Fraunhofer ISIT

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

Microelectronics Fab in northern Germany

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

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
- Medical technology & diagnostics
- Optical communications
- Consumer industry
- Manufacturing technology

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

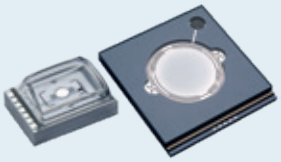
Fraunhofer Institute for Silicon Technology ISIT

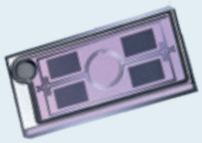
Fraunhoferstrasse 1
25524 Itzehoe, Germany
www.isit.fraunhofer.de

Business Unit MEMS Applications
Dr.-Ing. Shanshan Gu-Stoppel
Head of Optical MEMS
+49 4821 17-1424
shanshan.gu-stoppel@isit.fraunhofer.de
www.isit.fraunhofer.de/opticalmems

ISIT is part of Forschungsfabrik Mikroelektronik Deutschland

Overview of our MEMS Mirrors





Technical Specifications	Electrostatic	Piezoelectric	Magnetic
degree of freedom	2D	2D	1D
operation mode	resonant	resonant/ quasi-static	resonant/ quasi-static
driving frequency	500 Hz to 60 kHz	quasi-static to 65 kHz	quasi-static to 3 kHz
mirror diameter	0.8 mm to 20 mm	0.8 mm to 20 mm	7 mm
max. mechanical angle	± 45°	±10° (quasi-static); ±45° (resonant)	±2° (quasi-static); ±7° (resonant)
AR/ HR coating	✓	✓	✓
Reflective coating	✓	✓	✓
vacuum packaging	✓	✓	✓

Fraunhofer ISIT

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
- 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 m²

MEMS Cleanroom of the Fraunhofer ISIT.
Explore our cleanroom space in a 360° tour: s.fhg.de/isit360