

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2022/0407496 A1 Hill et al.

Dec. 22, 2022 (43) **Pub. Date:**

(54) ACOUSTIC WAVE DEVICES INCLUDING HIGH DENSITY INTERDIGITATED **ELECTRODES**

(71) Applicant: SKYWORKS SOLUTIONS, INC.,

Irvine, CA (US)

- (72) Inventors: Michael David Hill, Emmitsburg, MD (US); Benjamin Paul Abbott, Irvine, CA (US); Yosuke Hamaoka, Suita-Shi
 - (JP); Hirovuki Nakamura, Osaka-Fu (JP); Alan Sangone Chen, Leeburg, FL (US)
- (21) Appl. No.: 17/806,365
- (22) Filed: Jun. 10, 2022

Related U.S. Application Data

(60) Provisional application No. 63/211,232, filed on Jun. 16, 2021.

Publication Classification

(51) Int. Cl. H03H 9/02 (2006.01)H03H 9/25 (2006.01)H03H 9/145 (2006.01)H03H 9/64 (2006.01)

(52) U.S. Cl. CPC H03H 9/02228 (2013.01); H03H 9/25 (2013.01); H03H 9/14541 (2013.01); H03H 9/6483 (2013.01)

(57)ABSTRACT

A acoustic wave resonator comprises a piezoelectric substrate and a plurality of interdigital transducer (IDT) electrodes disposed on the piezoelectric substrate, the plurality of IDT electrodes formed of a mixture of tungsten and chromium to provide for reduction in size and increase in quality factor of the acoustic wave resonator.

