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TAKATA(10) **Pub. No.: US 2022/0352875 A1**(43) **Pub. Date: Nov. 3, 2022**(54) **FILTER DEVICE, MULTIPLEXER, RADIO
FREQUENCY FRONT-END CIRCUIT, AND
COMMUNICATION DEVICE***H03H 9/25* (2006.01)*H03H 9/64* (2006.01)*H04B 1/40* (2006.01)(71) Applicant: **Murata Manufacturing Co., Ltd.**,
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H03H 9/02559 (2013.01)(72) Inventor: **Toshiaki TAKATA**, Nagaokakyo-shi
(JP)(21) Appl. No.: **17/863,450**(22) Filed: **Jul. 13, 2022****Related U.S. Application Data**(63) Continuation of application No. PCT/JP2020/
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(57) A filter device includes a filter circuit including first and second terminals and series arm resonators along a series arm connecting the first terminal and the second terminal, and an additional circuit connected in parallel at least some of the series arm resonators. The additional circuit includes first, second, and third interdigital transducer electrodes. The first interdigital transducer electrode is connected to a first node at one end portion of a series arm resonator having a lowest anti-resonant frequency of the series arm resonators, the second interdigital transducer electrode is connected to a second node having a potential different from a potential of the first node, the third interdigital transducer electrode is connected to a third node having a potential different from the potentials of the first and second nodes, and the first and second nodes are closer to the first terminal than the third node.

