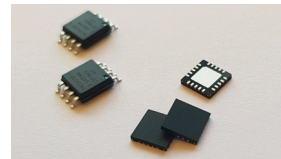


## ASICs

**HF transponder for Industry 4.0 applications**

The Fraunhofer IMS has been developing 13.56 MHz RF transponders for many years, especially for medical and industrial applications. The latest achievement of the Fraunhofer's Mixed Signal IC developers is the long-range transponder "HF18". HF18 is a transponder, which was developed especially for the requirements of the rising Industry 4.0.



Essential for this new revolution is the capture of application-specific data such as pressure, temperature or humidity in order to connect this data in the cloud and enable a new type of production control. Batteryless and maintenance-free transponders are ideal for this purpose. To meet this diversity HF18 is equipped with an SPI interface, which can be controlled via the RF link. This makes it easy to build versatile sensor transponders that can be used in Industry 4.0 applications. It is also possible to expand the memory with energy efficient FRAMs.

If you need more functionality or more safety on the transponder, then contact us. We would be happy to develop a full-custom transponder for your application. For example, crypto functions based on Physical Unclonable Functions can provide hardware-level protection. Built-in encryption mechanisms can protect internal storage or protect IP. This enables the increasing need for safety to be realized.

[MORE ABOUT ASICS](#)[MORE ABOUT HF18](#)

## Wireless and Transponder Systems

**Drones4Energy - Infrastructure Monitoring**

As a contribution for the application area of infrastructure monitoring "Drones4Energy" is an innovative drone project that adds to the newest technologies for the electrical and communications engineering to build a completely autonomous drone system that can be charged via overhead lines. The project promises the delivery of a collaborative drone system that can inspect the power grid in a highly efficient way. The project is designed and tested indoors and outdoors.

[MORE INFO](#)

## Trustworthy embedded AI with RISC-V

Researchers at Fraunhofer IMS have succeeded in the development of an efficient microcontroller core on the basis of a free RISC-V command set architecture as well as its extension of hardware acceleration for AI applications. "In combination with the AlfES framework for embedded AI we have enabled a system for the application of artificial intelligence on sensor- and actuator-related embedded systems", explains Alexander Stanitzki of Fraunhofer IMS.


[MORE INFO](#)

## News AlfES Demonstrator

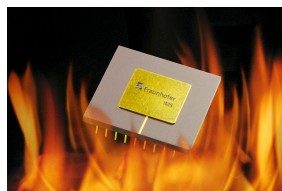
The AlfES development team at the Fraunhofer IMS is working on a new demonstrator for the **SPS IPC Drives** fair, which will take place from 26. - 28.11.2019 in Nuremberg. The demonstrator is based on a complex gesture recognition which was already introduced in a **video** and should show one of many applications for this technology. Due to the complex gesture recognition, a human-technology interaction is possible, which can be realized cost-effectively on embedded systems. Visit us at our booth and try it yourself. Colleagues from the department are on site to advise you.

Current topics in AlfES development include compatibility with existing machine learning frameworks, such as: For example, TensorFlow® can be used to transfer pre-trained neural networks to AlfES or the integration of reinforcement learning algorithms specifically for embedded systems. In the latter case, the use of the IMS RISC-V core with AI hardware accelerators is particularly interesting in order to learn quickly and efficiently.

Students have the possibility to do there Bachelor or Master Theses in the environment of Embedded-KI development at the Fraunhofer IMS. Visit our **Career Page**.

[MORE INFO](#)
[VIDEO](#)

## Innovation on Silicon



Fraunhofer IMS in Duisburg has more than 30 years of experience and proven expertise in microelectronic circuits and systems. Beside CMOS circuit development and wafer processing, including MEMS based sensor systems, Fraunhofer IMS also offers solutions in the field of high temperature integrated circuits and sensor systems.

[MORE ABOUT HT](#)
[NEW HT FLYER](#)

## Great Success for the Fraunhofer IMS at AutoSens in Brussels

For the first time Fraunhofer IMS presented its newest developments in automotive sensing at the renowned Autosens conference and fair on September 17th – 19th in Brussels.

Many discussions with experts from the automotive industry are confirming that the new LiDAR approach with backside-illuminated SPAD arrays has great potential for application in autonomous driving scenario.



In an [interview](#) Werner Brockherde explained the new technology based on optimized CSPAD technology and wafer bonding. Prototype detector arrays are expected to be available before end of this year.

[WATCH THE VIDEO](#)

## Events & Fairs

CMOS Image Sensors

### CSPAD technology for LiDAR: Coming conferences and new sensor solutions

Again, Fraunhofer IMS will contribute at high-level conferences and events related to the topic detectors for LiDAR (Light Detection and Ranging).



Do not miss the conference talk by Dr. Jennifer Ruskowski (Head of 3D Sensors) about CSPADs during the second [LiDAR Conference](#) organized by Driving Vision News (DVN) in Frankfurt (2-3 December 2019). Single Photon Avalanche Diodes (SPAD) integrated in CMOS (CSPAD) experience nowadays a great demand and therefore facing a new developing boom. Moreover, test our detector integrated into a Flash LiDAR 3D camera in real-time during the parallel exhibition.

Secondly, the LiDAR-team presents new SPAD solutions at the [SPIE Photonics West](#) in San Francisco (1-6 February 2020): Improve your understanding of LiDAR and attend to two scientific talks (paper 11288-5 and 11288-9) or the poster session (paper 11288-94) and start fruitful discussions with our experts.

At the parallel Photonics West exhibition (4-6 February 2020) at booth no. 4361 you will have the chance to get in touch with the new BSI-CSPAD generation from Fraunhofer IMS. The sensor CSPAD3000 will be featured in 2020 and unveils a new era of SPAD detector architecture for demanded high-performance LiDAR systems.

18.11 - 21.11.19 in Düsseldorf, Hall 8A - Booth F19

### COMPAMED

At Compamed, Fraunhofer IMS is presenting customized pressure sensor systems for medical applications.

This includes the Shunt Sensor – an implantable sensor that measure intracranial pressure in the shunt system of hydrocephalus patients. Another new development is the Tactile Hand, which integrated pressure sensor technology into a hand. A third product is the Theranostic Implant that features several sensors, like pressure, temperature and positions sensors controlled by ASIC. The scientists also showcase their AI solutions with a sensor-related system that recognizes handwriting and gestures.

COMPAMED



[www.compamed.de](http://www.compamed.de)

Leading International Trade Fair

DÜSSELDORF, GERMANY  
18-21 NOVEMBER 2019

Member of MEDICA Alliance

→ [More information can be found here](#)

26.11 - 28.11.19 in Nuremberg, Hall 7A - Booth 301

## sps – smart production solutions

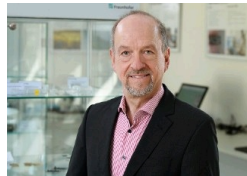


We invite you to visit us in hall 7A at booth 301. We are looking forward to show you examples of our current technologies, products and services:

- Energy-autonomous wireless current sensor for condition monitoring on 3-phase cables and connections
- SHF transponder - tool identification with pulse readout
- Micro Intelligence - Artificial intelligence for 3D gesture recognition and control
- Inductive position sensors - simple, cost-effective and precise position measurement
- HT Proximity Switch - High temperature proximity switch with improved performance
- Uncooled infrared sensors (microbolometers) and cameras for high sensitivity and temperature resolution in the IR range of 3 - 14µm
- IRFPA - object and person acquisition without artificial lighting
- SPAD-LiDAR camera Owl for reliable and fast distance measurements for lines and area sensors

→ [More information can be found here](#)

## Contact



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a

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