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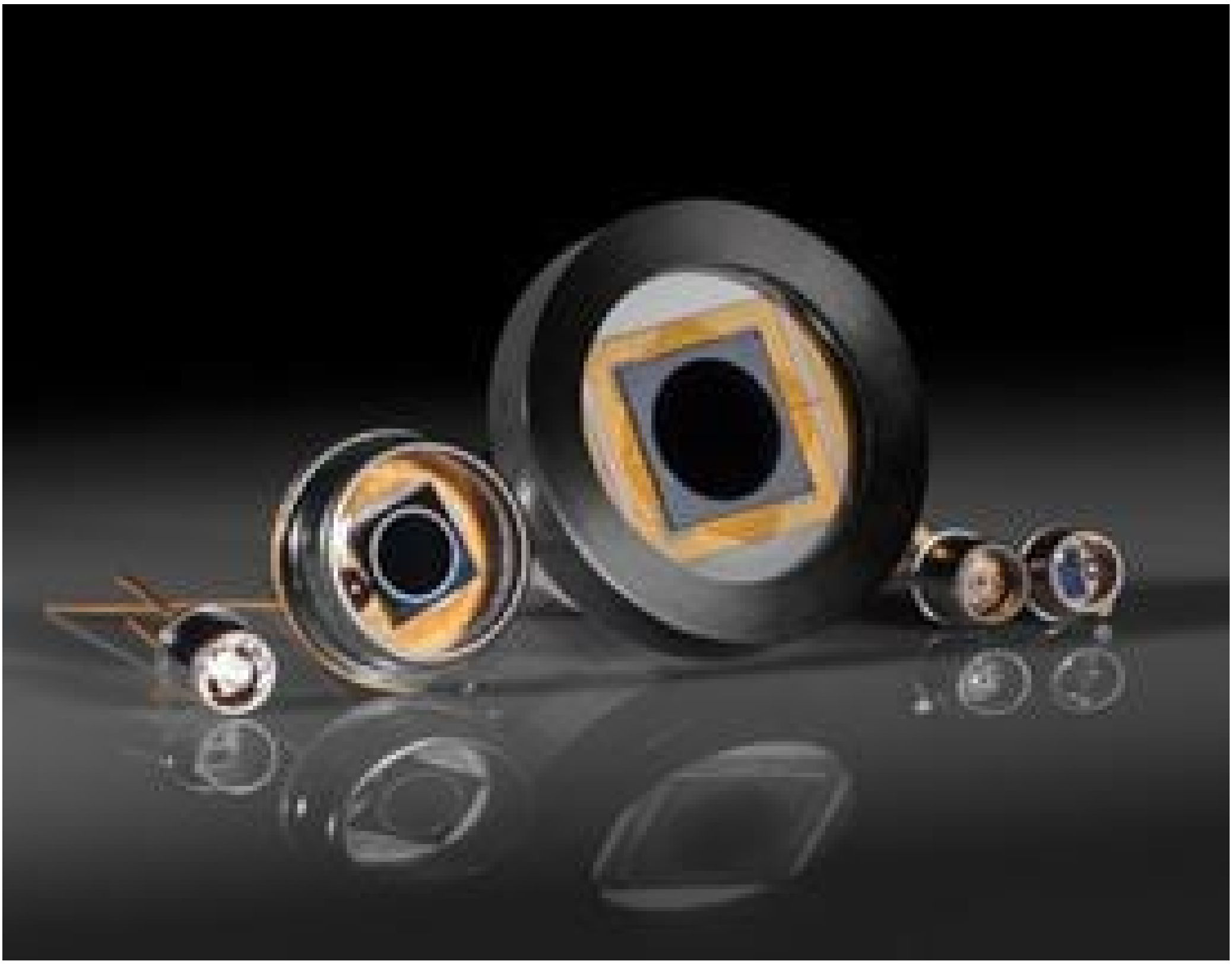
Normal Response, 0.81mm^2, Silicon Detector



Silicon Photodiodes

Stock **#57-507** **9 In Stock**

- 1 + **£31**.40

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Volume Pricing	
Qty 1-4	**£31.40** each
Qty 5-9	**£28.00** each
Qty 10-24	**£24.60** each
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Product Downloads

General

Type:
Biased

Typical Applications:
High light levels, pulse detectors, AC light measurement

Rise Time (ns):
8 @-10 V/50 Ω, 632nm

Model Number:
PIN-040A

Note:
Normal Response

Protective Window:
Borosilicate

Package:
TO-18

Physical & Mechanical Properties

Active Area (mm^2):
0.81

Construction:
PIN

Optical Properties

Detectivity ($cmHz^{1/2}/W$):
1.45×10^{13} @ -10 V, 970nm

Electrical

Terminal Capacitance (pF):
8 @ 0 V; 2 @ 10 V

Voltage Bias, V_{Bias} (V):
-10

Responsivity @ 970nm (A/W):
0.65

Noise Equivalent Power NEP ($W/Hz^{1/2}$):
6.2×10^{-15}

Maximum Breakdown Voltage (V):
30.00

Dark Current I_d (nA):
0.05 @ 10V

Environmental & Durability Factors

Operating Temperature (°C):
-40 to 100

Regulatory Compliance

Certificate of Conformance:
View

Product Details

- UV Enhanced, Blue Enhanced, and Normal Response Options
- Active Areas from <1 to $100mm^2$
- C-Mount and S-Mount Mounting Solutions Available

Through the photovoltaic effect, detectors provide a means of transforming light energy to an electrical current. The root of the theory behind this phenomenon is a small energy gap between the valence and conduction bands of the detector. When light, with enough energy to excite an electron from the valence to the conduction band, is incident upon the detector, the resulting accumulation of charge leads to a flow of current in an external circuit. Since light is not the only source of energy that can excite an electron, detectors will have some amount of current that is not representative of incident light. For example, fluctuations in thermal energy can easily be mistaken for light intensity changes. A variety of these “non-light” contributions are present and, when summed up, make up the total noise within the detector.

The ratio of the overall signal output to the noise level is known as the signal to noise ratio (s/n) and can be used to determine if noise will be a concern within a particular application. While noise is certainly a key means of characterizing detectors, it is only one of the characteristics which should be considered when selecting a detector.

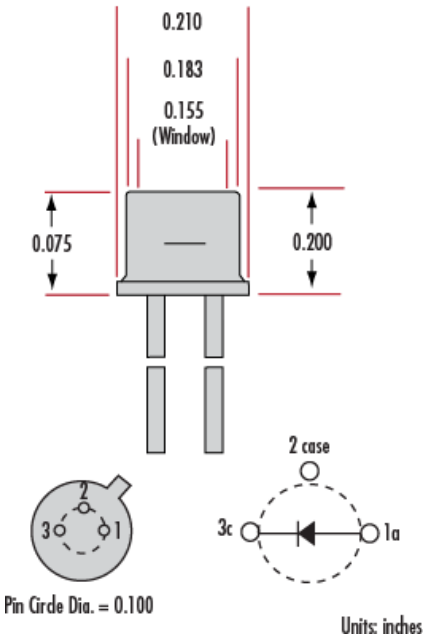
Different Operation Modes

Photovoltaic (Unbiased): During PV operation, no external bias is applied to the photodiode. Since Dark Current is a function of bias magnitude, PV operation eliminates Dark Current as a source of noise. In this case, the NEP will be lower, thereby allowing greater sensitivity at lower wavelengths. This makes it ideal for low signal detection. One disadvantage is the slightly lower responsivity at higher wavelengths (see graph).

Photoconductive (Biased): During PC operation, a reverse bias on the photodiode results in a number of response advantages, such as a faster rise time. This makes this type of operation more suitable for high frequency applications. One inconvenience is that the dark current increases with this applied biased current, so noise is introduced into the system.

Technical Information

T0-18 Mount
(#57-506, #57-507, #57-508)



Units: inches