



US 20220360234A1

(19) **United States**(12) **Patent Application Publication**
YAMAGUCHI et al.(10) **Pub. No.: US 2022/0360234 A1**(43) **Pub. Date: Nov. 10, 2022**(54) **BIAS CIRCUIT AND AMPLIFIER****Publication Classification**(71) Applicant: **Mitsubishi Electric Corporation**,
Tokyo (JP)(51) **Int. Cl.**
H03F 3/16 (2006.01)(72) Inventors: **Yutaro YAMAGUCHI**, Tokyo (JP);
Masatake HANGAI, Tokyo (JP);
Shintaro SHINJO, Tokyo (JP)(52) **U.S. Cl.**
CPC **H03F 3/16** (2013.01)(73) Assignee: **Mitsubishi Electric Corporation**,
Tokyo (JP)(57) **ABSTRACT**(21) Appl. No.: **17/866,830**(22) Filed: **Jul. 18, 2022****Related U.S. Application Data**(63) Continuation of application No. PCT/JP2021/
006236, filed on Feb. 19, 2021.(30) **Foreign Application Priority Data**

Mar. 10, 2020 (JP) PCT/JP2020/010137

A signal to be amplified is applied to a gate terminal of an amplifier element that amplifies the signal and that is a transistor, the bias circuit includes: a switching element having a first terminal and a second terminal, the first terminal being electrically connected to the gate terminal; and a trap compensation element having a third terminal and a fourth terminal, the third terminal being connected to the second terminal. Further, the bias circuit includes a control circuit to apply a bias voltage to the gate terminal. Further, the bias circuit includes a voltage application circuit to apply a first voltage to the fourth terminal when the signal to be amplified is a transmission signal, and apply a second voltage to the fourth terminal when the signal to be amplified is a reception signal, the second voltage being a negative voltage.

