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CHOO et al.(10) **Pub. No.: US 2022/0385294 A1**(43) **Pub. Date: Dec. 1, 2022**(54) **DIGITALLY CONTROLLED OSCILLATOR
INSENSITIVE TO CHANGES IN PROCESS,
VOLTAGE, TEMPERATURE AND DIGITAL
PHASE LOCKED LOOP INCLUDING SAME**(71) Applicant: **SAMSUNG ELECTRONICS CO.,
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(2013.01); **H03B 5/04** (2013.01)(57) **ABSTRACT**

A digitally controlled oscillator (DCO) includes; a current mirror configured to generate a supply current in response to a bias voltage matching a reference current, a variable resistor connected to the current mirror through a first node outputting the reference current and configured to provide a variable resistance in response to a first control signal, an oscillation circuit connected to the current mirror through a second node outputting the supply current and configured to generate an oscillation signal in response to the supply current, and a feedback circuit configured to control the bias voltage in relation to at least one of a voltage at the first node and a voltage at the second node.

