

High-voltage-resistant photodiode arrays (GalGiS)

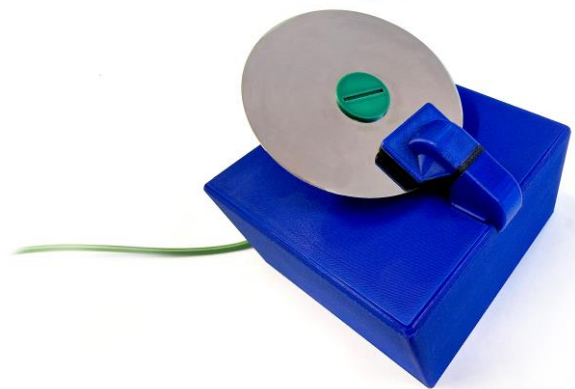
Safety-relevant applications such as aerospace, rail transportation and medical technology require the electrical isolation of sensor signals for electric fields up to 1500 V. At the same time, however, many sensor concepts are based on the comparison of several sensor channels. Until now, several separate assemblies were required for such applications.

CHARACTERISTICS

- Photodiode array with galvanically isolated individual segments
- Voltage-resistant up to 1500 V (ac/dc)
- From 150 μm distance between the segments
- Geometric tolerance +/- 1 μm
- Spectral range 300 to 1000 nm
- In-chip integration of LEDs and laser diodes possible
- Samples available, customer and application-specific implementation possible

As part of the "GalGiS" funding project, new silicon technologies were developed at the CiS Research Institute in order to achieve such galvanic isolation at chip level.

Photodiode arrays with an integrated LED light source were developed as demonstrators, which achieve the required voltage stability at a distance of 150 μm between the elements. At the same time, the usual geometric accuracy in the sub-micrometer range is achieved, allowing high-precision phase positions and signal ratios to be achieved reproducibly and with long-term stability. Such components can be used in optical encoders for position and speed sensors.



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