

Microelectronics Fab in northern Germany

© Fraunhofer ISIT: **ISIT MEMS mirrors and their** belonging control electronics

ISIT

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is participant of the

Overview of our **MEMS Mirrors**

lechnical specifications
degree of freedom
operation mode
driving frequency
mirror diameter
max. mechanical angle

AR/ HR coating Reflective coating vacuum packaging



2D	
resonant	
500 Hz to 60 kHz	
0.8 mm to 20 mm	
± 45°	
\checkmark	

 \checkmark



Piezoelectric 2D resonant/ quasi-static quasi-static to 65 kHz 0.8 mm to 20 mm ±10° (quasi-static); ±45° (resonant) 1

Magnetic

1D
resonant/ quasi-static
quasi-static to 3 kHz
7 mm
±2° (quasi-static);
±7° (resonant)
\checkmark
\checkmark
\checkmark

Fraunhofer Institute for Silicon Technology ISIT has a modern 200 mm clean room for the development of optical microsystems. We offer customized development of products and technologies in the field of microelectromechanical systems (MEMS), covering the entire development chain: from the specifications to a working product.

Our Portfolio Devices

- Fast laser scanners
- Micromirror arrays
- Heat radiation sensors

Components

- Microlenses & micro-optics
- Beam shaping elements
- Apertures
- Opto-packages from UV to IR

Systems

- MEMS control electronics
- Beam positioning system
- Display technology

Our Technology Platforms

- 3D Glass Forming
- Piezo MEMS
- Powder MEMS
- Epi-Poly Si

Application Fields

- Automotive industry and Industrial Lidar Sensor
- Medical technology & diagnostics
- Optical communications
- Laser projection
- Manufacturing technology
- Quantum technology

Our Offer

- System conception
- Simulation
- Failure analysis
- Design
- Manufacturing
- Wafer-level packaging
- Pilot production • Packaging and
- interconnection
- Characterization

Fraunhoferstraße 1

Business Unit MEMS Applications

www.isit.fraunhofer.de/opticalmems

Fraunhofer ISIT



Electrostatic



Smart Optical Systems for Communication & Sensor Technology to shape the 21st Century

Microelectronics Fab in northern Germany

Facilities @ Fraunhofer ISIT

Cleanroom I

Professional semiconductor production line

- Development and production: 200 mm silicon technologies for CMOS processes
 Cleanroom area: 2500 m²
- Cleanroom area. 2500 m-
- Critical Dimension: 1 micron
- Installed capacity: 5000 wafers per month

Cleanroom II

Professional MEMS production line

- Development and production: 200 mm wafer technologies (silicon and glas) and very low restrictions with respect to metals and other materials
- Cleanroom area: 1400 m²
- Critical Dimension: 0,35 micron and below
- Installed capacity: 800 wafers per month in one shift
- Cleanroom for chemical-mechanical polishing (CMP): 200 m²
- Grinding and dicing on chip and wafer level: 100 m