



US 20240235482A9

(19) **United States**  
(12) **Patent Application Publication**  
**TSAI**

(10) **Pub. No.: US 2024/0235482 A9**  
(48) **Pub. Date: Jul. 11, 2024**  
**CORRECTED PUBLICATION**

(54) **AUDIO SIGNAL AMPLIFYING DEVICE AND METHOD**

(52) **U.S. Cl.**  
CPC ..... *H03F 1/0222* (2013.01); *H03F 2200/03* (2013.01); *H03F 2200/102* (2013.01)

(71) Applicant: **REALTEK SEMICONDUCTOR CORPORATION**, Hsinchu (TW)

(72) Inventor: **CHIA-CHI TSAI**, Hsinchu (TW)

(57) **ABSTRACT**

(21) Appl. No.: **18/368,033**

(22) Filed: **Sep. 14, 2023**

**Prior Publication Data**

(15) Correction of US 2024/0136978 A1 Apr. 25, 2024  
See (22) Filed.  
See (30) Foreign Application Priority Data.

(65) US 2024/0136978 A1 Apr. 25, 2024

(30) **Foreign Application Priority Data**

Oct. 25, 2022 (TW) ..... 111140524

**Publication Classification**

(51) **Int. Cl.**  
*H03F 1/02* (2006.01)

An audio signal amplifying device processes an input signal to provide an output signal for a balanced headphone. The device includes a signal detection circuit, a voltage supply circuit, and an amplifying circuit. The signal detection circuit detects the variation in the input signal to generate a detection result. The voltage supply circuit outputs one of multiple voltages as a supply voltage according to the detection result; when the detection result indicates the amplitude of the input signal satisfying a first condition, the supply voltage is a first voltage; when the detection result indicates the amplitude of the input signal satisfying a second condition, the supply voltage is a second voltage lower than the first voltage; and the amplitude satisfying the first condition is greater than the amplitude satisfying the second condition. The amplifying circuit generates the output signal according to the input signal based on the supply voltage.

