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(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2022/0407534 A1**
(43) **Pub. Date: Dec. 22, 2022**(54) **ANALOG-TO-DIGITAL CONVERTER**(52) **U.S. Cl.**(71) Applicant: **SAMSUNG ELECTRONICS CO., LTD.**, Suwon-si (KR)CPC **H03M 1/1245** (2013.01); **H03M 1/466** (2013.01); **H03M 1/50** (2013.01)(72) Inventors: **Jaerin LEE**, Yongin-si (KR); **Minjae Lee**, Gwangju (KR); **Hyungyu Ju**, Daejeon (KR); **Kyeongkeun Kang**, Suwon-si (KR)(57) **ABSTRACT**(73) Assignees: **SAMSUNG ELECTRONICS CO., LTD.**, Suwon-si (KR); **GWANGJU INSTITUTE OF SCIENCE AND TECHNOLOGY**, Gwangju (KR)

An analog-to-digital converter, including a sample/hold circuit; a reference voltage driver; a digital-to-analog converter; a comparator; and a logic circuit, wherein the reference voltage driver includes: a first voltage supplier circuit configured to output an external supply voltage provided from outside of the analog-to-digital converter; a second voltage supplier circuit configured to output a sampled reference voltage that is obtained during a sampling phase based on control signals received from the logic circuit; and a switching driver configured to electrically connect the first voltage supplier circuit to the digital-to-analog converter during a first conversion phase after the sampling phase based on the control signals received from the logic circuit, and to electrically connect the second voltage supplier circuit to the digital-to-analog converter during a second conversion phase based on the control signals received from the logic circuit.

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