



US 20240178663A1

(19) **United States**

(12) **Patent Application Publication**
YADAV et al.

(10) **Pub. No.: US 2024/0178663 A1**

(43) **Pub. Date:** **May 30, 2024**

(54) **IEC PROTECTION OF HIGH-FREQUENCY
TERMINALS**

Publication Classification

(71) Applicant: **QUALCOMM Incorporated**, San Diego, CA (US)

(51) **Int. Cl.**
H02H 9/04 (2006.01)

(52) **U.S. Cl.**
CPC **H02H 9/046** (2013.01)

(72) Inventors: **KshitiJ YADAV**, San Diego, CA (US); **Vijayakumar DHANASEKARAN**, San Diego, CA (US); **Khaled Mahmoud ABDELFAHAT ALY**, Irvine, CA (US); **Ramkumar SIVAKUMAR**, San Diego, CA (US); **Dongyang TANG**, San Diego, CA (US); **Chienchung YANG**, San Diego, CA (US)

(57) **ABSTRACT**

An ESD trigger circuit is provided for protecting a pass transistor coupled to an integrated circuit terminal. The integrated circuit terminal couples through a diode to a voltage node. In response to an electrostatic shock at the integrated circuit terminal, the diode conducts charge to the voltage node to pulse a voltage of the voltage node. The ESD trigger circuit responds to the pulse of the voltage by coupling the voltage node to a gate of the pass transistor.

(21) Appl. No.: 18/070,414

(22) Filed: **Nov. 28, 2022**

100

