

## 2×15W+30W免电感2.1声道D类音频功放

### 2×15W+30W Inductor Free, 2.1 Channel Class D Amplifier

#### ■ FEATURES

- |   |   |
|---|---|
| <ul style="list-style-type: none"><li>· Output Power</li></ul> <p>2×12W+24W (VDD=14.5V, <math>R_L=2 \times 8\Omega+4\Omega</math>, THD+N=1%)</p> <p>2×15W+30W (VDD=14.5V, <math>R_L=2 \times 8\Omega+4\Omega</math>, THD+N=10%)</p> <p>2×8W+16W (VDD=12V, <math>R_L=2 \times 8\Omega+4\Omega</math>, THD+N=1%)</p> <p>2×10W+20W (VDD=12V, <math>R_L=2 \times 8\Omega+4\Omega</math>, THD+N=10%)</p> <ul style="list-style-type: none"><li>· Single Wide Voltage Supply: 4.5V-21V</li><li>· Efficiency &gt; 90%</li><li>· Spread Switching Frequency For Inductor Free</li><li>· Differential / Single-ended Analog Input</li><li>· Integrated Self-protection Circuits Including Overvoltage, Undervoltage, Overtemperature, DC-detect, and Overcurrent</li><li>· LF and HF Package of QFN6×6-36L</li></ul> | <ul style="list-style-type: none"><li>· 输出功率</li></ul> <p>2×12W+24W (VDD=14.5V, <math>R_L=2 \times 8\Omega+4\Omega</math>, THD+N=1%)</p> <p>2×15W+30W (VDD=14.5V, <math>R_L=2 \times 8\Omega+4\Omega</math>, THD+N=10%)</p> <p>2×8W+16W (VDD=12V, <math>R_L=2 \times 8\Omega+4\Omega</math>, THD+N=1%)</p> <p>2×10W+20W (VDD=12V, <math>R_L=2 \times 8\Omega+4\Omega</math>, THD+N=10%)</p> <ul style="list-style-type: none"><li>· 单电源系统, 4.5V-21V宽电压输入范围</li><li>· 超过90%效率, 无需散热器</li><li>· 扩频功能, 免电感滤波</li><li>· 模拟差分/单端输入</li><li>· 保护功能: 过压/过流/过热/欠压异常, 直流检测和短路保护</li><li>· 无铅无卤封装, QFN6×6-36L</li></ul> |
|---|---|

#### ■ APPLICATIONS

- |   |   |   |
|---|---|---|
| <ul style="list-style-type: none"><li>· Wireless Speakers</li><li>· Consumer Audio Applications</li></ul> | <ul style="list-style-type: none"><li>· 蓝牙/ Wi-Fi音箱</li></ul> | <ul style="list-style-type: none"><li>· 消费类音频系统</li></ul> |
|---|---|---|

#### ■ DESCRIPTION

HT32201 is a 2.1 channel, efficient, Class-D audio amplifier for driving speakers up to 30W/4Ω+2×15W/8Ω.

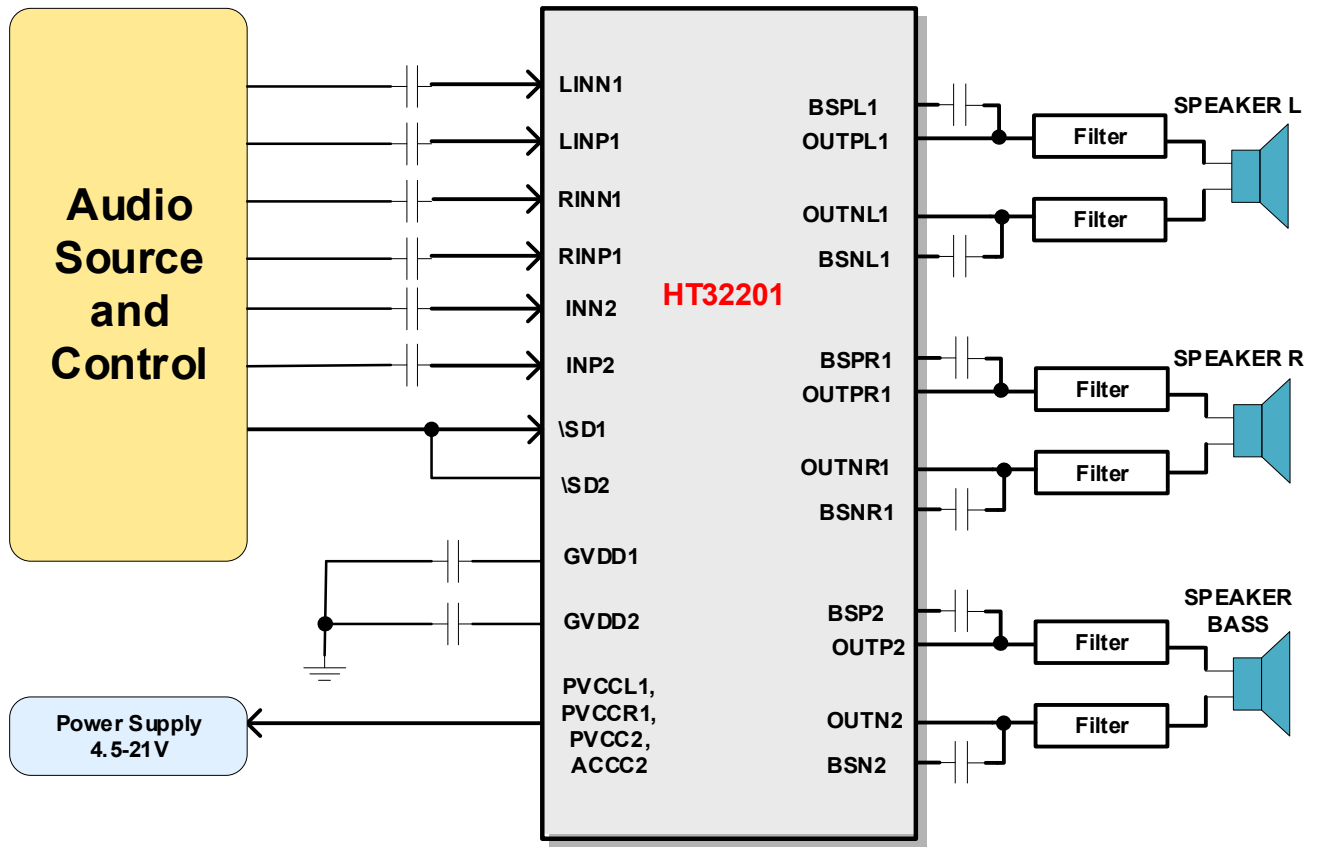
Advanced EMI Suppression with Spread Spectrum Control enables the use of inexpensive ferrite bead filters while meeting EMC requirements for system cost reduction.

HT32201 is fully protected against faults with Overvoltage, Undervoltage, Overtemperature, DC-detect, and Overcurrent protection. Faults can be reported to the processor to prevent devices from being damaged.

HT32201是一款高效的2.1声道D类音频功率放大器。在14.5V供电, 能够持续提供30W/4Ω+2×15W/8Ω的功率输出。

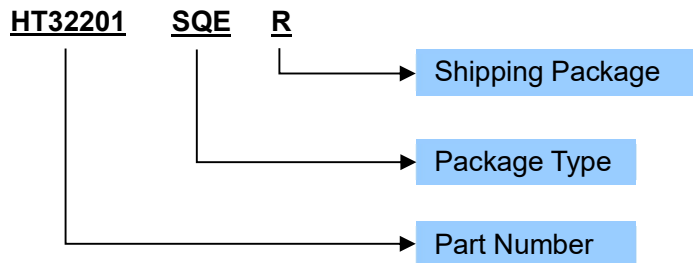
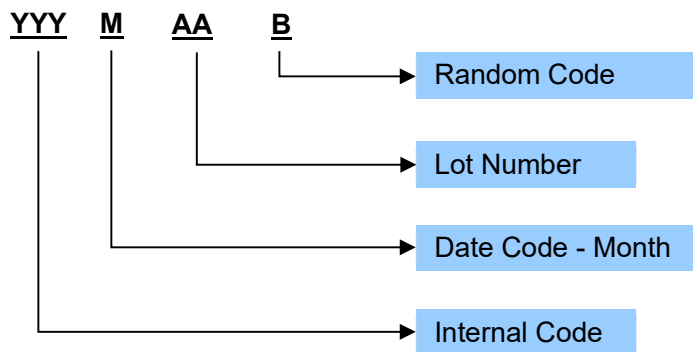
HT32201具有先进的扩频功能来抑制EMI, 使用价格低廉且小体积铁氧体磁珠可满足EMC要求。

此外, HT32201内置关断功能使待机电流最小化, 还集成了过压保护、直流保护、短路保护、热保护和电源欠压异常保护等功能, 可全面防止出现故障。

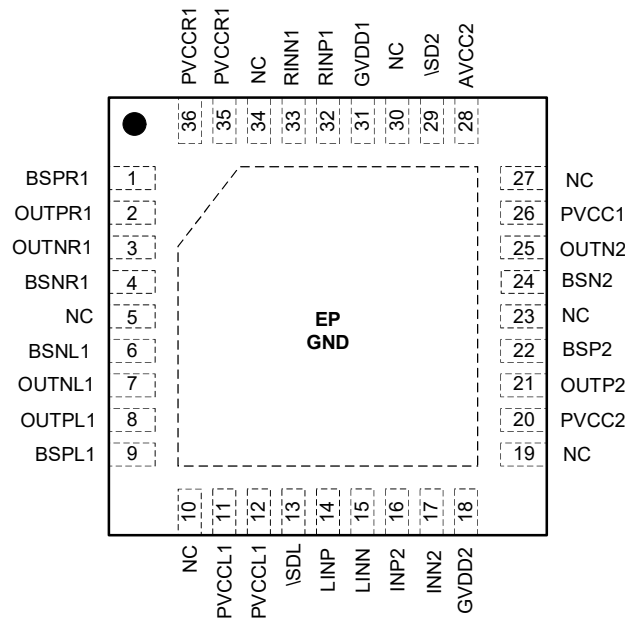
**■ TYPICAL APPLICATION**


**ORDERING INFORMATION**

| Ordering Number | Package Type | Marking                         | Operating Temperature Range | Shipping Package / MOQ  |
|-----------------|--------------|---------------------------------|-----------------------------|-------------------------|
| HT32201SQER     | QFN6×6-36L   | HT32201<br>YYYMAAB <sup>1</sup> | -40℃~85℃                    | Tape and Reel / 2500pcs |

**Ordering Number**

**Production Tracking Code**


## ■ TERMINAL CONFIGURATION



Top View

## ■ TERMINAL FUNCTION

| Terminal No.              | Name   | I/O <sup>1</sup> | Description   |
|---------------------------|--------|------------------|---|
| 1                         | BSPR1  | BST              | Connection point for the OUTPR1 bootstrap capacitor, which is used to create a power supply for the high-side gate drive for OUTPR1. OUTPR1自举电容位。   |
| 2                         | OUTPR1 | O                | Positive pin for differential speaker amplifier output R of channel 1. 1通道右声道输出正端。  |
| 3                         | OUTNR1 | O                | Negative pin for differential speaker amplifier output R of channel 1. 1通道右声道输出负端。  |
| 4                         | BSNR1  | BST              | Connection point for the OUTNR1 bootstrap capacitor, which is used to create a power supply for the high-side gate drive for OUTNR1. OUTNR1-自举电容位。  |
| 5, 10, 19, 23, 27, 30, 34 | NC     | -                | No connection, connect GND for better thermal performance. 内部无连接，外部连接到地。  |
| 6                         | BSPL1  | BST              | Connection point for the OUTPL1 bootstrap capacitor, which is used to create a power supply for the high-side gate drive for OUTPL1. OUTPL1自举电容位。   |
| 7                         | OUTPL1 | O                | Negative pin for differential speaker amplifier output L of channel 1. 1通道左声道输出负端。  |
| 8                         | OUTPL1 | O                | Positive pin for differential speaker amplifier output L of channel 1. 1通道左声道输出正端。  |
| 9                         | BSPL1  | BST              | Connection point for the OUTPL1 bootstrap capacitor, which is used to create a power supply for the high-side gate drive for OUTPL1. OUTPL1自举电容位。   |
| 11, 12                    | PVCC1  | P                | Power Supply for internal power circuitry of Channel L1. 1通道左声道功率电源。  |
| 13                        | \SD1   | I/O              | Multi-function pin. When pulled down, place channel 1 in shutdown mode. Also as a speaker amplifier fault terminal, which is pulled LOW when an internal fault of channel 1 occurs, open-drain output. 多功能引脚。当拉低时，通道1处于关闭状态。同时作为错误状态位，通道1发生某些错误时，该引脚拉低。 |
| 14                        | LINP1  | I                | Positive input terminal for channel L1. 1通道左声道正端输入。   |
| 15                        | LINN1  | I                | Negative input terminal for channel L1. 1通道左声道负端输入。   |
| 16                        | INP    | I                | Positive input terminal for channel 2. 2通道正端输入。   |
| 17                        | INN    | I                | Negative input terminal for channel 2. 2通道负端输入。   |
| 18                        | GVDD2  | O                | Voltage regulator of channel 2, connect 1uF to GND. 2通道LDO，接1uF到地。  |
| 20, 26                    | PVCC2  | P                | Power Supply for internal power circuitry of Channel 2. 2通道功率电源。  |

<sup>1</sup> I: Input; O: Output; G: Ground; P: Power; BST: BOOT Strap; OD: Open drain

|       |        |     |  |
|-------|--------|-----|--|
| 21    | OUTP2  | O   | Positive pin for differential speaker amplifier output of channel 2.<br>2通道输出正端。   |
| 22    | BSP2   | BST | Connection point for the OUTP2 bootstrap capacitor, which is used to create a power supply for the high-side gate drive for OUTP2. OUTP2自举电容位。   |
| 24    | BSN2   | BST | Connection point for the OUTN2 bootstrap capacitor, which is used to create a power supply for the high-side gate drive for OUTN2. OUTN2自举电容位。   |
| 25    | OUTN2  | O   | Negative pin for differential speaker amplifier output of channel 2.<br>2通道输出负端。   |
| 28    | AVCC2  | P   | Analog power supply of channel 2. 2通道模拟电源供电。   |
| 29    | \SD2   | I/O | Multi-function pin. When pulled down, place channel 2 in shutdown mode. Also as a speaker amplifier fault terminal, which is pulled LOW when an internal fault of channel 2 occurs, open-drain output.<br>多功能引脚。当拉低时，通道2处于关闭状态。同时作为错误状态位，通道2发生某些错误时，该引脚拉低。                                     |
| 31    | GVDD1  | O   | Voltage regulator of channel 1, connect 1uF to GND. 1通道LDO, 接1uF到地。  |
| 33    | RINP1  | I   | Positive input terminal for channel R1. 1通道右声道正端输入。  |
| 34    | RINN1  | I   | Negative input terminal for channel R1. 1通道右声道负端输入。  |
| 35,36 | PVCCR1 | P   | Power Supply for internal power circuitry of Channel R1. 1通道右声道功率电源。   |
| EP    | GND    | G   | Provides both <b>electrical and thermal connection</b> from the device to the board. <b>A matching ground pad must be provided on the PCB and the device connected to it via solder.</b> For proper electrical operation, this ground pad must be connected to the system ground. 既是地，又是散热PAD。 |

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