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New product release: Gain-stabilized APD

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Hamamatsu Photonics: A driver in the industry

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"A HIDDEN CHAMPION OF THE 21TH CENTURY"

Hermann Simon, author of the *Hidden Champions of the Twenty-First Century*

10

5,491
EMPLOYEES

1955 2022

5.4%
R&D EXPENSE

3 NOBEL PRIZE CONTRIBUTIONS

15.000
PRODUCTS

1995
ENTRY IN TOKYO **STOCK EXCHANGE**

UNITED NATIONS GLOBAL COMPACT
- HUMAN RIGHTS
- LABOUR STANDARDS
- ENVIRONMENT
- ANTI-CORRUPTION

*Figures taken in 2021/2022

APD gain vs temperature

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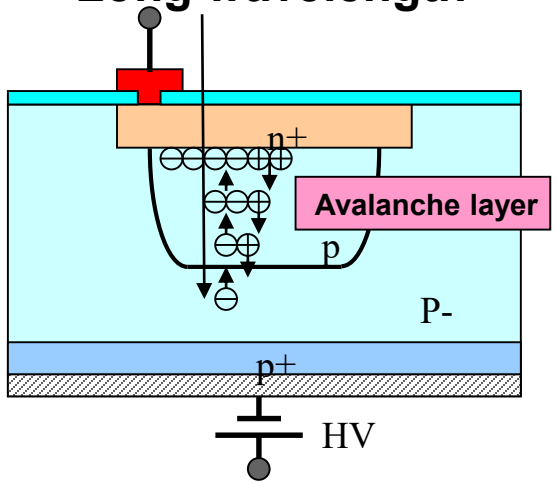
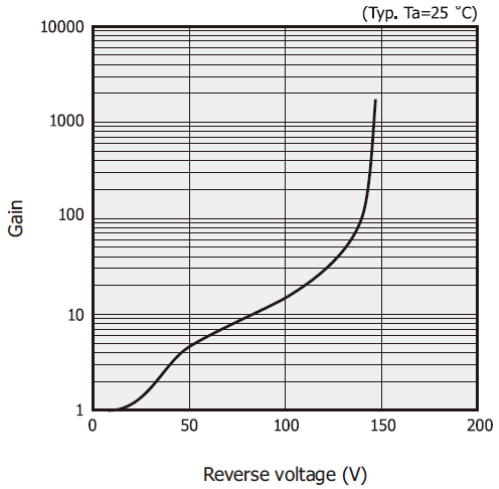
Long wavelength

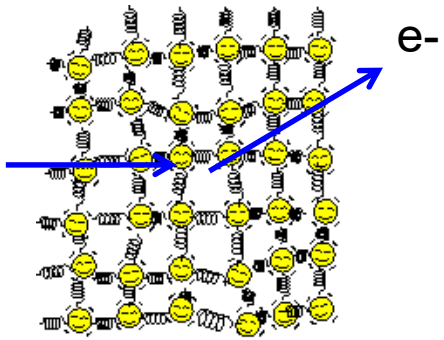


> Gain is obtained according to bias voltage

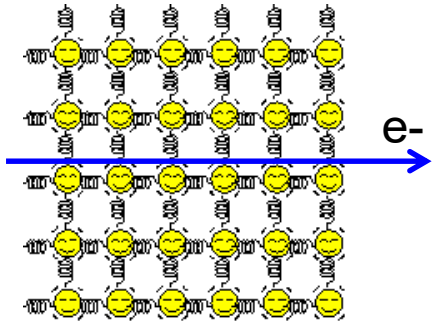


Scattering of the phonon

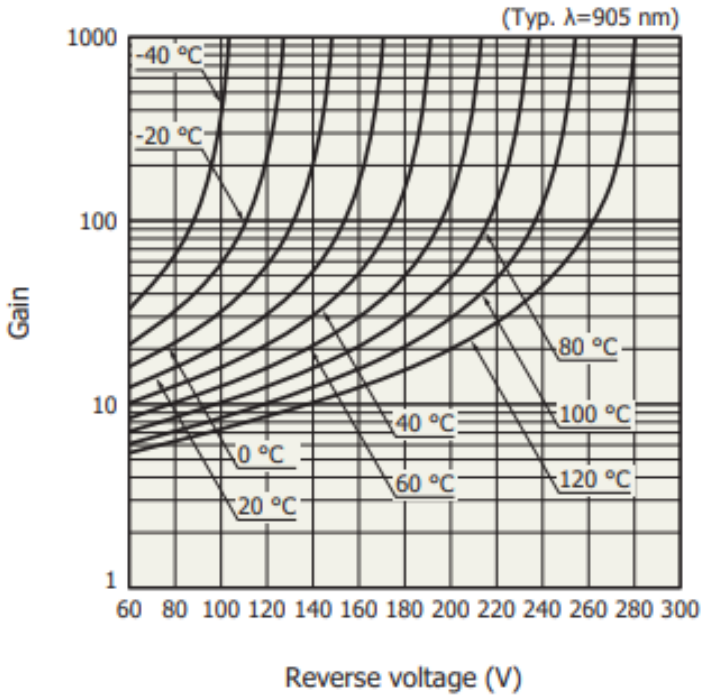
HOT



COLD



> Gain vs. reverse voltage



To obtain a constant gain, a temperature sensor and temperature compensation circuit are mandatory

NEW

Gain-stabilized APD: S15415-02/S15415-05

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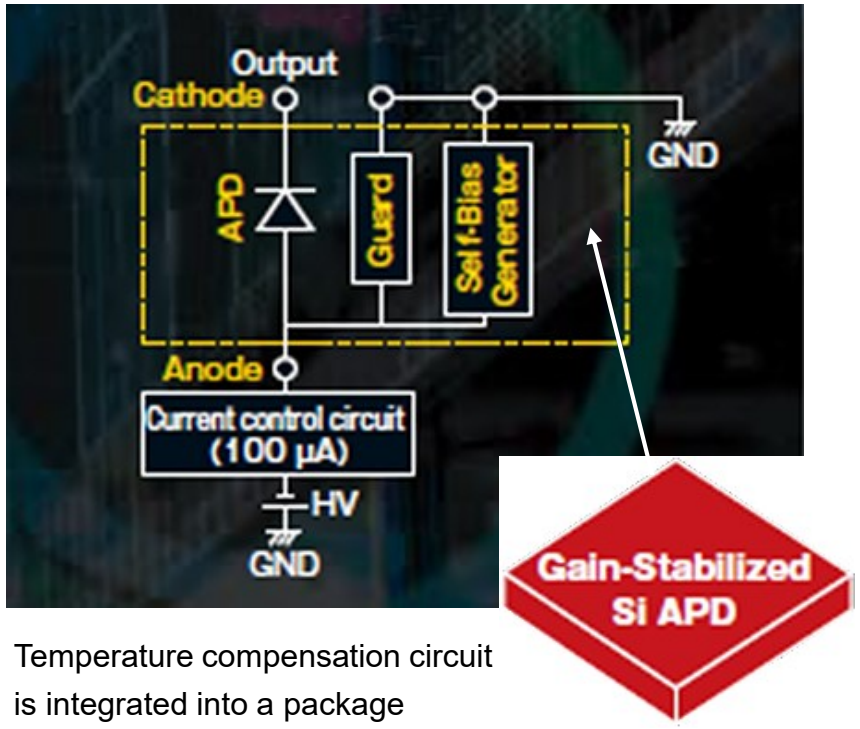
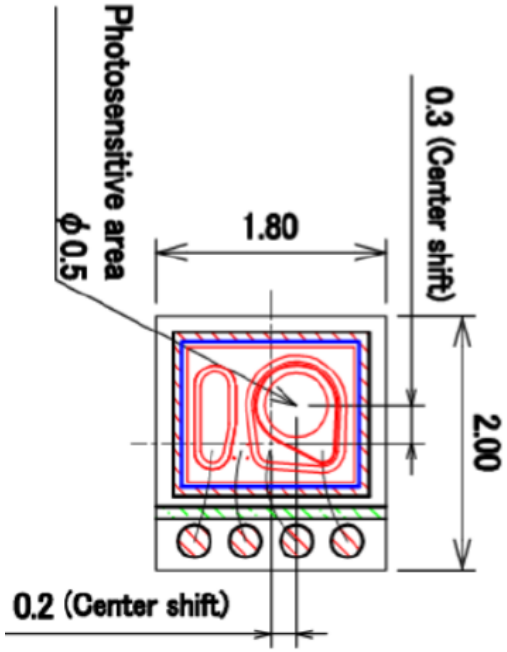
The Gain-stabilized Si APD has a self-bias generator (SBG) built into the chip to keep the gain of the light constant.

Operating principle



Temperature compensation circuit is integrated into a package



COB package
(2.0x1.8x0.9tmm)

NEW

Gain-stabilized APD: S15415-02/S15415-05

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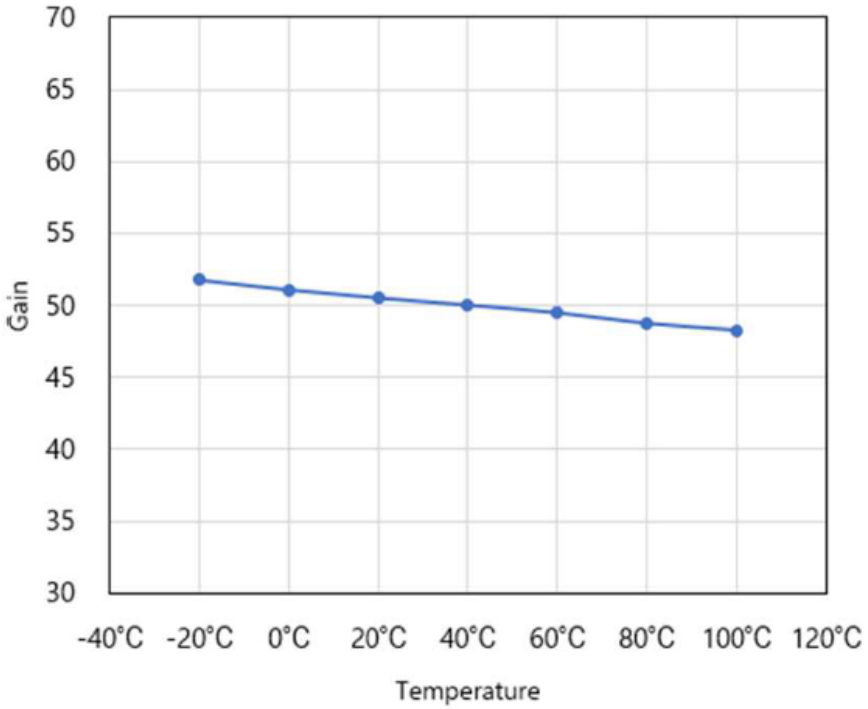
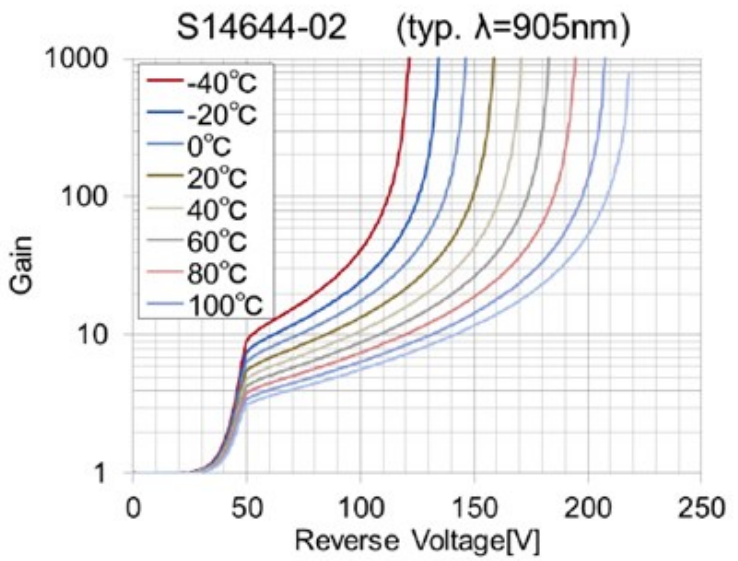
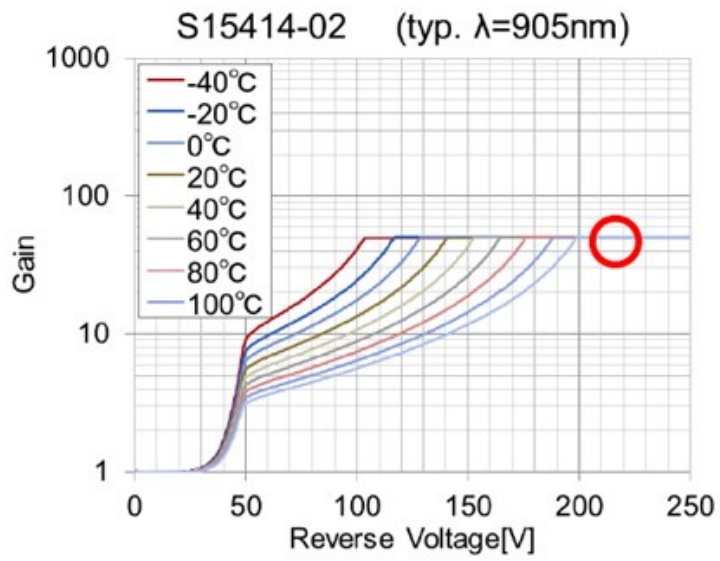
- No need to adjust the operating voltage individually
- No need to add a temperature compensation circuit



Fixed gain Si APD





*Measured with current limitation:100μA

The gain is fixed at **M=50** at any temperature range.

NEW

Lineup of standard products

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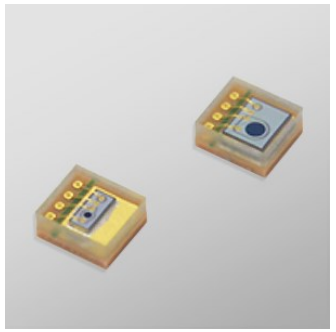
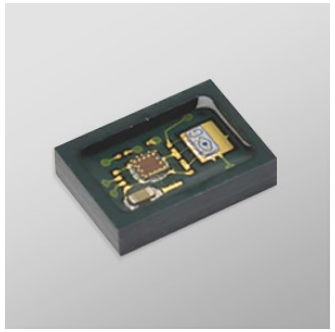


Single channel type

S15415-02 | S15415-05

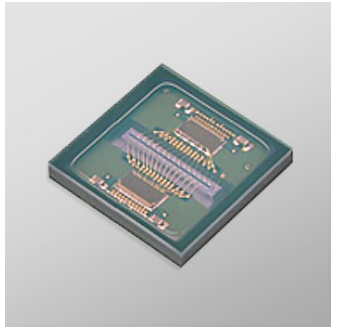
- Photosensitive area size: ϕ 0.2mm / ϕ 0.5 mm
- Peak sensitivity wavelength ʎ: 840nm
- Gain M: 50 (ʎ 905 nm)
- Peak sensitivity for 905 nm: 0.5 A/W (M=1)



Single channel with TIA

S16429-01CT

- Photosensitive area size: ϕ 0.2mm
- Wide bandwidth (typ. 300 MHz)
- Low ring back (low ringing) wave form
- 30 kV/A trance impedance
- Low noise trans-impedance amp & background light removal function included

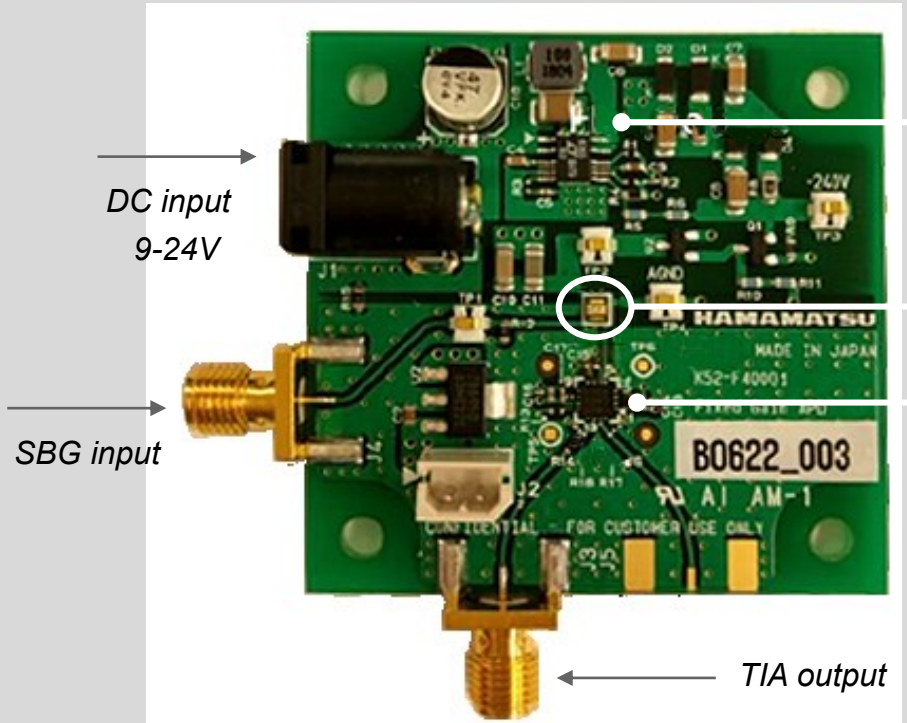


16 channels with TIA

S16430-01CR

- Photosensitive area size: ϕ 0.2mm
- Number of elements: 16 (parallel output)
- Wide bandwidth (typ. 300 MHz)

Evaluation board C15410



- Low ring back (low ringing) wave form
- 30 kV/A trance impedance
- Low crosstalk by integration of APD array & transimpedance amplifiers
- Low noise transimpedance amp & background light removal function included

NEW

Customization opportunities

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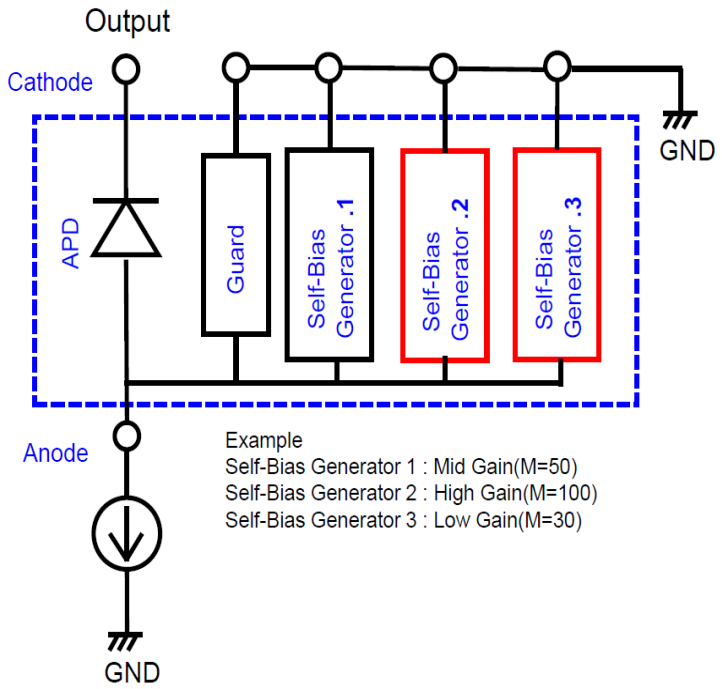
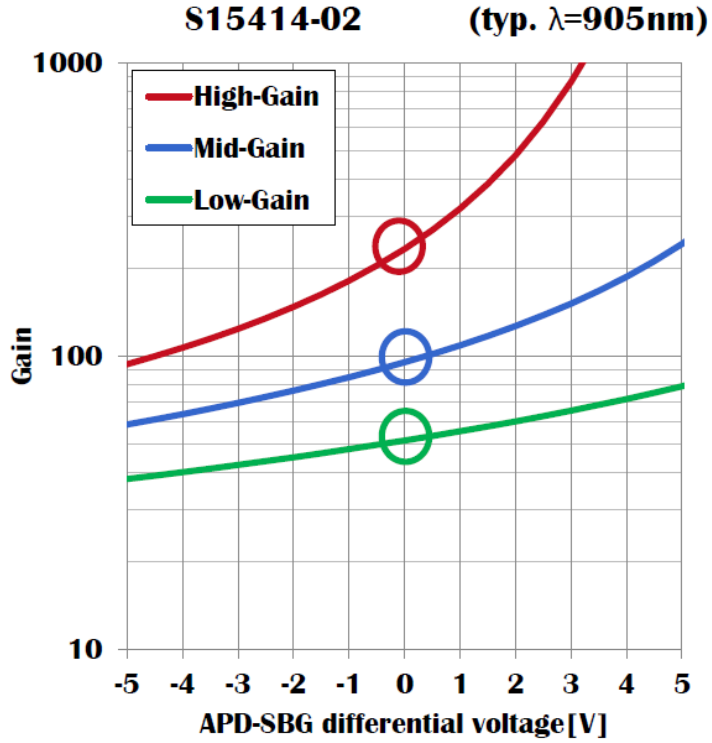
- It is technically possible to **add more self-bias generators** and add other gain settings.

- Other possible custom options:
  - Array type
  - Active area size
  - Change the gain setting from the standard gain





Thank you
for your attention

www.hamamatsu.com

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