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(19) **United States**(12) **Patent Application Publication**  
**DYER et al.**(10) **Pub. No.: US 2023/0231534 A1**(43) **Pub. Date: Jul. 20, 2023**(54) **TRANSVERSELY-EXCITED FILM BULK  
ACOUSTIC RESONATORS WITH COUNTER  
CHIRPED INTERDIGITAL TRANSDUCERS  
(IDTS) FOR MECHANICAL AND PROCESS  
COMPENSATION****Publication Classification**(51) **Int. Cl.****H03H 9/02** (2006.01)**H03H 9/17** (2006.01)(52) **U.S. Cl.****CPC** ..... **H03H 9/02228** (2013.01); **H03H 9/171**(2013.01); **H03H 9/02015** (2013.01)(71) Applicant: **Murata Manufacturing Co., Ltd.**,  
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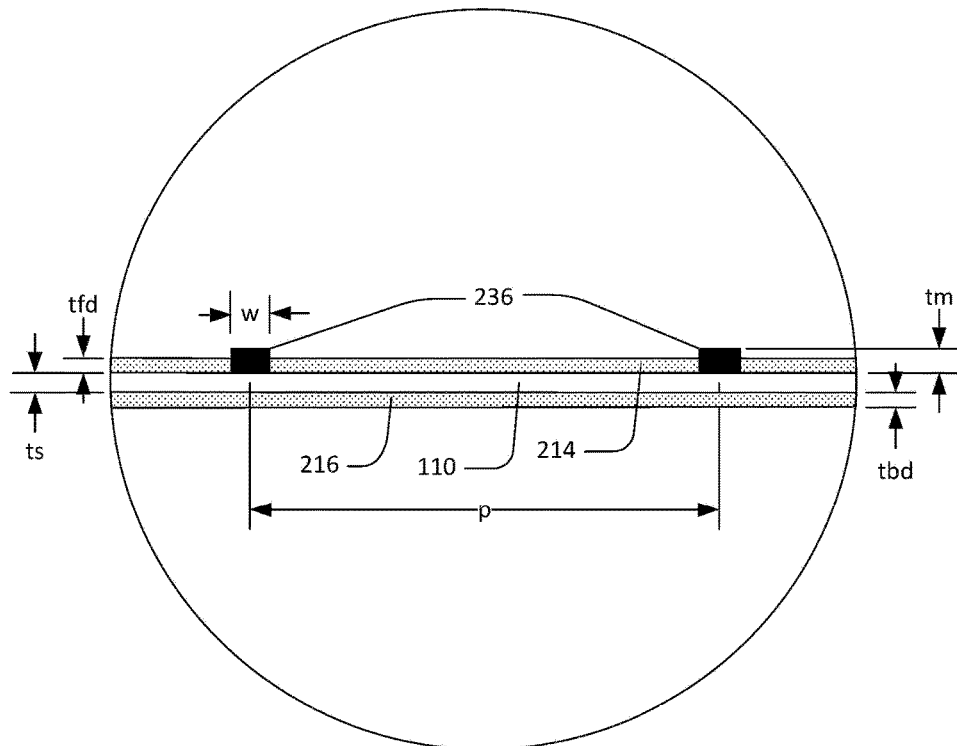
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**ABSTRACT**

An acoustic resonator has a piezoelectric plate having first and second surfaces, the second surface facing a substrate, and a diaphragm of the piezoelectric plate spanning a cavity. A conductor pattern is formed on at least one of the first and second surfaces and has an interdigital transducer (IDT) having interleaved fingers on the diaphragm portion of the piezoelectric plate. At least one of a pitch of the interleaved IDT fingers or a mark of the interleaved IDT fingers varies over an area of the IDT to compensate for process-induced distortion of the diaphragm portion of the piezoelectric plate.

(21) Appl. No.: **18/075,889**(22) Filed: **Dec. 6, 2022****Related U.S. Application Data**(60) Provisional application No. 63/287,927, filed on Dec.  
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**DETAIL C**