



US 20240213884A1

(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2024/0213884 A1**
Wan et al. (43) **Pub. Date: Jun. 27, 2024**(54) **ISOLATED BI-DIRECTIONAL DC
CONVERSION CIRCUIT AND METHOD FOR
CONTROLLING THE SAME**(52) **U.S. Cl.**
CPC *H02M 3/33584* (2013.01); *H02M 1/0009*
(2021.05); *H02M 1/0058* (2021.05); *H02M*
3/33592 (2013.01)(71) Applicant: **APTIV ELECTRIC SYSTEMS
COMPANY LTD.**, Shanghai (CN)(57) **ABSTRACT**(72) Inventors: **Cheng Wan**, Shanghai (CN); **Lewei
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An isolated bi-directional DC conversion circuit and a method for controlling the same are provided. The DC conversion circuit includes a transformer with a first energy storage element and a primary-side rectification bridge coupled to the primary side of the transformer and a second energy storage element and a secondary-side rectification bridge coupled to the secondary side of the transformer. The primary-side rectification bridge consists of multiple first power switching devices. The secondary-side rectification bridge consists of multiple second power switching devices. Each of the multiple first and the second power switching devices have a body diode in inverse parallel connection therewith. The DC conversion circuit further includes multiple first sampling resistors provided on each bridge arm of the secondary-side rectification bridge and a controller configured to perform switch control on the multiple second power switching devices based on a sampled voltage of the multiple first sampling resistors.

(21) Appl. No.: **18/391,940**(22) Filed: **Dec. 21, 2023**(30) **Foreign Application Priority Data**

Dec. 21, 2022 (CN) 202211650796.6

Publication Classification(51) **Int. Cl.**
H02M 3/335 (2006.01)
H02M 1/00 (2006.01)