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HUANG et al.(10) **Pub. No.: US 2024/0222965 A1**(43) **Pub. Date: Jul. 4, 2024**(54) **DRIVING CIRCUIT****Publication Classification**(71) Applicant: **Vanguard International Semiconductor Corporation**, Hsinchu (TW)(51) **Int. Cl.****H02H 9/04** (2006.01)**H01L 27/02** (2006.01)(52) **U.S. Cl.****CPC** ..... **H02H 9/046** (2013.01); **H01L 27/0255** (2013.01); **H01L 27/0266** (2013.01)(72) Inventors: **Shao-Chang HUANG**, Hsinchu City (TW); **Ching-Ho LI**, Hsinchu City (TW); **Chun-Chih CHEN**, New Taipei City (TW); **Kai-Chieh HSU**, Taoyuan City (TW); **Chien-Wei WANG**, Taoyuan City (TW); **Chih-Hsuan LIN**, Hsinchu City (TW); **Hwa-Chyi CHIOU**, Hsinchu City (TW); **Gong-Kai LIN**, Luodong Township (TW); **Li-Fan CHEN**, Hsinchu City (TW)(73) Assignee: **Vanguard International Semiconductor Corporation**, Hsinchu (TW)(21) Appl. No.: **18/147,152**(22) Filed: **Dec. 28, 2022**

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**ABSTRACT**

A driving circuit includes a detection circuit, a control circuit, and a power device. The detection circuit is coupled between first and second power terminals. The detection circuit generates a detection voltage at a detection node based on a first voltage of the first power terminal and a second voltage of the second power terminal. The control circuit includes a transistor device with a back-to-back connection structure that is coupled between a bonding pad and a first node and controlled by the detection voltage to generate a driving voltage at the first node for controlling the power device. In response to an electrostatic discharge event occurring on the bonding pad, the transistor device is turned on according to the detection voltage, and the power device is triggered by the driving voltage to provide a discharge path between the bonding pad and the second power terminal.

