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KURUSU(10) **Pub. No.: US 2022/0385286 A1**(43) **Pub. Date: Dec. 1, 2022**(54) **SEMICONDUCTOR DEVICE**(52) **U.S. Cl.**(71) Applicant: **Mitsubishi Electric Corporation,**
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2200/294 (2013.01); **H03F 2200/372** (2013.01)(72) Inventor: **Hitoshi KURUSU**, Tokyo (JP)(73) Assignee: **Mitsubishi Electric Corporation,**
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A semiconductor device (1) according to the present disclosure includes: an n-channel depletion-mode transistor (10); an input matching circuit inside which the gate terminal (11) and the ground terminal (22) are DC-connected; a self-bias circuit (26) including a resistor (14) biasing the transistor (10) by a voltage drop due to a current flowing through the resistor (14), and a capacitor (15) connected in parallel to the resistor (14) and regarded as short-circuit at a frequency of the high-frequency power; and a diode (31) having an endmost anode connected to the source terminal (12) and an endmost cathode connected to the ground terminal (22), and connected in one stage or connected in series in a plurality of stages in the same direction.

