

# 30W内置升压单声道D类/AB类音频功放

## 30W Boosted Mono Class D/AB Amplifier

### ■ FEATURES

- Anti-Clipping Function (ACF)
- Spread spectrum technology
- Output Power  
28W ( $V_{BAT}=7.2V$ ,  $R_L=4\Omega$ , THD+N=10%, PVDD = 15.5V,  $f_{IN} = 1kHz$ )  
22W ( $V_{BAT}=7.2V$ ,  $R_L=4\Omega$ , THD+N=1%, PVDD = 15.5V,  $f_{IN} = 1kHz$ )  
16.5W ( $V_{BAT}=3.7V$ ,  $R_L=4\Omega$ , THD+N=10%, PVDD = 12V,  $f_{IN} = 1kHz$ )  
12.8W ( $V_{BAT}=3.7V$ ,  $R_L=4\Omega$ , THD+N=1%, PVDD = 12V,  $f_{IN} = 1kHz$ )
- Power Supply  $V_{BAT}$ : 3.0V~12V
- Integrates High Efficiency Boost Converter
  - Adjustable voltage by external resistor
  - Adjustable switch peak current limit to avoid over-pulling on battery current
- Both Class D and Class AB are available
- Over Current Protection, Thermal Protection, over voltage protection function included
- Pb-Free Packages, ESOP16
- 防削顶失真功能(防破音, Anti-Clipping Function, ACF)  
• 扩频技术  
• 输出功率  
28W ( $V_{BAT}=7.2V$ ,  $R_L=4\Omega$ , THD+N=10%, PVDD = 15.5V,  $f_{IN} = 1kHz$ )  
22W ( $V_{BAT}=7.2V$ ,  $R_L=4\Omega$ , THD+N=1%, PVDD = 15.5V,  $f_{IN} = 1kHz$ )  
16.5W ( $V_{BAT}=3.7V$ ,  $R_L=4\Omega$ , THD+N=10%, PVDD = 12V,  $f_{IN} = 1kHz$ )  
12.8W ( $V_{BAT}=3.7V$ ,  $R_L=4\Omega$ , THD+N=1%, PVDD = 12V,  $f_{IN} = 1kHz$ )  
•  $V_{BAT}$ 供电范围: 3.0V至12V  
• 内置高效升压  
-可通过外部电阻调节升压值  
-可调节最大限流值, 有效防止电池拉死  
• AB类和D类可切换  
• 保护功能:过流/过热/过压保护功能  
• 无铅封装, ESOP16

### ■ APPLICATIONS

• Bluetooth/Wi-Fi Speakers	• Portable Speakers	• 蓝牙/ Wi-Fi音箱	• 便携式音箱
• Smart speakers	• Smart Home	• 智能音箱	• 智能家居

## ■ DESCRIPTION

HT81697, integrated with a boost converter, is a mono Class D/Class AB audio amplifier that drives up to continuous 28W (10% THD+N, 1kHz) into 4ohm speaker from two Li-batteries in series boosted to 15.5V.

HT81697 integrates a boost converter that generates a power supply for the power amplifier, so that a higher power can be achieved. The output voltage of boost converter can be configured by external resistors. Configurable current limit is adopted to avoid accidental large peak current.

HT81697 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 supplies 3 different ACF mode with different audio experience, and also ACF OFF mode.

HT81697 integrates Spread Spectrum Control technology to achieve advanced EMI suppression. If EMI issue is highly concerned, the boost converter can be disabled and the amplifier can be switched to Class AB.

As for protection function, over current protection function for speaker output terminals, over temperature protection function and over voltage protection for boost converter output are also prepared.

HT81697是一款内置升压的单声道D类/AB类音频功率放大器，由双节锂电池串联供电升压至15.5V时，THD+N=10%，能连续输出28W功率（4Ω负载）。

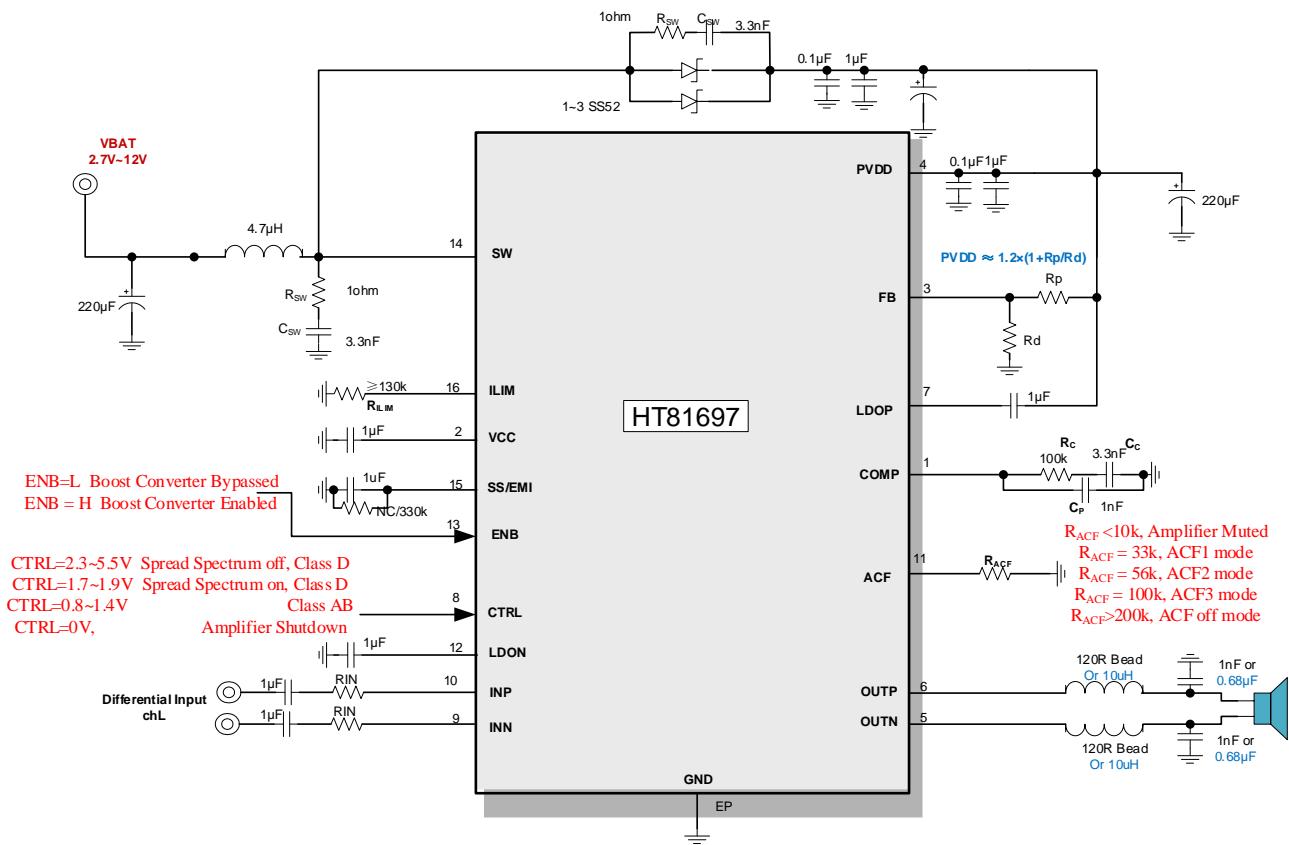
HT81697内置升压，可以为内部音频功放提供一个高电压，从而实现更高功率，其升压值可通过外部电阻调节。HT81697可配置升压限流值，以防止过大的电流尖峰。

HT81697具有防削顶失真（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。HT81697提供三种不同音乐体验的ACF模式，以及ACF-Off 模式。

HT81697具有先进的扩频功能来抑制EMI。如果系统对EMI高度敏感，则可以将升压关闭，并将功放切换到AB类。

此外，HT81697集成了输出端过流保护、片内过温保护、升压过压保护等功能。

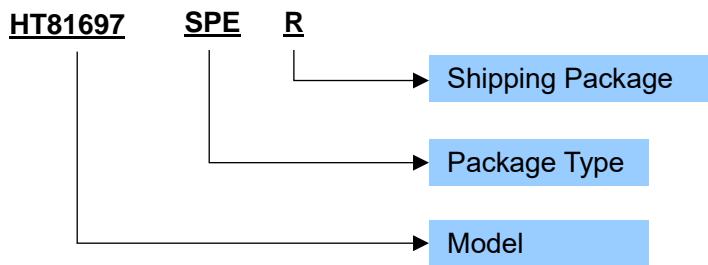
## ■ TYPICAL APPLICATION



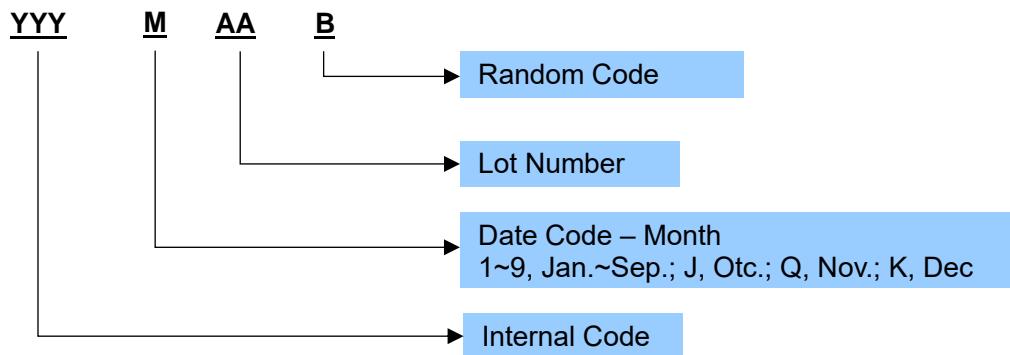
## ■ ORDERING INFORMATION

Part Number	Package Type	Marking	Operating Temperature Range	Shipping Package / MOQ
HT81697SPER	ESOP16 (SPE)	HT81697 YYYMAAB <sup>1</sup>	-40°C~85°C	Tape and Reel (R) / 2500pcs
HT81697SPET	ESOP16 (SPE)	HT81697 YYYMAAB	-40°C~85°C	Tube (T) / 50pcs

### Part Number

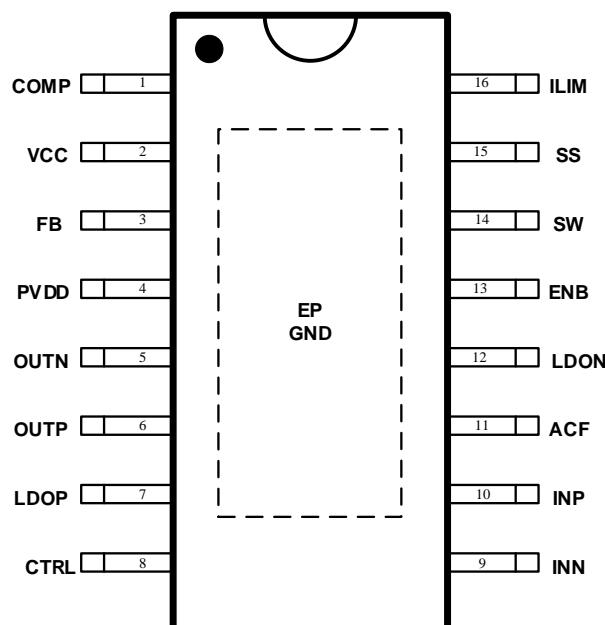


### Production Tracking Code



<sup>1</sup> YYYMAAB is production tracking code

## ■ TERMINAL CONFIGURATION



**HT81697 Top View**

## ■ TERMINAL FUNCTION

Terminal No.	Name	I/O <sup>1</sup>	Description
HT81697			
1	COMP	O	Output of the internal error amplifier, the loop compensation network should be connected between this pin and the GND pin. 环路补偿脚, 接补偿电路到GND。
2	VCC	O	Voltage regulator, connect 1uF to GND. 电压调节器, 接1uF到地。
3	FB	I	Voltage feedback. 电压反馈脚
4	PVDD	P	Power supply. 电源供电
5	OUTN	O	Negative pin for differential speaker amplifier. 输出负端
6	OUTP	O	Positive pin for differential speaker amplifier output. 输出正端
7	LDOP	O	Internal LDO output, connect 1uF to PVDD. 内部LDO输出, 接1uF到PVDD
8	CTRL	I	Amplifier working mode selection terminal 功放工作模式设置脚
9	INN	I	Negative input (differential-) for audio amplifier. 功放输入负端
10	INP	I	Positive input (differential+) for audio amplifier. 功放输入正端
11	ACF	O	ACF mode selection terminal. ACF模式设置端
12	LDON	O	Internal LDO output, connect 1uF to GND. 内部LDO输出, 接1uF到GND
13	ENB	I	Enable terminal for the boost converter. 升压使能端
14	SW	I	Boost and rectifying switch input. 升压整流开关输入端
15	SS	O	Soft-start programming pin. An external capacitor connected to ground sets the ramp rate of the internal error amplifier's reference voltage during soft-start. 升压软启动设置脚, 接电容到地。 Also used as mode selection for different tr/tf of the boost converter, an external resistor 330k connected to ground selects a flatter tr/tf. 同时作为升压电路tr/tf设置脚, 当同时外接1个330k电阻到地时, 选择较缓的tr/tf。
16	ILIM	I	Adjustable switch peak current limit. An external resistor should be connected between this pin and GND. 最大限流值设置端, 外部接电阻到地。
EP	GND	G	Provides both <b>electrical and thermal connection</b> from the device to the board. <b>A matching ground pad must be provided on the PCB and the device connected to it via solder.</b> For proper electrical operation, this ground pad must be connected to the system ground. 既是地, 又是散热PAD

<sup>1</sup> I: Input; O: Output; G: Ground; P: Power; BST: BOOT Strap;

**IMPORTANT NOTICE****注意**

Heroic Electronic Technology (Jiaxing) Co., Ltd (HT) reserves the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any products or services. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete.

禾润电子科技（嘉兴）股份有限公司（以下简称HT）保留对产品、服务、文档的任何修改、更正、提高、改善和其他改变，或停止提供任何产品和服务的权利。客户在下单和生产前应确保所得到的信息是最新、最完整的。

HT assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using HT components.

HT对相关应用的说明和协助以及客户产品的板级设计不承担任何责任。

HT products are not authorized for use in safety-critical applications (such as life support devices or systems) where a failure of the HT product would reasonably be expected to affect the safety or effectiveness of that devices or systems.

HT的产品并未授权用于诸如生命维持设备等安全性极高的应用中。

The information included herein is believed to be accurate and reliable. However, HT assumes no responsibility for its use; nor for any infringement of patents or other rights of third parties which may result from its use.

本文中的相关信息是精确和可靠的，但HT并不对其负责，也不对任何可能的专利和第三方权利的侵害负责。

Following are URLs and contacts where you can obtain information or supports on any HT products and application solutions:

下面是可以联系到我公司的相关链接和联系方式：

**禾润电子科技（嘉兴）股份有限公司**  
**Heroic Electronic Technology (Jiaxing) Co., Ltd.**

地址：浙江省嘉兴市凌公塘路3339号JRC大厦A座三层

Add: A 3rd floor, JRC Building, No. 3339, LingGongTang Road, Jiaxing, Zhejiang Province

Sales: 0573-82585539, sales@heroic.com.cn

Support: 0573-82586151, support@heroic.com.cn

Fax: 0573-82585078

Website: [www.heroic.com.cn](http://www.heroic.com.cn); [wap.heroic.com.cn](http://wap.heroic.com.cn)

Wechat MP: HEROIC\_JX

请及时关注禾润官方微信公众号，随时获取最新产品信息和技术资料！

