

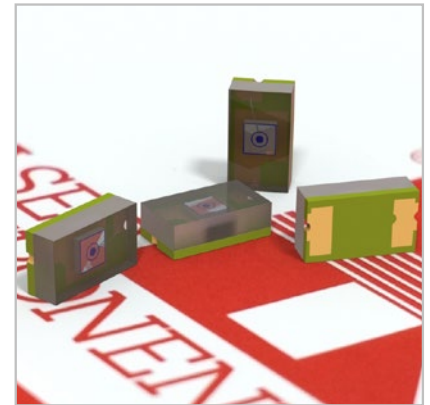
Low-Cost Silicon Avalanche Photodiode SAH-Series (NIR-Enhanced)

Description

The SAH230NM2 and SAH500NM2 are low-cost, general purpose silicon APDs in a miniature SMD package. Responsivity is optimised for 905 nm rangefinders.

Features

- High Quantum Efficiency
- Low noise, high speed
- Multiplication gain, $M > 100$ available
- 230 μm and 500 μm diameter active area
- Gradual multiplication curve
- Wide operating temperature range
- Miniature surface mount package



Applications

- Rangefinding
- Optical communication systems

Generic Characteristics at $T_a = 25\text{ }^\circ\text{C}$

	SAH230NX			SAH500NX			Units
	Min	Typ	Max	Min	Typ	Max	
Wavelength Range	400		1000	400		1000	nm
Peak Sensitivity		800			800		nm
Diameter		230			500		μm

Absolute Maximum Ratings

	SAH230NX		SAH500NX		Units
	Min	Max	Min	Max	
Storage Temperature	-55	100	-55	100	°C
Operating Temperature	-20	60	-20	-60	°C
Reverse Current Peak Value (CW Operation)		200		200	µA
Reverse Current Peak Value (1 sec Duration)		1		1	mA
Forward Current I _f at 21 °C Average Value (CW Operation)		10		10	mA
Forward Current I _F at 21°C Peak Value (1 sec Duration)		50		50	mA
Max. Total Power Dissipation		60		60	mW
Soldering (for 15 sec.)		260		260	°C

Electrical Characteristics, T_a = 25°C, M = 100

	SAH230NX			SAH500NX			Units
	Min	Typ	Max	Min	Typ	Max	
Breakdown Voltage @ I _d = 10 µA		150	200		150	200	Volt
Responsivity @ 905 nm		50			50		A/W
V _{br} Temperature Coefficient		0.5			0.5		V/°C
Dark Current		0.5	1.0		1.0	3.0	nA
Noise Current		0.2			0.2		pA/sqrtHz
Capacitance		1.0			2.0		pF
Rise Time @ M=100		250			300		psec
Cutoff Frequency (-3 db)		1.4			1.2		GHz
Gain (M = 100)		100			100		

Fig. 1: Spectral Response @ M = 100

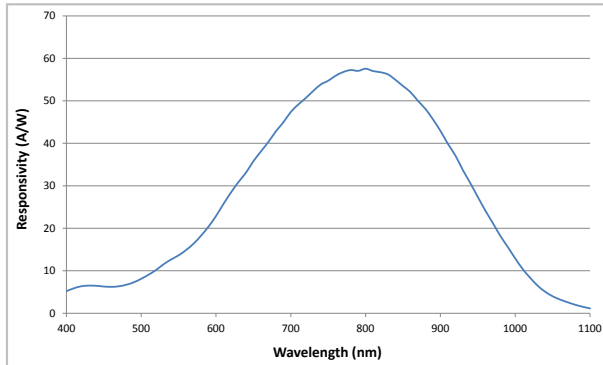


Fig. 2: Current vs. Voltage @ 905 nm

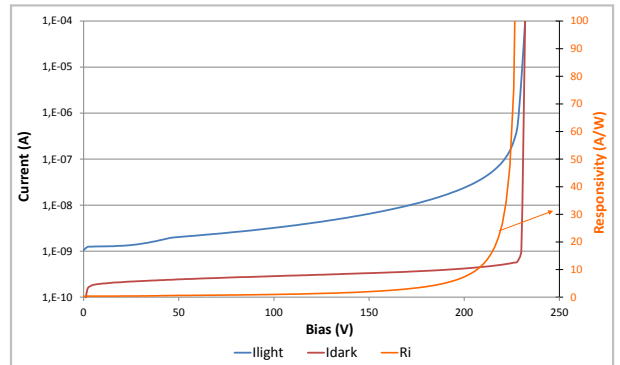


Fig. 3: Noise vs. Bias

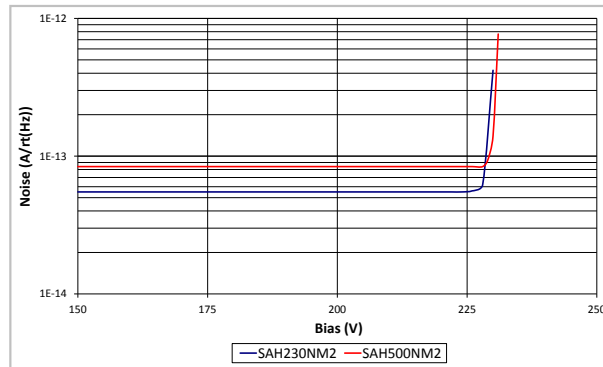


Fig. 4: Capacitance vs. Reverse Voltage

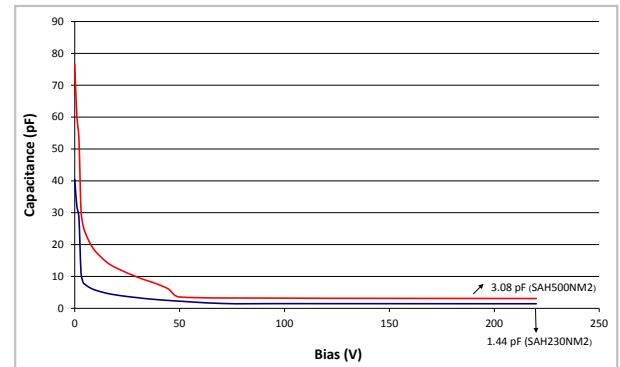
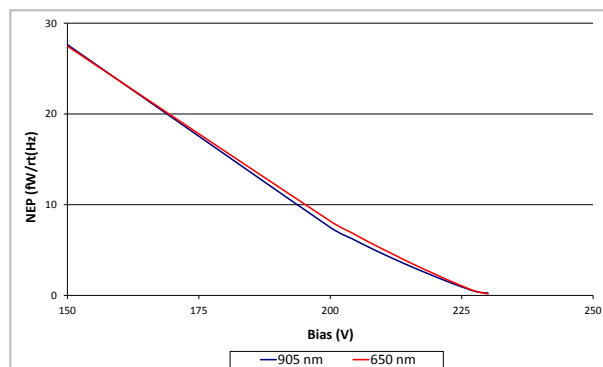
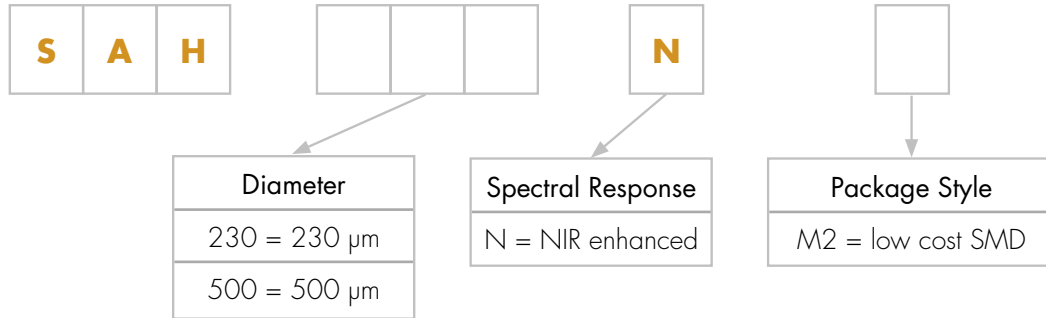


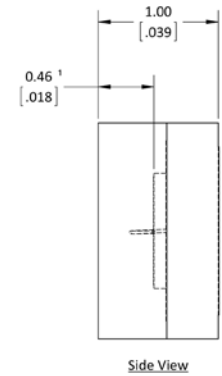
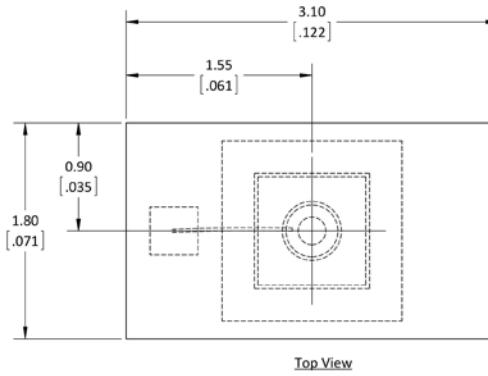
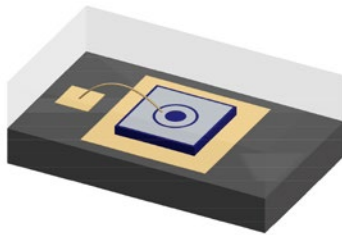
Fig. 5: NEP vs. Bias



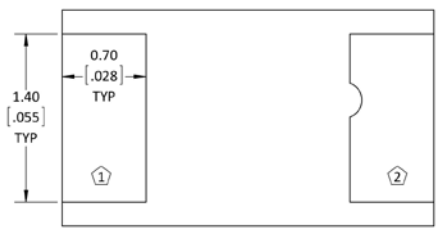
Product Number Designations



Package Drawing



¹ Distance from top of active area to top of device.



Bottom View Pin 1: Cathode Pin 2: Anode