US 20230231519A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2023/0231519 A1**

SATO et al. (43) **Pub. Date: Jul. 20, 2023**

(54) **OSCILLATOR CIRCUIT AND TEMPERATURE COMPENSATION METHOD FOR OSCILLATOR CIRCUIT**

(71) Applicant: **Asahi Kasei Microdevices Corporation**, Tokyo (JP)

(72) Inventors: **TAKAYUKI SATO**, Tokyo (JP); **TAKESHI HAMADA**, Tokyo (JP)

(73) Assignee: **Asahi Kasei Microdevices Corporation**, Tokyo (JP)

(21) Appl. No.: **18/088,608**

(22) Filed: **Dec. 25, 2022**

(30) **Foreign Application Priority Data**

Jan. 14, 2022 (JP) 2022-004683

Publication Classification

(51) **Int. Cl.**

H03B 5/04 (2006.01)
H03B 5/36 (2006.01)
G01K 1/02 (2006.01)
G05D 23/19 (2006.01)

(52) **U.S. Cl.**

CPC ***H03B 5/04*** (2013.01); ***H03B 5/362*** (2013.01); ***G01K 1/026*** (2013.01); ***G05D 23/1931*** (2013.01)

(57) **ABSTRACT**

An oscillator circuit includes: a first temperature detector, detecting an internal temperature of the oscillator circuit; a current generator, generating a heater current so that the internal temperature matches a target temperature; a first and second heater, heating the resonator and the integrated circuit, respectively, based on the heater current; a second temperature detector, detecting a temperature of the integrated circuit; a first compensation voltage generation circuit, generating a first compensation voltage for compensating for a frequency variation due to a temperature change in the integrated circuit, based on a detection result of the second temperature detector; a second compensation voltage generation circuit, generating a second compensation voltage for compensating for a frequency variation due to a temperature change in the resonator, based on a detection result of the first temperature detector; and an oscillator, generating an oscillation signal based on the first and second compensation voltages.