

## 内置BOOST升压/防破音功能的2×4.75W立体声D类音频功率放大器

### ■ 特点

- 防削顶失真功能(Anti-Clipping Function, ACF)
- 免滤波器数字调制，直接驱动扬声器
- 输出功率

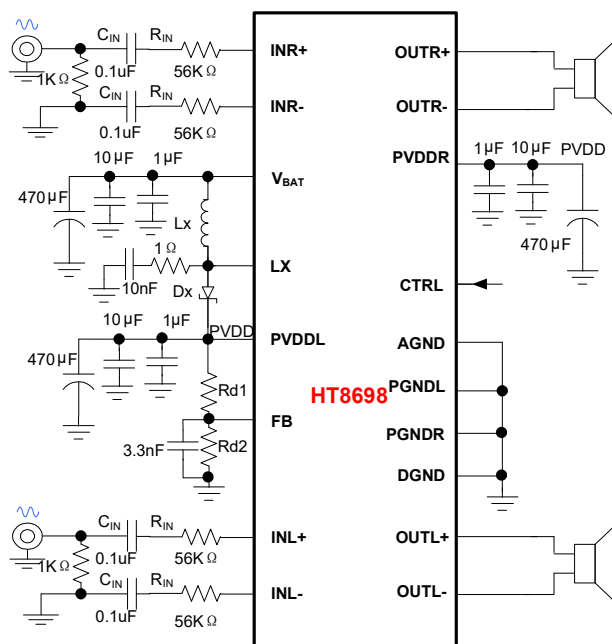
$2 \times 4.75W (V_{BAT} = 4.0V, PVDD = 6V, R_L = 4\Omega, THD+N=10\%)$

- 电源
  - 升压输入  $V_{BAT}$ : 2.5V至5.5V
  - 升压输出  $PVDD$ :  $V_{BAT}$ 至7.0V
- BOOST输出电压可调
- AB类, D类可切换
- 过流/过热/欠压异常保护功能
- 无铅封装, TSSOP20L-PP

### ■ 应用

- |                            |            |
|----------------------------|------------|
| · 蓝牙音箱                     | · 便携式音箱    |
| · 2.1声道小音箱                 | · 扩音器      |
| · iphone/ipod/ipod docking | · MP4, 导航仪 |
| · 平板电脑, 笔记本电脑              | · 智能手机     |
| · 小尺寸LCD电视/监视器             | · 便携式游戏机   |

### ■ 典型应用图



### ■ 概述

HT8698是一款内置BOOST升压模块的立体声D类音频功率放大器。内置的BOOST升压模块可通过外置电阻调节升压值，即使是锂电池供电，在升压至6V时，10% THD+N，4Ω负载条件下，能连续输出2×4.75W 的功率。

HT8698的最大特点是防削顶失真（ACF）输出控制功能，可检测并抑制由于输入音乐、语音信号幅度过大所引起的输出信号削顶失真（破音），也能自适应地防止在BOOST升压电压下降所造成的输出削顶，显著提高音质，创造非常舒适的听音享受，并保护扬声器免受过载损坏。同时芯片具有ACF-Off 模式。

HT8698具有AB类和D类的切换功能，在受到D类功放EMI干扰困扰时，可随时切换至AB类音频功放模式。

HT8698内部集成免滤波器数字调制技术，能够直接驱动扬声器，并最大程度减小脉冲输出信号的失真和噪音。输出无需滤波网络，极少的外部元器件节省了系统空间和成本，是便携式应用的理想选择。

此外，HT8698内置的关断功能使待机电流最小化，还集成了输出端过流保护、片内过温保护和电源欠压异常保护等功能。

芯片料号	可选工作模式
HT8698B6xxxx	D类
HT8698P5xxxx	D类, AB类

# 4.75W Anti-Clipping Stereo Class D Audio Amplifier with Boost Converter

## ■ FEATURE

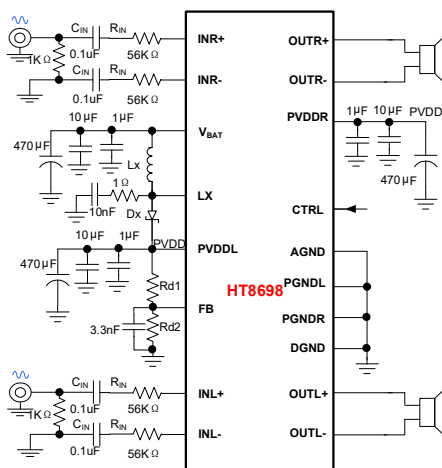
- Anti-Clipping Function (ACF)
- Filter-less Modulation, Eliminating Output Filter
- Output Power  
 $2 \times 4.75W (V_{BAT}=3.6V, PVDD = 6V, R_L=4\Omega, THD+N=10\%)$
- -BOOST Input  $V_{BAT}$ : 2.5V to 5.5V  
-BOOST Output PVDD:  $V_{BAT}$  to 7.0V
- Adjustable BOOST Output Voltage
- Class D and Class AB audio amplifier available
- Thermal Protection, Over current protection, Low voltage malfunction prevention function included
- Pb-Free Packages, TSSOP20L-PP

## ■ APPLICATIONS

- Bluetooth Speakers
- Portable Speakers
- 2.1 Channel Speakers
- Megaphone
- iPhone/iPod/iPod docking
- MP4/GPS
- Tablet PC/Note Book
- Smart Phones
- LCD TV/Monitor
- Portable Gamers

Part No.	Available Working Mode
HT8698B6xxxx	Class D
HT8698P5xxxx	Class D and Class AB

## ■ 典型应用图



## ■ GENERAL DESCRIPTION

HT8698 integrates a boost converter with a filter-less stereo class D audio power amplifier to provide  $2 \times 4.75W$  continuous power into a  $4\Omega$  speaker when operating from a Li-battery voltage boosted to 6V. Meanwhile, the boost output voltage is adjustable.

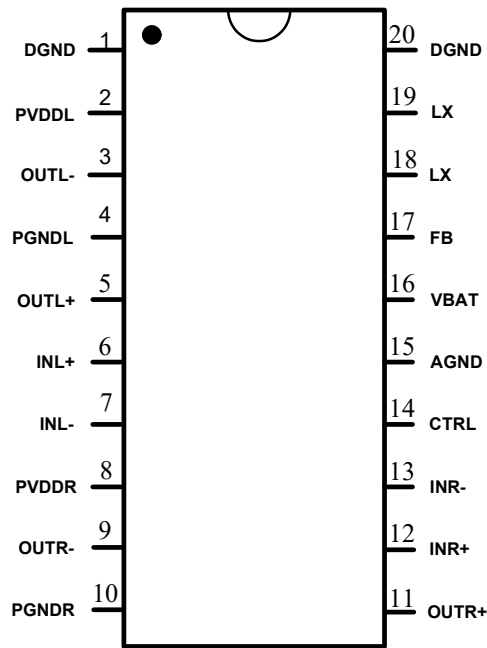
HT8698 features Anti-Clipping Function (ACF) which detects output signal clip due to the over input signal and suppresses the output signal clip automatically. Also, the ACF function can adapt the output clip caused by power supply voltage down with battery. It can significantly improve the sound quality, creating a very comfortable musical enjoyment, and to protect the speakers from overload damage. It also supplies ACF OFF mode.

Class AB amplifier mode is also available for HT8698. Once the EMI Interference from class D and Boost Converter becomes an annoying problem, HT8698 can be changed into Class AB mode.

HT8698 has a filter-less modulation circuit which directly drives speakers while realizes low distortion and low noise characteristics. Thanks to filter-less, circuit design with fewer external parts can be made in portable applications.

HT8698 has the independent Shutdown function which can minimize the power consumption at standby and MUTE function. As for protection function, over current protection, over temperature protection function, and low supply voltage malfunction preventing function are also prepared.

**■ TERMINAL CONFIGURATION**



TSSOP20L-PP Top View

**■ TERMINAL FUNCTION<sup>1</sup>**

TSSOP Terminal No.	Name	I/O	ESD Protection	Function
1,20	DGND	GND	-	Power Ground for Boost converter
2	PVDDL	Power	-	Boost Converter Output Voltage, Power Supply for Class D Left Channel
3	OUTL-	O	-	Left channel negative output terminal (BTL-)
4	PGNDL	GND	-	Power Ground for Class D Left Channel
5	OUTL+	O	-	Left channel positive output (BTL+)
6	INL+	I	PN	Left channel positive input terminal (differential +)
7	INL-	I	PN	Left channel negative input terminal (differential -)
8	PVDDR	Power	-	Boost Converter Output Voltage, Power Supply for Class D Right Channel
9	OUTR-	O	-	Right channel negative output terminal (BTL-)
10	PGNDR	GND	-	Power Ground for Class D Right Channel
11	OUTR+	O	-	Right channel positive output terminal (BTL+)
12	INR+	I	PN	Right channel positive input terminal (differential +)
13	INR-	I	PN	Right channel negative input terminal (differential -)
14	CTRL	I	PN	Shutdown, Class AB and ACF control terminal
15	AGND	GND	PN	Analog Ground
16	VBAT	Power	PN	Power Supply
17	FB	I	PN	Regulator Feedback Input
18,19	LX	I	-	Internal Switch Input

<sup>1</sup> I: Input O: Output

**ORDERING INFORMATION**

Part Number	Available Working Mode	Package Type	Marking	Operating Temperature Range	MOQ/Shipping Package
HT8698B6MTET	Class D	TSSOP20L-PP	HT8698 <sub>MTE</sub>	-40°C~85°C	Tube / 46 PCS
HT8698B6MTER	Class D	TSSOP20L-PP	HT8698 <sub>MTE</sub>	-40°C~85°C	Tape and Reel 3000PCS
HT8698P5MTET	Class D and Class AB	TSSOP20L-PP	HT8698 <sub>MTE</sub>	-40°C~85°C	Tube / 46 PCS
HT8698P5MTER	Class D and Class AB	TSSOP20L-PP	HT8698 <sub>MTE</sub>	-40°C~85°C	Tape and Reel 3000PCS

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