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(19) **United States**(12) **Patent Application Publication****Aw**(10) **Pub. No.: US 2024/0178801 A1**(43) **Pub. Date: May 30, 2024**(54) **CIRCUITS AND METHODS FOR RECEIVING DATA SIGNALS HAVING DIFFERENT COMMON-MODE VOLTAGES**(52) **U.S. Cl.**CPC **H03F 3/04** (2013.01); **H03K 3/037** (2013.01); **H03K 19/20** (2013.01)(71) Applicant: **Altera Corporation**, San Jose, CA (US)

(57)

ABSTRACT(72) Inventor: **Chee Hong Aw**, Bayan Lepas (MY)(73) Assignee: **Altera Corporation**, San Jose, CA (US)(21) Appl. No.: **18/432,538**(22) Filed: **Feb. 5, 2024****Publication Classification**(51) **Int. Cl.****H03F 3/04** (2006.01)**H03K 3/037** (2006.01)**H03K 19/20** (2006.01)

A receiver circuit includes a first sense amplifier circuit that generates a first data signal based on a second data signal that has a first common-mode voltage during a first mode of operation. The receiver circuit includes a second sense amplifier circuit that generates a third data signal based on a fourth data signal that has a second common-mode voltage less than the first common-mode voltage during a second mode of operation. The receiver circuit includes a switch circuit that provides first data bits indicated by the first data signal to an output during the first mode of operation. The switch circuit provides second data bits indicated by the third data signal to the output during the second mode of operation.

