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## **Medical Imaging using Silicon Photomultipliers (SiPMs)**

Ketek

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### **Looking inside the body for early detection and treatment of disease**

The goal of medical imaging is to provide diagnostic information which is invisible to the human eye or comes from within the body. It allows the medical doctor an accurate diagnosis with non-invasive methods. Many of these techniques demand for sensor technologies which are fast, have a high sensitivity and are reliable also in long term usage. The performance of a medical imaging device is already defined on detector level by the detector's quality. There is an increasing demand for sensors which detect in the visible light regime, either for direct detection of photons or for the use in combination with a scintillator.

KETEK SiPMs provide excellent performance for these detection tasks and are the superior alternative compared to the traditionally used light detectors like PMTs (photomultiplier tubes) and APDs (avalanche photodiodes). The KETEK SiPMs are still able to work under adverse circumstances like e.g. high magnetic fields or electromagnetic polluted environments without compromising the performance. KETEK SiPMs operate at a low voltage of about 30 V increasing the operation safety. As a result, employing this faster and more sensitive detection techniques there is a direct impact on the image quality. This can help to increase the accuracy of a diagnosis and the further treatment, ensuring the health of the individual. SiPMs from KETEK provide superior performance at a lower cost for these tasks.

Key Features:

- High photo detection efficiency capable for direct optical detection or the use with a wide range of scintillators.
- Robust, compact, lightweight sensor
- No degradation of the SiPM under accidental illumination by daylight
- 4 side-tileable SiPMs suitable for densely packaged sensor arrays
- Excellent timing properties
- Excellent linearity of response also for bright scintillators
- Simple operation
- Uniformity of operation voltage in combination with best in class temperature coefficient allows the simultaneous operation of many SiPMs with just one Bias Supply, which further reduces the complexity and cost
- Insensitive to magnetic field, operation in the field already proven up to 7 T
- Can be supplied with a multichannel readout capable to read out thousands of SiPMs with high performance and scalability

## Applications:

- Positron Emission Tomography (PET)
- Single Photon Emission Tomography (SPECT)
- Gamma Camera
- Compton Camera
- Intraoperative Probes
- Optical Tomography

KETEK SiPMs are sold in North America by Electro Optical Components.