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KIM et al.(10) **Pub. No.: US 2023/0231009 A1**(43) **Pub. Date: Jul. 20, 2023**(54) **POWER SEMICONDUCTOR DEVICE****H01L 29/78** (2006.01)**H01L 29/66** (2006.01)(71) Applicant: **Samsung Electronics Co., Ltd.**,
Suwon-si (KR)(52) **U.S. Cl.**CPC **H01L 29/0634** (2013.01); **H01L 29/1608**
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29/7813 (2013.01); **H01L 29/66068** (2013.01)(72) Inventors: **Kwangsoo KIM**, Seoul (KR); **Jinhee**
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ABSTRACT

A power semiconductor device includes a base semiconductor layer including impurities of a first conductivity type; a body portion provided on the base semiconductor layer and defined by a source trench, the body portion including a gate trench extending inwardly from an upper surface of the body portion; a gate electrode provided in the gate trench; a source electrode provided on the body portion and spaced apart from the gate electrode; and a drain electrode provided below the base semiconductor layer, wherein the body portion includes: a drift layer provided on the base semiconductor layer and including impurities of the first conductivity type; and a pair of shielding regions provided in the drift layer, spaced apart from each other in a horizontal direction, and spaced apart from the base semiconductor layer and the gate trench, the pair of shielding regions including impurities of a second conductivity type different from the first conductivity type.

