

12A Synchronous Class-H Boost Converter with Audio Detection

■ FEATURES

- Input voltage range V_{IN} : 2.7V to 12.2V
- Output voltage range V_{OUT} : 4.5V to 12.8V
- Programmable switch peak current limit: up to 12A
- High Efficiency
92% ($V_{IN} = 7.4V, V_{OUT}=12.8V, I_{OUT} =3A$)
92% ($V_{IN} = 3.6V, V_{OUT}=9V, I_{OUT} =1A$)
- Class-H boost converter with Audio detection
10 modes with power supply of 1 or 2 batteries in series, extremely extend the battery life when the output power is connected to an Audio Amp.
- 2 modulation mode available: PFM or PWM mode at light load
- 1.0 μ A current consumption during shutdown
- Adjustable switching frequency: 200k to 1.4MHz
- Programmable soft start
- Output overvoltage protection (at 14V), cycle-by-cycle overcurrent protection, thermal shutdown protection
- Pb-free Packages,DFN20L, 4.5mm*3.5mm

■ APPLICATIONS

- Wireless/ Speakers · Portable Speakers

■ DESCRIPTION

The HT71678 is a high-power density, fully integrated synchronous boost converter with a 16m Ω power switch and a 23m Ω rectifier switch to provide a high efficiency and small size solution in portable systems. The HT71678 has wide input voltage range from 2.7 V to 12.2 V to support applications with single cell and two cell Lithium batteries. The device has 12A switch current capability and can provide an output voltage up to 12.8V.

The HT71678 integrates audio detection which receives the audio signal to change the output voltage in accordance with audio amplitude, so that the system efficiency will be improved. There are 10 different modes that can be selected with different output voltages.

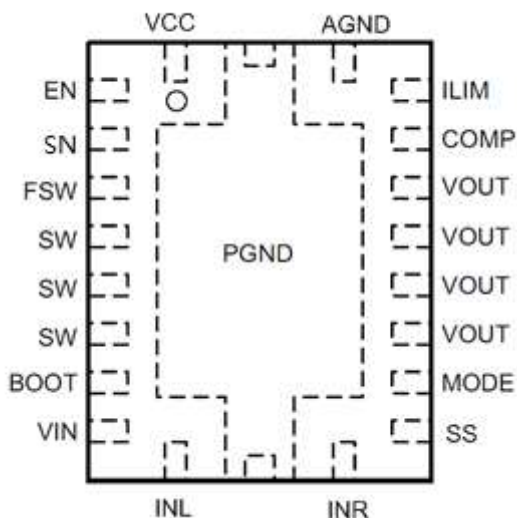
The HT71678 uses adaptive constant off-time peak current control topology to regulate the output voltage. In moderate to heavy load condition, it works in the PWM mode. In light load condition, the device has two operation modes selected by the MODE pin. One is PFM mode to improve the efficiency and another one is the forced PWM mode to avoid application problems caused by low switching frequency. The switching frequency in the PWM mode is adjustable ranging from 200kHz to 1.4MHz by an external resistor.

The HT71678 also implements a programmable soft-start function and an adjustable switching peak current limit function. In addition, the device provides 14V output overvoltage protection, cycle-by-cycle overcurrent protection, and thermal shutdown protection.

■ ORDERING INFORMATION

Part Number	Package Type	Marking	Operating Temperature Range	Shipping Package / MOQ
HT71678DNER	DFN20L	HT71678	-40 $^{\circ}$ C~85 $^{\circ}$ C	Tape and Reel / 5000PCS

■ TERMINAL CONFIGURATION

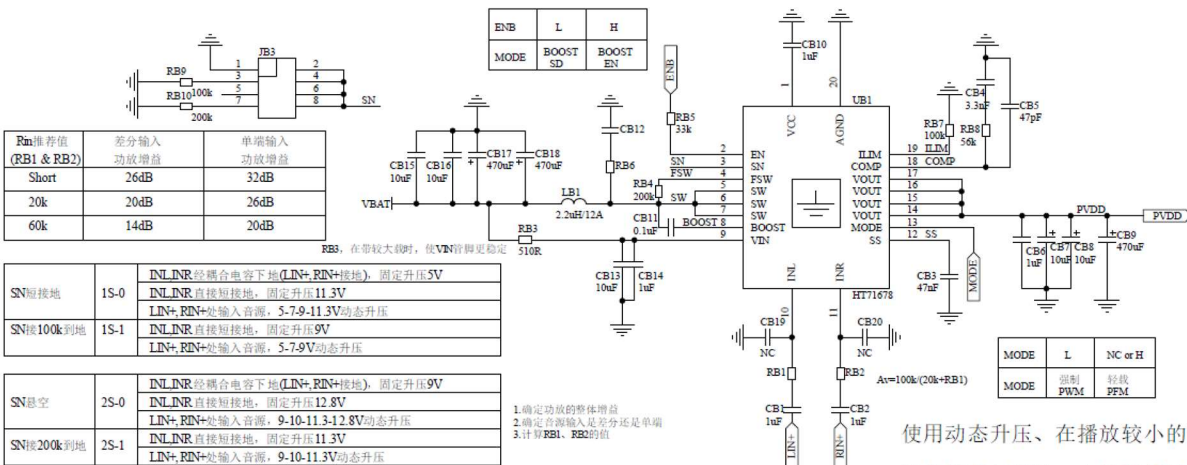
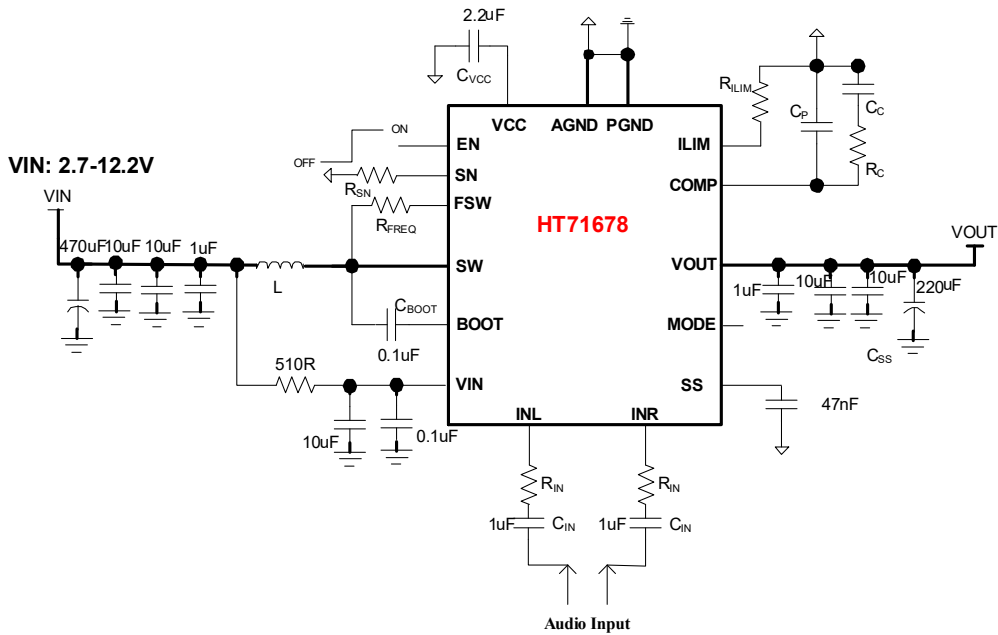


■ TERMINAL FUNCTION

Terminal No.	NAME	I/O ^{*1}	Description
1	VCC	O	Output of the internal regulator. A ceramic capacitor of 2.2uF is required between this pin and ground.
2	EN	I	Enable logic input. Logic high level enables the device. Logic low level disables the device and turns it into shutdown mode.
3	SN	O	Output voltage selection pin for boost converter.
4	FSW	I	The switching frequency is programmed by a resistor between this pin and the SW pin.
5/6/7	SW	PWR	The switching node pin of the converter.
8	BOOT	O	Power supply for high-side MOSTFET gate driver. A ceramic capacitor of 0.1μF must be connected between this pin and the SW pin.
9	VIN	I	IC power supply input.
10	INL	I	Audio detection input pin of left channel
11	INR	I	Audio detection input pin of right channel
12	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
13	MODE	I	Operation mode selection pin for the device in light load condition. When this pin is connected to ground, the device works in PWM mode. When this pin is left floating, the device works in PFM mode.
14/15/16/17	VOUT	PWR	Boost converter output.
18	COMP	O	Output of the internal error amplifier, the loop compensation network should be connected between this pin and the AGND pin.
19	ILIM	I	Adjustable switch peak current limit. An external resistor should be connected between this pin and the AGND pin.
20	AGND	-	Signal ground of the IC.
0	PGND	PWR	Power ground of the IC.

¹ I: input O: output PWR: power

TYPICAL APPLICATION



使用动态升压、在播放较小的适耳音量时较传统升压芯片，电池播放时间可延长30%

IMPORTANT NOTICE

注意

Jiaxing Heroic Electronic Technology 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.

嘉兴禾润电子科技有限公司（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：

嘉兴禾润电子科技有限公司

Jiaxing Heroic Electronic Technology 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; 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！

