

# (19) United States

## (12) Patent Application Publication (10) Pub. No.: US 2024/0178760 A1 Lee et al.

May 30, 2024 (43) **Pub. Date:** 

#### (54) VOLTAGE CONVERTER

- (71) Applicants: Hyundai Motor Company, Seoul (KR); Kia Corporation, Seoul (KR)
- (72) Inventors: Jun Young Lee, Daegu (KR); Byung Gu Kang, Hwaseong-si (KR); Dae Woo Lee, Incheon (KR); Tae Jong Ha, Songpa-gu (KR)
- Appl. No.: 18/180,935
- (22)Filed: Mar. 9, 2023
- (30)Foreign Application Priority Data

Nov. 29, 2022 (KR) ...... 10-2022-0162852

#### **Publication Classification**

(51) Int. Cl. H02M 3/335

(2006.01)

U.S. Cl. (52)

> CPC ... H02M 3/33571 (2021.05); H02M 3/33592 (2013.01)

(57)**ABSTRACT** 

An embodiment voltage converter includes a DC-DC converter and a controller. The DC-DC converter includes a transformer, a main switch connected to an input terminal and the transformer, and first and second synchronous rectification switches connected to an output terminal and the transformer, and the controller is configured to switch the main switch so that the DC-DC converter adjusts a voltage of the input terminal and outputs the voltage to the output terminal and to complementarily switch the first and second synchronous rectification switches without dead time.

### 300a

