SINGLE PHOTON AVALANCHE DIODE MODULE

AT A GLANCE

InGaAs-based SPAD and NFAD modules for QKD and sensing applications

Features

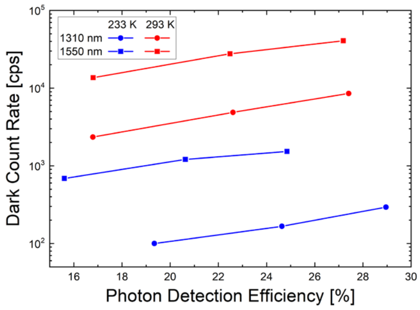
- fiber coupled SPAD or NFAD
- SWIR wavelength range
- TEC integrated
- detection of DV-QKD keys
- evaluation board for test & measurement setups
- customized solutions for individual applications on request

Applications

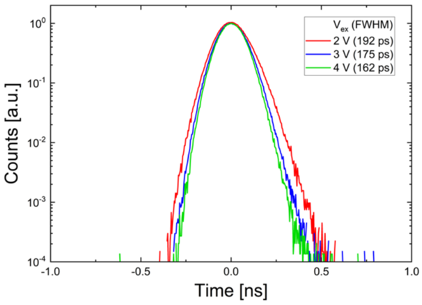
- quantum key distribution
- quantum sensing

Background

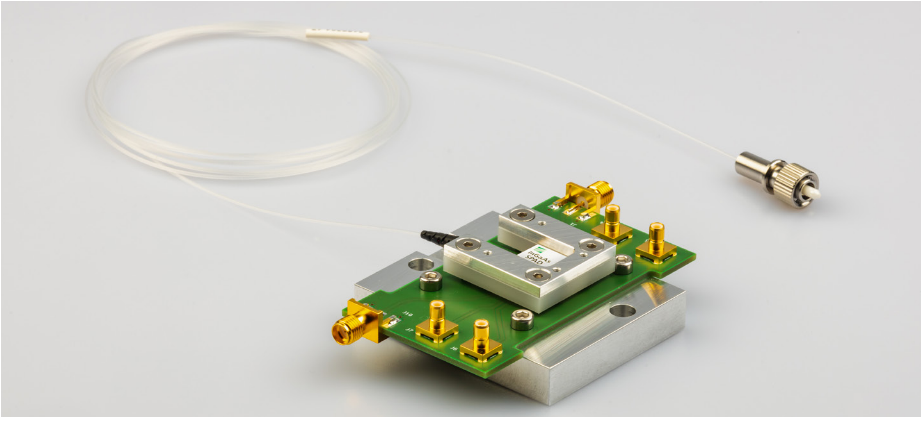
High performance InGaAs based single photon avalanche diodes at telecom wavelengths are of interest for security applications, e.g. quantum communication or imaging. Fraunhofer HHI offers SPAD modules with cutting-edge performance. The SPAD chips inside the modules are based on mature InP technology and are fabricated in the wafer process line of Fraunhofer HHI, with Telcordia and space-qualified processes. The SPAD supply chain is completely within EU, including packaging at the Fraunhofer HHI facility.



Dark count rate (DCR) and photon detection efficiency (PDE) measurements of O- and C-band SPAD modules



Jitter measurements of SPAD modules



Evaluation board for SPAD modules

Technical Specifications

- **Option 1:**
  wavelength: 1000 nm - 1600 nm
  PDE of 25 % with DCR of 1.5 kcps
- **Option 2:**
  wavelength: 1000 nm - 1350 nm
  PDE of 29 % with DCR of 0.3 kcps
- afterpulsing propability (APP) < 1 % after 8 µs
- cooling down from room temperature to -40 °C with integrated TEC
- optical input: FC/PC SMF

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