US 20220376699A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2022/0376699 A1**

MOCTEZUMA et al. (43) **Pub. Date: Nov. 24, 2022**

(54) **INDUCTIVE CURRENT DIGITAL-TO-ANALOG CONVERTER (DAC) AND RELATED CONTROL OPTIONS**

(71) Applicant: **TEXAS INSTRUMENTS INCORPORATED**, Dallas, TX (US)

(72) Inventors: **Ariel D. MOCTEZUMA**, Richardson, TX (US); **Marius DINA**, Inver Grove Heights, MN (US); **William R. KRENIK**, Garland, TX (US)

(21) Appl. No.: **17/703,300**

(22) Filed: **Mar. 24, 2022**

Related U.S. Application Data

(60) Provisional application No. 63/191,382, filed on May 21, 2021.

Publication Classification

(51) **Int. Cl.**
H03M 1/74 (2006.01)
H03M 1/66 (2006.01)

(52) **U.S. Cl.**
CPC ***H03M 1/742*** (2013.01); ***H03M 1/665*** (2013.01)

(57) **ABSTRACT**

An inductive current digital-to-analog converter (DAC) includes: a power supply input adapted to be coupled to a power supply; a load terminal adapted to be coupled to a load; an inductor between the power supply input and the load terminal; and inductor current control circuitry. The inductor current control circuitry has: a sense signal input configured to receive a sense signal representative of the inductor current; a control code input configured to receive a control code; a set of switches having respective control terminals; and a set of control circuit outputs coupled to the respective control terminals of the set of switches. The inductor current control circuitry is configured to adjust control signals provided to the set of control circuit outputs based on the sense signal and the control code.