新器件实验室
Novel Device Laboratory

R&D For Low-Level-Light Detector Innovation

SiPM 11-1010C Series

Features

For a conventional SiPM, the quenching resistors are usually fabricated on the surface, and used to connect all APD cells to trace metal lines. In contrast, NDL SiPM employs intrinsic epitaxial layer to form the quenching resistors, using a continuous silicon caping layer as an anode to connect all the APD cells. As a result, the device has more compact structure and simpler fabrication technology, allows larger micro cell density (larger dynamic range) while retaining adequate photon detection efficiency (PDE). The main advantages of NDL C Series SiPM are as follows:

- **Small Cell and Small Pitch**
- **High Cell Density and High Fill Factor**
- **Large Dynamic Range While High PDE**
- **Fast Rise Time and Short Pulse Width**
- **Short Recovery Time and High Time Resolution**
- **Cost Effective**

Applications

- **High Energy Physics**
- **Scintillation Measurement**
- **Nuclear Medical Imaging (PET, SPECT, CT)**
- **Radiation Detection and Imaging**
- **Optical Spectroscope**
- **Other Low Level Light Detection**

Specifications

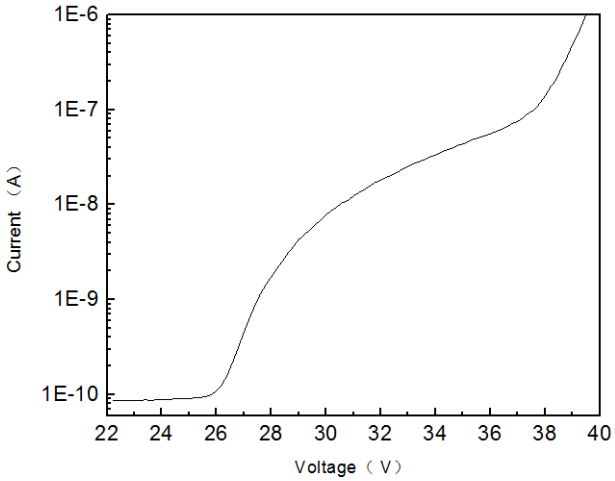
Compared with B series, the C series devices have higher gain, higher PDE, lower dark count rate, better time resolution, and can operate at low temperature down to 77 K .

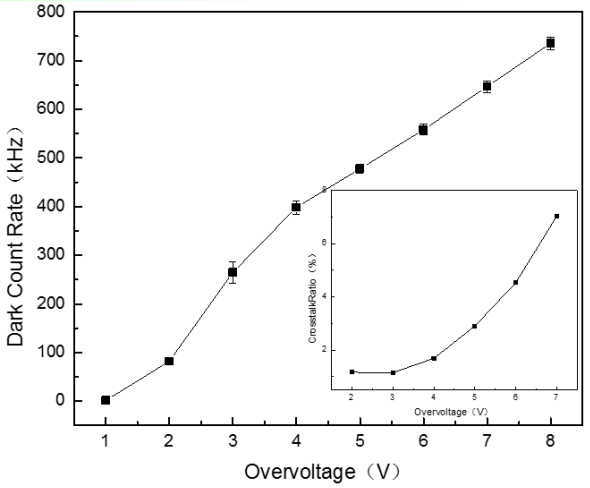
Parameter	Value	Parameter	Value
Effective Active Area	1× 1mm^2	Peak PDE@420nm*	31%
Effective Pitch	10 μm	Dark Count Rate*	~500 kHz
Micro-cell Number	~10000	1 p.e. Pulse Width	6.8ns
Operating Temperature Down to LN2 (77 K)	Yes	Temperature Coefficient For V_b	25 mV/℃
Breakdown Voltage (V_b)	27.5±0.4V	Gain	⩾2×10^5
Max. Overvoltage (ΔV_{max})	8 V	Single Photon Time Resolution	≤ 70 ps

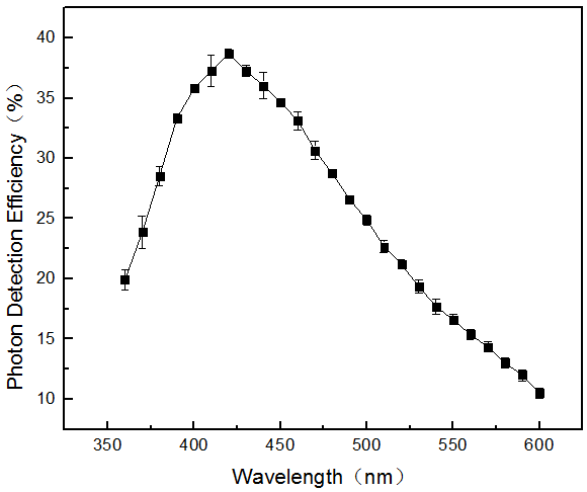
*Measured at overvoltage close to 5 V.

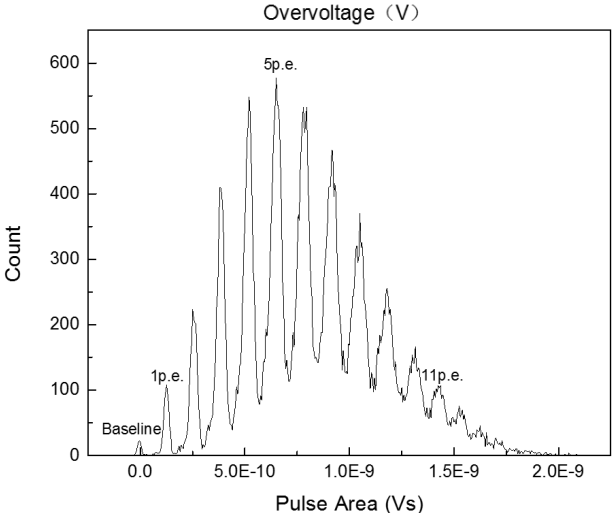
Novel Device Laboratory, Xue Yuan Nan Lu No.12, Hai Dian District, Beijing, China, 100875.
Tel: +86-10-62207419, Email: info@ndl-sipm.net Http://www.ndl-sipm.net

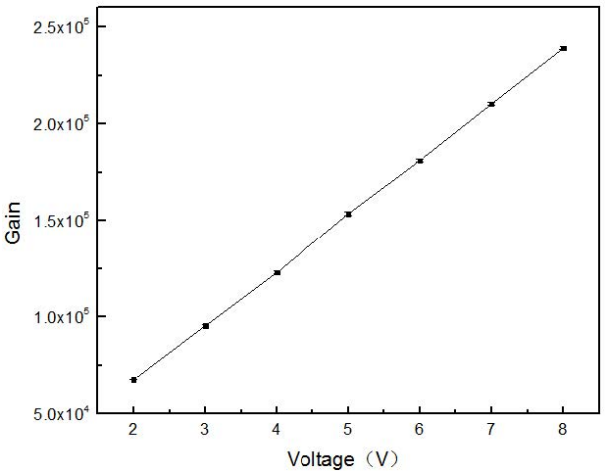
Characteristic Curves

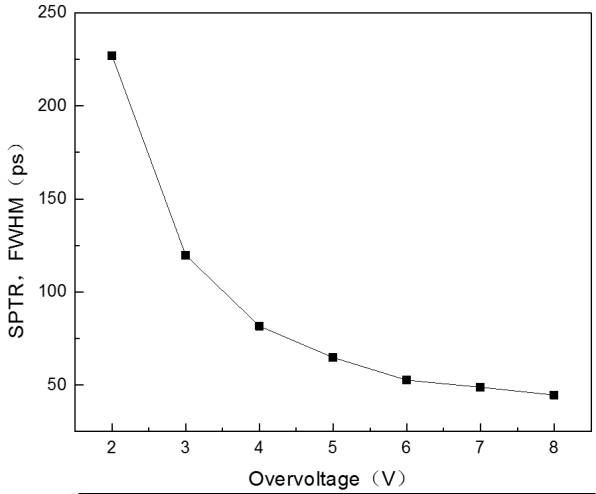


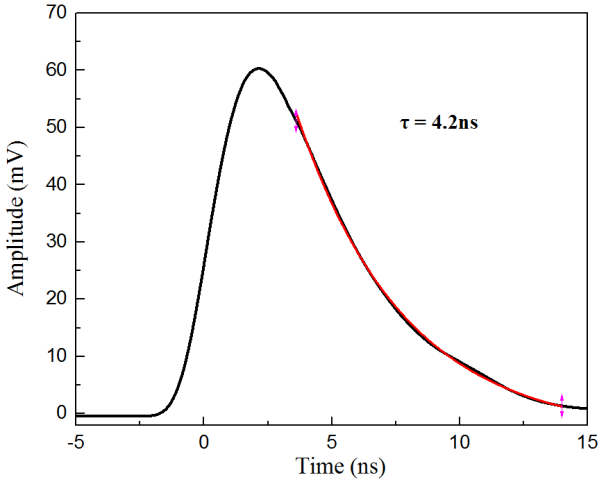


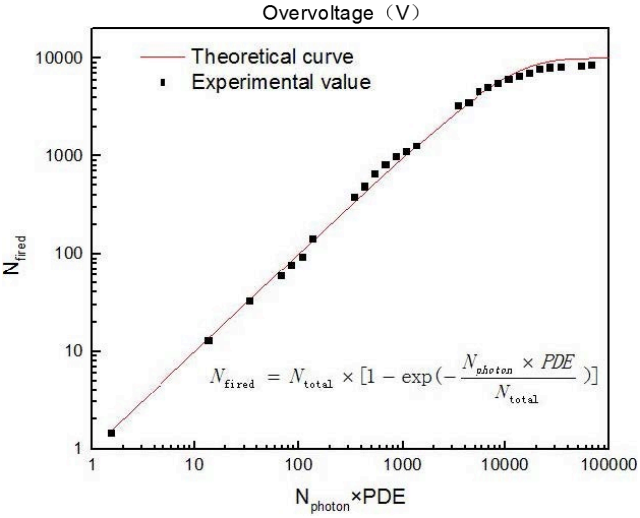






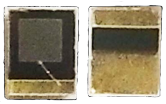




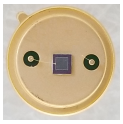


PDE, Pulse Area spectrum, Dynamic range and the Pulse waveform are measured at overvoltage close to 5 V. The temperature of the experiment is 20 ℃

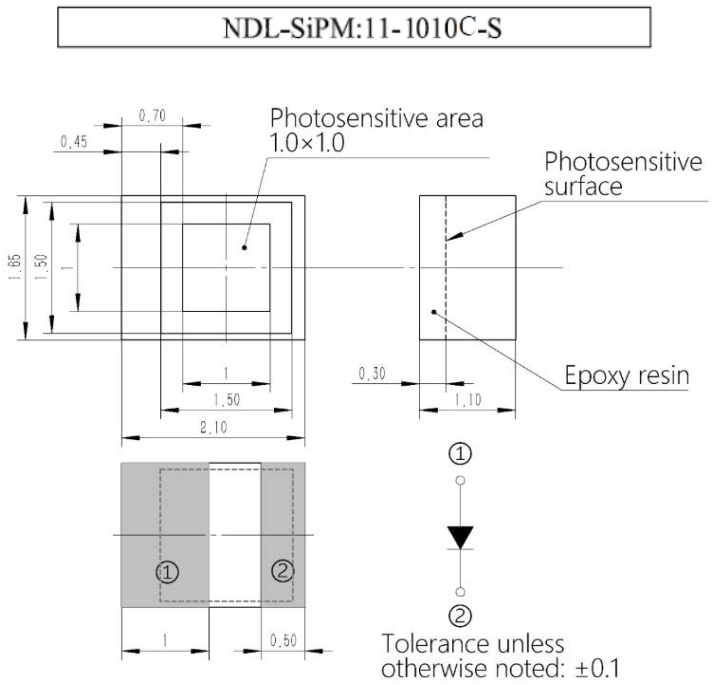
Dimensional outlines (unit: mm)

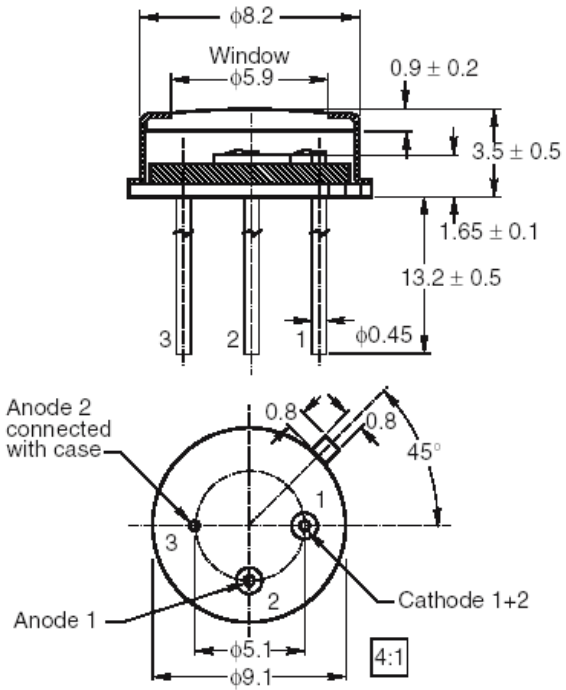


11-1010C-S

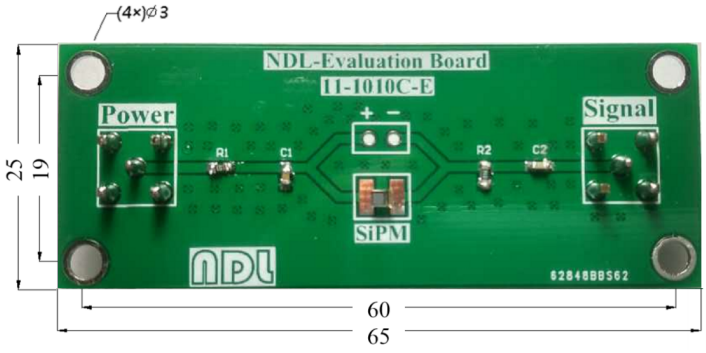


11-1010C-T





11-1010C-E



Basic connection diagram for Evaluation Board