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(19) **United States**(12) **Patent Application Publication**
Lee(10) **Pub. No.: US 2024/0213971 A1**(43) **Pub. Date: Jun. 27, 2024**(54) **COMPARATOR CIRCUIT WITH DYNAMIC HYSTERESIS**(52) **U.S. Cl.**CPC **H03K 5/2481** (2013.01); **H03K 3/3565** (2013.01)(71) Applicant: **Texas Instruments Incorporated**,
Dallas, TX (US)(72) Inventor: **Ho-Young Lee**, San Jose, CA (US)(21) Appl. No.: **18/175,109**(22) Filed: **Feb. 27, 2023**(30) **Foreign Application Priority Data**

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(57)

ABSTRACT

A comparator circuit with dynamic hysteresis. A common source branch is configured to conduct a differential current at first and second intermediate outputs responsive to a differential input at first and second inputs, and a common gate branch is configured to generate a voltage at a third intermediate output responsive to the differential current at the first and second intermediate outputs. A hysteresis branch includes a hysteresis current generator including first and second replica transistors having source/drain paths coupled in parallel, and gates coupled to the first and second inputs, respectively. A hysteresis capacitor is coupled between the sources of the first and second replica transistors and the common terminal. Current mirror circuitry is coupled to the source/drain paths of the first and second replica transistors, to supply a hysteresis current responsive to the absence of current conducted by the parallel first and second replica transistors.

