



(19) **United States**

(12) **Patent Application Publication**

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(10) **Pub. No.: US 2024/0223187 A1**

(43) **Pub. Date:**

Jul. 4, 2024

(54) **SEMICONDUCTOR MEMORY DEVICE
PERFORMING RECURSIVE ZQ
CALIBRATION AND CALIBRATION
METHOD THEREOF**

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(21) Appl. No.: **18/381,611**

(22) Filed: **Oct. 18, 2023**

(30) **Foreign Application Priority Data**

Jan. 2, 2023 (KR) 10-2023-0000334

Publication Classification

(51) **Int. Cl.**
H03K 19/00 (2006.01)
H03K 19/017 (2006.01)
H03K 19/17784 (2006.01)
(52) **U.S. Cl.**
CPC ... **H03K 19/0005** (2013.01); **H03K 19/01721**
(2013.01); **H03K 19/17784** (2013.01)

(57) **ABSTRACT**

A semiconductor memory device may include an impedance adjustment pad, a dummy pull-down driver and an external resistor connected in parallel between the impedance adjustment pad and a ground, a recursive code generation circuit configured to recursively generate a pull-up code and a pull-down code corresponding to a target resistance by using the external resistor and the dummy pull-down driver as a reference resistance, in an impedance calibration operation of the semiconductor memory device, a code register configured to store the generated pull-up code and the pull-down code, and a calibration control logic circuit configured to control the recursive code generation circuit during a plurality of steps in the impedance calibration operation while adjusting a resistance value of the dummy pull-down driver.

