

Customized pressure sensor technology for medical applications

Our latest developments feature low power consumption, low temperature dependence, a customized sensing range and long-term stability.

Services and know-how for the design of a customized mixed-signal ASIC

With advances in the pressure sensor technology, integrated capacitive pressure sensors have emerged as one of the most promising solutions in the medical field. These sensors not only offer a compact design but also outstanding

features such as low power consumption and long-term stability. This enables precise and realtime measurement of pressure changes directly in human, which is essential for monitoring and treating various health conditions.

Customer benefits

- Customized system solutions using post-CMOS compatible technology and capacitive sensing principles
- Combined expertise in mixed signal circuit design, sensor technology, and system design
- Cover of the entire process from concept and feasibility studies to development of first samples and prototyping, leads to pre-series and series production of sensors
- Precise and reliable pressure measurements with our innovative sensors
- System knowledge for medical implants

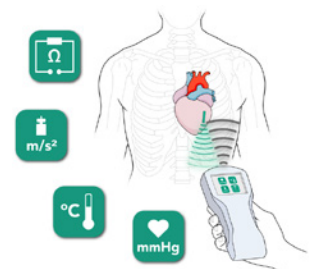
System advantages

- Long-term stability
- High precision
- Low power

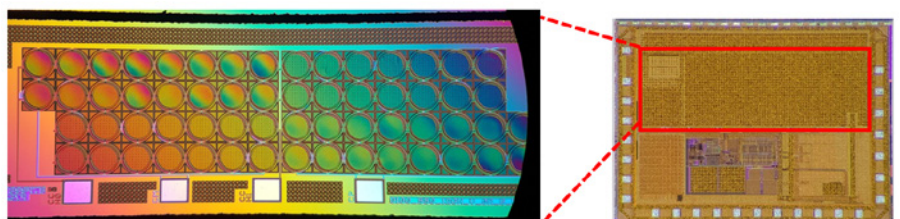
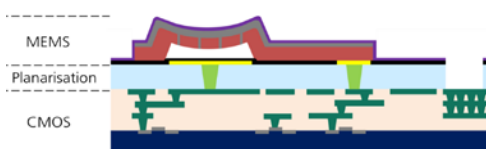
Application fields

Our integrated pressure sensors are used in various implanted medical devices and at various locations:

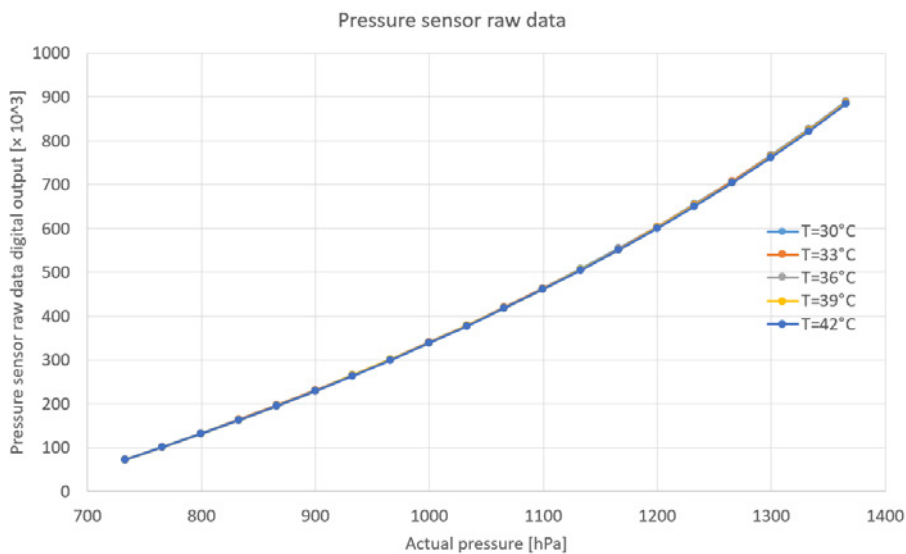
- Intracranial
- Intraocular
- Cardiological applications



Designed for medical implants



Bringing everything together: Finalizing of the post-CMOS pressure sensor process, application of the process onto CMOS wafers with readout ASICs, test of the performance and long-term stability



Typical pressure sensor data over the measurement range. The non-linear behavior of the pressure data and the slight temperature dependencies can be corrected in the embedded software.

Specifications

Sensor size (l x w x h)	2,48 x 1,87 x 0,75 mm
Pressure range	650 hPa - 1250 hPa
Pressure sensor accuracy	< 1 hPa
Pressure sensor sample rate	100 Hz
Temperature range	18 °C - 42 °C
Temperature sensor accuracy	0,5 K
Temperature sample rate	100 Hz
Operation distance	3 cm
Carrier frequency	133 kHz
Power consumption	< 50 µA

Note: The illustrations and information presented herein are not the specifications of a medical product but examples of a Fraunhofer IMS pressure sensor system.

Contact

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