First Sensor

Press release
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Solid-state silicon photomultipliers offer performance and application advantages

First Sensor extends its range of optical sensors with innovative solid-state silicon photomultipliers (SiPMs) for the detection of ultra-low light levels down to single photons. Compared to conventional photomultiplier tubes, SiPMs offer significant advantages such as low operating voltage, excellent temperature stability, immunity to magnetic fields and a much smaller size for easy system integration. The detectors are optimized for near ultraviolet (Series SiPM-NUV) or red, green and blue (Series SiPM-RGB) light detection with peak sensitivities at 420 nm or 550 nm.

The silicon photomultipliers consist of a matrix of multiple avalanche photodiode (APD) micro-cells operated above their breakdown voltage (Geiger mode). NUV- and RGB-SiPMs from First Sensor feature extremely low temperature coefficients of the breakdown voltage and gain, which allows for highly accurate and stable measurements. Enhanced materials and semiconductor technology enable low-noise devices with reduced dark count rate, crosstalk and very low afterpulsing probability typ. <4 %. The precision SiPM detectors are designed to achieve very high gain (>10^6) and high photon detection efficiencies. The edgeless SiPM dies ensure high cell fill-factors and maximized active areas in array arrangements. The Chip-Scale-Package (CSP) provides a cost-effective and RoHS compliant solution suitable for reflow soldering. For custom specific applications First Sensor develops and manufactures arrays, modules and complete systems for OEM customers worldwide.

Important features of the SiPM-NUV and SiPM-RGB silicon photomultipliers:

- Ultra-low light detection down to single photons
- Low operating voltage
- High gain and low noise
- Immunity to magnetic fields

Typical applications of silicon photomultipliers from First Sensor include high energy physics, medical diagnostics, nuclear medicine, homeland security and analytical instruments. Due to the immunity to external magnetic fields, SiPM detctors are ideal for medical imaging applications such as combined tomography systems using magnetic resonance tomography (MRT) and positron emission tomography (PET) or single photon emission computed tomography (SPECT).

Further product information: www.first-sensor.com/sipm

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About First Sensor AG

First Sensor AG is one of the world's leading suppliers in the field of sensor systems. Our company develops and manufactures both standardized and tailor-made sensor solutions for the detection of light, radiation, pressure, flow, level and acceleration for applications in the Industrial, Medical and Mobility growth markets. The company produces in-house and along the value-added chain from component to system level.

With over 800 employees, we are represented at six German locations and also have development, production and sales sites in the USA, Canada, China, the Netherlands, Great Britain, France, Sweden and Denmark along with a worldwide partner network. We guarantee our compliance through regular successful certifications of the sites according to ISO/TS 16949, ISO 14001, EN ISO 13485, EN 9100 and ISO 9001 - matching the respective business field.

First Sensor AG is listed in the Prime Standard of the German stock exchange in Frankfurt.

For more details on First Sensor, please visit: www.first-sensor.com

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