



US 20230231010A1

(19) **United States**

(12) **Patent Application Publication**
CHO et al.

(10) **Pub. No.: US 2023/0231010 A1**

(43) **Pub. Date: Jul. 20, 2023**

(54) **SUPERJUNCTION SEMICONDUCTOR
DEVICE AND METHOD OF
MANUFACTURING SAME**

Publication Classification

(51) **Int. Cl.**

H01L 29/06 (2006.01)

H01L 29/10 (2006.01)

H01L 29/78 (2006.01)

(52) **U.S. Cl.**

CPC *H01L 29/0634* (2013.01); *H01L 29/1095*
(2013.01); *H01L 29/7811* (2013.01)

(71) Applicant: **DB HiTek Co., Ltd.**, Bucheon-si (KR)

(72) Inventors: **Won Kook CHO**, Bucheon-si (KR);
Myeong Bum PYUN, Incheon (KR)

(21) Appl. No.: **18/147,698**

(22) Filed: **Dec. 28, 2022**

(30) **Foreign Application Priority Data**

Jan. 19, 2022 (KR) 10-2022-0007668

ABSTRACT

Disclosed are a superjunction semiconductor device and a method of manufacturing the same. More particularly, a superjunction semiconductor device and a method of manufacturing the same include an additional structure that enables smooth current flow in a transition region and/or a ring region of the device, where the current concentrates locally during turn-on/turn-off operations of the device due to insufficient current paths compared to the cell region of the device, thereby improving reverse recovery characteristics and preventing device destruction.

