

US 20220416785A1

## (19) United States

# (12) **Patent Application Publication** (10) **Pub. No.: US 2022/0416785 A1 Xu et al.** (43) **Pub. Date: Dec. 29, 2022**

### (54) DIFFERENTIAL BOOTSTRAPPED TRACK-AND-HOLD CIRCUIT WITH CROSS-COUPLED DUMMY SAMPLING SWITCHES

(71) Applicant: NXP USA, Inc., Austin, TX (US)

(72) Inventors: Weiwei Xu, Cupertino, CA (US); Xiaoyue Wang, San Jose, CA (US)

(21) Appl. No.: 17/359,462

(22) Filed: Jun. 25, 2021

#### **Publication Classification**

(51) Int. Cl. *H03K 17/687* (2006.01) *H03K 3/01* (2006.01)

#### (57) ABSTRACT

Embodiments of a differential bootstrapped track-and-hold circuit are disclosed. In an embodiment, the differential bootstrapped track-and-hold circuit includes first and second single-ended bootstrapped track-and-hold circuits. Each single-ended bootstrapped track-and-hold circuit includes a sampling switch connected between an input terminal and an output terminal, a sampling capacitor connected to the output terminal, and a dummy sampling switch connected between the input terminal and a dummy output terminal. The sampling switch and the dummy sampling switch are controlled by a bootstrap driver connected to the input terminal. The dummy output terminal of the first singleended bootstrapped track-and-hold circuit is connected to the output terminal of the second single-ended bootstrapped track-and-hold circuit and the dummy output terminal of the second single-ended bootstrapped track-and-hold circuit is connected to the output terminal of the first single-ended bootstrapped track-and-hold circuit to provide signals to compensate for charge injection errors at the output terminals.

