices
- ▶ Portable DVD players
- ▶ LCD TVs

- ▶ Notebook PCs
- ▶ POS terminals
- ▶ USB speakers
- ▶ Educational toys
- ▶ Gas-station pumps
- ▶ Industrial applications

Designed for use in a wide range of portable and wired applications, the NXP Class-D audio amplifier SA58672UK delivers highly efficient operation in a small form factor. The low noise, filterless PWM architecture eliminates the output filter, reducing external component count and lowering system cost. The maximum power efficiency is excellent: 88 to 90 % into 8 Ω , and 84 to 88 % into 4 Ω .

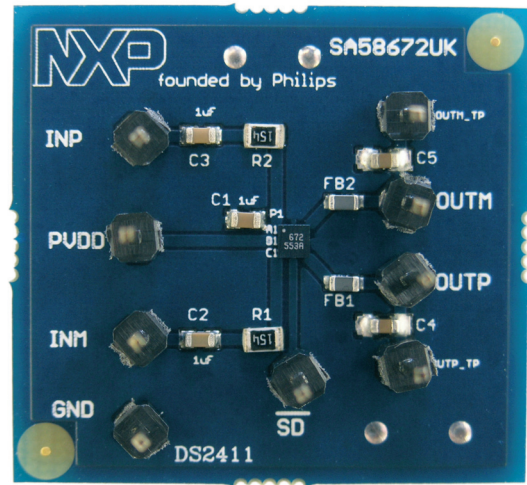
In cellular handsets, the earpiece, speaker phone, and melody ringer can all be driven by the SA58672UK. The gain is externally configurable, so it's possible to have independent gain control from multiple sources by summing signals from separate sources.

Using a 5-V power supply, the maximum output power with a 4- Ω load is 3.0 W; with an 8- Ω load the maximum is 1.7 W. Using a 3.6-V power supply, the maximum output power is 900 mW into an 8- Ω load.

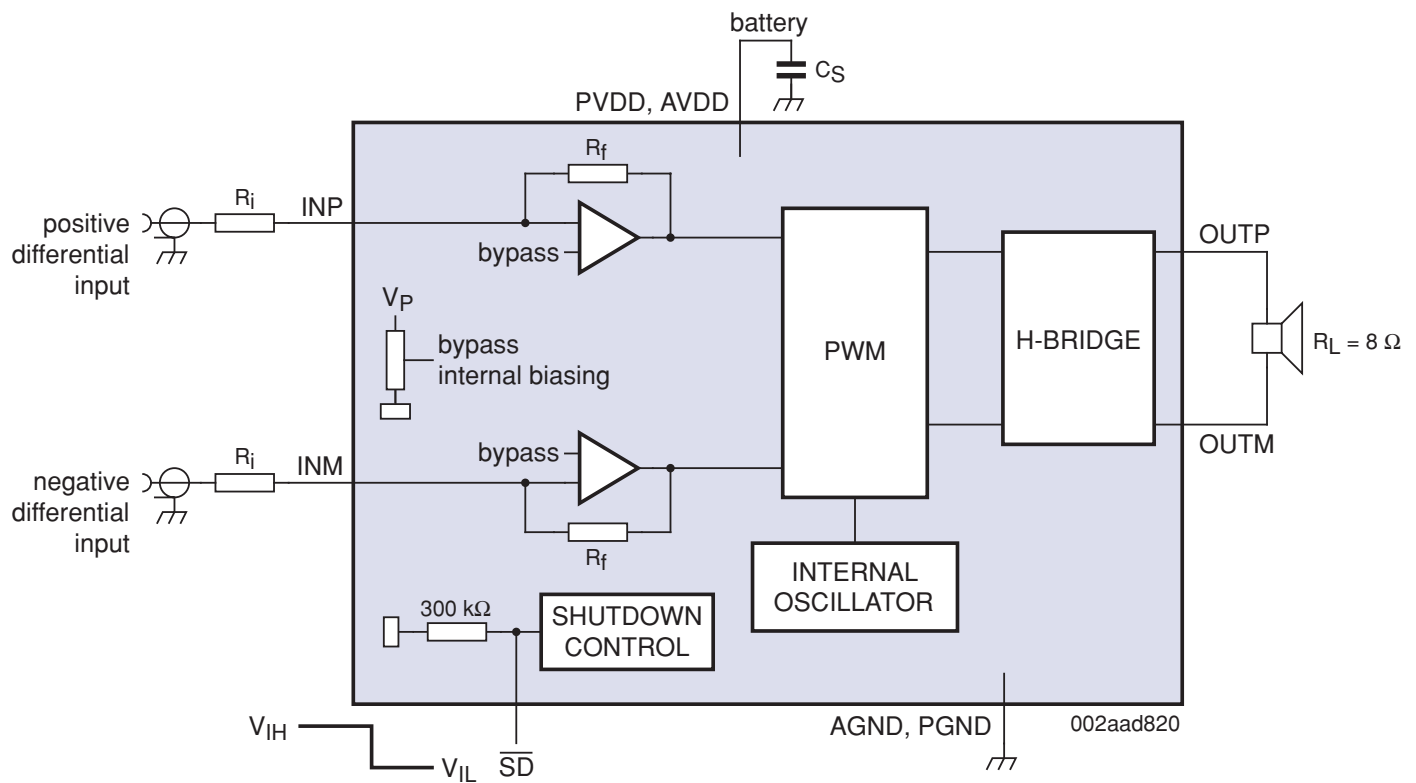
To save space in portable designs, the SA58672UK uses a 9-bump Wafer Level Chip Scale Package (WLCSP) that measures only 1.66 x 1.71 x 0.6 mm.

The improved immunity to noise and RF rectification results in better overall audio performance.

The fast start-up time of 7 ms eliminates pop-on sounds and makes the SA58672UK ideal for wireless or cellular handsets and other portable audio applications.



SA58672UK evaluation board



SA58672UK block diagram