Fraunhofer

Component

Micromachined Ultrasonic Transducers

Fast Facts

- High sensitivity
- Miniaturization
- CMOS compatibility
- Array functionality
- RoHS compliance

Introduction

The Fraunhofer Institutes ENAS, IPMS, and ISIT are at the forefront of ultrasonic transducer technology, delivering compact, high-performance solutions for diverse applications. Our cutting-edge transducers are renowned for their precision, versatility, and integration ease, meeting the stringent demands of various industries.

Transducer Technology Overview

At the core of our ultrasonic sensors are MEMS transducers, leveraging semiconductor processes for unrivaled quality and efficiency. Available in capacitive or piezoelectric drive options, these transducers are adept at converting electrical signals into mechanical vibrations, thereby producing high-frequency sound waves for accurate sensing.

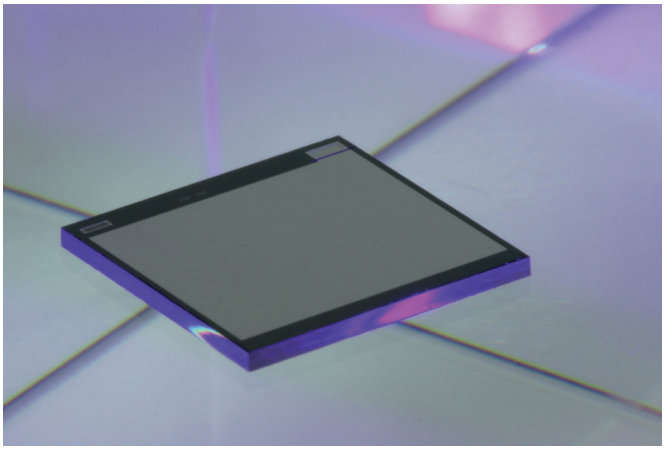
Innovative Applications

Our ultrasonic transducers are integral to numerous applications, including but not limited to:

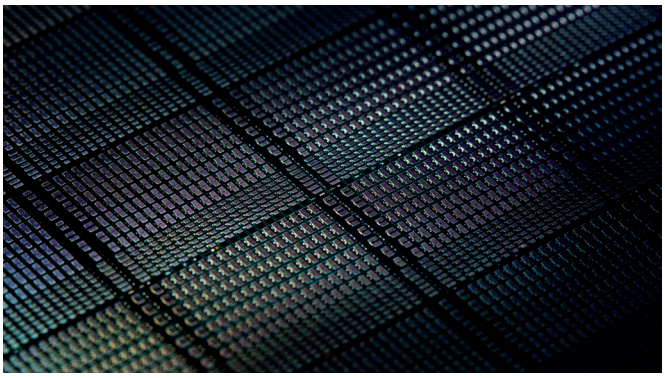
- Industrial automation and quality control
- Medical diagnostics and therapeutic devices
- Proximity sensors for consumer electronics

Research and Development

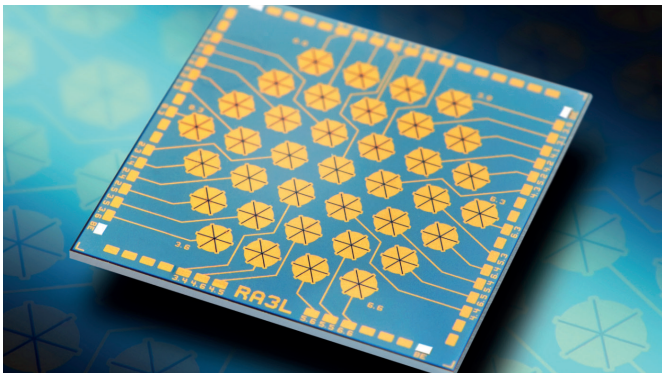
Our institutes are dedicated to the advancement of capacitive micromachined ultrasonic transducers (CMUT), piezoelectric micromachined ultrasonic transducers (PMUT), and in-plane capacitive micromachined ultrasonic transducers (L-CMUT)



Capacitive micromachined ultrasonic transducer. (Fraunhofer ENAS)



Capacitive micromachined ultrasonic transducer. (Fraunhofer IPMS)



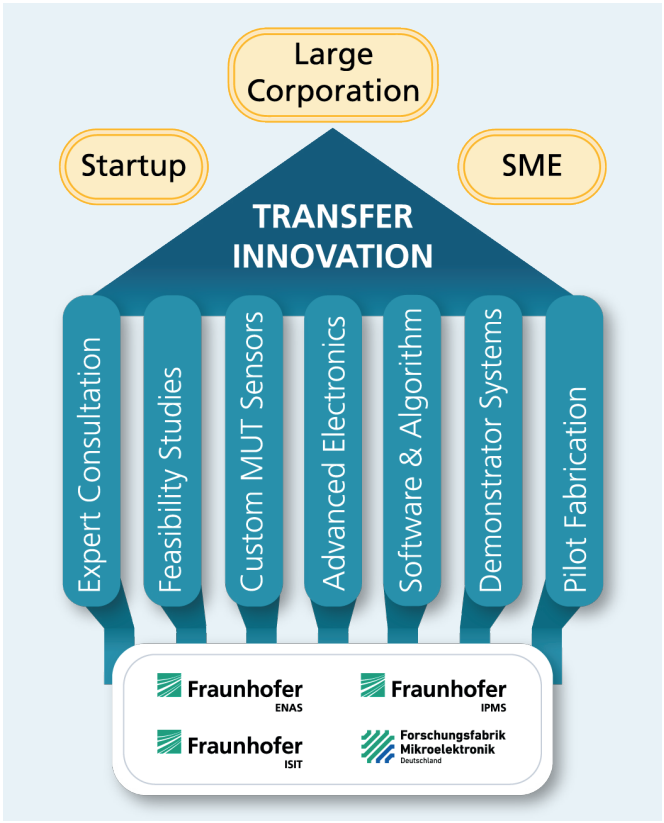
Piezoelectric micromachined ultrasonic transducer. (Fraunhofer ISIT)

technologies, pushing the boundaries of what's possible in ultrasonic sensing. We specialize in array-based designs that enable advanced functionalities like beamforming and beam steering, providing unparalleled control and resolution in spatial sensing.

Collaboration and Services

The Fraunhofer Institutes are committed to fostering innovation through collaboration. We offer a comprehensive suite of services for companies of all sizes:

- Expert consultation
- Feasibility studies
- Custom MUT sensor development
- Advanced electronics and software solutions
- Demonstrator system prototyping
- Scalable pilot production facilities



Real-World Implementations

Our ultrasonic transducers have a broad range of applications, enhancing processes and products across multiple sectors:

- Industrial: Precision positioning, level detection, and material characterization
- Consumer electronics: Interactive interfaces and safety features
- Healthcare: Diagnostic imaging and fluid measurement

Partnerships for Progress

We partner with startups, SMEs, and multinational corporations, providing a streamlined pathway from concept to commercialization. The joint ultrasound development platform brings together our collective expertise in a one-stop solution for ultrasonic technology development. Engage with us to explore how our ultrasonic transducer technology can revolutionize your products and processes.

Contact us for more details and to initiate a partnership.

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