

Low-gain avalanche detectors (LGADs) for low-energy electrons (eLGAD)

APPLICATION

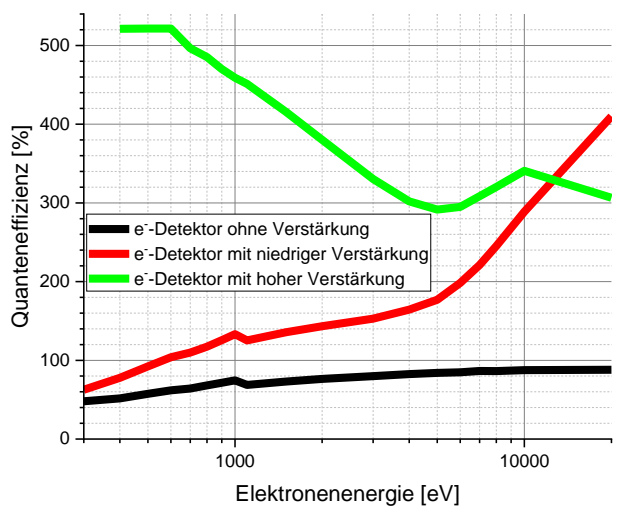
Detectors in the LGAD category have moderate intrinsic amplification (gain factor ~10 to 100), which can simplify the downstream electronic amplification circuits. These silicon devices have been optimized for the detection of low-energy electrons. They are relevant in medical technology and electron microscopy.

Low-energy electrons have a shallow entry depth in silicon. Therefore, the entry window was minimized and the detector's active zone was positioned close to the surface.

DEMONSTRATOR PARAMETERS

PARAMETER	VALUE
Chip size	1 x 1 mm ²
Dark current @ 40V	10 nA/cm ²

QUANTUM EFFICIENCY OF THE LGAD



Through this development work, the technology has been refined to achieve quantum efficiencies of up to 460% for the detection of low-energy electrons at 1 keV. This enables, for example, significantly higher contrast resolution in electron microscopy applications.



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