



US 20230231540A1

(19) **United States**
(12) **Patent Application Publication** (10) **Pub. No.: US 2023/0231540 A1**
TAKATA (43) **Pub. Date: Jul. 20, 2023**

(54) **MULTIPLEXER**(71) Applicant: **Murata Manufacturing Co., Ltd.**,
Nagaokakyo-shi (JP)(72) Inventor: **Toshiaki TAKATA**, Nagaokakyo-shi
(JP)(21) Appl. No.: **18/127,024**(22) Filed: **Mar. 28, 2023****Related U.S. Application Data**(63) Continuation of application No. PCT/JP2021/
035266, filed on Sep. 27, 2021.(30) **Foreign Application Priority Data**

Sep. 30, 2020 (JP) 2020-164877

Publication Classification(51) **Int. Cl.**
H03H 9/64 (2006.01)
H03H 9/25 (2006.01)(52) **U.S. Cl.**CPC **H03H 9/6483** (2013.01);
H03H 9/25 (2013.01)

(57)

ABSTRACT

A multiplexer includes a first filter and a second filter with a lower pass band than that of the first filter. A longitudinally coupled acoustic wave resonator of the first filter includes an interdigital transducer electrode group of interdigital transducer electrodes having an asymmetric shape with respect to a center line that passes through a center of the interdigital transducer electrode group and is perpendicular or substantially perpendicular to an acoustic wave propagation direction. The interdigital transducer electrodes connected to a first path on a common terminal side when seen from the longitudinally coupled acoustic wave resonator have a smaller aggregate average of electrode finger pitches of the interdigital transducer electrodes and a smaller sum of numbers of pairs of electrode fingers of the interdigital transducer electrodes, compared with the interdigital transducer electrodes connected to the first path on a first terminal side.

