

2*4.5W Anti-Clipping Stereo Class D/AB Audio Amplifier with Adaptive Charge Pump Regulator

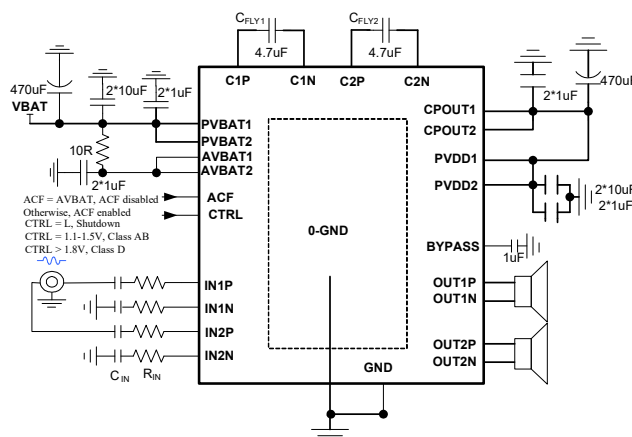
■ FEATURE

- 4 modes of Anti-Clipping Function (ACF)
- Adaptive Charge Pump Regulator
- Maximum Voltage Gain: 28dB
- Output Power
 - 2*4.5W ($V_{BAT}=4.2V$, $R_L=4\Omega$, THD+N=10%)
 - 2*3.5W ($V_{BAT}=3.7V$, $R_L=4\Omega$, THD+N=10%)
 - 2*2.7W ($V_{BAT}=3.3V$, $R_L=4\Omega$, THD+N=10%)
- Efficiency
 - 81% ($V_{BAT} = 3.7V$, $R_L = 4 \Omega$, $P_o = 0.4W$)
 - 73% ($V_{BAT} = 3.7V$, $R_L = 4 \Omega$, $P_o = 2.0W$)
- Power Supply
 - Input V_{BAT} : 2.7V to 5.5V
 - Output CPOUT: 6.4V
- Quiescent Current: 7mA
- Shutdown Current: <1uA
- Class AB / Class D selectable
- Filter-less Modulation, Eliminating Output Filter
- Over Current Protection, Thermal Protection, Low voltage malfunction prevention function included
- Pb-Free Packages , TSSOP24-PP

■ APPLICATIONS

- Smart Speakers • Wireless Speakers
- Portable Audio Devices • Smart Phones

■ TYPICAL APPLICATION



■ GENERAL DESCRIPTION

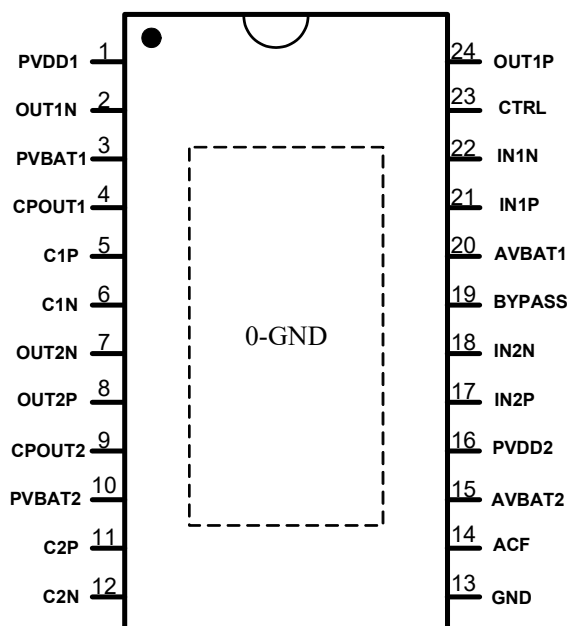
HT8320 is a Class D stereo audio amplifier which can deliver continuous 2*4.5W output power into a 4Ω speaker with 4.2V battery supply when THD+N = 10%. The class D audio amplifier's power supply is adaptively boosted by the integrated charge pump regulator which only works while the output power is big enough. This will significantly extend the playing time in battery supply applications. HT8320 features Anti-Clipping Function (ACF) which detects output signal clip due to the over input signal and suppresses the output signal clip automatically. Also, it 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. It provides 4 different ACF modes and ACF OFF mode to adjust different applications.

Class AB amplifier mode is also available for HT8320. Once the EMI Interference from class D and Boost Converter becomes an annoying problem, HT8320 can be changed into Class AB mode.

HT8320 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.

HT8320 has an internal gain of 28dB and an independent Shutdown function which can minimize the power consumption. 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



TSSOP24-PP Top View

■ TERMINAL FUNCTION ¹

SOP Terminal No.	Name	I/O	ESD Protection	Description
0	GND	GND	--	Ground
1	PVDD1	POWER	PN	Power supply for audio amplifier 1
2	OUT1N	O	PN	Negative BTL audio output 1
3	PVBAT1	POWER	PN	Power supply for the charge pump regulator 1
4	CPOUT1	POWER	PN	Boosted voltage output of the charge pump regulator 1
5	C1P	I	PN	Flying capacitor positive terminal for charge pump 1
6	C1N	I	PN	Flying capacitor negative terminal for charge pump 1
7	OUT2N	O	PN	Negative BTL audio output 2
8	OUT2P	O	PN	Positive BTL audio output 2
9	CPOUT2	POWER	PN	Boosted voltage output of the charge pump regulator 2
10	PVBAT2	POWER	PN	Power supply for the charge pump regulator 2
11	C2P	I	PN	Flying capacitor positive terminal for charge pump 2
12	C2N	I	PN	Flying capacitor negative terminal for charge pump 2
13	GND	GND	--	GND
14	ACF	I	PN	ACF selection terminal. ACF is disabled when it is pulled to VBAT directly.
15	AVBAT2	POWER	PN	Analog power supply 2
16	PVDD2	POWER	PN	Power supply for audio amplifier 2
17	IN2P	I	PN	Positive audio input terminal 2
18	IN2N	I	PN	Negative audio input terminal 2
19	BYPASS	O	PN	Analog reference terminal, connecting a 1uF capacitor to ground
20	AVBAT1	POWER	PN	Analog power supply 1
21	IN1P	I	PN	Positive audio input terminal 1
22	IN1N	I	PN	Negative audio input terminal 1
23	CTRL	I	PN	Mode selection terminal. When it is pulled low, the device goes into shutdown mode.
24	OUT1P	O	PN	Positive BTL audio output 1

¹ I: Input; O: Output

ORDERING INFORMATION

Part Number	Package Type	Marking	Operating Temperature Range	Container/MOQ
HT8320MTET	TSSOP24-PP	HT8320 ^{MTE}	-40℃~85℃	Tube/38PCS
HT8320MTER	TSSOP24-PP	HT8320 ^{MTE}	-40℃~85℃	Tape and Reel/3000PCS

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