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(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2022/0385281 A1**
Sarda (43) **Pub. Date: Dec. 1, 2022**(54) **SIGNAL DELAY CONTROL USING A
RECIRCULATING DELAY LOOP AND A
PHASE INTERPOLATOR**(71) Applicant: **Skyworks Solutions, Inc.**, Irvine, CA
(US)(72) Inventor: **Vivek Sarda**, Austin, TX (US)(21) Appl. No.: **17/332,365**(22) Filed: **May 27, 2021****Publication Classification**(51) **Int. Cl.**
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(2013.01); **H03K 2005/00052** (2013.01)(57) **ABSTRACT**

A delay circuit provides a programmable delay and includes an input selector circuit to select between a loop delay output signal and an input signal. A loop delay circuit provides a loop delay to the input signal and supplies the loop delay output signal. The input signal can be recirculated through the loop delay circuit to extend the range of the delay. The input selector circuit selects the feedback signal during recirculation. A variable delay circuit provides a variable delay to the loop delay output signal after the recirculation is complete and supplies a variable delay output signal. An output selector circuit selects the output of the output selector circuit during the recirculation and selects the variable delay output signal after the recirculation is complete to thereby provide a delayed signal with the delay based on the loop delay, the number of loops of recirculation, and the variable delay.

