



US 20220352892A1

(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2022/0352892 A1**
(43) **Pub. Date: Nov. 3, 2022**

(54) **OPTOCOUPLER CIRCUIT WITH LEVEL SHIFTER**(71) Applicant: **NXP USA, Inc.**, Austin, TX (US)(72) Inventors: **YangTao Cheng**, Shanghai (CN); **Kai Zhu**, Shanghai (CN)(21) Appl. No.: **17/658,395**(22) Filed: **Apr. 7, 2022**(30) **Foreign Application Priority Data**

Apr. 29, 2021 (CN) 202110477708.6

Publication Classification(51) **Int. Cl.**
H03K 19/0175 (2006.01)
H04L 25/02 (2006.01)(52) **U.S. Cl.**CPC **H03K 19/017509** (2013.01); **H03K 19/01759** (2013.01); **H04L 25/0282** (2013.01)(57) **ABSTRACT**

In an optocoupler circuit, a first direction path, which transmits signals from a first to a second terminal, includes a first level shifter, a second level shifter, and a first optocoupler. The first level shifter receives a first input signal at the first terminal, and shifts a voltage level of the first input signal to a first shifted voltage level with respect to a first ground level in a first power domain, to provide a first shifted signal. The first optocoupler receives the first shifted signal, and generates a first optocoupler signal in response to the first shifted signal. The second level shifter receives the first optocoupler signal, and shifts a voltage level of the first optocoupler signal to a second shifted voltage level with respect to a second ground level in a second power domain, to provide a second shifted signal at the second terminal.

