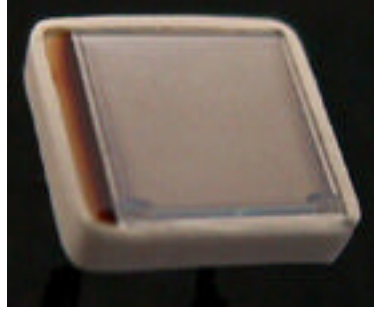
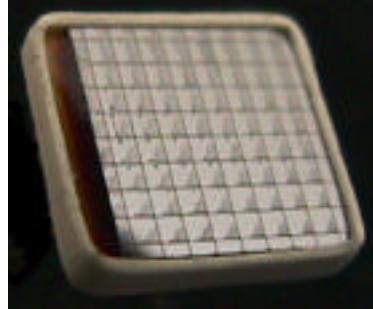


# Silicon Avalanche Photodiode



64 mm<sup>2</sup> active area of **S0814**



Array with 64 pixels. **A6403**

## Features

- Gain above 1,000 at operating condition of best signal-to-noise ratio. (Maximum gain of 10,000.)
- Large active area
- High quantum efficiency (QE) extends beyond visible spectrum
- High speed at 1064 nanometer wavelength of YAG lasers
- Pulse counting mode is the most-frequent style of use.
- Optical Photon Counting (2-3 photons) when cooled

## Devices

Type No.	Description
<b>S0223</b>	2 mm x 2 mm active area detector
<b>S0814</b>	8 mm x 8 mm active area detector
<b>S1315</b>	13 mm x13 mm active area detector
<b>A1604</b>	Array of 16 detector pixels. Pixels are in a 4 x 4 pattern. Each pixel: 2 mm x 2 mm area, 2.48 mm pitch
<b>A6403</b>	Array of 64 detector pixels. Pixels are in an 8 x 8 pattern. Each pixel: 1 mm x 1 mm area, 1.27 mm pitch.

## Specifications

Parameter	Typical Value at 22°C
gain (at optimal signal-to-noise ratio)	300 to 2000
capacitance	0.7 pf/mm <sup>2</sup>
bias voltage (device is typically operated at optimal signal to noise ratio)	1650 to 1750 volts
QE at 400 nm	50 %
QE at 532 nm	65 %
QE at 830 to 905 nm	75 %
QE at 1064 nm	20 %

Type No.	<b>S0223</b>	<b>S0814</b>	<b>S1315</b>	<b>A1604</b>	<b>A6403</b>
nominal Active Area (if array, of pixel) mm <sup>2</sup>	4	64	169	4	1
Rise Time for a charged particle, ns	≤ 1	≤ 1	≤ 1	≤ 1	≤ 1
Rise Time at 532 nm, ns	5	8	10	5	5
Rise Time at 1064 nm, ns	< 2	< 2	< 2	< 2	< 2
Noise Equivalent Power, rms fW/(Hz) <sup>1/2</sup>	19	42	85	19	10
Noise, FWHM eV	200	450	900	200	100

## Applications

- LIDAR, LADAR
- Medical Imaging. PET sensor provides both timing and energy information.
- High Energy Physics. Read-out of optical fibers
- Bio Sensors
- Telecommunications