

内置BOOST升压和防破音功能的11W D/AB类音频功率放大器

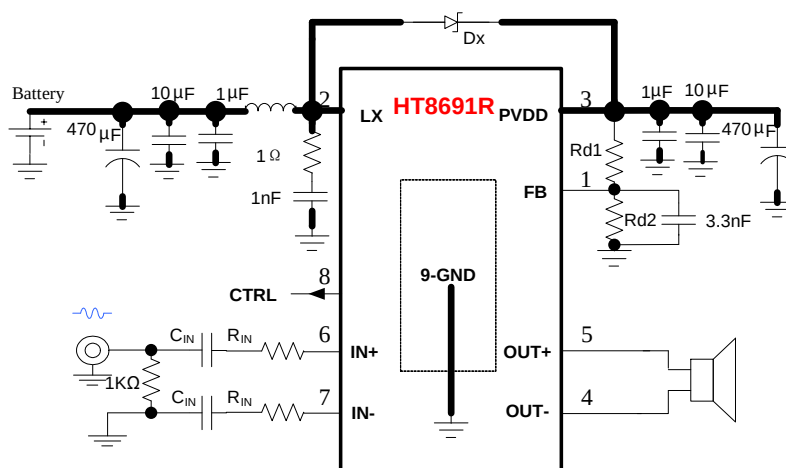
■ 特点

- 防削顶失真功能(防破音, Anti-Clipping Function, ACF)
- 免滤波器数字调制, 直接驱动扬声器
- 输出功率
 - 9.0W ($V_{BAT}=3.7V$, $PVDD = 7.5V$, $R_L=3\Omega$, $THD+N=10\%$)
 - 11.0W ($V_{BAT}=3.7V$, $PVDD = 7.5V$, $R_L=2\Omega$, $THD+N=10\%$)
 - 5.5W ($V_{BAT}=3.7V$, $PVDD = 6.5V$, $R_L=4\Omega$, $THD+N=10\%$)
 - 3.15W ($V_{BAT}=3.7V$, $PVDD = 7.5V$, $R_L=8\Omega$, $THD+N=1\%$)
- 电源
 - 升压输入 V_{BAT} : 2.5V至5.5V
 - 升压输出 $PVDD$: V_{BAT} 至7.5V
- BOOST输出电压可调
- AB/D类可切换
- 保护功能:过流/过热/欠压异常保护功能
- 无铅封装, SOP8L-PP

■ 应用

- 蓝牙音箱
- 2.1声道小音箱
- iphone/ipod/ipod docking
- 平板电脑, 笔记本电脑
- 便携式音箱
- 扩音器
- MP4, 导航仪
- 智能手机

■ 典型应用图



- 小尺寸LCD电视/监视器
- 便携式游戏机

■ 概述

HT8691R是一款内置BOOST升压模块的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7.5V, 2Ω负载条件下则能连续输出11W功率。其支持外部设置调节BOOST输出电压。

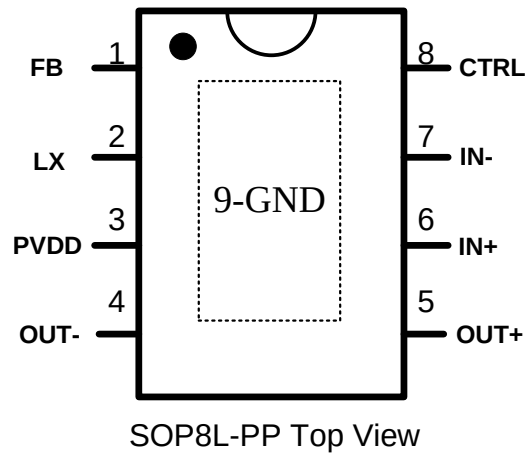
HT8691R的最大特点是防削顶失真 (ACF) 输出控制功能,可检测并抑制由于输入音乐、语音信号幅度过大所引起的输出信号削顶失真 (破音),也能自适应地防止在BOOST升压电压下降所造成的输出削顶,显著提高音质,创造非常舒适的听音享受,并保护扬声器免受过载损坏。同时芯片具有ACF-Off 模式。

HT8691R具有AB类和D类的自由切换功能,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。

HT8691R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, HT8691R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。

■ 引脚信息



■ 引脚定义¹

SOP Terminal No.	Name	I/O	ESD Protection	Function
1	FB	I	PN	升压反馈点
2	LX	I	-	升压整流管输入
3	PVDD	Power	PN	升压输出和功率电源
4	OUT-	O	-	输出负端(BTL-)
5	OUT+	O	-	输出正端(BTL+)
6	IN+	I	PN	输入正端 (differential +)
7	IN-	I	PN	输入负端 (differential -)
8	CTRL	I	PN	模式控制输入端
9	GND ²	GND	PN	电源地

■ 订货信息

产品型号	封装形式	顶面标记	工作温度范围	包装和最小起订量
HT8691RSPET	SOP8L-PP	HT8691R _{SP}	-40℃~85℃	料管 / 100颗
HT8691RSPER	SOP8L-PP	HT8691R _{SP}	-40℃~85℃	编带 / 2500颗

¹ I: 输入端 O: 输出端

² 请确保 GND 脚连接至电源地。

11W Anti-Clipping Mono Class D/AB Audio Amplifier with Boost Converter

FEATURE

- Anti-Clipping Function (ACF)
- Filter-less Modulation, Eliminating Output Filter
- Output Power
 - 9.0W ($V_{BAT}=3.7V$, $PVDD = 7.5V$, $R_L=3\Omega$, $THD+N=10\%$)
 - 11.0W ($V_{BAT}=3.7V$, $PVDD = 7.5V$, $R_L=2\Omega$, $THD+N=10\%$)
 - 5.5W ($V_{BAT}=3.7V$, $PVDD = 6.5V$, $R_L=4\Omega$, $THD+N=10\%$)
 - 3.15W ($V_{BAT}=3.7V$, $PVDD = 7.5V$, $R_L=8\Omega$, $THD+N=1\%$)
- Power Supply
 - Boost Input V_{BAT} : 2.5V to 5.5V
 - Boost Output $PVDD$: V_{BAT} to 7.5V
- Adjustable BOOST Output Voltage
- Class AB / Class D
- Over Current Protection, Thermal Protection, Low voltage malfunction prevention function included
- Pb-Free Packages , SOP8L-PP

APPLICATIONS

- Bluetooth Speakers
- Portable Speakers
- 2.1 Channel Speakers
- Megaphone
- iphone/ipod/ipod docking
- MP4/GPS
- Tablet PC/Note Book
- Smart Phones

TYPICAL APPLICATION

• LCD TV/Monitor

• Portable Gamers

GENERAL DESCRIPTION

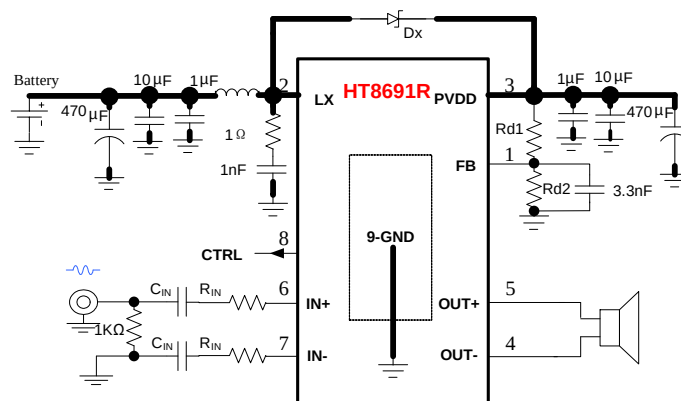
HT8691R integrates a boost converter with a filter-less stereo class D audio power amplifier to provide 11W continuous power into a 2Ω speaker when operating from a Li-battery voltage boosted to 7.5V. Meanwhile, the boost output voltage is adjustable.

HT8691R 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.

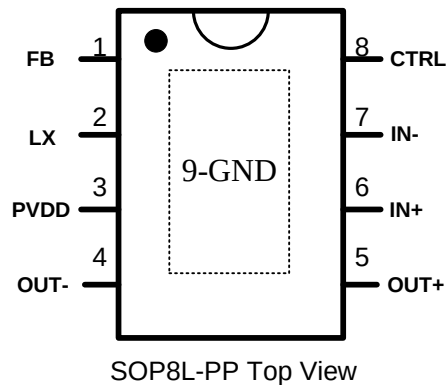
Class AB amplifier mode is also available for HT8691R. Once the EMI Interference from class D and Boost Converter becomes an annoying problem, HT8691R can be changed into Class AB mode.

HT8691R 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.

HT8691R has the independent Shutdown function which can minimize the power consumption at standby and MUTE function. As for protection function, over current protection function for speaker output terminals, over temperature protection function, and low supply voltage malfunction preventing function are also prepared.



■ TERMINAL CONFIGURATION



■ TERMINAL FUNCTION ¹

SOP Terminal No.	Name	I/O	ESD Protection	Function
1	FB	I	PN	Regulator Feedback Input
2	LX	I	-	Internal Switch Input
3	PVDD	Power	PN	Boost Converter Output Voltage and Power Supply
4	OUT-	O	-	Negative Output Terminal (BTL-)
5	OUT+	O	-	Positive Output (BTL+)
6	IN+	I	PN	Positive Input Terminal (differential +)
7	IN-	I	PN	Negative Input Terminal (differential -)
8	CTRL	I	PN	Mode Control Terminal
9	GND ²	GND	PN	Power Ground

■ ORDERING INFORMATION

Part Number	Package Type	Marking	Operating Temperature Range	MOQ/Shipping Package
HT8691RSPET	SOP8L-PP	HT8691R _{SP}	-40°C~85°C	100PCS / Tube
HT8691RSPER	SOP8L-PP	HT8691R _{SP}	-40°C~85°C	2500PCS / Tape and Reel

¹ I: Input O: Output

² Do make sure that the GND pin is grounded into the Ground plane connecting into the power ground.

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