

## 2×6.5W 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 with a weak thermal system, significantly increase the peak audio power
- Power Supply/Output
  - $V_{BAT}$  from 2.8V to 5.0V
  - Multiple Boost Output  $V_{POUT}$  Settings: 6.5V, 7.5V, 8.0V
- Output Power
  - 2×4.5 W ( $V_{BAT}=4.2V$ ,  $V_{POUT} = 6.5V$ ,  $R_L=4\Omega$ , THD+N=1%)
  - 2×5.8W ( $V_{BAT}=4.2V$ ,  $V_{POUT} = 7.5V$ ,  $R_L=4\Omega$ , THD+N=1%)
  - 2×6.5W ( $V_{BAT}=4.2V$ ,  $V_{POUT} = 8.0V$ ,  $R_L=4\Omega$ , THD+N=1%)
  - 10.0W ( $V_{BAT}=4.2V$ ,  $V_{POUT} = 8.0V$ ,  $R_L=3\Omega$ , THD+N=3%, PBTL)

**(Do contact and confirm with HT supplier before setting  $V_{POUT} = 8.0V$ , otherwise do not use this setting.)**

  - Gain: 25dB
  - Quiescent current: 8.0mA ( $V_{BAT} = 3.6V$ )
  - Efficiency: 88% ( $V_{BAT} = 4.2V$ ,  $R_L = 4\Omega+22\mu H$ ,  $P_o = 2\times 0.6W$ )
  - THD+N: 0.03% ( $V_{BAT} = 4.2V$ ,  $R_L = 4\Omega+22\mu H$ ,  $P_o = 2\times 0.5W$ )
  - Over Current /Thermal/Low voltage malfunction prevention function with auto recovery
  - Pb-free Packages, TSSOP28L-PP

### ■ DESCRIPTION

The HT868 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 10W (3% THD+N, boosted to 8.0V) into 3ohm speaker, or instantaneous 2×6.5W (1% THD+N, boosted to 8.0V) into 4ohm speaker from a Li-battery voltage.

The built-in sync boost converter generates a supply voltage (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.

HT868 integrates Automatic Gain Control (AGC), including Limiter and Battery Tracking function. When Limiter function is active, the output music can be limited below a certain power and THD+N. When Battery Tracking function is active, HT868 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 HT868 Thermal Foldback (TFB) is designed to protect the HT868 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.

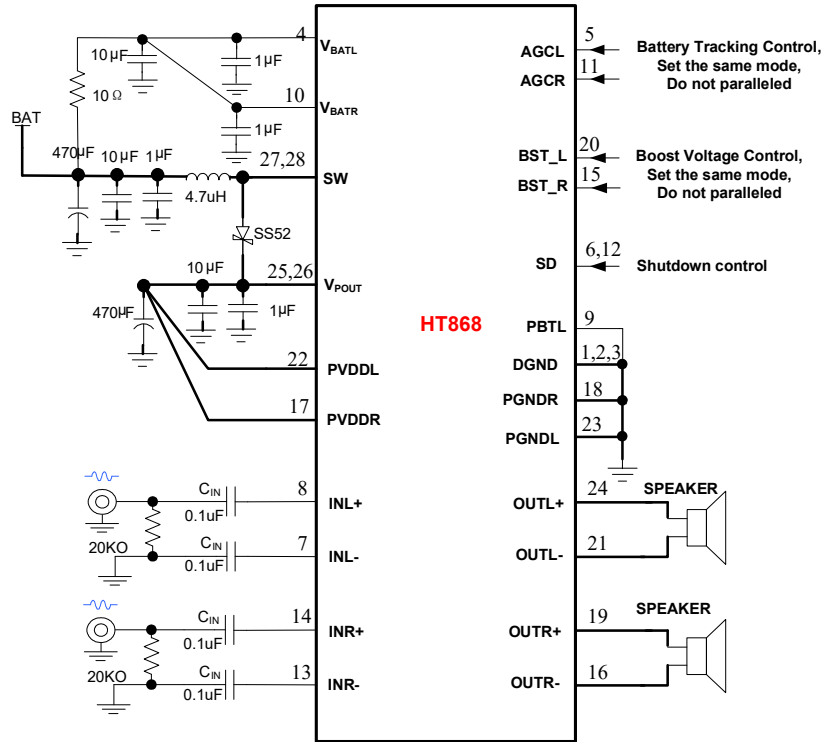
HT868 has a filter-less modulation circuit which can directly drive speakers. HT868 can be shut down so that the power consumption can be minimized. As for protection function, over current protection function for speaker output terminals, over temperature protection function and low supply voltage malfunction preventing function are also prepared.

### ■ APPLICATIONS

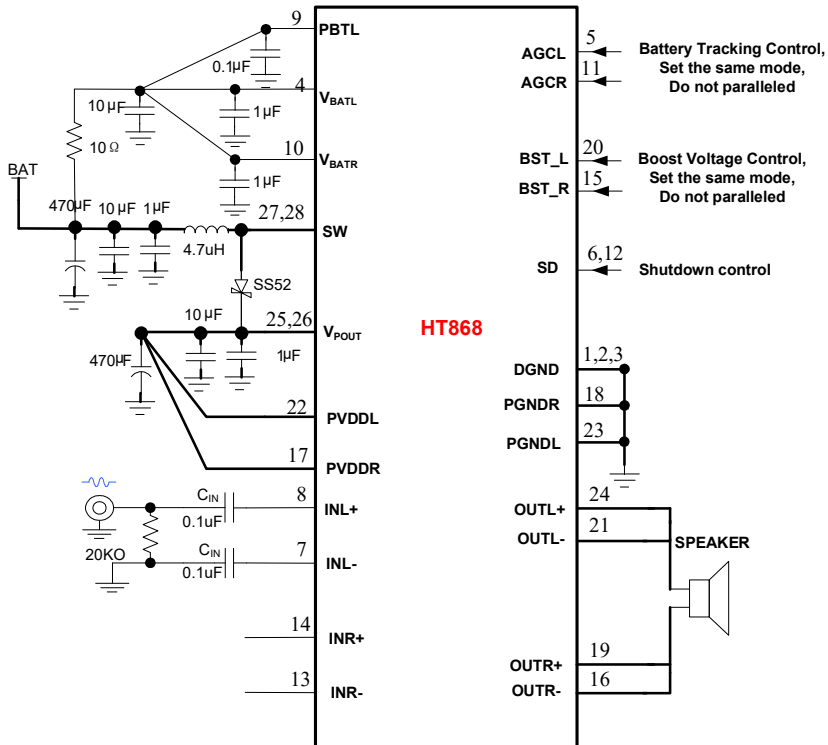
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|----------------------------|---------------------|-----------------------|------------------|
| • Bluetooth/Wi-Fi Speakers | • Portable Speakers | • 2.1Channel Speakers | • Megaphone      |
| • Portable Gamers          | • MP4, GPS          | • Tablet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

**■ TYPICAL APPLICATION**

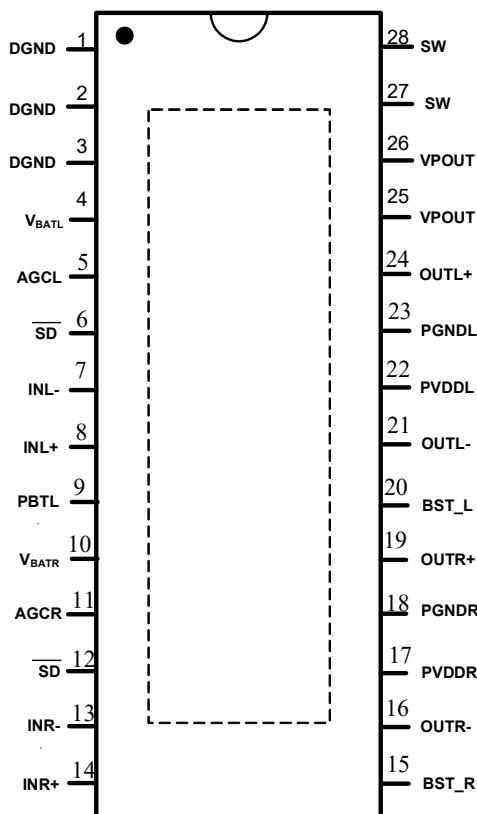
**1. HT868 BTL MODE**



**2. HT868 PBTL MODE**



## ■ TERMINAL CONFIGURATION



HT868 Top View

## ■ TERMINAL FUNCTION

Terminal No.	NAME	I/O*1	Description
1,2,3	DGND	GND	Power ground for boost converter
4	V <sub>BATL</sub>	Power	Power supply for left channel
5	AGCL	O	Terminal that enables and selects Battery Tracking Function for left channel
6	$\overline{SD}$	I	Shut-down terminal
7	INL-	I	Negative input (differential-) for audio amplifier of left channel
8	INL+	I	Positive input (differential+) for audio amplifier of left channel
9	PBTL	I	Parallel BTL mode switch
10	V <sub>BATR</sub>	Power	Power supply for right channel
11	AGCR	O	Terminal that enables and selects Battery Tracking Function for right channel
12	$\overline{SD}$	I	Shut-down terminal
13	INR-	I	Negative input (differential-) for audio amplifier of right channel
14	INR+	I	Positive input (differential+) for audio amplifier of right channel
15	BST_R	O	Select boost converter output voltage V <sub>POUT</sub> for right channel
16	OUTR-	O	Negative output (BTL-) for audio amplifier of right channel
17	PVDDR	Power	Power supply terminal for audio amplifier of right channel
18	PGNDR	GND	Power ground for audio amplifier of right channel
19	OUTR+	O	Positive output (BTL+) for audio amplifier of right channel
20	BST_L	O	Select boost converter output voltage V <sub>POUT</sub> for left channel
21	OUTL-	O	Negative output (BTL-) for audio amplifier of left channel

22	PVDDL	Power	Power supply terminal for audio amplifier of left channel
23	PGNDL	GND	Power ground for audio amplifier of left channel
24	OUTL+	O	Positive output (BTL+) for audio amplifier of left channel
25,26	V <sub>POUT</sub>	Power	Boost Converter output voltage
27,28	SW	I	Boost and rectifying switch input
-	PAD	GND	Connect to PGND

\*1 I: input O: output

## ORDERING INFORMATION

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Package type

Part Number	Package Type	Marking	Operating Temperature Range	MOQ/Shipping Package
HT868MTE	TSSOP28L-PP	HT868 <sup>MTE</sup> UVWXYZ <sup>*2</sup>	-40°C~85°C	Tape 30 PCS

\*2: WXYZ/UVWXYZ is production track code.

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