

## 8W Smart Audio Amplifier with Boost Converter, TFB and AGC

### ■ FEATURES

- Automatic Gain Control (AGC) with Battery Tracking and Limiter function
  - Battery Tracking: automatically reduce system gain to extend battery life when the battery voltage is low
  - Limiter: adjusts the amplifier gain to prevent heavy clipping
- Integrated Adaptive Sync Boost Converter
  - Increases efficiency at low output power
  - No need for external diode
- Integrated Thermal Foldback (TFB) function
  - Particularly apply to applications of 8.0V+Class D, Boost + Class AB or one with a weak thermal system, significantly increase the peak audio power
  - Low quiescent current of 4.0mA ( $V_{BAT} = 3.6V$ )
  - Efficiency: 85% ( $V_{BAT} = 4.2V$ ,  $R_L = 4\Omega + 22\mu H$ ,  $P_o = 0.6W$ )
  - THD+N: 0.02% ( $V_{BAT} = 3.6V$ ,  $R_L = 4\Omega + 22\mu H$ ,  $P_o = 0.5W$ , Class D)
  - Control Mode :Hardware or I<sup>2</sup>C
- Power Supply/Output
  - $V_{BAT}$  from 2.8V to 5.0V
  - Multiple Boost Output  $V_{POUT}$  Settings: 5.5V, 6.5V, 7.5V, 8.0V
- Output Power
  - 3.4 W ( $V_{BAT}=4.2V$ ,  $V_{POUT} = 5.5V$ ,  $R_L=4\Omega$ , THD+N=1%)
  - 4.7 W ( $V_{BAT}=4.2V$ ,  $V_{POUT} = 6.5V$ ,  $R_L=4\Omega$ , THD+N=1%)
  - 6.2 W ( $V_{BAT}=4.2V$ ,  $V_{POUT} = 7.5V$ ,  $R_L=4\Omega$ , THD+N=1%)
  - 7.0 W ( $V_{BAT}=4.2V$ ,  $V_{POUT} = 8.0V$ ,  $R_L=4\Omega$ , THD+N=1%)
  - 8.5 W ( $V_{BAT}=4.2V$ ,  $V_{POUT} = 8.0V$ ,  $R_L=4\Omega$ , THD+N=10%, instantaneous)
- Two gain settings in hardware mode: 25dB, 30dB; 80-step volume control In I<sup>2</sup>C Mode
- Optional multiple modes : Boost + Class D, Boost + Class AB, Class D only and Class AB only
- Over Current /Thermal/Low voltage malfunction prevention function with auto recovery
- Pb-free Packages, TSSOP20L-PP

### ■ APPLICATIONS

- Bluetooth/Wi-Fi Speakers
- Portable Speakers
- 2.1Channel Speakers
- Megaphone
- Portable Gamers
- MP4, GPS
- LCD TV/Monitor
- Tablet PC/Note Book

### ■ DESCRIPTION

The HT862 is a smart audio power amplifier with TFB, AGC technology and an integrated adaptive sync boost converter that enhances efficiency at low output power. It drives up to continuous 7W (1% THD+N, boosted to 8.0V), or instantaneous 8.5W (10% THD+N, boosted to 8.0V) into 4ohm speaker from a Li-battery voltage.

The built-in sync boost converter generates a supply voltage (5.5V, 6.5V, 7.5V, 8.0V optional to meet different out power demands) for the audio amplifier. The boost converter is adaptive and is automatically active only when the peak output audio signal exceeds a preset voltage threshold, which is optimized to prevent clipping while maximizing system efficiency. What more, there's no need for an external diode.

HT862 integrates Automatic Gain Control (AGC), including Limiter and Battery Tracking function. When Limiter function is active, the output music can be limited below the preset power and THD+N. When Battery Tracking function is active, HT862 monitors the battery voltage and the audio signal, automatically decreasing gain when battery is lower than preset voltage and the audio output power is high. It finds the optimal gain to maximize the loudness and minimize the battery current, providing louder audio and preventing early shutdown at end-of-charge battery voltages.

The HT862 Thermal Foldback (TFB) is designed to protect the HT862 from excessive die temperature in case of the device being operated beyond the recommended temperature or power limit, or with a weaker thermal system than recommended. The TFB works by reducing the on-die power dissipation by reducing Gain if the temperature trig point is exceeded, so that the peak audio power is significantly increased.

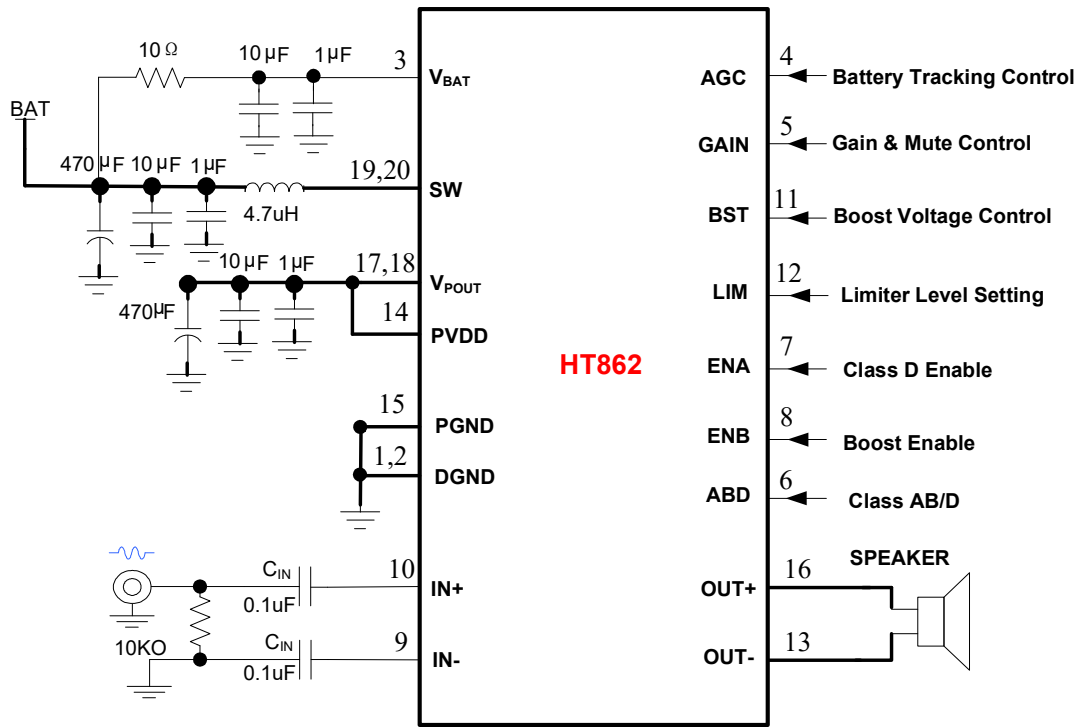
HT862 can be switched in various modes to adapt different system, such as boost + Class D, boost + Class AB, Class D only and Class AB only.

Both hardware and I<sup>2</sup>C control mode are available for HT862. More functions and parameters can be configured in I<sup>2</sup>C control mode.

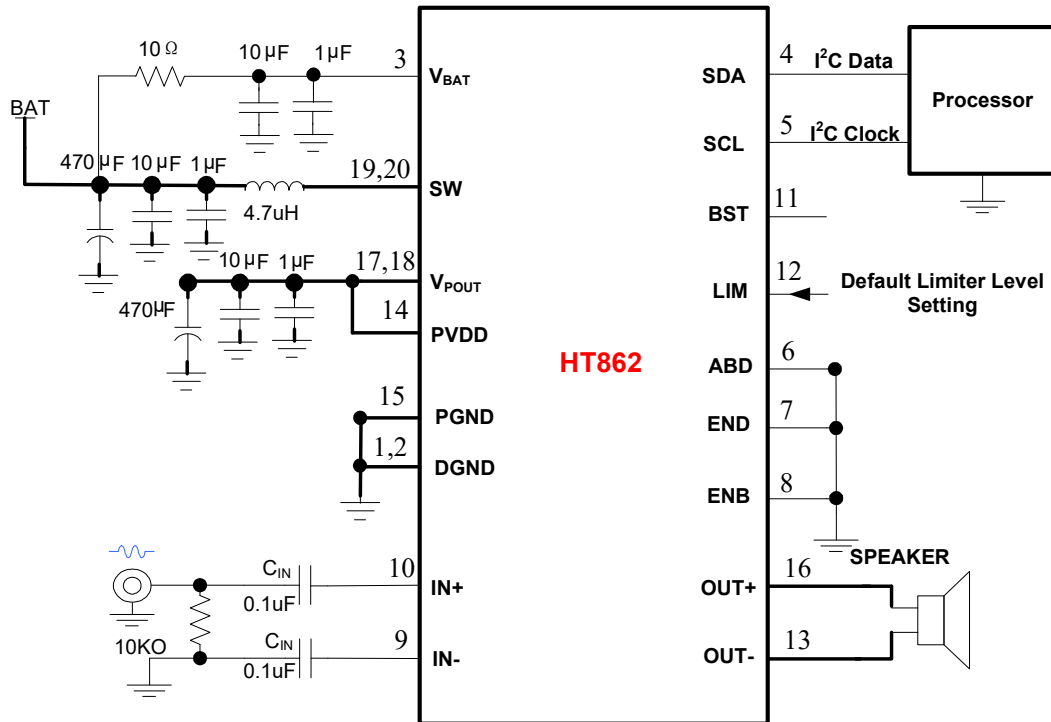
HT862 has a filter-less modulation circuit which can directly drive speakers. HT862 can be shut down so that the power consumption can be minimized. As for protection function, over current protection function for speaker output terminals, over temperature protection function and low supply voltage malfunction preventing function are also prepared.

**■ TYPICAL APPLICATION**

**1. HARDWARE CONTRL MODE**



**2. I<sup>2</sup>C CONTROL MODE**



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