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(19) **United States**(12) **Patent Application Publication****HAN et al.**(10) **Pub. No.: US 2024/0223189 A1**(43) **Pub. Date:****Jul. 4, 2024**(54) **SEMICONDUCTOR CIRCUIT CAPABLE OF SWAPPING SIGNAL PATHS AND SEMICONDUCTOR APPARATUS USING THE SAME**(71) Applicant: **SK hynix Inc.**, Icheon-si Gyeonggi-do (KR)(72) Inventors: **Hyun Wook HAN**, Icheon-si Gyeonggi-do (KR); **Min Chang KIM**, Icheon-si Gyeonggi-do (KR)(73) Assignee: **SK hynix Inc.**, Icheon-si Gyeonggi-do (KR)(21) Appl. No.: **18/609,755**(22) Filed: **Mar. 19, 2024****Related U.S. Application Data**

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**ABSTRACT**

A semiconductor circuit includes a first pad, a second pad, swapping circuit, and an internal circuit. The internal circuit receives a first external signal and a second external signal, and generates a first internal signal and a second internal signal. Based on master information and swapping information, the swapping circuit couples the internal circuit to one of first and second pads to provide a path through which the first internal signal is output and a path through which the first external signal is received, and couples the internal circuit to the other of the first and second pads to provide a path through which the second internal signal is output and a path through which the second external signal is received.

