

Silicon APD



The silicon avalanche photodiode (Si APD) has an internal gain mechanism, fast time response, low dark current and high sensitivity in the UV to near infrared region. Hamamatsu offers SI APDs with active areas ranging from 0.2mm to 5.0mm in diameter. Our range of APDs are hermetically sealed in metal packages. Applications for APDs include optical fiber communication, spatial light transmission, low-light-level detection, high speed bar code reader, laser radar and biomedical devices.

While Avalanche photodiodes are limited to gains below 200, they have excellent [quantum efficiency](#) in the near infrared include the [S8890](#) and [S9251 series](#). Low bias infrared sensitive [avalanche photodiodes](#) have typical breakdown voltage of 150V. We make APDs with [visible sensitivity](#) as well. Technical data and operation of silicon avalanche photodiodes can be found in [Characteristics and Use of Si APD](#). The article [Light Levels and Noise, Guide Detector Choices](#) is useful in determining if an APD is an appropriate detector. For ease of use we recommend an [APD module](#) that incorporate an APD, power supply and amplifier in one package. APD arrays are also available. APD's are also widely used in High Energy Physics experiments.

In weak light applications where high magnetic fields are applied an avalanche photodiode is often the only choice. Hamamatsu Photonics has specially developed avalanche photodiodes for Cern's LHC - CMS experiment to withstand very high radiation produced by the collisions during 10 years of operation of the LHC.

Hamamatsu Photonics received the [CERN Award](#) for its close collaboration and special efforts over many years to reach the goal of delivering high volume, large surface and radiation hard APD's to the CMS-Electro Magnetic Calorimeter.