

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2022/0368325 A1 THOMSEN et al.

(43) **Pub. Date:** Nov. 17, 2022

(54) DRIVER CIRCUITRY AND OPERATION

(71) Applicant: Cirrus Logic International Semiconductor Ltd., Edinburgh (GB)

(72) Inventors: **Axel THOMSEN**, Austin, TX (US);

Eric J. KING, Austin, TX (US); Thomas H. HOFF, Austin, TX (US); John L. MELANSON, Austin, TX (US); Angus BLACK, Largs (GB); Ross C. MORGAN, Bathgate (GB); Malcolm BLYTH, Edinburgh (GB)

Assignee: Cirrus Logic International

Semiconductor Ltd., Edinburgh (GB)

(21) Appl. No.: 17/874,357

(22) Filed: Jul. 27, 2022

Related U.S. Application Data

(63) Continuation-in-part of application No. 17/590,943, filed on Feb. 2, 2022, which is a continuation of application No. 17/314,917, filed on May 7, 2021, now Pat. No. 11,277,129.

Provisional application No. 63/065,051, filed on Aug. 13, 2020.

Publication Classification

(51) Int. Cl. H03K 17/687 (2006.01)H02N 2/00 (2006.01)H02M 3/158 (2006.01)

(52) U.S. Cl. H03K 17/6871 (2013.01); H02N 2/0075 CPC (2013.01); H02M 3/158 (2013.01)

(57)ABSTRACT

This application relates to methods and apparatus for driving a transducer with switching drivers. A switching driver has first and second supply node for receiving supply voltages and includes an output bridge stage, a capacitor and a network of switches. The network of switches is operable in different switch states to provide different switching voltages to the output bridge stage. A controller is configured to control the switch state of the network of switches and a duty cycle of output switches of the output bridge stage based on an input signal to generate an output signal for driving the transducer.

