

内置升压的25W立体声D类音频功放

2×25W Class D Audio Amplifier with Boost Converter

■ FEATURES

- Output Power ($f_{IN} = 1\text{kHz}$, $R_L = 4\Omega$, BTL)
VBAT = 7.2V, 2×25W ($V_{OUT} = 14.8\text{V}$, THD+N = 10%)
VBAT = 3.7V, 2×10W ($V_{OUT} = 9\text{V}$, THD+N = 10%)
- Output Power ($f_{IN} = 1\text{kHz}$, $R_L = 2\Omega$, PBTL)
VBAT = 7.2V, 50W ($V_{OUT} = 14.8\text{V}$, THD+N = 10%)
VBAT = 3.7V, 20W ($V_{OUT} = 9\text{V}$, THD+N = 10%)
- Output Power ($f_{IN} = 1\text{kHz}$, $R_L = 4\Omega$, PBTL)
VBAT = 3.7V, 20W ($V_{OUT} = 12\text{V}$, THD+N = 10%)
- Power Supply V_{BAT} : 2.7V~VOUT
- Integrated boost converter: adjustable output voltage VOUT and switch peak current limit
- Anti-clipping Function (ACF)
- Differential / Single-ended Analog Input, BTL or PBTL Output
- Over current protection/ Over temperature protection / Overvoltage protection / Low voltage malfunction prevention function with auto recovery
- Pb-free Packages, ETSSOP28
- 输出功率($f_{IN} = 1\text{kHz}$, $R_L = 4\Omega$, BTL)
双锂电7.2V: 2×25W ($V_{OUT} = 14.8\text{V}$, THD+N = 10%)
单锂电3.7V: 2×10W ($V_{OUT} = 9\text{V}$, THD+N = 10%)
- 输出功率($f_{IN} = 1\text{kHz}$, $R_L = 2\Omega$, PBTL)
双锂电7.2V: 50W ($V_{OUT} = 14.8\text{V}$, THD+N = 10%)
单锂电3.7V: 20W ($V_{OUT} = 9\text{V}$, THD+N = 10%)
- 输出功率($f_{IN} = 1\text{kHz}$, $R_L = 4\Omega$, PBTL)
单锂电3.7V: 20W ($V_{OUT} = 12\text{V}$, THD+N = 10%)
- VBAT供电范围: 2.7V至VOUT
- 内置升压电路: 可调节的升压值和升压限流
- ACF防破音功能可选
- 模拟差分/单端输入, 输出模式立体声/单声道可选
- 保护功能: 过流/过热/欠压异常/过压保护功能
- 无铅无卤封装, ETSSOP28

■ APPLICATIONS

- Smart Speakers
- Portable Speakers
- Megaphone
- Wireless Speakers
- 2.1Channel Speakers
- Portable Gamers
- 智能音响
- 无线音响
- 便携式音箱
- 2.1声道小音箱
- 拉杆音箱
- 便携式游戏机

DESCRIPTION

The HT81698 is a stereo Class D audio amplifier integrated a boost converter. With wide input voltage range, HT81698 supports applications with single cell, two cell Lithium batteries, 5V or 12V power supply and so on, and can drive two speakers in BTL mode or one speaker in paralleled PBTL mode.

HT81698 built-in boost converter supports selectable output voltage by external resistors for different applications with different power requirements. It also implements an adjustable switching peak current limit function through external resistors.

HT81698 has a filter-less modulation circuit which can directly drive speakers. HT81698 can be shut down so that the power consumption can be minimized. As for protection function, over current protection function for speaker output terminals, over temperature protection function, low supply voltage malfunction preventing function and over boost voltage protection are also prepared.

HT81698 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. It can significantly improve the sound quality, creating a very comfortable musical enjoyment, and to protect the speakers from overload damage.

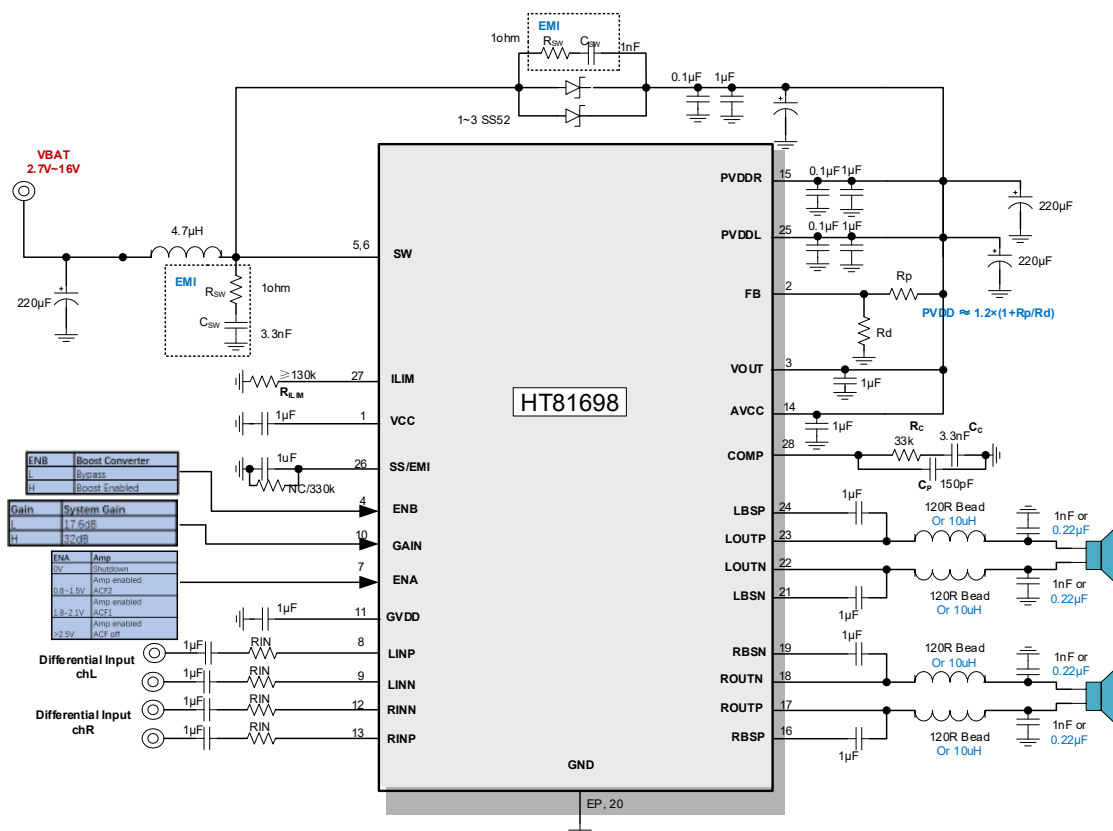
HT81698是一款内置升压的立体声D类音频功率放大器，其支持单节锂电、双节锂电串联、5V、12V等多种输入，升压后的电压提供给功放供电，功放支持双通道立体声BTL输出以及并联PBTL单声道输出。

HT81698内置的升压电路，可通过FB脚设置升压值，以满足不同的输出功率需求。其还可通过外置电阻调节开关峰值电流限值。

此外，HT81698内部集成免滤波器调制技术，能够直接驱动扬声器，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、输入电源欠压异常保护、升压电压过压保护等功能。

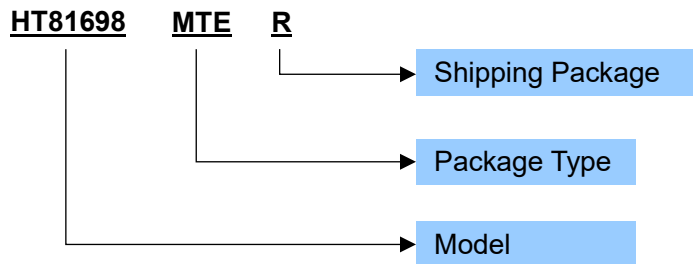
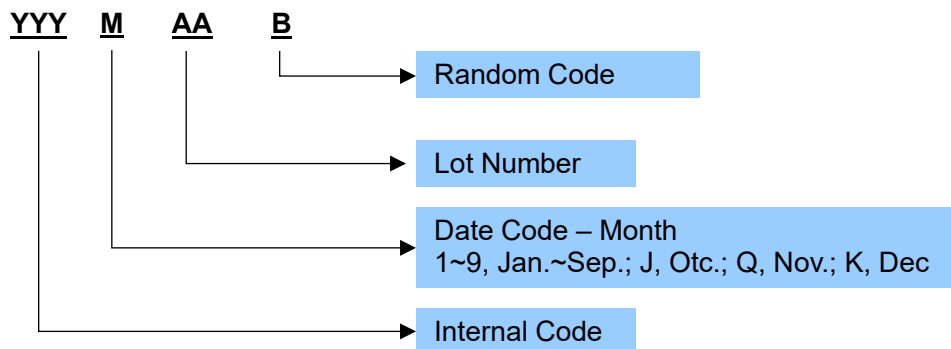
HT81698具有防削顶失真（ACF）输出控制功能，可检测并抑制由于输入音乐、语音信号幅度过大所引起的输出信号削顶失真（破音），也能自适应地防止在BOOST升压电压下降所造成的输出削顶，显著提高音质，创造非常舒适的听音享受，并保护扬声器免受过载损坏。

TYPICAL APPLICATION

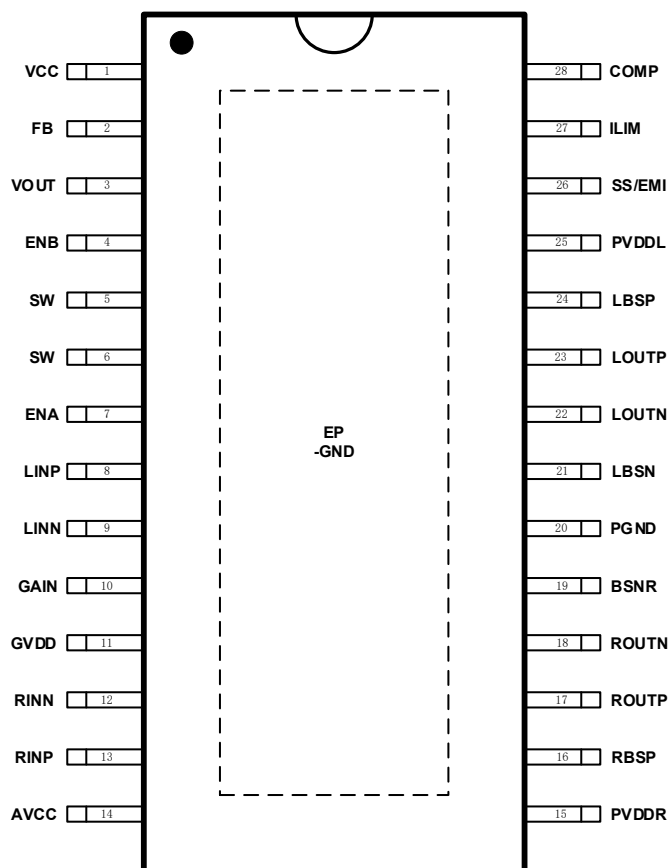


ORDERING INFORMATION

Part Number	Package Type	Marking	Operating Temperature Range	Shipping Package / MOQ
HT81698MTER	ETSSOP28	HT81698 YYYMAAB ¹	-40℃~85℃	Tape and Reel 3000PCS

Part Number

Production Tracking Code

¹ YYYMAAB is production tracking code

■ TERMINAL CONFIGURATION



Top View

■ TERMINAL FUNCTION

Terminal No.	Name	I/O ¹	Description
EP	GND	G	Ground. Also provides thermal connection from the device to the board. A matching ground pad should be provided on the PCB and the device connected to it via solder. 地, 同时提供器件向板级散热的路径。PCB 板上需要留有足够的铺地露铜与之良好焊接。
1	VCC	O	Output of the internal regulator for boost converter. A ceramic capacitor of 1uF is required between this pin and ground. 升压电路内部电压输出, 接 1uF 到底。
2	FB	I	Voltage feedback. 电压反馈脚
3	VOUT	P	Power supply for boost converter. 升压供电端
4	ENB	I	Enable logic input for boost converter. Logic high level enables the device. Logic low level disables the device and turns it into bypass mode. 升压使能脚, 高电平时升压开启, 低电平时升压关闭
5,6	SW	P	The switching node pin of the converter. 升压开关点

¹ I: Input; O: Output; G: Ground; P: Power

7	ENA	I	Enable logic input and operation mode selection for amplifier
8	LINP	I	Positive input (differential+) for audio amplifier of left channel. 音频左声道输入正端。
9	LINN	I	Negative input (differential-) for audio amplifier of left channel. 音频左声道输入负端。
10	GAIN	I	Gain select pin. Gain is 17.5dB when logic low, and 31.8dB when logic high or floating 增益选择。拉低时，增益 17.5dB；拉高或悬空时，增益 31.8dB
11	GVDD	O	Voltage regulator of amplifier, connect 1uF to GND. 功放内部电压，接 1uF 到地
12	RINN	I	Negative input (differential-) for audio amplifier of right channel. 音频右声道输入负端。
13	RINP	I	Positive input (differential+) for audio amplifier of right channel. 音频右声道输入正端
14	AVCC	P	Analog power supply for amplifier 功放模拟供电
15	PVDDR	O	Power supply terminal for right channel. 右声道功率电源端。
16	RBSP	BST	Connection point for the ROUTP bootstrap capacitor, which is used to create a power supply for the high-side gate drive for ROUTP. ROUTP 自举电容端
17	ROUTP	O	Positive output terminal (BTL+) for right channel. 右声道正端输出
18	ROUTN	O	Negative output terminal (BTL-) for right channel. 右声道负端输出。
19	RBSN	BST	Connection point for the ROUTN bootstrap capacitor, which is used to create a power supply for the high-side gate drive for ROUTN. ROUTN 自举电容端
20	PGND	P	Power ground for amplifier 功放功率地
21	LBSN	BST	Connection point for the LOUTN bootstrap capacitor, which is used to create a power supply for the high-side gate drive for LOUTN. LOUTN 自举电容端
22	LOUTN	O	Negative output terminal (BTL-) for left channel. 左声道负端输出。
23	LOUTP	O	Positive output terminal (BTL+) for left channel. 左声道正端输出。
24	LBSP	BST	Connection point for the LOUTP bootstrap capacitor, which is used to create a power supply for the high-side gate drive for LOUTP. LOUTP 自举电容端
25	PVDDL	P	Power supply terminal for left channel. 左声道功率电源端。
26	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, an external resistor connected to ground selects a flatter tr/tf. 同时作为 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。
27	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。
28	COMP	O	Output of the internal error amplifier, the loop compensation network should be connected between this pin and the AGND pin. 内部补偿脚

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